Federal Communications Commission

27th annual report
Fiscal year ended June 30, 1961

With summary and notation of subsequent important developments.

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COMMISSIONERS

Members of the Federal Communications Commission

(As of June 30, 1961)

NEWTON N. MINOW, *Chairman*
(Term expires June 30, 1968)

ROSEL H. HYDE
(Term expires June 30, 1966)

ROBERT T. BARTLEY
(Term expires June 30, 1965)

ROBERT E. LEE
(Term expires June 30, 1967)

T. A. M. CRAVEN
(Term expires June 30, 1963)

FREDERICK W. FORD
(Term expires June 30, 1964)

JOHN S. CROSS
(Term expires June 30, 1962)

A list of present and past Commissioners appears on page IV.

LETTER OF TRANSMITTAL

FEDERAL COMMUNICATIONS COMMISSION,
Washington 25, D.C.

To the Congress of the United States:

Submitted herewith is the 27th annual report of the Federal Communications Commission for the fiscal year 1961.

The report furnishes particular information and data required by section 4(k) of the Communications Act of 1934, as amended; a section 315 amendment concerning political broadcasts; also material responsive to recommendations made in 1959 by the House Legislative Oversight Subcommittee.

Congressional attention is invited, in particular, to Commission actions in implementing the many changes to the act made in 1960, efforts of the Commission to make broadcasters more aware of their public interest responsibilities, the Commission's relation to and activities in national defense and space communication matters, and problems and policies reflected in the mushrooming growth of business and private communication services and the continued expansion of common carrier telephone and telegraph facilities.

To serve as a more timely reference, the report notes important developments since the fiscal year closed on June 30, 1961.

Respectfully,

NEWTON N. MINOW, *Chairman.*

PAST AND PRESENT COMMISSIONERS

Commissioners	*Politics*	*State*	*Terms of service*
*Eugene O. Sykes	Dem.	Miss.	July 11, 1934–Apr. 5, 1939
Chairman			July 11, 1934–Mar. 8, 1935
*Thad H. Brown	Rep.	Ohio	July 11, 1934–June 30, 1940
Paul A. Walker	Dem.	Okla.	July 11, 1934–June 30, 1953
Acting Chairman			Nov. 3, 1947–Dec. 28, 1947
Chairman			Feb. 28, 1952–Apr. 17, 1953
Norman S. Case	Rep.	R.I.	July 11, 1934–June 30, 1945
Irvin Stewart	Dem.	Tex.	July 11, 1934–June 30, 1937
*George Henry Payne	Rep.	N.Y.	July 11, 1934–June 30, 1943
*Hampson Gary	Dem.	Tex.	July 11, 1934–Jan. 1, 1935
*Anning S. Prall	Dem.	N.Y.	Jan. 17, 1935–July 23, 1937
Chairman			Mar. 9, 1935–July 23, 1937
T. A. M. Craven	Dem.	D.C.	Aug. 25, 1937–June 30, 1944
*Frank R. McNinch	Dem.	N.C.	Oct. 1, 1937–Aug. 31, 1939
Chairman			Oct. 1, 1937–Aug. 31, 1939
*Frederick I. Thompson	Dem.	Ala.	Apr. 13, 1939–June 30, 1941
James Lawrence Fly	Dem.	Tex.	Sept. 1, 1939–Nov. 13, 1944
Chairman			Sept. 1, 1939–Nov. 13, 1944
*Ray C. Wakefield	Rep.	Calif.	Mar. 22, 1941–June 30, 1947
Clifford J. Durr	Dem.	Ala.	Nov. 1, 1941–June 30, 1948
Ewell K. Jett	Ind.	Md.	Feb. 15, 1944–Dec. 31, 1947
Interim Chairman			Nov. 16, 1944–Dec. 20, 1944
Paul A. Porter	Dem.	Ky.	Dec. 21, 1944–Feb. 25, 1946
Chairman			Dec. 21, 1944–Feb. 25, 1946
Charles R. Denny	Dem.	D.C.	Mar. 30, 1945–Oct. 31, 1947
Acting Chairman			Feb. 26, 1946–Dec. 3, 1946
Chairman			Dec. 4, 1946–Oct. 31, 1947
*William H. Wills	Rep.	Vt.	July 23, 1945–Mar. 6, 1946
Rosel H. Hyde	Rep.	Idaho	Apr. 17, 1946–
Chairman			Apr. 18, 1953–Apr. 18, 1954
Acting Chairman			Apr. 19, 1954–Oct. 3, 1954
Edward M. Webster	Ind.	D.C.	Apr. 10, 1947–June 30, 1956
Robert F. Jones	Rep.	Ohio	Sept. 5, 1947–Sept. 19, 1952
*Wayne Coy	Dem.	Ind.	Dec. 29, 1947–Feb. 21, 1952
Chairman			Dec. 29, 1947–Feb. 21, 1952
George E. Sterling	Rep.	Maine	Jan. 2, 1948–Sept. 30, 1954
*Frieda B. Hennock	Dem.	N.Y.	July 6, 1948–June 30, 1955
Robert T. Bartley	Dem.	Tex.	Mar. 6, 1952–
Eugene H. Merrill	Dem.	Utah	Oct. 14, 1952–Apr. 14, 1953
John C. Doerfer	Rep.	Wis.	Apr. 15, 1953–Mar. 10, 1960
Chairman			July 1, 1957–Mar. 10, 1960
Robert E. Lee	Rep.	Ill.	Oct. 6, 1953–
George C. McConnaughey	Rep.	Ohio	Oct. 4, 1954–June 30, 1957
Chairman			Oct. 4, 1954–June 30, 1957
Richard A. Mack	Dem.	Fla.	July 7, 1955–Mar. 3, 1958
T. A. M. Craven	Dem.	Va.	July 2, 1956–
Frederick W. Ford	Rep.	W. Va.	Aug. 29, 1957–
Chairman			Mar. 15, 1960–Mar. 2, 1961
John S. Cross	Dem.	Ala.	May 23, 1958–
Charles H. King	Rep.	Mich.	July 19, 1960–Mar. 2, 1961
Newton N. Minow	Dem.	Ill.	Mar. 2, 1961–
Chairman			Mar. 2, 1961–

*Deceased.

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Report Summary

GENERAL

Electronic communication is rendering public and private services on a scale undreamed of when the Federal Communications Commission was created a little more than a quarter of a century ago. For one thing, the developments of 1961 demonstrate that radio is rapidly being shorn of its earthbound shackles by the ingenuity of the new age. Also, in view of the tensed world situation, the importance of instantaneous communication to national defense is more firmly established than ever.

The act of 1934 which provided for telecommunications regulation by the Commission did not anticipate or make specific provision for these happenings any more than it could have foretold the full development of TV and FM broadcast; or the harnessing of radio for a myriad of uses by business, industry, public agencies, and individuals; or the introduction of communication refinements such as radar, transistors, coaxial cable, microwave, split channels, and ocean cables which carry telephone conversations as well as telegraph messages.

That the United States is by far the world's greatest user of radio is attested numerically by the nearly 3.3 million such authorizations of all kinds now under FCC jurisdiction. This is almost half a million more than last year.

Radio stations collectively exceed 790,000, an increase of 122,000 over 1960. Together they employ over 2.7 million fixed, mobile, and portable transmitters, which is 500,000 more than the year previous.

In addition, the number of commercial radio operator permits increased from about 1.9 million to nearly 2.3 million, and amateur operators rose from some 206,000 to over 216,700.

Because program broadcast enters the home it commands the lion's share of popular interest—and controversy. But the nonbroadcast services (whose stations outnumber broadcast facilities 55 to 1) are also important, since they help protect life and property on the land, on the water, and in the air; aid business and other private enterprise; and concern everyone who uses long-distance and international telephone, telegraph, and cable services, and the rates they pay for these conveniences.

NATIONAL DEFENSE

One of the law's stated objectives of the FCC is "for the purpose of the national defense." It also gives the President powers to marshal radio and wire facilities in a national emergency.

An Executive order of 1951 requires the Commission to curb electromagnetic radiation which might guide enemy aircraft and electronic missiles.

In connection with the civil defense program, the Commission has provided a system (called CONELRAD) to alert and control all types of radio operation in time of war. Meanwhile, this system is being put to peacetime use in giving advance warning of serious storms, floods, and other destructive forces of nature.

With industry cooperation, the Commission has established FM Defense Networks in 31 States to further provide the public with emergency communication, to the inclusion of reports of severe weather disturbances.

During the year, a plan was effected to enable the President and other key Federal officials to broadcast to the public via the networks in a national emergency.

In preparing and executing plans for the harnessing of radio and wire facilities to the national defense program, the Commission is assisted by a Military-FCC Emergency Communications Committee; regional, State, and local Industry Advisory Committees; and an FCC unit of the National Defense Executive Reserve.

SPACE COMMUNICATION

Demonstration of radio's ability to pierce outer space presages ultimate regular global communication via manmade satellites, and with earth-launched vehicles carrying humans or apparatus to further probe the great beyond.

Although the Commission is not responsible for the actual launching of any space communications vehicle, its authority over international common carriers operating in this country and its obligation to promote new uses of radio require it to plan for and encourage future space communication.

It has initiated two proceedings to accomplish this objective. One is an inquiry into space frequency needs for space communication on a long-range basis. The other is an inquiry looking to the earliest practicable development of a commercially operable space satellite communication system. As part of this inquiry, on July 25, 1961, the Commission invited a committee composed of the international common carriers to speed recommendations for the establishment of such a system. The committee reported on October 13 thereafter.

Space communication requires international agreement on frequencies to be used for this purpose throughout the world. At the present time, bands are provided for space research purposes only. At the request of the Department of State, the Commission is helping formulate U.S. space requirements for consideration at a future world telecommunications conference.

Meanwhile, the Commission is encouraging experimentation by its licensees so that private industry may develop additional technical information which will further this country's overall space program.

BROADCAST

Programs

The Commission intensified its effort to insure that broadcasters operate in the public interest. It announced a policy on programing and instituted a closer check on station performance, with special attention to complaints. Stress was placed on the requirement that stations ascertain and serve the programing needs of their respective communities. Applicants for new stations, renewals, sales, and major changes must now give local public notice of that intent; also when their applications have been designated for hearing. Hearings on revocation orders or of the type involving many local witnesses are held, insofar as possible, in the places affected.

Congress amended the Communications Act to specifically authorize the issuance of short-term licenses when circumstances warrant and to provide for the levying of fines for infraction of rules, thus providing less extreme sanctions than revocation of license. It also outlawed "payola" and "fixed" quiz shows.

The Commission proposed to require more programing information on application forms, looks toward hearings on transfers of any station held less than 3 years, and is continuing its hearings on various phases of TV network program selection methods.

Television

TV now enters 90 percent of the country's homes. However, the Commission is encouraging more use of UHF channels to achieve a truly nationwide competitive TV system. Besides suggesting the deintermixing of VHF and UHF operation in markets where possible, it has proposed further relaxations to spur more UHF stations, has begun tests in New York City of the use of UHF for covering a large metropolitan area, and seeks legislation to require that TV sets be equipped to receive UHF as well as VHF signals. At the same time, it is providing for TV service to remote places by authorizing translators, repeaters, and boosters.

Commercial TV.—TV stations (other than network owned) will be prohibited from being represented in national "spot" sales by networks

after December 31, 1961. Comments have been invited on whether TV "option time" (reservation of station time for network programs) is in the public interest.

The first grant for a test of subscription TV was made to station WHCT, Hartford, Conn., which now plans to start such programs by July 1, 1962.

During the year the number of commercial TV station authorizations decreased (for the first time) from 653 to 650, and operating authorizations fell from 579 to 553. However, more than a thousand TV repeaters came into existence, and TV translators increased from about 300 to 700.

Educational TV.—Noncommercial educational TV station authorizations added 3 to total 67, including the first such station for the Nation's Capital. Fifty-four ETV stations were operating, compared with 47 a year ago. The number of channels reserved for ETV operation has increased to 273.

Several States have or propose ETV network operation. The Commission is seeking to make available a VHF educational channel each for New York City and Los Angeles.

Purdue University is experimenting with airborne UHF transmitters to serve educational institutions within 200 miles of Montpelier, Ind.

Frequency Modulation

Increased interest in FM is manifest by mounting applications and more competition for commercial facilities. This is due, in large part, to the growing scarcity of AM outlets, the opportunity for FM stations to obtain additional revenue by furnishing subsidiary services, and by the blanket authority recently given them to engage in stereophonic broadcasting.

In view of these developments, the Commission proposed to revamp the FM rules with respect to mileage separations, establish three classes of commercial stations—one with service range of 25 miles, another of 50 miles, and the third of 100 miles. In addition, educational stations would be of two classes—one of low power (10 watts) and the other with power and ranges equal to commercial FM stations. It also will consider whether duplication of AM programs on FM stations should be curtailed.

Commercial FM.—Commercial FM gained 180 authorizations during the year, to bring its total to nearly 1,100. This figure exceeds the previous high of 1,020 in 1948, which decreased to around 550 in the middle 1950's. Of the approximately 890 commercial FM stations operating at the close of fiscal 1961, 275 held subsidiary communications authorizations.

Educational FM.—Noncommercial educational FM continued its slow but steady progress, gaining 18 authorizations to bring its total to about 200, of which 186 were on the air. Educational FM stations can now render subsidiary services, but of a noncommercial nature.

AM Broadcast

AM radio continued to withstand the impact of TV. There was a net gain of 176 authorized stations for the year, bringing the total to more than 3,700, of which number 3,600 were operating (over 100 more than a year ago).

Termination of the 16-year-old proceeding involving clear-channel operation was indicated when the Commission opened the way for assignment of one unlimited time class II (secondary) station on each of 13 of the 25 clear channels, under controlled conditions, to benefit unserved or underserved areas.

During the year, two important international pacts concerning AM broadcast entered into force. One was the North American Regional Broadcasting Agreement; the other was a separate agreement with Mexico.

SAFETY AND SPECIAL

The more than 40 classes of radio operations in the Safety and Special Radio Services constitute the largest category of Commission nonbroadcast radio station authorizations. Their 770,000 grants cover radio systems utilizing over 2.6 million fixed, portable, and mobile transmitters. This is an increase of 118,000 stations and 478,000 transmitters over the previous year.

The fastest growing of these services is citizens short-distance communication for many business and personal purposes. During fiscal 1961 this service added 80,000 stations to bring its total over 206,000. They employ 657,000 transmitters, or 216,000 more than in 1960.

Amateur stations increased by 5,000, to over 222,000.

The marine services gained 13,000 stations, to exceed 110,000. These ship and coastal stations use nearly 128,000 transmitters, an increase of 21,000.

Aviation added 1,600 stations, to approach 93,000. Such air and ground use requires nearly 147,000 transmitters, an increase of about 2,500.

Expanded industrial operations netted 13,000 stations, for a total nearing 78,000. The 757,000 transmitters involved is about 117,000 more than last year.

Police, fire, local government, and other public safety services required more than 3,700 new stations, to bring their total to over

36,000. Their 415,000 transmitters is a gain of over 43,000 for the year.

Land transportation (railroad, taxicab, bus, and truck) services noted only 600 additional authorizations, but their yearend total of over 12,000 stations involved utilization of 341,000 transmitters, or 82,000 more than the year previous.

During the year the Commission effectuated its policy of permitting microwave frequencies to be used by safety and special services for point-to-point communication, as well as for omnidirectional operations on a regular basis, without regard to the availability of common carrier services. It extended the license term for certain marine stations to 5 years, provided frequencies for the exclusive use of hospitals and their ambulances, and expanded radio eligibility of physicians and veterinarians to include urban as well as rural practitioners.

COMMON CARRIER

Telephone

The number of telephones in the United States exceeds 74 million, or more than half the world's total. Service is provided by more than 3,300 companies. Daily calls average 285 million. Annual gross revenue exceeds $9 billion on an industry gross investment of nearly $29 billion.

The Bell System, which operates about 80 percent of all domestic telephones, does about 85 percent of the telephone business. About half of its telephones can now dial long-distance calls. Nearly all Bell and independent phones are dialed for local calls.

Bell is constructing a new coast-to-coast relay system which will have three times the capacity of its present type of microwave system. Its relay facilities now serve 380 TV stations. The world's first electronic central office opened at Morris, Ill.

The Commission is conferring with the Bell System on the matter of interstate message toll rates, which in 1960 earned 7.8 percent on net plant. It is also considering three new Bell tariffs—TELPAK (providing for volume private line rates), WATS (Wide Area Telephone Service), and WADS (Wide Area Data Service).

Sabotage of several telephone facilities during the year resulted in Congress providing severe penalties for jeopardizing national defense and public communication service.

Telegraph

Western Union, which operates the only nationwide telegraph system, reported record gross revenues, but a decline in net income to slightly over $11 million. The continual decreased volume of telegraph messages (more than 45 percent during 1945–60) is due to growth in private line telegraph services of the Bell System as well as

of Western Union, growth in the telephone company's TWX service, improved and expanded airmail service, and increased rates for message telegraph service.

Increased telegraph rates which became effective during the year were designed to provide Western Union with about $12.6 million additional annual revenue. They were requested to offset increased wage costs.

Western Union's $150 million 1960–61 construction program calls for new links in its proposed transcontinental microwave system and special facilities to serve Government and business. Its teleprinter exchange service (TELEX) now links 27 cities in the United States and 140 points in Canada and Mexico, with connection to 45 other U.S. cities in immediate prospect.

Among Western Union installations for the Government during the year was a network connecting satellite tracking stations and a facsimile system for speeding weather maps to 650 points throughout the Nation. It is also extending its bomb alarm system on the eastern seaboard to a nationwide network, and completing a logistics network to connect 450 Air Force bases, and other installations.

International

American Telephone & Telegraph Co. continued to expand its oversea telephone cable system. Its third transatlantic cable will be the first one to connect with the United States direct. Other cables will link the United States with Bermuda and points in the Caribbean area. Additional cables are planned from Hawaii to Japan, to interconnect at Hawaii with a cable from Canada to New Zealand and Australia as well as the cable from Hawaii to the United States. The telegraph companies continued to lease channels in existing telephone cables to supplement their own facilities.

Gross revenues of international telegraph and telephone carriers continued to rise. The Commission has requested A.T. & T. to make a cost study to reflect the level of earnings of its oversea communication services.

Western Union and American Securities Corp. reached an agreement for the former to divest its international telegraph operations, as required by law. They would be taken over by an independent company. After hearings, the Commission conditionally approved the proposal.

FIELD ENGINEERING AND MONITORING

The Commission's field engineering staff constitutes its "eyes and ears" in the matter of monitoring, suppressing interference, and other grassroots enforcement, as well as inspecting radio stations and giving radio operator examinations. About one-fourth of the Commission's

entire personnel is required for this essential work. They operate 18 monitoring stations, 24 district offices, 5 suboffices and 2 marine offices, supplemented by 2 microwave cars and 2 mobile TV monitoring units.

During the year, the field engineers made 11,600 inspections of radio stations of all kinds which resulted in 10,200 violation notices being served. In the same period it received 28,700 interference complaints and conducted 17,800 related investigations. Resolvement of routine interference cases was aided by 654 cooperating interference committees.

Only 247 cases of unlicensed radio operation were detected during the year as compared with 450 in 1960. Most of these were attempts—especially by juveniles—to use radio without knowing that licensing is required for radiation beyond a limited distance. The FCC monitoring network furnished some 47,600 direction finder bearings, of which 820 were for ships or planes in distress. It identified 90,500 signals on which there was question of origin.

It processed 23,400 antenna proposals in relation to air safety considerations. Included was the 1,749-foot (above ground) tower for joint use of WRBL–TV and WTVM at Columbus, Ga. This shaft, when built, will, temporarily at least, be the world's tallest manmade structure. One hundred TV towers more than 1,000 feet tall are now in operation.

RESEARCH

In addition to its New York City UHF–TV project (mentioned elsewhere), the Commission is engaged in VHF and UHF propagation research, and is studying TV allocations in the light of technical developments, single sideband operation for voice communication below 30 Mc, and technical aspects of interference from noncommunication devices.

The Commission has no authority over manufacturers of electronic equipment (its control extends to users only), but it continues to seek the cooperation of manufacturers as well as of users to obtain better compliance with radiation requirements. This has included contacts with foreign manufacturers.

To prevent interference before it starts, certain equipment is approved by the Commission prior to manufacture. The number of type-accepted items was approaching 2,500. Type approval was given to 26 items after being tested at the FCC laboratory at Laurel, Md.

During the year the Commission completed a project covering the impact on radio by two 11-year sunspot cycles. It continues to establish technical standards for equipment used in the various radio services.

During the year, more than 1,400 applications were received for experimental authorizations to test new equipment and techniques.

Most of these were of short duration. At the year end, 757 such grants were active.

FREQUENCY ALLOCATIONS

The Commission prepared for the entry into force domestically of the new Geneva (1959) radio regulations and initiated various changes in the national frequency allocations table to conform with the Geneva international table revisions. It also made other frequency changes to accommodate increasing needs of domestic radio users.

Under Department of State auspices, the Commission helped to prepare the U.S. position for 15 international telecommunications sessions, to which it furnished 42 delegates, including 3 chairmen and 1 vice chairman.

LEGISLATION

Of vital concern to the Commission was enactment of legislation designed to expedite and improve its procedures. Sponsored by the FCC, it conforms largely to the President's reorganization plan except to delegate less powers to the Chairman than was requested by the President. It gives more action authority to the Commissioners—as panels or individuals—and to the staff to enable the Commissioners to devote more time to policy and other major matters; and removes certain procedural restrictions.

The Commission also proposed legislation which, among other things, would permit it to fine rule violators in the common carrier and safety and special services; to regulate community antenna TV systems to some extent; to prescribe minimum performance capabilities for TV receivers; to invoke summary judgment procedure; and to require the marking of abandoned radio towers for air safety.

LITIGATION

The Commission was a party to 78 cases in the Federal courts (31 less than in 1960). Three petitions for writs of certiorari against the Commission were denied by the Supreme Court. The court of appeals affirmed the Commission in 20 cases and reversed it in 7 others. Fifteen appeal cases were dismissed or remanded, and 33 were pending at the year's close.

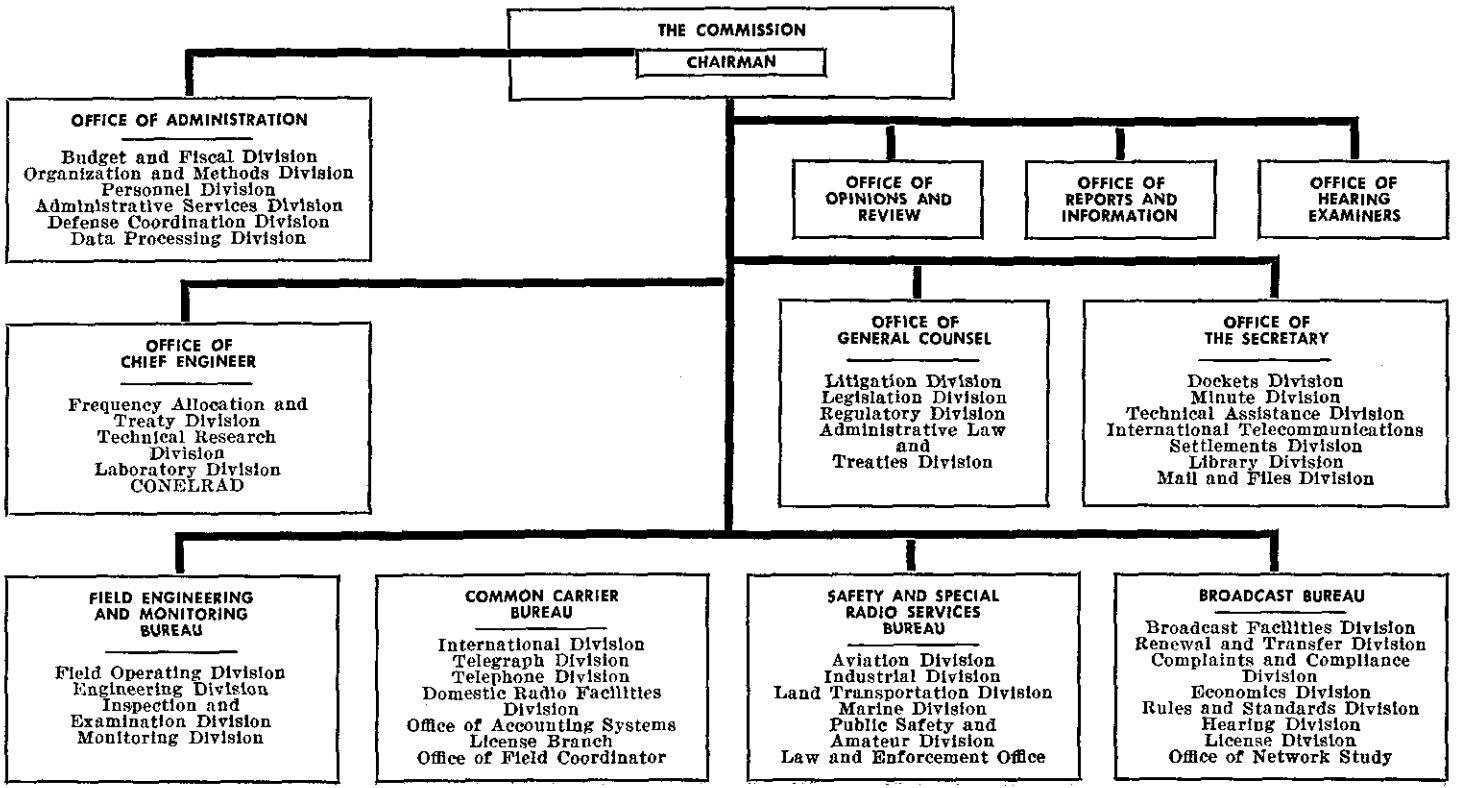
COMMISSION

The Commission operated with an appropriation of slightly under $11.8 million, which was about $1.2 million more than the previous year. It closed the 1961 fiscal year with nearly 1,400 employees.

On March 2, 1961, Newton N. Minow became both a Commissioner and Chairman.

FEDERAL COMMUNICATIONS COMMISSION

Organization Chart as of June 30, 1961



Commission

PURPOSE

The Federal Communications Commission was established in 1934 to unify Federal regulation of wire, cable, and radio communication between the States and between this country and foreign points. Prior to that time this jurisdiction was shared by various Government agencies.

AUTHORITY

The Commission operates under the authority of the Communications Act of 1934, which created it, and subsequent amendments to that statute. Its jurisdiction extends over the continental United States and its territories and possessions, but not to communication facilities operated by the Federal Government.

REGULATION

General

Three major fields of electrical communication are regulated by the Commission. They cover telephone and telegraph services by common carriers operating by wire, cable, and radio; broadcast stations which transmit programs over the air; and a variety of nonbroadcast services used for safety and other special purposes.

The law restricts FCC licensing to U.S. citizens. The Commission cannot license corporations in which any officer or director is an alien, or of which more than one-fifth of the capital stock is owned or controlled by foreign interests.

As far as radio in general is concerned, the Commission allocates bands of frequencies for the different domestic radio services; assigns particular frequencies and call signals to individual stations; authorizes and licenses transmitters; licenses transmitter operators; and establishes and enforces rules and regulations governing radio operation under its jurisdiction.

In addition, the Commission promotes the use of radio to protect life and property; encourages new and wider utilization of radio; curbs interference to radio communication; coordinates private communication systems with the national defense program; and participates in formulating and administering domestically the telecommunications provisions of international agreements to which the United States is a party.

Common Carriers

Commission jurisdiction is of primary concern to common carriers furnishing interstate and international services. Carriers engaged in purely intrastate operations are under the authority of their respective State utility commissions.

The Commission supervises rates and services of subject telephone and telegraph companies. It also reviews the adequacy and the quality of their services. Its approval is required for such carriers to construct, acquire, or dispose of interstate or foreign facilities, to discontinue or curtail service, and for carriers to merge or consolidate.

The Commission prescribes the forms of records and accounts kept by these carriers. Its authorization is required for any person to hold office in more than one company. Subject to the approval of the Secretary of State, the Commission can issue, deny, or revoke licenses to land or operate submarine cables in the United States.

Broadcast

Since the Communications Act declares broadcast stations are not common carriers, the Commission does not regulate broadcast station time charges, profits, salaries, employment, or internal management. The law also guarantees free speech on the air and enjoins the Commission from censoring programs.

The Commission's relation to broadcasting includes the assignment of frequencies, power, operating time, and call letters; the periodic inspection of transmitting equipment and otherwise checking technical operation; passing upon station transfers and assignments and other changes in existing authorizations; modifying and renewing construction permits and licenses; and reviewing the general service of each station to determine whether it has been operating in the public interest.

Receiving sets are not licensed by the Commission, nor does it regulate their manufacture, sale, or servicing. However, limitations are imposed on receiver and other radiations to minimize their interference to radio communication.

Safety and Special

In complying with the law's mandate to encourage new uses for radio and to foster its employment to help protect life and property, the Commission is affording many opportunities for such realization in its Safety and Special Radio Services. This group constitutes by far the largest number of stations, since it embraces practically all radio operations which are neither broadcast nor open for hire to the general public. Included are services dedicated to public safety (police, fire,

etc.); aviation and marine; land transportation; business and industry; and amateurs and citizens interested in more personalized uses.

COMMISSIONERS

The Commission is composed of seven Commissioners who are appointed by the President and confirmed by the Senate. Appointment is for 7 years except in filling an unexpired term. Terms are staggered so that not more than one expires in a year. A Commissioner may serve until a successor takes office, but not beyond the close of the following congressional session.

Not more than four Commissioners may be members of the same political party. A Commissioner cannot have financial interest in any business which the Commission regulates, nor engage in any other business, vocation, profession, or employment while on the Commission. Also, he must be a U.S. citizen.

The President designates one of the Commissioners to serve as Chairman. This appointment is not subject to Senate confirmation. The duration of a chairmanship is at the pleasure of the President. The law designates the Chairman as the Commission's chief executive officer and, as such, he is responsible for administering the internal affairs of the Commission.

The Commissioners function as a body in making all policy determinations. Weekly meetings are held to transact business, except during the August recess when there is a single session to comply with statutory requirement. In addition, the Commissioners hold monthly meetings with staff officers to review the work status and to determine priority for pressing matters. The Commissioners sit en banc in some major proceedings and hear oral arguments (required by law) on exceptions to initial decisions of hearing examiners.

Certain responsibilities are delegated to individual Commissioners and committees of Commissioners. Examples in the first category are the Defense Commissioner, Motions Commissioners, and Commissioner membership in various groups representative of Government and industry telecommunication interests. Within the Commission, Telephone and Telegraph Committees function with Commissioners as members. Individual Commissioners also head or are members of U.S. delegations to international telecommunications conferences.

Actions taken by delegated authority—whether by individual Commissioners, committees of Commissioners, or staff units—are subject to petitions for review by the full Commission.

Commission practices conform to the Communications Act, to the Administrative Procedure Act, and to other applicable laws.

On January 30, 1961, the President nominated Newton N. Minow to the Commission and on February 13 thereafter the Senate confirmed Mr. Minow as a Commissioner to fill out the term of Charles H. King, expiring June 30 of that year, also for the ensuing regular term to June 30, 1968. Mr. Minow's appointment as Chairman was pursuant to the President's announcement of January 9. Chairman Minow took office on March 2.

STAFF ORGANIZATION

The Commission staff has, since 1952, been organized into integrated bureaus and offices on the basis of its principal workload operations and other primary functions.

In consequence, there are four bureaus, each with its own engineers, lawyers, accountants, and other necessary staffing. They are the—

Broadcast Bureau, which deals with AM, FM, TV, and other broadcast services;

Safety and Special Radio Services Bureau, which administers to the nonbroadcast and noncommon carrier radio services (except for common carrier aspects of the marine services);

Common Carrier Bureau, which deals with telephone and telegraph rates and services, whether by wire, cable, or radio; and

Field Engineering and Monitoring Bureau, which is responsible for field engineering work, including inspection of radio stations, monitoring the radio spectrum, technical investigation and enforcement, examination and licensing of radio operators, and special engineering studies.

In addition, there are seven offices with specific functions, namely:

Office of the General Counsel, which serves as chief legal adviser to the Commission in matters concerning litigation, legislation, administrative law and treaties, and regulation;

Office of the Chief Engineer, which deals with the technical aspects of frequency allocations, treaty matters, technical research, and laboratory investigation;

Office of the Secretary, which has charge of the Commission's official records, processing of correspondence and official documents, and certain functions of an administrative nature;

Office of Administration, under the direction of the Chairman, which handles the Commission's fiscal, personnel, and administrative services, including data processing; reviews its organization and methods, and now includes a defense coordination division;

Office of Hearing Examiners, which conducts hearings and prepares and issues initial decisions;

Office of Opinions and Review, which assists the Commission in the preparation of decisions in cases of adjudication pursuant to Commission instructions (see "Legislation"); and

Office of Reports and Information, which is the central point for issuing releases and other public information.

An organization chart of the Commission as of June 30, 1961, appears as a separate page of this chapter.

During the year the Commission delegated additional authority to its operating bureaus and certain of its offices to take routine actions which are largely automatic under the rules and do not involve policy considerations. This has relieved the Commission of considerable routine work and given it more time to devote to subjects of greater importance.

AUTOMATIC DATA-PROCESSING STUDY

During fiscal 1961 the Commission employed a permanent data-processing staff which was organized as the Data Processing Division under the Office of Administration. A definition of the current operations of the Commission was completed and a proposed electronic data-processing system was developed to accomplish many of its administrative functions. Specifically, the system is designed to accomplish the following objectives: (1) improve service to the public by reducing the application processing time; (2) provide uniform application of rules and regulations, thereby eliminating deficiencies resulting from individual interpretations; (3) achieve a maximum degree of accuracy and timeliness in recording data through the elimination of routine clerical functions; (4) facilitate the use of advanced mathematical techniques for engineering and technical functions; (5) furnish a means to retrieve information and data rapidly and accurately; and (6) provide the FCC field offices and monitoring stations with current information pertaining to all communications facilities.

The specifications for the proposed system were presented to manufacturers of electronic computers for submission of equipment proposals. The data-processing study is progressing on schedule and it is anticipated that a computer will be delivered and installed by the third quarter of fiscal 1963.

PERSONNEL

The Commission ended the fiscal year with 1,396 employees on its rolls. Included were 46 employed for the summer months only, and 64 performing work for other agencies on a reimbursable basis. The actual average employment for the entire year for staff engaged in "regular" Commission activities was 1303.8. This represents an increase of 80 over 1960. The average employment for the various organization units was as follows:

	Washington	Field	Total
Commissioners' offices	47.2	0	47.2
Office of Opinions and Review	36.7	0	36.7
Office of Hearing Examiners	30.3	0	30.3
Office of Reports and Information	4.4	0	4.4
Office of Administration	97.8	1.0	98.8
Office of Secretary	59.2	0	59.2
Office of General Counsel	39.4	0	39.4
Office of Chief Engineer	60.4	13.6	74.0
Common Carrier Bureau	105.8	27.1	132.9
Safety and Special Radio Services Bureau	154.2	8.0	162.2
Broadcast Bureau	232.3	0	232.3
Field Engineering and Monitoring Bureau	62.9	317.5	380.4
UHF-TV Group	6.0	0	6.0
Total	936.6	367.2	1,303.8

EMPLOYEE AWARDS PROGRAM

During the past 10 years the Commission has operated a program of recognizing length-of-employee service by the presentation of service emblems at annual gatherings to which all employees are invited. It has also recognized with cash awards especially noteworthy employee performance and employee suggestions for bettering work procedures. In the year just closed, 252 length-of-service emblems were presented, $10,630 was awarded 61 employees for superior performance, and $1,295 was paid 46 employees for suggestions adopted.

APPROPRIATIONS AND EXPENDITURES

The Commission's appropriation for fiscal 1961 was $13,085,000, which included $2 million for the New York City special UHF–TV study for the 2-year period of 1961–62. An additional $704,000 was appropriated to cover the cost of personal services due to the pay increase enacted in July of 1960.

Personnel compensation plus personnel benefits accounted for 89 percent of the 1961 budget. A breakdown follows:

Personnel compensation	$9,835,142
Personnel benefits	759,706
Travel	184,525
Transportation of things	44,766
Rents, communication and utility services	322,821
Printing and reproduction	95,283
Other services	164,326
Supplies and materials	172,298
Equipment	192,667
Land and structures	17,440
Total amount obligated	11,788,974

The source of these funds and the authority for expenditures thereunder is Public Law 626, 87th Congress. Expenditure details and

their justification are set forth at length in the FCC budget presentation to Congress.

The Commission again told Congress that it favors the collection of fees for its licensing and other services if such Government reimbursement is applied to other Federal regulatory agencies. In 1954, at the request of the Bureau of the Budget, the FCC proposed a schedule of fees, but further action was stayed at congressional request.

HEARING EXAMINERS

During the year, 198 proceedings (involving 438 applications) were assigned to the Commission's 15 hearing examiners. They held 293 prehearing conferences, 297 formal hearings, closed the records in 189 cases, and issued 171 initial decisions. During the same period, they issued 1,420 interlocutory and other orders, including 469 by the Chief Hearing Examiner.

