DEPARTMENT OF THE ARMY
HEADQUARTERS, U.S. ARMY TRAINING AND DOCTRINE COMMAND
950 JEFFERSON AVENUE
FORT EUSTIS, VIRGINIA 23604-5700

April 21, 2021

Office of the Deputy Chief of Staff, G-6

John Greenewald, Jr.
[redacted]

Dear Mr. Greenewald:

This is in response to your Freedom of Information Act (FOIA) request dated February 23, 2016, to the Defense Technical Information Center for the "(U) The Nuclear Threat in the Post Cold-War Era." The FOIA request was referred to the U.S. Army Training and Doctrine Command (TRADOC) and subsequently referred to the U.S. Army Installation Management Command (IMCOM), Fort Leavenworth Garrison, FOIA Office where it was processed and referred back to TRADOC on December 6, 2017, and assigned control number 18-0031.

As requested, enclosed are the responsive TRADOC records from the U.S. Army Combined Arms Center. Portions of the records have been redacted and the FOIA exemption that prohibits the information disclosure is cited.

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This decision is considered a TRADOC partial denial response to your FOIA request. General Paul E. Funk II, Commanding General, TRADOC, is the Initial Denial Authority (IDA) and by position I am the delegated IDA.

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If you are not satisfied with this request response, you may administratively appeal by writing to the **TRADOC FOIA Office** at **U.S. Army Training and Doctrine Command, Office of the G-6 (ATIM), 661 Sheppard Place, Fort Eustis, VA 23604-5733**, and it will be forwarded to the Army General Counsel for final disposition on behalf of the Secretary of the Army. To meet the deadline for the appeal, the appeal letter must be received by this office and forwarded to the Secretary of the Army within ninety (90) days of the date of this partial denial determination response letter.

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Point of contact is the Government Information Specialist at usarmy.jble.tradoc.mbx.hq-tradoc-foia@army.mil.

Sincerely,

Mark Thomson

Mark A. Thomson
Colonel, U.S. Army

Enclosure

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THE NUCLEAR THREAT IN THE POST COLD-WAR ERA

A Monograph
by

(b) (6) [redacted]

School of Advanced Military Studies
United States Army Command and General Staff College
Fort Leavenwoth, Kansas

AY 94-95

ABSTRACT

THE NUCLEAR THREAT IN THE POST COLD-WAR ERA by (b) (6) [redacted], 41 pages.

This monograph discusses the nuclear threat that the United States faces following the downfall of the Soviet Union. The Russian and Chinese nuclear arsenals represent a formidable threat that must be countered and a new threat is emerging in the third world despite efforts to counter the proliferation of weapons of mass destruction.

The monograph reviews the current status of both the Russian and Chinese arsenals and lists the programs that are being undertaken to modernize and improve their respective nuclear capabilities. Both nations are taking significant steps to preserve and improve their nuclear strike capability.

The proliferation of nuclear weapons technology, fissile material, and ballistic missiles in the third world is an emerging threat to national security interests. The lack of appropriate security measures during the on-going dismantling of the former Soviet nuclear arsenal presents an opportunity for "rogue" states and terrorist organizations to readily obtain the materials to produce their own nuclear weapons.

SCHOOL OF ADVANCED MILITARY STUDIES

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I. INTRODUCTION

Nuclear weapons have always been an item of major concern in the international political arena since their invention in the 1940s. With the easing of tensions between the traditional nuclear superpowers, the United States and the Republics of the Former Soviet Union, one might have expected that the threat posed by this particular type of weapon would diminish in importance as an element of national strategy. To the contrary, it has become increasingly apparent that nuclear weapons command a position of major significance even in the post cold-war era.

