



The Newsletter of the Steel Tank Institute, *Division of STI/SPFA*

New Revisions to SP001 Standard to be Published

After a year of study and revisions by a broad-based committee of experts, Steel Tank Institute (STI) is announcing the newest edition of standard SP001, which is now known as "Standard for the Inspection of Aboveground Storage Tanks."

The third edition of the SP001 standard can be ordered by contacting STI via phone (847-438-8265) or visiting the STI web site at www.steeltank.com.

The effort completes a cycle of standard-making revisions. The process started in 2004 when STI announced a request for public proposals to modify the standard. [Link to April 2004 edition](#)

The revised standard incorporates key changes such as:

- A risk-based inspection schedule. Tanks with a means of detecting a release of product are inspected less frequently. A system must be capable of diverting leaked product and/or incorporating a release-prevention barrier while providing for prompt detection through periodic inspection by the owner. Single-wall tanks sitting directly on soil pose the greatest risk for an incident and therefore require more frequent inspections.
- Inspection of field-erected tanks up to a maximum 30-foot (9.14 meters) diameter and a maximum shell height of 50 feet (15.24 meters). This would equate to a capacity of about 265,000 gallons (1,002,840 liters). This will allow one inspector to inspect virtually all tanks at a facility where both field-erected and shop-fabricated tanks are installed. Field-erected tanks included in the standard have properties similar to steel shop-fabricated tanks. Both the shop fabricated and small field-erected tank are not affected by brittle fracture, whereas large field-erected tanks may be.

Other significant changes include sections on safety considerations, inspection of containers, suitability-for-continued-service guidance, and expanded periodic inspection checklists.

In addition, the STI AST Inspection Standards Review Committee is soliciting public comment through Sept. 1 for a possible fourth edition in early 2006. The fourth edition will become available in 2006 after the next review cycle is completed.

STI is arranging a facility for a public forum in San Antonio, Texas on Sept. 21 and 22. Individuals who wish to present comments in-person to the STI committee should notify Dana Schmidt (dschmidt@steeltank.com) no later than Sept. 1.

Information about the exact location and timing of the public forum also will be available at www.steeltank.com by Aug. 1, as will instructions for providing written or oral comments to be considered by the STI committee.

All comments must include the paragraph to be revised, suggested wording and a rationale for the change. Comments must be submitted in writing.

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The committee's work stemmed in part from revisions of the SPCC regulations, created by EPA to prevent oil pollution of the nation's water, which were published in August 2002. The rule incorporated provisions for all regulated tanks to be integrity tested. National standards, such as SP001, play an important role in trying to comply with the regulation.

The STI committee, which unanimously approved the new edition after a year's worth of meetings and teleconferences, was formed last year to reshape the SP001 standard and clarify issues that resulted from trying to provide the owner/operator with a method of SPCC compliance.

"The members and Board of Directors of STI thank the committee members for the remarkable amount of time and energy that they put into revision of the standard," said Chuck Travelstead, committee chairman. "It is clear that the SP001 standard will provide valuable guidance to AST owners, managers, installers, inspectors and regulators."

A balanced number of representatives from major oil companies, engineers and regulators participated in the committee. For a list of committee members, [click here](#).

Issues were discussed, and re-discussed, several times to assure that the committee formed a consensus on each individual topic. Comments from industry were also reviewed by the committee and acted upon, either as approved, approved with modification or, denied. The committee was formally balloted upon the final version and the standard approved by minimum two-thirds affirmative vote.

The committee anticipates adaptations in 2006 to STI's AST Inspector Certification program. New procedures will address certification requirements of both existing SP001 inspectors and API 653 inspectors.

STI members manufacture a variety of aboveground storage tanks including shop-fabricated and field-erected designs.

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Correction and Clarification: Using the Right Performance Data In an edition of Tank Talk distributed during July, STI inappropriately quoted data from a draft of a long-awaited report from the U.S. Environmental Protection Agency (EPA) on underground storage system performance. The study has compiled data showing the track record of fiberglass-clad steel tanks. This study is not yet ready for public consumption and data should not have been cited in Tank Talk. STI apologizes for any inconvenience this may have created for the EPA Office of Underground Storage Tanks and our readers. The EPA study includes data from the Florida Department of Environmental Protection (DEP), which has gathered information for an ongoing project known as the Florida Leak Autopsy Study. The Florida study includes additional data on tank system performance compiled since Jan. 1, 2003 that will supplement material to be published in the EPA report. Marshall Mott-Smith, administrator of the Storage Tank Regulation Section in the Division of the Waste Management at DEP, said, "Our data indicates that fiberglass-clad steel (also known as 'composite') tanks have the best performance data of any tank type. Florida's data from the earlier (EPA) study is confirmed by the latest statistics." The current Florida study indicates that single-wall composite tanks represented only 5 percent of the source of all tank releases. Internally lined steel tanks were listed as the cause of 14 percent of the releases, while single-wall cathodic protected tanks represented another 13 percent. Single-wall FRP tanks accounted for 46 percent of tank releases. For the latest information on sources of tank releases, the Florida Leak Autopsy Study can be examined

at: http://www.dep.state.fl.us/waste/quick_topics/publications/pss/tanks/Leak/SourcesinTanks-TypeofTank0605.ppt. The study also includes data that show piping, overfills and dispenser areas as more statistically significant causes of release in Florida than tanks. The Florida

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STI/SPFA NEWS

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Click the link for a complete listing of current course offerings. Brochures, course information, educational

study shows that tanks of all types account for only 10 percent of all leak sources.

