

**The History of the Radio Intelligence Division
Before and During World War II
1940-1945**

A HISTORY OF THE RADIO INTELLIGENCE DIVISION
BEFORE AND DURING WORLD WAR 2
1940 – 1945
As Related By

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FEDERAL COMMUNICATIONS COMMISSION

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PREFACE

The story you are about to read has been delayed much too long. During the latter years of George E. Sterling's life, and after his death, several attempts were made to produce a non-fiction publication of the RID exploits and history. The lack of interested publishers and of time on the part of would be ghostwriters signalled the failure of seeing a 'book' reach fruition.

For several years, a draft copy of his manuscript (the original was lost sometime during Mr. Sterling's submissions to publishers) has been on hand, but was not in a form to be readily reproduced. In fact, a reputable author/writer team reviewed the pages and concluded the copy had no public appeal and returned the material in even greater disarray.

Recognizing that action, at this late date, was a "now or never" situation, and if any usable reproduction was to be made, that action must be taken immediately. Further recognizing it was the wish of Mr. Sterling that such information be made available to the "women and men" of RID, who labored diligently and loyally during WW2 not knowing the value of their work to the war effort. While this compilation may or may not have public appeal, we find it imperative that a printed record be made available to the remaining survivors of RID and their families.

As this work is a compilation, rather than a creation, of the many articles written by Mr. Sterling which appeared in various non-commercial periodicals, in addition to certain pertinent documents and the original draft copy itself, there is a duplication of "stories". However, it was felt better to provide all material than to use our limited time editing them.

This publication was undertaken by two octogenarians, veterans of RID, using their own resources and being produced as a final contribution to the RID organization that occupied a vital period of their lives.

Albert A. Evangelista
E. Merle Glunt
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SPIES USE RADIO

A STORY OF ESPIONAGE AND COUNTER-ESPIONAGE BY RADIO

BY

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FEDERAL COMMUNICATIONS COMMISSION

The story which I am about to narrate encompasses the operations of the Radio Intelligence Division, Engineering Department of the Federal Communications Commission immediately prior to and during World War Two.

During the period of neutrality while the war was being waged in Europe in (1940-1944) new responsibilities were imposed on the Commission and particularly the Field Division which was responsible for the enforcement of radio rules and regulations and international treaties as they pertained to the technical operation of radio stations.

The reports of fifth column activities by enemy agents in Europe utilizing radio transmitters gave cause for alarm should they spread their activities to our hemisphere. However, it was essential to keep all channels of communications free of interference.

At this time the Field Division of the Commission had only seven monitoring stations the operations of which were confined mainly to frequency measurements and analysis of the character of the emissions of the stations. None of these stations were equipped with high-frequency Adcock direction finders. Neither did they have any recorders and other essential equipment. At least three of them were poorly located with no room for expansion. For example, one was on a Navy munitions site where there was a limit placed on the number and height of antenna. Another on the grounds of a West Coast fort where artillery practice interfered with monitoring and still as third on a Navy radio training school location where interference was becoming intolerable. The field offices were not equipped with mobile loop direction finders so as to quickly locate an illegal station or a source of interference.

So, in the face of the alarming use of radio by Nazi spies in Europe and of the special problems at home, the Federal Communications Commission acted to put this country in a state of radio preparedness. A plan was drawn up to modernize and increase the number of monitoring stations and to provide mobile units with at least one station in each of the States to do local investigative work and pinpoint illegal stations and sources of interference.

The plan was approved by the Bureau of the Budget and President Roosevelt allocated \$1,600,000 from his emergency fund to accomplish the objective. Congress later supplemented the grant and before the war came to America, the monitoring system, identified as the National Defense Operations, then the Radio Intelligence division with the short title RID was already mobilized with trained men and equipment. The RID was neither too little or too late. There was no Pearl Harbor in Radio Surveillance.

When the war came upon us on December 7, 1941, RID was given a full share of duties, far beyond that which it ever thought it would be called on to perform.

From it's inception until the war was over, RID intercepted hundreds of coded messages sent by the German espionage agents all over the world and supplied the cryptographic laboratories of our government with these messages at their specific request.

In performing it's patrol of the ether, RID located Nazi agents with their transmitters in the Western Hemisphere, Africa, Europe and Asia. It sent trained radio intelligence engineers to

Latin American Republics in accordance with a hemisphere defense plan to aid in cleaning out the infestation of German spies in those countries. It also trained representatives of Latin American countries in radio intelligence techniques at its specialized school at Laurel, Maryland.

With funds furnished by the military RID performed a host of military intelligence duties on the mainland, Hawaii and Alaska. It also established radio intelligence centers in San Francisco and Honolulu which were manned by Army, Navy and RID men around the clock.

RID also was the first to detect many intriguing clandestine operations in the performance of its duties, as the following chapters will reveal. It monitored both neutral and enemy commercial radio circuits. Recording the transmissions on tape and then producing typewritten copies for the Board of Economic Warfare and the FBI. By the examination of this traffic, it was learned what the enemy's shortages were so that we could send our buying agents into neutral countries to outbid them on the merchandise they were endeavoring to purchase for their war effort. This also provided a means of determining what big name individuals were traveling between the enemy countries as well as to neutral ones.

One of the surprising and most gratifying services performed by RID was the rescue service it performed for military planes lost in the black-out or having cock-pit trouble. It located distressed aircraft by providing fixes from their radio signals and got them back on a normal course and to a safe landing. In fact, it trained Air Force personnel in this service and aided them in setting up their networks.

To meet the requirements of the Coastal Defense Commands, RID extended its surveillance to the coastal regions by mobile patrols looking for evidence of surreptitious communications with enemy submarines operated by Nazi agents, particularly those that might be using beamed VHF frequencies that normally would not be heard at fixed sites.

A separate branch of RID, identified as NDA, monitored and recorded world wide high frequency voice broadcast of press and enemy propaganda for the Foreign Broadcast Intelligence Service, another amateur FCC wartime division which published texts translations and analysis of the recorded material for a variety of government consumers.

RID trained OSS men in radio intelligence techniques and procedures and built equipment for its use. It also patrolled the outside of the Oak Ridge, Tennessee, installation, the scene of the Manhattan Project but without the personnel knowing what atomic developments were being made inside.

Since the military transferred funds to RID to assist them in military radio intelligence duties, it was necessary for the Division's facilities and procedures to be inspected by a military officers security board.

After going over RID with a fine tooth comb, they reported as follows:

**Cryptographic Security – Excellent, Physical (Cryptographic Systems) – Excellent.
Documentary & Information Security—Excellent... Qualifications of Personnel..Excellent**

(Fortunately my military experience in Radio Intelligence in World War 1 led me to install the proper military security in the organization and operation of RID.)

Wartime demands of the Division also placed demands on the development of new and improved tools to accomplish these projects. Fortunately RID had in its rolls many excellent radio engineers who lent their skill and know-how to these new developments. As Chief of RID, I appointed Charles Ellert, W3LO, an Hopkins engineering graduate as Technical Advisor. Under his direction great studies were made in the improvement of the Adcock direction finder resulting in far greater accuracy than had been obtained from purchased equipment. In fact one of our English counterparts reported that the accuracy of RID bearings and fixes were far more accurate than obtained from military source.

Since we had neither enough men or money to provide a continuous surveillance over enemy suspects who might be engaged in clandestine operations, it became necessary to develop a radio receiver which would respond to any signal within the communication range of the spectrum at that time, yet insensitive except to the strongest signal. Out of this requirement an aperiodic receiver was developed by two RID engineers, James Veatch and William Fellows.

This receiver was used to advantage in our mobile units and providing surveillance at fixed locations such as the Japanese internment camp. It paid off too. It was subsequently adopted by the Navy and OSS.

Under Ellert's supervision, the 'Snifter' was created. This is a simple receiving device contained in a small pack was worn around the waist, under one's coat. An antenna could be trailed down the inside of the operator's pant leg. To register the signal, either a hearing aid or a meter held in the hand was utilized. The Snifter was used when casing the corridor of a hotel or apartment house or on the roof of a house containing many antennas to pinpoint the location of the transmitter.

The name Snifter was given the device by a very distinguished British astronomer Col. F.J.M. Stratton, who provided liaison with RID and its British counterpart, the British Security Service of the Signal Corps.

Also on the list of RID devices is the employment of the selectable side band adapter developed by James McLaughlin and fitted to the Hallicrafter SX 28 receiver. The SX 28 receiver was the work horse of RID among its many other types. The selectable side band receiver was used to advantage to eliminate jamming while recording the enemy's propaganda.

The nucleus of the staff of RID was taken from the ranks of the Field Division, Radio Inspectors, like Ralph Renton and Forest Pedfern who had gained considerable experience in locating illegal radio stations such as the rum runners during the Prohibition days, the race track touts with transmitters trying to beat the bookies and the pranksters.~

The monitoring officers and radio operators were recruited from industry and the amateur ranks. In fact, about 80% of the men in RID, including its Chief were or had been amateurs. They

made a tremendous contribution to the defense of their country as did the other men and women who served in the "Silent Service of RID."

Many of the women of RID stationed at the monitoring stations became very proficient in producing typewritten copy from miles of Bohme tape recordings made from the many high frequency radio circuits of the enemy and neutral countries. This required a special skill since the recordings were made a type of stylus making both horizontal and vertical characters.

RID received wonderful cooperation from manufacturers of receivers and other equipment. Special mention is made of the help received from the Hallicrafter organization who went all out to supply us with receivers. The Hudson Motor Company who cooperated by modifying a production line of their passenger cars at no additional cost so that they could be used for undercover work and installation of loop direction finders without attracting any undue attention and the Dictaphone Company for recorders.

When the war was underway, most manufacturers were loaded with defense contracts and not interested in small orders. Consequently RID persuaded Mr. Manuel Kann, W3ZM, of Baltimore to manufacture our aperiodic receivers and Adcock direction finder parts in the basement of his home at nights aided by technicians employed at local broadcasting stations when they were off duty. Before Kann knew it, he was up to his neck in the manufacturing business for the Navy Department and OSS as well as RID. I imagine his neighbors often wondered what went on in his house with lights burning in the basement and particularly with men going in and out all hours of the night.

As will be seen in the following chapters, in the main, the personnel of a lively secondary station or a busy primary one supplied only a portion of what appeared as an intricate puzzle and from the fragmentary parts of the final picture was assembled at RID headquarters in Washington. In several important cases the first information that led to the development of a substantial case was made by a single operator on duty hundreds of miles from the source of the radio transmissions of the German espionage system. The person making the intercept never knew at the time he had furnished the first clue to a new station in our hemisphere or in Africa. The RID men working in Latin American Republics at times gained direct contact with spies in those countries but throughout the entire period of operation the information gained by each individual was held in the strictest security and made known only to those in authority.

I recall giving a talk before the Baltimore Section of the Institute of Radio Engineers right after the war in which I disclosed several RID cases. Some of the engineers of the staff of the Laurel Direction Finding Station were in attendance and they came to me at the conclusion of my talk and told me that they never realized that their station had participated in the cases until I revealed it at the time.

During my inspection of stations during the war, I was frequently asked, if after the war, a history of the organization and its accomplishments would be furnished. A promise was made to do so and it is my hope the disclosures which follow will be made to all the loyal women and men who served so devotedly in the organization.

One thing in particular which highlighted RID accomplishments was when Hollywood decided to make a movie depicting the mode of operation and its responsibilities. As the following which appeared in the Amusement Section of the Baltimore Sun of March 11, 1944, reveals, it became a historical movie, the first movie ever to be shown on television.

This was another of RID's firsts.

From the Sun: Pictures Plays and Players:

"The movies venture into television with a short subject, *Patrolling the Ether*.

Last night movies and television held a joint celebration. They were both excited about the first broadcasting of a motion picture, a Metro-Goldwyn-Mayer two-reeler called, "*Patrolling the Ether*." This marked, both industries were intent on saying, through one spokesman or another, a milestone in history.

"*Patrolling the Ether*," like most of Metro's "Crime Does Not Pay" series is a pretty good picture, shown on even the tiny television sets of today. Metro-Goldwyn-Mayer and the National Broadcasting Company made an occasion of this event. James L. Fly, Chairman of the Federal Communications Commission, came up from Washington to appear in a television preface to the television movie. Reports from Schenectady, it turns out later, declared Mr. Fly to be vidigenic, a radio term for photogenic. He was, it was explained by NBC's Frank Mullen, a nice face.

Radio, through NBC supplied several representatives, among them, Mr. Mullen, Clay Morgan and Nils Trammell. Metro, of course was well represented, with Morgan present for the short subjects department. George E. Sterling, Chief of the Radio Intelligence Division of the Federal Communications Commission, arrived to see the broadcast of the movie about his department's work. In addition the Hays office had two executives present, Arthur DeBra, Director of Research, and Glen Allvine.

There was no doubt about the enthusiasm. No one dared to say, even Radio's John Royal, just how movies would be shown by radio. No one questioned the fact, once the war is over, television would be accepted nationally.

Last night's movie was shown on a modern television set, with the picture reflected into a mirror on the top of the machine. The picture was clear, the synchronization was perfect, the projection on much too small a surface. Television is prepared to rectify that fault. Screens will be at least four times as large once industry is allowed to go ahead.

Movies are now wondering just what to do about this device, whether to use it for television pictures to theaters or whether to televise directly to homes.

Last night's performance seems to prove that, should Hollywood wish, movies might take their place with radio as home entertainment. A watch company (Guess which one?) started the program with more than a minutes showing of a watch face, well identified, with hands moving briskly. That looks as though advertising at last had caught up with motion pictures. It was, in last night's demonstration, unobjectionable.

Metro had selected a twenty minute melodrama about the success of the Radio Intelligence Division in catching spies. Mr. Fly, in introducing the movie, paid tribute to the Division's prowess.

"*Patrolling the Ether*," a fictional version of the RID's more dramatic adventures, goes into more detail. The primary monitoring stations are still picking up people with a hankering for

broadcasting to foreign lands, and broadcasting suspicious messages. Metro could not have picked a better picture for its initial television experiment."

(FROM SPARK GAP TIMES. 1 APRIL, 1963)
SOME EXPERIENCES IN RADIO INTELLIGENCE AND
COUNTER-ESPIONAGE

BY

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PART 1 MILITARY RADIO INTELLIGENCE
IMMEDIATELY PRIOR TO AND DURING WORLD WAR 1.

RADIO INTELLIGENCE. WHAT IT MEANS

Radio Intelligence means obtaining information or knowledge by means of identifying, locating and intercepting or recording radio transmissions from legal or clandestine radio stations. The information obtained may have legal, diplomatic, commercial, economic, or military significance.

Military radio intelligence is primarily concerned with monitoring, locating and identifying enemy transmitters to determine the disposition, strength and activity of military or naval forces and gaining other information of military value. Military radio intelligence also includes policing one's own radio circuits to insure security of operations and adherence to prescribed procedures, thus precluding the enemy from gaining information from "BOO BOOs". It may also include the transmission of communications designed to mislead the enemy or to jam it's radio services.

Another field of endeavor other than military radio intelligence but having a direct bearing on it, is counter radio intelligence whereby the activities of enemy spies with radio transmitters is monitored, direction finding bearings obtained

to locate the transmitters and intercepts made for the decoding of the espionage messages. This leads finally into identification of the members of the spy ring, their contacts, and at the proper time, their apprehension by police officials.

This field of endeavor in radio intelligence would also include the operation of any clandestine or illegally operated radio station or an authorized one which might be suspected of operating in a manner other than which it had been authorized.

I will report on each type of operation referred to above to the extent I have participated in it or have knowledge of its operation. This may limit in a measure a complete resume of radio intelligence up to this time, but it will start with events leading up to World War I and extend through the end of World War II.

RADIO INTELLIGENCE WORLD WAR I

The use of radio or "Wireless", as it was called in 1917-1918, was confined to frequencies or wave lengths which would have made it almost impossible for an enemy to use for espionage purposes. It would have required antenna structures of such sizes and associated apparatus that it would have been quickly detected even by the general public who are prone, fortunately, to report their suspicions and observations to the appropriate government agencies. However, two interesting cases come to mind which involved commercial stations on this continent.

The Late Herbert O. Yardley, an expert cryptographer, in his book "The American Black Chamber", a book which publishers were enjoined by a special Act of Congress from printing, revealed that a station in Mexico exchanged coded messages with the German station POZ in Nauen, Germany. Yardley was successful in decoding the exchange of messages revealing that Mexico was offered a bribe to remain neutral since we and our Allies had been endeavoring to enlist Central and South American countries on our side in the war.

The other World War I case involved the transatlantic Telefunken station which was located in Sayville, New York. A young experimenter surmised from listening to the transmission at times from Sayville, that it was sending secret messages by resorting to high speed transmissions. Accordingly he recorded them and played them back at slow speed with amazing results. This led to the seizure of the station by the U.S. Government and the internment of the officials in charge.

This feat was accomplished by Charles E. Apgar, a Ham Operator, 2MN, who had developed a system of recording wireless signals on Dictograph records. Our government had become suspicious of the transmissions from WSL and solicited the help of Apgar in making recordings of the high speed transmissions. When played back at readable speed, it disclosed that the station was indeed violating our neutrality by sending messages to German submarines.

Apgar was commended by our government for his clever performance and his achievement gained him considerable publicity. De Sota in his book "200 Meters and Down" describes this episode in some detail.

SIGNAL CORPS RADIO INTELLIGENCE, U. S. A.

As Yardley in his book, "The Black Chamber", indicated, there were Army units having the responsibility of intercepting foreign radio transmissions and taking direction finding bearings to confirm the suspected location of transmitters that might be used for diplomatic and espionage purposes.

I have learned from two of our club members, Clarence Pfeifer, W2FG, and Conrad J. Bedlak, Sr. that they were engaged in such activities of the Signal Corps and apparently the first intelligence activity of the Signal Corps. Pfeifer reports that men in these units were picked from ham and commercial ranks and that they were in a military intelligence division attached to the Signal Corps. While it appears that much of this operation was confined to the vicinity of the Mexican border, since Clarence's was set up outside of Las Cruces, New Mexico and Conran Sedlak operated at Fort Sam Houston. Other units were distributed along the Mexican border.

I have no recollection of the term "Snafu" in World War I but it apparently existed as Conny Sedlak relates how their special radio intercept receiver had been installed as part of station WUJ at Fort Sam Houston and used for routine operation and his group became a "lost squad" for a year until someone realized a mistake had been made. They were then relieved of routine operation and placed in a special intelligence section for which they were originally intended.

It is interesting to note that Conny's unit intercepted the code messages that Yardley published in his book. These transmissions were made by the high powered station using the prefix HSI. Conny also intercepted some Japanese Kana code messages as well as other important intercepts. Not all of the radio intelligence activities took place in the Southwest as can be seen from a report from Clarence Pfeifer in his own words.

"In late October, 1918 I was picked out of my unit and ordered to Houlton, Maine where a unit was being established in an old farm house a couple of miles east of the town on top of a hill and about a mile from the Canadian border. I arrived there on Armistice Day and found Art, who had asked for me because I could operate a Morse wire. We had a direct wire to Washington. I was pretty busy. One night I copied a long string of messages from POZ addressed to President Wilson, Jane Adams and other prominent people, from the women of Germany appealing the terms of the armistice.

The next morning the papers all over the country had this story in headlines and told that the messages had been copied by the military intelligence section at Houlton Maine. This caused a ruckus between Secretary Daniels of the Navy and Secretary Baker of the Army, as it seems the Navy stations did not copy these transmissions, and there was a rivalry between the services. As a result we were stopped from copying for a while and put on experimental work, direction finding, etc. A little later we were started up again, and kept at it until September or October 1919, when it was disbanded and we were released."

Sabotage too, had apparently come into play in the early part of World War I as Conny Sedlak reports that the first three SC72 receivers they tried did not work and investigation revealed a small piece of wire about 1" long was broken or cut in each of these receivers. Also the direction finding loops read approximately fifteen degrees off and investigation showed that iron bolts instead of bronze were used to hold the tripod together.

No doubt the archives of the U.S. Signal Corps contains much more on the radio intelligence operations of it's Signal Corps units which operated in the stages before and during World War I than I have related in this introduction to a report on what was accomplished in France in 1917-1918 and subsequently by the Radio Intelligence Division of the FCC immediately prior to and during World War II.

* * * * *

Future issues of Spark Gap Times will continue with:

"Military Radio Intelligence AEF France 1917-1918"

"I try to fly on one wing"

"Infra-red ray light signalling"

"An experiment with rockets"

"I am ordered to General Pershing's Headquarters."

Plus six chapters about the FCC's Radio Intelligence Division - WW II

The complete series was scanned & placed on <http://users.ticnet.com/oetc/>

The articles are "re-typed" for Spark Gap Times with better results.

CHAPTER 1

THE FIFTH COLUMN THREATENS

That the enemy spies would use radio to the maximum in the war that was sweeping upon us was a foregone conclusion. As the Nazi's swept over Europe the agencies of the government received many reports of their feats of espionage. German agents carrying innocent suitcases containing complete short wave equipment plopped down in England by parachute. They were landed in Africa from submarines. Dozens of stories of the activities of the Nazi fifth column came out of France. One report stated that Nazi spies dressed as French officers and using pocket short wave sets sent misleading information to the French high command. Other reports told of clandestine radio activities in this hemisphere.

During this period of neutrality on the part of our government thousands of amateurs in this country owned and operated short wave transmitters and thousands more could be easily purchased on the open market. Any competent radio man could change a broadcast receiver to a short wave transmitter with ease. In fact one Japanese did this while interned in a camp in Colorado. Diathermy machines were a natural for use as a transmitter.

It was comparatively easy for any enemy agent to hide his transmissions in the activities of 60,000 amateur stations operating on the various bands. In fact one German agent was sent over to this country with instructions to do this as we shall see later.

As indicated previously, the FCC had no way of determining that foreign ships within our neutrality zone were maintaining radio silence as they were required to since the monitoring stations had no Adcock high frequency direction finders.

These and other factors made the problem of sealing this country against axis spy transmissions exceedingly difficult.

In the meantime, a few days before the Nazis took Paris, amateur radio stations were prohibited from communications with foreign stations. Subsequently, the Board of War Communications, an agency established to control U.S. communication with representation from all interested agencies of government and industry, acted to close all point to point radiotelegraph circuits communicating with foreign countries. There was always a possibility of a disloyal person operating these stations for the benefit of the enemy. In fact one operator on the West Coast made arrangements with a person he thought was an enemy agent and accepted money to transmit messages but his designs were short lived when the FBI took him in.

Immediately after Pearl Harbor amateur stations were silenced.

To appreciate the tremendous problem confronting any station in attempting to combat the use of this medium of communication for subversive purposes, it is necessary to consider the many methods available for use by enemy agents which require scientific methods of detection. Subsequent to World War 1, tremendous advances were made in the use of radiotelephony. To insure secrecy of talking circuits arrangements were devised whereby speech is rendered unintelligible to those who listen in except at public terminal points. This mode of transmission in common parlance is referred to as "garbled or scrambled speech."

Intelligibility is restored only by making use of complicated receiving mechanisms and adjustments which must be available to the party endeavoring to reproduce the interceptions in the language in which they are transmitted. In the meantime, television and facsimile transmissions have made rapid progress. Here again one must have exactly the same type of equipment as employed by the sender and receiver to reproduce faithfully the transmitted material or images. Antennae of special design and construction having for their purpose beaming or directing their transmissions on a certain area with little energy radiated off the sides or rear which could be intercepted or used for direction finding purposes came into common usage on the part of commercial radio companies as well as amateurs.

Speculating on other methods which conceivably might be used by enemy agents to make it difficult of interception and determination of the location of the transmitter one must include a multitude of possibilities some of which are involved and require the most intricate of applications. Nevertheless, they cannot be discounted and must be considered in any plan of operation that has for its purpose combating such activity. The following systems may be placed in this category:

- (a) Two transmitters widely separated, one which makes the dots and the other the dashes or which transmits alternate words and the then feeding a receiving system that combines the transmissions into solid copy.
- (b) Transmitters and receivers that change frequency continuously at a synchronized rate during a transmission schedule.
- (c) Mobile transmitters which move from one place to another thereby making localization by direction finding and field strength measurements difficult.
- (d) Superimposing sub-audible or super tonic frequencies upon the carriers of regular broadcasting stations. These frequencies are beyond audibility of the human ear and must be detected by special equipment.
- (e) Arrangement of broadcast programs and announcements in a prearranged code. This was suspected by the public and certain government officials to be the most general form employed by the fifth columnists to signal submarines relative to the departure and location of ships. The modus operandi is not new and was employed in the prohibition days to advise rum runners when the coast was clear and what points and times they should make their entry.
- (f) Utilizing diathermy machines for communication shows that energy generated in these devices is radiated by the power mains and is possible of transmission over thousands of miles.

Included in this group is the case where the call letters of an established station is pirated by the operators of a clandestine circuit in an attempt to camouflage their operations and make them appear as officially authorized and registered stations. This was resorted to by both Germany and Japan when they established a radio circuit between Berlin and Tokyo for the exchange of diplomatic communications that they did not care to transmit through regular commercial channels. The details of this case will be described later.

In contemplating a plan of combating illegal uses of radio it is necessary to consider the range of frequencies that might be employed and particularly the ultra-high frequencies for short

distance transmissions as, for example, from a point of vantage on shore to a ship just below the horizon.

The use of these frequencies while confining the reliable communication range to a distance of that of an optical path or somewhat longer makes it easy to conceal equipment in suitcases and even on one's body. Interception is accomplished only by establishing a listening station within the narrow limits of the beam, and moreover a difficult radio goniometrical problem is presented, which fortunately can and was met successfully as will be related subsequently. The beam of such a transmitter can be compared to that of the beam of a flashlight using a parabolic reflector.

In addition to the technical problems anticipated in establishing a monitoring system, another obstacle of serious importance presented itself. A legal problem, occasioned by Section 605 of the Communications Act of 1934 which was designed to insure secrecy of addressed communications. At the very outset of the war in Germany the Commission proceeded to take action against a broadcast station for alleged violation of this provision of the Act since the station had broadcast as a news item an intercepted radiotelegraph message intended for reception on the part of the German Merchant Marine.

The action taken in this case established a precedent which the Commission was forced to adhere to as a policy in its monitoring operations. The restrictions on intercepting and divulging the contents of the addressed communications played an important part in espionage activities of the Japanese consul and staff in the Territory of Hawaii prior to the attack on Pearl Harbor.

The report of the Commission appointed by the President to investigate the facts relating to this attack includes two pertinent paragraphs which read as follows:

"There were, prior to December 7, 1941, Japanese spies on the Island of Oahu. Some were Japanese consuls or agents and others were persons having no open relations with the Japanese foreign service. These spies collected and, through various channels, transmitted information to the Japanese Empire respecting the military and naval establishments and dispositions on the Island."

"It was believed that the center of Japanese espionage in Hawaii was the Japanese consulate at Honolulu. It has been discovered that the Japanese consul sent to and received from Tokyo in his own and other names many messages on commercial circuits. This activity greatly increased toward December 7, 1941. The contents of these messages if it could have been learned might have furnished valuable information. In view of the peaceful relations with Japan, and the consequent restrictions on the activities of the investigating agencies, they were unable prior to December 7 to obtain and examine messages transmitted through commercial channels by the Japanese consul, or by persons acting for him."

It is interesting to note that prior to December 7, 1941, not a single agency in the federal government responsible for intelligence activities, requested assistance from the monitoring system of the Federal Communications Commission in making intercepts of radio transmissions emanating from commercial circuits in the Territory of Hawaii. At that time RID monitoring stations were in operation on the Island of Oahu close to the city of Honolulu, one near the city of Hilo on the Island of Hawaii and another on the Island of Kauai. They were equipped with

receivers, recording equipment and direction finders and diligently performed their tasks to detect and locate any clandestine radio stations.

Many stories emanated from Hawaii immediately after December 7, relating to the operation of radio stations by enemy agents and amateur stations operated by second generation Japanese alleging they were communicating with Japanese naval ships and aircraft during the attack. Thorough investigations revealed that they were fictitious as were many other stories relating to activities of fifth columnists such as cutting sugar cane in a manner to leave a large arrow formation pointing to military targets to aid flyers to their targets. All well informed military officials agree that the Hawaii incident was well planned and rehearsed and when the flyers and submarines came in each knew the location of their military target. This was proven when the Japanese plan for the attack was revealed before a Senate Investigating Committee following the Pearl Harbor disaster.

Immediately after the attack on Hawaii, as the result of a request from the Army, Navy and FBI, I took a group of trained men recruited from our stations and with a hold full of equipment sailed for Honolulu in a Navy convoy.

It was while we were off Santa Barbara headed south to pick up an element of our convoy that a Japanese submarine shelled a refining plant nearby. The Captain of our ship sent for me in the morning and showed me on the map how close the sub was to us. He said the first shell was fired the moment President Roosevelt was making that night.

In addition to our counter espionage operations and locating sources of interference as well as performing military radio intelligence chores for the Army and Navy, at their specific request and with appropriations furnished by them, we soon learned of a new and very important use to which our direction finding networks could be put – the location of lost and distressed aircraft by Adcock radio bearings. This new use was really just a by-product of our nationwide system which had been established for entirely different purposes. However, it was a very important by-product as I shall relate subsequently.

As General Davidson told me in Hawaii a couple of months after the attack, when he solicited the same service for his B-17 bombers flying from the West Coast to the Islands, he had lost three the night before because of poor navigation. He made this startling, but true, statement, "Production is getting ahead of training." In a separate chapter, I will report on this thrilling and valuable service rendered by RID.

"Eternal vigilance is the price of Liberty" was accepted as the order of the day and throughout its entire period of operation personnel of the organization served with loyalty and distinction as case after case was uncovered of the operations of a world wide ring of Axis espionage agents with radio transmitters being used in reporting the movement of allied ships, troops, munitions, production of factories, distribution and extent of fortifications and other important military information and the development of other operations of vast significance to our military information, as well as the development of other operations of great value to our military forces and the security of the Western Hemisphere and Allied nations throughout the world.

THE MODUS OPERANDI OF RID

Just how are clandestine stations apprehended? The story of how counter-espionage techniques were designed to locate and eliminate clandestine transmitters is a fascinating one, for the techniques of espionage and other clandestine transmissions had improved by leaps and bounds by 1939, and have accordingly made necessary similar advances in the defense against such activities. During the rum-running days, for example, operators of many clandestine transmitters made no effort whatever to disguise their activities, counting on the absence of effective government measures to protect them. Thereafter, these transmitters resorted to simple codes and ciphers to protect themselves against detection by occasional eavesdroppers. Today, however, the art of clandestine radio transmissions has vastly improved, so that only the utmost skill and ingenuity on the part of agencies concerned with eliminating these clandestine transmitters, will succeed.

The first step in tracking down a clandestine transmitter, of course, is to hear its signals. It is for this reason that the RID located its primary monitoring stations and its 58 secondary monitoring stations at strategic points throughout the area of FCC jurisdiction, so that at least one monitoring station would be within range of any probable clandestine transmitter.

At each RID monitoring station operators engaged in the process which is known as "cruising" the ether. This consists in tuning from frequency to frequency throughout the usable radio spectrum, identifying each signal as it is heard.

Radio signals and services are identified through various elements in the transmission, the call letters, the frequency, the operating procedure, the nature of the traffic, the technical characteristics of the signal, characteristics of the fists of the operators and the taking of D/F bearings to confirm location, and finally a very important element in radio intelligence, "busts". By "busts" I mean hamming on the part of operators, use of operators' signs, using the wrong call letters or incorrect frequency at the wrong time. Radio intelligence work is much like a picture puzzle, fragmentary parts of information gathered from many stations are fitted into their correct place and soon before you the whole picture is revealed. Identifying some radio signals is extremely easy, others are more difficult.

At this point, two refinements may be noted. First, the alerting of the direction-finding network must be as nearly instantaneous as possible. One characteristic of espionage transmissions is that the operator of a spy station keeps his messages as short as it is humanly possible, for the very obvious reason that the longer he is on the air the easier it is to detect him. Accordingly, RID detection techniques were speeded up to such a degree that only a short time elapses between the request for bearings by the originating station and the receipt of bearings from RID direction finders all over the country and plotting of them on a chart.

A second refinement is the synchronization developed by RID to insure that all direction finders are in fact taking bearings on the same signal. The radio spectrum, as you know, is extremely crowded these days: communications are carried on simultaneously over channels which are separated by but a very thin twist of the radio dial, and sometimes such channels even overlap. In fact, several stations may occupy the same channel simultaneously. It is thus possible, in an uncoordinated direction finding system, for some to list just where and what the transmitters is, and thus avoid the necessity of repeating the work already done.

If the bearings procured on this station show it to be located in Allied or neutral territory, the State Department or other appropriate agency of the government is notified, so that appropriate measures can be taken.

Suppose, however, the bearings indicate that the unidentified transmitter is within American jurisdiction. In that case the RID swings into action with all its resources. The fix may show, for example, that the transmitter is located in the general neighborhood of Philadelphia. The FBI is promptly notified since the code groups transmitted smack of subversive activity. Mobile RID units in that area are immediately alerted, and proceed to take bearings with the loop direction finder if the transmitter is found within the so-called ground wave range. By means of these bearings taken locally, the exact building from which the signals emanate can be quickly ascertained. Finally, by means of these devices developed by RID engineers, which can be carried in the palm of the hand, the precise room in the building from which the signals emanate can be determined and the operators apprehended, if it is prudent to do so. In the case of a station engaged in espionage, it may be desirable not to close it down so as to get information on the spy ring or use it later for counter-espionage.

Having described the modus operandi of RID, the following Chapters will reveal success achieved.

CHAPTER 3

TARGET PRACTICE

In the Spring of 1941, reports reached headquarters that there were at least two stations on the air, the operators of which instead of identifying their stations by signing call letters, chose to identify themselves by signing "Fritz". One seemed to be operating in the amateur bands and was prone to communicate at brief intervals with licensed amateur stations whereas the other chose an entirely different mode of operation. A few hours of monitoring brought forth information that Fritz number two was endeavoring to chisel in on our own secret radio circuit that linked the primary stations with the net control station at Laurel that served to relay traffic to Washington through a private line teletypewriter circuit.

It was observed that when Laurel would call one of our stations, Fritz would immediately reply using the tactical call of the station called and advise the operator to go ahead with his traffic. When the traffic was light on our net, he would adjust his frequency to that of the Army Amateur Radio System and communicate with the net control station in Washington. Plans were immediately set in motion to trap him. Cooperation was extended to the Signal Corps station who kept up an exchange of signals with Fritz so as to enable our high frequency direction finders to obtain bearings.

The exchange of communications between Fritz and our own station began to take on an unusual character. The following excerpts are typical of his transmissions: "I am a cryptographer. "You must give me some information in exchange for this stuff. Give me the location of (gave several U.S. Government stations calls). "This station is now in the hands of the enemy. Your insolence will not be tolerated by German troops. This station is now in control of German Signal Corps. "Name here is Hans Von Keitel. Heil Hitler. "I want your codes and ciphers. Give them to me or else we will jam this net with the big rig. "You will be in a concentration camp. I am cryptographer for this signal unit in the German Army of Occupation. "I am on the ADMIRAL SCHEER and never dock." When asked where he was located, Fritz said, "Off coast of Madagascar."

Fritz was canny and obviously very sensitive to the fact that we might never locate him if he kept his transmissions very short and changed frequency often. One of my assistants, Lew North, employing his amateur transmitter but with a phony military call letter, contacted Fritz and sent him messages to be relayed to the Signal Corps station at Army headquarters in Washington which had as its call letters WAR. We solicited the cooperation of WAR so as to keep Fritz on the air so that we could obtain sufficient direction finder bearings so accordingly they would ask for several repeated of the transmissions directed to WAR This worked very satisfactorily.

These bearings were quickly obtained and when projected produced a fix close to a midwestern city. Immediately five mobile units were dispatched into the area, each one having explicit instructions as to what roads and directions to pursue. The unit soon

picked up the signals and took bearings, which when projected on their maps for the local area, indicated that Fritz was located west of the Illinois River and apparently in the city of Peoria. The information was quickly verified by other units proceeding towards Peoria from various directions. Subsequent bearings taken from carefully selected sites, free from the influence of overhead wires and buildings disclosed the location of the transmitter within two city blocks. Close examination revealed an antenna on a house within the two blocks terminated in a delta match transmission line, but field strength readings did not positively confirm this antenna as the radiating structure.

During the evening when it was necessary to do close-in work to determine the exact location of the transmitter, Fritz ceased transmitting since he could not work our station in Laurel or the Army Amateur station in Washington. It then became necessary to resort to some special operations. On one occasion on a weekend when WAR was not operating, I authorized Lew North to communicate with Fritz from his home in Virginia, using his ham station and signing the call WAR.

Toward the climax of the case I had sent Mr. Ellert, our technical supervisor, to Peoria to offer technical advice to Supervisor Weston and his staff. Weston believed the transmitter to be in the house on which the delta matched antenna was erected. Ellert was unconvinced and bet Weston a dinner that the station was not in that house but the one next door. As pointed out previously, it was necessary when making a complaint to secure a warrant to state exactly the house and room in the house in which the transmitter is located. To clinch the problem, Ellert requested authority and it was granted, to set up a small transmitter in the temporary monitoring station in a downtown hotel room and adjust it to the frequency and power output equivalent to the signal received in Peoria from the Laurel and Washington stations.

Employing the tactical call letters of the Laurel station, the transmitter went into operation as the signals from Laurel started to fade out with the approach of darkness. Fritz took the bait, hook, line and sinker and continued to transmit, while at the same time Ellert with the special equipment made a positive identification of the location of Fritz's transmitter. The operation and that of Lew North's might be called an entrapment if offered in evidence in court, but we were confronted with a possible case of espionage, and we were engaged in counter-espionage when drastic and quick action was necessitated.

Because of the character of the transmissions it was necessary to notify the Federal Bureau of Investigation while the station in the hotel room kept up a continuous monitoring surveillance. The field agent of the Bureau reported that a thorough investigation had been made of the operator and permission was secured to obtain a warrant and make an arrest charging violations of the Communications Act.

When an entry was made Fritz was in communication with what he supposed was a government military station and never advised that the signals our men heard coming from his loud speaker were being received from our transmitting station in Peoria. The arrest disclosed that Fritz was a college student more intent on trying to determine the

identity of the stations heard employing tactical call signs and special procedure. It is interesting to note that only six hours of operating time elapsed from the date the station was heard until the transmitter was located. Also only two days passed from the time Fritz was arrested until he was indicted by a special session of the Grand Jury on two counts involving Sections 301 and 318 of the Communications Act of 1934. Weston has since settle for a dinner to Ellert.

While operations were in progress on Fritz, another signal had been heard in the amateur seven megacycle band who also chose to call himself Fritz, and during one transmission said, "Nuts to the FCC. I am on a ship in the Atlantic and they can't catch me." Bearings indicated the location of the transmitter as being in western Massachusetts.

Because of the hilly nature of the country a complex direction finding problem developed due mainly to reflection of signals from the hills. Through arrangements made with the Connecticut Aviation Commission the service of an airplane was secured and Monitoring Officer C.A. Vimmerstedt quickly determined that the station was located in the town of Haydensville. A mobile unit operating in town almost simultaneously made a quick determination of the location of the transmitter. Ellert and the others entered the area and soon found it. The tubes were still warm. Ellert had Fritz hook it up. They put it on the air again and our Laurel Monitoring station confirmed its identification. Fritz was arrested and later interned in a state institution.

Considerable assistance was rendered by licensed amateurs in New York City and vicinity in keeping Fritz active on the air while field operations were in progress, particularly a young lady operator who Fritz seemed quite fond of working. This lady ham was our first female counter intelligence operator; also Fritz never knew that the W2 he supposed was in the second call zone was actually at the primary monitoring station at Laurel and operated by Charlie Potts under the supervision of Assistant Supervisor "Red" Rollins.

The two cases of some radio activity carried on by race track touts trying to beat the bookies was properly termed by our fellows as Target Practice in preparation for bigger cases ahead. They also helped to prove the efficiency of our monitoring and direction finding systems as those two and the next case in Chapter 4 will prove.

CHAPTER 4

SPY AND COUNTER-SPY

With over a hundred monitoring stations in operation it became necessary to inaugurate a system to process intelligently the intercepted material that began to flow into Washington, which could not be identified from the aids available at the stations. It should be realized that the use of radio channels for commercial military and diplomatic purposes increased directly in proportion to the tempo of the international situation. New call letters and new procedures appeared constantly in the intercepted material. New stations appeared on channels assigned to regular commercial and government stations and their identity could not be found in the official International listings of stations. In looking over the qualifications of those who because of their previous service and affiliations might provide the nucleus of a specialized staff of radio traffic analysts, my attention was focused particularly on those individuals in stations who made comments on their intercepted material to aid in its evaluation. One individual in particular, a radio operator on the staff of the primary station located then at San Pedro, California, continually furnished comments which gave evidence that he appreciated the task we had undertaken in Washington. It should be borne in mind that we were looking for enemy agents with transmitters and had no inkling of the radio procedure they might use. I had ordered this chap from San Pedro into Washington on a detail and while busily engaged one afternoon my secretary announced that a gentleman was outside with no baggage but two hats, one on his head and the other in a hat box.

Thus did Albert McIntosh of San Pedro and formerly American Airlines join the staff and proved to be one of my greatest finds. Others having similar aptitude were located and soon under McIntosh's supervision an orderly method of processing intercepted material was in operation. To aid our monitoring staff throughout the nation, I had also assigned McIntosh with some of his assistants to prepare an identification manual showing the occupancy of the spectrum by call letters, frequency, type of emission with samples of traffic and other characteristic. These manuals were to assist in making quick identification of authorized stations throughout the world at each monitoring station and thus avoid having scads of intercepted material processed at headquarters. The necessity of having our monitoring staff become familiar with each type of emission and procedure was essential since the majority had known only amateur procedure or marine traffic. Moreover, the Army and Navy were constantly reporting stations which they could not identify. This was understandable since they had many new operators and officers unfamiliar with traffic other than military.

These manuals became so popular that they were requested by the Army and Navy and other agencies of government including the OSS. I should like to add that I also had encouraged three of my men to study cryptography, a fair knowledge of which I had acquired in WW1.

During the summer of 1940 RID exchanged information with both Army and Navy about the suspicious operation of two stations operating in the 14 megacycle band. One

station signed UK and worked a station signing AOR. The Navy with a scant number of bearings reported the probable location of AOR near St. John, New Brunswick, and that while satisfactory bearings had not been obtained believed that UK was located somewhere in western central New England or New York State.

During this time we were furnishing the Army and Navy intercepts from UK and AOR and, in addition, intercepts from Japanese weather stations, British Army, and Royal Air Force stations.

The frequency on which UK (which we concluded was meant to mean the unknown station) was operating in the middle of the 20 meter amateur band and was heard repeatedly calling AOR, also signed "RAY". During August of 1940, the Honorable John Edgar Hoover, Director of the Federal Bureau of Investigation, addressed a letter to Chairman Fly of the Commission expressing concern over remarks apparently based on magazine articles (notably The American Magazine) to the effect that FCC agents were daily "raiding" enemy radio stations in this country. Mr. Hoover stated in his letter that he had reliable information leading him to believe we were cognizant of the radio activities of station "AOR". It was evident that Mr. Hoover referred to "AOR" in view of the informal call which had been made only a short time previously by one of his representatives. In reply, the Commission stated that we had no knowledge of "AOR", but that arrangements had already been made to furnish the Bureau with copies of intercepts of "AOR and "UK". In our reply we indicated that the latest location of AOR which had been brought to our attention was somewhere near St. John, New Brunswick. This, the third reported location was based on a letter from the Navy Department acknowledging receipt of intercepts of AOR and UK and stating that:

"Bearings taken on this station (AOR) indicate its probably location is near St. John, New Brunswick."

On September 17, 1940, the Navy advised us that the stations AOR and N7Z had been tentatively located and that their stations had discontinued watch on them and that they desired no further information from us. (The N7Z referred to was later established as being a British cruiser operating in U.S. waters.)

Thus it was that the inability to distinguish between stations not using a standard radio procedure comparable to that used by commercial and government stations caused the Navy to drop a task that once Navy initially (and subsequently as will be shown later) regarded me of prime importance. The information furnished us by the Navy was also given to the War Department. We had initiated correspondence to the War Department with intercepts of the transmissions of AOR, included with other unidentified material our monitoring stations had intercepted, beginning August 19, 1940. In fact the Commission's letter of September 19th to both the Navy and War Departments pointed out that by crossing a bearing of 35 degrees received from our Portland, Oregon, Monitoring Station with the AOR bearings originally taken by the Navy, an intersection would be obtained in Europe. That is, Portland's bearing gave a "wide-angle" cut and this type of intersection was later established as a standard procedure in obtaining accurate

fixes in Europe due to the fact that East Coast bearings tended to be parallel and not give a precise determination of the point in Europe where the station under surveillance really was located.

The Navy Department apparently took no cognizance of the bearing from Portland which we furnished, as the two letters crossed in the mail and the Navy's letter of September 17th apparently closed the case as far as the Navy was concerned.

The War Department responded in a similar letter. In an enclosure from G-2, all intercepts of unidentified stations which we furnished the Army were returned with a chart "identifying" them. The package included intercepts of both AOR and UK and these were marked as unidentified. Pencil notes on the bottom of one of these Intercepts indicated that an actual letter count had been made of the text of one of the messages and the intercept marked to show that the cipher employed was transposition. Even so, this traffic did not intrigue the Army to the extent that a solution of the cipher was attempted. Later we learned that the officer that had made this decision was embarrassed no end because he had in his possession actual traffic from stations in which the Army was keenly interested, but it was not recognized because of the dodge the Germans used in employing changing call signs. The science of analyzing call rotas, clandestine habits, procedures and fists had not yet developed to the point where any clandestine message could be easily identified as to source, circuit location and message content.

The respective sections of the Army and Navy in "closing" this case now left only the FBI as an outlet for the traffic and such other information as we could furnish. By now our identification of all radio traffic had reached a high degree of perfection.

On November 11th one of the men on my staff noted that the special 4-4-3-3 heading by AOR and UK contained identical letters in the first group and surmised that these letters could easily stand for the digits which represent November 11, namely 11/11. Working on this premise during the entire course of one night the entire preamble system was worked out and thirty different AOR and UK message headings were exhibited with their solutions the following morning. Armed with this, the first clue of any kind as to how the messages were enciphered, I made this information available to the Navy.

The Navy Security office in charge of cryptography was astounded that such a system was being employed, but did not recognize it and could not associate it with any known type of traffic. Nevertheless, this clue caused the Navy to reopen the case and this time much better results were obtained with the bearings because our analysis staff was able to "line up" the desired schedules, frequencies and operations for the Navy in a manner similar to that now being employed by our own stations. That is, we had learned that we must give our monitoring stations all information possible which will assist them in intercepting and taking bearings on the desired stations. It was necessary to describe the characteristics of operator of stations under surveillance and to accurately list the signal type, styles and speeds of sending of each station on which we desired bearings. With these "assists" the Navy was able to obtain "synchronized" bearings, that is, bearings that could positively be established as having been obtained on one or the other of the two

stations AOR and UK. Matching their bearings with those we still continued to obtain, we had an excellent small triangle or "fix" on the Northern end of Long Island.

There was beginning to develop something more than a mere perusal of the intercepts. We continued to monitor both AOR and UK and to furnish the FBI with copies of all messages intercepted.

I was fully convinced that UK was in the United States and took steps to contact the Navy Department, our original informant, as to the nature of the traffic despite the Navy letter "closing" the case.

The only thing that remained was to positively determine what the station was sending and its precise location. To this end the officer in charge of the Naval Communications Security Office requested me to detail Albert McIntosh to his office to assist in the solution of the UK cipher. McIntosh was the same one who had "broken" the preamble key. He was one of the three I had urged to study cryptography. His analysis had showed that the texts proper of the traffic were most likely in a German transposition cipher interspersed with frequent null letters. The official Navy cryptographers tried desperately to solve the cipher, but to no avail. Neither had the FBI given us any indication that they had broken the code.

I, therefore, felt that further time should not be taken to wait for the reading of the messages and called the monitoring officers in charge of the three nearest secondary monitoring stations to the scene of the "fix" on UK – namely Messrs. Redfern, Cressy and Ross of New York City, Bayshore, L.I., and Portland, Connecticut, to my office and issued detailed and explicit instructions in regard to what procedure was to be followed in determining the exact location of the UK transmitter. By working independently (but exchanging the results of their observations daily in accordance with my instructions) they were able in three days to locate the exact house in which UK was located. This determination was based on the projections of ground wave bearings taken by two mobile units on Long Island and one on the Connecticut shore.

On Saturday, December 7, 1940, for the second consecutive day, Mr. Ross, Monitoring Officer in Charge of our Bayshore monitoring station, each time obtained the same result, observing that the S-29 receiver on the floorboard "blocked" even with the collapsible antenna all the way in with the cap in place over the antenna socket. In addition, Mr. Ross observed that this house in Centerport was the only one in this village of approximately 300 persons having a visible antenna that conceivably could radiate signals that would reach Germany and AOR on the 14 megacycle band.

It was now observed that the location, of the station Ross had found was in the same village, Centerport, as the one listed as being the location of a secret amateur radio station licensed to the FBI in the spring of 1940; this station had been given the call W2NCK for a confidential purpose and it was, therefore, believed there might be some connection between the confidential license issued to the FBI and the operation of UK. The letter

from the Bureau in response to one from the Commission attempting to determine this information led me to believe otherwise, however.

After consulting with Mr. Jett, who was Chief Engineer of the FCC, my immediate supervisor, he advised me to notify the FBI that we had located this station and the Army and Navy could not identify it. Unless they had some interest in the station, we were going to take action to arrest the operators. I made this information known to Mr. Carson, a supervisor of the FBI, Monday morning, December 9, 1940, and he advised that he would make inquiries and let me know if the Bureau had any information in this case. He did request me to await further word from him before taking any action to enter the station.

Soon after my return from the Bureau, I was called into Mr. Jett's office and was surprised to find Mr. Carson waiting to see him. Mr. Carson stated that he tried to see Chairman Fly but in his absence had been directed to see Mr. Jett.

In Mr. Jett's office, he stated that the station we had located on Long Island was involved in an operation of extreme importance to the FBI and furnished sufficient information to imply, without doubt, it was engaged in a counter-espionage activity. He requested we take no action to move in on the operators.

This operation reached a climax on June 28, 1941, when the Federal Bureau of Investigation announced the arrest of thirty-three spies, including three women, and charged them with violating the Espionage Act of 1917. During the progress of this case in the Federal Court in Brooklyn, New York, the Bureau announced that they were the operators of the station on Long Island. The disclosure came on September 9, 1941, through the testimony of William G. Sebold a machine gunner of the German army in World War I. Sebold related how he was trapped by the Gestapo while on a visit to his home in Germany after working in the Consolidated Aircraft Company plant in San Diego, California, and being forced under threat of death to himself and punishment of his mother, brothers and sisters, joined the Nazi espionage ring. Little did the Chief of the Gestapo, Adolph Fritz Ritter, realize that it was Sebold's firm intention to turn all of the information he received over to the government of the United States. After completing a course in the spy school which included radio telegraphy, microphotography, codes and ciphers and other essentials, Sebold received instructions to return to the United States and act as a paymaster for the spy ring operating in this country and to set up a radio telegraph station through which information gathered by the spies would be transmitted to Germany.

The spymaster furnished Sebold with \$1,000 in cash with which to start his activities on arrival in America and he was told to operate under the name of Harry Sawyer. He was advised that a spy by the name of Siegler, Erwin Willhelm Siegler, would aid him in setting up the wireless station. He was furnished with microfilm containing all of his instructions and the names and addresses of those to be his confederates in this country and the proper pass words for identification.

He received a personal message from Dr. Ritter, Chief of Gestapo Spies, instructing him to tell Herman Lang of Ridgewood, Long Island, to return to Germany by the way of Japan and via Siberia. He was told to approach Lang with the greeting "Rentzau, Berlin, Hamburg".

Herman Lang, a naturalized citizen of this country and an employee of the Norden Bombsight factory, visited Germany in 1938 and had revealed to the German government at that time the particulars of the design and construction of this instrument. Apparently the information Lang supplied was not sufficient and the spymaster desired him to return to Germany. Lang was reluctant to return to Germany, but even if he desired, he would have been apprehended by the FBI who had him under constant surveillance. He was subsequently convicted and received eighteen years imprisonment.

Sebold, prior to his departure from Germany, had furnished information to the U.S. Consul at Cologne regarding his plans and a representative of the State Department met him when the Manhattan docked at New York and brought him to the office of the FBI where he told his story and turned over his microfilm and \$910.00 remaining of the \$1,000 Dr. Ritter had furnished him. He then agreed to enlist in the service of the FBI and operate under their direction as a counter-espionage agent.

Sebold himself did not operate the transmitter at Long Island, instead the FBI gave Special Agent Morris H. Price this assignment as he was licensed by the Federal Communications Commission as a holder of a Class A radio amateur operator's license and had gained experience operating his own station.

Strange as it may seem, after the round up of the spies had been made and the trial was in progress the control station AOR in Germany continued to communicate with the FBI station and did so up until four days before Special Agent Price took the witness stand in the Brooklyn Federal Court. Hitler's associates in Germany were unaware of the arrest of their agent.

