

NORTH ATLANTIC MILITARY COMMITTEE

COMITE MILITAIRE DE L'ATLANTIQUE NORD

Standing Group

Groupe Permanent

SGM-631-51

27 April 1951

MEMORANDUM FOR: All Member Nations of the North Atlantic Treaty Organization.

SUBJECT: Plan for the Provision of Crypto Channels for North Atlantic Treaty Organisation Communications - During the Planning Stage Using Typex II and Simplex Settings - Plugboard Setting Keys and Books of Settings.

Reference: SGM-616-51

INSTRUCTIONS FOR HAND PRODUCTION OF TYPEX SIMPLEX SETTINGS

1. A NATO Typex/Simplex pad contains eight pages, each consisting of 25 settings - i.e. a total of 200 settings per pad. Each setting consists of four items:

- a. Insert order.
- b. Tyre setting.
- c. Three message rotor alignments.
- d. Indicator.

Pads may be produced as follows:

2. Insert Order. This consists of a selection of any five of the letters A to N, indicating the insert to be employed, which may or may not be followed by the letter R, indicating whether the insert is to be used in the normal or reversed position. There are two methods of producing this:

- (i) Make 14 discs, the first marked A on one side and AR on the back, the next B and BR, and so on to N and NR. Mix these thoroughly in a box, ensuring that they are in a random order and that they are turned over at random. Pick out any disc, and write down what appears on the uppermost side; put it aside and select a second disc; and so on, until five items have been written down. Throw the five discs back into the box, and again mix thoroughly, then repeat the process for the next setting, and so on.
- (ii) Take 112 discs, mark the first four A, the next four AR, the next four B, and so on until the last four which will be marked NR; only one side of each disc is used. Put all the discs into a box and mix thoroughly. Pick out a disc at random, write down what appears on it, and put it aside; similarly, pick

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out four more discs. If a letter appears which has already been written down, it must be rejected, and a new disc picked out, to ensure that five different insert letters are used; e.g. if JR has already been written down, any disc marked J or JR must be rejected. When five different letters have been written down, return all discs to the box, mix thoroughly, and repeat for the next setting, and so on.

The first of these two methods is easier to use, since there is no possibility of selecting a repeated letter, but owing to the small number of discs it is more difficult to mix properly and ensure a random distribution of R and non-R; the second method is slower to use, but ensures that the settings will be random. In either case, it is essential to return all discs to the box and mix thoroughly after each setting.

3. Tyre setting and message rotor alignments. These consist of four random five-letter groups; it does not matter if they contain repeated letters. Make 260 discs, and mark the first ten A, the next ten B, and so on until the last ten are marked Z. Put these all in a box (taking care to keep them separate from the insert order discs), and mix them thoroughly. Pick out any 20 discs, and write down the letters appearing on them as they are drawn out; divide these 20 letters into four five-letter groups, the first of which will be the tyre setting and the remainder the rotor alignment groups. Return the used discs to the box, mix thoroughly, and repeat for the next setting; and so on. Again, it is important that all used discs should be returned to the box and mixed after each setting.

4. Indicator. This consists of two letters, followed by three-figure groups in numerical order. The two letters may either be written at the beginning of each indicator, or for convenience may be written or printed on the inside of the cover immediately above the indicator column. If the first pad has two-letter group AA, number the 200 settings 001 to 200 in numerical order. The next pad will be AA, with settings numbered 201 to 400; the fifth pad will be AA, with settings numbered 801 to 999. For the sixth pad, alter the letters to AB, and start again at 001 to 200, etc.

5. Checking. Make periodical checks, at least weekly and preferably daily, to ensure that the Insert Order box contains the correct number of discs marked A, AR, B, BR, etc. and that the setting box still contains exactly ten discs marked with each letter of the alphabet; if any are found to have been lost, they must be replaced before production is continued, otherwise the standard of production will deteriorate. Check each individual insert order to ensure that five different letters have been employed; otherwise it will be impossible to set up the Typex machine. Make periodic checks to ensure that the correct proportion of Rs and non-Rs are occurring; on each page there should be approximately the same number of each; one setting in 32 approximately should contain five Rs and one in 32 five non-Rs.

E. B. W. CARDIFF
Secretary