TANK TALK®

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Chairman's Corner

By: Crone Knoy

What's in a Name?

Although we have been nicknamed "TIC®" ever since the second year or so of our business, we still answer the phone with the sometimes cumbersome *"Good Morning, TANK INDUSTRY CONSULTANTS."* How did I pick the name? Actually, in 1979 I started the engineering practice using a letterhead of *E. Crone Knoy, P.E.* After a month or so, I added to the signature block, *TANK INDUSTRY CONSULTANTS*, merely in an attempt to describe the services I was concentrating on. Within a couple of months, I had decided on the company name and had my first tri-fold brochure printed. My goal at that time was to start an organization that would have name recognition all of its own, and one that could continue operation over generations without my name as a ghost in the closet.

This has been achieved. The organization, ownership, and financial guarantees are in place to accomplish these goals upon my demise or retirement (both of which I hope are way off in the future). The entire staff has a great sense of ethics, customer service, technical know-how, and fiscal control.

After a couple decades of firms making their acronyms their official corporate name, we now see that the "trendy" thing is to use real names. I guess this is something else we have done right. *Our name says what we are.*

By design or sheer dumb luck, we have put an organization into place which we don't think has to be *re-engineered*, the present catchword which describes revolutionary processes described in management publications and touted at management seminars. After all, *re-engineering* means redesigning that which you screwed up to begin with. (Have you noticed that there seems to be a new catchword or phrase coming to the forefront about every six months, just in time for me to make light of it?)

Oh yes! The real name question which I am asked regularly--what does the "E." in "E. Crone Knoy" stand for? To find out, read the rest of TANK TALK® 23. In it you will find a misspelled word. That is what the "E." stands for. (I'll give you a hint...it's not *Frank.*)

Moving News...

It's official...TANK INDUSTRY CONSULTANTS will be moving to our new, state-of-the-art facility, hopefully, early this winter. The move into the new office will mean increased effectiveness of communications and increased efficiency which will benefit us all. Details concerning address change will be communicated as the actual move-in date approaches; but at this time, we just wanted you to be able to share in our excitement as this long-held dream becomes a reality.

Standards

Throughout these issues of TANK TALK you will find references to various AWWA, SSPC, and NACE Standards. About the time we think everyone knows the purpose of standards and how they are to be used, we hear of a controversy which would have been avoided had the standards and their use really been understood.

The standards-making process usually consists of an official committee serving under the auspices of the board of directors of a technical organization, or as in the case of the American Water Works Association, under the auspices of the Standards Council.

The standard itself is usually developed by a task group which serves at the discretion of the committee chair. The committee overseeing that technical area then ballots its membership and repeats the ballots until a consensus is reached. This requires that all negatives be resolved or deemed non-persuasive. In the case of AWWA Standards, the standard then goes before the Standards Council which must also approve the standard. The next step, (which in the case of NACE and SSPC Standards follows the standards committee approval) is to be approved by the board of the organization. The job of the board is not to appraise the technical content of the standard, but to determine if the proper standards-making procedures have been followed.

In the promulgation of AWWA Standards, a public comment period follows board approval. Usually, this public comment period produces little or no controversy. The recent comment period of the AWWA D100 Standard has produced an appeal which was basically denied by the Standards Council, but was appealed to the Board of Directors.

The purpose of standards is to protect the interests of society. AWWA D100, for example, has been successfully used to protect the safety of the general public throughout the world by providing structurally sound water storage tanks--tanks which are usually located in highly populated public and private areas.

Other AWWA Standards deal with items of equipment, materials, or processes concerning the delivery of safe drinking water to the public. SSPC and NACE standards usually deal with criteria for acceptance of materials or methods which will improve the longevity of structures.

Standards are not specifications. Project specifications must be written specifically for the project being undertaken. Standards are referenced in the specification as required to delineate the quality of work and materials to be included in the project.

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QBS

By: Bill Daugherty, P.E.

"QBS" is not the latest automotive safety feature...it's "Qualifications-Based Selection." While no one would ever consider soliciting three bids to determine which physician should put tubes in their child's ears, or choose an attorney to prove their innocence in a hit-and-run accident based on price alone, it is still a fairly common practice to take bids when hiring architects, engineers, and other related technical consultants. On the surface, obtaining the lowest fee may appear to save money; however, when the complete picture is considered, it becomes obvious that more often than not, selecting the lowest priced engineer is one of the most costly things an owner can do. This is why prudent owners select engineers and other professionals based on a combination of qualifications, experience, personnel, and expertise.

