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THE CUTTING EDGE

Chuck Hansen, Editor

Number 1, December 1996

Welcome to the *Cutting Edge*, a periodic newsletter and "intelligence report" for current and prospective customers of *The Swords of Armageddon*. Our intention is to keep you advised of recent and little-known publications, document collections, research sources, and films concerning Cold War topics, primarily nuclear weapons and weapons testing-related subjects.

RECENT PUBLICATIONS OF INTEREST

A good source for several of the following books is an on-line Internet bookstore named Amazon.com at <http://www.amazon.com>. Their service is prompt and reliable, and they offer books at 10 to 30 percent discounts. You can order on-line; they accept only credit cards, whose numbers and expiration dates you can either provide on-line or via telephone. A lengthy article about Amazon.com appeared in the May 16, 1996 issue of *The Wall Street Journal*; other articles have appeared in *FORTUNE*, December 9, 1996; *Publisher's Weekly*, November 4, 1996; *Newsweek*, June 10, 1996; and *Business Week*, September 23, 1996.

Allison, Graham T., et. al. 1996. ***Avoiding Nuclear Anarchy: Containing the Threat of Loose Russian Nuclear Weapons and Fissile Material***. The MIT Press, Cambridge, MA. 295 p. ISBN 0-262-51088-X. Paper.

Produced by members of the Center for Science and International Affairs at Harvard University, this is a study of problems related to the downfall of the Soviet Union and the resultant loss of weapons security in Russia and her new satellite republics.

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Carlisle, Rodney P. and Joan M. Zenzen. 1996. ***Supplying the Nuclear Arsenal: American Production Reactors, 1952-1992***. Johns Hopkins University Press, Baltimore, MD. 275 p. ISBN 0-8018-5207-2.

This is primarily a history of the Atomic Energy Commission weapons materials reactors at Hanford and Savannah River. The authors are employees of History Associates, Inc. in Rockville, Maryland, which has written many classified histories for the U.S. Department of Energy. The book ignores enriched uranium production, concentrating mainly on plutonium and secondarily on tritium production.

Cochran, Dr. Thomas B., et. al. 1995. ***Making the Russian Bomb: From Stalin to Yeltsin***. Westview Press, Boulder, Colorado. 318 p. ISBN 0-8133-2382-2.

Written in part by some of the authors of the noted Natural Resources Defense Council *Nuclear Weapons Databook* series, this volume provides a short history of the Soviet nuclear weapons program, a description of the materials production complex, and some of the environmental problems faced by the Russians at the end of the Cold War.

Coolidge, Matthew. 1996. ***The Nevada Test Site: A Guide to America's Nuclear Proving Ground***. The Center for Land Use Interpretation, 9331 Venice Boulevard, Culver City, CA 90232. ISBN 0-9650962-3.

This is a softbound 55-page illustrated guidebook to the Nevada Test Site, including two fold-out maps. Contents include major sites of interest, with photos of selected facilities. If you're going to visit the NTS, you must take a copy of this book with you.

Delgado, James P. 1996. ***Ghost Fleet: The Sunken Ships of Bikini Atoll***. University of Hawaii Press, Honolulu, Oahu, Hawaii. 232 p. ISBN 0-8248-1864-4 (paper), 0-8248-1868-7 (cloth).

This is a well-illustrated underwater archeological study of the sunken shipwrecks created by Operation CROSSROADS in 1946. Delgado briefly describes the preparations, conduct, and aftermath of CROSSROADS, and depicts and diagrams the submerged remnants of the test. Of interest is the fact that some of the ships sunk by the airburst Able shot and which were further blasted into the lagoon bottom by the underwater Baker shot are now being revealed 50 years later as currents scour and deepen the lagoon. The current definitive CROSSROADS history is Jonathan Weisgall's ***Operation CROSSROADS: The Atomic Tests at Bikini Atoll*** (Naval Institute Press, Annapolis, Maryland, 1994, ISBN 1-55750-919-0). Weisgall, an attorney, has represented the citizens of

the Marshall Islands during their many years of litigation against the U.S. government.

Francis, Sybil. 1996. **Warhead Politics: Livermore and the Competitive System of Nuclear Weapon Design**. Massachusetts Institute of Technology, Cambridge, Massachusetts. Paper.

This is a long-awaited doctoral thesis which describes the programs and products of the Livermore nuclear weapons laboratory between 1950 and the present (post-Cold War activities are not examined). Until a better publication comes along, this is the "definitive" history of the California nuclear weapons lab, and we recommend it highly.

