

COPY FOR Op-20-G ✓

*Post War*Op-20-G/lmd
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21 August 1945

MEMORANDUM FOR THE VICE CHIEF OF NAVAL OPERATIONS

Subj: The continuation and development of Communication Intelligence.

Encl: Proposed post-war C.I. Organization (2 pages)

1. No one in a position to know the facts questions the exceptional value of communication intelligence during the recently-ended war. There has, throughout, been a striking correlation between communication intelligence success and operational effectiveness. The direct and indispensable instrumentality of communication intelligence in the successes of Midway, the Atlantic anti-submarine warfare, the Pacific submarine operations, the ambush of Admiral Yamamoto, and the sinking of YAMATO, are outstanding cases in point. Less spectacular have been the forewarnings by communication intelligence of such important enemy technical developments as the magnetic mine, Schnorkel, and the V2 rockets, which thereby lost the advantage of surprise. Particularly noteworthy, because it seems to portend the future, is the discovery of the pursuit of atomic research with "heavy water" at Peenemunde after that place had been bombed in the light of a communication intelligence tip-off.

2. With the advent of great strategic air striking fleets and guided missiles which can strike overwhelmingly and without warning, it has become obvious that peace-time intelligence is no longer merely a strategic protection but a tactical one as well, in the most literal sense. The thunder clap of the first atomic bomb has crystallized this thought as nothing else could have done. It is now apparent, with a very special clarity and urgency, that completely effective intelligence is imperative for the security of the nation. And effective intelligence, if the example of World War II can be accepted as a criterion, means, in a large measure, communication intelligence.

3. The progress of the world in weapons and operational techniques during the war years has a close analogy in its progress in the apparatus and methods of communication

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intelligence. The United States Navy entered the war with a handful of communication intelligence personnel engaged in attack by primitive manual methods against Japan's even more primitive communications; it comes to the end of the war with a highly trained force of nearly 10,000 men and women, with the apparatus, techniques and experience of the continuously successful effort against the German Enigma machine, with beginnings in the field of interception and analysis of the various new kinds of radio emission, and with the first glimpses opening ahead into the applications of electronic bombe techniques to the solution of post-Enigma cipher machines such as our own E.C.M.

4. Our progress has been forced on us by the cryptographic evolution, greatly accelerated by war, of our enemies. Such evolution is common to cryptography the world over, although some nations are more advanced than others. It is essential that cryptanalytic attack follow this evolution as it unfolds; technical continuity is the one indispensable requirement for effective cryptanalysis. We may never again be blessed with opponents so myopic, so wedded to mere deviousness in cryptography, as the Japanese. Even so, had we, in 1941, had to face in the Pacific an unfamiliar communication system and an unknown cryptography, we should have been fortunate to achieve the beginnings of effectiveness before the end of 1942. The grave implications are clear in the light of that year's naval history. German cryptography presented a different problem, less variegated, more concentrated, but technically more difficult. We had not kept level with the German evolution and, in 1941, were not familiar with the problem confronting us. There is no more convincing proof of the necessity of technical continuity than the fact that, although the British gave us the benefit of their knowledge, we were not effective in cryptanalysis against Germany until nearly two years later.

5. An inevitable corollary of the need for technical continuity in communication intelligence is the necessity of adequate technical research. The days of intercept copy produced by individual radiomen following Morse transmissions at hand speed on typewriters are nearly past; rapidly disappearing, too, are the fields of cryptography which can be defeated by individual cryptanalysts working with paper, pencil and intuition on small collections of traffic. Cryptography and cryptanalysis have become big businesses and highly mechanized

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ones. Radio transmission has entered the era of "non-horse", in which teletype, facsimile and "flash", and various forms of "scrambling", replace even the later techniques of high-speed dot and dash transmission.. Continued success in the interception and source location and identification of such emissions demands continuous research on a highly technical plane. Cryptography, even in some of the less advanced nations, has entered the phase of the long-cycle cipher machine, the only counter for which is the high-speed electronic scanner known as the bombe. Here again research must be not merely up to the minute but several steps into the future. If any part of the proposed post-war Communication Intelligence Organization can be regarded as truly indispensable at the expense, if need be, of all other parts, that part is the technical research organization. Alone it cannot produce intelligence, but it alone can guarantee technical continuity, if such can be guaranteed at all. The research resources available to United States Communication Intelligence can be and must be unexcelled throughout the world. Such resources must include not only the research components of the U. S. Navy and U. S. Army Communication Intelligence Organizations but every pertinent technical research group and laboratory, commercial or academic, in the country; activities with which the service components must have well established channels of access and cooperation.

6. It emerges, in summary, that the two outstanding and urgent reasons for maintaining an adequate communication intelligence organization through the days of troubled peace which appear to lie ahead are

- (1) the necessity of maintaining technical continuity, and
- (2) the indispensability of the intelligence which can be produced.

In the light of these compelling considerations, a reversion to anything resembling the unsponsored, ill-supported, meager organization of 1941 is unthinkable.

7. It has been estimated that, provided a proper basis of collaboration or integration with the U. S. Army can be arranged, the U. S. Navy C.I. Organization can continue to fulfill its

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mission, and can accomplish its peace-time tasks, with an organization of approximately 2,000 active naval personnel and 500 civilians. The enclosure presents the proposed allocation of this personnel to stations and activities. The organization contemplated is a somewhat simplified version of that which functioned successfully and efficiently throughout the war. The principal changes will be increased prominence of the research organization and the addition of a Communication Intelligence Reserve.

