A 10th Anniversary Retrospective

By Jack E. Ingram, NSA, Curator

A Long Journey

The National Cryptologic Museum (NCM) opened its doors to the public on 17 December 1993. The journey to the event began some fifty years earlier during World War II. As the combat war intensified, so, too, did the intelligence war. Captured Axis cryptographic equipment and materiel were examined and reverse engineered by the Army and Navy signal security services. After the war, the Army holdings were designated as the Research and Development Museum (RDM) Collection. When the National Security Agency (NSA) was formed in November of 1952, it inherited the RDM, which is still the main core of the NCM collection. The RDM holdings included cryptographic devices from the 19th and early 20th centuries, as well as Allied and captured Axis materiel.

Legendary cryptologic pioneers William F. Friedman and Lambros Callimahos each had an abiding interest in cryptologic history and the RDM collection. Callimahos even had a small "museum" next to his office at NSA that he enjoyed showing to privileged visitors. Thanks in part to their efforts, the collection was kept intact well into the late 1970s when Earl J. "Jerry" Coates became curator of the collection, which by then had been assimilated into the History Department. Beginning in the late 1970s and throughout the 1980s, Coates began designing and placing exhibits in the lobby of the headquarters building.

The exhibits included such diverse subjects as the Cipher Machine Enigma; The NSA Rare Book Collection; The Radio Intelligence Service 1918-1919; The Cryptologic Background of D-Day; The Battle of the Atlantic; COMSEC; Codes, Ciphers and Signals in the American Civil War; Prelude to War; and more. The success of the exhibits served to push Coates toward the ultimate goal of developing a true museum for NSA.

In 1981, with the support and authorization of NSA Director Vice Admiral Bobby Ray Inman, Coates responded to a request by the Smithsonian's Museum of American History for assistance in installing an exhibit on cipher machines. In addition to helping with the exhibit story line, Coates loaned the Smithsonian early 20th century and World War II cipher machines used by the Allied and Axis powers. The exhibit marked the first time NSA had ventured into the public arena.

In 1987, Coates loaned what is thought to be the last surviving U.S. Navy cryptanalytic Bombe (used to recover Enigma keys in World War II) to the Smithsonian's Museum of American History. The Bombe, which had been on exhibit at NSA since 1985, became the centerpiece of the Smithsonian's new Information Age Exhibit.

In November 1989, NSA Director Vice Admiral William O. Studeman established the Center for Cryptologic History (CCH), moving the History Department out of the Office of Archives and History and making it a part of the NSA Directorate. The first director of the CCH was David W. Gaddy. Gaddy shared Coates' desire to open a museum within the Agency combining classified and unclassified exhibits for the education and enjoyment of NSA employees and distinguished visitors.

Although the CCH flourished under Gaddy, due to operational needs no suitable space could be located for a museum within the NSA complex. Then a fortuitous event occurred. In May of 1990, NSA purchased the old Colony 7 Motel, located adjacent to NSA at the intersection of the Baltimore-Washington Parkway (295) and MD Route 32. The motel consisted of a one-story office, restaurant, and dinner theater building; and four two-story lodging facilities. The NSA Senior Facilities Council entertained a number of proposals for use of the complex; a proposal by the CCH to establish a museum was merely one idea among many.

Admiral Studeman then made another key contribution when, during a speech to the Baltimore-Washington Corridor Chamber of Commerce in June 1990, he made off-the-cuff remarks about the possibility of using Colony 7 as a museum. The audience, composed of state and county officials and business leaders, was excited by this idea. The Chamber followed up with a letter pointing out the advantages of a museum and promising support.

The public surfacing of the concept obliged NSA leadership to take it seriously. David Gaddy persisted in arguing its importance to NSA. In his view, the museum would not be simply a display of "ancient history," but one that served the educational needs of the day, and presented "an idea of the challenges for the future."

On 4 September 1990, the Senior Facilities Council accepted a series of goals in regard to a museum at the Colony 7 facility. A working group was charged with ironing out the details of funding, staffing, access, operation, and parking. Since the Colony 7 complex would not be secured for storage of classified material, the museum would have to be unclassified. It was a short step from that concept to accepting the idea that the public could and should be admitted.