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STI/SPFA Unveils Tanks and Fabricated Products of the Year

STI/SPFA, has announced its 2004 Steel Tank of the Year and Fabricated Product of the Year winners. The competition honors superior innovations in design and fabrication of steel water tanks, and other steel plate projects. [Tanks](#)



In the Reservoir category, a 5-million-gallon (18,921,000 liters) tank fabricated for Huntsville Utilities in Huntsville, Ala. received the top honor. Assembled by Fisher Tank of Cropwell, Ala., the project featured a solid slab foundation to span potential sinkholes and an all-welded 32-foot-high (9.75 meters) radial cone roof, including rafters, girders, plates and connections.



In the Elevated category, a 150,000-gallon (567,644 liters) tank – designed to look like a hot-air balloon – was selected as best in class. Fabricated by Caldwell Tanks, Inc. of Louisville,

requirements and location information is available for each course. Register online using our secure site. Check back often as courses are added frequently.

[20 05 AST Inspector Training Courses](#)

Columbus, OH
Level 1 Tank Inspection Certification
August 29 - 31, 2005

Level 2 Tank System Inspection Certification
August 31 - Sept. 2, 2005

Contact Dana at 847/438-8265 x 246 to request a private seminar.

[AST Inspection Course for Regulators Only](#)

Orlando, Florida
October 18 - 20, 2005

[2005 Cathodic Protection Tester Courses](#)

Contact: Claire
847/438-8265 x 248.

[2005 Water Storage Tank Seminars](#)

September 13, 2005
South Bay Area
California

September 15, 2005
Orange County
Area California

Contact: Anne
847/438-8265 x 233.

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Ky. for the Victory Junction Gang Camp in Randleman, N.C., the distinctive water tower included a simulated passenger basket suspended by 12 steel rods. To complete the look, the basket was painted in a woven pattern. The 137-foot-high (41.76 meters) elevated tank also included a Victory Junction camp logo, supports for a cellular antenna and equipment storage in the base cone.



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Among Standpipe entries, a 180,000-gallon (681,173 liters) tank for the Semitropic Water Storage District in Wasco, Calif. received the nod. Built by CB&I Constructors Inc. of San Luis Obispo, Calif., the 80-foot-high (24.38 meters) standpipe featured an aviation paint motif. Also included in the design was a ladder and cage system to provide safety when climbing, and an external overflow pipe to grade.



For Special Storage Systems, CBI Services, Inc. of Plainfield, Ill. was recognized for its work at a U.S. Department of Energy location in Hanford, Wash. CBI engineered, fabricated and field installed an all-stainless-steel secondary containment lining for a water treatment facility under construction by Bechtel National Inc. The state-of-the-art facility stores, mixes, treats and vitrifies radioactive liquid waste. The one-eighth-inch (3.18 millimeters) thick stainless steel plate was domestically manufactured by Allegheny Ludlum of Pittsburgh, Pa. – then fabricated and installed by CBI on walls of three newly constructed radioactive water-

treatment buildings. The stainless steel lining provides leak-tight secondary containment storage of radioactive waste in the event of primary containment storage spillage. **Fabricated Products**



For the Special Fabrication category, a thermal test cell built for Sandia National Laboratory at Kirtland Air Force Base in Albuquerque, N.M. was recognized. Fabricated by Brown-Minneapolis Tank of Albuquerque, the tank is a sealed vessel built to enable thermal testing of material properties. The tank wall is made of wall tube steel in 40-foot (12.19-meter) lengths seal-welded inside and out. During thermal testing, water is circulated in the tank walls to keep the steel cool during test cycles. The tank walls act as a radiator for the thermal test process.



In the Pressure Vessel category, four water-treatment vessels used for primary containment of radioactive liquid waste received top honors. The project was fabricated by CBI Services, Inc. of Plainfield, Ill. for a U.S. Department of Energy facility in Hanford, Wash. All weld seams were 100-percent x-rayed, 100-percent dye-penetrant tested and 100-percent visually inspected. All nozzle welds and other vessel-attachment welds were 100-percent ultrasonically tested. The vessels created radioactive-liquid capacity of 525,000 gallons (1,986,760 liters). Each vessel – 45-feet high by 47-foot diameter (13.72-meters high by 14.33-meters diameter) contained 12 stainless steel pulse-jet mixers built in accordance with ASME Section VIII. All steel plate was domestically produced.



Among Pipe entries, the winner was a unique discharge pipe created for the Waxahachie Pump Station of the Tarrant Regional Water District in Fort Worth, Texas. RTALC Piping Products of Kosse, Texas fabricated the pipe with a cement-mortar lining and polyurethane coating. The discharge pipe featured four-inch-thick (101.6 millimeters) reinforcing plates to withstand the 250 pounds per square inch (17.58 kilograms per centimeter) design pressure.

