

## Why Does the Relief Valve Opening Point Change?

When a backflow prevention assembly tester tests a reduced pressure principle assembly, the tester expects to find certain results. The relief valve opening point should be at least 2.0 psid (pounds per square inch differential) and the first check reading should be at least 3.0 psid above the reading obtained on the relief valve. This

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*If the tester activates the relief valve and then determines the relief valve opening point, the reading is likely to be higher than if the tester determined the relief valve opening point without first exercising the relief valve.*

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still leaves plenty of room for various readings. One question, that many testers have is: *Why do the readings vary on the same assembly each time it is tested?*

The opening point of the relief valve is determined, in part, by the relief valve spring. The springs are designed to operate within specific tolerances. They may vary slightly after they are

fully compressed. After some initial use, the spring will "set" or settle in at a fairly consistent point. However, one may still find that the relief valve opening point changes.

The spring is not the only factor which determines the relief valve opening point. In fact, there may be several factors involved depending upon the design of the relief valve. One of the primary factors will be the sliding surfaces within the relief valve. When the relief valve opens some of the surfaces slide against other surfaces, such as guide stems. In some cases the sliding surfaces operate as a piston in a cylinder. The condition of the surfaces may change depending upon the local water conditions and how much exercise the relief valve gets.

If the relief valve is being exercised on a regular basis the sliding surfaces will glide freely without any hindrances. However, if the assembly has been sitting for a while without any relief valve activity, some small deposits from the water may build up upon the sliding surfaces requiring more force to move them, thus a lower relief valve opening point. If this is the case,

## E. Kent Springer

### Protector of Public Drinking Water

E. KENT SPRINGER, Director Emeritus of the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California and Professor Emeritus of Mechanical Engineering at the University of Southern California passed away Monday the fourth of December 1995.

For nearly twenty years, Prof. Springer headed the Foundation, he was responsible for

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## Highlights

- Tenth Edition
- Foundation Web Site
- Relief Valve Test Results
- The Logo Changes

# NEW FOUNDATION. Members

*The Foundation Staff would like to welcome the following new Members to the Membership Program. Remember all Members are welcome to contact the Foundation Office with any questions regarding cross-connection control. Also, Members are granted discounts on Courses, Manuals and Training Tools. We trust your Foundation Membership will be a great benefit to you in your cross-connection control efforts.*

A. C. Austin's Plumbing  
 ABC Plumbing & Heating  
 ABC Plumbing, Heating &  
 Air Conditioning  
 Alexander Plumbing, Inc.  
 C. "Herb" Berger  
 California Commercial  
 Plumbing  
 California State Univ.,  
 Fresno  
 Cisco Fire Sprinklers  
 Cross Connection  
 Consultants, NV  
 Denny's Plumbing  
 City of Exeter  
 City of Firebaugh  
 Foodmaker, Inc.  
 Town of Gilbert  
 City of Holtville

City of Hurst  
 John S. Kern, P.E., P.C.  
 City of Ketchikan  
 L. Nothhaft & Son, Inc.  
 Litton Guidance  
 & Control Systems  
 City of Lompoc  
 Louisiana Water Service Inc.  
 Pete's Plumbing  
 Pinellas County  
 Utilities Engineering  
 RCI Sales & Marketing, Inc.  
 City of Richmond, TX  
 Sarasota County  
 Utilities Dept.  
 SC Johnson Professional  
 Westinghouse Electric  
 Corporation  
 City of Woodlake

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## Relief Valve Opening Point

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the relief valve may have a higher reading if tested again immediately following the initial test. This is why it is so important for the tester not to activate the relief valve before determining the relief valve opening point. If the tester activates the relief valve and then determines the relief valve opening point, the reading is likely to be higher than if the tester determined the relief valve opening point without first exercising the relief valve. A stiff diaphragm may also have a similar effect.

