

Commerce

September 1, 1971

Mr. James Wakelin
Assistant Secretary for Science
and Technology
Department of Commerce
Washington, D.C. 20230

Dear Jim:

I want to express to you our appreciation for your help in resolving the several issues concerning formation of the Policy Support Division in the Office of Telecommunications. I believe we can look forward to a productive joint program which will be beneficial to both OTP and OT.

I understand that the National Bureau of Standards is in the process of initiating a major program in the area of teleprocessing. In view of this, I believe it is desirable for the National Bureau of Standards to assume a distinct and special role in assisting OTP in carrying out its functions assigned by the President in the area of computers and communications. In particular, we would like to look to the NBS to provide technical advice and analysis to this Office in teleprocessing matters and to represent the United States at appropriate international meetings as mutually agreed. This would complement, but not duplicate, any analytical support in communications provided by the Office of Telecommunications.

If you agree that coordination of our mutual interests in teleprocessing is beneficial, I would appreciate it if you would designate a point of contact to work with our staff in further delineating the activities of NBS in support of OTP.

Sincerely,

George F. Mansur

George F. Mansur

DD Records
DD Chron

✓
Col Enslow/Mr. Whitehead/ GFMansur/tw

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

Commerce
PSD

August 9, 1971

MEMO FOR: The Director

From: Michael McCrudden

MM

Subject: Space Required for Analysis Division Staff

Based on the assumed 60 man size for the Analysis Division, approximately 12,000 to 14,000 square feet of space is needed. The formal request for the space will have to come from Commerce. I hesitate to press Commerce on submitting the request until the basic working agreements have been solidified. At such time as that has occurred, I would suggest we reach an agreement with the acting manager of the Division on space location and have him initiate the formal request.

Commerce

PS 2

SEP 18 1971

Honorable Maurice H. Stans
Secretary of Commerce
Washington, D. C. 20230

Dear Mr. Secretary:

As you are aware, the efforts of our staffs have borne fruit, and the Policy Support Division of the Office of Telecommunications is now functioning within your Department.

I want to express to you my pleasure at this achievement and my appreciation for the cooperation which you personally and your people have demonstrated. I am confident that the arrangements we have worked out will go far to bring about the objectives the President set forth in Executive Order 11556 and Reorganization Plan No. 1 of 1970. I thank you for your help.

Sincerely,

(S) Lom

Clay T. Whitehead

cc: DO Records
DO Chron
Mr. Whitehead - 2
GC Subject
GC Chron

AScalia:hmy/jm 9/18/71

Commerce

Tuesday 8/31/71

1:10 Mr. Kandoian's secretary (Betty Davis) called (189) 5171
to say that since the agreement was signed last week,
they were wondering if there were any meetings
they should attend, etc.

Dr. Mansur said to tell them that the nature of our
staff meetings has changed significantly and are now
very brief and principally scheduling meetings.
As a result, we doubt there will be any need for them
to attend our staff meetings.

Have so advised them.

cc: Timmie
Dolores

Commerce

28 JAN 1971

Mr. Armig Kandoian
Director, Office of Telecommunications
Department of Commerce
Room 3523
Washington, D.C. 20230

Dear Mr. Kandoian:

Mr. Whitehead has asked me to transmit the attached letter of commendation concerning Mr. Charles E. Lathey. This letter was received following Mr. Lathey's transfer from this Office. Mr. Whitehead recommends the association of this letter with Mr. Lathey's personnel file.

Sincerely,

Signed

Stephen E. Doyle
Special Assistant
to the Director

cc: Mr. Whitehead
Mr. Doyle



SEDoyle/ec/28Jan71

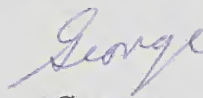
EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF TELECOMMUNICATIONS POLICY
WASHINGTON, D.C. 20504

900
OFFICE OF THE DIRECTOR

August 20, 1971

NOTE TO: Tom
Nino
Walt
Michael

Jim Wakelin called this afternoon and stated that he has initialed his concurrence to the agreements negotiated by Scalia and O'Brien. He indicated that he did not plan to discuss it with Secretary Stans and he would assume the responsibility for the Department of Commerce. I assured him that OTP would also concur, and that we should get on with the staffing and program definition.


George

February 9, 1971

Chron
SED Chron
Personnel
✓ OT, Commerce

MEMO TO THE RECORD

Subject: James Sutton

I told James Sutton today there are no prospects for employment for him in OTP, but that Armig Kandoian would be visiting OTP Thursday morning February 11. At that time we will give his file, together with some others, to Dr. Kandoian for consideration for employment at OT, Commerce. I gave him Dr. Kandoian's telephone number and suggested he call Kandoian after Thursday morning.

Stephen E. Doyle

cc: Mr. Whitehead
Mr. Doyle

SEDoyle:jm



July
Commerce

U.S. DEPARTMENT OF COMMERCE
Office of Telecommunications

Washington, D.C. 20230

March 10, 1971

Directory of Commerce Personnel
recently transferred from OTP

Following is a listing of all OTP personnel recently transferred to the Office of Telecommunications, Department of Commerce, and physically located at 1325 G Street, N. W., Washington, D. C.

<u>Name</u>	<u>Room</u>	<u>Telephone Extension</u>
Barlow	288	4383
Brady	284	4783
Burns	287	4931
Butler	284	4783
Cole	281	3604
Corrado	289	5012
Dhue	286	5771
Dinkle	288	4383
Filipski	292	4931
Gamble	290	5012
Garber	290	5012
Hazel	284	4783
Higgins	291	5012
Jahn	288	4383
Kirkevold	293	4931
Sarkesain	285	5771
Stelzenmuller	271	4556
Sterner	287	4931
Thrift	284	4783

To reach any of the foregoing, dial Code 189 plus the extension or 967 plus the extension.

The mail address is, for example:

Executive Secretary
Interdepartment Radio Advisory Committee
Office of Telecommunications
Department of Commerce
Washington, D. C. 20230

The Stop number is: 206

Chron
OTP - Gen. Cnsl.
Cong.
✓ Commerce Dept.

January 5, 1971

To: Nino Scalia

From: Tom Whitehead

In addition to the two memoranda for the staff I talked to you about, you should write a memo to the staff after you get on board regarding expenses incurred by the staff on official business. In view of the fact that we do not have any representational funds, state what is tax deductible. Set forth guidelines with respect to what kinds of entertainment the staff can properly accept from companies -- a particularly important problem for OTP since it is so heavily wrapped up in industry matters.

Jim Lynn suggested that you should meet with Sol Mosher, Congressional Liaison, Commerce Department. Lynn might have talked to Mosher about it, and you should call Lynn, or Mosher directly, to set something up. Mosher knows the Hill well and could give you some useful thoughts.

cc: Mr. Whitehead

CTWhitehead:jm

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

February 10, 1971

MEMO FOR TOM WHITEHEAD

From: Frank Urbany

Subject: Review of DOC/OT FY 72 Budget

I talked with Mr. Kandoian today and indicated that we would like to review the OT Budget before it finally goes to press. He indicated that it is still being revised, but expects it to be available for review next week. Accordingly, he and Mr. Richardson have set aside the balance of the morning following the Thursday 9 a.m. staff meeting on February 18 to review their program with the OTP staff. By that time, our Budget will be finished and will be a useful point of reference. If available, I will obtain and circulate copies of the OT Budget in time to review prior to the Thursday staff meeting.

Distribution:

Dr. Mansur

Mr. Dean

Mr. Hinchman

Mr. Doyle

Commerce

PSS

April 13, 1971

Honorable James H. Wakelin, Jr.
Assistant Secretary of Commerce
Washington, D. C. 20230

Dear Jim:

Tom has asked me to reply to your letter of last week concerning the definitive arrangements for Commerce support to this Office.

I'm sure you recognize that the Memorandum of Agreement which I sent to you the week before last did not raise any new or substantive matters, but simply reflected the arrangements which had been developed with Messrs. Kandoian and Richardson. I had thought that you were in accord with the basic provisions as a result of our meeting with Messrs. Lynn, Scalia, and Whitehead.

The Memorandum which you forwarded last week departs from a fundamental principle which evolved as a result of the many discussions between OTP and OT over the last several months. This principle is that those functions of OT which are in direct support of the policy analysis responsibilities of this Office should be managerially separate from the remainder of OT and under our close control. We are reluctant to reconsider that basic question, since it was resolved only after joint investigation of numerous alternatives. We have no reason to believe further discussions will lead to substantially different conclusions.

We are concerned that this basic disagreement should arise so close upon your budget hearings, since OMB approval of the OT budget was predicated upon the establishment of arrangements which would assure this Office closely responsive support at the level of \$4 million for FY 72. We therefore think it is important that the entire matter be resolved this week.

Such a time schedule seems to me to dictate that we conduct discussions at a high level, tomorrow if possible. I would like, if you are able, to

- 2 -

meet with you and Jim Lynn, and would like to bring Messrs. Scalia and Hinchman with me. I will give you a call later today to see if such a meeting can be arranged.

Sincerely,

George F. Mansur

G. F. Mansur
Deputy

AScalia:hmy

4-13-71

cc: Mr. Whitehead - 2 ✓

Dr. Mansur

Scalia Chron File

" Subj "

*Commerce
Issue Study*

May 28, 1971

Memorandum for Mr. Robert Lowe:

With reference to your request for OTP views on prospective panelists for the OT issue study, I have elicited the following:

Prime Candidates (in order of preference)

1. A. D. Wheelon (Hughes)
2. J. Fisk (Bell Labs)
3. J. M. Pettit (Stanford)
4. L. Smellin (MIT)
5. (DOD representative?)
6. ? (Texas Instruments)
7. Cullen Crane (Rand)
8. Dr. William Linville (Stanford)
9. R. T. Gifford (GE)

No basis for judgment

- E. C. Jordon
- D. G. Fink
- J. T. deBettencourt
- B. N. Oliver

Mr. Whitehead

- 2 -

The remaining individuals on your list were considered to be either too narrowly focused or duplicative of those above in interests or perspective.

15
Walter R. Hinchman

WRHINCHMAN:dc

Subj: Commerce; Issue Study

RF

January 4, 1971

MEMORANDUM FOR

Dr. Armin G. Kandelian
Director
Office of Telecommunications
Department of Commerce

Subject: Commerce Telecommunications Budget and OTP
Support -- FY 71 and 72

To obtain OMB approval of Commerce appropriation requests for telecommunications research and analysis during FY 71 and FY 72, the OTP was required to give certain assurances regarding use of these resources. The general terms of this understanding, along with relevant staff and funding implications, are the subject of this memorandum.

For FY 1971, the OMB has approved a supplemental appropriation of \$1M to enable Commerce to undertake important tasks in support of the OTP. It is understood that about \$700K of this supplemental will be used to reassign staff and/or positions previously identified with other agency programs to OTP support programs; the remainder to be used for related contract studies. It is also understood that about \$500K of existing Commerce appropriations will be reprogrammed into activities identified by the OTP and OT as being more responsive to national needs and priorities.

With regard to staff, it has been agreed that the authorized ceiling for the Commerce telecommunications program will not increase during this period, although new skills, disciplines and management capabilities might be added through natural or forced attrition.

For FY 1972, the OMB has approved a direct appropriation request of \$5M for the Commerce telecommunications program. These funds are intended to continue the basic studies program at a somewhat reduced

level, to continue the supplemental appropriation for positions reassigned to the OTP support area and provide for further reassignments, and to continue at present levels those activities transferred from the OTP to Commerce (e. g. , IRAC Secretariat, ADP support).

Our understanding with OMB is that at least \$4M of this appropriation will be for studies in support of the OTP. This would leave about \$1M for basic studies in radio propagation and telecommunication sciences, which should be adequate to maintain the existing capability in these areas. Prior to the FY 73 budget cycle, we should jointly review this part of the Commerce activity to determine whether all or portions thereof might be more appropriately treated as government-supported university research.

We have agreed with the OMB that the total telecommunications staff and budget in Commerce could be held at or very near present levels during FY 72, subject to critical other-agency needs. This conclusion is based on the assumption that OTP needs can be met by taking up slack in other-agency activities or by actually reducing the Commerce reliance on this type of support. Please note, however, that we would not oppose some increase in staff provided it were clearly justifiable by the existence of critical other-agency needs where Commerce has unique capabilities.

I hope this has clarified our views and requirements regarding the Commerce telecommunications program. If there are any questions, I suggest we discuss them at our next weekly liaison meeting on January 6.

Clay T. Whitehead

cc: Mr. Whitehead (2)

✓ Subj

RF

WRH
WRHinchman:clt - 12/30/70

Commerce
PSS

April 2, 1971

MEMO FOR: Walt Hinchman

Info copies: Tom Whitehead ✓
George Mansur
Will Dean
Mike McCrudden

From: Frank Urbany

Subject: Planning for Commerce Support Staff

The following information is provided in response to your request of March 26, 1971:

1. Estimated cost of 25 ITS positions for first 6 months of FY 1972.

a.	<u>Cost of 25 positions for 6 months.</u> (Annualized cost of 1 position is \$18,343 based upon DOC FY 72 ITS Budget with average salary adjusted for January 1971 pay increase and personnel benefits.)	\$229,787
b.	<u>Other objects.</u> (Estimated proration based on ITS FY 72 Budget, except for travel.)	71,750
c.	<u>Travel.</u> (10 one-week trips from Boulder to DC and return @ \$345 each.)	34,500
	Estimated Total Cost	<u>\$336,037</u>

2. Estimated costs to establish 70 positions, Analysis Division.

a.	<u>Personnel costs.</u> (See attachments A and B for distribution of GS grades and linear phasing schedule.)	\$988,956
b.	<u>Overhead.</u> (Arbitrary estimate of 20 %.)	197,791

c.	<u>Furniture and capital equipment.</u> (Assumes new equipment and furniture to support staff, \$1,500 each x 70.)	\$105,500
d.	<u>Rent.</u> (Estimated 17,000 sq. ft. @ \$6.00 downtown DC location. <u>Note: First year costs must be absorbed from DOC FY 72 funds.</u>)	102,000
e.	<u>Contingency reserve.</u> (To cover yet undefined costs such as personnel relocation expenses, security clearances and other requirements subsequently identified.)	50,000
Estimated Total Cost		<u>\$1,447,247*</u>

*Note: No contract study funds are provided for in the above estimate.

3. Estimated space requirements.

Space requirements are estimated at 17,000 sq. ft. to support 70-man staff. Downtown DC office space is in the \$5.50 to \$6.50 a square foot range. Prices in the suburbs about 50¢ a square foot less.

I have discussed the space question with GSA; however, they are not able to do anything until a specific requirement is identified, defined, and funding determined. They promise a quick (two-week) response for any requirement for downtown or suburb space. Having alerted GSA to a possible requirement, I cannot proceed any further with them until we reach some definite understanding with DOC. This is particularly important since first year costs must be borne by the requesting agency from regularly appropriated funds. Thus, in FY 72, someone will have to cough-up about \$100K if new leases are to be negotiated.

4. Funds to support IRAC Secretariat, plus staff expansion.

a.	<u>IRAC Secretariat.</u> (Based upon FY 72 OT Budget, <u>not</u> including EMC Analysis and ADP improvement.)	\$ 1,028
----	---	----------

b.	<u>Adjustment for January 1971 pay raise.</u>	\$ 23,000
c.	<u>Additional positions.</u> (7.5 additional full-year positions for frequency management support group based on average salary of \$17,664.)	132,480
d.	<u>Overhead.</u> (20% of c.)	26,496
e.	<u>Furniture and equipment.</u> (\$1.5K x 7.5)	11,250
Estimated Total Cost		<u>\$1321,226</u>

5. Status of FY 71 supplemental and reprogrammed direct appropriations.

a. Amount of FY 71 supplemental unexpended as of April 1, 1971.

We do not have any direct figures on this. All of the funds are intended for salaries and related expenses and the expectation is that they will be fully expended by the end of FY 71. (See b below.)

b. Projects funded by FY 71 \$700K supplemental.

My memo of March 31, 1971, circulated a description of OT projects being supported by the supplemental funds. The project statements account for \$526K. OT is preparing similar statements for the remaining \$174K. It is not clear as to the Boulder/Washington division of the work effort; perhaps you recognize the names on the OT project statements which will give a clue.

c. Projects funded by reprogrammed FY 71 direct appropriation.

The OT FY 72 Budget reflects allocation of FY 71 funds to current program activities. The OT projects referenced in b above reflect \$230K support additional to the supplemental funding. Again, the Boulder/Washington mix is not readily determined.

Without a careful examination of DOD in-house fiscal statements, it is not possible to provide detailed estimates about

available remaining funds. But, in general, as of 1 April, OT should have unexpended, particularly in the Salary, Expenses and Related Objects, 25% of the total funds appropriated for FY 71.

The cost estimates described above are approximations and subject to adjustment as additional requirements may be identified. They can be changed as assumptions change but for planning purposes should meet the requirements for completing the Memorandum of Understanding between OTP and DOC concerning staff support.

Attachments

OT Analysis DivisionStaffing Distribution and Associated Salary Cost
for 70 Full Time Positions

<u>Grade</u>	<u>Number</u>	<u>Salary (3rd Step)</u>	<u>Total</u>
GS-18	1	\$ 37,624	\$ 37,624
GS-17	2	34,716	69,432
GS-16	2	30,005	60,010
GS-15	12	25,867	310,404
GS-14	10	22,203	222,030
GS-13	10	18,945	189,450
GS-12	4	16,042	64,168
GS-11	4	13,457	53,828
GS-10	4	12,285	49,140
GS-9	3	11,168	33,504
GS-8	3	10,125	30,375
GS-7	3	9,151	27,452
GS-6	4	8,243	32,972
GS-5	4	7,400	29,600
GS-4	4	6,616	26,464
	<hr/> <hr/> 70		<hr/> <hr/> \$ 1,236,463

Average Salary: \$ 17,664

OT Analysis DivisionStaff Augmentation Phasing Schedule
and Projected FY 72 Costs

<u>Periods</u>	<u>Month</u>		<u>Monthly Rate</u>	<u>Annual Rate</u>
12	July	20	\$29,540	\$353,280
	July	4	5,888	70,656
11	August	4	5,888	64,768
10	September	4	5,888	58,880
9	October	4	5,888	52,992
8	November	4	5,888	47,104
7	December	5	7,360	51,520
6	January	4	5,888	35,328
5	February	4	5,888	29,440
4	March	4	5,888	23,552
3	April	4	5,888	17,664
2	May	4	5,888	11,776
1	June	5	7,360	7,360
				<hr/>
Salary				\$824,320
Personnel Benefits @ 8.5%				<hr/> 70,067
Salary and Benefits				\$894,387
3 Consultants (Top step GS-15)				<hr/> 94,569
				<hr/> <hr/> \$988,956

Commerce
PSD

April 5, 1971

MEMO FOR: Walt Hinchman

Info copies: Tom Whitehead ✓
George Mansur
Will Dean
Mike McCrudden

From: Frank Urbany

Subject: Planning for Commerce Support Staff

On Friday, you indicated that the Memorandum of Understanding with Commerce now contemplates a 60-position Analysis Division in support of OTP. If this is the case, you may want to substitute the following set of numbers for item 2 of my memorandum of April 2 dealing with this subject.

2. Estimated costs to establish 60 positions, Analysis Division.

- | | | |
|----|---|-----------|
| a. | <u>Personnel costs.</u> (See attachments A and B for distribution of GS grades and linear phasing schedule.) | \$895,299 |
| b. | <u>Overhead.</u> (Arbitrary estimate of 20%.) | 179,059 |
| c. | <u>Furniture and capital equipment.</u> (Assumes new equipment and furniture to support staff, \$1,500 each x 60.) | 90,000 |
| d. | <u>Rent.</u> (Estimated 15,500 sq. ft. @ \$6.00 downtown DC location. <u>Note: First year costs must be absorbed from DOC FY 72 funds.</u>) | 93,000 |
| e. | <u>Contingency reserve.</u> (To cover yet undefined costs such as personnel relocation expenses, security clearances and other requirements subsequently identified.) | 45,000 |

Estimated Total Cost \$1,302,358*

*Note: No contract study funds are provided for the above estimate.

Attachments

OT Analysis Division

Staffing Distribution and Associated Salary Cost
For 60 Full Time Positions

<u>Grade</u>	<u>Number</u>	<u>Salary (3rd Step)</u>	<u>Total</u>
GS-18	1	\$ 37,624	\$ 37,624
GS-17	2	34,716	69,432
GS-16	2	30,005	60,010
GS-15	11	25,867	284,537
GS-14	8	22,203	177,624
GS-13	8	18,945	151,560
GS-12	4	16,042	64,168
GS-11	3	13,457	40,371
GS-10	3	12,285	36,855
GS-9	3	11,168	33,504
CS 8	3	10,125	30,375
GS-7	3	9,154	27,462
GS-6	3	8,243	24,729
GS-5	3	7,400	22,200
GS-4	3	6,616	19,848

60

\$ 1,080,299

Average Salary

\$18,005

OT Analysis DivisionStaff Augmentation Phasing Schedule
and Projected FY 72 Costs

<u>Periods</u>	<u>Month</u>		<u>Monthly Rate</u>	<u>Annual Rate</u>
12	July	23	\$34,500	\$414,000
11	August	3	\$4,500	49,500
10	September	3	4,500	45,000
9	October	3	4,500	40,500
8	November	4	6,000	48,000
7	December	4	6,000	42,000
6	January	3	4,500	27,000
5	February	3	4,500	22,500
4	March	3	4,500	18,000
3	April	3	4,500	13,500
2	May	4	6,000	12,000
1	June	4	6,000	6,000
		<u>60</u>		
			Salary	\$738,000
			Personnel Benefits @ 8.5%	<u>62,730</u>
			Salary and Benefits	\$800,730
			3 Consultants (Top step GS-15)	<u>94,569</u>
				<u><u>\$895,299</u></u>

Comm. -

April 30, 1971

To: Walt

From: Tom

I think we ought to take a long
look at this.



