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NELSON Celebrates 70 Years of Continuous Practice

By: Kenneth H. Nelson, P.E.



Waldemar S. Nelson, P.E.
Founder
(1916 - 2005)



Charles W. Nelson, P.E.
Chairman



Ginger Nelson Dodge
Corporate Secretary



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President


July of 2015 marked the 70th anniversary of our professional practice. We can be proud of, and will recount herein, many of the history-making projects we have designed. But we will also celebrate the significant accomplishment of providing a livelihood for the thousands of people who have worked with us over these seven decades. A story from Waldemar's early career demonstrates the effect this economic catapult has had on people's lives.

Shortly after graduating from Tulane University in 1936 with a combined degree in mechanical and electrical engineering, Waldemar did some design-build contracting work installing a heating system at a religious abbey on the north shore of Lake Pontchartrain. This was years before the causeway would be built

across the lake, so every couple of weeks he would make the circuitous trip by automobile from New Orleans to Covington to check on the job and pay his workers. On one such trip he arrived and asked his superintendent how things had gone since his last visit. The man said "Fine, except one of the pipe fitters ran off with one of their nuns!" Worried that this was going to cause problems with the client, Waldemar hurried over to the Father Abbot's office to make apologies. The Abbot put him at ease and described what had actually happened. This was the middle of the Great Depression triggered by the stock market collapse of 1929, and the woman had come to the abbey with two small children, destitute after her husband had left home to seek work. The abbey had given the lady and her

children shelter. There was a sister organization of nuns who supported themselves by doing laundry for the community. To replace her tattered dress, they gave her a nun's habit, the only clothing they had to furnish, and put her to work in the laundry. The newly hired pipe fitter was her husband, and the job had given him the chance to accumulate some savings so he could rejoin his family and start them all out on a new life. Waldemar used to recount this story with obvious joy at having been able to help that family get back together.

This story demonstrates what has now played out for many families over decades. Young engineers have come to us straight out of school with hardly a penny in savings, started their careers, and begun immediately contributing to the economy through



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Waldemar S. Nelson, P.E.
81 Years Old Takes His Last Trip Offshore

purchases of goods and homes. Virginia Dodge, Waldemar's daughter who has been in our human resources department for years, has remarked how gratifying it has been to get a call from a car dealership, landlord, or potential lender to a new employee, and to verify "Yes, that person works for us!" Knowing it meant they would be able to qualify for the next step in their path toward independent living was a great pleasure, and being able to facilitate it continues to be a humbling duty for the management of the company. Through the dedication of all our staff, we have been able to maintain an environment where we can

practice our profession in an economic engine that has benefitted our families and our clients. It would be hard to put a present inflation-adjusted value on the total payroll that our company has generated over seven decades. Suffice it to say that many households have been started, many children have been raised and educated, and many families have been kept together as a result of the seeds that Waldemar helped plant in 1945. And on our clients' side of the ledger, many billions of dollars worth of projects have been designed that have produced immeasurable value to the world economy. Along the way, we have had the opportunity to design some world record projects on the frontiers of technical development that have garnered awards at the national level.

The company began in New Orleans in July of 1945 as a partnership between Waldemar S. Nelson, Colonel Victor J. Bedell, and his son John Bedell. Colonel Bedell had been the leader of the Boy Scout troop that both Waldemar and John trained in. The only other member of the firm was draftsman Richerson Rhodes,

with whom they had worked during World War II building Camp Claiborne in northern Louisiana. When Waldemar was twenty-five years old, the project manager of Camp Claiborne was transferred to work on another facility, and Waldemar was left in charge of an operation with 1,200 office employees and 20,000 construction workers. This trial by fire prepared him for all the subsequent challenges of building and maintaining his company.

