



SAABE TIMES

A Publication of the San Antonio Association of Building Engineers

October, 2001

Mark Your Calendar —

Direct Digital Controls: Definitions & Basics

Ward Systems & Mechanical Maintenance of Texas together have installed over 200 DDC Systems in a variety of commercial properties over the last several years.

As these DDC Systems are turned over to the customers, we have noticed either a peace of mind or a fear of the system.

Actually, the more the customer/operator is familiar with the operation of the system, the more relaxed they become with it. The intent of any DDC System is to:

1. Provide tenant comfort
2. Provide energy savings (\$\$\$)
3. Provide one-seat control solution
4. Reduce in-house maintenance cost

This luncheon program, presented by Bob Wright, will make you aware of how important it is for any installed DDC System to become "user friendly", and to describe the basics of the so-called "Glorified Time Clock".

Education Corner

by Kenny Aguilar

Classes being offered:

Refrigeration and Air Conditioning: October 30-November 1, San Antonio, TX; NTT, 800-922-2820, Cost: \$1,095.00 per person.

Boilers—An Operator's Workshop: October 16-18, San Antonio, TX; NTT, 800-922-2820, Cost: \$1,095.00 per person.

McQuay Training Courses

Screw Compressor Chiller Maintenance and Operation: Staunton, VA. October 9-12. Cost \$1,100.

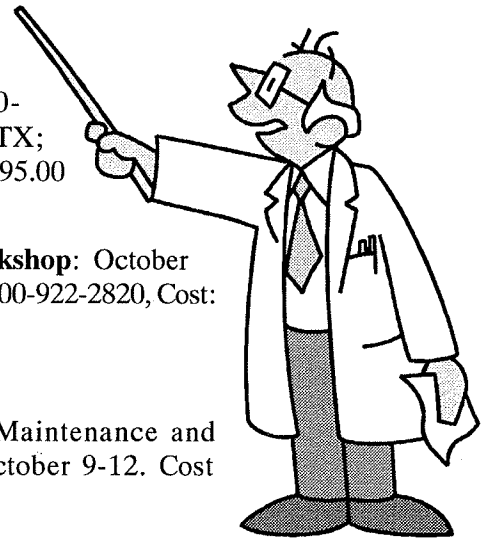
Centrifugal Chiller Maintenance and Operation: Staunton, VA. October 9-12. Cost \$1,100.

For more information contact Linda Custer at McQuay International in Staunton at P.O. Box 2510, Staunton, VA 24402-2510. Telephone 540-248-9646, Fax 540-248-9210, or email at linda.custer@mcquay.com.

Amcon Controls Inc. 2 day Boiler/Burner Training: Hilton San Antonio Airport, November 5th and 6th, 2001. 8am to 5pm. Presentation is designed around Honeywell Flame Safeguard (FSG) Controls. Cost of course is \$350.00 per person and class size is limited to 20 people. Cost includes all workbooks, textbooks, continental breakfast and lunch. To register call: 210-349-6161 or fax 210-341-0695, email sales@amcon.net

Entech Sales and Service Inc. Centrifugal Chiller Training (Carrier, Trane, York): Class 1 (Trane CVHE and PCV Series) Nov. 5-Nov. 9, 2001. Class 2 (Carrier 19 and 19D Series) Nov. 12-Nov. 16, 2001. 8am to 5pm. 1734 Highway 66, Suite 200, Garland, TX 75040-6723. To register call 972-485-1171 or 888-368-3241. Ask for Robin or Tami.

Roofing & Mold Seminar: Friday, October 19th, 8 a.m. to 2 p.m. at Cram Roofing Co., Inc. 5171 Casa Bella, San Antonio, TX Seminar and BBQ lunch free of charge; call 210-694-7815 to RSVP.



A Message from the President by Elena C. Castillo

Are Your Security Measures Sufficient?

America has begun its air strike against a terrorist and his associates who does not care about human life. This terrorist, who thought that by killing American people and destroying our buildings, has brought pain into our hearts; but this pain and heartache has only united our people and made them stronger. The retaliation against the American dream will only hurt these terrorists, as we will not condone their actions. There will be justice.