U.S. DEPARTMENT OF COMMERCE
Office of Telecommunications

Washington, D.C. 20230

W.H. 10

April 22, 1971

MEMORANDUM

To: Clay T. Whitehead, Director
Office of Telecommunications Policy

From: Armig G. Kandoian, Director
Office of Telecommunications

Subject: Request for OTP input to FY 1973 Program Memorandum

The Department of Commerce bureaus, including the Office of Telecommunications, are required to submit Program Memoranda for fiscal year 1973 through 1977 to the Office of the Secretary by April 30, 1971. This will concentrate on program issue identification and resolution as a basis for determining the 1973 budget, plus the impact thereof on those years within the five-year planning cycle.

Your input to this planning effort is invited, in terms of: (a) resource levels to be used; (b) program content in the areas of frequency management, policy studies, and improvement of government telecommunications systems; and (c) review of our planning documents here prior to their submission to the Office of the Secretary by the end of next week.

Without such input, we will have to proceed with the submission, anticipating the levels of effort which you will require and which you would support to OMB.

Commerce 7
12/13

December 13, 1971

TO: George
FROM: Walt
SUBJECT: Commerce Study re Federal
Telecommunications Assistance

Bob Lowe called to inform me that the attached funding arrangements were being made to cover the Lathey study. On mentioning this at the staff meeting this morning, Tom expressed some concern regarding both the effort itself and this manner of funding. Also, both Michael and I have some concern about the proposed level of funding.

You may want to discuss this with Tom. I understand that Lowe would like to have any reaction to the proposed funding arrangements in particular ASAP, as the memorandum represents an accomplished fact as it now stands.

SLW

Walt

WHINCHMAN:dc
Subj: Commerce
RF
✓ Mr. Whitehead
Mr. McCrudden



Mr. Hinchman
U.S. DEPARTMENT OF COMMERCE
Office of Telecommunications
Washington, D.C. 20230

Date: December 10, 1971

To: Eugene M. Zucker
Acting Administrative Officer

From: Robert M. Lowe *RML*
Policy Support Division

Subject: Federal Telecommunications Assistant to State and Local Governments

Consistent with the attached letter of George Mansur dated December 3, 1971, and work statement appended thereto, I am requesting that the Telecommunications Analysis Division perform an information collection and analysis program on Federal Assistance to State and Local Governments.

The work is to be performed during Fiscal Year '72 under the direct supervision of Mr. Charles E. Lathey. Accordingly, please transfer \$51,200 from the account of the Policy Support Division to the account of the Telecommunications Analysis Division. A separate project should be established to identify charges for this work.

Attachment

OFFICE OF TELECOMMUNICATIONS POLICY

EXECUTIVE OFFICE OF THE PRESIDENT

WASHINGTON, D.C. 20504

DEPUTY DIRECTOR

December 3, 1971

Mr. Robert Lowe
Manager, Policy Support Division
Office of Telecommunications
Department of Commerce
Washington, D.C. 20230

Dear Bob,

We have carefully reviewed the attached Work Statement for an OT study of Federal Telecommunications Assistance and find it consistent with our general guidelines.

In the course of performance we wish to emphasize the need to establish your contacts with the various Federal agencies in a sense of exploration rather than one of planning for specific action. When your planned contacts may directly or indirectly interact with the Office of Management and Budget, full coordination should be accomplished with them through OTP before contact with an agency is made. Mr. Lathey should coordinate directly with Mr. Cooke, of our Office, on problems that arise.

Sincerely,



George F. Mansur

Attachment



U.S. DEPARTMENT OF COMMERCE
Office of Telecommunications
Washington, D.C. 20230

Date: November 12, 1971

To: Dr. John M. Richardson
Mr. Robert M. Lowe

From: Robert C. Powell

A handwritten signature in dark ink, appearing to read "R.C. Powell", is written over the printed name "Robert C. Powell".

Subject: State and Local Program Assistance

Reference is made to our discussion concerning a task to be accomplished by our division for the Director, Office of Telecommunications Policy.

Contained in the attachment to this memorandum is a proposed Statement of Work. We estimate the cost of the proposed effort to be \$51,200. This includes five-sixths of a man year of effort spread over a five month period and has been computed using current approved OT methods of cost computation.

We would be happy to discuss the attached with you, particularly with regard to the task starting date and the method by which funds will be made available for the task.

Enclosure

ENCLOSURE 1

STATEMENT OF WORK:
FEDERAL TELECOMMUNICATIONS ASSISTANCE

BACKGROUND

The Director, Office of Telecommunications Policy, by Executive Order 11556, September 4, 1970, has responsibility to "coordinate Federal assistance to State and local governments in the telecommunications area."

Currently, Federal assistance, including telecommunications assistance, is administered by Federal agencies directly to counterpart agencies in State and local governments. A review of the 1971 Catalog of Federal Domestic Assistance* reveals that more than 29 major Federal agencies are administering over 996 programs of assistance through about 113 sub-bureaus or offices in these agencies.** The overall magnitude of these programs was more than \$24 billion in FY 1970.***

Since Federal telecommunications assistance in the many programs is infrequently coordinated by Federal agencies laterally among agencies and less frequently with the Office of Telecommunications Policy, it is difficult for the Director of the office to determine the extent to which he should become involved in coordination of Federal telecommunications assistance. At the same time, it is difficult to pinpoint the programs providing telecommunications assistance to State and local governments.

* 1971 Catalog of Federal Domestic Assistance, Office of Management and Budget, Executive Office of the President, Washington, D.C.

** See Table I.

*** Federal Aid to States, Fiscal Year 1970, The Department of the Treasury, Washington, D.C.

SELECTED FEDERAL AGENCIES
ADMINISTERING STATE AND LOCAL GOVERNMENT
ASSISTANCE PROGRAMS*

Federal Agency	Sub-Elements Administering	# of Programs
1. Department of Agriculture	20	85
2. Department of Commerce	12	54
3. Department of Defense	8	43
4. Department of Health, Education and Welfare	9	300
5. Department of Housing and Urban Development	7	70
6. Department of the Interior	10	89
7. Department of Justice	7	30
8. Department of Labor	5	45
9. Department of State	3	7
10. Department of Transportation	6	24
11. Department of the Treasury	3	5
12. Advisory Commission in Inter- government Relations	1	1
13. Appalachian Regional Commission	1	12
14. Atomic Energy Commission	1	31
15. Civil Service Commission	1	10
16. Equal Employment Opportunity Commission	1	3
17. Export-Import Bank of the United States	1	5
18. General Services Administration	1	8
19. Library of Congress	1	8
20. National Aeronautics and Space Administration	1	2

Federal Agency	Sub-Elements Administering	# of Programs
21. National Foundation on the Arts and the Humanities	1	16
22. National Science Foundation	1	32
23. Office of Economic Opportunity	1	12
24. Office of Emergency Preparedness	1	3
25. Office of Intergovernmental Relations	1	1
26. Small Business Administration	1	15
27. Smithsonian Institution	1	20
28. Veterans Administration	2	38
29. Environmental Protection Agency	<u>5</u>	<u>27</u>
	113	996

*Catalog of Federal Domestic Assistance, Office of Management and Budget,
Executive Office of the President, Washington, D.C.

For example, the preceding mentioned 1971 Catalog of Federal Domestic Assistance, in its Subject Index, lists only the following reference titles for communications: Communications, which has a listing of programs titled Licensing and Regulation and Public Lands Right-of-Way; Educational Media and Audiovisual Aids Radio and Television Equipment; and Radio and Television, which repeats part of the previous listing and which adds Public Media Arts Programming.

Many of the programs listed in the Catalog appear to be candidates for the provision of Federal telecommunications assistance, but they need to be reviewed in some detail to determine whether this is so. Until such information is available to the Director, Office of Telecommunications Policy, concerning the size and nature of Federal telecommunications assistance to State and local governments, it will be difficult for him to determine the extent to which he should coordinate such assistance.

Accordingly, this Statement of Work is designed to respond to the immediate needs of the Director, Office of Telecommunications Policy. That is, this document outlines a work effort directed at information collection and analysis concerning Federal assistance to State and local governments in the telecommunications area.

OVERALL TASK

The overall task is to develop and provide to the Director, Office of Telecommunications Policy, information so that the Director can determine the extent to which he should coordinate Federal telecommunications assistance.

SPECIFIC TASKS

1. Survey Federal assistance programs to State and local governments and collect information in the following categories:

- a. Types of telecommunications assistance being provided.
- b. Purposes to which telecommunications assistance are directed.
- c. Federal, State and local government costs of telecommunications assistance.
- d. Recipients of telecommunications assistance.
- e. Authorities responsible for administering programs of telecommunications assistance.
- f. Authority for provision of telecommunications assistance.
- g. Guidelines and policies regulating use of telecommunications assistance.
- h. Identity of programs (by Catalog number) authorizing telecommunications assistance.
- i. Coordination procedures used in processing telecommunications assistance.

2. Collate and analyze information collected so as to provide information concerning the following:

- a. The approximate annualized cost of Federal telecommunications assistance to State and local governments.
- b. The approximate annualized cost provided in matching funds by State and local governments to the Federal telecommunications assistance costs.

c. A listing of Federal assistance programs, by agency and program title, which permit the provision of telecommunications assistance.

d. A comparative listing of the purposes for which telecommunications assistance is authorized in terms of the categories of assistance provided, the costs of each category of assistance, and the results sought through Federal telecommunications assistance.

e. A comparative listing of the guidelines and policies governing the provision of telecommunications assistance, including coordination, eligibility procurement, and reporting requirements.

f. Potential gaps and conflicts in telecommunications assistance policies and guidelines which should be brought to the attention of the Director, Office of Telecommunications Policy.

CONDUCT OF WORK

Since the total Federal assistance effort is large and complex and since a sampling of Federal assistance programs may be sufficient for task accomplishment, the research team will endeavor to conserve time, manpower, and cost by limiting its research to that amount needed only to obtain a valid base of information. This can be accomplished somewhat by extensive use of the 1971 Catalog of Federal Domestic Assistance and by the use of accepted personal interview techniques. That is, the catalog should be used to identify subject areas and potential sources of information, and interviews should be designed in advance so as to

permit the obtaining of a maximum amount of information is a minimum amount of time.

The Office of Telecommunications Policy will assist in the work effort by endeavoring to overcome any possible other agencies' reluctance in providing information when such reluctance may prohibit successful accomplishment of the tasks described. When reluctance is encountered, the task leader will evaluate the need for overcoming it and, if he finds that the information to be obtained is essential to the task, notify the Chief of the Policy Support Division (OT) of the situation. The latter will take such steps as are necessary to overcome the reluctance encountered.

THE WORK PROGRAM

The research and analysis effort described in this Statement of Work consists of the following phases:

1. Information Collection: Development of the interview process; definition of sources of information; arranging for data gathering interviews; conduct of interviews; and collection of information.
2. Information Analysis: Information formatting; information analysis in categories corresponding to those listed in the preceding under Specific Tasks; and development of alternative courses of potential action by the Director, Office of Telecommunications Policy.
3. Reporting: Report development and submission on work effort accomplishments in a format agreeable to the Chief of the Policy Support Division (OT). In general, sections of this report should correspond to the specific tasks assigned in this Statement of Work. In addition, the Chief of the Policy Support Division will be kept informed of the progress of the work effort described.

Mr. Armig Kandoian
Office of Telecommunications
Department of Commerce
Armig:

May 6, 1971

loc
p52

Much as I welcomed our recent discussion of OTP support activities and future plans, I fear your confirming memorandum fails to take into account several important conditions and considerations on which the discussion was predicated. As I indicated, the first order of business must be resolution of the institutional arrangements whereby this support is provided. Specifically, we are awaiting agreement on the basic questions of establishing a quasi-independent support staff dedicated exclusively to this effort, and the level of funding to be devoted to this staff.

Once these arrangements are settled, the procedures we discussed may well be in order for coordination between OTP program managers and the OTP support staff. Until that time, it seems somewhat premature to speculate on detailed procedures for the future. We will make available for budget planning purposes our own program plans for FY 72, along with the level of effort we anticipate will be needed from OT, as these evolve. At John Richardson's suggestion, we will also begin discussions of specific OTP support needs with selected members of your staff, as a basis for developing detailed work statements at the proper time.

In view of the many issues yet unresolved, I could not endorse your confirming memorandum, and doubt that it can serve any useful purpose. It is just vital that the institutional questions be resolved ASAP!

Mr. Armig Kandoian
Office of Telecommunications
Department of Commerce

SIGNED

Walter R. Hinchman

WRHinchman:dc
✓ Mr. Whitehead
Dr. Mansur

Mr Hinchman:

Here's a quick draft of our discussion this AM.
Modify it if you believe it is required.

I'd like to issue it to people involved so we
start new year right. ig

Armig

D R A F T

MEMORANDUM

TO: Walt Hinchman
FROM: Armig G. Kandoian
SUBJECT: Procedure for Work Statement and Program
Review Between OTP and OT for Fiscal Year 1972

Confirming our discussion of this morning between yourself, Dr. Richardson, and myself, and taking into consideration your memorandum of April 26, 1971, the following was agreed with respect to the policy support staff activities at OT, for Fiscal 1972:

1. The basic document for all work OT does in behalf of OTP is the OT BUDGET ESTIMATES, FISCAL YEAR 1972, dated February 1971 (available at OTP).
2. OTP Program Managers (W. Hinchman, C. Joyce, J. Thornell, and others with responsibilities in this area) will provide OT with a work statement for their specific projects that OT is to work on in the Policy Support area. This work statement is to be specifically related to one of the items in the OT budget document.
3. The first version of the work statement for each project to be done in Fiscal 1972 will be forwarded to OT, preferably before June 1, 1971 but not later than July 1, 1971.

4. OT will designate a responsible staff member for each project, and organize to carry out the work specified.

5. OT will set up a regular monthly project review meeting, so that all policy support activities are reviewed at least once a month. During this meeting, OTP program managers, or their representatives, will be present so their guidance can be direct on all policy support projects done for OTP.

This monthly management review is intended to be brief and not to replace detailed in depth technical or policy meetings that may be necessary in any area.

AGK/mfh/5/4/71



THE SECRETARY OF COMMERCE
Washington, D.C. 20230

MAY 13 1971

Honorable Clay T. Whitehead
Director
Executive Office of the President
Office of Telecommunications Policy
Washington, D.C. 20504

Commerce
PSQ
Stars signed
Memo of Agreement

Dear Mr. Whitehead:

Your letter of April 21, 1971, refers to responsibilities given to my Department by Executive Order 11556 in support of the Office of Telecommunications Policy (OTP). It proposes a framework for Commerce activities intended to support OTP.

The proposed framework appears to relate only to activities that you refer to as "policy support." It is my understanding that other supporting functions will be conducted under established arrangements of organization and direction, without the need for explicit agreement.

With respect to the direct communications referred to in paragraph 4 of your letter, I understand that such communications are intended solely to facilitate the exchange of information between OTP personnel on the one hand, and the manager of the policy support unit on the other.

It also appears to be implicit in your letter that either you or I may reexamine the approved arrangements at any time for cause.

If the above concepts may be incorporated into our relationship by this letter without objection by you, I am happy to approve the framework you propose by countersigning and enclosing a copy of your letter.

As provided also in your letter, transitional arrangements developed by Assistant Secretary Wakelin with my full concurrence are also enclosed for the consideration and approval of your Deputy Director.

2

I am most pleased, as you must be, with the increased strength that these arrangements will bring to the Executive Branch in telecommunications matters.

Sincerely,

Maurice H. Stans
Secretary of Commerce

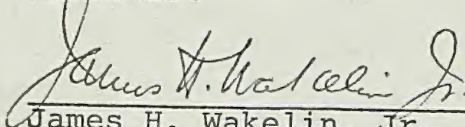
Enclosures



TRANSITIONAL ARRANGEMENTS THROUGH FY 1972 FOR THE
POLICY SUPPORT UNIT IN THE DEPARTMENT OF COMMERCE
TO ASSIST THE OFFICE OF TELECOMMUNICATIONS POLICY

1. The manager of the policy support unit will be selected as soon as possible but at least by June 1, 1971.
2. In FY 1972, assuming a total OT appropriation of \$5M, \$1.5M will be allocated to the policy support unit for the implementation of its program.
3. The conclusions and recommendations of the telecommunications issue study being conducted for the Office of Management and Budget will be taken into account in any modification of the above distribution of funds between the policy support activities and the other activities of the Office of Telecommunications.
4. Staffing of the policy support unit will be determined by (1) the funds available; (2) the vacant positions that become available through attrition, administrative action, and assignments of existing personnel to available reimbursable work; and (3) the qualifications of existing personnel for work assignments in the policy support unit. The Director, Office of Telecommunications, will reassign twenty personnel, ten from the Boulder and ten from the Washington area, and will make five vacant full time positions available to the policy support unit by July 1, 1971, and twenty-five more personnel by July 1, 1972.

APPROVED:


James H. Wakelin, Jr.
Assistant Secretary of Commerce
for Science and Technology

George F. Mansur
Deputy Director
Office of Telecommunications
Policy

May 13, 1971

Date

Date

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

DIRECTOR

April 21, 1971

Honorable Maurice H. Stans
Secretary of Commerce
Washington, D. C. 20230

Dear Mr. Secretary:

As you are aware, Executive Order 11556, which assigned the functions of the Office of Telecommunications Policy (OTP), gave to your Department responsibilities in support of this Office. In recent months members of my staff and the staff of your Office of Telecommunications (OT) have given intensive consideration to the method of discharging those responsibilities. More recently, I have explored this subject at some length with Mr. Wakelin, your Assistant Secretary for Science and Technology.

These discussions have led to general agreement that the following framework will be most desirable for those Commerce activities intended to support OTP:

1. There will be established within Commerce a separate policy support unit, located in the greater Washington metropolitan area, whose function will be to assist OTP. This unit will have its own manager, under the supervision of the Director of OT.
2. Proposed programs for the support unit will be developed by its manager and OTP staff for approval by the Assistant Secretary for Science and Technology and the Director of OTP. It is understood that such programs must remain sufficiently flexible to enable redirection of emphasis as immediate, and to some extent unpredictable, needs of OTP may require.
3. Budget requests for the support unit will be agreed upon between the Assistant Secretary for Science and Technology and the Director of OTP. OTP will actively support such requests before the Office of Management and Budget, and will provide such assistance as Commerce may require in supporting such requests before Congress.

112742

4. In selecting professional personnel for the support unit, Commerce will work in close cooperation with OTP, and with respect to ongoing projects, the lines of communications between OTP and the support unit shall be direct.

5. Transitional arrangements to achieve full staffing of the support unit by the end of FY 72, and to meet the needs of OTP in the interim, will be developed by the Assistant Secretary for Science and Technology and the Deputy Director of OTP.

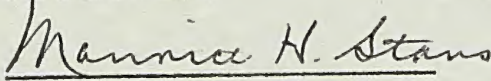
If the foregoing arrangements meet with your approval, I would appreciate your signing the enclosed copy of this letter and returning it to me. My staff and I look forward to close and fruitful cooperation with your Department.

Sincerely,

A handwritten signature in dark ink, appearing to read "Clay T. Whitehead", with a large, sweeping flourish at the end.

Clay T. Whitehead

APPROVED:

A handwritten signature in dark ink, appearing to read "Maurice H. Stans", written in a cursive style.

Maurice H. Stans

DATED:

May 13, 1971

Commerce

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

Date: January 19, 1971

Subject: OTP/Commerce Staff Meeting

To: For the Record

A meeting was held in Room 742, 1800 C Street, this date, to continue the earlier discussion on December 29, 1970 on the subject of Electro-magnetic Compatibility.

Those in attendance were:

<u>Name</u>	<u>Organization</u>	<u>Telephone No.</u>
Alfred F. Barghausen	OT/ITS	303-447-3384
Leo A. Buss	OTP	202-395-4637
D. D. Crombie	OT/ITS	303-447-3816
W. Dean, Jr.	OTP	395-5623
Bill Gamble	OT	395-5616
Lyman Hailey	OTP	395-5623
Dale Hatfield	OT/ITS	303-447-3627
George W. Haydon	OT/ITS	303-447-3583
Bruce Higgins	OT	395-5616
Don Jansky	OTP	202-395-4636
C. R. Kirkevold	OT	395-5610
H. W. Lance	OT	967-5171
L. R. Raish	OTP	395-5623
Roger Salaman	OT	967-5171
George Stelzenmuller	OT	395-5616
*George Garber	OT	395-5616

*Involved, but did not attend.

1. Electromagnetic Compatibility.

The undersigned outlined the EMC problem as in the earlier meeting for the benefit of the those who had not been in attendance at that time.

- a. Mr. Hailey reviewed the history of the development of the OTP data processing system up to the present time, reported on its present status, and outlined the plans for the future (see attachment 1).

It was noted that the subject of time sharing should begin to receive priority attention. Mr. Hailey observed that OTP will finance development during the balance of FY71, but that Commerce is expected to budget for this item beginning in FY72. It was also noted that responsibility for funding and maintenance of the existing ADP system will pass to the DOC on the same date.

It was agreed there should be coordination between Messrs. Hailey, Crombie and Garber, and HRB Singer.

- b. Mr. Higgins led the discussion on analysis capability, identifying the three present capabilities as the:

- 1) HF propagation model;
- 2) Graphic display model; and
- 3) Geographical plotting routine.

The retrieval and data display capabilities of these routines were briefly described and the need for further development of their rudimentary engineering aspects was touched upon. Differences between the OTP's HF Propagation Prediction Model and the ITS Model were discussed. The need for an early review of this matter was agreed.

As a related matter, time sharing was cited as a planned capability. Presently means are being studied to make the file (GMF) more manipulative. OTP is financing a contract in FY71 to initiate a study on time sharing, but Commerce should provide funds in FY72 to continue the development. Although the red/black problem has not yet been solved, there was feeling that work should go forward in this area to gain experience and be ready when the foregoing problem is solved.

