TENTH ANNUAL REPORT

FEDERAL

COMMUNICATIONS

COMMISSION

FISCAL YEAR ENDED JUNE 30, 1944

COMMISSIONERS

MEMBERS OF THE FEDERAL COMMUNICATIONS COMMISSION

(As of January 1, 1945)

CHAIRMAN
PAUL A. PORTER
(Term expires June 30, 1949)

PAUL A. WALKER
(Term expires June 30, 1946)

NORMAN S. CASE
(Term expires June 30, 1945)

RAY C. WAKEFIELD
(Term expires June 30, 1947)

CLIFFORD J. DURR
(Term expires June 30, 1948)

EWELL K. JETT
(Term expires June 30, 1950)

(One Vacancy)

FEDERAL COMMUNICATIONS COMMISSION
Washington 25, D. C., January 9, 1945

To the Congress of the United States:

In accordance with the requirement of Section 4(k) of the Communications Act, the Tenth Annual Report of the Federal Communications Commission for the fiscal year ending June 30, 1944, is submitted herewith.

Significant activities of the Commission since the close of the fiscal year include the following:

Allocation hearings for a complete review of the spectrum from 10 kilocycles to 30,000,000 kilocycles to determine the post-war frequency needs of the various radio services were conducted by the Commission, sitting en banc, from September 28 through November 2. During 25 hearing days, the Commission heard 4559 pages of testimony by 231 witnesses, including representatives of the radio industry, of other interested organizations and government agencies and by members of its own staff, and received 543 exhibits. Most of the industry recommendations were presented by the 13 panels of the Radio Technical Planning Board which, since its inception one year before, had conducted detailed studies. At the close of the calendar year, the Commission was studying the various recommendations and conferring with the Interdepartment Radio Advisory Committee preparatory to issuing proposed findings.

Some 35 witnesses representing a dozen railway systems, industry and government agencies who testified in the Commission's railroad radio hearings September 13 to 18 were unanimous in recommending some type of radio communications on trains for increased safety and efficiency regardless of the communication and signalling techniques now in use. The testimony provided a basis for the consideration of providing frequencies for radio in railroad operations at the general allocation hearings which opened September 28. The railroad radio hearings were held before Commissioners Paul A. Walker (chairman), Norman S. Case and E. K. Jett.

Concerned by the high prices being paid for radio stations, the Commission on July 24 asked the Congress for guidance on the policy it should follow in passing on the sale of stations where the sales prices are far in excess of the going-concern and physical property values of the stations and appear to involve compensation for the radio frequencies themselves. The statute makes it clear that the frequencies are not in any way the property of the licensees, the Commission pointed out.

A report, "Preliminary Studies on Some Aspects of the Availability of Landline Wire Communications Service," issued by the Commission on November 15, disclosed the limited availability of telegraph service and a decline in farm telephone service. The report showed that only 5.2 per cent of the cities in the 5,000-25,000 population group, only 18 per cent in the 25,000-50,000 group and only 49 per cent in the 50,000-100,000 group have telegraph offices always open. From 1920 to 1940 farms having telephones decreased 39 per cent.

As part of an over-all program agreed to earlier in conferences with the Commission, the American Telephone & Telegraph Company filed tariffs from August through December putting into effect new reduced rates on overseas telephone calls between the United States and several points in South America, Central America, the West Indies, Bermuda and Hawaii.

To give the public fuller information concerning the source and kind of payment received by radio stations for sponsored programs, including political broadcasts, the Commission on December 12 adopted a rule requiring appropriate announcements.

Respectfully,

Paul A. Porter

PAUL A. PORTER
Chairman

TABLE OF CONTENTS

SUMMARY

Fostering improvement of American wire and radio services at home and abroad despite extra wartime burdens, obtaining substantial common carrier rate reductions and preparing for far-reaching postwar communications developments were highlights of the activities of the Federal Communications Commission during the past fiscal year.

The number of standard broadcast stations increased from 912 to 924, the additional permits having been issued to applicants who showed that the grant would serve an outstanding public need and that they had materials available. In line with its fundamental policy of encouraging diversification of ownership, the Commission prohibited ownership by one person of more than one station in the same locality. Another expression of this policy, the network rules, effective since June 15, 1943, had a full year of operation during the period covered by this report. It is apparent that program service throughout the nation has benefited through increased competition between networks and the extension of network service to a greater number of stations. In recognition of the advancement of the radio art and the growth of the radio industry, the Commission increased the standard broadcast license period from two to three years. Revenues of networks and broadcast stations increased 19 percent over the previous year.

At the close of the fiscal year 47 frequency modulation (FM) stations were operating, with an estimated 500,000 FM receiving sets in use. Indicative of the expansion to be expected when materials and manpower are available was the total of 202 applications on file for permits to construct new FM stations. In the field of television, six commercial stations and two experimental stations were rendering program service and 52 applications for commercial stations were on file.

Wartime demands for telephone service continued to mount during the year. Traffic of the Long Lines Department of the A.T.& T., for example, was one-seventh heavier than last year but the speed of service improved. Reductions of approximately $8,000,000 annually in interstate rates were agreed to by the Bell System Companies, following negotiations by the Commission with the A.T.& T. On December 10, 1943, the Commission held that surcharges on interstate and foreign toll calls from hotels, apartment houses and clubs in the District of Columbia were subject to regulation by the Commission, and it ordered the telephone companies to file proper

tariffs. The Bell Companies throughout the country subsequently filed tariffs having the effect of requiring the discontinuance of the surcharges by such establishments. This matter is now being contested in the courts. The elimination of these surcharges would result in an annual saving of over $2,000,000 to users, in addition to the rate reductions of $8,000,000 mentioned above.

Improvement in the financial condition of the domestic telegraph industry has resulted from the merger of Western Union and Postal Telegraph which was approved by the Commission September 27, 1943. There was also an improvement in the speed of telegraph service. The time required for the fastest 95 percent of ordinary full rate messages to pass through Western Union message centers was reduced from 14.1 minutes to 10.1 minutes.

Radiotelegraph carriers have been able to maintain efficient communication with various countries throughout the world and even to establish new circuits. Prior to the allied invasion operations in Italy and France, the Commission assisted the Joint Chiefs of Staff and the Board of War Communications in making arrangements to have the United States companies install and operate semi-portable stations in the invasion areas for the speedy handling of press and government messages.

Many reductions in international rates were made during the fiscal year and the Commission ordered an investigation of the rates and charges of all carriers. A delegation consisting of a Commissioner, a Commission staff member and a representative of the State Department conferred with officials of a number of South American countries with the result that several of the nations agreed to the reduced rates provided for in an order issued by the Commission on June 22, 1943.

Following several disastrous train wrecks in 1943, wide interest developed in the experimental use of radio on railroads and during the year 35 applications for railroad radio authorizations were received by the Commission. Many of these were granted. On May 2, the Commission ordered a public hearing to obtain information on the feasibility of the regular use of radio by railroads to promote efficiency and safety.

Technical studies inaugurated by the Commission during the year included the Low Frequency Recording Project, the Very High Frequency Recording Project and the Determination of Origin of Burst Signals.

The Radio Intelligence Division (RID), which is charged with safeguarding the nation's radio channels from misuse, investigated 1895 complaints of illicit of subversive transmission and of

interference; located 32 unlicensed stations and continued to render emergency direction finding service to aircraft. The Foreign Broadcast Intelligence Service (FBIS) regularly monitored programs from stations in 55 countries in 41 languages for the use of agencies of this and allied governments.

To assist in the transition of the radio communications industries from wartime conditions to the many new and enlarged opportunities of peace, the Commission began extensive studies for frequency allocation hearings. Simultaneous studies were conducted by the Interdepartment Radio Advisory Committee on which the Commission is represented, and by the Radio Technical Planning Board, representing industry groups. The Commission assigned staff members as observers at meetings of the RTPB and also made information available. Near the end of the fiscal year, the Commission set up a committee composed of representatives of all of its departments and divisions to develop plans for a public allocations hearing. It was deemed necessary to complete such a review of the spectrum and make allocation recommendations as soon as possible for forthcoming telecommunications conferences and to enable manufacturers to prepare for the production of new apparatus designed on the basis of such recommendations as soon as the facilities and manpower are available for the manufacture of civilian radio equipment.

The Commission, on January 13, 1944, closed the record and dismissed the investigation into the newspaper ownership of radio stations. The Commission concluded, in the light of the record in the proceeding and of the grave legal and policy questions involved, not to adopt any general rule regarding such ownership.

GENERAL

1. ADMINISTRATION

At the beginning of the fiscal year a Director of Personnel and a Budget and Planning Officer were appointed to carry out the functions of the Commission's Administrative Order 2-G, adopted March 25, 1943.

Several changes were made in the operations of the Radio Intelligence Division and the Foreign Broadcast Intelligence Service during the last quarter of the fiscal year in order to bring about a reduction in operations in line with the Commission's 1945 budget. No other significant administrative changes were made.

2. COMMISSION MEMBERSHIP CHANGES

On February 15, 1944, Ewell K. Jett, of Maryland, was sworn in as Commissioner, to succeed George Henry Payne, whose term expired June 30, 1943. The term of T. A. M. Craven expired on June 30, 1944.

3. STAFF ORGANIZATION

The Commission's organization consists of four operating departments: Engineering Department, Law Department, Accounting Department, Foreign Broadcast Intelligence Service. There are four staff service units: The Office of the Secretary, Information Office, Personnel Office, and the Budget and Planning Office.

An Administrative Board comprising the General Counsel, Chief Engineer, Chief Accountant and Secretary act on matters delegated to it by the Commission. A Rules Committee initiates, considers proposals for new or revised rules, regulations, forms and procedures, and advises the Commission with respect to such matters.

4. PERSONNEL

During the last quarter of the fiscal year the total personnel of the Commission was reduced approximately 25%, from 2159 to 1670, to conform with the Commission's reduced 1945 budget effective July 1, 1944. Of these, 826 were stationed in Washington, 650 were employed in the field (135 outside of the continental United States), and 59 on terminal leave. The total number of employees in the Engineering Department was 820; Law Department, 71; Accounting Department, 118; Foreign Broadcast Intelligence Service, 316; Secretary's Office, 6; License Division, 91; Records Division, 42; Service Division, 70; Personnel Office, 29; Budget Office, 16; Information Office, 5.

5. APPROPRIATIONS

For the fiscal year, the Commission was appropriated a total of $7,609,914. Of this amount, $2,000,000 was for its regular activities, $5,590,314 for its war activities, and $19,600 for printing and binding.

6. LEGISLATION

No legislation amending the Communications Act of 1934 nor any other legislation relating to matters within the Commission's jurisdiction was passed during the fiscal year.

Extensive hearings were held between November 3 and December 16, 1943, before the Senate Committee on Interstate and Foreign Commerce on S. 814, 78th Congress, 1st Session, to amend the Communications Act. This bill was introduced on March 2, 1943, by Senators White and Wheeler. No further action on the bill has been announced by the Committee.

7. LITIGATION

There were two cases in the United States Court of Appeals for the District of Columbia at the beginning of the fiscal year. Both were dismissed shortly afterward. In addition, two new appeals were filed in the same Court during the year. Both were pending at the close of the year. There was one case pending in the United States District Court of Massachusetts at the beginning of the year and five more cases were filed in various United States District Courts during the year, two of them in the District of Columbia, two in the Southern District of New York and one in the Northern District of Illinois.

All of the cases in the United States Court of Appeals for the District of Columbia were appeals to set aside orders of the Commission in proceedings on applications for radio station licenses, filed pursuant to the provisions of Section 402(b) of the Communications Act of 1934. All the litigation in the district courts involved cases arising in connection with the Commission's jurisdiction over common carriers engaged in interstate and foreign communication by wire. Two cases related to accounting matters and four were with the Commission's jurisdiction over charges by hotels for interstate and foreign long-distance telephone service.

The case in the United States District Court of Massachusetts involved an appeal brought by the New England Telephone and Telegraph Company to set aside an order of the Commission requiring that company to make certain adjustments in its accounts relating to its employees' pension fund. The District Court upheld the Commission's order as being within its statutory powers under the Communications Act and not at odds with fundamental principles of correct accounting. No further appeal was taken in this case. New England Telephone and Telegraph Company v. United States, et al., 53 F. Supp. 400 (D. Mass., 1943)

Another accounting issue is presented in the case of the New York Telephone Company v. United States, brought in the District Court for the Southern District of New York on February 11, 1944. In this action the New York Telephone Company seeks to set aside an order of the Commission of December 14, 1943, made after extensive hearing, requiring the New York Telephone Company to make certain adjustments in its accounts. These adjustments relate to certain transactions between the Company and its parent corporation, American Telephone & Telegraph Company, under which the New York Telephone Company acquired from the American Telephone & Telegraph Company properties at a price in excess of original cost to American Telephone & Telegraph Company. The New York Telephone Company recorded these transactions by entering in its books the prices charged it by American Telephone & Telegraph Company. The Commission disapproved this accounting, holding that in transfers of property between parent and affiliate the book figures of the parent company for the property in question should have been used by the affiliate. The New York Telephone Company has sought to review this order. Oral argument was presented before a statutory three-judge court on June 1, 1944, and the case was still pending at the close of the fiscal year.

The remaining four actions in the district courts relate to the question of the Commission's jurisdiction over charges made by hotels in connection with interstate and foreign long-distance telephone calls made by their guests. On January 6, 1942, the Commission instituted a proceeding for the purpose of determining whether charges by hotels made for or in connection with such calls are within the jurisdiction of the Commission under the Communications Act of 1934. In these proceedings, it was disclosed that certain hotels in the District of Columbia and elsewhere made certain charges known as "surcharges" or "service charges" in connection with interstate and foreign telephone calls made by their guests, which were in addition to the charges specified in the effective tariffs filed by the telephone companies supplying service to such hotels. After hearing, the Commission concluded that it possessed jurisdiction with respect to such charges by hotels, and by its order of December 10, 1943, directed the American Telephone & Telegraph Company and the Chesapeake & Potomac Telephone Company (D.C.) to file tariffs showing the charges collected by hotels or the condition upon which telephone service is furnished to hotels. On January 22, 1944, these companies filed tariffs effective February 15, 1944, providing that telephone service is furnished to hotels on the condition that use of the service by guests, tenants and others shall not be made subject to any charge in addition to the toll charges set forth in the effective tariffs of the telephone company. Similar tariffs were filed on behalf of all other companies in the Bell System.

On February 14, 1944, the Hotel Association of Washington, D.C., instituted a suit pursuant to the provisions of Section 402(a) of the Communications Act of 1934, to set aside the Commission's order of December 10, 1943. The case is still pending.

On February 19, 1944, the Commission, having determined that certain hotels in the District of Columbia were not complying with the tariff provisions of the telephone companies effective February 15, 1944, relating to the making of charges in addition to those set forth in the effective tariffs of the telephone companies, had a suit instituted pursuant to the provisions of Section 401(c) of the Communications Act to enjoin violation of Section 203 of the Communications Act relating to the furnishing of service at charges other than those specified in the filed effective tariffs. After hearing and oral argument, Justice O'Donoghue of the District Court issued an injunction against the defendant hotels on June 8, 1944.

On February 23, 1944, the United States, on behalf of the Commission, instituted a similar suit in the District Court for the Southern District of New York under Section 401(c) of the Communications Act to enjoin violation of Section 203 of the Communications Act by certain hotels in New York City. A hearing was held before the District Court on June 26, 27 and 28, 1944, and the case is now awaiting decision.

On February 24, 1944, a similar action was instituted in the District Court for the Northern District of Illinois to enjoin violation of Section 203 of the Communications Act by certain Chicago hotels. That case is still pending.

8. DOCKETS

The Commission heard 91 docket cases, of which number 66 were broadcast, one telephone, and 24 telegraph; held 14 oral arguments, of which 9 were on broadcast matters, four telephone and one telegraph. A total of 203 motions, petitions, and other pleadings were acted upon, of which 164 were granted, 35 denied, and four were dismissed. Included in the total of 205 motions, 136 were on broadcast matters (109 granted, 25 denied, two dismissed), 67 on telephone and telegraph (55 granted, 10 denied, two dismissed).

9. INTERNATIONAL

In preparation for the Commission's impending appearance in the Senate Interstate and Foreign Commerce Committee hearing on international communications, comprehensive charts, lists and reports on the subject have been prepared.

Because of the crowded spectrum, and because of the wartime demand for frequencies by the Armed Forces, considerable time and effort have been devoted during the past fiscal year to maintaining complete frequency

records for immediate reference. The "Master Frequency List" revised as of May 1, 1944, gives detailed information on approximately 5000 channels between 10 kc and 438,000 kc. Unforeseen developments in the rapidly-expanding aviation service have required considerable additional work on the frequency plan for allocation and assignment of frequencies for the Inter-American International Air Routes. This plan cannot be completed in final form until international agreement concerning the allocation and use of specific frequencies has been effected.

It is expected that an Inter-American conference will be called early in 1945 to consider revision of the Inter-American Radio Communications Convention (Havana 1937) and the Inter-American Radio Communications Agreement (Santiago 1940). The United States proposals for these treaties are being prepared and probably will be available by the end of the calendar year 1944. The North American Regional Broadcasting Agreement (Havana 1937) will expire on March 29, 1946, and preparation is being made for a conference to modify and renew this Agreement before that date. It is also expected that an international conference will be held at the end of the war to consider revision of the International Telecommunications Convention (Madrid 1932) and the Annexed Regulations (Cairo 1938).

The information contained in the International Telecommunications Survey reports, which were prepared by the Division, has been supplied to various government agencies desiring such information in connection with their respective problems.

Courses in telecommunications techniques were given to eight South and Central American holders of trade scholarships sponsored by the Inter-American Training Administration.

Approximately 790 cases of treaty violation and interference were handled during the year. These matters, with the exception of minor violations which are reported to the foreign administrations directly by the Commission, are handled through the Department of State and such action has been indirectly instrumental in improving the communication services of the United States.

10. INTERDEPARTMENT RADIO ADVISORY COMMITTEE

The Interdepartment Radio Advisory Committee approved 1927 new assignments, 346 deletions, and numerous modifications in existing assignments, bringing the total number of outstanding assignments made by IRAC since its inception to 31,044. IRAC is a committee of the Board of War Communications and advises the Board of assignments involving new frequencies, or changes in method or type of employment of existing frequencies. During the fiscal year it prepared a revised Executive Order assigning approximately 4500 frequencies to government stations.

11. FREQUENCY ALLOCATION

Frequency allocation is of particular importance at this time because of the new devices and new uses for radio which, appearing during the war, may have peace time application. The work of determining in what portion of the spectrum the various services shall operate must be completed before the end of the war in order that manufacturers may begin production as soon as the plants are turned back to the manufacture of civilian radio equipment.

Extensive studies are being conducted on means of conserving frequency space by reducing the width of the space to be occupied by individual stations and by examining operating practices and systems. For example, international communication requirements may be reduced and the service improved by a system of relay stations at appropriate points around the world. The adoption of automatic switching systems, the coordinated use of frequencies and multichannel techniques made possible by automatic relay would greatly improve the international service and provide additional frequency space for the tremendous expansion expected in the aeronautical and maritime services.

The Commission activities in this field have been conducted during the fiscal year 1944 by a committee representing the various divisions of the Engineering Department. Simultaneous studies have been conducted by the Interdepartment Radio Advisory Committee, on which the FCC is represented, and by the Radio Technical Planning Board. The Commission has cooperated with the industry by making information available and by sending observers to the meetings of the various Radio Technical Planning Board panels.

Near the end of this fiscal year, the Commission recognized that the engineering work involved in the allocation studies had progressed to the point where meetings between the Commission and other interested parties would be required. It was also realized that hearings on the broad subject and on particular phases would be necessary. The Commission's engineering committee was replaced by a committee under the Chairman of the Commission with representatives of all Commission departments and divisions which are concerned with the use of radio facilities. It is expected that this work will proceed rapidly during the coming year and that satisfactory means will be found for the continuation and expansion of the radio communication facilities of the United States and possessions.

