TOP SECRET - U. S. EFES ONLY

AFSA-OOT/ef

TOP SECRET - U.S. LYES ONLY

2 July 1951

MEMORANDUM FOR: Chief, AFSA-02

EO 3.3(h)(2) PL 86-36/50 US 3605

SUBJECT: Hagelin machines, study of

Reference: T/S AFSA memo to Director, CIA, serial 000154,

dated 25 June 1951, subj: Negotiations with Mr.

Hagelin

- 1. In view of paragraph 2 of the reference, it is desired that you review AFSA's position with respect to its cryptanalytic potential in handling traffic enciphered on crypto-machines manufactured and sold by A. B. Cryptoteknik (the Hagelin Cryptograph Company) of Stockholm and submit on or before 1 September 1951:
- a. An operations plan for intensifying AFSA's present efforts to solve the traffic enciphered by the current Hagelin machines:

- 2. The plans should be carefully integrated and should indicate:
- a. The estimated approximate number of additional personnel that may be required and how they would be employed;
- b. The additional or new cryptanalytic machines or aids that may be required to assist in solution.
- c. The estimated approximate amount of additional space and funds required for a. and b.
- 3. It is desired that AFSA-O3, AFSA-OOT and the Chief, AFSA-14 assist in this project by participating in conferences pertaining thereto and in the preparation of the final plans. A preliminary report is desired not later than 31 July 1951.

EARL E. STONE

Rear Admiral, U.S. Navy

Director, Armed Forces Security Agency

TOP SECRET - U. S. EYES ONLY

Copy to:

AFSA-00A AFSA-03

AFSA-OOB AFSA-11 AFSA-OOC AFSA-12 AFSA-OOT AFSA-14

TOP SECRET ACORN

U. S. EYES ONLY

22 May 1951

MEMORANDUM FOR: See Distribution List

SUBJECT:

Negotiations with !r. Hagelin

ENCLOSURE:

Draft Report by William F. Friedman, Technical Consultant, to DIRAFSA on the Aktiebolaget Cryptoteknik, Stockholm, Sweden (The Hagelin

Cryptograph Company)

1. A meeting has been called by DIRAFSA for the purpose of discussing the enclosure and assisting DIRAFSA in establishing the position he should take at this time in regard to the subject negotiations.

- 2. The meeting will be held in the AFSA Conference Room (19-125), on 23 May 1951 at 1400 hours.
- 3. DIRAFSA desires that you review the enclosure in advance of the meeting so as to be prepared to participate in the discussion.

4. The enclosure should NOT be circulated within your office or division.

LHHIKK

AFSA-OOT

AFSA-COA

AFSA-OOB AFSA-OOC

Copy 4

AFSA-02

(Capt. Holtwick) (!fr. Rowlett)

AFSA-021

(Capt. Harper)

AFSA-03

AFSA-O4A (Dr. Sinkov)

AFSA-41

(Mr. Austin)

AFSA-11

(Capt. Goodwin)

AFSA-14

(Capt. Dyer)

Copy for: DIRAFSA

U. S. EVES ONLY

Right III) - Asmed

2

TOP SECRET

U. S. EYES ONLY

GODE WORD MATERIAL

U. S. EYES ONLY

TOP SECRET

TOP SECRET ACORN U. S. EYES ONLY

REPORT BY WILLIAM F. FRIEDMAN, TECHNICAL CONSULTANT, TO THE DIRECTOR, ARLED FORCES SECURITY AGENCY ON THE AKTIEBOLAGET CRYPTOTEKNIK, STUCKHOLM, SWEDEN (The Hagelin Cryptograph Company) dated 22 May 1951

EO 3.3(h)(2) PL 86-36/50 USC 3605

INDEX TO CONTENTS

	Paragraphs	Pages
REPORT TO THE DIRAFSA	1-4	1-3
THE PROBLEM	1	1
FACTS BEARING ON THE PROBLEM AND DISCUSSION	2	1
CONCLUSIONS	3	1-3
RECOLLENDATIONS	4	3
ENCLOSURE "A" (TO BE PROMULGATED)		44
ENCLOSURE "B"		5-20
INTRODUCTORY RELEARAS	1-2	5 - 6
THE COMINT POSSIBILITIES	3- 8	6-12
	4-5	6-10
	6	10-11
	7-8	11-12
THE COESEC POSSIBILITIES	9	12-13
	10	14-15
Assessment of Advantages, disadvantages, at Risks	ND 11 - 18	15-19
Final Remarks	19-22	1 9- 20
Annex 1		21-23
ENGLOSURE "C" Annexes 1-5 (not included in document)	1-10	24-28
ENCLOSURE "D"		29-34

4

U. S. EYES ONLY

TOP SECRETAGORN

EO 3.3(h)(2) PL 86-36/50 USC 3605

REPORT

U. S. EYES ONLY

BY

WILLIAM F. FRIEDMAN

TECHNICAL CONSULTANT

TO THE

DIRECTOR, ARMED FORCES SECURITY AGENCY

ON THE

AKTIEBOLAGET CRYPTOTEKNIK, STOCKHOLM, SWEDEN (The Hagelin Cryptograph Company)

References:

- (a) USCIB 13/157 (b) AFSAC: 66/15 (c) AFSAC: 66/20 (d) AFSAC: 66/23

THE PROBLEM

	1,	a.	To determine the advantages, disadvantages, and risks to the
U.S.			
	•		
		h	To assess those advantages, disadvantages, and risks;
		υ.	10 aspess more entannakes, drammanakes, am travs,
		c.	To determine
and	-		
		d.	To evaluate and render an opinion as to the suitability of a

FACTS BEARING ON THE PROBLEM AND DISCUSSION

2. See Enclosure "B".

CONCLUSIONS

- 3. It is concluded that:
- It would be to the advantage of the U.S. Government if the proposed new or improved Hagelin cryptoequipments were prevented from being developed, manufactured, and sold commercially on the open market.

