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FEDERAL

COMMUNICATIONS

COMMISSION

FISCAL YEAR ENDED JUNE 30, 1942

(With Notation of Subsequent War
and Other Important Activities)

COMMISSIONERS

MEMBERS OF THE FEDERAL COMMUNICATIONS COMMISSION

(As of January 1, 1943)

CHAIRMAN
JAMES LAWRENCE FLY
(Term expires June 30, 1949)

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

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

T.A.M. CRAVEN
(Term expires June 30, 1944)

GEORGE HENRY PAYNE
(Term expires June 30, 1943)

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

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

LETTER OF TRANSMITTAL

FEDERAL COMMUNICATIONS COMMISSION,
Washington, D. C., March 3, 1943.

To the Congress of the United States:

The Eighth Annual Report of the Federal Communications Commission, for the fiscal year ending June 30, 1942, is submitted herewith. Certain matters occurring since June 30, 1942, in particular developments in the Commission's war activities, are included to provide as nearly as possible a current picture.

Pursuant to regulations of the Bureau of the Budget, this year's report is submitted in mimeographed form rather than printed.

Respectfully,

JAMES LAWRENCE FLY,
Chairman.

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CHAPTER 1

WAR ACTIVITIES

1. General
2. Radio Intelligence Division
3. Foreign Broadcast Intelligence Service
4. Board of War Communications
5. Other Commission War Activities

1. General

Since July 1, 1941, and even more intensively since Pearl Harbor, the conversion of Commission activities to a war footing has been its chief task.

The Commission's concern is with electrical communications by wire and radio. Just as land, sea, and air transport is the life blood of a nation at war, so telephone, telegraph, and radio communication is its nerve system. The United States needs international communications routes, maintained at peak efficiency, to carry messages promptly to and from our forces overseas, our allies, and friendly neutrals; to weld this hemisphere into a single neighborly unit; to assemble news and information from all quarters of the world; and to carry American news and information to friends abroad. On the home front we need prompt, safe, and efficient telephone and telegraph systems to carry on the work of war production and the essential business of the country. Communications routes must be expanded to meet new war needs, while wastage of critical materials and equipment on unessential expansion must be avoided. Communications plants must be protected against sabotage and accident, and misuse of communications techniques by the enemy must be prevented. To such goals as these the full attention of the Commission is now directed.

2. Radio Intelligence Division

The largest single activity of the whole Commission is the monitoring of the ether throughout the United States, its Territories and possessions, by the Radio Intelligence Division (formerly the National Defense Operations) of the Engineering Department. R.I.D. stations, strategically placed to cover enemy, illegal, and unlicensed radio transmissions, keep constant watch

over the whole radio spectrum. They are a first line of defense against radiocommunication with the enemy abroad, and against illegal use of radio at home. In addition, their continuous watch for lost planes and for marine distress signals, and the aid they render in locating lost planes, and in helping them to return to their bases, are a regular part of their duties.

Primary monitoring stations. The key points in the R.I.D. monitoring system are the 12 primary monitoring stations. Their function in general is to range through the radiofrequency spectrum in search of all unidentified, clandestine, or illegal radio transmissions, to establish the general location of transmitters from which such signals emanate, and to intercept and record such signals for use by the War and Navy Departments, the Federal Bureau of Investigation, and other intelligence services of the United States.

Secondary monitoring stations. The Commission maintains 90 secondary stations, one or more of which are located in each of the 48 states and in the territories and possessions. The functions of the secondary stations are to investigate each report of alleged unidentified, clandestine, or illegal radio operation reported within its territory, and to locate precisely the origin of such transmissions after they have been generally located by the primary monitoring stations. The secondary station personnel, like the primary, maintains so far as possible a 24-hour monitoring watch for unidentified or unauthorized radio signals, thus supplementing the work of the primary stations.

Radio Intelligence Centers. The three radio intelligence centers are located at Honolulu, T.H., San Francisco, California, and Washington, D.C. All three were instituted at the specific request of the armed forces, and the bulk of their duties are performed in cooperation with the Army, Navy, Coast Guard, and Federal Bureau of Investigation. They act as coordinating centers for all reports concerning radio surveillance and direction-finding activities, enemy and illegal radio operations in their respective areas, etc.

Mobile coastal units. The Commanding Generals of the Western, Eastern, and Southern Defense Commands have requested the Commission to supply a comprehensive mobile radio surveillance extending throughout the coastal areas of these three defense commands. Mobile units now patrol the entire 5000 mile coast line of the continental United States. These coastal patrol units are particularly on the watch for any radio transmitters on shore which might attempt to communicate with an enemy ship at sea relative to the departure, location, or cargoes of departing vessels.

Washington activities. The work of the primary and secondary monitoring stations, of the radio intelligence centers, and of the coastal patrols is coordinated in Washington by a small staff. This staff is composed of the Chief of the Division; an Administrative Section; an Intercept Section, which receives, classifies, and distributes intercepted radio traffic to the Chief Naval Censor, the Chief Signal Officer, the Weather Bureau, and the Coast Guard; a Cartographic Unit which plots on maps the location of unidentified, clandestine, and illegal stations; a Translation Unit which translates foreign-language intercepts into English; an Investigative Section; and a Communications Section. The entire Division is so organized that a clandestine signal received anywhere in American territory can be thoroughly investigated. This includes spotting the location of the transmitter, analyzing the signals intercepted, and investigating the circumstances. The information is turned over with a minimum of delay to the Army, Navy, Department of Justice, or other appropriate agency.

Broadcast Recording Unit. This unit gives engineering assistance to the FBIS at five listening posts in the U.S. territories and possessions; organizes and operates the technical facilities for reception of programs under the general supervision of the R.I.D.

3. Foreign Broadcast Intelligence Service

The Foreign Broadcast Intelligence Service (formerly the Foreign Broadcast Monitoring Service) was created in March, 1941, as the result of a suggestion from the State Department to the Board of War Communications that means be found to keep the government informed about the content of foreign broadcasts. The Board designated the Federal Communications Commission as the agency best equipped technically to carry out this task, and the Commission thereupon organized the Foreign Broadcast Intelligence Service. (FBIS).

The FBIS is a war agency. It operates exclusively as a service to the Federal (and United Nations) agencies, and to officials shaping foreign and military policy, carrying on military operations and economic warfare, aiding in the dissemination of accurate news and information to the American and other peoples, countering enemy propaganda, and promoting understanding and unity in the war effort.

Its specific functions are: (1) listening to broadcasts emanating from foreign countries throughout the world; (2) summarizing and digesting their contents; (3) recording the more important broadcasts verbatim and translating them from the thirty-five or more languages and dialects used in foreign broadcasts; and (4) selecting, editing, and reporting in the forms most useful to the various Federal agencies served, the news and propaganda intelligence received. Operating on a 24-hour day, seven-days-a-week schedule, the FBIS provides a service and center for minute-by-minute reporting of foreign broadcast news intelligence and answers to requests for special information, as well as for continuous, detailed analysis of foreign radio propaganda. The FBIS also conducts analyses to determine possible propaganda content of domestic foreign language broadcasts.

Because the enemy and enemy-conquered countries have cut off the regular channels of rapid news communication (diplomatic staffs, press representatives and cable news service--even travelers), enemy and neutral radio broadcasts for domestic and foreign consumption are our chief source of foreign news and intelligence. The FBIS performs this emergency task.

So also, because of its direct and full access to the raw material of incoming broadcast propaganda, the FBIS prepares cumulative, intensive analysis of enemy programs. Regular and special reports on incoming propaganda are transmitted by FBIS to those Federal agencies which are concerned with combatting or neutralizing such enemy activity.

The listening posts and monitoring-recording stations maintained by FBIS are designed to cover three main geographical areas.

First is the Pacific and Asiatic area where Japanese and Japanese-controlled stations in Japan, Manchukuo, occupied China, French Indo-China, and the Philippines carry on extensive broadcast operations in many languages aimed at these countries themselves, at Latin America, Free China, Europe and the United States. Two FBIS stations, one in Portland and one recently taken over in San Francisco from the Office of War Information, divide the labor of monitoring these broadcasts. They listen also to shortwave broadcasts from Free China and from Russia. The news, intelligence, and propaganda thus selected and processed is teletyped to FBIS headquarters in Washington.

Second is the Latin American area where each of 20 republics maintains one or more stations for making domestic broadcasts, many of which are audible in the United States, and for broadcasting programs direct to this country. The promotion of closer relations between the United States and the other American nations has led to the development of an extensive U.S. program of shortwave broadcasting to Latin America. To provide a basis for these broadcasts and to collect war information from these countries, FBIS maintains at Kingsville, Texas, a listening post designed to monitor, record, and edit the programs from Latin American stations to their sister states and to the U. S. The material thus procured is teletyped from Kingsville to FBIS headquarters in Washington for relay to the Coordinator of Inter-American Affairs, Office of Strategic Services and other agencies with a special interest in Latin America.

Third is the large and important volume of broadcasts emanating from Germany, Italy, German-and-Italian-controlled territory in Europe, a few neutral stations in this area (Switzerland, Sweden, Spain, Portugal and Turkey) and from Great Britain itself. These include shortwave broadcasts designed for foreign and American audiences. To keep in touch with this elaborate set of programs in a variety of languages, FBIS maintains a major listening post near Washington, D. C., from which selected programs as received are transmitted directly and fully to the Washington headquarters office where they are recorded, monitored, translated, and edited. Essential to the Washington listening post is the London FBIS bureau maintained in cooperation with the British Broadcasting Corporation. By arrangement with the BBC, the large volume of programs from the Continent of Europe for home consumption, including summaries of programs received at British Ministry of Information listening posts in Egypt and India, are available to FBIS editors who select important material not audible in Washington and forward it, by trans-Atlantic radio to Washington headquarters. Broadcasts from Africa and Europe to the Antilles and to South America, and from the Antilles to South America, are handled by an FBIS listening post in Puerto Rico. Here programs which are not heard in Washington are intercepted and the results sent by wire to the Washington office.

In all, about 1,650,000 words are intercepted daily.

4. Board of War Communications

Organization

The Board of War Communications (formerly the Defense Communications Board) was created by Executive Order on September 24, 1940. The Board reports to the President through the Office of Emergency Management.

F.C.C. Chairman James Lawrence Fly is also Chairman of the Board of War Communications. Other Board members are Major General Dawson Olmstead, Chief Signal Officer of the Army; Captain Carl F. Holden, Director of Naval Communications; Hon. Breckenridge Long, Assistant Secretary of State in Charge of the Division of International Communications; Hon. Herbert E. Gaston, Assistant Secretary of the Treasury in Charge of Treasury Enforcement Activities, who is Secretary of the Board; and Captain R. J. Mauerman, U. S. Coast Guard, who is Assistant Secretary of the Board.

The Board itself has no paid personnel, appropriation, or funds. It operates through a Coordinating Committee and a Law Committee staffed by personnel from the agencies represented on the

Board; through Labor and Industry Advisory Committees and an International Broadcasting Coordinating Committee; and through 13 "numbered committees" for radio amateurs, aviation communications, cable, domestic broadcasting, the Interdepartmental Radio Advisory Committee, international broadcasting, radiocommunications, state and municipal facilities, telephone, telegraph, U.S. Government facilities, the Communications Liaison Committee for Civilian Defense, and the Priorities Liaison Committee.

Activities

As of December 31, 1942, the Board had issued 25 orders, plus modifications and extensions thereof. Orders 1, 2, 3, 14, and 23 delegated certain communications powers to the Army and Navy; Order 4 provided for registration by the Federal Communications Commission of all radio-frequency generating apparatus not otherwise licensed; Orders 5, 6, 7, 8, 11, 16, and 21 provided for the closure of certain facilities, services, and circuits, together with exceptions to such closure orders; Order 9 delegated to the Federal Communications Commission certain authority with respect to the War Emergency Radio Service; Order 10 provided for notice to the Federal Communications Commission prior to abandonment or suspension of wire communications facilities; Order 12 dealt with the removing and impounding of radio equipment in Puerto Rico and the Virgin Islands; Order 13 instituted a questionnaire concerning transmitting tubes; Orders 15, 17, 18, and 19 dealt with international radiotelephone restrictions; Order 20 provided priority for urgent telephone toll calls essential to the war effort or public safety; Order 22 concerns the leasing of cable circuits; Order 24 concerns operation of certain international radiobroadcasting stations; and Orders 25, 25-A, 25-B, and 25-C concern telegraph service.

The Board has also issued memoranda requesting other government agencies to eliminate insofar as feasible, the use of long-distance circuits, to spread the filing time of telegrams throughout the day in order to avoid peak loads, and to take other steps designed to improve the efficiency of communication services.

5. Other Commission War Activities.

In addition to the new functions described above, the following war activities of the Commission, most of which are carried on by the regular staff, should be mentioned:

(a) Studies of the speed and adequacy of wartime telegraph services, undertaken at the request of the Board of War Communications to ensure swift and uninterrupted despatch of military and civilian war messages;

(b) The inauguration, in cooperation with the Office of Civilian Defense, of a new "War Emergency Radio Service" in lieu of former amateur activities, and designed to provide radiocommunications facilities for State and local civilian defense officials;

(c) Comprehensive surveys resulting in detailed plans and recommendations to insure adequate protection against sabotage of important communications facilities, both wire and radio, or other service interruptions.