The museum would be located in what had formerly been the restaurant area of the large one-story building. The rest of the building would be configured into four large classrooms for unclassified courses and meetings. Renovations of the building were to begin in the fall of 1991 and would not be completed until the spring of 1993.

The Museum Becomes a Reality

In the late summer of 1991, Jerry Coates moved into an old motel room set up as an office in one of the two-story buildings near the "museum building" to begin planning exhibits for the museum, but he would need help. When David Gaddy asked him whom he would like as his assistant, Coates asked that I be offered the position of assistant curator.

A lifelong history buff with previous graphic arts experience, I was at the time assigned as a senior instructor in the National Cryptologic School (NCS). I had gained a good reputation through my lectures in cryptologic history and other subjects to NCS classes and elsewhere, but I was ready for a change and a new challenge. Gaddy offered me the position in August 1991, explaining that the Office of the Secretary of Defense had endorsed the museum. I readily accepted his offer, joined the CCH, and moved into the converted office with Coates in November 1991. For about eighteen months, while the building's interior was gutted and reconfigured, Jerry and I made plans and dreamed dreams about what to include in our new museum. One burning question was what to name the museum. Several unacceptable suggestions were received, including "Codes R Us." Eventually, I had the idea that the "National " Security Agency should name its museum the "National" Cryptologic Museum, as we were after all a national-level agency and cryptology was our business. Since no one objected, Coates and I just used the name and it stuck.

Our task was a daunting one. We were to build a museum without a procurement budget. Other than our salaries and facility support, we really had no funding. The graphics support would come from the main NSA Graphics Department at no cost to us; however, we needed exhibit cases in order to both display and protect our artifacts. Fortunately, Jerry made a phone call to a friend at the Smithsonian at just the right time. The Museum of African Art had some used exhibit cases to give away, and we were the first to ask for them. All we had to do was select the ones we wanted (we took them all) and move them ourselves, which we managed to do in fairly short order. In addition, the Historical Electronics Museum in Linthicum, Maryland, gave us three large cases. After some minor repairs, the cases were ready, and we were all set to begin designing and installing exhibits.

By mid-April 1993, the museum building was completed, and two members of the NSA Graphics Display Team moved in with Coates and me. Arthur Green and Douglas Parks proved to be masters of their trade, and the four of us made rapid progress in turning our ideas into reality. The exhibits were fabricated on sheets of plywood supported by sawhorses set up in what had been the motel kitchen. Occasionally globs of grease would fall out of the old exhaust fans and onto our work in progress.

While the four of us designed, fabricated, and put in exhibits, another man cleaned and restored the old cipher machines we were going to display. His name was Joel Atwood, and he was a gem. Joel had many years of experience restoring old toy trains and building model railroads. He managed to keep one step ahead of us during the three months it took to complete the initial exhibits. Joel stayed on as part of the NCM staff until his retirement in January 1994.

The National Cryptologic Museum opened on 13 July 1993. Initially the museum was open only to NSA employees and their families as well as other members of the intelligence community. This gave us time to get used to giving small tours and answering questions from employee family members, which would of course be much the same as the ones we would later get from the general public. We also used the first few months to fine-tune our exhibits.

Finally, on 17 December 1993 the museum opened its doors to the general public. By that I mean we were now open to virtually anyone from anywhere. A small reception was held that evening with some Baltimore-Washington Corridor Chamber of Commerce, Fort Meade, and Smithsonian officials in attendance. There was no press release on the event; therefore, the public did not really know we were open. After all, NSA was known as "No Such Agency," and the Agency was really just beginning to feel its way in the public affairs arena. That would change with the opening of the NCM, and sooner than anyone would have thought.