DOCKETS

Docket statistics for the fiscal year follow:

Dockets statistics

	Total pending July 1, 1960	Designated for hearing	Disposed of without hearing			Disposed of following hearing			Total pending June 30, 1961	Initial decisions issued	Applications covered by initial decisions
			Granted	Dismissed	Removed [1]	Granted	Denied	Dismissed			
Broadcast dockets:											
AM broadcast:											
New stations	194	182	17	60	18	62	27	9	183	46	106
Major changes	219	150	97	12	3	69	5	2	181	62	152
Subtotal	413	332	114	72	21	131	32	11	364	108	258
Assignments and transfers		2			1				1		
Renewals	13	4				4			13	4	
Licenses	2	1				1			2		
All others	1	1							2		
Total AM broadcast dockets	429	340	114	72	22	136	32	11	382	112	258
FM broadcast:											
New stations	40	25	6	6	4	15	6		28	12	19
Major changes	11	4	3		1	5			6	6	7
Subtotal	51	29	9	6	5	20	6		34	18	26
Assignments and transfers											
Renewals	3								3		
Licenses											
All others											
Total FM broadcast dockets	54	29	9	6	5	20	6		37	18	26
TV broadcast:											
New stations	67	27		13	1	13	10	4	53	16	37
Major changes	17	14		7	1	7	1		15	6	11
Subtotal	84	41		20	2	20	11	4	68	22	48
Assignments and tranfers	1	1		1					1		
Renewals	1	1							2		
Licenses											
All others	30			1		1	24	2	2		
Total TV broadcast dockets	116	43		22	2	21	25	6	73	22	48

Other broadcast services	13	10	5	2					16		
Total broadcast dockets	612	422	128	102	29	177	73	17	508	152	332
Other than broadcast dockets:											
Safety and special radio services	38	51	10	15		3	24	4	33	15	16
Common carrier services	64	21	23	15		7	4	2	34	3	4
Joint and general matters	48	22	14	4	1		1	1	49	1	1
Total other than broadcast dockets	150	94	47	34	1	10	29	7	116	19	21
Petitions, cease and desist orders, rules, etc	32	38	21	7		1		2	39		
Total dockets	794	554	196	143	30	188	102	26	663	171	353

[1] Removed from hearing status and returned to processing lines.

AUTHORIZATIONS

Nearly 3.3 million radio authorizations were on Commission record at the yearend. This was almost 470,000 more than the year previous. Comparative figures follow:

Class	June 30, 1960	June 30, 1961	Increase
Broadcast services	11,179	13,845	2,666
Safety and special services	651,993	770,505	118,512
Common carrier services	4,386	4,959	573
Experimental services	728	757	29
Commercial radio operators	1,947,368	2,282,148	334,780
Amateur radio operators	[1] 206,000	216,720	10,720
Total	2,821,654	3,288,934	467,280

[1] Estimated.

Because some service authorizations cover the use of more than one transmitter, radio station grants collectively represent the use of over 2.7 million transmitters.

APPLICATIONS

Applications of all kinds received by the Commission during the year exceeded 700,000, which was a slight increase over 1960. Application figures for the 2 fiscal years are:

Class	1960	1961	Increase or (decrease)
Broadcast services	12,613	15,500	2,887
Safety and special services	350,177	392,622	42,445
Common carrier services	5,612	8,270	2,658
Experimental services	1,369	1,456	87
Commercial radio operators	329,744	291,366	(38,378)
Total	699,515	709,214	9,699

The net reduction in commercial operator authorizations was due to the Commission waiving the restricted operator permit for operation of semiautomatic transmitters used in certain services; also a general tendency for holders of lower grade permits to seek those of higher grades.

Amateur radio operators are not listed here because their station and operator applications are combined in the safety and special services application total.

CORRESPONDENCE

More than 2 million pieces of mail were received or dispatched by the Commission's Washington office (exclusive of its Field Engineering and Monitoring Bureau) during the year. This was an increase of 330,000 over the previous year. Of the 1961 total, over 1.3 million were incoming and about 674,000 outgoing.

RELEASES

The Commission issues two general types of mimeographed releases. One consists of public notices of actions, receipt of certain kinds of applications, petitions for rulemaking, hearing calendars, etc. The other comprises texts of orders, decisions, and other formal documents. Copies of the documents are served on the parties concerned. No public mailing list is maintained for any of the Commission's issue.

Mimeographing for release and internal administrative use required 56,500 stencils, 13.5 million sheets of paper, and nearly 19.8 million prints during the year. An all-multilith reproduction system was put into operation by the Commission in September 1961.

PUBLICATIONS

The Commission does not make distribution of its printed publications which are sold by the Government Printing Office. A list of such publications will be furnished by the Commission on request.

The Government Printing Office sells the texts of the Commission's major decisions in a weekly pamphlet form on a subscription basis and, later, in bound-volume compilations. Printed copies of the Commission's rules and regulations by categories are available from that same source. These, too, are sold to subscribers who also receive from the Government Printing Office subsequent amendments to the particular volume or volumes purchased. That Office additionally sells copies of the Commission's annual and special reports; a composite volume of the Communications Act, as amended, and the Administrative Procedure Act and the Judicial Review Act; statistics of communications common carriers, etc.

Further, all Commission hearing orders and rulemaking (both as proposed and finalized) are given official promulgation in the Federal Register, which may be subscribed to or single copies purchased through the Government Printing Office.

FOREIGN TECHNICAL ASSISTANCE

The Commission, cooperating with the International Cooperation Administration and the Department of State, continued to plan programs in behalf of foreign telecommunications experts and technicians for study of U.S. communication systems and industry. Domestic industry has partcipated in practically all instances and, along with various branches of the Commission, provided training to upward of 400 persons since Commission participation in this program started in 1951.

Law and Enforcement

LEGISLATION

FCC Reorganization

During the 1st session of the 87th Congress, a major portion of the Commission's legislative activity was concerned with the President's Reorganization Plan 2 affecting the FCC. About 5 days of hearing were held in both Houses before the two legislative committees—the Subcommittee on Regulatory Agencies of the House Interstate and Foreign Commerce Committee and the Subcommittee on Communications of the Senate Commerce Committee. In addition, the House Government Operations Committee held a full day of hearing and the Senate Government Operations Committee also conducted a hearing.

Both Houses turned down the President's FCC reorganization proposal mainly because of the powers that it would delegate the Chairman and undertook to accomplish the rest of his recommendations by legislative means.

Following the hearing before the Senate committee, the Commission, at the request of that committee, submitted a draft of its own legislative proposal. This was introduced by Senator John O. Pastore as S. 2034 on June 7, 1961, and, following a hearing on June 28, a revised bill was recommended to the full committee.

On the House side, Chairman Oren Harris introduced H.R. 7333 for the same purpose. A hearing was held on June 13, following which the House committee reported a new bill, H.R. 7856, which was introduced on June 26. The Senate bill was passed by the Senate on July 27, 1961, and the House, on August 3 thereafter, adopted a substantially similar measure in lieu of its bills. A subsequent conference agreed on revisions in S. 2034, which became law when signed by the President on August 31, 1961.

This is the most important legislation affecting Commission organization and procedures since the extensive revisions of 1952. It is intended to improve and expedite the Commission's functioning. It conforms largely to the President's reorganization plan except that it gives less powers to the Chairman than the Chief Executive's proposal.

In substance, the Communications Act is changed to delegate more authority to the Commissioners—as panels or individuals—and to the staff to enable the Commissioners to devote more time to policy and other important matters; permits the Commission to deny review petitions without stating reasons; prohibits off-the-record approaches

in adjudicatory cases; deletes specific reference to the Office of Opinions and Review and permits the Commission staff to recommend decisions; and, as is the practice in other Federal agencies, makes oral argument discretionary and allows Commissioners to consult with the General Counsel and Chief Engineer on legal and technical considerations involved in adjudication, and examiners to consult with each other on points of law.

Other Enacted Laws

Following the close of the 1960 fiscal year, six other bills affecting the FCC were enacted into law by the 86th Congress. As noted in the 1960 annual report, these were—

Public Law 86–609, enacted July 7, 1960, waiving the licensed operator and prior construction permit requirements for TV translators and boosters.

Public Law 86–619, July 12, 1960, providing that a Commissioner continue to serve until his successor is appointed and qualifies.

Public Law 86–624, July 12, 1960, retaining the status quo with respect to consolidations and mergers of telegraph carriers in the light of Hawaii's entry into the union.

Public Law 86–677, August 24, 1960, suspending for the 1960 campaign the equal-time requirements for nominees for President and Vice President.

Public Law 86–751, September 13, 1960, affirming the Commission's authority to regulate charges and services of common carriers using microwave and other point-to-point radio circuits.

Public Law 86–752, September 13, 1960, providing a pregrant procedure for certain broadcast and other applications; limitations on "payoffs" between broadcast applicants; disclosure of payments for broadcast of certain matter; prohibition of deceptive practices in broadcast contests; local notice by applicants for new stations, major changes or hearings; and short-term licenses or forfeitures for broadcast infractions.

FCC Legislative Program

Eight Commission proposals to amend the Communications Act were introduced during the 1st session of the 87th Congress. They were—

An amendment to sections 219, 308, and 319 to eliminate the requirement of an oath or affirmation on certain documents filed with the Commission (S.683, H.R. 4113).

An amendment to section 504(b) and a new section 510 to authorize forfeitures for violation of certain rules and regulations in the common carrier and safety and special radio fields (S. 1668, H.R. 6581).

An amendment to exempt persons serving in the FCC unit of the National Defense Executive Reserve, who are not otherwise employed by the Commission, from the conflict-of-interest provisions of section 4(b) of the Communications Act and other statutes (S. 1689, H.R. 6579).

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An amendment to section 303(q) which would give the Commission authority to require the painting and/or illumination of abandoned radio towers (S. 684, H.R. 4114).

An amendment to subsection (e) of section 307 to remove the present restriction against the renewal of any license more than 30 days prior to its expiration in the safety and special services (S. 1371, H.R. 5710).

An amendment to section 3 and a new section 303 which would authorize the FCC to issue rules and regulations with respect to community antenna TV systems (S. 1044, H.R. 6840).

An amendment to section 303 and a new section 330 which would give the Commission authority to prescribe minimum performance capabilities for TV receivers (S. 2109, H.R. 8031).

An amendment to provide for summary judgment procedure in the consideration of license applications in appropriate cases. This would clarify the situations in which a full evidentiary hearing would be required on applications filed under section 308 (S. 2108, H.R. 7895).

Five of these bills had been passed by the Senate and were pending at the end of the fiscal year in the House—namely, those eliminating the oath or affirmation, providing monetary forfeitures for violations, marking abandoned towers, permitting early renewals, and improving the FCC's administrative process.

Other Legislative Proposals Affecting the FCC

Some 300 bills and resolutions affecting the Commission directly or indirectly were introduced in the 1st session of the 87th Congress (approximately 240 in the House and over 75 in the Senate). Many of these were duplicated in both Houses. Among them were more than 75 bills dealing with removing the excise tax on telephone communications.

Other bills concerned such subjects as—

Establishing Federal matching grants for educational TV station construction.

Extending the time for annual inspections of ship radio stations.

Amending the Communications Act with respect to the hours of operation of certain broadcast stations.

Limiting FCC authority to shift TV stations from VHF to UHF.

Providing civil remedies to persons damaged by unfair commercial activities.

Reimbursement of political parties for broadcast expenditures in presidential election campaigns.

Penalties for malicious damage to communication facilities.

Providing for assessment and collection of fees to cover cost of operation of regulatory agencies.

Making permanent the equal radio time suspension for candidates for President, Vice President, Senator, Representative, and Governor.

The Commission submitted to the Bureau of the Budget and committees of Congress written comments on more than 20 legislative proposals referred to it for study. In lieu of submitting comments on several other bills, statements were presented at some congressional hearings.

Congressional Hearings

The Communications Subcommittee of the Senate Commerce Committee and the Communications and Power Subcommittee of the House Interstate and Foreign Commerce Committee held hearings on various bills concerning the Commission, including those relating to section 315 as it pertained to presidential and vice presidential campaigns, educational TV, increasing the effectiveness of regulatory agencies, and other matters. The Commission surveyed all broadcast stations to determine the extent and terms under which each station made time available for political broadcasting and reported the results to Congress.

The Senate Subcommittee on Freedom of Communications held hearings on section 315 complaints in the 1960 election. In addition, the Senate Subcommittee on Juvenile Delinquency investigated the effects on young people of violence and crime portrayed by TV.

The House Subcommittee on the Judiciary held hearings on various subjects concerning which the Commission either testified or submitted statements. These included such matters as organized crime, antitrust aspects of space communication satellites, network practices with respect to "option time" and "must buy" practices, the telephone consent decree, the UHF problem, and competitive TV.

Space hearings.—The Senate Committee on Aeronautical and Space Sciences held hearings in connection with the use of space communication satellites, at which the Commission presented a statement. Hearings were also held July 13, 1961, when Commissioner T. A. M. Craven testified before the companion committee in the House. The House Interstate and Foreign Commerce Committee held 4 days of hearings from Juy 25 to July 28, 1961, at which Chairman Newton N. Minow and Commissioner Craven testified. On August 1 thereafter the Commission also appeared before the Subcommittee on Communications of the Senate Commerce Committee, and on August 8 before the Senate Select Committee on Small Business, also on the same subject.

LITIGATION

The Commission was a party to a number of cases, mostly in the U.S. Court of Appeals for the District of Columbia Circuit, which enunciated principles of law having impact upon the Commission's

procedures and its administration of the Communications Act which, in some instances, had a bearing on the procedures of other Federal administrative agencies.

Important Cases

During the year, the following cases were decided in important areas of Commission jurisdiction:

In *Interstate Broadcasting Company, Inc.* v. *United States of America and Federal Communications Commission*, No. 15561, 109 U.S. App. D.C. 255, it was held that immediate judicial review could be sought of a Commission order denying intervention in a comparative hearing. The court rejected the Commission's contention that review could not be sought until a final decision was issued in the proceeding, on the grounds that (1) it would be contrary to the legislative history of section 309(b) of the act which expressly confers upon parties in interest the unconditional right to intervene in the Commission's proceedings; (2) immediate review would eliminate the possibility of duplication of the entire administrative proceeding, since the Commission could stay the proceeding pending determination of the appeal if there was sufficient doubt as to the validity of its denial of intervention; and (3) absent the allowance of immediate review under section 402(a) of the act, the Commission might be deprived of evidence going to the "public interest, convenience, and necessity" introduced by a party who might not be aggrieved by the final action upon the hearing.

The court concluded that the denial of intervention under section 309(b) is a final order reviewable under section 402(a). It also found the alleged economic injury was sufficient to confer standing, particularly since it was cumulative to other applications which would interfere with the signal of the same party. See also *Interstate Broadcasting Co.* v. *Federal Communications Commission*, No. 15046, for an enunciation of this latter doctrine.

In *Metropolitan Television Company* v. *United States of America and Federal Communications Commission*, No. 15810, U.S. App. D.C. 289 F. 2d 874, the so-called "spot sales" case, the court affirmed the Commission's action amending section 3.658 of its rules to prohibit any TV network from representing individual stations, affiliated with the network organization, in the sale of nonnetwork time. The court held that the Commission possessed the statutory authority to promulgate the regulation, on the authority of *National Broadcasting Co.* v. *United States*, 319 U.S. 190.

Ridge Radio Corporation v. *Federal Communications Commission*, No. 15946, U.S. App. D.C. 292 F. 2d 770, the court reversed the Commission for failure to provide adequate notice of the time within which an AM broadcast station applicant could be cut off from comparative consideration with other applicants. However, the court sustained the validity of the so-called "cutoff" rule (sec. 1.106(b)(1)), and the Commission's interpretation of the rule. The Commission had held that where an application on a published list was cut off under the rule from other later filed applications, in the sense that it could be granted without a hearing as against the other applicants who otherwise

would be mutually conflicting because of signal interference, it was also cut off as against applications not in direct conflict with it, but in conflict with another application which was in direct conflict with the listed application.

The rules sustained here and in *Ranger et al.* v. *Federal Communications Commission*, No. 15714, U.S. App. D.C. 294 F. 2d 240, are important in dealing with the expeditious processing of competing applications and the problem of the chain reaction inherent in successive applications which present engineering conflicts.

In *Clear Channel Broadcasting Service and WSM, Inc.* v. *United States and Federal Communications Commission*, No. 15552, 109 U.S. App. D.C. 88, 284 F. 2d 222, the petitioners, who represent 12 clear-channel class 1–A AM broadcasting stations, challenged the validity of the Commission's rules and standards relating to the problem of daytime skywave radiation. This type of radiation produces interference during the transitional hours preceding sunrise and following sunset when radio waves radiated into space and refracted back to the earth by the ionosphere gradually build up and decline from their nighttime peak. These rules and standards, adopted in 1959 at the conclusion of the long-pending daytime skywave proceeding in docket 8333, were intended to increase the protection of class 1–A stations from the operations of class II stations. The gist of the petitioners' complaint was that the Commission's final order promulgating rules and standards was inconsistent with the original aim of the proceedings. However, the court decided that the Commission's rules and standards, being a reasonable balance between permitting excessive interference and imposing prohibitive restrictions on class II stations, were adequately based on the evidence and within the broad powers of the Commission.

In *Massachusetts Bay Telecasters* v. *Federal Communications Commission*, Nos. 13896 and 13899, the court approved the Commission's findings and recommendation on remand in the Boston Channel 5 comparative TV case, vacated the original grant to WHDH, Inc., and remanded the case for Commission reevaluation of the comparative qualifications of the applicants on the basis of the original record as supplemented by the record on remand. After hearing before a specially appointed examiner, the Commission reported to the court its findings that two of the applicants were responsible for ex parte attempts to influence a former Commissioner and its conclusion that these activities rendered the original grant voidable and required a new comparative evaluation in which the ex parte actions would reflect adversely upon the responsible parties. On May 8, 1961, the Supreme Court denied a petition for certiorari filed by WHDH, Inc.

In *WBEN, Inc.* v. *Federal Communications Commission*, No. 16017, U.S. App. D.C. 290 F. 2d 743, the court held that the grant of a daytime-only application for a new AM broadcast station constituted a modification of license of an existing station where conceded objectionable interference within its normally protected contour would be caused if new station operated presunrise, and the Commission's rules permit a daytime-only station to operate presunrise subject to cessation upon complaint. The court, reversing the Commission, held that the Com-

mission must either grant the appellant a hearing or condition the grant to prohibit presunrise operation.

In *Great Lakes Broadcasting Co.* v. *Federal Communications Commission*, No. 14638, U.S. App. D.C. 289 F. 2d 754, the court sustained the commission's determination in a comparative TV proceeding that the Commission need ascertain only whether the applicants' overall program balance and structure meet the needs of the service area, and that a detailed comparison of individual programs is required only where significant differences appear in overall programming.

In *Lar Daly* v. *United States and Federal Communications Commission*, No. 13030 ([C.A. 7] 286 F. 2d 146), the court (Seventh Circuit) upheld the Commission's refusal to order or "recommend" that Columbia Broadcasting System afford petitioner access to its facilities to make a statement in opposition to a proposed amendment of section 315 of the Communications Act. CBS had previously presented a public service program devoted to the affirmative viewpoints of exempting various kinds of news programs from the "equal-opportunities" requirement and, subsequently, had also allowed the presentation of opposing views. The court decided the network had fulfilled its duty of presenting a balanced presentation of this public issue of a controversial nature even though the petitioner, an unsuccessful candidate for Mayor of Chicago, had been excluded from offering his personal views.

In *Triangle Publications, Inc.* v. *Federal Communications Commission*, Nos. 15970 and 15971, U.S. App. D.C. 291 F. 2d 342, the court affirmed a Commission decision denying an application for change of transmitter site by a VHF TV station where the effect of the move would be to adversely affect the operation in the public interest of UHF TV stations.

Statistics

During the fiscal year, the Commission was a party in 78 cases in the Federal courts. Thirty-eight of these were instituted during that period, 34 in the Court of Appeals for the District of Columbia Circuit, 3 on petition for writ of certiorari in the Supreme Court, and 1 in the U.S. District Court for the District of Columbia. The other 40 cases were pending at the beginning of the year.

All three petitions for certiorari, filed by other parties, were denied by the Supreme Court. In the courts of appeals, the Commission was affirmed in 20 cases and reversed in 7 others. Fourteen cases were dismissed by the appeals court on jurisdictional grounds, or remanded without decision on the merits. The district court dismissed one case.

As of June 30, 1961, there were 33 cases pending in the Court of Appeals for the District of Columbia Circuit. Of these, six have been heard and are awaiting decision. No cases are pending in the Supreme Court.

A tabulation of the litigation for the fiscal year follows:

	Supreme Court	Court of Appeals, 402(b)	Court of Appeals, 402(a)	District court	Total
Total	3	55	19	1	78
Cases affirming the Commission		10	10		20
Cases reversing the Commission		7			7
Cases dismissed on jurisdictional grounds or by agreement, or remanded.		10	4	1	15
Denial of certiorari	3				3
Cases pending June 30, 1961	0	28	5	0	33

ENFORCEMENT

As explained elsewhere in this report, certain types of industrial, scientific, and medical equipment, during operation, emit electromagnetic energy which may be a source of harmful interference to authorized radio communication. Part 18 of the FCC rules controls the operation of this equipment to preclude, insofar as possible, the possibility of such interference. The primary responsibility for the enforcement of part 18 lies with the Commission's Field Engineering and Monitoring Bureau. However, the General Counsel represents the Commission in any court proceedings which may be brought to enforce the rules.

During late 1958 it was brought to the attention of the Commission that the widespread operation of industrial heating equipment in violation of part 18, particularly in the New York City area, was causing serious interference to air navigation radio aids, police, TV, and other services. Since many of the operators involved were not willing to cooperate voluntarily with the Commission in abating the interference and otherwise complying with the rules, it became apparent that part 18 would have to be revised in order to expedite enforcement proceedings against those who declined to cooperate.

The result was proposed rulemaking issued by the Commission on May 13, 1960 (docket 13511). This notice afforded interested parties the opportunity to comment. After considering the responses of different parties, the new rules were adopted on March 8, 1961, effective April 30 thereafter. These new rules clarify the procedures which an operator of industrial heating equipment should follow in having it certified by a competent engineer as in compliance with the electromagnetic radiation restrictions.

The principal change was the addition of a requirement that certification should be made on an FCC form which provides for detailed statements as to the methods by which certification was arrived at. The form also requires the operator of the equipment to certify in

writing that he is familiar with part 18 with respect to operation of the equipment and that he has assured himself that it does not cause harmful interference; but if such interference should occur he will take prompt steps to eliminate it.

A vigorous enforcement program commencing in early 1959 resulted in the issuance of about 24 temporary restraining orders by the courts against persons who were operating industrial heating equipment in the New York City area. The publicity arising from these cases as well as stepped-up field enforcement have had impressive results. Of six major interference cases referred to the General Counsel's office in fiscal 1961, only one offender refused to comply voluntarily with the rules. In that case a temporary restraining order was issued by the court at the Commission's request. In no instance has any court refused to issue such an order when sought by the Commission in such cases.

In view of the attitude of the courts, the tightened procedures, as well as the high priority which has been given to this problem by the FCC, it probably will be less necessary in the future to seek court aid in enforcing part 18, although it will be sought when warranted.

The number of cases referred to the Department of Justice for criminal prosecution under section 501 penal provisions of the Communications Act remained at about the same level as in fiscal 1960. Approximately $2,600 in fines were imposed by the courts in addition to sentences of 1 year (suspended) and 3 years' probation.

Title III, parts II and III, of the act requires the operation of radio transmitting equipment on certain types of vessels. Failure to comply with these requirements and the related FCC rules can result in the imposition of forfeitures against both the vessels involved and their masters. Three marine forfeiture cases which had been referred to the Department of Justice were settled with the payment of $430 by the offenders into the U.S. Treasury.

National Defense

GENERAL

The Federal Communications Commission is charged with broad national defense responsibilities involving wire and radio communication.

Section 1 of the Communications Act states that an objective in creating the FCC was "for the purpose of the national defense."

Section 606 of the act provides for marshaling of wire and radio communication facilities in time of national emergency under special powers given to the President.

By Executive Order 10312 in 1951, the FCC was directed to prepare and put into effect plans for minimizing the use of electromagnetic radiations of radio stations as an aid to navigation of hostile aircraft, guided missiles, and other devices capable of direct attack upon the United States. The Commission has since prepared such plans for the broadcast and nonbroadcast services.

The defense activities for which the Commission is responsible are under the direction of the Defense Commissioner (Robert T. Bartley) and two Alternate Defense Commissioners (Robert E. Lee, First Alternate, and Newton N. Minow, Second Alternate) designated by the Commission.

During fiscal 1961, significant accomplishments were made in various areas of the Commission's defense activities.

CONELRAD PROGRAM

> Should the United States ever be subjected to direct enemy attack, CONELRAD and the national emergency broadcasting system will be vital to our defense. This carefully planned program would prevent an enemy from using our radio stations to assist him and yet permit emergency broadcasting such as you now hear. The voluntary participation of the radio and television broadcasters of the nation at their own expense is a commendable example of individual responsibility which is so essential to the survival of this Nation.

So declared President Kennedy in an address over CONELRAD on April 28, 1961, during a civil defense drill.

CONELRAD is the name given the program for controlling radio operation in event of an attack. It is a contraction of the words "*CON*trol of *EL*ectromagnetic *RAD*iation." The prime purpose of

this program is to prevent radio signals from being used as beams to guide enemy aircraft or electronic missiles. In peacetime it renders an incidental, yet important, service in giving advance warning of serious threats of hurricanes and other storms, floods, and kindred acts of nature which might endanger life and property.

In time of armed emergency, it would alert all radio stations to leave the air except certain AM broadcast stations which, working in clusters in a system of rotation so as to confuse direction finding, will operate on 640 and 1240 kc to communicate civil defense and other pertinent information to the public. Some designated stations in other radio services would furnish essential emergency service under prescribed controls.

A special alerting communication system is used to send the CONELRAD alert to key broadcast stations for airing and pickup by other stations (broadcast and nonbroadcast) which monitor the key stations for that purpose.

On May 17, 1961, a nationwide teletype alerting system was established to replace largely the older telephone alerting system. The new system makes use of the established Associated Press and United Press-International press teletype networks, which operate on a continuous basis and to which most broadcast stations subscribe. A special control system makes it possible for the commander in chief of the North American Air Defense Command to utilize the two press networks for delivering the alerting message to broadcast stations. Advantages of the system are manifold—it expedites delivery of the alert, provides record copy of messages, eliminates human factors involved in distributing the message by telephone, and makes use of an established system. As soon as the new teletype adjunct is fully tested and evaluated, the old telephone alerting system will be phased out. Tests started in September 1961.

Simultaneously with implementation of the new alerting system, certain program and control lines, used to control broadcast transmitters when operating in a cluster sequentially, are being eliminated at considerable monetary savings to the Department of Defense. This became feasible after an improved system for operating broadcast stations in a synchronous manner was developed and tested in cooperation with the U.S. Air Force.

On April 28, 1961, a nationwide half-hour CONELRAD drill was held in conjunction with the Office of Civil and Defense Mobilization Operation Alert 1961. The drill was highly successful and included the participation of all radio services, except certain international, maritime, and aviation elements.

MILITARY-FCC EMERGENCY COMMUNICATIONS COMMITTEE

Under the direction of the Military-FCC Emergency Communications Committee, experimental feasibility studies were continued to evaluate and test the possibility of utilizing commercial broadcast and industrial radio facilities for emergency survival communication in event of war or disaster, to back up common carrier facilities which may be rendered inoperative by enemy action, indirect damage, or casualties of operating personnel. Evaluation reports are being submitted by the committee to the Joint Chiefs of Staff and to the FCC Chairman for review and consideration.

STATE FM DEFENSE NETWORKS

The Commission, with the help and cooperation of the State Industry Advisory Committees and the commercial broadcasters, continued its efforts in establishing FM Defense Networks. These networks consist of emergency trunk circuits provided by off-the-air relay between FM broadcast stations in a contiguous area using the main channel and/or subcarrier channels, where available, for relay purposes. By this means, it is practical to provide the public with emergency communication when normal facilities are disrupted or destroyed.

A notable test of the usefulness of such a system was demonstrated during Hurricane Donna in Florida in September 1960.

Currently 33 States have implemented some form of FM Defense Network.

EMERGENCY BROADCAST SYSTEM

On July 29, 1960, the Commission approved the National Industry Advisory Committee plan, "Technical Arrangements To Ensure Nationwide Continuity of the Emergency Broadcast System During Conelrad and the Period Following Issuance of the Conelrad Radio All Clear." This plan provides for the President and other Federal officials to communicate with the public via the broadcast networks preceding, during, and following an enemy attack. It also assures continuity of communication between State and local civil defense directors and the general public within their respective jurisdictions. The plan is being amplified to permit the President to use the system from designated points in each State.

INDUSTRY ADVISORY COMMITTEES

During the fiscal year, terms of reference for the Industry Advisory Committees appointed by the Commission under the authority of section 8, Executive Order 10312, were approved and published. The

National Industry Advisory Committee (NIAC), State Industry Advisory Committee (SIAC), and Local Industry Advisory Committees (LIAC), through coordination and liaison, work toward a "national system of information dissemination by means of the Emergency Broadcast System and emergency communications, under conditions of war, or a threat of war, or a state of public peril or disaster or other National, State, or local emergency." Regional Industry Advisory Committees are also being organized.

INDUSTRY RELATIONS

The Commission sponsored and held an Annual Defense Communications Seminar at Gettysburg, Pa., on August 3 and 4, 1960. Members of the National and State Industry Advisory Committees and representatives from the Department of Defense participated. The agenda included matters of mutual concern to the Commission and the communications industry dealing with emergency planning on a national scale.

DEFENSE COORDINATION

The FCC Division of Defense Coordination reports to the Defense Commissioner and is concerned primarily with agency mobilization planning and liaison with other Federal departments and agencies on defense matters other than CONELRAD and radiofrequency management activities. These matters include plans to assure the continuity of the Commission's essential functions in an emergency.

During the year, the division provided for the training of the FCC unit of the National Defense Executive Reserve and FCC employees designated as communicators in the Interagency Communications System (U.S. Army Signal Corps). Training included procedures in teletype, cryptography, and facsimile. The division also arranged for instructors and classes in first-aid procedures, firefighting and radiological detection.

NATIONAL DEFENSE EXECUTIVE RESERVE

The FCC unit of the National Defense Executive Reserve, established pursuant to Executive Order 10660, February 15, 1956, assists in the execution of the agency's essential functions in a national emergency. It is comprised presently of 20 members who are telecommunications experts from diverse branches of the communications industry and professions, and who train for the handling of myriad problems which would arise from discharging the essential functions of the FCC in the event of enemy attack. During the year, they participated in a defense communications seminar.

EMERGENCY COMMUNICATIONS FACILITIES

During the year, the Commission installed its Kineplex printer equipment at the agency emergency relocation site. This equipment is capable of a very rapid printout of the essential resource data from a central computer located at the OCDM classified location and is used in support of FCC damage assessment activity.

A mobile radio communication center, together with its associated emergency power supply, is stationed at the emergency relocation site. It is capable of providing emergency communication between the Commission's relocation site and stations in its monitoring network and the OCDM classified location. The mobile center can handle radio teletype as well as radiotelegraph traffic. The range of the facility under normal propagation conditions is considered sufficient to contact directly any one of a number of the Commission's radio-equipped monitoring stations. If necessary, these stations could function as relay points to other stations. During Operation Alert 1961 and at other intervals throughout the year, these facilities were used in successful tests with other FCC stations and the OCDM classified location.

Three FCC monitoring stations have or are constructing fallout protected operating positions.

OPERATION ALERT 1961

Operation Alert 1961 was the eighth of a series of annual civil defense and defense mobilization exercises. FCC headquarters in Phase I of the exercise included the assignment of a cadre of Commission task force personnel to the OCDM classified location, representation at the National Resources Evaluation Center, and the activation of the emergency communication facilities at the agency emergency relocation site. Headquarters participants traveled to the OCDM classified location on the receipt of alert warnings from the OCDM. The Chairman and the Defense Commissioner went there by air transportation provided by the military, while the remaining participants made the trip by automobile. The agency's essential operating records and documents were reviewed for currency and adequacy. Simulated emergency actions were executed in accordance with the developing situation. The line of succession of officials set forth in the Commission's rules for the Emergency Relocation Board was tested.

Participation by FCC field personnel consisted primarily of dispatching FCC representatives to two of the eight OCDM regional headquarters offices and the activation of the relocation sites of nine

of the FCC district offices and the operational testing of emergency communication facilities.

The Operation Alert exercise demonstrated the ability of the agency to execute its essential functions under the conditions posed by the attack assumptions.

FCC FAMILY RENDEZVOUS POINT

The rendezvous point is a facility for uniting FCC families in the event of separation during an emergency and for certain designated employees to receive emergency assignments. Facilities include mass feeding, and shelter and protection from radiation fallout. It is supplied with emergency communication equipment capable of linking with other FCC stations, including relocation sites and mobile units. The facilities were tested during the year for readiness.

On Memorial Day, May 30, a picnic for FCC families was held to orientate them on the routes to and facilities at the rendezvous point.

Broadcast Services

PROGRAMS

General

Broadcast regulation during the year was marked by intensified Commission effort to assure compliance with its rules and regulations, particularly in the matter of the broadcaster's responsibility to serve the public interest.

A programing policy was enunciated, a closer check of station performance was instituted—especially at license renewal time, and special attention is being given to complaints and other indications of infractions. Stress was placed on the requirement that applicants and licensees ascertain the programing needs of their respective communities and meet them with balanced programs. Applicants for new stations, major changes, license renewals and transfers must now give local public notice of such intent. And hearings, insofar as possible, are held in the communities affected.

Congress strengthened the Commission's hand to grant licenses for less than the normal 3-year period so as to, in effect, put a station on probation; also to impose forfeitures on stations for violations which do not warrant revocation proceedings. Cease-and-desist orders have now been invoked against broadcast violators.

Additional legislation helped the Commission to deal with certain objectionable broadcast practices, such as making it illegal to accept payola for plugging records and other commercial services over the air without announcing such consideration, and providing penalties for those who "fix" quiz and other programs purporting to be based on knowledge, skill, or chance.

Programing Policy

On July 29, 1960, the Commission issued a report and statement of policy on programing in connection with its overall inquiry into TV network practices (docket 12782). It said in part:

> In the fulfillment of his obligation the broadcaster should consider the tastes, needs, and desires of the public he is licensed to serve in developing his programing, and should exercise conscientious efforts not only to ascertain them but also to carry them out as well as he reasonably can. He should reasonably attempt to meet all such needs and interests on an equitable basis. Particular areas of interest and types of appropriate service may, of course, differ from community to

community, and from time to time. However, the Commission does expect its broadcast licensees to take the necessary steps to inform themselves of the real needs and interests of the areas they serve and to provide programing which in fact constitutes a diligent effort, in good faith, to provide for those needs and interests.

The major elements usually necessary to meet the public interest, needs, and desires of the community in which the station is located as developed by the industry, and recognized by the Commission, have included: (1) opportunity for local self-expression, (2) the development and use of local talent, (3) programs for children, (4) religious programs, (5) educational programs, (6) public affairs programs, (7) editorialization by licensee, (8) political broadcasts, (9) agricultural programs, (10) news programs, (11) weather and market reports, (12) sports programs, (13) service to minority groups, (14) entertainment programing.

The elements set out above are neither all-embracing nor constant. We reemphasize that they do not serve and have never been intended as a rigid mold or fixed formula for station operation. The ascertainment of the needed elements of the broadcast matter to be provided by a particular licensee for the audience he is obligated to serve remains primarily the function of the licensee. His honest and prudent judgments will be accorded great weight by the Commission. Indeed, any other course would tend to substitute the judgment of the Commission for that of the licensee.

For the first time, the Commission denied an application for a new broadcast station solely on the grounds of inadequate programing preparation. On June 28, 1961, it turned down the application of Suburban Broadcasters for a new FM station at Elizabeth, N.J., because it failed to determine the programing needs of the community intended to be served.

TV Network Inquiry

Under its order of February 26, 1959 (docket 12782), the Commission continued the phase-by-phase study, by means of public hearings, of the TV network program selection process.

In October 1960 hearings were resumed at Los Angeles and extensive testimony was obtained from producers of TV films. Witnesses included spokesmen for several leading motion picture studios, independent producers, and program "packagers," talent agents and broadcast personalities involved in TV film production. A major talent representation organization, which is also a TV program packager and film producer, refused to testify in public. In March 1961 the Los Angeles hearings were continued and testimony was received from various persons who had been engaged in placing "hidden commercials" in TV programs. The reluctant talent organization witness again refused to testify. The Commission recommended that the Department of Justice seek criminal sanctions.

In June 1961 hearings in New York City received testimony from TV writers, directors, producers, and broadcast personalities concerning the status of live and taped programing. In addition, they commented on the development of drama, documentary programing, and "balance and diversity" in present-day TV schedules. These witnesses included persons engaged in the creation, production, writing, casting, sale, and licensing of live TV programs for network showing. Because of the free expression of views at this hearing, the Commission warned at its conclusion that the testimony given should not be the basis for retaliatory action by any FCC licensees.

Additional proceedings began in September to hear representatives of national advertisers who sponsor many of the TV network programs. After a review and analysis of the entire record, the national TV networks will be called to testify as to the roles, policies, and practices they pursue in the program selection process and other relevant matters.

Concurrent with these hearings, the Office of Network Study has commenced a study of the nature and scope of network financial and proprietary interests in TV programing. It may assist in determining to what extent, if any, the networks employ their power of program selection for their own economic benefit.

COMPLAINTS

Publicity given to congressional inquiries into various broadcast practices, the Commission's programing inquiry and related actions and pronouncements, and the industry's promise and efforts to improve program content, have raised the public voice in protesting many aspects of station and network programing.

Mail of this nature to the FCC has correspondingly increased. It is handled by a new unit in the Broadcast Bureau to deal especially with complaints and compliance matters. During the last 3 months of calendar 1960, the mail volume received by this division totaled nearly 1,150 pieces (not including 1,270 letters objecting to a single program—a network rodeo presentation). For the first 5 months of 1961, this mail increased to about 4,300 letters.

Of the 8-month total, nearly 1,800 complained about program balance, individual programs, profanity, program cancellations, and over 500 complained of excessive crime and violence on TV; some 390 others objected to slanted news and editorializing; 550 complained that commercials were false or misleading, constituted lotteries, or disapproved advertising of liquor, tobacco, and underwear; nearly 350 complained about contests, publicity stunts, and other business practices; nearly 250 objected to excessive length and nature of commercials; and 100

alleged payola practices. Of the remainder, about 480 inquired as to Commission rules on various aspects of programing, and 570 were largely from civic and other groups lauding FCC efforts to improve programing. (The latter figure does not include letters received by Chairman Minow in response to his National Association of Broadcasters speech—now over 6,000.)

During fiscal 1961, more revocation proceedings were instituted and more renewal applications were designated for hearing than in any other year in the Commission's history. In addition, the Commission invoked a cease-and-desist order for the first time in a broadcast case, also the new sanctions of short-term renewal and forfeiture.

