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UKRAINE: INDEPENDENT NUCLEAR WEAPONS CAPABILITY RISING

by

Martin J. DeWing
Lieutenant Commander, United States Navy
B.A., University of California, Irvine, 1980
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ABSTRACT

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EXECUTIVE SUMMARY

Ukraine: Independent Nuclear Weapons Capability Rising

LCDR Martin J. DeWing

June 1993

Despite protestations by Ukrainian President Kravchuk and Ukrainian diplomats to the contrary, Ukraine is showing every indication that it intends to develop an independent nuclear capability. However, the parliament, not the president, is the key Ukrainian entity to watch on the nuclear issue. Several factors motivate the Ukrainians toward the retention of nuclear weapons including prestige and financial concerns. However, the argument for the development of an independent nuclear capability that motivates the largest majority of Ukrainians, especially the parliamentarians, is that a nuclear capability is required as a hedge against Russian domination. Russian instability and hostility towards an independent Ukraine are driving Ukraine to develop an independent nuclear weapons capability. American policymakers, fearful that a nuclear armed Ukraine will wreak havoc on arms control efforts, have tended to ignore the legitimacy of Ukrainian motivations. The West is unable to offer any conceivable security guarantees, such as a treaty or NATO membership, which merit the name. Ukraine is on its own and must try to provide its own guarantee. The Ukrainian parliament sees this guarantee in terms of independent control over its nuclear arsenal. The

unrealistic demands for compensation for fissile materials and demands for increasingly large sums of money for disarmament are probably just delaying tactics until Ukraine can obtain independent control over its arsenal.

If Ukraine cannot obtain independent control of the arsenal, most of the national security rationale for retaining it evaporates. Ukraine does not yet have the ability to directly launch ICBMs itself, however, Ukraine is currently trying to find a way to either generate the requisite commands/codes required to physically unblock the weapons or bypass the protective safeguards. Russian experts have estimated that it would require 8-9 months to a year of effort for the Ukrainians to break the launch control security systems. Additionally, high ranking Russian and Ukrainian officials have acknowledged that Ukraine is capable of retargeting its SS-24 ICBMs.

The information on the current readiness/state of repair of the Ukrainian arsenal is incomplete and conflicting. Much of it comes from Russian sources eager to display to the West why Ukraine should be forced into giving up its arsenal. Ukraine is having some trouble maintaining its nuclear warheads and currently needs Russian assistance in maintaining them. However, Ukraine's military-industrial complex is probably capable of maintaining the republic as a nuclear state. Ukraine has smart, technically sophisticated people capable of mastering the relevant technologies.

Various Ukrainian leaders, including President Kravchuk, have

repeatedly decoupled the START I Treaty, which covers only Ukraine's SS-19 ICBMs, from the Nuclear Non-proliferation Treaty (NPT). This suggests that Ukraine will ratify START I but not accede to the NPT, and keep its SS-24s. A smaller force consisting strictly of SS-24s would result in considerable cost savings and still allow Ukraine to keep a potent deterrent. Ukraine's future course of action in establishing an independent nuclear capability will be as follows:

1. Ratify START I
2. Retire the older SS-19 ICBMs as well as the bomber-carried nuclear weapons.
3. Decline to accede to the NPT as a non-nuclear state or accede to the NPT as a nuclear-armed state.
4. Retain its more modern SS-24 ICBMs.

I. INTRODUCTION

A. NUCLEAR PROLIFERATION IN THE FORMER SOVIET UNION

One of the most pressing problems resulting from the disintegration of the Soviet Union is that the Soviet nuclear arsenal is now dispersed among four of the former Soviet republics. Russia, Ukraine, Belarus, and Kazakhstan all inherited nuclear arsenals. Although the transfer of tactical nuclear weapons from the non-Russian republics to Russia has been completed, Ukraine, Belarus, and Kazakhstan continue to possess strategic nuclear weapons. Belarus has signed the Strategic Arms Reduction Treaty (START I), pledged to adhere to the Nuclear Non-Proliferation Treaty (NPT) and has agreed to transfer its 81 SS-25 inter-continental ballistic missiles (ICBMs) to Russia. Kazakhstan has ratified the START I treaty but has yet to adhere to the NPT.¹ Ukraine has yet to accept either treaty and there is growing concern in the West that Ukraine may elect to not transfer its strategic weapons on Ukrainian territory to Russia. The strategic nuclear weapons in all four nuclear republics were ostensibly under centralized control of the Commonwealth of Independent States (CIS). This myth served as a fig leaf for actual Russian

¹"Help Belarus Become Nuclear Free," New York Times, 15 April 1993, A16.

control. This pretense has been dropped and Russia now says the weapons in the non-Russian republics should remain under Russian control.² While it appears that the weapons in Belarus and Kazakhstan are actually under Russian control, it is becoming less true of Ukraine with each day. Despite protests to the contrary by senior leaders and diplomats, Ukraine is showing every indication that it intends to retain an independent nuclear capability. Such a development would have far-reaching national security implications for the United States, Russia, Europe and for most of the world. Most immediately, Ukrainian decisions regarding nuclear statehood are a critical link in START I and START II arms control agreements between Russia and the United States. Russia has repeatedly stated that it will not carry out the START I and II reductions unless Ukraine ratifies START I and accedes to the NPT as a non-nuclear state. Additionally, there is concern that a decision by Ukraine to develop an independent nuclear capability will cause other nations to do the same. The fear is that Kazakhstan may follow suit.³

²Michael R. Gordon, "Russians Fault U.S. on Shifting Ukraine's Arms," New York Times, 7 June 1993, A1.

³These fears are fed by the fact that Kazakhstan has ratified the START I Treaty but has not yet acceded to the NPT, and, Belarus has ratified START I but has yet to accede to the NPT.

B. UKRAINIAN NUCLEAR AMBITIONS

This thesis addresses the likelihood that Ukraine intends to move from mere possession of CIS-controlled nuclear weapons to the development of independent control and possession of strategic nuclear weapons to become a true nuclear-armed nation. It will demonstrate that the factors driving Ukraine towards remaining a nuclear state drastically outweigh the factors acting in restraint; therefore, Ukraine will abrogate previous pledges to become nuclear free and retain at least some of its inherited nuclear arsenal. This thesis will also suggest that Ukraine's future course of action in establishing an independent nuclear capability will be as follows:

1. Ratify START I
2. Retire the older SS-19 ICBMs and bomber-carried nuclear weapons.
3. Decline to accede to the NPT as a non-nuclear state or accede to the NPT as a nuclear-armed state.
4. Retain its more modern SS-24 ICBMs.

C. THESIS ORGANIZATION

This thesis begins with a review of the contents of the Ukrainian nuclear arsenal, its current material status, and Ukrainian capabilities to maintain it. Chapter III describes the essentials of Soviet strategic command and control and nuclear safeguards. It also examines the current level of Ukrainian control of the arsenal and Ukraine's ability to

retarget its weapons. This will permit an assessment of the problems which Ukraine must overcome to obtain direct firing control of its arsenal. Chapters IV and V examine the nuclear issue from the Ukrainian perspective, focusing on the Ukrainian motivations for developing an independent nuclear capability. Chapter VI examines Ukrainian thinking on the deterrent value of the arsenal in contrast with deterrence theory. The final two chapters include a recap of Ukrainian commitments, pledges and treaty obligations regarding nuclear weapons, followed by an assessment of Ukraine's most likely course of action in attempting to obtain an independent nuclear capability.

II. THE UKRAINIAN NUCLEAR ARSENAL

In trying to answer the question of whether or not Ukraine aspires to possess an independent nuclear weapons capability, it is necessary to consider the composition of the current Ukrainian arsenal and its material status. This chapter will establish the type and quantity of nuclear weapons in the Ukrainian arsenal, the current state of repair and material readiness of the arsenal, and the ability of Ukraine to maintain its weapons over the long run.

A. THE UKRAINIAN NUCLEAR INVENTORY

The Ukrainian nuclear arsenal is comprised of both inter-continental ballistic missiles (ICBMs) and weapons for long-range, strategic bombers. All tactical nuclear weapons were withdrawn from Ukraine to Russia as of 6 May 1992 and none remain in the Ukrainian inventory.⁴

1. The Bomber Leg

a. Platforms

As a result of the breakup of the Soviet Union, Ukraine inherited two types of strategic bombers: the TU-160 "Blackjack" and the TU-95 "Bear H." These bombers are part of

⁴John W.R. Lepingwell, "The Control of Former Soviet Nuclear Weapons: A Chronology," RFE-RL Research Report 2, no. 8 (19 February 1993): 71-73.

the 46th Air Army.⁵ The numbers of bombers remaining in the Ukrainian inventory vary according to source. According to the International Institute For Strategic Studies (IISS), Ukraine holds 22 Bears and 20 Blackjacks.⁶ Arms Control Today reports there are 14 Bears and 16 Blackjacks.⁷ Another source cites 21 Bears (based at Uzin) and 13 Blackjacks (based at Priluki).⁸ An April 1993 statement from the Russian government indicates that there are 24 Bear and 19 Blackjack bombers in Ukraine.⁹ Determining the exact number of strategic bombers in the Ukrainian inventory is not especially critical for the purposes of this thesis. Some of the bombers in the Ukrainian inventory may no longer be airworthy. The number of nuclear weapons for these aircraft is of greater concern.

⁵Viktor Zamyatin, "Russian-Ukrainian Differences Over Start," Moscow Kommersant Daily in Russian, 6 April 1993, p. 6 (FBIS-SOV-93-064, 6 April 1993, p. 23).

⁶The International Institute For Strategic Studies, The Military Balance 1992-1993, (London: Brassey's, 1992), 93. Note: Page 93 indicates 22 TU-95 Bear H aircraft in Ukraine while page 86 shows only 21.

⁷"Factfile," Arms Control Today 21, no. 10 (December 1991): 29.

⁸Steven Zaloga, "Strategic Forces of the SNG," Jane's Intelligence Review 4, no. 2 (February 1992): 79-85. Similar numbers have been reported in the Russian press.

⁹Zamyatin, "Russian-Ukrainian Differences Over Start."

b. Weapons

Both types of bombers in the Ukrainian inventory can carry nuclear gravity bombs as well as nuclear-armed, air-launched cruise missiles. Both the Bear-H and the Blackjack can carry the AS-15 "Kent" (Soviet designation RKV-500). The AS-15 is a turbo-jet powered weapon with a 3000 KM range. It is similar to the U.S. Air-Launched Cruise Missile (ALCM). The AS-15 comes in two versions: the AS-15A, which is carried on the Bear H, and the AS-15B, which is carried on the Blackjack.¹⁰ Guidance for the AS-15 is assumed to be inertial with some sort of terrain-matching system for accuracy.¹¹ The Blackjack bombers can also carry the AS-16 "Kickback" air-to-surface missile. This system is similar to the U.S. short-range attack missile (SRAM) and uses an inertial guidance system augmented by an active radar terminal seeker.¹²

Like the estimates of the number of bombers in Ukraine, there are conflicting estimates of the number of strategic nuclear weapons associated with these bombers. Most accounts of the number of bomber weapons are derived from listings of the total number of strategic nuclear warheads

¹⁰Ibid.

¹¹Duncan Lennox, ed., Jane's Strategic Weapon Systems (Surrey, UK: Jane's Information Group, 1990).

¹²The Bulletin of the Atomic Scientists 49, no. 1 (January/February 1993): 56.

(ICBM and Bomber) in the Ukrainian arsenal, usually estimated to be 1656.¹³ This represents an inaccurate estimation of the number of bomber weapons in the Ukrainian arsenal. The 1656 ICBM and bomber warhead total is computed as follows:

<u>SYSTEM</u>	<u>NUMBER</u>	<u>WARHEADS PER PLATFORM</u>	<u>TOTAL</u>
SS-24	46	10	460
SS-19	130	6	780
	---		---
ICBM SUBTOTAL	176		1240
BEAR H	14	16 (AS-15's)	224
BLACKJACK	16	12 (AS-15's)	192
	--		---
BOMBER SUBTOTAL	30		416

TOTAL NUCLEAR WARHEADS			1656

The total numbers of warheads shown above is derived by multiplying the number of ICBM's and bombers times the ICBM multiple independently targeted re-entry vehicle (MIRV) design capacities and the cruise missile carrying capacities of the bomber types in Ukraine. While counting platform capacities may arguably be an acceptable methodology for deriving total ICBM warheads in Ukraine, there is no reason to believe it is accurate for the bomber weapons. A more recent estimate of bomber weapons was made using the same methodology but

¹³"Ukraine: Barrier to Nuclear Peace," New York Times, 11 January 1993, A18; "Factfile," Arms Control Today, 21, no. 10 (December 1991): 29; "Kiev's Stance on Nuclear Disarmament Examined," Moscow Rossiyskaya Gazeta in Russian, 21 Jan 1993, p. 7 (FBIS-SOV-93-014, 25 Jan 1993, p. 1).

different numbers of bombers. This effort came up with the following results:¹⁴

ICBM SUBTOTAL			1240
BEAR H	21	16 (AS-15's)	336
BLACKJACK	16	12 (AS-15's)	192
	--		---
BOMBER SUBTOTAL	37		528

TOTAL NUCLEAR WARHEADS			1768

The Russians should have a precise notion of how many bomber-carried nuclear weapons there are in Ukraine, however, Russian officials have generally tended to speak only in round numbers. General Yuriy Maksimov, Commander of the CIS Joint Armed Forces Strategic Forces, has been quoted as saying that there are "several hundred" nuclear warheads for long-range bomber aircraft deployed in Ukraine.¹⁵ A January 1993 article in Krasnaya Zvezda indicated there were 600 nuclear warheads equipping the Ukrainian strategic bombers.¹⁶ On 7 April 1993, Colonel General Boris Gromov, Russian

¹⁴John W.R. Lepingwell, "Beyond START: Ukrainian-Russian Negotiations," RFE-RL Research Report 2, no. 8 (19 February 1993): 46-58.

¹⁵"Ukraine Said Seeking Command of Nuclear Forces," Moscow Izvestiya in Russian, 11 June 1992, Morning Edition, p. 2 (FBIS-SOV-92-113, 11 June 1992, p. 2).

¹⁶"Series on National Armies Examines Ukraine Armed Forces," Moscow Krasnaya Zvezda in Russian, 13 January 1993, p.2 (JPRS-UMA-93-008, 10 March 1993, p. 38).

Federation Deputy Defense Minister, said that there are roughly 670 strategic bomber nuclear munitions stationed in Ukraine.¹⁷

Ukraine's officials have been no more forthcoming at revealing the exact number of nuclear weapons it possesses for its bomber force. At least one highly placed Ukrainian source, Deputy Defense Minister Ivan Bizhan, has confirmed that Ukraine possesses nuclear weapons for the bombers still on its soil, although he gave no indication of numbers. During a briefing at the Foreign Ministry's press center, Bizhan said that the only nuclear weapons remaining on Ukrainian territory are 176 strategic missiles and strategic aviation ammunition.¹⁸

The 670 total noted by Colonel-General Gromov seems to be the most authoritative number and has been cited in several Russian newspaper articles which appeared in early-1993. Unfortunately, there is no credible source reporting a breakdown of the bomber weapons by type. The bomber arsenal probably consists primarily of AS-15 air-launched cruise missiles, AS-16 air-to-surface missiles, with some free-fall gravity bombs.

¹⁷Oleg Vladykin, "Do Not Set a Dangerous Precedent. Question of Sitting Nuclear Weapons on Ukrainian Territory," Moscow Krasnaya Zvezda in Russian 7 April 1993 p. 1 (FBIS-SOV-93-065, 7 April 1993, p. 26).

¹⁸"Official Confirms No Tactical Weapons Left," Moscow ITAR-TASS in English, 1727 GMT, 8 May 1992 (FBIS-SOV-92-091, 11 May 1992, p. 49).

2. ICBM's

a. SS-19 "Stiletto"

The SS-19 is a fourth-generation, silo-based, two-stage, liquid-fueled ICBM.¹⁹ It carries six MIRVs. It uses computer-controlled inertial guidance for the booster and the post-boost vehicle (MIRV Bus).²⁰ The range of the SS-19 is 10,000 KM. The SS-19 is deployed in a launcher group consisting of ten silos each. Each launcher group is commanded by a launch control center mounted in a modified silo. Ukrainian SS-19s are deployed to two sites:²¹

Khmelnitskiy	9 launch groups	90 missiles
Pervomaysk	4 launch groups	40 missiles

		130 missiles

b. SS-24 "Scalpel"

The Ukrainian SS-24s are silo-based missiles. The SS-24 is a fifth-generation, three-stage, solid-fueled ICBM with a 10,000 KM range. It carries ten MIRVs and uses computer controlled inertial guidance for the booster and the

¹⁹SS-19s are fueled by liquid heptyl fuel. Heptyl is a storable, highly toxic rocket fuel. It is actually unsymmetrical dimethyl hydrazine (UDMH) using nitrogen tetroxide (N2O4) as an oxidizer. An interesting discussion of the dangers of heptyl fuel is contained in: Pavel Felgenhauer, "Disarmament: Former USSR's Missiles" Moscow Nezavisimaya Gazeta in Russian 25 March 1992 p. 1 (FBIS-SOV-92-059, 26 March 1992, p. 4).

²⁰Jane's Strategic Weapons Systems.

²¹Zaloga, "Strategic Forces of the SNG," 83; The Military Balance 1992-1993, 86.

post-boost vehicle.²² SS-24 ICBMs were built at the Pavlograd Machine Plant in Pavlograd, Ukraine. SS-24s are deployed in a launcher group consisting of ten silos each. Each launcher group is commanded by a launch control center mounted in a modified silo. Ukrainian SS-24s are deployed to only one site, Pervomaysk, where there are five launch groups consisting of 46 missiles. One of the launcher groups at Pervomaysk (Pervomaysk-8) consists of only six SS-24 silos vice the normal ten.²³

As previously noted, the number of ICBMs and warheads in Ukraine is usually tabulated as follows:

<u>SYSTEM</u>	<u>NUMBER</u>	<u>WARHEADS PER PLATFORM</u>	<u>TOTAL</u>
SS-24	46	10	460
SS-19	130	6	780
	---		---
ICBM SUBTOTAL	176		1240

The number of warheads cited above has been computed using MIRV'd warhead capacities of the missiles and is probably valid.

²²Jane's Strategic Weapons Systems.

²³Department of State, "Treaty Between The United States of America and the Union of Soviet Socialist Republics on the Reduction and Limitation of Strategic Offensive Arms (START)", (Washington D.C.: United States Arms Control and Disarmament Agency, 1991), 168.

B. CURRENT STATE OF REPAIR/MATERIAL READINESS OF THE ARSENAL

In determining whether or not Ukraine can develop an independent nuclear capability, it is necessary to consider the current state of repair of the weapons in the Ukrainian arsenal. Specifically, are the weapons in adequate material condition to allow them to be used? And, are the Ukrainians capable of keeping them that way?

1. ICBMs

a. *Deactivation of Some Missiles*

Bruce Blair cites several conflicting sources in discussing the current status of Ukrainian ICBMs and whether or not these missiles have been "deactivated," "detargeted," or "disarmed."²⁴ Blair quotes a Russian officer as saying that 90 of the 130 Ukrainian SS-19s have been "disarmed," leaving 40 SS-19s and 46 SS-24s in "a more advanced stage of readiness." One source quoted by Blair indicates that deactivation consisted of nothing more than removing firing cables from the missiles. Another source quoted by Blair indicates that "detargeting" meant to "delete the flight maps from onboard computers." According to a February 1993 article in Izvestiya, some warheads have apparently been physically separated from their missiles and placed in a divisional depot

²⁴Bruce G. Blair, The Logic of Accidental War (Washington: The Brookings Institution, 1993), 104.

at Pervomaysk.²⁵ Most likely these are warheads which have been removed from their missiles for servicing, vice spare warheads. The article quotes Major General Vladimir Nikitin, deputy commander in chief of the Strategic Rocket Forces in charge of the operation of nuclear weapons, as saying that during missile maintenance, warheads are disconnected from the missile airframe and placed in a depot for storage. According to Nikitin, during this maintenance period "the warhead is replaced by an electrical simulator so that all the systems of the unit continue to operate continuously in the prescribed controlled operating mode." The article does not specify the number of Ukrainian ICBMs which are missing warheads, however, it does claim that:

The number of warheads in one [divisional storage] depot is three to five times above the norm. As a result the radiation background has been exceeded there and now reads almost 1,000 microroentgens per hour, which endangers the life and health of the people servicing the nuclear warheads.

The available information indicates that not all of the Ukrainian ICBMs are complete, "full-up rounds." Some warheads have been separated from their missiles. However, in April 1993, Russia offered to remove the warheads from the ICBMs and to remove all "flight assignments" from all weapon delivery

²⁵Viktor Litovkin, "Second Chernobyl Brewing In Ukraine's Missile Silos," Moscow Izvestiya in Russian, 16 February 1993, p. 4 (FBIS-SOV-93-029, 16 February 1993, p. 1).

vehicles.²⁶ This suggests that any prior attempts to do so were incompletely accomplished, and that many of the ICBMs are complete systems. In any event, there is no information which suggests that there has been any permanent disabling of any Ukrainian ICBMs, although, Blair notes that it must be assumed that "...the steps taken to deactivate the forces could not be quickly reversed."²⁷ Blair does not, however, believe that anything short of emergency destruction of systems and warheads would prevent Ukraine from eventually being able to develop an independent nuclear capability if it had physical possession of intact strategic weapons.²⁸

b. Maintenance Difficulties

In November 1992, Marshal Yevgeniy Shaposhnikov, CINC of the CIS Armed Forces, said that Ukraine lacks the experts to maintain the nuclear weapons in Ukraine.²⁹ Statements issued from Russian government officials have indicated that, due to Ukrainian failure to follow proper maintenance procedures, the material condition of the Ukrainian nuclear arsenal is unsatisfactory and poses a danger that should be cause for concern. These officials have

²⁶"Government Statement on Ukraine's Nuclear Weapons," Moscow ITAR-TASS World Service in Russian, 1030 GMT, 5 April 1993, (FBIS-SOV-93-064, 6 April 1993, p. 21).

