THE STATUS OF U.S., RUSSIAN, AND CHINESE NUCLEAR FORCES IN NORTHEAST ASIA

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I. INTRODUCTION

With the end of the Cold War, it has become difficult to envision a scenario in which any of the five declared nuclear weapons states would deliberately initiate the use of nuclear weapons against each other. On the other hand, the international community has become increasingly concerned about the spread of nuclear weapons to developing countries where they might be used in regional conflicts. Of these regional concerns, Northeast Asia has recently vaulted to the top due to a number of factors. The historical animosities, the territorial disputes, the potential power vacuum created by the disengagement of the superpowers, the region's growing importance as a trading partner, the general economic dynamism accompanied by increasing defense expenditures and acquisition of high tech weaponry, the imminent leadership

changes, and the political isolation of North Korea combined with its development of new longer-range ballistic missiles and possibly nuclear weapons have all contributed to fears that Northeast Asia could become a nuclear powder keg.

It is clear to the United States, Russia, and China--the three major nuclear powers with a military presence in Northeast Asia--that it would not be in their respective interests for any additional state in the region to develop a nuclear weapons capability in the near or distant future. Although a consensus exists among the governments in Washington, Moscow, and Beijing that they should try to dissuade other states in Northeast Asia from "going nuclear" there is no consensus on the appropriate means for achieving that goal.

North Korea's perceptions of U.S. nuclear capabilities and intentions as they pertain to the Korean Peninsula are certainly an important factor in Pyongyang's decision whether to continue to pursue nuclear weapons. Similarly, Japan's perceptions of North Korea's nuclear capabilities and intentions as well as those of Russia and China, will be an important factor in Tokyo's decision whether to remain a non-nuclear weapons state.

With these perceptions in mind, this paper will look at: 1) the current status of U.S., Russian, and Chinese nuclear forces (e.g. numbers, types, locations, operational characteristics, targets, trends in force structure, the impact of recent arms control agreements and unilateral initiatives); 2) scenarios involving the use of nuclear weapons in Northeast Asia; and 3) new global, regional, and unilateral arms control measures that the three major nuclear powers could implement to help reduce the likelihood of nuclear proliferation in the region.

PART II: U.S. NUCLEAR FORCES

New Policy Debate on Purpose of U.S. Nuclear Weapons

Over the last four years, a number of important factors have changed the U.S. government's perspective regarding its nuclear weapons programs. The end of the confrontational relationship with Moscow, the lack of a clear and present security threat, progressively declining defense budgets, and the negotiation of the START treaties have compelled the United States to reduce the size of its nuclear arsenal, spend less on nuclear weapons, and curb modernization programs. Despite these developments, it is clear that the United States will continue to maintain thousands of nuclear weapons, with some limited modernization, for the foreseeable future. More broadly, there is no consensus in the United States on the purpose of these weapons in the post Cold War era and a new debate has begun in Washington. The outcome of this debate will likely have implications for "negative security

assurances" for North Korea and Japan's support for the indefinite extension of the nuclear Non-Proliferation Treaty (NPT).

With the passing of the Cold War, two separate schools of thought on the future of U.S. nuclear weapons have emerged. First, there is the school that believes that: a) the role of nuclear weapons in international relations has diminished dramatically; b) the exclusive, or at least primary, purpose of U.S. nuclear weapons is to deter or respond to the use of nuclear weapons against the United States or its allies; and c) strict constraints on U.S. nuclear weapons (e.g. a ban on nuclear testing) could help the United States strengthen its efforts to curb proliferation of nuclear weapons in the developing world, as well as in the former Soviet Union.

Second, there is the school of thought that believes that a) increased "instability and uncertainty" in the developing world, coupled with the spread of "weapons of mass destruction," necessitate an expansion of the role of U.S. nuclear weapons to deter or respond to chemical and biological weapons or even conventionally-armed ballistic missiles; and b) the development of "mini or micro" low yield nuclear weapons would be useful for attacks against "Third World tyrants like Saddam Hussein" who would take refuge along with their senior military officers in reinforced underground bunkers during a conflict with the United States.

In addition, there is another group, which includes members in both of the first two schools of thought, that believes the United States must maintain its nuclear forces at their current number with a modest level of modernization as a "hedge" against retrograde leaders coming to power in the Kremlin. To add to the cacophony in the U.S. debate, there is frequent disagreement within the same schools of thought about the degree to which their policy formulations should be carried out. In an effort to reconcile some of these conflicting views, the Defense Department has begun to conduct a "Nuclear Posture Review," due to be released this fall. It remains to be seen, however, whether the government can arrive at a consensus about the future role of U.S. nuclear weapons.

Reductions in the number of U.S. strategic nuclear weapons

In the last four years, the United States has removed virtually all of its oldest strategic weapons from operational service, including Minuteman II ICBMs, Poseidon submarines, and B-52G bombers. Consequently, the number of deployed U.S. strategic nuclear warheads, has declined by about one-third since September 1990--from 12,646 to 8,380 (1). (The current figure is approximately the number the United States had planned to deploy

under START I.) If the START II treaty is ratified and implemented, that number will drop to 3,500--a 72 percent decrease from the September 1990 level.

It should be noted, however, that START II cannot enter into force unless START I does- -a development that cannot happen until Ukraine accedes to the NPT. Furthermore, Russian ratification of START II is far from a foregone conclusion and the United States has said that it is not prepared to go down to START II levels unilaterally (2).

Spending on U.S. Nuclear Weapons

With the end of the Cold War and the continuing economic burden of a large federal budget deficit, the U.S. government has found that it can not justify allocating scarce resources to its nuclear programs at the levels it maintained in the recent past. A decade ago, strategic nuclear programs accounted for 11 percent of the Department of Defense (DOD) budget when the Reagan Administration's strategic modernization program was being implemented. But today, strategic nuclear programs represent only 3 to 4 percent of the DOD budget (3). Admiral Henry Chiles, commander-in-chief of the United States Strategic Command (STRATCOM) told Congress in April that spending on U.S. strategic forces over the last decade has declined far more rapidly than the U.S. defense budget as a whole in the same period. Chiles said that while the Defense Department's total obligating authority declined by over 33 percent (in constant FY93 dollars), "the portion of the overall defense budget dedicated to nuclear forces declined over 74 percent in FY93 dollars. (4)"

Status of U.S. Strategic Weapons Programs

In recent years, the United States has also curtailed the development, testing, and production of new nuclear systems. With respect to nuclear warheads, the United States has not conducted any underground nuclear tests since 1992 and, with the closing of Rocky Flats' plutonium pit fabrication unit in November 1989, has not produced any new warheads since the summer of 1990 (5). It has not produced any new plutonium since 1988 and has not enriched any uranium for weapons purposes since 1964.

Regarding nuclear delivery vehicles, Admiral Chiles told Congress in his April testimony that "There are no new...ballistic missile programs on the drawing boards to replace our current systems (6)" and the Defense Department has said that "development of a new intercontinental ballistic missile (ICBM) is not anticipated for at least 15 years. (7)"

Some strategic modernization, however, is proceeding. The United States continues to build B-2 bombers and Trident submarines--two

programs for which Congress has already appropriated the vast majority of the funding. In addition, the Clinton administration is seeking funding to build additional Trident II (D-5) submarine-launched ballistic missiles (SLBMs) and upgrade the accuracy and extend the life of the Minuteman III ICBM.

ICBMs

Although U.S. ICBMs have the range to hit targets in Northeast Asia, they are not particularly relevant to the region. In any case, U.S. ICBM plans are quite straightforward: all of the remaining Minuteman II missiles, which have already had their warheads removed, are scheduled to retired by fiscal year 1995; if START II is implemented, all of the 500 Minuteman III missiles will be downloaded from three warheads each to one, and all 50 of the ten-warhead MX missiles will be eliminated.

U.S. SSBNs and SLBMs

U.S. nuclear-powered ballistic missile submarines (SSBNs) are considered to be the heart of the U.S. strategic deterrent. The last three Poseidon submarines were removed from patrol status on April 1, 1994. Trident submarine production continues on schedule. The USS Rhode Island is scheduled to be commissioned in the summer of 1994. It will be the 15th Ohio-class submarine and seventh to carry the Trident II missile, all of which are based at King's Bay, Georgia. (The other eight operational Trident submarines, which are armed with the Trident I missile, are based in the Pacific Ocean at Bangor, Washington.) By 1997, the United States plans to have a total of 18 SSBNs--10 in the Atlantic carrying 24 Trident II missiles each and eight in the Pacific carrying 24 Trident I missiles each. To get under START II's limit of 1,750 SLBM warheads, the Navy plans to download its 432 Trident SLBMs from 8 warheads each to 4, for a total of 1,728 warheads (8).

The Navy's decision on whether to backfit the eight Trident submarines that patrol in the Pacific with the Trident II missile will not be made until early 1995 (9). Even if the United States does decide to go forward with the backfit--a decision that seems unlikely for budgetary reasons--it would not be carried out until the first decade of the next century.

U.S. Strategic Bombers

U.S. dual-capable strategic bombers have been used in the past to deliver conventional ordnance in regional conflicts. (For example, B-52 bombers were used in the Vietnam War and in the Gulf War against Iraq.) In addition, the United States has used

the B-1B in the Team Spirit exercise (10) and the Air Force has touted the B-2 as an effective system for limited conflicts in developing states.

The United States recently retired all of its B-52G bombers (11), including the B-52Gs that were once deployed at Andersen Air Force Base in Guam. The Department of Defense is now planning to retire up to half of its 95 B-52Hs pending the outcome of the Nuclear Posture Review.

The Air Force has decided that all the B-1Bs will be "reoriented to a purely conventional role" by 1998 for regional missions. It also plans to put one quarter of the 96 B-1Bs in "attrition reserve," a new category in which the B-1Bs will continue to fly, but with reduced crew-to- aircraft ratios to save money.

The first operational B-2 was delivered to Whiteman AFB, Missouri in December 1993. Four additional B-2s will be delivered in 1994 (12) and by the late 1990s, the United States will have deployed all 20 operational B-2s. In addition, the Senate Armed Services Committee, along with the B-2's prime contractor Northrop, have recently called for keeping the production line open to maintain "the industrial base" and produce additional B-2s beyond the cap of 20 set by Congress last year.

U.S. Tactical Nuclear Weapons Withdrawn From South Korea

Less than a month after President George Bush's September 27, 1991 announcement that the United States would withdraw all of its ground- and sea-launched tactical nuclear weapons, press reports cited anonymous Bush administration officials saying that the United States planned to remove all U.S. nuclear weapons from South Korea, including air-delivered nuclear weapons (13). (At that time, Robert S. Norris, a Senior Analyst for the Natural Resources Defense Council, estimated that there were approximately 100 U.S. nuclear weapons based in South Korea--60 B-61 gravity bombs available for delivery by several squadrons of nuclear-capable F- 16s located at Kunsan air base; plus 40 W-33 nuclear artillery shells.) (14)

On December 18, 1991, then-President of South Korea, Roh Tae Woo announced in a televised speech that "As I speak, there do not exist any nuclear weapons whatsoever, anywhere in the Republic of Korea (15). Subsequently, senior U.S. officials stated that "U.S. policy is consistent with" President Roh's statement (16).

