HOWARD KEYLOR MARKS

1913 - 1998

AN ENGINEER'S ENGINEER

~ Introduction ~

Howard Marks was a multi-talented, self-assured gentleman who universally won the admiration and respect of other engineers. His career largely reflected this familiar adage:

There is no limit to what a man can achieve if he doesn't care who gets the credit.

Like others who toiled long hours, and mostly anonymously in Admiral Rickover's Naval Nuclear Program, Howard Marks understood that the real reward for his dedicated service would be the quiet satisfaction of knowing that he had helped create state-of-the-art nuclear-powered naval vessels for the defense of the United States of America.

My association with him was of relatively short duration, but what he contributed to my ability to participate and perform in that demanding program was indeed of major personal benefit. Fortunately, some years after we both had moved on to other things, he and I visited occasionally on a purely social basis to enjoy recounting shared experiences.

However, I never knew very much at all about his early life, and didn't have enough sense to inquire until it was too late. Recently, his family graciously provided me with enough information, illustrations and insight that I can now share and celebrate his impressive life story. It's the least I can do in belated appreciation.

Bill Lee

~ A Quintessential Coming to America ~

Howard Marks' parents immigrated separately to this country from Europe in the late 1800's. His mother, Marie Marks (nee Spiegel) came from her native Hungary to America in 1887 as a young girl, along with her widowed mother and older sister Bertha. Initially, they lived in central Tennessee with an aunt who had helped fund their passage.

Like many other Europeans of Jewish descent, religious freedom was a key factor in Marie's family decision to leave their homeland. William Marks, a German, was also Jewish, but his reasons for leaving his homeland may have been more economically based than religious. He immigrated to the United States in 1883.

Howard's father, William Marks met Joseph Neuman around the start of the 20th century while both were traveling by train. Neuman had immigrated to this country in 1885 to seek his fortune. Howard's mother, Marie, likely met William Marks, by then a widower, because her older sister, Bertha, had married Joseph Neuman in 1901.

William Marks and Joseph Neuman decided to go into business together and headed westward to find a suitable place to live and set up a clothing business. They passed up Los Angles, San Francisco and Seattle before deciding on Pasco, Washington; a very small town located in central Washington State.

Pasco was a railroad and steam boating town, and a county seat, located at the confluence of the Columbia and Snake rivers in what otherwise was a windswept desert with little precipitation throughout the year. Two other communities hugged the rivers' banks nearby; the towns of Kennewick and Richland. William Marks and Joseph Neuman apparently found opportunity…and perhaps little competition…there.

Presumably, after they got established in Pasco, Marie married William; incomplete census records imply they wed in 1909. Alice Marks, his daughter from a former marriage, joined them there. The next year, Marie and William Marks had a son; initially named Maxmillian, per the 1920 census. His given name was later changed to William; perhaps to honor his father, following the senior William's death in April of 1915.

Before he died, a second son, Howard Keylor Marks was born on November 6, 1913.

~ *The Pasco Kid* ~

Howard Marks was about a year and a half old when his father passed away. His mother was left with three small children and no independent means to support her family. Howard's half-sister left Pasco to live with relatives in Kansas. The three remaining members of the Marks family were supported to a large extent by proceeds from the clothing store business that Howard's father and his Uncle Joseph had developed.

Howard Marks' memories of those trying times were later shared with his grandchildren:

"Pasco was a blue-collar town…and the collars weren't very big. We didn't have much. Moms was really tight with money…for good reason. In the winter, it would get down to minus-20 degrees outside. We used an insulated icebox to keep food from freezing, and changed clothes and slept next to the stove."

Howard Marks got introduced to hard work early. He and his brother performed chores around the house, and did as much as small boys could at the clothing store. Once he reached high school age, Howard was able to help out a little more. One summer he worked in a garage removing years of accumulated layers of grease for twenty-five cents an hour. In his senior year he worked at a service station.

After graduating from high school in the late 1920's Howard's older brother could only find a menial job working for the railroad. By then, Marie Marks and her two sons had moved in with the Neuman family. In addition to Howard's Uncle Joseph and Aunt Bertha, their son and the mother of Bertha and Marie were also living there.

William Marks, Howard's brother managed to attend Stanford University and graduated with a masters' degree in engineering. Although the Great Depression hampered his job prospects, he did find work as a Standard Oil trainee and he went on to have a long and fruitful career with the oil company.