U. S. LYES ONLY

TOP SECRET ACORN

	TOP	SECRET	ACORN U.S. EYES O

			nd technical know-how of Hagelin nication security equipment for
			NATO requirements, as well as
	for the possible use		
acc	e. Assessment o	f the advantages, d	ileadvanteges, and risks warrants
O 3.3(h)(2) ₋ 86-36/50 U	SC 3605	2	U. S. EYES ONLY

TOP SECRET ACORN

TOP SECRET ACORN U. S. EYES ONLY

g. The cost of the contemplated of	ical, \$700,000, would not be
excessive, in view of its potential benefit	te to the U.S. Government.
h. The Director, Armed Forces Sec	
ard this Report to the Director of Central	I Intelligence and to the other
emera of A2CTD for fuldimented.	
j. If a deal is consummated, this	s project should be given a c
ame and be surrounded with COMINT special	security restrictions.
RECOMMENDATIONS	
A. It is recommended that.	<i>₹</i>
4. It is recommended that: a. Enclosure "A" be forwarded to	the Director of Central Inte
	the Director of Central Inte
a. Enclosure "A" be forwarded to	
a. Enclosure "A" be forwarded to ence; b. This report be forwarded to US	
a. Enclosure "A" be forwarded to ence; b. This report be forwarded to US	
a. Enclosure "A" be forwarded to ence; b. This report be forwarded to US gencies other than CIA and AFSA;	CIB for the information of m
a. Enclosure "A" be forwarded to ence;	CIB for the information of m

EO 3.3(h)(2) PL 86-36/50 USC 3605

A C EALS UMIA

REF ID: A60611

RESTRICTED

FROMULGATION OF ENCLOSURE "A" WILL BE EFFECTED BY THE DIRAFSA FOLLOWING THE MEETING ON WEDNESDAY, 23 MARCH 19517

L

Enclosure to AFSA-OOT Staff Study dtd 22 May 1951

ENCLOSURE "A"

RESTRICTED

TOP SEREDIRAGO ALORN

EO 3.3(h)(2) PL 86-36/50 USC 3605

FACTS BEARING ON THE PROBLEM AND DISCUSSION

U. S. EYES ONLY

INTRODUCTORY REMARKS

- 1. At the Sixty-first Meeting of USCIB, held on 9 March 1951, a statement regarding certain negotiations with Mr. Boris C.W. Hagelin, hereinafter referred to as Hagelin, who is sole owner of the Hagelin Cryptograph Company (HCC), was presented by a representative of the Armed Forces Security Agency (AFSA), on behalf of the USCIB Coordinator. A brief history of the negotiations with Hagelin forms Enclosure "C" to this report; in Reference (a) will be found the minutes dealing with this item of the agenda of the meeting.
- 2. a. These negotiations have now resulted in a draft memorandum of agreement, a copy of which forms Enclosure "D" of this report. Briefly, under this draft, for the payment of \$700,000 plus a "best efforts" undertaking with respect to the surplus commercial sale of M-209 machines. the

taking with	respect	to	the	surplus	commercial	sale	of	M-209	machines,	the
U.S. would										
\ \										
L										

U. S. EYES ONLY

ENCLOSURE *B*

		TO	P SI	ECR	ET	AC)RN	- Ú.	o. EYES	ONLY
Т										_
										ľ
	b.	Each of	these c	ategorie	es of po	tential	benefits	will now	r be	
stu	died in d	ietail.								

- b. The HCC is now the only firm in the world which develops, manufactures, and commercially sells cryptographic equipment. The firm is well-established and has attained a position of importance in the COMSEC equipment field. Since the end of hostilities in World War II, Hagelin has made a number of inventions and is contemplating developing, manufacturing, and selling improved models of present Hagelin machines and certain new types of machines. These will be briefly described in the next paragraph, and discussed only insofar as concerns their bearing on the problem under consideration.
- 5. a. The HCC is preparing to manufacture and sell an improved model of the present C-38 machine, in which not only the new keying mechanism but

EO 3.3(h)(2) PL 86-36/50 USC 3605

ENCLOSURE *B*

TOP SECT	
also several additional complicating	features would be incorporated.
	of COMINT would probably be important, as
discussed below:	
	<u> </u>
	ploy the new keying mechanism as a basis
for the control of the cryptographic	
C-30 ndr arec of several new chose of	of cipher machines. In particular, the
	mista the new bourse
	using the new keying
mechanism. The possible effects are	discussed below:

EO 3.3(h)(2) PL 86-36/50 USC 3605 EO 3.3(h)(2) PL 86-36/50 USC 3605

enclosure *B*

TOP SECRET ACORN

	It is possible that two or three years
will be required	for development and that several years will elapse
before this machi	ine would be available for sale.
(2) With rega	ard to
	At present the HCC has a development model
in which the new	keying mechanism has been incorporated. However,
Information to a	It is not possible, without more detailed
	evaluate the security of this new machine. Reveloped a model of the C-38 which uses a perforated
	l instead of the present "pin and lug" keying mechanism
,	tape will produce a "one-time system" and, provided the
•	e, messages enciphered on such a machine will be unsolvented be also been developed for producting the tapes
to be used with this m	erator has also been developed for producing the tapes
bo be ased with only as	20111103
	lso developed a machine for producing "one-time pads"
d. The HCC has a	TOO GOADTON O MICHINIO TAT NEGROUND AND AND LONE
	200 dovozopod u maormio zon broducing one emie been
	200 dovozopod a maormio zon producing one emile pode
of the numerical type	
of the numerical type	
of the numerical type for "literal pads". The good but further study	he principles underlying the model already produced are and more details are necessary before a firm security
of the numerical type for "literal pads". The good but further study	he principles underlying the model already produced are and more details are necessary before a firm security
of the numerical type for "literal pads". The good but further study evaluation can be made.	he principles underlying the model already produced are and more details are necessary before a firm security
of the numerical type for "literal pads". The good but further study evaluation can be made, provided the machines a	he principles underlying the model already produced are and more details are necessary before a firm security
of the numerical type for "literal pads". The good but further study evaluation can be made, provided the machines askeying sequence.	he principles underlying the model already produced are and more details are necessary before a firm security
of the numerical type for "literal pads". The good but further study evaluation can be made. provided the machines askeying sequence. e. It is true that	he principles underlying the model already produced are and more details are necessary before a firm security.