Sebold had been instructed to use a cipher system which later proved to be used rather generally by German Espionage agents. We used it effectively in reading messages set by spies South America. The system requires the use of a book, generally a popular novel of the day, but one whose circulation was restricted to Europe. In this instance the novel furnished Sebold was entitled "All This And Heaven Too". Each agent was assigned a special number which he used as a constant when enciphering and deciphering messages. In general after contact is made between the "In" control station (Hamburg) and the "Out" station (Centerport) the system provided for each station to change its call letters daily utilizing the novel for this purpose as follows:

Assume Sebold's number to be 20 and the period of operation May 30th. To 20 one would add 5, May being the fifth month of the year, and then 30, the day of the month, making a total of 55. Turning to page 55 of the novel the last three letters of the last word on that page, read in reverse, would be the call letters used by the control station and the last three letters of the next to last word, read in reverse, the call letters of

the "Out" station. Unindented lines on that page were used to form the rectangle under which the message to be enciphered. On the following day the next page was used. A cycle of operators using this system took place generally over periods of 30 or 60 days.

The first transmission made by the FBI operator took place on May 25, 1940.

The call letters Sebold was instructed to use consisted of the combination CQ DX V W2 and he was to call AOR. By international agreement each station is assigned certain letters of the alphabet with which to derive call letter permutations. However, calls beginning with "A" had not been assigned any nation. It is believed that Gestapo radio minds chose these permutations for reasons that they were least able to attract the attention of our own monitoring system and the thousands of licensed amateurs operating in the 14 megacycle amateur band. It is customary for an amateur who desires to communicate over a long distance to make a general call, CQ and follow it by the letters DX meaning long distance contact desired. In this case using the letters "DE" or "V" followed by W2, the prefix assigned to amateurs in the second call letter area which embraced Long Island was understandable. The Gestapo, however, failed to add the two or three letters that would normally follow the prefix W2. As far as it is known, only one amateur operator reported the transmissions from the Long Island station as being suspicious during the fifteen months of operation. This surprised me as it is often stated that the hams police their own bands.

Special Agent Price made his first call to AOR on the evening of March 15th and continued calling each day on schedule until finally contact was made on May 22nd when the first message was received. It read "Tuesdays and Thursdays at 1:00 and 5:00 P.M. E.S.T. After that will listen daily except Saturday night and Sunday. Saturday, 12:00 noon O.K. Will furnish you new frequency later."

After an exchange of several messages relating to schedules the first business message was transmitted. Sebold had among the spy group met Lilly Stein, an artist's model the Gestapo sent to New York to collect spy material from other members of the ring. She advised Sebold that she had new information but needed money, so a message was dispatched to AOR which read: "Stein destitute. Got new contact, but must have money at once."

One of the first important messages received from the Master Spy read as follows: "Need urgently from all friends monthly production of airplanes, factories, exports to all countries, especially England and France, number, type, date of delivery by steamer or air, armature and armament, payment cash and carry, credit. Rose has \$200 for you, not for Stein, Greetings".

Subsequently members of the ring fed information to Sebold in the belief that it was all being transmitted to Germany, not knowing that the FBI was originating hoax messages to keep the Gestapo satisfied, in addition to other messages relating to payment of funds to agents.

The transmissions continued until September 7th, four days before Agent Price took the witness stand in the Brooklyn Federal Court and several weeks after the arrest of the spy ring by the FBI. Apparently Mr. Hoover's men had crippled Hitler's sources of information to the extent that the Gestapo was unaware of the arrest of their agents in the New York area.

A rather dramatic incident was precipitated in the Federal Court presided over by Judge Mortimer W. Byers, where sixteen of the men accused of espionage activities were on trial. During the cross examination of FBI agent Price, who operated the transmitter at Centerport, L.I., was asked by a defense attorney if he had any way of determining that AOR was in Germany and he replied that he did not. Moreover, he admitted that the transmitter could have been operated from the court room and he would not have been aware of it from his receiving station on Long Island. The defense with this admission thought they had scored a major point. U.S. Attorney Harold Kennedy called for Al McIntosh of the RID Engineering Department, Federal Communications Commission, to take the stand. McIntosh gave expert testimony to prove that the station signing AOR was in the immediate vicinity of Hamburg, Germany, and back his testimony by charts showing the projection of bearings taken by our primary stations in the United States and resulting in a fix embracing the metropolitan area of Hamburg. Defense attorneys endeavored to break down McIntosh's testimony, particularly with respect to the accuracy of the bearings and the methods of projection. U.S. Attorney Harold Kennedy, a former Naval Officer and familiar with charts and bearings finally led one defense attorney into a ridiculous position where it was obvious to the court that he was in total ignorance of the subject of his examination.

The complete story of this spy ring and its operation, apprehension, conviction and sentence of all involved, has been covered in the press and in particular by William Gilman in a serial story, the first installment of which appeared in the November, 1942 issue of 'True Detective'. Mr. Gilman in his article gave appropriate credit to the work performed by the RID in aiding the FBI in this case.

The details of the story revealed the brilliant operations of the FBI in making pictures of the meetings of the spies by hidden cameras and keeping each individual under continuous surveillance, resulting in the final round up of thirty-three, many of whom pleaded guilty. All of the sixteen tried in the Brooklyn Court received prison sentences.

CHAPTER 5

THE GERMAN EMBASSY CASE

Before December 7, 1941, there was little need for either the Germans or the Japanese to establish clandestine radio transmitters within the United States, territories, and island possessions. The commercial radio and cable circuits were open for the transmission of messages through ordinary commercial channels to these countries. Codes could be, and were, freely used. When a message was so secret that the Germans and Japanese did not desire to trust it to the communication companies, even in their intricate top secret diplomatic codes, it could be sent by diplomatic pouch with entire secrecy. Failing this, it could very easily be sent by courier on the trans-oceanic planes and vessels which continued to traverse between these two countries until the very outbreak of the war. Under such circumstances, there was little incentive for the enemy to seek to establish clandestine radio stations in the United States, with all the risks that they entailed, while safer channels of communication were still open.

After the attack on Pearl Harbor, however, the situation changed. The ordinary means of communication were immediately closed down so that the only practicable way for an enemy spy in the United States to establish rapid and direct communication with his home country was by means of clandestine radio. This was tried in the United States two days after Pearl Harbor.

Prior to the attack on Pearl Harbor I had assigned three mobile units in the District of Columbia to provide a special surveillance over certain embassies. In the wee hours of Tuesday, December 9, 1941, Monitoring Officer Morris Blum in charge of one of the units radioed my office (I had slept in my office from December 8th going to a hotel when I could for a bath and change of clothes) stating that his aperiodic receiver, which I previously described, had sounded off on a strong signal with the call letters UA. With another receiver he identified the frequency and I immediately alerted the other mobile units to guard the frequency and take bearings on any transmissions.

I had no sooner done this when my watch officer informed me that the primary monitoring station at Portland, Oregon, had printed on the teletypewriter that it had intercepted a station calling UA and furnished the frequency. It was the same as that reported by Monitoring Officer Blum. I immediately issued orders to sound a nationwide alert on the teletypewriter and radio nets. We use both nationwide and regional alerts. A short time later bearings from Adcock high frequency direction finders started to come into the communication center and they were rapidly projected and made a fix embracing the District of Columbia with the most intersections in the city of Washington. They were followed by bearings taken by loop direction finders at the mobile units and produced a fix in the vicinity of Massachusetts Avenue at Thomas Circle, which was the location of the German Embassy. There was no doubt in my mind then that the chief operator of the German steamer Columbus, which had been interned after a chase down the Atlantic Coast, had placed a transmitter on the air in violation of existing agreements concerning embassies. The State Department had permitted the Embassy at their request to have an

operator on duty there for what they said was to copy press from the homeland. The staff of the Embassy were in fact sealed in after December 7th and deprived of their diplomatic pouch privileges and commercial channels of communications. On the next transmission we confirmed that the transmitter was in the German Embassy.

I immediately notified the State Department and the FBI. After consultation in the early hours of the morning in my office, it was decided that the transmitter should be seized. However, there was a fly in the ointment. There were two buildings on the property, one the Embassy, the other was the Chancellery and a pole on each supported an antenna with a lead-in taken off at each end. I was of the opinion this was done to deceive us or to make it difficult to pinpoint the location of the transmitter. The FBI wanted me to go in first and like a quarterback put the transmitter in their hands. During the conference I told them I could not tell in which building the job was located as it was not advisable to go too close and show our hand. However, I informed them that if I could ascertain from the power company if there were separate feeders to each building, switches could be placed in each line and when a transmission was in progress, the building could be positively identified by interrupting their power. So it was agreed that this should be done. I got my friend, Mr. Ferris, the Chief Engineer of the Potomac Electric Power Company, out of bed before daybreak and, with his men, we went down in a manhole in front of the buildings installing switches. In the end, however, because the State Department was afraid of reprisals to our diplomatic missions still in Germany, it was decided not to enter the building but set up two transmitters to jam signals should they try once more to contact Germany.

The jammers were devised by ordering the staff at the primary stations at Millis, Massachusetts and Laurel, Maryland, to remove the filters from their highest power transmitters and convert them to the rhombic antennas which were beamed to Europe.

They never tried another transmission. In the meantime, we were requested to provide a special 24 hour watch over the Embassy, which I did by moving my secretary Miss Neva Bell Perry and her mother out of their apartment as they lived within a block of the Embassy buildings. The FBI provided us with the most powerful binoculars I had ever seen, so powerful they had to be mounted on a tripod. With this instrument and our receivers we did a good job of surveillance.

During 1940 the Treasury Department said that an instrument had arrived for the Embassy and requested my assistance in identifying it before they permitted it to be delivered. To do this they first told me I had to be sworn in as a special customs officer, which was duly performed. I identified the instrument as a Hellscriber printer, a system of radio communication that prints letters and words. I hooked it up in my office and with a makeshift antenna I had it printing both German and Russian messages from overseas.

After the war Al McIntosh and I, at the request of the State Department, we went into the Embassy and there was the Hellscriber and other radio gear.

This case was an excellent example of how well our monitoring system worked as planned, that is, the Adcock high frequency direction finders at the primary stations obtaining bearings on the sky wave, and the mobile units doing likewise on the ground wave with loop direction finders, and fixing the precise location of a transmitter.

In the preceding Chapter, I narrated that Nazi spies attempted by clandestine radio to establish communications and really believed they were doing so through the operation of the transmitter the FBI had set up in operation on Long Island. In this case false and innocuous information was transmitted by the FBI to AOR in Germany.

In this group of spies Axel Wheler-Hill had also set up a transmitter in New York City with which he too was to establish communication with Germany. He never got a signal on the air because the transmitter was defective. RID maintained a special listening watch very close to the apartment in which he was located.

So with the closing of the Germany Embassy case and this one in New York no other station engaged in espionage successfully operated within the United States to the best of our knowledge. This was the beginning and the end for Axis radio agents within our borders. German agents picked up by the FBI thereafter were found to have been using secret ink or microfilm through mail drops to get information out of the country. And we learned that some Japanese agents who requested funds to establish a station on the West Coast were turned down on the grounds that the RID would nab them as soon as they got on the air.

Wilhelm Hoettl, one of the German foreign intelligence area chiefs, affirmed during his interrogation by the 3RD Army in June 1945 that the Sicherheitsdienst had not been able to establish a single wireless connection in the United States.

However, outside of our States and Territories it was a different story, one in which the RID became intimately concerned.

Now, while we could take pride in the fact that we had sealed the United States against espionage transmission, we could take small comfort from the fact that they had set up shop in Latin America. In Latin America spies had various ways of getting information from the United States, including the use of travelers and invisible ink. Once they had information they could shortwave it to Germany. These nations had virtually no facilities to combat such activity and, in fact, they were for the most part not even aware of it as they had no adequate radio intelligence organization. But we of the RID were painfully aware of the scope of Nazi espionage activity in our Good Neighbor countries. Our long range direction finders in the United States located station after station sending out a shocking flow of damaging intelligence. Often we intercepted the stations before they could establish contact with each other.

Signs of the Nazi effort to create an espionage base in Latin America began to be apparent as early as the fall of 1940. On October 27 our primary station at Allegan, Michigan, picked up a strange maritime signal using the unregistered call BCNL. Other monitoring posts were alerted and quite a number of station calls were traced to ships in

the Gulf of Mexico and Caribbean Sea. Our Tampa office succeeded in identifying these as small vessels operated by a firm near Belize, British Honduras, which also operated a small coastal station. The U.S. Caribbean Defense Command, after developing evidence that this fleet was being used to refuel German submarines and passing information, arrested a Canal Zone employee who was a member of the ring and was able to arrange a trap for nineteen others, including the ringleader, a prominent shipping executive in Belize.

The concerted drive to establish radio agent nets in this hemisphere and our struggle against them began in the Spring of 1941. One of our monitors at Millis, Massachusetts, detected the faint signals of a station that was trying to hide its transmission in a TransAtlantic radiotelephone circuit operating on the same frequency. It was repeating the call letters REW, but the signal sounded quite like that of AOR, the FBI operated Sebold transmitter's respondent.

Other monitoring stations were put on the case to help identify the suspicious signal and copy all transmissions. It was noted that when REW paused to listen a station on a different frequency, a few kilocycles away, would start sending the call letters PYL. The two transmitters put on the same performance at the same hour the next day, and for several days in their apparent attempt to communicate with each other.

The officer in charge of our monitoring station at Searsport, Maine, Maurice Grainger, became so enthusiastic about the case he requested that I permit him to tune up his transmitter on the frequency of one of the stations and help them get together so we could intercept the traffic.

In the meantime all high frequency direction finders had been alerted to the case and, as bearings were collected, fixes were obtained that showed REW was in Hamburg, and PYL in Valparaiso, Chile; an espionage station was discovered before it could make contact with its base.

As our monitors diligently patrolled the ether more and more clandestine transmitters were identified together with their approximate locations. Chile and Brazil held the principal concentrations at this time. There were three main agent networks in Brazil, centered on transmitters that we designated LIR, CEL, and CIT, from the call signs that they were using when first heard. Evidence of the damage contained in the messages sent from these transmitters began to mount.

Before revealing the contents of some of these messages, I think it would be well to digress and explain how the Nazi espionage system operated and how agents were trained.

THE GERMAN RADIO ESPIONAGE SYSTEM

The German espionage system utilized six major radio nets with control centers in Berlin, Hamburg, Bordeaux, Madrid, Paris, and, at one time, Lisbon, for the purpose of

securing from its agents information relating to the Allied movement of ships and troops, armaments, production of factories and other essential military information. The radio stations associated with these control centers extended to practically every country in Europe, neutral countries in Africa, Islands in the Atlantic, and to the Western Hemisphere. The largest radio espionage net was controlled by Berlin.

The following is how the agents of the Nazi espionage system were trained. The facts being given have been assembled largely from interviews and confessions of Nazi agents whom the RID assisted in running down.

Ordinarily, the training took place in a school near Hamburg. The men selected for these assignments were not skilled radiomen. They were taught photography, including microfilming, use of invisible ink for secret writing, codes and ciphers, radio and other essential information such as handling of explosives and demolition methods.

As a part of their radio training candidates for this service were taught International Morse Code, construction and use of radio transmitters and receivers, and general radio knowledge. Prospects had to pass a test in sending and, to be successful, demonstrate that they were capable of transmitting fifty to sixty letters per minute, which is equivalent to twelve words per minute. Twelve words per minute is not considered a very high speed, either in amateur or commercial radio circles. For example, the minimum code requirements for operators serving in our own Merchant Marine are sixteen words per minute or 90 letters per minute.

After they finished the training period, each candidate was required to send for five minutes with special equipment, producing a graph indicating his touch, speed and method of sending. The person in charge, after studying this graph, assigned to the agent his sending speed and the student was required thereafter to send all messages at the speed assigned to him. In order that he was properly trained into this speed he underwent further training in sending only. At the conclusion of the week, a further graph was made as a protective measure and filed for later use in comparing messages purporting to come from that agent. Having a record at the control center of an agent's individual characteristics in sending ensured that the transmitters was in fact being operated by their bona fide representative and not an operator of an intelligence agency in a counter-espionage activity. This action was taken, I believe, after the Nazis had been fooled by the Federal Bureau of Investigation when the agency established their countermeasure station on Long Island.

Agents were provided with portable radio transmitters and receivers, generally of the type that was built into a suitcase, and was complete in itself, including antenna wire, tools and all the accessories necessary to permit placing the station quickly in operation when they arrived at their destination. They were furnished explicit instructions relative to construction of their antenna systems so as to ensure that maximum signal was beamed to the receiving site which also aided in covering up their transmissions.

These agents were transported to their destinations on submarines and landed through arrangements completed with other agents who had gone before them, or through the various Embassies of the German Nation . There were several cases where agents were dropped by parachutes from aircraft, and others were seized as they attempted to land from neutral ships.

As mentioned previously, these agents received instructions in codes and ciphers while in training. The group of agents were taught a system which utilized popular novels for the purpose of deriving call letters as well as a cipher in which to encipher messages. The system of call letters used and the manner in which they were derived is quite interesting. In the group referred to, the call letters of the control station in Germany and those of the agents outside Germany changed daily. Let us examine a particular case which requires the use of the novel entitled "The Story of San Michels" by Alex Munthe, published by the Albatross Publishing Company of Leipzig, Paris, and Bologna. On the front cover was observed the following "Not to be introduced into the British Empire or the U.S.A." This novel was used not only to determine the daily call letters of each station, but also for the purpose of enciphering and deciphering messages. Each agent was furnished a certain constant. The agent added to this constant the number of the month of the year plus the day. In our example case, the constant is 56. In selecting the calls to be used for a particular date, say June 6, it is necessary to add the number of the day plus the month to the constant, which, in this case, would be 12 plus 56, giving a total of 68. This operation gives the number of the page of the novel to be consulted. The call letters are taken from the bottom line of the page as follows:

The first three letters of the first word on the bottom line, read in reverse order, give the call for this date for station No.1, which is the control station in Germany and referred to in general radio parlance as the "in" station. In a similar manner, the last three letters of the last word on the bottom line, read in reverse order, give the call for station No.2, the espionage station, which is referred to as the "out" station.

Turning to page 68 of this novel, the last line reads "half open door he wagged his stump of a tail and looked". The first three letters of the first word of this line, read in reverse order, give the call letters of the control station as LAH. And as the last word on the line is "looked", the last three letters, read in reverse order, give the call letters DEK for the "out" station. On the succeeding day, page 69 will be used for this purpose and this will continue until the end of the month, after which the process will start over again.

The Radio Intelligence Division by careful analysis of traffic intercepted from, clandestine stations was able to work out in advance the daily call letters which were to be used on many clandestine circuits each day, and they were furnished our monitoring stations for the purpose of enabling them to identify their transmissions. This information had also been furnished other agencies who had an interest in this work, such as the Coast Guard, Federal Bureau of Investigation cryptographic laboratories, and British Security Coordination. Sometimes an operator was caught making a mistake by not using the call or frequency required by his own system.

As an interesting sidelight, worthy of mention, it became necessary on one particular day for a clandestine station to use the call letters "SOS", which everyone recognizes as

an international maritime distress signal. This was in 1941 and there were many who were listening in on the shortwave bands. In cases of this kind it is customary for operators of government agencies and shortwave listeners to report such transmissions when heard under unusual circumstances to the Federal Communications Commission. Anticipating that such calls would be received on that date, an Information Memorandum was furnished all Inspectors in Charge in the Field Division as well as the Monitoring Stations of the Radio Intelligence Division, so that they could properly handle the situation.

Another very common system of developing call letters employed on certain intra-European circuits is known as the "odd-even month" system. This type consists of two sets of 31 calls each. The first set being used during each odd month and the second set for each even month. Obviously, in such a system the same call would be used on the second of January, March, May and July, etc. A variation of this type of call was used by stations which employ only one list, the same call being used for the same day of each month throughout the year. There were a few circuits which used a different call for each day.

The control of one of the most important clandestine nets operated in the Western Hemisphere passed from the German High Command to the German Gestapo. At that time the net adopted call letters and frequencies assigned to commercial stations located in the various countries in South America. This made detection more difficult but it was still possible to identify the traffic by the formulation of the messages and the use of general operating procedures which were characteristic of clandestine transmitters operated by German agents elsewhere. Thereafter, the procedure was changed again and this net used a call list based on a "month plus day" system.

RID did not maintain a cryptanalysis laboratory. But in order to be able to identify traffic, RID did have a handful of men who became familiar with such work.

The German espionage radio operators used the signal QSA Zero, when either the control station ("In"), or the agent station ("out"), as was learned, were attempting to establish communication. QSA Zero means heard no signal. On occasions RID operators knew a new agent was to come on the air as they could hear the control station calling each day with a different call and ending "QSA Zero, please call". The agent would also terminate his call in this fashion until contact was established. "QSA Zero, please call" became quite a big word among the RID boys.

It was previously explained how Nazi espionage systems utilized novels not obtainable in the United States and the British Empire to encode their messages. An example of how this system worked in a real case appears below>

SPYING ON THE BRITISH SHIP QUEEN MARY

On March 12, 1942, one of our monitoring officers at the secondary station at Laredo, Texas, copied solid a 35 group coded message on 11,220 kilocycles. He really had to dig

it out of the mud (interference) as it was sent with one of the low-powered suitcase transmitters. He signed the call letters EVI. We knew from our analysis of previous messages that the call EVI was due to be used by an operator of the San Michele group from the novel "The Story of San Michele" (excluded by copyright from Britain and the United States) whose assigned constant was 56. Checking we added the month and day, which would be March 13 by Greenwich Mean Time, so it referred to page 72 of the novel. The last word on the page was "give" so EVI was right for that day. The first word on the last line was "like" hence the control station was KIL.

Proceeding to decipher the coded message in accordance with the prescribed cryptographic procedure the German text was obtained which translated into English read "Sixty from Vesta to Stein, Queen Mary reported off Recife by steamship Campeiro on eleventh at eighteen o'clock middle European time". It was interesting to note that on that day three of the six espionage transmitters in Rio reported the arrival of the Queen Mary.

The Queen Mary laid over in Rio about a week and took aboard a considerable number of troops. A few hours after she sailed on March 20, 1942, the Brazilian police rounded up a considerable group of Nazi spies, including a leader by the name of Christiansen, whose organization was operating in Rio de Janeiro, Recife, San Salvador, and other places in Brazil. Christiansen's last messages to Hamburg had reported the movements of the Queen Mary. However, the British Naval Attache had been promptly advised of the espionage transmission and this enabled the Admiralty to change the Queen Mary's route. It was the RID that first detected the activities of the Christiansen group (known as the CIT group), as well as the activities of the LIR and CEL groups. Within several days of the sailing of the Queen Mary, the Brazilian authorities rounded up some 200 espionage agents.

(One of the espionage suitcase outfits was presented to George E. Sterling by the Brazilian government in appreciation for the work RID performed for that country)

THE GERMAN REICH WANTS MILITARY INFORMATION

During this period the German control station sent exhaustive lists of requirements for naval information, asking PYL in Chile if they could "place a suitable man for us among students going to the United States for air training", complimented agencies as "exceptionally correct" in their reports on technical details of English and American cruisers equipment" and assigned agents to investigate "USA parade and air bases in Colombia and Venezuela" and "air units in Trinidad and Lesser Antilles and flights via those places to West Africa, airplane types, movements, dates".

The agents sent back reports like these:

5 July. Nine Boeings flew with mixed crew English and Americans. In next few weeks 20 more to be flown across. Details follow.

19 July. LM reports 15 Lockheed Hudsons flew across, English registry and Canadian-Australian crew. Boeing Clipper left Natal on seventh allegedly for Bolano with 19 Lockheed mechanics and 11 crew.

7 August. USA steamer Uruguay on last voyage to United States left Rio 25 June. Was convoyed to British Auxiliary Cruiser Carnarvon Castle to Trinidad. Trip takes 7 days. Cruiser traveled sometimes ahead, sometimes astern of SS Uruguay.

8 October. BMM reports several hundred U.S. aircraft of various types and 8000 special troops allegedly landing corps being assembled Port of Spain.

1 January. Curtiss Columbus factory will begin mass production series SB2C single seater Stuka for Navy. Armament one cannon, five machine guns, motor 1700 HP Wright. Built for 2000 HP Wright in experimental stage. Production SO3C(sic) begun in Columbus factory at beginning December. Employees all Curtiss aircraft factories December total 27000. Propeller production November 1042.

The Emergency Advisory Committee for Political Defense, representing Latin American nations and the United States published a report at this time in which the following was stated: "The pernicious and constant activities of the German spies are proved by hundreds of messages intercepted by an agency of the Government of the United States of America (RID) by means of detecting equipment situated in that country".

The state of affairs as revealed by messages copied by our monitoring stations here in the United States, aroused the Latin American nations to action .

The third meeting of the Foreign Ministers of the American Republics on January 15, 1942, 22 days after Pearl Harbor, adopted a resolution recommending that the several governments take immediate measures to eliminate clandestine stations.

Accordingly at the request of our State Department, RID sent monitoring officers and equipment to our neighbors to the South while, at the same time, RID took a step to train 30 representatives of the several countries in radio intelligence theory and technique at our training school at Laurel, Maryland.

At the conclusion of the course these trainees were required to locate hidden transmitters in the surrounding countryside, sometimes 15 to 20 miles away. One phase of this exercise required that the first bearing be taken on the loop direction finder with which our mobile units were equipped. They were plug-in loops and were concealed except for a short period of time when taking a bearing. After plotting the bearings on a chart they were required to take off and obtain at least two additional bearings in order to determine a fix. I recall one engineer from Cuba coming to me with tears streaming down his cheek, after he and his companion had just successfully located a transmitter by our methods, begging me to let him return to his country immediately saying his people were starving because of lack of food due to submarine sinkings of ships bound to Cuba with food. He said if he could go right back he was certain he could clean out spies with clandestine transmitters that were reporting on shipping.

While the engineers from the Latin American countries were training at Laurel under the direction of my Technical Supervisor Charles Ellert, the RID men we had sent to

these countries were busy helping the governments locate espionage transmitters as well as aiding in establishing monitoring networks patterned after that of RID.

SPIES IN BRAZIL

The man we sent to Brazil was Robert D. Linx. He helped lay the groundwork for the arrests of 200-odd spies after the Queen Mary left her dock in March. Much of the seized equipment, used in the "trade" of a Nazi spy, was manufactured in the United States, the same as we were using in our counter-espionage operations.

These round-ups apparently cleaned out the LIR and CIT organizations as they were never heard on the air again.

Some of the members of CEL organization escaped to the interior, but two arrests, after they ventured twice at intervals to get their transmitters on the air, also put an end to them.

It was not until August of 1943 that Nazi agents again attempted to use radio for espionage purposes in Brazil. About midnight on August 9, 1943, two German agents were landed on the shores of Rio de Janeiro, Brazil, from a German fishing vessel. They were apprehended by the police immediately after landing. These two agents carried with them two shortwave transmitters for use to communicate intelligence information to Germany.

One of these transmitters, with the aid of RID officer Bob Linx, was placed in operation as a counter-espionage station under the auspices of the Brazilian Army. Utilization was made of one of the Nazi agents as an undercover operator and communication was established with Germany.

During the operation of this station the German Reich transmitted a message to the Brazilian station asking data about the defense of the harbor of Rio de Janeiro, the

location of submarine nets and mine fields, as well as the arrival and sailing dates of vessels. It was thought by the Brazilians that this communication might be an indication that it was the plan of the Germans to essay a token invasion of the harbor and city of Rio. In reply, a message proposed to the Reich was designed in the hope of laying a trap of some kind for a Reich U-boat.

Subsequently, through the facilities of this counter-espionage station two messages were received from Germany which read as follows:

- (1) "Information is desired concerning the strength and composition of the Brazilian air Force. What possibility is there of its being sent abroad?"
- (2) "Impossible to give you any contact in Rio de Janeiro. As a last extremity, proceed to the south and contact the individual whose name you already have."

From the last message we concluded that with the help of the RID the German spies in the various cells operating in Rio and vicinity had been cleared out or silenced.

Soon after, the Brazilians abandoned the use of this counter-espionage station; however, the control station in Germany was heard by RID monitoring stations in the United States endeavoring to continue communication with it long after it had ceased operating.

This is exactly what the control station in Germany did after the FBI had discontinued the counter-espionage station on Long Island. As mentioned previously, the control station continued to call even while the trial of the spies was going on in the Brooklyn Federal Court. This to us in RID was a good sign that we had sealed the United States from espionage radio stations as the Germans had not learned of the arrest of the New York gang of spies.

The suitcase transmitter and receiver presented to me by the Brazilian government was one of those carried by the two spies who landed on the shore of San Joao de Barra from the German fishing vessel.

By mid-year of 1944, Brazil was permanently cured of its spy radio infestation. Bob Linx stayed on to direct the establishment and operation of Brazil's monitoring service patterned after that of RID and became known as "the father of Brazilian monitoring".

RID AIDS THE CHILEAN GOVERNMENT

The kind of information the German espionage headquarters in Berlin was demanding of its agents operating in Chile was previously indicated. The initial call letters of the station RID first detected in Chile was PYL, so the cell in Chile was always identified by those call letters.

The man we sent to Chile was John DeBardeleben. Prior to his arrival in Chile we had intercepted and decoded a message PYL sent to Hamburg that their agent identified as "Pedro" would be ready to test on the next day, March 9, an auxiliary transmitter for PYL, made from the radio parts purchased by Nazi agent Blume.

On March 10, RID monitors in the U.S. picked up Pedro's test transmission the first time he attempted communication with Germany. He signed the call letters GES.

DeBardeleben arrived in Valparaiso on March 19 and this was the signal for the main transmitter of PYL to be moved around. DeBardeleben spent weeks tracking its changing locations in an area of a ten-mile radius of Valparaiso. It was noted, however, that every second week a transmission would be made from a house at Avenue Alemana, 5508, Cuso Alegre. This house was owned by Guillermo Zeller, a radio technician and licensed amateur, who was often seen in the company of Hans Blume, Manager of the Valparaiso branch of the German company Transradio. In April 1941, shortly before PYL was first heard trying to contact REW, Blume had bought from a local supply store a complete set

of transmitter parts and two receivers. A tap was then placed on Zeller's telephone. The Chilean police prematurely raided Zeller's house on June 25 and their perfunctory search revealed no transmitter. DeBardeleben said he believed that Zeller had been tipped off. Another raid was made after Zeller had telephoned his agent colleagues and reported he had a narrow escape as the police had not made a good search. He had hid his transmitter in a sewing machine box.

PYL went off the air after this and nothing could be done. But a few weeks later DeBardeleben found the transmitter hidden in a store on the same street on which Zeller resided. Finally, on October 23, most of the agents of the PYL organization were arrested; however, the man who actually operated the main transmitter and operator Pedro had disappeared. In the meantime, DeBardeleben and another one of RID engineers were sent to Argentina.

William Fellows, one of the RID engineers who had aided in developing the aperiodic receiver, was sent to Chile to take DeBardeleben's place. Almost a year after the incomplete capture of the PYL ring in Valparaiso, three different RID operators at widely scattered monitoring stations intercepted a new station with the call letters PQZ. All three noted on their intercept copy that the "fist" of the operator resembled that of Pedro, who had signed the call letters GES when using the standby PYL transmitter made from the parts purchased by Agent Blume. A nationwide alert on the RID monitoring network obtained bearings on PQZ during his next schedule which produced a fix indicating the location as Santiago, Chile.

William Fellows was immediately dispatched orders to track down the location of PQZ. Because of short transmissions Fellows had a difficult time obtaining sufficient bearings to produce a good fix on the house in which the transmitter was located. One night while doing a little footwork in the area Fellows had bracketed with his bearings, long after the lights had gone out in surrounding houses, Fellows detected a trace of light seeping through a corner of a window on the second story of a house. During daylight of the next day a discreet investigation revealed a small wire running from the window in which the light had been detected to a tree in the backyard. Now the pursuit was getting hot. Fellows played the game carefully and when the next time the signal came on the air his direction finder bearings confirmed the location of the transmitter. So, with considerable satisfaction, the operator Pedro, who had been in hiding for a year, a graduate spy of the Hamburg School, and who also had the effrontery to use my own initials for the call letters of his clandestine transmitter was arrested and his equipment seized. This case was an excellent example of the proficiency of the RID radio operators as three of them, at widely different locations, advised that the operator signing PQZ had the same fist or sending characteristics as the one who had operated GES a year before. Indeed it was Pedro. The arrest of Pedro and associates was the last of radio espionage operations in Chile.

ARGENTINA – A HOT-BED OF GERMAN ESPIONAGE OPERATIONS

That Argentina was the center and hot-bed of German espionage operations in the Western Hemisphere can be seen readily from the following quotations reported on January, 1943, by the Emergency Advisory Committee for political defense to the governments of the American Republics in Resolution XVIII on the subject of Axis Espionage Activities in, Argentina.

This Resolution stated in part as follows:

“A. The Government of the United States of America has submitted to the Emergency Advisory Committee for Political Defense, for its consideration, a Memorandum dated January 4th of the current year, entitled “Axis Espionage Activities in Argentina;

“B. This Memorandum reveals the existence of well-organized and extremely active groups of Axis espionage agents who are using one of the American Republics as a base of operations against all of the Republics of the American Continent, in flagrant violation and disregard of the most elementary standards of conduct between nations which maintain friendly relations;

“C. This document further reveals that these espionage groups are organized, directed and financed by German diplomatic representatives accredited to the Argentine Republic, who have also undertaken the organization, direction and coordination of the different groups or cells of agents and their accomplices, engaged in subversive activities in favor and for the interest of the totalitarian States, so that these diplomatic representatives constitute an integral part of the German espionage system, operating in America under the orders and instructions of the German High Command.”

Resolution XVIII goes on to state:

“The information demonstrates that after the rupture of diplomatic relations with the Axis by various countries of Latin America, the Axis began to use Argentina as the base of its espionage and sabotage activities against all the American nations. It has been established that from this base of operations the Germans have spread the net of their subversive organization to at least ten American countries; and that as a result of their work a large number of American lives, considerable American property, and the lives and property of the citizens and countries of the United Nations which are engaged in the struggle against the totalitarian power have been lost.”

“---Totalitarian diplomats and agents have employed every imaginable artifice and technique to achieve their objective of undermining and destroying the defense and security of the peoples of the American Republics. In addition to the methods already mentioned – that is to say, espionage, clandestine radio, the mails and telecommunications, secret ink, etc., the following may be cited, among many others, written and oral propaganda, sabotage, clandestine entry and exit, either by secretly crossing frontiers that are not under patrol or by using fraudulent passports, certificates or other documents of identity, and abuse of nationality.”

“---A number of ranking espionage agents enjoy diplomatic status and are actually with the German Embassies. This is especially true of the military and naval

attaches. It is also worth noting that some of the principal espionage agents are Nazi party leaders and known as such. The German Embassies have not hesitated to use clandestine radio stations and it is definitely known that the German Embassy in Rio de Janeiro employed a station belonging to Group II in sending messages to the Foreign Office in Berlin."

Since Axis agents in Argentina had free use of diplomatic channels and could send unlimited coded messages through the regular commercial radiotelegraph and telephone circuits and by diplomatic pouch as well as secret writing, they had no need to establish clandestine radio stations. However, after the exposure of the situation in Brazil, Chile, and Argentina, the Argentine Government placed restrictions on the number of coded messages that could be sent through commercial radio and cable circuits and eventually prohibited transmission of all coded messages.

These restrictions forced the Nazis in Argentina to resort to the use of clandestine radio stations which did not escape detection by the RID whose direction finders in the United States established the location of several near Buenos Aires, and the messages transmitted to and from Germany were copied daily and furnished the appropriate agencies of our government as rapidly as received. Moreover, the Germans transmitted traffic by a one-way naval circuit from Germany to their Embassy in Buenos Aires.

During the month of December 1943, RID intercepted coded messages containing over 10,000 groups of five letters each, transmitted by Axis clandestine transmitters to the German High Command. On April 17th a clandestine transmitter in Argentina sent 2,325 coded groups, establishing a new record for espionage radio traffic from that country for a single day.

During May 1943, the State Department requested that the FCC furnish personnel and equipment to be used in Argentina to locate these clandestine transmitters. Two RID men, Mr. J.F. DeBardeleben, who formerly performed meritorious service in Chile, and Francis McDermott of the Departmental Staff of RID, were selected for this assignment.

Considerable difficulty was experienced by our men operating in Argentina because of the political situation that existed at the time. All automobiles were under very strict surveillance on the part of the police, especially those which operated outside the city and thus hindered their field operations. Sufficient evidence was gained, however, through studies made by RID and our men operating in Argentina to confirm the existence of at least six transmitters. The Nazi technicians resorted to every trick of the trade in order to prevent their being located. They would operate a transmitter at a certain location one day and when our men would move in on that location as a result of radio direction finding bearings, they would find that on a following day the transmissions were made on a transmitter many miles farther away.

During one phase of our operations in Argentina, decoded cipher messages indicated that Nazi big-wigs planned to flee Germany via submarine. They were supposed to have been entering Argentina by night landings along the southern coast between Mar del

Plata and Bahia Blanca. Accordingly, DeBardeleben arranged for another agent to accompany him and they went to a beach resort near Mar del Plata where they set up a monitoring watch in a cabana or on the waterfront.

After two weeks of continuous monitoring, this detail was discontinued as no suspicious transmissions were heard. The story of Nazi submarine landings was later verified by several writers after the war; so it must be assumed that they landed farther south along the coast or that they came ashore under orders to maintain radio silence.

Messages were dispatched to DeBardeleben and McDermott by using a special cipher worked out by Al McIntosh for this circuit. These messages were transmitted "blind", i.e., one way from a RID transmitter with no acknowledgement as they had no transmitters available to them in Argentina.

To escape apprehension by Argentina police or agents subsidized by the Nazis, they changed cars frequently and usually carried extra gas cans of gasoline to avoid too frequent stops at gasoline filling stations. This was important as gasoline was rationed there also and coupons were needed to buy gasoline. To keep their cars supplied, coupons were obtained by other agents from black market sources.

Despite their attempts to keep their operations under cover, Nazi-Argentina agents eventually discovered their real mission and they were shot at twice during evening patrols, while trying to locate one of the several clandestine radio transmitters operated by Nazi agents.

An added handicap was the thick fog which frequently covered the coastal areas. One man tried riding on the fender with a strong flashlight to assist the driver in keeping the car out of the ditches along the roads. McDermott reported that the fog was as dense as any he had encountered including London.

I was informed that the radio operators of the interned crew of the German GRAF SPEE had aided the embassy in their clandestine radio operations.

It was only by very careful analysis of the characteristics of the "fists" of the operators and technical aspects of the emissions that we were enabled to determine exactly how many transmitters were being used by the German agents in the vicinity of Buenos Aires.

At one time the German High Command transmitted information "blind" (one way) to the German Embassy by means of the "Hellesreiber" system, which prints on tape the English letters of the words of the message. It was fortunate that RID had equipment which enabled it to intercept and print these transmissions as the material was urgently requested by the Coast Guard Cryptographic Laboratory at the Navy Department.

Through information obtained from the Embassy and their contacts as well as by monitoring, it was concluded that no transmitter was being operated at the German Embassy itself. However, a store of radio parts was kept in the Embassy, including parts

which were used in the transmitters operated with the call letters LIR and MAX in Brazil. The German Embassy forced the Argentine police to return these parts after the trial and expulsion of the German Naval Attache, Captain Neibuhr, who was deported to Germany after his espionage work in Argentina.

Finally, when the Argentine situation took a turn for the worse from the Allied Governments' standpoint, it was decided by the State Department to withdraw our men from that country and store the equipment until such time as the full cooperation of the Argentine Government could be secured in suppressing the activity of the clandestine radio transmitters.

In fact, the Argentine Government was about to charge our men with espionage. Accordingly on the advice of the State Department we had to get them out of the country in a hurry.

OPERATION CUBA – A SPY IS EXECUTED

On March 21, 1942, Acting Secretary of State, Sumner Welles, addressed a communication to Chairman Fly of the FCC, wherein he stated:

"My attention has been invited by the authorities of the Cuban Government to the urgent and critical necessity of discovering and suppressing a number of clandestine radio transmitters which are now conveying information to enemy submarines concerning the movement of merchant vessels on the coast of Cuba.

"I should, therefore, appreciate it if you would be good enough to inform me whether the Federal Communications Commission could make available immediately a mobile direction finder detecting apparatus, such as are now used in the United States in discovering unauthorized radio transmitting stations."

In accordance with this request and further exchange of correspondence, a representative of the Radio Intelligence Division, Monitoring Officer Charles B. Hogg, was detailed to Cuba, arriving there during the later part of April, to assist in locating any clandestine transmitters which might be operated in that Republic.

During his detail to Cuba, Hogg discovered that a group of nine stations were being operated by an official of the Cuban Government without the authority of that Government and that messages were being exchanged relating to the movement of vessels and shipments of cargoes in a very simple code, which should be decipherable by anyone having an elementary knowledge of cryptography. This official was eventually ousted and all the stations closed. Mr. Hogg subsequently returned to the United States.

In August of 1942, at the request of the State Department Monitoring Officer Hogg was again sent to Cuba and continued his activities in connection with the detection of clandestine radio stations. During this detail Mr. Hogg assisted the government in establishing direction finders and monitoring stations in connection with the plans for hemispheric defense.

An interesting development occurred during Mr. Hogg's second assignment to Cuba. The Cuban police arrested Heinz August Luning and charged him with being a Nazi spy. Mr. Hogg reported that this arrest was made prematurely without notifying the Legal Attache of the Embassy who represented the FBI. Evidence of Luning's activities was scattered through British, American and Cuban censorship who had found secret writing on letters addressed to Sweden and Portugal. After his arrest a radio transmitter and receiver were found in his rooms. During Luning's incarceration, Hogg interviewed him and found him capable of speaking three languages – German, Spanish and English – with equal facility. He had spent some time previously in South America and carried a Honduran passport with a Cuban visa issued in Portugal. He stated that he had been trained in the German Espionage School and the course included secret writing and cryptography. In addition to being provided with a forged passport, he was furnished \$3000.00 in American money and instructions on how to conduct himself while in Cuba. He was told that if it became absolutely necessary to hide, he was to go to the Spanish Embassy, but only as a last resort. During the period of his activity in Havana, from April 1942 until September 1942, he sent various communications giving information regarding shipments and airplanes in secret writing. He corresponded with Carlos Robertson in Chile, and they both were expected to set up radio transmitters for exchange of information. Even after he had been arrested a cable was intercepted from Chile, instructing him to start his transmitter on 20895 kcs, and the answering station in Chile would reply on 11240 kcs. A precise examination of his radio transmitter revealed that it was incapable of generating radio frequency oscillations and, moreover, because of his lack of technical ability and proper materials it appeared doubtful if he would have ever placed it on the air himself. He was subsequently tried by the Havana Urgency Court, convicted and later executed by a firing squad. To my knowledge, he was the only spy other than the Nazi saboteurs who landed on Long Island who was executed during the war.

This case serves only to show further the attempts of the German high Command, through espionage and by clandestine radio circuits, to secure military information.

At the request of the United States Office of Censorship, the Radio Intelligence Division, aided by its representative, Mr. Hogg, in Cuba, provided a surveillance over the communications originating from the Cuban Wireless Corporation, a subsidiary of Galban y Lobos Company of Havana. The Cuban Government had authorized this company to transmit communications "blind" (one way) to both Puerto Rico and a New York office. Incidentally these transmissions were made in the American Morse Code as contrasted with the Continental Code, the latter which is used by international agreement. This, of course, necessitated that the intercept officers assigned to these circuits be capable of receiving the American Morse Code. The Office of Censorship informed RID that its intercepts revealed indiscreet transmissions relating to movement of ships and cargoes.

SOUTH OF THE RIO GRANDE

My story of Radio Intelligence in World War I narrated how the high powered longwave Mexican radio station located at Chapultepec had exchanged considerable clandestine diplomatic traffic with Nauen, Germany (PQZ). Yardley in his book "The Black Chamber" revealed the magnitude of this operation.

In the latter part of 1940, as the war clouds moved nearer our hemisphere, RID was requested to monitor the transmissions of the Mexican stations as it was indicated that espionage information was being transmitted to Germany, through this commercial channel, by means of coded messages. In fact, one German spy, a licensee of an amateur station was sending his messages through the Chapultepec station merely by indicating on the messages that they were in a private code. At that time the Mexican Government made little or no attempt to censor international radiotelegraph communications.

In January 1944(sic), a clandestine station was intercepted by RID monitors and our direction finders pointed to its location near Mexico City. While monitoring this station it was heard to communicate at times with the FBI counter-espionage station on Long Island. All intercepts were furnished the FBI at their request. The nature of the messages was never revealed to the RID.

NAZI SPIES OPERATE IN AFRICA

The story of RID's detection of Nazi espionage radio stations in Africa is one of the most intriguing operations the Division engaged in.

RID was, as far as it could be determined, the first organization to detect the operation of the Nazi spy rings in this continent, mostly along the western coast. When we reported through channels to our English allies how the German Agents were reporting the arrival and departure of British Naval and merchant ships, the counterpart of RID in England, the Radio Security Service of the Signal Corps requested the establishment of regular liaison and exchange of information on the espionage operations of the Nazis

German secret agents, like in other countries, were landed by submarine and set up shortwave transmitters in neutral countries and colonies of Africa. They reported to Germany by shortwave radio, convoy arrivals and departures and movements of allied troops, supplies and aircraft. In some instances, the German High Command inter- (remainder of sentence or paragraph not available).

This was made known immediately to the Director of Naval Communications. He was astonished that we were so proficient in our long range battle with the Nazi spy system and said he was unaware of Nazi espionage operations that were going on in Africa.

Later messages from the Nazi spy in West Africa indicated he picked up a lot of his information by trips into British colonies.

An English language translation of a Portuguese language code message, which was sent to BX7 in Lisbon, Portugal, from West Africa station NPD via clandestine radio on December 4, 1941, read as follows:

"Armando reports that the English Consul received a long enciphered telegram relative to enforcing a strict vigilance against espionage, officials claimed English still command Cape Verde submarine approach of ten convoy ships, large troops, ammunition and tanks. However, informer does not know if they remain at Lagos or Freetown and Bathurst".

Below is a summary of other clandestine stations, which were detected by RID and located in Africa as well as the Canary Islands.

MAX - BDW

Early in 1941 RID monitors intercepted the transmissions of a station using the call MAX. Our bearings showed that MAX was in West Africa, and it was later established

that this station was actually operated as an espionage outlet from Rio De Oro, which is Spanish territory. MAX communicated with Paris. Copies of intercepts of the transmissions of this station were continuously furnished the Army, Navy and FBI for months.

Still another clandestine radio was operated by the Germans from a point farther North, near Cabo Judy. This station communicated with Lorient, the German submarine base in France.

At times in the past, stations in the Canary Islands were active, as well other circuits which operated between two points in Africa without attempting to contact Europe directly. That is, they fed their traffic to one of the more powerful clandestine radios from whence it was relayed on to Germany.

For a short time, a clandestine radio circuit once was in operation between Spanish Guinea and Madrid. The Madrid control being the same station that was in 24 hour a day contact with Berlin on the main European net.

CASE E43 CISNEROS TO ROME

Italian controlled spies in Cisneros operated a clandestine radio station there and communicated daily with Rome until the day our troops landed in Italy. After that date, careful monitoring conclusively established that the Cisnero transmitter was no longer in operation (although other transmitters were still operating from Spanish territory).

This circuit originally employed the calls UGI and ULP. Later they went over to the special call sign system favored by Italian clandestine circuits. This particular type of call letter selection made it possible for us to predict the calls which would be used after only ten days of observations of the new system.

Information regarding this Italian espionage station was furnished regularly to the OSS and to the State Department. In addition, copies of the intercepts of its transmissions were made available to the FBI, and the Army and Navy.

A copy of schedule and call list employed on this circuit until its cessation is attached. (Note -This information has not been found).

This is a typical example of the result of painstaking analysis made by RID experts of espionage radio messages transmitted by control and out stations of the German High Command clandestine networks.

CASABLANCA STATION AFD

A station operated by the German Armistice Commission known as AFD operated in Casablanca for months until the day our troops landed in Africa on November 10, 1942. On that day AFD operated practically continuously and sent more five letter code

messages than had been sent in any two days previously. The transmissions ceased as the result of overseas radio intelligence specialists operated by the OSS going right to the station, as soon as the way was opened by our Naval and Army forces, and putting it out of operation. The last message transmitted by this station was intercepted by our monitoring station in North Scituate, R.I., supervised by Tom Cave.

INVESTIGATIONS OF ALLEGED SUBVERSIVE ACTIVITY

One of the most important functions of RID was the quick and thorough investigation of alleged subversive radio activity. These complaints were received from the general public, federal, state and municipal agencies of government. Lewis North was in charge of this section of RID. He and his staff performed their duties with a high degree of proficiency. Often an investigation would develop into an amusing episode as this chapter will reveal.

It will be realized that during war time the public is suspicious of unusual goings on, such as a small gathering of a few cars at a remote farmhouse with registration plates of an outside state, interference to radio reception when it takes on a sequence like dots and dashes and even the coming and going of their neighbors at unusual hours.

An unusual antenna, a dim light in a room of a house well into the wee hours of the morning seemed always to lead someone to report it to the FBI, police, or the FCC, or at times, to all three agencies. Then there are the neurotic folks who report radio signals going through their body, transmitted by enemy agents, or imagining a gang that has designs on themselves and/or their families. Of course, each and every case had to be investigated. This is when the RID men went out in their prowler cars in all kinds of weather maintaining a listening watch and combing the radio spectrum for a suspicious local signal. Even the RID men themselves parked in a remote area and often came under suspicion.

RID MOBILE UNITS LIKENED TO FIRE ENGINES

The primary purpose of RID mobile units equipped with direction finders can be likened to that of fire engines making a run as fast as possible to knock down a fire and prevent a conflagration.

Consider the time on October 30, 1938, when Orson Welles' drama on the "Mercury Theater on the Air" was enacted over the radio, throwing panic into thousands of households. In this case, an imaginary invasion of men from Mars landing on our soil was realistically portrayed over a radio network "which caused widespread excitement, terror and fright." The public that heard the program believed it true and many fled from their homes.

But consider the case should an enemy fifth columnist establish such a station in an American city or town. The local state or sheriff's offices are unprepared to take action in such cases. They have no equipment to locate such a station. Neither is it within their jurisdiction to locate an illegal radio station. This responsibility lies within the authority imposed by the Communications Act of 1934 on the Federal Communications Commission.

Accordingly, the RID mobile units were distributed and manned by experts to make a quick run and, as fast as possible, put such a dangerous station out of operation.

I recall that, during the war, officers of the United States Physiological Warfare called on me to furnish them a transcript of the program. I wondered if they had planned something of the same order to demoralize the enemy.

PROWL CARS

The prowl cars fitted with their loop direction finders, receivers and recorders were all associated with a primary and secondary monitoring station. These were the units and the men who were dispatched to the area of a long range direction finding "fix" of a suspected station or a source of interference to a radio service. A "fix" is the "cocked hat" area embraced by the projection of the bearings on a map as they are obtained from the Adcock high-frequency direction finders. The loop direction finders like those on ships and aircraft are useful when one comes in range of the ground wave component of a radio transmitter, generally an area from four to five miles from the shortwave transmitter and often shorter depending on the frequency utilized by the transmitter. The Adcock direction finder is used to take bearings on the skywave component of the radio emission, i.e., the energy that travels skyward and is reflected back to earth many hundreds of miles from the source of the signal. Loop direction finders are useless on skywave signals as they produce erroneous bearings. Accordingly, the mobile units with the loop direction finders are the ones like the dogs on a hunt, that move in to make the kill and apprehend the operators of illicit transmitters or discover the source of interference, such as a diathermy machine, arc welder, or even a transmitter someone failed to shut off after making a transmission.

It is not unusual for a RID mobile unit to set up extra equipment in a motel or an apartment for the purpose of providing surveillance over a suspect.

THE MUTE RADIO COP

Consider the case of Manfred Zapp, a Nazi propagandist, associated with the German Embassy in Washington before we declared war in 1941. Zapp, among other things, was alleged to be a ladies' man as well as a propagandist. It was reported that he might be using a radio station clandestinely to communicate with Germany or some confederates elsewhere. We occupied an apartment in the suburbs of Washington. RID, through the cooperation of a Navy officer, who lived in the same block as Zapp, permitted us to establish a monitoring unit in his basement.

RID had only recently purchased from a Dr. Wallis of France a panoramic radio receiver which he was trying to introduce in this country. A panoramic receiver is one equipped with a cathode ray oscilloscope having a large tube similar to that of a television receiver and which, on the face of it, will display radio signals within the range of frequencies to which it is set. The tuning is done electronically and permits a

portion of the radio spectrum to be scanned continuously while another portion of the spectrum is being scanned manually by the operator on duty. It is possible for the operator of an illegal station to transmit messages in a different portion of the radio spectrum than that which is being covered manually at the time and the signals would go unnoticed. In this case, if a nearby transmitter goes on the air, the signal from it, if within the frequency range of the panoramic receiver, will produce a display in the cathode ray tube of such amplitude and intensity as compared to signals coming from a distance that it can be quickly noted; sort of a mute radio cop. The operator on duty can then immediately tune the receiver he is operating manually to the frequency of that shown with such clarity on the panoramic device and proceed to copy and identify the signals.