Nuclear Weapons Withdrawn From U.S. Ships in the Pacific

Between September 1991 and June 1992, the United States withdrew all tactical nuclear warheads routinely deployed at sea on surface ships, attack submarines, and aircraft carriers,

including those that patrol in the Western Pacific. These withdrawals consisted of: B-57 depth strike/bombs for S-3 jets and SH-3 helicopters and B-61 gravity bombs for A-6, A-7 and F/A-18 planes deployed on aircraft carriers; and W-80 warheads for Tomahawk sea-launched cruise missiles (SLCMs) deployed on cruisers, destroyers, and attack submarines. In addition, the United States removed from service 350 B-57 depth bombs deployed with land- based naval anti-submarine warfare (ASW) aircraft, including B-57 depth bombs deployed in Alaska, California, Guam, and Hawaii (17). All of the B-57s are slated for dismantlement by April 1996 (18) and apparently all of the Navy's B-61s are scheduled for eventual dismantlement as well. But the W-80 nuclear warheads for SLCMs will be stored rather than dismantled (19).

Current U.S. Operational Tactical Nuclear Weapons

Since 1984, the United States has reduced the number of operational tactical nuclear warheads in its arsenal by more than 90 percent. The retired tactical nuclear weapons that have not been dismantled yet are either stored in depots in the United States or have been shipped to the Department of Energy's Pantex facility near Amarillo, Texas, where they are being dismantled at a rate of up to two thousand per year.

The United States, however, plans to maintain a significant number of tactical nuclear weapons well into the future. In January 1992, General Colin Powell, then chairman of the Joint Chiefs of Staff, announced that the United States planned to reduce its tactical nuclear weapons to 1,600. At the time, Powell made it clear that this number included B-61 gravity bombs for naval carrier based aircraft--apparently about 650. But in October 1993, the Pentagon stated that the Navy and Marine Corps "can prudently do away with the tactical nuclear mission of their air components (20)." Consequently, the number of tactical nuclear warheads estimated to remain in the active stockpile dropped to 950 (21).

Last year, the Clinton administration confirmed some earlier projections about the types of tactical nuclear weapons the United States plans to keep when it told Congress that the only tactical nuclear warheads the United States currently plans to maintain in its active stockpile after September 30, 1996 are three variants of the B-61 gravity bomb (mods 3/4/10) and the W-80 warhead for Tomahawk SLCMs (22). Based on these developments, it now appears that the United States will maintain 600 B-61 gravity bombs stored in the United States and Western Europe for the U.S. Air Force (and other NATO squadrons) and 350 W-80 Tomahawk SLCM warheads stored in the United States for the Navy (23).

U.S. Nuclear Weapons Employment Policy and North Korea

At least in theory, as it stands now, U.S. declaratory policy on the employment of nuclear weapons does not preclude the United States from initiating the use of nuclear weapons on the Korean peninsula. In 1978 the Carter administration announced U.S. policy on "negative security assurances," a policy that has been reaffirmed by all subsequent U.S. administrations, including the current one. On June 12, 1978, then-Secretary of State Cyrus Vance said: "The United States will not use nuclear weapons against any non-nuclear weapon state party to the NPT or any comparable internationally binding commitment not to acquire nuclear explosive devices, except in the case of an attack on the United States, or its territories or armed forces, or its allies, by such a state allied to a nuclear-weapon state or associated with a nuclear-weapon state in carrying out or sustaining the attack. (24)"

Although the principal aim of the statement was to encourage countries to join the NPT as non-nuclear weapon states, the purpose of the qualifying clauses was to, inter alia, preserve the option of using nuclear weapons against non-Soviet Warsaw Pact countries or against North Korea which is "allied" with China. The Clinton administration, which has recently reaffirmed the 1978 policy, has promised that the Nuclear Posture Review will include an examination of U.S. negative security assurances and their implications for nuclear proliferation. Initial reports from anonymous U.S. government sources, however, indicate that this review will not result in any major substantive changes in U.S. policy (25).

Scenarios for U.S. nuclear weapons employment in Korea

The most likely scenario in which the United States would use nuclear weapons against North Korea is if Pyongyang--possibly in a response to a U.S. bombing attack against the nuclear facilities at Yongbyon--launched nuclear weapons against South Korea. (As in the Gulf War, Scud missiles armed with conventional warheads would not prompt a U.S. nuclear response; and it is only a remote possibility that the United States would respond with nuclear weapons if its troops were attacked with chemical or biological weapons.) A second, but even less likely, scenario that could trigger a U.S. nuclear response would involve a North Korean nuclear attack against Japan, especially one that resulted in numerous deaths of American troops stationed there.

Although the odds of a U.S. decision to use nuclear weapons on the Korean peninsula are near zero, some members of the U.S. Senate have advocated the reintroduction of tactical nuclear weapons into the region. On February 1, 1994, in response to North Korea's refusal to cooperate fully with the IAEA on the

inspection of its nuclear facilities, the U.S. Senate passed by voice vote an amendment to the State Department Authorization Bill, sponsored Senator Charles Robb (D-VA), that called on the President to "enhance the defense capability of United States forces by preparing to reintroduce tactical nuclear weapons in South Korea (26)." After a conference with the House of Representatives, however, this language was dropped from the bill and apparently replaced with the following sentence: "While diplomacy is the preferable method of dealing with the North Korean nuclear challenge, all options, including the appropriate use of force, remain available (27)."

Although the likelihood of the United States ever reintroducing tactical nuclear weapons onto the Korean peninsula again is also extremely remote, the proposed legislation illustrates that it is not inconceivable. Furthermore, such proposals, regardless of their actual likelihood, are certain to raise concerns in Pyongyang.

Because the United States is in the process of dismantling all of the Army's ground- launched tactical nuclear warheads, their reintroduction is not a realistic option. (The United States plans to dismantle the last Lance missile nuclear warhead by November 1994 and the last nuclear artillery shell by September 1995 (28).) The Navy and the Air Force, however, could still deliver tactical nuclear weapons in the Korean theater. The Air Force maintains 72 nuclear capable F-16s in South Korea (29), which could be equipped to carry B-61 gravity bombs for use against targets in North Korea. In addition, as mentioned above, the nuclear-capable B-1B bomber was used in the Team Spirit exercise in March 1993, (which North Korea's Foreign Minister called "a nuclear war rehearsal") (30).

The Navy's 7th fleet has at least one carrier battle group (and usually two) in the western Pacific and Indian Ocean with nuclear-capable surface ships and attack submarines. Normally, one of these is the USS Independence, which is based at Yokosuka, Japan. When the Independence is in dry dock, another aircraft carrier from San Diego, California, Alameda, California, or Bremerton, Washington, is forward deployed in the place of the Independence. Typically, during peacetime, a U.S. carrier battle group would include: one carrier, one to two Ticondergoga Aegis class cruisers, two or more destroyers (DDs); and up to three Sturgeon- or Los Angeles-class attack submarines (SSNs). Because the navy has now abandoned the tactical nuclear aviation mission, the only nuclear option remaining is the Tomahawk. Although U.S. surface ships and attack submarines no longer carry nuclear weapons during peacetime, the cruisers, detroyers, and attack submarines associated with the 7th fleet are all capable of carrying nuclear-armed Tomahawks (31).

With respect to strategic weapons, the United States would probably rule out ICBMs because land-based missiles, deployed in the continental United States, would have to fly over the North Pole in the direction of Russia to strike targets in North Korea and might inadvertently provoke a nuclear response from Moscow. Bombers and SLBMs, however, have been considered by at least a few U.S. strategic planners for carrying out nuclear strikes against "Third World targets." On October 10, 1991, Thomas Reed, the chairman of an advisory group on strategic deterrence, gave a briefing to General Lee Butler then-the Director of the Strategic Target Planning Staff (JSTPS) and Commander-in-Chief of the Strategic Air Command (SAC). Reed recommended creating a new single integrated operational plan (SIOP) option in which the United States would establish an "expeditionary force: a handful of nuclear weapons on alert, day to day, or specifically generated for nuclear missions, primarily for use against China or Third World targets." Reed suggested that the new SIOP option "Echo" could be executed by B-2 bombers, nuclear-armed SLCMs, or SLBMs. Just last year, General Butler publicly expressed interest in developing SIOP options for the use of U.S. nuclear weapons in regional conflicts (32). Also in 1993, Rear Admiral John Mitchell, the director of the Navy's Strategic System Programs told Congress that the Navy was increasing its capability to retarget SLBMs quickly to prepare for "a world of more diffuse threats than those imagined even five years ago (33)"--presumably a reference to potential conflicts outside the former Soviet Union.

Due to North Korea's densely deployed air defense systems, the United States would probably be reluctant to overfly targets in North Korea with aircraft and risk the lives of its pilots. Furthermore, the cost and small number of B-2 bombers would probably make the Air Force averse to its use in North Korea. SLCMs are more accurate than SLBMs and were used successfully in the Gulf War against Iraq. Therefore Tomahawk missiles appear to be the most likely option for nuclear use on the Korean peninsula.

U.S. Nuclear Weapons and China

Although the likelihood of the United States threatening to use nuclear weapons against China is extremely low, there are precedents for such threats--e.g. during the Korean War and again during the 1954-1955 and 1958 Taiwan-Formosa Straits crises--which Beijing has surely not forgotten (see also p. xxx). Furthermore, the United States still earmarks some of its strategic forces for contingencies involving China.

The most likely scenario in which the United States would use or threaten to use nuclear weapons against China would be if the United States became involved in a war with North Korea and China

intervened militarily on Pyongyang's behalf. In the 1990s, however, this would be extremely unlikely, in large part because, unlike the 1950s, China now possess its own nuclear weapons. (Furthermore, the Chinese, who have declared economic modernization as their top priority, have very strong disincentives to intervene militarily in Korea.)

According to Robert S. Norris and William A. Arkin, China was included in the U.S. SIOP until 1982 when a separate new plan was prepared for nuclear war with the PRC. Initially, that plan relied almost exclusively on B-52 bombers, but because of their removal from alert in September 1991, SSBNs took on a more central role vis-a- vis China. Apparently, U.S. war planners decided to rule out ICBMs for attacks against China for the same reason that they would not use ICBMs against North Korea--their flight paths over the North Pole could inadvertently provoke a response from Moscow (34).

PART III: RUSSIAN NUCLEAR FORCES

Introduction

The end of the Cold War, the virtual free fall in the Russian economy, the signing of strategic arms reduction agreements with the United States, and the unilateral initiatives taken by Mikhail Gorbachev and Boris Yeltsin have clearly had an enormous impact on the status of Russian nuclear forces.

The production of nuclear weapons systems has ground almost to a halt. Russia has stopped producing ballistic missile submarines, strategic bombers, and all intercontinental ballistic missiles (ICBMs) except for the SS-25. Development of new nuclear weapons has also been curtailed. For example, in 1991, the United States estimated that Moscow had "five or six" new types of long-range ballistic missiles under development (35). But today, U.S. intelligence estimates that number is down to two or three--none of which has yet been flighted tested. Testing of nuclear weapon systems has also declined. Russia has not conducted an underground nuclear test since becoming the successor state to the former USSR (which conducted its last test on October 24, 1990.) The flight testing of strategic ballistic missiles has also dropped precipitously in recent years (36).

Although the retirement of older, Russian strategic nuclear weapons has thus far been carried out at a relatively slow pace, the operational readiness or alert levels of existing Russian strategic forces has dropped precipitously.

Russia has made a commitment to dismantle a significant portion of its tactical nuclear warheads and asserts that this process is well underway.

Russian ICBMs in 1990 (Numbers and locations)

As of September 1, 1990 the Soviet Union deployed the following ICBMs (37):

--326 SS-11s: 60 at Bershet; 26 at Teykovo; 40 at Krasnoyarsk; 50 at Drovyanaya; 90 at Yasnaya; and 60 at Svobodnyy. (All of these bases are in Russia.)

--40 SS-13s at Yoshkar-Ola, Russia.

--47 SS-17s at Vypolzovo, Russia.

--204 SS-18s in Russia: 64 at Dombarovskiy; 46 in Kartaly; 64 in Uzhur; and 30 in Aleysk.