²⁷Blair, 104.

²⁸Blair, 90.

²⁹RFE-RL Daily Report, 13 November 1992.

suggested that Ukrainian neglect could lead to a catastrophe rivaling Chernobyl. The reports indicate that some Ukrainian ICBMs have overrun scheduled inspection and maintenance dates and that scheduled "technical servicing" of nuclear warheads have been violated.³⁰ The problem of background radiation in warhead storage compartments has already been mentioned. A Russian newspaper article, elaborating on problems with Ukrainian nuclear warheads, stated that maintenance of nuclear charges is more than ten months overdue. It reported that "nuclear charges" are being kept in dumps alongside warheads from ICBMs and that the concentration of assemblies [bloki] is seven times the norm which could eventually result in "emergencies" or an unauthorized low-order warhead explosion (the high explosive detonates but no nuclear detonation occurs). Additionally, the article states that:

...446 strategic missile warhead assemblies and 162 cruise missile warheads did not have the necessary chemical components guaranteeing their total nuclear safety changed during 1992 and the first three months of 1993. Nuclear specialists describe these components as absorbents, which act as filters to neutralize the gases given off by the nuclear charges during protracted storage, impede the formation of combustible compounds in them, and thus prevent emergencies from arising.³¹

³⁰Litovkin, "Second Chernobyl Brewing."; Viktor Litovkin, "Nuclear Warheads in Ukraine Pose Danger," Moscow Izvestiya in Russian, 7 April 1993, p.5 (FBIS-SOV-93-065, 7 April 1993, p. 26).

³¹Litovkin, "Nuclear Warheads in Ukraine Pose Danger."

It would take more information on Soviet nuclear warhead design than is available to discern the exact nature of the problems with the Ukrainian warheads. A properly designed, fully-assembled, intact warhead ought not to be leaking much of anything. The quote above conceivably refers to a problem with desiccants used to protect lithium compounds (such as lithium-6 deuteride) in the fusion devices of multi-stage thermonuclear weapons.³² Lithium-6 deuteride is highly unstable in the presence of air/water, when it reacts to moisture and decomposes. Because lithium is so extremely hygroscopic, lithium-bearing weapons must be sealed vacuum-tight and packed with desiccants.³³ If the problem noted above does refer to decomposition of lithium compounds in the warheads, it suggests the warheads in the depots are not intact. In an unpublished article, Pavel Felgenhauer, formerly a defense correspondent for Nezavisimaya Gazeta, quotes an unnamed Russian Deputy Defense Minister as saying that the Ukrainian warheads in storage are emitting hydrogen (which is explosive).³⁴ This hydrogen could be from the decomposition of lithium compounds noted above. Alternatively, the source of this hydrogen could be from a

³²Brian Beckett, Weapons of Tomorrow (New York: Plenum Press, 1983), 17.

³³Chuck Hansen, U S Nuclear Weapons (New York: Orion Books, 1988), 21.

³⁴Pavel Felgenhauer, "Ukrainian Nuclear Warheads Out Of Control," February 1993.

leaking reservoir of deuterium-tritium (both are isotopes of hydrogen) gas mixture. This reservoir would be part of a gas-boosting system used in the fission trigger stage of the warheads, and would normally be external to the weapon core.³⁵

In any event, the Russian reports indicate the Ukrainians are experiencing some problems with maintaining the nuclear warheads. The Ukrainians do not deny this. According to Yuriy Kostenko, chairman of a Ukrainian parliamentary commission on the ratification of the START I Treaty, Russia alone has the capability to service the strategic missile warheads.³⁶ Responding to the Russian reports, the Ukrainian Ministry of Defense issued a statement which confirmed there were some difficulties in servicing the nuclear warheads on its territory, but, denied the possibility of a nuclear accident. The statement noted that difficulties in servicing the warheads were caused by Russia's failure to provide spare parts and added that an agreement had been reached to develop a logistics system to supply Russian spare parts.³⁷

³⁵Hansen, 25-27.

³⁶"Disarmament Requires Foreign Aid," Kiev Radio Ukraine World Service in English, 25 April 1993, (FBIS-SOV-93-078, 26 April 1993, p. 85).

³⁷"Ukraine Ministry Vows Missiles No 'Second Chernobyl'," Moscow Interfax in English, 1717 GMT, 20 February 1993 (FBIS-SOV-93-035, 24 February 1993, p.1).; "Difficulties Servicing Nuclear Arms," Moscow Radio Rossii Network in Russian 0500 GMT, 20 February 1993 (FBIS-SOV-93-035, 24 February 1993, p.1).

Regarding the Ukrainian missiles themselves, in February 1993, a Russian newspaper quoted Lieutenant General Aleksey Kryzhko, chief of the Ukrainian Defense Ministry Center for the Administrative Command and Control of Strategic Nuclear Forces, as saying that the combat readiness of sixteen strategic nuclear missiles is at a low level and another three are simply beyond repair. The general reported that the equipment needed to repair the sixteen missiles had already been manufactured at a plant in Kharkov, Ukraine, but had yet to be installed.³⁸ These sixteen missiles, which are apparently SS-24 ICBMs, have problems with their guidance and control systems.³⁹

c. Maintenance Agreement

Marshal Shaposhnikov was asked, during a 23 April 1993 interview, whether or not the maintenance problem with the Ukrainian nuclear warheads represented an imminent Chernobyl, as the Russian press warns. Shaposhnikov replied that,

One should not exaggerate the danger. However, these problems must not be denied either. We made several good

³⁸Viktor Litovkin, "Arguments About Missiles Continue. The Danger Remains," Moscow Izvestiya in Russian, 19 February 1993, p. 2 (FBIS-SOV-93-035, 24 February 1993, p. 1).

³⁹Litovkin, "Second Chernobyl Brewing."

agreements with President Kravchuk. Accordingly, joint commissions are to supervise maintenance....⁴⁰

The Ukrainians and the Russians have agreed to a joint servicing arrangement whereby Russian specialists will have access to and assist with the maintenance of ICBMs and warheads on Ukrainian territory.⁴¹ Joint servicing should alleviate some safety concerns, although, it makes the Ukrainian arsenal's viability somewhat dependent upon Russian support. On the other hand, joint servicing of the warheads will provide training opportunities for Ukrainian technicians which could translate into an independent Ukrainian ability to maintain the warheads.

2. Bombers

Less information has been reported about the condition of the bomber weapons than about ICBM warheads. An apparent problem with 163 cruise missile warheads has already been noted. The Ukrainian long-range bombers have been largely inactive and pilot skills are bound to be marginal. An April 1993 report concerning the TU-160 bombers of the 184th Heavy Bomber Air Regiment in Priluki indicates that the airfield

⁴⁰"Shaposhnikov Advocates Integration of CIS Armed Forces," Hamburg Die Woche in German, 23 April 1993 (FBIS-SOV-93-077, 23 April 1993, p. 3).

⁴¹Litovkin, "Second Chernobyl Brewing in Ukraine's Missile Silos."; "Kravchuk Discusses Problems of Ukraine's Nuclear Missiles Moscow Interfax in English 1533 GMT, 11 March 1993 (FBIS-SOV-93-047, 12 March 1993, p. 1).

there is not built to accommodate such heavy aircraft; therefore, they rarely fly.⁴² Before the Soviet Union disintegrated, this regiment was intended to transfer to another airfield better suited for these aircraft. On 23 March 1993, CIS Air Force Commander, Aviation Colonel General Petr Deynekin, stated that Ukraine should turn over its strategic bombers to Russia before they become unflightworthy due to insufficient maintenance.⁴³

The most serious assertion concerning the readiness of the Ukrainian bomber-carried nuclear weapons is that they no longer work at all. According to Bruce Blair, following the breakup of the Soviet Union, "...nuclear armaments for the long-range bombers stationed in Ukraine were disabled in place...."⁴⁴ Blair offers no details, however, a March 1992 Russian report quotes General Deynekin, as saying that:

...some elements of the electronic "stuff" of missiles and aircraft were removed from the Uzin base to Russia to the control posts to which the division is subordinated under the staff structure. These are complexes [devices] of flight mission carriers for missiles and cassettes providing for the aircraft getting to the area of separation of nuclear ammunition. All other forces of the long-range aviation in Ukraine, staying under reliable

⁴²"Sharing Out the Remnants of Soviet Aviation," Jane's Defense Weekly 19, no. 16, (17 April 1993): 19.

⁴³RFE-RL News Briefs 2, no. 14 (22-26 March 1993): 17.

⁴⁴Blair, 63.

control of corresponding headquarters, are in complete combat readiness.⁴⁵

Deynekin's statement suggests that the targeting/mission data software and/or recording devices were removed from Uzin-based aircraft and cruise missiles. Ukrainian Bear H bombers are based at Uzin while the Blackjack bombers are based at Priluki. According to Deynekin's statement, the TU-160 Blackjack bombers at Priluki were still combat ready as of March 1992. In April 1993 the Russians offered to help Ukraine meet its international commitments by removing all "flight assignments" from all weapon delivery vehicles, suggesting that this had not been previously fully accomplished.⁴⁶ Deynekin's statement and the April 1993 offer suggest that the TU-160s and associated cruise missiles at Priluki are still operational. Blair's assertion that all bomber weapons have been rendered inoperable is to some degree supported by a series of announcements from Kiev in March 1993 suggesting that Ukraine is not interested in keeping the strategic bomber force and is willing to live without it.⁴⁷ This may be because Blair's assertion that the bomber weapons

⁴⁵"Commander Cited on Future of Military Aviation," Moscow TASS in English, 2149 GMT, 27 March 1992 (FBIS-SOV-92-061, 30 March 1992, p. 8).

⁴⁶"Government Statement on Ukraine's Nuclear Weapons," Moscow ITAR-TASS World Service in Russian, 1030 GMT, 5 April 1993, (FBIS-SOV-93-064, 6 April 1993, p. 21).

⁴⁷See Chapter VII, Section B.

were disabled is correct, or because the Ukrainians have decided they lack the technical capability and/or money to maintain this leg.

3. Implications

The available information on the current readiness/state of repair of the Ukrainian arsenal is incomplete and sometimes conflicting. Additionally, much of it comes from Russian sources eager to show the West evidence of why Ukraine should be pressured into giving up its arsenal. Clearly, however, Ukraine is having some trouble maintaining its nuclear arsenal, especially the nuclear warheads. Since no nuclear warheads were built in Ukraine, this will likely be Ukraine's main problem area in maintaining an operational arsenal. If Ukraine is dependent upon Russian spare parts or technical expertise to maintain its arsenal, a Russian refusal to provide this assistance would make Ukraine's weapons a less likely deterrent over time. The question of who is dependent upon whom, at least when it comes to ICBMs, is not altogether clear. A statement by Colonel General Igor Sergeev, the commander of the Russian Strategic Rocket Forces, indicated that Russia may need Ukrainian parts to maintain its nuclear weapons as much as Ukraine needs Russian parts. In a 27 April 1993 speech, Sergeev noted that reductions in Russian strategic arms would have been inevitable even without the START II Treaty, because two out of three Soviet missile

plants were located in Ukraine, as were all producers of "combat control and missile guidance systems."⁴⁸ A state of mutual dependence may ensure some Russian assistance in maintaining Ukraine's arsenal in the short run, however, in order for its arsenal to remain a viable deterrent against Russia, Ukraine will need to develop an indigenous capability to service and maintain its weapons.

C. UKRAINE'S LONG-TERM ABILITY TO MAINTAIN ITS ARSENAL

1. ICBMs

Major General Volodymyr Tolubko, a Ukrainian parliamentary deputy and a former commander in the Strategic Rocket Forces, has stated that Ukraine's military-industrial complex is capable of maintaining the republic as a nuclear state.⁴⁹ Even if not true for all Ukrainian nuclear systems, Ukraine should certainly be able to maintain at least some of the SS-24 ICBMs which were built in Ukraine. Blair's information suggests that the 46 SS-24 ICBMs (plus 40 SS-19s) were left in "a more advanced stage of readiness." Additionally, the SS-24s are more modern and are, therefore, probably easier to maintain. Since the SS-19s were not built in Ukraine and are older systems, they are more problematic

⁴⁸RFE-RL Daily Report, 28 April 1993.

⁴⁹Bohdan Nahylo, "The Shaping of Ukrainian Attitudes Toward Nuclear Arms," RFE-RL Research Report 2, no. 8 (19 February 1993): 40.

for Ukraine to maintain over the long run. Nonetheless, Ukraine is well equipped to maintain its ICBM systems. Significant elements of the ballistic missile research and industrial infrastructure of the former Soviet strategic forces are located in Ukraine. These include the USSR's largest ICBM factory at Dnepropetrovsk and the ICBM and solid rocket engine plant at Pavlograd.⁵⁰ As previously noted, all producers of ICBM control and guidance systems are located in Ukraine. Although the SS-24s were built in Ukraine, some components no doubt originated in Russia. However, Ukraine should have the expertise to manufacture most SS-24 spare parts.

2. Nuclear Warheads

Long-term maintenance of nuclear warheads is more problematic for Ukraine. However, depending upon warhead design features, this may not be a serious problem. While all of the Ukrainian warheads may not be intact, many are and they likely have an extensive "shelf life." Components of modern nuclear warheads will degrade over time, but, this is not a short-term phenomenon. A long-term problem is that the tritium gas used to boost the fission component of the multi-stage warheads has a relatively short half-life (12.26 years) and must be replaced periodically. Soviet plants for

⁵⁰Zaloga, 82.

producing tritium were all located in Russia.⁵¹ However, Ukraine can likely generate tritium from its own reactors.⁵² Even if it cannot, this only means the warheads will have a reduced yield. They should still be usable nuclear weapons. A more critical warhead component which, depending upon design, may have a relatively short shelf life is the external neutron source (ENS).⁵³ In modern U.S. warheads, an ENS is a high-voltage vacuum tube neutron generator (initiator) used to provide the dedicated source of free neutrons required to ensure the nuclear detonation proceeds efficiently and reliably. These initiators work by accelerating small amounts of tritium.⁵⁴ The tritium in these initiators may also need periodic replacement.⁵⁵ However, as previously noted, Ukraine is capable of producing tritium. And, the initiators require only small amounts of this material. Additionally, a half-life of 12.26 years means that one-half of the tritium material has decayed after 12.26 years. There may be enough

⁵¹Robert S. Norris, "The Soviet Nuclear Archipelago," Arms Control Today 22, no. 1 (January/February 1992): 27.

⁵²Lepingwell, "Beyond START: Ukrainian-Russian Negotiations," 56.

⁵³Hansen, 15.

⁵⁴Apparently, deuterium may also be used in some neutron generators. Hansen, 35.

⁵⁵It is possible that the entire neutron generator device must be periodically replaced. There is no information available concerning Ukraine's ability to manufacture these devices.

residual material left after this time for the initiator to function adequately.⁵⁶

The high explosive components of a nuclear warhead are designed to have a long shelf life.⁵⁷ Even the batteries in warheads are long-lived. They remain dormant and chemically and electrically inactive until triggered by an external pulse. Evidence of the shelf life potential of a warhead comes from the U.S. testing of a twenty-year-old warhead. In the late-1980's the U.S. conducted a "stockpile confidence" test of a W-56 (Minuteman I/II) warhead that was over twenty years old. Reportedly, all arming and firing systems performed successfully and the measured yield was as expected.⁵⁸

3. Ukrainian Nuclear Infrastructure

Yuriy Kostenko, the Ukrainian Environment Minister and a nuclear proponent, has claimed that because of Ukraine's scientific and technical potential, it does have the capability to build its own nuclear weapons.⁵⁹ This may be overstating the case at the present moment, as the following

⁵⁶Only the Russians know for sure and the answer to this puzzle comes in the form of Russia's willingness to bet Moscow against the reliability of Soviet nuclear weapons.

⁵⁷Hansen, 31.

⁵⁸Ibid, 200.

⁵⁹"Kostenko Comments on Nuclear Arms, Nonnuclear Status," Moscow Nezavisimaya Gazeta in Russian, 27 April 1993, p. 3 (FBIS-SOV-93-080, 28 April 1993 p. 51).

information from a May 1993 publication by William Potter, Nuclear Profiles of the Soviet Successor States suggests.⁶⁰ Ukraine does not currently possess any facilities for manufacturing nuclear weapons. Ukraine does have several different types of nuclear power and research reactors. It does possess some fuel cycle facilities. Uranium mining and milling is undertaken at two locations in Ukraine, both located near Zheltiye Vody. Ukraine also has three Uranium conversion facilities. Other nuclear weapons-related production capabilities include three facilities capable of producing 250 metric tons of heavy water per year. Additionally, the Pridneprovsky Chemical Factory at Dneprodzerzhinsk is capable of producing zirconium, hafnium, uranium oxide and ion exchange resins.

Ukraine probably does possess the technical know-how to produce nuclear weapons. However, it currently lacks the capability to produce bomb-making quantities of highly enriched uranium or plutonium. For the time being, Ukraine would have to rely on materials recovered from existing weapons. Even if Ukraine did develop a warhead processing

⁶⁰William C. Potter, Nuclear Profiles of the Soviet Successor States, Program For Nonproliferation Studies Monograph No. 1 (Monterey, CA: Monterey Institute of International Studies, 1993), pp 83-102.

facility, it would be some time before they could produce anything as sophisticated as those nuclear warheads it already has.

III. THE QUESTION OF UKRAINIAN CONTROL OF THE ARSENAL

Having established the contents and material status of the Ukrainian arsenal, the next step in trying to bound the question of Ukrainian nuclear ambitions is to determine whether or not Ukraine can actually obtain direct firing control over the arsenal. This chapter will establish:

- Soviet strategic weapons command and control/launch authorization procedures.
- The current level of Ukrainian control over the arsenal.
- The problems faced by Ukraine which must be overcome to obtain a direct launch control capability for its nuclear weapons.

The answers to these questions should help to determine whether or not there is any point in Ukraine keeping the arsenal. If Ukraine cannot obtain independent control of the arsenal, most of the national security rationale for retaining it evaporates.

A. SOVIET STRATEGIC COMMAND AND CONTROL

Answering the question of whether or not the Ukrainians can obtain direct control of the nuclear weapons in their possession requires an understanding of how control over the weapons is normally maintained. Several studies have been conducted since the breakup of the Soviet Union. A 1991

study, Soviet Nuclear Fission, concluded that the available sources of information on the workings of the Soviet strategic nuclear command and control system "...do not present a consistent or complete account of the detailed workings of Soviet nuclear safeguards."⁶¹ A book written by Bruce Blair, The Logic Of Accidental Nuclear War, published in 1993 offers more detailed information. Between these two sources, enough information is available to establish the main obstacles which Ukraine would have to overcome in order to gain direct positive control over its arsenal.

1. SOVIET/CIS STRATEGIC FORCES ORGANIZATION

This description of the Soviet plan for operational employment of strategic forces during war time is presented in the 1989 issue of Soviet Military Power:

In the event of War, the General Headquarters (or Stavka) of the Soviet Supreme High Command (VGK) would directly control the strategic nuclear forces through the General Staff's Main Operations Directorate. As General Secretary of the Communist Party and Supreme Commander-in Chief of the Armed Forces, Gorbachev chairs the Defense Council and would head the Soviet Supreme High Command General Headquarters--the highest wartime military body. The order authorizing nuclear weapons would be passed from the VGK Stavka to the General Staff for implementation via its

⁶¹Kurt M. Campbell, Ashton B. Carter, Steven E. Miller and Charles A. Zraket, Soviet Nuclear Fission: Control of the Nuclear Arsenal in a Disintegrating Soviet Union, (Cambridge, MA: Center for Science and International Affairs, Harvard University, November 1991), 1.

command, control, and communications system for the strategic nuclear forces.⁶²

a. ICBMs

The Strategic Rocket Forces (SRF) were made up of a total of six rocket armies, all of which were under the control of the SRF Headquarters.⁶³ Each SRF army was composed of 10-12 rocket divisions. A rocket division was normally made up of ten regiments. These regiments were the lowest level of involvement in the launch of ICBMs. This was accomplished by the local or regimental (some accounts refer to battalion) launch control center (LCC).⁶⁴ Each of these LCCs normally controlled ten missile silos. Since the August 1991 coup, the SRF has been subsumed into a larger organization called the Strategic Deterrent Forces, but, the organization of the SRF within this larger organization is probably still the same as discussed above.

b. Strategic Bombers

In the Soviet Air Force, long-range, strategic bombers such as the Blackjack and Bear H bombers in Ukraine,

⁶²United States Department of Defense, Soviet Military Power 1989 (Washington, D.C., 1989), 43.

⁶³Thomas B. Cochran, William M. Arkin, Robert S. Norris, and Jeffrey I. Sands, Nuclear Weapons Data Book, vol. IV, Soviet Nuclear Weapons (New York: Harper and Row, Natural Resources Defense Council, 1989), 54-55.