As previously mentioned, This was just before we went to war with Germany. One day our operator on watch was rewarded with a display on his receiver that startled him. The spikes or image of the signal stood head and shoulders above the general run of signals that were dancing up and down on the face of the cathode ray tube. Man the chase was getting hot! The RID man quickly adjusted his manually operated receiver to the frequency of the strong signal showing on the face of the silent cop. He listened and in short order identified it as coming from an amateur station. Looking call letters up in his Amateur Radio Callbook of all licensed stations, which is furnished every monitoring unit, he quickly discovered it was a licensed ham operator located in the adjoining block. Amateur radio stations were still on the air and were not closed down until war was declared. In this instance, the panoramic receiver had produced the results for which RID had purchased it. After the war Dr. Wallis furnished RID with a letter, stating it was the first panoramic receiver purchased by the United States government for counter-espionage purposes.

A THREATENED INVASION OF MAINE BY NAZI SEAPLANES

That which follows is an excellent example of how one's imagination can conjure up a plot when it is kindled by a threat of war.

During the early part of 1940, the Chief Signal Officer of the Army, General Mabourgne advised the then Chairman of the Federal Communications Commission, J. Lawrence Fly, that his office had received a report from a man in a border town of northern Maine to the effect that a group of Germans were improving the facilities on their place and an adjacent lake in preparation for a planned landing place for Nazi seaplanes.

The General advised that the FCC should make an immediate investigation as it was hinted that a radio beacon had been installed to aid the ships to their landing place. Mr. Fly deemed the case of sufficient importance that he requested that I make the investigation myself. Since this was pre-RID, I immediately got in touch with Mr. Charles Kolster, the Supervisor of the First Radio District, which included Maine, and told him to prepare a car with Maine undercover plates and plan to go with me to the Maine border town.

On arrival, rather than to remain in town and possibly excite suspicion, we crossed over into Canada and made our headquarters at a motel. The Canadian officials were very cooperative and were sworn to secrecy with respect to the nature of our mission. After showing our credentials, we mentioned only that we wanted to do some radio surveillance work in a case of alleged espionage.

We monitored the radio spectrum through the night with the equipment concealed in our car, but picked up no suspicious signals of local origin. After refreshing ourselves, we cased the suspected place and the lake and failed to develop anything indicative of preparations for landings of seaplanes. Some improvements to landscaping and a wharf had been made by the owner of the adjacent estate. After a thorough surveillance, we decided the case was a dud as far as the use of an illegal radio station was concerned.

We then contacted the informer, an immigration officer, and soon developed the origin of the complaint.

The officer said he had noticed some unusual activity and that his neighbors had noted it, too, including voices speaking German and English with decided accents. He told us the name of the man who owned the estate bordering on the lake and said he entertained German speaking folks there, particularly on weekends and that the man himself made frequent trips out of state. We then interviewed the man himself, who was very cooperative and showed us throughout his buildings and facilities. It was revealed that he had married a former German-born opera singer from New York and that they often entertained German-speaking folks from that city. He also advised that his investments required him to take frequent trips to New York City.

This case really shows how neighbors can place one under a cloud of suspicion when the nation is threatened by an enemy.

On my return to Washington, I wrote the case up and submitted to the Chief Signal Officer over the signature of Chairman Fly.

PATROLLING THE COASTAL AREAS

An important function performed by the investigative section of RID was the surveillance work of the mobile units along and close to the coastal areas of our country. This function was performed at the specific request of the Army and Navy, as well as in discharging our own responsibility to quickly locate illegal stations and apprehend the operators. As the record will show, RID could, at its fixed monitoring stations, quickly intercept and locate the source of suspicious radio signals having long range communication characteristics, but it could not at these locations do much toward policing the ether on the so-called very high and ultra high frequencies, which by their very nature have short range characteristics. In addition, these signals could be confined to a narrow beam such as a search light beam and projected to an enemy submarine lurking near the coast. It was for this very reason that the coastal mobile units were utilized for this assignment. Special receivers classified at the time and furnished by the

military were used for this purpose. It was the thought of many military commanders that was the way the enemy submarines obtained their information about ship sailings, defense production, landing of spies, and other essential information from agents on shore.

While RID mobile units cruised thousands of miles up and down the East, West, and Gulf coasts, it did not locate a single enemy agent engaged in this form of espionage by radio. This was understandable to many of us in RID when we learned that, in general, the Nazi espionage agents did not operate their transmitters in this fashion in the Western Hemisphere.

To the best of our knowledge, at the time, we knew that the information obtained by enemy agents, in this continent, operating transmitters having long range characteristics were sent to control stations in Berlin, Hamburg, Lisbon, and other cities, where it was evaluated and the essential information transmitted to German submarines from the high powered naval stations when the ships surfaced on schedule. Witness the case of the sailing of the Queen Mary from Rio wherein three different spies sent out the time of departure, as related in another chapter. In this case, the spies in Brazil sent their information directly to espionage headquarters in Germany. However, the men in these mobile patrols encountered some thrilling experiences.

FARMER WITH A SHOTGUN

A mobile unit in charge of Monitoring Officer Maury Blum, who first incidentally was the officer in charge of the mobile unit which picked up the signals from the German Embassy transmitter in Washington, as related in a previous chapter, was on patrol one night on the Eastern Shore of Maryland. The car was parked in a lonely place beyond the highway and Blum and his companion were busily engaged tuning their VHF receiver that operated above 30,000 kcs when they heard an outside noise and looked up into the ace of a double-barrel shotgun leveled at them over the window of their car, which was partially opened. While each monitoring officer carried a 38 caliber police special, Blum and his companion were speechless for a moment.

It turned out that the fellow with the shotgun was a nearby farmer and he had become suspicious of the car parked in his field at such an hour of the night. It took a lot of fast talking with teeth chattering before Blum could convince the farmer they were not enemy agents, but agents of the United States Government.

A MOBILE UNIT AND CREW GET A FREE RIDE

A unit of the South Atlantic area patrolling on the North Carolina coast was surprised to find itself surrounded by soldiers with fixed bayonets.

Despite the fact that each man had in his possession an FCC I.D. folder, plus a gold badge with the words "Radio Intelligence Division" FCC – U.S. Government, and in addition a special military identification issued over the signature of the Commanding

Officer of the area, the N.C.O. in charge sent for a large truck and loaded the mobile unit and men into it and took them to headquarters. This N.C.O. saw his duty and performed it. He took nothing for granted. It took a long distance call to my office and one to the military before the unit was released for duty.

A NORTH CAROLINA PATROL

The following is a verbatim report of RID Monitoring Officer, Gene Brizendine, recounting his experience while on a coastal patrol assignment that took him and his associate Wilson to Cape Hatteras:

"Early in 1942, Carl Wilson and I were dispatched to the East Coast, driving the direction-finder Hudson sedan. We were headed on what was to be a most interesting assignment. We later learned that we would literally live by night, in the custom-built sedan vehicle.....for several months. We were assigned the entire cut-up coastline of North Carolina, to monitor Nazi submarine communications with shore-based agents. Quarters for sleeping in the daytime were established in the home of one Mr. Ives, a retired cotton broker, in New Bern.

We contacted the Army Intelligence at the local military installation and were briefed on various facets of local activities. Hundreds of sinkings along Cape Hatteras were marked by colored pins on the maps.

We found it standard practice at both Carolina and Atlantic beaches to provide a bucket of gasoline for bathers to wash off the diesel oil after a swim.

Our strategy was to drive our sedan load of detection equipment out on the reefs and islands, as near as possible to the submarines.

While patrolling off Albemarle Sound we were suddenly concerned with a loud unfamiliar sound coming in on 116 megacycles. As we explored the possible source near Kitty Hawk, we came upon a 200-foot tower, with a rotating antenna. Below the antenna, we saw the operator, who also rotated with the antenna. We had found our first radar. We were greeted by drawn submachine guns in U.S. military hands, at the base of the tower. The air was less tense, after our identification folders were studied. The young Signal Corps officer, a MIT graduate, assured us we could inspect his installation if necessary. We thanked him as we already had enough secrets to keep.

Strict blackout was enforced, however, the white sand of the dunes and beaches reflected any moon and starlight, and we soon were able to make reasonable speed. The mosquitoes were outstanding.

The sedan license plates were changed to match the area in which we were monitoring, and the antennas and direction finder loop were removed. The bank of receiving equipment, along the left rear door, was covered with a gray blanket, to lessen suspicion. With all precaution, however, fantastic stories of our movements sometimes arose in the area of submarine activity.

The armed services cooperated closely, and sometimes provided an armed guard to escort us through the strong military defenses along the capes and islands. On one occasion the soldier with his inseparable rifle rode the right front seat all night with us.

The very next day when we were buying gasoline, the filling station operator told us an account of how the Germans had a soldier tied up in a big black automobile out on the Cape last night.

Sometimes we were handicapped by the reluctance of other services to provide helpful information. For example, the Navy advised us of submarine activity and possible re-fueling in Pamlico Sound. They declined to give the vital data of the time and frequency of the communications. They would only say: "Between 9 and 12 megacycles".

In our explorations, we also located suspicious activity on Hickory Point in the form of a radio-equipped panel truck, parked in a remote wooded spot. We felt that this was a unit of the FBI, and asked them for identification. This was declined. We persisted, and with possible help from our Washington office, they claimed the vehicle as theirs.

Near the New Bern base on the Neuse River outlet to Pamlico Sound, the old three-story house of Morgan the Pirate stands. From the poop deck on top, he was said to have watched for his ships returning with the spoils of their pirating. He did to the shipping what the Nazis were trying to do, but on a larger scale, to the U.S.A.

The language in this historical area was distinctive and was called "deep sea talk".....to me, it seemed to have a touch of British accent. For example, if a person went downtown only a few minutes, he would say "I almost went to town".

I had never seen Cape Hatteras, the graveyard of ships, but as a child I was fascinated by stories of the grim tropical storms and the great hazards fought by ships passing this crucial point. Now the Nazis were taking full advantage.

When 15, I had learned the radio code by copying weather reports transmitted by the Navy's station NAA. The reports always contained the phrase "Hatteras Light". I could picture the great lighthouse, as I copied the storm warnings, and hoped to visit it some day. My childhood wish was to be granted, under surprising conditions. From the town of Atlantic, we were instructed by a coded message from our Chief, Mr. Sterling, to proceed by boat to Cape Hatteras. The purpose was not known to me. Some other civilians also boarded the Coast Guard craft. The water was choppy, but the rhythmic rise and fall of the boat caused drowsiness. As darkness fell, I roused and saw lights flashing past my face. I learned from my neighbor that the boat was self-bailing, and we were going through a school of fluorescent fish. The light patterns showed right through the open slots in the side of the boat. At that time I had little admiration for boats full of holes, and forgot about sleep.

We landed on the unique island of Ocracoke, and found that the people were intermarried, and many bore the same surname. Wild horses and wild turkeys roamed the remote parts of the island.

As we rode toward Cape Hatteras to the north, we learned that the roads were of fine, loose sand, and to improve traction, the few vehicles there ran their tires half-inflated. The tires seldom wore out.

Apparently we arrived at the Cape the following evening. I recall exploring the huge lighthouse and examining its massive fresnel lens. This was like a vacation trip!

Suddenly, we were told the purpose of our mission...the civilians converging on the Cape were members of Naval Intelligence, Border Patrol, the FBI, Coast Guard Intelligence and....FCC's Radio Intelligence Division. No one was identified

individually. Word was passed that the Nazis were to land another load of agents from a submarine that night and we had been selected to stop them.

After this briefing, our strange group went single file, past a large, round table covered with 45 automatics. After selecting a weapon, each man was assigned to patrol a section of the beach. My section lay directly beside the towering lighthouse of my boyhood vision. Straining our eyes to see any dark form emerge from the waves, we spent an anxious all-night vigil.

At 5 o'clock, shots were heard down the beach. The first light of dawn was just breaking over the Atlantic, and we ran in the direction of the gunfire. One of our group was shooting at sand crabs ...the Nazis had changed their landing plans.

The Captain off the Hatteras lightship accompanied us on the boat back to Atlantic. He was enroute to his home in Boston, for a well-deserved rest, after 3 months of lonely duty on the anchored lightship.

After three months of Atlantic Patrol duty, Carl and I returned to Little Rock and drew our entire per diem for the tour."

STATE POLICE SURROUND OUR STATION

When RID first went into operation as the N.D.O., National Defense Operations of FCC, with the assistance of the Amateur Radio Relay League, we obtained a house in a sparsely settled area near Portland, Connecticut, for a monitoring station. Several RID men from other states were ordered to report there for duty. Most of the men traveled in their own cars. One day, the monitoring officer in charge, himself an officer of a police force of a large city in Ohio, who had taken leave to sign up with RID, found his unit surrounded by a detail of Connecticut State Police.

Residents of the area had become suspicious of the several cars with out-of-state license plates coming and going and parked at all hours of the day and night at the monitoring station location, as well as being suspicious of its several antennas and had reported their suspicions to the state police. Once the situation was explained, the state police were very cooperative in guarding the station when on patrols. The fault in this case was my own and it led immediately to the issuance of a directive to the officer in charge of each unit to immediately notify the FBI, State and local police when they activated a new unit, as well as those already in operation.

ILLEGAL OPERATION BY JAPANESE INTERNED AT TULE LAKE, CALIFORNIA

Lieutenant General Clarence DeWitt, Commanding Officer of the Western Defense Command embracing the United States West Coast, including Alaska until it was made a separate command, was very suspicious of the Japanese on the West Coast at the time of the attack. As result, many of the Japanese on the West Coast were interned in a camp established away from the coast and in the Nine Corp Area at Tule, California under the jurisdiction of the War Relocation Authority.

In my conference with the General, who by the way at my suggestion, furnished military funds to establish a radio intelligence center at San Francisco under RID supervision and with military officers assigned to duty there, had informed me that he did not trust the internees and he feared they would set up illegal radio stations within their camps. Accordingly, we were requested to provide a radio surveillance over the camp. I informed the General that RID did not have sufficient personnel to do this continuously, but we would make checks from time to time when our mobile units were in the area. Also, that we would install some of our Aperiodic receivers we had developed and should they sound off, the guards at the camp could go into action as well as notifying our nearest monitoring unit.

The General's suspicions were not groundless and one day on a mobile unit patrol of the camp, a receiver triggered off. The Aperiodic receivers were designed by two RID engineers, James Veatch and William Fellows. By Aperiodic, it is meant that they would respond to any frequency without the necessity of tuning or adjusting the receiver to a specific frequency. They were made insensitive except to strong signals, such as those emanating from a radio transmitter in the immediate vicinity where they were installed for use.

The War Relocation Board had provided radio receivers and record players for the internees. An RID monitoring officer, while making patrol outside of the Tule Camp, immediately prior to a riot there, intercepted radio programs in Japanese. It developed that two of the internees had disassembled one of the receivers and made a radio transmitter from the parts. The station was quickly located by a mobile direction finder. The operator was subsequently indicted by the Federal Grand Jury and on April 10, 1944, Masandhi Hirato was sentenced to two years in a Federal prison for violation of the Communications Act of 1934. Subsequently, two operators were apprehended by RID and sentenced for operating illegal radio stations within the camp.

A translation of the broadcasts in Japanese indicated a tendency to inspire loyalty to the Japanese Army and instill hatred to China in the minds of the internees.

Later on, an attempt was made to smuggle a telegraph transmitting key into the camp: no doubt to be used with an illegal transmitter to make an outside contact.

The success of the performance of our Aperiodic receivers became known to the military and OSS and RID collaborated by furnishing circuit diagrams and other information so that these agencies could have some manufactured for their own use.

The FCC obtained a patent for Messrs. Veatch and Fellows as they had developed the receivers on their own time in their homes at my instigation. The obtaining of a patent in a case like this would allow the inventors to receive royalties on any that might be sold commercially, but not those manufactured for the Federal government.

A LIGHTHOUSE MONITORING STATION

Perhaps one of the most unusual temporary monitoring stations RID established was that placed in operation inside of Portland Head Light, one of the most photographed lighthouses on the Atlantic Coast. This lighthouse is located within the confines of Fort William, Cape Elizabeth, Maine, outside of Portland. My cousin Capt. Robert T. Sterling was the lighthouse keeper at the time and he readily cooperated with me.

An intelligence officer at the Fort, in 1942, reported to me, while visiting that area to find a location for a permanent station, that they were suspicious of a German-born physician in the vicinity, who possessed a diathermy machine and it was alleged that he was using this device for a transmitter, as it contained a radio frequency generator of several hundred watts. These machines are used to give therapeutic treatments.

To demonstrate the capabilities of a diathermy machine as a radio transmitter, we had previously made arrangements to test one at a military hospital in Vermont. It was keyed by transmitting three Morse code letters in a repeated sequence. The RID high frequency direction finding net was alerted to the frequency and time of operation and ordered to take bearings if their signals were heard. The station operators did not know the location of the machine. Bearings were obtained from several stations in the United States and as far away as Alaska and produced an excellent fix at Fort Ethan Allen, Vermont. No antenna was attached to the machine. Radiation took place mainly from the power mains as they were not filtered.

Immediately after the war started, all diathermy machines were required to be registered by hospitals and physicians with the FCC.

Al McIntosh, Chief of the Intercept Section, who had performed such brilliant work in decoding messages sent by Nazi agents from South America and other places, was assigned to the lighthouse as a special detail. Al had worked like a Trojan since Pearl Harbor, and I figured he needed a rest. I did not believe we would develop a positive case; nevertheless, nothing was taken for granted. I was certain, had there been clandestine transmissions from this doctor's place, they would, like in practically every case, have been picked up at one of the regular monitoring stations or by the mobile coastal patrols.

Al rotated his watch around the clock for a week, but nothing positive developed. When Al returned to headquarters, he said he enjoyed the detail, but didn't get much sleep when the fog horn was blasting away. He also reported that signals from some of the Nazi nets, we were covering, came in loud and clear at this oceanside monitoring station.

Because the signals came in so well from Europe along the Maine coast, we established a fixed unit at Ellsworth and later moved it to Searsport.

RACE TRACK TOUTS

Before we were engaged in World War II, reports were coming to our notice of race track tout using small transmitters concealed on their bodies and flashing signals to confederates on the outside of the tracks. It appeared at the time that in some cities bookies would accept bets beyond or right up to the time a race at some tracks was being run.

Race track touts knew this and by the use of low-powered clandestine radio stations, often concealed on the body of the operator, would report the progress and end of a race to confederates outside of the track, who by use of a high-powered transmitter or by telephone received the information and immediately placed bets. Typical of such cases was one in 1940 when RID was just getting underway and another during the war.

THE CHARLES TOWN TRACK CASE

Monitoring Officers, Johnson and Bradley, at the Huntington, West Virginia, unit received a complaint to the effect that an illegal radio transmitter was in use at the Charles Town track while the races were being run. Technical Supervisor, Charles Ellert, from the headquarters of RID was detailed to assist in the investigation.

It was soon discovered that signals in the 50-60 megacycle range were being transmitted by voice and a singing one at that. Monitoring revealed, as each race was being run, brief snatches of a popular tune of the day would be heard. It was, of course, recognized as some sort of code, denoting by each different song, the position of the leading horse, as the race progressed.

RID men with their sniffers filtering through the crowd were unable to identify anyone on the grounds or in the grandstand acting suspiciously as to lead them to believe that one was using a concealed transmitter. Nevertheless, each time a race was run, the singing tout performed his brief solo. Supervisor Ellert called me at RID headquarters and told me of the difficulties they were encountering and though if I would authorize him to buy the parts, he could assemble a small transmitter and jam each transmission, thereby necessitating the operator to move to a better location.

He also reported that they believed they had located the receiving position within eye range of the grandstand at a motel, noting what appeared to be a shortwave dipole erected outside which had a lead-in entering the motel. Mr. Ellert thought if the transmissions were jammed the receiving operator would make it known by flashing visual signals.

Authority was granted and Mr. Ellert hurried to a radio parts store in the city and purchased what was needed, and in a short time the jamming commenced. In other words, each time the tout transmitted, Mr. Ellert would adjust his transmitter to the frequency or channel used by the tout and give him a burst of interference. It worked and the RID men observed that someone in the motel was making frantic signals from a

window to the tout in the stands. Mr. Ellert figured that the operator, if in the grandstand, would try to move higher if his transmissions were not being received well. It worked. After the first burst or two, the receiving operator again signaled frantically, so again the operator moved, but to Mr. Ellert's surprise, a man came to the top row of seats and sat almost next to him. It was easy then for Mr. Ellert to clinch his case.

In the meantime, Johnson and Bradley had confirmed that there was a transmitter in the motel and it transmitted coded signals after the singing reporter did his performance. This confirmed clearly that the signals were being sent to some group in some distant city intent on beating the bookies. Time was required to obtain a search warrant and the services of the U.S. Marshall to aid in the arrest. While Mr. Bradley dashed to the nearest Marshall's office, Mr. Ellert and some of the crew let the air out of the tires of a large Packard car parked outside of the motel to delay any attempt of the illegal operators to escape. On this venture they were successful. Arrests were made and convictions obtained, but the funniest part of it all was the operators had insufficient funds to pay a fine so were lodged in jail. It was revealed that the crew in Charles Town had been employed by a doctor in Detroit who thought he could beat the bookies.

RACE TRACK TOUT RUNS AFOUL OF THE NAVY

During the early part of the war, it was determined that an illegal radio transmitter was being used at the Laurel, Maryland, track. The Navy had complained of interference to one of their very high frequency circuits operating between a high powered Navy station at Annapolis that communicated with the fleet and Naval Communications Headquarters on Constitution Avenue, Washington, D.C. Supervisor Ellert, our own Dick Tracy, was sent in to aid a crew from the primary station near Laurel. As described elsewhere, the loops of the RID direction finders were plugged in on the top of the Hudson cars when bearings were being taken and then removed so as not to attract attention when the cars were on a job. When it was desirable to take a bearing on a radio signal, the monitoring officer merely reached outside and plugged in his loop, took a bearing, removed the loop and proceeded to another location to obtain another bearing to cross with the others. In this case it was decided the best job of locating the culprit with the transmitter would be to take the car to the inside of the track. Permission was obtained from the officials of the track to do this. In this fashion, the car could move to several locations and obtain sufficient bearings to obtain a "fix" in the grandstand. In order to keep the loop plugged in continuously and not unduly attract attention while moving about the inside of the track, an orange crate was placed over the loop to conceal it. The operation was successful and the chap with a transmitter concealed around his body was quickly located.

Because it was proven that his transmissions were interfering with a wartime radio communication circuit, the judge showed the operator no leniency, and he received a stiff prison sentence.

In my long experience in enforcing the radio law, I cannot recall a single operator of an illegal radio station at a race track of having enough money to pay his bail while awaiting trial. But they still try at the big tracks from time to time.

AN ALERT PUBLIC - 'DUDS' BUT AMUSING

While many of the cases investigated by the crews of the mobile units produced positive results, a large number turned out to be "duds". As explained previously, this was due to suspicion or an imaginative mind, as the following cases will disclose.

It is well that the public is aware of the dangers of subversive activity in time of national emerge; many serious cases developed by police organizations are due to tips received from an alert and patriotic public.

RID took nothing for granted and investigated every complaint or information received.

WHO DONE IT ?

The FCC always has received its share of "crank" reports. Many of them involve reports of the reception of signals without the benefit of a radio receiver. Almost all, but not all, of these reports can be recognized as not being bona fide

One of the funniest exceptions involved a report made to one of our field offices to the effect that an elderly couple, recently moved into a newly purchased home, were being bothered with some sort of mysterious music and voices originating in their bedroom. Allegedly, this music started at 10 PM every evening when they are about to retire and continued until they went to sleep. Our field office thanked the old couple for their report and promptly dismissed it as a figment of their imagination.

Not being satisfied with the FCC's efforts, the old couple again complained. After still no further action on our part, we received a very courteous, but insistent, letter from a Congressman indicating that he thought we should pursue this matter somewhat further. We took the hint.

Two of our engineers visited the home of the elderly couple. Two were sent because it was obvious that these people might be dangerous. Promptly at 10 PM faint music and voices were heard emanating from some place in the room. After a few minutes of search, it was discovered that the sound appeared to be louder near the closet door. Opening the door made it still louder. Looking up at the ceiling, one of our men discovered a trap door which, until that moment, had remained unknown to the elderly couple.

Using a stepladder, our engineers climbed into the attic and there near the edge of the trap door opening was an old-time crystal broadcasting receiver attached to an inside antenna running back and forth on the rafters. This receiver had obviously been left

there by some previous owner of the house. It was tuned to a local broadcast station. But why did the music always start promptly at 10 PM? The answer was simple – the station shared time with another broadcast station in an adjacent state and always came on the air promptly at 10 PM.

This case was developed by Stacey Norman, who subsequently was made Assistant Chief of RID.

NET CONTROL

In the early days of the war, Lew North, Chief of the Investigative Section, received a telephone call from an Army doctor to the effect that he had knowledge of a whole network of unlicensed stations which were sending telegraph messages back and forth. He asked for an appointment, got it, and told this story.

He was previously in the Civilian Conservation Corps and had been transferred to the regular Army. During his tour of duty, he and a group of others had established a network of radio-telegraph stations. These stations were being operated without benefit of FCC licenses and the good doctor was fearful that now the United States was in the war, some of this net might be used for purposes against the best interest of this country.

It was hard to believe that a whole net of stations had gone unobserved by our monitoring system. Nevertheless, the doctor demonstrated his knowledge of code and a sufficient understanding of technical matters to indicate to Mr. North that we might have something here. The fact that the doctor indicated he had a portable station in his hotel room and would take us to it, clinched the truth of the matter as far as Mr. North was concerned. He sent one of his assistants to investigate the matter.

On reaching the doctor's room, it was found that he had connected up a telegraph key and a buzzer. The buzzer, which can act like a miniature radio transmitter was attached to the antenna terminal of a shortwave receiver, which, in turn was attached to an antenna thrown out the hotel window.

The doctor proceeded to tune in a short wave telegraph station and was able to copy its traffic. When its message was finished, he grabbed the telegraph key and sent the letter "R", which is the indication that a message has been received correctly. At about that instant, the station sent another message, which the doctor likewise acknowledged on the key and buzzer.

The doctor then tuned in other stations and similarly tried to acknowledge their transmissions with his key and buzzer system. He had utterly convinced himself that he was in actual communication with these stations, that he had indeed engaged in illegal operation and that he should make a clean breast of the whole thing.

Actually, his buzzer system had a range of only a few feet and the doctor was badly in need of medical help. We promptly informed the appropriate Army authorities who indicated they would take care of the matter and also the doctor.

WIRED WIRELESS

Because it might prove embarrassing, I am not going to mention the name of one of my own men who accidentally got in trouble with the buddies and was reported to be a "spy".

The FBI received a report of an illegal radio station located in a certain apartment house near Washington, D.C. It was found that one of my own staff lived in this apartment house. The illegal station?

It was a low-powered radio frequency oscillator coupled to the power line and was being used to communicate with four other RID engineers in a "wired wireless" or carrier current type system. There was nothing illegal about it since the signals were conducted along the line and are similar to those used by phone and power companies and campus broadcasting systems..

Nevertheless, the telegraph signal was heard in the receiver of the person occupying the next apartment, and the sound of a key was heard emanating from my man's rooms. It certainly sounded suspicious. The RID men were trying to keep their signals off the air as ham stations were off the air for the duration. They were all licensed hams.

POSITIVE IDENTIFICATION

An intelligence organization needs to practice strict discipline and security. RID was no exception.

One of our security policies involved the fact that all long-range bearings were sent to headquarters by PLT (Private Leased Line Teletypewriter System) or by radio, in a code known to the monitoring station obtaining the bearings and to master control in Washington. This prevented curious personnel at other monitoring stations from plotting bearings and learning the location of clandestine stations.

As a further security measure, each monitoring station had a special code word meaning "I am in the ground wave range of the station heard". Since our prime purpose was to ensure that we discovered any illegal stations on U.S. territory, the use of this code word, known only to the sender and to headquarters, was considered very important.

One afternoon, one of our monitoring stations sent a "primary alert". All stations tuned in on the unknown station. From the strength of the signals, I am sure that nearly all of the intercepting operators recognized that the station was here in the United States. Not only this, but it was also recognized as being a Russian military station and it was in communication with a station in Siberia!

One of our monitoring stations sent its special code word meaning it was in the "ground wave range" of the station. Excitement reigned in RID headquarters in

Washington, as well as with the engineer taking and reporting this “ground wave” range bearing. Security broke down! Monitoring control in Washington, asked on the PLT, the simple question in plain English, “How do you know?”. The monitoring station engineer reporting the coded ground wave immediately replied, “Because I can see it”. Questioned for further proof, the engineer said, “It is extremely loud with no fading and my DF is pointing continuously at a moving aircraft about ten miles away. My bearing moves with the aircraft”.

A quick check with military headquarters in Washington revealed that a Russian plane, with important Russian Generals on board, was indeed flying over our monitoring station on its way back to Russian territory. These Russian military personnel had just finished a military conference with the United States military personnel. You must remember, Russia was then one of our allies!

A good man on the job, no other than Lew North.

‘MOUTHING IT’

A fledgling pilot of the Air Force, who was on a training mission, became lost over the Cascade Mountains in Oregon. He was in radio communication with his base and RID was asked to see if we could obtain bearings on his transmissions. His signals were received strongly at several of our long-range direction finding stations, but we were unable to get him to stay on the air long enough to really give our DF men a chance to obtain a good fix.

In desperation, we asked the base control operator to have the pilot send “MO”s”. The letters “M” and “O” in Morse code are often used to distinguish a signal on which direction finding bearings are desired. They are easily recognizable even in static and interference because they are composed entirely of dashes. “M = ____ ____; O = ____ ____”.

When we were informed that the pilot had no key and did not know the Morse code, we instructed the base operator to have the pilot send the “MO’s” using his microphone switch as a key and to explain to him that, in the Morse code, the letter “M” sounds like “dah dah” and the letter “O” sounds like “dah dah dah”.

This was all that was needed to get things really mixed up. The pilot was afraid he was about out of gas, he was over wild country – but didn’t know where, he wanted to be told in which direction to fly to get out of the mountains and he was undoubtedly scared and couldn’t understand what we wanted.

For 15 minutes with no interruption, he held his microphone switch in the “on” position and spoke the syllables “dah dah”, “dah dah dah” into the mike. He almost ran out of gas, we almost ran out of bearings, the base operator almost ran out of patience, but in the end, our fix permitted the pilot to run out of the mountains to a safe landing.

ENTERTAINING THE GIRL FRIEND

This one proves that you can't always believe what you see. ----- One of our mobile units at Portland, Oregon, had been called upon to find an unlicensed station that was interfering with a government station in the 3000 kc band. As the unlicensed station transmitted nothing but music, our engineers thought it might be some sort of accidental radiation from a home phonograph oscillator being use as a record player.

The mobile unit engineers were able to obtain good bearings and to located the origin of the signal as emanating from one of three different houses. One of the houses had a long wire antenna and several transmitting type antenna insulators attached to the side of the house. Obviously, this must be the house.

But it wasn't. An elderly lady responded to the knock on her front door and explained that the antenna installation was left there a year previously by a electronics expert who had a "powerful" shortwave receiver. Inspection of the premises indicated the probable truth of her statement.

While leaving her house, one of our engineers happened to see someone quickly duck back of the window curtains in the house across the street. Our men were met on the front porch by an anxious father of a 13 year old son. The son had built a rather powerful phonograph oscillator. He found that when he attached a 50-foot wire to it that his girl friend down the street could hear it loudly on her broadcast receiver. He was playing her favorite records for her. What he didn't know was that not only was this operation a violation of Federal regulations, but alas, the third harmonic (3000 kc) of the generated frequency (1000 kc) was sufficiently strong to be heard for many miles and was seriously interfering with important Government communications.

The father saw that the equipment was quickly dismantled.

Lew North and Bob Landsburg worked together on this case before Lew came into RID headquarters as Chief of the Investigation Section.

A FOUR-LEGGED MONITORING STATION

Perhaps the first and most unique monitoring assignment of its kind was carried out on the big Island of Hawaii, in the early part of 1942, by Monitoring Officer, Mr.Kunz, who received a report indicating that some suspicious activity had been noted up in a mountain ravine and that clandestine operation of a radio transmitter by Japanese agents might be involved.

Consequently, Monitoring Officer Kunz secured a horse and mounted a Hallicrafter battery-operated all-wave receiver in a convenient operating position and proceeded up the rugged terrain to investigate the case. A thorough search of the area failed to develop anything of consequence, but I believe Monitoring Officer Kunz was the first to ever conduct radio surveillance on horseback.

He reported his mission as follows: RID On Horseback.....

"During the early days of the RID unit at Kukuihaele, Hawaii, the enthusiasm of the staff knew no bounds. In fact, we were winning the war single-handed! Within hours of our arrival, we had actually put a company of infantry to rout and occupied an old plantation mansion of the defunct Pacific Sugar Company that the soldiers had occupied. The Monitoring Officer in Charge was a special deputy sheriff and a special police officer. (I still have the Commission which adorns the wall of my den.) We had sidearms, a supply of hand grenades and Springfield rifles. Armed guards paraded the grounds after dark, challenging passing farmers and, occasionally, an ekaki (Hawaiian for "jackass") that had wandered up out of the Waipio Valley. We were the elect!

The first case brought to our attention was the finding of a badly beaten Filipino field hand, who had been poaching wild domestic pigs in Waimanu Valley. In pidgin English, he related that he had been caught and beaten with gun butts by Japanese sailors from a Japanese submarine. The size and shape of the bruises more or less confirmed the use of rifle butts, all the while an American employee of the plantation cross-examined him repeatedly. The Filipino also reported that he had seen two elderly men, purportedly Japanese, who had come down into the valley from the jungle above. The case was reported to O.N.I., but the officer-in-charge treated it as a myth.

Within a week, the armed guards alerted RID personnel to smoke signals – three long dashes – coming out of the jungle. Another guard excitedly reported a smoke bomb bursting on the surface of the sea about a mile off shore. The Monitoring Officer in Charge also sighted the smoke bomb, which could only have been released from a submarine. Again, the case was promptly reported to the O.N.I. and a request made to have the area checked at daybreak. A lone aircraft buzzed the bay at 8:00 AM the following morning – three hours after daybreak.

At the end of another week, following the daytime pattern of the week before, smoke signals once more; but no smoke bomb was detected. A soldier, posted on a point of land where he might see something enter the bay, reported sighting what appeared to be a small boat or the conning tower of a submarine disappearing around the cliff jutting out between the bay and his point of observation. Again, a report to both M.I.D. and the O.N.I.

The military commander was interested and suggested I take a patrol back into the jungle and come out from the head of the valley to check on evidence that a submarine might have been there. A Hawaiian-Chinese farmer reported that he found a number of unrusted gallon cans that had been used for lubricating oil and some grains of uncooked rice near the beach in the bay.

The patrol was mounted. There were twelve soldiers, including a second lieutenant and a sergeant. I made the thirteenth member. Truthfully, I had never sat on a horse except an old sway-backed veteran of an ice wagon. We were armed and carried

the usual field rations. After riding for four miles, we proceeded on foot. Falls and inexperience took their toll of the soldiers. The patrol dwindled to three people - the lieutenant, the sergeant and the lone RID man. We had departed at 4 AM on April 25th. At nightfall, with the rain pouring down, we ate cold C-rations and rolled up in our shelter-halves for the night.

The next morning, I awakened to find myself within a foot of the edge of a cliff some twenty or thirty feet high. I was also a year older - April 26, 1942, was my 35th birthday. Another discovery was made. I was for going on, but the Army decided to retreat. Later, we were to discover that, for all purposes, we had gained the head of the valley. Another hundred yards or so would have found us overlooking the valley floor. We hiked back to our horses, picking up stragglers and casualties enroute, and returned to Kukuihaele. I became the final casualty. Those saddle sores were as big as minute steaks and twice as raw as the rarest.

Within a few weeks, I had become a more experienced rider and eventually got the idea of taking an National 1-10 into the Waipio Valley to monitor the VHF spectrum. I had hopes that there might be enough ground component of any VHF signals from a ground station or submarine in the next valley for me to hear. I unloaded my gear and set up a monitoring post in an abandoned house. Batteries proved to be a problem. Instead of a storage battery for filaments, I had brought along a bank of A cells. Results! Negative. Mosquitoes, a leaky roof, rats and flying cockroaches made the night a miserable, if not a memorable one. The serious casualty was the fifth of McNish Scotch I had brought along as gift to the owner of the house. I had just taken one healthy drink - this was after the batteries finally gave up their ghosts - when the bottle slipped from my hand and broke. My companion, the Army sergeant, apologized the next day for the name he called me when that bottle broke.

There were signals from the Mutual Telephone Company's facility at Waikii, on Mauna Loa. A soldier station in Hilo was talking to his girl friend in Honolulu and slyly told her how anxious he was for them to get married.

The case of the wandering submarine was eventually closed, but some question arose as to who should have gotten credit for the sinking of the submarine some distance east of Hilo harbor. On the basis of our visual observations, we suggested a probable course a submarine would take when approaching the island, the fact that he might lie well east of the island before proceeding to Waimanu Bay and estimated times. Apparently our reasoning was explored by the Navy, A PBY (Catalina) amphibian surprised and sunk a Japanese submarine in the area and at approximately the time we had suggested. The O.N.I. would never confirm or deny that they had used our information. Eventually, the Navy referred to the sinking when asking for increased findings(funding?). Your office wired me to try to obtain confirmation of our participation.

What was never reported to you was the fact that I not only hoodwinked the O.N.I. at Hilo to allow me to use their office while I shaved the Dictaphone records

during their lunch hour, but actually rifled their files in an attempt to locate their records on the case. All that I can remember about the search is that their filing system was rather poor and their security even worse."

Monitoring Officer Kunz also reported the following case he investigated on the big Island of Hawaii.

WHO THE HELL ARE YOU?

During 1942 and early 1943, the green troops from the States were trigger-happy and shadow-jumpy. Working with them during alerts was quite nerve-racking and, I'm afraid, very hazardous. It was no fun being halted to find the cold end of a rifle barrel rammed against your temple. It happened to me!

About the "saltiest" experience I had was during a rather wild and chaotic alert resulting from an inexperienced Army radio operator picking up the signals from JUP. The signals were about 70db above S9 and consisted of the usual coded katakana. However, when the Army howled for assistance, they were positive that a fleet must be just off shore.

My post was Waimea in the vicinity of a church not far from the headquarters of the Parker Ranch. For identification purposes, we had installed a pair of blue 6-volt bulbs behind the radiator grill. Our coded identification was three long dashes of light. Up until the time I entered the anticipated combat area, I was positive that routines would be followed and that I would arrive on station without undue interference by trigger-happy soldiers.

The trip from Kukuihaele to Honakas and then up over the mountain to Waimea was "hairly" as usual. Crossing the range, we entered a low-lying cloud that obscured the road. Slowing down a little better than a walk, I held the middle of the road. A head of a young cow loomed up. I did not swerve because of the drop-off I knew to exist at one side of the road. The young cow leaped, but I did hit her tail as she leaped off into space.

Sentries had been pulled in at the approaches to Waimea. Then, as I turned a corner and headed for the church, the car was suddenly blocked by about a dozen soldiers. I blinked the lights three times, but it didn't mean a thing. A Tommy gun was shoved against my neck and I was ordered to leave the car. In the dim light, I made out the silver bars of a first lieutenant, but I didn't know him. It took about fifteen minutes for that lieutenant to understand that I was an American, let alone identify myself as an RID man. Finally, a command car came up with a very irate colonel who wanted to know why the hell I was goofing off when they needed me so badly. It was amazing to see how quickly that lieutenant and his men slipped off into the darkness.

I proceeded to the command post immediately (some text missing) identified the signals. However, it took some time to convince the colonel. I attempted to take bearings,

but only to convince him that I was making an all-out attempt. Sky waves, of course, but I recalled the bearing and did a convincing job that JUP was "way out thar".

Again, there was an aftermath! On the way to Cleveland from Indianapolis to attend conferences – I was then an industrial economist with OPA – early in 1946, two lawyers and I traveled by train. As was common then, the train was crowded with home-coming GI's. My companions and I went to the dining car, hoping for a table. There was only one where a lone man sat. He was easily identified as a discharged veteran by the "ruptured duck" in the lapel of his coat. He invited us to share his table.

After a few minutes, I was conscious of his guarded study of me. Then, something began bothering me – I was positive I had seen him somewhere. Suddenly, our eyes met, and he grinned apologetically. Then I realized who he was. He was the first lieutenant who had shoved the Tommy gun into my neck. By the time our train pulled into Cleveland, the four of us were pledging our undying friendship. I never did get his name.

A CLANDESTINE TRANSMITTER UNDER THE CAPITOL DOME

Perhaps one of the most effective demonstrations of direction finding was provided by RID engineers is a hearing room of the Congress of the United States in 1944 while a committee of the House was making a study and investigation of the Federal Communications Commission. (House Res. 21 78th Congress, 2nd Session).

In order to provide the committee and its staff with an introduction to radio direction finding, which was to be a lively subject in the hearings, permission was granted to demonstrate a direction finder in the hearing room. Consequently, a small transmitter was concealed within the clothing of RID Agent John Peterson, who sat in the back row of the room. The direction finder was located in the front of the Committee in their elevated row of seats. The Committee was unaware that a transmitter was to be used in the demonstration.

Mr. Ellert then demonstrated how bearing on a radio signal was obtained and then moved to another location and took a bearing; then a third and final one. A chart of the room with the seating arrangement of the Congressmen was provided by the Committee. Mr. Ellert continued the demonstration by projecting the bearings on the chart and then displayed it to the Congressional Committee and, pointing his finger in the direction of Mr. Peterson, announced that the transmitter should be near the gentleman in the back row, at the time describing how he was dressed. Mr. Peterson arose, opened his coat, and displayed a transmitter fastened around his waist with an antenna down his trouser leg.

The Committee Counsel was asked if there were any questions. He replied that the demonstration spoke for itself. The Congressmen expressed surprise.

We then pointed out to the Committee how easy it might be for someone in the audience of a closed session to broadcast the proceedings to a confederate outside of the hearing room and even outside on the street or in an automobile.

This was probably the first and last time that a hidden radio transmitter had been operated under the Dome of the Capitol.

THE NAZI RADIO ESPIONAGE SYSTEM

Early in 1942, the British monitoring service, known as RSS, the initials of which stood for the Radio Security Service, contacted the RID and requested the establishment of a liaison which would permit the exchanging of information between the British, including the Canadians, and ourselves. Approval was obtained from the State Department to establish this liaison and the most harmonious working relationship resulted and continued until the end of the war. The liaison was provided through the intelligence officers of the British Security Coordination at their headquarters in New York City. Almost daily exchange of information took place, not only of call letters and traffic, but also of direction finding bearings.

Prior to the organization of the RID network of monitoring stations, the Commission had no knowledge of the secret radio circuits operated by German nationals and sympathizers outside of Germany. Circuits had been set up between Berlin and Madrid, between Paris and Africa, between Hamburg and Ankara, and many other points prior to July 1, 1940, the date which marked the beginning of the RID monitoring system. In addition to these circuits, the German Diplomatic Corps maintained a very intricate communication system between its embassies in various countries and Germany.

One of the toughest tasks ever assigned to a monitoring station resulted from a request of a British government agency. This task involved the monitoring of German espionage radio circuits which were engaged solely in intra-European activity and on frequencies and power which were never destined to be intercepted in this country. The assignment required monitoring of 222 frequencies, comprising 18 circuits widely distributed throughout Europe. The agency placed a very high degree of priority on our interceptions of this particular traffic. We were able to provide intercepts daily from monitoring these circuits.

An officer of the British Radio Intelligence Service visited my office after his return from a short trip to England. He stated that their headquarters in England especially appreciated our assistance in furnishing intercepted material from a German net distributed through Asia, as there was no other source from which they could obtain traffic from these circuits. This officer stated that the British had made attempts to obtain the traffic from New Delhi, but had been unsuccessful.

A Cryptographic Laboratory, which was operated by one government agency, placed so much importance on quickly securing the intercepts on certain espionage circuits that they requested us to deliver it directly to them by teletypewriter circuit as soon as it was received from our monitoring stations.

In one particular instance, as a result of processing a message RID intercepted at Scituate, Rhode Island, the British were able to alert us within a few hours from the time

of the interception to guard a frequency on which it was anticipated that arrangements would be completed to land an agent in South America from a German submarine.

There were many instances where, as the result of decoding spy messages, we gained knowledge of new frequencies and call letters that we expected would be used on certain circuits. The German Espionage System extended to other parts of the world as well as the Western Hemisphere. In Africa, for example, it was the practice to locate the transmitter in a Portuguese territory near a British colony. The agents spied on Allied shipping arriving and departing from the British African ports in the Colony and, then, proceeded to send the information out through the transmitters in the nearby neutral country. Through the fine collaboration we had with the British, daily exchange of information, relating to the activity of espionage stations, was made through the office of the British Security Coordination in New York, which represents the British Empire with respect to the activity of German clandestine radio stations. Through the British Security Coordination we exchanged information, not only with the British Isles, but also Canada, India, Australia and New Zealand.

Coincidental with the activity in the Western Hemisphere which the RID observed was our detection of spies in Portuguese colonies in Africa, who were in, daily communication with Lisbon, Portugal, by means of clandestine radio. Reliable information subsequently obtained by RID indicated that no other monitoring service was aware of these Portuguese spies until after RID had detected them, located them, identified the traffic and, in one instance, furnished decipherments to the intelligence agencies of the federal government, when it became apparent that the messages otherwise would not be read.

The logging and recording of characteristics of individual operators' fists and transmitters in the various clandestine circuits resulted in the compilation of rather complete charts showing diagrammatically the composition of the various clandestine networks. The pooling of our information with that of the British resulted in a most complete knowledge and enabled us to keep currently on top of the situation. In numerous instances, we established that a given transmitter was employed on more than one circuit and one operator worked more than one circuit.

The peak of the activity of the German radio espionage system occurred when the Germans and Japanese had pushed their frontiers to the extreme limits and were headed for a junction in India. There can be no question but that the foiling of the Axis dreams of world conquest was, in part, dependent directly on the intelligence gained by the British and ourselves. This intelligence resulted from the interception and decipherment of message exchanged over the various clandestine and diplomatic circuits. There is every reason to believe that nearly all the various codes and ciphers used by the enemy were broken and the contents of secret messages made known to the Allied high command almost immediately on receipt.

At one time, RID knew that the control stations in Berlin and Hamburg were calling seventy (70) stations that did not respond to calls. That meant there were at least seventy

spies out who could bring up transmitters at any time. No one knew in what countries they would start their activity. We did learn from a source of reliable information that the Germans attempted to land spies on the coast of Maine. It was necessary for RID to continuously monitor the frequencies of these control stations in Germany to determine when the spy answered, then copy the traffic and identify the country in which the transmitter was located.

QSA ZERO PLEASE ANSWER

Radio operators throughout the world employ an international system to indicate the strength of the signals received by each other. For example, QSA 5 would indicate a strong signal, whereas QSA 1 would indicate a signal barely audible. QSA ZERO would indicate that no signals were being heard. The German espionage system used these QSA signals in their radio nets.

On many occasions, RID monitoring officers were aware that a new agent was to come on the air, as they could hear the control station calling each day with different call letters and ending by transmitting QSA ZERO. If the agent had not made contact on schedule, he also would terminate his call in this fashion until contact was established. QSA ZERO became quite a by-word among the RID staff.

Training of Nazi spies took place in a school near Hamburg. The men selected for these assignments were not skilled radiomen. The details of their training have been discussed in Chapter 6 and in preceding portions of this chronicle. Some interesting observations on individual characteristics of Nazi radio operators are related below.

CASE CW 18X39

RID copied the "out" station of this German Diplomatic group for approximately eight months, and during that period we got to know the operators at the Madrid end rather well, in so far as we could by just listening and copying them.

This station kept schedules with the Berlin Control every odd hour, 24 hours a day. On nearly every schedule there were several messages exchanged and these varied in length from 30 to 700 words, all sent in parts of 50 words each, in either five letter or five digit cipher groups. The station in Madrid was able to work duplex when they had enough operators, which was most of the time; sometimes they even had visiting operators sitting in; where they came from we do not know. We suspected that the Lisbon circuit was cut down and one or two of the operators there sent to Madrid to help out. In October or November of 1944, the Ambassador was changed and up until the relieved one left, the traffic sent to Berlin was terrific. The overworked operators at Madrid began to get "edgy" and complain more than usual when the Berlin station would tell them to wait for one reason or another. After the new Ambassador took hold, the traffic dropped considerably for two or three months and then, as the German armies were being beaten back, the traffic from Madrid to Berlin began to increase again, just as it did before the Ambassador at Madrid was changed.

There appeared to be four regular operators at Madrid; in October of 1944 there were only three, but an addition was made of a new man. He was new in many ways; his fist was bad and not only Berlin, but we at Hato Rey, had considerable difficulty in guessing what his characters were supposed to mean. He made "C" for either F or Y, for instance, made errors without correcting them and, in general, ruined nearly each schedule he kept. One day the Berlin station sent an urgent message to Madrid, after this we did not hear our bad-fisted friend for two or three weeks. It was assumed that he was being used only to *copy* Berlin's traffic while the other more experienced men ran the circuit. He came only came on at the key once or twice a week, apparently when it was absolutely necessary for the other men to be off watch, such as at meal times or when they were working another circuit. It was noted when we first commenced copying this station that, at certain regularly spaced times, they would tell Berlin "PSE AS 15 HR BUSY" and then shift the frequency of their transmitter downwards to some low frequency. We were never able to find him working another station, but there was a lot of evidence that they did work at least one other station besides Berlin, and perhaps two other stations.

The Chief Operator at Madrid was an excellent one and after listening to him for a few weeks we decided that he must have been one of the more active amateurs in Germany as well as having had commercial experience. We knew he made an automatic keyer for their call letters and we also knew he built a second transmitter, which was too weak for us to copy. We knew that Berlin did not want it used as it was "too weak" most times, although traffic was handled with it for three days in March 1945. It turned out that the Chief Operator was also a "leader" in the Nazi party – he would tell the operators at Berlin to pay more attention "hier leader" when he thought he was not obtaining the proper service from the Control Station in Berlin.

From observations we knew that their transmitter was a straight oscillator type, its frequency crept badly at the beginning of each schedule, and, at times, bad connections in its switching devices made the note "dirty". Under this condition No. 1 would usually complain and tell them to fix it.

Another oddity about the station in Madrid, was that their frequency measuring device must have either been defective or they didn't know how to use it, because they never went to an exact frequency as requested by Berlin. They were often off 50 or 60 kilocycles, and when Berlin would tell them to go to 12740 kcs, for instance, to us it meant we would find them anywhere between 12700 and 12800 kcs, and when Berlin told them to go to 15580 kcs, any place between 15500 and 15625 kcs would be where we would find them. Nearly always we would be able to find the station by looking where the interference was the worst.

The signal from Madrid was never any good, hardly ever being more than 6 – 8 db above our noise level, and normally 2 – 4 db above it. Of the several frequencies used the 15580 kcs and the 7650 kcs were the two loudest; we assumed their transmitting antenna was resonant at approximately those frequencies, because on either, we always got our best copy.

The operators at Berlin Control were divided into three watches; two watches were really good and the third had men, it appeared, who did not know how to tune receivers. The time wasted in shifting the Madrid station from one frequency to another consumed many hours. The other two groups seemed to be able to copy Madrid on any useful frequency. During the summer of 1944 conditions got so, at times, we could not hear the control station at all, especially when they used one of their low powered transmitters on a low frequency in daytime. This made it extremely difficult for us to follow Madrid from one frequency to another – in the middle of a word there would be a pause, an “OK” and cessation on that frequency – then would ensue a frantic jumping from one frequency to another with all available men here searching for the Madrid station. Sometimes they would shift him five or six times dodging interference or weak signals until they had his frequency set in a decent spot – which, sad to relate, was too often under a British A-2 signal twenty times louder. It happened so often that Madrid was under heavy interference, for us, we suspected someone, an invisible spy perhaps, was standing in back of us watching to see if we were able to copy the signal and then reporting on it to Berlin and hence Berlin would shift No. 2 again. It is fully believed that one group at Berlin deliberately shifted Madrid under interference; the other two groups had too much trouble copying him to take time to move him under a signal which would interfere with us, but not with him.

Copying Madrid was quite a strain for even our oldest and most experienced men. It was nerve wracking to copy a signal like that, as weak as it was, under all kinds of interference, constantly changing frequency, and sometimes with heavy lightning crashes and local tropical rain static to worsen matters. The newer men here were not very successful as interference caused them to miss 50 to 100 words at a time. One of our younger men threw the headset on the floor, got his lunch kit and went home saying “if I have to copy that any longer I will shoot myself” A couple of days off and non-assignment to that work put him “back to normal”. As the case continued, and the traffic got heavier from Madrid to Berlin toward the end of the war, some of us began to get “dit crazy” and it was necessary to put only the steadiest men on the case. And then only to allow them to cover it a half week, that is, 24 hours per week.

On January 1st, 1945, the Control Station in Berlin and the station in Madrid, as well as the other No. 2 stations in various parts of the world changed their “Q signals and the daily factor numbers (which already had) to a new system. This made it even more difficult than before, until one of our AMOs (Louis Silver) devised a scheme for breaking down the daily factors used by the in and the out stations, as well as a method whereby the new “Q” and “Z” signals could be deciphered. It became the duty of the man on watch at 0000 GMT to observe the No.1 and the No.2 stations for frequency shifts, and then generate the necessary lists of “Q and “Z” signals for the next 24 hours, so the rest of the staff would be able to follow No.2 around and determine what his schedules would be from the “Q” signals used. The normal schedules were every odd GMT hour, but Madrid or Berlin would often arrange a special schedule and we had to know what his schedules were so we would not miss any traffic

This report was submitted by Monitoring Officer, Tom Cave, in charge at Scituate, Rhode Island.