The first year of operation of the complaints and compliance unit was devoted largely to developing facts about payola practices, but it also found time to inquire into hidden ownership, unauthorized transfers of control, misrepresentations in applications and other statements to the Commission, and violations of various rules and regulations. More effective liaison was established with the Federal Trade Commission in matters relating to false and misleading advertising.

At the close of the year, action on 558 applications by regular broadcast stations for renewal of licenses had been deferred pending resolvement of a variety of questions. They included 446 AM, 76 FM, and 36 TV stations. (The licenses of these stations had expired in the meantime, but the law permits them to continue operating pending disposition of their respective cases.)

HEARINGS

During fiscal 1961, the Commission ordered certain stations to show cause why their licenses should not be revoked, and designated the renewal applications of some other broadcast licenses for hearing. The great majority of these proceedings relate to questions of concealment or misrepresentation on the part of the licensee, failure to live up to programing representations, and promoting fraudulent contests. Hearings were or are to be held in the communities concerned. A list follows:

Palmetto Broadcasting Co. (dockets 13985–13986), hearing at Kingstree, S.C., on renewal and license applications for station WDKD there, concerned broadcast of allegedly vulgar, suggestive, and indecent material; misrepresentations made to the Commission; the extent of licensee control exercised over programing; the responsiveness of the licensee's programing to meet the needs of the area; and whether the licensee possesses the necessary qualifications to be a licensee.

Wireline Radio, Inc. (docket 13972), scheduled at Lewisburg, Pa., involves question of unauthorized transfer of control and misrepresentations with respect to correction of technical deficiencies in station WITT operations.

KWK Radio, Inc. (docket 13827), revocation proceeding scheduled at St. Louis, Mo., involves questions of fraudulent contests conducted by the licensee with respect to both the hiding of prizes and certain bonus club operations.

Gila Broadcasting Co. (dockets 13598 et al.), involves renewal applications of five AM stations and one FM station in Arizona. Hearing was held in Phoenix on issues with respect to concealment of ownership and unauthorized transfer of control.

Eleven Ten Broadcasting Corp. (dockets 13622–13623), hearing held in Pasadena, Calif., on application for renewal of license of KRLA on issues regarding fraudulent contests, mislogging of programs, whether programing representations were made in good faith and whether an alien exercised control of the licensee contrary to section 310 of the Communications Act.

Mandan Radio Association (docket 13855), revocation hearing held in Bismarck, N. Dak., on issues respecting unauthorized transfer of control, misrepresentations, and concealment of ownership of station KBOM.

Leo Joseph Theriot (docket 13925), revocation proceeding involves station KLFT, Golden Meadow, La.; hearing held at New Orleans on issues concerning misrepresentations and concealment and failure to comply with various technical rules.

Seaway Broadcasting Co., Inc. (docket 14051), revocation proceeding scheduled to be held in Chicago, Ill., on issues of misrepresentation and failure to make full disclosure of ownership of station WMPP.

It is expected that even a greater number of these types of hearings will be held in the field. They involve important public interest issues bearing directly on the qualifications of licensees and require the assignment of a minimum of two FCC counsel who generally must spend many days both in the field and Washington in connection with a hearing. As the result, one-third of the attorneys in the Hearing Division have been in the field at the same time on hearing assignments. This has made it difficut for the remaining staff to handle without undue delay the numerous pleadings and hearings for cases held in Washington.

PROGRAM INFORMATION FORM

On February 17, 1961, the Commission proposed rulemaking (docket 13961) looking toward amending section IV of the broadcast application forms to require, among other things, a statement by the applicants as to measures taken and efforts made by them to determine the tastes, needs, and desires of the communities served and the manner in which they propose to meet those needs and desires.

The proposed changes would require a description of the service area, its needs and interests, the opportunities afforded community expression, specialized programing, more information about the presentation of controversial issues of public importance (including edi-

torializing), data on program types, time devoted to commercial spot announcements, and measures taken by applicants to insure the maintenance of appropriate programing and advertising standards. The Commission concluded that certain revisions of its proposals were desirable. Accordingly, on May 12, 1961, the date for filing comments was extended until further order. The Commission reviewed the comments already received and held informal conferences with industry representatives and other interested parties. The principal objective of these discussions was to insure that questions proposed by the Commission could be answered on the basis of reasonable efforts and records to be kept by the applicants. A Notice of Further Proposed Rulemaking was issued on July 7, 1961, and on the following October 6 a public meeting was held with the National Association of Broadcasters to further discuss the contemplated revisions.

SPONSORSHIP IDENTIFICATION

On September 13, 1960, a bill (S. 1898) became law and amended section 317 of the act. Among other things, it redefined situations in which broadcast licensees must make sponsorship identification announcements. In addition, the new law (Public Law 86–752) added a new section 508 to the act requiring disclosure by persons other than broadcast licensees who provide or receive valuable consideration for the inclusion of any matter in a program intended for broadcast. The persons to whom section 508 relate had previously not been directly subject to provisions of the act.

In adopting the new legislation, Congress cited 27 examples to illustrate the intended effect of the proviso clause in amended section 317(a). These examples were listed by the Commission in a public notice of September 21, 1960, at which time the Commission stated that until adoption of the new rules, it would interpret the new statute and existing rules in the light of these examples.

Subsequent to enactment of this legislation, the Commission held two informal conferences with interested parties to discuss what would be a reasonable approach to implement this law. The first conference, on September 21, 1960, was with representatives of the Motion Picture Association of America, the Alliance of Television Film Producers, Inc., and several of the latter's member production organizations. The other, on November 4, 1960, was with representatives of the networks and the National Association of Broadcasters.

On April 27, 1961, the Commission proposed rulemaking on the subject (docket 14094). A question of concern to the Commission was the applicability of the new statute to films shown on TV but not produced exclusively for TV. To avoid any uncertainty, the Commission proposed to rule that any films made for commercial dis-

tribution after the effective date of the proposed rules would be presumed to have been produced for later TV showing.

The Commission proposed 9 interpretations of applicability of sponsor identification in addition to the 27 congressional examples. At the close of the fiscal year, the comments in this proceeding were being reviewed.

POLITICAL BROADCASTS

Congress amended section 315(a) of the act, effective September 14, 1959, to exempt from the "equal opportunities" requirement appearances by legally qualified candidates on bona fide newscasts, news interviews, news documentaries, or on-the-spot coverage of news events. In addition, the Commission is required to include in each annual report to Congress "a statement setting forth (1) the information and data used by it in determining questions arising from or connected with such amendment; and (2) such recommendations as it deems necessary in the public interest."

The procedure generally followed by the Commission with respect to section 315 complaints is as follows: Immediately upon receipt a complaint is acknowledged and the complainant informed that the Commission is communicating with the licensee. At the same time, the licensee is advised of the complaint and directed to reply within a given time. Such notice is given by telegram, letter, or telephone depending on the date of the election. When necessary, and practicable, the licensee is informed of the specific factual data required to reach a determination.

All section 315 matters are given priority consideration. When a determination is made, both the licensee and the complainant are advised by telegram, letter, or phone as may be required by the circumstances.

In deciding whether a particular "use" of a station's facilities by a candidate comes within the section 315 exemptions, the Commission seeks factual information bearing on the determinative factors. For example, in a case in which the applicability of the exemptions was in issue, the Commission inquired into the following matters: Whether the candidate requesting "equal opportunities" was a "legally qualified candidate"; the format and content of the program on which he appeared; whether the program was "regularly scheduled," and if so, the times of the day and week; when the program was first initiated and when the candidate who first appeared on the station commenced his appearances; whether controversial issues were discussed by the first candidate, and if so, whether opportunity was afforded to present opposing viewpoints; the total amount of free time received by the initial candidate since he became a legally qualified candidate; a copy of the script of the program in issue; and the basis for the station's

denial of the request of the complaining candidate for equal time.

The Commission has not experienced any serious problems in applying the section 315 amendments in cases before it. Accordingly, it is not making any recommendations on the subject.

On August 24, 1960, the President signed Senate Joint Resolution 207 which suspended the section 315 equal-time provision with respect to the 1960 presidential and vice presidential candidates. The resolution required the Commission to report to Congress on the "effect" of the waiver and any recommendations the Commission might have. On January 31, 1961, the Commission made a preliminary report to the Senate Commerce Committee Communications Subcommittee. On March 1, 1961, it submitted a final report.

During the period from August 24 to election day 1960, only two complaints with respect to the "equal opportunities" provision were filed on behalf of major party candidates for President, and three complaints by independent candidates. From January 1 to August 23, 1960, the Commission received no complaints on behalf of major party candidates for President and one complaint from another source.

By means of an August 1960 questionnaire, data were obtained on a State-by-State basis of the extent to which AM, FM, and TV stations carried programs and announcements involving appearances by candidates for President, Vice President, Senator, U.S. Representative, and Governor.

Practically all TV stations reported carrying some political broadcasts, and over 95 percent of the AM stations carried political program time or announcements. Only a handful of stations had a policy of not carrying any political broadcasts.

Charges for broadcasts by or on behalf of Republican candidates aggregated $7,558,809; Democratic, $6,204,986; candidates for all other parties, $431,483. The total of approximately $14.2 million was 45 percent greater than the figure reported in the 1956 election campaign. The money spent on network TV was approximately the same as in 1956, whereas expenditures on network radio decreased by 75 percent. The substantial overall increase over 1956 was accounted for by expenditures on stations—a gain of 92.3 percent for TV and 42 percent for radio. TV and radio networks doubled the amount of free time given to major party candidates and their supporters, compared to the 1956 campaign. On the other hand, free time allotted to candidates of other parties and their supporters declined sharply.

The joint network "Great Debate" programs—the first time opposing presidential candidates appeared on the air in live debate—were carried, with few exceptions, by affiliated TV stations. Radio

network affiliates also reported high clearances for these debates, although less than the TV affiliates.

Networks and the stations provided virtual equality in sustaining program time between the presidential and vice presidential candidates of the two major parties. This equal treatment also extended to appearances of less than 5 minutes' duration on newscasts which were exempted by the 1959 amendment.

Sixty-six stations (53 AM, 7 AM–FM, 4 FM, and 2 TV) reported broadcasting editorials for or against political candidates. Almost all of these stations indicated that they had either broadcast reply statements to their editorials or had made efforts to obtain such replies.

BROADCAST OF CONTROVERSIAL ISSUES

In its June 1, 1949, "Report on Editorializing by Broadcast Licensees," the Commission enunciated the principle that when a licensee permitted the use of his facilities for a discussion of controversial issues of public importance, he was under an obligation to afford reasonable opportunity on his station for the broadcast of opposing viewpoints. This principle, sometimes referred to as the "fairness doctrine," has since been the Commission's policy.

In September 1959, Congress added a caveat to a section 315 amendment which has been interpreted by the Commission and the broadcast industry as affirming the Commission's fairness doctrine. This caveat reads:

> Nothing in the foregoing sentence shall be construed as relieving broadcasters, in connection with the presentation of newscasts, news interviews, news documentaries, and on-the-spot coverage of news events, from the obligation imposed upon them under this chapter to operate in the public interest and to afford reasonable opportunity for the discussion of conflicting views on issues of public importance.

Senate Joint Resolution 207, which suspended the "equal opportunities" provision of section 315 during the 1960 campaign with respect to nominees for President and Vice President, also contained a caveat that "Nothing in the foregoing shall be construed as relieving broadcasters from the obligation imposed upon them under this Act to operate in the public interest." The Commission has construed this as a further affirmation of its fairness policy.

Unlike the "equal opportunities" provision of section 315 which deals with the rights of individuals (candidates), the "fairness doctrine" deals with controversial public issues in general. In the latter connection, the Commission stated in its editorializing report:

> The licensee will in each instance be called upon to exercise his best judgment and good sense in determining what subjects should be considered, the particular format of the programs to be devoted to each

> subject, the different shades of opinion to be presented, and the spokesmen for each point of view. In determining whether to honor specific requests for time, the station will inevitably be confronted with such questions as whether the subject is worth considering, whether the viewpoint of the requesting party has already received a sufficient amount of broadcast time, or whether there may not be other available groups or individuals who might be more appropriate spokesmen for the particular point of view than the person making the request. . . .

Reference is made to this because individuals who may not invoke the political "equal opportunities" provision of section 315 sometimes seek the use of station facilities under the "fairness doctrine." Since the licensee is permitted more discretion in applying the "fairness doctrine" than the "equal opportunities" provision, determinations as to compliance with the former are more difficult and time consuming.

ASSIGNMENT OF LICENSES

The consideration paid for broadcast properties continued to increase. Record prices for AM stations were reached on negotiations to sell WMGM, New York City, to Crowell-Collier Broadcasting Corp. for $10,950,000 (since broken off), and to sell WINS, in the same city, to Storer Broadcasting Co. for $10 million (which faces a hearing). A record price was paid for a UHF TV station (KJEO, Fresno, Calif., which sold for $3 million).

On April 25, 1961, the Commission gave notice that a consolidated hearing appeared necessary on applications of (*a*) the National Broadcasting Co. to assign WRCV, AM and TV, Philadelphia, to RKO General, Inc., in exchange for RKO's WNAC, AM, FM, and TV, in Boston; (*b*) NBC to assign WRC, AM and TV, Washington, to RKO; (*c*) RKO to assign WGMS, AM and FM, Washington, to Crowell-Collier Broadcasting Corp.; and (*d*) NBC to purchase KTVU (TV), San Francisco. Also involved in this proceeding are NBC's applications for renewal of licenses for the Philadelphia and Washington stations and competing applications by the Philco Corp. and the San Francisco Chronicle. Westinghouse Broadcasting Co. and the Chronicle were to be made parties to the hearing. The Commission proposed, in addition to the comparative considerations, to include issues relating to the qualifications of NBC and RKO; antitrust actions involving NBC and/or RCA; conduct and activities of NBC to purchase stations in Boston and San Francisco; possible trafficking in licenses by NBC, RKO, or KTVU (TV); programing operations of Crowell-Collier; and multiple broadcast interests of RKO. The application for the sale of WGMS to Crowell-Collier was later withdrawn.

Due to the frequent turnover of a large number of broadcast stations and the concern which this has occasioned to Congress and the Com-

mission, proposed rulemaking issued on December 9, 1960, looks toward hearings in transfers where a station has been held less than 3 years and a finding cannot otherwise be reached that changed circumstances justify the sale. The Commission is continuing its study of "trafficking" in broadcast licenses and is collection data on all station sales.

The fiscal year saw an increase in the number of licensees who were selling a minority or even a majority of their shares to the general public. Such sales are normally made to raise capital for improving facilities or acquiring additional facilities.

LOCAL NOTICE REQUIREMENT

Public Law 86–752, approved September 13, 1960, requires, among other things, that applicants for new stations, major changes in existing stations, station sales and license renewals, also designations for hearing, give local public notice of such applications. Newspaper publication is required for applications for new or major changed facilities and hearings; and broadcast announcement for modification, assignment, transfer, or license renewal.

The Commission, on November 16 thereafter, amended its rules accordingly. On July 26, 1961, it clarified these requirements with respect to type of publication and time of broadcast announcement. In the case of notices relating to filing or designation for hearing of renewal applications, additional statements are required of the applicant to inform the local community that those who desire to do so can write to the Commission to call its attention to facts for consideration in determining whether a grant of an application would serve the public interest.

On August 1, 1961, the Commission amended its rules to provide that whenever the only application for a broadcast facility in a community is sought to be withdrawn by agreement between competing applicants, and the withdrawal would impede the distribution of radio service, the withdrawing applicant shall give local public notice of the proposed withdrawal so that new parties may file substitute applications.

OTHER 1960 ACT AMENDMENTS

The Commission also implemented other changes required by Public Law 86–752.

On September 28, 1960, the rules were amended to provide for issuing or renewing a broadcast station license for less than the statutory 3-year period in cases where the Commission deems it in the public interest to do so.

On November 16 thereafter, rule amendments eliminated the requirement for section 309(b) letters of notification prior to designation for hearing and the former "protest" procedure. It established a new pregrant procedure for handling objections.

On January 11, 1961, a new section 311(c) was adopted to insure that the Commission is apprised of all agreements proposing to remove a conflict between mutually exclusive broadcast applications. Applicants are required to furnish information which will enable the Commission to determine whether effectuation of such an agreement would serve the public interest. The new rule is designed to curb "payoffs."

On February 7, 1961 the rules were changed to reflect amendments to sections 503 and 504 of the act which provide for monetary forfeitures (payable to the U.S. Treasurer) against a broadcast licensee for willful or repeated infractions of the rules. (The first notice of such a forfeiture was issued March 22, 1961, against the Crowell-Collier Broadcasting Corp. for apparent liability in the amount of $10,000 for continued improper technical operation of its station KDWB, St. Paul, Minn. On July 26 thereafter an order of forfeiture of $2,500 was issued.)

TELEVISION (TV) BROADCAST SERVICE

General

Television is an integral part of American life. As of June 30, 1961, it reached into 90 percent of this country's homes. Some 54 million TV receivers were in the hands of the public. Of the number authorized to go on the air, 456 VHF and 76 UHF commercial stations were operating in 273 markets at the end of the fiscal year.

UHF Promotion

Yet, one of the most perplexing questions still facing the Commission is the TV allocations problem—how to get at least three or four signals into every home and to provide for the future growth of video.

It is impossible to have a competitive TV system for the Nation's growing needs in the commercial and educational fields with the present 12 VHF channels alone. Unless prospective broadcasters can be interested in utilizing the 70 UHF channels, the TV system will have no room in which to expand.

A general study has explored various possibilities for major long-range changes. One possible basic course of action is the shift of all or a major part of TV to the UHF band. The FCC has undertaken a large-scale program of experimentation and demonstration in New York City to compare VHF and UHF transmission side by side. It is hopeful that from this test will grow a renewed interest in the

feasibility of adequately covering major population centers through the use of improved UHF transmission and receiving equipment.

The Commission has also requested legislation which would require that all TV sets shipped in interstate commerce be equipped for UHF as well as VHF reception. If all-channel receivers are available throughout the Nation, a substantial incentive will be provided for revived interest in UHF broadcasting.

Action has also been taken to improve opportunities for effective competition among a greater number of stations in individual markets. In some cities, the Commission is endeavoring to do this by deintermixture, namely, deleting VHF channels in order to make the area completely or substantially UHF; in other cities, it is seeking to squeeze in VHF channels at less than standard spacings.

In a substantial step to encourage more general use of the UHF channels, the Commission on July 28, 1961, proposed a comprehensive program (docket 14229) which would—

Eliminate the UHF table of assignments and permit application in a given community for any workable UHF channel without the necessity for rule making to change the assignment table.

Permit dual operation of both UHF and VHF stations in the same city by those already broadcasting in the VHF band.

Reserve a pool of UHF channels for future use by existing VHF broadcasters and educational interests.

Adopt a first-come-first-served policy so that a qualified application for a UHF channel may be granted without comparative hearing against possible competition for the channel.

Relax various technical requirements to reduce costs in the construction and operation of a UHF station, and

Employ UHF translators to bring TV service to remaining white areas.

As a part of this program, the Commission additionally proposed to establish competitive balance in particular communities where UHF service is struggling for survival against VHF competition. In Madison, Wis.; Rockford, Ill.; Hartford, Conn.; Erie, Pa.; Binghamton, N.Y.; Champaign-Urbana-Danville-Springfield-Decatur, Ill.; Columbia, S.C.; and Montgomery, Ala., the Commission would remove the single VHF assignment and make each of these markets all UHF. (During fiscal 1961, Fresno and Bakersfield, Calif., were deintermixed to make the San Joaquin Valley a UHF area.)

At the same time, and in order to meet pressing need for a third competitive facility in some of the largest two-station markets, the Commission added new VHF channels in Syracuse and Rochester, N.Y., and in Grand Rapids, Mich., and proposed to add a new VHF channel at less-than-minimum mileage separation in Baton Rouge, La.; Birmingham, Ala.; Charlotte, N.C.; Dayton, Ohio; Jacksonville, Fla.; Johnstown, Pa.; Knoxville, Tenn.; and Oklahoma City, Okla.

In July 1961, the Commission sponsored an exhibition at Washington of UHF video equipment in which leading receiver and UHF translator manufacturers as well as educational organizations participated. The FCC provided an information booth at which both its own and industry engineers answered questions regarding UHF transmissions and reception. This exhibit was keyed with the advent of a UHF educational station at the Nation's Capital.

Translators, Repeaters, and Boosters

In an effort to bring TV to areas not getting adequate service, the Commission has since 1956 authorized UHF translator stations. Translator stations provide a means whereby the signals of a regular TV station may be received, converted (translated) to another channel, amplified and retransmitted at comparatively low cost, for reception in a small community where other direct reception is unsatisfactory. On July 27, 1960, the Commission established regulations for the operation of low power (1 watt) translators in the VHF band (docket 12116) and, at the same time, scheduled a procedure enabling existing unauthorized repeaters (boosters, similar to translators in nature and operation) which were constructed before July 7, 1960, to apply for temporary authorization to continue operation until October 31, 1961, pending their compliance with the new translator requirements. Members of the Commission's broadcast, legal, and field engineering units held a series of meetings in western areas where most of the unlicensed booster stations are located to assist their operators obtain interim authority while preparing to convert to the new low power VHF translator stations.

As of June 30, 1961, the Commission had authorized 703 TV translator stations (345 UHF and 358 VHF), and had 705 applications (45 UHF and 640 VHF) for others on file; also, 1,044 TV repeater authorizations were issued and 39 such applications were pending.

It appeared that some VHF translator applications were being filed by VHF stations for the purpose of extending the latter's coverage beyond normal service areas, so the Commission on June 29, 1961, proposed rules which would preclude licensing VHF translators to TV broadcast stations except under prescribed circumstances.

On May 17, 1961, UHF translator licensees were permitted to use on-channel "boosters" to supplement service, particularly in areas unable to obtain good reception because of terrain barriers. At the close of fiscal 1961, one UHF booster application had been granted and another was pending.

National Spot Sales Representation by TV Networks

Pursuant to a recommendation of the 1957 network study report, the Commission adopted a rule prohibiting TV stations other than

those licensed to a network from being represented in national spot sales by an organization which operates the network with which the station is affiliated. On March 2, 1961, the appeals court unanimously upheld the Commission action. (See "Litigation".) The affected stations must conform by December 31, 1961.

TV Option Time

On September 14, 1960, after a public hearing, the Commission concluded that the option time rules should be amended to prohibit TV stations from optioning to networks more than 2½ hours in each of four time segments (docket 12859). At the same time, it made other changes with respect to option-time arrangements to allow for greater selection flexibility by stations. The effect was to permit any TV station which had contracted with a network to carry a particular program series to reject such series on the grounds that it was unsatisfactory, unsuitable, or contrary to the public interest. The new rules also provide that a TV station may substitute for a network program one which, in the station's opinion, is of greater local or national importance.

The Commission's decision was appealed to the court. On April 19, 1961, the Commission announced its intent to reconsider its previous action and the court remanded the proceeding at the Commission's request. On May 4, 1961, the Commission invited comments on whether time optioning is in the public interest and, if found contrariwise, what rule should be adopted to prohibit the practice.

Subscription TV

On June 22, 1960, the Commission received an application (the first) to conduct trial subscription TV operations over WHCT on channel 18 at Hartford, Conn. In the following October it conducted a hearing on issues to assess the proposal's compliance with the conditions for trial operations set out in the third report on subscription TV released March 24, 1959 (docket 11279), and to hear objections by five Connecticut motion picture theater owners and the Connecticut Committee Against Pay TV.

Upon consideration of the record of the 5-day hearing and subsequent pleadings, the Commission on February 23, 1961, granted the requested trial authorization. In doing so, it found that the trial operation posed no threat to the free TV services available at Hartford. An appeal from the Commission's grant is pending in court.

Among conditions laid down by the Commission was that the Hartford toll-TV test should start no later than 6 months after the decision (i.e., by August 23, 1961), but, on good cause shown, the commencement date was extended to July 1, 1962.

No other completed application for a subscription television trial authorization has been received.

Noncommercial Educational TV

During the 9 years since 1952, when it first provided for noncommercial educational TV operation, the Commission has made special effort to encourage the development of this service. Though 273 channels are reserved for this purpose, only slightly more than 50 ETV stations are on the air. However, their success is an incentive to other educators to speed their plans to take advantage of this modern visual teaching medium.

Two cities each had two operating ETV stations—Oklahoma City, Okla. (one on a commercial channel), and Pittsburgh, Pa., and in 1961 a second channel was reserved in Ogden, Utah, and Milwaukee, Wis. The Commission is considering proposals to add a second reservation in Albany, N.Y.

Several petitions to delete educational reservations have been denied and a number of reservations have been added to several communities, including Presque Isle and Augusta, Maine, and Newark, Ohio.

Alabama, Connecticut, Georgia, Ohio, and Texas have three or more operating ETV stations. Florida has an ETV network of 5 VHF stations and has asked that 12 additional UHF channels be reserved for this educational network.

On June 15, 1961, the Greater Washington Educational Television Association received a construction permit for the first ETV station to serve the National Capital area. It will operate on a UHF channel in an area where four VHF commercial stations are on the air.

On March 29, 1961, the Commission undertook an inquiry into means to make available for educational use one of the seven VHF channels which serve the New York City and Los Angeles metropolitan areas.

On June 30, 1961, an application was filed to assign the license of WNTA–TV, a commercial station, to a New York City citizens group organized as Educational Television for the Metropolitan Area, Inc., which proposes to operate it as an educational station. The sale was opposed by the State of New Jersey. The station operates on channel 13, which is assigned to New Jersey, but (as in the case of the other six VHF stations in New York City) has its transmitter atop the Empire State Building to serve a large area including northern New Jersey. The Commission approved the transfer on October 25, 1961. New Jersey appealed to court but later withdrew.

On October 25, 1961, the Commission established an Educational Broadcasting Branch, reorganizing its former Economics Division as the Research and Education Division for that purpose.

Airborne TV Instruction Test

Purdue University reported substantial progress in activating an experimental system of TV instruction using airborne transmitters operating on UHF channels 72 and 76. This is pursuant to a December 22, 1959, Commission grant for the purpose of air-telecasting educational courses to elementary and secondary schools, colleges, and universities located within 200 miles of Montpelier, Ind. The project employs two DC–6 AB airplanes, each with two UHF transmitters, flying, one at a time, in a 10-mile circle at an altitude of 23,000 feet over central Indiana.

Test flights were made during the first 2 weeks of May 1961. Beginning June 19, the airborne transmitters were used for 3 weeks to provide informaton on the courses of instruction to summer workshops for school teachers and administrators. Good-to-excellent reception was reported from places 200 miles distant from the aircraft. Regular telecasts for the school year 1961–62, 4 days a week and 6 hours a day, were scheduled to commence September 11, 1961.

The Midwest Program on Airborne Television Instruction, a cooperating organization, has prepared video tape for 15 courses consisting of 1,344 telecasts including such subjects as arithmetic; French, Spanish, and Russian languages; elementary and general science; music; world history and geography; American history; government and civics; and art. These tapes will be made available to noncommercial educational TV stations and educational closed-circuit installations throughout the country. Also, ETV stations located within the service areas of the airborne transmitters will be granted permission to rebroadcast their signals.

TV Agreements With Canada and Mexico

In March of 1961 a "working arrangement" was agreed to with Canada to deal with certain technical problems which have developed in administering the 1952 joint agreement concerning TV assignments within 250 miles of the border.

In October 1960 a general basis of agreement was reached with Mexico of assignment of VHF stations within 250 miles of that border and negotiation of details continues. There is a joint 1958 agreement between the two countries on UHF assignments within 200 miles of the border.

FREQUENCY MODULATION (FM) BROADCAST SERVICE

General

Increased interest in FM broadcast outlets is being evinced by mounting applications and more competition for facilities. This is due, in large measure, to the growing scarcity of AM outlets, the opportunity for FM stations to obtain additional revenue by furnish-

ing subsidiary services and, more recently, by the blanket authority given them to engage in stereophonic broadcasting.

The growing number of FM stations and certain changes in the FM rules made it necessary to confer with Canada looking to possible modifications of a 1947 agreement which governs the assignment of FM stations along the border.

Because of potential detrimental effect by portable FM receivers on electronic equipment on aircraft, the Federal Aviation Agency banned carrying such receivers aloft beginning May 25, 1961.

Commercial FM

As of June 30, 1961, there were 1,092 commercial FM stations authorized; of these, 889 were on the air. The previous high in authorizations was about 1,020 in 1948, from which peak the number decreased to around 550 in the middle 1950's. In 1957 the upward trend began and is still continuing. Of the operating commercial FM stations at the close of fiscal 1961, 275 held subsidiary communications authorizations.

During the year, the first commercial FM grant was made for Wyoming. All other States now have commercial FM stations except North and South Dakota, Montana, and Vermont.

Educational FM

In contrast to commercial FM, the noncommercial educational FM broadcast service has continued a slow and steady increase since its inception. As of June 30, 1961, of 199 stations authorized, 186 were on the air.

The rules were amended during the year to enable educational FM stations to engage in subsidiary services of a noncommercial nature, such as programing for classroom and other specialized audiences, relaying programs between educational FM stations, and remote cueing and other functions relating to station operation. The changes permit these stations to present material for which the only consideration is the matter furnished and/or the payment of any line charges involved.

Stereophonic Broadcasting

On June 1, 1961, the Commission amended its rules to permit the transmission of stereophonic programs by FM broadcast stations on a multiplex basis. Any FM station may transmit these programs without further Commission authorization. A subcarrier is used in conjunction with the main channel operation of stations offering the service. The Commission considered several proposed "stereo" systems, but adopted the one which provided the best quality of transmission with only negligible effect on the listener who is receiving only the main channel program.

By early July 1961, approximately six stations had begun stereophonic broadcasting and others were expected to follow. It is anticipated that FM stereo receiving equipment will appear on the market in the relatively near future.

While FM stereo must be regarded as an adjunct to aural FM services, the Commission is hopeful that it will add a new dimension to FM listening.

On September 27, 1961, the Commission denied petitions to institute proceedings looking toward adoption of stereo standards for AM broadcast stations at this time.

Change in FM Rules

The need for a revision of the FM rules is due to many technical and other developments since this service was started 20 years ago. The demand for FM facilities is now such as to pose many of the problems which beset AM broadcasting. Therefore, on June 29, 1961, the Commission started an inquiry looking toward revamping the FM rules. The considerations relate to two general questions: (1) whether the present system of FM station assignments is the best one for optimum development of this important service; and (2) how the development and expansion of FM can be achieved without the administrative burdens and delays inherent in present AM station assignment process.

The Commission specifically proposes an overall plan of new FM station assignments based on minimum mileage separations with respect to existing stations and also, to some extent, on maximum separations. Three classes of commercial FM stations are proposed—one with a nominal protected service range of 25 miles, another of 50 miles, and the third of 100 miles. In addition, educational stations would be divided into two classes—one of low power (10 watts) and the other with powers and ranges equal to the commercial stations. It also will consider whether duplication of AM programs on FM stations should be curtailed.

In order to expedite application processing and to remove many administrative burdens on the part of the Commission and handicaps for the prospective applicants, a simple go-no-go type of assignment principles is contemplated. Many other technical and procedural changes are proposed to update the FM broadcast service to accommodate its growth in the most efficient manner possible.

STANDARD (AM) BROADCAST SERVICE

General

AM radio continues to withstand the onslaught of TV. As of June 30, 1961, there were 3,602 AM stations on the air and 155 under construction.

Class IV Stations

On May 28, 1958, the Commission increased the limit on daytime power of class IV (local) stations from 250 watts to 1 kilowatt. The great majority of resulting applications involved interference problems in violation of section 3.28(c) (10-percent rule). So the Commission, on December 14, 1960, exempted existing class IV stations seeking daytime power increases from that provision. This helped in processing class IV applications, but a substantial backlog delayed realization of the public benefits to be derived from increasing the daytime power ceiling on local channels. It also delayed the processing of other classes of applications.

There is a total of 1,110 class IV stations. By March 13, 1961, 308 applications to increase to 1 kilowatt had been granted and 343 were pending. Therefore, on May 3, 1961, the Commission took further steps to expedite the granting of these applications. Section 1.354(c) was amended to permit simultaneous consideration of related pending class IV applications for increased power, thus eliminating much of the delay and many hearings.

Clear Channels

In initiating this proceeding (docket 6741) in 1945, the Commission noted that there are still large areas of the United States which had no radio service during the daytime and no primary radio service at night. The basic question presented was whether any changes should be made in use of these clear channels. There are 23 domestic class I–A frequencies which are given complete nighttime protection from objectionable cochannel interference to enable them to render wide-area nighttime secondary (skywave) service to remote communities and rural areas not reached by other AM stations. Only a little more than 50 percent of the land area of the United States receives a primary (groundwave) nighttime AM service.

Parties to this proceeding have, in a voluminous and complex record, advocated numerous and diverse approaches to the problem. There are two general divergent views. One urged that class I–A stations could provide a satisfactory signal to wide areas through the use of increased power and by limiting the operation (during nighttime hours) of cochannel stations. The conflicting view contended for an increase in the number of unlimited-time stations on the clear channels.

Since the original record in this proceeding, numerous changes have occurred in the broadcasting industry. TV expanded and radio listening habits changed substantially. There were 900 operating AM stations when this proceeding began; in 1958 there were 3,000. Therefore, in the latter year the Commission reopened the record and invited

comments on proposals to open 12 specified clear channels for additional unlimited-time assignments and to reserve for later determination proposals to increase power on the remaining clear channels. Subsequently, in 1959, it asked for comments on a proposal to assign new class II stations on 23 clear channels, the new stations to be located in certain selected and designated States.

After considering the subsequent record, the Commission on September 13, 1961, concluded the clear-channel proceeding by rule amendments opening the way to the assignment of one unlimited-time class II station on each of 13 clear channels, under controlled conditions, to provide service to underserved or white areas. The action will not affect present use of the remaining 12 clear channels.

NARBA and United States-Mexican Agreements

Within the past year, two international agreements concerning AM broadcasting entered into force. One was the North American Regional Broadcasting Agreement (NARBA), effective April 19, 1960, between Canada, Cuba, and the United States and, on May 4, 1961, with the Dominican Republic. The other was the United States-Mexican agreement which became operative June 9, 1961. They complement each other and afford a sound basis for continued coordination of AM broadcast assignments among the North American countries.

On June 21, 1961, and on July 12, 1961, the Commission amended its rules to conform with the above agreements. Except in certain areas near the Mexican border, U.S. class II stations on Mexican I–A channels may now operate with power up to 5 kilowatts instead of the former ceiling of 1 kilowatt.

The new rules contain substantially the same provisions as now concerning consideration of applications by class IV stations to operate with up to 1 kilowatt power daytime, even though under NARBA the ceiling on class IV stations is 250 watts, both daytime and nighttime. Such applications will be considered where the proposed operation would not cause objectionable interference to a foreign station and where the applying station is not located within certain areas near the Mexican border or in Florida close to Cuba.

INTERNATIONAL BROADCAST STATIONS

International (or high frequency) broadcast stations extend service to foreign countries. There were two such non-Government stations in operation and one under construction in the United States. KGEI, at Belmont, Calif., directs programs to Central and South America and has an application to broadcast to Japan. WRUL, Scituate, Mass., now operated by Metro Media, Inc., broadcasts to Europe,

Africa, and Central and South America. Station WINB, Red Lion, Pa., indicates it will commence operations shortly. One experimental station in Cincinnati, Ohio, uses an international broadcast frequency to provide a continuous signal used in propagation studies by the National Bureau of Standards. All other international broadcast facilities in the United States are operated by the U.S. Information Agency.

MISCELLANEOUS BROADCAST SERVICES

There are more than 6,300 broadcast adjuncts. About 5,000 of these are used for remote pickup purposes; others link studios and transmitters, and still others provide facilities for development and experimentation. On July 27, 1961, the Commission proposed doing away with the separate classifications of AM, FM, and TV (aural) studio-transmitter links and combining them in a single category to be called aural broadcast STL stations.

STATISTICS

Current Broadcast Authorizations

At the close of fiscal 1961, outstanding broadcast authorizations of all classes totaled 13,845, representing a net gain of 2,666 collectively for the year.

A breakdown of authorizations for the different classes of broadcast services at the yearend follows:

Class	June 30, 1960	June 30, 1961	Increase or (decrease)
Commercial AM	3,581	3,757	176
Commercial TV	653	650	(3)
TV translators	302	703	401
TV repeaters	0	1,044	1,044
TV boosters	0	1	1
Educational TV	64	67	3
Auxiliary TV	1,093	1,254	161
Experimental TV	24	27	3
Commercial FM	912	1,092	180
Educational FM	181	199	18
International	5	4	(1)
Remote pickup	4,279	4,943	664
Studio-transmitter-link	65	69	4
Developmental	4	4	0
Low-power auxiliary (cueing)	16	31	15
Total	11,179	13,845	2,666

Status of Broadcast Authorizations

There were 7,513 AM, TV, and FM broadcast stations authorized at the close of fiscal 1961, of which 6,955 had authorizations to go on the air and 548 others held construction permits. A breakdown follows:

Class	Operating authorizations	Construction permits
Commercial AM	3,602	155
Commercial TV	553	97
TV translators	637	66
TV repeaters	1,044	0
TV boosters	0	1
Educational TV	54	13
Commercial FM	889	203
Educational FM	186	13
Total	6,965	548

Also, 275 commercial FM stations held subsidiary communications authorizations to engage in functional (background) music and other multiplexed operations.

Broadcasting Since 1949

Until 1949 Commission reports of broadcast totals did not give figures for stations actually on the air.