TOP SECRET ACOR: 33(h)(2)

TOP SECRET ACOR: 350 USC 3605

REF ID: A60611

TOP SECRET ID: A60611RN

ntinuation of present sources.	
Gathering of cryptologic technical intellig	ence
6. a. During the past 25 years Hagelin, in exploi	ting the products
the HCC, has established contact with the cryptologic	
moies of many governments. It appears that some of	
ch Hagelin has dealings are not so security-minded a	_
tain general or specific matters are disclosed to his	•
out which there is no secrecy. He has thus been able	to gather not only
eral ideas with respect to the size and activities of	f the organizations,
ir attachment, etc., but also specific information as	s to chief personali-
s, equipment, practices, requirements, etc.	
c. The HCC has agencies in several countries in	each hemisphere.
se also serve as information-gathering elements.	•
BE SISO SOLAR SE THINIBUTION NEWSTAIN BIRMINES"	

EO 3.3(h)(2) PL 86-36/50 USC 3605

U. S. EYES ONLY

TOP SECRE	TT ANCORNU. S. EYES ON
e. It may be possible to gain te	ochnical intelligence applicable to
the cryptologic agencies of U.S.S.R. sate	ilite countries. In this connection,
repre	sentatives of the U.S.S.R. have
isited the HCC since 1946, desiring info	rmation as to new HCC developments
nd products.	
	the RCC frequently receives requests
or specific developments.	
	
7. a. The use of cipher machines for	r COMBEC purposes is steadily increa-
ing with greater mechanization of office	work in general. If the governments
h In this connection it should	be noted that not only does the HCC
olicit business, but also some business of	
overnments desiring specific developments	
- 100 minutes contratiff sheary to do 1070 histories	
<u> </u>	U. S. FYFS ANLY
(h)(0)	o. rico unti

EO 3.3(h)(2)
PL 86-36/50 USC 3605 TOP SECRET ACORNAL PL 86-36/50 USC 3605

TOP SECRET ACORN U. S. EYES ONLY

8. The potential COMINT benefits mentioned above are those which are more or less obvious. It is impossible to anticipate or prognosticate all the COMINT benefits

The disadvantages and/or risks inherent in such an arrangement will be treated in paragraphs 10-15 below.

THE COMSEC POSSIBILITIES

9. a. Hagelin has proved himself a clever engineer and designer, as well as a cryptographer with some appreciation of the technical intracacies and pitfalls in the COMSEC field.

Reference has been made to the new keying mechanism and other improved features for the modified L-209 (or C-38) machine. Although aFSA is still studying the prototype improved C-38 machine submitted by Hagelin early in 1951, it is already permissible to state that it represents considerable improvement over the present C-38 (or M-209). AFSA's present CUMSEC interest in this improved model lies in the possibility of incorporating the new keying mechanism and certain other recently proposed additional new features in an AFSA development called the Mechanical Cipher Machine (MCM). which is being designed specifically for the U.S. Marine Corps and for limited use by the U.S. Navy. It is quite probable that the original U.S. contracts with Hagelin (those of 1941/42) permit the U.S. to use his recent improvements on the M-209 without additional recompense to him; it is also true that Hagelin has indicated he would not contest this point. However, it must be noted that the U.S. contemplates using those improved features not in the M-209 but in the MCM -- a quite different machine. Whether this changes the patent situation is not clear. In any case, however, Hagelin's consultative assistance in working out the incorporation of these improvements in the MCM, and in other special cases, would probably be quite useful.

c. When the AFSA development known as AFSAM-7 has been completed and the machines have been procured and distributed to holders, our large stock of M-209s will become available for other purposes or usages. If the surplus M-209s were converted to modified M-209s, principally perhaps by

EO 3.3(h)(2) PL 86-36/50 USC 3605 U. S. EYES ONLY

TOP SECRET ACORN U.S. EYES ONL
incorporating the new Hagelin keying mechanism, they might be given to NATO
countries for use in low-level NATO or low-level national communications.
Possibly the M-209 might be used in encrypting NATO weather traffic, We
probably have a sufficient stock to supply all NATO armed forces with these
machines. The HCC might be useful in working out the incorporation of the
improvements, although it has been stated by Hagelin that, from an engineering
point of view, it would be more practicable to build machines anew rather
than attempt to modify the present ones. Perhaps additional work along these
lines will demonstrate the feasibility of incorporating the improvements, or
certain of them, in our present M-209s.
f. As indicated in connection with the potential CAMINT benefits,
it is not possible to foresee all the potential Collision benefits
TA TO TAR INDUTATE AN TAYABBO ETT AIR PARENTATE ANIMAN POLISTERS

EO 3.3(h)(2) PL 86-36/50 USC 3605

U. S. EVES ONLY ENCLOSURE "B"

13

TOP SECRET ACORN 6. 3. FYES	ANI v
	MLT
from the nature of certain risks that must be faced. The risks are three-fold:	
(1) Possible waste of money. The deal would cost \$700,000 and	
/1/ 10802070 #0980 or world. The deat would ones Assolves and	7
and (b) unforeseen contingencies might arise to	j
prevent, obstruct, or reduce its efficacy, there would be the risk that	
the money would have been spent in vain. This risk is discussed in	
detail in paragraphs 11-14 below.	_
(2)	
This risk is discussed in detail in paragraph 15	
below.	_
in detail in paragraph 16 below.	J
b. There is another apparently significant but in reality unimportant	
disadvantage the placing of a	
limitation on U.S. disposition of surplus H-209 machines.	
"undertakes to use its best	
efforts to prevent the surplus sale or other disposition for private or commer-	
cial use and/or resale of any M-209 machines now owned by the United States or	
any Agency thereof." This condition, while appearing to be a limitation on U.S.	
rights, is really in furtherance of U.S. interests.	•
it is existing policy not to permit these	
machines to be sold as surplus equipment. Annex 1 to this Enclosure has a	
bearing on this point.	
a. One other disadvantage may be mentioned, viz., the additional	
administrative burdens which must be assumed by the U.S. if full advantage is to be taken	
TO AN ACTUAL	

EO 3.3(h)(2)
PL 86-36/50 USC 3605 TOP SECRET ACOR PELOSURE *B**

TOP SECRET ACORN U. S. EVES ONLY

study reports, etc. This would involve additional personnel, not many, but perhaps two or three persons.

