Declassified and approved for release by NSA on 9 January 2007 pursuant to E.O. 12958, as amended. MDR-51909.
DOCID: 3098554

(U) Cryptologic Almanac 50th Anniversary Series

(U) Richard A. Day:A Telecommunications Pioneer

(U) When Richard A. "Dick" Day was hired by NSA in October 1957 as a GS14, some people wondered why the Agency had hired an "outsider" who lacked a college degree. An Agency senior in telecommunications responded that Day was hired because the Agency needed a mover and a shaker. Dick Day lived up to that description. Day's work was already known to Agency seniors before his employment. He was specifically recruited by Colonel Dean, who was on the NSA telecommunications staff, with the blessing of Dr. Tordella, deputy director of NSA.

~~(TS//SI)~~ Because of Day's leadership, NSA revolutionized its telecommunications throughout the 1960s and 1970s. Through his work, NSA's communications became much faster and more efficient than those from other Defense Department entities. Dick Day was instrumental in the development of the first wideband systems using satellite communications. Thanks to Day, NSA was the first government organization to engineer and implement fiber-optic communications links.

(U) Dick day's life experience was an excellent preparation for his NSA career. Born in Rhode Island, Dick was fascinated by old radios and received his first crystal set at age seven. While other teens were interested in cars, Day placed ads in the newspapers asking people who were discarding old radios to give them to him.

(U) In November 1942, following high school graduation, Day enlisted in the army. He served with the 53rd Signal Corps Battalion as a radio mechanic. As Day explained: "I saw how valuable intelligence was to the field commander. We had to keep the 128th Signal Radio Intelligence Company operational at all costs."

(U) Day served much of the war in the European theater, but spent the last few months of his time in the military in Japan. He left the army in November 1945.

(U) From 1950 to 1957, Day was a technical representative for RCA Corporation. He served as the liaison between the U. S. military and European telecommunication entities. During this period, Day believed European telegraphy was more advanced than U.S. systems. According to Day, Europeans depended more heavily on teleprinters because they had to overcome more language barriers than the U.S. The U.S., on the other hand, conducted most of its business on the telephone. Europeans did not have that luxury and thus developed more sophisticated telegraph capacity. Day later introduced some of the

advanced concepts that he learned in Europe to NSA communications planning.

~~(TS//SI)~~ One of Day's early projects at NSA was implementing the CRITICOMM improvement program. In 1958 President Eisenhower instructed the Joint Chiefs of Staff and the intelligence community to establish a system whereby the president would be notified of any situation throughout the world within ten minutes of recognition that the situation met CRITIC criteria. NSA became the manager of this project. The Agency had to find equipment that could fill the bill and have it operational by 1961. Day observed that getting a message to Washington within ten minutes was not the greatest technological problem. The major difficulty was segregating the message after it had been received by the president so that it could be sent only to those entities that needed the information.

~~(TS//SI)~~ Day used this opportunity not only to meet the president's objectives, but also to upgrade all aspects of telecommunications. As Day stated: "We rebuilt the communication center at NSA. We standardized signaling procedures [and] routing instructions and introduced human engineering improvements such as the locations of racks at intercept sites throughout the world. I wanted an individual to go to any site, recognize the set-up, and begin work immediately."

~~(TS//SI)~~ Day was not a shy individual. He spoke up for innovation and reform even when his ideas were considered controversial. Many general service communicators viewed Day's plan of putting a printer on every line that came into the communication center as wasteful. Day convinced his opponents that these printers would alert the operator more quickly to machine problems which caused the transmission of junk rather than real traffic. Day further improved quality controls on traffic by developing error correction equipment to ensure that every encrypted bit was received as transmitted. Day argued that cryptanalysts have enough of a challenge trying to decrypt garbled messages; they should not have to cope with transmission problems that cause characters to be added or deleted from traffic.

~~(TS//SI)~~ Day had a knack for identifying a problem, writing specifications to solve it, and working with NSA engineers and contractors to ensure that the equipment was built properly and actually worked. For example, Day identified a timing problem in satellite communications. His chief engineer developed and patented an automatic delay compensator to solve this problem. This new technology was a great asset to the Agency for many years.

~~(TS//SI)~~ Other governmental entities frequently called upon NSA for communications assistance. Day reported that the deputy director of NSA, Louis Tordella, told him to fix the telephones in President Eisenhower's office. Day found shelves under the president's desk in the Oval Office that contained 26 telephones. When a phone rang, the president had to get on his hands and knees, crawl around, and pick up phones until he came to the

line with a caller on it. Day claimed that NSA not only fixed the phone problem, but also rebuilt the entire communications structure for the White House.

~~(TS//SI)~~ One of the most unusual requests for communications assistance came to Day from the Nixon administration. President Nixon would not read teletype reports. He wanted information on bond paper, typed with double spaces, and did not want all of the characters to be in upper case. Day had a KW-7 modified to accept ASCII characters, allowing the president to receive reports in the requested format.

(U) Day reported that one of the most rewarding aspects of his Agency career was the opportunity to influence U.S. communications policy. He always paid close attention to proposed changes in standards to influence their design. Day stated: "Many of the people who wrote standards knew about data processing and computing. They rarely knew anything or even thought about transmission or switching. For example, an edict came down that ASCII characters would be the new standard for the federal government. I convinced the authors to add a null character to the ASCII table to signify a space, a necessity in transmissions."

(U) In recognition of his achievements, Day received the Exceptional Civilian Service Award in 1969 and the Meritorious Civilian Service Award in 1981. He retired from the Agency in 1984 and devotes his time to restoring antique marine engines.

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Content Owner: Feedback
Web POC: Feedback

Last Modified: by nsr
Last Reviewed: May 27, 2003
Next Review: 365 days

TOP SECRET//COMINT//X1

DERIVED FROM: NSA/CSS MANUAL 123-2
DATED: 24 FEB 1998
DECLASSIFY ON: X1