The public first found out about the NCM thanks to the *Washington Post*. Post staff writer Ken Ringle had learned about the museum from David Kahn, author of the groundbreaking book *The Codebreakers*. Ringle's article, entitled "Only Sleuths Can Find This Museum," appeared in the Post on Monday, 24 January 1994. It filled the entire bottom half of the front page. The article included a photograph of the curator, Jerry Coates, looking much like a college professor, standing next to a WWII cipher machine. Ringle's article was complimentary while poking some fun at us at the same time. In his last paragraph he wrote, "Some at NSA say you can reach [the museum] at 301-688-5849. Others at NSA deny that number exists." Of course the article was syndicated throughout the nation, and beginning at about 8:00 that morning our telephone rang every five minutes for the next several days. The word was out! The tempo picked up quickly with visitors beginning to walk in and people calling to schedule tours. We were definitely open, and a big change was just around the corner.

A New Curator and Uncharted Waters

On Friday, 28 January 1994, Jerry Coates retired, and I became curator of the NCM. This had been the plan all along, but the timing was about a year sooner than I had expected. Nevertheless, I was in the hot seat, and it was getting warmer every day. Jerry and I always knew the museum would be a success, but we did not anticipate how quickly that success would come about. Over the first six months, we had several thousand visitors, and I personally gave dozens of tours, with David Hatch, the new chief of the CCH, lending a hand when needed. Our first scheduled public tour was for the "Sisters in Crime," a club for local mystery writers. They were a lot of fun and gave me a great coffee cup in appreciation for the tour.

With the retirement of both Jerry Coates and Joel Atwood, Larry Sharp came on board in February 1994, and John Hultstrand joined me as assistant curator in June. Larry was a militaria and equipment expert and a good armchair historian. John helped by taking on many of the public tours and other time-consuming functions of NCM operations.

With authorization from DoD, in the spring and summer of 1994, I began to draw in retired NSA personnel as museum volunteers. The volunteers provide tours for our visitors, assist in the NCM library, and help organize and catalog our ever-growing collection. Some of the volunteers are former coworkers and friends while others are

people who answered our plea for help. The volunteer program has been critical to the success of the museum.

We also began to develop a more aggressive loan program during this period. Federal and private museums often need cryptologic items for short- and long-term loan. A good example is the U-505 captured during WWII, which is on permanent exhibit at the Museum of Science and Industry in Chicago. They have on loan from us the Enigma machine that was actually used on the U-505. At present, we have approximately twenty Enigmas and many other items on loan in about a dozen locations.

The real shock to us all was the unprecedented media attention generated by the Washington Post article. In February 1994, FOX 5 News of Washington, DC, became the first TV crew to tape "inside NSA." They videotaped me giving a short tour and then sitting down to answer some questions for the 10 O'clock News. What the people watching on TV that night did not see were Judith Emmel, chief of the NSA Public Affairs Office (PAO), and my boss, Dave Hatch, standing about two feet off camera waiting to intercede if needed. The entire session went fine, and the FOX 5 coverage that night was positive for the museum, but, more importantly, it was very positive for NSA.

It was surrealistic, to say the least, to find myself appearing on television after a lifetime of working at NSA in almost complete anonymity outside of family and a few close friends. The FOX 5 interview was the beginning of an adventure that would eventually transform the NCM into a "world class museum" and bring unprecedented, favorable media coverage to both the museum and NSA.

Over the next few months, we were inundated with requests to film exhibits and to interview me at the museum. The requests were from television stations and networks ranging from the local Baltimore network affiliates to ABC for their D-Day special, and film crews from Canada, Germany, France, Spain, and Japan. We also had major radio attention, including National Public Radio and the CBS program "The Osgood File." These programs were all great publicity for the NCM and treated NSA in a favorable light.

The print media was not to be left behind, as many large and small newspapers and periodicals came to do interviews and photo shoots. These included *The Wall Street Journal*, *The Washington Times*, and other U.S. papers, as well as European publications such as *Die Zeit* and *Paris Match*. A very interesting aspect of the print media reporters was how they usually arrived with an ax to grind or an attitude of mistrust towards NSA. You would have thought we all had horns by the look of them when they first arrived. However, by the time the interviews were over, they had come to realize we were not what they perceived us to be and went on to write very favorable articles on the Agency and the NCM. This, in turn, gave me much personal satisfaction in the knowledge that we were breaking new ground in lessening some of the mistrust and anti-NSA bias of the media. Fortunately, this trend has continued to the present day.