ASSESSMENT OF ADVANTAGES, DISADVANTAGES, AND RISKS

11. a. With reference to the risk mentioned in paragraph 10.a(1), it
is clear that as regards the potential benefits which might flow from the
if there was certainty as to their realization, a
would be well worth under-
taking, even at considerable cost. However, it is obvious that not only
can there be no such certainty, but also that the probability of reaping the
potential benefits is undeterminable, since much would depend upon:
12. a. With regard to the factor of integrity, it can be stated with some assurance that in previous dealings with Hagelin he has demonstrated
his trustworthiness and good faith. All who have talked with him agree that,
although a good trader, he can be relied upon to execute, in good faith and
to the fullest extent of his ability, the terms of any agreement to which he
is a willing party. As regards the integrity of Hagelin Junior, there is
not only no reason to entertain doubts on this score but also the parental
control exercised over him is such that for the term of the agreement at least there should be no difficulties.
b. With regard to other personnel of the HCC, we have the assurance
of the Hagelins that none of them, save, possibly, Mr. C.E. Lindmark, is
capabale of inventing or developing new ideas in the CUMSEC equipment field.

EO 3.3(h)(2) PL 86-36/50 USC 3605 1. S. PALC CHIA

ENCLOSURE "B"

OGA

TO	P SECRET ACORNAL CUE
13. With report	to the bearing that the action which the U.S. Govern-
_	espect to NATO communications
	lowing comment may be pertinent: Hagelin has ceveloped
	tain cryptographic equipment which,
THE TRACE OF LAND CO.	carn cranontre eduramente mittert
<u></u>	In the case of the pro-Soviet nations, the
nossible effects, what	ther for better or worse, of Hagelin's developments are,
	hat some well-equipped firm should decide to go into the ness and become a competitor of the HCC. Then, either,
as having been a decision.	poor investment. The latter would, no doubt, be the
b. The chanc	es for the occurrence of this contingency, however, are
small in vior of the h	nead-start the HCC now has and the comparatively very
limited market for Cul	SEC equipment. Moreover, even should it occur, the
	new firm will have developed, tested, manufactured, and
•	new product in quantity within a very few years is rather
•	
.3(h)(2) 3-36/50 USC 3605	b. S. EYES ONLY

16

TOP SECRET ACORN J. J. EVES ONLY small, if our experience in such matters is taken into account.

	For example, the Swedish
Governm	ent, or conceivably the U.S.S.R., might take over the HCC. Suppose
the for	mer occurs: in this event, it is highly probable that the Swedish
Governm	ent would take action
	Suppose the U.S.S.R. should, as a result of war, take over the HCC.
The ory	ptanalytic situation of the U.S. vis à vis the U.S.S.R. and its various
satelli [.]	tes leads to the assumption that we might be no worse off than we are;
nd it i	is conceivable that we might be better off.
	d. The foregoing four paragraphs discuss the risk mentioned in para-
graphs :	10.a.(1). There remain to be discussed the risks mentioned in paragraphs
.0.a.(2)) and (3), and these will be assessed in the next two paragraphs.
15	. With regard to the possible damage to U.S. COMINT security in going
	The U.S. has control over this in
erger 1	The U.S. has control over this in
arger 1	measure.
	neasure.
	neasure.
	neasure.
16.	with regard to the risk of political repercussions, it is true that
16.	with regard to the risk of political repercussions, it is true that to certain governments now friendly with this Government, there might
16.	with regard to the risk of political repercussions, it is true that to certain governments now friendly with this Government, there might cirable repercussions. But here again, the danger
16.	with regard to the risk of political repercussions, it is true that to certain governments now friendly with this Government, there might cirable repercussions. But here again, the danger is leved to be serious, in view of the remarks made in paragraph 12; and if
e undes	with regard to the risk of political repercussions, it is true that to certain governments now friendly with this Government, there might sirable repercussions. But here again, the danger is leved to be serious, in view of the remarks made in paragraph 12; and if the damage to our friendly relations