12. NEWSPAPER OWNERSHIP

On January 13, 1944, the Commission closed the record and dismissed the proceeding instituted pursuant to Orders 79 and 79A relating to newspaper ownership of radio stations. The Commission concluded, in the light of the record in this proceeding and of the grave legal and policy questions involved, not to adopt any general rule with respect to newspaper ownership of radio stations.

A summary of the evidence in the proceeding was forwarded to the appropriate committees of the Senate and House of Representatives in order to inform them of the facts developed by the investigation and for any consideration which they might desire to give the matter.

Aside from the specific question of common ownership of newspapers and radio stations, the Commission recognized the serious problem involved in the broader field of the control of the media of mass communications and the importance of avoiding monopoly of the avenues of communicating fact and opinion to the public. All the Commissioners agreed to the general principle that diversification of control of such media is desirable. The Commission stated that it does not desire to discourage legally qualified persons from applying for licenses, but does desire to encourage the maximum number of qualified persons to enter the field of mass communications, and to permit them to use all modern inventions and imporvements in the art to insure good public service.

In the processing of individual applications for licenses, the Commission stated that it will inquire into and in its decisions give expression to "public interest" considerations. The Commission further stated that it does not feel that it should deny a license merely because the applicant is engaged or interested in a particular type of business, but, it does not intend in granting licenses in the public interest to permit concentration of control in the hands of the few to the exclusion of the many who may be equally well qualified to render such public service as is required of a licensee.

13. COMMISSION COMMITTEES

Frequency Allocation Committee - Chairman Fly and Commissioner Jett, with staff members. To make studies and to confer with government and industry groups in preparation for the general Allocation Hearings heard by the Commission sitting en banc.

Railroad Radio Committee - Commissioners Walker (chairman), Case and Jett. To preside at initial hearings in the matter of investigating the establishment and use of radio in railroad operations.

Bar Committee - Commissioners Walker (chairman), Case and Durr. To review applications by attorneys for admission to practice before the Commission.

Telephone Committee - Commissioners Walker (chairman) and Wakefield. To study over-all problems of the telephone industry.

Agency Committee on Deferment of Government Employees - Commissioners Case (chairman), Walker and Durr.

Telegraph Committee - Commissioners Case (chairman), Wakefield and Durr, with staff members. To study possible revision of Western Union's domestic telegraph rate structure.

CHAPTER II

STANDARD BROADCAST

1. GENERAL

The engineering problems involved in frequency assignments were complicated during the year by the large number of applications considered by the Commission for new frequency assignments, transfers of control, changes in existing facilities and for renewals. The Commission considered 843 such applications. In the other than renewal class, 252 applications were granted, 46 dismissed without prejudice or denied, 58 designated for hearing. Of the renewal applications, 478 were granted, one denied, eight designated for hearing. These applications also emphasized the need for a revision of existing rules and standards. Studies looking towards such a revision are being made by the Commission and by the Broadcast Allocation Committee of the Radio Technical Planning Board. The number of standard stations was increased from 912 to 924.

2. MATERIALS AND MANPOWER

As shortages of materials and manpower continued through the year, the Commission retained the following orders:

No. 91-C relaxing requirements for radio operators at broadcast stations.

No. 94-A permitting stations to operate at only one third of their licensed time during the broadcast day.

No. 107 reducing the power of stations by one decibel (approximately 21 per cent).

The Freeze Order of April 27, 1942, which was modified on September 22, 1942, was still further modified on August 11, 1943, when the Commission announced that under certain stated conditions it would be in the

public interest to grant applications for permits involving the use of idle equipment to increase the power of 100-watt channel standard broadcast stations to 250 watts and for the construction of new 100-watt and 250-watt local channel stations.

On January 26, 1944, the Commission released its Supplemental Statement of Policy Concerning Applications for Permits to Construct or Change Radio Stations, which said in part:

> "Present indications are that despite the tremendous expansion of radio production that has taken place in the last two years, the large burden on the industry of meeting military needs will not permit production of equipment for new stations or the expansion of existing stations. All orders and practices looking toward the conservation of equipment (such as Order 107, relating to operation with reduced power) should be retained in full force and effect. It would not be in the public interest to issue and have outstanding permits for authorizations the terms of which cannot be met within a reasonable period.
>
> "The Commission will give consideration to the issuance of conditional grants upon applications where it is shown (1) that a grant will serve an outstanding public need or national interest; (2) that the operation proposed is consistent with the provisions of the Rules and Regulations of the Commission and the conditions and standards prescribed in the Act; and (3) that, after due consideration of the policies and orders of the War Production Board and the facts with respect to existence or availability of necessary materials, there is reasonable prospect that the proposed operation in the vicinity in question can be provided for without substantial delay."

These changes made it possible for the Commission to grant 12 additional licenses and construction permits in addition to several authorizations for an increase in facilities. The changes also encouraged the filing of an increased number of applications for new facilities or changes in existing facilities.

3. NORTH AMERICAN REGIONAL BROADCASTING AGREEMENT

The successful operation of this agreement for the third year was additional proof of its value in resolving the radio problems between the signatory nations despite the stress of war.

4. MULTIPLE OWNERSHIP

On November 23, 1943 the Commission adopted Order No. 84-A promulgating Section 3.35, effective May 31, 1944, which provides that no license

shall be granted for a standard broadcast station, directly or indirectly owned, operated or controlled by any person where such station renders or will render primary service to a substantial portion of the primary service area of another standard broadcast station, directly or indirectly owned, operated or controlled by such person, except upon a showing that public interest, convenience and necessity will be served through such multiple ownership.

Procedures were established by adoption of Order No. 84-B dated April 4, 1944, for the purpose of obtaining compliance with the multiple-ownership regulation without hardship in any particular case where disposition of stations or compliance with the order by other means would not be feasible prior to May 31, 1944. The Commission also issued a statement indicating principal factors to be considered in determining whether or not an overlapping of signal strengths in any given situation resulted in a standard broadcast station rendering primary service to a substantial portion of the primary service area of another broadcast station within the meaning of the regulation. Also the Commission announced, April 4, 1944, that upon the granting of applications for consent to the assignment of licenses or for consent to the transfer of control of licensee corporations, filed for the purpose of effecting compliance with the policy established in the multiple ownership rule, appropriate certificates would be issued pursuant to the provisions of Section 123 of the Revenue Act of 1943, relating to gain from sale or exchange of property necessary or appropriate to effectuate the policies of the Commission with respect to ownership and control of broadcast stations.

There have been filed a total of 22 applications for consent to transfer control of licensee corporations or for consent to assignment of licenses. Of this number, 7 applications have been granted.

5. EXTENSION OF LICENSE PERIOD

The Commission, on December 14, 1943, adopted a change in its rules and regulations which formerly provided for a license period of two years for standard broadcast stations, to provide for issuance of licenses for a normal license period of three years, the maximum permitted under Section 307(d) of the Communications Act. At the same time, the regulations were so amended as to distribute the work load in the examination of renewal of license applications of all classes of standard broadcast stations over the entire three year license period.

6. NETWORK REGULATIONS

The regulations of the Commission applicable to stations engaged in chain broadcasting were made effective June 15, 1943, following a decision of the Supreme Court of the United States. Accordingly, this has been the first year of operation of stations since the adoption of the regulations. In every instance where a violation of network regulations has been brought to the attention of licensees and network organizations, changes have been made in order to comply with the regulations. One major network, known as

the Blue Network, formerly owned by the Radio Corporation of America, was transferred to new ownership, effective October 12, 1943, in order to comply with the policy of the network regulations.

While a study of the effects of these regulations has not been completed, it is apparent that program service throughout the nation has benefited through increased competition between networks and the extension of network service to a greater number of stations.

7. FINANCIAL DATA

Four major and five regional networks and 841 standard broadcast stations in the United States reported net revenues from the sale of time amounting to $195,704,153 in 1943 as compared to $163,642,745 reported by 10 networks and 851 standard broadcast stations for the previous year or an increase of 19.59%. One small regional network discontinued operations in April 1943 and did not submit a report covering its 1943 operations. In addition these networks and stations received $19,613,621 in 1943 from the sale of talent and other incidental broadcast activities as compared to $15,196,554 for the previous year, an increase of 29.07% in this class of revenue. After deducting operating expenses, excluding Federal income tax, these stations and networks reported operating income amounting to $66,475,586 as compared to $44,632,238 for the previous year, an increase of 48.94%.

The four major networks (CBS, Blue, Mutual and NBC) and their 9 key stations reported revenues from the sale of time aggregating $71,027,292 in 1943 as compared with $59,400,110 for 1942. Combined broadcast revenues of these networks and stations were $64,301,538 in 1943 as compared with $52,845,641 for the previous year; and broadcast income (revenues less expenses before Federal income tax, and excluding net losses from other than standard broadcast operations amounting to $351,092 for 1943 and $1,839,136 for 1942) amounted to $19,455,701 for 1943 and $13,918,712 for 1942, or an increase of 39.78%.

In general standard broadcast stations reported substantial improvement in the results of operations for 1943. Excluding the 9 key stations of major networks for which the reports did not include adequate segregations of expenses between these stations and network operations, the average broadcast income of clear channel stations with operating power of 50,000 watts, unlimited time, amounted to $400,170 in 1943, or an increase of 21.81% over 1942 and such income reported by the clear channel unlimited time stations with operating power of 5,000 to 25,000 watts averaged $61,850, or an increase of 56.45% over the corresponding amount reported for 1942. The average broadcast income reported by regional stations amounted to $79,784 in 1943 as compared with $52,867 in 1942, an increase of 50.91%. Local unlimited time stations reported average broadcast income of $4,399 in 1942 and $12,682 in 1943, showing an average increase of 188.29%. Broadcast income reported by local unlimited time stations

affiliated with major networks averaged $15,109 in 1943, or an increase of 169.18% over the average for 1942, while local unlimited time stations not affiliated with a major network reported an average increase of 185.88% over 1942.

Ninety-four of the 841 stations reported losses (total broadcast expenses in excess of total broadcast revenues) in 1943 as compared with 194 of the 851 included in the statistics in 1942. The average loss per station in 1943 was $5,348, while the average loss in 1942 amounted to $6,904. Only 42 of the stations reporting losses in 1943 were affiliated with the major networks while there were 86 in 1942.

The total number of stations affiliated with the major networks and included in the statistics for 1943 was 604 and 572 in 1942. The average broadcast income of the 604 stations amounted to $72,975, an increase per station of 30.71% over the average of $55,828 for the 572 stations in 1942.

8. STATISTICS

NUMBER OF STATIONS IN THE BROADCAST SERVICE FOR FISCAL YEAR ENDING JUNE 30, 1944

Class of Station	As of June 30 1943	New	Licenses or CP's surrendered or abandoned	As of June 30 1944
Standard Broadcast.....	912	16	4	924

BROADCAST APPLICATIONS

Service	Applications Received	Authorizations issued	Special authorizations
Standard Broadcast.....	1,689	1,318	209

NEW STATIONS AUTHORIZED

Call Letters	Licensee and Location	Power (watts)	Frequency (kc)	Time Designation
KJAN	KNOE, Inc. Monroe, L[illegible].	250	1450	Unlimited
KONP	Evening News Press, Inc. Port Angeles, Wash.	250	1450	Unlimited
KTHT	Texas Star Broadcasting Co. Houston, Texas	250	1230	Unlimited
KVOP	W.J. Harpole & J.C. Rothwell, a partnership, Plainview, Texas	250	1400	Unlimited
KWBU	Century Broadcasting Co. Corpus Christi, Texas	50 KW	1010	Day to sunset at Little Rock, Ark.
WELO	Birney Imes, Jr. Tupelo, Miss.	250	1490	Unlimited
WENT	Scandaga Broadcasting Corp. Gloversville, N.Y.	250	1340	Unlimited
WFEB	Alabama Broadcasting Co. Sylacauga, Ala.	250	1340	Unlimited
WHOT	South Bend Broadcasting Corp. South Bend, Ind.	250	1490	Unlimited
WJEF	John E. Fetzer and Rhea Y. Fetzer, d/b as Fetzer Broadcasting Co. Grand Rapids, Mich.	250	1230	Unlimited
WKLA	Karl L. Ashbacker and Grant F. Ashbacker d/b as Ludington Broadcasting Co. Ludington, Mich.	250	1450	Unlimited
WMOH	The Fort Hamilton Broadcasting Co. Hamilton, Ohio	250	1450	Unlimited
WOCB	E. Anthony & Sons, Inc. West Yarmouth, Nr. Hyannis, Mass.	250	1240	Unlimited
WRHI	Ernest H. Carroll, et al, d/b as York County Broadcasting Co. Rock Hill, S.C.	250	1340	Unlimited
WRLD	L.J. Duncan, et al, d/b as Valley Broadcasting Co. West Point, Ga.	250	1490	Unlimited
WROX	Robin Weaver, Sr., Clarksdale, Miss.	250	1450	Unlimited

NONSTANDARD BROADCAST

1. GENERAL

The construction of new United States international broadcast stations used in psychological warfare has proceeded rapidly during the year. In high frequency (FM), television, and facsimile broadcasting, the authorization of new stations has continued to be severely limited by the Commission's Memorandum Opinion of April 27, 1942, adopted to conserve critical materials. Few new stations have been authorized in other nonstandard broadcast services, because of shortages of materials and personnel as well as other wartime conditions affecting station construction and operation.

Several applications for new stations in the nonstandard broadcast services have been considered pursuant to the supplemental policy statement of January 26, 1944, which provided for new authorizations under certain conditions, including certification of the War Production Board that any required authorization of that Board to carry the construction to completion has been obtained.

The Commission's policies provide for the wartime licensing of FM and television stations to cover partial construction and to permit their operation on a regular basis until conditions allow full completion of the construction originally authorized. Several additional licenses have been issued during the year for stations on this basis. Stations in these new services have continued to furnish broadcast service during the war, although hampered by shortages of personnel and replacement equipment. On July 6, 1943, the Commission adopted a simplified procedure for authorizing changes relating to technical operation of FM, television, and noncommercial educational broadcast stations.

Much interest has been shown in the post-war establishment of commercial television and frequency modulation (FM) broadcast stations and

many applications for construction permits have been filed. While authorizations for such stations are not being granted under present "freeze" orders, applications are not being dismissed but are being retained in the Commission's pending file without present action. In addition, many educational agencies are planning to establish noncommercial educational FM stations for use both in advancing classroom work and for furnishing educational and entertainment programs to the public. These applications may likewise be retained in the pending file although action may be taken if equipment is available.

The needs of the nonstandard broadcast services, particularly FM and television, are receiving full attention in connection with post-war allocation studies now under way. In view of the probable rapid expansion of these services as soon as construction may be authorized, their needs for frequency space are the subject of much study and planning. These matters are also being considered fully by the Radio Technical Planning Board, and meetings of panels and committees of that Board have been attended by Commission representatives in the capacity of observers.

2. HIGH FREQUENCY (FM) BROADCAST SERVICE

Four additional high frequency (FM) broadcast stations were authorized. These stations were previously in operation as experimental stations and the authorization for commercial operation did not require the use of substantial amounts of material. Otherwise, however, no construction permits for new FM stations have been granted under the wartime "freeze" policies.

As of June 30, 1944, FM program service was being furnished by 47 stations, including three experimental high frequency broadcast stations. Except for ten stations which had previously completed full construction and testing, all commercial FM stations in operation have been issued wartime licenses to cover partial construction. This policy, which was adopted August 4, 1942, has provided a practicable arrangement for wartime operation of FM stations. Although FM stations are required to operate a minimum of six hours per day (excluding Sunday), stations in some areas are furnishing a program service throughout the day and evening, and it is estimated that approximately one-half million FM receiving sets are in use. To assist in alleviating the manpower shortage, Order No. 111-A was adopted on July 6, 1943, to permit FM stations to use duplicated material for all FM programs if necessary. Previously it was required that a minimum of two hours of the daily broadcast schedule consist of programs not duplicated in the same area by a standard or by another FM broadcast station. Most of the existing FM stations are operated by licensees of standard broadcast stations and therefore have program material readily available.

On August 24, 1943, the Commission adopted letter calls for FM stations, effective November 1, 1943. This system replaced the letter-numeral system formerly employed whereby the call letters W45D, for example, denoted

a station operating on 44,500 kc in Detroit. Licensees found that the letter-numeral system was somewhat cumbersome and that it did not meet with general favor. One complication arose when stations changed frequency and required a change of call letters. The new system provides four-letter calls like those used in standard broadcasting and in many other services. An FM broadcaster who also has a standard broadcast station may, if he desires, be assigned the standard broadcast station call letters with the suffix "FM". Thus the licensee of a standard broadcast station with the call "WABC" may be assigned "WABC-FM" for the FM station.

A great deal of interest has been shown in establishing FM broadcast stations after the war, and it is expected that as soon as personnel and materials are available a large expansion will begin. Indicative of this is the fact that as of June 30, 1944, 202 applications requesting construction permits for new FM stations were on file with the Commission. Inasmuch as these applications are contrary to the provisions of the Memorandum Opinion of April 27, 1942, they are not being granted at this time. However, the Commission has continued to apply its policy of February 23, 1943, in which it stated that applications for FM (and television) broadcast stations would not be dismissed, but would be retained in the pending files without present action. Although the majority of the pending applications have been filed by the licensees of standard broadcast stations, a considerable portion have been submitted by applicants new to radio broadcasting.

3. TELEVISION BROADCAST SERVICE

Throughout the fiscal year, commercial television broadcast stations have been subject to wartime policies, the most important of which are (1) That no authorizations for commercial television stations would be granted which involved the use of critical materials; (2) That the Commission would not dismiss applications for commercial television stations, but instead would retain such applications in the pending

files without present action thereon; and (3) that holders of construction permits might obtain licenses to operate existing facilities provided construction had reached a point where the station was capable of rendering a substantial service.

At the beginning of the past fiscal year, four television broadcast stations were rendering service on a commercial basis, two in New York City, one in Schenectady and one in Philadelphia.

Two additional commercial stations have been authorized during the year, one in Chicago, and one in New York City. These two stations had been constructed previously and were in operation as experimental television broadcast stations. Consequently they were not affected by the freeze policy. Under the Commission's rules, each commercial television station is required to render a minimum of four hours of program service per week.

Experimental television stations, under the Commission's wartime policy, may be authorized provided a worthwhile research program is to be conducted. Of the twenty-two experimental television stations licensed, two have rendered a limited program service throughout the fiscal year. One of these stations is located in Los Angeles, the other is in Chicago.

Of the experimental stations, fourteen are relay stations used for transmitting television programs from the studio or from other local points of program origination to the main television stations (commercial or experimental). Another use is for relaying television broadcasts from one city to another for experimental rebroadcasting.

Much interest is being shown in the post-war establishment of commercial television stations, and at the close of the fiscal year fifty-two applications for such stations were on file. These are being held without present action in the same manner as applications for FM stations. Most of these television applications propose stations in the larger cities.

4. INTERNATIONAL BROADCAST SERVICE

During the past fiscal year, the installation of new international broadcast stations in the United States has progressed rapidly. These stations are programmed during the war by the Office of War Information and the Coordinator of Inter-American Affairs. An expansion of the facilities existing at the onset of war was urgently required to provide for the needs of psychological warfare, and a total of thirty-six international broadcast transmitters were determined to be necessary in a plan proposed by the Interdepartmental Committee for International Radiobroadcasting

Facilities. By the close of the fiscal year, twenty-one of these stations were in operation and the remainder were under construction, all of which are authorized to those companies which were operating international stations before the war. The new stations are being completed as quickly as possible, and during their construction supplementary facilities are being provided by the use of available equipment of point-to-point stations. As of June 30, 1944, six such transmitters were in use, providing a total of twenty-seven stations furnishing international broadcast service at that time.

5. NONCOMMERCIAL EDUCATIONAL BROADCAST SERVICE

FM stations in this service are licensed to organized nonprofit educational agencies for use in the advancement of their educational programs and the transmission of educational and entertainment programs to the public. The frequencies are adjacent to those used in commercial FM broadcasting, thus making both services readily available on one receiving set.

