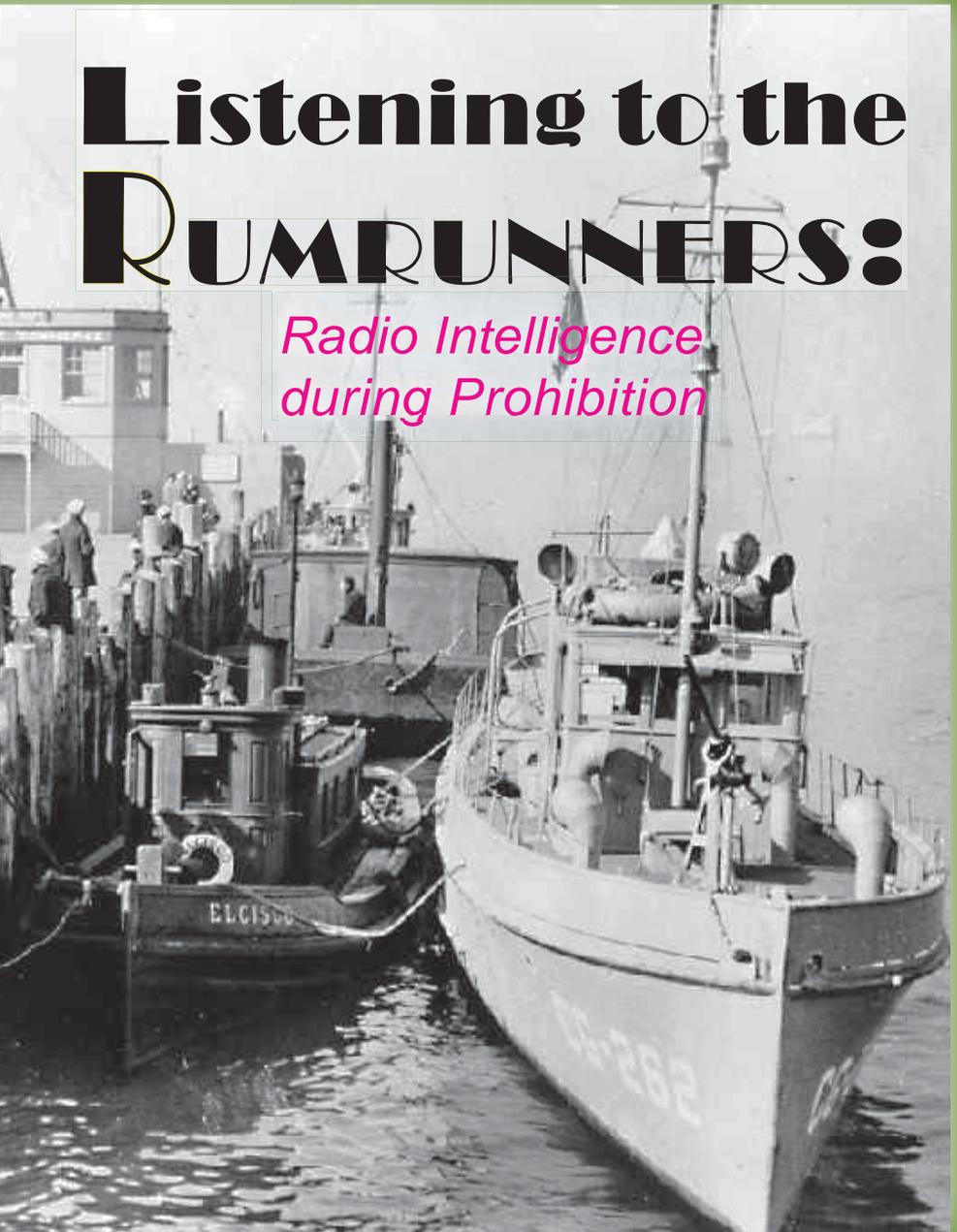


Listening to the RUMRUNNERS:

*Radio Intelligence
during Prohibition*



This publication is a product of the National Security Agency history program. It presents a historical perspective for informational and educational purposes, is the result of independent research, and does not necessarily reflect a position of NSA/CSS or any other U.S. government entity.

This publication is distributed *free* by the National Security Agency. If you would like additional copies, please email your request to history@nsa.gov or write to:

Center for Cryptologic History
National Security Agency
9800 Savage Road, Suite 6886
Fort George G. Meade, MD 20755-6886

David Mowry served as a historian, researching and writing histories in the Cryptologic History Series. He began his Agency career as a linguist in 1957 and later (1964-1969) held positions as a linguist and cryptanalyst. From 1969 through 1981 he served in various technical and managerial positions. In the latter part of his career, he was a historian in the Center for Cryptologic History. Mr. Mowry held a BA with regional group major in Germany and Central Europe from the University of California at Berkeley. He passed away in 2005.

Cover: The U.S. Coast Guard 75-ft. patrol boat *CG-262* towing into San Francisco Harbor her prizes, the tug *ELCISCO* and barge *Redwood City*, seized for violation of U.S. Customs laws, in 1927. From *Rum War: The U.S. Coast Guard and Prohibition*.

Listening to the Rumrunners: Radio Intelligence during Prohibition

David P. Mowry



Center for Cryptologic History
Second edition 2014



A motorboat makes contact with the liquor-smuggling British schooner *Katherine* off the New Jersey coast, 1923.
(Photo courtesy U.S. Coast Guard)

Foreword

Most Americans are aware of the era of lawlessness in this country that began with the passage of the Eighteenth Amendment to the Constitution in 1919. The institution of Prohibition brought with it major law enforcement problems, whose effects continue to be felt today. Few people, however, are aware of the major role played by communications intelligence in the enforcement of the Prohibition laws. The files of the United States Coast Guard (USCG) and the Federal Communications Commission (FCC), including the files of the Radio Division of the Department of Commerce, show that radio was used on a large scale in connection with rum-running activities. The radio operations of the rum-running organizations were, in fact, comparable in size, technical skill, and organization with the radio operation that would be conducted by enemy agents in World War II.

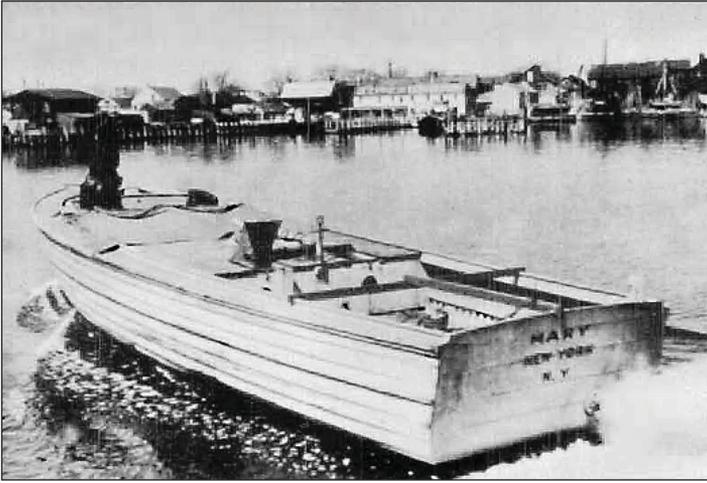
The Beginning

By the year 1924, five years after the beginning of the Great Experiment in America, defiance of the Prohibition laws had grown to such proportions that Congress appropriated \$13,852,980 just to expand the U.S. Coast Guard for the purpose of enforcement. Intelligence operations against the rumrunners were thus a harbinger of what might be expected in the event the United States became involved in war on an international scale; and the experience gained between 1919 and 1935 was to prove of great value after 1940.¹

During World War I the science of long-distance radio transmission was effectively unexplored except for certain techniques known only to a handful of scientists and engineers. Radio equipment was bulky and difficult to obtain, and antenna installations were so conspicuous that any station capable of transoceanic communication could have been tracked down by normal police methods. It was not until shortwave communications became feasible and the invention of the vacuum tube made small transmitters possible that clandestine radio communications became a serious danger. Such equipment became a practical reality in the 1920s and was immediately adopted by criminals for various purposes. The first instance of an illegal transmitter small enough to be concealed on a person's body was recorded in 1928, when a tipster was apprehended at Laurel Race Track in Laurel, Maryland, with his vest pockets full of equipment and his body girded with wire.²