This paper will address several of the more significant aspects of the evolving nuclear arsenals of the world and the political motivations behind these efforts. A substantial number of nuclear weapons are currently maintained by a number of nations that may represent a future threat to the United States. Additionally, several nations appear to be making a concerted effort to obtain nuclear weapons in an attempt to bolster their security or enhance regional influence. The apparent lack of comprehensive accountability of nuclear materials during the dismantling of the former Soviet arsenal offers an avenue for the illicit acquisition of weapons or their individual components. Ultimately, the proliferation of nuclear weapons and ballistic missile technology is a major concern in the post cold-war world and is without a doubt a very confusing and intertwined picture deserving of close scrutiny by policy makers in every country.

The large number of strategic nuclear weapons remaining in the cold war arsenals of the United States and the former Soviet republics is universally recognized as excessive and will continue to demand the attention of our national policy makers as the denuclearization process continues. Perhaps more critical at this point in time is the fact that the United States' most potentially dangerous nuclear threat stems not from the Republics of the Former Soviet Union, but from an expanding global trend towards nuclear proliferation. If one of the aspiring third world nations or a "rogue state" were able to develop one or two nuclear devices that are deliverable against a neighbor or even the United States itself, the balance of power within the region would experience a significant realignment.

The formers republics of the Soviet Union still retain a substantial portion of the nuclear arsenal that they inherited when the Soviet empire collapsed. Russia, Ukraine, Kazakhstan and Belarus have agreed that the former Soviet strategic nuclear weapons should be returned to Russia. Once Russia has received the weapons the remaining three republics will continue their disarmament efforts with the intent of becoming nuclear free states. The United States and Russia have ratified the START I treaty and their respective leaders have signed the START II treaty. Although diplomatic negotiations have been promising, the actual implementation of these agreements is threatened by the unrest and instability that is seemingly omnipresent in the former Soviet Union. Russia is also embarking on a program to modernize its strategic nuclear forces and is

involved in efforts to sell potentially threatening technology in an attempt to generate some desperately needed hard currency.

China is still in the midst of an active testing and modernization program that will substantially improve its posture as a nuclear power. A robust plan to develop new land and sea launched intercontinental ballistic missiles, improved nuclear warheads and a follow-on ballistic missile submarine potentially indicate intentions to become a global nuclear power.

Proliferation in third world countries is occurring despite attempts at controlling the flow of knowledge and technology. At the turn of the century analysts have predicted that eight third world countries can reasonably be presumed to have some form of useable nuclear weapon capability. Leaders of these countries feel that weapons of mass destruction offer them a coercive effect as well as a deterrent value. The increased occurrence of regional conflicts based on ethnic, religious, and nationalistic fervor indicates a movement toward unbelievably harsh methods and end states within the third world that make the use of nuclear weapons more likely. The sense of restraint that governed actions of the superpowers during the cold war does not have the same mitigating affect among the leaders of the third world countries who are continually striving to develop a nuclear weapon capability.

The downfall of the Soviet Union has opened up a large potential new source of nuclear materials for third world countries to seize an opportunity to

become a major influential power in their region of the globe. Deficiencies within Russia's nuclear weapon security systems make the vast stockpile of nuclear weapons and fissile material a relatively easy target for those who are trying to get their own nuclear capability without having to produce it themselves.

To date, attempts at limiting nuclear proliferation apparently have been somewhat successful considering that in 1963 President Kennedy predicted that 15 - 20 countries would possess nuclear weapons by 1975.[1] At this time, twenty years later, the actual number of acknowledged and probable countries possessing nuclear weapons is approximately ten. In the future as the number of countries that possess the capability to produce ballistic missiles and nuclear weapons increases, it becomes increasingly more difficult to control the proliferation of these weapons. Diplomatic efforts such as START I and II go a long way in reducing the nuclear arsenals of the cold war era; but they do not address the problem of proliferation. The Nuclear Non-Proliferation Treaty and the Missile Control Technology Regime attempt to limit the spread of technology but have not been universally subscribed to and are also circumvented by those countries who desire a nuclear capability. A coordinated and conscientious effort among all nations is required to successfully contain the flow of nuclear weapons materials and technology coupled with a all out effort to solve the problems that lead nations to believe that they need nuclear weapons at all.

