

ABSTRACT

Title of Dissertation: THE MINIMUM MEANS OF REPRISAL:
CHINA'S SEARCH FOR SECURITY IN THE
NUCLEAR AGE.

Jeffrey Lewis, Doctor of Philosophy, 2004

Dissertation Directed By: Professor John D. Steinbruner
School of Public Policy

Among the 5 states authorized under the NPT to possess nuclear weapons, China has the most restrained pattern of deployment: The People's Republic of China (PRC) operationally deploys about 80 nuclear warheads exclusively for use with land-based ballistic missiles. Its declaratory doctrine rejects the initiation of nuclear war under any circumstance. The PRC does not maintain tactical nuclear forces of any kind, and its strategic forces are kept off alert, with warheads in storage.

This posture has been sustained over time and changes in threat perception, suggesting restraint is the result of choice and not expediency. The apparent implication of the sustained pattern of Chinese restraint implies a distinctly different strategic assessment from that developed by Russia and the US to justify and direct their larger and more actively deployed forces.

As articulated in the *2001 Nuclear Posture Review*, the United States seeks credible options for the preventive use of strategic forces. Such options will presumably undermine confidence among Chinese leaders that a small strategic force provides adequate deterrence, and that vulnerability to preemption poses a less significant risk than the loss of control over alert forces. There is no evidence yet of a fundamental revision in the traditional deployment pattern of Chinese strategic forces, perhaps because China is likely to preserve a modest capability sufficient for its minimalist conception of deterrence. If China were subjected to a level of preemptive threat that Beijing judged intolerable, Chinese leaders would likely to reject, at least initially, the systematic emulation of US deployment patterns. Although the inner deliberations of China's leadership are only barely perceptible, patterns in Chinese defense investments, strategic force deployments, and arms control behavior suggest China would consider asymmetric responses that targeted the vulnerable command, control and intelligence (C2I) systems essential to preventive operations.

This dissertation attempts a systematic examination of Chinese policy statements and diplomatic actions for two purposes:

- To test the plausibility of China's apparent strategic logic against the conflicting expectations of prevailing US assessments.
- To provide guidance for shaping both the specific security relationship with China and global security arrangements in general.

THE MINIMUM MEANS OF REPRISAL
CHINA'S SEARCH FOR SECURITY IN THE NUCLEAR AGE

By

Jeffrey Glenn Lewis

Dissertation submitted to the Faculty of the Graduate School of the
University of Maryland, College Park, in partial fulfillment
of the requirements for the degree of
Doctorate of Philosophy
2004

Advisory Committee:
Professor John D. Steinbruner, Chair
Professor I.M. Destler
Professor Steve Fetter
Professor George Quester, Deans' Representative
Professor Emeritus Thomas C. Schelling

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ACKNOWLEDGEMENTS

I owe a great debt to the members of my committee, chaired by John Steinbruner, who read and re-read countless drafts and chapters that might have been better proofread. This includes I.M. “Mac” Destler, who kindly agreed to serve as an alternate committee member.

After two years as a University Fellow, I was fortunate to complete my dissertation on a graduate assistantship in the Advanced Methods of Cooperative Security Program with the Center for International and Security Studies at Maryland (CISSM). CISSM provided a rich intellectual community, including my colleagues Nancy Gallagher, Stacy Okutani, Chuck Thornton and Zhao Wuwen. The Advanced Methods program is generously supported by the John D. and Catherine T. MacArthur Foundation.

On several trips to China, Gregory Kulacki of the Union of Concerned Scientists kept me out of trouble, focused on the facts and even discovered a new source on the history of the Chinese nuclear weapons program. Thanks, man.

Many other colleagues provided help, ranging from comments on draft chapters to research materials to simple encouragement including Wade Boese, Kris Bergerson, Jeremy Bratt, Jonah Czerwinski, Jonathan Dean, Nancy Gallagher, Lisbeth Gronlund, Laura Grego, Adam Grissom, Theresa Hitchens, Mike Horowitz, Iain Johnston, Paul Kerr, Michael Krepon, Li Bin,

Joseph Logan & Ronya Anna, Marty Malin, Clay Moltz, Götz Neuneck, Dan Pittman, Todd Sechser, Rob Sprinkle, Nina Tannewald, David Wright and Logan Wright.

I also want to thank those Chinese colleagues, who must remain unnamed, for discussing freely a subject that's not necessarily a great idea to discuss at all. The manuscript was edited by Laura Susan Jacobs, a friendly but firm grammarian who occasionally invites strangers over for grilled cheese. All of these people above did their best to save me from committing countless errors; any that remain are mine alone.

Finally, thanks to Jennifer Ober, the love of my life, and my parents, John and Darlene Lewis.

TABLE OF CONTENTS

Acknowledgements	ii
Table of Contents	iv
List of Figures	vi
Chapter 1: The Minimum Means of Reprisal.....	1
How Much is Enough in Theory?	3
Evident Facts From and Apparent Implications of the Chinese Case.....	12
Scope and Purpose	21
Chapter 2: Chinese Strategic Forces, 2004	28
Chinese Strategic Delivery Vehicles.....	29
Command and Control Arrangements.....	39
Operational Doctrine.....	45
Proposed Modernization Plan	51
Conclusion	59
Chapter 3: Chinese Strategic Forces, Evolution and Design.....	60
The Evolution of Chinese Strategic Forces.....	61
1955-1967: High Yield Nuclear Weapons and Long-Range Missiles	61
1967-1981: China's First Generation of Strategic Systems	68
After 1981: China's Second Generation of Strategic Systems	76
Principles of Design.....	86
Chinese Nuclear Forces are « Defensive »	87
Chinese Nuclear Forces are « Limited »	89
Chinese Nuclear Forces are « Effective »	90
Chinese Nuclear Forces are « Safe »	94
Continuity Over Time.....	95
A Note on Organizational Bias.....	96
Conclusion	99
Chapter 4: Chinese Participation in the Conference on Disarmament.....	100
Comprehensive Nuclear Test Ban Treaty	105
Fissile Material Cut-Off Treaty	119
Conclusion	127
Chapter 5: Competing Explanations for Chinese Arms Control Behavior.....	128
Skeptical Explanations for China's Participation.....	131
Comprehensive Nuclear Test Ban Treaty	134
Fissile Material Cut-Off Treaty.....	144

Toward an Alternative Explanation.....	156
Comprehensive Nuclear Test Ban Treaty	159
Fissile Material Cut-Off Treaty	165
Conclusion	170
Chapter 6: The <i>Nuclear Posture Review</i> and the Logic of Restraint.....	173
Implications of the Nuclear Posture Review	174
Missile Defense	177
Non-nuclear Strike	181
Enhancing Deterrence.....	183
Possible Chinese Responses	185
Crisis Stability Concerns.....	199
Conclusion	207
Chapter 7: A Legal Undertaking to Prevent an Arms Race in Outer Space	209
Chinese Working Papers	212
2000-2001: CD/1606 & CD/1645	215
2002-2003: CD/1679 & the Unofficial Annex	219
Analyzing China’s Arms Control Proposals	223
Appropriate Forum and Agenda Items	223
Scope of Obligations	228
Verification.....	230
Conclusion	235
Chapter 8: China’s Search for Security in the Nuclear Age	236
Assessing Chinese Strategic Decisions	238
Implications for American Policy	244
Appendix: Selected Documents Submitted by the Chinese Delegation to the Conference on Disarmament, 1985-2003.....	250

LIST OF FIGURES

- Figure 1-1: A Model of *Enough*
- Figure 2-1: Operationally Deployed Strategic Warheads (as of January 1, 2003)
- Figure 2-2: Estimated PRC Ballistic Missile Deployments
- Figure 2-3: IC Estimates of Chinese ICBM Deployments by 2015
- Figure 2-4: Past IC Projections of Chinese ICBM Threat
- Figure 3-1: DIA Projection of Selected Chinese Strategic Forces, 1984-1994
- Figure 3-2: Chinese Nuclear Forces, 1965-2005
- Figure 4-1: Chinese Nuclear Tests, 1987-1996
- Figure 5-1: Purposes and Plausible Achievements for Chinese Nuclear Testing at Various Yields
- Figure 6-1: Missile Defense Appropriations 1985-2004
- Figure 6-2: Notional US Missile Defense Architectures
- Figure 6-3: Selected Programs Supporting the Non Nuclear Strike
- Figure 6-4: General Procedures for Weapons Development
- Figure 6-5: Cold War Alerts to DEFCON 3 or Above
- Figure 7-1: Confidence Building Measures in the Hague Code
- Figure 7-2: Obligations and Definitions in Selected Chinese Working Papers Submitted to the CD

Chapter 1: The Minimum Means of Reprisal

My attitude was clear throughout. For more than a century, imperialists had frequently bullied, humiliated and oppressed China. To put an end to this situation, we had to develop sophisticated weapons such as the guided missile and the atomic bomb, so that we would have the minimum means of reprisal if attacked by the imperialist with nuclear weapons.

Marshall Nie Rongzhen, *Memoirs*¹

Among the 5 states authorized under the Nuclear Non Proliferation Treaty to possess nuclear weapons, China has the most restrained pattern of deployment: The People's Republic of China (PRC) deploys just 80 or so operational warheads exclusively for use with land-based ballistic missiles. Its declaratory doctrine rejects the initiation of nuclear war under any circumstance. The PRC does not maintain tactical nuclear forces of any kind, and its strategic forces are kept off alert, with warheads in storage.

That this posture has been sustained over time and changes in threat perception suggest restraint is the result of choice and not expediency. China has long had the economic and technical capacity to build larger forces. Chinese deployment patterns have clearly been subjected to review, alteration, and modification. The apparent implication of the sustained pattern of Chinese restraint implies a distinctly different strategic assessment from that developed by Russia and the US to justify and direct their larger and more actively deployed forces. The Chinese assessment can be summarized with two statements:

¹ Nie Rongzhen, *Inside the Red Star: The Memoirs of Marshal Nie Rongzhen*, Zhong Rongyi, translator (Beijing, New World Press, 1988).

- A small number of nuclear warheads, regardless of the size of opposing forces, provides adequate deterrence against nuclear attack; and
- The vulnerability to a surprise disarming first strike poses a less significant risk to Chinese security than risk from losing control over alert forces.

These judgments, evident in Chinese declaratory policy and consistent with China's deployment history, contradict the typical strategic assessments of outside observers, especially those that have been most prominently advanced within the US. These observers have often projected larger forces, the imminent deployment of tactical nuclear weapons or other forces that would be more actively deployed, and the adoption of operational patterns that reflect commonly held US deterrent conceptions.

The evident problem is that such a rationale will be subjected to increasing pressure by the evolving capability and declaratory doctrine of US strategic forces. As articulated in the *2001 Nuclear Posture Review*, the United States seeks credible options for the preventive use of strategic forces. Such options will presumably undermine confidence among Chinese leaders that a small strategic force provides adequate deterrence, and that vulnerability to preemption poses a less significant risk than the loss of control over alert forces. There is no evidence yet of a fundamental revision in the traditional deployment pattern of Chinese strategic forces, perhaps because China is likely to preserve a modest capability sufficient for its minimalist conception of deterrence despite US investments in missile defenses

and other aspects of strategic modernization. Instead, the Chinese response has been limited to diplomatic initiatives within the Conference on Disarmament (CD).

If China were subjected to a level of preemptive threat that Beijing judged intolerable, Chinese leaders would likely to reject, at least initially, the systematic emulation of US deployment patterns. Although the inner deliberations of China's leadership are only barely perceptible, patterns in Chinese defense investments, strategic force deployments, and arms control behavior suggest China would consider asymmetric responses that targeted the vulnerable command, control and intelligence (C2I) systems essential to preventive operations.

This dissertation examines Chinese policy statements and diplomatic actions for two purposes:

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How Much is Enough in Theory?

This difference between Chinese deployments and those of the other declared nuclear powers, in principle, centers on the fundamental question of nuclear sufficiency: How much is enough? What are the requirements for deterrence? How difficult is it to achieve and maintain deterrence? How important are technical details such as the size, configuration, and readiness of nuclear forces to the goal of maintaining deterrence?

Enough describes not just the number of warheads and delivery vehicles, but also their sophistication and operational readiness to conduct nuclear operations.² As a nuclear force becomes increasingly capable of conducting nuclear operations, it acquires the characteristics of a highly complex organization marked by what organizational theorists describe as “interactive complexity” and “tight-coupling.” In general, such investments are undertaken because policy-makers presume they will enhance the credibility of deterrence. Deterrence can include relatively simple mission of deterring nuclear use by other states to more difficult deterrent operations involving extended deterrence, escalation dominance, and war termination. Even if there are bureaucratic or organizational imperatives pressing for increasingly capable forces, these imperatives—as a policy matter—will usually be expressed in terms of enhancing deterrence.

Investment in the deterrent effect, beyond investments in a minimum retaliatory capability, is subject to declining marginal returns—“our twenty thousandth bomb,” Robert Oppenheimer predicted, “will not in any deep strategic sense offset their two-thousandth.”³ Policy makers, as McGeorge Bundy would later note, are unlikely to “double-check the detailed consequences of an exchange, or to

² It is easiest to think of capability to conduct active operations as a function of the number delivery vehicles and warheads, but other forms of capability are also important. For example, the National Academy of Sciences Committee on International Security notes “In assessing the risks associated with nuclear arsenals, the operational and technical readiness of nuclear weapons for use is at least as important as the number of delivery vehicles or warheads.” Committee on International Security and Arms Control, National Academies of Sciences, *The Future of US Nuclear Weapons Policy* (Washington, DC: National Academy Press, 1997) 62.

³ J. Robert Oppenheimer, “Atomic Weapons and American Policy,” *Foreign Affairs* 31:4 (July 1953) 525-535.

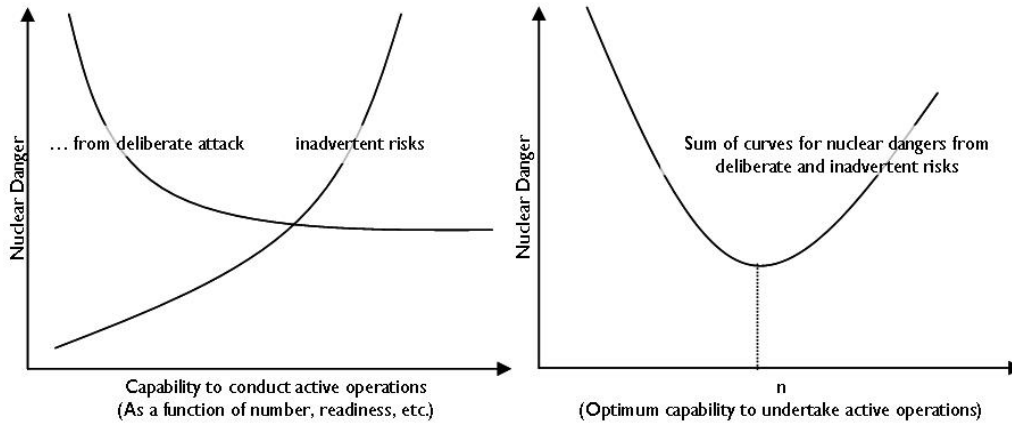
review how such a war might be fought.” Leaders are likely to have “a healthy disrespect for such exercises,” recognizing that “the avoidance of such a war was imperative.”⁴ Although such arguments are typically made by advocates of arsenals that emphasize custodial competence over readiness to conduct operations, proponents of extensive preparations for the full spectrum of deterrent operations (including Herman Kahn and Keith Payne) have also observed the “healthy disrespect” for such calculations. During the Cold War, Payne and Gray argued that the extreme caution introduced by nuclear weapons—“Armageddon Syndrome”—was a purely American phenomenon that undermined rational defense planning and was subject to technical remedies such as the deployment of confidence inspiring ballistic missile defenses.⁵

At the same time, increasing the ability to conduct active deterrent operations creates new, inadvertent nuclear dangers. In his careful study of nuclear accidents, false alarms and other safety related concerns, Scott Sagan found compelling empirical evidence that “nuclear weapons may well have made *deliberate* war less likely, but, the complex and tightly coupled nuclear arsenal we have constructed has

⁴ McGeorge Bundy, *Danger and Survival: Choices About the Bomb in the First Fifty Years* (New York: Random House, 1988) 461.

⁵ One crude method to measure the operational capability of a nuclear posture, beyond counting warheads or throw-weight, is to estimate the number of casualties that a given posture might produce. Nuclear warfighting proponents, for reasons not entirely clear, seem to have fixated on the figure of 20 million persons killed to define “victory” in a nuclear, i.e. they believed that reducing American dead to that level would provide a meaningfully more credible deterrent for Washington than a pure retaliatory full-scale nuclear exchange that accepted the death of 100 million Americans. The implicit statement is that once the Soviet deployed a nuclear posture capable of inflicting more than 20 million casualties, the ability to inflict additional casualties would be subject to sharply declining deterrent returns.

Figure I-1: A Model of Enough



simultaneously made *accidental* war more likely.”⁶ At some theoretical point, the risk of *accidental* war (and other inadvertent nuclear dangers) will exceed reductions in danger from deliberate war. That is the point at which we have enough—more will be worse (See Figure 1: A Model of *Enough*).

Of course, we do not know the shape of these curves or the current position of any nuclear weapon state. We can, however, say something about the rationales that determine, in practice, whether an analyst will believe a country should alter the mix of factors that determine its overall risk. In practice, the debate usually centers on the slope of the curve representing danger from deliberate attack, with judgments

⁶ Scott D. Sagan, *The Limits of Safety: Organizations, Accidents, and Nuclear Weapons*, (Princeton University Press, 1995) 264. Emphasis in original. See also John D. Steinbruner, *The Cybernetic Theory of Decision: New Dimensions of Political Analysis* (Princeton, NJ: Princeton University Press, 1974); Kurt Gottfried *et al*, *Crisis Stability and Nuclear War* (Ithaca, NY: Cornell University, January 1987) and Bruce G. Blair, *The Logic of Accidental Nuclear War* (Washington, DC: Brookings Institution, 1993).

about inadvertent danger in a subordinate role.⁷ The focus on meeting deterrent requirements at the minimum level of capability is captured by a 1983 NATO Nuclear Planning Group decision declaring that “policy of the Alliance is to preserve the peace through the maintenance of forces at the lowest level capable of deterring the Warsaw Pact threat.”⁸

Advocates of active deterrent operations typically express concern that deterrence will be very difficult to maintain and will depend very much on the details of the technical balance. Early, influential expressions of this argument emphasized uncertainty about future technological developments that might open the theoretical possibility of dramatic changes in the deterrent balance—possibilities that created a “delicate balance of terror.”⁹ More recent expressions of the idea, couched in the language of capabilities-based planning, focus on uncertainty regarding future threats rather than technological change.¹⁰ In both cases, deterrence is elusive and presumably requires increasingly capable forces.

Skeptics of preparing for active deterrent operations, in contrast, have emphasized the destructiveness of nuclear weapons to suggest that the risks of even

⁷ If one believes that deterrence is very difficult, it is not surprising that an analyst would believe the risk of accident is comparatively low. Tannenwald notes this kind of cognitive consistency in nuclear war planning for Korea, where opinions about the objective utility of using nuclear weapons in Korea (expressed as a statement about the presence of suitable targets for nuclear weapons in Korea and The PRC) was usually consistent with an analysts moral or political judgments. Nina Tannenwald, “The Nuclear Taboo: The United States and the Normative Basis of Nuclear Non-Use,” *International Organization* 53:3 (Summer 1999) 446-448.

⁸ *The Montebello Decision on reductions of Nuclear Forces announced by the Nuclear Planning Group in Ministerial Session* (Montebello, Canada, October 27, 1983).

⁹ Albert Wohlstetter, *The Delicate Balance of Terror*, P-1472 (Santa Monica, CA: RAND, December 1958).

¹⁰ Keith Payne, *Strategic Force Requirements and the Nuclear Posture Review's New Triad* (National Institute for Public Policy, 2003).

modest retaliation overwhelm any potential gains from the use of nuclear weapons in any plausible scenario. Deterrence is achieved with the very first deployments of nuclear weapons, with sharply declining marginal benefits from adding complexity to the arsenal after initial deployments. Reflecting on the Cuban Missile Crisis, for example, six of President John F. Kennedy's advisors wrote:

American nuclear superiority was not in our view a critical factor [during the Cuban Missile Crisis], for the fundamental and controlling reason that nuclear war, already in 1962, would have been an unexampled catastrophe for both sides; the balance of terror so eloquently described by Winston Churchill seven years earlier was in full operation. No one of us ever reviewed the nuclear balance for comfort in those hard weeks.¹¹

As Bundy would later explain, the critical factor compelling both sides to a political solution was "a parity of mortal danger that is not sensitive to this or that specific difference in numbers of warheads or megatons."¹² Looking back at the Cuban Missile Crisis, former Secretary of Defense Robert McNamara concluded that "In 1962 it would have made no difference in our behavior whether the ratio had been seventeen to one, five to one, or two to one in our favor—or even two to one against us."¹³

The difference between these two schools can be characterized as a statement about the sensitivity of the deterrent effect to changes in the size, configuration, and readiness of nuclear forces. If increasing the capability of strategic forces to conduct active deterrent operations has a large effect on reducing nuclear danger from

¹¹ Rusk, McNamara, Ball, Gilpatric, Sorenson and Bundy, "The Lessons of the Cuban Missile Crisis," *Time* (27 September 1982) 85 in Bundy, *Danger and Survival*, 447.

¹² Bundy, *Danger and Survival*, 606.

¹³ Robert S. McNamara, *Blundering Into Disaster: the First Century of the Nuclear Age* (New York: Pantheon Books, 1986) 45.

deliberate attack, then a state will prefer larger, more diverse forces kept on higher rates of alert and will eschew arms control (unless political costs compel it to do otherwise). Conversely, if larger or more capable forces add more risk of inadvertent forms of nuclear danger, then some form of restraint, formal or otherwise, will be preferable.

Fundamentally different assessments of the relative nuclear danger from deliberate and inadvertent routes to war produce fundamentally different views about nuclear weapons and arms control policies. Compare two contemporary statements from the National Academies of Science and the Defense Science Board concerning proposals for de-alerting:

“During the Cold War, reducing the risk of a surprise attack appeared to be more important than the risks generated by maintaining nuclear forces in a continuous state of alert. With the end of that era, the opposite view is now more credible [to the National Academies of Science Committee]. This has important implications for U.S. nuclear policy and calls for dramatically reduced alert levels.”¹⁴

“The [Defense Science Board] Task Force found the current set of arguments for further de-alerting difficult to understand. The arguments stress potential weakness in the Russian command and control system as a source of danger of unauthorized or accidental use.... The central issue must be stability. This was the central issue guiding START II goals and the principal driver of the outcome. Hence, to do violence to the stability of the force over a perceived danger not addressed by de-alerting US systems seems unwise in the extreme.”¹⁵

The tension between secure deterrence and accidental war prevention has been noted by several analysts. The trade-off—whether we describe it as a “usability” paradox in Scott Sagan’s phrase or the “always/never dilemma” as Peter Stein and Peter Feaver did—is a fundamental tension in nuclear weapons policy: the to always

¹⁴ *The Future of US Nuclear Weapons Policy*, 6.

¹⁵ *Report of the Defense Science Board Task Force on Nuclear Deterrence* (Washington, DC: Defense Science Board, 1998) 15.

to be able to use nuclear weapons when necessary works at cross purposes with the desire never to use them accidentally.¹⁶

Our own choices about balancing these risks will depend, in part, on beliefs about how other states view the importance of relative force levels. Extensive preparations for deterrent operations have been justified, in the United States, on the grounds that the Soviet Union was said to be undertaking similar preparation. These preparations allegedly revealed a high Soviet tolerance for nuclear danger and keen sensitivity to the balance of forces. In a crisis, our own inattention to the technical balance might create a situation that led the Soviets to attempt a limited strike, either to signal resolve or create a more favorable balance of forces. The latter case, the so-called “window of vulnerability” scenario, in particular, depended on Soviet perceptions of nuclear superiority. Where American participants in the Cuban Missile Crisis emphasized that irrelevance of nuclear superiority, Paul Nitze suggested the Soviets drew a different lesson:

Harking back to the Soviet penchant for actually visualizing what would happen in the event of nuclear war, it seems highly likely that the Soviet leaders, in those hectic October days in 1962, did something that U.S. leaders, as I know from my participation, did only in more general terms—that is, ask their military just how a nuclear exchange would come out. They must have been told that the United States would be able to achieve what they construed as victory, that the U.S. nuclear posture was such as to be able to destroy a major portion of Soviet striking power and still itself survive in a greatly superior condition for further strikes if needed. And they must have concluded that such a capability provided a unique and vital tool for pressure in a confrontation situation. It was a reading markedly different from the American internal one, which laid much stress on American nuclear superiority....¹⁷

¹⁶ Scott D. Sagan, *Moving Targets: Nuclear Strategy and National Security*, (Princeton University Press, 1989) 176-186 and Peter Stein and Peter Feaver, *Assuring Control of Nuclear Weapons: The Evolution of Permissive Action Links*, CSIA Occasional Paper No 2 (Centre for Science and International Affairs, Harvard University, 1987).

¹⁷ Paul H. Nitze, “Assuring Strategic Stability in an Era of Détente,” *Foreign Affairs* 54:2 (January 1976) 222.

Archival evidence suggests that the Soviet leaders drew much more circumspect conclusions than Nitze imagines, but the logic of his argument is clear: “Ultimately the quality of that deterrence depends importantly on the character and strength of the US nuclear posture versus that of the Soviet Union.”¹⁸ The idea that our own beliefs about the sensitivity of deterrence might be dangerous could be taken to an extreme—some proponents suggested suppressing research into the climactic effects of a nuclear exchange because of the danger that might result from an asymmetry in beliefs about the environmental consequences of nuclear war.¹⁹

If other countries, however, are easily deterred, then a very different set of policies are appropriate. Our own preparations will be wasteful and may incur an unnecessary risk of inadvertent nuclear danger. Moreover, our preparations might lead other states to doubt the credibility of their deterrent with respect to our forces. Alleged Soviet preparations to fight and win a nuclear war were sometimes invoked to justify similar preparations on the part of the United States. For example, Nitze argued that even if Soviet leaders abhorred the prospect of nuclear war, they would “consider themselves duty bound by Soviet doctrine to exploit fully that strategic advantage [conferred by preparations for fighting and winning a nuclear war]

¹⁸ Nitze, “Assuring Strategic Stability in an Era of Détente,” 223. On Soviet views of the Cuban Missile Crisis, see: Aleksandr Fursenko and Timothy J. Naftali, *One Hell of a Gamble: Khrushchev, Castro, and Kennedy, 1958-1964* (New York: W.W. Norton & Company, 1998).

¹⁹ *Nuclear Winter: Uncertainties Surround the Long-Term Effects of Nuclear War* GAO/NSIAD-86-92 (Washington, DC: Government Accounting Office, March 1986) 30-35.

through political or limited military means.”²⁰ Of course, our own preparation, would provide the same dilemma for the Soviet Union or other parties.

Evident Facts From and Apparent Implications of the Chinese Case

The attitudes of the Chinese leadership toward nuclear weapons and arms control are not directly available for examination, but some conclusions may be inferred from the history and current deployment of China’s strategic forces, as well as Chinese behavior in arms control negotiations. China’s leaders appear to hold a restrained view about the role and value of nuclear weapons, roughly comparable to the skepticism expressed by participants in the Cuban Missile Crisis regarding nuclear superiority. In fact, a very similar formulation to the one offered by President Kennedy’s six advisors is found in a text used to train Chinese Communist Party Cadres at the Chinese National Defense University, which notes:

Though the United States was superior to the Soviet Union in nuclear weapons at that time, if a nuclear war broke out, no country could avoid the destiny of destruction. There is sharp conflict between the super destructive power of the means of war and the thinking of the war launcher who wants to get his interest on one hand, but fears destruction on the other.²¹

Chinese force deployments and arms control behavior both suggest the Chinese leadership has decisively chosen a small nuclear force based on the principle that a more capable arsenal would not substantially enhance deterrence and will

²⁰ Nitze, “Assuring Strategic Stability in an Era of Détente,” 223.

²¹ *Strategic Studies (Zhanlue xue)* (Beijing, Academy of Military Sciences, 2000) Ch. 20, p.7.

compromise leadership control—in other words, *enough* is, in the phrase of Marshal Nie Rongzhen, “the minimum means of reprisal.”²²

In a 2000 interview with a newspaper reporter, the PRC’s then-Ambassador for Disarmament Affairs Sha Zukang articulated confidence in the PRC’s nuclear deterrent in terms that Bundy and McNamara would immediately recognize, arguing that even a very small, unsophisticated force maintained a measure of deterrence against larger, more sophisticated nuclear forces:

I must emphasize that “strategic balance” and “strategic parity” are two different concepts. Nuclear weapon is kind of special weapon. Due to its gigantic destructive force, to achieve strategic balance among nuclear countries [China] does not need to possess the same amount of nuclear weapons. As far as the medium and small nuclear countries are concerned, after being hit by the first nuclear strike, as long as they still possess the capability of launching the second nuclear strike to inflict unbearable losses to the attacking side, they can still reach a certain kind of strategic balance with major nuclear countries which possess quantitative and qualitative superiority of nuclear weapons. [sic]²³

Much as Bundy and McNamara, facing the prospect of nuclear war over Cuba, concluded that even small, unsophisticated nuclear arsenals achieved a large measure of deterrence, recent historical scholarship suggests Chinese leaders drew similar conclusions after facing nuclear threats during the Korean War. Such historical scholarship is, of course, only suggestive. Here I note only two anecdotes. However, succeeding chapters demonstrate that Chinese force deployments and arms control policies continue to be deliberate reflections of this judgment.

²² Nie, *Inside the Red Star*. See also: Nie Rongzhen, “How China Develops Its Nuclear Weapons,” *Beijing Review* 17 (29 April 1985) 15-18.

²³ Interview with Sha Zukang, Director-General of Department of Arms Control And Disarmament of Ministry of Foreign Affairs in Tseng Shu-wan, “US Nuclear Proliferation Threatens Global Security -- Sha Zukang on Ways China Should Handle It, Stressing Needs To Ensure The Effectiveness of Retaliatory Capacity” *Wen Wei Po* (June 11, 2000) FBIS- CPP-2000-0711-000024.

In his study of the formation of Chinese attitudes about nuclear weapons during the Korean War, Mark Ryan concludes the first generation of Chinese communist leaders formed highly accurate assessments about the physical limitations of nuclear weapons and the political constraints on the American use of nuclear weapons.²⁴ Despite caricatures of Chinese attitudes toward nuclear weapons during the Korean War as ignorant or facile, Ryan finds Chinese assessments from the period are consistent with those found in declassified US documents from the same time. Ryan notes that one particular Western text translated for the Chinese leadership—P.M.S. Blackett’s *Military and Political Consequences of Atomic Energy*—was particularly influential in the formation of Chinese attitudes toward US nuclear threats.²⁵ Interestingly, Blackett’s “optimism on the stability of the balance of terror” that so influenced the Chinese is criticized by Wohlstetter in *The Delicate Balance of Terror* on the grounds that a technological innovation—the introduction of ballistic missiles—threatened to undermine the stability of the deterrent balance.²⁶ Whether Blackett or Wohlstetter better assessed the impact of the ballistic missiles and other technical developments of the period in question is less important than the direct way in which Chinese attitudes map to the model in the preceding section and provides a candidate rationale for arms limitations.

²⁴ Mark A. Ryan, *Chinese Attitudes Toward Nuclear Weapons: China and the United States During the Korean War* (New York: ME Sharpe, 1989) 179.

²⁵ The full citation is: P.M.S Blackett, *Military and Political Consequences of Atomic Energy* (Turnstile, London, 1948).

²⁶ “It is now widely known that intercontinental ballistic missiles will have hydrogen warheads, and this fact, a secret at the time, invalidates Mr. Blackett’s calculations and, I might say, much of his optimism on the stability of the balance of terror.” Wohlstetter, *The Delicate Balance of Terror*, np.

By the end of the Korean War, Ryan concludes Chinese leaders had developed a “genuine self-confidence derived from the successful endurance of risk and from the experience gained in implementing defensive measures against nuclear attack during the war.”²⁷ This confidence in the robust character of the deterrent balance continues to determine Chinese force deployments through the current period—something the next chapter suggests remains in evidence based on US intelligence assessments.

The integrated realism suggested by Ryan is evident in a remarkable assessment produced by four senior Chinese military officials, including Marshal Nie Rongzhen, during the 1969 fighting between China and the Soviet Union over the Zhenbao (Damansky) Islands. Although Mao had told a visiting dignitary that China “in a sense, is still a non-nuclear power,” Nie and his colleagues expressed confidence in the deterrent quality of China’s small force:

Will the U.S. imperialists and the Soviet revisionists launch a surprise nuclear attack on us? We must be fully prepared for this. However, it is not an easy matter to use a nuclear weapon. When a country uses nuclear weapons to threaten another country, it places itself under the threat of other country’s nuclear weapons, and will thus inevitably face the strong opposition of its own people. Even the use of nuclear weapons cannot conquer an unbending people.²⁸

This statement is a remarkable expression of confidence in the deterrent effect of an extremely small arsenal—China had tested its first warhead deliverable by a missile

²⁷ Ryan, *Chinese Attitudes Toward Nuclear Weapons*, 10.

²⁸ Chen Yi, Ye Jianying, Xu Xiangqian, and Nie Rongzhen, *Report to the Central Committee: A Preliminary Evaluation of the War Situation* (11 July 1969) translated in Chen Jian and David L. Wilson, “All Under The Heaven Is Great Chaos: Beijing, The Sino-Soviet Border Clashes, And The Turn Toward Sino-American Rapprochement, 1968-69,” *Cold War International History Project Bulletin* 11 (1996) 167.

less than two years before and could not have produced more than a handful of warheads and gravity bombs.

The Chinese leadership appears to have concluded that the vulnerability from a disarming first strike was a less significant risk to Chinese security than the risk from losing control over alert forces. To this day, Chinese leaders emphasize the need to maintain control over nuclear weapons. During a March 2002 inspection of the China's strategic rocket forces—known as the Second Artillery (*Di Er Pao*)—China's paramount leader, Jiang Zemin, reportedly said the “special nature” of the Second Artillery's mission “requires that the Second Artillery unit politically must be absolutely reliable” and added that the political reliability of the Second Artillery unit ought to exceed that of other units.²⁹ Zhang Wannian, Vice Chairman of the Central Military Commission, suggested the Second Artillery, relative to other military units, must “set higher standards, impose stricter requirements on itself and do a better job in this connection and strive to be an exemplary model in assigning importance to politics.”³⁰

Not surprisingly, there is no evidence that China has ever placed its strategic forces on alert. The 1969 border clashes are widely regarded as the most serious foreign policy crisis during China's period as a nuclear power.³¹ Although Soviet aircraft practiced bombing runs in preparation for a strike on Chinese nuclear

²⁹“Forging the Republic's Shield of Peace,” *People's Daily* (21 March 2002) FBIS-CPP20020321000103.

³⁰ “Chinese military leader outlines goals for army missile unit,” *Xinhua News Agency* (7 June 2002).

³¹ For discussions of the crisis, see: William Burr, “Sino-American Relations, 1969: The Sino-Soviet Border War and Steps Towards Rapprochement,” *Cold War History* 1:3 (April 2001) 73-112.

facilities, the Chinese leadership did not order the Second Artillery to prepare for nuclear use. During a talk to senior Chinese leaders, Mao emphasized that “our nuclear bases should be prepared, be prepared for the enemy’s air bombardment,” but made no corresponding comment about preparations for the use of nuclear weapons in retaliation.³² No preparations to use Chinese nuclear weapons were detected by US intelligence, which noted only defensive preparations consistent with the “war preparations” campaign underway.³³

Chinese emphasis on maintaining control, even at the expense of readiness, is in stark contrast to US operational practices during much of the Cold War. For example, a US team inspecting American nuclear weapons based overseas once discovered an extreme instance of the kind of bias toward readiness at the expense of operational control that marked early assessments of the relative risks of deliberate and inadvertent routes to nuclear war. The inspection team reportedly found a German quick-reaction alert airplane (QRA), loaded with fully operational nuclear weapons, sitting on a runway with a German pilot in the cockpit. “The only evidence of US control was a lonely 18-year-old sentry armed with a carbine and standing on the tarmac” operating with conflicting advice about whether to shoot the pilot or the

³² Mao Zedong’s Talk At A Meeting Of The Central Cultural Revolution Group (March 15, 1969) translated in Chen and Wilson, “All Under The Heaven” 162.

³³ The CCP Central Committee’s order for a nation-wide mobilization in August makes no mention of nuclear weapons. DIA detected to no efforts to deploy nuclear weapons for operational use. *The CCP Central Committee’s Order for General Mobilization in Border Provinces and Regions* (28 August 1969) translated in Chen and Wilson, “All Under The Heaven” 168-169. The *Order for General Mobilization in Border Provinces and Regions* emphasizes ending the factional struggle that characterized the Cultural Revolution in order to unite against a common, external threat. Presumably, the active deployment of nuclear weapons during factional infighting and tenuous political control would have given the Chinese leadership pause.

bomb in the event of an unauthorized take-off.³⁴ This admittedly extreme example has no analogue in the Chinese case.

The PRC's strategic forces lack capability even in comparison with the other "second tier" nuclear powers—Chinese officials themselves claim that "the nuclear policy of China is to a large extent different from that of the UK and France in terms of what nuclear weapons deter against, the amount of nuclear weapons required for a retaliatory strike that is sufficient to inflict unacceptable damage on the enemy, and other aspects."³⁵ The PRC relies on an operationally deployed force of about 80 land-based ballistic missiles, with the warheads stored separately and missiles kept unfueled. In contrast, both Britain and France maintain fleets of nuclear ballistic missile submarines (SSBNs) that continue operational patrols—although Britain's 1998 *Strategic Defence Review* announced reductions in the British nuclear stockpile to 192 operationally available warheads available exclusively for use by Trident SSBNs "at several days 'notice to fire.'"³⁶ France continues to maintain 348 operationally deployed nuclear warheads, available for use by strategic submarines, carrier-based strike aircraft and land-based bombers. Britain nor France have not indicated whether they have installed permissive action links, environmental sensing devices, or other positive control mechanism on their nuclear weapons.

³⁴ The story is recounted in Stein and Feaver. *Assuring Control of Nuclear Weapons*. 30-31.

³⁵ Citation available from author.

³⁶ *Strategic Defence Review* (London, UK: Secretary of State for Defence, July 1998). Available at: http://www.mod.uk/issues/sdr/wp_contents.htm

The evident problem with the rationale that underpins Chinese restraint is embedded within the evolving capability and declaratory doctrine of US strategic forces. As articulated in the *2001 Nuclear Posture Review*, the United States seeks credible options for the pre-emptive use of strategic forces for what two analysts, writing in a different context, described as “coercive, yet politically defensive, purposes.”³⁷ The condition that Sha Zukang describes as balance in his interview looks quite different to the authors of the *Nuclear Posture Review*. Keith Payne, for instance, noted the “obvious fact” that a US intervention in a dispute over Taiwan might “risk escalation to a large-scale theater war and Chinese ICBM threats against the U.S. homeland.”

Preserving the credibility of U.S. deterrence commitments in such circumstances would require Chinese leaders to believe that Washington would persevere despite their nuclear threats and possible regional nuclear use. Washington would have to deny Chinese leaders confidence that such threats could deter U.S. intervention, a hope to which they would likely cling. Consequently, U.S. deterrence policy in this case could require that the United States be able to limit its own prospective losses to a level compatible with the stakes involved.³⁸

The goal of the modernization outlined in the *Nuclear Posture Review* is a fundamental transformation of the way that the Chinese leaders view the efficacy of their own deterrent. Whereas Wohlstetter warned about a technological breakthrough that might disrupt the delicate balance of terror, the *Nuclear Posture Review* deliberately seeks that breakthrough through conventional precision-strike systems to resolve self-deterrence, missile defenses to reduce homeland

³⁷ Colin S. Gray and Keith Payne. “Victory is Possible,” *Foreign Policy* 39 (Summer 1980) 20.

³⁸ Keith B. Payne, “Post-Cold War Deterrence and a Taiwan Crisis,” *China Brief* 1:5 (September 12, 2001) np. Available at: <http://www.jamestown.org/>

vulnerability, and a responsive defense infrastructure to indefinitely maintain the advantage. In short, the modernization outlined in the *Nuclear Posture Review* is designed to enable coercion by demonstrating that the US is no longer deterred by Chinese strategic forces. This modernization will substantially increase the apparent willingness of the United States to subject China to a disarming first strike and will presumably complicate efforts to sustain Chinese restraint.

There is no evidence, yet, of a fundamental revision in the traditional deployment pattern of Chinese strategic forces, or even the underlying strategic logic. For the foreseeable future, a US force with the capability outlined in the *2001 Nuclear Posture Review* remains an aspiration. China will continue to preserve a modest level of capability sufficient for its minimalist conception of the role of nuclear weapons—despite US investments in missile defenses and other aspects of strategic modernization.

Yet, any responsible American policymaker must ask how China might respond to US strategic forces that accomplished the *2001 Nuclear Posture Review's* goal of subjecting China to a greater level of preemptive threat. Beijing would likely judge this situation intolerable. Chinese leaders are likely to reject, at least initially, the systematic emulation of US deployment patterns and their attendant logic on technical and economic grounds. Instead, China would likely consider, as did their Soviet counterparts, asymmetric threats to the systems most vulnerable and essential to the successful conduct of preemptive interference—systems essential for C2I functions.

Scope and Purpose

Although the inner deliberations of China's leadership are only barely perceptible, additional evidence can be derived from patterns in Chinese defense investments, strategic force deployments, and arms control behavior. The recent history of Chinese engagement in multilateral arms control negotiations, in particular, reflects the logic of restraint that is evident both in Chinese statements and strategic force deployments. The strong emphasis on opening negotiations in the Conference on Disarmament concerning the prevention of an arms race in outer space may also suggest the form that reaction to strategic pressure would ultimately take.

This dissertation attempts a systematic examination of Chinese policy statements and diplomatic actions for two purposes:

- To test the plausibility of China's apparent strategic logic against the conflicting expectations of prevailing US assessments.
- To provide guidance for shaping both the specific security relationship with China and global security arrangements generally.

The first chapter sketches current Chinese nuclear force deployments based entirely on the scant Chinese statements and US intelligence assessments that have appeared in open source literature. Detailed information about the status of Chinese nuclear testing program is contained in the fourth chapter.

The majority, if not all, of unclassified estimates of the Chinese nuclear arsenal were badly in need of revision. Most estimates derive from research done in the mid-1980s, before a flood of new information became publicly available. This

research was necessarily based on informed speculation, but that speculation was often incorrect—particularly in relation to the first generation of solid-fueled ballistic missiles in China’s inventory. Overall, the new picture of the Chinese strategic force that emerges is one that is smaller, less diverse and less ready to conduct actual operations than most analyses suggest. Overall, I estimate the Chinese have around 80 operationally deployed nuclear warheads, assigned exclusively to ballistic missiles that are kept unfueled and with warheads stored separately. The exclusive purpose of these weapons, along with any warheads or gravity bombs maintained in storage, is to retaliate in the event of a nuclear use against the PRC.

Since the 1980s, two major developments have made the majority of US intelligence community judgments available to open source analysts. First, the natural progress of declassification has released a large number of intelligence estimates from the 1960-1990 period. These documents reveal a tremendous amount about the development of the Chinese arsenal and its present configuration. Second, the partisan politics of the 1990s played out over a number of issues that created pressure to either declassify or provide unclassified summaries of intelligence judgments relating to alleged nuclear espionage, the need for continued nuclear testing, the ballistic missile threat to the United States, and the need for arms sales to Taiwan. In some cases, dissatisfied parties leaked entire classified documents to the public. In arguments over the ballistic missile threat and the pace of Chinese defense modernization, the intelligence community itself became a subject of debate, resulting in the disclosure of substantial information about the community’s

methodology and diversity of opinion. All of these documents contain a wealth of information about the Chinese nuclear and ballistic missile programs. Although the decision to declassify, summarize in unclassified form, or leak was quite often partisan, the motives were no more subtle than the judgments of the intelligence community.

I was in a unique position to take the time to start from the beginning and, not holding a security clearance, utilize classified documents that were improperly leaked to the press. US intelligence analyses are not perfect, but they are informed by a wealth of data, such as radiochemistry analysis of test fallout, that are not otherwise available to open source analysts. The intelligence community has employed a relatively consistent methodology over a period of years that can be used to identify systematic biases such as overestimating future deployments.

The second chapter reviews the history of Chinese nuclear deployments. Based on this history, I conclude that the limited posture is substantially the result of deliberate choices by the Chinese leadership that reflect a belief that deterrence is relatively insensitive to changes in the size, configuration, and readiness of nuclear forces. I have attempted to use US intelligence analyses to track deployments and budgetary allocations, but such information is difficult to obtain and often very speculative. Moreover, intelligence sources offer little information about the internal decision-making that determined Chinese force structure. A handful of Chinese sources exist but few are unquestionably official. The paucity of sources makes cross comparison nearly impossible and virtually all are in the Chinese language. To

compensate for my inadequate command of the Chinese language, this chapter makes use of the work of John Wilson Lewis, and his Chinese collaborators Xue Litai and Hua Di. Adding to these sources are a number of Chinese documents translated into English, including *China Today: Nuclear Industry*, the *Memoirs of Marshall Nie Rongzhen*, and a pair of text books from the Chinese National Defense University, *Strategic Studies* (2000) and *Operational Studies* (2000).

One Chinese language source deserves special attention: a collection of 23 biographical essays about the most important figures in China's nuclear, missile and space programs entitled *Biographies of the Founders of the Nuclear, Missile and Satellite Program* (Liangdan Yixing Yuanxunzhuan), Tsinghua University Press, 2001. This document contains a number of revelations about the Chinese nuclear weapons program, particularly in the 1980s.

The third chapter sketches a history of China's participation in the Conference on Disarmament during the negotiations of two treaties: the Comprehensive Nuclear Test Ban Treaty (CTBT) and the Fissile Material Cut Off Treaty. The significance of the Chinese decision to negotiate and sign the CTBT has been overlooked, particularly in the deadlock that has afflicted the CD since 1996. The actual positions of the participants, particularly the United States and China, have frequently been poorly understood and often misrepresented. I have attempted to reconstruct the broad outline of a decade of negotiations from several sources, including documentary records of the CD; published accounts of the participants (including Congressional testimony during the ratification debate); a small number

of subsequently declassified documents; and a series of interviews and conversations with American and Chinese participants in Washington, New York, Beijing, and Geneva. The status of the Chinese nuclear testing program is an important piece of the story of CTBT negotiations. Therefore, I try to present a relatively detailed account of its status in rather more detail in this section than the first chapter, relying as much as possible on official judgments that appeared as declassified documents, unclassified summaries or leaked documents.

The fifth chapter compares two explanations of Chinese participation in these negotiations against the revised historical record presented in the fourth chapter. This chapter examines the current academic literature that documents Chinese arms control behavior, including the prevailing judgments that China signed the CTBT under duress and future Chinese arms control concessions are unlikely. Comparing this literature against the principles of design suggested in the first three chapters and the actual conduct of negotiations in the CD, I conclude China had good strategic reasons to support the CTBT and the United States may be missing an opportunity for further arms control negotiations with China.

The sixth and seventh chapters examine current Chinese perspectives on US strategic forces modernization and possible arms control solutions to manage the vulnerability of the Chinese arsenal created by the impending deployment of anti-ballistic missile systems and expanding military activities in outer space. These chapters are largely based on official Chinese government documents, papers, and reports by Chinese officials and well-connected academics, and interviews and

conversations conducted during several trips to Beijing and Geneva. Official statements and speeches are an obvious, but often overlooked, source of information about Chinese government policy. As John Lewis wrote forty years ago in *Major Doctrines of Communist China*, “Although many Communist statements are idealized versions of events and social conditions in China, it is in such statements that Party leaders regularly communicate the ideas and policies which obedient cadres—the Chinese leaders at all levels of Party, government, and social organizations—are expected to apply to a wide inventory of routine tasks.” “On most domestic and international questions, the Communists leave no doubt about their general positions,” Lewis concludes. “In the main, their statements and reports have been prepared for internal consumption.”³⁹ This tendency is evident in other countries, including the United States, and remains relevant for China today.⁴⁰

An essential, but often implicit, source of context against which to interpret Chinese statements is the set of judgments derived from the historical account of the evolution of China’s nuclear forces and its arms control behavior. In combination, China’s past behavior and statements suggest a very different account of Chinese attitudes toward nuclear weapons and arms control than is commonly presented. On the whole, Chinese policies reflect a more skeptical view of the role of nuclear

³⁹ John W. Lewis, *Major Doctrines of Communist China* (New York: W.W. Norton, 1964) 3-4.

⁴⁰ On the role of public statements in setting internal bureaucratic priorities within the United States, see Warren Christopher, *In the Stream of History: Shaping Foreign Policy for a New Era* (Stanford, CA: Stanford University Press, 1998) 9 and Henry Kissinger, *American Foreign Policy: Three Essays* (New York: W.W. Norton, 1969) 22-23.

weapons and a greater interest in arms control than the American foreign policy community has generally recognized.

Chapter 2: Chinese Strategic Forces, 2004

China possesses a small number of nuclear weapons entirely for self-defense. China undertakes not to be the first to use nuclear weapons, and not to use or threaten to use nuclear weapons against non-nuclear-weapon states. China does not participate in any nuclear arms race, and never deploys any nuclear weapons beyond its borders.

China maintains a small but effective nuclear counterattacking force in order to deter possible nuclear attacks by other countries. Any such attack will inevitably result in a retaliatory nuclear counterstrike by China. China has always kept the number of its nuclear weapons at a low level. The scale, composition and development of China's nuclear force are in line with China's military strategy of active defense.

China's nuclear force is under the direct command of the Central Military Commission (CMC). China is extremely cautious and responsible in the management of its nuclear weapons, and has established strict rules and regulations and taken effective measures to ensure the safety and security of its nuclear weapons.

China's National Defense, 2000⁴¹

China probably has 80 operationally deployed nuclear warheads, assigned exclusively to ballistic missiles that are kept unfueled and with warheads stored separately. China's strategic forces are significantly smaller, less diverse, and less ready to conduct actual operations than those of the other four nuclear powers recognized under the Nuclear Nonproliferation Treaty (NPT). The exclusive purpose of these weapons, along with any warheads or gravity bombs maintained in storage, is to discourage states from using nuclear weapons against the PRC and to retaliate against any state that does.

This conclusion is based on the limited number of official Chinese documents available for examination and US intelligence assessments that have appeared in open source literature. Official Chinese statements regarding the size, readiness and

⁴¹ *China's National Defense in 2000* (Beijing, Information Office of the State Council, September 2000) in *White Papers of the Chinese Government* (Beijing, China: Foreign Language Press, 2002) 236.

configuration of Chinese nuclear forces are limited—but not as limited as one might believe. The most detailed public statement appears in *China's National Defense* (2000), which describes China's "small but effective nuclear counterattacking force" in very general terms. This passage implies China's strategic offensive forces are (1) small and based largely on land-based ballistic missiles, (2) kept under tight central control and off-alert, and (3) operational missions are limited to retaliatory strikes. These statements are consistent with two internal Chinese government publications, *Strategic Studies* (2000) and *Operational Studies* (2000), used to train CCP cadres, as well as the available US intelligence estimates.⁴²

This section reviews the status of Chinese nuclear delivery vehicles, command and control arrangements, and operational doctrine. It concludes with a discussion of anticipated Chinese modernization.

Chinese Strategic Delivery Vehicles

China probably has about 80 nuclear weapons deployed operationally—the smallest force among the five nuclear weapons states recognized by the Nuclear Non Proliferation Treaty (See Figure 2-1: Strategic Warheads Deployed Operationally). Some Chinese ballistic missile launchers may have a re-fire capability, which would raise the total above 100 operationally deployed warheads.

⁴² *Operational Studies (Zhanyi xue)* (Beijing, National Defense University, 2000) and *Strategic Studies (Zhanlue xue)* (Beijing, Academy of Military Sciences, 2000). My copies are DIA translations, generously made available by Alistair Iain Johnston.

Figure 2-1: Operationally Deployed Strategic Warheads (as of January 1, 2003)*

United States	5,948
Russia	4,852
France	348
United Kingdom	185
China	> 100

* Based on START accounting rules. Does not include tactical nuclear weapons, weapons undergoing remanufacture or forces held in reserve. All estimates, other than China, are from: Kristensen, H.M. and Shannon Kile, "World nuclear forces," *SIPRI Yearbook 2003: Armaments, Disarmament and International Security*, (Oxford University Press: Oxford, 2003). China is drawn from: *Proliferation: Threat and Response*, (Washington, Department of Defense, 2001).

The Chinese government does not provide estimates of the number of nuclear weapons it possesses or deploys. *Proliferation: Threat and Response* (2001)—the only official, unclassified US estimate of the number of Chinese nuclear weapons—states that China “currently has over 100 nuclear warheads.”⁴³

Estimates provided by nongovernmental organizations—such as the Council on Foreign Relations, National Resources Defense Council and the International Institute for Strategic Studies—are much higher, generally describing the People's Republic of China as the world's third largest nuclear power, ahead of the British and French, with 400 or so warheads.⁴⁴ The differences among the estimates largely

⁴³ *Proliferation: Threat and Response*, (Washington, DC: Department of Defense, 2001) 14

⁴⁴ Such estimates are often based on two comments in the open literature: In 1979, a senior Defense Department Official described the nuclear forces deployed by China, France and the United Kingdom as “more or less comparable with China perhaps being the leader of the three. So it is possible that China might be the third nuclear power in the world.” See: *Department of Defense Authorization for Appropriations for FY80. Part 1: Defense Posture; Budget Priorities and Management Issues; Strategic Nuclear Posture*, Washington: Government Printing Office, 1979. (Y4.Ar5/3:D36/7/980/pt.1) 357. A “senior Chinese military officer” purportedly told Lewis and Xue that China maintained “a nuclear weapons inventory greater than that of the French and British strategic forces combined.” See John W. Lewis and Xue Litai, *China Builds the Bomb*, (Stanford, CA: Stanford University Press, 1988) 253.

reflect accounting methodologies.”⁴⁵ Most likely, the United States intelligence community does not have direct evidence regarding the number of Chinese nuclear weapons. Instead, US analysts are counting a proxy: delivery vehicles that are believed to have operationally deployed warheads assigned to them.⁴⁶ The US intelligence community used this methodology for Chinese and Soviet estimates at least through the mid-1980s.⁴⁷

The Department of Defense assesses that nuclear warheads are deployed operationally only for use with China’s inventory of about 100 land-based ballistic missiles: China “has over 100 warheads deployed operationally on ballistic missiles. Additional warheads are in storage.”⁴⁸ Although DoD does not define “deployed operationally,” basic information about the readiness of land-based ballistic missile force strongly suggests that other methods of delivery (including aircraft-delivered gravity bombs and submarine-launched ballistic missiles) do not factor into Chinese assessments of their national retaliatory capability. As early as 1984, the Defense Intelligence Agency argued that “land-based surface-to-surface ballistic missile (SSM) systems are currently China’s only credible means of strategic nuclear

⁴⁵ The Council on Foreign Relations, National Resources Defense Council and the International Institute for Strategic Studies estimate that China has between 130-140 ballistic missiles with nuclear deterrent roles. See Harold Brown *et al*, *Chinese Military Power*, (New York: Council on Foreign Relations, 2003) 51-53; Hans M. Kristensen and Joshua M. Handler, “Tables of Nuclear Forces,” in *SIPRI Yearbook: Armaments Disarmament and International Security* (Oxford University Press, 2001) 475-478; and *Military Balance 2000-2001*, (International Institute for Strategic Studies, 2000).

