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 MR-266-AF "The Day After..." Study: Nuclear Proliferation in the Post-Cold War World. Volume I, Summary Report.
 MR-267-AF "The Day After..." Study: Nuclear Proliferation in the Post-Cold War World. Volume III, Exercise Materials.
 IP-102-AF "The Day After . . ."—Nuclear Proliferation in the Post-Cold War World.
 P-7407 Post INF: Toward Multipolar Deterrence.

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 MR-369-USDP Controlling Conventional Arms Transfers: A New Approach with Application to the Persian Gulf.
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 R-3745-ACQ Domestic Implementation of a Chemical Weapons Treaty.

ABSTRACTS

BOOKS

Book-120590 Still the Arms Debate. R. A. Levine. 1990.

Returning to the theme of his 1963 book, *The Arms Debate*, the author analyzes the contending schools of thought in the policy debates over counterinsurgency, strategic force posture and arms control, and the future of the NATO alliance. Specifically, the author describes several constructs used to analyze the past and present debates, and frames the current debate historically, projecting some of the history into the future as well. He then presents a substantive analysis of the three segments of the current arms debate (on the Third World, strategic nuclear policy, and NATO). Finally, he considers the future of arms policy and the arms debate after another 25 years. (Published by Dartmouth Pub. Co., Brookfield, Vt., 1990. Available only from booksellers or the publisher.) 453 pp.

Book-150568 Conventional Arms Control and the Security of Europe. U. Nerlich, J. A. Thomson. 1988.

Political controversy over the role of nuclear weapons in Western security strategy has underscored the importance of conventional arms. This book includes a broad range of European and U.S. perspectives on the historical, political, and military factors shaping the arms debate, the Kremlin's strategy toward conventional arms control, and the Soviet military threat. The contributors emphasize the need to reduce Soviet conventional attack capabilities by modernizing Western conventional forces and by negotiating arms control agreements weighted against Soviet conventional superiority. (Published by Westview Press, Boulder, Colo., 1988. Available only from booksellers or the publisher.) 251 pp. Ref. Index.

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MR-145-FF An Arms Control Strategy for the New Europe. L. E. Davis, C. Bertram, I. H. Daalder, R. E. Darilek, I. Davidson, H. Linnenkamp, J. Roper, M. Wills. 1993.

Far from being a relic of the Cold War, arms control, according to this study, has a continuing role to play in addressing Europe's new insecurities and instabilities and, therefore, should be pursued ambitiously for its potential contribution to peace and security. After summarizing the

record of arms control to date and concluding that it provides a firm and impressive foundation upon which to build an ambitious agenda for the future, the study presents a four-part strategy for future arms control in Europe: (1) help build confidence among the newly independent states and contribute to peace-building efforts; (2) confirm by treaty the positive developments in military forces and activities under way in Europe; (3) manage the demilitarization of interstate relations and, over time, foster a community of interest throughout Europe in which disputes are resolved peacefully; and (4) reduce significantly the role of nuclear weapons and strengthen the global nuclear nonproliferation regime.

MR-207-USDP Countering the Proliferation of Chemical Weapons. M. Eisenstein. 1993.

This report discusses the prospect for successfully inhibiting the proliferation of chemical weapons (CW). The author argues that adequate verification and strict adherence to the recently completed Chemical Weapons Convention, banning the possession and use of such weapons, will be difficult and expensive. In addition to the possibility of countries covertly proceeding to produce CW, vast quantities of CW have been buried over the past decades in many locations around the world. With ambiguity and suspicion about neighbors, CW stock piles could continue to grow covertly. The author explores other measures for inhibiting CW use, including inter alia, active defenses, and the possibility of economic and political sanctions imposed by the UN Security Council against nations charged with CW use in warfare, particularly against civilian populations.

MR-214-CC The Nuclear Asymptote: On Containing Nuclear Proliferation. R. C. Molander, P. Wilson. 1993.

The abrupt end of the Cold War has created a security environment where many nations are now reconsidering acquiring independent nuclear weapons capability. Ahead is a planetary condition where virtually any industrialized nation will have the scientific infrastructure necessary to produce nuclear weapons and associated delivery vehicles indigenously, and at an economically affordable cost. Many nations may choose to maintain "virtual nuclear arsenals" that by plan can be reliably assembled inside a nation's notional strategic warning time for the appearance of dire political-military threats. This report confronts the challenge of containing these tendencies in the direction of a more favorable end state. The authors set forward four illustrative alternative end states: (1) "High Entropy" Deterrence—a highly proliferated world with few "rules of the nuclear road"; (2) An Ever-Slowly-Expanding Nuclear

Club—an inexorable slow growth in the number of nuclear-armed states; (3) a Two-Tiered Static "Have-a-Lot/Have-None" System—a handful of "haves" maintain substantial "at-the-ready" nuclear arsenals and commit to maintaining the security of the "have-nots"; and (4) the Virtual Abolition of Nuclear Arsenals—a handful of states maintain a few hundreds of nuclear weapons with a highly intrusive inspection and collective enforcement regime. The 1995 NPT Review and Extension Conference looms large as a key passage which will reveal the direction that the world's leading nations will take on the nuclear proliferation problem.

MR-253-AF "The Day After..." Study: Nuclear Proliferation in the Post-Cold War World. Volume II, Main Report. M. D. Millot, R. C. Molander, P. Wilson. 1993.

This report documents the results of four series of policy exercises conducted under "The Day After..." project. This summary first describes the assumptions, objectives, and approach of the study, including the exercise technique. It then covers each of the four series of exercises. It highlights the participants' discussion and debate and, based on the results of each exercise series, identifies alternative approaches to proliferation-related policy problems. "The Day After..." study revealed that the policy support community in Washington (represented by the participants) has yet to articulate the implications of nuclear proliferation for U.S. defense strategy. Although this report does not advocate any specific policies, its authors urge the U.S. government and the analytic community to study more rigorously the options for addressing nuclear proliferation.

MR-266-AF "The Day After..." Study: Nuclear Proliferation in the Post-Cold War World. Volume I, Summary Report. M. D. Millot, R. C. Molander, P. Wilson. 1993.

This study reports the results and analysis of a series of policy exercises conducted under RAND's "The Day After ... " project—a study conducted for the Air Force that explored the implications of nuclear proliferation for U.S. national security strategy and policy in the post-Cold War world. In "The Day After ... " project, teams of participants were presented with scenarios that postulated the use of nuclear weapons against the U.S., its allies, or nonaligned third parties; the teams were then prompted to formulate policy responses. The results of "The Day After ... " exercises point out important policy issues that the Air Force should be prepared to debate. These issues, which will impact the Air Force considerably, include: 1) ensuring a credible power projection capability against potential regional nuclear adversaries, 2) charting the future role of nuclear weapons in U.S. defense strategy,

and 3) developing an overall long-term strategy toward the nuclear proliferation threat.

MR-267-AF "The Day After..." Study: Nuclear Proliferation in the Post-Cold War World. Volume III, Exercise Materials. M. D. Millot, R. C. Molander, P. Wilson. 1993.

This Annex to the "Day After ..." project reports on the implications of nuclear proliferation for U.S. national security. This volume contains the materials that the exercise participants used, as well as instructions on how to conduct the exercise. These materials were separated from the reports so that they might be used (with the main report) for college and graduate-level national security studies.

MR-369-USDP Controlling Conventional Arms Transfers: A New Approach with Application to the Persian Gulf. K. Watman, M. Agmon, C. Wolf. 1994.

This report presents a methodology and a practical approach to the control of conventional arms transfers that link United States policy on such transfers to U.S. national and regional interests and strategy. It identifies ways to make explicit the connection between decisions on arms transfers and larger U.S. goals. The approach is designed not only to maximize the strategic benefit to the United States, but also to be politically and financially practicable for the United States and for the other principal suppliers of major conventional weapons. The phase of the research documented in this report applies this approach to the Persian Gulf region.

MR-467 Modeling Decisionmaking of Potential Proliferators as Part of Developing Counterproliferation Strategies. J. Arquilla, P. K. Davis. 1994.

Counterproliferation strategies should be informed by an objective understanding of the motivations of proliferating states. This report applies an exploratory methodology for developing alternative models of the reasoning of national leaders considering acquisition of weapons of mass destruction. It can be used for analysis or as a mechanism for group discussion. It assumes that the leaders in question strive for rational decisionmaking by considering the most-likely, best-case, and worst-case outcomes of various options. That is, they reflect at least limited rationality by considering a range of options and by looking at the upside and downside of those options, as well as best-estimate outcomes. The models allow ample opportunity for "errors," however, by recognizing problems associated with recognizing and evaluating options. They also recognize that psychological and organizational factors can introduce biases and other types of misjudgment. The approach draws on Davis-Arquilla methods developed earlier for use in crisis work.

MR-489-A Korean Arms Control: Political-Military Strategies, Studies, and Games. R. E. Darilek, J. C. Wendt. 1994.

This report presents an overview of three fundamental negotiating strategies for dealing with the Democratic People's Republic of Korea (DPRK) on arms control issues. The first strategy would maintain international pressure on the DPRK to accept both the routine and the challenge inspections required under the Non-Proliferation Treaty (NPT) regime and to proceed with the bilateral North-South inspections endorsed by both sides in 1991. The second strategy would try to influence the future direction of DPRK development. The third strategy would use leverage for prying or dislodging the North from its uncertainty about making constructive arms control arrangements with the South. By treating arms control as a tool of international policymaking that can positively affect the political-military decisions of governments and actively contribute to the achievement of worthwhile objectives (e.g., security, stability, and non-proliferation on the Korean peninsula), the third strategy is the most creative. However, this strategy only works if DPRK nuclear policy is uncertain enough to be susceptible to inducement, or at least capable of movement in one direction or the other.

MR-490-A/AF U.S. Regional Deterrence Strategies. K. Watman, D. Wilkening, J. Arquilla, B. Nichiporuk. 1995.

This report assesses the requirements of a deterrence strategy for application to potential regional adversaries. The authors argue that states content with their status quo (e.g., the former Soviet Union during the Cold War) should be relatively easy to deter, especially from seeking gain, because they are likely to be risk-averse decisionmakers. On the other hand, many regional adversaries, already dissatisfied with the status quo and anticipating further losses, can be hard to deter, though not impossible. Hence, the U.S. military problem of regional deterrence in this instance boils down to two factors: (1) how the United States can make its deterrent threats highly credible; and (2) what military capabilities are required for credible denial and punishment threats. Should an adversary be willing to take high risks, the authors suggest that the United States adopt a national military strategy based on the ability to deny the opponent's political/military objective, either by basing U.S. forces within the region in times of crisis or by convincing the adversary that they can be forward deployed rapidly if the need arises.

MR-500-A/AF Nuclear Deterrence in a Regional Context. D. Wilkening, K. Watman. 1995.

This report addresses the question of deterring nuclear attacks by regional adversaries against the United States, U.S. forces overseas, or U.S. allies. Because emerging nuclear states will have small arsenals at first, regional nuclear threats will be made primarily for three political purposes, to: (1) deter the U.S. from intervening in a regional conflict, (2) intimidate U.S. regional allies; and/or (3) ensure the survival of their state or regime. Effective U.S. deterrent strategies vary depending on the purpose behind the nuclear threat. A U.S. strategy of "escalation dominance" should credibly deter nuclear threats against the U.S. homeland or U.S. forces overseas when the adversary's objective is to prevent U.S. intervention. A U.S. strategy of extended deterrence based on escalation dominance, backed up by theater defenses, should prevent U.S. regional allies from being intimidated by an adversary's nuclear threats. For the third threat, which is the most difficult to deter, U.S. strategy should shift away from retaliatory deterrence to highly effective damage limitation (i.e., counterforce capabilities backed up by effective defenses).

MR-514-AF The British Nuclear Deterrent After the Cold War. N. K. J. Witney. 1995.