⁶⁴Stephen M. Meyer, "Soviet Nuclear Operations," in Soviet C3, ed. Stephen J. Cimbala (Washington: AFCEA International Press, 1987), 148.

fell under the Aviation Armies of the Soviet Union known in the West as strategic air armies. There are five strategic air armies which are subordinate to and under the operational control of the VGK.⁶⁵

2. Launch Control For ICBMs

Operational orders to launch ICBMs would normally flow from the general staff, via the strategic nuclear section of the General Staff's Main Operations Directorate, to the SRF Headquarters for relay down echelon to ICBM command posts in the field.⁶⁶ The sequence of launch orders was as follows.

a. *The Preliminary Command*

According to Bruce Blair, who quotes a multitude of Soviet sources, the Soviet sequence of strategic launch commands consisted of several discrete steps or sequences.⁶⁷ A *preliminary command* is first issued which prepares crews to receive and implement the next order known as a *direct command*. A preliminary command would normally require joint action by the Chief of the General Staff (CGS) and the Commander in Chief (CINC) of the appropriate strategic forces. Special codes held by the CGS and CINC SRF, for example, would have to have been separately generated and combined by a special algorithm to create a valid preliminary command for

⁶⁵Nuclear Weapons Databook Vol IV, Soviet Nuclear Weapons, 59.

⁶⁶Meyer, 143; Blair, 65.

⁶⁷Blair, 59-114.

SRF units. In the SRF the preliminary command opened a communications channel through which a direct command could then flow down echelon. This communications channel used for disseminating the direct command passed through each echelon of SRF command (SRF HQ, army, division, regiment, etc.) but was effectively blocked at several locations to prevent its misuse. The preliminary command electronically closed circuits at each echelon and connected both the general staff and the SRF hierarchy to the channel used for disseminating the direct command. Additionally, the preliminary command gave launch crews access to the equipment that directly governed the launch of their missiles and allowed access to the special documentation used to authenticate a subsequent direct command by electronically switching circuits that provided the access. The General Staff could select the specific recipients of a preliminary command to allow for flexible alerting.

b. Skip Echelon Procedures

According to Blair, the General Staff could also elect to switch over to a fully automatic mode, a transition affected by transmitting a special preliminary command down echelon. Once this special preliminary command was received by the ICBM launch crews, they performed a procedure to transfer direct control to higher authority, allowing the launch orders to bypass intermediate levels of command (skip

echelon) and be sent directly from the General Staff to the combat crews. If the General Staff was incapacitated, the CINC SRF could switch over to the automatic mode and direct the entire strategic arsenal. A functioning General Staff could block or override the CINC SRF if he ordered nuclear actions without proper authorization.⁶⁸

c. Participation By the Political Leadership

There is some mystery as to whether or not the participation of the highest levels of the political/military leadership was actually necessary to initiate a launch. Apparently it may not have been required. The Soviet system of strategic nuclear weapons control intended that launch authorization should originate at the highest levels of the political/military leadership, however, the requirement to allow for a retaliatory strike if the senior leadership was incapacitated or unable to participate meant that under certain circumstances their participation was not actually required. According to Soviet Nuclear Fission, the authority to issue a valid launch order devolved to the degree that the President probably could not prevent senior military commanders from exercising control over nuclear weapons.⁶⁹ According to Blair, participation by the president and defense minister was probably not required for a valid launch order to

⁶⁸Blair, 65.

⁶⁹Soviet Nuclear Fission, 10.

be issued.⁷⁰ The CGS and the CINC SRF could issue valid launch orders. Under normal circumstances, prior to sending the direct command, the CGS and the appropriate CINC had to receive a *permission command* issued by those in the supreme high command. This permission command was the product of separate codes sent by the president and defense minister. Each individual passed his code over a dedicated communications channel to a third point (probably the strategic nuclear section of the General Staff's Main Operations Directorate) where the code halves were validated, combined, and passed to another device that integrated the permission code input of the CGS. Then the composite permission code would be passed to the CINCs of the strategic forces designated for launch. However, if the senior political leadership were taken out by a preemptive enemy strike, the CGS and CINC SRF could still generate the requisite preliminary and direct codes. Under such a system, the prevention of an unauthorized launch depended on the loyalty of the military and the fact that the crucial direct command required two separate codes, each controlled by a different military organization.

⁷⁰Blair does offer the possibility that a separate organization (such as the KGB) might have resided at the CGS or CINC war rooms to ensure that a direct command was never issued without permission from higher authority. He also speculates that a valid permission command may have been technically required to activate the systems used by the military leadership to generate and disseminate direct codes. These possibilities apparently "cannot be reliably ascertained on the basis of available evidence." Blair, 85.

d. The Direct Command

Once possessed of the directive (permission command) of the supreme leadership, the CGS and the CINCs of the strategic forces, independently formed and sent their respective components of the *direct command* to a third node, which in turn validated, combined, reencrypted and retransmitted as a composite direct command to the launch crews. This composite direct command was the order that directed the crews to fire their weapons. When the direct command was received at local launch control centers in the missile fields its authenticity was verified by electronic and organizational means. If the electronic verification was positive, certain symbols would appear on the computer monitors in the launch control centers, which the crews would compare against documentation from their safes. Soviet Nuclear Fission concurs with this assessment and notes that launch crews at the regimental LCCs had to receive two separate sets of coded orders; one authorizing use and another physically enabling warheads in their custody.⁷¹

e. Unblocking Codes

A component of the direct command was an unblocking code needed to remove the blocking devices that physically prevented illicit launches. The unblocking code became a component part of a launch command sent by the launch crew to

⁷¹Soviet Nuclear Fission, 17.

its formation of missiles. This command from the launch crew (and its unblocking code component) had to be electronically verified by equipment at the silos. If the result of the electronic verification was positive, an electronic device at each silo lifted the blocking devices to activate the missile for launch. Without the unblocking code, launch crews could not physically fire their missiles. Blair quotes Soviet military sources as saying that after receiving the preliminary command, but before receiving the direct command, the launch crews gained access to the pertinent equipment and could try to guess the unblocking code. However, due to a limited try feature, after three unsuccessful guesses which had to be tried in a matter of seconds, the system locked out the user.

3. Control Over the Bomber Force

According to Blair, procedures analogous to those described above for ICBMs would have been followed if strategic bomber forces had been designated for release.⁷² The dissemination of commands would normally have involved the CINC of the Soviet Air Force/Strategic Air Armies command hierarchy. Procedural differences had to do with the actions at the lower end of the command echelon and the characteristics of bomber weapons versus ICBMs. For strategic bomber forces, preliminary commands probably resulted in

⁷²Blair, 76.

bomber munitions being moved from depots and being uploaded on the aircraft.

There is some question concerning the safeguards which protected strategic nuclear bomber weapons from unauthorized use. According to Frank Umbach:

Bombers do not normally have nuclear weapons "uploaded" on them. Their weapons are delivered to them by organizationally distinct custodial crews from storage sites. It is unclear whether their bombs contain integral coded enabling locks or whether the enabling mechanisms are associated with the aircraft.⁷³

According to Blair, air-launched cruise missile weapons for Soviet long-range strategic bombers were apparently not equipped with blocking devices.⁷⁴ The blocking devices that were connected to the General Staff and that had to be lifted for the bomber crews to use their nuclear payloads were integral to the bombers themselves. Since strategic bomber armaments lacked technical safeguards, in the event of their illicit seizure they "could be released and detonated from virtually any aircraft." This is to some degree counter-intuitive. Blair states that blocking devices existed on tactical nuclear weapons which had to be unblocked to allow

⁷³Soviet Nuclear Fission, 19.

⁷⁴Blair quotes a former SRF officer as saying that blocking devices for air-launched cruise missiles were integral to the bombers themselves, not the missiles. Blair, 101 & 103.

the weapons to be used.⁷⁵ It is difficult to imagine the Soviets completely neglected similar safeguards against unauthorized seizure/use on weapons of such recent vintage as air-launched cruise missiles.

If Blair's previously noted information is correct and the armaments for the bombers stationed in Ukraine were disabled in place following the breakup of the Soviet Union, control over the bomber weapons is a moot point as these weapons have no utility.⁷⁶

4. Post-Coup Changes To Strategic Command and Control

The break-up of the Soviet Union obviously led to changes to the strategic force command and control structure, however, most changes have had to do with control at the apex of the system. The creation of the CIS to manage and control strategic weapons in the former republics has resulted in political/military control over the strategic forces being vested jointly with the President and the Commander-in-Chief of the CIS Armed Forces.⁷⁷ The lower levels of the strategic command and control system as described above are very likely still intact.

⁷⁵Blair, 70.

⁷⁶Blair, 63.

⁷⁷The power sharing arrangement among the leaders of the four nuclear republics vis-a-vis launch authorization has already been discussed.

B. CAN UKRAINE USE ITS NUCLEAR ARSENAL

1. Ukrainian Requirements For Using Its Arsenal

Even if Ukraine has arranged to have only officers loyal to the Ukrainian government manning the strategic command centers located in Ukraine, this does not translate into direct Ukrainian control over the launch of the associated ICBMs. Ukraine apparently did not inherit enough of the strategic command and control system to be able to generate the necessary commands (preliminary, direct and possibly permission commands) to launch nuclear weapons. Independent of retargeting concerns, the question of whether or not Ukraine can use its nuclear arsenal turns on whether or not Ukraine can somehow find a way to either: (1) generate the requisite commands/codes required to physically unblock the weapons or (2) bypass the protective safeguards.

2. Soviet Nuclear Weapons Safeguards

Answering the question of whether or not the Ukrainians can beat the protective systems and obtain direct control of the nuclear weapons in their possession, requires an understanding of the safeguards which normally protect against unauthorized use of these weapons.

a. Safeguards Already Bypassed by Ukraine

In Soviet Nuclear Fission the authors discuss six distinct types of safeguards employed by the Soviets to prevent against unauthorized seizure, movement, launch or

detonation of nuclear weapons.⁷⁸ The first four types of safeguards are:

- Institutional segregation between peacetime custodians of weapons and wartime operators (not applicable to ICBM's).
- Formalized procedures mandating that all operations involving nuclear weapons must be conducted by groups of individuals acting collectively.
- Physical security at storage sites.
- Mechanisms to prevent accidental detonations in the event of fire, electrical disturbances, or dropping of a weapon.

The first three safeguards listed above have already been bypassed by the current level of Ukrainian control over the nuclear forces on Ukrainian territory.⁷⁹ The fourth type of safeguard listed above, also known as enhanced nuclear detonation safety (ENDS) systems, refers to design features for safing the weapons to make them and their high explosive components as resistant as possible to accidental ignition during a fire or high-speed impact.⁸⁰ ENDS systems do not bear on the issue of Ukraine's ability to obtain control over the weapons.

⁷⁸Soviet Nuclear Fission, 11-16.

⁷⁹See Section II, D below; Vladykin, "Do Not Set a Dangerous Precedent."; "Ukraine's Warheads May Become 'Second Chernobyl'," Moscow IZVESTIYA in Russian, 16 February 1993, p. 4 (FBIS-SOV-93-029, 16 February 1993, p. 1); "Ukraine and Russia Differ Over Strategic Troops," RFE/RL Research Report 1, no. 24 (12 June 1992): 45.

⁸⁰Hansen, 225.

The remaining two types of safeguards discussed in Soviet Nuclear Fission are environmental sensing devices and coded switches/permissive action links.

b. Environmental Sensing Devices (ESDs)

ESDs, which are part of a weapon's safing and arming system, are electronic or electro-mechanical devices such as accelerometers, barometric pressure switches, and radar altimeters which sense whether or not a weapon has been launched and travelled the prescribed course or trajectory through space. ESDs are designed to prevent a weapon from arming until it has experienced the physical environment of intended use--that is they are activated by an environment unique to a particular weapon.⁸¹

ESDs should not be an impediment to Ukraine's use of the nuclear weapons in its arsenal so long as the weapons are used in their intended modes. ESDs on Soviet ICBMs probably determine the minimum range for the ICBMs, but these minimum ranges are probably variable (or programmable) depending upon the distance to the missile's target. An SS-24 ICBM targeted at New York would have a larger ESD-controlled minimum range than would the same missile used in a theater role. In the event that ESDs on the Ukrainian weapons are an impediment to their use against desired targets, it is probable that ESDs could be bypassed or disabled. Ukrainian

⁸¹Soviet Nuclear Fission, 14; Hansen, 225.

personnel possess sufficient technical expertise and competence to accomplish this. They also have time to work on the problem.

c. Coded Switches and Permissive Action Links

The nuclear weapon safeguard that represents the primary obstacle to Ukraine's ability to obtain direct control of its nuclear arsenal are known as coded switches, permissive action links or for the Soviets, unblocking codes. On U.S. systems these devices are part of nuclear warhead arming and fuzing systems. They are electronic or electro-mechanical combination locks that must be set in the correct order before a weapon can be armed or released.⁸² When such a coded switch is integral to the weapon itself, informal usage gives it the name "Permissive Action Link" (PAL).⁸³ The term "PAL" will be used throughout the remainder of this discussion. PALs may be part of the launch platform (ICBM/Warhead) or launch mechanism/equipment (silo). They are designed to ensure that a nuclear detonation cannot be obtained from a weapon unless the correct numeric/alpha-numeric code is entered.

As described above, the codes needed to unblock a Soviet ICBM or bomber weapon are external to the lower command echelons and must be transmitted from higher authorities.

⁸²Hansen, 227.

⁸³Soviet Nuclear Fission, 14.

Reporting indicates that modern Soviet ICBMs require a 12-digit code.⁸⁴ Ukraine apparently does not possess the codes and therefore would have to figure out a way to generate them or bypass the PAL circuitry. Some of the difficulties likely to be encountered in attempting to do this are suggested by Richard Garwin in a description of U.S. PALs:

Some U.S. PALs have limited-try features permitting, say, only three attempts to put in the correct code, which must be within a short interval, like one minute. Some PALs provide appropriate presettable penalties for failure, including permanent disabling of the warhead or even detonation of the high explosive if incorrect codes are repeatedly inserted. More advanced PALs are linked with protective membranes and special circuitry to protect the weapon against unauthorized entry or manipulation. Technology as diverse as heat-treated glass that is strong but shatters upon being drilled, or a rigid plastic sheet filled with a dense web of sensing wire, has been used to detect penetration and to initiate destruction of vital portions of the weapon. Many weapons are designed on the "strong link-weak link" principle, meaning that if the weapon were tampered with or opened, items essential to detonate it would become inoperable before the PAL would.⁸⁵

It may not be impossible to bypass, disable, or otherwise work around the PALs on the weapons in Ukraine, especially if those working on the problem have sufficient time and expertise. But if the PALs on Soviet weapons incorporate the same level of sophistication and technology as their U.S. equivalents

⁸⁴Richard L. Garwin, "Post-Soviet Nuclear Command and Control," Arms Control Today 22, no. 1 (January/February 1992): 19.

⁸⁵Garwin, "Post-Soviet Nuclear Command and Control," 19.

this will be no easy task. Since the PALs on Soviet ICBMs are part of the launch equipment and not the warheads themselves, it may be relatively easy. One indication that the Soviet PALs are less than foolproof comes from Colonel General S. G. Kochemasov, Chief of the Main SRF staff, who disclosed in Pravda in 1990 that a Soviet missile "left" its launcher "of its own accord," but, "fell not far from the launch pad."⁸⁶ Experts from the Russian defense ministry have estimated that it would require 8-9 months to a year of effort for the Ukrainians to break the launch control security systems.⁸⁷

American intelligence agencies have estimated that this would take 12-18 months.⁸⁸ Reports concerning Ukrainian efforts to defeat the launch control security systems surfaced in December 1992.⁸⁹ Assuming the Russian estimate is accurate, a Ukrainian direct launch control capability should not be far off. Ukrainian Prime Minister, Leonid Kuchma, has been quoted as saying that Ukraine has the ability to take operational

⁸⁶A. Gorokhov, "The Rocket Age," Moscow Pravda second edition, in Russian, 21 February 1990, p. 6 (FBIS-SOV-90-037, 23 February 1990, p. 88), quoted in Keith B. Payne, Missile Defense in the 21st Century: Protection Against Limited Threats (Boulder, CO: Westview Press, 1991), 104.

⁸⁷RFE-RL Daily Report, 19 May 1993.

⁸⁸Michael R. Gordon, "In Shift, U.S. Uses Aid to Ukraine In Effort to Sway A-Arms Policy," New York Times, 4 June 1993, A4.

⁸⁹Time, 28 December 1992, 11.

control of its nuclear weapons.⁹⁰ If the Ukrainians are able to work around the PALs on their weapons, they should be able to obtain control over their nuclear arsenal.

3. UKRAINIAN CAPABILITY TO RETARGET ITS WEAPONS

a. ICBMs

An inability to retarget their ICBMs is cited as an additional obstacle, beyond the problem of unblocking codes, which limits Ukraine's ability to control its arsenal.⁹¹ To determine the exact difficulties which Ukraine would have in retargeting its ICBMs against Russia (or other countries) would require detailed knowledge of the SS-19 and SS-24 guidance and propulsion systems. While complete information is not available, some conclusions can be drawn. The Ukrainians might have trouble retargeting their ICBMs to fly with the degree of precision adequate to target missile silos or other point targets at maximum ICBM ranges. Hitting a large city using a modern ICBM is less of a problem.⁹² Presumably, one of the targets Ukraine would most want to hold hostage is Moscow, and it should be within Ukrainian

⁹⁰Chrystia Freeland and R. Jeffrey Smith, "Kiev Premier Urges Keeping Nuclear Arms," Washington Post, 6 June 1993, A1.

⁹¹Soviet Nuclear Fission, 39.

⁹²The Iraqi's were able to hit Riyadh with an indigenously produced version of a very old Russian-designed ballistic missile. The Ukrainians ought to be able to figure out how to hit a city with a modern ICBM.

capabilities to reprogram an ICBM to fly from Pervomaysk to Moscow. According to Peter Pry:

Computerized fire control for ICBMs allows for rapidly shifting their aimpoints. All ICBMs have at least several alternative targets for every warhead prerecorded in the missiles onboard computer, permitting near instantaneous retargeting of warheads. The number of prestored selectable targets available with ICBMs has apparently increased greatly over the years, in tandem with microprocessor technology.⁹³

The targeting data originally loaded onboard the Ukrainian ICBMs did not originally include Russian cities. Pry notes, however, that for U.S. ICBMs, "New coordinates for previously unrecorded targets can be promptly entered through the Command Buffer System via an interface between the launch control computer and the ICBM."⁹⁴ A similar system likely exists for modern Soviet ICBMs. The necessary geodetic and other targeting data in excess of that needed for their primary targets is probably available in local mission planning systems. Soviet missiles flying from ICBM fields in Ukraine enroute to targets in the United States would have travelled over the northern polar regions. Geodetic data sets necessary for the missiles' normal trajectories may be adequate for programming missions aimed at Moscow/other Russian cities.

⁹³Peter Vincent Pry, The Strategic Nuclear Balance, vol. 1, And Why It Matters (New York: Crane Russak, 1990), 114.

⁹⁴Ibid.

Even if the available geodetic data is not readily available in mission planning systems in Ukraine, the requisite guidance input data is conceivably available in the Ukraine at an astrophysics institute, SRF military institute, or university. Both Russian and Ukrainian sources have indicated that Ukraine can retarget its ICBMs. According to Blair, Moscow has not ruled out a Ukrainian capability to retarget the ICBMs and from Moscow's perspective, "the strategic missiles in Ukraine would eventually pose a direct nuclear threat to Russia if the Ukrainian government inherited them."⁹⁵ Sergei Stepashin, the head of the Russian parliamentary Committee for Defense and Security, has claimed that the Ukrainians are attempting to retarget the nuclear weapons on their territory, and will be able to complete this and the breaking of the launch codes in less than a year.⁹⁶ Additionally, The Ukrainian Premier, Leonid Kuchma, has been quoted as saying that Ukrainian specialists are technically capable of retargeting the SS-24 ICBMs to allow them to serve as a deterrent.⁹⁷

Minimum range capabilities have been cited as a factor limiting Ukraine's ability to target some Russian cities. Blair describes the assumption that Ukraine could

⁹⁵Blair, 89.

⁹⁶RFE-RL Daily Report, 19 May 1993.

⁹⁷Daniel Sneider and Chrystyna Lapychak "Russia, Ukraine Stalemated in Arms Talks," Christian Science Monitor, 8 March 1993, 6.

create a deterrent against Russia by getting control of missile installations on its soil as flawed because this assumption defies technical constraints. According to Blair:

...the closest Russian targets that could be threatened are located in Siberia and points east. Moscow and central Russia could perhaps be targeted by the variable range SS-19 missiles in Ukraine.⁹⁸

As Blair notes, Moscow is within the estimated 500 NM minimum range for an SS-19 ICBM.⁹⁹ However, he assesses the SS-24s as having a minimum range of 3000 miles.¹⁰⁰ All ICBMs are variable range to some degree. ICBM range is primarily a function of launch angle and velocity. Velocity is determined by engine thrust capacity and burn time. Liquid-fuel ICBMs, such as the SS-19, can control burn time (and therefore, velocity) by shutting off fuel to the rocket engines. Solid-fuel ICBMs, such as the SS-24, fly out at a constant velocity and this component cannot be controlled. The minimum range for an SS-24 is therefore a function of launch angle, and, the limitations on this component are a function of SS-24 design/performance features which are unavailable in the public record. Due to minimum range considerations, the

⁹⁸Blair, 89. 120 of the Ukrainian SS-19's are reportedly variable range, capable of theater missions. See Blair, 148.