- c. Mr. Raish spoke to the development of the Spectrum Management Data Base as treated in great detail in Enclosure 2 of the memorandum to Mr. Kandoian on November 10, 1970. He emphasized the need for taking into account work already done, such as by Commerce (Boulder) and ECAC, so as to avoid unnecessary duplication, and noted the development will require several years.

It was generally agreed that data should not be collected until the need has been demonstrated.

- d. Mr. Jansky spoke to the need for the Government to develop a monitoring and measuring capability as covered in detail in Enclosure 5 of the memorandum to Mr. Kandoian on November 10, 1970. He distributed copies of the draft outline for OTP Monitoring/Measurement Capability Final Report (see attachment 2), noting SRI has the contract.

Mr. Crombie stated that Army is also developing a van for measuring spectrum use. As this was "new" to the OTP, Mr. Jansky was asked to discuss the matter with Army so they might benefit from the SRI study and so there would be less likelihood of duplication.

In response to suggestions that the OTP could use the facilities of other agencies, the undersigned pointed to a recent survey of all government agencies wherein it was disclosed they had none to loan. Further it was noted that many times such agencies' measurement/monitoring equipment is "borrowed" for other uses. Further, in the last year, several of the ranges have been stripped of personnel competent in this area. Therefore, it was maintained that the OTP must have its own system. Further, differences between Government and non-Government requirements were explained as the reason for the need of a different type of monitoring equipment.

2. Status of Action Items.

a) Mr. Higgins led the discussion on Propagation.

Modification and improvement of the current HF Propagation and interference prediction models and previous ITS developments of Terrain-Conscious Prediction Models were identified as matters of immediate interest. Arrangements were made for a follow-on discussion of these areas between Messrs. Haydon/Higgins/Garber after the meeting.

Although it was acknowledged that the current model for making use of terrain data is far from perfect, it was agreed that it was much better than using "smooth earth".

In response to a question by Mr. Salaman as to whether HRB Singer could help in this area, Mr. Higgins stated that the current contract has run out of maintenance funds. He said it is hoped the next contract will provide for a senior programmer to act as an interface between OT/OTP but that Commerce should hire at least a programmer as soon as possible to begin working with Mr. Garber.

b) Mr. Jansky outlined the four specific problems with pertinent comments as indicated:

- 1) CATV vs air/ground and navigation aids in the band 108-136 MHz.

Mr. Hatfield stated that the documents have been reviewed and computations made. However, the report must be reviewed before being submitted to OTP/IRAC. Target date for receipt of report was set as February 2, for consideration by IRAC on February 9.

- 2) VHF follow-on aircraft study for FAA.

Mr. Hatfield said he had reviewed the Wilcox Report but needs a more specific statement of the problem, Messrs. Buss and Hatfield will coordinate on this.

- 3) Altimeters vs collision avoidance systems, etc., in the band 1535-1660 MHz.

Mr. Hatfield has reviewed the background but asked for a more specific statement of the problem. Messrs. Buss, Jansky and Hatfield to coordinate.

The undersigned referred to the earlier ECAC study on this matter, but noting the time lapse, stated it would have to be updated to be of any current value. Because of the sensitivity in some areas, he asked that contacts with ECAC be made through him.

4) GE Computer Program re Orbital Satellites.

Mr. Hatfield said he had examined the program and was confident it could be put on one of their computers with little trouble.

Messrs. Hatfield, Haydon and Jansky will coordinate program with assistance from Garber who has noted some errors.

- c. Mr. Stelzenmuller distributed copies of an outline on Spectrum Engineering Standards Status and Program Needs (see attachment 3) and led the discussion thereon.

Mr. Salaman, although expressing appreciation for the foregoing outline, asked for something more specific to show what should be done now and in FY72. Accordingly, it was agreed that Messrs. Stelzenmuller, Gamble, Crombie and Lance would coordinate in the preparation of a paper for the next meeting which would define in more detail what needs to be done and would assign priorities.

The OT representatives were invited to participate in the Special IRAC meeting of January 28 on radar spectrum engineering criteria and in any meeting of the Technical Subcommittee.

- d. As a first step in the interface between Frequency Management and EMC, Mr. Kirkevold, using a flow chart (see attachment 4), explained the procedure used in processing applications for frequency assignments. He also distributed several copies of the OTP letter to Commerce (Tribus) of October 14, 1970, in which Enclosure 2 thereof covered the processing procedures in great detail.

It was agreed that Mr. Hatfield, after studying the procedures, may as a next step have someone on his staff work with the Secretariat for about a week to get a better feel for the task.

- e) Mr. Higgins led the discussion on the interface between EMC needs and the current OTP data base. He noted that compatibility studies cannot be made without a certain amount of data. It was noted that Sachs-Freeman is on contract and will have pertinent outputs within about a month. This should be useful.

Meanwhile the group should be thinking about what can be done with the data available today, the extra data needed in the very near future and the extra data needed further on in the future.

3. The undersigned reported on the transfer of personnel from OTP to OT:

21 (including one vacancy) - October 18, 1970;

4

- December 27, 1970.

In this respect, a copy of the letter to Mr. Kandoian on December 11, 1970, was given to Mr. Crombie. The attachment thereto describes the functions and responsibilities of each of the foregoing, as well as the five professionals remaining in OLF Frequency Management.

4. The present target date for physical relocation of the foregoing personnel to 1325 G Street is understood to be March 7, 1971.
5. Copies of a draft "Sachs-Freeman" Work Statement on the Equipment Data Base (see attachment 5) were distributed with explanatory comments by Mr. Gamble.

It was decided this would be discussed at next meeting, after more study.

6. Other Business.

Mr. Crombie suggested that a brief statement of the problem on each future document would be most helpful.

Mr. Haydon suggested that we rely on the telephone as much as possible to save time and effort. In this respect, a flow chart of those most closely involved in EMC Analysis Development in Boulder was made available (see attachment 6).

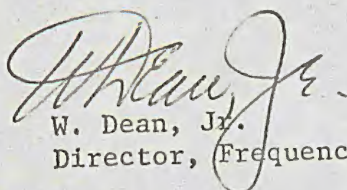
In addition to the general distribution of documents cited in the foregoing record, the following were provided Mr. Crombie:

- 1 - ADP System Operations Manual (3 volumes).
- 2 - ADP System Users Manual.
- 2 - Draft work statement for HRB-Singer FY71 system maintenance and improvement.
- 2 - Draft work statement for FY71 contract for initial development of time-sharing capability.
- 2 - OTP memo to OEP with estimate of terminal requirements of Government agencies for participation in the proposed time-sharing system.
- 2 - OTP Manual including Appendix.
- 2 - Final Report of Melpar for the Development of Technical Performance Standards for Radio Communications-Electronic Systems.

A follow-on schedule of meetings was agreed for January 20, in Room 739, as follows:

- 9:00 a.m. Messrs. Crombie/Lance/Stelzenmuller/Gamble on Standards.
- 10:30 a.m. Messrs. Crombie, Gamble, Garber, Hatfield, Salaman, and Higgins on ADP-Data Base.
- 1:30 p.m. Messrs. Buss, Hatfield and Jansky on Special Problems.
- 3:30 p.m. Messrs. Hatfield and Kirkevold on application processing, if time permits.

New items were agreed for the agenda (see attachment 7) for the next meeting scheduled for February 17, at 9:30 a.m.


W. Dean, Jr.
Director, Frequency Management

Attachments (7)

1/19/71

Attachment 2

OTP ADP SYSTEM

OBJECTIVE - To establish a Government capability to store and analyze data quickly, to engineer the assignment and use of frequencies, and to produce the statistical facts essential to sound management.

HISTORY - 1963 - Development began.
1965 - Interim paper-tape system implemented.
1966 - Initial ADP system implemented.

HARDWARE - Univac 1108 (Executive VIII).
- Owned and operated by Office of Emergency Planning.

SOFTWARE - Has been and is still being developed under contract with HRB-Singer, Inc., State College, Penna.

WHAT IT DOES -

1. Processes applications for frequency assignment.
 - a. Input is an application.
 - b. Output is:
 - 1) Results of review of application for validity of input data and conformity with frequency management regulations.
 - 2) An agenda of applications for consideration by the Frequency Assignment Subcommittee of the IRAC.
 - 3) Applications approved by the FAS are stored on the master tape.
2. Retrieves data from the master tape to produce:
 - a. Minutes of FAS meetings.
 - b. Lists of Government assignments.
 - c. Any type of list of assignments required for frequency management.
3. Uses the frequency assignment data base and specialized computer models to provide or support EMC analysis in three areas:
 - a. The HF propagation/interference prediction model.
 - b. The Graphic Display Model, used primarily for land mobile.
 - c. The Plot model, used primarily for fixed microwave.

OTHER DATA BASES - In addition to the Government frequency assignment data base (120,000 records) just described, there are four other data bases in various stages of development.

1. The International Frequency List of the ITU (600,000 records).
2. The FCC Frequency List (500,000 records).
3. The list of certain US Military frequency uses outside the US and Possessions (12,000 records).
4. The National Table of Frequency Allocations

PLANS FOR FUTURE -

1. System Development - Improvements in application processing, data retrieval, and existing engineering models.
2. Data Base - Initial steps toward acquisition and use of ECAC's Nominal Characteristics File of equipments.
3. Initial steps toward development of a time-sharing capability to provide access to the system from remote terminals in Govt. agencies.
4. Transfer of Responsibility to Commerce - 7/71 system operation and maintenance (other than computer); 7/72 provision of computer and computer personnel.

Attachment 2

DRAFT OUTLINE FOR OTP MONITORING/
MEASUREMENT CAPABILITY
FINAL REPORT

I

INTRODUCTION

22 Feb 71 ← target dates

A. Objectives and Scope

B. Summary

C. Conclusions and Recommendations

21 Dec 70

II

A SPECTRUM MONITORING/MEASUREMENT CAPABILITY

18 Jan 71

A. General Monitoring and Measurement Requirements (what needs to
be mon./meas. for freq. mgmt.)

1. Radio Systems to be Monitored/Measured

a. Technical Characteristics

b. Operational Characteristics

2. Requirements for Short Term Management (Problem Solving)

3. Requirements for Long Term Management (Planning)

4. Generalized Scenarios and Uses of the Data

a. Occupancy

b. Compliance

c. Compatibility

B. Dimensions of the Spectrum Monitoring/Measurement

1. Introduction

2. Frequency Dimension

3. Space Dimension

4. Time Dimension

DRAFT

C. Functions of the Monitoring/Measurement Capability

1. Laboratory Measurements
2. Field Measurements
3. Communications
4. Data Processing and Analysis
5. Data Evaluation and Interpretation
6. Maintenance, Repair and Storage Support

D. Features of the Monitoring/Measurement Capability

1. Manual, Semi-Automatic, Automatic
2. Frequency Coverage
3. Measurement Capability (Detection - Parameter Estimation)
4. Mobility - Platform Adaptability
5. Modularization
6. Expandability
7. Measurement Time Requirements
8. Interactive Concepts, Communications
9. Data Processing and Recording

E. Hardware Ref.

F. Software Ref.

III

ALTERNATIVE SYSTEM CONFIGURATIONS

18 Jan 70

A. The Concept of a Basic System

1. Alternative Systems with a Basic System as a Common Element
2. The Rationale for the Selection of Basic System Features

B. Basic Systems Specifications

1. System Concept
 - a. Manual
 - b. Automatic

2. Operational Considerations

3. Special Features

C. Basic System Supplements

1. Extended Frequency Coverage

2. Control Features

3. Direction Finding

4. Specialized Software

a. Maintenance/Diagnostic

b. Pre-processing

5. Communications

a. Data Transmission

b. Command and Control

c. Interactive Monitoring

d. Remote Terminals

6. Spectral Displays

IV

COST SUMMARY

1 Feb 71

A. Cost Definitions

B. Cost Data Estimated Acquisition and Accuracy

C. Estimate for Basic System (Lease and Buy)

1. Manual

2. Automatic

D. Estimate for Basic System Supplements

E. Estimate for Supplemental System Peripherals

F. Cost Summary of Monitoring/Measurement Capability

END

V

DISCUSSION OF BENEFITS

5 Feb 71

- A. Definition of Benefits
- B. A Value Scale for Benefits (as a function of scenario)
- C. The Value of Time
- D. The Influence of Budgetary Constraints
- E. The Influence of Technological Change

VI

COST/BENEFIT TRADE-OFF ANALYSIS

15 Feb 71

- A. Introduction
 - 1. Method of Approach
 - 2. Analysis Ground Rules
- B. Discussion of Subjective Factors not Suitable for Quantification
- C. Example of Details of Cost/Benefit Analysis
- D. Summary of Cost/Benefit Analysis Results

REFERENCES

APPENDICES

1 Mar 71

- A. List of Specific Example Scenarios
- B. Examples of Use of Monitoring/Measurement Capability
- C. List of Manufacturer Response to Information Request

MDA/CT

Spectrum Engineering Standards

Status and Program Needs

1. Promulgation of executive branch standards can:
 - a. aid agencies in equipment contracting
 - b. promote interchangeability among equipments
 - c. promote efficient frequency utilization
 - d. guide technological development
 - e. decrease Government procurement costs
 - f. simplify compliance monitoring
 - g. facilitate equipment type approval (frequency allocation)
 - h. facilitate Government EMC analysis.
2. Standards are most important where impact on the spectrum is greatest.
 - a. Users of large amounts of spectrum (radar, etc).
 - b. Users of high power emissions.
 - c. Services represented by a large equipment population.
(Land mobile)
 - d. Services represented by a large number of agencies (Land mobile).
 - e. Technical characteristics having large potential impact on spectrum (spurious emissions).
 - f. International treaty requirements .
3. Commonly used term, "(technical) standards" means several more specific things to OTP. The present FM Manual, and current material proposed for future inclusion therein, contains reference to:

- a. Technical standards
- b. Engineering standards
- c. Spectrum engineering criteria
- d. Minimum performance requirements
- e. Minimum performance specifications
- f. Standards of good engineering practice
- g. Engineering design objectives.

4. The scope of the broad term "technical standards" involves those technical characteristics of electronic equipments which affect the use of the radio spectrum in a primary way. For example:

- a. Bandwidth of emissions
- b. Levels of spurious and other emissions outside the required bandwidth
- c. Frequency tolerance
- d. Receiver radiation, stability and undesired response
- e. Antenna gain and directivity.

5. Definition of terms is necessary for uniform application of standards.

- a. IRAC and TSC have defined some terms, as appearing in OTP Manual.

- b. Other terms are used without definitions.

- those in uniform common use among OTP, FCC, industry and the engineering profession present no difficulty.

- those used differently in one or more of these arenas require clarification/definition.

c. Internationally defined terms are applied whenever appropriate and possible in U.S. usage; a few important ones are not universally accepted and we should exert leadership in recommending progressive changes.

--RR. These are binding upon member countries; changes require treatment at a world radio conference and a time of five years is not unrealistic.

--CCIR. These have widely recognized status, ^{and} ~~on a~~ time of several years would be involved in a change.

d. Additional action is required on definitions.

6. A uniform application of standards also requires stipulation of standard electrical values and standard measurement techniques, procedures and instrumentation.

a. Technical standards contained in the OTP Manual do not specify the above.

b. Technical standards now under development do not adequately specify the above.

c. Future technical standards should, wherever possible, include development of the above.

d. Additional action is needed in view of a, b and c.

7. Most current executive branch standards relating to efficient spectrum use were developed in TSC (Technical Subcommittee of IRAC), with very small manpower application and consequent long time schedules. An urgent need is to expand the capability somewhat--one of the hoped for objectives of assigning certain OTP support tasks to Department of Commerce.

APPENDIX

Tabulation of Status of Standards Development

Form of Present Standard	Adequate Definitions	Adequate Measurement Standards
Table of Frequency Tolerance (5.1)	Yes	Not needed
Spurious Emissions (5.2)	No	No
REDO (5.3)	Not required	Not required
RSEC (for high power radars radars)*	No	No
Standards for certain VHF & UHF NBFM (5.4)	Yes	Not required
Standards for certain HF SSB and LSB systems (5.6, 5.7)	Yes	Not required

* Under development

Standards Awaiting Development	Definitions	Measurement Standards
--------------------------------	-------------	-----------------------

Standards for Land Mobile Systems *

Needed

Needed

RSEC for lower Power and mobile radars

Needed

Needed

Standards for space communication systems

Needed

Needed

Standards for telemetry systems

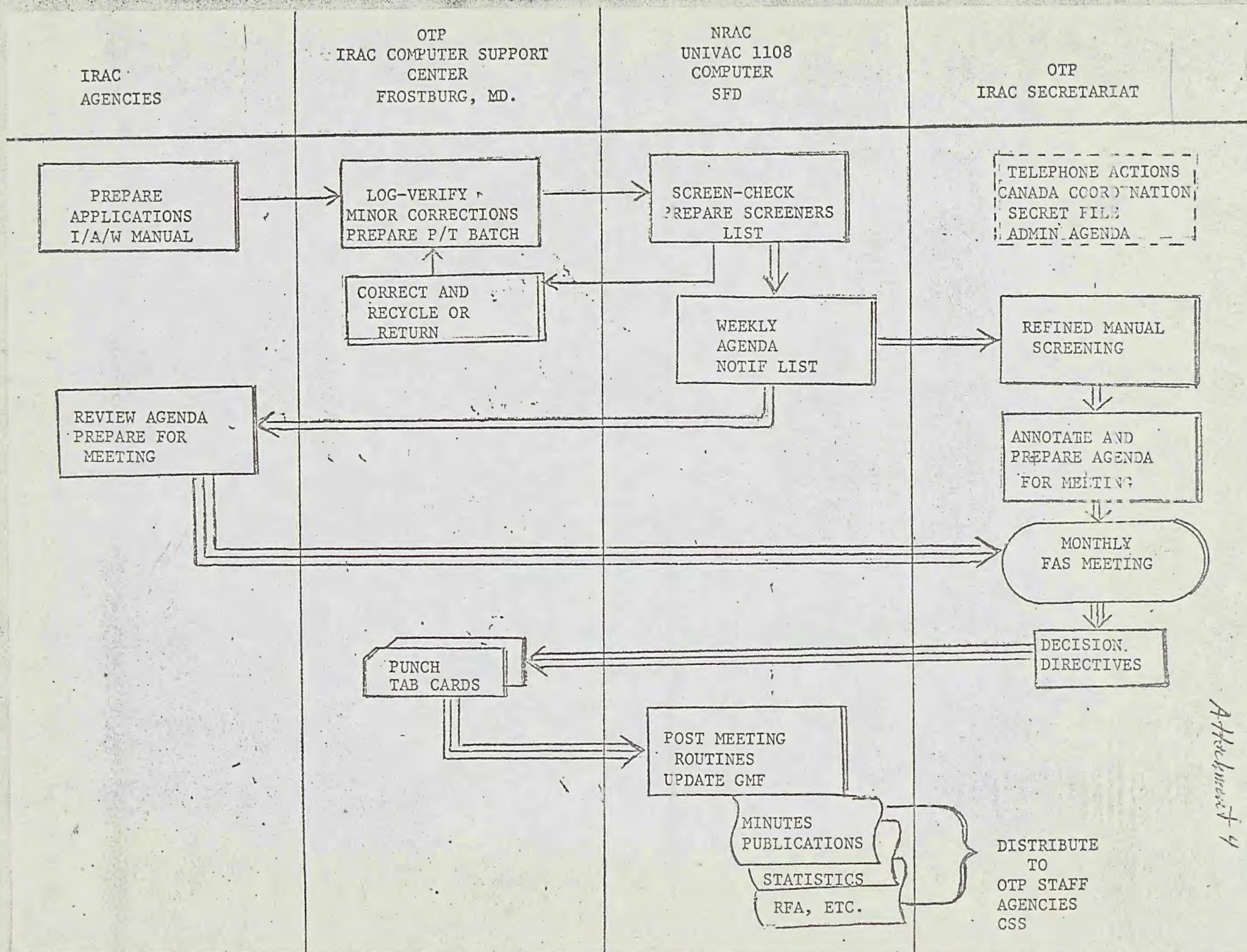
Needed

Needed

Receiver standards

Needed

Needed



Attachment 4

Attachment 5

WORK STATEMENT
EQUIPMENT DATA BASE
FY 70

I. General Objective

The general objective of this contract is to develop an initial plan for acquiring and maintaining a data base of technical characteristics of radio equipments for use in frequency management. The plan shall be compatible with and responsive to the Office of Telecommunications Policy's (OTP) concept of an improved data base as delineated in OTP staff study considered in the Interdepartment Radio Advisory Committee and adopted August 11, 1970, as a guide to future activities and development in this area by the Federal Government*. The approved concept calls for a centralized "Basic Frequency Management Data Base" comprised of an augmented and improved version of the current OTP frequency assignment record and other supplemental files (topographical, "side effects", etc.) needed for an improved frequency management capability, especially in the area of Electromagnetic Compatibility (EMC) prediction and analysis. Prominently identified in the OTP/IRAC concept is the requirement for an equipment characteristics file which is properly constituted and cross-referenced to the "Basic File". The plan for creating the Equipment Characteristics File (ECF) shall be developed from an intensive study of constituent data elements, sources, formats, and data maintainability as these factors relate to selective display and use of this information in EMC analysis (both manual and computerized) of localized environments and for generalized spectrum planning.

*The OTP "Guide Plan" was transmitted to the DOC (OT) by OTP memo, Commerce Support to OTP, dated November 10, 1970 (Enclosure 2).

Initial consideration shall be given to the use of information from data bases established by other organizations, particularly the Electro-magnetic Compatibility Analysis Center of DOD and the FCC. Proper balance between a centralized data base at the Office of Telecommunications (OT) and a decentralized data base utilizing data from other organizations will also be considered along with the question of the degree of redundancy which may be desirable between the basic frequency assignment record and the equipment file.