Ms. Francis was required by laboratory security officials to resort to code names for well-known and public weapons design concepts, including "Basilisk" for uranium deuteride implosion, and "Manticore" for linear implosion. Another code name, "L-3," identifies a still-classified late-1950s Livermore design innovation.

The thesis is available from MIT Microfilm Reproduction Laboratory, Bldg. 14-0551, MIT, Cambridge, MA 02139, phone 1-617-253-5668.

Gerber, Michele Stenehjem. 1992. **On the Home Front: The Cold War Legacy of the Hanford Nuclear Site**. University of Nebraska Press, Lincoln, Nebraska. 312 p. ISBN 0-8032-2145-2.

This is a history of the Hanford site between 1942 and 1992, concentrating primarily on the releases, intentional and inadvertent, of radioactive isotopes into the surrounding countryside.

Gibson, James N. 1996. **Nuclear Weapons of the United States: An Illustrated History**. Schiffer Publishing Ltd., Atglen, Pennsylvania. 236 p. ISBN 0-7643-0063-6.

Dealing primarily with delivery systems, this is an updated edition of Mr. Gibson's 1989 **The History of the U.S. Nuclear Arsenal** (Brompton Books Corp., Greenwich, Connecticut, 192 p., ISBN 0-86124-564-4). The newer volume contains many more excellent color photos than the earlier edition, but repeats most of the errors concerning warhead deployments and yields. If you're interested in delivery systems, this is a good reference.

Gibson, James N. 1996. **The NAVAHO Missile Project**. Schiffer Publishing Ltd., Atglen, Pennsylvania. 96 p. ISBN 0-7643-0048-2.

The story of the canceled long-range cruise missile which became a testbed for many later successful U.S. rocket propulsion and guidance systems. Contains many excellent photos and drawings.

Gusterson, Hugh. 1996. **Nuclear Rites: A Weapons Laboratory at the End of the Cold War**. University of California Press, Berkeley, California. 351 p. ISBN 0-520-08147-1.

Originally entitled *Testing Times*, this volume joins a growing list of recent college doctoral theses turned into books, including William Borgiasz' **The Strategic Air Command: Evolution and Consolidation of Nuclear Forces, 1945-1955** (Praeger Books, Westport, Connecticut, 1996, ISBN 0-275-94861-7), Peter Douglas Feaver's **Guarding the Guardians: Civilian Control of Nuclear Weapons in the United States** (Cornell University Press, Ithaca, New York, 1992, ISBN 0-8014-2675-8), and Matthew Evangelista's **Innovation and the Arms Race: How the United States and the Soviet Union Develop New Military Technologies** (Cornell University Press, Ithaca, New York, 1988, ISBN 0-8014-2165-9).

As he did in his 1992 anthropological doctoral thesis, Gusterson examines the denizens of the Lawrence Livermore National Laboratory as a tribal culture with unique rites and language. He also explores the effects of the San Francisco Bay area anti-nuclear movement that focused its attention on the lab during the 1980s. *Nuclear Rites* is to some extent a sequel and supplement to the Sybil Francis dissertation cited above.

Institute for Energy and Environmental Research. May 1996. **The Nuclear Safety Smokescreen; Warhead Safety and Reliability and the Science-Based Stockpile Stewardship Program**. IEER, 6935 Laurel Avenue, Takoma Park, Maryland 20912, phone 1-301-270-5500, fax 1-301-270-3029, e-mail: ieer@igc.apc.org.

Written by Hisham Zerriffi and Arjun Makhijani, this is a 50-page study which, as described in a press release dated May 22, 1996, claims that the DOE's science-based stockpile stewardship program is merely a cover for further weapons development and testing. An article based on this report appeared in the September/October 1996 issue of *The Bulletin of the Atomic Scientists*.

Johnson, Major A. 1993. **Progress in Defense and Space: A History of the Aerospace Group of the General Electric Company**. 656 p.

This is a large-format (8.5 x 11 inch) profusely-illustrated privately-published hardbound history of the post-World War II activities of GE's military products division; it begins where an earlier GE history, **Men and Volts at War: The Story of General Electric in World War II** (John Anderson Miller, McGraw Hill Book Co., New York, 1947) ends and follows GE's aerospace activities through the 1990s. Of particular interest are histories of GE's missile re-entry vehicle work and a lengthy chapter on the Pinnellas, Florida nuclear weapons neutron generator facility.

