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## North Carolina Regulatory Move to Lead to Higher UST System Costs

A regulatory shift by underground storage tank (UST) regulators in North Carolina will increase the cost of leak detection for all new steel and fiberglass-reinforced plastic UST systems in that state, according to recent media coverage.

And, by doing so, their actions are ignoring a spotless 23-year track record of environmental protection for double-wall steel tanks that carry the Steel Tank Institute label.

A new rule, which took effect on Nov. 1, will require a more-expensive and non-traditional leak-detection monitoring method for steel UST systems designed with secondary containment.

North Carolina will no longer accept the most common method of checking for leaks in steel double-wall tanks – using a small sensor in the interstice between a tank's inner wall and outer wall, according to a recent article in Convenience Store Petroleum magazine. An interstitial sensor detects the presence of any liquid in that space.

State officials contend that the sensor method is not completely accurate. The new rule will require leak monitoring through creation of a vacuum, or monitoring the pressure, in the interstice. The regulation also allows a hydrostatic interstitial monitoring system.

Proponents of the new rule say that the leak-detection method will lead to better environmental protection. Critics say the new rule will create burdens and costs for installation of steel tanks, which many North Carolina businesses prefer over USTs made of fiberglass-reinforced plastic.

However, data from the STICO Mutual Insurance Co. (STICO) shows that secondary containment USTs carrying the Steel Tank Institute label have never leaked product into the environment, said Brian Donovan, president of STICO.

There are about 100,000 secondary containment steel USTs in service within the United States, including STI-labeled tanks, and other steel USTs built to Underwriters Laboratories standards, said Wayne Geyer, executive vice president of STI/SPFA.

“As early as 1984, STI members were fabricating secondary containment tanks to enable the development and use of any leak-detection technologies,” Geyer said. “The flawless track record of environmental protection for STI-labeled underground tanks with secondary containment makes the case for inclusion, rather than exclusion, of proven systems. In addition, ongoing studies that pinpoint the ‘cause of release’ from UST systems have shown that piping and overfill problems are much more significant than tanks in contributing to soil and groundwater pollution incidents.”

Curiously enough, despite the cause-of-release evidence, underground storage system piping in North Carolina will still be allowed to use the same type of sensor that regulators are prohibiting for double-wall USTs.

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## **Underwriters Laboratories Includes Secondary Containment for New Heating Oil Tanks in 2010**

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Here come the double-bottom heating oil tanks.

The newest version of Underwriters Laboratories UL 80 standard has included an option that new, obround heating-oil tanks built to the UL 80 standard be fabricated with secondary containment.

The UL standard for Safety for Steel Tanks for Oil-Burner Fuels and other Combustible Liquids was released in September with a number of revisions from the previous version.

Notable requirements related to secondary containment include:

- The additional bottom of double-bottom tanks, when used, shall cover at least two inches (51 millimeters) above the centerline of the primary tank bottom
- The interstice of a double-bottom tank shall be built to provide either separate or combined venting, and leak monitoring

The effective date of the new UL 80 standard is March 21, 2010.

North of the border, UL Canada (ULC) has also published a new standard that allows a double-bottom tank for heating-oil storage. Details about the new ULC expectations are contained in the Fifth Edition CAN/ULC-S602-07. ULC is very close in concept to UL 80, but a key difference between the standards pertains to venting.

It is generally accepted that secondary containment tanks provide greater environmental protection. In the past, the downside to providing a double-wall design has been the overall cost.

Recognizing that the vast majority, if not all, of failures for obround tanks occur at the bottom, a new option is secondary containment only for the lowest portion of the tank. This will provide additional environmental protection and an efficient leak-detection approach at minimal cost to prevent a release of product from the likeliest point of failure for such tanks.

A study of 60 obround heating oil tanks with failures found that nearly all of those failures occurred near the bottom centerline of the tank.

Accounting for the hesitance of homeowners to pay top dollar for a complete double-wall obround tank, the double-bottom design provides secondary containment where it is needed most without the substantial extra weight of a double-wall tank. Despite that hesitance, homeowners are increasingly aware of environmental consequences resulting from a heating-oil spill and spiraling clean-up costs.

Another advantage to the double-bottom approach is that the tank retains the same dimensions and footprint – a critical consideration when replacing an existing tank – to ensure ease of delivery through doorways and installation into basements.

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## Online Recertification Debuts for Cathodic Protection Testers

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Cathodic protection testers for underground storage tanks (USTs) can gain recertification through a new, online examination offered through Steel Tank Institute.

The easy-to-follow, interactive exam is available to cathodic protection testers currently certified by STI or NACE International. All testers must provide proof of active engagement in the field of cathodic protection monitoring.

In addition, cathodic protection testers whose STI certifications have expired will be permitted to recertify under this program until Feb. 29, 2008.

“STI has offered certification programs for several years that require cathodic protection testers to travel to various locations to obtain and maintain certification,” said Lorri Grainawi, director of technical services for STI/SPFA. “The online exam decreases time and cost commitments substantially. Testers can take the recertification exam from their offices or homes – even on a weekend, if they don’t want to disrupt their work schedules.”

To register for the exam, which costs \$395, visit [www.steeltank.com](http://www.steeltank.com), where a library of downloadable review materials is available. After obtaining the materials, a tester has 59 days to take the recertification exam. After starting the actual exam, a tester will have 24 hours in which to complete the effort. To date, most testers have finished the exam within two to four hours.

