Administratively
~~CONFIDENTIAL~~

DECLASSIFIED
E.O. 12958, Sec. 3.4
NLN-NSC Files · 313-1-3-Y
By CIA Date 2009/04/20

CENTRAL INTELLIGENCE AGENCY

WASHINGTON, D. C. 20505

OFFICE OF THE DIRECTOR

12 DEC 1969

MEMORANDUM FOR: Honorable Peter M. Flanigan
Assistant to the President

SUBJECT : Office of Telecommunications Policy

I am gratified to note that your study of 6 December 1969 recommends the establishment of an Office of Telecommunications Policy as an independent entity within the Executive Office of the President. The Central Intelligence Agency has previously endorsed such an action. I reaffirm that endorsement.

National Security Action Memorandum 252 of 11 July 1963 states:

> "In furtherance of the general objectives stated in NSAM 201 dated 26 October 1962, a National Communications System (NCS) shall be established and developed by linking together, improving, and extending on an evolutionary basis, the communications facilities and components of the various Federal Agencies."

As a result of the above, our telecommunications system, in addition to giving vital support to this Agency's operations, provides secure service to and interconnects with other departments and agencies operating abroad. Many of these also have national security missions. Thus, we are a major contributor to the NCS effort, particularly in the national security area.

I agree that a study of the NCS and its objectives should be undertaken. An updated NCS with clearly defined objectives and responsibilities could effectively complement the proposed Office of Telecommunications Policy. The collective communications expertise available within the NCS organization could be of great assistance to the Director of Telecommunications Policy in the solving of ongoing and future telecommunications problems of the Federal Government. In view of our extensive involvement in the NCS we would expect to participate in this study inasmuch as the outcome could have an impact upon this Agency's operations.

Richard Helms
Director

cc: Dr. Kissinger

Administratively
~~CONFIDENTIAL~~

GROUP 1
Excluded from automatic downgrading and declassification

~~CONFIDENTIAL~~

CENTRAL INTELLIGENCE AGENCY

WASHINGTON, D.C. 20505

OFFICE OF THE DIRECTOR

12 DEC 1969

MEMORANDUM FOR: Honorable Peter M. Flanigan
Assistant to the President

SUBJECT : Office of Telecommunications Policy

I am gratified to note that your study of 6 December 1969 recommends the establishment of an Office of Telecommunications Policy as an independent entity within the Executive Office of the President. The Central Intelligence Agency has previously endorsed such an action. I reaffirm that endorsement.

National Security Action Memorandum 252 of 11 July 1963 states:

> "In furtherance of the general objectives stated in NSAM 201 dated 26 October 1962, a National Communications System (NCS) shall be established and developed by linking together, improving, and extending on an evolutionary basis, the communications facilities and components of the various Federal Agencies."

As a result of the above, our telecommunications system, in addition to giving vital support to this Agency's operations, provides secure service to and interconnects with other departments and agencies operating abroad. Many of these also have national security missions. Thus, we are a major contributor to the NCS effort, particularly in the national security area.

I agree that a study of the NCS and its objectives should be undertaken. An updated NCS with clearly defined objectives and responsibilities could effectively complement the proposed Office of Telecommunications Policy. The collective communications expertise available within the NCS organization could be of great assistance to the Director of Telecommunications Policy in the solving of ongoing and future telecommunications problems of the Federal Government. In view of our extensive involvement in the NCS we would expect to participate in this study inasmuch as the outcome could have an impact upon this Agency's operations.

/s/ Richard Helms

Richard Helms
Director

cc: Dr. Kissinger

~~CONFIDENTIAL~~

OUT

OUT TO	FILE NUMBER OR NAME OUT	DATE	OUT TO	FILE NUMBER OR NAME OUT	DATE	OUT TO	FILE NUMBER OR NAME OUT	DATE
DSS 9/11/12	Box 7 (Jackie's labels), Folder "Domestic Satellite (Outside Interest)"							
	8) **Memo to J. D. O'Connell fm Col. Ellis F. Anderson, USA, dtd. 8/22/68, subj: Costing of the "New Capability" Proposed by the Central Staff, 1 p., "Administratively Confidential" (hand-annotated)**, w/11 enclosures: 1) Scope of the Proposed Government Capability to be Set Up in Telecommunications, dtd. 8/14/68, 4 pp., no markings; 2) Org Chart– Central Staff Proposed Telecommunication Capability, dtd. 8/22/68, 1 p., no markings; 3) "Placement of functions within the 'type organization,'" undated, 5 pp., no markings; 4) Cost chart, undated, 2 pp., no markings; 5) Costing of Proposed "New Capability for the National Communications Directorate," dtd. 8/22/68, 5 pp., no markings; 6) Memo to [blank] fm CELathey dtd. 8/21/68, subj: Federal-State Requirements and Proposed Task Force Capability 4 pp., no markings; 7) Rationale for Determining the Staff Required for the "New Capability" in the Frequency Management Area, undated, 2 pp., no markings; 8) International Telecommunications, undated, 2 pp., no markings; 9) Telecommunications Technology, undated, 3 pp., no markings; 10) Administration, undated, 2 pp., no markings; 11) Management (Director's Office), undated, 1 p., no markings				

SMEAD®
UPC 51910 No. 125-OG
smead.com • Made in USA
SUSTAINABLE FORESTRY INITIATIVE
Certified Fiber Sourcing
www.sfiprogram.org

STUDY OF

FEDERAL COMMUNICATIONS

ORGANIZATION



BUREAU OF THE BUDGET
EXECUTIVE OFFICE OF THE PRESIDENT

December 1968

STUDY OF

FEDERAL COMMUNICATIONS ORGANIZATION

December 1968

FEDERAL COMMUNICATIONS ORGANIZATION

Table of Contents

Summary of conclusions and recommendations

		Page
I.	Background	1
	Organizational problems	1
	Task Force recommendations	4
	Study methods	6
II.	History	8
III.	Findings and conclusions	13
	Organization for policy planning	13
	Government telecommunications operations	23
	Special problems	33
IV.	Recommendations	39

FEDERAL COMMUNICATIONS ORGANIZATION

Summary of Conclusions and Recommendations

In his Message on Communications Policy of August 14, 1967 the President directed the Bureau of the Budget "to make a thorough study of existing governmental organization in the field of communications and to propose needed modifications." This report contains the findings, conclusions and recommendations of the Bureau of the Budget in response to the President's request.

Major Conclusions

We have concluded that there is a need for:

(1) a strengthened organization for policy planning, formulation, and direction of Federal communications activities.

(2) a reorganized and strengthened National Communications System within the Department of Defense.

(3) an improved procurement and technical assistance effort on behalf of those Federal agencies which do not now have their own resources in this field.

(4) a unified frequency spectrum management process.

(5) a coordinated technical assistance program for State and local governments in this area.

Program Recommendations

1. Policy planning, formulation, and direction

Recommendation: A new and strengthened central policy and long-range planning organization for communications should be established in the executive branch. The nucleus for this organization should be created using as a base the Office of

Telecommunications Management now in the Office of Emergency Preparedness.

2. Operations

Recommendation: We recommend: (1) the transfer of the Federal Telecommunications System to the Department of Defense for merger with the military administrative communications systems to provide service to all Federal agencies -- this transfer should be subject to an implementing study by the National Communications System Staff to confirm the feasibility of the transfer; and (2) a study of the appropriate location and combination of the roles and functions of the Executive Agent and the Manager of the NCS within the Office of the Secretary of Defense in order to provide unified guidance to the National Communications System (NCS) from within the Defense Department. An effective mechanism should be provided whereby the member agencies of the NCS can advise and be consulted by the Manager, NCS.

Recommendation: The general policy guidance now provided the NCS Executive Agent (Secretary of Defense) by the Director of Telecommunications Management should become a responsibility of the new communications policy organization.

3. Procurement assistance to agencies

Recommendation: The National Communications System organization within the Department of Defense should provide a central source of procurement and procurement related assistance for use by executive agencies.

4. Research

Recommendation: The new communications policy organization should have a limited in-house research capability to support its frequency spectrum management and general policy development responsibilities.

5. Spectrum management

Recommendation: The management of that portion of the frequency spectrum assigned to Federal agencies should be a function of the new communications policy organization. If the proposal for a unified spectrum manager is adopted -- the total function should be placed in the new organization.

6. Technical Assistance to Federal agencies, State and local governments

Recommendation: The new communications policy organization should coordinate actions taken by Federal agencies on requests for technical assistance in communications from State and local governments and should provide such assistance to Federal agencies who lack in-house capability.

Organizational Recommendation

Recommendation: We believe that the proposed communications policy organization should be established in either the Department of Commerce or the Department of Transportation.

FEDERAL COMMUNICATIONS ORGANIZATION

I. Background

The President's Message on Communications Policy of August 14, 1967 announced the appointment of a Task Force on Communications Policy composed of senior representatives of 15 Federal departments and agencies. The Task Force was directed to make a comprehensive study of Federal communications policy. The President's Message also directed the Bureau of the Budget to undertake a separate study of the Federal Government's organization for communications activities. The President said:

> "I have asked the Bureau of the Budget to make a thorough study of existing governmental organization in the field of communications and to propose needed modifications."

This study is in response to the President's request.

A. Organizational problems

There were a number of concerns regarding the Federal Government's organization for managing its communications responsibilities which led to this study:

(1) Policy coordination

There appeared to be no single agency effectively accomplishing comprehensive and long-range communications policy-making and the coordination of multi-agency efforts. While policy-making and coordinating tasks have been assigned, authority in this area seemed fragmented. Communications issues having national significance (e.g., domestic communications satellite decisions) seemed to be handled on a piecemeal basis without overall evaluation by a single policy agency. For lack of central guidance, it appeared that Presidential options could be foreclosed by

preemptive agency action or by the lack of adequate staff to evaluate policy alternatives. One objective of this study was to evaluate the need and organizational alternatives for strengthening and centralizing Federal policy-making and long-range planning capabilities.

(2) Federal use of communications

Each year the Federal Government spends billions of dollars in procuring and providing communications equipment and services. Again, while coordinating assignments have been made, there appeared to be no organization adequately evaluating or coordinating agency procurement policies to assure the most effective utilization of the Government's purchasing power in the communications field. The unfilled need for a centralized procurement policy organization in this field, according to some, may well represent an important gap in the organization and management of the Federal Government's user role in communications.

(3) Federal communications research and development

The Government's research and development activities in communications are scattered among a number of Federal agencies. Since a large part of the Government's ability to carry out its responsibilities in the communications field is tied closely to its ability to make increasingly complex technical judgments, this study investigates the need for a more centralized focus for Federal communications research programs to assist in making such judgments.

(4) International communications

The President's Message on Communications Policy indicated the complexity of international problems related to communications. While the State Department is responsible for the conduct of international negotiations in communications, the issues are difficult to resolve and there is a need for strong technical support to the State Department by other Federal agencies. This study evaluates alternatives for providing specialized technical competence in support of the State Department's role in international communications.

(5) Federal-State-local relations

Considerable Federal funds are provided for State and local government programs requiring ancillary communications facilities and services. This study considers the need for coordination of such non-Federal governmental communications requirements in order to prevent unnecessary demands for frequency allocation and duplications of expensive facilities -- and the organizational alternatives for providing technical assistance to State and local government units.

(6) Government-industry relations

Since the early years of Federal involvement in communications, the Government's relationship to private industry has been primarily one of regulation. The Task Force on Communications Policy undertook a review of Federal regulatory policy. The Task Force conclusions in this area have organizational implications which are discussed later in this study. In

addition, we examined the role of private industry in advising and assisting the Federal agencies in meeting their objectives in communications.

It is clear from the issues cited above, that most of the organizational questions in this field are closely related to Federal communications policy decisions and program objectives. Our study has therefore been closely related to the work of the President's Task Force.

B. Task Force organizational recommendations

The President's Task Force on Communications Policy concluded that "the patchwork nature of the present structure is not conducive to optimum performance of the telecommunications activities and requirements of the Federal Government." While the Task Force did not make recommendations regarding a specific organizational solution for the problems which it identified, a number of recommendations were made which have important implications for this study. These recommendations are:

1. A new Federal telecommunications capability is urgently needed to integrate the various roles in which the Government is now engaged.