Over the years, media attention has remained high with dozens of film crews and reporters from around the world visiting the museum. My personal favorite of the many

television productions, as well as one of the most positive for NSA, is the History Channel's "History's Mysteries" program. The one-hour program was filmed in August 2000 and was first aired in January 2001. Entitled "NSA: America's Most Secret Agency," it was an excellent mix of historical cryptologic success stories, present-day operations, and the value and need for NSA today. The people interviewed ranged from the NSA Historian, Dave Hatch, a few retired NSA officials, and me, to our present leadership including current director Lieutenant General Michael V. Hayden, USAF. Also appearing on camera was well-known author James Bamford, author of two books on NSA, *The Puzzle Palace* and *Body of Secrets*.

Visitors Famous and Infamous

Throughout 1994 and into 1996, we put in a few more exhibits as we moved into one of the classrooms just off our entrance hall. I had an interactive STU-III secure phone set up (using test key) in the room for visitors to experience using a "scramble phone." These didn't last long, as they were not childproof. However, while they were in operation, we had a visit from a Russian Army general in uniform, Lt. Gen. Ivan Milkuan, Chief Russian Army Personnel Directorate. We had a photographer covering the visit, and later on a photograph of the general speaking on a STU-III caused much consternation when shown to the Deputy Director for Information Security. Upon leaving, the general presented us with a documented piece of Francis Gary Powers' U-2, which had been shot down over the Soviet Union on 1 May 1960.

Another unique visitor in those early years was former KGB General Victor Ivankov, the last director of the KGB. Ivankov is now a capitalist running his own security firm in Moscow. Exxon Oil was a client, and an Exxon official set up and accompanied him on the tour of the NCM. At the time, we had a small exhibit on the KGB museum in Moscow, featuring a photograph of Lubyanka Prison, the former headquarters of the KGB. General Ivankov delighted in pointing out the window of the office from which he ran the KGB. The general's English was rather poor, but he was accompanied by one of his former colonels, who spoke excellent English and was a fine interpreter.

In 1994, the eminent astronomer Carl Sagan paid a short visit after giving a presentation inside the Agency. He had only about fifteen minutes to spare, but he spent ten of those minutes playing with our hands-on World War II-vintage Enigma cipher machine. I think he was amazed that he could not predict the outcome of the cipher text. Nevertheless, he thoroughly enjoyed himself and entertained us as well.

I fondly recall the day in early 1998 when Tom Rowlett, the son of Frank Rowlett (who led the team that solved the Japanese Purple Machine in 1940), walked into my office with a gift from his father. With a big smile on his face, Tom handed me a small box containing an old solenoid switch, saying, "Pop said you would know what this is." The solenoid switch had been used in the original Purple Analog. The machine that solved Japanese diplomatic messages would not function properly until the team's electrical engineer, Leo Rosen, wired this fifteen-cent switch into the circuitry. I could not have been more surprised. I had spoken with Frank Rowlett on the telephone numerous

times, and he had visited the museum for a private tour in 1997. Frank had never mentioned to me that he still had the little switch, which had just become an invaluable piece of our collection. Sadly, America lost one of its truly great cryptologic giants when ninety-year-old Frank Rowlett passed away a few months later in June of 1998.

Of the many famous and distinguished visitors, we have had at the NCM, my personal favorite is Apollo 13 Command Astronaut James Lovell. The NSA Deputy Chief Scientist accompanied him and had set up a thirty-minute tour before he was to meet with the Director, Admiral McConnell. Lovell was unassuming and friendly, articulate and inquisitive. In fact, he was so interested and had so many questions that he stayed longer than planned and was late for his meeting with the director. As he was leaving, he graciously signed a handful of museum brochures for the staff. This was the only time I have ever been moved to make such a request of a visitor.