⁹⁹Nuclear Weapons Databook, vol 4, Soviet Nuclear Weapons, 16.

¹⁰⁰Blair, 89.

Ukrainians may be able to hold only a limited subset of Russian cities hostage with the SS-24s. Only the Russians and the Ukrainians know precisely what the minimum range of an SS-24 is. Neither nation discusses this in the public record. Whatever the limitations are on the SS-24s, the Ukrainians seem content that they still represent a viable deterrent to Russia. Additionally, the Ukrainians may be capable of making modifications to the SS-24s which would allow for usage at shorter range. An example is the Soviet SS-20 intermediate range ballistic missile (IRBM). This is a solid-fuel missile which is actually the first two stages of the SS-16.¹⁰¹

b. Strategic Air-Launched Missiles

Guidance for the AS-15 is assumed to be inertial with some sort of terrain matching system for accuracy. If they do utilize a terrain matching system, retargeting will be difficult for the Ukrainians.¹⁰² Terrain matching requires sophisticated guidance inputs to program specific flight profiles and it is unlikely this information has been compiled for mission profiles into Moscow. It is also unlikely that Ukraine inherited the requisite mission planning systems for developing such missions.

¹⁰¹Nuclear Weapons Databook, vol 4, Soviet Nuclear Weapons, 211.

¹⁰²Soviet Nuclear Fission, 34.

As previously noted, the AS-16 air-to-ground cruise missile uses inertial navigation with a radar seeker for terminal target acquisition. If Ukraine has this weapon system, retargeting should not be much of a problem.

C. THE STRUGGLE FOR CONTROL OF UKRAINE'S ARSENAL

1. Current Ukrainian Control of Nuclear Weapons

a. Ukrainian "Administrative Control"

On 5 April 1992 Ukrainian President Kravchuk signed a decree placing strategic nuclear forces on Ukrainian soil under the operational control of the CIS command, while establishing "administrative bodies" for them under Ukrainian control.¹⁰³ The development of Ukrainian administrative control included the establishment of a "Center of Administrative Control of the Strategic Nuclear Forces of the Ukrainian Ministry of Defense." Ukrainian officials stated that "administrative control" would mean that these troops and officers would become part of the Ukrainian Armed Forces, take the Ukrainian oath of allegiance, and be made up solely of Ukrainian personnel in the future.¹⁰⁴ Ukrainian

¹⁰³Lepingwell, "The Control of Former Soviet Nuclear Weapons: A Chronology," 72.

¹⁰⁴RFE-RL Research Report 1, no. 24 (12 June 1992): 45.

administrative control also extends to the troops responsible for guarding the warheads.¹⁰⁵

Some Russian/CIS military leaders immediately expressed concern about the resulting problems of dual subordination of strategic forces created by Ukrainian actions. Despite Ukrainian assurances that strategic forces on Ukrainian territory would remain under CIS operational control, Russian/CIS officials viewed "administrative control" as de facto control and possession of nuclear forces on Ukrainian territory and considered it "a unilateral declaration of nuclear status by Ukraine."¹⁰⁶ Grigory Berdemikov, the Russian Deputy Foreign Minister for Arms Control, expressed concern that administrative control means "the officers who sit there with the key will be Ukrainian."¹⁰⁷ According to Colonel-General Boris Gromov, Russian Federation Deputy Defense Minister, the Ukrainian leadership is taking practical steps that attest to Ukraine's desire to possess nuclear weapons. Gromov pointed out that the Ukrainian president's edict No. 209 of 5 April 1992, followed by an order issued by the Ukrainian Defense Minister,

¹⁰⁵R. Jeffrey Smith, "Officials See Shift in Ukraine's Nuclear Position," Washington Post, 19 December 1992, A10.

¹⁰⁶Pavel Felgenhauer, "Ukrainian Nuclear Warheads Out of Control," Unpublished article by a freelance defense correspondent in Moscow (formerly with Nezavisimaya Gazeta), February 1993.

¹⁰⁷Chrystia Freeland, "Ukraine Having Second Thoughts About Giving Up Nuclear Weapons," Washington Post, 6 November 1992, A20.

incorporated the 43rd Missile and 46th Air Armies in the Ukrainian Armed Forces. Gromov said that in May 1992 the personnel of two nuclear-technical troop units of the 46th Air Army, where roughly 670 strategic nuclear munitions are stationed, swore the Ukrainian military oath. According to General Gromov, this indicates that control has been established over these munitions and the Ukrainians have begun handling them. Gromov also says that subunits guarding the missile systems are being manned solely by Ukrainian citizens. In Gromov's opinion, Ukraine has thus acquired an opportunity in principle to use nuclear weapons.¹⁰⁸

On 10 April 1993, the Ukrainian Defense Minister Colonel General Konstantin Morozov, took administrative control one step further and called for all personnel at the 43rd Strategic Rocket Forces Army command center to take an oath of allegiance to Ukraine. Morozov said the oath would be mandatory and those not wishing to take the oath of allegiance could resign.¹⁰⁹

b. Electronic Blocking Control Over ICBMs

The strategic nuclear weapons in Ukraine were formerly under control of the Soviet nuclear command and

¹⁰⁸Vladykin, "Do Not Set a Dangerous Precedent."

¹⁰⁹Chrystia Freeland, "Ukrainian Calls For Allegiance Oath, Washington Post, 11 April 1993, A 24; "Morozov: Ukraine To Issue Oath for Strategic Forces," Moscow Russian Television Network 1000 GMT 11 April 1993 (FBIS-SOV-93-068, 12 April 1993, p. 47).

control system. This system incorporated a number of physical and procedural safeguards to prevent unauthorized use. The modified CIS command and control structure similarly protects against unauthorized launch as did the previous Soviet system. The differences between the Soviet system and the current CIS system have to do with control at the apex of the system, not with control at lower echelons.

The Alma-Ata summit agreement of 21 December 1991 and the Minsk agreement on strategic forces of 30 December 1992 supposedly vested control at the apex with the leaders of the four republics (Russia, Ukraine, Belarus, and Kazakhstan) where strategic nuclear weapons are based. The Minsk agreement states that a decision to use nuclear weapons may be made by the president of the Russian federation "in agreement" with the leaders of the other three republics.¹¹⁰ With the CIS strategic command and control system intact and Ukrainian President Kravchuk able to merely *consult* with the other Presidents concerning the use of weapons on Ukrainian territory, the CIS strategic forces arrangement was "little more than a fig leaf for the Russian President's ultimate control."¹¹¹ The Russians have dropped this pretense and Russian Defense Minister, General Pavel S. Grachev, was quoted

¹¹⁰RFE-RL Research Report 1, no. 3 (17 January 1992): 51.

¹¹¹Mark Kramer, "The Armies of the Post-Soviet States," Current History (October 1992): 327-33.

in June 1993 as saying that the nuclear weapons in Ukraine were Russian and should remain under Russian control.¹¹²

Kravchuk has repeatedly asked for the installation of a blocking device that would allow him to prevent the launch of Ukrainian ICBMs. He has often hinted that there were "technical safeguards" or some sort of "special technical control" allowing him to physically block the launch of Ukrainian-based ICBMs if he did not concur with their use.¹¹³ According to Ukrainian First Deputy Defense Minister Ivan Bizhan, as of July 1992 no device allowing Ukraine to block an ICBM launch order from the CIS was ever installed.¹¹⁴ Kravchuk was still asking for such a device to give him negative control over the ICBMs as late as February 1993.¹¹⁵ And in early-April 1993, Deputy Foreign Minister Boris Tarasyuk stated that the Ukrainian President still could not block the use of the weapons on Ukrainian territory.¹¹⁶ Marshal Yevgenii Shaposhnikov, Commander-in-Chief of the CIS

¹¹²Gordon, "Russians Fault U.S on Shifting Ukraine's Arms," A1.

¹¹³"Kravchuk Outlines Ukraine's Position on Nukes," Ukrainian Weekly, 17 January 1993, 1; RFE-RL Research Report 1, no. 14 (3 April 1992): 49; RFE-RL Research Report 1, no. 3 (17 January 1992): 51.

¹¹⁴"Shaposhnikov, Ukrainian Official on Nuclear Arms," Moscow INTERFAX in Russian 0754 GMT 17 July 1992 (FBIS-SOV-92-138, 17 July 1992, p. 1).

¹¹⁵"Moscow, Kiev Clarify Positions on Nuclear Weapons," Moscow Krasnaya Zvezda in Russian, 2 February 1993, p. 3 (FBIS-SOV-93-022, 4 February 1993, p. 1).

¹¹⁶RFE-RL News Briefs 2, no. 16 (5-8 April 1993): 19.

Joint Armed Forces, has confirmed that "hot lines" among the presidents of the four nuclear republics have been established to allow voicing of disagreements about the use of nuclear weapons, but, Shaposhnikov has also indicated that Kravchuk's demands for a blocking device will not be met because this would allow Ukraine to join "the system of technical control of nuclear weapons."¹¹⁷

A recent assessment by John Lepingwell, citing statements from President Kravchuk and Prime Minister Kuchma, indicated that in late 1992 Ukraine set up its own launch veto system.¹¹⁸ According to Lepingwell, this system may consist of a direct phone line from Kravchuk to the strategic forces' headquarters in Ukraine together with explicit orders not to launch without direct confirmation from Kravchuk. During a January 1993 interview with an Italian journalist, Kravchuk described two telephones in his office which, according to Kravchuk, comprise the Ukrainian "nuclear button." Kravchuk indicated one of the telephones connects his office with the "43rd Brigade." It is via this phone that he gives or refuses permission for the launch of missiles.¹¹⁹ The report refers to the 43rd Strategic Rocket Forces Army located in the

¹¹⁷"Shaposhnikov, Ukrainian Official on Nuclear Arms."

¹¹⁸Lepingwell, "Beyond START," 55; Blair, 87.

¹¹⁹"Kiev's Stance on Nuclear Disarmament Examined," Moscow Rossiyskaya Gazeta, in Russian, 21 January 1993, p. 7 (FBIS-SOV-93-014, 25 January 1993, p. 1).

central Ukrainian region of Vinnytsya. The 43rd Strategic Rocket Forces Army, ostensibly subordinate to the CIS Unified Strategic Forces Headquarters in Moscow, controls all Ukrainian ICBMs.¹²⁰ Commenting on the effectiveness of a "hot line" arrangement between Kravchuk and the 43rd SRF army, Blair notes:

If the 43rd SRF Army commander at his headquarters in Vinnytsya, Ukraine, had been willing to obey the orders from Kravchuk, or if troops loyal to Ukraine were positioned to disable communications serving the headquarters, the president's launch veto power would have been strengthened, because the installation was a key retransmission point of the Russian strategic command system. This headquarters maintained contact with all 176 ICBM launch posts in Ukraine. By controlling the major land-line switching centers, for example, the Ukrainian leadership could have severed the normal primary link between Moscow and the missiles. Such an arrangement was evidently implemented in late 1992. It did not provide an ironclad veto, however, because the Russian high command retained alternate links and the technical ability to bypass the key SRF installation, disseminating launch orders directly to the missile launch crews, or alternatively, firing the missiles using radio signals from Moscow directly to the silos. However, this switchover from the normal, manual mode to the automatic mode of strategic command-control that bypassed intermediate nodes might have been impeded or even prevented if launch crews broke ranks with Moscow and refused to implement the transitional procedures.¹²¹

When Ukrainian defense minister Morozov called for all personnel at the 43rd Strategic Rocket Forces Army command

¹²⁰Freeland, "Ukrainian Calls For Allegiance Oath."; "Morozov: Ukraine To Issue Oath for Strategic Forces," (FBIS-SOV-93-068, 12 April 1993, p. 47).

¹²¹Blair, 88.

center to take an oath of allegiance to Ukraine in April 1993, it was almost as if the Ukrainians had read Blair's book.

As of mid-April 1993, CIS/Russian officials continued to insist that the nuclear weapons in Ukraine were under their control.¹²² If true, the available information indicates that as of mid-April 1993, Ukraine could not actually exert negative control over the launch of ICBMs located on its territory, although it is probably attempting to get such control by arranging to have only Ukrainian loyalists manning the launch control centers. Ukraine does not yet have the ability to directly launch ICBMs itself.¹²³

c. Blocking an ICBM Launch by Physical Means

If committed to the task, the Ukrainians could utilize physical means to prevent an ICBM launch. Richard Garwin has suggested several methods by which Ukraine could prevent the launch of ICBMs by direct physical means.¹²⁴ One measure suggested is the stationing of firing teams equipped with anti-tank (or air-defense) weapons to intercept the ICBMs during their vulnerable boost-phase rise out of the silos. This is easier said than done, but possible if sufficient numbers of properly equipped fire teams were stationed close

¹²²"Ukrainian Nuclear Arms 'Fully Under Control' of CIS Forces," Moscow ITAR-TASS in English 1107 GMT, 14 April 1993 (FBIS-SOV-93-070, 14 April 1993, 1).

¹²³Lepingwell, "Beyond START", 55.

¹²⁴Garwin, "Post-Soviet Nuclear Command and Control."

enough to their target silos. The troops assigned such a task would need to be intrepid souls for several reasons. There is a possibility of an explosion from a munition striking a missile (especially the liquid-fueled SS-19s). The resulting fireball itself could kill, and it could cause a low-order, non-nuclear detonation of the warheads spreading nuclear debris (and toxic rocket fuel) over a large area. Additionally, there is danger from the missile exhaust itself which is apparently highly toxic. Garwin has also suggested that a launch could be blocked by piling earth to a depth of at least 10 meters on the silo covers. Creative minds can probably think up several other methods to block physically an ICBM launch such as wiring explosive charges near the silos or cutting off electric power to command centers. Another possibility is the previously discussed cutting of the communications links to the launch control stations in Ukraine. The communications system which is used to command Soviet (now CIS) strategic nuclear forces is redundant. According to Daniel Goure:

The Soviets employ a series of parallel communications means including underground cables, microwave and short-wave fixed site and mobile radios, and satellite platforms to ensure connectivity between the nuclear forces and command echelons.¹²⁵

¹²⁵Daniel Goure, "C3 and the New Soviet Nuclear Forces," in Soviet C3, ed. Stephen Cimbala (Washington, D.C: AFCEA International Press, 1987), 162.

The redundancy of strategic communications systems, built to remain intact after a nuclear first strike, would make it difficult to accomplish the severing of all communications links. However, as noted above, with Ukrainian loyalists manning the control centers it would be possible to isolate the nuclear arsenal from the CIS/Russian command and control system.

D. UKRAINIAN EFFORTS TO OBTAIN LAUNCH CONTROL

1. Is Ukraine Really Trying?

Russian/CIS officials have been quoted as saying that Russian officers continue to have complete operational control over launch codes and all other aspects of weapons control and launch procedures.¹²⁶ In April 1993, First Deputy Chief of Staff of the CIS Armed Forces, Lieutenant General Vladimir Krivonogikh, said that nuclear weapons on Ukrainian territory are fully under control of the CIS Unified Armed Forces main command.¹²⁷ And in a 6 April 1993 statement, Ukraine reaffirmed its intention to be a non-nuclear state claiming only to own the *components* of the strategic weapons and not the weapons themselves. Ukraine also asserted that it cannot

¹²⁶Dunbar Lockwood, "Ukraine Delays Vote on START: U.S. Offers Incentives, Warnings," Arms Control Today 22, no. 10 (December 1992): 21 & 28.

¹²⁷"Ukrainian Nuclear Arms 'Fully Under Control' of CIS Forces."

deploy [launch] these missiles alone because the elements of system control are located outside Ukraine's territory. In the statement, Ukraine also denied having any intention of acquiring control over nuclear weapons and affirmed that operational control of the weapons on Ukrainian territory remains with the CIS.¹²⁸

It is tempting to believe the Ukrainians. For a country with no intention of acquiring an independent nuclear weapons capability and wanting to get rid of its nuclear weapons, however, Ukraine seems to have amassed a great deal of control over its arsenal. More than anything else, the recent move to get the personnel at the 43rd Strategic Rocket Forces Army Command Center to take an oath of allegiance to Ukraine suggests that Ukrainian officials are making efforts to gain control over at least the ICBM leg of their arsenal. An argument that Ukraine made this move only to obtain additional blocking control over the ICBMs is unconvincing. There is evidence that Ukraine is trying either to develop substitutes for the unblocking codes or to bypass the safeguards. An effort to develop unblocking codes is underway at the Kharkov Scientific Center (Monolit) and some Russians

¹²⁸"Cabinet Explains Nuclear Stance," Kiev Holos Ukrayiny in Ukrainian, 7 April 1993, p. 1 (FBIS-SOV-93-067, 9 April 1993, p. 57).

may have been enlisted to help in the effort.¹²⁹ Senior Russian military officers have been quoted as saying that Ukraine is going all out to break the launch codes for the warheads it possesses.¹³⁰ The Russian government has issued statements charging that Kiev was taking active steps to establish control over nuclear weapons on Ukrainian territory.¹³¹ It is possible that statements like this from the Russians may be based upon a desire to attract Western concentration on the problem of Ukrainian nuclear weapons rather than reality, but, still they cannot be entirely discounted. Several senior Ukrainian leaders have denied the allegations that Ukraine is trying to break the codes, but even if the allegations are true, such denials are to be expected. It is also possible that senior Ukrainian leaders haven't been made aware of such efforts.

2. Ukrainian Chances of Success

If the Ukrainians are trying to find a way around the unblocking code safeguards, there is not enough information to positively state what their chances of success are. The most convincing evidence that breaking the codes is within Ukrainian capabilities comes from the Russians themselves who,

¹²⁹William C. Potter, "Ukraine's Nuclear Trigger," New York Times, 10 November 1992, A24; Potter, Nuclear Profiles of the Soviet Successor States, 84.

¹³⁰Time, 28 December 1992, 11.

¹³¹RFE-RL Daily Report, 6 April 1993 and 19 May 1993.

as previously noted, estimate the Ukrainians can do it in less than a year. The authors of Soviet Nuclear Fission warn against assuming that the Soviet systems and procedures for nuclear command and control are similar to their U.S. counterparts.¹³² Assuming that Ukraine will have a tough time getting direct control of its nuclear arsenal because it would be difficult for them to get past U.S.-quality safeguards represents flawed thinking. If more were known about the Soviet nuclear weapons safeguards, especially their equivalent PALS/unblocking codes, the system's level of sophistication might be less than expected. And it is important to remember that the Ukrainians are not a pack of goatherds who happened upon these systems. Ukraine has an advanced weapons infrastructure; Ukrainians were involved in the design and construction of many of these systems. The Ukrainians have time to work on the problem and most safeguards weren't designed to prevent intrusion for an indeterminate period of time. Even if Ukraine doesn't quite have all the knowledge it needs to get around the nuclear weapons safeguards covering its arsenal, such expertise is probably accessible in Russia.

E. CONCLUSION

¹³²Soviet Nuclear Fission, 3.

The primary obstacle to any Ukrainian attempt to obtain direct control over its nuclear weapons are the unblocking codes or PALs. If Ukraine cannot figure out a way around these devices, its arsenal is useless in any kind of deterrent or offensive role. Retargeting of some of the systems is an additional obstacle, but probably not a serious one. According to Strobe Talbot:

It is only a matter of time before they have operational control--that is, the ability to launch those missiles. That control now resides in Moscow, with President Yeltsin and General Shaposhnikov, the chief of staff for the increasingly fictional Commonwealth of Independent States. There are apparently think tanks in Ukraine today, probably working overtime, trying to break the launch codes. And beyond the question of control over those ICBMs, there is the question of capacity to retarget those missiles, and that is a capacity that surely, sooner or later the Ukrainians would have.¹³³

It might be enough for Ukraine to merely make the Russians (or other nations) wonder whether or not it has control, but, it is unlikely Ukraine would endure the costs associated with retaining nuclear weapons which it cannot use in at least some limited capacity. The Ukrainians must think there is some possibility that they can obtain a launch control and a retargeting capability over some component of their arsenal.

¹³³Strobe Talbot, "Crisis or Kiosks in the Former Soviet Union," Arms Control Today, 22, no. 10 (December 1992): 15-19.