Without supplanting on-going mission-support telecommunications activities or Federal Communications Commission regulation, the proposed capability should:

-- have the necessary multidisciplinary capability to advise and assist the FCC by engaging in communication systems analyses, long-range economic and technological

forecasting, delineation of technical and service standards, and review of major system design and investment choices of the industry;

-- have centralized responsibility for spectrum management, including government research and development related to spectrum;

-- have responsibility for studying communications-related research and development for potential application to the mission needs of other agencies, and for the accomplishment of broader national goals;

-- have responsibility for initiating, monitoring and evaluating prototype experiments and pilot programs, and providing assistance to other agencies in connection with such experiments and programs;

-- provide telecommunications advice and assistance to other Federal agencies, as well as State and local government, on request, especially in connection with procurement;

-- engage in long-range policy planning.

2. The FCC's common carrier regulatory capability should be strengthened through a more comprehensive legislative mandate, increased resources, refocus of priorities and improved methods and principles of regulation.

These recommendations and others will be discussed later in this paper in the section entitled "Findings and Conclusions."

C. Study methodology

Our study consisted of a reconnaissance survey of Federal communications activities and an in-depth study of selected organizational problems in the communications field.

First study phase

The objectives of the reconnaissance were:

-- to gain an overview and insight into agency missions and activities in the communications field in two major areas: policy formulation and planning; and the acquisition and utilization of communications services and facilities.

-- to obtain agency suggestions for an in-depth study of major organizational issues.

We met with representatives of 13 Federal agencies: the Federal Communications Commission; General Services Administration; Office of Science and Technology; National Aeronautics and Space Council; National Aeronautics and Space Administration; Departments of Commerce, Defense, Health, Education, and Welfare, Justice, Labor, Transportation and State; and the Office of Telecommunications Management.

Our preliminary work with the Federal agencies indicated that a balanced development of issues and problems would be enhanced by discussions with representatives of the major non-governmental groups involved in telecommunications. We met, therefore, with senior representatives of the following companies and public groups: American Telephone and Telegraph Co., International Telephone and Telegraph Co., National Association of Broadcasters, National Cable Television Association, Western Union,

International Business Machines, Hughes Aircraft, General Telephone and Electronics, Sperry Rand Corporation, Ford Foundation, and RCA World Communications, Inc.

Second study phase

At the conclusion of the reconnaissance survey, three major areas were selected for additional study: (1) Federal policy formulation, coordination, and long-range planning; (2) the role of the Government as an operator of and customer for communications systems, facilities and equipment; and (3) Federal communications research and development activities.

In order to receive the more detailed views of a limited number of Federal agencies (Departments of Defense, Transportation and Commerce, the General Services Administration, NASA and the Office of Telecommunications Management in the Office of Emergency Preparedness) on these problem areas a series of organizational "models" was developed to indicate the range of potential organizational changes in the communications field. The models attempted to deal with the selected problems which appeared to exist in the field. After a series of brief presentations of the issues and organizational alternatives, each agency responded to a questionnaire. Finally, a meeting was held with a number of the industrial representatives contacted during the first phase of our study to obtain their views on the issues developed.

II. Organizational History

The Communications Act of 1934 (47 U.S.C. 151-609) provided the foundation for the present organization of Federal telecommunications activities. The Act established the present seven-man Federal Communications Commission (replacing both the former Federal Radio Commission with its responsibility for radio frequency management and the Interstate Commerce Commission responsibility for commercial telephone and telegraph regulation). The 1934 Act preserved the President's existing authority for assigning frequencies used by the Federal Government and control of communications during a national emergency.

Pressures for greater control and coordination of telecommunications resources were generated during the Second World War. The Defense Communications Board was created in 1940 (Executive Order 8546, September 1940) to act as the central focus for major governmental communications decisions during the pre-war emergency. Renamed the Board of War Communications at the start of World War II (Executive Order 9183, June 1942), the Board consisted of the Chief Signal Officer of the Army, the Director of Naval Communications, representatives of the Departments of State and Treasury and the Chairman of the Federal Communications Commission. The Board functioned as a planning and coordinating committee for the control of radio and wire communications during periods of national emergency until it was abolished early in 1947.

Post World War II

Since the war, the executive branch has undertaken several studies of telecommunications policy, but each of those surveys tended to focus on one or two aspects of the total problem rather than searching for

answers that might cut across the entire communications field. The proposals which resulted related to the day-to-day operating problems faced by the Government and not to the need for effective policy-making machinery for both national and Government-wide problem solving. There has been, however, a recognition that the Federal Government required a substantial policy-making capability in this field even though few specific proposals emerged.

For example, in their desire for more frequency space, Federal agencies were forced to compete with growing demands on the spectrum from non-Federal users. This led President Truman to establish the President's Communications Policy Board (Executive Order 10110 of February 1950). His charge to the Board points up the difference between a comprehensive study and a focus on current issues:

> "Developments in this field during and since the war have created a number of problems which require careful consideration at this time ... . The most pressing communications problem at this time, however, is the scarcity of radio frequencies in relation to the steadily growing demand ... . Problems such as these cannot adequately be considered on a piecemeal basis. They must be viewed as parts of the broader problem of developing a total national communications policy ... . An overall objective review of the entire situation is urgently needed."

The Board's report, while citing the need for a new agency "to give coherence to the Government telecommunications structure," viewed this largely in the context of "fields where the interests of private and Government telecommunications users are in conflict," that is, in frequency allocation.

As a result of the Board's report, a Telecommunications Advisor to the President was established in the Executive Office of the President

(Executive Order 10297, October 1951) to advise and assist the President in communication matters concerning the executive branch. The Inter-department Radio Advisory Committee (established in 1922 by the Secretary of Commerce to assist in the allocation of frequency spectrum to Federal agencies) was assigned the responsibility of assisting the Telecommunications Advisor.

The Eisenhower reorganization

President Eisenhower abolished the Office of Telecommunications Advisor (Executive Order 10460, June 1953) and transferred its functions to the newly created Office of Defense Mobilization -- ODM (Reorganization Plan No. 3 of 1953). The Director of Defense Mobilization named an Assistant Director for Telecommunications and created a new Telecommunications Office to carry-out communications management functions assigned by the President. In 1957, President Eisenhower further strengthened the ODM communications function by delegating his wartime communication powers reserved under the Communications Act of 1934 (Section 606) to the Director of Defense Mobilization.

The next year the Office of Defense Mobilization was merged with the Federal Civil Defense Administration to form the Office of Civil and Defense Mobilization (OCDM) within the Executive Office of the President (Reorganization Plan No. 1 of 1958). The telecommunications functions of ODM then became a responsibility of the new agency.

Later in 1958, a Special Advisory Committee on Telecommunications was established by the Director of OCDM. The focus of the Advisory Committee's deliberations was the Government's management of its own

communications facilities. The Committee recommended the creation of a National Telecommunications Board within the Executive Office to advise the President on Federal communications matters. The Board was not established.

The Kennedy effort

A major effort to call attention to a gap in long-range and comprehensive policy-making in telecommunications emerged from an examination of regulatory agencies for President-elect Kennedy under the direction of James M. Landis. Landis found FCC weak in policy-making and recommended establishment of an Office for Coordination and Development of Communications Policy within the Executive Office and transfer to this Office of all powers assigned to OCDM relating to telecommunications. Instead, the President limited changes primarily to the management of Government telecommunications.

President Kennedy established the position of Director of Telecommunications Management (Executive Order 10995, February 1962) as one of the Assistant Directors of the Office of Emergency Planning -- the successor agency to the OCDM (Act of September 22, 1961 and Executive Order 11051, September 1962). The President also delegated his authority to amend, modify or revoke Government frequency assignments to the Director of Emergency Planning (Executive Order 10995, February 1962) who in turn redelegated that function to the Director of Telecommunications Management.

During this period technological advances also made possible the use of satellites for communications and led to a new role for the Federal

Government in telecommunications. The Communications Satellite Act of 1962 (47 U.S.C. 701-44) provided for the establishment, ownership and operation of a commercial satellite communications sytem through a Government-chartered private Communications Satellite Corporation (COMSAT). The Act authorized the President to "exercise his authority so as to help attain coordination and efficient use of the electromagnetic spectrum and the technical capability of the system with existing facilities both in the United States and abroad" and to insure broad foreign participation in the establishment and use of a satellite system. The Act assigned NASA responsibility for assisting COMSAT in research and development requirements and advising the FCC on technical characteristics of the communications satellite system. In addition, it authorized the FCC to regulate important aspects of ground station construction and operation and assigned the State Department the role of coordinating agency views in international negotiations. Rapid progress in satellite communications led to creation in June 1963 of an ad hoc Communications Satellite Group, chaired jointly by the Deputy Attorney General and the Director of the Office of Science and Technology.

Difficulties with Government management of its own telecommunications facilities precipitated another ad hoc study in 1962. The inadequacy of Government communications systems, demonstrated during the Cuban missile crisis, in carrying a heavy load of high-priority traffic under emergency conditions prompted a National Security Council investigation headed by the Deputy Under Secretary of State for Administration, William H. Orrick, Jr. Upon receipt of the Orrick

Committee's findings, the President issued a memorandum (August 21, 1963) establishing the National Communications System designed to link existing Government systems into a unified long-haul network.

The present studies

The executive branch's primary concern in telecommunications has been for the efficient management of its own facilities and proper spectrum utilization. A variety of study groups have surveyed the communications field in bits and pieces over the last twenty years. There has been left a sense of "groping" for effective coordinating and policy-making machinery which could somehow pull together the complex and far-reaching Federal involvement in telecommunications. The President's Task Force on Communications Policy, and this study by the Bureau of the Budget represent a broad-gauged and comprehensive effort to reevaluate the Federal role in communications, and to recommend to the President any needed changes in our policies or organization in this field.

III. Findings and Conclusions

A. Organization for policy planning, formulation and direction in the executive branch.

The principle issue raised in the policy area during the study was the apparent need for and lack of an effective focal point within the executive branch for comprehensive and long-range communications policy-making and the coordination of multi-agency efforts. The following criticisms have been voiced with respect to the current situation:

-- The President cannot rely on coordinated timely, and well thought-out policy advice from executive agencies in the communications field.

-- The Federal Government cannot present a coherent and consistent position on policy problems, nor can meaningful alternatives to courses of action proposed by groups outside the Government be adequately developed. This condition becomes increasingly serious as we move from the sphere of short-range policy decisions to those having long-range implications.

-- The Federal Government lacks the capacity necessary to evaluate proposals put forth by the private sector. This criticism is directed toward technical competence and organizational arrangements.

-- Policy decisions are being made on an ad hoc basis, without the necessary coordination and without the proper institutional framework necessary to support the decisions being made.

The current situation

There are two major organizational locations for communications policy development within the Federal Government. The Office of the Director of Telecommunications Management (within the Office of Emergency Preparedness) is looked to for policy-making and planning for those communications activities which are largely internal to the needs of the executive branch -- such as the planning for and the allocation of frequency spectrum to the individual Federal agencies. The Federal Communications Commission, on the other hand, is the principal source of policy regarding communications matters which are external to the Federal Government -- specifically policies developed as a basis for regulating the private communications industry. In addition to these two Federal policy-makers, a number of other Federal agencies play important roles in the development of policies for specific functional

areas of communications (usually based on a particular technical competence or a specific statutory authority -- e.g., the Department of State in international communications and the General Services Administration for communications procurement policies).

The Director of Telecommunications Management (DTM)

The Director of Telecommunications Management's charter (contained in Executive Orders No. 10995 of February 16, 1962 and No. 11084 of February 15, 1963) appears to be a comprehensive assignment of authority to the DTM for the development of policies and plans affecting virtually all aspects of Federal telecommunications activities. His duties include the:

-- coordination of telecommunications activities of the executive branch of the Government and responsibility for the formulation, after consultation with appropriate agencies, of overall policies and standards;
-- promotion and encouragement of the adoption of uniform policies and standards by agencies authorized to operate telecommunications systems;
-- development of data with regard to United States Government frequency requirements; and
-- encouragement of such research and development activities as he shall deem necessary and desirable for the attainment of the objectives set forth in the Executive orders.

The formal authority of the DTM was bolstered further by President Kennedy's Memorandum of August 21, 1963 (28 F.R. 9413), establishing the National Communications System (NCS) -- a "unified governmental

communications system." The Memorandum charged the DTM with responsibility for policy direction of the development and operation of the National Communications System, in which capacity he would serve in an additional role as a Special Assistant to the President for Telecommunications.