(d) The recapture for military use of frequencies assigned to less essential civilian uses and needed by the armed forces;

(e) The issuance and enforcement of uniform instructions to insure radio silence during air-raid alarms;

(f) Studies of the optimum frequencies, power, antenna design, and hours for international broadcasting stations beaming programs abroad, all of which are now programmed by the Office of War Information and the Office of the Coordinator of Inter-American Affairs;

(g) Preparation of maps and data concerning all broadcast stations for the Fighter Command of the Army Air Forces;

(h) Studies of methods of confusing enemy planes endeavoring to use American broadcast stations as homing beacons;

(i) Studies of the propagation characteristics of ultra-high frequencies, to facilitate their use in American war activities and to prevent misuse within the United States by the enemy;

(j) Authorization of new communications routes to foreign points not previously served;

(k) Establishment of standards and inspection of non-radiating receivers for use on board ship, to prevent receiver radiations from revealing the ship's location to enemy raiders;

(l) Preparation of technical requirements for life-boat radio equipment;

(m) The maintenance of a continuous marine watch for the reception of distress signals;

(n) Analyses of radio distress signals at sea;

(o) Studies of the use of automatic marine radio alarms under war conditions;

(p) Wartime expansion of police radio and other emergency radio services;

(q) Detail of FCC radio operators to Army Information Centers for enforcement of radio silence during air-raid alarms and other radio air-raid defense duties;

(r) Registry of all diathermy equipment and unlicensed transmitters.

(s) Studies of foreign-language broadcasting by domestic stations;

(t) Expansion of Latin American communications facilities and related hemispheric radio and wire communications problems;

(u) Studies of skilled labor shortage, deferment procedures, and related manpower problems in the communications industries;

(v) Studies of rates charged by communications carriers, as part of the anti-inflation program;

(w) Studies in connection with telegraph merger legislation and the proposed merger of telegraph carriers.

Many of these and other war activities of the Commission are treated in greater detail elsewhere in this report.

Of especial importance was the Commission's Memorandum Opinion of April 27, 1942, instituted at the suggestion of the Board of War Communications and designed to save materials needed elsewhere in the war effort. The Memorandum Opinion states:

> "* * *The Commission has adopted a policy to grant no application for an authorization involving the use of any materials to construct or to change the transmitting facilities of any standard, television, facsimile, relay, or high frequency (FM) broadcast stations."

Coupled with this conservation policy governing radiobroadcasting grants, is a policy of granting only those applications for extension of wire-line facilities which are needed for military or civilian war use.

CHAPTER II

GENERAL

1. Administration
2. Commission Membership Changes
3. Staff Organization
4. Personnel
5. Appropriations
6. Legislation
7. Litigation
8. Dockets
9. International
10. Interdepartment Radio Advisory Committee

1. Administration

There were no significant changes in the Commission's administrative procedures.

2. Commission Membership Changes

On November 1, 1941, Clifford J. Durr of Alabama was sworn in to succeed Frederick I. Thompson, also of Alabama, whose term expired June 30, 1941.

3. Staff Organization

The Commission's staff organization consists of five units: the Accounting, Statistical, and Tariff Department, the Engineering Department, the Foreign Broadcast Intelligence Service, the Law Department, and the Secretary's Office. The Chief Accountant, Chief Engineer, The General Counsel, and Secretary constitute an Administrative Board, which handles routine actions in accordance with established Commission policy, and a Committee on Rules, which considers and recommends revisions of the rules and regulations.

4. Personnel

At the end of the fiscal year 1942, the Commission had 2,108 employees; of these 511 were regular employees in Washington, 531 were

national defense employees in Washington, 222 were regular employees in the field, and 844 were national defense employees in the field.

5. Appropriations

For the fiscal year 1942, the Commission was appropriated $2,315,229 for its regular activities, $3,316,195 for its national defense activities, and $24,500 for printing and binding—a total of $5,655,924.

6. Legislation

The basic law under which the Commission operates is the Communications Act of 1934 as amended. During the fiscal year two amendments were made to that Act.

Section 353(b) was amended by Public No. 155, 77th Cong., 1st sess. (H.R. 2074), approved July 8, 1941. This amendment provides that during the emergency proclaimed by the President on September 8, 1939, but not after June 30, 1943, the requirement of six months' previous service as a qualified operator in a station on board a ship of the United States may be suspended or modified by regulation or order of the Commission for successive periods of not more than six months' duration.

Section 606 of the Communications Act, relating to the war emergency powers of the President, was amended by Public No. 413, 77th Cong., 1st sess. (H.R. 6263), approved January 26, 1942. This Act added paragraphs (d), (f), and (g) to Section 606. This amendment authorizes the President, during a state of war or threat of war involving the United States, (1) to suspend or amend the rules and regulations of the Commission applicable to any or all facilities or stations for wire communications within the jurisdiction of the United States; (2) to cause the closing of any facility or station for wire communications and the removal therefrom of its apparatus and equipment; or (3) to authorize the use or control of any such facility or station by any department of the Government. Similar power with respect to stations for radio communication is already possessed by the President.

S. 2445, a bill to amend the Communications Act of 1934 so as to permit consolidation or merger of telegraph companies, was introduced on April 9, 1942 by Senators White and McFarland. Hearings were held before the Senate Committee on Interstate Commerce during April and May 1942, and the bill was reported out in amended form as S. 2598, in which form it passed the Senate on June 22, 1942.

Thereafter, hearings were held before a subcommittee of the House Committee on Interstate and Foreign Commerce on July 21-23, 1942, and the House Committee reported the bill with amendments; but no action was taken by the House.

H. R. 5497, a bill to alter the structure of the Commission and to amend many important procedural provisions of the Communications Act of 1934, was introduced on August 5, 1941, by Representative Sanders. Hearings were held before the House Committee on Interstate and Foreign Commerce between April 14 and July 2, 1942. The bill was not reported out. No hearings were held on a similar bill, S. 1806, introduced on July 31, 1941, by Senator White.

During the fiscal year the Commission also answered requests from Congress for its views on six other bills.

7. Litigation

At the beginning of the fiscal year there were pending four cases to which the Commission was a party, three of which were in the United States Court of Appeals for the District of Columbia and one in the United States District Court for the Southern District of New York.

During the year nine new cases were filed. Four of them were appeals to the Court of Appeals for the District of Columbia from orders of the Commission. Three were suits filed in three-judge district courts pursuant to the Urgent Deficiencies Act to enjoin Commission action. One was a suit filed by the Commission in the United States District Court for the District of Columbia to enforce a subpoena. This case was subsequently appealed to the Court of Appeals. The remaining case was one reopened by leave of the Court of Appeals for the District of Columbia.

Seven cases were finally disposed of during the year. The Commission won six of these cases and lost one.

Thus, six cases were pending at the end of the year, four in the Court of Appeals for the District of Columbia and two in the United States District Court for the Southern District of New York.

Three of the cases pending at the end of the year went to the Supreme Court of the United States on interlocutory matters. In one of them, Scripps-Howard Radio, Inc. v. Federal Communications Commission, No. 508, decided April 6, 1942, the Court of Appeals certified to the Supreme Court the question whether, in a case appealed under Section 402(b) of the Communications Act, the Court of Appeals has the power to issue a stay order preserving the status quo pending determination of the appeal. The question certified was answered in the affirmative and the case is now pending in the Court of Appeals on the merits.

The other two cases which went to the Supreme Court, National Broadcasting Company, et al. v. United States, No. 1025, and Columbia Broadcasting System v. United States, No. 1026, both decided June 1, 1942, are suits to enjoin the enforcement of the Commission's chain broadcasting regulations. The three-judge district court in which the suits were brought dismissed the complaints on motions of the Commission which urged that the regulations are mere declarations of policy to be applied in subsequent administrative proceedings and hence are not reviewable at this time. The Supreme Court reversed, holding that the regulations are reviewable under the Urgent Deficiencies Act. The cases were remanded to the lower court for disposition on the merits. On November 16, 1942, the three-judge court held for the Commission on the merits. The cases are now on appeal to the Supreme Court.

Of the cases finally disposed of during the year, two are worthy of specific mention. Stahlman v. Federal Communications Commission, 126 F. (2d) 124, involved an action by the Commission to enforce obedience to a subpoena requiring a witness to appear and testify before the Commission in connection with its newspaper hearing. The witness refused to appear on the ground that the Commission had no authority to enact regulations directed against ownership of radio stations by newspapers, and therefore was without authority to conduct the investigation. Suit was brought by the Commission in the United States District Court for the District of Columbia to enforce the subpoena. The District Court ordered the witness to appear. An appeal was filed and the Court of Appeals affirmed the holding that the Commission did have authority to hold the hearings, and directed the witness to obey the subpoena.

R.C.A. Communications, Inc. v. United States, 43 F. Supp. 851, was a suit brought by R.C.A. Communications, Inc. in a three-judge court for the Southern District of New York to set aside an order of the Commission lowering the rates charged on international and in transit "Urgent" telegraph messages, from double the rate for regular messages to 1 1/2 times that rate. The court sustained the Commission's action, holding that the Commission had jurisdiction over international inbound messages and messages in transit within the United States as well as outbound messages. The court also held that the ratio established by the Commission was warranted, saying: "We think that Section 201(b) of the Act gave the Commission sole authority to classify communications by wire or radio as 'Urgent' and to fix reasonable charges therefor."

8. Dockets

During the fiscal year, 127 docket cases were heard by the Commission. The Commission also acted on 636 motions, petitions, and other pleadings; of which 452 were granted, 149 were denied, and 35 were dismissed.

9. International

The International Division of the Engineering Department prepares the basic data on all phases of international communications - radiotelephone, radiotelegraph, and aable. It advises the War and Navy Departments with respect to the best frequencies available for special military communications services. The Division's major report, the International Telecommunications Survey, is supplied to all government agencies concerned with international communications problems. The Division maintains the "master-frequency records" for both transmission and reception of all radio frequency assignments in the United States and in foreign countries. It furnishes technical information and advice to the Interdepartment Radio Advisory Committee and the Interdepartmental Committee for International Radiobroadcasting Facilities and supplies the secretariat for these two committees. It serves as liaison between the Commission and the Committee on Cooperation with American Republics, the State, War and Navy Departments, and other government agencies concerned with international telecommunications problems.

10. Interdepartment Radio Advisory Committee

The Interdepartment Radio Advisory Committee, upon which 12 Federal agencies are represented, was established for the purpose of advising the President with reference to the assignment of frequencies to Government radio stations. During the fiscal year it approved the assignment of 6,942 frequencies for Government radio stations, bringing to 27,635 the number of such assignments recommended by the Committee since its establishment. IRAC is now a committee of the Board of War Communications and advises the Board of its assignments.

The administrative duties in connection with IRAC are performed by the International Division of the Commission's Engineering Department.

[No page 14 in original!]

CHAPTER III

TELEPHONE AND TELEGRAPH

1. Telephone
2. Telegraph
3. Cable
4. Radio Common Carriers
5. Tariffs
6. Supervision of Accounts

1. Telephone

The Commission is charged with the regulation of all wire and radio telephone and telegraph companies doing business as common carriers in interstate or foreign communication. War conditions, by the creation of new problems, have resulted in greatly increased work relating to both domestic and international circuits, rates, and services.

Rate Investigations

American Telephone and Telegraph Company Long-Lines Rates. On November 21, 1942, the Commission ordered the American Telephone and Telegraph Company to show cause why its toll rates and other charges should not be substantially reduced. Hearings were held on December 16 and 17, 1942; and on January 20, 1943, after a series of conferences, the Commission announced that the company had agreed to reductions totaling an estimated $34,700,000, in its rates to the public; and in addition to reduction of its share of rates and an increase in the share allotted to associated and independent companies amounting to $16,000,000 -- a total reduction in the American Company's Long Lines revenues of $50,700,000. A part of the reduction was in rates charged for leased private-line telephone, telegraph, and radio-program transmission services, and the remainder was in the decrease in overtime charges on toll messages. The United States Government, as the largest user of telephone service, will benefit materially from an estimated reduction of $11,900,000 in charges for such services, and will further benefit substantially from the reduction in rates for calls in excess of three minutes. To prevent an increase in ordinary long-distance calls over already burdened circuits, no reduction was made in the rates charged for the first three minutes. Toll rates including the reductions in overtime rates were made applicable on the "station-to-station" basis (as distinguished from the "board-to-board" basis of making toll rates. In addition, the adoption of the "station-to-station" method of quoting toll rates was one of the factors resulting in increased compensation to connection carriers.

In announcing the settlement, the Commission stated: "The reductions are in conformity (1) with the Government policy against inflation and (2) with the policy of avoiding an increase of civilian traffic and the consequent impeding of war messages."

Representatives of state public utility commissions participated with the Commission in the proceedings. The Office of Price Administration was an intervenor, stating the an order reducing the excess earnings of the company would contribute materially to its program of controlling costs.

Special Telephone Charges of Hotels, Apartment Houses, and Clubs in Interstate and Foreign communications. -- The principal issue involved is to determine whether surcharges imposed by hotels, apartment houses, and clubs in the District of Columbia, on telephone calls to and from telephone stations located on their premises, are subject to any regulation either by this Commission or by the Public Utilities Commission of the District of Columbia. A hearing was held jointly with the District Public Utilities Commission and a decision on this matter is pending. The precedent which may be established in this case will, of course, be an important one for similar conditions existing in other cities.

Northwestern Bell Telephone Company Increased Charges for Interstate Telephone Exchange Service in Iowa.--The Commission suspended certain increases in charges for interstate telephone exchange service in Iowa which were not subject to review by any state or local regulatory agency,1/ and ordered an investigation to determine the justness and reasonableness of these rates. The Company was granted an extension of time to prepare its case and has agreed to continue suspension of the increased charges accordingly.

