

### **28 July 1914 – start of World War I in Europe**

- 28 July 1916 – U.S. Navy Code and Signal Section established
- **6 April 1917 – U.S. declares war on Germany**
- 10 June 1917 – U.S. Army Code and Signal Section, MI-8, established

### **11 November 1918 – end of World War I**

#### **Between the Wars - Cipher Bureau (Black Chamber):**

First United States peacetime cryptanalytic organization – allows MI-8 to continue

- Funded by both the Army and the State Department
- Led by Herbert O. Yardley, former commander of MI-8
- Shut down by Henry Stimson, Secretary of State under Herbert Hoover:  
*“Gentlemen don’t read each other’s mail.”*

### **May 1919 – October 1929**

#### **Between the Wars – U.S. Army**

Signals Intelligence Service, part of the U.S. Army Signal Corps

- Created by the U.S. Army after State Department decision to close the Cipher Bureau
- Led by William Friedman,
- When Pearl Harbor attacked, SIS had 331 people assigned (military and civilian)
- Moved to Arlington Hall in 1942

#### **Between the Wars – U.S. Navy**

Code and Signal Section, OP-20-G, part of the Division of Naval Communications (DNC)

- Established in 1916
- Formally made part of DNC July 1922
- 1923 - U.S. Navy directed to undertake intercept of foreign communications
- When Pearl Harbor attacked, OP-20-G had 730 people assigned
- Moved to Nebraska Avenue (Naval Annex) in 1943

### **1 September 1939 – start of World War II in Europe**

- 1 September 1939 - Germany invades Poland
- 3 September 1939 – France and Britain declare war on Germany
- **December 1941 – Japan attacks Pearl Harbor**
- December 1941 - Congress declares war on Japan and then on Germany
- 15 May 1942 – Women’s Army Auxiliary Corps (WAAC) authorized by FDR
- 30 July 1942 – Women Accepted for Voluntary Service (WAVES) established

### **1 December 1939 – 2 December 1945**

### **Japanese systems** (Navy uses codes, Ministry uses machines)

- 1920's and 1930's – OP-20-G breaks Japanese manual codes
- 1935 – OP-20-G breaks the Japanese ORANGE M-1 cipher machine
- 1935 – Japanese Ministry of Foreign Affairs introduces RED cipher machine
- February 1937 – SIS produces first RED translation
- June 1938 – Japanese Ministry of Foreign Affairs introduces PURPLE cipher machine
- June 1939 – Japanese Navy introduces JN-25 and the (never solved) Flag Officer's code
- September 1939 – SIS produces first translation of a PURPLE message
- September 1940 – Genevieve Grotjan breaks the twenties, completes solution of PURPLE
- September 1940 – U.S Army and Navy sign agreement on joint exploitation of PURPLE

### **German Enigma**

- 1920's: Commercial Enigma machine developed
- 1926: Germans start to use Enigma
- 1931: Secret Enigma plans sold to France then given to Polish Cipher Bureau
- December 1932: Marian Rejewski at Polish Cipher Bureau used "theory of permutations and flaws" to break the message keys of the plug-board (stecker)
- December 1938: Germany upgrades Enigma – loss of reading
- July 1939: fearing invasion, Poland reveals details of their success on Enigma to France and Britain
- 1939-1940: Alan Turing and Gordon Welchman design the bombe, an electro-mechanical device used to break Enigma messages
- January 1941: Britain first shares information on ENIGMA with the US
- February 1942: German U-Boats upgraded to 4-rotor machines so UK Bombes do not work against the U-Boat messages
- March 1942: U.S. Navy contracts with National Cash Register (NCR)
- May 1943: Adam & Eve, first two prototype 4-rotor Bombes, produced by NCR

### **Agnes Driscoll - U.S. Navy Cryptanalyst**

- July 1919 - joins Code and Signal section of the Director of Naval Communications
- Co-develops U.S. Navy Cipher Machine CM
- 1923/1924 – Technical Advisor to Hebern Electric Code Company
- 1926 – breaks the RED book code (different from RED machine) after 3 years of work
- 1930 – breaks the BLUE book code
- 1935 – leads the team that breaks the Japanese ORANGE M-1 machine
- 1940 – critical inroads into JN-25