⁴⁶ This was also the practice with the Soviet Union during the Cold War. See, for example, William Arkin and Jeffrey I. Sands, “The Soviet Nuclear Stockpile: Defense Department Sees ‘Warhead Gap’,” *Arms Control Today* 14:5 (June 1984) 1, 4-8.

⁴⁷ See, for example, Arkin and Sands, “The Soviet Nuclear Stockpile,” 1.

⁴⁸ *Proliferation: Threat and Response*, (Washington, Department of Defense, 1997). Available on-line at: http://www.defenselink.mil/pubs/prolif97/ne_asia.html#china

delivery.”⁴⁹ This is consistent with official Chinese descriptions. For example, *China's National Defense* notes that China’s “strategic nuclear missile force, under the direct command of the CMC, constitutes the *main part* of China's limited nuclear counterattack capability [emphasis added].”⁵⁰ *Operational Studies* suggests “The nuclear retaliation campaign of the Second Artillery [China’s strategic rocket force] *mainly uses* ground-to-ground nuclear missiles.”⁵¹

Basic estimates on the size and quality of China’s ballistic missile force are available from the National Air Intelligence Center (2000), which publishes *Ballistic and Cruise Missile Threat* (See Figure 2-2: Estimated PRC Missile Deployments).⁵² NAIC estimates and analyses occasionally appear in the conservative press, often in response to CIA estimates that some conservatives claim are “biased in favor of a benign view” of China.⁵³ Past NAIC estimates of the size of Chinese ballistic missile deployments do, in fact, appear larger than estimates that appear in unclassified National Intelligence Estimates (NIE). For example, the 2000 edition of *Ballistic and Cruise Missile Threat* lists China as having deployed “less than 25” CSS-3 (DF-4) ballistic missiles, while the 2001 National Intelligence Estimate credits China with

⁴⁹ *Handbook of the Chinese People's Liberation Army*, DDB-2680-32-84 (Washington, Defense Intelligence Agency, 1984) 70.

⁵⁰ *China's National Defense* (September 2000). Emphasis added.

⁵¹ *Operational Studies*, Ch. 14, p.3. Emphasis added.

⁵² The National Air Intelligence Center produces the only official, unclassified estimate of ballistic and cruise missile inventories. The most recent edition was published in September 2000. *Ballistic and Cruise Missile Threat*, NAIC-1031-0985-00 (Washington, National Air Intelligence Center, September 2000).

⁵³ See Bill Gertz and Rowan Scarborough, “Target: CIA China Shop,” *The Washington Times* (27 October 2000) and George J. Tenet, “CIA Analysts Are Not Pro-China Apologists,” Letter to the Editor, *The Washington Times* (1 November 2000) A18.

Figure 2-2: Estimated PRC Ballistic Missile Deployments

US Designation	PRC Designation	Class	Range (miles)	Deployed
CSS-2	DF-3	MRBM	1750	< 50*
CSS-5	DF-21A	MRBM	1100	
CSS-3	DF-4	IRBM	3400	< 25
CSS-4	DF-5A	ICBM	8000	~ 20
CSS-X-10	DF-31	ICBM	4500	Not Deployed
	DF-31A	ICBM	7000	
CSS-NX-3	JL-1	SLBM	>1000	
	JL-2	SLBM	4500	
Total				< 95

Data from: National Air Intelligence Center, *Ballistic and Cruise Missile Threat*, NAIC-1031-0985-00 (September 2000).

* Launchers may possess a re-fire capability for a total of <100 MRBMs & <145 ballistic missiles.

“about a dozen.”⁵⁴ In all likelihood, NAIC is simply providing a larger band of uncertainty about the number of ballistic missiles. When a more specific, official estimate is available from a source other than *Ballistic and Cruise Missile Threat*, I present that specific estimate—although the overall difference is relatively small.

A word on terminology: Chinese ballistic missiles are generally numbered sequentially. Land-based ballistic missiles are part of the *Dong Feng*, or “East Wind” series, while sea-based ballistic missiles are part of the *Julang* or “Great Wave” series. The Chinese use the prefixes DF or JL, from the *Pin Yin* system of Romanization, to identify their ballistic missiles. US designations for all “Chinese surface to surface”

⁵⁴ National Air Intelligence Center, *Ballistic and Cruise Missile Threat*, NAIC-1031-0985-00 (September 2000) and CIA *National Intelligence Estimate Of Foreign Missile Developments And The Ballistic Missile Threat Through 2015*, Hearing Before The International Security, Proliferation And Federal Services Subcommittee Of The Committee On Governmental Affairs United States Senate, S. Hrg. 107-467 (11 March 2002) 32.

ballistic missiles, land- and sea-based, use the prefix CSS. An N indicates “naval;” an X that the missile is under development or experimental. In general, I use Western designation, with the Chinese designation in parenthesis.

The best guess, derived from official sources, estimates the size of the Chinese strategic arsenal around 80 operationally deployed nuclear warheads. Only a handful of China’s ballistic missiles are ICBMs: probably 18 CSS-4 (DF-5A) missiles and about 12 CSS-3 (DF-4) missiles. The remainder of the nuclear force, numbering about 45 launchers, comprises what one member of the intelligence community called “theater” forces: medium range ballistic missiles (MRBMs) like the liquid fueled CSS-2 and its replacement, the solid-fueled CSS-5.⁵⁵ These launchers may have a re-fire capability.

The liquid-fueled CSS-4 (DF-5A) intercontinental ballistic missile (ICBM), with a range of 8000 km, is the only Chinese missile capable of striking targets throughout the entire United States. First deployed in 1981, the missile underwent flight testing that suggests it was principally designed to penetrate the air defense system around Moscow.⁵⁶ In Congressional testimony, General Habiger revealed that China had 18 CSS-4 (DF-5A) ICBMS, all of which are reportedly based in silos.⁵⁷

⁵⁵ *Foreign Missile Developments and the Ballistic Missile Threat Through 2015* (Washington, National Intelligence Council, December 2001) 8.

⁵⁶ *Special Defense Intelligence Estimate: China’s Evolving Nuclear Strategies* DDE-2200-321-85 (Washington, May 1985) 8. A CIA report suggested that 5 of the 18 CSS-4 ICBMS were targeted at Moscow. See: Bill Gertz, “China targets nukes at U.S.; CIA missile report contradicts Clinton,” *The Washington Times* (May 1, 1998) A1.

⁵⁷ *Ballistic Missiles: Threat And Response*, Hearings Before The Committee On Foreign Relations United States Senate, S. Hrg. 106–339 (April 15 And 20, May 4, 5, 13, 25, 26, And September 16, 1999) 165. The 2000 edition of Chinese Military Power notes that “China reportedly has built 18 CSS-4 silos.” See:

The US intelligence community assesses that the Chinese leadership “almost certainly believes its silos to be vulnerable”—something suggested by unofficial reports that the engineers responsible for CSS-3 and CSS-4 missile silos referred to the installations as “missile tombs.”⁵⁸ China has reportedly built many dummy silos as part of a camouflage and concealment effort.

Although *Chinese Military Power* and other intelligence assessments note that the Chinese are replacing CSS-4 Mod 1 ICBMs with longer range CSS-4 Mod 2 ICBMs, the significance of the upgrade program appears to be minimal. In 1998, after intelligence reports of the upgrades first became public, then-STRATCOM Commander Eugene Habiger said “the CSS-4 ICBM that the Chinese have deployed today has been deployed since 1981. And there have been some modifications, but nothing significant.”⁵⁹ With the greatest throw-weight among Chinese ballistic missiles, the CSS-4 is probably equipped with China’s largest nuclear warhead, with a 4-5 MT estimated yield. The CSS-4 is the only Chinese ballistic missile with sufficient throw-weight to accommodate multiple re-entry vehicles.⁶⁰ To place

“Chinese Military Power,” *Annual Report On The Military Power Of The People’s Republic Of China*, Report To Congress Pursuant To The FY2000 National Defense Authorization Act (Washington, Department of Defense, June 2000) np.

Available at: <http://www.defenselink.mil/news/Jun2000/china06222000.htm>

⁵⁸ “China’s current force of about 20 CSS-4 ICBMs can reach targets in all of the United States, although Beijing almost certainly considers its silos to be vulnerable.” *National Intelligence Estimate On The Ballistic Missile Threat To The United States*, Hearing Before The International Security, Proliferation, And Federal Services Subcommittee Of The Committee On Governmental Affairs, United States Senate, S. Hrg. 106–671 (February 9, 2000) 8.

⁵⁹ General Eugene Habiger, Commander of US Strategic Command, *DoD News Briefing* (16 June 1998).

Available at: http://www.defenselink.mil/transcripts/1998/t06231998_t616hab2.html

⁶⁰ The NIE defines multiple reentry vehicle payload systems to “include those that independently target each RV and those that do not provide independent targeting for each RV (MRV).” *Foreign Missile*

multiple re-entry vehicles on the CSS-4, China could use technology from its commercial “Smart Dispenser” upper stage as a “technology bridge” to a post-boost vehicle (PBV) that could accommodate 3 or 4 470 kg CSS-X-10 type RVs on the CSS-4.⁶¹ The US intelligence community disagrees about whether China intends to do so.

China also maintains “about a dozen CSS-3 [DF-4] ICBMs that are almost certainly intended as a retaliatory deterrent against targets in Russia and Asia.”⁶² Although these missiles are listed as intercontinental ballistic missiles by the intelligence community, the missile would be characterized as an intermediate range ballistic missile under the 1987 INF treaty due to its 3400 km range.⁶³ The CSS-3 can be launched from a roll-out to launch site, as well as from an elevate-to-launch silo.⁶⁴ In 1993, the US intelligence community estimated that, of China’s approximately ten CSS-3 ICBMs, “two of the CSS-3s are based in silos but most are stored in caves and must be rolled out to adjacent launch pads for firing.”⁶⁵ In August 1995, the Second Artillery completed a major construction project that apparently created a network

Developments and the Ballistic Missile Threat Through 2015 (Washington, National Intelligence Council, December 2001) 8.

⁶¹ “China could use a DF-31-type RV for a multiple-RV payload for the CSS-4 in a few years.” See: *Ballistic Missiles: Threat And Response*, S. Hrg. 106–339, 358. On the ability of the “smart dispenser” to use a modified CSS-X-10 (DF-31) type RV, estimated at 470 kg, see: [No Title] NAIC-1442-0629-97 (National Air Intelligence Center, December 10, 1996) in Bill Gertz, *Betrayal: How the Clinton Administration Undermined American Security*, (Regency Publishing, May 1999) 21-252.

⁶² *CIA National Intelligence Estimate Of Foreign Missile Development ...*, S. Hrg. 107–467, 32.

⁶³ *The Treaty between the United States and the Union of Soviet Socialist Republics on the Elimination of their Intermediate-Range and Shorter-Range Missiles*.

Treaty text available at: <http://www.state.gov/www/global/arms/treaties/inf1.html>

⁶⁴ “Chinese Military Power,” (June 2000) np.

Available at: <http://www.defenselink.mil/news/Jun2000/china06222000.htm>

⁶⁵ *Report to Congress on Status of China, India and Pakistan Nuclear and Ballistic Missile Programs*, (July 28, 1993) np. Available at: <http://www.fas.org/irp/threat/930728-wmd.htm>

of interconnected caves and tunnels to enhance survivability under conditions of a nuclear attack. The CSS-3 reportedly has the same 2,000 KG/3 MT RV as the CSS-2.⁶⁶

The intelligence community has offered less detailed information about China's nuclear capable, theater ballistic missile force comprising CSS-2 (DF-3) and CSS-5 (DF-21) ballistic missiles. The CSS-5 Mod 1 is a land-based derivative of the CSS-NX-3 (JL-1) SLBM that was developed for deployment on China's Xia-class SSBN. China is currently deploying an upgraded CSS-5 Mod 2 to replace the much older CSS-2, although an unspecified number of CSS-5 ballistic missiles will be deployed to conduct conventional missions. During normal peacetime operations, CSS-2 and CSS-5 launchers remain in their garrisons, where the principle method of protecting deployments is extensive tunneling; These missile may be dispersed in a crisis.⁶⁷ The Chinese have apparently tested endoatmospheric reentry decoys on R&D flight tests for the CSS-5 Mod 2 (November 1995) and CSS-5 Mod 1 (January 1996). In 1972, US intelligence assessed that the CSS-2 was equipped with China's earliest 3 MT thermonuclear warhead.⁶⁸ Unofficial reports indicate that China planed a 600 KG warhead for the CSS-5 with a yield of 400 or more KT, although the

⁶⁶ *Soviet and People's Republic of China Nuclear Weapons Employment Strategy* (Defense Intelligence Agency, March 1972). See Tables 5 and 6; Page number redacted in declassification.

⁶⁷ On peacetime CSS-2 operations, including tunneling efforts, see: *Intelligence Appraisal China: Nuclear Missile Strategy*, DIAIAPPR 34-81 (Dense Intelligence Agency, 13 March 1981) 4-5.

⁶⁸ *Soviet and People's Republic of China Nuclear Weapons Employment Strategy* (Defense Intelligence Agency, March 1972). See Tables 5 and 6; Page number redacted in declassification.

relatively late deployment of the CSS-5 may have allowed for CSS-X-10 type warheads tested between 1992-1996.⁶⁹

Ballistic and Cruise Missile Threat estimates the number of launchers for the CSS-2, CSS-5 Mod 1 and CSS-5 Mod 2 MRBMs as “less the fifty” each, implying as many as 150 total MRBM launchers. Intelligence documents leaked to the press suggest there are fewer than 50 total MRBM launchers *of all types*. A 1997 NAIC report on the program to replace the CSS-2 with the CSS-5, suggested there were approximately 45 CSS-2 launchers and implied that CSS-5 was replacing the CSS-2 on a one-to-one basis.⁷⁰ Presidential Review 31 (1993): *U.S. Policy On Ballistic Missile Defenses And The Future Of The ABM Treaty*, summarized a CIA assessment that “China’s medium and intermediate range missile force currently is composed of some 50 launchers.” The entire MRBM force (CSS-2 and CSS-5), then, comprises 50-100 missiles, depending on whether 1 or 2 missiles are assigned to each launcher.

China currently has a single *Xia* class SSBN which is not operational.⁷¹ The submarine “went on one cruise and has been essentially in dry dock ever since,” according to General Habiger.⁷² The *Xia* was to carry 12 CSS-NX-3 (JL-1) missiles, but

⁶⁹ John W. Lewis and Xue Litai, *China’s Strategic Seapower: The Politics of Force Modernization in the Nuclear Age*, (Stanford, CA: Stanford University Press, 1994) 177.

⁷⁰ *China Incrementally Downsizing CSS-2 IRBM Force*, NAIC-1030-098B-96 (National Air Intelligence Center, November 1996) in Bill Gertz, *The China Threat: How the People’s Republic Targets America* (Regency Publishing, November 2000) 233-234.

⁷¹ *Current And Projected National Security Threats To The United States*, Hearing Before The Select Committee On Intelligence Of The United States Senate, S. Hrg. 107-597 (February 6, 2002) 78-79.

⁷² *Ballistic Missiles: Threat And Response*, S. Hrg. 106-339, 165-166.

these missiles have not been deployed despite successful flight tests in 1988.⁷³ The Office of Naval Intelligence reports the submarine “fell short of expectations” due to a noisy and unreliable propulsion system.⁷⁴ One edition of *Chinese Military Power* assesses the “capabilities [of the Chinese nuclear submarine fleet] would be limited against modern Western and Russian ASW capabilities.”⁷⁵ These factors may explain why China delayed, and then suspended, plans to build additional *Xia*-class SSBNs in the 1980s and 1990s.⁷⁶ Press reports indicate that the JL-2 SLBM was test fired from a retrofitted Golf-class submarine, which suggests the *Xia* may never be outfitted with the JL-2.⁷⁷

Command and Control Arrangements

China maintains “a highly centralized and unified command” system for nuclear operations. Although the declaratory policy in *China’s National Defense* only implies highly centralized command and control arrangements, *Operational Studies* offers a much more detailed description:

The nuclear retaliation campaign of the Second Artillery carries out a special strategic task. Its main combat issue and operation are all related with the overall situation of

⁷³ *Annual Report On The Military Power Of The People’s Republic Of China*, Report To Congress Pursuant To The FY2000 National Defense Authorization Act (Washington, Department of Defense, July 2003) 31.

⁷⁴ *Worldwide Submarine Challenges* (Washington, DC: Office of Naval Intelligence, 1997) 22. On the limitations of the submarine, see: Lewis and Xue, *China’s Strategic Seapower*, 120-122.

⁷⁵ “Chinese Military Power,” *Selected Military Capabilities Of The People’s Republic Of China*, Report To Congress Pursuant To Section 1305 Of The FY97 National Defense Authorization Act (Washington, Department of Defense, April 1997) 4.

⁷⁶ Lewis and Xue, *China’s Strategic Seapower*, 121. United States intelligence was reporting the delay in construction picked by early 1985. See: *Special Defense Intelligence Estimate: China’s Evolving Nuclear Strategies*, 8.

⁷⁷ Bill Gertz and Rowan Scarborough, “Inside the Ring: China Tests JL-2,” *Washington Times* (2 November 2001) A10.

war. Therefore, we have to have a highly centralized and unified command. All the important campaign issues, such as campaign guidance, campaign goal, campaign deployment, targets, and the time of nuclear retaliation, have to be decided by the supreme command. The Second Artillery has to follow the order of the supreme command very strictly and correctly to organize and conduct the nuclear retaliation campaign.... The highly centralized and unified strategic command is an outstanding characteristic of the nuclear retaliation campaign.⁷⁸

Although little additional public information is available about China's command and control arrangement for nuclear forces, we can infer general statements from some fragments of evidence about the attitude of Chinese leaders regarding control of nuclear weapons.

China is not believed to have developed the capacity to integrate permissive action links (PALs), environmental sensing devices (ESDs) or other safety devices into its warheads.⁷⁹ However, China reportedly sought technical assistance from the United States, and possibly Russia, to develop such devices.⁸⁰ The United States intelligence community estimates that "China keeps its missiles unfueled and

⁷⁸*Operational Studies (Zhanyi xue)* (Beijing, National Defense University, 2000) Ch.14, p.3.

⁷⁹ More recent NIE's offer less detailed information on this point, although the 1999 National Intelligence Estimate assessed that "an unauthorized launch of a Chinese strategic missile is highly unlikely" with noting the "procedure and technical safeguards" that are identified in the case of Russia. *National Intelligence Estimate On The Ballistic Missile Threat ...*, S. Hrg. 106-671, 49-50. *Operational Studies* implies this arrangement by defining the "missile base group" as "two or more missile bases and warhead bases." *Operational Studies (Zhanyi xue)* Ch.14, p.1.

⁸⁰ Danny Stillman, head of the intelligence division at Los Alamos National Laboratory, was reportedly asked by Hu Side to provide PAL technology. "Every trip, they asked for that. I always thought the world would be a safer place if they got that," Stillman told the *Washington Post*. Kurt Campbell, former Deputy Assistant Secretary of Defense for Asia-Pacific Affairs reportedly confirmed Stillman's story to the *Post*, adding "There was a big debate in the United States about how far we should go to assist them with that technology. I think they [the Chinese] truly were interested in what they called positive control." See: Steve Coll, "The Man Inside China's Bomb Labs: U.S. Blocks Memoir of Scientist Who Gathered Trove of Information," *The Washington Post* (16 May 2001) A1. The story is also recounted in Dan Stober and Ian Hoffman, *A Convenient Spy: Wen Ho Lee and the Politics of Nuclear Espionage*, (New York: Simon & Schuster, 2001) 93-94.

without warheads mated” as its primary safety measure.⁸¹ As a consequence, Chinese missile units reportedly require 2-3 hours of pre-launch exposure to complete the launch sequence.⁸²

China does not deploy nuclear gravity bombs at airbases on a day-to-day basis for use with its aging bomber fleet. In 1984, the US intelligence community was “unable to identify the associated airfield storage sites” for the “small number” of nuclear capable aircraft that “probably” had nuclear bombs assigned to them.⁸³ DIA concluded that it was “improbable that China’s air forces have a strategic nuclear delivery mission” because “it is unlikely that these obsolescent aircraft could successfully penetrate the sophisticated air defense networks of modern military powers.”⁸⁴ In 1993, the US intelligence community concluded that the “Chinese Air Force has no units whose primary mission is to deliver China’s small stockpile of nuclear bombs.” Chinese leaders have allowed the national bomber fleet to atrophy further in the intervening decade.⁸⁵ In all likelihood, Chinese leaders have made a deliberate decision to focus scarce resources on ballistic missiles rather than strike

⁸¹ Robert D. Walpole, National Intelligence Officer for Strategic and Nuclear Programs, *Speech at the Carnegie Endowment for International Peace* (17 September 1998). Available at: http://www.cia.gov/cia/public_affairs/speeches/1998/walpole_speech_091798.html

⁸² This estimate is provided by Lewis and Hua. The requirement was apparently set by Chinese leaders calculating the time between detection of a missile unit by a reconnaissance satellite and a possible enemy strike. John W. Lewis and Hua Di, “China’s Ballistic Missile Programs: Technologies, Strategies, Goals,” *International Security* 17: 2 (Autumn 1992) 23-24.

⁸³ *Defense Estimative Brief: Nuclear Weapons Systems in China*, 3-4.

⁸⁴ *Report to Congress on Status of China, India and Pakistan Nuclear and Ballistic Missile Programs*, np.

⁸⁵ For a study projecting trends in PLAAF bomber forces, see: Kenneth Allen *et al*, *China’s Air Force Enters the 21st Century*, (Washington, DC: RAND, 1995) 165-168. For a review of recent developments, see David Shambaugh, *Modernizing China’s Military: Progress, Problems, and Prospects* (Berkeley, CA: University of California Press, 2002) 265.

aircraft—a decision consistent with recent Chinese efforts to supplement conventional strike aircraft with conventionally-armed ballistic missiles.⁸⁶ The lack of identifiable storage sites near airfields and the continued decline of the bomber force strongly suggest that China held this capability in escrow.⁸⁷

Proliferation: Threat and Response suggests that Beijing stores all warheads that are not “operationally deployed” for use on ballistic missiles—possibly in a single stockpile site. The process of moving warheads from a central stockpile site to airbases around the country would be probably be lengthy and visible. The intelligence community is probably aware of the locations of any stockpile facilities, based on past confidence in locating China’s nuclear weapons stockpile site. A leaked 1984 DIA report noted that “only one national stockpile site and no regional sites have been observed in China.”⁸⁸ China’s central stockpile comprised three vaults in a ridge near China’s Haiyan nuclear weapons production complex through the early 1970s.⁸⁹ The Haiyan complex has been decommissioned and opened to tourists. The national stockpile site has presumably moved, along with the facilities to conduct warhead assembly and disassembly, to Mianyang in Sichuan province—

⁸⁶ *CIA National Intelligence Estimate Of Foreign Missile Development ...*, S. Hrg. 107–467, 33. Lewis and Hua suggest this reflects a deliberate decision by the Chinese leadership. Lewis and Hua, “China’s Ballistic Missile Programs,” 6.

⁸⁷ In 1982, a Chinese defense official reportedly told a French delegation that China had no tactical nuclear weapons deployed at “ground division or below”—the implication being that “tactical” nuclear weapons might be held at a higher echelon. Based on the fragmentary evidence available about the report, as well as the difficulty in defining tactical nuclear weapons, it seems probable to me that the official was referring to warheads for China’s nuclear capable aircraft rather than atomic demolition munitions, or warheads for rockets and guided missiles. Anderson, “China Shows Confidence in Its Missiles,” F11.

⁸⁸ , Anderson, “China Shows Confidence in Its Missiles,” F11.

⁸⁹ *Soviet and People’s Republic of China Nuclear Weapons Employment Strategy*, II-E-5.

although at least one unofficial estimate places the national stockpile site near the test facility at Lop Nur.⁹⁰

China's command and control system appears just as centralized as deployments.⁹¹ Authority to use nuclear weapons rests with the CPC Central Committee and the Central Military Commission.⁹² The Central Military Commission directly controls the 6 base commands of the Second Artillery (each base command controls 2 or 3 missile brigades), bypassing China's military region commands.⁹³

Chinese Military Power suggests that "China has an extensive network of hardened, underground shelters and command and control (C2) facilities for both its military and civilian leadership."⁹⁴ In 1995, Chinese press reported the completion of

⁹⁰ Joseph Cirincione et al, *Dangerous Arsenals: Tracking Weapons of Mass Destruction* (Washington, DC: Brookings Institution Press, 2002) 141–163. Norris et al place a "few" warheads in research and production facilities near Mianyang and Zitong in Sichuan province. See: Robert Norris et al, *Taking Stock: Worldwide Nuclear Deployments 1998* (Washington, DC: National Resources Defense Council, March 1998).

⁹¹ For a general discussion of the Central Military Commission, see: David Shambaugh, "The Pinnacle Of The Pyramid: The Central Military Commission," in *The People's Liberation Army as Organization: Reference v.1.0* CF-182-NSRD, James C. Mulvenon and Andrew N. D. Yang, eds. (Washington: RAND, 2002) 95-121.

⁹² See, for example, Jiang Zemin's March 2002 speech indicating that the "At any time and under any circumstance, [the Second Artillery] must absolutely obey the command of the CPC Central Committee and the Central Military Commission." "RMRB Summarizes Report on Jiang Praise for Second Artillery Corps," FBIS-CPP-2002-0321-000103.

⁹³ Bates Gill, et al, "The Chinese Second Artillery Corps: Transition To Credible Deterrence," in *The People's Liberation Army as Organization: Reference v.1.0* CF-182-NSRD, James C. Mulvenon and Andrew N. D. Yang, eds. (Washington: Rand, 2002) 546.

⁹⁴ "Chinese Military Power," *Annual Report On The Military Power Of The People's Republic Of China*, Report To Congress Pursuant To The FY2000 National Defense Authorization Act (Washington, Department of Defense, July 2003) 34.

a “certain major defense project” for the Second Artillery that included positions to launch ballistic missiles, as well as storage facilities and a command center.⁹⁵

Press reports place the national military command center at Second Artillery Headquarters near Xishan. A declassified Defense Department document, however, suggests the Second Artillery Headquarters commands only routine operations: “During wartime, Chinese strategic missile forces would be controlled from the [General Staff Department] command center.”⁹⁶

Open source information about the quality of communication links between China’s leadership and national nuclear forces is limited. Leadership facilities are connected to separate military and civilian telecommunications networks. *Chinese Military Power* suggests that the Second Artillery began installing a digital microwave communications system to support its missile launches around 1995 to provide all weather and encrypted communication ability.⁹⁷ The systems are probably “at least two generations behind that of Western countries” and based largely on commercial off-the-shelf technology.⁹⁸ *Operational Studies* suggests these systems may be vulnerable at the brigade level following dispersal in a crisis. This

⁹⁵ “RMRB Summarizes Report on Jiang Praise for Second Artillery Corps,” FBIS-CPP-2002-0321-000103.

⁹⁶ *Strategic Missile Tidbits* (1995) 3. [Declassified Department of Defense document with incomplete citation]

⁹⁷ “Chinese Military Power,” (June 2000). See also: Bates Gill *et al*, “The Chinese Second Artillery Corps: Transition To Credible Deterrence,” in *The People’s Liberation Army as Organization: Reference v.1.0* CF-182-NSRD, James C. Mulvenon and Andrew N. D. Yang, eds. (Washington: Rand, 2002) 546-547.

⁹⁸ “Chinese Military Power,” (April 1997) 5. “China still lags far behind western standards for controlling complex joint operations and lacks the robust C4I architecture required to meet the demands of the modern battlefield.” “Chinese Military Power,” *Future Military Capabilities Of The People’s Republic Of China*, Report To Congress Pursuant To Section 1226 Of The FY98 National Defense Authorization Act (Washington, Department of Defense, 1998).

would be “good for the hiding and survival of the missile force. But at the same time, because the troops are highly scattered, under serious nuclear circumstances, their telecommunication systems are vulnerable, making the commanding and control of the campaign very complicated and difficult.”⁹⁹

Launch commands to the Second Artillery may not be automated. *Chinese Military Power* (1997) assesses that “most PLA command and control systems are still manual, there are long delays in dissemination of directives”—problems that *Operational Studies* alludes to in warning commanders that “the issuance of a launching order has to be timely, accurate, and secret.” *Operational Studies* even suggests that the content of a launch order should “be brief and clear” and identify “the missile troops to carry out the attacking task, the serial number of card of missile firing data to be used, the time frame of the launch, the action of the troops after the launch, and other things to be watched.”¹⁰⁰

Operational Doctrine

China's National Defense explicitly defines the mission of Chinese nuclear weapons as retaliatory and reiterates a number of negative security assurances, such as a “no-first-use” pledge, that are consistent with a retaliation-only doctrine. Beginning with China’s first nuclear test in 1964, China undertook to “never at any time or under any circumstances be the first to use nuclear weapons.”¹⁰¹ In

⁹⁹ *Operational Studies (Zhanyi xue)* (Beijing, National Defense University, 2000) 14:7

¹⁰⁰ *Operational Studies (Zhanyi xue)* (Beijing, National Defense University, 2000) 14:7.

¹⁰¹ Statement of the Government of the People’s Republic of China (16 October 1964).

subsequent years, that declaration was supplemented by other negative security assurances not to use or threaten to use nuclear weapons against non-nuclear-weapon states or nuclear-weapon-free zones.¹⁰²

This formulation continues to guide China's operational doctrine, which remains constrained by China's "no first use" doctrine. *Operational Studies* warns commanders that launch operations will have to be undertaken in a nuclear environment: "According to our principle of 'no first-use of nuclear weapons,' the nuclear retaliation campaign of the Second Artillery will be conducted under the circumstances when the enemy has launched a nuclear attack on us." This description of China's operational doctrine is consistent with Second Artillery exercises reported in the press. For example, Chinese units rode out a "bolt from the blue" in their bunkers during a 1994 exercise, waiting for nuclear decontamination units to complete their missions before launching a retaliatory strike.¹⁰³ *Operational Studies* lists only three missions for China's nuclear forces:

1. Conduct anti-nuclear deterrence combat (alert operations to demonstrate will);
2. Guard against enemy surprise attack (ride out a nuclear attack);
and

¹⁰² For the official Chinese statement, see: *China's Contribution to Nuclear Disarmament* (Beijing, Ministry of Foreign Affairs, no date).

¹⁰³ Dong Jushan and Wu Xudong, "True Story: China's Mysterious Strategic Missile Forces on Rise" *Guangzhou Guangzhou Ribao* (1 July 2001) FBIS-CPP-2001-0703-000044. The exercise is consistent with warnings in *Operational Studies* that a nuclear campaign will be conducted in "a bleak nuclear environment...under very serious nuclear circumstances. The personnel, position equipment, weapons equipment, command telecommunication system and the roads and bridges in the battlefield will be seriously hurt and damaged." *Operational Studies (Zhanyi xue)* (Beijing, National Defense University, 2000).

3. Conduct nuclear missile attack (launch operations to retaliate).

This list of missions is probably comprehensive, given the size of China's nuclear arsenal, which is too small for most counterforce missions; moreover, China's forces require several hours of pre-launch exposure that would provide substantial tactical warning to a potential adversary. Chinese operational doctrine appears to focus on counter-value targeting—"targets that are strategically highly valuable, influential on the overall situation, and easy to hit"—that might extend beyond population centers.¹⁰⁴ Second Artillery commanders are also likely to preserve a "strategic and campaign nuclear reserve force with suitable numbers and capabilities, according to the strategic intent of the supreme command and the actual situation of the missile force."¹⁰⁵

The intent of the Chinese leadership to ride out a nuclear attack is evident from the lack of Chinese early warning assets. China has a single large phased array radar (LPR), positioned on a mountain slope at 1,600 meter elevation near Xuanhua, manned by Second Artillery forces. This site, allegedly visible on the road from Beijing to Zhangjiakou, may be inactive.¹⁰⁶ Without early warning assets, Chinese forces would be unable to adopt alternative postures.¹⁰⁷

¹⁰⁴ *Operational Studies (Zhanyi xue)* Ch.14, p.7.

¹⁰⁵ *Operational Studies (Zhanyi xue)* Ch.14, p.7.

¹⁰⁶ Mark A. Stokes, *China's Strategic Modernization: Implications For The United States* (Carlisle, PA: Army War College, September 1999) 41-42 and 67, fn 56.

¹⁰⁷ Some observers suggest that compromises made in the design of China's Bei Dou satellite navigation constellation, which provides relatively inaccurate guidance from geosynchronous orbit, appears to confirm retaliatory missions for China's Second Artillery. The constellation is optimized to guide post-boost vehicles through space to ensure the accuracy of China's ICBMs to down to about 1 km circular error—probably to "facilitate MIRVing [Chinese] missiles without significantly improving their

Perhaps the best evidence of China's retaliatory operational doctrine is the substantial criticism that the doctrine has endured in Chinese military journals accumulated by Western scholars since the early 1980s. Many of these articles criticize the Second Artillery for adopting an unrealistic and inflexible operational doctrine.¹⁰⁸ Western observers have long predicted that this dissenting school of thought will eventually come to dominate Chinese operational doctrine. For example, a 1985 DIA study noted:

Particularly noteworthy is the concern exhibited by some writers over the dilemma that would face Chinese leaders if the Soviet Union were to limit its use of nuclear weapons in any attack. Chinese nuclear strategy, as it is now focused on the Soviet Union, is predicated upon deterring attack by maintaining a small but credible capability to retaliate against Soviet urban-industrial areas. Existing forces provide Chinese leaders little flexibility for other targeting options. Recognizing the great disparity between Chinese and Soviet capabilities, some Chinese military writers have argued the need for more options—both tactical and theater—below the strategic level to respond to a limited Soviet attack.¹⁰⁹

This theme—China moving toward greater operational flexibility—appears in the first analyses of China's nascent nuclear doctrine by RAND's Alice Langley Hsieh, as well as the work of contemporary scholars.¹¹⁰ For example, Iain Johnston published a 1983 article in the *Journal of Northeast Asian Studies* and an influential

accuracy." The ability to maneuver post-boost phase would, in combination with warhead decoys, serve as countermeasure to US midcourse ABM interceptors because the maneuvers would occur after US space-based tracking systems determined the trajectory of an ICBM. These satellites are placed in geosynchronous orbit, which provides a substantial security against possible anti-satellite systems. See: Geoffrey Forden, "Strategic uses for China's Bei Dou satellite system," *Jane's Intelligence Review* (October 2003) 26-33.

¹⁰⁸ Alastair Iain Johnston, "China's New 'Old Thinking': The Concept of Limited Deterrence," *International Security* 20:3 (Winter 1995/96) 21-23.

¹⁰⁹ *Special Defense Intelligence Estimate: China's Evolving Nuclear Strategies*, 8-9.

¹¹⁰ Alice Langley Hsieh, "China's Nuclear-Missile Programme: Regional or Intercontinental?" *China Quarterly* 45 (January-March 1971) 85-99.

1996 article in *International Security*, which both suggested that China would adopt a more flexible operational doctrine.¹¹¹ The argument also appears in the 2003 edition of *Chinese Military Power*, which notes that “despite Beijing’s ‘no first use’ pledge, there are indications that some strategists are reconsidering the conditions under which Beijing would employ theater nuclear weapons against US forces in the region.”¹¹² Overall, however, Chinese proponents of such views appear to remain a minority within the Chinese leadership. Hua Hongxun, a Chinese academic, notes that the authors cited by Johnston and others “do not reflect the accepted views of the PLA and, indeed, they are criticized implicitly” in a speech by the Vice Chairman of the Central Military Commission.¹¹³ In fact, one finds little evidence in either the public declaratory statements or internal documents, such as *Operational Studies*, to suggest a doctrinal shift.

Chinese proponents of a doctrinal shift had more success convincing Western analysts of the need for additional operational flexibility within Chinese nuclear forces. Many Western analysts, working from the security concerns articulated in Chinese military journals and other circumstantial evidence, have concluded that China maintains an inventory of “tactical” nuclear warheads. Although the Defense Intelligence Agency noted “no evidence confirming production or deployment” of

¹¹¹ Alistair Iain Johnston, “Chinese Nuclear Force Modernization: Implications for Arms Control,” *Journal of Northeast Asian Studies* II:2 (June 1983) 13-28 and “China’s New ‘Old Thinking’: The Concept of Limited Deterrence,” *International Security* 20:3 (Winter 1995/96) 5-42.

¹¹² “Chinese Military Power,” (July 2003) 31.

¹¹³ Hua Hongxun, “China’s Strategic Missile Programs: Limited Aims, not ‘Limited Deterrence,’” *The Nonproliferation Review* 5 (Winter 1998) 64

tactical nuclear weapons by the mid-1980s, DIA still offered a “best guess” of 50 atomic demolition munitions in the Chinese stockpile at that time. In addition to military writings, the evidence for Chinese tactical nuclear weapons is three-fold:

- China conducted tests to develop low-yield nuclear weapons. China conducted low yield nuclear tests to develop fission bombs for delivery by aircraft and short-range ballistic missiles in the 1970s and to develop enhanced radiation warheads in the 1980s.
- China has conducted military exercises that involved the simulated, offensive use of tactical nuclear weapons. The most well known exercise took place in 1982, although other exercises have been reported.¹¹⁴
- In 1982, a Chinese defense official reportedly told a French delegation that China had no tactical nuclear weapons deployed at “ground division or below”—the implication being that tactical nuclear weapons might be held at a higher echelon.

The first two pieces of evidence are largely inferential and do not preclude the possibility that China developed the capability to produce low-yield nuclear weapons but did not actually produce more than a token number.¹¹⁵

The last piece of evidence—the comment by a senior Chinese defense official—might have referred to simple fission devices to be delivered by aircraft or short-range ballistic missiles. Shortly after that statement, DIA concluded that Beijing might be considering the use of aircraft delivered bombs and short range missiles to

¹¹⁴ For a review of published reports about Chinese military exercises, see: Lin Chong-Pin, *China's Nuclear Strategy: Tradition within Evolution* (Lexington, MA: Lexington Books, 1988) 92-95.

¹¹⁵ For a skeptical view of Chinese tactical nuclear weapons production, see: Charles D. Ferguson, Evan S. Medeiros, and Phillip C. Saunders, “Chinese Tactical Nuclear Weapons” in *Tactical Nuclear Weapons: Emergent Threats in an Evolving Security Environment*, Brian Alexander and Alistair Millar, editors (Brassey's, 2003) 110-128. See also Kenneth W. Allen, “China's Perspective on Non-Strategic Nuclear Weapons and Arms Control” in *Controlling Non-Strategic Nuclear Weapons: Obstacles and Opportunities*, Jeffrey A. Larsen and Kurt J. Klingenberg, editors (Colorado Springs, CO: USAF Institute for National Security Studies, June 2001) 159-96.

blunt a Soviet attack. Although that report posited 50 atomic demolition munitions, another DIA product from the same year reached the opposite conclusion: “China is not now assessed as having any stockpile of nuclear rockets, guided missiles, or atomic munitions.”¹¹⁶ *Operational Studies* does not include any information for the tactical use of nuclear weapons delivered by either aircraft or missiles. In contrast, it makes explicit reference to the April 1998 creation of operational plans for the conventional use of ballistic missiles in support of joint operations.

The intelligence community probably does not currently believe that China has deployed tactical nuclear weapons. Unclassified assessments of China’s nuclear weapons capability such as *Proliferation: Threat and Response* and *Chinese Military Power* do not mention possible Chinese tactical nuclear weapons other than theater ballistic missiles like the CSS-5.¹¹⁷ To the contrary, *Chinese Military Power* specifically identifies Beijing’s SRBM force as conventionally-armed—a feature that frees Beijing from “the political and practical constraints associated with the use of nuclear armed missiles.”¹¹⁸

Proposed Modernization Plan

The United States intelligence community expects that the “number, reliability, survivability and accuracy of Chinese strategic missiles capable of hitting

¹¹⁶ *Handbook of the Chinese People’s Liberation Army*, 36

¹¹⁷ The CSS-5 (M-9 export version) is the only Chinese system that mentioned in the declassified sections of *A Guide to Foreign Tactical Nuclear Weapon Systems Under the Control of Ground Force Commanders*, DST-1040S-541-87 (Defense Intelligence Agency and Army Foreign Science and Technology Center, September 1987) 79.

¹¹⁸ “Chinese Military Power,” (July 2003) 29.

the United States will increase during the next decade.”¹¹⁹ A basic outline of the intelligence community’s judgments about the Chinese strategic force modernization was provided by a December 2001 National Intelligence Estimate and subsequent Congressional testimony.¹²⁰ The central feature of Beijing’s current modernization program is the introduction of mobile, solid-propellant ballistic missiles to address survivability concerns. By 2015, the intelligence community expects China to deploy approximately 75-100 strategic nuclear warheads primarily against the United States and another two dozen shorter-range ballistic missiles capable of reaching parts of the United States. Most of these missiles are expected to be mobile.

Modernization of China’s shorter-range ICBMs will occur first. China is expected to retain more than a dozen CSS-3 (DF-4) ballistic missiles through the end of the decade.¹²¹ The intelligence community anticipates China will supplement and then replace the CSS-3 (DF-4) with the 8,000-km range CSS-X-10 (DF-31), a mobile, solid-fueled ballistic missile that will be deployed primarily against targets in Russia and East Asia.¹²² China “could begin deploying the CSS-X-10 ICBM during the next

¹¹⁹ Vice Admiral Lowell E. Jacoby, US Navy, Director, Defense Intelligence Agency, *Statement For the Record*, Senate Armed Services Committee (26 February 2004).

¹²⁰ Unless otherwise noted, this estimate is derived from *CIA National Intelligence Estimate Of Foreign Missile Development ...*, S. Hrg. 107-467.

¹²¹ *Annual Report On The Military Power Of The People’s Republic Of China*, Report To Congress Pursuant To The FY2000 National Defense Authorization Act (Washington, Department of Defense, June 2002) 27.

¹²² *Ballistic and Cruise Missile Threat* gives the range as “4,500+ km”—although the 8,000 km range is found in other documents, including classified NAIC reports leaked to the press. For example, see: *Chinese ICBM Capability Steadily Increasing*, NAIC-1030-098B-96 (National Air Intelligence Center, November 1996) in Bill Gertz, *Betrayal : How the Clinton Administration Undermined American Security*, (Regency Publishing, May 1999) 253 and *Proliferation: Threat and Response*, (Washington, Department of Defense, 2001) 15.

few years,” although “countries are much less likely to [deploy] by the hypothetical ‘could’ dates than they are by the projected ‘likely’ dates.” In 1996, NAIC predicted CSS-X-10 (DF-31) deployment “about the turn of the century,” suggesting the program may be under-funded or experiencing technical problems.¹²³ The CSS-X-10 (DF-31) reportedly incorporates many advanced technologies similar to current-generation Russian missiles: upgraded mobility for the transporter-erector-launcher, advanced materials for the booster and payload, use of penetration aids such as decoys or chaff, and an improved solid propellant. These technologies were “presenting Chinese designers with substantial challenges,” according to NAIC. A series of flight tests were conducted in 1999 and 2000.¹²⁴ Although one intelligence official in 2001 predicted imminent deployment of the CSS-X-10 based on formation Second Artillery units for the missile and the beginning of crew training, in hindsight his prediction appears incorrect.¹²⁵

To supplement the CSS-4 (DF-5A), the intelligence community believes that China is “developing two follow-on extended range versions of the CSS-X-10 (DF-31): a solid-propellant, road-mobile ICBM and a solid-propellant SLBM.” The CSS-X-10 (DF-31) follow-on is expected to have a range of 12,000 km.¹²⁶ China could deploy the CSS-X-10 (DF-31) follow-on “in the last half of the decade,” — again, with “could”

¹²³ *Chinese ICBM Capability Steadily Increasing* in Gertz, *Betrayal*, 253.

¹²⁴ *Current and Projected National Security Threats To The United States*, S. Hrg. 107-597, 79.

¹²⁵ Gertz, Bill, “China Ready to Deploy its First Mobile ICBMs,” *The Washington Times* (September 6, 2001).

¹²⁶ As in the case of the CSS-X-10 (DF-31), NAIC, *Ballistic and Cruise Missile Threat*, lists a much lower range, 7,000+ km than other official documents, in this case the 1997 *Chinese Military Power*.

implying the last half of the decade is the *earliest* deployment date. China is designing a new SSBN that will carry the JL-2 ballistic missile, which is expected to have a range of over 8,000 km. The JL-2 and a new SSBN (the Type 094) will “likely will be *developed and tested* later this decade.”¹²⁷ When deployed, the JL-2 will allow China to target the United States from operating areas near the Chinese coast.

The 75-100 warhead range does not reflect uncertainty, but rather two distinct modernization plans:

- “75 warheads” assumes that China does not place multiple RVs on the CSS-4 (DF-5A).
- “100 warheads” assumes the Chinese build fewer missiles, but place multiple CSS-X-10 (DF-31) type RVs on the CSS-4 (DF-5A).

The IC does not provide disaggregated estimates of CSS-4 (DF-5A), CSS-X-10 (DF-31) follow-on, or JL-2 deployments, beyond noting that half the missiles will be mobile. The intelligence community does not provide details on its assumptions about possible scenarios for multiple CSS-4 (DF-5A) RVs, beyond noting that the China would probably use a CSS-X-10 (DF-31) type RV. One senior intelligence official, however, gave an interview to the *New York Times* describing the difference between the two options as “add new warheads to their old 18 CSS-4, transforming them from single-warhead missiles into four-warhead missiles” or “double the size of their projected land-based mobile missiles.”¹²⁸ This is broadly consistent with

¹²⁷ *Current and Projected National Security Threats To The United State*, S. Hrg. 107–597, 79. Emphasis Added.

¹²⁸ An earlier estimate by the National Air Intelligence Center, however, suggested that the CSS-4 (DF-5A) might carry up to three 470 kg CSS-X-10 (DF-31) type RVs—although one assumption of this

Congressional testimony where intelligence officials predicted the Chinese decision to place multiple re-entry vehicles on the CSS-4 (DF-5A) would reflect a vulnerability assessment of silo-based missiles, *id est* whether the Chinese “view [multiple re-entry vehicles on the CSS-4] just as throwing good money after bad, on the side they are vulnerable.”¹²⁹ If Chinese leaders view silo-based ICBMs as too vulnerable, they would presumably increase their production of CSS-X-10 ballistic missiles rather than silo-based CSS-4s

We can infer a deployment estimate along the lines of Figure 2-3: IC Estimates of Chinese ICBM Deployments by 2015. This estimate would be consistent with earlier IC predictions that “China will likely have tens of missiles targeted against the United States [by 2015], having added a few tens of more survivable land- and sea-based mobile missiles with smaller nuclear warheads.”¹³⁰ It is also consistent with 2002 Defense Department estimate that the number of Chinese ICBMs “will increase to around 30 by 2005 and may reach 60 by 2010.”¹³¹

analysis was that “minimum number of changes” were made to modify a Smart Dispenser upper stage for use as a post-boost vehicle. NAIC-1442-0629-97 in Gertz, *Betrayal*, 252.

¹²⁹ *Ballistic Missiles: Threat And Response*, S. Hrg. 106–339, 372.

¹³⁰ *National Intelligence Estimate On The Ballistic Missile Threat...*, S. Hrg. 106–671, 51.

¹³¹ “Chinese Military Power,” (July 2003) 31.

Figure 2-3: IC Estimates of Chinese ICBM Deployments by 2015

	Case 1: No MIRV	Case 2: MIRV
CSS-4 (DF-5A)	18	18 × 4 = 72
CSS-X-10 (CSS-X-10/JL-2)	56	28
Total	72	100

Author estimates, derived from *CIA National Intelligence Estimate Of Foreign Missile Developments And The Ballistic Missile Threat Through 2015*, Hearing Before The International Security, Proliferation And Federal Services Subcommittee Of The Committee On Governmental Affairs United States Senate, S. Hrg. 107-467 (March 11, 2002).

The IC may have developed competing modernization programs for the Chinese, in part, because of the difficulty in predicting international reaction to an missile defense system that remains ill-defined and the choices available to the Chinese leadership. National Intelligence Office for Strategic and Nuclear Programs Robert Walpole has suggested that the Chinese leadership will not commit to a set of countermeasures until the precise architecture of US missile defense efforts becomes clear. In the end, the architecture of the US missile defense system will determine “both the numbers of weapons they would put together and the types of weapons, because they would want to carry countermeasures on these that they would use.” Chinese officials have made the same point themselves. Sha Zukang, for example, noted the United States “will need more time to design [its missile defense

Figure 2-4: Past IC Projections of Chinese ICBM Threat

	1984	1994	2000
Projected	-	16 ¹	24-28 ²
Actual	2 ¹	7 ²	18 ³

1. *Defense Estimative Brief: Nuclear Weapons Systems in China*, DEB-49-84 (Defense Intelligence Agency, April 24, 1984) 5.

2. *U.S. Policy On Ballistic Missile Defenses And The Future Of The ABM Treaty*, Presidential Review 31 (1994) in Bill Gertz, *Betrayal: How the Clinton Administration Undermined American Security*, (Regency Publishing, May 1999) 233-236.

3. *Proliferation: Threat and Response*, (Washington, Department of Defense, June 2000). Available at: <http://www.defenselink.mil/news/Jun2000/china06222000.htm>

deployments] and to resolve technical problems. So it's too early to say what kind of countermeasures China will take."¹³²

In response to Chinese claims that the projections were “baseless speculation,” Walpole admitted that “One out of two is not bad. It is speculation. We are speculating, but it is far from baseless.”¹³³ Either projection would suggest a major departure for the Chinese leadership. Past intelligence community projections have overestimated both the scope and pace of Chinese ballistic missile deployments (See Figure 2-4: Past IC Projections of Chinese ICBM Threat):

- 10 year deployment predictions issued by the Defense Intelligence Agency in 1984 overestimated deployments figures for all classes of Chinese ballistic missiles, including ICBM deployments; in fact, China had 7 ICBMs in 1994 and the total number of ballistic missiles declined, substantially.
- Deployment predictions issued by the intelligence community in 1994 predicted that China would deploy as many as 24-28 ICBMs by the

¹³² Sha Zukang, *Transcript Briefing On Missile Defense Issue* (Beijing, China: 23 March 2001). Available at: <http://www.fmprc.gov.cn/eng/wjb/zzjg/jks/cjkk/2622/t15417.htm>

¹³³ *CIA National Intelligence Estimate Of Foreign Missile Development ...*, S. Hrg. 107-467, 27.

end of the decade; in fact, China probably had just 18 CSS-4 (DF-5A) ballistic missiles in 2000.

One source of bias is the difficulty that the intelligence community has in interpreting Chinese intentions. Chinese industrial capacity has long exceeded intent to produce ballistic missiles. For example, Beijing deliberately slowed construction on its SSBN fleet in the mid-1980s and, based on the difference between delivery vehicle production and industrial capacity inferred from floor-space estimates derived from overhead imagery, operated its ballistic missile factories and warhead production facilities below capacity.¹³⁴ This situation persists: A recent edition of *Chinese Military Power* noted that China “will probably have the industrial capacity, though not necessarily the intent, to produce a large number, perhaps as many as a thousand, new missiles within the next decade.”¹³⁵

The intelligence community has also overestimated the speed at which new systems would enter the Chinese inventory. The history of anticipated deployment dates for the CSS-X-10 demonstrates this tendency: In 1984, the intelligence community forecast the first solid-fueled ICBM deployments in 1994; then, in 1996, the National Air Intelligence Center predicted CSS-X-10 deployment “about the turn of the century.” If recent reports of a 2002 CSS-X-10 flight test failure prove true, China may not meet current predictions of CSS-X-10 deployment later this decade.

¹³⁴ The construction of the 093 SSBN to follow the 092 SSBN launched in 1981 was initially delayed and then scrapped altogether. See Lewis and Xue, *China's Strategic Seapower*, 121. United States intelligence was reporting the delay in construction picked by early 1985. See: *Defense Estimative Brief: China's ICBM Force Begins to Take Shape*, 2. China appears to have built redundant production facilities for missiles and nuclear warheads, see *Defense Estimative Brief: Nuclear Weapons Systems in China*, 3.

¹³⁵ “Chinese Military Power,” (April 1997) 4.

Conclusion

China's "small but effective nuclear counterattacking force" — comprising around 80 operationally deployed nuclear warheads, stored separately from their land-based ballistic missiles and intended for retaliatory missions—is significantly smaller, less diverse, and less ready to conduct actual operations than any of the arsenals maintained by the other four nuclear powers recognized under the NPT. This posture, which is vulnerable to preemptive interference, deviates significantly from accepted wisdom about deterrence and the posture necessary for its credibility. Current Chinese strategic forces look very little like the projections offered by the intelligence community in the past, predictions that began with the assumption that Chinese strategic forces will increasingly resemble those of other nuclear states. The historical pattern of Chinese deployments, examined in the next chapter, suggests that the current force reflects a very different set of design principles. To the extent that Chinese forces continue to reflect a distinct logic, current projections may exaggerate the future Chinese deployments. These projections also obscure the relatively benign nature of the current arsenal by presenting its unique features as ephemeral phenomenon.

Chapter 3: Chinese Strategic Forces, Evolution and Design

“It’s still a fact that there has always existed a coherent and consistent nuclear strategy that is based on sober minded views of the special nature of nuclear weapons.”

Senior Member of the Chinese Nuclear Weapons Complex, 2004¹³⁶

The idea that current and projected Chinese nuclear weapons developments and deployments reflect a consistent outlook on the “special nature” of nuclear weapons—particularly the insensitivity of the deterrent balance to changes in the technical balance—is the central theme of this study. This chapter explains current deployments as a natural technological evolution of Chinese forces guided by the principle of insensitive deterrence.

The account does not dwell on the organizational development of China’s nuclear weapons institutions, including the Second Artillery, or the bureaucratic politics connected to the development of China’s nuclear forces.¹³⁷ Instead, it focuses on the choices that Chinese leaders faced and made regarding the development of their nuclear forces. This section draws extensively from the work of John Lewis, including his books *China Builds the Bomb* and *China’s Strategic Seapower*, as well as two new reference works that have not appeared in English language publications—*Biographies of the Founders of the Nuclear, Missile and Satellite Program* (2001), which is a compendium of biographies about 23 scientists involved in the development of the

¹³⁶ Citation available from author.

¹³⁷ The history of the Chinese nuclear weapons community is recounted in John Wilson Lewis and Xue Litai, *China Builds the Bomb* and *China’s Strategic Seapower*; John Wilson Lewis and Hua Di, “China’s Ballistic Missile Programs,” and John Wilson Lewis, Hua Di and Xue Litai, “Beijing’s Defense Establishment,” *International Security* (). For a review of the development of the Second Artillery, see: Gill *et al*, “The Chinese Second Artillery Corps: Transition to Credible Deterrence.”

China's nuclear, ballistic missile, and satellite program, and a history of the same programs published by the General Logistics Department of the PLA.

The Evolution of Chinese Strategic Forces

The development of China's strategic forces can be divided broadly into three periods: The first period, from 1955-1967, focused on developing atomic and thermonuclear warheads as well as long-range ballistic missiles. During the second period, from 1967-1981, China developed and deployed its first generation of operational strategic systems—most of which remain in service today. After 1981, Chinese strategic programs have largely been devoted to developing ballistic missiles with solid propellants and miniaturized nuclear warheads.

1955-1967: High Yield Nuclear Weapons and Long-Range Missiles

Chinese state media date the decision to pursue nuclear weapons and ballistic missiles during a Spring 1955 meeting at Zhongnanhai that followed explicit nuclear threats from the United States over Quemoy and Matsu.¹³⁸ The actual decision, however, seems to have been undertaken earlier at a Politburo meeting in January that was convened to specifically consider the question of nuclear weapons and included presentations by several well-known Chinese scientists.¹³⁹ Chinese

¹³⁸ For example, see: Xu Zuzhi, "China's Strategic Missile Unit Now Possesses Fighting Capability under High-Tech Conditions; from National Day Background News Series," *Beijing Zhongguo Xinwen She* (1 October 1999) FBIS-FTS-1999-1002-00009.