EO 3.3(h)(2)
PL 86-36/50 USC 3605 TOP SECRET A EL SE RECEBERACIONES CONTROL DE LA CONT

THE SEAL REALITE AT LIFE AT LIFE	. 5. ETES ONLY
this risk lies entirely within the control of the U.S., since it w	-
directly proportional to the extent and nature	
undertaken. This risk is not an unavoidable concomitant	<i></i>
it can be minimal, or entirely absent, if the U.S. choose not to t	ry to take
advantage of all the opportunities	
17. The preceding six paragraphs pave the way for making a j	udgment
will not have been spent in vain. However, it is my considered op	inion that,
taking into account (a)	
	that it
is not inadvisable to assume the risks, and	
is not inadvisable to assume the risks, and in expectation that the hoped-for benefits will be realized.	
	was prepared
in expectation that the hoped-for benefits will be realized.]
in expectation that the hoped-for benefits will be realised. 18. a. Enclosure *D**,	ents an
in expectation that the hoped-for benefits will be realized. 18. a. Enclosure *D*, by CIA in collaboration with Mr. Hedden on 17 May 1951. It represent	ents an
in expectation that the hoped-for benefits will be realized. 18. a. Enclosure "D", by CIA in collaboration with Mr. Hedden on 17 May 1951. It represents the improvement on the first draft and, with one exception, it includes	ents an s all the emorandum of
in expectation that the hoped-for benefits will be realized. 18. a. Enclosure "D", by CIA in collaboration with Mr. Hedden on 17 May 1951. It represe improvement on the first draft and, with one exception, it includes safeguards and features recommended by the Director, AFSA in his me 6 April 1951 to the Director of Central Intelligence (Annex 5 to "C"). This exception is in regard to the terms of payment: the Director	ents an all the emorandum of Enclosure irector,
in expectation that the hoped-for benefits will be realized. 18. a. Enclosure *D**, by CIA in collaboration with Er. Hedden on 17 May 1951. It repressing the provement on the first draft and, with one exception, it includes safeguards and features recommended by the Director, AFSA in his me 6 April 1951 to the Director of Central Intelligence (Annex 5 to 180°). This exception is in regard to the terms of payment: the Director of Central Intelligence (Annex 5 to 180°).	ents an s all the emorandum of Enclosure irector,
in expectation that the hoped-for benefits will be realized. 18. a. Enclosure "D", by CIA in collaboration with Mr. Hedden on 17 May 1951. It repress improvement on the first draft and, with one exception, it includes safeguards and features recommended by the Director, AFSA in his m 6 April 1951 to the Director of Central Intelligence (Annex 5 to "C"). This exception is in regard to the terms of payments the Di AFSA recommended that the consideration be paid in seven equal am installments; CIA finds this not only unnecessary but also undesir	ents an all the emorandum of Enclosure irector, mual
in expectation that the hoped-for benefits will be realized. 18. a. Enclosure *D**, by CIA in collaboration with Er. Hedden on 17 May 1951. It repressing the provement on the first draft and, with one exception, it includes safeguards and features recommended by the Director, AFSA in his me 6 April 1951 to the Director of Central Intelligence (Annex 5 to 180°). This exception is in regard to the terms of payment: the Director of Central Intelligence (Annex 5 to 180°).	ents an all the emorandum of Enclosure irector, mual
in expectation that the hoped-for benefits will be realized. 18. a. Enclosure "D", by CIA in collaboration with Mr. Hedden on 17 May 1951. It repress improvement on the first draft and, with one exception, it includes safeguards and features recommended by the Director, AFSA in his m 6 April 1951 to the Director of Central Intelligence (Annex 5 to "C"). This exception is in regard to the terms of payments the Di AFSA recommended that the consideration be paid in seven equal am installments; CIA finds this not only unnecessary but also undesir	ents an all the emorandum of Enclosure irector, mual
in expectation that the hoped-for benefits will be realized. 18. a. Enclosure "D", by CIA in collaboration with Mr. Hedden on 17 May 1951. It repress improvement on the first draft and, with one exception, it includes safeguards and features recommended by the Director, AFSA in his m 6 April 1951 to the Director of Central Intelligence (Annex 5 to "C"). This exception is in regard to the terms of payments the Di AFSA recommended that the consideration be paid in seven equal am installments; CIA finds this not only unnecessary but also undesir	ents an all the emorandum of Enclosure irector, mual
in expectation that the hoped-for benefits will be realized. 18. a. Enclosure "D", by CIA in collaboration with Er. Hedden on 17 May 1951. It repress improvement on the first draft and, with one exception, it includes safeguards and features recommended by the Director, AFSA in his m 6 April 1951 to the Director of Central Intelligence (Annex 5 to "C"). This exception is in regard to the terms of payments the Di AFSA recommended that the consideration be paid in seven equal am installments; CIA finds this not only unnecessary but also undesir	ents an all the emorandum of Enclosure irector, mual
in expectation that the hoped-for benefits will be realized. 18. a. Enclosure "D", by CIA in collaboration with Er. Hedden on 17 May 1951. It repress improvement on the first draft and, with one exception, it includes safeguards and features recommended by the Director, AFSA in his m 6 April 1951 to the Director of Central Intelligence (Annex 5 to "C"). This exception is in regard to the terms of payments the Di AFSA recommended that the consideration be paid in seven equal am installments; CIA finds this not only unnecessary but also undesir	ents an all the emorandum of Enclosure irector, mual
in expectation that the hoped-for benefits will be realized. 18. a. Enclosure "D", by CIA in collaboration with Er. Hedden on 17 May 1951. It repress improvement on the first draft and, with one exception, it includes safeguards and features recommended by the Director, AFSA in his m 6 April 1951 to the Director of Central Intelligence (Annex 5 to "C"). This exception is in regard to the terms of payments the Di AFSA recommended that the consideration be paid in seven equal am installments; CIA finds this not only unnecessary but also undesir	ents an all the emorandum of Enclosure irector, mual

	TOP SECRET ACORN	V. S. EYES	ONLY 1

			·
	Final Religies		J
19.	In view of the content of paragraphs 11 to 18 above, i	t is believed	·
that the	Director, AFSA should advise the Director of Central In		
he still	regards (Enclosure *D*) is satisfactory and as a gamble, he deems it to b	_	
	In view of the interest which USCIB has in this matter		
	to submit this report to the Board merely as information		
	cessary for the Director. AFSA to submit it to USCIB for		
PL 86-36/50 USC	3605 U. 3.	EYES ONLY	

TOP SECRETAGOEN

U. S. EYES ONLY

to attempt to obtain the concurrence or ev	en an expression of endorsement
by the Board.	
22. In view of the fact that the pri	mary objects
it is advisable that this p	roject be given a cover name and
be surrounded with special security safegu	ards beyond those applicable to
COLINT codeword information or material.	
should be permitted to know	or
any of its details.	
	/ EO 3.3(h)(2) PL 86-36/50 USC 3605

EO 3.3(h)(2) PL 86-36/50 USC 3605

U. S. EYES ONLY

20

REF ID:A60611

RESTRICTED

-RESTRICTED -- BOOK MSG -25 FEB 46 SENT OUT BY OCSIGO-REQ. DIV. SUPPLY CONTROL BRANCH

FARX 98567 CM-OUT-98567

CONVERTER 14-209 IS CLASSIFIED HEREBY AS MILITARY TYPE I. DESIRE ALL CLASS A AND B STOCKS BE RETURNED TO U.S. ALL CLASS C STOCKS AND ANY CLASS A AND B STOCKS NOT RETURNED WILL BE DESTROYED. FOR SECURITY REASONS NONE SHOULD BE DECLARED SURPLUS TO ANY DISPOSAL AGENCY.