Another cause for various readings for the relief valve opening point may be differing line pressures. The relief valve of each reduced pressure principle backflow preventer is required to open at a pressure differential across the first check valve of 2.0 psi or greater at various line pressures from 20 psi up to and including the maximum working

water pressure of the assembly. While at each pressure, the opening point must be at least 2.0 psid, readings can vary depending upon the line pressure. So, a difference in line pressure alone may be cause for differing readings for the relief valve opening point.

In summary, It is important for the tester to remember that exercising the relief valve before determining the relief valve opening point can lead to artificially high readings on the relief valve. Readings obtained for the relief valve opening point may vary. This may be due to frequency of the operation of the relief valve, or simply varying line pressures. This does not mean there is any thing wrong with the relief valve as long as it is operating within the design parameters, that is opening at 2.0 psid or higher.

## Professor Springer

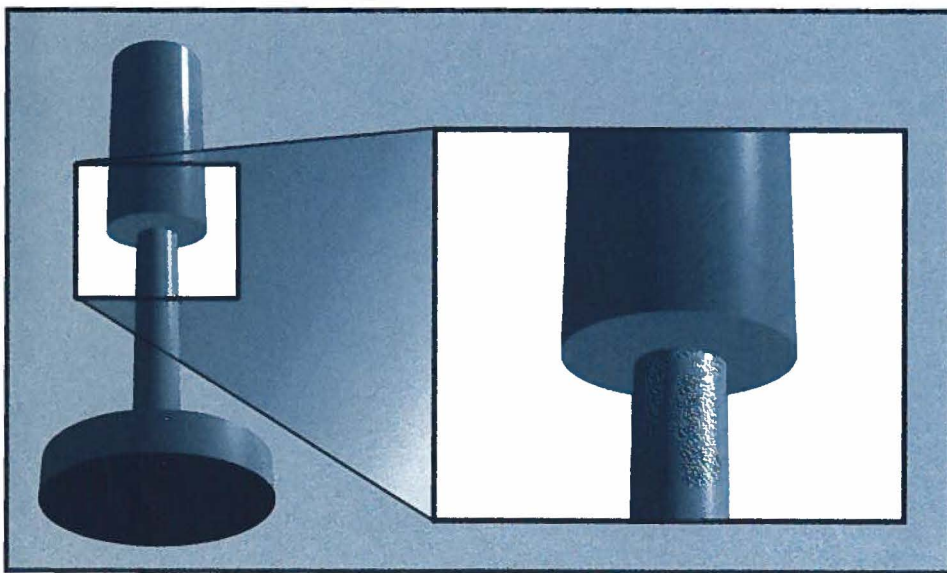
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leading the Foundation into the position it has as a world's authority on cross-connection control.

Springer was responsible for establishing the Foundation's Field Evaluation Program for the evaluation of backflow prevention assemblies—the only full-time program of its kind in the world.

In 1967 Professor Springer, worked closely with the Southern California Water Utilities Association and Mr. Walter O. Weight to develop the Foundation's Membership Program in order to assure funding of the Foundation's important work. Originally the Southern California Water Utilities Association (SCWUA) organized the Foundation's Membership program by asking its Members to donate funds for the Foundation's work. The SCWUA collected the Foundation's Membership fees from its Members which chose to participate in the Foundation's Membership Program, transferring funds to the Foundation when they were collected.

Prof. Springer also developed the Foundation's five-day *Course for the Training of Backflow Prevention Assembly Testers* and offered the first course in 1970. Professor E. Kent Springer taught the first Tester Training Course with the assistance of Mr. Ernest J. Havlina of the Los Angeles Department of Water and Power. The Fourth Edition of the *Manual of Cross-Connection Control* was used for this course which had



*Under certain water conditions mineral deposits may form on the sliding surfaces of the relief valve. This may cause the relief valve reading to vary, depending upon the amount of deposits*

