

HEADQUARTERS
ARMY SECURITY AGENCY EUROPE

8620 Administrative Area Unit

APO 757

SUBJECT: Visit to Dr. Grimsen

15 NOV 1954

TO: Chief
Army Security Agency
Washington 25, D. C.
ATTN: GAS 53

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

1. References:

a. Letter this headquarters Subject: Mixing Device (W020), dated 1 June 1954.

b. Letter this headquarters Subject: Hagelin Cipher Machines, dated 11 October 1954.

c. 1st Ind this headquarters Subject: Intelligence Reports, dated 5 October 1954.

2. On 4 November 1954, the Assistant TICOM Representative visited Dr. Grimsen at his office, C. Lorenz AG, in Stuttgart. Prior to this visit Dr. Grimsen had been approached by Dr. Erich Huettenehain, Mathematical advisor to the Athenaeum Stiftung, concerning Grimsen's mixing device (Ref 1a above). Dr. Huettenehain spoke highly of this device stating that it was very secure and if properly utilized, its product could not be successfully broken. ~~(Secret)~~

3. Concerning the CX52 (Ref 1b above) Dr. Huettenehain stated that it was a very simple device and [redacted] The T&N high speed enigma, he stated, [redacted] (Ref 1c above). ~~(Secret)~~

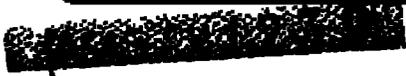
4. The mixing device has not been utilized in the United States due to the difficulty in equating the German 50 baud system with the American 45.5 baud system. Although the mixer was used on both the Bonn-Paris, and Bonn-London links, certain difficulties were experienced

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due to the differences in power available. However, these difficulties were overcome during the Saar Conferences in Paris by the use of an additional synchronizing mechanism, Inclosure # 1. The machine in London was removed after the 9-power conference for the above stated reasons.

~~(Secret)~~

5. Huettenhain and Grimsen also discussed the problem of maintaining the physical security of the one-time tapes used on the mixer. Huettenhain proposed that the tape rolls themselves be coated with shellac of a specially prepared chemical formula which would withstand extreme temperatures. Tampering with the tapes would be revealed by subjecting them to examination under an ultra-violet light. Grimsen's counter-proposal was that they be kept in electrically sealed plastic cartridges. This matter will be decided at some time in the future. ~~(Secret)~~

6. The Atheneum, Stiftung asked Dr. Grimsen to design and construct a speech scrambler which would utilize all known methods of scrambling voice communications i.e. addition of noise, amplitude and frequency modulation, speech inversion and transposition. It is projected that the device will be controlled (Program Steuerung) by a tape similar to a perforated teletype tape. Said tape will be punched with five different symbols each representing one of the above mentioned methods of enciphering speech i.e. addition of noise, inversion etc. As the tape moves past a reading point, a specific symbol will cause the device to perform whatever function the symbol represents.

a. For example, let us presume that three square holes represent speech inversion. When three square holes, which have been cut on the tape, pass the reading point, the device will invert whatever sound it is receiving. This inverted sound will go on line. Each function will operate for a period of 1-2 seconds. The five different symbols will appear on the tape in random sequence. The sequence of the symbols will be statistically limited. The device will produce sound constantly. Physical security will be maintained by a knife-like device which will cut the tape into small segments after it passes the reading point. These small pieces, as such, will then be destroyed.

b. Dr. Grimsen stated that he could not accomplish the first model in less than 1 $\frac{1}{2}$ years, due to supply procurement difficulties and other problems native to the project. He expects that the first model will be as large as an average office room. Dr. Grimsen desires ultimately to produce a mobile unit to be carried in a truck. ~~Top Secret, U.S.~~

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c. Dr. Huettenhain stated that the Soviet Union has a laboratory devoted solely to research on this problem (speech scrambling) which is located just outside of Moscow. It is presumed by this headquarters that the laboratory referred to is ~~SECRET~~.

7. At the end of November or early December the following individuals will meet in Bonn to decide which of three cipher machines, (Grimsen's Mixer, T&N Enigma, Hell's CX-52) will be used for certain

[Redacted]

[Redacted]

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8. [Redacted] is planning to use the Grimsen Mixer on links with [Redacted]
~~(Secret)~~

9. Dr. Grimsen stated that a K.R. Messingset, Ringswesen 16, Stabbekk, Oslo, (Standard Telephone Cable Factory) is manufacturing a Secret Teleprinter System 5. Patent has been applied for. ~~(Unclassified)~~

FOR THE CHIEF:

Charles E. Chambers
CHARLES E. CHAMBERS
1st LT ARMY
ASST ADJ

4 Incls:

1. Scrambler 54 with additional synchronizer.
2. Technischer Bericht # SL 34-54-17.
3. Athenaeum Wuerfel.
4. Mischgeraet 544 with translation.

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