--104 SS-18s in Kazakhstan: 52 in Derzhavinsk, (formerly referred to by the United States as Imeni Gastello); and 52 in Zhangiz-Tobe.

--170 SS-19s deployed in Russia: 60 in Kozel'sk; and 110 in Tatishchevo.

--130 SS-19s in Ukraine: 40 in Pervomaysk; and 90 in Khmel'Nitskiy, (formerly referred to by the United States as Deraznya).

--234 SS-25s in Russia: 36 in Teykovo; 18 in Yoshkar-Ola; 45 in Yur'Ya; 45 in Nizhniy Tagil; 27 in Novosibirsk; 27 in Kansk; and 36 in Irkutsk.

--54 SS-25s in Belarus: 27 in Lida; and 27 in Mozyr.

--33 rail-based SS-24s in Russia: 12 in Kostroma; 12 in Krasnoyarsk; and 9 in Bershet (38).

--10 silo-based SS-24s deployed at Tatishchevo, Russia.

--46 silo-based SS-24s deployed at Pervomaysk, Ukraine.

Russian ICBM Deactivations

In anticipation of the implementation of the START Treaty, Russia has begun retiring some older ICBMs. As of early May 1994, Russia had deactivated (i.e. removed the warheads from) all 326 of its SS-11s, 20 of its 40 SS-13s, 27 of its 47 SS-17s and 16 of its 204 SS-18s, according to the U.S. Department of Defense (39). In addition, 12 of the 104 SS-18s in Kazakhstan have been deactivated (40); and all 46 of the SS-24s and at least 30 of the 130 SS-19s in Ukraine have been deactivated (41).

Based on their location, it seems likely that the 200 SS-11s based at Drovyanaya, Yasnaya, and Svobodnyy were targeted on China prior to their retirement (42). Most of the other ICBMs that have been deactivated were probably targeted on the United States.

Russian ICBMs in 1994 (numbers) and projections for START

After taking these deactivations into account, the Strategic Rocket Forces currently have 20 SS-13s, 20 SS-17s, 188 SS-18s, 170 SS-19s, 10 silo-based SS-24s, 36 rail-based SS-24s and 351 SS-25s in Russia plus 92 SS-18s in Kazakhstan, 100 SS-19s in Ukraine, and 54 SS-25s in Belarus--for a total of 1,041 ICBMs with 5,385 warheads. Since 1990, this represents a 26 percent cut in missiles and a 19 percent cut in warheads.

Under START I Russia is expected to retain some SS-19s, SS-24s, and SS-25s, and no more than 154 SS-18s. Under START II, Russia will be required to eliminate all of its SS-18 and SS-24 ICBMs and is expected to field no more than 105 SS-19s downloaded to one warhead each plus a total of 500-1,000 single-warhead SS-25 type missiles, both in silo- and mobile-basing modes (43).

Russian ICBM Production

Russian ICBM production has continued to decline in the early 1990s (44). In February 1993, the CIA's National Intelligence Officer for Strategic Programs, Dr. Lawrence Gershwin said, "today the only strategic missile in production at all is the SS-25 road mobile ICBM, and that production is down from what it historically has been. We are really at a rather low point in missile production. (45)" Development of New Russian ICBMs

The U.S. intelligence community now expects Russia will soon flight test a follow-on to the SS-25 and deploy it sometime "during this decade" both in silos and in a mobile basing mode (46). Gershwin testified in early 1993 that neither of these missiles had been flight tested (47) and as of early 1994, there were no new reports to the contrary.

Russian SSBNs in 1990 (numbers and locations)

In the START I September 1, 1990 MOU, the Soviet Union declared a total of 62 SSBNs divided as follows: 38 in the northern Atlantic fleet on the Kola Peninsula; and 24 in the Pacific fleet (15 based at Rybachiy some 15 kilometers southwest of Petropavlosk on the Kamchatka Peninsula; and 9 at Pavlovskoye some 65 kilometers southeast of Vladivostok.)

Among other things, the START I MOU revealed that two-thirds of the most modern SSBNs were based in the northern Atlantic Fleet.

The 38 on the Kola Peninsula included: 6 Typhoons; 7 Delta IVs; 5 Delta IIIs; 4 Delta IIs; 9 Delta Is; 1 Yankee II; and 6 Yankee Is. The 15 at Ribachiy included: 9 Delta IIIs; 3 Delta Is; and 3 Yankee Is. The 9 at Pavlovskoye included 6 Delta Is and 3 Yankee Is.

In 1988, Rear Admiral William Studeman, then-Director of U.S. Naval Intelligence, told Congress that Yankee-class SSBNs had stopped patrolling of the U.S. coast in late 1987 and were "conducting combat service patrols against theater targets," compensating for the projected loss of SS-20 missiles under the Intermediate-Range Nuclear forces (INF) Treaty. He added that the Yankee-Is, equipped with 16 3,000 kilometer range SS-N-6 missiles each "can reach...Asian targets while alongside their piers." (48) (Specifically, a Yankee-I based at Ribachiy could launch missiles from port and hit Japan, while a Yankee-I based at Pavlovskoye could hit China, North Korea, and Japan.)

Russian SSBNs in 1994 (numbers and locations)

Over the last four years, Russia has retired at least 20 percent of its SSBNs, including at least 5 submarines in the Pacific fleet. In response to a Freedom of Information Act request filed by Josh Handler of Greenpeace, the office of U.S. Naval Intelligence reported that Russia had removed 9 Yankee-Is, the single-unit Yankee II, and three Delta Is from operational service as of January 1, 1994 (49). Consequently, as of that date, Russia had 30 SSBNs on the Kola Peninsula and 19 in the Pacific fleet. The latter consisting of 8 Delta-Is, 9 Delta-IIIs, and 2 Yankee-Is.

In June 1994, Admiral Sheafer indicated that one additional Russian SSBN has been retired since January, bringing the total to 48. He did not, however, specify whether the class of that submarine or the fleet from which it was removed. It should also be noted that it is extremely unlikely that all 18-19 Russian SSBNs in the Pacific fleet (or all of the 29-30 in the Northern fleet for that matter) are fully operational given Russia's economic crisis and the numerous press reports that Moscow only maintains one or two SSBNs on patrol at any given time (50). Russian SSBN Production and Projections SSBN Reductions Admiral Felix Gromov, Commander-in-Chief of the Russian Navy, said in 1993 that "the construction of new strategic submarines is not planned for the near future, although designers continue to work in this field. (51)" Admiral Gromov added that by the year 2000, Russia would reduce the number of its SSBNs to 24 (52), presumably six Typhoon, 7 Delta IV, and 11 Delta III class submarines. (If this is the case, it seems likely that Russia would decide to close down the Pavlovskoye base near Vladivostok since none of these submarines is based there (53).) U.S. intelligence officials echoed Admiral Gromov in their public

statements to the U.S. Congress in 1993. CIA analyst Gershwin said in February 1993 that, for the first time since the 1960s, Russia has stopped producing ballistic missile submarines and the U.S. intelligence community does not "anticipate a resumption of the production of ballistic missile submarines until...sometime after the year 2000. (54)" In June 1994, Rear Admiral Edward Sheafer, Director of U.S. Naval Intelligence, said that under START II, the Russian SSBN force "will decrease by 50 percent from its current level of 48 submarines. (55)"

Russian SLBMs under Development(56)

Russia is developing a new SLBM for deployment on Typhoon-class submarines (57). This follow-on to the SS-N-20 missile had not been flight tested as of early 1994, but U.S. naval intelligence projected in May 1993 that "the missile should begin flight testing soon." According to an April 1993 Russian press report, the SS-N-20 follow-on development is slated to be complete by 1996. U.S. Naval Intelligence expects that all six of the Typhoon SSBNs will be backfitted with the follow-on to the SS-N-20 by the late 1990s. It seems likely that the follow-on to the SS-N-20 based on Typhoon submarines on the Kola Peninsula would be used for U.S. targets rather than Asian targets.

Russian Bombers in 1990 (numbers and locations)

In the September 1990 START MOU, the Soviet Union declared that it had the following strategic bombers:

--46 Bear-G, all of which were based in Ukrainka, Russia--just north of the Chinese border.

--84 Bear-Hs deployed as follows: 21 in Uzin, Ukraine; 22 in Mozdok, Russia; 40 in Semipalatinsk, Kazakhstan; and one in Kubyshev, Russia where the Bear-H was produced.

--21 Blackjacks: six test planes at the Zhukovsky flight test center just south of Moscow; two deployed in Kazan, Russia where the Blackjacks were produced; and 13 deployed at Priluki, Ukraine. Russian bombers in 1994 (numbers and locations)

Since the Soviet Union provided data for the START I treaty, little additional information on the number and locations of Soviet/Russian strategic bombers has surfaced. It is well documented, however, that the 40 Bear-H bombers based at Semipalatinsk, Kazakhstan had all been flown back to Russia as of early 1994 (58). In addition, some new data on the Blackjack are also available, indicating that there are now 19 or 20 Blackjacks based in Priluki, Ukraine, (59) and at least six in Russia which appear to divide their time between the Zhukovsky flight test center (60) and Engels air force base on the Volga river near

Saratov (61).

It now appears that the 46 Bear-G, located in the Far East Military District at Ukrainka, are the only START-accountable bombers based in the Asian part of Russia (i.e. east of the Ural mountains). These aircraft were apparently transferred from the Irkutsk Strategic Air Army (SAA) located in the Transbaykal Military District to Ukrainka sometime between 1988 and 1990 (62). The Pentagon reported in 1988 that the Bear-G "have been reassigned to a theater role [in Asia] and have been observed conducting regular combat training exercises against naval and land targets in the Northern Pacific Ocean region. (63)" The Bear-G are armed with the nuclear-capable AS-4 missile, which has a range of 280-560 kilometers and can conduct both land-attack and anti-ship missions (64).

Given Ukraine's control of 80 percent of the former Soviet Union's Blackjacks and 25 percent of its Bear-Hs, plus Russia's lack of aerial refueling capability, it seems unlikely that Moscow would be able to bring many of its most modern strategic bombers to bear in a conflict in Northeast Asia.

Projected Russian Strategic Bomber Forces

Moscow's strategic bomber production declined sharply in the early 1990 (65)s and has now ceased altogether (66). The number of heavy bombers Russia will retain in the future will probably not depend on the numerical limits imposed by START I and START II on Russian strategic forces but rather on how many Blackjacks and Bear-Hs it can retrieve from Ukraine and how many aircraft it can afford to maintain.

In addition, the role of Russian strategic bombers is expected to change dramatically in the future. Reportedly, the Russian air force has recently been restructured in order to conform with the new military doctrine which stresses preparation for tactical missions around Russia's periphery. Blackjack, Bear, and Backfire bomber crews have begun training as a "composite force" to deliver conventional weapons against targets near Russia's borders (67).

Soviet INF Treaty Implementation east of the Urals(68)

The INF Treaty, which was signed in December 1987 and entered into force on June 1, 1988, required the United Stated and the Soviet Union to dismantle all of their land-based missiles with a range of 500 to 5,500 kilometers within three years. In implementing this treaty, the Soviet Union dismantled a significant number of nuclear-armed missiles that were certainly targeted against China and a few that may have been targeted on North Korea.

These mobile missiles included the 5,000 kilometer range three-warhead SS-20s, the 900 kilometer range SS-12 and the 500 kilometer range SS-23. The SS-20s within range of China included 45 at Novosibirk, 45 at Drovyanaya, 45 at Barnaul, and 36 at Kansk. The SS-12s within range of China included 36 at Gornyy, 9 at Kattakurgan, and 40 at Novosyoyevka. (The Novosyoyevka base, just north of Vladivostok, put the 900 km SS-12 within range of Pyongyang as well as Northeastern China.) The SS-23s within range of China included 22 in Semipalatinsk, Kazakhstan.