In the meantime, security has been heightened all over the world. Airports are being monitored and guarded by the military, the Emergency Defense personnel are on the alert, FBI is interrogating suspected persons that may be involved in the September 11 attack. But what is being done right here in our own buildings? Are our security measures sufficient? Are cameras monitoring every entrance and egress to the building? It is the building manager and maintenance personnel's responsibility to manage installation, monitoring, maintenance contracts, and the day-to-day operations of alarm systems (such as card access, intrusion detection, duress/hold-up, CCTV), and emergency and local intercom communications for the entire building. There have been many suggestions as to how and what to do to secure your building. The following are only a few:

- **Cameras.** If you have them, they should run 24 hours a day, 365 days per year. A color, high definition camera can show clear details, where a black and white camera is just that: black and white. Some cameras have a 360-degree rotation and impressive zoom capabilities. *It is very important to discuss possible liability issues with an attorney before mounting cameras for security or any other purpose.*
- **Monitors.** Display monitors are useful tools used in any security application. Depending on the security system applied in a building, a graphic display monitor will enable the viewer to pinpoint exact coordinates of any particular area of an alarm. Maps, equipment, personnel, and fire alarm troubles are quickly projected onto the screen. This allows the dispatcher to direct the proper response teams quickly and accurately to the exact location in the building.
- **Pull Stations and Fire Extinguishers.** Do your tenants know what a pull station is? You would be surprised how many do not even know where they are located. Do they know how to use a fire extinguisher?

- **Emergency Lighting.** Have the tenants traveled the stairwells out of the building? In the dark? Without emergency lighting to light their way? This could happen! In your very own home, have you had trouble finding your way down the hall to the bathroom in the dark? And you live there, too. Making sure the emergency generator is working and fueled is a good preventive maintenance measure. Keep outside generator doors locked at all times to prevent tampering.

- **Management procedures.** Are bomb threat procedures in place? Terrorist threat procedures and forms ready to fill out? Evacuation procedures should be given several trial runs. Tenants should also be encouraged to participate.

- **Security Guards.** If onsite security guards are available, are they being trained to spot suspicious personnel carrying parcels and entering the building without checking in? And leaving empty-handed? Are your tenants also asked to report suspicious personnel delivering unordered packages to their department? Do they have phone numbers to security or management? If not, training should commence.

- **Roof access.** Can anyone access the roof without checking in? Elevator personnel accessing their equipment usually have their own keys and might not check with the front desk to let them know of repairs on the elevators. Communications personnel with cell equipment and antennas on the roof need to report their presence to the management or security on site. All doors accessing the roof should be locked at all times and not kept open by means of a rope or board or any item that gives access to an intruder.

- **Access cards.** Access cards should be updated periodically. A lost card not reported can give an intruder access where he/she could cause damage to building or sensitive equipment.

Personal Safety Tips for you and your tenants include the following:

- Lock public doors or gates to your building or office.
- Never leave a public door propped open, even for a friend. Someone else may use it.
- Lock your doors when you leave your office for lunch or a meeting.

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Are Your Security Measures Sufficient?

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- Lock your doors before you go to sleep at home.
- Lock windows at home that are accessible from the outside.
- Know your security personnel by name or face or company.
- Leave spare keys with a trusted neighbor or friend, never hidden near your door.
- Keep your house and car keys on separate chains. In a private valet parking lot, leave only the car keys.
- Never attach your address to your key chain.
- Never attach your access ID tag to your key chain.
- Identify visitors though a window or peephole before opening the door to your home.
- If you normally work late in your office, install a peephole.
- Request service people to show proper credentials before you let them in. If necessary, call the company to verify employment.
- Do NOT lend your keys or ID tag to service people.
- If a stranger asks to use your telephone, do not let them. Offer to call for assistance for them.



Construction/Maintenance Job Opening:

Applicant should have detailed knowledge of a variety of construction and building maintenance skills, including carpentry, electrical, dry-wall and carpet tile installation. Needs knowledge of construction tools and equipment. Extensive contact with tenants and vendors requiring tact and good judgment. Occasional shift work involved. This is a non-smoking environment. Salary based on experience. Applications can be made in the Human Resource Department at GPM Life Insurance, or call 357-2222 ext. 2112.



The American Spirit

Well, you hit the World Trade Center, but you missed America. You hit the Pentagon, but you missed America. You used helpless American bodies, to take out other American bodies, but like a poor marksman, you STILL missed America.