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California Seeks Data on UST Permeability and Compatibility

The California State Water Resources Control Board this spring asked underground storage system manufacturers to submit permeability and product compatibility test data and results. The state agency, which regulates underground storage tanks (USTs), plans to verify UST owner and/or operator compliance with the provisions of Chapter 6.7 of the California Health and Safety Code. The UST test data and results must be related to steps that led to either an independent testing organization listing or, if applicable, the approval of a state registered professional engineer. The request covers all UST primary and secondary containment for tanks installed on or after July 1, 1991, piping installed on or after Jan. 1, 1992, and sumps, under-dispenser containment, spill buckets, fittings, special accessories, coatings, and linings installed on or after Jan. 1, 1995. Additionally, this request applies to listings/approvals under which USTs are currently manufactured, and for previous versions or editions of listings/approvals. The letter also requested product warranty information from the manufacturers. [Click here](#) for a link to the entire document.

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Special Section: The New Emphasis on Ethanol

Petroleum price increases, federal and state legislative action, and desires to reduce America's dependence upon overseas energy supplies are redefining demand for ethanol in the United States. The growing strength of this alternative fuel, an alcohol most often derived from corn, is creating new awareness among marketers and regulators about the infrastructure that would store and handle the flammable and combustible liquid. For instance, in late June, the U.S. Senate voted 85 to 12 to pass new energy legislation that included incentives for ethanol development, including establishment of a tax credit for the cost of installing clean fuel refueling equipment. In this edition of Tank Talk, we present several articles that examine aspects of ethanol that will be important to successful storage of the fuel.

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Special Section: The New Emphasis on Ethanol **Growing use of E85 prompts tank-system compatibility concerns**

The growing acceptance of E85 as an oxygenated fuel is prompting concerns among petroleum marketers and ethanol advocates about how to prepare the infrastructure for product compatibility issues. The National Renewable Energy Laboratory in 2004 estimated that ethanol production in the United States would rise from 2.5 billion gallons per year in 2003 to between 20 and 30 billion gallons annually by 2020, according to the California Energy Commission. The growth stems from requirements for petroleum marketers to provide cleaner-burning fuels to minimize air pollution from tailpipe emissions. Such growth in ethanol production and usage can be managed with steel underground storage tanks (USTs) and aboveground storage tanks (ASTs), which are renowned for compatibility with high concentrations of alcohol – in this case, a motor fuel that is 85-percent ethanol. However, older plastic tanks that have not been prepared with a special resin are raising concerns. The American Coalition for Ethanol states on its web site that: "In many cases, existing gasoline, diesel, or other hydrocarbon fueling systems may also be used to store and dispense fuel ethanol. Most metal underground storage tanks that meet EPA December 1998 codes can be used to store E85. Many underground fiberglass tanks that meet EPA standards may also be used to store E85. However, fiberglass storage tanks manufactured prior to 1992 MAY NOT be able to handle E85." Fiberglass-reinforced plastic (FRP) tank manufacturers for years have said that tanks they have fabricated since the 1980s have been compatible with alcohol blends. The ACE website recommends that tank owners contact the National Ethanol Vehicle Coalition if they are considering conversion of an existing fiberglass UST manufactured prior to 1992 to store E85. For the complete caution from ACE, click on <http://www.ethanol.org/e85storage.html>. The ACE concerns are echoed by the U.S. Department of Energy on its Efficiency and Renewable Energy website: "Double-walled and post-1992 single-walled fiberglass USTs may be used with E85 when approved by Underwriters Laboratories, Inc." http://www.eere.energy.gov/afdc/e85toolkit/equip_options.html. Similarly, greater attention to compatibility issues from regulators and insurers has emerged in Iowa, an ethanol hotbed. The May 13 newsletter of the Petroleum Marketers and Convenience Stores of Iowa reported: "During the Iowa Marketers' Expo, attendees learned of issues relating to tank and equipment compatibility issues with E85. The DNR (Department of Natural Resources) and PMMIC Insurance communicated federal requirements and likewise insurance requirements that all tanks and equipment must be certified as compatible with 85-percent alcohol in order to be approved to dispense E85 and in order for insurance to be valid. At this time, there are no laws or rules addressing neither biodiesel nor E85 requirements other than 'compatibility' requirements." The compatibility concerns take on added significance in light of federal and state initiatives to expand the ethanol fueling infrastructure. In late April, U.S. Sen. Barack Obama (D-Ill.) proposed legislation to provide a tax credit that will benefit the construction of E85 ethanol fueling stations throughout the country. The proposal would encourage the use of more ethanol and help to provide motorists who drive flexible fuel vehicles (FFVs) with a cheaper gas, according to RenewableEnergyAccess.com. The legislation would provide a 50-percent tax credit for the cost of building a new E85 vehicle refueling facility, with a credit limit up to \$30,000. Funds from penalties on auto manufacturers that violate fuel mileage standards would pay for the tax credit. For more information, click on <http://www.renewableenergyaccess.com/rea/news/story?id=27700>

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Special Section: The New Emphasis on Ethanol

Wisconsin UST Inspectors Learn All About Ethanol and Tank-System Issues

As petroleum marketers in Wisconsin continue to convert underground storage tanks (USTs) to ethanol fuel blends, inspectors increasingly have confronted a series of tank-system concerns. To help inspectors statewide manage the issue, the Bureau of Petroleum Products and Tanks of the Wisconsin Department of Commerce on June 22 conducted a seminar at

the Fort McCoy Military Training Academy. Topics included an overview of ethanol as a motor fuel, case studies in which inspectors described challenging situations that they encountered in the field, an introduction to the Optic Fuel Clean technology, an examination of inventory control records, an exploration of ethanol compatibility issues for various tank-system components and a recap of regulatory proposals that may apply to ethanol. During his case-study presentation, Inspector Marv Thiel said he has seen the conversion of tanks to ethanol occurring without UST owners and managers fully understanding operational impacts. "There's a large number of station owners who have switched to ethanol and don't know what's in their tank," Thiel said. "If a station's going to switch to ethanol, you've got to wash out the tank," said Inspector Jim Zorn, who presented another of the case studies. Ethanol can loosen internal tank residue when it is first introduced to a petroleum storage tank that has held other product. Petroleum marketers throughout Wisconsin are making the conversion in large part because of pricing pressures that have made ethanol-blended fuels more cost-competitive than in the past. Prior to the last year, ethanol blends were offered to motorists primarily in eastern Wisconsin where Clean Air Act requirements dictated that cleaner-burning fuels be marketed.