Though the STI certification is generally accepted throughout the United States, some regulatory agencies may have additional requirements. STI recommends that testers check with regulators to ensure that they are aware of all cathodic protection monitoring mandates in their service areas.

The exam is structured so that answers must reflect the body of knowledge in STI’s recommended practice for cathodic protection testing.

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## Turnkey AST System Provides Blending, Hedging Opportunities

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A portable 30,000-gallon AST provides a fuel marketer in Knoxville, Tenn. with price-hedging options through easy-to-set-up ethanol-blending capability.

An innovative, portable aboveground storage tank (AST) system is enabling fuel marketers with bulk storage facilities to take advantage of price fluctuations when blending ethanol or biodiesel.

Separation By Design, based in Evansville, Ind., has created a turn-key AST system solution that primarily helps marketers with 100 stores or more to hedge purchases of fuel and cleaner-burning additives such as ethanol.

The system features a Flameshield double-wall, two-hour fire-tested AST manufactured by Modern Welding Co. in capacities ranging from 550 to 30,000 gallons (2,081 to 113,529 liters), said Roy Jorgensen, president of Separation By Design. ASTs can be configured with either skid- or saddle-mounted support systems.

Loading capacity, depending upon client specifications, can be from 25 to 450 gallons (95 to 1,703 liters) per minute. Other features include:

- A custody-transfer-approved dispensing system
- An electronic or mechanical terminal automation system with software for reconciliation
- Customization capabilities for additive injection
- Transport overfill prevention and grounding system
- Tank monitoring communication capabilities by ethernet or phone line

"The whole thing is wired and shop-tested," Jorgensen said. "We drop it off virtually ready to go. The only thing a customer has to do is hook up two power conduits to it and it's ready for business. They can be in operation within two hours."

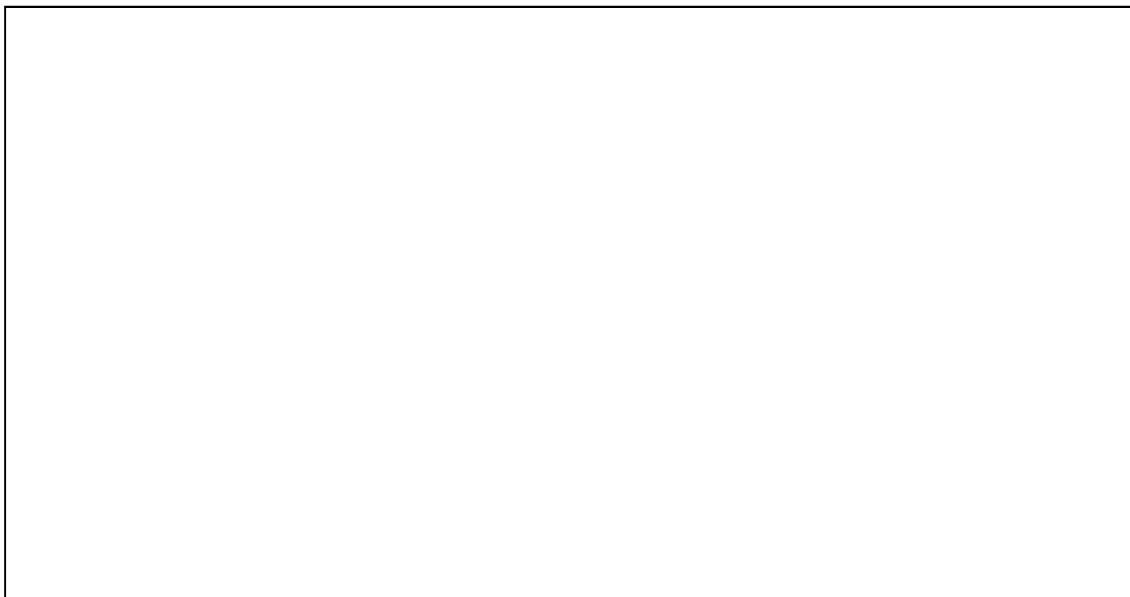
In addition to hedging on price variations, the unique AST design enables petroleum marketers to take advantage of tax incentives offered by some states for providing alternative fuels such as ethanol or biodiesel.