II. Specific Requirements

In order to achieve the above general objective the contractor shall conduct the necessary studies and investigations and provide the OT with a recommended plan for the establishment of a file of the technical characteristics of radio equipments dependent for their operation upon the use of frequencies in the radio spectrum above 30 MHz. Investigations, studies and recommendations shall include but not be limited to the following:

A. Required data elements for transmitters, receivers, antennas and systems packages of Government and, selectively, for non-Government equipments, giving due consideration to: 1) data utility in EMC planning and analysis; 2) data accessibility and 3) perishability.

B. Availability and potential utility of existing equipment characteristics files as maintained by the DOD/ECAC and the FCC, giving due consideration to the: 1) file content; 2) format; 3) current methods of updating; and 4) completeness. (Investigations in this area will require prior arrangements between the OT and the agencies concerned using the assistance of the OTP as appropriate.)

C. Structure of the Equipment Characteristics File (ECF) for communications-electronics (C-E)-systems, transmitters, receivers, antennas, considering: 1) format of currently available data; and 2) utilitarian advantages of alternate formats and structures.

D. Selection or development of a system for an unambiguous nomenclature for equipment types suitable for cross-reference between the Government Frequency Assignment File and the ECF.

E. Procedure for acquisition of equipment data on new and future C-E systems and for C-E equipments not currently included in the DOD/ECAC files.

F. Development and recommendation of a method or methods for updating information in the ECF, giving due consideration to: 1) the importance of data validity; 2) the relative cost of various updating procedures; and 3) the availability of existing useful updating mechanisms within the OTP/IRAC and member agencies of the Federal Government.

G. Amalgamation of the results of the foregoing studies and investigations into a recommended plan of action for the development and use of an Equipment Characteristics File (ECF).

III. Personnel

In undertaking this program, the contractor shall assign competent professional personnel and consultants to perform this contract. The contractor shall also assign appropriate secretarial staff support. The contractor shall submit to the OT for approval, resumes containing complete biographical information on all professional personnel assigned to this contract.

IV. Schedule of Performance and Reports

The contractor shall provide the following:

A. A work plan to be delivered to the contracting officer within two weeks after the effective date of the contract. This plan will indicate the significant milestones to be achieved during the accomplishment of each phase of the program.

B. Progress reports to be delivered to the contracting officer in the second and third months after contract initiation. These reports will summarize the contractors's progress during the previous period, the information developed, a discussion of matters with which difficulty was encountered, and the contractor's planned activities for the next reporting period. Statements of working problems shall be reported in writing as soon as possible after a problem is recognized.

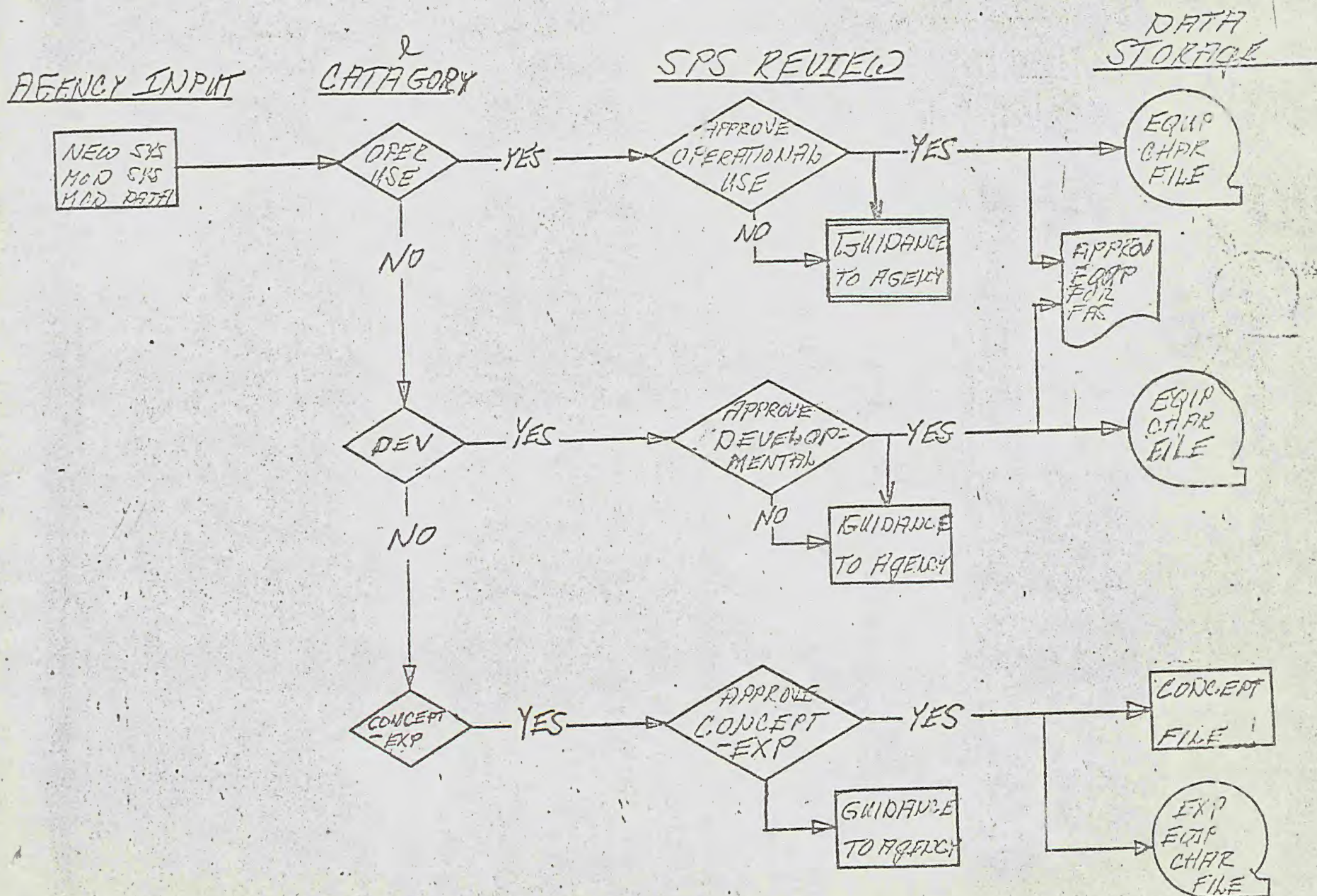
C. Draft final reports to be delivered to the contracting officer within four months after the effective date of the contract.

D. Revised final report containing information on all of the specific requirements to be delivered to the contracting officer within fifteen working days after receipt of comments on the final draft reports.

V. Consultation

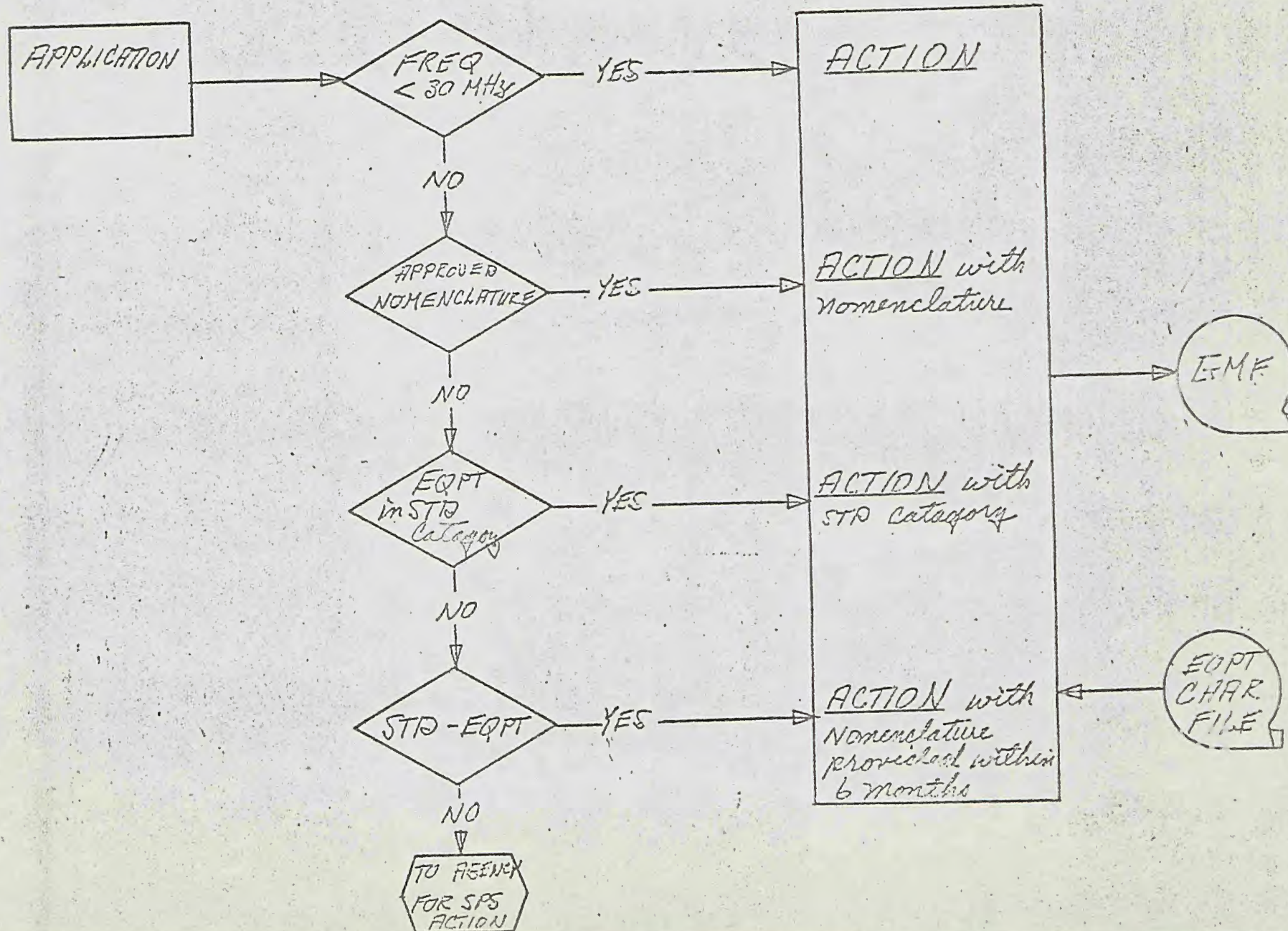
The contractor shall meet with the staff of the Office of Telecommunications from time to time, to expedite progress toward the fulfillment of the requirement of this contract. Because of the nature of the required investigations, the interlocking effect of the various elements of the study upon each other, and their potential impact upon current operations, day-to-day contact will be required between the contractor and personnel of the Office of Telecommunications. Coordination between the OTP, the contractor and the Office of Telecommunications will be arranged as appropriate.

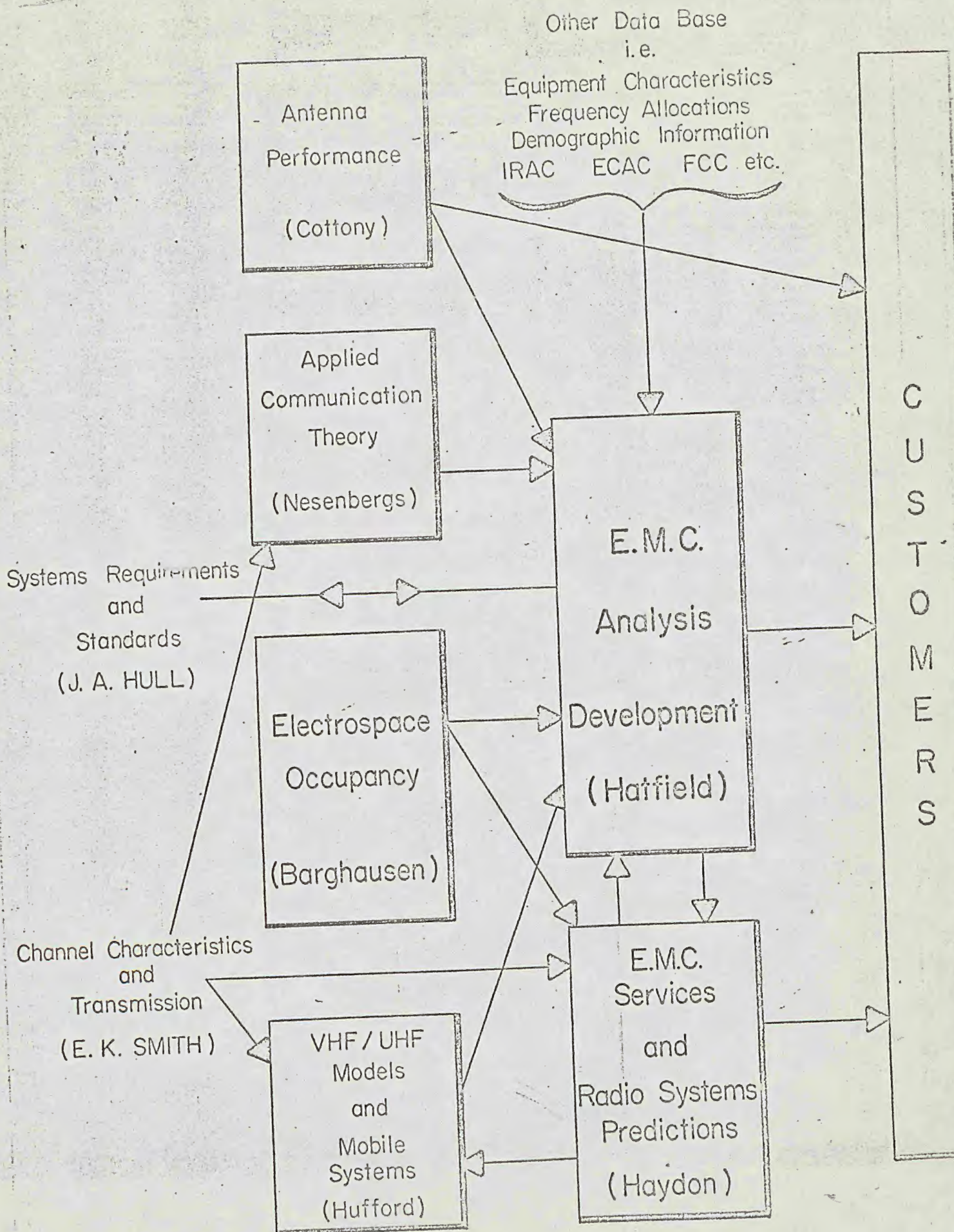
SPS



FAS

FAS





AGENDA
DOC/OTP MEETING
FEBRUARY 17, 1971

1. Electromagnetic Compatibility -- Further discussion on scope and magnitude of over-all area, including:
 - a) Analysis Capability -- Higgins
 - b) Data Base -- Raish
 - c) Automatic Data Processing -- Hailey
 - d) Monitoring -- Jansky
2. Status of Action Items:
 - a) Propagation -- Higgins/Haydon
 - b) Specific Problems -- Jansky/Hatfield
 - c) Standards -- Stelzenmuller/Gamble
 - d) Interface between Frequency Management and EMC -- Kirkevold/Hatfield
 - e) Interface between EMC needs and current OTP data base -- Hatfield/Higgins
3. Allocations
4. Noise
5. Receivers
6. Relocation
7. Sachs/Freeman Work Statement
8. New equipments being designed which may affect radio spectrum use - JTAC 65.1 (copy attached).
9. Other business.

cc Gamble
Hailey
Higgins
Jansky
Kirkevold
Raish
Salaman
Stelzenmuller

THE JOINT TECHNICAL ADVISORY COMMITTEE

THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

ELECTRONIC INDUSTRIES ASSOCIATION

FUTURE NEEDS AND USES OF THE SPECTRUM

A Report of the
Joint Technical Advisory Committee
of the IEEE and the EIA



SEPTEMBER 26, 1968

VOLUME XXX



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THE JOINT TECHNICAL ADVISORY COMMITTEE

THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

ELECTRONIC INDUSTRIES ASSOCIATION

345 East 47th Street
New York, N. Y. 10017
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Secretary

Audrey L. van Dort
Administrative Assistant

October 18, 1968

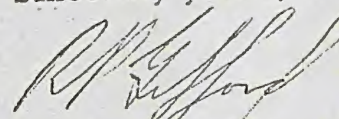
Dear Sir:

As a recipient of our report issued in July 1968 on SPECTRUM ENGINEERING—THE KEY TO PROGRESS, you will undoubtedly be interested in the enclosed report of JTAC Subcommittee 65.1, FUTURE NEEDS AND USES OF THE SPECTRUM.

Don't let its slim appearance, in contrast to the former report, fool you. Its findings are significant in again driving home the need for a Spectrum Engineering Entity that could be kept informed of contemplated uses and be advisory to industry as to potential conflicts.

Should you have any questions after reading the report, please let me know—we'll make every effort to assist in understanding its important message.

Sincerely yours,



Richard P. Gifford
Chairman, JTAC

RPG:ci
enclosure

FUTURE NEEDS
AND USES OF
THE SPECTRUM

A Report of the
JOINT TECHNICAL ADVISORY COMMITTEE
of the
Institute of Electrical and Electronics Engineers
and the
Electronic Industries Association

345 East 47 Street
New York, N. Y. 10017

VOLUME XXX
September 26, 1968

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INTRODUCTION

The JTAC, in reviewing the progress of the work of JTAC Subcommittee 63.1, considered a recommendation by the Subcommittee to give full JTAC subcommittee status to the work being carried out by Subgroup 63.1.1(9), Future Demands on the Radio Spectrum, of its Survey Task Group 63.1.1. The JTAC took into consideration that the continuing nature of the subject of future demands and usage of the radio spectrum, involved an input of too great an importance to be included in a single, final report such as the recently promulgated publication SPECTRUM ENGINEERING — THE KEY TO PROGRESS. Therefore the JTAC, at its meeting on September 16, 1965, established Subcommittee 65.1 with the designation "Future Needs and Uses of the Spectrum."

JTAC SUBCOMMITTEE 65.1

The following members, under the leadership of David R. Hull, comprise Subcommittee 65.1, Future Needs and Uses of the Spectrum—

L. L. Arnone
F. T. Balash
A. Berman
R. S. Caruthers
W. C. Collins
R. S. Connell
L. G. Cumming
Consultant
H. W. Davis
P. Fosher
A. E. F. Grempier
A. L. Hiebert
H. S. Jewett

J. B. Keane
R. L. Kelleher
W. W. McDonald
D. J. Medley
R. C. Moore
C. E. Nobles
R. C. Raymond
N. M. Rogers
S. A. Scharff
C. J. Schultz
W. R. Smith
D. O. Sprankle
J. Veatch

Audrey L. van Dort, Editor
(non-member)

FUTURE NEEDS AND USES OF THE SPECTRUM

Procedures

Subcommittee 65.1 of the Joint Technical Advisory Committee endeavored to carry through the sophisticated survey which previously had been undertaken. However, after a few months it became apparent that classified and proprietary considerations inhibited adequate response even though the information was desirable from the standpoint of thorough analysis. Therefore, it was decided that a simplified questionnaire, even though the information would be limited, should be devised to overcome the objections and obstacles found in the initial survey. It was believed that, at least, this approach would provide a base of information which would be helpful for the future.

To implement this decision, a Task Group of Subcommittee 65.1 developed a questionnaire which, after review by the Subcommittee and the JTAC, was sent to the senior technical officers of all commercial organizations which might have developments entailing prospective spectrum allocations. This distribution was made in January, 1967, to approximately one hundred companies. A copy of the covering letter is appended to this report.

Response

Industry response was excellent, only one company failing to reply. As was to be expected, about half indicated that they had no research or development requiring spectrum use. The remaining companies submitted more than two hundred completed questionnaires which represents an extremely good cross section of demand.

Of the questionnaires submitted, 144 were usable for statistical purposes. These results are appended on a copy of the form. In order to provide a graphic presentation it was decided also to

prepare a chart indicating distribution of future demands on the spectrum. After review of several charting approaches by the JTAC it was decided to limit the presentation to the region between 10 MHz and 100 GHz. Since nine of the replies were beyond the limits of the chart they have not been included. An additional 25 replies have not been charted, either because no preference was stated, or because too broad a band was indicated. The resultant chart is appended.

Assessment

In assessing results of this report, the following considerations must be emphasized:

1. The survey represents only those developments initiated and financed by industry. Government projects, even though contracted to commercial organizations, are not included. They will be handled separately by the Office of Telecommunications Management.
2. It was recognized that each returned questionnaire represented the opinion of the originator. However, the total response demonstrates the measure of activity through the spectrum.
3. Because of multiple or missing answers on the questionnaires, only the answer to Question 4 adds to the total of 144 usable responses.
4. Replies to Question 4 show 80 developments (over 55%) requiring exclusive channel assignments. In turn, 65 replies to Question 5 (or 45%) indicate no established allocations.
5. Of the replies to Question 3 an even hundred anticipate near-term (less than 5 years) service even though many of these demand exclusive assignments not yet allocated.

6. The chart, showing individual developments between heavy lines, indicates as many as five projects requiring exclusive assignments of the same channels, with shared requirements superposed on these.

Conclusion

The survey makes it abundantly clear that the spectrum cannot accommodate many of the industry-sponsored developments, even without including government activities. Certainly, valuable engineering effort and company financing are being wasted. Properly coordinated advance review of projected developments requiring spectrum allocation is needed. Protection of proprietary rights will be essential in the reviewing process.

Recommendation

The JTAC Subcommittee 63.1 Report, SPECTRUM ENGINEERING—THE KEY TO PROGRESS, has recommended establishment of a Spectrum Engineering Entity. It is recommended that this Entity include among its responsibilities—

An advance confidential review of prospective new developments to assure spectrum availability for those successfully completed.

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H. Edward Weppeler

John M. Kinn
Secretary

Audrey L. van Dort
Administrative Assistant

Return Replies to:
David R. Hull
Electronic Industries
Association
2001 Eye Street, N.W.
Washington, D.C. 2000

Your assistance is respectfully requested in an effort, national in scope, to develop information on prospective future uses of the electromagnetic spectrum resulting from research now under way and being contemplated.