The Trident nuclear-deterrent program is one of the United Kingdom's largest-ever military acquisitions. Planned and initiated during the Cold War, it is now coming to fruition at a time when the most obvious justification for it—the Soviet threat to Western Europe—has disappeared. With the money largely spent or committed, Britain's continuance as a nuclear-weapon state until well into the twenty-first century seems certain. But with what point and purpose? This report examines the history, the underlying issues, the policy options, and the risks related to redefining a rationale for Britain's nuclear-deterrence program. The author reviews the role the United States has played in the development of Britain's nuclear policy and discusses how a new rationale might affect U.S.-U.K. relationships.

MR-596-RC U.S. Nuclear Declaratory Policy: The Question of Nuclear First Use. D. C. Gompert, K. Watman, D. Wilkening. 1995.

Current American declaratory policy regarding the use of nuclear weapons, formulated during the midst of the Cold War, is now obsolete. While the Soviet threat has receded, the threat posed by the spread of nuclear, biological, and chemical weapons, frequently to states hostile to the United States, has become quite serious. Deterrence will be a central element in the U.S. strategy for coping with these threats. This raises the question about the circumstances under which the United States would be willing to threaten to use nuclear weapons. In view of these two major developments—the end of the Cold War and the spread of weapons of mass destruction—this

report argues for a change in U.S. declaratory policy from one that reserves the right to use nuclear weapons first to one that promises not to use any weapon of mass destruction first.

MR-742-A Strategic Exposure: Proliferation Around the Mediterranean. I. O. Lesser, A. J. Tellis. 1996.

The proliferation of weapons of mass destruction—nuclear, chemical and biological—and the means for their delivery at ever longer ranges has emerged as a leading issue in the post-Cold War debate about international security and as a prominent concern of U.S. policymakers and Army planners. Nowhere are the effects of proliferation trends felt more keenly than around the Mediterranean, where the European and Middle Eastern security environments meet, and where NATO allies are increasingly exposed to the spillover effects of instability to the south. This analysis explores proliferation trends in North Africa and the Levant (the Eastern Mediterranean and its hinterlands), the motives of proliferators around the region, and the implications for European security and for U.S., NATO, and Army policy.

MR-771-OSD Arms Proliferation Policy: Support to the Presidential Advisory Board. M. Agmon, J. Bonomo, M. Kennedy, M. Leed, K. Watman, K. W. Webb, C. Wolf. 1996.

A 1995 Presidential Executive Order established a board to advise the president on implementing a policy on conventional (nonnuclear) arms and technology transfer. The board was to study the factors that contribute to the proliferation of strategic and advanced conventional military weapons and technology and the policy options the United States might use to inhibit such proliferation. Shrinking federal budgets have made exports of all kinds, including weapons, an attractive means of shoring up a country's industrial base. The heart of the problem is striking a balance between the preservation of military production and a healthy industrial base on the one hand, and restraining exports that proliferate advanced weapons. Foreign policy, national security, and economic interests that are served by the approval or denial of weapons sales can be compelling, but often pull in different directions. Striking the right balance among cross-cutting priorities is the key to an effective weapons transfer policy. This report discusses trends in the international arms markets, how transfers of weapons and technology are controlled, the economics of arms exports, and the relationship between arms exports and a country's economy. Requestors of MR-771-OSD will also receive Report of the Presidential Advisory Board on Arms Proliferation, by Janne Nolan, Edward Randolph Jayne, Ronald Lehman, David McGiffert, and Paul Warnke, 1996.

MR-1104-OSD The Changing Quality of Stability in Europe: The Conventional Forces in Europe Treaty Toward 2001. J. E. Peters. 2000.

Some observers have wondered whether the Conventional Forces in Europe (CFE) Treaty was becoming an instrument whose purpose had become obsolete, or whose function had been taken over by other, more effective institutions. The author concludes that it no longer functions as its designers originally intended, but it nevertheless continues to contribute to the region's stability. This report illustrates that CFE cannot merely exist in stasis but must interact with other arms control activities and other European security instruments. Along the line of other security instruments, the author proposes safety and security measures to improve peoples' confidence that civil authority will function fairly to protect them—measures providing international monitors to evaluate the objectivity and legal basis of the police process, and providing people with recourse to an international court in the event due process is not observed. The protracted need for NATO forces in Bosnia is testimony to the fact that the arms control aspects of the Dayton Accords, although successful at separating the belligerents and corraling the major weapons, do not go far enough in addressing the fundamental problems of Bosnia and many parts of Europe in general.

MR-1119-AF China's Arms Sales: Motivations and Implications. D. Byman, R. Cliff. 1999

China's arms sales have become the focus of considerable attention and pose a moderate threat to U.S. interests. Although Chinese sales have fallen in recent years, and Beijing has become more responsible in the transfer of nuclear, biological, and chemical (NBC) technologies, much progress will be needed to curtail China's behavior. Principal recipients of Chinese arms have been Iran, Iraq, Myanmar, North Korea, Pakistan, and Thailand. These countries and others seek Chinese weapons because they are available, cheap, and easy to use and maintain. In addition to missiles, the Chinese are willing to transfer NBC technology. The United States and other countries do have a modest ability to influence Chinese behavior, and China has increasingly wished to be viewed as a responsible world nation. The analysis supports three major findings about China's arms sale behavior: (1) China's arms transfers not motivated primarily to generate export earnings but by foreign policy considerations; (2) China's government has more control over transfers than some have reported: its weapons export system is quite centralized; and (3) China's adherence to international nonproliferation norms is in fact increasing. Nevertheless, Washington must hedge against the likelihood of sales and develop offsets in concert with allies.

MR-1127-AF India's Emerging Nuclear Posture: Between Recessed Deterrent and Ready Arsenal. A. J. Tellis. 2001.

On May 11, 1998, after a hiatus of more than two decades, India conducted a series of nuclear tests that signaled a critical shift in its strategic thinking. Once content to embrace a nuclear posture consisting largely of "maintaining the option"—i.e., neither creating a nuclear arsenal nor renouncing its right to do so—India is now on the threshold of adopting a posture that, while stopping short of creating a ready arsenal, will take as its goal the establishment of a "minimum but credible deterrent," known as a "force-in-being." This book examines the forces—political, strategic, technological, and ideational—that led to this dramatic policy shift and describes how New Delhi's force-in-being will be fashioned, particularly in light of the threat India faces from its two most salient adversaries, China and Pakistan. The book evaluates in detail the material, infrastructural, and procedural capabilities India currently possesses as well as those it is likely to acquire in its efforts to meet the needs of its evolving force-in-being. Finally, the volume concludes by assessing the strategic implications of India's posture both on the South Asian region in particular and on the global nonproliferation regime in general.

MR-1285-OSD Nonproliferation Sanctions. R. Speier, B. G. Chow, R. Starr. 2001.

The danger of proliferation—of nuclear, biological, and chemical (NBC) weapons and missiles for their delivery—is appreciated by almost everyone. Since the 1970s, some of the most important instruments for combating this danger have been U.S. sanctions laws requiring penalties for acts contributing to proliferation. However, by the mid-1990s, a backlash had developed against a broad range of unilateral U.S. economic sanctions—a backlash that, appropriately or not, may affect nonproliferation sanctions. This study examines the United States' use of sanctions against foreign entities to prevent NBC and missile proliferation. It begins with a review of the objectives and provisions of the various U.S. nonproliferation sanctions laws, and compares the legal provisions at each step of the sanctions process. It then reviews the history of the applications of sanctions against proliferation and the problems revealed by the experience and explores alternatives for dealing with these problems—including possible actions by both Congress and the Executive Branch. The study concludes by recommending a set of three new principles for sanctions: (1) A "worse-off" criterion for the design of sanctions, which entails finite economic or security-related penalties on the target entity so that the costs imposed by the sanctions exceed the benefits of the sanctionable activity; (2) automaticity in the imposition of sanctions, for tightening up the determination process, eliminating

waivers altogether, and requiring presidential certifications of improved behavior before lifting continuing sanctions prescribed by Congress; and (3) specialized staff to design and oversee the implementation of sanctions.

MR-1450-USCA Limited Conflicts under the Nuclear Umbrella: Indian and Pakistani Lessons from the Kargil Crisis. A. J. Tellis, C. C. Fair, J. J. Medby. 2001.

This report examines the views of India and Pakistan on the significance of Pakistan's foray into the Kargil-Dras sector in a limited war that has come to be known as the "Kargil conflict." The goal of the analysis is to assess both combatants' perceptions of the crisis, with a view to evaluating the possibilities of future Kargil-like events and the implications of the lessons each country learned for stability in South Asia. The analysis is based almost exclusively on Indian and Pakistani source materials. The Kargil crisis demonstrated that even the presence of nuclear weapons might not appreciably dampen security competition between the region's largest states. However, the question remains of whether or not the Kargil war represents a foretaste of future episodes of attempted nuclear coercion if India and Pakistan believe that their nuclear capabilities provide them the immunity required to prosecute a range of military operations short of all-out war.

MR-1468-DIA Arms Trafficking and Colombia. K. Cragin, B. Hoffman. 2003.

Colombia has experienced significant political instability and violence over the past century due to a number of factors—the drug trade, a protracted insurgent conflict, internal corruption, and small-arms proliferation, the last being among the most serious of the country's problems. The authors identify the sources and routes used by arms traffickers to acquire, buy, sell, receive, transfer, and ship weapons. They also examine the various guerrilla groups, paramilitary organizations, criminal factions, and ordinary citizens who purchase and use these munitions. The authors then examine Colombia's political conflict through the lens of small-arms trafficking and conclude with policy implications for the U.S. government. The authors find that small-arms trafficking patterns—the manner by which arms and munitions are acquired and distributed—provide useful insights into the strategies used by insurgent groups engaged in conflict and a conflict's future evolution.

REPORTS

R-3366-FF The Strategic Defense Initiative and European Security: A Conference Report. N. Brown. 1986.

This report summarizes the presentations and discussions of a conference on the U.S. Strategic Defense Initiative and European Security held in March 1985. The conference participants were government officials and defense analysts from the Federal Republic of Germany, France, Great Britain, and the United States. The conferees overwhelmingly supported research on the Strategic Defense Initiative as a hedge against Soviet ballistic missile defense programs. However, support for development or deployment hinged in part on whether Soviet actions were seen as being linked to U.S. actions. These views, along with the assumption that the Soviet Union would field defenses if the United States did, reflected differences in concern about the implications of strategic defenses for (1) deterrence in general, (2) NATO strategy and deterrence in Europe, (3) arms control, and (4) European technological interests.

R-3514-FF Extended Deterrence and Arms Control: A Conference Report. N. C. Gantz. 1987.

This report summarizes the presentations and discussions from a conference on Extended Deterrence and Arms Control held in San Diego, California, in March 1986. It focuses on the main issues related to Soviet policy toward the West, extended deterrence and Alliance strategy, and the role of arms control. Most participants agreed that it is in the West's interest to continue to pursue arms control agreements. They believe that although the West has had difficulty in translating its strategic objectives into an arms control strategy, changes can be made to improve the West's position. In the near term, it will be important to reestablish a more coherent link between arms control and the requirements for deterrence. An enduring challenge for the United States will be the need to reassure its European allies of its continued commitment to Alliance security if arms control should lead the two superpowers down the road toward significant nuclear-force reductions.

R-3517-USDP Testing the Effects of Confidence- and Security-Building Measures in a Crisis: Two Political-Military Games. J. P. Kahan, M. Lawrence, R. E. Darilek, W. M. Jones, A. Platt, P. J. Romero, W. Schwabe, D. A. Shlapak. 1987.