The origins of the use of radio intercept in enforcing the Prohibition laws are obscure. In a letter written in 1934, Commander Stephen S. Yeandle, U.S. Coast Guard Intelligence Officer, Eastern Area, stated that he believed he was the first to use radio in obtaining intelligence while he was in command of a destroyer division operating offshore. His operators intercepted illegal radio traffic, and two of his officers developed considerable proficiency in breaking codes and ciphers. Yeandle said that this was prior to the establishment of the unit of the Coast Guard specializing in this work.³

Unlicensed radio station transmissions onshore frequently interfered with local radio reception. The Radio Division of the Department of Commerce, which was charged with the supervision of radio



The *Mary*, a typical contact boat. The 43-footer was powered with a 100-hp motor. (Source unknown)

communications in the United States, could do little about these unlicensed transmitters, as it was limited to inspecting only licensed stations, and its investigators had no police authority. The Coast Guard, however, as an arm of the Treasury Department, had been tasked with enforcement of the Prohibition laws; and Commander Charles S. Root, the Intelligence Officer of the Coast Guard, was sure that many of the unlicensed stations were connected with rum-running.⁴

By 1925 the overall structure of international liquor-smuggling operations had assumed the form which characterized it until Repeal. The major sources of illicit liquor were British Columbia and Mexico for the West Coast; and Nova Scotia, British Honduras, and the West Indies for the East Coast. Smuggler ships would take on legal cargoes of spirits in these countries, with the cargo manifested for a country where liquor importation was legal. The ships would then proceed to a prearranged rendezvous point and transfer the cargo to high-speed “**contact boats**” which would ferry the liquor ashore. Since the rendezvous points were outside U.S. territorial waters, defined in this case as extending either twelve miles or “one hour’s sail” from the coastline, the smuggling vessels sitting in this “Rum-Row” could not be seized by the Coast Guard, but could be, and were, regularly harassed by them.

“Radio New York”

 On 13 October 1925, Mr. Robert J. Iversen, of New York City, wrote a letter to Commander Root, discussing the establishment of an intercept site in New York City.⁵ At the time, Iversen was employed at the *New York Times* Radio Station on West 43rd Street. In this letter, obviously not the first on the subject, Iversen told Root to send equipment either to the *Times* or to his (Iversen’s) home address on Long Island and reported the “lists of materials for high power had been submitted to various manufacturers for bids and would be purchased through the *Times*.” Iversen estimated that he would need a \$500 advance for the first two months, after which \$150 per month would be satisfactory. He also informed Root that he had located two radio operators. One was a Canadian employed by RCA Corporation on its ship station at Chatham, Massachusetts, and the other (also a resident alien) had experience in ship operation and “high power” and had satisfied all requirements for American citizenship but had not taken out final papers.

Root instructed Iversen to determine if the second man could get his citizenship papers right away. If this were possible, Root could have the man ordered immediately to Washington to be sworn into the Coast Guard. It would, however, be impossible to commission an alien into Iversen’s service. With regard to the shipment of equipment, Root predicted that it would be sent by 17 or 18 October.

Iversen moved his base of operations on 16 October 1925 and began collecting with two receivers: one, a low-frequency receiver designed to collect signals in the 20 to 200 kHz range and the other, a medium-frequency receiver covering 300 to 750 kHz. On 18 October, he managed to pick up an exchange between the Coast Guard station at Rockaway, New York, and the Coast Guard cutter *Mojave*. The same day he told Root that he was borrowing a 200-1000 kHz receiver from the *Times* and was having an amplifier constructed so that this receiver could be put on speaker watch on the 600 kHz London-New York commercial circuit. Construction of a new long-wave receiver to collect London-New York traffic was also being



Listening to radio traffic (source unknown; probably 1920s)

pushed. The first batch of traffic from the site was sent to Root on 23 October and consisted of ten messages, all international commercial plain text, mostly in English.

In the meantime, Iversen had found another possible operator for whom Root forwarded the necessary application forms. Since RCA, the man's employer, would undoubtedly try to find out where and for whom the man was working and the type of work he was doing, Iversen had not told him that the job was a government one. Root agreed with this precaution and suggested that the man should always be paid by Iversen, in cash. Iversen was not particularly happy with this arrangement, as he wanted the ultimate responsibility for the activity to devolve upon the Coast Guard.

At the end of October, Iversen received an official appointment from the Coast Guard. He was still constructing the long-wave set which he intended to use to cover the London-New York commercial circuit. He had, however, completed the recorder he intended

to use in conjunction with this receiver. The latter would allow him to let the long-wave receiver run unattended while he was intercepting traffic on another receiver. On 3 November, Root shipped a medium-wave receiver to him, billed as coming from a W. W. Reynolds in Washington, DC. The long-wave receiver was completed on 9 November, and testing started that night. Iversen had quoted a price for the construction of this receiver, with recorder: \$1,000. In fact, the entire installation, including the radio equipment, furniture, and all other expenses incurred in starting operations, cost less than \$1,000. Tests of the long-wave equipment proved satisfactory, and, after considerable red tape, Iversen was informed that Reeves, the RCA radioman, would be hired on 19 November. Collection emphasis was on international commercial circuits, although Iversen did ask Root what “enemy ships” were in his territory (i.e., Cape Cod to Cape May) and which ones had antennas on board.

By modern standards security seems to have been fairly lax at “Radio New York,” as the operation was titled by Root. Communications between New York and Washington were by mail and, during the first month or so, the extent of security consciousness seems to have been exemplified by the refusal to hire an alien (at least until he had been naturalized) and the provision of an alternate mailing address. (Iversen had suggested improving security by having Root send part of his correspondence via Iversen’s wife, Helen.) Toward the end of November, Iversen and Root started addressing one another intermittently as “2002” and “1000,” respectively. Iversen asked for some official government envelopes since he was unable to put his name on envelopes containing intercept being sent to Root. He was particularly worried about RCA acquiring one of the envelopes, as its international circuits were the primary intercept targets. He informed Root on the same day that a telephone had been installed in the station and that the number was being forwarded separately. With regard to the mail, Root suggested sending intercept via registered mail using the return address of one Charles Gordon, who had offices in the Equitable Building (New York City). However, Root wanted this address used only on registered mail: he did not want Gordon’s name connected with the Intelligence Office.

Murphy, the resident alien, had been naturalized in November, but the paperwork on his loyalty oath had been delayed, and this delayed his hiring. On 2 December Reeves resigned but remained on board until the end of the month. Apparently he resigned because his wife would not move and he didn't like the commute. He intended to return to RCA and promised Iversen that he would work for Radio New York's interests there. Iversen started looking for a replacement—unmarried.

Radio New York's first rumrunner intercept was apparently accomplished on 4 December

with the copy of a message from the SS *Copeman* to its principals in Cardiff, Wales, announcing its arrival date. The *Copeman* had been formerly known as the SS *Avontown* and had, under that name, been a rumrunner. As a result of this intercept, the Coast Guard was able to estimate the ship's location at 40°N 73°W. Root immediately ordered Iversen to monitor its frequency continuously and forward intercept by Special Delivery since the *Copeman's* cipher was readable and analysis could lead to the discovery of her shore connection.

With the intercept from the *Copeman*, everything began to fall into place, and Radio New York began to collect a considerable quantity of rumrunner traffic from schooners outside the territorial waters of the United States. In addition to this collection, the 600 kHz commercial circuit between London and New York was being monitored; the rumrunner *I'm Alone* (about which more will be said later) was copied on 23 December; and on 26 December Root suggested that Iversen try to intercept stations on St. Pierre et Miquelon (off the southern coast of Newfoundland), which had both radio and cable

Radio New York
began to collect
a considerable
quantity of rum-
runner traffic
from schooners
outside U.S.
territorial waters.

communications and was a major source of liquor. During the entire month of December, Iversen was supplied with considerable information concerning the identities of ships in Rum Row together with descriptions of their radio antennas.

At the end of the year, Iversen was notified that Root was going on leave. Root had made provision for feedback. Upon his return he was promoted and transferred. Iversen continued to supply intercept, but he complained to Root in a personal letter on 2 March 1926 that he had received no feedback. Root answered that he himself had received practically no information since their "original arrangement was brought to an end" but that he thought that would change. It is interesting to note that, with the change of command, Iversen was instructed to cease sending his traffic to Washington. His new instructions were to deliver it to a "decoder" in New York, apparently Victor Weiskopf of the Justice Department, who was a part-time member of Herbert O. Yardley's MI-8 staff, the famous "American Black Chamber" of World War I, which continued in operation in New York City until 1929.