IV. OPPOSITION TO/SUPPORT FOR UKRAINIAN NUCLEAR STATEHOOD

A. INTERNATIONAL OPPOSITION TO A NUCLEAR-ARMED UKRAINE

A great deal of pressure has been directed at Ukraine over its failure to ratify the START I Treaty and to accede to the Nuclear Non-Proliferation Treaty (NPT) as a non-nuclear Party. This pressure results from concerns that the reason underlying the delays and reluctance to formally ratify the treaties have to do with a Ukrainian desire to retain its inherited nuclear arsenal and its status as a nuclear-armed state. Ambassador Strobe Talbot of the United States has suggested that Ukraine continues to pay lip service to the proposition of being a nuclear-free state but is tempted by the idea of having its own deterrent.¹³⁴ Ukraine's temptation is not difficult to understand. Many other nations have been similarly tempted to possess nuclear weapons and Ukraine's motivations are no less valid. Still, for very different reasons, both Russia and the West (led by the United States) would much prefer a non-nuclear Ukraine. From the Russian perspective, a Ukraine disarmed of nuclear weapons is certainly less of a threat. And for Russia's increasingly imperialistic leaders and populace unable to adjust to the reality of Ukrainian independence, a non-nuclear Ukraine is a far easier target for

¹³⁴Ibid, 16.

eventual reincorporation. American difficulties with the prospect of a nuclear-armed Ukraine are more complex. A January 1993 Wall Street Journal editorial attempted to articulate them as follows:

- American policymakers are uncomfortable with the notion of many countries where once there was one.
- An "unfounded belief in the efficacy of arms agreements."
- A belief that concentrating all the former Soviet nuclear weapons into Russia somehow ensures safety.
- More nuclear powers in the region will give rise to a new kind of regional balance-of-power and produce a dangerous nuclear standoff.¹³⁵

1. Security Policy and Arms Control Agreements

Not everyone would agree with the Wall Street Journal's analysis of American motivations, but it is clear that U.S. policymakers are far more concerned with American national security policy than with Ukrainian national security. American policymakers would much prefer dealing with a single nuclear-armed entity than multiple nuclear-armed states from the former Soviet Union. The emergence of a nuclear-armed Ukraine threatens the START I and II arms control agreements, and their scuttling is viewed as a tragedy that must be averted. American policymakers, fearful that a nuclear armed Ukraine will wreak havoc on arms control efforts, have tended to ignore the legitimacy of Ukrainian

¹³⁵Wall Street Journal, 6 January 1993, A6.

motivations. This unwillingness/inability to view the issue from a Ukrainian perspective has resulted in some arguably counterproductive moves and mistakes being made by Washington. In 1981, Kenneth Waltz commented upon the tendency of the U.S. to make such mistakes. According to Waltz:

We damage our relations with such countries by badgering them about nuclear weapons while being unwilling to guarantee their security. Under such circumstances they, not we, should decide what their national interests are.¹³⁶

The American attempt to force Ukraine to disarm in order to preserve arms control is understandable. However, the allegation that Ukrainian intransigence over disarmament is delaying the implementation of START II is overstated.¹³⁷ The ongoing conflict between Russian president Boris Yeltsin and the Russian parliament is more to blame. According to Boris Tarasov, a leading Russian hardliner:

Strategic nuclear weapons gave the Soviet Union the status of a superpower. Ratification of START II would mean Russia loses this status.¹³⁸

¹³⁶Kenneth N. Waltz, The Spread of Nuclear Weapons: More May Be Better, Adelphi Papers Number 171 (London: The International Institute for Strategic Studies, 1981), 28.

¹³⁷Michael R. Gordon, "Aspin Meets Russian in Bid To Take Ukraine's A-Arms," New York Times, 6 June 1993, A8.

¹³⁸"A Persistently Nuclear Nightmare," The Economist, 3 April 1993, 52.

The prospect for the ratification of the START II Treaty by the Russian parliament is bleak, but for reasons that have nothing to do with Ukraine's nuclear status. Preserving arms control is a worthwhile endeavor, however, failing to acknowledge the national security concerns of Ukraine in the pursuit of the endeavor, may produce results opposite from those intended. This may prove to be an instance where well-intentioned efforts to do good, ultimately end up fomenting insecurity and war in Europe.

2. American Disinterest

To a large degree, American disinterest has been out of ignorance on the part of policymakers accustomed to viewing the Soviet Union as a monolithic entity. American disinterest towards Ukraine has played a key role in driving the Ukrainians toward nuclear-armed status. The American treatment of Ukraine as nothing more than "an interloper threatening the post-cold-war world order" has led to disenchantment on the part of Ukrainian leaders anxious to divorce their nation from Russia and turn to the West in their nation building.¹³⁹ Instead of being welcomed by the West, the Ukrainians have been, at best ignored, and in many instances rebuffed, out of Western deference to Russia. In the words of the Ukrainian Prime Minister, Leonid Kuchma, "on

¹³⁹Ukraine: "You'd Be Nervous Living Next To A Bear," The Economist (15 May 1993): 21.

the maps of world leaders, Ukraine does not even exist. They are indifferent whether Ukraine is independent or not."¹⁴⁰ Taras Kuzio, a research associate with the International Institute for Strategic Studies, commenting on American disinterest towards Ukraine, noted that:

While former President George Bush pursued an all-embracing foreign policy towards Russia, Ukraine was largely forgotten and U.S.-Ukrainian relations remained mainly confined to the issue of nuclear weapons....Calls for diplomatic and economic isolation if Ukraine should fail to deliver on its commitment to become nuclear free were therefore regarded as empty threats in Kiev because of the perceived quarantine that Ukraine had, in effect, already been placed into by the former Bush administration.¹⁴¹

At first, the Clinton administration seemed determined to pursue the same policy line as the Bush administration, however, by April 1993, it was recognized that such a policy was backfiring. In May 1993, it was announced that a shift in U.S.-Ukrainian relations would occur and the bilateral relationship would broaden to include economic, defense, and foreign policy issues.¹⁴²

¹⁴⁰Ibid.

¹⁴¹Taras Kuzio, "Shifting Public Opinion In Ukraine Affects Its Status As Nuclear Power," Ukrainian Weekly, 9 May 1993, 7. (originally published in German in Die Zeit, a Hamburg newspaper.)

¹⁴²Marta Kolomayets, "Talbot Visit Signals Sea Change In U.S.-Ukrainian Ties," Ukrainian Weekly, 16 May 1993, 1.

3. Consolidation of the Soviet Arsenal

From the Ukrainian national security perspective, the proposition that it makes sense to consolidate the Ukrainian nuclear arsenal with Russia's in the interest of non-proliferation must seem ludicrous. According to Ken Booth, writing in Arms Control, a similar argument applied to Western Europe sounds almost facetious:

Would it not make equal sense - for anti-proliferation purposes - to pursue complete nuclear abolition or, second best, the centralization of its nuclear weapons into the custodianship of the most powerful and economically most effective member, Germany? If not, why not? Opposition to such an idea within Britain and France will have nothing to do with logic, of course, but everything to do with national self-interest.¹⁴³

From a national security perspective, there is little reason to believe that a nuclear-armed Ukraine is any less stable or any more of a threat than a nuclear-armed Russia. Russia is currently anything but stable, and, the future offers little hope of improvement in the near term. Ukraine is clearly having some problems maintaining the nuclear warheads in its arsenal, but there is some concern about the Russian arsenal as well.¹⁴⁴ The 6 April 1993 explosion at Russia's Tomsk-7 nuclear material processing plant should serve as a warning

¹⁴³Ken Booth, " 'Loose Nukes' and the Nuclear Mirror," Arms Control 13, no. 1 (April 1992): 140-150.:

¹⁴⁴Dan Oberdorfer, "Russian Strife Seen Straining Arms Controls," Washington Post, 4 February 1993, All.

that the Russians have their share of problems in the nuclear area.¹⁴⁵

Nevertheless, the West has used a variety of diplomatic tools to convince Ukraine to give up her nuclear arsenal. Ukraine has been labeled a "barrier to nuclear peace" and a "pariah" in the Western press.¹⁴⁶ In January 1993, a group of military experts and Soviet policy specialists sent a letter to President Clinton urging him to take immediate action to control nuclear arms in Ukraine.¹⁴⁷ A New York Times editorial suggested that Ukraine should be warned not to "toy" with nuclear arms, as if the Ukrainians were a primitive tribe which happened upon the SS-19 and SS-24 ICBMs in a field somewhere and planned to turn them into totem poles.¹⁴⁸

¹⁴⁵"Radiation Level at Epicenter Reported," Moscow ITAR-TASS in English, 1709 GMT, 8 April 1993 (FBIS-SOV-93-067, 9 April 1993, p. 50); Piers Paul Read, "Mugged By The Nuclear Hooligans," New York Times, 24 May 1993, A15.

¹⁴⁶"Ukraine: Barrier to Nuclear Peace," New York Times, 11 January 1993, A18.

¹⁴⁷The letter was initiated by the Fourth Freedom Forum (a private foundation). Among the signatories were Stephen F. Cohen, Marshall Goldman, Admiral Eugene Carrol, Jr. (USN, retired), and Admiral Noel Gayler (USN, retired). "Experts Warn Clinton About Ukraine's Nukes," Ukrainian Weekly, 31 January 1993, 5.

¹⁴⁸"Nuclear Backsliding in the Ukraine," New York Times, 4 May 1992, A16.

4. Effect on Regional Proliferation

A significant concern over the potential development of a Ukrainian independent nuclear capability is the effect it would have on other nations. A nuclear Ukraine could cause other nations to follow suite. Some feel that Kazakhstan is waiting to see how Ukraine acts before deciding the final disposition of its SS-18 ICBMs. Should Kazakhstan follow a Ukrainian lead and develop its own nuclear capability, this might cause Iran to develop its own nuclear capability. Some believe this linkage effect could conceivably lead Poland or Germany into the nuclear club.

This, however, is a lot to blame on the Ukrainians. Nations will try to develop a nuclear capability for reasons which have nothing to do with Ukraine. Iran, in particular, is a country which seeks a nuclear capability for reasons that have nothing to do with the former Soviet republics.¹⁴⁹

B. UKRAINIAN DEMANDS FOR NUCLEAR STATEHOOD

1. Popular Support

One indicator of the level of overall popular support in Ukraine for nuclear statehood comes from a May 1992 public opinion poll conducted by the Sociological Association of

¹⁴⁹Professor David Yost, interview by author, 11 June 1993, Monterey, CA, Naval Postgraduate School, Monterey, CA.

Ukraine.¹⁵⁰ Among the overall sample, 28 percent agreed with the statement that "all nuclear weapons should remain in Ukraine." Forty-four percent disapproved, for the most part strongly, of nuclear weapons. Increasing tensions with Russia since the poll was taken have caused Ukrainian government officials and parliamentarians to favor a shift in policy away from previous pledges to become a non-nuclear state.¹⁵¹ Newer polls show increasing support for nuclear statehood. A different public opinion poll conducted in Kiev in the summer of 1992, indicated that one out of every six or seven citizens in Kiev believed it unwise to surrender the nuclear arsenal. By the end of 1992 the level of support in Kiev had risen to one out of three.¹⁵² The Economist reported in mid-May 1993 that 40 per cent of Ukrainians want their country to be nuclear armed.¹⁵³

There is some anecdotal evidence of popular support. ITAR-TASS reported that "many thousands" participated in a demonstration organized in Kiev on 18 January 1993 demanding that Ukraine leave the CIS and that it retain a nuclear

¹⁵⁰Kathleen Mihalisko, "Defense, the CIS and Ukrainian Public Opinion," RFE-RL Research Reports, 1, no. 35 4 September 92, 43.

¹⁵¹Sneider and Lapychak, "Russia, Ukraine Stalemated."

¹⁵²Olena Hubina, "To Some People the Disarmament of Ukraine Looks Like a Striptease," Kiev Molod Ukrayiny in Ukrainian 19 February 1993, p. 2 (FBIS-SOV-93-037, 26 February 1993, p. 1.).

¹⁵³Ukraine: "You'd Be Nervous Living Next To A Bear," The Economist (15 May 1993): 21.

capability.¹⁵⁴ The Ukrainian Officers Union also favors retention of nuclear weapons on Ukrainian territory.¹⁵⁵

Anti-nuclear Ukrainians tend to cite the cost and difficulty of maintaining the nuclear arsenal, environmental dangers associated with the arsenal, or general opposition to anything nuclear. The Chernobyl experience has been described as having created in Ukraine a "lasting aversion to the atom's fearsome power," and is often cited as being a brake on any moves to retain a Ukrainian nuclear weapons capability.¹⁵⁶ The incident undoubtedly had tremendous emotional and psychological impact, however, its braking effect on Ukrainian nuclear statehood may be less than some might imagine. Despite the horrible consequences of the Chernobyl incident, the Ukrainians are willing to continue operation of this dangerous power plant.¹⁵⁷ The Ukrainians are forced by perceived necessity into continued reliance on nuclear power. By continuing to operate Chernobyl, the Ukrainians have proven

¹⁵⁴RFE-RL Daily Report, 19 January 1993.

¹⁵⁵Officers Union Endorses retention of Nuclear Weapons," Moscow INTERFAX in English, 1305 GMT 12 April 1993 (FBIS-SOV-93-069, 13 April 1993, p. 60).

¹⁵⁶Oleh Bilorus, "Ridding Ukraine of Nuclear Weapons," Christian Science Monitor, 24 December 1992, 18. See also: Bohdan Nahaylo, "The Shaping of Ukrainian Attitudes Toward Nuclear Arms," RFE-RL Research Report, 2, no. 8 (19 February 1993): 21; Paul A. Goble, "Forget The Soviet Union," Foreign Policy, no. 86 (Spring 1992): 62.

¹⁵⁷Ukrainian Weekly, 11 April 1993, 2; RFE-RL Daily, 2 October 1992.

that they are pragmatic enough to endure nuclear hazards if required. Growing Ukrainian nationalism encountering increasingly vocal and threatening Russian nationalism may similarly result in a pragmatic willingness to endure the hazards posed by retention of the Ukrainian nuclear arsenal; especially if the Ukrainians believe that giving up their nuclear weapons could cost them their independence. A March 1993 poll conducted in Kiev showed that, of the 50 per cent of the respondents who think that Ukraine should be nonnuclear, only 11 per cent think that the nuclear arsenal should be surrendered unconditionally. Almost 90 per cent indicated that Ukraine should be given international security guarantees and financial compensation before surrendering the weapons.¹⁵⁸

2. Governmental Support

President Kravchuk and his assistants for the most part have repeatedly and consistently affirmed their support for eventual nuclear disarmament, if their three conditions (security guarantees, compensation for nuclear materials, help with cost of dismantling the arsenal) are met. However, the Office of the President usually tells us what we want to hear. It is probably more important to pay attention to what the parliament has to say.¹⁵⁹ In March 1993, Ukrainian Premier

¹⁵⁸RFE-RL Daily Report, 27 April 1993.

¹⁵⁹Potter, "Ukraine's Nuclear Trigger."

Leonid Kuchma suggested that he thought a nuclear arsenal might not be a bad thing to have available. According to Kuchma:

Back then [in 1991] in the euphoria of independence, we very hastily made this decision to get rid of all our nuclear weapons....Ukraine's nuclear weapons could be a restraining factor or check [against potential aggression] if we controlled them.¹⁶⁰

Despite Kuchma's statement, on 6 April 1993 the Ukrainian government issued a statement reaffirming its intention to be a non-nuclear state.¹⁶¹ Kuchma reaffirmed his position in early-June when he told a closed-door parliamentary meeting that Ukraine should declare itself a nuclear state and temporarily keep part of the former Soviet nuclear arsenal.¹⁶² There is a vocal, pro-nuclear faction within the Ukrainian parliament, however, many reports don't indicate the size or influence of this faction.¹⁶³ In November 1992, the Christian Science Monitor noted that there were about two dozen deputies in the Ukrainian parliament that

¹⁶⁰Sneider and Lapychak, "Russia, Ukraine Stalemated."

¹⁶¹"Cabinet Explains Nuclear Stance," Kiev Holos Ukrayiny in Ukrainian, 7 April 1993, p. 1 (FBIS-SOV-93-067, 9 April 1993, p. 57).

¹⁶²Gordon, "In Shift, U.S. Uses Aid to Ukraine In Effort to Sway A-Arms Policy," A4.

¹⁶³Oleh Bilorus, "Ukraine Needs Protection," New York Times, 11 February 1993, A23.

oppose nuclear disarmament, but, the majority of the 450 legislators support complete nuclear disarmament.¹⁶⁴ When asked about the numerical correlation in parliament between nuclear hawks and nuclear doves in February 1993, Ukrainian Deputy Foreign Minister, Boris Tarasyuk, said that since no serious poll had been conducted, it would be inappropriate to speak of the correlation. Tarasyuk said that there is an active group of deputies studying this matter, however, "the vast majority of deputies have yet to determine their positions."¹⁶⁵ The available information suggests that a majority of the Ukrainian parliament do not favor nuclear disarmament. If the deputies were firm in their conviction that nuclear disarmament was definitely the course Ukraine should pursue, START I and the NPT would have likely been approved early on. On 22 April 1993, a military doctrine that would have banned Ukraine from storing, manufacturing, or using nuclear weapons was narrowly defeated in Parliament. Only 189 of 450 deputies approved the draft doctrine.¹⁶⁶ In late-April 1993, a statement advocating nuclear status for

¹⁶⁴Chrystyna Lapychak, "Ukraine Delays Treaty Ratification," Christian Science Monitor, 19 November 1992, 1.

¹⁶⁵"Tarasyuk on START, Security Guarantees," Kiev Golos Ukrainy in Russian, 17 February 1993, p. 6 (FBIS-USR-93-029, 12 March 1993, p. 78).

¹⁶⁶RFE-RL Daily Report, 23 April 1993.

Ukraine was signed by 162 parliamentary deputies.¹⁶⁷ This pro-nuclear faction is influential and controls approximately 300 votes.¹⁶⁸

Several different factors are apparently at work preventing parliamentary approval of Ukrainian nuclear disarmament. While many parliamentarians may support nuclear disarmament, there is some question as to their idea of the proper sequence for accomplishing it. Many deputies who support *eventual* disarmament might not support it at the present time.¹⁶⁹ According to William Potter, "Even parliamentarians who believe Ukraine should eventually become free of nuclear weapons maintain the country is temporarily entitled to nuclear weapons status."¹⁷⁰ Ukrainian parliamentary spokesmen have indicated that the majority's support for nuclear disarmament is contingent upon the three specified conditions (security guarantees, compensation for nuclear materials, help with cost of dismantling the arsenal)

¹⁶⁷"Statement by Ukraine's People's Deputies on Ukraine's Nuclear Status," Kiev Molod Ukrayiny in Ukrainian 27 April 1993 p. 1 (FBIS-SOV-93-082, 30 April 1993, p. 51).

¹⁶⁸Professor William C. Potter, interview by author, 11 June 1993, Monterey, CA, Program for Non-Proliferation Studies, Monterey Institute of International Studies, Monterey, CA.

¹⁶⁹Viktor Myronchenko, "Does Ukraine Need Nuclear Weapons?," Kiev Molod Ukrayiny in Ukrainian 26 January 1993, p.2 (FBIS-USR-93-023, 3 March 1993, p. 66).

¹⁷⁰Potter, "Ukraine's Nuclear Trigger."

being met.¹⁷¹ Since Ukraine is not having much luck at getting these conditions met to their satisfaction, parliamentary support for nuclear statehood is rising. Amid growing tension between Ukraine and its powerful Russian neighbor, Ukrainian government officials and parliamentarians are increasingly favoring a shift in policy away from Ukraine's unilateral pledge to become a non-nuclear state and hint at keeping some arms as a deterrent.¹⁷² During talks in Washington in May 1993, Ukrainian Foreign Minister, Anatoliy Zlenko, said that recent political turmoil in Russia has had a negative effect on political support for the elimination of nuclear weapons in Ukraine and was causing growing opposition in the Ukrainian parliament to the government's earlier decision to renounce nuclear weapons.¹⁷³ Bohdan M. Horyn, Deputy Chairman of the Parliament's Foreign Relations Committee and Deputy Chairman of the Military Affairs Committee says that Ukrainian commitments to become non-nuclear were voiced as intentions not obligations. According to Horyn, "During this period of instability in Russia, it's

¹⁷¹"Legislature, Commissions Discuss Adoption of START," Kiev Ukrainian Business News in Ukrainian, 20 January 1993, p. 2 (FBIS-SOV-93-016, 27 January 1993, p. 40); "Official on START Group's Visit to Missile Unit," Kiev Radio Ukraine World Service in Ukrainian, 14 January 1993, (FBIS-SOV-93-011, 19 January 1993, p. 44).

¹⁷²Sneider and Lapychak, "Russia, Ukraine Stalemated."

¹⁷³"Zlenko on Growing Opposition to Giving Up Nuclear Arms," Moscow Radio Rossii Network in Russian 0900 GMT 25 March 1993 (FBIS-SOV-93-056, 25 March 1993, p. 49).

unwise and dangerous to get rid of our nuclear weapons." ¹⁷⁴
According to Parliamentary Deputy Mykhailo Batih, commenting on parliamentary hearings in early March 1993 on the ratification of START I:

I think it is obvious the political situation has changed dramatically since we first declared that Ukraine would get rid of all its nuclear weapons. This was before anyone in Russia made territorial claims on parts of Ukraine and before Yeltsin's request for special military authority over the whole former Soviet Union. In today's situation it would be naive to rush into this without considering our security interests.¹⁷⁵

Reports in Pravda Ukrainy and other Ukrainian newspapers on 11 March 1993 indicated that hearings in parliament on the START I treaty are producing largely negative appraisals.¹⁷⁶ The hearings were organized by a group of deputies as a prelude to the official ratification debate. The reports suggested the deputies might consider ratifying the START I treaty while delaying ratification of the NPT to allow Ukraine to retain some of its nuclear weapons, while entering negotiations with the other CIS states as to how the START I cuts would be apportioned among them.

¹⁷⁴Steven Erlanger, "Ukraine and Arms Accords: Kiev Reluctant to Say 'I Do'," New York Times, 31 March 1993, A1.

¹⁷⁵Sneider and Lapychak, "Russia, Ukraine Stalemated."

¹⁷⁶RFE-RL Daily, 12 March 1993.

