

## **HAROLD JOHNSON**

### ***Architect of an “All-Apprentice” Arrangement; the Culmination of Fifty Years of Shipyard Service***

*by Bill Lee (Designer, Atomic - 1959)*



*~ Introduction ~*

All too often, by the time life has knocked enough sense into us, allowing a fuller appreciation for what someone did on our behalf, it is too late to thank them in person. However, it is never too late to acknowledge the gifts imparted to us by such individuals. This is a long overdue public expression of personal gratitude to **Harold Johnson**; apprentice, accomplished designer and, always, under all circumstances, a *gentleman*.

This story is not about me, per se, but I thought it best to relate it from the perspective of my well-remembered experiences, while under the tutelage of Mr. Johnson. My memories are augmented by the reflective comments I recently solicited from several shipbuilders who also had the opportunity and pleasure to interface with Harold Johnson during the course of his fifty years of service at Newport News Shipbuilding.

My formative years of apprenticeship were shaped for the better by the fortunate happenstance of having him as a mentor. I first met Mr. Johnson (I never could bring myself to call him Harold) in the spring of 1956, when I transferred in my second year of apprenticeship from the waterfront to the drawing room.

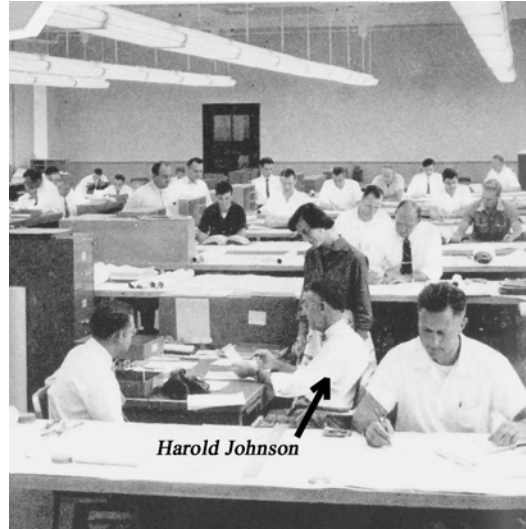
Offered the choice of a transfer to the Hull Design Division, or the very new Atomic Power Design Department, I chose the latter (ignoring the advice of a couple of people whose opinions I normally respected and followed). They felt that nuclear power for ship propulsion was a passing fancy, and that I should take advantage of the offer for an established career in hull design. My seemingly rash decision changed my entire life.

On a beautiful spring Monday morning, as I recall, I reported to the Apprentice School office, nattily attired in white shirt and tie. It was the first time I ever went to work at NNS in such garb. Along with five of my classmates, I was escorted to the south end of the third floor of the yard's main office: Building 86. Clutching our cardboard cases of Apprentice School-issued drawing instruments and our transfer papers, we received temporary badges at the security desk that guarded the APD offices.

We then paraded down an aisle that separated a double row of drawing boards manned by curious onlookers. We arrived at our inconspicuous destination; a desk set right out in the middle of drafting office that was in a long, fairly narrow and high-ceilinged space that had been built in the 1890s and had been changed very little thereafter. The only readily apparent concessions to progress were rows of suspended bright florescent lighting and window air conditioners. After eighteen months on the waterfront and in various shipyard shops, it looked wonderful.

At that desk sat a slightly built man with rimless spectacles, who looked more the part of an elderly preacher than a dynamic leader of men in the demanding world of naval nuclear propulsion plant design. Our escort introduced him to us as Mr. Johnson.

I must admit, I was not overly impressed. How very wrong that first impression was! He rose to welcome us as if we were important personages. He quietly and politely introduced himself and welcomed us to his domain. Although almost everything about APD was classified back then, this slightly fuzzy 1955-vintage photo does appear in several shipyard periodicals, with Mr. Johnson in the foreground.



He briefly explained that his group was doing detail design work for something called A1W, which we soon learned was a large nuclear propulsion plant prototype under construction in Idaho, plus an unannounced aircraft carrier. I do not recall much else; I was too busy taking in the surroundings. He turned us over to a supervisor, and without further ado, we were assigned two to a drawing board and commenced our training.

APD was such a new organization, that it did not have an established apprentice training program. Therefore, we utilized training materials ‘borrowed’ from other drawing rooms. However, the dual demands of completing the detail design of A1W and commencing the effort to create production drawings for the world’s first nuclear-powered aircraft carrier provided us a unique opportunity. Much sooner than was the norm in the shipyard’s other drafting offices, we were dispersed throughout the group to do *real work*.