From its modest beginning as Bedell and Nelson, through its renaming as Waldemar S. Nelson and Company, Inc. in 1961 after Waldemar bought out the interests of his deceased partners, the company has grown to its current size of over 400 staff with all engineering disciplines as well as architecture, environmental, and project management capability. We rank consistently in the upper half of the Engineering News Record top 500 design firms, and even higher on some specialty lists within that publication's rankings. The company has designed projects all over the United States, in many foreign countries, and in many offshore oil fields around the world. Our client list has contained most of the major oil, gas, and chemical companies; mining and manufacturing companies; city, state, and federal government agencies; educational institutions; and developers. Our relationships with our major clients have lasted decades. In the files of a mining client we saw a drawing which Waldemar had signed in 1947, and we have worked on a continuous string of projects for that client ever since. At this time that makes a 68 year run of projects, which is remarkable in the annals of industrial history and the consulting engineering world. Since 2000, we have also had a major presence in Houston, with two offices currently serving that vast market. Houston has become a worldwide hub of the oil exploration and production industry, and we are heavily involved in that sector. Our talented staff in those offices have serviced clients with projects on several continents.

Cutting edge projects we have been involved with helped propel the manned exploration of space. In the 1960's we designed a clean room for the assembly of rocket parts, and in the 1970's we designed a building to apply sprayed heat ablative insulation to the exterior of space crafts' fuel tanks. In the 1970's we also participated



New Orleans Office New Employee Welcome Lunch



Charles Nelson and Jim Lane Review The Houston Employee Roster During The Houston Office 10 Year Anniversary Celebration

in the design of the first floating oil storage and treatment vessel in U.S. waters off the environmentally sensitive coast of California. This ability to design with regard for environmental concerns later took us to projects in the waters of Mobile Bay and on the coast of Florida, where the tourist economy is so dependent on pristine waters and beaches. Our environmental department helps our clients keep abreast of the vast permitting requirements that a major industrial project entails, and our other disciplines help design the systems to control pollution. We have designed large projects for chemical plants in the corridor between New Orleans and Baton Rouge, as well as many marine bulk transfer facilities along the river. Our architecture department has designed some of the largest living quarters buildings for offshore platforms in the Gulf of Mexico. These facilities are the equivalent of a self-contained hotel and office building, which happens to need to meet the most stringent life safety code and industrial requirements, while being capable of being lifted as a module from the deck of a barge onto an offshore platform. It is a unique niche in the practice of architecture requiring close coordination between the building designers and all of the engineering disciplines.

In the offshore industry, our engineers started designing platforms before the guidelines for such activities were even published. The first edition of the American Petroleum Industry Recommended Practice for the Design and Installation of Offshore Structures (RP2A) was issued in 1969.

Twelve years before that in 1957, the company had designed the largest connected complex of platforms in the world, located seven miles out to sea from Grande Isle, Louisiana. With no code to go by, our engineers used basic physics and good judgment to develop this innovative facility. It was built only ten years after the very first offshore platform was constructed in the Gulf of Mexico, showing what a cutting edge project it was. This group of platforms performed as designed until 1994, at which time it was turned into an artificial reef to promote fishery growth, another innovative incarnation of the project which the company helped facilitate. In 1967, we would design a similar complex for the same client five miles out to sea from Caminada Pass, Louisiana. And in 1989, we would again work on the then-largest platform complex in the world for the same client, this time twenty-two miles offshore of Venice, Louisiana in 215 feet of water. That massive facility stretched over a mile, with bridges 600 feet long spanning between towers the size of skyscrapers rising from the ocean floor. Those structures were designed by a major offshore construction contractor, with whom we collaborated closely in our role as 'topsides' engineers. The

power plant which we designed for the project was built as a single module the size of a five story office building that would take up half a city block. At 5,400 tons, it was the largest module ever lifted in the western hemisphere up to that time, and the seventh largest lift in the world up to that time. When the head of our civil engineering department put his professional seal on the drawing for the lifting points of this power plant module, he walked into Waldemar's office and said "I just stamped the most important drawing in the company's history." His concern was alleviated when all went well with the lift, and the many millions of dollars hanging on the basis of that stamp were safely delivered. Our involvement in the offshore world has continued to this day, with some of our staff having helped write the codes that now govern the industry. We started in water depths of fifty feet, and we have followed the frontier of oil and gas production into ever deeper water. Our main work now is 'topsides' design on floating platforms tethered to the ocean floor, with installations currently being planned in water up to 9,500 feet deep. The ocean waters off Louisiana were the cradle of the worldwide offshore industry, and the experience we gained there has led us to participate in projects all over the planet.