Ground-Launched Nuclear Weapons with a Range Less than 500 Km

On October 5, 1991, then-Soviet President Mikhail Gorbachev declared that the Soviet Union would eliminate all of its existing nuclear artillery projectiles and warheads for tactical nuclear missiles (69). On January 29, 1992, Russian President Yeltsin said that Russia had stopped the production of nuclear warheads for nuclear land mines as well as for artillery and tactical missiles. He added that "stocks of such nuclear devices will be eliminated. (70)" Russian officials have said that they plan to dismantle all of the nuclear land mines by 1998 and all the tactical warheads associated with its short-range missiles and artillery by the year 2000 (71). Naval Tactical Nuclear Weapons and the Pacific Fleet

In his October 5, 1991 initiative, Gorbachev said that "all tactical nuclear weapons shall be removed from surface ships and multi-purpose submarines." (In February 1993, the Russian Ministry of Defense announced that this initiative, which had been reaffirmed by Yeltsin, had been carried out (72).) In his January 29, 1992 initiative Yeltsin said that Russia would dismantle one-third of its naval tactical weapons formerly deployed on ships, submarines and aircraft. Subsequently, Russian officials indicated that they plan to fulfil this pledge by 1996 (73).

Presumably, the two thirds of Russia's naval tactical nuclear warheads that are not slated for dismantlement will remain in storage facilities near existing naval bases, including those in the Pacific Fleet. Although Russia has been reducing the number of nuclear-capable ships, submarines and aircraft in the Pacific Fleet, a significant residual nuclear capability remains and some modernization appears to be taking place. For example, in the early 1990s, Moscow began replacing obsolete Tu-16 Badger medium-range bombers with the modern, supersonic Tu- 22M/Tu-26 Backfire strike aircraft (74). IISS estimated last year that 70 Tu-26s in two regiments are based at Alekseyevka naval airfield north of Vladivostok. Backfires can carry nuclear payloads of AS-4s, AS-16s, or nuclear gravity bombs (75).

The Tu-26s are supported in the strike role by 15 Su-24 Fencers

and 35 Su-17 Fitter fighter-bombers (76), both of which can carry nuclear gravity bombs (77).

Pacific Fleet surface combatants are also capable of nuclear surface strike operations. The Fleet has a single Slava-class cruiser and six Sovremenny-class destroyers (78). The Slava (Chervona Ukraina) can carry 16 SS-N-12 anti-ship missiles with an estimated range of more than 500 kilometers. The Sovremennys are capable of carrying eight 90-kilometer SS-N-22 anti- ship missiles each (79).

The surface ships are augmented by about ten cruise missile submarines (SSGNs) including two Oscar II boats capable of fielding 24 SS-N-19 SLCMs (80). SS-N-19s are anti-ship cruise missiles with an estimated range of 550 kilometers. Additionally, the Sierra-I class and the Akula-class SSNs assigned to the Pacific Fleet are able to carry the 3,000 kilometer range SS-N-21 SLCM for land attack missions (81).

A host of Pacific Fleet units can conduct nuclear anti-submarine operations. Airborne ASW forces include 15 Il-38 May, 35 Be-12 Seagull, and 20 Tu-142 Bear F aircraft. Sixty Ka-26 and Ka-27 Hormone helicopters supplement this force. All of these units are able to carry nuclear torpedoes and depth charges (82).

At least 22 surface combatants can conduct nuclear ASW operations, although primary responsibility would fall to the two Kara-class cruisers and three Udaloy class destroyers that are dedicated to ASW. These ships can carry nuclear-tipped ASW torpedoes (83). Pacific Fleet attack submarines are also able to carry nuclear torpedoes. Additionally, Akula- and Sierra- class SSNs can carry the SS-N-15 nuclear depth charge and the SS-N-16 ASW rocket (84).

Notwithstanding this extensive nuclear-capable force structure, the Pacific Fleet is a hollow force. The 1994 U.S. Director of Naval Intelligence Posture Statement reports that the Fleet is suffering severe supply and financial problems (85). Four Pacific Fleet conscripts reportedly starved to death last year in a scandal that prompted one of several Fleet command changes (86). In July, 1993 oil and lubricant shipments to Fleet bases were halted because it could not pay its bills (87). Many of the Pacific Fleet's ships are unfit to go to sea due to a lack of spare parts and maintenance (88). Finally, numerous reports indicate that operating tempo for all of Russia's major fleets, including the Pacific Fleet, has dropped precipitously.

Russian Nuclear-Armed SAMs in the Far East Military District

In 1990, the Pentagon said, "The Soviets are...substantially upgrading their Far East air defense capabilities with the rapid

buildup of SA-10 Grumble surface-to-air missile sites." At that time, DOD projected that a total of 27 SA-10 battalions would eventually be deployed in the Far East (89). It is estimated that at least one out of every three SA-10 launchers has nuclear-armed interceptor missiles (90). (In 1993, IISS estimated that there were 570 SAMs in the Far East Military District, but did not provide a breakdown by type.)

According to Russian officials, Moscow plans, in accordance with President Yeltsin's January 29, 1992 initiative, to dismantle one half of the warheads associated with anti-aircraft missiles by 1996 or 1997 (91). Presumably, the warheads that will be dismantled will be those associated with the older SA-2 and SA-5 SAMs rather than the SA-10s. Air-Launched Tactical Nuclear Weapons

Russia has said that it plans to dismantle one-half of the nuclear munitions for tactical aircraft by 1996 (92). Presumably the other half will remain in storage depots near existing depots, including those at bases in the Asian part of Russia. Russian attack aircraft based in the Far Eastern TVD include the MiG-27 Flogger and the Su-24 Fencer E (93), both of which can carry nuclear gravity bombs (94). In 1988, the Pentagon said that the Soviet Union's Strategic Air Army (SAA) at Irkutsk, just north of the Mongolian border near Lake Baikal, was "arrayed against ... China/East Asia." At that time, nuclear-capable Backfire, Bear-G, Badger, and Blinder bombers were based at Irkutsk (95). Today, the status of the Irkutsk Air Army is unclear.

Russian Brain Drain to China and North Korea

The continued political and economic turmoil in Russia has intensified international concerns about the prospect for a "brain drain" in which former nuclear weapons scientists and engineers sell their expertise to the highest bidder.

CIA Director James Woolsey told Congress in July 1993 that "delays in pay, deteriorating working conditions, and uncertain futures are apparently spurring Russian specialists to seek emigration despite official restrictions on such travel. (96)" Woolsey added that China has been "aggressively recruiting" weapons scientists from Russia and his aide Gordon Oehler said, "there is evidence the North Koreans would like to have them [too], but the Russians are unwilling to go. (97)"

In January 1993, Yevgeny Primakov, head of the Russian Foreign Intelligence Service (FIS) said that "as of the beginning of 1993, the FIS had no data indicating that Russian specialists of this kind were working in Third World countries which are producing or starting up the production" of weapons of mass

destruction. In February 1994, the Russian Security Ministry announced that North Korea had tried to recruited 60 engineers from Makeyev Design Bureau in Miass, which is responsible for Scud missiles and SLBMs. Russian police, however, prevented the group from boarding a plane in Moscow bound for Pyongyang in October 1992 (98).

In January 1994, the Japanese weekly Shukan Bunshun published what it claims is an official Russian government assessment of the brain drain to North Korea. According to this document, 160 Russian specialists have participated in the North Korean nuclear weapons and ballistic missile programs and 9 nuclear weapon scientists and 17 missile engineers are currently taking part (99).

Russia: No-First-Use and Nuclear Use Scenarios

In a press conference on November 3, 1993, Russian Defence Minister Pavel Grachev made it clear that Russia's newly adopted military doctrine does not reaffirm the pledge made in 1982 by Leonid Brezhnev that the Soviet Union would not be the first to use nuclear weapons under any circumstances (100). Grachev said that "there is absolutely nothing in the doctrine about non-use of [nuclear] weapons. (101)"

The change in Russia's declaratory policy on no-first-use may reflect, inter alia, a general sense in Moscow that because of the recent, sharp decline in its conventional forces and its overall economic and political situation, Russia must now rely more on nuclear weapons both for deterrence and for its status as a major world power (102). With respect to nuclear deterrence, Moscow may be particularly concerned that if its relations with Beijing take a dramatic turn for the worse in the next 10-20 years, Russian conventional forces east of the Urals might not be able to counter those that China could bring to bear. Sergei Rogov, deputy director of the Institute for the Study of USA and Canada in Moscow, recently wrote: "While relations with China today are pretty good, a military conflict with China has been and will always be a nightmare for Russian military planners. Concerns about whether Russia is capable of fighting a conventional war with China lead to an emphasis in Russian military circles on the need to keep some tactical nuclear weapons. (103)"

As mentioned above, Russia has already dismantled its land-based missiles with a range between 500 and 5,500 kilometers in compliance with the INF Treaty and is also committed to dismantle all of the warheads associated with land-based missiles with a range under 500 km, as well as its nuclear artillery and nuclear land-mines. Therefore, if a new border dispute were to erupt between Russia and China, the most likely Russian nuclear option

would be tactical air- launched nuclear weapons, such as AS-4 and AS-16 missiles or gravity bombs, delivered by Bear-G, Backfire, Blinder, Fencer, Flogger, or Fitter attack aircraft.

A second, but even less likely scenario, might involve a Russian nuclear attack against Japan if Tokyo tried to retake the Kuril islands by military force. Such a scenario might involve both air- and sea-launched tactical nuclear weapons. PART IV: CHINESE NUCLEAR WEAPONS

China's nuclear weapons program remains shrouded in secrecy but it appears that Beijing is continuing to slowly upgrade and expand its forces with the development of new types of ballistic missiles and the acquisition of nuclear-capable aircraft from Russia.

Unlike the United States and Russia, China has not yet agreed to subject its nuclear forces to legally binding limits in any international agreements. But China, of course, has a much smaller force--roughly 300 deployed nuclear warheads and possibly another 150 ground-launched tactical nuclear warheads in storage.

The Rationale Behind Chinese Nuclear Forces

China began a program to develop nuclear weapons in the mid-1950s and exploded its first nuclear weapons device in 1964. Since then it has continued to give the maintenance and development of nuclear weapons a high priority. There appear to be four major reasons why Beijing continues to dedicate a substantial amount of resources to its nuclear weapons programs. First, China seeks to deter U.S. and Russian aggression or political intimidation. (Of course if deterrence failed and the United States or Russia initiated the use of nuclear weapons against China, Chinese nuclear forces would give Beijing the capability to retaliate and punish the aggressor and/or deny the aggressor victory.) China intends to make sure that it will never be subjected to what it calls "nuclear blackmail" again (104). This concern stems directly from Chinese experience in the 1950s and 1960s. China was subjected to nuclear threats by the United States during the Korean war and during the Taiwan-Formosa Strait Crises (Quemoy and Matsu) in 1954-1955 and 1958, and by the Soviet Union during the Sino-Soviet border clashes in 1969 (105).

Today, even if the United States and Russia ratify and implement the START II Treaty, they would still have approximately ten times more nuclear weapons each than China. Moreover, China knows that both Russia and the United States have targeted China in the past with nuclear weapons and could do so again in the future. In a sentence that seems representative of Beijing's view--a former

member of the General Staff and the Ministry of National Defense of China's People's Liberation Army recently wrote: "Before the total elimination of the superpowers' nuclear arsenals, it would be suicidal and reckless for China to give up its own limited nuclear retaliatory capability. (106)"

Second, China's robust nuclear weapons program also appears to be part of an effort to increase Beijing's international prestige and status, and influence over both regional and international security issues (107). Although China has the world's largest population and fastest growing economy, it is still a relatively poor country and would probably not be considered a major power with status comparable to the other permanent members of the UN Security Council without nuclear weapons.

