



## DEPARTMENTS

### EDITORIAL

ANS Technical Journals	10
Backscatter	68
Calendar	6
Calls for Papers	8
Late News	17
Nuclear Notes	4
People	64
Recently Published	10

### ADVERTISING

Direct Answer	54
Index to Advertisers	53
Employment Ads Begin	63

### Coming up ...

**March**—18th Annual Reference Issue

**April**—Special Section on Outage Management

### Members: View Nuclear News online!

At <[www.ans.org](http://www.ans.org)>, click on Member Center at the upper right of your screen. Log in with your email address and password (if you haven't already, you can create a password at <[account.ans.org](http://account.ans.org)>). Click on the heading for the current issue of *Nuclear News*.

## SPECIAL SECTION: FUEL

29

Accident-tolerant fuel: A range of viewpoints	30
Developing enhanced accident-tolerant fuel	
BY MIKE MORRELL	30
Coated molybdenum alloy cladding to enhance accident tolerance of LWR fuel	
BY BO CHENG	31
Technical, economic, and regulatory hurdles for accident-tolerant fuel	
BY MICHELLE BALES AND PAUL CLIFFORD	31
Coordinated effort needed in accident-tolerant fuel development	
BY KRISTOPHER CUMMINGS	32
The need for global collaboration on material characterization and testing	
BY ANDREW SOWDER	32
Update on the DOE's ATF development program	
BY SHANNON M. BRAGG-SITTON AND W. JON CARMACK	34
U.S. uranium mining: An industry in transition	
BY SUSAN GALLIER	38

## POWER

12

FitzPatrick to close by 2017; Clinton gets a reprieve. Dominion to apply for second license renewal for Surry. NRC proposes rule to set variable annual fee schedule for small modular reactors. NRC determines that only 20 sites need seismic probabilistic risk assessments. Commissioners overrule admission of fracture contention on Palisades. Revised Diablo Canyon renewal contention denied, hearing process terminated. Draft EIS issued for Fermi-2 license renewal; LaSalle reviews accelerated. Renaissance Watch: An update on developments that may lead to new power reactors. Final EIS for Turkey Point-6 and -7 delayed by eight months.

## SECURITY

22

DOE awards funding to two university consortia for R&D on power grid protection. NRC adopts new cybersecurity event notification requirements. DOE inspector general says special nuclear material mismanaged at Y-12. NRC delays rulemaking on security requirements for spent fuel and high-level waste storage facilities for five years.

**On the cover:** Idaho National Laboratory's Advanced Test Reactor (ATR) has a unique serpentine fuel arrangement (top photo) that allows simultaneous testing of materials under varied conditions. The blue glow is due to Cherenkov radiation, emitted when a charged particle (such as an electron) passes through the cooling water at a speed faster than the speed of light in the water. Pictured across the bottom, from left to right: Sintered full-sized test pellets for ATR irradiations, along with two thermophysical samples (at front) for property measurements; individual fibers of silicon carbide woven together to make a new type of protective fuel cladding, intended to increase the coping time for a light-water reactor under severe accident conditions; and gas bubbles at the boundaries between individual crystals of material in a fabricated bit of nuclear fuel surrogate, to help researchers understand the impact of gas bubbles (or other characteristics) on heat transfer. (All photos: INL. Bottom center: Image captured by Tammy Trowbridge; bottom right: Image captured by Yuedong Wu.) To read more on issues related to fuel, see the Special Section on Fuel that begins on page 29.



## POLICY & LEGISLATION

26

Congress enacts two-year budget deal; December shutdown still possible. House passes bill to reauthorize Export-Import Bank.

## INTERNATIONAL

45

China National Nuclear Corporation may take a stake in Areva. Fuel loading begun at South Korea's Shin-Kori-3, world's first Generation III+ reactor. Japan's Ikata-3 gets local approvals for restart. Funding arranged for Jordan's planned research reactor. Land acquired for Argentina's fifth reactor. ABWR reaches final step in United Kingdom's design approval process. U.K. regulator gets new chief executive.

## WASTE MANAGEMENT

49

Central Huron, Ontario, added to list of possible sites for Canadian HLW repository. DOE cancels spent fuel shipment to INL because of Integrated Waste Treatment Unit construction delay. Storage of high-burnup spent fuel to be tested at North Anna. Revised WIPP safety analysis to be submitted in December. Milestone met in Sellafield cleanup.