Admittedly, our first assignments, hand-lettering material lists or drawing borders for production drawings for A1W were not all that exciting, but they were *real work* that had to be done. This was long before computer-aided design programs, or even drafting machines were in vogue, so it all had to be manually accomplished by dozens of designers utilizing traditional instruments.

Over time, we discovered that Mr. Johnson was an apprentice graduate; handpicked for the important task he had been assigned. But, of course, a half-dozen brash apprentices barely twenty years old did not – could not – fully appreciate all that we learned about his background. However, one thing came across loud and clear to us; he was universally respected by all who knew him. We soon joined those ranks of his admirers.

Harold Johnson was born in Leeds, England, on September 15, 1893. At a very young, albeit unrecorded age, he began serving an apprenticeship in a British machine shop. For reasons and under circumstances unknown, he left there to emigrate to America. He was first employed in the Brass Machine Shop at NNS in October of 1911, and apparently was given some credit for ‘time served’ in a related apprenticeship in England.

Less than three years later, on July 21, 1914, Harold Johnson, age twenty, completed his apprenticeship as a piping draftsman. He was the fifth apprentice to complete his time in the Piping Drafting Office and he was the 312<sup>th</sup> graduate of the apprentice program. All this took place before the Apprentice School became a formalized entity in 1919.

He was certainly at the right place, and at the right time, when he arrived in Newport News in October of 1911. On November 9<sup>th</sup> of that same year, shipyard President Walter A. Post approved a co-operative program with local public schools to conduct evening classes for shipyard apprentices. A young Harold Johnson may – or may not – be in this vintage picture of such an evening class.



Soon after arriving in Newport News, Harold Johnson apparently became a member of the First Presbyterian Church. It was there that he met his bride-to-be, Mary Kritzer. The church also figured prominently in his life for many years. He was an elder in the church, and taught the men's bible class back when radio station WGH broadcasted those weekly sessions 'live' on Sunday mornings.

Mary and Harold Johnson had two sons, Harold Lee and Robert Edward. Harold Johnson was a great admirer (and, in my opinion emulator) of Robert E. Lee, which accounts for his son's names. Both of his sons followed him by entering the Apprentice School. Their first-born, Harold Lee Johnson, completed his time in the machine shop in 1938.

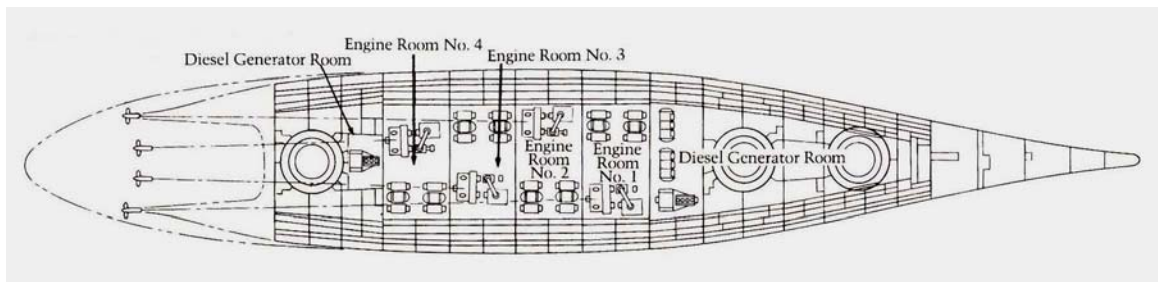
Robert Edward Johnson was initially unable to become an Apprentice. In his own words: *"They didn't want me, at first, because I couldn't play ball or toot a horn."* So, he went to work in the Steam Engineers. After about a year, at the insistence of that department's foreman, John Boutchard (Machinist - 1902), he received an appointment to the Apprentice School. He served some time in the machine shop before transferring to the drawing room where his Father was employed, and completed his apprenticeship in 1944.

Robert Edward Johnson never worked directly for his Father; that would have broken one of the shipyard's unwritten rules. However, while in the piping drawing room, he witnessed, firsthand, examples of his Father's compassion.

*"There was a draftsman there that had severe diabetes, and on occasion would go into a coma. Others avoided him at such times, but my Father would help get him up and onto a drawing board, and force candy into his mouth. He always kept candy handy, for that purpose. On another occasion, I learned that one of the men was out of work, due to illness, and almost broke. My Father quietly collected money to help that fella until he could get back on his feet and return to work."*

Robert Edward Johnson also recalls that his Father worked on the design of the very first aircraft carrier built at Newport News (RANGER, completed in 1934), and the numerous others that followed. When it came time for the yard to assign someone the responsibility of starting up a design section for APD to do similar work, Harold Johnson was the obvious choice for that assignment.