In a related reason, over the last three decades, China--like France--has apparently seen its nuclear weapons as a way to remain politically autonomous from Washington and Moscow. By developing its own nuclear weapons, China--unlike Japan and Germany--has not had to join a security alliance and rely on another state's "nuclear umbrella. (108)" Thus, in some ways, China's nuclear forces serve a political purpose similar to France's "force de frappe."

China also probably seeks to maintain and upgrade its nuclear faces so that it can settle regional security issues, (e.g. border disputes with India and Vietnam, disputes over claims to the Spratly Islands, the status of Taiwan), on its own terms without concern that it could be politically coerced by any of its neighbors that currently have or may have nuclear weapons in the future (109). In addition to the United States and Russia, China must be concerned about many of its neighbors: India and Pakistan currently have the capability to assemble a relatively small number of nuclear weapons quickly; North Korea may have or may be pursuing nuclear weapons capability; and Japan, South Korea, and Taiwan, have the technology to develop nuclear weapons relatively quickly (110). Thus, as a hedge against nuclear proliferation in Asia, China has an incentive to maintain and upgrade its nuclear arsenal (111).

Trends in Chinese Nuclear Forces

China has developed a nuclear "triad," but with far more emphasis on land-based ballistic missiles than on submarines or bombers. The technology of these systems lags far behind U.S. and Russian nuclear weapon systems. For example, China's ballistic missiles are believed to be far less accurate than U.S. and Russian ballistic missiles. In addition, Beijing has not yet developed missiles that can deliver warheads to separate targets.

As mentioned above, China's nuclear arsenal is far smaller than

the U.S. and Russian arsenals and will not come anywhere near those levels for the foreseeable future. China's force structure and operations, as well as its declaratory policy, reflect a counter-value, "city busting," second strike strategy which can be fulfilled with a relatively small force.

Although it seems clear that China does not seek to field large numbers of nuclear weapons, the People's Liberation Army (PLA) continues to work on many different types of nuclear weapons--a guideline referred to as "small but all-inclusive. (112)" Consequently, Beijing appears to have numerous development programs underway to improve its nuclear forces in qualitative terms. The pace of Beijing's modernization programs, however, is extremely gradual and slow. For example, as a rule of thumb, many years pass between the first flight test of a new ballistic missile and the actual deployment of that missile. With China's growing economy, it will probably have sufficient resources to raise its defense budget, including increased expenditures for nuclear weapons for many years to come.

Improving Survivability

In order to deter a U.S. or Russian nuclear attack against China, Beijing has focused its efforts on developing a secure strategic retaliatory capability. To increase the survivability of its nuclear forces, China has tried to make its ballistic missiles more difficult to locate and target by storing them in caves and tunnels, using camouflage, deploying them on mobile land-based launchers, and deploying them on submarines. Current modernization efforts, e.g. the development of solid fuel mobile ICBMs and lighter more compact warheads, seem geared to reduce the vulnerability of China's nuclear forces to a first strike.

Land-based ballistic missiles

Land-based ballistic missiles are the mainstay of China's nuclear forces. These systems vary in range from 1,000 km to 13,000 kilometers. Between the mid-1960s and the early 1970s, China developed the Dong Feng or "East Wind" family of four land-based missiles: the DF-2; DF-3; DF-4; and DF-5. All four missiles were intended to have the capability of striking U.S. targets. The DF-2, first successfully flight tested in 1964, has a range of 1,000 to 2,000 kilometers and was designed with the intention of hitting Okinawa, Japan. (The DF-2 has now been removed from service.) The DF-3, first successfully flight tested in 1966, has a range of 2,600-2,800 kilometers and was designed with the intention of hitting the U.S. bases at Clark and Subic Bay in the Philippines. The DF-4, first successfully flight tested in 1970, has a range of 4,700 kilometers and was designed with the intention of hitting Andersen AFB on Guam. Finally, the DF-5, first successfully flight tested in 1971, has a range of 12,000-

13,000 kilometers and was designed with the intention of hitting the continental United States (113).

After the Sino-Soviet border clashes in 1969, however, Beijing decided to retarget most of its nuclear forces on the Soviet Union. According to John Lewis and Xue Litai, Soviet cities became the designated targets of Chinese missiles in the early 1970s (114). It is believed that most Chinese land-based missiles are deployed in the northwestern part of China from where they would only have the range to hit targets in Russia (115).

The DF missile series have a slow response time, vulnerable basing modes, and poor accuracy (116). Consequently, the Chinese leadership has decided to develop new solid fuel, mobile, land-based ballistic missiles, including the DF-21, DF-31, and the DF-41.

DF-3 (CSS-2)(117)

China currently deploys 40-80 DF-3 missiles (118). This road-mobile DF-3, which was the first Chinese missile to use storable liquid fuel, has a single warhead with an estimated yield of 1-3 megatons. It was initially deployed in 1971. Reportedly, the DF-5s are deployed at launch sites near Dalong, Liuchingkou, X'ian, Kunming, Jianshui, Liankengwang, Xuanhua, Fengrun, Itu and Tangdao with most of the missiles in the northwestern part of China near the Soviet (now Russian) border (119). Many of the D-5s are stored in caves and valleys in order to conceal their locations and enhance their survivability. In a report published in 1976, the U.S. Defense Intelligence Agency (DIA) said that the DF-3 is "probably intended for relatively largely population targets in central and eastern Russia. (120)" According to a 1994 report by the U.S. Congressional Research Service (CRS), the deployment of the DF-3 "provides the PRC with a capacity to hit static targets such as population and industrial centers in central and eastern Russia, for example, as well as similarly close targets elsewhere in East and South Asia. (121)"

DF-4 (CSS-3)

Approximately 10-20 DF-4 missiles are now deployed in China (122). This liquid fuel missile, which is deployed in both silos and tunnels, was first deployed in 1980. The DF-4's warhead has an estimated yield of 1-3 megatons. The silo-based versions are reportedly located in China's central and southeast region near Sundian and Tongdao (123). The tunnel-based versions are based in the northwestern region on erector launchers in Qinghai (Xiao Qaidam, Da Qaidam and Delingha) where they were moved in 1971 when they were retargeted against the Soviet Union (124). The DF-4 is probably targeted against Russian military-industrial and population centers (125). According to the U.S. Air Force, it

"can reach targets throughout European Russia, including Moscow. (126)"

DF-5 (CSS-4

Today China deploys 4-10 DF-5A missiles in silos (127). (These are deployed among a large number of fake silos to make them more survivable. (128)) China has the capacity to build many more DF-5 as has been demonstrated by the production of CZ-2 and other space launch vehicles but appears content to demonstrate ICBM capability with a small number of missiles (129). This liquid fuel system, whose warheads have an estimated yield of 3-5 megatons, first became operational in 1981 (130). Two of the DF-5As are located near Luoning in Henan Province (131). The DF-5A, with a range of up to 13,000 kilometers is China's only missile capable of hitting the continental United States. According to Jane's Strategic Weapons Systems, the DF-5 has a circular error probable (CEP) of 500 meters. (It seems unlikely, however, that the DF-5 could be that accurate given that China's nuclear weapons program as a whole is relatively backward.)

DF-21

Reportedly, China deploys roughly 25-50 DF-21s (132). This mobile missile, which has a range of 1,800 kilometers, was first deployed in 1988. The DF-21, which has a warhead with an estimated yield of 200-300 kilotons, is China's first land-based intermediate-range ballistic missile with solid fuel (133). (The JL-1 SLBM, which is essentially the same missile as the DF- 21, was China's first ballistic missile with solid fuel. (134))

According to one press account, the DF-21s are deployed in the northwest province of Qinghai and the southwest province of Yunnan (135). Presumably those DF-21 based in Qunghai are targeted against urban industrial areas in Russia and those in Yunnan are targeted against northeastern India and south East Asian countries (136). Jane's Defence Weekly reported in January 1994 that some of the DF-21s have recently been equipped with conventional warheads "so they can be more effectively employed in limited local wars. (137)"

Chinese ICBMs under Development

In order to improve the reliability and survivability of its land-based nuclear forces, China is now trying to develop solid fuel, mobile ICBMs (138). Currently, all of China's land-based nuclear missiles except for the DF-21 have liquid fuel. These missiles are not only more difficult to maintain than solid fuel missiles, but they have slow reaction times as well. For example, in order to launch the DF-4 tunnel-based missiles, the PLA must roll the missiles out to the launch pad, place them on the launch

stand and fuel them--a process that requires several hours (140). Furthermore, China has only a handful of ICBMs and these are all liquid fuel silo-based systems. In addition to the development of ICBMs with solid fuel and mobile basing modes, many analysts believe that China is also trying give its new land-based missiles increased range and the capability to carry multiple independently targetable reentry vehicles (MIRVs).

In order to develop solid fuel mobile ICBMs with greater range and MIRVs, it appears likely that China would have to decrease the size and weight of its current warheads. According to U.S. government officials and private analysts, China's 5 October 1993 and June 10 1994 underground nuclear tests at Lop Nor were probably part of a series of tests to develop smaller, more compact warheads for its new mobile ICBMs (141), possibly for the single-warhead DF-31 ICBM or for the DF-41, which may carry MIRVs (142). (U.S. Senator Larry Pressler has compared the DF-31 and DF-41 to the Russian single-warhead SS-25 and ten-warhead SS-24 ICBMs, respectively (143).) China's commitment to negotiate a comprehensive test ban (CTB) only by 1996--a commitment just undertaken in 1993--may represent Beijing's estimate of how long it will take China to complete the test program for the development of new warheads with higher "yield-to-weight rations" for these ICBMs. (Chinese officials, however, claim that the purpose of the planned tests is to incorporate safety features into their warheads, such as insensitive high explosives (144).)

According to John Lewis and Hua Di, the new DF-31 and DF-41 solid fuel mobile ICBMs will have ranges of 8,000 and 12,000 kilometers and become operational in the mid- 1990s and late-1990s, respectively. They also assert that the warhead originally designed for the DF-31 and DF-41 has a yield of 200-300 kilotons, but the 660 kiloton underground blast at Lop Nor on May 21, 1992 may indicate that the Chinese are trying to develop a higher yield warhead for these two missiles (145). On May 4, 1994, Senator Pressler, using the New Delhi-based Institute of Defense Studies and Analysis as his source, cited the same ranges and deployment dates for the DF-31 and DF-41 as Lewis and Hua, but estimated that they will have yields of 100 kilotons and one megaton, respectively (146). Pressler also said that these ICBMs will probably be MIRVed and "can be raised and launched in thirty minutes. (147)"

Russian Scientists Reportedly Help China Develop New ICBMs

It appears that, as part of its effort to develop solid fuel mobile ICBMs, Beijing has actively recruited former Soviet weapons scientists and engineers to come work in China. James Woolsey, director of U.S. Central Intelligence, told Congress on July 28, 1993 that China is "the country that is probably most aggressively recruiting CIS [Commonwealth of Independent States]

scientists to help in a wide number of weapons programs." Woolsey added, "there is substantial movement along those lines. (148)" Subsequent to Woolsey's statements, a spate of press reports indicated that the flow of CIS weapons designers to China continued on a large-scale in late 1993 (149).

China seems interested in acquiring technology from the CIS, particularly from Russia, to improve the range and accuracy of its ballistic missiles, especially technology that would help Beijing design the DF-31 or a follow-on version so that it is similar to Russia's SS-25 mobile, solid fuel ICBM (150). China has also reportedly approached Ukraine seeking help to improve Beijing's ballistic missile technology (151).

