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In The 21st Century *Third Review Conference of the Parties to the Treaty on the Non-proliferation of Nuclear Weapons*, Geneva, 27 August to 21 September 1985 Recommendations for Enhancing Reactor Safety in the 21st Century *Theory of Nuclear Matter* Technical Papers Presented at the Defense Nuclear Agency Global Effects Review, 19-21 April 1988 The Cassandra Review of GAO Report on the Nuclear Non-Proliferation Act of 1978 Federal Register

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This book presents the state of the art in reactor dosimetry as applied to nuclear power plants and to high performance research reactors, accelerator-driven systems and spallation sources. The reader will also find the latest advances in computer code development for radiation transport and shielding. In addition, the book focuses on radiation measurement techniques. The first detailed Iranian account of the diplomatic struggle between Iran and the international community, *The Iranian Nuclear Crisis: A Memoir* opens in 2002, as news of Iran's clandestine uranium enrichment and plutonium production facilities emerge. Seyed Hossein Mousavian, previously the head of the Foreign Relations Committee of Iran's Supreme National Security Council and spokesman for Tehran's nuclear negotiating team, brings the reader into Tehran's private deliberations as its leaders wrestle with internal and external adversaries. Mousavian provides readers with intimate knowledge of Iran's interactions with the

International Atomic Energy Agency and global powers. His personal story comes alive as he vividly recounts his arrest and interrogations on charges of espionage. Dramatic episodes of diplomatic missions tell much about the author and the swirling dynamics of Iranian politics and diplomacy—undercurrents that must be understood now more than ever. As intense debate continues over the direction of Iran's nuclear program, Mousavian weighs the likely effects of military strikes, covert action, sanctions, and diplomatic engagement, considering their potential to resolve the nuclear crisis.

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Five decades after the first splitting of the atom, the military and civilian applications of nuclear energy have reached a critical juncture, providing an unprecedented opportunity to reexamine both the national and international mechanisms for controlling nuclear energy. The disintegration of the Soviet Union has eliminated the need to maintain a

This two-volume set is the output from an extensive research project focused on developing the first forecasting model for nuclear proliferation. The Case Study volume (Volume 2) addresses a set of overarching questions regarding the propensity of selected

states from different regions of the world to "go nuclear," the sources of national decisions to do so. This open access volume surveys the state of the field to examine whether a fifth wave of deterrence theory is emerging. Bringing together insights from world-leading experts from three continents, the volume identifies the most pressing strategic challenges, frames theoretical concepts, and describes new strategies. The use and utility of deterrence in today's strategic environment is a topic of paramount concern to scholars, strategists and policymakers. Ours is a period of considerable strategic turbulence, which in recent years has featured a renewed emphasis on nuclear weapons used in defence postures across different theatres; a dramatic growth in the scale of military cyber capabilities and the frequency with which these are used; and rapid technological progress including the proliferation of long-range strike and unmanned systems. These military-strategic developments occur in a polarized international system, where cooperation between leading powers on arms control regimes is breaking down, states widely make use of hybrid conflict strategies, and the number of internationalized intrastate proxy conflicts has quintupled over the past two decades. Contemporary conflict actors exploit a wider gamut of coercive instruments, which they apply across a wider range of domains. The prevalence of multi-domain coercion across but also beyond traditional dimensions of armed conflict raises an important question: what does effective deterrence look like

in the 21st century? Answering that question requires a re-appraisal of key theoretical concepts and dominant strategies of Western and non-Western actors in order to assess how they hold up in today's world. Air Commodore Professor Dr. Frans Osinga is the Chair of the War Studies Department of the Netherlands Defence Academy and the Special Chair in War Studies at the University Leiden. Dr. Tim Sweijjs is the Director of Research at The Hague Centre for Strategic Studies and a Research Fellow at the Faculty of Military Sciences of the Netherlands Defence Academy in Breda. The Near-Term Task Force was established in response to Commission direction to conduct a systematic and methodical review of U.S. Nuclear Regulatory Commission processes and regulations to determine whether the agency should make additional improvements to its regulatory system and to make recommendations to the Commission for its policy direction, in light of the accident at the Fukushima Dai-ichi Nuclear Power Plant. The Task Force appreciates that an accident involving core damage and uncontrolled release of radioactive material to the environment, even one without significant health consequences, is inherently unacceptable. The Task Force also recognizes that there likely will be more than 100 nuclear power plants operating throughout the United States for decades to come. The Task Force developed its recommendations in full recognition of this environment. In examining the Fukushima Dai-ichi accident for insights for reactors in the