EO 3,3(h)(2) PL 86-36/50 USC 3605

TOP SECRET ACORN

U. S. EYES ONLY

	***************************************	г	
BRIEF	HISTORY	OF	

- a. During World War II, the U.S. Armed Forces extensively employed for low-echelon communications a cipher machine known as Converter M-209.
 These machines were manufactured by the L.C. Smith and Corona Typewriter Co. at Groton, New York, under U.S. patents owned by Mr. Boris C.W.
 Hagelin, a citizen of Sweden and sols owner of the Hagelin Cryptograph Company (HCC) of Stockholm.* Approximately 72,000 M-209's were manufactured for the Armed Forces. About 60,000 machines are still on hand, in serviceable condition. The details of the contracts involved in the procurement of the M-209 are given in Annex 1 to this Enclosure.
 b. The M-209 is practically identical with a model (C-38) manufactured and sold on the open market by the HCC in various parts of the world, but thus far principally in Europe.
- 2. a. In its operations in the communications intelligence (COMINT) field,
 AFSA has knowledge of the extensive use of the C-38 machine by various
 foreign governments.

- 3. a. Soon after the close of hostilities, Mr. Hagelin initiated research and development work with a view to improving the C-38 (or M-209) and to producing new types of cipher machines for commercial exploitation.

 b. Through informal contact between a member of AFSA and Mr. Hagelin some of Mr. Hagelin's new ideas for cryptologic devices came to the attention of AFSA, and were studied to ascertain their security. The results of such studies were not communicated to Mr. Hagelin.
- * The Swedish trade name of the firm is Aktiebolaget Cryptoteknik (A.B. Cryptoteknik).

Enclosure to AFSA-00T Staff Study dtd 22 May 1951

24

ENCLOSURE "C"

EO 3.3(h)(2) PL 86-36/50 USC 3605

U. S. EYES ONLY

TOP SECRET ACORN

- of the Engineering and Technical Service, Office of the Chief Signal Officer, and a representative of Mr. Hagelin, to discuss the possibility of providing Mr. Hagelin with one or more M-209s so that he could incorporate embodiments of certain of his ideas for improving the security of the M-209. The desired machines were not made available but Mr. Hagelin obtained one from the L.C. Smith Company.
 - b. On 8 January 1951, an M-209, modified by the HCC to incorporate a new keying mechanism, was received by AFSA and promptly subjected to study. Although the security studies have not been completed, it is clear that the new keying mechanism proposed by the HCC would greatly increase the overall security of messages encrypted by the modified machine.
- 5. a. It was learned that the HCC was preparing not only to manufacture and sell new models incorporating the improved keying mechanism, but also to produce several new cipher machines of considerable security, which also employ the new keying mechanism.

b. It was also learned	that patent application	ons on the new keying
mechanism had been filed	in several countries	(U.S., Switzerland, France,
Italy) and		

d. In January 1951, Mr. Hagelin, accompanied by his son Boris Hagelin
Junior, came to Washington for the purpose of discussing with AFSA the
results of the study of the modified 14-209. They were told that the
study was not complete and no report was yet available.