¹³⁹ Accounts of the meeting are provided in Lewis and Xue, *China Builds the Bomb*, 35-39 and *Biographies of the Founders of the Nuclear, Missile and Satellite Program (Liangdan Yixing Yuanxunzhuan)*, (Tsinghua University Press, 2001).

leaders initially expected substantial Soviet assistance, which for a time was provided to the Chinese nuclear and ballistic missile programs. The two countries signed six cooperative agreements, culminating in the October 1957 *New Defense Technical Accord*, which reportedly committed the Soviet Union to provide China with a prototype nuclear device.¹⁴⁰

“Although the agreement worked out quite well in the first two years,” according to Marshal Nie Rongzhen, who headed China’s strategic programs during the 1950s and ‘60s, “the assistance was short-lived.”¹⁴¹ For a variety of reasons, relations had begun to sour by early 1958, when the Soviet Union decided against shipping a prototype nuclear device, along with blueprints and technical data, to the Chinese. According to one account, the Soviets had prepared sealed railroad cars containing a prototype atomic bomb, documentation, and equipment. Upon learning of the preparations, the Party Central Committee ordered the bomb removed and the documents burned.¹⁴²

Soviet assistance to the Chinese nuclear program would be formally terminated with a June 1959 letter to the Chinese Central Committee stating that the USSR, due to test ban negotiations in Geneva, would not provide a prototype nuclear device, blueprints, or technical data.

¹⁴⁰ This section is largely drawn from Nie Rongzhen, *Inside the Red Star: The Memoirs of Marshal Nie Rongzhen*, Zhong Rongyi, trans. (Beijing, New World Press, 1988) 693-701; Lewis and Xue, *China Builds the Bomb*, 39-72; *Biographies of the Founders of the Nuclear, Missile and Satellite Program*.

¹⁴¹ Nie, *Inside the Red Star*, 696.

¹⁴² See Evgeny A. Negin and Yuri N. Smirnov, *Did the USSR Share Atomic Secrets with China?* (Parallel History Project on NATO and the Warsaw Pact, October 2002) 11-12.

Deteriorating Sino-Soviet relations surrounding nuclear cooperation produced one of the few published documents offering insight into early Chinese nuclear strategy. *The Guidelines for Developing Nuclear Weapons*, probably issued July 1958 by the Central Military Commission, set forth the basic parameters for the indigenous development of Chinese nuclear weapons.¹⁴³ The *Guidelines* endorse a retaliatory operational doctrine based on an arsenal of “nuclear and thermonuclear warheads with high yields and long-range delivery vehicles,” explicitly excluding the development of tactical nuclear weapons.

The general ideas about nuclear weapons expressed in the *Guidelines* have been noted by other scholars studying the Chinese leadership of the 1950s. In a study of Korean-War era Chinese language material—including articles in the Chinese mass media, civil defense and cadre manuals, and specialized journals—Mark Ryan concludes the first generation of Chinese communist leader “early on developed a marked attitude of realism in their treatment of ... not only the physical effects of nuclear weapons and how they might affect warfare, but also to the sphere of political assessment—how likely the enemy was to use nuclear weapons, what the political preconditions were for such use, and what the political repercussions might be stemming from such use.”¹⁴⁴ Ryan argues that these attitudes “depended in part upon a measure of psychological realism, an ability to look clearly at both the enemy’s and one’s own advantages, disadvantages, hopes, fears, and general

¹⁴³ Lewis and Xue, *China Builds the Bomb*, 71.

¹⁴⁴ Mark A. Ryan, *Chinese Attitudes Toward Nuclear Weapons*, 195.

psychological deportment.” These attitudes continued to shape the Chinese decisions about the role for their own nuclear weapons, leading toward the adoption of a minimum deterrent posture that remains dominant in Chinese strategic planning.

The complete withdrawal of Soviet advisors in 1960 and the turmoil of the Great Leap Forward (1958-1960) campaign complicated Chinese efforts to develop a nuclear weapon and ballistic missiles. In particular, the Chinese faced great difficulty in producing adequate amounts of fissile material, particularly plutonium.¹⁴⁵ The budgetary and technical constraints imposed by the aftermath of the Great Leap Forward and the Soviet withdrawal created divisions within the Chinese leadership about the wisdom of pursuing strategic programs, with other senior officials arguing the expense of the strategic programs had begun to “impede the development of other sectors of the national economy.” In the summer of 1961, the controversy was resolved during a meeting of the Politburo at Beidaihe, with strategic programs selected for modernization at the expense of conventional forces.¹⁴⁶ Advocates for slowing or suspending the strategic programs broke into civilian and military camps, with each worried that large expenditures for strategic programs would jeopardize their own programs and priorities. The argument that reportedly carried the day in favor of continued spending on strategic programs linked the

¹⁴⁵ On the difficulties created by the withdrawal of Soviet technical advisors, particularly in the production of fissile material, see Lewis and Xue, *China Builds the Bomb*, 104-136 and [Author redacted], *China's Plutonium Production Reactor Problems: A Research Paper* (Central Intelligence Agency, January 1988) 1.

¹⁴⁶ This meeting is summarized in Nie, *Inside the Red Star*, 702-703.

development of “sophisticated weapons” with Chinese national economic development. One result of this view was to prioritize ballistic missiles over aircraft as a strategic delivery system.¹⁴⁷ In the end, the Chinese nuclear program would cost 10.7 billion Yuan in 1957 prices over the period of 1955-1964—roughly equivalent to the entire defense budget for 1957-1958.¹⁴⁸

In 1961, Chinese designers also settled on pursuing a relatively more sophisticated implosion device (A-1) instead of a simpler gun-type device because the former was better conformed to the requirements of an operational weapons system and made more efficient use of China’s fissile material stockpile.¹⁴⁹

China successfully tested a 15 KT implosion device utilizing U-235 in October 1964. The Chinese government promptly issued a doctrinal statement that outlined the major features of China’s declaratory policy.

China exploded an atomic bomb at 15:00 hours on October 16, 1964, thereby successfully carrying out its first nuclear test. This is a major achievement of the Chinese people in their struggle to strengthen their national defence and oppose the U.S. imperialist policy of nuclear blackmail and nuclear threats. ...

China is developing nuclear weapons not because it believes in their omnipotence nor because it plans to use them. On the contrary, in developing nuclear weapons, China’s aim is to break the nuclear monopoly of the nuclear powers and to eliminate nuclear weapons. ...

China is developing nuclear weapons for defence and for protecting the Chinese people from U.S. threats to launch a nuclear war.

¹⁴⁷ On the competition for resources between ballistic missiles and aircraft, see Evan A. Feigenbaum, *China’s Techno-Warriors: National Security and Strategic Competition from the Nuclear to the Information Age* (Stanford, CA: Stanford University Press, 2003) 25-37.

¹⁴⁸ The cost calculations are from: Lewis and Xue, *China Builds the Bomb*, 107-108.

¹⁴⁹ Lewis and Xue, *China Builds the Bomb*, 137-160.

The Chinese Government hereby solemnly declares that China will never at any time or under any circumstances be the first to use nuclear weapons.¹⁵⁰

This statement, received in the West largely as propaganda, accurately reflects the contents of the 1958 *Guidelines for Developing Nuclear Weapons*. Both statements indicated that the purpose of Chinese nuclear weapons was defensive, and reference the broader goals involving safeguarding world peace and promoting disarmament. Perhaps most important, the statement articulated the no-first-use pledge, which remains the major doctrinal statement describing the structure of Chinese nuclear forces. The consistency between internal formulation and external formulation is not surprising, given China's interest in discouraging Soviet or American pre-emption.¹⁵¹

The 1964 statement contains a number of other elements that are interesting from a historical point of view: The statement describes the Limited Test Ban as "a big fraud" and "an attempt to consolidate the nuclear monopoly of the three nuclear powers." This is almost certainly a veiled reference to the June 1959 Soviet letter announcing suspension of assistance to the Chinese nuclear program in deference to test ban negotiations in Geneva (in fact, the first nuclear device had been code-named "596", as in June 1959, the date of the letter). The statement also refers to Mao's aphorism that the "atom bomb is a paper tiger"—a comment that Ryan

¹⁵⁰ Statement of the Government of the People's Republic of China (16 October 1964). An edited version of this statement is available as an appendix to Lewis and Xue, *China Builds the Bomb*, 241-243.

¹⁵¹ On the planning for US pre-emption, see: Gordon H. Chang, "JFK, China, and the Bomb," *Journal of American History* 74:4 (March 1988), 1289-1310 and William Burr and Jeffrey T. Richelson, "Whether to 'Strangle the Baby in the Cradle': The United States and the Chinese Nuclear Program, 1960-64" *International Security* 25:3 (Winter 2001) 54-99.

suggests was a symbolic aphorism for the limited military utility and high political costs associated with the use of nuclear weapons.

The bomb itself surprised the intelligence community in the United States. The intelligence community had expected China to test a device using Plutonium, rather than Uranium-235.¹⁵² Glenn Seaborg, Chairman of the Atomic Energy Commission, recalled that “to our surprise, the Chinese had detonated a device employing U-235. Further, we were persuaded that the Chinese bomb had been more sophisticated in design than our own Hiroshima U-235 weapon, employing an advanced form of implosion trigger to detonate fission materials.”¹⁵³ With the nuclear test completed, the Chinese shifted resources into two parallel tracks, with one track dedicated to developing a thermonuclear warhead and another to “weaponize” nuclear devices for use with aircraft and ballistic missiles.

Just as designers had faced a choice between the relatively simple gun-type device and the more sophisticated implosion device, Chinese weaponeers now chose between a simple “boosted” device, which would have had a yield on the order of hundreds of kilotons, or a multi-stage thermonuclear weapon with a yield of one megaton or more. Again, the Chinese designers chose the more technically

¹⁵² The US intelligence was unaware that the gaseous diffusion plant at Lanzhou had begun enriching uranium in 1963. For a contemporary intelligence assessment, see: *The Chances of an Imminent Communist Chinese Nuclear Explosion*, Special National Intelligence Estimate 13-4-64 (Director of Central Intelligence, August 26, 1964). For a historical account of the Lanzhou facility, see: Lewis and Xue, *China Builds the Bomb*, 113-125.

¹⁵³ Glenn T. Seaborg with Benjamin S. Loeb, *Stemming the Tide: Arms Control in the Johnson Years* (Lexington, MA: Lexington Books) 116-117. I have omitted a parenthetical note in the text reading “(The other four nuclear weapon powers had used plutonium devices for their first tests.)” Seaborg’s passage is based on his diary entries for 20 and 21 October 1964, republished in *Journals of Glenn Seaborg*, Volume 9 (Lawrence Berkeley Laboratory, University of California, 1979) 261.

complicated route, though this time the decision was inferred from broad guidance provided by Zhou Enlai in July 1964. That guidance reportedly reiterated the 1958 *Guidelines for Developing Nuclear Weapons* focus on developing “nuclear and thermonuclear warheads with high yields and long-range delivery vehicles,” making clear the “high-level goal” of producing “thermonuclear warheads that would be fixed to our intermediate and long-range missiles.” As one senior Chinese official recalled, “we thought we had to develop hydrogen bombs with deterrent force.” The Chinese would successfully test a two stage thermonuclear device in June 1967, dropped from a bomber, just as the chaos of the Cultural Revolution was beginning to overtake the country.¹⁵⁴

1967-1981: China’s First Generation of Strategic Systems

While Chinese designers were completing work on thermonuclear warheads, a second track was underway to develop operational aircraft- and missile-delivered nuclear warheads. Following the successful test of a thermonuclear device in 1967, the Chinese strategic program would focus on deploying operational systems. Much of the work prior to the detonation of the thermonuclear weapon had been preliminary in nature: In 1965-1966, China reorganized ballistic missile programs into an eight-year program, established the Second Artillery and tested a fission

¹⁵⁴ This paragraph is drawn from Lewis and Xue, *China Builds the Bomb*, 196-202.

weapon dropped by an aircraft (May 1965) and another fission weapon launched from a ballistic missile (October 1966).¹⁵⁵

The unusual decision to test a missile armed with a live nuclear warhead deserves some consideration. The Central Military Commission had established the country's strategic rocket forces, called the Second Artillery Corps, in July 1966. Although Second Artillery units received the CSS-1 (DF-2) in September 1966, Chinese nuclear warheads were reportedly still too heavy for the CSS-1 until the October 1966 test, when a CSS-1 delivered a 1,290 KG device with a 12 KT yield.¹⁵⁶ The US intelligence community did not detect CSS-1 deployments and troop training for several more years, *after* China had tested a 3 MT thermonuclear warhead. It is possible that Chinese leaders, as typified by Zhou Enlai's 1964 guidance to develop "nuclear and thermonuclear warheads with high yields and long-range delivery vehicles," intended to deploy an arsenal that exclusively comprised large yield nuclear warheads delivered by ballistic missiles—essentially the same force that the Chinese have today.

The privileged status of ballistic missiles, relative to aircraft, as a delivery vehicle for Chinese strategic forces appears to have been rooted in the notion that they were "sophisticated weapons" and were linked to China's economic

¹⁵⁵ The May 1965 and October 1966 tests are detailed in Lewis and Xue, *China Builds the Bomb*, 207-210; Nie, *Inside the Red Star*, 711-712; and *China Today: Nuclear Industry* JPRS-CST-88-002 (Foreign Broadcast Information Service, US Department of Commerce Joint Publications Research Service, 15 January 1988) 43-44.

¹⁵⁶ The dates, mass and yield are from Lewis and Hua, "China's Ballistic Missile Programs," 15.

development. Indeed, the Chinese term for the program, *liang dan* or two weapons, is typically translated as “sophisticated weapons.”¹⁵⁷

Although work on ballistic missiles had begun with the onset of Soviet technical assistance in the 1950s, the modern outlines of China’s ballistic missile program were set forth in the 1965 *Eight Year Plan for the Development of Rocket Technology*. The *Eight Year Plan* specified a series of four *Dongfeng* (East Wind) missiles to be developed over 1965-1972: DF-2 (CSS-1), DF-3 (CSS-2), DF-4 (CSS-3) and DF-5 (CSS-4). During the 1970s, Chinese leaders would focus on deploying its first generation medium range ballistic missiles (DF-2/CSS-1 and DF-3/CSS-2), completing development of long-range ballistic missiles (DF-4/CSS-3 and DF-5/CSS-4), and developing solid-fueled ballistic missiles.¹⁵⁸ The missiles outlined in this plan, with some modification, continue to form the backbone of China’s strategic forces today.

Although China tested the DF-2 (CSS-1) and DF-3 (CSS-2) on schedule and deployed the missiles at the beginning of the 1970s, the longer-range DF-4 (CSS-3) and DF-5 (CSS-4) would not enter China’s arsenal until the 1980s. These delays may reflect both the turmoil of the Cultural Revolution, as well as strategic decisions by the senior leadership to shift resources toward conventional force modernization.

During the long development timelines of the CSS-3 and CSS-4, the changing

¹⁵⁷ The Chinese term “liang dan” in Marshal Nie’s memoir, which roughly translates as “two weapons” and appears in modern descriptions of the Chinese program, is translated as “sophisticated weapons” in the New World Press translation, as well as “How China Develops Its Nuclear Weapons,” *Beijing Review* 17 (April 29, 1985) 15-18.

¹⁵⁸ Unless otherwise noted, this section is drawn from Lewis and Hua, “China’s Ballistic Missile Programs,” 5-40.

strategic outlook of China's leaders, including a new emphasis on the threat from the Soviet Union, was reflected in the changing technical requirements for the missiles.

Chinese nuclear testing remains somewhat of a mystery during this period: The first 11 Chinese nuclear tests (1964-1970) were designed to develop a pair of fission warheads, as well as a 2,000 KG/3 MT thermonuclear warhead for the CSS-1 and CSS-2.¹⁵⁹ Beginning in 1971, China appears to have entered a new phase in its testing program, but the public information about the 21 Chinese nuclear tests conducted between 1972-1984 is scant and circumstantial. DIA assessed that only one new design, a 4-5 MT warhead (probably for the CSS-4, which would be deployed in 1980), was proof-tested during this period.¹⁶⁰ One of the few official Chinese histories of the strategic weapons program, *China Today: Nuclear Industry* (1988), notes only that "In several nuclear tests after 1973, concrete progress was made in improving weapons performance, developing nuclear warheads, and other areas."¹⁶¹ *China Today: Nuclear Industry* devotes substantial attention to the impact that the Cultural Revolution and the Gang of Four had in the mid-1970s, especially on slowing China's development of the ability to conduct underground nuclear tests. Based on yield estimates, China appears to have continued improving its 3 MT warhead and conducted lower yield nuclear tests to learn about thermonuclear

¹⁵⁹ Data on Chinese nuclear testing in this period is derived from *Soviet and People's Republic of China Nuclear Weapons Employment Strategy*, II-D-1-3.

¹⁶⁰ *Defense Estimative Brief: Nuclear Weapons Systems in China*, 1.

¹⁶¹ *China Today: Nuclear Industry* JPRS-CST-88-002 (Foreign Broadcast Information Service, US Department of Commerce Joint Publications Research Service, 15 January 1988) 46.

phenomenology and investigate tactical nuclear weapons. This testing program, during the 1970s, did not fundamentally alter China's deterrent posture.

Chinese nuclear posture in the 1970s reflected the aftermath of the 1969 border crisis between China and the Soviet Union, during which the Soviet leadership reportedly ordered extensive preparations for a disarming first strike against the Chinese.¹⁶² These preparations may have been the serious consideration of a preventive strike, an effort to coerce Chinese leaders, or both. The aftermath of the crisis appears to have strongly shaped Chinese decisions about force deployments in a number of ways.

In 1972, the Defense Intelligence Agency concluded that China may have deployed the DF-2 (CSS-1) and DF-3 (CSS-2) in the aftermath of the crisis, although Lewis and Hua report that both missiles had entered the Second Artillery prior to 1972.¹⁶³ The deployment of the DF-2 may have been an emergency measure, since deployments were stopped after 1972 at around 30 missiles.¹⁶⁴ Rather than prompting early deployment of the DF-3, deteriorating relations with the Soviet Union may have accelerated easily detected activities, such as troop training and hardening, that revealed existing deployments.

¹⁶² Descriptions of Soviet preparations are available in Blair, *The Logic of Accidental Nuclear War*, 25; Raymond Garthoff, *Détente and Confrontation* (Washington, DC: Brookings Institution, 1985) 209; and Arkady Shevchenko, *Breaking With Moscow* (New York: Knopf, 1985) 165.

¹⁶³ *Soviet and People's Republic of China Nuclear Weapons Employment Strategy*, Table 5 (page no. redacted). Lewis and Hua, "China's Ballistic Missile Programs," 15.

¹⁶⁴ *United States Military Posture for FY 1978* (Joint Chiefs of Staff, 1977) 31. The number estimate is derived from *Soviet and People's Republic of China Nuclear Weapons Employment Strategy*, Table 5 and *Defense Estimative Brief: Nuclear Weapons Systems in China*, 5.

The 1969 crisis also affected the development of the DF-4 (CSS-3) and DF-5 (CSS-4) during the 1970s. Both missiles were modified to optimize their ability to target Moscow: the Chinese extended the range of the DF-4 (CSS-3) to 4500 km to bring Moscow within range of bases located in Qinghai province and designed a flight testing program for the DF-5 (CSS-4) that improved the ability of the missile to penetrate the Moscow missile defense system.¹⁶⁵

Many of the decisions made about modernizing China's nuclear forces focused, during the 1970s, on improving survivability of the missiles using passive measures including hardening and dispersal. The United States intelligence community detected a "war preparations" campaign undertaken in 1969 as relations with the Soviet Union deteriorated.¹⁶⁶ Passive civil defense measures to protect China's military and industrial facilities were already underway on a massive scale: The 1965-1971 "third front" program to build redundant industrial capacity in the country's remote interior consumed, at its peak, more than two-thirds of national budgetary industrial investment.¹⁶⁷

The Chinese military extensively pursued survivability enhancements through the 1970s: Improvements in US and Soviet missile accuracy reportedly led the Chinese military to consider more survivable basing modes for its new

¹⁶⁵ Lewis and Hua suggest that the decision to improve penetrability was a response to the declaration that the US ABM system was deployed against the Chinese, while DIA concluded it was designed to penetrate Moscow's ABM system. Compare Lewis and Hua, "China's Ballistic Missile Programs," 21 with *Special Defense Intelligence Estimate: China's Evolving Nuclear Strategies*, 8.

¹⁶⁶ See *Soviet and People's Republic of China Nuclear Weapons Employment Strategy*, II-15.

¹⁶⁷ Barry Naughton, "The Third Front: Defence Industrialization in the Chinese Interior," *The China Quarterly* 115 (September 1988) 351-386.

generation of silo-based ballistic missiles (DF-4/CSS-2 and DF-5/CSS-2) and to accelerate development of the mobile, solid fueled CSS-5/CSS-NX-3 (DF-21/JL-1) program. In 1975, the senior civilian and military leadership approved a pair of reports that changed the DF-4 (CSS-3) basing mode to caves under high mountains and authorized studies on ship-mobile, rail-mobile, and various camouflaged fixed basing modes for both missiles. The Central Military Commission also approved a 1975 report entitled *Report on Arrangements for Research and Development on Nuclear-Armed Missiles* that called for the accelerated deployment of the CSS-3 (DF-4) and CSS-4 (DF-5) by 1977 and the JL-1 by 1980.¹⁶⁸

Research on a solid fueled ballistic missile to be launched from a submarine (the JL-1/CSS-NX-3) had been ongoing since the late 1960s, although the work “progressed somewhat haphazardly” through the years of the Cultural Revolution due to political turmoil and technological challenges associated with solid-fuels, miniaturized warheads and nuclear powered submarines. Following Deng Xiaoping’s return to power, the Central Military Commission reiterated its concern about survivability, approving a *Report on the Arrangement of the Research and Development on Strategic Nuclear Missiles and Man-Made Satellites and Their Delivery Systems before 1980* (September 1977) that focused on deploying a limited number of CSS-3 (DF-4) and CSS-4 (DF-5) ICBMs, as well as attempting to compete the CSS-NX-3 (JL-1) SLBM program by “the first half of the 1980s.”¹⁶⁹ The Central Military

¹⁶⁸ Described in Lewis and Xue, *China’s Strategic Seapower*, fn 19, p. 308.

¹⁶⁹ Lewis and Xue, *China’s Strategic Seapower*, fn 25, p. 308.

Commission decisively settled on the cave-basing mode for the DF-4 (CSS-3) in 1977 and had probably settled on camouflaged silo-basing for the DF-5 (CSS-4) by the time the Defense Science and Technology Commission ended rail-mobile trials in November 1978.¹⁷⁰ The Chinese leadership reportedly ordered the “emergency deployment” of the CSS-3 (DF-4) and CSS-4 (DF-5) near the end of 1979, although the CSS-4 silos would not be ready until August 1981.

That left the question of China’s “mobile MRBM and IRBM (CSS-1/CSS-2)” force “estimated at over 100 launchers, all of which possess a refire capability.”¹⁷¹ Chinese officials reportedly expressed confidence to US officials that the Soviet Union would be deterred “because the Chinese arsenal is so well-hidden that it ensures sufficient retaliatory capability to inflict intolerable damage to the USSR.”¹⁷²

At the same time, the Chinese were accelerating work on a solid-fueled ballistic missile to replace the relatively vulnerable DF-3 (CSS-2). Although the DF-3 (CSS-2) was mobile, the missile required several hours of pre-launch exposure to load propellants and prepare the guidance systems. Though the mid-seventies, the Second Artillery organized the first “massive long-range firing practice with live warheads, involving moving operations, camouflaging, and launching.”¹⁷³ By the

¹⁷⁰ During 1978-1984, China also pursued a mobile, liquid fueled 8,000 km IRBM called the DF-22.

¹⁷¹ Lewis and Hua state that the CSS-1 was completely retired by 1979, although US intelligence continued to credit the PRC with 25 CSS-1 ballistic missiles through 1984.

¹⁷² Anderson, “China Shows Confidence in Its Missiles,” F11.

¹⁷³ Zhang Jiajun and Zao Zhi, “The Strong Contingent of Secret Rockets - The Historical Course of Development of China's Strategic Guided Missile Units” *Xinhua Hong Kong Service* (7 July 1996) FBIS-FTS-1996-0707-000027.

Figure 3-1: DIA Projection of Selected Chinese Strategic Forces, 1984-1994

	Actual & Projection in <i>Nuclear Weapons Systems in China, DEB-49-84 (1984).</i>			Actual 1994
	1984	1989	1994	
CSS-4 (DF-5)	2	9	16	7
CSS-3 (DF-4)	8	31	32	10
CSS-NX-3 (JL-1)*	0	24	48	0

Projections are *italicized*.

Actual is from National Security Council, *Report to Congress on Status of China, India and Pakistan Nuclear and Ballistic Missile Programs*, July 28, 1993.

late 1970s, Chinese units were reportedly able to reduce pre-launch exposure in exercises to 2-3 hours.

After 1981: China's Second Generation of Strategic Systems

After 1981, the Chinese leadership turned its attention to deploying China's new ICBMs, the CSS-3 and CSS-4, and developing a second generation of ballistic missiles, using solid-propellant, to replace China's first generation of liquid-fueled ballistic missiles. In addition to developing solid-fueled ballistic missiles, China would have to develop a nuclear ballistic missile submarine (SSBN) and miniaturized nuclear warheads. Although we know little about actual Chinese expenditures during this period, DIA speculated that China's *6th Five Year Economic Plan* (1981-1985), devoted an "increasing share of [procurement] funds for ICBM deployment and SSBN/SLBM force development."¹⁷⁴ DIA predicted large deployments of both of China's longer range ballistic missiles (CSS-3 and CSS-4), as

¹⁷⁴ *Defense Intelligence Memorandum: Military Implications of China's Economic Plans*, DDE-1900-80-84 (September 1984) 8-9.

well as its SLBM (CSS-NX-3), through the mid-1990s—at which point China was expected to deploy mobile ICBMs and a CSS-NX-3 follow-on SLBM (See Figure 3-1: DIA Projection of Selected Chinese Strategic Forces, 1984-1994).

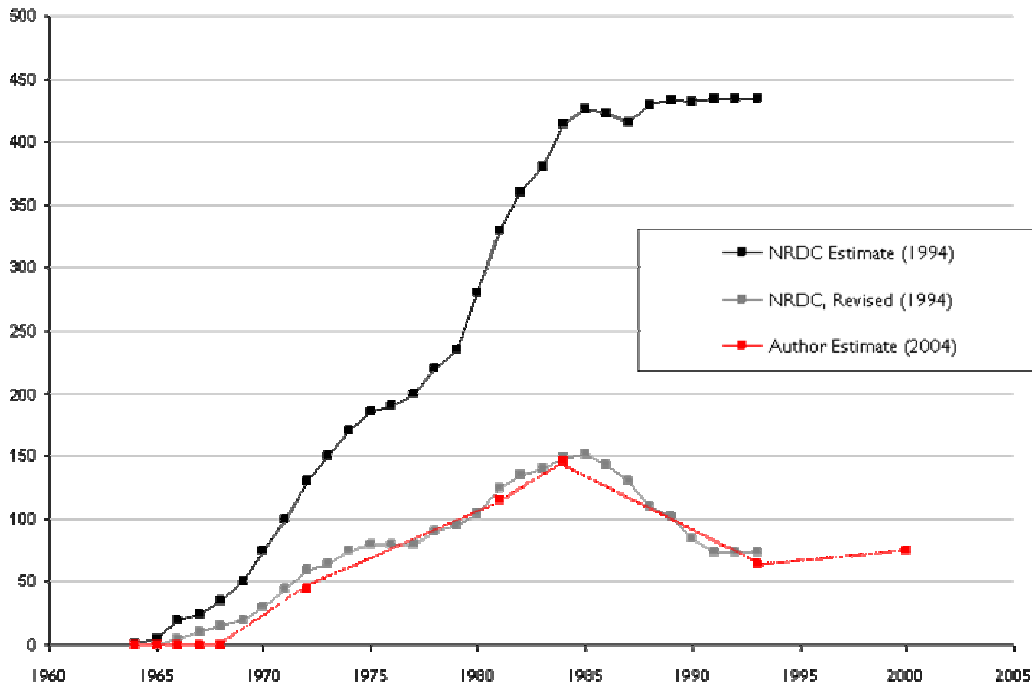
In 1984, China maintained 110 CSS-2 MRBMs, which accounted for more than 75 percent of the total number of operationally deployed warheads; As a modified CSS-2 entered the inventory in 1986, the total number of CSS-2 missiles was allowed to decline to fewer than fifty launchers by 1993. ICBM deployments were halted after construction of a pair of CSS-4 silos in 1981. Following a modification program to improve the range, operability and reliability of the CSS-4, carried out over 1983-1986, China reportedly deployed just 4 of the DF-5A modified ICBMs. By 1994, China had deployed just 7 total CSS-4 (DF-5) and 10 CSS-3 (DF-4) ballistic missiles.¹⁷⁵ China built just one SSBN, which never became operational. Total force levels declined from nearly 150 in 1984 to less than 70 a decade later (See Figure 3-2: Chinese Nuclear Forces, 1965-2005).

One factor may have been the increasing confidence among Chinese leaders that war, including nuclear war, was unlikely.¹⁷⁶ Although threat perceptions clearly began to ease in the early 1980s, the defining symbol of Beijing's recognition of the relaxation of international tension was a 1984 statement, issued after the annual summer leadership conference at Beidaihe, stating that no world war would occur

¹⁷⁵ National Security Council, *Report to Congress on Status of China, India and Pakistan Nuclear and Ballistic Missile Programs*, np.

¹⁷⁶ This paragraph is based on Lewis and Xue, *China's Strategic Seapower*, 211-214.

Figure 3-2: Chinese Nuclear Forces, 1965-2005



This is a comparison of the estimates provided by NRDC and the author. “NRDC Estimate” includes a variety of systems that were very likely never deployed, including SLBMs, tactical nuclear weapons and gravity bombs; “NRDC, Revised” includes only CSS-1, CSS-2, CSS-3, CSS-4 and CSS-5 ballistic missiles, creating an “apples-to apples” comparison with author estimates in Chapters 1 & 2.

Source: Robert S. Norris, Andrew S. Burrows and Richard W. Fieldhouse, *Nuclear Weapons Databook Volume 5: British, French and Chinese Nuclear Weapons* (Boulder, CO: Westview Press, 1994) 359.

for at least 10-15 years. Over the course of the 1980s, the Chinese leadership would substantially reduce the size of the PLA and allow defense spending to atrophy.

China would have a decade or more to improve its first generation of ballistic missiles and develop its second. China’s solid-propellant missile programs would progress slowly. Work had been underway in earnest since August 1978, when Deng Xiaoping expressed “the greatest interest in mobility on land; that is, in the use of

modern weapons for fighting guerilla war.”¹⁷⁷ The relative priorities given to the JL-1 (CSS-NX-3) and its land-based variant, the DF-21 (CSS-5), at this time remain unclear.¹⁷⁸ During the mid-1980s, however, the Chinese leadership slowed investment in the SLBM/SSBN program as both the missile and the submarine programs experienced technical setbacks. The JL-1 testing program experienced three consecutive failures during a 1985 test series to demonstrate the missile’s ability to ignite under water and, following a pair of successful tests in 1988, work appears to have stopped on the program.¹⁷⁹ The 092 *Xia* SSBN, which was to carry the missile, was reportedly so noisy during its initial sea trials that its crew was unable to sleep.¹⁸⁰ Although DIA speculated that the Chinese might deploy as many as 4 *Xia* submarines by 1994, the Chinese leadership delayed and then canceled construction of a follow-on ballistic missile submarine in 1985, shifting resources to

¹⁷⁷ Lewis and Hua, “China’s Ballistic Missile Programs,” 26.

¹⁷⁸ It is uncertain at which point the DF-21 program received priority, if ever, over the JL-1. John Lewis, the eminent political scientist and source of much of our knowledge about Chinese ballistic missile deployments, has offered two versions of the same meeting.

- “Zhang [Aiping] attached great importance to project JL-1, and soon after his appointment in March 1975, he visited the first and fourth academies and exhorted them to redouble their efforts in coordinating and promoting the project.” Lewis and Xue, *China’s Strategic Seapower*, 153.
- “At a meeting of the First Academy in April 1975, Zhang Aiping belittled the idea that the PLA might send a submarine as far as the Arabian Sea to launch a missile. Even from there, the closest Asian location, for a sub firing on Moscow, the distance to the Soviet capital would be too far for the JL-1. Zhang concluded with the judgment *julang shangan* [the Giant Wave (JL-1) must go ashore], and all participants accepted his ruling.” Lewis and Hua, “China’s Ballistic Missile Programs,” 27.

¹⁷⁹ Lewis and Xue, *China’s Strategic Seapower*, 200-202

¹⁸⁰ Lewis and Xue, *China’s Strategic Seapower*, 120.

long-term design efforts for a more advanced submarine, still under development, that would carry the naval variant of the CSS-X-10 (JL-2).¹⁸¹

Even the CSS-5 (DF-21), which had a comparatively smooth testing program compared with the CSS-NX-3, was not deployed for many years following a series of successful tests in 1985. The Second Artillery created an operational CSS-5 unit in 1986, but declassified US intelligence estimates note that “deployment of this missile seems to have begun in the early 1990s.”¹⁸² In 1996, the intelligence community observed that China had deployed only a handful of the DF-21 while R&D flight tests continued and that China planned to keep the CSS-2 (DF-3) in service until CSS-5 (DF-21) deployments were “adequately underway, ... perhaps by 2002.”¹⁸³ As in the cases of China’s ICBM and SLBM programs, the token deployments of the DF-21 in 1994 were substantially below anticipated DIA deployments ten years earlier.¹⁸⁴

The delay in CSS-NX-3/CSS-5 deployments may have been related to difficulty in developing a miniaturized warhead for the two missiles. Original design plans reportedly called for the CSS-5/CSS-NX-3 to carry a 600 kg warhead with a yield of more than 400 kt.¹⁸⁵ Although *China Today: Nuclear Industry* describes a

¹⁸¹ Projections of SSBN deployments are available in *Defense Estimative Brief: Nuclear Weapons Systems in China*, 4. The cancellation is noted in Lewis and Xue, *China’s Strategic Seapower*, 121.

¹⁸² *Report to Congress on Status of China, India and Pakistan Nuclear and Ballistic Missile Programs*, (National Security Council, np. A later edition of *Chinese Military Power* expresses more confidence, noting the CSS-5 (DF-21) has been “operationally deployed since about 1991.” “Chinese Military Power,” (1998) 9.

¹⁸³ *China Incrementally Downsizing CSS-2 IRBM Force*, NAIC-1030-098B-96 (National Air Intelligence Center, November 1996) in Gertz, *The China Threat*, 233-234.

¹⁸⁴ DIA anticipated 28 MR/IRBM follow on missiles by 1994. *Defense Estimative Brief: Nuclear Weapons Systems in China*, 4.

¹⁸⁵ Lewis and Xue, *China’s Strategic Seapower*, 177. As in the case of Zhang Aiping’s meeting with members of the First Academy in the 1977, Lewis and Hua provide a different account of the same

testing program in the early 1980s to validate “new design principles for development of nuclear weapons,” *Biographies of the Founders of the Nuclear, Missile and Satellite Program* suggests China had refrained from weaponizing the device given the expense involved.¹⁸⁶ *Biographies* suggests that work accelerated as the Chinese expected a test ban agreement among the superpowers.

The yield data from the Chinese nuclear testing suggests a series of tests in 1987-1991 that appear to be high yield warheads (200 KT to 1 MT). This warhead may have been superseded by an even smaller warhead for the CSS-X-10 that was completed during the 1992-1996 test series.¹⁸⁷ The Chinese also experimented with enhanced radiation warheads (neutron bombs) during this period, although—as with Chinese low-yield tests in the 1970s—there is no evidence that China built or deployed the devices.

While China spent comparatively little on deployments of ICBMs and early solid-propellant ballistic missiles during the 1980s, the Chinese leadership set in place plans that govern China’s current modernization, which relies on the CSS-X-10 family of solid-propellant ballistic missiles.¹⁸⁸ The Chinese leadership was reportedly concerned about the survivability of missiles based in silos following the deployment of the Trident II–D5, which the US intelligence community assesses is

events as Lewis and Xue. In “China’s Ballistic Missile Programs,” Lewis and Hua report that the warhead was to be 500 kg with a yield of 200-300 kt. “China’s Ballistic Missile Programs,” 30. I assume the warhead was heavier than the 470 kg DF-31 type RV.

¹⁸⁶ This section is drawn from *Biographies of the Founders of the Nuclear, Missile and Satellite Program*, 56-63.

¹⁸⁷ Dan Hoffman and Ian Stober, *A Convenient Spy: Wen Ho Lee and the Politics of Nuclear Espionage* (New York: Simon & Schuster, 2002) 226.

¹⁸⁸ Lewis and Hua, “China’s Ballistic Missile Programs,” 28-30.

accurate enough to threaten Chinese silos.¹⁸⁹ Ballistic missiles with solid-propellant offer advantages in terms of survivability, because they may remain fueled at all times, reducing pre-launch exposure, and are more suitable to mobile transporter-erector-launcher operations. With the threat expressed as a long-term technical matter, and no nuclear war expected in the near future, the State Council and Central Military Commission reorganized ongoing research into solid-propellant ballistic missiles in 1985. The broad features of that plan, like the 1965 *banian sidan* plan, continued to guide the development of China's for more than a decade: The Central Military Commission settled on a pair of "second generation" solid-fueled ballistic missiles: the DF-31 and JL-2, with the land-based DF-31 receiving priority over the JL-2. In 1986, the Chinese also began work on a mobile 12,000 km range ICBM to follow the DF-31, which has variously been described as the DF-41 or merely an extended range DF-31.

The deployment of solid-fueled ballistic missiles would remove Beijing's reliance on ambiguity about the number and location of fixed deployments sites, creating a more secure retaliatory capability. During this period, resources would be shifted away from more near-term programs, such as the follow-on Xia-class submarine and a mobile, liquid fueled ICBM (DF-22).

The Chinese leadership reportedly expected the CSS-X-10 (DF-31) and JL-2 systems to enter the Chinese arsenal in the late-1990s. Despite flight testing of the

¹⁸⁹ Robert Walpole in *CIA National Intelligence Estimate Of Foreign Missile Development ...*, S. Hrg. 107-467, 26.

CSS-X-10 (DF-31) in 1999 and 2000, recent NIC estimates predict Chinese deployments of the DF-31, an extended range DF-31 and the JL-2 in the last half of the decade—more than twenty years after the programs were inaugurated and almost a decade after initial flight testing.¹⁹⁰

One cannot confidently say if the delays experienced by the CSS-X-10 program reflect the technical complexity of the endeavor or a lack state support. Unfortunately, little public information is available about the DF-31 flight testing program or Chinese budgetary allocations. Whatever the reason, the Chinese appear to have reassessed their ballistic missile deployments during the 1990s. Between 1994 and 1998, the number of CSS-4 (DF-5) ballistic missiles in US intelligence estimates increased from “seven to ten” to “about twenty.”¹⁹¹ China may have increased the number of its ICBMs during that period, perhaps in response to anticipated delays in the CSS-X-10 program (either from technical challenges or a decision to reduce investment).¹⁹² China has also continued periodic upgrades on the CSS-4, perhaps to extend the missiles service life beyond its reported 2010 withdrawal.¹⁹³

¹⁹⁰ The few official statements about the DF-31 flight testing program are provided in: Kenneth H. Bacon, ASD PA, DoD News Briefing (August 3, 1999) and (December 12, 2000). Available at: http://www.defenselink.mil/news/Aug1999/t08031999_t0803asd.html and http://www.defenselink.mil/news/Dec2000/t12122000_t1212asd.html. See also: *Current and Projected National Security Threats To The United States*, S. Hrg. 107–597, 78.

¹⁹¹ Compare *Report to Congress on Status of China, India and Pakistan Nuclear and Ballistic Missile Programs with Ballistic and Cruise Missile Threat*, NAIC-1031-0985-00 (Washington, National Air Intelligence Center, 1998). Available at: <http://www.fas.org/irp/threat/missile/naic/>

¹⁹² Conversely, US intelligence capabilities may simply have begun providing more detailed information about Chinese ballistic missile capabilities. In 1992, the United States launched the first of three advanced Keyhole (KH-11) imaging satellites, which reportedly included a thermal infrared imagery system that offered improved ability to detect buried structures, such as missile silos.

¹⁹³ Continuing CSS-4 upgrades are noted in “Chinese Military Power,” (July 2003) 31.

Other manifestations of the Chinese leadership's interest in survivability during the 1980s included an effort to improve the country's command and control system and the beginning of a "certain major defense project" to construct "a number of strategic missile positions that hold different types of missiles" with warhead and missile storage facilities, a command center, and accommodations for personnel.¹⁹⁴ This project was completed in 1995.

The reduction in defense spending and personnel that the Chinese government undertook in the mid-1980s was part of a much larger program of professionalization that continues to shape the modern People's Liberation Army, including the Second Artillery. Lewis and Hua write that, "until the early 1980s, there were no scenarios, no detailed linkage of the weapons to foreign policy objectives, and no serious strategic research." In the mid-1980s, the Second Artillery became vastly more professional, conducting its first "large-scale combined battle exercise" to assess the overall capability of the strategic missile units.¹⁹⁵ In 1984, the Central Military Commission ordered the Second Artillery to develop a system of what Lewis and Xue call "round-the-clock alerts"—more likely an effort to raise professionalism than readiness given the Chinese leadership's increasingly sanguine view of the international system. By the mid-1990s, more than 70 percent of Second Artillery officers were college graduates.¹⁹⁶ The Second Artillery reportedly offers

¹⁹⁴ "RMRB Summarizes Report on Jiang Praise for Second Artillery Corps," FBIS-CPP-2002-0321-000103.

¹⁹⁵ Zhang and Zao, "The Strong Contingent of Secret Rockets - The Historical Course of Development of China's Strategic Guided Missile Units" FBIS-FTS-1996-0707-000027.

¹⁹⁶ "Chinese progress in missile research," *Xinhua News Agency* (21 July 1997).

officer recruits with doctorates or doctoral-level education salaries of RMB 50,000 and RMB 30,000, as well as better living and working conditions.¹⁹⁷ Such salaries are rather large in a country where a division commander in Beijing makes RMB 36,000 per year.¹⁹⁸

A final, important change in the posture of the Second Artillery began with the development of tactical ballistic missiles in the 1980s.¹⁹⁹ *Operational Studies* reports that Second Artillery units to conduct conventional operations were first created in the early 1990s, which corresponds to the first deployments of the CSS-5 MRBMs (some armed with conventional warheads) and CSS-6 SRBMs. The number of CSS-6 and CSS-7 SRBMS has grown dramatically from fewer than 200 in 1998 to more than 450 in 2003.²⁰⁰

¹⁹⁷ "160 People with Doctorates in Service for China's Strategic Missile Troops," *Xinhua News Service* (April 21, 2004) FBIS-CPP-2004-0420-000028.

Available at: http://fpeng.peopledaily.com.cn/200404/20/eng20040420_140929.shtml

¹⁹⁸ "A Better Life for Common Soldiers," *People's Daily* (23 July 2002). Available at: <http://www.china.org.cn/english/FR/37476.htm>

¹⁹⁹ Lewis and Hua, "China's Ballistic Missiles," 31-39.

²⁰⁰ 1998 estimate is from *Chinese CSS-6 and CSS-X-7 Launchsite Coverage of Taiwan, October 1998* (Defense Intelligence Agency, 1998) in Gertz, *The China Threat*, 232.

Principles of Design

The nuclear strategy of our country has the following basic characteristics:

Number one, it is defensive. From the first day of possessing nuclear weapons, our government solemnly stated that in any time, under any circumstance, we would not use nuclear weapons first. Our country has nuclear weaponry purely for the purpose of self-defense and breaking the nuclear monopoly and nuclear blackmail of hegemonism.

Number two, it is limited. The size of our nuclear force is limited. We do not involve ourselves in the nuclear arms race of other nations. The development of our nuclear force is completely in accordance with the active defensive military strategic guidance.

Number three, it is effective. The fundamental purpose of developing nuclear weapons by our country is to stop a nuclear attack against our country. Once being attacked of this kind, we will firmly and effectively conduct destructive nuclear retaliation.

Number four, it is safe. Our nuclear force is under the direct command of the Central Military Committee. And we have taken strict management measures, so nuclear security has reliable safeguarding. All the strategic regions of our country are the strategic operational units under the centralized and unified leadership of the Central Military Committee. The main tasks of all the strategic regions in their strategic operational directions are to consider the reality of all the strategic directions according to the unified arrangement of the Central Military Committee to carry out the strategic intention of the Central Military Committee creatively and implement all the requirements of the military strategy.

Strategic Studies, Academy of Military Sciences, 2000²⁰¹

The idea that Chinese deployments continue to reflect a set of principles is widely held, as demonstrated anecdotally by the comment that begins this chapter and the passage from *Strategic Studies* at the beginning of this section. The four principles outlined in *Strategic Studies* may appear somewhat anodyne, but their application in practice has produced an arsenal strikingly different than that of other nuclear states. Although many observers have anticipated imminent change in doctrine and force structure, Chinese nuclear forces continue to be structured around

²⁰¹ *Strategic Studies (Zhanlue xue)* Ch.19.p.1.

principles very much like the ones suggested in *Strategic Studies*, which themselves reflect the core notion that the deterrent effect is largely insensitive to changes in the size, configuration, and readiness of nuclear forces.

Chinese Nuclear Forces are « Defensive »

Chinese leaders deliberately chose to maintain a defensive operational doctrine, marked by a no-first-use pledge, and eschewed the development of battlefield or tactical nuclear weapons. The defensive orientation of Chinese nuclear forces, expressed within the no-first-use commitment in 1964, was among the earliest doctrinal pronouncements to shape Chinese nuclear force decisions. MG Pan Zhenqiang, (PLA-Ret) has argued that “The no-first-use doctrine provided a conceptual guideline for the development of China’s nuclear force.”²⁰² The commitment to a defensive arsenal comprising “nuclear and thermonuclear warheads with high yields and long-range delivery vehicles” in the 1958 *Guidelines for Developing Nuclear Weapons*, reiterated by Zhou Enlai in July 1964, reportedly determined the decision to proceed with a multistage thermonuclear device and, probably, to eschew deployments of relatively small fission weapons for use by the People’s Liberation Army Air Force.

China did not operationally deploy warheads with yields of less than 1 MT until the 1990s. Work on these warheads began in the 1980s, when Chinese leaders

²⁰² Pan Zhenqiang, “On China’s No First Use of Nuclear Weapons,” Pugwash Online (26 November 2002): <http://www.pugwash.org/reports/nw/zhenqiang.htm>

outlined plans for a miniaturized warhead, with a 200-300 KT yield, for use with solid-fueled ballistic missiles, such as the CSS-5 (DF-21) and CSS-NX-4 (JL-1), which had reduced throw-weight. Research efforts in the 1970s and 1980s on nuclear weapons with yields of a few tens of kilotons do not appear to have led to the deployment of tactical nuclear weapons.

This trend continues to be evident in the design of the Chinese nuclear arsenal. Doctrinal documents and Second Artillery exercises continue to emphasize defensive operations associated with a no-first-use commitment. The decision to outfit the CSS-5 (DF-21) with a conventional payload suggests that the Chinese continue to eschew battlefield uses for nuclear weapons.

The retaliatory nature of the Chinese deterrent precludes neither the targeting of military targets, such as US bases in the Asia-Pacific region, nor limited retaliatory strikes. *Operational Studies* includes “enemy strategic targets, political centers and military installations” as potential targets to “send the enemy a tremendous mental shock.”²⁰³ *Operational Studies* also suggests that commanders prepare to retain a reserve force to continue to provide a measure of interwar deterrence.²⁰⁴ Nevertheless, these elements of China’s operational strategy do not appear tied to purposes such as the control of escalation or the creation of favorable exchange ratios.

²⁰³ *Operational Studies (Zhanyi xue)* Ch.14, p.9.

²⁰⁴ *Operational Studies (Zhanyi xue)* Ch.14, p.7.

Chinese Nuclear Forces are « Limited »

Chinese leaders chose to deploy a small nuclear force. We know Chinese leaders were concerned about the survivability of their deterrent. Chinese leaders made extensive investments in passive defensive measures to camouflage, harden, and disperse industrial and military assets, including ballistic missile forces. The limited nature of the Chinese deterrent has two elements: First, the number of nuclear warheads and delivery vehicles was small, even when compared to British and French nuclear forces that numbered in the 200-500 range. Second, the Chinese relied on a single basing mode for the country's nuclear deterrent, while both Britain and France maintained multiple modes of delivery for most of the Cold War.

Chinese ballistic missiles production has consistently been below China's industrial capacity, based on floorspace estimates. Following large expenditures to develop nuclear weapons, China spent comparatively little on the deployment of ballistic missiles—perhaps as little as 5 percent of its total defense spending during 1965-1979.²⁰⁵ Chinese leaders reportedly spent a greater percentage during the 1980s, although deployments of the CSS-3 (DF-4) and CSS-4 (DF-5) remained very limited and investment in the SLBM/SSBN program probably remained below the DIA estimates based on the 1981-1985 Five Year Economic Plan. China reportedly deployed fewer than 10 ICBMs though the mid-1990s, although China produced 10

²⁰⁵ Chinese spending estimates are from Ronald G. Mitchell and Edward P. Parris, "Chinese Defense Spending, 1965-1978," Joint Economic Committee, *Allocation of Resources in the Soviet Union and China—1979* (Washington: Government Printing Office, 1979) 66-72.

ICBMs and space launch vehicles each year during 1978-1982.²⁰⁶ Futron Corporation estimates the commercial price of a CZ-2 launch vehicle, the space launch variant of the CSS-4, at \$25 million (2000 dollars). At this price, the cost of adding 10 CSS-4 ballistic missiles per year would be modest—less than 5 percent of total equipment expenses in 2000.²⁰⁷

Chinese Nuclear Forces are « Effective »

The Chinese leadership defined an “effective” nuclear force as one capable of delivering a limited retaliatory strike. Through the 1970s, Chinese leaders clearly expressed concern about the survivability of their strategic forces, undertaking campaigns to harden facilities and reduce pre-launch exposure. However, they did not increase the scope of deployments or readiness of their strategic forces.

The sentiment expressed by six of Kennedy’s advisors—that “American nuclear superiority was not in our view a critical factor, for the fundamental and controlling reason that nuclear war, already in 1962, would have been an unexampled catastrophe for both sides”—is also found in *Operational Studies*, which notes, “Though the United States was superior to the Soviet Union in nuclear weapons at that time, if a nuclear war broke out, no country could avoid the destiny of destruction. There is sharp conflict between the super destructive power of the

²⁰⁶ Schuyler Bissel, “Economic Assessment of the Soviet Union and China,” in Joint Economic Committee, *Allocation of Resources in the Soviet Union and China—1983* (Washington: Government Printing Office, 1984) 104.

²⁰⁷ *Space Transportation Costs: Trends in Price Per Pound to Orbit 1990-2000* (Bethesda, MD: Futron, September 6, 2002). Available at: <http://www.futron.com/pdf/FutronLaunchCostWP.pdf>

means of war and the thinking of the war launcher who wants to get his interest on one hand, but fears destruction on the other."²⁰⁸

Ryan, noting that Chinese leaders developed an accurate assessment of American psychological attitudes during the Korean War, speculates that Chinese leaders continued to draw confidence from their assessment of Washington's likely fears about possible retaliation. Chinese confidence was evident in assessments by senior Chinese military officials, including Marshal Nie Rongzhen, during the 1969 border clashes with the Soviet Union. Although the Soviet Union was actively preparing for a disarming first-strike and making public statements to pressure the Chinese leadership, Nie and his colleagues, in a report to the Central Committee, concluded that a Soviet preventive attack was unlikely because "it is not an easy matter to use a nuclear weapon. When a country uses nuclear weapons to threaten another country, it places itself under the threat of other country's nuclear weapons...."²⁰⁹

MG Pan suggested that such an attitude underpinned Chinese support for no first use, explaining that "The idea was as long as you are able to give a devastating counter-attack against one or two US big cities, the scenario was enough to make the attacker who had the intention of preemptive nuclear strike pause, and hopefully drop the plan."²¹⁰ Defining effectiveness as a function of the psychological fear of

²⁰⁸ *Strategic Studies (Zhanlue xue)* Chapter 20, p.7.

²⁰⁹ Nie *et al*, *Report to the Central Committee: A Preliminary Evaluation of the War Situation* translated in Chen and Wilson, "All Under The Heaven" 167.

²¹⁰ Pan "On China's No First Use of Nuclear Weapons," np.

retaliation, rather than a calculation based on the force balance, explains why the Chinese undertook extensive defensive measures to conceal, harden and disperse military and industrial assets without also undertaking large deployments of land-based ballistic missiles and nuclear capable aircraft. As one Chinese official expressed in the 1980s, the psychological fear generated by numerical ambiguity surrounding Second Artillery deployments was sufficient to deter the Soviet Union.

Lewis and Hua contend that Chinese nuclear strategy appears to have been driven more by technology than leadership beliefs: “Technology, not strategy, determined the pace and main direction of the ballistic missile program at least until the late 1970s.”²¹¹ Lewis, writing with Xue Litai, suggested the decisive nature of technological determinants applied to the strategic programs as a whole: “As compared to the view held by Chinese leaders in the 1950s, the emerging view decisively endorsed the military-technical side of doctrine and a posture to deter nuclear attack.”²¹²

The history of Chinese deployments, however, suggest that leadership beliefs about the stability of deterrence played particularly important roles across the strategic weapons program. The “military-technical side of posture” would not explain Chinese choices about alert postures, operational training, or targeting doctrines, all of which vary greatly from those in the other NPT nuclear weapons states.

²¹¹ Lewis and Hua, “China’s Ballistic Missile Programs,” 20.

²¹² John Lewis and Xue Litai, “Strategic Weapons and Chinese Power: The Formative Years,” *China Quarterly* 112 (December 1987) 547.

Second, technological requirements were altered to reflect changing political conditions: Following the 1969 border clashes with the Soviet Union, the national government ordered the Second Artillery to accelerate troop training exercises and modified some programs to reflect a new focus on the Soviet Union. The CMC shifted emphasis from the JL-1 to the DF-21 and ordered the First Academy to extend the range of the DF-4 and test the DF-5 against simple missile defense systems. In these instances, leadership beliefs were clearly instrumental in altering technical requirements.

Third, the steady progression of ballistic missile technology is not found in other strategic programs. Leadership beliefs clearly blocked production and deployment of tactical nuclear weapons. Chinese leaders focused their resources on developing land-based strategic ballistic missiles over aircraft and the development of tactical ballistic missiles (at least until the 1980s). In the mid-1980s, Chinese leaders shifted resources away from a sea-based deterrent. China has not deployed MRV or MIRV ballistic missiles, possibly due to technological constraints on the size of warheads into the 1980s. The intelligence community is currently divided over the question of whether China will deploy multiple re-entry vehicles on its CSS-4 ballistic missiles; the implication of this chapter is that such a deployment would be unlikely.