II. EXISTING NUCLEAR THREATS

RUSSIA

The Russian military still retains a substantial strategic nuclear arsenal even when considering the reductions associated with the START treaties. After the implementation of the START I treaty the Russians will have approximately 6,000 strategic nuclear warheads apportioned between their land and sea-based intercontinental ballistic missile and bomber fleets. The START II treaty provides for the Russian total to be reduced to 3,000 which is about one third of their current level.[2]

As the Russians shift to their post START I nuclear posture they will find that the naval portion of their strategic triad becomes more important.[3] When the Russian land-based missile force is reconfigured from multiple warheads to single warheads the percentage of the nuclear arsenal that is based in the sea launched ballistic missile rises from about 30 percent to over 50 percent.[4] This represents a problem to the Russian planner because the Russian fleet of sea launched ballistic missiles does not have the hard target kill capability that the land based missiles have, and the Russian submarine force is affected by sub-optimal communications capabilities and is not so impervious to antisubmarine warfare attacks.[5]

In recognition of this condition the Russians are in the process of revitalizing their submarine force almost to the point of ignoring the other strategic and

conventional forces.[6] There are also indications of renewed efforts to improve upon the current level of submarine technology and increased emphasis on submarine exercises at sea.[7] A new type of ballistic missile submarine equipped with a sea launched ballistic missile with capabilities similar to the Trident C3 is on the design boards now and should be operational after the year 2000.[8]

Another problem faced by Russian planners is a shortfall in deliverable warheads allowed under the Start II treaty caused by a delay in bringing the SS-25 on line. As the first phase Start II requirement to reconfigure multiple warhead missiles with single warheads is completed at the seven year point, enough SS-25 missiles to meet the ceiling limit of 3,258 warheads will not be fielded until the year 2010.[9] In order to offset this shortfall the Russian General Staff will probably lobby for a treaty amendment to allow deployment of the new multiple warhead sea launched ballistic missile until SS-25 production is up to speed.

The Russian General Staff is also expected to ask for amendments to the treaty that require the destruction of silos of destroyed missiles and deletion of the two phase treaty structure. Also, a follow-on to the SS-25 is being designed in such a manner that it is so similar so as to be exempted from being declared as a new missile according to treaty requirements. If the United States is not responsive to these Russian requests it is likely that the Russian General Staff will ask that the treaty be abandoned.

Another potential stumbling block to Russian adherence to START II stems

from the recent poor performance of the Russian army in the uprising in Chechnya. Peter Clement, the chief of the CIA Russian Affairs Division, feels that it is increasingly uncertain that Russia will ratify START II because hard liners in the government feel the deficiencies in the Russian army make it a mistake to give up so much power in its nuclear arsenal.[10] Additionally, elections which are scheduled to be held approximately six to eight months from now cast a further cloud of doubt as to how much support will remain for the arms control agreement.

CHINA

China developed its first nuclear weapon in 1964 but did not pursue the construction of a large-scale nuclear arsenal as did the Soviet Union and the United States.[11] China is currently credited with 375 strategic nuclear weapons and 125 tactical nuclear weapons.[12] Strategic delivery vehicles are thought to be eight intercontinental ballistic missiles, 60 intermediate range ballistic missiles, and 12 sea launched ballistic missiles from one ballistic missile submarine.[13]

The Chinese are currently pursuing the development of three new strategic delivery systems capable of delivering nuclear warheads. The mobile land-based DF-31 missile is capable of delivering a 700 kg payload over a distance of 8,000 kilometers.[14] The JL-2 sea launched ballistic missile is also capable of delivering a 700 kg payload over 8,000 kilometers.[15] To complement the new JL-2 missile

an improved ballistic missile submarine, the Type 094, is thought to be under development.[16] The new DF-41 intercontinental ballistic missile gives the Chinese the ability to launch a 700 kg weapon over a distance of 12,000 kilometers.[17] The most significant aspect of these modernization programs, aside from the increase in throw weight and range, is the transition from liquid fuel to solid fuel resulting in a increased capability in mobility and corresponding decrease in vulnerability.[18]