One new station was authorized during the year, and of the total of eight stations authorized, five had completed construction and were furnishing service. Although the authorization of new educational stations has not been subject to the Commission's "freeze" policy, wartime conditions have served practically to stop new construction. Much interest is developing in this field and when personnel and materials again become available for the purpose, it is expected that many stations will be constructed. At the close of the fiscal year, seven applications for new stations were pending, and correspondence indicated that scores of applications were in preparation. Applications proposing post-war construction of such stations may be retained by the Commission without present action, similar to the policy adopted for the FM and television services.

Applications filed and correspondence with the Commission indicate that many states are planning the installation of groups or networks of educational FM stations, providing for coverage of individual school systems and for program interchange between stations. The Commission has worked with the United States Office of Education in the preparation of material for assisting applicants in this field, most of whom are new to the ownership and operation of broadcast stations.

6. ST (STUDIO-TRANSMITTER) BROADCAST SERVICE

Stations in this service operate experimentally on frequencies between 330 and 344 megacycles and provide program circuits between the studio and transmitter of a number of high frequency (FM) stations. The rules also provide for their use by international broadcast stations. ST broadcast transmitters are particularly useful where the main transmitter is

remotely located, such as on a mountain top or other isolated place, and the ST facilities furnish dependable program circuits having high fidelity characteristics. Several years of use of such equipment indicates that interruptions to service are infrequent. Since ST broadcast stations are used principally with FM broadcast stations, in which service new construction is severely restricted, no particular change in the status of ST broadcasting has occurred during the past year.

7. RELAY BROADCAST SERVICE

Relay broadcast stations are licensed as adjunct stations for other classes of broadcast stations, and are used to transmit from the point of origin to the main station when wire circuits are not available. A secondary use is to provide an emergency program circuit between the studio and transmitter of standard broadcast stations during interruption to the regular wire circuits. Since many relay broadcast transmitters are powered by batteries, difficult to obtain during the war, the use of relay equipment has been curtailed. The shortage of licensed personnel has also served to limit the use of such apparatus.

While the construction of new relay broadcast stations previously was restricted under the Memorandum Opinion of April 27, 1942, the Commission announced on August 28, 1943, that the use of equipment for additional or improved relay broadcast facilities would be authorized under certain conditions. Applications, therefore, must indicate that the required materials are available without priority, and this policy has permitted the use for relay broadcast work of equipment found unnecessary or unsuited for more urgent wartime needs. During the year, thirteen construction permits for new relay broadcast stations were granted, although a number of deletions of existing stations reduced the total number authorized from 549 to 540.

8. FACSIMILE BROADCAST SERVICE

Facsimile broadcast stations provide a means for the transmission of still pictures and text to special receivers in homes and offices. Only three stations are authorized - none having been added during the past year.

The rules governing high frequency (FM) broadcast stations provide for the multiplex transmission of facsimile. Little interest has been shown in this service, and no regular FM broadcast stations have been authorized to transmit multiplex facsimile.

9. DEVELOPMENTAL BROADCAST SERVICE

Developmental broadcast stations are used by equipment manufacturers and others when actual transmission is required in connection with research or development of broadcast equipment. Since wartime conditions have limited this research during the past year little activity in this service has occurred.

One application was granted during the fiscal year for a developmental broadcast station to be used in connection with radio propagation studies and other problems pertaining to FM broadcasting. It is expected that considerable activity in this field will ensue as soon as personnel and materials become available.

10. STATISTICS

Number of Stations in the Nonstandard Broadcast Service
For Fiscal Year Ending June 30, 1944

Class of Station	As of June 30 1943	New	Licenses or CP's Surrendered or Abandoned	As of June 30 1944
High Frequency Broadcast (Exp.)..	4	0	1	3
High Frequency Broadcast (Temp. Class II Experimental)	5	0	2	3
High Frequency Broadcast (FM) ...	48	4	0	52
Low Frequency Relay	249	12	7	254
High Frequency Relay	300	6	14	292
Television (Experimental)	28	0	1	27
Television (Commercial)	8	1	0	9
International	16	21	0	37
Developmental	4	1	1	4
ST (Studio-Transmitter)	10	0	2	8
Facsimile	3	0	0	3
Non-Commercial Educational	7	1	0	8
Class II (Experimental)	1	0	0	1
Total	683	46	28	701

The June 30 figures in Item 10 above, "ST (Studio-Transmitter)" include three confidential stations.

Nonstandard Broadcast Applications

Service	Appls. Recd.	Author. Issued	Special Authorizations
Relay Broadcast	453	390	20
International Broadcast	67	68	2
Television Broadcast (Com'l.)	73	12	9
Television Broadcast (Exp.)	76	45	11
Facsimile Broadcast	3	8	0
High Frequency Broadcast (Exp.) ...	28	15	23
High Frequency Broadcast (FM)	259	70	23
High Frequency Broadcast (Temp. Class II Experimental)	6	3	0
Non-Com'l. Educational Broadcast ..	36	7	1
Developmental Broadcast	9	6	4
ST (Studio-Transmitter) Broadcast .	28	30	0
Class II Broadcast (Exp.)	1	1	0
Total	1039	655	93

COMMON CARRIERS

1. Telephone (Wire, Radio)
2. Telegraph (Wire, Cable, Radio)
   (A) Domestic
   (B) International

1. TELEPHONE (WIRE, RADIO)

Service and Facilities

Construction of Wire Facilities - One hundred sixty-four applications for construction certificates were received, of which 163 were for supplementing existing facilities and one for extension of facilities. One hundred twenty-eight applications were approved, including two filed during the 1943 fiscal year. These projects involved construction ranging from a few hundred dollars to $2,386,000. The estimated total construction cost was $9,582.239.

Wire Telephone Applications for Construction Approved by the Commission From July 1, 1934 to June 30, 1944

Period	Number of Applications	Estimated Construction Cost	Miles of Cable Placed	Miles of Open Wire Placed	Channel Miles of Carrier System
7/1/34 to 6/30/35	7	$ 1,145,851	234.3	0	
7/1/35 to 6/30/36	15	275,625	24	475	
7/1/36 to 6/30/37	50	5,551,702	206	17,045	
7/1/37 to 6/30/38	45	3,921,000	499	1,212	
7/1/38 to 6/30/39	45	6,960,123	646	1,967	
7/1/39 to 6/30/40	72	9,070,952	1,209.2	3,501	
7/1/40 to 6/30/41	137	38,319,399	5,263	15,521	
7/1/41 to 6/30/42	169	45,046,250	5,099.7	34,583	
7/1/42 to 6/30/43	48	8,683,527	418	4,501	
7/1/43 to 6/30/44	121	9,582,239	574.8	7,968	181,592
Total	709	$128,556,768	14,174.0	86,773	181,592

In the above table, coaxial cable is represented as follows: Fiscal year 1935, 94.5 miles, 2 units; Fiscal year 1939, 195 miles, 4 units; Fiscal year 1940, 42 miles, 4 units; Fiscal year 1942, 296 miles, 4 units, and 101 miles, 6 units. The increase in the number of applications for Fiscal year 1944 over 1943 results from the amendment to Section 214 requiring authority for carrier construction. Sixty-three applications were for carrier systems.

The reduced construction cost covered by the applications approved during the year despite the increased demands for telephone toll service, is in line with the drastic reduction during the fiscal year of 1943 from the fiscal years of 1941 and 1942. This downward trend is caused by the scarcity of critical materials and the greatly increased use of multi-channel carrier current systems.

Twenty-six applications involving construction costs estimated at $31,902,819 had not been acted upon by the Commission at the close of the year.

During the year the use of the "EB" emergency type of carrier equipment has provided on an emergency basis over 400,000 miles of additional telephone channels, making a total of about 1,000,000 miles of such additional emergency channels now in use.

A proceeding was instituted to determine whether, under Section 214(a), an authorization from the Commission is required for the establishment of carrier systems, known as Type K Carrier Systems, on existing conductors providing additional facilities for interstate communications. The American Telephone and Telegraph Company and the New York Telephone Company were made parties respondents in the proceeding and were directed to show cause why authorization from the Commission was not required for the construction and operation of their carrier system between New York City and Boston. Type K carrier systems, superimposed upon wires, provide the means of transmitting twelve simultaneous conversations. In the New York-Boston case, eight Type K Carrier Systems, providing 96 additional telephone channels, were installed in lieu of the additional wires necessary to carry a comparable number of simultaneous conversations. It was decided by the Commission

in its final report adopted on January 25, 1944, that the construction or operation of carrier systems used for interstate or foreign communication by any carrier subject to the provisions of Section 214, without prior application to, and authorization from, the Commission, constitutes a violation of Section 214. Accordingly, the Commission concluded that all such carriers should make application to, and obtain authorization from, the Commission for all pending and future construction of carrier systems.

Planned Wire Projects - A tentative plan for coaxial cable construction announced by A.T.& T. Company calls for the installation of 6,000 to 7,000 route miles of coaxial facilities in the next five or six years for both the expansion of toll telephone service and for interconnecting television stations for network operations. Two applications pending before the Commission involve proposed construction of six coaxial units in cables between Terre Haute, Ind., and St. Louis, Mo., and between Atlanta, Ga., and Meridian, Miss., a total distance of 497 miles at an estimated cost of $10,000,000.

Radio Experimentation - On June 20, 1944, the Commission authorized the A.T.& T. Company to construct two ultra and super-high frequency experimental Class 2 fixed radio stations in New York City and Boston as terminals of a proposed wide-band, multi-station, point-to-point, beamed radio repeater circuit to operate simultaneously in both directions. Upon completion of construction, the stations will utilize frequencies ranging between 1,914,040 and 12,511,250 kilocycles in experimental radio communication embracing telephone, telegraph, facsimile and television transmission. This will be the first time construction of this character has been undertaken and the Commission will observe the development with interest.

Through Routes and Interconnections - The Commission considered again the petition of the Oklahoma-Arkansas Telephone Company which was filed under Section 201(a) of the Communications Act of 1934. This Section authorizes the Commission to order the establishment of physical connections between carriers, where the Commission "finds such action necessary or desirable in the public interest". This petition

sought to compel the Southwestern Bell Telephone Company to reestablish a physical telephone connection which prior to 1928 had existed between the facilities of Southwestern Bell and toll line facilities of the Oklahoma-Arkansas company. The Commission, by its order of December 8, 1943, denied the relief sought by the petitioner, and dismissed the proceeding after concluding that the petitioner failed to meet the statutory requirements which were prerequisite to a grant of the relief sought. This conclusion was premised on the findings made by the Commission that rehabilitation of the petitioner's circuits would require the unnecessary use of critical materials and labor, and that the available circuits of Southwestern Bell were adequate, having ample capacity to handle the traffic demands involved.

Volume and Speed of Toll Service - The volume of toll calls continues at an unprecedented level. During the fiscal year 660,000,000 toll board calls were handled by the Bell System and 605,000,000 short haul toll calls were handled through other than toll boards. Traffic of the Long Lines Department of the A. T. & T. Company is now running at the rate of 175,000,000 messages annually, compared with 150,000,000 at the end of the last fiscal year. Despite the growing increase in toll usage, service has improved during the year. The average time required to establish toll board connections in June, 1944 was 3.3 minutes. In June, 1943, 4.2 minutes were required as compared with 1.7 minutes in 1941.

Approximately 1,500,000 channel miles for toll telephone message service were added between toll centers of the Bell System, an increase of about 20% over the mileage at the beginning of the year. Approximately 85% of these added channel miles were derived from application of carrier system to existing physical circuits - principally cable conductors.

Overseas telephone service during the year was extended to the Union of Soviet Socialist Republics, Curacao and Trinidad.

Abandonments - Pursuant to Board of War Communications Order No. 10, the Commission has been notified of the closing of eight small rural exchanges, six telephone toll stations, 417 telephone toll stations with telegraph tariff listings, and the removal of 13,680 miles of copper wire, 662 miles of iron wire, five miles of cable, and 115 miles of poles. Except in the case of the small rural exchanges serving a few subscribers, these abandonments have not affected service and result from the substitution of cable for aerial wire routes and the involuntary removal of telephone stations.

(The use of telephone facilities as well as telegraph facilities for the transmission of racing information is discussed on page 39).

Radiotelephone Service - War conditions and the Board of War Communication's Order No. 19-B have continued to restrict the number of public transoceanic telephone calls between the United States and many foreign countries.

Direct commercial radiotelephone service was opened for the first time to the U.S.S.R. (European), Curacao (Dutch West Indies) and Trinidad (British West Indies). Tests with Afghanistan and China revealed that satisfactory radiotelephone service could not be established until better equipment is installed at the foreign terminals. New and efficient equipment is being installed at the Chinese terminal and it is expected that service between the United States and that nation may be opened during the first part of 1945.

During the fiscal year 53 applications were received for point-to-point telephone service and 52 authorizations were issued. Stations as of June 30, 1944, totaled 16 (includes 3 domestic stations used for short distance toll telephone service within the United States).

Rates and Tariffs

Rate Schedules - At the close of the year, 349 communication carriers had tariffs and concurrences on file with the Commission. They filed 20,638 tariff publications containing changes in rates, regulations, practices and classifications of service or establishing new communication services and new or revised instruments of concurrence. Of the total number filed, 10,958 related to telephone services; 6,696 related to telegraph services, and 2,984 related to both telephone and telegraph services. A total of 28 tariff publications were rejected for failure to conform to statutory requirements.

Numerous irregularities in the rate schedules were corrected or eliminated through correspondence with the carriers.

Special Permissions - During the year, 17 applications for special permission to make changes in tariffs or file tariffs to become effective on less than statutory notice were received from telephone carriers, of which 16 were granted and one was denied.

Special Telephone Charges of Hotels, Apartment Houses and Clubs on Interstate and Foreign Communications - After a joint hearing with the District Public Utilities Commission, the Commission in a final report and order issued on December 10, 1943, held that in collecting surcharges on interstate and foreign toll calls hotels, apartment houses and clubs in the District of Columbia were agents of the telephone companies involved and hence that such surcharges were subject to regulation by the Commission. The companies were ordered to file proper tariffs with the Commission covering such surcharges. The District Commission reached a similar conclusion as to its jurisdiction over surcharges on local calls.

Following the issuance of the Commission's decision in this matter, the various Bell System telephone companies filed provisions in their respective tariffs on file with the Commission to the effect that interstate and foreign long distance telephone service would, on and after February 15, 1944, be furnished to hotels, apartment houses and clubs on condition that no surcharges or service charges be collected on interstate and foreign long distance telephone calls. The American Telephone and Telegraph Company concurred in these provisions. (See pp.2-4 for discussion of suits instituted by the Attorney General, at the Commission's request, in Federal District courts in Washington, D.C., New York, N.Y., and Chicago, Ill., to enjoin various hotels in each of those cities from continuing to collect "surcharges" notwithstanding this tariff provision and to enjoin telephone companies from furnishing service to those defendants who continue to make such collections.) Elimination of such surcharges will result in an estimated saving to the users of the service of over $2,000,000 annually. Complaints have been filed with the Commission by certain hotel associations against the Bell System telephone companies attacking the lawfulness of such tariff provisions. At the request of the complainants, however, the hearings on these complaints have been postponed indefinitely.

American Telephone and Telegraph Company, Long Lines Department, and Associated Bell System Companies Rate Reductions - Following negotiations by the Commission with the American Telephone and Telegraph Company, the Bell System agreed to effect an annual reduction in interstate rates of approximately $8,000,000. Approximately $5,600,000 of the roduction is expected to derive from an agreement pursuant to which the night rate period, during which reduced rates are applicable to long distance interstate telephone calls, has been lengthened to make such reduced rates applicable beginning at 6 p.m. instead of 7 p.m.,

effective March 1, 1944. The remaining portions of the reductions, an estimated $2,350,000, will accrue to users of TWX message service by a reduction, also effective March 1, 1944, in the overtime rate on interstate TWX messages. This reduction is composed of a cut in over-time charges from one-third to one-fourth of the initial-period rate on all TWX messages for which the initial-period charge is over thirty cents.

Effective May 1, 1944, the New York Telephone Company reduced charges for certain local channels and interexchange studio transmitter channels furnished in connection with channels for Program Transmission.

Effective May 20, 1944, the Illinois Bell Telephone Company reduced charges for certain local channels and interexchange studio transmitter channels furnished in connection with channels for Program Transmission.

Independent Telephone Companies - Effective November 15, 1943, the West Coast Telephone Company and the West Coast Telephone Company of California reduced their requirements for a monthly guarantee of revenue from Teletypewriter Exchange Service from $30 to $10 and changed the duration of the initial contract period for such service from one year to one month pursuant to the Commission's Order in Docket No. 5897.

Reduction of Rates For Overseas Message Toll and Program Transmission Service - On June 29, 1944, the American Telephone and Telegraph Company filed amendments to its tariffs to become effective August 1, 1944, reducing 3-minute week-day and Sunday rates for overseas message toll telephone service and rates for overseas program transmission service. Reductions in rates for message toll service apply between the United States on one hand, and Argentina, Brazil, Chile, Peru, Colombia, Haiti and Puerto Rico, on the other hand. Reductions in program transmission service rates will be made between the United States and all the countries named except Puerto Rico. It is expected that similar amended tariffs will be filed by the American Telephone and Telegraph Company which will effect a reduction in rates for message toll telephone service to and from the United States from and to Costa Rica, Guatemala, Honduras, Nicaragua, Curacao, Panama and Surinam, and a reduction in charges for program transmission channels between the United States and most of the Central American countries indicated above.

Supervision of Accounts

New York Telephone Company Accounting - Hearings were held jointly with the New York Public Service Commission to investigate the accounting performed by the New York Telephone Company with respect to certain inter-company property transfers, and to require the company to show cause why an amount equivalent to the inter-company profit on the transfers of property should not be charged to Account 413, "Miscellaneous Debits to Surplus". The transactions in question involved the transfer of certain property from the American Telephone and Telegraph Company to its subsidiary, the New York Telephone Company, at a price which was $4,166,000 in excess of the depreciated cost of the property to the American Telephone and Telegraph Company. The New York Telephone Company, recorded such "price" which included the $4,166,000 "profit" to A.T.& T., as "book costs". After public hearings and argument, the Commission found that the accounting performed by the New York company with respect to the inter-company transfers resulted in a purely inflationary write-up of the company's accounts. Accordingly, the Commission directed the New York Telephone Company to charge the entire amount of $4,166,000 to surplus with appropriate concurrent entries. At the close of the fiscal year the Commission's order was involved in litigation.

Bell System License Service Contracts - As part of a long range program for the study of certain fundamental problems of telephone rate regulation, the Commission, acting in close cooperation with the State Commissioner's Committee designated for the purpose, is continuing its investigation into the Bell System license service contracts. Considerable data have been compiled which will be of material assistance to this Commission and the state regulatory commissions concerned with the regulation of telephone rates.

Pennsylvania Telephone Corporation Accounting - The Pennsylvania Telephone Corporation was ordered to appear and show cause why the Commission should not refer the matter of certain accounting violations to the Attorney General of the United States for the institution of appropriate proceedings. These violations involved the practice of making charges to operating expense to amortize amounts in its Account 100.4 "Plant Acquisition Adjustment", without the prior approval or direction of the Commission as required by the Commission's accounting orders and regulations. The Commission also ordered a general investigation into the accounting performed, and the accounts, records, and memoranda kept by the company with respect to all entries made in Account 100.4 and further ordered that all charges to operating expenses which were

made on or after January 1, 1943, for the purpose of amortizing the amounts in said Account 100.4 be suspended pending determination by the Commission as to the propriety and reasonableness of such charges. The proceedings are now pending additional hearings before the Commission.

Amendments to Uniform System of Accounts - Several amendments were made to the uniform system of accounts prescribed by the Commission, to simplify the accounting requirements, because of an acute shortage of accounting personnel, without sacrifice of records of essential information.