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# Professor Springer

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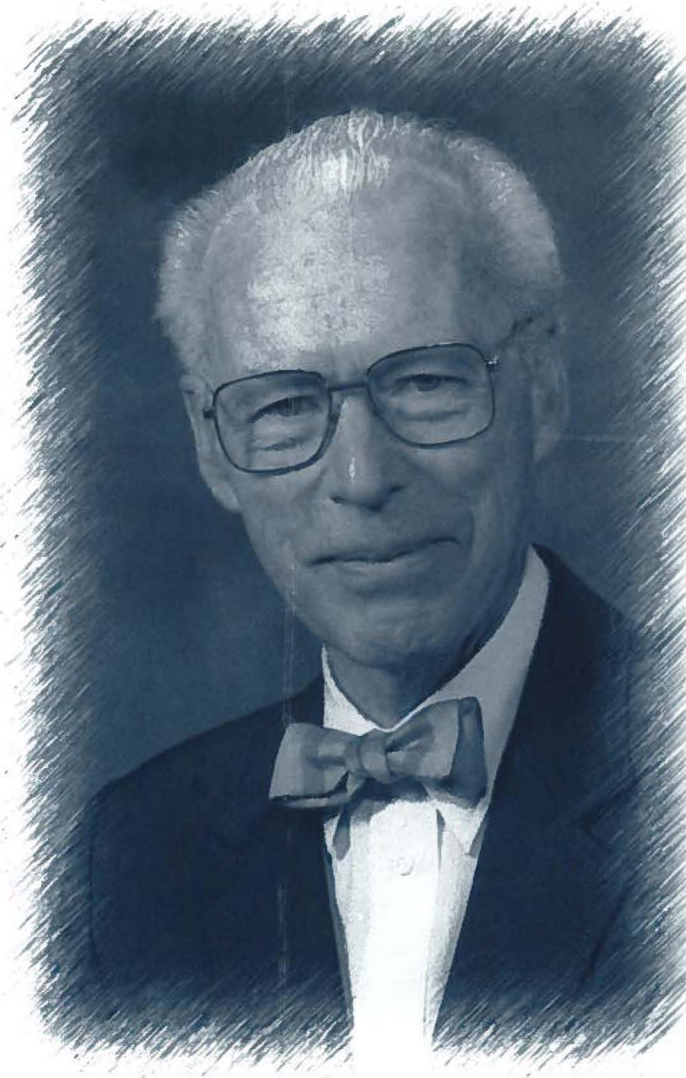
nineteen students from California, Idaho, Missouri, Oregon, Pennsylvania, and Washington. From the first year this course was introduced, the Foundation offered the course in various locations to help train personnel throughout the country. Originally Professor Springer handled all of the away courses with the help of some local personnel.

Professor Springer was truly instrumental in the development of the field of cross-connection control. His efforts not only brought the Foundation to the forefront of the field, but have also resulted in safer drinking water throughout North America and other parts of the world.

Springer was born Sept. 17, 1912, in Bellingham, Wash. After earning his B.S. degree in mechanical engineering from the USC School of Engineering in 1936, he worked as a plant engineer at the Fluid Packed Pump Co. in Los Nietos, Calif., and, later, as a mechanical engineer for the Pacific Railway Equipment Co. in Los Angeles.

Springer joined the faculty of the University of Wisconsin, Madison, in 1941. While teaching at the University as an instructor and later as an assistant professor, he earned a master's degree in mechanical engineering in 1945 from the University of Wisconsin.

He joined the USC School of Engineering as an associate professor of mechanical engineering in 1946. He became a full professor there in 1951. He became interested in the work of the Foundation in the mid-50's



and co-authored the document USCEC 48-101, published in 1959, which became the basis for the 1<sup>st</sup> Edition of the *Manual of Cross-Connection Control*. He served as director of the Foundation for Cross-Connection Control and Hydraulic Research from 1965 until his retirement in 1984.

Springer was a fellow of the American Society of Mechanical Engineers and held several distinguished positions, including vice president of Region IX, in that organization. For a number of years, he was the faculty adviser to the USC student section of the ASME. In 1981, the Los Angeles section of the ASME awarded its Centennial Medal to Springer for his years of dedicated service.