China has also been actively testing nuclear war heads in the early 1990s. The warheads being developed appear to be approximately 500 kg with an equivalent explosive yield of 200-300 kilotons.[19] Analysis of a test conducted on May 21, 1992 indicated a 650 kiloton yield.[20] This is a significant increase in yield over previously fielded and tested weapons and it is uncertain if this weapons could be mounted on to the new missiles or if it would be used as an aircraft delivered weapon.[21]

At this time China has elected not to participate in the ban on nuclear weapons testing and will probably continue its testing program until completing the present modernization program. They appear to be supportive of a nuclear test ban starting in 1996.[22] If they continue along with a substantial nuclear testing program they may very well become a significant nuclear threat to the remainder of the world. China could very well serve as an example for other states to emulate in trying to develop their own nuclear weapons. China does not appear

to be trying to develop a force structure that is qualitatively or quantitatively equal to that of the United States, but they clearly do have a capability to threaten the continental United States.

UKRAINE

Upon the dissolution of the Soviet Union the Ukraine inherited a potent strategic nuclear force. At the time that the Soviet Union collapsed, the Ukrainian nuclear arsenal reflected the following composition: 130 SS-19 ICBMs located at Khmelnitskiy and Pervomaysk, 46 SS-24 ICBMs located at Pervomaysk, 13 Tu-160 Blackjack and 13 Tu-95 Bear bombers (both aircraft are air launched cruise missile capable) located at Priluki Air Base as well as two ballistic missile production facilities at Pavlograd which are used to build both the silo and mobile variants of the SS-24 missile.[23] The SS-19 and the SS-24 are both equipped with multiple independently targeted re-entry vehicles that contain six and ten warheads respectively.[24]

Although Ukraine agreed in January 1994 to dispose of their nuclear weapons, the status of these weapons remains as a source of concern due to the chaotic nature of the newly independent state.[25] On February 3, 1994, the Ukraine Verkhovna Rada agreed to ratify Start I along with the provisions of the Lisbon protocol.[26] They still have not ratified the Nuclear Non-Proliferation treaty which leaves their pledge to denuclearize somewhat unpredictable.[27] This

unpredictability is further complicated by the fact that progress towards removing the weapons is linked with Russian domestic developments.[28] A full one third of the Ukrainian population favors the retention of nuclear weapons to ensure that Ukraine will not have to rely on the security guarantees of another country.[29] There are also members within this group that favor the construction of a "nuclear shield" to protect the country with the SS-24 and air-launched cruise missiles that were inherited from the Soviet Union.[30] The remainder of the population does not hold the pro-nuclear view and has instead lobbied for security guarantees and financial compensation in exchange for giving up their nuclear arsenal.[31]

Perhaps the driving force for the Ukraine to approve the Start I treaty was the fact the United States, Russia, and the Ukraine reached a compromise that satisfied Ukrainian desires about national security and provided a minimum of $700 million to finance the removal of the nuclear weapons and provide additional economic relief.[32] Regardless of the fact that the Rada has approved the Start I treaty, there is still much discord as evidenced by Parliamentary Chairman Ivan Pliushch's remarks that stated, "I cannot see the observances of Ukrainian economic interests or guarantees for Ukrainian security in the Moscow document. What happened in Moscow is not nuclear disarmament but stripping the state naked in military, economic, and political terms."[33]