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Special Section: The New Emphasis on Ethanol

Minnesota Raises the Ante on Ethanol Use Minnesota leaders are looking for some gains from grains. On May 10, Gov. Tim Pawlenty signed a law (S.R. 4) that will require all gasoline sold in Minnesota to contain at least 20-percent ethanol within the next eight years. The current standard throughout the state is a 10-percent ethanol blend. The gains for Minnesota would be greater use of cleaner-burning fuel in many vehicles, reduction of dependence upon foreign oil sources, and agricultural market development for grain farmers. Minnesota will apply for a federal waiver to allow the 20-percent ethanol-gasoline blend. The new legislation will not take effect unless the state secures federal approval for ethanol requirements by 2010. The bill also calls for the state to aim for a target of 20 percent of all liquid fuel generated from renewable resources by 2015. At the same time, Minnesota is trying to encourage development of the E85 (85-percent ethanol) market. Formed to promote greater use of the 105-octane fuel was the Minnesota E85 Team, which has launched a grant program for service stations and fleet operations installing equipment or converting existing storage and handling systems for dispensing E85 fuel to flexible fuel vehicles (FFVs). An FFV has the capability to burn standard gasoline formulations or newer high-alcohol blends such as E85. About 4 million FFVs are operating in the United States – bearing nameplates such as Daimler Chrysler, Ford, General Motors, Isuzu, Mercedes Benz and Mercury. Minnesota tank owners who are interested in the incentive program can contact the American Lung Association of Minnesota at 1(800) LUNG-USA or 651-227-8014.

In addition to the lung association, the Minnesota E85 team for 2005 includes the Minnesota Corn Growers Association, Minnesota Coalition for Ethanol, Minnesota Department of Commerce Energy Division, Minnesota Office of Environmental Assistance, Minnesota Department of Agriculture, Ford Motor Co., National Ethanol Vehicle Coalition and U.S. Department of Energy Clean Cities.

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Special Section: The New Emphasis on Ethanol

Several States Consider What 22 Have Done - Ban or Restrict MTBE Sales As of May, six states – Maryland, Mississippi, New Jersey, Pennsylvania, Rhode Island and Vermont – were considering a restriction on, or elimination of, selling fuel blended with methyl tertiary butyl ether (MTBE), according to the Renewable Fuels Association. Among those states, Rhode Island has just taken action – as the governor in July signed legislation that will prohibit adding MTBE to gasoline for sale in the state, effective in 2007. Rhode Island is the 22nd state to make the legislative

change. Elected officials in those six states were looking at ways to follow the lead of states, including Missouri and Ohio, where prohibitions against the use of MTBE took effect on July 1. MTBE has been hailed as a gasoline additive that helps engines burn cleaner. However, numerous instances have been reported of how MTBE leaked from underground storage systems to pollute local groundwater supplies. The incidents have led to severe restrictions or prohibitions on the additive's use. In addition to Rhode Island, Missouri and Ohio, states such as Kentucky and Montana (effective Jan. 1, 2006) or Maine and New Hampshire (effective Jan. 1, 2007) have passed legislation in recent years that will phase out future MTBE sales. For more information on states where MTBE is prohibited, [click here](#). Also, the Energy Information Administration of the U.S. Department of Energy periodically updates a map of states that have banned MTBE. http://www.eia.doe.gov/oiaf/ethanol_map.html

Despite the banning of MTBE, residual problems with the fuel additive will create an expensive legacy, researchers say. A new study by ENSR International, scheduled for release this summer, will peg the national cost of MTBE remediation during the next 30 years in the range of \$1 to \$3 billion, according to the Association for Environmental Health and Sciences. In similar news, the American Petroleum Institute released a study in July that forecast cleanup costs at or below \$1.5 billion. The study estimated cleanup costs, not funded by currently identifiable sources such as insurance and state or federal monies, to be \$100 to \$300 million for USTs, \$200 to \$900 million for public wells, and \$200 to \$300 million for private wells.