While the functions of the DTM relate primarily to the conduct of the Government's in-house telecommunications activities, his office is currently the only logical focus for development of overall executive branch contributions to national telecommunications policy. This was recognized in outlining the objectives of his office in Executive Order No. 10995:

-- full and efficient employment of telecommunications resources in carrying out national policies;
-- development of telecommunications plans, policies, and programs under which full advantage of technological development will accrue to the Nation and the users of telecommunications, and which will satisfactorily serve the national security, sustain and contribute to the full development of world trade and commerce, strengthen the position and serve the best interests of the United States in negotiations with foreign nations, and permit maximum use of resources through better frequency management;
-- utilization of the radio spectrum by the Federal Government in a manner which permits and encourages the most beneficial use thereof in the public interest; and

-- implementation of the national policy of development and effective use of space satellites for international telecommunications services.

To carry out the responsibilities of his office, the Director of Telecommunications Management had a Fiscal Year 1968 appropriation of $1,945,000, of which $600,000 was authorized for studies and research. His total staff authorization was 70 permanent positions. For Fiscal Year 1969 the Congress reduced the DTM's appropriation to $1,675,000, of which $500,000 was authorized for studies and research.

The Federal Communications Commission (FCC and its relationship to the DTM

The FCC's regulatory mandate is a broad one -- "regulating interstate and foreign commerce in communication by wire and radio so as to make available, so far as possible, to all people of the United States a rapid, efficient, nationwide, and worldwide wire and radio communication service with adequate facilities at reasonable charges, for the purpose of the national defense, for the purpose of promoting safety of life and property through the use of wire and radio communication, ..." Viewed in perspective, its individual regulatory decisions over a period of time constitute a major source of policy-making, whether intended or not. In addition, the FCC further stresses its policy role in its development of standards and legislative proposals.

To the extent that the FCC operates independently in its regulatory and policy-making activities, the Federal Government's ability to formulate and implement overall national communications policies is fragmented. Whether or not this is desirable is subject to heated

controversy and there are persuasive arguments on both sides of the question.

This division of responsibility is built into the relationship between the DTM and the FCC. An almost blanket exemption from the authority of the DTM, as the telecommunications policy spokesman for the executive branch, is found in the Executive order establishing the DTM's authority. Executive Order No. 10995 provides that nothing therein will serve to "impair the existing authority or jurisdiction of the Federal Communications Commission."

However, the DTM and the FCC have a joint responsibility for providing assistance and policy advice to the Department of State in the discharge of international telecommunications policies, positions, and negotiations.

Other policy-making authorities in telecommunications management

While the principal responsibilities for policy formulation are split between the DTM and the FCC, these two agencies are not the only participants in the process. For example, the Administrator of General Services under the Federal Property and Administrative Services Act of 1949, as amended, is given authority with respect to the representation of agencies in negotiations with carriers and proceedings before Federal and State regulatory bodies; prescription of policies and methods of procurement; and the procurement either directly or by delegation of authority to other agencies of public utility communications services. And, Government responsibilities under the Communications Satellite Act are shared among the

President, the FCC, and NASA. By Executive Order No. 11191 of January 4, 1965, the President has provided that the DTM shall "advise and assist" him in connection with the functions conferred upon the President by the Communications Satellite Act. NASA's responsibilities under the Act relate to the research and development aspects of communications satellite development. FCC is concerned with effective competition, common carrier relations, and procurement by the Communications Satellite Corporation (COMSAT) of apparatus, equipment, and services.

Two other elements of the Executive Office of the President become involved in telecommunications policy to varying extents. The Office of Science and Technology, within its general mandate to provide the President with advice and assistance on matters of national policy affected by or pertaining to science and technology, deals with communications problems and issues on an ad hoc basis. It in turn works closely with the Bureau of the Budget on questions of telecommunications organization and on budget issues. The allocation of resources through the budgetary process affords the Bureau of the Budget a continuing opportunity to exercise a policy review function in telecommunications management. Finally, the Department of Defense through its role in the National Communications System structure, as discussed later, and because of its predominant position as a user of communications resources also has a major impact on the policy area.

Conclusions on the present situation

While the grants of authority to the Director of Telecommunications Management appear impressive, the realities of the situation present a different picture.

Perhaps, the fact that the DTM is severely limited in staff resources is a major factor in his inability to assume an effective leadership role in telecommunications management. This appears to be an over-simplified approach. However, it may contribute to the feeling that the DTM's greatest impact is in negating actions rather than initiating them. The DTM is also criticized as being preoccupied with the details of equipment requirements. And, the effectiveness of his interface with the communications industry is questionable.

To the extent there is a conscious process in the ODTM for policy formulation, the DTM's success depends on the actions of and agreement with the Federal Communications Commission generally, the State Department in international telecommunications policy, the Department of Defense and the General Services Administration in procurement policy, and the Department of Commerce, Transportation, and the National Aeronautics and Space Administration in communications research policy. Finally, the DTM depends to no small degree on the Bureau of the Budget for support through the planning and budgetary process.

The theme (which resulted in the establishment of the DTM) that runs through the various attempts since 1950 to find an effective organizational home for Government-wide policy coordination and formulation in telecommunications has been to place the responsibility in a staff office at the Presidential level -- a home without anchorage in program responsibilities, without effective clientele support, and dependent upon acceptance by and agreement from major program agencies, each

with the power of effective veto over the staff office's attempts at policy direction. The Office of the Director of Telecommunications Management, as presently constituted, cannot fulfill an effective Government-wide role in policy-making. This situation apparently results from a combination of circumstances -- the location of the Office, the lack of adequate staff resources, and the fragmentation of the policy role among various agencies with no single one having overall responsibility.

The need for a new policy-making and planning capability

The President's Task Force on Communication Policy concluded that there is an overall need for "a long-range planning, policy-formulating and coordinating, and mission-support capability which can serve to integrate the various roles in which the executive branch is presently engaged."

Representatives of the major elements of the communications industry complain that the industry has no single Federal focus for appeal from individual policy decisions. In fact, it often has difficulty even in identifying the agency responsible for a specific policy decision. Some of them have indicated that what is needed is high-level Federal Government leadership to open the door for private initiative. They believe the Federal Government should serve as a "catalytic agent" to enable the forces of private initiative to match technology with public needs to promote the most meaningful implementation of communication services to serve our national purposes. They state that Government leadership must provide more than coordination, or compromise among conflicting interests; it must provide far-seeing guidance and a willingness to decide what is best in the national

interest and act on those decisions. The catalytic leadership envisioned will require far more extensive analytical planning and engineering resources than are now supported in the FCC and the DTM. It will require a continuing high level of effort -- rather than stop and go studies. To be effective, the leadership must be continually capable of updating long-range plans as imaginative minds and new experiences show additional or modified paths to provide greater long-term yield. Leadership must be founded on highly professional skills in engineering and analysis.

Agencies having significant telecommunications responsibilities are almost unanimous in their criticism of the Government's process for policy formulation in telecommunications which they view as resulting in the haphazard derivation of policy decisions from the solution of day-to-day operational problems. Most of the agencies support the need for broad centralized policy formulation, coupled with a close budgetary examination of telecommunications requirements, in the executive branch. They believe this capability should be structured in such a way as to preserve its distinctness from the user/operator role. They indicate the major areas for improved policy formulation and planning are:

-- the development of policies needed to insure the controlled development of Government telecommunications facilities;

-- spectrum management;

-- coordination of overseas Federal telecommunications programs to prevent duplication of effort;

-- Federal-State-local relations;

-- coordination of responsibilities for communications research; and

-- Government relationships with the communications industry.

The agencies are unanimous in their belief that the telecommunications industry should serve in an advisory capacity to insure that governmental policies and industrial capabilities are in harmony.

We agree that the executive branch needs this broad centralized policy formulation capability in telecommunications.

B. Government communications operations

The Federal Government spends approximately $4 billion annually on communications equipment, research, development and services of all kinds using the broadest definitions. Of this, approximately $1 billion goes for equipment not generally considered in conventional communications summaries (e.g., communications internal to ballistic missiles), $2 billion goes for specialized systems, and $1 billion goes for more conventional long-haul communications. According to a recent survey the users of these more conventional services represent 17 major departments and agencies that operate 47 separately organized communications systems under the general coordination and guidance of the National Communications System.

The Federal Government depends heavily on the communications industry to satisfy its requirements for facilities and services. Consequently, the decisions made with respect to the ways by which the Federal Government establishes and operates its own communications systems may

have at least as great an influence in shaping the future configuration of the industry as any regulatory and other decisions with respect to developing "national policy" in communications. The industry, while essentially healthy from an economic standpoint and aggressive in its approach to technological innovation, looks to the Federal Government as its most significant customer and as the initial source of requirements for new developments in communications.

1. The National Communications System (NCS)

The National Communications System was established by President Kennedy in 1963 as a coordinating mechanism to achieve integration of the major operating communications systems of the Government. The major components of the system are Defense, Diplomatic, Space, and Air Traffic Control communications systems and the Federal Telecommunications System -- the general administrative communications system of the Government managed by the General Services Administration.

The NCS comprises most of the long-haul communications systems of the Federal Government, both within the continental United States and overseas, including Government-owned and leased commercial facilities. The Director of Telecommunications Management is responsible for policy direction on the NCS while the Secretary of Defense is the "Executive Agent" responsible for integrated planning and operations. The Assistant Secretary of Defense (Administration) is the principal adviser to the Secretary of Defense on NCS matters. The Director of the Defense Communications Agency, usually a general officer of three-star rank, fills the additional role of "Manager of the NCS." He

reports to the Secretary of Defense through the Joint Chiefs of Staff in his role as Director of the DCA.

One characteristic of the NCS which cannot be over-emphasized is the relative weight of the Department of Defense within the system. It is hardly a meeting of equals. The DOD controls the lions-share of both facilities and technically qualified staff. Its annual expenditures are in terms of hundreds of millions and its staff resources are in terms of thousands. On the other hand, GSA's Federal Telecommunications System has projected Fiscal Year 1969 sales of $107.3 million. The design, engineering and management control of the FTS is handled by a staff of 125 people operating on an annual budget of approximately $2.2 million -- and this with a system that is almost entirely leased from the commercial carriers. The GSA system, together with the sizeable FAA and NASA communications systems do not approach the DOD's investment or operation.

The reconnaissance phase of our study revealed the following questions with respect to the National Communications System:

-- Was the current basis for organizing governmental telecommunications services into a number of dedicated communications systems vs. administrative systems effective from the standpoint of individual agency and overall executive branch requirements?

-- Was the NCS, as currently structured, realizing its objective to achieve integration of the major operating communications systems of the Government? Did the management of the NCS properly belong in the Department of Defense? Should it be transferred from the DOD and

associated with an executive branch policy-making organization? If not, should it be strengthened and reorganized within the Department of Defense?

-- Was the existence of two separate administrative communications systems within the NCS -- GSA's Federal Telecommunications System and Advanced Record Systems plus the DOD's systems (AUTOVON and AUTODIN) -- justified from the viewpoints of operational necessity and/or economy and efficiency?

Our findings with respect to the first issue were that the current basis for organizing in terms of the types of services provided was basically sound even though specific areas of operations could stand improvement.

On the second issue, the President's Task Force on Communications Policy, in discussing the criteria for a new governmental capability in telecommunications, said:

> "What is required, therefore, is the creation of an entity with sufficient knowledge to enable it effectively to integrate the various government roles, while avoiding that degree of preoccupation with operational responsibilities which would threaten performance of the dominant function of long-range planning and policy formation."

Our findings in surveying the organization of the Government's telecommunications operations support the Task Force's concept. Operation of the Government's communications systems does not need to be combined with policy formulation and direction in order to be responsive to it.

Further, the reality of the situation where the Department of Defense operates a massive portion of the total governmental communication network is easily recognized. The Department of Defense has indicated that the "Secretary of Defense/NCS Executive Agent role is particularly critical since the mission of DOD telecommunications is vital in relation to the conduct of the national defense effort." We agree with DOD's position and believe that it is a controlling factor in leaving management of the NCS within the Department of Defense.

Our findings indicate, however, that the NCS has a long way to go to fulfill the objective intended for it. The non-Defense members of the NCS have conflicting views of how the system should operate. Even within DOD there is apparent difficulty in achieving a single policy position on NCS matters. The absence of effective agreement in these areas make it almost impossible to (1) know what kind of system or systems there should be; (2) provide meaningful budget rationale for the NCS; and (3) determine the need for or status of "add-ons" to the system. This situation can and does result in duplication of effort and investment. If the management of the NCS remains with the Department of Defense, it should be reorganized and strengthened.