Howard Marks graduated from Pasco High School in 1931. Following the pattern established by his older brother, he applied for admission to Stanford University and was accepted.

His acceptance was conditioned on first attending a summer session and successfully completing that regimen, which he did. Howard's uncle supported and encouraged his goal to get a college education and undoubtedly helped with expenses. Even so, throughout his years at Stanford, Howard Marks had to spend a lot of his time earning enough money to stay in college.

~ Living on One Meal a Day ~

Howard's tuition was largely covered through loans. Joseph Neuman likely had a hand in getting those loans, since Howard's six years at Stanford took place in the depths of the Great Depression. But Howard still had to eat and worry about incidental expenses.

During his freshman year, he worked at the school cafeteria. To get to work he walked a mile from his dormitory room each day. When he became a sophomore, he got a part-time job at an 'eating club' which was located in the same building were he resided [Eating clubs at Stanford in the 1930's were popular alternates to cafeteria food].

That was the good news. But in order to work there, he had to become a member of the club. Howard signed up for the most thrifty plan available; one meal per day. Years later, he laughed about that experience:

"Lunch was only thirty-five cents, so I decided I could hold out 'til noon. If I could get a good meal in me at noon, I could get through the night. I did that for a year. But it wasn't as bad as it sounds because some buddies that worked at night would sneak somethin' out. My room was at the end of the building and there was a fire escape that came up outside near my window. They'd come up and they'd have a bulge in their t-shirt...and there'd be three or four slices of buttered toast. But hey, you don't get too choosey at a point like that; it was nourishment."

The next year, Howard had seniority, and got a much better assignment at the eating club. Working there full time, in addition to taking a full load of engineering courses, he got all his meals free.

In the summer between his junior and senior years, Howard Marks joined the Army's ROTC program. He spent that summer at Fort Worden, located at the Pacific Ocean's entrance to Puget Sound. There he participated in test-firing various new models of artillery weaponry. He and his bunkmates received small salaries, plus room and board. There was a curfew at the army base, but Howard later admitted that they would sneak out some evenings to visit a local bar.

In 1935, Howard Marks received a degree in Mechanical Engineering. Following a summer of work at a Civilian Conservation Corps' camp in Northern California fighting forest fires, clearing trails and doing some surveying, he returned to Stanford to enter graduate school.

~ Final Years at Stanford ~

Back at Stanford University, he became treasurer of his eating club, which paid $30 a month and included three meals a day. Nevertheless, times were still tough for Howard Marks, and he took on menial work in the Mechanical Engineering Department, doing general cleanup work in the school's forge and machine shops for fifty cents an hour while still keeping his grades up.

During the next summer, he finally was able to take a break. He and a friend in graduate school made a six-week tour of the West in his friend's Model A Ford. To save money, they created a way to run the vehicle on diesel oil, although Howard later said it didn't run too well on that substitute fuel.

Howard Marks completed graduate school in 1937, earning a masters degree in Mechanical Engineering. His thesis was entitled *An Investigation of Pitting due to Rolling and Sliding Metal Surfaces*. After six years of college life, he was ready for the real world. But the real world wasn't quite ready for him…

~ On the Road to Bremerton ~

After completing his graduate work, Howard Marks was offered a job doing mechanical engineering work in Seattle. But what was promised, and what was provided were two different things. Arriving in Seattle, Howard soon found himself heading for a dam construction site in a remote part of Washington State.

"The next thing I knew I was on the payroll, and on a train going to the mountains. The dam was just getting started. I suddenly found that, once there, I wasn't doing any engineering work, or construction work...we were burning brush that had been stacked up from the logging operation. We had to re-stack the stuff and then burn it..."

Although disappointed, he stayed there for about a year, since no better jobs were available. He was being paid $125 per month, plus room and board, and enjoyed being outside. But he knew that job was not going to last long, so he continued searching for more meaningful work.

In the fall of 1939, he learned that there was an opening for a mechanical engineer at the naval shipyard in Bremerton, Washington. He took a civil service exam, easily passed it and after being hired began doing 'real' mechanical engineering work.

~ The Puget Sound Naval Shipyard Years ~

For the next eight years, Howard lived and worked in town every much as blue collar as Pasco. During that significant period in his life, he helped rebuild ships that had been badly damaged or even sunk at Pearl Harbor. But his wartime engineering achievements were overshadowed by the personal satisfaction of attending a social function in Bremerton and meeting a grammar school teacher named Mary Eleanor Thompson.