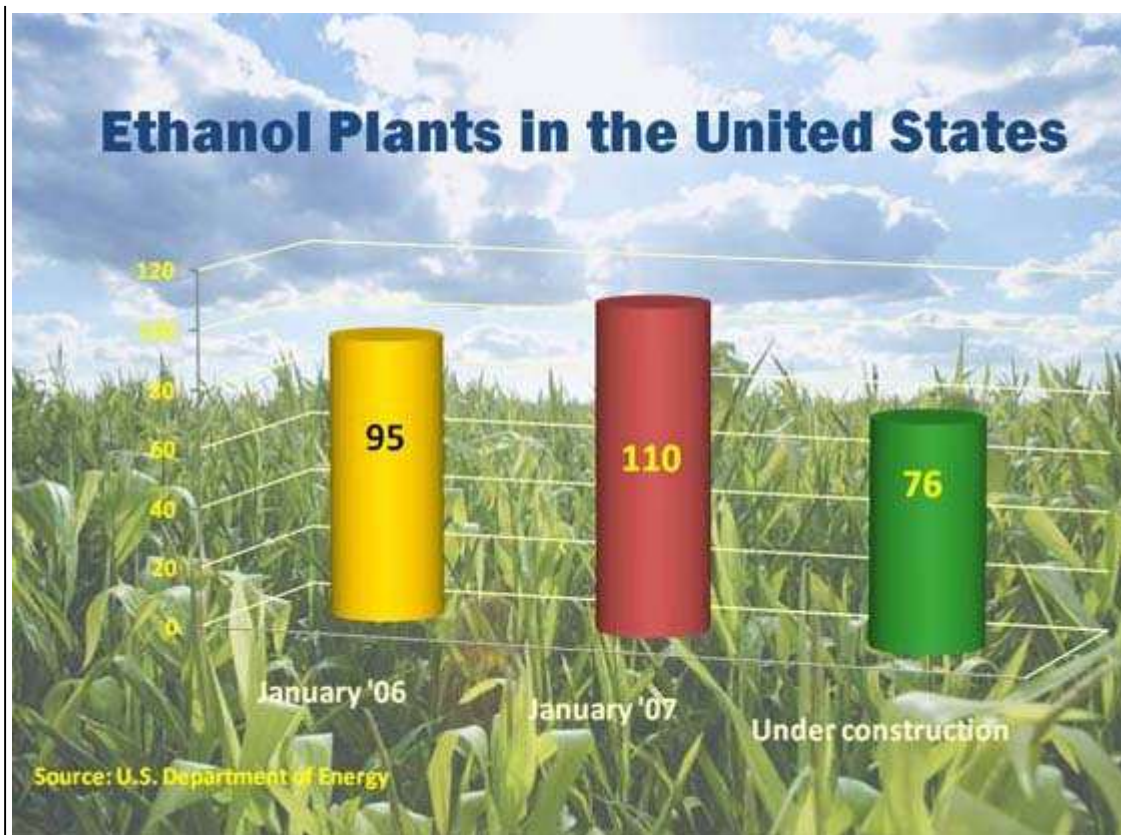
"If one state's tax breaks go away, the tank owner can move the investment," Jorgensen said. "We don't want anyone looking at this for retail applications. It's all about letting the customer get the cheapest gasoline possible and using their own additives to save several cents a gallon all across the board."

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## Ethanol Plants in the United States

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The number of ethanol plants operating in the United States rose by 15.8 percent from the start of 2006 to 2007 and is due for even larger gains during 2008.

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## SPCC Revision Proposals will be Available for Public Comment through Dec. 14

The U.S. Environmental Protection Agency (EPA) has proposed another round of amendments to the Spill Prevention, Control and Countermeasure (SPCC) rule.

EPA said its intent is to provide increased clarity, tailor requirements to specific industry sectors and streamline some requirements for a facility owner or operator subject to the rule.

Specifically, EPA is proposing to exempt:

- Hot-mix asphalt
- Pesticide application equipment and related mix containers used at farms
- Heating oil containers at single-family residences
- Completely buried oil storage tanks at nuclear power generation facilities

In addition, the rule would amend the:

- Facility diagram requirement to provide additional flexibility for all facilities
- Definition of "facility" to clarify the flexibility associated with describing a facility's boundaries
- General secondary containment requirement to provide more clarity
- Security requirements for all facilities
- Integrity testing requirements to allow a greater amount of flexibility in the use of industry standards at all facilities
- Integrity testing requirements for containers that store animal fat or vegetable oil and meet certain criteria



The rule would allow the use of an SPCC template for facilities with an aggregate capacity of 10,000 gallons (37,843 liters) or fewer.

EPA said the rule also would define "loading/unloading rack" to clarify the equipment subject to the provisions for facility tank car and tank truck loading/unloading racks; provide streamlined requirements for a subset of qualified facilities; and streamline some requirements for oil-production facilities.

To review the latest version of the complete SPCC proposal, go to [http://www.epa.gov/oilspill/spcc\\_oct07.htm](http://www.epa.gov/oilspill/spcc_oct07.htm).

For those who wish to provide comments on the proposed SPCC revisions, the deadline is Dec. 14.

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## **Jet Makers Explore Biofuel Alternatives**

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Within the next decade, commercial jets could be transporting passengers or cargo powered by biofuels, according to the Seattle Post-Intelligencer newspaper.

Leading aircraft makers such as The Boeing Co. and Airbus are examining options for reducing carbon emissions associated with jetliners.

Within the year, a Virgin Atlantic 747-400 will be removed from passenger service so that one of its tanks can be filled with biofuel for a series of demonstration test flights by Boeing, the airline and engine maker General Electric.

Scientists estimate that the world's jetliner fleet contributes about 2 to 4 percent of daily carbon emissions. Though seemingly small in percentage, the numbers have put the air-transport industry in the crosshairs of the green movement, particularly in Europe.

During the summer, hundreds of environmental activists pitched camp at London's Heathrow Airport to dramatize the issue of greenhouse gases emanating from jetliners.

Despite moves by aircraft manufacturers to trumpet their advancements in environmental engineering, protestors in the United Kingdom earlier this year seized a barge that carried a U.K.-produced wing for the A380. The environmental group "Plane Stupid" said the action was taken because the big Airbus jet, even though it may be more fuel-efficient, will add to the surge in the number of people who fly. Plane Stupid and other environmental groups contend that the solution is not to fly.