We have taken our broad domestic experience with us as we forged into the international arena. Our overseas work began as early as the mid 1950's with a mining project in the Caribbean. It involved what were at the time recently developed space age technologies such as welded titanium piping and Teflon gasketing material. These



World Record Offshore Platform Complex Designed in 1957

were necessary to handle the thermally and chemically aggressive reagents involved in the extraction of nickel from a laterite ore. Subsequent work has taken us to Central and South America, Canada, Europe, Russia, continental Asian countries, the Middle East, Africa, and island nations across the Pacific Ocean. Our assistance has been sought anywhere that oil and gas or mining projects are designed, fabricated, or installed. One of our mining projects saw us interacting twenty-four hours a day with the various entities contributing to the project in the Far East. Starting at the international time line on the Greenwich meridian, morning would see the project financing come awake in the banking center of London. As the day progressed, manufacturing facilities in South America would pick up the thread. Then design offices across all time zones in the United States would keep the project going for twelve hours. Skipping over the Pacific, other design offices in Australia would pick up, with many late night phone calls, faxes, and emails between us to coordinate the work. Morning in the Pacific Islands would see construction under way and bring renewed communication with our office in New Orleans. As the sun swept across Asia and Europe, other financial and manufacturing interests would awake and keep the ball rolling until twenty-four hours later, London would again see morning and assess the overnight progress of the \$800 million dollar project. The challenges of making a project of this scale and complexity happen are stunning, and the opportunity to participate in such an endeavor is thrilling.

Our overseas projects have required us to translate not only in words, but also in number systems, working alternately be-



World Record Breaking Directionally Drilled High Voltage Cable Crossing Designed By NELSON

tween English and metric calculations. When foreign investors have wanted to build plants in the United States, we have had to do the reverse and convert their metric designs and equipment specifications into English units. The logistics of transporting materials to overseas locations can also be daunting. On one project, we had two weeks to come up with a list of all the steel we would need to construct a major project because we had to make the sailing date of a ship that would transport the steel to the job site. We scrambled to do preliminary design and assemble a bulk order of steel that would fill the ship and keep the project on schedule. As we finished the design, we had to keep an inventory of what steel had been used so we knew what would be left in a warehouse on a remote mountain top half way around the world. It required close coordination between an army of designers and a staff tracking the dwindling pile of steel.

Louisiana and the company can both be proud of their representation in the oilfields of the world. Charles Nelson, Chairman of Waldemar S. Nelson, began his career designing structures for the North Sea and Persian Gulf oil fields in the office of a major U.S. engineering company in the Netherlands. When he interacted with U.S. equipment suppliers in that capacity, his Louisiana roots brought instant recognition, and they knew they were dealing with someone who had an inherent understanding of the business. When the author was traveling eleven time zones from home on a project involving

petroleum as a fuel and mentioned he was from New Orleans, another participant in the meeting exclaimed "I can't believe it, I'm from Houma!" Two random people living an hour apart in the south Louisiana oil patch had run into each other literally half way around the world because they each brought a piece of expertise to the table that they had learned in the marshes of Louisiana. Similarly, one of our senior consultants brought to bear his experience of building roads to wellhead sites in our soft coastal soils to salvage a project mired down in muddy conditions half way around the world. The ingenuity required to survive in our challenging half water / half soil environment, which is occasionally hit by hurricane winds and tidal surge, has required innovative solutions to protect major economic investments in industrial facilities. The spirit that those design challenges instilled in our staff prepared us to survive one of the most serious threats to our company's life in the form of hurricane Katrina.

In August of 2005 Katrina hit New Orleans, and the levee system protecting the city was in some areas overwhelmed and in other areas just failed. The storm had been a large category five when out at sea, building up a tremendous mound of water. By the time it hit New Orleans, the winds had luckily subsided and the path of the storm took it slightly to the east, so New Orleans was on the weaker side of the hurricane. But the residual momentum of the storm surge brought a wall of water that overtopped some levees in the eastern part of the city, and other levees on interior canals of the city suffered catastrophic structural failures. Eighty percent of the city flooded, followed by a failure of electric power, communications, water supply, and finally civil order. We had rudimentary preparations in place