METHOD FOR DETERMINING DAILY CONSTANT – WACA CW18X39 FREQUENCY DIFFERENCES OF STATION NO.2

15600 kcs	12740 kcs	10485 kcs	7650 kcs	7420 kcs
<u>12740</u>	<u>10480</u>	<u>7650</u>	<u>7420</u>	<u>6620</u>
2860	2260	2835	230	800

6620 kcs	5640 kcs	15600 kcs	12740 kcs	10485 kcs
<u>5640</u>	<u>4800</u>	<u>10485</u>	<u>7650</u>	<u>7420</u>
980	840	5115	5090	3065

7650 kcs	7420 kcs	6620 kcs	7650 kcs
<u>6620</u>	<u>5640</u>	<u>4800</u>	<u>5640</u>
1030	1780	1820	2010

METHOD FOR DETERMINING CONSTANT

Listen for frequency shifts given by station No.2, i.e., QGQ 15773 (Please call on ?); QGH 14743 (Shift to ?). When you have two frequency notations such as this subtract one from the other and compare with the above frequency differences of station No.2. Using the two examples given here, 15773 and 14743, subtracting one from the other gives 1030. Comparing with the above table of differences one notes that 6620 kcs from 7650 kcs gives 1030. Therefore, 15773 must be 7650 kcs and 14743 is 6620 kcs. Now subtracting 7650 kcs from 15773 gives 8123 which is the constant for that day. Another example: On December 31, 1944, station No.1 sent 11972 and 11132. Subtracting one from the other gives 840. Glancing at the above table shows that 840 is the difference between 5640 kcs and 4800 kcs, therefore, 11972 must be 5640 kcs and 11132 is 4800 kcs. Subtracting 5640 from 11972 gives 6332, which is the constant for that day. Another example: On January 2, 1945, station No.2 used designators 14234 and 12414; subtracting one from the other gives 1820. The table above shows that 1820 is the difference between 6620 kcs and 4800 kcs; deduction, 14234 is 6620 kcs and 12414 is 4800 kcs. Subtracting 6620 kcs from 14234 gives 7614, which is the constant for that day.

MONITORING ENEMY PROPAGANDA BROADCASTS

The National Defense Analysis (NDA) was established informally in 1940 as an activity of the Federal Communications Commission to monitor foreign propaganda, some time before a specifically authorized activity was formalized for that purpose. As the FCC was requested to provide propaganda intercept, it set up separate groups of engineers and code operators for the monitoring of enemy propaganda broadcasts. At first these groups were set up within the stations operated by the Field Division of the Engineering Department of the FCC. As the activity increased, separate monitoring stations were established. Soon the requests for the content of enemy propaganda broadcasts became too much to handle with an informal organization.

The amount of propaganda broadcast by official and clandestine stations in enemy and neutral countries was considerable by late 1940. The anti-American propaganda was of great concern to the State Department. This concern led it to recommend to President Roosevelt that the Government monitor foreign broadcasts. The President pointed out that the issue was one for the then Defense Communications Board (renamed on 15 June 1942 as Board of War Communications) to consider.

On 3 January 1941, Assistant Secretary Breckinridge Long, the Department of State's representative on the Board, introduced the subject before the Board, which also had the following representation: Chairman of the FCC; Chief Signal Officer; Director of Naval Communications; and, an Assistant Secretary of the Treasury. It was necessary to establish stations with the mission of monitoring broadcasts from countries abroad, Secretary Long said. These broadcasts, he continued, were often aggressive in character and subversive in intent, and were coming from a substantial system of voice and press broadcasting stations. After further discussion before the Board on 13 January 1941, it passed resolutions to establish adequate monitoring facilities necessary to keep the various interested activities of the Government informed of the content of broadcasts, intended for this country and its friends, from Europe and the Far East. The FCC was requested to submit a plan for the monitoring of foreign propaganda broadcasts.

The FCC submitted a plan that provided for the expansion of monitoring services already performed by it on limited basis. On 21 January 1941, the Board approved a memo to the President recommending the FCC plan and requesting the allocation of additional funds to the Commission for recording, transcribing or translating and analyzing selected propaganda broadcasts emanating from European, Far Eastern, South American and Latin American stations. President Roosevelt directed the Secretary of the Treasury, in a letter dated 25 February 1941, to allocate funds from the "Emergency fund for the President" as recommended by the Board. The Foreign Broadcast Monitoring Service (FBMS) was established the following day, 26 February 1941, as a unit of the FCC. The monitoring of foreign broadcasts was transferred to this new service.

The first head of the FBMS was Harold W. Graves, Jr., a former Director of the Princeton University Radio Listening Center. He was named Acting Director, which position he held until June 1941, when Lloyd Free was named the first Director. Mr. Graves continued on as Assistant to Mr. Free. He again became Acting Director of the FBMS on the departure of Mr. Free in early January 1942. The functional organization under Mr. Free had an office of the Director, an Advisory Board and several sections named Translation and Transcription, Reports, Analysis, Monitoring, Engineering, Mail and Files, and Stenographic. A divisional structure was set up by the FCC for the FBMS in early 1942. The Monitoring and Stenographic Sections were amalgamated into the Analysis Division and the other sections were upgraded to Divisions. The monitoring stations were located thus: Washington, D.C., area with the intercept and recording station (SHINDA) near Silver Hill in Prince Georges County, southeast of Washington, and the Transcription and Translation, Typing and Administrative activity co-located with the Headquarters in Washington, D.C., on F Street; Portland, Oregon, area, with the intercept and recording station (POBRU) in the country, co-located with the RID monitoring station, and the Transcription and Translation, Teletyping and Administrative activity in Portland; San Francisco, California, area, with the monitoring station, (HABRU), on a hill near Hayward and the remaining activity in a hotel in downtown San Francisco; Kingsville, Texas area; Santurce and Hato Rey, Puerto Rico; and near London, England.

Mr. Robert D. Leigh was appointed Director of FBMS on 16 July 1942. About two weeks later, the FCC changed the name of the Foreign Broadcasting Monitoring Service to the Foreign Broadcast Intelligence Service (FBIS) on Mr. Leigh's suggestion. The Engineering Division was renamed the Broadcast Recording Unit and the intercept and recording stations received technical direction from it.

The number of employees and activities both reached their maximum by early 1943. By this time the various operations became fairly well ordered and were identified as: Scheduling of Programs, Interesting Programs, Monitoring and Recording, Translation, Producing the Wire Service, Production of Reports and Analysis.

Usually on request for support, additional listening posts or monitoring stations were established in overseas areas. They often functioned in cooperation with activities of the Office of Information, the British Broadcasting Corporation and the British Ministry of Information. The functions were broadened to include the intercept of foreign news, intelligence information of interest to many different activities, and special services like the reaction to the B-29 flights over Tokyo and other Japanese cities by the Broadcasters. Stations monitored were those of the enemy, those of occupied countries and those of neutrals.

The usual routine of a monitoring station was the intercept by engineers of selected scheduled programs which were either recorded or fed over lines to monitors, who made the recordings as they also produced a running summary in English translated from the foreign language, or both. Recordings were often made by both engineers and monitors to prevent failure or loss of recording on important speeches or pronouncements. Many of

these are in permanent files in the National Archives. The monitors would make full texts of items, speeches or pronouncements from the recording after the project was completed, and after editors selected the items of interest. Translations or transcripts were then edited and teletyped, cabled or mailed to the headquarters in Washington, D.C.

At the headquarters office all material was again edited to ensure good and logical reading in English and the more significant material was teletyped in excerpts or full text, as in important speeches or pronouncements, to various U.S. Government agencies, concerned with the military, diplomatic, propaganda and historical aspects of the war. Daily compilations of selected material were made in reports. Special studies, interpretations and daily and weekly summaries were prepared and distributed to meet the general and specific requirements of the Government agencies.

The activities of the FBIS began to decline in the spring of 1943. This was chiefly the result of congressional investigations of FBIS' personnel and functions. The first investigations were those of the House Select Committee to investigate the FCC and later the House Appropriations Committee began studies and investigations. Charges by the two committees included: 1) The FCC had exceeded its authority in establishing the FBIS, 2) Analysis or evaluations of broadcasts could best be prepared by the agencies using them, and 3) Some officials of the FBIS were unfit to hold their positions. While these Committees of Congress were investigating the FBIS, several agencies began to confer about the appropriate reallocation of the analysis function to another agency. This resulted in the termination of the Analysis Division. Its important functions and personnel performing them were transferred to the Office of War Information. Mr. Charles S. Hynaman succeeded Mr. Leigh as Director on 19 June 1944. In March 1945, after several reorganizations, the FBIS comprised the Office of the Director, the Office of the Chief Editor, and the Distribution, Daily Report, Far East and monitoring Divisions.

The FBIS ceased operation as a part of the FCC on 5 December 1945. This followed a 4 December 1945 news release by the FCC announcing the suspension of FBIS monitoring of foreign broadcasts and the termination of the services of its personnel effective 10 December. However, in a letter to the Chairman of the FCC, dated 21 December 1945, the Secretary of War emphasized the need for continuing the monitoring service and proposed that the FCC discontinue the termination of FBIS until arrangements could be made for the transfer of its personnel and facilities to the War Department. The proposal was accepted by the FCC on 27 December 1945 and the FBIS was transferred to the Military Intelligence Division of the General Staff on 30 December 1945 by order of the Secretary of War.

Several services of the FBIS during the war years are worthy of special mention.

WIRE SERVICES

Designated by the symbols A, B, C, D, E, S, X, and PM, these direct FBIS teletype wire services were sent principally to Government agencies concerned with war propaganda.

They consisted of the more significant parts of the incoming material from the monitoring stations. Their content was selected to meet the requirements of the activity to which they were sent.

A WIRE

A general service wire sent to about 25 agencies, including the State, War and Navy Departments, the Office of War Information, the Coordinator of Inter- American Affairs, the Office of Censorship and the Office of Strategic Services. The Governments and agencies of Allied Nations, including the Philippine Commonwealth, also received some of this wire service.

B WIRE

Consisted of propaganda summaries and texts teletyped to the Office of War Information in Washington and New York.

C WIRE

Information on Latin America sent to the Office of the Coordinator of Inter-American Affairs.

D WIRE

Far East data sent to the British Ministry of Information.

E WIRE

Texts or excerpts of broadcasts and messages sent by American prisoners of War and civilians interned by Axis Governments over their radio facilities. These were teletyped to the Office of the Provost Marshal General.

S WIRE

Wires teletyped to the Department of State consisting of texts and excerpts of broadcasts made by stations throughout the world relating to the withdrawal of Italy from the War in September 1943.

X WIRE

Selections of intercepts from European transmitters for use in counter-propaganda programs in the Far East sent by FBIS Headquarters to the Propaganda and Analysis Section of the Office of War Information in San Francisco at their request.

PM WIRE

Teletype wires sent by 24-hour teletype circuit linking the FBIS with the Office of the Provost Marshal General and consisting of message from or allusions to American servicemen held captive by the enemy. These broadcasts by the enemy were designed to build up a listening audience in the United States.

Original Voice Recordings of American Traitors

In the course of monitoring Common Axis propaganda channels, monitors(?) occasionally heard and recorded the broadcast statements of Americans who deserted their country and either actively expounded the propaganda of the Axis or became their pawns. These statements soon attracted considerable interest and occasionally were the source of evidence in the trials of those individuals on their return to the United States or after their capture by our advancing armies. Several cases attracted national prominence. One of these was the trial and conviction of Ezra Pound. FBIS engineers who made the original recordings testified at trials that these were the recordings they made at specific times of the voices of individuals identified in the broadcasts. Such evidence and the content of the broadcasts made by them contributed greatly to the conviction of such traitors.

Broadcast Japanese Air Raid Alarm

Soon after General Curtis LeMay's flight of B-29 bombers began mass attacks on major Japanese cities in 1945, it was observed that announcers of the Japanese domestic medium wave broadcasting stations came on the air with air raid alarms and often with running commentaries of the progress of the the raiders in their approach to the city, the number of planes involved, the extent and nature of damage caused by the raiders to named areas, factories and structure and the extent of defensive measures taken, damage inflicted on the raiders, and the direction in which they retreated from the scene. The value of the intercept and translation of these broadcasts to General LeMay's air armadas was far beyond monetary value. It was not long before a well established routine was developed for the rapid delivery of translations of these broadcasts to the Air Force on Guam by the FBIS monitoring station established there in early 1945. At one time a small FBIS operation was established on Iwo Jima to ensure better intercepts of the broadcast air raid alarms. As a result of these intercepts the raids were often analyzed and their value determined before the crews returned for debriefing. Many changes in formations and direction of approach of the flights were made and an untold number of planes and men were saved by this rapid reporting, for which the Air Force relied on the FBIS.

German Ball Bearing Shortwave

FBIS intercepts of broadcasts from Berlin, Germany and from Sweden about the arrival in Sweden of German officials for the purpose of arranging for the purchase of ball bearings disclosed that the Germans were in dire straights over low supplies of high quality ball bearings. This led to concentrated bombing by the Allies of German ball bearing plants and caused the Allies to try to corner the market on ball bearings.

Some notes follow on the establishment, purpose and service of various outposts and monitoring stations operated by the FBMS/FBIS, in chronological order.

Portland, Oregon

With the growing interest in the content of Japanese overseas broadcasts a modest recording operation was started near Portland in March 1941. The operation was soon expanded with staff and equipment to cover Khabarovsk in Siberian Russia and several Chinese stations. The recordings were shipped daily, by air, to Washington Headquarters for translation and processing. On 2 October 1941, this Portland operation was expanded into a full monitoring facility with the arrival from Washington Headquarters of thirteen monitors and editors who were set up in a farm house about two miles from the recording station called POBRU.

When the Japanese bombed Pearl Harbor on 7 December 1941 it became necessary to increase the Japanese monitoring staff from two to five to cope with the necessary coverage of Japanese and Japanese-controlled transmissions. Morse code operators, trained to intercept the Japanese kana code, were added. The Russian language staff and the editorial and teletype sections were increased. By early August 1942 the staff numbered forty. Principal transmitters in the following cities were monitored regularly in language indicated: Tokyo in Japanese and English; Nanking, Shanghai and Chungking in Chinese dialects; Khabarovsk in Russian; Saigon, Manila and Singapore in English and, later, Japanese. The translation and processing operation was later moved into downtown Portland. The intercept and recording operation remained in the country, where reception was better. At first, recordings were transported from the intercept station, but program lines were later installed and monitors made the recordings from which they worked. Important programs were backstop recorded by the engineers. In August 1942, when the San Francisco office was opened and became the headquarters for the West Coast operation of FBIS, the Portland operation was reduced and retained principally for Japanese language coverage. The Western Defense Command was clearing Nisei (1st generation American born) Japanese for work in the Portland area only. As the Japanese forces advanced in the Pacific, requests grew for more monitoring of their broadcasts. Thirteen Nisei monitors were added to the Portland staff. Clearance of Nisei by the Western Defense Command was a brake on the growth of the monitoring staff. This Command was prevailed upon to authorize an FBIS office in Denver, Colorado, where Nisei awaiting clearance could be used to transcribe and translate recordings mailed daily from Portland. Eventually enough Nisei translators were cleared and the Denver office was closed.

Laurel/Silver Hill, Maryland

The Laurel site was established in April 1941. It was co-located with the NDO (later RID) facilities in an old farmhouse, ideally located in a large field. In this field were erected the antennas necessary for the collection of the signals to be monitored from Latin America and Europe. The farmhouse was in serious disrepair. As personnel arrived, fired with enthusiasm to begin program intercepts, they were first put to work in making the place habitable. Then they began equipment installation, including the provision of

electric power and antenna connections. In a few weeks the Laurel facility began operations with six loaned receivers. Programs, first without guidance as to type of propaganda content desired, were recorded on wax cylinders which were transported twice a day to the Washington Headquarters, located in an old garage building on F Street. Here monitors would transcribe and translate the recordings. Editors and analysts gradually evolved direction to the engineers at Laurel to provide the program content found most useful by the users in the intelligence community.

An important new operation was evolved at this stage, when no one knew what station was broadcasting what, at what time of day, and in what language. It was necessary to develop program schedules for each foreign broadcasting station and to note what frequencies were in use at the same time. Gradually, order was evolved out of chaos as cruising engineers, later called cruising monitors, developed schedules which made it possible for program content analysts or editors to select, at first for sampling and then for regular coverage, the programs they wished the intercept engineers to record. The whole field was so new that no one knew just what was available, let alone what was wanted program content.

Monitors and translators likewise developed a technique in which they first summarized, in the briefest terms, the content of a recording. This summary was taken to editors who gradually developed judgment as to what was useful information. They then advised the monitors which items they wished in full text, in fuller summary, or not at all. Eventually the process of program and content evolved and less time was spent in looking for "needles in haystacks".

In the mid-summer of 1941 the crowded condition of the old farmhouse and the long time required delivering recordings to monitors at Headquarters both pressed supervisors to relocate the NDA operation to a more convenient site.

An old CAA engineering site, which had been abandoned several years previously, was finally located at Silver Hill, Maryland. The building at this site was also in a bad state of disrepair, with broken windows, cracks in the wooden floors and leaks in the roof. The equipment at Laurel was loaded on a truck and transported to the Silver Hill site one afternoon in September 1941. The next morning, with makeshift antennas, the recording operation was restored. The necessary cleanup, repairs and vital improvements were slowly made to the building. Two of the latest type antennas, called Rhombics, from their shape in plain view, were installed for improved shortwave reception on Latin America and Europe. Several "long wire", "dipole", and "doublet" antennas for general use supplemented these antennas. They were supported by two 125 foot steel self-supporting towers still standing on the site from the days of CAA's occupancy. The installation was improved technically until 34 receivers were installed for voice propaganda and Morse press transmissions. Engineers tuned receivers to desired programs on schedule and made two sets of recordings, one on wax cylinders for use by the monitors and another set on plastic discs, which were sent to the Archives. The wax cylinders were sent, at first, twice daily to Headquarters on F Street, and later as often as importance of the programs warranted. Later in the year, four program lines were

installed between the intercept operations at Silver Hill, called SHINDA, and the monitoring operations at Headquarters. The recordings on wax cylinders was discontinued at Silver Hill and started at Headquarters. Monitors slowly developed the technique of making summaries "off the air" while the broadcasts were in progress, at the same time making a recording on the wax cylinders. When editors indicated on the summaries what was wanted in full text, or in excerpt, the monitors went back to their recordings for the fuller versions of the broadcasts. In time Morse press transmissions were also transmitted over lines from receivers tuned at Silver Hill to code operators at Headquarters. Later this operation was returned to Silver Hill when it was determined that press operators could get better and fuller intercepts if they tuned their own receivers.

As program schedules were developed on more and more stations, two additional lines were added, providing a total of six. At peak broadcast periods, all six lines were being fed with programs which were being monitored and recorded at Headquarters. The number of disc recorders at Silver Hill was increased to eight and the number of Rhombic antennas was increased to five.

When the war with Japan broke out on 7 December 1941, there was quite a flurry of excitement at Silver Hill. The next day a detail of soldiers was sent to guard the station. The next day the detail was replaced and several service revolvers and ammunition belts were issued, but no one was trained to use the arms. After a few weeks they were returned to FCC headquarters. The staff was increased so the voice and press intercepts could be made on a 7-day a week, 24-hour a day basis.

Operations became pressing. The haphazard direct patching of a recorder or a line, or both, into a receiver carrying a particular program scheduled for feeding and recording, was replaced by an audio patch panel, in which lines and disc recorders terminated in patch cords and receivers terminated in jacks. Later lines and recorders terminated in jacks and double-ended patch cords, which were used to make the desired connection of any line or recorder to any receiver output. SHINDA engineers tuned receivers on schedule to desired programs, made disc recordings and fed the programs on the lines, in accordance with an agreed to line schedule. They also kept "servicing" the programs on the receivers of their own accord, as their time permitted, or on telephone call from monitors who often felt that their programs were not being intercepted adequately or appropriately. During periods of poor reception tempers often flared as engineers tried to keep programs tuned in as best they could, only to be interrupted in so doing by complaining monitors.

An interesting episode is worthy of mention. It charged the seriousness of the normal day's work of the SHIND engineer. "Wild Bill" Donovan, then a full Colonel, was in command of the OSS with offices in New York City. Someone had suggested that he should have a line from his office to the Silver Hill intercept station so that he and his staff could arrange on a moments notice to listen to any program which that station could intercept. The line was installed. For many months it lay idle, never feeding a program. One day "Wild Bill" had some influential visitors. He wanted to show them how to listen to overseas programs. However, the telephone call to Silver Hill requested a "broadcast

program", which was interpreted by the engineer receiving the call to mean any domestic radio program. It is reported the "Bill" really went "Wild" when Roy Rogers began singing a Western Ballad. When he came down from the ceiling he ordered the line taken out. The telephone call should have asked for a "foreign broadcast" or an "overseas shortwave broadcast".

SHINDA engineers reflect on their technical accomplishments. They remember with pride how much they could do with little material, improvising and innovating. They reflect with greatest pride on the semi-automatic line switching mechanism, which they fashioned out of odds and ends and an old electric clock motor and gear train. Often it became more than one man could handle to tune up a dozen or more receivers, select the best programs on alternate frequencies, and, in the short interval between the ends of up to eight programs, feed on eight lines, patch in new programs on the quarter hour without missing a program start. They duplicated the receiver output connections to jacks on two sides of the console. They wired in jukebox relays having double-pole-double-throw signal contacts, with the common contacts tied to the lines. The relay contacts were switched from one bank of jacks to the other alternately every 15 minutes by having the clock controlled contacts switch current on and off the jukebox relays. Once the clock switch was set and periodically checked, the pre-patched set of receivers, first on one bank of jacks and then on the other, were switched to the lines. The engineer could now stretch out patching of his next fifteen minutes of program over as much of the period as he wished. Therefore, he knew if he had the receivers tuned to the right programs and patched to the right lines before the start of the next fifteen-minute period he would be on time. This scheme worked well, though "jerry built" until the Silver Hill station was replaced years later. It was the first semi-automated program selection in FBIS.

Due to the nearness to FBIS Headquarters in Washington, D.C., SHINDA was used as a training post for engineers and operators later sent to Puerto Rico, Kingsville, Texas, and Hawaii.

Silver Hill operated a "Telefax" radio circuit using a modified "Hellschreiber" system with the intercept station in Puerto Rico, until this station was closed out in the Spring of 1944. The monitoring output of the Puerto Rican station was punched up on teletype tape which was used to activate the Telefax transmitter when transmissions were made to Silver Hill on schedule. The Puerto Rican transmissions were cued by Morse signals from Silver Hill.

San Juan, Puerto Rico and Kingsville, Texas

Original planners felt that Latin American monitoring should be performed by stations set up for this specific purpose. To carry out this plan, monitoring operations were set up near San Juan, Puerto Rico, at Hato Rey, and near Kingsville, Texas in September 1941. Both stations were short lived. The Puerto Rican station suffered very poor reception attributed to "skip", wherein the signals of the broadcasters to be monitored passed over the receiving site. At Kingsville, reception was seldom useful due to a "sand static" caused by dust storms. However, in sampling of Latin American broadcasts, it was determined that the content of the broadcasts was of insufficient value

to justify establishment of monitoring posts elsewhere. Both stations were closed out in March 1944. Intercepts for such Latin American monitoring as was necessary or desirable were performed at Silver Hill, and at Hayward, California.

The Telefax equipment and the Hallicrafters SC-610 transmitters used on the Hato Rey to Silver Hill circuit were sent to Honolulu, Hawaii, where they were soon used to deliver the monitored output of the first FBIS station in Hawaii to the San Francisco office in May 1944.

London, England

On 7 December 1941 a number of FBMS editors were attached to the British Broadcasting Corporation Monitoring Service (BBC/MS) unit located near London. Language monitors of the MS produced translations and transcriptions of broadcasts. Copies of these translations and transcriptions were made available to FBMS editors, who selected from them material of interest to the American Intelligence community. The selected material was at first transported and later electronically transmitted to the FBMS communication room, housed with the American Embassy at Grosvenor Square, in London, from where it was communicated to the FBMS Headquarters in Washington, D.C. In the spirit of cooperation engendered by the war, the FBMS editors soon were receiving the entire raw product of the BBC/MS monitors. In 1943 and 1944 the London Bureau file was supplemented by the product of monitoring in Stockholm, Sweden, through the attachment of an editor to the American Legation there. This operation ceased in late 1944 when most of the desirable monitoring of the Baltic States and the Scandinavian countries was performed in England. An FBMS editor was also attached to a sizeable monitoring post operated in Cairo, Egypt, by the British Ministry of Information.

San Francisco, California

By 1 August 1942 the need for increased coverage to provide essential material to the Government Information and Intelligence agencies in San Francisco, particularly the OWI, was so great that the FBMS opened an office in that city. The former CBS listening post on a hill near Hayward was acquired and expanded as an intercept and recording operation serving the San Francisco office. In the beginning wax cylinder and plastic disc recordings were transported from the intercept station near Hayward to the processing center co-located with the office in San Francisco. Later, program lines connecting the two facilities were installed and the Hayward listening post backstop recorded only important speeches and fed other intercepts to the monitors in San Francisco, who made their own recordings.

The San Francisco office continued in operation as a monitoring station until the end of December 1944. It remained open as an FBIS office during the running of the San Francisco Conference to receive and deliver, each morning, to the United States delegation a roundup of world radio reaction, prepared by the FBIS in Washington, to the Conference proceedings. The bulk of the usable equipment from the Hayward station

(HABRU) was sent to Hawaii, where intercept facilities were being expanded on the Island of Kauai.

Oahu and Kauai, Territory of Hawaii

In the fall of 1943, in response to requests from the OWI and others of the intelligence community for more coverage of Japanese broadcasts, the FBIS began concrete planning to establish a monitoring station in Hawaii, where Japanese medium wave broadcasts could be heard quite well in the evening hours. A survey team made up of engineers from the West Coast stations visited RID installations on Oahu and Maui late that fall and conducted sample monitoring and looked for specific sites. The report of this team led to the initiation of a monitoring operation co-located with the RID in an extinct volcano called the "Punchbowl" in Honolulu, Oahu, in May 1944. The initial personnel arrived in late March and began setting up facilities, which included a Rhombic antenna in the Punchbowl for communicating with San Francisco using the Telefax equipment from Puerto Rico after the closing of that station in early March. Initiation of this communication service awaited receipt of the equipment from Puerto Rico. A sloping Vee antenna and a Beverage Wave antenna were erected on the north coast of Oahu near a pineapple camp called Waialua, where RID had a secondary monitoring station identified as HA-9. The Vee had legs some 750 feet long and was supported by an 80 foot creosoted pine pole. The apex angle of the antennas was about 40 degrees. The antenna was directed generally toward Japan and the Chinese mainland beyond. Reception was excellent on this antenna, which was soon terminated to eliminate, to a practical degree, reception of friendly signals originating on Oahu. The Beverage Wave antenna was made some 1800 feet long. The two wires were mounted on wooden poles about 14 feet above ground. The antenna caused quite some curiosity to people in the camp, for it ran through the camp, through the pineapple fields, over irrigation ditches and finally ended near an eucalyptus grove, where it, also, was terminated to eliminate rear-end reception.

During dry periods and during periods immediately after heavy rains, which were quite frequent seasonally, the reception on the Beverage Wave antenna amazed the RID personnel who previously had listened to Tokyo Radio only with a long wire antenna. Dozen of medium wave stations from Japan, China and the Soviet Siberian mainland were heard for the first time. However, to everyone's amazement, there were odd periods when reception with this antenna was useless. This was puzzling. Soon, however, it was observed that reception was very good in the evenings shortly after a rain and during the day it was passable. The latter was a diurnal change expected on medium wave reception over great distance. It was further observed that after a rain reception got better and better as the day changed to night, when reception was excellent, almost amazing. Within a few days after a rain, however, the reception was almost completely masked by a hiss that grew louder as the sun set and night fell. Closer observation led engineers to suspect corona discharge and leakage noise from high-tension lines. This was conclusively proven to be the case when one day the 20 kV power line, over a mile in from the antenna and about a half mile from the sea, was blown down and interrupted (sic) near the front of the antenna. It was finally concluded that the noise, principally, was due to the leakage of

currents under high voltage across the layer of salt deposited on the power line insulators and hardware. When the salt was dry during the day it was a good insulator. As soon as the salt on the hot insulators began to collect moisture in the cool evening, it began conducting, and leakage under high voltage was considerable. The leakage produced a high voltage electromagnetic radiation that masked the broadcast band, but was inaudible on shortwave. When rains washed the salt off, there was no leakage to set up the noise. The winds from the sea deposited the salt on everything, but it was a matter of concern only on high-tension lines. It was this limitation of the HA-9 site that led to experimentation with reception at other sites.

Recordings on wax cylinders were made during the late afternoon and evening hours at HA-9 and then transported to the monitoring operation set up in the Punchbowl. At first, one engineer made the recordings in the evening at HA-9 and then late in the morning he started up the transmitter, on schedule, to transmit the mornings take, from the previous evenings recordings, to San Francisco via the Telefax circuit. Later a second engineer was added as monitoring hours were expanded to provide desired additional coverage, that included some intercepts of several Chinese, Japanese and Philippine, Hong Kong and Singapore shortwave stations.

Test Beverage Wave antennas were set up initially at a pineapple camp near Pearl Harbor and then at the HA-4 site on Wilhemina Rise in Honolulu. It was determined that the best signal collected, in simultaneous observations at the three sites, was at HA-9 when the power line was clean after a rain. It was also determined that the drop in signal was fairly directly proportional to the distance of the site from the sea. Land attenuation over a few miles affected signals much more than attenuation over thousands of miles of seawater. As the reception at HA-9 could not be controlled because of the leakage noise, explorations began for a site elsewhere, off Oahu.

In early July 1944 the American forces had just captured most of the main Marshall Islands from the Japanese. A three-man team soon left Oahu for the Marshalls to survey reception. A 36-hour flight via Johnston Island in a Navy PB2Y3 arrived on Kwajalein Island. A test Beverage was set up, but interference from local military radio stations was too great. A trip of several hours in an LCI to Namur on the Northern end of the Atoll, via Roi, landed the team at an installation where the Marines were still licking their wounds after routing the Japanese on this and the neighboring islands. One of the team members was a Nisei Japanese monitor, who had to be escorted every moment, especially during the night on trips to the toilet facilities to keep him from being shot by the Marines. In mid-July a test Beverage Wave antenna was set up on Namur oriented toward Tokyo, Japan. Reception was very good, but no better than at HA-9, on northwestern Oahu. The southern location of the Marshalls had not gained much distance from Tokyo. The war was moving on and the Marianas campaign was in progress. The team returned to Oahu wiser, but not ready to recommend establishment of a monitoring operation in the Marshalls.

In August 1944 a reception survey trip was made to the northwestern-most main island of the Hawaiian group, Kauai. Although the whole island was combed for an ideal

combination of available logistic and administrative support for a monitoring station and the best reception, close scrutiny of the northwest coast was given also because of the conclusions arrived at on Oahu, to wit: that medium wave signals were best intercepted from a location as close as practicable to the sea (where the signals first made landfall). Such a site was located about one mile from the town of Kekaha, on property owned by the Kekaha Sugar Plantation. The four acre site consisting of an abandoned World War 2 U.S. military camp, which before the war, had also been used as a plantation workers housing area. It was surrounded by fields planted in sugar cane on three sides and rocky ridges approaching a mountain range on the fourth side. The path for signals approaching from Japan was clear, no radio activities on the island were within several miles, and there were no high power lines between the site and the sea. The sugar plantation administration was very cooperative. They allowed the erection of antennas in the sugar cane fields between harvest of one crop and the planting of another. They charged only a very nominal rent for use of the site and for utility connections. FBIS could use the structures on the site and special efforts would be taken, the plantation manager promised, to cut fire breaks under Beverage Wave antennas and around Rhombic poles. The reception of target stations at the site was better than it was on Oahu, not so much because the site was 100 miles closer to Japan, but more so because radio interference was minimal. There were no high voltage power lines to nullify the excellent signal collecting capabilities of Rhombics and Beverage Wave antennas. A move to Kauai, as soon as practicable, was recommended.

On 23 November 1944 the initial contingent of three employees arrived on Kauai. Within a few days several more employees arrived from Honolulu. The first month was very hectic. Long hours of work by the entire staff were expended as they battled to set up the initial facilities to activate a monitoring operation while, at the same time, tried to sweep out cobwebs, centipedes and scorpions, patch up rotted screens and holes in the floor of structures in the old barracks to be used both for the operation and for living quarters,

On 29 November, using Sloping Vee antennas supported by coconut palm trees, and long wire antennas strung on Signal Corp lance poles, monitoring operations began. Communications were provided by Army Signals facilities both to Oahu and from Oahu to San Francisco by tape relay on Oahu. By 4 December 1944 operations were closed out on Oahu except for a liaison and copy distribution post manned by one person, to provide OWI and other agencies hard copy of the Kauai take.

Needless to say, the process of building and improvement on Kauai was long and hard. Most facilities were established through sheer ingenuity and improvisation. There were only minimal funds for construction and technical improvements. Engineers bought their own tools for construction purposes. Signal distribution terminal blocks were made out of pins boiled in paraffin wax. The terminal lugs in these blocks were made of pieces of number 12 copper wire pushed through holes drilled in the blocks. Racks for mounting the receivers and the consoles in the intercept station were made out of 2" X 2" pine lumber covered with tempered masonite. Open wire lines transmitted signals from the radio shack to the operations building for months before a piece of lead covered

multiconductor cable was obtained for burial in the ground. Nevertheless, esprit de corps was high.

When the sugar cane was harvested in the spring of 1945, materials were on hand for the erection of a Beverage Wave antenna and for five Rhombic antennas to replace the Sloping Vee. A calculated risk was taken with termites, which were everywhere, in the use of uncreosoted poles for the Rhombics. The creosote had a relatively low flash point and it was feared that during periods of burning off the cane the poles might be ignited if they were creosoted (In spite of this precaution, in 1945 when the cane was burned off, one Rhombic pole was destroyed by fire).

In mid-1945 sufficient funds were made available for the fairly satisfactory rehabilitation of all barracks structures in the compound and for the movement to the compound of needed structures from other military points. All screens were replaced, roofs were repaired, new floors were laid, footings were replaced and treated against termite infestation and the structures were painted inside and out. Morale took a leap forward (only to be dashed in December when the news arrived of loss of FCC support for FBIS)

Coverage, although predominantly Japanese voice and press, included English, Chinese and some French. The overall staff soon numbered about forty. Operations were on a 24-hour a day basis, with peak coverage occurring late in the evening for the Far Eastern late afternoon broadcasts. One of the most interesting coverage segments during the life of the Kauai station was the intercept of Communist Chinese hand-sent Morse code press from the birthplace of the Chinese communist movement, in the vicinity of Yen-an, in North China. The transmissions were at first weak, irregular in schedule and sent with a very poor hand. These transmissions were in progress when the Oahu operation moved to Kauai in late November 1944. They continued to hold great interest and were a great challenge to copy even to the very fine Morse press operators the Kauai Post had on its staff. The irregular schedule, often missing transmissions entirely and frequently changing frequency, was attributed to the moving of the transmitter, which was apparently mounted on a truck to avoid capture by Chinese Nationalist forces. Over time, as the Communist Chinese movement became stronger, the signal of their transmissions became steadier, more regular in schedule and it was better sent.

GUAM AND IWO JIMA

At the request of Admiral Nimitz, then Commander in Chief, Pacific (CINCPAC), FBIS opened a post on Guam with a staff of five in early February 1945. The main responsibility of this post was to monitor Japanese medium wave (home service) transmissions and report significant content to Admiral Nimitz's headquarters in Honolulu and to General Curtis LeMay's 20th Bomber Command on Guam. It was this command that was conducting massive B-29 bomber raids on Japanese cities, including Tokyo.

To increase the number of medium wave stations that could be monitored well, FBIS established a small listening and Japanese translating post on Iwo Jima, in the Benin

Islands, on 13 August 1945. It was soon determined that no significant addition to the coverage available on Guam was obtainable on Iwo Jima. The operation was closed on 29 September 1945.

The first news of impending loss of financial support by FCC for the FBIS mission filtered to the staff in the Pacific in September 1945. Operations were at a standstill during December 1945, until word came of the transfer of support and nominal supervision to the Army, in late December. The Kauai Staff, who had received the news just in time, that operations would continue, celebrated the Christmas of 1945 with special thanks. New Year's Day was even more joyous as the word was out that FBIS had been transferred to the Military Intelligence Division of the General Staff of the Department of War on the 30th of December.

CHAPTER 11

"MESSAGE TO MACARTHUR"

On June 24th 1942 an RID man on watch at the primary monitoring station at Portland, Oregon, intercepted a station on 6970 kcs calling "CQ" meaning a general call to all stations. It also sent this: "Australia from Java". It signed the call sign PK1JZ.

The prefix PK was indicative that the sending station was by international agreement located in Java and the figure one that it was in the first radio district of that island.

This did not seem kosher to us since we knew that amateur stations in Java were off the air for the duration of the war.

The RID monitoring system was alerted and orders given to place the station on a priority list and for the direction finders to take bearings on the next transmission.

Three days later the station was heard again and it transmitted the following: "To United Nations, please answer for important message to General MacArthur from Java. Answer on 40 meters."

It was noted that a station in Australia with the call letters VNDN replied, but no contact was made on that day.

Contact with VNDN was established on June 28th, but the station, designating itself as being in Java, refused to send any message. It stated that it desired verification it was communicating with an Australian station by having a message transmitted from the higher-powered international broadcasting station KGEI operated at the time under the auspices of the U.S. Office of War Information. Apparently the signals from this high-powered broadcasting station were being received very well.

Meanwhile, RID had been busily engaged taking bearings on the alleged Java station. To our astonishment, when the bearings were projected, they produced a fix indicating that the station was in the northern part of the island of Luzon in the Philippines.

We immediately notified the Office of the Chief Signal Officer of the Army regarding the information we had developed. The Signal Corps urged us to keep on top of the case.

The verification was broadcast by KGEI through arrangements made by the Chief Signal Officer on June 29, 1942. Immediately after the station signing the call sign PK1JZ sent what appeared to be a United States Army man's serial number and requested that his wife be notified that he was safe. This was followed by a coded message. Three RID men on the staff at Washington under Al McIntosh's supervision were ordered to take the CM-94 U.S. Signal Corp code device and, with each one using a familiar woman's name as an indicator, endeavor to break the coded message. Within an hour Merle Glunt announced he had the message in the clear. It indicated, we thought, an U.S.

Army Officer had escaped with some of the Philippine Army and they were hiding in the hills of northern Luzon. He indicated he was anxious to get the information to General MacArthur in Australia.

A messenger was immediately dispatched with the decoded message to the office of the Chief Signal Officer.

We were rewarded with a telephone call expressing appreciation for our quick solution of the coded message, as the Army cryptographer had not at that time broken the code.

We were then requested to give the case top priority and to devote the entire facilities of our primary monitoring station at San Leandro to the copy of the traffic from PK1JZ and other stations that popped up later.

The Signal Corps provided RID a leased line teletypewriter circuit from San Leandro to Washington so that the messages could be transmitted directly to the code laboratory of the Signal Intelligence Service.

Subsequently, several more transmitters came on the air with coded groups. We later learned that they been landed on the island by submarine. The operation was to pave the way for General MacArthur's return to the Philippines as he promised.

The stations sent a tremendous amount of traffic. We had 16 personnel assigned to that work alone. In this case, as in others, we sought to find out when we could be relieved of the work which was a province of the military. In reply to an inquiry to the Western Defense Command, the Signal Officer sent the following letter dated December 31, 1942: "The special assignment now being carried on by the FCC's monitoring stations at the request of Western Defense Command and the 4th Army, has contributed greatly to the interest of this Command. The nature of this case requires the continuance of the use of FCC facilities for an undetermined period of time. It is therefore requested that your efforts be continued until such time as the closure of the case is warranted." We continued to do this job of intercepting the traffic from the stations in the Philippines for many weeks.

CHAPTER 12

JAPANESE BALLOONS

Late in the war, a series of strange radio signals were intercepted by RID's monitoring station on the West Coast. When the direction finder bearings from the Alaskan and other monitoring stations were plotted, the staff was surprised that the fix or intersection of the bearings indicated locations over the Pacific Ocean. A daily plot of the bearings further indicated that some device was travelling in an easterly direction at a fairly constant speed of 600 miles per hour. A daily track confirmed that, whatever the nature of the device, it would hit the coast of Oregon. The military and FBI were alerted. We were lucky in getting bearings as the radio signals were of short duration and apparently sending binary information, e.g., "yes" or "no" and not regular radio messages.

We were not too surprised when the press reported a Japanese balloon equipped with a radio transmitter had been found in an Oregon forest. Balloons were found as far East as Idaho. Several other balloon signals were heard and they were tracked continuously in their flight to the West Coast. On one occasion a plot of bearings showed the device farther to the westward than that of the previous days. The next day the bearings showed it had reversed its direction and again headed for the West Coast. Apparently this balloon had encountered reverse winds in its flight. It was thought that some balloons carried incendiary devices and were responsible for setting forest fires that broke out in Oregon at one time.

CHAPTER 13

ANOTHER EMBASSY CASE

The detection of the clandestine transmitter in the German Embassy immediately after Pearl Harbor was not the only transmitter RID located in an Embassy in Washington during World War 2.

On August 27, 1942, a station transmitting the call letter VS on 11020 kcs was intercepted by our primary monitoring station at Santa Ana, California. Direction finder bearings obtained from our stations at Laurel, Maryland, Kingsville, Texas, Portland, Oregon and Allegan, Michigan, produced a fix bracketting the District of Columbia.

Having determined that this unknown station using the two letter call was in the District of Columbia, mobile units were assigned to the case and loop direction finder bearings placed the transmitter at the southwest corner of 16th and Fuller Streets, N.W. This time it was the Polish Embassy so the State Department and FBI were notified. In the meantime, the operator of the station established communications with stations, which RID identified as being clandestine transmitters operated by the Polish Government in exile located in London and Montevideo, Uruguay. It is interesting that bearings taken in Hawaii and Puerto Rico combined with those taken by our stateside stations helped to confirm the location of these two stations.

We were concerned about the operations of this transmitter in the Polish Embassy. While under our surveillance, we intercepted a message transmitted in English advising about the weather in the District of Columbia and vicinity. This type of information was in violation of the censorship regulations on the part of our licensed stations. Soon after transmitting this type of information the station was silenced by our government.

PROBE TO BARE REDS' ILLEGAL RADIOS IN U. S.

FCC Inquiry Will Air Discovery
and Seizure of Short Wave
Sets in N.Y., S. F. Consulates

By David Sentner

Los Angeles Examiner Washington Bureau

WASHINGTON, Oct. 17.—The **PASSPORT FRAUDS**

discovery and seizure of power. The examples range from full short wave radio sets in the smuggling of propaganda funds from the Soviet, illegal entry of Soviet consulates in New York Communist agents, passport frauds (Earl Browder, general secretary of the Communist Party in the United States was convicted and sentenced to a penitentiary term for such a crime) to the gigantic, insidious and well-organized boring-within campaign to subvert the American form of government to Communism.

The radio sets, presumably used for direct contact with Moscow or Soviet listening posts abroad, were unlicensed and reported to have been discovered by FCC monitors checking the ether for illegal radio transmission.

The FCC allegedly kept the seizure of the sets secret.

Whether the consulates used such sets for transmitting messages abroad during the days of the Hitler-Stalin pact is unknown.

BROADCASTS BANNED

Since America entered the war, all short wave broadcasting to foreign points other than that conducted by Government agencies, has been banned.

The use of a short wave broadcasting set without a license by a consulate or individual during peace time is a direct violation of the law.

Under the wartime emergency Government regulations it would be looked upon as an even more serious offense.

The flouting of American laws by agents of Communist Russia is recorded in innumerable files of Government investigative bureaus.

CHANGE NAMES

Communist front organizations continue to change their names as their propaganda operations become too well known.

The young Communist League of the United States "dissolved" last Sunday in New York City to adopt a new name without the word "Communist" in its new organization which will broaden its base of leadership.

If the forthcoming conference in Moscow among Allied statesmen should result in a genuine order from Stalin to his agents here to suspend all Communist propaganda, it would be a thousand-fold more convincing than the most rosy-hued communiques regarding Soviet intentions of collaborating with democracy for a postwar world of peace and mutual trust.

Illegal Radios Found In Red Consulates

By DAVID SENTNER

News-Post Washington Bureau.

WASHINGTON, Oct. 18.—The discovery and seizure of powerful short wave radio sets in the Soviet consulates in New York city and San Francisco after Pearl Harbor will be aired at future hearings of the House committee investigating the Federal Communications Commission, it was learned today.

The radio sets, presumably used for direct contact with Moscow or Soviet listening posts abroad, were unlicensed and reported to have been discovered by FCC monitors checking the ether for illegal radio transmission.

The FCC allegedly kept the seizure of the sets secret.

Whether the consulates used such sets for transmitting messages abroad during the days of the Hitler-Stalin pact is unknown.

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CHAPTER 14

A Canadian Case

At one phase of the war an intercept was made of a signal having much of the characteristics of the Nazi espionage system. A nationwide alert brought in bearings that produced a widely and somewhat erratic fix embracing a part of northern New York State and Canada. At that time propagation conditions were very turbulent. We hounded the monitoring stations for bearings, but some days none were produced. We were unable to make any determination as to whether the transmitter was in the United States or Canada. It must be remembered that high-frequency direction-finding is not an exact science and the best it can do is give a direction of the arrival of the radio signal which might be diverted from its true course by propagation turbulence or site errors.

Meanwhile, I had dispatched three mobile units to the general area in hopes that they could get within the ground wave of the signal. If they could locate that small area at the frequency the station was operating on, the transmitter could be located using the loop direction finders. After several worrisome days and nights propagation became stable and a fix of sufficient accuracy was obtained that convinced me the transmitter was in or near Montreal. I immediately telephone my counterpart of the Royal Canadian Signal Corps, Colonel Drake, and informed him of our conclusions.

A few days later he informed me that we had done much to permit him to save face. The story was that a German submarine had landed a spy in the St. Lawrence River. He was quickly apprehended by the Canadian Mounted Police. They like the FBI in the United States were responsible for acts of espionage and sabotage.

Colonel Drake further informed me that the CMP had set up the transmitter of the German agent and were attempting to use it as a counter-espionage operation, similar to the FBI case on Long Island, which was previously discussed. So Colonel Drake's crew went to work and quickly located the transmitter; he expressed his appreciation to RID as it was unnecessary for him to disclose how he had first heard about the operation of the station.

RID PERFORMED MILITARY RADIO INTELLIGENCE

The war, after slowly creeping from Europe toward United States shores for two years, suddenly exploded upon us at Pearl Harbor on December 7, 1941. The military agencies were ill prepared and equipped to do the radio intelligence operations necessitated by such a national emergency as this Chapter and subsequent ones will reveal.

Consequently, the Radio Intelligence Division of the Federal Communications Commission, because it had a network of radio monitoring and direction-finding stations was given its full share of duties not called for in its job description.

Frantic Requests of the Armed Services for Assistance

When the disaster of Pearl Harbor burst upon us, on December 7th, the major part of RID's expansion had been completed, and our units were on the job in Hawaii, Alaska, and on the West Coast, as elsewhere, patrolling the ether to ensure against any subversive radio activity. In the military sphere this country was far from being prepared for an all-out war.

In the days following, an attack on the mainland was regarded as imminent. Such direction-finding installations the Army and Navy had were swamped with work. It will be recalled that near hysteria prevailed. The radio field was no exception. The most lurid stories came from both Hawaii and the West Coast. Every unidentified signal was labeled a Japanese spy or even a Japanese warship.

It was this frantic state of affairs that RID was asked to step into and lend a helping hand. Of course, we did everything we could.

The following is typical of communications received from the Assistant Chief of Staff, G-2, of the 9th Army Corps, showing the urgency of these requests:

"It is imperative at this time that we take full advantage of every means at our disposal to definitely locate the source of radio signals emanating from certain radio transmitters in the Pacific Ocean."

In response to these requests, men and equipment were flown from their bases in the interior to stations on the West Coast. The late General Walsh told me while I was in Seattle that his bombers had sunk a Japanese submarine, whose location was determined from our direction finders. General DeWitt advised our West Coast Supervisor that information gained by our monitoring activities had aided in confirming the approach of the Japanese to Midway.

Lack of Preparation of Armed Services

Let me tell you some of the confusion that prevailed. We were deluged with reports from the Army that there were stations transmitting in Japanese Kana Code, which its direction finders had located at various points in the States along the West Coast. These recurring reports invariably led us on a wild goose chase. Here are some examples:

Shortly after Pearl Harbor, we got one call after another (...some text missing here) its radio to our units in the field. The station, which the Army had been locating at various spots near Salinas, was found to be a Japanese station in Tokyo. Remarkable considering that the station was given in the Berne List (A publication of the International Telecommunication Union, Berne, Switzerland, listing all radio stations of the world by location, power and frequency). Another of these Japanese stations supposedly secreted near Castroville, California, turned out to be another regular station in Tokyo. Still even another station, reported by the Army as being located near the corner of Randall and Locust Streets in Fontana, California, whose garbled transmissions were reported as having the word "Domei" appearing, was the regular listed Japanese Domei News Agency station in Tokyo, which sent press in both Japanese and English.

In other cases, the scrambled-speech transmissions of regular domestic point-to-point stations were taken for Japanese.

At the time of Pearl Harbor, the various Naval Districts had their own communications officer and staff, whereas the communications on their ships came under a separate jurisdiction. RID received a frantic call from a Navy Communications Officer of the San Francisco Naval District, reporting they had intercepted radio signals which seemed to be modulated or had the tones of a ship's propeller and they feared it might be a Japanese submarine approaching the Golden Gate. He described the frequency and other characteristics of the signal. We quickly identified it as coming from a transmitter on a buoy with a submerged hydrophone, which picked up the tone of the ship propeller and, in turn, modulated the transmitter. We also knew that it was being operated by the fleet communications. In fact, I had seen parts of one being manufactured in a Baltimore defense plant, which made oil burners in peacetime. We advised him to call the Navy Yard for information as it was not a Japanese transmitter. A case of one branch of the Navy not aware of what the other was doing.

Japanese Station Ten Miles from Fort Lewis, Tacoma, Washington

The headquarters office of RID in Washington, D.C., received an urgent PLT message from the Portland, Oregon, monitoring station, indicating that an Army Signal Corps unit out of Fort Lewis, had discovered a high-powered Japanese espionage station in the vicinity of Tacoma. The word we received was that "we have been able to locate within ten miles, a Japanese radiotelegraph station sending Kana Code."

We immediately sent several of our mobile units into this area and had our Supervisor contact the Commanding Officer of the Signal Corps unit that had originated the report. On being contacted, this Officer had his radio operator tune in the Japanese station so that our men could hear it. We quickly recognized the station as being one of the high-

powered Japanese Navy stations in Japan. We had quite a bit of difficulty convincing the Army Signal Unit that this station was not located within ten miles of where it was being received. After all, there was nameplate attached to the Army receiver and loop direction finder that said: "This equipment cannot be used for stations that are more than ten miles way." What was really meant was that on shortwave, a loop direction finder is not reliable for obtaining directions on sky waves, signals coming from transmitters hundreds of miles away. Inasmuch as ten miles might be considered as a "round" figure for the ground wave range of short waves, the nameplate was merely warning operators that bearings should not be depended on beyond ground wave range of the station being intercepted. We were unable to close this case until we furnished a complete long-range high frequency direction-finding "fix" to the Commanding Officer. This convinced him.

This was not intended to be critical of these Signal Corps operators. They were not trained in direction finding and its relation to radio wave propagation, and could not be expected to recognize this technical problem as it has been pointed out before in this narrative.

Even though the frenzied days after Pearl Harbor saw many of the botched radio intelligence jobs, I don't want to imply that they were limited to the early days of the war, nor that they were the monopoly of the Army. Both services pulled croppers at other times. In the fall of 1942 RID got urgent requests from the Office of the Signal Officer of the Eastern Defense Command that we do something about a station 8NJ. Army units reported it was sending out information about shipments in Delaware Bay and it had been located by their direction finders at Linnwood, Pennsylvania. The Office of Naval Intelligence and the FBI also became interested. Bearings of our stations placed the station in England, and the Army was so advise. A few days later, we got a request from the Army to reopen the case because the arrangement of its call letters and other transmissions seemed to be some kind of code. Actually, the station was sending a series of V's with its call letters and coded weather repeated over and over again. We got confirmation from the British that the station was a RAF beacon.

The Navy did about as good a job of getting things mixed up in the AOR case as could be imagined. That was the case involved in the Brooklyn spy trial several years ago. The FBI had set up a station using the call letters RAY. On Long Island, purportedly run by a Nazi spy, and station AOR in Germany communicated with it. The Navy placed the location of the Long Island station in Europe and then in England, and the location of the German station first in New Brunswick, Canada, and then in Newfoundland. It closed the case on this basis.

