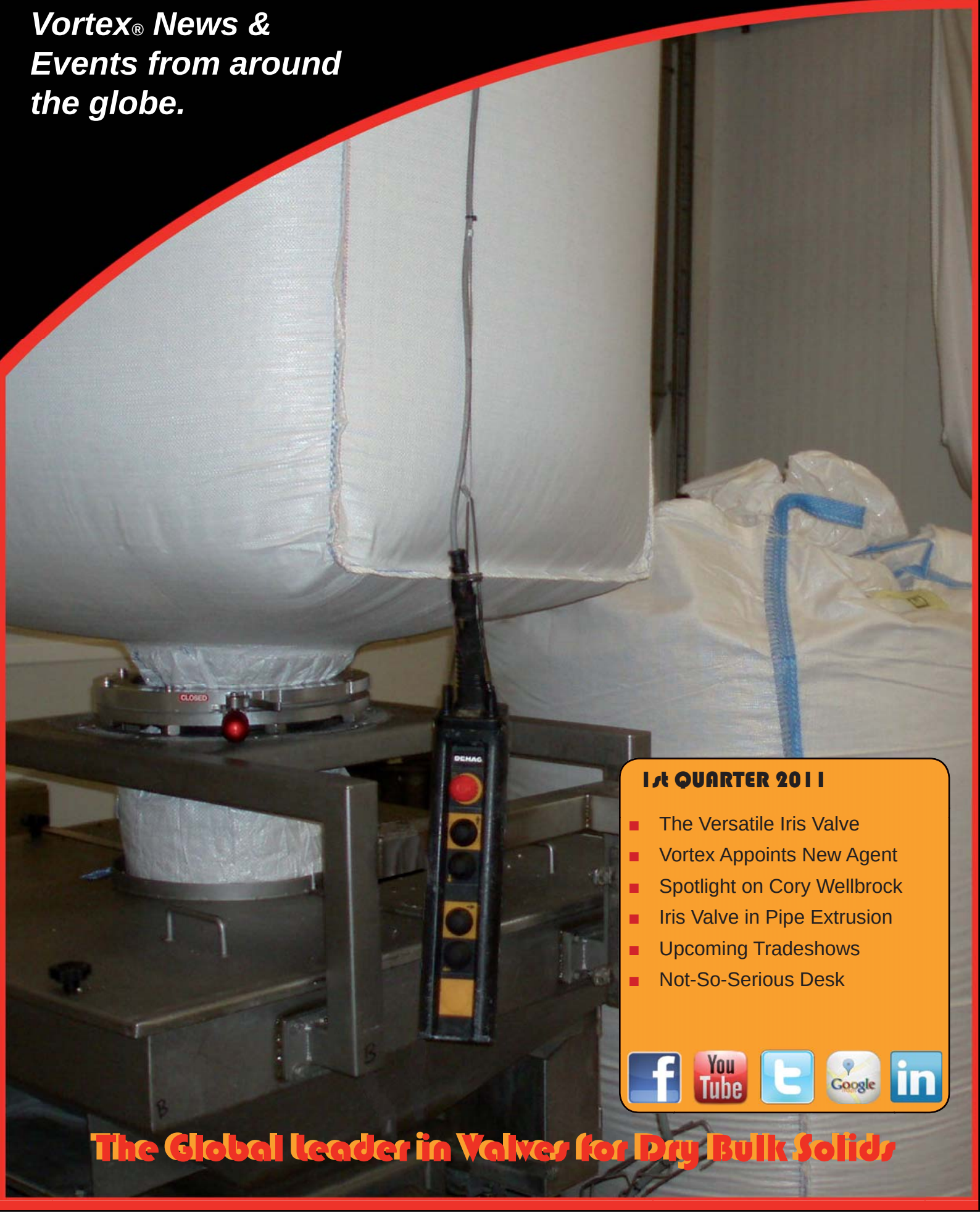
# Quantum Leap

*Vortex® News & Events from around the globe.*




**1st QUARTER 2011**

- The Versatile Iris Valve
- Vortex Appoints New Agent
- Spotlight on Cory Wellbrock
- Iris Valve in Pipe Extrusion
- Upcoming Tradeshows
- Not-So-Serious Desk

The Global Leader in Valves for Dry Bulk Solids

# Welcome to QL!

Welcome to the latest edition of Quantum Leap! As you may have noticed, we have decided to change our bi-monthly publication to a quarterly publication.