They were married on June 6, 1942. Over the next few years, they had a daughter, Sally, then a son, Gordon.

When Howard Marks got to the Puget Sound Naval Shipyard (PSNS), he was placed in a test group that was involved with the developmental testing of all kinds of shipboard equipment. Howard felt he was lucky to get that assignment. Years later, looking back, he said:

"If they'd have assigned me to one of the other jobs I probably wouldn't have lasted. I couldn't stand working over a drafting board all the time like a lot of those guys were doing...I was out on the waterfront and in the shops. That was why I wanted mechanical engineering in the first place...It was just ideal for me."

In 1939, when Howard Marks got to the naval shipyard in Bremerton, the facility was a beehive of activity, employing 6,000 workers. During the Great Depression, money had been poured into the expansion of the yard. This not only helped the local economy, but it was a part of a planned effort to revitalize the Navy following two decades of reduced funding following World War I.

The addition of a large machine shop, two big dry docks, a huge hammerhead crane and other facilities resulted in the Puget Sound yard becoming the Navy's principal West Coast shipbuilding and repair installation. Even before the attack on Pearl Harbor, the shipyard's concentration of effort had begun to shift from shipbuilding to repair work.

Following the major improvements made there in late 1930's, the PSNS had become the only West Coast facility capable of servicing the nation's largest battleships and aircraft carriers. Five of the six battleships that survived the Japanese attack were moved from Hawaii to Bremerton for damage repairs and modernization. Howard Marks was in the thick of that effort.

But first, he had to avoid the less-than-amorous advances of the US Army. Soon after America entered the war, and since Howard held a commission in Army, they wanted him. Capable engineers were in short supply. Consequently, he got orders to leave Bremerton and prepare to go on active duty. But the Navy wanted him too, and won the tug-of-war for his services. While on a visit home to see his mom before going to war, Howard received a telegram canceling the Army's directive and directing him to proceed back to work at Bremerton ASAP.

Returning to PSNS, Howard Marks was soon faced with scenes like this of severe damage, which often required innovative ways to make repairs and also upgrade older battleships. This work went on around the clock, seven days a week. One of his contributions was to use some hands-on experience from his youth to help solve a problem.

The Navy, which was transitioning to welded structures, didn't want armor plating reattached to the sides of repaired battleships with rivets. But welding thick sections of steel resulted in unacceptable distortions. Howard thought a brazing technique he had learned back in Pasco might be the answer. It was; and is a good example of applied engineering resulting from hands-on experience that served him well in later years.

By 1945, the workforce at Bremerton had grown to 32,500 workers. Howard had been placed in charge of a squad of engineers. Reflecting years later on that intense period of hard work, he modestly told his grandchildren:

"We did alright--I thought we saved the government a lot of money and manpower."

~ A Move to the East Coast ~

A huge reduction in force took place at the Puget Sound yard following the war. By the end of 1946, fewer than 9,000 employees were working there. Most of them were mothballing scores of surplus naval vessels or performing routine maintenance on those still in commission. Howard Marks decided it was time to move on.

Howard's years of work at Bremerton had provided him invaluable experience and also had built his civil service resume. In 1947 he applied for an opening at the Portsmouth Naval Shipyard, located in New England and was hired. Traveling across the county, perhaps for the first time, he, Mary Eleanor and their two small children got there in 1947. It was a big move, but one he felt at the time he had to make:

"In engineering you either go ahead or you go back."

His prior testing experience resulted in 34 year-old Howard Marks being placed in charge of the yard's test group. Their work involved running tests on equipment for a new class of conventionally powered submarines. He found that work less fulfilling than his prior navy yard war time experience on the West Coast. In addition, neither he nor his wife…both born and bred Westerners…particularly liked living in New England.

In late 1949, he learned of an opening elsewhere in the Navy for a mechanical engineer that required shipboard steam plant experience. He met those requirements and was interested in the additional opportunity it presented for taking engineering courses at the graduate level…and getting paid to do so. He applied…and changed the rest of his life as well as the lives of many others.

~ A Three-Day Interview ~

That opportunity, of course, was with a branch of the Bureau of Ships, which had been formed in August of 1948. Designated as the Nuclear Power Branch, it was headed by a then-obscure navy captain named Hyman G. Rickover. Rickover, who in spite of much in-service opposition, was pushing for construction of a nuclear powered submarine.

