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By Authority of the
Chief of Signal Center

Initials Date

WPC 6 Mar 44

Subject: Request for U.S. Army Cipher Machines**SPSIC 461 Codes
(22 February 1944)****1st Ind.****SPSIC****ASF, OCSigO, Washington 25, D. C., 6 March 1944****To: Assistant Chief of Staff, G-2, War Department General Staff, Washington 25, D.C., Attention: Lieutenant Col. Goodrich**

1. Attention is invited to the attached communication from Mr. David A. Salmon, Special Consultant to the Assistant Secretary of State, requesting the issue of four (4) U.S. Army cipher machines, Converter type M-134-A.
2. Subsequent to the receipt of this letter, similar equipment was informally requested for installation at the Embassies in Stockholm and Lisbon.
3. Through informal contacts with the Navy, it has been ascertained that the State Department requested U.S. Navy HCM cipher machines for issue to their installations in Madrid, Stockholm, Lisbon, Istanbul, Ankara, Algiers, and Cairo. The Navy Department agreed to the installation of HCM cipher machines in Ankara, Cairo, Istanbul, and Algiers, but declined to authorize the subject equipment for installation in Stockholm, Lisbon, and Madrid for security reasons.
4. The State Department, at present, has Navy HCM cipher machines in most of its South American installations. At the present time, the State Department has eight (8) Converter M-134-A cipher machines, of which four (4) are located in the United States Embassy in London and four (4) in the State Department in Washington.
5. It is obvious that at the present time, and especially in the near future, it is to the best interest of the Government that the cryptographic security of the State Department be of the highest order. For a number of years the Signal Security Agency, under authorized directives, has been rendering technical advice and operational assistance in the production of cryptographic materiel for the State Department and in its proper maintenance and use. Very recently a resurvey of the Department's cryptographic communications, from the point of view of assuring their security, was completed by the SSA and certain remedial measures recommended.

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SPSIC 461 Codes

SPSIC
6 March 1944

6. In order to facilitate production of cryptographic systems, training of code clerks, maintenance of equipment, and handling of traffic, it is desirable that the same basic mechanisms of cryptographic equipment be used throughout an organization. This is not the situation in the State Department communications net at the present time, since both HCM and M-134-A cipher machines are now in use. The following three plans are offered as possible solutions to this problem:

Plan a.-- The United States Army has available thirty (30) Converter type M-134-A cipher machines. This equipment is obsolete so far as U.S. Army use is concerned and could be issued to the Military Attache at an Embassy or Legation, as the case may be. The Military Attache would be responsible for maintaining its physical and cryptographic security. The equipment could be operated under his direct supervision by United States Army personnel who would be furnished for this purpose. The principal disadvantages of this plan are that (1) the equipment is difficult to maintain and keep in steady service; (2) since this type is obsolete no more machines are being manufactured and therefore if it were desirable or necessary to extend the distribution within the State Department none would be available; (3) even if no more machines were needed the matter of supplying replacement parts for those now on hand would present great difficulties; and (4) as the machines get older it would be increasingly difficult to maintain them. Military personnel for this purpose and for their efficient operation would have to be provided on a more or less permanent basis.

Plan b.-- An alternate plan would be to make available a new U.S. Army device called Converter M-325 for State Department use. This is a hand-operated device permitting relatively low speed operation, it being approximately equal in this respect to the speed of the strip cipher device, but it affords far greater security than does the latter. The cryptographic principles involved in the device are similar to those of the German Enigma; however, the mechanical design of the M-325 is superior to the German design, and offers considerably greater possibilities for variation, therefore making the machine far more secure than the Enigma. The M-325 device could be provided for the State Department and all Embassies and Legations requiring high-level cryptographic systems. It would be necessary to train State Department personnel at these installations in the use and

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SPSIC 461 Codes

SPSIC
6 March 1944

maintenance of the equipment; however, it is quite simply constructed and relatively easy to maintain. Several hundred M-325 cipher devices could be made available to the State Department for this purpose in the near future. It may be possible that for the State Department code room in Washington, and for such posts as have voluminous communications an automatic, high-speed, printing type M-325 machine could be developed by an appropriate conversion of a Sigaba machine. Such a conversion appears to be possible and would in no way jeopardize Army or Navy cryptographic communications, since the converted machines would not disclose the principles underlying the Sigaba.

Plan c.-- A composite plan embodying the principles of Plans a and b, above, would be to limit the issue of Converter M-134-A to the State Department code rooms in Washington, London, and a very few additional selected Embassies such as Madrid, Lisbon, and Stockholm. The actual selection would be accomplished through conferences between representatives of the War Department and the State Department. The provisions for maintaining cryptographic and physical security would be the same as those outlined under Plan a, above. In addition, the Department and all Embassies and Legations could be provided with Converter M-325. This plan would provide automatic machines for high-level, high-speed cryptographic communications between the Department and those Embassies handling large amounts of traffic and hand-operated devices for high-level, low-speed cryptographic communications between the Department and its smaller Embassies and Legations having less heavy traffic loads. The hand-operated devices could also be used for general intercommunication among all State Department posts. The disadvantages of this plan are that (1) the servicing and maintenance difficulties mentioned under plan a would still be present so far as concerns the M-134-A machines, (2) military operating and maintenance personnel would still have to be provided to a limited extent and (3) the high-level communication devices would be of two different types, making intercommunication among all installations more complicated.

7. Of the foregoing three plans, the second (Plan b) appears to be the most advantageous and is the one recommended by the SSA. Authority for recommending it to the State Department for its consideration is requested. Details as to

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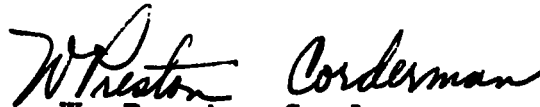
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SPSIC 461 Codes

SPSIC
6 March 1944

procurement, issue, use, etc., could then be discussed with the State Department. If Plan b is adopted, War Department authority will be required to procure the necessary additional Converters M-325 or to release the number required for State Department use from Army procurement and procure replacements therefore for Army use. War Department authority will also be required to procure and transfer to the State Department the automatic type M-325 machines and to divert sufficient Sigaba production to this purpose if they are to be received prior to the early part of 1945.

For the Chief Signal Officer:



W. Preston Corderman
Colonel, Signal Corps
Commanding Officer, Signal Security Agency

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