In another instance, a Navy commander wrote us on April 27, 1942, saying that the Navy station on the West Coast had picked up a transmission in English voice with Japanese accent calling on 20.1 megacycles. A background noise of propeller and ignition was said to be heard. It was reported that bearings on one day were 214 degrees and on the next 140 degrees, and that the station signed off with the call letters LSY. We were asked to take bearings. We didn't need to. The station was a regular point-to-point

station at Monte Grande, Argentina, using its regular procedures and call letters; it was listed in the Berne Lists.

A real prize was a report from the Navy in Puerto Rico of an unidentified station using the call WAR. This, of course, was none other than the regular Army control station in Washington which has operated for 15 years on scores of frequencies.

We got requests repeatedly from the Army and Navy asking us to identify some unknown suspicious signal, which turned out to be another military or naval station. Not infrequently, the call from the Army involved another Army station, and from the Navy, another Navy station.

I remember one case, when RID was asked by the Army in Washington to identify a station 9FZ causing interference to an Army station on 4772.5 kcs. As we had no record of it, our nets were alerted and a fix was obtained close to the intersection of Idaho, Nevada and Utah. The Army in San Francisco, when queried, did not know anything about the station. As we were sure of the fix and the transmissions were characteristic of Army stations in the Aeronautical Service, we went back at them again. This time the Army confirmed that the station was at the location we gave, and expressed the not uncommon amazement that we could fix the location so accurately. Such cases – where the Army and Navy did not know their own stations and we identified them – were regular grist to our mill.

I mentioned these instances merely to show that it is a matter of record that RID was constantly solving radio intelligence problems, which had completely stumped the Armed Services. They had, I think, some probative value as to our relative competence in the field. This is important with respect to Chapter 18.

Causes of Trouble Confusion Compounded by Fear

In the dismal days of December 1941, confusion was compounded with fear, the Army was reporting Navy stations as being Japanese and vice versa, in fact, the Signal Corps was reporting Army air stations in California as Japanese transmitters. Because of the incidents related earlier, and others like them, showed something seriously amiss with the Army's operations, arrangements were made for RID to inspect some of its operations to see wherein the trouble lay causing the repeated wild goose chases on which we were sent. We definitely found the reason, or rather, the reasons, for there were a number. There was something wrong at about every step of their operation. Direction finders were not properly located so as to be free of overhead wires. Unnoticed errors of 4 degrees were found in direction-finding apparatus. The Berne Lists in use were several years out-of-date. Frequencies of signals monitored were determined in the roughest of fashions – by reading from the receiver, instead of carrying out the requisite technical operations to get the precise frequency. Bearings were attempted and reported, because it was insisted on, when it was not feasible to take them. A fading point in the signal would sometimes be taken as the null, resulting, of course, in bearings widely in error. Reciprocals of the

true bearing, that is, the opposite direction of 180 degrees from the source of the signals were sometimes reported as the bearing, resulting in fixes to the East or inland instead of to the West. At times bearings were taken on other than the station thought to be under observation. Bearings were taken on two different Japanese stations, on different frequencies and at different times, on the assumption that a single station was being monitored, because the strength of the signal and type of transmission were the same. Loop direction finders were used on signals originating at a great distance, with the natural consequence of bearings widely in error. Monitoring projection maps designed for use over short distances in combat areas were used to plot bearings going over great distances into northern latitudes. As radio signals follow the great circle course, naturally the results were inaccurate. The bearings of one Army direction finder in Hawaii, on a station in Tokyo, were apparently right on the nose when projected on a Mercator chart. Plotting them on a gononic projection map showed they were considerably wide of the mark. The Army knew nothing about the use of gononic and polymeric charts.

The basic reason for all these errors was the inexperienced and unqualified personnel involved. We found the men engaged in this work most conscientious and anxious to do everything they could, but their lack of training could not help but produce the confusion that resulted. Right after New Year's 1942, while on the West Coast with the late Commssioner Wakefield, to confer with General DeWitt, Commanding General of the Region, a summarized contemporary report was given the Chief Engineer, as follows:

"As General DeWitt seemed concerned and, in fact, seemed to believe that the woods were full of Japanese with transmitters, I proceeded to tell him and his staff about the organization of the N.D.O. Section (the first name of the RID was National Defense Operations). I described its inception, objective, jurisdiction and its distribution of stations, equipment employed, personnel and training of personnel and the general modus operandi. I explained how we determined the general area in which an unauthorized station was operating and how we closed in on it with mobile units and other specialized equipment, including the all-frequency response receiver. I know it virtually astounded the General's staff officers. They had no comprehension whatsoever as to the difficulties one encounters in radio direction finding and why different equipment is necessary for ground wave as compared to sky wave propagation. And why it was particularly necessary to train personnel, not only in the use of equipment, but radio propagation as well and its relation to direction finding.

Frankly, I have never seen an organization that was so hopeless to cope with radio intelligence requirements. The personnel are unskilled and under trained . Most are Privates who can read only ten words per minute. They know nothing about signal identification, wave propagation and other technical subjects, so essential to radio intelligence procedures. They take bearings with loop equipment on Japanese stations in Tokyo listed, as such, in the Berne List, employing their authorized call letters and then report to their commanding officers that they have fixes on Japanese agents operating transmitters on the West Coast. These officers, knowing no different, pass it on to the General and he takes their word for it. It is pathetic to say the least. As an example of what they have done, a few nights ago a group of soldiers from G-2 with guns and steel

helmets started going from house to house demanding everyone to cut their receiving antennas down to 10 feet in length. Further more, Army reports Navy stations as being Japanese and vice versa. In between this chaos stands Mr. Greaves' FCC office. Whenever a station cannot be identified they call FCC. Consequently, it is easy to understand the hundreds of calls that have been made to the FCC office in San Francisco. They look to the FCC as an authority on all matters pertaining to radio communications other than their own."

The contrast that I drew in my memorandum between the Army personnel and RID men, was, I wish to repeat, not boastful on our part or deprecatory of the Army. It was merely the fact, and it is a fact, which it is no use not to recognize. No particular credit redounded to RID for that situation, because it should not have been otherwise. As a radio intelligence expert of one of our Allies, who was familiar with the work in the field throughout the world said, "RID bearings are better than those of anyone else – Army, Navy or British". And he plumbed to the heart of the matter when he added, "Of Course, you (that was RID) have trained engineers and experts, whereas the work of the Army and Navy is done by Privates and Sergeants."

That brings to mind the statement of Admiral Hoover of the 10th Naval District in Puerto Rico, when he was berating his staff for being incompetent as compared with RID. He said, "Why is an organization with ordinary equipment, but high-priced men (the latter is somewhat of a hyperbole, I might say) can locate and obtain information about stations when we with the best of equipment and plenty of men don't hear anything about them?" As his staff officer floundered around, he thundered, "Why don't you answer my question?" emphasized by appropriate pounding of the desk.

After our observations of Army operations, we helped to correct as many of the errors as we could by advising them of correct procedures. We were also asked to give instructions to their personnel.

Helped by RID

It was perfectly apparent that in the days after Pearl Harbor our help was direly needed by the Armed Services, not merely in preventing them from running amok in the matter of clandestine operations, which was within our province and the FBI, but in matters of a strictly military character. Military radio intelligence was not what we were set up to do and was outside our field, but we gave our help unstintingly when called upon, while still doing our own work.

West Coast Operations for the Military

Following Pearl Harbor, most of the calls on RID for help were by telephone. Some of the calls were confirmed by letter. Typical of the requests to our West Coast, Hawaiian and Alaskan stations are those contained in two letters from the Army and Navy. Lt. Col. Lehman, Assistant Chief of Staff of G-2 Headquarters of the 9th Army Corps, wrote on December 16, 1941, confirming his earlier telephone request that "all available radio

monitoring units be placed in operation at once to locate the source of a large volume of Japanese radio traffic it was vital that immediate steps be taken to place these transmitters under surveillance to discover their exact locations". He added, "It is easy to comprehend why under these conditions, we contacted your office at once to get the needed support", and thanked RID for the prompt action and data he received from us. Similarly, Captain Davis, Chief of Staff of the 13th Naval District wrote RID on December 20, 1941, confirming earlier telephone calls from the Navy requesting "bearings on certain high-frequency radio transmissions". He likewise emphasized the importance and urgency of the work: "It is imperative at this time that we take full advantage of every means at our disposal to definitely locate the source of radio signals emanating from certain radio transmitters in the Pacific Ocean. He added that "The bearings what you furnished in response to these requests have been most helpful to us and we will greatly appreciate their continuance". He asked that our stations be tied in with the Navy's West Coast net and offered to furnish the necessary terminal equipment and circuit extensions.

The requests covered about everything that conceivably might indicate Japanese activity and were just about that indefinite. On December 15th, our primary monitoring station at Portland, Oregon, advised us that the Army wanted bearings on any Japanese or unidentified station using Kana Code, or stations which might be Japanese on any of 14 frequencies. The Navy stressed the importance of getting as many bearings as possible in order to determine whether the units were mobile, that is, ships. It also wanted bearings on any suspicious signals heard on any frequency. The urgency was indicated by the Navy's regular calls to us at 11 PM for bearings and again at 3 o'clock in the morning for additional bearings we had taken in the interim. This is an indication of the hours our men put in to do what was asked of them. Some of them went 2 or 3 days without much sleep during those hectic days after Pearl Harbor. The experience of our other stations was comparable.

Naturally enough, we did not have personnel and equipment on the Coast to do the great volume of work involved in these requests. But it didn't take us long to remedy this. Immediately, men were ordered to the Pacific Coast by airplane, carrying their equipment with them. Mobile units were dispatched to the West Coast from Utah, Idaho and Montana.

It will be noticed that the Navy, in its requests, specified certain frequencies on which it wanted all bearings. We suggested that we also give them the time, as well as a portion of the transmission in each case, but that was of little interest to them. Again, this illustrated the lack of qualifications for radio intelligence work in the military services at that time. Without something to distinguish the signals on which the bearings were taken, even though they were all on the same frequency, it would be pure luck if bearings on different ships, perhaps thousands of miles apart, were not hopelessly mixed up. Any fix from such data would, of course, be worthless.

During those early days, our West Coast stations, in addition to identifying hundreds upon hundreds of signals for Army and Navy personnel, took thousands of bearings on

Japanese naval and army stations. Our Portland station alone was furnishing as many as 500 bearings on some days. Our greatest contribution was unquestionably not directly in the military field, but still in view of the confusion that prevailed, one of military significance, namely, to show that station after station, which was thought to be on land or just off shore, was in reality thousands of miles away. In the strictly military field, we had no way of knowing to what use our bearings on the Japanese navy and army transmitters were put, but we were repeatedly urged to furnish all we could. I learned from General Walsh(?) that toward the end of December, our bearings led his planes to a submarine off the Oregon Coast, which they sank. On another occasion, we got bearings on transmissions of the Kana Code that furnished a fix close to Los Angeles. The signals undoubtedly originated from a Japanese submarine pack as we tracked them across the Pacific.

Although we wanted to, and did, render all the help we could, we recognized at the outset that we were getting into the military field. Accordingly, as soon as we got word of the requests of our Pacific Coast stations for bearings on Japanese military and naval stations, we took pains to clear the propriety of our acting on requests of Naval officers in the field from Admiral Noyes, Director of Naval Communications in Washington. On December 16th, we wrote him advising of the requests we had received and of the extraordinary steps we had taken to be able to fulfill them. We said, "The men are at this time on duty at the primary monitoring station and will continue to remain on duty, rendering the assistance requested by Naval representatives on the West Coast, unless you issue instructions to this office to the contrary". We emphasized "our willingness to cooperate with (Navy) representatives on the West Coast if our services can be utilized to advantage." Admiral Noyes replied on December 31st that "the immediate and effective cooperation of the FCC direction finders on the West Coast in a time of emergency is very much appreciated". With respect to future requests for work, he said that District Commandants were being requested, first "to release FCC stations from special assignments which should be covered by naval direction finders" and, second, "to submit all recommendations for cooperation in special situations to the Navy Department to insure proper coordination of effort".

As a result of Admiral Noyes' letter, we prepared to stop the work on the Japanese naval units, which we had done at the request of local commanders. The West Coast, however, had been a combat area with General DeWitt in command. And we did, as well as everyone else there did, what he said. He decided early in January 1941 that, in order to coordinate radio intelligence work, we should establish a Radio Intelligence Center in San Francisco, in which the other agencies should cooperate. The purpose of this center was to coordinate the monitoring, cataloging, identification and evaluating of all signals on the air in order to put an end to the very distressing and wasteful confusion that prevailed.

The Radio Intelligence Center, or RID, did not get under way formally until March 1942, but our office in San Francisco served in the interim as the de facto information center for everyone with a radio problem. Supervisor W. Ford Greaves, a former Navy Commander, was recognized as the authority from Pearl Harbor on to whom everyone on

the West Coast appealed for help. Bearings taken by RID were relayed to the service through the Army telephone network until circuits were set up in connection with the RID, and even after that, the network was available as an alternate tie-in with Army posts.

Army Provides Guards For Monitoring Stations

Immediately after the declaration of war, the Army, without a request on the Commission's part, moved in companies of Infantry to guard each of the primary monitoring stations. When because of military necessity the Infantry Guards were called for other duty, the Commission employed its own guards.

CHAPTER 16

ALASKAN OPERATIONS

The military radio intelligence operations of RID in Alaska began in December 7, 1941, with a request from the Commanding Officer of the Air Force Base at Ladd Field, Fairbanks, that we supply radio direction finder bearings on any Japanese station heard by three monitoring stations in the Territory. Those stations consisted of a primary station on the grounds of the University of Alaska, secondaries at Anchorage and Juneau. The bearings obtained were transmitted to G-2 at Fairbanks and Fort Richardson at Anchorage.

The part played by the RID in the military radio intelligence was far greater in Alaska than in any other theater of operations. During the fifteen months after our entry into the war, we did most of the military radio intelligence for the Army, as they had no facilities and trained men to perform these functions.

In fact, the Army had no radio intelligence company in Alaska until the end of 1942, and did not get its stations in operation until the early part of 1943. The amount of work involved in furnishing the large number of bearings and intercepts and doing other things requested of us by the Alaskan Defense Command far exceed what it was originally anticipated our units would be called upon to do. Our modest facilities and personnel were loaded down rather heavily.

We had, of course, our regular functions to perform, but naturally gave the requests of the Army priority. Early in the war, military and naval personnel expressed fears that the Japanese would land on one of the outlying islands in Southeastern Alaska and set up a radio station to transmit weather reports and ship movements. Difficulties in transportation made surveillance against illicit operations over the large area in the Territory, something of a problem in any case. And this was a threat we were not equipped to cope with unaided. We endeavored to get the Navy to help us by patrolling the coastline with small ships equipped with radio equipment, but we were unsuccessful. However, we got the prompt and hearty cooperation of the Fish and Wild Life Commission, and were able to give necessary surveillance by sending men along on their regular maritime patrols. This was RID's first maritime monitoring station.

We increased our personnel in Alaska to handle the mounting work resulting from the war, in particular that requested by the Alaskan Defense Command, but the invasion of the Aleutians in June 1942 resulted in our being called on to do even more military radio intelligence work. At a conference in early June, between the RID Supervisor for the Alaskan area, and Lt. Col. Castner, Assistant Chief of Staff, G-2, of the Alaskan Command, the urgent need was stressed for all the Radio Intelligence assistance RID could give in furnishing bearings, intercepting flash messages relating to movement of enemy craft and making intercepts of regular traffic, especially that in connection with Japanese operations in the Aleutians. Accordingly, RID shipped two additional Adcock direction finders by air transport to Alaska. One Adcock DF was in operation at

Fairbanks. Additional personnel were also sent to Alaska as soon as possible. The Alaskan Defense Command expedited the installation of the Adcocks by furnishing incidental materials as well as workmen. One of the Adcocks was set up at our secondary monitoring station at Anchorage where the Headquarters of the Alaskan Defense Command was located. With the aid of a force of 30 men furnished by Fort Richardson, the job was done in three weeks. For the other, a site as far east as possible was chosen, partly in order to ensure steady reception of transmissions from Japanese stations in the Aleutians and partly to furnish as wide a base-line as possible for the taking of bearings, Nome was chosen as the site.

I Go to Alaska

On my return to Washington from Hawaii I received an urgent request to me with Lt. Gen. C. DeWitt, Commanding General of the Western Defense Command which, at that time, included Alaska.

Accordingly, Technical Supervisor Ellert and I flew to the coast and accompanied by V. Ford Greaves, Supervisor of the Radio Intelligence Center we had previously established at the request of General DeWitt, proceeded to the Presidio and conferred with him and his G-2 Staff. He had ordered Col. Castner of the G-2 Staff of General Buckner, the Commanding Officer in Alaska at Fort Richardson to fly down to join us.

General DeWitt and Colonel Castner were high in their praise of the operations we were performing for them.

The General was always glad to see me and whenever his aide announced me, he would rise from his desk chair and walk quickly to greet me with a hearty handshake. He always accompanied me to the door of his office when I departed. The General was a loyal friend of RID.

It was at this conference we mutually decided to establish a monitoring and direction finding station at Nome with the assistance of the Signal Corps.

The General also requested that RID train a radio intelligence company where it was encamped in California before ordered to Alaska.

We, of course, readily agreed to do this as RID men had a comprehensive knowledge of the radio procedures used by Japanese Army and Navy stations.

A plan for stepping up our operations in Alaska was agreed on. Immediately after, Ellert and myself accompanied by Col. Castner flew to Fairbanks. Soon after arrival, I paid my respects to General Bruckner who voiced his appreciation for the work we were doing for his Command and pledged his whole-hearted cooperation.

We then flew, with RID Supervisor for Alaska, Walter Loeber, to the various stations conferring with the officers in charge and their staff.

Food was scarce at that time and the day we flew to Nome we had to carry our own sandwiches, as there was no public eating place there. I recall spending 50 cents for a stale egg for breakfast in Fairbanks on the morning of our departure for Nome.

I found Nome a bleak outpost of civilization and wondered how our men would make out there. Even Army rations were scarce. The wind blew across the tundra at times obscuring the Quonset hut and antenna poles.

After I returned to the States I found out! As winter approached, Monitoring Officer in Charge Marshall wrote me in November 1942, as follows:

"The five men assigned here are living in a small Quonset hut over a mile from the station in the opposite direction from Nome. The distance to town is therefore about four miles. The building has not been weather-proofed and actually is equivalent to a barn from the standpoint of heating facilities. No attempt is made to remain in the building except during the times that the men must sleep. Even in bed there are times that the cold is almost unbearable. There are no bathing or washing facilities, but an outside sanitation section has recently been provided. Meals are purchased from the Army mess hall.

"There is no transportation provided between the living quarters and station, nor is there any available between town and the station. When it is not possible to hitch-hike rides to and from work, or into town to obtain the mail, walking is resorted to. The condition of the roads most of the time is such that a standard model automobile cannot pass over the roads due to the high centers. The high wheel jeeps, Command cars, and trucks are able to pass over the roads when equipped with chains. Nome has no taxicab or bus service. To venture outside during Nome blizzards and sub-zero weather is extremely hazardous, so the present outlook for men here this winter is most discouraging."

I informed General DeWitt of this condition. Shortly thereafter, conditions improved as the result of instructions issued by the General on December 5, 1942 to the Commanding General, Alaskan Defense Command.

Work in the Aleutians

With the invasion of the Aleutians in June 1942, our work was, of course, directed in large parts toward maintaining the closest watch over the stations set up there by the Japanese. There were three big stations: A Navy station which was part of a net extending throughout the Japanese Empire, an Army station which communicated regularly with stations in the Kuriles, and a special station which transmitted various kinds of special traffic. The work involved not only keeping track of the location of the stations, but intercepting and analyzing incoming and outgoing traffic. It was important not merely to keep the location of the Japanese stations set up on Kiska and Attu located at all times, but to intercept all the traffic in order to know where any other stations communicating with them were located.

The need which Colonel Castner had for the quickest possible receipt for radio intelligence data led him to have an Alaskan Intelligence Center established in the Fall of 1942 at Anchorage, next to his office. He was anxious for us to take over operation of the Center, but we arranged instead to train military personnel to handle it. By November 1942, a radio intelligence company had been sent to Alaska, and its personnel, after being trained by us, began to operate the Center under our supervision. The establishment of this Center enabled the Alaskan Defense Command to have intercepts and bearings taken by our stations in Alaska, as well as the bearings evaluated locally. As the Center did not have to wait for such evaluated information to be forwarded by radio from the Radio Intelligence Center at San Francisco, it was able to get the vitally needed radio intelligence information much quicker.

RID Prepares and Identification Manual Of Japanese Signals and Procedures

A not particularly dramatic, but still one of the most helpful things we did in connection with our work on Japanese radio stations was to compile an identification manual. Identification of Japanese stations had always been a problem by itself because of the use of Kana Code. And, although before Pearl harbor, certain work had been done by RID in compiling data as aids in identification, it was rendered largely obsolete on December 7, 1941, by the Japanese changing their calls and frequencies all around. During the next year, RID prepared a tremendous amount of data concerning the calls, location, types of traffic, etc., of Japanese Naval, Army and other types of radiotelegraphic stations. The Japanese frequently changed calls in order to disrupt the job of identification, but we made up charts of the stations and the changes and soon found out the changes were made on a regular cycle. As a result, this deceptive tactic employed by the Japanese was effective for a very short time.

As we gathered information, the work of identification was made much easier. Reports of suspicious signals, which in the early days had sent us on wild goose chases, could in many cases be handled from the data on hand. The data, as we gathered it, was, of course, currently supplied to the Armed Services. By November 1942, we had at hand a rather full file of information and by assigning a special detail of men to do the job, it was carefully correlated and compiled in a convenient manual entitled "Data on Japanese Radio Intelligence Stations." This manual was furnished to the Western and Alaskan Defense Commands and to officials in Hawaii. I am sure it must have been of as great value to them as it was to us.

The radio intelligence facilities in the Territory were rounded out finally by the establishment of Army direction finder stations which, at long last, got into effective operation in the Spring of 1943. These stations, plus the RID's long-range direction finder stations at Fairbanks, Anchorage and Nome were coordinated into a single network and geared into the Alaskan Intelligence Center at Anchorage. The Army stations, as well as the RID stations, participated in the Z8Z (Kana Code) and their bearings, along with ours, were transmitted to RID by radio in a special code from our Anchorage station for use by the Western Defense Command in San Francisco.

The Army Stations were located at Kodiak and at Uninak. Also about this same time the Navy had taken over the surveillance of the Japanese Navy stations in the Alaskan area so some of the pressure on RID was relaxed.

When bombing operations began against the islands of Attu and Kiska , it was the job of RID's stations in Alaska, assigned by Colonel Castner, to monitor all frequencies used by Japanese stations on the islands and any transmissions made by radio transmitters at Japanese outposts in order to herald the approach of our planes. In particular, we helped effectuate the Army's jamming of the frequencies used by the Japanese by keeping the Army informed of the frequencies which the Japanese stations employed and letting it know if the Japanese shifted frequency in an effort to get out from under the jamming.

RID Monitoring Officer – Lloyd Quynn

The officer in charge of our Anchorage monitoring station was Lloyd Quynn, a veteran wireless operator who, while in the Navy, participated in the landings at Tampico, Mexico, in 1916. Quynn was a colorful figure with a tremendously interesting background. I first met him when he was a plainclothes detective on the Baltimore City police force. He claimed he operated the first police radio station stating, that while serving as a radio operator on a ship at anchor in Hampton Roads right after World War 1, when a mutiny took place, he summoned the Norfolk Police by radio to put down the mutiny.

While serving as a radio operator on Scotland Lightship at the entrance to New York Harbor during World War 1, the ship was rammed and sunk by a German submarine and he was rescued by a coastal ship. Some years later while serving on one of the Merchants and Miners passenger ships, sailing between Boston and Baltimore, Quynn's ship was rammed by another. Quynn's ship had just been equipped with a brand new Marconi radio receiver. As the ship sunk, Quynn went over the side and it is reported when he emerged to the surface his headphones were still around his neck and he was carrying the new receiver in his arms.

Because of his excellent ability as a radio operator and his knowledge of the Japanese Kana Code, acquired while serving in the Navy, I signed him up and sent him to Anchorage as Monitoring Officer in Charge of the station located at Fort Richardson.

Quynn, like the little boy who polished the apple for the teacher, thought it would be nice to put on a big show for the boss on his arrival at Anchorage. Because of the limited roads available around Anchorage at the time, the monitoring station was not equipped with a mobile unit to investigate cases in the field. However, the Monitoring Officer in Charge was authorized to hire a car if the circumstances warranted. A portable direction finder could be carried in the car.

On our arrival at the airport in Anchorage in August of 1942, Quynn met us with a large Packard car he had hired for the occasion. He informed us that Colonel Castner

wanted us to confer with him at his home and remain for dinner. Lloyd was to be the cook and T-Bone Steaks were promised as the piece-de-resistance. We loaded in the car and as we got underway, the rear end of the car seemed to be making a lot of noise. We came to a grinding stop and looking back, I could see gears rolling along the main street in the shopping area at Anchorage.

I shall never forget how Ellert and Loeber and Quynn with paper bags picked up the loose gears from the street. Lloyd was very much embarrassed. We waited and after a while Quynn appeared with a less pretentious car.

Colonel Castner was also an interesting personality. He was completely bald and gave the impression from a scar about his head that he had been completely scalped sometime in his career. I had heard that he had sailed the whole length of the Yukon River in a canoe.

The Colonel was an excellent host. While Quynn cooked the steaks, we enjoyed some liquid refreshments. His wife and family were in the States.

Directly above the fireplace was mounted the head of a huge grizzly bear. Ellert remarked to the Colonel, looking at the bear's head, "That was a good shot Colonel." Castner replied saying, "I did not think I did too well; the sun was in my eyes." An examination of the head showed that the bullet had struck just in the middle and slightly above the eyes of the bear. We enjoyed a fine dinner and then proceeded to discuss further operations in Alaska.

After the war, Lloyd Quynn made himself famous in amateur radio ranks by announcing his call sign W3EWW as "Every Woman's Wish." He passed away in 1962, while serving as a ship radio inspector in the employ of the FCC.

Colonel Castner made himself famous during the war in Alaska by recruiting trappers, miners and Eskimos and formed a brigade called "Castner's Cut Throats." This outfit was trained to stand all kinds of privation and swimming in ice water and their service were used in making reconnaissance and sorties on the islands held by the Japanese in the Aleutian Chain. While we were in Alaska he put on a demonstration of their operations. It was very impressive. The Colonel died just before the end of the war as a victim of a heart attack. RID lost a staunch and loyal friend.

RID Communicates with the Japanese In Their Own Code

As Lloyd Quynn knew the Japanese Kana Code as well as others of our staff at the Anchorage station, Colonel Castner conceived the idea of communicating with the Japanese as a counter-intelligence venture. Consequently, a control line from one of the Army transmitters was extended to our monitoring station at Fort Richardson so that the transmitter could be operated from that location.

The transmitter was adjusted precisely to the frequency or channel of the regular broadcast sent to the Japanese fleet from their homeland. Immediately at the end of a Japanese broadcast, Quynn, at the key of the Army transmitter, using the call letters of the Japanese Station and transmitting in the Kana Code sent messages prepared at the Army counter-intelligence headquarters. These messages consisted of fake news items – about the disgrace of a Japanese Admiral after being licked in a battle, about another high naval officer for engaging in rare indiscretions with a housemaid and the arrest of Anti-Japanese Germans in Tokyo, etc. This was done in an attempt to lower the morale of the Japanese sailors and soldiers in the Aleutians. An account of one item that is amusing, but to my mind at least somewhat questionable, subsequently appeared in the Alaskan papers. It was to the effect that Japan's economy was so hard hit by the war that golf balls had been reduced almost to the size of camphor balls.

The Japanese Fleet Control Answers Quynn's Signals

On one occasion G-2 was concerned as to whether the Japanese ships off the Aleutians were about to move up the coast and attack Nome, preliminary to landing operations. All day and the night before storms called the "Willy Wave" had prevented aerial reconnaissance.

So it was decided to attempt to get the enemy ships to acknowledge a radio call purported to come from one of their own ships. If the Japanese ships answered, the RID direction finders were prepared to take immediate bearings on their signals. The call letters of the Japanese task force ships were known to RID from intercepts, which had been made.

Quynn called the command ship and asked him in the Kana Code, "LA-IMI ARK", or how are you receiving my signals? The Japanese operator quickly replied saying "KAN5" or a very good signal. Then Quynn transmitted a message in Kana Code prepared by G-2 containing maneuvering instructions. It was noticed that the message created considerable confusion among the Japanese producing a momentary silence and then some rather flurried communications. That was all we needed. Three direction finding bearings were taken at each station and plotted. They showed that the Japanese ships were not underway, but in the same positions that they had been before the "Willy Wave" prevented aerial reconnaissance.

Neither RID nor G-2 was surprised when our troops landed on Kiska on August 22, 1943 and found no enemy. The Japanese radio station which had been on Kiska sent its last message on July 29th. We had so advised G-2 early in August.

The RID staff in Alaska had the closest possible working relationship with the officers of the Alaskan Command – telephone contacts and conferences were held almost daily. Colonel Castner voiced his appreciation in the following, extracted from a letter which he sent to me as Chief RID:

"Thank you very much for the copy of the standardized procedure established with reference to the emergency direction finding service rendered by you to the Army. We are taking immediate action to make the procedure effective for all individuals and agencies affected, as your letter of November 2nd suggests."

"We are deeply grateful, too, for your prompt help with respect to securing material needed to complete our direction finder installations. Your personal assistance, as well as the help of your representatives here, continues to be of the highest value defense effort."

It should be noted that the Signal Corps Intelligence Companies were supplied material by RID in order to complete their own direction finders.

To ensure that RID could be of the greatest assistance to the Alaskan Command, we were provided with much classified information, such as the reported location and size of the enemy force in that area, and going into detail as to what we might be particularly watchful for and when. The cooperation with the military is well expressed in a letter written by Colonel Post, Chief of Staff of the Alaskan Command written in June 1942.

"The splendid work of your office is well known to us and its cooperation in the past has been utilized to the fullest extent.....It is the desire of this headquarters to express appreciation for the close liaison already maintained between your Anchorage office and this office."

Russian, Weather Messages

The staff of the primary monitoring station at College, Alaska, had intercepted messages transmitted by one or more Russian stations on schedule each day. On receipt of them in Washington we sent them to the Signal Corps Security Center where they were identified as weather forecasts for Russian fliers.

The military placed so much emphasis on this operation that they requested that we copy the transmissions each morning and send them to Washington on a special facsimile radio circuit the Army had taken over from a local broadcasting station. The Chief Engineer of KFAR had obtained a license for the station to operate experimentally between College and a station in New York City.

Immediately after translation in Washington the weather forecasts were transmitted back to the Air Force in Alaska for the benefit of our own fliers. The Army felt that this operation was so important that they insisted that on arrival a detail pick up the intercepted material daily and take it to the operator of the facsimile transmitter for transmission to Washington.

As I have indicated, not merely did RID, for over a year, perform most of the radio military radio intelligence that done for the Army in Alaska, but we helped set up their stations and train their personnel, so we could be relieved of this responsibility. Before

Army radio intelligence units were sent to Alaska, they received training from RID in California. After they arrived in Alaska and before they took up their duties in the Army stations in the field, they were placed in our stations and given intensive training in the construction and operation of equipment, in Kana Code and other Japanese procedures, in the make-up of the various Japanese military and naval radio nets, and in our own procedures which the Army later adopted. We also gave the military personnel basic instructions in the essential theoretical aspects of the work that we were doing and they were to do. RID also trained the Army personnel which were to be used at the Alaskan Intelligence Center in the evaluation of bearings, analysis of intercepts and cartography. And after it was set up, RID continued for several months both to supervise the operations, and to give further training to the military personnel so that they would be in a position later to do the work themselves. A booklet was even prepared for the special use of the Army men and by the RID instructor.

As the Army units gained experience and competence, our work in the military field in Alaska gradually decreased. Radio intelligence work, covered a broad field, and the Army did not have sufficient trained personnel to take over the Nome station, which we had set up in the summer of 1942, at their request, until the Spring of 1944. We had continued even though under date of November 2, 1943, the Commanding General of the Alaskan Department advised RID Supervisor in the Territory as follows:

“During the late spring of 1942 this Headquarters requested the Federal Communications Commission to establish a monitoring and direction finding facility near Nome for the purpose of intercepting and determining the origin of Enemy radio transmissions. At that time military personnel and equipment were not available for this work.

“Military personnel and equipment are now available for this mission. Therefore, confirming informal conversations between you and the Staff Signal Officer, this command is prepared to assume complete control, operation and maintenance of the station during the month of December 1943, the exact date being determined by the availability of transportation.”

The importance to which the Armed Forces placed on RID's military intelligence operations is highlighted by the following:

One spectacular instance occurred just prior to the battle of Midway and the invasion of the Aleutians. We had, at the request of the Army on May 20, 1942, been keeping a special vigilance over Japanese mobile stations in the Northwest Pacific. On May 29th, I was attending an Executive Session of the Commission when the Chairman interrupted the meeting to say there had been an urgent telephone call for me to go immediately to the Office of the Chief Signal Officer. On my arrival, I was asked by officers of the Signal Corps what knowledge RID had of the activities of Japanese radio stations, both military and commercial, in the Far East during the last 48 hours. I advised these officers that, at the moment, I was not aware of any particular change in activities, but I would check with the stations and let them know immediately. When I checked with the

Supervisor, Mr. Greaves, at San Francisco, I learned that he had been summoned at eight o'clock in the morning to a conference with General DeWitt, and questioned about information that had been developed by our direction finder and intercept operations. The General advised him that our data had been confirmed by information the military had obtained from other sources. He referred to the approach of a Japanese task force to Midway. General DeWitt subsequently told Mr. Greaves that information we furnished the Army were of great value in connection with the Midway engagements. I might say, as the General's eight o'clock call indicates, that Mr. Greaves worked on the closest possible basis with him.

East and Gulf Coast Military Intelligence Operations by RID

The situation on the East and Gulf Coasts were somewhat different than that which was experienced on the West Coast, Alaska and Hawaii. There never was the impending threat of invasion that existed in the other areas, and they were never combat areas. Confusion did not exist to the same appalling degree. The military radio intelligence problem related principally to the submarine menace and emergency direction finding to military aircraft.

The part played by the RID, though comparatively minor to that in other areas was of some importance. Here, as in the other areas, the RID was set up and equipped when the war broke out. Here as elsewhere, however, we got into the military field only after an appropriate request was made to us by the military. As soon as we entered the war, the District Intelligence Officer of the 4th Naval District in Philadelphia asked us to submit by telephone any information we got concerning the activities of suspected enemy vessels in the coastal area. And on February 18, 1942, Lt. Cdr. Townsend of the same office asked for intercepts of messages from and bearings on submarines off the East Coast, saying:

“The detection and destruction of enemy submarines operating in the East Coast is.....a primary objective at this time” and that “the closest coordination and cooperation should be accomplished among the Armed Forces and the Federal Communications Commission.”

Other requests came from various Navy and Army officers in the field. We would, of course, have been happy to honor these requests and give such help as we could to these “officers in the field”, but here again, despite the succession of urgent requests, we were careful not to step over into the Navy’s field without clearance from the top. Accordingly, we referred such requests to the Director of Naval Communications, as a result of a long-standing arrangement, as the Navy Department had jurisdiction over radio stations at sea. We informed the officers in the field of the arrangement and suggested that they should take the matter up with the Office of the Director of Naval Communications.

On occasion the Office of the Director of Naval Communications (DNC) did request us to submit bearings and intercepts in connection with transmissions on particular frequencies reportedly used by German and Italian submarines in the Atlantic.

SS and SOS

RID also was requested by the DNC to advise the nearest naval office or station of any reports we received of merchant marine or other ships reporting Submarine Sightings (SS), attacks and SOS calls on the international distress frequency. As RID had navy monitoring stations along the seaboards we were in an advantageous position to do this. In compliance with this request, each monitoring station along the coasts had one receiver

tuned constantly to the international distress frequency or channel of 500 kcs. If an SS or SOS call was heard the operator quickly copied the details and they were reported promptly to the Navy so appropriate counter action could be taken.

We noticed that an unreasonable delay often occurred between the receipt of a call from a ship that had sighted a submarine, or had been torpedoed, and the dispatch of a bomber or other aircraft to the scene. Therefore, I recommended to the responsible officer that we report our intercepted material to the nearest Air Force or Naval base to that immediate counter action could be taken. The recommendation was taken under advisement, but never consummated. I always felt had timely action been taken many more Nazi submarines would have been bombed and perhaps many more merchant seamen rescued.

As late as December 23, 1943, Admiral J. Redman in a letter requested that we continue to report submarine radio intercepts to the officers concerned.

Nazi Submarines off the Mississippi Delta

As Chief of RID, I received an urgent request in May 1942, from Joe McKinney, RID Supervisor of the Gulf States area, to come to New Orleans and attend a conference that was being called by the Navy Admiral, whose name I cannot recall, in Command of that District. It was the Admiral's desire that we intensify our efforts in that area, because of the activity of Nazi submarines operating outside of the Mississippi Delta.

I immediately took the first flight I could get out of Washington to New Orleans arriving late in the evening. The conference was convened in the morning and the Admiral and his staff advised the seriousness of the situation and requested aid from RID. It was agreed that we would establish two additional monitoring stations equipped with Adcock direction finders and other essential equipment on each side of the river delta with sufficient separation to obtain good fixes. Such bearings taken on the submarine's radio emissions when intercepted would also be combined and plotted with those obtained at the primary stations at Kingsville, Texas, and Marietta, Georgia, as well as those from the secondary station adjacent to Lake Pontchartrain.

Equipment from our reserve stock of each of two primary stations was ordered into the area with a staff to employ them. This operation continued until October 1, 1942. The Navy Department in the area reported that enemy submarine activity eventually subsided as the result of the fixes we had provided the bombers.

East Coast Intelligence Center Established at RID Headquarters

As a result of a conference with the Chief Signal Officer of the Army in April 1943 and in accordance with recommendations made by General Stoner to General Strong of G-2, an Eastern Intelligence Center (EIC) was established at the headquarters of RID in Washington rather than at the headquarters of the Eastern Defense Command at Fort Jay in New York.

This Center within the heart of RID national operations had quick access to all files and information that had been gathered by us with respect to enemy naval, army and espionage circuits. It also permitted a rapid report of information to the military headquarters in Washington. Funds provided by the Army enabled us to tie together, via a leased teletypewriter circuit, all of our primary stations in the East and mid-West and within the Radio Intelligence Center which had previously been set up at San Francisco.

The West Coast Intelligence Center was linked to the primary stations on the West Coast by a leased teletypewriter circuit using funds provided by Lt. Gen. DeWitt's Command. We had our own radio circuits to Alaska, Hawaii and Puerto Rico.

Through the medium of these wire circuits as well as our own radio channels we could immediately alert the entire RID monitoring system by a signal and obtain direction finder bearings. By the use of certain procedural signals we could confine the operation to one geographical area if the need seemed to indicate.

Before the upper military echelon in Washington would authorize the transfer of funds to the FCC to carry on our mutual efforts it was necessary for RID in Washington to submit to an investigation by a staff of officers from G-2 as to our Security measures.

Fortunately as a result of having served in the first radio intelligence section of the Signal Corps in France in World War 1, for the purpose of locating German Army field radio stations and intercepting their messages for our cryptographic officers, I knew something of military Security procedures.

When the RID was first established in 1940 as the National Defense Operations, as its Chief, I insisted on utilizing military security measures. RID was so insulated from the other Divisions of the Commission that none but RID personnel were allowed in the rooms we occupied. The exceptions were the Commissioners, the General Counsel and Mr. Jett, a former naval officer, who was the Chief Engineer of the Engineering Department and my immediate supervisor.

The report of the G-2 investigating staff to those concerned, after giving us the fine tooth comb treatment, read as follows with respect to the four cardinal points of military security:

I take this opportunity to reveal an activity I experienced at the F.C.C. Primary Monitoring Station at Allegan, Michigan where I was a Monitoring Officer of the FCC Radio Intelligence Division. Incidentally this same activity was released by the Washington office of the FCC to the READERS DIGEST for publication in

one of their monthly issues. What made it interesting to me to read this article was that the FCC was presenting their annual budget request and trying to convince the U.S. Congress for approval.

To the best of my memory I recall that on a Tuesday evening around 7:00pm in 1942 (or 1943) I was on the Evening Watch with a crew of six radio operators

and one of them intercepted a transmission in the 8 megacycle marine band a ship using a call sign beginning with the letter "B". At that time the letter "B" was not assigned, as a prefix, to any nation in the world so the indication to us was that it was a CLANDESTINE station. We alerted the FCC Direction Finding Network via our teletype network, with direction finding equipment, in the USA, Hawaii, Alaska and Puerto Rico. After the Net Control in Washington, DC evaluated the bearings and determined the "fix" we were instructed to follow-up with daily monitoring. After a few days of activity by the clandestine station we were informed to discontinue any further coverage and "close the case". No reason or information was given to us for doing so. (we did our job and that is all was required.)

Now - in 1947 or 1948 I received my monthly issue of Readers Digest and in it I noted that there was an article by the FCC relative to the annual budget they presented for approval by the U.S. Congress and they (the FCC) presented an example of what the FCC did during World War II and it went like this.....

"On a Tuesday evening an operator of the FCC Radio Intelligence Division at the Allegan Michigan Monitoring Station observed a clandestine transmission and alerted the FCC Direction-Finding Network resulting in a "fix" and intercepts of messages transmitted that were turned over to the U.S. Navy who followed up and apprehended a Cuban millionaire refueling a German Submarine" !!!!! You can just imagine how my blood pressure jumped!!!!!!

This is not a story but a fact. At my age (almost 90) I remember it as if it happened last night. When I find this copy of Readers Digest I will make a copy of this article and send you a copy to insert between pages 110 and 111.

73 - Alex A. Polityka W8FLA

Cryptographic Security.....	Excellent
Physical (Cryptographic Systems.....	Excellent
Documentary & Information Security.....	Excellent
Qualifications of Personnel.....	Excellent

The funds were then rapidly made available and we were also furnished with some additional codes and officers(sic) to be used in our operations.

~~Japanese~~ Submarines off Florida

During early part of June 1942, I attended a conference with Navy and Army officers at Fort Jay, New York, the Headquarters of the Eastern Defense Command, for the purpose of coordinating our work along the East Coast. At that time, the Signal Officer of the Command told me that an Army radio intelligence unit in Florida was taking bearings on German submarines and had expressed concern over the possibility of shore to submarine communications. I told him we had mobile coastal patrols in operation and would intensify our surveillance in that area.

I was convinced that, in general, Nazi submarines communicated directly with their naval command stations in Europe when they surfaced to obtain information about ship sailings sent to Germany by espionage agents.

We discovered subsequently that the Army radio intelligence companies in Florida could not do accurate work on locating submarines in the Atlantic, because the base lines between direction finders were too short and they could not obtain good right angle intersections when their bearings were projected.

ERRATA: PAGE 111- Appears that Mr. Sterling erred in referring to Japanese submarines. Obviously "German".

Chapter 19

RID Gradually Withdraws from the Field Of Military Radio Intelligence

RID was not set up for the purpose of engaging in military radio intelligence activities. When, however, war found the Armed Services totally unprepared in this field and they made urgent requests for help, it was no time to stand offish or even not to do those things requested of us about which we had serious misgivings. Honoring the requests made on us by the Armed Services meant, of course, that our regular work suffered to a serious extent, but we had no doubt that what they asked to be done was the more important of the two. Therefore, we pitched in and did everything we possibly could to help. At the same time, as I think I have made abundantly clear already, not only did we act in the military field solely when requested to do so, but took prompt steps to make sure that requests from Commanders in the field cleared through proper channels. And we were anxious to withdraw from these activities as rapidly as the Armed Service were prepared to relieve us of the responsibility. We accelerated the process to no small extent by helping to set up the military's installations and train its personnel.

Replying to a letter of ours in which we inquired of the Army what work it was expected that the military would require of us during 1943, General Olmstead, Chief Signal Officer of the Army, wrote on January 16, 1943, as follows:

"I have received your letter of January 15th requesting information as to plans for future radio intelligence activities in the Western Defense Command. The radio intelligence situation has been receiving careful study and a concrete plan of action should be drawn up shortly.

"Defense Commanders have consistently expressed themselves as gratified with the cooperation extended by the Commission's radio intelligence units. They have also pointed out the need for extended military radio intelligence activities. As a result tentative plans call for the activation of a Radio Intelligence Regiment in each Defense Command, in addition to the Radio Intelligence Companies now performing this work. It is too early to predict what effect the extension of military radio intelligence work will have upon the Commission's Activities; however, it is certain to greatly reduce the number of requests which military commanders currently make on the Commission's installations."

In view of what had been said about "Commanding Officers in the field," I want to direct attention particularly to the sentence "Defense Commanders have consistently expressed themselves as gratified with the cooperation extended by the Commission's radio intelligence units." We then received this letter that indicated that the Army was getting into a position to take over the work we had been doing. I went to the West Coast and made arrangements for our withdrawal from doing work of a military radio intelligence nature, and other information services performed by the Radio Intelligence Center at San Francisco for the Army and Navy.

The standing of watch by Army personnel at the Radio Intelligence Center was soon discontinued, and our contacts with the Army were taken care of by telephone. On March 1, 1943, RID and representatives of the Western Defense Command conferred further on the matter. Major St. Clair, Assistant Signal Officer, advised us that it was no longer necessary to take bearings on Japanese Naval Stations "unless, in the performance of other work, such stations were found to be on or near U.S territories or in an unusual location of military interest." He also advised that the Army, in the near future, would establish a direction finding net to coordinate the activities of the various Army Radio Intelligence Companies along the West Coast. We were asked, however, to continue to furnish bearings on Japanese military stations at the request of the 125th Radio Intelligence Company, Fort Louis, Washington.

We were able to discontinue most of our military radio work in the Hawaiians in December 1943. In the case of Alaska, we inquired at frequent intervals as to when the Army would be able to take over the military radio intelligence work there, but the date was always set back. As I related before, we not only furnished the equipment, but trained the military personnel before the Army could take over. In connection with the station at Nome, which we had set up in the Fall of 1942 at the Army's request, General Gault, of the Office of the Commanding General of the Alaskan Department, wrote us in November 1943, as follows:

"...During the late Spring of 1942 this Headquarters requested the Federal Communications Commission to establish a monitoring and direction finding facility near Nome for the purpose of intercepting and determining the origin of Enemy radio transmission. At that time Military personnel and equipment were not available for this work.

"Military personnel and equipment are now available for this mission. Therefore, confirming informal conversations between you and the Staff Signal Officer, this command is prepared to assume complete control, operation and maintenance of the station during the month of December 1943: the exact date being determined by the availability of transportation."

It was not until three months later, however, that we were able to withdraw from Nome. As stated previously, the caliber of our work in the military field is shown, incidentally, by the fact that even after Army Services allegedly were prepared to take over the work we were called on for help.

The Navy in Washington Misunderstands Our Primary Function

As in the case of the request to aid in the Gulf Area and Florida Coast, it required much more than routine monitoring and direction finding to ensure that there were no stations on land communicating with ships. Had we located a station engaged in such activity we would have immediately notified the Federal Bureau of Investigation as, by Presidential order, Mr. Hoover's Bureau was made responsible for all cases involving sabotage and subversive activity. Any other forms of illegal operation on land were the responsibility of the FCC.

At any time while running down a suspicious signal identified as an enemy submarine, we passed it to the Navy. As in the case of our surveillance of the espionage circuits, we definitely had to locate the origin of every unidentified transmission to make sure whether it was or was not on land. In other words, we had definitely to establish the location of each end of the circuit used for submarine traffic, whether in Hamburg, on the submarine, or on our shore. In the course of investigation, however, we did get some good fixes on the submarines themselves that were lurking off shore. And here apparently is where we committed the heinous offense which, to my mind, accounted for much of the later developments with the military, resulting in the appointment of a Congressional Committee to investigate the FCC. What did we do? We phoned the fixes to the Office of the Director of Naval Communications as soon as we got them, and later explained the circumstances in a letter dated July 2, 1942, over Chairman Fly's signature to Admiral Redman.

"I am submitting herewith projections of radio direction finding bearings, showing the approximate location of {submarines along the} Atlantic Seaboard and in the Caribbean Sea, and apparently communicating with stations in Europe. The "fixes" indicated by these projections were furnished the Navy Department promptly on receipt of bearings from our primary monitoring stations on the dates indicated on the charts.

"It has been observed that the stations referred to communicate with the control station in Europe on different frequencies in the band from 7000 to 14000 kilocycles, depending on the time of the day. In general, it has been observed that the "out" stations are most active during the night hours. Samples of the traffic exchanged between these stations are also submitted with the projections. It should be noted that this traffic is of the four-letter type and the first two and last two groups of the text identify it as German Naval traffic. The control station in Europe employs the call letters NMA and KYO.

"We have made no concerted effort to take bearings on or make intercepts of stations which, from preliminary projections, appeared to be afloat. In our constant effort to determine if there are clandestine stations operating on land, it is necessary to make intercepts and trial projections of bearings received from our monitoring stations. In cases where information is developed which appears to be of interest to the Navy, it is dispatched promptly to the Navy Department from the offices of our Radio Intelligence Division.

"You are, no doubt, aware that the personnel of our monitoring stations on the Coasts are reporting promptly to the Navy Department the interception of all submarine attacks as well as message intercepted from ships reporting the sighting of submarines.

"We shall continue to pursue this policy and would appreciate the Navy Department furnishing us with any information it obtains which would indicate the presence of a radio station on land engaged in subversive activity or apparently operating in violation of the Communications Act of 1934, as Amended."

Sometime later, Mr. Jett and I made a visit to inspect the Navy's message center in Washington at Admiral Joseph Redman's request. He told us that the Navy was doing a complete job, needed no help from us, and that RID would have to become a part of the Navy's security net before RID did work in connection with submarines. We patiently,

but carefully pointed out that submarine work was not our job and that any fixes we obtained were merely incidental to our performing our job of guarding against clandestine operations on shore, as we had already said in our letter of July 2nd. But we added that whenever we did obtain information relating to the Navy's sphere, we thought we ought to let them have it. The Navy might already have the information, it might not; and it could do no harm, in any case, to give it to them. But we were given to understand that the Navy didn't want it. The Navy in Washington apparently thought we were trying to horn in on their work. They were just mistaken. We did, of course, periodically do similar specific jobs of intensive surveillance of submarine traffic, over and above our regular monitoring, to make sure the end of none of the circuits was on land. As a result of the Navy's attitude, however, we refrained from sending them any fixes we obtained in the course of our monitoring operations.

The Storm Clouds Gather

Unknown to RID, a growing dissatisfaction with the work we were doing for the military commanders in the field had arisen among certain military officers in Washington, particularly the Navy. It arose primarily as the result of a feud that had developed between certain Naval officers and J. Lawrence Fly, Chairman of the FCC. They resented the fact that he, as a civilian, had been named the head of the Board of War Communications. This Board formulated all policies during the war relating to the operation of commercial communications companies. It was also fanned by a feud that earlier had developed between Admiral Hooper and Chairman Fly because the latter refused to transfer finger prints of commercial radio operators in the merchant marine to the FBI file. Fly's position was taken on the premise that when operators were finger printed the files would be confined to the use of the FCC.

However, it was reported that some naval officers in the field, not too well versed in the technique of radio direction finding had erroneously projected some RID bearing with some taken with their own stations which led the Navy, in one case, on a wild goose chase.

The clouds opened and the deluge fell on July 2, 1943, when the Select Committee appointed by the Congress to investigate met in formal session.

RID in Hawaii

At the time of the attack RID had three monitoring stations in operation on the islands. A primary was located in the Punch Bowl, an extinct volcano just outside of Honolulu, which later was created as a National Military Cemetery; one at Helo on the big island of Hawaii; and another on the island of Kauai.

These stations were fully manned and equipped with various types of radio receivers, recording equipment fixed Adcock type high-frequency direction finders, and also mobile units with similar equipment except that the direction finders were of the loop type, required to fix the precise location of a radio transmitter or a source of interference to radio services.

Confusion Reigns Supreme During and After the Attack

Many stories came out of Hawaii immediately after December 7th alleging the operation of espionage stations of Japanese agents and even that licensed amateur stations owned by Nesei, second generation Japanese, were communicating with the Japanese naval and aircraft stations during the assault on the islands.

Thorough investigations revealed that they were fictitious reports as were many other stories relating to alleged fifth column activities, such as cutting sugar cane in a manner to represent a large arrow formation pointing towards military installations to aid the enemy bombers to their targets.

Subsequent investigations after the war proved that the attack on Pearl Harbor and adjacent military installations was well planned and rehearsed. When the fliers and two-man submarines came in each knew the locations of their military target.

As stated there was a full quota of alarmist stories particularly relating to alleged subversive radio activity, but each case was fully investigated by RID Supervisor Dawson and his staff to the benefit of those concerned.

The lack of trained and efficient military intelligence units within the commands on the islands led practically every military officer to believe, like those on the West Coast, that Japanese agent were operating transmitters from every house or secluded place on the islands.

As Supervisor Dawson wrote me on January 8, 1942 concerning operations during the preceding month: "A day by day account of the results obtained in running down suspicious signals would contain a constant repetition of the statement "Transmission legitimate or Japanese station in the mandated islands." Signals in the Japanese Kana Code from Japan came in loud and clear on the high frequencies leading the military to believe they were of local origin."

In other words this was just another situation similar to that which RID found on the West Coast and Alaska, military officers and their staffs ill equipped and trained in the occupancy of the radio communication spectrum by stations and services. Every signal they could not identify was in their mind a Japanese espionage station.