Renaissance

By 1996, the museum was out of space for new exhibits and was badly in need of repairs and further renovations. The entrance road and parking lot were crumbling, and we still needed road signs pointing the way to the museum. When visitors did find us, they were greeted by a building surrounded by an eight-foot fence topped with barbed wire. The thirty- five-year-old restrooms were in poor condition and in need of a major overhaul. All things considered, the NCM was not very appealing or visitor friendly. Since we still had no real budget, my requests for the many needed improvements fell on deaf ears. It was quite discouraging.

All this changed when, in March of 1996, Lieutenant General Kenneth A. Minihan, USAF, became the fourteenth director of the National Security Agency (DIRNSA). General Minihan liked museums, and when told NSA already had a museum, he is reputed to have noted, "But it has to pass the Minihan test!" It was not long before he came over to see our museum, accompanied by the Deputy Director for Support Services (DDS). CCH chief Dave Hatch and I were prepared to give a short tour of the museum, but instead Minihan walked throughout the building with us in his wake. He asked questions and made comments for about fifteen minutes and then began giving orders. General Minihan said he "wanted a 21$_{st}$-century museum," and wanted the needed repairs and renovations completed quickly. He told us he was going to begin holding evening receptions and dinners in the museum, and the first one would be in six weeks. Before leaving he turned to me and, putting his finger on my stomach, said, "You now own the whole building." My mouth fell open in disbelief, so he repeated his statement, adding that he wanted a three-year expansion plan from Dr. Hatch and me in thirty days. Upon returning to his office, the DDS issued an e-mail to his chain of command stating, in effect, "General Minihan and I have just toured the museum. The Director wants needed improvements made to the museum facility. Dave Hatch and Jack Ingram are speaking for the director in this matter, and I expect full support and cooperation to be given to them." Salvation was at hand!

Thanks to General Minihan's interest and support, I began getting phone calls and visits from facility managers asking what I needed and in what priority. The needed improvements to the museum building were taken care of in a few weeks, including an overhaul of the heating and air-conditioning system. Within a few more weeks, the road and parking lot were resurfaced. The fence was removed, trees were planted along the entrance road, and several large museum signs were placed on roads leading to the museum.

During the summer and fall of 1996, the Director and other Agency officials hosted about a dozen evening dinners and social events. Normally, a short tour would be provided to the guests tailored to their particular areas of interest. Over the succeeding years, the popularity of these events has continued to increase, with an average of forty evening events held at the NCM each year.

In the summer of 1996, General Minihan gave his support to retired Air Force Major General John E. Morrison, a former NSA Deputy Director for Operations (DDO) and the "founding father" of the National SIGINT [now Security] Operations Center (NSOC), for his proposal to form the National Cryptologic Museum Foundation (NCMF). That year, the NCMF became a reality with General Morrison as president and a supporting cast drawn from among the most distinguished former senior officials of NSA. The NCMF supports the museum in many ways, such as purchasing artifacts for the collection and books for the library, sponsoring special programs at the museum, and providing funding for the Acoustiguide self-guided tour system. The ultimate goal of the NCMF is to fund and build a large, new museum and turn it over to NSA.

With more space available, I soon began putting in new exhibits as well as expanding some of the original ones. In 1996, the five-ton U.S. Navy cryptanalytic Bombe (an early predecessor of the computer) was recalled from the Smithsonian and added to the popular Enigma exhibit. The Bombe (the last of 121 manufactured) had been used to solve Enigma keys during the Battle of the Atlantic and is a critical part of our cryptologic history. I had grown weary of telling our visitors they would have to go to the Smithsonian to see it; it was now home where it belonged.

A museum gift shop operated by the NSA Civilian Welfare Fund using non-appropriated funds was opened in 1997. The shop, which offers NSA logo shirts, hats, coffee cups, and pens, as well as related books and posters, is immensely popular with our visitors. The shop also generates funds used to purchase items for the museum collections.