While some activists try to position flying as immoral, others are seeking green breakthroughs through new biofuel formulations.

Jet fuel produced from plants in theory should be carbon neutral, cleaner burning and avoiding the addition of greenhouse gases to the atmosphere. However, a biofuel would likely freeze at a higher temperature than a petroleum-based fuel – creating engineering challenges for high-flying airliners.

In a recent technical workshop presented by the National Biodiesel Board, speakers noted that biodiesel is not a likely candidate as a jet fuel additive or replacement because of the greater propensity of biodiesel to absorb water. Jet engines cannot be subjected to fuel that contains water.

The other major challenge is availability of feedstock. A 2006 report by the National Aeronautics and Space Administration (NASA) contended that to supply only airlines from the United States with a 15- percent blend of bio-jet fuel made from soybeans would require a dedicated growing patch roughly equivalent in square miles to the state of Florida. That's prompting some researchers to explore whether biofuels made of algae would work as a better alternative.

The commercial aviation biofuels initiatives are running parallel to efforts by the U.S. Department of Defense to develop secure domestic sources for military energy needs. Tank Talk reported in February that Pentagon planners hope to reduce its use of crude oil and foreign producers so that about half of military aviation fuel comes from alternative

sources by 2016.

The entire Seattle Post-Intelligencer article is available at:  
[http://seattlepi.nwsource.com/business/329382\\_air29.html](http://seattlepi.nwsource.com/business/329382_air29.html)

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## Wisconsin, Michigan USTs Probed after Storms Foul Fuel

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Heavy Midwestern summer rains led to newspaper headlines and television coverage for service stations where water had contaminated some fuel supplies.

In Madison, Wisc., WISC-TV reported that two service stations had shut off some of their gasoline pumps because of water infiltration in underground storage tanks and subsequent engine damage to vehicles. One station in Madison and another in nearby Sun Prairie closed some dispensers because of motorist complaints about stalled vehicles.

One motorist experienced abrupt stalling shortly after filling the tank in his girlfriend's Mercedes. After draining the tank, he said he found that nearly half of the contents was water. "I've never seen it this bad. I've done a lot of water and fuel repairs, and I've never seen it like this," he said. Repair costs totaled more than \$900.

After receiving several similar complaints, the Wisconsin Department of Commerce began to investigate water problems at the two area gas stations. "And in both cases we did a visual sample of the product in test tubes. We looked at the tubes, you could see there was some water sediments -- not much but enough," said a representative of the agency.

Heavy rains prior to the incident resulted in some localized flooding and extremely saturated soils.  
<http://www.channel3000.com/news/14028074/detail.html>

Earlier in the summer, several motorists who filled up at a service station in Michigan's Ypsilanti Township also discovered water in their vehicles' fuel tanks. The Ann Arbor News newspaper said authorities were blaming an unsecured fitting at the top of the underground storage tank that could have allowed rainwater to enter.  
[http://blog.mlive.com/annarbornews/2007/07/leaky\\_tank\\_blamed\\_for\\_water\\_in.html](http://blog.mlive.com/annarbornews/2007/07/leaky_tank_blamed_for_water_in.html)

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## Green Skies: Iowa Benefits from Gusting Wind-Power Market

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With apologies to Bob Dylan, you don't need a weatherman to know which way the wind market blows in Iowa. Wind-power manufacturers, which are using growing amounts of steel plate for wind towers and turbines, are finding the state's business climate quite hospitable.

New entrants to the Iowa wind-energy manufacturing community are:

- Hendricks Industries, which last month unveiled plans to build a \$32 million plant and spend \$2.5 million upgrading the Southeast Iowa Port Terminal in Keokuk, Iowa. Together, the projects would employ about 380 workers.
- Siemens Power Generation, which in September announced an expansion of manufacturing capacities in Fort Madison, Iowa for its growing wind business. The factory is expected to produce about 600 wind turbine blades annually for wind farms in the United States.

"Iowa has a base that's only going to grow as manufacturers like Siemens, Clipper and Acciona attract component suppliers," said Randy Swisher, executive director of the American Wind Energy Association (AWEA).

Converting kinetic energy to mechanical energy, modern wind turbines provide a clean, renewable source of electrical power.

Analysts estimate that the wind-energy market over the next decade will use about 6 to 7 million tons (5,443,200 to 6,350,400 metric tons) of steel plate if wind power captures 6 percent of electrical generation in the United States. The total amount of steel would be supplemented with rebar and structural steel on each project.

A typical 262-foot (80-meter) tower contains 174 tons (158 metric tons) of steel plate, according to the American Wind Energy Association (AWEA). There are about 18,600 turbines in use in the United States, according to AWEA. An additional 43,400 towers would be required to reach a 6-percent market share.

Wind power is the world's fastest-growing source of electrical energy in the United States. As of June 30, there were 12,634 megawatts of installed wind-power capacity in the nation. A decade ago, the comparable number was under 2,000 megawatts. As such, it still accounts for less than 1 percent of electrical generation in the United States. But in Denmark, the world's leader, wind power provides 20 to 30 percent of generated electricity.