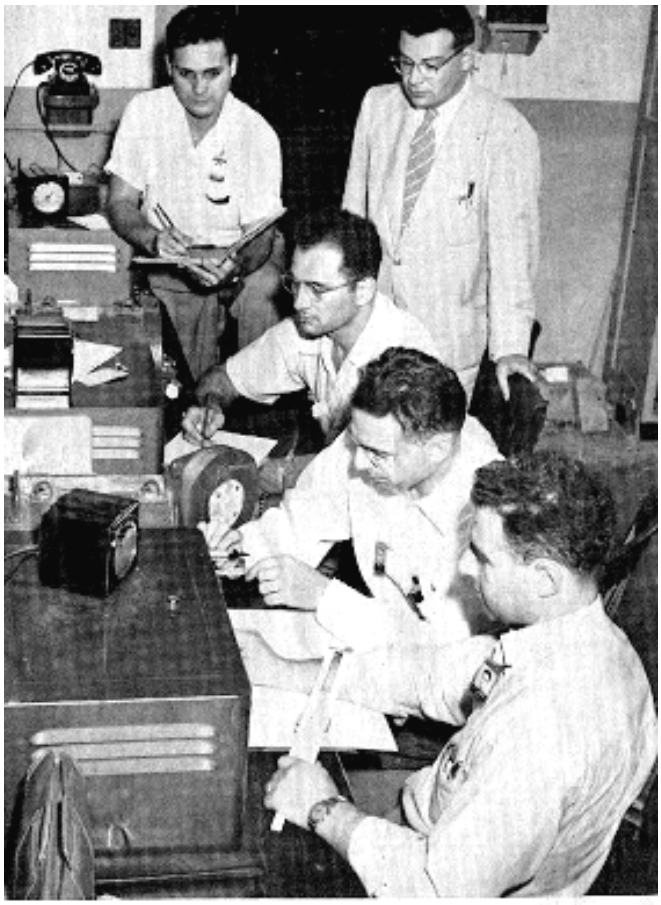
By 1949, Rickover's efforts were yielding positive results. He needed to increase the size of his organization. But he wanted the best of the best, and sought out both talented naval officers and civilians whose engineering experience could be beneficial to his program. To determine if an individual measured up to his standards, Rickover interviewed each applicant. Just before Christmas, that year, Howard Marks had the interview of his life:

"After three days of interviewing hell, I was finally hired by the Captain and sent to Oak Ridge for training, along with four others."

Howard and his family moved to Oak Ridge, Tennessee in March of 1950. There, he was supposed to get a full year of advanced training in nuclear physics and associated subjects at government expense. Included, at Rickover's insistence, was as much hands-on, practical training as the theoretical.

In August of 1950, authorization was given for the construction of a nuclear-powered submarine. That same month, construction on a propulsion plant prototype began at an Atomic Energy site in a remote part of Idaho. A number of ambitious studies for other nuclear-powered ships, including an aircraft carrier were proceeding in parallel.

So, after only nine months at Oak Ridge, Howard was told to report without delay to Rickover's organization in Washington, DC. Howard Marks quickly became immersed in advanced engineering work he could not have possibly dreamed of when he was a student at Stanford University.



EARNEST CONCENTRATION IN REACTOR STUDY—Students of the program of the Oak Ridge School of Reactor Technology have a stiff course of instruction to follow in their training. Shown in the Experimental Reactor Laboratory, in Building 101-E, is a group of the students working with some of the numerous pieces of equipment they are required to learn. They are, front to back: B. T. Resnick, H. K. Marks, Murray Kanes, and Edward Gilbert. Dr. Edward C. Campbell, in charge of the training stands at the rear.

His first assignment was to work on the power plant design for the nation's first nuclear-powered submarine, the NAUTILUS. In a short period of time, his capabilities earned him the responsibility to render final approval for different parts of that pioneering propulsion plant.

By February of 1952, Howard had become a group leader in what was more commonly referred to as Naval Reactors (or, simply called NR; an abbreviation that soon became known throughout the Navy). His group next worked on an improved reactor plant design for submarines. That design was so highly successful that it was utilized in over eighty submarines. Extremely busy between 1950 and 1952, his group did preliminary design and work on what later became the multi-reactor propulsion plant systems installed in the world's first nuclear-powered aircraft carrier and cruiser; the ENTERPRISE and LONG BEACH, respectively.