After the war some one on an occasion would mention that Nazi and Japanese espionage transmitters operated in the United States. I would then ask "Did you ever see or know of the operator arrested for the operation of one?" Their answer was always, No. It was always hearsay.

In public speeches and interviews after the war, I challenged anyone to tell me of a bona fide case of the operation of a station engaged in espionage transmissions in the Territory of Hawaii. No one ever did!

Concerning the loyalty of the Japanese in the Hawaiian Islands during and after the attack, the following report made by Howard M. Norton, War Correspondent for Baltimore Sun papers, under date of January 17th, is quoted in part:

Army Intelligence Office Reports No
Fifth Column or Sabotage Case
Is Known
By Howard M. Norton
(Sunpapers War Correspondent)

Honolulu, Jan. 16 (By Cable) – One of the strangest but happiest stories of this war is the story of Hawaii's 160,000 Japanese and how they are working and fighting to help America defeat Japan.

It is a story which contrasts so sharply with the Japanese situation on the United States mainland that it is hard for a visitor here to believe.

Calls Record Perfect

Their record of loyalty has been not merely good but perfect, according to no less authority than the assistant chief of staff for military intelligence here, Col. Kendall J. Fiedler. "I have been in charge of military intelligence activities here since June, 1941, and am in a position to know what has happened, says Colonel Fiedler.

"There have been no known acts of sabotage, espionage or fifth column activities committed by the Japanese in Hawaii, either on or subsequent to December 7, 1941."

Colonel Fiedler says he hopes this categorical statement will kill once and for all the malicious and completely false rumors of treasonable acts by the Hawaiian Japanese during and after the attack on Pearl Harbor.

No Thought of Internment

Since the very beginning of the war, there has been no thought of interning Hawaii's Japanese. Only a handful of known subversive elements has been detained and they were seized while the bombs were still falling on Pearl Harbor, before they had a chance to do any harm. Most of them were recognized Japanese Government agents or Japanese educated in Japan

As a result of a study of all records and information available including examination by our own staff in Hawaii at the time of the attack, we in RID were convinced that there were no secret radio stations operated by Japanese agents prior to or during the attack. The record shows clearly that the Japanese consul and his staff had full access to commercial radiotelephone and telegraph circuits and hence had no need of operating such stations. We were convinced also that had they such stations, our monitoring of the radio communication spectrum would have quickly identified them. Even if they were not detected by monitoring stations in the islands no doubt any Japanese station would have been detected by those on the mainland as we had done in the cases of Nazi spies in South America, Africa and other places. Fortunately, we had several RID men at our stations who were skilled in the use of the Japanese Kana Code.

Harbinger of Things to Come in Hawaii

It was never the intent or desire of RID to enter the field of military intelligence as it was outside of our jurisdiction. It was, of course, a job the responsibility of which lay solely within the military agencies of the government.

But as the record will confirm, we were brought into this field of endeavor at the specific and urgent request of the Army, Navy and Air Force with funds supplied by them to enhance our operations.

Interestingly enough, there had been some intimation, had we recognized it, that we might be called upon just a few days prior to December 7th. On November 21, 1941 our primary station in Hawaii reported that it had been requested to participate with Navy stations in helping to locate some ships engaged in a mock invasion of Hawaii. The RID station did participate and submitted to the Navy a whole series of bearings it took on the "unfriendly fleet." Though we were never informed of the results of our work, the Navy had every chance to appraise it before the shooting actually began. The reliance placed on us then argues rather well that our work was better than satisfactory.

However, our work in the military sphere in Hawaii at the time of the attack was similar to that on the West Coast. We were asked to give whatever help we could. On a couple of instances our stations got a fix on Japanese warships and, in one case, on a stray submarine lurking off Oahu. On one occasion in December 1942 RID was asked to help clear up some interference Army radar installations were experiencing. A five-day surveillance was maintained before the interference was observed again. RID units took direction finder bearings that established a fix approximately 5 miles northeast of Kaneohe Naval Base. This information was relayed at once to the Navy as well as the

Army. Later the Navy reported they had sighted a Japanese submarine 1 mile from the fix we had furnished, but we were not informed if it was destroyed.

RID Increases Its Operations in Hawaii

Right after the attack on Hawaii, a request was made by the Director of Naval Communications that we increase the number and staff of our operations in the islands. It was the thought of high military officials that if Japanese agents had not utilized clandestine transmitters for espionage purposes before the attack, and that since then commercial outlets of communications were denied them, this would be the signal for them to break out their espionage transmitters.

So a high level conference was convened in the office of Chairman J. Lawrence Fly of the FCC attended by the Director of Naval Communications, the Chief Signal Officer of the Army and a high level official of the FBI, Chief Engineer E.K. Jett of the FCC and myself. An agreement was reached to augment the number of our stations and staff under the agents (aegis?) of the military in Hawaii.

Pursuant to the agreement, I sent out a flash to all stations on the mainland, particularly requesting those who had knowledge and could copy the Japanese code to advise me if they would volunteer to accompany me to the islands for at least a two year detail. The response was terrific and the difficult choice of those who would be selected for this trip was finally made and those chosen were ordered to report to the Supervisor of our Radio Intelligence Center at San Francisco.

Al McIntosh of RID Analysis Section was sent to San Francisco and gave this detail some instructions on the identifications of radio signals and their place in the radio spectrum. Technical Supervisor Charles Ellert and myself joined them a few days later and sailed from the Golden Gate in a Navy convoy on the President Monroe (?). Additional equipment had been shipped ahead from our reserve stock and was loaded in the hold of the ship.

The Master of the ship had been informed of our mission and arranged for Supervisor Ellert to conduct a class in the main salon each morning of instruction in radio propagation and its relation to direction finding. If there was any single thing that made RID successful, in addition to teaching and having its men possess a thorough knowledge of the radio spectrum and its occupancy by services, it was the relation of radio propagation to direction finding.

Second to these two essential requirements was the ability to copy signals through interference as so often was the case when copying the Nazi spies with their low power transmitters. This was called "digging the signal out of the dirt." Even as an experienced commercial and ham operator for over 30 years, at times while inspecting stations, I listened in on some of the clandestine networks and saw monitoring officers, like Tom Cave at Scituate, R.I., make solid copy of code groups when I could hardly hear or follow the signals that were being copied.

A Japanese Submarine Fires on an Oil Refinery on the Coast of California

The first night out of San Francisco, our convoy was headed down the coast of California to join a small convoy that had sailed from San Diego. The following morning the radio operator advised me that the skipper of the ship desired to see me. I went to the bridge and the Captain informed me that a Japanese submarine only a few miles east of our course had shelled an oil refinery near Santa Barbara during the evening. He also stated that the first shell was fired the moment President Roosevelt uttered his first word on a nation-wide speech. He advised me that all the military officers who were on board as passengers were being placed on watch around the clock to augment the regular crew as lookouts and might call on my men for additional help. I promised we were at his command.

Except for one alert when our convoy destroyers dumped some ash cans (depth bombs) and made some clever maneuvering the voyage was otherwise uneventful.

Monitoring Officer Prose Walker, who later was promoted to Supervisor in Charge of the Radio Intelligence Center established in Honolulu at the request of General DeWitt in San Francisco, displayed his talent as an accomplished piano player. He entertained the contingent of pilots and nurses in the blacked out recreation room of the ship night after night of the long eleven-day voyage to Honolulu. Zig and zagging made for a long trip. I have often wondered how many of these fine and courageous men returned home safely after the war. I recall a famous Navy surgeon who was in the continent who did not.

Further Hawaiian Operators

In accordance with the agreement reached in Washington between the Army, Navy and FBI, I reported on arrival to Col. Powell, Chief Signal Officer of the Hawaiian Command who, like other Army and Navy officials on the islands, had been advised of my mission and had orders to aid and cooperate with us.

We received the finest cooperation from the military and I paid my respects to both Lt. Gen. Short and Admiral Block. I found the later fully indoctrinated by reports received from his subordinates to the extent that he, like some of the commanders on the West Coast of the States, thought the woods were full of Japanese with radio transmitters. After exchange of greetings, he said he hoped that I would get busy with my men and round up the spies on the islands. Despite my knowledge and feelings on the subject I replied we were there to do everything within our jurisdiction to the best of our ability.

As rapidly as sites for additional monitoring stations were approved by the military, they were erected and placed in operation. At the instigation of the military and space was provided by them, a Radio Intelligence Center (RIC) under the supervision of A. Prose Walker was placed in operation through which all information relating to unidentified and suspicious radio signals were filtered and analyzed.

This Center also controlled the emergency direction finding service to distressed military aircraft. It received commendations several times from Gen. Flood of the 7th Air Force and other Commanders for the valuable service it rendered rescuing men and aircraft.

The value of the work performed by the Radio Intelligence Center was appraised by the Senior Counter Intelligence Officer of the Hawaiian Command, Lt. Colonel Bicknell, G-2. He wrote under date of January 13, 1943: "the FCC Radio Intelligence Division is practically an integral part of the Counter Intelligence Section of G-2 in the Hawaiian Islands. Their service has been of great assistance to both the Counter Intelligence Section as well as to other branches of the Army."

The Military Tests RID's

On March 19, 1942, two days before the Hawaiian installations were completed, Chief Signal Officer Colonel C.A. Powell of the Hawaiian Department and his staff, and Colonel George W. Bicknell, Assistant Chief of Staff for Military Intelligence in Hawaii, decided they would like to test the efficiency of RID. They placed in operation a hidden transmitter in the Honolulu area for the test. Six mobile direction finding units all started from scratch at a chosen military camp and were ordered to locate the hidden transmitter solely by means of taking bearings and projecting them on charts of the area. Each two-man mobile unit working independently located the hidden transmitter in a private house hidden away in the hills on the outskirts of Honolulu. The house was located on a small side road many miles from the starting point. The antenna was carefully concealed by interweaving it on the branches of a nearby tree. The first car located the house in exactly 52 minutes after the first transmission. The first bearing had to be taken at the starting point. The other units came there one by one until all six arrived at the location.

I reported to Mr. Jett the following concerning this test:

"The Army officers in attendance at this demonstration were profuse in their expression of the ability of the men to locate the transmitter and in view of the conditions under which it was operated, and with due regard to the topography of the land. The RID men made a very excellent showing and reflected the instructions that had been given them"

In acknowledgement of the successful completion of the entire Hawaiian monitoring plan, Admiral Wilkinson wrote on April 12, 1942:

"I have been very glad to cooperate in the establishment of these additional stations, whose operation, I am sure, will contribute materially to the war effort and to the maintenance of adequate security in Hawaii."

When the Hawaiian installations were completed, RID had 11 monitoring stations and approximately 82 employees on the Islands.

Confirmation of Efficiency of RID's Monitoring in Hawaiian Islands

On Tuesday May 19, 1942 information was released in the press concerning certain major volcanic eruptions on the big island of Hawaii from Mauna Loa. The eruptions occurred some weeks before the announcement, but information was withheld until it was certain that it would be of no value to the enemy.

For a period of two weeks the eruptions were in progress and a matter of common knowledge throughout the Hawaiian Islands, which have a tremendous Japanese population. The press and radio of the Islands were not permitted to comment on the eruptions, however, and no news was sent to the mainland. For a considerable period of time, then, the Japanese radio had no opportunity of achieving a sensational new scoop which would have attracted a good deal of attention and would have received much valuable publicity in the American Press. As one will recall, the Axis shortwave was alert to the value of news beats for the purpose of increasing its audience.

It was a strong indication to RID that the failure of the Japanese radio to make announcements of these eruptions was that no such information was made available to them. It was also evidence to us of the strongest type that the Japanese were not making illicit transmissions from the Hawaiian Islands.

RID Detects Signals from a Japanese Submarine

On December 5, 1942, Col. C.A. Powell asked the Radio Security Center for assistance in determining the origin of certain interference experienced by the operators of Army radar stations. Two mobile units were directed to participate in this investigation. A continuous watch for a period of five days of the frequencies used by the radar stations failed to disclose the reported interference. However, on December 10, 1942, an unidentified carrier was intercepted on the radar frequency. A fix immediately obtained by the mobile units indicated that the signal had originated from a point approximately five miles ENE of the Kaneohe Naval Base. This information was communicated directly to both the Army and the Navy. Short time later a Japanese submarine was sighted within a mile of the FCC fix. Although it was not definitely known if the submarine was destroyed, responsible Army officials indicated that it was their opinion that the intercepted signals undoubtedly originated from the submarine.

Smoke Signals

During April 1942 the personnel of the Secondary Monitoring Station at Nonokas, Hawaii, noticed the regular appearance of a smoke signal originating from a spot on the island which could not be reached from the monitoring station location. Apparently, the signal was answered by another smoke signal originating a few miles out at sea. Military Intelligence and Naval Intelligence officers were immediately notified of full particulars. Based previous observations the officers were advised that these smoke signals appeared to have a certain schedule and were told when the next signal might possibly be in evidence. The signals appeared on schedule and our personnel noted considerable air

activity from Naval planes in the vicinity. Although no information as to the outcome was ever officially received, the monitoring officer reported that rumors of the sinking of an enemy submarine at the subject location were whispered around "military circles".

Our belief was reinforced that we had effectively sealed the Islands so far as the use of clandestine transmitters were concerned, if in fact, spies were using smoke signals to communicate with an enemy submarine.

Regulating Diathermy Machines

It was previously pointed out that diathermy machines utilized by physicians and hospitals for deep therapy are basically radio frequency generators and with powers up to 500 watts. It was also shown that the radio frequency thus generated could, unless properly filtered, radiate from the cabinet and the power lines that energize it. While all machines were required to be registered, the military in Hawaii felt that special provisions should be taken to shield them in the Islands. It was feared an enemy aircraft could utilize the radiated signal for a training device in an attempt to make a landing or locate a bombing target. Moreover, it was essential that all the military communications circuits and radar be left free of interference.

RID was called on to aid in this project and monitoring officer Ernest Theleman rendered Yoeman service in drawing up the regulations governing the shielding and filtering of these machine, as well as testing them to ensure that the radiation was sufficiently suppressed. He was commended by the military for the fine service he rendered in this connection.

The following is typical of the nature of many of the complaints investigated by RID and the net result. It will be noted that in some instances one branch of the military service was interfering with another. The funniest one of all was the croaking of a toad alleged by the Army to be a radio set on a coffee plantation.

The following is a typical list of complaints investigated by RID in Hawaii before and after attack

DETAILS OF HAWAIIAN AREA CASES APPEARING IN INVESTIGATIONS SECTION FILES

<u>Date</u>	<u>Referred by</u>	<u>Nature of Allegation</u>	<u>Result</u>
10/10/41	FCC Monitoring	Special case undertaken by HA-1 to determine whether amateur stations in the Hawaiian Islands, whose licenses had been cancelled, might attempt to operate illegally.	No unlicensed operation discovered
10/25/41	Navy	Suspected subversive radioactivity, 747 N. Judd St., Honolulu	Investigation determined that directional radio antenna being used only for reception was the basis of the suspected activity. Owner of antenna dismantled it
11/28/41	Navy	Code signals from loud-speaker heard by general public	Monitoring observations revealed no station operation and the information was never able to hear the signals again.
1/23/42	FCC Monitoring	Unidentified broadcast station, 660 kc, broadcasting recorded popular music. No announcements.	Mobile direction finder traced station to metropolitan area where it was found that a phonograph oscillator was being operated. Owner agreed to reduce radiating properties of oscillator and no further signals were intercepted.

<u>Date</u>	<u>Referred by</u>	<u>Nature of Allegation</u>	<u>Result</u>
12/27/41	FCC Monitoring	Unidentified carrier, 7310 kc, intercepted by Unit	Adcock bearings and use of mobile unit determined signal to originate as a spurious emission from one of the Navy's located in Administration Building in Pearl Harbor.
2/12/42	Army	Unidentified station transmitting call letters "MO" interfering with Hickam Field radio operations, 8500 kc.	Station found to be Navy
12/9/41	Army	Interference caused to Army planes, 6355 kc	Interfering stations identified as Central and South American broadcast stations
12/7/41	Navy	Interference to Globe Wireless, 14, 850 kc	Interference found to originate at Globe Wireless Station KPG, 7437.5 kc (2nd harmonic)
12/7/41	Army	Unidentified and suspicious code signals received on 600 kc	Identified as Naval Station NFW
1/14/42	Navy	Interception of code signals by the general public	Monitoring observations failed to indicate local operation. However, informant's receiver was susceptible to receiving local short-wave radio transmissions due to poor

/18/42

FCC Monitoring

Unidentified rough carrier intercepted on 256 kc

Signals traced by mobile unit and found to originate with faulty radiating radar device of the Army.

/3/42

Navy

Alleged operation of amateur station on the part of one Jaeger.

Investigation determined allegation was without foundation. Station was not operated, and, in fact, transmitter had been rendered inoperative by the owner.

/28/42

Army

Alleged unlicensed activities N. Vineyard & Houghtaling Sts., Honolulu

Investigation with mobile Unit determined that complaint resulted from power line interference.

/31/41

Army

Army & Navy believed that Japanese submarines were coming into Maunaloa Bay at night to receive radio messages from agents ashore.

Continued monitoring observations failed to reveal any such activity.

/1/42

FCC Monitoring

Unidentified modulated carrier intercepted on 13,300 kc

Adcock D/F bearings together with mobile unit bearings gave fix on Ford Island, Pearl Harbor, location of Navy radio station, Signal found to originate from a spurious emission of one of the Navy transmitters. As soon as the Navy was advised the signal was removed from the air.

/26/42

Army

Code Signals heard on telephone line connected to residence of a Japanese named B. Fuioko

Investigation revealed telephone line was picking up and rectifying signals from local military station;

<u>Date</u>	<u>Referred by</u>	<u>Nature of Allegation</u>	<u>Result</u>
11/42	FCC Monitoring	Unidentified modulated signal, 106 Mc	Mobile unit with D/F bearings located transmitter at Pahoehoe operated by the Army
6/42	Army	Sounds believed to be Kana code intercepted by the Army. Believed to be emanating from a plantation worker's residence who was being investigated by the military authorities.	Reported signals found to originate from an arc across an insulator of a high-frequency transmission line
31/42	Army	Unidentified code signals intercepted by the Army	Investigations with mobile unit located transmitter at the Commanding General's new "secret headquarters"
4/42	Army	Interference to Army radio frequencies caused by unidentified signal	Interfering signals found to originate from portable transmitters used by 96th Field Artillery
30/42	Hilo Tribune-Herald Newspaper	Strong carriers intercepted on crest frequencies	By use of mobile unit it was determined that an Army transmitter final amplifier stage was oscillating and emitting spurious signals on many different frequencies
10/42	Army	Interference to Army tank Battalion receivers of undetermined origin.	Investigation with mobile unit disclosed interference to be electrical in nature and was caused by electrical razors used in the Officers quarters
17/42	Army	Interference from undetermined source received at Filter Center, Hilo	Investigations with mobile unit revealed that interference was caused through static discharges from belt driven rotating machinery operated at Filter Center

	<u>Referred by</u>	<u>Nature of Allegation</u>	<u>Result</u>
5/43	Hilo Police Dept.	Request to inspect a receiver owned by S. Higa, an alien believed to be capable of receiving shortwave stations contrary to military order	Inspection revealed receiver had been modified for reception of short-waves by Japanese citizens-repairman, named Matsuda. 2 years sentence and \$500 fine given by Provost Court.
9/43	Army	Request to make an engineering determination relative to harmonics of Army control tower transmitter	Engineering inspection made and report submitted to the Commanding Officer
4/43	Army	Request to make inspection diathermy machine to determine if radiating characteristics comply with Army regulations	Engineering investigation made determining that the equipment complied with military regulations.
4/43	Army	Request to inspect diathermy machine to determine if radiating characteristics comply with Army regulations.	Engineering investigations made determining that the equipment complied with military regulations.
1/41	Hilo Police Dept.	Alleged unlicensed amateur station using call, K6IIV.	Case investigated but no unlicensed station discovered operating
3/41	FBI	Alleged unlicensed operation on the part of Japanese alien.	Complete investigation determined that the only radio equipment involved was an obsolete broadcast receiver.

<u>Date</u>	<u>Referred by</u>	<u>Nature of Allegation</u>	<u>Result</u>
16/42	General Public	Alleged that Japanese school-teacher was arrested by military authorities and suspected of having communicated with the enemy.	Investigation revealed that the Japanese had been interned and no evidence was found connecting him with unauthorized radio connection.
20/42	General Public	Alleged unlicensed operation by one Y. Momohara, residing at Kawai, T. H.	Unidentified signal intercepted as result of monitoring mobile D/F fix on suspect's residence. Entry to premises was made with military authorities and it was found that suspect was radio serviceman and that signals intercepted originated from a broadcast receiver with poor shielding.
10/42	Hamakua District Sheriff	Alleged interception of Japanese radio signals	Monitoring observations revealed no operation. It was found that Japanese voices heard originated from Japanese family conversations in the neighborhood.
13/42	FCC Monitoring	Unidentified signals on 108 megacycles	Signal identified as Army radar Installation.
2/42	Army	Alleged radio equipment believed located on coffee plantation. Allegedly, every 2 minutes a motor generator set was heard to operate.	Investigation determined that reported sounds were the croaking of a large toad.
21/42	Army	Interference to mutual telephone companies; 38 megacycle radio telephone circuit.	Station identified a Japanese radio telephone station in Japan. Interference found to undergo seasonal changes depending on propagation conditions.

<u>Referred by</u>	<u>Nature of Allegation</u>	<u>Result</u>
Army	Code Signals on Army Telephone switchboard	Investigation failed to reveal presence of radio signals. Interference found to originate from other electrical disturbances.
Army	Radio telegraph signals allegedly emanating from home of Japanese	Special monitoring watch established for purpose of surveillance. No transmitter was being used. Apparently, original report resulted from radio receiver in vicinity receiving telegraph signals with loud speaker reproductions.
	Alleged unauthorized transmitter operation Lanikai, Oahu, T. H. on the part of one, Mr. Bell	14 hours of monitoring determining no radio station operation. ONI advised that the matter had been cleared up through other channels and that suspicion of person had been removed.
Honolulu Police Dept.	Alleged possession and illegal operation of radio transmitter by Fred S. Ida, Lanikai, Oahu, T. H.	Investigation revealed no unauthorized radio station operation.

Chapter 21

RID Men Not Protected by the Geneva Convention if Captured

It is interesting to remember that RID men were engaged as civilians in counter-espionage operations. The Territory of Hawaii was under martial law and in fact was no doubt a combat area.

A Japanese aircraft no doubt launched from a submarine made an attack on Honolulu while I was there. Headlines in the papers confirmed it.

The bombs dropped close to our primary monitoring station in the Punch Bowl.

Had an enemy invaded the Islands which they surely had a good chance to at the time of all the attacks and had captured any RID men they could not have been accorded the protection necessarily of war prisoners as provided by the terms of the Geneva Convention. No doubt if the enemy knew of the nature of their work they could have been executed as spies.

RID Adcock Type Direction Finders

The ordinary directional loop antenna is susceptible to error due to horizontal polarization of the observed signal, commonly present in signals propagated through the ionosphere. For these signals, the most effective device then available was the Adcock type (developed originally ca. 1917 in England), having vertical dipoles at the ends of a horizontal boom, rotatable in the horizontal plane about the center of the length of the boom, with transmission lines along the boom from the dipoles to its center, connected so that signals arriving simultaneously at the dipoles were cancelled, thus giving nulls at right angles to the sides of the boom. In this design, with careful attention to details and balance of parameters, the DF is unaffected by horizontal polarization.

The first Laurel HF/DF was a portable Army Adcock that had very poor performance. I. Milton Mobley, was assigned the task of developing another, also of the Adcock elevated "H" type. The first of these was installed south of the Laurel monitoring station building.

Measurements made on it enabled development of an improved model with a tuner having coils switched to any of several frequency bands from 1.5-30 MHz. I should note that the most useful test instrument in these tests was a grid-dip meter. That readily showed the frequencies of various resonances and the effectiveness of changes in the coupling to the tuner. Except for a signal generator and some frequency meters (of the calibrated oscillator type), this was the main RF measuring device at the station.

The first version had open transmission lines exposed to the elements; the second version had these enclosed in the hollow boom that supported the dipoles. The equipment was mounted on an elevated house about 8' x 8', about 15 feet above ground. The first one of the second type used a battery-operated receiver. Later ones used AC power from underground supply lines through decoupling chokes. Heat in winter was delivered via a wooden duct from a heater at ground level.

Laurel manufactured about 125 of this second model; some of these were transferred to OSS or the military for use out of this country. The wooden house for the device was locally constructed. All primary monitoring stations and some of the secondary stations were equipped with them. I made about 50 of the tuners; the remainder of them were contracted for with a small Baltimore manufacturing company. I made trips to other sites to verify performance of and readjust these Adcocks. When better materials became available after the war, the horizontal boom of these HF/DF's was replaced with one made of plastic tubing. The design continued in use until the advent and installation of the Wollenweber direction finder in the 1960.

That Baltimore company also manufactured for RID some unites of aperiodic(wide band) receivers designed to report the presence of RF emissions without regard to

frequency. I do not recall who on the part of the RID staff did the initial development of these receivers.

Three commercial HF/DF's became available in 1942/1943. One, using shielded loops mounted coaxially at the ends of a metal boom, originally developed by UAL for its inter-continental flight service before the war, was installed. It turned out to have errors due to horizontal polarization effects that could not practicably be eliminated. This was mainly because the loops were unbalanced instead of being balanced to ground.

A second system, type DAJ, manufactured by ITT (developed by Henri Busignies), was made available by the U.S. Navy. This had four arrays, each having monopoles located at the corners and center of a square area, connected by underground coaxial cables to goniometers within the Monitoring Station. We installed it in the field south of the Monitoring Station now occupied by the Wollenweber D/F. Even though accurate, this system had a fatal difficulty, in that the amplifiers used to couple the monopoles to the coaxial cables were severely affected by intermodulation. The Laurel system was not so badly impaired, but the one at Santa Ana, CA, had intermodulation components only a KHz or so apart throughout the rated range. The Navy had several of these systems installed, generally in locations where the RF ambient did not cause difficulty.

Later, another paired loop type was made available for test, a Navy Type DAB. Like the UAL version, it also had problems with horizontal polarization, but this was traced to the arrangement of the loading coils used as an accessory in tuning the loops, and was practically eliminated by modification of the circuit arrangement.

So far as I know, the FCC never used any DAB's, but some were used when the U.S. Coast Guard started setting up its HF/DF network, expected to be needed as transocean civilian air travel increased post-war. I was involved in the planning of this system, as a Lt. JG, USCG(R), in the CG HQ in Washington. As it happened, the reliability of aircraft improved so much that the expected need for a CG HF/DF system as an adjunct to Air-Sea Rescue did not occur, and the CG terminated the HF/DF program near the end of 1945.

Collateral activity at Laurel RID included training many groups, several from South America, in DF and other investigative techniques. The building at the Lab known as "The Schoolhouse" was set up for that purpose originally. Transmitter hunts were carried out locally as part of the training. Several hundred people went through these courses. Charles Ellert was the principal instructor.

ADCOCK DF



Fig 11

CHAPTER 23

Congressional Investigation of Federal Communications Commission

On January 19, 1943, the House of Representatives of the Congress adopted a Resolution (H-21) directing a Select Committee to conduct a Study and Investigation of the organization, personnel and activities of the Federal Communications Commission with a view to determining whether or not such Commission in its organization, in the selection of its personnel and in the conduct of its activities has been, and is, acting in accordance with law and the public interest.

Congressman Eugene Cox

The late Congressman Eugene Cox of Georgia was made Chairman of the Committee and the late Eugene L. Garey was selected as General Counsel.

The investigation was triggered as a result of the exposure of a check by the FCC, which Congressman Cox had accepted from a constituent for interceding for him in obtaining an authorization for a broadcast station. The late Congressman Cox was a powerful man in Congress and he readily obtained the backing of other members of the Congress who were critical of the manner in which Chairman Fly and the Commission were regulating the broadcast industry. The Committee obtained a staff of lawyers and investigators and the inquiry got under way.

The investigators in their endeavors struck what might be called pay dirt when they discovered a feud had developed between a small group of Naval Communications Officers in Washington and Chairman Fly for two reasons. First, they were opposed to the appointment of Fly as a civilian at the head of the Defense Communication Board, later identified as the Board of War Communications, which coordinated and, in part, regulated the communication industry and government immediately prior to and during the war, as the President had delegated to the Board certain authority for which he was responsible under Section 606 of the Communications Act of 1934.

Furthermore, they discovered that quite a feud had developed between the late Admiral Hooper and Chairman Fly because the latter refused to turn over fingerprints taken of operators in the Merchant Marine. The fingerprints were later turned over to the Federal Bureau of Investigation. During the hearing, it was alleged that Fly had forced the retirement of Hooper from the Navy.

Over a year past from the time of opening of the hearing on July 2, 1943 until the FCC was provided an opportunity to answer and refute the charges made by the Committee Counsel Garey.

In the meantime, constant pressure was put on Congressman Cox to resign from the Committee. As early as June 4, 1943, Commissioner Clifford Durr had requested the

House of Representatives to disqualify Representative Cox as Chairman of the investigating committee. On September 24, 1943, Commissioner Durr appealed to the then Speaker of the House Rayburn to bring up a petition to disqualify Representative Cox as a member of the investigating Committee. Under severe criticism from the press and members of Congress, Cox was forced to resign along with the General Counsel Garey.

FCC Chairman Fly Makes a Plea to Be Heard

On March 7, 1944, when Chairman Lea took over the Committee, Mr. Fly appeared before him and stated "the record is replete with requests, and even demands, from the Commission that it be given some sort of a hearing. The investigation is now heading around the turn into its second year and to this moment no person representing the Commission and certainly not I have been given any opportunity by the introduction of a single document or by utterance of a single word in this record to give an account of my stewardship in the official affairs of the Commission."

"On another point, I do not want to embarrass the Committee by further pressing for a hearing, but I do hope the Committee will keep the matter in mind, its importance and its urgency, and granting as soon as possible a prompt hearing in regard to the RID and FBIS. Their existence and their essential work have been imperiled. They are substantial activities quantitatively. They involve roughly one half of the appropriations that are made to the Commission by this Congress, and roughly one half of the personnel of the Commission. The majority of the irresponsible charges and innuendoes uttered by the former Counsel (Garey) of this Committee have been directed at these two essential, loyal and efficient divisions, and toward the men who are in there, doing loyal, efficient and productive jobs. Great publicity has been given to them by the irresponsible charges."

When the hearing for underway on July 2, 1943, Congressman Cox was criticized by Chairman Fly and by segments of the press for his unethical conduct of the hearings.

On the day the hearings opened, Chairman Fly assailed Representative Cox for "announcing conclusions in advance of a hearing."

It is not the intent of this chapter to cover the extensive and many ramifications of the hearing, the exposure of star chamber hearings, interview of witnesses in hotel bedrooms, the unfair conduct of the hearings, and the badgering of witnesses, but to report the charges made regarding the operations of the Radio Intelligence Division and how they were answered and refuted by public testimony given by Chairman Fly, Chief Engineer Jett, Technical Supervisor Charles Ellert, and myself as Chief of the Division. Both Mr. Jett and myself were subsequently appointed members of the Federal Communications Commission.

The charges as made by the General Counsel of the Committee, Mr. Garey, burst like a bombshell on the Federal Communications Commission and the moral of the RID was

severely undermined as the newspapers and the radio of the country published the unfair and unfounded charges. The staff of the stations, because of security reasons, knew little of what the RID was accomplishing as a whole in the prosecution of the war.

Each monitoring station contributed a small part of a picture puzzle that was put together at headquarters. They did know, of course, when they were assisting a distressed aircraft or reporting a SOS of a merchant ship torpedoed by an enemy submarine. But the counter-espionage and military radio intelligence operations were cloaked with secrecy and the Division as a whole never knew exactly the importance of their individual contribution, as the result of taking a bearing on a radio signal, copying transmissions of a designated station, typing miles of recorded tape telegraph communications, recording foreign language broadcast, building or improving a piece of apparatus.

Up to that time, they were confident, and had been assured, they were making a vital contribution to the winning of the war. Hence, when the following charges were publicized, doubt and suspicion arose in the minds of many and it became necessary to reassure them from Washington that the FCC would have a day in court and answer the malicious and ridiculous charges. The fact that the charges led to Congress cutting one million dollars from the RID budget served only to aggravate the situation.

However, they learned that a recommendation had been made by Joint Chiefs of Staff that the RID be transferred to the Army. This, President Roosevelt refused to do as we shall see later.

On the morning of July 2, 1943, the Committee went into operation and the following charges were read to the Committee by General Counsel Garey.

He charged that the Federal Communications Commission: 'had sought to cloak itself as an essential war agency, making vital contributions to the war effort, in the truth, its alleged war activities constituted a danger and menace to national security.'

"That in furtherance of its alleged war activities, it has drawn to its use manpower and critical materials from the limited sources available and needed by the Armed Forces of the United States and has procured the exemption from military service a large number of persons not entitled thereto."

"That military radio intelligence means gaining through the radio spectrum intelligence of the enemy and what FCC attempts to do does not constitute radio intelligence by merely monitoring or more primary listening to the enemy transmissions."

"That such a service must have specially trained operators, who must know the enemy" code and be familiar with the traffic handled because in wartime, unlike peacetime, the messages are secret code. Such a service must be able, when they take a bearing, to identify it and know where it is coming from and must have full knowledge of the cryptographic systems employed. Which, oftentimes, vary from message to message."

“That the FCC personnel is inadequately trained in radio work and not familiar with the methods and radio activities of our enemies”.

“That essential information to a proper conduct of this intelligence work is of the highest degree of secrecy, which can be given only to the most trusted and experienced personnel, which also be subject to military discipline. That without this essential information, no matter how technically able any civilian agency might be, the inevitable result would necessarily be information which could not be properly evaluated. That if such information is disseminated, it would result in operations based on improperly evaluated information”.

“That such an event would be highly dangerous, and that such an incident based on such improperly evaluated information furnished by the FCC actually transpired in Alaskan waters”.

“That the RID of the FCC definitely overlaps the functions of the military services in the fields of radio direction finding of domestic clandestine stations, the interception of enemy radio telegraph transmissions, the conduct of distress service, and such matters as the furnishing of information to aircraft operation”.

“The fact that the RID of the FCC is not adequate, either from the standpoint of equipment and personnel, to do other than local monitoring, because, (1) its stations are not properly located, (2) its personnel lacks adequate intelligence information respecting the enemy and is not trained to handle direction finding triangulations and other radio intelligence functions, and (3) the military services cannot entrust secret military information essential to the proper functioning in radio intelligence to a civilian agency, and, more particularly, to one prone to publicize its activities for its own aggrandizement”.

“The fact that the military personnel is trained and equipped to and does perform adequate radio intelligence functions and the fact that the alleged national defense effort of the FCC constitutes a duplication of no value whatsoever to the Armed Forces, but on the contrary, in fact endangers national security.”

“That the FCC does not and cannot as claimed by Mr. Fly render service of any value to the Navy in locating enemy ships or in reporting attacks upon war shipping.”

“That FCC. through its RID, does not perform the service which Mr. Fly has claimed it renders for the Army and Navy in his testimony before various committees of the Congress such as Appropriations, Costello and other Committees. That the Army and Navy never requested (and do not want) FCC to perform for them services claimed by Mr. Fly to be rendered to them by their requests.”

“That such information furnished the Navy by the RID of the FCC respecting alleged operation of enemy ships has necessitated the expenditure by the Navy of days of

checking such reports only to ascertain that the alleged enemy ships were in fact standard radio stations located in Japan.”

I have mentioned that the investigation of the FCC was instigated in part by a small clique of Naval Officers in Washington who were disgruntled because a civilian was chosen to head up the Board of War Communications. The committee counsel, Mr. Garey, referred to it in these words: “The insidious steps by which Mr. Fly injected himself into the control of the Board of War Communications which he and his organization dominate, and the methods and manner in which he brought about and has since maintained that domination and control.” (R. 17)

Mr. Fly in his testimony demolished this charge by stating the facts. As he indicated, “It is, however, completely in accordance with our traditional as well as present practice for a civilian to be the head of a wartime agency”. He went on to show how eight or more wartime agencies including the War and Navy Departments had civilians at their heads.

I want to make it amply clear that the Chief Signal Officer of the Army, General Mauborgne, and Admiral Noyes, Director of Naval Communications endorsed whole heartedly the selection of Mr. Fly as Chairman of the Board.

In a letter to Mr. Fly, dated July 2, 1940, General Mauborgne on this subject concluded by saying, “Admiral Noyes and I agree, and we have the backing of various chiefs in saying to you, that the powerful stimulus given by you to the furtherance of this project is a matter of great satisfaction to the Army and the Navy.”

I would like to add that these two top military officers were staunch supporters of RID.

While Chairman Fly and Mr. Jett, Mr. Ellert and myself answered these charges in detail in public testimony that I will relate subsequently, I would like to comment briefly on some of the charges concerning RID by Mr. Garey. He was, by the way, forced to resign allegedly for leaking two RID classified cases to a Washington reporter of a chain of newspapers.

Consider the charge that the FCC had drawn to its use manpower and critical materials from the limited source available and needed by the Army Forces. Whenever it could, when an experienced RID man was drafted, steps were taken through appropriate channels to get him into a service whereby his talents and training could be used to advantage, such as OSS, Navy, Army and Coast Guard.

Chairman Fly recounts in his testimony how RID manufactured equipment for OSS, transferred fully-equipped mobile units to the Army, a monitoring station in Hawaii to the Navy, direction finders to the Signal Corps in Alaska as they had none. Revealed to the military and other agencies its latest developed equipment required in radio intelligence operations.

With respect that RID did not perform military radio intelligence and what it did “merely constituted monitoring or more primary listening to the enemy transmissions” one only has to read the chapters devoted to military Radio Intelligence and the letters of commendation from all branches of the military to see how unfounded and erroneous that charge was.

With respect to the charge that a military radio intelligence service must have specially trained operators who know the enemy code and be familiar with the traffic, RID had 61 former Navy operators skilled in the Japanese Kana Code, some of whom had served with the Navy in China and other Far East waters.

Several RID operators came from the U.S. coastal commercial radio stations that handled traffic from all ships of the world. Others were skilled amateur DX operators who had won contests in working the greatest number of amateur radio stations throughout the world in a given time through all kinds of interference and competition.

The most ridiculous assertion was made when it was stated “when they take bearings to identify it and know where it is coming from”. The fundamental purpose of taking bearings is to determine in conjunction with bearings taken by other stations strategically located and when properly evaluated and plotted to indicate the general location of the station, The call letters and composition of the traffic to skilled RID men who knew the full occupancy of the radio spectrum by all services, commercial and military, left no doubt as to the nature of the service the station was engaged in.

The specific charge was made that the FCC personnel were inadequately trained in radio work and not familiar with the methods and radio activities. One has only to remember that the RID prepared the monitoring aids describing the many types of signals and services heard on the air with examples of all kinds of commercial and military traffic and furnished this material to the military at their urgent request.

Consider the letter from the Navy indicating the various kinds of military traffic they requested the FCC to furnish so as to enable them to train their operators. Consider also how Lt. General DeWitt summoned Mr. V. Ford Greaves, Supervisor of the RID Intelligence Center at San Francisco, and how on the same day, I was summoned from a formal Commission meeting at the request of the military to tell them what RID knew about the Japanese fleet in the Pacific prior to the Battle of Midway.

Also consider how RID trained military officers at its special radio intelligence school at Laurel, Maryland, and the letter of thanks received from the Air Force and OSS for this service as they are revealed in this chapter.

The following pages are devoted in part to FCC Chairman James Lawrence Fly's reply to the charges made about the operations of RID. Included is the letter over the signature of Franklin D. Roosevelt refusing to transfer RID to the War and Navy Departments.

Chairman Fly Answers the Irresponsible Charges Made About FCC

Appearing before the Select Committee on June 20, 1944, Chairman Fly testified as follows:

“Before concluding our public testimony on the subject of the Commission’s Radio Intelligence Division, there is one final matter with which we want to deal. I refer to the proposal of the Joint Chiefs of Staff that the facilities and functions of the RID be transferred to the Army.”

“It will be recalled that on February 1, 1943, the Joint Chiefs directed a secret letter to the Secretary of War and the Secretary of the Navy recommending – an Executive Order transferring certain of the Commission’s functions and personnel to the War Department. The Secretaries joined in this recommendation in a secret letter to the President, dated February 8, 1943. These two letters and the proposed Executive Order appear in the record at Pages 10 – 13. These moves were contrary to established administrative procedure in the failure to submit the recommendation and the proposed Executive Order via the Bureau of the Budget. Moreover, they were submitted without prior conference with or even any form of notice to the Commission. It will be recalled, however, that the President had a comprehensive study made of the proposal by the Bureau of the Budget. After full consideration, the President determined that the transfer should not be made. The President’s decision, contained in identical letters addressed to the Secretary of the Navy and the Secretary of War on September 7, 1943 (Appendix 1).

The Chairman. Off the record. (There was a discussion off the record as result of which it was agreed that the remainder of Mr. Fly’ statement could be deemed read into the record as follows:)

Mr. Fly. I believe that this decision by the Commander in Chief was (remainder of sentence unavailable). (What follows is the best construction that could be found based on available pages).....One of the charges that the Counsel of the Committee was that RID had as a result of furnishing bearings to the Navy had resulted in some sort of mishap in Alaskan waters. The charge was never proven, but reflecting on the cross-examination of Chairman Fly and my testimony predicated by that of former Commissioner T.A.M. Craven, a former Naval Officer, I felt at times as if I must have been the Director of Naval Operations, as the following exchanges taken from the transcript of the hearings will indicate.

Mr. Fly – Page 2863—“I think I would like to answer the charge that RID misled some portion of the fleet and drew it into a falsely indicated safe and clear sea, where some mishap occurred. (Congressman Miller of the Committee charged that the Navy lost a battle with the Japanese in this instance and offered to bring a wounded sailor to Washington to testify but reneged on it when the chips were down.)”

Mr. Fly – (Continuing) – “Now no such mishap as that has been established in this record, either in public testimony or in secret testimony. The first point I want to

make is that RID never at any time in its history suggested the movement of the fleet or anything of the sort. The RID does not endeavor even identify the type of ship or armed force structure that may be in the middle of the ocean that is emitting a radio signal. It has no means of doing that, except in respect to the general type of code used. All the RID ever does is give a radio bearing on a radio transmission which is operating at that time or moment. We have no means of and do not undertake and never undertaken to give any estimate of the quantity of ships or the quantity of forces or the number of people who may be involved there.

The RID has no possible means – and I emphasize – “No possible means of suggesting that any part of the ocean is clear and that it is safe for any force to go there”. I draw attention to that fact because that seems to be the guts of this charge, that the fleet was drawn into a supposedly clear area that was not clear.

All the RID undertakes to do in any instance of that kind on the high seas is to give a radio bearing on a transmitter that is in operation at that time. That is all. So the only possible suggestion there is that a radio transmitter is somewhere in the vicinity of a fix arrived at by these bearings (Navy and FCC combined) provided, of course, the service (Navy) receiving the bearings appropriately charts (plots) them and correctly arrives at a fix.

Neither Admiral Hooper (Director of Naval Communications) or any other officer has even brought to the attention of this Commission, any record or evidence of any erroneous bearings, which, as I say would have to do with a transmitter at the moment only, and since that time and continuously to this very day, the Navy Department has continued to rely on RID for extensive service.

Again, I want to remind the Committee that no record of this Committee, not even its secret records, records of testimony taken in hotel bedrooms, substantiate any such charges as that put out here."

At this point, Congressman Magnuson, now Senator from Washington and at Pearl Harbor during the war, began some pertinent inquiry of Mr. Fly and later Commissioner Craven and myself as Chief of RID. Congressman Magnuson was the only member of the Committee who had a thorough understanding of radio direction-finding and radio intelligence as well as the responsibility of the Navy as the following will show.

Congressman Magnuson – “Mr. Fly, I want to clear this question in my mind and in the minds of the Committee in everyday language. I think perhaps your description of the function of the Radio Intelligence Division, in the early part of the war, in establishing radio bearings on supposedly unfriendly objects on the ocean, might not have been as clear as it should be. It is my understanding, and correct me if I am wrong, that the RID would establish a fix on an object that was supposedly unfriendly. Of course, RID had no knowledge whether it was friendly or unfriendly – from two points, is that correct?”

Mr. Fly – “At least two points. (meaning at least two bearings. RID itself would never rely on a fix projected by only two bearings.) We would arrive at that fix or perhaps we would send the bearings and let the armed services arrive at that fix.”

Mr. Magnuson – “It would be reported to the Armed Forces at such longitude and latitude at the moment there was an object transmitting?”

Mr. Sterling (answering) “No, we gave bearings. All we reported were bearings.”

Mr. Fly – “and they (Navy) chart the bearings and arrive at their own fix?”

Mr. Sterling – “That is right.”

Mr. Magnuson – “The bearings would be transmitted to the military?”

Mr. Sterling – “Yes.”

Mr. Magnuson -- “And it would be up to the military whether they deemed that object or fix worthy of investigation?”

Mr. Sterling – “That is right.”

Mr. Magnuson – “And the decision was up to them whether they would send a task force or an airplane to investigate the object?”

Mr. Sterling – “That is correct.”

Mr. Magnuson – “And if a task force went from one point in the Pacific to another point based on information furnished by RID that decision would rest entirely upon the military?”

Mr. Sterling – “That is right, sir. We only gave them bearings at their request.”

Mr. Magnuson – “Then, of course, the military themselves would be taking bearings?”

Mr. Sterling – “That is right.”

Mr. Magnuson – “And if RID bearings and the military bearings continuously discovered this object, they would all be evaluated by the military?”

Mr. Sterling – “Yes, and they would investigate it.”

Mr. Magnuson – “In the early part of the war in the Pacific, many of these fixes were found – this is off the record. (Discussion followed)

Mr. Sterling – General Wash(sic) told me the bearings we furnished the bombers enabled (his command) to sink a submarine off the coast (West Coast)."

Mr. Magnuson – "Some would be investigated, and some would of those that were investigated turned out to be wild goose chases?"

Mr. Fly – "That is right. It might be there only temporarily."

Mr. Sterling – "High frequency direction-finding is very complex and requires careful engineering analysis."

Mr. Magnuson – "What you people did, if you found a fix, you would report that, and that was the extent of what you did?"

Mr. Fly – "No. We did not give a fix. We gave bearings and they arrived at a fix. All we did was give them the bearings. They formed their judgment as to what they should do, and I will say this is a credit of the Navy, there is no task force commander in the Navy who would go out on a wild-goose chase based on one radio bearing. That is why this thing is ridiculous on its face. And the suggestion is that we led the task force into a supposedly vacant part of the ocean. I will ask Mr. Sterling if we had any way of knowing if any part of the ocean is vacant."

Mr. Sterling – "No, we have not."

Mr. Magnuson – "Is it correct that Japanese submarines were very active at the beginning of the war and in an around the Aleutians? You would find bearings and they (the Navy) would chart their ships?"

Mr. Sterling – "I think they can tell from what the message contains when it is decoded whether it is a submarine."

Mr. Magnuson – "Did you decode any messages?"

Mr. Sterling – "No (referring to military codes). We had to evaluate the bearings dependent on propagation conditions (conditions in the upper atmosphere through which radio signals travel)."

Mr. Magnuson – "Assume you had reported a bearing, and you went into a discussion of what you might think exists in that area, and that was transmitted to a trained Naval Officer, you would not know what was there, and a trained Naval Officer would know you did not."

Mr. Sterling – "That is right."

Mr. Magnuson – "And what you said would be conjecture, if you did say."

Mr. Sterling – “It certainly would.”

Mr. Denny – (General Counsel of FCC) “Mr. Chairman, I would appreciate having that in the record as Mr. Sterling’s testimony. I would appreciate it if you administer the oath to him.”

Mr. Chairman – “You mean what he has said?”

Mr. Denny – “Yes, I would like him to confirm under oath what he has said. (Whereupon an oath confirming his testimony above given was administered to Mr. Sterling by the Chairman.)

At this point in the hearings former Commission T.A.M. Craven, a former Navy Commander, was on the stand. Congressman Magnuson also participated in the following exchanges during Craven’s testimony.

Mr. Garey – (General Counsel of the Committee) “I think the only reference we can make and that must be in broad terms is to an incident that transpired in Alaskan waters.”

Mr. Craven – “I am so informed.”

Mr. Garey – And that incident was based on improperly evaluated information furnished by the FCC?”

Mr. Craven – “That is the way I understand it.”

Mr. Magnuson – “Furnished to whom?”

Mr. Craven – “To the Navy.”

Mr. Denny – “In order to answer the charge, RID has given out improperly evaluated information and has caused trouble in Alaskan waters. I would have to know when and what happened, and I would have to know if the witness has checked with the Commission engineers. Did he check with George Sterling?”

(Note – Commissioner Craven had full opportunity to know what RID was doing at the time, but he did not avail himself of the opportunity by consulting me or at any time advise me that the Navy was concerned with the work we were doing or them.)

Mr. Garey – “I think the question is out of order. I will state for Mr. Denny’s information that, I too, received similar information from the Navy, and the reason Naval Officers, who could give us such information, cannot be brought before the Committee is because the Commission was successful in having those officers silenced.” (An absurd charge. The President, as Commander in Chief, made that decision as many Presidents

have done before in ordering military officers not to testify before Congressional Committees.)

Mr. Hart (Acting Chairman) "Mr. Denny, rephrase the question. It was complicated."

Mr. Denny – "I want to know when and where this happened and what happened. I cannot deal with the charge we have given out misinformation unless I have the information."

Mr. Hart – "If the Commissioner feels he can answer that question, he may do so. If the Commissioner feels circumstances prevent his answering in a public hearing, he need not answer."

Mr. Magnuson – "Did the information given by RID to the Naval Officers confuse the Naval Officials?"

Mr. Craven – "They so stated to me."

Mr. Magnuson – "That is what bothers me. Supposing information went to the Alaskan Command of a bearing sighted (he meant of a radio signal) by RID at such and such latitude and longitude, how could that confuse the Naval Officers? They would know where their own forces were. Wouldn't it be just information given for what it is worth?"

Mr. Craven – "It was information concerning enemy ships and the Navy acted upon that information and wasted a lot of time and found it was erroneous. I shall try to bring each date and fact before the Committee. (He never did)"

Mr. Magnuson – "I imagine there are a lot of so-called tips that came in."

Mr. Garey – "This was broader than that, and the testimony is available to the Committee in executive session."

Mr. Magnuson – "Then the Navy's judgment was in error in acting upon it."

After Mr. Garey resigned with most of his staff, this subject about an incident in Alaskan waters never came up again.

As Mr. Fly pointed out in his testimony, had the Joint Chiefs of Staff requested the Bureau of the Budget to make an investigation of RID's military activities, they would have been fully informed as to what RID was doing in the field of military intelligence with funds furnished in part by the military, as well as what it was doing for other agencies of the government, while at the same time discharging the legal responsibilities of the Commission.

Unfortunately, a small clique of Naval Officers in Washington feuding with Chairman Fly misinformed the Joint Chiefs of Staff as to the full nature of RID's operations which served only to embarrass these officers when the Commander in Chief refused to transfer RID to the Army.

Had RID been transferred to the Army, it would have soon been emasculated in the name of military operations. Also, its identity as an efficient organization directed by one head in Washington would have been under a chain of command, serving only to stifle its initiative and lower its standard of performance.

The testimony given by Chairman Fly, Chief Engineer Jett, Technical Supervisor of RID Charles Ellert and myself, plus the many letters of request for services and commendations received from the military commanders in the field and in Washington, made the charges leveled at RID, by the former counsel of the Committee, look ridiculous and without an iota of foundation.

The RID lost \$1,000,000 in its yearly appropriation, but it continued to function until the end of the war discharging its responsibilities as required by law. It was not relieved of performing military radio intelligence in Alaska until 1943. It continued at the request of the military giving bearings and fixes to distressed aircraft. Subsequently this service was tied in with Air Sea Rescue Services performed by the U.S. Coast Guard and operated as such at that time when requested.

The service is now rendered by the Bureau of Field Engineering and includes many of the monitoring stations established by RID and use the procedures developed by it.

Prior to the testimony given by representatives of RID, the operations of RID were clothed in secrecy and operated much as a separate entity with other branches of the Commission unaware of the detailed nature of its operation and even excluded from the rooms occupied by it.

One charge of the Committee was that the Commission was prone to give publicity to its operations. Prior to the time public testimony was given by the officials of FCC, no publicity had been released about the nature of RID operations or its accomplishments. However, after the testimony was given the lid was blown off and resulted in RID receiving much publicity in the press, on the radio, magazine articles and Hollywood making the movie "Patrolling the Ether".

Chairman Fly's testimony was well summarized in a release by the FCC on June 20, 1944, which read follows:

The secret letters to the President from the Joint Chiefs of Staff and the Secretaries of War and the Navy which influenced Congress to cut \$1,000,000 from the appropriations request for the Radio Intelligence Division of the Federal Communications Commission, were branded today by Chairman James Lawrence Fly before the Lea Committee as

“based on incorrect facts and upon a fundamental misconception of the Commission’s radio intelligence work”

The recommendation was that the RID be transferred to the Army. The President announced after “careful study” and “full consideration” that the transfer should not be made.