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## **SPFA Water Pipe Certification Program Provides Third-Party Auditing**

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By Larry O'Shea and George Ruchti

The Steel Plate Fabricators Association (SPFA) pipe-certification program is one of the most recognized third-party certification efforts in the water-transmission industry. Applicants go through a rigorous audit with more than 100 individual checklist items every three years. After the initial audit, a third-party assessor returns for a follow-up that includes more than 50 individual checks. The three-year cycle includes a full audit in the first year, and partial audits in the second and third years.

The checklist is a consensus document produced by manufacturers, assessors and SPFA. Who better knows the industry (as it relates to fabrication) than the manufacturers themselves? The checklist identifies all of the most critical AWWA standard requirements. All the necessary testing, inspection instruments, welding, coating and lining, and personnel certification requirements – as prescribed by the standard – are included in the SPFA checklist.

Assessors of the third-party organization have many years of experience in fabricated steel pipe and the SPFA certification program. Assessors are assigned to a plant by the third-party agency, so a manufacturer cannot just arbitrarily choose an assessor of their liking. SPFA's third-party agency, Lloyd's Registry Quality Assurance, Inc., has an excellent reputation in the inspection/auditing service industry.

Information regarding the SPFA Pipe Quality Audit Certification program can be obtained by visiting: <http://www.steeltank.com/Industries/WaterPipe/tabid/94/Default.aspx>. The following companies have earned the designation and are certified under the audit certification program:

- American SpiralWeld Pipe Company, LLC (Birmingham, Ala. and Columbia, S.C.)
- Ameron International – Water Transmission Group (Phoenix, Ariz., Etiwanda, Calif. and Fontana, Calif., Tracy, Calif., and Mexicali, Baja California, Mexico [Tubos Y Activos])
- BVI Precision Materials (Allentown, Pa.)
- Hanson Pipe & Products, Inc. (Grand Prairie, Texas)
- JIFCO Inc. (Livermore, Calif.)
- Mid-America Pipe Fabricating & Supply (Scammon, Kan.)
- RTLC Piping Products (Kosse, Texas)
- Skyline Steel (Cartersville, Ga., Luka, Miss. and Camp Hill, Pa.)
- Trinity Steel & Pipe (Weir, Kan.)

One other application is pending from a company seeking to participate in the quality program.

(Editor's note: This article is an excerpt of a paper presented by O'Shea and Ruchti in July at the Pipeline Conference 2007. O'Shea is director of quality assurance for the Steel Plate Fabricators Association, a division of STI/SPFA. Ruchti is chairman of the SPFA Steel Pipe Committee.)

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## Ruchti Teams with Experts to Craft Steel Water Pipe Solutions

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With a freshly minted civil engineering degree in 1964, George Ruchti knew as he graduated that he didn't want to be a consulting engineer starting on the drafting table.

He opted instead for the field of product engineering and found himself in a career focused on water and wastewater pipe projects.

In the steel pipe industry, Ruchti, as business development manager for American SpiralWeld Pipe Company, LLC, has contributed to specifications for major engineering firms and industry-standard documents that have guided the growth of steel pipe throughout the United States.

Earlier this year, Ruchti was honored as one of the newest members of the STI/SPFA Hall of Fame – in recognition of his overall service, including time as chair of the STI/SPFA Pipe Committee and sitting on the STI/SPFA Board of Directors.

Ruchti's humble nature is on display when asked about his career in the water-pipe industry. He is more likely to talk about helping customers to understand steel than to discuss his own accomplishments.

"A lot of what I do is to discuss the benefits of steel pipe," Ruchti said. "It has the ability to resist corrosion. It is structurally sound and does not fail catastrophically. There is the ease of installation and inspection. It works in conjunction with soil to withstand external loading rather than battling Mother Nature."

His familiarity with the needs of water-pipe customers has been honed during a career that included stints with industry leaders such as Interpace, Thompson Pipe and Steel, Rocky Mountain Consultants, Northwest Pipe, and American SpiralWeld. Also sharpening his acumen has been active involvement – and, a number of chairmanships – of many American Society of Civil Engineers (ASCE) and American Water Works Association (AWWA) committees that address pipeline issues. In 2004 he had the honor of chairing the Executive Committee of the ASCE Pipeline Division. In 2005, Ruchti received that organization's Award of Excellence.

Through his committee work – and his efforts on behalf of customers – Ruchti has seen a new "state of the art" developing.

"In the 1960s and 1970s, and even into the early 1980s, we saw more arbitrary decisions on which materials would be used for pipe," he recalled. "Today, we are witnessing an evolving philosophy of how to evaluate pipe for buried conditions. In addition, new welding techniques during the last 15 years have expedited the work in the field, thereby cutting the cost of steel pipe projects through greater efficiency. One side benefit is that inspection of pipelines can occur at a more leisurely pace."

Examining the reasons for the steady growth in the use of steel pipe, Ruchti gives credit to the contributions of Dr. Reynold Watkins of Utah State University in analyzing pipe-soil interaction – among many other technical issues – which has helped to boost the knowledge base of the pipeline industry. In addition, Ruchti cited the efforts of long-time industry consultant George Tupac in creating greater understanding of large-diameter steel pipe. Both experts have spent many years sharing their insights with SPFA and AWWA committees.

But there's still more work to do. Ruchti and the SPFA Water Pipe Committee are developing plans for new web-based educational efforts and new publications that take steel pipe to the next level of understanding and acceptance in the marketplace.