This report presents the results of two political-military games played at RAND in the spring of 1986 to investigate how possible European confidence- and security-building measures (CSBMs) might affect interaction between the United States and the Soviet Union in a crisis situation. The objective was to examine which of three hypotheses best describes the most likely effects of CSBMs in a crisis: (1) CSBMs can help make crucial distinctions/decisions; (2) CSBMs neither help nor harm decisionmaking; and (3) CSBMs can cause more harm than good. The games provided no evidence that CSBMs could reduce the risks of miscalculation or

misunderstanding. However, neither did the CSBMs appear to exacerbate misunderstandings. The players tended to focus on their own beliefs and to ignore evidence bearing on the intentions of the other side. The study indicates a need for further research on such important issues as the interplay between intimidation and surprise.

R-3565-FF/CC/RC The Strategic Nuclear Debate. R. A. Levine. 1987.

To analyze the debate over the use and control of nuclear weapons, this report divides the debaters into three groups (the "Extenders," the "Limiters," and the "Disarmers") and defines the two major issues that divide them: (1) whether, in what circumstances, and how nuclear weapons should be used—or threatened—for any purpose other than to deter or defeat use of such weapons against U.S. territory; and (2) how hard to strive for explicit agreements with the Soviet Union to control nuclear weapons. The author suggests that the strategic nuclear debate has changed little since the 1960s in spite of radically changing circumstances, because (1) the premises remain untestable, so it is easy to believe or rationalize anything; (2) nuclear weapons are different and their dangers represent an unprecedented discontinuity in human history; and (3) the Soviet Union remains an adversary of the United States.

R-3586-FF Extended Deterrence and Arms Control: A Collection of Conference Papers. N. C. Gantz. 1988.

In March 1986, The RAND Corporation, the Stiftung Wissenschaft und Politik, the Institut Francais des Relations Internationales, and the Royal Institute of International Affairs sponsored a conference in San Diego, California, on Extended Deterrence and Arms Control. The conference brought together 22 prominent defense analysts and government officials from the Federal Republic of Germany, France, Great Britain, and the United States to address the continuing adequacy of and requirements for extended deterrence and related arms control issues. This report is a collection of conference papers, which have not been updated since March 1986 and thus do not account for changes in East-West relations and arms control.

R-3607-FF/CC/RC NATO, the Subjective Alliance: The Debate over the Future. R. A. Levine. 1988.

This report analyzes the range of differing views on policy with regard to the North Atlantic Treaty Organization (NATO) in the 1980s. It considers (1) the issues over which those who debate NATO policy in the 1980s differ and (2) how these differences have developed from the debates of the 1960s. The author concludes that Europe has been stable and Western Europe secure for a long time, and this security and stability will continue if NATO

remains strong. In addition, both the American and European sides of NATO need to avoid suspicions of each other. Finally, the Gorbachev era may make possible substantial improvements through arms control agreements that increase Western security and East-West stability.

R-3704-USDP Toward a Conceptual Framework for Operational Arms Control in Europe's Central Region. P. K. Davis. 1988.

This study sketches a military framework for conceiving and evaluating measures for operational arms control in Europe's central region—i.e., arms control affecting the operations and readiness of forces. Such measures are complementary to structural arms control, which affects size and composition. In the past, operational arms control has been largely associated with confidence-building measures that have limited, although worthy, ambitions. This study argues, however, that operational arms control has the potential to substantially improve NATO's military security. Although operational arms control has considerable potential by itself, this study concludes that it should no longer be treated as a separate subject, but should be integrated with structural measures.

R-3732-USDP/AF Conventional Forces in Europe: A New Approach to the Balance, Stability, and Arms Control. L. L. Rohn. 1990.

The "balance (or imbalance) of conventional forces" is an expression of the degree to which the capabilities of the conventional military forces deployed by two sides are in some way equal. This balance is a central factor in determining the degree to which a given situation is stable. "Conventional stability" is a broader concept than balance; it also encompasses perceptions of the balance, differences in the nature of the operational tasks imposed on the forces of both sides, and other factors. Conventional stability rests on the degree to which both sides believe they could achieve their military objectives in wartime. The author suggests a new analytic framework relating measurements of military capabilities, balance assessment methodologies, and defense objectives to conventional stability. Application of the framework to the conventional balance in Europe suggests some tentative conclusions regarding the potential role of arms control in stabilizing the balance: the most productive use of arms control seems to be to decrease the offensive potential of the two sides' forces.

R-3734-A/AF British Military Requirements, Resources, and Conventional Arms Control. J. E. Nation. 1990.

British military leaders face a formidable challenge in the next 15 years as they modernize their forces. The financial

requirements of modernization efforts will be large, especially since replacement equipment is almost always more expensive than its predecessors. Modernization requirements will be substantial, even with conventional force reduction agreements that cut forces deeply. Other factors complicate Britain's military modernization efforts: Demographic pressures will probably make recruiting Britain's all-volunteer force both more difficult and more costly. In turn, increasing personnel costs may reduce defense resources available for investment and jeopardize the acquisition of replacement equipment. A reduced Warsaw Pact threat will also probably reduce defense resources. This report compares the financial requirements of achieving British modernization goals with a range of projected budgetary resources. The financial requirements of major equipment production with projected resources are estimated in two cases: in the absence of conventional arms control in Europe, and following a Conventional Forces in Europe (CFE) agreement.

R-3745-ACQ Domestic Implementation of a Chemical Weapons Treaty. J. Aroesty, K. A. Wolf, E. C. River. 1989.

To determine the effects on and the role of industry in the event of implementation of a chemical weapons treaty, this report analyzes the way in which the proposed treaty can mesh with the U.S. regulatory system, examines whether and how existing reporting and inspection requirements or regulations can be used to facilitate domestic implementation, studies the domestic implementation procedures and experience gained from the U.S.-International Atomic Energy Agency Safeguards Agreement, and develops some general observations and recommendations pertaining to legislative and regulatory approaches to U.S. treaty implementation. The authors describe the background of the present chemical arms control system and summarize the U.S. Draft Convention; list the specific chemicals that are included in either the U.S. Draft or the Rolling text and indicate the chemical-specific provisions; review the major regulations that are relevant to treaty chemicals and consider how databases associated with these regulations can be used for treaty compliance; identify producers of certain treaty chemicals and present case studies on two such chemicals; review and analyze the most pertinent arms control precedent for the type of domestic implementation scheme envisioned under the Chemical Weapons Convention.

R-3765-AF First-Strike Stability: A Methodology for Evaluating Strategic Forces. G. A. Kent, D. E. Thaler. 1989.

This report presents a logical and transparent methodology for evaluating strategic offensive forces on the basis of first-strike stability, which the authors define as a condition that exists when neither superpower perceives

the other as motivated by the strategic force posture to launch the first nuclear strike in a crisis. The methodology underlines that (1) first-strike stability under current conditions is relatively robust, (2) postures of U.S. and Soviet strategic nuclear forces become increasingly important under an arms reduction regime if the current level of first-strike stability is desired, (3) enlarging U.S. and Soviet strategic nuclear weapons inventories does not necessarily erode first-strike stability, (4) the superpowers should realize the importance of both sides generating forces early in a crisis to render these forces nontargetable, and (5) whatever the index of first-strike stability, the index applies equally to both the United States and the Soviet Union, and thus suggests a dimension of U.S.-Soviet cooperation.

R-3792-FF/RC Cruise Missile Arms Control. R. J. Lempert. 1989.

The treatment of long-range, land-attack, sea-launched, and air-launched cruise missiles has been and will continue to be a major stumbling block in negotiations aimed at controlling strategic nuclear weapons. The existence of both conventional and nuclear variants is a frequently mentioned reason, since it is impossible to distinguish the two types except by close inspection. However, a more fundamental problem is that cruise missiles are carried by platforms—ships, submarines, and bombers—that have many important roles, mostly unrelated to nuclear capabilities, that are the subject of strategic nuclear arms control. This report examines options for controlling both air- and sea-launched cruise missiles within strategic arms control treaties. It assesses these options by the extent to which they provide easily verifiable limits on nuclear cruise missiles, allow substantial deployments of conventional cruise missiles, and avoid operational restrictions on conventional military forces.

R-3841-A/AF West German Military Modernization Goals, Resources, and Conventional Arms Control. J. E. Nation. 1991.

This report compares the financial requirements of modernizing West German military forces with a range of budgetary resources both with and without negotiated conventional force reductions in Europe. The analysis focuses on the evolution of economic and demographic constraints on long-term West German defense planning, projects resource-requirement imbalances, and examines potential reactions to imbalances. The author concludes that reactions by Ministry of Defense (MoD) planners will vary depending on the emerging security environment and the results of West Germany's security debate. If substantial shortfalls appear likely, planners may be forced to make difficult choices, ranging from stretching out procurement purchases to making large personnel

reductions and abandoning specific missions. However, MoD plans will probably be influenced more by changes in Soviet and Warsaw Pact member defense efforts.

R-3876-AF The Soviet Turn Toward Conventional Force Reduction: The Internal Struggle and the Variables at Play. H. Gelman. 1989.

This report examines the relationship between the Soviet force posture toward Western Europe and the political struggle that is being waged in the Soviet Union for control over the priorities of military deployment policy and military-industrial decisionmaking. It presents an overview of the intertwined issues that have been the key battleground in this contest: how to define the Soviet military budget, how far and how fast to cut it, how far to reduce Soviet conventional forward deployments in Europe, how much asymmetry to accept in such reductions, how to reorganize forces for "defensive" purposes, and whether to move away from the traditional Soviet mass conscripted army in the direction of a professional army. Finally, the study considers prospects for the future.

R-3876/1-AF The Soviet Turn Toward Conventional Force Reduction. Executive Summary: The Internal Struggle and the Variables at Play. H. Gelman. 1989.

This report presents key observations drawn from R-3876, a RAND study that examines the relationship between the Soviet force posture toward Western Europe and the political struggle that is being waged in the Soviet Union for control over the priorities of military deployment policy and military-industrial decisionmaking.

R-3877-RC Strategic Defense Issues for the 1990s. J. T. Quinlivan, G. L. Donohue, E. R. Harshberger. 1990.

The recent revolution in the political affairs of the Soviet Union and its relationship to the United States, together with budgetary pressures, highlight the necessity for new decisions with respect to the Strategic Defense Initiative (SDI). As changes in the U.S.-Soviet relationship reduce the chances of ballistic missile attacks, the United States should examine the contribution of strategic defenses to other roles and missions. The United States should also consider how defenses might contribute to policies designed to decrease missile proliferation in unstable regions. Limited defenses might protect the United States against threats by the smaller nuclear powers as well as by those nations now acquiring ballistic missiles. Protection against tactical ballistic missiles may become more important for those American allies who are in the vicinity of nations with ballistic missiles and chemical weapons. Along with efforts to restrain missile proliferation, the United States should investigate defensive systems that might help defend population and industrial targets of U.S.

allies against ballistic weapons. A missile launch notification protocol, perhaps under United Nations auspices, should also be pushed forward. Finally, programmatic elements of the SDI should be aligned to develop capabilities against smaller threats.

R-3889-FF Theater Modernization Options and Arms Control Challenges in Europe: A Conference Report. R. Bitzinger. 1990.

A conference held in Maffliers, France, in April 1989 brought together defense analysts and government officials from the United States, France, the Federal Republic of Germany, and the United Kingdom to discuss the future of NATO theater nuclear forces (TNF), the options for nuclear modernization, and the problems and challenges posed by the growing pressures for arms control. No clear consensus emerged, but the discussions brought up several important points. American and British participants appeared to be wary of further TNF arms control. They supported preservation and modernization of NATO's short-range nuclear forces (SNF) and desired replacement for intermediate-range nuclear forces. Participants from the Federal Republic of Germany wanted immediate progress on TNF arms control leading toward total elimination of all SNF. The French participants argued that the alliance should adopt the French concept of "prestrategic warning." Interestingly, the conference tended more to mirror the contemporary NATO debate over the future course of arms control and nuclear modernization than to resolve any of these contentious issues.

R-3898-USDP The Role of Shevardnadze and the Ministry of Foreign Affairs in the Making of Soviet Defense and Arms Control Policy. J. Van Oudenaren. 1990.