As far back as 1939, as Horace Sutton recently recalled, Harold Johnson was a supervisor in piping design. Horace also remembers that he was working directly for Harold Johnson then, engaged in the detailed design of piping in the machinery spaces of the INDIANA, the last battleship built at NNS. Those machinery spaces were arranged as shown below. Many of the aircraft carriers designs that Mr. Johnson subsequently worked on had very similar layouts; another probable reason why he was selected for a leadership role is the development of the machinery spaces for the first nuclear-powered aircraft carrier.



Horace also recently told me: *“In 1940, I had to have my appendix taken out. Mr. Johnson visited me in the hospital and brought me a ‘present’ – my weekly paycheck!”*

Harold Johnson’s picture appears in the 1941 and 1942 Apprentice School yearbooks, along with the information that he was the apprentice instructor in the piping drawing room in those years. Although he delegated such duties to another graduate apprentice, Newit Pepper (Designer, Machinery - 1947) in APD, Mr. Johnson often had a personal hand in our continuing education. For example, when one of us would get a check print back, heavily marked in red, which denoted things that had to be changed, he might join in a discussion about the necessity of the indicated changes.

As I reflect on those times, I realize he had many other, seemingly more important things to do. But, as I now conclude, he considered our training to be of paramount importance. Occasionally, “HJ” (as he was often referred to – but never in his presence) would share stories of his own apprenticeship with some of us during the daily lunch breaks. We often wolfed down our food, and sometimes worked on homework assignments together for the remainder of the noon hour. More often, we just sat around and gossiped. When passing by, and seeing that was all we were doing, Mr. Johnson might join in the discussion.

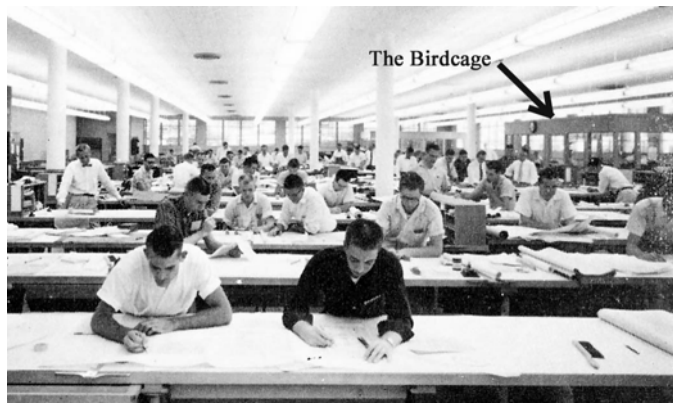
He sometimes spoke of working in summer heat and humidity in a drawing room cooled only by a few electric fans. Fully attired in long-sleeved shirt, tie and vest; the only concession allowed was the removal of suit coats. Often working with ink, he told us that perspiration (I doubt he ever used the word ‘sweat’) soaked his sleeves, and he wore stiff, protective arm sleeves to keep the drawings from smearing.

His photograph in 1941 and others taken when he retired in 1961 appear virtually identical. When I first met him, he seemed old, but he stayed that way as others aged all around him. Speaking of pictures, because he had no middle name, the photo security badge he wore, as we all did, proclaimed his name thusly: HAROLD NMN JOHNSON

He enjoyed explaining to puzzled people that ‘NMN’ stood for No Middle Name. He was quite reserved, and only an occasional twinkle in his eye gave any clue to a very dry and understated sense of humor. Mr. Johnson always spoke in a quiet voice, and I don’t recall a single time when he raised his voice in anger. I am quite positive he never cursed in my presence, in spite of a few times when I and/or others did something that violated his unwritten code of draftsman demeanor that might have excused such an outburst.

Instead, at such times, he just gave you a sad, disappointed look, and made you want to hide somewhere, or at least strive to do better. In similar fashion, his praise was rare and equally understated. It wasn’t that he didn’t want to give credit where credit was due; it was just that what might be considered exemplary design work today is what he expected from us, each and every day, back then.

We moved in 1957 from the main office building to a larger, more modern and secure building across Washington Avenue: Building 521. Mr. Johnson sat in a real office that was essentially a glass-enclosed room, which we called “The Birdcage”. He shared that space with a secretary and his engineering assistant, George Morse (Designer, Piping - 1947).