Illinois Bell Telephone Company and American Telephone and Telegraph Company Increased Rates for Radiotelephone service through Coastal Harbor Radio Station WAY.--This proceeding was instituted after the companies had increased their rates for radiotelephone service through coastal harbor radio station WAY. The Commission suspended the increased rates and ordered an investigation to determine the justness and reasonableness thereof. Hearings have been held and the matter is pending decision.

Separation of Telephone Property, Revenues, and Expense as an Aid in the Regulation of Telephone Companies.--With the collaboration of the National Association of Railroad and Utilities Commissioners, the Commission has undertaken a study of the methods of separating telephone property, revenues, and expenses as between interstate and foreign communication on the one hand, and intrastate communication on the other. Such a study also includes consideration of whether telephone toll rates should be fixed on a "station-to-station" or "board-to-board" basis. The board-to-board basis means that toll

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1/ Iowa is one of the three states having no statewide regulation of telephone rates, and the communications in question are not regulated locally.

rates and charges are stated to cover all services, facilities and operations required in the transmission and reception of telephone toll communications between one toll board and another toll board, and that compensation to the telephone company for facilities and services required to establish connection between the actual telephone stations and the toll boards is provided for in the exchange rate. The station-to-station basis means that telephone toll rates and charges are stated to cover all the services, facilities, and operations required in the transmission and reception of telephone toll communications between one telephone station and another telephone station. The Commission directed that a hearing be held in order to receive evidence and the views of interested parties with respect to these questions.

New York Telephone Company Accounting. - The Commission instituted an investigation to determine the propriety of accounting entries of the New York Telephone Company relating to certain acquisitions of telephone property by the company from its parent company, the American Telephone and Telegraph Company. The Commission suspended, pending decision herein, all charges to operating expenses made by the New York Telephone Company after January 1, 1942, for the purpose of amortizing the questioned amounts in its acquisition adjustment account.

Bell System Pension Accounting. - This proceeding involves the manner of accounting for certain charges made in connection with pensions. The propriety of the Bell System Pension Plan is not in question. The Commission issued a proposed report, in which it concluded that the companies involved had not justified accounting entries which charged to operating expense accounts certain amounts necessary to arrest the growth of an "unfunded actuarial liability". Exceptions and briefs were filed and oral argument was heard. On December 2, 1942, the Commission issued its final report and order directing that the items in question be eliminated from operating expense accounts.

Increased Service Charges of Associated Telephone Company, Ltd., for Private Line Teletypewriter Station Equipment. The Commission suspended certain increases in charges for station equipment furnished for and in connection with interstate and foreign private line teletypewriter service, and ordered an investigation to determine the justness and reasonableness of these rates. The Company requested permission to withdraw the suspended tariff changes, and when the withdrawal became effective, the matter was dismissed.

Telephone Facilities

Applications. During the fiscal year the Commission approved 174 applications for telephone facilities involving an aggregate expenditure of about $78,000,000. Of these, 165 were to supplement existing facilities by new construction costing approximately $45,000,000; 7 were for acquisition of properties valued at more than $33,000,000; and 2 involved consolidations of properties aggregating $39,500.

Type K Carrier Systems. On January 8, 1942, the Commission instituted an investigation into the facts and circumstances surrounding the construction and operation of Type K Carrier Systems between New York City and Boston, Mass., by the American Telephone and Telegraph Company and the New York Telephone Company. Type K carrier systems, superimposed upon wires, provide the means of transmitting twelve simultaneous conversations, and 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. The Commission ordered the two companies to show cause why authorizations covering such facilities are not required under Section 214 of the Communications Act of 1934 as amended. A hearing was held before an individual commissioner and the matter was awaiting formal decision of the Commission at the close of the fiscal year.

Acquisitions and Consolidations. During the fiscal year the Commission approved 5 applications of the American Telephone and Telegraph Company to acquire the assets of its subsidiaries, the American Telephone and Telegraph Company of Georgia, the American Telephone and Telegraph Company of Kentucky, Inc., the American Telephone and Telegraph Company of Mississippi, the American Telephone and Telegraph Company of South Carolina, and the American Telephone and Telegraph Company of Tennessee. The purpose was corporate simplification. These applications involved aggregate assets of about $25,000,000.

There were also granted the application of the Tri-State Telephone and Telegraph Company to acquire and operate the interstate toll lines of the Nicollet County Telephone and Telegraph Company, involving assets of about $406,000, and the application of the Northwestern Bell Telephone Company to acquire and operate the interstate toll lines of the Dakota Central Telephone Company, valued at approximately $7,740,000. Both the Nicollet and the Dakota Central companies were already part of the system of the Northwestern Bell Telephone Company through stock affiliation.

At the end of the fiscal year there were pending three applications for authority to acquire and operate interstate toll lines.

Hearings on the application of the New Jersey Bell Telephone Company to acquire the capital stock of Imperial Securities Company, a holding company which directly or indirectly holds stock control of the Keystone System, composed of the Keystone Telephone Company of Philadelphia, the Eastern Telephone and Telegraph Company, and the Camden and Atlantic Telephone and Telegraph Company, have been concluded and the matter is now awaiting formal decision.

Applications of the Carolina Telephone and Telegraph Company to acquire the Colerain Telephone Company, and of the Southern Bell Telephone and Telegraph Company to acquire the Collierville Telephone Company, were granted.

2. Telegraph

Applications

There were 150 applications for wire-telegraph certificates under Section 214 received by the Commission during the year. Of

these, 143 were granted. Of the latter, 86 authorized extensions of lines to military and naval establishments, and involved the leasing of approximately 4,097 miles and the construction of 1,807 miles of telegraph circuit.

Applications filed by Postal Telegraph Cable Co. for extensions of telegraph lines from Beaumont to Orange, Texas; from Ogdensburg to Massena, New York; from Bellows Falls to Springfield, Vermont; and from Miami to Florida City, Florida, received during the fiscal year 1941 were heard during the fiscal year 1942 and are awaiting decision.

Government Message Rates

The Navy and War Departments presented to the Commission the question whether cost-plus-a-fixed-fee contractors with those departments were entitled to the rates for telegraph service fixed by the Commission for government messages, as authorized by the Post Roads Act of 1866 and subsequent legislation. In the annual order of the Commission fixing rates for United States Government telegraph messages, the Commission prescribed a ratio which in most cases is 60% of the rate applicable to private messages. A formal proceeding was held by the Commission upon the question presented by the Navy and War Departments, following which the Commission revised its annual government message order to provide that government rates are applicable to telegraph messages sent by cost-plus-a-fixed-fee contractors with the United States Government departments when such messages are certified by authorized officers or employees of such departments as messages on official business for which payment will be made from United States funds.

Investigations

Investigation of Telegraph Service. On July 3, 1942, the Board of War Communications requested the Commission to undertake promptly an investigation into the service rendered in the telegraph field. Pursuant to this request, the Commission, by Order No. 103 dated July 7, 1942, instituted an investigation of the speed, accuracy, and general adequacy of wartime telegraph service; the manner and method of conducting operations and the extent to which such operating methods are suitable and adequate to wartime needs; matters pertaining to technical developments and improvements in such service; and the cause or causes for any inadequacies in service which may be found to exist.

The investigation was carried on, as requested by the Board, with the cooperation of the telegraph companies and the labor unions at 12 key Western Union and Postal Telegraph offices—New York, Chicago, Atlanta, New Orleans, Dallas, Cleveland, Detroit, St. Louis, Los Angeles, San Francisco, Portland, and Seattle. Thereafter, in October 1942, the Commission reported its findings to the Board.

Following this report the Board on November 5, 1942, issued its Order No. 25 (superseded on December 10, 1942 by Order No. 25-C). This order establishes speed-of-service goals for telegraph messages; orders the discontinuance of all non-telegraphic services including errand, distribution, remittance, installment payments, shopping, and other services; and bans the acceptance of domestic felicitation and congratulation telegrams, including Christmas, New Year, Easter, Father's Day, Jewish New Year, Mother's Day, Thanksgiving, and Valentine's Day greetings, congratulations on the birth of a child, graduations, weddings, anniversaries, and birthdays. Order No. 25-C also requests, and where necessary authorizes, the Commission to develop a plan of priorities for the handling of urgent essential traffic, both governmental and non-governmental; to prepare standards of minimum use to control installations of teleprinter equipment for telegraph users, including exemptions for equipment which serves a military necessity or a vital public need which cannot otherwise be met; to formulate basic principles for regulation of the leasing of telegraph circuits, to the end that no needed facilities shall be used for non-essential purposes; to study possibilities for the elimination of unnecessary circuits, facilities, and offices; and to develop a plan for the curtailment of the use of franks and deadhead messages and the elimination of "free service" messages.

Tariff Schedules for Land Line Charges for Foreign Telegraph Services. -In its decision on this case the Commission found that the charges for service rendered by Postal Telegraph-Cable Company to customers filing international messages at its office by long distance telephone (the sender paying the telephone toll cost), were discriminatory when the zone rates at the point at which the telephone message originated were applied rather than the zone rates at the recording point. The Commission decided that the schedule in issue had the effect of discriminating unjustly and unreasonably between customers using long distance telephone in filing messages and local customers, at both the point of origin and the receiving or recording point.

Pick-up and Delivery Practices.-The investigation described in the last Annual Report relating to the pick-up and delivery practices of telegraph carriers has been continued.

Investigation of Commercial News Bulletins, Quotation Service Tariffs and CND Baseball-Sports-Ticker Services. - The Commission has instituted an inquiry to determine a proper separation of the charges applicable to transmission from the charges applicable to the contents of the messages transmitted in these services by the Western Union and Postal Telegraph Companies. Hearings have been held and the matter is now pending.

Investigation of Private Line Teletypewriter Service. - Transradio Press Service, Inc., filed a complaint against the American Tele-

phone and Telegraph Company with respect to its charges, classifications, regulations, and practices for press private line teletypewriter service. The Commission consolidated this complaint with an order of investigation into these matters. On January 20, 1943, the F.C.C. announced that the American company had agreed to substantial reduction in private-line charges. Hearings in the matter went forward, however, and the matter is still pending.

Tariff Schedules for Private Printer Service by Telegraph Carriers.- The carriers furnishing this service have been required to file certain information relating to charges, terms and conditions upon which such carriers undertake to install private printers and furnish this service to the public, and the carriers have been further required to show cause why they should not file tariff schedules accordingly.

Merger

During the fiscal year, studies were prepared for use by Government witnesses in their testimony before a subcommittee of the Senate Interstate Commerce Committee on S. 2445, 77th Congress, 2nd Session to amend the Communications Act of 1934, as amended, to permit consolidations or mergers of telegraph operations and for other purposes.

3. Ocean Cable

The war has interrupted cable communication services of American companies to continental Europe and to Far Eastern points. Direct facilities are available to the United Kingdom, Eire and the Azores. The Pacific cable is operating to Hawaii and Midway only.

4. Radio Common Carriers

The Commission has continued its practice of granting authorizations for radiotelegraph circuits upon a temporary basis only, in order to permit the establishment of circuits for which there is an existing public need under wartime conditions without the delays incident to extensive hearings which might be necessary to determine questions relevant to authorizations on a permanent basis. The extension of the war and the consequent dispersal of

United Nations troops throughout the world has required that emphasis be placed upon the need for adequate communication facilities between the United States and all foreign points of strategic importance.

Since the commencement of the war, direct radiotelegraph circuits have been established to Egypt, Australia, Iceland, Paraguay, Bolivia, New Caledonia, Greenland, New Zealand, Iran, French Equatorial Africa, Asiatic U.S.S.R. and several additional points in unoccupied China. During the fiscal year, the Commission received 471 applications for authority to establish additional radiotelegraph circuits and issued 448 authorizations. During this period, 8 new stations were authorized, and on June 30, 1942 the total number of radiotelegraph stations authorized by the Commission was 87.

As a result of the entry of the United States into the war, direct radiotelegraph circuits with Axis countries have been discontinued, and circuits to countries occupied by the Japanese have also been discontinued.

By Order of the Board of War Communications, all domestic point to point radiotelegraph circuits in the United States were designated for closure, effective June 30, 1942. By subsequent order of the Board of War Communications, issued on the recommendation of the Commission, R.C.A. Communications, Inc., Mackay Radio and Telegraph Companies(California and Delaware), and Tropical Radio Telegraph Company were permitted to continue the operation of certain designated radiotelegraph circuits within the United States for the transmission of precensored international messages relayed within the United States, and Press Wireless, Inc., was permitted to operate certain radiotelegraph circuits within the United States for the handling of international government, press, and service messages, and for the transmission of domestic multiple address press and service messages.

Where an applicant for authority to establish a direct radiotelegraph circuit, proposes to apply to service over such direct circuit existing rates which are predicated upon indirect service involving several relays and handlings, the question of the justness and reasonableness of the application of such rates arises. In order to avoid delay in the establishment of circuits which may be vital in the war effort, the Commission, in authorizing certain direct circuits, has noted the existence of such rate questions and has expressly reserved consideration thereof for an appropriate proceeding at some later date. Under other circumstances, the Commission, in granting authorizations for additional direct circuits, has imposed conditions designed to prevent the application of unreasonable rates to the direct service authorized.

After study of the quarterly reports submitted by the companies during the past several years and the closing of the domestic

operations, the Commission was of the opinion that the radio communication companies could efficiently carry on all of their important international communications on a fewer number of frequencies than presently licensed to them by making more effective use of each frequency. After conferences with the carriers, it was decided that the companies could relinquish approximately 87 frequencies from 2 to 23 megacycles which would be made available to the armed forces for the duration of the war. These frequency studies are to be continued and will form a basis for the determination of future frequency requirements of all companies both during war and peacetime conditions.