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## Welded Steel Water Pipe Design Guide Published by AISI and STI/SPFA

An updated version of Steel Plate Engineering Data, Volume 3, a design document known as "Welded Steel Pipe Revised Edition – 2007" has been published by the American Iron and Steel Institute (AISI) and STI/SPFA.

The newest version, featuring contributions of insight and expertise from many leaders within the steel water pipe industry, provides technical background and equations that will be helpful in addressing design issues for water transmission lines and distribution systems that employ welded steel pipe.

Available for download at <https://www.steeltank.com/Publications/PublicationsIndex/tabid/108/Default.aspx>, the illustrated document includes a broad range of analysis on issues such as internal pressure, handling, installation, ring deflection, performance limits, soil mechanics, external loads, coatings, couplings and many other topics.

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## Landmark Underground Storage Tanks Still Holding Fuel Near Pearl Harbor

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A bunker of 20 underground storage tanks continues to serve the United States Navy near Pearl Harbor with an overall capacity that is more than half of Hawaii's annual statewide gasoline usage.

The Red Hill reservoir – featuring 20 tanks that each are 200 feet (61 meters) tall – was built and operated in secrecy during World War II, according to the Honolulu Advertiser newspaper, but has for decades been declassified.

Combined, the tanks have a capacity of 252 million gallons (953,643,000 liters). Hawaii in 2004 used 450 million gallons (1,702,930,000 liters) of gasoline.

Workers continue to operate the facility and monitor the tanks and associated pipelines about 450 feet (137.2 meters) underground. Inspectors move from point to point on a small rail subway.

In 1995, the American Society of Civil Engineers cited the facility along with Hoover Dam, the Eiffel Tower, the Panama Canal and the Statue of Liberty as historic engineering achievements.

Begun in 1940 as the threat of war escalated, the Red Hill project – known then simply as "The Underground" – was designed as a fuel storage site that would be safe from attack. The first of the 20 tanks was completed on Sept. 26, 1942. The last was finished on Sept. 30, 1943.

Today, with few major alterations, almost all of the steel tanks contain diesel, JP-5 or JP-8 jet fuel, and directly feed Hotel Pier by gravity at Pearl Harbor. "We fuel the whole Pacific," said Al Hoyle, fuel distribution systems manager for Red Hill, which is operated by the Navy's Fleet and Industrial Supply Center.

Fuel flows through a 32-inch (81.3-centimeter) diameter diesel pipeline and 18- and 16-inch (45.7- and 40.6-centimeter) jet fuel pipes along the side of the approximately three-mile (4.83 kilometer) rail line to Pearl Harbor. Trucks then deliver fuel to other bases.

The entire article about this phenomenal steel tank system can be accessed at:

<http://www.honoluluadvertiser.com/apps/pbcs.dll/article?AID=/20070613/NEWS08/706130406/1001/NEWS>

Also available are:

Video:

<http://www.honoluluadvertiser.com/apps/pbcs.dll/article?AID=/20070613/VIDEO01/70608010/1001/NEWS>

Photo gallery:

<http://the.honoluluadvertiser.com/article/2007/Jun/13/In/train.html>

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## OSHA Offers Safety and Health Resources Online

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The Occupational Safety & Health Administration (OSHA) of the U.S. Department of Labor has created several online resources that can help small businesses.

One example is OSHA's collection of standard interpretation letters, which are official responses to written questions about compliance with agency requirements. OSHA requirements are set by statute, standards and regulations. Interpretation letters explain requirements and how they apply to specific circumstances, without creating additional employer obligations.

For a complete list of online resources, go to [www.osha.gov](http://www.osha.gov) and click on the site index at the top of the page. The site index lists key tools, including eTools, safety and health topics pages, and other resources.

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## Facts of Steel

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Big Emma. At launch in 2006, Emma Mærsk became the largest container ship ever built, and as of 2007 the longest ship in use at 397 meters (1,302.5 feet). Officially, Emma Mærsk can carry about 11,000 containers known as 20-foot equivalent units (TEUs) in the calculation of the Mærsk transportation company. That total exceeds by about 1,400 containers the capacity of any other ship. The steel-hulled Emma Mærsk is powered by a Wärtsilä-Sulzer 14RTFLEX96-C engine, currently the world's largest single diesel unit, weighing 2,300 tons (2,086.5 metric tons) and capable of 109,000 horsepower. The gross weight of the ship is 170,974 British tons (191,491 tons).

[http://en.wikipedia.org/wiki/Emma\\_M%C3%A6rsk](http://en.wikipedia.org/wiki/Emma_M%C3%A6rsk)



Ravenel Bridge photo credit: C. Frank Starmer from <http://ravenelbridge.net> (licensed under a Creative Commons License)

Largest North American cable-stay bridge. Opened to traffic in July 2005, the landmark Arthur Ravenel Jr. Bridge over the Cooper River in Charleston, S.C. was the largest public works project in South Carolina history. The 3.5-mile (5.6-kilometer), eight-lane span of graceful white steel is also the longest cable-stay bridge in North America. The bridge included 38,000 tons (34,473 metric tons) of steel, a total of 6,194 pieces that included 40-ton (36.3 metric ton) girders and shark-fin-shaped anchors that hold the bridge's cables in place. The new bridge replaced two obsolete bridges, allowing modern container ships into Charleston Harbor, one of the country's largest ports.