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Compliance, Close-out or Cleanup: Tough UST Choices in California

Environmental-protection regulations in California continue this year to create challenges for underground storage tank (UST) owners and operators in the Golden State. Long known for defining the leading edge of many environmental issues, California has evolving regulations that have escalated the cost of doing business for tank-system managers. However, a representative of the state's lead agency for underground storage tank regulation acknowledged that compliance costs have increased, but alignment with regulations remains less expensive than managing a cleanup. A February story in the Lodi News on a tank-removal job at Lodi city hall included comments from a contractor on how even double-wall underground storage tanks are falling out of favor. "The trend now is we're taking out double-walled tanks because the rules and regulations that are put on them are overwhelming," the contractor said. "The state has made it almost impossible for guys to afford it." California's requirements on inspection and testing equipment have prompted many tank owners to decide it's cheaper to take the storage and handling systems out of service, the newspaper article said. Scott Bacon of the State Water Resources Control Board (SWRCB) in Sacramento said, "California's UST program is not working to bring about the removal of double-walled USTs. We have merely developed rules that help ensure that these tanks are installed, maintained and operated in a manner that minimizes the risk of release." Meanwhile, in Southern California, a Riverside service station owner pleaded his case this year to the Press-Enterprise newspaper. "It's not fair. I have done everything in my power that I could do," said the station owner, whose business had been closed for several months as regulators developed a program to ensure that no leakage from a tank system could affect a local aquifer. The station owner bought the facility in 2003 after 10 years of operating it as a franchise of a major oil company. No leaks had been reported during his time as manager or owner of the station. Nevertheless, because of the station's proximity to local water wells, and the nearby aquifer's importance in fast-growing Riverside County, regulators felt that extreme measures had to be imposed upon the fueling facility. "We think that we've come up with a plan that's stricter than we've ever seen and stricter than the state has seen," said a regulator with a regional water control board. The measures that the station owner will have to comply with include installation of groundwater monitors, vapor-detection devices and soil-based vapor vacuums. The estimated price tag of the upgrades is \$100,000. However, two other governmental units with some jurisdiction over local water supplies filed suit against the station owner and the city, claiming that inadequate study of environmental impact had allowed the facility to operate. Bacon of SWRCB said: "The measures being imposed on the Riverside UST facility are site-specific, imposed by the local

regulatory agency, and are not typical of requirements for double-walled UST systems throughout the state. "California is proud to be among the nation's leaders in protecting groundwater from contamination due to leaking underground storage tanks. As our state's reliance upon groundwater grows, protecting aquifers from contamination becomes increasingly important. Installation of double-walled tanks has been required in California since 1984, and the State Water Resources Control Board has updated UST operation and maintenance requirements periodically since that time as we identify areas where changes can be made that help to reduce the likelihood of release of hazardous substances to the environment. While each new requirement has an associated cost, we firmly believe that the costs are significantly less than the costs associated with cleaning up releases from leaking USTs."

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Report from the field: Microbes growing near probe and pump areas

During its first two years of operation, Optic Fuel Clean of Minnesota has analyzed or cleaned fuel in about 1,200 underground storage tanks (USTs) or aboveground storage tanks (ASTs) in the upper Midwest. The Optic Fuel Clean system uses fiber-optic technology and a controllable probe for UST and AST tank-bottom inspections and fuel cleanings that are designed to pinpoint and correct product-quality problems that could result from water, sludge, gums, bacterial contamination and other sources. The system visibly inspects and cleans tank bottoms of contamination. The work occurs with product remaining in the tank, enabling motorists to pump fuel with no downtime or lost revenue to the retail service station. John Marshall, president of the firm based in Alexandria, Minn., provides the following report on what technicians have found during tank inspections: We have discovered in many tanks that rarely are water-accumulation problems and microbial growth occurring near the fill end of the USTs. Most contamination is found near the probe and pump areas of the tanks. Because microbial growth occurs around the "quiet area" where the automatic tank gauging probes are placed, this has caused many false monitor readings. We have inspected and cleaned the fuel in tanks where the monitor read 1.5 inches (38.1 millimeters) of water and have found very little water. On the other hand, we have seen monitors that indicated zero inches of water – and we have removed 50 to 150 gallons (189.2 to 567.6 liters) of water and bacteria. After we have pulled up the probe – and cleaned the tank bottom near the probe's resting place – and wiped the probe itself of sludge and bacteria, we have been able to get accurate readings from the monitors. We have encountered a few tank owners and managers who say that a microbiocide treatment is a simple cure for bacterial tank problems. On one hand, the microbiocide is a good first step in the whole process of a tank cleaning. But, our experience has shown that they still need to get rid of the dead bacteria, and any accumulated water, to prevent ongoing issues of plugged filters and an eventual renewal of bacteria growth. We've also found a good percentage of tanks that were sloped to one side or the other. Significantly sloped tanks often have resulted in our removal of a great deal of water. It's a physical problem. Monitors can only read or detect water that is near the probe. On hundreds of occasions, the monitors we have seen did not detect water at the ends of the tank. There have been times where we were called to a site to inspect and clean tank bottoms because of slow product flows and frequent filter changes. These problems resulted from a lack of regular tank maintenance and tank-bottom inspections, which allowed bacteria and sediment over time to accumulate to a dense, or calcified, consistency. In these situations, the tank owners needed to have the tank physically cleaned by experts who specialize in manned entry. This cost the tank owners many thousands of dollars – for the service itself, and the tank-system downtime that resulted in lost opportunities for gasoline or convenience store sales.

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Corrections and clarifications

An article in the March edition of Tank Talk about a tank-system leak in Connecticut quoted a truck-stop official as saying, "A union on some of the piping leaked and got out of the sump, and about 30,000 gallons of diesel fuel was found in the ground." In response, reader Glen Marshall pointed out that a pipe coupling may have been what the truck-stop official meant to say. "Unions should never be utilized in underground piping," Marshall said. "This has been an industry-wide standard practice for at least the last 40 years that I know of."