Effective April 2, 1942, Section 6.29 was amended so that, normally, licenses for stations in the Fixed Public Radio Services will be issued for a period of two years instead of one year, the date of expiration being the first day of December.

On June 1, 1942, Globe Wireless, Ltd., ceased operations as a commercial common carrier for the duration of the war and leased its facilities to the United States Government. The cessation of operation in the commercial field was brought about through the loss of its Far Eastern circuits which decreased its traffic and revenues so far as to impair its ability to remain in commercial service.

Investigations

Ordinary Press Rates Between United States and China. - Press Wireless, Inc., established rates for ordinary press radiotelegraph services between the United States and China. The rates so established were higher than those charged by Press Wireless, Inc., for ordinary press radiotelegraph service to England, France and Russia. The Commission instituted an investigation to determine the justness and reasonableness of the rates to China. Hearings have been held and the matter is pending.

Government Direct Radiotelegraph Transmission Service. - R.C.A. Communications, Inc., filed tariffs for such service. The Commission instituted an investigation into the reasonableness of the rates and charges, and the justness of the classifications, regulations, and practices in connection with the service. The carrier thereupon withdrew such tariffs and the Commission dismissed the proceeding.

Rates to South America, Central America and the West Indies. -- The Commission has broadened its inquiry into the justness and reasonableness of charges for international telegraph communications between the United States on the one hand, and South America and Central America on the other, to include consideration of the rates between the United States and the West Indies and the desirability of establishing additional through routes. Hearings have been held, and the matter is now pending before the Commission for decision.

Through Routes Between Transpacific Points and Points in the United States. - This proceeding arose upon a complaint by Globe Wireless, Ltd., against the Western Union and Postal Telegraph Companies, requesting the establishment of through routes between the latter companies and Globe for the handling in the United States of Globe's transpacific telegraph traffic. The Commission, finding such action necessary and desirable in the public interest, ordered the establishment of such through routes.

Transpacific Rates. - This proceeding involved an investigation into the justness and reasonableness of the "radiomail" classification offered by Globe Wireless, Ltd., applicable in its transpacific service from the Philippine Islands to the United States, Guam, and the Hawaiian Islands. Consolidated with this proceeding was an investigation into the reasonableness of a differential in charge made by Globe and various other telegraph carriers for services between the Philippine Islands on the one hand, and the United States, Guam, and the Hawaiian Islands on the other. The Commission found that the "radiomail" classification was not a distinctive classification of service authorized by Section 201(b) and found the same unlawful.

Rates to Colombia. - Upon application by Globe Wireless, Ltd., a radiotelegraph carrier, the Commission modified Globe's station licenses to permit it to institute direct service to Colombia. Globe proposed to furnish such service at rates lower than those prevailing for service over the routes of other carriers. Competing carriers petitioned the Commission for reconsideration. In its decision denying these petitions, the Commission pointed out that it is reasonable to assume that a substantial portion of the traffic to be handled by Globe will arise from increased use of telegraph services stimulated by such lower rates and will not necessarily be traffic diverted from competing carriers. The Commission also gave recognition to the fact that establishment of additional communications circuits between the United States and South America is conducive to better international relations and hemispheric solidarity.

Increased Rates for Telegraph Messages from Bolivia to the United States. - The Commission suspended certain increases in charges of Mackay Radio and Telegraph Company (Delaware) for telegraph messages from La Paz, Bolivia to the United States, and ordered an investigation to determine the justness and reasonableness of these rates. A hearing was held, and the matter is pending before the Commission for decision.

Radiotelephone

As in the case of the radiotelegraph service, war conditions have seriously affected transoceanic telephone traffic.

Shortly after the entrance of the United States into the war, service to Berlin, Rome, and Tokyo was suspended. Subsequently, radiotelephone service to Java and the Philippine Islands was discontinued when these countries were occupied by Japanese military authorities.

International radiotelephone communications are now restricted by Order No. 19, issued September 30, 1942, which provides as follows:

"(1) Non-governmental business radiotelephone calls between the United States and Great Britain shall be permitted subject to the prior approval thereof from the Office of Censorship. No personal radiotelephone calls shall be permitted between the United States and Great Britain.

"(2) No non-governmental business or personal radiotelephone call shall be made to or from any foreign point outside of the Western Hemisphere other than Great Britain unless such call is made in the interest of the United States or the United Nations and unless an agency of the United States Government sponsors such call and obtains prior approval therefor from the Office of Censorship; PROVIDED, HOWEVER, That this provision shall not apply to American press calls or radio broadcast programs, or to such other press calls and radio programs as may be specifically approved by the Office of Censorship.

"(3) No calls of any nature, over the radiotelephone circuits under the jurisdiction of the United States, no matter where such calls may originate, unless sponsored and approved as provided in paragraph (2), shall be permitted to, from, or on behalf of, the following thirteen countries: Egypt, Finland, France, Iceland, Iran, Ireland, Latvia, Lithuania, Portugal, Spain, Sweden, Switzerland, and Turkey.

"(4) Personal calls other than those prohibited in the foregoing paragraphs may be completed between two points in the Western Hemisphere."

The only new point of communication to which radiotelephone service has been extended during the year was to Surinam (Dutch Guiana), although transmission tests to the U.S.S.R. have been under way for some time.

Due to the tremendous increase in radiotelephone traffic to South America, Hawaii, Puerto Rico, and Panama, additional circuits have been established to accommodate this traffic. All of the new circuits are of the twin-channel single sideband type thus providing for future growth with the minimum requirements for frequency space.

Radiotelephone service from the United States is rendered from three primary distribution centers located at New York, New York; San Francisco, California, and Miami, Florida. Telephone service to points in Europe, Panama and South America is routed via New York; while that to Australia and Hawaii is handled via San Francisco. Telephone calls destined to Central America, the West Indies and Northern South America are transmitted from Miami.

5. Tariffs.

At the close of the fiscal year 392 communication carriers of all types had tariffs and concurrences on file with the Commission. During the year these carriers filed 30,420 concurrences and tariff pages, containing changes in rates, regulations, practices and classification of services. A total of 35 tariff pages were rejected for failure to conform to statutory requirements.

During the year, upon application, special permission was granted telephone carriers to make changes in, or file tariffs on less than statutory notice in 43 instances. During the same period 286 applications for similar authority were received from telegraph carriers. Of this number 283 were granted, 7 were denied and 6 were withdrawn.

Expeditionary Force Message Service

A special wartime EFM service was established during June 1942 for the benefit of members of the Armed Forces and their families. Selection from one of 104 fixed texts, designed to cover nearly all occasions, offers the sender an exceptionally low message rate equivalent to 60 cents in American currency. The texts were sponsored and approved by the Armed Forces and the carrier companies.

6. Supervision of Accounts

Among the more important activities of the Commission in the field of accounting regulation were the following:

Restatement of plant accounts on basis of original cost.—The first of a series of formal cooperative proceedings with State commissions

was instituted for the purpose of disposing of questions and other important related matters with respect to write-ups accomplished through transfers or exchanges of property between affiliated companies. This proceeding involved the American Telephone and Telegraph Company and its largest operating subsidiary, The New York Telephone Company. It is anticipated that as a result of these proceedings it will be possible to formulate practicable and conclusive procedures for the solution of the many intricate problems inherent in the application of the original cost requirements.

Depreciation.- Participation in the activities of the Committee on Depreciation of the National Association of Railroad and Utilities Commissioners has continued.

In order that the Commission might be informed as to the annual depreciation rates of common carriers by wire or radio, an order was issued in June requiring such carriers to furnish certain information with respect to all changes made since December 31, 1941, in depreciation rates applied and to continue furnishing information regarding similar future changes.

Inquiry was instituted into the depreciation practices of The Western Union Telegraph Company as a result of which accounting adjustments totaling more than $13,000,000 have been made with further adjustments pending the completion of additional stages of the continuing investigation.

Miscellaneous. - In connection with other projects of a continuing character there were issued a number of amendments of the uniform system of accounts for telephone companies and of the regulations relating to the destruction of records by communication carriers. These latter were principally changes made necessary by war-created circumstances such as the prevention of the seizure of informative documents by the enemy. Other projects included:

Determination of suitable retirement units for use by wire-telegraph and ocean-cable carriers.

Revision of the uniform system of accounts for Class A and class B telephone companies.

Development of a continuing property-record procedure for telephone and radiotelegraph carriers.

Revision of a proposed annual report form (Form S) for use by noncarrier affiliates of communication carriers to conform to the requirements of defense agencies and to avoid duplicative requirements.

Compilation of a revised summarization relating to the promulgation by State commissions of uniform systems of accounts for telephone companies that were patterned after the systems prescribed by this Commission. (The summary indicated marked progress toward uniformity of requirements).

Compilation of an annual report form (Form O) for wire-telegraph and ocean-cable carriers to conform to the new uniform system of accounts for such carriers effective January 1, 1943.

Examination and report on the financial condition of a radiotelegraph carrier taken over by the War Department.

Analysis of current international telegraph and radiotelephone traffic.

Investigations of the accounting performed by telegraph and telephone carriers in connection with the restatement of plant accounts on the basis of original cost and the establishment of continuing property records.

Studies of the accounting organizations of three large telephone carriers and analyses of their methods of segregation of depreciation reserves.

Continuing 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.

While the war has operated to retard progress upon, or to postpone the completion of, several projects, it has also created a most urgent need of information upon a variety of subjects. An important series of questions, for example, had to do with various accounting problems presented in connection with the construction by, or for, communication carriers of emergency facilities required by the Government itself or by industries engaged in the war effort. Rental of complete plants or portions thereof by the Government occasioned special studies. Emphasis upon the matter of ownership of stock of communication carriers by aliens provided another task.

CHAPTER IV

STANDARD BROADCAST

1. General
2. Memorandum Opinion of April 27, 1942
3. North American Regional Broadcasting Agreement
4. Chain Broadcasting Regulations
5. Newspaper-Radio Inquiry
6. Modifications of Rules and Regulations
7. Foreign-Language Programs

1. General

A total of 897 standard broadcast stations were in operation or under construction on June 30, 1941. During the fiscal year thirty-four stations were authorized and six deleted, making a net increase of twenty-eight stations during the fiscal year.

The use of more complex directional antenna systems to minimize interference has made it possible for numerous stations to increase nighttime power to the maximum allowable and the submission of applications for new or increased facilities involving the use of these complex directional antenna systems has increased the time and care which the Commission has been required to devote to the study of such proposals. Approximately 25% of the stations in existence on June 30, 1941 employed directional antennae. Approximately 27.6% of the stations operating as authorized on June 30, 1942 employ directional antennae.

2. Memorandum Opinion of April 27, 1942

The Commission on April 27, 1942 published a memorandum opinion as follows:

"Since the adoption of the Commission's Memorandum Opinion of February 23, 1942, concerning policy and procedure for the handling of standard broadcast applications, it has become increasingly apparent that further restrictions upon the use of materials and skilled personnel for the construction and operation of radio broadcast stations are necessary. Public interest demands that the

requirements of the armed services be met before materials and skilled personnel can be used for the expansion of existing or the construction of new broadcast services.

"On April 16, 1942, the Defense Communications Board recommended to the War Production Board and this Commission that there be immediately placed in effect the following policy:

> No future authorizations involving the use of any materials shall be issued by the Federal Communications Commission nor shall further materials be allocated by the War Production Board, to construct or to change the transmitting facilities of any Standard, Television, Facsimile, Relay or High Frequency (FM, Non-Commercial, Experimental) broadcast station.

"Upon consideration of this recommendation, the Commission has adopted a policy to grant no application for an authorization involving the use of any materials to construct or change the transmitting facilities of any standard, television, facsimile, relay, or high frequency (FM) broadcast station. The Commission, however, has deferred action on the recommendation of the Defense Communications Board with respect to experimental high frequency and non-commercial educational broadcast stations.

"Applications filed to meet the requirements of authorizations heretofore made in the form of conditional grants, and applications requesting an extension of time within which to complete construction under authorizations heretofore made, will not be granted, unless it appears that the applicant (1) has made substantial expenditures in connection therewith or actually commenced construction prior to the date hereof, and (2) has on hand or available substantially all materials and equipment necessary to complete construction.

"This policy shall not preclude the issuance of authorizations involving essential repairs or replacements for the purpose of maintaining existing services; nor shall it preclude the issuance of authorizations by the Commission for construction of, or changes in, facilities required by the Commission or recommended by the head of a war agency of the Federal Government.

"For the purpose of carrying this policy into effect, the following procedure will govern applications now pending: Every applicant who desires to prosecute a pending application involving the use of materials to construct or change the transmitting facilities of any standard, television, facsimile, relay or high

frequency (FM) broadcast station 1/, shall, on or before June 1, 1942, file with the Commission a formal petition embodying a statement of such facts and circumstances as he believes would warrant the granting of his application in the public interest. The filing of such petition will be construed as an indication of the desire of the applicant to prosecute his application, and, in the event the petition is denied, the application will be designated for hearing. Failure of any such applicant to file such formal petition on or before June 1, 1942, or such further time as the Commission may, upon satisfactory showing allow, will be deemed an abandonment of the application, and such application will be retired to the closed files of the Commission and dismissed without prejudice."

This memorandum superseded a somewhat similar statement of policy dated February 23, 1942 and has a more far reaching effect on the work of the Commission in regard to applications for new or increased broadcast facilities as well as for other services.