~ Naval Reactors Section Head ~

Throughout the rest of the 1950's, Howard Marks was totally immersed in the rapid fire and multi-project development of nuclear-powered naval vessels. Almost on a yearly basis, his title changed as he was given more and more responsibility. In a relatively short period of time, this progression led to Howard Marks becoming one of Rickover's direct reports and promoted to the position of Section Head. In this early 1950's photo, Howard Marks is standing; Rickover is in the foreground.

By 1953, Rickover had been promoted to the rank of admiral. But that took an act of Congress, over the objections of the Navy brass. Rickover was impatient, ill-tempered and often irascible. His mood changes are the stuff of legend. But he got things done, often leaving the careers of others in his wake.

Conversely, Howard Marks was polite, reserved and always the gentleman. Plus, he was highly competent; otherwise he would not have survived, much less prospered at Naval Reactors. More than once, Howard Marks was called to task by Rickover for some perceived less-than-perfect effort on the part of one of his subordinates. Even if he was unaware of exactly what had triggered the Admiral's ire, Howard Marks stoically accepted the blame and soldiered on, time after time.

However, that is not to say that he was a 'yes' man. Howard Marks had the courage of his convictions. He did not back down, even in the face of a formidable Rickover verbal assault. Once, he presented a letter to Rickover for signature. It didn't agree with what the Admiral had previously directed that the letter convey. When asked why, Howard said he had consulted with all the other section heads, and they were in unanimous agreement with the letter, as written. Without another word, Rickover signed the letter.

The unorthodox manner in which Naval Reactors accomplished its work was unlike anything else in the US Navy. But it got results. Nuclear powered subs were soon coming off the ways in great numbers. In addition to building and testing full size, operating prototypes of several reactor plant designs, full scale mock-ups were employed to ensure that the plants could be operated properly and maintained without undue difficulty.

Howard and his associates often worked a full day in the office and then flew to a prototype site or shipyard to review work-in-progress late into the night. Or visited a nuclear-powered vessel to test the crew's proficiency; both dockside and at sea.

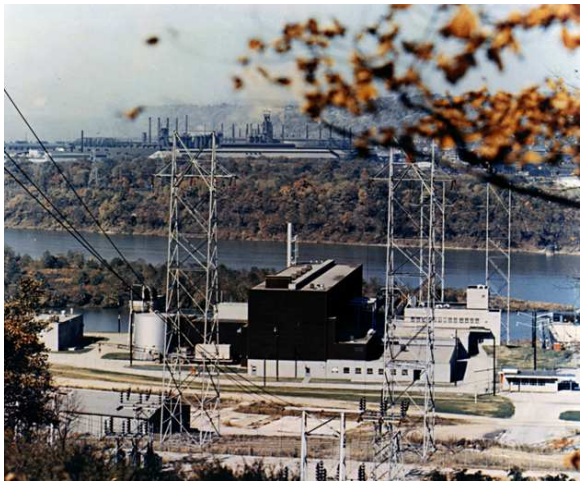
~ The Devil is in the Details…but so is the Salvation ~

Before computer drafting came into common use, detail designs were created manually by draftsmen. The limitations of two-dimensional drawings, even when created as multiple plan, elevation and sectional views, often led to rework during construction, plus expensive modifications after operational experience at sea revealed problems. Rickover felt…insisted…that full-scale mock-ups were the only way to avoid such problems.

Following is an excerpt from a book entitled *Rickover and the Nuclear Navy*. It provides a good description of how mock-ups were utilized and became an indispensable part of the design process for nuclear propulsion plants.

"Submarine mock-ups were fascinating. Built largely of cardboard and wood, they made it possible to trace every pipe in its actual size, see the location of every valve, and observe the overall arrangements of components. Rickover took a great deal of time in his frequent inspections of a mock-up, often remaining transfixed while he visualized the motions that men would have to make to maintain or repair equipment. The mock-up even showed whether lighting was sufficient to read instruments. The full-scale mock-up exposed problems that would not have been apparent from drawings or small scale models. It allowed shipyard workers – such as welders – to be sure they could perform their job in the ship wearing full working gear. After a mock-up had served its initial purpose, it could be used in training people, making sure procedures were correct, and ensuring that operations could be carried out as planned."

Howard Marks not only participated in this process, he instituted a novel technique; i.e., to crawl through the maze of foundations and piping in the bilge areas of surface ship mock-ups to insure that everything in the bowels of an actual ship could be easily constructed and maintained. But he didn't just direct that effort; he often donned hard hat and coveralls, and showed neophyte trainees in his organization how it was done and why it was so important.