In September 1997, an exhibit on aerial reconnaissance missions and losses was installed in conjunction with the opening of National Vigilance Park, located within walking distance of the museum. Vigilance Park opened with the installation of a refurbished C-130 replicating the one shot down over Soviet Armenia in September 1958, an event resulting in the death of all seventeen crewmen. In May of 1998, an Army RU-8D was placed in the park to commemorate the Army's aerial reconnaissance activities during the Vietnam War.

In 1998, John Hulstrand left for another position, and Jennifer Wilcox became the new assistant curator in April 1999. She soon became an indispensable part of my small staff. Jennifer had worked at the museum on a six-month diversity tour in 1996. Within a short amount of time, she wrote a booklet on women cryptologists in WWII. She made herself a true expert on the cryptanalytic Bombe, as she designed and upgraded the exhibit and wrote a groundbreaking booklet explaining how the Bombe worked. She also took charge of our school and Scout outreach program, vastly increasing the number of their visits to the museum.

That same year, Vernon "Rick" Henderson joined the staff, as Larry Sharp retired. Rick had been the facilities specialist assigned to the museum and surrounding buildings since before the museum opened. Rick had always been there for me with a true "can-do" work attitude. He was a natural to join the staff and take on the daunting dual tasks of collections manager and COMSEC custodian. Rick also proved to be adept at working with school and Scout groups and has a special way of relating to senior adult visitors.

We also installed a replica of the NSA/CSS Cryptologic Memorial located in the OPS2B Building. The memorial lists the names of more than 150 individuals who lost their lives in cryptologic service. That same year, an exhibit on cryptologic support to the Vietnam War was installed using recently declassified information. By the end of 1998, we had installed a new gallery dedicated to the Information Assurance mission, and we were again beginning to run out of space.

In 1999, the NCM was the beneficiary of a NSA program known as Soft Landing. As "Soft Landers," newly retired NSA employees continued to work for twelve to eighteen months, but for a contractor that assigned them to "new work." Andy Maxson and Stella Adams each worked at the museum for eighteen months during which time they developed educational and outreach programs and traveling exhibits, as well as helped with all other aspects of museum operations. Andy also brought us into the computer age by importing a computer network program for the museum calendar. During those flourishing times, the NCM staff level grew to six employees plus some fifteen volunteers working as docents, librarians, and collection specialists.

The struggling museum library, which had had several librarians over the preceding years, gained a permanent and superb librarian in Rowena Clough. Rowena's warm and friendly personality, coupled with her professionalism, soon had the library gaining a fine reputation that quickly spread throughout the academic community. She rapidly expanded and transformed the collection into a truly unique tool, accessible to researchers the world over.

In one of his last ceremonial functions as Director, General Minihan presided over a ceremony at the museum as we opened the Cryptologic Hall of Honor in March of 1999. Eight cryptologic pioneers were inducted that first year, followed by three more in 2000, four in 2001, six in 2002, and four in 2003. Located in the museum lobby, the Hall of Honor pays public tribute to the men and women who were, until their election to the

Hall, unsung heroes of the cryptologic profession. They willingly served in silence, never dreaming that one day a grateful nation would give them public recognition.

During General Minihan's tour, the museum became a "world-class museum." In fact, those were the very words expressed by Senator Patrick J. Moynihan during a tour of the museum in 1997. We had grown from one exhibit area to four, and by the end of Minihan's tour, our annual visitation had increased from 10,000 to more than 40,000. General Minihan's support for the NCM and his understanding of its value to the Agency had not only brought about a renaissance for the museum, but it had also positioned us for groundbreaking events to come.

About Exhibits

Our exhibits are carefully planned to show and explain as much as possible of our rich cryptologic heritage and mission. Typically, the museum staff, working in conjunction with the Center for Cryptologic History and the Office of Public and Media Affairs, will develop a new exhibit we believe would be interesting. Often, however, I will receive a request and direction from the DIRNSA or other senior NSA officials for a new exhibit. Once a new exhibit is decided upon, we research the subject, write the captions, and select the photographs and artifacts to be used. Then I work with the NSA Graphics Design Team to develop, fabricate, and install the exhibit. If all goes well, we end up with a visually effective and informative exhibit.