In addition to the unsanctioned help from Russia, there appears to be a fair amount of sanctioned help as well. Reportedly, Russia's Atomic Energy Minister Viktor Mikhailov visited China in November 1992 as part of an initiative to broaden nuclear cooperation between Moscow and Beijing (152). Reportedly, China has also contracted with Russia to buy three diesel-powered Kilo-class submarines (153) and purchased a "sizeable force of SA-10 SAMs. (154)"

Chinese SSBNs and SLBMs

China has built two Xia-class SSBNs which can carry 12 Julang-1 (JL-1) SLBMs each (155). Although Beijing has declared both of these submarines to be operational, some in the West continue to question whether both SSBNs have actually conducted patrols with their missiles (156). According to the 1994 CRS report, "It is uncertain if the second Xia-class submarine can be considered fully operational. (156)" Furthermore, in his June 1994 Posture Statement, the Director of U.S. Naval Intelligence said China had "commissioned" only one SSBN (157). The SSBNs are believed to be deployed in the North Sea Fleet, possibly at Quingdao or Ningbo on the Yellow Sea (158).

The JL-1, which was developed and tested during the 1980s (159), was China's first ballistic missile to use solid fuel. Reportedly, the JL-1 has not been flight tested since 1988 (160). With a range of only 1,700 kilometers, the JL-1 could only strike Moscow from the Baltic Sea--an unlikely location for a Chinese submarine. Presumably, the JL-1 is designed to be deployed on submarines patrolling in the western Pacific from where it could target urban industrial areas in the eastern part of Russia (161).

SSBNs and SLBMs Under Development

The U.S. intelligence community apparently now believes that China has, at least for the near future, halted or slowed SSBN

production. In May 1993, Rear Admiral Edward Sheafer told Congress that China's "nuclear-powered submarine construction program effort has probably at least temporarily ended at the current half dozen ballistic missile and attack units (162)" ("the current half dozen" apparently refers to one operational Xia-class SSBN and five Han-class SSNs (163).) But in his June 1994 posture statement, Admiral Sheafer said, "China is believed to be working on an indigenous design for a second generation nuclear-powered ballistic missile submarine to carry a new SLBM also in development; the new SSBN may be launched by the turn of the century." The "new SLBM..in development" that Sheafer referred to is the JL-2, which is a variant of the DF-31 ICBM (164). Like the DF-31 it is expected to use solid fuel and have a range of 8,000 kilometers.

The relatively slow pace of SSBN development and production may be due, inter alia, to technical difficulties China has experienced in developing nuclear reactors for its submarines and solid fuel for its SLBMs (165). Robert S. Norris, Richard Fieldhouse, and Andrew Burrows, authors of Nuclear Weapons Databook Volume V: British, French, and Chinese Nuclear Weapons project that China will eventually build "perhaps four to six" SSBNs (166).

Current Chinese Bombers

There is a considerable amount of uncertainty about the number and types of Chinese aircraft that are equipped to carry nuclear weapons. Norris, Burrows, and Fieldhouse estimate that China currently fields approximately 180 nuclear-capable aircraft: 120 Hong-6; 30 Hong-5; and 30 Qian-5. They estimate that a total of approximately 150 nuclear gravity bombs are available to arm these aircraft (167). CRS, on the other hand, estimates that the Chinese nuclear bomber forces consists of 30 Hong-6 while IISS says only that "some [H-6] may be nuclear- capable."

These planes are based on Soviet technology from the 1950s and 1960s. (Specifically, the design of the H-6, H-5, and Q-5 were based on the Soviet TU-16 Badger, the IL-28 Beagle, and the Mig-19, respectively (168).) The Hong-6 and Qian-5, however, are still under production (169). In the last two decades, bombers have received less emphasis in China's nuclear forces than ballistic missiles, presumably because of their limited range and vulnerability to Soviet/Russian air defense (170). According to CRS, "it is often claimed that these obsolescent aircraft would have great difficulty penetrating sophisticated air defenses. At least some observers speculate that it is improbable that China's air force has a nuclear delivery mission against either Russia or U.S. forces in Asia. (171)" Little is publicly known in the West about the locations of Chinese bomber bases. The Hong-6 may be based at Datong (Qinghai) (172).

Chinese Bombers Under Development

The Hong-7 bomber, which is China's only modern bomber, was first flight tested in 1988. In 1992, the aircraft entered series production at the Xian Aircraft Factory (173). In a development that suggests that the Hong-7 may finally be nearing operational status, it was reported in March 1994, that, as part of a marketing effort to sell the aircraft to Teheran, Xian Aircraft would fly the Hong-7 to Iran for a series of flight demonstrations (174).

China, however, may have decided that it is cheaper and faster to purchase nuclear- capable aircraft from Russia and other foreign countries than to develop new planes indigenously. Beijing has recently purchased a number of Su-27 "Flanker" fighters from Moscow. The first of these were initially delivered in January 1992 (175). Jane's Defence Weekly reported in early 1994 that China was operating a squadron of 26 Su-27s at Wuhu, a base near Shanghai (176). According to U.S. intelligence and press accounts, Beijing will probably exercise its option to purchase one or two more squadrons, eventually giving China a total of 50 to 75 Su-27s (177). (According to a May 1993 report from the Director of U.S. Naval Intelligence, "the Chinese Air Force has experienced training and maintenance problems in integrating the Flanker into its technologically obsolescent aircraft order-of-battle. (178)") Reportedly, China is also interested in buying four or more nuclear capable Tu-22M Backfire bombers from Russia (179). China has also demonstrated interest in purchasing Soviet-built Su-24 Fencers and Mig-29 Fulcrums from Iran (180).

Chinese Land-Based Tactical Nuclear Weapons

There is some controversy over whether China has any tactical nuclear weapons. Norris, Burrows, and Fieldhouse, assert that China introduced approximately 150 tactical nuclear weapons into its arsenal in the late 1970s, possibly including atomic demolition munitions, nuclear artillery, or Multiple-Rocket System (MRS) shells or tactical missiles. They base their conclusion in part on the fact that China has conducted several nuclear tests with yields well below 20 kilotons and conducted military exercises in which Beijing reportedly simulated the use of tactical nuclear weapons. Norris, Fieldhouse and Burrows note that the worsening relations between China and the Soviet Union in the late 1960s and early 1970s may have spurred Beijing's tactical nuclear weapons program. They also suggest, however, that recent improvements in the relationship between China and Russia could lead China to retire its tactical nuclear weapons (181). Jonathan Pollock of the Rand Corporation has written, "Given that the prospect of a Soviet attack diminished appreciably during the mid- and late-1980s, it is possible that the Chinese have already begun to quietly dismantle [their

tactical nuclear weapons] which they have been loath to even acknowledge or confirm in the first place. (182)"

Nuclear Weapons Scenarios

Although Chinese military planners will continue to be concerned about the United States, Russia, and Japan, it seems very unlikely that it would get involved in a nuclear conflict with any of these three countries. In June of this year, Admiral Sheafer gave, what seems to be an accurate assessment when he said China "does not perceive any large-scale threat from either global or major regional powers through the next decade. Intra-regional conflicts--mainly in southern Asia--are seen as more likely, largely revolving around disputed claims in the South China Sea (such as those to the Spratly Islands)." Another plausible regional scenario might involve a military conflict between China and Taiwan if Taipei declared independence. But neither seizing the Spratly Islands nor preventing Taiwan's independence, would justify the political, economic and environmental costs China would bear if it used nuclear weapons. Furthermore, Beijing would have no reason to use or threaten to use nuclear weapons in these scenarios because it could ultimately prevail in both cases with conventional forces.

In four extreme cases, however, it is plausible that China could contemplate the use of nuclear weapons, especially if the adversary's ground troops appeared to be driving toward Chinese territory or if the adversary initiated the use of nuclear weapons: 1) the United States attacks North Korea with ground forces and starts to drive north beyond Pyongyang; 2) the United States launches a nuclear-armed Tomahawk cruise missile against Yongbyon or Pyongyang which accidentally strays into Chinese territory; 3) China becomes involved in another serious border dispute with Russia; or 4) China becomes involved in a border dispute with India. In all cases China would presumably use its land-based mobile missiles, such as the DF-21, or its ground-launched tactical nuclear weapons against foreign troops.

V. RECOMMENDATIONS

REGIONAL BILATERAL INITIATIVES

It is difficult to identify viable proposals to limit U.S., Russian, and Chinese nuclear forces that would directly affect North Korea, Japan or other Northeast Asian countries. For example, a "zonal" approach--prohibiting the deployment of U.S., Russian, and Chinese nuclear weapons in a designated area--would be problematic for a number of reasons. To begin with, such an arrangement would be extremely difficult to negotiate and implement due to the geographical and numerical asymmetries. With the implementation of then-U.S. President George Bush's September

27, 1991 initiative, the United States no longer deploys any tactical nuclear weapons in or near North East Asia (see p. xxx) nor does the United States have any strategic nuclear weapons based in Asia (unless one counts Trident submarines that patrol in the Pacific Ocean), but this is irrelevant because strategic weapons could hit targets in the region, regardless of where they are based. This latter point applies to Russia as well. In China's case, all of its nuclear weapons are based in Northeast Asia. Furthermore, Beijing does not appear to be willing to limit the number and types of its nuclear weapons until the United States and Russia make reductions to or near China's level--a development that is not in the offing.

Although a far-reaching nuclear free zone in Northeast Asia covering U.S., Russian, and Chinese nuclear weapons deployments in any meaningful way is probably not viable, some regional initiatives targeted on individual states could make a positive impact, especially in the short term. The following is a list of proposals for bilateral measures intended to help prevent nuclear proliferation in Northeast Asia.

A) BILATERAL INITIATIVES THE UNITED STATES COULD TAKE WITH NORTH KOREA

The United States should:

1) Offer North Korea a package of economic, political, and security incentives--similar to the deal worked out in the January 14 trilateral statement with Ukraine. In exchange for a commitment from Pyongyang to:

a) comply with the NPT treaty (including full cooperation with the IAEA); b) implement the January 1992 Joint Declaration of the Denuclearization of the Korean Peninsula (i.a. dismantle its plutonium reprocessing facilities); c) not refuel the 5-megawatt reactor at Yongbyon; and d) terminate work on the two more powerful nuclear reactors under construction.

the United States would make a commitment:

a) not to deploy nuclear weapons in South Korea and not to initiate the use of nuclear weapons on the Korean Peninsula and; b) normalize diplomatic relations with North Korea; c)

support general financial and technical assistance, including loans from international institutions such as the World Bank and the IMF; d) provide specific financial and technical assistance for the construction of alternative energy sources in North Korea; and e) cancellation of Team Spirit.

B) BILATERAL INITIATIVES THE UNITED STATES COULD TAKE WITH JAPAN

The United States should:

1. Encourage Japan to abandon its breeder reactor program and stockpile low-enriched uranium (LEU) for fueling existing light water reactors.

2. Abandon the U.S. Navy's policy neither to confirm nor deny the presence of nuclear weapons on specific ships and attack submarines and naval aircraft; and explicitly assure Tokyo that no nuclear-armed ships or submarines will conduct port calls in Japan; (this is essentially already a de facto policy since the United States no longer deploys nuclear weapons on these platforms).

3. Encourage Japan to support indefinite and unconditional extension of the NPT at the 1995 conference.

4. Reassure Japan that strains in the U.S.-Japanese relation over trade issues and the dissolution of the Soviet Union will not reduce the U.S. commitment to Japan's security.

C) BILATERAL INITIATIVES THE UNITED STATES COULD TAKE WITH RUSSIA

1. Continue to help Russia improve security and accounting for nuclear material through the Nunn-Lugar program and weapons lab-to-weapons lab cooperation. (If reprocessed plutonium can be easily diverted from Russia, North Korea does not need to maintain any of its nuclear facilities to build a bomb.)