This report analyzes the influence of Soviet Foreign Minister Eduard Shevardnadze and the Ministry of Foreign Affairs (MFA) on the formulation and implementation of Soviet national security policy. It discusses how Shevardnadze, an adviser close to President Gorbachev and a member of the Defense Council, has evolved from a fairly traditional supporter of the Soviet defense establishment into one of its harshest critics. It discusses MFA-military differences in specific policy areas (e.g., doctrine and force reductions) and their implications for the military. The report thus examines both the new procedures by which the Soviet Union makes defense policy and the emerging substance of that policy.

R-3918-AF First-Strike Stability and Strategic Defenses: Part II of a Methodology for Evaluating Strategic Forces. G. A. Kent, D. E. Thaler. 1990.

A pressing issue facing the United States in the early 1990s centers on whether, and for what strategic purposes, the United States should deploy nationwide ballistic missile defenses (BMD). One argument is that such defenses could enhance stability. This report extends the methodology developed in R-3765 to assess the effect of BMD deployments on first-strike stability. The authors conclude that (1) first-strike stability is currently robust; (2) deployment of strategic nationwide BMD by either superpower in competition with the other's strategic offenses generally erodes first-strike stability; (3) there might be a level at which U.S. and Soviet BMD could effectively defend against third-country ballistic missile attacks, unauthorized attacks, and accidental launches, without being so robust that it would undermine first-strike stability; (4) the buildup of U.S. defenses during Phase I deployment seems to exceed this level; and (5) maintaining effective bomber forces on both sides would be critical to any attempt to move from offense dominance to defense dominance.

R-3977-USDP Planning for Long-Term Security in Central Europe: Implications of the New Strategic Environment. P. K. Davis, R. D. Howe. 1990.

The recent changes in Europe have transformed the strategic landscape and altered what can be accomplished with respect to security. This report proposes a framework of new NATO objectives and a strategy for accomplishing them. The approach recognizes the desirability of achieving long-term stability—a state characterized by robust security, predictability, the absence of crises and dangerous international tensions, a "reasonable" defense burden that is either constant or shrinking, and public satisfaction with the situation. To achieve this objective, the authors recommend thinking in terms of five subordinate objectives: (1) deter, without provocation, a Soviet invasion of Western Europe; (2) deter, without provocation, Soviet reentry into Eastern Europe; (3) maintain strategic equivalence; (4) deter rearmament; and (5) reduce sources of conflict and tension.

R-3994-FF The Role of Military Power and Arms Control in Western Security in the 1990s: A Conference Report. R. Bitzinger. 1990.

From April 30 to May 2, 1990, RAND, the Stiftung Wissenschaft und Politik, the Institute Francais des Relations Internationales, and the Royal Institute of International Affairs jointly sponsored a conference in Williamsburg, Virginia, on The Role of Military Power and Arms Control in Western Security in the 1990s. This report summarizes some of the key conference discussions related to the climactic changes taking place in Eastern Europe; the subsequent redefinition of the threats, risks, and dangers to the West; NATO's role in an evolving European security system; future conventional and nuclear

force requirements and the impact of arms control; and the likely future course of Western security policy over the near term. The discussion showed that dramatically changing threat perceptions should continue to affect NATO security policies. In particular, public perceptions of a diminished threat will pressure alliance leaders attempting to restructure NATO. There was unanimous agreement on the continued need for NATO and general agreement that the West must enhance the political conditions for NATO's acceptance.

R-4029-USDP Emerging Technology Systems and Arms Control. R. J. Lemberg, I. Y. Chang, K. McCallum. 1991.

The Strategic Arms Reduction Treaty (START) and the Conventional Forces in Europe (CFE) agreements call for unprecedented cuts in strategic nuclear and conventional forces. But in contrast to earlier attempts to restrict technology development in previous arms control agreements, these two treaties will have no significant limitations on emerging technology weapons systems. This report considers whether the decision to set aside emerging technology restrictions may undermine the benefits of START and CFE over the lifetimes of these treaties. The authors conclude that the United States should not be concerned that the START and CFE treaties do not restrict emerging technology systems. Over time, however, such systems could upset the balance of conventional forces in Europe mandated by the CFE treaty, and they will probably become more important to the negotiations if the United States chooses to pursue strategic nuclear and conventional arms control with the Soviet Union beyond START and CFE toward START II and CFE II treaties.

R-4174-FF/RC Helsinki II: The Future of Arms Control in Europe. T. J. Hirschfeld. 1992.

Members of the Conference on Security and Cooperation in Europe (CSCE) agree that arms control in Europe is a continuing process. Yet the European conditions underpinning that consensus have been transformed to the point where past formative concepts—namely, concerns about surprise attack and massive invasion—have been replaced by questions of how to organize collective security in the face of local unrest and potential regional instabilities. This report attempts to relate past arms control achievements to future requirements by describing what has been done and how Europe has changed since earlier negotiations began and by anticipating how the arms control and confidence-building frameworks already established can be adapted to new conditions. Research for the report included examination of treaty texts and review of suggestions by people connected with or interested in plans for the CSCE conference scheduled for March 1992 in Helsinki. To succeed, Helsinki should be more than just

another chance to manage transition from the familiar East-West framework into the unknown, or an opportunity to create more Euro-forums. The author suggests that more is possible if CSCE participants (1) build on achievements of the past, (2) identify common CSCE approaches to more defensive force orientations, (3) prevent regional disputes from becoming conflagrations, and (4) conclude the business of the Vienna negotiations.

NOTES

N-2348-1-AF Key Issues for the Strategic Offensive Force Reduction Portion of the Nuclear and Space Talks in Geneva. E. L. Warner, G. A. Kent, R. J. DeValk. 1985.

This Note discusses approaches for the limitation and reduction of U.S. and Soviet strategic attack forces. It identifies three national security objectives that the United States and, arguably, the Soviet Union seek to obtain through a combination of strategic nuclear force deployments, arms control, and diplomacy. Those objectives are credible deterrence, strategic/crisis stability, and essential equivalence. It defines three measures that can be controlled to constrain the destructive capacity of intercontinental strategic attack forces: the amount of ballistic missile throwweight; the number of ballistic missile reentry vehicles; and the number of bomber-carried weapons, a value that can most reasonably be estimated by linking it to the gross takeoff weight of the strategic bombers on both sides. It also considers a weighted-measure approach that yields a smaller initial difference between U.S. and Soviet ballistic missile forces than does the pure throwweight approach, thus providing better prospects for successful compromise in negotiation. The Note reviews several recent proposals for U.S.-Soviet strategic arms reductions and concludes that the United States cannot reasonably expect to gain significant cuts in Soviet ballistic missile capabilities without being prepared to accept substantial constraints on the growth of the U.S. bomber force's weapon-carrying potential.

N-2432-FF/RC A Suggested Policy Framework for Strategic Defenses. G. A. Kent. 1986.

This study proposes a framework for considering U.S. policy with regard to the Strategic Defense Initiative (SDI). The framework takes account of the basic goals and strategies for the security of the United States and its allies, the reasons for the SDI technology program, the purposes and missions of strategic (or nationwide) defenses, and the relationship of these matters to arms control. It establishes national survival—a fundamental goal of the United States and its allies—as the central goal of strategic defenses. The framework relieves the tension

between the advocacy of SDI on the one hand, and the basic U.S. strategy of deterrence and arms control on the other.

N-2526-AF A Calculus of First-Strike Stability: A Criterion for Evaluating Strategic Forces. G. A. Kent, R. J. DeValck, D. E. Thaler. 1988.

For analyzing the merits of alternative strategic nuclear force postures, first-strike stability is a more relevant and demanding criterion than deterrence. First-strike stability exists if neither superpower perceives the other as motivated to strike first in a crisis. This Note describes an approach for evaluating the first-strike stability (or instability) of various postures of superpower strategic offensive forces. The study uses a calculus of the cost of striking first compared with the potential cost of waiting and risking an enemy first strike. The analysis suggests that the current postures of U.S. and Soviet strategic offensive forces do not demonstrate any undue degree of first-strike instability. However, merely reducing the level of U.S. and Soviet offensive forces does little to enhance stability and may actually increase first-strike instability because the types and posture of forces deployed have a greater effect on stability than do their overall numbers. To maintain stability, reductions in offensive weapons should be coupled with improved basing modes.

N-2697-AF Conventional Arms Control Revisited: Objectives in the New Phase. J. A. Thomson, N. C. Gantz. 1987.

This Note examines the relationship between conventional defense and arms control planning and assesses the conditions under which arms control can help NATO meet its conventional defense requirements. It first defines a defense objective for NATO, then assesses the balance relative to that objective, and, finally, defines the requirements to fill the gap. The Note concludes that (1) arms control alone cannot correct the conventional force imbalance in Europe; (2) defense requirements can be moderated through arms control, but only if the reductions are highly asymmetric and large; and (3) NATO should seek to reduce the offensive capabilities of the Warsaw Pact forces through reductions of tanks and artillery.

N-2859-FF/RC Assessing the Conventional Balance in Europe, 1945-1975. R. Bitzinger. 1989.

This Note examines the state of the NATO-Warsaw Pact conventional military balance between 1945 and 1975 as it was perceived at the time, describes the methodology used to arrive at these conclusions, and discusses and assesses perceptions of both defense analysts and Western officials regarding the military balance. In particular, it considers the analytical approaches used to assess the state of the balance, how "subjective" the analyses were, and ways the

interpretations of the balance have changed over the years. Underlying this discussion is the role of nuclear strategy in shaping perceptions of the conventional force balance.

N-2896-FF Nuclear Modernization and Arms Control in NATO. A. Kanter. 1988.

The Intermediate Nuclear Force (INF) Treaty and its aftermath have not simply returned NATO to a world without ground-launched cruise missiles, the Pershing II, and the SS-20, but have crystallized and reinforced long-standing questions about the credibility of NATO's strategy of flexible response, the appropriate role of theater nuclear weapons in the future, and the prospects for continued U.S. leadership of the Alliance. These issues come together in a consideration of whether and how NATO should modernize its remaining nuclear forces. This Note analyzes different ways in which NATO can respond to the nuclear requirements that flow from its strategy. It considers how INF Treaty constraints and prospective Strategic Arms Reduction Talks limits, as well as the special place and concerns of the Federal Republic of Germany, bear on the various possibilities. It also assesses the implications of different choices for Alliance cohesion, U.S. leadership of NATO, and extended deterrence. On the basis of that analysis, it describes an approach to NATO nuclear modernization and arms control.

N-2976-USDP Variables Affecting Central-Region Stability: The 'operational Minimum' and Other Issues at Low Force Levels. P. K. Davis, R. D. Howe, R. L. Kugler, W. G. Wild. 1989.

The negotiations on conventional forces in Europe (CFE) include the principle of mutual reductions to parity at force levels below NATO's current levels. The participants' proposals set limits on equipment such as main battle tanks and artillery in the Atlantic-to-the-Urals region and various subregions. This Note provides an analysis of the following issues: (1) defining and estimating the "operational minimum," which is the operational-level strength of forces below which the feasibility of narrowly defined forward defense would be questionable (although by no means impossible) even under conditions of parity; (2) the significance for Central Region stability of the D-Day theater force ratio; (3) the potential stability at low force levels (i.e., below the "operational minimum"); and (4) possible CFE "stabilizing measures."

N-3045-A Verifying Conventional Stability in Europe: An Overview. T. J. Hirschfeld. 1990.

Verifying the obligations in the prospective Conventional Forces in Europe (CFE) treaty will be far harder and more expensive than verifying those in the Intermediate-Range Nuclear Forces (INF) treaty, or in other previous arms

control agreements. This Note presents a qualitative overview of conventional arms control verification issues, including (1) monitoring force levels calibrated in major items of equipment and personnel, in a large production area that makes concealment possible; (2) watching force withdrawals, restructuring, or disbandments involving removal, reexport, or destruction of thousands of heavy equipment items; (3) monitoring the post-agreement stasis of the largest and most complex force concentration in peacetime history; and (4) meshing these observations with the concurrent need to monitor unilateral Warsaw Pact force reductions and force changes on a massive scale.

