

W.P.A T.DIV.

WAR DEPARTMENT
OFFICE OF THE CHIEF SIGNAL OFFICER
WASHINGTON

November 16, 1931

MEMORANDUM TO: Executive Officer.

Attached hereto is Mr. Friedman's report on his investigation, for the Department of State, of the cipher machine submitted for their consideration by the International Telephone and Telegraph Company. It is recommended that this report be forwarded to the Department of State, and that the following be used as a basis for a letter of transmittal to be signed by the Secretary of War:

Reference is made to your letter of October 29, 1931, and this Department's reply of November 9, 1931, with regard to the assistance to be rendered by Mr. W. F. Friedman, Cryptanalyst in the Office of the Chief Signal Officer, in your investigation of the cipher machine submitted for your consideration by the International Telephone and Telegraph Company. The Department is pleased to forward herewith the report rendered by Mr. Friedman as a result of his investigation of the degree of cryptographic security afforded by this machine.

Should any further assistance or advice in this connection be necessary or desirable, this Department will be very glad to cooperate with your Department in whatever manner possible.

D. W. Crawford,
Major, Signal Corps.

Attached;
Report

Report on Investigation for the Department of State
of the cipher machine submitted for their consideration by the
International Telephone and Telegraph Company.

1. Pursuant to authority contained in the 3d Indorsement, dated November 4, 1931, to a letter dated October 29, 1931, from the Department of State to the Secretary of War, a study was initiated to determine only the degree of cryptographic security afforded by the above-mentioned cipher machine.

2. A theoretical method of solving cryptograms produced by this machine, without possession of either the machine or a knowledge of the particular key settings employed in their production was quickly established.

3. Two sets of cryptograms were requested for test, as set forth in the attached Exhibit 1. The messages were delivered to this office under sealed cover and were received at the times indicated on the photostatic copies, Exhibits 2 to 9, inclusive.

4. As regards the first set of messages, the only information given by the State Department was that each message had been enciphered by a different 10-letter keyword. Attached hereto, labeled Exhibits 10 to 13, inclusive, are the solutions to Messages 1, 6, 7, and 8, of the set of 12 messages furnished as Set A. There seemed to be no point in solving all the messages of this set, it being deemed satisfactory to demonstrate, by solving any four of them, the possibility of solving any messages of this category, all with independent initial key settings. It may be stated that, with practice, any message of this type may be solved within an hour or less.

5. As regards the second set of messages, Set B, the only information given by the State Department was that these four messages were the 3rd, 4th, 5th and 6th of a series enciphered from an initial setting known only to them. Attached hereto, labeled Exhibits 14 to 17, inclusive, are the solutions to all four messages thus furnished. It may be stated, as regards this method of employing the machine, that if a series of 10 or more messages is available, the determination of the proper initial setting for the series can be reached within 24 hours, possibly only 12 hours. From that point on, however, all messages can be deciphered as rapidly as the legitimate correspondents can decipher them, providing a duplicate machine is available. If no duplicate machine is at hand, then the question of quick translation becomes one merely of available clerical personnel.

William F. Friedman,
Cryptanalyst,
Chief of Signal Intelligence Section.

Attached:

Exhibits 1 to 17, inclusive.

MESSAGE NO. 1 OF SET A

NIA

DATED NOVEMBER 6, 1931.

RECEIVED 12:40 P.

SECRETARY OF STATE,

WASHINGTON.

THIS NO FIGURES ON THE SIDE OF RUSSIAN THIS YEAR GRAIN
CROP HAVE YET BEEN RELEASED, OFFICIAL SPEAKERS CITED IN DRAVDA
OF NOV 2ND AND 3RD ANNOUNCED THAT THERE HAD BEEN A SERIOUS
DROUGHT ...

+ COLB

(Solving time: 40 minutes to get first word "THIR".)

MESSAGE NO. 6 of SET A

NOVEMBER 5, 1931.

S. F. .

AUTOMATIC

MONTIVIDEO (URUGUAY)

ARE FROM DEPART IN EARLY AND TO THE LOCAL RETIREMENT?

STINEON

(Solving time: 30 minutes)

MESSAGE NO. 7 OF SET A

NOVEMBER 5, 1981.

6 PM.

AMERICAN CONSUL,
TOKYO (JAPAN)

IN EMERGENCY OF GRILL AUTHORIZED IS PLACED ON NORTHEAST WALL IN
JAMB OF ARCH LEADING TO STAIRWAY FROM THE NORTHERLY CORNER OF LOBBY
NO. 17, GRILL TO SWING INTO LOBBY.