Chinese Nuclear Forces are « Safe »

Finally, the Chinese leadership implemented operational practices that sacrificed readiness to preserve operational control. The Chinese leadership never deployed gravity bombs to airbases—despite the Chinese leadership’s decision to rush the DF-5 into deployment in 1980. Chinese leaders continued to maintain separate storage for ballistic missiles and nuclear warheads, even after the decision to professionalize the Second Artillery in the 1980s and to institute “round-the-clock” alerts in 1984. There is substantial evidence that the Chinese leadership was acutely concerned about the vulnerability of ballistic missiles, including selecting storable fuels for the DF-2 based on analyses of the Cuban missile crisis, conducting troop training exercises to reduce pre-launch vulnerability of the DF-3, and investigating multiple basing modes for the DF-4 and DF-5. Many of these concerns about survivability might have been met with the deployment of rudimentary missile warning radars and higher alert rates for Chinese nuclear forces. Yet the Chinese did not do so, suggesting that the deterrent benefit from deploying more alert forces was overwhelmed by the inherent risk of the loss of control. Chinese leaders may not have made a conscious calculation, but we can easily imagine how senior Chinese leaders—in the aftermath of the leadership disputes of the Cultural Revolution, Lin Biao’s death and the arrest of the Gang of Four—may have reacted to suggestions that central control over nuclear weapons be loosened to enhance the deterrent effect.

Continuity Over Time

These four principles of design appear consistent across changing PRC threat perceptions and programmatic developments. They can be traced from the 1958 *Guidelines* to current cadre training manuals like *Strategic Studies* (2000) and *Operational Studies* (2000).

The continuity can, in part, be traced to the slow generational turn-over in China's leadership: For example, the current set of modernization programs was established in the mid-1980s under Deng Xiaoping, who as party General Secretary in 1956, would likely have been involved in the adoption of the 1958 *Guidelines*. Deng also selected Jiang Zemin and, reportedly, Hu Jintao to succeed him as China's paramount leader.

But the age of Chinese leaders does not entirely explain this consistency. Competing factions, particularly during the Cultural Revolution, continued to disagree about the method and relative importance of defense modernization, including nuclear weapons. Competing factions held very different views on the relative importance of nuclear weapons. For example, the left-leaning coalition during the Cultural Revolution reportedly placed comparatively high priority on the development of nuclear weapons to strengthen national defense. Regardless of the relative priority dedicated to nuclear weapons, neither faction appears to have proposed dramatic changes in the overall character of China's nuclear posture.

A Note on Organizational Bias

One alternative explanation for the unique nature of Chinese deployments relies on the anticipated organizational bias of professional militaries. Some observers have suggested that professional militaries may “not develop invulnerable nuclear forces if left to their own devices” because programs to make arsenals less vulnerable to attack may

- Take resources from more valued programs, such as bombers and missiles;
- Require new missions, systems or even organizational units;
- Conflict with organizational preferences for preventive war; or
- Succumb to organizational routine and standard operating practices.²¹³

“The influence of organizational biases on strategic weapons deployments can perhaps best be seen in the People’s Republic of China,” which, Sagan argues, “did not develop a confident and secure second-strike capability until the early 1980s.”²¹⁴

Sagan identifies two decisions to demonstrate the point. First, he suggests the Second Artillery “did not independently pursue the survivability measures needed” for the CSS-3 (DF-4) and CSS-4 (DF-5) until Mao approved a report recommending cave- and silo-basing modes for the missiles.²¹⁵ Second, Sagan suggests “the strong bureaucratic power of traditional People’s Liberation Army interests in the party and

²¹³ Scott D. Sagan, “The Perils of Proliferation: Organization Theory, Deterrence Theory, and the Spread of Nuclear Weapons,” *International Security* (Spring 1994) 66-107, especially pages 90-91.

²¹⁴ Sagan, “Perils of Proliferation,” 90.

²¹⁵ Sagan, “Perils of Proliferation,” 91. Citing Lewis and Hua, “China’s Ballistic Missile Programs,” 24.

the weapons institutes appears to have slowed the development of the Chinese navy's SLBM force."²¹⁶

Although organizational and bureaucratic imperatives are undoubtedly an important part of the story, the two cases that Sagan cites are inadequate to justify explaining the unique character of the Chinese arsenal. Moreover, Chinese leaders were more concerned about survivability than Sagan suggests.

For example, Sagan describes Mao's approval of a recommendation by the Defense Science and Technology Commission (DSTC) to change the CSS-3 basing mode as "high level intervention by civilian authorities."²¹⁷ Sagan's source material, however, suggests the impetus for improving survivability came from *within* the defense community: The 1975 *Report on Arrangements for Research and Development on Nuclear-Armed Missiles*, prepared by the First Academy, contained several recommendations to accelerate work on more survivable basing modes which were then approved by Mao.

The broad interest in survivability is consistent with intelligence reports from the same period identifying an extensive campaign of dispersal and hardening across the Chinese military and industrial sectors, including the "third front campaign."²¹⁸ In the late 1980s, the Second Artillery completed another major engineering project to improve the survivability of ballistic missiles based in caves and silos.

²¹⁶ Sagan, "Perils of Proliferation," 90.

²¹⁷ Sagan, "Perils of Proliferation," 90.

²¹⁸ See *Soviet and People's Republic of China Nuclear Weapons Employment Strategy*, II-15.

Second, the Chinese decision to emphasize the land-based CSS-5 (DF-21) over the naval variant, the CSS-NX-3 (JL-1), did not, as Sagan suggest, prolong China's vulnerability "for a longer period of time than can be explained by the rationalist assumptions of proliferation optimists." First, Sagan implies the Chinese eventually deployed the CSS-NX-3, something they did not do for a variety of economic, political and technical reasons outlined in the preceding section. The lack of urgency surrounding the JL-1 program that Sagan cites was not organizational, but technical. The slow progress made by other elements of the program, including miniaturizing a nuclear warhead for the JL-1 (which was not tested until the late-1980s) and developing an SSBN, obviated a crash program for the missile. As in the case of the basing mode for the CSS-5 (DF-21), the People's Liberation Army was concerned about survivability—a concern piqued, no doubt, by the poor technical performance of the submarine and the limited range of the CSS-NX-3 (JL-1).²¹⁹

A careful reading of these two cases suggests the Chinese military was, in fact, concerned with reducing the vulnerability of its forces. Yet that concern, which led to substantial investments in hardening, dispersal, and redundancy of national industrial capabilities as well as the pursuit of survivable basing modes for land-based ballistic missiles, did not result in a more orthodox deployment pattern. In fact, the biases of professional military organizations identified by Sagan—particularly the value place on hardware such as missiles and bombers and the preference for preventive war doctrines—should have created pressure for larger

²¹⁹ Lewis and Hua, "China's Ballistic Missile Program," 27.

and more diverse inventory of delivery vehicles, decentralized command and control, and a more flexible operational doctrine. Yet, the Chinese deterrent in 1994 that Sagan declared survivable was not materially different from the force of the 1970s that Sagan criticized: The CIA estimates that China maintained “only seven relatively inaccurate single-warhead ICBMs”, “some 50” medium and intermediate-range missiles, and no submarine-launched ballistic missiles.²²⁰

Conclusion

The persistence of unorthodox nuclear deployment patterns, set against the anecdotal evidence of concern with survivability and macro-economic data suggesting substantial investments in defensive measures to protect national military forces, industrial capacity and population against nuclear attack, appear to reflect a deliberate decision. Why did the Chinese undertake some measures, such as hardening and dispersal, but not others, such as building more delivery vehicles, placing forces on higher rates of alert, and adopting a more flexible operational doctrine?

The simple answer is suggested by the senior member of the Chinese nuclear weapons complex at the outset of this chapter: “a coherent and consistent nuclear strategy that is based on sober minded views of the special nature of nuclear weapons.” The sober minded view, in this case, is a concern about inadvertent risks rather than deliberate attack, reflected in choices to invest in survivability measures

²²⁰ U.S. Policy On Ballistic Missile Defenses And The Future Of The ABM Treaty, Presidential Review 31 (1994) in Gertz, *Betrayal*, 233-236.

that did not compromise party control of nuclear weapons. Even China's mobile ballistic missiles, which are dispersed around the country, do not appear to conduct regular patrols. Instead, nuclear warheads are stored separately from the ballistic missiles—a measure that seriously compromises the survivability of such deployments.²²¹ That compromise is fundamentally in the interest of the United States, even if that fact is not widely appreciated in the American political system.

²²¹ China's lone SSBN does not patrol and is not believed to be operational.

Chapter 4: Chinese Participation in the Conference on Disarmament

“The Conference on Disarmament, located along the Lac Lemon in Geneva, is the single multilateral disarmament negotiating body in the world today, and as such, it plays an indispensable role in safeguarding world peace and security. What you are doing is an arduous but lofty work.”

Jiang Zemin, Address at the Conference on Disarmament, March 1999²²²

In addition to information about strategic force deployments, China’s arms control behavior provides insight into Chinese attitudes about nuclear weapons. This chapter considers recent Chinese participation in the Conference on Disarmament (1993-2003), focusing on Chinese approaches toward two treaties designed to “freeze” global nuclear stockpiles in terms of sophistication and scope: the 1996 Comprehensive Nuclear Test Ban Treaty (CTBT) and the proposed Fissile Material Cut-Off Treaty (FMCT). The CTBT was negotiated in the Conference on Disarmament in Geneva from 1994-1996, while the FMCT has been under consideration by the CD since the conclusion of CTBT negotiations.

This period marked a new period in Chinese attitudes toward arms control and disarmament. Although official Chinese statements always paid homage to the goal of the “thorough” destruction of nuclear weapons, China shunned formal arms control negotiations until joining the Conference on Disarmament in 1980. The decision to negotiate and sign a CTBT was a particularly symbolic departure for China, who had denounced the 1963 Limited Test Ban Treaty as “a big fraud to fool

²²² Jiang Zemin, “Promote Disarmament Process and Safeguard World Security, Address at the Conference on Disarmament,” in *Final Record of the 822nd Plenary Meeting of Conference on Disarmament CD/PV.822* (Geneva, Switzerland: 26 March 1999) 2.

the people of the world.”²²³ China viewed test ban negotiations as an excuse for the Soviet Union to deny technical assistance to the Chinese bomb program. The CTBT represented the first time that China accepted an international constraint on its national military capabilities.²²⁴ Any explanation of Chinese security policy must provide a coherent account of this decision as well as subsequent Chinese behavior toward the FMCT.

The Comprehensive Test Ban Treaty obligates signatories “not to carry out any nuclear weapon test explosion or any other nuclear explosion.” Advocates of the CTBT believe that the test ban will prevent the development of increasingly sophisticated nuclear weapons. In this light, the CTBT has become a test of the nuclear weapons states’ commitment under Article VI of the NPT to “pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament....”²²⁵

Where the CTBT places a qualitative limit on nuclear arsenals through a ban on testing, the FMCT would impose a quantitative limit by prohibiting the production of additional fissile material for nuclear weapons. Like the CTBT, the 1995 NPT Review Conference identified the “immediate commencement and early

²²³ *Statement of the Government of the People’s Republic of China* (16 October 1964).

²²⁴ Chinese participation in Chemical Weapons Convention negotiations marked the first full participation of the Chinese delegation in an arms control negotiation. The institutional capacity developed during the CWC negotiations paid dividends during CTBT negotiations and Chinese positions on the CWC negotiations also foreshadowed some of the substantive positions that China would take on the CTBT, including proposals to limit the intrusiveness of on-site inspections.

²²⁵ The connection between the CTBT and Article VI was established in the *Final Document of the 1995 NPT Review Conference* (NPT/CONF.1995/32) making the treaty an important element of the nonproliferation regime that helps curb the spread of nuclear weapons. Available at: <http://www.un.org/Depts/ddar/nptconf/162.htm>

conclusion of negotiations on a nondiscriminatory and universally applicable convention banning the production of fissile material for nuclear weapons or other nuclear explosive devices” as “important in the full realization and effective implementation of article VI” commitments to nuclear disarmament.²²⁶

Despite the similarity of the two agreements, Chinese behavior toward the two treaties has been radically different. China was an active participant in CTBT negotiations held at the CD. Although the Chinese bargained hard, negotiations were completed on schedule with China becoming among the first countries to sign the treaty. By contrast, China—in a dispute with the United States—blocked the adoption of a work program in the Conference on Disarmament for five years, foreclosing the possibility of negotiations on a FMCT.

This chapter reviews Chinese behavior in the CD from 1993 to 2003. Such a review is overdue: Scholarly consideration of Chinese participation in the CD has been limited to a handful of small sections in journal articles.²²⁷ Competing explanations of Chinese behavior are explored in the next chapter; this chapter

²²⁶ *Final Document of the 1995 NPT Review Conference* (NPT/CONF.1995/32/DEC.2). This statement was reaffirmed in the *Final Document of the 2000 NPT Review Conference* (NPT/CONF.2000/28).

²²⁷ Iain Johnston and Bates Gill, with various co-authors, are the only scholars who have dedicated any sustained attention to the question of why China signed the CTBT. Although each has published a number of articles and book chapters that include some discussion of the Chinese decision, the principle sources are: Michel D. Swaine and Alastair Iain Johnston, “China and Arm Control Institutions,” in *China Joins the World*, ed. Elizabeth Economy and Michael Oksenberg (New York: Council on Foreign Relations Press, 1999) 90-135; Alastair Iain Johnston, “The Social Effects of International Institutions,” in *Locating the Proper Authorities*, Daniel W. Drezner, ed. (Ann Arbor: University of Michigan Press, 2003) 145-196; Bates Gill, “Two Steps Forward, One Step Back: The Dynamics of Chinese Nonproliferation and Arms Control Policy-Making in an Era of Reform,” in *Making of Chinese Foreign and Security Policy in the Era of Reform, 1978-2000*, David Lampton, editor (Stanford, CA: Stanford University Press, 2001) 257-288.

attempts to create a detailed history of negotiations. Other accounts contain potentially significant factual errors regarding the sequence of events and positions of the participants. I have conducted a limited number of interviews with American and Chinese participants in the process and made use of recently declassified US documents regarding negotiating positions and unclassified assessments of the Chinese testing program that emerged during the CTBT ratification debate and the allegations of Chinese nuclear weapons espionage. Two potentially significant findings suggest the Chinese were prepared for a CTBT relatively early in the process: A 1986 report by two former Directors of IAPCM reportedly called for accelerating Chinese nuclear testing in anticipation of new US-Soviet test ban negotiations. As early as 1994, US officials were briefed on Chinese plans to suspend testing by 1996.

Even less scholarly attention has been paid to the complete stoppage of work in the CD after the signature of the CTBT. The reasons for the deadlock appear to have been poorly understood at the onset, even by the participants. Some retrospective consideration is helpful to understanding the evolution of the Chinese and American policy in this regard. The section concerning the FMCT is necessarily more speculative because the treaty is the subject of ongoing discussions about a potential work plan.

Comprehensive Nuclear Test Ban Treaty

The Chinese decision to negotiate and sign a CTBT was an important turning point for Chinese participation in international arms control regimes. The CTBT represented the first time that China accepted an international constraint on its national military capabilities. On 5 October 1993, China committed to the completion of a CTBT “no later than 1996.”²²⁸ The October 1993 commitment to a test ban was rooted in decisions made during a major revision of Chinese security policy in the mid-1980s. These roots are worth a short digression.

During the mid-1980s, China’s security policy began to reflect the country’s rapid economic development, Gorbachev’s ascension to power in the Soviet Union and China’s growing confidence. For example, in 1985, paramount leader Deng Xiaoping ordered a reduction in the size of the PLA by one million troops.²²⁹ Deng allowed defense spending to decline as a percentage of GDP—a trend that would continue through the 1980s.²³⁰ The number of operationally deployed nuclear forces declined as China reduced the number of CSS-2 MRBMs.

Following a December 1984 nuclear test, China did not conduct another nuclear test for 30 months (June 1987). The testing pause appears to have coincided

²²⁸ *Statement of the Government of the People’s Republic of China on the Question of Nuclear Testing* (5 October 1993).

²²⁹ Deng Xiaoping, *Speech At An Enlarged Meeting Of The Military Commission Of The Central Committee Of The Communist Party Of China* (4 June 1985). Available at: <http://english.peopledaily.com.cn/dengxp/vol3/text/c1410.html>

²³⁰ For a review of military reforms instituted under Deng, see: Dennis J. Blasko, “PLA Force Structure: A 20 Year Retrospective,” in *Seeking Truth From Facts: A Retrospective on Chinese Military Studies in the Post-Mao Era*, CF-160-CAPP James C. Mulvenon and Andrew N.D. Yang, eds. (RAND, 2001) 51-86.

with the completion of deployment goals for China's first generation of nuclear capable ballistic missiles and the Soviet test moratorium that Gorbachev declared on July 1985 (and which lasted until February 1987). During this period, two former Directors of IAPCM, Yu Min and Deng Jiaxian, became concerned that the US would accept calls for a Comprehensive Nuclear Test Ban.²³¹ The Chinese had refrained from aggressively pursuing their miniaturization program because of the expense of the technologies involved. Although China had validated miniaturization principles in a series of tests during the early 1980s, the design had not been weaponized. Deng had been hospitalized repeatedly during those two years. Just before his death in late 1986, he called Hu Side (who would eventually head China's nuclear weapons programs) to the hospital and, after conferring with Yu Min and the other senior members of the team, asked Hu to compose a report to the Central Committee asking for support for an accelerated testing program that would complete a miniaturized warhead design in advance of a test ban.²³² The Central Committee approved the report, dated 2 April 1986, and appointed Hu Side and Hu Renning in charge of the overall planning for the test series.

Chinese leaders apparently believed additional US nuclear weapons testing would not enhance US deterrence. Deng and Yu argued the United States was experiencing declining returns from testing and could, when politics required, agree

²³¹ This section is drawn from *Biographies of the Founders of the Nuclear, Missile and Satellite Program*, 56-63.

²³² In the 1990s. France would also accelerate its nuclear testing program in anticipation of the CTBT. The Chinese decision is notable largely for its foresight—which seems to reflect the relative priority at the time placed on economic development and the central planning apparatus.

to a test ban. An interesting analogue to this reasoning appears in a contemporary DIA analysis of Chinese attitudes about nuclear weapons: DIA reported that Chinese leaders viewed US Pershing II deployments in Europe as a purely political exercise and expected the US—having defeated Soviet efforts to undermine alliance cohesion with SS-20 deployments—to refrain from additional deployments for “political and psychological gains.”²³³ In both cases, the Chinese anticipated US restraint for political gains, reasoning that the deterrent balance was insensitive to factors such as nuclear weapons testing and missile deployments.

Chinese anticipation of test ban negotiations was evident in Chinese behavior in the CD. In 1985, China had expressed its willingness to “reconsider” its position on the CTBT if an *ad hoc* committee were convened. In March 1986, China announced that it would no longer conduct atmospheric nuclear testing and that it would participate in an *ad hoc* group on the CTBT if one were convened in 1986.²³⁴

The Deng-Yu report established a testing plan to lead China into a test ban. In 1984, DIA assessed that the Chinese nuclear stockpile was based on a relatively small number of warhead designs that were proof-tested in atmospheric nuclear tests (15

²³³ *Special Defense Intelligence Estimate: China's Evolving Nuclear Strategies*, 9-10.

²³⁴ One the commitment to cease atmospheric nuclear testing, see: Zhao Ziyang at the Chinese People's Rally for World Peace, quoted in “China Urges Superpowers to End Nuclear Testing,” *United Press International* (21 March 1986). On the commitment to participate in an *ad hoc* committee, see: Qian Jiadong, “Statement at the Conference on Disarmament,” in *Final Record of the 339th Plenary Meeting of Conference on Disarmament*, CD/PV.339 (Geneva, Switzerland: 13 February 1986) 32. China had, in 1985, expressed its willingness to “reconsider” its position on the CTBT if an *ad hoc* committee were convened. Qian Jiadong, “Statement at the Conference on Disarmament,” in *Final Record of the 292nd Plenary Meeting of Conference on Disarmament*, CD/PV.292 (Geneva, Switzerland: 19 February 1985) 32-33.

KT, 3 MT and 4-5 MT warheads).²³⁵ DIA speculated that further Chinese nuclear testing would be intended to

1. increase reliability and warhead confidence;
2. develop more compact warheads;
3. increase hardening of warheads in a nuclear missile defense environment;
4. develop tailored output devices, including enhanced radiation warheads; and
5. improve safety, storage, and logistics procedures.²³⁶

Following the resumption of testing in 1987, an analysis of Chinese test yields suggests at least two additional designs: Two tests in the 200-300 KT range probably involved the warhead for the DF-21/JL-1 proposed in 1986 by Deng Jiaxian and Yu Min. Then, in September 1992, China conducted a low yield test that was reported to validate an aspherical primary for a miniaturized nuclear warhead that could arm the DF-31/JL-2.²³⁷ This development probably obviated the DF-21/JL-1 warhead. China announced its intention to complete negotiations on a CTBT “no later than 1996” following the first full scale test of the warhead for the DF-31 in October 1993.²³⁸ Six tests in the 50-150 KT range probably completed validation for the design.

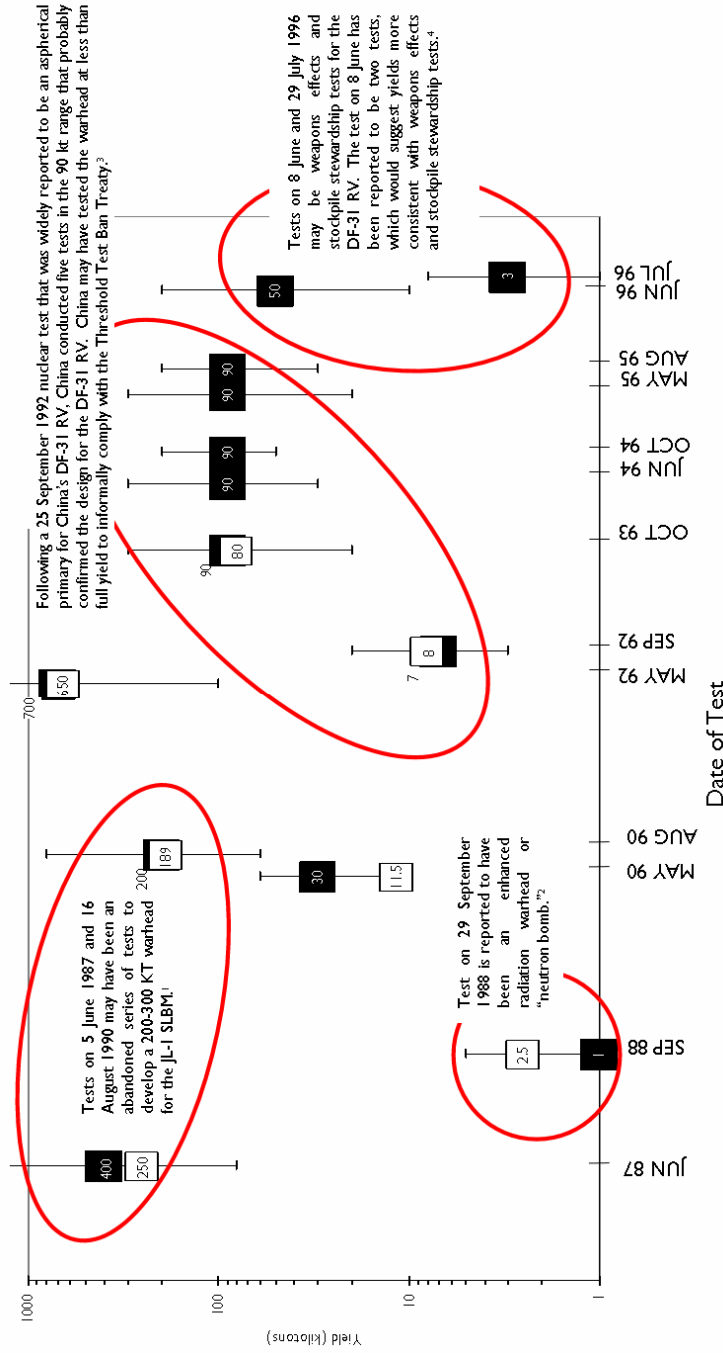
²³⁵ *Defense Estimative Brief: Nuclear Weapons Systems in China*, 2.

²³⁶ *Defense Estimative Brief: Nuclear Weapons Systems in China*, 2-3.

²³⁷ For example, Sun Cheng Wei, a Chinese weapons scientist, gave a talk at Los Alamos in Summer 1994 where he discussed China’s work on spherical primaries, before noting “But these last few years, we’ve just been working at these watermelons.” Hoffman and Stober, *A Convenient Spy*, 109.

²³⁸ Foreign Qian Qichen had told US Secretary of State Warren Christopher in July 1993 that China would give “positive consideration” to a CTBT by 1996. “China, U.S. hold security talks,” *Agence France Presse* (July 27, 1993).

Figure 4-1: Chinese Nuclear Tests, 1987-1996



Yield estimates in solid boxes are from data provided by the International Seismological Centre Bulletin, available at: <http://www.isc.ac.uk/>. Estimates represented in hollow boxes are more sophisticated measurements provided by John R. Murphy, "Yield Estimation and Bias at the Chinese Lop Nur Test Site," 14th Annual DARPA/PL Seismic Research Symposium (Tucson, AZ, September 1992).

1. Vipin Gupta, "The Status Of Chinese Nuclear Weapons Testing," *Jane's Intelligence Review*, January 1994.
2. Dan Stober and Ian Hoffman, *A Convenient Spy*, Simon & Schuster, 2001, 64.
3. *A Convenient Spy*, 108.
4. On purposes of low-yield Chinese testing, see: Holdren et al. *Technical Issues Related to the Comprehensive Nuclear Test Ban Treaty*, National Academy Of Sciences, 2002. On the June 1996 seismic event, see "Latest Chinese Nuclear Test Involved Two Bombs," *Armed Forces Newswire Service*, June 12, 1996.

China may have tested an enhanced radiation warhead in 1984 and again in 1988 (29 September 1988), as well as a high yield warhead (21 May 1992).²³⁹ Chinese tests may also have been carried out to enhance the performance of the CSS-4 warhead for a nuclear anti-ballistic missile environment, improve reliability and confidence, and integrate safety features. The last two seismic events may have been three weapons effects and stockpile stewardship tests on the DF-31 RV.²⁴⁰

The decision to conclude a CTBT “no later than 1996” appears to have been linked to the anticipated completion of the Chinese testing program, following the first successful full-scale test of the DF-31 RV. Based on the subsequent sequence of tests (6 tests in the 50-150 KT range), the Chinese leadership appears to have approved a limited test schedule (most likely proposed by CAEP) that would permit the addition of a single, new warhead design to the Chinese arsenal by 1996. The US intelligence community apparently believed that the Chinese were planning to suspend nuclear testing after 1996—a February 1994 State Department memorandum (now declassified) intended to prepare Undersecretary of State Lynne Davis for a meeting with her Chinese counterpart cited “evidence that China plans

²³⁹ A small explosion of uncertain yield (10-30 kt) in May 1990 may have been a primary for the 200-300 kt warhead tested in June 1987 and August 1990, or a tactical warhead.

²⁴⁰ The June 1996 seismic event was reportedly two nuclear tests, which would reduce the yield to levels more compatible with effects and stockpile stewardship tests. In April 1995, *Jane's Defense Week*—citing unspecified but previously reliable sources—reported that China intended to conduct three nuclear tests in 1996. “China increases test total before Treaty,” *Jane's Defence Weekly* (8 April 1995) 3. The decision to conduct simultaneous nuclear explosions may have reflected international pressure to cease testing and agree to the CTBT. See “Latest Chinese Nuclear Test Involved Two Bombs,” *Armed Forces Newswire Service* (12 June 1996).

to suspend testing in 1996.”²⁴¹ Press reports indicated that Chinese officials privately confirmed to Undersecretary Davis that they would be ready to sign a CTBT by 1996.²⁴²

Chinese officials were also publicly stressing that the Chinese nuclear program was not open-ended. In early 1994, Chinese officials indicated that “five or six” tests remained in the ongoing testing sequence (in fact, 6 tests remained). In October 1994, a Chinese arms control official told reporters that China needed “a few more” nuclear tests.²⁴³ After China’s June 1996 test, China officially announced that it would conduct 1 additional test.²⁴⁴

Negotiations on the CTBT commenced when the CD convened in January 1994. Although the negotiations were conducted under the auspices of the CD, the P5 conducted regular talks as a group, and, in some instances, countries conducted bilateral negotiations.

China maintained three “treaty-killing proposals” that were designed to forestall an early CTBT. First, China insisted that any treaty permit “peaceful nuclear

²⁴¹ Department of State, *China: CTBT/Nuclear Testing* (1994) 2. Interestingly, this information does not appear to have been shared with the United States delegation in Geneva. Personal communication with Ambassador Stephen Ledogar.

²⁴² Vipin Gupta, “The Status Of Chinese Nuclear Weapons Testing,” *Jane’s Intelligence Review* (January 1994) 34. One of the members of the Chinese delegation to Geneva, Zou Yunhua, authored an article in 1994 entitled “Comprehensive Nuclear Test Ban Treaty Inevitable in the Developing Circumstances ...” See Zou Yunhua, “Comprehensive Nuclear Test Ban Treaty Inevitable in the Developing Circumstances ...” *Guoji Wenti Yanjiu [International Studies]* (January 13, 1994) in JPRS-CAR-94-030 (May 12, 1994) 1-4.

²⁴³ “China to Conduct Just ‘Few More’ Nuclear Tests,” *Los Angeles Times* (October 21, 1994).

²⁴⁴ See Vipin Gupta, “The Status of Chinese Nuclear Weapons Testing,” *Jane’s Intelligence Review* (January 1994) 34; “China increases test total before Treaty,” 3; and “China Stages Nuclear Test and Vows to Join Ban After One More,” *The New York Times* (June 9, 1996) 14.

explosions.”²⁴⁵ The Chinese side must have been well aware that its position on PNEs would find little support among other states—permitting such nuclear explosions would make a treaty non-verifiable, and there was little international interest in PNEs.²⁴⁶ Second, China insisted that the treaty contain negative security assurances, including a no-first-use pledge from the United States. The United States had long refused to adopt a no-first-use policy and made its position clear that the test ban treaty was an unacceptable forum to discuss these pledges. Third, China proposed an international satellite monitoring system that was widely considered unnecessary and cost-prohibitive. Chinese participants in the process, during interviews, confirmed they were under instruction not to agree to a test ban before 1996.

At the beginning of negotiations, the United States supported permitting nuclear tests with yields below 4 lbs (so-called hydronuclear tests). This was unacceptable to the other nuclear states, who lacked the test data and expertise to conduct useful tests at such low yields. The negotiations on the threshold for the test ban occurred principally among the P5 and lasted through August 1995, when the United States dropped its insistence on a 4 lb threshold and committed to a “zero yield” test ban. This essentially ended the negotiations over the threshold question,

²⁴⁵ For a review of various Chinese proposals for PNEs, see: John Horgan, ‘Peaceful’ Nuclear Explosions: China’s interest in this technology may scuttle a test-ban treaty,” *Scientific American* (June 1996) 14-15.

²⁴⁶ The *Final Document of the 1995 NPT Review Conference* (NPT/CONF.1995/32) authorized recommended that the Conference on Disarmament “take ...into account when negotiating a comprehensive nuclear test-ban treaty” that “peaceful applications of nuclear explosions envisaged in article V of the Treaty have not materialized.”

with the other members of the P-5 agreeing to the US proposal. The United States concession came amid mounting evidence that the test ban negotiations were entering their final phase.

In July 1995, France had announced a final series of eight tests in advance of the test ban, beginning in September.²⁴⁷ Several states, perhaps reacting to the colonial overtones of French testing in the South Pacific, pushed a resolution through the UN General Assembly on 12 December 1995 stating that the General Assembly “strongly deplores” nuclear testing and calling for the immediate cessation of nuclear weapons tests. The proposal had lukewarm support—a majority of states abstained, asked to be counted as “not present” or voted against the resolution (including all of the P5). The French Ambassador to the UN called the resolution “unfounded, unfair, pernicious and useless.”²⁴⁸ China came under rather less pressure than the French, perhaps because Chinese testing in Xinjiang lacked the obvious colonial overtones of French testing in the South Pacific. The Japanese Diet, however, suspended the grant portion of its overseas development assistance (ODA) to China in 1995 in response to continued Chinese nuclear testing. This was largely symbolic; the grants portion represented a small fraction of Japan’s ODA contribution to China.

²⁴⁷ On June 13 1995, French President Jacques Chirac announced a series of eight nuclear tests in the South Pacific to run from September 1995-May 1996. Two months later, in the face of negative international and domestic reaction, France announces the tests will end more quickly.

²⁴⁸ 18 states voted against the resolution, with another 43 states abstaining and all the other nuclear weapons states either voted against the resolution, or abstained. Another 30 or so states either failed to cast votes or asked for their votes to be recorded as absent.

China announced in March 1996 that a “common understanding” had been reached among the P5 on the phrase “any nuclear weapon test explosion”—essentially signaling Chinese support for a zero-yield test ban and moving the negotiations into the so-called “endgame” phase during 1996.

In short order, the Chinese delegation began to drop the “treaty-killing” provisions that it had supported. At the beginning of the session, the rolling text ran 97 pages with 1200 instances of bracketed language signifying disputed language—many of these proposals were Chinese. On 28 May 1996, Dutch Ambassador Japp Ramaker tabled a clean draft text that proposed compromises on all the disputed language. China largely accepted this draft, which did not contain a provision for a satellite verification system, as the basis for future negotiations. In June, China indicated that it would agree to a “temporary” ban on PNEs, and dropped its demand for negative security assurances to be included in the treaty.

The Chair’s text proposed compromises on two issues—entry-into-force (EIF) and on-site inspections (OSI)—that were the subject of negotiations during the second session of the CD and remained unresolved when negotiations were closed with the June 28 text.

The entry-into-force issue reflected competing interests in balancing early entry-into-force with universality. Everyone agreed that the P5 would need to ratify the agreement for it to enter into force, but there were disagreements about whether entry into force should depend on ratification by the three “threshold” states—India, Pakistan, and Israel. Various formulas were floated to require ratification by the

three threshold states without naming them, including requiring ratification by all members of the CD. The Chinese initially insisted on ratification by all members of the CD as a condition for entry-into-force. After September 1995, China supported a Russian proposal that would require ratification by 68 states listed by the IAEA as having nuclear reactors or nuclear research programs. In the end, China accepted the Chair's compromise for a list of 44 states that were members of the CD and had IAEA nuclear reactors and research programs, most likely because this formula ensured that India would be required to sign the treaty. New Delhi, however, objected to Indian ratification as a condition for entry-into-force and, after the Chair indicated that negotiations were closed with the June 28 text, withheld its consent to forwarding the treaty. In the end, Australia, rather than the CD, forwarded the treaty to the United Nations for signature.

China had better luck reopening the June 28 text on the issue of on-site inspection. The Chair's draft of June 28 accepted much of the Chinese position on inspections. The Chinese had objected to initial American proposals to use information collected by national technical means as a justification for an inspection and to automatically approve inspections unless opposed by a majority of the CTBT Executive Council (the "red-light" procedure). The Chinese delegation wanted national technical means limited to a "supplementary" role and each inspection to be approved by an affirmative two-thirds of the treaty's proposed Executive Council (the "green-light" procedure). The June 28 Chair's text permitted national technical means, but adopted the green-light procedure for inspections with a simple majority

(26 votes out of 51) of the Executive Council required to approve an inspection. The United States indicated at this point that it would “live with” the compromise proposal in the Chair’s text.

China’s delegation indicated that the June 28 draft still did “not reflect China’s positions on some important issues,” such as the basis for on-site inspections and the decision-making procedure of the Executive Council, and put forward its own amendments to the chairman’s text. The Chinese delegation expressed concern about the possible abuse of inspections. Interview data suggests that these concerns divided the Chinese delegation between the PLA and the Ministry of Foreign Affairs. The Chinese position was not uncommon and was shared by “many” states that, as US Ambassador to the Conference on Disarmament Stephen Ledogar testified, were “adamantly opposed to giving the US what they considered was...a license to spy.”²⁴⁹ Inspections may reveal some sensitive technical data about a country’s testing program as well as provide cover for espionage efforts directed at nearby facilities. Moreover, inspections were hypothetical at the time of negotiation. No one could be sure how common or intrusive they would actually be. The United States itself was concerned over such espionage and, in its own interagency process, favored restricting access to US facilities during inspections.²⁵⁰

In response to the stand-off over procedures for on-site inspections, Jiang Zemin reportedly sent a letter dated 12 July 1996 to President Clinton expressing his

²⁴⁹ *Final Review of the Comprehensive Nuclear Test Ban Treaty (Treaty Doc. 105–28)*, Hearing Before The Committee On Foreign Relations, S. Hrg. 106-262 (7 October 1999) 18.

²⁵⁰ *Final Review of the Comprehensive Nuclear Test Ban Treaty*, S. Hrg. 106-262, 18.

“hope that the two sides can reach agreement on this matter prior to the resumption of the Conference on Disarmament on 29 July with a view to avoiding the reopening of talks on the chairman’s text during the resumed meeting and to facilitating the signing of a CTBT within this year.”²⁵¹

In August 1996, the United States and China opened intensive bilateral negotiations over the treaty’s provision for on-site inspections. This judgment was based on a belief that China would not sign the treaty without further compromise on the issue of inspections. Whether or not the Chinese delegation would have signed the agreement without this compromise is difficult to say. Interview data suggests the delegation was divided over the issue of on-site inspections, and Chinese participants provide different answers to a counterfactual question regarding whether China would have signed without the compromise. But the judgment of the United States seems based on some evidence. Chinese representative Sha Zukang had publicly told the Conference on Disarmament that the “success or failure” of the negotiations would hinge on the issue of on-site inspections.²⁵² One member of the Chinese delegation recalled that “Chinese ambassador Sha Zukang made it clear in the discussions that China would be unable to sign the treaty without this concession.” In all likelihood, the decision would have been made at the most senior levels of the Chinese leadership. On 6 August, the

²⁵¹ This apparently responded to Clinton letters dated June 26 and July 8, 1996. See: Zou Yunhua, *China and the CTBT Negotiations*, (Stanford, CA: Stanford University Center for International Security and Cooperation, 1998) 24.

²⁵² Zou, *China and the CTBT Negotiations*, 18.

United States and China indicated that the Chinese accepted the use of information from national technical means as a basis for inspections, but that inspections would require a supermajority of the treaty's Executive Council (30 of 51 members).²⁵³ This compromise was submitted on 14 August 1996.

After signing the treaty, the Chinese government expressed continued concern about the possible abuses of the inspection regime. The official Chinese government statement that accompanied the Chinese signature reaffirmed Beijing's opposition to "the abuse of verification rights by any country, including the use of espionage or human intelligence, to infringe upon the sovereignty of China and impair its legitimate security interests in violation of universally recognized principles of international law." Secretary of State Warren Christopher appears to have sent a letter to Chinese Vice Foreign Minister Qian Qichen expressing that "the United States understood China's concern on NTM and was committed to compliance by all parties to the CTBT with these CTBT provisions against possible abuse."²⁵⁴

The Chinese appear to have been serious about abuse, proposing another measure that suggested how far the Chinese delegation had come in developing expertise. Several participants mentioned that the Chinese delegation proposed

²⁵³ "US, China say they have made progress on CTBT," *Agence France Presse* (6 August 1996). AFP later reports that, in exchange for setting the trigger at 30 votes, China commits to secure Pakistani support and push the CTBT through to the UN General Assembly. "US, China agree to get around Indian opposition to CTBT," *Agence France Presse* (9 August 1996).

²⁵⁴ Zou, *China and the CTBT Negotiations*, 24.

drafting a “permitted activities” list that would reduce suspicion and the risk of mutual recrimination.²⁵⁵

In September 1996, the CTBT was opened for signature. After signing the CTBT, President Clinton told the United Nations General Assembly that the United States was ready to begin “negotiating a treaty to freeze the production of fissile materials for use in nuclear weapons” and suggested that the “Conference on Disarmament should take up this challenge immediately.”²⁵⁶

Fissile Material Cut-Off Treaty

In contrast to the period from 1993-1996 when the CD energetically worked toward a CTBT, the CD has not adopted a program of work to negotiate a FMCT—in fact, the CD has been deadlocked since the end of 1996 (with a three week exception in 1998). Disputes in the first two years (1997-1998) following the conclusion of the CTBT focused on the scope of the treaty. Many developing nations wanted to link FMCT negotiations with broader negotiations toward nuclear disarmament—this linkage was in large measure a proxy for the more contentious issue of whether the treaty ought to be a nonproliferation measure that banned future production, or whether it would be a more general disarmament measure subjecting existing fissile material stockpiles of the nuclear weapons states to regulation. The main difference

²⁵⁵ The document is said to be classified because it might have complicated negotiations with non-nuclear states. Citation available from author.

²⁵⁶ Clinton, William Jefferson, “Address to the United Nations,” *Public Papers of the Presidents* (1996) 1648.

involved whether or not the negotiations on the FMCT would cover past production (or stockpiles), or merely prohibit future production.

The nuclear weapons states all strongly oppose the inclusion of stockpiles. China is especially sensitive about subjecting its stockpile to international regulation. China ceased production of plutonium for military uses around 1990, apparently as part of a larger effort to convert defense industries to civilian production.²⁵⁷ Most estimates of Chinese fissile material production credit China with 1-4 tons of plutonium and 20 tons of highly enriched uranium.²⁵⁸ China's plutonium stockpile may be significantly closer to 1 ton than 4 and may constrain the size the Chinese nuclear arsenal. China has never disclosed the amount of plutonium it produced. Western estimates are largely derived from the capacity of China's 2 plutonium production facilities. Classified estimates by the Department of Energy, leaked to the press, estimate the Chinese plutonium stockpile (including weapons) at 1.7-2.8 tons. Assuming 3-4 kg of plutonium per warhead, 1.7-2.8 tons of Pu could support a force of 400-900 weapons. This estimate probably forms the basis of the assessment from *Proliferation: Threat and Response* the China "has a stockpile of fissile material sufficient to improve or increase its weapons inventory."²⁵⁹ The DOE estimate is

²⁵⁷ David Wright and Lisbeth Gronlund, "A History of China's Plutonium production," *Science and Global Security* 11: 1 (2003) 61-80. See also: *Proliferation: Threat and Response*, (2001) 14.

²⁵⁸ David Albright, Frans Berkhout, and William Walker, *Plutonium and Highly Enriched Uranium 1996: World Inventories, Capabilities and Policies* (New York: Oxford University Press Inc., 1997) 126-130.

²⁵⁹ *Proliferation: Threat and Response* (2001) 14.

consistent with a detailed, unclassified estimate of estimate of Chinese Pu production placing the Chinese plutonium stockpile at 2-5 tons.²⁶⁰

Limited information about the production facilities themselves, as well as the power and operating histories of the reactors, could significantly reduce the total size of the stockpile. US intelligence estimates South African HEU production in the 1980s, for example, were significantly higher than actual production, in part because the facilities encountered substantial difficulties.²⁶¹

Declassified US intelligence documents suggest Chinese plutonium production facilities encountered significant technical problems, possibly resulting from the withdrawal of Soviet assistance in 1960.²⁶² The authors of the unclassified estimate report “rumors that one of the production facilities had a fire during the 1970s that seriously crippled the plant. If true, such an occurrence would reduce the total estimate, possibly by a significant amount.”²⁶³ If the Chinese plutonium stockpile is closer to 1 ton, China may face a serious constraint on its ability to expand its arsenal beyond the projected modernization plans.

Non-nuclear-weapon states have supported the much broader concept of “Fissile Material Treaty” that would cover both existing stockpiles and future production. Algeria, Egypt, Iran, and Pakistan have, in particular, been keen to include stockpiles as a way to curb Israeli and Indian nuclear arsenals. There were

²⁶⁰ Wright and Gronlund, “A History of China’s Plutonium production,” 61-80.

²⁶¹ Robert E. Kelley, “The Iraqi and South African Nuclear Weapon Programs: The Importance of Management,” *Security Dialogue* 27:1 (March 1996) 37.

²⁶² Central Intelligence Agency, *China: Plutonium Production Reactor Problems* (January 1988).

²⁶³ Wright and Gronlund, “A History of China’s Plutonium production,” 76.

(and are) also disagreements over other matters such as transparency, civil reprocessing of plutonium, and verification measures. This period ended with an agreement on an agenda and program of work late in 1998. Although there was a general sense that the delegates had agreed to a program of work as a largely symbolic measure (since the year was drawing to a close, there would be little time for negotiations before the year ended and a new work plan would be necessary), a compromise on the scope of negotiations appeared feasible.

In January 1999, US Secretary of Defense William Cohen announced a major restructuring of the US national and theater missile defense programs. Cohen announced, among other changes, that the Administration would seek \$6.6 billion over 2000-2005 for *deployment* of a national missile defense (previous funding had been restricted to research and development) and would explore the “nature and scope” of modifications to the ABM Treaty.²⁶⁴ In March, the Chinese delegation began to link negotiations on a fissile material cut-off treaty with negotiations on “preventing an arms race in outer space” (PAROS) as part of a “balanced and comprehensive” plan of work. This procedural position reflects a substantive dispute between the two countries over China’s objections to US military activities in outer space, particularly to anticipated missile defense deployments.

The US delegation did not anticipate this linkage when the CD convened in January with the United States holding the presidency, and was slow to recognize its

²⁶⁴ Craig Cerniello, “Cohen Announces NMD Restructuring, Funding Boost,” *Arms Control Today* (January/February 1999) 20.

significance. The proposed program clearly did not anticipate Chinese demands for outer space negotiations. China's decision to link the FMCT and PAROS agendas occurred against the backdrop of a difficult period in Sino-American relations, marked by sharp disputes over NATO's intervention in Yugoslavia (Operational Allied Force). In March, the Rambouillet talks to determine the status of Kosovo collapsed. In the days between the collapse of the talks and the beginning of Operation Allied Force, Li Changhe, Ambassador for Disarmament Affairs of China, advanced a strong Chinese demand that any program of work include an *ad hoc* committee to "negotiate and conclude an international legal instrument banning the test[ing], deployment and use of any weapons, weapon systems and their components in outer space, with a view to preventing the weaponisation of outer space."²⁶⁵ Two days after the United States began Operation Allied Force, Jiang Zemin addressed the CD as the Chinese Head of State. His remarks focused on looming US missile defense deployments and Operation Allied Force—but not the specific Chinese proposal to link the FMCT with PAROS.²⁶⁶ In retrospect, the tensions in the relationship may have obscured the degree to which the Chinese position reflected less ephemeral concerns.

As the tension over Operation Allied Force began to ease after the cease fire in June, Ambassador Dembri of Algeria proposed a compromise formula: negotiations on a fissile materials convention and discussions on nuclear

²⁶⁵ Li Changhe, "Statement at the Conference on Disarmament," in *Final Record of the 818th Plenary Meeting of Conference on Disarmament* CD/PV.818 (Geneva, Switzerland: 11 March 1999) 15.

²⁶⁶ Jiang Zemin, "Promote Disarmament Process and Safeguard World Security," 2-5.

disarmament and PAROS. Accepting the Dembri formula for an *ad hoc* committee to discuss disarmament would have exceeded the negotiating instructions given to the US representative—the authority to agree to an *ad hoc* committee appears to have been removed from his instructions the previous winter. Although he pledged to “work with [the delegations] to take advantage of any flexibility that may exist on the part of my government,” that flexibility was constrained and did not encompass a subsequent June 2000 Chinese draft mandate for the *ad hoc* committee that called for negotiations.²⁶⁷ Although the US might have agreed to a mandate that convened an *ad hoc* committee, Washington would be unlikely to accept a mandate that created an obligation to negotiate a treaty.

By 2000, China insisted that the *ad hoc* committee to discuss outer space must have a mandate that included the word *negotiate*. The United States refused. As one US participant explained, “It’s just that one word—*negotiate*.” In another effort at compromise, Ambassador Celso Amorim of Brazil suggested supplementing the Dembri formula with a presidential declaration stressing that the CD was a disarmament *negotiating* forum and that the mandates and work of the bodies should be “understood in that light.”²⁶⁸ Again, the Chinese rejected this proposal and insisted that the mandate itself include some declension of *to negotiate*.

After taking office in January 2001, the Bush Administration maintained the Clinton Administration commitment to negotiating a fissile material cut-off treaty

²⁶⁷ Robert T. Grey in *Final Record of the 836th Plenary Meeting of Conference on Disarmament CD/PV.836* (Geneva, Switzerland: 7 September 1999) 4.

²⁶⁸ The Amorim proposal was published as CD/1624 (August 24, 2000).

through November 2003.²⁶⁹ Robert Grey, a Clinton appointee, remained as Ambassador in Geneva through the end of 2001 and received approval to commit the United States to the Amorim formula. The Chinese continued to insist on negotiations, proposing that the discussions take place “with a view to negotiating a relevant international legal instrument.” The stalemate continued. As new Ambassador to the CD Eric Javits took office, the Chinese offered another formulation—this time modifying the mandate for an ad hoc committee to discuss a number of issues related to an arms race in outer space, “including the possibility of negotiations.”

The Chinese movement appears to have been too late—the Chinese proposal of 2001 might have been enough to gain agreement from the Clinton Administration, but the Bush Administration did not accept. The reasons are not clear—and judgments are highly politicized. Some observers claim that Javits was removed by the Bush Administration (he was transferred to OPCW) over a dispute with Undersecretary of State John Bolton and that Javits had wanted to more flexibility to compromise with the Chinese. This judgment has gained the status of conventional wisdom, in part because Washington did not nominate a successor to Javits for more than a year.

²⁶⁹ See for example, Avis T. Bohlen, Statement in the First Committee of the General Assembly United Nations, New York (10 October 2001). The Bush Administration would later review and revise its support for an FMCT. See: “U.S. Reviewing FMCT Policy,” *Arms Control Today* (November 2003) and Jackie W. Sanders; Permanent Representative to the Conference on Disarmament and Special Representative of the President for the Nonproliferation of Nuclear Weapons, Remarks to Conference on Disarmament, Geneva, Switzerland (29 July 2004).

Although there are some delegations that, no doubt, are happy to have the excuse provided by the United States and China, the vast majority of states appear ready to begin FMCT negotiations. For example, one representative to the CD noted that:

The deadlock we are experiencing for so long a time is not due to the inflexibility of the greatest majority of the States here represented.... Therefore, we expect that the major players will not let this last attempt [to reach consensus] down. In this context we applaud, as a first step, the political consultations on CD held recently in Beijing between the United States and China. We expect in fact that the major players honor their high responsibilities in front of international community and history....²⁷⁰

In 2003, the Chinese government moved again, this time significantly, accepting a compromise offered by Ambassador Jean Lint. The Bush Administration did not accept this compromise, but rather announced a “review” of the Administration’s commitment to achieving a FMCT. In August 2004, the Bush Administration reiterated their support for an FMCT, but without provisions for verification and under a “clean” mandate that did not include the *ad hoc* committees in the A5 initiative. This marked a new phase in the CD, where principle responsibility for the deadlock falls solely on the United States. In accepting what some observers are calling a “research mandate”, China may be responding to international pressure or attempting to enmesh the United States in international negotiations once again.

²⁷⁰ Angelo Persiani in *Final Record of the 917th Plenary Meeting of Conference on Disarmament CD/PV.917* (Geneva, Switzerland: 28 January 2004) 4.

Conclusion

China began preparations for a CTBT in the mid-1980s, much earlier than most observers realize. Those preparations reflected a decline in Chinese threat perceptions. Mirroring the new emphasis on quality over quantity throughout the PLA, China reduced the size of its operationally deployed nuclear forces and shifted resources toward a much longer range modernization that included a test ban.

China's participation in CTBT negotiations marked a dramatic change for the country that, in the statement accompanying its first nuclear test, called the 1963 Limited Test Ban Treaty "a big fraud to fool the people of the world." In the end, the state that warned the test ban would "tie the hands of all peace-loving countries" ended up drafting the list of permitted activities for the five nuclear powers. China's subsequent opposition to a program of work in the CD represented not so much a return to the historical Chinese position, but a culmination of China's increasing confidence that it had a right to participate in setting the global arms control and disarmament agenda. This conclusion is at odds with much of the current scholarship emphasizing skepticism about Chinese motives; the next chapter attempts to compare these competing explanations.

Chapter 5: Competing Explanations for Chinese Arms Control Behavior

Signing the CTBT was in line with China's consistent stand in support of "the complete prohibition and thorough destruction of nuclear weapons." This was one of the major reasons China supported an early conclusion of the treaty.

Of course, China's desire to meet the trend of the modern world also motivated it to sign. Because economic development had long been Beijing's top priority, China needed a peaceful security environment in order to devote itself completely to the modernization of the nation. To this end, its defense buildup had been steadily subordinated to national economic development.

Beijing's decision on the CTBT negotiations stemmed also from its self-defense and no-first-use nuclear policies. China had established an effective nuclear force for self-defense.

SCOL Zou Yunhua, *China and the CTBT Negotiations*, 1998²⁷¹

Given China's current force configuration and its past participation on the Conference on Disarmament, China ought to be active participant in arms control negotiations. Yet most American analysts would agree with three authors of a recent study for the Council on Foreign Relations, who conclude: "In the current climate, however, we have a sense of pessimism about the prospects for Chinese participation in nuclear arms control beyond the CTBT."²⁷²

This pessimism is partly rooted in the conventional account of China's attitudes toward nuclear weapons. Chinese participation in international arms control negotiations and regimes since the late 1980s is typically explained as an adaptation to external changes in China's security environment that do not reflect a fundamental change in Chinese attitudes toward nuclear weapons—attitudes that

²⁷¹ Zou, *China and the CTBT Negotiations*, 6-7.

²⁷² Robert A. Manning, Ronald Montaperto, and Brad Roberts, *China, Nuclear Weapons and Arms Control: A Preliminary Assessment* (New York: Council on Foreign Relations, 2000) 66.

reportedly emphasize the value of nuclear weapons and the sensitivity of deterrence to changes in the technical balance.²⁷³ Chinese accession to certain arms control regimes is largely viewed by skeptics as a concession to international pressure in spite, rather than because, of China's attitudes about nuclear weapons and arms control.

Skeptics of Chinese participation in international arms control regimes generally believe that Chinese leaders highly value the military power of nuclear weapons—a materialist outlook that fits comfortably with academic conceptions of realism.²⁷⁴ For policy-makers—presumably interested in the interaction of US and Chinese force deployments, as well as the prospect for arms control solutions—casting the debate as one between realism and its critics is not helpful: Realists hold a range of views regarding the sensitivity of deterrence to changes in the technical balance and a range of views on the need and purpose for arms control arrangements.²⁷⁵ The crucial question, for our purposes, is how the Chinese leadership itself tends to view deterrence and the need for arms control.

The first few chapters suggest that China maintains smaller, less diverse, and less ready strategic forces because Chinese leaders believe the stability of deterrence

²⁷³ For example, see: Alistair Iain Johnston, *Cultural Realism: Strategic Culture and Grand Strategy in Chinese History* (Princeton University Press, 1988) and Thomas J. Christensen, "Chinese Realpolitik," *Foreign Affairs* 75:5 (September/October 1996): 37-52.

²⁷⁴ Alistair Iain Johnston, "Learning Versus Adaptation: Explaining Change in Chinese Arms Control Policy in the 1980s and 1990s," *The China Journal* 35 (January 1996) 29-30.

²⁷⁵ For example, see Kenneth Waltz, "The Spread of Nuclear Weapons: More May Better," *Adelphi Papers*, Number 171 (London: International Institute for Strategic Studies, 1981) and Charles L. Glaser, "Realists as Optimists: Cooperation as Self-Help," *International Security* 19:3 (Winter 1994/1995): 50-90.

is largely unaffected by factors. China's almost existentialist approach is philosophically compatible with arms control agreements and other constraints on strategic forces. In fact, recent Chinese participation in the Conference on Disarmament suggests that the Chinese leaders are more interested in formal arms control than Americans generally believe. American may have overestimated the impact of international pressure in setting the Chinese security agenda.