This issue of QL will spotlight the little known, but just as important, Iris Valve. The iris valve's unique design can be used to shut off bulk bags and handle friable materials in gravity flow applications. We also supply iris valves to wipe water off pipes as they cool down after the extrusion process as mentioned in our case study on page 5.

Hopefully you have had the chance to stop by to see us at ChemTech, GEAPS, IMA-NA, or Gulf Coast Solids Handling tradeshows. If not, you have plenty of other opportunities in 2011 to visit us at other venues listed on page 6. Otherwise, sit back, relax, and enjoy reading Quantum Leap!

Warm regards,

***Jeff Thompson, CEO & President***
Salina Vortex Corporation

*Vortex's Corporate Headquarters in Salina, Kansas - USA*

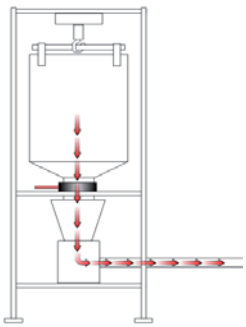
# Iris Valves for Handling Dry Bulk Solids

***By Shawn Werner, Chief Engineer***

By definition, an iris is a mechanism used as a compact solution to close and open holes. You can find iris mechanisms in your eyes, camera shutters, and even as doors in science fiction films! Despite all these wonderful uses of an iris design, we are going to focus on one that specifically impacts dry material handling.

**Purpose and Design**

Iris valves are designed to control the discharge of free-flowing, dry material in gravity flow applications. Material handled by the iris valve ranges across most industries, including: chemicals, dairy, food, minerals, plastics and pharmaceuticals. Iris valves are often used to handle friable products because of their gentle closing action.



*Bulk Bag Unloading Station with Iris Valve*

Typically, they are located on bulk-bag discharge stations, portable and fixed bin bottoms and chutes. Iris valves were originally engineered to close off the neck or spout of a bulk bag or "super sack", where material does not come in direct contact with the valve. In direct material handling applications, the iris's design works very well with potentially explosive materials, as well as, friable products that are susceptible to degradation. These valves may not perform well in applications with high flow rates, high cycles, and abrasive materials, as the sleeve material is exposed to blast abrasion.

The valve mechanism consists of two concentric rings connected by a flexible, tubular sleeve material. One end of the sleeve is fixed inside the valve body. The other end is attached to a control ring that is normally manipulated by an external handle. As the handle is rotated through a 180-degree arc, the sleeve is twisted to the point that it becomes a flat, tight, solid barrier. Most manufacturers offer standard sizes with nominal bores between 4 inches (100mm) and 18 inches (450mm).

*continued on page 3*


## Sleeve Material

The sleeves for iris valves are available in a variety of fabrics, coated fabrics, and rubber material to accommodate a range of material handling requirements. The use of double sleeves is common for handling fine powders. Rubber material is regularly used to handle abrasive materials, or when wash-down is likely to occur. Iris valves are typically available in, but are not limited to, the following types of sleeve materials:

- Teflon
- Urethane Coated Nylon (FDA approved)
- Buna “N” Rubber

*Iris Valve with Buna-N Rubber Sleeve*

It is important to consult with your supplier on which sleeve material is best for handling your specific application, as even some of the least assuming materials can be caustic or too abrasive for some rubbers and fabrics.

## Metal Construction

The bodies of iris valves are typically aluminum, however, 304 and 316L stainless steel bodies are also readily available. Anodized or Teflon coated aluminum bodies are offered as options. Typically, all stainless steel valves are priced significantly higher than iris valves constructed with aluminum bodies. If stainless steel contact is required, some manufacturers offer aluminum bodies with stainless steel liners where material would come in contact with the valve.

*Teflon coated aluminum Iris Valve with Nylon Sleeve*

## Actuation and Mounting

*Stainless Steel Iris Valve with ferrule connection*

Manually actuated iris valves are available in various styles. The two most common manually actuated mechanisms are the twist and quick lock handles. The twist-handle style allows for opening control in infinite positions across the 180-degree arc. The quick-lock handle, with a limited number of set points on the valve body, allows quicker action to reach those set points. You may also find a hand wheel operated iris valve that allows for easier actuation on larger sizes. Pneumatic or electrically actuated iris valves are also available on the market, however, may add a significant cost to the valve.

