

# **EAST TENNESSEE GEOLOGICAL SOCIETY**

## **ETGS/AIPG Newsletter**

### **April 2000**

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**EAST TENNESSEE GEOLOGICAL SOCIETY  
and  
TENNESSEE SECTION of the  
AMERICAN INSTITUTE OF PROFESSIONAL GEOLOGISTS**

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## **ETGS/AIPG APRIL MEETING**

**Monday, April 3, 2000**

**11:45 am - 1:00 pm**

**Sagebrush Steakhouse and Saloon**

390 South Illinois Avenue

Oak Ridge, Tennessee

# APRIL PRESENTATION

## **The Investigation of Potential Microbiologically Induced Corrosion (MIC) of Stainless Steel Monitoring Well Components at the Y-12 Plant, Oak Ridge, Tennessee**

By

[Steven B. Jones](#)

Y-12 Plant Groundwater Protection Program  
Environment, Safety, Health, and Quality Organization

[Lockheed Martin Energy Systems, Inc.](#)

[sqj@y12.doe.gov](mailto:sqj@y12.doe.gov)

### **Abstract**

Monitoring wells are constructed from a variety of materials from Polyvinyl Chloride (PVC) to various grades of steel. Stainless steel is favored due to its durability and resistance to corrosion. At the Y-12 Plant, a majority of the wells are constructed from stainless steel, and elevated levels of nickel and chromium concentrations not associated with known contaminant source areas have been observed in a number of them. These trace metals comprise approximately 30% of the alloy to make stainless steel. Corrosion of the casing and screen and subsequent dissolution of nickel and chromium is suspected. However, the water quality data from wells exhibiting an increase in nickel and chromium do not tend to support the possibility of chemical corrosion. However, the water quality data and borehole camera surveys performed at several wells, potentially agree with corrosion from a microbiological source.

Microbiological Induced Corrosion (MIC) is a recognized source of stainless steel failure in the nuclear industry. With the right environmental conditions, it is possible for bacteria to thrive in a monitoring well, attached to the well casing and screen. Through biochemical processes, these organisms are able to corrode stainless steel causing the dissolution of the component metals. At the U.S. Department of Energy Y-12 Plant, an investigation into the viability of this process as a source for nickel and chromium in monitoring wells is underway.

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## **MARCH MEETING SUMMARY**

### **March Meeting Draws Eight New Members!**

**by J. Brad Stephenson**

The March meeting was held in conjunction with a "brown-bag" seminar at IT Corporation in Knoxville. ETGS member Tom Zondlo presented *Applications of Thermal Infrared Surveys at Redstone Arsenal*. (An abstract is available in the [March Newsletter](#).) In his case study, Tom discussed the application and limitations of a thermal infrared survey as the first step in a large-

scale karst hydrogeologic investigation. He summarized the objectives, methodology and preliminary results of the survey, which has already resulted in the identification of nearly 900 springs and seeps within the 40,000-acre study area. ETGS thanks Tom for an excellent presentation.

Additional appreciation goes to ETGS member Mark Joop, as well as Bill Hedberg and Scott Logan for their roles arranging this joint meeting. The meeting was well attended by geologists from IT and elsewhere. Eight IT geologists have joined ETGS as a direct result of the March meeting, bringing the total number to twelve (so far). Thanks to everyone at IT Corporation for your support; and welcome, new members!

In addition to giving a brief description of the society for the benefit of our guests, we also discussed the upcoming bicycle field trip on the Virginia Creeper Trail. Tony Tingle is spearheading the effort to identify a trip leader, as well as lodging, camping, and bike-shuttle options. Tentatively, the trip will be held on May 20 or June 3. Please see [Tony's article](#) later in this issue for additional information.

Meeting attendees were reminded to submit suggestions for the "Name-the-Newsletter" contest. It was noted that only seven submissions had been received-all from the same member. (Since that time, one additional nomination has been received from a second person.) A call for membership renewal was also made, including a brief discussion about the forthcoming Membership Directory. (Please see [Seaira's article](#) later in this issue for details.)

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## **MEMBERSHIP RECRUITMENT**

### **Professional Geologists in East Tennessee**

**by Jim Morgan & J. Brad Stephenson**

ETGS is the primary organization serving the geological community of East Tennessee. Its members ARE the organization. Each member is a valuable resource with the potential to share a unique set of experiences and talents with the rest of the group.

With each new member, ETGS increases its ability to keep local geologists informed about technical and professional trends in the geosciences, as well as opportunities for social interaction and networking. Unfortunately, many practicing geologists in East Tennessee are not members of the society and may not even be aware of its existence.

It has been suggested that we might increase awareness of ETGS among our colleagues by contacting Professional Geologists (PGs) registered with the State of Tennessee. Originally, it was thought that e-mail would be a cost-effective way to reach them. Although the State does not maintain e-mail addresses in its records, the names and addresses of Tennessee PGs may be downloaded from the Department of Commerce and Insurance web site (<http://www.state.tn.us/cgi-bin/commerce/roster2.pl>).

