



2007 Chapter Officers

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Welcome to the May Newsletter



April Program Meeting

The East Tennessee Chapter of the Health Physics Society held its monthly meeting on Tuesday, April 17, 2007 at the Sagebrush Restaurant in Oak Ridge, Tennessee. Approximately 27 ETCHPS members and guests were in attendance. The speaker of the evening was Mr. Grant Ashley, an electrical engineer specializing in criticality instrumentation for the Bechtel Jacobs Corporation. The title of his presentation was "Idaho Horn Testing Criticality Survival."

Mr. Ashley discussed the radiological survivability testing of electrically-operated horns proposed to replace air-operated horns within the K-25 Criticality Accident Alarm System. Key topics of Mr. Ashley's presentation included the following:

- **How to Test.**
 - Testing was required as DOE required proof that the alarm system would survive a criticality event.
 - Conventional wisdom was that criticality alarm systems should be tested with a pulsed reactor.
 - The US-based Godiva reactor is shutdown and unavailable.
 - Reactors are available in Europe – but access increased testing time and cost.
 - A casual conversion lead to the question: Could testing be performed using accelerators?
 - The answer was yes! Idaho State University was selected as the testing site.
 - Three tests were to be performed
 - Electron Beams
 - Photons
 - Neutrons.
- **Performance Criteria.**
 - **Primary Objective:** Demonstrate survivability to a criticality event.
 - **The minimum acceptance criteria:** Horn must survive 8000 Rad in Air (15% Neutrons, 85% photons).
 - Various radiation testing levels would be applied, starting low and increasing until system failure is observed.
 - System Failure was defined as the horn not producing that same sound at the same volume after radiation applied.
- **Testing Equipment:**
 - 20 MEV LINAC used.
 - 10 MEV Induction Accelerator (recycled star wars machine) – supplied 35 nSec pulses
 - Fission spectrum mimicked by targeting electrons onto tungsten.
 - Photon contribution controlled by lead shielding.
 - Dosimetry performed by film.
- **Testing Results:**
 - Failure was observed at DOSES of:
 - Electron Beam 7.1 kRad
 - Photons 10.6 kRad
 - Mixed Field 11.5 kRad
 - The corresponding PULSE DOSE RATES for the three failure conditions were:
 - Electron Beam 3.7E+07 kRad/sec
 - Photons 1.2E+10 kRad/sec
 - Mixed Field 4.9E+06 kRad/sec
- **Interpretation of Results:**
 - Electron Beam test is not indicative of criticality conditions. Therefore, failure below 8 kRad does not disqualify the horns.
 - Photon test demonstrated that the horns can withstand intense radiation fields. Failure was more likely due to dose rate.
 - The neutron contribution within the mixed beam was less than specified (8% compared to 15%). However, the test was sufficient to demonstrate survivability in a high neutron field.

Final Conclusion: The horns passed testing and can be placed in service.

Prepared by: David A. McLaughlin
ETCHPS Secretary-Elect

Upcoming ETCHPS Meetings

May 22 , 2007 -

Speaker will be Dr. Joe Alvarez, ETCHPS President-Elect - new developments in detection limits.

Location is the Gondolier Restaurant in Farragut. Social period will begin at 5:30 and the pizza buffet will be served at 6:00. The presentation will begin around 6:30.

June 19, 2007 -

Speaker will be Dr. Jerry Eisele of ORAU. He will discuss the history of the ORNL Dairy Farm.

The location will be the Sagebrush Steakhouse in Oak Ridge - check back for more details.

July 2007 -

There will not be a ETCHPS meeting in July due to the National HPS meeting in Portland, Oregon.

August 30, 2007 -

The ETCHPS annual picnic will be held at Clark Center Park. Please mark your calendars and plan on attending - keep checking the website for more details. (Rain date is set for September 6.)

December 11, 2007 -

The annual vendor's meeting will be held at Rothchild's catering at Baron's Place.

Member Database

The new member online database has been up and running for several months now. All active members (those who are current with 2006 and/or 2007 dues) should have received an email alerting you that your name and email have been added to the database and you have been approved for membership. You will need to login to verify/update your information using the username listed in the email along with your old website login password. If you forgot your old password, click on the 'Forgot your password?' tab on the member database login screen and an email will be sent to you. If you cannot log-in please email Erika Bailey (baileri@aol.com).

I apologize for the repetition - however, several members still do not have an online account. If you are a member and do not have an online account - please go to the [New Member Online Application Link](#) and fill out a new application. Even though technically you are already a member, this is the only way to be added to the new online database. Once you do this you will begin receiving all newsletter and meeting notices by email.

If you are not currently an active member, you can pay your dues and become active quite easily...

Dues Information

The chapter requests that all dues be paid by March 31st of each year - please send them in immediately if you are past due.

Emails have been sent to past due members (that is if the Secretary had your email). If you are unsure if you have paid your 2007 dues please email the chapter Secretary [Erika Bailey](#).

At this time please pay dues via check.

To send in your dues via the USPS, please make your check payable to: ETCHPS, and address your envelope to:

ETCHPS
P.O. Box 7006
Oak Ridge, TN 37831-7006

Due fees are as follows:

Plenary	\$15.00
Fellow	\$15.00
Student	\$ 7.50
Member Emeritus	\$ 7.50
Life Member	No Dues

Thanks for your support.

Erika Bailey
ETCHPS Secretary