

MEMORANDUM FOR: Op-20

Via: Op-20-1.

1. In order to provide a high grade, high speed, and reliable machine system for encrypted combined communications, adaptors were built to modify the British Type "X" machine and the ECM. The adaptor produces a new, third machine system. The advantages and disadvantages of issuing the ECM to the British, versus the adaptor, are listed below:

<u>Advantages</u>	<u>ECM</u>	<u>Disadvantages</u>
Cryptographically superior to adaptor or Type "X"		Greater cost, \$1677 for ECM, \$300 for adaptor.
Mechanically and electrically superior to Type "X"		Extension of ECM distribution renders it more liable to capture.
Distribution can be started to British at a rate of 100 units monthly commencing 1 December, 1942.		
Primary combined naval communication problem solved by early Spring, 1943.		
Provides U.S. Navy with finest cryptographic system available for combined communications.		
Eliminates 3rd machine system.		
Much faster than adaptor system.		
	<u>ADAPTOR</u>	
Permits British to use Type "X" machines.		Twelve to eighteen months delay before this system can be made effective. Third system. Cryptographically inferior to ECM. Mechanically and electrically inferior to ECM. Slower than ECM.
None are now on board British ships.		
Relatively inexpensive.		

2. It is recommended that the ECM be made available to our British Allies for the following reasons:

- (a) The ECM is the finest cryptographic machine system known to exist at the present time.
- (b) Possibility of capture of the ECM should be considered. It is believed that ultimately the ECM will be captured by the enemy. We should, therefore, make it available to our Allies at an early date in order to take full advantage of its superior qualities.

- (c) Separate code wheels and key lists can be issued to our Allies, thereby preventing reading of U.S. traffic.
- (d) The ECM is not the final word in machine cryptographic systems. We can and will increase its security. We should, however, fight this war using the existing ECM as our primary system.
- (e) Granting capture of all component parts, if known to us, the ECM cannot be read by the enemy.
- (f) The ECM is now in mass production and can be made available at the rate of 100 units per month. The Atlantic communication problem solved in approximately 3 months. Production of the adaptor will require tooling-up and the consequent delay incident to manufacturing any new machine. Twelve to eighteen months will expire before it can be made effective.
- (g) Combined traffic is of such importance that it should be protected by the finest system available.
- (h) To support the war effort to the maximum.

Respectfully,

/s/ T.A. SMITH,
Op-20-S1.