This is not a trivial mistake. If Chinese leaders are reluctant participants in international arms control negotiations, the most effective strategies to cope with Chinese nuclear modernization will focus on deterrence, supplemented by international pressure to force Beijing into constraining arms control agreements.²⁷⁶ By contrast, if Chinese leaders are interested in accommodation and cooperation, the focus of our policy should be on crafting equitable regimes that convey reassurance to Beijing. Inadequate appreciation of Beijing's readiness for arms control efforts may have been responsible for much of the recent deadlock in Geneva, as well as the rather gloomy assessments of the prospects for future US-China arms control negotiations.

Chinese behavior toward the 1996 CTBT and the proposed Fissile Material Cut-off Treaty (FMCT) offers an interesting comparative test this hypothesis. Both treaties ask Beijing to accept significant restrictions on Chinese nuclear force structure in exchange for more general improvements in the international security

²⁷⁶ In practice, most proponents of adaptation believe that learning may work over time, and attempt to balance both strategies.

environment, yet Chinese behavior toward the two treaties has been radically different. In terms of the CTBT, China was an active participant in the treaty negotiations held at the Conference on Disarmament. Although the Chinese bargained hard, negotiations were completed on schedule with China becoming among the first countries to sign the treaty. By contrast, China—in a dispute with the United States—blocked the adoption of a work program in the Conference on Disarmament for five years, foreclosing the possibility of negotiations on a FMCT.

Skeptical Explanations for China's Participation

American observers are generally skeptical about Chinese motives for participating in arms control regimes. The skepticism rests on the belief that China remains the “high church of realpolitik in the post-Cold War world,” by which the authors mean to say Chinese leaders are very concerned about the material aspects of power and the relative balance of military capabilities.²⁷⁷ Skeptics of Chinese participation in arms control regimes assume that the realpolitik worldview ascribed to the Chinese leadership will necessarily render Chinese leaders acutely sensitive to changes in the deterrent balance. “Realpolitik world views are associated with a keen sensitivity to relative power capabilities, since these are critical for preserving the territorial integrity of the state,” Iain Johnston notes. “Given this world view, it is

²⁷⁷ Christensen, “Chinese Realpolitik,” 37.

not surprising that China's decision-makers have generally accorded a great deal of status and military value to nuclear weapons."²⁷⁸

China, however, has expanded participation in international arms control and nonproliferation regimes despite this keen sensitivity to changes in relative capability. In the process, the Chinese have undertaken at least one significant obligation—the CTBT—to constrain national military forces.

To account for both the trend and the decision to sign the CTBT, while preserving the assumption that Chinese leaders are acutely concerned with managing the deterrent balance, skeptics argue that the “changes are mostly tactical in nature, [and] reflect a recalculation of the most effective means to avoid placing China's capabilities on the arms control tables, and that they are designed to preserve and improve its relative capabilities.”²⁷⁹ This argument reproduces the debate that occurred in the late 1980s over the nature of the changes occurring in the Soviet Union, particularly the changes in foreign policy that Gorbachev implemented starting with the redefinition of “peaceful coexistence” at the 27th Party Congress in February and March 1986. That debate broke roughly into two camps: One camp argued that Gorbachev was merely “adapting” to new situations without altering the fundamental character of Soviet policy, while a second camp

²⁷⁸ Johnston, “Prospects for Chinese Limited Nuclear Force Modernization,” *China Quarterly* 146 (June 1996) 550.

²⁷⁹ Johnston, “Learning Versus Adaptation...”²⁸.

suggested that the changes reflected “new thinking” about Soviet interests (academics called this “learning” to reflect the fundamental nature of the change).

There are limits to the value of the distinction between adaptation and learning. First, locating the changes in Soviet foreign policy implicitly accepted a crude (and probably incorrect) caricature of pre-Gorbachev Soviet foreign policy.²⁸⁰ Second, the model also presents a suspiciously clean distinction between motivations and actions that led one academic to declare the discipline a “conceptual minefield.”²⁸¹ Whatever its merits, the entire conceptual debate about learning and adaptation has been transferred to the question of Chinese participation in international arms control regimes, with most American academics adopting a variant of the “adaptation” view that China participates in international regimes solely for reputational or image reasons.²⁸²

The argument that Chinese leaders are very susceptible to international pressure takes two forms. The most straightforward account concerns China’s reputation—Chinese leaders are said to worry that an image as a non-cooperative state will leave it isolated amidst a highly threatening international system. A second

²⁸⁰ On the roots of “new thinking” in Soviet foreign policy, see Celeste Wallander, “Lost and Found: Gorbachev’s ‘New Thinking,’” *The Washington Quarterly* 25:1 (Winter 2002) 117-129.

²⁸¹ Jack Levy, “Learning and Foreign Policy: Sweeping a Conceptual Minefield,” *International Organization* 48:2 (Spring 1994): 279-312.

²⁸² Johnston warns that “While reputation and image are often used interchangeably in international relations theory literature, they are in fact different concepts.” Unfortunately, he himself uses the concepts interchangeably, e.g. when he argues that the most important “variable appears to be international image. The costs to reputation from backing out of these kinds of processes are extremely high, while the benefits from remaining inside—reinforcing China’s image as a responsible major power—are also high.” Johnston, “Prospects for Chinese Limited Nuclear Force Modernization,” 576.

version of the argument suggests that the concern for image evinced by the Chinese leadership is not connected to material rewards, but rather reflects sensitivity to “back-patting and opprobrium.”²⁸³ This sensitivity is said to be accentuated by a tendency among Chinese elites to conflate their identities with that of the state. Academics call the process anthromorphization or isomorphization, but the concept is immediately recognizable to anyone with a passing knowledge of Bourbon France: *l’etat c’est moi*.

How well do skeptical theories that China is attempting to optimize these kinds of social interests explain Chinese behavior in international arms control regimes? Is the skeptical explanation more parsimonious than the explanation that Chinese leaders, having concluded that deterrence is robust, are pursuing their security interests cooperatively? This section considers skeptical explanations for Chinese behavior in the CD during CTBT negotiations, and then tests those explanations against subsequent Chinese behavior in that forum.

Comprehensive Nuclear Test Ban Treaty

The idea that China is acutely sensitive to social pressure is principally employed to explain Chinese participation in the CTBT negotiations. Signing the CTBT was the “first instance where [China] sacrificed potential military capabilities for the sake of formal multilateral arms control.”²⁸⁴ A Chinese leadership, keenly

²⁸³ Johnston, “The Social Effects of International Institutions,” 173.

²⁸⁴ Johnston, “Learning Versus Adaptation...” 54.

aware of the relative balance of technical capabilities, should be very reluctant to sign such an agreement. An additional variable is necessary to explain anomalous behavior: Chinese behavior is said to reflect reluctant participation driven by fear that outright obstruction would damage its reputation or image:

Until late summer 1996, outside observers did not sense much strong support in China for the CTBT. Indeed, Beijing's position in the CTBT talks seemed to have been largely designed to slow down the process, in the view of many CD delegates and nongovernmental observers. Specifically, China had posed several preconditions for successful completion of the treaty that were generally unacceptable to other participants in the talks and that would seriously delay its signing and implementation.²⁸⁵

China had little choice once it was clear that the CTBT was supported by an enormous majority of states who saw it as a pillar of the nuclear nonproliferation regime. ... China's signature was consistent with its being a responsible major power, and joining the treaty was part of a "global atmosphere," such that China would have been isolated had it opposed or sabotaged the treaty.²⁸⁶

This account is straightforward but stylized and inaccurate.

The claim that "outside observers did not sense much strong support in China for the CTBT" before "late summer 1996" ignores the apparently long-running internal preparations for a test ban dating to the report issued by Deng Jiaxian and Yu Min in 1986, which concluded that the declining marginal utility of additional refinements to US and Soviet nuclear weapons would render nuclear testing obsolete. Contrary to the claim that "It was clear from the start that China's decision makers were not especially interested in a test ban treaty," the Chinese testing program anticipated an end to nuclear modernization in 1996—something that the

²⁸⁵ Swaine and Johnston, "China and Arms Control Institutions," in *China Joins the World: Progress and Prospects*, Elizabeth Economy and Michael Oskenberg, eds. (New York: Council on Foreign Relations, 1999) 106.

²⁸⁶ Swaine and Johnston, "China and Arms Control Institutions," 108.

State Department was reporting in early 1994 and that Chinese officials confirmed in private meetings reported in the press.²⁸⁷ Moreover, the Chinese leadership geared its nuclear modernization to achieve of a more survivable version of its current deterrent posture, most likely on judgments that the United States and the Soviet Union would negotiate a test ban based on the declining utility of further strategic force modernization.

Some skeptics suggested China completed its testing program by the end of 1996, perhaps with the assistance of espionage, in support of the hypothesis that pressure played a crucial role. To be clear, the CTBT imposes two constraints on the further modernization of the Chinese arsenal. Unclassified US intelligence assessments conclude that China would require additional nuclear tests in “the yield range needed to develop a more nearly optimum (lighter weight and perhaps more efficient use of fissile material) warhead” similar to the W-88.²⁸⁸ China might need to make more efficient use of its fissile material stockpile (for example, by using composite pits) to expand the size of its nuclear arsenal without resuming production of fissile material. China might also want to further miniaturize its nuclear warheads to place multiple RVs on its new solid-fueled mobile missiles. Although China might achieve further miniaturization through engineering advances in the power supply, arming, fuzing, and firing systems, the intelligence

²⁸⁷ Gupta, “The Status of Chinese Nuclear Weapons Testing,” 34.

²⁸⁸ John Holdren *et al*, *Technical Issues Related to the Comprehensive Nuclear Test Ban Treaty* (Washington, DC: Committee on Technical Issues Related to Ratification of the Comprehensive Nuclear Test Ban Treaty, Committee on International Security and Arms Control, National Academies of Sciences, 2002) 72.

community has assessed that China is unlikely to deploy such a warhead without additional testing.²⁸⁹ If one assumes that China is keenly sensitive to the technical details of the deterrent balance, these would be substantial sacrifices.

The claim that “China had posed several preconditions...that would seriously delay [the CTBT’s] signing and implementation” is also misleading. The argument is employed to explain the decision by China’s leaders to enter negotiations in the first place in 1994. One author notes that “China could probably have blocked the treaty before its negotiations had started, linking with the other two medium-sized nuclear powers to prevent a P-5 agreement to negotiate a treaty in the CD.” The same author speculated that “if costs to its image preclude” blocking a CTBT, “there are good reasons for China to...at least slow down the process.”²⁹⁰

There is no evidence, however, that China slowed negotiations. In 1994, China committed to a CTBT “no later than 1996” and, in fact, the treaty was completed when the UN General Assembly convened in 1996. Interview data does

²⁸⁹ The National Intelligence Estimate concludes that developing such a warhead without testing would “encounter significant technical hurdles and would be costly.” *Foreign Missile Developments and the Ballistic Missile Threat Through 2015* (Washington, National Intelligence Council, December 2001) 8. In his capacity as Special Advisor to the President and Secretary of State for the Comprehensive Test Ban, Former Chairman of the Joint Chiefs of Staff General John Shalikashvili concluded that the test ban would “impede China from placing multiple warheads on a mobile missile.” John M. Shalikashvili, *Findings and Recommendations Concerning the Comprehensive Nuclear Test Ban Treaty* (January 2001) 7. These assessments were echoed by former Los Alamos Director Harold Agnew, who concluded, in reference to allegations of Chinese nuclear espionage, that “No nation would ever stockpile any device based on another nation’s computer codes. ... If China doesn’t resume testing, no harm will possibly have been done other than to our egos.” Harold M. Agnew, “Looking for Spies in Nuclear Kitchen,” *Wall Street Journal* (17 May 1999) A27.

²⁹⁰ Johnston, “Learning Versus Adaptation...” 55. Johnston defines an “early” test ban as 1996, noting “suspicions in the Conference on Disarmament that at a minimum China hopes the negotiations are delayed past 1996 ...”

suggest that the Chinese delegation in Geneva was not authorized to agree to a test ban before the completion of its ongoing testing program in 1996. Although the Chinese delegation adopted positions that would allow China to slow negotiations if necessary, in the end China did not need to obstruct negotiations. The United States agreed to a zero-yield test ban in August 1995, meaning that the Treaty could not have been completed and forwarded to the General Assembly any earlier than it was—when the General Assembly again convened in September 1996. Rather than slowing negotiations, China dropped its obstructionist positions and focused on core concerns about the procedures for on-site inspections as negotiations entered the endgame.

There are three problems with the final claim that “China had little choice once it was clear that the CTBT was supported by an enormous majority of states who saw it as a pillar of the nuclear nonproliferation regime.” First, the claim is unnecessary—the arguments in the previous paragraphs suggest that China was ready to stop testing in 1996.

Second, there is no evidence that the Chinese leadership “felt” pressure. A declassified 1994 State Department memorandum is revealing:

In the meantime, China is pursuing an accelerated test series to satisfy the military's minimum requirements for strategic forces modernization, and there is evidence that China plans to suspend testing in 1996. We are unlikely to persuade China not to conduct its next test (probably in the spring). Our past protests have met with a stock reply. Nonetheless, to maintain consistency in our position and to place the onus on China, we should continue to press China to halt its tests.²⁹¹

²⁹¹ Department of State, *China: CTBT/Nuclear Testing* (1994) 2.

This resigned attitude was certainly noticed in China—the lack of conviction in American protests over Chinese nuclear testing was recorded in a report commissioned by the French government. The report relayed the suspicion of French diplomats that the United States and China had reached a private understanding in advance of negotiations.²⁹² If the Chinese were operating to minimize image costs, they might have agreed to a moratorium in lieu of the treaty. Such an approach would have defused an overwhelming amount of international pressure, without requiring China to accept the possibility of on-site inspections that were apparently a major concern for the Chinese leadership.

Third, China's behavior in negotiations over the verification regime suggests that China did not feel pressure to sign the treaty under any conditions. Skeptics argue that the endgame negotiations were political theater:

That the Chinese bargained hard over verification issues—in particular on-site inspection—even in the face of considerable dismay among delegations, does not undermine the argument about social influence. Bargaining to dilute the verification elements of the treaty in the last months of negotiations was premised on the existence of a basic acceptance of the core 'distributional' features of the treaty.²⁹³

The claims that China was “bargaining to dilute the verification elements of the treaty” and accepted “the core 'distributional' features of the treaty,” however, are both false.

²⁹² Rene Galy-Dejean et al, *La simulation des essais nucleaires*, Rapport d'information n. 847 (December 15, 1993) 33-34.

²⁹³ Alistair Iain Johnston, “Explaining Chinese Cooperation in International Security Institutions,” in *Controlling Weapons of Mass Destruction: Findings from USIP-Sponsored Projects*, Peaceworks No. 41, Deepa M. Ollapally, ed. (Washington, DC: United States Institute of Peace, September 2001) 49-53.

The Chinese position would not “dilute the verification elements” of the CTBT because China would not have improved its ability to conduct militarily significant clandestine testing. The National Academy of Sciences’ authoritative study on technical issues related to the verification of the CTBT (hereafter, Holdren *et al*) concluded that the “very limited nuclear testing [China] could plausibly conceal [from the IMS] would not add significantly” to Chinese military capability (See Figure 5-1: Purposes and Plausible Achievements for Chinese Nuclear Testing at Various Yields).²⁹⁴

Chinese proposals over OSI focused on the number of states needed to approve an inspection. The impact of the Chinese proposal was to reduce the frequency of inspections so that they became a “rare” event. Yet, inspections in a test ban treaty need not be frequent to have the desired impact.²⁹⁵

²⁹⁴ Holdren *et al*, *Technical Issues Related to the Comprehensive Nuclear Test Ban Treaty*, 68.

²⁹⁵ Some analysts argue that the political difficulty in proposing and conducting inspections generally outweigh their value. See Steve Fetter, *Toward A Comprehensive Test Ban*, (Cambridge, MA: Ballinger, 1988) 132-136.

Figure 5-1: Purposes and Plausible Achievements for Chinese Nuclear Testing at Various Yields

Yield	Purpose
Subcritical testing only (permissible under a CTBT)	<ul style="list-style-type: none"> • Equation-of-state studies • High-explosive lens tests for implosion weapons • Development and certification of simple, bulky, relatively inefficient unboosted fission weapons • limited insights relevant to designs for boosted fission weapons
Hydronuclear testing (yield < 0.1 t TNT, likely to Remain undetected under a CTBT)	<ul style="list-style-type: none"> • one-point safety tests • validation of design for unboosted fission weapon with yield in 10 ton range
Extremely-low-yield testing (0.1 t < yield < 10 t, likely to remain undetected under a CTBT)	<ul style="list-style-type: none"> • validation of design for unboosted fission weapon with yield in 100-ton range • possible overrun range for one-point safety tests
Very-low-yield testing (10 t < yield < 1-2 kt, concealable in some circumstances under a CTBT)	<ul style="list-style-type: none"> • proof tests of compact weapons with yield up to 1-2 kt • partial development of primaries for thermonuclear weapons
Low-yield testing (1-2 kt < yield < 20 kt, unlikely to be concealable under a CTBT)	<ul style="list-style-type: none"> • development of low-yield boosted fission weapons • development and full testing of some primaries and low-yield thermonuclear weapons • proof tests of fission weapons with yield up to 20 kt
High-yield testing (yield > 20 kt, not Concealable under a CTBT)	<ul style="list-style-type: none"> • development and full testing of new configurations of boosted fission weapons & thermonuclear weapons • development and full testing of new configurations of boosted fission weapons & thermonuclear weapons

Adapted from *Technical Issues Related to the Comprehensive Nuclear Test Ban Treaty* (Committee on Technical Issues Related to Ratification of the Comprehensive Nuclear Test Ban Treaty, Committee on International Security and Arms Control, National Academy of Sciences, 2002) p.68.

Inspections would not contribute to the monitoring regime, except as a deterrent: Holdren et al suggest “it is impossible to quantify the likelihood that [inspections] would succeed” in demonstrating that a clandestine test had occurred, but “a violator would not be able to anticipate how to conceal all potential evidence.”²⁹⁶ As a result, a state that had violated the treaty would be unlikely to accept an inspection—which would itself be suspicious. Holdren et al conclude “the right to on-site inspection provided by the CTBT constitutes a deterrent to treaty violation whether or not the inspection actually takes place....”²⁹⁷ Inspections, then, may occur infrequently and still have a deterrent value—some analysts have suggested less than 1 inspection a year of Russian test sites would resolve ambiguous seismic events. In this regard, the Chinese proposals do not appear to have been a serious threat to the integrity of the inspection regime.

Yet, the Chinese delegation appears to have been ready to reject the CTBT without compromises from the US to re-open negotiations on the 28 July Chair’s text and increase the number of states necessary to approve an inspection from 26 to 30. Contrary to the claim that “prestige, image and relative...gains in security can prevail...over narrow technical and military considerations,” narrow technical and military considerations were doing rather well. Yet, the technical and military considerations at issue concerned the prevention of frivolous inspections, not the continued conduct of nuclear testing.

²⁹⁶ Holdren et al, *Technical Issues Related to the Comprehensive Nuclear Test Ban Treaty*, 68.

²⁹⁷ Holdren et al, *Technical Issues Related to the Comprehensive Nuclear Test Ban Treaty*, 68.

Why do skeptics suggest Chinese decisions reflect international pressure? Current scholarship employs two types of evidence. A Chinese participant, in a monograph, mentions “the necessity of maintaining [China’s] international image” as “*a reason*” for China’s decision to sign the CTBT.²⁹⁸ In fact, China’s image is one of six reasons the author cites, including equally plausible motivations such as the role of arms control negotiations in promoting peace and security, the subordination of military modernization to economic development, the limited testing requirements to maintain a minimum nuclear deterrent, and the value of the CTBT as a nonproliferation measure.

The second type of evidence is what Johnston calls the “consistent refrain in interviews...that China could not stay out of, or in the end sabotage, the CTBT because of the costs to China’s international image.”²⁹⁹ I have also noticed this refrain in my own interviews. Although much of the language used is in fact status oriented, Chinese interlocutors also cite a range of other reasons. And, when asked about the precise role of international pressure, Chinese interlocutors deny that it was a significant factor in their decision. Johnston, too, has noticed this phenomenon: “In some cases, when I followed up with questions specifically on the role of image concerns, my interlocutors would downplay what they had just said, since this implied that China was indeed susceptible to external pressure.”³⁰⁰ Where

²⁹⁸ Zou, *China and the CTBT Negotiations*, 6-7. Emphasis added.

²⁹⁹ Johnston, “The Social Effects of International Institutions,” 183

³⁰⁰ Johnston, “The Social Effects of International Institutions,” 196, note 66.

Johnston posits a psychological motive, the more parsimonious (and less patronizing) explanation is the subjects are being truthful and do not believe that international pressure played a significant role in the Chinese decision. This conclusion is consistent with the overall tone of the interviews, as well the assessments of US negotiators in the process and actual Chinese behavior during negotiations. As we will see in the next section, it also explains Chinese behavior in the CD since the conclusion of CTBT negotiations.

Fissile Material Cut-Off Treaty

A major objection to the incorporation of “social influence” as an explanatory device is that it is very difficult to falsify. Johnston implicitly admits this when he discusses the development of “a metric for determining a distribution of states in terms of sensitivity to status and security.” He admits that the case of the CTBT merely demonstrates the “plausibility” of his hypothesis about the role of social influence.

This section attempts to test the predictions of the social influence hypothesis against subsequent Chinese behavior in the CD. Since most of the literature concerning China’s decision to negotiate and sign the CTBT was written in the early stages of FMCT negotiations, the articles offer some tentative predictions about Chinese behavior.

If material and image costs determine Chinese strategies toward arms control negotiations, then the Chinese should adopt similar strategies for treaties that pose

similar cost calculations. Cases (such as the CTBT and the FMCT) where the Chinese have adopted very different approaches suggest either dissimilar cost calculations or the irrelevance of material and image costs.

Although the CTBT and FMCT are typically associated with qualitative and quantitative constraints, respectively, the two treaties pose the same basic question for China's leaders: Should China sacrifice its flexibility to reconfigure its nuclear arsenal to maintain its image as a cooperative and responsible power? In fact, proponents of the social influence hypothesis suggested that Chinese behavior toward the two treaties should be similar:

It is fairly clear that China would prefer not to be in CTBT negotiations or the talks on a fissile material production ban.... Yet China is involved in these negotiations, even though there is no external material coercion compelling its participation.... So there must be some additional factor that is altering the cost-benefit analysis, a factor that compels China to participate in a process the end point of which it would prefer to avoid. This variable appears to be international image. The costs to reputation from backing out of these kinds of processes are extremely high, while the benefits from remaining inside—reinforcing China's image as a responsible major power—are also high.³⁰¹

This is a strong *prima facie* case for expecting similar behavior. The burden of proof ought to rest with those who suggest that the CTBT and FMCT pose dissimilar choices for Chinese leaders.

Although the FMCT and CTBT impose different technical constraints on the Chinese arsenal, both treaties limit China's ability to reconfigure its nuclear forces—whether China wants to optimize its deterrent to anticipate US missile defense

³⁰¹ Alistair Iain Johnston, "Prospects for Chinese Nuclear Force Modernization: Limited Deterrence Versus Multilateral Arms Control," in *China's Military in Transition*, David Shambaugh and Richard H. Yang, eds. (Oxford: Clarendon Press, 1997) 311-312.

deployments or adopt an entirely new strategy of limited nuclear deterrence. Both treaties impose a kind of constraint on the size of the Chinese arsenal—building more weapons would either require expanding the stock of fissile material through production or stretching a fixed stock through more new designs (such as composite pits) that require testing. Presently, China has a sufficient stock of fissile material to complete the modernization anticipated in unclassified intelligence estimates and could re-start production in advance of a ban to produce any additional fissile material.³⁰² As a result, a ban on the production of fissile material that does not deal with past production would impose a relatively light burden on Chinese modernization plans.³⁰³

A fissile material treaty includes provisions for accounting for and controlling past production would require a fairly intrusive verification regime that might reveal sensitive information about the Chinese program. Nevertheless, some Chinese academics have argued that, in the event of such an agreement, Beijing would accept the verification procedures likely to attend a FMCT based on the

³⁰² *Yitzhak Shichor*, *Peaceful Fallout: The Conversion of China's Military–Nuclear Complex to Civilian Use*, Bonn International Center for Conversion (BICC) Brief 10 (November 1997) 30-39.

³⁰³ This would not be the case if China were pursuing a move toward a “limited” deterrent, as argued by Alistair Iain Johnston, that would require tripling the size of the Chinese nuclear forces to, perhaps, rough parity with US and Russian forces. See: Johnston, “Prospects for Chinese Nuclear Force Modernization: Limited Deterrence Versus Multilateral Arms Control,” 299.

See Alistair Iain Johnston, “China’s New ‘Old Thinking’: The Concept of Limited Deterrence,” *International Security*, 20:3 (Winter 1995/96) 39.

location and type of facilities. Although this is a matter of conjecture, the technical assessments that support that hypothesis are confirmed by Western analysts.³⁰⁴

In addition to imposing similar material constraints, the treaties should pose similar image considerations for the Chinese leadership. The conditions for these costs are well defined in the adaptation literature: “Beijing wishes to avoid appearing as an outlier or violator of arms control norms when these are supported by a large group of politically significant nations.”³⁰⁵ Moreover, this sensitivity is greatest in the CD:

Sensitivity to these image costs and benefits would not be as great if the ‘audience’ were smaller or less important. But the CD is the only UN-related multilateral arms control negotiating body. All the major powers, and a critical mass of developed and developing states are members. In front of this particular audience China’s identity is not unequivocally that of an underdog or a have-not, so it has to be more careful about not appearing as a self-interested major power like all the others.³⁰⁶

Although we don’t know the lower bound of China’s susceptibility to pressure, if image matters at all consensus, the consensus in the CD for a program of work centered on a fissile materials production ban clearly should have forced Chinese participation well before it did. Only the United States and China have rejected programs of work in over the 5-year period running from 1998-2003.

³⁰⁴ See: Hui Zhang, “Uses of Commercial Satellite Imagery in FMCT Verification,” *The Nonproliferation Review* 7:2 (Summer 2000) 120-135; Hui Zhang, “Civil Remote-sensing Satellites and a Fissile Material Cutoff Treaty: Some Case Studies on Verifying Nonproduction,” *Journal of Nuclear Materials Management*. 30:1 (Fall 2001): 20-28; and Lisbeth Gronlund, Yong Liu, and David Wright, “The China Card: Will China agree to cut off fissile material production?” *Nucleus: The Magazine of the Union of Concerned Scientists* 17:2 (Summer 1995): <http://www.ucsusa.org/Nucleus/95sum.chinacard.html>.

³⁰⁵ Johnston and Swaine, “China and Arms Control Institutions,” 119.

³⁰⁶ Johnston, “Prospects for Chinese Nuclear Force Modernization: Limited Deterrence Versus Multilateral Arms Control,” 576.

The reason for normative pressure is not entirely related to affinity for the FMCT. The CD has been essentially inactive since the end of 1996; some states are considering options for negotiating outside the CD. Anecdotal evidence suggests that countries are beginning to reduce their staffs in Geneva, while others have stopped sending representatives entirely. Washington, in particular, left the post of Ambassador vacant for a year, choosing instead to send a parade of officials through to berate the CD for inaction. Presumably, China would not want to be seen as sharing the blame, even in equal measure with the United States, for the slow, agonizing death of a forum that many developing nations view as an important guarantee of their representation in international security discussions. This forms an important “second front” of pressure on Beijing, which should be especially sensitive to charges that it was helping to collapse the CD.

How did skeptics predict that China would respond to US efforts to pursue the FMCT at the CD over 1997-2003? Having failed to keep the FMCT off the agenda, China was working with the other nuclear powers to keep past production out of the talks. Were that to be unsuccessful, China was expected to shift toward limiting the intrusiveness of the treaty’s verification regime. Skeptics did not anticipate Chinese obstruction or the linkage with outer space negotiations. They focused “on whether and when”³⁰⁷ China might sign a fissile materials convention. Obstruction was not considered a likely outcome because “once these issues are on the international

³⁰⁷ Swaine and Johnston, 110.

agenda, China is loathe to back out even when the process is not necessarily in its military interests."³⁰⁸

China's decision to back out of negotiations, and then obstruct work in the CD for several years, undermines the hypothesis that China is largely motivated by concerns about its reputation or image. At the same time, China has attempted to shield itself from criticism by offering amendments to various proposals, issuing working papers of its own, and issuing a 2002 joint working paper with six other countries including the Russian Federation. Whether or not Chinese leaders see deterrence as sensitive, they would seek to minimize the diplomatic costs of any strategy. Skeptics, however, argue that China is "so sensitive to image costs and benefits" that it "has become entrapped in processes that it would prefer to avoid."³⁰⁹ This is not the China of the stand-off in the CD.

The Chinese decision to obstruct the FMCT negotiations is not damning. Given the focus on external factors, the adaptation hypothesis suggests that the United States will be a critical actor in defining the international arms control agenda.³¹⁰ A dramatic change in US policy might reasonably explain the change in Chinese policy. "Unless it moves [toward finding more effective ways to address Chinese security concerns], the United States hardly can expect China to accede this

³⁰⁸ Swaine and Johnston, 124.

³⁰⁹ "so sensitive" Johnston, "Prospects for Chinese Nuclear Force Modernization," n.93, 312. "has become trapped ..." Johnston, *China's New Old Thinking*, 38-39.

³¹⁰ Johnston and Swaine, "China and Arms Control Institutions," 125.

agenda or any other agenda that places restrictions on its military capabilities.”³¹¹ In particular, “decisions to test and deploy TMD that undermine the ABM treaty will...ensure that this expansive arms control agenda gets nowhere...”³¹²

The role of the United States as an agenda setter with the power to determine the reputational and image costs facing China opens two possible explanations consistent with the adaptation hypothesis. If the changes in US policy have been substantial, China may be responding to a more threatening environment by implementing a less cooperative, more obstructionist strategy; if US policy has changed only slightly, perhaps China is using PAROS to obstruct the FMCT while deflecting international criticism. These two modifications share a common theme: They are designed to support the view that the “standoff on the FMPCT reflects the Chinese desire to keep as many options open as possible for the modernization of its nuclear weapons program.”³¹³

Whether or not Chinese leaders view the deterrent balance as sensitive, US failure to address Chinese security concerns could, at some point, undermine Chinese support for an arms control agenda set in Washington. In the case of a major change in US security policy, however, the Chinese response would depend on Chinese assessments of the sensitivity of deterrence. If Chinese leaders viewed

³¹¹ Johnston and Swaine, “China and Arms Control Institutions,” 125-126.

³¹² Johnston, “Prospects for Chinese Nuclear Force Modernization,” 575.

³¹³ Johnston, *Sources of Conflict in the Sino-US Arms Control Relationship*, Paper originally prepared for Fairbank Center For East Asian Research- Chinese Academy of Social Sciences Institute of American Studies Project on Issues in Sino-US Relations (July 2002) 10.

deterrence as sensitive but were more motivated by image costs, Chinese obstruction of the FMCT should signal a general subordination of image benefits in favor of greater emphasis on managing the balance of forces. This overall change in outlook should manifest across Chinese security behavior, including a shift toward a more flexible nuclear posture and a general decline in Chinese compliance with arms control agreements.

If Chinese leaders perceived a dramatic change in the international security environment, the outlook for arms control would be quite pessimistic—and Chinese obstruction of the FMCT would be explained. As three skeptics warned:

China is unlikely to welcome any formal U.S. arms control initiative at this time. It probably perceives the drift toward TMD and NMD as inevitable. Beijing recognizes that Washington's decisions on the status of its offensive forces will be driven almost entirely by developments in the U.S.-Russian relationship. But it also sees START on prolonged hold. It is probably also thinking through the consequences of a possible collapse of the CTBT and NPT regimes.³¹⁴

Is there evidence that Chinese security policy has adapted, for the worse, to threatening changes in United States policy?

Perhaps the most important evidence of the “major change” explanation would be a dramatic change in China's nuclear posture. The changes in the international security environment that allowed China to begin undermining the

³¹⁴ Manning, Montaperto and Roberts, *China, Nuclear Weapons and Arms Control*, 73. Johnston appears to have picked up similar rhetoric: ““The pessimistic prediction would be that an interactive downward spiral in Sino-US relations will eventually lead China to reconsider its support for various arms control regimes. Just as the US has abandoned the ABM, and there are arguments in Washington in favor of abandoning its nuclear testing moratorium (so as to develop third generation of warheads), so too it is easy to imagine that China could decide to resume nuclear testing (particular if the US abandoned the moratorium first) on the grounds that it needs to fully develop its second generation warheads, as well as EMP and enhanced-radiation capabilities to deal with different kinds of escalation scenarios in a Sino-US war over Taiwan.” Johnston, *Sources of Conflict in the Sino-US Arms Control Relationship*, 10.

FMCT should also have unleashed the Second Artillery to begin to redress the current deterrent imbalance, perhaps by abandoning its no-first use pledge and developing plans to use nuclear weapons in a broader array of contingencies. Skeptics suggest “the primary constraint on China’s nuclear modernization will come from” external factors such as “multilateral arms control processes and particularly American commitments to those processes,” because China’s own internal dynamics are pushing in the opposite direction.³¹⁵ If China’s internal motivations are guided by a keen sensitivity to the deterrent balance, the Chinese state ought to seek *ceteris paribus* a limited nuclear deterrent. Johnston offers the most dramatic prediction of change, noting that China might be expected to deploy:

...a greater number of smaller, more accurate, survivable missiles including ICBMs, SLBMs, cruise missiles, and tactical and theater weapons; ballistic missile defence systems to improve survivability; space-based early warning and command and control systems; and ASATs to hit enemy satellites and a civil defense system that can reduce the number of urban and industrial centre casualties, thus enhancing the state’s ability to recover from nuclear war.”³¹⁶

Although the scope of change may not be as dramatic as Johnston implies, the general direction is clear: Without the external constraints imposed by arms control agreements, China’s nuclear posture should move to reflect its own internal orientation—which the adaptation hypothesis predicts will be a limited nuclear deterrent. As Johnston notes, a decline in the American commitment “may well have the unintended consequence of dramatically reducing Chinese incentives to

³¹⁵ Johnston, “Prospects for Chinese Nuclear Force Modernization,” 311

³¹⁶ The typesetter misprinted ICBM as ICMB, I have corrected it in the text. Johnston, “Prospects for Chinese Nuclear Force Modernization,” 292-293.

participate in the extant agenda in the CD; certainly it will provide added incentives for China to speed up its nuclear modernization program.”³¹⁷

In the years since China began actively obstructing the FMCT, however, there is no evidence that China simultaneously accelerated its adoption of limited nuclear deterrence. China has not begun “doubling, possibly tripling” the size of its nuclear forces.³¹⁸ At a time when China is expressing concerns that its future defense needs will be impinged by a US deployments, it has not taken rudimentary steps to give its leaders the option of expanding their arsenal beyond current modernization plans. China has not resumed production of fissile material (which would be expensive), suggesting that the Chinese leadership is not yet committed to a larger arsenal. It is difficult to believe that China is obstructing the FMCT to “keep its options open,” without simultaneously expanding its stockpile of fissile material. In the case of the CTBT, realists can claim that Chinese negotiating behavior was designed to buy time for an ongoing testing program. There is no comparable object or goal to incite delay in the case of the FMCT.

Nor has China deployed any of the other elements of a limited nuclear deterrent: missile defense systems, space-based early warning and C2I, or anti-

³¹⁷ Spelling and punctuation has been edited for ease of reading: Original presented as: “may well also have the unintended consequence of dramatically reducing Chinese incentives to participate in the extant agenda in the CD. Certainly it will provide added incentives for China to speed up its nuclear modernization programme.” Johnston, “Prospects for Chinese Nuclear Force Modernization,” 575.

³¹⁸ Johnston, “Chinese Nuclear Force Modernization,” 299. Johnston is also clear, however, that a shift toward a limited deterrent “may or may not entail a dramatic short-run increase in the absolute numbers of warheads and delivery systems: the pace will depend on whether the United States proceeds with TMD deployment.” Johnston, “China’s New ‘Old Thinking’: The Concept of Limited Deterrence,” 41.

satellite weapons—although research continues in these areas. There certainly have not been any major civil defense exercises. If Chinese leaders had undergone a major change in their assessment of the United States, we should have seen some signs: In 1997, one author predicted that if China were pursuing limited nuclear deterrence, “over the next decade or so, we should expect to see a discernible effort to shift the forces away from a minimum strike-back assured destruction posture, which China now has, toward limited war-fighting.”³¹⁹

Skeptics would also predict that, in the absence of a strong American commitment to the arms control process, China would turn against a number of other arms control arrangements that might inhibit the development of a limited nuclear deterrent. China’s particular strategy for obstructing the FMCT, however, focuses on expanding, rather than shrinking, the overall arms control agenda to include an ad hoc committee to negotiate a legal instrument regarding the “prevention of an arms race in outer space.” These proposals are addressed directly in the next chapter, but the essential features are noted here. First, China has incurred strong image costs by pursuing this strategy, sharing equal blame with the United States for undermining the viability of the CD year after year. Second, the decision to accept negotiations by the United States would impose a “dramatic constraint on China’s limited deterrent” by restricting the development of Chinese ballistic missile defenses and anti-satellite weapons.³²⁰ This is a significant constraint,

³¹⁹ Johnston, “China’s New ‘Old Thinking’: The Concept of Limited Deterrence,” 41.

³²⁰ Johnston, “China’s New ‘Old Thinking’: The Concept of Limited Deterrence,” 39.

particularly if China targets US command and control performance rather than theater forces. Third, a legal agreement might require transparency measures and relatively intrusive verification procedures that would reveal sensitive information about the state of China's ballistic missile and space-launch programs. Transparency, particularly for China's space and missile programs, is a high cost concession for China.

China has neither rejected the CTBT nor resumed nuclear testing, but it has yet to ratify the treaty. This is a major puzzle for the skeptics—if China were concerned about the size of its stockpile, one option would be to resume nuclear testing to make more efficient distribution of fissile material in its nuclear warheads. Manning *et al* confess, “We were left wondering how deeply China remains committed to the CTBT....Beijing's perceptions of its nuclear future might have changed significantly since its signature of the CTBT in 1996.”³²¹ Yet, China has not resumed testing. Instead, having “taken notice” of a Bush Administration trial balloon to resume nuclear testing, China expressed its continued support for the “early coming in force of the CTBT.”³²²

If the Chinese leadership has dramatically changed its threat perception, those changes are not yet evident in policy.³²³ Consistency despite changes in the

³²¹ Manning, Montaperto and Roberts, *China, Nuclear Weapons and Arms Control*, 66-67.

³²² Zhu Bangzao, *Foreign Ministry Regular Press Conference* (4 September 2001). Available at: <http://www.chinaembassy.org.zw/eng/17580.html>

³²³ Skeptics might also argue that the changes in US policy have been minor and that China has adopted a correspondingly minor revision of its own position: Link PAROS with the FMCT to pass some image costs from obstruction to the United States. It is not at all clear that the US commitment toward arms

external environment undermines the prediction of a China that supports arms control arrangements as “a short run policy of accommodation, to be reconsidered” when external factors change.³²⁴

In sum, China does not appear to have abandoned arms control for limited deterrence—even in the face of what could charitably be described as American neglect of the international arms control agenda and Chinese interests. Chinese commitment to the process appears more serious than an effort to obtain “social back-patting” or avoid opprobrium.

Toward an Alternative Explanation

Skeptics have attempted to explain Chinese participation in arms control negotiations as the result of an extrinsic factor—in this case, an acute Chinese

control did change substantially during the period between the 1996 signing of the CTBT and China’s 1999 decision to link FMCT and PAROS negotiations—although the Republican majorities in both houses of Congress after 1994 did progressively undermine the Clinton Administration’s arms control agenda by creating political pressure to deploy ABM systems and refusing to ratify the CTBT in 1999. More important, however, is whether the Chinese leadership perceived a major change in Washington’s commitment to arms control. China might have judged that it would not be likely to keep the issue of its past production of fissile material off the agenda and that the United States would bear the brunt of the blame. Yet, the Chinese have not, for instance, restarted fissile material production. Moreover, this would be an extremely high risk strategy for Beijing—if the CD remains in deadlock, some states may attempt to negotiate the FMCT outside of the CD. China would then face not only the current pressure to join negotiations, but also the opprobrium of having sunk the CD, which is disproportionately popular among the smaller states that are typically excluded from other security fora and to which China is said to be highly sensitive. Perhaps even worse—for a China motivated by *realpolitik*—the United States might agree to the Chinese proposal on PAROS. This would leave China to face the worst of all possible worlds from a *realpolitik* perspective: a set of comprehensive restrictions on its stockpile of fissile material, as well as restrictions on ballistic missile defense programs and anti-satellite weapons to complement the ban on nuclear testing. Successful conclusion of this agenda would preclude China from developing the limited deterrent necessary from a *realpolitik* point of view; blocking such an agreement would provide Chinese diplomats a much bigger hurdle than merely keeping the scope of the FMCT limited to future production.

³²⁴ Characterizing learning explanations in reference to changes in Soviet foreign policy under Gorbachev. Johnston, “Learning Versus Adaptation,” 28.

concern with external image. That account, however, does not withstand scrutiny. This section explains Chinese participation in arms control regimes largely as a function of contemporary Chinese attitudes toward nuclear weapons, particularly the belief that the balance of deterrence is insensitive. If Chinese leaders believe that deterrence does not depend on the fine details of the technical balance, they should view arms control as potentially beneficial.

The idea that deterrence is not sensitive to changes in the technical balance implicitly endorses arms control measures. Without the prospect that additional offensive capability (in the form of more weapons, more ready forces, etc) will significantly enhancing the deterrent effect of a nuclear arsenal, such measures merely create inadvertent dangers. A policymaker who believes deterrence is easily achieved will see little reason to participate in arms races and will want to make sure that operational practices reinforce, rather than degrade, crisis stability. That policymaker will also be far more sensitive to the diplomatic and political implications of nuclear weapons deployments.

Many, although not all, of these efforts can be undertaken unilaterally. China certainly deployed an arsenal that reflects these priorities while simultaneously criticizing US-Soviet arms control efforts. Few states, however, are likely to count entirely on the insensitivity of deterrence, as even the modest Chinese nuclear force modernization suggests. As long as force deployments are interactive, deployments can lead to arms race effects and operational practices that undermine crisis

instability. Arms control agreements may help constrain such conduct—a fact evident in the Chinese statements of hostility to US-Soviet arms control agreements, which were tempered with an appreciation for the benefits that China received, as a third party, from the ABM Treaty.

Arms control agreements may also reinforce deterrence by constraining weapons programs and operational practices that may “strengthen the illusion that a nuclear war could be fought and won, without altering the underlying reality that all would lose.”³²⁵ Chinese confidence that the United States would not use nuclear weapons in Korea was based, in part, on the political costs to using such nuclear weapons. Ryan suggests Chinese leaders saw disarmament campaigns (though not arms control campaigns) as a means to strengthen the political costs of nuclear weapons use, as well as a method to control their own fear of such weapons.³²⁶ Opponents of arms control also sometimes note this effect, warning that arms control efforts undermine the (delicate) balance of terror by promoting the idea that nuclear weapons are not usable.

Advocates for the two treaties considered in this section—the Comprehensive Nuclear Test Ban and Fissile Material Cut-off Treaties—often suggest that their support for the two treaties reflects the belief that deterrence is easy to maintain. As good-faith tests of the commitment of the nuclear weapons states to the “early cessation of the arms race,” these measures imposed some technical constraints on

³²⁵ Fetter, *Toward Comprehensive Test Ban*, 167.

³²⁶ Ryan, *Chinese Attitudes Toward Nuclear Weapons*, 180.

national nuclear arsenals as part of an effort to marginalize the role of nuclear weapons in the conduct of international security. In technical terms, a Comprehensive Nuclear Test Ban Treaty would complicate the development of new nuclear weapons, although much could be done with computer simulations. A treaty to prohibit the production of fissile material would limit the size of nuclear arsenals, while a treaty that regulated existing stockpiles of fissile material would make nuclear reductions more permanent.

Interview data, as well as an assessment of China's security situation, suggests the Chinese leadership viewed the CTBT and FMCT in much the same manner as advocates of both treaties within the Clinton Administration. From Washington and Beijing, the further development of nuclear weapons would contribute very little to either country's security, particularly compared to the benefits from enhancing the nonproliferation regime.

Comprehensive Nuclear Test Ban Treaty

If Chinese leaders supported the CTBT on its merits, then Chinese leaders believe in insensitive deterrence. "Stated simply, support for a [Comprehensive Nuclear Test Ban] flows naturally from a minimum deterrent strategy" because "continued testing is at best wasteful and at worst dangerously destabilizing."³²⁷

The fragmentary documentary record suggests that the Chinese leadership viewed nuclear testing as increasingly irrelevant. The 1986 report that Deng Jiaxian

³²⁷ Fetter, *Toward Comprehensive Test Ban*, 167

submitted to the Central Committee concluded that the “nuclear superpowers’ technology level had approached the theoretical limits and needed no further development.” The report’s conclusion that the Soviet Union and the United States would support a test ban “out of political needs,” suggests that Chinese leaders believed that Washington shared their basic judgment about the insensitivity of deterrence.³²⁸ The report’s recommendation for an accelerated test schedule to complete a warhead for the first generation of Chinese solid-fueled mobile ballistic missiles is evident in the subsequent test series with one change—the apparently successful development of an RV with an aspherical primary for the DF-31 eliminates the need for additional testing to develop new warhead designs. This testing program completed China’s requirements for nuclear warheads, leading one Chinese participant in the CTBT process to conclude:

China supported the CTBT negotiations in part because it had the capability to undertake the obligations of the treaty. China has long assumed a policy of building limited nuclear weapons for the purpose of self-defense only. ... Because of its stated no-first-use policy, China does not need to build a large number and variety of nuclear weapons and therefore does not necessarily need to conduct many nuclear tests.³²⁹

During the Cold War, advocates argued that a test ban would demonstrate that the United States and the Soviet Union were not arming to “fight and win” a nuclear war.³³⁰ The Chinese government, in the past, has been particularly interested in similar assurances. In 1994, China sought a bilateral no-first-use pledge from the

³²⁸ Hu Side et al, “Ten Years, We Cherish The Memory Every Moment: For the tenth anniversary of the passing away of Dr. Deng Jiaxian, 1924-1986” *Guangming Daily* (21 July 1996) 1.

³²⁹ Zou, *China and the CTBT Negotiations*, 6-7.

³³⁰ Fetter, *Toward Comprehensive Test Ban*, 169.

United States (the two sides negotiated a non-targeting agreement) and several Chinese academics have written papers on other measures that the United States might take to convey that it was not attempting to develop the capacity to undertake a disarming first strike.³³¹

In interviews, Chinese participants are clearly aware of the constraints that a CTBT would impose on the development of nuclear weapons. Chinese participants often remark that “China signed the CTBT to promote disarmament.” When asked precisely how the CTBT does so, Chinese participants offered typical, sophisticated arms control explanations such as the role that the CTBT plays in halting proliferation to new nuclear states and the impact that halt would have on development of existing nuclear arsenals.

Chinese observers are also aware of the limitations of the CTBT, particularly that the ability of a test ban to constrain the United States is largely political in nature. One Chinese arms control expert noted that the treaty “would have more political than military significance.”³³² Another Chinese academic echoed his reasoning:

As a token, the CTB will bring nuclear testing to a halt, but one cannot take for granted that a CTB will automatically bring efforts to develop and modernize nuclear weapons to a stop. The CTB in itself does not address this issue. Halting development and modernization is a much different – and

³³¹Li Bin, “Visible Evidences of No-First-Use Nuclear Strategies” *INESAP Information Bulletin No. 17* (August 1999) 44-45; Wu Jun, “On No-First-Use Treaty” (Shanghai, China: The Sixth ISODARCO Beijing Seminar on Arms Control, October 1998); and Pan, “On China’s No First Use of Nuclear Weapons,” np.

³³²Liu Huaqiu “No-First Use and China’s Security,” *Henry L. Stimson Center Electronic Essay* (no date, c. 1998).

more difficult – matter ... Within the context of a test ban, what is important is the political intention of complying with the treaty.”³³³

Even then-Vice Foreign Minister, Wang Guangya, emphasized the normative impact of treaty: “The past four years have shown that though the Treaty has not come into force, it has already played an important regulatory role in the international community. Any breach of the Treaty would inevitably come under unanimous condemnation by the international community.”³³⁴

The test ban is a necessary condition, but not sufficient, condition for the United States to demonstrate that it is not planning to “fight and win” a nuclear war. The relationship between testing and such preparations is an indirect one.³³⁵ Chinese interlocutors usually emphasize the non-proliferation benefits of the treaty, when discussing the Chinese decision to sign the CTBT. The symbolic connection between the test ban and what some Chinese observers have called “nuclear warfighting” is apparent, however, when Chinese interlocutors discuss the US decision to reject the test ban.

China would gain a very substantial nonproliferation benefit from a test ban that entered into force. Although new nuclear states might develop crude fission weapons without testing, more advanced designs—such as thermonuclear weapons—do require testing. The yield estimates associated with the May 1998

³³³ Shen Dingli “Toward A Nuclear-Weapon-Free World: A Chinese Perspective,” *Bulletin of Atomic Scientists* (March/April 1994) 52.

³³⁴ Wang Guangya. *Remarks at the Opening Ceremony of the Regional Workshop for CTBTO International Cooperation and National Implementation/Ratification Procedures* (Beijing, China: 6 June 2000).

³³⁵ Fetter, *Toward Comprehensive Test Ban*, 169.

Indian nuclear test, for example, are difficult to reconcile with Indian claims to have tested a “thermonuclear” device.³³⁶ China would clearly have an interest in restraining India’s development of thermonuclear weapons. A member of the Chinese CTBT delegation frankly noted the impact of Chinese conventional and nuclear capabilities on Indian decisions to develop nuclear weapons and noted the Chinese interest in pressing “India and Pakistan to stop nuclear tests, observe the Comprehensive Nuclear Test Ban Treaty, and make a firm commitment not to deploy nuclear weapons or missiles capable of delivering nuclear warheads.”³³⁷

The hypothesis that China viewed the CTBT as compatible with its national security interests helps explain the major puzzle that bedevils the pressure hypothesis: Why China accepted a treaty that entailed inspections (rather than declaring a moratorium) and then almost scuttled negotiations over the *frequency* of those inspections. This puzzle has two parts:

- *Why did China sign the treaty, rather than agree to a moratorium?* In the previous section, I have argued that the majority of pressure on China resulted from its continued testing; China might have defused that pressure by agreeing to a moratorium. Without signing the treaty, China would not be obligated to

³³⁶ For yield estimations, see: Brian Barker, et al., “Monitoring Nuclear Tests, *Science* 281:5385 (25 September 25, 1998) 1967-68; Gregory van der Vink *et al.*, “False Accusations, Undetected Tests and Implications for the CTB Treaty,” *Arms Control Today* 28:4 (May 1998) 7-13; and Terry C. Wallace, “The May 1998 India and Pakistan Nuclear Tests,” *Seismological Research Letters* 69 (September 1998) 386-393.

³³⁷ Zou Yunhua, *Chinese Perspectives on the South Asian Nuclear Tests* (Stanford University Center for International Security and Arms Control, January 1999) 17.

accept on-site inspections, which were apparently a high value concession for the Chinese.

- *Why did China almost walk out over on-site inspections?* Although we cannot know if China would have signed the CTBT without concessions from the United States regarding on-site inspections, the Chinese delegation clearly considered the matter of great importance. Chinese brinksmanship over a small issue such as the frequency of inspections is hard to fathom if the regime were under duress, particularly since the obvious motive would have been to scuttle the negotiations over the prospect of inspections.

The Chinese decision to sign a treaty only makes sense if a formal agreement has intrinsic value beyond the avoidance of opprobrium—in this case, the treaty was a non-proliferation measure, as well as a form of reassurance that the United States was not contemplating the use of nuclear weapons for coercion. The nonproliferation rationale was probably very important, as the Chinese could have anticipated that their signature would be a necessary condition to securing Indian compliance. Chinese leaders also viewed the CTBT much as their counterparts in the Clinton Administration—as a necessary, but insufficient step toward the larger, amorphous goal of reducing the role of nuclear weapons in international security. It is possible that a third intrinsic benefit from the treaty was prestige, as Johnston suggests, but Chinese brinksmanship over on-site inspections suggests it was not the dominant factor.

The intrinsic, but limited, value of the CTBT explains the almost obsessive focus on the frequency of inspections: to the extent that the test ban reflected a partial conveyance of reassurance from the United States, there was considerable internal debate about the level of transparency to accept. That is consistent with Chinese efforts to gain additional assurances from the United States about the potential for abuse *after* the treaty was signed, as well as the subsequent decision to withhold International Monitoring System data in response to the US Senate's rejection of the CTBT.

Fissile Material Cut-Off Treaty

As in the case of the CTBT, the rationale for the FMCT flows from the conclusion that nuclear deterrence is insensitive.³³⁸ The idea that greater numbers of nuclear weapons do not enhance deterrence is the most straightforward expression of insensitive balance of terror. A fissile material cutoff would limit the size of potential nuclear arsenals by preventing the production of additional fissile material for the manufacture of nuclear weapons. Whereas the CTBT attempted to constrain the qualitative improvement of nuclear weapons by preventing testing, an FMCT would prevent quantitative enhancements by banning the production of Plutonium and Highly Enriched Uranium for weapons.

³³⁸ Steve Fetter and Frank von Hippel, "A Step-by-step Approach to a Global Fissile Materials Cutoff," *Arms Control Today* 25:8 (October 1995) 3-8.

A cut-off treaty might also regulate the large stockpiles of fissile material currently held by the United States and Soviet Union. International oversight of fissile material stockpiles would be useful in verifying warhead dismantlement and would render reductions irreversible if fissile material from dismantled weapons was placed under international safeguards. Further reductions by nuclear weapons states to reduce the large disparities in fissile material stockpiles might be a precondition to the successful negotiation of a treaty. The cut-off would provide a direct nonproliferation benefit by preventing the production of fissile material, as well as indirect benefit from promoting deep reductions and subjecting nuclear facilities in all states to international inspection.

In contrast to Chinese behavior towards the CTBT, China withheld its consent to a work program in the Conference on Disarmament from 1999-2003 because the United States refused to negotiate a treaty on “preventing an arms race in outer space” that would constrain US missile defense and other military activities in outer space.

That dispute has blocked the beginning of FMCT negotiations, although China has not indicated any opposition to such a treaty in principle. Revealing the calculus behind China’s decision to obstruct negotiations is difficult for a number of reasons. First, participants are naturally more reluctant to reveal information about an ongoing negotiation than a historical one such as the CTBT. Second, the size and composition of China’s fissile material stockpile is a sensitive national security

subject. Finally, Chinese academics have authored very few papers about the subject, in part because of the way that the Chinese nuclear weapons establishment is structured. The principle locus of arms control expertise is the China Academy of Engineering Physics (CAEP), which is a consumer of fissile material.

Interview data suggests that Chinese and US leaders basically support a Fissile Material Cut-Off Treaty for the same reason: Neither plans to expand the size of its arsenal beyond its current stock of fissile material. Despite the disparity between Chinese stockpiles and those of the United States, China might benefit from US reductions undertaken to build political support for the treaty. An FMCT would also constrain the size of the Indian nuclear arsenal, providing a straightforward nonproliferation benefit to China analogous to the CTBT. These benefits would accrue largely cost-free to China, which is no longer believed to be producing fissile material for military use. China would have to accept a verification regime, but most Chinese scholars appear to believe that this would not be an insurmountable hurdle. At the same time China might consider controls on future production, China shares the view of the other nuclear weapons states that national security considerations preclude consideration of a treaty that would regulate existing stockpile. China's stockpile of fissile material may also be smaller than current estimates suggest.

