AMERICAN MAGIC: THE NAVY INTELLIGENCE EFFORTS AGAINST THE JAPANESE

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Introduction

This presentation is intended to give an overview of what was the American Magic and to give two examples of how it has been used by the Americans. Basically, Magic can be described as the code assigned to Japanese diplomatic traffic that was intercepted by American intelligence as a result of the breaking of Purple, the Japanese diplomatic code, in 1940. Magic included both the intercepted and the decoded Japanese diplomatic codes and ciphers. Navy intelligence efforts against the Japanese went by a variety of code names, one of which was Magic. Technically, the code name Magic applied only to signals intelligence efforts directed against the Japanese diplomatic cipher produced by the Purple machine. However, postwar discussions of the Navy's code-breaking effort often use Magic to include all signals intelligence efforts directed against the Japanese Empire.

And although the origins of that US remarkable code-breaking operation can be traced back as far as 1919 when the Black Chamber was created, Magic really came to existence in 1940 and played a key role in the Allied defeat of Japan.

Birth of Magic

The Black Chamber was closed down in 1929 by Secretary of State Stimson with the famous and somehow mythological statement that 'gentlemen do not read one another's mail'. At that time, the Chamber was a complete, expensive disaster, doing no research in cryptanalysis whatsoever and consisting only of six people, with approximately 37 percent of the total payroll going to Herbert Yardley, the father of the Black Chamber. So when the Chamber closed down, its employees loyally and silently accepted their fate except for Yardley. In 1931, he published a book revealing to the public all he knew about the penetration of Japanese codes. It obviously infuriated the Japanese who then sought a way to improve the security of their signals.

The solution to their security problem was a radical one: they decided to abandon using code and began instead to encipher their most confidential and secret messages on a machine. Ironically, it was this decision that eventually enabled the US to read Japanese diplomatic messages with great ease. The enciphered machine they used was developed by the special signals unit of the Japanese Navy. It was this machine that became known as Purple to the Americans. Of all the enciphering machines used during World War Two, only the Japanese Purple and the German machine Enigma attained 'star quality'.

The reason both these machines failed their masters was simple: the Japanese and the Germans had complete confidence throughout the war that their machines would protect their secrets. Both countries were so confident, in fact, that they believed their machines to be unbreakable while in fact both ciphers were cracked at a sufficiently early stage and then broken consistently until the end. The man usually credited with the breaking of Purple was William Friedman, a highly skilled cryptanalyst of great experience. Since the Stimson shutdown of the Black Chamber, a new unit had been established for army intelligence, called the Signal Intelligence Service. Its

chief signal officer was General Gibbs and its director was Friedman, whose staff consisted of only six people. Interchanges between this group and Safford's group of the Office of Naval Intelligence allowed the Army and Navy teams to pool much of their knowledge, but the battle of the breaking of Purple was, nevertheless, harsh and prolonged.

The first break was recorded as having occurred in August of 1940, and the first complete text of a message as having been established on 25 September. According to the US Department of Defence, 'by the fall of 1940 United States Government cryptanalysts had solved some of the Japanese foreign offices' highest grade cryptographic systems. The interception, decryption and translation on a current basis of secret Japanese worldwide diplomatic messages then began.' This marked the birth of Magic the remarkable code-breaking operation that ultimately saved thousands of American soldiers' lives and contributed greatly to the Allied victory over Japan.

Indeed, Magic played a key role in the victory over Japan since it was basically the only clear advantage that the United States had over the Japanese at that time. Against Japan's eight large carriers and 11 battleships, the Navy could place, at most, only the six carriers of the Pacific Fleet. Its battleships either rested on the bed of Pearl Harbor or were not yet repaired of the damage inflicted by the Japanese on 7 December 1941. Japan also had a superior air fleet. The Japanese Zero outclassed all American carrier-borne fighters. Japanese torpedo bombers carried the famous 'Long Lance' torpedo, far superior to the Americans' slower, shorter-range torpedoes, which often failed to explode even when they hit. But if the Japanese militarists seemed to hold all the aces, they remained unaware of one card held by the Americans: the intelligence effort, a card that would prove decisive.

In terms of intelligence sources, in early 1942, the United States had no significant human sources, no captured documents and little captured material, and no way to use photographs against a moving fleet. Only signals intelligence promised any hope of providing a picture of Japanese intentions and capabilities. And only Magic could make it possible for the American Pacific fleet to defeat the Japanese naval forces in the Battle of Midway.

The Battle of Midway

The Japanese naval code in use just prior to Pearl Harbor, called JN-25 for Japanese navy version 25, consisted of thousands of random letter groups that were enciphered prior to transmission. According to Magic expert and author Ronald Lewin, 'a message would first be encoded by the Japanese; then, drawing on a stock of a hundred thousand five-digit members mixed at random, the clerk would convert into a ciphered text the already encoded message. Thus the Americans had to 'strip' the cipher before the coded signal could be bared and broken.'