N-3046-OSD Arms Control Constraints for Conventional Forces in Europe. R. E. Darilek, J. K. Setear. 1990.

This study focuses on one aspect of potential arms control agreements involving conventional military forces: the use of constraints, defined as measures directly limiting or prohibiting current or future operations by military forces. The authors focus on constraints involving the conventional forces of the Warsaw Pact and NATO. Constraints may save money for all parties involved in a conventional arms control agreement. In addition, constraints have the potential to reduce the incentives for attack by increasing the amount and quality of warning time available to the defending side or by forcing an attacker to launch a constrained offensive. The authors develop, and apply with hypothetical examples, three criteria (defensive asymmetry, clarity, and economy) for determining whether a particular constraint is a good idea. Because of the difficulties of determining when constraint measures actually constrain an attacker's operations more extensively than a defender's operations, the nations of NATO and the Warsaw Pact should approach constraint measures cautiously lest they reach an agreement that reduces the prospects of a successful defense against large-scale offensives.

N-3120-USDP Naval Arms Control: The Backdrop of History. J. L. Lacy. 1990.

This Note is one in a series of six RAND examinations of issues, options, and relevant considerations in East-West naval arms control. Other parts of the study seek to better understand what U.S. policy toward naval negotiations might be in the future by probing the strategic rationality and political desirability of alternative approaches. This Note is concerned exclusively with matters past—not with what U.S. policy ought to be but with what the policies of the United States and other naval actors have been in the past, why, and to what result. The discussion traces and explains major developments in the negotiation of naval limitations over the course of more than 150 years, placing particular emphasis on the experience since the turn of the

century. Though the legacy is richest before the onset of World War II, the reconstruction of events continues through the postwar period to the mid-1980s.

N-3121-USDP The Baroque Debate: Public Diplomacy and Naval Arms Control, 1986-1989. J. L. Lacy. 1990.

The public posturing of nations is not usually the best guide to the substance of the ideas upon which they disagree, or to the intensity and extent of their disagreements. In matters of naval arms control, however, the public record takes on special meaning. Neither the East nor the West has had much to say to the other in private that is at variance with public statements. This Note is the second in a series of six RAND examinations of issues, options, and relevant considerations in the naval dimensions of East-West arms control. It is concerned with one aspect in particular—the public diplomacy of naval arms control. The Note reviews the East's various naval overtures since early 1986, and the West's various public responses. It covers developments through early December 1989.

N-3122-USDP Within and Beyond Naval Confidence-Building: The Legacy and the Options. J. L. Lacy. 1991.

Given the good prospects for an East-West conventional force reduction agreement in Europe in 1990, an old issue is likely to take on greater saliency. The Soviet Union has long insisted on negotiations to constrain the activities of naval forces. The United States has consistently rejected such overtures. Nearly everything the Soviet Union has proposed thus far has been in the realm of naval "confidence-building"—that is, arms control measures that do not directly affect the size, structure, composition, or ultimate military capability of naval forces, but instead concern the what, why, when, and where of naval operations. This Note, part of a series on naval arms control issues and alternatives, examines what naval confidence-building in its multiple forms brings to the strategic and political equation, probes the character and potential implications of Soviet proposals in this area, and explores Soviet and U.S. options for the future. These options include a modest selection of naval confidence-building arrangements, but they also extend beyond confidence-building to broader structural forms of naval arms control.

N-3123-USDP Between Worlds: Europe and the Seas in Arms Control. J. L. Lacy. 1991.

This Note discusses Soviet efforts to link naval limitations to ongoing negotiations on conventional forces in Europe. It examines the history of these efforts and explores

alternatives for approaching naval issues in future arms control talks.

N-3248-USDP Global Arms Exports to Iraq, 1960-1990. R. Schmidt. 1991.

This Note provides information about the supply of weapons to Iraq since the 1960s, including a rough assessment of the level of technological sophistication inherent in those systems. After the mid-1970s, Iraq pursued a policy of diversifying the countries from which it imports its weapons in an effort to lessen the leverage that suppliers could exert over it. Historically, the Soviet Union had been Iraq's primary supplier. During Saddam Hussein's presidency, however, Iraq collected a wide assortment of equipment from all over the world, including, among others, French, Brazilian, and Soviet designs. Although this may have been considered a logistical nightmare, it gave Iraq access to highly advanced military technologies in several categories of weapons. A detailed examination of the factors that led to the Persian Gulf conflict is beyond the scope of this research; the goal here is limited to documenting Iraq's arsenal buildup. Nonetheless, this Note should be of interest to those who study arms trade or who are evaluating the events that led to that war.

N-3308-AF Methodology for Examining Effects of Arms Control Reduction on Tactical Air Forces: An Example from Conventional Forces in Europe (CFE) Treaty Analysis. C. Kelley. 1993.

In 1989, NATO and the Warsaw Pact were engaged in the Conventional Forces in Europe arms reduction negotiations. The major advantages to NATO were the large cuts in Warsaw Pact ground forces. However, agreement to these cuts was not expected until both sides had agreed on how tactical air forces should be reduced. Both sides submitted proposals (NATO's involving a 15-percent reduction), but, after negotiation, remained far apart on three categories of aircraft: trainers, medium bombers (including land-based naval attack aircraft), and homeland defense aircraft. This note describes RAND's suggestions on how the tactical air reduction agreement should be structured and how NATO should implement it. The author suggested a compromise that allowed each side to exclude some number of basic trainers and land-based naval attack aircraft, and that granted the Soviets a unilateral exclusion for some number of homeland air defense aircraft. The final treaty incorporated the first two suggestions. NATO was not required to reduce its inventory of combat aircraft. Had the proposed 15-percent reduction been accepted, about 100 aircraft would have had to be transferred from the region or destroyed.

N-3411-RGSD Designing and Evaluating Conventional Arms Control Measures, the Case of the Korean Peninsula. Y. Han. 1993.

The governments of South and North Korea have recently made proposals with mixed motives for arms control in the peninsula: either to settle a 45-year-old military confrontation with sincerity or to repeat past propaganda wars with each side blaming the other for posing threats. The analytic communities of the two Koreas have not systematically analyzed the effects of arms control proposals on the security and the stability of the peninsula, nor have they suggested coherent ways to relate arms control measures to security problems. This study attempts to design and evaluate effective arms control measures in relation to specific Korean security problems and arms control objectives that the South Korean government should undertake. The study takes a combined approach of qualitative analysis and military simulation. Three qualitative criteria derived from case studies on Korean and European arms control are used to examine whether these measures are legally binding, verifiable, and negotiable. One quantifiable criterion is used to test against the base case scenario (a one-day surprise attack by North Korea), to explore whether arms control measures will stabilize or destabilize the military status quo on the peninsula in terms of North Korea's extent of penetration in actual war situations. Four alternative measures are derived from the analysis: (1) confidence and security building measures (CSBMs); (2) establishment of an asymmetric non-deployment zone (NDZ); (3) reduction of the joint U.S.-South Korean "Team Spirit" exercises and North Korea's forward deployed forces; and (4) reduction of South Korean, U.S., and North Korean forces. Findings indicate that establishment of the NDZ and North Korean unilateral reduction can best achieve the goal of South Korean arms control. These two measures enhance stability, while a unilateral reduction or suspension of Team Spirit and CSBMs may only reduce military stability. CSBMs and a scale-down of Team Spirit are more easily verifiable than the NDZ and mutual reduction measures, because the latter measures would require more intrusive verification. Arms negotiations should be led by tight conditionality of one side's concession on the other side's concession. However, South Korea's concession (e.g., reduction of Team Spirit and withdrawal of U.S. forces) should guard against negative consequences of these measures on security and stability of the entire peninsula. Moreover, confidence building measures should be negotiated in one channel for negotiating reduction measures, since separating talks on these two issues is nearly impossible.

N-3475-USDP Background and Options for Nuclear Arms Control on the Korean Peninsula. K. D. Oh. 1992.

The threat posed by North Korea's nuclear weapons development program could significantly increase tensions in Northeast Asia. This Note presents four options for achieving a nuclear-free Korea. The option of unilaterally withdrawing any U.S. nuclear weapons stationed in South Korea in order to induce North Korea to abandon the development of its own nuclear weapons was realized as a consequence of President Bush's worldwide unilateral withdrawal of U.S. tactical nuclear weapons in late 1990. This preempted another option linking the withdrawal of any U.S. nuclear weapons with North Korean implementation of international inspections of its nuclear facilities. The option of inducing North Korea to forgo nuclear weapons in return for improved economic and political relations with the international community is currently being pursued, but North Korea has been slow to respond, and the threat of economic and political sanctions against the North is being seriously considered. A fourth option, to attack suspected North Korean nuclear weapons facilities, is considered to be highly dangerous and of questionable value.

N-3509-DNA Methodologies for Planning On-Site and Aerial Inspections for Use in Treaty Negotiations. M. Eisenstein, S. Weisberg, O. Stauber. 1994.

N-3564-A U.S. Conventional Arms Control for Korea, a Proposed Approach. J. C. Wendt. 1993.

This Note presents an approach for integrating arms control into the changing Korean security environment and for evaluating how alternative arms control measures affect U.S. interests. The study identifies five U.S. arms control objectives: maintain U.S. presence, minimize short-warning threat, eliminate ground force disparity, maintain a U.S. reinforcement capability, and produce a verifiable agreement. The study then finds that equipment reductions, which involve equal ceilings on three critical pieces of equipment, and U.S. reductions (above a residual amount) proportional to North Korean reductions, would meet four of the five objectives. (Exercise limitations and notifications would help meet the fifth one.) While the approach apparently satisfies South Korean objectives, it may not be enough for the North Koreans. Thus, if the United States and South Korea place a sufficiently high value on achieving their objectives, other political/economic incentives may have to be offered.

ISSUE PAPERS

IP-102-AF "The Day After . . ."--Nuclear Proliferation in the Post-Cold War World. M. D. Millot, R. C. Molander, P. Wilson. 1993.

A nation with a small, survivable nuclear arsenal has the potential to undermine current U.S. national military strategy for dealing with regional conflicts. So concluded government officials and defense analysts who participated in a series of exercises to explore U.S. policy options in response to nuclear proliferation. Among the suggestions reported in this issue paper are to dramatically enhance conventional counterforce capabilities, to develop very high confidence theater ballistic missile defenses, and to implement operational concepts for power projection that minimize the exposure of U.S. personnel to attack.

IP-132 Stopping the North Korean Nuclear Program. Z. Khalilzad, P. K. Davis, A. N. Shulsky. 1993.

The North Korean nuclear program poses a threat to the stability of Northeast Asia and to our global nonproliferation goals. This issue paper examines three strategies which, as of late 1993, the United States could bring to bear against the North Korean regime to discontinue this program. One is to wait until the North Korean government disintegrates as the result of decay or the realignment of internal forces. Another is to provide political, security-related, or economic incentives to abandon the program. A third involves coercive actions, such as trade sanctions, enhancing U.S. and South Korean military readiness, or direct military attacks. The authors conclude that only a mix of the second and third options has a chance of success. Waiting would provide North Korea with time to produce nuclear weapons and further expand its program. Positive incentives alone are unlikely to be effective.

IP-181 Planning a Ballistic Missile Defense System of Systems: An Adaptive Strategy. D. C. Gompert, J. A. Isaacson. 1999.

IP-192 From Testing to Deploying Nuclear Forces: The Hard Choices Facing India and Pakistan. G. S. Jones. 2000.