Typically, when the "low bidder" is hired for an engineering project, any number of problems can arise. Because the engineer must make money on the project in order to survive, and all an engineering firm has to "sell" is its time and expertise, the lowest priced engineer logically must spend less time on the project than any of the other competing firms. Time-saving shortcuts can result in incomplete specifications which require costly change orders once the project is underway. To keep construction and maintenance costs down, the cost effectiveness of different designs and materials must be considered, and this real cost of construction can be greatly compounded if the long-term maintenance of the facility is not given due consideration by the design engineer. The list of costly repercussions of a narrow-sighted concern for cost savings in the selection of an engineer can go on and on. If a low-fee engineer causes as little as a 2% to 3% cost overrun in construction alone, the savings the owner realized by hiring the lowest priced engineer can very quickly be wiped out.

Low cost is a goal of every professional. Some professionals attempt to meet this goal by offering low fees, while others attempt to meet this goal by reducing construction costs/overruns, reducing liability, and reducing operation and maintenance costs. Does this mean the most expensive engineer is worth the cost, or that the least expensive engineer won't do a good job? Of course not. The point is that fees should not be considered until the most qualified firm has been selected. Then "fair and reasonable" fees should be negotiated based on a mutually agreed upon scope of services. The best qualified firm may have experience and a data base which will make their fee very competitive.

The concept of Qualifications-Based Selection has been used very successfully for many years. In fact, 30 states presently have laws in place requiring QBS, several more are reviewing legislation to require QBS, and several others do not allow engineers to bid their services as part of the ethical or legal requirement of holding a professional engineering license. All federal contracts for engineering services are required by law to be solicited on a QBS basis (commonly referred to as the Brooks Law). And, the American Public Works Association formally recommends QBS as does the National Rural Water Association.

So why are so many owners still bidding professional services? I haven't a clue!

Historic and Unusual Tanks

Maybe it's just a natural offshoot of our line of work, but at TIC® we have a pretty unnatural curiosity about water tanks--and the more unusual the tank, the more curious we become.

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For several years, we have been telling our readers about the Steel Plate Fabricators Century Club which honors tanks that have been in service for 100 years or more. Last summer, the 107-year-old standpipe in Xenia, Ohio was identified by SPFA as the 2nd oldest tank to be honored thus far as a Century Club member. Put into service in 1887, the 270,000-gallon tank still serves the Xenia community today. TIC evaluated that tank during the summer of 1987, and let's just say that we all wish we could look that good at 100! In 1990, we wrote specifications and provided work-in-process observation for rehabilitation work on the tank. With proper maintenance, this "heirloom" could continue to serve the community for another 50 to 100 years...maybe even longer.

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We recently learned of another tank project that is a bit unusual. In Collinsville, Illinois, just outside of St. Louis, stands the Giant Catsup Bottle Tank. The 70-foot tall Brooks Catsup bottle on a 100-foot steel base could hold 640,000 average bottles of catsup--or 100,000 gallons of water--whichever you would prefer. In recent years, this historic tank has been showing the usual signs of neglect, but at the ripe old age of 46, this unique structure is getting a face lift thanks to the Ernest efforts of the Catsup Bottle Preservation Group. To raise the final $13,000 needed for the project, the Preservation Group is selling T-shirts which feature a 3-color illustration of "Catsup Well Preserved." For additional information on how you can add this unique remembrance of tank history to your wardrobe, phone 618/344-8775.

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Thanks to Ray Schuster of the Clifton (CO) Water District, we now have photos of the moving of a 100,000 gallon ground tank...and we do mean "moving." The tank was taken out of retirement and moved on the back of a low boy trailer along 6 miles of public roads to its new home. The traffic-stopping moving operation went without a hitch until the 17-foot tall, 32-foot wide load met with a bridge that wasn't quite as wide. We're glad to hear that even that hurdle was overcome, and the 27-year-old tank is now once again in service.

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Last fall, TIC evaluated what we believe may be the tallest tank in the world--the 400,000 gallon tank at the Martin Marietta Energy Systems facility in Oak Ridge, TN. At 360 feet to the high water level, this 6-column tank with the requisite red and white checkerboard aviation warning paint job definitely is "heads above" any other tank we've evaluated. If you know of a taller tank, please let us know. We're always interested in perfecting our knowledge of tank trivia.