Available for only \$25 (!) from the author, Major A. Johnson, 14 Pray St., Rochester, New Hampshire 03868-5903, phone 1-603-335-6390. A fantastic bargain.

Koch, Scott A. (ed.) 1993. **CIA Cold War Records: Selected Estimates on the Soviet Union, 1950-1959**. CIA History Staff, Center for the Study of Intelligence, Central Intelligence Agency, Washington, D.C. 297 p. Paper.

This is one of a series of recent titles issued by the CIA; this volume is a compilation of declassified CIA estimates concerning Soviet science and technology, foreign policy, military capabilities, and nuclear arms control and disarmament policies during the 1950s.

Leuders, Bill. 1996. **An Enemy of the State: The Life of Erwin Knoll**. Common Courage Press, Monroe, Maine. 297 p. ISBN 1-56751-098-1. Paper.

A biography of the late Erwin Knoll, editor of *The Progressive* between 1973 and 1994. An excellent description of the landmark First Amendment battle over Howard Morland's 1979 article occupies about a third of this book; it is doubtful that the book would have been written had the case not catapulted Knoll into the limelight. Leuders details the struggle between Morland and Knoll for control of the "spin" on the case.

Another good recent account of the *Progressive* case is Ellen Alderman and Caroline Kennedy's **In Our Defense: The Bill of Rights in Action** (William Morrow & Co., New York, 1991, 430 p., ISBN 0-688-07801-X). The Leuders book contains a much more complete account of Chuck Hansen's activities during the case.

Moody, Walton S. 1996. **Building a Strategic Air Force**. Air Force History and Museums Program. 515 p. Paper.

Dr. Moody has written a thorough and academic account, based on both classified and declassified documents, of the origins of the U.S. Air Force's Strategic Air Command between 1945 and 1953. While there is not much in this book about nuclear weapons development per se, it is a good description of the fight for an independent postwar air force and the teething problems of SAC. Available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20408.

Ruffner, Kevin C. (ed.) 1995. **CIA Cold War Records: CORONA - America's First Satellite Program**. CIA History Staff, Center for the Study of Intelligence, Central Intelligence Agency, Washington, D.C. 360 p. Paper.

Another recent CIA title, this volume describes the CORONA spy satellite program and its targets between 1959 and 1972, including reports, memoranda, and photographs.

Sanger, S. L. 1995. ***Working on the Bomb: An Oral History of WW II Hanford***. Continuing Education Press, Portland State University, Portland, Oregon. 264 p. ISBN 0-87678-115-6.

Yet another Hanford history, this softbound volume is a compilation of interviews of former Hanford workers, ranging from scientists to construction workers, which concentrates mainly on wartime activities. Ms. Sanger is also the author of an earlier Hanford history, ***Hanford and the Bomb: An Oral History of World War II*** (Living History Press, Seattle, Washington, 1989, ISBN 0-9624867-0-1).

Shelton, Dr. Frank H. 1995. ***Reflections on the Big Red Bombs***. Shelton Enterprises Inc., 1327 Culebra Avenue, Colorado Springs, Colorado 80903, phone 1-719-633-2508. 77 p. ISBN 0-1-881816-17-6.

This privately-published volume, concerned mainly with the history of Soviet nuclear weapons development, is also an update and supplement to Dr. Shelton's 830-page 1988 book, ***Reflections of a Nuclear Weaponeer***. Although the new title contains much of the declassified information released by the U.S. Department of Energy in 1993 and 1994, ***Big Red Bombs***, like ***Weaponeer***, meets current DOE declassification criteria and as a result, is sometimes lacking in details. During the 1950s, Dr. Shelton was a weapons effects scientist for Sandia Laboratories and the Armed Forces Special Weapons Project in Albuquerque, New Mexico.

Stein, R. Conrad. 1993. ***The Manhattan Project***. Children's Press, Chicago, Illinois. 32 p. ISBN 0-516-06670-6.

One of the *Cornerstones of Freedom* volumes from Children's Press, this is one of the very few children's and young adults' books about the early days of the U.S. nuclear weapons program to appear since the publication of ***The History of the Atomic Bomb*** (Michael Blow, American Heritage Publishing Co., Inc., New York, 1968).

Stumpf, David K. 1996. ***REGULUS: The Forgotten Weapon***. Turner Publishing Company, Paducah, Kentucky. 191 p. ISBN 96-60266.

A comprehensive well-illustrated technical history of the development and deployment of the Chance Vought ***REGULUS*** missiles, containing many previously unpublished photos and drawings. Highly recommended.