We conclude a need to improve the National Communications System by:

-- retaining and strengthening the NCS under DOD management, with expeditious progress toward truly integrated planning and programming;

-- combining the functions of the Executive Agent, NCS and the Manager, NCS at Office of the Secretary of Defense level to achieve unified guidance within DOD; and

-- establishing an interagency committee to advise and be consulted by the Manager, NCS on matters affecting individual agencies.

On the third issue, industry representatives have indicated the desirability of a central communications support agency which would deal with industry on all Government needs for continental United States communications (except tactical military). The major deterrant to development of such a capability with respect to the Government's administrative telecommunications is the current split between the Department of Defense systems (AUTOVON and AUTODIN) and the GSA systems (Federal Telecommunications System and Advanced Record System). We use the term "administrative" advisedly; though we recognize that AUTOVON was designed to meet military command and control needs including costly preemption features, the dominant message load is administrative and only a small fraction is command and control. Although we have not developed the necessary supportive data, we are disturbed by the claim that there is an inability for cross-over among such governmental communications systems.

We question continuing the split between the GSA administrative communications system and the military administrative system and believe the Department of Defense should provide administrative communications to all Government agencies, as a special operating function within the Department. The implementation of such a merger should be studied promptly by the NCS staff.

2. Procurement and technical assistance to agencies

We found that there is no single source in the executive branch for procurement guidance and assistance or technical assistance to the agencies in telecommunications matters. The Department of Defense has its Armed Services Procurement Regulation. The General Services Administration has the Federal Procurement Regulations. From time to time, the Director of Telecommunications Management publishes issuances to the agencies. As previously mentioned, the Department of Defense has a sizeable technical staff capability in telecommunications. The FCC, NASA, Transportation, Commerce, and GSA have specialized technical capabilities of varying degrees of size and quality. The agencies with sizeable procurement and technical staffs have little worry. The agencies without these assets have a problem.

In view of the increasing involvement with telecommunications in agency programs, our findings indicate a clear need for an identified source of procurement and technical assistance in telecommunications for use on a Government-wide basis. This source should provide:

-- an evaluative capability for assessing the proposed satisfaction of valid agency communications requirements without impairing individual agencies' basic responsibilities in the requirements determination area; and

-- a means for better relating the results of research and development in telecommunications to the procurement process through the development of adequate technical standards.

We believe that the provision of effective procurement and allied assistance to agencies on request and the development of needed technical standards in telecommunications would be a logical responsibility of the National Communications System, operating within the policy guidelines set forth by the executive branch's overall telecommunications policy organization.

The telecommunications policy organization should provide appropriate technical assistance to agencies in support of their telecommunications requirements planning and implementation.

3. Research and development

During the reconnaissance phase of the study the question of the need for expanded technical assistance to agencies quickly raised the broader issue of the Government's overall research and development base for telecommunications. The claim was made that the Federal Government's research and development activities in communications are not organized in a manner which allows for the best use of its technical resources. Subsidiary questions included:

-- are our efforts in communications research wasteful, misdirected, uncoordinated, or unneeded?

-- are there gaps in Federal research or application of technology which should be performed in the public interest?

-- is there a gap in the availability of needed objective technical advice on communications matters within the Government for use in evaluating industry's technical proposals and making valid regulatory judgments?

-- does the Government have the necessary technical competence in the communications field to fulfill any unique service requirements which industry may be unable to satisfy?
-- what need is there for a centralized focus for Federal communications research programs?

The President's Task Force on Communications Policy has advocated an expanded capability in the executive branch which would have "centralized responsibility for studying communications-related research and development for potential application to the mission needs of other agencies."

The vast bulk (84.6%) of Federal financing of communications research and development is devoted to product development, as opposed to basic research, and is provided primarily by Defense, NASA, Commerce, and Transportation. Existing major communications research resources within the Government include:

-- DOD's laboratory resources for communications systems development and electromagnetic capability studies, and such institutions as the Lincoln Laboratory, an Air Force federally funded research and development center at the Massachusetts Institute of Technology;
-- NASA's satellite applications research;
-- National Bureau of Standards Radio Standards Laboratory, Boulder, Colorado, which establishes uniform systems of electromagnetic measurement for Government and industry;
-- Environmental Science Services Administration's Institute for Telecommunications Services, Boulder, Colorado, which conducts research aimed at the efficient use of

electromagnetic telecommunications, better understanding of the scientific and technical aspects of radio propagations in the ionosphere and troposphere, and better predictions of atmospheric disturbances;

-- Environmental Science Services Administration's Wave Propagation Laboratory, Boulder, Colorado, part of which conducts research on sub-millimeter wave propagation; and

-- FCC Chief Engineer's Office which conducts technical studies of electromagnetic spectrum use, interference problems, and channel splitting. The FCC has a single laboratory facility at Laurel, Maryland, which tests equipment for conformity to FCC standards governing radiations of radio frequency energy.

In addition, the Director of Telecommunications Management supports studies similar to those of the FCC in the frequency spectrum, communications satellite technology, etc. The FAA and the Coast Guard also possess R&D and communications engineering talents.

While we agree with the opinion of some industry representatives that there is a lack of a strong focus in the Government for research and development efforts in communications hardware and systems, our findings do not support the contention that there is need for "centralized responsibility" for communications' related research in the executive branch. It would be unwise to attempt to duplicate the vast communications industry research and existing Government

capabilities in order to meet needs for in-house technical competence in communications. In addition, the informed opinions of those responsible for scientific policy within the executive branch are that a research and development function divorced from a clear mission responsibility is not likely to be productive.

While we do not believe that there is need for a new general purpose research organization in the executive branch, we do see the need for better direction and utilization of research resources currently available. The one significant problem in maintaining a core of skilled scientific personnel on a policy staff is to provide them with meaningful research so that they can retain their scientific credentials and their interest in remaining in the policy organization. The best means of accomplishing this purpose is to (1) associate a specific research capability with the policy organization and/or (2) provide for effective working relationships between scientific personnel on the policy staff and those in the agency research facilities.

C. Special problems

1. Spectrum management

The President's Message on Communications Policy specifically referred to the utilization of the electromagnetic frequency spectrum as an area for evaluation by the Task Force on Communications Policy. As a corollary to the Task Force reviewing the overall utilization of the spectrum, we have assessed the Government's organization for managing spectrum utilization.

Currently, responsibility for the management of the spectrum is divided between the Federal Communications Commission and the Director of Telecommunications Management. The FCC has the statutory responsibility for assigning bands of frequencies to all users other than the Federal Government itself. The Director of Telecommunications Management, by delegation from the Director of the Office of Emergency Preparedness, assigns radio frequencies to Government agencies and foreign diplomatic establishments. The Interdepartment Radio Advisory Committee (IRAC), organized originally in 1922, serves in an advisory capacity to the DTM in the management and usage of Government frequencies.

The result is a division of responsibility for managing a single frequency spectrum.

Since the Task Force devoted a considerable portion of its efforts to an intensive review of frequency spectrum problems, we have not retraced its steps but have considered those Task Force spectrum recommendations which have significant organizational impact.

The Task Force has recommended that:

> "Legislation should be considered which would vest in an executive branch agency overall responsibility for efficient spectrum use for all government and non-government uses. This legislation should contain appropriate guidance as to coordination between the spectrum manager and the FCC in areas of mutual interest and concern."

The Task Force's rationale underlying their spectrum organizational recommendation is largely derived from their analysis of current shortcomings:

> "The FCC's spectrum management responsibilities alone have reached staggering proportions. More than 800,000 license applications were received for processing in 1967. Unable to obtain necessary funds for enlarging its small technical staff, the FCC cannot adequately undertake the comprehensive planning needed to achieve greater efficiency in spectrum use. It has little alternative but (a) to rely on block allocations, (b) to establish simplified operating standards for use of frequencies, and (c) except for broadcasting, to issue licenses and renewals on a routine basis to qualified applicants."

> "The longer the present management structure remains, the greater the likelihood that considerable duplication and inefficiency will result. Establishing a single manager should reduce these problems significantly. It would facilitate establishment of (a) common data collection programs, (b) common bases for projecting demands and services and for developing, implementing, and enforcing equipment and operating standards, (c) a single spectrum engineering capability for both government and non-government uses, and (d) a consistent system of priorities derived from a common base. A single management would also facilitate the introduction of flexible administrative procedures. ... A consolidation would make possible more efficient use of technical and analytic capabilities now fragmented among various offices. ... Unification of spectrum management within executive branch would relieve the FCC of complex managerial tasks which ... need not be tied to its regulatory responsibilities."

The findings and recommendations of the Task Force are buttressed further by the recommendations of the Joint Technical Advisory Committee (JTAC) Study on Spectrum Engineering Compatibility which points out the need to:

-- adopt a procedural and a managerial policy of maximizing yield and benefits from the spectrum;

-- adopt a spectrum engineering philosophy and design concept; and

-- establish a spectrum engineering system, including analysis capabilities, spectrum monitoring, a common data base, and standards.

We view as highly desirable the concept of vesting overall management of the spectrum in an executive agency, leaving only licensing and regulatory functions over broadcasting and common carriers with the FCC. We would view the expanded spectrum management function as one to be logically associated with the other responsibilities of the policy staff discussed previously.

2. Technical assistance to State and local governments

The President's Task Force has recommended that the new executive capability in telecommunications should include the provision of "telecommunications advice and assistance to State and local governments, on request, especially in connection with procurement."

Our survey of the major telecommunications agencies revealed that the number of requests for information and technical assistance on communications matters being received from State and local government agencies has been increasing over the years. A significant impact on the agencies in this area could result from the recent enactment by the Congress of the Intergovernmental Cooperation Act of 1968 which contains new authority for the provision of technical services to State and local governments.

While the specific areas and types of technical services to be provided under the Act have yet to be defined, it is already apparent that there is need for a mechanism within the executive branch to coordinate the servicing of requests for technical assistance from State and local governments to the extent that such services may be

authorized. We view this as a logical extension of the responsibilities of the central policy staff discussed previously.

3. Regulation and promotion of industry

During the reconnaissance phase of our study, the Federal Government's regulation of the communications industry was discussed at considerable length during our meetings with agency and industry representatives. This area has been of primary concern in the consideration of the President's Task Force on Communications Policy and we have looked to it for any major recommendations for change. Most of the issues posed in the regulatory area, however, are questions of public policy and do not bear directly upon organization.

Short of dealing with those questions of public policy in communications regulation, we examined several questions which relate to executive branch organization for telecommunications. These are:

(1) Are the shortcomings of the FCC, as claimed by its critics, explained by a lack of staff resources for the FCC to do the necessary in-depth analyses and evaluation of economic and technical issues posed in its proceedings or are they due to a misdirection of focus by the FCC in claiming responsibility for functions which could be performed more effectively elsewhere?

(2) What improvements are possible in present executive branch activities in dealing with the communications industry?

On the first question, the Task Force has documented both the lack of adequate staff resources and misdirection of focus by the FCC. We

have no specific recommendations of an organizational nature with respect to the FCC. We believe that a strengthening of the telecommunications policy formulation activity in the executive branch, including an adequate capability for economic and technical evaluation, will contribute to the sorting out of responsibilities between the FCC and the other executive branch telecommunications agencies.

On the second question, we conclude the need for improvement in bringing together three distinct activities which are now performed in different parts of the executive branch. We believe these activities should be the responsibility of an expanded telecommunications policy organization. They are:

-- provision for effective representation of the telecommunications industry in an advisory capacity to the executive branch telecommunications policy organization;
-- the responsibility of the Administrator of General Services under Section 201(a)(4) of the Federal Property and Administrative Services Act of 1949, as amended, with respect to representation of Federal Government interests in telecommunications matters before Federal and State regulatory bodies; and
-- establishment of a capability to represent the public interest in telecommunications proceedings before Federal and State regulatory bodies.

IV. Recommendations

Some of the problems described by the Task Force on Communications Policy and in the "Findings and Conclusions" section of this report do not appear to lend themselves to organizational solutions. In some cases, answers to problems are related to the need for additional manpower for a specific Federal agency or to the need for increased funding of an existing Federal program. In some other instances problems could have been resolved by more timely or perhaps different decisions by Federal officials.