A sign of those times, the only telephone in our new quarters that had outside calling capability was on Mr. Johnson’s desk. The only other telephones in the area were on the desks of his three supervisors, but those were restricted to ‘inside-the-yard’ calls. If one of us was ever called into his office to take a call, the entire group held its collective breath, for that almost certainly indicated some family tragedy.

But this was not always the case. A classmate of mine, Ernie Branch (Designer, Atomic - 1959) vividly remembers being summonsed to The Birdcage to take a personal telephone call. Mr. Johnson eased Ernie’s fears by saying “It’s Osborne” as he handed over the receiver. The party on the other end shared one of those long drawing boards so familiar to all NNS designers in the mid-20<sup>th</sup> century with Ernie, and they had developed a friendship. But the poor fellow, who was not an apprentice, had run afoul of the law the night before and had been incarcerated. Having no one else to turn to, in desperation he called poor Ernie to get him out of jail. After hanging up, Ernie tried to explain the situation to Mr. Johnson, but was cut off in mid-story when Mr. Johnson simply said:

“Go get him”.

I assume Mr. Johnson had been given fairly free rein, in 1955, to select the key members of his staff. I believe, but am not sure, that his title at that time was Senior Design Supervisor. Ultimately, Harold Johnson was promoted and accorded the title of Assistant Engineer, which was somewhat rare at NNS for a man without a college education.

His most senior right-hand men were all Junior Design Supervisors, as well as Piping Design apprentice graduates. Roger Lamison (1944), Ray Nelson (1941) and Gordon Poole (1924) had transferred to APD along with Mr. Johnson. They all had one or more 'leading draftsmen' in their sections; all of whom - without exception – were also apprentice graduates with years of experience in the design of naval propulsion plants.

One of those graduate apprentices was John Insley (Designer, Piping - 1952) who later had a key role in the propulsion plant design of the NIMITZ-class carriers. When APD was formed, John was a newly minted designer in the piping drawing room, one of many.

But that did not deter him from being a bit bold. As he recently related to me: *“When I heard about people moving to APD, I asked Mr. Johnson if I could go along. It all sounded new and exciting, and I wanted to continue working for him. Mr. Johnson told me he’d consider it and I assumed he had to get permission. Whether that was so or not, I did become the 8<sup>th</sup> piping designer to transfer to APD.”*

*“I never met anyone else that was as kind, as good or as fair as Harold Johnson. He was of the highest moral character, and was extremely fair in his dealings with me and everyone around me. I became a better man and a better designer because of I was fortunate enough to be one of Harold Johnson’s ‘boys’.”* Amen, John!

Harold Johnson had two other direct reports: Newit Pepper (Designer, Machinery – 1947) and Roscoe Crickenberger (Designer, Machinery – 1948). Both Newit and Roscoe (better known as “Crick” to one and all) had worked for Mr. Johnson while still in their apprenticeships. In the early 1950s, they had been loaned to Piping Design to help develop a series of globe and gate valves for shipyard in-house manufacture. Obviously, their work pleased Mr. Johnson, so when it came time for people to be drawn from various areas to form APD, undoubtedly Mr. Johnson asked for – and got – them.

Newit Pepper was APD’s first apprentice training instructor, amongst other responsibilities. Crick ably handled a wide range of items that complemented the basic propulsion plant design work. The most important of these was the detail design of each machinery space’s control station. The first creative work that I performed in APD was under his direction. Recently, he and I reminisced a bit about all that. Crick had a well-deserved reputation for being a very detailed person, which no doubt endeared him to Mr. Johnson. When Crick reviewed a design, the check print often had more red marks on it (denoting changes) than it did yellow shaded areas (indicating acceptable details).

Which sometimes led to the singing of a little ditty, to the tune of a popular commercial jingle for soap that was popular back then (I plead guilty to being the originator):

*I wonder where the yellow went... when Crickenberger checked this print!*

But I digress... In our recent conversation, Crick told me a couple of stories about Mr. Johnson that I had not previously heard. They bear repeating because they provide further insight into the character of the man we both knew whom Crick called *exceptional*.