2. Amend the U.S. proposal to "clarify" the Anti-Ballistic Missile (ABM) Treaty (183). The current U.S. proposal to establish a demarcation line between ABMs, which are limited by the treaty, and anti-tactical ballistic missiles (ATBMs), which are not, would allow the United States and Russia to develop and deploy ATBMs with significant capability against strategic ballistic missiles. Since there are no numerical, geographical, or transfer limits on ATBMs, this proposal, if implemented, could reduce the likelihood of carrying out deep cuts in U.S. and Russian strategic offensive forces. Furthermore, the ATBMs that would be permitted under the current U.S. proposal could intercept almost all of China's existing ballistic missiles. Consequently, the prospect of unlimited deployment of such ATBMs would undermine prospects for Beijing ever agreeing to subject its nuclear forces to legally binding limits in an international agreement.

D) BILATERAL INITIATIVES RUSSIA COULD TAKE WITH NORTH KOREA

Russia should:

1. Stop Russian weapons scientists and engineers from emigrating

to North Korea by creating expanded opportunities to apply their expertise to peaceful purposes.

E) BILATERAL INITIATIVES RUSSIA COULD TAKE WITH JAPAN

Russia should:

1. Return the Kuril islands to Japan.

2. Encourage Japan to establish a regular government-funded program, similar to the Nunn-Lugar program, to help Russia control and account for its nuclear materials. (Japan, which has significant expertise in this area, has already committed $17 million for the International Science and Technology Center in Moscow, and pledged an additional $80 million for other denuclearization activities (184), including funding to help build a storage facility for plutonium from dismantled warheads.)

3. Seek financial assistance from Japan to dismantle Russian nuclear submarines (SSBNs, SSNs, and SSGNs) in the Pacific fleet. This would include assistance to: a) dispose of spent fuel from naval nuclear reactors; b) dispose of solid radioactive waste, including defueled reactor compartments from decommissioned submarines; and c) cut up the submarines themselves. (Russia and Japan are currently holding negotiations for an agreement in which Moscow would make a commitment not to dump liquid nuclear waste from decommissioned submarines in the Sea of Japan in exchange for assistance from Tokyo in building a new sea-based facility to store and dispose of that waste. (185))

3. Sell Japan low-enriched uranium blended down from HEU recovered from dismantled warheads--similar to the agreement with the United States (186). Tokyo could use the LEU to fuel its existing light water reactors.

F) BILATERAL INITIATIVES THAT CAN BE TAKEN BY CHINA WITH NORTH KOREA

China should:

1. Make it clear to North Korea that if it agrees to abandon its nuclear weapons program, Beijing will push Western countries hard to normalize economic and political relations with Pyongyang.

GENERAL, GLOBAL COMMITMENTS THAT CAN BE MADE BY THE UNITED STATES, RUSSIA, AND CHINA

While bilateral regional measures and initiatives are worth pursuing, some of them have the potential danger of appearing, at least implicitly, discriminatory by singling out a nation, e.g. North Korea, or Japan, as unfit to possess nuclear weapons. Arms

control measures will be more enduring if they help promote a world in which it is univerally recognized that nuclear weapons have very limited political and military utility and that the political, economic, and environmental costs of developing nuclear weapons will almost certainly exceed the benefits.

Therefore, the arms control steps that the United States, Russia, and China can take that will have the greatest impact in the long-run will probably be steps that will strengthen the international nuclear non-proliferation regime as a whole. In this context, it is crucial that the United States, Russia, and China take concrete initiatives between now and April 1995 to ensure the indefinite extension of the NPT. Even if North Korea has already built one or two nuclear weapons, a strong NPT regime could still have a positive influence on Pyongyang. By helping create an international environment in which nuclear weapons are seen as more of a liability than an asset and their acquisition a violation of an international norm, an NPT supported by almost all of the world's nations indefinitely would make it easier for a post Kim Il Sung/Kim Jong Il regime (or a united Korea with nuclear weapons) to follow the precedent set by South Africa by dismantling its nuclear weapons and becoming a non-nuclear weapons state. In Japan's case, if the NPT is extended indefinitely at the 1995 conference, it will strengthen the hands of those in Tokyo who believe that Japan should never develop nuclear weapons.

The United States, Russia, and China should:

1) Strengthen longstanding negative security assurances by pledging not to use or threaten to use nuclear weapons against any non-nuclear weapons state, regardless of its alliances. (This pledge could initially be made in the form of a UN Security Council Resolution and eventually in the form of a treaty to be signed and ratified by all five of the declared nuclear powers.)

(STATUS: The U.S. policy on negative security assurances is being discussed in the Nuclear Posture Review. Proposals by some DOD officials to weaken the assurances so that the United States could reserve the option to use or threaten to use nuclear weapons against countries possessing or seeking to possess chemical or biological weapons, have been opposed by State Department and Arms Control and Disarmament Agency (ACDA) officials (187). The probable result will be the status quo. Russia, for its part, recently dropped the Soviet no-first-use pledge and endorsed a position similar to the current U.S. position. China, on the other hand, is a strong advocate of no-first-use, which is, of course, more sweeping than the negative security assurances proposed above.)

2) Stop nuclear testing and negotiate, sign and ratify a CTB;

(STATUS: The United States and Russia have stopped nuclear testing (188) and are committed to conclude a CTB "as soon as possible." China is continuing to conduct underground nuclear tests at Lop Nor, but is committed to seek a CTB by "no later than 1996." At the CD, China has proposed allowing "peaceful nuclear explosions" under a CTB--a move that seems calculated to stall the negotiations.)

3) Stop the production of fissile material for weapons, and negotiate and sign a cutoff treaty, placing--at a minimum--all plutonium reprocessing and uranium enrichment facilities under full- scope IAEA safeguards;

(STATUS: The United States has stopped the production of fissile material for weapons. Russia has stopped the production of HEU for weapons, but it continues to operate three dual purpose reactors at Tomsk-7 and Krasnoyarsk-26, which in the past have produced plutonium for weapons. On June 23, however, Russia signed an agreement with the United States, making a commitment to shut down those three reactors no later than the year 2000 and in the interim not to use any of the plutonium produced by those reactors for weapons purposes. The two nations also made a commitment to seek a new bilateral agreement banning the production of any plutonium for weapons purposes. This agreement would include verification of civilian plutonium reprocessing facilities.

China is apparently opposed to transparency measures at the moment. Given China's relatively small stockpile and statements from U.S. officials, there is good reason to believe China has ceased production of fissile material for weapons (189). None of the three major nuclear powers opposed the U.N. General Assembly December 1993 resolution calling for a cutoff. China opposed the establishment of a mandate for negotiations at the Conference on Disarmament in March but then dropped its objections in June. While negotiations for a cutoff treaty could begin at the CD this year or in early 1995, there is no prospect that the pact would be finished before the NPT extension conference convenes.)

4) Cease all reprocessing of plutonium, including reprocessing for civilian purposes.

(STATUS: The United States has stopped reprocessing plutonium; Russia continues to reprocess plutonium and MINATOM plans to build three or four new "breeder reactors" after the turn of the century as part of a plutonium fuel cycle; China's position is unclear.)

5) Declare the number of nuclear weapons in their stockpiles (including non-deployed strategic and all tactical warheads) and their fissile material inventories and arrange for measures to

verify these declarations. (This agreement could also include an exchange of data on warhead assembly and dismantlement rates.)

(STATUS: While there has been little movement on these issues, a number of transparency proposals have surfaced in the last two years. As a condition to its approval of START-I in October 1992, the U.S. Senate called for the U.S. executive branch to make a good faith effort to agree to a similar measure "in connection with any further agreement reducing strategic arms." But the United States and Russia did not pursue such an agreement in connection with START II. In December 1993, the U.S. DOE released data on total U.S. production of weapons grade plutonium. The data, however, did not provide plutonium levels for the Pantex dismantlement facility or for existing weapons. The United States has also agreed to place its "excess" fissile material under IAEA safeguards, but has not yet announced publicly what amount will be deemed excess.

In February 1992 at the CD, the Russian Foreign Minister Andrei Kozyrev proposed "developing a reciprocal exchange of data between all nuclear powers on the number and types of existing nuclear weapons, the amount of fissionable materials and on nuclear weapons production, storage, and elimination facilities." In May 23-26 meetings in Moscow between U.S. and Russian technical working groups, some transparency measures for fissile material were discussed. At these meetings, the U.S. reiterated its proposal to declare all stocks of plutonium and HEU.

6) Allow some international monitoring of warhead dismantlement. (in practice, this would probably be a bilateral agreement between the United States and Russia.)

(Status: Thus far, the United States and Russia have generally argued that direct monitoring of warhead dismantlement could give away warhead design secrets and would be too costly. It is not clear whether China dismantles warheads on a regular basis and seems unlikely that China would permit such openness in its nuclear weapons programs.)

7) Make a commitment to dismantle all naval nuclear warheads carried on attack submarines, surface ships, and aircraft (i.e. all naval nuclear warheads except for those that arm SLBMs).

(STATUS: The United States apparently plans to dismantle all of its naval nuclear weapons except for the 350 W-80 warheads intended to arm Tomahawk SLCMs; Boris Yeltsin made a commitment in January 1992 to dismantle one-third of Russia's naval tactical nuclear weapons; China is not believed to have any naval tactical nuclear weapons.) 8) Make a commitment to dismantle all ground-launched tactical nuclear warheads.

(STATUS: The United States and Russia have already made this commitment and begun to carry it out, but China has not publicly acknowledged whether it has any tactical nuclear weapons.)

9) Establish and institutionalize a multilateral forum, including the United States, Russia, China, Japan, and South and North Korea, to discuss nuclear security issues in Northeast Asia.

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ENDNOTES

1. September 1, 1990 is the date that corresponds to the data the United States provided in the START I Memorandum of Understanding (MOU). For a breakdown of the 12,646 warhead number by weapon system, see Factfile: Past and Projected Strategic Nuclear Forces, Arms Control Today, July/August 1992 pp. 35-36; and Department of Defense Fact Sheet, "U.S. Strategic Nuclear Forces," Office of the Secretary of Defense, Public Affairs, June 1992.

2. On March 14, 1994 at George Washington University, U.S. Secretary of Defense William Perry said that although the United States has come down to the START-I level unilaterally, "as a hedge," it has "not begun implementing the START II reductions and will not do so until Russia undertakes comparable reductions."

3. Les Aspin, Secretary of Defense, Annual Report to the President and the Congress, January 1994, p. 150.

4. Admiral Henry G. Chiles, Jr., US Navy, Commander-in-Chief, United States Strategic Command, written statement submitted to the Senate Armed Services Committee, April 20, 1994, p. 3.

5. "Nuclear Notebook: U.S. Nuclear Weapons Stockpile," July/August 1994, p. 61.

6. Admiral Henry G. Chiles, Jr., written statement submitted to the Senate Armed Services Committee, April 20, 1994, p. 3.

7. Les Aspin, Secretary of Defense, Annual Report to the President and the Congress, p. 148.

8. David Mosher, "Rethinking the Trident Force," (Congressional Budget Office: Washington, DC, July 1993), p. xii.

9. Department of Defense Appropriations for 1994, Hearing before the Subcommittee on the Department of Defense, House Appropriations Committee, (US Government Printing Office: Washington, DC, 1993) Part 4, p. 179; Les Aspin, US Secretary of Defense, Annual Report to the President and the Congress, January 1994, (US Government Printing Office: Washington, DC, 1994), p. 149.

10. Jon B. Wolfsthal, "North Korea Threatens Withdrawal From Non-Proliferation Treaty," Arms Control Today, April 1993, p. 22.