NCM exhibits cover the early sixteenth century to the modern era. There is a "Rare Book" exhibit featuring the book *Polygraphia*, published in 1518, and other ancient books on cryptology. We have an area devoted to the Civil War featuring a rare Signal Honors Flag and a replica of a sampler quilt quite possibly used by the Underground Railroad to communicate secret message to escaping slaves.

There is a section on WW I, with a recreated intercept site as used by the American Army along the Verdun Front. We have a large exhibit area on WW II cipher machines and the machines that solved the Axis cipher machines. This area features eight German Enigma cipher machines; the U.S. SIGABA cipher machine, which was never solved by Axis cryptanalysts; the U.S. PURPLE Analog, used to break the Japanese diplomatic system known as PURPLE; and many other machines of the era. Our WW II area also highlights the Battle of Midway and the role of Native American Code Talkers in Europe and the Far East.

Moving into the latter half of the 20th century, we have exhibits on the Korean and Vietnam Wars, both featuring some superb artifacts of the eras. On permanent loan to us from the Naval Research Laboratories is a reproduction of the second intelligence satellite, from the first series of intelligence satellites, GRAB, launched in the early 1960s. We have a replica of the Great Seal of the U.S. found in Moscow in the American ambassador's residential office. It remained on the wall for seven years before an implanted KGB listening device was discovered in 1952. The Great Seal is next to a case containing a fragment of Francis Gary Powers' U2 reconnaissance plane,

which crashed in the Soviet Union in 1960. There is also the NSA "RISSMAN" Telemetry Processing System, taken out of service in 1995. Recently retired supercomputers and an operating Storagetek data retrieval machine are also on display.

We completely redesigned and installed a new Information Assurance Gallery in August 2002. The history of cryptography (the development of secure codes and cipher systems) is told here. It features artifacts and equipment from the 19th century to the present era, including computer security and biometrics.

On the Cutting Edge

When Lieutenant General Michael V. Hayden, USAF, became DIRNSA in March 1999, he had a mandate from Congress to restructure the Agency and position it for the new millennium. With a graduate degree in history, it was not long before General Hayden visited the museum for a complete tour. He not only saw the value of the museum for entertaining distinguished visitors and what a great public outreach it was, but he also realized that it could be a valuable asset for improving NSA's message to the media.

On 6 March 2000, both the CCH and NCM were placed under the Public Affairs Office. Then ten months later, the CCH was resubordinated to the National Cryptologic School while the NCM stayed on as part of the PAO. Public Affairs Officers Jane Hudgins and Patrick Weadon began working closely with me to better coordinate, integrate, and prioritize museum operations with NSA corporate operations. Their efforts made immediate and positive improvements in operations, and they both continue in that vital role today. General Hayden and NSA Director of Public Affairs Judi Emmel began a strategy to put a more public face on the Agency and to engage with the media in an unprecedented manner. The NCM was to play a major part in the new initiative.

General Hayden began inviting the news media to cover the unveiling of new exhibits at the museum. A great example is the opening of a new exhibit on 18 September 2000 commemorating cryptologic support activities during the Korean War. The exhibit contains recently declassified information and was the first event in NSA's public observance of the fiftieth anniversary of the Korean War.

Other examples of museum events covered by the news media are ceremonies inducting new members into the NSA Hall of Honor, the opening of an exhibit on the African American experience at NSA, and a temporary 2001 exhibit on U.S. Coast Guard cryptanalytic activities during Prohibition loaned to us by the U.S. Coast Guard.

Television production crews have continued to use the NCM to videotape background footage as well as new historical programs. In early 2001, the Discovery Science Channel interviewed Jennifer Wilcox and me for a program about breaking the German Enigma cipher machine during World War II. The program aired internationally on television and the Internet.

Judi Emmel and Agency officials often meet with writers and media representatives in the museum conference room for discussions and interviews on a myriad of topics. These meetings often begin or conclude with a short tour of the museum.