The following table shows the number of authorized, licensed, and operating broadcast stations, and pending applications at the close of the past 13 fiscal years; also the number of stations deleted during those years:

Year	Grants	Deletions	Pending applications	Licensed	CP's on air	Total on air	CP's not on air	Total authorized
COMMERCIAL AM								
1949	200	55	382	1,963	43	2,006	173	2,179
1950	194	70	277	2,118	26	2,144	159	2,303
1951	116	35	270	2,248	33	2,281	104	2,385
1952	60	25	323	2,333	22	2,355	65	2,420
1953	187	23	250	2,439	19	2,458	126	2,584
1954	148	29	226	2,565	18	2,583	114	2,697
1955	161	18	304	2,719	13	2,732	108	2,840
1956	197	18	389	2,871	25	2,896	124	3,020
1957	232	14	431	3,044	35	3,079	159	3,238
1958	132	17	536	3,218	35	3,253	100	3,353
1959	159	12	679	3,328	49	3,377	123	3,500
1960	92	11	822	3,442	41	3,483	98	3,581
1961	178	2	702	3,545	57	3,602	155	3,757
COMMERCIAL TV								
1949	15	7	338	13	56	69	48	117
1950	0	8	351	47	57	104	5	109
1951	0	0	415	81	26	107	2	109
1952	0	1	716	96	12	108	0	108
1953	381	6	572	101	97	198	285	483
1954	174	81	200	104	298	402	171	573
1955	67	58	127	137	321	458	124	582
1956	60	25	128	186	310	496	113	609
1957	55	13	129	344	175	519	132	651
1958	35	21	125	427	129	556	109	665
1959	24	22	114	475	91	566	101	667
1960	22	36	106	481	98	579	74	653
1961	33	36	80	*497	56	543	97	650
TV TRANSLATER								
1957	74	0	48	17	24	41	33	74
1958	88	6	34	92	0	92	64	156
1959	96	7	27	158	0	158	87	245
1960	60	3	19	233	0	233	69	302
1961	420	19	685	279	0	279	424	703

*10 not on air.

Year	Grants	Deletions	Pending applications	Licensed	CP's on air	Total on air	CP's not on air	Total authorized
TV REPEATER								
1961	1,044	0	39	0	1,044	1,044	0	1,044
TV BOOSTER								
1961	1	0	1	0	0	0	1	1
EDUCATIONAL TV								
1952	0	0	1	0	0	0	0	0
1953	17	0	29	0	1	1	16	17
1954	13	0	17	0	6	6	24	30
1955	5	1	14	1	10	11	23	34
1956	7	0	11	1	19	20	21	41
1957	8	0	8	14	12	26	23	49
1958	4	0	9	29	3	32	21	53
1959	6	0	7	37	6	43	16	59
1960	6	1	7	40	7	47	17	64
1961	4	1	9	43	11	54	13	67
COMMERCIAL FM								
1949	57	212	65	377	360	737	128	865
1950	35	169	17	493	198	691	41	732
1951	15	91	10	534	115	649	10	659
1952	24	36	9	582	47	629	19	648
1953	29	79	8	551	29	580	21	601
1954	27	54	5	529	24	553	16	569
1955	27	44	6	525	15	540	12	552
1956	31	37	10	519	11	530	16	546
1957	40	26	24	519	11	530	31	560
1958	98	24	57	526	22	548	86	634
1959	153	18	71	578	44	622	147	769
1960	165	22	114	700	41	741	171	912
1961	200	20	97	829	60	889	203	1,092
EDUCATIONAL FM								
1949	18	7	9	31	3	34	24	58
1950	25	4	3	61	1	62	20	82
1951	19	6	2	82	1	83	12	95
1952	12	2	2	91	1	92	12	104
1953	13	1	3	106	0	106	10	116
1954	9	2	1	117	0	117	6	123
1955	7	3	1	121	3	124	3	127
1956	13	4	5	126	0	126	10	136
1957	17	5	2	135	0	135	13	148
1958	11	3	6	144	3	147	10	157
1959	16	8	2	150	4	154	11	165
1960	20	4	11	161	4	165	16	181
1961	21	3	4	176	10	186	13	199

Reinstatement of some deleted authorizations and other considerations not detailed in this table account for any seeming discrepancy in the relation of grants and deletions during the year to the total yearend authorizations.

Stations actually operating or holding authorizations to operate are covered by the term "on the air." "CP's" indicate construction permit status.

Broadcast Applications

During the year, 15,500 broadcast applications were received, or 2,887 more than the year previous. The following is a breakdown of broadcast applications in nonhearing status at the end of the fiscal year (for docket statistics, see "Commission" chapter):

Applications	Pending July 1, 1960	Incoming workload			Disposed			Pending June 30, 1961
		New	Returned to processing		Granted	Dismissed, denied, returned	Designated for hearing	
			Hearing	Non-Hearing				
STANDARD BROADCAST (AM)								
New stations	628	293	20	3	105	138	182	519
Major changes	656	303	3	2	239	79	150	496
Subtotal	1,284	596	23	5	344	217	332	1,015
Assignments and transfers	125	770	1	1	631	90	2	174
Renewals	597	1,553		3	1,195	82	4	872
Licenses	206	601		4	448	23	1	339
All others	186	1,216		1	1,062	74	1	266
Total applications	2,398	4,736	24	14	3,680	486	340	2,666
FREQUENCY MODULATION (FM) [1]								
New stations	85	256	4	2	216	33	25	73
Major changes	41	254	1	1	224	15	4	54
Subtotal	126	510	5	3	440	48	29	127
Assignments and transfers	29	186			152	24		39
Renewals	188	339			295	14		218
Licenses	71	313			248	16		120
All others	67	614		2	543	31		109
Total applications	481	1,962	5	5	1,678	133	29	613
TELEVISION (TV) [2]								
New stations	46	48	1		28	12	19	36
Major changes	41	95	1	3	78	8	12	42
Subtotal	87	143	2	3	106	20	31	78
Assignments and transfers	24	108			98	8	1	25
Renewals	97	195		2	165	5	1	123
Licenses	144	86		3	76	4		153
All others	87	159			145	16		85
Total applications	439	691	2	8	590	53	33	464
TV TRANSLATOR, BOOSTER, REPEATER								
New stations	28	2,360		6	1,473	191	5	725
Major changes	8	28		2	21	3	2	12
Subtotal	36	2,388		8	1,494	194	7	737
Assignments and transfers		11			11			
Renewals	55	249			124	9		171
Licenses	29	97			66	14		46
All others	7	34			33	3		5
Total applications	127	2,779		8	1,728	220	7	959
ALL OTHER [3]								
New stations	164	1,190			1,111	96		147
Major changes	60	514			475	33		66
Subtotal	224	1,704			1,586	129		213
Assignments and transfers	47	309			289	11		54
Renewals	649	1,807			1,375	81		1,000
Licenses	442	1,389			1,333	69		429
All others	16	125			113	21		7
Total applications	1,378	5,332			4,696	311		1,703
Total nonhearing applications	4,823	15,500	31	35	12,372	1,203	409	6,405

[1] Includes noncommercial educational.
[2] Includes noncommercial educational.
[3] Includes: international, relay and studio link, developmental, experimental TV, remote pickup, TV auxiliaries.

Broadcast Industry Financial Data

The radio and television industry for the calendar year 1960 reported total revenues (which are derived from the sale of time, talent, and program materials to advertisers) of $1,866.3 million.

Total radio revenues increased by 6.7 percent to $597.7 million while total television revenues rose to $1,268.6 million, or 9.0 percent above 1959.

Total radio and television profits were $290.0 million, an increase of 9.6 percent above 1959. Television broadcast profits of $244.1 million were 9.8 percent higher and radio profits of $45.9 million were 8.3 percent greater than 1959.

The following tables show the comparative calendar 1959–60 financial data for the radio and television broadcast industries.

Broadcast Revenues, Expenses and Income of Networks and Stations of Radio [1] *and Television Broadcast Services, 1959–60*

[$ Millions]

Service	1959	1960	Percent increase or (decrease)
	Total broadcast revenues		
Radio	$560.0	$597.7	6.7
Television	1,163.9	1,268.6	9.0
Industry total	$1,723.9	$1,866.3	8.3
	Total broadcast expenses		
Radio	$517.6	$551.8	6.6
Television	941.6	1,024.5	8.8
Industry total	$1,459.2	$1,576.3	8.0
	Broadcast income (before Federal income tax)		
Radio	$42.4	$45.9	8.3
Television	222.3	244.1	9.8
Industry total	$264.7	$290.0	9.6

[1] Includes AM and FM broadcasting.

NOTE: 1960 radio data cover the operations of 4 nationwide networks, 3,470 AM and AM–FM and 218 independent FM stations. Excluded are 40 AM and AM–FM stations and 3 independent FM stations whose reports were filed too late for tabulation. 1959 data are for 4 nationwide networks, 3,380 AM and AM–FM and 148 independent FM stations. 1960 TV data cover the operations of 3 networks and 530 stations. 1959 TV data cover the oprations of 3 networks and 519 stations.

Nationwide Networks Only, 1959–60

[Including owned and operated stations]

Item	1959 (millions)	1960 (millions)	Percent increase or (decrease)
Total broadcast revenues	$636.5	$703.7	10.6
Radio	60.4	63.0	4.3
Television	576.1	640.7	11.2
Total broadcast expenses	553.1	611.5	10.6
Radio	64.9	66.0	1.7
Television	488.2	545.5	11.7
Broadcast income (before Federal income tax)	83.4	92.2	10.6
Radio	(4.5)	(3.0)	
Television	87.9	95.2	8.3

NOTE 1: Radio data include the operations of 19 nationwide network-owned AM stations in 1959 and 1960.
NOTE 2: Television data include the operations of 17 network-owned stations in 1959 and 15 in 1960.

Investment in Tangible Broadcast Property of 4 Nationwide Networks, Their 19 Owned and Operated Stations and 3,451 Other Radio [1] Stations, 1960

Item	Investment in tangible broadcast property	
	Original cost ($ thousands)	Depreciated cost ($ thousands)
4 nationwide networks	$8,740	$4,472
19 network owned and operated stations	8,947	4,496
3,451 other stations	397,053	210,883
Total	414,740	219,851

[1] Excludes 218 independently operated FM stations.

Comparative Financial Data of 4 Nationwide AM Radio Networks and 3,470 AM Stations, 1959–60

[In thousands]

Item	4 nationwide networks	19 owned and operated stations	3,451 stations	Amount 1960 total 4 nationwide networks and 3,470 stations	Percent of increase or decrease
Revenues from the sale of time:					
Network time sales:					
Sale of network time to advertisers	$31,917				
Total network time sales	31,917				
Deductions from network's revenue from sale of time to advertisers:					
Paid to owned and operated stations	656				
Paid to affiliated stations	4,336				
Total participation by others (excluding commissions) in revenue from sale of network time	4,992				
Total retentions from sale of network time	26,925	$656	$7,445	$35,026	(1.7)
Non-network time sales:					
National and regional advertisers		23,790	178,312	202,102	7.4
Local advertisers		10,749	374,597	385,346	7.3
Total non-network time sales		34,539	552,909	587,448	7.3
Total time sales	26,925	35,195	560,354	622,474	6.8
Deduct—Commissions to agencies, representatives, etc	4,817	6,815	55,255	66,887	6.4
Net time sales	22,108	28,380	505,099	555,587	6.8
Revenues from incidental broadcast activities:					
Talent	8,190	2,438	12,203	22,831	2.5
Sundry broadcast revenues	1,250	620	11,575	13,445	0.3
Total incidental broadcast activities	9,440	3,058	23,778	36,276	1.7
Total broadcast revenues	31,548	31,438	528,877	591,863	6.5
Total broadcast expenses	38,443	27,561	477,553	543,557	6.2
Broadcast income (before Federal income tax)	(6,895)	3,877	51,324	48,306	9.8

NOTE: Data for 1959 cover the operations of 4 nationwide networks and their 19 owned and operated stations. 1960 data for owned and operated stations reflect the sale of 1 station by one network and the acquisition of 1 station by another network

( ) Denotes loss.

Broadcast Revenues, Expenses, Income, Investment in Tangible Broadcast Property of Frequency Modulation (FM) Stations Operated by Non-AM Licensees, 1959–60

Broadcast revenues, expenses, and income

Item	1959 Number of stations	Amount (millions)	1960 Number of stations	Amount (millions)
	Total FM broadcast revenues			
FM stations operated by:				
AM licensees:				
Reporting no FM revenues	361		337	
Reporting FM revenues	153	$1.4	234	$3.6
Non-AM licensees	148	4.3	218	[1] 5.8
Total FM stations	662	5.7	789	9.4
	Total FM broacast expenses			
FM stations operated by:				
Non-AM licensees	148	$5.9	218	$8.2
Industry total		[2]		[2]
	FM broadcast income (before Federal income tax)			
FM stations operated by:				
Non-AM licensees	148	($1.6)	218	($2.4)
Industry total		[2]		[2]

Investment in tangible broadcast property 1960

Original cost ($ thousands)	Depreciated cost ($ thousands)
$8,171	$6,258

[1] Of this amount $1.3 million was reported as incidental broadcast revenues including revenues from providing functional music or other special services.

[2] In view of the difficulty in a joint AM-FM operation in allocating FM operation expense separately from AM station operation expense, licensees of such stations were not required to report FM station expense separately. As a result, FM industry totals for expense and income are not available. AM-FM licensees, however, were requested to report separately the revenues, if any, attributable to FM station operation.

( ) Denotes loss.

Investment in Tangible Broadcast Property of Television Networks and Stations, 1960

Item	Number of stations	Investment in tangible broadcast property	
		Original cost ($ thousands)	Depreciated cost ($ thousands)
3 networks and their owned and operated stations	[1] 15	$140,505	$76,796
Pre-freeze stations	93	167,924	74,353
Total pre-freeze stations	[1] 108	308,429	151,149
Post-freeze stations:			
VHF	346	248,524	134,353
UHF	76	35,850	18,034
Total post-freeze stations	422	284,374	152,387
Grand total	530	592,803	303,536

[1] Includes one post-freeze VHF station owned and operated by a network.

TV Broadcast Revenues, Expenses and Income, 1960

[In millions]

Item	3 networks	15 network owned and operated TV stations	515 other TV stations	Total 3 networks and 530 TV stations
Revenues from the sale of time:				
Network time sales:				
Sale of network time to advertisers	$468.8			
Total network time sales	468.8			
Deductions from network's revenue from sale of time to advertisers				
Paid to owned and operated stations	29.9			
Paid to affiliated stations	132.0			
Total participation by others (excluding commissions) in revenue from sale of network time	161.9			
Total retentions from sale of network time	306.9	$29.9	[1] $134.8	$471.6
Non-network time sales:				
National and regional advertisers		100.3	358.9	459.2
Local advertisers		30.8	185.0	215.8
Total non-network time sales		131.1	543.9	675.0
Total time sales	306.9	161.0	678.7	1,146.6
Deduct—Commissions to agencies, representatives, etc	70.4	24.6	99.7	194.7
Net time sales	236.5	136.4	579.0	951.9
Revenues from incidental broadcast activities:				
Talent	220.1	3.6	10.6	234.3
Sundry broadcast revenues	38.2	5.9	38.3	82.4
Total incidental broadcast activities	258.3	9.5	48.9	316.7
Total broadcast revenues	494.8	145.9	627.9	1,268.6
Total broadcast expenses	461.2	84.3	479.0	1,024.5
Broadcast income (before Federal income tax)	33.6	61.6	148.9	244.1

[1] Total retentions from sale of network time of $134.8 million by 515 other TV stations includes revenues received from miscellaneous TV networks in addition to receipts from the 3 national TV networks.

Broadcast Expenses of 3 TV Networks and 530 TV Stations, 1960

[$ Thousands]

Type of expenses	3 networks	15 network owned and operated TV stations	515 other TV stations	Total 3 networks and 530 TV
Technical	$27,763	$14,812	$78,039	$120,634
Program	376,948	42,173	196,944	616,065
Selling	23,207	8,895	58,238	90,340
General and administrative	33,232	18,436	145,767	197,435
Total broadcast expenses	461,170	84,316	478,988	1,024,474

Broadcast Expenses of 4 Nationwide Networks, Their 19 Owned and Operated Stations and 3,451 Other AM Stations, 1960

[$ Thousands]

Type of expenses	4 nationwide networks	19 network owned and operated stations	3,451 other AM stations	Total
Technical	$3,516	$5,188	$62,409	$71,113
Program	22,978	12,544	142,393	177,915
Selling	5,124	4,717	90,904	100,745
General and administrative	6,826	5,112	181,847	193,785
Total broadcast expenses	38,444	27,561	477,553	543,558

Safety and Special Radio Services

GENERAL

The Safety and Special Radio Services comprise more than 40 categories of mobile and point-to-point radio usage by private and non-Federal Government licensees. This is the largest group of radio users regulated by the Commission. These licensees utilize radio communication as an aid in virtually every segment of the Nation's business, transportation, public safety, research, and other activities.

The interest in these private radio systems is manifested by the mounting number of applications as well as by the increasing capital investment in equipment. At the close of fiscal 1961, more than 2.6 million fixed, portable, and mobile transmitters were authorized to over 770,000 licensees in the safety and special services collectively. This is in contrast to 2,184,526 transmitters and 651,993 licensees at the close of the previous year.

LEGAL AND REGULATORY DEVELOPMENTS

Microwave Inquiry and Policy Implementation

Early in fiscal 1961, the Commission concluded its microwave inquiry (docket 11866) concerning the allocation and usage of frequencies above 890 Mc. In essence, the Commission determined that eligible applicants in the safety and special services would be permitted to use microwave frequencies for point-to-point communication, as well as for some omnidirectional operations, on a regular basis and without restrictions based on possible availability of common carrier communication services. In a companion proceeding (docket 13083), interim technical standards for microwave transmitting equipment were adopted. By a series of orders and rulemaking proceedings, these microwave policies were codified in appropriate parts of the Commission's rules and further implementing rule refinements were adopted. Appropriate procedures and a new application form also were adopted.

Pregrant Notice and Petition Procedure

Effective December 12, 1960, several categories of safety and special services applications were made subject to new statutory pregrant notice and petition procedures.

The most significant changes are that (1) in contrast to past procedures which made all safety and special grants subject to postgrant protests, only specified categories of applications in these services are subject to the pregrant procedures; (2) a public notice is regularly issued listing those applications filed which are subject to the pregrant procedures; and (3) applications of which public notice is given are not acted upon for at least 30 days during which interested parties may file petitions to deny. At the close of the fiscal year, after nearly 7 months of operation under the new procedures, no petition had been filed to deny any application in the safety and special services.

Informal Inquiry Concerning Defendants in Electrical Antitrust Cases

The Commission undertook an informal inquiry and consideration of the defendants in the recent Philadelphia electrical price-fixing antitrust cases who are licensees or may become applicants in all radio services regulated by the Commission. At the close of the year the Commission was still gathering facts and had reached no determination.

MARINE RADIO SERVICES

Safety at Sea

The Commission administers the requirements of domestic law and international agreement that certain vessels must carry radio installations for safety purposes.

Distress studies.—The Commission continued its study of ship distress communications as a basis for regulating radio to promote safety of life and property. During the fiscal year, the radiotelegraph distress signal "S O S" was used on behalf of 235 vessels and aircraft. These calls for help were intercepted by 910 non-Government ships and coast stations in addition to U.S. Coast Guard ships and shore stations. There were 150 reports of auto alarms being actuated to alert off-duty ship radiotelegraph operators of distress calls. In many cases vessels more than 1,000 miles from the distress scene were alerted by the radiotelegraph alarm signal. Radiotelegraph generally functioned satisfactorily for such distress communications.

Studies were also made of distress cases involving small vessels equipped with radiotelephone. Of 27 cases studied, the radiotelephone functioned satisfactorily in 15 instances; in 8 cases operation was unsatisfactory due to radio equipment failures or other causes; and in the 4 remaining cases there was no opportunity to use the radiotelephone installation to summon aid. To increase sources of information with regard to use of radiotelephone in distress, the Commission requested public coast telephone stations to furnish copies of radio logs containing intercepts of radiotelephone distress traffic.

Exemptions from compulsory radio requirements.—The Commission is authorized by section 352(b) of the Communications Act to grant exemptions from compulsory ship radio requirements. Exemption applications handled during fiscal 1961 were:

	Received during fiscal 1961	Granted	Denied
From compulsory radiotelegraph requirements	[1] 36	[2] 35	1
From compulsory radiotelephone requirements	[3] 29	20	9

[1] Not included in this table are 11 temporary radiotelegraph exemptions granted.
[2] All of these were granted on condition that specified radiotelephone requirements are met.
[3] Not included in this table are 7 temporary radiotelephone exemptions granted.

Public coast radiotelephone stations operating in the 2-Mc band are normally required to keep a safety watch on the radiotelephone distress frequency 2182 kc. On May 11, 1961, the Commission exempted the New York Telephone Co.'s public coast telephone station WOX from this requirement for a period of 12 months on the basis that the watch is adequately covered by Coast Guard radio facilities in that area. Licensees and operators of affected ship stations were requested to comment concerning further extension of this exemption.

Proposed legislation.—Two identical bills, S. 1288 and H.R. 4743, were introduced during the fiscal year which would amend section 362(b) of the Communications Act. That section now provides that radio equipment and apparatus required to be installed on board vessels subject to title III, part II of the act, be inspected at least once a year. The proposed amendment would allow the time lapse between inspections to be extended by the Commission in certain circumstances. The Commission favors enactment of such legislation.

Radio Technical Commission for Marine Services (RTCM)

The RTCM, a cooperative association of Government agencies and industry groups interested in marine telecommunications, is concluding technical studies of shipboard radio antennas; present and future communication requirements for voluntarily equipped noncommercial vessels; introduction of the radiotelephone auto alarm signal in the United States; and use of the 9300–9500-Mc radar band. During the fiscal year, three additional committees were organized. One committee is studying the overall problems of maritime telecommunications; a second will report on recommended uses for newly available single sideband working frequencies and double sideband calling frequencies; and the third is investigating the relative merits of various selective calling devices for use in the maritime mobile service.

Marine Radio Communications Systems

Rule amendments.—The Commission provided up to 5-year license terms for certain maritime land and shipboard stations in lieu of the present shorter terms. Increased efficiency in processing applications is anticipated.

The rules were changed (docket 13523) to permit calls between ships on frequencies other than the calling frequency 2182 kc, under specified conditions. The time limit for any one exchange of intership communication was reduced from 5 to 3 minutes, and the time interval before communications between the same stations may be resumed was increased from 5 to 10 minutes. These changes were made to bring about more efficient use of the 2–3-Mc ship radiotelephone frequencies.

Other rule changes make public correspondence frequencies in the 2–3-Mc band available for assignment in the vicinity of St. Thomas, Virgin Islands (docket 13898); and Lake Allatoona and Lake Sydney Lanier, both Georgia (docket 13983). Construction permits have been issued for the establishment of public coast stations at these locations.

An additional rule amendment (docket 13588) made the frequency pair 2466 kc (coast)—2382 kc (ship) available for public ship-shore use in the Los Angeles-San Diego area on a 24-hour basis.

The frequencies 2003 kc and 156.6 and 156.7 Mc were provided for ship stations to communicate with Government coast stations concerning passage of vessels on the St. Lawrence Seaway and on the St. Mary's River (docket 13447).

Proposed rule changes.—The Commission proposed to make the intership frequencies 2738 and 2830 kc available to limited coast stations at causeways, bridges, waterways, and similar locations where there is need for ship-to-shore communication (docket 14160). Under the proposal, communications serving the safety and related navigational needs of all types of vessels would be permissible.

Proposals were still outstanding in two additional rulemaking proceedings. One (docket 13952) would implement certain requirements of the 1959 Geneva radio regulations concerning, principally, frequencies for coast and ship stations. The other would ease the requirements applicable to ship stations (particularly small boats) concerning measurement of transmitter frequencies (docket 14161).

Authorizations of special interest.—The Lorain County Radio Corp., Illinois Bell Telephone Co., and RCA Communications were authorized developmental stations to use single sideband for ship-shore communication on the Great Lakes and Mississippi River system. Because of operational requirements in the safety service, complete conversion to a single sideband cannot be realized in the near future. However, increased use of this technique for nonsafety

communication could increase the number of available communications channels.

The Commission on May 1, 1961, provided for the shifting of frequencies of ship stations and certain coast stations operating in the international maritime bands between 4 and 27.5 Mc in accordance with the Geneva regulations. The purpose was to conform the operation of U.S. ship and coast stations with the Geneva frequency assignment plan.

Additional coast station facility established.—The Chesapeake & Potomac Telephone Co. of Maryland constructed a public coast station at Ridge, Md., to make VHF service available to vessels throughout the entire Chesapeake Bay area.

VHF radiotelephony for navigational communication.—Since August 1959, ship radio stations have been licensed to use VHF on a developmental basis for "bridge-to-bridge" communication on U.S. oceangoing ships in the interests of safety of navigation. The developmental period was extended by the Commission to allow additional time to evaluate the operation. Approximately 55 ships are participating. The Pilots Association for the Bay and River Delaware are licensed for 100 marine utility stations so pilots may communicate "bridge-to-bridge" with other ships in the immediate area.

Radio communication in Alaska.—The Alaska Communication System (ACS) operates the main trunklines in Alaska connecting all communication facilities in that State with the rest of the United States and other parts of the world. Alaska-public fixed stations may communicate with each other or with ACS facilities. Special frequencies are allocated to Alaska for public point-to-point and ship-shore communication.

Since landline facilities are not generally available in Alaska, communities depend largely on radio for safety and business purposes. Also, the increase in oil exploration and industrial production has added greatly to the use of existing frequencies. Additional frequencies are not available between 2–8 Mc for further expansion. Very high frequencies (152–162-Mc band) have been provided for ship-shore communication in Alaska. However, these frequencies have not been used due to their short range, usually limited to line of sight.

AVIATION RADIO SERVICES

The Commission's responsibilities include control over non-Government use of radio for aviation communication, aeronautical radionavigation, and other safety and operational applications in that industry.

The Aviation Radio Services include stations aboard aircraft and the necessary ground stations to serve them in communicating, navi-

gating, and other specialized uses. These stations are classed as air carrier aircraft, private aircraft, aeronautical en route, aeronautical metropolitan, areonautical utility mobile, airdrome control, flight test, flying school, radionavigation, aeronautical public service, aeronautical search and rescue mobile, and Civil Air Patrol. The administration of these services requires close coordination with various technical and policy making groups, which are described below.

Radio Technical Commission for Aeronautics

The RTCA is a nonprofit cooperative association of Government and industry organizations concerned with aeronautical telecommunications matters. The findings and reports of this organization are submitted to responsible agencies and are frequently used by Federal bodies as the basis for proposing regulatory measures affecting the aviation industry. The Commission is represented on the RTCA Executive Committee and on many of its special committees handling specific technical matters.

During the past year, Commission representatives took part in special committee consideration of such subjects as minimum performance standards for airborne radio receiving and transmitting equipment operating within the frequency range 117.957–136.000 Mc; frequency requirements and utilization for common system air traffic control in the band 108–136 Mc; development of revised environmental test procedures for airborne electronic equipment; a study of utilization of the band 9300–9500 Mc for radionavigation; development of standardized procedures for measurement of RF energy emitted from aircraft radio receivers; and development of minimum performance standards for airborne receiving and direction finding equipment operating within the range of 200–415 kc.

Air Coordinating Committee

The ACC, which was abolished by Executive order during the past year, was responsible to the President for coordinating Federal policy in the field of aviation. The duties of this group insofar as international aviation matters are concerned have largely been assumed by the Interagency Group on International Aviation (IGIA). Matters concerning domestic policy are currently being coordinated by direct liaison between responsible agencies as, for example, continued FAA–FCC cooperation in the matter of antenna structures.

International Aviation Communication Coordination

The Interagency Group on International Aviation (IGIA) formulates policies for the guidance of U.S. representatives to international meetings such as the International Telecommunication Union (ITU) and the International Civil Aviation Organization (ICAO). ICAO is a specialized agency of the United Nations. Its task is to recom-

mend practices relative to international aviation matters, one of which is the use of radio.

The Commission participated during the year in preparing the U.S. position for the following ICAO meetings: Limited South American/South Atlantic (SAM/SAT) Regional Air Navigation Meeting; Rules of the Air and Communication (RAC/COM) Regional Air Navigation Meeting; Informal Rules of the Air and Air Traffic Services/Aeronautical Communications and Electronic Aids Meeting; Second ICAO Pacific Regional Air Navigation (PAC/RAN) Meeting; Fourth North Atlantic Regional Air Navigation (NAT/RAN) Meeting; Seventh Session of the Communications Division Meeting (VII COM); Seventh Session of the Aerodromes, Air Routes, and Ground Aids Division (AGA); and Fifth Personnel Licensing/Aviation Medicine (PEL/MED) Division Meeting.

Problems considered concerned such matters as views on developments in the VHF forward scatter technique for increasing coverage of air-ground communication; proposals with respect to functional use of the four teletypewriter channels of the ICAO North Atlantic cable system; proposed reply to comments by the Republic of the Philippines concerning distance-measuring equipment specification contained in Amendment 35 to Annex 10 to the Convention on International Aviation; serious deficiencies in air navigation facilities and services in the various ICAO regions; and proposed reply to ICAO regarding recommendations on utilization of the band 9300–9500 Mc for marine and aeromobile radars.

Rule Amendments and Waivers

The Commission continued to keep its applicable rules current with the expanding aviation industry. Some of the year's more significant rule changes follow:

Amendment of part 9 to specify the applicable technical standards for voluntary use of single sideband (SSB) emissions.

Making the frequency 122.6 Mc available for use by air carrier aircraft until July 1, 1962, to allow participation in an FAA direct pilot-to-weather forecaster test. It is intended to provide weather data to pilots and traffic controllers. One objective is to determine the best method for doing this.

Rulemaking which has been initiated but not yet finalized follows:

A new subpart to cover aviation developmental operations. It parallels existing developmental rules in other radio services. Authorizations for aviation stations engaged in developmental operation would be made on a temporary basis for a specific period of time, but in no event longer than 1 year.

Proposal to allow the use of the frequencies 4602.5 and 4630 kc by land and mobile stations of the Civil Air Patrol, the civilian adjunct of the Air Force, within certain specified States.

An amendment to permit activation of airport lights by means of radio signals transmitted from aircraft. This would make it possible for pilots to turn on landing and related lights at airfields which are not normally manned during the hours of darkness.

Proposal to make frequencies available for an aviation service at terminal areas for use by stations located aboard ground vehicles (including aircraft on the ground) or carried by persons performing functions of service and supply to aircraft on the airdrome.

Current and Future Problems

As previously reported 2 Mc of non-Government aviation frequencies have been relinquished, along with 3 Mc of space by Government users, for Government and non-Government use in air traffic control. This required reassignment of frequencies to about 800 non-Government ground aviation stations, with close liaison with Canada in areas where such reassigned frequencies might result in interference to stations of either country. Most of the necessary reassignments have been completed; however, problems with reference to possible interference between stations in Canada and this country require continuous study and coordination.

PUBLIC SAFETY RADIO SERVICES

The Public Safety Radio Services enable licensees to establish radio communication facilities to assist in meeting emergency conditions and to aid in the administration of local governmental activities. The specific services available are the police, fire, forestry-conservation, highway maintenance, special emergency, State guard, and local government.

Developments and Rule Changes

The first implementing phase of the Commission's channel-splitting program has been completed. This was the August 1, 1960, requirement that wide-band licensees reduce the frequency deviation of their transmitters. This has helped to minimize frequency interference in these services; however, the full value of the program will not be realized until licensees comply with all of the narrow-band technical standards. The date for this final requirement is Novemmber 1, 1963.

In response to the numerous requests for additional frequencies, the Commission made available approximately 75 split-channel frequencies for use in the 42–50- and 150.8–162-Mc bands (docket 13273). A petition to split channels in the 25–42-Mc band and rulemaking

(docket 13847) for similar action in the 450-Mc band are both under consideration. If channel splitting is undertaken in these bands, this source of additional frequencies for these services will be exhausted. Thus, serving the ever-increasing demands of growth will require technical proficiency on the part of all users to develop the maximum usage of the available frequencies.

Though a petition to create a separate Medical Emergency Radio Service was rejected, a hospital category in the Special Emergency Radio Service was established with five frequencies for the exclusive use of hospitals and hospital-connected ambulances (docket 13273). In addition, the elegibilty of physicians and veterinarians was expanded to include urban as well as rural practitioners.

Under consideration is a rulemaking proceeding (docket 14111) which contemplates that split-channel frequencies assigned in a block to the police, fire, highway maintenance, and forestry-conservation radio services be coordinated by frequency advisory committees, thus easing the present frequency coordination procedure.

One of the increased uses of radio facilities in these services is reflected in two current rulemaking proceedings concerning traffic signal control. The first (docket 13953) would provide for the allocation of a frequency for omnidirectional use in traffic signal control. The second (docket 13971) proposes that a frequency be assigned for low-power use in the Local Government Radio Service to activate traffic signal devices by emergency vehicles in transit.

Police Radio Service

The widening use of pocket radio equipment is emphasized by a current rulemaking proceeding (docket 14028) to permit police mobile units to be used for the automatic relay of transmissions from subminiature mobile equipment to base stations.

Fire Radio Service

Two frequencies were designated for intersystem use in this service. In addition, the coordination requirements applicable to those frequencies were relaxed to permit this by frequency advisory committees (docket 13851). It now appears that additional frequencies for coordinated operation within and between districts, counties, and States may be required. Rulemaking (docket 14139) to designate such additional "mutual aid" frequencies was under consideration.

Special Emergency Radio Service

This service, with its recently expanded coverage, now includes all physicians and veterinarians; most hospitals, ambulance, and rescue vehicle operators; lifesaving beach patrols; school bus operators; disaster relief organizations; and persons in certain isolated areas.

The provision permitting the licensing of hospitals and urban medical practitioners was met by allocating 13 of the newly desig-

nated split-channel frequencies in the 152–162-Mc band, with 5 being reserved to hospitals and their ambulance operators on an exclusive basis. In this service, also, coordination requirements applicable to certain split-channel frequencies were eased by deleting the requirement for a showing of coordination with other licensees in the service (docket 13475).

DISASTER COMMUNICATIONS SERVICE

This service furnishes communication facilities in the 1750–1800-kc band for use in emergencies such as storm, flood, and war. Authorized stations may transmit any communication necessary to civil defense or relief work during disaster. At other times, communications are limited to those necessary in drills and tests to assure efficient functioning of equipment and competency of personnel. Over 85 percent of the Disaster Communications Service licensees are civil defense organizations. Of the civil defense organizations, 76 percent are also using the Radio Amateur Civil Emergency Service (RACES) for civil defense communication.

LAND TRANSPORTATION RADIO SERVICES

The Land Transportation Radio Services provide for the use of radio to facilitate interstate or local transportation of passengers or freight by rail, truck, bus, streetcar, and taxicab. These services also enable the rapid dispatch of vehicles rendering emergency road service to disabled automobiles.

Motor Carrier Radio Service

This service continues to show a substantial growth, particularly stations operating in the 150–160-Mc band. The expansion reflects both the Commission's and the motor carrier industry's efforts over approximately 11 years to fulfill needs both as to permissible radio operation and the availability of frequencies—especially in the 150–160-Mc band. As a part of industry's efforts to utilize fully the frequencies available to it in this band, a substantial number of grants have been made for 15-kc channel separations, rather than 30 kc. Reports indicate that these 15-kc systems are proving satisfactory and are suitable in many areas.

The first license for the use of microwave frequencies in the Motor Carrier Radio Service was granted. This system will be utilized to convey billing, scheduling, and other administrative information between freight terminal points and offices. It is understood that other motor carriers are studying the feasibility of microwave radio systems in connection with their trucking activities.

A limited number of licensees using frequencies in the 450–460-Mc band have indicated an interest in employing power input in excess of 120 watts, which is the maximum now permitted. Several developmental grants were made to determine the merits of higher power under certain conditions. Only one such authorization is now outstanding.

Railroad Radio Service

Railroads continue to discover new techniques and uses of radio to promote efficiency and safety in the movement of trains and maintenance operations.

The trend is toward greater use of microwave frequencies by rail lines. Such systems are not only capable of handling a comparatively greater volume of voice communications in connection with rail operation, but are also useful for data processing; safety, reliability, and economy of operation; coordination of traffic movements; freight car distribution and accounting procedures, including a systemwide data-gathering process. Microwave facilities are also employed by railroads for teletype, control functions in connection with the operation of associated mobile systems, and for facsimile. Consistent with the Commission's policy of using microwave frequencies above 10,000 Mc for "links" or "spurs," one railroad has filed applications involving limited use of frequencies in the 12,000-Mc band. Such equipment became available only recently and it is expected that this particular operation will provide valuable information about the use of microwaves in this part of the spectrum.

Based on the 1959 Geneva frequency plan which allocated 161.61 Mc to the Maritime Mobile Service, a rule amendment was proposed (docket 13824) to require licensees in the Railroad Radio Service using 161.61 Mc to change to another frequency as of May 1, 1961. However, the Commission determined that the continued use of that frequency by the railroads on a noninterference basis would be compatible with the Geneva agreement. This action was of substantial economic importance to a number of railroads, some of which operate extensive systems on 161.61 Mc.

Also of importance to this service was the rule change which provides that certain station transmitter measurements be made only once each year rather than every 6 months. Compliance with the former requirement was often difficult for the larger railroads which operate over vast areas. This relaxation was possible because of technical improvements in the stability of radio equipment.

A proposal (docket 14042), if adopted, would permit railroad use until October 31, 1963, of low power (3 watts or less input) transmitters that do not meet the frequency deviation requirements now generally applicable. Many of these low power units are used extensively in yard and terminal operations, but cannot be modified

readily to meet frequency deviation requirements. This equipment is presently being operated under a temporary waiver of the rules. The proposed change would avoid making obsolete a large number of transmitters of this type.

Taxicab Radio Service

The taxicab industry continues to conduct the greater part of its radio operations in the 150–160-Mc band. It has shown little interest toward more use of the 450–460-Mc band.

A limited number of requests have been received to use plate power input in excess of the present 120-watts limit in the 450–460-Mc band. However, only developmental operation has been authorized for the purpose of obtaining additional information.

A pending proposed rule change (docket 13690) of importance to the taxicab industry looks to redefining eligibility requirements and to specifying locations of base stations. It contemplates, in part, that persons who have applied to the appropriate local authorities for a franchise to operate taxicabs may be considered eligible for an FCC authorization. A second proposal would require that base stations be located in the geographic area within which the licensee is permitted to both pick up and discharge passengers; however, such limitations would not apply if locating a base station in such area would be prohibited by local ordinances and if the location of such proposed station outside the pickup and discharge area would not result in a material increase in radio interference to other taxicab operations.