As previously indicated in the tone and substance of this report, the telecommunications universe presents a mixed picture -- much of it good, some of it in need of repair. No disasters are right around the corner, but opportunities for improvements and solving old problems are in sight. We have identified areas of activity in which we believe improvement can and should be made in the Federal Government's telecommunications role and organization. We believe there is a need for:

-- a strengthened policy planning, formulation, and direction organization for Federal telecommunications activities.

-- a reorganized and strengthened National Communications System.

-- an improved procurement and technical assistance effort on behalf of those Federal agencies which do not now have their own resources in this field.

-- a unified frequency spectrum management process.

-- a coordinated technical assistance program for State and local governments.

A. Program recommendations

1. Policy planning, formulation, and direction

Recommendation: A new and strengthened central policy and long range planning organization for telecommunications should be established in the executive branch. The nucleus for this organization should be created using as a base the Office of the Director of Telecommunications Management now in the Office of Emergency Preparedness.

As we have stated earlier in this report, the Director of Telecommunications Management is not functioning successfully in his present setting. We have considered a number of possibilities with respect to creating a more viable and relevant policy center for the executive branch. For example, it has been proposed that the DTM would have a stronger policy role if his office were removed from the Office of Emergency Preparedness and established as an independent agency within the Executive Office of the President. We do not agree. We believe that the day-to-day policy matters with which the DTM must deal do not require the continuing attention of the President. Policy matters will on occasion warrant Presidential attention, but the location of the DTM in the Executive Office is not a necessary requisite to gaining the President's attention.

Communications policy development and planning should not be an isolated activity of a Presidential staff office -- rather it should be one element contributing to an expanded telecommunications competence within an appropriate operating agency in the executive branch. We

have stated that there is a need for a single Federal focus for communications policy development and planning. The establishment of such a capability would enable the Government to describe more broadly and with greater confidence the national policy implications of proposed actions by the Congress, executive agencies and both Federal and State regulatory bodies. In addition there would be a single source of policy analysis and advice available to the President on communications matters when those matters require Presidential consideration.

The alternatives for locating the policy and planning functions envisioned are discussed at the conclusion of this paper.

2. Operations

Recommendation: We recommend that the National Communications System staff undertake (1) an implementing study to transfer the Federal Telecommunications System to the Department of Defense for merger with the military administrative communication systems to provide service for all Federal agencies and (2) a study of the appropriate location and combination of the roles and functions of the Executive Agent and the Manager of the NCS within the Office of the Secretary of Defense in order to provide unified guidance to the NCS from within the Defense Department. An effective mechanism should be provided whereby the member agencies of the NCS can advise and be consulted by the Manager, NCS.

Recommendation: The general policy guidance now provided the NCS Executive Agent (Secretary of Defense) by the Director of Telecommunications Management should become a responsibility of the new communications policy organization.

The Federal agencies and private industry view the National Communications System as an important step forward in the Federal Government's efforts in the communications field. Responsibility for the successful operation of and further improvements in the NCS should be placed clearly on the Executive Agent of that system -- the Secretary of Defense. Support, cooperation, and any guidance required to assist the Executive Agent in creating a successful system for Federal communications should come from the Federal agencies managing the assets of the NCS and from the policy organization for the executive branch which we are recommending be established. We also believe that the benefits to be gained by combining the Federal Telecommunications System with certain Defense Department Systems (i.e., AUTOVON and AUTODIN) may outweigh any anticipated difficulties and we recommend further study of the steps needed to effect such a merger in the immediate future. Finally we believe that the separation of roles between the Executive Agent and the Manager of the NCS does not make for the most effective management of the NCS. Further study should be undertaken of the most effective way to organize the management of the NCS in order to provide for unified system direction within the Office of the Secretary of Defense.

We do not recommend that the new communications policy organization which we propose have any communications systems operations directly within its jurisdiction.

3. Procurement assistance to agencies

Recommendation: The National Communications System organization within the Department of Defense should provide a central source of procurement and procurement related assistance for use by executive agencies.

Because of the highly developed procurement and contract administration staff capabilities in telecommunications already available within the Department of Defense, together with the existence of the NCS organization, the Department of Defense represents the most logical source for assistance to agencies in these areas. This assistance should be available for use by agencies on a voluntary basis. The provision of this assistance by DOD would in no way interfere with agencies' basic responsibilities for requirements determination.

4. Research

Recommendation: The new communications policy organization should have a limited in-house research capability to support its frequency spectrum management and general policy development responsibilities.

While we wish to avoid the creation of a "general purpose" communications research laboratory in the executive branch, we do wish to provide a strong technical capability in the communications policy

and planning organization -- particularly in support of its proposed frequency spectrum management function. On the other hand, we would expect that the new organization would call upon existing Federal agency research capabilities (e.g., NASA for satellite research) as needed where such competence already existed.

We believe this research capability is needed because much of the content of telecommunications policy is highly technical, and sound policy direction can only come from a sound technical base. In addition, experience indicates that high quality technical personnel require a continuing relationship with actual research problems to retain their interest and professional standing.

We believe that the nucleus for this research capability can be constituted by transferring to the new organization ESSA's Institute for Telecommunication Services, appropriate portions of ESSA's Wave Propagation Laboratory, and the Radio Standards Laboratory of the National Bureau of Standards. Those laboratories now conduct research in areas directly related to the frequency spectrum and in allied areas of communications technology.

5. Spectrum management

Recommendation: The management of that portion of the frequency spectrum assigned to Federal agencies should be a function of the new communications policy organization. If the Task Force proposal for a single spectrum manager is adopted -- the total function should be placed in the new organization.

We believe the management of the frequency spectrum constitutes one of the most important governmental functions in the communications field. While responsibility and authority for this function (either as presently assigned or as modified in the future) should be placed in an executive agency, there should be continuing consultation with the FCC, other Federal agencies, and representatives of private industry through an established channel such as an advisory committee.

6. Technical assistance to Federal agencies, State and local governments

Recommendation: The new communications policy organization should be the coordinator of action taken by Federal agencies on requests for technical assistance in telecommunications from State and local governments and should provide such assistance to Federal agencies who lack in-house capability.

No single Federal agency will have the capability to offer State and local governments comprehensive assistance in all aspects of the communications field. The proposed communications policy organization should serve as a source of general information to identify those Federal agencies which can provide technical assistance to other levels of government and those Federal agencies in need of similar assistance. In addition special requests for assistance which require the coordination of multi-agency efforts would be an appropriate responsibility of the new policy organization.

B. Organizational alternatives and recommendations

We believe there is need for a new organizational structure within the executive branch to be responsible for the expanded telecommunications

functions and program responsibilities we have recommended. There appear to be three major and several less likely possibilities for locating a new telecommunications organization:

1. Establish a separate telecommunications agency within the executive branch which would be dedicated to communications functions.
2. Establish a new telecommunications administration within the Department of Transportation.
3. Establish a new telecommunications administration within the Department of Commerce.
4. Other possibilities include creation of an expanded telecommunications service within the General Services Administration or a new telecommunications office within the National Aeronautics and Space Administration.

A separate telecommunications agency

There have been a number of proposals made during our study to establish a "Department of Communications"or some other form of independent communications agency. This proposal has a number of drawbacks. We believe the magnitude and relative importance of the problems and programs involved (in terms of the Federal role) are insufficient at this time to justify the costs and complexities of such a reorganization.

A "Department of Communications" would be under strong pressure to assume comprehensive operating control of existing governmental communications systems. As we indicated earlier in this report, we do not

believe such a change is necessary or desirable at this time. The case seems clearly made for leaving operations responsibility with the principal agencies having mission-related telecommunications -- operating with general guidance and coordination from a strengthened executive policy-maker and an improved NCS structure.

The Department of Transportation

Advantages

1. Developments in modern technology are increasingly identifying the interconnections and tradeoffs between transportation and communications. The Department of Transportation would be the most logical location within the executive branch to monitor and provide governmental leadership for these developments.

2. The Department of Transportation has strong operating bureaus with extensive working relationships with the appropriate segments of industry.

3. Its present modal administrations, particularly the Coast Guard and FAA, give it useful experience in dealing with the large competing forces in the telecommunications field.

Disadvantages

1. To the extent that operating components of Transportation such as the Coast Guard and the FAA have interests as major Federal consumers of communications equipment and services there could be a conflict-of-interest situation in the view of other executive agencies if the responsibility for Government-wide telecommunications policy were placed in the Department.

2. The Department of Transportation is a relatively new organization combining strong operating agencies with a tradition of independence. To bring these components within an effectively-operating departmental setting is a major undertaking which still needs much effort to accomplish. The next few years may not be an opportune time to add another major operating responsibility such as telecommunications.

The Department of Commerce

Advantages

1. The Department of Commerce currently has an important communications research capability located in elements of ESSA and the National Bureau of Standards which could provide a technical base for a telecommunications policy organization.

2. The Department has no major communications consumers within it and therefore could constitute an "honest broker" for all executive agencies in planning, formulating, and directing Government-wide telecommunications policy (e.g., the spectrum management process).

3. Its other functions are not so large in size or aggravated by serious problems that its leadership could not devote substantial attention to telecommunications problems.

Disadvantages

1. The Department has an "image" with many of being primarily representative of business interests and thus might not provide a balanced representation of all interests.

2. The Department's reputation with other executive agencies raises doubts about its ability to provide forceful leadership.

Other agencies

Consideration also was given to the possibility of placing the expanded telecommunications policy organization in NASA or GSA. NASA has an outstanding research and scientific operations capability but its mission is so clearly identified with the space program that it would be difficult to justify adding a Government-wide program that places great emphasis on providing service to other agencies. The major disadvantage of placing the responsibility within GSA is just the opposite. GSA's charter and its operating programs are directed almost exclusively to the provision of support services to executive agencies.

Recommendation: We believe that a new communications organization be established in either the Department of Commerce or the Department of Transportation.

Management and image problems identified with the Department of Commerce might be overcome if new and major responsibilities in the field of communications are assigned. On the other hand, if it is determined that the relationship between transportation and communications plus other more relevant experience should be the over-riding factor in selecting an organizational location for the proposed communications functions, then the Department of Transportation would be the proper choice.

C. Implementation

Establishment of a Federal Communications Administration in either the Department of Commerce or the Department of Transportation would take time and could be done in increments. We believe that the first step should be the transfer of the Office of the Director of Telecommunications Management to the Department of Commerce or Transportation. This could be done even prior to the establishment of the new Administration within either department.

11/6/68
Robert Lowe

PRESIDENT'S TASK FORCE ON COMMUNICATIONS POLICY
DISCUSSION PAPER ON FINAL REPORT
PROPOSED POSITION FOR
DEPARTMENT OF TRANSPORTATION

CONCEPTUAL BACKGROUND

I. Role of Communications Policy

A. Resource Allocation - The central objective of communications policy making should be effective resource allocation and utilization in the public interest generally. Distilled to their purest essence, all decisions affecting spectrum users and common carriers are resource allocation and utilization decisions.

B. Priorities - When a resource becomes scarce, those who regulate its allocation and use are forced to choose between contending claims. As they do so, they have no choice but to establish a system of priorities for choosing between alternatives.

C. Market Forces - From an administrative point of view, the free market is the most efficient vehicle for establishing priorities of access to a resource. The vast majority of resource allocation decisions in our society are made in the market place. Competition is the key to the viability of the market as a resource allocator. Hence, a basic and long-standing policy of our society has been the encouragement and preservation of free competitive enterprise.

D. Market-Exempt Transactions - For social reasons, however, we have been reluctant to resolve all resource allocation questions in the market place. Traditionally, we have exempted certain transactions from that forum. In contrast with business generally, the communications industry is characterized by an extremely high percentage of market-exempt transactions. In the face of our powerful traditional bias in favor of free competitive markets, why have we tolerated such exceptional behavior in the communications industry?

There are two reasons. The first is associated with spectrum use. Without shortages, resources are usually left to be exploited as a free good. Unless there are shortages, market forces cannot be expected to operate, and only recently has the spectrum resource been in short supply. Secondly, we have considered communications common carriers to be natural monopolies.

E. Natural Monopoly - Natural monopolies are exempted from comprehensive operation of the anti-trust laws. As a matter of fact, we have actively protected them from encroaching competition. We have reconciled this exception to our philosophy of competition upon the ground that natural monopolies offer resource allocation efficiencies which make them unique among commercial enterprises.