Nonetheless, American code breakers stationed at Pearl Harbor, led by Commander Joseph Rochefort, managed slowly to crack enough of the code to develop good intelligence. Additional intelligence came through the Japanese diplomatic cipher, which was cracked before the US entered hostilities and broken consistently throughout the war. Japanese code makers, who invested a too great faith in their system, dealt with such possibilities by changing their codes periodically, and always before a major operation. This they did in December 1941, introducing JN-25b. This new naval code effectively blinded the Americans just prior to the attack on Pearl Harbor, with the results we know.

In the spring of 1942, the situation in the Pacific was somehow alarming since the lineup of naval

power in the Pacific became six Japanese carriers to three American. Admiral Isoroku Yamamoto, the architect of Pearl Harbor, was well aware that this superiority would be short lived. He had spent several years in the United States and did not underestimate its productive capacity. Yamamoto knew he must strike quickly. If he could concentrate all six of his operational carriers against the American three, the outcome could not be doubted. Midway Island, 1,136 miles northwest of Pearl Harbor, would be the target. The attacking fleet would serve as bait to draw out the Americans, then finish off their fleet.

Yamamoto's undoubtedly brilliant mind tended toward overly complicated plans. At Midway, he divided his fleet into three task forces, each powerful in itself, but too far apart for mutual support. He moved his main carrier striking force of four carriers into a single formation. This meant that if one was discovered by the Americans, all were subject to attack. If the Americans remained ignorant of his plans and reacted as expected, his victory was assured. If, however, they learned of his far-flung forces, they could concentrate on the most dangerous and defeat them. This is what happened, thanks to abundant, quickly decoded and analysed intelligence.

At Pearl Harbor, Rochefort and his code breakers worked around the clock attacking JN-25b. Finally in April, the pieces came together. Although only portions of each Japanese message could be read, enough could be pieced together to give Admiral Chester Nimitz, the commander in chief of the Pacific Fleet, the plans and objective of the Japanese effort. With this information in hand, Nimitz could maximize the impact of his limited forces. On 4 June 1942, the US fleet crushed the Japanese at the Battle of Midway and changed the course of the Pacific war.

Disturbing Japanese supply convoys

The enormous Pacific expansion of the Japanese Empire in 1942 meant that Japan was dependent on the ability of its merchant fleet to resupply and reinforce its far-flung garrisons. Until 1943, American submarines failed to neutralize this fleet. Their failure was due to inexperienced commanders; faulty equipment, particularly torpedoes; and the inability to find Japanese merchantmen.

Then everything came together. American submarine commanders learned their new trade, torpedoes were improved and Navy code breakers began to read the Japanese merchant ship code. Submarine commanders now got not only the number of ships in a given convoy, but often even their names, cargos and escorts, and the convoy's exact position. The American submarine offensive left thousands of Japanese soldiers on bypassed islands, and oil stocks in the home islands were cut 90 percent. Japan, which had started the war with some six million tons of merchant shipping, lost five million of it during the war.

Conclusion

The main value of Magic for both the American president and those of his advisers with access to it was that it exposed the gulf between Japan's policy declarations and its undeclared aims. On 6 June 1941 a communication to the Japanese ambassador in Berlin warned him that the Americans had broken the Japanese diplomatic code and on 20 May, the ambassador reported to Tokyo that he had discovered that the United States was reading some of their codes though he did not know which ones. Tokyo rashly concluded that Purple was still secure. That overconfidence was to play against the Japanese and indeed led to the weakening of Japanese naval forces despite their numeral superiority.

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Structure of the presentation

Introduction
1. Birth of Magic
2. The Battle of Midway
3. Disturbing Japanese supply convoys

Conclusion

Reference materials on Magic

Alexander S. Cochran Jr., *The Magic Diplomatic Summaries: A Chronological Finding Aid*, New York, Garland, 1983.

This work indexes more than 1,300 Magic documents with a brief summary for each.

Alexander S. Cochran Jr., ''Magic', 'Ultra', and the Second World War: Literature, Sources, and Outlook', *Military Affairs*, vol. 46, no. 2, 1982, p. 88-92.

Edward J. Drea, 'Ultra and the American War Against Japan: A Note on Sources', *Intelligence and National Security*, vol. 3, no. 1, January 1988, p. 195-204.

A valuable introduction to a key document collection.

Jürgen Rohwer, 'Signal Intelligence and World War II: The Unfolding Story', *Journal of Military History*, vol. 63, no. 4, October 1999, p. 939-951.

The author tracks the opening up of information from American and British sources (and secondarily from other countries) about the role of sigint in World War II.

Donald J. Sexton, *Signals Intelligence in World War II: A Research Guide*, Westport, Greenwood, 1996.

This work has 828 annotated bibliographic entries dealing with the role of Ultra and Magic. Entries include both primary and secondary sources, and the annotations average 4-5 lines each. There are also entries on sources on the sigint and cryptanalytic programs of the Axis and neutral powers.

Donald J. Sexton and Myron J. Smith Jr., *Electronic Intelligence in World War II: ULTRA and MAGIC - A Bibliography*, London, Meckler, 1994.

(comments from J. Ransom Clark, *The Literature of Intelligence: A Bibliography of Materials, with Essays, Reviews, and Comments*, available online at http://intellit.muskingum.edu/)