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1. AS-80 AS-81 15 Dec 47 Storing of Cryptographic Devices and Materials

1. It is believed advisable that a project be initiated to be undertaken by CSGAS-83 concerning future methods of storing cryptographic devices and materials by low echelon units.

2. Considering such devices as the MX-519, 508 and 507, wherein weight and size are the dominant factors, it is necessary to revise our present security regulations as to the association of documents and devices, or to revise our method of storage. It is a certainty that no such device similar to the Chest CH-76 can be provided for low echelon units. The Air Force considers that the Chest CH-76 does not possess sufficient weight to prevent its being carried away manually. To lighten this safe would be a step in the wrong direction.

3. Consideration should be given to the inclusion of reserve rotors and documents within the outer carrying case of the device, with a method of quick and thorough destruction. Also to be considered is the provision of a light-weight inflammable safe, with a suitable lock provided with a quick and thorough means of destruction, wherein the necessary amount of cryptographic material might be stored. This of course would not provide actual physical security, yet would insure a certain degree of privacy. It is thought necessary that armed guards supply the factor necessary for physical security in low echelon devices.

4. If present plans are successful for constructing cryptographic equipments so that they are self destroying, it should not be necessary to provide safes for these devices in low echelon units.

5. Consideration might also be given to the removal of the cryptographic unit of the MX-519 with storage in the magnesium safe.

6. Considerable thought will be necessary as to the most feasible and practical method consistent with the requirements for tactical use, as well as our own security policy.

7. This project should be undertaken at once as it is vitally necessary that some plan be adopted prior to procurement of any future equipments.

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15 Dec 47

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2. AS-81 AS-83 27 Sep 48 Storing of Cryptographic Devices and Materials (Cont'd)

1. There are two fundamental objectives to be reached by our physical security regulations and by the materials we issue to provide this security. They are:

a. Protection against forcible seizure such as the over-running of a cryptocenter by enemy troops.

b. Protection against clandestine seizure for a brief period of time, permitting enemy agents to examine equipment, copy wiring diagrams, key lists, etc. This latter protection is probably more necessary than the first, since successful espionage of the type described will usually not be discovered.

2. It can be generally stated that contemplated issue of cipher equipment is also divisible into two classes: issue to tactical, more or less mobile units and issue to administrative, higher echelon, more or less "fixed" organizations.

3. Roughly the division by echelon and division of physical security objectives match. Protection against espionage can generally be said to be the paramount consideration in the higher headquarters, protection against loss through violent action of prime importance in the lower echelons.

4. To a certain degree, also, different protective measures exist to take care of the different objectives. Secure storage space is a defense against clandestine compromise; a rapid means of total destruction of equipment is the logical defense against compromise by capture.

5. Unfortunately the divisions into two are not neat and well defined. The lower echelon unit still requires secure storage as well as rapid means of destruction. Reserve rotors and key lists, instructional documents, et al must be carried around. Even though these were made of the same self-destructible material as the basic equipment, they cannot be stored in the equipment itself. And the lower units are not free of the dangers of espionage. Equipment destined primarily for high echelon use will also have to be employed in lower echelons if past experience is any criterion. The MK 519 is already an example of this. And, in future wars it is conceivable that "fixed" headquarters may be separated by enemy territory, perhaps even isolated. It will be necessary to transport cipher equipment to such places under dangerous conditions with increased chances of loss. Thus, provision of the proper storage facilities, though of prime importance, is not in itself enough but must be supplemented by the same self-destructible feature as must be incorporated into the lower echelon devices.

6. There has been a more or less traditional physical security "requirement" of separate storage for various items of cryptographic material. It is considered that, for the purposes of storage, this requirement no longer need apply. If all the equipment is self destructible, and if storage space is secure, there is no reason why all material cannot be handled together. The similar hesitancy to put all eggs in one basket in the case of shipping should continue, however.

7. It can be concluded, then, that all cipher equipment regardless of where it's to be used, will require both secure storage and rapid destruction means. It is therefore recommended that the following program be adopted:

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2. AS-81 AS-83 27 Sep 48 Storing of Cryptographic Devices and Materials (Cont'd)

a. All equipment, cipher components, rotors, key lists, etc., will be made of self destructible material without regard to its contemplated issue. (An exception to this provision can be made if an item of equipment is of such a nature as to positively preclude its use in low echelons or its shipment under conditions of subjection to capture.)

b. A small, lightweight, self-destructible safe will be developed for issue to low echelon units. The safe will be used for storage of reserve material, rotors, currents, etc. Cryptographic units of machines themselves may also be stored in the safes, when such units are detachable.

c. In addition to the above, armed guards will be required. This is considered necessary for two reasons.

- (1) To permit a time delay for igniting the equipment and the safe.
- (2) To prevent capture by enemy spy activity of the safe which will be light in weight, and portable. It is assumed that the normal cryptographic complement will be able to fulfill this requirement without the use of especially assigned guards.

d. At the higher echelons, heavy secure safes will be provided. (The CH-76 or an improvement on the CH-76, should meet this requirement.) Storage therein of cryptographic material, including cipher units when detachable, will be mandatory. Since these safes will not be self-destructible it may be necessary to provide some sort of an incendiary to ignite the equipment inside, all of which will be self destructible.

e. Current minimum physical security requirements for fixed installations will remain in force.

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