The exceptional resource allocation features which natural monopolies are said to possess include opportunities for systems optimization and economies of scale to such dramatic degrees that duplicating competitive facilities would result in intolerable investment inefficiency and social inconvenience.

Assuming a static condition of technology, there unquestionably are systems that offer such dramatic efficiencies in economies of scale and systems optimization as to require, in the public interest, that they be operated as monopolies. Under existing technology a large part of communications common carrier operations offer the potential of those efficiencies. Communications technology, however, is in a period of dramatic change.

F. Government Regulation - In competitive business enterprise, the public is protected by the restraining forces of competition. Government does not regulate the profits of competitive enterprises. But an unrestrained monopoly charges what the traffic will bear. Therefore, in order to prevent exploitation of the public, government does regulate the profits of natural monopolies. Ideally, this regulation operates as a substitute for competitive market forces.

Regulation of the profits of communications common carriers is designed to permit a "fair return" upon investment. Some contend that the "rate base" approach to regulation offers the carrier no incentive for operating efficiencies, and encourages him to follow "capital intensive" investment policies. These policies, it is argued, mitigate against the use of new technology which is radically cost-saving. Hence, effective regulation must concern itself not only with the honesty of a monopoly's accounting system. It must also stay abreast of investment decisions.

G. Yardstick Regulation - There is a dimension of the communications industry which makes it unique when compared to other industries enjoying "natural monopoly" status. That dimension is the Bell System (AT&T).

In the electric power industry, particular power companies serve particular territories exclusively. But there are many such operations -- many power companies serving many distinct territories.

The regulators of these monopolies can therefore compare the performance of one against the others and establish bench marks of wise investment and efficient operation. "Regulatory yardsticks" of this sort exist in other regulated industries as well. But to the extent that AT&T is regulated by the Federal Communications Commission, AT&T stands alone. There are no yardsticks by which to measure its overhead or its investments.

CONCEPTUAL BIAS

With that as background, I would like to emphasize the conceptual bias which affects my analysis of all issues confronting the Task Force.

I. Competing claims for scarce resources should be resolved by market forces.

II. Unless clearly inimical to the public interest, free competition is preferred over regulated monopoly.

III. When business monopoly is regulated, yardstick competition should be encouraged.

Since the thrust of this bias extends through my analysis of all the Task Force chapters, I will not undertake to discuss each of the chapters separately. Rather, in the recommendations which follow, I will deal with issues and concepts important to the bias and will identify the subject areas where applicable.

Against that bias, there are four areas of basic interest, to wit:

I. Satellite Technology
II. Common Carrier Industry Structure and Regulation
III. Spectrum Management
IV. Federal Roles

RECOMMENDATIONS

I. Satellite Technology

A. Space Segment - Natural Monopoly - Due to constraints of frequency allocation, physical limitation of orbital parking slots, systems optimizing opportunities and inherent economies of scale, we consider the operation of communications satellites to be a classic example of natural monopoly. Consistent with forecasts of future

technology, this is likely to remain so for the foreseeable future. Therefore, we believe management of and access to the space platform of particular communications satellite systems should be controlled by a single allocator.

B. Ground Stations - Competition - But we do not believe those natural monopoly characteristics extend to ground stations. On the contrary, we think one who controls both ground and space segments of the system is more likely to design a system which favors his particular economic bias. Greater and more efficient utilization is more likely to derive from a variety of ground facilities, all compatible with the satellite repeater. This conclusion is supported by the Task Force recommendation that satellite systems accommodate a variety of ground facilities.

C. Systems Optimization - The tradeoff between satellite power and ground station cost is well recognized. Another tradeoff, not so widely recognized, offers promise of greater satellite systems optimization. Assuming a given power level in the satellite repeater, there is a tradeoff between assigned band width and ground station costs. The greater the band width available to transmit a given form of intelligence, the lower the cost of the station which transmits and receives that intelligence.

Satellite systems will, no doubt, experience the peaking phenomonen associated with terrestrial systems utilization. While available radiated power requirements in any system must remain constant throughout the day, band width requirements are not so constrained. During periods of peak loading, there are incentives to conserve band width. During off-peak hours, those incentives are not so important.

Satellite systems should afford the operational flexibility to accommodate a type of station with narrower band width requirements during peak hours and another type with larger band width requirements during off-peak hours. One in control of the satellite would not be motivated to afford that type of operational flexibility if he also owned ground stations. Rather, he would be motivated to adopt operational procedures which favored his own ground station investment.

D. Conclusion - The satellite offers the most dramatic opportunity for competition and systems flexibility in communications of any technology yet developed. The key to that opportunity for competition and flexibility lies in the availability of access to the satellite repeater. Yet the satellite platform offers classical natural monopoly efficiencies. Therefore, management

and allocation of access to satellite repeaters of particular satellite systems should be the responsibility of a single entity. That entity should not be permitted to own ground stations not compatible with the greatest practicable competition and flexibility in satellite communications.

II. Common Carrier Industry Structure and Regulation

A. Characteristics - An ideal common carrier industry structure would have the following characteristics:

1. The greatest feasible head-to-head competition between carriers and between carriers and non-carriers.

2. Yardstick competition to the extent possible between carriers.

3. Interconnection of all systems, carrier and private, which meet uniform technical and operating standards.

4. Deregulation of carrier services affected by head-to-head competition.

5. More effective regulation of non-competitive carrier services.

6. Greater flexibility of common carrier tariffs.

7. Unity of response to national security emergencies.

B. Domestic vs. International - Those characteristics are of equal importance to both international and domestic communications. On that basis, it is difficult to distinguish either functionally or philosophically between international and domestic carriers. The Task Force should endorse greater competition in the domestic industry and encourage it internationally as well.

C. Merger - Rather than requiring merger of Comsat with all international record carriers, while forcing AT&T out of international operations, we should expand AT&T's authority permitting it to carry all types of international and domestic traffic (in addition to voice); and we should permit the merger of Comsat with the international record carriers and the domestic carriers (except AT&T), allowing it (individually or as a merged entity), like AT&T, to carry all types of traffic both domestically and internationally.

D. Comsat's Future Role - This approach eliminates the peculiar characteristic of Comsat as a "carrier's carrier" and vitiates the "authorized user" decision of the FCC. Thereafter it would simply

be another common carrier. In such a case, we think it unfair and undesirable that Comsat (individually or as part of a merged entity) continue to act as manager of Intelsat. Its newly acquired terrestrial system might bias it against greater flexibility for satellites. As a rate base carrier it might even develop a new bias against satellites generally, favoring cables instead. On the other hand, the new Comsat should not be denied access to satellite communications. Indeed, we think all carriers should have the opportunity to exploit this new technology, both domestically and internationally. For international communications, this means that the "gateway city" concept should be abandoned.

E. Future of Intelsat - With Comsat removed as manager, a significant problem in the definitive arrangements for Intelsat would be eliminated. It could be reorganized as a purely inter-governmental entity and the ambiguity of a commercial enterprise participating as a co-equal with foreign governments would be eliminated. Our government, not Comsat, would represent the U.S. in Intelsat. Of course, as a condition of its removal from Intelsat, Comsat should be reimbursed for its investment in that organization.

The new Intelsat would own the space segment of the international satellite system. It should not be permitted to own ground stations except where authorized by a particular country to do so. It would be in the business of leasing satellite circuits to carriers or others with whom it decided to do business.

F. Domestic Satellite

1. Institutional Structure - Just as Intelsat would become the sole manager/allocator of the space segment for international satellite communications, an institutional entity should become sole manager/allocator for domestic satellites. Three alternatives for that role come to mind:

   a. Government Ownership - The government could retain ownership and control of the space segment allocating access to it much like it will allocate spectrum access.

   b. Public Non-Profit Corporation - A TVA-type public non-profit corporation could be established to own and manage the spectrum segment.

   c. Specialized Commercial Common Carrier - A new privately owned specialized common carrier could be established to operate the space segment on a purely commercial basis. It should have no interest in ground facilities which conflict with the greatest practicable competition and flexibility for domestic satellite communications.

2. The Pilot Program - Enjoyment of domestic satellite communications might be postponed if the system must await establishment of a permanent institutional form. Of course, it is the desire for earlier launching that motivates endorsement of the pilot program. There should be no objection to a pilot program if it is clearly understood that permanent institutional rights are not vested thereby. In the meantime efforts should begin toward establishing a permanent institutional entity to own and manage the domestic space segment.

G. Common Carrier Competition

1. History - The lack of competition in long-distance transmission today is not the product of "natural monopoly" forces. If our regulatory policy in the past had divided the country into a number of exclusive territories where different entities supplied transmission facilities, those facilities with common operating and technical standards could have been interconnected into a viable national system. In such a case, there would at least have been yardstick competition between carriers. Further, assuming common standards, a different regulatory environment could have permitted competing carriers to indulge in head-on competition along identical transmission routes. Of course, careful scrutiny of new carrier facilities by the regulator would have been required to prevent construction of inordinate excess capacity. So the nature of today's industry is not the product of immutable natural forces but of a regulatory and anti-trust environment which was reconciled to the growth of a nationwide sole-source monopoly.

2. The Future - Past regulatory and anti-trust policy need not prevail in the future. Consistent with the promise of satellite communications, new policies should permit the greatest possible competition for establishment of new facilities.

a. Interconnection

i. The Carterfone Case - FCC's decision in the recent Carterfone case suggests a new policy direction is forming. It may be the most far-reaching decision in the history of communications common carrier regulation; for it is the right of interconnection which affords the potential for competition in communications. And the Carterfone case promises an opportunity for interconnection not only between common carriers but between carrier and non-carrier systems as well. The case makes no distinction between private line services and the public message

network for interconnection purposes. In fact Carterfone, a non-carrier system, involved interconnection with the public message network. The decision should be endorsed and applauded.

ii. Economic Injury - Assuming common technical and operating standards, the problem of interconnection is an economic one and not an engineering one. Interconnection with all carrier systems by other carrier and private systems should be permitted upon application to FCC when it is shown that irreparable economic injury is not likely to result therefrom. Evidence of irreparable economic injury would be demonstration that competitive inroads threaten the existing financial viability of common carrier services. This requirement would impose FCC approval upon all new facilities, whether carrier or private if interconnection is sought. Regulatory approval of new non-interconnected facilities should not be required:

iii. Common Standards - Interconnection between systems is undesirable unless there is operating and engineering compatibility between them. This raises the problem of common standards. Heretofore, operating and technical standards have been unilaterally promulgated by the individual carrier. Interconnection requires standards which cannot be changed by the whim of a carrier but which offer the flexibility to meet changing conditions. Of course such standards could be unilaterally promulgated by the regulator. But that whim is theoretically as capricious as that of a carrier acting unilaterally.

As a compromise, technical and operating standards could be established or changed by FCC Rule only upon application by one whose system interconnects with others. Upon such application all interested parties should be afforded an opportunity to be heard before Rule is adopted or rejected.

b. Deregulation - As this new regulatory approach is adopted, increasing head-on competition should occur. It should occur between carriers and it should occur between carriers and non-carriers. And, if the regulator carefully evaluates each interconnection petition, wasteful construction of facilities would be curbed. Under such conditions, with vigorous anti-trust enforcement, deregulation of competitive services could occur.

Under conditions where head-on competition prevails, no ceiling should be imposed upon carrier profits. Carriers should be permitted in those cases to remove their charges from the non-discriminatory constraints of tariff filings. As a result, traditional carriers would take on a new characteristic. Some of their business would be common carrier in character and therefore regulated. The remainder would be competitive and non-regulated.

c. Separate Accounting - In such a case, the carrier should be required to maintain accounting systems which segregate operating expanse and capital investment associated with competitive operations from those associated with regulated services. Plant investment devoted to competitive service, as identified by the carrier, would be removed from the rate base for regulated services; and overhead associated with competitive services could not be charged to regulated services.

d. Marginal Cost Pricing - Since increments of plant devoted to competitive services seldom will be subject to physical identification apart from plant generally, there will be difficulties in apportioning capital and overhead costs where competitive and regulated services are co-mingled in common plant and common operations. Marginal cost pricing concepts should prove equitable in effecting those separations.

But one reservation should be noted. Marginal capital and operations costs should be based upon investment in and overhead associated with plant actually used to provide the competitive service, rather than upon costs associated with hypothetical plant proposed for the future. The most substantial public benefit to be derived from competition is the incentive it provides for adopting new and radical cost-savings technology. If a carrier is permitted to thwart the threat of competition with pricing based upon hypothetical plant using the latest state of the technology without actually constructing that plant, then the major benefit of competition is destroyed.

