



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

Southwest Regional Chapter
Institute of Nuclear Materials
Management
Albuquerque, NM 87111
<http://www.inmm.org/southwest/>



JOINT DINNER MEETING ANNOUNCEMENT

"Gas Centrifuge Technology: Proliferation Concerns and International Safeguards"

Speaker: Dr. Brian D. Boyer, International Safeguards Project Leader,
Nuclear Engineering and Nonproliferation Division, LANL.

Abstract: Please see next page.

Biography: Please see next page.

Place: Courtyard by Marriott, Santa Fe

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

Directions: From Albuquerque, take 1-25 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: November 7, 2014

Time: 6:00 Social Hour with Cash Bar

7:00 Buffet Dinner (stuffed chicken breast and beef tips)

7:45 Speaker

Cost: \$35 per person (by web sign-up in advance);

\$40 per person (not pre-paid, at the door);

\$15 for students and children

We strongly encourage you to sign up and pay for this event using the ANS Trinity on-line payment account. From the "Calendar" page (<http://local.ans.org/trinity/calendar.html>) select the appropriate payment button. You may use any credit card and do NOT need to have your own PayPal account.

RSVP: If you do not use on-line payment, please RSVP no later than Nov 3rd to:
Markku Koskelo: mkoskelo@aquilagroup.com (505-338-8083) or
Kimberly Klain: kclark@lanl.gov (505-667-5301)

RSVP must be received by 3 Nov 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/Chapter are partially subsidizing the cost of this event. If you cancel after 3 Nov, you will still be responsible for paying.

Abstract

Gas Centrifuge Technology: Proliferation Concerns and International Safeguards

Dr. Brian D. Boyer, Los Alamos National Laboratory

The need to enrich uranium arose in war as scientists realized that to use uranium in a nuclear weapon would need development of an enrichment technique. The Manhattan project tried centrifuges and abandoned them due to the engineering challenges. Oak Ridge tried with some success to use electromagnetic isotope separation, thermal diffusion, and gaseous diffusion. After the war, only gaseous diffusion remained. As time went on and “Atoms for Peace” came about with a civilian nuclear industry needing low-enriched uranium fuel, gaseous diffusion plants provided fuel for the Western nuclear industry for decades.

After WWII in the USSR, Third Reich P.O.W. scientists provided the intellectual spark to make centrifugation of uranium hexafluoride gas a viable means of enrichment for the military. When Gernot Zippe returned to Austria in the mid-1950's, he realized the West was way behind the USSR in gas centrifuge technology. His briefings to Europeans and Americans, especially to Prof. Jesse Beams and the University of Virginia, stoked the drive to make gas centrifuges the eminent enrichment technology starting in the 1970's with URENCO. URENCO built large gas centrifuge plants in England, the Netherlands, Germany, and now in Eunice, N.M. However, in the mid-70's a young metallurgist named A.Q. Khan managed to bring this technology to his native Pakistan. Later this technology spread from Pakistan to at least Iran, Libya, and North Korea from Khan and his associates. This talk will tell how enrichment technology developed and what we should understand about its relevance to today's headlines. The talk also shows how the International Atomic Energy Agency verifies the peaceful use of centrifuge technology.

Biography

Dr. Brian D. Boyer is an R&D Engineer in the Nuclear Engineering and Nonproliferation Division at Los Alamos National Laboratory in Los Alamos, NM. He has been employed at Los Alamos since 2006 in the field of nuclear nonproliferation, specializing in international safeguards especially in the areas of enrichment safeguards, safeguards by design, and reactor safeguards. From 2002 to 2006 he worked at Brookhaven National Laboratory as a nonproliferation and safeguards specialist who worked extensively on gas centrifuge enrichment plant safeguards issues. He worked from 1997 to 2002 at the IAEA as a Nuclear Safeguard Inspector doing inspections in Europe at various types of facilities including reactors such as TRIGA and MTR research reactors and RBMK, LWR and CANDU power reactors, reprocessing facilities, MOX fuel fabrication, and the URENCO gas centrifuge enrichment plants and as a Nuclear Safeguards Analyst in the Section for System Studies. He holds B.S., M.S., and Ph.D. degrees in Nuclear Engineering from the Pennsylvania State University.