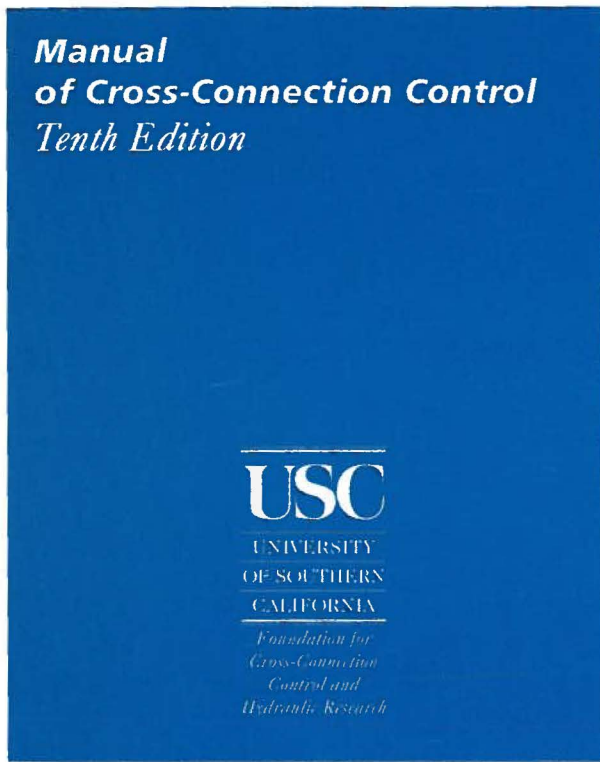
He was also a member of several organizations that promote safe drinking water and engineering education. They include the American Water Works Association, the American Society for Engineering Education, the Southern California Water Utilities Association and the City of Pasadena Blue Ribbon Committee reviewing the Pasadena Department of Water and Power.

Springer is survived by his wife, Frances, and son Bruce, a mechanical engineer. A memorial

scholarship fund has been established at the Foundation. Contributions may be sent to: Cross-Connection Control Pioneer's Scholarship Fund, USC Foundation for Cross-Connection Control and Hydraulic Research, Kaprielian Hall 200, Los Angeles, CA 90089-2531.

# Tenth Edition of the Manual

*..In a couple of years*



you'd like to see specific additional material, please let the Manual Review Committee know.

The review process for the Ninth Edition of the Manual took over 2 1/2 years. So, it could be quite some time before the Tenth Edition is actually at the point of publication.

However, the Members are encouraged to keep in mind the fact that the Manual will be under revision. Whenever you come across something you would like to have added to the Manual or changed, let the Manual Review Committee know. These suggestions will be discussed in the committee and possibly added to the Tenth Edition of the Manual.

You can contact the Manual Review Committee care of the Foundation Office.

**Manual Review Committee**  
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**A**lthough the Ninth Edition of the Manual of Cross-Connection Control has only been available for just over two years, it is time to begin work on the Tenth Edition. The Ninth Edition of the Manual was the most comprehensive revision to date. At this point there is no way to tell what the Tenth Edition will include, but the Manual Review Committee will convene later this year to begin preliminary discussions.

The Manual Review Committee is comprised of Water Agency personnel, Health Agency personnel, private testers and Foundation Engineering Staff members. The Committee accepts comments and suggestions from all Foundation Members. If you've noticed things you feel are missing from the Manual, or

## T-Shirts and Hats

The Foundation has made available a small supply of T-shirts and baseball caps.

The T-shirts are available in Extra Large. The baseball caps are



embroidered in two colors. There is a limited supply, but Members who would like to receive one or the other may purchase them



from the Foundation Office. The T-shirts are \$10.00 and the caps are \$15.00. We will pay the shipping charges.

The Foundation is preparing to accept Visa, Mastercard, and Discover. This has been in the works for quite some time, but finally these cards will be accepted by the Foundation Office. This will make taking orders by FAX, phone and even e-mail a possibility.

The Foundation is working with other departments at the University to get the system implemented. The cards should be accepted in early April.