United States, the Task Force addressed protecting against accidents resulting from natural phenomena, mitigating the consequences of such accidents, and ensuring emergency preparedness. The accident in Japan was caused by a natural event (i.e., tsunami) which was far more severe than the design basis for the Fukushima Dai-ichi Nuclear Power Plant. As part of its undertaking, the Task Force studied the manner in which the NRC has historically required protection from natural phenomena and how the NRC has addressed events that exceed the current design basis for plants in the United States. The Task Force finds that the Commission's longstanding defense-in-depth philosophy, supported and modified as necessary by state-of-the-art probabilistic risk assessment techniques, should continue to serve as the primary organizing principle of its regulatory framework. The Task Force concludes that the application of the defense-in-depth philosophy can be strengthened by including explicit requirements for beyond-design-basis events. Many of the elements of such a regulatory framework already exist in the form of rules regarding station blackout, anticipated transient without scram, maintenance, combustible gas control, aircraft impact assessment, beyond-design-basis fires and explosions, and alternative treatment. Other elements, such as severe accident management guidelines, exist in voluntary industry initiatives. The Task Force has concluded that a collection of such "extended design-basis" requirements, with an

appropriate set of quality or special treatment standards, should be established. The Cassandra follows a woman who goes to work in a top secret research facility during WWII, only to be tormented by visions of what the mission will mean for humankind. Mildred Groves is an unusual young woman. Gifted and cursed with the ability to see the future, Mildred runs away from home to take a secretary position at the Hanford Research Center in the early 1940s. Hanford, a massive construction camp on the banks of the Columbia River in remote South Central Washington, exists to test and manufacture a mysterious product that will aid the war effort. Only the top generals and scientists know that this product is processed plutonium, for use in the first atomic bombs. Mildred is delighted, at first, to be part of something larger than herself after a lifetime spent as an outsider. But her new life takes a dark turn when she starts to have prophetic dreams about what will become of humankind if the project is successful. As the men she works for come closer to achieving their goals, her visions intensify to a nightmarish pitch, and she eventually risks everything to question those in power, putting her own physical and mental health in jeopardy. Inspired by the classic Greek myth, this 20th century reimagining of Cassandra's story is based on a real WWII compound that the author researched meticulously. A timely novel about patriarchy and militancy, The Cassandra uses both legend and history to look deep into man's capacity for destruction, and the resolve and compassion it

takes to challenge the powerful. Along with classic papers by Fowler, Hoyle, and the Burbidges, this work stands as a key foundation in the development of nuclear astrophysics. Long out of print and very hard to find, this remarkable work has been edited and re-typeset by an atomic expert. Now available in an affordable paperback edition for the very first time, it addresses interrelated questions — What are stars? How does the sun shine? Why is gold so rare, and Where did the elements come from? — that have puzzled observers from time immemorial. Edited and re-typeset reprint of the original Atomic Energy of Canada, Ltd., 1957 edition.

The existing Global Nuclear Safety Regime is functioning at an effective level today. However, its impact on improving safety could be enhanced. This publication recommends action in a range of areas. Exploring what we know--and don't know--about how nuclear weapons shape American grand strategy and international relations