*“Harold. Johnson once revealed to me something few, if any, ever knew about him. He was a smoker! But he was so disciplined, he never smoked at work. In fact, he told me he smoked three times a day; before and after dinner, and just before bedtime.”*

*“Mr. and Mrs. Johnson once took a vacation trip out west, along with their close friends, Mr. and Mrs. Hebble [Grant Hebble had once been Mr. Johnson’s supervisor in Piping Design.] Mr. Johnson didn’t like to fly, so they went by train. One of their stops was Las Vegas. Mr. Hebble said that in addition to seeing the sights, they should at least put a quarter or two in a slot machine, so they could boast that they had gambled in Vegas. Mr. Johnson could not bring himself to do that; at least not until Mrs. Johnson insisted. But even then, according to Mr. Johnson it was all he could do to acquiesce.”*

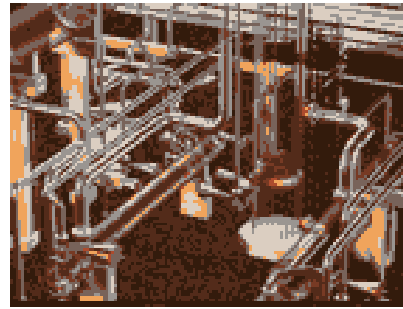
Harold Johnson was a walking warehouse of extremely useful information about design, which he freely shared. He imparted to us, over a relatively few years, many tricks of his trade that we otherwise would not have discovered on our own for decades; if ever. Not only did we have a great mentor in Harold Johnson, but the period of our design apprenticeships roughly coincided with the design developmental phase of the ENTERPRISE. In a period of only three years, we were exposed to all the problems and solutions associated with the development of a propulsion plant design. Today, such things take far longer. Although the complexity of such technology has increased significantly since the 1950s, even then, three years was considered a relatively short period of time for such an accomplishment.

He also repeatedly shared with us his personal credo for team success in what can best be described as informal sermons. Harold Johnson was a staunch believer that if everyone gave 51%, team success was inevitable. I can’t tell you we all did so, all the time, but my recollection is that there were far fewer conflicts within his group than in any other design group we interfaced with in those days.

Mr. Johnson often moved between individual drawing boards, spot-checking the results of our efforts. But he didn’t look over our shoulders as one might normally expect; instead, he stood on the opposite side of our drawing boards and inspected our work whose orientation was upside down to him with ease and understanding!

The arrangement of the ENTERPRISE propulsion plants was controlled by the use of composite drawings. This was the source of all production drawings. Therefore, composites had to accurately reflect structure, foundations, equipment, piping systems, wire ways and ventilation; and open spaces designated for equipment overhaul. The details of how that was done would fill another entire story, and perhaps it will, someday. For now, suffice to note that plan views were created at various levels, with as many corresponding sections and elevations added, as necessary, in order to ensure that what was shown on those complex drawings could be built without interferences resulting.

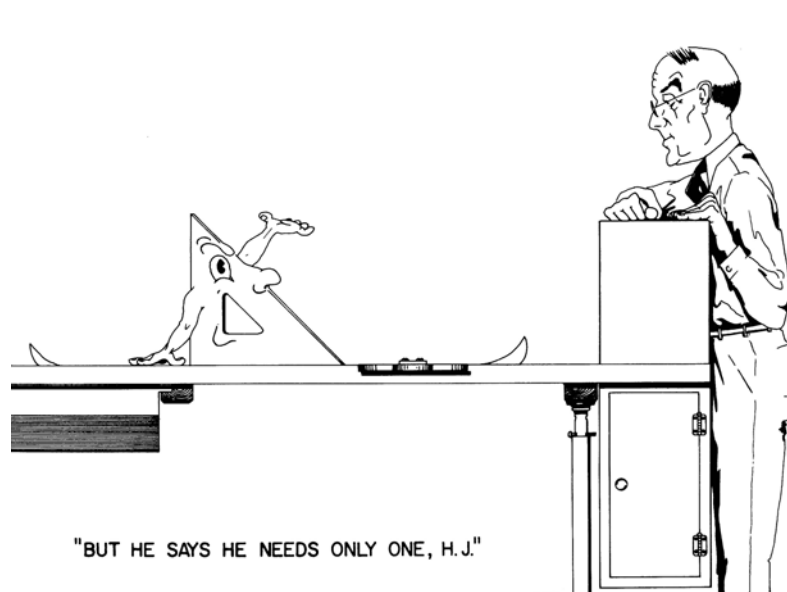
Some fortunate few could look at crowded composites and visualize what was represented there in '3-D'. Harold Johnson was one of them. Things we had to lay out in all three views, and often add an auxiliary view for clarity, he seemed to comprehend with ease. He could glance at a set of composites and tell if there was a problem, or one brewing. I doubt that was due solely to years of practical experience. I think he also had 'the gift'. Remember, he was doing all this by casually inspecting drawings from an upside down vantage point.