H. Improving Carrier Regulation - While a new regulatory environment will contribute to expanding beneficial competition in communications, many communications services will remain common carrier in character and therefore require regulation. There is widespread agreement that

carriers should be regulated more effectively than in the past. A large part of the problem is attributable to a lack of adequate regulatory resources. Those resources must be extensively suplemented in the future.

But, in addition to money and man power, other contributions can be made to the regulatory process. The regulator should be empowered and encouraged to require common carriers to afford greater tariff flexibility, greater service flexibility, and greater systems engineering flexibility in the future.

I. Tariff Flexibility

a. History - The power to initiate tariffs, thoughtfully exercised by the regulator, can result in greater systems optimization and a larger variety of carrier services. Historically, AT&T has argued that the public message service is not price-demand elastic. Upon its own initiative, it has not attempted to adopt flexible pricing policies designed to penalize use during peak traffic periods or encourage use off peak. Apart from night-time rates initiated when the President assumed operation of the telephone system during World War I, the only significant off-peak-rate concession undertaken has been the recent reduction in station rates after 8 p.m. which the telephone company adopted only after substantial pressure from the FCC.

b. Traffic Loading Characteristics - A study of traffic loading profiles subsequent to the new rate demonstrates significant price-demand elasticity, at least during the affected time period. Contrary to telephone company conclusions, the tariff structure may be subject to price-demand elasticity throughout the day and particularly during periods of greatest and least demand under existing tariffs. Attached as Appendix "A" is a graph which reflects the composite 24-hour loading profile of the interstate public message telephone system for an average weekday during October of 1965. Two dramatic characteristics are made clear by that profile. The first is the relatively low percentage of total system utilization averaged over a 24-hour day. The second is the significant rise in station-to-station calls at 8 p.m. when the cheapest rate goes into effect.

Even more dramatic characteristics of the system appear upon closer analysis. Assuming a bias in favor of price-demand elasticity as a device for optimizing the system and generating the largest feasible total revenues, systems capacity was divided upon the attached profile into five equal segments represented by dark horizontal lines across the graph. As indicated on the left, each segment between those lines represents a capacity of 50,000 calls during each half-hour period.

The peak half-hour period is from 10:30 to 11 a.m. That peak represents a total of 235,106 calls during the 30 minute period. While systems capacity is ordinarly expressed in terms of total channels, for the sake of this analysis capacity is characterized in terms of total average messages during 30 minute segments. Maximum capacity of the system in real numbers of channels can be calculated, but data establishing maximum capacity in calls per half hour is not available and according to AT&T, is not easily calculable. Therefore, this analysis assumes an arbitrary maximum capacity of 250,000 calls per half hour. That maximum divides capacities into five easily calculable segments of 50,000 each which greatly simplified the analysis. And in view of the company's construction practices, which require new construction to be initiated when peak loads upon transmission facilities regularly exceed 85 percent of circuit capacity, the arbitrary maximum should not be unreasonably high. Rather than an excess capacity of 15 percent it reflects a spare capacity of just under 10 percent.

c. Revenue Characteristics - In an attempt to relate revenues to calling practices for each 50,000 segment of total capacity, the average revenues per call for each class of service during each rate period was multiplied by the average number of calls of particular types during those periods. The result reflects total revenues generated by each of the five system segments during the average weekday. Then those totals were converted into relative percentages. Appendix "B" graphically portrays those percentages.

The first of five segments of system capacity (up to 50,000 calls per half hour) generated 43.1 percent of all daily revenues. The second segment (50,000 to 100,000 calls) generated 25.3 percent of those revenues. The third (100,000 to 150,000 calls) generated 18 percent. And the fourth and fifth segments generated 12.2 percent and 1.4 percent respectively. Forty percent of the total capacity accommodated calls yielding 68.4 percent of total revenues, while 60 percent of plant capacity generated only 31.6 percent of those revenues. And 60 percent of capacity exists to serve peaking loads. (Observe loading profile above 100,000 calls per half hour on Appendix "A".)

Even if the telephone company is correct in its assumption against price-demand elasticity in its pricing policies, it seems obvious that calls between 9 a.m. and 5 p.m. and between 6 p.m. and 10 p.m. do not contribute an equitable share of total revenues related to total system capacity. And a regulatory policy which requires significantly higher rates for peak period calling might reduce total capacity needs if the involved calls are indeed price-demand elastic.

J. Service Flexibility

a. Private Line Service and WATS - Another way regulator initiative could result in better systems optimization is through requiring more variety in service classifications, particularly for services which are not presently accommodated by the public message network. The loading profile we have appended only reflects usage of the public message network. It does not include loading of private line services. Yet, as a functional entity the transmission segments serving private line customers cannot be distinguished from that segment serving toll messages.

As noted in the staff paper on the domestic common carrier industry, a customer who requires point-to-point interconnection for more than 40 minutes per day gains an economic advantage under existing tariffs by leasing a line available to him 24 hours per day. In real time communicating capability, the economic tradeoff occurs at a ratio of 36 to 1. But few private line customers utilize that service a full 24 hours per day. And many could just as well meet their private line requirements during times of the day when the public message service is not experiencing peak loading. Yet, for the most part, private line service extends over the full 24 hours and, no doubt, substantial system capacity devoted to it lies idle during public message peaks.

Greater systems utilization might result from a service classification which offered private line connections at a cheaper rate only between the hours 9:30 p.m. and 9 a.m. for example. By the same token, equity may dictate that private line customers who require interconnection during peaking periods pay more for the privilege than is paid under existing tariffs. By the same token, WATS services which bridge peaks may be underpriced, while untapped demand for WATS during non-peak hours might generate dramatically large contributions toward total revenue requirements.

b. Television Networks - Substantial public benefit would derive from greater flexibility in another service classification, television networking. Existing tariffs require an eight-hour minimum for video interconnection. The established commercial television networks are in many ways a product of that minimum. Viewed in this way, one of their important characteristics is that of a communications broker for program originators. If independent program originators enjoyed the opportunity to distribute their programs directly to stations, paying the telephone company only for network time actually used, two important benefits would be enjoyed. Unconstrained by

by commercial network scheduling and programming limitations, greater program diversity should result. And in markets with more than three stations the potential earnings gap between affiliated stations and non-affiliates should be significantly narrowed.

Such flexibility could result also in greater optimization of existing telephone transmission facilities. The profile represented by Appendix "A" does not include television network traffic. As a practical matter, television networks are a private line service dedicated apart from the public message network. Yet, when one observes the traffic peaks upon the attached profile and relates those peaks to network television programming during the identical hours, it is apparent that programs of least economic value are being carried coincident with public message systems requirements of highest economic value. Even existing commercial networks, given an option through tariff flexibility, might find it desirable to vacate the telephone system to more expensive public message traffic between the weekday hours of 9 a.m. to 12:30 p.m. and 1 p.m. to 5 p.m. for example. In lieu of those seven and a half hours real-time networking, they might find it desirable to transmit those programs during off-peak hours. Under such an arrangement, the affiliate station would simply record the affected programs for replay later.

K. Systems Engineering Flexibility - This sort of flexibility between television services and the public message network during peak hours presents systems engineering problems beyond a mere restructuring of rates and service classifications. As a matter of fact, the eight hour television network minimum is dictated in large part because those networks must be patched together and balanced manually. After their use, they must be taken down in the same way. These manual operations require several hours time and considerable manpower. And during that time, the involved circuits are unavailable for any use, either television or telephony. Only in three locations does the telephone company possess an automatic switching capability for video. Yet from an engineering and economic standpoint this type of flexibility might be widely enjoyed if pressures were brought to ensure it.

Those pressures may originate from two forces, regulation and competition. One of the most attractive features of satellite technology is its adaptability to reconfiguration in various segments of broad-band transmission capacility in a short time. It is far more adaptable to automatic switching of broad band. If that technology is freed to compete headon with the terrestrial system for television networking, it will have the capability of affording short time video interconnection. Faced with that type of competition and encouragement from the regulator, AT&T is likely to find ways to adapt its terrestrial system to compete economically.

L. National Security Considerations - These suggestions, if adopted, would result in a single communications system both domestically and internationally. But that system would be made up of various constituent elements operated by separate institutional entities. Systems integrity can be maintained through uniform technical and operational standards. Those responsible for national defense have grave reservations about subjecting our communications system to segmented management. Confronted with a national emergency, they believe our communications capability must be under single institutional management if it is to possess the flexibility and responsiveness required for national defense.

On the other hand, members of the defense community would like to see the largest possible communications plant in place. Contemplating service restoration after destruction of substantial portions of the system, they view excess capacity and redundancy as a very real bonus in times of emergency. They are therefore not motivated by incentives for optimizing systems use and are not offended by resource allocation decisions which do not minimize systems investments. From their standpoint then, a single-manager, sole-source monopoly for both domestic and international communications is very appealing and they prefer for that monopoly to possess a systems capacity in excess of that dictated by purely commercial practices.*

---

* The desire that commercial communications systems be designed and operated to offer the greatest possible defense capability in the event of national emergency raises another serious resource allocation question. While the Department of Defense wishes the commercial system to include the largest possible capacity to meet defense contingencies, it is not prepared to compensate the carrier directly for capacity in excess of normal civilian needs except to the extent it leases its own lines from the carrier. The revenue support for any additional excess justified on defense grounds must come from communications customers generally. In addition, AT&T has installed a number of "hardened" cables and "hard" operations centers solely to enhance their survivability in case of attack. The design of those facilities comprehends nuclear attack. Consequently, the investment in them is much greater than required for day-to-day commercial operations. Those additional investments, while made with the cognizance of the FCC and State regulatory commissions, were not a procurement requirement of Defense. Therefore, additional investment rationalized as a defense measure was not paid for out of the defense budget. Rather, those additional costs became a part of AT&T's overall rate base for calculation of revenue requirements generally. In both instances -- hardened sites and excess capacity for defense purposes -- a hidden tax is imposed upon the telephone customer. Those expenses are more appropriately chargeable to the defense budget.

On their face, these proposals may seem at variance with considerations of national defense. To the contrary, free interconnection of all systems will afford a communications capability which is far larger than AT&T possesses alone. And, since the President is empowered to assume management of all communications systems during appropriate emergencies, the other consideration important to defense can be met as well. Under such circumstances the White House would become the single operator of all interconnected systems, carriers and private alike. In the meantime, uniform operational standards could be adopted to ensure that the system is subject to unitary management during emergencies.

III. Spectrum Management

A. History - Heretofore, we have treated the spectrum as a free good. Within arbitrary bands of service designation, our past policy for allocating the resource has been simply to afford access on a first-come, first-served basis without significant economic penalty attached. In retrospect, we may defend the band designations as reflecting a relative order of social priorities, but they too sort of grew like Topsy. The identification of those bands and the quantity of spectrum assigned to each were not decisions made against a thoughtfully derived set of social priorities, but were merely attempts to compromise institutional interests as demand grew. So, in band designation as well as discrete assignments, first-come, first-served was largely the order of the day.

It was Congress that decided social values would govern the allocation of this public resource. Access to it was to be afforded those who served "the public interest, convenience or necessity." But in adopting a scheme of social values governing the allocator, Congress recognized that social conditions were likely to change and that social values therefore might change. Explicit requirements in the law that no property attaches to spectrum assignments is a recognition of that fact. And provision for periodic license renewal was included to afford the allocator an opportunity to meet changing conditions.

As a matter of fact, through, the Congressional purpose has been thwarted. Almost from the beginning, the allocator while requiring recipient to disavow any property interest, has treated the license privilege as a property right. Pragmatically, in attempts to describe a species of non-property freehold which defies any common law conception, we have taken to calling incumbent licenses "grandfather rights." In the field of broadcasting, we have gone further. With the consent of Congress, we have permitted

licensees to transfer those "grandfather rights" almost as freely as absolute property. And the prices exacted for those transfers reflect a value associated with the "grandfather right" which frequently is greatly in excess of the value of more tangible property included in the sale. There has been a market in broadcast rights for a good long time. But other licensees have not been so favored.

B. Policy Void - Until demand for spectrum exceeded supply, the first-come, first-served tradition created no serious problems. Growing shortages have created a situation where, more and more, the resource allocator must decide between competing claims for its use. In those cases there has been a policy void, requiring the allocator to resolve competing claims on an ad hoc basis without policy guidelines more specific than "the public interest, convenience or necessity."