Restatement of Plant Accounts on Basis of Original Cost - Studies of restatements filed by communication carriers were continued, but were primarily limited to the instances where the matter was under consideration by State Commissions with respect to certain carriers hereinafter discussed. On the basis of the studies undertaken thus far, it is apparent that the pursuit of this work in the future will result in showing that there should be substantial reductions in the recorded investments of the carriers in communications plants.

Pacific Coast Restatements - Further studies, and exchanges of views with the several State regulatory commissions, with respect to the proposed restatement of the plant accounts by three telephone carriers on the Pacific Coast have revealed considerable laxity on the part of these carriers in complying with the provisions of the uniform accounting regulations.

Continuing Property-Records - The presently effective uniform system of accounts provide for the establishment and maintenance of continuing property records. Each of the several carriers has filed with the Commission, after extended conferences with representatives of this Commission and State Commissions, plans for the establishment and maintenance (or the improved maintenance) of such records as soon as competent personnel is available.

Depreciation - Studies of the changes in depreciation rates of common carriers by wire and radio are being continued in view of the vital importance of this work in connection with the control by the Commission of prices for communication services in line with the Federal anti-inflation program. Members of the staff have devoted substantial time to the activities of the Committee on Depreciation of the National Association of Railroad and Utilities Commissioners, particularly to the review of the comments upon its report for 1943, and to the preparation of its report for 1944. Current conditions have occasioned close scrutiny of the net effect upon depreciation

rates, and consequent charges to operating expenses, of such factors as (1) the abnormally short life of emergency facilities, (2) war-imposed overloading of equipment, and (3) deferment of plant replacements due to labor and material shortages.

Miscellaneous - In this field, the Commission also:

Simplified procedures in the accounting for transactions involving foreign-currency exchange.

Completed a study of the accounting organization of a large telephone carrier, to determine the extent to which the procedures of the carrier conform to accounting regulations, and to obtain information concerning the nature and extent of the accounting data that are readily available from the carrier's records.

Made examinations of the accounts of two large telephone carriers to determine the manner in which the carriers segregated their depreciation reserves by primary accounts.

Continued studies of the Long Lines Department of the American Telephone and Telegraph Company with respect to plant additions, working capital requirements, depreciation reserves, receipts and payments for lease and joint use of plant, and division of revenues from joint interstate business with other participating carriers.

Continued investigations of the methods of telephone carriers with respect to restatement of plant accounts on basis of original cost and the establishment and maintenance of continuing property records.

Made an examination of the distribution of radio program transmission wire costs between the networks, on the one hand, and the individual stations, on the other hand.

Commenced examinations in the offices of several of the larger communication carriers in the matter of extension of credit and accounting for uncollectible revenues.

Statistics and General Studies

There were 163 common carriers and 42 controlling companies which filed annual reports containing financial and operating data for the calendar year 1943, including 132 telephone carriers and 31 wire-telegraph, ocean cable, and radiotelegraph carriers.

The publication "Statistics of the Communications Industry in the United States" is issued annually. Certain statistical data summarized from the annual reports filed by the principal telephone carriers, are presented in the following table:

Item	1943	1942	Percent Increase or (Decrease)
Investment in plant and equipment	$5,749,404,257	$5,652,506,025	1.71
Depreciation and amortization reserves	1,815,817,128	1,649,187,666	10.10
Net investment in plant and equipment	$3,933,587,129	$4,003,318,357	(1.74)
Local service revenues	1,015,417,529	956,407,209	6.17
Toll service revenues	683,249,608	557,255,266	22.61
Total operating revenues	1,779,244,520	1,590,312,393	11.88
Operating expenses	1,143,350,306	1,021,818,170	11.89
Taxes, including income and excess profits	393,854,121	337,285,766	16.77
Net operating income after all taxes	242,040,393	231,208,757	4.68
Net income	194,244,968	178,012,225	9.12
Dividends paid	181,860,721	182,193,395	(.18)
Company telephones:			
Business	8,389,888	7,669,677	9.39
Residential	14,683,244	14,071,664	4.35
Average number of calls originating per month:			
Local	3,232,537,623	3,227,608,668	.15
Toll	121,494,120	103,560,468	17.32
Number of employees at end of year:	368,603	359,941	2.41
Male	103,330	112,534	(8.18)
Female	265,273	247,407	7.22
Total payroll for the year	$ 752,259,155	$ 670,787,483	12.15

Intercompany general service and license fees and rents amounting to approximately $35,000,000 for each of the years 1943 and 1942, have not been eliminated in Items 6 and 7 above, "Total operating revenues" and "Operating expenses."

Occupational Classifications of Employees - During the fiscal year, revised regulations relating to occupational classifications of employees of land line telegraph carriers and Class A and B telephone carriers were promulgated by the Commission, including corresponding revisions in the schedules contained in the annual report forms for the reporting of labor information. These revisions were adopted after consultation with representatives of the industries, labor organizations and other governmental departments interested in this matter. It is anticipated that the additional information that will be supplied in the revised report forms will eliminate the necessity of obtaining numerous special reports from the carriers by this Commission and other governmental agencies.

Economic Studies - In view of changing operating methods and facilities and types of services rendered by the various branches of the communications industry, and the rapid growth of the industry during recent years, it has been necessary to undertake certain basic economic studies which will aid the Commission in reaching well-informed policy judgments on matters of rate and service regulations. Such developments as the growing competitive threat of air mail to the private communications industry may call for a reappraisal of traditional regulatory policies, and it is to such questions as these that the basic studies are addressed. Analytical studies of the trends in demand for communications facilities in general, and for particular segments of the industry are being made, and continuing studies of such matters as investments, earnings, expenses, and justifiable rates of return to the carriers are projected.

2. TELEGRAPH (WIRE, CABLE, RADIO)

(A) DOMESTIC

Service and Facilities

Merger of Western Union & Postal Telegraph - Pursuant to the provisions of Section 222 of the Communications Act of 1934, as amended, the Commission after extensive hearings on the application to merge filed by Western Union & Postal Telegraph, Inc., issued its final Report and Order on September 27, 1943, authorizing and approving the proposed merger of the two telegraph systems, effective October 7, 1943. In its final order the Commission stated that the proposed merger would be in the public interest by providing opportunities and advantages which, if properly availed of by the merged company, would place the industry on a sounder financial basis, permitting it to progress and meet the needs of the

public for a more efficient record communication service. The Commission concluded that the merger will permit a unified management of the domestic telegraph industry, and noted Western Union's assertion that merger will make possible long-term planning for the modernization of plant and the improvement of service standard. In the interest of providing a completely adequate telegraph service in keeping with the technical accomplishments and public requirements, it is expected that the company will have developed completely and submitted to the Commission, one year from the effective date of the merger, a comprehensive plan for converting, within the shortest possible time, its existing facilities into a modern, efficient nation-wide communications system capable of effectively competing with other communications services.

It was also concluded that the merger would enable elimination by the merged company of many uneconomic expenditures incurred by reason of competitive conditions which, until merger, were a continual drain on the resources of the industry; that merger would permit a unified management of the domestic telegraph industry and facilitate long-term planning for the modernization of service standards; and that through the elimination of duplicate operations, the ensuing consolidation of the personnel of the two companies would afford relief from the wartime manpower shortage, with consequent betterment of the working conditions of the labor force as a whole, possible curtailment of turnover trends and a resulting increase in efficiency and productivity. It was expected that the financial condition of the merged company would be stronger than that of either of the merged companies separately, and the merged company would be better able to undertake the steps necessary to provide improved service at reduced cost to the public.

It was found by the Commission that the proposed merger provided for the divestment of the international telegraph operations being carried on by Western Union, as required by paragraph (2) of Section 222 (c) of the Act. In accordance with such statutory provision, the Commission ordered that Western Union exercise due diligence to bring about such divestment as promptly as it reasonably can and not later than one year from the date of the order unless such period is extended by the Commission. In a separate report and order, the Commission, pursuant to Section 222(e) of the Act, approved formulas for the distribution of international traffic among the various international telegraph carriers and the division of charges for such traffic. In general, the distribution of traffic approved was based upon distribution during a representative past period, adjusted to correct past inequities.

The Commission recognized that present telegraph rate structures were developed under competitive conditions which produced numerous anomalies and questionable discriminations; and which resulted in establishment of preferential rates service classifications rather than basic reductions. The elimination of competition within the domestic telegraph industry is expected to correct these and other anomalies, and the economies and other benefits resulting from the merger would make possible substantial reductions in rates. The Commission observed that such reduction should be accompanied by a rationalization of the rate structure so that unwarranted preferences are eliminated, and the basic classifications are established in such a manner as to stimulate greatly increased volumes of traffic, with resulting savings in costs. The Commission concluded that if appropriate action along these lines is not undertaken voluntarily, it would initiate appropriate action to this end.

In the course of the hearings Western Union made various commitments with respect to the manner in which the labor forces of both systems would be integrated. Among other commitments, it undertook to merge the seniority of the employees of both systems on an equitable basis, to adjust the wages of Postal employees to the levels of wages paid to Western Union employees, and to give Postal employees jobs comparable to those held by them prior to the merger.

Since the merger the Commission has received about 3,000 complaints from employees of the carriers arising under these commitments and under Section 222(f) of the Act. All complaints arising under Section 222(f) were referred to the National Labor Relations Board. The Commission also rendered assistance to the War Labor Board in connection with its arbitration of disputes certified to it concerning commitments made by the company during the course of the merger hearings.

Acting under Section 214 of the Act, Western Union filed an application on October 14, 1943, for authority to integrate the offices, facilities and equipment formerly owned or controlled by Postal with those of Western Union. This application was granted with five important conditions designed to safeguard service.

The grant stated that upon request of the Commission made because of formal complaint of any state commission for any other reason, the Western Union was to re-establish any office closed, replace any facilities or equipment removed, re-establish the former hours of service, or otherwise restore the service formerly furnished in a manner satisfactory to the Commission.

The Commission announced that it would continue to study the overall adequacy of service, including particularly the need for new offices, relocation of existing offices, increased hours of operation of existing offices, and improvements in the types of service and adequacy of facilities.

Supplemental applications filed by Western Union and approved by the Commission have permitted the closure of certain functional offices and offices located more than one-quarter of a mile from the nearest available telegraph office.

Although the integration of the system's 90 functional offices and outside plant will require additional time, the integration of branch, tributary and other offices was practically completed by end of the fiscal year. These steps toward integration had been taken: Offices closed: Functional, 20; Tributary, 635; Branch, 523; Agency, 458; Joint, 27. New Offices opened: Branch, 32; Agency, 321. Hours of operation extended: Public Offices, 377. Customer printer tie lines: Duplicate, removed, 3,621; Installed, new customers, 2,017. Customer call boxes: Duplicate, disconnected, 94,221.

Improvement in the financial condition of the domestic telegraph industry has already been effected as the result of the merger. As of the date of the merger, Postal had notes payable to the Reconstruction Finance Corporation in the principal amount of $12,563,452. Most of this money had been used to finance its operating defecits over a period of about three years. Under the merger agreement these loans were assumed by Western Union. On January 7, 1944, Western Union repaid the loans in full, plus interest, using funds realized from the sale of short term securities held by it, thus reducing annual fixed charges of the merged company by approximately $500,000.

Construction of Wire Facilities - The most notable advancement during the year, aside from the merging of telegraph operations, was the installation of reperforator switching systems in Western Union's large message centers at St. Louis and Dallas and the partial installation at Washington, D.C. Reperforator switching provides for the automatic switching of messages from an incoming message channel to an outgoing channel, thus eliminating manual relaying. Six such offices are now in operation and at each the speed of relaying messages is substantially faster than in manual message centers.

During 1943, Western Union installed six carrier current systems between certain cities west of Chicago. Carrier systems provide high grade telegraph paths at relatively low cost by employing high frequency electrical impulses guided over physical wires.

Seventy-seven applications for wire telegraph construction certificates were filed with the Commission. Seventy such applications were granted, 12 of which authorized extension of lines to military and naval establishments, and involved the leasing of approximately 5,211 channel miles, constructing about 160 wire miles and installing carrier systems costing $526,810. Two applications were dismissed as not being in proper form.

Overall Improvement of Service - The Commission is continuing with informal studies in connection with the overall adequacy and improvement of domestic telegraph service. It is understood that Western Union is also engaged in studies with respect to the overall adequacy and improvement of such telegraph service, and it is expected that the company will submit a plan for the modernization of its plant and the improvement of its service standards pursuant to the terms of the merger report.

Speed of Service - Pursuant to Order 113, adopted April 27, 1943, Western Union and the Postal Telegraph on July 20, 1943, filed with the Commission their first speed of service reports, covering the service rendered during June, 1943. These initial reports, with other data, were analyzed in the September, 1943 Commission report to the Board of War Communications on telegraph service, the first of periodic reports made pursuant to the request contained in Board Order 25-C.

The year saw an improvement in the speed of telegraph service. In June, 1943, it required an average of 14.1 minutes for the fastest 95% of ordinary full rate messages to pass through a Western Union message center. In June, 1944, this had been cut to 10.1 minutes. The percent of such messages completed in 15 minutes improved from 61.9 to 81.1, respectively. While these figures are still substantially below the objectives established in BWC Order No. 25-C, it is apparent that the measures taken by the BWC, and the Commission, and the merging of telegraph operations are becoming progressively effective. Other tests of speed of telegraph service, such as public office handling and messenger delivery, performance, also indicate improvement during the year.

Improvement in the quality of TWX (Teletypewriter Exchange Service) service during the year is likewise noted. In June, 1943, 1,240,256 connections were completed at an average of 2.7 minutes. In June, 1944, the calls completed totalled 1,214,791, a decrease of 2.1%, and the average time of completion was 1.8 minutes.

Abandonments - Section 214 of the Communications Act of 1934 was amended by Congress on March 6, 1943, to provide, among other things, that no carrier shall discontinue, reduce or impair service to a community, or part of a community, unless and until there shall first have been obtained from the Commission a certificate that neither the present nor future public convenience and necessity will be adversely affected thereby.

At the beginning of the fiscal year, eight applications filed under this amendment were pending and 36 were received during the year. Of these 44 applications, 21 were granted, 3 were denied, 7 were withdrawn, and 13 were pending as of June 30, 1944. Thirty-seven of the applications were requests for authority to close telegraph offices and seven involved the reduction of office hours at telegraph offices.

Pursuant to the requirements of BWC Order No. 10, the Commmission has received notification from telegraph companies of the abandonment or suspension of service as follows: 5 offices, 166 miles of iron wire, and 85 miles of pole line. These abandonments are the result of removal of railroad lines authorized by the Interstate Commerce Commission.

Use of Facilities for Racing Information - An investigation into the use of telegraph and telephone facilities for non-essential purposes including the dissemination of racing information by other than press associations, newspapers and radio stations was made pursuant to an Order of the Commission issued on September 21, 1943. This investigation was in response to a request from the BWC.

Rates and Tariffs

(For data relating to rate schedules filed by telegraph carriers see page 27.)

Improvement of Domestic Rate Structure - At the close of the fiscal period, pursuant to the merger report, the Commission was engaged in studies of the rationalization of the rate structure of Western Union.

Special Permissions - During the year, 332 applications for special permission to make changes in tariff or file tariffs to become effective on less than statutory notice were received from telegraph carriers. Of this number, 306 were granted, 14 were denied and 12 were withdrawn. One application relating to both telephone and telegraph service was received and granted during the year.

Government Message Rates - As authorized by the Post Roads Act of 1866 and subsequent legislation, the Commission promulgated the annual Order fixing rates applicable to United States Government telegraph messages for the ensuing fiscal year. The new order (No. 116) continues in effect the same rates prescribed for the past fiscal year. The rates for government domestic telegraph messages may not exceed 80 percent of the normal rates charged the public and the rates for international messages of the United States Government shall not exceed 50 percent of the rates for commercial full rate messages except that government code message rates may not exceed 50 percent of the commercial code rates.

Rates Applicable to Army Post Exchange Telegrams - Upon consideration of a complaint filed by the Secretary of War alleging that the Western Union Telegraph Company had refused to accept telegrams of the Army Post Exchanges as Government telegrams, the Commission in its Order No. 116-A required the Western Union Telegraph Company to accept and transmit telegraph communications of the United States Army Post Exchanges relating exclusively to the business of such exchanges at the rates prescribed for government telegrams in Commission Order No. 116 of June 28, 1943, fixing charges for government messages at 80% of the rate for corresponding commercial messages.

Supervision of Accounts

Relief and Pensions - A study was made of the data which were submitted concerning relief and pensions in the matter of the merging of Postal Telegraph, Inc., into The Western Union Telegraph Company, particularly with respect to the establishment by Western Union of a book reserve representing the accrued actuarial liability in respect to future payments to Postal pensioners. Considerable time was also given to the matter (which is still pending) of excluding from the current operating expenses of Western Union all pension costs in excess of normal accruals on the full-service basis. Studies were made of the pension and benefit plans of the several carriers which may be consolidated into an international telegraph carrier with the view of developing the

most appropriate pension and benefit plan, from an economic and sociological standpoint, for the proposed international carrier. Consideration was given to the proposed revision by the Bell System companies of their actuarial computations and the resultant payments into their pension-trust funds, the revision being occasioned by the alleged reduction of the average rate of interest, now being earned by the funds. Certain studies were made also in connection with data which were submitted by communication carriers regarding their pension and other benefit plans.

Western Union Telegraph Company - Original Cost and Restatement of Plant Accounts and Establishment and Maintenance of Continuing Property Records - Since the adoption by the Commission of a Unified System of Accounts for Wire-Telegraph and Ocean-Cable Carriers, effective January 1, 1942 (later postponed to January 1, 1943), the Commission's staff has been engaged in conducting an examination of the accounts and records of The Western Union Telegraph Company and has participated in numerous conferences with representatives of the carrier with the view of effecting a restatement of the accounts of that company on the basis of original cost, establishing retirement units for future accounting and installing a continuing property record system, all of which are required by the regulations. Since October 7, 1943, the date of the merger of the domestic telegraph carriers, the staff has likewise conducted examinations and conferred on numerous occasions with representatives of the carrier with a view of establishing a sound plan for accounting for the properties acquired from the Postal Telegraph-Cable Company. As a result of these examinations and discussions, Western Union has submitted proposals for reclassifying amounts for plant and equipment, establishing continuing property records and integrating accounts for Postal plant and equipment, which are now being considered by the Commission.

Statistics and General Studies

Thirty-one wire-telegraph, ocean-cable, and radio-telegraph carriers filed annual reports containing financial and operating data for the year 1943. (See Economic Studies, page 34.)

Certain statistical data summarized from the annual reports filed by wire-telegraph carriers, including data relating to

ocean-cable operations of Western Union which are not adequately segregated in the reports filed by the company to permit segregation from wire-telegraph operations, are presented in the following table:

Item	1943	1942	Percent Increase or (Decrease)
Investment in plant and equipment	$344,034,810	$417,862,737	(17.67)
Depreciation and amortization reserves	112,814,280	133,374,910	(15.42)
Net investment in plant and equipment	$231,220,530	$284,487,827	(18.72)
Domestic service revenues	153,133,698	134,772,289	13.62
Foreign service revenues	11,507,878	8,796,776	30.82
Total operating revenues	178,887,319	156,466,776	14.33
Operating expenses, depreciation, and other operating revenue deductions	165,168,770	140,161,854	17.84
Net operating revenues	13,718,549	16,304,922	(15.86)
Income and excess profits taxes	4,940,000	5,183,000	(4.69)
Net income	1,750,626	5,162,136	(66.09)
Dividends declared	2,090,080	2,090,080	-
Revenue messages transmitted:			
Domestic	232,083,099	223,729,534	3.73
Foreign	5,656,573	3,908,516	44.72
Number of employees at end of year	62,352	65,992	(5.52)
Total pay roll for the year	$114,872,601	$ 95,022,484	20.89

In above table, Item 1, "Investment in plant and equipment," includes net book cost of plant of Postal Telegraph, Inc., acquired by The Western Union Telegraph Co. in the amount of $16,754,143, on basis of gross book cost of $69,320,179 less tentative allowance for depreciation of $52,566,036. Item 9, "Income and excess profits taxes," includes $320,000 state and foreign government taxes for 1943, the corresponding amount for 1942 being included in operating expenses as it was not segregated in the reports for that year.