The world first confronted the power of nuclear weapons when the United States dropped atomic bombs on Hiroshima and Nagasaki in August 1945. The global threat of these weapons deepened in the following decades as more advanced weapons, aggressive strategies, and new nuclear powers emerged. Ever since, countless books, reports, and articles--and even a new field of academic inquiry called "security studies"--have tried to explain the so-called nuclear revolution. Francis J. Gavin argues that scholarly and popular understanding of many key issues about nuclear weapons is incomplete at best and

wrong at worst. Among these important, misunderstood issues are: how nuclear deterrence works; whether nuclear coercion is effective; how and why the United States chose its nuclear strategies; why countries develop their own nuclear weapons or choose not to do so; and, most fundamentally, whether nuclear weapons make the world safer or more dangerous. These and similar questions still matter because nuclear danger is returning as a genuine threat. Emerging technologies and shifting great-power rivalries seem to herald a new type of cold war just three decades after the end of the U.S.-Soviet conflict that was characterized by periodic prospects of global Armageddon. Nuclear Weapons and American Grand Strategy helps policymakers wrestle with the latest challenges. Written in a clear, accessible, and jargon-free manner, the book also offers insights for students, scholars, and others interested in both the history and future of nuclear danger. Shortly after assuming duties as Secretary of Energy, I reviewed the Nuclear Weapons Complex Modernization Report" submitted to the Congress in January 1989 as required by the National Defense Authorization Act of 1988 and 1989. My review showed that several of the report's assumptions needed to be re-evaluated. During this eighteen-month review, dramatic world changes forced further reassessments of the future Nuclear Weapons Complex. These changes are reflected in the new report. The new report presents a plan to achieve a

reconfigured complex, called Complex-21. Complex-21 would be smaller, less diverse, and less expensive to operated than the Complex of today. Complex-21 would be able to safely and reliability support nuclear deterrent stockpile objectives set forth by the President and funded by the Congress. It would be consistent with realities of the emerging international security environment and flexible enough to accommodate the likely range of deterrent contingencies. In addition, Complex-21 would be constructed and operated to comply with all applicable federal, state, and local laws, regulations, and orders. Achieving Complex-21 will require significant resources. This report provides and organized approach toward selecting the most appropriate configuration for Complex-21, satisfying environmental requirements, and minimizing costs. The alternative -- to continue to use piecemeal fixes to run an antiquated complex -- will be more expensive and provide a less reliable Nuclear Weapons Complex. As a consequence, implementation of the Complex-21 plan is considered necessary to ensure continued viability of our nuclear deterrent. The first accessible book to discuss all aspects of nuclear power to help combat climate change and lethal air pollution. Nuclear power is not an option for the future but an absolute necessity. Global threats of climate change and lethal air pollution, killing millions each year, make it clear that nuclear and renewable energy must work together, as non-carbon sources of energy. Fortunately, a new era of growth in this

energy source is underway in developing nations, though not yet in the West. Seeing the Light is the first book to clarify these realities and discuss their implications for coming decades. Readers will learn how, why, and where the new nuclear era is happening, what new technologies are involved, and what this means for preventing the proliferation of weapons. This book is the best work available for becoming fully informed about this key subject, for students, the general public, and anyone interested in the future of energy production, and, thus, the future of humanity on planet Earth. Catalog of reports, decisions and opinions, testimonies and speeches. This collection examines the extent to which nuclear weapons modernization has become a significant point of concern and consideration in international security. Recent statements and substantial investments by nuclear weapon possessor states in the upkeep and modernization of their nuclear postures - particularly the United States, Russia and China - illustrate a return of primacy and the salience of nuclear forces in international politics. The upgrading of systems, the introduction of new capabilities, the intermingling of new technologies, and the advancement of new strategic models, are all indicative of their elevation in importance and reliance. With contributions from leading thinkers in the nuclear weapons domain, this book elucidates the global strategic and policy implications such modernization efforts by the above-mentioned states will have on international

security. In unpacking and conceptualizing this developing source of potential (in)security and tension, the collection not only provides a technical context, but also frames the likely effects modernization could have on the relations between these nuclear weapon powers and the larger impact upon efforts to curb nuclear weapons - both in terms of horizontal and vertical proliferation. The chapters have been arranged so as to inform a variety of stakeholders, from academics to policy-makers, by connecting analytical and normative insights, and thereby, advancing debates pertaining to where nuclear modernization sits as a point of global security consternation in the 21st century. A theoretical analysis and historical investigation of the Cold War nuclear arms race that challenges the nuclear revolution.

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