The ratification of Start I still left several major issues unresolved regarding Ukrainian accession to the Non-Proliferation Treaty: the compensation for

nuclear weapons that had been removed to Russia in the first half of 1992, and the exact definition of the meaning of the security guarantees or security assurances listed in the tripartite agreement.[34] Ukraine also does not want to destroy the missile silos that currently exist on its soil, there is no firm time line for removing the nuclear weapons, and the Ukraine wants a continuous supply of uranium to power its civil reactors for producing electricity.[35] Ukrainian President Kravchuk has emphatically linked Ukrainian compliance with these nuclear commitments to the successful revitalization of the Ukrainian economy. If the Ukrainian economy comes to a halt then the country feels that its security guarantees have been violated and need not follow the provisions of the agreement.[36]

In an attempt to exercise maximum control over the strategic nuclear forces on Ukrainian soil, President Kravchuk has placed administrative command of these forces under the exclusive control of senior officers who have sworn allegiance to Ukraine.[37] This move not only ensures complete control over the denuclearization program but also postures the Ukraine to become a nuclear power should it become dissatisfied with developments within Russia.[38]

The primary source of Ukrainian reluctance to join the Non-Proliferation Treaty is based upon their desire to participate as a nuclear state.[39] They feel that the Russians will demand the return of all nuclear weapons without any obligation to compensate the Ukraine because the weapons are the property of

Russia.[40] Many Ukrainian legislators are in favor of dragging out the Ukraine's accession to the Non-Proliferation Treaty until the agreement is renegotiated in 1995 in hopes of finalizing the agreement with Ukraine as a nuclear state. Vasyl Durdynets, the deputy parliamentary chairman, has argued that Ukraine should pursue a course that provides for the Ukraine as a nuclear state to be in the nations best interest.[41] No doubt this view is strengthened by the rise of Russian ultra nationalist Vladimir Zhirinovsky. The Ukrainians have always be suspicious of a hidden Russian agenda to unite their peoples under one government.[42]

The Ukrainians have also stated that their status as a nuclear state is tied to the fate of Crimea.[43] If Crimea secedes to Russia, Ukraine will undoubtedly retain the nuclear weapons that it currently holds.[44]

President Kravchuk may be on his way out as the Ukrainian leader and the reactions of a new government are unclear at this time. The Russian movement towards neo-imperialistic nationalism will without a doubt weaken Ukrainian inclination to continue the denuclearization effort . Additionally, the Ukrainian success in winning concessions and security guarantees has prompted Belarus and Kazakhstan to demand equal treatment.[45] Unquestionably, the nuclear issue in the Ukraine is far from settled.

KAZAKHSTAN

Upon the demise of the Soviet Union the republic of Kazakhstan found itself with 104 SS-18 intercontinental ballistic missiles with ten warheads each and 40 TU-95MS Bear bombers equipped with the nuclear capable AS-15 Kent cruise missile.[46] The bombers along with their cruise missiles were returned to Russia in 1994. The SS-18s still remain in Kazakhstan under Russian operational control and their removal is pending as a result of parliamentary approval to accede to the Non-Proliferation Treaty and ratification of the Start I treaty.[47] After observing the results of the Ukrainian experience regarding the return of their nuclear weapons in exchange for economic assistance and security guarantees there are members of Kazakhstan's government who are starting to rethink their previously stated intent to return the weapons unconditionally. This reconsideration has the potential to alter the schedule of the weapons return are perhaps the level of regional tensions.

III. NUCLEAR STRATEGY CHALLENGES FROM THE THIRD WORLD

The proliferation of nuclear weapons in the third world represents a unique challenge to strategy planners in the United States. Analysts predict that eight third world countries can reasonably be presumed to have some form of a useable nuclear weapon capability by the year 2000.[48] The list of potential nuclear states includes Israel, India, Pakistan, North Korea, Iran, Iraq and Syria. It is thought

that some of these states may have already crossed the nuclear threshold but have not yet publicly declared their nuclear status.[49] All of these countries have a national interest in becoming nuclear powers or upgrading the capabilities of their current arsenals.[50]