A survey is being conducted in Government and in industry. The Director of Telecommunications Management (DTM), Executive Office of the President, will assemble data from Government agencies. The Joint Technical Advisory Committee (JTAC), of the IEEE and EIA, will obtain like information from industrial, consulting and educational sources. This effort by the JTAC is responsive to a letter from the DTM, written with the concurrence of the Federal Communications Commission, which pointed out the importance of a study of future spectrum usage and requested the participation of the JTAC.

The attached questionnaire form is designed not to disclose classified or proprietary information. However, as additional protection, Government agencies' responses, bearing security classifications if appropriate, will be retained in the office of the DTM. Industry responses will be handled by the long established procedures of EIA for protecting proprietary positions of participants in studies of industry-wide trends. While some information derived from responses from Government agencies may be made available to the JTAC, this would be done only within proper bounds. The results of the work of the JTAC incorporating such data would be presented only to the DTM.

Three copies of the questionnaire form are enclosed. Kindly advise me of the additional number of copies required to complete one for each program or project relevant to the survey. If you prefer, you may reproduce the form as necessary. Please designate one individual in your organization to distribute, collect and return the completed forms to me at the above EIA address. Our deadline date is March 1, 1967, which we hope will provide adequate time for you.

Thank you for your participation.

Sincerely,

David R. Hull, Chairman
JTAC Subcommittee 65.1

JOINT TECHNICAL ADVISORY COMMITTEESURVEY:

Prospective Effects of New Technology on Radio Spectrum Usage

PURPOSE of the
SURVEY:

To gather data which may afford some insights into the future pattern of usage of the spectrum.

APPROACH:

Request all leading sponsors and conductors of development programs for a minimum of data on those of their programs considered relatively likely to earn firm acceptance.

Broad coverage is most desirable. Military security must not be compromised. The competitive positions of innovators must be protected. Do not indicate organization identity on this form. The following questions attempt to collect data relevant to the prospective distribution of usage of the spectrum without violating these constraints. Please complete a separate questionnaire for each existing and planned development project. This form is to be used only for company sponsored programs even though the intended customer may be a government agency.

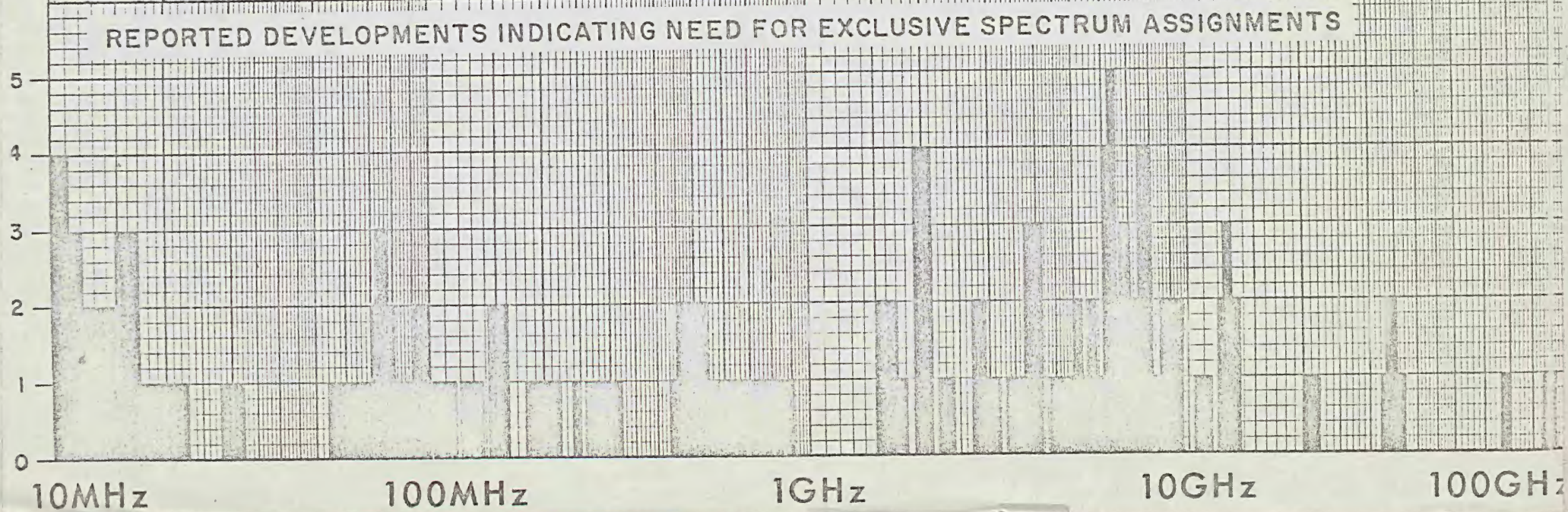
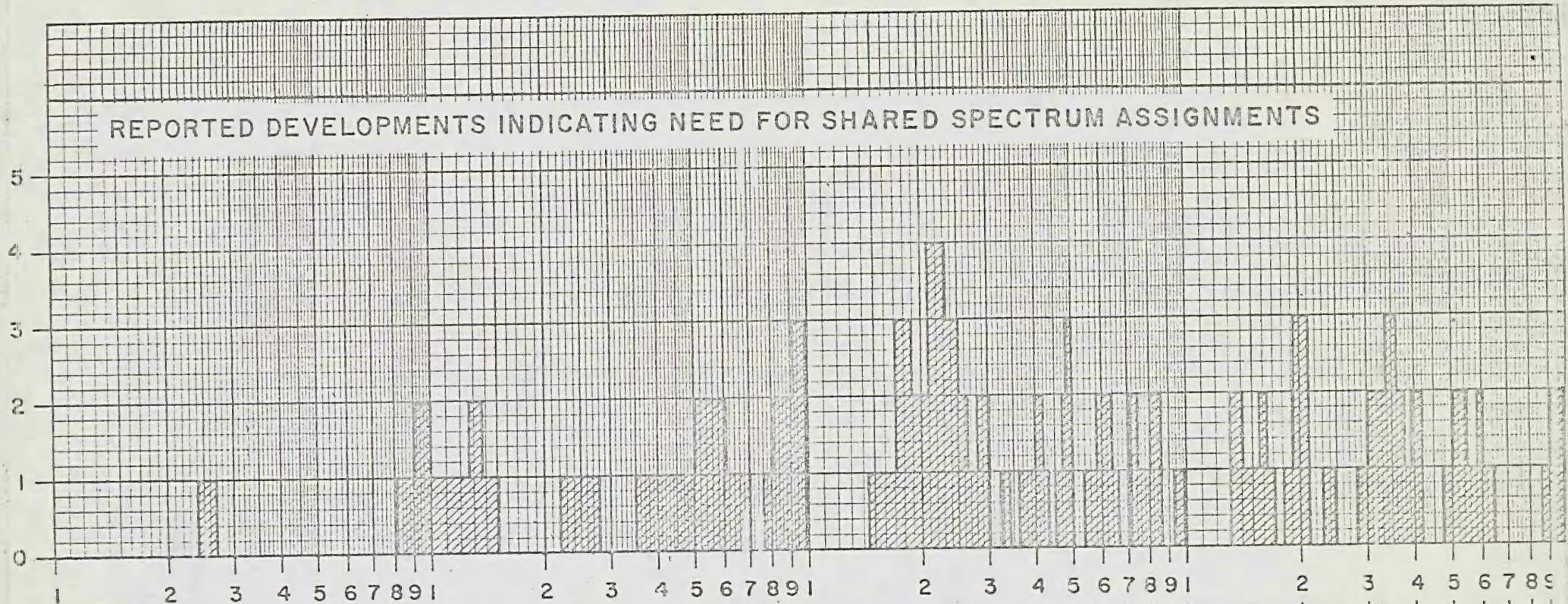
QUESTIONS:

- (1) Will the new technology create:
- | | | |
|--|----------------|--------------|
| new service(s) | Yes <u>68</u> | No <u>54</u> |
| improvement of existing service(s) | Yes <u>120</u> | No <u>37</u> |
| replacement of existing service(s) | Yes <u>46</u> | No <u>67</u> |
- (2) Service(s) in question:
- | | | |
|----------------------------------|---------------|--------------|
| safety of life | Yes <u>44</u> | No <u>62</u> |
| national defense | Yes <u>92</u> | No <u>30</u> |
| meeting a public need | Yes <u>96</u> | No <u>14</u> |
| meeting a private need | Yes <u>56</u> | No <u>58</u> |
- (3) Do you foresee such service in the:
- | | | |
|---|----------------|--------------|
| near-term (less than about 5 years) | Yes <u>100</u> | No <u>22</u> |
| longer-term (beyond about 5 years) | Yes <u>77</u> | No <u>4</u> |
- (4) What is the necessary channel bandwidth? _____
 What is the anticipated total system(s) spectrum requirement? _____
 Is an exclusive assignment required? YES 80 NO 59 Qualified 5
 What frequencies will be preferred? _____
 Is frequency selection based primarily on:
- | | | |
|---------------------------------------|---------------|--------------|
| propagation characteristics | Yes <u>99</u> | No <u>32</u> |
| equipment considerations | Yes <u>79</u> | No <u>33</u> |
| other | Yes <u>49</u> | No <u>53</u> |
- (5) Is spectrum allocation presently established? Yes 75 No 65
 If not, to be established by:
- | | | |
|------------------------------------|---------------|--------------|
| FCC | Yes <u>56</u> | No <u>15</u> |
| IRAC | Yes <u>37</u> | No <u>28</u> |
| International Regulation | Yes <u>35</u> | No <u>28</u> |

REMARKS:

(The value of this questionnaire will be enhanced by inclusion of comments on such factors as anticipated quantities, power output, geographic and spacial deployment, etc. Use reverse side to expand remarks.)

CHARTED RESULTS OF JTAC SUBCOMMITTEE 65.1 SURVEY



Commerce
OT

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

Date: February 17, 1971

Subject: Commerce - OT Organization, Staffing, and Program Plans

To: Tom Whitehead

The following topics should be covered in your discussions with Kandoian and Richardson on February 18:

1. OTP/OT/FCC/Other Agency Roles and Relations - Fine structure

The broader aspects of these roles and relations have been discussed previously; however, the implications for day-to-day operation apparently are not yet understood. For example, despite the recent OTP policy banning contractual arrangements between the OT and FCC on the interconnection/attachment study, the OT staff is continuing to develop program plans which contemplate the transfer of funds from other agencies (including the FCC) rather than the establishment of cooperative study projects. (e.g., Alaska Communications Proposal)

Until this traditional philosophy of the Commerce staff can be altered, the OTP may be forced to assume a leadership role in every inter-agency activity contemplated by OT. While this will further strain our limited resources, there seems no alternative except a complete ban on all inter-agency programs.

2. Role of Technical and Economic Analysis in Policy Development

A major factor in OT organizational and program planning is its continued misunderstanding of the role of technical and economic analysis (for which it is charged) in the process of policy formulation. Until this is resolved, there is scant hope for improved planning.

Different elements of the OT staff have different conceptions of this role (which in itself is a source of confusion in planning). Generally, these conceptions are:

(a) development of an "operations research" model into which appropriate data and/or opinions can be inserted to arrive at a policy decision;

(b) development of an "optimum" engineering design to meet a specified communications requirement or national plan, which then becomes the basis for "political" action to bring about such a system to the exclusion of alternatives; or

(c) routine, unglamorous manipulation of engineering formulas in response to OTP dictates, with no room for "creativity."

As I understand it, the OTP concept is that, within overall guidelines and priorities established by the OTP, the OT staff would eventually be free to examine a wide range of technical possibilities, associated operational and cost implications, various regulatory and pricing options, etc. for meeting a variety of existing or prospective communication service needs. This is either not understood by the OT headquarters staff, or is considered an uninteresting role, or is contrary to their self-image as a major voice in actual policy decisions. Whatever the difficulty, effective planning by that group will be impossible until this issue is settled. This may require some reshuffling of the OT headquarters staff itself.

3. Program vs. Line-Management Concepts

Despite many discussions, both Kandoian and Richardson are firmly wedded to a line-management approach to organizing the OT. The official argument for this is that it lets everyone in the organization know exactly where he fits and what is required of him, thereby providing stability. Unofficially, there is added acknowledgement that this provides greater insulation of top management from involvement with substantive issues and day-to-day operations, thus easing their load. Cynically, one could also infer that this permits the shifting of responsibility for program performance to ever-lower staff levels, with obvious benefits to management.

Whatever the motivation, the fact remains that OT will be a multi-tier, line management organization incapable of and resistant to any rapid shifts in program emphasis, unless strong pressures are exerted by the OTP. Given this wide divergence in basic philosophies, it is doubtful that mediatory approaches will be effective; it may be necessary instead to adopt an extreme position and hard line, i.e., a negotiating posture.

4. Current Organizational Plans

Current OT planning contemplates establishment of a headquarters operation plus a tripartite organization consisting of:

- Frequency Management Support Division (D. C. ?)
- Policy Analysis Division (Gaithersburg ?)
- Institute for Telecommunication Sciences (Boulder)

Each of these activities will apparently be organized and managed as essentially independent entities with distinct programs, though it is said that the first two will "draw on" the ITS expertise as appropriate.

This proposed structure, coupled with the previously stated management objectives and the proposed staffing arrangements, poses serious problems. While there may be some justification for establishing a distinct frequency management support group (i.e., IRAC Secretariat), the distinction between "policy analysis" and "telecommunications science" is a potential disaster.

On one hand, it would perpetuate the isolationism of the Boulder operation. On the other, it would place responsibility for virtually all the OTP support in the hands of individuals who have no actual experience or interest in telecommunications science, engineering, or economics, who instead entered the field within the last two years with the sole objective either of becoming the focus of policy formulation or of self-advancement. Considering the added problem that these individuals are mediocre by any standards, the central role envisioned for them would be disastrous if adopted.

5. Current Program Plans and Activities

As has been previously noted, the OT has not responded in any substantive manner to the FY 72 OT program description proposed by the OTP. Some elements of that plan have been incorporated in the OT Congressional appropriation request, interspersed with many programs not considered by the OTP to be of primary importance. While certain members of the staff have given assurance that they can see how the OTP program would be satisfied under the proposed OT program structure, the fact remains that those individuals are not now (nor will they be) in control of the activity, and all formal responses by OT show a considerable gap between the respective plans. (Please note attached memoranda for specifics).

One tip-off to future OT program planning and implementation can be found in current utilization of the FY 71 supplemental. At the time these funds were requested, it was decreed by OTP and OMB that they would be used to re-orient staff resources into studies more responsive to OTP needs and priorities. Subsequently, the OT was informed that the FY 72 program plan outlined by OTP should be used as guidance in reorienting efforts during FY 71. To date, there is no evidence that this is being done; in fact, some reports indicate the supplemental funds are being used to re-institute old ITS projects (e. g. population distribution studies) and bail out over-spent projects in telecommunications science, wave propagation, etc.

Some progress may be underway in specific areas (e.g., frequency management, interconnection studies) as the result of direct, detailed involvement and firm stands by the OTP staff. This type of interaction is probably essential, and could be speeded considerably if appropriate counterparts can be identified in each particular program area. To date, there have been no outstanding prospects in the broadband and specialized services area, with the possible exception of interconnection. Those who have been identified by OT management in these areas are probably unacceptable for one reason or another. The immediate objective of

- 5 -

OTP should be to single out promising individuals, while resisting any OT efforts to make premature assignments. Dr. Richardson has promised a list of prospective project leaders in the near future, with the implication that OTP could pass judgment on some. We should be prepared to act rapidly and assertively on this list, with specific alternatives where needed, as soon as it becomes available.

Walt

Walter R. Hinchman

February 11, 1971

To: Mr. Robert Lowe
Office of Telecommunications
Department of Commerce

Attached are my thoughts at this point on the objectives, scope, and organization of the telecommunications issue study. This reflects both our previous discussions plus some views of Mr. Whitehead.

We should discuss this prior to next Thursday's meeting to identify any unresolved questions for Messrs. Whitehead and Kandoian. I would hope that agreement could be reached at that meeting which will allow the project to get under way.

SIGNED

Walter R. Hinchman

Encl.

Mr Whitehead

Telecommunications Issue Study

Objective: To evaluate the relevance of certain traditional functions of the Department of Commerce (e.g., electromagnetic wave propagation research, telecommunication science research, and other-agency engineering support) to current national needs and priorities; their importance relative to newly-assigned functions deriving from E. O. 11556; and the appropriate institutional and funding arrangements for their future conduct.

Background: The Department of Commerce has for many years carried out studies in electromagnetic theory, wave propagation, and telecommunications science and engineering, both independently and in direct support of other Federal agencies. Executive Order 11556, establishing a new Office of Telecommunications Policy in the Executive Office of the President, assigned additional telecommunications functions to the Secretary of Commerce in support of the OTP, to be carried out under the policy guidance of the Director of that Office.

To meet these responsibilities, the Secretary on September 20, 1970 established an Office of Telecommunications in Commerce, and transferred to that office the Institute for Telecommunication Sciences, the most recent Commerce organization charged with the conduct of its telecommunications functions. This organization brought with it various existing programs and obligations (both internal and other-agency), personnel, and fiscal resources.

To obtain maximum effectiveness from the necessarily limited staff and fiscal resources available for telecommunications policy and planning, the program of the Office of Telecommunications must be closely aligned with national needs and priorities. The OTP has identified a number of high priority tasks for FY 72 which will require roughly 80% of the direct appropriations to Commerce for telecommunications research and analysis; still others may become critical as the Administration's telecommunications program evolves. There is thus an urgent need to evaluate the relevance of Commerce's traditional telecommunications R&D activities to this program, in order to determine an appropriate level of continuing support for these activities, as well as an appropriate institutional setting.

Scope of Inquiry

This inquiry is addressed specifically to the functions and activities historically carried out by the Institute for Telecommunication Sciences and its predecessor organizations, including studies in:

- Electromagnetic theory
- Atmospheric physics
- Electromagnetic wave propagation
- Ionospheric and tropospheric geophysical predictions
- Radio channel characteristics and performance predictions
- Radio frequency predictions
- Electromagnetic compatibility analysis
- Telecommunication science
- Telecommunication systems engineering and analysis
- Spectrum Utilization Research
- Engineering Standards and design criteria.

Evaluation Criteria

In conducting this evaluation, the following types of criteria will be employed for each activity:

- Magnitude of ITS effort relative to total national effort
- Probable impact on national effort if terminated
- Alternative sources, likelihood of emergence under (a) private enterprise or (b) other Federal agencies
- Status of national interest (expanding, static, contracting)
- Potential economic impact, in terms of (a) cost savings to government, (b) to others, (c) expansion of valuable resources (e.g. spectrum), (d) development of new markets or services, etc.

Study Organization

To ensure the necessary independence and objectivity in making this evaluation, several factors are immediately apparent. First, the study should be conducted by persons outside the ITS who are reasonably conversant with overall national telecommunication issues and developments. At the same time, some prior knowledge of ITS activities, capabilities, and products is essential. Also, since an issue study is almost by definition a very sensitive internal review of Federal agency operations with significant organizational and budgetary implications, it cannot be delegated fully to a formally constituted outside group, no matter how prestigious.

These considerations lead to the following recommendations:

1. OT should retain primary responsibility for conducting the study, rather than assigning this to any outside group such as CTAB.
2. An Executive Director should be designated from the OT headquarters staff, preferably one having considerable familiarity with both ITS and national telecommunications issues.
3. A small ad-hoc group of outside consultants should be jointly identified by the OTP and OT to assist in the evaluation, comprised of prominent telecommunications engineers and managers.
4. Individual members of the ITS staff should be made available to the Executive Director at his request, as resource personnel (not as formal participants in the study).

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

Date: February 3, 1971

Subject: Comments on Department of Commerce Budget Estimates FY72,
Congressional Submission dated 2/1/71

To: Mr. W. Hinchman
Mr. F. Urbany

I have reviewed the subject document and consider the following points to be germane to OTP's review thereof:

a. With respect to spectrum management, two important areas are not reflected adequately, i.e., measuring/monitoring and standards for improved RF occupancy. Recommend these be incorporated.

b. Under the summary of requirements on page OT-5, I am not at all clear what the 13 permanent positions under OT 12 for "prediction and compatibility analysis services" are for. I would also be interested at some early point in learning who they are. Clarification is requested.

c. On page OT-10 the statement is made "The joint use arrangement cannot be continued in FY72 since the OTP requires the computer and its other facilities for continuing expanded responsibilities." This statement is not understood. If the intent is for Commerce to convert the frequency management records to "in house" computers, it is seriously questioned that this can be effected commencing in FY72. Planning should be oriented so that OT can continue to obtain services from OEP, at least until comparable capability exists in the Department of Commerce. This is a most important area which should be clarified.

d. Page OT 14, the third paragraph from the bottom of the page should be amended in two respects as follows: Fifth line, delete "issues authorizations". Reason: OTP issues authorizations, not DOC. Eighth line, delete "computers of". Reason: In the interest of accuracy, since the users will not necessarily have computers but rather ancillary equipment.

e. On page OT 28, reference is made to the establishment of a "telecommunications system to interconnect the Office of Telecommunications facilities in Boulder, Colorado with those in the Washington, D.C. area." \$250 K is proposed for this purpose. Clarification is necessary on this point. Consider that OTP

should not condone the establishment of a capability which would permit DOC support, particularly in the frequency management area, to be perpetuated at Boulder. The facilities and personnel should be moved to a location in close proximity to Washington so that adequate supervision/policy guidance can be rendered.

The foregoing are furnished for incorporation with the views of others into an overall OTP position

W. Dean, Jr.
W. Dean, Jr.

C.T. Whitehead ✓
G.F. Monsur

Commerce
PSD

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

Date: February 1, 1971

Subject: Commerce Support Program, FY 72

To: Tom Whitehead

I am resubmitting the proposed plans for the Commerce FY 72 support program with the comments received from Commerce attached. I have no particular comment on the Commerce response; it speaks for itself.