<http://www.highsteel.com/hss/AboutUs/Projects/CooperRiver.html>

Beauty and seismic strength. The International Terminal at San Francisco International Airport, which opened in December 2000, is the largest building in the world utilizing base isolators to protect against earthquakes. The terminal was the \$400 million centerpiece of the airport's \$2.4 billion expansion and modernization program. Its dramatic 860-foot (262-meter) long wing-like roof structure and 700-foot (213-meter) long and 80-foot (24.4-meter) tall glass wall can withstand an 8.0 earthquake measured on the Richter scale. The design depends on 267 steel friction-pendulum seismic isolators installed at the base of the building columns. The construction of the terminal was challenging because it is located on a deep and soft site in one of the nation's most severe earthquake zones.

<http://www.aisc.org/ContentManagement/ContentDisplay.cfm?ContentID=482>

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## Online Sources of UST & AST News and Information

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### Online Publications

2006 Biodiesel Handling and Use Guidelines <http://www.nrel.gov/docs/fy06osti/39451.pdf>

Buncefield Fire <http://www.buncefieldinvestigation.gov.uk/>

Energy Tomorrow, American Petroleum Institute [www.energytomorrow.org](http://www.energytomorrow.org)

California Air Resources Board, Enhanced Vapor Recovery Phase II Advisory:

<http://www.arb.ca.gov/vapor/advisories/adv359.pdf>

California State Water Resources Control Board, Results of Secondary Containment Survey

[http://www.waterboards.ca.gov/ust/leak\\_prevention/secondary\\_containment/survey.html](http://www.waterboards.ca.gov/ust/leak_prevention/secondary_containment/survey.html)

Fuel Oil News <http://www.fueloilnews.com/>

International Code Council <http://www.ecodes.biz/>

National Biodiesel Board Fuel Quality Policy  
[http://www.biodiesel.org/pdf\\_files/fuelfactsheets/20060621\\_TAB\\_11\\_Fuel\\_Quality\\_Policy.pdf](http://www.biodiesel.org/pdf_files/fuelfactsheets/20060621_TAB_11_Fuel_Quality_Policy.pdf)

National Ethanol Vehicle Coalition E85 Compatible Products and Manufacturers List  
[http://www.e85fuel.com/pdf/E85\\_Equipment\\_and\\_manufacturers.xls](http://www.e85fuel.com/pdf/E85_Equipment_and_manufacturers.xls)

National Petroleum News <http://www.npnweb.com/>

The PEI Journal Online <http://www.thepeijournal.org/content/1q07/index.php>

Recommended Practices for Overfill Prevention for Shop-Fabricated Aboveground Tanks (PEI RP 600)  
[www.pei.org/RP600](http://www.pei.org/RP600)

Renewable Fuels Association Industry Statistics <http://www.ethanolrfa.org/industry/statistics/>

Steel Tank Institute Water in Fuel Tanks Research [Keeping Water out of your Tank](#)

TulsaLetter <http://www.pei.org/TulsaLetter>

Wisconsin Department of Commerce Ethanol Storage and Dispensing Conversion Policy  
[http://commerce.wi.gov/ERpdf/bst/ProgramLetters\\_PL/ER-BST-PL-EthanolConversionPolicyMemo.pdf](http://commerce.wi.gov/ERpdf/bst/ProgramLetters_PL/ER-BST-PL-EthanolConversionPolicyMemo.pdf)

#### Associations

American Iron & Steel Institute <http://www.steel.org>

American Petroleum Institute <http://api-ep.api.org/>

American Water Works Association <http://66.45.110.61>

Clean Diesel Fuel Alliance <http://www.clean-diesel.org/index.htm>

National Association of Convenience Stores <http://www.nacsonline.com/NACS/News/>

National Biodiesel Board <http://www.biodiesel.org>

National Ethanol Vehicle Coalition <http://www.e85fuel.com>

National Leak Prevention Association <http://www.nlpa-online.org/standards.html>

National Oilheat Research Alliance <http://www.nora-oilheat.org>

Petroleum Equipment Institute Learning Center <http://learn.pei.org/home.php>

Petroleum Marketers Association of America <http://www.pmaa.org/>

Safe Tank Alliance [http://www.osha.gov/dcsp/alliances/api\\_nfpa/api\\_nfpa.html#api](http://www.osha.gov/dcsp/alliances/api_nfpa/api_nfpa.html#api)

Society of Independent Gasoline Marketers of America <http://www.sigma.org/>

Steel Plate Fabricators Association <http://www.spfa.org/>

Steel Tank Institute <http://www.steeltank.com>

Federal Regulatory Agencies (United States)

U.S. Chemical Safety and Hazard Investigation Board, Methanol Fire Report  
[http://www.csb.gov/completed\\_investigations/docs/CSBBethuneFinalReport.pdf](http://www.csb.gov/completed_investigations/docs/CSBBethuneFinalReport.pdf)

**NEW** U.S. Department of Labor, Occupational Safety & Health Administration  
<http://www.osha.gov>

U.S. Department of Labor, Occupational Safety & Health Administration, Storage Tanks  
<http://www.osha.gov/dcsp/products/topics/storagetank/index.html>

U.S. Environmental Protection Agency, Laws and Regulations <http://www.epa.gov/epahome/laws.htm>

**NEW** U.S. Environmental Protection Agency, National Pollutant Discharge Elimination System, Stormwater Pollution Prevention Plans for Construction Activities <http://cfpub.epa.gov/npdes/stormwater/swppp.cfm>