The capacity to produce or acquire nuclear weapons also varies among these states. Israel, India, Pakistan and North Korea clearly possess the technological knowledge and facilities to produce relatively sophisticated nuclear weapons indigenously.[51] This includes the ability to deliver the weapons either by long range aircraft or with medium range ballistic missiles.[52] Libya, Syria, and Iraq will most likely resort to purchasing weapon grade fissionable material as it become available from external sources. These countries' arsenals will tend to lack the technological sophistication of the previously mentioned countries and will most likely be limited to delivery by aircraft or short range ballistic missiles.[53] International trade restraints would have to be circumvented, especially in the case of Iraq, in order for these countries to obtain nuclear capability.[54]

Of these eight countries, Israel can reasonably be presumed to remain an ally of the United States. The other seven countries represent a challenge to the security interests of our country because the possibility of their use of nuclear weapons in a crisis must be taken seriously. The factors that might contribute to the use of nuclear weapons are based upon the rational actions of governments responding

to perceived threats to national security.

Regional conflicts between two nuclear states or between a nuclear state and a non-nuclear state are unavoidable in today's world.[55] These conflicts may escalate into a military crisis and threats to use nuclear weaponry as an intentional instrument of national power can be expected. This is especially true of the situation where a nuclear state finds itself losing a conventional war to a non-nuclear adversary.

There was a tendency for these regional conflicts to be dampened during the cold war by the mediation of the two world superpowers. Now that the superpower influence is diminished, these third world nuclear states may feel more vulnerable and will lean more toward the tendency to use nuclear weapons if their survival is threatened.[56] Additionally, third world countries may not feel any inhibition against using nuclear weapons because they do not feel that the United States or Russia will intervene or that the world community will impose sanctions upon them as punishment for their use.[57] This seems to indicate that the concept of deterrence as practiced by the superpowers during the cold war breaks down at the regional conflict level.[58]

Third world countries also are victims of imperfect and incomplete intelligence regarding the actual state of affairs during a regional conflict. There is often a pronounced tendency for policy makers to assume the worst case scenario which could conceivably lead to a decision to launch a preemptive strike even though

the opponent is not planning to use nuclear weapons.[59] This was precisely the case in 1992 when the United States intervened in a clash between India and Pakistan and provided intelligence that defused the potential conflict.[60]

The command and control arrangements for nuclear weapons in these countries also is an area for great concern. The lack of survivable and secure command and control systems increase the overall vulnerability of these nuclear forces.[61] This unsophisticated arrangement by our standards leads to the distinct possibility that the weapons might be used either prematurely to avoid losing them to an enemy strike or used by an unauthorized agent such as a local commander facing an overwhelming enemy force.[62]

The abundance of regional conflict in the third world, the lack of outside influence in settling these crisis, the apparent lack of the effect of deterrence, faulty or incomplete intelligence and a less than desirable command and control structure may very well lead the world to the brink of a nuclear conflict. It is of vital interest to the entire world community to see that the proliferation of nuclear weapons is controlled to the maximum extent possible.

Given the potential for these countries to acquire a nuclear weapon capability it is important to determine what United States' interests are at stake. Although these countries will lack the capability to deliver a nuclear attack directly against the United States they possess the means to inflict damage upon elements affecting national security interests.

At the end of this century the United States will still have a substantial number of military forces stationed overseas to include a significant number bases that are within the range of nuclear weapons from these countries.[63] This is especially true for South Korea, Japan, the Middle East and the Persian Gulf region. In addition to military forces the United States also has a substantial number of citizens and corporate entities involved in these areas of the world. The protection of these assets is of primary concern to the national command authorities.[64]

The acquisition of nuclear weapons also threatens allies, both those engaged by formal treaty and those that are not. Our national interests are further buoyed by the presence of United States bases or forces stationed in these countries. These countries include Japan, South Korea, Egypt, Italy, and the Gulf Cooperational Council countries.[65]

The use of nuclear weapons in a conflict also brings with it the possibility that the initial use of nuclear weapons between two belligerents might cause the spread of nuclear war to an adjacent country or perhaps bring about the involvement of one of the major nuclear states.[66] Israeli involvement in a Middle Eastern crisis between two hostile Arab states or Chinese involvement in a Korean conflict are examples of this aspect.

