

**HEADQUARTERS
ARMY SECURITY AGENCY
WASHINGTON 25 D C**

WDGSS-85

4 December 1945

SUBJECT: Preparation of Cipher Machines for Extended Storage

TO: Chief, Security Division

1. In order to preserve cipher machines while in extended storage, it is recommended that the following method be used:

a. Cover all unplated metal parts with a light coat of rust preventive.

b. Insert within each machine a sufficient amount of Silica Gel to absorb any moisture that might be prevalent during the storage period.

c. Seal each machine within a Water Vapor Barrier envelope to exclude moisture, dust, or vapor from the outside.

d. After completion of the steps outlined in subparagraphs a, b, and c above, place each piece of equipment, except SIGNIN, in its original packing case and strap with metal bands. It will be necessary to place SIGNIN in a wooden packing case after preparation to protect the envelope.

2. It has been determined that this method would be the most economical and simplest to accomplish. It was not possible at this time to arrive at any definite or guaranteed method of certain preservation. Research along this line indicated that the proposed method of packing was developed during the war years. Equipment packed in this manner has not been stored for a period long enough to state definitely whether or not the method is entirely satisfactory over an extended period of time.

3. In arriving at this proposed method, discussions were held with the Quartermaster Corps, the Signal Corps, the Ordnance Department, and the Navy Department. The suggestions of the Quartermaster Corps, the Signal Corps, and the Ordnance Department were all noted and discussed with representatives of the Navy Department. The Quartermaster suggestions were not applicable; the Ordnance specifications for packing called for heavy smearing of metal parts with rust preventive compound. This

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method was discarded owing to the necessity for complete disassembly and cleaning of the equipment whenever it would be taken out of storage and placed in operation again. The Signal Corps suggestions were similar to the method outlined in paragraph 1 with the additional operation of placing the prepared equipment in a metal container and sealing it. The sealed metal container proved highly successful in preserving equipment which was shipped throughout the world during the war; however, the use of a sealed metal container was not considered essential. It would be an expensive procedure both from the standpoint of material required and man hours necessary to accomplish the packing and sealing in such a container. In addition, the space contemplated for extended storage use is dry and temperature controlled; thus, the necessity for a sealed metal container to keep out external moisture is eliminated. It was therefore decided that the method outlined in paragraph 1 is the most feasible to be adopted by the Army and the Navy.

4. It is proposed to prepare SIGABA, SIGCUM, SIGNIN, SIGFOY, SIGIVI, and associated equipment such as rotors and spare parts kits in this manner. For the most part, the only expenditure of funds required will be for the Water Vapor Barrier envelopes and Neoprene Gaskets for packing. It is proposed to use petrolatum as a rust preventive, and it is estimated that a sufficient quantity is now on hand to complete this packing project. Silica Gel and metal strapping are available in sufficient quantities at Signal Corps depots and can be delivered immediately upon requisition. The necessary equipment for air exhaustion and sealing of the Water Vapor Barrier envelopes is presently available in Maintenance Branch.

5. Listed below are the quoted prices of Water Vapor Barrier envelopes for each item:

SIGNIN	\$1.80 (additional cost of \$2.00 estimated for this item for wooden case)
SIGABA	\$1.75
SIGCUM	\$1.75
SIGFOY	\$.30
SIGIVI	\$.30
Spare Parts Kits	\$.30

Neoprene Gaskets, four of which will be required for each SIGABA, SIGCUM, and SIGNIN, are estimated to cost \$6.00 a thousand. Originally it was intended that Cork Gaskets would be used, but they did not successfully seal under test.

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6. It is not considered necessary to prepare blank unwired rotors for extended storage, since it is highly improbable that corrosion will set in during their unwired state. However, after wiring, a chemical reaction caused by the flux used in soldering and the acetate coating of the wire may set in and cause corrosion. To prevent this, it is recommended that each wired rotor be encased in a Pliofilm envelope and sealed prior to its being placed in its container. These Pliofilm envelopes can be purchased at a quoted price of \$17.06 a thousand. The equipment necessary for sealing is presently available in Maintenance Branch.

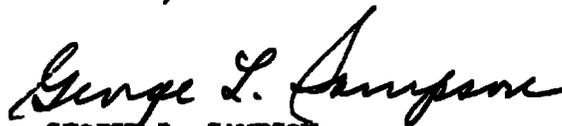
7. It is estimated that two man hours for each unit of equipment will be required to prepare this equipment for storage. It is pointed out that this will further increase the work load of Maintenance Branch which was submitted as of 27 November 1945.

8. In view of the foregoing, it is requested that:

a. Approval be granted to prepare equipment for extended storage as outlined in paragraph 1.

b. Maintenance Branch be informed of the quantities of each type of equipment it is desired to prepare in this manner.

c. Authorization be granted for the expenditure of funds for the procurement of necessary material.



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