Mr. Johnson had a pet peeve. We had been told to always draw all lines using a T-square and a triangle, or two triangles to ensure that our lines were exactly parallel or perpendicular. But some, especially when drawing a short and seemingly insignificant line, would sometimes yield to the temptation of using a single triangle to save time.

Whenever he saw a single triangle in use, out came his disappointed look, accompanied by a short lecture and an 'offer' to show an embarrassed designer how it's properly done.

When Harold Johnson retired, he graciously accepted this cartoon; drawn by one of the men who probably incurred more disappointed looks and repeated lectures than any of the rest of us.



He didn't like for people to smoke in 'his' drawing room, but he never curtailed that right (and now, decades later I know why he tolerated this habit in others). However, he did make it plain that smoking was a bad practice, usually right after some poor unfortunate soul burned a hole in a drawing. He also thought pipe smokers wasted too much time packing tobacco in their pipes. And woe be any designer whose pipe tobacco residue had to be disdainfully removed from a drawing by HJ!

As the design phase of ENTERPRISE wound down, his group was logically diminished in size, with many of us dispersed to other assignments. He urged me to go to college, after completing my apprenticeship, and he suggested (well, in truth, he told me) to go into the nuclear test group and rub shoulders with the best and brightest of the NNS engineers. He said that would be good experience, and an added incentive for me to attend engineering school. He was right, and following his sage advice changed my life.

Sometime late in 1960, after I had been transferred out of his group, he suffered some serious health problems, and was uncharacteristically out of work for an extended period. I'm told there was talk of retiring him. He was already two years past normal retirement age. By then, I was attending college on a shipyard scholarship, thanks, in large part, to his encouragement and strong recommendation to the scholarship committee.

A lesser man than Harold Johnson would have listened to his body – and to the well-meaning advice of his shipyard associates. But he really wanted to complete fifty years of service, and compassion ruled the day. Mr. Johnson was assigned, administratively, to report to Don Kane, a rapidly rising engineer in APD who became the Chief Engineer of the NIMITZ propulsion plant design project a few years later.

Don Kane told me, in a recent conversation: *“I provided this gentleman [Don used that complimentary word in the most sincere and respectful tone, over and over, when reminiscing about Mr. Johnson] with an office and left it up to him to decide how best to productively spend his remaining months at NNS. Mostly on his own volition, Harold Johnson set forth to document his almost fifty years’ of design expertise.”*

What Mr. Johnson ultimately created was a document entitled: ***Notes on Arrangements of Machinery Rooms and Piping Systems***. In his own words, it was “a rational approach to any arrangement problem with which the designer should be acquainted”.

In the real world of propulsion plant design, *what* is required is usually spelled out in a fair amount of detail in government specifications. The mechanics of proper design execution are provided by one or more bone-dry design manuals. But the secret of *how* to achieve the required results is locked in the decades of design experience handed down informally through generations of mostly apprentice-trained designers.

Anyone who has ever been involved with this type of creative work knows that any propulsion plant design is a trade-off of space to accommodate the technical requirements associated with structural, mechanical and electrical systems. In addition, it was very desirable to create an arrangement relatively easy to construct, operate and maintain. This is why the concept of composite drawings was developed at NNS and used for decades.

Mr. Johnson's very last success in the field of design is represented by the plainspoken 'helpful hints' document he created in 1961, filling over 70 pages with sage advice, and lots of do's and don'ts that he and others had learned the hard way through decades of practical experience. He included, as part of his handbook's conclusion, a version of his philosophy of “51% teamwork”, which reads as follows:

*“When we consider that almost half of our waking hours are spent in the shipyard, why should they be wished away as something unpleasant. A cooperative and congenial attitude will produce a like response, and promote a tension free atmosphere, essential to the quantity and quality of production.”*

He also chose to include the following, which shows not only that he was a realist, but still had that wonderful, dry sense of humor which that those of us who once worked for him had come to appreciate and even emulate.

#### A SUPERVISOR'S PRAYER

Dear Lord, help me to become the kind of supervisor my management would like to have me be. Give me the mysterious something which will enable me at all times satisfactorily to explain policies, rules, regulations, and procedures to my workers even when they have never been explained to me.

Help me to teach and to train the uninterested and dimwitted without ever losing my patience or my temper.

Give me that love for my fellowmen which passeth all understanding so that I may lead the recalcitrant, obstinate, no-good worker into the paths of righteousness by my own example, and my soft persuading remonstrance, instead of busting him in the nose.

Instill into my inner being tranquillity and peace of mind that no longer will I wake from my restless sleep in the middle of the night, crying out: "What has the boss got I haven't got, and how did he get it?"