China's decision to obstruct negotiations in the CD is a principal puzzle. The image constraints that allegedly compelled Chinese participation in the CTBT should also have compelled Chinese participation in FMCT negotiations. If China viewed

the balance of terror as delicate, it is unlikely that Chinese officials would choose to insist on more negotiations (in this case, an agreement concerning military activities in outer space) for missile defense deployments. Instead, Chinese obstruction in the CD ought to have been accompanied by more significant efforts to enhance their arsenal. Conversely, if Chinese leaders viewed the deterrent balance as relatively insensitive and conceived their interests in more cooperative terms, they would focus on reaching additional agreements to address the broader security issue in question.

In this case, the security problem driving obstruction is Beijing's perception that US strategic modernization may pose a threat to China's deterrent. In this regard, the demand for a "balanced and comprehensive plan of work" — the linkage between PAROS and fissile material stockpiles—makes sense. If the strategic modernization envisioned by the United States is principally space-based, then China's willingness to agree to a constraint on its fissile material stockpiles would require some assessment of the prospects for US military activities in outer space. In the case of the CTBT, China's decision to suspend testing was premised on the judgment that US leaders would share the Chinese assessment that further nuclear testing would not alter the balance of deterrence. It would be surprising if the decision to cease fissile material production were not based on similar assessments about the impact that decision would have on the strategic balance.

The nature of this linkage is largely symbolic. Chapter 6 suggests that the current American modernization program, when matched to its Chinese counterpart, is unlikely to result in a substantial change in the strategic situation. The United States has not committed to a fixed architecture for missile defenses and other elements of its strategic modernization, permitting the Chinese to defer decisions about specific countermeasures. Yet, the Chinese leadership must worry that American policymakers may one day believe they could build strategic forces capable enough to disarm the Chinese in a crisis; a refusal by the Chinese to enter FMCT negotiations underscores the point that a much larger Chinese arsenal remains an option.

The timing of China's decision to link its positions on outer space and fissile material is particularly telling. The decision was announced in early 1999—immediately following US Secretary of Defense Cohen's announcement that the United States would increase funding for a more capable national missile defense system that might require revision of the ABM Treaty. In March 1999, Jiang Zemin strongly condemned US missile defense plans in an address to the Conference on Disarmament. Jiang made a veiled reference to outer space, referring to the impact of missile defense systems on extending the arms race into "new areas."³³⁹ Although this linkage might have appeared obvious to Chinese delegates at the time, interview

³³⁹ Jiang Zemin, "Promote Disarmament Process and Safeguard World Security, Address at the Conference on Disarmament," in *Final Record of the 822nd Plenary Meeting of Conference on Disarmament CD/PV.822* (Geneva, Switzerland: 26 March 1999) 2-5.

data suggests that its significance was lost on the American delegation against the backdrop of Operation Allied Force.

Similarly, China's announcement in June 2002 that relaxed its demand for negotiations on outer space appears to have been formulated as a response to openings provided by the United States. The June 2002 announcement immediately followed the conclusion of the Moscow Treaty. Although Chinese observers were less than impressed with the terms of the treaty, the general consensus appears to have been that the decision to commit to an agreement was a substantial step for the Bush Administration.

China's obstruction of negotiations in the CD poses a major challenge for the idea that China participates in arms control agreements largely to avoid costs to its international image. Instead, China's behavior is best explained in terms of its national security interests. China's reluctance to enter into fissile material cut-off negotiations appears to reflect a judgment about the need to balance constraints on the size of its nuclear arsenal with constraints on US strategic capabilities. This suggests that Chinese proposals for outer space negotiations—covered in more detail in a subsequent chapter—are sincere and reflect a serious assessment of China's security situation.

Conclusion

The motivations behind Chinese participation in the CTBT and obstruction over the FMCT are important. They determine the broader prospects for arms

control arrangements to manage the evolving deterrent relationship between the strategic offensive forces maintained by Washington and Beijing.

Skeptics suggest that China's support for arms control is ephemeral and a function of the acute sensitivity of the Chinese leadership to international pressure. This explanation is offered to account for Chinese participation in CTBT negotiations despite the assumption that Chinese leaders are obsessed with the balance of forces. It fails to account for the fact that China began to prepare for a test ban as early as 1986, or for China's strong reluctance to agree to an inspections regime requiring a simple majority to approve an on-site inspection. Moreover, that model fails to predict China's behavior toward the FMCT.

A simpler model explains China's support for arms control and the country's modest nuclear deterrent as reflections of a relative confidence in the stability of deterrence. Chinese officials largely meant what they said about their motives for agreeing to the CTBT and for obstructing the FMCT. The Chinese leadership is motivated by the security benefits of arms control agreements, rather than international pressure. Beijing's decision to accept the constraints imposed by the CTBT on its strategic offensive force modernization, and the relative high priority assigned to preventing frivolous inspections, suggest the Chinese leadership cautiously accepts the foundational principles of arms control. China's decision to obstruct negotiations on the FMCT appears to reflect concern that such an agreement, in the face of US missile defense deployments, would seriously

jeopardize Chinese national security. In the case of the FMCT, the timing of both China's decision to obstruct negotiations and to offer a key compromise suggests that Chinese decisions are, in large part, designed to entice the United States into serious discussions about the changing relationship between both arsenals.

The implications of this relationship are profound: At a time when China's nuclear arsenal is undergoing a major modernization, the United States is essentially ignoring an opportunity to shape that modernization in ways that would be beneficial to the security of both countries. Subsequent chapters consider Chinese perspectives on US strategic forces modernization and arms control proposals.

Chapter 6: The *Nuclear Posture Review* and the Logic of Restraint

I think [the United States has] not very responsible at all. You know it's against their own principles which they are [acting in regard to missile defense]. They themselves ... were propagating this idea to oppose missile defense [in the 1972 ABM Treaty]. Now all of sudden because of the collapse of the former Soviet Union, suddenly they change their mind and they want the world to listen to them. Of course, the US can be right and on many times or occasions they are right, but you cannot monopolize the truth. So we only want US to heed to the views of others and the views of themselves before.

Sha Zukang, PRC Ambassador at Large for Disarmament Affairs, 2001³⁴⁰

The evolving capability and declaratory doctrine of US strategic forces poses a significant challenge for China's nuclear posture. While Chinese officials view their limited nuclear arsenal as sufficient to maintain a mutual deterrent relationship with the United States, US officials continue to reject mutual deterrence in the US-China context. As articulated in the *2001 Nuclear Posture Review*, the United States seeks strategic forces that would provide credible options for preventive and pre-emptive operations.³⁴¹ This modernization could substantially increase the perceived willingness of the United States to subject China to coercion and complicate efforts to sustain Chinese restraint under its apparent rationale—that a small strategic force provides adequate deterrence, and vulnerability to preemption poses a less significant risk than loss of control over alert forces.

³⁴⁰ Statement has been edited for spelling, punctuation and clarity. Sha Zukang, Interview with Chris Masters, Australian Broadcasting Company (6 August 2001). Available at: <http://abc.net.au/4corners/roquestate/interviews/kang.htm>

³⁴¹ The *2001 Nuclear Posture Review* is officially classified. The Department of Defense provided an unclassified cover letter and briefing by Assistant Secretary of Defense for International Security Policy J.D. Crouch that are available at: http://www.defenselink.mil/news/Jan2002/t01092002_t0109npr.html. Some sections of the *2001 Nuclear Posture Review* were leaked to the press and are available at: <http://www.globalsecurity.org/wmd/library/policy/dod/npr.htm>

China has not yet revised the deployment pattern of its strategic forces, nor does it need to. Despite US investments in missile defense and non-nuclear strategic strike systems, China will continue to maintain a modest retaliatory capability. Instead of reducing the danger from Chinese nuclear weapons, the strategic forces outlined by the *2001 Nuclear Posture Review* may increase nuclear dangers to the United States. The logic of pre-emption, inherent in the counterforce doctrine articulated by the *2001 Nuclear Posture Review* may interact dangerously with more capable Chinese strategic forces, particularly if those forces are kept on higher rates of alert or if China fields capabilities to target US command, control, and intelligence (C2I) assets.³⁴²

Implications of the Nuclear Posture Review

The United States has embarked on a major transformation of its strategic forces that, in part, is driven by concerns about the modernization of China's strategic forces. China plays a prominent role in the *2001 Nuclear Posture Review*, having returned to US nuclear planning in 1998 after a long absence.³⁴³ After

³⁴² The *2001 Nuclear Posture Review* uses the simpler C2I rather than other, more complex formulations like C4ISR (Command, control, communications, computers, intelligence, surveillance, and reconnaissance) to describe systems designed to support a commander's exercise of command and control across the range of military operations. That practice is adopted here.

³⁴³ Presidential Decision Directive-60 (1998) returned China to the SIOP after a reported 16-year absence. Although still classified, the *Washington Post* reported that PDD directed the "the military to plan attacks against a wider spectrum of targets in China, including the country's growing military-industrial complex and its improved conventional forces." See: R. Jeffrey Smith, "Clinton Directive Changes Strategy On Nuclear Arms Centering on Deterrence, Officials Drop Terms for Long Atomic War," *Washington Post* (7 December 1997) A1 and Hans M. Kristensen, *The Matrix of Deterrence: U.S. Strategic Command Force Structure Studies* (Nautilus Institute, May 2001) 14-15. The revelation produced a confidential State Department memorandum, now partially declassified, concerning targeting policy. See: *Targeting Policy* SEA-23820.9 (Department of State, 17 March 1998).

unsuccessful efforts by STRATCOM to include China in the *1994 Nuclear Posture Review*, the *2001 Nuclear Posture Review* identifies China as one of seven countries “that could be involved in an immediate or potential contingency” with nuclear weapons.

Chinese strategic forces are increasingly supplanting Russia as the primary benchmark for determining the size and capabilities of US strategic forces, particularly as the Bush Administration seeks to justify decisions to sign the Moscow Treaty and to withdraw from the ABM Treaty on the grounds that the United States no longer maintains an adversarial relationship with Russia.³⁴⁴ Secretary Rumsfeld stated that future reductions below the 1,700-2,200 range in the Moscow Treaty, for example, are precluded by the size of Chinese nuclear forces:

I think it would be a mistake to leave the impression...that either the SIOF or the 1,700 to 2,200 is premised on Russia. The reality is we live in the world, there is a security environment. Russia exists and has capabilities to be sure, but so does the People’s Republic of China, and they are increasing their defense budget and they are increasing their nuclear capabilities purposefully.³⁴⁵

In response to criticism that the 1,700-2,200 nuclear warheads exceeded potential targeting requirements,³⁴⁶ Secretary Rumsfeld warned that further reductions might encourage China to attempt what he termed a “sprint to parity” — a

³⁴⁴ Bruce Blair, for example, estimated the *2001 Nuclear Posture Review* would result in “a 50 percent reduction in Russian targets and a 100 percent increase in China targets.” See: Walter Pincus, “U.S. Considers Shift In Nuclear Targets: Defenses to Focus on China, Experts,” *Washington Post*, (29 April 2001) A23.

³⁴⁵ *Treaty on Strategic Offensive Reduction: The Moscow Treaty, Hearings before the Committee On Foreign Relations, United States Senate*, S. Hrg. 107–622 (9, 17, 23 July and 12 September 2002) 111.

³⁴⁶ For criticism of overkill in the *Nuclear Posture Review*, see: John Steinbruner and Jeffrey Lewis, “The Unsettled Legacy of the Cold War,” *Daedalus* 131:4 (Fall 2002) 5–10. See also, David Mosher and Michael O’Hanlon, *The START Treaty and Beyond* (Washington, DC: Congressional Budget Office, October 1991) 21.

rapid increase in nuclear forces to reach numerical parity with the United States.³⁴⁷ In an exchange with Senator Joseph Biden (R-DE) concerning the disparity in size between the United States and Chinese nuclear forces, Rumsfeld explained the relationship between the Chinese strategic forces and their American counterparts, which are an order of magnitude larger:

BIDEN: [But Chinese strategic are forces are in the] multiples of 10 right now, Mr. Secretary.

RUMSFELD: Very low, very low.

BIDEN: I mean, you know, 2,200...

RUMSFELD: I understand. We have—I'm coming to that.... To the extent you lower down so low that it looks like some country can, in fact, sprint and get up to a level, then the deterrent effect of having your capability is probably less persuasive.³⁴⁸

Assumptions about the configuration and purpose of China's strategic forces determine not just the overall force level, but also the mix of capabilities identified in the *2001 Nuclear Posture Review*. The *2001 Nuclear Posture Review* concludes that "a strategic posture that relies solely on offensive nuclear forces is inappropriate for deterring the potential adversaries we will face in the 21st century."³⁴⁹ Instead, the

³⁴⁷ In his prepared statement, Rumsfeld makes the "sprint to parity" argument explicit, though he does not specify China as the "would-be peer competitor" in question:

Some have asked why, in the post-Cold War world, we need to maintain as many as 1,700-2,200 operationally-deployed warheads? The end of the Soviet threat does not mean we no longer need nuclear weapons. To the contrary, the U.S. nuclear arsenal remains an important part of our deterrence strategy, and helps to dissuade the emergence of potential or would-be peer competitors, by underscoring the futility of trying to sprint toward parity with us or superiority. See: *Treaty on Strategic Offensive Reduction: The Moscow Treaty*, S. Hrg. 107-622, 81.

³⁴⁸ *Treaty on Strategic Offensive Reduction: The Moscow Treaty*, S. Hrg. 107-622, 111.

³⁴⁹ These quotations are drawn from the unclassified cover letter that accompanied the *2001 Nuclear Posture Review*. See: Donald H. Rumsfeld, "Foreward" *Nuclear Posture Review Report* (January 2002): <http://www.defenselink.mil/news/Jan2002/d20020109npr.pdf>.

2001 *Nuclear Posture Review* suggests a “New Triad” characterized the addition of two capabilities.

- “The addition of defenses (along with the prospects for timely adjustments to force capabilities and enhanced C2 and intelligence systems) means that the U.S. will no longer be as heavily dependent on offensive strike forces to enforce deterrence as it was during the Cold War.”
- “The addition of non-nuclear strike forces—including conventional strike and information operations—means that the U.S. will be less dependent than it has been in the past on nuclear forces to provide its offensive deterrent capability.”

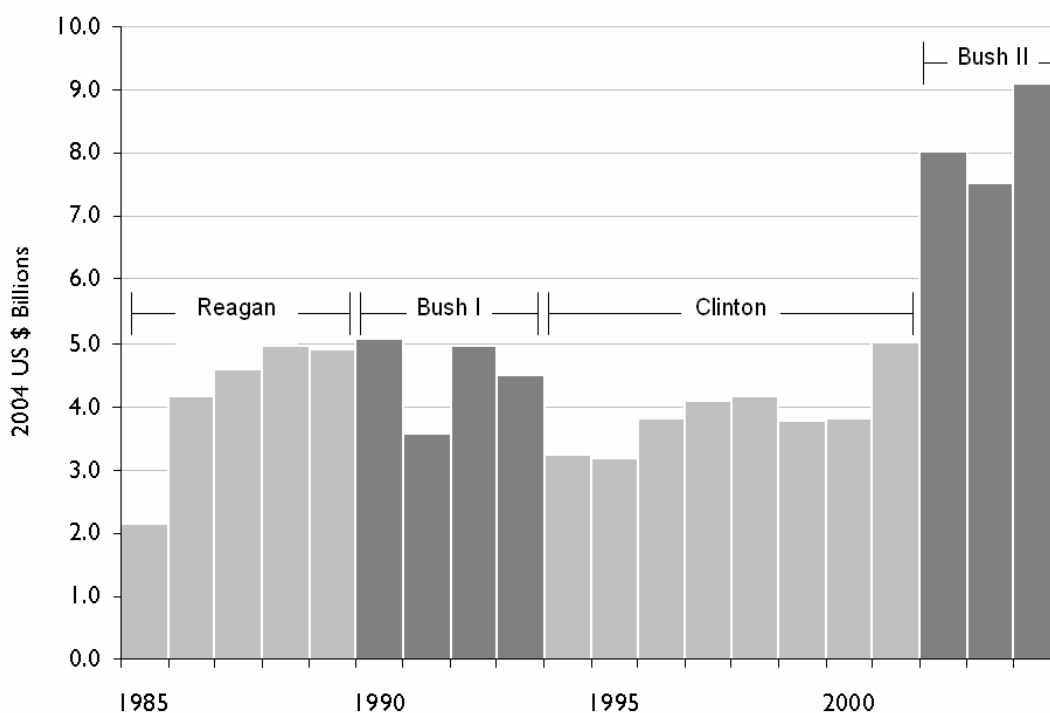
The capabilities in the New Triad, which include a revitalized defense infrastructure to complement defenses and offenses, are “bound together by enhanced command and control (C2) and intelligence systems.”

Missile Defense

Missile defenses are perhaps the most important element of the *Nuclear Posture Review* in the near-term—as evidenced by Secretary Rumsfeld’s claim that “our decision to undertake such deep reductions [as the ones outlined in the Moscow Treaty] was predicated, in part, on the assumption that we would deploy missile defenses.”³⁵⁰ The Bush Administration has significantly increased the funding available for missile defense efforts (see Figure 6-1: *Missile Defense Appropriations 1985-2004*). The Bush Administration has also made a number of programmatic changes, including decisions to elevate the Ballistic Missile Defense Organization to the agency level, abolish the distinction between theater and strategic defenses, and

³⁵⁰ *Treaty on Strategic Offensive Reduction: The Moscow Treaty*, S. Hrg. 107-622, 120.

Figure 6-1: Missile Defense Appropriations 1985-2004



Missile Defense Agency, *Fiscal Year (FY) 2005 Budget Estimates*, Press Release (February 18, 2004) 7.

adopt of an evolutionary approach that does “not envision a final or fixed missile defense architecture.”³⁵¹

Despite enhanced levels of funding, the initial defensive operational capability that the Missile Defense Agency will “stand up” on 1 October 2004 is not substantially different from the C1 architecture proposed by the Clinton Administration (See Figure 6-2: Notional US Missile Defense Architectures).³⁵²

³⁵¹ Assistant Secretary Of Defense J.D. Crouch II, *United States Missile Defense Policy*, Statement Before The House Armed Service Committee United States House Of Representatives, (18 March 2003). Available at: <http://armed-services.senate.gov/statemnt/2003/March/Crouch.pdf>.

³⁵² For a summary of the Clinton C1 architecture, see: Walter B. Slocombe, “The Administration’s Approach,” *The Washington Quarterly* 23:3 (Summer 2000) 79–85. On October 1, 2004 deployment date, see: David Ruppe, “Rumsfeld Directs Missile Defense to Operate Oct. 1,” *Global Security Newswire* (13 July 2004) np. Available at: http://www.nti.org/d_newswire/issues/2004_7_13.html#90FC8434

The Bush Administration's principle changes to the Clinton 2005 C1 Architecture are likely to make the system less capable in order to meet the 2005 deployment deadline:

- The Bush Administration will place only 20 interceptors instead of 100, with 16 in Alaska and 4 in California.
- Instead of building an X-band radar in Shemya, Alaska, the Bush Administration will build a Sea-based X-band radar and upgrade the early warning radar at Shemya.
- The Space-based Infra Red System (SBIRS) Program is now behind schedule, with SBIRS-High launches scheduled for 2006-2010. SBIRS-low is now the Space Tracking and Surveillance System (STSS), with non R&D launches scheduled for 2011.³⁵³

³⁵³ The major changes are derived from *Missile Defense Operations Announcement*, No. 642-02 (Department of Defense, 17 December 2002).

Figure 6-2: Notional US Missile Defense Architectures

<i>Architecture (IOC)</i>	<i>C1 (2005)</i>	<i>C2 (2007)</i>	<i>C3 (2010-2015)</i>
Ground Based Interceptors (GBI)	100 Alaska	100 Alaska	125 Alaska 125 Grand Forks ND
Upgraded Early Warning Radar (UEWR)	Beale CA Clear AK Cape Cod MA Fylingdales UK Thule, Greenland	Beale Clear Cape Cod Fylingdales Thule	Beale Clear Cape Cod Fylingdales Thule
X-Band Radars	Shemya AK	Shemya Clear Fylingdales Thule	Shemya Clear Fylingdales Thule Beale Cape Cod Grand Forks Hawaii South Korea
Space Sensors	DSP SBIRS-High	DSP SBIRS-High SBIRS-Low	SBIRS-High SBIRS-Low
In Flight Interceptor Communications System (IFICS)	Alaska Shemya AK Caribou ME	Alaska Shemya AK Caribou ME Munising MI	Alaska Shemya AK Caribou ME Munising Hawaii

Sources: C1-C-3 architecture is derived from “C1/C2/C3 Architecture—Preliminary.” Briefing slide TRSR 99-082 25 (Ballistic Missile Defense Organization, March 3, 1999) in Andrew M. Sessler et al *Countermeasures: A Technical Evaluation of the Operational Effectiveness of the Planned US National Missile Defense System* (Cambridge, MA: Union of Concerned Scientists, 2000) 21.

Non-nuclear Strike

The *Nuclear Posture Review* also contains recommendations for the development of non-nuclear strike capabilities, as well as new nuclear capabilities, to attack a variety of difficult targets—including “hard and deeply buried targets” (HDBTs) and mobile, relocatable targets. Conventional options offer practical advantages for certain scenarios and the political advantage of not requiring the initial use of nuclear weapons.

The Pentagon has repeatedly outlined requirements for a “prompt global strike” capability—the ability to hit a target anywhere in the world in a matter of hours—in a number of documents.³⁵⁴ These capabilities should be particularly threatening to the Chinese, who will continue to rely on hardening to protect command and control networks and are investing heavily in mobile ballistic missiles. The Pentagon is considering a range of programs to improve non-nuclear strike capabilities, including the Common Aero Vehicle, space-based radar (SBR) and Transformational SATCOM (TSAT).

- *Common Aero Vehicle (CAV)* The Common Aero Vehicle (CAV) is a hypersonic glide vehicle designed to carry a payload 3,000 nautical miles (5,500 km) downrange, with re-entry speeds of approximately 4,000 feet per second (1200 m/s) and an accuracy (circular probable error) of 3 meters. The accuracy and cross-range would make the CAV particularly capable against mobile ballistic missiles. In the near-term, the CAV will be delivered by a ballistic missile or a space launch vehicle. The CAV was expected to achieve initial operating capability (IOC) from a ballistic missile in 2010. In December 2002 the Deputy Secretary of Defense directed the Air Force and DARPA to

³⁵⁴ Matt Bille (ANSER) and Major Rusty Lorenz (AFSPC/DRM), *Requirements For A Conventional Prompt Global Strike Capability*, NDIA Missile and Rockets Symposium and Exhibition (May 2001).

Figure 6-3: Selected Programs Supporting the Non Nuclear Strike

	2005	2006	2007	2008	2009	Total
PE 0604856F Common Aero Vehicle (CAV)	21.6	27.2	32.6	31.5	39.6	152.5
PE 0603858F Space-based Radar	327.7	466.2	502.7	1,177.6	1,550.0	15,525.3
PE 0603845F Transformational SATCOM	774.8	1,192.4	1,346.7	1,830.1	1,038.6	5,407.8

FY 2005 President's Budget Request. Available at:
<http://www.defenselink.mil/comptroller/defbudget/fy2005>

establish a joint program office to accelerate the CAV effort to meet the DOD mission requirement for “conventional global, prompt response” with a total response time of “hours.”³⁵⁵

- *Space-based Radar (SBR)* The most promising program for space-based ISR is the space-based radar (SBR) program. SBR is “designed to transform surveillance by providing persistent, all-weather detection, tracking, and imagery of time-critical targets.”³⁵⁶ The FY05 budget requests at least \$411 million for the SBR, which is the first space program conceived after the Air Force was designated as Executive Agent for space.³⁵⁷ SBR has been designated by OSD as “as a key Transformational Space program inextricably linked” to its ISR requirement for transformational forces.³⁵⁸ Eventually, the Air Force estimates that annual funding for the SBR could reach \$1.5 billion by 2009, before the launch of the first satellite. The Air Force is considering different radar constellation architectures in low- and medium-earth orbits (MEO), including a mixed constellation with satellites in both.
- *Transformational SATCOM (TSAT)* TSAT, formerly the *Advanced Wideband System*, will replace the Wideband MILSATCOM and supplement the Advanced EHF system. The TSAT is expected to integrate a number of technologies, including laser communications, which would dramatically improve the rate of data transmission in

³⁵⁵ Defense Advanced Research Projects Agency, *FALCON: Force Application and Launch from CONUS Technology Demonstration PHASE I SOLICITATION 03-XX* (17 June 2003) 7.

³⁵⁶ John A. Tirpak, “The Space Based Radar Plan,” *Air Force Magazine* (August 2002) 68.

³⁵⁷ The FY 2005 Budget Request includes \$327.7 million for PE 0603858F SBR Concept and Technology Development. USAF Exhibit R-3 (PE 0603858F), 623. In budget briefings, officials indicate the budget includes requests for \$411 for SBR, with the difference presumably located in other accounts.

³⁵⁸ *Program Description: Space-based Radar*, Northrop Grumman, Available at: <http://www.capitol.northgrum.com/programs/sbr.html>

much the same way that fiber optic cables have improved ground-based data transmission.³⁵⁹ The Air Force is still conducting an analysis of alternatives to determine the final architecture of the system. The FY05 Request includes \$775 million for Advanced Wideband, a total of \$12.5 billion across the FYDP. Undersecretary Teets testified that the first launch is targeted for 2009-2010.³⁶⁰

Enhancing Deterrence

The mechanism by which new offensive and defensive capabilities would enhance deterrence is somewhat obscured by the language of the *2001 Nuclear Posture Review*.³⁶¹ The *2001 Nuclear Posture Review* conceptualizes the problem of deterrence, in part, as a function of asymmetry: The United States is presumed vulnerable to nuclear coercion because the risks inherent in regional conflicts often exceed the stakes. New offensive and defensive capabilities, in the description of one participant, would enable offensive operations to “neutralize enemy military capabilities, especially nuclear and other WMD forces” in order “to deter aggression, coerce compliance, and limit the damage that enemy forces can inflict.”³⁶² This extends to the capability to target “Chinese nuclear forces, including intercontinental

³⁵⁹ Kerry Gildea, “Transformational Satellite Communications Architecture Almost in Place, Lord Says,” *Defense Daily* 217:11 (17 January 2003) np.

³⁶⁰ Peter B. Teets, *Testimony Before the U.S. Senate Armed Services Committee*, Hearing on National Security Space Programs (12 March 2003).

³⁶¹ Clear statements about the logic implied by the addition of non-nuclear strike and defenses can be found in a series of articles and papers by Keith Payne, Deputy Assistant Secretary of Defense for Forces and Policy and principal author of the 2001 Nuclear Posture Review. On the general logic see: “Victory is Possible,” (with Colin S. Gray) *Foreign Policy* (Summer 1980): 14-27; *Deterrence in the Second Nuclear Age* (Lexington, KY: University Press of Kentucky, 1996); *Rationale and Requirements for U.S. Nuclear Forces, Vol. I, Executive Report* (January 2001); and *Strategic Offensive Forces and the Nuclear Posture Review’s “New Triad,”* (March 2003). On China’s role in determining required capabilities, *The Fallacies of Cold War Deterrence and a New Direction* (Lexington: University Press of Kentucky, 2001) and “Post-Cold War Deterrence and a Taiwan Crisis,” np.

³⁶² Payne et al, *Rationale and Requirements ...*, 5.

forces, [which] give ‘teeth’ to their diplomacy and vastly complicate U.S. planning to deter a conventional conflict in the Strait of Taiwan.”³⁶³

Implicit in each of these missions—deter aggression, coerce compliance, and limit the damage—is the ability to use offensive capabilities to neutralize ballistic missiles prior to launch (either directly or by disrupting command and control networks), with missile defenses to “shoulder some of the burden of a counterforce strategy” by intercepting any ballistic missiles that survive a first strike.³⁶⁴ For example, the Defense Science Board refers to “synergies between ballistic missile defense systems (BMDS) and offensive actions that offer the possibility for different consequences when considered together.... BMDS could reduce the risk of some offensive options and thus permit a future strategic strike option with fewer detrimental consequences.”³⁶⁵ Shortly before he was nominated as Deputy Assistant Secretary of Defense for Forces Policy (with responsibility for overseeing the *Nuclear Posture Review*) Keith Payne argued:

Depending on the circumstances, the U.S. might exploit nonnuclear and/or nuclear capabilities for attacking silo-based and mobile missiles. Unless the Chinese employed WMD against U.S. targets, however, *the U.S. National Command Authorities almost certainly would be highly reluctant to authorize preventive nuclear strikes against such targets. ... Consequently, offensive operations against ballistic missiles would need to be complemented by Ballistic Missile Defense (BMD), and other active and passive defenses for U.S. forward-deployed forces....*³⁶⁶

³⁶³ Payne, *Strategic Offensive Forces ...*, 4

³⁶⁴ Payne et al, *Rationale and Requirements ...*, 8.

³⁶⁵ *Report of the Defense Science Board Task Force on Future Strategic Strike Forces* (February 2004) 3-17.

³⁶⁶ Payne, *The Fallacies of Cold War Deterrence and a New Direction*, 181. Emphasis Added.

That the entire strategy is premised on pre-emption is reinforced by the evident fact that the effectiveness of a preventive action declines substantially as adversary forces are raised to higher levels of readiness.

The idea that a counterforce strategy, emphasizing the preventive or pre-emptive strikes, is necessary to extend deterrence is hardly new. Writing in 1981, Payne argued:

However, American strategic forces do not exist solely for the purpose of deterring a Soviet nuclear threat or attack against the United States itself. Instead, they are intended to support U.S. foreign policy, as reflected, in the commitment to preserve Western Europe against aggression. Such a function requires American strategic forces that would enable a president to initiate strategic nuclear use for coercive, though politically defensive, purposes.³⁶⁷

Possible Chinese Responses

The Chinese, of course, have no guarantee that the United States will only use nuclear coercion for politically defensive purposes. The Chinese are unlikely to take such a matter on trust, particularly given their concern about several instances of nuclear blackmail during the 1950s involving the Korean War and the status of Taiwan. The Chinese government professed to be “deeply shocked” by the contents of the *Nuclear Posture Review*.³⁶⁸ One analyst observed the “New Triad would provide the United States with not only offensive strike capability but also missile defense capability against China. This would reduce China’s nuclear retaliatory capability to

³⁶⁷ Gray and Payne, “Victory is Possible,” 20.

³⁶⁸ Foreign Ministry spokesman Sun Yuxi told reporters in Beijing that the Chinese government says it is “deeply shocked” at reports China was one of seven countries mentioned by name in the 2001 *Nuclear Posture Review*. “China ‘shocked’ to be on U.S. nuke hit list,” CNN.com (13 March 2002): <http://www.cnn.com/2002/WORLD/asiapcf/east/03/12/china.nuclear/>

impotence and thus neutralize China's limited nuclear deterrent forces. Thus the United States would be less cautious about drifting into a Taiwan Strait crisis.³⁶⁹ Whereas the *2001 Nuclear Posture Review* refers to "synergies" between offensive and defensive forces, Sha Zukang, China's then-Ambassador At-Large for Disarmament Affairs, referred to efforts by some countries "to strengthen both their sword and shield in an attempt to gain their own absolute security in disregard of others' security."³⁷⁰

The implication of the *2001 Nuclear Posture Review*, at least the aspiration implicit in its selection of strategy and capabilities, demonstrates the risk inherent in China's nuclear strategy. The Chinese arsenal is limited because Chinese leaders appear to have confidence that the aspiration expressed in the *2001 Nuclear Posture Review* is infeasible. There is little sign—as yet—that Chinese choices about force modernization reflect the implicit threat posed by that aspiration.

The visible elements of China's current strategic forces modernization have been programmed since the mid-1980s and are not responses to recent changes in strategic policy. Although members of the intelligence community believe that shift was driven in part by silo vulnerability, the Chinese began design work on solid-fueled ballistic missiles in the late 1960s. The Chinese settled on the current modernization program, with its emphasis on solid-fueled ballistic missiles, in the

³⁶⁹ Tian Jingmei, *The Bush Administration's Nuclear Strategy and Its Implications for China's Security* (Stanford, CA: Center for International Security and Cooperation, March 2003) 3.

³⁷⁰ Sha Zukang, *Statement at the Conference on Facilitating the Entry into Force of the Comprehensive Nuclear-Test-Ban Treaty* (7 October 1999): <http://www.nti.org/db/china/engdocs/sha1099.htm>

mid-1980s.³⁷¹ Similarly, China has had “countermeasure programs for decades,” developing countermeasures to US and Russian missile defense systems.³⁷² Although technical parameters may have been adjusted to account for the changing international geopolitical situation—for example, as the Soviet Union displaced the United States as the principle threat to Chinese security, Chinese designers extended the range of the CSS-3 to bring Moscow into range of bases in Qinghai province—the overall character of the modernization programs appears to be driven by a general determination to have technically competent forces in line with the minimalist conception of nuclear deterrence.

The intelligence community projects that over the next decade China will increase the number of warheads targeted at the United States, by adding new mobile ballistic missiles and, perhaps, placing multiple warheads on existing silo-based ballistic missiles. The estimate is speculative: There is no evidence that China has either deployed solid-fueled ballistic missiles or placed multiple warheads on existing ballistic missiles. As US intelligence officials have emphasized, the Chinese “do not have to commit themselves to specific countermeasures they will employ. Until they see what system the United States would deploy as a missile defense, they

³⁷¹ Lewis and Xue, *China's Strategic Seapower*, 211-214 and Lewis and Hua, “China's Ballistic Missile Program,” 26-31. When asked “is there any relationship or correlation between our withdrawal from the ABM Treaty on what [the Chinese] are doing?”; Robert Walpole, National Intelligence Officer for Strategic and Nuclear Programs, responded that “the modernization program to develop the two mobile ICBMs and the one SLBM that I talked about date clear back to the 1980's.” *CIA National Intelligence Estimate Of Foreign Missile Development ...*, S. Hrg. 107-467, 27.

³⁷² *Foreign Missile Developments and the Ballistic Missile Threat to the United States Through 2015* (National Intelligence Council, September 1999) 8 in *National Intelligence Estimate On The Ballistic Missile Threat...*, S. Hrg. 106-671, 98. The Chinese countermeasures program, which dates to the beginning of work on ballistic missiles, is also mentioned in Lewis and Hua, “China's Ballistic Missile Program,” 21-22.

have the luxury at this point of pursuing multiple types of countermeasure options.”

Sha Zukang made the same point in a press briefing regarding missile defense issues:

As I said earlier, even Americans need time to decide what kind of NMD they want. And Americans will need more time to design it and to resolve technical problems. So it's too early to say what kind of countermeasures China will take.³⁷³

One important factor in determining countermeasures will be the effectiveness of solid-fueled ballistic missiles and penetration aids in dealing with improvements in strategic strike and missile defenses.

The existing modernization program should be sufficient to overcome threats posed by the most plausible deployments of new US offensive and defensive strategic systems. Some combination of current and improved penetration packages, in particular, will be effective against the near-term US missile defense deployments. The Missile Defense Agency admits that its initial missile defense architecture “could not defend against a massive attack involving hundreds of warheads nor is it intended to defeat a more sophisticated set of countermeasures.” The Defense Science Board, considering the range of possibility for strategic strike and missile defense capabilities, has concluded that achieving “effective and comprehensive protection is likely to be a matter of decades.”³⁷⁴

³⁷³ Sha Zukang, *Transcript Briefing On Missile Defense Issue* (Beijing, China: 23 March 2001).

³⁷⁴ *Report of the Defense Science Board Task Force on Future Strategic Strike Forces*, 1-3.

China has advanced countermeasures programs, comparable in the assessment of the US intelligence community to those in Russia. A 1995 BMDO Study suggested several Chinese countermeasures, including electronic countermeasures, decoys and radar cross-section reduction.³⁷⁵ China presumably has the capability to deploy all of the “readily available” technologies for simple countermeasures available to states like Iran and North Korea, including “separating re-entry vehicles, spin stabilized RVs, RV reorientation, radar-absorbing material, booster fragmentation, low-powered jammers, chafe, simple or balloon decoys.”³⁷⁶

Most Chinese ballistic missiles have either been deployed or tested with one or more penetration aids:

- CSS-4 RV was reportedly designed with electronic countermeasures and light exoatmospheric decoys.³⁷⁷ The intelligence community expects the Chinese to develop “improved penetration packages for its ICBMs.”³⁷⁸
- CSS-5 RV flight tests in November 1995 and January 1996 each included “two probably endoatmospheric reentry decoys...designed to survive harsh atmospheric reentry conditions, and to simulate characteristics of the actual RV.”³⁷⁹
- CSS-X-10 RV apparently employs “similar decoys and other types of penetration aids.”³⁸⁰ An August 1999 CSS-X-10 flight test reportedly

³⁷⁵ *Country Profiles: China* (Ballistic Missile Defense Organization Countermeasure Integration Program, April 1995) 12-18.

³⁷⁶ Walpole in *National Intelligence Estimate On The Ballistic Missile Threat...*, in S. Hrg. 106-671, 10.

³⁷⁷ Lewis and Hua, “China’s Ballistic Missile Program,” 21

³⁷⁸ Defense Intelligence Agency in *Current and Projected National Security Threats To The United States...*, S. Hrg. 107-597, 321.

³⁷⁹ *Chinese ICBM Capability Steadily Increasing*, NAIC-1030-098B-96 (National Air Intelligence Center, November 1996) in Gertz, *Betrayal*, 254.

³⁸⁰ *Chinese ICBM Capability Steadily Increasing*, in Gertz, *Betrayal*, 254.

included an unknown number of decoys, although this is unconfirmed.³⁸¹

Apart from decoys visible in ballistic missile flight tests, the US intelligence community seems to have little information about the precise type of Chinese penetration aids. The precise nature of the penetration package appears to vary by ballistic missile, depending on target and missile defense threats, if any.³⁸²

Similarly, China's solid-fueled ballistic missiles are likely to be relatively secure from US precision strike capabilities, given the low requirement implicitly set by the Chinese for the size of the retaliatory force that must survive. The United States, in the estimate of the Defense Science Board (DSB), will remain short of a decisive pre-emptive capability against Russian and Chinese HDBTs and mobile ballistic missiles. The DSB projected that the overall capability of US forces against such targets would be only 54 percent of the "ideal" force—in other words, our capability to conduct offensive operations against Russian and Chinese strategic forces will be little better than half the force that the DSB suggests is desirable. The DSB suggests that most of the shortfall results from limitations in space-based command, control, and intelligence (C2I) systems.³⁸³ The limitations are inherent in

³⁸¹ Bill Gertz, "China Develops Warhead Decoys to Defeat U.S. Defenses," *Washington Times*, (16 September 1999) 1

³⁸² *Country Profiles: China*, 18.

³⁸³ How one ought to interpret the "ideal" capability is just one of many methodological issues that caution making extensive use of the study. Another is the decision to treat the capability of Russian and Chinese strategic forces as essentially equivalent, despite the evident difference in force size and sophistication. Although the DSB provides only a very rough measure, 54 percent leaves sufficient "room for improvement" beyond 2015 to suggest US policy-makers will, given the magnitude of retaliation, continue to be deterred by Russian and Chinese strategic forces. *Report of the Defense Science Board Task Force on Future Strategic Strike Forces*, 4-10.

notional capabilities of future space assets—notional capabilities that are themselves probably optimistic, given the technological and budgetary challenges facing so-called “transformational” systems such as Space-Based Radar and Transformational SATCOM.³⁸⁴

The *aspiration* expressed by the *2001 Nuclear Posture Review* is likely to threaten the Chinese, even if the actual technologies remain some years away. Given the long time-lines associated with Chinese strategic programs such as the CSS-X-10, Beijing must be concerned about the evolutionary nature of the missile defense architecture, which is clearly intended to improve the ability of the United States to deal with larger salvos of warheads and more sophisticated countermeasures. The 200 interceptors in the notional C3 architecture would be “enough to knock out several dozen warheads accompanied by advanced defense penetration aids.”³⁸⁵ General Kadish confidently predicted in his Congressional testimony that “we’re going to be very good at” dealing with countermeasures.³⁸⁶

Moreover, the *Nuclear Posture Review* has called for enhanced capability to target mobile ballistic missiles, upon which the Chinese deterrent may depend. The *2001 Nuclear Posture Review* speculates that “a demonstration of the linkage between

³⁸⁴ See: *Military Space Operations: Common Problems and Their Effects on Satellite and Related Acquisitions* GAO-03-825R (Washington, DC: General Accounting Office, June 2003) and *Improvements Needed in Space Systems Acquisition Management Policy* GAO-03-1073 (Washington, DC: General Accounting Office, September 2003). The Space-based radar program is not covered in either report, but basic information about shortcomings in its architecture and acquisition schedule is available from: *Senate Report 108-46*, 243-244.

³⁸⁵ *Talking Points for Ambassador John Holum* (January 20, 2000). Copy available from the Bulletin of Atomic Scientists website: <http://www.thebulletin.org/>

³⁸⁶ Ronald Kadish in “Hearing of the Defense Subcommittee Of The Senate Appropriations Committee,” *FDCH Political Transcripts* (April 21, 2004) np.

long-range precision strike weapons and real-time intelligence systems may dissuade a potential adversary from investing heavily in mobile ballistic missiles.”³⁸⁷ The DSB was similarly optimistic about the ability to achieve the “extraordinarily responsive and adaptive planning” necessary to target mobile and elusive targets.³⁸⁸ The Board concludes this capability “can be achieved through the recommended C2 and communications developments.”³⁸⁹

Moreover, even if US strategic forces continue to have significant limitations, the Chinese leadership must worry that US policymakers will develop false confidence in the system. Undersecretary of Defense E. C. “Pete” Aldridge expressed confidence that the system deployed in October 2004 would have a 90 percent chance of intercepting a ballistic missile in flight and affirmed that he would advise the President during a crisis that the United States had a 90 percent chance of intercepting a North Korean ballistic missile fired at Los Angeles or San Francisco—statements that Senator Levin implied contradicted classified analysis.³⁹⁰ Similarly, the Defense Science Board concluded that achieving a 54 percent of the “objective” capability against “near-peer WMD capabilities” was a “significant” improvement and would “give future Presidents realistic, high confidence strategic strike options

³⁸⁷ *Nuclear Posture Review* (2001) 12.

³⁸⁸ *Report of the Defense Science Board Task Force on Future Strategic Strike Forces*, 4-10.

³⁸⁹ *Report of the Defense Science Board Task Force on Future Strategic Strike Forces*, 4-10.

³⁹⁰ http://www.armscontrol.org/act/2003_04/missiledefense_apr03.asp

to reassure friends, change the behavior of enemies, and protect American interests.”³⁹¹

Absent a resolution of the status of Taiwan, the Chinese leadership is not likely to ignore indefinitely substantial US preparations to conduct preventive interference against Chinese strategic forces. Among the range of possible responses, China is not likely to conclude that emulation is either a feasible or sensible strategy. Instead, Chinese leaders are likely to consider asymmetric approaches if the current modernization program is judged inadequate. This would be consistent with Chinese preferences for an arsenal that emphasizes political control and economic considerations. There are, of course, voices for much larger deployments, but they are unlikely to exert much influence over the next decade given the nature of the Chinese political system and the slow pace of change among the Chinese leadership.

The reaction of the Soviet Union in the 1980s is instructive in this regard. At least one former Soviet official has discussed asymmetric responses in some detail, noting that the Soviet leadership officially endorsed a set of “asymmetric responses” to SDI that had been worked out in classified documents. The response is also detailed in a number of open publications.³⁹² One of those publications, *Space Weapons: A Security Dilemma*, suggested that the Soviet Union would consider “active

³⁹¹ *Report of the Defense Science Board Task Force on Future Strategic Strike Forces*, iv.

³⁹² Kokoshin suggests, among open publications, that official thinking is fairly reflected in: E. P. Velikhov, A. A. Kokoshin, and R. Z. Sagdeev, *Kosmicheskoe oruzhie: dilemma bezopasnosti [Space Weapons: A Security Dilemma]* (Moscow: Mir, 1986), 117–127 [98–105 in the English translation published by Mir press]; A. A. Vasil’ev, M. I. Gerasev, and A. A. Kokoshin, “Asimmetrichnyi otvet (vozmozhnye mery protivodeistviya SOI)” [“Asymmetric Response (Possible Methods of Countering SDI),”] *SShA: ékonomika, politika, ideologiya* no. 2 (1987): 27–32.

and passive countermeasures. The former would be based on the development of means for neutralizing and destroying the various components of a multilayered BMD, and the latter on the buildup, modification, and diversification of strategic offensive nuclear forces.”³⁹³ This lesson was not lost on the Chinese leadership. Senior Chinese diplomats and military specialists reportedly told one visiting American that they would mirror the asymmetric response—which they called the “Andropov solution” —planned by the Soviet Union.³⁹⁴ In an interview with the *New York Times*, Sha Zukang reportedly expressed his conviction that China “will do whatever possible to ensure that our security will not be compromised, and we are confident that we can succeed without an arms race. We believe defense itself needs defense. It is a defense system. It has many, many parts and most of them are vulnerable to an attack.”³⁹⁵

This strategy probably includes anti-satellite weapons as one possible response. Two Chinese scientists, including one from IAPCM, suggested that space-based missile defenses “would pose a threat to the retaliatory capability of the Soviet Union,” suggesting a variety of countermeasures including “an anti-satellite weapon system to penetrate this defensive net.”³⁹⁶ Although Chinese officials are circumspect in detailing specific responses to US missile defense deployments, one Chinese

³⁹³ Velikhov et al, *Space Weapons: A Security Dilemma*, 98.

³⁹⁴ Rose Gottemoeller, “If China Builds More Warheads,” *The Washington Post*, (September 6, 2001) A23.

³⁹⁵ Michael R. Gordon, “China, Fearing a Bolder U.S., Takes Aim on Proposed National Missile Shield,” *New York Times* (April 29, 2001) A1.

³⁹⁶ Cheng Dongquan and Huang Zhen, “Banning ASAT Weapons” in *Space and Nuclear Weaponry in the 1990s*, Carlo Schaerf, Giuseppe Longo and David Carleton, editors (New York: Macmillan, 1992) 41.

academic admitted that, among the countermeasures that China might consider, anti-satellite weapons “might also be tempting.”³⁹⁷

China can detect and track most satellites with sufficient accuracy for targeting purposes.³⁹⁸ The extent of Chinese reliance on foreign tracking facilities is unclear. Although China has some domestic telemetry facilities, China also has one overseas facility and international agreements for telemetry, tracking and control, including stations operated by France, Brazil, and Sweden. The United States, for instance, provided collision avoidance analysis for China’s Shenzhou manned spaceflight mission.³⁹⁹ The political problems are evident from a recent event when China dismantled its second overseas tracking site, in Kiribati, after Kiribati recognized Taiwan.⁴⁰⁰

Unlike penetration aids, however, anti-satellite countermeasures would be far more complicated. A 1995 BMDO countermeasure study, which considered several possible Chinese anti-satellite systems to suppress space-based early warning systems, concluded that such measures “are too complex, are too costly, or pose too many unacceptable trade-offs to warrant serious consideration by China.”⁴⁰¹ China

³⁹⁷ Shen Dingli, “A Chinese Perspective On National Missile Defence,” In *Missile Threats And Ballistic Missile Defense: Technology, Strategic Stability And Impact On Global Security*, Paolo Cotta-Ramusino and Maurizio Martellini, editors (Rome, Italy: Landau Network - Centro Volta and Italian Ministry Of Foreign Affairs, 18-19 January 2001) 223. Available at: <http://lxmi.mi.infn.it/~landnet/NMD/volume.pdf>

³⁹⁸ *The Security Situation In The Taiwan Strait* (Department of Defense, February 1999) 14.

³⁹⁹ Richard Boucher, *State Department Daily Press Briefing* (15 October 2003) 16. Available at: <http://www.state.gov/r/pa/prs/dpb/2003/25203.htm>

⁴⁰⁰ Robert Keith-Reid, “China Scraps Kiribati Satellite Tracking Station,” Associated Press (16 November 2003) np.

⁴⁰¹ *Country Profiles: China*, 16.

currently has no dedicated anti-satellite weapons; its only means of destroying or disabling a satellite, according to the US intelligence community, would be to launch a ballistic missile or space launch vehicle armed with a nuclear weapon.⁴⁰²

Chinese scientific and educational centers conduct basic research on technologies with anti-satellite implications. China conducted research during the 1970s on Project 640, which examined missile defense and anti-satellite systems, until Deng Xiaoping canceled the program. Current activities, inferred from press reports, scientific publications, and technology imports all suggest that current research on anti-satellites remains investigatory in nature.⁴⁰³ There are, broadly speaking, three types of anti-satellite weapons that China is sometimes said to be developing:

- *Laser programs* Specific Chinese programs for laser anti-satellites have not been identified. Intelligence reports are based on press articles and publications in scholarly journals.⁴⁰⁴ During the mid-1990s, China may have acquired high-energy laser equipment and technical assistance, which could be used in the development of ground-based anti-satellite weapons.⁴⁰⁵ Beijing may possess the capability to damage, under specific conditions, optical sensors on satellites that are very vulnerable to damage by lasers. But China is more than a

⁴⁰² *Annual Report On The Military Power Of The People's Republic Of China* (Department of Defense, June 2004). Unless otherwise noted, the claims regarding Chinese counterspace systems are drawn from this report.

⁴⁰³ The degree of Chinese development can be inferred from the 1998-2004 editions of *Chinese Military Power*, which contain little direct evidence of Chinese research on counterspace programs and couches most claims in the most tentative language. Claims made in the 1998-2004 editions of *Chinese Military Power* without citation or much detail; this section attempts to examine each claim in light of the available knowledge about Chinese space programs.

⁴⁰⁴ To my best guess, the articles in question are: Zhang Hongqi, "High Power Microwaves and Weaponry," *Xiandi Fangyu Jishu* (April 1994) 38-46 in *China Aeronautics and Missilery Abstracts* and "Beam Energy Weaponry as Powerful as Thunder and Lightening," *Jiefangjun Bao* (25 December 1995) FBSI-CHI-96-039.

⁴⁰⁵ "Chinese Military Power," (1998) 9.

decade away from developing “lasers that are capable of disabling the sensors on U.S. satellites.”⁴⁰⁶

- *Space-based parasitic satellites* Claims that China is working on a parasitic microsatellite are unconfirmed.⁴⁰⁷ Qinghua University, in Beijing, has built and launched two small satellites in cooperation with the British firm Surrey Satellite Technology Ltd. (SSTL). The first satellite, launched in 2000, contained a multi-spectral camera with 40 meter resolution to contribute to a constellation of SSTL remote sensing micro-satellites for natural disaster monitoring and mitigation.⁴⁰⁸ A second satellite, Naxing 1, was launched in April 2004. Naxing 1 is an experimental vehicle with mass under 25 kg to test small satellite technology.⁴⁰⁹
- *Co-orbital or direct-ascent weapons* China is said to be conducting research and development on a direct-ascent anti-satellite system that “could be fielded in the 2005-2010 timeframe.”⁴¹⁰ The Cox report that China could use existing ballistic missiles, such as the CSS-2, to develop what the Committee called a “direct ascent” system— although the system would operate like the Soviet co-orbital interceptor.

The activities described in open literature for all three programs fall within the first phase of the Chinese weapons development process, Theoretical Evaluation (See

⁴⁰⁶ Capt. Mike Doubleday, DASD (PA), *DoD News Briefing* (3 November 1998): http://www.fas.org/news/china/1998/t11031998_t103asd_3.html

⁴⁰⁷ The Department of Defense claims that it is “still investigating” a 2002 Hong Kong press report that China is working on a “parasitic micro-satellite.” However, Gregory Kulacki and David Wright at the Union of Concerned Scientists found that the report, as well as more than seventy other references, could be traced to a single website in China maintained by a self-described “space enthusiast” named Hong Chaofei. Gregory Kulacki and David Wright, *A Military Intelligence Failure? The Case of the Parasite Satellite* (Cambridge, MA: Union of Concerned Scientists, 16 August 2004). See also, Bradley Graham, “Some Question Report On Chinese Space Arms,” *Washington Post* (14 August 2004) A14.

⁴⁰⁸ You Zheng and M. Sweeting, “Initial Mission status analysis of 3-axis stable Tsinghua-1 Microsatellite,” The 14th Annual AIAA/Utah State University Conference on Small Satellites (2000). and Xiong Jianping *et al*, “On board computer Subsystem Design for the Tsinghua Nanosatellite,” 20th AIAA International Communication Satellite Systems Conference (12-15 May 2002).

⁴⁰⁹ *Jonathan’s Space Report* 524 (23 April 2004): <http://www.planet4589.org/space/jsr/back/news.524>

⁴¹⁰ Wang Jian, “US Pursuing Vigorous Development of Space Weapons,” *Renmin Ribao, Guangzhou South China News Supplement* (19 August 2002) FBIS-CHI-2002-0819 and Fang Fenghui, “Preparations for Military Struggle Assume New Importance in the Age of High-Tech Local Warfare,” *Jiefangjun Bao* (27 August 2002) 6, FBIS-CHI-2002-0819.

Figure 6-4: General Procedures For Weapons Development

1. Theoretical Evaluation (Lunzheng)
2. Program Phase (Fangan)
3. Engineering Development (Gongchang Yanzhi)
4. Design Finalization (Sher Dingxing)
5. Product Finalization (Shengchang Dingxing)

Adapted from: *Technological Base Resources—China: An Overview of the Military Products Research & Development System*, DST-18308-407-92 (Defense Intelligence Agency and Department of the Air Force, 10 February 1992) 9-12 and *People’s Republic of China People’s Liberation Army Air Force DIC-1300-445-91* (Defense Intelligence Agency, May 1991) 23-2-23-5 .

Figure 6-4: General Procedures For Weapons Development).⁴¹¹ It is not unusual for Chinese weapons development programs to remain in the first phase for many years—Project 640 appears to have remained in the first phase for more than a decade. There are some reports that anti-satellite work was moved to the national-level “863 Program for High Technology Development.”⁴¹² If true, that would support the hypothesis that Chinese anti-satellite work remains in the early stages of research and development.⁴¹³

The one exception may be the “direct ascent” anti-satellite —although all the available evidence suggests that this research also remains exploratory in nature.

⁴¹¹ Although DIA presents these steps as indicative of the entire Chinese RDT&E process, the information appears to reflect aircraft programs. Some variation may exist for ballistic missiles, missile defenses, anti-satellites and other special weapons programs. See: *Technological Base Resources—China: An Overview of the Military Products Research & Development System*, DST-18308-407-92 (Defense Intelligence Agency and Department of the Air Force, 10 February 1992) 9-12 and *People’s Republic of China People’s Liberation Army Air Force DIC-1300-445-91* (Defense Intelligence Agency, May 1991) 23-2-23-5 .

⁴¹² Stokes, *China’s Strategic Modernization*, 118.

⁴¹³ For a review of the 863 program, see: Kathleen Walsh, *Foreign High-Tech R&D In China: Risks, Rewards, And Implications For U.S.-China Relations* (Washington, DC: Henry L. Stimson Center 2003) 44-46.

The relatively strong claim that a Chinese direct ascent anti-satellite “could be fielded in the 2005-2010 timeframe” is belied by the lack of similar statements in other editions of *Chinese Military Power* and Congressional testimony by US Secretary of Defense Rumsfeld, who made no mention of the threat from co-orbital or direct ascent anti-satellites. Instead, Rumsfeld emphasized that “Adversaries are likely to develop ground-based lasers, space jamming and ‘killer’ micro-satellites to attack U.S. space assets.”⁴¹⁴

The lack of specific programs at this time suggests the Chinese are serious about their willingness to forgo anti-satellite weapons and that substantial investment in counterspace systems will require a major change in Chinese threat perceptions. Such changes could result from concerns about the survivability of Chinese strategic forces. In lieu of well-defined architectures for emerging missile defense and non-nuclear strike capabilities, China will continue to keep its counterspace options open and not commit to specific programs.