(B) INTERNATIONAL

Service and Facilities

Mackay Merger - On December 31, 1943, Mackay Radio & Telegraph Company (California) was merged with Mackay Radio & Telegraph Company (Delaware). These two companies were non-competing radiotelegraph carriers and the outstanding stock of both companies was owned by the same parent company. An outstanding feature of this merger was the ear-marking of a portion of the surplus of the merged company to provide for restatement of the plant accounts on basis of "original cost" and adjustment of the allowance for depreciation on the reserve requirement basis, as soon as the necessary studies for making such adjustments have been completed.

Radiotelegraph Circuits - The radiotelegraph carriers have been able to maintain efficient communication with various countries throughout the world and at the same time to establish new circuits despite the exigencies of war. Restoration of circuits to some of the enemy and enemy occupied territory, following the invasions by the Allied Forces, has already begun and it is expected that pre-war circuits to other areas will be similarly restored shortly after their liberation by the Allied Forces.

During the past year direct radiotelegraph circuits were established for the first time to Gambia, British Guiana and Madagascar. A direct circuit to Ethiopia was authorized and it is expected that it will be open for service some time during the ensuing year. Additional direct circuits between the United States and Brazil and Uruguay were opened by companies other than those already communicating with these two countries. A similar additional circuit to Chile was authorized although as of June 30, 1944, it had not been opened for traffic in both directions. The circuit to Afghanistan, which was opened in May, 1943, was closed for a temporary period during the past fiscal year due to a lack of transmitting tubes at the foreign station.

Prior to the Allied invasion operations in Italy and France, the Commission assisted the Joint Chiefs of Staff and the Board of War Communications in making arrangements to have United States companies install and operate semi-portable stations in the invasion areas. The necessary equipment and personnel were in readiness just before the invasions, and shortly thereafter the stations were placed in operation on direct circuits to the United States. Upon completion of the installation of the invasion area stations, which were under the control of the Military Forces, the Commission promptly authorized

the companies in the United States to communicate with their respective stations in Italy and Western France at points designated by the Military. Service over these circuits was inaugurated immediately, handling press and government traffic, and any other classes permitted by the Office of Censorship.

In accordance with the recommendations of the Board of War Communications, the Commission continued to authorize one company only to operate with each new point of communication in a war zone for handling all classes of commercial, press and government traffic. Since one of the United States radiotelegraph carriers is normally authorized to handle press and government traffic only it requested authority to handle commercial traffic in order that it might qualify to establish circuits to war areas where press traffic generally predominates. This matter was set for hearing. The report of the Commission concluded that this carrier may be authorized to handle all classes of commercial traffic, as well as press and government traffic, over circuits to war-zone points which may be authorized to the company by the Commission whenever this company only is permitted to establish circuits to these points. Consequently, when the Commission authorized this company to communicate with the invasion area in Western France, it was also authorized to handle all classes of commercial traffic over the circuit.

In accordance with outstanding recommendations of the Board of War Communications made during the preceding fiscal year the Commission has referred to the Board all applications for the establishment of trans-oceanic circuits, and where such circuits were authorized by the Commission, they were continued on a temporary basis for periods not exceeding one year. The policies of the preceding fiscal year regarding procedure in the establishment of new circuits, involving the Board of War Communications, Department of State, Joint Chiefs of Staff and the Commission, were also continued in effect during the past fiscal year.

All radiotelegraph carriers have experienced some difficulty in handling the present large volume of international traffic because of the limited number of frequencies, interference, and comparatively inefficient equipment being used at most foreign terminals. With a view to alleviating this situation, one of the carriers applied for authority to operate on certain "side frequencies" 2.5 kc and 5 kc from its regularly assigned frequencies. The Commission granted authority for operation on such frequencies and the applicant has advised that under certain conditions these frequencies are used considerably, although not as extensively as the regular frequencies, due mainly to insufficient selectivity of receivers at many of the foreign points.

No new point-to-point radiotelegraph stations were licensed. A total of 258 applications, covering various matters were received and of these, 245 authorizations were granted.

The study to determine whether efficient use was being made of frequencies authorized to the carriers was continued through the year. This was necessitated primarily by the need of the Armed Forces for frequencies to be used in connection with important war operations.

Ocean Cable - Cable communication services of the American companies to continental Europe and to Far Eastern points remained suspended because of the war. Direct facilities are available to the United Kingdom, Eire and the Azores. The Pacific cable is operated to Hawaii and Midway Islands only. Direct cable service has also been maintained to the West Indies, Central and South America.

Reconsideration of Applications for Authority to Communicate with Algiers, Dakar and Rabat - On May 23, 1944, the Commission affirmed its temporary authorization to Mackay and its denial to RCAC and Press Wireless to communicate with Algiers; its temporary authorization to RCAC and its denial to Mackay to communicate with Dakar and Rabat; its temporary authorization to RCAC to operate a broadcast cue and contact control channel to Algiers.

Applications had been filed by RCAC and Press Wireless for reconsideration by the Commission of its original action of February 19, 1943 granting Mackay the Algiers circuit and denying it to RCAC and Press Wireless. This original action was taken by the Commission on the recommendation of the BWC which was based on the decision of the Joint Chiefs of Staff that only one company should be authorized and that company should be able to handle all classes of traffic.

The Commission granted the temporary authorization to RCAC to operate the broadcast cue and contact control channel on August 3, 1943, after being advised that the Joint Chiefs of Staff had no objection to such a grant.

Press Wireless Application for Modification of Licenses From "Fixed Public Press" to "Fixed Public" Service - Press Wireless originally sought authority to render commercial service on all its presently operating foreign circuits and on any new circuits which it might be authorized to establish in the future. Subsequently, the application was amended limiting it to a request for authority to handle commercial messages on those foreign circuits which under wartime policy would be authorized to one, and only one, United States carrier, and only for the duration of such policy. The hearing was held on

November 18 and 19, 1943, following which the Commission's final report concluded that Press Wireless shall be regarded as eligible for consideration in the authorization of circuits to points where the "one-carrier" policy may apply, so long as such policy is applicable.

Rates and Tariffs

Special Permissions - During the year 1943, 332 applications for special permission to make changes on less than statutory notice were received from telegraph carriers. 306 were granted, 14 were denied and 12 were withdrawn.

Rate Changes - RCAC and the Western Union reduced rates for message telegraph traffic between the United States and the French Cameroon via RCAC direct circuit to Brazzaville, effective July 25, 1943. The rates for full rate messages between New York, N.Y., and the Cameroons were reduced from 88 cents to 62 cents a full rate word.

Mackay reduced rates for message telegraph service between the United States and Madagascar coincident with the establishment of a direct radiotelegraph circuit between New York and Madagascar, effective July 29, 1943. The rates were reduced from 75 cents a word to 50 cents a word for full rate traffic between New York City and Madagascar.

All America, Western Union, Postal, RCAC and Tropical reduced rates for message telegraph service from the United States to Central and South America and the West Indies pursuant to the Commission's Order in Docket No. 6046, effective August 16, 1943. This was the first step in a program for the establishment of lower rates between the United States and Latin America which when complete will result in an estimated annual savings to the public of more than $2,000,000.

All America reduced rates for message telegraph service from Bolivia to the United States pursuant to the Commission's Order in Docket No. 6046.

Western Union, All America, Mackay, RCAC and Tropical reduced rates for message telegraph service between San Francisco and Panama to the level of the rates for service between New York City and Panama, effective December 3 and 6, 1943, pursuant to Commission's Order in Docket 6046.

Press Wireless established rates for deferred press messages between its offices in the United States and Rio de Janeiro, Brazil, effective December 24, 1943.

RCAC reduced rates for message telegraph service from the United States to French Guiana via the direct radiotelegraph circuit to Paramaribo, Dutch West Indies, effective January 21, 1944. Reductions of 13 to 21 cents a full rate word were made with proportionate reductions for other classes of traffic.

RCAC established rates for message telegraph service, program transmission service and radiophoto service between the United States and Italy via a new direct radiotelegraph circuit, effective February 1, 1944. The new message telegraph rates between New York City and Italy are the same for messages in plain language, cipher and code and are equal in both directions in terms of United States currency. The basic rate between New York and Italy is 15 cents a word for full rate messages. The basic rate for ordinary press messages is 5 cents a word.

RCAC and Western Union reduced rates for ordinary press messages between the United States and New Caledonia via the direct radiotelegraph circuit between San Francisco and New Caledonia, effective March 27, 1944. The basic rates are 5 cents a word between San Francisco and New Caledonia, a reduction of 5 cents a word.

Press Wireless and Western Union established joint through rates for message telegraph service coincident with the establishment of through routes by these companies between places in the United States and foreign countries with which Press Wireless has direct radiotelegraph circuits, effective April 24, 1944.

RCAC, Mackay and Western Union reduced the rates for ordinary press messages which ranged from 12 to 16 cents a word between the United States and Australia to levels which range from 5 to 9 cents a word depending upon the origin or destination in the United States, effective April 27, 1944.

Mackay, RCAC., Commercial Cable and Western Union reduced rates for message telegraph service from the United States to Madagascar, Comoro Islands and Reunion Island, effective May 1, 1944. Reductions range from 15 to 11 cents a full rate word with proportionate reductions in other classifications.

RCAC, Mackay and Western Union reduced the rates for ordinary press messages between the United States and New Zealand, effective May 10, 1944. The new rates and the amount of the reductions are the same as in the case of Australia, preceding.

All America established rates for Drop Copy Press Service from certain places in South and Central America and the West Indies to Washington, D.C., effective May 15, 1944. At the same time the company reduced the minimum wordage requirements of this service from 300,000 words to 250,000 words per annum.

All America, RCAC, Mackay and Western Union reduced rates for message telegraph service between the United States and the "wireless stations" in Chile, effective May 16, 1944. The rates for full rate messages are reduced 12 cents a word; the rates for other classifications are reduced proportionately.

Press Wireless established rates for message telegraph service and program transmission service between the United States and France (European Theatre of War) via the new direct radiotelegraph circuit of Press Wireless, effective June 14, 21 and 23, 1944. The rates for message telegraph service are the same for messages and plain language, cipher and code and are equal in both directions in terms of United States currency. The basic rate for full rate traffic between New York City and France is 14 cents a word. The ordinary press rate is 5 cents a word to and from New York, N.Y.

Investigation of All Foreign Telegraph Rates - After investigation and hearing in the latter part of 1942, the Commission issued a proposed report concluding that the rates and charges of Press Wireless, Inc., for ordinary press service between Los Angeles and China were unjust and unreasonable, and should be reduced. Subsequently, the Commission issued an order directing that an investigation be instituted into all of the rates and charges of Press Wireless, and requesting Press Wireless to show cause why such rates and charges are not unjust and unreasonable, and why an interim reduction should not be made pending the conclusion of the proceedings. The Commission also ordered that the proceedings concerning communication service furnished by Press Wireless between the United States and China be reopened. The Commission thereafter instituted an investigation into the rates and charges of all carriers in connection with telegraph service between the United States and all foreign points. The proceeding concerning all of the rates and charges of Press Wireless was consolidated with the new investigation. Hearings in the consolidated proceedings have not yet been held. The re-hearing with respect to rates and charges between Los Angeles and China has been concluded and the carrier has filed its proposed findings and conclusions.

Rates between the United States and South America, Central America and the West Indies - The first step in the Commission's program for the establishment of lower rates

between the United States and Latin America, as provided in a report and order issued by the Commission on June 22, 1943, was taken on August 16, 1943. On or about that date, rate reductions, in accordance with the Commission's order became effective for service from the United States to South America, Central America and the West Indies by All America Cables and Radio, Inc., Western Union, Postal Telegraph-Cable, RCA Communications, Inc., Mackay Radio & Telegraph Co. Inc., and Tropical Radio Telegraph Co.

Southbound rates from the United States to all Central and South American points and to the West Indies have been substantially reduced. Seven Latin American countries failed to adopt the northbound unified rates and a delegation consisting of a Commissioner, a staff member, and a representative of the State Department conferred with leading communication officials of the respective South American nations on general communication matters and particularly the acceptance of the northbound unified rate. Reduced northbound rates have become effective from the Central American Republics, most of the West Indies, Peru, Ecuador, Bolivia, Brazil and Uruguay and further reductions are expected shortly as a result of conferences in South America by the American delegation during May and June.

The Commission, on February 8, 1944, ordered Cable and Wireless of West Indies, Ltd., and its connecting carrier Western Union to show cause why they should not be ordered to cease and desist from receiving rates for telegraph communications from Puerto Rico to the continental United States different from the charges specified in the tariffs of Cable and Wireless of West Indies, Ltd., and concurred in by Western Union, and different from the principles enunciated by the Commission in its Report and Order of June 22, 1943, with respect to rates between the United States and the West Indies including Puerto Rico. It was also ordered that the carriers show cause why they should not be ordered to cease handling the communication service involved, and why their apparent violation of the Communications Act of 1934, as amended, should not be referred to the Attorney General for appropriate proceedings. Subsequent to the hearings held on March 2, 1944, the carriers filed revised tariffs with the Commission, which conform to the rates provided for in the Commission's Report and Order of June 22, 1943, and the proceedings were dismissed.

Foreign Contract Press Service - Effective July 13, 1943, the Western Union Telegraph Company established rates for Foreign Contract Press Service between Washington, D.C., and London, England. The service was established primarily

for the use of the departments and agencies of the United States Government at rates which range from 3.6 cents to 5.6 cents a word, depending upon the number of words sent during a year. The regular press rates are 6 cents a word.

Photo Service Rates by Wire or Radio - It appearing that increasing use is being made of photo service, and that the charges for such service may not presently be established on a proper basis and may be unjust and unreasonable, the Commission ordered that an investigation be instituted into the lawfulness of the charges for interstate and foreign photo service by wire or radio. All carriers who furnish such service were made parties respondent. Hearings in this matter have been held and the proceeding is now in recess, subject to further call.

Rates for Government Telegraph Communications Between the United States and Turkey - The Commission, upon its own motion, ordered a hearing concerning the lawfulness of proposed increased charges for government messages between the United States and Turkey, proposed by the Commercial Cable Company, Mackay Radio & Telegraph Company and The Western Union Telegraph Company. The Commission suspended the proposed rates until July 15, 1944. A hearing was held by the Commission on May 18, 1944, and the proceedings are now pending decision by the Commission.

Supervision of Accounts

The Commission made a general examination of the accounts and records of a large radiotelegraph carrier and also of a large ocean-cable carrier.

The Commission also conducted investigations to determine compliance of wire and radiotelegraph carriers with the prescribed Uniform System of Accounts.

Statistics

Class of Station	Applications Received	Authorizations Issued	Total Stations as of Jan. 30, 1944
Fixed Public:			
Point to Point Telegraph	195	202	38
Point to Point Teleg. Press ..	63	43	2
Total	258	245	40

In the above table, Item 1, "Point to Point Telegraph" includes stations in Puerto Rico and Hawaii which are used for intra-territory and territory to continental United States communications service.

The following tables contain statistical data summarized from the annual reports filed by the principal international carriers:

Ocean-Cable Carriers

Item	1943	1942	Percent Increase or (Decrease)
Investment in plant and equipment	$80,830,592	$80,771,679	.07
Depreciation and amortization reserves	56,321,142	55,231,311	1.97
Net investment in plant and equipment	$24,509,450	$25,540,368	(4.04)
Domestic service revenues	527,706	333,024	58.46
Foreign service revenues	12,783,442	12,515,805	2.14
Total operating revenues	14,275,053	13,190,620	8.22
Operating expenses, depreciation, and other operating revenue deductions	10,432,276	9,832,670	6.10
Net operating revenues	3,842,777	3,357,950	14.44
Income and excess profits taxes	1,933,691	1,002,537	92.88
Net income	1,941,537	1,696,798	14.42
Dividends declared	811,332	67,137	1108.47
Revenue messages transmitted:			
Domestic	399,187	272,760	46.35
Foreign	4,102,844	3,859,501	6.31
Number of employees at end of year	3,023	3,018	.17
Total pay roll for the year	$ 5,443,594	$ 5,033,221	8.15

Item 9 in the above table, "Income and excess profits taxes," includes $268,075 state and foreign government taxes for 1943, the corresponding amount for 1942 being included in operating expenses as it was not segregated in the reports for that year.

The above table does not include data relating to cable operations of Western Union, as they are not adequately segregated from wire-telegraph operations in the reports filed by the company.

Foreign service revenue and message data from cable operations reported by Western Union for 1943 and 1942 were as follows:

	1943	1942	Percent Increase
Foreign service revenues.....	$11,507,878	$8,796,776	30.82
Foreign revenue messages transmitted	5,656,573	3,908,516	44.72

Radiotelegraph Carriers

Item	1943	1942	Percent Increase of (Decrease)
Investment in plant and equipment	$26,671,803	$28,342,793	(5.90)
Depreciation and amortization reserves	15,693,482	15,900,204	(1.30)
Net investment in plant and equipment	$10,978,321	$12,442,589	(11.77)
Continental and insular fixed revenues	865,179	1,671,964	(48.25)
Foreign fixed service revenues	8,578,412	7,649,898	12.14
Marine service revenues	16,953	36,978	(54.15)
Total operating revenues	13,482,746	12,605,322	6.96
Operating expenses, depreciation, and other operating revenue deductions	10,269,573	10,192,434	.76
Net operating revenues	3,213,173	2,412,888	33.17
Income and excess profits taxes	3,522,964	2,906,025	21.23
Net income	2,069,500	707,832	192.37
Dividends declared	920,000	2,069,480	(55.54)
Revenue messages transmitted:			
Continental and insular fixed	655,066	1,466,775	(55.34)
Foreign fixed	5,170,231	3,529,317	46.49
Marine	6,831	11,743	(41.83)
Number of employees at end of year	3,293	2,887	14.06
Total payroll for the year	$ 8,087,853	$ 6,992,851	15.66

SAFETY AND SPECIAL SERVICES

1. MARINE SERVICES

Coastal Radiotelegraph Stations

As of June 30, 1944, 29 coastal telegraph stations were licensed by the Commission, exclusive of those in Alaska. Three of these stations were authorized for limited (governmental) coastal telegraph service and the remaining 26 stations were authorized for public coastal telegraph service. During the year 12 applications were received and 17 authorizations issued. Three stations at Thomaston, Maine; Lake Worth, Florida, and New York, N. Y., which had been closed because of the decrease in ship-shore traffic resulting from earlier wartime restrictions of the Navy Department, were opened during the year and were re-licensed by the Commission.

Coastal Radiotelephone Stations

Because of wartime conditions, the four stations licensed by the Commission at the close of the year for public telephone service with oceangoing vessels were not rendering that service, but in some cases were being utilized temporarily to supplement facilities employed in the international or overseas fixed public service.

Coastal Harbor Radiotelephone Stations

At the close of the year, 36 coastal harbor stations were licensed by the Commission, exclusive of those in Alaska. Two were authorized for limited (governmental) coastal harbor service and the remaining 34 for public coastal harbor service. During the year 16 applications were received and 19 authorizations issued. A new station at Louisville, Ky., established for communication with ships on the Mississippi River and connecting inland waters, began operation with service tests in June, 1944.

Marine Relay Radiotelegraph Stations

As of June 30, 1944, there were 17 marine relay stations licensed by the Commission. During the year nine applications were received and 14 authorizations were issued. Wartime restrictions resulted in decreased activity for stations in this classification.

