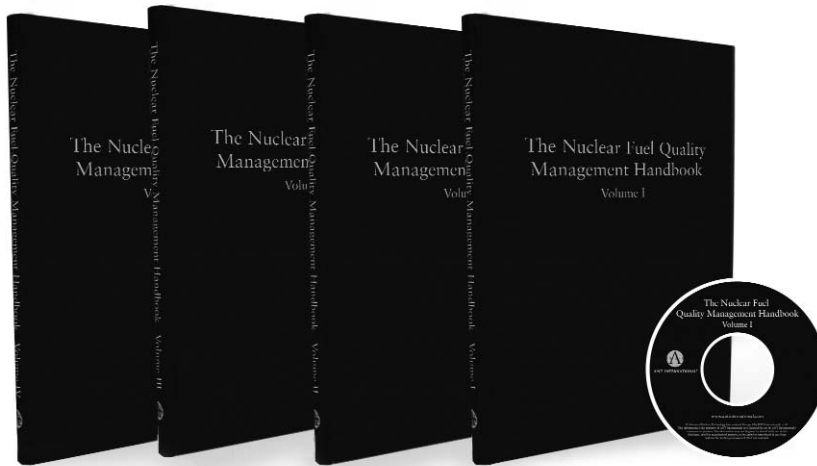


## NEW HANDBOOKS



ANT International in co-operation with  
Stochastikon GmbH publish:

## The Nuclear Fuel Quality Management Handbook

LACK OF ADEQUATE QUALITY management in processes from procurement to disposal of nuclear fuel may have dramatic economical and political consequences for the nuclear industry. To address this issue, ANT International in co-operation with Stochastikon GmbH will publish the *Nuclear Fuel Quality Management Handbook, FQMH* in four separate volumes. The objectives of the *FQMH* are to provide guidance for

- quality management by a state-of-the-art methodology of all processes from procurement to disposal of nuclear fuel.
- those needing to get an introduction to and an initial understanding of quality management in general or to update and refresh the memory of those with quality management background.

The *FQMH* will give a comprehensive overview of the techniques currently used, and will in addition provide an in-depth

introduction into the state of the art of quality management of nuclear fuel focusing on newly developed methods and strategies for effectively controlling and improving process quality. The handbook will be written and explained in such a way that those not familiar with the topic can follow the report, and grasp the appropriate information. This means that the reports could be used by the organisation in the training of the internal staff with or without additional assistance from the ANT International staff.

The groups of individuals that may benefit from the *FQMH* range from young engineers, researchers and experts to upper management. Please read more about the topics covered and the tentative publishing dates for each volume on our webpage.

[READ MORE](#)

## NETWORK CLOSE UP



**CHRIS WOOD**

*How did you get started as an engineer?*  
I studied chemistry at University College, London, and received my PhD in Physical Chemistry from Leicester University in UK in 1964. I had a post-doctoral fellowship in Radiation Chemistry at National Research Council in Ottawa, Canada, which led to my interest in nuclear power.

*Your career history?*  
I went to work for the Central Electricity Generating Board in 1968, which at the time was the operator of the nuclear power plants in England. I was in the Research Department at Berkeley Nuclear Laboratories, where I became head of the Radiation Chemistry Section. Although working mainly to control corrosion in the gas-cooled reactors, I was also involved in reducing radiation fields in water reactors when CEGB started planning to build them. There was great concern that LWR radiation exposures would be much higher than in the gas-cooled reactors, so my team developed the LOMI chemical decontamination process, and applied it at the UK's SGHWR plant. The Electric Power Research Institute (EPRI) in USA was interested in our work and actually funded part of it. As a result I spent some time in USA and joined EPRI as a Program Manager in 1982, eventually becoming Senior Technical Manager for Chemistry, Radioactive Waste and Radiation Management.

*How did you get introduced to ANT International and the LCC Program?*  
Rolf Riess told me about it originally

*Continued on next page*



## NETWORK CLOSE UP

but at the time I was still working for EPRI. Then Peter Ford contacted me and put me in touch with Peter Rudling.

*How has the field of water chemistry issues changed during your career?*

Thirty years ago, water chemistry was seen as the cause of many of the problems facing the operators of nuclear power plants – stress corrosion cracking, high radiation fields and fuel failures as examples. In fact, the need to modify water chemistry to reduce materials degradation, control crud buildup on fuel cladding and sludge buildup in steam generators gradually became apparent, up to the highest management levels. This led to increased interest in research in many countries. The resulting developments in the chemistry area, such as elevated pH in PWR primary systems, hydrogen water chemistry and noble metals in BWRs, zinc injection, amines for pH control in steam generators, and also chemical decontamination and ultrasonic fuel cleaning, have successfully mitigated many of the problems. Consequently, these advanced water chemistry options are now regarded as a proactive way of improving plant performance and addressing the challenges of power uprating and life extension.

*What do you foresee for the future in the nuclear industry and how does the LCC program fit in?*

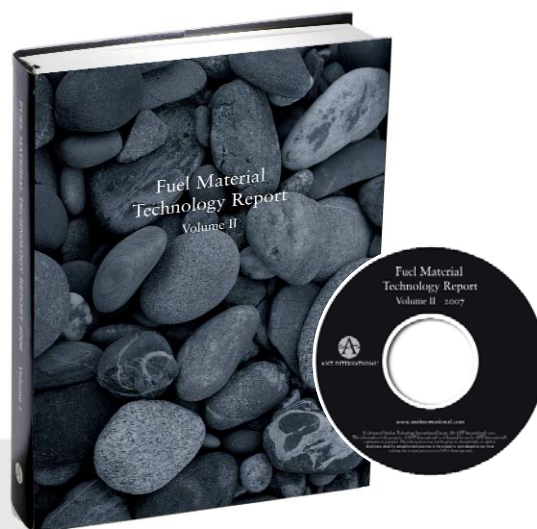
Clearly, new nuclear power plants are essential for addressing the global warming problem worldwide, and they will improve energy supply security. It is encouraging that most of the major industrial nations are now preparing to build, or are already building new water reactors which are enhancements of current plants. Looking further ahead, high temperature gas-cooled reactors and fast reactors will present new technical issues. The challenge is to ensure that the next generation of design engineers and operators benefit from the lessons of the past, and LCC has a central role in providing historical and educational papers in the chemistry and materials area.