Coast Guard Collaboration with Other Agencies

The Coast Guard was not the only U.S. government agency involved in the rum war. There was cooperation among the Bureau of Prohibition, the Federal Bureau of Investigation (FBI), the Bureau of Customs, and the Department of Commerce. Of these, the Radio Division of the Department of Commerce, the FBI, and, until at least 1930, the Bureau of Customs were involved in radio intercept. In addition, MI-8 and the infant Signal Intelligence Service (SIS) of the War Department provided some cryptanalytic assistance to the Coast Guard, although SIS interest was primarily in using solved systems as training problems.⁶

One of the more prominent individuals involved in intercept operations against the rumrunners was Forest F. Redfern of the Radio Division of the Department of Commerce. According to a 19 October 1929 article in the *New York World*, Redfern's involvement with radio had started in 1912 when his brother Otto, a former supervisor with the Radio Division, taught Forest to copy Continental Code. Forest served with the Signal Corps from 1912 to 1915 and was assigned subsequently to the Army Transport Service (ATS) on the Mexican border with General Pershing. Later he became the chief operator of the ATS in San Francisco. He went on to serve in the Signal Corps in World War I, copying German codes in France, and received a certificate for meritorious service. After the war Redfern served five years with a private radio company and then joined the Radio Division.

In 1929 Redfern was detailed to work with the Treasury Department to aid its special agents in locating illicit radio stations. In these cases Treasury would develop a conspiracy case prior to the capture of one of the radios. Redfern would enter the illicit station at the invitation of either the special agents or a federal marshal and note the violation after inspection of the equipment. This rather cumbersome procedure permitted the enforcement of a law that provided for a five-year penalty.⁷

In October 1929 Redfern received the following cable of appreciation from the Treasury Department:

Treasury Department desires to express its appreciation for the excellent cooperation afforded this department and for the splendid service which you have performed on behalf of this government.⁸

Redfern continued to work in cooperation with the Treasury Department until 1935, when, as an inspector with the newly established Federal Communications Commission (FCC), he was transferred to Buffalo, New York. In an attempt to retain Redfern's services, commander Yeandle wrote to the chief engineer of the FCC, Dr. C. B. Jollife, that Redfern had the degree of familiarity with the wave lengths, callsigns, procedures, and the "fists" (transmission style) of illegal operators, that only long experience could produce. Yeandle thought that it would be of great assistance to the Coast Guard if Redfern were continued in his detail to radio inspection duty. He believed that Redfern's services to the government would be more valuable if they took advantage of his long experience in handling smugglers' traffic.⁹

Jollife replied that such an action, i.e., retaining him in his current job, would be detrimental to Redfern's career and would result in financial loss to him, since the transfer to Buffalo carried with it a raise in pay. In addition, the FCC appropriation was not large enough to permit retaining Redfern on such duty. He suggested that if the Coast Guard felt that strongly about the matter then Redfern should be transferred from FCC to Treasury so that he could be paid from the proper appropriation and be assigned to the proper career structure. There is no evidence of a Coast Guard follow-up.¹⁰

Prior to 1930, cooperation among these agencies in radio intelligence was strictly ad hoc. On 18 August 1930, a meeting was held at the National Press Building in Washington, DC, to formulate a definite plan regarding the enforcement of the Prohibition laws and use of radio intelligence. The meeting was attended by fifteen representatives of the Coast Guard, the Bureau of Prohibition, the Bureau of Customs, and the Radio Division of the Department of Commerce.

Present at the meeting were the following:

- for the Coast Guard—Lieutenant Commander E. M. Webster, Lieutenant Frank M. Meals, Lieutenant (Junior Grade) John L. Steinmetz, Radio Electrician C. T. Solt, and Chief Radioman Wendell W. Patten, Jr.;
- for the Bureau of Prohibition—J. L. Acuff, Carlos M. Bernstein, and H. J. Simmons;
- for the Bureau of Customs—E. J. Shamhart and G. W. O’Kiefe;
- and for the Radio Division of the Department of Commerce—W. D. Terrell, L. C. Herndon, William R. Foley, Forest F. Redfern, and Emery H. Lee. The meeting was chaired by Mr. Terrell.



Captain (then Lieutenant) Frank Meals helped plan Prohibition enforcement using radio. (Photo USCG)

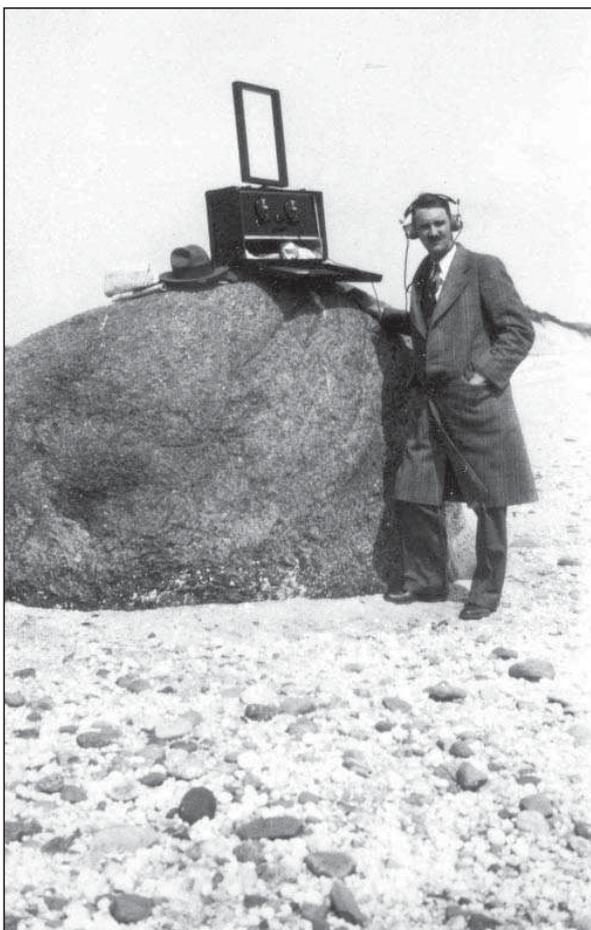
Lieutenant Commander Webster, chief of the Communications System at Coast Guard Headquarters, defined the situation. The intercept stations of the Radio Division, the Bureau of Prohibition, and the Coast Guard had identified over seventy illicit stations, ship and shore, operating in the vicinity of New York City since the beginning of 1930. Initially, most of the liquor-smuggling operation had been in the hands of independent operators. As the advantages of organization became apparent, the direction of the marketing operation in the U.S. came under the control of a few large gangs. At the same time, the various independent sources of liquor abroad began to come under the control of a few corporations, primarily Consolidated Exporters Corporation of Vancouver, British Colum-

bia. The same companies also tended to take over the shipping of the liquor, but there always remained a place for the independent ship owner within the operation. The illicit radio stations were used to transmit internal communications of the rum-running organizations. These communications were concerned with the direction of ships, the arrangement of contact points, the ordering of supplies, and the general conduct of the rum-running business. At the time of the meeting there were approximately 103 illicit stations between Maine and Florida, forty-five of them shore stations. Four of the shore stations were in Newark, one of them directing the activities of nine ships which accounted for illegal imports valued at six to seven million dollars a month.

The illicit stations were equipped with the best and newest radio apparatus, capable of working with stations in foreign countries, and manned with first-class, experienced operators. English and French traffic, both plaintext and encrypted, was transmitted; and radio procedure was primarily amateur and commercial, although, according to Webster, the occasional use of naval procedure indicated that some of the illicit operators were ex-Navy or ex-Coast Guard.