Tank Security

As those long, hot days (and evenings) of summer approach, tank owners need to stop and consider how safe their tank site is from the neighborhood kids who become graffiti artists and declare undying love to Susie Q or Billy Joe--or the Class of '95 that tries to outdo the Class of '94 with a higher, bigger, bolder banner on the local water tank.

Graffiti itself is not the problem. Graffiti can usually be solvent-washed off of today's polyurethane finish coatings, and chances are you can always find a bucket of an older vintage paint sitting around in some storage room to cover up this summer's handiwork. The problem with graffiti is that it is a sure sign that unauthorized personnel are gaining access to your tank site. Such unauthorized access can spell trouble for the tank owner--trouble spelled L-I-A-B-I-L-I-T-Y. If that graffiti artist falls 100 feet from the tank balcony to the ground, or even twists an ankle while running across the site, we all know who will be held liable--you, the tank owner.

Liability from injury is not the only problem tank owners face. There is also concern over contamination of the drinking water, either from materials put into the tank by vandals, or contamination from birds, insects, or small animals.

Liability for tank site safety has become such a great concern that we are even seeing tank sites with motion detectors--once found primarily on tank sites on military facilities--being installed on some of the tank sites we have evaluated around the nation. But not every tank owner may need or be able to justify the cost of such sophisticated equipment. There are, however, several basic precautions tank owners can take to protect themselves and their water system.

Safety Precautions

- Install--and maintain regularly--a fence around the tank site. Repair any bent or broken fencing immediately.
- Make sure all gates in the fence are locked at all times.
- Install vandal deterrents on exterior ladders and at the base of lattice-legged columns.
- Keep all manholes and access doors locked at all times.
- Lock valve vault accesses.

Sanitary Safeguards

- Install adequate protective screening on all tank openings--vents, overflow pipes, and any other uncovered openings.
- Install shields on vents to protect from wind-driven dirt and debris.
- Check to make sure that all cathodic protection hand hole covers are properly positioned.
- Install an above-grade air break in the overflow pipe to prevent a possible cross connection.
- Verify that roof manholes are equipped with a 4 in. high curb and a 2 in. cover overlap, and that they are locked.

Whatever else you do--when the first sign of unauthorized access appears on your tank or site--find out how vandals are getting in, and take steps immediately to prevent repeated access. You and your insurance carrier will be glad you did!

Used Tanks

From time to time, we get questions about the feasibility and advisability of purchasing and re-erecting a used tank. While there is now an AWWA Used Tank Task Force, there is still very little information available for prospective used tank purchasers. These are TIC®'s recommended guidelines.

Have the used tank evaluated for:

- Deterioration due to corrosion
- Damage from causes other than corrosion
- Type of steel used in original construction
- Compliance of the accessories with today's standards
- Appropriateness of structural design for new location
- Presence of lead-based paint.

Require the following submittals before purchasing the tank:

- Tank drawings
- Foundation drawings
- Drawings of additions to original structure
- Drawings of accessories
- Dismantling and re-erection procedures
- Welding procedures
- Weld testing methods
- Cleaning and painting details.

Have professional quality control observations of the project at the following minimum intervals:

- Dismantling
- Foundation construction
- Pre-re-erection cleaning and painting
- Re-erection
- Cleaning and painting.

TIC has been involved in successful used tank projects, and we have information on many others. However, we also know of a number of cases when the owner spent more money buying, upgrading, and re-erecting the tank than it would have cost to build a new tank. Others have bought a "pig in a poke" and have been saddled with high maintenance costs or early retirement. When considering the purchase of a used tank, investigate all of the possibilities and carefully weigh ALL costs.

Summer Maintenance Tips

When mowing the grass on your tank site this summer, be sure to direct the mower discharge away from the tank base to prevent grass clippings from lying on the tank base plate, around the anchor bolts, or in the anchor bolt chairs and accelerating corrosion of those vital structural components. Also, avoid hitting the foundation or tank with the mowing equipment to help avoid concrete or coating damage. Trim back bushes and trees so that their branches don't scratch the steel and cause coating damage. Any vegetation found growing on or near the tank foundation and base plate should be removed to help eliminate corrosion and grout, sealant, or concrete damage.