Do India and Pakistan intend to develop fully deployed nuclear forces? If they do, their tests were only the first step a fully deployed nuclear force must take to meet the requirements for a nuclear deterrent. These requirements were first delineated by Albert Wohlstetter in his seminal article "The Delicate Balance of Terror." These "Cold War" standards are still applicable today and will be difficult for either India or Pakistan to meet. This issue paper discusses what decisions India and Pakistan must make in order to attempt to fulfill these requirements and describes the risks involved in their failure to attain them.

IP-206 Ballistic Missile Defense: A German-American Analysis. D. C. Gompert, K. Arnhold. 2001.

The Bush Administration has already signaled its intention to proceed with national missile defense in some form. This paper examines the desirability, feasibility, and risks and costs of missile defense in the context of the NATO alliance. It lays out a concrete and comprehensive approach to strategic offensive and defensive arms and arms control policy and aims to be the basis for U.S.-European discussion and an aid in the search for common ground. The authors conclude by looking at the new realities that European leaders must confront and the key questions they need to answer as the United States proceeds with missile defense.

REPRINTS

RP-185 Confidence Building and Arms Control in the East-West Context: Lessons from the Cold-War Experience in Europe. R. E. Darilek. 1993.

This paper attempts to define broadly applicable lessons for the future from the history of arms control that developed during the former East-West rivalry in Europe. It also explores possibilities for applying these lessons to other regions of the world. In particular, the paper asks whether confidence-building measures (CBMs), other similar measures, and verification provisions originally designed to address Cold-War conditions in Europe can usefully be applied to the resolution of political-military confrontations elsewhere. Originally published in *Korean Journal of Defense Analysis*, v. 4, no. 2, Winter 1992.

RP-312 Ukraine: Europe's Next Crisis? F. S. Larrabee. 1994.

Originally published in *Arms Control Today*, Jul./Aug. 1994.

RP-449 The United States and WMD: Missile Proliferation in the Middle East. Z. Khalilzad. 1996.

Originally published in *Weapons of Mass Destruction: New Perspectives on Counterproliferation*, Eds. S.E. Johnson and W.H. Lewis, Washington, D.C.: National Defense University Press, 1995.

RP-542 China and Asia's Nuclear Future. J. D. Pollack. 1996

Originally published in *Bridging the Nonproliferation Divide: The United States and India*, by Francine R. Frankel (ed.), Lanham, Md.: University Press of America, 1995.

RP-720 Rethinking the Role of Nuclear Weapons. D. C. Gompert. 1998.

In the new era, the United States need not rely on nuclear weapons to prevent a global challenger from upsetting the status quo, to compensate for weakness in conventional defense, or to impress others with its power. Although the threat of nuclear response to conventional attack is no longer crucial to U.S. strategy, rogue states might adopt this tactic to deter U.S. power projection. However, the United States needs nuclear weapons to deter nuclear and biological attack, which could be just as deadly and might not be deterred by threat of U.S. conventional retaliation. The United States could reduce the importance and attractiveness of nuclear weapons, delegitimize their use in response to conventional threats, sharpen nuclear deterrence against biological weapons by stating nuclear weapons would be used only in retaliation for attacks with weapons of mass destruction (WMD)—in essence, a "no-first-use-of-WMD" policy. Originally published in *Strategic Forum*, no. 141, May 1998.

RP-899 North Korean Behavior in Nuclear Negotiations. Yong-S. Han. 2000.

At the end of the Cold War, North Korea changed its approach to negotiations. Toward the United States it continued to use a strategy of brinkmanship; toward South Korea it used a number of tactics that it did not use with the United States, such as insults and slander, propaganda, and delay. There were some commonalities: the use of extortion to attempt to gain concessions, and generating issues and manipulating the agenda to maximize negotiation gains. The author recommends that (1) future talks be held outside the Korean peninsula to minimize negative psychological effects; (2) South Korea ignore the propaganda and focus on the main agenda; (3) South Korea should try to keep the negotiations insulated from domestic political pressure and maintain consistency in its policy; (4) the United States should use a balanced "carrot and stick" approach toward North Korea and should attempt to gain a better knowledge and understanding of conditions in different regions. He suggests that the international community should step up efforts to closely monitor North Korea's clandestine nuclear activity and should address the verification issue at an early stage when new deals are being considered. In general, concerned countries should produce detailed, written documents on negotiated agreements to prevent North Korea from violating or misinterpreting them. Originally published in *The Nonproliferation Review*, Spring 2000, v. 7, no. 1.

RP-980 Deterrence and the ABM: Retreading the Old Calculus. R. A. Levine. 2001.

During the Cold War, it was assumed that stable deterrence would work because both sides were "rational opponents." The current debate over missile defense systems has become more complex as we consider irrational opponents—for instance, rogue states that have

gotten possession of Russian nuclear weapons. In addition, deterrence becomes irrelevant against terrorists when we do not know whom to threaten or punish. The author believes that no clear-cut case can be made for or against the ABM and national missile defense: Although there are some advantages to a missile defense system (if it works at all), the system cannot protect against all potential threats, and it will incur high costs, both political and monetary. He believes that the costs of a national missile defense system, particularly the real budgetary costs, outweigh the advantages. But, he concludes, setting the balance between the potential advantages and potential costs of an American ABM system, and between a thin and a robust national missile defense, is properly a political decision. Originally published in *World Policy Journal*, v. 18, no. 3, fall 2001.

CONFERENCE PROCEEDINGS

CF-132 Integrating Counterproliferation into Defense Planning. G. F. Treverton, B. W. Bennett. 1997.

PAPERS

P-7004 The Implications of Nonnuclear Strategic Weaponry: Concepts of Deterrence. R. M. Rosenberg, C. H. Builder. 1985.

The emergence of nonnuclear strategic weapons (NNSW) by the year 2000 is likely to have a profound effect on our ideas of deterrence. NNSW are conventional weapons with the capability of attacking targets in the homelands of the United States and the Soviet Union. This paper used an analytical framework to explore current concepts of deterrence and to look at how NNSW may change those concepts. The findings were many sided. For instance, since the end of World War II, deterrence has been based on nuclear capabilities; but if NNSW seem to offer the chance of escalating a conflict without using nuclear weapons, escalation could become easier. On the other hand, because NNSW are more discriminately destructive, they may help to raise the nuclear threshold and slow the pace of conflict. This could increase the opportunities for bargaining and crisis resolution in the early stages of a conflict and therefore reduce the likelihood that any conflict would unavoidably lead to a large-scale nuclear war. However, the authors found nothing to suggest that NNSW will completely replace nuclear weapons.

P-7045 Some Policy Implications of Nuclear Winter. J. J. Gertler. 1985.

This paper considers the implications for U.S. foreign and strategic policy of the possibility of "nuclear winter," the dramatic cooling of the earth as the result of massive amounts of soot and dust released into the atmosphere by a nuclear exchange. Some ways in which the possibility of nuclear winter affects foreign policy include the following: (1) As a new factor deterring use of U.S. nuclear devices in Europe, it is another reason for NATO nations to doubt the U.S. commitment to their defense. (2) U.S. policy toward Southern Hemisphere nations should take into account that they would become the world's major food suppliers following a nuclear exchange. (3) Given the global nature of nuclear winter, and uncertainty about its intensity or the level of exchange necessary to set it off, U.S. foreign policy may need to become more interventionist to secure, ensure, and enforce peace in nuclear-capable nations. Among the strategic policy implications of nuclear winter are the following: (1) Distinctions such as "tactical" or "theater" among nuclear weapons would cease to exist. (2) Nuclear winter may demand a greater reliance on enhanced radiation and sophisticated conventional weapons. (3) Targeting strategy and deterrent theory would be radically affected. The paper points out the importance of making both superpowers realize the potential seriousness of nuclear winter and incorporate it into their policy thinking.

P-7049 Of Arms Control, Summit Meetings, and the Politics of Make-Believe. A. Alexiev. 1985.

This paper argues that arms control negotiations and summit meetings are a dangerous panacea because they do not achieve the goals commonly claimed for them: (1) alleviate tension and contribute to international peace and security; (2) create a climate of trust and cooperation between the superpowers; and (3) slow down and even reverse the arms race. The author blames a fundamental misperception of the nature of the Soviet system and particularly its definition of security and the role of military power for this unwarranted emphasis on negotiations and summit meetings. He argues that, because of Soviet systemic insecurity, the mere existence of the Western alternative presents a security threat to the Soviet system, and that a stable security relationship with the Soviet Union can and should be achieved, but is only possible based on a strong U.S. defense capability.

P-7065 Monitoring Bombers and Cruise Missiles for the Purposes of Arms Control. D. Wilkening. 1985.

This paper discusses the extent to which bomber/cruise missile characteristics and activities can be monitored by national technical means. Monitoring, which involves detection, identification, and measurement, should be distinguished from verification, which involves judging treaty compliance. The author concludes that aircraft that can perform bombing missions can be identified with

moderate confidence at best. Cruise missiles can be monitored with moderate levels of confidence only if no deliberate effort is made to conceal them. Although monitoring bomber/cruise missile characteristics with high confidence is difficult, this does not necessarily imply that arms control agreements involving these systems cannot be adequately verified. Congress is considering altering the way Medicare pays for physicians' services. This report provides a framework for thinking about the ways in which a physician payment system can influence medical care, and tries to anticipate the kinds of effects that several possible alternative systems might have on the quality of care delivered to Medicare patients. The fact that the impact on quality of care is uncertain for any alternative payment system demonstrates the need to introduce any new system in an experimental way and then monitor it to attempt to ensure quality of care.

P-7112 The Intelligence Process and the Verification Problem. F. S. Feer. 1985.

In an effort to improve public understanding of the relationship between intelligence and the feasibility of verifying compliance with arms control agreements, this paper provides a primer on the intelligence-gathering process, discusses the need for secrecy, and analyzes 15 potential pitfalls in the process of gathering intelligence. The author suggests that verification is working, as evidenced by the U.S. government's publication of data demonstrating alleged Soviet noncompliance. The fundamental problem is that our political processes have yet to yield a credible means of responding to violations.

P-7128 Strategic Nuclear Weapons, Arms Control, and the NATO Alliance. G. Klinger. 1985.

The development of new strategic nuclear weapons systems and the current chill in Soviet-American relations have clouded the future of strategic arms control. Prospective deployments of certain strategic weapons also strain relations between the United States and its NATO allies. This paper examines what systems are likely to be deployed during the 1980s, maps certain options for strategic arms control in light of these deployments, and explores their effect on the NATO alliance. The author concludes that reaching an arms control agreement will be difficult in view of the steady decline in the state of Soviet-American relations since the late 1970s and the larger number of systems now deployed in Europe. The greatest obstacle to an agreement is the apparent incompatibility of the goals pursued by each side: The Soviet Union is primarily concerned with stopping or restricting the U.S. Strategic Defense Initiative, while the United States seeks deep cuts in Soviet offensive forces.

P-7190-RGS Assessing Options for Anti-Satellite [Sic] Arms Control: The Analytic Hierarchy [Sic] Process. S. Pace. 1986.

The Office of Technology Assessment (OTA) has identified seven antisatellite policy options. This paper evaluates the desirability of each option from the viewpoint of U.S. interests; identifies risk areas; and demonstrates the applicability of a structured quantitative evaluation technique, the Analytic Hierarchy Process, to a current policy issue. The result is a quantitative, auditable ranking of the OTA options by persons at RAND familiar with antisatellite/ballistic missile defense issues.

P-7264-RGS A Game Worth the Candle: The Confidence- and Security-Building Process in Europe--an Analysis of U.S. and Soviet Negotiating Strategies. M. Lawrence. 1986.

The United States is currently negotiating with the Soviet Union and 33 other nations in the Stockholm Conference on Confidence- and Security-Building Measures and Disarmament in Europe. This study finds that the United States has been somewhat more successful in achieving its objectives than the Soviet Union. The Soviet Union thus far has little to show for its efforts but continues to participate because withdrawing might seriously damage its position in the European public opinion polls. Effective U.S. stratagems include patient adherence to "tough" proposals, strong resistance to deadline pressure, informal consultations with other delegations, and judicious use of a public commitment to a position. The United States has been less successful with stratagems involving anti-Soviet propaganda, either as a tool or an objective, and with linkage of external events to progress in the negotiations.