## USC Loses the Logo

The University of Southern California has introduced a new logo to be used throughout the University community. After almost thirty years of the same logo, the University has gone to a new look. The new logo will be phased in over the next several months and will affect every department of the University. This also means the Foundation's logo will be retired in favor of the new University Logo.

The University's Board of Trustees felt the University's image had suffered as a result of disjointed use of the logo by various University departments. As an example, many may not have made the association with USC as being the University of Southern California which is home of Prof. George Olah, who earned the Nobel Prize in Chemistry, the Trojan Football Team and the Foundation for Cross-Connection Control and Hydraulic Research. The change of logo will bring a uniformity to all entities of the University, thus tying together the various facets of the University of Southern California.

Although the old logo worked extremely well for the Foundation, many departments on campus had adapted the logo to

the point that the use of the logo was inconsistent across the campus. This is the main reason the University's Board of Trustees has decided to change the University logo to a single image to be used throughout the University community.



The Foundation's logo will disappear over the next few months. You will notice, the Foundation's letterhead, FAX cover sheets, business cards, newsletters, etc. all changing to the new logo format. Nothing at the Foundation has changed, the logo is simply changing to come into compliance with the new University

policies.

You will notice the change first if you receive a fax from the Foundation. The new fax cover sheets are already in use. Within a few weeks letterhead and business cards will change, and finally by the end of the year, *Cross Talk* and the *List of Approved Backflow Prevention Assemblies* will be printed using the new University Logo.

The change has already taken place on the Foundation's Web site. Those Members with Internet access can see the change by accessing the Foundation's Web pages.

## Tester Training Courses

Over the last several years the Foundation has raised the level of proficiency required of those attending the Tester Training Courses. More time is devoted to the review of troubleshooting, ensuring that the attendees will be capable of handling most of the real world conditions which they may encounter in the field.

A Tester Training Course is being offered in Hilo, Hawaii. This course will be offered during the week of 17-21 June 1996 and is being held in conjunction with the Hawaii Department of Water Supply.

The Foundation is also offering a course in Las Vegas, Nevada during the week of 23-27 September 1996. This course is being held in conjunction with the Las Vegas Valley Water District.

Both of these courses are Five Day courses teaching the attendees how to test the double check valve assembly, the reduced pressure principle assembly and the pressure vacuum breaker assembly. The attendees will spend much of their time in the wet lab area testing and troubleshooting the actual backflow preventers under guided instruction.

For more information and an application for either of these courses, or information on hosting a course in your area, please contact the Foundation Office.

Phone: (213) 740-2032  
FAX: (213) 740-8399  
E-Mail: fccchr@usc.edu

## Visit the Foundation's Web Site

The Foundation has been using the World Wide Web to provide information to its Members and others requesting information on backflow prevention and cross-connection control. It is also being used as a means of asking questions of the Foundation's Engineering Staff. A reply is usually made within one day and in many cases within minutes.

On the Web you will be able to find much information.