AWWA Update

D100 -- At a meeting on March 13, 1995 in Kansas City, the Standards Council attempted to resolve concerns raised during the public comment period for the up-coming D100 Standard. Although the Standards Council denied the technical objections, they did agree to some editorial changes, and at that time it was thought that the Standard was on its way to being published. We recently learned, however, that a segment of the industry still has objections to the Standard and has asked to have their appeal heard by the Executive Committee of the Board of Directors of AWWA during the June Annual Conference and Exposition.

D102 -- D102 ballots have been received, and the most recent version of the Standard is to the committee and staff for review of qualifying comments. It now looks like the Standard will finally be published sometime early in 1996.

Tank Manual -- The timetable for the publication of the long-awaited Tank Manual is still undetermined at this time. Since we've been told that no hard copy of the edited draft can be received from AWWA prior to the Annual Conference and Exposition in June, the Tank Manual Committee will not be meeting to discuss the Manual at ACE, but will resume work as soon as the hard copy is available.

AWWA Annual Conference and Exposition Seismic Presentation

Representatives of TANK INDUSTRY CONSULTANTS will be on hand in the exhibit area of the AWWA Annual Conference and Exposition to be held in Anaheim, California early this summer. In addition, Mike Crist will take part in a panel of experts selected to discuss various aspects of seismic concerns for water storage tanks. The presentation is entitled "Elevated Tank Inspection After the Northridge and Whittier Earthquakes."

If you have plans to attend this year's AWWA ACE, be sure to stop by and talk with the representatives of TIC® who will be on hand to answer questions at booth #1636, or if you are unable to attend but would like a copy of the seismic presentation or the literature that will be distributed in Anaheim, contact TIC and we will send the information out to you.

TIC Seminars

Plans are underway to again "take the show on the road" and host the two-day TIC seminar, "Water Storage Tanks -- Design, Construction & Maintenance," at sites throughout the country during January, February, and March of 1996. Planned seminar sites include Baltimore, MD; Orlando, FL; Indianapolis, IN; and Ontario, CA.

If you would like more information on the seminar content, or would like to be put on our mailing list to receive additional details once the actual sites and dates are selected, please contact TIC's Seminar Coordinator, Linda Reed, at 1-800-TANK SEM, or fax at 317/486-4708.

NACE Notes

We announced in the winter issue of TANK TALK® 22 that Crone Knoy had been selected to be the SSPC representative on the NACE International Board of Directors. Although the concept of encouraging the spirit of cooperation between these two leading organizations in the corrosion field had been formalized for several years, it was only last year, through the efforts of the immediate past president of NACE, Don Waters, that the process was implemented.

Lee Bone of Arco Exploration & Production serves as the NACE International representative on the SSPC Board of Governors. This means that at least four times a year there will be Board level interaction between the two groups.

As a result of meetings at the March '95 NACE International Conference, a balloting procedure for joint standards is in place. Future opportunities for cooperation are education, certification, publications, and conferences. The process will not be a revolutionary one, but must be one evolving over several years. As the needs of society change, so will the missions of these fine organizations. With their continued support and guidance, our industry will be able to face the ever-changing, ever-more complex challenges of tomorrow.

Standards

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By using nationally recognized standards, the specification writer does not have to "reinvent the wheel" for each project. The bidders for the project know the quality expectations of the specification writer when recognized standards are utilized. Should controversies evolve concerning the quality of the project, recognized standards become the yardsticks for dispute resolution or legal action.

Many people assume that referencing recognized industry standards is all that is required to achieve the desired end results. Standards are minimum requirements. The consensus process itself cultivates this "watering down" of the standards because of the varying backgrounds, experiences, and expectations of the committee members.

Unfortunately, proprietary interests also may influence the standards-making process, or at least slow it down. It is important that committee members keep in mind that the industry organization exists not to serve the individual members' vested interests, but to serve the public.

Most standards are voluntary, not mandatory, therefore one should not assume that they will apply to the work in question unless referenced in the project documents.

A final note. When utilizing standards in your specifications, you must reference the exact edition of the standard (in other words, AWWA D100-<u>84</u>). To specify the "latest edition" is inappropriate.

To summarize, standards are not specifications. They are not perfect. They <u>are</u> necessary in order to do commerce and protect the interests of contractors, suppliers, and owners.