There is definitely a shortage of much of the material and equipment necessary to the maintenance of broadcast stations, particularly large transmitting tubes. The Commission's Engineering Department has been active in cooperation with the broadcasters and with the various war agencies in an effort to work out a plan to make use of all surplus material and equipment and to afford the industry as a whole every possible means of maintaining stations in operation. Considerable study has been devoted to a means of prolonging the life expectancy of consumable materials employed in communication.

3. North American Regional Broadcasting Agreement

The plan for cooperation among North American countries in the allocation of broadcast facilities as provided for in the North American Regional Broadcasting Agreement became effective March 29, 1941. The Dominican Republic and Newfoundland ratified the Agreement during the fiscal year.

Interference between United States stations and stations of other countries signatory to the North American Regional Broadcasting Agreement has occurred in several instances during the past

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1/ Includes all such applications filed prior to the date hereof irrespective of present status.

year as have several conflicting notifications of proposed new assignments. In most cases these interference problems and conflicts have been adjusted in a manner satisfactory to all parties. The North American Regional Broadcasting Agreement is serving its purpose in preventing the total confusion that would speedily ensue in the absence of a planned system of allocation adhered to by all of the North American countries.

4. Chain Broadcasting Regulations

The Chain Broadcasting Regulations are now suspended pending the outcome of litigation between the network companies and the Commission. A three-judge court in New York has found for the Commission, and the matter is now on appeal to the Supreme Court.

5. Newspaper-Radio Inquiry

During the fiscal year the Commission held hearings on the joint control of newspapers and broadcasting stations, pursuant to Order No. 79. The record has not been closed and no action has been taken.

6. Modifications of Rules and Regulations

In view of the scarcity of skilled operators holding the proper grade of license to operate standard broadcast stations, the Commission, pursuant to Orders 91, 91-A and 91-B, relaxed the requirements in regard to operators where it is impossible for stations to secure a full complement of operators holding first-class radiotelephone licenses. To lengthen the life of transmitting tubes and equipment, and to conserve personnel, the Commission by Orders 94 and 94-A reduced the requirements for minimum hours of broadcast service; and by Order No. 107 it required a reduction of power by one decibel.

7. Foreign Language Programs

Much attention has been given to domestic foreign language radio stations and programs. Assistance has been given to representatives of the Foreign Language Division of the Office of War Information, the Office of Censorship, the Special War Policies Unit of the Department of Justice, other government agencies, the foreign language broadcasters, and interested private organizations in order to determine policies with respect to such stations. Surveys are being made of program service, personnel, community background, and general operations of foreign-language stations.

CHAPTER V

NONSTANDARD BROADCAST

1. General
2. High Frequency (FM) Broadcast Service
3. Television Broadcast Service
4. International Broadcast Service
5. Noncommercial Educational Broadcast Service
6. Studio-Transmitter Service
7. Relay Broadcast Service
8. Facsimile Broadcast Service
9. Developmental Broadcast Service

1. General

The Commission's war policy of limiting grants and authorizations pursuant to the Memorandum Opinion of April 27, 1942 (described in a previous chapter), also includes the following classes of non-standard broadcast stations: television, facsimile, relay and high frequency or frequency modulation (FM). This policy was asserted for applications filed to meet terms of conditional grants, and applications requesting additional time in which to complete construction under previous authorizations. Such applications are not granted unless substantial expenditures have been made or construction actually has been started and, further, unless substantially all materials and equipment necessary to complete construction are on hand or available. Applications for experimental high frequency and non-commercial educational broadcast stations were not made subject to this policy.

2. High Frequency (FM) Broadcast Service

With the curtailment of new authorizations for FM stations, together with the stoppage of production of broadcast receivers after April 22, 1942, further expansion of FM service is unlikely until after the war.

Authorizations. As of July 1, 1942, 55 construction permits for commercial FM broadcast stations were outstanding and five licenses had been granted. During the year 20 construction permits were granted prior to the adoption of the Memorandum Opinion, and eight authorizations were deleted, the latter generally resulting from the inability of permittees to obtain equipment. Due to this difficulty, a considerable number of stations were operating under special temporary authorizations,

using temporary transmitters or antennas and serving areas smaller than specified by the terms of the construction permits. At the close of the year, ten experimental high frequency broadcast stations were continuing to operate in the FM band under special authorizations, and seven of these stations had applications for commercial FM station authorizations either pending or granted.

Rules. No changes in the rules governing this service were made during the year; however, due to the shortage of materials, equipment, and skilled personnel necessary to broadcasting, the Commission on August 4, 1942, announced that holders of construction permits for FM stations may obtain licenses during the war to operate presently existing facilities, provided construction has reached a point where a substantial public service can be rendered. License applications submitted under this policy must include a showing of diligence in proceeding with construction and the applicant's willingness to proceed to final construction when equipment and personnel become available.

Although the rules permit the use of simultaneous facsimile transmission by high frequency broadcast stations, only limited interest has been shown in such operation and some technical difficulties have arisen in its application.

3. Television Broadcast Service

July 1, 1941, marked the beginning of television broadcast service to the public on a commercial basis. Under the rules and regulations adopted by the Commission in April of the same year for this type of service, each broadcast station was required to render a minimum of 15 hours program service per week.

Two television broadcast stations, both located in New York City, initiated program service to the public on a 15 hour-a-week basis, beginning July 1, 1941. In September, 1941, a station in Philadelphia was authorized to operate on a commercial basis, and in February, 1942, a station in Schenectady, New York, was likewise authorized. Thus, over the present fiscal year, four television broadcast stations have commenced and are continuing with program service to the public.

During June, 1942, the Commission authorized the completion with materials on hand of a fifth commercial station, located in Chicago, Illinois. The broadcast service that will be rendered by these five stations in various locations of the United States, augmented by the several experimental stations that continue to make limited broadcasts, should keep alive this new art during the war.

Station Construction. In addition to the five commercial stations authorized, as of July 1, 1941, 16 other permittees had authorizations for experimental television stations. Each permittee had indicated his intention to proceed promptly with the construction of the proposed station and to seek authorization for commercial operation at an early date. As of January 1, 1942, five of these permittees had obtained commercial authorization, with completion dates for station construction varying from one to six months. The eleven remaining permittees were unable to proceed with construction because of lack of equipment and each had obtained an extension for completing its proposed stations.

During the first months of 1942, it became evident that because of the war emergency equipment would not be available for constructing the unfinished stations authorized. On April 9, 1942, the Commission held an informal conference with television station permittees and licensees for the purpose of determining upon policies that might be followed during the war emergency. Representatives of the National Television System Committee also attended this conference. Following the conference the Commission called upon the permittees of television broadcast stations to submit progress reports on station construction and equipment on hand or needed for completion of the stations authorized.

As previously indicated, the Commission on April 27, 1942, adopted the policy that no further authorizations involving the use of any materials would be issued by the Commission to construct or to change the transmitting facilities of any commercial television broadcast station. This action of the Commission did not, however, prevent further authorizations for experimental television station construction, and the Commission has since April 27, 1942, continued to issue authorizations for such stations upon a showing that the construction was necessary to carry forward worth-while television research work.

Regulations. The operating rules and regulations for television broadcast stations adopted by the Commission in April, 1941, have not been changed except as to the minimum program service required of commercial stations. As a result of the Commission's conference with the television industry on April 9, 1942, the rule (Section 4.261(a)) governing the minimum program service required was changed to require but four hours per week instead of 15 hours per week.

Standards. At the time the Commission adopted regulations and standards for commercial television broadcast stations, it also announced that on or before January 1, 1942, it would consider further restrictions in standards with regard to the alternatives permitted in synchronizing wave forms. The same announcement

further stated that test data with respect to color transmissions and recommendations as to standards therefor would also be considered.

At the April 9, 1942, conference the National Television System Committee submitted a report recommending that the Commission's present standards be continued in effect for the duration of the war. This committee also stated that the present knowledge of the art does not justify the setting of standards for color transmissions. Its recommendations were adopted by the Commission.

4. International Broadcast Service

At the close of the fiscal year there were fourteen international broadcast stations in operation within the United States. One, a 100-kilowatt station located in San Francisco, was licensed during the year.

All international broadcast stations are now programmed by the Office of War Information and the Office of the Coordinator of Inter-American Affairs. The Commission cooperates closely in determining optimum frequency, power, antenna structure, and hours of service for broadcasts from these stations to foreign areas. Commission engineers have cooperated in designing new stations and antennas in this international service.

5. Noncommercial Educational Broadcast Service

As previously reported, five channels have been allocated for noncommercial educational FM broadcast stations. Since these frequencies are adjacent to those assigned commercial FM broadcast stations, educational programs can be received by the public.

As of July 1, 1942, eight FM educational stations were operating or under construction, a gain of three during the year.

6. Studio-Transmitter Service

The location of many high frequency (FM) broadcast transmitters on the remote tops of hills and mountains for increased service areas often makes it difficult to provide economical, dependable and satisfactory telephone lines for the programming of such stations. This difficulty is overcome by a provision in the Commission's rules for ST (studio-transmitter) stations for transmitting programs from the studio to the transmitter of such stations. ST stations are required to employ FM and to use directional antennas.

The rules also provide for the use of ST stations by international broadcast stations, providing program circuits less subject to mechanical interruption.

Only a limited increase in this type of radio has been observed during the past year; about half those in service were authorized during the last fiscal period. Although ST is not included in the wartime "freeze" order of the Commission, the policy of no additional grants in the FM service has become a determining factor to a very large degree.

7. Relay Broadcast Service

Relay broadcast stations are employed for the transmission of broadcast programs from sources where wire facilities are not available. Such stations may also be used as an emergency program link between the studio and the transmitter of a standard broadcast station when the regular wire circuits are interrupted. Considerable interest has been shown in the use of FM for relay broadcast work and several such stations have been licensed. At the close of the fiscal year a total of 523 authorizations for relay broadcast stations were outstanding.

8. Facsimile Broadcast Service

Interest in facsimile broadcasting has continued to lag and at the close of the fiscal year only four stations were licensed, the same as the previous year. This service provided a means of transmitting still-pictures and text to a particular type of receiver in the homes and offices of the public. It was believed that a future for it might be found during the nighttime silence period of the standard broadcast stations, and some experimentation has been made in simultaneous transmissions over FM stations. Those standard broadcast stations owned or affiliated with newspapers showed particular interest in its development. While formerly a number of special authorizations for transmission of facsimile signals by standard broadcast stations were issued, all of such authorizations have expired without request for renewal.

As previously indicated, high frequency broadcast stations may multiplex transmission of facsimile signals with the regular aural programs; however, technical difficulties in such operation have been experienced and interest in this particular development has been limited.

9. Developmental Broadcast Service

Stations authorized under these rules are provided to permit manufacturers of broadcast equipment and experimenters in this field to carry on development and research looking toward new or improved broadcast apparatus and service. Due to the concentrated effort of manufacturers and others in developing and producing radio equipment for military purposes, the operation of developmental broadcast stations has been voluntarily restricted considerably, and there has been no change during the year of the number of stations (eight) authorized.

CHAPTER VI

SAFETY OF LIFE AND PROPERTY

1. Marine Services
2. Aviation Service
3. Emergency Service
4. Experimental Service
5. Miscellaneous Services
6. War Emergency Radio Service

1. Marine Services

Control by Navy Deparment

Immediately following the entry of the United States into the war, the Board of War Communications issued its Order No. 1, which had the effect of making radio stations and facilities on board certain ships subject to use, control, supervision, inspection, or closure by the Navy Department.

Ship radio stations, accordingly, are subject to the regulations and instructions of the Navy Department in addition to applicable treaties and statutes and the Commission's Rules and Regulations. Close cooperation between the Commission and the Naval authorities has been necessary in the enforcement of radio requirements and in the promulgation of new regulations concerning ship radio installations. The Commission has adopted a practice of withdrawing or withholding deficiency notices when requested by local Naval Authorities where corrective action required by such notices would cause a delay in the movement of the vessel in connection with the war effort.

Board of War Communications Order No. 2, dated February 26, 1942, similarly authorizes the Navy Department to use, control, supervise, inspect, or close all coastal and marine relay stations.

Field Inspections

A total of 10,260 ship inspections were made by the Field Division of the Engineering Department during the fiscal year—

6,863 on U. S. vessels and 3,397 on vessels of foreign registry. As a result of these inspections, 4,879 violations notices were served, and 2,791 violations were cleared in the course of the inspections.

Exemptions

As in the past, the Commission granted exemptions from ship radio requirements to vessels under 100 tons gross tonnage, providing in most cases that such vessels not navigate more than 20 miles from land; and it similarly exempted certain other vessels, as authorized by Sec. 352 (b) of the Communications Act.

Great Lakes Engineering Study

During the past year the Commission made further study of necessary requirements for a safety radiocommunication service on the Great Lakes. An engineering survey was conducted for the purpose of obtaining additional technical data, under actual operating conditions, relative to the amount of radio transmitter power necessary to provide a selected degree of reliability in radiocommunication for a given distance on the Great Lakes. The survey involved a determination of the signal-to-noise ratios necessary to provide a given degree of intelligibility of radiotelephone transmission, a determination of the intensity of atmospheric noise which might be expected in an average navigation season, and numerous other required observations.

Approval of Equipment

Type approval of radio equipment designed for use on oceangoing vessels of the United States has been extended during the past year to shipboard radio receivers with respect to the radiation of energy. This extension was necessitated by a new rule, one purpose of which is to prevent enemy naval units from locating United States ships at sea through the use of sensitive radio direction finders or other radio receiving equipment capable of detecting radiated energy from the receivers on board. The Commission's engineers and inspectors tested or observed tests on a total of approximately 100 types of ship radio receivers which were submitted by commercial manufacturers or operating agencies for type approval, and action was taken to approve or disapprove each of these types under the requirements for equipment of this nature.