If the transfer had been made, the Army would have had to go into the business of running down all illicit radio communications, including operations of race track touts, thousands of complaints of improper radio activity from other government agencies and the public, and of tracking down sources of interference to communications such as phonograph oscillators, diathermy machines, vacuum tube bombardiers, neon signs and X-ray machines, Chairman Fly revealed. The Army would also have had to make intercepts of foreign radiotelegraph traffic for many civilian agencies of the government and would have had to furnish direction-finding service to lost civilian aircraft, he declared.

“In short, the net result of the proposed transfer would have been either to eliminate these essential civilian activities or to place the Army in the business of policing the ether to insure the enforcement of the Communications Act of 1934, the Commission’s rule and regulations and various treaties and international agreements, Chairman Fly asserted.

RIDICULOUS RESULTS

“Perhaps the Chiefs intended no such ridiculous results because as I have pointed out their letter discloses that it was their intention to take over only the “military and quasi-military radio intelligence activities”. However, the Executive Order which accompanied their letter proposed the transfer of all the functions, powers and duties of the FCC in the field of radio intelligence and particularly in the conduct of direction-finding activities.”

“If, as stated in their letter (as distinguished from the Executive Order), it was the intention of the Joint Chiefs to take over only the FCC’s military radio intelligence work, then there was clearly no need for an Executive Order.”

“Since we were doing military intelligence work only at the specific request of the Army and Navy, all they had to do was to stop asking us for assistance in the military field.”

Other points made by Chairman Fly

1. That the Joint Chiefs made no inspection of FCC facilities nor even hinted their plan to the FCC before sending their letter.
2. That the expansion of the RID to a wartime basis was discussed by the FCC with the Chief Signal Officer of the Army and the Director of Naval Communications.
3. That there was no duplication of military intelligence and all work of that nature was done at the specific request of the military.

4. That the RID helped locate enemy units only at the specific request of the Army and Navy.
5. That the RID intercepted enemy Army and Navy traffic only at the request of the Army and Navy.
6. That the location by the RID of illegal transmitters (375 in the past four years) is a responsibility fixed by the Communications Act.
7. That the finding of lost military planes was done at the specific request of the military. (Emergency bearings have been furnished to 616 planes, most of them military aircraft. Many of them would otherwise have been lost. The cases handled during the last month exceeded by 250% the average number handled per month during the preceding two and one-half years.)
8. That the reduced appropriation will make it difficult, if not impossible, to carry on lost plane finding adequately. However, the Army has stated that it is not in a position to do this job and has requested the FCC to continue the emergency service.
9. That the maintenance of marine watches for distress frequencies is not an improper function as charged by the Joint Chiefs but is required under the Act and the FCC will continue to refuse to ignore an unanswered SOS.
10. That the men and facilities devoted by RID to military radio intelligence work was not a "substantial drain upon available material and personnel" but was a "mere drop in the bucket compared with the more than half-million men in the Army Signal Corps, plus a large number engaged in naval communications and compared with the five billion dollars which was available in 1944 for the purchase of equipment for the Army Signal Corps alone."
11. That the RID handling of information, far from being insecure as charged by the Joint Chiefs was rated by one of their own inspectors as "excellent".

Chairman Fly submitted excerpts from letters from some 50 Army and Navy officers praising the work of RID.

"I don't know where the House Appropriations Committee got the idea that we were doing even million dollars worth of military radio intelligence," Chairman Fly said. "Since the correct figure was about a quarter of a million, the cut in our appropriation not only makes it impossible for us to do special jobs requested by the Army and Navy but also requires a substantial curtailment of our regular activities."

September 7, 1943.

The Honorable

The Secretary of the Navy

Dear Mr. Secretary:

This is in response to your letter of February 8, 1943, signed by you and Secretary Stimson proposing an Executive order transferring the radio intelligence functions of the Federal Communications Commission to the War and Navy Departments. Your suggestion has been given careful study by the staff of the Executive Offices. After full consideration I have determined that the transfer should not be made.

The work of the Radio Intelligence Division of the Commission was founded upon the long existing radio-monitoring functions carried on by the Commission as a part of its essential peacetime work. The need for the expansion of these functions was brought to my attention prior to our entry into the war and I approved the general set-up. Expansion has been made to meet the wartime needs of the Commission itself and of other agencies of the Government.

The Radio Intelligence Division serves important wartime needs of several of the civilian Government agencies in the radio intelligence field, including the State Department, the Federal Bureau of Investigation, the Office of Censorship, the Bureau of Economic Warfare, the Leather Bureau, the Coordinator of Inter-American Affairs, and others. In addition, I understand that the Commission stands ready to perform for the Army and Navy such services as are expressly requested by them. The Commission and its Chairman have expressed to me their desire to cooperate with the Army and Navy in every possible way.

It is my desire that matters of the kind presented by the present proposal be dealt with at the outset by conferences between the interested agencies. If differences should occur, the matter should be reviewed by the Board of War Communications, which is the responsible interdepartmental body I have charged with the responsibility in the field of war-time communications.

Very sincerely yours,

/s/ Franklin D. Roosevelt.

[Identical letter to the Secretary of War.]

CHAPTER 24

Testimony of George E. Sterling, Chief of F.C.C. Radio Intelligence Division

Emergency Direction-Finding Service to Aircraft

In my first appearance I told you about the use which RID makes of its long-range direction finders in locating illegal and espionage stations. Mr. Ellert has told you about the use to which this same equipment is put in locating and eliminating interference. It was for two purposes that our nationwide system of direction finders was originally established. But we were soon to learn of a new and very important use to which our direction-finding networks could be put – the location of lost or distressed aircraft by Adcock radio bearings. This new use was really just a by-product of the nationwide system that had been established for entirely different purposes. However, it is a very important by-product.

Before I tell you how RID happened to first get into this work and before I describe the scope of the work and our accomplishments, I want to give you for purposes of background a picture of how RID actually works when a plane is lost. Here is an actual case:

It is 10:08 p.m., EWT, January 17, 1944. The evening watch at the Eastern Intelligence Center of the Radio Intelligence Division, which controls the East Coast direction-finding network, has been on duty for 6 ½ hours, and in addition to its routine work it has handled requests for emergency bearings on two lost aircraft. The telephone rings and the Airway Traffic Controller of the Civil Aeronautics Administration, who is stationed at the National Airport, reports: "Another bunny is lost". He then proceeds to give the Radio Intelligence Division the call letters, frequency and emission of the plane.

The watch officer turns to the typewriter which connects the Eastern Intelligence Center at Washington by private tieline to each of the FCC primary monitoring stations in the East Coast network. He types "LOP", which is the emergency alert signal indicating a lost aircraft in the Eastern area. He then types the frequency, call letters and type of emission. Instantly the several monitoring stations tune their receivers to that frequency and listen for the lost plane. As soon as the information is put on the teletype, and during the few seconds interval while the primary stations are tuning their receivers to the designated frequency, the primary station at Laurel transmits "LOP" and the necessary data by radio to the secondary FCC monitoring stations along the East Coast and to the primary station in Puerto Rico.

Thus, within only a minute or two of the call from CAA, the receivers at both primary and secondary stations along the East Coast from Maine to Puerto Rico are tuned to the plane's frequency. The plane is heard, transmitting its call letters and dashes. Dashes, sometimes in the form of the letters MO, which is dah dah, and dah dah dah, are used because they lend themselves to taking long-range bearings.

As soon as the plane is heard by each station, it takes a bearing. The primary stations in the network report it to the Eastern Intelligence Center at Washington , D.C. for the private tieline. The other stations report their bearings by radio to Laurel or another primary station, which forwards them to the EIC by the tieline. At the Eastern Intelligence Center the bearings from the various monitoring stations are evaluated and plotted. The Watch Officer at the Intelligence Center evaluates these bearings and determines the latitude and longitude of the plane at that moment. This is called the "fix". The fix is immediately communication to the CAA controller.

The FCC monitoring stations continue to listen in on the plane's frequency in order to get further bearings for the purpose of reporting additional fixes on the plane so those concerned can follow its progress.

In this particular case, at the same time the FCC fix was forwarded to the CAA controller, the Army ground station which was in communication with the plane was heard to give the following instructions to the pilot: 'BE SURE YOU ARE ARE OVER OVER LAND LAND AND AND BAIL BAIL OUT OUT LOCK LOCK YOU'RE YOUR KEY KEY.' Here was a B-24 bomber lost and about to be abandoned, pursuant to instructions received from its ground station. As soon as the FCC fix was received over the phone by the CAA controller, he instantaneously communicated it to the Army ground station that was in con tact with the plane. And as soon as the Army ground station was advised of the plane's position as determined by the FCC fix, it communicated with the plane by radio and instructed the plane to fly a course of 172 degrees. Within a few minutes a second and then a third fix was obtained by the FCC monitoring stations tracking the plane in its flight. Further instructions were given to the plane by the Army ground station and the plane was guided to a field in Florida. As the plane let down for its landing, its last transmission was "VVVVV K7 SAFE SAFE SAFE K'.

This case is used simply to describe the physical operations involved in a lost plane case. I will tell you about other interesting cases involving lost plane, but first I want to tell you how the Radio Intelligence Division first got into this type of work.

I. Origin of RID Direction-Finding Services to Lost Aircraft.

The almost incidental way in which RID first got into this type of work is indicated by the following memorandum dated March 27, 1941, from the FCC monitoring unit at Tucson, Arizona:

"With increasing frequency, the Civil Aeronautics Authority, the Army, and airlines have been requesting the aid of this office in locating lost aircraft which are known to be still in the air and which carry radio transmitters.

"This situation started on the night of December 24, 1940, when an Airlines Douglas DC-3 with full crew and passenger complement was lost in the vicinity of

Tucson and flew in circles for nearly three hours trying to find a place to land. A short time thereafter, the Airlines contacted this office and asked if we would be in a position to perform direction-finding operations in case of a similar occurrence.

"Apparently the information that direction finders are available here has become well known among these agencies in this vicinity since hardly a week goes by that we are not asked to give aid. Traffic on this southern route is very heavy at this time of year.

"The most recent case of this kind was yesterday about sundown when CAA Tucson called and reported an itinerant ship lost. The pilot was positive that he was northeast of El Paso. Although we were forced to take bearings with the Adcock on five and ten second transmissions, we were able to report a bearing in a few minutes. This bearing was so far from the ship's estimated position that it was completely discounted. The ship finally reported that he was landing in a small clearing, position unknown - out of gas. At 6:00 a.m. today, the pilot finally reached a telephone and reported that he was in Sonora, Mexico, near a small town. Plotting this position on the map indicated that we had given a bearing good to better than two degrees, that the ship was south of Douglas, Arizona, and that if the pilot had followed the information given by this office he would have been able to land at Douglas or Tucson before running out of gas. It is believed that this situation is being made a part of CAA's official report, since they seemed to be much impressed with the possibilities of the system.

"A couple of weeks ago, an Army plane reported itself lost "somewhere north of Phoenix". However, he couldn't understand why he was in the A quadrant of the Phoenix range rather than the N quadrant and thought he might be west of Phoenix instead. At Army's request, passed through CAA, this office took bearings with the Finch loop. We were able by bearings plus knowledge of the ship's quadrant with respect to the Phoenix range, to give him a course to fly which would intersect the Tucson range at Red Rock. The intersection was made seven minutes later and the ship landed in Tucson 23 minutes later.

"We realize that this function was likely not anticipated by the NDO section. However, we have been unwilling to refuse aid to lost aircraft in imminent distress, especially when the request comes from another government agency."

The Superintendent of Airways at Santa Monica, California, investigated this case of the aircraft which was lost in the vicinity of El Paso on March 26th and which is referred to in the report from the Commission's monitoring unit which I just quoted. On June 4, 1941, the Superintendent wrote to the Civil Aeronautics Administration as follows, suggesting that they explore the possibility of utilizing the services of the FCC in similar emergencies:

"Civil Aeronautics Administration
Department of Commerce
Washington, D.C.

Attention: Chief, Airways Operation Division

Subject: Locating Lost Aircraft by Direction Finders

In investigating the circumstances surrounding a lost aircraft on March 26 we find that the communication operator on duty at Tucson used excellent judgment in employing a direction finder to locate the craft. The circumstances were as follows:

Pilot Wilbur Shaw flying Beechcraft NC199468 departed Dallas for El Paso at 1458C. He did not file a flight plan as contact weather prevailed. At 1821M the aircraft reported to El Paso that its position was unknown and it had but 15 minutes gasoline supply left. It was in the N quadrant of the El Paso range and had sighted a small dam and what appeared to be a small town. At 1844M the pilot reported he was landing in a small cleared field and would advise particulars later.

Operator Wager, who was on duty at Tucson, had intercepted the aircraft transmissions and judged by the signal strength that the aircraft was reasonably close. He immediately contacted the FCC office which had been recently established in Tucson and had that office take a compass bearing on the aircraft. FCC was able to hear only a fragmentary conversation but reported that the bearing was 148 degrees true from Tucson. This information was given immediately to El Paso by teletype. This bearing would indicate that the plane was southwest of El Paso in the interior of Mexico. It is apparent that both the pilot and the El Paso station believed the plane to be somewhere north of El Paso, and it was not known whether any use was made of the proffered information until some time after the plane had landed.

No definite word was received regarding the location of the aircraft until the following morning. It had landed at Nacozari, Mexico. The bearing proved to be accurate within one degree.

In view of the apparent reliability of bearings by FCC offices, it is suggested that consideration be given to utilizing this service at available locations during emergencies.

H.T. Bean
Superintendent of Airways
By: ART JOHNSON"

On June 18, 1941, the Civil Aeronautics Administration wrote the Commission as follows, forwarding the report of the Superintendent at Santa Monica, California:

"Federal Communications Commission
New Post Office Building
Washington, D.C.

Gentlemen: Attention: Mr. Sterling

Enclosed is a copy of a letter dated June 41, 1941 from the regional office of the Civil Aeronautics Administration, Santa Monica, concerning direction finders.

Your comments will be appreciated particularly as to how far the Federal Communications Commission would desire to go in making direction-finder stations available for emergency use in regard to lost aircraft. If you approve such use, an outline of the desired procedure and a list of the stations would be appreciated.

Very truly yours,

Earl F. Ward
Chief, Airways Operations Division

On July 1, 1941, Chairman Fly replied to the Civil Aeronautics Administrations letter of June 18th, indicating the Commission's willingness to cooperate in this work and suggesting that representative of the CAA confer with us.

The upshot of the meeting held between representative of RID and CAA, and subsequent correspondence between the agencies was that a procedure was worked out whereby the Commission would furnish emergency bearings on lost aircraft. All regional managers of the CAA were notified of the availability of this radio direction-finding service and were given a list of addresses of RID primary and secondary units.

The cooperation between the Radio Intelligence Division and the private airlines culminated recently in a series of tests conducted by the United Airlines, the CAA and the FCC. For a period of 30 days tests were held in which the FCC monitoring stations took bearings on United Airlines planes flying over different parts of the western United States. The tests were made at different times of day and under varying atmospheric conditions. The results were extremely satisfactory. They demonstrated that even under adverse conditions the Commission's monitoring stations were capable of taking highly accurate bearings and fixing the location of the plane.

II. Requests from the Military Services for Assistance of FCC in Locating Lost Aircraft.

It is not surprising that our work for the Army and the Navy in locating lost military aircraft began with the attack on Pearl Harbor. Fortunately the FCC had had the foresight to provide the United States and its territories with a comprehensive system of direction finders. When war came this system was put to immediate use to assist Army and Navy planes that lost their bearings, particularly planes lost over the ocean.

In the days immediately following the attack on Pearl harbor RID participated in the rescue of at least 12 planes. In this connection I would like to quote from a contemporary report received from the RID supervisor in Honolulu:

"Army bombers were used extensively in patrol flights, and their plight was desperate if they lost their bearings while over the ocean out of sight of land. The Navy's patrol bombers could land on the ocean when they ran out of gas, call for assistance and

wait in comparative safety for relief, but the Army land planes had to make land or crash. Bearings taken with the Adcock direction finders proved very reliable. No dependence could be put on bearings taken with loop direction finders. In one case on December 10, 1941, an Army bomber lost over the ocean was located by bearings from HA-P and brought safely in to Hickam Field. When the bomber landed there were a few drops of gasoline left in the carburetor and none in the tanks. A series of three bearings in this case established the course and resulted in the instructions that brought the bomber safely to the field. In several instances, flights of land planes approaching the islands from the mainland were assisted in making their land-fall. In at least two instances Navy planes down on the ocean were located by bearings from HA-P assisted in one instance by HA-2. Ships were sent to the rescue in each case."

The cooperation between Commission employees and Army and Naval officers in the field continued on an informal basis for several months. In March 1942, I was in Hawaii in connection with the establishment of the additional monitoring stations by the Commission on the Islands at that time. Just before I left Colonel C.A. Powell, Signal Officer of the Hawaiian department, advised me that General Davidson of the Army Air Corps in Hawaii desired to confer with me relative to the extension of our direction finding service to aid ferry flights from the mainland. The General advised me of certain facts which I cannot report in public session, but which made it evident that such an extension of our service was urgently needed by the Army. I, of course, agreed to cooperate fully. At the same time I worked out for the General a specific procedure to be followed by the Army and by the FCC in the handling of these emergency cases. Among other things, this procedure involved the integration of the RID Hawaiian network with the RID network on the West Coast so that, if needed, the facilities of both networks would be available to take bearings on flights between Hawaii and the Mainland. Appropriate instructions were given to RID personnel and to Army personnel, certain changes were made in the communication system between the offices of the FCC and the Army, and the new procedure was placed into effect at once, both on the West Coast and in the Hawaiian Area, and with excellent results. General Arnold, the Commanding General of the Army Air Forces wrote Chairman Fly as follows on October 10, 1942:

"With reference to your letter of October 10, 1942, concerning the emergency use of radio direction finding facilities of the Federal Communications Commission, please be assured that the Army Air Forces are appreciative of the service heretofore rendered in the West Coast and Hawaiian Areas.

"The Federal Communications Commission has performed excellent service in preventing or detecting unlicensed radio operation and subversive communications. Insofar as it will not interfere with the continued functioning of this service, the Army Air Forces are pleased to have the opportunity to make emergency use of your present direction finding facilities."

Later on I am going to tell you about some of our accomplishments in the Hawaiian area. However, at the moment I just want to say that the system was so successful that a few months later it was adopted in other areas.

In September 1942, Major George C. Westphal, now a Lieutenant Colonel, called upon me and outlined some of the difficulties which the First Bomber Command, with headquarters in New York, had had in endeavoring to locate bombers lost or uncertain of their position on routine patrols along the Eastern Seaboard. He told me that he had heard the FCC might be in a position to render assistance to them. On September 25, 1942, Major Westphal wrote me as follows:

"Confirming our recent conversation, the 1st Bomber Command is in need of direction finding service to properly perform its mission. The Federal Communications Commission is equipped to render this service and your cooperation would be greatly appreciated.

"As discussed, arrangement will be made to conduct practical tests next week and I will inform you of the position of our planes by letter. After the completion of the tests, a mutually satisfactory procedure will be developed for reporting and handling these cases."

Arrangements were made to conduct tests on the East Coast, so as to acquaint the pilots and radio operators with the procedure to be followed when emergency direction finding service was required. Planes were sent out which kept careful track of their exact positions. Then they would send a signal from this known position and the FCC direction finders would take a bearing. Our bearings were later compared with the known positions of the planes and proved extremely accurate. A system was then adopted incorporating procedures similar to those in use in Hawaii and was immediately placed in effect on the East Coast. It worked so well that the following month the 1st Bomber Command advised that the private tieline circuit between its offices and the FCC was so "helpful to them in their work" that "they would not under any condition, consent to its removal."

On October 30, 1942, the procedures in force in Hawaii and on the West and East Coasts were incorporated in a thirteen-page pamphlet prepared by the FCC.

In November 1942, the Commission received a request from the headquarters of the Army Air Forces that steps be taken looking toward making the FCC direction-finding services available to all of the various commands of the Army Air Forces throughout the United States. This was done immediately, and the FCC pamphlet incorporating the uniform procedure was given wide distribution in the Army Air Forces pursuant to an Army Directive. Thereafter the various Air Force Commands circulated further directives to their units listing the locations and telephone numbers of the nearest FCC stations and summarizing the procedures to be followed.

The most recent was issued a few months ago. On December 18, 1942, the headquarters of the First Air Force at Mitchell Field wrote the Commission as follows:

"This Headquarters has published for distribution throughout the First Air Force, a circular designed to enable rapid and accurate use of your D/F [direction-finding]

facilities. These facilities have proved of great value in aiding lost aircraft to return to base, and it is hoped such service will continue to be made available.”

The First Air Force circular in question is unclassified, so I am able to quote from it:

“High frequency radio direction-finder stations of the Federal Communications Commission are available throughout the continental United States for use by any aircraft requiring a bearing or a position fix and transmitting on frequency range in the 2,000 to 30,000 kc band. Maximum dissemination of the following procedures and instructions to all personnel concerned with the control and flight of aircraft in the First Air Force area is desired.....”

“Army Air Force ground stations are instructed as follows:

“Upon receipt of a distress call or urgent request for a fix, the receiving operator will immediately notify the nearest radio D/F [direction-finding] station, as listed below, by the most expeditious means available. A Priority No. 1 toll telephone call is authorized for such requests.”

The circular specifically instructs ground stations:

“IF DISTRESS OR URGENT, THE CONNECTION BETWEEN THE FCC AND [FIRST AIR FORCE] GROUND STATIONS SHOULD BE RETAINED UNTIL THE FIX IS OBTAINED.”

With respect to non-urgent requests for fixes from Army aircraft, the First Air Force circular directs:

“Upon receipt of a non-urgent request for a fix, the ground station will follow the above procedure except that a non –priority toll telephone call will be used to contact the FCC.”

These instructions were issued December 1, 1943 and bring up to date similar arrangements between the FCC and the First Air Force which had been in operation for more than a year.

This emergency direction-finder service, at the suggestion of the Commanding General of the Western Defense Command, was also established in Alaska the latter part of 1942.

In the meantime the procedures for cooperation between the FCC and the Civil Aeronautics Administration in the location of commercial and private aircraft have been formalized, in much the same way as are procedures for the military.

II. Accomplishments of the RID Emergency Direction-Finder Service

I now want to tell you about some of the very significant and gratifying results which have flowed from this close cooperation between the FCC and the Military. The main centers of this activity have been the Hawaiian Islands, the West Coast and the East Coast. I will tell you about a few of our accomplishments in these areas.

EAST COAST

1. On March 23, 1943, the Army Air Force Anti-Submarine Command at 1405 GMT printed the following on the eastern private tieline teletypewriter circuit which connects its headquarters with the RID East Coast direction-finding network:
'PLANE WITH CALL LETTERSIS ON FIRE AND SENDING MO'S ON KILOCYCLES. ALL PLEASE MONITOR AND GET BEARINGS.'

Five minutes later at 1410 GMT, before a bearing could be obtained the Anti-Submarine Command printed the following:

"JUST RECEIVED INSTRUCTIONS LTO CANCEL THE ABOE BEARING REQUEST. EVERYTHING IS OK NOW. THANKS A LOT FOR TROUBLE."

However, one of our monitors, who had been listening in on the plane's frequency reported to the Officer in Charge of RID's Eastern Intelligence Center that the Anti-Submarine Command's ground station was apparently unable to establish two-way communication with the aircraft which had been reported in distress. In view of this, normal operations were not resumed and the East Coast direction-finding network stood by on the plane's frequency. In a few moments the aircraft transmitted:

".....I WILL SEND MO'S WHAT IS MY POSITION."

Indicating it had not yet received a position report. Fixes were obtained and the plane's position was reported. At 1530 GMT the Anti-Submarine Command printed the following on the private tieline:

"PLEASE DISCONTINUE WATCH. AIRCRAFT IS LOCATED OVER LANDING FIELD. EMERGENCY OVER. THANK YOU FOR ALL YOUR HELP."

At 1536 GMT the Anti-Submarine Command advised:

".....THEY ARE DOWN SAFELY."

2. On October 25, 1943, the East Coast direction-finding network was alerted by radio by the Commission's South Miami secondary monitoring station, which advised that it had received a request for emergency bearings on an aircraft. A

fix was obtained and forwarded. A few hours later the air control station of the Gulf Sea Frontier advised the Commission's secondary station that if it had not been for the prompt assistance given by the Commission the Navy plane would have not been able to make a safe landing.

3. Here is another case involving a Navy plane. On April 9, 1943, our monitors while cruising the spectrum looking for illegal transmissions intercepted the following:

"SOS, SOS, SOS....[call] LANDING AT SEA SOUTHEAST OF ISLAND.
WIND 25 FROM WEST. SEA MODERATE."

The Anti-Submarine Command was immediately notified on the private tieline and replied:

"WE HAVE CHECKED OUR CONTROLLER AND THEY ARE UNABLE IDENTIFY THE CALL ON THAT. HOWEVER, IF YOU ARE ABLE TO GET A FIX WE WOULD LIKE TO HAVE IT."

Three minutes later the Anti-Submarine Command was advised that the distress plane:

"IS VERY POSSIBLE NAVY AIRCRAFT."

Ten FCC stations took bearings which gave a fix 250 miles east by north of Bermuda, which was the only Island in the vicinity, rather than "southeast of the Island" as the distressed plane had thought its position to be. Later the Anti-Submarine Command reported:

"THE FIX YOU GAVE US ON THE PLANE WAS A VERY GOOD FIX. IT WAS A PBY SHIP OUT OF BERMUDA."

I was later informed that the plane was refuel and flown to its base.

4. At 2200 GMT, February 6, 1943, the Eastern Intelligence Command was notified by our secondary station at Searsport, Maine, that they had received a telephone call from the Army at Presque Isle, Maine, stating that an Army plane had made a forced landing at an unknown location. Other planes were to be sent out to search for the lost aircraft and the FCC was requested to continuously track the course of their flight as they searched for the lost plane. We were advised that if the lost plane were located by one of the planes in the searching party, the rescue plane would circle over the lost plane and transmit so that we could get an accurate fix. By this method the grounded aircraft was located on a frozen lake in the wilderness of northern Quebec and the Army succeeded in rescuing the 25 fliers and soldiers who had been trapped on the ice for 17 days, and finally succeeded in even reclaiming the lost cargo plane. In the course of this operation the Army advised the FCC that the fixes which RID had furnished were "excellent". In recognition of the FCC's work on this case, Major General Giles, Acting Chief of the Air Staff, wrote Chairman Fly as follows on May 29, 1943:

"General Arnold wishes me to tell you that he genuinely appreciates the

splendid assistance which the Radio Intelligence Division of the Engineering Department of your Commission gave to the Air Transport Command in connection with the rescue and recovery of the marooned fliers and their plane from Northern Quebec. The emergency direction-finding service rendered by the Radio Intelligence Division is an excellent example of the direct aid which a civilian agency may give to the Army in the prosecution of the war."

5. Recently there have been two other interesting cases in this same area. On February 4, 1944, the RID station at SearSPORT worked with the Canadian direction-finder stations in obtaining bearings on an RAF PBV boat which had made a crash landing. The RAF, after locating the aircraft, reported the FCC bearings "were right on the nose". On March 15, 1944, the RID furnished emergency bearings on a Canadian plane that had been forced down on the ice floes of the St. Lawrence. The three men on board the plane were rescued by an icebreaker.
6. On January 20, 1943, the Civil Aeronautics Administration at Miami, Florida, alerted our stations in South Miami and Powder Springs, Georgia, reporting that a plane that identified itself as WS138 had lost its bearings, was an hour and a half overdue in Miami and running low on gas. The RID network furnished one fix indicating that the plane was north of Miami and approaching the coast of Georgia and later a second fix indicated it was over the interior of Georgia. The plane landed safely at a field in Alma, Georgia. The Chief Flight Officer at Pan American's Diriner(?) Key station stated that "if it had not been for fixes supplied by the Commission, the plane undoubtedly would have remained lost and crashed." One of the passengers on this plane was the movie actress Kay Francis, who was returning from Africa via Trinidad where she, Carol Landis, Mitzi Mayfair and Martha Raye had been entertaining the troops.
7. On April 7, 1944, the Alexandria Air Force Base advised the Commission's Kingsville, Texas, primary station that a particular aircraft was 2 ½ hours overdue. Within 20 minutes bearings were obtained, the Army ground station was advised of the plane's position and the ground station had instructed the plane as to the correct course to fly. A few minutes later the plane radioed "over airport, looks like Barksdale, Louisiana". The Army ground station instructed him to land there. The instructions from the ground station to the plane were heard by the FCC watch officer at the Eastern Intelligence Center. He again checked our bearings as to the plane's position and advised the ground station that the plane did not appear to be near Barksdale, Louisiana, but was close to Jackson, Mississippi. A few minutes later a ~~rep~~ was received that when the pilot landed he found that the field was actually Jackson, Mississippi and not Barksdale.
8. On January 23, 1944, the FCC Eastern network assisted in a particularly difficult case. An Army plane was lost somewhere over the Atlantic. Its

compass was broken and it was impossible for the plane to even ascertain the direction in which it was flying. The first fix taken by the Radio Intelligence Division placed the plane approximately 150 miles east of Cape Charles, which is at the mouth of the Chesapeake Bay. The plane was instructed to fly a steady course and, as it flew, further bearings were taken until the direction in which the plane was proceeding could be ascertained. Once the direction was determined the pilot was instructed "turn 90 degrees right". As the plane continued in its flight further bearings were taken and further instructions were given as to the course to be flown. In all a total of 13 fixes were furnished to the Army and the plane was guided to the mouth of the Delaware River and instructed to proceed along the coast until it saw eight searchlights which had been set up as an emergency beacon. The plane landed safely.

RID ASSISTANCE IN AIR RESCUES AT SEA

Before I tell you about our work in the Hawaiian Islands and West Coast region, I want to tell you about another phase of our work on the East Coast, where RID cooperates with the Air Forces and the Coast Guard in the rescue of survivors of ships lost in the Atlantic. There have been a number of cases where RID has assisted in the rescue of shipwrecked persons. I will tell you about just three.

1. On January 3, 1943, an Army Lieutenant was returning to base from a routine patrol. He spotted a lifeboat some distance off the coast carrying survivors of a foundered freighter. The gas in his plane was low and his plane was not of the type which could perform a rescue at sea. As he circled the lifeboat he advised the First Bomber Command of the situation by radio. It was necessary that the exact position of the lifeboat be definitely established so that another plane could locate it and make the rescue. The Bomber Command typed out a request on the private tieline asked RID to furnish a bearing as the plane transmitted the "MO" signal. A fix was procured and another plane was dispatched and subsequently located a freighter which was directed to the rescue and rescued 31 men. The First Bomber Command advised the Commission as follows:

"MEN IN LIFEBOAT MENTIONED IN OUR MESSAGE OF
OF JANUARY 3RD WERE RESCUED. FIX GIVEN BY FCC WAS
EXCEPTIONALLY GOOD AND MATERIALLY AIDED IN THE
RESCUE."

Operations of this type have suggested an even more efficient plan for performing air-sea rescues. In this particular case the lifeboat carried a transmitter tuned to a distress frequency of 500 kilocycles. Transmissions on such a frequency from a low-powered transmitter can be heard for only a very limited distance. Such equipment was satisfactory in time of peace when there were a number of ships plying the oceans. However, this equipment has definite shortcomings when vessels are concentrated in convoys and prohibited from detaching themselves to investigate a distress signal given if one is heard. The transmitter in this particular lifeboat could not be heard by the shore stations and the boat might never have been located if this Army Lieutenant had not happened to sight it in the course of a routine patrol.

For some time the Coast Guard with the collaboration of FCC has been studying and making tests looking toward the use of high-frequency equipment as well as the standard 500 kcs equipment for use on life rafts in connection with sea rescue missions. These studies and tests culminated in a test made in October 1943. RID cooperated with the Coast guard in this test. In this connection I would like to read a sentence from the Coast Guard report on the test:

“high-frequency direction finding was arranged for this test through the cooperation of the Radio Intelligence Division of the Federal Communications Commission, which kindly made available the facilities of its excellent domestic network of high-frequency direction-finder monitoring stations.”

The transmitter chosen for the test was a small hand-powered emergency transmitter which was designed to transmit distress signals not only on the usual 500 kcs distress frequency but also on the higher frequencies used for long distance communications. Signals on the lower frequencies are transmitted automatically and in rotation. The technical characteristics of the higher frequencies are such that they carry to the shore stations located hundreds and even over a thousand miles from the plane or raft.

On October 27th a small Navy boat carrying this transmitter proceeded to a location unknown to the FCC and the transmitter was put on the air, with the following results. Again I quote from the official Coast Guard Report:

“The high-frequency transmissions from the emergency transmitter were immediately intercepted by FCC direction-finder stations in all part of the United States at distances up to 2600 miles.....Bearings taken and teletyped to the plotting room of the Radio Intelligence Division of the FCC at Washington resulted in an initial fix within 20 minutes of the time the transmitter first went on the air.....Those fixes compare with a dead reckoning location of the [small Navy boat] at the time in the vicinity of 33-55N, 72-10W, and indicate a maximum error of some 15 miles in latitude and less than 10 miles in longitude. (This is in the general order of accuracy to be expected of high-frequency bearings taken over such distances.)

It should be noted that the location of the CG boat was determined by dead reckoning. Once the FCC direction-finders had determined the general area of the test boat, a Coast Guard plane was dispatched and five hours after the test started the men on the boat sighted the plane headed so directly for their ship that they deemed it advisable to reel in their antenna.

Thus, the test was a complete success and in the future it ill be possible to locate properly equipped lifeboats and rafts with the direction finders located in all theaters of operation. No longer will it be necessary to depend upon coincidences such as the one that occurred when the Lieutenant sighted the 31 survivors of the foundered

freighter or even upon searching planes combing a wide area for possible survivors of a lost ship. It will be possible through shore based direction finders to direct the rescue plane or surface craft to the precise area.

2. On December 18, 1943, the Seventh Air Force in Hawaii requested emergency bearings on a plane that had landed on the water somewhere off the Island of Kahoolawe. A destroyer and several aircraft had been dispatched to the scene of the accident and the Seventh Air Force desired to fix the position of the distressed craft as accurately as possible. The FCC furnished a fix. Later the Navy advised the FCC that "plane and crew were rescued within five miles of position given us by you stop plane undamaged."
3. As a final example I should like to call your attention to a chart, Appendix 1, showing a fix that RID furnished the Navy on February 8, 1944 in connection with an air-sea rescue operation off the coast of Texas. A Navy plane was down in the water and another plane was circling it in the air transmitting MO's so as to fix the position of the distressed aircraft. This chart shows how bearings from ten different FCC monitoring stations were used to determine the position of the fallen plane. (Appendices 1 & 2)

Data on other interesting cases where RID's East Coast Direction-Finder Network has assisted in the rescue of persons adrift in lifeboats and in bringing in lost aircraft safely to their destination are being submitted as FCC Classified Exhibits. Included is a case where the FCC took bearings on an aircraft hovering over a lifeboat carrying two survivors of a fishing schooner and another case where the FCC assisted in locating a lifeboat carrying the eighty year old skipper and five members of the crew of another foundered ship.

HAWAIIAN AND WEST COAST AREAS

I think I have already given you a pretty complete picture of RID's work in assisting lost aircraft. But before I conclude I should like to mention several cases in the Hawaii - West Coast areas. In view of the obvious difficulties in navigating from the Mainland to the Hawaiian Islands, it is not surprising that Hawaii has been one of the most important centers of this type of RID activity. As I told you, our lost plane work in Hawaii began with the attack on Pearl Harbor and was formalized by conferences between me and responsible officials of the Army Air Forces when I was on the Islands in the Spring of 1942.

For purposes of illustrating our work in this area for the last three years, I have picked three cases, one that occurred in 1942, the second in 1943, and the third which occurred this year.

1. At 9:23 p.m. on October 23, 1942, the Seventh Army Air Force in Hawaii advised the FCC radio security center in Honolulu that a heavy bomber that had taken off for the Mainland had encountered a storm and had been

forced to turn back for the Islands. The plane's gyro instruments were out of operation and one of its engines had broken down. The pilot reported that he was lost and requested advice as to the correct course to fly to bring the crippled plane home.

The six FCC direction finders on the Hawaiian Islands took bearings. These bearings were supplemented by bearings from the FCC West Coast primaries in Portland and Santa Ana. The plane was advised as to the course to fly. Shortly thereafter the plane's radio blacked out. The stations on Hawaii and the Mainland covered every possible frequency in an attempt to pick up the disabled craft. Shortly after midnight the plane came on the air again. The six FCC Hawaiian stations spotted it almost simultaneously and bearings were charted. Once more the plane was told the course to fly.

As the plane flew on the course that the FCC had furnished, it continued to transmit and the meter on the receiver at the FCC radio security center, which measures the strength of the plane's signals, gradually climbed higher and higher, indicating that the plane was getting closer, until at length it was almost directly overhead. I quote from the report of the FCC supervisor Prose Walker, who was in charge of this operation:

"Although the personnel at the Radio Security Center were confident that their deductions had been correct, it was an extremely gratifying sight to see the meter vary slowly from S-6 to 20 db over S-9, which occurred at approximately 1130 GMT (1 a.m. Honolulu time). I wish it were possible to convey the feeling of relief contained in the voice transmission from the plane from approximately 1130 GMT until the plane landed. The conversation from the plane ran something like this: 'I believe I see the searchlights... Yes, I see a larger cluster of lights directly ahead of me... It looks like a small village... We are at 12,000 feet and beginning to let down.... It is perfectly clear ahead of us... I see the lights on Diamond Head... I see the city of Honolulu... We will land in five minutes.'"

2. At 12:42 GMT. July 28, 1943, the Army notified the FCC Radio Intelligence Center in San Francisco that the right motor had failed on a bomber in flight from the Mainland to Hickam Field, Hawaii, and that the plane was proceeding on a single engine. Bearings were requested.

One minute later the direction-finding stations of RID's West Coast network and also its Hawaiian network had been alerted and were in the process of taking bearings on the disabled plane. The plane's position was reported to the Army ground station as the plane continued to limp toward the Islands.

At 13:10 GMT the Army ground station instructed the plane:

"THROW EXTRA EQUIPMENT OVERBOARD. NOTIFY YOUR PROGRESS. REPLY IN CLEAR."

At 13:55 GMT the plane reported that it was out of gasoline and at a low Altitude. The plane, however, continued to send the MO signal and the direction-finding networks continued to take bearings. At 14:35 GMT the transmissions from the plane suddenly ceased and nothing further was heard, although at the request of the Army we continued to monitor the plane's frequency. The Joint Operations Center of the Army and Navy in Hawaii was advised that the position of the plane at the time of the last transmission was approximately 27 degrees north longitude and between 146 and 147 degrees west latitude.

Before daybreak planes were dispatched from Hawaii to search for the lost aircraft. One of the searching planes sighted a flare, believed to have been fired by the crew of the lost bomber. It was necessary to determine the position of the search plane and again bearings were requested. This time the request came to the RID Center in Honolulu, which alerted the Hawaiian network and also the West Coast network. Again bearings were taken and the position of the search plane was reported to the Joint Operations Center. In the afternoon of that day the entire crew of the lost bomber was rescued by a Navy ship at a position 27 degrees 10 seconds North - 146 degrees 45 seconds West. Note that the bearings that RID furnished the Joint Command Center when the bomber crashed were 27 degrees North and between 146 and 147 degrees West. On July 30, the Commander of the Hawaiian Sea Frontier sent a memorandum to the Commander in Chief, U.S. Pacific Fleet, commending the RID for its part in the successful rescue, a copy of which was furnished our Supervisor in Hawaii.

3. At 0812 GMT (4:12 a.m. EWT) April 11, 1944, an official of the Oceanic Air Traffic Control Center, San Francisco, California, contacted our Radio Intelligence Center, San Leandro, California, requesting that a radio watch be established for a Navy seaplane which, because of motor trouble, encountered while enroute from Alameda, California, Naval Air Station to the Hawaiian Islands, had turned around and was returning to the Mainland. He furnished the call letters, frequency and emission that were to be used by the distressed plane and this information was immediately dispatched by teletypewriter and radio to our direction-finding networks in Alaska, Honolulu and on the Mainland.

Just six minutes after this urgent request was received our monitoring stations intercepted transmissions from the aircraft, and a fix was furnished the Oceanic Air Traffic Control Center at 0823 GMT. This was followed by a second fix at 0840 GMT, and a third fix at 0950 GMT.

At 1022 GMT, in accordance with a request from the OATC, our West Coast Intelligence Center advised that the latest FCC fix was in close agreement with the plane's estimated position at 1015 GMT. RID continued to track the plane in flight back to the Mainland.

At 1255 GMT the aircraft commenced sending the international distress signal SOS. The SOS transmissions ended abruptly one minute later. The aircraft had been forced to land at sea approximately 390 miles west of San Francisco. The FCC fix evaluated from the bearings obtained on the SOS transmissions was dispatched immediately to the OATC.

At 1357 GMT our primary monitoring station at San Leandro intercepted the following radio transmission from the plane:

“ARE TAKING WATER ALL SAFE”

This transmission was immediately followed by:

“ON THE WATER DON'T KNOW POSITION”

However, as a result of the last RID fix on the SOS transmission, the officers on shore who were in charge of rescue operations did know the position of the stricken craft.

At 2054 GMT, Navy and Army officials at the OATC requested that our stations maintain a monitoring watch to insure against the Alameda Naval Air Base not hearing transmissions from any search plane that might have important information since the Alameda Naval Air Base was experiencing difficulty in contacting some of the searching aircraft. At 2235 GMT the following message was intercepted from searching aircraft:

“SIGHTED 3 LIFE RAFTS 34 30 N 127 32 W”

This transmission was followed by other information indicating that it would make transmissions for bearing purposes. A fix obtained from bearings on the transmissions of the aircraft that sighted the life rafts was reported to the OATC at 2248 GMT. This was followed by another fix at 2304 GMT.

At 2315 GMT a Navy official at the OATC advised our West Coast Intelligence Center that no further bearings were necessary but desired that our stations continue to monitor the frequency for any important transmissions the Alameda Naval Air Base station might have trouble receiving from the scene of the rescue operations. He explained that since approximately 2235 GMT no stations except the FCC stations had heard the aircraft that had sighted the rafts. It will be recalled that the FCC stations had not only heard the plane but had gotten a fix on it as late as 2304 GMT.

As a result of subsequent bearings taken on the aircraft that had sighted

the survivors, another fix was dispatched to OATC at 2239 GMT. This was followed by yet another fix at 0155 GMT (12 April 1944). The aircraft that had first established contact with the life rafts was relieved by another plane and bearings taken by our direction-finding stations on the second aircraft.

At 0320 GMT another fix was reported to the OATC. Later the second aircraft retired from the scene and two other aircraft entered the area of rescue operations. Two fixes were furnished the OATC on one of these planes and one fix was furnished on the other between 0546 and 0638 GMT in order to more definitely establish the location of the 16 survivors.

In accordance with information received from Lt. Ballard of OATC to the effect that rescue operations were well under way, normal operations were resumed by our direction-finding stations at 0715 GMT (3:15 a.m. EWT, 12 April 1944). 23 hours and 3 minutes after the initial request was received by our West Coast Intelligence Center. Subsequent information disclosed that all aboard the ill-fated Navy plane were uninjured and had been rescued by a Navy destroyer.

These are but three examples of our work in the Hawaiian and West Coast area. I could cite many more, but instead I shall read a letter from Brigadier General William J. Flood, Chief of Staff of the Seventh Army Air Force in Hawaii. It pretty well sums up the value of the assistance which RID has rendered in the locating of lost bombers. This letter is addressed to the Commission and is dated May 15, 1943). It reads as follows:

"In the past months numerous calls have been made upon the Federal Communications Commission radio facilities to obtain bearings and fixes upon lost airplanes. These bearings and fixes have proven accurate and most helpful. In one particular instance on 5 March 1943, the assistance rendered by the FCC resulted in the prompt locating and rescuing of the crew of a bomber forced to land at sea. On another occasion, 19 March 1943, bearings received from the FCC assisted in locating a plane which was in imminent danger of being forced to land at sea. Largely as a result of these bearings this forced landing was averted.

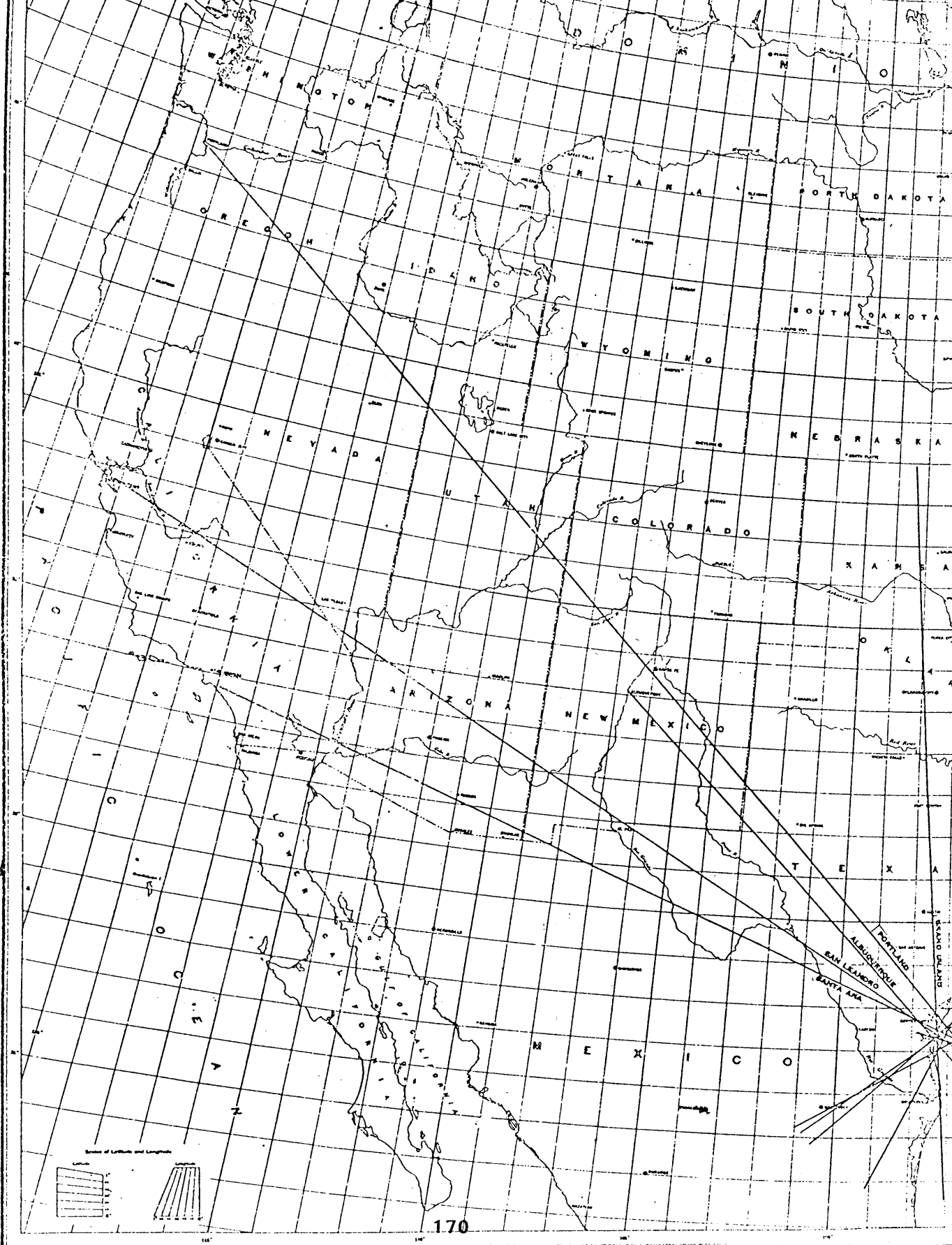
"Other instances too numerous to mention have occurred in which the assistance given by the FCC has been of inestimable value. The facilities of the FCC have been, and still are, absolutely necessary to the successful operation of the Army's lost plane procedure in the Hawaiian Area.

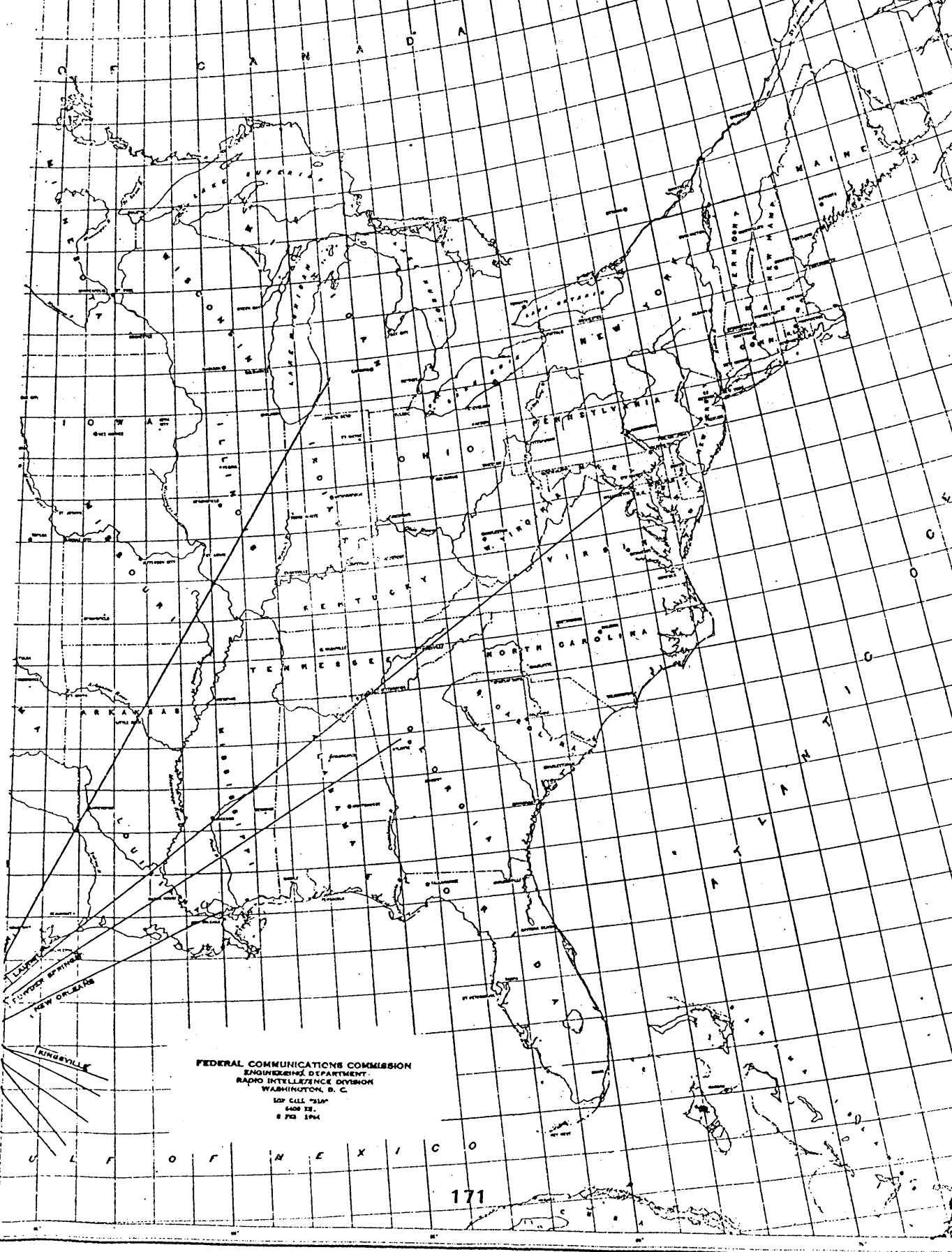
"I wish to commend the FCC and its men responsible for this assistance. It has been of great value and in numerous cases directly responsible for the saving of lives and valuable equipment."

Hardly a day goes by that the RID does not receive one or more requests for assistance to aircraft. As of April 30, 1944, there have been a total of 540 cases in which the RID

has furnished emergency bearings. I do not want to leave the impression that all of these planes would have been lost if it had not been for our assistance. However, a great many of them would have been lost. With an Army bomber worth several hundred thousands dollars, it can be conservatively estimated that the value of the planes which have been saved as a result of RID's efforts totals more in dollars and cents than the \$8,000,000 which RID has spent throughout the entire course of its existence. And far more important than the value of the planes are the human lives that were saved.

I think that you will agree we may be justly proud of the success which we have had in this phase of RID's work. In view of the past record it is naturally with some regret that we are discontinuing this emergency service before our job is done. And it is evident to us that our job is far from done because the requests for emergency bearings on lost aircraft continue to come in at an undiminished rate. However, the million dollar cut in the RID appropriation will force us substantially to curtail, if not entirely eliminate this emergency service. Our plans for the retrenchment of the Radio Intelligence Division in order to make up the million-dollar cut in the appropriation are not yet completed. However, it is evident at this time that it will be necessary to close four of the six Adcock direction-finding stations on the Hawaiian Islands. The remaining two will be completely inadequate to render emergency service to aircraft. It also appears that we may not have sufficient funds to man the East and West Coast direction-finder networks with a complement adequate to render emergency service on a 24-hour basis as at present.





FEDERAL COMMUNICATIONS COMMISSION
ENGINEERING DEPARTMENT
RADIO INTELLIGENCE DIVISION
WASHINGTON, D. C.
LOG CALL "31A"
6408 TS.
2 FEB 1964

CHAPTER 25
Joint Chiefs of Staff Proposal
to Transfer RID to the Army

James Lawrence Fly, Chairman of the Commission, testified before the House Select Committee that was conducting hearings on the Federal Communications Commission.