*How do you spend your leisure time?*

A retirement club in Paulo Alto, golf, hiking and maintaining my 1960 Triumph TR3A (which drips oil like all British sports cars, but is great fun to drive in the mountains) keep me busy.

[READ MORE ABOUT THE NETWORK](#)

## FUEL MATERIAL TECHNOLOGY REPORT VOLUME II



### “A Starting Point for Every New Project”

COMMENTARY FOR ANTENNA ON FUEL MATERIAL TECHNOLOGY REPORT VOLUME II BY DR. RAUL B. REBAK, CORROSION ENGINEER, GE GLOBAL RESEARCH



THERE IS NO DOUBT that a person who is new (or not) to the field of nuclear fuel materials will be charmed when they first open the Fuel Material Technology Report Volume II. First of all, this is a handsome volume with an intriguing cover and highly appealing graphics, colors, charts and tables. The layout and organization of each page is so appealing that it becomes easy to be immersed into its content. This volume definitely does not have the cryptic or claustrophobic appearance of many other textbooks.

The Fuel Material Technology Report Volume II should be a starting point for every new research project in this field. Reading the organized chapters in the book we become aware of the current state of knowledge in this subject. This volume says what we know and what (and sometimes why)

we do not know, all conveyed almost colloquially by experts in the field. The volume has a well balanced content from the most basic concepts to the most advanced findings, all in the matter of a few sections in each chapter. One of the most important assets of the book is its sense of comprehensiveness and authority, since it was written by people that were dealing with everyday issues of fuel material performance for decades.

This volume was particularly useful to me since, although I am an experienced corrosion engineer, I was completely new to the fuel materials performance field. My supervisor at GE Global Research purchased the book before my arrival to the company and this volume is now an indispensable reference resource for my work, especially at the time of the interpretation of laboratory data or the preparation of technical reports.

[READ MORE](#)

*We look forward to meet you there!*

NPC 08 in Berlin, Germany

International Conference on Water Chemistry of Nuclear Reactor Systems  
September 15th – 18th 2008

WRFP 2008 in Seoul, Korea

Water Reactor Fuel Performance Meeting October 19th – October 23rd 2008

*ANT International will be present with representatives and a booth.*

COMING UP

# One-Day-LCC Seminar in Philippsburg, Germany

ON APRIL 1ST 2008 ANT International held a one-day-seminar at the premises of the Philippsburg Nuclear Power Station (KKP). The audience consisted of KKP staff and 2 visitors from the Nuclear Power Plant Isar. The content of the seminar or training course was jointly selected by KKP and ANT International based on the LCC3 Seminar which was held earlier this year in Malta. The lectures were the highly experienced Dr Rolf Riess and Dr Wilfried Rühle.

The objective of the One-Day-LCC Seminar was to provide background information related to current discussions on Water Chemistry issues like:

- The Increase of pH values on the Primary Side of PWRs equipped with Inconel 690 TT tubed steam generators

- The elevation of the hydrogen concentration on the PWR primary side in order to mitigate stress corrosion cracking of Ni based Alloys,
- Radiation field issues, and
- Formation of crud and the options to mitigate
- Steam generator secondary side problems.

One day seminars on site are becoming more and more appreciated by LCC Members. For further information please contact

Dr Rolf Riess at [rolf.riess@np-consulting.de](mailto:rolf.riess@np-consulting.de) or  
Peter Rudling at [peter.rudling@antinternational.com](mailto:peter.rudling@antinternational.com)

[READ MORE](#)

## LCC4 Seminars in both the US and in Europe 2009

*Block the dates in your calendar!*

In the **US, Clearwater Beach, Florida, February 9-10<sup>th</sup>** • In **Dresden, Germany, March 19-20<sup>th</sup>**

COMING UP

### TAILORED SEMINAR ON SITE

## Highly Valued Seminar in Madrid by Dr Peter Ford

ON APRIL 29TH Peter Ford gave a one day seminar on “*Degradation of Structural Materials in Water-Cooled Nuclear Reactors*” to staff members from IBERDROLA, IBERDROLA INGENIERIA and NUCLENOR, involved in material issues at primarily Cofrentes and Garoña NPPs but also at the other Spanish NPPs. The seminar was mostly based on the Degradation Report of the same title authored by Dr. Ford and published by ANT International.

The audience ranged from young staff to senior utility management who

- was comparatively new to the subject and need a “quick introduction” or
- searched for a broader and deeper knowledge of the material degradation beyond what they might face on a daily basis.

Dr. Ford gave an excellent seminar which included a lot of interaction with

the audience. His main messages were: 1) a proactive management of material issues is possible based on the knowledge of the controlling factors for each relevant degradation mode and 2) the industry is doing a huge effort in identifying the existing knowledge gaps to be able to predict the degradation and, if possible, mitigate it.

Despite the necessarily short seminar the audience received an overview of the topics covered in the report and may later consult the report for more in depth information.



JUAN DE D. SÁNCHEZ ZAPATA  
Responsible for Life Management at Cofrentes  
NPP Nuclear Technical Department  
Iberdrola Generación S.A.U

[READ MORE](#)



*We wish you a pleasant summer!*