Some points may be worth reiterating:

1. These are not intended as detailed work statements, but rather broad program plans and objectives. The development of detailed work statements, objectives, schedules, etc. will require much more effort than I have been or will be able to devote, and is really dependent on two developments: augmentation of both OTP and Commerce staffs in several critical areas, plus a more detailed understanding within OTP of the issues and objectives on which we must focus.
2. The December 28th package contains at least two inadvertent omissions which I have since discovered and which will be covered in any subsequent version. These are: (a) a study of Federal/State/local telecommunications programs, plans, developments, etc. which will identify future issues and action needs in this area; and (b) a general study of the quantitative economic implications of alternative pricing policies and practices (long-run marginal cost, Baumol's burden test, fully-allocated, etc.) for both the suppliers of joint monopoly/competitive services and of competitive-only services.

You may be interested to know that Commerce has a completely different program package for FY 72. Theirs is essentially an updated version of the FY 71 reprogramming, in which all those activities are "annualized" and some additional tasks included. They have provided both an OTP-OT and OT-OTP "dictionary" which purports to show that each program maps into the other with no serious problems. I have no difficulty following the resultant translation, so far as words are concerned, but it remains to be demonstrated that the resultant work will be in accord with our objectives and priorities.

Incidentally, John Richardson inquired about shifting priorities (and resources) from some of the "new" areas (CATV, bulk and specialized services, economic analyses, etc.) to more familiar spectrum-related areas (mobile, spectrum management, EMC). My response was that, while different emphases might result within a particular program as planning evolves, the allocation of effort among these programs was pretty firm in view of the national issues involved and their relative priorities. This brought the standard response that it would be very difficult to utilize available manpower in these areas, to which I responded that the balance of FY 71 could be devoted to reorienting, re-educating and/or replacing those skills.

When your comments on the total package are available, I will produce a final draft which might serve as a basis for a memo of understanding between OTP and Commerce. I do believe such a memo is essential for further planning and coordination.

Walt

Walt



Date: January 29, 1971

Reply to
Attn of: Dr. John M. Richardson
Deputy Director

Subject: Comments on the Commerce Support Program for FY 1972
Proposed by OTP approximately January 4, 1971

To: Mr. Robert M. Lowe

GENERAL COMMENTS

The ten elements of the total OTP-OT program cover the subject in the sense they are collectively exhaustive. There are, of course, not mutually exclusive. There is a great deal of interaction between mobile communications and spectromanagement for example, or between communications networks and new technology.

I agree with the rank order of emphasis according to dollar amounts, both for the OTP-OT total and for the OT component. I think that the OT component is suitably slanted toward our technical capabilities and interests.

If one were to classify the proposed program for Commerce according to technical, economic, and managerial components, I think the greatest bulk would fall into the economic category then the technical category and finally the managerial category. This distribution of effort will naturally require a very major change in the character of present OT resources especially at ITS. OTP is both desirous and willing to make this change. Conversations with Dr. Mansur and Mr. Hinchman indicate that they believe it can be made within the course of six months, in particular, by the time the FY 72 program gets underway. I am considerably more pessimistic about achieving a massive staff readjustment and professional reorientation in that time.

The program as contemplated also assumes a very great reduction in the other agency component of the ITS program and a corresponding reorientation of the direct program. This decision can lead to two problems that will take time to resolve. First, there is the problem of achieving a logical and reasonable integration and mutually supported relationship between the content of the direct and the other agency programs such as existed in the past. Secondly, as there becomes less emphasis on technical studies at ITS, ITS will become less qualified to undertake technical work for other agencies and there will be a regenerated effect that will probably force the other agency work to zero. This will raise the problem of suitably utilizing the laboratory and equipment facilities that OT owns in Boulder.

I have mentally held the following questions in mind while reading OTP project descriptions. In most cases I can supply the answers to my satisfaction even though they are not all explicitly stated in the write up.

- What is the motivation for the project?
- What are the specific project objectives during FY 72?
- What approach will we use for this project?
- What is the output of the project?
- How will the project output be used?
- Is the project cost estimate realistic? (In many cases, discussed in detail below, I have questions about the realism of the project cost estimate.)
- Does the project lend itself to a continuous transition from our prior activities?
- What areas are omitted? (Here we find assistance to the states, telecommunications information base, and radio propagation predictions services omitted.)
- Is the project a proper function of Government?

SPECIFIC COMMENTS

Broadcasting, Cable Television, and Related Services

The \$75K allotted for this project will allow for the assembly, review and consolidation of existing work. I have grave doubts that it will allow for any development of original material. The benefit of the project will have to be in the synthesis of existing material. The above comments refer to the first project "Technology Capabilities and Costs."

The amount of approximately \$75K to \$100K proposed for demand projections is quite small compared to any serious demand study that I conceive of.

Same comment applies to the amount proposed for economics of program production.

The amount of \$100K might be sufficient to manage a pilot project assuming that sufficient incentives can be offered to get somebody else to pay for the hardware and the software involved in the pilot project. This work might well build on some of the hoped for suggestions coming out of the current National Academy of Engineering study.

Bulk and Specialized Communications Networks

I think we have to view the \$400,000 proposed for this area as an investment in the training and reeducation of our staff. When I compare the individual amounts in these projects of the order of \$100K to the amounts that the industry is spending even for planning in these subjects, I am pretty discouraged. For example, a closer look at the problem of studying technical and economic criteria for interconnection by an FCC-NBS-OT group has come up with something in the order of \$400,000 rather than \$50,000. I am also mindful of the cost of about \$2 million or more for the Datran market survey of data communications. With the \$125,000 allocated to market and demand studies we shall be able to do a little more than subpoena existing studies and consolidate them.

New Technologies and Services

The motivation for the project "Operational Feasibility and Economics of Joint Switching and Teleprocessing" appears to be a reexamination of the present policy adopted by the FCC precluding teleprocessing by operating carriers. This policy was adopted largely on the basis of the wish to prevent cross-subsidization of these operations which is a consideration quite different from operational feasibility and which seems to the FCC to be the overriding consideration. After conversation with Hinchman, I gather that this project is an attempt to quantify the cost benefits of such joint use in order that they may be compared with the penalties that might arise from cross-subsidization.

Mobile Communications

The work under technological and operational alternatives for mobile communications will, of course, have to be an examination of existing schemes that have been devised by Bell and the military. For example, very little contribution to technology and operations can be done under this amount.

It needs to be clearly understood by the staff that they are in the position of critiquing very extensive proposals that have cost some tens of million of dollars to conceptualize and engineer, let alone to develop and produce.

International Communications

I wonder why it is that a Government functions to make demand projections for international communications. This function is performed by the ITU through the carriers themselves. Apparently,

the thrust of the project is to validate these demand projections upon which the carriers are basing their investment plan inasmuch as the Government has the power of approval of investment in these international facilities. Again, under this project \$30,000 for developing methodology for improved demand projections seems very, very small compared with the effort that already goes into the existing methodology.

International Conferences and Cooperative Programs

Obviously, CCITT needs to be added to our international involvement inasmuch as we are trying to turn our attention to telephone as well as radio.

Federal Government Communications

Under the project research and development and planning, I wonder how much was spent on the rather abortive Government-wide effort to take a progress and project inventory of R&D in process. I have in mind the DOD Standard Form 1492 and the DOC Standard Form 228. These systems are not effectively working, even after receiving some special attention from Don Hornig. If we are to try this anyway, we will need to use the authority of the OTP more than money so the cost of the project is not so important here.

In this area, I have already mentioned to Charlie Joyce and Walt Hinchman that the title be changed from "Federal Government Communications" to Government Communications so as to allow us the opportunity to add a project or two under state and local governments.

Federal Spectrum Management

No particular comment here. I think Will Dean has the planning and objectives under superb control. I also think that this general area could be a "black hole" for money unless we watch it.

Special Projects

No comments.

Spectrum Policy and Allocation

The \$150K allocated to this area is quite insufficient to conceive and conduct any experiments that might help with frequency sharing. Inasmuch as the conduct of these

experiments have been the stock and trade of ITS, here is an area where ITS competence could be effectively used but apparently is not. Conceivably, this area is a candidate for some shifts in program emphasis in order to benefit from this competence, and in order to make the transition from a scientific to an analytical organization more smoothly.

Mr. Salomon

I. Broadcasting, Cable Television and Related Services

2. Demand Projections: Studies of demand for cable TV may be extrapolated from past experience. The use of broadband cable in related services will depend upon market possibilities of such devices - for which there is no history. Demand may be enormous or very limited depending upon specific equipment at the terminals, its price and substitutibility. The program ties in with "related services to individual homes" in (1) preceeding. I visualize the earliest applications (outside of TV) to commercial organizations who can utilize high speed data, FAX or videophones for business purposes. Therefore, the topic should be broadened to encompass service to business organizations. Here there is some basis for demand projection.
4. Pilot Project: There are sharp limits on what can be done with \$100 K here. While you can provide a distribution plant in a very small town for a portion of the amount, it would be unlikely to find a satisfactory number of related service applications in such a small community. Funding for this purpose should be at least \$250,000.

II. Bulk and Specialized Communications Networks

This is a very necessary and worthwhile project. Its description is mired in too heavy a technical jargon. Whether or not there are economics of specialization or of scale, the overriding institutional and market structure questions must be confronted directly. Governmental restraints are today the paramount obstacle to the MCI's moving ahead. The use by dominant communication entities of the regulatory process to impede or restrain competitive inroads is too obvious to deserve recounting. It would be appropriate to examine the legal and institutional bottlenecks to application of the technology.

III. New Technologies and Services

2. Joint Switching and Teleprocessing: I am not sure where this topic leads to. Bell says they do not propose to do computer processing. Western Union seeks to divorce its SICOM and other computer services from its carrier activities. What is needed in depth here is an evaluation of the regulatory problems for costing of joint services and some new tools for the regulators.

V. International Communications

How about examining the role and function of the five principal international communications carriers? The record carriers are playing the part of jobbers and living off the transmission plant provided by AT&T and Comsat. How well is the concept of "carrier's carrier" meeting public needs?

Why the increasing variation in charges by distance? (e.g., United Kingdom vs. Hawaii) What are the considerations governing the establishment of international charges for communications, or are there any?

VI. International Conferences

The \$100K set out as project money does not square with the summary sheet showing \$80K for OTP and \$50K for contract costs. Is there really time now to do anything meaningful for a Spring '71 conference?

VII. Federal Government Communications

The projects skip over the real problems: an NCS whose job is to integrate - which it does not do; a high cost, low efficiency military system which is to be survivable - and it is not. Start on these subjects to really make a dent in the problem.

General Comments

All of the topics chosen are real and provide opportunity for contributions to meaty questions. All are heavily cloaked in technical matters and seem to veer away from the more earthy institutional difficulties which underly each of them. This form of presentation may be politically opportune, but if the work literally follows this subject matter outline, its limitations should be clearly recognized.

R. Gabel -
1/4/71

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

Date: December 30, 1970

Subject: Commerce Support Program for FY 72

To: ✓ Mr. Clay T. Whitehead
Dr. George F. Mansur

The attached draft material has been reviewed with Commerce (Robert Lowe) per our discussion. Mr. Lowe's initial reaction is generally enthusiastic, although he feels the CATV and Government communications efforts should be greater and perhaps frequency management should be less. I stressed that these are still tentative plans, and that we would appreciate further comments prior to their incorporation in a formal memo to Commerce. Am expecting some response to this by early next week. I indicated that you would be reviewing the package then, with the object of getting out a memo by late next week?

Obviously, I hope you can find time to review the complete package reasonably soon. It differs considerably from the earlier version. I am particularly interested in your reaction to Section VIII (Spectrum Management) which I prepared from scratch after reviewing the voluminous, highly-detailed material submitted by W. Dean. I feel all the significant objectives in this area are covered, but still expect a strong dissent to the rewrite.

Walt

Walter R. Hinchman

Attachment

Commerce Support Program FY 72I. Broadcasting, Cable Television and Related Services

1. Technological Capabilities and Costs: This study will identify existing and future (e. g., 1975) capabilities in the technology and cost of alternative systems for providing broadcast, cable television and related services to individual homes. Transmission technologies to be examined include single and multi-channel VHF/UHF broadcasting; one- and two-way, switched and non-switched coaxial cables; microwave/cable combinations; and digital vs. analog transmission. Both space-division and time-division switching alternatives will be considered. Future prospects for a variety of terminal devices (e. g., slow-scan and stored video display, facsimile or alternative hard copy devices) will be evaluated. The results will be presented in parametric form, i. e., with relevant technical, operational, and economic trade-offs fully explored and exposed. The identification of scalar and/or specialization economies is a prime objective of the study. \$75K
2. Demand Projections: This study will identify a representative spectrum of customer services which could be provided utilizing various broadcast and distribution capabilities in the 1975 time frame; and develop estimates of the price elasticity and

and cross-elasticity of demand, as well as the potential level of demand, for such services. Such economic determinants of demand as disposable income, substitutability for other services, etc., will be considered, as will such possible determinants as social needs and goals in health, education, welfare, ecological control, etc. To the maximum feasible extent, the fine structure of demand (i.e., by specific age, interest, social, and economic groups) will be determined, as well as gross demand. \$75K

3. Economics of Program Production: Develop a structural and economic model of the program production industry, including the creation, licensing, production/publication, marketing, advertiser support, etc., of all forms of entertainment and information materials for public consumption. Important factors to be determined from this study are the long-term supply curves, plus long-term demand curves for both paying consumers and advertisers, all for various classes of existing and/or potential programs. \$75K
4. Pilot Project: Provide program management support, including definition and evaluation of experimental projects, for a pilot project in broadcast and distribution services in one or more model communities to be identified by the OTP. \$100K

II. Bulk and Specialized Communications Networks

1. Long-Distance Transmission/ Routing Systems and Costs:

Identify existing and near-term capabilities in the technology, and costs of alternative systems for long-distance, point-to-point transmission and routing. Specifically, transmission systems employing microwave/millimeter-wave radio techniques, coaxial cables, millimeter waveguides, and communication satellites will be examined, as will such routing systems as toll switching centers and demand-assigned satellite circuits. Potential economies of scale and/or specialization will be clearly identified, as will relevant technical, operational, and economic trade-offs. \$75K

2. Local Distribution Systems and Costs: Identify existing and near term systems for local distribution (i.e., two-way, narrow and/or wide-band interconnection between the individual subscriber and the local switching center), and relevant hardware and operating costs. Specifically, the study will address the twisted-pair local loop characteristic of telephone operations as well as microwave or millimeter-wave radio links, wideband analog cables, digital cables, etc. A wide

range of assumptions as to circuit capacity, density of subscribers, degree of urbanization, etc., will be factored into these analyses, whose output will be capable of illustrating economies of scale and/or specialization of each complete distribution system in terms of both hardware and operating costs. \$100K

3. Local Exchange Systems and Costs: This study will identify past, present, and near-term trends in the technology and cost of local exchange switching centers, considering any effects on inter-exchange transmission costs resulting from increased switching capacity as a part of switching cost. This study should include narrow and wide-band space division and time division switches, as well as centralized vs. distributed switching/routing techniques. A primary objective of this study is to determine the extent to which local switching services exhibit natural monopoly characteristics (e. g., large scalar economies); another objective is to determine the extent to which it may be economically attractive to substitute extra transmission capacity for some switching functions. \$50K
4. Technical and Economic Criteria for Interconnection: This study will identify for each possible interface within a comprehensive telecommunications network (e. g., terminal/local

loop, local loop/local exchange, local exchange/inter-exchange transmission, inter-exchange transmission/toll exchange, toll exchange/long distance transmission, etc.) the technical criteria required for compatible interconnection, and the type and degree of network degradation which would be experienced for various incompatibilities. Also, identify and evaluate the probable costs of alternative methods of ensuring and/or enforcing compatible interconnection between different entities at these interfaces. \$50K

5. Market and Demand for Data Communications and Specialized Service: Develop estimates of the future demand for various types of data communications and other specialized exchange services. Develop a range of quantitative estimates for the near-term with a more qualitative discussion of the possible services and trends in the longer run. Estimate the impact of possible prices on demand to the extent feasible. \$125K

III. New Technologies and Services

1. Satellite Communications: Identify (from existing literature to the maximum extent possible) the types and potential magnitude of new satellite telecommunication services, and the necessary and sufficient technological developments to support such services. Consider as a minimum satellite capabilities for: (a) multi-point broadband distribution; (b) long distance point-to-point trunking, (c) single node networks; (d) direct space broadcast; (e) public aeronautical communications; (f) community broadcast; (g) earth sciences/ resources monitoring; (h) inter-satellite relay; and (i) on-board switching. Estimate relative and absolute costs for each alternative means of accomplishing a particular function and the confidence limits associated with these estimates. \$100 K
2. Operational Feasibility and Economics of Joint Switching and Teleprocessing

Evaluate the operational requirements for computer-controlled telecommunications switching and for teleprocessing, and the relative costs of multi-purpose and specialized computers, in order to determine to what extent telecommunications common carriers will be competitive with independent teleprocessing suppliers if allowed to use joint switching and teleprocessing computers. \$75 K

3. Future Services and Potential Benefits: Identify opportunities for significantly new information services resulting from telecommunications advances in the 1980-1990 time frame and the probable public and/or business users. The types of services to be considered would include the so-called checkless and/or moneyless society; the home information/entertainment center; the distributed business office; etc.
\$75K

IV. Mobile Communications

1. Technological and Operational Alternatives: Identify and evaluate a number of alternative technologies and operational approaches for providing mobile communication services (land, sea, and air) for large segments of the public. Transmission technologies to be examined will include conventional AM and FM mobile radio systems (single and multi-channel); guided-wave transmission systems; microwave/millimeter wave systems; satellite systems; etc. Terminal device and signal processing technologies will include data terminals, mobile telephones, multi-channel RADA-type terminals, use of large scale integrated circuitry, etc. Operational techniques will include cellular base station networks, common-user and/or common carrier integrated networks, common-frequency repeaters, etc. In all analyses, the relative spectrum resource needs and optimum frequency assignment methods for alternative approaches will be identified. \$ 150 K

2. Opportunities For, and Benefits Of, New Mobile Communications Services:

Identify and analyze opportunities for new and expanded applications of mobile communications systems in the 1975-80 time frame. Estimate the sensitivity of alternative service offerings to spectrum availability and cost, industry structure and regulation, etc. Develop quantitative estimates of demand, including consideration of equipment costs and possible spectrum charges (e.g., through license fees). \$150K

3. Communications for Law Enforcement and Public Safety:

Examine the requirements and opportunities for improved mobile communications to support law enforcement and public safety services; and evaluate the potential benefits and costs of alternative approaches for providing such services (e.g. greater integration of local systems, use of common-user distributed basic station networks, joint Federal/State development and operational arrangements, etc.) \$100K

cg 12/18

V. International Communications

1. Economics of Reliability:

Develop quantitative criteria for measuring the communication system effects of outages, considering both degraded capacity (i. e., increased probability of lost calls) and degraded service (i. e., interruption of calls in progress). Compare the costs of alternative means of achieving parametric levels of reliability for alternative transmission facilities and systems, including quality improvement and control, redundancy, network topology and diversity of routes, etc.

50 K

2. Demand Projections and Methodology:

Identify the parameters which are valid predictors of demand for international telecommunications, and perform econometric analyses of selected geographic areas to evaluate price elasticity of demand. Estimate the effects of the introduction of new procedures and equipment (direct dialing, direct routing via satellite, etc.) on significant traffic engineering parameters (holding time, peak loading, etc.). Derive from these data estimated ranges of trunking requirements for selected years and areas.

30 K

3. Facilities Mix and Timing:

Develop an iterative dynamic programming model of the international transmission industry capable of determining the optimum mix and timing of international transmission facilities deployment

-11 -

under varying assumptions as to technological development
and cost, failure modes and reliabilities, service require-
ments, traffic routing, etc.

70 K

VI. International Conferences and Cooperative Programs

1. CCIR Review and Consolidation: Compile, review, and consolidate the studies and findings of U. S. Preparatory Committees for the CCIR, in order to produce a single comprehensive, integrated report for consideration by the OTP, FCC, and State Department. A major feature of this effort will be to identify and fill important gaps in the analysis and documentation, where possible, to identify work programs when necessary, and to eliminate discrepancies among the various documents. \$50K
2. International Cooperative Organizations: Provide technical support for U. S. participation in telecommunications activities of such organizations as the International Civil Aviation Organization (ICAO), World Meteorological Organization (IOC), Intergovernmental Maritime Consultative Organization (IMCO), etc. \$50K

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VII. Federal Government Communications

1. Teleprocessing Systems:

Analyze in depth one or more areas in which several agencies are involved in the collection, processing, dissemination and use of specific types of information; e.g., weather data. Identify the existing data processing and transmission methods used, and determine the options for improving the efficiency and effectiveness of the process. Determine what changes in system structure, standards, operations, and management arrangements would be needed to achieve feasible improvements.

\$125 K

2. Research and Development Planning:

Develop, and apply on a pilot basis, a methodology for reviewing research and development sponsored by the Federal Government in the telecommunications area to identify duplication within Federal Government programs, and between Federal Government programs and programs supported by other governmental levels and by private industry.

\$75 K

3. Budgeting for Common User Telecommunications Networks:

Develop alternative means of allocating costs to users of common user communications networks serving the Federal Government, and of reflecting such costs in the budgetary process. Analyze these options in terms of technical feasibility, cost of implementation,

the incentives associated with use of the network, and the capability provided for appropriate tradeoffs between telecommunications costs and other resource costs.

\$50 K

VIII. Federal Spectrum Management \$1.850 M

1. Frequency Management Support and Improvement:

Provide administrative and technical support required for the processing of Federal frequency assignment applications. This includes advice and assistance to Federal agencies in the preparation of applications, review of applications for compliance with regulations and procedures, support of the Frequency Assignment Subcommittee of IRAC, recording of frequency assignment actions, and publication and distribution of relevant documents. This task includes maintenance and operation of the current ADP system, plus maintenance of facilities for emergency relocation of the OTP spectrum management staff. \$1.0 M

2. Electromagnetic Compatibility Analysis: Modify and enhance the limited engineering support routines currently available in the OTP automatic data processing facility; provide engineering support in solving current EMC problems. Develop plans and programs for improved EMC analysis, within available resources. Improve the existing data base for spectrum management and EMC analysis, including development of appropriate files on supplementary equipment characteristics (covering receivers, transmitters, and systems) needed for spectrum engineering.