The online database includes nearly 3000 PGs, but only 800 of them live in Tennessee. Of these, 442 live in East Tennessee, loosely defined as the Cumberland Plateau eastward. Removing 70 who are already on the ETGS mailing list leaves 372 potential new members in the region.

For a total investment under \$100, a computer-generated postcard can be sent to each of these 372 Professional Geologists for about \$0.25 each (postage and paper). The cards could include a brief description of the society; list our web-site address; and invite the recipient to our next meeting. From a financial perspective, we would recover this investment if only 7 people (1.9%) join the organization for one year. More significantly, ETGS would benefit from the expertise and perspective of each added member.

This proposed recruitment effort will be discussed during the April meeting. If you have any suggestions or questions, please share them at the meeting or by contacting Membership Director, Jim Morgan ([jmorgan@gmgw.com](mailto:jmorgan@gmgw.com)), or Brad Stephenson ([jbrad@ispchannel.com](mailto:jbrad@ispchannel.com)). Finally, please help with this effort by inviting your friends and coworkers to our meetings and field trips. Visitors are always welcome!

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## **NAME THE NEWSLETTER and Win a Free Membership for 2001!**

**by J. Brad Stephenson & Tony Tingle**

This is your final chance to suggest the winning name for the ETGS/AIPG Newsletter and *receive a free, one-year ETGS membership!* The winning name will be selected by a vote at the April meeting. Submit as many titles as you like, but *do it by Friday March 31, 2000.*

E-mail your nominations to Brad Stephenson ([jbrad@ispchannel.com](mailto:jbrad@ispchannel.com)). You will be notified if any of your suggestions have been submitted previously.

Good luck!

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## **FIELD TRIP ON THE VIRGINIA CREEPER TRAIL Trip Leader Needed!**

**by Tony Tingle**

Considerable interest has been expressed in a geology-oriented bicycle trip on the Virginia Creeper Trail. However, I am still looking for a person that would be willing to lead the

proposed field trip. Can you suggest someone versed in the stratigraphy of that area? I have checked with a couple of folks that I know and have had no success.

The proposed trip is a stratigraphic tour along the Virginia Creeper Trail. It would be an almost-all-downhill ride as long or as short as we would like to make it. A shuttle service would be used to transport the group to a high point (near Whitetop Station), and we would ride downhill toward Damascus. The Virginia Creeper starts in Abingdon and ends just east of Whitetop Station for a total length of 33.4 miles. It began as a Native American footpath and became part of the Virginia-Carolina Railroad system in 1907. Now it serves as a multi-use recreation trail.

Tentative dates for the trip were discussed at the March meeting. The weekends of May 20-21 and June 3-4 are currently the top choices, but the trip-leader search and other considerations may require that we schedule the trip for next autumn. Any suggestions for a trip leader (and/or alternative trip locations) should be directed to Tony Tingle at [geofolks@worldnet.att.net](mailto:geofolks@worldnet.att.net).

For more information on the Virginia Creeper Trail, check out the following web sites.

<http://www.cccyclery.com/vacrep.htm>

<http://www.his.com/~jmenzies/urbanatb/rtrails/creeper/creeper.htm>

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## **MEMBERSHIP DUES ARE DUE**

### **Join/Renew by April 10**

### **to be Included in the 2000 Membership Directory!**

**by Seaira Stephenson**

As we prepare for an exciting field trip, we want to make sure you remain on our mailing list and are included in the 2000 Membership Directory, which will be distributed to all members later this spring. The directory will include the name, business address, business phone/fax numbers, and e-mail addresses of each ETGS member. It will be a useful resource for networking with your colleagues.

If you are not sure about your membership status, check the list at the April meeting or get in touch with me **by April 10** at [sstephenson@scisale.com](mailto:sstephenson@scisale.com) or 865-483-9332. Members from last year who have not renewed should have received an e-mail from me on March 17. If you believe our records are in error, be sure to let us know. (Remember that dues are now applied on a calendar-year basis.)

Don't be left out! If you have not already done so, please renew your membership now. Dues remain a bargain at just \$15 per individual, \$20 per couple, and \$5 per student. Encourage a colleague to join as well. Be sure to complete the Membership Information form available online at <http://www.kornet.org/etgs/member.htm>. (Forms are also be available at each meeting.) Bring

the completed form to the next meeting with your dues, or mail them to

ETGS  
PO Box 6193  
Oak Ridge TN 37831-6193

Whether you join or renew at the meeting or by mail, please complete a membership form to help us keep the society's records updated. This information will be used for the directory, so we want it to be as complete and accurate as possible. In particular, please make sure we have at least one current e-mail address.

We look forward to your continued participation in ETGS!

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## **UPCOMING GEOLOGY SEMINARS**

### **University of Tennessee Department of Geological Sciences**

by **Dr. Don Byerly**

March 30	Frank Chapelle (Klepser Lecture II) Hydrogeology
April 6	Student presentations
April 13	Colin Sumrall (Haines-Morris Scholar)
April 20	Student presentations
April 27	Department Awards Day

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## **CONTACT INFORMATION**

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**ETGS APRIL NEWSLETTER PAGE**

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Questions or comments about this page should be directed to [Carla Sparks](#).

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[the Knoxville-Oak Ridge Regional Network!](#)