P-7277 1986, the Year in Arms Control. E. L. Warner, D. A. Ochmanek. 1987.

The year 1986 was a very active and potentially significant one for arms control. Stockholm agreements were a limited but useful step toward regulating Warsaw Pact and NATO forces. The United States and the Soviet Union met at Reykjavik and worked out the basic elements of a series of potential agreements that had eluded them for many years. But the near-term prospects for concluding these agreements were not bright. Hard bargaining would be required to resolve important details not worked out at Reykjavik. The introduction of different U.S. and Soviet proposals for a second phase of strategic offensive weapon reductions sparked fruitless recriminations and produced a new area of disagreement. A large gap, probably not unbridgeable, remained on an agreement governing the development and testing of strategic ballistic missile defenses.

P-7286 Arms Transfers to the Middle East: European and Other Suppliers. A. Platt. 1986.

This paper, which is a chapter from the forthcoming book *U.S.-Soviet Competition in the Middle East*, reviews the current state of arms transfers to the Middle East. In recent years such transfers have increased greatly and are not likely to abate in the near future. The author, citing various sources, discusses the political background of these transfers, the superpowers' attitudes toward them, and the number and types of arms involved. In separate sections he details the involvement of the newly important West European suppliers. Finally, the author identifies measures that might foster international limitations on arms transfers in the future.

P-7319 Emerging Technologies in the Strategic Arena: A Primer. J. J. Gertler. 1987.

This paper presents an introductory look at the world of emerging technology weapons systems—primarily nonnuclear kill vehicles—and some of the implications for global stability of their introduction into world arsenals.

P-7334 Diamonds in the Sky: A Scenario in Three Scenes. C. H. Builder. 1987.

A speculative scenario describes how nonnuclear weapons for strategic intercontinental warfare might be deliberately developed and introduced by the Soviets. Its purpose is to stimulate thinking about nonnuclear strategic weapons, not to predict them. It is not based on fact or evidence: An SS-17 launch monitored in the Aleutians was analyzed and determined to have an unusual trajectory and to give off hundreds of sparkling objects. Subsequent analysis of the sparkler patterns showed that on the ground they would be rectangles, probably threatening even the most internal U.S. airbases with destruction of exposed planes. Protecting airbases necessitated buying fewer planes. The Air Force countered with two nonnuclear payloads for Minuteman, one that could threaten Soviet aircraft and one with precision guided charges, thus beginning the nonnuclear strategic arms race of the twenty-first century.

P-7356 Nordic Nuclear-Weapons-Free Zones: Prospects and Problems. R. Bitzinger. 1987.

The idea of a Nordic nuclear-weapons-free zone has been around for almost 30 years, yet proposals to establish such a zone have made no headway. The Nordic nations are aware that recently their region has grown in military and strategic importance to NATO and the Warsaw Pact, and traditional Nordic concerns for preserving the low tension and stability of the area have led the Scandinavian countries to search for new ways to protect and enhance this special security condition. This paper explores the motivations, rationales, and support behind the initiatives

for a nuclear-weapons-free zone in the region and the problems that may be countered in realizing such a zone.

P-7357 SDI And/Or Arms Control. D. A. Ochmanek. 1987.

This paper suggests a framework that relates U.S. policies regarding the Strategic Defense Initiative (SDI) and arms control to fundamental objectives of U.S. security—deterring aggression and limiting damage should deterrence fail. The paper argues that an "early deployment" of a nationwide ballistic missile defense is unnecessary and might undermine, rather than strengthen, U.S. security. The United States should consider deployment of such defenses only when it becomes clear that they could fundamentally improve U.S. security by assuring national survival in the event of a nuclear attack. Because the weight of evidence indicates that assured survival would be feasible only in cooperation with the Soviet Union, the paper concludes that the SDI depends on arms control to be viable as anything more than a modest research program.

P-7358 Strategic Impact of Abolishing Nuclear Weapons. R. W. Komer. 1987.

This paper considers what would happen to the global strategic balance if nuclear weapons were eliminated. The author discusses such issues as the budget impact of developing conventional deterrence; the possibility of a technological solution to the problems of NATO defense; the risks associated with achieving a nonnuclear world; and problems of treaty violations. The author suggests that elimination of nuclear weapons by the year 2000 would have an adverse effect on the U.S. strategic position, and that a nonnuclear world would be a less stable one.

P-7382 The Arms Control Challenge to the Alliance. J. A. Thomson. 1987.

This paper was originally presented as an address to the North Atlantic Assembly in Plenary Session, The Storting, Oslo, Norway, on September 25, 1987. It considers recent developments in arms control negotiations and their possible effect on the military dimension of Western security policy. The author suggests that because current arms control concerns are working at cross purposes to NATO security policy, an effort should be made to (1) link NATO's conventional arms control position to its defense program and (2) develop realistic expectations about what conventional arms control can accomplish.

P-7407 Post INF: Toward Multipolar Deterrence. J. C. Wendt, P. Wilson. 1988.

The NATO nations have never had enough conventional forces to deter the Soviets in Europe, and they have relied on NATO's nuclear forces—primarily those of the United

States—for deterrence. As Soviet conventional and nuclear forces have grown, the credibility of using U.S. nuclear forces in response to Soviet aggression in Europe has eroded. This paper analyzes the elements of deterrence and examines the best ways to preserve this system; discusses the growing role of British, French, and Chinese nuclear forces in deterring the Soviet Union from aggression; and considers what steps the United States can take to encourage this evolution in a favorable direction.

P-7470 Eastern Europe's Northern Tier and Proposed Changes in Warsaw Pact Military Doctrine. S. W. Stoecker. 1988.

The Warsaw Pact's Political Consultative Committee issued a "revolutionary" communique on May 29, 1987, stating that its military doctrine would be "strictly defensive" and would require only the minimal level of weapons "sufficient" for defense. This paper reviews the varied responses of Warsaw Pact countries to this declaration. The author speculates that military officers of the Northern Tier countries—Poland, Czechoslovakia, and the German Democratic Republic—may lack enthusiasm for a revised military doctrine because of concerns about the defense of their homeland and their strategic importance within the Warsaw Pact. On a political level, however, these countries have issued disarmament proposals of their own, suggesting a political endorsement of Gorbachev's arms control initiatives.

P-7476 Limitations on Tactical Missile Defenses: Negotiated and Otherwise. K. N. Lewis. 1988.

The launching of the U.S. Strategic Defense Initiative raises defense strategy issues surrounding the capabilities of antitactical ballistic missiles (ATBMs) and the U.S.-Soviet antiballistic missile treaty of 1972. This paper explores potential policies on ATBMs, reasons for heightened interest in ATBM issues, possibilities for limiting ATBMs, and historical trends and current concerns regarding ATBMs and arms limitation agendas. The author discusses the desirability of restrictions on ATBMs, existing limitations and the extent of those limits, and candidate rules for ATBM restriction.

P-7488 The Threat, the Conventional Balance and Arms Control: The Emerging Alternative View in Europe. R. Bitzinger. 1988.

In August 1988, the author attended a conference held in Kiruna, Sweden, on the subject of "Independent Arms Verification and Crisis Monitoring from Space." The conference examined the possibilities, problems, and limitations of utilizing civil (i.e., nonmilitary) satellites for national security- and arms control-related research. This paper lays out the key points of the conference, including an interesting "hands-on" workshop in using civil satellite

imagery for national security research. Finally, it discusses the prospects for using SPOT and LANDSAT civil reconnaissance satellites in support of defense and arms control research.

P-7502 Competing Security Doctrines and a Nordic Nuclear-Free Zone. R. Bitzinger. 1988.

This paper explores many problems common to the creation of nuclear-free zones (NFZs) throughout the world, using a Nordic NFZ as a case study. It discusses the contending issues surrounding the establishment of such a zone, as well as the security implications of a Nordic NFZ. In particular, the author finds that although a Nordic NFZ may suit the security needs of the Nordic neutral states, alliance commitments and NATO defense doctrine make Danish and Norwegian entry into such a zone currently impossible. In fact, any NFZ that has a real impact on Western nuclear defense strategy is likely to be unacceptable to NATO and therefore divisive to Western security and defense policy.

P-7575 Arms Control and Disarmament: The New Intra-Alliance Debate. M. Eisenstein. 1989.

This paper discusses Mikhail Gorbachev's "peace offensive" and NATO members' perceptions of and reactions to the Soviets' arms reduction policies as they affect the NATO position on disarmament. The author suggests that Soviet unilateral arms reductions might lead to calls for removal of some or all nuclear weapons from Europe, and he cautions against believing the Soviets' stated intentions to reduce arms. Negotiations on conventional arms control should emphasize the need for improved methods of force monitoring in order to enhance stability between NATO and Warsaw Pact countries.

P-7577 Living with Nuclear Weapons: Avoiding Nuclear War. P. Niblack. 1989.

This paper is the text of a presentation at the Crossroads Peace Institute's Peace Weekend, Palos Verdes, California, June 23, 1989. The author reviews the role of nuclear weapons as tools of diplomacy that have prevented a confrontation between the United States and the Soviet Union. He points out that avoiding a premeditated nuclear war is only half the problem. The other half is avoiding a war that arises out of the political and operational dynamics of a confrontation between the two superpowers. The author suggests that, because peace and war are both political conditions, peace is not an automatic result of a reduction in weapons. We can and should seize opportunities to reduce the risks of war by creating mechanisms and procedures to increase understanding and communication between the two superpowers and between NATO and the Warsaw Pact.

P-7601 The Philosophic Roots of Western Antinuclear Movements. R. Bitzinger. 1989.

This paper is based on a presentation made to a conference held October 28–29, 1988, at Cambridge, Massachusetts, on Arms Control Without Negotiation: Unilateral and Independent Initiatives. It describes and discusses the philosophic roots behind the emergence and activities of the antinuclear movement, identifying six major "motivational currents": pacifism, moralism, politics, feminism, anti-establishmentism, and antinuclearism. Although the first four motivational drives play important roles within the overall movement, the latter two—anti-establishmentism and antinuclearism—probably constitute the most far-reaching and persuasive philosophic motivations to be found in the antinuclear protest today. Anti-establishmentism embodies a critical attitude toward the established sociopolitical norms of modern society, including a criticism of the current international security regime, while also embracing a "positive, alternative view" regarding conducting both interpersonal and international relations. Antinuclearism is based mainly on the fear of nuclear war. Together, these motivations help define and refine each other's attitudes towards nuclear arms and provide the philosophic foundation for the antinuclear movement.

P-7610 Central Region Stability in a Deep-Cuts Regime. P. K. Davis. 1989.

There is widespread interest in the possibility of deep cuts in conventional forces in Europe, cuts going well beyond those that will be required by the Conventional Armed Forces in Europe (CFE) treaty now being negotiated. This paper critically reviews the static-analysis arguments underlying concerns about low force levels and presents the results of both simple analytic modeling and more complex simulation modeling of the deep-cuts regime. It concludes that, from a theoretical perspective, there is nothing inherently destabilizing about a deep-cuts regime—as long as the sides have approximately equal force-generation capabilities. On the negative side, the author concludes that a scaled-down version of NATO's current "layer-cake" force posture would be highly inappropriate in a deep-cuts regime.

P-7615-RGS U.S. Export Control Policy and the Missile Technology Control Regime. R. Schmidt. January 1990.