EO 3.3(h)(2) PL 86-36/50 USC 3605

Director, AFSA, who decided to place the matter before the Arm Security Council (AFSAC). a. On 29 January 1951, at the 26th Meeting of AFSAC, Mr. Frie behalf of the Director, AFSA, made a presentation regarding the (Ammex 2 to this Enclosure). b. The minutes of the discussion at the AFSAC meeting form reto this report. The decision reached was as follows: "DECISION: AFSAC authorized the Chairman to contact the Director, Central Intelligence with a view toward obtains views together with a summary prepared by CIA (Ammex 3 to this c. On 16 February 1951, the Director, AFSA submitted preliminal indicating specific points which should	man, on s matter erence (b)
Security Council (AFSAC). a. On 29 January 1951, at the 26th Meeting of AFSAC, Mr. Friedebalf of the Director, AFSA, made a presentation regarding the (Ammer 2 to this Enclosure). b. The minutes of the discussion at the AFSAC meeting form reto this report. The decision reached was as follows: "DECISION: AFSAC authorized the Chairman to contact the Director, Gentral Intelligence with a view toward obtains views together with a summary prepared by CIA (Annex 3 to this c. On 16 February 1951, the Director, AFSA submitted preliming	man, on s matter erence (b)
behalf of the Director, AFSA, made a presentation regarding the (Annex 2 to this Enclosure). b. The minutes of the discussion at the AFSAC meeting form related this report. The decision reached was as follows: "DECISION: AFSAC authorized the Chairman to contact the Director, Central Intelligence with a view toward obtains views to this views together with a summary prepared by CIA (Annex 3 to this c. On 16 February 1951, the Director, AFSA submitted preliming	erence (b)
together with a summary prepared by CIA (Annex 3 to this c. On 16 February 1951, the Director, AFSA submitted preliming	erence (b)
(Annex 2 to this Enclosure). b. The minutes of the discussion at the AFSAC meeting form reto this report. The decision reached was as follows: "DECISION: AFSAC authorized the Chairman to contact the Director, Central Intelligence with a view toward obtains views together with a summary prepared by CIA (Annex 3 to this c. On 16 February 1951, the Director, AFSA submitted preliming	erence (b)
b. The minutes of the discussion at the AFSAC meeting form reto this report. The decision reached was as follows: "DECISION: AFSAC authorized the Chairman to contact the Director, Central Intelligence with a view toward obtains views DECISION: AFSAC authorized the Chairman to contact the Director, Central Intelligence with a view toward obtains views Logether with a summary prepared by CIA (Annex 3 to this c. On 16 February 1951, the Director, AFSA submitted preliminary prepared by CIA (Annex 3 to this c. On 16 February 1951, the Director, AFSA submitted preliminary prepared by CIA (Annex 3 to this c. On 16 February 1951, the Director, AFSA submitted preliminary prepared by CIA (Annex 3 to this c. On 16 February 1951, the Director, AFSA submitted preliminary prepared by CIA (Annex 3 to this c. On 16 February 1951, the Director, AFSA submitted preliminary prepared by CIA (Annex 3 to this c. On 16 February 1951, the Director, AFSA submitted preliminary prepared by CIA (Annex 3 to this c. On 16 February 1951, the Director, AFSA submitted preliminary prepared by CIA (Annex 3 to this c. On 16 February 1951, the Director, AFSA submitted preliminary prepared by CIA (Annex 3 to this c. On 16 February 1951, the Director, AFSA submitted preliminary prepared by CIA (Annex 3 to this c. On 16 February 1951, the Director)	ning
to this report. The decision reached was as follows: "DECISION: AFSAC authorized the Chairman to contact the Director, Central Intelligence with a view toward obtains views together with a summary prepared by CIA (Annex 3 to this c. On 16 February 1951, the Director, AFSA submitted preliminal contacts and the contact the Director, AFSA submitted preliminal contacts and the contact the Director, AFSA submitted preliminal contacts and the contact the Director, AFSA submitted preliminal contacts and the contact the Director, AFSA submitted preliminal contacts and the contact the Director, AFSA submitted preliminal contacts and the contact the Director, AFSA submitted preliminal contacts and the contact the Director and the Chairman to contact the Director and Dir	ning
"DECISION: AFSAC authorized the Chairman to contact the Director, Central Intelligence with a view toward obtain his views together with a summary prepared by CIA (Annex 3 to this c. On 16 February 1951, the Director, AFSA submitted preliminal contact the Director of the Chairman to contact the Director of t	nine
together with a summary prepared by CIA (Annex 3 to this c. On 16 February 1951, the Director, AFSA submitted prelimina	nine
together with a summary prepared by CIA (Annex 3 to this c. On 16 February 1951, the Director, AFSA submitted prelimina	
c. On 16 February 1951, the Director, AFSA submitted prelimina	
c. On 16 February 1951, the Director, AFSA submitted prelimina	
c. On 16 February 1951, the Director, AFSA submitted prelimina	
c. On 16 February 1951, the Director, AFSA submitted prelimina	
c. On 16 February 1951, the Director, AFSA submitted prelimina	
c. On 16 February 1951, the Director, AFSA submitted prelimina	
c. On 16 February 1951, the Director, AFSA submitted prelimina	
c. On 16 February 1951, the Director, AFSA submitted prelimina	
c. On 16 February 1951, the Director, AFSA submitted prelimina	
c. On 16 February 1951, the Director, AFSA submitted prelimina	
c. On 16 February 1951, the Director, AFSA submitted prelimina	
indicating specific points which should	-
/	
or added, for purposes of further discussion in a second confer	ence to be
The results of the confe	rence are
summarized in Annex 4 to this Enclosure.	
EYES ONL'	_
ENCLOS	 -

EO 3.3 PL 86-3

TOP SECRET ACORN U. S. EYES ONLY

- 8. a. On 9 March at the 61st Meeting of the United States Communications
 Intelligence Board (USCIB), a brief presentation of this subject was
 made for the information of the members of USCIB, by Mr. Friedman, on
 behalf of the Director, AFSA. No comments were made on the presentation.
 The minutes of the discussion at the meeting form reference (a) to this
 report.
 - b. On 29 March 1951, the Director, AFSA submitted a Report on this matter to the members of AFSAC (reference (c)) and the memorandum was discussed at the 30th Meeting of AFSAC, on 6 April 1951. The minutes of the discussion form reference (d) to this report, a reading of which discloses that:

liscloses that:
(1) Several members of AFSAC were doubtful of the advisability of
making a deal which would cost \$700,000 and in which there was no
(2) Nevertheless, it was recognized that there was a possibility
of reaping benefits and, therefore,
although AFSAC was unwilling to approve and thus to endorse the
recommendations in AFSAC 66/20, it agreed as follows:
*DECISION: AFSAC agreed to interpose no objections to the proposals of Director, AFSA.
On 6 April 1951, the Director, AFSA forwarded to the Director of
entral Intelligence specific recommendations based upon a detailed
tudy referred to in Paragraph 7b above. A
opy of these recommendations, which dealt principally with additional
afeguards thought to be desirable for incorporation in the draft form,
s attached as Annex 5 to this Enclosure.
. On 19 April 1951, the Director, AFSA forwarded to the Director of
entral Intelligence a memorandum (see Annex 6 to this Enclosure) in
hich he summarized the broad considerations involved
and clearified his views concerning them.

9.

EO 3.3(h)(2)

PL 86-36/50 USC 3605

TOP SECRET ACORN

TOP SECRET ACORN U. S. EYES GNLY

10.	

EO 3.3(h)(2) PL 86-36/50 USC 3605

U. S. EYES ONLY

ENCLOSURE "C"