One of the more radical positions on nuclear weapons seems to be held by the Ukrainian Republican Party. During a mid-1993 congress the Republican Party called for the following:

- Full Ukrainian control of nuclear weapons on Ukrainian territory.,
- Ukrainian command of strategic nuclear troops.
- Creation of a Ukrainian system of nuclear warning.
- The retargeting of nuclear weapons according to the principle of "security in all directions."
- Direct launch control for Kravchuk.¹⁷⁷

3. Implications

Russian instability and hostility towards an independent Ukraine are causing popular and parliamentary support to shift towards favoring nuclear weapons. The key Ukrainian entity to watch on the nuclear issue is the Parliament. If the majority of Ukrainian parliamentarians really thought it was a good idea to ratify START I and surrender the arsenal, they would have likely done so by now. Although initially opposed to nuclear-armed status for Ukraine, the executive branch will probably behave pragmatically on this issue. Overall, the Ukrainians would

¹⁷⁷Vladimir Skachko, "Republicans Favor Nuclear Ukraine," Moscow Nezavisimaya Gazeta in Russian, 6 May 1993, p. 3 (FBIS-SOV-93-087, 7 May 1993, p. 59).

probably prefer to become a non-nuclear state, however, circumstances seem to be forcing them in the other direction.

V. UKRAINIAN MOTIVATIONS FOR NUCLEAR-ARMED STATUS

A. WHY UKRAINE MIGHT WANT A NUCLEAR WEAPONS CAPABILITY

Kenneth Waltz has suggested the following seven reasons why nations in general want to possess a nuclear weapons capability:

1. Great powers always counter the weapons of other great powers.
2. For offensive purposes.
3. Prestige or enhanced international standing.
4. It may find nuclear weapons a cheaper and safer alternative to conventional forces.
5. Its adversary has nuclear weapons.
6. Fear of its adversaries' present or future conventional strength.
7. Fear that its great power ally (if it has one) will not retaliate if the other great power attacks.¹⁷⁸

Waltz's list, while not completely exhaustive, nonetheless serves as a useful framework for considering and evaluating possible Ukrainian motivations for obtaining an independent nuclear capability.

¹⁷⁸Waltz, 7.

1. Countering Weapons Of Great Powers

Russia is the primary threat to Ukraine. Since their main antagonist is nuclear armed, it should not be surprising that the Ukrainians feel they need nuclear weapons to defend themselves.

2. Offensive Purposes

Offensive purposes are an unlikely motivation for Ukraine to seek an independent nuclear capability. If Ukraine has strategic goals or ambitions which an offensive nuclear weapons capability can help it to achieve, they are not discernable either in history nor in statements currently being made by the Ukrainian leadership. Ukraine has pressing economic and societal problems. Nation building, the maintenance of its territorial integrity, and the preservation of its independence are goals which most Ukrainian leaders would be more than happy to settle for.

3. Prestige

The fading glory of Russia is a lesson not lost on the Ukrainians. The remaining vestiges of Russian prestige in the world as a major power mostly result from its possession of nuclear weapons. In the face of the reality that they too are economically a third world nation, some Ukrainians may well see nuclear weapons as a means to gain respect. Sergei Kiselyov, a Russian journalist, has drawn a parallel between Ukraine's current and Russia's historical need to rely on

nuclear weapons to achieve international status and respect.¹⁷⁹ Prestige has been a factor considered by other countries in deciding whether or not to become a nuclear military power, and it shouldn't be surprising that it motivates some Ukrainians; especially in light of the historical Ukrainian inferiority complex vis-a-vis Russia and Western indifference to a newly-independent Ukraine. Unfortunately, the United States has unintentionally done all it can to link Western concern and attention for Ukraine with Ukrainian possession of a nuclear arsenal. Washington made it abundantly clear that Ukraine was important only insofar as it had nuclear weapons.¹⁸⁰ The focus by Washington strictly upon the nuclear issue contributed to the likelihood that Ukraine would opt for a nuclear-armed status by reinforcing for many Ukrainians the notion that without nuclear clout, Ukraine will be just another province of Russia.¹⁸¹

Prestige is undoubtedly a strong motivation for a Ukrainian nuclear capability, however, as Kenneth Waltz has observed, "the nuclear military business is a serious one, and we may expect that deeper motives than desire for prestige lie

¹⁷⁹Sergei Kiselyov, "Ukraine Stuck With The Goods," The Bulletin of the Atomic Scientists, 49, no. 2 (March 1993): 31.

¹⁸⁰Suzanne Crow, "START II: Prospects for Implementation," RFE-RL Research Report 2, no. 3 (15 January 1993): 16-18; "Just Treatment for Ukraine," Christian Science Monitor, 14 January 1993, 20.

¹⁸¹George Slusarczuk, "Ukraine Should Keep Nukes," Ukrainian Weekly, 15 September 1993, 7.

behind the decision to enter it."¹⁸² In Ukraine's case, the prestige factor pales in comparison to the motivation provided by the perceived threat to Ukrainian independence posed by Russia.

4. Alternative to Conventional Forces

Historically, the threat to Ukrainian independence has been in the form of armies from the north. At the beginning of this century, Ukraine lost her independence because she had declined to maintain her own army. The Ukrainians have not forgotten this lesson.¹⁸³ According to John A. Armstrong:

Few political movements in this century have been as thoroughly obsessed as the Ukrainian nationalist movement with the idea of building military strength.¹⁸⁴

The nationalistic voices in Ukraine's parliament are similarly convinced of the relationship between military might and Ukrainian independence.¹⁸⁵ Ukraine moved quickly after independence to establish large Ukrainian armed forces loyal to the Ukraine. Fortunately, the conventional military

¹⁸²Waltz, 8.

¹⁸³Anatoly Zlenko, "Independent Ukraine: Risk or Stability," RUSI Journal 137, no. 2 (April 1992): 38-42.

¹⁸⁴John A. Armstrong, Ukrainian Nationalism, 3d ed., (Englewood, CO: Ukrainian Academic Press, 1990): 124.

¹⁸⁵Freeland and Smith, "Kiev Premier Urges Keeping Nuclear Arms," A22.

hardware inherited by Ukraine was some of the best in the former Soviet Union. At the present time there is some legitimate question as to who enjoys a conventional force advantage over whom. Following the breakup of the Soviet Union, Russia retained the conventional force assets that were on its territory, as well as all of the assets of the Groups of Forces (GOFs) in East Germany, Poland, and the Baltics. As the table below illustrates, Russia has overwhelming numerical superiority overall, however, more than half of the current Russian assets are located outside of Russia:¹⁸⁶

	Tanks	ACVs	Artillery	Aircraft	Helos	Total
GOFs	5587	11059	4591	1411	465	23113
RUSSIA	5017	6279	3480	2750	570	18096
UKRAINE	6204	6394	3052	1431	285	17366

It will take years for Russia to move the GOFs back to Russia. Additionally, plummeting morale in the Russian army has caused many to doubt its capacity to fight.¹⁸⁷ In the meantime, the Ukrainian assets are considerable. Unfortunately, the Ukrainian economy is in shambles, and Ukraine is being forced to downsize its Army. Ukraine cannot sustain a large, well-equipped military and at the same time rebuild its shattered economy. It has been suggested to the Ukrainian

¹⁸⁶Douglas L. Clarke "Implementing the CFE Treaty," RFE-RL Research Reports 1, no. 23 (5 June 1992): 50-55.

¹⁸⁷"Hidden Enemy," The Economist, 27 March 1993, 20.

parliamentarians that a nuclear arsenal is a force multiplier which could allow Ukraine to downsize its conventional forces while still maintaining a credible deterrent. Major General Tolubko noted in a parliamentary address that:

...nuclear weapons permit a country to reduce its defense spending. You must admit that for our state, which is only just rising to its feet, given our condition of economic ruin, retaining our nuclear capability is the most expedient variant of military building and national security.¹⁸⁸

Because nuclear weapons are so overwhelmingly destructive they may be an inappropriate response to a marginal provocation. The disutility of nuclear weapons in instances of limited war makes the argument that nuclear weapons can serve as an alternative to conventional forces of highly questionable validity. As the United States discovered in the Korean conflict, conventional forces are still required by nuclear armed states. Nevertheless, the "more bang for the buck" mode of thinking is a phase of nuclear thinking/strategy which more than a few mature nuclear powers passed through. It should not be surprising that it appeals to some Ukrainian leaders.

5. The Russian Threat to Ukrainian Independence

When applying Waltz's motivational framework to the Ukrainian situation, the final three reasons (actually the

¹⁸⁸Myronchenko, "Does Ukraine Need Nuclear Weapons?"

final four) all have to do with the Ukrainian perception of the threat posed by Russia. The Russian threat to Ukrainian independence is continually cited by those Ukrainian leaders advocating a nuclear-armed Ukraine.¹⁸⁹ Russia is the natural, historical enemy of a free and independent Ukraine, and, there are no reasons to believe that Russia has ever abandoned its historical view of Ukraine as an integral part of Russia.¹⁹⁰ The potential for Russian aggression against Ukraine was acknowledged in late-1992 by Ambassador Strobe Talbot who commented that:

The brutal fact is that many Russians - notably including Russians that we would consider to be good guys, liberals, reformers - in their government, do not accept the independence of Ukraine. And believe me, Ukrainians know that. That is one reason why Ukrainians know there is no state on the face of the Earth that has more need for security guarantees against Russia than Ukraine.¹⁹¹

The most powerful political figures in Russia have all issued repeated public declarations against Ukrainian sovereignty and

¹⁸⁹Steven Erlanger, "Ukraine and Arms Accord: Kiev Reluctant to Say 'I Do'," New York Times, 31 March 1993, A1; Sneider and Lapychak, "Russia, Ukraine Stalemated."; Bilorus, "Ukraine Needs Protection."

¹⁹⁰Roman Solchanyk, "Ukraine: A Year of Transition," RFE-RL Research Report 2, no. 1 (17 December 1992): 58-63.

¹⁹¹Talbot, "Crisis or Kiosks in the Former Soviet Union."

territorial integrity.¹⁹² President Yeltsin, considered by many to be the only moderating voice in Russia, has been quoted as saying that, "Russia reserved the right to review its borders with those republics that declared themselves independent."¹⁹³ An especially ominous development for the Ukrainians was President Yeltsin's February 1993 suggestion that the United Nations should grant Russia special military powers to intervene in the former Soviet republics.¹⁹⁴ While Yeltsin's statements may be only an attempt to appease the Russian hardliners, it cannot be comforting to Ukrainians that it is necessary for Yeltsin to do so. Russian Vice-President Aleksandr Rutskoi has been quoted as saying:

The historical consciousness of the Russians will not allow anybody to mechanically equate the borders of Russia with those of the Russian Federation and to take away what had constituted the glorious pages of Russian history.¹⁹⁵

Sergei Baburin, a member of the Russian Supreme Soviet and central figure in the National Salvation Front, was quoted in

¹⁹²Bohdan Psykir, "Ukraine Needs Reassurance from West" (Letter to Editor) New York Times, 21 January 1993, A18.

¹⁹³Roman Solchanyk, "Ukraine," RFE-RL Research Report 1, no. 7 (14 February 1992): 1-5.

¹⁹⁴Serge Schmemmann, "Yeltsin Suggests a Role for Russia to Keep Peace in Ex-Soviet Lands," New York Times, 1 March 1993, A1.

¹⁹⁵Igor Torbakov, "The 'Statists' and the Ideology of Russian Imperial Nationalism," RFE-RL Research Report 1, no. 49 (11 December 1992): 12.

May 1992 as telling Kiev's ambassador in Moscow that, "either Ukraine reunites with Russia or there will be war."¹⁹⁶ Lieutenant General Aleksandr Lebed, commander of Russia's 14th Army in Moldova, has condemned the "parade of sovereignties" of the former Soviet republics as a "darkening of the mind" and predicted that sovereignty will lead to wars; "therefore it is necessary to eradicate it." Pointing to the Dniester conflict, Lebed warned that "something similar is looming in Ukraine."¹⁹⁷ The threats to reabsorb Ukraine made by major Russian political figures combined with general Russian instability are especially alarming for Ukrainians in light of the declining power and influence of Russian President Boris Yeltsin.¹⁹⁸ Reporter Vitaly Portnikov of the Russian newspaper Nezavisimaya Gazeta has observed that "If Yeltsin and the Democrats fall in Russia, it would threaten Ukrainian independence."¹⁹⁹

The issue of the Crimea is also perceived by Ukraine as being especially dangerous. Hints of Russian intentions with regard to the Crimea were revealed in early-1993, when Russia's ambassador to Ukraine, Leonid Smolyakov, commented at

¹⁹⁶Izvestiya (Moscow evening edition), 26 May 1992 quoted in Roman Solchanyk, "Ukraine: A Year of Transition."

¹⁹⁷RFE-RL Daily Report, 12 February 1993.

¹⁹⁸Erlanger, "Ukraine and Arms Accord."

¹⁹⁹Justin Burke, "Yeltsin, Kravchuk Meet at Kremlin," Christian Science Monitor, 15 January 1993, 8.

a press conference that Russia had received 20,000 requests for Russian citizenship from Crimeans and that if Crimea should vote to become independent, the Russian government would support the move.²⁰⁰

An additional warning sign of Russian intentions vis-a-vis Ukraine is available in the form of the emerging Russian military doctrine.²⁰¹ Mark Galeotti, a specialist on the Russian military, has characterized the new Russian Draft Military Doctrine as:

...a charter for nationalists and interventionists, paving the way for a more aggressive and imperialist foreign policy, especially towards the other successor states.²⁰²

Not all analysts share Galeotti's assessment of the Russian doctrine, however, the threat posed by Russian imperialism to the former Soviet republics has been acknowledged by the American defense establishment to the degree that it has even been incorporated into Pentagon contingency planning.²⁰³

The unwillingness of the U.S. to extend meaningful security guarantees to Ukraine is at least partly out of fear

²⁰⁰Ukrainian Weekly, 14 February 1993, 2.

²⁰¹Scott McMichael, "Russia's New Military Doctrine," RFE-RL Research Report 1, no. 49 (09 October 1992): 45-50.

²⁰²Mark Galeotti, "Decline and Fall- Plots and Scapegoats," Jane's Intelligence Review 4, no. 12 (December 1992): 530.

²⁰³"Pentagon War Scenario Spotlights Russia," Washington Post, 20 February 1992, A1.

of the likelihood that it might have to stand behind any such guarantees. The U.S. clearly considers Ukraine as part of the Russian sphere of influence. Former U.S. President Bush's "Chicken Kiev" speech and Western unwillingness to recognize fully and support the sovereignty of Ukraine early on, has doubtlessly translated into a Russian perception that the West would sit back and tolerate Russian imperialism against Ukraine. Ukrainian leaders know that Ukrainian independence is not a vital enough American concern over which to confront Russia. Given recent history, it should not be surprising that American deterrent threats on behalf of Ukraine would lack credibility. While addressing parliament, Major General Tolubko cautioned:

Is there really anyone who cherishes the hope that the Germans, Americans, or French will defend us from a potential aggressor? Or that their combined forces will do so? Did they not defend us splendidly in 1918? The same will happen today if the situation becomes serious. No one will be willing to fight for the interests of a naive and shortsighted Ukraine.²⁰⁴

In the face of an all-out invasion of Ukraine by Russia, the best Ukraine could hope for from America would be the issuance of stern warnings, the appointment of a special envoy, a boycott of the Olympics, and extensive media coverage. The ineffectiveness of the United Nation's efforts at intervention

²⁰⁴Myronchenko, "Does Ukraine Need Nuclear Weapons?"

in Bosnia offers little in the way of hope for Ukraine that any international effort would be of much use if Ukraine should find itself under duress from Russia. Ukraine likely understands that it will have to rely on its own devices to fend off any future Russian moves to reincorporate it.

a. Ukrainian Options in the Face of the Threat

Russia is and will be for some time to come, the major strategic concern of Ukraine. The question of whether or not Ukraine will become a nuclear-free state turns primarily on the issue of Ukraine's ability to defend its citizens, sovereignty, and territorial integrity. If Ukrainians believe that giving up their nuclear weapons exposes them to aggression from Russia, then they will consider this a dangerous and risky course to pursue.²⁰⁵ One way or another Ukraine can be expected to look after its security concerns, either by obtaining what it believes are viable security guarantees from the West or by Ukraine's own guarantees. . The inability of the West to extend acceptable, credible security guarantees limits the options available to Ukraine and places the republic in a difficult strategic

²⁰⁵Chrystyna Lapychak, "Ukraine Gains U.S. Guarantee Needed for START Support," Christian Science Monitor, 12 January 1993, 1.

position. Ukraine is all but forced to not play by the rules and keep its nuclear weapons.²⁰⁶

B. SECURITY OR MONEY: WHICH IS THE REAL ISSUE?

Ukraine has consistently articulated that the following conditions must be met in order for it to give up its nuclear arsenal:

- Economic assistance to cover the cost of taking the missiles and warheads out of service.
- A fair share of revenues from the sale of highly enriched uranium from dismantled ex-Soviet nuclear warheads.
- Strong and clear security guarantees from the West.²⁰⁷

Initially, Western attention focused on the issue of economic assistance. Ukrainian delays in ratifying START I and surrendering the weapons were thought to be a ploy to get economic concessions from the West. Has the entire drama over Ukrainian nuclear weapons been merely about money?

1. The Financial Factor

a. The Cost of Disarming

The Ukrainians continue to insist that they cannot afford to pay for the cost of disarmament themselves. No one

²⁰⁶Alexander J. Motyl, "Russian Hegemony and non-Russian Insecurity: Foreign Policy Dilemmas of the USSR's Successor States," Harriman Institute Forum 5, no. 4 (December 1991): 1-11.

²⁰⁷Dunbar Lockwood, "Russia Ratifies START; Ukraine Reaffirms Conditions for Approval," Arms Control Today 22, no. 9 (November 1992): 26-32; and "U.S. Rejects Security Guarantees Sought by Ukraine," Ukrainian Weekly, 10 January 1993, 1.

disagrees that this is true. Ukraine is in desperate financial condition. The United States has offered Ukraine \$175 million to pay for the cost of disarmament. However, according to Yuriy Kostenko, chairman of the parliamentary commission considering the ratification of the START I Treaty, the cost to implement disarmament is three billion U.S. dollars.²⁰⁸ This amount is an increase over an earlier claim of \$1.5 billion quoted by Ukrainian leaders. The disparity seemingly indicates that the United States is offering Ukraine only a fraction of what is needed to disarm. But is this really the case? Could Ukraine effect disarmament for \$175 million or is \$3 billion a true reflection of the actual cost? The Ukrainians do not discuss specifics or otherwise justify their cost estimates for disarmament. The Ukrainians have stated that they will not turn the nuclear warheads over to Russia for dismantlement, insisting that nuclear warheads must be dismantled in Ukraine. Since there is no warhead dismantling facility in Ukraine, one would have to be built. This is an expensive proposition and certainly adds to the cost (not to mention time) of disarmament. If the Ukrainians really wanted to become a non-nuclear state they wouldn't worry about where the warheads are destroyed. Any argument that the Russians might use the surrendered warheads/missiles

²⁰⁸"Material Prosperity is the Main Thing," Moscow Rossiyskaya Gazeta in Russian 24 April 1993 p. 6 (FBIS-SOV-93-078, 26 April 1993, p. 85).o

to attack Ukraine is absurd. The Russian have many thousands of warheads to choose from. Should they choose to attack Ukraine with nuclear weapons, it really wouldn't make any difference if Russia did use formerly Ukrainian missile/warheads. The outcome would be the same.

In a February 1993 RFE-RL Research Report John Lepingwell, discusses the cost of Ukrainian disarmament.²⁰⁹ Assuming that Ukraine would agree to let Russia destroy the warheads, the cost of getting rid of the bomber weapons is mostly transshipment costs. The same is true of the ICBM warheads. Beyond moving the warheads to Russia for dismantlement, the destruction of the Ukrainian ICBMs themselves is a bit more complicated, especially the SS-19s. The SS-19s use a dangerous liquid fuel known as heptyl fuel. It is actually unsymmetrical dimethyl hydrazine (UDMH) and nitrogen tetroxide (N2O4) as an oxidizer. Both UDMH and N2O4 are highly toxic and dangerous. The Ukrainians have maintained that the cost of disposing of the heptyl fuel is extremely high. Lepingwell, however, indicates that disposal could probably be accomplished by burning the fuel in liquid propellant engines at a cost between \$10,000 and \$20,000 per missile. And this cost could be paid for by Russia if they took over dismantling of this class of ICBM. This would leave

²⁰⁹John W.R. Lepingwell, "Beyond START: Ukrainian-Russian Negotiations," RFE-RL Research Report 2, no. 8 (19 February 1993): 46.

only the 46 Ukrainian built, solid-fuel SS-24's for Ukraine to dismantle.

Lepingwell quotes Ukrainian Deputy Defense Minister, Ivan Bizhan, as saying that destroying the silos for the ICBMs (required by START I treaty) would cost billions, endanger the surrounding population and cause environmental problems.²¹⁰ Lepingwell counters that, "...the destruction of silos appears to be a relatively straightforward demolition project that represents little threat to the surrounding environment if properly implemented."

Commenting on the adequacy of the \$175 million which the United States has offered to help Ukraine disarm, Lepingwell notes that, "In light of the prevailing prices in Ukraine, this is a very large sum that should more than cover the heptyl's disposal and leave a substantial amount of funding for missile destruction."²¹¹ It appears that the U.S. offer is not so far out of line, and, the cost of disarming is not what is keeping Ukraine from doing so. If Ukraine truly wished to become a non-nuclear state, it could do so quickly and easily, with the cost paid by the United States or Russia. If necessary, the United States would come up with additional funds required to accomplish this high priority objective. There should be little doubt among

²¹⁰Lepingwell, "Beyond START," 52.

²¹¹Lepingwell, "Beyond START," 53.