*Stainless Steel Iris Valve with compact handle*

Bolt hole-mounting patterns for each size of valve are usually offered as a standard, however, this pattern may differ from manufacturer to manufacturer. Mating spool pieces and ferrule type connections can also be applied to the valve to match mounting requirements.

## Additional Information

Iris valves can be a very efficient and cost effective solution for many dry bulk solid applications. Despite the unique design, the valve has some limitations. Make sure you evaluate the pros and cons of using an iris valve before you implement it into your system.

Iris Valve Pros

- Inexpensive, if utilizing manual actuation
- Compact design and weight of the valve make it easy install, especially in confined areas
- Ideal for use with explosive or delicate products
- Unobstructed opening
- The valve closes to the center of the valve, allowing containers to be filled more evenly
- Easy to maintain

*continued on page 4*

Iris Valve Cons

- Not recommended for handling large, continuous volumes of material
- Not for use with heavy, abrasive material
- Valve cannot close through a standing column of material
- Valve body will not support heavy equipment hanging from it
- Bolt hole-mounting patterns differ and are usually specific to the manufacturer

**Other Considerations**

Iris valves are subject to torsional stress, especially as they are being closed. Handles and locking mechanisms made of polycarbonate are subject to distortion and breakage. Polycarbonate control rings are subject to the same problems.

Additionally, iris valves containing bronze control rings are subject to metal flaking inside the valve due to the metal-on-metal contact between the bronze control ring and the metal valve body. This can lead to damaged sleeves, introduction of foreign material and erratic actuation of the valve. It is important to thoroughly investigate materials of construction prior to making a purchase. QL

## Vortex Establishes China Agent

Vortex is pleased to announce the appointment of Wuxi QCDS Machinery Co., Ltd as a new agent in China.

QCDS is an acronym for Wuxi's core values: Quality, Cost, Delivery, and Service.

Wuxi QCDS provides system solutions for lifting and lashing systems, hydraulic and pneumatic systems, flow control system line, and products in the mechanical, food, oil production, petrochemical, and water treatment industries. QL

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# Who's *Who* at Vortex

***Cory Wellbrock, Fab & Weld Supervisor***

In high school, Cory was pre-enrolled to attend Fort Hays University, but was asked by a friend (and future coworker), Jesse Robben, to tour Salina Tech school with him. Cory liked what he saw at Salina Tech and decided to go there for schooling. Smart move for Cory and Jesse, because after graduation, they were hired on at Vortex.

Cory started working at Vortex as a TIG welder in 1999. He welded for 5 1/2 years, then moved to weld lead for 2 years. Cory was then promoted to his current position fab/weld supervisor.

Cory manages close to 30 employees, the largest department at Vortex. He oversees the daily operations of the welders, laser, waterjet machine, brake department, blast/paint booth, shear, fab department and heavy MIG welding.

He also helps sell Vortex to students by giving facility tours and speaking at job fairs with North Central Kansas Technical College, Manhatten Area Technical College, Salina Tech, Hutchinson Community College and Salina Central High School. Not only does he tell the students what Vortex is looking for as a future employee, but he also advises students what any future employee looks for on resumes and appearances.

Reflecting on the past decade, two special projects come to mind. The first project was rebuilding the Roto-Reclaimer where he was welding nights and weekends to finish the project. The other project was building a shed for an outdoor multiport diverter system. Once the sculpture was built, it wouldn't fit through the doorway to get it out of Vortex's shop. The workers had to turn it corner to corner to get it out of the building.

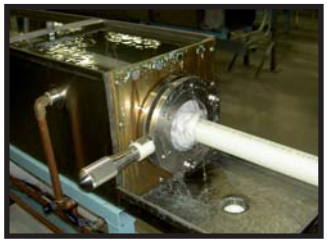
Outside of work, Cory enjoys hunting, golf, motorcycle riding and hanging out with family and friends. Cory and his wife, Sherry, have two boys, Trenten (6) and Cooper (3), who both have a bundle of energy. Cory pretty much enjoys doing anything outside.

