Declassified from NSA on 12-01-2011, Transparency Case# 63852

(U) Cryptologic Almanac 50th Anniversary Series

(U) Dr. Joseph J. Eachus

(U) He walked into his office in OP-20-G. It was his first day on the job. He was, perhaps, not quite prepared for what he saw: one officer was talking to himself - he was trying to learn Japanese; another officer was sending Morse code - to himself; a third was on the phone, trying to get a second phone on his desk to ring - by routing the call through Alaska. Joe Eachus later said that he decided that he had found a home. This is the story of his career in cryptology.

(U) Dr. Joseph J. Eachus was born in 1913 in Indiana. He received a Bachelor of Science degree in mathematics and physics from Miami University (Ohio) in 1934 and from 1934 to 1936 was an instructor in mathematics, physics, and engineering, and earned his Master of Science in mathematics and physics there in 1936. He was granted his Ph.D. from the University of Illinois in 1939.

(U) Dr. Eachus was teaching at Purdue University just before the outbreak of World War II. He related that he had received a questionnaire from "the government," asking about, among other things, his hobbies. He replied that he was interested in cryptanalysis, and he soon received a letter from the Navy's OP-20-G (Communications Analysis), inquiring whether he would like to take the Navy's correspondence course in cryptanalysis. He replied that he would, and he did. He was given a commission and entered on active duty shortly after the war broke out. In 1942 LT (jg) Eachus was assigned to OP-20-G as a cryptanalyst. His entire military training consisted of being taught, along with two or three other new officers, by an "old-time Chief ... how to salute and one thing or another." Eachus described his military training as "How to become an Officer in three easy steps."

(U) He began to study the cryptanalysis of cryptographic machines. Shortly thereafter, Eachus and LT Robert G. Ely were chosen as the first Americans to study the British methods of cryptanalysis against the German military's principal cipher machine, the ENIGMA, at the Government Code and Cypher School (GC&CS) at Bletchley Park, U.K. Eachus and Ely departed for Bletchley Park on 11 July 1942. It was to be the first of three such trips for Eachus. On being asked what training he had received for his TDY, he replied, "Passport. They showed me where the Passport Office was."

(U) British cryptanalysts were seeking to build a machine which would help them solve the cipher text generated by the 4-wheel ENIGMA machine. This machine was used by the German Navy, especially by its submarine forces, which were threatening British lines of

communication. Britain had to beat the U-boats or starve.

(U) Although he was slated to return to the United States on 13 October, the GC&CS requested a 2-week extension for Eachus, in order that he might be present for the testing of the high-speed Bombe, a new model of the famed cryptanalytic machine. GC&CS also noted that Eachus was working on a "pattern testing" machine and had "made significant contributions already." Later, Dr. Alan Turing, a pioneer in computers, noted that Eachus was "working on a resistor board" to aid the British cryptanalytic effort. High praise from our World War II colleagues!

(U) Upon his return to the States, from 1942 through 1945 Eachus continued to work against the 4-wheel ENIGMA, as the use of this machine had spread from sole use by the German Navy to use by other arms of the Nazi war machine. His early cryptologic experience defined Dr. Eachus's future career - he would henceforth be associated with Rapid Analytic Machines (RAM).

(U) From 1945 through 1949, Dr. Eachus was a civilian cryptanalyst for the Navy; his specialty had become cryptanalytical computer applications. He joined NSA's predecessor, the Armed Forces Security Agency (AFSA) in 1950; from 1952 to 1953, Dr. Eachus served as the chief of NSA's Analytic Equipment Machines Division in the Office of Research and Development. In 1953 he became assistant chief for development, Office of Research and Development.

(U) Joe Eachus left NSA in 1956 to join Research Engineering Associates, a private firm which manufactured cryptologic equipment under exclusive contract to the government. He left partially because of what might be described as office politics, but also because he received a hefty salary increase, which he characterized as "about 180 % more." He continued his association with NSA as a member of the National Security Agency Scientific Advisory Board from 1961 to 1972.

(U) Dr. Louis Tordella, deputy director of NSA, called upon Dr. Eachus, then director of Advanced Development for Honeywell, Inc., of Waltham, Massachusetts, in 1968, to ask him to chair a committee which was to evaluate NSA's processing of certain high-interest Soviet targets. The study was commissioned by the secretary of defense, following an earlier study by the National Intelligence Review Board (NIRB), which recommended abandoning the processing of some of these targets and reallocating personnel and machine resources to other targets of an entirely different nature.

(U) It was in preparing and guiding the other members of the panel, only one of whom had a cryptologic background, that Dr. Eachus showed his true strengths: his management skills and analytic expertise. He arranged for a week of classified briefings and tours to ensure that the members of the panel had a thorough understanding of the targets,

processing, and implications of implementing the NIRB's recommendations. The panel concluded that there were no inefficiencies and that NSA was doing all that was humanly and mechanically possible in processing and analyzing the targets in question. Further, the panel opined that the analytical machines and personnel could not readily be transferred to other targets, and that more Soviet targets would be lost if the NIRB's recommendations were implemented. The Office of the Secretary of Defense accepted the committee's report in its entirety, and the results of much labor and money were preserved and continued to be built upon.

(U) Dr. Eachus continued to work in private industry and served on the NSA Scientific Advisory Board through 1972 and other special boards. He was a participant in the National Cryptologic Museum Foundation's panel discussion, "The American Experience at Bletchley Park," on 23 May 2000.

[(U/~~FOUO~~) [redacted], Center for Cryptologic History, 972-2894s, 688-2336b]

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Content Owner: Feedback

Web POC: Feedback

Last Modified: by nsr
Last Reviewed: December 16, 2003
Next Review: 365 days