Tension Leg Platform For Oil & Gas Production



Innovative Rail to Barge Transfer Terminal Developed on Brownfield Industrial Site

with a few volunteers manning the company office, but nothing that could prepare us for the turmoil to follow. The brave skeleton staff of building maintenance personnel literally “held the fort”, living in primitive conditions for about three weeks and keeping our office safe for the return of our company to commerce. With the audacious leadership of Charles Nelson, our inventive staff rented a large generator in Baton Rouge, trucked it into New Orleans through various obstacles, and “hot wired” the building with assistance from some of our senior electrical engineering staff. We had one of the first operating office buildings in the city about a week after the storm, thanks to the resourcefulness, skill, and perseverance of our staff. In fact, when a national television news network was looking for a functioning base of operations for their coverage of this unprecedented event, they rented space in our building and broadcast from the rooftop. When interviewed some months after the storm by a newspaper

reporter who marveled at the accomplishment of our quick return, we explained “We do this for a living, but most of the time it’s on a platform forty miles offshore and you have to take a boat to get there.” There were several junctures at which the entire future of the company could have been lost, but our people in both the New Orleans and Houston offices kept doing the next right thing to keep the doors open through their intelligent action and sheer tenacity. The heads of our accounting and human resources departments in New Orleans carried enough information to our Houston office on a laptop computer to keep payroll functioning, and issued checks by hand to keep our people paid on schedule. The Houston office welcomed our refugee staff from New Orleans, and we kept all of our clients’ projects rolling. Thanks to the remarkable efforts of our staff in both cities, we have enjoyed this past decade of unprecedented growth since Katrina.

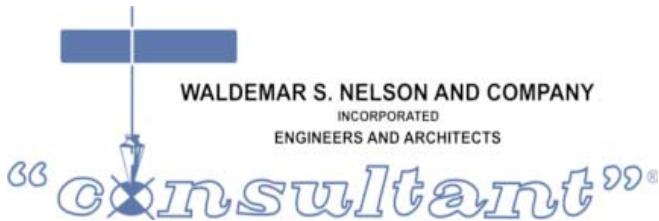
Economic perils have also threatened

the company in its seven decades. Our business is largely dependent on the price of commodities traded on world markets over which we have no control, so we have been whipsawed by radical changes in commodity prices brought on by geopolitical events. The benefit of being privately owned and not a slave to the next fiscal quarter’s stock market reporting cycle has kept us afloat through many boom and bust cycles. In the final analysis, people innately know what is in the best interest of the survival of their families, and in the best of circumstances they are allowed to pursue what is rationally best for them and their progeny. In less than ideal circumstances, as we have seen too many times through history, they have to fight for survival against the tidal forces of misfortune, ignorance, politics, and just plain evil intent. We are lucky to have a resourceful and battle proven staff that works together to meet these challenges so we all have the chance to keep our families fed and sheltered while designing the next technical breakthrough.

The tradition of practicing engineering is deep in the roots of the Nelson family, which has had members practicing in New Orleans for over a century. We have counted about three dozen blood relatives of Waldemar who are engineers, so it is truly “in our genes”. Waldemar’s father graduated in mechanical and electrical engineering from Tulane University in 1907. His mother and her twin sister both graduated in civil engineering in 1903 from Texas A&M, where their father was a professor. Waldemar himself was eventually registered to practice in forty-four states, a remarkable feat. In addition to three of Waldemar’s children who are actively engaged in management of the company, two of Waldemar’s grandsons are recent graduates in civil engineering, a granddaughter is a recent graduate in architecture, and they are all embarking on their professional careers. While the contribution to the world economy from this history of dedication to the profession is incalculable, it can be measured by the many households started and held together by the livelihoods that the company has provided. We celebrate our seventieth year with the continued resolve to keep our company a place where individuals can apply their talents in a positive atmosphere and better both their personal condition and the economy at large.



Generator Power After Hurricane Katrina Helped Restart The Company And City's Economy



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Congratulations to all our staff for achieving these 2015 rankings in the following lists published by Engineering News Record magazine (based on 2014 Revenue):

- Top 500 Design Firms - No. 167
- Top 225 International Design Firms - No. 147
- Top 50 Design Firms in Petroleum - No. 30
- Top 10 Design Firms in Mining - No. 6
- Top 15 Design Firms in Offshore and Underwater Facilities - No. 6