Great Lakes Radiotelephone Procedure

It has been the practice for several years in the ship radiotelephone service on the Great Lakes, based upon the Commission's Rules, for ship radiotelephone stations to initiate ship-to-ship and ship-to-shore telephone communications on the calling and safety frequency 2182 kilocycles. After establishing contact, the stations involved would shift to an associated working frequency. As a result of rather intensive use of radiotelephone communication on the Great Lakes, the calling and safety frequency became congested at times of peak message traffic and abnormal delays in establishing communication have been experienced. With a view to relieving this condition and expediting telephone messages, the Commission amended its Rules to permit direct calling by ship radiotelephone stations on the working (traffic) frequency 2158 kilocycles when establishing communication with land stations at which the proper technical facilities have been provided for accepting initial calls on this frequency.

Relaxation of Naval Regulations

During the fiscal year the Navy Department relaxed the restrictions on the use of radio communication in the Great Lakes region and on certain inland waters between ships and between ship and shore which had been imposed pursuant to Orders No. 1 and 2 of the Defense Communications Board. The restrictions had the effect, among others, of prohibiting radio transmissions (except distress) from non-commercial vessels, limiting the use of radio by commercial vessels to communications concerning distress situations, navigation, and ships' business, placing certain limitations on the contents of messages and conversations, and prohibiting the use of marine radiotelephone circuits by other than designated persons.

Weather and Hydrographic Information

In previous years, the Commission, in cooperation with the Canadian Administration, the United States Weather Bureau, and United States Naval Authorities, developed schedules for the encoded transmission of weather and hydrographic information to ships in the Great Lakes area. Coastal harbor radio stations located at Lake Bluff, Ill.; Rogers City, Mich.; Port Washington, Wisc.; Duluth, Minn.; and Lorain, Ohio, were authorized to transmit such information in accordance with these schedules. These authorizations were extended during the fiscal year with certain changes and with relaxed restrictions relative to the transmission of encoded weather information to permit transmission of this information in plain language, insofar as such transmissions do not conflict with Naval regulations.

Studies of Lifeboat Radio Equipment

During the fiscal year the Commission has cooperated, by request, in a study designed to coordinate air and sea rescue work, being conducted by government agencies, including the Navy Department, under direction of the Joint Chiefs of Staff. Projects involved in this study in which the Commission has participated include the determination of radiation efficiencies of various types of lifeboat radio antennae, the testing of experimental models of lifeboat radio equipment embodying certain technical advantages not available on the presently approved types of lifeboat apparatus, and a survey of the deficiencies of equipment of this nature now in use. As a result of certain recommendations made at the conclusion of this study, the Commission has been requested to modify its requirements relative to lifeboat radio equipment to cover requirement of the additional facilities which have been found desirable.

Approval of Equipment

During the fiscal year, the Commission extended approval of several new types of marine radio equipment for use on board oceangoing vessels, which equipment was designed and constructed to meet certain requirements in accordance with the Commission's Rules and Regulations.

Six additional types of shipboard radio receivers were approved during the year as capable of being used and operated within the limitation imposed by the Commission to prevent the radiation of energy which may be detected at sea by enemy vessels. Three additional types of direction finder receivers were similarly approved.

One new radio transmitter of the "permanently-installed" type and two portable radio transmitters for use in lifeboats were approved as complying with the applicable Rules of the Commission.

One new type of shipboard radiotelegraph transmitter, designed to operate as a main and as an emergency transmitter, was approved by the Commission.

Exemptions

The Commission is authorized by Section 352(b) of the Communications Act of 1934, as amended, to grant exemptions from the ship radio requirements prescribed therein and established by the International Convention for the Safety of Life at Sea, London, 1929, to certain vessels and classes of vessels when navigated

within certain specified limits, provided the Commission considers that the route and conditions of the voyage, or other circumstances, are such as to render compliance therewith unnecessary or unreasonable for the purpose of this Act and Convention. It has been the continued policy of the Commission to grant exemption on an annual basis for certain classes of vessels and to exempt individual vessels for limited periods of time sufficient to cover specified voyages.

The Commission renewed for another year the exemption previously granted to small United States passenger vessels of less than 100 gross tons when navigated off the Gulf Coast solely in coastal waters between Naples, Fla., and New Orleans, La.

The exemption previously granted to small United States passenger vessels, as a class, up to and including 15 gross tons was renewed for an additional period of one year. Many of the vessels to which this exemption applies normally are engaged in sportfishing, sightseeing and the water taxi business.

In addition to the foregoing class exemptions, the Commission granted exemption for a period of one year to certain individual passenger and cargo vessels operating on international voyages. All of these exemptions, during the period of the present war, are coordinated with the Navy Department before final action is taken by the Commission.

Fixed Public and Marine Services in Alaska

Measures were taken to simplify the licensing of Alaskan stations in the Coastal and Fixed Services and to conserve call letter groups by consolidating certain station licenses. A single instrument of authorization bearing one call letter group is now being issued for point-to-point telephone and point-to-point telegraph stations at the same locations instead of the two authorizations with two call letter groups previously issued. Licenses are being consolidated in a similar manner in the case of Coastal Harbor and Coastal Telegraph stations.

At the close of the fiscal year, the following stations were authorized by the Commission in the fixed public and public coastal services in the Territory of Alaska:

Coastal Harbor, 115; Coastal Telegraph, 38; Point-to-Point Telegraph, 69; Point-to-Point Telephone, 208.

There has been little change since the last annual report in the total number of stations of these classes authorized. The War Department, through Order No. 14 of the Board of War Communications, exercises wartime control and supervision over all licensed stations in Alaska, except ship, coastal, and marine relay stations that are subject to similar control by the Navy Department under DCB Orders Nos. 1 and 2.

Marine Radio Publications

As in former years, the Commission published a list of licensed U. S. Great Lakes ship radiotelephone stations for distribution to ship and shore stations on the Great Lakes. This list, which is in pamphlet form, contains the names of the ships, call letters, ringer numbers, and licensed frequencies. In addition, it contains approved schedules for the transmission of weather and hydrographic information to ships.

In accordance with an understanding with the Navy Department, the Commission regularly furnishes that Department certain detailed information necessary for a list of oceangoing radio-equipped ships which the Department prints and distributes.

Changes in Regulations

In order that the production of essential radiotelegraph transmitters for oceangoing ships would not be delayed due to the scarcity of materials, the Commission repealed certain provisions of its rules which would have required additional electric meters for certain transmitters manufactured after January 1, 1944.

Marine Watch on 500 kc

The Commission, through the medium of its Field Division monitoring stations, continued to maintain a marine watch on the International distress frequency 500 kilocycles for safety purposes and supplied appropriate naval authorities with details of each distress communication immediately upon interception. In addition, the data and records resulting from this marine watch were analyzed and furnished by request to the Commandant, U. S. Coast Guard, in accordance with previous arrangements.

2. AVIATION RADIO SERVICES

General

As a result of wartime conditions which have imposed upon the commercial airlines heavy traffic to be handled with a limited number of aircraft, the use of radio has been accelerated in an effort to maintain safety and efficiency.

In accordance with correlated policies of this Commission and the War Production Board, the majority of authorizations for new aviation radio stations issued during the fiscal year involved the contemplated use of equipment already in the possession of applicants. In exceptional cases it has been necessary to authorize new ground station construction utilizing new equipment where necessary priorities were granted by the War Production Board because of a vital connection with the war effort.

A total of 3,689 authorizations for the use of radio transmitting equipment in the aviation services, including aircraft, aeronautical, aeronautical fixed, airport control, flying school, flight test, and marker beacon radio stations were issued by the Commission during the year.

Domestic Aviation Communication

A number of engineering problems concerning air-ground communications and interference from relatively high power ground station transmitters have been investigated during the year. Conferences were held with representatives of the industry and of other government agencies and in most instances satisfactory results were attained.

At certain route terminal locations it is necessary for aeronautical and aeronautical fixed stations to use powers substantially in excess of the average power provided for normal service, and unless proper restrictions are imposed with respect to the characteristics of the emission of such stations, serious interference is caused to the service of other stations. At the request of the Board of War Communications, a comprehensive technical investigation was made by the Commission's engineers at several locations where interference to communication with aircraft was caused by the operation of transmitters using high power on frequencies adjacent to those used by aeronautical receiving stations in the same localities. Information secured in the course of these investigations indicated precisely the technical conditions under which adjacent-frequency operation may be performed in any area

without causing objectionable interference to nearby stations. Stations operating under such conditions require close regulation of frequency tolerances and modulation characteristics. Thorough investigation of all related engineering factors is necessary before frequencies may be assigned to stations at new locations with the assurance that destructive interference will not result.

The Civil Aeronautics Board is currently considering numerous applications for inter-state routes and these prospective airlines in all probability will be required to provide radio communication systems deemed adequate for safe operation before final operating certificates are issued by the Civil Aeronautics Administration. The Commission in coordination with the CAA and the IRAC is considering the problem of frequency allocation for these new routes in the hope that their communication needs can be satisfied.

According to reports made to the Commission, technical developments in radio communication and in radio aids to air navigation have advanced to such an extent during the war that considerable changes are expected to be made after the war in methods of operation and in radio equipment used by commercial airlines. Predictions are that wide expansion of this industry will commence at the conclusion of hostilities, and therefore it is of prime importance that the Commission's Rules and Regulations Governing Aviation Services be periodically revised so as to provide the maximum safety of life and property in the air, consistent with the practical limitations of available frequency channels in the radio spectrum, and consistent with space, weight and uniformity where aircraft equipment is concerned.

Airport Control Stations

In the maintenance of airports and in emergency circumstances, it has been found desirable to provide radiotelephone communication between an airport control radio station and various mobile units, including crash trucks, ambulances, fire apparatus, repair equipment and patrol launches, which have access to the areas in which aircraft landings and take-offs are made. In cooperation with the Civil Aeronautics Administration, the Commission has made an intensive study of the requirements of this particular type of service at airports where heavy air traffic requires coordination between all mobile units on the airport in order to prevent serious accidents that might occur if such units were obstructing an area during aircraft landings or take-offs. During the fiscal year several experimental authorizations were granted for this type of service, and as the result of these activities the Commission is considering early modification of its rules regularly to provide for this service at the larger airports.

The service performed by airport control radio stations, in regulating and directing air traffic in the control areas of airports, has reduced landing and take-off hazards to such an extent that all aircraft making use of certain airports are required by the Civil Aeronautics Administration to be equipped for two-way radiotelephone communication on airport control frequencies.

Although there is a continued shortage of very high frequency radio equipment for installation aboard non-military aircraft and at airport control towers, it has been demonstrated that the use of very high frequencies has definite advantages over the low frequencies now employed. It is expected that very high frequencies will be used extensively and successfully for this purpose when suitable equipment becomes generally available.

Flying School Stations

There was no important change in the activity of flying school radio stations during the fiscal year and only one additional station of this class was licensed. Although the training of pilots for the Army and Navy by private flying schools under contract has decreased considerably, the need for flying school radio stations continues to exist.

Flight Test Stations

The number of flight test radio stations licensed by the Commission increased from 12 to 27 during the fiscal year. All of these stations perform vital communication services in connection with the production and testing of aircraft for the armed forces.

International and Alaskan Aviation Radio Services

The total number of licensed radio stations of all classes in the aviation service in Alaska increased from 215 to 274 during the fiscal year. The Alaskan radio system of aeronautical communications is still in a developmental stage. Efforts are being made to obtain increased coordination of the communication services of several airlines in the Territory in order to obviate unnecessary duplication of operations at aeronautical ground stations.

During the fiscal year there has been a considerable increase in the activity of commercial airlines operating on international routes. This has required special study by the Commission in the related allocation and assignment of frequencies to assure adequate safety communication for the additional aircraft. In particular, increased activity has occurred on the Inter-American Routes from

Miami, Fla.; New Orleans, La.; Brownsville, Texas, and Los Angeles, Calif., to points in Mexico, Central and South America, and the West Indies. It has been necessary to assign additional frequencies and types of emissions to aircraft stations aboard planes flying these routes and to aeronautical and aeronautical fixed stations in the United States and island possessions of the United States, in order to provide for safety communication, including radiotelephone circuits, which are considered desirable and necessary in the operation of these routes.

It is customary to employ radiotelegraphy on the long distance international routes, with an increasing tendency toward the use of telephony for short distance communication between aircraft and ground stations. Telephony, however, if widely adopted, may involve certain foreign language difficulties and problems of standardizing international operating procedures. Inasmuch as governmental policies involving the establishment and operation of international airlines are indefinite at the present time, further and more intensive study of these problems will be necessary. It is becoming increasingly apparent that the postwar aviation service on a world-wide basis will demand the use of a large share of the radio spectrum.

Aviation Radio Committees

From time to time the Commission is represented on committees which deal with aviation matters and make recommendations concerning the use of radio by the various aviation interests. Prominent among these committees is the Radio Technical Commission for Aeronautics (RTCA), a continuing organization through which aviation radio technical subjects of interest to United States government agencies, the industry, and private flyers are coordinated.

The outbreak of the present war interfered with the normal activity of the RTCA and most of its activities were discontinued. During the fiscal year, however, the RTCA resumed its activities with renewed interest in view of the need for immediate consideration of new problems concerning frequency allocation, radio equipment, and international flying, which lately have arisen as a result of technological developments of the war.

3. EMERGENCY RADIO SERVICES

General

The Emergency Radio Services includes stations classed as municipal police, state police, zone and interzone police, special emergency, forestry, and municipal fire which are operated by instrumentalities of government, public utilities, and organizations concerned with the protection of life, public safety, and property.

Three hundred and five new emergency radio communication systems were authorized during the fiscal year. The small number is attributed to the scarcity of equipment.

Class of Sta.	FISCAL YEAR -- 1944 Appls. rec'd.	Authrzs. issued	New stas. authorized	No. of licensed stations at close of fiscal year 1941	1942	1943	1944
Municipal Police	4352	3080	162	1196	1672	1708	1906
State Police	714	737	61	513	378	431	452
Zone Police	67	101	3	69	85	94	88
Interzone Police	26	28	0	30	33	30	31
Forestry	1144	1143	84	807	844	837	925
Special Emergency	158	80	10	340	435	448	451
Marine Fire	29	21	0	6	8	10	10
Total	6490	5190	320	2961	3455	3558	3863

Each "station" referred to in this tabulation usually is a complete radio communication system consisting of one land station and a plurality of associated mobile units operated under a single license. In many cases the communication system covered by one station license includes from one to four land station transmitters at the same fixed location and as many as 100 or more associated mobile units. Some states and large municipalities operate as many as 200 mobile units. In some cases all of these transmitter units are covered by a single authorization. This method of administration is followed to simplify licensing procedure and minimize the number of applications handled. Separate applications are required and separate licenses are issued, however, for land stations at different fixed locations. Many of the applications for authorizations for municipal and state police stations received during the year constitute requests for license renewals. The number of such applications is approximately the number of stations in these two classifications.

Nearly all authorizations for new stations in the emergency radio services are for frequency modulated equipment for operation on the very high frequency communication channels. The relatively few authorizations issued for use of amplitude modulated equipment were generally to licensees making additions to existing radio facilities.

In some instances, licensees having obsolete emergency radiocommunication equipment have been successful in obtaining new FM equipment for replacement. It is expected that as soon as new equipment becomes generally available, many of the present emergency radio systems utilizing "amplitude modulated" equipment will be replaced by FM.

Police Radio Stations

To compensate for the loss of personnel to the armed forces and to war industries by municipal and state police departments during the fiscal year, several hundred portable-mobile police units have been licensed and placed in operation.

The operation by police departments of radio equipment using frequency modulation on very high radio frequencies has resulted in a substantial increase in the range of portable-mobile units, and fortunately the more widespread use of these systems has relieved to some extent the mutual interference between these stations. With the continued increase in the number of transmitters operated by municipal and state police departments, however, the difficulties and concurrently the importance of frequency allocations and assignments increase proportionately. It is necessary, therefore, to require close cooperation between applicants and licensees in the selection and use of each of the limited number of frequencies available for assignment.

Several reports from licensees received during the year indicated serious interference between stations separated by a considerable distance. This somewhat intermittent long distance skip interference is considered a major problem in frequency allocation. It is hoped, however, that plans presently being formulated for possible postwar use will result in more interference-free communication for the expected large number of stations.

Many municipal and state police departments have extended their emergency radiocommunication facilities to the military police in their respective areas. Informal reports indicate that the increased use of radiocommunication coordinated with the local police has permitted a substantial reduction in the number of the military police for the area concerned.

On November 30, 1943, a hearing was held at Lansing, Mich. on an application filed by the State of Michigan for construction permit for a new State Police radio station proposed to be located at Sault Ste. Marie, Michigan. This station, classed as State Police, was proposed to be operated jointly by the Michigan State Police and Michigan Department of Conservation and used primarily for the prevention and control of forest fires. Additional information on the application was considered necessary in view of the requirements of the Commission's related Memorandum Opinion and the Rules and Regulations regarding proper control of the station. The records of the hearing demonstrated the need for the additional facilities requested and satisfactory compliance with the Communications Act and the Rules and Regulations of the Commission. The authorization was subsequently granted by the Commission.

Municipal Fire Radio Stations

Effective June 23, 1944, the rules concerning "marine fire" radio stations were modified to change the name of this class of station to "municipal fire." Prior to this change, marine fire radio stations were operated by a few of the larger cities for intercommunication by telephony between fire headquarters and fire boats and vehicles operated by the municipal fire departments for the control and suppression of water-front fires. Heretofore all fire department radiocommunication with mobile units relative to other types of fires has been effected through occasional use of the municipal police radio systems. This change provides for authorization of municipal fire stations for the larger cities to operate on the one medium frequency and the two very high frequencies previously allocated for use of marine fire stations and to handle messages relative to any fire; water-front or otherwise. Because of the intermittent nature of fire department communication, the limited number of frequencies available for the entire Emergency Service, and the limited interference range of the very high frequencies, it is impracticable and unnecessary to provide separate frequencies for each municipal fire department desiring this service. Furthermore, only cities whose fire departments serve a population of 150,000 or more persons are eligible under the Commission's rules to receive licenses for municipal fire stations, unless special circumstances warrant the use of a separate communication system for the police and the fire departments. This plan makes it possible for the larger cities to use designated frequencies for their fire departments independently of police communications, since it is considered that in emergencies, the peak message traffic on municipal police radio frequencies of the larger municipalities is of such proportions that radio service to the fire department cannot be rendered efficiently by the police department. It is expected that emergency radiocommunication required by fire departments of the smaller municipalities normally will be furnished by municipal police stations located in the same general area.

As a result of this change in the rules, all licensees of marine fire stations requested modification of license to change the class of each "marine fire" station to "municipal fire" station. Since marine fire stations were authorized only to the larger municipalities, it followed that each of the licensees concerned was eligible for a municipal fire radiocommunication system. This change in the classification of the stations does not materially affect the service rendered, nor was any change in the existing communication facilities of such stations necessary.

Recent inquiries received by the Commission indicate that additional municipalities are making plans for installation of new fire department radiotelephone systems. It appears that local radictelephone communication between fire department personnel on the ground and those on the upper floors of buildings at the scene of a fire is being considered by some fire departments and awaits only the availability of small pack type portable transmitters and receivers. One frequency in the 100,000-200,000 kilocycle range which is available to fire departments on an experimental basis is adaptable to this type of communication because of the comparatively small antenna required for operation of such very high frequencies and the need for communication over short distances only.

Forestry Radio Stations

The first objective of forestry radiocommunication systems is to provide rapid communication by telephony between forest fire lookout towers in order that the tower men by triangulation may quickly determine the exact location of a "smoke." The second purpose is in connection with suppression of forest fires. In this second type of operation the forestry radiotelephone systems function in a manner similar to the police radio systems in that land radio stations are used at central bases of operation (fire lookout towers and district or area headquarters) to furnish emergency dispatching and communication service to mobile units operating in a particular area. Like the police, the forestry services have endeavored to compensate for the wartime loss of personnel by increasing and expanding their radiocommunication facilities.

Following the successful use of frequency modulation in police radiocommunication, some of the licensees of forestry radio stations are now using more recently developed type of equipment which provides a greater communication range than the older type of amplitude modulated equipment of comparable size and power. This extended communication range is particularly desirable for the small and necessarily low power portable and mobile forestry radio units.