INDUSTRIAL RADIO SERVICES

Ten radio services constitute the Industrial Radio Services. Many of the names of these services are descriptive of the industries they serve, as for example: Petroleum Radio Service, Power (Utilities) Radio Service, Forest Products Radio Service, Manufacturers Radio Service, Motion Picture Radio Service, Relay Press Radio Service, and the Telephone Maintenance Radio Service. Other segments of industry are provided for in the Special Industrial Radio Service which serves such business functions as farming and ranching, mining, heavy construction, pipeline service activities, ready mix concrete and asphalt. Offshore oil exploration, large area land surveying, and non-Government storm and weather forecasting activities utilizing radio techniques are eligible in the Industrial Radiolocation Service. There is, finally, the Business Radio Service, which includes within its eligibility provisions many and diverse industries and commercial activities as the general term "business" may suggest. In essence, any person engaged in a legitimate commercial activity may apply for a radio license in one or more of the various services that constitute the Industrial Radio Services.

The number of industrial station authorizations continues to mount. Such growth takes place within a relatively small portion of the radio spectrum. Consequently, as each new station commences operation, a further compression of the available radio space takes place. The problem of channel scarcity received much consideration during the past year. It has been slightly alleviated by various proceedings which have effected a more efficient use of the available spectrum space and, in one instance, by the allocation of more frequencies.

During the year the Commission issued authorizations in its Business Radio Service to the University of Texas for the construction of an educational closed-circuit TV intercity microwave relay system. It covers a distance of over 100 miles and permits lectures, classroom instructions, and other educational program material originating in either San Antonio or Austin to be relayed to 10 colleges and universities. This is the first microwave system of its kind granted by the FCC.

Another development in the use of microwave for a point-to-point system was the issuance in the same service to a large retail dry goods company in the San Francisco Bay area for communication between its main store, branch stores, and warehouse.

Licensee recordkeeping and notification requirements in all services were relaxed or modified to conform with modern operating methods. This rule change relieved many licensees of administrative duties, which were found to be no longer necessary, while at the same time gave the Commission's field engineering staff an opportunity to concentrate on more important matters.

The frequency scarcity in the industrial services was mitigated slightly when the Commission returned four channels in the 49-Mc band to these services (docket 13616). The channels in question had been withdrawn in 1957 for non-Government international communication employing forward propagation by ionospheric scatter (FPIS), but they were not utilized for that purpose. Of the four frequencies regained, two were assigned to the Special Industrial Radio Service on an exclusive basis while the other two were assigned on a shared basis to Special Industrial and Forest Products Radio Services.

The Power Radio Service, which is one of the older services in the two-way radio field, was subjected to a number of substantial rule changes in fiscal 1961. Of significance were new rules which allow extensive tone or impulse signaling for purposes of warning responsible personnel of impending equipment failures and, most important, for automatically and remotely controlling equipment during an emergency. This is a breakthrough in the field of radio automation, or pushbutton radio control of power generators, circuit breakers, and many other pieces of heavy utilities equipment.

The utilization of tone signaling devices in the Power Radio Service is an example of the Commission's search for more effective utilization

of available channels. This form of signaling is conducted on a licensee's regular mobile service channel or channels on a basis secondary to that of normal voice communication. In some instances both voice and tone signals may be transmitted simultaneously without one interfering with the other.

Another of the older industrial services which envisions a need for tone signaling is the Petroleum Radio Service. Because of the nature of radio usage within this service, the petroleum industry has requested that tone signaling be allowed only for warning of equipment or apparatus failures. Equipment and apparatus control by means of secondary tone signaling are not desired by that industry. Covering rulemaking proceedings are in progress.

Perhaps the most significant proposal affecting the Business Radio Service is that relating to the use of 15 kc or tertiary "split" channels in the 150-Mc band. Under present operating requirements, channel assignments in this band are made at 30-kc intervals. With the advent of new and improved equipment it has been shown that operation at 15-kc intervals is feasible under certain circumstances. Accordingly, the Commission has proposed that operation on 15-kc or "split" channels be allowed on a regular basis in the business service. If the Commission's proposal is adopted, 13 new channels will relieve the channel scarcity situation in that service.

Two proceedings relating to the use of radio in telephone wireline maintenance activities were conducted in fiscal 1961. The first proceeding concluded with a modification of the rules whereby Power Radio Service licensees may use their facilities to maintain wirelines which employ the same poles, ducts, or other distribution systems as that of the electric power company. Previously, two separate radio systems were required to maintain and repair a single distribution system. One of these was required to be licensed in the Telephone Maintenance Radio Service, while the other had to be in the Power Radio Service.

In the other proceeding, which is still in progress, it has been proposed that mobile relay-type operations be allowed in the Telephone Maintenance Radio Service on frequencies in the 150-Mc band. This proposal, if adopted, would enable telephone companies to operate more efficiently in their wireline maintenance role.

CITIZENS RADIO SERVICE

The Citizens Radio Service has become the fastest growing of all the radio services. Its biggest expansion occurred during fiscal 1961. At the close of that year, over 206,000 citizens stations employing 657,500 transmitters had been authorized. This was 80,000 more stations than the year previous.

The unprecedented volume of slightly over 10,000 citizens applications a month in itself poses an administrative problem. A large

number of these applications are defective and must be returned because of omissions or other nonconformity.

The citizens service is particularly attractive to the individual or small business. In general, it can be employed for short-distance personal or business communication, or a combination of the two, or for remote control of objects such as garage doors, model airplanes, and for paging purposes. Furthermore, citizens service equipment is less costly than for other services.

In the citizens service especially, the Commission has to deal with many individuals who are using radio for the first time, have little or no technical knowledge of the subject, have difficulty in understanding the rules, and require special advice and guidance to keep them from using the frequencies indiscriminately for superfluous or other unauthorized communication. At the same time the Commission received many requests for basic information about the service and for interpretations of the rules. In an effort to reduce the volume of inquiries, as well as to curtail improper operation, the Commission issued many bulletins spelling out the intent and purposes of the service in lay terms. In addition, it has encouraged the formation of user groups for self regulation.

There is increased interest in the use of citizens radio for civil defense activities. In many areas, local civil defense agencies are recognizing the value of citizens communication for emergency situations, and some individual citizens licensees have coordinated with local authorities in organizing emergency communication systems.

AMATEUR RADIO SERVICE

Public service is the keynote of amateur radio operation. A large part of disaster emergency and civil defense communication services is performed through the Radio Amateur Civil Emergency Service (RACES). In addition to peacetime operation, RACES would function during wartime, when other amateur activities must cease, so that amateur radio may continue to furnish essential public service communication.

Technical development as an amateur radio contribution was emphasized during the year with the announcement of Project Oscar (Orbital Satellite Carrying Amateur Radio) and by the successful bouncing of amateur UHF signals off the moon.

The continuing growth in this service creates application processing delays and administrative problems. One possible remedy presently under study is the use of automation for routine actions.

Rulemaking under consideration includes a proposal (docket 14026) to permit maritime mobile operation on a worldwide basis in the 14.00–14.35-Mc band and (docket 14025) to permit applicants

residing temporarily outside the United States to take an examination for a conditional class license even if the residence in the United States is less than 75 miles from a legal Commission examination point.

ENFORCEMENT

During the year, the Commission adopted rule changes to reduce complex formalities in its revocation and cease-and-desist proceedings. In brief, when a respondent waives a hearing, the resultant processing eliminates a number of interim formal pleadings and interim decisions. These changes conserve the services of personnel and speed issuance of a final decision.

A continuing enforcement difficulty concerns minor violations by station licensees, with particular reference to stations being used for the safety of life. In these cases the Commission at present has available only the warning letter technique, which does not serve the desired purpose, or station revocation, which is too severe and may eliminate a vital safety usage of radio. Thus, the Commission has requested Congress to permit the imposition of small fines or forfeitures for violations in the safety and special services. This would be more effective than a warning letter and yet less drastic than revocation.

The phenomenal growth in the Citizens Radio Service has brought with it a proportional increase in the number of violations committed by licensees in this service, as well as unlicensed operation by persons who have applied for, but have not received, a station license. Over 1,500 citizens rule violation notices were issued during the year.

There were 20 station license revocation proceedings and 23 amateur operators suspension proceedings in the safety and special services during fiscal 1961. Two of these cases involved the transmission of profane, indecent, or obscene language.

The first prosecution for using indecent language on the citizens band resulted in a court placing the licensee on probation for 3 years on condition that he not use his station during that period.

At the request of the Commission, the Department of Justice instituted criminal proceedings against a New England fishing company and one of its officers. A plea of guilty to the charge of unlicensed radio operation resulted in collection by the Government of fines totaling $2,500 and assurances of future compliance.

Most of the forfeiture cases handled during 1961 concerning enforcement of maritime compulsory usage of radio arose as a result of the failure of vessel owners and operators to obtain the proper inspection and certification of their radio equipment. The Commission continued to mitigate forfeitures incurred for this reason to relatively small amounts where the violation was the first offense of a nonaggravated nature.

STATISTICS

Stations in Safety and Special Radio Services

At the end of 1961 fiscal year there were 770,505 stations authorized in the Safety and Special Radio Services, an increase of 118,512 over 1960. For these purposes, separate license, construction permit or combination construction permit and license for new facilities have been counted as one station. Therefore, in many cases, a station includes a base transmitter and various mobile units. The following table compares station authorizations at the close of fiscal years 1960 and 1961:

Stations in Safety and Special Radio Services

Class of station	June 30, 1960	June 30, 1961	Increase or (decrease)
Amateur and disaster services:			
Amateur	217,102	222,170	5,068
Disaster	404	406	2
RACES	10,700	12,105	1,405
Total	228,206	234,681	6,475
Citizens	126,034	206,106	80,072
Aviation services:			
Aeronautical and fixed group	3,942	4,339	397
Aircraft	72,017	72,612	595
Aviation auxiliary group	420	465	45
Aviation radionavigation land	369	386	17
Civil Air Patrol	14,432	14,977	545
Total	91,180	92,779	1,599
Industrial services:			
Business	19,161	28,420	9,259
Forest products	1,876	2,045	169
Industrial radiolocation	256	286	30
Manufacturers	277	449	172
Motion picture	48	53	5
Petroleum	8,591	8,502	(89)
Power	12,427	12,915	488
Relay press	138	150	12
Special industrial	21,901	24,708	2,807
Telephone maintenance	129	245	116
Total	64,804	77,773	12,969
Land transportation services:			
Automobile emergency	1,188	1,202	14
Interurban passenger	49	50	1
Interurban property	1,861	2,048	187
Railroad	3,065	3,499	434
Taxicab	4,935	4,868	(67)
Urban passenger	123	126	3
Urban property	231	282	51
Total	11,452	12,075	623
Marine services:			
Alaskan group	1,240	1,282	42
Coastal group	412	431	19
Marine auxiliary group	98	100	2
Marine radiolocation land	35	44	9
Ship group	95,626	108,576	12,950
Total	97,411	110,433	13,022
Public safety services:			
Fire	5,935	6,667	732
Forestry conservation	3,667	3,862	195
Highway maintenance	3,582	4,150	568
Local government	1,678	2,586	908
Police	14,039	14,982	943
Special emergency	3,994	4,400	406
State guard	11	11	0
Total	32,906	36,658	3,752
Grand total	651,993	770,505	118,512

Transmitters in Safety and Special Radio Services

It is estimated that more than 2½ million transmitters were authorized to be used in the Safety and Special Radio Services at the end of fiscal 1961, an increase of 478,949 over the figure reported in 1960. A breakdown of the estimates of land, fixed, and mobile transmitters authorized by class of station follows:

Transmitters in Safety and Special Radio Services

	Land or fixed	Mobile	Total
Amateur and disaster services:			
Amateur	215,160		215,160
Disaster	406		406
RACES	2,535		2,535
Total	218,101		218,101
Citizens	7,500	650,000	657,500
Aviation services:			
Aeronautical and fixed	6,900		6,900
Aircraft group		118,175	118,175
Aviation auxiliary group	50	2,175	2,225
Aviation radionavigation land	500		500
Civil Air Patrol	6,950	12,000	18,950
Total	14,400	132,350	146,750
Industrial services:			
Business	18,225	203,000	221,225
Forest products	2,045	18,400	20,445
Industrial radiolocation	165	525	690
Manufacturers	575	10,950	11,525
Motion picture	60	750	810
Petroleum	20,650	55,850	76,500
Power	10,850	144,000	154,850
Relay press	135	1,980	2,115
Special industrial	23,150	237,700	260,850
Telephone maintenance	210	7,725	7,935
Total	76,065	680,880	756,945
Land transportation services:			
Automobile emergency	1,125	11,450	12,575
Interurban passenger	40	450	490
Interurban property	2,050	34,600	36,650
Railroad	~~8,490~~	~~156,100~~	~~164,590~~
Taxicab	8,490	156,100	164,590
Urban passenger	100	3,050	3,150
Urban property	230	7,800	8,030
Total	15,785	325,150	340,935
Marine services:			
Alaskan group	2,625		2,625
Coastal group	670		670
Marine auxiliary group	650	7	657
Marine radiolocation land	70		70
Ship group		123,750	123,750
Total	4,015	123,757	127,772
Public safety services:			
Fire	6,000	74,600	80,600
Forestry conservation	7,780	33,350	41,130
Highway maintenance	3,675	39,065	42,740
Local government	10,760	25,420	36,180
Police	12,950	183,300	196,250
Special emergency	4,220	13,890	18,110
State guard	197	265	462
Total	45,582	369,890	415,472
Grand total	381,448	2,282,027	2,663,475

3,150 111,700 115,450

Applications in Safety and Special Radio Services

During fiscal 1961, more than 390,000 applications for authorizations in the Safety and Special Radio Services were received, which was an increase of 42,445 over 1960. A comparison of the number of applications received in each service during the past 2 years follows:

Applications in Safety and Special Radio Services

Class of station	Received 1960	Received 1961	Increase or (decrease)
Amateur and disaster services:			
Amateur	105,498	116,884	11,386
Disaster	19	35	16
RACES	1,615	2,535	920
Total	107,132	119,454	12,322
Citizens	106,530	140,153	33,623
Aviation services:			
Aeronautical and fixed group	2,983	2,410	(573)
Aircraft group	29,462	26,998	(2,464)
Aviation auxiliary group	237	260	23
Aviation radionavigation land	184	174	(10)
Civil Air Patrol	3,720	4,275	555
Total	36,586	34,117	(2,469)
Industrial services:			
Business	15,118	15,518	400
Forest products	931	862	(69)
Industrial radiolocation	227	306	79
Manufacturers	474	370	(104)
Motion picture	18	27	9
Petroleum	4,567	4,379	(188)
Power	5,266	5,775	509
Relay press	72	103	31
Special industrial	10,143	11,455	1,312
Telephone maintenance	171	228	57
Total	36,987	39,023	2,036
Land transportation services:			
Automobile emergency	487	507	20
Interurban passenger	26	25	(1)
Interurban property	1,250	1,041	(209)
Railroad	1,740	1,984	244
Taxicab	2,846	2,549	(297)
Urban passenger	78	77	(1)
Urban property	107	151	44
Total	6,534	6,334	(200)
Marine services:			
Alaskan group	402	469	67
Coastal group	229	626	397
Marine auxiliary group	108	44	(64)
Marine radiolocation land	52	41	(11)
Ship group	36,087	34,838	(1,249)
Total	36,878	36,018	(860)
Public safety services:			
Fire	3,323	2,456	(867)
Forestry conservation	2,215	1,862	(353)
Highway maintenance	2,440	2,439	(1)
Local government	2,177	2,289	112
Police	7,693	6,769	(897)
Special emergency	1,507	1,676	169
State guard	3	5	2
Total	19,358	17,523	(1,835)
Grand total	350,005	392,622	42,273

Common Carrier Services

DOMESTIC TELEPHONE

Highlights

Fiscal 1961 reflected a year of continued rapid growth for most segments of the telephone industry. Gross operating revenues for calendar 1960 were over $9.1 billion. Telephones exceeded 74.4 million at the end of 1960. Gross investment in plant amounted to $28.8 billion.

The Bell System made three interstate tariff filings reflecting new concepts of charging for communication services. These cover TELPAK (a tariff offering for volume private line communication users covering telephone, telephotograph, teletypewriter, control, signaling, facsimile and data transmission); WATS (Wide Area Telephone Service); and the precursor of what will become WADS (Wide Area Data Service). All three are subject of FCC investigations.

The Commission adopted its initial decision in the private line rate case (dockets 11645 and 11646) on July 6, 1961.

The world's first electronic central office, forerunner of future switching systems, was opened at Morris, Ill.

In 1960, Bell Laboratories demonstrated a new device, the optical maser, that can amplify light waves in much the same way that radio waves are handled. This may ultimately increase by 10,000 times the spectrum of waves that can be used for future communication through hollow "wave guide" pipes.

General

The telephone industry has continued to grow faster than the economy as a whole. During the postwar years, the cost of telephone service has not increased as much as general living costs. Consequently, the average family's telephone bill is a considerably smaller part of the household budget than it used to be.

In the Bell System, about 50 percent of the telephones are equipped so that the customer can dial directly toll calls to distant places. At the beginning of 1961 about 90 percent of all independently owned telephones and about 97 percent of the Bell telephones had been converted to dial operation. Automatic number recording on toll calls will be extended to several million more Bell telephones during the next 2 years at an estimated cost of $90 million.

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Telephone service in the United States, including Alaska and Hawaii, is provided by 3,323 telephone companies including those of the Bell and General Telephone Systems. Substantial amounts of plant were added during calendar 1960 to provide service for approximately 74.4 million telephones, an increase of about 3½ million telephones, or 5 percent over 1959.

The average daily local and toll calls are 273 million and 12 million, respectively, which are increases of 5.9 and 6.3 percent, respectively. The telephone industry now has a total gross investment of $28.8 billion, an increase of 8.6 percent over 1959, with an annual gross revenue of $9.1 billion, about 7.6 percent over 1959. The Bell System's private line telephone and telegraph revenues for 1960 amounted to $340 million, an increase of 16.9 percent. Revenues from teletypewriter exchange service totaled $61 million, up 7.3 percent.

The consolidated net income applicable to capital stock totaled over $1.2 billion for American Telephone & Telegraph Co. (A.T. & T.) and $71.7 million for General Telephone in 1960, increases of 9 percent and 1 percent, respectively, over 1959. The earnings per share increased from $5.22 to $5.53 for A.T. & T., and decreased from $1.13 to $1.04 for General Telephone. The average number of shares outstanding increased about 5.8 million for A.T. & T. and 6 million for General Telephone. The number of shares and earnings per share for A.T. & T. were corrected to show the 1959 split in the stock of 3 for 1. Likewise, shares and earnings per share for General Telephone reflect a 3-for-1 stock split in 1960. The expansion of these two telephone systems during the past 10 years is illustrated by the following data as of December 31 for the years indicated:

Year	Telephones	Plant book cost	Revenues	Employees
Bell System				
1950	35,343,000	$10,102,000,000	$3,262,000,000	523,300
1955	46,218,000	15,340,000,000	5,297,000,000	615,900
1960	60,735,000	24,072,000,000	7,920,000,000	580,400
General Telephone System				
1950	1,306,000	270,000,000	70,000,000	17,400
1955	2,548,000	671,000,000	205,000,000	27,900
1960	4,107,000	1,517,000,000	410,000,000	37,500

Interstate Facilities

The Bell System, which provides the bulk of the Nation's interstate toll facilities, continued an accelerated toll construction program. Substantial circuit additions were required by the increases in toll telephone calls and private line services, and the rearrangement in circuitry to handle operator and customer-dialed toll calls.

Work progressed on the construction of a new radio relay system (Type TH) providing three times the capacity of the microwave

systems now in service. This system will extend from coast to coast on an express route avoiding major metropolitan and other critical target areas in order that facilities will be available for defense and other national emergency requirements. Also, the construction of a coaxial cable on a remote transcontinental route moved forward.

During fiscal 1961 the Commission authorized telephone construction projects totaling about $225 million. Included was about $72 million for new radio relay systems or the addition of channels on existing systems totaling about 61,279 radio relay channel-miles. The new major radio relay systems totaled about $41 million, and included new systems on the major routes between Boston, Mass., and New Haven, Conn.; St. Louis, Mo., and Jackson, Miss.; Norway, Ill., and Dodge City Junction, Kans.; Dodge City Junction and Prospect Valley, Colo.; San Antonio and Laredo Junction, Tex.; and New Orleans, La., and San Antonio. New cable and open wire construction, and the installation of carrier equipment for use in conjunction with cable, open wire, and radio relay routes, totaling about $153 million, accounted for the remainder of the authorized telephone company projects.

By the close of the fiscal year, Bell had over 280,400 channel-miles of radio relay in service, of which about 86,800 miles were being used for TV program networking. An additional 6,300 TV program-miles were provided by coaxial cable. These facilities interconnected directly 367 TV stations. An additional 13 TV stations were linked to the network by Bell off-air pickup and microwave relay, while other stations received network programs by picking up the signal of the connected stations.

Bell System had nearly 84 million miles of toll circuits in service. The Long Lines Department of A.T. & T., which provides the bulk of the interstate toll facilities, had over 43.7 million circuit-miles, of which about 19.6 million were radio relay and 16.4 million coaxial cable.

New automatic toll-dialing offices were placed in service during 1960 at Charleston, W. Va., Fort Worth, Tex., Greensboro, N.C., Knoxville, Tenn., and Springfield, Ill., to bring the Bell total to 64.

New Tariffs

During the fiscal year, A.T. & T. filed three new tariffs of major significance—TELPAK (providing for volume private line rates), WATS (Wide Area Telephone Service), and what will eventually be called WADS (Wide Area Data Service).

TELPAK is purportedly a private line service for volume customers using telephone, telegraph, data, and the other types of communication. TELPAK was designed by A.T. & T. to meet competition from privately owned microwave systems. There has been much contro-

versy as to the scope and nature of the service, the lawfulness of the charges, and the impact on customers, other common carriers, and private microwave manufacturers. At the close of fiscal 1961, the status of TELPAK was in some doubt as a result of Commission action interpreting the tariff as limiting the charging of TELPAK rates (which went into effect February 16, 1961) to cases where service is furnished by means of discrete broadband channels. Also, two petitions for investigation were before the Commission at the close of the year. In August 1961, A.T. & T. filed tariff revisions to permit the application of TELPAK rates to volume private line services furnished by means of a diversity of facilities. The Commission, on September 7, 1961, suspended these tariff revisions and entered into an investigation of the lawfulness of the TELPAK tariff.

The WATS tariff makes available limited (measured time) and unlimited (full time) interstate calling within specified areas at flat monthly rates. A WATS subscriber is furnished a special access line over which he can originate interstate station-to-station calls to from one to six zones. The monthly rates vary with the number of zones to which a customer desires the service. The Commission instituted an investigation into the lawfulness of WATS charges, regulations, and classifications, and hearings are still in progress.

It is contemplated that when WADS is offered some time in 1962, it will form the data and teletypewriter complement to WATS with such similar features as six zones and flat rates for either limited or unlimited service. WADS cannot be offered to the general public until the present teletypewriter exchange service (TWX), with which it will interconnect, is converted to dial operation. At present, A.T. & T. has offered a forerunner to WADS called Developmental Line Switched Teletypewriter Service which the Commission has suspended and set down for an investigation on issues relating to the propriety of the whole WADS concept as well as the lawfulness of the preliminary developmental service.

These new tariffs have future significance both for communications users and within the telephone industry itself. As far as the customers are concerned, WATS and WADS indicate a move toward nationwide flat rates. In the past, only local rates have had this characteristic. On the industry side, TELPAK and WADS indicate an increasing tempo of competition. Both of these tariffs have been the cause of concern to The Western Union Telegraph Co., for TELPAK threatens to divert customers from Western Union's record private line services and WADS will be in direct competition with Western Union's TELEX (Teleprinter Exchange) service as well as its private line services. Then, too, all three tariffs seem to show a desire on the part of A.T. & T. to meet what it considers the competitive threat from the

private microwave industry triggered by the Commission's decision on frequencies above 890 Mc (docket 11866) which, briefly, made microwave radio available to private communication systems. Because of these developments, the Commission's investigations have important implications.

During the year, 10,081 new or revised tariff publications were received, of which 22 were suspended and 3 were rejected, as well as 25 applications requesting special permission to file tariffs on less than statutory notice. At the year's close there were on file 638 telephone tariffs and concurrences of 554 telephone carriers.

Destruction of Interstate Facilities

On May 28, 1961, interstate communications facilities of the A.T. & T. located at Wendover, Nev., and Knolls and Cedar Mountain, Utah, were destroyed by three early-morning explosions. Destruction of a radio relay station, a cable repeater station, and a microwave tower disrupted some 2,200 telephone, telegraph, and private line circuits, plus 2 TV channels. The effects were minimized by employment of alternate telephone routes and quick repair. Vital military operations were not handicapped and network TV facilities were not in use at the time. Two men, captured in Mexico, were indicted for the sabotage.

These incidents sparked the common carrier industry into urging Congress to consider legislation to provide severe penalties for persons convicted of willfully sabotaging communications facilities used for the national defense and public service. Such a law was signed by the President in October 1961.

The problem of protecting interstate communication facilities is a serious one. The continuity of communications is assured to some extent by built-in safety factors, such as diversity of routings, the automatic choice of alternate routes, and the availability of mobile replacement units. New telephone construction is being designed with security in mind. Also, as previously indicated, some coaxial cable and associated repeater installations are underground.

Interstate Message Toll Telephone Rates

The $50 million general reduction in interstate message toll telephone rates that became effective September 19, 1959, has failed to reduce the going level of Bell earnings to about 7 percent as was anticipated, principally because of a continued high rate of growth in interstate telephone business. Thus, during calendar 1960, the interstate message toll services earned a return of 7.8 percent on net plant. The current year has shown a continued high level of earnings, although some lessening in growth was experienced as a result of the slowdown of general business activity. In the light of these develop-

ments, the Commission has been giving the matter careful study. Several comprehensive discussions have been held with representatives of A.T. & T. to review in detail all aspects of the situation in order to aid the Commission in arriving at some definitive conclusion as to what action is warranted.

Other Rate Cases

An initial decision in the private line case (dockets 11645 and 11646) was adopted on July 6, 1961. It would permit A.T. & T. and Western Union to increase rates for private line telegraph services by $2.7 million and $750,000, respectively, a year. Also, it proposes that A.T. & T. cut its rates on private line telephone services annually by $1.2 million. Adjustments in rates will not become effective until after issuance of a final decision.

In investigations of private line rates for services to the Air Force, four cases were dismissed prior to hearing on the basis of revised rates being filed, hearings were concluded in another, and the fourth case will probably go to hearing in the fall. The Commission has not yet acted on a petition for a declaratory ruling on the scope of its jurisdiction with respect to communication services furnished in connection with the Air Force SAGE (Semiautomatic Ground Environment) system.

Subsidiary Telephone Equipment Supplier

During calendar 1960, the Western Electric Co. made three revisions in its prices for manufactured products resulting in net reductions of approximately $26.2 million annually. Including these changes, the level of Western Electric prices to the Bell companies was approximately 8 percent below the January 1, 1950, level. In spite of this, Western Electric received a 10.2-percent return on net investment for its Bell business. This was its highest level of earnings during the past several years.

On July 7, 1961, the Commission requested Western Electric to take action looking toward a reduction of its prices on items sold to the Bell System. Also, a question was raised as to the desirability of a refund with respect to 1960 Bell purchases. On July 27, 1961, the company advised that, effective July 1, 1961, it was reducing prices to Bell companies on a wide range of products. These reductions aggregated $26 million on an annual basis and were in addition to reductions of $7 million placed into effect earlier in 1961.

Other Regulatory Matters

Depreciation.—One of the Commission's regulatory duties is to prescribe annual depreciation rates for common carriers which come under its jurisdiction. In the telephone industry, this extends to all

24 Bell companies and 36 independent companies. To carry out this requirement, studies are made for the purposes of determining the service lives and other factors of depreciation appropriate for each of more than 30 different classes of telephone plant. Whenever practicable, these studies are conducted in cooperation with the State regulatory commissions concerned. The Commission's prescribing of telephone depreciation rates has thus far been confined to the Bell companies.

Depreciation expenses of the 24 Bell companies have more than doubled over a 5-year period, passing the billion dollar mark at the end of 1960. This represented 22 percent of total operating expenses of these companies.

New revised depreciation rates were prescribed for eight Bell companies during fiscal 1961. In each case there were both upward and downward adjustments in the rates for individual classes of property. The overall effect was an increase of slightly less than 3 percent in annual depreciation expenses. To a large extent this increase reflects relatively heavy retirements of several classes of plant due to the introduction of new developments and operating procedures.

In view of rapid changes in facilities and operations, it has been found desirable to review the depreciation rates prescribed for each Bell company once every 3 years. Currently, depreciation rates of nine additional Bell companies are being investigated. In addition, studies are underway to determine the effects on depreciation rates of new innovations, such as electronic central office equipment scheduled for production in 1963 which will accelerate retirement of some central office equipment, electronic-computer-assisted traffic service equipment scheduled to begin replacing long-distance switchboards in 1964, new and more efficient automatic message accounting equipment used for recording long-distance calls, and the preparation of customer bills, mechanization of teletypewriter service presently being handled on a manual basis, and "Centrex" equipment which permits direct dialing to and from PBX extensions.

Steps are being taken to circularize the independent telephone companies for the purpose of obtaining up-to-date information on the depreciation methods used in the development of depreciation rates, service lives and salvage factors.

Accelerated depreciation.—Because so few companies subject to its accounting rules were using accelerated depreciation for tax purposes, the Commission terminated a rulemaking proposal initiated in 1957 that amounts recorded as income tax expense should be unaffected by a taxpayer's decision to use one of the types of liberalized depreciation permitted by section 167 of the Internal Revenue Code of 1954 for

tax purposes but not for accounting purposes. Any company using accelerated depreciation and desiring to follow an accounting practice differing from the "flow through" provided for in the rules may apply to the Commission for specific waiver.

Cooperation with Federal and State regulatory bodies.—The Commission participated in the work of several committees of the National Association of Railroad and Utilities Commissioners during fiscal 1961. This work related to matters of mutual interest in the fields of accounting, depreciation, separations of plant book costs, revenues and expenses between interstate and intrastate operations, and the development of data relative to the operations of subsidiary equipment manufacturers of the Bell and General Telephone Systems.

Discontinuance of service, acquisitions and consolidations.—The Commission granted four applications to discontinue telephone service during fiscal 1961. It received 14 applications from telephone companies to acquire other telephone property. Twelve of these, together with five held over from 1960, were granted without hearing. One grant was to the Pacific Northwest Bell Telephone Co. (Pacific Northwest), a new corporation, to acquire toll lines operated by The Pacific Telephone & Telegraph Co. (Pacific) in Idaho, Oregon, and Washington. Pacific Northwest acquired all of the business and properties of Pacific located in these States having a gross original cost of $685 million as of December 31, 1960.

Field studies and reviews.—To assure compliance by telephone carriers, limited studies and reviews were made of certain of the accounts, records, and accounting procedures of six Bell and two non-Bell companies during fiscal 1961. They were conducted by the Common Carrier Bureau field offices in New York, St. Louis, and San Francisco, and by the headquarters staff. They were directed, among other matters, to the development of retirement unit costs, transatlantic cable costs, and research and fundamental development costs of satellite communication systems.

Interlocking directorates.—The Commission granted seven applications for an individual to act as interlocking director and officer of more than one carrier, two of which were for miscellaneous common carriers.

Original cost accounting.—Accounting for several current acquisitions of plant was approved during the year, including the disposition of amounts paid for plant in excess of original cost. Consideration is being given to the accounting for several plant acquisitions where questions involve the basis for the exchange of stock, the propriety of procedures used in estimating original cost of plant acquired, and the methods used in determining depreciation reserve requirements.

Pensions and relief.—A study was made to determine the reasonableness of the actuarial data used in determining Bell System service pension accrual rates for 1961. Bell company payments to trust funds for employees' service pensions amounted to $211 million for 1960, an increase over the preceding year of $7 million, or 3.5 percent. Earnings of the Bell pension funds were 3.27 percent in 1960, as compared with 3.34 percent in 1959. As of the close of 1960, the balance in Bell System pension funds was $2,655 million.

There is in progress a study relating to the development of service pension accrual rates for the General Telephone System.

Speed of service.—The Bell System reported further strides in expediting toll calls. The average speed of completion during 1960 was reduced to 59 seconds.

Telephone set losses.—The Commission has been concerned about the telephone set losses sustained by the Bell companies in recent years. As a result of studies made at the Commission's request, A.T. & T. has recommended that each operating company review losses on a monthly basis for each geographical area. This should lead to a determination of the contributing conditions, as well as the accuracy of the reporting and recordkeeping.

DOMESTIC TELEGRAPH

Highlights

The Western Union Telegraph Co. reported record gross revenue for calendar 1960 despite a 6-percent drop in public message volume. The increase resulted chiefly from higher telegraph rates and from continued growth in private line business. Net income from all Western Union's operations amounted to $11,016,239 in 1960, compared with $16,685,144 in 1959, reflecting increased expenses due to labor contract renewals.

A decline in the volume of telegraph messages handled by Western Union by more than 45 percent during the period 1945–60, coupled with a decline of 35 percent in the number of public telegraph offices in the United States during the same period, gives cause for concern regarding the future of a nationwide message telegraph service as known today. Speed of domestic telegraph service showed some overall improvement, but deteriorated during the latter half of the year. In 1961 the company placed in operation the first leg of its transcontinental microwave relay system.

General

Western Union provides a domestic message telegraph service by means of some 19,500 offices and agencies, 56,100 teleprinter and facsimile customer tielines, and a nationwide network of intercity

communication facilities representing some $398 million in gross landline plant. The company employs some 33,000 people. It operates an international ocean-cable system and is the sole agency for the landline handling of oversea, foreign, and ship-shore messages originating or terminating in the continental United States outside the so-called gateway cities. Western Union also furnishes private line and other communication services.

The company's domestic public message service accounted for 61 percent of its total landline revenue, as compared with 64 percent in 1959. Public message gross revenue in calendar 1960 was $161 million, compared with $166 million the previous year, reflecting a 6-percent drop in message volume. Gross private wire revenues increased $5.2 million in 1960, reaching a record high of $56.6 million. Private line telegraph services accounted for 22 percent of Western Union's total revenues in 1960, as compared with 20 percent the previous year.

Although Western Union's private line revenues continue to grow, the telegraph company competes with the Bell telephone system which handles the bulk of private line telegraph services, including teletypewriter (TWX) exchange service. The continual decline in the volume of telegraph messages over the years has been due to growth in private line telegraph services of both Western Union and Bell, growth in Bell's TWX services, improved and expanded airmail services, and increased rates for message telegraph services to offset costs of higher wages and prices.

Rates and Tariffs

Domestic telegraph rates.—As reported in 1960, Western Union filed revised tariff schedules increasing rates for interstate message telegraph, press, money order, and miscellaneous services, effective August 17, 1960, and on subsequent dates. The revised rates were designed to produce total additional revenues of about $12.6 million a year from interstate and intrastate traffic. On October 17, 1960, charges were revised for United States-Canada and St. Pierre-Miquelon Islands telegraph message and money order services which were estimated to increase Western Union revenues by approximately $406,000 annually. Increased rates for United States-Mexico telegraph message and money order services were made effective by Western Union on November 1, 1960, to provide additional revenues of about $113,000. The higher rates were filed to offset, approximately, increased wage costs incurred in connection with labor contract renewals. The overall average effect was estimated to increase the cost of telegraph services to the public by about 8 percent.

Tariff schedules.—During the year, carriers filed 964 pages of domestic telegraph tariff material and 30 requests for special permission to file tariff schedules effective on less than statutory notice.

Leased facilities services.—On July 6, 1961, the Commission adopted an initial decision on its investigation into the lawfulness of the charges, classifications, regulations, and practices in connection with the leased facilities services of Western Union (docket 11646).

A complaint by General Services Administration alleging that the rates and charges for certain services and equipment furnished the U.S. Air Force were excessive (docket 12937) is still pending. GSA agreed to holding the complaint in abeyance pending a determination of the lawfulness of charges at issue in the leased facilities investigation.

Subsequent to a prehearing conference held June 13, 1961, on the formula for distribution by Western Union of telegraph traffic destined to points in Canada (docket 13187), the parties reached agreement and the division of charges therefor which will be submitted for Commission approval.

On November 30, 1960, the Commission affirmed the conclusion of the hearing examiner that Western Union had collected overcharges for certain private line services from the Chicago Board of Trade and Commodity News Services, Inc. (dockets 12710 and 12748). The parties agreed on the amount of damages and the Commission on June 21, 1961, granted their joint motion to dismiss the proceeding.

Services and Facilities

Modernization and expansion program.—Western Union's current construction program involving net capital expenditures of $45 million and $105 million for calendar 1960 and 1961, respectively, provides for work on its transcontinental microwave system, special facilities to serve the Government, and expansion of TELEX service and private wire systems.

Western Union placed in operation the first leg of its transcontinental microwave relay system between Vandenberg and Sunnyvale, Calif. The second and main link of the route, from Los Angeles to Boston, is scheduled for completion in 1962. This new broadband system, designed to carry all types of communication at high speed and in large volume, should be one of the most significant developments in Western Union's history. It will reduce the telegraph company's dependence on the Bell System for leased facilities and enable it to compete for substantially more of the communications market.

Scheduled for completion in 1962 is the Combat Logistics Network (COMLOGNET) being built by Western Union for the Air Force. It will interconnect 450 bases, air stations, depots, contractors, and

other authorized installations, and be capable of handling high-speed telegraphic communications and operating with a variety of digital data devices.

A bomb alarm system designed by Western Union to detect and record nuclear blasts is now being extended from a prototype along the eastern seaboard to a nationwide system. It is designed to alert the Nation's military and civilian leaders within 1 second if a nuclear blast should occur at or near any one of a number of important target areas in the country.