Warner, Michael (ed.) 1994. ***CIA Cold War Records: The CIA under Harry Truman***. CIA History Staff, Center for the Study of

Intelligence, Central Intelligence Agency, Washington, D.C. 473 p.

Another title in the recent CIA history series, this paperbound volume comprises a collection of documents written between 1945 and 1952 concerning the establishment of the CIA and many of its early postwar areas of study and surveillance.

White, Ken. 1992. **World in Peril: The Origin, Mission, and Scientific Findings of the 46th/72nd Reconnaissance Squadron**. K. W. White & Associates, P. O. Box 1446, Elkhart, Indiana 46515, phone 1-219-293-1717. ISBN 1-9628916-8-1.

This privately-published volume describes an early USAF effort, Project Nanook, to quantify the Soviet threat in the Arctic, and to establish modern means of transpolar navigation in preparation for strategic targeting of Soviet sites. Based on crew interviews and declassified documents, this hardbound book is well-written and lavishly illustrated.

Winn, Humphrey. 1994. **The RAF Strategic Nuclear Deterrent Forces: Their Origins, Roles and Deployments, 1946-1969, A Documentary History**. His Majesty's Stationery Office, London, England. 653 p. ISBN 0-11-772778-4.

Originally published as a classified study in England, this detailed, footnoted, and well-illustrated book is the British counterpart to the Office of Air Force History's **A History of the Air Force Atomic Energy Program, 1943-1953**. The Winn book describes the development of nuclear bombs, warheads, and their associated delivery vehicles. Available in the U.S. from Bernan Unipubs in Lanham, Maryland, phone 1-800-274-4888 or 1-301-459-7666. Bernan is the U.S. sales agent for HMSO.

Ziegler, Charles A. and David Jacobson. 1996. **Spying without Spies: Origins of America's Secret Nuclear Surveillance System**. Praeger, Westport, Connecticut. 253 p. ISBN 0-275-95049-2.

Based on recently declassified documents found in the National Archives, this is a comprehensive history of the early U.S. atmospheric nuclear test detection system established during the late 1940s and which detected the first Soviet nuclear tests. Highly recommended.

RECENT ARTICLES OF INTEREST

A milestone historical conference was held in Russia last May, and some papers from that meeting appeared this fall; they provide the most complete description to date of the early Soviet hydrogen bomb program. The November-December 1996 issue of **The Bulletin of the Atomic Scientists** includes a short article by three Soviet scientists, and the November 1996 issue of **Physics**

Today contains a half-dozen more articles, lengthier and more technical than the *Bulletin* article. One of the latter articles includes the most comprehensive description ever published of the design of the U.S. "classical Super;" the article is based partially on stolen wartime Los Alamos documents and is far more detailed than any description of the "classical Super" ever released in the U.S. An unedited version of this article is available on the World Wide Web at <http://www.aip.org/pt/articles/96/110413.html>.

On October 27, 1996, the **Washington Post** revealed that within a year after the collapse of the Soviet Union, a group of Russia's top atomic weapons scientists agreed to write and sell to the United States Defense Nuclear Agency (now the Defense Special Weapons Agency) a massive, secret study of the history of Soviet nuclear weapons testing, providing first-hand information about Cold War events stretching over more than four decades, according to documents and interviews with key Russian participants. This study -- a detailed 17-chapter, illustrated 2,000-page history of 715 Soviet nuclear tests over 41 years -- is unprecedented and appears to have given the United States valuable insights into Soviet military and scientific procedures.

An annex entitled "USSR Nuclear Weapons Tests and Peaceful Nuclear Explosions, 1949 through 1990," listing all 715 Soviet nuclear tests, and providing such details as their purpose and yield, was made public by the Russians this summer and a 10-page contract outline of the study was obtained by the Natural Resources Defense Council. Some chapters in the secret history reportedly will be published openly, after sensitive material is taken out. The entire study, published by the Ministry of the Russian Federation for Atomic Energy, is currently being withheld from further circulation in the U.S., ostensibly for nonproliferation reasons.

RECENT VIDEOS OF INTEREST

Nagasaki Journey: This is a 27-minute color and black-and-white video produced by filmmakers Judy Irving and Chris Beaver, who produced the award-winning film **Dark Circle** which dealt with the inhabitants of Rocky Flats, Colorado.

Nagasaki Journey is the story of three persons associated with the second atomic bombing: a U.S. Marine who entered the city after the attack; a woman whose son was killed; and a young man who was horribly burned and who now campaigns against nuclear war. The video, and a photo book by the same name, are supplements to a touring show of photos of the city after the attack.

