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Op-20-G/ev

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Bombe History
X Bombs N-530
Kab Bldg
Quinn
30 added Bombs

24 March 1944.

MEMORANDUM FOR Op-20-G-1:

Subj: Bombs - History of.

1. The original project for Bombe construction was approved by Rear Admiral J. R. Redman and Vice Admiral F. J. Horne on 4 September 1942. The original directive did not specify the number of units to be provided.
2. Efforts during the latter months of 1942 were directed principally at effective design of the proposed equipment. In the original concept of the problem, it appeared that 336 units were desirable since there are 336 possible wheel orders which could then be run simultaneously. In forming preliminary notions of the size and power requirements of the equipment, the British three-wheel Bombe was strongly in mind. The British three-wheel Bombs have three levels in each physical piece of equipment. Thus the concept of 336 Bombs led to the notion of 112 separate pieces of equipment slightly larger than the British Bombs. The Laboratory Building was thus designed to take 112 such units. Preliminary designs for the building were approved in January of 1943.
3. Dr. Turing on his visit to Op-20-G in December of 1942 entered discussions concerning the number of Bombs to be built. In view of technical conditions limiting wheel order choices, the original notion of running one Bombe for each wheel order was modified. At about the same time designs on the two experimental American Bombs were nearing completion. Due to other requirements of automatic switching and the high speeds necessary to do the four-wheel job, following the British pattern of three banks per unit proved impracticable and our machines were designed with one Bombe in each unit.
4. Discussions as to the number of Bombs required for the Naval problem reached a conclusion in March of 1943 that ninety-six Bombs was the optimum number for the Naval problem. These conclusions have been borne out by experience. Furthermore, more than 100 production units would have over-taxed the manufacturing facilities.

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Subj: Bombes - History of.

5. Production models of the Bombes were put in operation in August of 1943. Early in September of 1943 considerations again centered around the total number of Bombes to be produced. British views were invited on this subject on 7 September. They replied as follows:

"In our view, present favorable SHARK position may not continue. Also your assistance in non-SHARK jobs may be very valuable. We should therefore be sorry if your production figure were reduced."

The German Naval position (SHARK) has remained favorable for the past six months. At present all units are used for Naval jobs until the keys are out. The machines are then put on non-Naval research. During this period about 45% of the Bombe time has been devoted to these non-Naval problems.

6. Since 1 February 1944 there has been some deterioration in the Naval cribbing situation. However, present equipment has handled the traffic adequately.

7. While the fifty additional Bombes will result in a 33-1/3% decrease in time required for pulling SHARK keys, their major contribution will be in the direction of other problems.

8. Introduction by the Germans on certain air circuits of a pluggable reflector has caused some concern. A machine for breaking both the external and reflector plugging has been designed and construction started. While this new machine (DUENNA) has similarity to a Bombe, it must be considered a separate device. In view of the possibility of introduction of this device on more keys and in view of the general German situation, it is considered that 150 Bombes will be completely adequate. Additional equipment will probably be necessary in the form of DUENNAS or other special devices.

Respectfully,



H. T. ENGSTROM,
Op-20-CM.