Western Union's direct customer-to-customer TELEX (Teleprinter Exchange) service, which is somewhat similar to the Bell System TWX service, was extended to 19 domestic cities in May 1961. This service now links 27 of the largest U.S. cities and 140 points in Canada and Mexico. It is planned for 45 U.S. cities by the end of calendar 1961, and 180 cities upon completion of the project.

Private wire systems.—Western Union's private wire systems produced record revenues of $56.6 million in calendar 1960, which was 10 percent above 1959. At the end of fiscal 1961, such revenues were running at an annual rate of $59 million, and constituted about 22 percent of total landline revenues. Among systems it installed for the Government during fiscal 1961 were a new network connecting satellite tracking stations for the National Aeronautics and Space Administration; an automatic high-speed message center at Honolulu for the Federal Aviation Agency to handle international air traffic control and weather communications; a new regional network for the Veterans Administration; and a nationwide, high-speed facsimile network for transmitting U.S. Weather Bureau weather maps to 650 Government and other stations.

Extension of facilities and curtailment of service.—The Commission authorized Western Union to extend and supplement its wire lines by the addition of some 660,000 telegraph channel-miles and 33,000 facsimile channel-miles, obtained mainly through lease from other carriers. Most of these were for meeting the increased needs of the military and other Government agencies and a variety of private wire services to the general public.

In the area of telegraph service curtailment, the Commission granted 1,127 Western Union applications to close or reduce hours at public telegraph offices. Eight requests were withdrawn and 136 were pending. The applications granted involve closure of 800 agency offices operated by railroads and local establishments handling negligible amounts of traffic in small communities. Such agency closures generally result in discontinuance of direct telegraph service, although service remains available by telephone. Also authorized was the substitution of agency offices for company-operated main

offices in 51 communities and closure of 19 branch company-operated offices, with substitute service provided through other offices or facilities. The majority of the other grants were for reductions in hours of service at company-operated main and branch offices where alternate service is provided through company-operated or agency offices.

Speed of service.—Western Union is required to submit monthly reports of the speed of message services at its 75 largest telegraph offices. To the extent that the budget permits, on-the-ground investigations are made by the Commission's staff of telegraph service conditions. A limited number of such field inspections were made to ascertain service performance before and after service curtailments. Service deficiencies disclosed, including complaints from users, are brought to the company's attention for corrective action. Speed-of-service reports and staff investigations revealed that some progress was made toward the company's ultimate goal calling for delivery of full-rate messages by telephone or tieline within 1 hour, and business full-rate messages by messenger within 75 minutes. However, the quality of telegraph service deteriorated during the latter half of the year and the Commission has advised Western Union that it expects every reasonable effort will be made to bring the service up to a satisfactory level at all of its offices.

DOMESTIC COMMON CARRIER RADIO FACILITIES

Point-to-Point Microwave Radio

Expanded facilities for telephone, telegraph, video, and data transmission, in response to public need and national defense requirements for these services, are being provided on an ever-increasing scale by point-to-point microwave radio services. As previously noted, both A.T. & T. and Western Union are extending their microwave relay routes.

In Alaska, microwave applications by Trans-Alaska Telephone Co. resulted in a pregrant protest by the Secretary of the Army. It contended, among other things, that grant would result in competition with toll facilities of the Alaska Communication System (U.S. Army Signal Corps) and would consequently impair possible future sale of ACS to private interests, and that ACS could provide Trans-Alaska's service at preferential rates. On March 29, 1961, the Commission granted the applications with appropriate conditions, concluding that no duplication of ACS toll facilities would result since Trans-Alaska had stated that the requested facilities would not be utilized for toll traffic and that it would route any toll through ACS toll facilities.

With the type acceptance, during the year, of equipment suitable for common carrier use in the 2110–2200-Mc band, a number of

authorizations were granted in this band, which was allocated for use by common carriers on a shared basis with private radio services to partially compensate for the loss of frequencies in the 890–942-Mc band allocated to Government radio services.

Licenses for stations in the common carrier point-to-point microwave service expired on February 1, 1961. In filing for renewal, all licensees who did not also operate a public telephone or public telegraph wireline system were required to make a showing that at least 50 percent of the total hours of service and 50 percent of the total number of channels available in each radio system were used by customers not under the control of the applicant or, if such showing were not possible, the efforts which have been made to meet this rule requirement. Qualifying licensees, typically, are providing microwave relay service to unaffiliated CATV systems. Seventeen licensees, involving 21 microwave systems with 34 separate stations, also satisfactorily met this test.

However, 21 licensees, with 27 point-to-point microwave radio systems involving 51 separate stations, were not able to show compliance. These licensees, typically, are providing a microwave relay service to CATV distribution systems under common ownership or affiliation. The Commission has this group of renewal applications under consideration to determine what, if any, public need there may be for the use of point-to-point microwave facilities by noncommon carriers. Hearings may be held in some of these cases to permit the Commission to determine the policies which should be followed.

Related to the renewal of licenses for such point-to-point operations is the allegation by some TV broadcast stations of adverse economic impact by CATV systems. The Commission had previously determined its general policies in this regard in its inquiry (docket 12443) into the impact of CATV systems, translators, satellites, and repeaters on the orderly development of TV broadcasting. A second petition to reopen the record was withdrawn during the fiscal year, the first such petition having been previously denied. While there were a substantial number of protests by TV broadcasters against point-to-point microwave applications, all but two of them were settled without hearing. One case is in an appeal status, and the other has been heard and awaits oral argument and final decision.

In July 1961, a $25 million Canadian microwave system was opened, its 1,300-mile length linking Alaska with her sister States to the south.

Split-Channel Implementation

Growth of the Domestic Public Land Mobile Radio Service in certain populous areas was impeded during the year due to the lack of sufficient frequencies to accommodate all needs for new facilities. With the approach of November 1, 1963, by which time all 152/158

Mc facilities will be required to operate on narrower radio channels, numerous stations in this service already have voluntarily converted to narrow band split-channel operation in order to make additional channels available immediately. However, no further relief in congested areas is anticipated in the foreseeable future.

Dispatch Stations

Subscribers in the Domestic Public Land Mobile Radio Service frequently dispatch their own radio-equipped vehicles via private leased lines between their offices and base radio station. Because leased lines are not always readily available for such purposes or are prohibitively expensive due to the length of circuit required, the Commission, during fiscal 1961, provided for the licensing of dispatch stations for subscribers to communicate with their own vehicles.

450-Mc Repeater Assignments

The Commission amended its Domestic Public Land Mobile Radio Service rules to provide for repeater station operation in the 459.000–459.375-Mc band to enable mobile stations to increase their talkback range to their base station. This action was designed to eliminate the necessity for discontinuance of operation by certain repeater stations, which would otherwise have had to cease operation by April 1, 1961, while safeguarding the availability of those frequencies for their primary use in areas where frequency shortages are known to exist.

Freeze on Air-Ground Frequencies

Based on impending need for frequency space for the proposed air-ground public radiotelephone service, the Commission in January 1961 established an interim procedure for assignments on the frequencies 454.675–455.000 Mc and 459.675–460.000 Mc. Pending promulgation of rules and regulations to govern the public air-ground radiotelephone service, frequencies in these bands were made unavailable for establishment of new radio facilities in the Domestic Public Land Mobile Radio and Rural Radio Services. It is planned to shift all current land mobile and rural radio stations in these bands to other available frequencies in the same spectrum region. Rulemaking proceedings, looking toward amending part 21 to provide for establishment of a public air-ground radiotelephone service on a regular basis, will be instituted as soon as possible.

One-Way Signaling (Radio Paging)

Several equipment manufacturers have made progress during the year in the development of miniature pocket-size radio receivers for radio paging operations in the 152-Mc band. These developments should enable licensees to integrate one-way signaling service with two-way land mobile radiotelephone service on the same radio chan-

nels, thereby increasing the efficiency of radiofrequency utilization and bringing the one-way service to communities where such service was not heretofore possible due to frequency shortages. Although the one-way signaling service to pocket-size receivers has thus far been provided mainly by the miscellaneous common carriers, it is significant that the Bell System has substantially expanded its operations in this field in the past 2 years. The demonstrated need for such service is far in excess of that which can be provided on frequencies allotted to this use.

Rural Radio Service Frequencies

In connection with docket 13847, the Commission is considering amending its rules to provide new frequency space for stations in the Rural Radio Service in the 461–462-Mc and 466–467-Mc bands. It is contemplated that these bands will be shared on a geographical basis with the proposed Aviation Terminal Radio Service and thus permit further growth of public radiotelephone service in rural areas.

INTERNATIONAL TELEGRAPH AND TELEPHONE

Highlights

The international telegraph carriers reported new high revenues during calendar 1960, due primarily to the continued strong demand for TELEX service.

Great interest was shown in a space communication system by both Government and industry. The Commission granted a number of authorizations to private companies for experimental work in this field and initiated an inquiry into the various problems involved in the authorization of a commercially operable space satellite system (see special chapter).

A decision conditionally approved a proposal by Western Union for divestment of its international telegraph operations, as required by section 222 of the Communications Act.

General

Oversea telegraph and telephone service continues to be furnished by the same companies as before, by means of ocean-cable and radio facilities. Telegraph service is primarily offered by 10 companies, including the American Cable & Radio Corp. subsidiaries, RCA Communications, Inc., and Western Union. Telephone service is offered by A.T. & T. Most of these companies also offer telegraph or telephone service with ships and aircraft.

Financial Position of Industry

Total revenues of the international telegraph industry rose 3.1 percent during calendar 1960 to $87 million. Despite this, net rev-

enues decreased from the previous year because of a greater increase in expenses. The rise in revenues was due primarily to the strong demand for international teletypewriter exchange service which rose to a new high of $7.5 million, while leased channel service revenues fell off to $8.6 million. The relative importance of conventional message service revenues to total industry revenues continued to decline, dropping to 75 percent.

Revenues from oversea telephone services sharply increased during calendar 1960 by 34 percent, reaching $43 million as compared to $32 million the previous year.

Oversea Communication Services

On June 30 1961, the Commission wrote a letter to A.T. & T. requesting it to proceed at once to make a cost study that will reflect the current level of earnings on its oversea communication services. In addition, without in any way delaying the completion of the study, the company was requested to give attention to the matter of formulating procedures that will readily provide this type of information whenever required.

The Commission has never had before it data on which to properly evaluate the level of earnings on the oversea communication services of A.T. & T.

Ocean Telephone Cables

A.T. & T. continues to expand its oversea telephone cable system. A cable to Bermuda is being laid and service is expected to begin late in 1961. Additional cables now planned include a third transatlantic cable. This will be the first such cable landing in the United States and will extend from New Jersey to Great Britain. Service is expected to start in 1963. A cable from Florida to Jamaica is scheduled to go into operation the same year. In 1964 installation will begin on a cable from Hawaii to Japan via Midway, Wake, and Guam, and on a second cable from the U.S. mainland to Hawaii. At approximately the same time, the British Commonwealth plans to lay a telephone cable from Canada to New Zealand and Australia via Hawaii where it will interconnect with the A.T. & T. cables, thus providing cable links between the United States and the major countries in the South Pacific.

All of the new cables will exceed the capacity of the first transatlantic telephone cables, which were originally designed for 36 voice channels in each direction. The channel capacity of existing submarine telephone cables has been increased dramatically in the past year by two different developments. The first of these is new channeling equipment which increases the capacity by one-third; for example, from 36 to 48 channels on the present transatlantic cables. The second,

a device known as TASI (Time Assignment Speech Interpolation), operates by taking advantages of pauses in conversations to use the temporarily idle channel for other calls.

Use of Telephone Facilities by Telegraph Carriers

The telegraph carriers continued to lease channels in A.T. & T.'s telephone ocean cables to supplement their own facilities, and expanded the use of such facilities during the year. Channels are so leased in the cables to England, France, Puerto Rico, and Hawaii. It is expected that this trend will extend to the proposed new A.T. & T. cables to England, Bermuda, Jamaica, and Japan.

One carrier has leased channels in the A.T. & T. microwave system between the United States and the Bahamas.

Congestion in Frequency Bands

The high-frequency bands allocated internationally to the fixed services continued to become more congested. It would appear that the increased use of telephone cables for both telephone and telegraph services on some of the high-volume international communication routes would tend to alleviate this situation. However, due to the necessity of maintaining radio as a standby for the cables and the fact that the overall demand of communication is steadily increasing, installation of the telephone cables has not provided significant relief for the overcrowded high-frequency spectrum. Another factor which contributes to spectrum crowding is the decrease in the usable range of frequencies as the lower part of the solar cycle is approached. This will grow steadily worse during the next 3 or 4 years.

Radio Circuits

During the past year RCAC opened direct radiotelegraph circuits to Vienna, Austria, and Lima, Peru; Press Wireless, Inc., inaugurated a direct circuit to Quito, Ecuador, for regular press services by radiotelegraph; and A.T. & T. established direct radiotelephone service to Papeete, Tahiti, and Belize, British Honduras. Operation of a number of circuits by relay via Tangier has been discontinued in favor of direct operation or by relay via other points in Europe.

Rate Structure of International Telegraph Carriers

During the year the level of rates for outbound telegraph services remained constant. Rates for inbound telegraph message service increased in a few instances. Increased surtaxes were applied to telegraph messages by certain foreign administrations. Other administrations found it necessary to increase rates for inbound messages to the United States (as well as other countries). Although total revenues of the carriers increased during the year, operating costs more than offset the revenue gain. The Commission is continuing to

maintain surveillance over the level and structure of international telegraph rates.

International Telegraph Merger

The Senate bill for permissive merger of international telegraph and marine carriers, endorsed in principle by the Commission in 1959, expired with the adjournment of the last Congress. Although no new bill has yet been introduced, the Commission is maintaining relevant data on a current basis.

Docket Cases

Press Wireless license modification.—On January 11, 1961, the Commission issued a final decision denying the applications of Press Wireless for license modifications to permit it to handle nonpress material under its "telex" service (dockets 12539 and 12540).

Western Union divestment.—An agreement was filed September 15, 1960, between Western Union and American Securities Corp. which would result in the divesting the former of its international telegraph operations by the establishment of an independent company, Western Union International, Inc. (docket 6517). Hearings were held during November and December 1960. On March 6, 1961, the Commission released a decision conditionally approving the agreement.

On June 27, 1961, the Commission denied a petition for reconsideration filed by American Cable & Radio Corp.; also, for the most part, a petition for reconsideration by American Securities. The latter was granted time to determine whether the agreement as conditioned by the Commission was satisfactory to it. Western Union and American Securities filed their assent on November 7, 1961.

On July 10, 1961, the Pan American Union and the Pan American Sanitary Bureau filed a complaint (docket 14198) with the Commission against six international telegraph carriers alleging that the carriers were not according official messages of the complainants special government rates to which they were entitled. After the carriers filed their answers, the complainants filed a reply in which they urged the Commission not to set the matter for hearing until they filed a motion which they felt, when acted upon, would resolve all questions in the case.

Other Regulatory Matters

Relief and pensions.—During fiscal 1961 one carrier adopted for the first time a pension plan covering its employees, and three other carriers amended their pension plans, primarily to expand coverage and to increase benefits. The Commission continued its general studies of the carriers' pension arrangements, giving particular consideration to the effect, for ratemaking purposes, of total pension costs upon allowable operating expenses.

Depreciation.—The Commission initiated limited studies for developing information to serve as a basis for prescribing annual depreciation rates for the four remaining international telegraph carriers for which rates have not been prescribed. No depreciation rates were prescribed in fiscal 1961, but previously prescribed rates were reviewed to ascertain whether they reflect the current service lives and salvage factors reasonably applicable to operated plant. General reviews of the practices of the carriers in accounting for depreciation were continued.

Continuing property records.—The carriers' property records have proved to be essential to effective regulation. Mindful of this result, general reviews were made of the records and, as required, the Commission gave advice and assistance to the carrier so as to obtain proper maintenance of records. Some inappropriate procedures were disclosed and, upon request, the carriers undertook corrective measures.

Accounting compliance.—Continuing consideration was given to, and limited field reviews were made of, the accounting practices and procedures of the international telegraph carriers. Efforts to this end have proved especially effective in implementing substantial compliance with the applicable rules of the Commission.

Tariff schedules.—During the year carriers filed 2,505 pages of international tariff material and 97 applications for permission to file tariff schedules on less than statutory notice.

STATISTICS

General

Annual reports were filed by 559 common carriers and 7 controlling companies for the calendar year 1960. Considerable financial and operating data taken principally from these reports are published annually in a volume entitled "Statistics of Communications Common Carriers." The larger telephone and telegraph carriers also file monthly reports of revenues and expenses, and summaries of these data are published monthly by the Commission.

Telephone Carriers

Annual reports were filed by 550 telephone carriers, including 141 carriers engaged in general landline telephone service and 409 miscellaneous common carriers, engaged only in providing land mobile radiotelephone service. Sixty-one of the 141 telephone carriers were subject to the comprehensive landline telephone reporting requirements of the Commission and the remaining 80 were required to report on the more limited basis applicable to mobile radio carrier licensees.

Selected financial and operating data concerning 52 general telephone carriers whose annual operating revenues exceed $250,000 are shown in the following table for the year 1960, as compared to 1959.

Telephone carriers [1]

Item	1959	1960	Percent of increase or (decrease)
Number of carriers	52	52	
Book cost of plant (as of Dec. 31)	$23,692,805,199	$25,714,235,060	8.53
Depreciation and amortization reserves	$5,239,801,173	$5,576,903,316	6.43
Net book cost of plant	$18,453,004,026	$20,137,331,744	9.13
Local service revenues	$4,503,748,627	$4,822,970,199	7.09
Toll service revenues	$2,923,586,415	$3,148,120,313	7.68
Total operating revenues	$7,798,579,328	$8,364,778,680	7.26
Operating expenses and operating taxes	$5,393,908,773	$5,763,503,379	6.85
Provision for Federal income taxes	$1,107,201,872	$1,201,790,571	8.54
Net operating income after all taxes	$1,297,468,683	$1,399,484,730	7.86
Net income	$1,159,377,400	$1,249,711,977	7.79
Dividends declared	$754,343,623	$795,569,262	5.47
Company telephones:			
Business	16,529,807	17,281,983	4.55
Coin	1,189,607	1,222,549	2.77
Residence	44,318,073	46,558,541	5.06
Number of calls originating during the year:			
Local [2]	96,542,724,886	101,300,804,234	(3)
Toll [2]	3,664,584,152	3,942,465,951	(3)
Number of employees at end of October	627,127	626,684	(.07)
Male	265,077	266,653	.59
Female	362,050	360,031	(.56)
Total compensation of employees for the year	$3,229,968,423	$3,384,371,064	4.78

[1] Data shown relate to telephone carriers whose annual operating revenues exceed $250,000. Intercompany duplications, except in minor instances, have been eliminated.
[2] Partly estimated by reporting carriers.
[3] The number of calls shown are not comparable, as many calls were reclassified from "Toll" to "Local" during 1960, due to englargement of numerous local calling areas. The Bell System, after adjusting for such reclassifications, reported for 1960 over 1959 increases of 5.2 percent in local conversations and 7.0 percent in toll conversations.

Landline telephone companies filing reports with the Commission include most of the larger companies (accounting for over 90 percent of the industry revenues), but exclude the great majority of the 3,300 telephone companies in the United States. There are also additional thousands of connecting rural or farmer lines and systems. Telephone industry estimates are that its operating revenues in 1960 totaled $9.1 billion, with book cost of plant at December 31, 1960, of $28.8 billion, and 694,000 employees.

Land mobile radiotelephone service is offered by 31 of the 61 telephone carriers reporting to the Commission as "fully subject" carriers, with revenues for the year 1960 amounting to $7.0 million. This service is also offered by 80 other carriers engaged in general landline telephone service and by 409 miscellaneous common carriers. Reports filed by the latter group show that their operating revenues for 1960 totaled $4.1 million. About half of the miscellaneous common carriers reported operating losses for 1960.

Domestic Telegraph Carrier

The following table sets forth financial and operating data relating to the domestic landline operations of The Western Union Telegraph

Co. for the calendar year 1960 as compared to 1959. The data pertaining to its cable operations are included in tables below showing data of international telegraph carriers.

The Western Union Telegraph Co.[1]

Item	1959	1960	Percent of increase or (decrease)
Book cost of plant (as of Dec. 31)	$380,215,771	$398,022,904	4.68
Depreciation and amortization reserves	$157,381,787	$168,604,885	7.13
Net book cost of plant	$222,833,984	$229,418,019	2.95
Message revenues	$194,012,149	$189,789,329	(2.18)
Total operating revenues	$260,849,098	$262,365,106	.58
Operating expenses, depreciation, and other operating revenue deductions	$235,762,335	$246,767,968	4.67
Net operating revenues	$25,086,763	$15,597,138	(37.83)
Provision for Federal income taxes [2]	$11,000,000	$4,350,000	(60.45)
Net income	$14,755,185	$10,204,688	(30.84)
Net income (landline and cable systems)	$16,685,145	$11,016,239	(33.98)
Dividends (landline and cable systems)	$7,941,024	$8,949,326	12.70
Number of revenue messages handled [3]	130,992,717	124,319,364	(5.09)
Number of employees at end of October	33,151	32,655	(1.50)
Total compensation of employees for the year	$159,841,768	$164,524,204	2.93

[1] Represents data for landline operations. Figures covering cable operations are included in tables below showing data of international telegraph carriers.

[2] Reflects estimated net reductions in Federal income tax liability of $2,184,000 and $2,470,000 in 1959 and 1960, respectively, arising from the utilization, for income tax purposes but not for accounting purposes, of a liberalized depreciation method recognized by sec. 167 of the Internal Revenue Code of 1954. Also reflects estimated net increases of $145,000 and $216,000 in 1959 and 1960, respectively, in Federal income tax liability arising from the use in prior years of 5-year amortization authorized under sec. 168 of the Internal Revenue Code of 1954.

[3] Includes domestic transmission of transoceanic and marine messages (about 10,238,000 in 1959 and about 10,586,000 in 1960).

International Telegraph Carriers

Financial and operating statistics relating to the U.S. international telegraph carriers for the calendar year 1960 are shown below as compared to similar figures for 1959. Statistics pertaining to radiotelegraph and ocean cable carriers are also shown separately.

International telegraph carriers

Item	1959	1960	Percent of increase or (decrease)
Number of carriers	9	9	
Book cost of plant (as of Dec. 31)	$157,557,232	$163,798,267	3.96
Depreciation and amortization reserves	$83,679,191	$82,609,921	(1.28)
Net book cost of plant	$73,878,041	$81,188,346	9.90
Message revenues:			
Domestic [1]	$3,051,884	$3,191,306	4.57
Transoceanic	$55,116,246	[4] $58,003,652	5.24
Marine	$1,782,284	$1,790,659	.47
Total operating revenues	$84,376,718	$86,975,831	3.08
Operating expenses, depreciation, and other operating revenue deductions	$71,725,467	$76,885,077	7.19
Net operating revenues	$12,651,251	$10,090,754	(20.24)
Provision for Federal income taxes	$5,815,215	$4,510,983	(22.43)
Net income	$8,328,268	$7,991,209	(4.05)
Dividends declared [2]	$2,013,468	$1,423,468	(29.30)
Number of revenue messages handled:			
Domestic [3]	122 983	139,469	13.41
Transoceanic	24,493,862	24,590,278	.39
Marine	1,061,348	1,041,376	(1.88)
Number of employees at end of October	11,239	11,011	(2.03)
Total compensation of employees for the year	$14,530,765	$47,635,567	6.97

Radiotelegraph carriers

Item	1959	1960	Percent of increase or (decrease)
Number of carriers	6	6	
Book cost of plant (as of Dec. 31)	$58,234,372	$65,240,198	12.03
Depreciation and amortization reserves	$23,318,432	$24,864,004	6.63
Net book cost of plant	$34,915,940	$40,376,194	15.64
Message revenues:			
Domestic [1]	$2,814,912	$2,931,774	4.15
Transoceanic	$28,680,259	$28,572,709	(.37)
Marine	$1,782,284	$1,790,659	.47
Total operating revenues	$47,777,980	$50,806,434	6.34
Operating expenses, depreciation, and other operating revenue deductions	$38,138,853	$42,202,554	10.66
Net operating revenues	$9,639,127	$8,603,880	(10.74)
Provision for Federal income taxes	$4,705,215	$3,640,983	(22.62)
Net income	$5,707,102	$7,153,221	25.34
Dividends declared	$1,660,000	$1,070,000	(35.54)
Number of revenue messages handled:			
Domestic [3]	52,428	72,020	37.37
Transoceanic	13,842,854	13,571,407	(1.96)
Marine	1,061,348	1,041,376	(1.88)
Number of employees at end of October	[4] 5,371	[4] 5,397	.48
Total compensation of employees for the year	$26,677,489	$28,550,634	7.02

Ocean cable carriers (including Western Union cable operations)

Item	1959	1960	Percent of increase or (decrease)
Number of carriers	3	3	
Book cost of plant (as of Dec. 31)	$99,322,869	$98,558,069	(0.77)
Depreciation and amortization reserves	$60,360,759	$57,745,917	(4.33)
Net book cost of plant	$38,962,101	$40,812,152	4.75
Message revenues:			
Domestic [1]	$236,972	$259,532	9.52
Transoceanic	$26,435,987	[2] $29,439,943	11.33
Total operating revenues	$36,598,738	$36,169,397	(1.17)
Operating expenses, depreciation, and other operating revenue deductions	$33,586,614	$34,682,523	3.26
Net operating revenues	$3,012,124	$1,486,874	(50.64)
Provision for Federal income taxes	$1,110,000	$870,000	(21.62)
Net income	$2,621,156	$837,988	(68.03)
Dividends declared [3]	$353,468	$353,468	
Number of revenue messages handled:			
Domestic [4]	70,555	67,449	(4.40)
Transoceanic	10,651,008	11,018,871	3.45
Number of employees at end of October	[5] 5,868	[5] 5,614	(4.33)
Total compensation of employees for the year	$17,853,276	$19,084,933	6.90

[1] Includes revenue of 2 ocean-cable carriers and the radiotelegraph carriers from the domestic transmission of transoceanic and marine messages outside of points of entry or departure in the United States, and revenues from domestic-classification messages (primarily Canadian and Mexican).

[2] All dividends declared by Western Union Telegraph Co. have been reported in the table above relating to the domestic landline operations of that company and are excluded from this table.

[3] Represents domestic-classification messages (primarily Canadian and Mexican).

[4] Certain employees of 1 radiotelegraph carrier and 2 ocean-cable carriers serve more than 1 of the companies. The amounts of compensation reported for each of these companies are after intercompany charges and credits. As a result, the number of employees and total compensation shown are not on the same basis.

[5] Transoceanic message revenues for 1960 are not comparable with those shown for 1959 for the reason that All America Cables & Radio, Inc., effective July 1, 1959, revised its method of determining the revenues classified as cable transoceanic so that they are substantially greater than under the former method. All America's radiotelegraph transoceanic message revenues, $2,207,821 in 1960 and $4,405,146 in 1959, are not included in the message revenue data in this series of tables.

International Telegraph and Telephone Traffic

During calendar year 1960 a total of 637,995,000 words were handled into and out of the United States by international cable and radiotelegraph carriers. In the outbound direction 330,320,000 words were transmitted, while 307,675,000 were inbound. There were, also, during

calendar year 1960, 1,669,800 telephone calls outbound from the United States and 1,544,200 calls inbound. The word volume of international telegraph traffic and the number of telephone calls between the United States and each of the principal countries of the world during calendar year 1960 are set forth in the following table:

U.S. international telegraph (radio and cable) traffic in words and telephone calls (radio and cable), 1960

(Includes traffic transiting the United States)

Country	Telegraph traffic (number of words (in thousands))		Telephone traffic [1] (number of calls (in hundreds))	
	Outbound from the United States	Inbound to the United States	Outbound from the United States	Inbound to the United States
Europe, Africa, and the Near East				
Ascension Island (Bahrain relay)			3	6
Algeria	200	165		
Arabia	1,085	1,048	7	14
Austria	1,538	1,143	96	40
Azores	105	55		
Belgian Congo	471	428		
Belgium	4,970	4,167	139	87
British East Africa	917	627		
British West Africa	1,209	969		
Bulgaria	151	105		
Canary Islands	175	111		
Czechoslovakia	779	720		
Denmark	2,282	1,746	110	70
Egypt	2,669	2,755	13	14
Ethiopia	335	336		
Finland	656	681	14	6
France	16,464	15,998	778	636
French Equatorial Africa	89	334		
French West Africa	434	252		
Germany	19,459	15,654	1,463	805
Greece	2,019	1,640	63	43
Hungary	303	445		
Iceland	243	224	10	11
Iran	1,375	1,405		
Iraq	654	1,285		
Ireland	1,090	1,070		
Israel	3,076	2,909	47	34
Italy	15,193	11,961	497	276
Lebanon	1,244	1,422		
Liberia	1,250	1,290		
Libya	509	226		
Luxembourg	157	141		
Madagascar	101	82		
Morocco: French	134	130		
Tangier	419	404		
Netherlands	8,307	7,084	207	183
Norway	3,072	2,134	84	47
Persian Gulf	606	579		
Poland	905	1,123	10	18
Portugal	1,357	1,053	21	15
Rhodesia	192	231		
Rumania	483	321		
Spain	4,591	2,866	108	105
Sweden	4,339	4,141	144	119
Switzerland	10,066	7,159	364	242
Syria	236	177		
Transjordania	278	250		
Tunisia	357	239		
Turkey	1,539	1,691	15	18
Union of South Africa	2,950	2,787	15	13
U.S.S.R.	4,511	4,471	10	23
United Kingdom	51,070	49,478	1,834	1,871
Yugoslavia	1,068	1,079		
All other places	925	1,295		
Total	178,607	160,086	6,052	4,696

See footnotes at end of table.

U.S. international telegraph (radio and cable) traffic in words and telephone calls (radio and cable), 1960—Continued

(Includes traffic transiting the United States)

Country	Telegraph traffic (number of words (*in thousands*))		Telephone traffic [1] (number of calls (*in hundreds*))	
	Outbound from the United States	Inbound to the United States	Outbound from the United States	Inbound to the United States
West Indies, Central, North, and South America				
Argentina	7,209	6,982	161	191
Aruba			12	18
Bahamas	1,811	1,781	814	520
Barbados	325	216	29	25
Bermuda	1,250	862	375	107
Bolivia	1,228	935		
Brazil	9,433	8,837	176	170
British Guiana	377	308		
British Honduras	221	179		
Canada [3]	8,487	13,373		
Canal Zone	697	552		
Chile	3,348	2,432	54	60
Colombia	5,257	4,086	147	207
Costa Rica	1,715	1,604	64	62
Cuba	7,185	12,416	2,658	2,761
Curacao			18	29
Dominican Republic	1,541	1,276	125	125
Ecuador	2,281	1,281	21	22
French West Indies	163	98		
Greenland	215	139		
Guatemala	2,055	1,746	76	93
Haiti	1,174	869	37	38
Honduras Republic	1,153	908	46	59
Jamaica	1,625	1,293	230	185
Martinique			2	3
Mexico [4]	2,877	1,830		
Netherlands West Indies	1,196	1,074		
Nicaragua	1,111	701	53	57
Other British West Indies	342	254		
Panama	2,071	1,566	161	193
Paraguay	298	251		
Peru	2,781	2,463	78	80
Puerto Rico	7,039	5,909	1,561	1,877
Salvador	1,720	1,108	46	43
Surinam	376	277	8	11
Trinidad	1,367	1,032	29	39
Uruguay	2,253	1,951	21	25
Venezuela	10,253	12,718	203	238
Virgin Islands	621	546		
All other places	119	69		
Total	93,174	93,922	7,205	7,238
Asia and Oceania				
Afghanistan	184	139		
Australia	5,246	4,866	93	107
Burma	748	520		
Ceylon	718	418		
China (*excluding Hong Kong*)			[2]	[2]
Formosa	1,671	1,517	21	23
French Indochina	722	1,050		
Guam	442	535	66	57
Hawaii	7,278	5,790	2,417	2,730
Hong Kong	3,124	2,421	56	69
India	5,892	5,147		
Indochina				
Indonesia	1,614	2,146	2	18
Japan	17,937	14,373	497	246
Korea	1,493	2,369	68	95
Malaya, Federation of	1,235	1,060	4	8
New Caledonia				
New Zealand	1,553	1,368	17	18
Okinawa	662	853	107	21
Pakistan	1,736	2,171		
Philippines	4,507	5,048	93	116
Society Islands	161	141		

See footnotes at end of table.

U.S. international telegraph (radio and cable) traffic in words and telephone calls (radio and cable), 1960—Continued

(Includes traffic transiting the United States)

Country	Telegraph traffic (number of words (in thousands))		Telephone traffic [1] (number of calls (in hundreds))	
	Outbound from the United States	Inbound to the United States	Outbound from the United States	Inbound to the United States
Asia and Oceania—Continued				
Tahiti			[2]	[2]
Thailand (Siam)	1,146	1,141		
All other places	449	382		
Total	58,518	53,455	3,441	3,508
Unknown destination or origin	21	212		
Grand total	330,320	307,675	16,698	15,442

[1] The data on telephone calls include the number of oversea calls handled via radio and via North Altantic, Hawaii, and Caribbean telephone cables. A.T. & T reports its volume of oversea telephone traffic transmitted to, and received from, each point of communication, which may be either (1) the foreign country and oversea point of destination or origin of the calls, or (2) an intermediate country or oversea point through which the call is relayed onward. Therefore, the number of calls reported herein with respect to a particular place is not necessarily the number of calls originating or terminating with that place. The absence of calls for certain countries or oversea points indicates only that no direct cable or radiotelephone service was provided in 1960. Any calls that may have been handled with such countries during 1960 are included in the traffic of the intermediate country through which indirect service was rendered. Service with Canada and Mexico is by means of wire lines and with Alaska by means of wire lines, radio, and ocean cable.

[2] Less than 100 calls.

[3] Represents international-classification traffic which originated at oversea points and was destined to Canada (outbound from the United States), and international-classification traffic which originated in Canada and was destined to oversea points (inbound to the United States). This traffic was handled between such points and Canada by United States carrier via the United States.

[4] Represents international-classification traffic which originated at oversea points and was destined to Mexico (outbound from the United States), and international-classification traffic which originated in Mexico and was destined to oversea points (inbound to the United States). This traffic was handled between such points and Mexico by United States carriers via the United States.

Common Carrier Applications

Over 8,300 applications were filed with the Commission by common carriers during the fiscal year (exclusive of Alaskan and marine mobile). The following table shows the number of applications according to class of service:

Class	Pending June 30, 1960	Received	Disposed of	Pending June 30, 1961
Radio facilities				
Domestic:				
Point-to-point microwave radio stations	108	2,824	2,491	441
Local television transmission stations		19	17	2
Rural radio stations	66	284	321	29
Domestic public land mobile radio stations	65	1,209	1,136	138
Developmental stations	5	48	46	7
Registration of Canadian radio station licensees		21	21	
International:				
Fixed public and fixed public press telegraph	10	115	124	1
Fixed public telephone	6	54	60	
International control		6	6	
Subtotal	260	4,580	4,222	618
Wire facilities				
Telephone extensions	9	209	211	7
Telegraph extensions	5	129	129	5
Telephone reductions		4	4	
Telegraph reductions	94	1,191	1,155	130
Subtotal	108	1,533	1,499	142
Miscellaneous				
Interlocking directorates		7	7	
Jurisdictional determinations				
Submarine cable landing licenses	1	6	6	1
Petitions or motions (nondocket)		4	4	
Renewals:				
Point-to-point microwave radio stations		2,100	2,100	
Local television transmission stations		50	50	
Domestic public land mobile radio stations	64		64	
Developmental stations		26	26	
International		43	43	
Subtotal	65	2,236	2,300	1
Total	433	8,349	8,021	761

Space Communication

GENERAL

Radio communication, heretofore earthbound, is rapidly reaching into space. Manmade satellites transmit radio signals, and space objects are used to "bounce" other signals to test long-distance communication possibilities.

Although the Commission is not responsible for any overall space program or any particular space vehicle launching project, the mounting activity in space communication has an impact on its regulation of non-Government radio users. This stems from its obligations under the Communications Act to "study new uses for radio, provide for experimental uses of frequencies, and generally encourage the larger and more effective use of radio in the public interest," as well as to "make available, so far as possible, to all the people of the United States a rapid, efficient, nationwide, and worldwide wire and radio communication service."

This now extends to the allocation and assignment of frequencies for space communication and the authorization of research and experimentation looking toward the use of natural or manmade satellites to provide civil communication services on a regular basis. Radio signals relayed from satellites would permit the transmission of large amounts of telephone, telegraph, and other traffic, including television, over great distances. Such developments present a new and complex array of technical problems. Not the least of these is finding suitable and sufficient frequencies and insuring compatability between space communication systems and surface systems so that the public interest will best be served. Many regulatory problems will flow from adding space communication to radio's already manifold uses.

The achievement of these purposes involves both national and international considerations. Consequently, the Commission is working closely with the interests concerned.

This involves particularly close relationship with the National Aeronautics and Space Administration (NASA), which directs the Nation's nonmilitary space activities. On February 28, 1961, the FCC and NASA announced a joint memorandum of understanding for delineating and coordinating their respective responsibilities in this field.

The FCC also participates in other related interagency activities, including those of the Telecommunications Coordinating Committee (TCC) of the Department of State; the Telecommunications Plan-

ning Committee (TPC); the Office of Civil and Defense Mobilization (OCDM); the Interdepartment Radio Advisory Committee (IRAC); the U.S. Committee for Study Groups IV and VIII of the International Radio Consultative Committee (CCIR) of the International Telecommunication Union (ITU); the Space Science Board (SSB); the International Radio Scientific Union (URSI); and the National Bureau of Standards Central Radio Propagation Laboratory.

FCC Commissioner T. A. M. Craven was chairman of an ad hoc group of the TCC which drafted foreign policy recommendations on space communication systems for the Department of State.

INTERNATIONAL CONSIDERATIONS

The International Administrative Radio Conference, held at Geneva in 1959 under the auspices of the ITU, adopted an international table of frequency allocations which, for the first time, opened bands of frequencies for space and earth-space services. These bands, however, are for research purposes only and are useful principally for research, tracking, control, and telemetry functions. Although no bands were allocated internationally for space satellite relay communication, a special ITU Administrative Radio Conference is scheduled tentatively for late 1963 to deal specifically with world space problems on the basis of development as of that time. At the request of the Department of State, preparatory work toward formulating the U.S. position at that conference has been initiated jointly by the FCC and IRAC.