The potential use of nuclear weapons also threatens national access to resources either through blocking lines of communication or by denying access to

a particular area.[67] A nuclear war in the Persian Gulf even if short lived might render the oil fields of the region inaccessible for years to come.

The most alarming affect of the use of nuclear weapons by a third world state would occur if the weapons were used in conjunction with the successful conclusion of a regional war. The nuclear weapon would then be viewed as a highly valuable instrument of national policy and would become a sought after item for every country aspiring to exert influence in their own region of the world.[68]

There are three countries suspected of having fielded a nuclear weapons capability but have not declared themselves as nuclear powers. These de facto nuclear powers may perhaps be considered more dangerous than declared nuclear powers, since they do not appear to be relying on the deterrent effect of the weapons as justification for their existence as an asset of national power.[69]

INDIA

India first demonstrated its nuclear capability in 1974 with a "peaceful" demonstration of a nuclear weapon.[70] In the subsequent years analysts estimate that the country's nuclear weapon program may have enough fissile material to manufacture between 40 and 60 weapons and furthermore may be well on the way to producing a fusion weapon.[71] Fifteen years after developing its first nuclear weapon India made a giant leap forward capability wise when it

successfully test launched the Agni rocket. The 650 miles test flight meant that India now possessed the means to deliver the warhead to any location in Pakistan, and large portions of central Asia, the Arabian Peninsula, and China.

PAKISTAN

Little is known in open literature of the Pakistani nuclear weapons that is estimated to have first fielded a capability in 1986. They are credited with the ability to assemble five to ten weapons if they anticipate the need for their use and possess combat aircraft that are capable of aerial delivery. The United States is currently withholding the delivery of $600 million of new F-16 aircraft until the Pakistanis renounce the use of nuclear weapons.

ISRAEL

Israel is estimated to have become a nuclear power in the late 1960s.[72] Testimony from an Israeli nuclear weapons technician who worked at the Dimona nuclear weapons facility indicated that Israel may have produced enough fissile material to produce up to 200 nuclear weapons.[73] The Israeli Air Force operates F-4 and F-16 aircraft that are capable of aerial delivery of nuclear weapons and satellite imagery suggests that approximately 50 Jerico II missiles have been produced.[74] The fighter aircraft along with the ballistic missiles give Israel ability to employ nuclear weapons throughout the middle east. Israel is also developing

a sea-launched cruise missile that will add another dimension to its nuclear posture and further complicate any attempts to defeat its nuclear forces.[75]

In addition to the undeclared nuclear powers there are a number of countries who are attempting to obtain nuclear weapons. Most of these countries are unable to build a nuclear weapons program from the ground up and must rely on some sort of external assistance to gain the capability. The transfer of nuclear weapons from the former Soviet republics back to Russia and weaknesses within the Russian security for these weapons may provide a convenient means to obtain the fissile material and expertise required for a successful program.

IV. SECURITY OF SOVIET NUCLEAR MATERIALS

The summer of 1994 marked the first of many disturbing incidents that suggested the republics of the former Soviet Union had lost total accountability for their nuclear weapons and fissile material.[76] The ugly specter of an underground effort to supply nuclear weapons, warheads, and fissile material to rogue states, terrorist organizations and perhaps criminal elements is truly a disturbing thought.

