

WAR DEPARTMENT  
ARMY SERVICE FORCES

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By authority of the  
SIGNAL OFFICER

*Sh* *18 Dec 44*  
Initials Date

TO	Director, Communications Research <small>(Service, division, or organization)</small>	<small>(Location)</small>
	<small>(Branch or unit)</small>	<small>(Attention)</small>
Subject:	Memorandum - B II Personnel Requirements	
File No.		
	<small>(Writer's last name)</small>	18 December 1944 <small>(Date)</small>
FROM	<small>(Service, division, or organization)</small>	<small>(Location)</small> <small>(Telephone extension)</small>

1. For your information and file.

*S. Kullback*

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Lt. Colonel, Signal Corps  
SPSIB-2, EXT 321

Encl.

1. Memo - 16 Dec. 1944

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Memorandum: B II Personnel Requirements 16 December 1944

1. It is believed opportune to discuss herein the problems that confront B II, with their consequent personnel demands, in order that the Personnel Control Committee may appreciate why it is necessary not only that the 18 civilians under discussion in Action 1 be permanently assigned to B II but also why it is necessary that the personnel allotment to B II be filled as soon as possible. Much of what follows is probably known by the Personnel Control Committee but is included for the sake of completeness.

2. The following principles and policy which guide the operations of B II must be considered in view of the personnel requirements inherent therein.

a. The SSA has been directed by competent higher authority to process all intercepted Japanese Army and Air Force Traffic.

b. It is the established policy of the Commanding Officer, that the SSA be the leader and the directing center and control agency for the various American and British centers engaged on the Japanese Army Code Problem.

c. The material with which B II must concern itself is very perishable. Information about the Japanese forces, intentions, operations and shipping must be current if it is to be of value and worth the effort necessary to derive it. The inestimable value of such current information to the operations of the American Forces against the Japanese has been amply demonstrated. The pressure from G-2 caused by a temporary stoppage of current information for some months subsequent to 1 August 1944 due to various changes introduced by the Japanese and the extremes to which it was their desire to go to get data to derive such information, is a definite indication of the value of our efforts and the serious consequences of delay in the operations.

3. A very large number of people and much equipment is involved in the interception, forwarding and processing of Japanese Army Traffic. Unfortunately, the exact figures are not available to the writer though the Personnel Control Committee can ascertain them. This personnel is spread over the face of the earth and at the SSA includes many E Branch personnel, most of G Branch, most of B I, all

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of B II, most of B IV, most of I & L and a large staff in G-2. It must be pointed out that the expense and personnel involved in getting the traffic are wasted if B II cannot successfully solve and process the material. Most of the operations of G Branch, B I, I & L and many personnel in G-2 are definitely dependent on the successful solution and processing of the traffic by B II.

4. It must also be pointed out that the nature and direction of B II Operations and problems cannot be planned for long in advance nor anticipated, since the Japanese refuse to make changes in their cryptographic materials and procedures to suit our convenience and personnel. We must be prepared to defend at no matter what point the Japanese attack cryptographically.

5. a. Since 1 August 1944, because of a variety of changes and new procedures introduced by the Japanese and additional commitments which B II has been directed to undertake, it has become necessary to process more traffic with new additional processes and procedures. Indeed, the latest additional step will take place on and after 16 December 1944. Let me repeat not only must more traffic be processed, but more processing steps must be performed. Even if there had been no increase in traffic to process, it would still have required more personnel for processing.

b. A recent commitment which B II has been directed to undertake is the Japanese Air Force Problem. At present there are 40 people engaged on this problem which needs 400 in order to satisfy the demands of G-2 and meet the commitment of the SSA.

c. A commitment which the Japanese have forced B II to undertake is the discriminant problem. The procedure of enciphering discriminants, introduced by the Japanese on 1 August 1944, has imposed several burdens on B II. In the first place, personnel had to be trained and diverted to solve and recover the keys used to encipher the discriminant. In addition, every bit of traffic coming in had to be processed to the extent, at least of deciphering the discriminant in order to segregate traffic by system, a necessary preliminary to solution. This has absorbed the services of 163 personnel since 1 August 1944, something which could not have been foreseen until we learned about this change.