FCC PROCEEDINGS

Space Frequency Allocation

As a result of developments in space communication during 1960, the Commission reopened its proceeding in the general inquiry relative to the allocation of frequencies above 890 Mc (docket 11866) to determine, in the light of evidence then available, whether the frequency requirements for communication via space satellites would require modification of the Commission's decision to permit some additional classes of users to establish communication systems on frequencies between 1,000 and 10,000 Mc. After a careful analysis of all the evidence then on hand, the Commission on September 28, 1960, concluded that its earlier decision need not be modified at that time.

However, in view of rapid developments in space communication, the Commission had, on the previous May 18, instituted an inquiry (docket 13522) as to space frequency needs on a longer range basis. This information will assist the Commission in its preparatory work leading to a U.S. position for future international conferences on space needs and usage. On December 21, 1960, the inquiry was expanded to include consideration of whether and what sparsely settled

areas might be established and protected for future civil space communication earth terminals.

On May 17, 1961, the Commission adopted, for public comment, a second notice of inquiry in docket 13522 setting forth preliminary draft views of the United States concerning international frequency allocation requirements for coordinated domestic and foreign space programs.

In summary, the proposals would provide frequencies for space communication, research, meteorological and aeronautical services, also for telemetry, command, guidance, and tracking functions associated with such space operations.

The U.S. draft estimates that a total of about 3,000 Mc of spectrum space should be allocated to meet foreseeable requirements until about 1970. Of this, 2,000 Mc would be divided between earth-to-satellite and satellite-to-earth transmissions, 950 Mc in each case being shared with the fixed and mobile services, with two other bands reserved for adjustments as needed.

These allocations proposed for the communication satellite service lie in the range of 3,700–4,200 Mc (3.7–4.29 gigacycles) and 5,925 and 8,400 Mc (5.925–8.4 gigacycles) where it would share frequency bands with the existing fixed and mobile services. (A "gigacycle" is a short term for denoting 1,000 Mc.)

Administrative and Regulatory Problems

Previously, on March 29, 1961, the Commission instituted an inquiry (docket 14024) into the administrative and regulatory problems relating to future authorization of commercially operated space communication systems. It invited proposals as to methods of insuring equitable and nondiscriminatory participation in any single or limited number of satellite communication systems which might be authorized; how such proposed plan would comply with existing antitrust and other laws; and how it could be authorized under Commission rules and policies.

In its notice of inquiry, the Commission stated in part:

> It is the expressed policy of the United States that activities in space should be devoted to peaceful purposes for the benefit of all mankind. The earliest possible realization of a commercially operable point-to-point space satellite communication system represents one of the most significant, practical, and beneficial means of implementing this vital national policy. The Commission, in furtherance of its statutory responsibilities and in an effort to facilitate the advancement of the Nation's vital space policy, has been engaged for some time in an attempt to assess the nature of the many varied and complex problems associated with international communications via space satellites. Present studies indicate the possible arising of conditions and circumstances which appear likely to present certain problems with respect to the authorization and operation of satellite systems for communication services between the United States and foreign points. These

problems require an assessment of the Commission's administrative and regulatory functions and authority with respect thereto.

The United States has, of course, maintained a policy of fostering beneficial competition among privately owned and operated international communication common carriers. However, assuming that the organization of a single or limited number of satellite systems will best serve the public interest, there is a question as to the extent to which this will be consistent with the maintenance of competition in international communications, and with the antitrust laws and policies of the United States. The purposes of this proceeding therefore are to ascertain the various methods by which participation in such system or systems by all interested present and future international communication common carriers and others can best be effectuated on an equitable, nondiscriminatory, and lawful basis.

In instituting this proceeding the Commission wishes to make it perfectly clear that it is mindful of the scope and complexity of the international problems inherent in the field of space communications. It is recognized that international cooperation and agreement on frequency allocations and other essential matters are required if a truly useful and efficient satellite communication system is to be realized. The Commission is also fully cognizant that before a fully operational commercial satellite communication system can be established, a substantial amount of research and development remains to be completed. However, it is the Commission's opinion that consideration of the questions involved in this proceeding in advance of the resolution of these other related problems will hasten the establishment of international communication via space satellites.

On May 24, 1961, the Commission adopted a first report in docket 14024 in which it concluded that the formation of a joint venture composed only of existing international common carriers was deserving of consideration and exploration as an effective means of promoting the orderly development of a commercial satellite communication system. A conference was held with these carriers and other respondents on the following June 5.

Mindful of the substantial interests in and contributions by communications equipment manufacturers to space science, the Commission announced its intention to require any mutual venture by the international carriers to make adequate and effective provision, such as competitive bidding, to insure that there will be no favoritism in the procurement of communications equipment required for the satellite system. In this connection, and also to promote the maximum degree of standardization, the Commission will also require that its approval be obtained with respect to the specifications for all equipment used by the common carriers in the satellite system, including the ground terminals. At the same time, before approving any specifications, it will examine closely into the relevant patent situation to insure that an undesirable or dominant patent position will not hamper or frustrate the Commission's objectives in this regard.

It was not then possible for the Commission to indicate all the specific features which it believes should be incorporated in any joint

venture. These matters require study and formulation by the interested carriers acting under the aegis of the Commission and in accordance with the procedures and policies hereafter to be provided. However, regardless of the plan of organization or type of entity that may subsequently evolve, it must contain clear and definite provisions which will insure that existing and future international common carriers, whether or not any such carrier participates through ownership in the joint venture, shall have equitable access to, and nondiscriminatory use of, the satellite system, under fair and reasonable terms. The Commission, in issuing licenses or other authorizations that may be required to effectuate such joint venture, will take appropriate measures to implement this policy and to effect such other safeguards as may be required in the public interest.

The Commission will make later determination as to the desirability and need for participation by domestic common carriers in any joint satellite communication venture.

On July 25, 1961, the Commission called upon the international communications carriers to organize promptly an ad hoc committee to develop a plan of organization for a commercially operable satellite communication system. Because of the prime importance given by the Commission to this undertaking, it required the committee to report as soon as possible, but not later than October 13.

The ad hoc committee comprises representatives of American Cable & Radio Corp. (Mackay Radio & Telegraph Co., Inc., The Commercial Cable Co., All America Cables & Radio, Inc., and Globe Wireless, Ltd.); American Telephone & Telegraph Co.; Hawaiian Telephone Co.; Press Wireless, Inc.; Radio Corp. of Puerto Rico; RCA Communications, Inc.; South Puerto Rico Sugar Co.; Tropical Radio Telegraph Co.; and The Western Union Telegraph Co.

On October 13, 1961, the nine international carriers submitted such a joint plan, summarizing their recommendations as follows:

> Research, development and experimental trials should be expedited by Government and industry and all resources drawn upon to establish the best communications satellite system at the earliest practicable time.
>
> A non-profit satellite corporation should be created to develop, construct, operate, manage and promote the use of communications satellites, for the United States interests therein, in accordance with the public interest objectives specified in the President's Statement and the Commission's Supplemental Notice—the satellite corporation to have three directors appointed by the President of the United States or by whomsoever he shall designate to make the appointments, two directors designated by each authorized participant in ownership of the satellites, and a director designated by the carriers which do not own but which may lease satellite facilities.
>
> The United States carriers which are authorized by the Commission to provide communications services via satellites should be allowed to participate in joint ownership of the satellites and to include their investments in their rate bases for rate-making purposes, so that rates

would continue to be established as at present under regulation by the Commission.

Each United States carrier should be permitted to establish and operate its own ground stations, participate in joint ownership of ground stations with other carriers or rent capacity in other carriers' ground stations, and to obtain equitable access to and use of the ground stations and satellites, in accordance with public interest objectives set forth in the Supplemental Notice and as authorized by the Commission.

The Commission should, expeditiously, take such further administrative action as may be necessary and proper in furtherance of the plan proposed herein.

Meanwhile, in September, General Electric Co. withdrew an application for its own satellite communication system.

EXPERIMENTATION

Meanwhile, the FCC is encouraging experimentation by its licensees so that private industry may develop additional technical information which will further the country's overall space program. NASA, for its part, is cooperating by providing facilities at cost to launch satellites built by the communications industry.

In January 1961, the Commission granted an experimental authorization to the ITT Laboratories to bounce signals off the moon and "passive" (non-radio-equipped) earth satellites.

During the same month, a grant was given A.T. & T. to test earth terminal and "active" (radio-equipped) satellite communication. On July 28, NASA and A.T. & T. signed an agreement for the testing of two, or possibly four, active satellites to be built by the latter. During the year, A.T. & T. used the balloon-satellite Echo to reflect signals from one earth station back to another earth station.

In May 1961, Westinghouse Broadcasting Co. received an FCC experimental authorization to reflect signals from the moon and passive earth satellites.

After the close of the fiscal year, NASA signed contracts to launch experimental communication satellites of the Radio Corp. of America and the Hughes Aircraft Co.

MONITORING

Another FCC activity is the continued monitoring of channels being used for space communication. This started with its long-range direction-finding work in tracing Sputnik I, before the Government established special installations to track space objects. Commission monitoring is to prevent unauthorized use by other stations of channels employed for space communication, and to identify and locate sources of interference on those channels. At a number of FCC monitoring stations, special equipment used for this purpose includes sensitive receivers, high-gain directional antennas, and automatic frequency scanning devices.

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Field Engineering and Monitoring

GENERAL

Field engineering functions of the Commission are in two general categories—enforcement and service. Both are at the "grassroots" level. Field Engineering and Monitoring Bureau enforcement duties include radio station inspections, radio operator examinations, and monitoring of the radio spectrum, as well as suppressing unlicensed radio operations. Its services are largely in the area of radio interference elimination and furnishing technical assistance and guidance. More than 33,000 interference complaints alone are processed each year.

This field organization consists of 18 monitoring stations, 24 district offices, 5 suboffices, 2 marine offices, 2 mobile TV monitoring units, and 2 microwave cars.

It is interesting to note that June 30, 1961, marked the 50th anniversary of the start of Government field enforcement of radio regulation. At that time it applied only to radio usage on large seagoing passenger vessels and was under the then Department of Commerce and Labor.

The following summary of field problems and accomplishments gives an insight into the broad aspect of today's activities under the Federal Communications Commission.

FIELD ENFORCEMENT

Broadcast Inspections

In late 1959 a review of inspection records and citations disclosed an increasing disregard for engineering rules, operator requirements, and equipment performance standards on the part of many broadcast stations, particularly in the AM field. As a result, broadcasters were warned of the need for technical compliance by a public notice of April 29, 1960.

The Field Engineering and Monitoring Bureau and the Broadcast Bureau have developed a joint program to review the performance of AM broadcast stations. This includes an inspection of all technical equipment, such as antenna, transmission lines, ground system, making performance measurements of transmitters as well as studio equipment; determination if on-the-air performance of the station

conforms to its license, station records, and promises; and prompt reporting of deficiencies to the Broadcast Bureau for renewal consideration or for specific enforcement action.

Despite the fact that the renewal inspection program was instituted only in late 1960, field engineers have checked 99 percent of some 500 stations in Tennessee, Kentucky, Indiana, Ohio, and Michigan whose renewals are due August 1 and October 1, 1961.

A 4-month review of broadcast violations showed that the most frequent technical infractions involve indicating instruments, equipment performance measurements, transmitter and modulation requirements, and maintenance of operating power. In addition, 24 instances were observed where the measured field intensity was excessive for stations employing directional arrays. Correction of defective equipment usually improves broadcast reception.

Broadcast Monitoring

By means of on-the-air monitoring, measurements were routinely made to determine whether the technical quality of the radiated signal was being maintained in accordance with the rules. Emphasis was given to those things which would most seriously affect the quality of reception, such as operating off-frequency, modulation variance, spurious emissions, carrier hum and noise, excessive bandwidth, and carrier shift. In view of the increasing public interest in high fidelity reception, maintenance of technical quality in the broadcast services has assumed increasing importance.

While monitoring for technical discrepancies, observations are made at the same time for other violations, such as station identification, sponsor identification, lotteries, and profane and indecent language. These observations are usually recorded on tape. Where broadcast stations were too distant from the fixed monitoring stations, close-in monitoring was done by mobile units.

AM Broadcast Measurements

Various types of engineering measurements were employed to insure that AM stations complied with the more technical requirements. Field strength was measured to see that station coverage was consistent with licensed power and any special radiation limitations. Measurements were also made of carrier frequency, modulation levels, antenna radiation patterns, and antenna resistance.

TV and FM Enforcement

Because of the more limited coverage of TV and FM broadcast stations, enforcement of the technical provisions depends upon measurements and observations within the service area of the particular station involved. The Commission some years ago equipped

two vehicles for TV and FM mobile surveillance. A needed third unit will—funds permitting—be placed in operation next year. The three units will enable each TV and FM station to be given a technical check at least once during its license period.

Other Radio Station Inspections

Since inspection of the multitude of nonbroadcast stations, many of which are in remote places, is impossible with the limited personnel available, a system of sampling checks has been developed. Under this program a limited number of stations in each category are inspected and enforcement emphasis is based on the results. While this sampling process is subject to error, it has been found to be the only effective method of determining services that are not being operated in accordance with the regulations and, therefore, require special attention.

It was necessary to curtail inspection activities for some services because of the emphasis given to broadcast enforcement during the year. Also particular attention was required by services which were operating on split channels opened in 1960.

Marine Station Inspections

The Communications Act specifies that every ship of the United States subject to parts II and III of title III shall have its radio equipment inspected periodically by the Commission. The United States-Canadian agreement for the promotion of safety on the Great Lakes by means of radio requires similar periodic inspection. The Commission's rules provide that applications for periodic ship inspections be filed at least 3 days prior to date of desired inspection. However, conditions inherent in commercial shipping make this impracticable. Thus, many inspections are conducted on short notice or at times which disrupt the orderly scheduling of field work.

Inspections of radio on the larger oceangoing vessels are time consuming, generally requiring several hours to complete. This adds to the difficulty of making inspections on short notice. Inspection of a ship's radiotelephone equipment is of relatively short duration. However, these inspections require considerable travel time because many vessels are found at locations remote from the field offices. By treaty agreement, inspections are made and temporary certificates are issued by Canada and the United States to permit each other's ships to sail to home ports where reinspection can be made and full-term certificates issued.

Misuse of the calling frequency 2182 kc, superfluous communications, and failure to identify continue to plague marine radiotelephone enforcement. The problem is especially acute in certain areas of the Gulf of Mexico and Pacific coastal waters where commercial fishermen

operate some distance from land. Monitoring from shore is difficult because of interference from nearby signals, yet the improper transmissions out at sea interfere with the signals near shore. FCC engineers sometimes travel on Coast Guard vessels to bring some degree of enforcement in offshore waters. The magniture of the problem is evinced in the fact that there were 102,685 radiotelephone-equipped vessels licensed at the end of the fiscal year.

Monitoring Nonbroadcast Stations

In the nonbroadcast radio services the biggest problems, as before, were violations in the small-boat 2–3 megacycle band, and the Class D Citizens Radio Service. Concerted field efforts resulted in some improvement in small-boat radio operations, but violations are still numerous and cause unnecessary interference to other users of this service. Class D licensees continued to top all other services combined in rule violations. Licensees who have a real need for this service are forming clubs to promote self-regulation and encourage compliance for the benefit of all.

Monitoring efforts were spread increasingly thin in attempting to cover as much of the high-frequency spectrum and as many stations as possible. The complexity in emissions, tightly packed frequency assignments, and newly developed types of radio facilities have combined to place stringent demands upon both the types of monitoring equipment and the time required for making technical observations and measurements.

Nonbroadcast Measurements

Because of the growing number of stations in the various land mobile services which use split channels, it has been necessary to step up frequency and bandwidth measurements for such operations. During the year checks were made on several hundred split-channel stations, resulting in issuance of numerous citations for off-frequency or excessive modulation. This is important because overmodulation by a single station (often without its knowledge) can interfere with stations operating on nearby channels.

Unlicensed Station Suppression

The Commission's constant patrol of the radio spectrum has been a major factor in both deterring and detecting unlicensed operation.

There were several instances of the illegal use of high-power transmitters during the year. Two enthusiastic Cubans were apprehended operating a shortwave station in southern Florida to broadcast in Spanish to Cuba. One of them was fined; the other was released.

There were more cases of unlicensed low-power operations covering very limited areas. Most of these involved youths who, in their eager-

ness to get on the air, built their own transmitters for the purpose of entertaining neighborhood listeners. One case involved a teenager who began broadcasting with a mail order house low-power kit and progressed to a homemade 6-watt transmitter feeding a 100-foot antenna. He promptly discontinued his service when warned.

Unlicensed operation aboard small aircraft appears to be decreasing, but only so long as enforcement pressure is maintained. Only a scattering of unlicensed operations on amateur frequencies were encountered.

Low-Power Devices

The task of enforcing regulations governing the operation of incidental and restricted radiation devices has been difficult because these devices are generally used by nontechnical people. They include electrical appliances and machines having sparking contacts or electrical arcs, certain types of wireless microphones, transceivers, radiating receivers, carrier current systems, remote radio controllers, and toy "broadcast" stations. Such low-radiation gadgets may be operated without a license, yet many of them may be potential sources of interference to radio services and therefore require control.

Enforcement has been largely a matter of educating the public regarding the applicable restrictions. In some instances, manufacturers and wholesalers, seemingly ignorant of the rules, placed noncomplying equipment on the market. One manufacturer, after his initial distribution of wireless microphones for marketing, was informed that they did not comply with the rules. He cooperated by recalling the devices from the distributors and refunding their money.

To the extent possible, through investigation, inspection, and correspondence, the Commission has kept manufacturers, dealers, and users informed of the rule requirements. There have been few reports of interference caused by low-power communication devices and carrier current broadcast sysems. CATV systems appear well under control as they are not the subject of many complaints.

FIELD SERVICES

Antenna Application Processing

Proposals for new or modified transmitter towers are processed by the FCC upon recommendation of the Federal Aviation Agency with respect to their aeronautical hazard considerations. Pursuant to the Communications Act, the painting and lighting of certain antenna structures are required as a further protection to air navigation.

FAA's new part 626 rules, effective July 15, 1961, tightened existing regulations on hazard considerations of antenna towers, established requirements for notifying FAA of antenna proposals

simultaneously with filing applications with the FCC, and provided for the establishment of "antenna farms" (grouping of antennas) in coordination with the FCC. Only antenna structures which do not exceed 20 feet in height above ground or on an existing building are exempt.

The FCC furnishes applicants with information about the new requirements and provides guidance in selecting an alternate site when the FAA determines that the original antenna proposal is unacceptable.

Television towers continue to increase both in number and in height. Construction of 10 additional towers over 1,000 feet (above ground) was completed during the year, which increased to 102 the number in operation. Twelve construction permits for tall TV towers were outstanding, of which three were for shafts of over 1,500 feet (KYTV, Springfield, Mo., 1,609 feet; WITN, Washington, N.C., 1,523 feet; and KCRA–TV, KXTV and KOVR, 1,549 feet, for joint use at Sacramento, Calif.).

Applications were pending for 19 additional tall towers, including a 1,749-foot structure at Columbus, Ga., for joint use of WRBL–TV and WTVM (which was later granted). This tower when built will top the 1,676-foot tower of KFVS–TV, Cape Girardeau, Mo., and will, temporarily at least, be the world's tallest manmade structure. The Commission denied a proposed 1,829-foot tower for WHAS–TV, Louisville, Ky.

The number of antenna proposals processed by the Commission during fiscal 1961 for all radio services totaled 23,391, as compared with the previous high of 22,940 for fiscal 1960. The number of TV antenna proposals processed increased from 763 in fiscal 1960 to 1,555, due principally to translator stations.

Interim Ship Licensing

As a convenience to ship radiotelephone users, field offices issue interim licenses which are valid until a regular license is received or for a maximum period of 6 months. In 1961, 13,778 applicants took advantage of this service, which was an increase of 14 percent over the previous year. The only requirement for issuance of an interim license is for the applicant to appear at a field office in person with a completed application. This personal contact between the FCC field engineer and the licensee provides an opportunity to outline the operating rules and explain the need for restraint in communicating on the crowded ship radiotelephone frequencies.

Commercial Radio Operator Licensing

In general, all persons operating transmitters of radio stations must, according to law, be licensed. Transmitter operators of sta-

tions other than amateur are classed as commercial radio operators. The licensing of these operators is a field function. Field offices issue seven classes of commercial licenses. Six classes are issued on the basis of examination and are renewable at the end of 5 years. The remaining license is of limited scope. Operator examinations are conducted both at field offices and at 56 other points as the needs indicate. The places and times the examinations are given are published semiannually.

The U.S. citizenship requirement was waived on 765 occasions for alien aircraft pilots, and operator licenses were issued which permit them to operate radio stations on aircraft in this country in connection with their piloting duties.

The Commission amended section 13.12 to make it clear that the 1 year's previous service required of candidates for a radiotelegraph first-class operator license shall have been in the handling of public correspondence. Disciplinary action was taken against 16 operators by suspending their licenses for appropriate periods. Examination questions were revised and a more rapid grading process was put into effect.

Operator Licensing Security Program

The Commission, in determining whether applicants for commercial radio operator licenses are qualified, also inquires into character qualifications. The applications call for information as to any previous criminal record in the nature of a felony. Also where the facts warrant, the Commission on a case-by-case basis inquires as to membership in subversive organizations.

Interference Elimination

The elimination of interference to authorized radio services as well as to broadcast reception continues to be a major field service item. For the first time, the Commission issued show-cause orders against owners of two TV sets interfering with an invalid neighbor's radio reception.

In addition to interference from receivers, and interference from radio signals, interference is caused by a myriad of electronic devices.

The latter include noncommunication apparatus which employs radiofrequency energy for heating plastics, gluing wood, welding metals, removing superfluous hair, and curing body pains. Some of this equipment operates with power exceeding that of radio transmitters with which it is capable of interfering.

The Communications Act does not give the Commission authority to control the manufacture and possession of this equipment. Hence, unwary or unscrupulous prospective users obtain equipment which

is capable of emitting radio energy that may disrupt regular radio service. The only recourse the Commission has is to regulate use. Hence part 18 of the Commission's rules regulates emissions of industrial, scientific, and medical equipment. These rules require the user to take steps to eliminate any interference by placing the equipment in a shielded room and to filter the powerlines into the room to prevent the escape of radiation unless the equipment is capable of remaining on certain frequencies assigned for its use. It is further required that the installation be inspected by a qualified technician and certified by him that it complies with the FCC rules.

By far the most troublesome apparatus is the industrial heating equipment, particularly dielectric heaters used in fabricating sheet plastics into such items as raincoats, pocketbooks, shirt collar stays, briefcases, and a variety of novelties. The businesses that employ these machines range from large manufacturers to small producers in loft buildings in the most congested metropolitan areas. The manufacturer may not suspect that the introduction of a machine into his plant for processing shirt collar stays might jeopardize the safety of aircraft. Recognizing the seriousness and magnitude of the problem, the Commission has attacked it in several ways with increasing effectiveness.

In an effort to head off prospective users from placing such equipment in operation without complying with the Commission's rules, releases have been furnished trade journals and conferences held with industry organization in an effort to educate potential and existing users. Responsible industry representatives, now aware of the seriousness of the problem, are assisting the Commission in alerting the businesses involved.

Through cooperation with the Federal Aviation Agency, Commission engineers have been making flights over industrial centers in specially equipped FAA planes. The investigator aloft notes a location of highest signal intensity and relays this information by radio to other investigators on the ground who then approach the area and seek out the offending plant by conventional means.

Other devices which cause interference to radio communication include razors, germicidal lamps, toy broadcast kits, power transformers, a special truck ignition system, a wide variety of radio control devices, and even radiating TV and radio receivers. Although these items generally do not jeopardize safety, they are a potential threat to radio transmission and reception.

It would be impossible for the limited field staff to investigate every complaint of radio interference. Many of these complaints result

from defects in the complainant's own receiver or electrical device. Because of the widespread nature of interference, the Commission has encouraged the formation of self-help groups to solve routine cases.

The following user groups help to combat interference:

Cooperative Interference Committees (CIC), 36 in operation, composed of engineers, industry executives, Government officials, and others interested.

Television Interference Committees (TVIC), 618 in number, representative of amateur radio operators, radio and television repairmen, and others.

Induction and Dielectric Heating Subcommittee of the Electric Heating Committee of the American Institute of Electrical Engineers, which studies problems of industrial heater installations with the view of developing improved methods of measuring radiation.

Radio Interference Committee of the Society of the Plastics Industry, Inc., which recommends to the users methods of reducing plastics heater interference.

Joint Industry Committee on High Frequency Stabilized Arc Welders of the National Electrical Manufacturers Association, which aids users of radiofrequency welding devices to control interference.

Power companies have also been cooperative in maintaining their lines and stations in good repair and in providing operating crews to hunt down interference originating in their systems.

Marine radio operating organizations work to improve operating practices and promote compliance with the marine radio telephone rules. Examples are the North Pacific Council, the Southern California Marine Radio Council, the National Party Boat Alliance, and the Texas Shrimp Association.

Long-Range Direction Finding

In addition to maintaining round-the-clock vigilance against illegal radio operations, the FCC long-range direction-finding net is an indispensable instrument in locating sources of interference. Because of the congestion of signals, interference has become a particular problem in the high-frequency spectrum. In many cases complex emissions without identifying call signs are used, and spurious emissions are often involved which can be located only through long-range direction finding. Requests for assistance in locating sources of interference were received from commercial companies, military and civil government agencies, airlines, satellite trackers, and the general public. The following cases were typical:

The FCC monitoring station in Hawaii received a request from the Army for assistance in identifying interference caused by a station

using both short-burst transmissions and a steady unmodulated signal. The monitoring net, by direction finder bearings and observation of the signal, determined that the interference was from a station in Peru, which was operated in connection with a research project.

The satellite trackers of the National Aeronautics and Space Administration made an urgent call to the FCC monitoring station at Powder Springs, Ga., reporting that interference was knocking out reception of transmissions from Iota 1. The Kingsville, Tex., monitoring station had already alerted the monitoring net on the same signal. Direction finder bearings, backed up by synchronized monitoring observations, identified the source to be a transmitter near Madrid, Spain. Another case of interference to Iota 1 was traced to a commercial station in the Netherlands.

The Livermore, Calif., monitoring station received a report from Mackay Radio in San Francisco that severe interference was being experienced to reception of its signals at Tokyo. Bearings from the direction finder net placed the source of interference also at Tokyo. Monitoring observations further pinpointed it on a particular Tokyo transmitter.

Sea/Air Rescue

The direction-finding net was called upon to fix the positions of distressed planes and ships over areas ranging from Alaska and Hawaii to mid-Atlantic. The following examples are typical:

> The Air Force reported that an aircraft engaged in a satellite cone-catch mission had run low of fuel and was in urgent need of a position check. A fix was furnished, placing the plane just off the southern tip of the island of Hawaii, and 10 minutes later the pilot sighted land.
>
> Another Air Force request involved an aircraft off the Atlantic coast. The navigational instruments on the plane were reportedly defective. During the ensuing 3 hours, four fixes were furnished which enabled the craft to land.
>
> An aircraft bound for an island in the Caribbean Sea reported to the Coast Guard that one of the engines was failing, the plane was losing altitude, and ditching appeared inevitable. The Coast Guard notified the FCC and the latter furnished two fixes which showed that the plane was off course. The pilot changed course and a Coast Guard plane led it to a safe landing.

Though not exactly a "rescue" operation, the FCC in January 1961 located the Portuguese liner *Santa Maria* which was hijacked on the Atlantic and furnished fixes which enabled the Navy to follow up with sea, air, and radio contacts. It was while patroling the radio spectrum that the monitoring net first heard signals from the seized

ship and interception of subsequent messages made it possible to follow its course.

Contractual Services for Federal Agencies

The field bureau continued to furnish special technical services for various Federal agencies and certain foreign governments. These services included field strength recording, monitoring, tracking, and direction finding in connection with transmissions from high-altitude weather balloons, cargo or manned balloons, and hurricane-detection buoys for the purpose of collecting scientific data and, in certain instances, the training of foreign students or officials in the techniques of setting up and using monitoring, direction finding, and other related equipment. The cost of these services for fiscal 1961 exceeded $200,000, for which the Commission was reimbursed.

OTHER FIELD ACTIVITIES

Miscellaneous field activities included meetings with citizens groups in the West to assist them in establishing TV translator stations in isolated communities, promoting organization of cooperative committees to handle local interference problems, collecting data for Government agencies through observation and analysis of monitoring and inspectional information, furnishing the Commission with technical data for its rulemaking and frequency allocation proceedings, and making observations and measurements of a variety of special transmitting tests by licensees of new or proposed radio techniques.

Although no monitoring stations were relocated to new sites during the year, improvements were made to the buildings at a number of these stations.

Some progress was made in modernizing the technical equipment both at monitoring stations and field offices, but a lack of modern monitoring and measuring equipment still hampers field surveillance and enforcement functions. Modern instrumentation is costly and the electronic art is developing at an ever-increasing pace. In many cases field engineers must use pre-World War II equipment. Because of limited funds, a number of field installations share specialized instruments. Advantage is taken, where possible, of equipment available through the Federal property disposal program. However, equipment discarded by other agencies does not meet FCC's need for modern precision measuring and monitoring apparatus. Field engineers and technicians continue to design and construct specialized equipment of types which cannot be obtained from commercial sources.

FIELD ENGINEERING OFFICES AND MONITORING STATIONS

A list of field engineering district offices and monitoring stations follows:

1_____ 1600 Customhouse, Boston 9, Mass.
2_____ 748 Federal Bldg., New York 14, N.Y.
3_____ 1005 New U.S. Customhouse, Philadelphia 6, Pa.
4_____ 415 U.S. Customhouse, Baltimore 2, Md.
5_____ 402 Federal Bldg., Norfolk 10, Va.
6_____ 718 Atlanta National Bldg., Atlanta 3, Ga.; (suboffice) 214 Post Office Bldg., Savannah, Ga.
7_____ 312 Federal Bldg., Miami 1, Fla.; (marine office) 201 Spradlin Bldg., Tampa 6, Fla.
8_____ 608 Federal Bldg., New Orleans 12, La.; (suboffice) 419 U.S. Courthouse and Customhouse, Mobile 10, Ala.
9_____ 326 U.S. Appraisers Bldg., Houston 11, Tex.; (suboffice) 301 Post Office Bldg., Beaumont, Tex.
10_____ Room 401, States General Life Insurance Bldg., Dallas 2, Tex.
11_____ 849 South Broadway, Los Angeles 14, Calif.; (suboffice) 1245 Seventh Ave., San Diego 1, Calif.; (marine office) 356 W. 5th St., San Pedro, Calif.
12_____ 323–A Customhouse, San Francisco 26, Calif.
13_____ 201 New U.S. Courthouse, Portland 5, Oreg.
14_____ 806 Federal Office Bldg., Seattle 4, Wash.
15_____ 521 New Customhouse, Denver 2, Colo.
16_____ 208 Federal Courts Bldg., St. Paul 2, Minn.
17_____ 3100 Federal Office Bldg., Kansas City 6, Mo.
18_____ 826 U.S. Courthouse, Chicago 4, Ill.
19_____ 1029 New Federal Bldg., Detroit 26, Mich.
20_____ 328 Post Office Bldg., Buffalo 3, N.Y.
21_____ 502 Federal Bldg., Honolulu 13, Hawaii
22_____ 322–323 Federal Bldg., San Juan 13, P.R.
23_____ 53 U.S. Post Office and Courthouse Bldg., Anchorage, Alaska; (suboffice) 6 Shattuck Bldg., Juneau, Alaska
24_____ Room 106, 718 Jackson Place N.W., Washington 25, D.C.

Primary Monitoring Station	*Secondary Monitoring Station*
Allegan, Mich.	Searsport, Maine
Grand Island, Nebr.	Spokane, Wash.
Kingsville, Tex.	Douglas, Ariz.
Canandaigua, N.Y.	Fort Lauderdale, Fla.
Santa Ana, Calif.	Ambrose, Tex.
Laurel, Md.	Chillicothe, Ohio
Livermore, Calif.	Anchorage, Alaska
Portland, Oreg.	Fairbanks, Alaska
Powder Springs, Ga.	
Waipahu, Hawaii	

STATISTICS

Field engineering statistics for fiscal 1961 in comparison with 1960 follow:

Field inspection statistics

Stations	United States		Foreign	
	1960	1961	1960	1961
Ship				
Authorized stations:	91,351	103,835		
Compulsory:				
Inspections	4,533	3,936	94	147
Violation notices	4,017	4,896		
Certificates issued	3,020	2,271	71	97
Voluntary:				
Inspections	1,657	1,258		
Violation notices	1,102	1,132		
Broadcast				
Authorized stations	11,179	13,845		
Inspections	1,518	2,774		
Violation notices	980	2,657		
Other radio services [1]				
Authorized stations	333,684	433,370		
Inspections	6,592	3,552		
Violation notices	2,622	1,542		

[1] Includes aircraft, but excludes ship, broadcast and amateur.

Investigative statistics

	1960	1961	Increase or (decrease)
Interference complaints received by FCC:			
Interference to monochrome TV	19,049	23,029	3,980
Interference to color TV	56	83	27
Interference to aural broadcast	2,561	2,767	206
Interference to other services	2,319	2,858	539
Total	23,985	28,737	4,752
Interference investigated by FCC	15,658	16,499	841
Other investigations by FCC	999	1,313	314
Total	16,657	17,812	1,155
Number of Cooperative Interference Committees	34	36	2
Number of TV Interference Committees	561	618	57
Total	595	654	59
Unlicensed operations in violation of the Communications Act	450	247	(203)
Indecent language cases	40	23	(17)
Unauthorized divulgence of radio communications cases	16	10	(6)

Monitoring statistics

	1960	1961	Increase or (decrease)
Source and number of major interference complaints:			
U.S. military agencies	628	578	(50)
Civil Government agencies	122	143	21
Commercial companies	675	798	123
Foreign governments	4	2	(2)
Total	1,429	1,521	92
Monitoring net alerts	8,230	7,983	(247)
Direction finder bearings:			
Case bearings	50,128	46,787	(3,341)
Search and rescue bearings	1,784	820	(964)
Total	51,912	47,607	(4,305)
Cases monitored and developed:			
Major:			
Interference	1,429	1,521	92
Noninterference	420	456	36
Minor:			
Interference	4,472	4,625	153
Noninterference	8,300	8,092	(208)
Total	14,621	14,694	73
Survey cases	21	17	(4)
Contractual cases for other Government agencies	6	4	(2)
Signals identified and indexed	96,482	90,514	(5,968)
Monitoring reports to IFRB:			
FCC	39,921	42,527	2,606
Commercial companies (via FCC)	50,130	42,313	(7,817)
Total	90,051	84,840	(5,211)
Monitoring observers participating in training program	101	107	6
Citations:			
FCC licensees (including marine watch)	11,692	8,296	(3,396)
U.S. Government	657	435	(222)
Foreign governments	5,606	4,419	(1,187)
Total	17,955	13,150	(4,805)

Commercial radio operator licenses

Class of license	Outstanding June 30, 1960	Outstanding June 30, 1961	Increase or (decrease)
Radiotelegraph:			
1st class	7,018	8,438	1,420
2d class	10,434	12,344	1,910
3d class	2,258	2,771	513
Radiotelephone:			
1st class	76,235	102,981	26,746
2d class	57,254	79,159	21,805
3d class	59,119	85,993	26,874
Restricted permits [1]	1,734,950	1,990,462	255,512
Total	1,947,368	2,282,148	334,780

[1] This class of license, normally issued for the lifetime of operator, includes 765 permits issued for a term of 1 year or less to alien aircraft pilots.

Applications processed by Antenna Survey Branch

Services	Pending July 1, 1960	Received in ASB	Cleared by ASB	Pending June 30, 1961
Broadcast:				
AM	103	544	553	94
FM	17	382	371	28
TV	47	1,588	1,555	80
International	1	0	1	0
Experimental	0	33	33	0
Total broadcast	168	2,547	2,513	202
Common carrier	48	1,163	1,140	71
Safety and special radio	1,348	19,281	19,738	891
Grand total	1,564	22,991	23,391	1,164

Proposals referred to Federal Aviation Agency for special aeronautical study

Services	Pending at FAA July 1, 1960	Sent to FAA during year	Received from FAA during year	Pending at FAA June 30, 1961
Broadcast:				
AM	66	128	152	42
FM	4	44	37	11
TV	28	68	70	26
International	0	0	0	0
Experimental	0	1	1	0
Total broadcast	98	241	260	79
Common carrier	5	76	54	27
Safety and special radio	80	487	466	101
Grand total	183	804	780	207

Research and Laboratory

NEW YORK UHF–TV STUDY

With money appropriated on a 2-year basis for this special purpose, the Commission is conducting a research project in New York City to study the technical and economic feasibility of using UHF channels to provide satisfactory TV coverage to a large metropolitan area. From this test should come answers to some of the questions concerning the future of UHF operation.

The project is under the direction of the Commission's Chief Engineer who is assisted by a special unit. Industry participation in the planning is provided by advisory committees in transmitting, receiving, observations and measurements, analysis, and other phases.

The work is being done largely on a contract basis. A high-powered UHF–TV transmitter has been installed on the Empire State Building. This location was selected in order to compare results directly with those obtained from the VHF stations whose transmitters are grouped atop that building. New York City has contracted to operate the station under FCC supervision. It will rebroadcast over channel 31 selected programs broadcast by the VHF stations in that city, also educational programs provided by the New York State Board of Regents. Test station WUHF is now in operation.

Initial tests will be with a temporary antenna with a directional beam pointed in a northerly direction. With this antenna, comparisons will be made between circular and horizontal polarization of signals. After these initial tests the main antenna will be installed which will provide an essentially omnidirectional pattern so as to serve in all directions.