Crisis Stability Concerns

How would the American strategic forces such as those outlined by the Nuclear Posture Review interact with Chinese strategic forces equipped with a variety of countermeasures? Would the result be more or less stable? This question is difficult to answer with certainty, but there is reason to be concerned.

⁴¹⁴ Donald H. Rumsfeld, *Prepared Testimony Before House Appropriations Defense Subcommittee* (14 February 14, 2002): <http://www.defenselink.mil/speeches/2002/s20020214-secdef.html>

One potential source of instability is a Chinese “alert operation”—an operation undertaken to reduce the vulnerability of strategic forces to attack and to prepare them for potential use. Alert operations may be used to signal resolve in crisis, a potentially important function for Chinese leaders concerned about the confidence that US missile defense systems might create among US policy-makers during a crisis.

Alert operations are largely indistinguishable from actual preparations to launch an attack. Moreover, the principal benefit to the state placing its strategic forces on alert—increasing the ability to use nuclear weapons—is an incentive for its adversary to interfere with the operation. Given the increasing focus on pre-emption implicit in the *Nuclear Posture Review*, both through the advocacy of defenses and the addition of non-nuclear strike options, this concern is far from hypothetical. China’s mobile ballistic missiles would presumably be dispersed in a crisis, creating an incentive for the United States to attempt to catch CSS-X-10s in their garrisons and CSS-4s in their silos—particularly if the penetration packages associated with each missile were very effective against a US missile defense system. These incentives would be greater if US offensive and defensive capabilities were highly dependent on space-based assets vulnerable to Chinese anti-satellite weapons.

The potential for escalatory incentives was also present in US-Soviet strategic force interactions during the Cold War. Fortunately, alert operations have been exceptionally rare, occurring far less frequently than serious crises. Since the inception of the Defense Condition (DEFCON) system, US forces were placed on

Figure 6-5: Cold War Alerts to DEFCON 3 or Above

1. The “Unintended” DEFCON Alert	26 May 1960
2. The 1962 Cuban Missile Crisis	22 October – 20 November 1962
3. The “Madman Alert”	10 October 1969
4. The October 1973 Middle East War	24 October 1973

Scott D. Sagan, “Nuclear Alerts and Crisis Management,” *International Security* 9:4 (Spring 1985) 99-139 and Scott D. Sagan and Jeremi Suri, “The Madman Alert: Secrecy, Signaling and Safety in October 1969,” *International Security* 27:4 (Spring 2003) 150-183.

DEFCON 3 or above only four times, and never after 1973—until September 11, 2001 (Figure 6-5: Cold War Alerts to DEFCON 3 or Above).

Of the Cold War alerts, the first is considered unintentional, while the last two were attempted by the Nixon administration to signal resolve to the Soviet Union. Only the alert during the Cuban Missile crisis, during which SAC became the only command ever placed on DEFCON 2, occurred during a serious crisis. All of the Cold War alerts occurred more than thirty years ago, when the United States enjoyed substantial nuclear superiority that would overwhelm any Soviet incentive to initiate nuclear use.⁴¹⁵ Whether and to what extent the Soviet Union alerted its forces in response to American alerts and on other occasions remains unclear.⁴¹⁶

There is no evidence that the Chinese Second Artillery has ever been placed on alert. Although there are reports that Second Artillery units maintain “round the clock” alerts, the overall readiness of the Second Artillery to conduct nuclear

⁴¹⁵ Although this author is skeptical of the concept of nuclear superiority, even opponents of SALT II, who believed deeply both in the importance of nuclear superiority and that the Soviet Union had achieved it, argued that the United States did not begin to lose such superiority until after 1973. For example, see Nitze, “Assuring Strategic Stability,” 224-226.

⁴¹⁶ For a review of Soviet nuclear alerts, see Blair, *The Logic of Accidental Nuclear War*, 23-26.

operations remains very low—with ballistic missiles kept unfueled and with the warheads stored separately.⁴¹⁷ The reluctance of the Chinese leadership to place its nuclear forces on alert may reflect concerns, outlined in the introduction, that alert operations may risk unexpected and dangerous interactions during crisis. One passage in *Operational Studies* suggests this concern, stressing that units must “strictly follow” orders issued by the national command during alert operations.

Chinese strategic forces have not been structured in a way that would make alert operations meaningful. There is, consequently, the possibility future alert Chinese forces, in a deep crisis, may interact unexpectedly with American strategic forces. Without actual Second Artillery Chinese alerts as an historical reference, analysts must speculate about the impact that changes in the composition of Chinese forces, such as the introduction of mobile ballistic missiles and the improvement of command and control networks, will have for the Chinese alerting process and its interaction with its US counterpart.⁴¹⁸ At some point in a severe crisis, Chinese leaders probably plan to raise the alert level of Second Artillery forces to demonstrate their resolve and capability to retaliate in the event of a nuclear first strike. *Operational Studies* (2000) calls such alert operations “anti-nuclear deterrence

⁴¹⁷ Xue Litai, “Evolution of China’s Nuclear Strategy,” in *Strategic Views from the Second Tier: The Nuclear Weapons Policies of France, Britain, and China*, John C. Hopkins and Weixing Hu, editors (Transaction Publishers: New Brunswick, 1995) 178.

⁴¹⁸ This point was made by Blair in reference to US-Soviet strategic interactions, prior to his discover of Soviet alert operations. See Blair, “Alerting in Crisis ...,” 77.

combat” — “the military operation that shows our nuclear power and will.”⁴¹⁹ *Operational Studies* instructs commanders to “have the troops fully prepared for nuclear retaliation. Comprehensive and firm combat readiness is itself an important means and firm backing to show a strong resolve and will.”

In general, Chinese alert operations appear designed to increase the readiness of Chinese nuclear forces to conduct retaliatory strikes. based on press reports of Second Artillery Exercises, alert operations appear to involve the dispersal of CSS-2 (DF-3) and CSS-5 (DF-21) mobile ballistic missiles. In 1984, DIA reported that mobile Chinese missile units “practice quick reaction alert responses to sudden alert notification by withdrawing from their normal garrisons. Secretly deploying over a period of several hours or days to new launch positions that are unknown to the enemy, they may move hundreds of kilometers away from their home bases.”⁴²⁰ Indications of alert operations are rare in the Chinese press, although a 2001 press report describes an exercise in which Second Artillery “units hidden in various assembly areas rapidly moved to the launching position” after receiving orders issued by “the party Central Committee and the Central Military Commission.” According to the press report, the missiles “stood upright, fully prepared for any eventuality” for several hours while the unit received orders to “deal with various situations in a timely manner” before eventually being ordered to launch the

⁴¹⁹ All quotes are from Chapter 14 of *Operational Studies (Zhanyi xue)* (Beijing, National Defense University, 2000), unless otherwise noted.

⁴²⁰ *PLA Handbook*, 72.

missiles.⁴²¹ Large CSS-3 (DF-4) and CSS-4 (DF-5) ballistic missiles are not mobile and could not conduct such “guerilla tactics.” Raising alert rates for the silo-based CSS-4 (DF-5) probably entails fueling the missile, since the designers deliberately chose storeable liquid propellants that “offer the advantage of high readiness for the DF-5 and could be maintained in a launch mode for prolonged periods.”⁴²²

How changes in China’s strategic posture will affect alert operations is uncertain. China will probably keep CSS-X-10 mobile ballistic missiles in shelters during peacetime operations, dispersing them at some point in a crisis to conduct “anti-nuclear deterrence combat.” This is reportedly the practice maintained by the Russians. Chinese operating practices have, historically, been extremely conservative. Chinese interest in permissive action link (PAL) technology probably signals a desire to maintain control over Chinese nuclear weapons during alert operations, given the onus *Operational Studies* places on the Second Artillery units conducting alert operations “to strictly follow the intention and order of the supreme command and to comply with the need of political and diplomatic struggle.” If accounts suggesting that the Chinese have had difficulty developing PALs are accurate, China would be less likely to maintain continuous patrols and more reluctant to order alert operations.

⁴²¹ Dong Jushan and Wu Xudong, “Build New China’s Shield of Peace,” *Beijing Zhongguo Qingnian Bao* (1 July 2001) FBIS-CPP-2001-0703-000119. The report does not indicate how long the missiles remained on alert, but the launch order did not come until “late at night” suggesting the missiles were on alert for several hours.

⁴²² Lewis and Xue, “Strategic Weapons and Chinese Power: The Formative Years,” 550.

In addition to increasing the readiness of China's ballistic missile units, the Chinese would also increase the readiness of all other units that would participate in a strategic retaliatory strike, including those command elements and any units that would target US command-and-control assets. This would include preparations for use of any anti-satellite weapons, such as a decision to fuel co-orbital interceptors or prepare ground-based lasers.

The history of US alert operations suggests that alert operations have an inherent escalatory potential. In studies of the four US DEFCON-3 or higher alerts, Scott Sagan found that orders were frequently misunderstood or ambiguous events misinterpreted to confirm the sense of crisis. Recognizing that the potential for escalation provides some deterrent benefit, Sagan nonetheless concluded that policymakers must remain aware that "keeping the alert at the desired level will be extremely difficult, and the degree of further grave escalation uncertain."⁴²³ The inherent risk is captured by Kennedy's sardonic remark, upon learning that a U2 had strayed over Soviet airspace during the Cuban Missile Crisis: "There's always some son-of-a-bitch who doesn't get the message."⁴²⁴

A Naval War College exercise, held August 14-25, 2000, suggests one possible cataclysmic result from alert operations during a crisis, particularly in the presence of anti-satellite weapons. In the exercise, Red—a large Asian nation with over a

⁴²³ Sagan, *Alerts*, 136,

⁴²⁴ Sagan, *Limits of Safety*, 117-18

billion people—was conducting large-scale military exercises that Blue believed were a prelude to an attack on Brown, an island neighbor to Red and a US ally.⁴²⁵

Red strategic forces were configured to rely on ground-based lasers in an anti-satellite role to target extensive Blue space assets necessary for the conduct of coercive, strategic strikes. During these exercises, the commander of Blue Forces became concerned that Red was readying its ground-based lasers for use against Blue satellites. Although the press reports do not indicate whether Red also dispersed mobile ballistic missiles, dispersal might be seen as equally hostile. Fearing the loss of important space assets, the Blue commander ordered a *limited* preemptive strike — using a fleet of Common Aero Vehicles deployed in space — against suspected ground-based laser sites inside Red territory. At the same time, he refrained from striking other targets “rationalizing that the preemptive strike was only protecting high-value space assets, not initiating hostilities.”⁴²⁶ Such limited strikes are clearly part of the planning process. Although the Defense Science Board rejected a full-scale effort to disarm either Russia or China in a crisis, the Board concluded “the United States might seek to eliminate a portion of the WMD capability most threatening to a particular regional operation or ally.”⁴²⁷ This could include not just anti-satellite weapons, but perhaps mobile ballistic missiles shelters or selected command and control facilities.

⁴²⁵ Accounts of this war game are available in Kenneth Watman, “Global 2000,” *Naval War College Review* 54:2 (Spring 2001) 75-88 and William B. Scott, “Wargames Zero In On Knotty Milspace Issues,” *Aviation Week & Space Technology* 154:5 (29 January 2001) 52.

⁴²⁶ Scott, “Wargames Zero In...,” 52.

⁴²⁷ *Report of the Defense Science Board Task Force on Future Strategic Strike Forces*, 2-13.

The Blue Team was stunned when Red viewed the strike on targets deep inside its territory as an act of war and retaliated — causing a general war. One flabbergasted participant, sounding not completely convinced of what had just happened, reportedly explained: “We thought these preemptive strikes might very well have stopped the crisis situation. But there were some who had a different point of view — that the strikes may have been provocative.”⁴²⁸

It is important to note that the Chinese ability to disperse mobile ballistic missiles or conduct anti-command operations need not be effective to be destabilizing. The natural tendency of defense planners is to assume the worst. Although Blue claimed, after the game, that it acted on “unambiguous warning” of a threat to space assets, a relatively small risk of anti-nuclear deterrence operations undermining US freedom of action might create a strong incentive to use US space systems before they are lost.

Conclusion

Of course, this does not prove that future deployments will certainly be destabilizing. But *elements* in the US strategic forces modernization may create adverse incentives. Given the risks inherent in the proposed remedies, the burden of proof ought to rest with the advocates of the *Nuclear Posture Review* to demonstrate that their proposed modernization will enhance, rather than detract, from the crisis stability and the common interest in avoiding nuclear war.

⁴²⁸ Simon “Pete” Worden quoted in Scott, “Wargames Zero In ...,” 52.

In particular, advocates of the *Nuclear Posture Review* must reconcile their depiction of Chinese intentions and capabilities with the evidence marshaled in this study. If China maintains strategic forces off alert, at levels in the tens and in support of an operational doctrine that rejects the initiation of nuclear war under any circumstance, then Chinese nuclear weapons only deter the first use of American nuclear weapons. In that case, the only plausible rationale for strategic forces outlined in the *Nuclear Posture Review* is to support a doctrine for US strategic forces that includes options for the first use of nuclear weapons, either for coercion or a preventive strike against Chinese strategic forces. This is certainly the conclusion drawn by Chinese officials and scholars, who may choose, eventually, to alter the Chinese arsenal in response and in ways that would reduce American security. There is no evidence, yet, that China is doing so; in fact, the response of the Chinese government appears limited to a diplomatic initiative in Geneva, which is considered in the next chapter.

Chapter 7: A Legal Undertaking to Prevent an Arms Race in Outer Space

We believe that at present the priority issue is that of securing a common understanding by means of a legal undertaking or instrument on the need to prevent the weaponization of and an arms race in outer space.

Hu Xiaodi, *Statement at the Informal Plenary of the Conference on Disarmament May 2004*⁴²⁹

In March 1999, the Chinese Delegation to the Conference on Disarmament (CD) announced that it would not support adoption of a work program for the CD that did not include an ad hoc committee with a mandate to negotiate a “legal instrument on the prevention of an arms race in outer space.” The sudden obstruction was a change for the Chinese Delegation, which prior to 1999 had played a largely constructive role in efforts to develop a program of work.

In the preceding chapters, I have suggested that Chinese strategic force deployments and arms control policies were complementary efforts to construct and then preserve what Marshal Nie called “the minimum means of reprisal.” The March 1999 statement was, in all likelihood, the culmination of growing concern about the potential of US missile defense systems to someday threaten those means. Chinese leaders have yet to alter their strategic force deployments in response to missile defenses and other modernization programs. Chinese arms control policies, however, have changed—China’s new position in Geneva closely followed a January

⁴²⁹ Hu Xiaodi, *Statement at the Informal Plenary of the Conference on Disarmament on Item3 “Preventing an Arms Race in Outer Space”* (Geneva, Switzerland: 27 May 2004). Available at: <http://www.china-un.ch/eng/65284.html>

1999 announcement by Secretary of Defense William Cohen of significant changes to US missile defense programs, which was, itself, a response to growing political pressure in the United States.

Until March 1999, China's post-CTBT arms control policies focused on bilateral proposals regarding the mutual no-first use of nuclear weapons and opening the ABM Treaty for Chinese adherence.⁴³⁰ The shift in strategy was lost in the United States—perhaps in the strain on Sino-American relations during the run-up to Operation Allied Force.⁴³¹ Although China has since softened its demand for an explicit mandate to negotiate a legal instrument concerning the prevention of an arms race in outer space, China continues to maintain the substantive position that a new, legally binding instrument is necessary.

This chapter draws largely on official Chinese government working papers submitted to the Conference on Disarmament, as well as other official statements and a series of interviews conducted in Beijing and Geneva, to describe and analyze

⁴³⁰ In January 1994, China formally submitted a draft "Treaty on the Mutual No-First Use of Nuclear Weapons" to the United States, Russia, France and Britain. The Presidents of China and the Russian Federation undertook, in September 1994, not to be the first to use nuclear weapons against each other or target their nuclear weapons at each other. China pressed again, in 1998, for an agreement, which led to the June 1998 "de-targeting" agreement. "China, U.S. Should Sign No-first-use Pact," (Washington, DC: Embassy of the People's Republic of China, 18 June 1998): <http://www.china-embassy.org/eng/7063.html>. On Chinese views of no-first use, see: Li "Visible Evidences of No-First-Use Nuclear Strategies," 44-45; Wu, "On No-First-Use Treaty," np; Pan, "On China's No First Use of Nuclear Weapons," np; and a pair of electronic essays, published by the Stimson Center but regrettably no longer available on-line: *No-First-Use and China's Security* by Liu Huaqiu and *China's Negative Security Assurances* by Shen Dingli (no date; about 1998).

⁴³¹ The Council on Foreign Relations, for example, published a study entitled *China, Nuclear Weapons and Arms Control* that did not refer to Chinese proposals in Geneva or the Chinese position regarding the non-weaponization of outer space. Manning, Montaperto and Roberts, *China, Nuclear Weapons and Arms Control*.

that position. The basic outline of the Chinese position in Geneva is found in five working papers submitted to the Conference on Disarmament:

- CD/579: *China's Basic Position on the Prevention of an Arms Race in Outer Space* (15 March 1985)
- CD/1606: *China's Position on and Suggestions for Ways to Address the Issue of Prevention of an Arms Race in Outer Space at the Conference on Disarmament* (9 February 2000)
- CD/1645: *Possible Elements of the Future International Legal Instrument on the Prevention of the Weaponization of Outer Space* (7 June 2001)
- CD/1679: *Possible Elements for a Future International Legal Agreement on the Prevention of the Deployment of Weapons in Outer Space, the Threat or Use of Force Against Outer Space Objects* (23 June 2002)⁴³²
- *Unofficial Annex: Compilation of Comments and Suggestions to the CD Working Paper CD/1679* (31 July 2003)⁴³³

These documents are reproduced in the appendix. On the whole, these working papers present a coherent view of the threats to China's deterrent from space systems. These working papers suggest that the procedural obstruction in Geneva regarding outer space reflected Beijing's continuing concern about the viability of its deterrent and was designed to induce a dialogue on strategic issues that is otherwise absent in US-China relations.⁴³⁴

⁴³² Working Paper Presented By The Delegations Of China, The Russian Federation, Vietnam, Indonesia, Belarus, Zimbabwe And Syria. Reproduced in the Appendix.

⁴³³ Compiled by the Delegations of China and the Russian Federation

⁴³⁴ Following a May 2001 consultation regarding US missile defense plans with Assistant Secretary of State for East Asian and Pacific Affairs James Kelly, the Chinese government expressed a desire to make such consultations more frequent in the future. See: Wade Boese, "Missile Defense Consultations Abroad Yield Little Progress," *Arms Control Today* (June 2001) 19 and "Missile meeting ends in stalemate," *BBC News* (15 May 2001): <http://news.bbc.co.uk/1/hi/world/asia-pacific/1331585.stm>

Chinese Working Papers

China's working papers on outer space have been issued episodically. The first working paper (CD/579) was submitted in 1985, following President Reagan's "Star Wars" speech. Fifteen years later, in 2000-2001, China issued a pair of working papers (CD/1606 & CD/1645), followed by a joint working paper (CD/1679) issued with the Russian Federation and five other delegations in 2002. The Chinese working papers span almost two decades but reflect a consistent concern that space systems might be used to achieve nuclear superiority that would subject the Chinese leadership to what they view as the "nuclear blackmail" experienced during the 1950s.

1985: CD/579

President Reagan's announcement of the Strategic Defense Initiative (SDI) in 1983 appears to have unnerved many Chinese analysts. Contemporary interviews with Chinese officials and academics reveal that the Chinese elite saw SDI as an "attempt to achieve clear nuclear superiority over the Soviet Union and understand such superiority to mean a first strike capability"—a view consistent with long-standing Chinese concerns about so-called nuclear blackmail.⁴³⁵ Chinese concern about the SDI was probably related both to the objective threat to China's deterrent posed by SDI, as well as the legacy of the Johnson Administration's decision to focus

⁴³⁵ Bonnie S. Glaser and Banning N. Garrett, "Chinese Perspectives on the Strategic Defense Initiative," *Problems of Communism* 35:2 (March/April 1986) 28-44 and John Garver, "China's Response to the Strategic Defense Initiative," *Asian Survey* XXVI:11 (November 1986) 1220-1239.

on a notional ICBM threat from China as the principle rationale for the Sentinel missile defense system.⁴³⁶

In March 1985, China submitted a working paper to the Conference on Disarmament, CD/579, *China's Basic Position on the Prevention of an Arms Race in Outer Space*, outlining the emerging threat from anti-ballistic missile and anti-satellite systems.⁴³⁷ This document contains most of the essential features of the current Chinese position in outer space, focusing heavily on the development of technologies to intercept ballistic missiles and satellites in outer space.

CD/579 expressed Chinese support for “the exclusive use of outer space for peaceful purposes.” Although this broad interpretation would require the limitation of “military satellites of all types”, the Chinese proposal accepted that the “complexities” of doing so would permit that question to be deferred indefinitely. Instead, CD/579 focused on a single, core obligation—“banning the development, testing, production, deployment and use of any space weapons and the thorough destruction of all space weapons.” “Space weapons” were defined as:

... all devices or installations either space-, land-, sea-, or atmosphere-based, which are designed to attack or damage spacecraft in outer space, or disrupt their normal functioning, or change their orbits; and all devices or installations based in space (including those based on the moon and other celestial bodies) which are designed to attack or damage objects in the atmosphere, or on land, or at sea, or disrupt their normal functioning.

⁴³⁶ An actual Chinese ICBM threat would not emerge until after the system, by then reconfigured as Safeguard, had been shut down.

⁴³⁷ Reproduced in the Appendix.

CD/579 set out the requirement for a new agreement, established the CD as the appropriate forum, and called on the United States and the Soviet Union to honor “special responsibilities” for the prevention of an arms race in outer space. All countries were called on to “refrain from developing, testing and deploying space weapons.”

As SDI evolved into less ambitious missile defense architectures, Chinese diplomatic efforts shifted toward more general efforts to manage the threat from offensive systems through the 1990s. China pressed to include negative security assurances in the text of the Comprehensive Test Ban Treaty and, in 1994, submitted draft “no-first-use” treaties to the other NPT nuclear weapons states. China again pressed the United States for a bilateral no-first-use agreement, before settling in 1998 for a mutual “non-targeting” agreement.⁴³⁸ At the same time, China continued to object to the development of various successor systems to SDI. For example, in 1992, China expressed concern that the Global Protection Against Limited Strikes (GPALS) system “would not be totally defensive, and that its development would inevitably give rise to mutual suspicion among states.”⁴³⁹

⁴³⁸ On earlier Chinese refusals to accept a non-targeting agreement in place of a no-first use pledge, see: Howard Diamond, “Sino-U.S. Summit Yields Modest Advances in Arms Control Agenda,” *Arms Control Today* (June/July 1998) 23.

⁴³⁹ *The United Nations Disarmament Yearbook* 17 (New York: United Nations Department of Political Affairs 1992) 198.

2000-2001: CD/1606 & CD/1645

During the late 1990s, Chinese concern about missile defense and anti-satellite technologies re-emerged in response to the growing political pressure in the United States. That pressure culminated in 1999. In January, US Secretary of Defense William Cohen announced that the Administration would seek \$6.6 billion over 2000-2005 for *deployment* of a national missile defense (previous funding had been restricted to research and development) and would explore the “nature and scope” of modifications to the ABM Treaty.⁴⁴⁰ In July, President Clinton signed the National Missile Defense Act of 1999 (Public Law 106-38), which made it “the policy of the United States to deploy as soon as is technologically possible” a missile defense system.⁴⁴¹ In May, following Cohen’s announcement and during the debate over the Missile Defense Act of 1999, the Chinese Delegation announced that China would withhold its consent from any work plan in the CD that did not include negotiations on an agenda item to “prevent of an arms race in outer space.” In early 2000, the Chinese government submitted a new working paper, CD/1606: *China’s Position on and Suggestions for Ways to Address the Issue of Prevention of an Arms Race in Outer Space at the Conference on Disarmament*, that updated the 1985 working paper. CD/1606 was, itself, modified the next year with CD/1645: *Possible Elements of the*

⁴⁴⁰ Craig Cerniello, “Cohen Announces NMD Restructuring, Funding Boost,” *Arms Control Today* (January/February 1999) 20.

⁴⁴¹ Public Law 106-38, National Missile Defense Act of 1999. Available at: <http://thomas.loc.gov/cgi-bin/query/z?c106:S.269.PCS>:

Future International Legal Instrument on the Prevention of the Weaponization of Outer Space.

CD/1606 and CD/1645 largely repeated the spirit and emphasis of the 1985 document, with three significant elaborations that suggest the Chinese focus was, initially, to induce a dialogue about restricting missile defense deployments. CD/1606 bans the testing, deployment and use of space “weapons, weapon systems or their components”—a specific choice of wording that also appears in the 1972 ABM Treaty’s obligation “not to deploy ABM systems or their components.” To the extent that a missile defense interceptor is a weapon, the Chinese draft would prohibit the United States from basing the system or any of its components—including sensors—in space. Both Space Based Infrared System-High and -Low (now the Space Tracking and Surveillance System) would have been “components” under the Chinese definition, since the latter was considered a prohibited component under the 1972 ABM Treaty.⁴⁴²

CD/1645 also included an obligation “not to use any objects launched into orbit to directly participate in combatant activities.” Chinese Ambassador to the CD Hu Xiaodi explained that, from the Chinese perspective, “laser, particle beam, kinetic weapons, high precision targeting and guidance, remote sensing and

⁴⁴² See: John B. Rhinelander, *Statement Before The International Security, Proliferation And Federal Services Subcommittee Of The Senate Committee On Governmental Affairs* (28 April 1999): http://www.senate.gov/~gov_affairs/042899_rhinelander_testimony.htm

detecting, etc., all are space weapons and weapon systems” [sic].⁴⁴³ At the same time, the CD/1645 also reiterated the Chinese willingness to defer discussions about other military uses of outer space and contained a new proposal for an article on “permissible activities” that would “distinguish between activities that are prohibited and those that are not” in the military arena.

Finally, the documents proposed confidence-building measures, but deferred discussion of verification provisions to a future date. The confidence building measures in the 2000 and 2001 working papers—which permitted state parties to publish information about their space programs, declare the locations of space launch sites, and provide notification and basic information about objects launched into outer space—are almost identical to those provided for by the *International Code of Conduct Against Ballistic Missile Proliferation* (Hague Code) (see Figure 7-1: Confidence Building Measures in the *Hague Code*).

The Chinese Government rejected the Hague Code on the grounds that the transparency measures were obligatory.⁴⁴⁴ China may have been seeking to preserve transparency measures as a future concession to alter US missile defense policy:

⁴⁴³ A transcript of Hu’s remarks before the NGO Committee on Peace and Disarmament panel *A Treaty To Prohibit Weapons And War In Space?* (11 October 2001) can be found at the NGO Committee on Disarmament website: <http://www.igc.org/disarm/T101101os3.html>

⁴⁴⁴ Liu Jieyi, Remarks at the Carnegie International Nonproliferation Conference (Washington, DC: Carnegie Endowment, 14 November 2002). Available at: <http://www.ceip.org/files/projects/npp/pdf/conference/loi.pdf>

Figure 7-1: Confidence Building Measures in the Hague Code

“Transparency measures as follows, with an appropriate and sufficient degree of detail to increase confidence and to promote non-proliferation of Ballistic Missiles capable of delivering weapons of mass destruction:

“i) With respect to Ballistic Missile programmes to:

- make an annual declaration providing an outline of their Ballistic Missile policies.

Examples of openness in such declarations might be relevant information on Ballistic Missile systems and land (test-) launch sites;

- provide annual information on the number and generic class of Ballistic Missiles launched during the preceding year, as declared in conformity with the pre-launch notification mechanism referred to hereunder, in tiret iii);

“ii) With respect to expendable Space Launch Vehicle programmes, and consistent with commercial and economic confidentiality principles, to:

- make an annual declaration providing an outline of their Space Launch Vehicle policies and land (test-) launch sites;
- provide annual information on the number and generic class of Space Launch Vehicles launched during the preceding year, as declared in conformity with the pre-launch notification mechanism referred to hereunder, in tiret iii);
- consider, on a voluntary basis (including on the degree of access permitted), inviting international observers to their land (test-) launch sites;

“iii) With respect to their Ballistic Missile and Space Launch Vehicle programmes to:

- exchange pre-launch notifications on their Ballistic Missile and Space Launch Vehicle launches and test flights. These notifications should include such information as the generic class of the Ballistic Missile or Space Launch Vehicle, the planned launch notification window, the launch area and the planned direction.”

Note: CD/1645 calls for confidence building measures “to enhance mutual trust”, stating “each State Party shall promulgate its space programme, declare the locations and scopes of its space launch sites, the property and parameters of objects to be launched into outer space, and notify the launching activities.” See: CD/1645: *Possible Elements of the Future International Legal Instrument on the Prevention of the Weaponization of Outer Space* (7 June 2001).

The Hague Code was initially promoted as a multilateral diplomatic alternative to missile defense systems; when the successful negotiation of the code produced no change in US missile defense policy, the Chinese government may have withheld support to preserve its leverage in negotiations over missile defenses.⁴⁴⁵

⁴⁴⁵ Undersecretary of State John Bolton made clear that although the ICOC was “an important addition” to nonproliferation efforts, an equally “important element is missile defense. We view our missile Bolton, John R. *Remarks at the Launching Conference for the International Code of Conduct Against Ballistic*

2002-2003: CD/1679 and the Unofficial Annex

In 2002, along with the Russian Federation and five other delegations, China issued a draft working paper, *CD/1679: Possible Elements for a Future International Legal Agreement on the Prevention of the Deployment of Weapons in Outer Space, the Threat or Use of Force Against Outer Space Objects*. CD/1679 represented an amalgam of Russian and Chinese positions that often differed in wording and approach—though not in substance. The two delegations later issued an unofficial annex to the document that compiled comments of other states, *Compilation of Comments and Suggestions to the CD Working Paper CD/1679*. CD/1679 contained some suggestions that referenced wording from previous Chinese documents. Overall, the working paper reaffirms the positions outlined in previous working papers issued by the Chinese, though it also drew on language from Soviet draft treaties submitted to the United Nations General Assembly in the early 1980s.⁴⁴⁶

The obligations themselves are framed somewhat differently, probably to reconcile different approaches taken by prior Russian and Chinese drafts (See Figure 7-2: Obligations and Definitions in Selected Chinese Working Papers Submitted to the CD).⁴⁴⁷ Under CD/1679, parties would undertake:

Missile Proliferation (The Hague, Netherlands: 25 November 2002). Available at: <http://www.uspolicy.be/Issues/ND/bolton.112502.htm>

⁴⁴⁶ See: *Soviet Draft Treaty on the Prohibition of the Use of Force in Outer Space and From Space Against the Earth*, U.N. General Assembly document A/38/194 (22 August 1983).

⁴⁴⁷ On Soviet drafts, see: *Anti-Satellite Weapons, Countermeasures, and Arms Control* (Washington, DC: Office of Technology Assessment, September 1985) 96-99 and *Arms Control in Space* (Washington, DC: Office of Technology Assessment, May 1984) 25-27

- Not to place in orbit around the Earth any objects carrying any kinds of weapons, not to install such weapons on celestial bodies, or not to station such weapons in outer space in any other manner.
- Not to resort to the threat or use of force against outer space objects.
- Not to assist or encourage other States, groups of States, or international organizations to participate in activities prohibited by this Treaty.

These obligations are somewhat less comprehensive in scope, restricting only deployment. Research, testing, and development of space-based weapons and anti-satellite weapons would be permitted, as would the deployment of ground based anti-ballistic missile systems.⁴⁴⁸

The unofficial annex contains suggestions for strengthening these obligations. The annex suggests restrictions on testing, production, deployment, transfer, and use “to elaborate the intended prohibitions” on the deployment of weapons in outer space. The annex also suggests that the second obligation could be strengthened to preclude “temporary operational disruption, displacement or other non-damaging interference with a space object by another space object” and to “include the testing of any weapons against space objects or “for anti-satellite purposes.”

⁴⁴⁸ While early Chinese drafts would have restricted theater missile defenses, the Soviet-era submissions permitted ground-based missile defenses. The current draft is probably compatible with Russian Federation efforts to promote a regional theater missile defense for Europe. On Chinese restrictions on TMD, see: Li Changhe, “Statement at the Conference on Disarmament,” in *Final Record of the 803rd Plenary Meeting of Conference on Disarmament* CD/PV.803 (Geneva, Switzerland: 13 August 1998) 2-5; For a review of Russian proposals for proposal for a “European Theater Ballistic Missile Defense (EuroPro) system,” see: Nikolai Sokov, *Russian Missile Defense For Europe: The February 20 Proposal Is More Serious Than It Seems*, Center for Nonproliferation Studies Report (14 March 2001) and Victor Mizin, *Russian Cooperative Proposals for Missile Defenses with NATO, European BMD: “EuroPro”—Any “Contra”?* (Southampton, UK: Mountbatten Centre for International Studies, 2000). For Chinese commentary on these proposals, see: Sha Zukang, *Transcript Briefing on Missile Defense Issue* (Beijing, China: 23 March 2001).

Figure 7-2: Obligations and Definitions in Selected Chinese Working Papers Submitted to the CD

CD/579
(15 March 1985)

CD/1645
(7 June 2001)

CD/1679
(23 June 2002)

At the present stage, the primary objective in the efforts to prevent an arms race in outer space should be “the de-weaponization of outer space”, i.e. banning the development, testing, production, deployment and use of any space weapons and the thorough destruction of all space weapons.

- Not to test, deploy or use in outer space any weapons, weapon systems or their components.
- Not to test, deploy or use on land, in sea or atmosphere any weapons, weapon systems or their components that can be used for war-fighting in outer space.
- Not to use any objects launched into orbit to directly participate in combatant activities.
- Not to assist or encourage other countries, regions, international organizations or entities to participate in activities prohibited by this legal instrument.

- Not to place in orbit around the Earth any objects carrying any kinds of weapons, not to install such weapons on celestial bodies, or not to station such weapons in outer space in any other manner.
- Not to resort to the threat or use of force against outer space objects.
- Not to assist or encourage other States, groups of States, international organizations to participate in activities prohibited by this Treaty.

The aforesaid space weapons should include all devices or installations either space-, land-, sea-, or atmosphere-based, which are designed to attack or damage spacecraft in outer space, or disrupt their normal functioning, or change their orbits; and all devices or installations based in space (including those based on the moon and other celestial bodies) which are designed to attack or damage objects in the atmosphere, or on land, or at sea, or disrupt their normal functioning.

- Outer space is the space above the earth's atmosphere, i.e. space 100km above the sea level of the earth.
- Weapons are devices or facilities that strike, destroy or disrupt directly the normal functions of a target by various destructive ways.
- Weapon systems are the collective of weapons and their indispensably linked parts that jointly accomplish battle missions.
- Components of weapon systems are subsystems that directly and indispensably involved in accomplishing battle missions.

Documents are reproduced in the Appendix.

The substantive equivalence of the two document pairs—the Chinese documents issued in 2000-2001 and the Sino-Russian documents issued in 2002-2003—is evident in how those documents treat permissible military activities in outer space. Although the Sino-Russian working paper is, *prima facie*, more permissive by permitting all military uses “not prohibited by this Treaty,” the Russian statement accompanying CD/1679 articulated the same test for permissible activities as CD/1606, which suggests permissible activities should require affirmative approval. Although this difference is not trivial in a negotiating context, the more restrictive language does not appear designed to exclude military missions in outer space beyond anti-ballistic missile and anti-satellite missions. Just as CD/1606 recognized that “military satellites involve rather complex issues and their role should not be all together negated,” the Russian delegate to the CD endorsed “auxiliary” military uses that are “applied to maintain strategic stability [such as arms control] in the world.” But, the Russian representative added, that endorsement did “not mean, not at all, that military activities in outer space should be used to obtain the superiority in force.”⁴⁴⁹

The Sino-Russian working paper does not contain any discussion of verification measures. The annex merely notes the suggestion by some countries that verification would be an important element, but notes that specific verification

⁴⁴⁹ Leonid Skotnikov, “Statement at the Conference on Disarmament” in *Final Record of the 907th Plenary Meeting of Conference on Disarmament* CD/PV.907 (Geneva, Switzerland: 27 June 2002) 19-21. Available at: <http://www.in.mid.ru/Bl.nsf/arh/FDC3CF91FADC6EC443256BE600374C1F?OpenDocument> See also: Hu Xiaodi, , “Statement at the Conference on Disarmament,” in *Final Record of the 907th Plenary Meeting of Conference on Disarmament* CD/PV.907 (Geneva, Switzerland: 27 June 2002) 17-19.

measures would depend upon the “the obligations to be verified and the level of confidence to be required.”

Analyzing China’s Arms Control Proposals

The Chinese position is best viewed as a mechanism to address Chinese concerns about the US strategic forces modernization begun under the Clinton Administration and codified in the Bush Administration’s 2001 *Nuclear Posture Review*. Although some observers dismiss the proposals as “a delaying tactic aimed at hampering American progress on ballistic-missile defense,” a plausible case can be made that the Chinese proposal is designed to induce a dialogue about strategic stability.⁴⁵⁰ American missile defense deployments are important, but only as part of a broader Chinese concern about the security of the China’s deterrent. This concern extends to other elements of the 2001 *Nuclear Posture Review*’s “New Triad.”

Appropriate Forum and Agenda Items

Perhaps the most important conclusion that can be drawn from the Chinese working paper is that the Chinese government *did react* to the possibility of US missile defense deployments—though perhaps not in the manner many US observers expected. While Bush Administration officials have denied that Chinese actions are linked to US missile defense developments including US withdrawal

⁴⁵⁰ “a delaying tactic ...” Larry Wortzel, *China Waging War on Space-Based Weapons* (11 August 2003). Available at: <http://www.heritage.org/Press/Commentary/ed081103b.cfm?RenderforPrint=1>

from the ABM Treaty, the working papers submitted by the Chinese government, and the subtle changes in strategy those working papers represent, suggest that the Chinese are reacting in the forum they consider appropriate, under the agenda item they consider relevant.⁴⁵¹

Since 1999, China has sought a multilateral treaty regarding the military use of outer space. The change in the Chinese position followed a major foreign policy address by Jiang Zemin, then the Chinese Head of State, before the Conference on Disarmament. During his remarks, Jiang issued a very strong warning that:

The research, development, deployment and proliferation of sophisticated anti-missile systems and the revision of, or even withdrawal from, the existing disarmament treaties on which global strategic equilibrium hinges will inevitably exert an extensive negative impact on international security and stability and trigger off a new round of arms race in new areas, thereby seriously obstructing or neutralizing international efforts of nuclear disarmament and nuclear non-proliferation.⁴⁵²

In hindsight, the subsequent change in the Chinese negotiating position in Geneva suggests Jiang's choice of venue was not a coincidence. China had abandoned the unsuccessful effort, conducted over 1994-1998, to extract a pledge from the United States to refrain from the first use of nuclear weapons.

The decision to shift from a bilateral strategy to a multilateral one may have reflected the state of relations between the United States and China. Relations

⁴⁵¹ See Paul D. Wolfowitz, Remarks to the Frontiers of Freedom, Dirksen Senate Office Building, Washington, DC, Thursday (24 October 2002) and Donald H. Rumsfeld, *Secretary Rumsfeld Interview with Group of Reporters*, Washington, DC (July 11, 2001).

⁴⁵² Jiang Zemin, "Promote Disarmament Process and Safeguard World Security, Address at the Conference on Disarmament," in *Final Record of the 822nd Plenary Meeting of Conference on Disarmament CD/PV.822* (Geneva, Switzerland: 26 March 1999) 2-5.

declined during the 1990s, ostensibly because of concerns about alleged export control violations and Chinese espionage at nuclear laboratories. Whatever motive or merit the charges had, these allegations resulted in a Congressional investigation that produced the *Final Report of The United States House of Representatives Select Committee on U.S. National Security and Military/Commercial Concerns with the People's Republic of China* (The Cox Report) and a lengthy rebuttal by the Chinese government entitled, *Facts Speak Louder Than Words and Lies Will Collapse by Themselves*.⁴⁵³

As multilateral forums go, the Conference on Disarmament—which the Director-General of China's Department of Arms Control and Disarmament in the Chinese Ministry of Foreign Affairs described as “the sole multilateral arms control negotiating forum”—offers a number of advantages.⁴⁵⁴ The CD operates with rules that require consensus, which gives China comparative leverage to hold at risk agenda items that the US presumably values, and a broad membership that includes Russia, as well as some US allies sympathetic to Chinese concerns. The timing of the Sino-Russian working paper is also instructive. It followed the *2002 Moscow Treaty*. China may have been attempting to shore up a “common front” with Russia, in the wake of a treaty some in the Bush Administration treated as a *de facto* Russian

⁴⁵³ See: *Final Report of The United States House of Representatives Select Committee on U.S. National Security and Military/Commercial Concerns with the People's Republic of China*, House Report 105-851 (Washington, DC: Government Printing Office, January 1999). Available at: <http://www.access.gpo.gov/congress/house/hr105851/> and *Facts Speak Louder Than Words and Lies Will Collapse by Themselves—Further Refutation of the Cox Report* (Beijing, China: Information Office of the State Council, 15 July 1999). Available at: <http://www1.china.org.cn/Beijing-Review/Beijing/BeijingReview/99Jul/bjr99-30e-11.html>

⁴⁵⁴ Liu Jieyi, “Interview: Director Liu Jieyi on Disarmament and Arms Control Conducted by Phillip Saunders,” *The Nonproliferation Review* 11:1 (Spring 2004) 8.

acceptance of American missile defense deployments. Finally, China might have expected that negotiations in the CD would create a venue for informal P5 consultations like the ones that marked CTBT negotiations.

“Preventing an arms race in outer space” is a plausible agenda item under which to address the question of strategic force modernization. Space systems play an important role in enabling both anti-ballistic missile and long-range precision strike missions.⁴⁵⁵ SDI was historically associated with space-based assets because of the inherent benefits in terms of global, prompt coverage conferred by space-basing. Even the current ground-based midcourse defense depends heavily on space-based sensors. Current Missile Defense Agency plans include space-based interceptor options in Block 2012 configuration, beginning with a constellation of 3-6 space-based interceptors in orbit in the 2011-2012.⁴⁵⁶ A classified Space-based Laser (SBL) program may also exist within the Missile Defense Agency’s *Advanced Concepts, Evaluation and Systems* (ACES) program element.⁴⁵⁷ Similarly, long-range precision strike capabilities will require space-based platforms for intelligence and

⁴⁵⁵ For an American expression of this idea, see: Simon P. Worden and Martin E. B. France, “Towards an Evolving Deterrence Strategy: Space and Information Dominance,” *Comparative Strategy* 20:5 (October-December 2001) 453-466.

⁴⁵⁶ FY 2005 MDA R-2, PE 0603886C, Ballistic Missile Defense System (BMDS) Interceptor (February 2004) 2.

⁴⁵⁷ The *Ottawa Citizen* reported that a Canadian Department of National Defence briefing speculated that SBL had been classified. An MDA official objected to the report on the grounds that MDA had “no plan to deploy a space-based laser system for missile defence,” but did not deny that MDA was conducted SBL related RDT&E and MDA has not provided details about how the \$256.0 M in classified missile defense spending is dispensed. See: David Pugliese, “U.S. wants to build space laser in total secrecy: Weapon could be in use before it’s made public, Canadian military fears,” *Ottawa Citizen* (1 June 2004) A1 and Richard Lehner, “U.S. has no plans for space-based laser defence,” *The Ottawa Citizen* (4 June 2004) A15.

communications, even if space-based strike platforms remain many years from deployment.

The Chinese decision to pursue a dialogue about strategic stability through negotiations may also reflect the historical organization of Chinese research efforts. These efforts administered anti-ballistic missile and anti-satellite research under a single program, numbered 640, which ended in the 1980s.⁴⁵⁸ In fact, the technologies for intercepting satellites and ballistic missiles are quite similar.⁴⁵⁹

The American tendency to treat missile defense and outer space appears to some Chinese observers as deceptive.⁴⁶⁰ Chinese officials and academics often express skepticism about the stated rationale for both missile defense and space control programs. In the case of outer space, the Chinese Ambassador to the CD questioned Administration officials who warned of a “space Pearl Harbor” — “If any country is really worried about possible menace to its space interests, this could certainly be alleviated through the negotiation and conclusion of a treaty on the

⁴⁵⁸ For basic information about the “640 program”, see Lewis and Xue, *China’s Strategic Seapower*, 182 and Stokes, *China’s Strategic Modernization*, 118.

⁴⁵⁹ David Wright and Laura Grego, “Anti-Satellite Capabilities of Planned US Missile Defence Systems,” *Disarmament Diplomacy* 68 (December 2002-January 2003) 7-10.

⁴⁶⁰ For example, Rumsfeld told KNBC-TV reporter Conan Nolan:

The report that is the foundation for the ballistic missile defense issue is the Ballistic Missile Threat Commission, and it pointed out that a number of countries will be getting weapons of mass destruction and ballistic missiles to deliver them within the coming period of years.

The Space Commission report that I chaired had nothing to do with anything other than how the United States government and the Pentagon are organized to deal with space issues. It did not change U.S. space policy at all. Indeed, the space policy today is identical to what it was during the prior administration. Donald H. Rumsfeld, *Secretary Rumsfeld Interview with KNBC-TV Los Angeles* (August 14, 2001).

prevention of space weaponization, as suggested by China.” He suggested, however, that “the real motivation towards outer space is to defy the obligations of international legal instruments and seek unilateral and absolute military and strategic superiority based on the political, economic and military strength...”⁴⁶¹

Scope of Obligations

Outer space is a plausible agenda item under which to address strategic force modernization. A similarly plausible case can be made that the Chinese support outer space negotiations for a relatively straightforward arms control rationale. Past Chinese nuclear weapons deployments and negotiating behavior in the CD both suggest Chinese policy-makers strive to preserve a small retaliatory force capable of providing a basic measure of deterrence against nuclear attack. Some upper bound on the capability of anti-ballistic missile and precision strike systems would reassure Chinese leaders that the United States was not seeking the capability to deny those means to the Chinese.

This commitment could also have been embodied as a political commitment along the lines of a no-first use agreement, which would have built on the 1998 “non-targeting” agreement signed by Presidents Jiang and Clinton.⁴⁶² A legal instrument concerning the prevention of an arms race in outer space would not provide the

⁴⁶¹ Hu Xiaodi, “Statement at the Conference on Disarmament,” in *Final Record of the 876th Plenary Meeting of Conference on Disarmament CD/PV.876* (Geneva, Switzerland: 7 June 2001) 2-5.

⁴⁶² See: *Fact Sheet: Achievements Of U.S.-China Summit* (The White House, Office of the Press Secretary Beijing, China: 27 June 1998).

clarity of a no-first use declaration, but would provide observable evidence of reassurance.

Chinese leaders, with a preference for centralized control of nuclear forces over readiness, should prefer an arms control solution. The alternative, where Chinese and American strategic forces were drawn into day-to-day operational confrontation, would require a large investment in and greater sacrifice of control over China's strategic forces. This preference has been an enduring feature of Chinese strategic policy. The current strategy in Geneva seems to suggest it remains influential among the Chinese leadership.

The preference for arms control is also evident in the relatively limited nature of Chinese missile defense and anti-satellite research, which remains largely compatible with obligations outlined in the Chinese working papers. Although China has a small number of surface-to-air missiles for air and missile defense missions, the intelligence community assesses that China "lacks a coherent, national, strategic-level integrated air defense system (IADS)."⁴⁶³ Similarly, the last chapter suggests that China has limited anti-satellite capabilities, with current research reportedly carried out under the 863 program, a national-level science and technology research and development effort.

⁴⁶³ *Chinese Military Power* (July 2003) 29. Some reports suggest this may include an unknown number of Russian SA-300 surface-to-air missiles. For example, see: Richard D. Fisher, Jr. *The Impact of Foreign Weapons And Technology On The Modernization Of China's People's Liberation Army: A Report for the U.S.-China Economic and Security Review Commission* (January 2004). Available at: http://www.uscc.gov/researchreports/2004/04fisher_report/04_01_01fisherreport.htm

Verification

Judging by the working papers submitted by China, verification provisions may be the most difficult element to negotiate. If the United States insists on stringent verification mechanisms, the Chinese are likely to raise a series of objections, including concerns about compromising national security information, technical challenges, and the cost of verification measures. Hu Xiaodi addressed the topic of verification during a UNIDIR workshop in May 2004, concluding that “it may be advisable to put the verification issue aside for the time being,” and “the most important thing to do at present is to reach a political consensus on the prevention of an arms race of and their weaponization in outer space.”⁴⁶⁴

For a variety of security, bureaucratic, and political reasons, transparency is a high cost concession for the Chinese government.⁴⁶⁵ The technology, personnel, and facilities in the space launch and ballistic missile programs are essentially coextensive. Most of China’s space launch vehicles are derived from Chinese ballistic missiles and are manufactured in the same factories. All Chinese ballistic missiles undergo final assembly at the China Academy of Launch Technology plant in Wanyuan).⁴⁶⁶ As a result, the United States Defense Intelligence Agency could

⁴⁶⁴ Hu Xiaodi, Remarks to the Seminar on “Safeguarding Space for all: Security and Peaceful Uses,” (Geneva, Switzerland: 26 March 2004).

⁴⁶⁵ Li Bin, “China and Nuclear Transparency,” in *Transparency in Nuclear Warheads and Materials: The Political and Technical Dimensions*, Nicholas Zarimpas, editor (Oxford University Press, Oxford. 2003) 50-57.

⁴⁶⁶ Craig Covault, “Chinese Facility Combines Capabilities To Produce Long March Boosters, ICBMs,” *Aviation Week & Space Technology* (27 July 1987) 50.

estimate that China produced ten DF-5-type airframes a year from 1978-1982, but could not be sure how many were space launch vehicles.⁴⁶⁷

China will probably require political commitments from the United States to refrain from using verification and confidence building measures for espionage. During CTBT negotiations, according to one Chinese participant, a decisive signal of reassurance was “a commitment to China regarding possible abuse of verification [in a letter from Secretary of State Warren Christopher to Minister of Foreign Affairs Qian Qichen expressing that] the United States understood China’s concern on NTM and was committed to compliance by all parties to the CTBT with these CTBT provisions against possible abuse.”⁴⁶⁸

China may also require some assurance that verification assets are not used to circumvent agreements.⁴⁶⁹ A United Nations *Study On The Application Of Confidence-Building Measures In Outer Space*, in which three Chinese delegates participated, expressed concern that radars that “can track satellites and other objects in space and observe missile defense tests to obtain information for

⁴⁶⁷ Robert S. Norris, Andrew S. Burrows, and Richard W. Fieldhouse, *Nuclear Weapons Databook: British, French, and Chinese Nuclear Weapons* (Boulder, CO, Westview Press, 1994) 364.

⁴⁶⁸ Zou, *China and the CTBT Negotiations*, 24.

⁴⁶⁹ Chinese participants in other for a have also expressed Chinese perspectives on verification of a legal instrument on preventing an arms race in outer space. Three Chinese officials participated in a United Nations study on the application of confidence-building measures in outer space, which dealt extensively with issues of verification and transparency. The primary Chinese delegate accepted the study’s conclusions without reservation and the Chinese Representative to the UN voted to commend the study to member states. See *Report of the Secretary-General, Study on the Application of Confidence-building Measures in Outer Space* (New York: United Nations, 1994). The Chinese Ministry of Foreign Affairs sent Yu Mengjia to the first two sessions, Sha Zukang to the third and Wu Chengjiang to the fourth. See also: Du Shuhua, “The Outer Space and Moon Treaties,” in *Verification of current Disarmament and Arms Limitation: Ways, Means and Practices*, Serge Sur, ed. (New York, NY: United Nations, 1992) 123-148.

monitoring purposes are also an essential component of present generation missile defense systems, providing early warning of an attack and battle management support, distinguishing reentry vehicles from decoys, and guiding interceptors to their targets.”⁴⁷⁰ Similarly, a study by RAND concluded, “X-band radars designed for debris monitoring could provide a ballistic missile mid-course tracking capability that would be useful in a National Missile Defense system.”⁴⁷¹

Space-based verification technologies produce the same set of challenges. A study by the United Nations suggests:

...technical collection systems should not be so powerful that they reproduce the...systems that they intend to limit. Verification schemes that require inspection satellites to rendezvous with other satellites in order to determine the presence or absence of prohibited activities may be difficult to distinguish from prohibited anti-satellite systems. Similarly, large space-based infrared telescope sensors used for verification may be difficult to distinguish from sensors that would form the basis for an missile defense battle management system.⁴⁷²

The similarity between space-based verification technologies and offensive counter-space capabilities is evident in the relevant US programs. The US Midcourse Space Experiment (MSX) satellite currently used by the United States for space surveillance is a re-tasked Ballistic Missile Defense Organization asset. The US Air Force considers space object identification (SOI)—roughly analogous to on-orbit inspections—as part of the “space control” mission that also includes anti-satellite

⁴⁷⁰ *Study On The Application Of Confidence-Building Measures In Outer Space*, 36.

⁴⁷¹ Daniel Gonzales, *The Changing Role of the U.S. Military In Space*, (Washington, DC: RAND, 1999) 4.

⁴⁷² *Study On The Application Of Confidence-Building Measures In Outer Space*, 36.

intercepts. The Air Force also intends to conduct both inspections and intercepts with the same platform, based on a prototype series of micro-satellites, the Experimental Spacecraft System (XSS). The most recent satellite in the series, the XSS-10, was launched in 2003. That satellite maneuvered to within 35 meters of an expended Delta II rocket body, transmitting digital images to the earth, and conducted a number of other on-orbit maneuvers for twenty-four hours before completing its mission; the next satellite in the series, the XSS-11, is scheduled for launch in 2004. Unlike the XSS-10, the XSS-11 will remain in orbit for a year and conduct close-proximity operations to multiple targets of opportunity.⁴⁷³

These kinds of political commitments may require data-sharing. A cooperative approach from the CTBT experience which may prove helpful in the near-term would be to share space situational awareness data and some space technology. At this time, the world relies exclusively on the United States for the provision of orbital data necessary to avoid collisions and to monitor activities in outer space.⁴⁷⁴ The United States is currently exploring mechanisms to disseminate satellite tracking data and analytic services to other space faring states. The United States, for instance, provided collision avoidance analysis for China's manned space mission. Sharing space situational awareness data with China might be an important method of reassurance.

⁴⁷³ Russ Partch, *XSS-11 (AFRL-0003) DOD SERB*, Program Briefing (November 2002).

⁴⁷⁴ *Space Surveillance Network: New Way Proposed To Support Commercial and Foreign Entities*, GAO-02-403R Space Surveillance Network, (Washington, DC: General Accounting Office, 7 June 2002) 1.

Other forms of civil space cooperation may also be essential. Some observers have suggested, for instance, encouraging Chinese participation in the International Space Station. The Chinese government may be interested in microsatellite technology. A Chinese University has launched a pair of small satellites built in cooperation with a British University firm, Surrey Satellite Technology Ltd. Surrey built and launched a satellite, SNAP-1, that maneuvered to within 9 meters of a Surrey-Qinghua University satellite in 2000. The Chinese satellite contained a multi-spectral camera with 40 meter resolution to demonstrate a constellation of remote sensing micro-satellites for natural disaster monitoring and mitigation.⁴⁷⁵ Qinghua University launched a second satellite with SSTL, the 25 kg Naxing 1 (a contraction of Nami Weixing or “Nanosatellite”) in 2004.