Why? Because of something you guys will never understand. America isn't about a building or two, not about financial centers, not about military centers, America isn't about a place, America isn't even about a bunch of bodies. America is about an IDEA. An idea, that you can go someplace where you can earn as much as you can figure out how to, live for the most part, like you envisioned living, and pursue Happiness. No guarantees that you'll reach it, but you can sure try!

Go ahead and whine your terrorist whine, and chant your terrorist litany: "If you can not see my point, then feel my pain." This concept is alien to Americans. We live in a country where we don't have to see your point – but you're free to have one. We don't have to listen to your speech – but you're free to make one. Where did you get the strange idea that everyone has to agree with you? We don't agree with each other in this country, almost as a matter of pride. We're a collection of people who don't agree, called States. We united our individual states to protect ourselves from tyranny in the world.

Yeah, we're fat, sloppy, easy-going goofs most of the time. That's an unfortunate image to project to the world, but it comes with feeling free and easy about the world you live in. It's unfortunate too, because people start to forget that when you attack Americans, they tend to fight like a cornered badger. The first we knew of the War of 1812 was when England burned Washington D.C. to the ground. Didn't turn out like England thought it was going to, and it's not going to turn out like you think, either. Sorry, but you're not the first bully on our shores, just the most recent.

You guys seem to be incapable of understanding that we don't live in America, America lives in US! American Spirit is what it's called. And killing a few thousand of us, or a few million of us, won't change it. Most of the time, it's a pretty happy-go-lucky kind of spirit. Until we're crossed in a cowardly manner, then it becomes an entirely different kind of spirit. Wait until you see what we do with that spirit, this time.

Sleep tight, if you can. We're coming.



Beating Stress and Moving Forward

NEW YORK (CBS.MW) — More than three weeks after the life-altering tragedy, many people still have not emotionally gotten over the terrorist attacks on the Twin Towers and Pentagon.

Even if they're living and working hundreds of miles away from lower Manhattan or suburban Washington, they may show symptoms of profound stress. These range from trouble concentrating on the job to extreme difficulty sleeping, and include depression, moodiness, paranoia, lack of interest (or extreme interest) in food and/or sex, forgetfulness, irritability, nightmares, feeling overwhelmed, anxiety, indecisiveness, or any atypical behavior.

Such symptoms can easily afflict just about anyone who witnesses an act of extreme violence. The recent tragedy was all the more stress-creating because tens of millions of people witnessed it, often repeatedly, on television.

All this raises a host of questions:

What kinds of people are most likely to suffer from stress that just won't go away? How can we recognize the symptoms in our friends and colleagues, including our bosses and subordinates? What can we do to help them?

For some answers, this writer spoke at length with one of the best experts in dealing with such issues: Dr. Dee Soder.

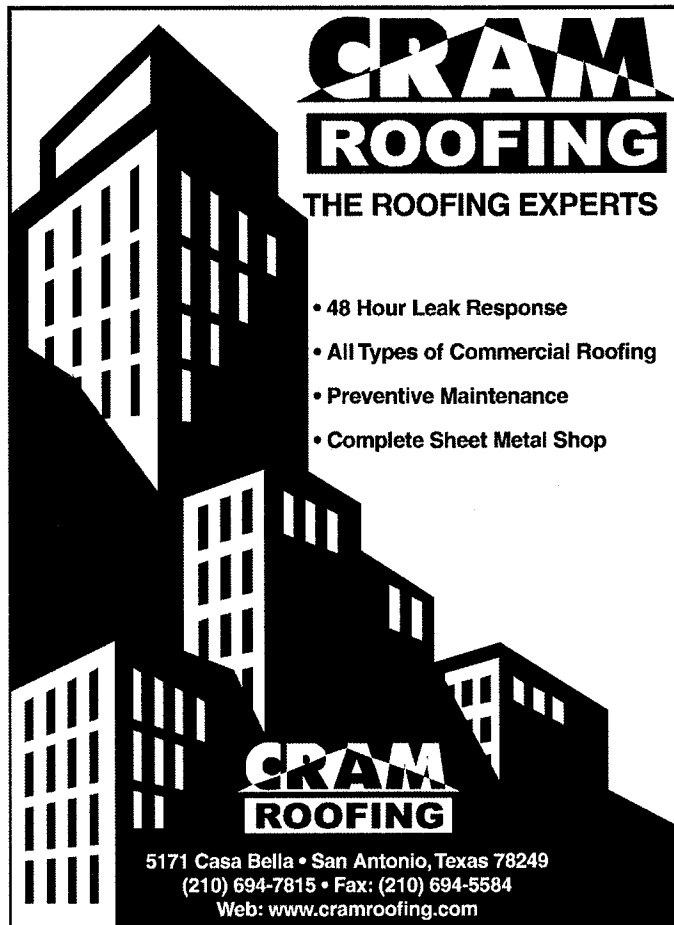
A PhD in psychology, who heads CEO Perspective Group, a New York City firm that counsels high executives (including some from the New York City police force) and, dating back to the Oklahoma City federal building bombing of 1995, has done a great deal of work in handling trauma and stress.