U.S. Environmental Protection Agency, Office of Underground Storage Tanks  
<http://www.epa.gov/swerust1/>

U. S. Environmental Protection Agency, Office of Underground Storage Tanks, Energy Act Guidelines for Secondary Containment and Financial Responsibility [http://www.epa.gov/oust/fedlaws/epact\\_05.htm#Final](http://www.epa.gov/oust/fedlaws/epact_05.htm#Final)

U.S. Environmental Protection Agency, Office of Underground Storage Tanks, Final Operator Training Grant Guidelines  
[http://www.epa.gov/oust/fedlaws/epact\\_05.htm#Final](http://www.epa.gov/oust/fedlaws/epact_05.htm#Final)

U.S. Environmental Protection Agency, Oil Program, Spill Prevention Control and Countermeasure  
<http://www.epa.gov/oilspill/spcc.htm>

State Regulatory Agencies (United States)

California Air Resources Board, Vapor Recovery Information <http://www.arb.ca.gov/vapor/vapor.htm>

Florida Department of Environmental Protection, Leak Autopsy and Program Data Presentation  
<http://www.dep.state.fl.us/waste/categories/tanks/default.htm>

U.S. Environmental Protection Agency database of state UST program websites  
<http://www.epa.gov/swerust1/states/stateurl.htm>

Model Codes and Testing Organizations  
American National Standards Institute <http://www.ansi.org>

ASTM International <http://www.astm.org/>

International Code Council <http://www.iccsafe.org/>

International Code Council jurisdictions <http://www.iccsafe.org/government/jurisdictionadoptions.xls>

National Fire Protection Association <http://www.nfpa.org/>

Southwest Research Institute <http://www.swri.edu/>

Underwriters Laboratories <http://www.ul.com/>



Underwriters Laboratories Canada <http://www.ulc.ca>

Underwriters Laboratories Collaborative Standards Development System <http://csds.ul.com/Home/Default.aspx>

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## Conferences and Meetings

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Nov. 28 to 30, 2007

BBI Biofuels Workshop and Trade Show Eastern Region, Philadelphia, Pa.

<http://www.biofuelsworkshop.com/ema/DisplayPage.aspx?pagelId=Program>

Dec. 11 to 13, 2007

2007 Power-Gen International Conference, New Orleans, La.

<http://pgi07.events.pennnet.com/fl/index.cfm>

Jan 20 to 26, 2008

ASSE's Continuing Education and Training for the Safety Professional, Las Vegas, Nev.

<http://www.asse.org/education/seminarfest/>

Jan. 29 to 31, 2008

Underground Construction Technology International Conference & Exhibition, Atlanta, Ga.

<http://registration.expoexchange.com/ShowUCT081/>

Feb. 3 to 6, 2008

National Biodiesel Conference and Expo 2008, National Biodiesel Board, Orlando, Fla.

<http://www.biodieselconference.org/2008/>

Feb. 19 to 21, 2008

Western Petroleum Marketers Association, Las Vegas, Nev.

[http://www.wpma.com/convention\\_info/index.cfm?conv\\_uuid=B0012864-5C99-1AF2-92D5B905D1CE7812](http://www.wpma.com/convention_info/index.cfm?conv_uuid=B0012864-5C99-1AF2-92D5B905D1CE7812)

Feb. 20 to 24, 2008

Pipe Line Contractors Association Convention, Kapalua, Maui, Hawaii

[www.plca.org](http://www.plca.org)

March 16 to 18, 2008

EGSA Spring Convention, Electrical Generating Systems Association, Santa Anna Pueblo, N.M.

<http://www.egsa.org/meetings/springconvention.cfm>

March 16 to 20, 2008

Corrosion 2008 Conference and Expo, NACE International, New Orleans, La.

<http://www.nace.org/nace/content/conferences/c2008/callpapers.asp>

March 17 to 19, 2008

20th Annual National Tank Conference, New England Interstate Water Pollution Control Commission, Atlanta, Ga.

<http://www.neiwpcc.org/tanksconference/>

March 18 to 19, 2008

CARWACS, Toronto, Ontario

<http://www.carwacs.com/about.asp>

March 18 to 20, 2008

Aviation Industry Expo, Dallas, Texas

[www.aviationindustryexpo.com](http://www.aviationindustryexpo.com)

March 30 to April 4, 2008

NHA Annual Hydrogen Conference 2008, National Hydrogen Association, Sacramento, Calif.  
[www.hydrogenconference.org](http://www.hydrogenconference.org)

April 6 to 9, 2008  
International Forecourt & Fuel Equipment Show, IFFE, Birmingham, U.K.  
<http://www.forecourtshow.com/>

April 6 to 10, 2008  
2008 Global Congress on Process Safety, New Orleans, La.  
<http://www.aiche.org/Conferences/Specialty/GCPS.aspx>

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## **STI/SPFA Seminars & Certification Courses**

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[Click Here](#) to View & Register for Upcoming Meetings & Courses

- February 11 - 15, 2008 STI SP001 AST Inspector Training Course, Denver, Colorado
- September 22 - 26, 2008 STI SP001 AST Inspector Training Course, Baltimore, Maryland
- March 4 - 5, 2008 Cathodic Protection Tester Training Course, St. Paul, Minnesota
- Visit our Calendar of Events periodically to view new courses

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