Observations will be made of the signal from the test UHF station and comparison observations on the VHF signals. This will be done by use of receivers placed at selected locations within 25 miles of the Empire State Building to provide an accurate sample of reception in the New York area. Some receivers will be used at 1,000 locations for short periods of time, and other receivers will be moved about at 4,000 other locations.

At all locations observations and measurements will be made to determine the availability and quality of the signals received on both UHF and VHF. Other measurements and observations will be done with mobile equipment not only within a 25-mile radius but also in areas beyond that distance.

It is also planned to measure signal strength of the test UHF transmitter and a low VHF transmitter and a high VHF transmitter—all on the same building—at three different distances between that city and Laurel, Md. (location of the FCC laboratory).

In the future, the Commission expects to use propagation data derived from the New York project for cross-polarization, multicasting, and miscellaneous VHF–UHF field strength comparison studies.

OTHER TECHNICAL RESEARCH

VHF and UHF Propagation Research

The Commission requires information concerning the propagation characteristics of radio waves to enable it to determine more accurately the optimum spacings between stations and the extent of useful service that stations can provide. For this purpose, specialized field strength measurement programs are continually being conducted and the resultant data analyzed. Eventually, the results are made available in FCC technical reports and studies.

During the fiscal year, field strength recordings were made on 12 TV and FM stations by 6 FCC monitoring stations. Five of these projects were terminated and the others are still active. Technical Research Report No. 2.4.18 describes and summarizes the results of various field strength measurements. Subsequent reports will be issued as more data are processed.

Work continued on revision of the existing high band VHF propagation curves. This was undertaken in collaboration with the Radio Propagation Advisory Committee, which is composed of industrial and governmental experts in that field. As a result, a new set of propagation curves for both the high and low VHF bands was released in connection with proposed shortened spacing between TV stations. The Commission intends to issue a background report describing these curves.

Another activity dealing with VHF–UHF propagation is that of developing methods for the prediction of field strengths over specific terrain. Detailed profiles of signal transmission paths involving the use of topographic maps and correlating field strength data with terrain features have been prepared. Progress has been made in developing methods for field strength prediction over unobstructed line-of-sight paths. However, much remains to be done before a sufficiently accurate method of prediction applicable to all types of terrain is realized.

New studies on the efficiency of TV station allocations were made. They incorporate new information on propagation and equipment development such as precision offset and digital TV. Stated briefly, "precision offset" means that a TV signal is set precisely to a frequency

having a specific relationship to the frequency of other signals on the same channels. By maintaining this precise relationship, mutual interference is reduced. "Digital TV", still in the experimental stage, is a new system for transmitting video information and, like precision offset, also offers the prospect of more efficient use of the radio spectrum.

Sunspot Cycle Recording Project

This project was completed to cover two 11-year sunspot cycles. A considerable amount of data have been processed, and field strength distribution curves obtained for the various paths of recording. No substantial progress was made toward issuing a covering report because of more pressing problems.

Technical Standards for Equipment

The Commission studied and recommended technical standards for several types of equipment for the various radio services. These included revised spurious emission limitations for equipment used in the public safety, industrial, land transportation, citizens, aviation, and domestic public land services; standards for single sideband equipment in the aviation services; standards for equipment in private microwave systems; and standards for FM stereophonic broadcast transmitters.

Stereophonic Broadcasting

Technical standards were adopted which enable FM broadcast stations to transmit stereophonic programs using multiplex techniques. The system chosen, selected after study of the relative merits of many proposals, permits simultaneous transmission of subsidiary "stereo" programs. Under this system, reception of such programs by conventional (monophonic) receivers suffers some impairment in signal-to-noise ratio, but this is so slight as to be virtually unnoticeable.

A significant contribution of stereo information was made by the National Stereophonic Radio Committee (NSRC), which was organized in 1959 by the Electronic Industries Association (EIA) to compile data on all aspects of that subject, including field testing.

FCC consideration must yet be given to several proposals to permit stereophonic transmission by AM and TV stations.

Equipment Type Acceptance

The primary objectives of the Commission's type acceptance program are the reduction of interference possibilities from transmitters and the consequent more efficient use of the spectrum. Additionally, the type acceptance program has speeded the processing of applications and provides the prospective licensee a reasonable assurance that

his proposed transmitter is capable of meeting the Commission's technical standards.

Although the major portion of type acceptance applications are for radiotelephone transmitters in the safety and special services, type acceptance is also applicable to transmitters in the common carrier and broadcast services and, during the year, was extended to include TV translators, FM stereophonic transmitters, microwave transmitters in the safety and special services, and single sideband transmitters in the aviation services. Lists of type accepted and type approved equipment are available for public reference at the Commission's field offices as well as its Washington office.

Type acceptance statistics follow:

	Equipment type accepted as of June 30, 1961	Increase since June 30, 1960	Total manufacturers as of June 30, 1961	Increase since June 30, 1960	Power range	Frequency range in megacycles
TV broadcast	85	37	14	9	0.05 to 100 kw	54 to 890.
Aural broadcast	325	34	20	2	0.01 to 50 kw	0.54 to 108.
Nonbroadcast	2,082	193	173	25	0.02 w to 100 kw	0.20 to 13,200.
Total	2,482	264	207	36	0.01 to 100 kw	0.20 to 13,200.

Single Sideband Communication

For several years, the Commission has worked toward the adoption of single sideband operation for voice communications on frequencies below 30 Mc. This technique requires only one-half the bandwidth of AM systems and one-eighth of the power for equivalent communication performance.

Actual use of this technique is commonplace in the International Fixed Public Service, and is contemplated in the mobile services, principally aviation and maritime. Following proposed rulemaking and thorough coordination with Government, international and industry committees, final rules for single sideband were adopted for the aviation services. Similar action is contemplated for the maritime services. Consideration is also being given to proposals for use of a single sideband technique for AM broadcast.

Radiofrequency Devices

Regulation of radio frequency (RF) devices includes control of unlicensed equipment capable of emitting radiofrequency energy which might interfere with operations of licensed radio stations.

Part 15 of the Commission's rules governs radio receivers which have small built-in RF generators capable of radiating energy; low-power communication devices such as wireless microphones, phonograph os-

cillators, remote control devices, community antenna TV systems, and incidental radiation devices which, although not designed to generate RF energy, radiate interfering signals as a byproduct of their operation. Incidental radiation devices include fluorescent lights, automotive ignition systems, electrical motors, circuit breakers, switches, etc.

Part 18 of the rules relating to Industrial, Scientific, and Medical (ISM) Services contains and governs RF stabilized arc welders, apparatus used for medical diathermy and industrial heating, ultrasonic equipment, and other related equipments.

Parts 15 and 18 provide for the operation of this diverse apparatus on the premise that those which comply with the regulations will not be significant sources of interference. The rules, accordingly, list frequencies that may be used, and radiated field levels that may not be exceeded, while part 18 lists seven frequency bands on which unlimited radiation is permitted.

The rules set out two procedures to achieve technical compliance. Type approval by the Commission, after testing in its laboratory, is available for medical diathermy and a few other types of miscellaneous equipment operated under part 18. Most other parts 15 and 18 equipment must be tested and certified that it is in compliance. Operation of equipment which is not type approved or certificated is a violation of the rules.

Unfortunately, the requirement for a certificate applies to the user—who is seldom in a position to make the necessary tests. The Commission has therefore sought the cooperation of manufacturers to make the necessary certification. This is particularly important in the case of broadcast receivers, and a program to publicize the requirement was started. A public notice was issued urging the public not to purchase TV or FM receivers that do not bear a certification seal. In addition, rules were proposed to specify the details of the receiver compliance seal for easier identification by the public.

The rules relating to certification of industrial (RF) heating equipment were amended to require use of a standard form (FCC Form 724). This form requires the owner of the equipment to certify that it has been installed and will be operated in accordance with the rules.

As part of its program to acquaint both users and manufacturers of requirements relating to RF devices, the Commission issued various public notices, conferred with Japanese and German receiver manufacturers, and participated in an industrywide survey on distribution and use of miniature transmitters; also continued to cooperate with industry in seeking more simplified and less expensive measurement procedure for certifying industrial heating equipment.

Under the law, the Commission has no authority over manufacturers of radio apparatus. Its control extends to users only. The survey on

miniature transmitters disclosed that at least three firms were marketing equipment which is not legally usable. The only recourse open to the Commission is to seek voluntary cooperation of the manufacturers.

Experimental Radio Services

The Communications Act charges the Commission with fostering experimental uses and generally encouraging the more effective use of radio.

The Commission's enabling rules (part 5), provide for: (1) basic research in all phases of radio, (2) communications essential to such research, (3) development of new radio techniques and services, (4) development of equipment under Government contracts, (5) development of equipment for use in established radio services, and (6) demonstration of equipment for various purposes.

A variety of research projects are being conducted in the Experimental Radio Services. Radio wave propagation and studies of new modes of communications are continuing. Wide-band, low-energy-level systems give promise of more efficient spectrum utilization. Some of these tests have superimposed low-energy communication on broad bands of frequencies, which are already saturated with high-energy narrow-band services, without causing apparent interference.

New developments in radionavigation and radiolocation give promise of resolving some difficult frequency allocations problems. These involve radiolocation, speed measurements, distance measurements, and radio surveying devices. For the most part these new devices utilize frequencies in the UHF range. A general shift to UHF will go a long way toward relieving crowded conditions in the lower frequency ranges. Experimental licensees are conducting fundamental research in the previously unused frequency bands from 40,000 to 90,000 Mc. At these frequencies, the wavelength is only a fraction of 1 centimeter. Hence, researchers are now pushing their investigations up toward the infrared end of the spectrum.

Several new automatic distress transmitters have been built for greater safety and faster aid both at sea and on land. Collision avoidance techniques for automobiles and trucks are being perfected, and at least one automatic electronic guidance system for high-speed autombile travel has been tested.

Many experimental applications for authorizations to operate radio tracking devices and the telemetering of data in connection with rockets have been received by the Commission. Most of them are from large research laboratories; however, a surprising number were submitted by teenagers and amateur rocket societies. Owing to danger to aeronautical travel as well as to life and property in general, only those rocket experiments which are supervised by military authorities have been encouraged.

Subpart H of the experimental rules provides for the issuance of authorizations to students of seventh grade or higher for the purpose of presenting experiments or technical demonstrations in school projects which require the use of radio for a brief period of time. These provisions are taken advantage of by technically minded students who wish to compete for scholarships in science fairs and similar activities. In this way, the Commission encourages and assists junior radio and electronic scientists.

Colleges, universities, and research and development laboratories are being licensed to carry out a variety of new developments. Many of these experimental licensees are operating under contractual agreements with the military and other Federal agencies. In many cases, these developmental operations involve multimillion dollar projects, and some are of importance to the security of the Nation.

During the past year, 1,128 formal and 330 informal experimental applications were received. At its close, 757 such authorizations were outstanding.

The biggest difficulty in processing experimental applications is to find frequencies for such purposes. There are no exclusive frequencies available for experimentation below 40,000 Mc. Accordingly, all experimental work on lower frequencies must be on frequencies shared with existing radio services without causing harmful interference.

Fortunately, technological developments promise to maintain an "even break" for the experimenter. Greater efficiency in frequency usage is being accomplished through long-range planning and utilization. The development of narrow-band communication methods has helped. High-speed data transmission systems are replacing slower methods of the past. More and more communication at higher and higher speeds is demanded in this electronic age. And the "ceiling" of the radio spectrum is being pushed steadily upwards as new apparatus and techniques are developed to utilize higher and higher frequencies.

LABORATORY

A part of the office of the Chief Engineer is the laboratory, located near Laurel, Md. Here a small staff makes tests of communication systems, and devices capable of interfering with communication, in connection with various FCC programs. A considerable amount of laboratory work is to assist the Commission to evaluate equipment and methods and formulate technical rules.

Studies of Systems and Devices

During the year, the laboratory participated in studies looking to extensions and improvements of broadcasting, including field ob-

servations of industry tests of competing FM "stereo" systems, field observations of airborne educational TV experimentation, tests of a system of transmitting sound in the TV picture signal for emergency use by stations in case of failure of network sound facilities, and studies of characteristics of modern UHF–TV sets to learn whether some restrictions on assignment of particular combinations of UHF channels may be relaxed. Observation was made of the effects of an experimental on-channel TV booster operation at Johnstown, Pa.

Laboratory studies were made of the interference which may be caused by the use of a new type of loudspeaker (Ionovac), which uses a substantial amount of radio energy to create sound waves through ionization of the air. Tests were made of a device which might be used to provide automatic call-sign identification of certain classes of stations, such as small boats, to aid the monitoring effectiveness of the Commission. The proposed use of small "handie-talkie" transmitters in the 72–76-Mc band was studied. Here there is a problem of interference with the adjacent TV channels 4 and 5 because of characteristics of typical TV sets.

The laboratory synthesized for the Commission a demonstration of the effects on two-way telephone conversations caused by time delays which will occur when such conversations are carried over space satellite relay stations.

Radio Propagation

The laboratory provides the equipment techniques and performs calibrations of the field strength recorders located at several of the FCC monitoring stations. These recorders are part of the Commission's long-range program of acquiring radio propagation data for use in efficient allocation of frequencies. A recorder was installed at Allegan, Mich., to make use of UHF–TV signals broadcast from the airborne educational demonstration over Indiana. Tests were continued to determine whether there are propagation effects which might preclude the ultimate use of "very precise" offset between carrier frequencies of cochannel TV stations.

Development of New Equipment and Techniques

A power-measuring system was developed for use by FCC field engineers in checking TV translator stations. FCC-developed spectrum occupancy recorders have been in daily operation at Commission facilities at Laurel, Md., and in Kingsville, Tex. A third recorder is under construction. The laboratory is participating in a study of the specifications for CONELRAD alert transmissions by broadcast stations. This has included observation and measurements of present CONELRAD transmissions, and development of a completely auto-

matic sender. Twenty of the automatic senders have been built and are undergoing trial by stations in the Washington area.

Calibration of Measuring Equipment

The laboratory repairs and calibrates measuring equipment used by field engineers; also its own equipment. During the year calibrations were made of 10 standard signal generators, 14 field strength meters, 1 noise figure meter, and 1 directional coupler—used in the FCC field offices—and 6 signal generators, 4 field strength meters, 2 decade attenuators, and 1 vacuum-tube volt meter, used by the laboratory.

Type Approval

Type approval tests are made by the laboratory on prototypes submitted by manufacturers. If the tests indicate compliance, the type approval will cover all identical units made by the manufacturer. The type approval procedure applies to certain noncommunication devices which are potential sources of interference. These include medical diathermy and ultrasonic equipment, epilators, neon signs, electronic ovens, and commercial ultrasonic units. Also type approved are modulation and frequency measuring equipment used by broadcast stations. Ship telegraph transmitters, lifeboat transmitters, and automatic alarm receivers—all required for safety of life at sea—are laboratory tested to assure reliability of operation. TV translators, which formerly were type approved, were changed over to the type acceptance procedure during the year. Under type acceptance, the tests of a prototype unit are conducted by the manufacturer and the results submitted by him to the FCC.

Following is a summary of type approval testing activity during the fiscal year:

Class of equipment	Number of submissions for test	Number of type approvals granted	Class of equipment	Number of submissions for test	Number of type approvals grants
Shipboard radiotelegraph transmitter	2	2	Medical diathermy	3	0
Shipboard radar	9	9	Medical ultrasonic	4	1
AM broadcast monitor	1	1	Ultrasonic cleaner	1	0
			Epilator	14	13

Improvement and Coordination of Measuring Methods

The laboratory participated in continuing activities of various professional and governmental bodies looking to improved standard methods of measurement and measuring instruments. Experimental work sought to correlate measurements of spurious emissions performed according to different specifications at various distances from the device under test.

Frequency Allocation and Use

NATIONAL FREQUENCY ALLOCATIONS

During the year the Commission made several changes in national frequency allocations to help to accommodate the ever-increasing needs of users of the radio spectrum. Still more extensive changes were proposed in order to align the national frequency allocations table, to the extent practicable, with the international table contained in the Geneva (1959) radio regulations. This Geneva pact, along with the 1959 Geneva international telecommunications convention, was approved by the Senate on September 25, 1961.

National allocation changes included restoration of bands at 46 and 49 Mc for land mobile use by the Public Safety and Industrial Radio Services. These frequencies previously had been allocated to the Aeronautical Fixed and International Fixed Public Services for use in international communication employing forward propagation by ionospheric scatter (FPIS), but need for that allocation was not supported by subsequent developments.

The band 10,000–10,500 Mc was made available for low-power electronic survey equipment in the radiolocation service; certain frequencies were reserved for the new air-ground public telephone service; rulemaking proceedings were instituted to consider the desirability of assigning frequencies for the control of traffic lights; proposal was made to establish an Aviation Terminal Service and an Industrial Protection Service; and controversial proposals are outstanding to halve the separation between assignable frequencies for the land mobile services in the 450–470-Mc band.

INTERNATIONAL FREQUENCY ALLOCATIONS

The rapidly expanding requirements of the space age have necessitated a concentrated effort on the part of the Commission and the Office of Civil and Defense Mobilization (OCDM), through its Interdepartment Radio Advisory Committee (IRAC), to develop the initial views of the United States with respect to changes to the international table which appear necessary to accommodate the world's frequency requirements for the various facets of space radio communication.

The Geneva Administrative Radio Conference (1959) allocated narrow bands of frequencies for earth-space and space services, but

limited their use to research purposes only. This action was predicated on the fact that too little was known about the future operational requirements of this new medium of communication to warrant specific allocations at that time. Recognizing, however, that the need for international agreement on frequencies to meet such requirements might become urgent before the next regular Administrative Radio Conference is convened, the 1959 session recommended that an Extraordinary Administrative Radio Conference be held during the latter part of 1963 to treat this matter.

The Commission, in anticipation of such a conference, initiated an inquiry (docket 13522) to elicit public comment on the foreseeable frequency requirements for space radio communication. Based on the replies received and on parallel studies of Government requirements made by OCDM and IRAC, the Commission issued a second notice in the same inquiry asking public comment on the preliminary U.S. views. Having received these comments, it is the Commission's intention to again consult with the OCDM and IRAC to determine mutually agreeable modifications necessary to the initial views, and to transmit the resultant document to the Department of State with a recommendation that the reaction and comments of foreign administrations be solicited. (See also chapter on "Space Communication.")

INTERNATIONAL CONFERENCES AND MEETINGS

Although the Department of State has the primary responsibility for U.S. participation in international telecommunication conferences, the FCC is directly involved in these meetings. The Commission is charged with carrying out domestically the provisions of the various international conventions, treaties, and agreements, and participates in the preparatory work of formulating the U.S. position for each. In addition, it provides delegates and advisers to the U.S. delegations. This is important to the Commission's licensees as the use of radio and international rights of radio stations are directly affected by the actions taken or agreements reached at the international meetings.

The next major world telecommunication conference is tentatively scheduled for 1963, at Geneva. Its primary purpose will be to consider proposals relating to space frequency allocations, including communication between space vehicles, and between space vehicles and ground stations.

During fiscal 1961, the Commission, under Department of State auspices, prepared for 15 international sessions, including 9 multilateral conferences, some of which entail continuing followup work. To these meetings the Commission furnished 3 delegation chairmen, 1 vice chairman, and 38 other delegation representatives.

INTERNATIONAL FREQUENCY COORDINATION

The need for more assignable radio frequencies for both global and domestic communication continues to grow at a rapid rate as more and more stations come into existence and established stations expand their operations. New frequencies must be found in the already badly overcrowded radio spectrum to meet this growth without causing harmful interference. This effort requires cooperation among the various users of radio. The 1959 Geneva radio conference recognized the problem and initiated a study by a panel of experts of measures to reduce congestion in the bands between 4 and 27.5 Mc.

Another international situation has developed which has a direct bearing on frequency coordination. The Geneva regulations provide for the elimination of notifications to the International Frequency Registration Board (IFRB) of stations, such as those of the land mobile service in bands above 28 Mc, except for entries indicating a typical operation for each frequency on which assignments have been made. This means the loss of international status previously accrued by such stations on the basis of their date of initial usage of a frequency. Consequently, it is more important than ever before to coordinate in advance the assignments of these stations with administrations whose current assignments may either cause or receive harmful interference.

The 1959 Geneva conference adopted the regional plans for frequencies below 4000 kc, plus the aeronautical and maritime mobile assignment plans for frequencies in the bands 2850–23,000 kc and 4000–23,000 kc, respectively, which originally were agreements reached at a 1951 Geneva conference. Fortunately, the maritime mobile plan adopted in 1959 is somewhat more flexible in that, in the case of coast stations, international status dating back to 1951 will be afforded only those assignments actually in operation on May 1, 1961. This means that assignments not provided for in 1951 may be worked into the bands without the risk of having to protect assignments activated subsequent to May 1, 1961. Since many of these new assignments will be capable of causing harmful interference to stations already in operation, frequencies will have to be chosen carefully and, in most instances, be coordinated with other governments. The necessity for coordination applies also to changes to existing assignments. This is particularly true in regions where changes could seriously affect U.S. stations.

The Commission's international frequency coordination program is especially important in the case of mobile and fixed operations in the common carrier, industrial, land transportation, public safety, and other similar services along the Canadian border in the 25–30-, 150–174-, 450–460-, and 4,000-Mc bands. The Commission and the Ca-

nadian Department of Transport have been following, since 1951, an informal frequency coordination procedure to obtain the comments of the other country before a new assignment is made in specified areas along the border. The success of this procedure is attested by the fact that only six interference cases occurred during the year in these bands, despite the many new operations authorized.

This informal coordination procedure with Canada is expanded from time to time to take care of new situations. It is anticipated that a new revision will be undertaken in the autumn of 1961 to provide for coordinating and protecting assignments above 28 Mc which are no longer reported to the ITU.

During fiscal year 1961, the Commission exchanged over 2,800 letters and telegrams with Canada, an increase of approximately 12 percent over 1960, all of which directly affected Commission licensees. As a result of the scarcity of frequencies free of harmful interference along the border and the new procedures made necessary by the 1959 Geneva conference, the number of exchanges between the United States and Canada is expected to increase.

INTERNATIONAL FREQUENCY NOTIFICATION

During the first part of the year, the Commission prepared for the entry into force of the new international radio regulations (Geneva 1959) on May 1, 1961, and, particularly, the establishment of the Master International Frequency Register (MIFR), pursuant to the Administrative Radio Conference (Geneva 1959).

Tabulations of frequency assignments and circular letters relating to various aspects of this work were received from the International Frequency Registration Board (IFRB) with the objective of furnishing the International Telecommunication Union (ITU) with more current and complete information on individual assignments.

The new Geneva regulations had to be reviewed, and administrative policies established, both for the preparation of the new master register and future activities. A new information manual was prepared for Government and industry users of the radio spectrum, instructing them in the proper submission of information necessary for international registration of their frequency assignments. Also, a review was made of U.S. ship assignment information requested by the ITU.

The year also marked the introduction of a new international procedure for using the bands allocated exclusively for high-frequency broadcasting, whereby schedules of such stations are notified to the IFRB for four seasonal periods of the year. These schedules were processed by the ITU and forwarded to all countries.

FCC work in this field is reflected in the fact that 78,880 applications were processed in fiscal 1961 as compared to 73,252 the previous

year, and there were 28,018 international notifications in 1961 as against 23,522 in 1960.

INTERNATIONAL INTERFERENCE AND INFRACTIONS

The Commission, as the contact betweeen foreign administrations and U.S. users of radio, is in constant communication with similar foreign regulatory agencies for purposes of resolving cases of harmful interference and reporting cases of infractions. This is of the utmost importance to ships and aircraft which depend upon radio for their operation and safety. Also, frequencies designated for distress or search and rescue communications must be kept clear for emergency use. Disruption of oversea communication can have a direct bearing on business transaction, as well as on Government messages carried over circuits leased from private operating companies.

Because of the difficulty of finding newly assignable frequencies, effort must be made to minimize interference on those frequencies now in use by the Commission's licensees and to protect their rights to use particular frequencies during the hours needed. Such interference cases cannot be handled on a general production-line basis, since the treatment required for one case may differ greatly from that required for another, depending upon the complexity of circumstances such as the relative rights of the stations involved and, frequently, the type of circuits used, radio propagation factors, and the availability of alternate frequencies. Furthermore, resolution of a case requires measures mutually satisfactory to both administrations. The technical problems concerned are coordinated at the Government regulatory level between the Commission and appropriate foreign technical officials. In some cases the assistance of the Department of State is solicited.

During the year, the Commission received approximately 350 requests for interference relief from its licensees and foreign administrations. Of these, some 300 were adjusted satisfactorily and correspondence with the foreign administrations involved continues on the remainder. The Commission referred to the appropriate agencies 85 complaints from foreign administrations involving U.S. Government radio stations. It collaborated, upon request, with those agencies in preparing replies to the respective governments. Over 1,400 pieces of correspondence were originated by the Commission in dealing with international interference problems.

The Commission exchanges with foreign administrations data on technical and operational deficiencies by radio stations noted during the course of monitoring. The purpose of this program is to keep the radio spectrum as free as practicable of unnecessary emissions.

A difficulty in administration is the fact that member countries of

the ITU do not all ratify conventions and regulations at the same time. This means that the examination of each infraction report must take into consideration only those treaties in force for each individual country to avoid any implication on the part of the United States that stations of foreign countries should observe regulations to which they are not a party.

The Commission prepared and forwarded to other administrations approximately 4,100 reports of improper technical and other operations by foreign stations during the fiscal year.

INTERNATIONAL FREQUENCY USAGE DATA

The Commission is one of the principal participants in the international frequency monitoring program. This program, in which 24 other governments also participate, furnishes the International Frequency Registration Board (IFRB) with data for publishing a monthly summary of monitoring information which is used for studying frequency occupancy over the spectrum range 2850 to 27,500 kc.

The summary is useful in resolving interference problems in which determinations must be made of usage dates, times, emissions, and other factors pertinent to the radio stations involved. Also, detailed studies of active assignments are carried out with the aid of these data in efforts to find additional usable frequencies. It serves also as a guide to determine if stations on the international frequency list are actually using their frequencies at the times indicated. The operating agencies find the summary valuable in that it indicates which frequencies may be used daily during selected hours for a portion of a year or during a sunspot cycle.

The Commission processed approximately 90,000 monitoring observations from its 18 monitoring stations and 16 private monitoring stations during the year. In addition, over 8,300 monitoring observations of broadcasting stations active in the high-frequency bands between 5950 and 26,100 kc were processed and sent the IFRB, on the latter's request, for use in analyzing broadcasting schedules furnished by members of the ITU. The combined U.S. efforts continue to account for about 25 percent of all monitoring data received by the IFRB.

CALL SIGNS

The Commission assigns the call signs of all U.S. stations, except mobile stations of the U.S. Army. Close liaison is maintained with the various Government agencies to insure the accuracy of records of call signs which have been assigned.

The assignment of call signs is handled on a request basis. Provision is made, when feasible, for the return of individual call signs

from U.S. Government agencies for reassignment to Commission broadcast stations, when requested. During the past year over 260 call signs were added to the file of radio call signs of the Federal Government.

NATIONAL FREQUENCY COORDINATION

One of the functions of the Commission is to provide liaison between the Government and non-Government users of the radio spectrum. Because of this dual responsibility for the assignment of frequencies, close coordination must be maintained between the Interdepartment Radio Advisory Committee (IRAC), acting on behalf of the President for Federal users of radio, and the Commission for all others.

The working body of the IRAC concerned with frequency assignments to individual stations is called the Frequency Assignment Subcommittee (FAS). This group meets at least once each month to consider proposals of agencies submitted during the previous month. Barring objections from an agency, the action of the subcommittee is final and is entered in the Government station list. Those requests from non-Government applicants which are coordinated with the subcommittee result in FCC authorizations which are reflected in the non-Government frequency lists.

Where new facilities require the use of frequencies allocated for use by both Government and non-Government stations, coordination is effected informally between agencies prior to submitting proposals to IRAC. This coordination precedes formal action and requires engineering studies to determine the impact of proposed new assignments on existing radio operations.

Since experimental radio stations may utilize frequencies throughout most of the radio spectrum, a large percentage of these applications require coordination with Government agencies. A procedural agreement has been reached with the IRAC whereby this is effected informally and expeditiously.

Through cooperative procedures between the FCC and other Federal agencies, remedial action on reported interference involving Government stations is effectively and promptly taken.

NATIONAL FREQUENCY LISTS

The substantial increase in the number of stations authorized by the FCC, particularly in the Safety and Special Radio Services, is reflected in the service frequency lists prepared by the Commission. During the last 6 months of the fiscal year, more than 18 separate frequency assignment lists, comprising a total of 7,138 pages, were compiled. Additionally, various special studies were made and lists prepared to assist in the formulation of frequency plans.

Appendix

FCC LOG HIGHLIGHTS OF 1961 FISCAL YEAR

The following capsule summary is based primarily upon releases of the Federal Communications Commission during the 1961 fiscal year period—July 1, 1960, to June 30, 1961. The dates shown are largely those of the covering releases and do not necessarily indicate the dates of the initiating formal approval. All actions are by the Commission unless otherwise indicated.

1960

July 7 Congress amends Communications Act to enable FCC to waive licensed operator and prior construction permit requirements for stations engaged solely in rebroadcasting (translators and boosters); also to provide that a Commissioner may continue to serve after the expiration of his term until his successor takes office; and to retain status quo with respect to consolidation or merger of telegraph carriers in light of Hawaii's admittance to Union.

July 18 Western Union files increased telegraph rates to produce $12.6 million additional annual revenue.

July 21 Announces New York City UHF-TV project.
Provides additional split channels for public safety services (more on May 3).

July 27 Authorizes telephone cable to Bermuda.

July 28 Authorizes low-power VHF-TV translators; enables existing unlicensed boosters to continue operation pending compliance.

July 29 Issues report and statement of policy on broadcast programing.

Aug. 10 Testimony on legislation proposing many changes in Communications Act.

Aug. 11 Offers field assistance to unlicensed TV boosters in converting to translator operation.

Aug. 12 Queries all broadcast stations about handling 1960 political campaign broadcasts.

Aug. 17 Establishes continuity of service plan for Emergency Broadcast System.

Aug. 19 Is advised that Government cannot spare any of its VHF channels for TV broadcast use.

Aug. 25 Congress joint resolution suspends equal-time requirement for nominees for President and Vice President in 1960 campaign; FCC to report on result.

Aug. 31 Rleases 1959 TV broadcast financial data.

Sept. 8 Issues supplement to "Use of Broadcast Facilities by Candidates for Public Office."

Sept. 9 Warns broadcast stations not to deal directly with foreign stations or governments.

Sept. 13 Communications Act amended to provide pregrant procedure; limit "payoffs" in broadcast transfers; require disclosure of payments for broadcast of certain matter; prohibit deceptive practices in broadcast contests; require applicants for new broadcast stations or major changes to give local notice; and authorize short-term broadcast grants and forfeitures.

Another amendment gives FCC authority to regulate common carrier use of microwave and other radio circuits for chain broadcasting (wire only was previously specified).

Sept. 14 TV rules amended to reduce time in which a station may option time to networks.

Hurricane Donna proves value of State FM Defense Networks.

Sept. 21 Gives notice of enactment of Communications Act amendments of 1960. Clarifies eligibility in Local Government Radio Service.

Sept. 29 Affirms 1959 microwave policy; makes exception for educational TV relay.

Adopts rules to provide shorter broadcast license terms in special cases.

Oct. 5 Issues progress report on New York UHF–TV project.

Oct. 10 Reopens Los Angeles hearing on film phase of TV program selection inquiry.

Oct. 17 Releases 1959 AM–FM financial data.

Oct. 21 Assigns more split channels to public safety services; hospitals and ambulances get exclusive frequencies.

Nov. 16 Amends rules to implement Communications Act amendments establishing pregrant procedure and local notice by broadcast applicants.

Nov. 21 Press wire service to speed CONELRAD alert in emergency (further notice Dec. 5).

Nov. 22 Denies more time for 24 "idle" UHF–TV stations to hold construction permits.

Nov. 23 Revises amateur application form.

Dec. 1 Warns broadcast stations for failure to respond to Commission's letters.

Adopts rules for common carrier pregrant procedure (for safety and special services Dec. 2).

Dec. 6 To announce certain applications and actions in safety and special services.

Dec. 8 Proposes hearings on transfers of broadcast stations unless operated by same owner for at least three years.

Proposes to exempt up to 5 percent holdings in corporations from broadcast multiple-ownership rules.

Grants first short-term broadcast licenses under new law.

Dec. 14 Issues first show-cause orders because of broadcast payola considerations.

Relaxes "10 percent rule" for class IV AM stations.

Dec. 19 Bell System files tariff for flat rate long-distance telephone service (WATS).

1961

Jan. 1 FCC year-end statement issued.

Jan. 6 To finalize without review initial decisions to which no exceptions have been filed.

Jan. 12 Adopts rules to curb "payoff" of competing broadcast applications.
Proposes rules to protect local community broadcast needs.
Experimental grant made to ITT Laboratories for earth-space communication research.

Jan. 13 Initiates inquiry into Bell System's proposed wide area telephone rates (WATS).

Jan. 19 Authorizes American Telephone & Telegraph Co. to engage in earth-space communication research.
Recommends legislation to eliminate requirement for oath or affirmation on certain documents filed with FCC; and proposed legislation to require painting and lighting of abandoned radio towers.

Jan. 25 Educational FM stations authorized to engage in subsidiary communications on noncommercial basis.
Proposes domestic frequency changes to conform with 1959 Geneva conference (subsequent related proposals).

Jan. 31 Issues release on how FCC monitors located hijacked steamship *Santa Maria*.

Feb. 3 Implements rules to conform with law amendment providing forfeitures for certain violations by broadcast stations.

Feb. 15 Allows Bell System TELPAK service to go into effect conditioned to any later FCC action. (On Apr. 12 held company misinterpreted certain provisions; company withdrew that part of tariff May 3.)

Feb. 17 Proposes legislation to enable FCC to regulate community antenna TV systems.
Proposes that broadcast applicants be required to show effort to meet local programing needs.

Feb. 24 First grant made to TV station to test subscription service (WHCT, Hartford, Conn.).
Authorizes Hawaiian link for new Canada-Australia cable.

Feb. 27 Approves Western Union plan for divestment of its international cable operations.
Issues release on "Subscription-TV and the FCC."

Feb. 28 Makes preliminary report to Congress on broadcasters' treatment of 1960 political campaign (final report Apr. 7).
Issues memorandum of understanding with National Aeronautics and Space Administration on respective FCC and NASA civil space communications functions.

Mar. 1 Proposes rules for local governments to use vehicles to control traffic lights.

Mar. 2 Chairman Minow takes office.
Comments on legislation proposing Federal funds to States to help construct educational TV stations (additional comments Mar. 7 and 21).

Mar. 7 Recommends legislation to permit FCC to renew safety and special licenses more than 30 days prior to expiration.

Mar. 8 Authorizes landing of first transatlantic telephone cable to connect United States direct.

Mar. 14 Issues release on "FCC Relation to Space Communication."

Mar. 17 Commissioner Bartley designated FCC Defense Commissioner.
FCC combines Communications, Administrative Procedure and Review Acts in single volume for sale by Government Printing Office.

Mar. 22 First notice to a broadcast station of liability for forfeiture under new law.

Mar. 27 FCC testimony on results of 1960 campaign on political broadcasts.

Mar. 29 Orders inquiry into means of obtaining VHF channels for educational use in New York and Los Angeles.
New working arrangement for allocating VHF channels under agreement with Canada.

Mar. 30 Institutes inquiry into problems of regulating commercial space communication systems.

Apr. 5 Warns broadcasters about late filings.

Apr. 10 Proposes legislation to authorize FCC to impose forfeitures for certain violations in nonbroadcast services; also to waive conflict-of-interest provisions for persons serving in FCC unit of National Defense Executive Reserve.

Apr. 19 Adopts standards for FM stereophonic broadcasting.

Apr. 20 Looks to reviewing TV option time order of Sept. 14, 1960 (further notice May 3).
Declares hearing necessary on NBC–RKO transfers and related broadcast applications.
Testimony on bills dealing with Government patent practices.

Apr. 21 Authorizes test of direct pilot-to-weather-forecaster communication.
Issues release on "Policing the Airwaves."

Apr. 26 Proposes rules to implement new "anti-payola" law.

Apr. 28 CONELRAD drill held in connection with 1961 Operation Alert.

May 2 Testimony on Geneva 1959 radio agreement.

May 3 Further proposed rulemaking asks comments on whether TV option time is contrary to public interest.
To expedite class IV AM station applications for increased daytime power.
Additional split channels provided Highway Maintenance, Local Government, and Forestry-Conservation radio services.
Telephone company withdraws controversial part of TELPAK tariff.

May 5 Authorizes Westinghouse Broadcasting Co. to engage in satellite communication research.

May 9 Chairman Minow addresses National Association of Broadcasters on TV programing and licensee responsibilities.

May 11 Proposes rules to require announcement of payment for goods or services promoted during broadcast.

May 12 Reminds broadcast applicants that local public notice is required for those designated for hearing.

May 14 New CONELRAD teletype alerting system tested.

May 17 Sale of KJEO (TV), Fresno, for $3 million approved (highest price yet paid for UHF station).
Announces preliminary U.S. views on frequency allocations for space programs.
Frequency band provided for exclusive use of remote pickup broadcast stations; additional VHF maritime mobile frequency pair made available.

May 18 Testimony on legislation to prevent interstate transmission of gambling information.

May 19 Issues 200,000th citizens radio authorization.
Testimony on proposed FCC reorganization (further testimony June 13).

May 24 First report on inquiry into administrative and regulatory problems of commercial satellite communication systems holds joint operation by international common carriers would best serve public interest (conference with carriers and other parties held June 5).
Testimony on legislation concerning wiretapping.

May 25 Warns TV and FM set buyers to look for required seal attesting compliance with noninterference requirements.

June 5 Proposes legislation to provide summary judgment procedure in considering license applications.

June 7 Initiates inquiry into telephone company's proposed developmental line switched teletype service.
Orders hearing for two owners of TV sets interfering with a shut-in's radio reception (first formal proceeding of this nature).

June 9 Testimony on legislation affecting independent regulatory agencies.
AM broadcasting agreement (1957) with Mexico effective.