Among the people most at risk of traumatic stress are those without strong family or religious ties, Soder says. They may lack the support systems to help carry them through.

Reflective, thoughtful people are also vulnerable. For all their virtues, they may ponder too much and have a hard time putting a tragic event behind them.

Empathetic folks, people who really care about other people, are also more prone to stress problems. A lot of writers are having problems now because they are reflective people, and journalists covering the story are particularly at risk because they become so involved with people in their articles, Soder says. Many executives who have trouble downsizing also are encountering difficulties.

All of these empathetic people take their workplace sorrows home with them at night. What they must do is learn how to compartmentalize — put a problem in a mental compartment, and move on.



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Helping Co-workers Grieve

By Marshall Loeb, *CBS.MarketWatch.com*

When people are stressed, their dominant personality traits are magnified. The detail-oriented manager becomes a micromanager. Defensive types become super-defensive. Simultaneously, any sharp change of behavior, such as a sudden gain or loss of weight, is an almost sure sign of stress.

How can you help co-workers and others who still grieve and suffer from stress?

Don't press them to talk about their feelings. They will talk when they are ready. One woman manager in Manhattan refused to talk — until one evening she opened a window and smelled traces of smoke. Then she instantly phoned her sister on the other side of the country and talked for an hour about all that she had been experiencing.

Do check back periodically with people who report to you to make sure that they are getting their work done. Many people are now working at 60 to 70 percent of their peak efficiency, Soder estimates. They will get back to 90 percent or so in about another month.

Do recommend that anybody showing significant stress get help, perhaps from a clergy person, or from a professional recommended by the American Psychological Association, or from the Red Cross, which has a 24-hour counseling hotline at 1-866-GET-INFO.

Don't presume that the strong manager is immune from stress. Many of those bosses, who bottled up their own feelings in the early days after the tragedy, may soon show signs of a real problem.

September SAABE Luncheon Summary

Vince Baker of SimplexGrinnell had a great presentation on life safety for us at the September general membership luncheon — perhaps that's why so many of us were "all fired up" to be there for the meeting! Thank you, Vince, for keeping us up-to-date on all the developments in the fire protection industry, and especially for giving us that cool fire extinguisher demonstration on the cell phone! (I hope the phone still works!) September's lunch was the first one at our new home, the Old San Francisco Steakhouse. The food was great and there was plenty of room, even with the high attendance! Don't forget to bring clothing and hygiene items to donate to Sam Rayburn Middle School students to the October luncheon at the Old San Francisco Steakhouse. See y'all then!

SAABE Welcomes New Members

New Associate Members:

Carrier Building Services
Mike Alvarez
121 Interpark Blvd, Suite 602
San Antonio TX 78216
Phone: 210-495-2600

Commercial Services Filtration
Dan Tingie and Armando Lerma
3507 Copeland
San Antonio TX 78219
Phone: 210-222-2242

New Regular Members:

Kennedy Wilson Property Services
Kyle Riggs
10010 San Pedro, Suite 320
San Antonio TX 78216
Phone: 210-342-2248

Tolin Mechanical Systems Company
Phil Harbin
300 Convent, Suite 100
San Antonio TX 78205
Phone: 210-225-1119

Heard It Through the Grapevine



- **Carolyn Knight** replaces Julie Smith as the SAABE representative from Smith Legacy Security.
- For Tolin Mechanical, **Mike Scranton** will take Stuart Thompson's place at the Nowlin Building, and **Mike Waller** replaces Ruben Morales at Travis Park Plaza.
- For Alamo Controls, **Dan Marsh** replaces Bob Hartman as SAABE representative.
- **Paul Thompson** is now at the Nowlin Building.