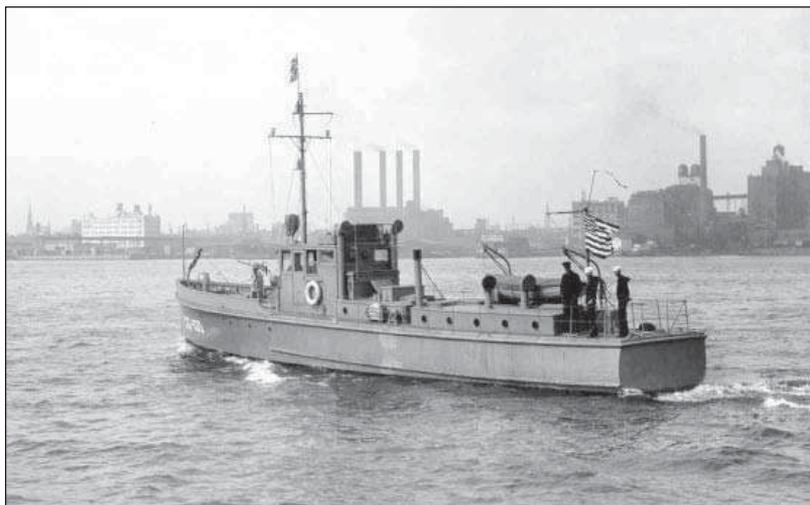
During the preceding twelve months, five illicit stations in the vicinity of New York City had been raided as a result of information obtained through intercept by the Coast Guard, the Bureau of Prohibition, and the Department of Commerce. Intercept was not difficult, since it required only an adequate receiver and a competent operator. Location of the stations, however, was another matter. Direction finding (DF) was still in its infancy, and DF bearings taken on high-frequency radio stations were only approximate and varied greatly in different localities. Lieutenant Meals pointed out that when the seventy-five-foot patrol boat *CG-210*, under his command, was fitted out as an intercept platform with high-frequency receivers, a radio compass had been installed for direction finding. Meals's comment concerning this apparatus defines the technical difficulties involved:

This is something new and just how it will work I do not know, but our experience before with the radio compass has been ... that the directional factor is limited as to distance



Direction finder model in use through 1930. Then a smaller, more modern apparatus was built that could be mounted in an automobile. (Photo from *Rum War: The U.S. Coast Guard and Prohibition* by Donald L. Canney)

and it is also approximate. In this connection we are up against high frequencies which are very erratic. The apparatus is not entirely suitable, especially compass apparatus, so that you encounter technical difficulties in locating stations, but I think the success we have had in locating the Highland's case and some of the others is very remarkable when you consider the apparatus.¹¹



The CG-100 in 1928, one of the 203 75-foot patrol boats built for Coast Guard Prohibition enforcement duties. Known as “six-bitters,” they entered service between 1924 and 1925. With a top speed of 15 knots, they were slower than most rumrunners but well built for off-shore operations. (Photo by Joseph N. Pearce, U.S. Coast Guard)

The conclusions of the meeting were that the major problems involved were lack of proper equipment, money, and a clear delineation of areas of responsibility. Only time could solve the first two. As to the third, it was decided that the Coast Guard had responsibility for targets at sea, the Bureau of Customs for the targets at points of entry, and the Bureau of Prohibition for targets located farther inland, with the Department of Commerce Radio Division making its expertise available as required and continuing in the exercise of its primary responsibility, the location of illicit transmitters. A committee, operating in New York City, was constituted to determine exactly what equipment and personnel were necessary to solve the overall problems; to specify what each organization could contribute in terms of equipment and personnel to provide each of them with the kind of information and assistance it required. This committee was to be made up of Lieutenant Meals and Messrs. Simmons, O’Kiefe, and Lee.¹²

The Arrival of Mrs. Friedman

Cryptanalysis of rumrunner traffic prior to Weiskopf's appearance on the scene in 1926 appears to have been done by such personnel in the cognizant agencies as were interested and had a knack for the work. As a consequence, results tended to be a bit "hit or miss." By the spring of 1927, an enormous number of encrypted messages had accumulated in the Coast Guard Intelligence Division. Root, by then a captain, took the matter up with the Bureau of Prohibition and established a joint effort, with the Bureau providing the personnel and Coast Guard the equipment. Intercept stations were set up in San Francisco and Florida, and in April 1927 Mrs. Elizebeth S. Friedman¹³ was employed by the Bureau of Prohibition as a cryptanalyst and established in the Coast Guard Intelligence Division to decrypt the material received and begin work on the hundreds of messages on file. Within two months she had eliminated the backlog. Since the sources of encrypted traffic were increasing, the Treasury Department launched an intelligence service based on the reading of illegal encrypted correspondence.

In May and June of 1927, the Coast Guard base at San Pedro, California, forwarded to headquarters a series of messages which resulted in the breaking of systems used by the two rival rum fleets operating on the West Coast. At that time all traffic was forwarded to Washington where it was broken and rendered into plain text. If it appeared that the decrypt could be useful immediately, it was encrypted and telegraphed back to the West Coast; otherwise, it was forwarded by airmail. This method of operation continued until mid-1928. At the request of the law enforcement agencies on the West Coast, Mrs. Friedman went to San Pedro and San Francisco in June and July of that year to instruct personnel there in decrypting traffic passed in systems that had already been broken, making the information contained therein immediately available. Clarence A. Housel, of the Office of the Coordinator of Pacific Coast Details in San Francisco, was the first person selected to receive this training. Subsequently, as new systems were solved in Washington, complete details were forwarded to Housel, who thenceforth decrypted the messages immediately upon receipt.¹⁴

During 1927 and 1928, only two general systems changing approximately every six months were in use on the West Coast. Between May 1928 and January 1930, some 3,300 messages were passed between the Pacific Coast rumrunner fleets and their principals in Vancouver, British Columbia. Nearly fifty separate and distinct cryptosystems were employed by four or five shore stations and approximately twenty-five vessels. Many of the systems employed multiple encryption. By 1930, according to Mrs. Friedman, there was a different system for practically every vessel, some of them of a complexity never attempted by any government for its most secret communications.¹⁵

The use of only two general systems on the West Coast in 1927-1928 reflected the fact that the rumrunners there were organized into two major fleets—Consolidated Exporters Corporation and the Hobbs' interests, both of Vancouver. While the crypto net became more complex between 1928 and 1930, Consolidated Exporters took over most of the fleet during the same period and expanded operations into other waters. By 1930 the company had agents in Mexico, British Honduras, Cuba, Louisiana, Florida, the Bahamas, and Quebec, with a major operation working out of Belize, British Honduras. All agents and operations were in direct communication with Vancouver, passing several hundred encrypted messages per month.

In October 1929 Mrs. Friedman went to Houston, Texas, where, over a month, she broke twenty-four different cryptosystems, solving 650 messages for U.S. Customs there.

Traffic totals for the southeastern Atlantic coast were, at this time, running about twenty-five messages per day, mostly between Florida and Georgia, on the mainland, and from Cuba and the Bahamas.¹⁶ The other major source of rumrunner traffic on the East Coast was the New York City area. Decrypted traffic from this area revealed smuggling operations extending from the Gulf of Mexico to Nova Scotia.

From 1928 to 1930 the Cryptanalytic Unit decrypted approximately 12,000 messages for the Bureau of Customs, the Coast Guard, the Bureau of Narcotics, the Bureau of Internal Revenue,



The Treasury Department's leading cryptanalyst, Elizebeth S. Friedman, leaves her Washington, DC, home to appear in federal court, 1934. (Photograph courtesy of the George C. Marshall Foundation, Lexington, Virginia)

... According to Mrs. Friedman, [some of the cryptosystems were] of a complexity never attempted by any government for its most secret communications.

the Bureau of Prohibition, and the Department of Justice. To produce this quantity, about 25,000 messages were examined annually. The information derived from these texts concerned illegal activities on the Pacific Coast from Vancouver to Ensenada; on the Gulf Coast from Belize to Tampa; and on the Atlantic Coast from Key West to Savannah (including Havana and the Bahamas) and from New Jersey to Maine (including Bermuda, St. Pierre, and Newfoundland). During this period, the Cryptanalytic Unit consisted of Mrs. Friedman and one clerk.¹⁷

It is not known when Mrs. Friedman transferred from the Prohibition Bureau to the Coast Guard, but in September 1930 an attempt was made to transfer both her and her assistant from the Coast Guard Intelligence Office to

the Division of Special Agents, Bureau of Customs. On 3 October the commandant of the Coast Guard ordered transfer held in abeyance until they could determine the feasibility of establishing a radio intelligence service in the field supported by a cryptanalytic section at Coast Guard Headquarters. This would put the enforcement agencies (Coast Guard, Customs, and Justice) in immediate possession of specific knowledge of the operations of the smugglers. As a consequence, they would be able to launch seizure actions or initiate preventive measures while the smuggling operations were still in the planning stage. Customs assented to Coast Guard retention of Mrs. Friedman and also agreed that the Coast Guard was the logical government agency to handle the radio problem.¹⁸

A Radio Intelligence Effort Becomes Necessary

In a recommendation to the commandant of the Coast Guard, Lieutenant Commander Frank J. Gorman, head of the Coast Guard intelligence unit, stated that practically all operations of the smuggler were directed by radio in code and cipher. Gorman felt that once the government mastered rumrunner radio activities, the smugglers would be so handicapped that smuggling from the high seas would be cut in half. On the East Coast the movement and operation of the smuggling vessels, usually referred to as “blacks” because of their habit of running without lights, were directed by forty-five shore stations between Maine and Florida. At this time fifty-eight “blacks” in East Coast waters were known to be using radio. The Coast Guard had a record of eighty-one stations in a single group whose operations were directed from the New York area. On the West Coast all smuggling was directed by two radio stations, one in Vancouver and one on the California coast. Traffic intercepted on these nets contained much of the information that the investigative agencies of Customs and Justice were after and practically all of the plans—including contact points—that the Coast Guard needed.