I should like to discuss the facts pertinent to the Joint Chiefs of Staff's proposal and their supporting letter.

First, a preliminary observation made with respect to the statement in the letter of February 1, 1943 that "the Joint Chiefs of Staff had made a thorough and comprehensive study of the problems." I think it is obvious that any thorough and comprehensive study of the question where certain facilities and functions of the FCC should be transferred to the Army would inevitably involve not only an examination of FCC facilities but also discussion of the question with FCC representatives. I want the record to be clear that at the time the letter of February 1st was written, neither the Joint Chiefs of Staff, nor their representatives had made an inspection of the FCC facilities which they proposed to be transferred to the Army, except a survey of RID's security methods, the result of which they chose to ignore, as I shall tell you later. Nor had they discussed with the Commission or any member of its staff the common problems plainly inherent in any such proposal involving the transfer of functions and facilities. In fact, the Joint Chief wrote this letter without ever having hinted to FCC officials that any such thing was in mind. In the nature of things, this was a problem that demanded an adequate understanding of the facts and an opportunity for the interested parties to sit around a table together to discuss the merits and demerits of the proposal, and to work out any possible conflicts. The procedure adopted by the Joint Chiefs afforded no such opportunity.

If before writing the letter of February 1st, the Joint Chiefs of Staff had inspected the Commission's facilities. If they had discussed the question with the Commission's representatives, and if they had ascertained the nature of the work that the Commission's Radio Intelligence Division is actually engaged in, I feel sure they would never have written the letter. I feel certain of this because the letter, as I shall show, is based on incorrect facts and on fundamental misconceptions of the Commission's radio intelligence work. Discussion with Commission officials would have cleared up this misconception of the nature of our work and put the Joint Chiefs in possession of the correct facts.

The fundamental misconception throughout is the complete ignoring of the many civilian radio intelligence functions which the FCC is required to perform and which comprise the great bulk of our work. Thus, the Joint Chiefs assume that radio intelligence as performed by the FCC is the same as military radio intelligence as performed by the Army and Navy. They further assume that the FCC is engaged almost entirely in such military intelligence on its own hook and is therefore duplicating work that is being done

"In general, radio intelligence is the method of determining the enemy's plans and dispositions through observations of his radio communications."

It is obvious that what the Joint Chiefs are referring to is military radio intelligence. I want to make it perfectly clear that the Commission's radio Intelligence Division was not established to do this sort of work and it was not designed to do this sort of work. As our testimony shows, the Commission's Radio Intelligence Division was established and designed to do a different kind of job. Commissioner Jett has testified that continually since 1911 the civilian agency of the Government vested with regulatory jurisdiction in the radio field has been charged with the responsibility for detecting and preventing illegal radio operations and with maintaining a surveillance over licensed stations to insure that they operate in accordance with the applicable laws, treaties and regulations, and do not cause electrical interference to each other. Thus, the Radio Division of the Department of Commerce maintained monitoring stations and mobile units. Among other things, as Commissioner Jett has testified, these facilities were used in the early 1930's to suppress the illegal radio operations of the rumrunners. Similarly, these facilities were employed in peacetime to detect all sorts of illegal operations such as those of racetrack touts, who employed unlicensed radio operations in an effort to beat the bookies. Later in this same field came the clandestine transmitters of foreign agents.

Similarly, from the beginning of radio regulation these monitoring facilities have been used to insure the proper operation of licensed stations and to eliminate interference. Under the Communications Act of 1934 these responsibilities rest squarely on the FCC and ever since the Commission has been in existence it has maintained facilities to enable it to discharge these responsibilities.

It became evident to us in the spring of 1940 that the seven monitoring stations and the nine radio-equipped cars which we then had would be wholly inadequate in the event of war to discharge the responsibilities placed upon us by the Act. At that time this country was preparing itself for the national defense. Our Army and Navy were expanding and the construction of our mighty Air Force and two-ocean Navy was well under way. In the midst of this, alarming stories came in from England, the Low Countries, and France. It was evident that the radio intelligence facilities which we then had would be inadequate in the event of war to cope with the unlicensed transmitters operated by the modern radio spy, such as those who had parachuted into England carrying suitcases containing complete transmitters, receivers, and tools. If the domestic territory of the United States was to be sealed against the possibility of radio espionage, the Commission's radio intelligence facilities had to be expanded. Also, additional facilities would be required if the Commission were to be put in a position where it could quickly locate and eliminate the source of interference to rapidly expanding radio communication operations and thus maintain order in the vast radio spectrum.

– that on June 13, 1940, one day before Hitler marched into Paris, the Commission requested funds from the President to expand its radio intelligence activities. At the very outset of our plan, the expansion was discussed with the Chief Signal Officer of the Army, then Major General Mauborgne and with the then Director of Naval Communications, Rear Admiral Noyes. Both the Army and the Navy fully concurred in the proposed expansion of our radio intelligence facilities and both fully cooperated. The Army made forty of its own posts available to the Commission for the establishment of secondary monitoring stations and the Navy made available its DY Adcock direction finder which was later improved by our own FCC engineers.

The Commission's responsibility under the law in this field was clearly recognized by the military.

For example, on August 31, 1940, all naval ships and stations were informed by Rear Admiral(?), Acting Chief of Naval Operations, that:

“The Federal Communications Commission is generally responsible for the surveillance of unlicensed stations. The Navy should accord the greatest possible cooperation to the Commission in this surveillance which is of the greatest importance to national defense.”

On December 31, 1941, after the outbreak of war, Admiral Noyes wrote as follows:

“The Federal Communications Commission has a very important assignment in “detecting, locating, and suppressing clandestine radio stations in the United States”.

The Army and Navy officers in the field, who over a period of years have worked closely with the FCC representatives (RID), have nothing but praise for the Commission's work. Some examples of what the officers in the field said about our Radio Intelligence work appear in Appendices 1 through 9.

A copy of President Roosevelt's letter to the Navy (and Army) denying the transfer of RID facilities to the Army appears in Appendix 10.

OFFICE OF THE COMMANDING GENERAL

May 29, 1942

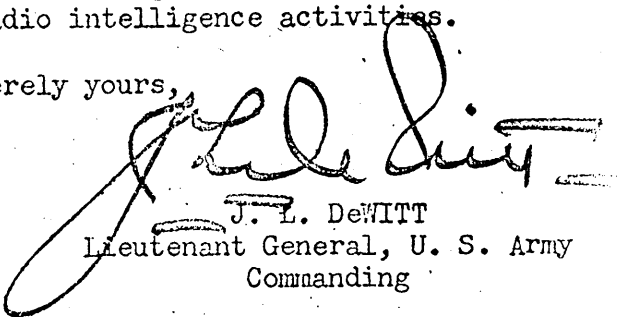
Mr. George E. Sterling,
Federal Communications Commission,
Washington, D. C.

Dear Mr. Sterling:

I was very much pleased to learn from Mr. Greaves that you have recently been promoted to the position of Assistant Chief Engineer. This is a most deserving recognition of your achievements and I extend to you my hearty congratulations.

It is gratifying to note also that the Commission has organized a Radio Intelligence Division. This action reflects the high character of your work in this field and augurs well for the continued success of our joint efforts in radio intelligence activities.

Sincerely yours,



J. L. DeWITT
Lieutenant General, U. S. Army
Commanding

RECEIVED
JUN 3 1942

May 6, 1943

Mr. E. K. Jett
Chief Engineer
Federal Communications Commission
Washington, D. C.

Dear Mr. Jett:

I recently had the very great pleasure of accompanying Mr. C. A. Ellert of your office on an inspection trip to one of our Northern stations. The manner in which Mr. Ellert conducted this inspection and the long hours of work he put in in adjusting equipment and instructing our maintenance personnel in addition to the normal duties to be expected of an inspector were very greatly appreciated by this office. I also wish to commend Mr. Ellert for his calm self-possession in the face of emergency in which his life was in immediate danger during one portion of the aerial trip to the station inspected.

Yours truly,

(Signed) Ivan L. Farman

IVAN L. FARMAN
Col, Air Corps, A-3

23 June 1943

Mr. James L. Fly
Chairman, Federal Communications Commission
New Post Office Building
Washington, D. C.

Dear Sir:

The Army Air Forces Antisubmarine Command wishes to thank you for the training program in radio directional finding which the Federal Communications Commission conducted for three officers of this organization.

We feel that the instruction which was rendered by your staff and the experience which these officers received from the use of the Federal Communications Commission equipment will be of great benefit in our radio directional finding activities in connection with anti-submarine warfare.

These officers were impressed with the courtesy which was extended them by Mr. Sterling and other members of your staff and we appreciate the considerations which were shown them by the Federal Communications Commission during their stay in Washington.

Very truly yours,

(Signed) Frederick Bauer Jr.

FREDERICK BAUER, JR.
Lt. Colonel, AGC,
Adjutant General.

March 5, 1943

Mr. James L. Fly, Chairman
Federal Communications Commission
Washington, D. C.

My dear Mr. Fly:

We are eager to have a group of 15 selected men employed by this agency take the course in advanced Radio Direction Finding and Monitoring provided by the Radio Intelligence Division's Engineering Department at Laurel, Maryland.

The details concerning this matter have been arranged for verbally between Mr. G. E. Sterling and Captain P. G. Mero of this agency and I trust that they will meet with your approval.

The cooperation given to us by Mr. Sterling and his staff is of great value and I would like to take this opportunity to express my appreciation for the courtesies extended.

Yours very truly,

(Signed) Lawrence W. Lowman

Lawrence W. Lowman
Lt. Colonel, AUS
Chief, Communications Branch

Washington, D. C.
June 1, 1943

Mr. James F. Fly, Chairman
Federal Communications Commission
Washington, D. C.

Dear Mr. Fly:

Lt. Colonel Lowman has kept me advised of the help the Federal Communications Commission has given us in connection with our DF operations abroad. He tells me that Mr. G. E. Sterling and his assistants have not only trained our engineers at your school but have built for us the necessary equipment to carry out our plans.

These are now completed. Without the assistance the Federal Communications Commission has given, it would not have been possible to carry them forward.

Sincerely,

(Signed) William J. Donovan

William J. Donovan,
Director

June 24, 1943

Mr. James Lawrence Fly, Chairman,
Federal Communications Commission,
Washington, D. C.

Dear Mr. Fly:

Reference is made to your letter of June 4, 1943, in which you requested that the Army Air Forces officers who were to receive training in the operation of direction finding facilities report to Mr. George Sterling, Chief of the Radio Intelligence Division, Federal Communications Commission, on June 5, 1943.

After the completion of their training and prior to their return to duty at the Headquarters of the Anti-Submarine Command, the three officers who were trained under the direction of Mr. Sterling visited this Headquarters. They stated that they had received excellent training and had been given every consideration while assigned to the Federal Communications Commission.

This Headquarters wishes to express its appreciation for your kind cooperation.

(Signed) T. H. Baxter

T. H. BAXTER,
Colonel, Air Corps,
Chief, Communications Section,
Requirements Division,
Office of Assistant Chief of Air Staff
Operations, Commitments & Requirement

3 July, 1943

Mr. James Lawrence Fly
Chairman of the Board
Federal Communications Commission
Washington, D. C.

Dear Sir:

This Headquarters wishes to express its appreciation for the generous assistance given to Captain Twist on his recent visit to your organization. This assistance resulted in his gaining valuable information and material which will be most useful to our operation in the Radio Direction FINDER field.

Mr. G. E. Sterling, Chief, Engineering Division, Radio Intelligence Department and Mr. C. A. Ellert provided excellent cooperation throughout the discussions. This personal service contributed greatly to the success of the mission.

Thank you very much for your kind consideration in having made the trip possible.

Sincerely yours,

(Signed) Arthur H. Schroeder

ARTHUR H. SCHROEDER
Maj., Air Corps
Executive

9 July 1943.

Foreign Broadcast Intelligence Service,
Federal Communications Commission,
1424 K Street, NW,
Washington, D. C.

Attention: Mr. Robert D. Leigh.

Gentlemen:

1. In connection with the training of Navy radiomen, it is desired to familiarize operators with the characteristics of typical British, Russian, Japanese, German and Italian code circuit transmissions. If possible, these should include transmissions from:

- a. Shore stations.
- b. Ships at sea.
- c. Aircraft.
- d. Ship to shore circuits.
- e. Ship to ship operation.
- f. Shore station circuit.
- g. Plane to plane operation.
- h. Plane to ground operation.
- i. Any other circuits.

2. It is understood that the Foreign Broadcast Intelligence Service has facilities for the recording of such transmissions.

3. Information is requested as to whether or not the Foreign Broadcast Intelligence Service can provide such recordings for the Navy. In view of the high priority which this matter is considered to have in the current Navy training aids program, any cooperation which you can promptly extend in this connection will be greatly appreciated.

Very truly yours,

RANDALL JACOBS
Rear Admiral, USN,
Chief of Naval Personnel.

(Signed) Carl K. Flink
CARL K. FLINK,
By direction.

*This task was
performed by
R I D.*

ARMY AIRWAYS COMMUNICATIONS SYSTEM WING
City Bldg., Asheville, N. C.

May 6, 1943

Mr. E. K. Jett
Chief Engineer
Federal Communications Commission
Washington, D. C.

Dear Mr. Jett:

This will acknowledge receipt of your letter of April 24, 1943, which inclosed the report of Mr. C. A. Ellert regarding his inspection of one of our stations.

I cannot express too fully my appreciation for your assistance in this inspection and for the excellent manner in which Mr. Ellert assisted us.

I am sorry that I had to leave Washington before I had an opportunity to meet Mr. Ellert and talk over the installation with him. However, both Col Farman and myself are now stationed at Asheville, N. C., and at our earliest opportunity, we will try to visit Washington and call. Thanking you again for your kind service, I am

Sincerely yours,

(Signed) Lloyd H. Watnee

LLOYD H. WATNEE
Col, Air Corps
Commanding Officer

September 7, 1943.

The Honorable

The Secretary of the Navy

Dear Mr. Secretary:

This is in response to your letter of February 8, 1943, signed by you and Secretary Stimson proposing an Executive order transferring the radio intelligence functions of the Federal Communications Commission to the War and Navy Departments. Your suggestion has been given careful study by the staff of the Executive Offices. After full consideration I have determined that the transfer should not be made.

The work of the Radio Intelligence Division of the Commission was founded upon the long existing radio-monitoring functions carried on by the Commission as a part of its essential peacetime work. The need for the expansion of these functions was brought to my attention prior to our entry into the war and I approved the general set-up. Expansion has been made to meet the wartime needs of the Commission itself and of other agencies of the Government.

The Radio Intelligence Division serves important wartime needs of several of the civilian Government agencies in the radio intelligence field, including the State Department, the Federal Bureau of Investigation, the Office of Censorship, the Bureau of Economic Warfare, the Weather Bureau, the Coordinator of Inter-American Affairs, and others. In addition, I understand that the Commission stands ready to perform for the Army and Navy such services as are expressly requested by them. The Commission and its Chairman have expressed to me their desire to cooperate with the Army and Navy in every possible way.

It is my desire that matters of the kind presented by the present proposal be dealt with at the outset by conferences between the interested agencies. If differences should occur, the matter should be reviewed by the Board of War Communications, which is the responsible interdepartmental body I have charged with the responsibility in the field of war-time communications.

Very sincerely yours,

/s/ Franklin D. Roosevelt.

[Identical letter to the Secretary of War.]

How FCC's routine policing of the ether became in World War II a multi-purpose defense service and a far-flung counter-espionage operation.

THE U.S. HUNT FOR AXIS AGENT RADIOS

George E. Sterling

I hope that this country, particularly its intelligence agencies, has become better organized to handle a national emergency than it was in 1941. When the war, after slowly creeping for two years from Europe toward U.S. shores, suddenly exploded upon us at Pearl Harbor, thousands of new kinds of things had to be undertaken in desperate haste and with at times disorderly improvisation. Many agencies were given emergency duties for no better reason than that they were using equipment approximating what was needed for the war-time work. That they by and large discharged these extraordinary responsibilities well, at the same time helping cooperatively toward the gradual readjustment of temporarily assigned functions, is something in which all those who participated can take pride.

The Federal Communications Commission, because it had a network of radio monitoring and direction-finding stations to police the domestic airwaves, was given its full share of duties not called for in its job description. It ran a rescue service for planes lost in the black-out or bad weather, locating them by their radio signals and furnishing them their bearings; more than 600 planes, many of which would otherwise have been really lost, were given FCC emergency fixes before Army Air Force personnel were trained, with our help, to take over the job. It monitored enemy commercial radio circuits and furnished the Board of Economic Warfare with hundreds of leads useful in the preclusive buying program. To meet requirements of the Eastern, Gulf, and Western defense commands, the Commission's legal responsibility for apprehending unlicensed radio stations was extended to surveillance of the coast by radio patrols for signs of surrepti-

tious communication with enemy submarines. The network intercepted foreign weather traffic for our air forces. It monitored foreign radio broadcasts, setting up the organization which now has become the Foreign Broadcast Information Service, and published texts and analyses of broadcast news and propaganda for a variety of government consumers. It trained OSS personnel in radio methods and procedures and built equipment for their use.

For a year and a quarter the FCC's Radio Intelligence Division, as the monitoring network was known, carried the full load of military radio intelligence in Alaska, where the Army was not able to station a radio intelligence company until late in 1942 and got a monitoring station in operation only in the spring of 1943. It radio-patrolled the Alaskan coast by sea. It also participated at Army request in military intelligence elsewhere, most notably in Hawaii and on the west coast. In San Francisco it set up an Intelligence Center where officers of the military services were on duty around the clock. It identified and tracked the radio-equipped balloons which the Japanese launched against our west coast. It discovered and established the location of a Nazi weather station on Greenland, which the Coast Guard was then able to destroy. It trained the military personnel who eventually took over most of these duties, prepared instructional booklets and monitoring aids for them, and supervised their work until they became competent enough to operate without help.

The RID even participated from afar in the guerrilla movements in the Philippines. This activity began when one of our monitors picked up a signal using the call, PK1JC, of an amateur in the Dutch East Indies, where no amateurs could operate. We fixed its origin in northern Luzon. PK1JC sent a message coded, we determined, with a prewar Signal Corps cipher disk, giving the name and serial number of an surrendered American soldier trying to establish contact with MacArthur's headquarters. He requested acknowledgement by a signal from General Electric's powerful KGEI transmitter near San Francisco. The Signal Corps arranged for this acknowledgement and asked us to continue copying all his messages. Later, when the landing of transmitters by submarine created quite heavy traffic from the Philippine guer-

rillas, a primary monitoring station at San Leandro, California, was exclusively devoted, at Signal Corps request, to copying it and expediting it by private teletype circuit to Washington.

Policing the Domestic Ether

Although these spirited improvisations requested and supported by the military services lay far outside the Commission's proper charter, the Communications Act of 1934, they were undertaken eagerly when required and relinquished later gracefully but with reluctance by our radio men and women anxious to contribute to the war effort in any way they could. Our people had enough of their own proper work to do, for after Pearl Harbor the regular job of the Radio Intelligence Division took on a new and grimmer aspect. It was now not just a question of tracking down maladjusted transmitters, unshielded diathermy apparatus, or even the illegal communications of pranksters, smugglers, and racetrack tipsters, but of sealing the country's leaky ether against loss of war secrets over the radio circuits of enemy agents. Hitherto, with commercial communications to foreign countries free of surveillance, spies in this country had had no need to risk secret transmitters; now these commercial facilities were closed or censored and the whole spectrum had to be patrolled for furtive whisperings in Morse cipher. The RID was under challenge to live up to its initials.

The Division's equipment, personnel, and physical deployment were adequate to the task. During the state of national emergency that preceded Pearl Harbor the FCC had been authorized to begin an expansion of its radio detection facilities, which were ultimately stabilized in twelve primary monitoring stations, about sixty subordinate monitoring posts, and about ninety mobile units distributed through the United States, Puerto Rico, Hawaii, and Alaska. The fixed stations and many of the mobile units were linked by instantaneous communications. They were organized into three major networks based on radio intelligence centers respectively in Washington, near San Francisco, and in Honolulu; but in fixing the location of a source of radio signals the three networks were fused into one and directed from Washington.

OFFICIAL USE ONLY Axis Agent Rules

Each primary station, in addition to its complex of rhombic and other antennae and its receiving and recording equipment, had at least one Adcock direction finder, a large rotating antenna sensitive to the direction of shortwave signals bounced off the ionosphere; this device had been invented in England, but was refined and improved by RID engineers. At short range, say within a few miles, a simple loop antenna can pick up the ground-wave component of a signal and determine its direction; our disguised mobile units included these in their equipment. And finally, for locating transmitters at really close quarters, we developed what we called a "snifter," a signal-strength meter that a man could carry in the palm of his hand while inspecting a building to determine which room a signal came from.

In the routine day-and-night operation of a monitoring station, the patrolman of the ether would cruise his beat, passing up and down the frequencies of the usable radio spectrum, noting the landmarks of the regular fixed transmissions, recognizing the peculiar modulation of a known transmitter or the characteristic fist of a familiar operator, observing an irregularity in operating procedure and pausing long enough to verify the call letters, or finding a strange signal and recording the traffic for close examination, and then sometimes alerting the nation-wide net to obtain a fix on the location of its source. More than 800 such fixes would be made in an average month, requiring the taking of some 6,000 individual bearings. For although mathematically the intersection of two bearings provides a fix, the 1% error that must in practice be allowed in the angle of a bearing, even when it is corrected for variations in propagation and site conditions, becomes considerable at distances that may run to thousands of miles; and at least four bearings are needed for a reasonably reliable long-range fix.

Radio Spies in the United States

With respect to Axis agents in the United States and its territories this close vigilance was almost purely prophylactic, and effective in its prophylaxis: out of respect for its enemy agents, as far as we ourselves were able to discover, made only two attempts during the entire war to establish radio communications across our ethereal frontiers, and in both cases

failed to get a single message through.¹ The stories of these two, although they have been told from other viewpoints elsewhere,² are worth summarizing here.

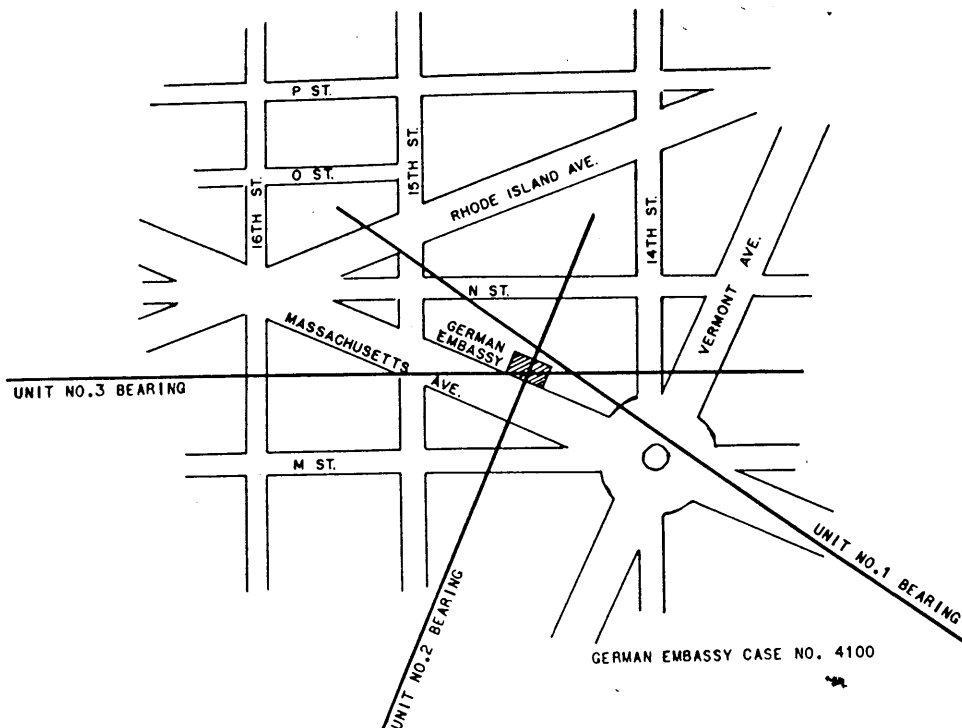
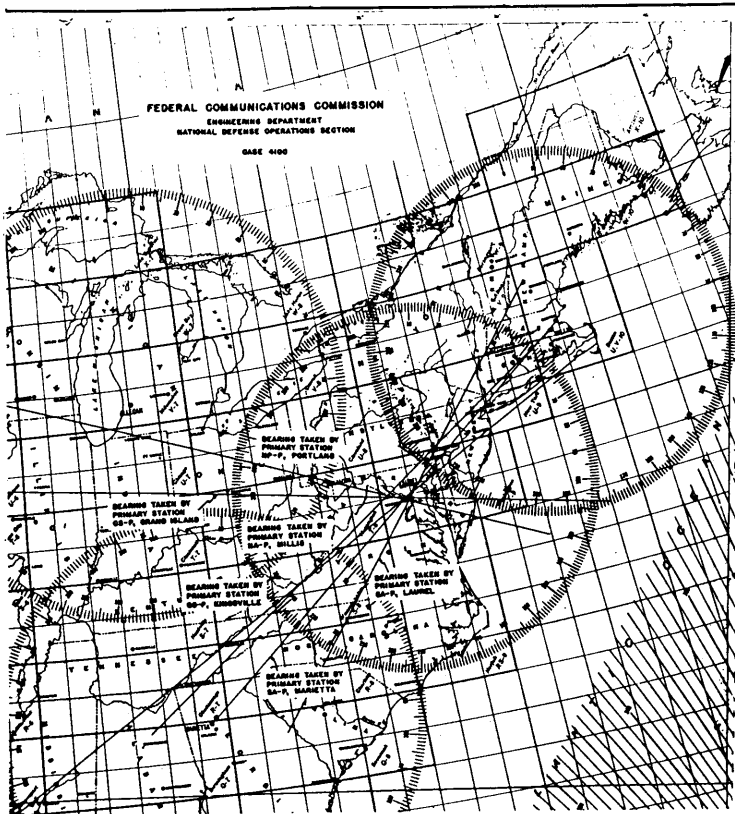
The first took place in the spring of 1940, long before Pearl Harbor had roused us to hunt for radio spies here in earnest. Our routine monitoring turned up an unidentified transmitter carrying on coded traffic with a distant station which used the call AOR. We asked the Army and the Navy if it might be one of theirs. They had no knowledge of it; the Navy thought it might be a St. John, New Brunswick, station. But our direction finders showed it to be on Long Island, and its correspondent AOR near Hamburg, Germany. We reported to the FBI.

The Bureau told us in confidence that it was indeed a German agent radio, but under their control. A German-American, William Sebold, had revealed that he was recruited by the Nazis and instructed to set it up. The FBI built and now were manning the station for him, feeding Hamburg false or innocuous information and identifying its agent sources. The deception continued for more than a year under our joint surveillance, until at the end of June, 1941, 33 German agents to whom the traffic had furnished leads were arrested. At their trial that fall, when the defense tried to maintain that AOR was not a German station but an FBI entrapment device in the United States, RID engineer Albert McIntosh produced charts showing the fix on Hamburg. His public testimony must have been one factor in the German decision not to risk agent transmitters in the United States.

They did try it once more, though, right after Pearl Harbor, apparently on local initiative, impromptu. In the general alert which followed that shocking Sunday morning we had put several mobile monitoring units out cruising the Washington streets. These were equipped not only with loop direction finders but with a device we called the watch-dog, an

¹ Wilhelm Hoettl, one of the German foreign intelligence area chiefs, affirmed during his interrogation by 3rd Army in June 1945 that the Sicherheitsdienst had not been able to establish a single wireless connection either in the United States or in England.

² Notably in Don Whitehead's *The FBI Story*.



FIGURES 1 AND 2

aperiodic receiver we had developed which would sound an alarm when it received a strong signal on any of a wide range of frequencies. (It was patented by two RID engineers and later used by OSS and the Navy.) In the wee hours of Tuesday, December 9, one of these watch-dogs was triggered by signals on a transatlantic frequency. At the same moment three thousand miles away our monitors in Portland, Oregon, heard them too—station UA briefly and vainly calling a distant control center. Five other direction-finding stations were set to watch the frequency; and when a few hours later UA tried it again, they reported the bearings projected on the chart in Figure 1. This fix confirmed the uncertain supposition of the watch-dog that the transmitter was in Washington.

Now three mobile units were given the scent, and they quickly narrowed down the location to the German Embassy, as shown in Figure 2. It was a problem to pin-point the transmitter without entering the Embassy because the antenna was stretched between two buildings, with equal signal strength at each end and apparently lead-in wires to both buildings. This problem was solved in a pre-dawn conference with the FBI, who arranged, in cooperation with the Potomac Electric Power Co., that we could go down into a manhole in the street and cut the power to each building separately in turn when UA began to call. In the end, however, because the State Department was afraid for our own diplomatic mission still in Germany, we did not seize UA but simply set up two jammers to drown him out if he should try once more. He never did.

This beginning was the end for Axis radio agents within our borders; any German agents picked up by the FBI thereafter were found to have been using secret ink or some other communications than radio to get information out of the country. And we learned that some Japanese agents who requested their headquarters' permission to set up a transmitter here were turned down on the grounds that the FCC would nab them as soon as they got on the air. Outside our own states and territories it was a different story, one in which also the RID became intimately concerned.

The Portuguese Net

One day in September 1941, monitors at the secondary RID post in Miami heard a station using irregular procedures and signing the call UU2, one not in conformity with those used on commercial and other authorized circuits. It was therefore made a case for investigation. Bearings fixed its location near Lisbon, Portugal; and as it continued to call almost nightly without receiving a reply, RID units were instructed to be on the lookout for the answering station. After more than a month monitors at the secondary posts in Pittsburg and Albuquerque simultaneously picked up the answer from a station signing CNA; bearings were taken which located this transmitter in South Africa.

A few days later another station using the UU2 procedure was intercepted, this time with the call BX7. It was also in Lisbon, and the characteristics of its signal showed that without question BX7 was the same station which had previously signed UU2, apparently the control station of a network. After a week an answer with the call letters NPD was picked up by our Rhode Island monitoring post. This station proved to be in Portuguese West Africa.

The messages exchanged between the Lisbon control UU2/BX7 and the two out-stations in Africa were of course enciphered. RID did not maintain a cryptanalysis laboratory, decipherment being the responsibility of the FBI, of the Army's Signal Intelligence Service, and, on behalf of the Navy, of the Coast Guard; but in order to facilitate the identification of intercepted traffic we had interested a couple of our staff in cryptanalytic work. These men attained a considerable skill and in some cases were able to furnish leads for the FBI decipherment. The Lisbon cipher was one of these cases. It was an up-and-down transposition whose key length varied from day to day.

The texts of the messages showed this network to be one channel by which German agents in the neutral countries and colonies of Africa reported on the movements of ships, troops, and materiel and on political events. On March 26, 1942, for example, the South Africa station reported ship sail-

ings and the concentration of Allied troops which later took Madagascar. As translated from the Portuguese:

TWENTYSIXTH. AMERICANS "NISHNAHA" AND "SOLONTU-SHAW" SAILED WITH ORE FOR NEW ORLEANS, ALSO ENGLISH "CITY OF N. CASTLE"; "ANGOLA" AND ENGLISH "ISIPIEGO" FROM DURBAN ARRIVED WITH PASSENGERS. TROOPS STILL CONCENTRATED; TRYING TO LEARN DETAILS.

From Portuguese West Africa an agent with the code-name Armando sent similar information intermingled freely with operational reports. On December 4, 1941:

ARMANDO REPORTS ENGLISH CONSUL RECEIVED LONG EN-CIPHERED TELEGRAM RELATIVE ENFORCING STRICT VIGILANCE AGAINST ESPIONAGE. OFFICIALS CLAIMED ENGLISH STILL COMMAND CAPE VERDE SUBMARINE CABLE. MANY MEN GO TO FREETOWN OWING APPROACH TEN CONVOY SHIPS, LARGE TROOPS, AMMUNITION AND TANKS. HOWEVER INFORMER DOES NOT KNOW IF THEY REMAIN LAGOS OR FREETOWN AND BATHURST.

On January 7, 1942:

WEST INDIA ARRIVED BATHURST FOURTEEN WITH PILOTS AIRCRAFT MECHANICS DISASSEMBLED TANKS ANTI-AIRCRAFT MACHINE GUNS MUNITIONS LARGE QUANTITY GASOLINE CAMPAIGN TENTS. NEXT MONTH WE WILL HAVE REGULAR CONNECTION DAKAR THROUGH INTELLIGENT NATIVE GOLD-SMITH AUTHORIZED TO ENTER COLONIAL SERVICE UNDER GOVERNOR TO HELP MY WORK. ARMANDO

On February 5:

CHIEF OF POLICE LIEUTENANT UNDERCOVER IMPRUDENTLY WORKS FOR ENGLISH. CONVENIENT TO OBTAIN HIS RETURN LISBON. HE CAN DAMAGE US. ARMANDO

But the Germans were growing dissatisfied with Armando's work. The Lisbon station radioed him on February 11:

SAID THERE IS TO BE DISEMBARKMENT ENGLISH AMERICAN TROOPS DAKAR NEXT FIFTEEN DAYS. WHY NO REPORTS MOST URGENT.

On February 12:

DISEMBARKATION TROOPS FREETOWN NOT DAKAR. I ORDER YOU INVESTIGATE. NOT SATISFIED REPORTS WHICH I CALL FOR. HAVE RECEIVED BETTER REPORTS FROM OTHER PERSONS.

And most indiscreetly, on 27 March:

SECURE EXPEDITIOUSLY RECENT REPORTS DAKAR FREE-TOWN RELIEVE CAROLINA OF HIS DUTIES. USE NEW INK. BEARER SHOULD DELIVER LETTERS PERSONALLY TO PORTER HOTEL DUAS HACOES VICTORIA STREET FOR MR. MERCKEL. WE ARE EXPERIMENTING CONTINUATION ORGANIZATION TWO MORE MONTHS. USE YOUR BEST REPORTS FOR MY VINDICATION.

The organization did not in fact last much longer than two more months, but it was not the Germans who terminated it. Revelations like this one enabled Allied intelligence officers to clean out the Portuguese group in the summer of 1942.

Nazi Agent Training and Procedures

Having thus demonstrated its capability in the European theater, the RID was approached early in 1942 by its British counterpart, the Radio Security Service, with a request for the establishment of regular liaison and exchange of information. From then on to the end of the war we maintained a most harmonious and fruitful relationship which served to build up a pretty complete picture of the German diplomatic and espionage networks and their activities. The characteristics of individual transmitters and individual operators were recorded and catalogued so that they could be recognized when they were used on a different circuit. Nearly all the codes and ciphers were broken, and the great bulk of the clandestine traffic could be promptly read. During the most critical period of the war in Europe the RID was monitoring 222 frequencies used in clandestine intra-European circuits.

After the Lisbon net was closed down the Germans had five major networks, with control centers in Berlin, Hamburg, Bordeaux, Madrid, and Paris. The out-stations were located in practically every European country, in Africa and the Atlantic, and in the western hemisphere. The operators of these out-stations were in general not skilled radiomen, we learned from captured spies, but agents who had been trained in radio and codes and ciphers along with other tradecraft—for example photography and microfilm, secret writing, explosives and demolition—at a school near Hamburg. Their radio

training embraced the use of International Morse and the construction and operation of transmitters and receivers.

Student operators were required to achieve the modest transmitting speed of twelve words a minute (as compared, for example, with our Merchant Marine requirement of 20-25 words a minute). Then they would make a five-minute sample transmission on a device which recorded graphically their speed, touch, and characteristic fist. On the basis of this graph they were assigned a permanent transmitting speed and given another week's training at this speed. Then a second graph was made as each operator graduated, this one to be filed as a specimen signature against which his later messages would be verified as genuine and not the deception of enemy counterespionage. This procedure was apparently adopted after the Germans learned that the FBI had fooled them with the Sebold station on Long Island.

The agents were furnished portable transmitters and receivers, usually of the type built into a suitcase, complete with antenna wire, tools, and all the accessories necessary for going into immediate operation. They were given precise instructions for constructing a directional antenna which would afford a maximum signal to their control center and a minimum to eavesdroppers. Then they were dispatched to their posts by neutral ship, by submarine, by parachute, or over clandestine land routes.

The first sign of their safe arrival would be their call letters on the air; and this would signify their presence to us, too, for it is difficult to disguise an agent radio's call. At one time, when the control of one of the German nets passed from the Abwehr to the Gestapo, its transmitters adopted the call letters and frequencies of commercial stations in South America; but other characteristic procedures of clandestine traffic still betrayed them, and this device was later abandoned.

Not being able to disguise their calls, the agent networks made a practice of changing call letters, usually every day, in an effort to spoil continuity for their pursuers. But very few had a rota which remained nonrepetitive for a year, say, and we were able to work out in advance the call letters which many espionage transmitters would be using on any

particular future day; sometimes we even caught the out-stations making mistakes in their own system. Some worked with a list of 31 different calls which repeated itself every month. Some had two such lists, one for odd and one for even months. One system was worked out with such little forethought that a spy once had to call with the international distress signal, SOS. This was one of the systems that determined call letters in connection with the cipher key for the day, a connection that sometimes led our part-time cryptanalysts into the decipherment of messages.

One group, we learned from one of its indiscreet first messages sent blind, based its calls and transposition cipher on the Albatross edition of Axel Munthe's *The Story of San Michele*, a book excluded by copyright arrangements from the British Empire and the United States, using a different page each day. The page to be used was determined by adding to a constant number assigned each agent the number of the month and that of the day in question. The last line on this page contained the calls to be used—the first three letters, reversed, for the control center and the last three, reversed, for the out-station. An example of this procedure may be of interest.

Shortly before midnight, eastern standard time, on March 12, 1942, one of our monitors at Laredo, Texas, copies the following slow hand-keyed message on 11,220 kilocycles.

VVVV EVI EVI EVI
 IWE OF WONUG IU VBJ DLVCP NABRS CARTM IELHX YEERX
 DEXUE VCCXP EXEEM OEUNM CMIRL XRTFO CXQYX EXISV
 NXMAH GRSML ZPEMS NQXXX ETNIX AAEXV UXURA FOEAH
 XUEUT AFXEH EHTEN NMFXA XNZOR ECSEI OAIN E MRCFX
 SENSD PELXA HPRE

We know from our analysis of previous messages that the call EVI is due to be used by an operator of the San Michele group whose assigned constant number is 56. Checking, we add the month and day—this would be March 13 by Greenwich Mean Time—and turn to page 72 of the novel. The last word on the page is "give," so EVI is right. The first word on the last line is "like"; the control center will sign KIL.

The message sent in the early hours of March 13 was probably enciphered on March 12, so we go back to page 71, shown here opposite, for the key. Here the first line reads, "I would

I would have known how to master his fear, and would have been the stronger of the two as I have been in later years more than once, when I have stayed a hand clutching a revolver in fear of life.

When will the anti-vivisectionists realize that when they are asking for total prohibition of experiments on living animals they are asking for what it is impossible to grant them? Pasteur's vaccination against rabies has reduced the mortality in this terrible disease to a minimum and Behring's anti-diphtheric serum saves the lives of over a hundred thousand children every year. Are not these two facts alone sufficient to make these well-meaning lovers of animals understand that discoverers of new worlds like Pasteur, of new remedies against hitherto incurable diseases like Koch, Ehrlich and Behring must be left to pursue their researches unhampered by restrictions and undisturbed by interference from outsiders. Those to be left a free hand are besides so few that they can be counted on one's fingers. For the rest no doubt most severe restrictions should be insisted upon, perhaps even total prohibition. But I go further. One of the most weighty arguments against several of these experiments on living animals is that their practical value is much reduced, owing to the fundamental difference from a pathological and physiological point of view between the bodies of men and the bodies of animals. But why should these experiments be limited to the bodies of animals, why should they not be carried out on the living body of man as well? Why should not the born criminals, the chronic evil-doers, condemned to waste their remaining life in prison, useless and often dangerous to others and to themselves, why should not these inveterate offenders against our laws be offered a reduction of their penal servitude if they were willing to submit under anæsthetics to certain experiments on their living bodies for the benefit of mankind? If the judge, before putting on the black cap, had in his power to offer the murderer the alternative between the gallows and penal servitude for so and so many years, I have little doubt there would be no lack of candidates. Why should not Doctor Woronoff, the practical value of his invention be

have known how to master his fear" etc. We take the first nine letters and number them in sequence: "

I W O U L D H A V
1 2 3 4 5 6 7 8 9

Substituting these figures in the first four groups, with nulls for any missing letters, we get

I	W	E	O	F	W	O	N	U	G	I	U	V	B	J	D	L	V	C	P
1	2	x	3	x	2	3	x	4	x	1	4	9	x	x	6	5	9	x	x

or "12 March, 2304 hours, 149 letters in 659th message following." There are actually 154 letters following, but the first group of five is simply a special indicator identifying the agent.

This is as far as the RID needed to go for its own purposes before turning the message over to the FBI. But the text could be worked out from the same page of the novel. Lay out a blank message in lines of twenty letters each, keeping the columns straight. 149 letters in rows of 20 make nine columns of eight letters each followed by eleven columns of seven each. Write across the top the first twenty initial letters of the lines on page 71, skipping indented lines. Number these in alphabetical sequence, and then go down the columns in the indicated order with the encrypted text. This arrangement gives the clear German text:

i	b	m	r	a	a	t	m	a	t	s	u	n	e	u	f	f	n	p	t
8	4	9	14	1	2	16	10	3	17	15	19	11	5	20	6	7	12	13	18
S	P	R	U	C	H	x	S	E	C	H	S	N	U	L	L	x	V	O	N
V	E	S	T	A	x	A	N	x	S	T	E	I	N	x	x	Q	U	E	E
N	x	M	A	R	Y	x	Q	U	E	E	N	x	M	A	R	Y	x	A	M
x	E	L	F	T	E	N	x	E	I	N	S	A	C	H	T	x	U	H	R
M	E	Z	x	M	E	Z	x	V	O	N	D	A	M	P	F	E	R	x	C
A	M	P	E	I	R	O	x	C	A	M	P	E	I	R	O	x	A	U	F
H	O	E	H	E	x	R	E	C	I	F	E	x	R	E	C	I	F	E	x
G	E	M	E	L	D	E	T	x											

In English:

TEXT SIXTY FROM VESTA TO STEIN. QUEEN MARY REPORTED OFF RECIFE BY STEAMSHIP CAMPEIRO ON ELEVENTH AT EIGHTEEN O'CLOCK MIDDLE EUROPEAN TIME.

The Latin American Infestation

The Queen Mary message, from an agent in Rio de Janeiro, came at a moment of climax in RID's most active and critical theater of counterespionage operations, Latin America. There were in March of 1942 six agent transmitters in Rio

alone, and three of them reported the Queen Mary's arrival on the twelfth. The espionage messages were full of news about her until after she sailed on March 20, but these were the last messages most of the agents sent. By the time she was again in mid-Atlantic on a safely altered course, the Brazilian authorities had arrested some 200 of the German spies. The story behind this roundup is first of all an RID story.

Signs of the Nazi effort to create an espionage base in Latin America began to be apparent as early as the fall of 1940. On October 27 our primary station at Allegan, Michigan, picked up a strange maritime signal using the unregistered call BCNL. Other monitoring posts were alerted, and quite a number of similar calls were traced to ships in the Gulf of Mexico and Caribbean Sea. The FCC's Tampa office succeeded in identifying these vessels as small ones operated by a firm called Gough Bros. and controlled by a coastal station near Belize in British Honduras. The U.S. Caribbean Defense Command, after developing evidence that this fleet was being used to refuel German submarines and pass information, arrested a Canal Zone employee who was a member of the ring and was able to arrange a trap for nineteen others, including the ringleader, prominent British shipping executive George Gough, in Belize.

Meanwhile in Mexico a German spy was sending out intelligence reports in private code over Chapultepec Radio, the same transmitter used for clandestine communication with Berlin during the first world war.³ After Pearl Harbor, when the use of code on commercial facilities was prohibited in Mexico, this man, a properly registered amateur, resorted to his own clandestine radio, but made the mistake of communicating first with the FBI's deception station on Long Island.

The concerted German drive to establish radio agent nets in this hemisphere, however, and our struggle against them, began in the spring of 1941. One of our monitors at Millis, Massachusetts, detected the faint signals of a station that was trying to hide its transmission in a transatlantic radio-telephone circuit operating on the same frequency. It was repeating the call letters REW, but the signal sounded quite like that of AOR, the FBI-operated Sebold transmitter's re-

³ See H. O. Yardley's *The American Black Chamber*.

spondent. Other monitoring stations, asked to help identify the suspicious and noise-shrouded signal, discovered that when REW paused to listen a station on a different frequency would start sending the call letters PYL. The two transmitters put on the same performance at the same hour the next day, and for several days; they were apparently trying without success to communicate with each other. One of our monitors became so engrossed that he wanted to go on the air and help them out. Our fixes showed that REW was indeed in Hamburg, and PYL in Valparaíso, Chile, an espionage station discovered before it could make contact with its base.

For the present, however, there was nothing that could be done about agent radios outside U.S. jurisdiction except to listen in, and more and more of them began to appear, setting up in a half dozen of the Latin American republics. Chile and Brazil held the principal concentrations at this time. There were three main agent networks in Brazil, centered on transmitters that we designated LIR, CEL, and CIT, from the call signs they were using when first heard; the EVI of our decipherment example was LIR. Evidence of the damage they could do began to mount.

The German control stations, for example, sent exhaustive lists of requirements for naval information, asked PYL in Chile if it could "place a suitable man for us among students going to the United States for air training," complimented agents as "exceptionally correct" in their reports on technical details of English and American cruisers' equipment, and assigned agents to investigate "USA parade and air bases Colombia and Venezuela" and "air units Trinidad and Lesser Antilles and flights via those places to West Africa; airplane types, movement, dates." The agent radios sent back reports like these:

5 JULY. NINE BOEINGS FLEW WITH MIXED CREW ENGLISH AND AMERICANS. IN NEXT FEW WEEKS 20 MORE TO BE FLOWN ACROSS. DETAILS FOLLOW.

19 JULY. LM REPORTS 15 LOCKHEED HUDSONS FLEW ACROSS. ENGLISH REGISTRY AND CANADIAN-AUSTRALIAN CREW. BOEING CLIPPER LEFT NATAL ON SEVENTH ALLEGEDLY FOR BOLANO WITH 19 LOCKHEED MECHANICS AND 11 CREW.

7 AUGUST. USA STEAMER URUGUAY ON LAST VOYAGE TO UNITED STATES LEFT RIO 25 JUNE. WAS CONVOYED BY BRITISH AUXILIARY CRUISER CARNARVON CASTLE TO TRINIDAD. TRIP TAKES 7 DAYS. CRUISER TRAVELED SOMETIMES AHEAD SOMETIMES ASTERN OF SS URUGUAY.

8 OCTOBER. BMM REPORTS SEVERAL HUNDRED US AIRCRAFT OF VARIOUS TYPES AND 8000 SPECIAL TROOPS ALLEGEDLY LANDING CORPS BEING ASSEMBLED PORT OF SPAIN.

In November PYL identified a network courier as "daughter of Clarke, secretary in USA embassy Quito since 1 November." And ten days after Pearl Harbor an agent offered details on the torpedo safety nets with which ships were being equipped and also "absolutely safe men . . . who will send to bottom two or three large armed English ships . . . without any suspicion falling on us. If we are interested payment only after sinking, nothing in advance." The control station in Germany of course approved: "Proposal for destruction of ships very interesting." Reports on plane production also now began in earnest:

1 JANUARY. CURTISS COLUMBUS FACTORY WILL BEGIN MASS PRODUCTION SERIES SB2C SINGLE SEATER STUKA FOR NAVY. ARMAMENT ONE CANNON FIVE MACHINE GUNS, MOTOR 1700 HP WRIGHT. BUILT FOR 2000 HP WRIGHT IN EXPERIMENTAL STAGE. PRODUCTION SO3C BEGUN IN COLUMBUS FACTORY AT BEGINNING DECEMBER. EMPLOYEES ALL CURTISS AIRCRAFT FACTORIES DECEMBER TOTAL 27000. PROPELLER PRODUCTION NOVEMBER 1042.

Our Government finally took action. On January 15, 1942, the Rio conference of foreign ministers of the American republics recommended immediate measures to eliminate the clandestine stations. An Emergency Advisory Committee for Political Defense was established with headquarters in Uruguay, and under its auspices we dispatched some of the best RID monitoring officers to the six countries where we knew agent radios to be operating (Brazil, Chile, Mexico, Cuba, Martinique, Paraguay). They had a two-fold mission—to locate the hide-outs of known agent transmitters with mobile direction-finding equipment they took along, and to help the governments of these countries establish monitoring networks which could keep them free of radio spies in the future.

For this second purpose we sent men also to six other countries (Haiti, Venezuela, Colombia, Ecuador, Peru, Uruguay). Forty men from eighteen Latin American republics were at the same time brought here for training at our school in Laurel, Maryland.

The man we sent to Brazil was Robert D. Linx. He helped lay the groundwork for that arrest of 200-odd spies after the Queen Mary left her dock in March. This roundup apparently cleaned out the LIR and CIT organizations, the latter led by a man named Christiansen; they were never heard again. Some members of the CEL net escaped to the interior, but two series of arrests after they ventured twice at intervals to reactivate their transmitter put an end to them too. By mid-year Brazil was permanently cured of its agent radio infestation. Linx stayed on to direct the establishment of the monitoring service, and became known as "the father of Brazilian monitoring."

Although our men in Latin America worked quietly by themselves as much as possible, the German agents were not always unaware of what was going on. We heard one of them telling his control that he knew at least six Yankee direction finders were beamed on him and he was going to cool off in the woods for a while. (He cooled off in a Central American jail.) In Chile, the PYL organization took the precaution of establishing a stand-by transmitter to assure continuity of communication if one should be seized. On March 9 PYL sent a message informing Hamburg that "Pedro," whom they had employed to operate the new transmitter, would be ready to get on the air the following day. On March 10, although RID had not yet received the decrypted text of this message, our monitors picked up Pedro's test transmission with the call GES and fixed his location in Antofagasta.

The arrival of our man, John de Bardeleben, in Valparaíso on March 19 was the signal for the main PYL transmitter to go mobile. De Bardeleben spent weeks tracking its changing locations in the area within a ten-mile radius of Valparaíso. It developed that every second week, however, a transmission would be made from the house at Avenida Atemana 5508, Cerro Alegre. This house belonged to one Guillermo Zeller, a radio technician and licensed amateur who was often

seen in the company of Hans Blume, manager of the Valparaíso branch of the German company Transradio. In April 1941, shortly before PYL was first heard trying to contact REW, Blume had bought from the radio supply store Casa Widow a complete set of transmitter parts and two Halli-crafter receivers. A tap was now placed on the Zeller telephone.

The Chilean authorities were persuaded to raid the Zeller house on June 25. Their perfunctory search discovered no transmitter, but Zeller was indiscreet enough to telephone afterwards to one of his agent colleagues and report his narrow escape: "Lucky they didn't search very good, especially in the basement." With some trouble and delay another search warrant was obtained, again to no avail; the officers didn't bother to open a box they noticed in the basement purporting to contain a sewing machine. PYL went off the air after this, and nothing could be done until after many weeks De Bardeleben found the transmitter in its sewing-machine box stored in a grocery on Cerro Alegre. Finally, on October 23, most of the agents of the PYL organization were arrested; but the man who actually operated the main transmitter and operator Pedro at Antofagasta had disappeared.

Neutralist Argentina, which did not participate in the Emergency Advisory Committee, posed a delicate diplomatic problem with respect to the elimination of clandestine enemy transmitters, and one of critical importance as the clean-up in Brazil and Chile made the Argentine the main base for espionage activity in this hemisphere. Not only agent radios but the powerful Argentine commercial transmitters were carrying quantities of compromising information to Italy, Japan, and Germany, and we could only copy their transmissions, hundreds of messages daily. Many of these were at speeds too high for manual copy; we recorded them on tape and trained selected typists to put them into page form. A strong memorandum from the U.S. Government on January 4, 1943, enabled us to send two men to Argentina to try to do what we had done in Brazil and Chile, but our earlier successes were not repeated here. The agent operations had become much more sophisticated. While our men were taking bearings on a signal the transmission would be cut off at

that location and picked up by another transmitter several miles away. And the cooperation of Argentine officials under the Castillo and Ramirez-Peron regimes was less than eager. They finally became so resentful of U.S. Government pressures that we had to withdraw our men.

One spy who escaped in Chile, however, did not get as far as Argentina. Almost a year after the incomplete catch of the PYL ring in Chile, monitors at three different RID posts heard a new station with the call PQZ, and all three were sure they recognized the fist of operator Pedro of the GES station at Antofagasta. Bearings placed the transmitter at Santiago, Chile.

De Bardeleben's successor in Chile, William Fellows, was notified, and he picked up the signal the next time it came on the air. Working alone, he had to move around and take bearings from different locations in order to get a fix; but after two more PQZ transmissions he had the house located. To my considerable personal satisfaction the operator Pedro, a graduate of the Hamburg spy school, who had the effrontery to use my own initials as his clandestine call, was arrested and his equipment seized. With this postlude there ended, except for the Argentine hold-out, the story of radio spies in the Americas.