Every day is different at Vortex and brings new problems and situations, but Cory enjoys the people he works with. "I've been at Vortex for a very long time. It's like a second home to me." **QL**

# CASE STUDY: VORTEX® IRIS VALVE HANDLING PVC PIPE

| | |
|---|---|
| Customer: | Manufacturer of products for plumbing and sprinkler systems |
| Material: | Polyethylene tubing |
| Application: | Plastic extruder |
| Challenge: | Develop a way to contain water used to cool hot extruded tubing |
| Valve: | Iris Valve<br>UBS06IP2-UR |

Results:



To form tubing, plastic is heated making it easier to push through a die. The die sizes the molten plastic to the desired diameter and wall thickness. Once formed, many factories direct the hot extruded product into a booth where water is sprayed onto the tubing to cool it down. This allows the tube to become self-supporting at ambient temperatures.

Water, adhering to the formed tubing, eventually drops off creating a wet area (sometimes many feet long) on the production floor, extending from the extruder. Safety and maintenance around this area are constant issues.

In solving the problems created by the coolant, the customer utilized a Vortex® Iris Valve™. The valve was constructed of 304 stainless steel to address the wet environment. The IP model allows infinite positioning of the opening to accommodate different tube diameters. A urethane-coated double sleeve wipes the water off the tube restricting it to one area.

For this application, a drip pan was fabricated to contain and recycle the water coolant. **QL**

# Global Venues Boosts Vortex Presence

Vortex has been busy displaying its products at both domestic and international tradeshows. Vortex was on hand during the first quarter of the year at the Chemtech show in China; GEAPS show in Portland, OR; IMA-NA show in Jacksonville, FL; and the Gulf Coast Solids Handling Show in Pasadena, TX.

Second quarter shows include exhibiting in USA, Germany, and Canada among others.

DEVELOPING UNCONVENTIONAL GAS DUG

Venturing into new territory, Vortex will be attending the 6th annual Developing Uniconventional Gas (DUG) Conference & Exhibition. DUG brings operators, investors, and the service industry together for the latest insights on unconventional gas plays across North America and around the world. Visit booth 126 at the Forth Worth Convention Center April 18-20.

MASC Mining Association of South Carolina

The Mining Association of South Carolina consists of individuals, firms and corporations whose common interest is the development of mineral resources, in an environmentally sound manner, in the state of South Carolina. MASC promotes harmony within the mining industry and with the general public with high standards of responsibility, skill, and integrity. The MASC conference will be held April 18-20 in Columbia, SC.

115th annual conference & expo IAOM san antonio • may 2-6, 2011

The IAOM Annual Conference & Expo is the premier educational event for grain milling and seed processing professionals. The annual event gathers milling and allied trade professionals from around the world for three days of education, networking and fellowship. Educational and technical programs presented by seasoned professionals assist millers in improving yields, productivity, customer satisfaction and safety. Vortex will be displaying at IAOM booth 321, May 2-6 in San Antionio, TX.

grapas 2011 international
flour milling • grain • rice • pasta processing

GRAPAS International 2011 will present a wide range of international companies that supply equipment, technology and ingredients that are used in flour milling and processing, rice and grain processing and storage, as well as, the specialist technology required for the production of pasta and noodles.This exhibition will bring together senior executives from flour mills, industrial bakers, grain processors and pasta producers. Co-located with Victam and FIAAP shows, the triple tradeshow will be held in Cologne, Germany on May 3-5.

PBE 2011 NORTHEAST CONFERENCE & EXHIBITION

PBE's 2011 Northeast Conference & Exhibition is the one tradeshow where 9 out of every 10 people strolling the aisles is a powder processing professional truly interested in technologies to protect and assure their company's profitability. PBE is a powder show emphasizing products and services specifically for the powder/dry particulate processing, handling, storing and transporting requirements of industry. Vortex will be displaying at PBE booth 305 in Somerset, NJ May 23-25.

PLAST-EX

Plast-Ex 2011 is the event that the Canadian plastics processing industry has been waiting for, with an impressive lineup creating Canada's first large scale co-located event. Joining Canada's national plastics industry show is PACKEX, ATX Canada, Design & Manufacturing Canada, PTX/PBS Canada, and Green Manufacturing Expo Canada. Approximately 30% of the leads an exhibitor receives are from an attendee who initially registered for one of the other shows. Co-located shows like Plast-Ex 2011 provide tremendous crossover sales and business development benefits for everyone participating. Vortex will showcase at Plast-Ex booth 2071, June 21-23, at the Toroto Congree Centre in Canada. **QL**