ATTENTION

(Solving time: Approximately 1 hour for complete reading.)

MESSAGE NO. 2 OF SET A

NOVEMBER 5, 1931

5 P.M.

TO ALL AMERICAN DIPLOMATIC AND CONSULAR OFFICES:

PRESIDENTS PROCLAMATION NOVEMBER SECOND DIRECTS DISPLAY

UNITED STATES FLAG ALL GOVERNMENT BUILDINGS ARMISTICE DAY NOVEMBER

ELEVENTH. TAKE ACTION ACCORDINGLY.

STIMSON

(Solving time: First word in 38 minutes; for complete reading 1 hour
and 20 minutes.)

MESSAGE NO. 3 of SET B

OCTOBER 30, 1931

7 P.M.

AMEMBASSY,

SANTIAGO, CHILE

ONE. CONTINGENT EXPENSE ALLOTMENT INCREASED \$305 TO PROVIDE
FOR REPAIRS RECOMMENDED YOUR DESPATCH 974. TWO. YOUR DESPATCH
952 ANSWERED BY MAIL INSTRUCTION OCTOBER 6.

TIMSON

MESSAGE NO. 4 of SET B

OCTOBER 30, 1931

7 P.M.

ASUNCION,

ASUNCION, PARAGUAY

EMBASSY AT RIO DE JANEIRO REPORTS THAT VASCO NOLLOS IS ON BOARD
STEAMER SOUTHERN CROSS WHICH LEFT THAT PORT ON OCTOBER 29 FOR NEW YORK.

SIMPSON

MESSAGE NO. 5 OF SET B

BERGEN

DATED OCTOBER 30, 1931.

RECEIVED 6:29 P. M.

SECRETARY OF STATE,

WASHINGTON.

NAVTOVA* MARSTEINEN* LIGHTHOUSE AND BACK TO BERGEN TODAY.

WEATHER DID NOT PERMIT TRANSFER OF MEN IN 307 BOAT BY TUGBOAT
AND SUBMARINE.

SMITH

* These names are not certain.

MESSAGE NO. 6 OF SET B

PERMANBUO

DATED OCTOBER 31, 1931

RECEIVED 7:34 A.M.

SECRETARY OF STATE,

WASHINGTON.

ALL AMERICAN RESIDENTS AND KNOWN TRANSLATE IN PERMANBUO

SAFE AND WELL.

VAN DEN AREND

MESSAGE NO. 1 of SETA

RIGA

DATED NOVEMBER 6, 1931.

RECEIVED 12:40 P. M.

SECRETARY OF STATE,

WASHINGTON.

WHILE NO FIGURES ON THE SIZE OF RUSSIAS THIS YEAR GRAIN
CROP HAVE YET BEEN RELEASED, OFFICIAL SPEAKERS CITED IN PRAVDA
OF NOV 2ND AND 3RD ANNOUNCED THAT THERE HAS BEEN A SERIOUS
DROUGHT ♦♦♦

COLE

(Solving time: 40 minutes to get first word "WHILE")

NOVEMBER 5, 1931.

6 PM.

AMLEGATION

MONTEVIDEO (URUGUAY)

ARE FLOOR DRAINS IN BATH AND TOILET LOCAL REQUIREMENT?

STIMSON

(Solving time: 30 minutes)

OFFICE
CHIEF SIGNAL OFFICER
NOVEMBER 5, 1931.

1931 NOV - 11 - PM 4 45 PM

AMERICAN CONSUL,

TOKYO (JAPAN)

INSTALLATION OF GRILL AUTHORIZED IF PLACED ON NORTHEAST WALL IN

JAMB OF ARCH LEADING TO STAIRWAY FROM THE NORTHERLY CORNER OF LOBBY

No. 17, GRILL TO SWING INTO LOBBY.

STIMSON.

(Solving time : Approximately 1 hour for complete reading)

REF ID: A4148512
MESSAGE #8 of SET A

TO ALL AMERICAN DIPLOMATIC AND CONSULAR OFFICES:

PRESIDENTS PROCLAMATION NOVEMBER SECOND DIRECTS DISPLAY
UNITED STATES FLAG ALL GOVERNMENT BUILDINGS ARMISTICE DAY NOVEMBER
ELEVENTH. TAKE ACTION ACCORDINGLY.

STIMSON OFFICE
CHIEF SIGNAL OFFICER

1931 NOV - 12 - AM 10:20

First word in 38 minutes; for complete reading
(Solving time: 1 hour and 20 minutes) ~~for complete reading~~