Howard was also responsible for much of the design of the nation's first nuclear powered, electrical generating plant. Part of President Eisenhower's 'Atoms for Peace' program, Rickover's team of scientists and engineers created a quasi-commercial nuclear power plant at Shippingport, Pennsylvania. Borrowing somewhat from navy designs, they developed the prototype for most of the world's subsequent nuclear power plants. And they did so in four and a half years; from authorization to full power.

~ From ENTERPRISE to NIMITZ ~

In 1963, the nation's first all-nuclear-powered naval task force steamed around the world without refueling. Howard Marks and his team had a significant role in creating the propulsion plants of the three vessels that composed that historic group (bottom to top): ENTERPRISE, LONG BEACH and BAINBRIDGE. Howard Marks didn't boast of that success. But understandably proud, he kept this lithograph was on his office wall for years.

Almost every thing the people at Naval Reactors did was highly classified. Their families knew they were doing important work on ship designs, but little else. Occasionally, individual recognition was forthcoming. In 1960, Howard Marks was so honored, receiving the Navy Distinguished Civilian Service Award. His citation reads as follows:

"Mr. Howard K. Marks has contributed outstandingly to the application of nuclear propulsion to naval ships and to other applications of nuclear power as well. As Director of the Advanced Design Division of the Nuclear Propulsion Divisions of the Bureau of Ships he has been responsible for the design, development and testing of the fluid systems and plant arrangements aspects of surface ship nuclear propulsion plants. For his resourcefulness and outstanding technical competence, his devotion to duty and intense personal interest, Mr. Marks is richly deserving of the Navy's highest civilian honorary award."

Present when he received that award were (left to right), Dave Leighton, Rickover's top assistant; Howard's daughter, Sally; his wife Mary Eleanor; Howard; an unidentified Navy Department official; Admiral Rickover; and Howard's son, Gordon.

Howard Marks' next, and in the opinion of many, his best work got started in the mid-1960's. A decade later, the USS NIMITZ, first of an advanced design of nuclear-powered aircraft carriers was commissioned.

Technological developments led to the creation of a class of aircraft carriers powered by two reactors. The lead ship, named in honor of Admiral Nimitz, was an outgrowth of prior experiences, and many 'lessons learned' in the early operations of ENTERPRISE and other nuclear-powered surface vessels. Howard Marks and his team of engineers made major contributions to a design that ultimately was replicated in ten carriers. Following NIMITZ sea trials, Admiral Rickover proclaimed that design to be 'The most successful technological accomplishment in the last 100 years of the United States Navy'.

Howard Marks' team had a leading role in creating the specifications and preliminary plans [called Contract Guidance Plans] for the NIMITZ propulsion plant. When these documents were ready for use in a request for proposal for building the recently authorized carrier, the Contract Guidance Plans were signed by a high ranking naval officer. Witnessing this signing ceremony, left to right (in civilian clothing) were Howard Marks; Al Forssell, Howard's second-in-command; and Dave Leighton.

Between 1966 and 1972, the detail design of the NIMITZ propulsion plant was largely completed. NIMITZ was structurally complete and launched on May 3, 1972. A second NIMITZ-class carrier had been authorized and was in the beginning stages of construction. There was every expectation that a third carrier would soon be authorized.

At the same time, the government was going through an austerity period. Early retirements were offered to senior civil servants employed by the Navy Department. To the surprise of his peers and subordinates, Howard Marks elected to accept that offer.

~ Life After Naval Reactors ~

A formal retirement party was held in his honor in 1972. That event was followed by this more relaxed gathering of many members of Howard Marks' group.

Howard turned his attentions to family and, on occasion, to doing consulting work for one of the power companies and a civilian engineering firm engaged in nuclear power activities.

After two decades of non-stop work, Howard was finally able to spend a good amount of quality time with his family. No more late night calls, nocturnal visits to shipyards or urgent naval nuclear design problems to solve. Instead, Howard was able to enjoy trips to the beach, amongst other pleasures. Perhaps, at such times, he gazed out to sea, musing about his contributions to the Nuclear Navy. Only his family knows for sure.

~ No, Thank You ~

In the early 1980's, Admiral Rickover made an overture to Howard Marks to come back to work for him. By that time, Rickover had been forced to retire, and was engaged in serving as a 'devil's advocate' for the nation's nuclear utilities…invited or not!