The Commission on June 6, 1942, approved the first automatic-alarm-signal keying device for use on oceangoing vessels of the United States. The automatic-alarm-signal keying device was designed and tested for compliance with the requirements promulgated by the Commission in 1941 for this type of equipment. The use of an automatic-alarm-signal keying device greatly reduces the possibility of error in transmitting the international automatic alarm signal and provides a means of transmitting the alarm signal after the ship has been abandoned. This procedure allows additional time for stations interested in the distress to take direction finder bearings.

Three additional types of ship station radiotelegraph transmitters have been approved, one as a main transmitter, one as an emergency transmitter, and one as both a main and an emergency transmitter. In accordance with pertinent regulations, the Commission also has approved certain emergency transmitting equipment for use in lifeboats of oceangoing merchant vessels, and is giving expeditious treatment to all matters concerning lifeboat radio apparatus.

New Rules

Because of the increased hazards to the safety of life and property at sea resulting from the war, it was found necessary to modify the Commission's rules governing ship service to provide added protection of the shipboard radio installations and a higher degree of reliability. New rules promulgated as a result of the war include the Commission's rule prohibiting the use of radio receivers which radiate radio frequency energy to an excessive degree on board oceangoing vessels of the United States; emergency transmitting antenna requirements; requirements pertaining to the protection of the ship's main antenna; and, other wartime provisions relative to the use and operating procedure of ship radio stations.

Emergency Marine Communications

During the past year and especially in the period following the entry of the United States into the war, increased use was made of the international and wartime distress signals by both ship and coastal radio stations. As in the past, the coastal radiotelegraph facilities contributed effectively to the safety of life and property at sea by intercepting distress signals from ships and rebroadcasting the signals using higher power than that available on board ship. Since our entry into the war, coastal stations have been used for the transmission of war warning messages to ships at sea. When sent on the international distress wave, these messages are frequently preceded by the automatic-alarm-signal in order to attract the attention of ships using approved automatic alarm receivers.

Because of the restrictions which have been applied to the use of receiving apparatus under certain conditions on board ship, and because of the lack of information concerning ship movements, it has not been possible to compile the usual statistical data regarding the number of responses to automatic alarm signal transmissions or to make conclusive studies of individual distress cases.

Radiotelephony in Gulf Coast Area

As a result of an investigation hearing held at Houston, Texas, the previous year, the Commission on May 26, 1942, published its conclusions concerning certain radiocommunication problems of the petroleum industry in the Gulf coastal area. It was decided that radio stations installed on stranded and indefinitely moored vessels and on fixed structures throughout inland waters of the coastal areas of Louisiana and Texas should not be classed and licensed as ship stations but should be authorized as provisional stations in the intermittent service. It was also decided that such provisional stations should be authorized, under certain conditions, to communicate with nearby public coastal harbor stations provided interference would not be caused to maritime mobile stations.

Coastal Stations

As of June 30, 1942, there were forty-eight coastal telegraph stations licensed by the Commission, exclusive of those in the Territory of Alaska. Because of the decrease in the ship-shore message traffic handled through coastal telegraph stations, brought about by the war, a total of 17 stations of this class in the United States and Hawaii were closed during the past year. The majority of the closed stations are maintained in readiness for immediate operation if their reactivation should be found necessary. No new coastal telegraph stations were established, and there has been no change in the number of coastal telephone stations previously reported. The four stations of this class licensed by the Commission are inactive insofar as communication with ships is concerned, and their facilities are being temporarily utilized for overseas fixed public telephone service.

Coastal Harbor Stations

For communication with vessels on the Missippi River and the connecting inland waters, using frequencies specifically allocated by the Commission, the Commission licensed a new public

coastal harbor station at St. Louis, Missouri, and authorized the construction of a public coastal harbor station at Louisville, Kentucky. Public hearings were held on applications for construction permits for similar new coastal harbor stations at Pittsburgh, Pennsylvania, and Hoquiam, Washington. As of June 30, 1942, there were 36 coastal harbor stations, exclusive of stations in Alaska, authorized by the Commission.

Stations in Alaska

Most vessels whose operations are concentrated in Alaskan waters are equipped with low-power radiotelephone ship stations for communication with low-power coastal harbor telephone stations open to public correspondence. Because of limited public land-line service in Alaska, there are many more coastal harbor stations in that Territory than in the continental United States. For the same reason there are many point-to-point stations operating in the fixed public service for intra-Alaska communication, often using the same equipment which comprises a coastal station. Since there are no public service radio communication companies in Alaska, most of these stations are maintained by isolated communities or commercial companies whose chief activity involves one or more of the principal industries of the Territory.

All point-to-point radio communication is coordinated with radio stations operated by the U. S. Signal Corps in Alaska and all stations licensed by the Commission in the fixed public service are subject to such use, control, supervision, and inspection by the Department of War as may be deemed necessary for the national security and defense, and the successful conduct of the war. All licensed ship and coastal stations in the Territory are subject to similar control by the Navy Department.

2. Aviation Service

Domestic Aviation

A total of 8013 authorizations for the use of radio transmitting equipment in the aviation service, including aircraft, aeronautical, aeronautical-fixed, airport control, flying schools, and flight test radio stations were issued by the Commission during the year ending June 30, 1942. Many of the commercial aeronautical facilities are now operating in conjunction with the military forces, and the facilities remaining for commercial use are being operated to the limit of their capacity. The resultant burden upon the aviation radio communication facilities serving the combined military and

commercial operations has necessitated several changes in the related administrative procedure and regulatory action of the Commission. These changes have been consummated after numerous conferences and close cooperation with the War Department, the Navy Department, the Civil Aeronautics Administration and certain war agencies of the Government, as well as the representatives of the aviation industry.

The several hundred licensed aeronautical stations are required to serve all radio equipped aircraft. Being largely owned and operated by commercial airlines, however, they are primarily engaged in communicating with scheduled commercial aircraft. Various changes in commercial air traffic such as shortening of routes to save vital materials, temporary closure of radio stations during construction work on airports and landing fields, diversion of commercial operations to military service and similar factors, have resulted in the closure of some of these stations but in most cases, this does not signify actual abandonment. Aeronautical-fixed stations are supplementary to the aeronautical stations and provide a point-to-point radio communication service, between the various ground stations, relating solely to actual aviation needs.

There are many scheduled aircraft radio stations authorized by the Commission for use aboard commercial transport aircraft in behalf of 21 station licensees. A number of commercial aircraft have been taken over by the military forces with the result of a sustained increase in activity.

Practically all of the non-government aircraft and aeronautical stations operating in the continental United States use double side-band telephony, which requires at least 6 kilocycles of the radio frequency spectrum for each communication channel. Serious problems of radio frequency allocation which arise from time to time because of the demand for additional communication channels require and receive expeditious engineering treatment. Problems of this nature had developed at the close of the fiscal year 1942, and their ultimate solution will require much engineering study and collaboration with the Interdepartment Radio Advisory Committee, War Department, Navy Department, and Civil Aeronautics Administration.

Non-Scheduled Aircraft

Authorization for the use of radio transmitting equipment aboard non-scheduled aircraft more than doubled over the previous year. Among other reasons, this increase may be attributed to a stimulated interest in flying, fostered by the

operation of the Civil Air Patrol, by large scale pilot training activities, and by other governmental regulations which tend more and more toward the requirement that all aircraft flying cross-country be equipped to transmit and receive radio communications. The associated increase in demand for aircraft radio transmitting equipment is reflected in the increased number of applications filed for aircraft station licenses. The consideration of these applications necessitates close cooperation with the War Production Board from the viewpoint of procurement and priorities. Many of the privately owned and operated aircraft in the Civil Air Patrol are contributing directly to the war effort by assuming various patrol and ferrying duties assigned by the Army. In this respect, plane-to-plane communication and plane-to-ground communication by means of radio has proved desirable and essential.

Airport Control Stations

The function of an airport control radio station is to provide communication, usually by means of telephony, between airport control tower and aircraft radio stations in the immediate vicinity of the airport, for purpose of controlling air traffic. The increased number of aircraft engaged in flying within the continental limits of the United States has necessarily increased the number of individual contacts made with the control towers and has made it necessary for radio communication facilities at airports to be operated consistently at the limit of their capacity. Many airports have attempted to convert the operation of their radio transmitters to the ultra-high frequencies allocated by the Commission under a plan designed to meet the future needs of these stations, thereby relieving interference on the less effective low frequencies. They have not been successful in effecting this change in frequencies in many cases because of the shortage of radio equipment brought about by the war.

The number of airport control stations authorized by the Commission during the year represents an increase of approximately 23 per cent over the preceding year. Included among these airport stations are 5 stations equipped for instrument landings. The advantage offered by the latter is the fact that landings may be made more safely during adverse weather conditions, provided the aircraft concerned have radio instrument landing facilities. The use of radio controlled instruments in aircraft navigation is constantly increasing in all branches of aviation, particularly in commercial air transport.

Flying School Stations

Commercial Flying School radio stations usually operate on one of the four ultra-high frequencies allocated by the Commission

for use by stations of this class. Transmission characteristics of the ultra-high frequencies are especially well adapted to the type of local communication needed for flight training activities. Communication between the student flier and the instructor on the ground or in another aircraft, by use of radio telephony, has been of great assistance in the training program. In some instances such communications have actually been the means by which serious accidents have been averted. It is apparent that operation of flying school stations contributes directly to the safety of life and property in the air, and aids the war effort through increased efficiency in the instruction of student pilots.

Flight Test Stations

A flight test radio station affords a means of transmitting essential communications in connection with test flights of aircraft. Since inception of this class of station in the year 1941, four flight test stations have been authorized to communicate on the ultra-high frequency allocated for this purpose.

International and Alaskan Aviation Service

Because of the war there has been a marked increase in the extent of routes and volume of traffic in international and Alaskan air operations. In general, non-military aviation service in Alaska has shown an increase of more than 100 per cent based upon authorizations on record at the close of the fiscal year as compared with the previous year. This trend in Alaskan service may be taken as an indication of a similar trend in the international service.

At the close of the fiscal year, all non-government radio communication facilities of the Alaskan aviation service were under control of the War Department through complete military activation of the Territory and the authority conferred upon the War Department by Order No. 14 of the Board of War Communications.

3. Emergency Service

Emergency Radio Service is the communication provided by numerous stations of public and private organizations devoted to the protection of life, public safety, and property. This classification includes state and municipal police, zone and interzone police, special emergency, forestry, and marine fire stations.

With respect to the number of applications received, the emergency radio service is exceeded only by the broadcast and ship services. The following tabulation shows the changes in the number of stations during recent years, including the fiscal year 1942:

Class of Station	Total 1940	Total 1941	Total 1942	Increase during 1942.	
				Number	Per Cent
Municipal Police	1053	1196	1672	476	39.8
State Police	246	513	378	-135	-23.0
Zone Police	64	69	85	16	23.2
Interzone Police	27	30	33	3	10.0
Special Emergency	309	340	435	95	27.9
Forestry	617	807	844	37	4.5
Marine Fire	12	6	8	2	33.0
Totals	2328	2961	3455	494	16.7

A definite trend towards use of frequency modulation (FM) for radiotelephony in the emergency service was observed during the year. An ultra short wave communication system using frequency modulation has certain advantages over the conventional amplitude modulation system, such as freedom from local noise and a reduction of interference from other stations particularly when the other stations operate on the same carrier frequency. The characteristic of frequency modulation, whereby the strongest of a group of simultaneously received signals is clearly discernible over the weaker signals, permits rapid clearance of communications without requiring repetition because of interference. This characteristic of frequency modulation will enable the Commission to assign the same carrier frequency to stations located in adjacent municipalities, with the knowledge that serious interference which would result from such assignments if the stations were using amplitude modulation will not occur.

Recognizing the practical advantages of radiotelephone transmission by means of FM the Commission made appropriate changes in its rules, effective October 1, 1941, to permit its use by police, forestry, and other stations in the emergency service. These existing "experimental" stations were transferred to regular classifications in the emergency service.

The rules governing stations in the emergency service now provide for licensing a radiocommunication system composed of a land station (fixed location) and mobile radio units under one instrument of authorization. This procedure has simplified the Commission's records pertaining to the emergency service and has permitted a

considerable reduction in the number of applications filed for necessary instruments of authorization. Moreover, this principle of licensing groups of stations as a system offers advantageous latitude of operation, including the unrestricted transfer of mobile radio units within communication systems operated by public utilities and large departments of state or municipal governments. In situations of this kind, the use of more than one land station is often necessary; however, all radiocommunications transmitted within the system are under the operating jurisdiction of one controlling land station. Due to the foregoing reasons, the percentage increase in station licensees as expressed in the foregoing tabulation does not indicate the increased activity in emergency service during the year.

Police Radio

Police radio is essential for civilian defense and protection, and for the maintenance of law and order. Municipal and state police systems are being chosen as the nerve centers of many systems of protection and civilian defense. However, the loss of experienced personnel to military service and the restrictions on use of materials has handicapped these developments to some extent. Augmented by volunteers and specially trained workers, police radio systems are being extended throughout many vital manufacturing areas, and are being coordinated with plant guards and special fire-fighting squads. Continued operation of established zone and interzone police radio stations using long distance frequencies for radiotelegraph communication between separate police systems is a valuable supplementary service in time of war, especially in the event existing wire lines were interrupted.