Gorman admitted that, up to now, the material obtained from intercept had been primarily informative, but he pointed out that a recent experiment had shown that practical application to enforcement was possible. Elizebeth Friedman’s husband, Major William F. Friedman, chief of the War Department’s Signal Intelligence Division and an expert cryptanalyst, had been detailed to the *CG-210* for a two-week cruise in the New York area. During these two weeks, the code used by one group of smugglers was broken, and the operating orders to the rum ships were read as received. The code was also compiled and made available for use by other Coast Guard units. Moreover, two radio stations, one in New Bedford, Massachusetts, and the other in Coney Island, New York, were located, raided, and put out of business by Department of Justice agents and Department of Commerce inspectors working in conjunction with the Coast Guard. Lastly, ample evidence was obtained linking one radio station

In 1930, one of
the [smuggling]
syndicates ... was
paying the man
in charge of its
radio operations
\$10,000 per year.

with the recently seized *Nova V* to obtain an indictment on conspiracy charges. Gorman said that this two-week voyage with a nine-man crew had accomplished more than the destroyer force and all other units combined had been able to effect in months.

From 1929 to 1930, there had been a 34 percent increase in the number of foreign “blacks,” from 103 to 138. As their number increased, the complexity of their radio com-

munications kept pace. In 1930 one of the syndicates, probably Consolidated Exporters, was paying the man in charge of its radio operations \$10,000 per year. According to Gorman, the Coast Guard on the West Coast was practically impotent, and on the East Coast it could do little more than annoy the rumrunners. He strongly recommended that a radio intelligence unit be established in order to better employ the Coast Guard’s resources. The necessary field intercept units could be provided from current resources, but funds would have to be provided to establish a central organization in Washington.¹⁹

The cornerstone of the whole effort, of course, would be cryptanalysis. And it was imperative, Gorman said, that such a section be established in the Intelligence Division. The alternative was that Mrs. Friedman would go to Customs and work on the intercept from two Customs stations, and

the Coast Guard with its destroyers and patrols on a military basis will continue to patrol the seas and operate precisely as if radio had never been heard of, spending hundreds of thousands of dollars in an effort to stumble across the information that is constantly on the air, i.e., the location and contact points of the rumrunners.²⁰

The Cryptanalytic Unit

In addition to the dollars and cents side of the problem, there was a question of morale. A sense of futility was spreading through the Coast Guard, together with a feeling that a demonstration of effort, rather than the effort itself, was all that was required. The results that could be expected from a radio intelligence effort would more than compensate for the expenditure.

The central organization foreseen by both Gorman and Mrs. Friedman was as follows:

Position	Grade	Salary	Total
Cryptanalyst in charge	P-4	\$4,000	\$4,000
Assistant cryptanalyst	P-1	\$2,000	\$2,000
One senior cryptographic clerk	CAF-5	\$2,000	\$2,000
One cryptographic clerk	CAF-4	\$1,800	\$1,800
Three assistant cryptographic clerks	CAF-3	\$1,620	<u>\$4,860</u>
			\$14,660

Gorman recommended that the funds for this organization be authorized in the FY31 appropriation. He deemed the matter to be of sufficient importance to justify asking for a “deficiency appropriation,” but doubted that that could be obtained because of the current fiscal situation. He also recommended that three more patrol boats be equipped as the *CG-210* and manned with a crew of ten men each, including four radiomen; and that fifteen men, including six radiomen and six warrant officers, be assigned to the New York Intelligence Unit under the command of Lieutenant Meals, formerly captain of the *CG-210*. The warrant officers would receive preliminary training under Meals and would then be brought to Washington for cryptanalytic training after the cryptanalytic section was established. Gorman realized that these individuals were not available but considered the requirement to be so overriding that they could and should be provided from current strength, depleting other units if necessary.²¹

The *I'm Alone*

In justifying the creation of the cryptanalytic unit, Mrs. Friedman cited, as one of the most conspicuous examples of the value of cryptanalysis in the enforcement of the Prohibition laws, the case of *I'm Alone*, a “black” sunk by the Coast Guard in the Gulf of Mexico in March 1929.

I'm Alone was a two-masted schooner built in 1923 in Lunenburg, Nova Scotia, for the liquor trade. Initially it operated out of St. Pierre et Miquelon along the coast of New England and New York, earning \$3 million for its owners. In 1928 it was sold and placed under the command of a bemedalled ex-officer of the Royal Navy, John T. Randall. The ship sailed for the Gulf of Mexico with 1,500 cases of liquor from St. Pierre, headed for a rendezvous off the Louisiana coast scheduled for early March 1929. Upon the arrival of the *I'm Alone*, the USCG cutter *Wolcott* appeared and trailed the schooner for two days. Randall left the area in disgust but returned a few days later, met a contact boat, and started unloading the liquor. On 20 March 1929, the *Wolcott* returned and determined that the *I'm Alone* was within the territorial waters of the U.S. and ordered it to heave to and be searched. It refused to obey and the cutter gave chase. Two hundred twenty miles out in the Gulf of Mexico, in a rising gale, the cutter *Dexter* joined the chase and boxed in the *I'm Alone*, finally sinking the rumrunner on the high seas and killing one crew member. The rest of the crew were rescued.

The sinking had taken place miles beyond the limit of maritime law jurisdiction. Since the ship was flying the Canadian flag when it was sunk, the Canadian government filed a claim against the United States for \$365,000 for the loss of ship and cargo.

The Canadian claim was based on the presumption of Canadian ownership of ship and cargo. In order to void the claim, the United States government was required to prove its contention that the *I'm Alone* was American-owned. Such proof would reduce the incident from the sinking of a ship owned by a friendly power to a flag insult, which could be settled by formal apology and a small cash indemnity.



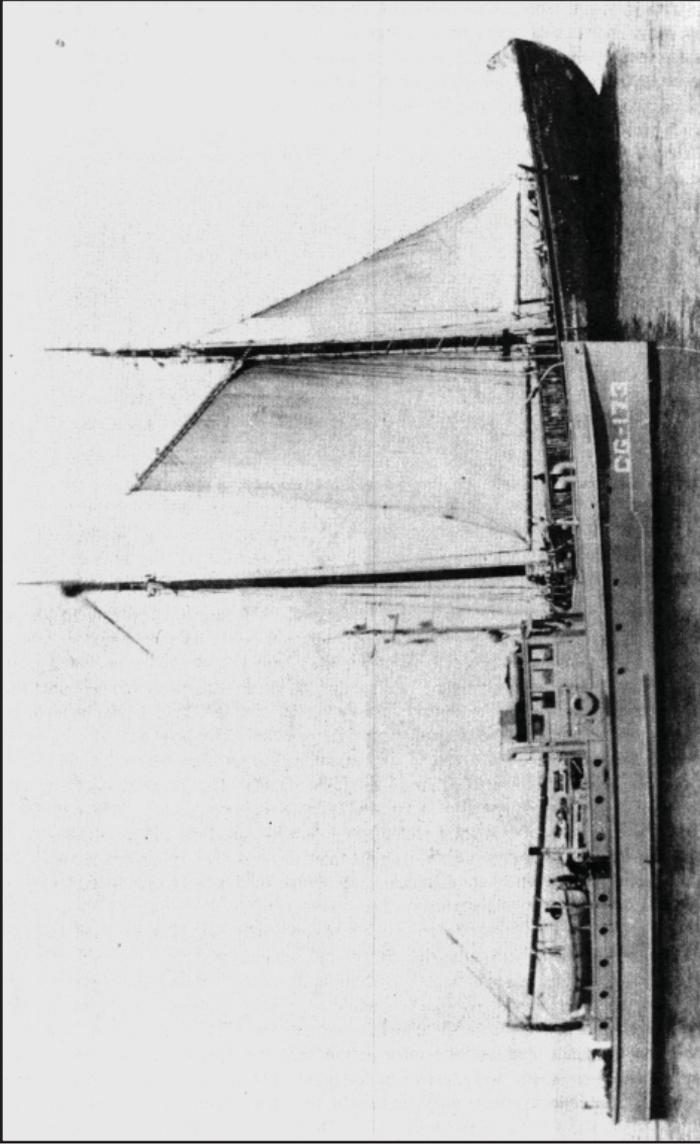
The crew of the *I'm Alone* after its sinking.
Left to right: Edward Bouchard, sailor (in back); Captain John Thomas Randall, ex-officer of the Royal Navy; Jens Jensen, assistant engineer; John George Williams, mate; Chester Hobbs, engineer; James Barrett, sailor; William Wordsworth, cook; Eddie Young, sailor; and Mr. Simpson, British vice consul in New Orleans (photo source unknown)