Technical information available includes: a

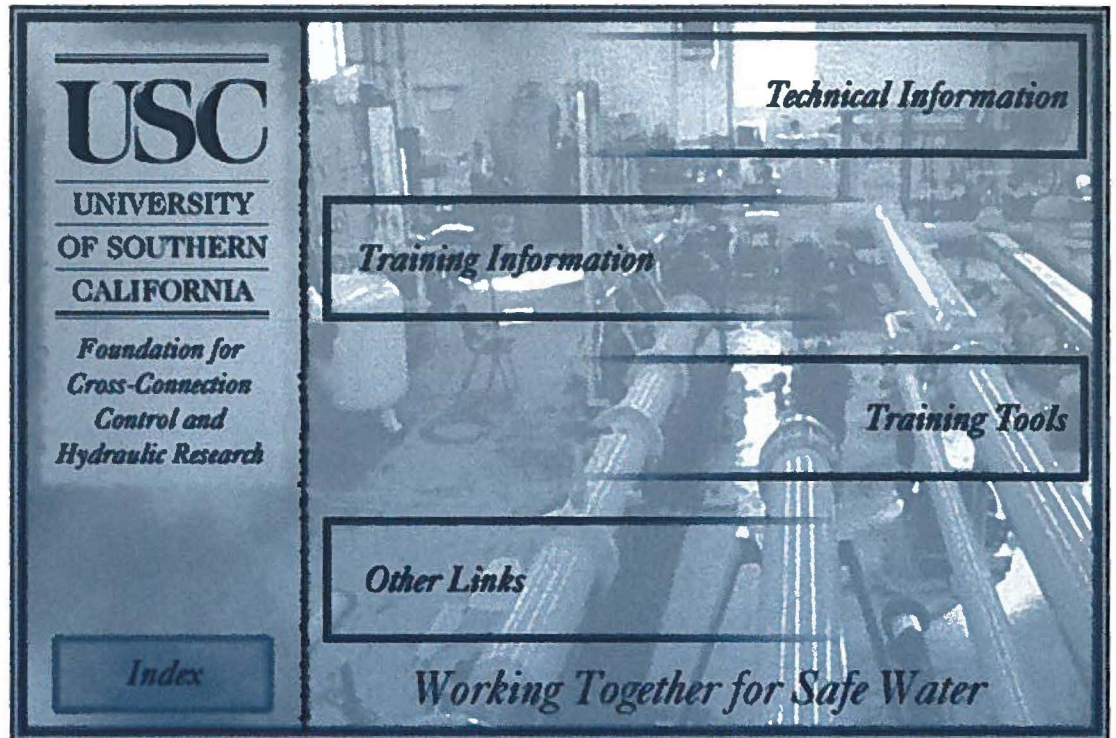
general introduction to cross-connection control, past issues of *Cross Talk*, detailed information about the Foundation's Approval Program for backflow prevention assemblies, special notices and the *List of Approved Backflow Prevention Assemblies*.

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***Members with Web access don't have to wait until the next printed edition of the List is released to find the latest Approval information***

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The List published on the Web is updated as new Approvals are granted and other changes are made. This means Members with Web access don't have to wait



until the next printed edition of the List is released to find the latest Approval information. Special notices are also listed on the Web site. As soon as a special notice is issued Members who have sent the Foundation their E-Mail addresses are notified by email that a new Notice has been issued. Additionally, Members are notified when there is a change in the *List of Approved Backflow Prevention Assemblies*. This way Members don't have to keep checking to see if there are any changes, they are notified automatically.

If you have not given the Foundation your E-mail address, please do so. This will allow us to notify you when Special Notices are issued and when the List changes.

Access to the List is restricted to Members so you will

need special instructions and a password to access the List. You can E-Mail the Foundation with your name, the name of the Member company or organization, and the name of the Member contact of the company or organization (that's the name on the mailing address of this issue of *Cross Talk*). Once you submit this information along with your E-Mail address, we will E-Mail instructions to you and a password for accessing the List. Foundation Membership is based on company or organization Membership, so any employees of the company or organization may be placed on the Foundation's E-Mail mailing list.

**Foundation Web Site:**  
<http://www.usc.edu/dept/fccchr/>

**Foundation E-Mail:**  
[fccchr@usc.edu](mailto:fccchr@usc.edu)

# Foundation Training Courses

## **Tester Training Courses**

**13-17 May 1996**

Los Angeles, CA

**15-19 July 1996**

Los Angeles, CA

**17-21 June 1996**

Hilo, HI

**5-9 August 1996**

Incline Village, NV

**23-27 September 1996**

Las Vegas, NV

## **Program Specialist Training Course**

**22-26 July 1996**

Los Angeles, CA

**10-12 April 1996**

CA/NV AWWA Spring Conference

Redding, CA

**24 April 1996**

Western States Symposium Association/American

Backflow Prevention Association Seminar

Fresno, CA

**25 April 1996**

Orange County Cross-Connection Control Group

Anaheim, CA

**28 April - 1 May 1996**

American Backflow Prevention Association

International Conference

St. Louis, MO

**12 June 1996**

Western States Symposium Association

Buena Park, CA



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