Teach me to smile if it kills me.

Make me a better leader of men by helping develop larger and greater qualities of understanding, tolerance, sympathy, wisdom, perspective, equanimity, mind-reading and second sight.

and when, dear Lord, Thou has helped me to achieve the high pinnacle my management has prescribed for me and when I shall have become the paragon of supervisory virtues in this mortal world ---- dear Lord, move over.

Anon.

In late September 1961, a large number of his fellow and former shipbuilders gathered at the Hotel Warwick to honor Harold Johnson. The toastmaster was Mark Ireland, APD Vice President; the wise man who handpicked Harold Johnson to lead the propulsion plant design effort for A1W and ENTERPRISE. Appropriately, most of those who spoke that night were apprentice graduates or subordinates of "HJ".

A rare, and coveted *50 Year Pin* for service at Newport News Shipbuilding was presented to Mr. Johnson by former shipyard president, J. B. Woodward, Jr. That honor had additional significance; Mr. Woodward had been a volunteer apprentice instructor as far back as 1914, and a long-time champion of the shipyard's apprentice program. More importantly, he was shipyard president when APD was formed in 1953, and surely had a role in Harold Johnson's selection to embark, at age 60, on the final chapter of an illustrious career as a piping designer and supervisor.

The cover of the program that commemorated that gala event includes his image (appropriately hand-drawn). It also includes representative piping systems' components artfully arranged to surround him, as they did for decades as he successfully pursued his life's work.

Still in college, I missed that happy occasion. But upon my graduation in 1963 and return to employment in APD, I had the rare good sense to call upon Mr. Johnson in his quiet retirement home to thank him for all he had done to train me, and to influence and assist me on a future career path.

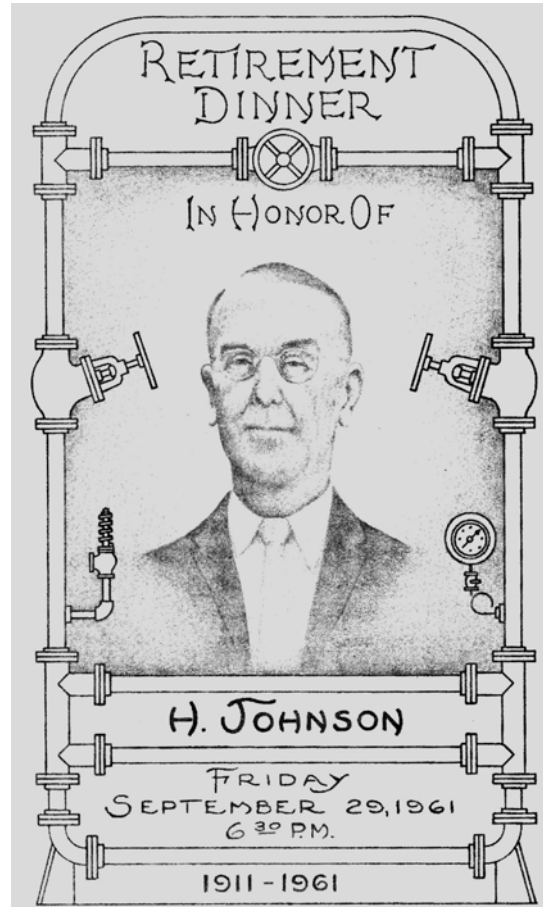
When I stopped by, one warm summer day after work, and as he greeted me, I immediately sensed that something was missing. It took a minute or so for me to realize what that was – he was wearing an open neck sports shirt! I do believe that was the only time I ever saw Mr. Johnson that he was not sporting his trademark white shirt and tie.

Politely brushing aside my clumsy attempts to sincerely thank him, instead he wanted to know all about my then-current work activities. Since that involved some engineering changes to ENTERPRISE necessitated by a couple of years' service experience, he was keenly interested in what I was doing, and – of course – *how* I was doing it. His well-worn body may have been retired, but his mind was still hard at work.

Only three months later, a little after his 70<sup>th</sup> birthday and less than a year shy of celebrating the 50<sup>th</sup> anniversary of completing his apprenticeship, Harold Johnson unexpectedly passed away on October 9, 1963. With great difficulty, his family narrowed the list of worthy and willing pallbearers for his funeral down to eight men; five of whom, unsurprisingly, were Apprentice School graduates.