## INDUSTRY

56

Westinghouse buys CB&I's nuclear arm; Fluor to manage AP1000 construction. Mitsubishi Heavy Industries to consider taking a minority share in Areva; other business developments. Westinghouse gets Sizewell B pact; other contracts. Defect found related to Vogtle-3 CA01 module; other 10 CFR Part 21 reports.

## RESEARCH

60

Westinghouse pitches lead-cooled fast reactor to DOE, small modular reactor to United Kingdom.

## ISOTOPES & RADIATION

61

ACMUI advises NRC to continue using linear-no-threshold model, for now. NRC inspector general has issues with agency's oversight of medical uses of radioactive isotopes. NNSA awards additional funding for molybdenum-99 production efforts.

## STANDARDS & DOCUMENTATION

63

NRC issues one final interim staff guidance and two drafts. Comments requested on ANSI/ANS-2.23 revision.

## Editorial Staff

### EDITOR & PUBLISHER

Betsy Tompkins

### SENIOR EDITOR

E. Michael Blake

### INTERNATIONAL EDITOR

Dick Kovan

### SENIOR ASSOCIATE EDITOR

Phyllis Ruzicka

### PRODUCTION EDITOR

Patricia A. Matas

### ASSOCIATE EDITORS

Michael McQueen

### DESKTOP EDITOR

Chris Salvato

Tim Gregoire

### CONTRIBUTING COLUMNISTS

Susan Gallier

Linda C. Byus

Bill Minkler

## Advertising & Circulation Staff

### SALES MANAGER

Jeff Mosses

### ADVERTISING/PRODUCTION

### ASSISTANT MANAGER

Erica McGowan

### ADVERTISING SALES ASSISTANT

Jessica Vazquez

## Editorial Advisory Committee

Jess C. Gehin, John C. Gilligan,  
and Kevan D. Weaver

## ANS Officers

### PRESIDENT

Eugene S. Grecheck

### VICE PRESIDENT/ PRESIDENT-ELECT

Andrew C. Klein

### TREASURER

Steven A. Arndt

### CHAIRMAN, ANS PUBLICATIONS STEERING COMMITTEE

Martin L. Grossbeck

## Administrative

### EXECUTIVE DIRECTOR

Robert C. Fine

## ANS Headquarters

### GENERAL NUMBER

708/352-6611

Fax 708/352-0499

www.ans.org

### NUCLEAR NEWS EDITORIAL

708/579-8245

Fax 708/579-8204

nucnews@ans.org

### NUCLEAR NEWS ADVERTISING

708/579-8226

800/NUC-NEWS

Fax 708/352-6464

www.ans.org/advertising

advertising@ans.org

### INTERNATIONAL EDITOR

(DICK KOVAN)

902/455-3575

dkovan@ans.org

*Nuclear News* (ISSN: 0029-5574), Volume 58, Number 13. Published monthly (except during the month of April when issued twice monthly) by the American Nuclear Society, Incorporated, with business, executive, and editorial offices at 555 N. Kensington Ave., La Grange Park, Illinois 60526; telephone 708/352-6611. Subscription rate for 2015 is \$580, which includes complimentary electronic access, 2008 to current issue; for subscriptions outside North America, add \$70 for shipping and handling. Alternatively, subscription rate is \$510 for Electronic Access Only, 2008 to current issue. Single copy price (regular monthly issues) is \$45; add \$12 for postage and handling if being shipped to address outside North America. Single copy price for annual mid-April Buyers Guide is \$110; add \$15 for postage and handling if being shipped to address outside North America. Individual ANS members receive *Nuclear News* as part of membership. Replacement copies may be obtained at the single copy price, as long as copies are available. Inquiries about the distribution and delivery of *Nuclear News* and requests for changes of address should be directed to the American Nuclear Society. Allow six weeks for a change to become effective. POSTMASTER: Send change of address orders to *Nuclear News*, American Nuclear Society, 555 N. Kensington Ave., La Grange Park, Illinois 60526, or --nucnews@ans.org--.

*Nuclear News* is printed in New Richmond, Wis. 54017, by St. Croix Press, Inc. Nonprofit periodicals postage paid at La Grange, Illinois, and at additional mailing offices. Copyright © 2015 by the American Nuclear Society, Inc. Trademark registered in USA and Canada.

Opinions expressed in this publication by the authors are their own and do not necessarily reflect the opinions of the editors, the American Nuclear Society, or the organizations with which the authors are affiliated, nor should publication of author viewpoints or identification of materials or products be construed as endorsement by this publication or by the Society.

Texts of most *Nuclear News* articles are available on the LexisNexis database, from Mead Data Corporation.