11. The last B-52G in the active inventory flew from Castle AFB, California on May 5, 1994 to Davis Monthan, AFB, Arizona where it will be dismantled.

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14. Don Oberdorfer, "Airborne U.S. A-Arms To Stay in South Korea," Washington Post, October 12, 1991, p. A20; Robert S. Norris, personal communication with the author, June 21, 1994.

15. Robin Bulman, "No A-Arms In S. Korea, Roh Says," Washington Post, December 19, 1991, p. A38; James Sterngold, "Seoul Says It Now Has No Nuclear Arms," New York Times, December 19, 1991, p. A3.

16. See for example, Pete Williams, Assistant Secretary of Defense for Public Affairs, DOD News Briefing, July 2, 1992.

17. United States Arms Control and Disarmament Agency (ACDA), Annual Report to the Congress, p. 37; William M. Arkin and Robert S. Norris, "Taking Stock: US Nuclear Deployments at the End of the Cold War," (Greenpeace/Natural Resources Defense Council: Washington, DC, August 1992), p. 4.

18. Energy and Water Development Appropriations for 1994, Hearing before the House Appropriations Committee subcommittee on Energy and Water Development, Part 6, (US Government Printing Office: Washington, DC, 1993), p. 1305.

19. For a breakdown of B-61 bomb and W-80 SLCM warhead storage facilities, see: William Arkin and Robert Norris "Taking Stock: U.S. Nuclear Deployments at the End of the Cold War," August

1992.

20. U.S. Department of Defense, "The Bottom Up Review," October 1993, p. 88; see also "Nuclear Notebook: U.S. Nuclear Weapons Stockpile, July 1994," Bulletin of the Atomic Scientists, July/August 1994, p. 63.

21. "Nuclear Notebook: U.S. Nuclear Weapons Stockpile, July 1994," Bulletin of the Atomic Scientists, July/August 1994, p. 61 and p. 63.

22. Report to the Committees on Armed Services and Appropriations of the Senate and the House of Representatives on Nuclear Weapons Testing, Required by Section 507 of the FY 1993 Energy and Water Development Appropriations Act [The "Hatfield Amendment"], July 1993, p. 7.

23. "Nuclear Notebook: U.S. Nuclear Weapons Stockpile, July 1994," Bulletin of the Atomic Scientists, July/August 1994, p. 61.

24. Documents on Disarmament 1978, United States Arms Control and Disarmament Agency, (US Government Printing Office: Washington, DC, 1980), p. 384.

25. See for example, William M. Arkin, "Bad Posture," The Bulletin of the Atomic Scientists, July/August 1994, p. 64.

26. The Congressional Record, February 1, 1994, p. 533; Jon B. Wolfsthal, "IAEA Team Arrives in North Korea For Inspection of Nuclear Facilities," Arms Control Today, March 1994, p. 33.

27. State Department Authorization Bill for fiscal year 1995, Conference Report, p. 101.

28. Energy and Water Development Appropriations for 1994, House Appropriations Committee subcommittee on Energy and Water Development, Part 6, (US Government Printing Office: Washington, DC, 1993), p. 1304.

29. The Military Balance 1993-1994, International Institute for Strategic Studies (IISS), (Brassey: London, October 1993), p. 28.

30. Jon B. Wolfsthal, "North Korea Threatens Withdrawal From Non-Proliferation Treaty," Arms Control Today, April 1993, p. 22.

31. Ticonderoga-class cruisers outfitted with vertical launching systems (VLS) could carry up to 46 Tomahawks; Spruance-class destroyers equipped with VLS could carry up to 45; Sturgeon- and Los Angeles-class attack submarines could carry up to 8 internally and Los Angeles-class equipped with VLS could carry an

additional 12. Source: Joshua Handler and William M. Arkin, "Nuclear Warships and Naval Nuclear Weapons 1990: A Complete Inventory," Neptune Paper, No. 5, September 1990, pp. 18-20.

32. "Targeting rethink may lead to non-nuclear STRATCOM role," Jane's Defence Weekly, May 22, 1993, p. 19; Eric Schmitt, "Head of Nuclear Forces Plans for a New World," New York Times, February 25, 1993, p. B7.

33. Statement of Rear Admiral John T. Mitchell, U.S. Navy, Director, Strategic Systems Programs, before the Subcommittee on Nuclear Deterrence, Arms Control and Defense Intelligence of the Senate Armed Services Committee, May 11, 1993, printed in "Department of Defense Authorization For Appropriations for Fiscal Year 1994 and the Future Years Defense Program," Senate Hearing 103-303, Part 7, (US Government Printing Office: Washington, DC, 1993) p. 17.

34. William M. Arkin and Robert S. Norris, "Nuclear Alert After The Cold War," Nuclear Weapons Databook, Working Papers, NWD 93-4, October 18, 1993, p. 11,, Footnote 38.

35. Dick Cheney, US Secretary of Defense, Annual Report to the President and the Congress, January 1991, p. viii.

36. Robert Gates, Director, US Central Intelligence, testimony before the Senate Armed Services Committee, January 22, 1992 as cited in Threat Assessment, Military Strategy, and Defense Planning," (US Government Printing Office: Washington, DC, 1992), p. 60.

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38. There are now 12 rail-based SS-24s at Bershet, giving Russia a total of 36 rail-based SS-24s.

39. Major Robert Potter, Office of the Secretary of Defense, Public Affairs, personal conversation with the author, May 20, 1994; see also, Harold Smith, Assistant to the Secretary of Defense for Atomic Energy, Written Statement submitted to the House Armed Services Committee, April 28, 1994, p. 7.

40. Ashton Carter, Assistant Secretary of Defense for International Security Policy, written testimony submitted to the Senate Armed Services Committee, April 28, 1994, p. 18.

41. Rostislav Khotin, Reuters, Kiev, "Ukraine Deactivates Most

SS-24 Nuclear Missiles," May 4, 1994; Ashton Carter, Assistant Secretary of Defense for International Security Policy, written statement submitted to the Senate Armed Services Committee, April 28, 1994, p. 17.

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43. See Dunbar Lockwood, "Strategic Nuclear Forces Under START II," Arms Control Today, December 1992, pp. 10-14; Alexei Arbatov, Editor, "Implications of the START II Treaty for U.S.-Russian Relations," (The Henry L. Stimson Center: Washington, DC, October 1993), Report no. 9, p. 6.

44. William Grundmann, Director for Combat Support, Defense Intelligence Agency, Written Statement submitted to the Joint Economic Committee, June 11, 1993, p. 18; see also Evgeni Shaposhnikov, "The Armed Forces: To a New Quality," in Russian Security After the Cold War, Editors, Teresa Pelton Johnson and Steven E. Miller, (Brassey: Washington, DC, 1994), p. 192.

45. Dr. Lawrence Gershwin, Hearing before the Senate Armed Services Committee, February 3, 1993, as cited in Current Developments in the Former Soviet Union, Senate Hearing 103-242, (US Government Printing Office: Washington, DC, 1993), p. 30.

46. Lawrence Gershwin, Hearing before the Senate Governmental Affairs Committee, February 24, 1993, as cited in, Proliferation Threats of the 1990s, Senate hearing 103-208, (Government Printing Office: Washington, DC, 1993), p. 41; Gershwin, Hearing before the Senate Armed Services Committee, February 3, 1993, as cited in Current Developments in the Former Soviet Union,...p. 8; "CIA expects Russia to deploy three new ballistic missiles by 2000," Aerospace Daily, February 4, 1993, p. 195; Lt. General James Clapper, Director, US Defense Intelligence Agency, as cited in The START Treaty, Hearings before the Senate Foreign Relations Committee, Part 2, Senate Hearing 102-607, Pt. 2, (US Government Printing Office: Washington, DC, 1992,) p. 163.

47. Current Developments in the Former Soviet Union, ... p. 30; Proliferation Threats of the 1990s,... pp. 40-41.

48. Rear Admiral William Studeman, Director, US Naval Intelligence, Written Statement submitted to the House Armed Services Committee, Subcommittee on Seapower and Strategic and Critical Materials, p. 22.

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breaking down the Russian SSBN "order of battle" for 1992- 1994; see also, International Institute for Strategic Studies, The Military Balance 1993-1994, (Brassey's: London, October 1993), p. 96; Joshua Handler, "Russia's Pacific Fleet--Submarine Bases and Facilities," Jane's Intelligence Review, April 1994, p. 167.

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51. Admiral Felix Gromov, commander-in-chief of the Russian Navy, 'Reforming the Russian navy', Naval Forces, Vol. 14, No. 4, 1993, p. 6.

52. Admiral Felix Gromov,... p. 10.

53. See, Joshua Handler, "Russia's Pacific Fleet--Submarine Bases and Facilities," Jane's Intelligence Review, April 1994, p. 167.

54. Current Developments in the Former Soviet Union, ... p. 31.

55. Rear Admiral Edward Sheafer, Director, US Naval Intelligence, Posture Statement, June 1994. (In May 1993, Admiral Sheafer, said that "the Russians will still retain nearly two dozen SSBNs... after the year 2000," see Sheafer's Posture Statement, May 3, 1993, p. 40.)

56. Unless otherwise indicated, all the information in this section comes from Admiral Sheafer...May 3, 1993, p. 44.

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63. Soviet Military Power, 1988, U.S. Department of Defense, p. 79.

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79. Norman Polmar, The Naval Institute Guide to the Soviet Navy, 5th edition, 1991, p. 155, p. 168.

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122. Norris et al, p. 363 and p. 382; Robert G. Sutter, p. CRS-9; IISS, p. 152. Norris estimates "not more than 15-20"; CRS estimates "less than 20"; and IISS estimates 10+.

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166. Norris et al, p. 373; see also Jane's Strategic Weapon Systems, China: Offensive Weapons, Issue 04; which says "up to four modified "Xia" class boats may be planned."

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181. Norris et al, pp. 370-371; see also Jonathan D. Pollack, pp. 159-160.

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183. For details of the U.S. proposal and its implications, see Lisbeth Gronlund et al, "Highly Capable Theater Missile Defenses And the ABM Treaty," Arms Control Today, April 1994, pp. 3-8; Spurgeon M. Keeny, Jr., "Inventing an Enemy," New York Times, June 18, 1994, p. 21A; "A New Threat to the ABM Treaty: The Administration's TMD Proposal," Arms Control Today, Jan./Feb. 1994, pp. 11-16.

184. Japan has reportedly earmarkedd $80 million for Russia and $20 million for Ukraine, Kazakhstan, and Belarus combined. Defense News, April 11-17, 1994, p. 2; "Nuclear Successor States of the Soviet Union," The Carnegie Endowment for International Peace/The Monterey Institute of International Studies, Number 1, May 1994, p. 21.

185. According to Greenpeace, the Japanese newspaper Yomiuri reported on June 3 that Japan and Russia had agreed to build a floating facility to store and dispose of liquid radioactive waste. This facility would be funded by part of the $100 million that Japan has pledged to the former Soviet Union in denuclearization assistance. The states hoped to begin construction this summer and complete the facility 6 months after that.

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187. see for example, William M. Arkin, "Bad Posture," The Bulletin of the Atomic Scientists, July/August, 1994, p. 64.

188. In March, President Clinton extended the U.S. moratorium through September 1995. It is extremely unlikely that the United States will resume nuclear testing after that. In any case, U.S. law prohibits testing after September 30, 1996 unless another country tests after that date. Russia,for its part, has not conducted a single nuclear test since becoming an independent state. (The last Soviet test took place in 1990.)

189. Norris et al, p. 350; Energy and Water Development Appropriations for 1994, Hearing before the Subcommittee on Energy and Water Development, House Appropriations Committee, (US Government Printing Office: Washington, DC, 1993), Part 6, p. 1313.

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