Harold Johnson's legacy endures. His last, great contribution to design, the propulsion plant of the USS ENTERPRISE, is still functioning, and functioning well. Now in her 46<sup>th</sup> year of commissioned service, she went to sea the first time during the same month that Mr. Johnson retired. Her performance has far exceeded everyone's expectations. Except, perhaps, his...

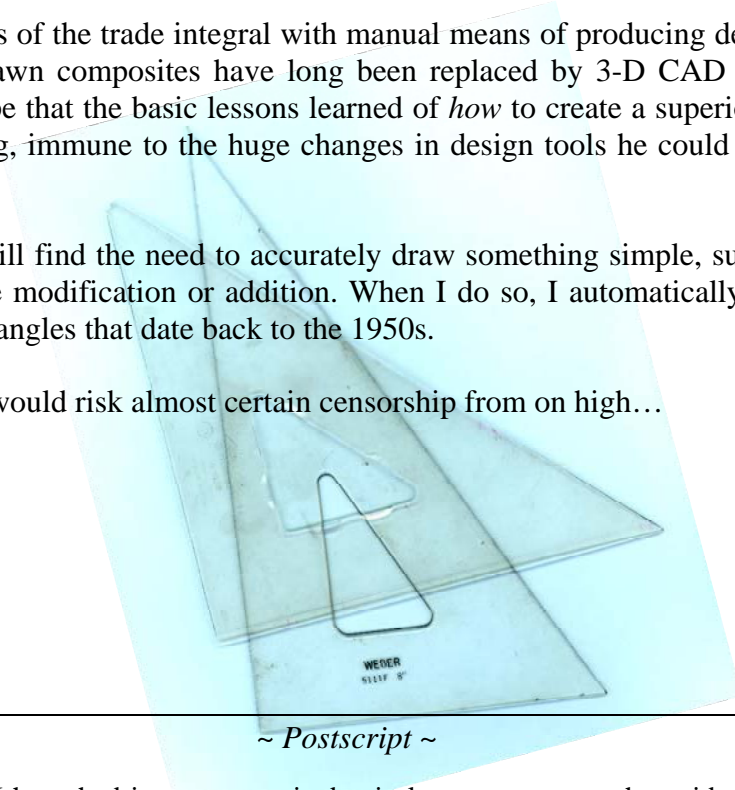
His memory lives on in the hearts and minds of a rapidly dwindling cadre of Mr. Johnson's boys. All but one of his direct reports have now passed on, as have many of those who worked in lesser roles under Harold Johnson's supervision.



Many of his tricks of the trade integral with manual means of producing designs are now archaic. Hand-drawn composites have long been replaced by 3-D CAD visualizations. One can only hope that the basic lessons learned of *how* to create a superior design have been passed along, immune to the huge changes in design tools he could not have even imagined.

Occasionally, I still find the need to accurately draw something simple, such as a sketch for a minor home modification or addition. When I do so, I automatically reach for my two well-worn triangles that date back to the 1950s.

To do otherwise would risk almost certain censorship from on high...



~ *Postscript* ~

Whatever success I have had in my career is due in large measure to the guidance and training imparted by Mr. Johnson during my design apprenticeship years. He instilled in me an appreciation for the necessity to go beyond the technical design requirements, and to incorporate into any future designs the hard to quantify concepts of constructability, operability and maintainability. As it turned out, that was his greatest gift, of all, to me.

During the design phase of the NIMITZ-class propulsion plant, Admiral Rickover demanded that NNS utilize a full-scale mock-up rather than depend on composite drawings to control machinery space arrangements. This was a radical shift from the shipyard' long-standing dependence for space control on composite drawings. Don Kane was the project's Chief Engineer, and had to choose someone to spearhead that difficult mission. He chose me.

It was what the navy calls a 'deep selection'. He skipped over more obvious and experienced candidates. He apparently thought that the combination of design, engineering and testing experience I had acquired in APD were key factors. I suspect another factor was that I had been one of Mr. Johnson's 'boys'.

Looking back, I should have been scared to death. But youth and enthusiasm, etc., etc... I believed in the goals and with much assistance had a hand in creating a highly successful design under often trying circumstances. That too is another story that I may try to tell someday.

The results of the efforts expended by everyone involved, in my opinion, may be considered a significant success because ten NIMITZ-class carriers have now been built, all of which utilize the arrangement we optimized in the A4W Mock-Up. In a sense, the NIMITZ-class propulsion plant design is also an accomplishment of Harold Johnson's, since he ably laid the groundwork for some of his 'boys' to emulate his example.

Thank you, HJ.

*Bill Lee*  
February 2008