That policy void must be filled in the future. Market forces to decide priorities between competing claimants offers an attractive solution. The Task Force recommends increasing use of economic incentive and penalty to aid the spectrum allocator. License fees approximating economic value are suggested. The right to transfer all licenses, not just broadcasting, is endorsed. Higher fees will tend to reduce the number of competing applications and unsuccessful applicants are afforded the option of buying spectrum assignments from their successful counterparts. But the basic policy question remains unanswered, to wit: How does the spectrum manager resolve competing claims for a specific unit of the resource?

C. Spectrum Leasing - The policy decision could endorse either economic values or social values or a combination to determine allocation priorities. While attractive in the abstract, social priorities for resource allocation are extremely difficult, if not impossible, to establish. On the other hand, market forces are the most flexible and administratively efficient tool available to the resource allocator. It is as difficult to combine the two concepts as it is to determine social priorities in the first instance.

Therefore, the most attractive policy for resolving competing claims to a resource is a free market which ignores the social importance of those who bid in it. That market may be in absolute property rights or it may be in more limited rights similar to a leasehold in realty. It is probably not desirable that absolute property rights in spectrum be established for two reasons. First, the technology which utilizes the resource is relatively new and continually changes. Therefore the ability to recover spectrum for use by changing technology is desirable. Secondly, while market

value has a resource conservation impact on private property, those economic incentives do not operate upon government use. Rather, in government annual charges are a more effective discipline for economy. For these reasons, the spectrum market should deal with rights for a fixed period of time rather than absolute property rights.

In that case the lease period and dimension of specific spectrum units would be set by the spectrum manager after taking economic and engineering factors into account. A minimum rental for the period would be established. Where competition occurs applicants of whatever social identification would simply compete at auction for access to the assignment, and the highest bidder in lease rentals would be awarded the license throughout the term. At the end of each term the auction process would be repeated.

This approach, wholly ignoring social values, would permit a florist to bid against a police department for example. On the face of it, that possibility would offend many people. But spectrum is a resource which is primarily economic in character. Even police use it as a less expensive alternative to other modes of communication. The social requirement is not that we afford free goods to essential public services. Otherwise, it is arguable that every good used by police should be afforded free by its supplier. The essential social requirement is that desirable public services be adequately financed to enable acquisition of needed resources.

D. Broadcasting - A collateral benefit might flow from lease payments received for spectrum use. Payment for broadcast rights are likely to aggregate as a substantial sum. After deduction of administrative costs, those proceeds might be earmarked for the support of public broadcasting. This seems more logical to us than requiring AT&T to furnish networking to public television stations free of charge. The former bears some relationship to broadcasting, while the latter is still another hidden tax imposed upon the telephone customer.

E. Government Users - A final note before leaving the spectrum chapter. Whatever economic penalties or market forces are injected in spectrum allocation should also be imposed upon government users. One of the principal motives for economic penalty is to encourage conservation of resource use. That incentive applies to government as well as non-government users, but only if the penalty is charged to annualized expense. In the interest of efficient resource allocation, government users should pay for spectrum like all others.

IV. Federal Roles

The final area of primary importance involves the Federal Roles chapter. In the regulation of common carriers, the FCC has two basic responsibilities which are inherently conflicting. Its Common Carrier Bureau is

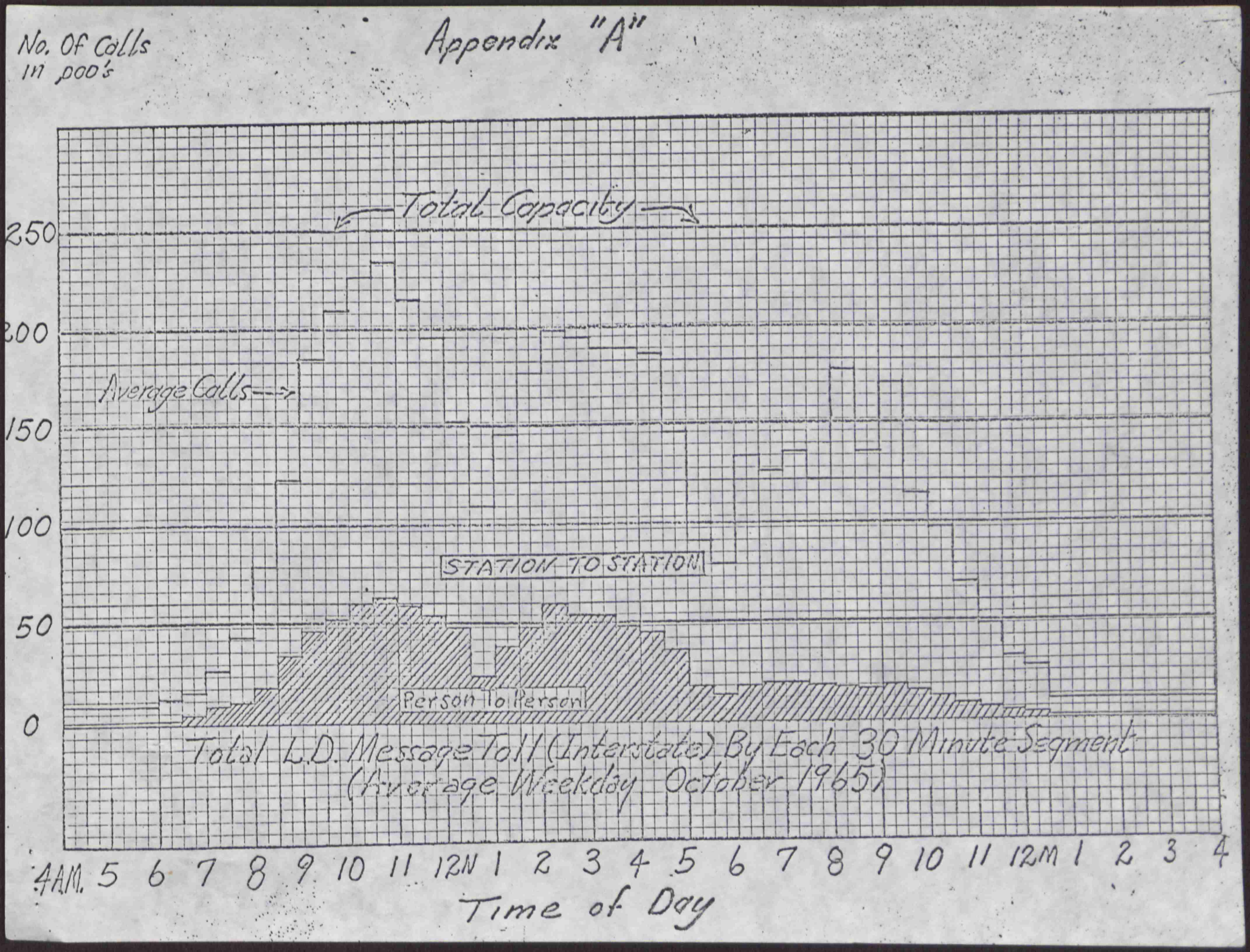
responsible for advocating the public interest generally in carrier matters, while the Commission must act as adjudicator of conflicts between the narrow interests of carriers and others and between those interests and the public interest generally.

By way of analogy, the Common Carrier Bureau is prosecutor and the Commission is judge. But in this instance the prosecutor is completely beholden to the judge. It can become involved only in those matters which the Commission permits, and it takes no appeal from a Commission action it considers adverse to the public interest. The public interest deserves an advocate with greater independence.

FCC should retain the adjudicatory responsibility in common carrier regulation. But the new Executive Branch capability should be given the responsibility for protecting and advocating the public interest in matters before the Commission. In that connection, like the Justice Department before the Federal Courts, it should be treated as any other party before the Commission. It should be subjected to the same rules of evidence and procedure and would be empowered to appeal Commission actions.

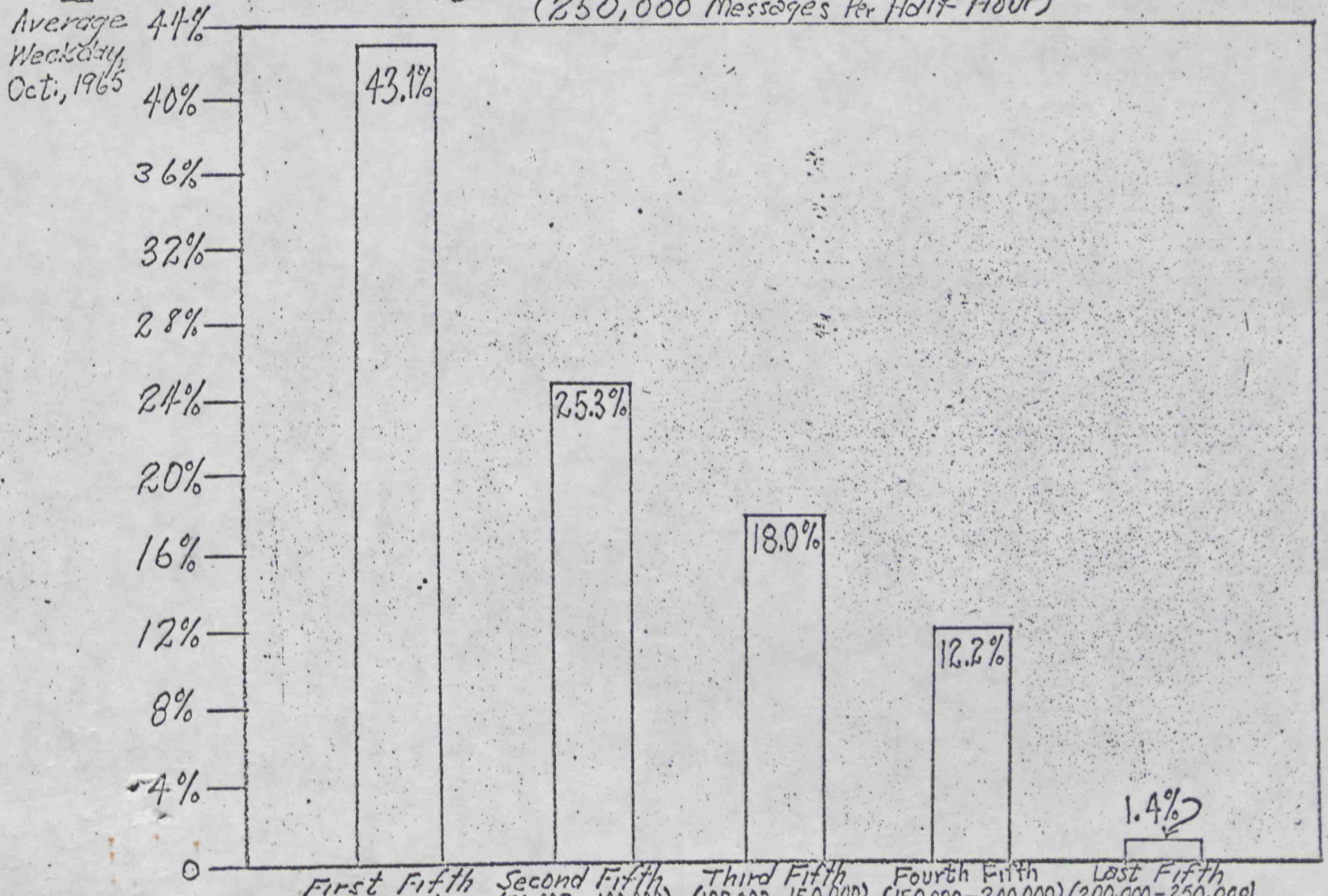
Robert M. Lowe
November 1, 1968

Appendix "A"


No. Of Calls
In 000's
Total Capacity
250
200
150
100
50
0
Average Calls
STATION TO STATION
Person To Person
Total L.D. Message Toll (Interstate) By Each 30 Minute Segment
(Average Weekday October 1965)
4AM 5 6 7 8 9 10 11 12N 1 2 3 4 5 6 7 8 9 10 11 12M 1 2 3 4
Time of Day

Appendix "B"

Comparison of Revenue Generated By 1/5 Intervals of Total Capacity (250,000 Messages Per Half Hour)



Source:
AT+T
Schedule I Traffic
October, 1965

Relative Message Capacity Per Half Hour In One Fifth Intervals
(Interstate Message Toll, Average Weekday Oct. 1965)