The same article also stated that regulations in Connecticut require that tanks be limited to a 20-year service life. Reader John Ernst replied: "Tank-life expectancy in Connecticut is defined in the state regulations as the period of the manufacturer's warranty (typically 30 years now), and tanks may be operated for up to five years beyond that if certain periodic testing is performed. The tanks in question may have been installed when manufacturers were offering 20-year warranties, or even one-year warranties." Scott Deshefy of the Connecticut Department of Environmental Protection said, "Since the Dec. 22, 1998 deadline for closure of bare steel components, the 20-year deadline for USTs only pertained to steel heating fuel tanks, provided passage of annual testing. Those tanks will by default be illegal as of November 2005, if not already past 20 years of service. Fiberglass-reinforced plastic and sti-P3® USTs will be in compliance through the end of the manufacturers' warranty (not to exceed 30 years) and cannot be used five years beyond that date." The current Connecticut regulation regarding the life expectancy of motor fuel USTs is: RCSA 22a-449 (d)-111(c). The section that allows operation beyond five years of the life expectancy is RCSA 22a-449(d)-110. The staff of Tank Talk regrets any confusion that the article may have caused.

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Water in Tanks Stalls Profits for Station Owners Water infiltration in underground fuel tanks can often lead to notoriety for a local service station. Two more expensive examples surfaced this spring in Arkansas and Texas. In Cabot, Ark., about 25 miles (40.2 kilometers) northeast of Little Rock, inspectors in late March discovered an underground storage tank (UST) at a Main Street gas station with 2.2 inches (5.58 centimeters) of water bottom. The measurement violated Arkansas Bureau of Standards regulations that call for a halt on fuel sales on any reading over two inches (5.08 centimeters). The gas station's owner within two weeks of the finding decided to close the facility – not because of water in the tank. The station owner told the Cabot Star-Herald newspaper that he had been trying to sell the station for several months. However, in late March, the owner of a 2003 Mitsubishi Eclipse paid \$30 for gasoline, cranked up the starter and discovered that his car would not move. "My mechanic told me the gas had too much water in it," the driver said. "He said it looked like fresh brewed tea and didn't even smell like gas." The bill to fix the car totaled \$3,050. The station owner contended that the fuel was checked every day for water, and that this incident was the first in seven years of operation. However, an Arkansas Bureau of Standards petroleum chemist told the newspaper that the premium tank had 2.2 inches of water visible on a stick test of the tank. The unleaded tank had 1.875 inches (4.76 centimeters) of water showing on the stick. However, no water was present in two other tanks at the station. The chemist issued the station owner a citation for the unleaded gasoline. The station owner asserted that heavy spring rainfall could have exploited a leaky pump seal or a hole in the tank. He also contended that the problem can be found in the natural condensation that builds up in a tank. An Arkansas regulator disputed whether condensation could cause a quick buildup of at least two inches of water. The Bureau of Standards has found more than 300 cases statewide of fuel fouled by water. The driver of the Mitsubishi advised other drivers to keep receipts when purchasing gasoline. "I wouldn't have been able to prove anything if I didn't have my receipt," he said. <http://www.cabotstarherald.com/Pages/04-06-05/Doors%20closing%20on%20watery%20gas%20station.htm> (Registration may be required.)

Meanwhile, in Houston, KHOU-TV news focused on the story of motorists trying to cope with watered-down gas. Eight vehicles at one service station suddenly stopped running after they were filled up with gasoline that apparently contained water. "When I put (the key) in I tried to crank it," said one stranded motorist. "It said clunk, then it stopped. I tried to crank it again, clunk again. Next thing I knew, it wouldn't do anything else." Tow trucks hauled the marooned vehicles to nearby mechanics. The owner of the gas station who has operated a

business at that location for more than 20 years shut down the dispensers and agreed to foot the bill for the tow and car repairs."They want to stay here. They want to keep their customers happy and they're doing what it takes to try and keep them happy. It's costing them quite a bit of money today," said Officer Rex Hopkins of the Houston Police Department. http://www.khou.com/news/local/houstonmetro/stories/khou050413_gj_badgas.1d4f48403.html (Registration may be required.)

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STI Cathodic Protection Tester Certification Program Continues to Serve Students An ongoing service of the Steel Tank Institute, the cathodic protection tester certification program offers a practical approach for individuals who need to understand how underground storage systems can be protected from corrosion. Sessions were held this spring in Richmond, Va., Dallas, Texas, Edison, N.J., San Antonio, Texas and St. Paul, Minn. Altogether, 66 testers were certified. The Texas sessions were held in conjunction with the state Texas Natural Resource Conservation Commission (TNRCC). Thousands of underground storage tanks (USTs) and piping systems require periodic monitoring of cathodic protection. During the course, industry experts demonstrate the latest methods for monitoring and troubleshooting cathodic protection systems. The course is focused on the real-world needs of individuals and companies that plan to conduct field testing of cathodic protection monitoring on systems such as sti-P3® tanks. The course also covers the monitoring of impressed current systems for USTs. Upon successful completion of a test, the course certifies qualifying participants as cathodic protection (CP) testers of underground storage tanks. John Cernero of the U.S. Environmental Protection Agency Region 6 office attended the Dallas session in late March. "The class was great!! It really gave me some hands-on training so I will be able to determine more accurately whether the CP system is functioning correctly. The class also provided the knowledge I need to understand (electrical) continuity and why it is so important that impressed current CP systems are properly designed. And, by the way, the instructors not only knew their 'stuff,' they taught in such a way that it was not boring." For information on when the next cathodic protection tester courses will be conducted, check the STI web site at <http://www.steeltank.com/calendar/default.aspx>.