Special Emergency Radio Stations

Public utilities, organizations established for relief purposes, and persons having establishments in remote locations are eligible for authorizations for special emergency radio stations. This class of station is authorized for essential communications arising from an emergency jeopardizing life, public safety or important property. Special emergency radio stations provide a means of direct communication to repair trucks and mainterance crews of public utilities, which have been of considerable value during emergency conditions in maintaining adequate transportation, gas, or electric power for the public and for plants engaged in the manufacture of war materials.

The majority of special emergency stations are operated by public utilities and, considering the usefulness of these radio facilities to such organizations, the unusually small increase in the number of authorizations for this class of station during the fiscal year apparently was related to the limited amount of radio-communication equipment manufactured for civilian use during that period.

In addition special emergency radio stations are used by The Western Union Telegraph Company and by the Associated Bell Telephone Companies to bridge gaps in wire communication where such wire failure is caused by storms, floods and similar disasters. Portable radio stations are kept in readiness by these licensees and rushed, in emergencies, to places where wire lines are down or inoperative. Of the special emergency radio stations licensed by the Commission 125 portable or portable-mobile stations and six land stations are used for this purpose.

4. WAR EMERGENCY RADIO SERVICE

This temporary service comprises Civilian Defense, State Guard and Civil Air Patrol stations operating on the very high frequencies (above 112,000 kilocycles). Licenses for these stations are issued only to municipalities, state military organizations, and the Wing Commanders of the Civil Air Patrol. This service makes available on a voluntary basis the skill and equipment of amateur radio operators and other qualified citizens under conditions which assure responsible control, and at the same time permit sufficient flexibility of operations.

The growth of this service, the number of applications received, and the number of authorizations granted are shown in the following table:

Class of Sta.	Appls. Recd.	FISCAL YEAR - 1944 Authorizs. Issued	New Stas. Authorized	No. of Stations Fiscal Year 1943	1944
Civilian Defense	452	447	80	199	253
State Guard	35	23	3	8	11
Civil Air Patrol	51	44	13	4	17
Total	538	514	96	211	281

The term "station" in the above table may, and usually does, include several fixed, portable, and portable-mobile transmitter and receiver units which are operated as a single coordinated emergency communication system. There are two Civilian Defense Station licenses issued to municipalities which authorize over 250 units each. A considerable number of the transmitters used in this service consists of portable and portable-mobile transmitters and include the so-called pack or walkie-talkie radio units. Although three frequency bands above 112,000 kilocycles have been authorized for use by this service, the majority of stations operate on the 112,000-116,000 kilocycle band because the equipment available for these stations at the present time performs more efficiently on the lower frequencies.

During the fiscal year, the only change made in the rules governing this service was an amendment effective on November 12, 1943, which provides more convenient week-day test periods for Civilian Defense Stations located in the eastern and central time zones.

The activities of the majority of Civilian Defense Stations have continued at approximately a constant level even though other Civilian Defense activities have abated somewhat. Civilian Defense Stations are permitted to use their communication facilities during emergencies endangering life, public safety, or important property, for essential communication relating to civilian defense or national security.

In one instance the communication facilities of a Civilian Defense Station were used to assist in a search for unexploded projectiles which were accidentally discharged from the anti-aircraft gun of a freighter lying in a coastal harbor dock. In another instance, the communication facilities were used to assist in the capture of escaped prisoners of war. A number

of reports have been received from licensees in the New England area indicating that Civilian Defense Station communication facilities were used for emergency communications to assist in fighting forest fires. Reports also have been received indicating that these communication facilities have been used during floods, fires, explosions, and other emergencies endangering life, public safety, or important property.

5. EXPERIMENTAL RADIO SERVICES

General

Under the stimulus of war experiment in the field of radio and electronics continued to expand during the year. Federal funds made available for this purpose to educational institutions and engineering laboratories have greatly aided radio and electronic research. Exemplifying this situation is the existence of 80 experimental radio stations authorized by the Commission for use by an important laboratory where hundreds of specially trained scientists and engineers are developing new devices. It is anticipated that some of the resulting developments will be widely used in the postwar period to provide improved radio navigation, communication, and broadcast facilities.

In most cases, experimental authorizations were granted to technical schools and scientific laboratories in which radio research and development work is being carried on under contracts issued by the War Department, the Navy Department and the Office of Scientific Research and Development. For security reasons, full information concerning these projects cannot be made available.

In accordance with the Commission's Rules, experimental stations are licensed for fundamental, general or specific radio research and experimentation directed toward advancement of the radio art. Experimental stations are authorized also for experimentation in radio directed toward the development of a new or proposed radio service or new methods of operation in an established radio service.

Considerable interest is being shown in the experimental use of beamed microwaves, more specifically designated as "ultra-high" and "super-high" frequencies (300,000 to 30,000,000 kc).

A.T. & T. New York-Boston Experiment

On June 20, 1944, the Commission granted permits to the American Telephone and Telegraph Company for construction of an experimental microwave radio communication system between the

cities of Boston and New York for operation on bands of frequencies within the limits of 1,900,000 to 13,000,000 kilocycles. This point-to-point communication circuit, using low power and highly directive antennas, will be designed to handle multiplex telegraphy and telephony, teletype messages, broadcast programs, television, and facsimile material. Present plans contemplate that these microwave signals, which are inherently limited in effective use to "line-of-sight" or optical distances, will be received and retransmitted instantaneously and automatically by seven unattended repeater stations to be installed at elevated locations between Boston and New York.

The maximum number of telecommunication channels that can be provided by use of these proposed facilities depends on the technical characteristics of the radio system, and these will not be entirely known until the experimental installation is in operation. The circuits, however, probably will be suitable for multiplex telephone and telegraph transmission, and will be tested in this respect by using them experimentally to handle regular message traffic diverted temporarily from normal land-line wire circuits. Furthermore, it is contemplated that the system will be technically satisfactory for the transmission of television programs to television broadcast stations when the need arises. Pending further developments, the Commission has not authorized the use of these proposed experimental facilities for commercial telecommunication services nor for supplementing existing regular facilities except as may be appropriate for the free point-to-point transmission of television programs and high-fidelity broadcast programs on an experimental basis.

Railroad Radio

Subsequent to the occurrence of certain passenger train wrecks on the Eastern Seaboard during 1943, with resultant heavy loss of life and injury, and to some extent because of related investigation of the matter of railway safety by Committees of the Congress, widespread interest has arisen in the experimental use of radio on railroads. Some authorities have expressed the belief that railroads can be operated with increased safety and efficiency through the use of radio communication primarily in connection with railray mobile units, i.e., between the ends of trains, between separate trains, and between dispatchers and trains. Communication of this nature can be provided in many cases either by space radio waves or by the use of other telecommunication methods commonly designated by the terms "wired-wireless" and "carrier-current" systems.

At the close of the fiscal year, the Commission had received 35 applications for authorizations to construct low power experimental radio stations for use in testing the practicability of radio communication in connection with the operation of trains. At the close

of the fiscal year there were 17 authorizations outstanding for experimental work of this kind, involving participation therein by several radio equipment manufacturers and at least six of the major railroads. In acting upon related applications for construction permits and licenses, the Commission considers the availability and proposed use of the associated radio equipment in relation to prevailing policies and regulations of the War Production Board.

On May 2, 1944, the Commission ordered an investigation and public hearings to inquire into the feasibility of using radio as a safety measure and for other purposes in railroad operations. On June 27, the Commission designated September 13, 1944, as the opening date for the hearings and appointed a committee composed of Commissioners Walker (Chairman), Case and Jett to preside.

The Commission has continued to license, on an experimental basis, very high frequency radio stations on airport vehicles, such as fire trucks, crash trucks, maintenance trucks and police cars. These experimental stations have been authorized to determine the practical value of such a service from the standpoint of safety of life and property in the vicinity of airports.

The Commission has authorized the use of certain frequencies in the 116,000-119,000 kc band on an experimental basis to determine the usefulness of these frequencies for municipal police service. Reports from licensees indicate that frequencies in this part of the spectrum will provide a two-way radio communication service comparable to that now being obtained in the 30,000-40,000 kilocycle band. Specific reports received in the Commission show that in one large city, a 25-watt FM (Frequency Modulation) transmitter operating on 118,550 kc with an antenna elevated 203 feet above ground, provided completely reliable communication to police cars to a distance of 18 miles. These frequencies present certain definite advantages over the more commonly used frequencies between 30,000 and 40,000 kc. Among these are absence of static and noise, freedom from "skip" and the possibility of duplicating frequencies at closer intervals. To date, the expectation that serious "dead spots" would exist in communication areas on these higher frequencies has been proven false.

6. MISCELLANEOUS RADIO SERVICES

The Miscellaneous Services include stations in the Geophysical, Special Press Service, and Intermittent Service. The classes of stations in these services are Geological, Relay Press, Mobile Press, Motion Picture, and Provisional. The Geological and Provisional stations continue as the most prominent classes of stations in the Miscellaneous services, and, as shown in the following tabulation of statistics, comprise over 96 per cent of the total number of stations licensed in these services.

Class of Station	Applications Received	Authorizations Issued	Total Stations 1942	1943	1944
Geological	108	94	302	325	358
Provisional	179	132	22	36	87
Motion Picture	8	10	15	10	8
Mobile Press	3	3	3	3	3
Relay Press	5	6	7	5	5
Total	303	245	349	379	461

Geological stations are used by oil companies and other organizations for the determination of the character of the underground strata of the earth in order to establish the probable location of oil deposits. Low power portable and mobile geological stations are used for communication by personnel of field parties prospecting for oil and for transmitting signals and impulses to the seismic recording instruments from the geophones at the various pickups located at distances up to fifteen miles from the centrally located recording truck.

Provisional stations, restricted in use for communications relating to safety or for communications of practical necessity, relative to projects of benefit to the public, are licensed on a temporary basis only and for a limited period of time not to exceed one year, subject to renewal of license if the need for the temporary facilities continues.

The increase in the number of Provisional stations during the past year is attributed mainly to the installation of radiotelephone communication systems for use by the plant guards at large plants producing war materials. Another type of Provisional station is the radiotelephone installations on barges indefinitely moored at isolated locations in the marshes of the Gulf Coastal areas of Louisiana and Texas.

Relay Press stations are used for short-distance communication on very high frequencies from the scene of important news events to the nearest point where wire line facilities are available.

Mobile Press stations operating on high frequencies (4,000-23,000 kilocycles) are authorized to provide radiotelegraph communication between maritime mobile stations and land stations, and are open to public correspondence for the handling of press traffic. At the close of the fiscal year, there were three mobile press stations licensed by the Commission, which, under the terms of Order No. 2 of the Defense Communications Board, were subject to wartime control of the Navy Department.

Motion Picture stations are used for communication with parties on "location" in isolated areas where no other communication facilities are available and for communications pertaining to the coordination and direction of activities of various units in the filming of motion pictures.

7. STATISTICS

Service	Applications Received	Authorizations Issued	New Stations Authorized	Total Stations June 30, 1944
U.S.				
AVIATION				
Aeronautical	235	199	31	365
Aeronautical Fixed	77	84	17	105
Aero. & Aero. Fixed	40	39	0	0
Aircraft	5053	3016	1744	2631
Airport Control	34	31	6	28
Flying School	10	5	1	12
Flight Test	44	34	15	27
Marker Beacon	4	3	1	3
Instrument Landing	2	0	0	0
Sub-Total	5499	3411	1815	3171
SHIP	7442	6978	1911	6301
EMERGENCY				
Municipal Police	4252	3080	162	1906
State Police	714	737	61	452
Zone Police	67	101	3	88
Interzone Police	26	28	0	31
Forestry	1144	1143	84	925
Special Emergency	158	80	10	451
Marine Fire	29	21	0	10
Sub-Total	6390	5190	320	3863

Service	Applications Received	Authorizations Issued	New Stations Authorized	Total Stations June 30, 1944
WAR EMERGENCY RADIO SERVICE				
Civilian Defense	452	447	80	253
State Guard	35	23	3	11
Civil Air Patrol	51	44	13	17
Sub-Total	538	514	96	281
EXPERIMENTAL				
Class 1	669	618	139	377
Class 2	303	289	48	195
Sub-Total	972	907	187	572
MISCELLANEOUS				
Geological	108	94	41	358
Motion Picture	8	10	0	8
Provisional	179	132	48	87
Mobile Press	3	3	0	3
Relay Press	5	6	0	5
Sub-Total	303	245	89	461
FIXED PUBLIC				
Pt. to Pt. Telegraph	195	202	0	38
Pt. to Pt. Teleg. Press	63	43	0	2
Pt. to Pt. Telephone	53	52	0	16
Sub-Total	311	297	0	56
AGRICULTURE				
Pt. to Pt. Telegraph	0	0	0	7
U.S. COASTAL				
Coastal Telegraph	12	17	0	26
Coastal Harbor	16	19	0	34
Coastal Telephone	0	0	0	4
Marine Relay	9	14	0	17
Coastal Telegraph Ltd.	0	0	0	3
Coastal Harbor Ltd.	0	0	0	2
Sub-Total	37	50	0	86
WIRE CERTIFICATES				
Telephone	167	112		
Telegraph	101	95		
Interlocking Directorates	23	24		
Petitions	14	3		
Phone Discontinuances	0	0		
Graph Discontinuances	69	33		
Sub-Total	374	267		
U. S. TOTAL	21,866	17,859	4,418	14,798

(continued)

Service	Applications Received	Authorizations Issued	New Stations Authorized	Total Stations June 30, 1944
ALASKAN				
AVIATION				
Aeronautical	35	73	0	79
Aeronautical Fixed	22	61	0	59
Aero. & Aero. Fixed	60	32	7	0
Aircraft	237	112	0	136
Sub-Total	354	278	7	274
FIXED PUBLIC				
Pt. to Pt. Telegraph	116	97	3	69
Pt. to Pt. Telephone	237	275	17	208
Sub-Total	353	372	20	277
COASTAL				
Coastal Telegraph	57	75	0	38
Coastal Harbor	135	146	10	115
Coastal Telephone	0	0	1	0
Marine Relay	0	0	0	0
Sub-Total	192	221	11	153
ALASKAN TOTAL	899	871	38	704
U.S. TOTAL	21,866	17,859	4,418	14,798
ALASKAN TOTAL	899	871	38	704
GRAND TOTAL	22,765	18,730	4,456	15,502

8. INSPECTIONS

Ship Inspections

Ship station inspections for the year totalled 11,409, of which 10,157 were U. S. vessels, 1,252 were foreign, resulting in 7,660 violation notices of which 5,580 were cleared.

Other Inspections

A total of 5,454 inspections were completed, 3,665 emergency stations, 1,050 aircraft and aeronautical stations, and 739 miscellaneous stations. A total of 1,378 violation notices were served.

CHAPTER VI

RADIO OPERATORS

1. GENERAL

The shortage of radio operators continued acute throughout the year, despite the large number of trainees from wartime classes and various orders by the Commission relaxing requirements.

It is the responsibility of the Commission to prescribe the qualifications of commercial and amateur operators, classify them, fix the form of license, examine applicants and issue licenses to those who qualify.

At the end of the fiscal year, more than 350,000 radio operators, applicants and communications company employees, had complied with Order 75 which required a showing of identity and citizenship in accordance with the provision of the Communications Act which provides that licenses may be issued only to citizens of the United States.

2. COMMERCIAL OPERATORS

At the close of the fiscal year, 200,000 individuals held valid commercial licenses.

On June 27, 1944, effective July 1, 1944, the Commission suspended for another six months its rule which provides that the holder of a radiotelegraph first or second class license may not act as chief operator or sole operator on a cargo vessel until he has had at least six months' satisfactory service as a qualified radiotelegraph operator on a vessel of the United States.

During the year, the Commission authorized the operation of a number of broadcast stations under its Order 91-C, adopted January, 1943. This Order provides that a broadcast station of any class which, by reason of actual inability to secure the services of an operator or operators of a higher class, could not be otherwise operated, could be operated by the holder of any class of commercial operator's license, subject to certain restrictions stated in the Order.

Because of the obvious difficulty encountered by commercial radio operator licensees and amateur radio licensees and operators, particularly those in the service, in endeavoring to submit evidence normally required for renewal of license for the purpose of showing a period of service as a licensed operator, the Commission on December 21, 1943, continued its suspension of this requirement for another year.

Other orders of the Commission, promulgated prior to the fiscal year, were continued in effect and provided temporary and necessary relaxation of operator qualifications and requirements. These were Order 93 which under the waiver provisions of Section 318 of the Communications Act, permits the operation of certain aircraft radio transmitting apparatus in the United States by qualified Latin American students during periods of training under the auspices of the Civil Aeronautics Administration; Order 97 establishing Temporary Limited Radiotelegraph Second Class Operator licenses for ship station operation exclusively, and Order 102 which authorizes the holders of properly endorsed radiotelephone operators licenses and permits to operate radiotelegraph aeronautical and aeronautical fixed stations whenever the individual licensee has demonstrated the required proficiency as a radiotelegraph operator.

Order No. 104, permitting American nationals who are regular employees of police departments in Hawaii to operate mobile police radio transmitting apparatus, also was continued in effect during the year under the waiver provisions of Section 318 of the Communications Act.

The Commission is giving attention to the effect of changing conditions upon the operator requirements for a number of existing radio services such as forestry, police, broadcast, and many others, and in addition is studying and analyzing the probable requirements for radio operators in new radio services expected to develop in the post-war era.

3. AMATEUR OPERATORS

Although amateur radio stations remained silent, by order of the Commission, for military and security reasons, the Commission, in accordance with the expressed desire of the Armed Forces, continued to conduct examinations for amateur radio operator licenses and issued such licenses to qualified applicants for the purpose of stimulating interest in the field of radiotelegraph and to encourage the development of skilled radiotelegraph operators and technicians for both the military and the commercial enterprises.

About 4,000 applications were received during the year for amateur licenses, renewals and modifications.

4. EXAMINATIONS

Applicants examined for operator licenses (exclusive of Class "C" Amateur) totalled 67,424 as compared to 81,003 for the previous year. Of these, 64,258 were applicants for commercial licenses, including 49,953 radiotelephone, and 14,305 radiotele-telegraph. Applicants for Amateur Class A and B radio operator licenses totalled 3,166. As a result of the examinations, 51,406 commercial operator licenses were issued - 44,803 telephone and 6,603 telegraph.

CHAPTER VII

TECHNICAL STUDIES

1. GENERAL

In the past year, the peak of production in the radio industry has been reached, and emphasis in planning has shifted to post-war allocation and reconversion. The Radio Technical Planning Board (RTPB), was organized by the radio industry in November, 1943, to consider post-war problems. The RTPB is divided into Panels, each of which is charged with the consideration of specific problems and the preparation of reports and recommendations thereon. The Chief Engineer of the Commission has appointed an engineer as a non-voting observer on each Panel dealing with subjects of interest to the Commission. Much of the information relating to radio propagation and allocation which is relied upon by the Panels in reaching their decisions is supplied to them by the Commission, either through the observers or by direct reports to the Chairman of the Panels concerned.

In anticipation of these needs, certain changes had been made in the technical investigations which were already under way, and a new investigation of propagation conditions affecting the very high frequencies was started as reported in the Ninth Annual Report.

The Technical Information Division is charged with the direction of three projects which have been set up during the year: The Low Frequency Recording Project, the VHF (Very High Frequency) Recording Project, and the Determination of Origin of Burst Signals. The Division acts in an advisory capacity in two other projects which have been set up, the Root Sum Squares (RSS) Interference Measuring Program and The Ship Receiver Radiation Measurement Program. The Division is also directing the Sunspot Cycle Field Intensity and Noise Program which has been in progress since February 1938.