For the preservation of law and order in large encampment areas, the military and civil police operate their communications in a unified system. These systems enable the necessary expansion to be properly made, and in addition provide for other essential communications of military importance, such as the rapid clearance of large convoys of military units and trucks through municipal areas.

The increase during the past fiscal year for municipal police stations was 39.8 per cent in comparison to a 14 per cent increase for the previous fiscal year. The number of state police stations decreased 23 per cent because many mobile station licenses were automatically cancelled, in changing to the system method of licensing mobile units. Ninety-one new state police station licenses were granted during the year, and if this increase were figured on the basis of the actual stations placed in service, the increase in state police radio stations

for the past fiscal year would be approximately 20 percent. It is necessary to maintain close liaison with the War Production Board during consideration of applications for additional police radio equipment, in order that procurement and priority matters will be properly coordinated.

Simultaneous use of frequency modulation and amplitude modulation on the same carrier frequency apparently has not increased interference between police communication systems. The practical development of frequency modulation has somewhat alleviated the interference problem and has substantially increased the utility of the 29 ultra-high frequencies allocated for police radio communication.

The use of high frequency unattended repeater stations has grown rapidly during the past year. Such authorizations have been granted as Class 2 experimental police stations. The principal use of these repeater stations in the Police Service is to increase the talk-back range of radio-equipped police cars. It is generally known that fixed police radio stations can transmit successfully to mobile units over longer distances than the cars can in reply. Comparatively compact and unattended repeater stations located at isolated points of high elevation intercept messages from the mobile police cars and automatically relay these messages over high frequency circuits to the headquarters or land station at a fixed location. In geographical areas favorable to this method of operation, such as the State of California, where many high mountains exist, the talk-back range of police cars has been greatly increased by such operation.

The outstanding example of automatic repeater installation is represented by the Pennsylvania Turnpike Radio System which utilizes seven unattended radio repeater stations. While this system has been operating on an experimental basis for only eighteen months, the operation of these unattended repeater stations on ultra high frequencies has served a useful purpose and gives promise of extensive practical application in the future.

Forestry

The United States Forest Service, the State Departments of Conservation, and private agencies owning and operating timber land have equipped hundreds of fire lookout towers with radio equipment, mostly for communication by telephony. Men and vehicles also are provided with radio units in order to establish a reliable communication network. This permits the rapid exchange of messages between the bases of forest fire control and the operating crews. Because of the state of war, this communication service which is established throughout sparsely settled and remote areas appears to have a valuable supplementary use in connection with the military forces; however, its full possiblities in this respect have not yet been demonstrated.

Marine Fire Stations

Under the marine fire classification, a relatively small number of radiotelephone stations are operated by municipal fire departments as an aid in reporting and combating fires originating on or near docks, wharves, moored vessels, and warehouses along city waterfronts. This service is useful for dispatching fire boats and coordinating their operation with the activities of land fire fighting units. Continuous communication is provided between fire headquarters and fire boats and between the boats and fire trucks, thereby permitting the immediate dispatch or recall of the mobile fire units.

Because of the important relationship between shipping and the war effort and the consequent need for increased protection against fire in harbors and ports, the value of marine fire service has increased during the year. Radiotelephony has increased the effectiveness of available fire boats in coping with expanded harbor patrols and other duties which are necessary.

Special Emergency Stations

Special Emergency Stations, as their classification implies, are intended for use only in emergencies concerning the safety of life or important property, provided no other means of communication is available. These stations, most of which are equipped for radiotelephony, are prohibited by the Commission's regulations from handling routine or non-emergency communications. During the past fiscal year the number of special emergency installations increased more than 27 per cent over the previous fiscal year.

Since the outbreak of the war, special efforts have been made by the gas, water, and electric power utilities to furnish improved protection for their pipe lines, aqueducts, and transmission lines in remote areas. These facilities are patrolled by special repairmen who often are deputized police officers with the authority to arrest. Special emergency radio stations permit utilities to be coordinated in a public emergency.

Special emergency stations are used also by public service wire telephone and telegraph companies to restore communication as quickly as possible after failure of the regular wire system has resulted from a flood, strong wind, or other cause. Portable radio transmitter and receiver units are placed at each end of the land-wire gap, and are used temporarily to bridge damaged lines. As soon as the wire lines are repaired or replaced the radio units are removed and stored at strategic locations for use in the next emergency.

4. Experimental Service

Stimulated by the urgent war-time need for new equipment and revolutionary methods in the field of radio communication, activity in the Experimental Service has increased during the year. Experimentation and development have occurred in almost every field of radio including television, facsimile, frequency modulation, direction-finding, and selective calling devices. A total of 493 experimental authorizations were in effect at the close of the fiscal year, which is an increase of ten percent over the previous year. The closure of all amateur stations probably was a factor contributing to the increased activity in the experimental field.

Many authorizations for the operation of experimental radio stations were issued to industrial organizations engaged in radio research and development under contracts issued by various agencies of the government, particularly the War and Navy Departments. For military reasons the scope and far-reaching effects of this research work cannot be revealed at this time; however, it may be reported that new methods and new techniques have been developed which, in all probability, will greatly enhance the value of radio in commercial fields of application after the war.

5. Miscellaneous Services

The entry of this country into the war created a new interest in prospecting for crude oil deposits and strategic minerals, and at the close of the fiscal year, the number of geological stations which are licensed for such purposes had increased 25 per cent in comparison to the previous year. On the other hand, the use of the relatively few relay press stations and mobile press stations has been reduced by certain restrictions necessitated by the war. Motion picture stations continue as a valuable adjunct in the filming of motion pictures since they are used for the protection of life and safety of the personnel and for the coordination of related activities.

The following tabulation shows the number of licensed stations by classes in each of the recognized miscellaneous services:

Service and station class	Number 1941	Number 1942
(1) Geophysical service:		
Geological stations.....	269	302
(2) Special press service:		
Relay press stations.....	7	7
Mobile press stations.....	4	3
(3) Intermittent service:		
Motion picture stations.....	12	15
Provisional stations.....	7	22

Under the revised rules, it is appropriate for the Commission to authorize provisional stations to be operated by miscellaneous organizations whose activities are directly related to the war effort. For example, radio stations operated by lumber companies can prevent accidents and can be employed to dispatch logging trucks over long and hazardous one-way forest roads, thus expediting production of wood products used in the construction of aircraft and for other projects of value to the war effort. Radiotelephone stations operated by large plants manufacturing war products afford communication for the plant police system where a municipal police radio system is not readily available for the plant police or where the use of municipal police radiocommunication would not be feasible.

6. War Emergency Radio Service

As recommended by the Board of War Communications, a new "War Emergency Radio Service" was authorized as a temporary wartime measure, and regulations governing this service were adopted by the Commission, effective June 12, 1942. The new service is intended to provide rapid emergency communication considered necessary for the national security and defense. The Board of War Communications, the Office of Civilian Defense, and the War Department collaborated with the Commission in the formulation of this plan. It makes available on a voluntary basis the services and equipment of amateur radio operators and other qualified citizens under conditions which would assure responsible control, and at the same time permits sufficient flexibility of operation to provide communications essential for civilian defense and state guard organizations. The Board of War Communications by means of its order No. 9 of May 28, 1942, delegated to the Commission the necessary authority to control, supervise, inspect, or close stations in this service in accordance with the terms of Executive Order No. 8964, and without regard to the requirements of notice and hearing contained in the Communications Act.

The rules and regulations governing stations in the War Emergency Radio Service provide for establishment of communication facilities for civilian defense organizations and for separate facilities for state guard organizations. Civilian defense stations may be used by instrumentalities of local government such as cities, towns, and counties to furnish essential emergency communication relating to civilian defense during or immediately following air raids, impending air raids, or other enemy operations or acts of sabotage. State guard stations may be used by state guard organizations during emergencies endangering life, public safety, or important property, or for essential communications directly relating to state guard activities under circumstances in which other communication facilities do not exist or are inadequate.

The Commission requires that each licensee of civilian defense stations appoint a responsible citizen to direct and supervise the operation of all civilian defense radio units authorized in the license. Each official so appointed is termed by regulation "Radio Aide" and must meet certain standard qualifications, among which, is the holding of a valid radio operator license of any class except a Restricted Radiotelephone Operator Permit. His duties include supervision of all of the radio stations and operators in a civilian defense communication system. He is responsible under the station licensee for the monitoring of all transmissions and must generally guard against the improper use of the station, such as any unintentional or inadvertent transmissions which might be of value to the enemy.

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CHAPTER VII

RADIO OPERATORS

1. General
2. Commercial
3. Amateur

1. General

There has developed a serious shortage of qualified operators in practically all radio services licensed by the Commission. Thousands of radio operators entered the military services of the nation during the year, thus creating vacancies at their former stations; and this has only in part been counterbalanced by the fact that the number of radio operators licensed during the year has greatly exceeded the average yearly increase over previous years.

During the fiscal year 1942, 69,804 applicants were examined (exclusive of Class C Amateurs). This is 22,930 more than were examined for operator licenses during the fiscal year 1941. Of the 69,804 applicants examined, 61,903 were applicants for commercial licenses, 58,277 being in the radiotelephone classifications. Applicants for Classes A and B amateur radio operator licenses totalled 7,901. As a result of examinations 61,399 commercial operators licenses were issued - 56,830 telephone and 4569 telegraph.

The Communications Act authorizes issuance of radio licenses to citizens of the United States only. 1/ By its Order 75 of 1940 the Commission required each licensed radio operator and each applicant for new or renewed license to file a certain questionnaire under oath, fingerprint card and documentary evidence to prove United States citizenship. Approximately 182,000 such responses have been received and analyzed since the adoption of the Order. Receipts exceed 5,000 monthly.

Similar information has been obtained from communications company employees; more than 45,000 have been received to date and receipts approximate 860 monthly.

1/ Communications Act. Sec. 303

2. Commercial Radio Operators

Six classes of commercial radio operator licenses are issued by the Commission. Three are for radiotelegraph and three are radiotelephone.

About 94,000 commercial operator licenses were outstanding at the close of the fiscal year, of which about 72,000 were restricted radiotelephone permits. The large increase reflects greatly increased use of radio, particularly for police and other services concerned with the safety of life and property. About 12,000 were Class I and Class II radiotelephone licenses, and the remaining 10,000 were radiotelegraph licenses.

The Commission, in recognition of the growing shortage of first class radiotelephone operators and upon recommendation of the Board of War Communications, relaxed its operator requirements (Order 91, 91(a) and 91(b)) to permit the operation of broadcast stations of any class by qualified holders of any class commercial operator license. However, station licensees must have at least one first class radiotelephone operator at hand to make all adjustments of the transmitter except those of a minor nature. The Orders also make it necessary for holders of restricted radiotelephone permits to have such permits endorsed to show their proficiency in radiotelephone theory as ascertained through examination.

The Commission adopted Order 97, establishing a new class of operator license entitled "Temporary Limited Radiotelegraph Second Class Operator License." This license is valid for the operation of licensed radiotelegraph equipment installed aboard ships only.

The Commission having also found that conditions arising from the war emergency necessitated an increased number of radiotelegraph operators qualified to operate aeronautical and aeronautical fixed stations using type A-1 and A-2 emissions, further relaxed its rules governing radio operators by Commission Order 102; that for a period of five years or until further Order of the Commission the holder of a valid first or second class radiotelephone operator license or the holder of a valid restricted radiotelephone operator permit be authorized to act as operator of this type station provided that the face of the permit or license has been endorsed attesting to the holder's ability to transmit and receive International Morse Code at the rate of at least sixteen code groups per minute.

Commission Order 93 permits the operation of radiotransmitting apparatus by certain qualified Latin-American students during their period of specialized aeronautical training with the C.A.A., only.

3. Amateur

On December 8, 1941 the Commission, at the request of the Board of War Communications, issued Order 87 closing all amateur stations throughout the United States, its territories, and possessions. This action was taken in the interest of the security of the United States.

The closing of amateur stations did not diminish the interest of amateurs in radio and allied subjects. Many amateur operators have obtained commercial licenses and are employed in the operation of broadcast, aircraft, ship and other classes of stations. Thousands of amateurs have entered the military services of the Nation, while others are engaged in various types of radio work in manufacturing organizations.

Since February 26, 1942, the Commission has continued to grant renewal amateur station licenses and amateur operator licenses to qualified applicants. This policy is supported by the War and Navy Departments in consideration of the fact that holders of amateur operator licenses entering the military and naval services are given higher ratings in recognition of their specialized technical knowledge.

On June 19 the Commission ordered the registration of all amateur radio transmitters requiring a complete description, ownership, location, etc., to be followed with information regarding any removal from the possession of the registrant.

Many amateurs, whose peacetime interests were devoted to the organization and establishment of emergency communication networks to be utilized by the American Red Cross and other disaster relief organizations in the event of floods, hurricanes, earthquakes and similar catastrophes when normal communication facilities had been disrupted, have retained possession of their equipment, which may become useful to State Guard and Civilian Defense organizations desiring to operate radio stations in the War Emergency Radio Service. Many amateurs became associated with these organizations during the past year and their experience gained as amateur station operators should prove very helpful in solving Civilian Defense and State Guard communication problems.

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CHAPTER VIII

TECHNICAL STUDIES

1. The Eleven-Year Sunspot Cycle Survey
2. Tropospheric Waves
3. Ground Waves
4. Standardization of Methods of Measuring Electrical Noise
5. Registration of Radiofrequency Generators

The Commission as a result of war conditions now serves as a consultant to other defense agencies such as the Board of War Communications, the Office of Civilian Defense, and the National Defense Research Committee. It collaborates with the Army, the Navy, the National Bureau of Standards, the National Inventors Council, the National Research Council and the radio divisions of other government departments. It is called upon for advice from time to time by state, county and municipal defense organizations. The character and the scope of the technical studies of the Technical Information Division during the year were necessarily affected by these changed conditions. In general, all work considered as routine was curtailed in order that full time might be given to problems bearing directly on the war.