Ukrainian leaders that the U.S. is not going to pay \$1.5 billion, and certainly not \$3 billion, nor engage in haggling with Ukraine over its disarmament.

b. Compensation For Nuclear Material

Ukraine claims to own the fissile material in the warheads on its territory, believes it should be compensated for the value of the material, and argues that the material is extremely valuable.²¹² A February 1993 RFE-RL Research Report article by John Lepingwell evaluated the Ukrainian claim that their compensation for the value of the fissile material in the warheads on Ukrainian territory should be approximately six billion U.S. dollars.²¹³ Lepingwell's results are only rough estimates as it is impossible to be precise for several reasons. Nuclear warheads use either highly enriched uranium (HEU), plutonium or a mixture of the two as fissile material. HEU has a market value because it can be denatured and readily used as fuel in commercial nuclear reactors. Plutonium, on the other hand, is not readily used as fuel, and because of its toxicity, it may even have a negative value. The available information concerning Soviet nuclear warhead design is incomplete. Neither the exact amount of fissile material in each warhead nor the

²¹²Lepingwell, "Beyond START," 47.

²¹³John W.R. Lepingwell, "How Much is a Warhead Worth," RFE-RL Research Report 2, no. 8 (19 February 1993): 62-64.

relative percentages of HEU and plutonium are known. Assuming the fissile material of the Ukrainian warheads are composed strictly of HEU, Lepingwell comes up with an approximate value per warhead of between \$200,000 and \$400,000. Using a total Ukrainian arsenal size of 1800 strategic warheads, this works out to be a grand total of between \$360-720 million. Including the value of tactical warheads already withdrawn from Ukraine, Lepingwell's calculus comes in with an estimate of \$1-2 billion. Lepingwell also uses an alternate calculus by which Ukraine would receive a 20 percent share of the value of the fissile material extracted from all Soviet warheads to be destroyed as part of arms reduction treaties. This alternate methodology also results in Ukrainian share of several billion dollars. All of Lepingwell's estimates assume that the warheads are made up of only HEU, which he says is probably not correct. Lepingwell observes that limited information about U.S. systems suggests that the fissile component of ICBM warheads is primarily plutonium. This is because the lower critical mass of plutonium allows for weight and size reductions necessary for the constraints of MIRV warheads. According to Lepingwell, since the Ukrainian warheads are probably mostly plutonium and not HEU, his estimates probably overvalue the worth of the Ukrainian arsenal. The presence of plutonium may even detract from the value of the warheads. Additionally, Western experts have estimated the cost of dismantling a warhead might be between

\$100,000 and \$1 million, which further reduces the value of the warheads. The Ukrainians' notion of what their warheads are worth is way out of line. This may be due to a misconception, shared by the Russians, that plutonium has commercial value.²¹⁴ It may also be due to a Ukrainian perception that its missiles have value as potential space launch platforms. More likely, however, is that the inflated demands for recompense for fissile material is a stalling tactic or smokescreen for nuclear ambitions. The Ukrainians have legitimate claims to a fair share of the value of the fissile material in their warheads. The U.S. has been pressing Russia to share the income from Uranium sales with Ukraine. This is a long-term issue which can be handled by arbitration. Only so many warheads can be dismantled and only so much HEU can be sold per year. Ukraine is not going to receive any kind of lump-sum payment for its share from any source.

c. Implications

Assuming Ukraine is sincere about disarmament, it seems unlikely that either the cost of disarming or compensation for the value of warhead fissile material would be major obstacles. The following passage, taken from a statement signed by 162 parliamentary deputies in late April

²¹⁴Thomas W. Lippman, "Russia Thinks Plutonium From Arms Has Commercial Value, Congress Told," The Washington Post, 10 March 1993, A24.

1993, provides insight into the true motivation of the pro-nuclear deputies:

We are grateful to those states that offer certain capital to Ukraine to cover its expenses on the reduction of nuclear weapons. At the same time, it would be a mistake to agree to promises of insignificant monetary compensation in exchange for Ukraine's immediate nuclear disarmament. The question of nuclear disarmament, state independence, national security and territorial integrity cannot become an object for bargaining or "monetary compensations."²¹⁵

National security issues are of greater concern than money, and, the third Ukrainian demand, security guarantees, is really the contentious issue.

2. The Issue of Security Guarantees

a. Ukrainian Demands for Security Guarantees

Several influential Ukrainian leaders, including the chairman of Ukraine's Popular Rukh (Ukraine Peoples Movement for Perestroyka), Vyacheslav Chornovil, believe the issue of security guarantees is the key to whether or not the parliament ratifies START I.²¹⁶ According to Ivan Plyushch,

²¹⁵"Statement by Ukraine's People's Deputies on Ukraine's Nuclear Status," Kiev Molod Ukrayiny in Ukrainian 27 April 1993 p. 1 (FBIS-SOV-93-082, 30 April 1993, p. 51).

²¹⁶Rukh Leader Links NATO Membership, START," Moscow Interfax in English, 1405 GMT 13 March 1993, (JPRS-TAC-93-006, 25 March 1993, p. 5).

speaker of the Ukrainian Parliament, Ukraine will ratify START and the NPT if it is given adequate security guarantees.²¹⁷

The guarantees sought by Ukraine are absolute guarantees. A "promise from Russia to be nice" will not satisfy Ukraine's needs.²¹⁸ A promise that in the event of the threat of nuclear attack "the U.S. would render political support by bringing the issue before the UN Security Council" similarly offers underwhelming comfort to Ukraine.²¹⁹ From the Ukrainian perspective, for security guarantees to be credible, the guarantees will likely have to be in the form of a treaty. Various Ukrainian officials have hinted in this direction. Deputy Foreign Minister Tarasyuk has spoken of:

...an appropriate document [from nuclear powers] that would state they will consider unacceptable any use of threat of force against Ukraine on the part of any nuclear state.²²⁰

The Vice-Chairman of the Ukrainian Parliament, Vasyl Durdinets, stated in January 1993 that parliamentary deputies want "written guarantees" on Ukraine's security.²²¹

²¹⁷"START I Ratification Linked to Security Guarantees," Kiev Radio Ukraine World Service in Ukrainian, 0500 GMT, 6 April 1993 (FBIS-SOV-93-064, 6 April 1993, p. 64).

²¹⁸Talbot, "Crisis or Kiosks in Former Soviet Union," 19.

²¹⁹RFE-RL Research Report 1, no. 20 (15 May 1992): 26.

²²⁰"Security and Nukes," Ukrainian Weekly, 10 January 1993, 6.

²²¹RFE-RL Daily, 21 January 1993.

Ukrainian President Kravchuk has said that "a declaration would calm the population" and make it easier for him to present START I to the Supreme Council.²²² In February 1993, Deputy Foreign Minister Tarasyuk specified specific requirements for security guarantees. According to Tarasyuk, Ukraine is:

...demanding guarantees of Ukrainian security from all the nuclear states that are permanent members of the UN Security Council.... The document on guarantees of Ukraine's security should specify three main points. First, exclusion of the possibility of aggression against Ukraine on the part of the nuclear states using either conventional or nuclear arms. Second, non-use of economic pressure on Ukraine for the purpose of achieving economic or political ends. Third, unconditional recognition of and respect for the territorial integrity and inviolability of the present borders of Ukraine.²²³

Kiev has also hinted that it would like assurances that would treat it like a NATO ally: an attack upon Ukraine would be treated like an attack upon the rest of the alliance. Rukh chairman Chornovil believes that joining the NATO alliance could be the sole guarantee for Ukraine's security after the liquidation of all nuclear weapons.²²⁴ Ukrainian Prime

²²²"U.S. Rejects Security Guarantees," Ukrainian Weekly, 10 January 1993, 1.

²²³"Tarsyuk on START, Security Guarantees," Kiev Golos Ukrainy in Russian 17 February 1993, p. 6 (FBIS-USR-93-029, 12 March 1993, p. 78).

²²⁴Rukh Leader Links NATO Membership, START," Moscow Interfax in English, 1405 GMT 13 March 1993, (JPRS-TAC-93-006, 25 March 1993, p. 5).

Minister Kuchma has even asked the United States to "bring us under your shield," a clear solicitation for extended nuclear deterrence from the United States.²²⁵

b. Russian and American Offers

The West has not been encouraging on the issue of security guarantees for Ukraine. The unofficial point of view on security guarantees from the United States was summed up in a New York Times editorial which cautioned that Washington "would be foolish to offer one" as this would "needlessly affront Russian nationalists already smoldering about Moscow's diminished stature."²²⁶ The unstated essence of this editorial is the mistaken notion that the way to handle the situation is to continue a long tradition of catering to the bully. A similar notion was in evidence in November 1991, when the Russian foreign minister, Andrei Kozyrev, urged President Bush not to recognize Ukraine immediately, "because that will play into the hands of the [Russian] extremist."²²⁷

Under the Bush administration, the U.S. State Department discussed assurances with Ukraine that would commit the U.S. to seek immediate U.N. Security Council assistance if Ukraine is the object of nuclear aggression or threat after

²²⁵Dunbar Lockwood, "Russia Ratifies START," 32.

²²⁶New York Times, 11 January 1993, A18.

²²⁷David Hoffman, "Bush To 'Welcome' Ukraine Vote, Skirting Immediate Recognition," Washington Post, 1 December 1991, A33.

Ukraine formally agrees to be a non-nuclear state.²²⁸ This guarantee, which applies to all non-nuclear signatories to the NPT, has been rejected by Ukraine as inadequate. Ukrainian Foreign Minister Anatoliy Zlenko has been quoted as saying the Ukraine needs security guarantees which are more encompassing.²²⁹ However, the United States is not prepared to offer Ukraine the sort of "ironclad security guarantee sought by some Ukrainian legislators."²³⁰

Russia has also offered Ukraine security guarantees.²³¹ However, since Russia is Ukraine's primary fear, offers by Russia alone are not likely to be acceptable. Russian offers to date have been rejected by Ukraine since they apparently did not guarantee Ukraine's territorial integrity or existing borders and thus failed to meet minimal Ukrainian demands for ratification of the START I Treaty.²³² It is unlikely that any guarantees from Russia will be truly credible for the Ukrainians.

²²⁸Don Oberdorfer, "Bush Details Assurances For Security of Ukraine," Washington Post, 9 January 1993, A18.

²²⁹Xenia Ponomarenko, "Zlenko Evaluates U.S. Meetings," Ukrainian Weekly, 4 April 1993, 2.

²³⁰Freeland and Smith, "Kiev Premier Urges Keeping Nuclear Arms," A22.

²³¹RFE-RL Daily Report, 18 January 1993; and "Russian Guarantees Called Inadequate," Ukrainian Weekly, 14 February 1993, 1.

²³²RFE/RL Daily Report, 11 February 1993, 10.

C. CONCLUSION

There is no more unanimity of opinion concerning nuclear weapons in Ukraine than there is in America. There are a variety of factors motivating the Ukrainians toward the retention of nuclear weapons including prestige and financial concerns. However, the argument for the development of an independent nuclear capability that motivates the largest majority of Ukrainians is that it is required as a hedge against Russian domination. This is certainly the argument that motivates the pro-nuclear faction in the Ukrainian Parliament. The Russian imperial threat looms large in the minds of most Ukrainians, and most are probably willing to go to great extremes to preserve their independence. The West is unable to offer any conceivable security guarantees, such as a treaty or NATO membership, which merit the name. Ukraine is on its own and must try to provide its own guarantees. It is difficult to fault those concerned about defending Ukrainian independence for believing that Ukraine's nuclear arsenal might be of some use in this regard. The unrealistic demands for compensation for fissile materials and demands for increasingly large sums of money for disarmament, money which Ukrainian leaders know they will not get, are probably just delaying tactics until Ukraine can obtain independent control over its arsenal.

VI. DETERRENCE AND THE UKRAINIAN ARSENAL

Most Ukrainian officials calling for retention of an independent Ukrainian nuclear capability justify the retention of a Ukrainian nuclear weapons capability in terms of national security concerns; specifically, they say that nuclear weapons should be kept to serve as a deterrent against Russian aggression.²³³ This chapter examines Ukrainian thinking on nuclear weapons as a component of their national security policy and considers the deterrent value of an independent Ukrainian nuclear arsenal.

A. UKRAINIAN NOTIONS OF DETERRENCE THEORY

Lawrence Freedman has noted that since the development of nuclear weapons, a rich literature on deterrence and nuclear weapons is, "barely appreciated by many contemporary students of strategy, especially those close to policy-making circles."²³⁴ A review of statements being made by pro-

²³³"Anti-START Stance Said to Gain Adherents," Kiev MOLOD UKRAYINY in Ukrainian 26 January 1993, p. 2 (FBIS-USR-93-023, 3 March 1993, p. 66); "Shift in Parliament's Position on Nuclear Status," Moscow Moskovskie Novosti in Russian, 10 November 1992, p. 11 (FBIS-SOV-92-219, 12 November 1992, p. 70); RFE-RL Daily Report, 18 September 1992 and 2 February 1993; Sneider and Lapychak, "Russia, Ukraine Stalemated."

²³⁴Lawrence Freedman, The Evolution of Nuclear Strategy (New York: St. Martin's Press, 1981): XV.

nuclear Ukrainian officials suggests that many of them also "barely appreciate" the "rich literature" to which Freedman refers. Based upon Ukraine's Soviet experience, one might expect that Ukrainian officials would have relatively sophisticated views concerning nuclear weapons and what it means to possess them. This, however, is not apparent from statements cited in the public record. It may be that those Ukrainian officials talking the loudest and being quoted the most on the need for nuclear weapons are those who know the least. Or it may be that few if any Ukrainian officials have fully considered the notion of a nuclear-armed Ukraine. Sergei Kiselyov, a Russian journalist commenting on the Ukrainian parliamentary understanding of nuclear weapons, observed that, "Unfortunately, the majority of Ukrainian parliamentarians know less about those [nuclear] armaments than about the mechanism of the button they push to vote."²³⁵ This parliamentary lack of appreciation for the technical aspects of the Ukrainian arsenal apparently also extends to the potential uses of the weapons.

There have been occasional statements made by some officials indicating some understanding of deterrence theory, such as the suggestion by Prime Minister Leonid Kuchma that Ukraine might be willing to give up its arsenal if the United States would agree to protect the Ukraine via extended

²³⁵Kiselyov, 32.

deterrence.²³⁶ Overall, however, the Ukrainians appear to be preoccupied with the issue of the nuclear weapons themselves and have spent little time considering how the weapons might actually work as an instrument of national security policy. In a lengthy article on nuclear strategy and deterrence published in The Ukrainian Weekly, Markian Bilynsky attempts to point out what he believes is flawed Ukrainian thinking in this area. Bilynsky, noted that:

The powerful symbolism of strategic nuclear weapons as synonyms for peace has shrouded them in a seductive aura that often distorts most discussions on the best means for defending Ukrainian national security from external threats. Consequently, the argument has rarely moved beyond a visceral assertion that Ukraine "should" or "shouldn't" have nuclear weapons.²³⁷

It is difficult to fault the Ukrainians for not yet grasping the subtleties of nuclear deterrence theory and the role of nuclear weapons in Ukrainian national security policy. Many nations have made the decision to develop a nuclear capability on the basis of a visceral perception that it was necessary to guarantee their nations survival. More importantly, leaders tend to ignore intellectual arguments which are in direct opposition to visceral intuition.

²³⁶Lockwood, "Russia Ratifies START," 31.

²³⁷Markian Bilynsky, "Analysis: Strategic Nuclear Weapons and Ukrainian National Security, Ukrainian Weekly, 31 January 1993, 5.

1. Parliamentary Views On Deterrent Value Of The Arsenal

Most pro-nuclear Ukrainian officials are seemingly unaware of "the higher calculus of deterrence."²³⁸ They do not discuss counter-force versus counter-value targeting, MAD, limited nuclear war, graduated deterrence or second strike capability. The pro-nuclear Ukrainian officials seem to be relying upon an intuitive, instinctive belief that nuclear weapons are a deterrent. It is probably unfair to fault them in this. Some mature nuclear powers similarly began their quests for nuclear statehood. Freedman has characterized the British decision to develop its own nuclear capability as "instinctive."²³⁹ Pro-nuclear Ukrainian officials are seemingly unaware of any possible limitations upon the ability of the Ukrainian nuclear arsenal to serve as a deterrent.

Some influential legislators say they favor ratifying START I but want to wait to sign the NPT. They favor keeping some nuclear weapons to deter any possible move by Russia to force Kiev back under Moscow's wing.²⁴⁰ Stepan Khmara, a parliamentary deputy, has stated that in order to guarantee

²³⁸Freedman, 248.

²³⁹Freedman, 79.

²⁴⁰Erlanger, "Ukraine and Arms Accords."

its territorial integrity, Ukraine needs to control at least a small nuclear arsenal which would act as a deterrent.²⁴¹

Major General Tolubko, a parliamentary deputy and a commander in the strategic forces, has addressed the Ukrainian parliament on several occasions about the reason why Ukraine needs nuclear weapons. According to Tolubko, nuclear weapons should be retained as a deterrent. The general believes Ukraine should aspire to become a non-nuclear state in the future but for the present it must maintain a nuclear capability. He questions why France and Britain have a right to possess nuclear weapons and Ukraine does not. Tolubko suggests that states keep strategic nuclear forces because they believe these forces deter aggression and protect against political and economic blackmail from outside. And Ukraine faces these same concerns says Tolubko.²⁴² Tolubko has also told parliament that, "As a military man, I am sure that without nuclear weapons the defense of a state cannot be sufficiently effective or generate confidence."²⁴³ During a September 1992 visit to the United States, Tolubko stated that, "to prevent Russian aggression, Ukraine needs to

²⁴¹"Shift In Parliament's Position On Nuclear Status," Moscow Moskovskiye Novosti in Russian, 10 November 1992, p. 11 (FBIS-SOV-92-219, 12 November 1992, p. 70).

²⁴²Myronchenko, "Does Ukraine Need Nuclear Weapons?"

²⁴³"U.S. Concerns Over Ukraine and START Viewed," Moscow Pravda in Russian, 14 January 1993, p. 6 (FBIS-SOV-93-012, 21 January 1993, p. 6).

maintain an independent nuclear deterrent similar to France's *force de frappe*."²⁴⁴

At least one parliamentary deputy sees a deterrent utility in the arsenal that has nothing to do with the ability to use them. Nikolay Porovskiy, a parliamentary deputy and member of the Congress of National Democratic Forces (CNDF) party has said that nuclear weapons deployed on Ukrainian soil ensured peace because:

The United States will not allow any warfare in any country where missiles are targeted at NATO countries. Once the missiles are out, the Ukraine will enter the sphere of Russia's strategic interests and armed conflicts such as those in the Caucasus or Central Asia can be started.²⁴⁵

According to this line of thought, mere possession of nuclear weapons, whether they can be used by Ukraine or not, guarantees U.S. involvement and intervention should Russia attempt aggression against Ukraine.

B. ARGUMENTS AGAINST THE DETERRENCE VALUE OF THE UKRAINIAN ARSENAL

Bilynsky's article in The Ukrainian Weekly attempts to show some of the major conceptual problems concerning the

²⁴⁴Lockwood, "Russia Ratifies START."

²⁴⁵"Ukraine's CNDF Resists START I Ratification," Moscow Interfax in English, 15 January 1993 (FBIS-SOV-93-012, 21 January 1993 p. 3).

potential deterrent value of an independent Ukrainian nuclear arsenal.²⁴⁶ Bilynsky's analysis draws upon contemporary deterrence theory in presenting arguments against the deterrent value of Ukraine's nuclear arsenal.²⁴⁷ Bilynsky concludes that the notion that Ukraine should have an independent nuclear force is unrealistic and dangerous because the structural imbalance of such a force prevents it from being credibly wielded, and because such a force could conceivably provoke a nuclear attack.²⁴⁸ The following are summaries of some basic arguments against the deterrent value of Ukraine's arsenal.

1. Uselessness to Deter Conventional Attack

This argument is that the awesome destructive capability of nuclear weapons make them useless except for deterring a nuclear attack by an opponent.²⁴⁹ Because of their destructive potential, nuclear weapons cannot be used to gain a meaningful victory in war. To use them against another

²⁴⁶Bilynsky's article is extensively quoted in this chapter. This is because Bilynsky's treatment is an adequate presentation of the standard deterrence theory arguments against the utility of the Ukrainian arsenal, and, it specifically addresses the Ukrainian nuclear situation. Also, it appeared in a forum likely to be eventually communicated to Ukrainian leaders, and appears to be an attempt to present these arguments to these leaders.

²⁴⁷See also the "basic axioms of the atomic age." Freedman, 44.

²⁴⁸Bilynsky, 5.

²⁴⁹Freedman, 259.

nuclear-armed state is to invite nuclear retaliation.²⁵⁰ In the face of a conventional Russian invasion of Ukraine, a Ukrainian nuclear strike against Moscow is tantamount to destroying Kiev and most of the rest of Ukraine. The use of Ukrainian nuclear weapons in retaliation for a Russian conventional invasion is not an option. To save Ukraine this way is to destroy it.

2. Uselessness for Deterring a Russian Nuclear Attack

To serve as a viable deterrent to a nuclear attack by Russia, the Ukrainian arsenal would have to consist of systems that are not vulnerable to a Russian first strike--that is, an attack which could destroy Ukraine's retaliatory (second strike) capability.²⁵¹ To credibly deter a Russian nuclear attack, the Ukrainian arsenal would need to consist of systems that would allow Ukraine to wield a retaliatory strike even after absorbing a nuclear attack. Against a large nuclear power such as Russia, which could launch a large number of warheads, a viable second-strike capability depends not on the number of weapons possessed but of type. The Ukrainian nuclear arsenal consists only of ICBMs and bombers which are highly vulnerable to a preemptive strike by Russian weapons. Submarine-launched ballistic missiles (SLBMs) are generally

²⁵⁰John Lewis Gaddis, The Long Peace (New York: Oxford University Press, 1987), 8.