Several U.S. senators have toured the museum, and congressional staffers routinely visit the NCM for tours and unclassified background briefings while visiting NSA. These visitors often comment on how the information gained during their tour has given them a greater understanding of cryptology and its importance to our national security. Maryland's U.S. Senator Barbara Mikulski has even used the museum for a staff meeting and a meeting with her Veteran Affairs Advisory Board.

With General Hayden's many-faceted use of the NCM, it has continued to evolve into an important tool in fostering for the American people a clearer understanding and appreciation for NSA and its vital mission in the post-Cold War era.

The New Millennium

The museum is often referred to as "NSA's gateway to the public," and visitors from every station in life from across America and the world routinely express their appreciation of the museum. During calendar year 2002, the NCM was host to over 50,000 visitors, with staff and docents providing in excess of 1,200 tours. Dozens of primary, secondary, and university-level math, computer science, history, and language classes were among the visitors. Active-duty military and veterans groups continue to visit in large numbers, as do Boy and Girl Scout troops. Among the most appreciative of our visitors are the dozens of senior adult groups that visit annually.

The museum has proved to be good for employees' morale, as they enjoy bringing family and friends to the museum - the only place they can share something about the nature of their work. Historically, with many out-of-town families visiting, the day after Thanksgiving is our busiest day of the year - just like the shopping malls! Christmas week is always very busy as well. On those days, it is typical to begin each of a dozen or more tours with a few people and end up with thirty or more by its conclusion.

The NCM is a valuable asset as a recruiting tool for prospective new employee. Examples of this are the Presidential Classroom and the National Youth Forum, which visit twice annually, receiving tours tailored to spark their interest in possible careers in the cryptologic profession. The NCM also gives new hires an appreciation and understanding of their new profession

It is especially gratifying for me when I see the light of understanding appear in the eyes of our military visitors after they see historical examples of the role signals intelligence (SIGINT) has played in giving our forces a decisive edge time after time throughout the 20th century. On the flip side, they see the consequences of inadequate communications security (COMSEC) practices. These lessons are particularly valuable in today's continually evolving environment of cyberspace warfare resulting in an ever more demanding role for Information Assurance.

On 11 September 2001, terrorists struck America in a barbaric act of murder unimaginable to the civilized mind. Because of security concerns, the NCM closed at 11:00 a.m. and remained closed until 13 December 2001, when it once again opened to the public. During those three months, as NSA implemented sweeping new security measures, the staff worked in the PAO and the CCH, lending a hand as needed. While the museum was closed, many behind-the-scenes improvements were made, and more streamlined accounting procedures were implemented for the collection. During the closure, we also continued to loan artifacts to other institutions and even managed to acquire some new items for the collection.

On 1 November 2002, General Hayden, NSA Deputy Director Mr. William B. Black, Jr., Judi Emmel and I opened a major new exhibit to celebrate the 50th anniversary of the National Security Agency. The ceremony was attended by the Honorable Janet Owens, Anne Arundel County Executive, who presented General hayden with a County Proclamation naming November 4, 2002 "NSA Day." The exhibit -- entitled "50 Years of Cryptologic Excellence" -- highlights the Agency's accomplishments during five decades of crisis and change throughout the world. Featuring a dramatic red, white, and blue background, the exhibit includes dozens of photographs, two exhibit cases of unique NSA artifacts, and a continuous-play DVD entitled "1952-2002 A Cryptologic Legacy."

In September 2003, another ribbon-cutting ceremony was held for a new museum exhibit highlighting the importance of language at NSA. The interactive exhibit, entitled "NSA Works with the Most Interesting Characters," illustrates the complexity of language itself and how language analysts use their in-depth skills not only to translate languages but also to produce intelligence

Today, the NCM collection continues to grow in size and scope with the acquisition of recently retired equipment, as well as the purchase and donation of older equipment and artifacts.

The journey toward our "world-class museum," which began some sixty years ago, has resulted in a museum that continues to evolve and improve every year, and which has been successful beyond anyone's expectations. I have been fortunate to be involved in the creation and management of the NCM since its beginning and have been richly rewarded professionally and personally beyond measure. I have had the support and friendship of many wonderful and dedicated people without whom this great success story would have never become a reality.