1. The Eleven-Year Sunspot Cycle Survey

This study of wave propagation, mentioned in many of the Commission's previous reports to Congress, has been in progress since the year 1938. Successful completion of the project requires continuous 24-hour automatic recordings of field intensity and noise over one complete sunspot cycle, or eleven years. Statistical analysis of the data so far obtained has yielded information which has been of great value to the Commission in connection with normal communication problems. It has now been found of even greater value in connection with wartime communication problems.

2. Tropospheric Waves

The study of tropospheric waves, a knowledge of which is important in connection with the assignment of frequencies for the rapidly growing commercial and government radio services operating

in the ultra-high-frequency regions of the spectrum, has also been a continuing one. Tropospheric waves are dependent on the weather, rather than on the vagaries of the ionosphere, as is the case with sky waves on the lower frequencies. For this reason experimental investigation of their behavior requires field intensity recordings of relatively few stations and over a shorter period of time -- only one year or two -- as compared to the eleven-year period required for ionospheric waves. Although changed conditions in the field caused by the war had previously interrupted this study, some recordings of tropospheric waves were begun from a location in Washington during the early part of the year. The arrangements at this location proved unsatisfactory because of interference to reception caused by diathermy machines. Equipment is now being installed at the Commission's monitoring station at Laurel, Maryland, for continuous recordings on four ultra-high-frequency broadcast stations. The lack of reliable data regarding propagation characteristics of ultra-high frequencies, extensively used by the armed forces made the inauguration and continuation of this program essential.

3. Ground Waves

Progress has continued during the year in the study of ground waves responsible for the primary service areas of both standard broadcast stations operating on the lower frequencies and of high-frequency broadcast and television broadcast stations operating on the ultra-high frequencies. Ground wave propagation curves were prepared for the entire band of frequencies from 10 kilocycles to 10,000 megacycles for average land conditions, and for transmission over sea water. Nomograms based on these curves are in process of preparation which will make possible rapid calculation of radio wave propagation over distance ranges of 200 miles for frequencies between 20 - 500 megacycles and antenna heights ranging from 30 to 1000 feet.

4. Standardization of the Methods of Measuring Electrical Noise

The importance of accepted standard methods of measuring electrical noise, i.e., man-made noise produced by electrical machinery of various kinds in connection with studies of radio wave propagation, was emphasized in the annual report of last year. Commission engineers participated in tests held in Montreal in April to determine the reliability of telegraph and telephone signals through varying amounts of electrical noise and in concurrent tests and comparisons of noise meters. In conformity with previous experience, wide variations were found to exist among the various meters tested. The listening tests disclosed that even with consistent methods of measuring noise, its effect upon communication

circuits cannot be predicted with accuracy unless the characteristics of the radio receivers to be used are also known.

5. Registration of Radiofrequency Generators

Pursuant to authority delegated to the Board of War Communications by the President, Order 8964 of December 10, 1941, the Board determined that the national security and defense and the successful conduct of the war demanded that the government (F.C.C.) have knowledge of all persons having apparatus equipped for the transmission of radiofrequency energy. Under terms of its Order the Federal Communications Commission was authorized not to require registry of particular apparatus or classes of apparatus whenever it determined that registry was not necessary.

The radiofrequency generators referred to may be separated into general classes, namely: (1) Carrier Current Communication Systems; (2) Wired Radio Broadcasting Systems; (3) Inter-office Wired Radio Communication Systems; (4) Wired Radio Systems in Private Use; (5) Radiofrequency Remote Control Devices; (6) Radiofrequency Phonograph Oscillators; (7) Test Oscillators or Signal Generators; (8) Diathermy Apparatus; and, (9) Industrial Oscillators.

The Commission has during the year, through its Orders Nos. 96, 99 and 101, provided for the registration of all diathermy machines, unlicensed or unused radio transmitters designed for communication purposes, and all amateur transmitters. The other classes of generating equipment are currently under consideration.

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CHAPTER IX

STATISTICS

1. Common Carrier Statistics
2. Broadcast Financial Data
3. Broadcast Statistics
4. Other Radio Service Statistics
5. Engineering Field Statistics
6. Publications

1. Common Carrier Statistics

Reports of Carriers

For the calendar year 1941 annual reports were filed by 218 companies including 135 telephone carriers, 38 wire-telegraph, ocean-cable, and radiotelegraph carriers, and 45 holding companies. These reports contain considerable financial and operating data relating to the communications industry. In addition, 40 carriers filed reports concerning traffic damage claims paid during the year 1941 by telegraph, cable and radiotelegraph carriers. Certain statistical data for the calendar year 1941 relative to large common carriers reporting to the Commission are shown in the following table:

Item	Telephone carriers	Wire-telegraph & ocean-cable carriers	Radio-telegraph carriers
Investment in plant and equipment	$5,393,579,802	$486,844,562	$30,314,488
Depreciation and Amortization Reserves	1,526,682,183	180,056,404	16,682,606
Net investment in plant and equipment	$3,866,897,619	$306,788,158	$13,631,882
Operating revenues 1/	1,407,761,066	149,315,654	15,725,900
Operating expenses 1/	918,194,439	125,927,627	9,936,473
Net operating income	489,566,627	23,388,027	5,789,427
Net income	210,019,491	6,111,860	1,645,940
Number of employees at end of year	345,439	74,298	3,852
Total payroll for the year	$603,410,323	90,942,052	$7,133,569

1/ Approximately $32,000,000 of intercompany general service and license fees and rents of the Bell System have not been eliminated from these accounts.

2. Broadcast Financial Data

The standard broadcast networks and stations in the United States received from the sale of time $178,091,043 in the calendar year 1941, an increase of $23,267,256, or 15%, over the amount for 1940, according to financial data filed with the Commission by the three nation-wide network companies, the seven regional networks, and 817 standard stations. In addition to time sales, these networks and stations reported revenues of $15,190,335 from the sale of talent and other services during 1941, an increase of $2,008,387 over the amount reported for the previous year. Broadcast service income (operating profit) of the standard broadcast industry for 1941 exceeded the amount reported for 1940 by more than $11,500,000, or about 35%.

The three major network companies (NBC, CBS, and Mutual) reported combined standard broadcast time sales of $79,681,534 for the year, up about 11% over 1940. The National Broadcasting Co., through its dual networks, accounted for $40,378,764, while the figures for CBS and Mutual were $34,386,040 and $4,856,730, respectively. They paid to standard stations under contract and to regional networks $25,651,249 compared to $22,123,760 in the year previous. The combined standard broadcast service income as reported by NBC, CBS and Mutual, including the operations of their networks and standard stations, was $16,897,944 before Federal income and excess profits taxes. After provision for Federal income and excess profits taxes, and including profits or losses from the operation of other than standard broadcast stations, the combined net income of the three nation-wide network companies amounted to $8,642,279 in 1941 as compared with $8,879,694 for the preceding calendar year.

The purely non-network business (time sold to local and national advertisers by the 817 standard broadcast stations) of the industry was $97,379,610, bettering the previous year by $15,482,374, or approximately 19%. The broadcast service income of 784 standard stations not operated by or for the networks amounted to $27,056,162, an increase of $7,932,553, or approximately 41%.

A total of 177 standard stations reported broadcast service deficits in 1941. These stations had total time sales of $7,629,969, total expenses of $8,706,066, and lost in the aggregate $1,209,795. These figures include losses for 10 of 54 new standard stations, the remaining 44 having operated at a profit. However, the number of standard stations showing broadcast service deficits was under the figure for 1940, when 187 stations lost $1,551,812.

As of December 31, 1941, these standard broadcast networks and stations employed 24,728 persons, and the pay roll for the year 1941 was $50,668,977.

4. Other Radio Service Statistics

Statistics for fiscal year ending June 30, 1942

SERVICE	Applications Received	Authorizations Issued	New Stations Authorized	Total Stations June 30 1942
AVIATION:				
Aeronautical	572	1019	53	424
Aeronautical Fixed	225	328	7	165
Aero.& Aero.Fixed	92	86	0	0
Aircraft	6627	6365	2012*	3759
Airport Control	177	162	15	53
Flying School	49	49	10	21
Flight Test	6	4	2	4
Sub-Total	7748	8013	2099	4426
EMERGENCY:				
Municipal Police	4995	3593	419	1672
State Police	1164	638	91	378
Zone Police	128	115	2	85
Interzone Police	48	43	2	33
Forestry	1197	1142	165	844
Special Emergency	770	549	124	435
Marine Fire	25	15	2	8
Sub-Total	8327	6095	805	3455
EXPERIMENTAL:				
Class 1	462	446	65	297
Class 2	669	657	188	195
Class 3	2	2	0	0
Sub-Total	1133	1105	253	493
PT. TO PT. TELEGRAPH:				
Public	471	448	4	73
Press	70	39	4	7
Agriculture	14	7	0	7
Sub-Total	555	494	8	87
PT. TO PT. TELEPHONE:				
Public	69	70	20	18
MISCELLANEOUS SERVICE:				
Geological	328	673	36	302
Motion Picture	15	15	4	15
Provisional	43	58	18	22
Mobile Press	4	4	0	3
Relay Press	7	4	0	7
Sub-Total	397	754	58	349

SERVICE	Year Ending June 30, 1942 Applications Received	Authorizations Issued	New Stations Authorized	Total Stations June 30 1942
COASTAL (U.S.):				
Coastal Telegraph	81	43	0	48
Coastal Harbor	100	57	9	36
Coastal & Pt. to Pt.	3	1	0	0
Marine Relay	57	20	0	0
M.R. & C. Telegraph	10	2	0	0
Coastal Telephone	11	4	0	8
Sub-Total	262	127	9	92
ALASKAN SERVICES:				
Fixed Public	479	471	39	321
Experimental	5	4	0	4
Aviation	341	307	14*	287
Coastal	277	514	21	176
Sub-Total	1102	1296	74	788
TOTAL	19,933	18,282	3,326	9,708
WIRE CERTIFICATES:				
Telephone	167	131		
Telegraph	173	197		
Total	340	328		

* The count for new stations authorized for Alaskan Aircraft is included in figure for U.S. The Number 14 under Alaska represents Aeronautical and Aeronautical Fixed stations.

5. Engineering Field Statistics

During the fiscal year the Field Division of the Engineering Department made 34,534 frequency measurements-- 4,157 radiotelegraph, 10,911 broadcast, and 1,292 radiotelephone. Such frequency monitoring resulted in the serving of 1,062 violation notices and 53 harmonic notices.

The number of inspections completed during the fiscal year totaled 16,548. Of these, 4,157 were radiotelegraph stations, 1719 were broadcast stations, and 417 were radiotelephone stations. A total of 1,386 violation notices were served following such inspections.

As noted in Chapter VI (1) (b), the Division also made 10,260 ship inspections, as a result of which 4,879 violations notices were served.

Routine investigations numbered 1,992. Of these, 679 were amateur, 224 broadcast, and 1,089 miscellaneous cases. At the close of the fiscal year only 24 cases remained unclosed.

During the fiscal year 1942, 69,804 applicants for radio operator permits were given examinations, an increase of 22,930 over the fiscal year 1941.

6. 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	.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
Annual Reports of the Commission:	
First Annual Report - Fiscal year 1935	.15
Third Annual Report - Fiscal year 1937	.30
Fifth Annual Report - Fiscal year 1939	.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

Title	Price
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
Report on Chain Broadcasting	.30
Rules and Regulations of the Federal Communications Commission:	
Part 1, Practice and Procedure	.10
Part 2, General Rules and Regulations	.10
Part 3, Rules Governing Standard Broadcast Stations	.05
Part 4, Rules Governing Broadcast Services (Other Than Standard Broadcast)	.10
Part 5, Experimental Rules	.05
Part 6, Rules Governing Fixed Public Radio Services	.05
Part 7, Rules Governing Coastal and Marine Relay Services	.05
Part 8, Ship Rules	.10
Part 9, Aviation Radio Services	.05
Part 10, Rules Governing Emergency Radio Services	.05
Part 11, Rules Governing Miscellaneous Radio Services	.05
Part 12, Rules Governing Amateur Radio: Stations and Operators	.10
Part 13, Rules Governing Commercial Radio Operators	.05

Title	Price
Part 14, Rules Governing Radio Stations in Alaska (Other than Amateur and Broadcast).....	.05
Part 31 and 32, Uniform System of Accounts Class A and Class B Telephone Companies, Units of Property Class A and Class B Telephone Companies (1 pamphlet).....	.15
Part 33, Accounting by Class C Telephone Companies.....	.15
Part 34, Uniform System of Accounts, Radio Telegraph Carriers.....	.25
Part 35, Uniform System of Accounts for Telegraph and Cable Companies.....	.35
Part 41, Rules Governing Telegraph and Telephone Franks.....	.05
Part 42, Rules Governing the Destruction of Records.....	.10
Part 43, Rules Governing the Filing of Information, Contracts, etc., of Telecommunication Carriers.....	.05
Part 61, Tariffs, - Rules Governing the Construction, Filing and Posting of Schedules of Charges for Interstate and Foreign Communication Service.....	.10
Part 62, Rules Governing Application under Sec. 212 of the Act to Hold Interlocking Directorates.....	.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 Congress).....	1.00

In addition, the following are available without charge from the Federal Communications Commission:

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