²⁵¹Bruce Russett, The Prisoners of Insecurity, (New York: W.H. Freeman and Company, 1983): 23.

considered as the only existing strategic systems which are survivable on day-to-day alert. The possession of SLBM systems confers a viable second-strike capability to the owner.²⁵² Ukraine possesses no SLBMs whereas Russia does. The vulnerability of the Ukrainian ICBMs and bombers to a pre-emptive, first-strike attack makes them questionable as a deterrent to a Russian attack. There is a strategic structural imbalance between Russia and Ukraine because Russia has a second-strike capability and Ukraine does not. In Prisoners of Insecurity Bruce Russett notes:

Under conditions of stable deterrence, each side has only a second-strike (retaliatory) capability, not a first-strike force. Each has an assured capability to inflict enormous destruction on an attacker; thus neither is tempted to attack the other.²⁵³

Conditions of stable deterrence do not exist between Ukraine and Russia due to the composition of the Ukrainian arsenal.

3. The Ukrainian Arsenal Invites Pre-Emption

Another criticism concerning the Ukrainian arsenal is that it could actually provoke the same nuclear attack which it is intended to deter. This argument contends that during a crisis, Russian leaders worried about the possibility of a Ukrainian pre-emptive first strike would elect to take out the

²⁵²Ibid, 25.

²⁵³Ibid, 24.

Ukrainian nuclear capability rather than risk a possibly incapacitating or at least devastating nuclear attack by Ukraine. Such a problem was of concern for both superpowers during the Cold War. It is even more of a problem for Ukraine because it doesn't have the command, control, communication and intelligence (C3I) infrastructure necessary for it to adopt a launch on warning/launch under attack strategy which might serve to deter against Russian pre-emption.²⁵⁴

C. ARGUMENTS FOR THE DETERRENT VALUE OF THE UKRAINIAN ARSENAL

The arguments offered in Section B above concerning the limited utility of an independent Ukrainian nuclear capability are compelling and appear convincing. However, they are not unassailable, and it is possible to offer counters to them.

1. Uselessness of the Arsenal to Deter Attack

Bilynsky, playing the devil's advocate, intentionally challenges this critique of the deterrent utility of the Ukrainian arsenal by suggesting that it could:

...create so much uncertainty concerning who will do what to whom and under what circumstances, that this in itself will serve to enhance deterrence. In other words, Russia might refrain from intimidating Ukraine militarily even if there was only a relatively small chance that it might itself be devastated.²⁵⁵

²⁵⁴Ibid, 25.

²⁵⁵Markian Bilynsky, Part II of "Analysis: Strategic Nuclear Weapons and Ukrainian National Security," Ukrainian Weekly, 7 February 1993, 5.

Bilynsky then repudiates this challenge to his argument by suggesting that this assumes a rationality on the part of the Russians which is not supported by studies of crises. According to Bilynsky, "...states often find themselves in critical situations in spite of rather than because of rational choice."²⁵⁶ War games conducted by the Rand Corporation have, however, shown that in the face of even a very limited nuclear threat, leaders of states do act rationally and conservatively.²⁵⁷ Bernard Brodie asked the question, "How do governments behave in the presence of awesome dangers? Brodie's answer is "very carefully."²⁵⁸ If Saddam Hussein had even only a few nuclear warheads for his Scud missiles, U.S. actions following the Iraqi invasion of Kuwait would have been substantially different. Bilynsky's contention that rationality can't be counted on when leaders are on the brink is precisely the issue. Russian leaders cannot assume that Ukrainian leaders won't use nuclear weapons to defend Ukraine, even if these Ukrainian leaders are fully cognizant that the result would be devastation at the hands of Russian retaliatory strikes. The Russians can't take the

²⁵⁶Bilynsky, Part II of "Analysis: Strategic Nuclear Weapons and Ukrainian National Security," 5.

²⁵⁷Peter Grier, "The New World 'Bomb' Threat," Christian Science Monitor, 9 April 1993, 1.

²⁵⁸Waltz, 117. For a similar argument, see James Blight, The Shattered Crystal Ball, (Savage MD: Rowman and Littlefield, 1990).

chance that Ukrainian officials wouldn't rather be dead than under Russian domination.

2. Structural Imbalance and Pre-Emption

Concerning the argument that the structural imbalance of the Ukrainian and Russian nuclear arsenals invites Russian pre-emption, there is little doubt that the Russian arsenal, because it contains SLBMs, is superior and vastly more survivable than Ukraine's. Although silo-based ICBMs are vulnerable, silo busting still requires considerable accuracy. The ability of the Russians to *completely* eliminate Ukraine's capability to retaliate is questionable. The Russian calculus of what it is willing to risk to reannex Ukraine may be such that the possibility of a single Ukrainian ICBM reaching Moscow would make Russia forget about the enterprise. When the Russian calculus turns on how many cities they might lose, they will stop thinking about running risks and start worrying about how to avoid them.²⁵⁹ Kenneth Waltz discusses a 1974 study considering whether or not the Chinese arsenal of the time was capable of deterring the Soviet Union. In considering the probable Russian calculus concerning the pre-emption of the Chinese weapons, the study noted that the mere possibility that a few nuclear weapons could get through was enough to deter. In considering the study on the deterrent value of the Chinese arsenal, Waltz posed the question, "What

²⁵⁹Waltz, 7.

political-military objective is worth risking Vladivostok, Novosibirsk, and Tomsk, with no way of being sure that Moscow will not go as well?"²⁶⁰ Such a question is applicable to the Russian-Ukrainian situation.

In Small Nuclear Forces, Rodney Jones attempts to demonstrate how a small nuclear force on one side can change the calculus for a stronger, better armed aggressor by using the Falklands as an example. If Argentina had a demonstrated or suspected nuclear weapons capability and was believed willing to go nuclear over the Falklands, Britain may have been forced to forego a military response altogether.²⁶¹ Despite the existence of a structural imbalance between rival arsenals, Waltz's contention still holds that nuclear weapons "make the cost of war seem frighteningly high and thus discourage states from starting any wars that might lead to the use of such weapons."²⁶²

As far as the contention that the Ukrainian arsenal invites pre-emption goes, Ukraine does not have a viable first-strike capability. The Russians are well aware of this fact. It is doubtful Russia's leadership worries much about the possibility that irrational Ukrainian leaders would elect to launch a first-strike against Russia. So long as Russia

²⁶⁰Waltz, 17.

²⁶¹Rodney W. Jones, Small Nuclear Forces, The Washington Papers/103 Vol XI (New York: Praeger, 1984), 3.

²⁶²Waltz, 3.

leaves Ukraine alone, Russia knows they needn't worry about Ukraine losing its nuclear weapons in hope of destroying Russia's ability to retaliate.

VII. UKRAINE'S PROBABLE COURSE TO NUCLEAR STATUS

A. MANEUVERING ROOM IN NUCLEAR WEAPONS TREATY OBLIGATIONS

1. Ukraine and the START Treaty

a. *The Lisbon Protocol*

On 23 May 1992, the Ukraine committed itself (subject to parliamentary ratification) to the terms of the 1991 Strategic Arms Reduction Treaty (START) by signing a protocol to the treaty in Lisbon. The Lisbon Protocol made Belarus, Kazakhstan and Ukraine parties to the START I Treaty along with Russia and the United States, and specified that all five parties would have to ratify the treaty before it entered into force.²⁶³ In signing the Lisbon Protocol, Ukraine agreed to destroy or to turn over to Russia all strategic nuclear warheads, to accede "in the shortest possible time" to the 1968 Nuclear Non-Proliferation Treaty as a non-nuclear weapon state Party, and to begin immediately to take all actions to this end in accordance with their respective constitutional practices.²⁶⁴ Under the START I protocol and accompanying letter, however, Ukraine's only legal obligation is to eliminate strategic forces on its soil

²⁶³RFE-RL Research Report, no. 23 (5 June 1992): 56.

²⁶⁴Victor Batiouk, "Ukraine's Non-Nuclear Option", United Nations Institute for Disarmament Research, Research Paper No. 14, 1992.

within seven years of START I's entry into force.²⁶⁵ There is no absolute deadline on Ukrainian parliamentary ratification of START I or accession to the NPT, and recent pressure from the West has had more to do with concerns about the follow-on START II Treaty than with Ukrainian reluctance or missed deadlines.

b. Requirements After START I Ratification

The only Ukrainian ICBMs covered under START I are the 130 silo-based SS-19s. The SS-24s held by Ukraine are not covered by START I.²⁶⁶ The only document committing Ukraine to get rid of the SS-24 ICBMs is the Lisbon Protocol's commitment to accede to the NPT.

2. Nuclear Non-Proliferation Treaty

In signing the Lisbon Protocol to the START I Treaty, Ukraine committed itself (subject to parliamentary ratification) to join this treaty "in the shortest possible time" as a non-nuclear state. If Ukraine accedes to the NPT as a non-nuclear party, it will have to give up any nuclear weapons not covered by START I.

3. START II

Ukraine is not a signatory to START II and has no commitments under this treaty.

²⁶⁵U.S., Four Commonwealth States Sign START Protocol in Lisbon," Arms Control Today 22, no. 5 (June 1992): 18.

²⁶⁶Ibid.

4. Minsk Commonwealth Agreement of 30 December 1991.

Ukraine committed to eliminate all strategic forces on its territory by the end of 1994. Moscow has implied it still expects Kiev to honor this pledge although the START Protocol doesn't bind Ukraine to this. There are no indications that the Ukrainian Parliament feels bound by this agreement.

B. HOW UKRAINE WILL GO NUCLEAR

There are numerous indications that Ukraine intends to surrender most of its nuclear arsenal but retain a small nuclear force consisting of its SS-24 ICBMs. Several pro-nuclear Ukrainian deputies have suggested that Ukraine could use the maneuvering room available under existing commitments and still retain a nuclear capability.

1. Ratify START I But Not the NPT

Ratifying START I but not the NPT, a course of action already followed by Kazakhstan, could allow the Ukrainians to accomplish quite a lot.²⁶⁷ Only the 130 Ukrainian SS-19 ICBMs are covered under START I. The SS-19s are nearly obsolete, and since they use liquid heptyl (UDMH) fuel, they are dangerous. The SS-19s were not produced in the Ukraine and there is little available expertise for handling these weapons. Although they are not covered under START I, Ukraine will probably also retire the bomber-carried nuclear weapons

²⁶⁷Lockwood, "Ukraine Delays Vote on START."

along with the SS-19s. Ratifying START I and retiring the SS-19s and bomber weapons could be offered to the world as a gesture of Ukrainian intentions to eventually disarm, taking off much of the international pressure. This course of action would also allow Ukraine to retain the 46 Ukrainian-built, solid-fueled SS-24 ICBMs. Since the SS-24s were built in Ukraine, attempts to gain control of these ICBMs are more likely to be successful. The Ukrainians can also manufacture many of the spare parts for these ICBMs. A smaller force consisting strictly of SS-24s would result in considerable cost savings to Ukraine. The retention of the SS-24s would still allow Ukraine to keep a potent deterrent. In a counter-value targeting scheme the Ukrainians could hold a large number of Russian cities hostage (depending upon the minimum range capabilities of these missiles).

2. Evidence of Ukrainian Intentions

a. Getting Rid of the Bomber Leg

A series of reports have suggested that Ukraine is not interested in keeping the strategic bomber force and is willing to live without it. Russian television reported in July 1992 that Ukraine would offer 19 TU-160 "Blackjack" bombers for sale.²⁶⁸ A March 1993 report indicated that a plan was drawn up by scientists and the military in Kiev which called for the Ukrainian TU-95 "Bear H" aircraft to be

²⁶⁸RFE-RL Daily Report, 3 August 1992.

disarmed and converted to carry equipment for UN environmental monitoring missions.²⁶⁹ In March 1993, Vadim Dolganov, Counsellor for Political Affairs of the Ukrainian Embassy in Moscow, said that some of Ukraine's TU-95 and TU-160 strategic bombers would be destroyed because their service life has ended and others will be used for various purposes such as delivery of humanitarian aid.²⁷⁰ When Russian Air Force officials complained that the loss of these aircraft would undermine the defensive capability of Russia and the CIS, Ukraine offered to exchange the TU-95 and TU-160 bombers for Russian made warplanes "of another kind."²⁷¹ There are several notions which could be motivating Ukraine in this regard. They may not consider the bombers a viable platform against Russia because of their vulnerability. Or the Ukrainians may have decided they will be unable to use the nuclear weapons which the bombers carry. This interpretation is supported by Blair's previously cited assertion that nuclear armaments for the Ukrainian long-range bombers were

²⁶⁹UN Offered Converted TU-95 Strategic Bombers," Moscow Ostankino Television First Channel Network in Russian 2100 GMT 15 March 1993 (FBIS-SOV-93-053, 22 March 1993, p. 81).

²⁷⁰"Official On Use of Former Soviet Air Force Heavy Bombers," Moscow Interfax in English, 1710 GMT, 24 March 1993 (FBIS-SOV-93-056, 25 March 1993, p. 45).

²⁷¹"Ukraine Willing to Exchange Bombers," Moscow Interfax in English, -2020 GMT, 24 March 1993 (FBIS-SOV-93-056, 25 March 1993, p. 50). There is no further information available as to type of aircraft Ukraine might be seeking, but they are probably tactical fighters of some kind.

disabled in place following the breakup of the Soviet Union.²⁷² In any event, these recent announcements suggest a Ukrainian intention to rely solely on the missile leg of their strategic arsenal.

b. Decoupling START I and the NPT

There is considerable evidence that the Ukrainians will follow the course of action outlined above. Ukraine divorced the SS-19s from the SS-24s on 23 December 1992, when President Kravchuk stated that the 130 SS-19s would have to be dismantled with Russian assistance, but "if the situation aggravates" the 46 SS-24s would be "destroyed" [read kept] by the Ukrainians.²⁷³ At one point Kravchuk indicated that Ukraine was actually seeking security guarantees in exchange for the SS-24s, all but conceding the SS-19s to START I reductions. Kravchuk indicated that Ukraine would be less able to defend itself if it makes good on an earlier vow to rid itself of all nuclear arms.²⁷⁴ A group of Ukrainian military officers had appealed to Kravchuk to retain the SS-24s not covered by START I as long as Russia continues to pose a threat.²⁷⁵ And Kravchuk is on the record as saying that

²⁷²Blair, 63.

²⁷³RFE-RL News Briefs 2, no. 3 (8 January 1993): 12.

²⁷⁴Chrystia Freeland, "Ukraine Seeks Western Protection From Russia," Washington Post, 29 April 1992, A28.

²⁷⁵IBID.

there would have to be an additional agreement besides START I on the 46 SS-24s.²⁷⁶ More recently, in March 1993, Ukrainian Environment Minister, Yuriy Kostenko, suggested that Ukraine may ratify START I and join the NPT as a nuclear state.²⁷⁷ In April of 1993, Ukrainian legislators said that Kiev may ratify the START I Treaty but refrain from joining the NPT, thus keeping its option to develop a nuclear arsenal.²⁷⁸ Reports in Pravda Ukrainy and other Ukrainian newspapers on 11 March 1993 indicated that preliminary hearings prior to the official ratification debate in parliament on the START I Treaty were producing largely negative appraisals. These reports suggested that deputies might consider ratifying the START I Treaty while delaying accession to the NPT to allow Ukraine to retain some of its nuclear weapons.²⁷⁹ Premier Kuchma has been quoted as saying that Ukraine cannot afford to build new nuclear arms but it could keep the SS-24s, which he says Ukrainian specialists are capable of re-targeting.²⁸⁰ Some influential legislators say they favor ratifying START I but want to wait to accede to the

²⁷⁶RFE-RL Research Reports 1, no. 19 (8 May 1992): 48.

²⁷⁷Vladimir Skachko "Ukraine's Nuclear Status," Moscow Nezavisimaya Gazeta in Russian 10 March 1993, p. 3 (FBIS-SOV-93-046, 11 March 1993, p. 1).

²⁷⁸Michael R. Gordon, "U.S. Presses Ukraine on A-Arms Pact," Washington Post, 8 April 1993, A5.

²⁷⁹RFE-RL Daily, 12 March 1993.

²⁸⁰Sneider and Lapychak, "Russia, Ukraine Stalemated."

NPT. They favor keeping some nuclear weapons to deter any possible move by Russia to force Kiev back under Moscow's wing.²⁸¹ Dmytro Pavlychko, the Chairman of the Parliament's Foreign Relations Committee, is quoted as saying that the Parliament will ratify START I but that he doesn't think they will accede to the NPT very soon. "I think we'll move to be non-nuclear, but at a slower pace. In three or four years, things will calm down in Russia."²⁸²

The separate treatment of the SS-24s and the decoupling of START I from the NPT strongly suggests that Ukraine will ratify START I but not accede to the NPT, and keep its SS-24s. Additional evidence that this will be the course of action which Ukraine will pursue is that on 10 April 1993, the Ukraine called for all personnel at the 43rd Strategic Rocket Forces Army Command Center to take an oath of allegiance to Ukraine.²⁸³ There is no reason for such a move unless Ukraine intends to take control of the 43rd Army away from CIS control.

²⁸¹Erlanger, "Ukraine and Arms Accords."

²⁸²Ibid.

²⁸³Freeland, "Ukrainian Calls For Allegiance Oath"; "Morozov: Ukraine To Issue Oath for Strategic Forces."

VIII. CONCLUSION

Despite protests to the contrary by senior Ukrainian leaders and diplomats, with every day and each new pronouncement, it appears increasingly likely that Ukraine will develop an independent nuclear capability. Despite a desire on the part of many Ukrainians to become a non-nuclear nation, Ukraine is in fact being driven to this eventuality by circumstances. Western policies towards the emerging Ukrainian state have demonstrated to the Ukrainians that nuclear weapons are the only reason for continuing Western attention and interest. To give up its nuclear arsenal is for Ukraine to fade quickly from Western sight, except as a footnote to Russia. Ukraine's primary and most immediate strategic concern is Russia. The menace of Russian hegemony is a palpable and imminent threat to Ukraine's newfound independence. The rise of a dictatorial regime in Russia or even Russian disintegration, are both eventualities which would bode ill for Ukrainian independence. The inability of the West to offer security guarantees acceptable to Ukraine will result in the Ukrainians providing their own guarantees. Almost any nation faced with such a national security dilemma, and in possession of inherited nuclear weapons, would attempt to gain control over at least some of these weapons to use as a deterrent. The unrealistic demands for compensation for

fissile materials and demands for increasingly large sums of money for disarmament put forth by Ukraine are likely just delaying tactics to buy time for Ukraine to attempt to obtain independent control over its arsenal.

The critical factor that will determine whether or not Ukraine ends up as a true nuclear power is whether or not it can obtain direct firing control over at least some of its arsenal. The Ukrainians must believe they can accomplish this or they would have taken what Western money has been offered, along with any associated Western goodwill and financial assistance, and gotten on with their nation building. Ukraine has gained a tremendous degree of control over its arsenal to the point of physical possession. The primary obstacle remaining to Ukraine's obtaining direct control over its nuclear weapons are the unblocking codes or PALs. If Ukraine cannot develop substitutes or figure out a way around these devices, its arsenal is useless in any kind of deterrent role. There is not an overwhelming amount of evidence about Ukrainian efforts at breaking the unblocking codes, but, this is to be expected. It is not something they would advertise until they had succeeded. Many informed observers, including the Russians, believe that Ukrainian physical possession of the weapons will ultimately translate into direct control of the weapons.

The ability of Ukraine to retarget its strategic weapons systems is an additional obstacle to the arsenal's utility,

but probably not a serious one. Ukraine's inability to maintain nuclear warheads is another problem in keeping a viable arsenal, however, Ukraine has smart, technically sophisticated people capable of mastering the relevant technologies.

The most likely course of action that Ukraine will pursue in going nuclear is to ratify the START I Treaty but not the NPT. This will allow Ukraine to surrender or retire the dangerous SS-19 ICBMs covered by START I. Ukraine can then promise to disarm "eventually" but keep the SS-24s which Ukraine is best able to maintain and control. The strategic bombers and associated weapons may very well be useless and these warheads will probably be surrendered or retired by Ukraine as well.

U.S. policy options regarding the Ukrainian nuclear issue may be more limited than realized. In the face of an increasing Russian threat, there may be little that the United States can do to convince Ukraine to disarm. This is especially true in the short term. It may very well be that the only choice the United States has is its reaction to a Ukrainian independent nuclear weapons capability. A Ukraine with an independent nuclear weapons capability needn't be any more frightening than a nuclear armed Russia. U.S. policy has been focused on getting rid of the nuclear weapons in Ukraine, but it must also consider European security and the furthering of democratic processes in the former Soviet Union. A policy

which serves to disarm Ukraine could sow the seeds of war and chaos. A disarmed Ukraine may invite aggression against Ukraine should Russia attempt to reestablish some vestige of the USSR. Any such effort by Russia would all but doom the rise of Russian democracy. A democratic Russia could not sustain such an effort. And any Russian attempt to forcibly reincorporate Ukraine will entail bloodshed and suffering on a massive scale. The deterrent value of a Ukrainian independent nuclear capability may well serve to prevent a large-scale Russian-Ukrainian conflict and also help to preserve Russian democracy.

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