The proliferation of ballistic missiles poses a worldwide threat. The Missile Technology Control Regime (MTCR) was created in 1987 to help control the spread of delivery system technology by means of parallel export restrictions among signatory member nations. However, many nations have declined to join the original group of seven signatories; the absence of China, the Soviet Union, and

Israel substantially weakens the restraint of technology transfer. Other treaties and organizations overlap and supersede MTCR, resulting in conflict between members and other nations. In this already difficult context, formulation of coherent U.S. policy on export control is further hindered by domestic conflicts among government agencies. The State, Defense, and Commerce departments often disagree over definitions of civilian vs. military applications of technology, as well as over the diplomatic implications of sale or embargo of technology. MTCR is not effective because participation and compliance are voluntary, and there is not adequate common understanding of what constitutes delivery system technology.

P-7633 The Future of Europe's Security. W. Gruber. 1990.

The revolutions of 1989 made by the people of Central, Eastern, and Southeastern Europe did more than topple the communist regimes in these countries. They shattered the bipolar political order established in Europe after 1945 and opened the door for the emergence of a new Europe. This paper assesses the implications these political upheavals are bound to have on the security structure of Europe. It considers the new security architecture likely to emerge, reviews possible security arrangements for a united Germany, and discusses some of the consequences these developments may have for the future of European arms control negotiations.

P-7635 Trends in Space Control Capabilities and Ballistic Missile Threats: Implications for ASAT Arms Control. D. J. Johnson. 1990.

Several emerging trends in global affairs will have an impact on U.S. military space policy and the acquisition of space control capabilities. These trends include the uncertainty of NATO's future and the role of U.S. forces in Europe, the growing potential for U.S. involvement in Third World conflicts, and ballistic missile proliferation among nations ostensibly developing space launch capabilities. This paper examines U.S. national space policy and military space policy, focusing on the space control debate. It considers the status of space control-related capabilities, such as the antisatellite (ASAT) and national aerospace plane (NASP) programs. The author discusses the "operationalization" of space control; examines the growing sophistication of the European Space Agency, and Japanese and other space programs; and evaluates three near-term ASAT "regimes." Finally, the author presents a range of policy choices for the United States.

P-7636 U.S. National Security Strategy and Arms Control in the Pacific. J. A. Winnefeld. 1990.

This paper discusses various arms control proposals that would have major effects on the security of the Pacific Rim. While an effective arms control agreement between NATO and the Soviet Union in Europe could do much to reduce the security problems of that region, a similar agreement between the United States and the Soviet Union would leave many potential security problems in Asia unresolved or even exacerbated. U.S. obligations require a significant forward-deployed military presence in the region. Even without a Soviet threat, the United States would need two-thirds to three-fourths of the forces now there. The Soviets propose to limit the size, duration, and number of naval exercises. They also suggest prior notification of exercises and exchange of observers for such exercises, and they have proposed notification of transfers of a specified size between "Zones of Naval Groups." The intent is to keep the U.S. Navy at a distance from Soviet or other advocate states or to limit the weapons that the Navy can mount. These limitations would deny the United States the ability to contribute to Japanese security, to protect the oil lines from the Persian Gulf and other oil fields and to demonstrate support of its exposed friends. The author recommends seizing the initiative, an approach that would require some adjustment in the current position of the administration but that would help maintain a secure environment on the Western Pacific Rim.

P-7662 Arms Control in Korea: Issues for the 1990s. K. N. Lewis. 1990.

Recent progress in European arms reduction is the result of a unique combination of developments not likely to occur in other regions, including Korea. While the potential for meaningful arms control may not seem very promising in the case of Northeast Asia, future developments may create possibilities for real reductions. This paper reviews the traditional objectives and means of arms control and applies them to the case of Korea. It also reviews selected propositions that have governed arms control efforts and examines pertinent similarities and differences between Northeast Asia and Europe and how they pertain to present options. The author also reviews some prerequisites for successful arms control, cites some implications of productive experience elsewhere, and discusses certain special problems of Northeast Asian arms control.

P-7702 The Future of Nuclear Deterrence. C. H. Builder. 1991.

The world that has shaped nuclear deterrence over the past 45 years is rapidly changing. To speculate on the future of nuclear deterrence, this paper reviews the history of the concept of nuclear deterrence and the society from which that concept sprang. It then discusses military utility and

counterforce, the nature of nuclear deterrence today, and implications the information era may have for deterrence.

P-7731 Gorbachev and GRIT: Did Arms Control Succeed Because of Unilateral Actions or in Spite of Them? R. Bitzinger. 1991.

This paper analyzes the strategy of GRIT—Graduated and Reciprocated Initiatives in Tension Reduction—and discusses whether GRIT was successful for Mikhail Gorbachev in his attempts in the late 1980s at unilateral arms control. Called into question is whether this strategy of reciprocation and cooperation has any role to play in "real-world" arms control and international relations. The author finds that although Gorbachev made several sincere attempts to participate in GRIT with the United States, these efforts failed largely because (1) U.S. interests were strongly against participating; (2) Soviet motives were not trusted, even after repeated initiatives; and (3) Gorbachev's overparticipation in GRIT came to be seen as a sign of weakness. If arms control did eventually succeed, it was largely for other reasons (e.g., negotiated agreements, the collapse of communism, etc.), and the GRIT strategy would appear to have had little impact.

P-7736 Comments on Implementation: Contingency Options for Chemical Weapons Demilitarization. J. Aroesty. 1991.

This paper discusses the need to formulate contingency options for complying with U.S./Soviet chemical weapon demilitarization timetables starting in 1992. These timetables could be overly optimistic in the face of emerging environmental concerns and potential political, technical, and operational difficulties. There is mounting evidence of a clash between environmental concerns and the obligation to destroy thousands of tons of toxic agents. This clash could derail the effective implementation of the treaty. Another less apocalyptic but likely outcome would be the risk of serious delay in meeting the strict schedules. Contingency plans should be prepared to minimize slippage and delay. Otherwise, the United States could be in the position of negotiating a treaty whose provisions cannot be properly implemented.

P-7876 Executive and Congressional Use of Security Linkage During the Late 1970s. K. K. Skinner. 1994.

This paper investigates when and how the U.S. Congress and the executive branch of government used security linkage during the late 1970s, the period in which U.S.-Soviet detente unraveled. This paper challenges the conventional wisdom that U.S. officials primarily invoked security linkage to affect Soviet international behavior. A close review of the historical record shows that U.S. security linkage was as much about the domestic politics of national defense as it was about Soviet malfeasance.

Patterns of security linkage are also discerned. While members of Congress have tended to establish a tight or tactical link between issues, executive officials have generally connected issues in a contextual or diffuse manner. Domestic politics, too, account for the difference in executive and congressional use of security linkage. Finally, this paper argues that understanding when and how the United States used security linkage during the late 1970s is of policy significance in the contemporary context. The Clinton administration has been faced with pressures to use a variety of economic and security levers in interaction with the People's Republic of China, North Korea, and Russia. The lessons of U.S.-Soviet security linkage may help the current administration to avoid some of the pitfalls of linkage diplomacy.

P-7902 Theory and Practice: Nuclear Deterrents and Nuclear Actors. J. T. Quinlivan, G. C. Buchan. 1995.

For more than 40 years, the central organizing concept of American defense policy has been "deterrence." The end point of analyses of superpower deterrence was that there are very few circumstances under which countries would take positive actions that might bring even a single nuclear weapon down on their heads. Yet, even as the established nuclear powers reduce total nuclear arsenals and nuclear force readiness, there are renewed worries about nuclear weapons proliferation in former Soviet states marked by economic and political upheaval and in the Middle East. Measures specifically aimed at nuclear threat situations can be broken down to (1) adding disincentives/restraints to nuclear acquisition and use and (2) devising procedures in the event of nuclear use. Changing American declaratory policy to emphasize a deliberate response to any use of weapons of mass destruction would be a disincentive. In addition, we should develop a forensic analysis capability that can identify the perpetrators to a moral certainty in the event of nuclear use.

P-7912-RGS Implementing the Chemical Weapons Convention: Requirements and Evolving Technologies. D. H. Jones. 1995.

The Chemical Weapons Convention (CWC) prohibits the use of chemical weapons in warfare and places controls on the development, production, stockpiling, and transfer of many chemicals and munitions. The regime calls for the destruction of existing stockpiles of chemical weapons under a strict timetable and the destruction or conversion of production facilities for chemical agents. In identifying the dynamic factors that will affect the viability of the CWC, the current research illuminates strategies for the enforcement of the regime. These enforcement strategies must strike a balance between the goal of achieving effective disarmament and the political and economic costs inherent in enforcing such a far-reaching regime.

P-7984 Deterrence, Weapons of Mass Destruction and Security Assurances--a European Perspective. M. Piper, B. Tertrais. 1996.

P-7985 Civilian Nuclear Programs in India and Pakistan. B. G. Chow. 1996.

This paper begins with a discussion of the current and future plans of civilian nuclear development in India and Pakistan. Some civilian nuclear facilities can be used to produce highly-enriched uranium (HEU) or plutonium, the basic ingredients for making nuclear weapons. In fact, in spite of the two countries' active nuclear weapons programs, they both claim that their nuclear activities are for peaceful purposes. Next, the paper distinguishes the proliferation-resistant activities from those that are proliferation-prone. It then discusses the economics and energy security of alternative nuclear paths. Finally, the paper discusses the Comprehensive Test Ban Treaty (CTBT) and fissile-Material Production Cutoff. Cooperation with India and Pakistan on civilian nuclear power and technology will be discussed in a subsequent paper.

P-8033 Does Burning Weapons Plutonium Generate Hotter Waste and Consume More Repository Space? G. S. Jones, B. G. Chow, R. Starr. 1998.

P-8035 Managing Wastes with and Without Plutonium Separation. B. G. Chow, G. S. Jones. 1999.

OCCASIONAL PAPERS

OPS-001 U.S.-Soviet Nuclear Arms Control: Where We Are and How We Got There. S. Talbott. 1985.

This paper reviews recent obstacles to progress in arms control negotiations between the United States and the Soviet Union. The author attributes the current status of arms control to both the situation that the Reagan Administration inherited when it came into office and to unresolved disagreements within the administration itself. He sees grounds for cautious optimism that the arms-control process can be revived but warns of the danger that the negotiations within the government, on issues such as the real negotiability of cruise missiles and strategic defenses, will continue to no avail.

OPS-003-1 U.S.-Soviet Nuclear Arms Control: The Next Phase. A. L. Horelick, E. L. Warner. 1986.

This paper, which is included as a chapter in *U.S.-Soviet Relations: The Next Phase* (Cornell University Press, 1986), analyzes the nuclear arms control dimension of U.S.-Soviet relations as it enters a new phase. It reviews

the developments and forces that led to the present impasse, discusses the nuclear arms agenda before the leaderships of the two states, and considers the prospects for future agreements. It includes an analysis of the Soviet and American arms control proposals of October and November 1985 and discusses prospects for agreement in the light of congruent and divergent aspects of the two proposals. The authors suggest that an arrangement between the superpowers that provided the Soviet Union with assurances against a U.S. strategic defensive breakout during the lifetime of any new far-reaching arms reduction treaty might facilitate conclusion of such an agreement. Constraints on flight testing might slow down the pace of the Strategic Defense Initiative (SDI), depending on precisely where the line was drawn between permitted research and forbidden testing and for how long. However, in the context of a new treaty reducing nuclear offensive arms, continued U.S. conduct of a vigorous SDI research program within agreed constraints would provide the Soviet Union with strong additional incentives to comply more punctiliously than it has in the past with treaty provisions.

DOCUMENTED BRIEFING

DB-197-OSD Engaging China in the International Export Control Process: Options for U.S. Policy. C. A. Goldman, J. D. Pollack. 1997.

DRAFTS

DRU-1338-DOE A Concept for Strategic Material Accelerated Removal Talks (SMART). B. G. Chow, R. Speier, G. S. Jones. 1996.

DRU-1651-1-DOE The Waste Heat Implications of Alternative Methods for Disposing Surplus Weapons Plutonium: Direct Disposal Vs. MOX Burning in LWRs. G. S. Jones, B. G. Chow, R. Starr. 1997.

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