The Coast Guard had first started collecting the communications of the *I'm Alone* in December 1925 and had targeted the ship continuously during the next three years. Information derived from this traffic had made Coast Guard analysts certain that the ship was American-owned. In addition, traffic was subpoenaed from commercial cable companies. When the code system used in the latter was broken, the information therein, combined with intelligence from other sources, resulted in the identification and arrest of the ship's owners, Dan Hogan and Marvin Clark of New York City. As a result, the final settlement between Canada and the U.S. amounted to \$50,000 for the insult to the Canadian flag and for the destruction of Canadian seamen's property.²²

Mrs. Friedman was later instrumental in the breaking up of Consolidated Exporters. By 1933 Consolidated Exporters Company was the largest and most powerful smuggling syndicate in existence, controlling a near monopoly of smuggling in the Gulf of Mexico and on the West Coast.²³ In 1931 special agents of the Bureau of Prohibition raided the syndicate's New Orleans headquarters and began an investigation of Consolidated Exporters' smuggling activities that lasted nearly two years and cost several hundred thousand dollars. More than 100 persons were indicted, including the New Orleans ring leaders who directed smuggling activities throughout the Gulf. The case against the syndicate ring leaders was based on a charge of conspiracy, and it was absolutely essential to connect these persons with the actual operation of the smuggling vessels. Convictions for conspiracy required the construction of a case connecting the ship, the illicit shore station and its operator, and the "bosses" controlling the operation. The only way to accomplish this was through the encrypted messages originating in the New Orleans office of Consolidated Exporters and transmitted by their illicit radio station which would show that the defendants actually directed the movements of the smuggling vessels.

Hundreds of encrypted messages between the "black" ships and their shore stations had been intercepted by the Coast Guard Intelligence Office in Mobile, Alabama, and many more were seized by the special agents when they raided the syndicate headquarters in New Orleans. All of those messages were forwarded to Coast Guard headquarters, where they were deciphered, decoded, and indexed by the Cryptanalysis Section. When the United States attorney went before the grand jury for an indictment, Mrs. Friedman was sent from Washington as a witness, and when the case came to trial in early 1933, she again went to New Orleans, where she was the star witness for the prosecution. After the trial, Colonel Amos W. W. Woodcock, former director of the Bureau of Prohibition, who had been sent to New Orleans as special assistant to the U.S. attorney general to prosecute the case in person, commended Mrs. Friedman, stating:

[She] was summoned as an expert witness to testify as to the meaning of certain intercepted radio code messages. Without their translations, I do not believe that this very important case could have been won.²⁴



The *I'm Alone*—a “black,” or contact boat that ran without lights—being searched by Coast Guard vessel CG-173. The *I'm Alone* was the center of a major 1929 Prohibition enforcement case that hinged on Elizebeth Friedman’s cryptanalysis in the Coast Guard Intelligence Division. (Photo source unknown)

Security Problems

The cooperative system set up at the 18 August 1930 meeting contributed greatly to the success of these agencies in enforcing the Prohibition laws. As time went on, however, it was learned that collaboration with other agencies contributed to the rise of a problem which has plagued signals intelligence down to the present: the problem of avoiding the compromise of sources and methods used. Coast Guard policy was to freely forward paraphrased information derived from intercept and cryptanalysis. The same policy required that no information be divulged on rumrunner cryptosystems or on the degree of analytic success achieved, even to other Coast Guard units. The Intelligence Division had found that while the rumrunners realized that they were being intercepted and that the Coast Guard was trying to read their traffic, they usually relied on the infallibility of their cryptosystems until advised by an informant that the system had been broken. When information concerning cryptanalytic success was distributed among government agencies, it invariably became known to the rumrunners.

In one case, an encryption system used between Belize and New Orleans was broken with considerable difficulty and with the aid of the Signal Intelligence Service. Because of the nature of the system, long messages in it were far more difficult to break than short messages. Shortly after the system was broken and transmitted to the Intelligence Office at Mobile, a message from New Orleans to Belize was intercepted and decrypted. The message stated that the syndicate had definite information that the Coast Guard could break the system when short messages were used and directed that no messages of fewer than twelve words be sent. Subsequent investigation indicated that the source of the leak appeared to be a hanger-on at the Customs House in New Orleans. The Bureau of Customs was so informed, but the damage had been done.²⁵



A Lake-class cutter, likely the Mendota, with rumrunner Edna, later commissioned into USCG as the CG-936. (From Rum War: The U.S. Coast Guard and Prohibition by Donald L. Canney)

After Repeal

With the election of Franklin D. Roosevelt, a bill for the repeal of the Eighteenth Amendment was proposed by Congress on 20 February 1933 and ratified by the states on 5 December of the same year. Contrary to popular belief and hope, repeal did not terminate efforts to smuggle alcoholic liquors; rather, it gave new hope and grandiose ideas to the smugglers as a means of making easy money on a large scale by smuggling liquor to evade the excise taxes.

This post-repeal smuggling cost the Treasury Department more than \$35,000,000 annually in lost revenue. Federal statutes were not adequate to cope effectively with this new smuggling problem, particularly in view of the reduction in size of the Coast Guard and other enforcement agencies as a result of the Economy Act. Secretary of the Treasury Henry Morgenthau immediately took measures to provide additional funds to the Coast Guard and to coordinate the activities of all Treasury law enforcement agencies. He further acted to increase cooperation with the Canadian government, which was also experiencing problems with liquor smuggling, now that it was being done to evade liquor taxes.²⁶

Interagency and International Cooperation

By 1935, cooperation among Treasury law enforcement agencies was complete. A statement of responsibilities for the Coast Guard, the Alcohol Tax Unit, and the Bureau of Customs was formalized in the case of the rumrunner *Reidun*. The Coast Guard was responsible for “preventive work” and would endeavor to keep under surveillance the vessels taking cargo from the *Reidun*. The Alcohol Tax Unit would furnish any equipment and personnel needed for patrol work to the responsible authorities in New York and Boston and, jointly with the Bureau of Customs, would assume responsibility for investigation of the various organizations believed to be interested in the *Reidun*’s cargo. All three services were directed to provide full support to this effort.²⁷

In the case of the *Bodo*, a “black” out of Antwerp, Belgium, a representative of the U.S. Coast Guard was ordered to proceed to Halifax, Nova Scotia, with intelligence personnel to work with the Royal Canadian Mounted Police (RCMP), Halifax. RCMP, Ottawa, was asked to assist in locating and observing *Bodo*. In addition, the Department of State arranged for Coast Guard cutters to call at Halifax and at Trepassy Bay and St. John’s, Newfoundland, as necessary, between 10 and 31 December 1935.²⁸

During the Prohibition period, there appears to have been little cooperation between U.S. and Canadian authorities in regard to limiting the liquor trade. The smuggling of liquor into the United States was not a crime in Canada, and a number of quite respectable Canadian companies and persons were engaged, one way or another, in the trade. After repeal, the profits of liquor smuggling came from the evasion of excise taxes, which were as vexing in Canada as they were in the United States, and the smuggling organizations, now working out of Europe, began to run alcohol into Canada. The RCMP began intercepting “black” radio transmissions and established an informal exchange of the fruits of this intercept with the U.S. Coast Guard.²⁹

Initially, the cooperation was somewhat less than perfect. Canadian rumrunners returning to Canadian ports were required to file "Inward Reports" concerning their voyages. These were frequently untruthful. On 26 September 1935, the *Miserinko* filed the following:

I, George Lohnes, Master of the M/V *Miserinko*, do solemnly swear that I cleared from Yarmouth, N.S., on August 29th for St. Georges, Bermuda; proceeded to position one mile west of Lurcher Lightship, loaded 1,200 cases of alcohol from MN *Popocatapelt* [*sic*]; then proceeded to position N. Lat. 37-15, W. Long. 73-20; transferred entire cargo to boat name unknown: then proceeded direct to Lunenburg in ballast, not having landed any spirituous liquors within territorial waters of Canada.