The video is available from The Video Project, 5332 College Avenue, Ste. 101, Oakland, California 94618, phone 1-800-475-2638

or 1-510-655-9050. The paperbound book, ISBN 0-87654-360-3, is available from Pomegranate Artbooks, Box 6999, Rohnert Park, California 94927, or Pomegranate Europe Ltd., Fullbridge House, Fullbridge, Maldon, Essex CM9 7LE England.

Trinity & Beyond: The Atomic Bomb Movie: A new 95-minute black-and-white and color film from VCE Inc., in Sylmar, CA, phone 1-818-367-9187 or 1-800-242-9627. For \$24.95 you get an outstanding film on postwar U.S. nuclear testing, from SANDSTONE to DOMINIC and the first Chinese test. Some of the footage is breathtaking; a mechanism purported to be the Operation GREENHOUSE George shot device is shown to be large torus (!). Another segment of film shows the interior of one of the submerged "Squaws" during

Operation WIGWAM; it looks like the sinking submarine sequence at the beginning of *The Abyss*, the recent Hollywood movie. Narrated by William Shatner, this video is an excellent visual supplement to *The Swords of Armageddon* CD-ROM.

FORTHCOMING PUBLICATIONS & DOCUMENT COLLECTIONS

Babcock, Elizabeth. **Magnificent Mavericks.** Naval History Division, Naval Historical Office, Washington, D.C. 1997 or later (presently undergoing classification review).

This is the third volume in a series of histories of the China Lake Naval Ordnance/Naval Weapons Test Station; it covers the period of 1948 to 1958, and includes brief descriptions of China Lake's work on nuclear ordnance. Hardbound editions of the first two volumes, **Sailors, Scientists, and Rockets** (Albert B. Christman, Naval History Division, Washington, D.C., 1971) and **The Grand Experiment at Inyokern** (J. D. Gerrard-Gough and Albert B. Christman, Naval History Division, Washington, D.C., 1978) are long out of print; however, they were reprinted in softcover in 1992 and are available from the China Lake Naval Air Weapons Center; address inquiries and orders to Commander (Code 474500D), Publications Distribution Office, NAWCWPNS, 1 Administration Circle, China Lake, CA 93555-6001. The China Lake Naval Air Weapons Center Web URL is <http://peewee.chinalake.navy.mil/clmf>; publications ordering information is available there.

Day, Dwayne Allen and John Logsdon and Brian Latell. **Eye in the Sky: Spy Satellites and American Intelligence-Gathering during the Cold War.** Smithsonian Institution Press. Fall 1997.

Described as "the most comprehensive book you will find on the early American satellite reconnaissance system," including more than 100 illustrations of equipment and personnel, and chapters on the emergence of the idea of strategic reconnaissance, the establishment of the legal right of overflight, the development of CORONA (the first U.S. "spy" satellite), the organizational

history of the National Reconnaissance Office, mapping from space, and many other topics.

Drew, Christopher. ***Blind Man's Bluff***. Simon & Schuster, New York. 1997.

Chris Drew is a reporter for the *New York Times*; this book describes Cold War submarine operations of both the U.S. and Soviet navies. It will presumably include accounts of Projects IVY BELLS and JENNIFER, as well as the exploits of the *USS PARCHE* and the *USS HALIBUT*, U.S. Navy subs which participated in many covert intelligence-gathering exploits. Chris has drawn on *Swords* for a description of Soviet submarine surveillance of the AEC's Pacific Proving grounds during Operations SANDSTONE, GREENHOUSE, and IVY.

Goldberg, Stanley. ***Fighting to Build the Bomb: The Private Wars of Leslie Groves***. Steerforth Press. No publication date.

The publication of this book has been delayed by the unexpected and untimely death of Stan Goldberg last October. Tom Powers of Steerforth Press is currently seeking an author to complete the work while researchers organize Stan's notes, source papers, and manuscript.

Habermehl, Mike. ***B-47 history***. Midland Counties Publications, England.

Mike has been working for several years on a comprehensive history of the Boeing B-47 *Stratojet*, the famous USAF medium bomber. No publication date for this volume has yet been scheduled.

Jacobsen, Meyers, et. al. ***B-36, The Big Stick: The Story of the U.S. Air Force's First Intercontinental Bomber***. Schiffer Publishing, Ltd., Atglen, Pennsylvania. Fall 1997.