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STI Collaborates with States on Tank-Related Courses

Continuing education has value in an industry where environmental and fire-code standards can change from year to year. Some states are seeking the assistance of Steel Tank Institute (STI) in putting together educational programs that keep regulators, tank owners, inspectors and maintenance personnel up to date. For instance, the Florida Department of Environmental Protection (DEP) Bureau of Petroleum Storage Systems (BPSS) and STI in October are offering a shop-fabricated aboveground storage tank (AST) inspection course. "We have worked with STI in the past on educational sessions, and found that participants gained insights that they could immediately use on the job," said Farid G. Moghadam, Engineer III with the Storage Tank Regulation Section of the Florida DEP. Instruction will be spread over three days for federal, state, city and county employees, and serve as a condensed version of the STI course on SP001, the newly revised Standard for the Inspection of Aboveground Storage Tanks. The instructor is John Cignatta Ph.D., P.E., a nationally recognized authority on shop-fabricated tanks. Similarly, the Texas Natural Resource Conservation Commission (TNRCC) worked jointly with STI this year in presenting certification courses for cathodic protection testers. For more information, [click here](#).

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In Memoriam: Charles Sonnenberg Charles Sonnenberg, an innovator in the steel tank industry who performed pioneering work on the sti-P3® tank, died on April 3 in Surprise, Ariz. He was 85. Sonnenberg worked for Kennedy Tank and Manufacturing in Indianapolis, Ind., advancing to vice president of operations prior to his retirement in 1984. During his years at Kennedy, Sonnenberg was instrumental in the development of the cathodically protected sti-P3® design, which debuted in 1969 and became an industry standard. In honor of his technical contributions to the industry, Steel Tank Institute (STI) in 1984 created the Charles Sonnenberg Award, of which he was the first recipient. In 1990, he was named as a member of the Steel Tank Institute Hall of Fame. After retirement, he also served as an engineering consultant to STI.

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STI/SPFA Redesigns Web Site STI/SPFA has launched a new web-site design at <http://www.steeltank.com/>. Providing information on the benefits of steel construction in a wide variety of markets, the new site includes streamlined and flexible access to technical resources such as training and certification programs for tank owners, regulators and members. The markets served by STI/SPFA members include vessels designed for the storage, distribution and processing of water, foods, chemicals, petroleum, alternative fuels and hazardous materials. Select one of the steel construction buttons for more information on piping, water tanks, pressure vessels, special fabrications and petroleum or chemical storage tanks. Topping the list of essential features on the new site is an events calendar and integrated seminar registration program with secure online credit-card processing. A wide range of educational and certification programs are offered, including a Steel Water Tank Seminar, an Aboveground Storage Tank Inspector Certification Program and a Cathodic Protection Tester Certification Program. Course materials, schedules and additional class information can be found by selecting the calendar of events or the education tabs. New classes are added all the time, and a Steel Pipe webinar is under development. The steel fabricator locator provides multiple search options, in addition to finding a member company by location or corporate name. Technical resources include standards, technical papers, position statements and presentations on various tank technologies. In the works are a Life Cycle Cost Analysis for Steel Water Tanks and an updated Volume 3 Pipe Design Manual. Key documents are available for purchase in the publications area, such as the STI/SPFA "Basic Safety Rules for Fabrication and Field Erection" 2005 Edition, and the SP001 Standard for Inspection of Aboveground Storage Tanks 2005 Revised Edition. Featured items on the home page include the Tank Talk newsletter, and projects that have been cited as industry award winners. Tank Talk provides technical information and news of underground and aboveground storage tank systems, along with updates on key regulatory and code issues. The awards link showcases STI/SPFA members who have earned recognition for safety, quality and fabrication of outstanding products. Additional information on any programs or services of STI/SPFA can be found in the press releases and position-paper links. [\[Top\]](#)

Fire Code Anticipates Tank System Needs for Hydrogen Fuels Envisioning the needs of the next generation of fueling infrastructure, the International Fire Code (IFC) is considering proposals that would define the characteristics of a hydrogen underground storage tank (UST) system. Under Sections F216-04/05 and F218-04/05 and paragraphs 3504.3 through 3504.5.2, the International Code Council is starting to examine IFC issues that would affect the construction, location, burial depth, anchoring, venting, piping, corrosion protection and vacuum monitoring of a liquid hydrogen fuel tank system. Unlike gasoline storage tanks, which are rated to handle atmospheric pressure, a hydrogen tank would have to be a pressure vessel. The IFC proposal calls for liquid hydrogen tanks to be "designed and constructed in accordance with ASME Boiler and Pressure Vessel Code (Section VIII, Division 1)" and "vacuum jacketed." The IFC, as part of the International Code Council, met in late February and early March to discuss the issue. Results of the meeting are available at <http://www.iccsafe.org/cs/codes/2004-05cycle/2005ROH%7EIFC.pdf>. Another hearing to address any objections to the meeting results is slated from Sept. 28 to Oct. 1. Vessels

storing hydrogen underground also would require listed corrosion protection, if approved this fall. The full language of original proposed changes to the IFC is available at <http://www.iccsafe.org/cs/codes/2004-05cycle/ProposedChanges/Fire-3.pdf>. [Top]

Steel FactsThe Statue of Liberty includes 125 tons (250,000 pounds or 113,400 kilograms) of steel.