In fact, the *Miserinko* had hovered off the New Jersey coast for nearly a month before succeeding in unloading her entire cargo, which was disposed of in two or three contacts in several different positions. *Miserinko* was under intermittent surveillance by the Coast Guard during the entire period. The phrase "boat name unknown" occurs frequently in these reports. Commander Yeandle stated at one time:

Here are instances of vessels with cargoes running into hundreds of dollars with the transfer effected with the vessels alongside of each other and frequently during hours of daylight, and still the names of the vessels involved are unknown to the Masters. It is inconceivable and must likewise be to Canadian officials.³⁰

On 29 January 1936, Commander Thompson of the United States Coast Guard and Mr. Avis of the Alcohol Tax Unit went to Ottawa to discuss, among other things, the problem of the Inwards Reports. The main problem was, apparently, that these declarations were made to the collector of customs of the individual ports. In many of the smaller ports, these men were related to, or associated with, the shipmasters. These collectors of customs did not require explicit details and did not scrutinize the reports closely, and for various reasons the RCMP was not in a position to query the collectors.³¹

In December 1935 the Coast Guard had loaned a Model 14-B direction finder to the RCMP, which proved to be of great value to both services. By mid-1936 the center of smuggling activity had shifted from the New Jersey coast and St. Pierre et Miquelon to Lurcher Shoal and Seal Island, Nova Scotia, and to Petit Manan and Grand Manan islands. As a result, the RCMP had shifted the 14-B to Chebucto Head, and Yeandle proposed the loan of a Model 14-D for use in the vicinity of Yarmouth, N.S.

Pursuing this policy to its logical conclusion, Yeandle also proposed establishing a direct radio link between New York District Headquarters and the RCMP Headquarters in Halifax for exchanging bearings and other pertinent information.³²

General MacBrien, RCMP, had discussed with Commander Parker, chief intelligence officer of the Coast Guard, the possibility of providing a Coast Guard cryptanalyst to train RCMP personnel. Radio Electrician O. M. Helgren, USCG, was a trained cryptographer who had been to Halifax twice previously in connection with both the *Reidun* and *Bodo* cases. Yeandle agreed to sending Helgren to Halifax not only to provide cryptanalytic instruction but also to install and maintain the 14-D direction finder and the two-way radio.³³

The rumrunners were not necessarily passive in this radio war. In fact, an attempt was made in July 1936 to infiltrate the RCMP intelligence effort. One individual approached the RCMP Marine Division in Halifax and asked if they had a DF station, as he would like to get a job operating one. When he received a negative answer, he asked if the U.S. Coast Guard used direction finders and if the RCMP copied rumrunner codes. Captain J. W. Bonner, the RCMP officer conducting the interview, told the man that the RCMP used aircraft for locating "blacks." The aircraft then notified a cutter, which proceeded to the vicinity of the rumrunner and started trailing it. Bonner said later that he had used this story to try to convince the man that neither DF nor cryptanalysis was used by the RCMP. In another case, a "rummy" kept trying to get RCMP officials to tell him which of his men was a police informant, since he was convinced that his codes were being read.³⁴

Cooperation between the two countries was tightened and communications improved at a conference held in Halifax on 27 July 1938, at which it was agreed to bring the U.S. consul general in Halifax and the vice consul in St. Pierre et Miquelon more fully into the picture.³⁵

Later in the year, the RCMP suggested sending two of its personnel to New York for training in cryptography. The two men proposed had some experience in the field, but the commanding officer of the RCMP Marine Division felt that this training would improve their proficiency. The request originated with him and was addressed to the intelligence officer of the New York Division of the Coast Guard, Commander Yeandle. Lieutenant Frank E. Pollio, who had become the acting intelligence officer of the Coast Guard upon the departure of Commander Parker, examined the provisions of the 1925 treaty between the U.S. and Canada concerning the suppression of smuggling and reached the conclusion that extension of cooperation into this field required the permission of higher authority. The sending of Helgren to Halifax in 1935 had been kept on a very unofficial basis with the idea that, after he gave the RCMP a start in the field, they would continue on their own. Pollio suggested that a formal request be made by the RCMP to the commandant of the Coast Guard, who could then present the matter to the State Department. Yeandle had pointed out that many of the RCMP radio operators were civilians from the Department of Transport, many of whom had not been investigated and some of whom were former rumrunner radio operators. It would therefore be necessary, if the training were provided, that the Canadian trainees be regular members of the RCMP. There are no records available indicating that the training ever did, in fact, take place.³⁶

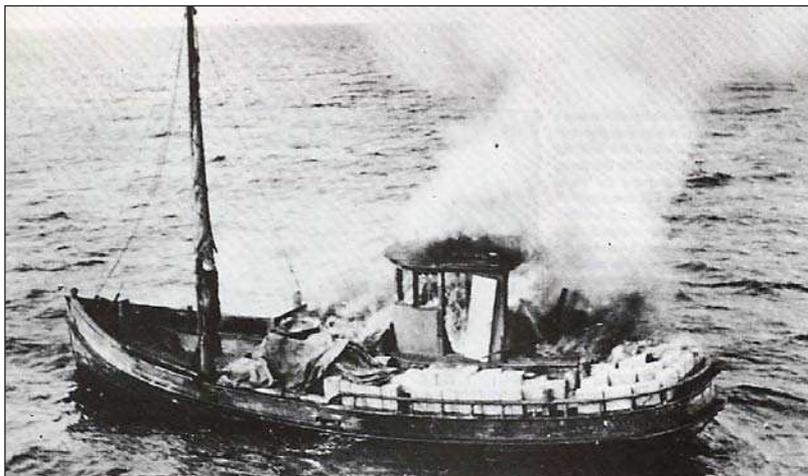
A “rummy”
kept trying to
get RCMP
officials to tell
him which
of his men
was a police
informant ...

New Duties for the Intelligence Division

By November 1938 offshore liquor smuggling had ceased almost entirely. In 1936 the Coast Guard had begun to cooperate with the Bureaus of Customs and Narcotics to suppress the smuggling of illegal drugs into the United States. Also after 1936, the Cryptanalytic Unit was tasked by the secretary of the treasury with developing cryptographic communications for his office and for the law-enforcement bureaus. As a consequence, the duties of the Intelligence Division were not reduced with the abatement of liquor smuggling.³⁷

After the establishment of the Money Stabilization Board under the Treasury Department, the Cryptanalytic Unit provided this board with information on foreign exchange control; after 1938 it maintained a close watch for any clues in radio traffic pointing to sudden changes in the international situation. In August 1939 the unit was transferred to the Communications Division of the Coast Guard, where it operated in response to requests from the Intelligence Division.

Organized smuggling had practically disappeared by 1939, and for several months before the German invasion of Poland, the Coast Guard had been assigned to monitor the shipborne communications of potential belligerents, watching for, among other things, indications of possible entry into the war by other nations. This was done to forewarn Treasury, which could then take appropriate actions concerning the freezing of funds.³⁸



The crew of the rum boat *Linwood* set fire to the vessel to destroy evidence of their illicit trade. (From *Rum War: The U.S. Coast Guard and Prohibition* by Donald L. Canney)

The Approach of War

With the outbreak of war in Europe, the Treasury Department's statutory responsibility for enforcement of U.S. neutrality brought on a number of new responsibilities for the Coast Guard. Among these were the sealing of communications equipment on all belligerent vessels entering U.S. ports and the prevention of communications concerning shipping of the movement of belligerent ships, communications which would compromise the neutrality of the United States.