# QL

## Industry Affiliations & Events:

Kansas State University Grain Science & Industry

SOLIDS & BULK HANDLING

IAOM International Association of Operative Millers

DEVELOPING UNCONVENTIONAL GAS DUG

115th annual conference & expo IAOM san antonio • may 2-6, 2011

grapas 2011 international flour milling • grain • rice • pasta processing

MASC Mining Association of South Carolina

THE WOLFSON CENTRE for Bulk Solids Handling Technology

PBE 2011 NORTHEAST CONFERENCE & EXHIBITION

INTERNATIONAL Powder & Bulk Solids

IMA-NA Industrial Minerals Association North America

IMA Europe

SHAPA SOLIDS HANDLING AND PROCESSING ASSOCIATION

GEAPS Grain Elevator and Processing Society

BulkSolids Europe2010

Powder and Bulk Engineering

PEMA

EuroBulkSystems

PLAST-EX

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INTERTEK ISO 9001:2008

**Vortex's quality management system is registered to ISO 9001:2008.**


## From the Not-So-Serious Desk

For centuries, the 1st of April has been a time for the clever ones to exploit the gullible. Some say this practice dates back to Roman times, while others find its roots in 14th century France. Regardless of its origins, April Fools Day is always worth a good funny.

This edition of NSSD celebrates this devious day and general everyday prankstering.

At the NSSD, we pity the fool!

## April Fools Hoaxes from Around the World:

**The Swiss Spaghetti Harvest**

In 1952 the respected BBC news show Panorama announced that thanks to a very mild winter and the virtual elimination of the dreaded spaghetti weevil, Swiss farmers were enjoying a bumper spaghetti crop. It accompanied this announcement with footage of Swiss peasants pulling strands of spaghetti down from trees. Huge numbers of viewers were taken in. Many called the BBC wanting to know how they could grow their own spaghetti tree. To this the BBC diplomatically replied, “place a sprig of spaghetti in a tin of tomato sauce and hope for the best.”

**The Taco Liberty Bell**

In 1996 the Taco Bell Corporation announced it had bought the Liberty Bell and was renaming it the Taco Liberty Bell. Hundreds of outraged citizens called the National Historic Park in Philadelphia where the bell was housed to express their anger. Their nerves were only calmed when Taco Bell revealed, a few hours later, that it was all a practical joke. The best line of the day came when White House press secretary Mike McCurry was asked about the sale. Thinking on his feet, he responded that the Lincoln Memorial had also been sold. It would now be known, he said, as the Ford Lincoln Mercury Memorial.

**Metric Time Conversion**

In 1975 Australia’s *This Day Tonight* news program revealed that the country would soon be converting to “metric time.” Under the new system there would be 100 seconds to the minute, 100 minutes to the hour, and 20-hour days. Furthermore, seconds would become millidays, minutes become centidays, and hours become decidays. The report included an interview with Deputy Premier Des Corcoran who praised the new time system. The Adelaide townhall was even shown sporting a new 10-hour metric clock face. TDT received numerous calls from viewers who fell for the hoax. One frustrated viewer wanted to know how he could convert his newly purchased digital clock to metric time.


**Dogs to be Painted White**

1965: *Politiken*, a Copenhagen newspaper, reported that the Danish parliament had passed a new law requiring all dogs to be painted white. The purpose of this, it explained, was to increase road safety by allowing dogs to be seen more easily at night.

# Our Best Office Prank Photos:

*Post-it® notes... still good for something.*

*Foiled again!*

**Do you have a great April Fool's joke or prank you would like to share with NSSD readers? Email us at quantumleap@vortexvalves.com and we will feature it in the next edition.**

# Our Favorite Pranks and Gags on YouTube

*Just For Laughs* from Montreal, Canada, are probably the most clever pranksters in the business. Enjoy this clip of Montreal's finest during a routine traffic stop.

http://www.youtube.com/watch?v=3LeXFR74ADQ&feature=related

The Japanese are the world's most elaborate pranksters. Check out this amazing and incredibly well thought out gag. It is a little slow at the start, but well worth the wait.

http://www.youtube.com/watch?v=eGcPRfPtjYo&feature=related


Graham Norton is a television presenter in the UK that is always setting up great gags. In this clip, television's *Cagney & Lacey* participate brilliantly in creating this prank.

http://www.youtube.com/watch?v=OR0D-nhQKvE&feature=related

This is a hilarious gag from Germany, using twins and a mirror trick.

http://www.youtube.com/watch?v=H_Dtsx-VGG0&feature=related