Pumps and Fans! (Part One of Two)

Pumps and fans are an integral part of heating, ventilation, and air conditioning (HVAC) systems. The function of this equipment is to move liquids or air from one place to another. Since most spaces are served by remote HVAC equipment, pumps and fans are required to circulate the fluids to heat or cool these spaces. While pumps usually circulate water, they also circulate other liquids such as ethylene glycol. Fans are used to supply air for heating and air conditioning of buildings as well as exhausting toilet rooms or dirty air from industrial processes.

Pumps and fans are similar in construction, with each commonly consisting of a set of curved blades or impellers, a housing assembly or volute, and an electric motor to drive the impellers. Since pumps need to be watertight, the housing and shaft are tightly sealed. Most HVAC applications use centrifugal pumps and fans, where the inlet and the discharge are located at right angles to each other. This style is efficient in moving liquids or air respectively over a wide range of pressure conditions.

For most light commercial and residential applications, pump and fan motor speeds operate at 1,800 rpm. Industrial applications will often use motors at 3,600 rpm, but at this speed the noise generated is usually too loud for some uses. Motor voltages in smaller applications are usually 120 volts (V) or 208-230V, but the majority of our uses are 480V. The motors rated at 120V are single-phase, while the higher voltages are three-phase. Three-phase motors, if wired incorrectly, will run backwards, rotating the impellers in the wrong direction. This backward operation does not cause reverse flow as may be thought, but flow is greatly reduced from the manufacturers specifications.

Most HVAC pumps are single-inlet centrifugal pumps where water enters the center of the pump and exits 90 degrees to the outer edge of the impellers. The rotating impeller imparts energy to the fluid, and is discharged out of the pump. The pump impeller rotates in what appears to be the wrong direction, as the blades are designed to slap or push the fluid, not scoop. If the pump were to rotate so that the impeller scooped the water, it would cause turbulence, which would reduce pump capacity.

Pump energy is measured in terms of pressure. There is negative pressure, or suction, at the pump inlet; there is positive pressure at the discharge. These conditions result in a pressure differential across the pump that causes water flow. Several factors influence how much water a pump

can move, including pump design, size, impeller size, and motor horsepower (hp). Pump performance is stated in terms of flow rate measured in gallons per minute (gpm) versus pump head in feet. Head is expressed in feet, while pressure is expressed in pounds per square inch (psi). These terms have the following relationship: $\text{psi} = \text{head (feet)} \times \text{specific gravity}/2.31$. Pump head is the pressure that the pump must overcome to move the water. This pressure drop can result from several sources, including friction losses between the water and the piping walls; pressure drop at equipment, such as heating or cooling coils, through which the water flows; and vertical distances or heights that the water must be pumped. This factor can be disregarded in closed systems, in which the piping forms a loop and the water returns back to the pump.

Given a typical pump curve chart, the pressure drop is normally given in units of feet of head. The curves show that the greater the pressure drop, the lower the water flow rate. Respectively, the greater the flow rate, the lower the pressure drop. This means that the pressure drop in the system must be low for the pump to circulate the maximum flow rate. At zero pressure drop the pump would theoretically not have any piping connected to it, and therefore no pressure drop. The pump motor works the hardest at full load, and as the flow rate approaches the end of the curve, large changes in pressure drop result. This part of the curve is generally considered to be unstable, and designers try to avoid selecting pumps that would operate in this range.

Manufacturers publish pump curves so that performance can be predicted. In selecting a pump, the required flow rate and the head or pressure drop are needed. Using this information, a pump can be selected to match each application. Water temperature and density do not affect the characteristics of the pump curve. However, water density does affect the pumping power requirements, as does fluid viscosity. Fluids such as glycols change pump curve and require more pumping energy.

In many systems the flow rate can vary because of seasonal weather changes, valves opening and closing, or other conditions such as process changes. Pumps are selected based on the maximum flow rate as well as the maximum system head that may be encountered. The flow rate is often related to the hourly heat loss of specific heat transfer equipment. Once the maximum BTU loss is known,

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Pumps and Fans

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the maximum heating supply water flow rate can be calculated. Similarly, friction losses for all equipment served by the pump, including the piping, fittings, valves, and heating and cooling coils, is added to calculate the estimated head.