8. This plan must be regarded as merely a tentative acceptable minimum. It has been evolved in the light of full recognition of certain limitations, particularly the present proportion of the organization's strength to that of Naval Communications and the Navy as a whole, and the question of adequate peace-time appropriations. Such considerations seem trivial when it is realized that the organization's value to the Navy has been far greater than that represented by the proportion of ten thousand to three and a half million, that the enemy losses directly attributable to communication intelligence have probably been the cheapest, in dollars, of the war, and that the value of anything which can insure national security in the uncertain future is hardly measurable in dollars anyway; nevertheless the limitations must be accepted in a spirit of realistic common sense until experience proves that the planned organization is inadequate.

9. It appears that even the reasonable-minimum plan of the enclosure will encounter some imposing obstacles. Current BUPERS policies with regard to the transfer of reserve officers to the regular Navy appear to be designed to attract younger men rather than older ones. Recent surveys of the opinions and intentions of communication intelligence reserve officers, who include an unusually high proportion of older men and men with advanced academic degrees (more than 19% hold the degree of PhD), reveal that one result of adherence to the present policies will probably be that not enough of the reservists will transfer to provide for the full manning of the projected organization. Extremely serious will be the losses forced by the age limitation feature, which will act to remove many of the higher-ranking officers in key positions; perhaps as serious will be the loss of some of the younger officers whose advanced educational qualifications assure them of better inducements in the civilian world than those now proffered by the Navy.

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10. It has been stated that present BUPERS policies will tend to drop the Communication Intelligence Organization rapidly below its planned post-war strength. This drop during demobilization is more serious than it might at first seem. Medical, dental, and other specialist officers can be provided from the pool of holders of appropriate professional degrees. There is no such definite source of communication intelligence officers. Communication intelligence work requires various kinds of high level competence, plus special aptitudes found in only a few. There is no parallel activity in civil life, nor has it been possible over a period of years to devise adequate tests for pre-selection. Ability can be determined only after prolonged special training and actual demonstration of success. High educational and intelligence standards have been set in selecting officers for communication intelligence work to ensure the most promising material. Adherence to these standards has resulted in the high caliber of personnel now in the organization. Four years of war-time operations have further screened those selected until there now remains a group who have demonstrated their aptitude for this highly specialized work. A comparable replacement group could be obtained only through repetition of the entire process. Because operations must continue without interruption, it is essential that the Navy keep a large number of these officers, either by permitting and inducing them to transfer to the regular service or, as a last resort, by providing for them civil service positions in the higher professional brackets.

11. The one great need of the Communication Intelligence Organization is support; administrative support, legislative support, and financial support, particularly of research activities, and, not least, the support, in the form of enlightened self-restraint, of the country's prominent publishers. Some of the obstacles lying in the way of an adequate organization have been touched on here; they will be overcome in one way or another. They have been discussed not in an effort to enlist the specific and immediate intervention of the Vice Chief of Naval Operations but simply as incidental to a presentation of what is conceived to be the place of communication intelligence in the post-war Navy. Your approval of the program outlined and the views expressed is requested.

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By VJ day plus 180 days the intercept stations, direction finder stations, and processing centers of the C. I. Organization will be reduced to peace-time strength (post-war status), which will be as follows.

Station	Location	Mission	PERSONNEL				RCVMS
			Off.	RM	Yeo.	Special and others	
A	Guam	Intercept, DF & processing	28	125	6	78	60
D	Dupont	Intercept & DF	2	38	1		20
E	Wahiana	Intercept, DF & processing	65	235	12	233	100
I	Imperial Beach	Intercept & DF	3	44	1		25
K	Cheltenham	Research	4	30		2	35
20-G & H	Washington	Processing & administration	225	20	25	455	8 5 (stand by)
O	San Juan	Intercept & DF	2	46	1	1	25
Pf	Port Lyautey	Intercept & DF	1	28			12
S	Bainbridge	Intercept, DF and training	5	60	2		30
T	Stagg Island	Research	4	19	1	11	
U	Toro Point	D/F	1	12			5
V	Samoa	D/F	-	6			5

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ULTIMATE POST-WAR STRENGTH (Cont'd)

<u>Station</u>	<u>Location</u>	<u>Mission</u>	<u>Off.</u>	<u>RM</u>	<u>PERSONNEL</u>		<u>RCVRS</u>
					<u>Yeo.</u>	<u>Specialized others</u>	
W	Winter Harbor	Intercept & DF	2	46	1	1	25
AL	Okinawa	D/F	-	6			5
AO	Kwajalein	D/F	-	6			5
AR	Recife	Intercept & DF	1	24	1		15
AX	Adak	Intercept & DF	2	57	1	2	30
Totals			345	802	52	783	414

- * Or yeomen with special qualifications.
- # To be established prior to or during the demobilization period with personnel from D, O, W, and AR.
- § Plus 518 civil-service employees to be added when positions can be established.

Total Projected Post-War Strength

Officers	345
Enlisted	1637
§Civilians	518
	<u>2500</u>