3. Spectrum Engineering Criteria: Review technical standards and criteria affecting usage of the radio spectrum by Federal agencies, and evaluate alternatives as necessary, with particular emphasis on standards now under development for high-powered radars and Government land mobile systems.
4. Spectrum Occupancy Monitoring: Review prior studies and proposals for mobile spectrum monitoring facilities, and existing techniques and capabilities (e.g. SRI and ITS facilities). Develop plans for alternative monitoring systems, including techniques for measuring the occupancy of spectrum resource dimensions other than frequency (e.g. direction of arrival, polarization, signal duration, etc.) Summarize the technical, operational, and cost characteristics of alternative monitoring systems of varying sophistication, as well as possible implementation schedules.
5. ADP Development: Continue development and improvement of the time-shared computer system initiated by the OTP, as well as present batch-processing capabilities. Evaluate the applicability and potential benefits of computer graphics terminal equipment to various frequency management functions including EMC analysis. Provide ADP planning assistance for the spectrum occupancy monitoring task.

IX Special Projects

Undertake such special, short-term analytic tasks as the OTP may from time to time request to support its evaluation of particular policy issues not contained within the scope of specific plans and programs. \$100 K

X. Spectrum Policy and Allocation

1. Technology Impact: Identify significant developments (past, present and future) in technologies and techniques which affect the amount of spectrum resource used by radio systems, the associated costs, and evaluate the operational and spectrum usage advantages and disadvantages which might accrue from each. Particular emphasis should be given to these techniques whose adoption would significantly affect spectrum requirements in the 100-1,000 MHz range. \$50 K
2. Spectrum Resource "Rights": Examine the basic processes of radio signal transmission and reception to identify the nature and dimensions of the spectrum "resources," and develop a system of units capable of specifying both the use of this resource and usage rights of reasonable expectation, in comprehensive and quantifiable terms. \$50 K
3. Frequency Sharing Techniques: Conduct studies of particular frequency sharing options (e.g., satellite/radio relay, satellite/ITFS, satellite/mobile, mobile/broadcast) in order to identify necessary and sufficient design and/or operating conditions on both services which will permit effective sharing, and identify the economic costs and benefits associated with each option. \$50 K

OFFICE OF TELECOMMUNICATIONS POLICY

ROUTE SLIP

TO C.T. Whitehead

ACTION	<input type="checkbox"/>
Concurrence	<input type="checkbox"/>
Signature	<input type="checkbox"/>
Comments	<input type="checkbox"/>
For reply	<input type="checkbox"/>
Information	<input checked="" type="checkbox"/>
Per conversation	<input type="checkbox"/>
Discuss with me	<input type="checkbox"/>

FROM W. Dean, Jr.

DATE 2/24/71

REMARKS

1. Attached reflects progress in bringing OT aboard in Spectrum Management area.

2. Boulder interests are enthusiastic about getting into "real world" and I am greatly encouraged.
 W.C. Mansur Will.

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

Date: February 17, 1971

Subject: OTP/OT Staff Meeting

To: For the Record

A meeting was held in Room 3862, Commerce Building, this date, to continue discussions looking to joint OTP/OT effort in frequency management.

Those in attendance were:

<u>Name</u>	<u>Organization</u>	<u>Telephone</u>
Leo A. Buss	OTP	395-4637
D. D. Crombie	OT/ITS	303-447-3816
W. Dean, Jr., Convener	OTP	395-5623
Richard Gable	OT	967-5171
W. Gamble	OT	395-5616
George Garber	OT	395-5616
L. G. Hailey	OTP	395-5623
Dale Hatfield	OT/ITS	303-447-3627
Bruce Higgins	OT	395-5616
C. R. Kirkevold	OT	395-5610
Malvey Lance	OT	967-5171
Robert Lowe	OT	967-5171
Robert Powell	OT	967-5171
William Roberts	OT/ITS	303-447-3364
Roger Salaman	OT	967-5171
G. V. Stelzenmuller	OT	395-5616

The discussion followed the agenda, which had been distributed as Attachment 7 to the report of the meeting on January 19, 1971.

1. Electromagnetic Compatibility

a) Analysis Capability

It was reaffirmed that Commerce would assume the ADP support on July 1, 1971, and that the OEP Computer (UNIVAC 1108 in the EXEC VIII Mode) would be continued in use through FY-1972. Assurance was given that there is no pressure from OEP to vacate the computer as long as Commerce provides financial support. Conversely, it was considered appropriate that, if and when another computer is contemplated, the OEP should be given at least six months notice. Also, any proposal for another system should be discussed within OTP/OT when available. Commerce was encouraged to continue with a UNIVAC 1108 in the EXEC VIII mode because of the time which would be lost in transferring to another computer.

Mr. Garber was asked to arrange a meeting between NRAC and OT personnel to establish contacts, exchange views and ensure a smooth transition from OTP to OT.

The Convener reiterated that the prime objective is to keep the existing system going, while making improvements through contract and Commerce support, and additionally to develop an EMC capability. In this respect, the Commerce Special Projects Group under Mr. Powell was identified as responsible for perpetuation and improvement of the ADP system, and Mr. Crombie, ITS, as responsible for EMC development within OT.

It was noted that two contracts are pending in OTP, one for computer system maintenance and one for time sharing. With respect to the latter, the Convener asked Mr. Garber to coordinate the text of the draft work statement with the OT staff.

b) Data Base

The Raish paper entitled "Radio Frequency Management Data Base" was reaffirmed as the foundation for this effort. Mr. Crombie will develop a rationale as to where and how data should be obtained.

c) Automatic Data Processing

Mr. Hailey reported that HRB Singer has three people working with the OTP computer system. Although OTP is about to extend the maintenance contract with HRB Singer, which will include a senior programmer, he repeated his earlier plea that Commerce develop an in-house capability.

Mr. Powell indicated there was money in the OT Budget for a senior programmer and said one would be hired as soon as a qualified person were found. Max Rentschler of HRB Singer was mentioned as a possibility noting however that he is a key person in the HRB maintenance and development area.

d) Monitoring

Mr. Buss announced a meeting with the contractor (SRI) at Boulder on March 1.

The Convener stated the previous report that the Army is developing a van for measuring spectrum use had been checked out and found to be without substance.

Mr. Crombie said ITS expects to make some pilot measurements as to develop a procedure, and to determine what kind of data are needed and how they might be used. He asked that he be put on the mailing list for any reports on the subject.

Mr. Lowe stated that \$193,000 of the draft OT Budget for FY-1972 is identified with monitoring and measuring.

The Convener noted there are two basic types of monitoring 1) to determine what is on the air and whether it is within authorized limits and 2) to evaluate electromagnetic compatibility.

2. Status of Action Items

a) Propagation

Mr. Higgins reported that he had had a brief discussion with Mr. Haydon before his departure for Geneva. As a result, Messrs. Rosage, and Stewart are doing preliminary work on the HF Propagation Model for the OTP computer from a remote terminal in Boulder. Mr. Stewart is learning the details of the Terrain-Conscious Prediction Models and is testing it on the Boulder computer.

Mr. Lowe voiced concern over the fact that Boulder and Washington are using different versions of the Propagation Model and coming up with different answers to the same problem. He urged that only the Boulder model be used until the differences are resolved.

Mr. Hailey observed that Boulder and Washington perform two different functions, the former providing propagation predictions and the latter interference analysis predictions. Only Washington can do the interference predictions because it alone has the frequency assignment data base.

It was agreed that requests for propagation predictions should be sent to Boulder until such time as the Washington model is so amended as to provide the same answers. Mr. Hailey noted that agencies having this requirement are already tied in with the Boulder computer. Meanwhile, it was requested that an attempt would be made to correct or convert the OTP computer model by the next meeting. Also, it was requested that Mr. Haydon be prepared to give a status report as to other Boulder models that might be incorporated into the OTP computer system.

b) Specific Problems

1) CATV vs Air/Ground

The Convener expressed appreciation for the Boulder report on this subject, which had been considered by the IRAC on February 9 and had received generally favorable comment. He said there had been no challenge to the technical finding although FAA had observed that the period when a plane is susceptible to interference is during the crucial period of landing and take-off, and that no consideration had been given to possible interference to remote receivers. He said that as far as Boulder and the IRAC are concerned, the matter is closed. The FAA, however, is documenting its position for submission to OTP and onward to the FCC.

2) VHF follow-on aircraft study for FAA

Mr. Buss reported that he had met with Messrs. Hatfield and Frisbie (FAA) on January 22, at which time the problem had been discussed in detail. Another meeting is scheduled for February 24.

Mr. Hatfield observed the need to computerize the manual methods now used to treat traffic density problems.

3) Altimeters vs collision avoidance systems in the
band 1535-1660 MHz

The Convener reported that McDonnell Douglas is scheduled to conduct a bench test in St. Louis in mid-March, at no cost to the Government, and that Bendix may also run a test if the necessary financing can be arranged.

At the request of Mr. Crombie, it was agreed that a meeting would be attempted sometime this week between Messrs. Hatfield, Buss and an FAA representative to discuss the test plan.

4) G.E. Computer Program re Orbital Satellites

The Convener expressed his opinion that this is a good program that will probably be used in answering future questions by the DTP. He suggested that Boulder evaluate the program thoroughly and report any difficulties to the contractor so they can be resolved. A complete set of the four volumes of the Orbit Spectrum Utilization Study were turned over to Mr. Salaman.

It was noted that Mr. Crombie has the program deck in Boulder and that the program has been incorporated in the OTP Computer System.

As a related matter, the Convener observed that one of the problems with problems is in their definition. He said a problem definition format would be drafted for consideration at the next meeting.

The Convener also referred to a list of problems which he would review with Mr. Crombie to decide which to attack next, noting one of the more troublesome is to determine the compatibility of the many services proposed to share the 7 to 8 GHz area of the spectrum.

c) Standards

The Convener stated a need to define standards in a realistic manner and to develop an enforcement capability.

Mr. Stelzenmuller distributed copies of a paper entitled "Spectrum Related Technical Standards Topics Requiring Immediate Attention" (see Attachment 1), reviewed briefly the four items listed, and suggested the addition of Land Mobile System Standards.

In response to a question by Mr. Powell, the Convener stated that enforcement could be through certification of equipment at time of assignment and through monitoring/measuring when that capability is developed. He foresaw the necessity to move monitoring/measuring equipment into any area -- by air if necessary.

Mr. Lance reported that he had been developing a paper on an OT standards program that he would like to present at a later meeting.

Mr. Crombie suggested that there might be a set of standards, for example, with receivers being assigned any one of a number of grades.

Mr. Hailey suggested that standards might be categorized by radio service.

Because of the urgent need for standards, it was agreed that:

- Messrs. Lance, Stelzenmuller and Gamble should work together and meld their thinking into one paper.
- Mr. Crombie would review the subject of standards and present a paper at the next meeting proposing what should be done during the balance of FY-1971.
- Someone at Boulder should review the Standards Chapter in the OTP Manual of Regulations and Procedures to determine where deficient, how improvements might be made, and what priorities should be assigned.

There was general agreement that recommended standards would be processed through the Technical Subcommittee and the IRAC before being recommended to the OTP for inclusion in the Manual.

d) Interface between Frequency Management and EMC

Mr. Kirkevold reported that as one of the first steps in this effort, Mr. Roberts was spending about a week with the Secretariat to observe its functions and processing methods, and to coordinate with any or all members of the staff to learn all he could about the how, what and why of frequency management.

e) Interface between EMC needs and current OTP data base

Mr. Higgins reported that the four-volume report of Sachs Freeman on Electromagnetic Compatibility for Frequency Management would be available on February 18. He referred to Volume I thereof, "The Approach to the Problem" and said action had already been implemented on some recommendations. He suggested the report be used as the basis for further development in EMC and urged that those involved in this matter familiarize themselves with the report and meet at an early date to determine the ordering of future projects.

It was agreed that a meeting would be held on the morning of February 18, for a general discussion of Volume I of the Sachs Freeman report, which would include Messrs. Buss, Crombie, Gamble, Garber, Hatfield, Higgins. Powell and any others who might wish to attend.

3. Allocations

The Convener outlined the procedure followed in preparation for an ITU Radio Conference, where one of the primary purposes is to modify the International Table of Frequency Allocations to meet current needs. He said it would help greatly if ADP support could be applied to the preparatory work in allocations. He noted the present Allocation Table has been put on the computer but has not yet been fully checked. As the Table is the very heart of frequency management, he asked the Boulder staff to become familiar with the Table so they might make recommendations for improvement in this area.

4. Noise

The Convener referred to a draft Radio Pollution Study Work Statement (see Attachment 2) and asked for OT support, noting that JTAC and AMS are vitally interested. He said Mr. Gamble was the focal point for this study and would be attending a meeting in New York on March 24, on noise studies. He suggested that either Mr. Barghausen or Spaulding of OT might also wish to attend.

As noise is a factor in EMC, the Convener asked all to study the work statement and be prepared to discuss possible approaches to the subject at the next meeting.

5. Receivers

The Convener referred to an exchange of correspondence between the OTP and FCC concerning the establishment of guidelines for receiver performance (see Attachment 3). He said Mr. Julian Dixon (FCC) will brief the EMAC on receiver performance at its meeting on March 18. He invited Messrs. Crombie and Hatfield to attend.

6. Relocation

The move of the Washington contingent of the OT to 1325 G Street was reported as contemplated between March 1 and 15, with the earlier date favored.

7. Sachs-Freeman Work Statement

Referring to the draft Work Statement on Equipment Data Base, which had been previously distributed as Attachment 5 to the Minutes of the meeting of January 19, 1971, Mr. Crombie said he would support the award of the contract to Sachs-Freeman if it were still intended to limit the cost to \$25,000, and, in that regard, provided a copy of his memorandum to Mr. Lowe on this subject (see Attachment 4). He said he would like to take an active part in the description of equipment characteristics which he thinks are important.

As the Convener considered the award of the contract an urgent matter, it was agreed that:

- those involved would meet with Mr. Gamble on February 18 to discuss the draft work statement and put it in final form.
- Sachs-Freeman would be invited to review the modified statement.
- the resultant work statement would be given to Mr. Salaman, looking to the execution of a contract.

The matter of designating a contract monitor was left to OT.

8. New equipments being designed which may affect radio spectrum use

The Convener referred to the JTAC Report on Future Needs and Uses of the Spectrum which had been attached to the Minutes of the meeting on January 19, 1971, and said this had been reviewed by the FMAC. He said some members of the FMAC had expressed the hope that the OT might at some time be in a position to also review a few problems for industry.

9. Other business

The Convener reported that he and Mr. Powell had met and discussed the transfer of people to OT, with the prime objective being to keep essential services functioning.

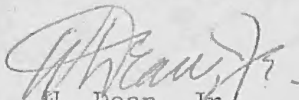
Mr. Crombie referred to the recent visit of Mr. Garber to Boulder and said the latter's discussions with members of the staff had been most helpful.

Mr. Hailey stated for the record that Mr. Corrado had not yet been able to attend one of these meetings because of an unfortunate set of circumstances. As one of those transferred to OT, he was described as a most competent engineer and one who will make significant contributions to the frequency management effort.

It was agreed that Mr. Crombie should and would be put on the distribution list for all IRAC agenda material.

The next meeting was scheduled for March 16, 1971, at 9:30 a.m., in Room 742, 1800 G Street (see Attachment 5 for Agenda).

The meeting was adjourned at 3:20 p.m.



W. Dean, Jr.
Director, Frequency Management

Attachments (5)

SPECTRUM-RELATED TECHNICAL STANDARDS TOPICS REQUIRING IMMEDIATE ATTENTION

ITEM 1. Attention to the Table of Spurious Emissions

The Table of Tolerances for the Levels of Spurious Emissions, covering the spectrum from 10 kHz to 235 MHz, as it now appears in the OTP Manual for frequency management is identical to the international table (App. 4, Radio Regulations, ITU). Recently, TSC (Technical Subcommittee of URAC) developed an extension of the Table to 960 MHz in a similar format, using as input the information from CCIR and from available sources in the Government agencies. This material has been accepted by OTP and will appear in early revisions of the Manual.

Certain deficiencies in the brief table as adopted are important enough to require immediate attention:

1. The bandwidth over which the unwanted emission level is measured should be specified, to make the limits meaningful.
2. The conditions of modulation should be specified for the indicated limits of undesired emission level.
3. The use of terms, such as spurious emissions, out-of-band emission and undesired emission, needs clarifying.
4. Above 960 MHz, at least some general provisions concerning spurious emissions should be included, as there is no guidance for Government users at all.

ITEM 2. Measurement Provisions Required for Radar Standards.

Standards, in the form of Radar Spectrum Engineering Criteria, are being completed for inclusion in the OTP Manual. The following criteria (among others) are likely to be included:

1. The emission levels permitted outside the radar emission bandwidth.
2. The gain and sidelobe characteristics of antennas.
3. The undesired response levels and the undesired radiation levels of receivers.

The work being completed contains no information, however, about the means of measuring the characteristics for evaluation.

Development of the necessary measurement specifications, techniques and definitions is an urgent requirement. It should be started no later than 1 April 1971 and continued until finished. Effort is estimated to be required as follows:

FY 1971 -- 3 man-months
FY 1972 -- 10 man-months

It is anticipated that an ad hoc advisory committee of experts will be utilized in addition to the resources above.

ITEM 3. Basic Requirements for Receivers.

Little attention has been given to promulgation of requirements ensuring that receivers of various radio services and systems are performing in a manner commensurate with the system transmitters and antennas. Certain minimal requirements are specified in the OTP Manual concerning radar receivers, single-sideband HF receivers, and certain of the VHF and UHF receivers, but there has been no focus on optimizing receiver criteria from both an operating AND a spectrum-efficiency viewpoint.

One segment of the receiver subject is under study now in TSC: a study of the desirability of stipulating advisory specifications for receivers used by the general public employing Government-furnished (USCG) radionavigation systems; this is a first approach at grossly indicating a figure of merit by which a prospective user might be aided in judging usefulness.

A broader program is needed urgently to reveal the improvement that can be realized in radio spectrum economy by this passive but very influential element of the communication system. No better appreciation can be had, concerning the tremendous impact of receivers, than by considering the effect that radio astronomy receivers have upon spectrum use.

An urgent requirement is initiation of a study of minimum basic criteria for receivers which can be specified as an umbrella for Government receiver performance.

The study should be initiated prior to FY 72 and continued to completion. It is estimated that resources as follows will be required:

FY 71 -- 0.25 man year for program initiation.

FY 72 -- 2.0 man years plus small contract study.

FY 73 -- 1 man year for review and coordination.

ITEM 4. Radio Noise Standards.

Interference from incidental radio emissions (man made radio-noise) has been increasing, and significantly adding to the pollution of the spectrum, and it is likely that new sources of this radio noise will further increase the noise level by an appreciable amount. Such a situation could result in disruptive interference to established communications-electronics systems unless potential problem areas are recognized now and control measures initiated.

However prior to establishing control measures, it is necessary to determine the parameters of noise that provide a meaningful assessment of its interference potential as well as to establish measurement procedures for these parameters. The effort to determine parameters and established procedures should start as soon as possible and will require the following order of magnitude of resources.

FY 71 -- 1/5 man year

FY 72 -- 2 man years

FY 73 -- 2 man years

RADIO POLLUTION STUDY WORK STATEMENT

A. The general objective of this study is to identify the technical characteristics of man-made electromagnetic noise for the purpose of determining its interference potential on communications-electronics (C-E) equipments and identifying those areas where additional regulations may be required to control this man-made pollution.

All C-E systems operate in an interference environment whose effect on performance is not well understood. In particular, interference from incidental* radio emissions (man-made radio noise) has been increasing, and significantly adding to the pollution of the spectrum, and it is possible that new sources of this radio noise might further increase the noise level by an appreciable amount. Such a situation could result in disruptive interference to established C-E systems unless potential problem areas are recognized at an early stage and control measures initiated.

In any program to acquire radio noise data and to predict its interference potential, the expense of obtaining, processing and storing the information in a data base, as well as the timeliness of the data, are significant considerations. Also the functional utility of the data is of primary importance. In this regard, the basic concerns are:

1. The feasibility of using radio noise data to predict the effects of the environment on a communication-electronics (C-E) system and to assess the contribution of individual noise source to the total environment; and

*For this study incidental radio emissions includes the emission from devices such as neon lights, motors, power lines, thyristors, etc., but does not include emissions from C-E equipment or ISM equipment.

2. The practicality of mapping noise data as a function of time and frequency and/or certain demographic variables.

B. SPECIFIC REQUIREMENTS

The following specific requirements shall be accomplished in all parts of the allocated radio spectrum where incidental electromagnetic radiation has an impact on C-E system design.

1. On the basis of existing data and current knowledge of incidental radio noise, document the major sources of noise and the emission properties of each of these sources.
2. Assess the impact of man-made radio noise on the various C-E system types and explain its significance as a function of geographic location, time and frequency bands.
3. Define the characteristics of noise that should be measured and discuss for each characteristic its importance, usefulness and obtainability. In so doing document:
 - a. The alternative descriptions of radio noise for which suitable data can be measured, predicted and utilized; and
 - b. The advantages and disadvantages of these various descriptions, the existing data on them, their comparative usefulness and where possible the conversion factors to interrelate them.
4. Explain and provide examples of the means through which data on radio noise characteristics can be effectively used to make more efficient use of the spectrum. In support thereof, document:
 - a. The techniques and algorithms for using the data to predict the effects of noise on the various types of communication-electronic systems;

b. The techniques of assessing the contribution of an individual noise source to its intended environment and of evaluating its interference potential;

c. The techniques to predict the interference potential of a large number of similar noise sources on the basis of the data obtained from a single source and the validity of these predictions; and

d. The practicality of mapping data on the radio noise environment as a function of time and frequency and the feasibility of expressing it as a function of demographic variables.