This is a new "definitive" B-36 history; Chuck Hansen is the author of the chapters concerning the bomber's defensive and offensive weaponry. Other chapters describe the development, deployment, operation, and retirement of this massive and unique aircraft.

National Security Archive. The National Security Archive is an independent private research institute located in the Gelman Library, George Washington University, 2130 H St. NW, Washington, D.C. 20037, phone 1-202-994-7000. The NSA Web page is at <http://www.seas.wgu.edu/nsarchive/nsa/index.html>. The NSA is preparing for publication in 1997 its collection of 1,400 nuclear history documents; these will be published on microfiche and sold for \$4,200 by Chadwyck-Healy Inc. of Alexandria, Virginia, phone 1-800-752-0515.

Sandia National Laboratories. In January 1997, Sandia is scheduled to publish a short informal history of the lab and its predecessor organizations. Contact Myra O'Canna, 1-505-844-6315, for further information and a brochure about the Sandia historical program.

In the meantime, work continues at Sandia on a second volume of the lab's definitive technical history; the first volume, **Sandia National Laboratories: The Postwar Decade** (Necah Stuart Furman, University of New Mexico Press, Albuquerque, New Mexico, 1990) chronicled the period between 1945 and 1955; the second volume will cover the next 20 years. No publication date has yet been scheduled for this book and it will probably not be available for several years. Necah Furman had to jump through many hoops to get the first volume cleared for publication in 1990.

Teller autobiography. Dr. Edward Teller has been working for several years (and through several co-authors) on his autobiography, which is scheduled for publication by Plenum Publishing Corporation in New York. No publication date has been scheduled; by the summer of 1993, Dr. Teller had written of his life and career up to 1956, and the Department of Energy had reviewed and cleared only the wartime portion of the memoir. What resemblance to reality the book may finally bear remains to be seen: it is unlikely that an objective biography of Teller will be written while he is still alive.

America's Shield: the Story of SAC and Its People. Turner Publishing Company, Paducah, Kentucky. 1997.

Turner Publishing is the world's largest publisher of military veterans association histories, having published more than 350 titles for Army, Navy, Air Force, Marine, and Coast Guard groups. This volume, written by members of the Society of the Strategic Air Command, includes a history of SAC, personal experience stories, mission and aircraft details, maps and diagrams. Turner's phone numbers are 1-800-788-3350 and 1-502-443-0121.

RESEARCH SERVICES

A large number of declassified documents, including some of the sources for the Winn book cited above, have recently become available from the United Kingdom Public Record Office in England. These documents deal with the development and testing of British nuclear weapons and Anglo-American cooperation on weapons development and testing and defense issues. A good source of research assistance in these archives is Paul Draper of Mills Draper Productions at 129 Butchers Road, London E16 1NE England, phone 011 44 171 511 3865. Paul has assembled a 100+ page alphabetized database of topics for which he can furnish lists of specific relevant PRO files.

SWORDS PROGRESS REPORT

Work continues on Release 2.0 of *The Swords of Armageddon*. Most of our effort since January has concentrated on document collection.

Nonetheless, much has been accomplished. We have considerably expanded the W-47 warhead history, including the incorporation of a description of the conduct and results of Project STARDUST, the 1960 Nevada experiment to determine what would happen when a W-47 primary was flooded with salt water. The W-47 history has grown by 50%.

The XW-59 warhead history has been extensively augmented by the receipt of several dozen formerly-classified United Kingdom documents which describe British efforts to influence warhead selection for, and design of, the *SKYBOLT* missile re-entry vehicle.

In addition, as the result of a Freedom of Information request, we have received a 28-page Sandia history of the development of external and internal initiators between 1945 and 1955. This document is one of the largest single aggregations of information ever compiled on this subject, and it will result in a doubling of the length of the "Advances in Neutron Sources" section in Volume II of *Swords*.

Volume II has also been expanded by the addition of a full description of Norris Bradbury's nine new schemes of January 1947 which might either improve the efficiency of implosion systems or make possible more economical use of uranium-235.

We have also filed FOIA requests for 46 weapons histories written by Frederick Alexander of Sandia. Redacted excerpts from these histories were used as a basis for *U.S. Nuclear Weapons: The Secret History* in 1987.

Release 2.0 of *Swords* will include updated versions of all existing eight volumes, and at least one new volume, which will continue Part III, the U.S. thermonuclear weapons development history. Another new section may be Part VI, a history of the evolution of delivery methods of airborne gravity bombs. At present, there is no scheduled publication date for Release 2.0.

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- Our 24-hour, seven-day order and information telephones,

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