6. a. At this point it might be of interest to describe statistically the demands of the problems, just as it was explained to various ranking officers of the War

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Department in order to get approval for an increase in the T/O of the SSA.

b. On an average of every two months there must be recovered.

1. 50,000 keys in the Water Transport system random number book.
2. 100,000 keys in two administrative systems random number books.
3. 100,000 keys in the Air Force random number book.
4. 50,000 keys in the Address random number book.
5. 10,000 keys in the discriminant random number book.

This means a total of 310,000 new keys introduced every two months. Since a key recoverer recovers an average of 15 keys per day we have every two months a work load of 20,667 man days for recoverers alone. If we assume that we will take 60 days to recover the keys then 345 key recoverers alone are necessary. Because of days off, etc., to have 345 key recoverers effective for 60 days requires that there be at least 402 key recoverers. But for every key recoverer there are necessary 4 other people for research, administration and processing. Consequently, the requirement is 402 plus 1608 or 2010.

c. It must be remarked here that these figures are based on a maximum possible utilization of mechanical aids for large volume production.

d. It must also be borne in mind that we are attempting to duplicate the cryptographic procedures in all units of the Japanese Army of Divisional or equivalent level and higher in addition to reconstructing the necessary data.

e. Right now we have thousands of messages in air force systems which could be read. Lack of sufficient personnel is the only reason for the information contained therein not being made available.

f. It might be suggested that the intercepted traffic be limited to what the available personnel can process and increase the traffic only as personnel becomes

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available. Unfortunately, the Japanese refuse to cooperate with us to this extent. Since 1 August they have changed conversion squares every five days, as compared to once every 20 days prior to 1 August. Consequently, four times as much traffic is needed if we are to continue to get as much data for square recovery as before.

b. The encipherment of the discriminant using an 8-digit control which means 100,000,000 possibilities or 10,000 times as much as previously, means that a very large volume of traffic must be available for the solution of the discriminants, which it must be repeated, is an absolute necessity if the messages are to be read. Consequently, each and every available message must be processed.

8. The current cryptographic trend by the Japanese to the use of Latin squares and enciphered discriminant control means that the reconstruction of such discriminant squares will be very difficult if not impossible. But such squares are absolutely necessary if the discriminants are to be deciphered, the various systems separated and the traffic read. Since the Japanese tend to send considerable cryptographic information, including squares in their traffic, it is consequently of prime importance that continuity be maintained and that all systems be studied and processed. The net result of the changes introduced by the Japanese is then that we must process more traffic with many additional procedures and work with it all if we are to read any of it.

9. The 18 civilian employees recently made available to help clean up an accumulated backlog of traffic processing, in addition to those B II personnel that will be made available by the fact that 30 enlisted men at Vint Hill and 25 WAC's from G Branch have been made temporarily available for traffic processing will more than be absorbed by the additional step which must be done on all traffic (an average of 385,000 per month) on and after 16 December.

10. The B II training program which has trained and helped absorb more than a thousand people in specialized jobs is prepared to continue to do so for all personnel that will be made available.

11. Should the thread of continuity get broken because of insufficient personnel to process and read the traffic and a backlog form it will result in a cessation of the

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furnishing of valuable information to G-2. The value of the results is evidenced by the approval given by and the interest displayed by the ranking officials of the War Department who have reviewed our activities.

12. To summarize: The changes introduced by the Japanese and the trend of their procedure is such that a greater volume of traffic must be processed with more operations and read under greater difficulty. If sufficient personnel are not made available to maintain a regular flow of processing and reading then all effort expended will be useless in that the material will either be impossible to read or readable when the information will be of not much value. Halfway measures will not suffice. We have progressed too far to allow "too little and too late" to stop us.

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