Howard went to see his former boss. Before they could really get started talking, the telephone rang. As Howard later humorously related:

"The Admiral picked up the phone, listened briefly and then interrupted the poor soul on the other end of the line. As Rickover raged, all those acrimonious sessions I endured came rushing back. My stomach started to churn. When the call was finished, he asked 'Now, were where we?' I told him I was about to say that I wasn't interested, thanked him for the offer and left quickly."

Occasionally, as former associates are wont to do, Howard Marks joined others at reunions. In 1985, he and some of Rickover's earliest subordinates gathered together with Rickover one last time.

In this unfortunately grainy photo, Howard is in the rear, on the far left. Admiral Rickover is in the front row, second from the right.

Howard and Mary Eleanor continued to reside in Fairfax, Virginia until 1988. That year, Howard Marks lost his wife, following her mercifully brief illness of two months.

A few years later, he was diagnosed with a rare neurological disorder. In failing health, he moved from Virginia to be near his daughter in Kentucky. On November 26, 1998, Howard Keynor Marks quietly passed away, twenty days after his 85th birthday.

~ *Fond Memories of a Gentleman…and an Engineer's Engineer* ~

When news of Howard Marks' demise became known, many of his associates whose professional lives he had touched and enriched offered their condolences to his family. Many also included memories of Howard and his approach to his work. A sampling follows.

Al Forssell, who took Howard's place at NR when he retired:

"The surface ships and submarines he worked on have operated well and long, thanks to his insight and design thoroughness. In springtime, when we were still in 'N' Building on Constitution Avenue, he and several of us would walk around the reflecting pool to see the cherry blossoms. It was always fun to talk to him about his past experiences and to be guided by his wisdom as we tackled problems in the design and construction of nuclear-powered vessels.

"He was always interested in the training of young engineers who came to us directly from college. Each had an open mind, ready to learn, and your Dad worked each of us, molding us into capable engineers and managers."

From Dave Leighton, for years Admiral Rickover's right-hand man:

"I worked with your father for a long time – from 1953 until he retired. You can be extremely proud of his major contributions to the defense of our country. He was truly an outstanding engineer as well as a wonderful person."

And from Admiral Bowman, head of Naval Reactors when Howard Marks passed away:

Your Father was one of the founders of the Naval Reactors program. In his early years in the program he worked on three classes of nuclear-powered submarines. His major legacy was construction of ENTERPRISE and development of the NIMITZ class carriers. There are now eight NIMITZ-class carriers in the fleet and two more under construction. These ships will be the backbone of our navy far into the next century. Howard's technical direction at a key point in the development of these ships and his attention to excellence in even the smallest detail played a major role in their success.

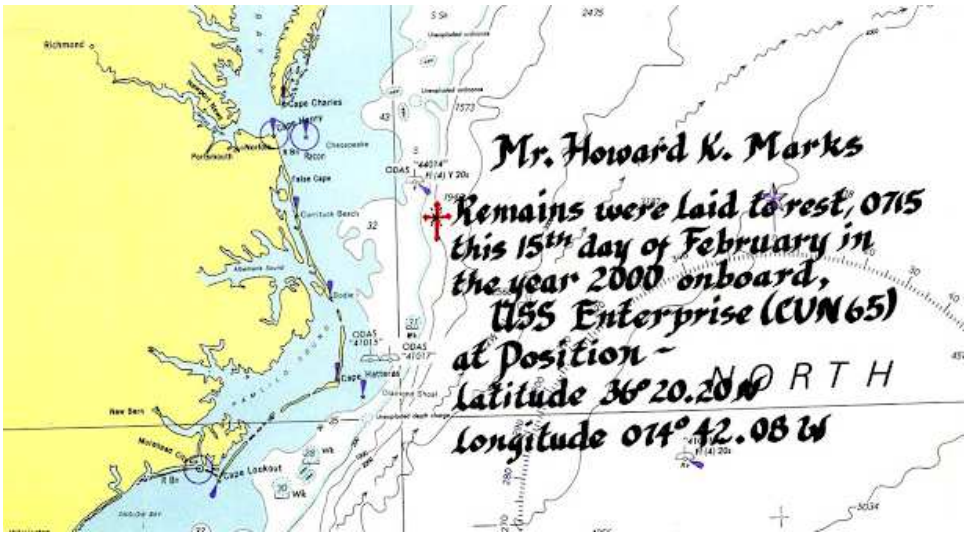
"As important as these ships are the leadership and example he provided to those who worked for and with him was more important. He helped develop a generation of Naval Reactor engineers. Because of what he taught them, they continue to contribute to the success of Naval Nuclear Propulsion to this day."