<http://www.endex.com/gf/buildings/liberty/libertyfacts.htm>A typical 2,000-square-foot home requires about 40 to 50 trees, about an acre's worth. With steel, only the equivalent of about six scrapped automobiles are needed. <http://www.steel.org/facts/residential.htm>

The Mackinac Bridge, the longest suspension bridge in the Western Hemisphere, contains 71,300 tons (64,682,272 kilograms) of structural steel and 3,700 tons (3,356,584 kilograms) of reinforcing steel. In addition, the bridge was built with 4,851,700 steel rivets and 1,016,600 steel bolts. The length of the steel superstructure is 19,243 feet (5,865 meters).

<http://www.mackinacbridge.org/> [Top]

Online ResourcesOnline Publications

2004 Biodiesel Handling and Use Guidelines

<http://www.nrel.gov/docs/fy05osti/36182.pdf>

National Petroleum News <http://www.petroretail.net/npn>

Petroleum Equipment & TechnologyPetroleum Equipment Petroleum Equipment &

TechnologyPetroleum Equipment & TechnologyPetroleum Equipment &

TechnologyPetroleum Equipment & Technology <http://www.pe-t.com>

Steel Tank Institute Water in Fuel Tanks Research

<http://www.steeltank.com/library/pubs/waterinfuel tanks.pdf>

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

Underground Tank Technology Update <http://uttu.engr.wisc.edu>**Associations**

American Iron & Steel InstituteAmerican Iron American Iron & Steel InstituteAmerican Iron & Steel InstituteAmerican Iron & Steel Institute

<http://www.steel.org>

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

American Water Works Association <http://66.45.110.61>

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

Petroleum Equipment Institute <http://www.pei.org>

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

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

U.S. Department of Energy Alternative Fuels Data Center

<http://www.eere.energy.gov/afdc/index.html>

U.S. Department of Energy Alternative Fuels Data Center Related Industry Links

<http://www.eere.energy.gov/afdc/resources/links.html>

U.S. Department of Energy E85 Toolkit Equipment Requirements and Specifications

<http://www.eere.energy.gov/afdc/e85toolkit/specs.html>

U.S. Department of Energy, Energy Information Administration Ethanol Compendium

<http://www.eia.doe.gov/oiaf/ethanol3.html>

U.S. Department of Energy Equipment Conversions

<http://www.eere.energy.gov/afdc/e85toolkit/conversions.html>

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, MTBE and Underground Storage Tanks <http://www.epa.gov/swerust1/mtbe/index.htm>

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

State Regulatory Agencies

California Air Resources Control Board <http://www.arb.ca.gov/homepage.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 Fire Code Institute <http://www.ifci.org/>

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

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

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

Underwriters Laboratories Collaborative Standards Development System

<http://csds.ul.com/Home/Default.aspx>

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

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Industry Conferences and Meetings

July 17 to 21, 2005

ASME Pressure Vessels & Piping Division Conference, Denver, Colo.

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<http://www.asmeconferences.org/pvp05> Aug. 16 to 18, 2005

18th Ethanol Conference and Trade Show, American Coalition for Ethanol, Omaha, Neb.

<http://www.ethanol.org/schedule.html> Aug. 21 to 24, 2005

Pipelines 2005, American Society of Civil Engineers, Houston, Texas

<http://www.asce.org/conferences/pipelines2005/overview.cfm> Sept. 20 to 22, 2005

2005 Pacific Oil Conference, California Independent Oil Marketers Association, Reno, Nev.

http://www.petroshow.com/attendees_deadlines.html Sept. 25 to Oct. 1, 2005

2005 Annual Conference, International Code Council, Detroit, Mich.

<http://www.iccsafe.org/news/annual/2005Conference/> Oct. 29 to Nov. 2, 2005

WEFTEC 05, Water Environment Federation, Washington, D.C.

<http://www.weftec.org/registration/registration.htm> Oct. 30 to Nov. 1, 2005

2005 PEI Convention at the NACS Show, Petroleum Equipment Institute and National

Association of Convenience Stores, New Orleans, La.

<http://www.pei.org/show/> Nov. 1 to 3, 2005

Chem Show, New York, N.Y.

<http://www.chemshow.com> Nov. 9 to 10, 2005

National Institute for Storage Tank Management UST Conference, Orlando, Fla.

www.NISTM.org Nov. 15, 2005

2005 Fall Operating Practice Symposium, American Petroleum Institute/National

Petrochemical and Refiners Association, Chicago, Ill.

<http://api-ep.api.org/training/index.cfm?objectid=B9FE7A77>

-F519-4F6A-862B33DE60844392&method=display_body-F519-4F6A-862B33DE60844392-

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[862B33DE60844392&method=display_body&er=1&](#)
[bitmask=002005001000000000](#)Dec. 4 to 5, 2005
D02 Conference on Biodiesel Fuels, ASTM International, New Orleans, La.
http://www.astm.org/cgi-bin/SoftCart.exe/filtrexx40.cgi?U+mystore+tjvv0161+/usr6/htdocs/newpilot.com/MEETINGS/sympfuturemeetings_work.frmDec. 6 to 8, 2005
Power-Gen International, Las Vegas, Nev.
<http://pgi05.events.pennnet.com/>

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