5. Propose an incremental program which is related to electromagnetic pollution and through which more effective use of the spectrum can be obtained. In accomplishing the above explain:

a. The required resources in terms of money, staff and time to implement each of the incremental steps;

b. The additional capability that can be realized from each step;

c. The improvement in spectrum utilization that will result from implementing these steps; and

d. The alternatives to or consequences of not implementing these steps.

6. Considering the overall noise environment, assess the degree of spectrum pollution being caused by incidental radiation and discuss the need for establishing control limits on devices emitting such radiation. In so doing document:

a. The importance of each type of the major identifiable sources of man-made radio noise with respect to its contribution to the noise level in various frequency bands and geographical localities;

b. The existing control standards applicable to identifiable sources of incidental radiation and the advisability of revising and/or extending these standards to a national basis;

c. Those areas wherein additional regulations may be required; and

d. What such regulations should contain.

C. PERSONNEL

In undertaking this program, competent professional personnel and consultants shall be assigned to perform the requirements of this study. Resumes containing complete biographical information on all professional personnel assigned to this study shall be submitted to the OTP.

D. SCHEDULE OF PERFORMANCE AND REPORTS

1. A work plan shall be delivered to the Office of Telecommunications Policy which indicates the significant milestones to be achieved during the accomplishment of each phase of the study.

2. Quarterly progress reports shall be provided to the OTP. These reports will summarize the progress during the previous period, the information developed, a discussion of matters with which difficulty was encountered, and the planned activities for the next reporting period. Statement of working problems shall be reported in writing as soon as possible after a problem is recognized.

3. A revised final report shall be submitted containing information on all of the specific requirements after receipt of OTP's comments on the final draft reports.

E. CONSULTATION

Personnel working on this program shall meet with the representatives of OTP frequently to expedite progress toward the fulfillment of the requirement of this study to report on progress, and to aid in achieving an analysis and program plan which will be useful to the OTP.

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

DIRECTOR

DEC 14 1970

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

Dear Dean:

Thank you for your letter of November 30 concerning the establishment of guidelines for receiver performance.

Your proposal that assumed receiver characteristics be codified and reflected in your rules would be a considerable step forward. Such action would permit receiver designers to evaluate the quality of service to which they wish to design and would permit system operators and the consumer to make more informed purchase decisions.

This Office stands ready to assist in any way and to work with the Commission on possible further efforts once this step is completed.

Sincerely,



Clay T. Whitehead

FEDERAL COMMUNICATIONS COMMISSION

WASHINGTON, D. C. 20554

November 30, 1970

IN REPLY REFER TO:

6100/T 62.17.1

Honorable Clay T. Whitehead
Executive Office of the President
Office of Telecommunications Policy
Washington, D. C. 10504

Dear Mr. Whitehead:

Thank you for your letter of October 21, 1970, concerning establishment of guidelines for receiver performance.

We agree that determinations of receiver performance parameters are vital to the planning, design and development of complete radio systems.

The Commission has already taken into account practical, or anticipated, receiver performance characteristics in connection with allocation of radio frequency space and transmission standards for most of the radio services. Recent examples include the splitting of land mobile channels in the band 450 - 470 MHz from 50 kHz to 25 kHz, and the allocation of VHF maritime mobile channels with 25 kHz spacing. In such instances, receiver characteristics such as receiver selectivity, frequency stability, bandwidth, etc. have been evaluated and have been taken into account as assumed receiver characteristics, in determination of the transmitting system parameters which are regulated by the Commission.

In view of the indicated need for explicit codification of the assumed receiver characteristics, our staff expects to codify, in our rules, the relevant assumed receiver performance characteristics for the respective services. These parameters will be derived from our records of the respective rule making proceedings. These assumed receiver characteristics will not be mandatory, but will serve as a guide to users in their selection of receivers having performance compatible with the allocations and engineering design for each complete system. However, users of receivers which do not meet the designated characteristics will be put on notice that they will not receive protection from harmful interference which is due to the use of such non-conforming receivers.

After codification of those assumed receiver performance characteristics which have been established in previous proceedings, we and other interested parties will be in a position to review the current situation and to plan improvements. These planned improvements will, of course, encompass all aspects of systems design, including receiver characteristics.


Honorable Clay T. Whitehead

2

In view of the more immediate aspects of our planned work on this problem, it seems to us that consideration of appointing a joint group to study the matter should be deferred, at least until after our codification of previously established assumed receiver characteristics has been completed. At that time, we will have a clear presentation of the present situation and a basis for efforts toward further improvements of complete systems.

In the meantime, please be assured of our intent to proceed expeditiously in this matter and that we shall always welcome any data or suggestions which you consider potentially useful. Our designated representative is Julian T. Dixon, Assistant Chief Engineer, in Charge of the Technical Division.

Sincerely,


Dean Burch
Chairman



EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF TELECOMMUNICATIONS POLICY

WASHINGTON, D.C. 20504

October 21, 1970

DIRECTOR

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

Dear Mr. Chairman:

The lack of adequate measures in the design and development of receivers, from the standpoint of their susceptibility to interference, has been a matter of concern for some time. The Joint Technical Advisory Committee report "Spectrum Engineering - The Key to Progress" touched on this point, as did the 1968 Task Force Report on Communications Policy.

While the FCC has, perhaps wisely, not ventured into the field of receiver regulation, per se, there are problems arising which point to the need for a systems engineering approach to be taken in the interest of improved spectrum management. The enclosure contains examples of problems in this area. Additional difficulties are to be expected due to the characteristics of certain foreign import radio products.

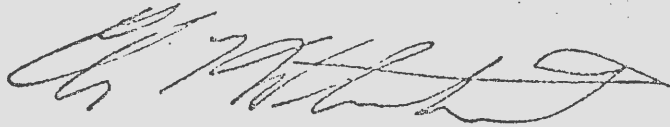
I consider that given adequate guidelines, the industry might regulate itself in this regard and this is a desirable objective. Some mechanism, however, would appear necessary to afford greater consumer/user protection than afforded at present.

It is suggested that we appoint a joint group to study the matter and recommend procedures and actions which might be taken short of mandatory regulation to ensure that receiver characteristics are given increased consideration. For instance, it might be possible to place greater emphasis on the procedure wherein the allocation of spectrum and authorization of transmitters is made on the basis of assumed receiver characteristics. Also, perhaps a "labeling" system would have merit which would permit the consumer to evaluate the "usability" of receivers prior to purchase.

-2-

If you are in agreement that we should jointly explore this area, I designate Mr. W. Dean, Jr. of my staff to represent this Office.

Sincerely,

A handwritten signature in dark ink, appearing to read "Clay T. Whitehead", with a stylized, sweeping flourish at the end.

Clay T. Whitehead

Enclosure

INFORMATION WITH RESPECT TO
THE NEED FOR RECEIVER STANDARDS

Some examples of receiver limitations affecting national frequency assignment practice are referred to in the following text. The implication intended is a need for additional investigation of all system technical factors involved in such examples and in other similar examples which might be cited. It is not intended to imply that the receiver performance is the sole element needing attention. Rather, the need for Systems Engineering is emphasized.

The evaluation of each example is necessarily not exhaustive, since it results from a brief review of material readily available on the case. Supplemental or corrective information with which to more accurately characterize these examples is welcomed.

1. For every UHF TV Channel assignment, 108 MHz (18 channels) are excluded from TV use for a radius of at least 20 miles (area of about 1250 sq. mi.) around the transmitter. The rules setting up these restrictions were established in 1952 on the basis of receiver performance. The restrictions take into account interference from various responses as noted below:

<u>Responses</u>	<u>Amt. of Spectrum Excluded</u>	<u>Min. Trans. Separation</u>
IF Beat Freq.	24 MHz (4 ch)	20 mi.
Intermodulation	60 MHz (10 ch)	20 mi.
Adjacent Channel	12 MHz (2 ch)	55 mi.
Oscillator Rad.	12 MHz (2 ch)	60 mi.
Sound Image Freq.	12 MHz (2 ch)	60 mi.
Picture Image Freq.	12 MHz (2 ch)	75 mi.
Cochannel	6 MHz (1 ch)	155 mi.

The extent of spectrum space so affected by each UHF TV assignment is depicted on the attached chart.

Reference Document: FCC, Sixth Report and Order, April 11, 1952.

Enclosure

2.

2. The FAA has noted that TV receivers tuned to channel 4 (66-72 MHz) or 5 (76-82 MHz) have experienced interference from the primary emission of aeronautical radionavigation systems (Marker Beacons) in the band 74.6-75.4 MHz.

Because of this interference potential, the FAA must make a field analysis of the receiver environment when siting new systems.

Reference: FAA Staff

3. Along the coast, Naval air search radar operations authorized in the band 216-225 are restricted to 222-225 MHz. That is, only 3 MHz of the allocated 9 MHz in the band is useful in certain geographical areas for the allocated primary use. The resulting increased concentration of operations in the 222-225 MHz band has compounded the Navy's EMC problems and reduced its flexibility. The restriction was imposed because of the interference caused to TV receivers tuned to channel 13 (210-216 MHz). The interference was a result of the radar's primary emission being detected by the TV receiver as an adjacent channel response,

Reference Documents: a) "Report of 'P Band' Radar Interference to Television Receivers", (Confidential). RCA Service Company, January, 1964.

b) "Determination of Fleet Silence Distances to Avoid Interference to Television Services". (Confidential) Jansky & Bailey, September, 1962.

c) OPNAV INSTRUCTION 002410.12D, 20 March 1968.

d) CINCLANTFLT INSTRUCTION 02410.6C, 20 August 1964.

4. In discussing certain proposed high power radar systems, one of the major concerns was the interference potential to the mobile and TV receivers in nearby frequency bands. The anticipated interference to these receivers was not from the spurious emission of the radars at the tuned frequency of the receivers, but from the spurious response of the receivers at the main emission frequencies of the radar.

Reference: IRAC Documents

3.

5. The data gathered on receivers by the Television Allocation Study Organization are evidence of the wide variability in the quality of equipment in the public domain (e.g., UHF receiver 3 dB bandwidth; min. 10 MHz, max. 60 MHz) and the consequential wide range in the susceptibility of such equipment to out-of-band radiation. In making an analysis of the potential interference to these receivers from the main emission of other systems, assuming values for the receiver characteristics of "poor equipment", prohibitive restrictions are indicated for the interfering system. If, in contrast, an interference analysis assumes the characteristics of better equipment, the poor equipment if used may suffer overwhelming interference and associated public relations problems may result (e.g., Air Force Experience with FPS-24 radar in the Pittsburgh area).

A minimum performance standard for receivers would eliminate some of the poorer equipment from the market and would provide an official basis for compatibility analyses.

Reference Document: Report of the Television Allocations Study Organization, March 6, 1959.

6. The requirement for marine radio beacon systems (285-325 kHz; 405-415 kHz) is increasing, but due to the "poor quality" of the many receivers in the hands of the general public, the Coast Guard is unable to activate any more stations from Maine to Cape Hatteras without causing an unacceptable interference potential.

Though the occupied bandwidth of the Coast Guard transmitters is only 1.1 kHz, the receivers in use by the small boat owners have a 3 dB bandwidth of about 4 kHz. Thus, adjacent channel interference is a major problem. Also, since the sensitivity (5 μ V) of a typical inexpensive receiver is better by 20 dB than the sensitivity of more sophisticated systems (50 μ V) and the design criteria upon which the Coast Guard based the system, cochannel interference is also a problem.

Presently the Coast Guard is undertaking an in-depth study of this matter with a view to developing an improved overall system for service to the small boat owners.

Reference: Coast Guard Staff.

4.

7. The Government is generally unable to use land mobile channels in the vicinity of 173 MHz in some areas where TV Channel 7 (174-180 MHz) is in use. This restriction is a result of interference to home TV receivers from the primary emission of mobile transmitters.

The sound-carrier image-frequency of TV Channel 7 is 170.750 MHz and is particularly susceptible to interference. FCC Report R-6306 shows 170.750 \pm 0.10 MHz as "taboo".

Reference: IRAC Doc. 8367 and FCC Report R-6306.

8. Frequencies for educational FM stations (88-92) must be carefully selected since television receivers (Ch 6; 82-88 MHz) are susceptible to interference from the FM transmitters. According to information from the FCC staff, educational FM stations cannot be assigned in some areas because of this susceptibility.

9. Military weather radar systems (FPS-77) were built with an image response equal to the primary response and unacceptable interference resulted. The procurer was forced to make extensive modifications to the receivers to ensure that the systems would operate satisfactorily in their intended environment.

Reference: Air Force Staff

10. The Radar Engineering Design Objectives adopted for promulgation by the DTM, and similar radar criteria adopted by DOD in MIL-STD 469, are the earliest established provisions of this kind. As these relate to receiver criteria, the stipulations are minimal; they concern: (1) acceptance bandwidth described only in terms of pulse duration and ignoring pulse rise and fall time; (2) spurious response of 60 dB or better; (3) image response suppression to maximum extent practicable; (4) stability "commensurate" with that of the transmitter; and (5) local oscillator radiation of -10 dBm or less. The program in the Technical Subcommittee (TSC) of IRAC to seek agreed standards for acceptance as requirements, is proceeding slowly, for a number of understandable reasons among which are the following:

a. Agencies are reluctant to encourage promulgation of requirements which impact adversely on expenditures, and the expenditures for radar systems are notably large;

5.

b. Extensive improvements in radar emission characteristics awaits the development of components and techniques not generally associated with the present generation of radar equipments, (e.g., klystrons, Gaussian pulse shapes, real interference-suppression);

c. Agreement is lacking on definitions of criteria -- a common language is not used; and

d. Stipulation of criteria is of little value because measurement of performance is not adequately developed or uniformly applied.

These difficulties are being dealt with in the TSC in connection with radar as well as other spectrum using systems, but national attention is required in a forum encouraging wider participation because of aspects such as (c) and (d) above.

11. The IRAC, in striving to keep pace with the state-of-the-art and to accommodate the ever increasing demand on the radio frequency spectrum, has reduced channel spacing and has required conversion to narrowband technical standards in a number of land mobile bands.

A problem has developed in this regard with respect to local weather broadcasts operated continuously by the Department of Commerce on 162.55 MHz. Although transmitters in this service have been converted to narrowband (16F3) emission and this information has been promulgated with the weather information in repeated broadcasts, the vast majority of receivers in the hands of the public remain inexpensive wideband devices.

This resulted recently in a case of interference between a Government operation (Veterans Administration) on 162.5875 MHz, with 16F3 emission, and the reception by the public on a wideband receiver of the weather broadcasts from 162.55 MHz. The Veterans Administration was forced to move to another frequency. As an additional measure, to minimize the chance of a similar incident in the near future, a number of changes were made in the channeling plan for the band 162-174 MHz. Chief among these were the designation of the frequency 162.575 MHz for Commerce use, with 16F3 emission, and the deletion of the channel centered at 162.5875 MHz.

6.

Although the foregoing action is not considered to be good frequency management, it was taken as an expedient to assure the implementation of the mandate to the Department of Commerce to provide the best and widest dissemination of weather information to the public. It is understood that there are 24 transmitters providing service at this time, by the end of 1970 there will be approximately 40 transmitters, and in 3-5 years as many as 300. It is also estimated that there are already 2-2½ million receivers for this service in the hands of the public today. The projected growth illustrates clearly that the receiver difficulty will intensify unless remedial measures are taken. By looking through the ads, one notes that receivers are being made available with wideband characteristics throughout the band 162-174 MHz, although, with but few exceptions, channeling is 25 kHz or less.

Frequency Space Affected by Typical UHF TV Channel Assignment

Co-channel (155 mi.)

Adjacent Channel
(55 mi.)

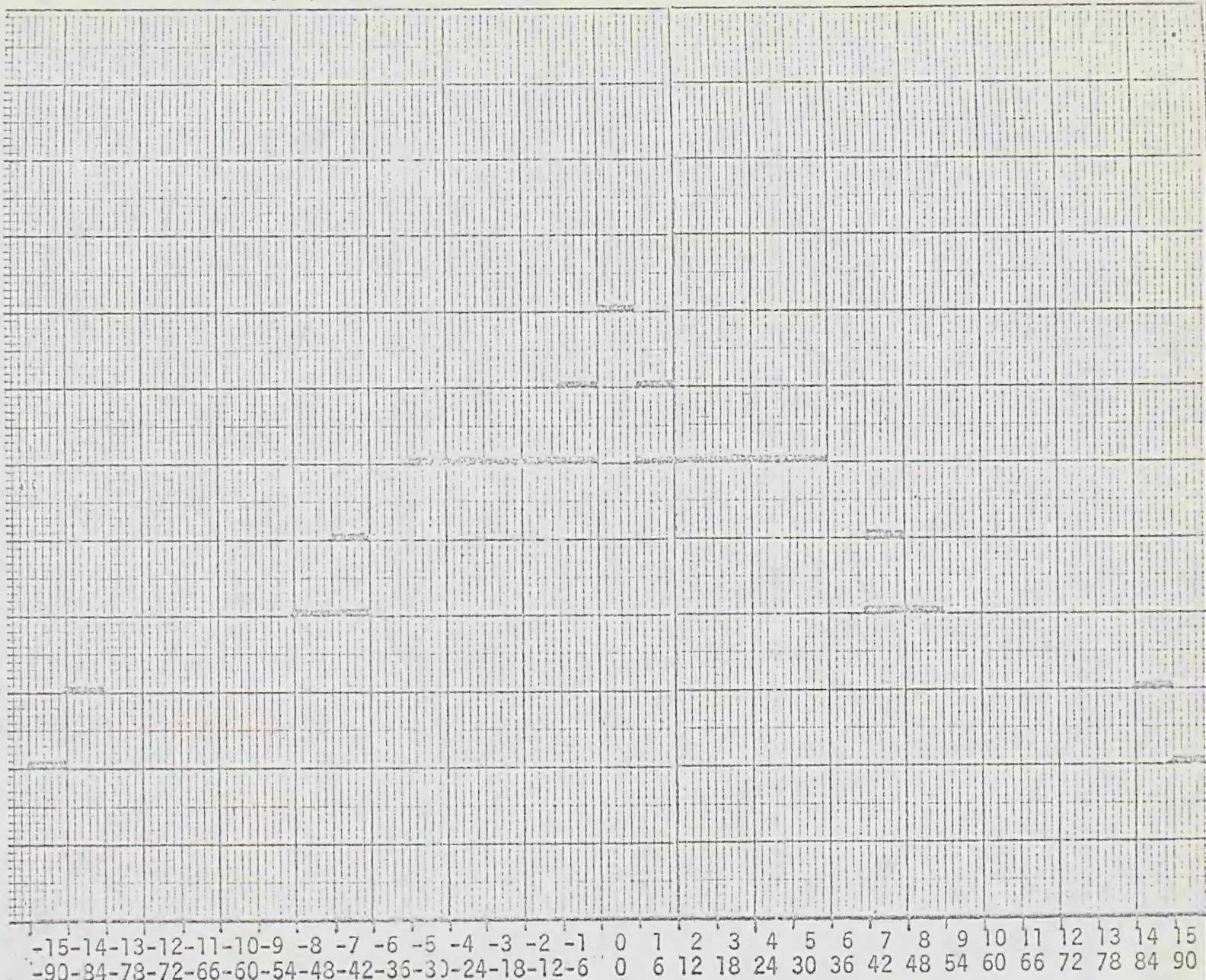
Intermodulation (20 mi.)

Oscillator Rad. (60 mi.)

IF Beat Freq. (20 mi.)

Sound Image (60 mi.)

Picture Image (75 mi.)



Relative Channel Numbers
Relative Frequencies - MHz



U.S. DEPARTMENT OF COMMERCE
Office of Telecommunications

INSTITUTE FOR TELECOMMUNICATION SCIENCES
Boulder, Colorado 80302

Date:

February 16, 1971

Reply to
Attn of:

D. D. Crombie/ITS

Subject:

Sachs-Freeman Associates Proposed Work Statement - Equipment Data Base

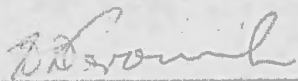
To:

Robert Lowe, OT

We have reviewed the subject work statement and also the OTP staff study on an improved data base for frequency management that was adopted by IRAC on August 11, 1970. On the basis of the review of these documents, we recommend that a contract should be awarded to Sachs-Freeman Associates to conduct the described study.

In doing so, we have only two reservations:

- (a) The educational aspects of the contract for OT/ITS and OTP personnel should receive added emphasis. This could be accomplished by active, day-to-day consultation with contractor personnel, briefings, as well as through the final report.
- (b) We have not reviewed the resumes of or conducted interviews with the proposed contractor personnel and, instead, we have depended on informal comments on their previous work.


D. D. Crombie

cc:

W. Dean, OTP ✓

AGENDA
OTP/OT MEETING
MARCH 16, 1971

1. Electromagnetic Compatibility -- Further discussion on scope and magnitude of over-all area, including:
 - a) Analysis Capability -- Higgins
 - b) Data Base -- Raish
 - c) Automatic Data Processing -- Hailey.
 - (1) OT/OEP Meeting
 - (2) Contact with HRB Singer programmer
 - (3) Review of Work Statement on Time Sharing
 - d) Monitoring -- Jansky
2. Status of Action Items:
 - a) Propagation -- Higgins/Haydon
 - b) Specific Problems -- Jansky/Hatfield
 - c) Standards -- Stelzenmuller/Gamble
 - d) Interface between Frequency Management and EMC -- Kirkevold/Hatfield
 - e) Interface between EMC needs and current OTP data base -- Hatfield/Higgins
3. Allocations
4. Noise
5. Receivers
6. Relocation
7. Sachs/Freeman Work Statement
8. New equipments being designed which may effect radio spectrum use - JTAC 65.1 (copy attached to Minutes of January 19, 1971).
9. Versar Effort
10. Other business.