~ Final Time…Underway on Nuclear Power ~

After Howard Marks' remains were cremated, his family and former associates and close friends Al Forssell and Don Fry set about to provide him a meaningful final resting place. A burial at sea was deemed the most appropriate. A concerted effort by Forssell, Fry and Admiral Bowman resulted in a most unusual approval in 1999 for Howard's cremains to be carried to sea specifically via ENTERPRISE for burial.

But there was a several months' wait before Howard could make his final trip to sea. ENTERPRISE was on an extended deployment when that approval was obtained. After the carrier returned to her home port of Norfolk later that year, Howard Marks' ashes were hand-carried to the ship. In early February of 2000, following a maintenance period she stood out to sea for training. Howard Marks was onboard, but not to quiz the crew or to make sure some recent propulsion plant modification was working as expected.

As dawn broke over a calm sea on February 15, 2000, the ship he helped create slowed. The colors were lowered to half-mast. A solemn ritual, per naval protocol and tradition followed. As part of the ceremony, a 21-gun salute was rendered by a rifle party. Appropriately and thoughtfully, that squad was composed of personnel from the reactor and engineering departments of ENTERPRISE. And then, Howard Marks' remains were solemnly committed to the sea.



~ Postscript ~

Months later, Howard Marks' daughter, one of his grandsons and some friends accepted an invitation from the ship's skipper to visit ENTERPRISE. They were treated to a tour of the ship Howard Marks had helped design, and were able to thank those involved who had last honored him. Until decommissioning in late 2012, that carrier was the oldest vessel in the United States Navy.

ENTERPRISE is now home for one last time at her Newport News birthplace. Eventually she will go to Bremerton, Washington, where Howard Marks once worked. There, her reactors will be prepared for burial…not at sea as he was...but in a huge trench in central Washington State where many other obsolete naval reactors have already been consigned.

The reactors that Howard Marks helped develop, which served for half a century will then go by barge up the Columbia River. At the last bend in the river, within sight of their final destination, those eight reactors will pass very close to his birthplace…and then, Howard Marks' spirit will have come full circle.

~ A Personal Footnote ~

As I developed this tribute to Howard Marks, I recalled a number of instances when he imparted to me the knowledge and skills necessary to have a small part in creating the NIMITZ-class propulsion plant design. Those memories involve things that may still be classified. He wouldn't want me to violate a trust, so I will refrain from sharing.

But I will tell you that I visited with him just a few months before he passed away. Knowing that I was going to be in the city where he was then living, I contacted his daughter and asked if it might be possible to see him. She was happy to arrange a visit, first cautioning that he might not be very alert due to the advanced state of his illness.

When I got there, he was resting in a recliner…an aging shell of the Howard Marks I much prefer to remember. I'm not sure he knew who I was…at first. But I put on my best smiley face and reminded him of some of the funnier episodes we had experienced together. Soon he sat upright and joined in. As he became increasingly alert, a well-remembered twinkle in his eye rekindled. When I left, he had resumed, if only for a far-too-brief time, the appearance of the ever-confident, ever-smiling gentleman I had once known and had so admired.

BL

September 2014

The Admiral, the Gentleman…and me

Five-plus decades ago, through choice or mayhap chance
Two quite contrasting, yet quickly complementary characters
Joined forces to conquer seemingly overwhelming odds
Bonded by an atomic passion to conceive, construct, commission
Military, maritime technical wonders only previously imagined

Rickover - THE Admiral - famous, fearless…and feared
Howard Marks - The Gentleman - poised, practical…and polite
As a then-young shipbuilder, and even younger engineer
I became apprenticed anew in '68 to their creative customs
Constantly challenged to seek, find, do and demand…the very best

I learned how and why - the hard way - from the Admiral
But became skilled under the tactful tutelage of the Gentleman
Who first was my instructor, but then became my mentor…
…and eventually accepted me as an equal…and a friend
To help conceive, construct, commission world-class carriers

I served the Admiral well because I had to
But I satisfied the Gentleman because I wanted to
Both now gone; one to be glorified by history
The other to live in the hearts of men like I who
Respected, admired…and ultimately, privately, loved the Gentleman.

[Written by me in late 1998 upon being informed of the passing of Howard Marks]