In monitoring these communications, USCG stations reported repeatedly that they were intercepting traffic similar to that of the old rumrunner transmitters. Solution of this traffic showed that it was the communications of Axis agents. Intercept and analysis of these communications were to constitute a major part of the Coast Guard contribution to the intelligence effort in World War II.³⁹

Notes

1. Federal Communications Commission, "The Radio Intelligence Division of the Federal Communications Commission," August 1943, 12-13. (This rather self-serving report was issued by the FCC in answer to the charges made by the U.S. House of Representatives Committee to Investigate the Federal Communications Commission, better known as the Cox Committee.) Information on the 1924 appropriation is from T. Michael O'Brien, *Guardians of the Eighth Sea: A History of the U.S. Coast Guard on the Great Lakes*, Ninth Coast Guard District Command, Government Printing Office 1976.
2. Testimony of George E. Sterling, Chief of the FCC Radio Intelligence Division, before the House Committee to Investigate the Federal Communications Commission, August 1943, pp. 3-4 of his manuscript.
3. Letter from Commander Yeandle to Commander Stanley V. Parker, Chief Intelligence Officer, USCG, 7 November 1934.
4. Malcolm F. Willoughby, *The Rum War at Sea* (Washington, DC: Government Printing Office, 1964), 109.
5. The description of the establishment of "Radio New York" is based on the correspondence of Commander Charles S. Root, intelligence officer of the Coast Guard, with Robert Iversen, employee of the *New York Times* radio station, October 1925 to March 1926. This and other documents cited are in the National Archives Record Group 26, "Records of the U.S. Coast Guard Intelligence Division." Box 53, "Correspondence Relating to New York in 1925."
6. Memorandum from Lieutenant Commander F. J. Gorman to the Commandant, USCG, "Radio Intelligence; Establishment of Cryptanalytic Section at Headquarters and Intercept Stations in the Field," 10 October 1930; and 26 August 1982 interview with Dr. Solomon Kullback, NSA Oral History Collection.
7. Report from Forest F. Redfern to Arthur Batcheller, U.S. Supervisor of Radio, 2nd Radio District, New York, 26 April 1930.

8. Cable from Assistant Secretary of the Treasury Lowman to Forest F. Redfern, 17 October 1929.
9. Letter from Commander Yeandle to Dr. C. B. Jolliffe, 3 December 1934.
10. Letter from Dr. Jolliffe to Commander Yeandle, 12 December 1934.
11. Coast Guard Lieutenant Frank M. Meals; "Report of a Meeting Held in Room 633, National Press Building, on August 18, 1930, at 10:00 A.M., for the Purpose of Formulating a Definite Plan of Procedure Regarding the Enforcement of Prohibition Laws and the Use of Radio in Connection with the Rum-Running Activity," 1-4.
12. *Ibid.*, 4-12 and addenda.
13. Elizebeth Smith Friedman, born in 1898, was the first woman in the United States to engage professionally in technical cryptanalysis. She received her start in this field in 1916 when she was hired by George Fabyan to work in his Riverbank Laboratories in Geneva, Illinois. Her job was to aid in the research attempt to read "Baconian" cipher and thus prove that Francis Bacon wrote Shakespeare's plays and sonnets. At Riverbank she met and married, in 1917, William F. Friedman, head of the Department of Genetics at Riverbank Laboratories. She is sometimes credited with having first interested her husband, who later became the head of the War Department's Signal Intelligence Service, in cryptanalysis. Mrs. Friedman was the Treasury Department's leading cryptanalyst during Prohibition and the immediate pre-World War II period, and she became possibly the world's most famous cryptanalyst during that period as a result of her court appearances as an expert witness for the prosecution.
14. Elizebeth S. Friedman, "History of Work in Cryptanalysis, April 1927 to June 1930," undated, 1-3. [Portions reprinted in the *Cryptologic Quarterly*, 1998, Vol. 17, No. 4, 119-125.]
15. *Ibid.*, 3.
16. *Ibid.*, 4.
17. *Ibid.*, 4-5.

18. Memorandum from F. J. Gorman to Commandant, USCG, 10 October 1930, 1.
19. Ibid., 1-4.
20. Ibid., 5.
21. Ibid., 5-6, and Elizebeth S. Friedman, "Memorandum upon a Proposed Central Organization at Coast Guard Headquarters for Performing Cryptanalytic Work," 30 November 1930.
22. Elizebeth S. Friedman's "Memorandum upon a Proposed Central Organization," 30 November 1930; Leah Stock Helmick, "Key Woman of the T-Men," *Reader's Digest*, September 1937; Willoughby, *Rum War at Sea*, 128-30; and Howard V. L. Bloomfield, *The Compact History of the United States Coast Guard* (New York: Hawthorne Books, 1966), 151-152.
23. This according to a memorandum from Lieutenant Commander Gorman to the Commandant, USCG, "Work of the Cryptanalytic Section of Headquarters for Other Branches of the Government," 8 July 1933.
24. Letter from Colonel A.W.W. Woodcock to the Secretary of the Treasury, 28 June 1933; Gorman's 8 July 1933 memorandum to the Commandant; and Willoughby, *Rum War at Sea*, 112.
25. Memorandum from Lieutenant Commander Gorman to Mr. T. J. Gorman, Deputy Commissioner of Customs, Washington, DC, 22 June 1933 (classified), and Kullback NSA Oral History interview, 1982.
26. Memorandum for the Secretary of the Treasury from Rear Admiral R. R. Waesche, Commandant, USCG, 16 November 1938.
27. "Preventive and Investigative Program Agreed upon in the *Reidun* Case," 12 November 1935 (classified); memorandum from the Commandant, USCG, "Special Investigation," 14 November 1935 (classified); and memorandum from the Commandant, USCG, to the Commander, New York Division, "*Reidun* Cargo, Operations and Investigation Relative Thereto," 13 November 1935 (classified).

28. Memorandum of Conversation with Mr. Graves, 3 December 1935 (classified).
29. Memorandum from Chief Intelligence Officer, USCG, to Intelligence Officer, New York. "Black Radio Intercepts," 15 March 1935.
30. Memorandum from Commander S. S. Yeandle, "False Statements in Inward Reports of British Motor Vessels," 27 January 1936. The quote from Master Lohnes' report and the details of the true voyage of the *Miserinko* are from the same memorandum.
31. Memorandum from Commander Yeandle, "Proposed Conference at Ottawa between Treasury Department and RCMP Officials," 27 January 1936.
32. Memorandum from Commander Yeandle to the Chief of the Division of Intelligence, "Royal Canadian Mounted Police; cooperation with," 15 June 1936.
33. Letter from Commander Parker to Commander Yeandle, 13 June 1936 (classified).
34. Memorandum from Yeandle to Chief, U.S. Coast Guard Division of Intelligence. "Information Regarding Smuggling off Nova Scotia," 14 August 1936.
35. Memorandum from Clinton K. MacEachran, U.S. Consul General, Halifax, NS, to the Secretary of State, "Conference at Halifax Concerning Liquor Activities," 30 July 1938 (classified).
36. Letters from F. J. Meade, Commander "H" Division, RCMP, to Commander S. S. Yeandle, "Re: Cryptography-RCMP Marine Section," 27 September and 25 October 1938 (classified). Letter from Yeandle to Pollio, 18 October 1938: memorandum from Intelligence Officer, New York Division, to Chief Intelligence Officer, "RCMP Request for Training of Personnel," 18 October 1938; letter from Pollio to Yeandle, 24 October 1938 (classified); and memorandum from J. F. Jacot, Acting Intelligence Officer, New York Division, to Chief Intelligence Officer, "RCMP Personnel; Instruction in Cryptography," 1 November 1938.

37. Memorandum for the Secretary of the Treasury from the Commandant, USCG, 16 November 1938.
38. Memorandum from Commander J. F. Farley, USCG, to Commander John R. Redman, Office of Naval Communications, 6 March 1942 (classified).
39. Ibid.

*Related
Publications*

The Friedman
Legacy: A
Tribute to
William and
Elizebeth
Friedman

The History of
Traffic Analysis:
World War I-
Vietnam