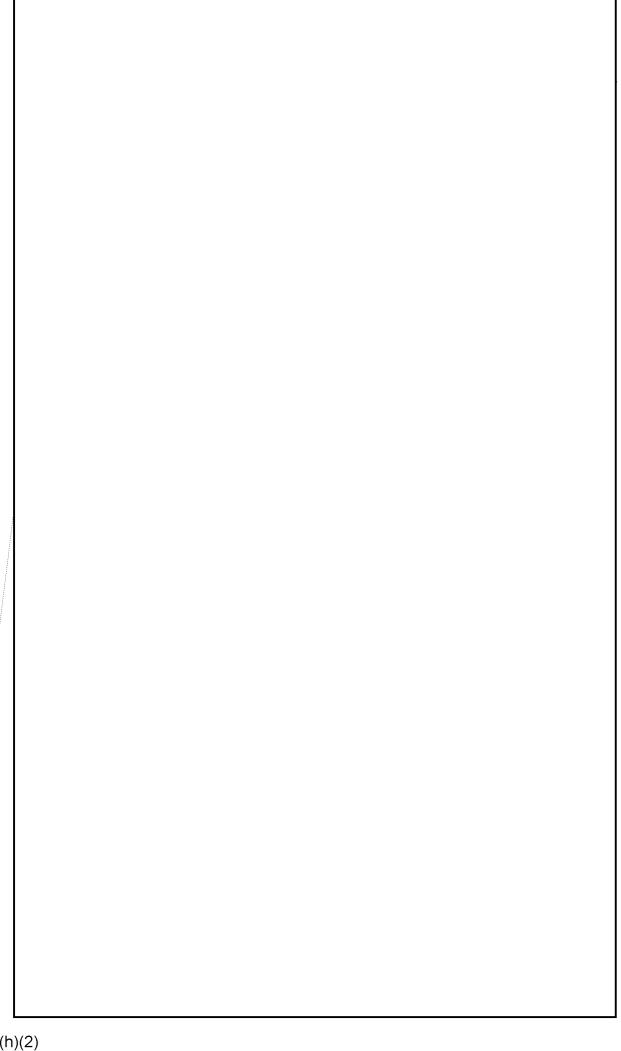
28

ENCLOSURE "D"

EO 3.3(h)(2) PL 86-36/50 USC 3605

Draft Memorandum of Agreement

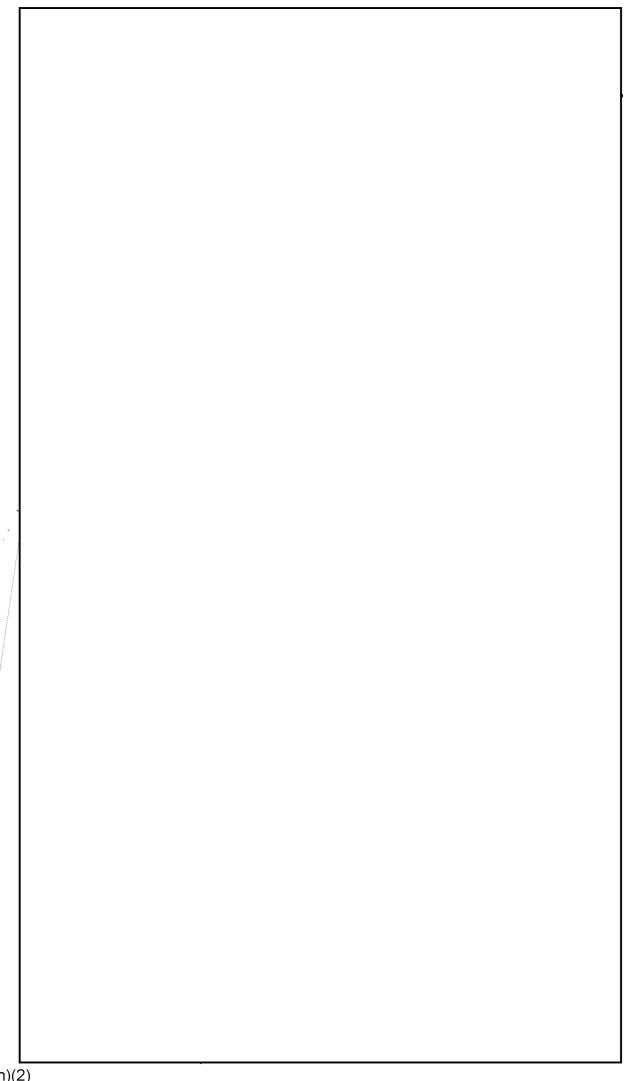
TOP SECKET



EO 3.3(h)(2) PL 86-36/50 USC 3605

30

TOPRESECRET



EO 3.3(h)(2) PL 86-36/50 USC 3605

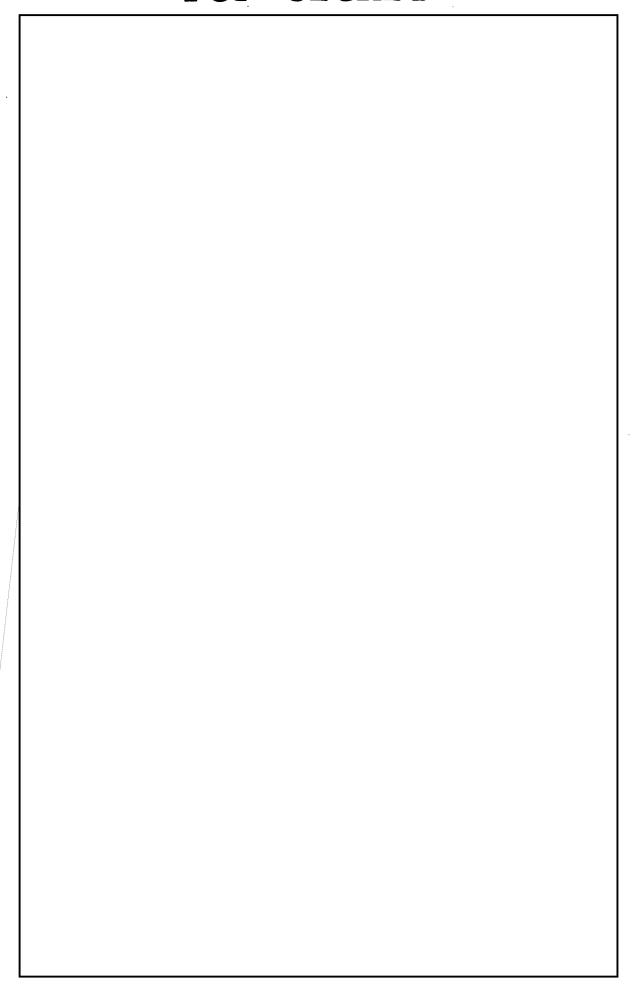
TOP SECRET

MICLOSURE "D"

EO 3.3(h)(2) PL 86-36/50 USC 3605

32

TOP SECRET



EO 3.3(h)(2) PL 86-36/50 USC 3605

33

TOP SECKET

EO 3.3(h)(2) PL 86-36/50 USC 3605