Although the Chinese side would, in principle, be interested in expanded cooperation, any enthusiasm will be tempered by lingering wariness and animosity over accusations in the late 1990s that the Chinese military obtained “dual use” technology by launching American satellites. For this reason, European initiatives may in fact be more helpful.⁴⁷⁶

⁴⁷⁵ Zheng and Sweeting, “Initial Mission status analysis of 3-axis stable Tsinghua-1 Microsatellite,” and Xiong *et al*, “On board Computer Subsystem Design for the Tsinghua Nanosatellite,” Despite the innocuous mission of the Chinese satellite, and its relatively limited capabilities, the Department of Defense identified TsinghuaSat-1 as evidence that China is developing “parasitic microsatellites” for use as anti-satellite weapons. *Chinese Military Power* (July 2003) 36.

⁴⁷⁶ Wei Long, “ESA To Help China Join ISS” Space.com (29 July 2001). Available at: <http://www.spacedaily.com/news/china-01zr.html>

Conclusion

The deadlock in the Conference on Disarmament after March 1999 is perhaps the most visible result of US missile defense policy during the 1990s. The timing, choice of venue, and choice of agenda items all suggest a real concern about the modernization of US strategic forces. A legal instrument concerning the prevention of an arms race in outer space would provide the same sort of political assurance as a no-first use commitment, trading some clarity of political commitment for more observable restrictions on US behavior. That compromise implies a greater burden for verification measures which are a high cost concession for the Chinese. Resolving Chinese concerns may require additional political commitments as well as confidence building measures centered on cooperation in the peaceful use of outer space.

Chapter 8: China's Search for Security in the Nuclear Age

Senator, you have raised a range of very interesting questions. One that is particularly important to address is this notion that we have a relationship of mutual assured destruction with China, which is implied in your question. It is not the case, and I think it is important that we do not import that into our thinking about U.S.-China relations, and in particular the nuclear issues in that relationship. We should not import into our thinking about China the cold war concepts of mutual assured destruction that applied between the United States and the Soviet Union.

Douglas Feith, US Undersecretary of Defense for Policy, 2002⁴⁷⁷

Over the years, the international situation has undergone drastic changes, but the basic international strategic configuration has remained relatively unchanged in one important aspect, i.e., the strategic balance and mutual deterrence between major powers.... No matter if the U.S. likes it or not, the fact is that, it is precisely because of this global strategic balance that the major powers have felt compelled to address global and regional security issues through peaceful means and avoid direct confrontation with each other.

Sha Zukang, PRC Ambassador at Large for Disarmament Affairs, 1999⁴⁷⁸

When he signed the Comprehensive Nuclear Test Ban Treaty (CTBT) in 1996, President Clinton chose the same pen that John F. Kennedy used to sign the Limited Test Ban Treaty (LTBT) more than thirty years before. The symbolism was obvious: the CTBT completed a decades-long effort to ban the development and testing of nuclear weapons. How China, which had dismissed the 1963 LTBT as a "big fraud to fool the people of the world," came to share in that goal is part of the much broader story of China's search for security in the nuclear age.⁴⁷⁹

This search, and its implication for international security, is poorly understood within the United States. Yet, that search has important implications for

⁴⁷⁷ *Administration's Missile Defense Program and the ABM Treaty*, Hearing Before The Committee On Foreign Relations, United States Senate, S. Hrg. 107-110 (24 July 2001) 32.

⁴⁷⁸ Sha Zukang, *Speech at the NMD Briefing* (Beijing, China: 14 March 2001). Available at: <http://www.chinaembassy.se/eng/9186.html>

⁴⁷⁹ "Big fraud ..." *Statement of the Government of the People's Republic of China* (16 October 1964).

international security. A small risk of an unlikely but very destructive event like a nuclear exchange, even one limited to a few weapons, must be taken seriously. A crisis over the status of Taiwan is among a small number of scenarios in which the deliberate use of nuclear weapons against the United States is plausible.

The deliberations of China's leaders are not, of course, directly visible, nor are the documents that record their decisions likely to be available in the near future. But Chinese statements, deployments and arms control behavior suggest that China's search for security in the nuclear age has consistently been a search for Marshal Nie's "minimum means of reprisal." Decisions about force configuration and arms control reflect a relatively strong belief among the Chinese leadership that deterrence is easily maintained, even at very low force levels and off-alert. The overall Chinese force configuration reflects a distinctive calculus of risk--that is, acceptance of a higher risk of suffering a first strike in order to achieve a higher standard of control over the possibility of inadvertent or unmanageable provocation.

This judgment explains the unusual configuration and operational doctrine of China's nuclear forces. US intelligence estimates suggest China deploys about 80 land-based ballistic missiles that are kept unfueled and with their warheads stored separately. China maintains a no-first-use policy that reflects an operational doctrine restricted to the retaliatory use of nuclear weapons.

Assessing Chinese Strategic Decisions

The historical record indicates that China's current posture is, above all, a deliberate choice that reflects certain attitudes about nuclear weapons. Although most attention is focused on the January 1955 decision that began China's efforts to develop ballistic missiles and nuclear weapons, the 1961 decision to continue the program after the withdrawal of Soviet assistance is more important. While Chinese leaders in 1955 expected significant Soviet support, by 1961 they could not avoid recognizing the significant costs of "going it alone." The decision to proceed, despite the high costs, would create the organizational structure and bureaucratic rationale that would sustain the program over the coming decades.

The Chinese leadership in the 1950s and 1960s expressed skepticism that nuclear weapons had much use on a battlefield—perhaps a result of their experience in the Korean War. Advocates of the nuclear weapons program rebutted arguments in favor of devoting money to "aircraft and conventional equipment" with an emphasis on using nuclear weapons to deter coercion—to "put an end" to China's period of being "bullied, humiliated and oppressed."⁴⁸⁰

The Chinese leadership believed this task was achieved with the very first deployments of nuclear weapons. This attitude was most evident in China's deployment posture throughout the 1969 Sino- Soviet crisis, but also in comments that Mao made to a visiting dignitary and an internal report for the Central

⁴⁸⁰ Nie, *Inside the Red Star*, 702.

Committee prepared by Marshal Nie and three colleagues.⁴⁸¹ These statements were remarkable expressions of confidence in the deterrent effect of an extremely small arsenal.

During the depths of this crisis, Chinese leaders appear to have eschewed survivability measures that would also compromise control over strategic forces, such as dispersing the available stockpile of nuclear gravity bombs to airbases for prompt delivery.⁴⁸² This is a very different calculus of risk than that which prevailed in the United States. It remains evident today in both in the current configuration of Chinese forces, which emphasizes keeping ballistic missiles and nuclear warheads under extremely tight control, and statements of Chinese leaders to the Second Artillery.⁴⁸³

A bureaucratic rationale for the Chinese strategic weapons program was also established at the 1961 meeting, with proponents emphasizing the potential of the strategic weapons program to “advance [China] in many other branches of modern science and technology.”⁴⁸⁴ The Chinese leadership would afterwards emphasize development over deployment. China would spend vast sums to develop the

⁴⁸¹ Nie *et al*, *Report to the Central Committee: A Preliminary Evaluation of the War Situation* in Chen and Wilson, “All Under The Heaven ...” 167.

⁴⁸² According to a 1972 DIA report, “operational storage sites for nuclear bombs at airfields have not been identified in China” although “it is not possible at this time to rule out the possibility that some nuclear weapons may already be dispersed to temporary, non-identifiable storage facilities at TU-16 capable airfields around China.” *Soviet and People’s Republic of China Nuclear Weapons Employment Strategy*, II-E-6.

⁴⁸³ “Forging the Republic’s Shield of Peace,” *People’s Daily* (21 March 2002) FBIS-CPP-2002-03210-00103 and “Chinese military leader outlines goals for army missile unit,” *Xinhua News Agency* (7 June 2002).

⁴⁸⁴ Nie, *Inside the Red Star*, 702.

technical competence to build the most sophisticated weapons, but only a small amount of funds would be made available for procurement of these weapons and training. China's operationally deployed force would peak around 150 ballistic missiles in the mid-1980s—a figure well below estimates of China's resources, material, manpower and industrial capacity.⁴⁸⁵ China would build a single ballistic missile submarine (SSBN) that would never become operational. China would also conduct a number of low-yield nuclear tests, including an enhanced radiation warhead, but not deploy tactical nuclear weapons.

The first phase of China's search for security in the nuclear age came to an end in the 1980s, as deployments reached their peak and Chinese leaders detected a relaxation of international tension.⁴⁸⁶ The deterrent role of nuclear weapons continued, but like other military programs, the government reduced the number of forces and subjected the strategic weapons complex to defense conversion.⁴⁸⁷ Between the mid-1980s and mid-1990s, China reduced the number of ballistic missiles in its arsenal by half. Modernization plans for a near term follow-on liquid

⁴⁸⁵ According to the Defense Intelligence Agency in 1984, at the peak of China's nuclear deployments, China maintained the capability to "produce more delivery systems than are currently estimated." *Defense Estimative Brief: Nuclear Weapons Systems in China*, 3.

⁴⁸⁶ For example, in 1984 the Defense Intelligence Agency reported that a "high-level Chinese defense official" expressed confidence that "the Soviet Union no longer had a first strike capability against China ..." Anderson, "China Shows Confidence in its Missiles," F11.

⁴⁸⁷ For a summary of Chinese defense conversion, see: Feigenbaum, *China's Techno-warriors*; John Frankenstein, "China's Defense Industries: A New Course?" in *The People's Liberation Army in the Information Age*, James C. Mulvenon and Richard H. Yang, editors (Santa Monica: CA: RAND, 1999); *Mixed Motives, Uncertain Outcomes: Defense Conversion in China*, Jorn Brommelhorster and John Frankenstein, editors (Boulder, CO: Lynne Rienner Publishers, 1997); John Frankenstein and Bates Gill, "Current and Future Challenges Facing Chinese Defense Industries," *China Quarterly* (June 1996) 394-427; and Shichor, *Peaceful Fallout*.

fueled ICBM and new ballistic missile submarine were canceled in favor of longer term efforts to develop the CSS-X-10 family of solid-fueled ballistic missiles.⁴⁸⁸

During this new phase, China was increasingly acting as a nuclear “have.” Arms control agreements were an increasingly viable mechanism to reinforce China’s deterrent posture. The costs associated with formal arms control were declining as Chinese technical competence improved; rendering the nonproliferation benefits a more decisive factor in Chinese thinking, both in terms of new nuclear states and development in superpower arsenals. In March 1986, China announced that it would no longer conduct atmospheric nuclear testing and that it would participate in an *ad hoc* group on the CTBT if one were convened in 1986.⁴⁸⁹ That announcement was more than political theater—the timing overlaps with a Central Committee decision to approve a series of nuclear tests that would allow China to agree to a test ban. Although China’s nuclear weapons designers still described a test ban as a superpower effort to “restrict other countries from developing nuclear weapons,” they also realized that China had increasingly less in common with “other countries.”

China’s signature on the CTBT, as well as its newfound support for the Nuclear Nonproliferation Treaty, in the mid-1990s reflected a sense that China’s search for security in the nuclear age, which began in earnest with American nuclear threats over Korea and continued through the Sino-Soviet split, was coming to an

⁴⁸⁸ Lewis and Xue, *China’s Strategic Seapower*, 211-214.

⁴⁸⁹ One the commitment to cease atmospheric nuclear testing, see: “China Urges Superpowers to End Nuclear Testing,”; Qian, CD/PV.339, 32; and Qian, CD/PV.292, 32.

end.⁴⁹⁰ China would continue the strategic forces modernization program established in the mid-1980s, emphasizing work on solid-fueled ballistic missiles and countermeasures.⁴⁹¹

Yet just as China arrived at something like mutual deterrence, some in the United States were contemplating a very different future. During the mid-1990s, proponents of US strategic modernization began to articulate a new vision for US strategic forces that included missile defenses and a denigration of Cold War concepts of vulnerability. Support for missile defenses, in particular, was an element of the 1994 "Contract With America." The Republican Party successfully campaigned on the Contract, taking control of both houses of Congress for the first time since 1954. The political pressure generated by the Republican Congress was evident by 1999. The year opened with Secretary Cohen's January announcement that the Administration would seek funds for the *deployment* of a national missile defense and modifications to the ABM Treaty.⁴⁹² In July, President Clinton would sign into

⁴⁹⁰ On China's changing attitude toward nuclear nonproliferation, see: Shen Dingli, *The Current Status of Chinese Nuclear Forces and Nuclear Policies*, Center for Energy and Environmental Studies Report 247 (Princeton, NJ: Princeton University, February 1990) 2 and Zhu Mingquan, "The Evolution of China's Nuclear Nonproliferation Policy," *The Nonproliferation Review* (Winter 1997) 40-48.

⁴⁹¹ Lewis and Xue, *China's Strategic Seapower*, 211-214 and Lewis and Hua, "China's Ballistic Missile Program," 26-31. When asked "is there any relationship or correlation between our withdrawal from the ABM Treaty on what [the Chinese] are doing?"; Robert Walpole, National Intelligence Officer for Strategic and Nuclear Programs, responded that "the modernization program to develop the two mobile ICBMs and the one SLBM that I talked about date clear back to the 1980's." *CIA National Intelligence Estimate Of Foreign Missile Development ...*, S. Hrg. 107-467, 27.

⁴⁹² Cerniello, "Cohen Announces NMD Restructuring...." 20.

law a bill committing the United States “to deploy as soon as is technologically possible” a missile defense system.⁴⁹³

These decisions had profound effects on the agenda for the Conference on Disarmament, which by consensus was moving slowly toward a program of work that would include negotiations on a treaty to ban the production of fissile material for nuclear weapons. The growing support for missile defense within the United States generated increasing expressions of concern among Chinese leaders. In early 1999, following Cohen’s announcement and the progress of the National Missile Defense Act of 1999 in both houses of Congress, China announced that it would not support a program of work for the Conference on Disarmament that did not include negotiations on a legal undertaking to prevent an arms race in outer space—an undertaking that would directly address US missile defense plans. China’s call for a “balanced and comprehensive plan of work” — a program including negotiations on both PAROS and fissile material stockpiles—reflected China’s sense that its willingness to agree to a constraint on the size of its arsenal required a corresponding constraint on the prospects for US strategic forces modernization. The nature of this linkage is largely symbolic: the current American modernization program, when matched to its Chinese counterpart, is unlikely to result in a substantial change in the strategic situation. Yet, the Chinese leadership must worry that American policymakers may one day believe they could build strategic forces

⁴⁹³ Public Law 106-38, National Missile Defense Act of 1999. Available at: <http://thomas.loc.gov/cgi-bin/query/z?c106:S.269.PCS>:

that would alter this balance. Refusal by the Chinese to enter FMCT negotiations underscores the point that a much larger Chinese arsenal remains an option.

Whether or not the United States will accept China's possession of the minimum means of reprisal is now the central issue for the future of both countries nuclear forces.

Implications for American Policy

If China's forces are, in fact, configured to achieve the most basic deterrent effect, then the United States draws several security benefits:

- China's nuclear weapons deter the first-use of US nuclear weapons, but do not otherwise constrain US freedom of action including intervention in defense of Taiwan. The United States faces no risk of nuclear retaliation if we do not use our own nuclear weapons first.
- The Chinese arsenal is likely to remain small enough to permit substantial reductions in US and Russian force levels. A major constraint on reductions below the 1700-2200 range outlined in the Moscow Treaty is the possibility that China would attempt to "sprint" up to numerical parity with the United States. The evident lack of interest in numerical parity suggests the United States need not be concerned about such a scenario. In any event, the size of the current Chinese arsenal and possible fissile material constraints suggest the United States could safely reduce its forces to several hundred warheads while maintaining years of strategic warning before China could achieve numerical parity.
- Chinese operational practices emphasize the safety and security of nuclear warheads at the expense of pre-launch vulnerability. The risk of theft, accidental launch or uncontrollable escalation involving Chinese nuclear weapons is negligible. Given concerns about a terrorist theft of a nuclear device, China's practice of keeping warheads within secure stockpiles in particular is a substantial benefit to American security.

China does not appear to be moving away from this posture. China will probably continue to modernize its delivery vehicles, continuing the development of the CSS-X-10 (DF-31) family of road-mobile, solid-fueled ballistic missiles. China will also likely continue to test ballistic missiles with penetration aids. China has continued periodic upgrades on the CSS-4, perhaps to extend the missiles service life beyond its anticipated 2010 withdrawal.⁴⁹⁴ China also began replacing older CSS-2 MRBMs with the newer CSS-5 MRBM.

It is difficult to place much confidence in the intelligence community's prediction that the introduction of new ballistic missiles will result in the large increases in the size of the Chinese arsenal. Past intelligence community estimates have exaggerated future Chinese deployments, in some cases egregiously. For example, the Defense Intelligence Agency in 1984 predicted that China would add about 100 ballistic missiles over the next decade, resulting in a force of approximately 250 ballistic missiles and an equal number of nuclear gravity bombs and tactical nuclear weapons; instead the size of China's arsenal fell to below 70. Although China is no longer reducing the size of its nuclear arsenal, the size of China's operationally deployed nuclear force has remained stable after the introduction of 10 new ICBMs between 1994 and 1997.

China's current modernization programs, set in place during the 1980s, will probably maintain China's deterrent even with the deployment of the US Ballistic Missile Defense System (BMDS). That system will have limited operational

⁴⁹⁴ Continuing CSS-4 upgrades are noted in "Chinese Military Power," (July 2003) 31.

capability, particularly against the kind of countermeasures that China most likely deploys on its ballistic missiles. The Department of Defense remains many years away from deploying capabilities to hold at risk Chinese hard and deeply buried targets (HDBTs) and mobile ballistic missiles for very high confidence, preventive attacks. Shortcomings in command, control and intelligence systems, in particular, will continue to leave an American president without sufficient confidence to conduct a disarming first strike against Chinese forces.

The possibility remains, however, that Chinese leaders will eventually lose confidence in their deterrent. This event is likely to reflect many factors beyond the objective measures of capability, such as that of a missile defense system to intercept Chinese ballistic missiles. It may result from complicated internal Chinese politics as much as external pressure. Yet, the actions of the United States are important for two reasons. First, a crisis in confidence among Chinese leaders is an implicit goal of the 2001 *Nuclear Posture Review*. Second, if Chinese confidence in their deterrent becomes frail, there are many things we can do to reassure China's leadership. We will not, of course, do so if such a collapse is a policy goal.

Although a catastrophic collapse of confidence in their deterrent would, in theory, open the Chinese up to nuclear coercion by the United States, this is unlikely to be the final action. Any number of options are available to China, including increasing the size of their arsenal, rushing mobile ballistic missiles into "operational training", keeping forces on alert and developing asymmetric responses, such as anti-satellite weapons, to target US command, control and intelligence (C2I) assets.

If the Chinese leadership is operating under the calculation of risk suggested here, Beijing will not pursue these options except under duress. Each option improves the deterrent effect only marginally, at the risk of weakening national control over the country's nuclear forces and initiating an action-reaction cycle with the United States.

China's efforts in the CD suggest the Chinese leadership recognizes the mutual interest at stake and is seeking to avoid this outcome. China's substantive support for a legal undertaking on preventing an arms race in outer space is a response to the impending modernization of US strategic forces, including missile defense deployments. This position follows Chinese efforts in the 1990s to win a no-first use pledge from the United States. This effort ended somewhat unsatisfactorily, from a Chinese perspective, in the 1998 mutual "non-targeting" agreement.⁴⁹⁵ Negotiations would induce a dialogue on strategic stability otherwise lacking in the Sino-US relationship and implicitly endorse a mutual deterrent relationship between the two countries. A formal agreement would enshrine mutual deterrence, much as the 1972 ABM Treaty did for the United States and the Soviet Union.

Although China appears to recognize the mutual interest at stake, the same cannot be said of the United States. Inaccurate predictions about the future size, configuration and operational doctrine of Chinese strategic forces suggest the American analysts and policymakers have been operating with a poor

⁴⁹⁵ On earlier Chinese refusals to accept a non-targeting agreement in place of a no-first use pledge, see: Diamond, "Sino-U.S. Summit Yields Modest Advances in Arms Control Agenda," 23.

understanding of Chinese attitudes toward nuclear weapons and arms control. The intelligence community has consistently anticipated that China would deploy a larger, more diverse force and abandon its restrictive operational doctrine of no-first use, including a particularly egregious failure to anticipate the impending reduction in Chinese strategic forces between 1984 and 1994.

The relatively stable force deployments since the late 1990s and China's more assertive arms control diplomacy in Geneva may represent an opportunity to build a more stable nuclear relationship between both countries. Whether or not the two countries do so will depend, in part, on whether the United States will accept a deterrent relationship with China. Vulnerability is a fact—Chinese technical capabilities and leadership commitment are sufficient to preserve a small deterrent. Whether the United States political system recognizes this fact is another question.

When Chinese Foreign Minister and Vice Premier Qian Qichen signed the CTBT in 1996, his signature announced that China had found security in the nuclear age. Implicit in the optimism was not just a confidence in China's deterrent, but a judgment that the United States appreciated and accepted this fact. The day after signing the treaty, at a press conference with US Secretary of State Warren Christopher, Foreign Minister Qian remarked:

Recently, thanks to the joint efforts of the Chinese and U.S. sides, some positive progress has been made in our bilateral relations ...

Of course, there are still some problems and differences in our relations such as the question of Taiwan. However, the atmosphere for Sino-U.S. relations, as a whole, has improved significantly. There are also favorable conditions for further improvement.

The Chinese side is ready to work with the U.S. side to increase dialogue, expand common ground, develop cooperation, and remove various interferences and properly settle the existing problems and differences with a view to pushing our bilateral relations toward a healthy and steady development.⁴⁹⁶

Whether that judgment was flawed remains to be seen.

⁴⁹⁶ Qian Qichen, *Remarks with Secretary Of State Warren Christopher Prior To Their Bilateral Meeting, Waldorf-Astoria* (New York, New York 25 September 1996).

APPENDIX: SELECTED DOCUMENTS SUBMITTED BY THE CHINESE

DELEGATION TO THE CONFERENCE ON DISARMAMENT, 1985-2003

CD/579: China's Basic Position on the Prevention of an Arms Race in Outer Space (15 March 1985)

Delegation of China

1. With the intensification of the development of anti-satellite and ant-ballistic missile weapons, the question of preventing an arms race in outer space is becoming ever more urgent. Resolution A/39/59 adopted at the thirty-ninth session of the United Nations General Assembly by an overwhelming majority with only one abstention fully reflects the grave concern and anxiety of the international community about an arms race in outer space.

2. Consistent with its stand against any arms race, China is opposed to an arms race in outer space. It holds the exploration and use of outer space should in the interest of mankind serve to promote the economic, scientific and cultural development of all countries. China fully subscribes to the objective of "the non-militarization of outer space" and "the exclusive use of outer space for peaceful purposes."

3. In principle, "the militarization of outer space" requires both space weapons with actual lethal or destructive power and military satellites of all types be limited and prohibited.

4. In view of their complexities, the limitation and prohibition of military satellites may be left to be considered and resolved at an appropriate time in the future.

5. At the present stage, the primary objective in the efforts to prevent an arms race in outer space should be "the de-weaponization of outer space", i.e. banning the development, testing, production, deployment and use of any space weapons and the thorough destruction of all space weapons.

6. The aforesaid space weapons should include all devices or installations either space-, land-, sea-, or atmosphere-based, which are designed to attack or damage spacecraft in outer space, or disrupt their normal functioning, or change their orbits; and all devices or installations based in space (including those based on the moon and other celestial bodies) which are designed to attack or damage objects in the atmosphere, or on land, or at sea, or disrupt their normal functioning.

7. While certain restrictions on the military activities in outer space have been provided by the existing international legal instruments regarding outer space, especially the 1967 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, these documents, however, because of their limited scope, are far from being adequate for the total prevention of an arms race in outer space. It is, therefore, necessary to undertake an analysis and examination of the major existing instruments, and to formulate new provisions and conclude new agreements.

8. The two Powers which possess the greatest space capabilities and are right now intensifying their efforts in the development and testing of space weapons bear special responsibilities for the prevention of an arms race in outer space. They should demonstrate genuine political will, conduct their bilateral negotiations in good faith and keep the Conference on Disarmament appropriately informed of the progress of the negotiations.

9. The prevention of an arms race in outer space is a priority agenda item of the Conference on Disarmament. As the single multilateral negotiating forum on disarmament, the Conference on Disarmament should establish a subsidiary body and undertake negotiations on this subject. The mandate of the subsidiary body should have a clear ultimate objective, i.e. the conclusion of an agreement or agreements and at the same time, may include an exploratory stage to identify issues.

10. In order to create conditions and an atmosphere favourable for negotiations, all countries with space capabilities should refrain from developing, testing and deploying space weapons.

CD/1606: China's Position on and Suggestions for Ways to Address the Issue of Prevention of an Arms Race in Outer Space at the Conference on Disarmament (9 February 2000)

Delegation of China

Outer space belongs to all mankind. All countries have equal rights in the exploration and use of outer space for peaceful purposes although their levels of economic and scientific development may differ. It is the shared desire of all mankind to forestall the spread of weapons and an arms race in outer space.

Some people believe that since currently there is no arms race in outer space, the CD has no need to discuss its prevention or negotiate the conclusion of international legal instruments in this regard. However, history and reality have both shown not only that there are indeed attempts, programmes and moves unilaterally to seek military and strategic superiority in or control over outer space but that there have been new developments in this respect. Such development, if unchecked, may lead to the weaponization of outer space in the near future or even to a multilateral arms race in outer space. Therefore, it is a present and pressing necessity for the international community to take effective measures to stop such negative developments.

I. OUR VIEWS ON HOW TO ADDRESS THE ISSUE OF PAROS AT THE CONFERENCE ON DISARMAMENT

As the single multilateral disarmament negotiating forum, the Conference on Disarmament (Conference) should concentrate on the most pressing and prominent issues in international arms control and disarmament, the ones that have the greatest bearing on global peace and security in the twenty-first century. PAROS is one such important issue, and should therefore be a top priority at the Conference. The Conference should play a primary role in the negotiations to prevent any form of arms race in outer space.

At its fifty-fourth session the United Nations General Assembly once again adopted, by an overwhelming majority, a resolution on PAROS. It was reaffirmed that negotiating an international agreement or agreements to prevent an arms race in outer space remains a priority task of the CD's Ad Hoc Committee. The fact that the resolution was adopted without opposition reflects the common aspiration and insistent demand of the international community to prevent an arms race in outer space.

The General Assembly also adopted at its fifty-fourth session, and also by an overwhelming majority, a resolution on preservation of and compliance with the

Anti-Ballistic Missile Treaty, an issue that is related to the prevention of an arms race in outer space. In the resolution the General Assembly recognizes the historical role of the 1972 Treaty as a cornerstone for maintaining global peace and security and strategic stability, reaffirms its continued validity and relevance in the current international situation and supports further efforts by the international community in the light of emerging developments with the goal of safeguarding the inviolability and integrity of the ABM Treaty in which the international community bears strong interest.

Since PAROS was put on the CD agenda in 1982, the Conference has, through the establishment of the Ad Hoc Committee and other means, held discussions on definitions, principles, existing treaties and confidence-building measures, and accumulated experience in this field, preparing the ground for future work in this area. With the accelerated development of outer space weapons, anti-ballistic missiles and other weapon systems, individual countries have stepped up efforts to secure military superiority in outer space and have mapped out and are pursuing plans to secure military superiority on the ground from space. In these circumstances, preventing outer space from becoming a new venue for an arms race without prejudice to its peaceful uses has obviously become the most important and pressing task of the Conference.

To accomplish this, the Conference must first re-establish the Ad Hoc Committee under agenda item 3 to negotiate and conclude an international legal instrument prohibiting the testing, deployment and use of weapons, weapon systems and components in outer space so as to prevent the weaponization of, and an arms race in, outer space.

In carrying out its mandate, the Ad Hoc Committee must take into account all relevant developments and specific proposals, present and future. As a preliminary step towards the negotiation of an international legal instrument, it might discuss and review all pertinent issues, including current military activities in outer space and related developments, their influence on the prevention of an arms race in outer space; shortcomings in the existing international instruments; and the basic elements of the future international legal instrument.

The Chinese delegation has taken note of the various ideas and suggestions on PAROS put forward in the CD. China believes that the re-established Ad Hoc Committee should be an open-ended, all-embracing mechanism where all participants may air and discuss different views. It should set as its ultimate goal and clear mandate the negotiation and conclusion of one or several international legal instruments to prevent the weaponization of and an arms race in outer space.

II. OUR VIEWS ON THE EXISTING INTERNATIONAL LEGAL INSTRUMENTS CONCERNING PAROS

A number of international legal instruments on the peaceful uses of outer space and the prevention of an arms race in outer space have been concluded.

The 1963 Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water prohibits any nuclear weapon test explosion in outer space. The 1996 Comprehensive Nuclear Test Ban Treaty prohibits any nuclear weapon test explosion in any circumstances.

According to the 1967 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and other Celestial Bodies, outer space, including the moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means. States Parties to the Treaty undertake not to place in orbit around the Earth any objects carrying nuclear weapons or any other kinds of weapons of mass destruction, install such weapons on celestial bodies, or station such weapons in outer space in any other manner. The establishment of military bases, installations and fortifications, the testing of any type of weapons and the conduct of military manoeuvres on celestial bodies is forbidden.

The 1972 Treaty between the United States and the Union of Soviet Socialist Republics on the Limitation of Anti-Ballistic Missile Systems prohibits the development, testing and deployment of space-based ABM systems or components.

Besides these, the 1972 Convention on International Liability for Damage Caused by Space Objects, the 1975 Convention on Registration of Objects Launched into Outer Space and the 1979 Agreement Governing the Activities of States on the Moon and other Celestial Bodies all contain provisions on outer space activities which have helped to constrain some aspects of military activities in outer space to some extent.

However, these instruments have been ineffective in preventing the weaponization of and an arms race in outer space. Some have imposed limited prohibitions and contained many loopholes and ambiguities. Some have not been fully complied with or are in danger of being violated, amended or even abrogated. Most crucially, as they have failed to reflect the latest developments in aerospace technology they cannot prevent the potential weaponization of outer space or an arms race in outer space in the twenty-first century.

The Chinese delegation believes that the most direct and effective way to prevent the weaponization of and an arms race in outer space is to negotiate and conclude new

international legal instruments while strictly observing the existing bilateral and multilateral agreements.

III. CHINA'S BASIC POSITION ON PAROS

China has always opposed arms races, in outer space and elsewhere. It maintains that the exploration and use of outer space should only serve to promote countries' economic, scientific and cultural development and benefit all mankind.

With the use of military satellites, outer space has already been militarized to some extent. Military satellites involve rather complex issues and their role should not be all together negated. Therefore, the primary goal at present in our efforts to prevent the weaponization of and an arms race in outer space is to ban the testing, deployment and use of weapons, weapon systems and components in outer space.

What should be particularly emphasized is that the Powers with the greatest space capabilities bear a special responsibility for preventing the weaponization of and an arms race in outer space and ensuring the use of space for peaceful purposes. Pending the conclusion of a new multilateral legal instrument on the prevention of an arms race in outer space, all countries concerned should undertake not to test, deploy or use any weapons, weapon systems or components in outer space.

IV. TENTATIVE IDEAS ON NEW INTERNATIONAL LEGAL INSTRUMENTS

The Chinese delegation tentatively suggests that the new international legal instruments to prevent the weaponization of and an arms race in outer space, in whatever form or by whatever name, might contain the following basic elements:

Purposes: to prevent the weaponization of and an arms race in outer space, and to use outer space for peaceful purposes.

Basic obligations: not to test, deploy or use weapons, weapon systems or components. Consideration could also be given to an article on "permissible activities" thus helping to distinguish between activities that are prohibited and those that are not, and thereby safeguarding States Parties' lawful right to utilize outer space for peaceful purposes.

An article on definitions, providing clear definitions of the concepts mentioned, e.g. "outer space", "space weapons", "weapon systems" and "components of weapon systems".

Provision for appropriate national implementation measures and the designation or establishment of organizations to ensure that States Parties implement the instruments consistently and effectively.

An article on international cooperation in the peaceful use of outer space promoting international exchanges, technical assistance and cooperation for peaceful purposes so that all countries can share in the economic and technological benefits of scientific advances in outer space, and outer space truly serves all mankind.

Verification: we must first consider fully how technically feasible it is, and on that basis determine whether to use inspections or alternative means to prevent treaty violations.

Establishment of an appropriate mechanism for consultations, clarifications and resolution of possible disputes in order to appropriately address such suspicions and disputes as might arise among States Parties.

Appropriate, rational and workable confidence-building measures to enhance mutual trust among States Parties and forestall unnecessary suspicion about particular activities.

The procedural articles commonly found in international legal instruments dealing with amendment, length of validity, signature, ratification, entry into force, depository and authentic texts. These may of course also have to resolve some sensitive and key issues.

The Chinese delegation wishes to emphasize that these are only tentative ideas that need to be developed. Our aim in putting them forward is to give all participants food for thought, pool our collective wisdom and encourage a fuller, more detailed examination of the relevant issues at the Conference. We will participate in such discussions and negotiations with an open mind, listening to and accepting good ideas and proposals from all parties and striving unremittingly to prevent the weaponization of and an arms race in outer space and to ensure the continued peaceful use of outer space for the benefit of all mankind.

CD/1645: Possible Elements of the Future International Legal Instrument on the Prevention of the Weaponization of Outer Space (7 June 2001)

Delegation of China

China is dedicated to promoting the international community to negotiate and conclude an international legal instrument on the prevention of the weaponization of and an arms race in outer space. In February 2000, the Chinese delegation submitted to the Conference on Disarmament a working paper (CD/1606, 9 February 2000) entitled "China's Position on and Suggestions for Ways to Address the Issue of Prevention of an Arms Race in Outer Space at the Conference on Disarmament", which outlined China's tentative ideas on the above mentioned international legal instrument. China has further substantiated and developed these ideas. In our view, the future legal instrument may include, inter alia, the following elements:

I. Possible Name of the Instrument

-Treaty on the Prevention of the Weaponization of Outer Space.

II. Preamble

-Outer space is the common heritage of mankind. It is the common aspiration of mankind to use outer space for peaceful purposes.

-Outer space is playing an ever-increasing role in future development of mankind.

-There is a potential danger of armament development and combatant activities being extended to outer space. -Prevention of the weaponization of and an arms race in outer space becomes a realistic and pressing task facing the international community.

-The United Nations General Assembly has adopted a series of resolutions on peaceful uses of outer space and prevention of an arms race in outer space, which have provided a prerequisite and a basis for the prevention of the weaponization of and an arms race in outer space.

-The existing arms limitation and disarmament agreements relevant to outer space, including those bilateral ones, and the existing legal regime concerning the use of outer space, have played a positive role in the peaceful use of outer space and the regulating of activities in outer space. These agreements and regime should be strictly complied with. However, these agreements and legal regime are unable to effectively prevent the weaponization of and an arms race in outer space.

-For the benefits of mankind, outer space shall always be used for peaceful purposes, and shall never be allowed to become a battlefield.

-Only strict prevention of the weaponization of outer space can eliminate the emerging danger of an arms race in outer space and fully safeguard the security of outer space properties of all countries, which is indispensable for maintaining global strategic balance, world peace and security of all countries.

III. Basic Obligations

- Not to test, deploy or use in outer space any weapons, weapon systems or their components.

- Not to test, deploy or use on land, in sea or atmosphere any weapons, weapon systems or their components that can be used for war-fighting in outer space.

- Not to use any objects launched into orbit to directly participate in combatant activities.

- Not to assist or encourage other countries, regions, international organizations or entities to participate in activities prohibited by this legal instrument.

IV. Definitions

- Outer space is the space above the earth's atmosphere, i.e. space 100km above the sea level of the earth.

- Weapons are devices or facilities that strike, destroy or disrupt directly the normal functions of a target by various destructive ways.

- Weapon systems are the collective of weapons and their indispensably linked parts that jointly accomplish battle missions.

- Components of weapon systems are subsystems that directly and indispensably involved in accomplishing battle missions.

V. National Measures for Implementation

-Each country shall, in accordance with its constitutional process, take any necessary measures to prohibit or prevent any activities in violation of this legal instrument on its territory or in any other place under its jurisdiction or control.

VI. Peaceful Uses of Outer Space

-This legal instrument shall not be construed as impeding scientific exploration in outer space by all its States Parties or other military uses not prohibited by this legal instrument.

-Each country shall abide by general principles of international laws in conducting outer space activities, and shall not undermine the sovereignty, security and interests of other countries.

VII. Confidence Building Measures

- To enhance mutual trust, each State Party shall promulgate its space programme, declare the locations and scopes of its space launch sites, the property and parameters of objects to be launched into outer space, and notify the launching activities.

VIII. Verification Measures

(Needs further consideration and development)

IX. Settlement of Disputes

- If a State Party suspects treaty violation by another State Party, States Parties concerned shall undertake to consult and cooperate to resolve the issue. The suspecting State Party shall have the right to request clarification from the suspected State Party. The suspected State Party is obliged to provide relevant information to clarify the matter.

- If consultation and clarification fail to produce satisfactory results for the States Parties concerned, the suspecting State Party can file charges to the executive organization of this legal instrument. The charges shall include the supporting evidence as well as the request for the organization to review the matter.

- Each State Party undertakes to cooperate in the investigation by the executive organization of this legal instrument in accordance with the request it has received.

X. Executive Organization of this Legal Instrument

In order to achieve the purposes and objectives of this legal instrument, and ensure compliance with the obligations of this instrument, the States Parties hereby establish an executive organization of this legal instrument, whose duties are, inter alia, as follows:

- To receive charges of non-compliance by States Parties.

- To investigate whether there are non-compliant activities.
- To organize consultations on non-compliance concerns between States Parties concerned.
- To urge States Parties that have violated this legal instrument to take measures to stop non-compliant activities and make up for the consequences arising therefrom.

XI. Amendments

- Any State Party may propose amendments to this legal instrument. The text of any proposed amendment shall be submitted to the depositary who shall circulate it to all State Parties. Thereupon, if requested to do so by one-third or more of the States Parties, the depositary shall convene a conference, to which all States Parties shall be invited to consider such an amendment.
- Any amendment to this legal instrument must be approved by a majority of vote of all States Parties. The amendment shall enter into force for all States Parties upon the deposit of such instruments of ratification by a majority of all States Parties.

XII. Duration and Withdrawal

- This legal instrument shall be of unlimited duration.
- Each State Party to this legal instrument shall, in exercising its national sovereignty, have the right to withdraw from this legal instrument if it decides that extraordinary events, related to the subject matter of this legal instrument, have jeopardized the supreme interests of its country. It shall give notice of such withdrawal to the depositary of this legal instrument six months in advance. Such notice shall include a statement of the extraordinary events it regards as having jeopardized its supreme interests.

XIII. Signature and Ratification

-This legal instrument shall be open for signature by all States at United Nations headquarters in New York. Any State which does not sign this legal instrument before its entry into force may accede to it at any time.

-This legal instrument shall be subject to ratification by signatory states. Instruments of ratification or accession shall be deposited with the Secretary-General of the United Nations.

XIV. Entry into Force

- This legal instrument shall enter into force upon the deposit of instruments of ratification by XX States, including the Permanent Member States of the United Nations Security Council.

- For States whose instruments of ratification or accession are deposited after the entry into force of this legal instrument, it shall enter into force on the date of the deposit of their instruments of ratification or accession.

XV. Authentic Texts

-This legal instrument, of which the Arabic, Chinese, English, French, Russian and Spanish texts are equally authentic, shall be deposited with the Secretary-General of the United Nations, who shall send certified copies thereof to all signatory and acceding States.

* * *

The Chinese delegation would like to reiterate that the above-mentioned elements are still very tentative. Further revision, amendment, improvement and perfection are needed. We are ready, in an open attitude, to work with other delegations to conclude at an early date a legal instrument aimed at preventing the weaponization of and an arms race in outer space through hard work and serious negotiations.

CD/1679: Possible Elements for a Future International Legal Agreement on the Prevention of the Deployment of Weapons in Outer Space, the Threat or Use of Force Against Outer Space Objects (23 June 2002)

Working Paper Presented By The Delegations Of China, The Russian Federation, Vietnam, Indonesia, Belarus, Zimbabwe And Syria

I. Possible Name of Such Agreement

Treaty on the Prevention of the Deployment of Weapons in Outer Space, the Threat or Use of Force Against Outer Space Objects

II. Preamble

Outer space is the common heritage of mankind and plays an ever-increasing role in its future development.

There exists a potential danger of an armed confrontation and combatant activities being extended to outer space.

The prevention of the deployment of weapons and an arms race in outer space becomes a pressing task facing the international community.

The United Nations General Assembly has adopted a series of resolutions on peaceful use of outer space and prevention of an arms race in outer space, which have provided a prerequisite and basis for the prevention of the deployment of weapons and an arms race in outer space.

The existing agreements on arms control and disarmament relevant to outer space, including those bilateral ones, and the existing legal regimes concerning outer space have played a positive role in the peaceful use of outer space and in regulating outer space activities. These agreements and legal regimes should be strictly complied with. However, they are unable to effectively prevent the deployment of weapons and an arms race in outer space.

For the benefit of mankind, outer space shall be used for peaceful purposes, and it shall never be allowed to become a sphere of military confrontation.

Only a treaty-based prohibition of the deployment of weapons in outer space and the prevention of the threat or use of force against outer space objects can eliminate the emerging threat of an arms race in outer space and ensure the security for outer space assets of all countries which is an essential condition for the maintenance of world peace.

III. Basic Obligations

Not to place in orbit around the Earth any objects carrying any kinds of weapons, not to install such weapons on celestial bodies, or not to station such weapons in outer space in any other manner.

Not to resort to the threat or use of force against outer space objects.

Not to assist or encourage other States, groups of States, international organizations to participate in activities prohibited by this Treaty.

IV. National Measures for the Implementation of the Treaty

Each State Party to the Treaty shall, in accordance with its constitutional process, take any measures necessary to prevent or prohibit any activity contrary to this Treaty on its territory, or in any other place under its jurisdiction or control.

V. The Use of Outer Space for Peaceful and Other Military Purposes

This Treaty shall not be construed as impeding the research and use of outer space for peaceful purposes or other military uses not prohibited by this Treaty.

Each State Party to the Treaty shall carry out activities in outer space in accordance with the general principles of international law and shall not violate the sovereignty and security of other States.

VI. Confidence Building Measures

To enhance mutual trust, each State Party to the Treaty shall promulgate its space programme, declare the locations and scopes of its space launch sites, the property and parameters of objects being launched into outer space, and notify the launching activities.

VII. Settlement of Disputes

If a suspicion arises against any State Party to the Treaty that it is violating the Treaty, the suspecting State Party, or a group of the suspecting State Parties to this Treaty shall conduct consultations and cooperate with the suspected State Party to this Treaty in order to settle down the aroused suspicion. Each suspecting State Party to this Treaty shall have the right to request clarification from the suspected State Party to this Treaty, whereas the suspected State Party to this Treaty shall undertake to provide requested clarifications.

If consultations or clarification fail to settle down the dispute, the suspicion that has aroused shall be referred to the executive organization of the Treaty for consideration together with relevant arguments.

Each State Party to this Treaty shall undertake to cooperate in the settlement of the suspicion that has aroused by the executive organization of the Treaty.

VIII. The Executive Organization of the Treaty

To promote the objectives and implementation of the provisions of this Treaty, the States Parties to the Treaty shall hereby establish the executive organization of the Treaty, which shall:

(a) receive for consideration inquires by any State Party or a group of States Parties to the Treaty related to the suspicion, which has aroused by the violation of this Treaty by any State Party to the Treaty;

(b) consider matters concerning the compliance with the obligations taken by the States Parties to this Treaty;

(c) organize and conduct consultations with the States Parties to the Treaty with a view to settling down the suspicion that has aroused against any State Party to the Treaty concerning its violation of this Treaty;

(d) take necessary measures to end violation of this Treaty by any State Party to the Treaty.

IX. Amendments to the Treaty

Any State Party to this Treaty may propose amendments to the Treaty. The text of any proposed amendment to this Treaty shall be submitted to the Depositary Governments who shall promptly circulate it to all the States Parties to the Treaty. Upon the request of at least one third of the States Parties to the Treaty, the Depositary Governments shall convene a conference to which all the States Parties shall be invited to consider the proposed amendment.

Any amendment to this Treaty must be approved by a majority of the votes of all the States Parties to the Treaty. The amendment shall enter into force for all the States Parties to the Treaty in accordance with the procedures governing the entry into force of this Treaty.

X. Duration of the Treaty and Withdrawal from the Treaty

The Treaty shall be of unlimited duration.

Each State Party to the Treaty shall, in exercising its state sovereignty, have the right to withdraw from this Treaty if it decides that extraordinary events, related to the subject matter of this Treaty, have jeopardized its supreme interests. It shall give notice to the Depository Governments of the decision adopted six months in advance of the withdrawal from the Treaty. Such a notification shall include a statement of the extraordinary events, which the notifying State Party to the Treaty regards as having jeopardized its supreme interests.

XI. Signature and Ratification of the Treaty

This Treaty shall be open for signature by all States at United Nations Headquarters in New York. Any State, which does not sign this Treaty before its entry into force, may accede to it at any time.

The Treaty shall be subject to ratification by signatory States in accordance with their constitutional process. Instruments of ratification or accession shall be deposited with the Depository Governments.

This Treaty shall be registered by the Depository Governments pursuant to Article 102 of the Charter of the United Nations.

XII. Entry into Force of the Treaty

This Treaty shall enter into force upon the deposit of instruments of ratification by twenty States, including all Permanent Member States of the United Nations Security Council.

For States whose instruments of ratification or accession are deposited after the entry into force of this Treaty, it shall enter into force on the date of the deposit of their instruments of ratification or accession.

XIII. Authentic texts of the Treaty

This Treaty, of which the Arabic, Chinese, English, French, Russian and Spanish texts are equally authentic, shall be deposited in the archives of the Depository Governments, who shall send duly certified copies thereof to all the signatory and acceding States.

Unofficial Annex: Compilation of Comments and Suggestions to the CD Working Paper CD/1679 (31 July 2003)

Compiled by the Delegations of China and the Russian Federation

I. General Comments:

Some delegations believe the joint Chinese and Russian initiative is a timely one with a view to fill the gaps of the current legal system with regard to the peaceful use of outer space. They urge the CD to start substantive work on PAROS issues at an early date so as to enable full-fledged discussion and negotiations on this matter.

One delegation prefers to negotiate as a first step an instrument best regarded as a space-based weapon ban. One delegation suggested to work on building norms in the area of space assets safety in the first place, rather than negotiating a treaty. Some delegations suggested starting with the CBMs such as pre-notification of ballistic missile launches.

One delegation suggested to consider putting forward in-depth papers on specific topics, such as "definition", "the use of outer space for civilian and military purposes" etc, to explore possible legal methods for ensuring outer space free from weapons. A new title of CD/1679, i.e., "Elements for Dealing with Outer Space Issues" was proposed. A suggestion of avoiding overlapping the work of the Committee on the Peaceful Uses of Outer Space (UNCOPUOS) in Vienna was also made.

II. Definitions

1. Some delegations suggested this part should be included in the proposed treaty.
2. A section containing definitions of the major key terms or expressions would help to clarify the intended scope of the treaty.

The definition of a "space object" would be useful, but as negotiations on this subject could take years, it might therefore be best to coin a term or phrase other than "space object" to clarify the intent of the instrument.

This paragraph would also benefit from definitions for "objects" and "weapons" to enunciate clearly the scope of the intended obligation and help to establish clarity of purpose.

More clarity might also be gained if a "weapon" were defined in terms of a component of a system, its intended effects and the means it employs to achieve its

intended effects. "Peaceful purposes" includes "non-aggressive" military use of outer space. The terms "peaceful purposes" and "other military purposes" could be explicitly defined.

3. The term "trajectory" should be clarified, because objects like intercontinental ballistic missiles are not outer space weapons, although they partly pass through outer space.

4. The notion of "peaceful use" should be defined to exclude different interpretations of the proposed Agreement's provisions aimed to prevent the deployment of weapons, the threat or use of force in outer space.

III. Basic Obligations:

1. Para. 1

a) The words "testing", "production", "deployment", "transfer" and "use" could be used to elaborate the intended prohibitions;

b) A new sub-para could be added: "prohibition on the deployment of weapons on orbital trajectories to and from celestial bodies including the Moon, or in orbit around the Moon or any other celestial body."

Para. 2

a) The reference to "general principles of international law" in Article V of CD/1679 could perhaps cover the issue of "threat or use of force" curbing the need for definitions.

b) The concept of a temporary operational disruption, displacement or other non-damaging interference with a space object by another space object might also need to be addressed;

c) The use ban obligation could include the testing of any weapons against space objects or "for anti-satellite purposes".

Para. 3 International trade in dual-use space hardware, software and technical data is enormous, thus this obligation is hard to fulfill.

a) Consider controls or limitations on launches of weapons into outer space on behalf of other states; or

b) Focus on the use of the hardware, software and technical data, which have to be consistent with the obligations set out in the instrument.

2. Should include prohibition of objects not only in orbit but also in a trajectory status taking the spirit of Article 3(3) of the Agreement Governing the Activities of States on the Moon and other Celestial Bodies.

IV. The Use of Outer Space for Peaceful and Other Military Purposes

Para. 2

A variation of the OST could be considered: "States Parties shall carry on activities [?] in outer space [,including the Moon and other celestial bodies] in accordance with the general principles of international law, including the Charter of the United Nations, in the interest of maintaining international peace and security and promoting international cooperation and understanding."

V. CBMs

1. Consider moving from CBMs to actual verification measures, sufficient to generate the evidence upon which objective compliance determinations could be made, and to feed into the dispute resolution mechanism

2. Since the International Code of Conduct on Prevention of Proliferation of Ballistic Missiles (ICOC) aims to increase confidence by such transparency measures as pre-launch notification, its relevant wording can be incorporated into CD/1679 to win the support of ICOC subscribing states.

3. The wording of CBMs of future outer space treaty should refer to multilaterally negotiated and internationally accepted languages rather than copying non-negotiated text.

4. To establish a regime of prior notification of launches of space launchers and ballistic missiles which could be supplemented by the setting-up of an international center responsible for the centralization and redistribution of collected data, so as to increase the transparency of space activity.

States Parties should transmit in writing to an international center notification of launches of space launchers (carrying satellites or other space objects) and ballistic missiles which they have planned. Such notification could take place one month before the planned date of launch (launch windows in terms of weeks or days, and time of each launch) and would be confirmed 24 hours before the actual launch.

As for space launchers, apart from the planned date of launch, the launching state should communicate the geographic impact area. Regarding space objects, the owning State or State of registry should communicate the following information:

Name of owning State or State of registry; Orbital parameters (perigee, apogee, nodal period, inclination); General function of the space object; Reference to its unarmed character; Indication of maneuverability; Physical characteristics (mass, planned lifetime).

With respect to missiles with a ballistic trajectory having a range of 300 km or more, the launching State should communicate:

The date of launch;

The launching area;

The impact area.

An international notification center should be set up. The center would essentially fulfill the following function:

Receive notifications of launches of ballistic missiles and space launchers transmitted to it by States Parties;

Receive the information transmitted by States Parties on launches actually carried out. State Parties, possessing detection capabilities shall communicate to the international center, on a voluntary basis, data relating to launches detected by them;

Place through a data bank the above-mentioned information at the disposal of the international community.

VI. Verification

Some countries suggest verification should be included in the proposed treaty:

1. Verification measures could include: open source information analysis, state declarations, terrestrial observation of space objects, space-based observation of space objects, sensors on-board space objects for in situ sensing, and on-site inspections. The negotiating parties of the treaty would first need to agree on the obligations to be verified and the level of confidence to be required. CBMs could be included into this article.

2. As a further confidence building measure, there should be a moratorium on the testing of all kinds of weapons and development of weapons in outer space.

VII. Settlement of Disputes

1. Introduction of a third party mechanism might be useful. The entire section could be redrafted to mirror Paragraphs (2) and (3) of Article 15 of the Moon Treaty, along the following lines.

“A State Party which has reason to believe that another State Party is not fulfilling the obligations incumbent upon it pursuant to this Agreement or that another State Party is interfering with the rights which the former State has under this Agreement may request consultations with that State Party. A State Party receiving such a request shall enter into such consultations without delay. Any other State Party which requests to do so shall be entitled to take part in the consultations. Each State Party participating in such consultations shall seek a mutually acceptable resolution of any controversy and shall bear in mind the rights and interests of all States Parties. The Secretary-General of the United Nations shall be informed of the results of the consultations and shall transmit the information received to all States Parties concerned.”

“If the Consultations do not lead to mutually acceptable settlement which has due regard for the rights and interests of all States Parties, the parties concerned shall take all measures to settle the dispute by other peaceful means of their choice appropriate to the circumstances and the nature of the dispute. If difficulties arise in connection with the opening of consultations or if consultations do not lead to a mutually acceptable settlement, any State Party may seek the assistance of the Secretary-General [in this context, the Executive Organization perhaps], without seeking the consent of any other State Party concerned, in order to resolve the controversy.”

The joint working paper could also benefit from including provisions for the verification measures as part of the operation of the dispute resolution mechanism.

A number of questions would need to be settled. For example, what rules of procedure should be applied? How would decisions be reached? Would the decisions be binding? If so, what would be the enforcement mechanisms?

2. The relevant text of CD/1679 should be maintained since it is much better than the relevant part of “Compilation”.

3. The specific provisions of CWC and BWC could be consulted in this article.

VIII. Executive Organization

1. This section would need significant expansion to address issues related to membership and authority of the Executive Organization, its exact mandate in relation to the settlement of disputes, and the case of whether an existing organization could be pressed into service in lieu of creating a new body.

Para.1 (a): It should be revised as: receive for consideration inquires by any State Party or a group of States Parties to the Treaty related to a dispute aroused by a suspected violation of this Treaty by any State Party to the Treaty;

Para.1 (d): This obligation could be read as an unbounded set of incentives or penalties. The treaty would need to set out clear provisions of objective criteria and verified evidence to ascertain non-compliance, and details of the decision-making mechanism.

2. The functions of the Executive Organization and the mandate of meetings of State Parties should be clearly stipulated.

IX. Amendments to the Treaty

1. The second half of Para. 2 should spell out explicitly the amendment procedure of the OST: "Any State Party to the Treaty may propose amendments to this Treaty. Amendments shall enter into force for each State Party to the Treaty accepting the amendments upon their acceptance by the majority of the States Parties to the Treaty and thereafter for each remaining State Party to the Treaty on the date of acceptance by it."

2. This part should be consistent with the relevant articles of the "Vienna Convention on the Law of Treaties".

X. Signature and Ratification of the Treaty

Instruments of ratification should be deposited with the UN Secretary General.

XI. Entry-into-Force of the Treaty

1. Placing P5 within nations needed for EIF might repeat the fate of CTBT. Should avoid such an EIF formulation. There could be two options:

Option 1: List all states with a space launch capability but indicate that the ratification of a specified number (i.e. not all) of them would trigger entry-into-force;

Option 2: Request ratification by a specific number of “states that can successfully launch objects into outer space” or something along those lines, rather than naming them.

2. It is the lack of political will rather than the EIF clause that obstructs CTBT from EIF. Therefore, the future outer space treaty should be ratified by all P5. Otherwise, the effectiveness of the Treaty will be weakened.

XII. International Cooperation

1. The elements of cooperation and assistance in peaceful use of outer space should also be added to the proposed treaty.

2. “International cooperation” and “CBMs” were closely related, so they could be merged into one section. The proposed language is as follows: “Each State Party shall endeavor to establish joint projects and programmes with other State Parties to further promote peaceful uses of outer space for the benefit of all mankind”.

3. “States shall follow the principle of mutual cooperation and assistance in the most adequate way, on an equitable and mutually acceptable basis, taking into account the particular needs of developing countries”.

XIII. Possible Additional Elements

Periodic review conferences;

An obligation not to enter into international obligations contrary to the obligations of the treaty;

Naming of the depository governments;

And a requirement that a State Party to the treaty may not make reservations.

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