



**Trinity Section**  
**American Nuclear Society**  
P. O. Box 5367, Albuquerque, NM 87185-5367  
<http://local.ans.org/trinity/>

## DINNER MEETING ANNOUNCEMENT

### "Nuclear Criticality Accidents"

Speaker: Dr. Thomas P. McLaughlin, Los Alamos National Laboratory (Ret.)

**Abstract:** *Dr. McLaughlin will provide an overview of nuclear criticality safety and what it's all about—namely, the prevention of criticality accidents. He will then discuss in general terms the worldwide database of criticality accidents, including both research reactor accidents and those in process facility operations. He will then focus on the known 22 that fall in the latter category, with discussions on where they occurred; the political, regulatory and safety climate at the sites; consequences; lessons learned; etc. He will be prepared to discuss in depth any of the accidents that the audience requests.*

**Biography:** *Please see next page.*

**Place:** Courtyard by Marriott, Santa Fe

3347 Cerrillos Road, Santa Fe, NM (505-473-2800)

**Directions:** From Albuquerque, take I-25 North approximately 55 miles to Exit 278 (Cerrillos Road). Hotel is located 3 miles on the left-hand side of Cerrillos Road at Richards Avenue.

**Date:** September 14, 2012

**Time:** 6:00 Social Hour with Cash Bar

7:00 Buffet Dinner (Chicken Florentine and Maple & Pecan Crusted Tilapia)

7:45 Speaker

**Cost:** \$30 per person,  $\frac{1}{2}$  price for students and children

We strongly encourage you to sign up and pay for this event using our PayPal payment account. Visit the "Calendar" page of our web site (<http://local.ans.org/trinity/calendar.html>) and select the appropriate payment button. You may use your own credit card and do NOT need to have a PayPal account to make the payment.

**RSVP:** If you do not use PayPal payment, please RSVP no later than Sep 10<sup>th</sup> to:  
Markku Koskelo: [mkoskelo@aquilagroup.com](mailto:mkoskelo@aquilagroup.com) (505-338-8083) or  
CJ Solomon: [clell.solomon@gmail.com](mailto:clell.solomon@gmail.com) (505-665-5720).

*RSVP must be received by 10 Sep in order to give final numbers to the caterers. While we strongly encourage everyone to use on-line payment to sign up and prepay, an RSVP is a commitment to attend/pay at the door. We cannot afford "no shows" after the final count is given to the caterers, as the Section is partially subsidizing the cost of this event. If you cancel after 10 Sep, you will still be responsible for paying.*

***Biography:*** **Dr. Thomas P. McLaughlin** is a 40+ year professional in the nuclear field, having begun his career at Los Alamos Scientific Laboratory (now Los Alamos National Laboratory) in 1967 and having been awarded his Ph.D. in Nuclear Engineering, with a minor in Physics, from the University of Arizona in 1970. After a 2-year stint working on thermionic reactor design in West Germany from 1970 to 1972, he settled down in Los Alamos for a career involving critical experiment design and execution, theoretical and computational advanced reactor safety analysis, and nuclear criticality safety. Throughout his career he has been heavily involved in American National Standards and in the training of personnel in nuclear criticality safety. He is now partially retired and consults for the DOE and its Contractors and the NRC and its Licensees as well as maintaining active involvement in standards activities and technical meetings.

For about the first decade of his career, Dr. McLaughlin was mainly involved in critical experiments research, both experimental and theoretical, as well as computational and theoretical advanced reactor safety research. His critical experiment research focused on the Rover space-application reactors, the Kiwi and Phoebus series in particular, where he played a lead role in calculating and understanding radiation heating and cooling in various reflector and shield designs. During this same period, he worked closely with Dr. William Stratton, a LASL staff member and active member of the NRC's Advisory Committee on Reactor Safeguards for many years, in the investigation of the dynamics of hypothetical destructive accidents with fast reactor designs. During this time he also became involved in the beginnings of the design and instruction of criticality safety classes, including the design of hands-on experimental setups that are still the mainstay of today's experimentally-based classes. He taught the first, multi-day class in 1975 and roughly monthly thereafter for the next thirty years at Los Alamos.

From approximately 1980 to the present he has focused on and been involved with all aspects of nuclear criticality safety. He has provided guidance for plant operations with all fissile materials (uranium of all enrichments, plutonium, U-233, neptunium, etc.) and in all forms (solids, liquids, powders, pellets, and even gases). He has also provided criticality safety guidance to the DOE and the DoD over these decades on all stockpile nuclear weapons as well as advanced concepts. This guidance included all aspects of the transportation of fissile parts and components in compliance with DOE and DOT regulations. Dr. McLaughlin also took the initiative, whenever in the vicinity, to visit military bases where nuclear weapon accident response personnel were located and to provide focused training on aspects of nuclear weapon accident recovery operations. His guidance is also found in various military manuals on nuclear weapons safety.

Dr. McLaughlin has been active in providing criticality safety guidance to essentially all sites throughout the DOE and NRC sectors, both as a solo reviewer/consultant and as a team member. This review/consulting work began in the mid-80's and continues to today. It has included dozens of site visits throughout the US and also consulting support for Canada's Chalk River Laboratory and Australia's Nuclear Science and Technology Organisation. Over these last 25 years he has also been heavily involved in the development of consensus standards in criticality safety, both nationally and internationally. From 1993 to 2010 he chaired the ANSI/ANS Subcommittee 8 which oversees and promulgates all nuclear criticality safety standards in the US. He has also been active in the development and review of IAEA regulations on the transport of fissile materials and of the International Standards Organization consensus standards in criticality safety.

Dr. McLaughlin is a Fellow of the American Nuclear Society (ANS) and has been awarded a Technical Excellence Award from the Nuclear Criticality Safety Division of the ANS. He has also been recognized by the DOE for his Outstanding Service. He was the DOE's criticality safety expert on the 3-person team sent by the US government to Japan immediately following the Tokai-Mura criticality accident in 1999. He has presented papers at and been an invited speaker at numerous nuclear criticality meetings as well as meetings of other professional societies. He initiated contacts with his Russian counterparts in the mid-90's (after the demise of the USSR) that led to the first disclosure and eventual publication of all criticality accidents that have occurred in Russia. He is the lead author of the most recent edition of the criticality accident review document that for the first time includes full discussions of the Russian accidents as well as the 1999 Japanese accident. He is also responsible for the publication of other leading resource documents in the field.