2. SUNSPOT CYCLE FIELD INTENSITY AND NOISE PROJECT

As the program was originally set up, recordings of standard broadcast station sky waves and of atmospheric noise in and adjacent to the broadcast band are being made at four widely separated recording sites: Atlanta, Ga.; Baltimore, Md.; Grand Island, Neb., and Portland, Ore. At various times additional data were recorded at other sites in connection with specific problems and these are also available to help in supplying the need for comprehensive information on sky wave fields and atmospheric noise throughout the continental United States. However, it has since become apparent that the original program would not reflect conditions along the Gulf Coast, where the noise levels are the worst to be encountered in the country.

Prior to the war, equipment was purchased for the installation of two noise recorders at Kingsville, Texas, but only recently has it become possible to complete the installation. Atmospheric noise levels in the Pacific Northwest have proven to be so low that it was found unnecessary to continue recording at Portland. This recorder is now being used in the VHF Broadcast Recording Project. The recordings of certain broadcast stations which were being made continuously on individual recorders are now being made alternately on fewer recorders. The equipment released by this change is being used in the following program.

3. LOW FREQUENCY RECORDING PROJECT

This program has been instituted to extend the recorded sky wave and noise frequencies down to about 200 kilocycles. Noise recorders are installed at Baltimore and Grand Island and will be installed at Kingsville. Aeronautical beacon stations in the frequency range between 200 and 400 kilocycles are to be recorded at Atlanta, Baltimore, Grand Island and Portland.

4. VHF BROADCAST RECORDING PROJECT

The effect of the troposphere, the lower part of the atmosphere in which the various weather conditions occur, on radio propagation is more marked as the frequency of the wave is increased. Thus as higher frequencies become useful, it becomes increasingly important to determine the effects of the weather on radio transmission. It is necessary to know not only the maximum and minimum field strengths to be expected but also, in many instances, the relation of field strengths to specific weather conditions.

The initiation of a program for recording broadcast stations in the very high frequency range above 40 megacycles was set

forth in the Ninth Annual Report. The expansion anticipated in that report has been realized and there are fifteen recorders operating as follows: Atlanta-2; Allegan, Mich.-5; Grand Island-3; Laurel, Md.-4; Portland, Ore.-1. Substantially all of the equipment which was obtained on a loan basis from radio manufacturers, consulting engineers and others, as previously reported, has been returned and surplus equipment from the Radio Intelligence Division is being used in its stead.

In the course of making the initial recordings at Laurel, a type of propagation was recorded in which short bursts of signal were received over much greater distances than had been anticipated. Since the signals hold the possibility of long range interference, recorders at each of the sites were tuned to a selected high powered station as soon as installed. Although some signals were recorded up to distances of 1400 miles from the station, a full year's recording indicates that the levels of the signals have not been sufficiently great at any distance to cause objectionable interference to FM programs under the present standards of the Commission. An analysis of these recordings was sent to the Panel Chairmen of four Panels of the RTPB.

The recordings have shown a second type of long distance signals known as sporadic E layer transmission. Although its existence at these frequencies has been known for some time, little was known of the field intensities to be expected. This need is being supplied by the records now being obtained, which indicate intensities sufficient in many cases to override the desired signals from nearby transmitters.

5. DETERMINATION OF ORIGIN OF BURSTS SIGNALS

This project was initiated to obtain needed information on the directions of arrival and, if possible, the medium responsible for the bursts of signal from the VHF broadcast stations. It is desired to know whether the signals recorded over the past year or two are typical of what may be expected or whether in succeeding years interference may result in services which are now relatively free from interference from this cause. Knowledge of the angles of arrival is important because of its bearing upon the design of transmitting and receiving antennas to minimize the interfering effects of the bursts. The project is as yet in the formative stage.

6. GROUND WAVES

The theoretical study of ground wave propagation which was in progress in pre-war years has been curtailed for the past two years. These waves are responsible for the primary

service areas of standard broadcast stations in the frequency range of 550 to 1600 kilocycles as well as for the service ranges of stations in the very high and ultra high frequency bands. Using data prepared under the previous theoretical study, a signal range chart for television stations operating at 300 megacycles was issued, supplementing similar charts at other frequencies which form a part of the Standards of Good Engineering Practice.

Ground waves are to a large extent responsible for the great distances spanned by the very low frequency telephone and telegraph channels upon which communications must rely when radio fade-outs and ionospheric storms prevent communication over large distances by way of sky waves. They form the reliable part of the low frequency aeronautical radio range beacons which mark the airways throughout the United States. While the primary object of the Low Frequency Recording Program, referred to above, is to determine the sky wave characteristics at frequencies below the present standard broadcast band, the program will yield needed additional data on ground waves in this range of frequencies.

7. RADIOFREQUENCY GENERATORS

It is anticipated that there will be a vast post-war expansion in the use of radiofrequency generators for medical, industrial and scientific purposes, and perhaps an appreciable increase in the number used in the home. A Panel has been organized by the RTPB to study this question and to recommend the necessary standards to prevent interference to communications.

Under present regulations, the limit of permissible field strength from low power generators, such as wireless record players, remote control devices and carrier current systems, is 15 microvolts per meter measured at a distance in feet equal to 157,000 divided by the frequency in kilocycles. This is the distance at which the radiation component of the field begins to predominate over the induction component, and the rule was formulated in this manner in an effort to distinguish between radio and non-radio apparatus. Heretofore, the majority of the devices of this nature were operated at frequencies within the standard broadcast band and for these the requirement has been satisfactory. The maximum permissible field strength has approximated the average noise levels at these frequencies and the allowable distances have been reasonable. However, disadvantages are apparent as the operating frequencies are selected either below or above the broadcast band. The allowable distances increase rapidly below the band. While this is somewhat compensated by the

fact that the ambient electrical noise and atmospheric noise increase as the frequencies are decreased, yet the distances at which the signals may cause interference become quite large. At higher frequencies the usable distances decrease, so that operation under the rule finally becomes impractical.

Realizing the necessity for the formulation in the near future of regulations for the control of high powered generators and for the revision of present regulations relating to low powered generators, a complete recapitulation of the problem was prepared. This included not only an analysis of the technical problems involved in the prevention of interference, but also a review of regulations and amendments to the Communications Act, which have been previously proposed in an effort to find a solution to these problems.

8. ROOT SUM SQUARES MEASURING PROJECT

Recording equipment was installed at the Laurel Monitoring Station to establish more accurately the extent of the composite interference to broadcast stations on shared channels. The purpose of the project is to measure the contributing effects of each of several undesired signals of various intensities to the composite interference to a desired service of broadcast stations. This project is as yet in the formative stage.

CHAPTER VIII

WAR ACTIVITIES

1. Radio Intelligence Division
2. Foreign Broadcast Intelligence Service
3. FCC Assistance to the Board of War Communications
4. Enforcement of Radio Silence
5. Protection of Facilities Against Sabotage
6. Manpower Problems

---

1. RADIO INTELLIGENCE DIVISION

In carrying out its function of safeguarding the ether waves of America, the Radio Intelligence Division during the fiscal year investigated 1,895 complaints of illicit or subversive transmission and of interference, bringing the total since its inception in 1940 to 11,622.

Thirty-two unlicensed radio stations were discovered during the year, making a total of 379.

A total of 434 planes in distress were aided by radio fixes, courses to fly or both, bringing the total cases of assistance up to 616 planes. Many of these planes included Army and Navy bombers and air transports. In addition, 823 other requests for this type of service were received, including practice drills and cases in which the RID was alerted but was unable to render assistance either because the plane's transmitter could not be heard or because radio propagation conditions were unsuitable for direction finding operations. Many commercial airlines have placed requests for direction finding service with the RID which is the only agency maintaining a service of this type on a national scale.

The RID at the close of the fiscal year was patrolling the ether with 22 secondary stations on the continent and eight in the Territories, with 12 primary stations, and 65 mobile units, a substantial reduction having been made following an appropriation cut by Congress. The Radio Security Center in Hawaii was closed, although one primary and five secondary stations were retained. The Radio Intelligence Center in San Francisco was transferred to the primary station at San Leandro, Calif. The Eastern Intelligence Center in Washington was retained. Intercepts of certain Merchant Marine traffic, foreign weather reports, certain clandestine radio traffic formerly requested by the armed services and radio bearings on specific types of enemy radio stations have

been discontinued. RID services for Allied governments and for the State Department and other agencies of the federal Government are maintained at their former level.

2. FOREIGN BROADCAST INTELLIGENCE SERVICE

The Foreign Broadcast Intelligence Service, during the year, established a monitoring and editing station in Hawaii, substantially increased its monitoring and distribution of broadcast information from Far East transmitters and extended arrangements to obtain material monitored by other agencies and foreign nations.

At the close of the year, the FBIS was receiving substantial files of material monitored by other agencies of the United States and allied or friendly powers in London, Stockholm, Algiers, Bari (Italy), Cairo, New Delhi and Melbourne. This was in addition to information obtained by FBIS monitors in Washington, Portland, San Francisco and Hawaii.

The Japanese translation post at Denver was absorbed in the headquarters staff. The monitoring stations in Puerto Rico and Kingsville (Texas) were discontinued.

FBIS regularly monitored programs from stations in 55 countries in 41 languages. Significant news and intelligence obtained from these broadcasts was translated into English and this, with English language materials, was distributed to agencies and officials of the United States and its Allies. Broadcasts which were of unusual significance or appeared likely to have historical importance were recorded by sound equipment for permanent preservation.

An automatic teletype-wire service carried significant monitored items to 18 offices on a 24-hour basis. This service was supplemented by a mimeographed "Daily Report of Foreign Radio Broadcasts" containing items required by several hundred officials and employees in approximately 60 agencies.

FBIS continued to provide bi-weekly summary of broadcast information relating to Far East and Pacific area for officials and employees in 40 departments and agencies. Weekly publications summarizing and analyzing information relating to various European countries and intermittent reports on special problems and events were also furnished.

3. FCC ASSISTANCE TO THE BOARD OF WAR COMMUNICATIONS

The Commission submitted to the Board three reports, in September, 1943, January and June, 1944, on speed and quality of

domestic telegraph service; reported on the use of telegraph and telephone facilities for the dissemination of racing information, pursuant to an investigation authorized by Order 117, September 22, 1943; continued checks to determine the extent of compliance by the telegraph carriers and the public with Board Orders 25-C and 28; and advised the Board regarding telecommunications service between the United States and Europe.

The Commission assisted in the preparation of the following orders issued by the Board:

Order No. 19-B, dated February 19, 1944, amending Board Order No. 19-A and relating to the conditions under which international radiotelephone communications may presently be conducted.

Order No. 21-A, dated March 16, 1944, exempting point-to-point radiotelegraph service in the Agriculture Service, operated by the Federal-State Market News Service from the closure provisions of the Board's Order No. 11, dated June 25, 1942.

Orders Nos. 27-B, dated January 13, 1944 and 27-C dated April 28, 1944, amending the Board's previous Orders Nos. 27 and 27-A with respect to precedence for telegraph messages essential to the war effort or public safety. These amendments were designed to permit the Office of War Information and the United Nations Relief and Rehabilitation Administration to expedite the transmission of important telegraph messages through greater use of the telegraph priorities provided for in the orders being amended; and

Order No. 30, dated April 13, 1944, establishing the offices of Traffic Coordinator and Assistant Traffic Coordinator and defining the duties of persons designated to fill those offices, including the maintenance of an effective and continuous liaison between the Board and United States communications carriers engaged in handling communications between this country and European points so that the Board might be informed of the speed and efficiency with which such traffic was being handled.

The members of the Board at the end of the fiscal year were:

FCC Chairman James Lawrence Fly, Chairman; Major General Harry C. Ingles, Chief Signal Officer of the Army; Rear Admiral Joseph R. Redman, Director of Naval Communications; Adolf A. Berle, Jr., Assistant Secretary of State in Charge of the Office of Transportation and Communications; Herbert E. Gaston, Assistant Secretary of the Treasury in Charge of

Treasury Inforcement Activities, Secretary; Captain E. M. Webster, Chief of Communications, U.S. Coast Guard, Assistant Secretary.

4. ENFORCEMENT OF RADIO SILENCE

During the year, the Interceptor Section of the Field Division of the Engineering Department was gradually reduced and finally abolished. At the beginning of the fiscal year, the Section had twenty 4-man interceptor units located in the Army Air Forces Information Centers along the East, West and Gulf Coasts and in the Chicago, Ill., and Saulte Ste. Marie areas to assist the Army in enforcing radio silence. The personnel was reduced as Army reorganizations were effected. On April 5, 1944, in preparation for the indicated reduction in the Commission's appropriation, the Section was abolished.

5. PROTECTION OF FACILITIES AGAINST SABOTAGE

Acting under Executive Order 9165 of May 19, 1942, which directed the Commission to take steps to safeguard communications facilities from sabotage, the Security Section of the Field Division of the Engineering Department by May of 1944 had completed 954 initial surveys, at 1254 locations, forwarding-security recommendations to the facility owners. Routine re-inspections followed on an approximate six-month schedule.

6. MANPOWER PROBLEMS

The survey as to availability for employment of the holders of radiotelephone and radiotelegraph licenses, which was undertaken during the preceding year for the purpose of assisting the broadcast industry in obtaining qualified personnel, has been continued and is being expanded materially at the request of the War Shipping Administration in connection with the need of the Merchant Marine for ship operators.

Current data is also being maintained on employment labor turnover, training facilities and programs, and labor requirements in the communications industry for the Board of War Communications and other governmental departments, such as the War Manpower Commission, Selective Service and U. S. Office of Education.

APPENDIX

Publications

Following is a list of Federal Communications Commission publications of general interest available at the Government Printing Office, Superintendent of Documents, Washington, D.C.:

Title	Price
Communications Act of 1934, with Amendments and Index thereto, Revised to March 6, 1943.....	$ .15
Federal Communications Commission Reports (Bound volumes of decisions and orders, exclusive of annual reports):..	
Volume 1 - July 1934 - July 1935	1.00
Volume 2 - July 1935 - June 1936.....	2.00
Volume 3 - July 1936 - February 1937.....	2.00
Volume 4 - March 1937 - November 15, 1937.....	1.50
Volume 5 - November 16, 1937 - June 30, 1938.....	1.50
Volume 6 - July 1, 1938 - February 28, 1939	1.50
Volume 7 - March 1, 1939 - February 29, 1940.....	1.50
Volume 8 - March 1, 1940 - August 1, 1941.....	1.50
Volume 9 - August 1, 1941 - April 1, 1943.....	1.25
Annual Reports of the Commission:	
First Annual Report - Fiscal Year 1935.....	.15
Third Annual Report - Fiscal Year 1937.....	.30
Sixth Annual Report - Fiscal Year 1940.....	.20
Seventh Annual Report - Fiscal Year 1941.....	.10
Study Guide and Reference Material for Commercial Radio Operator Examinations.....	.15
Standards of Good Engineering Practice Concerning Standard Broadcast Stations (550-1600 kc).....	.30
Statistics of the Communications Industry in the United States (1939).....	.25
Statistics of the Communications Industry in the United States (1940).....	.20
Statistics of the Communications Industry in the United States (1942).....	.35

Title	Price
Report on Chain Broadcasting	$ .30
Rules and Regulations of the FCC:	
Part 1 - Practice and Procedure, Effective August 1, 1939	.10
Part 2 - General Rules and Regulations, Effective June 15, 1939	.10
Part 3 - Rules Governing Standard Broadcast Stations, Revised to October 5, 1940	.10
Part 4 - Rules Governing Broadcast Services (Other than Standard Broadcast), Revised to May 14, 1942	.10
Part 5 - Experimental Rules, Effective October 1, 1939	.05
Part 6 - Rules Governing Fixed Public Radio Services, Revised February 20, 1943	.05
Part 7 - Rules Governing Coastal and Marine Relay Services, Revised April 5, 1941	--
Part 8 - Ship Rules, Revised May 31, 1943	.15
Part 9 - Aviation Radio Services, Revised November 1, 1942	.05
Part 10 - Rules Governing Emergency Radio Services, Revised February 15, 1943	.10
Part 11, Rules Governing Miscellaneous Radio Services, Effective January 1, 1939	.05
Part 12 - Rules Governing Amateur Radio Stations and Operators, Revised April 18, 1940	.10
Part 13 - Rules Governing Commercial Radio Operators, Effective July 1, 1939	.05
Part 14 - Rules Governing Radio Stations in Alaska (Other than Amateur and Broadcast) Revised April 2, 1942	.05
Part 15 - Rules and Regulations Governing All Radio Stations in the War Emergency Service, Revised May 26, 1943	.10
Part 31 - Revised October 25, 1940, and Part 32, Effective January 1, 1937, Uniform System of Accounts Class A and Class B Telephone Companies, Units of Property Class A and Class B Telephone Companies, (One Pamphlet)	.15
Part 33 - Accounting by Class C Telephone Companies, Effective January 1, 1939	.15
Part 34 - Uniform System of Accounts, Radio Telegraph Carriers, Effective January 1, 1940	.25
Part 35 - Uniform System of Accounts for Telegraph and Cable Companies, Effective January 1, 1943	.35

Title	Price
Part 41 - Rules Governing Telegraph and Telephone Franks, Effective August 11, 1939.....	$ .05
Part 42 - Rules Governing the Preservation of Records, Revised May 27, 1943.....	.10
Part 43 - Rules Governing the Filing of Information, Contracts, etc. of Telecommunications Carriers, Revised September 29, 1943.....	.05
Part 61 - Tariffs, Rules Governing the Construction, Filing and Posting of Schedules of Charges for Interstate and Foreign Communications Service, Revised September 29, 1943.....	.10
Part 62 - Rules Governing Application under Sec. 212 of the Act to Hold Interlocking Directorates, Effective September 1, 1939.....	.05
Part 63 - Extension of Lines and Discontinuance of Service by Carriers, Effective March 18, 1944...	.05
Federal Communications Commission Report on Social and Economic Data, pursuant to Informal Hearing etc. July 1, 1937.....	.60
Federal Communications Commission - Proposed Report Telephone Investigation Pursuant to Public Resolution No. 8, (74th Cong.).....	1.00
Final Report on Telephone Investigation, House Document 340.....	.65
Annual Report Form H for year ending Dec. 31, 1943.	1.00
Annual Report Form H for year ending Dec. 31,1944...	1.00
Annual Report Form M, Paper, loose-leaf, shoe-string fastener.....	.75
Statistical Circular No. 1.....	.05
FCC Form 901.....	.05 ea. 1.25 C
FCC Form 902.....	.05 ea. 1.25 C
Form 903.....	.05 ea. 1.25 C
FCC Form 905A.....	.05 ea. .85 C
FCC Form 905B.....	.05 ea. .85 C

In addition to the foregoing, the following are available without charge from the FCC:

An ABC of the FCC -(1940)
Radio - A Public Primer (1941)
Information Regarding Ship and Coastal Harbor Radiotelephone Service (1941).

Statistics of Classes A and B Telephone Carriers Reporting Annually to the Commission (1943).
Statistics of Principal Telegraph and Cable Carriers (1943).
Statistics of Principal Radiotelegraph Carriers (1943).
Salary Report of Telephone and Telegraph Carriers and Holding Companies (1942).
An Analysis of the Traffic Damage Claims Paid During 1943.
Telephone Carriers Filing Annual Reports for 1942, arranged in order of annual reporting revenues.

Class A and B Telephone Carriers, arranged in order of 1942 operating revenues, by revenue groups and by jurisdiction.

Telephone Hand-set Charges and Changes since January 31, 1943.

Summary of Broadcast Revenues, Expenses and Income of 4 Major Networks, 5 Regional Networks, and 841 Standard Broadcast Stations - 1943.

Summary of Broadcast Revenues, Expenses and Income of 832 Standard Broadcast Stations - 1943 (Excludes 9 Key Stations of Major Networks)

Summary of Functional Employee Data of Networks and 815 Standard Broadcast Stations by Districts as reported To the Commission for the week beginning October 17, 1943.

Financial and Employee Data Respecting Networks and 851 Standard Broadcast Stations - 1942 (22 Tables Containing Detailed Data).

Operating Data From Monthly Reports of Large Telephone Carriers.

Operating Data From Monthly Reports Of Telegraph, Cable And Radiotelegraph Carriers.