Since a pump is really an assembly of an electric motor, an impeller, and a volute, different sizes can be combined to form a pump. For each pump housing, there can be several different sizes of impellers that will produce a family of performance curves. This flexibility allows a pump to be specified to more closely match the system needs.

In general, it is best to avoid selecting a pump at either end of the performance curve. A pump should be selected on the center half of the performance curve. Selection at the extreme end of the pump curve can result in inadequate flow rates or in cavitation, the undesirable state where the impeller causes a vacuum that can result in damage to the impeller blades. These curves show the overall pump efficiency, but they should not be used as the major selection criteria, as it would be improper to base pump selection on

the highest possible pump efficiency. For example, if the pump selection were based on efficiency alone, it would be necessary to select the estimates rate and system head. However, the system head can vary based on numerous factors, such as the specific manner in which the system is installed, pipefittings, and the length of piping. These variables make it difficult to determine precisely in advance what the system head will be. Most designs will be conservative so that the pump can overcome the system head. In examining existing systems, pressure readings should be taken to determine system conditions. By referring to the pump curve for the installed pump; it is possible to determine if a different impeller would be a better selection than the existing equipment.

Next Month: Fans

CHARLIE'S LAW: Do unto others as they do unto you. Then split!

JUSTA MAINTENANCE MAN

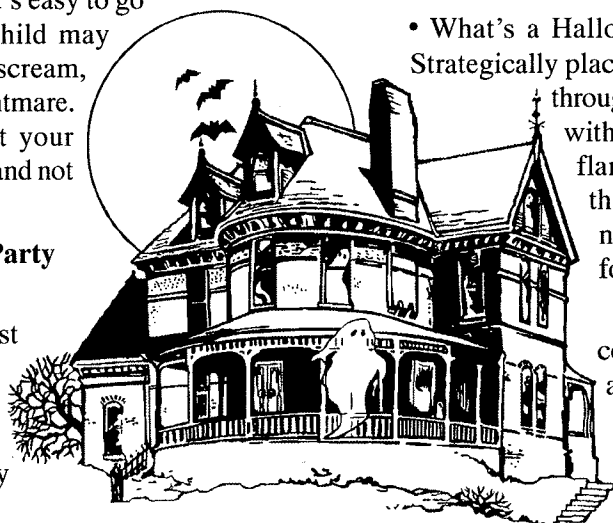
Trick or Treat Tips

Planning a Halloween party for your little monsters? There are a few things to keep in mind, according to Erik Mandell, Vice President of Marketing for Party City Corporation.

First and foremost, Mandell suggests you consider the ages of your visitors before you start decorating. "Halloween is so much fun, it's easy to go overboard. But while one child may think a haunted house is a scream, another may find it a total nightmare. You want to make sure that your decorations are going to thrill and not chill."

Here are some tips from Party City:

- Make a spooktacular first impression. Spider-webbing around your doorway is an inexpensive and effective way to create a creepy experience.



- Add a crashing witch to either the front door or a nearby lamppost.

- Replace the bulbs in your lamps with orange-colored light bulbs for some real mood lighting.

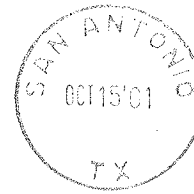
- Enhance the ambiance with some creepy sounds. Play audiotapes with spooky noises.

- What's a Halloween party without pumpkins? Strategically place electric or fiber-optic pumpkins throughout your home to add to the mood without the worry or danger of an open flame. If you want a jack-o-lantern that really stands out, check out the new eight-foot inflatable pumpkins for your yard!

- While candy is a given when it comes to Halloween treats, you can also include items that are out-of-the-ordinary: gooey eyeballs, witches fingers, spider rings and goofy teeth.



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**SAABE TIMES
October Issue**

Final Thought —

“Spirit, the will to win, and the will to excel are the things that endure. These qualities are so much more important than the events that occur.”
— Vince Lombardi

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Lynn Forester (830) 981-5223
Association Coordinator (lynnfor@mindspring.com)

**Membership Luncheon
October 17, 2001**

Time: 11:30 a.m.

Location: Old San Francisco Steakhouse

Topic: Direct Digital Controls

Speaker: Bob Wright

Sponsor: Mechanical Maintenance of Texas

Upcoming Luncheon:

November 21, 2001

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