An abundance of nuclear material is apparently available to the highest bidder. Russia, Kazakhstan, Uzbekistan, Tajikistan, and Ukraine all contain numerous sites that in some way handle, utilize, or store atomic materials.[77] The Soviet stockpile of uranium was divided among the republics of Russia (30 percent),

Kazakhstan (30 percent), Tajikistan (30 percent) and Ukraine (10 percent).[78] Additionally, there are 51 civil nuclear power reactors that are located throughout Russia, Ukraine, Lithuania, and Armenia.[79] A particularly disturbing feature of all of these sites is that they are operated with virtually no outside supervision whatsoever. The two agencies that are responsible for monitoring nuclear activities, the Russia Ministry for Atomic Energy and the Gosatomnadzor (the atomic energy inspectorate) are undermanned and largely ineffective. The net result is that only about one-third of the 14,500 facilities that handle nuclear materials have been inspected.[80] There are also a substantial number of nuclear reactors located on deactivated naval vessels that are outside of the jurisdiction of these organizations.[81]

In order to utilize these nuclear materials you must have the technological expertise to put them to their desired use. Again, the former Soviet Union is a repository for this talent which is currently underutilized if not unemployed. The Russian Federal Counter-Intelligence Service (itself an under funded and undermanned organization[82]) has implemented an effort to monitor the activities of the estimated 2,000 - 3,000 scientists who were involved with the Soviet nuclear weapons program to preempt their involvement in any illicit nuclear weapons development efforts.[83] Unfortunately, not enough attention has been placed on the estimated 5,000 - 8,000 nuclear weapons technicians who are more than capable of applying the already developed technologies to the construction

of a nuclear weapon.[84] These underpaid and essentially unrestricted technicians are excellent recruiting candidates for any individual or organization that has designs on developing its own nuclear weapons capability.

Evidence seems to indicate that 23 warheads were "lost" at the Komsomolsk-Amure weapons depot in May 1992.[85] During the transfer of over 27,000 nuclear warheads from 72 different front-line units and 12 central storage sites, it appears that the Russian transportation system was overloaded on the order of 60 - 70 percent.[86] This surge of activity no doubt overtaxed the ability of the Russians to control the movement of the nuclear weapons and presented a window of opportunity to obtain these weapons. In their haste to complete the withdrawal of nuclear weapons to Russian territory as soon as possible it is likely that Russian officials arranged to have the weapons temporarily off-loaded at storage facilities closest to the Russia-Ukrainian border and subsequently moved to their final destinations only after all nuclear weapons had been returned to Russian soil.[87] Again this opens the issue of the possible compromise of positive control of the nuclear weapons.

Once the weapons were withdrawn to the Russian republic they were stored in 41 different locations. The contents of what formerly comprised the arsenals of almost 90 bases and storage facilities are now loaded into less than half that number of locations. Analysts have concluded that at the height of the restructuring of the disposition of the weapons, the storage capacity of these 41

facilities may have been exceeded by as much as 107 percent.[88] Given the level of disarray that all of the republics of the former Soviet Union have experienced the security of these weapons must surely have been less than optimal.

In an effort to control this flight of nuclear material, the Russian authorities have taken some steps to control the problem though they are symbolic in nature and do not implement effective precautions. Moscow has established a Federal Bureau of Investigation liaison office with the United States and has signed a joint agreement with Germany to work on stopping the flow.[89] Until the appropriate government agencies are given the resources and authority to inspect and correct deficiencies, the continued dismantling of nuclear weapons will provide a large quantity of fissile material.

The cash starved government of Russia may even be conducting elaborate operations to provide nuclear materials for sale. The "Red Mercury" incident suggests that individuals acted with full knowledge of the government and security services to raise vitally needed hard currency through the sale of weapon grade material.[90] If this is indeed true, it suggests that until the Russian economy is on firm footing the government can not be expected to aggressively pursue the positive control of its fissile material.

V. BALLISTIC MISSILE PROLIFERATION

Proliferation of ballistic missile technology is a key ingredient in the

proliferation of nuclear weapons. Ballistic missiles offer several advantages to a country seeking the capability to deliver nuclear weapons including short time enroute to target, long stand-off range from adversary air forces, mobility which significantly increases the difficulty in targeting the systems during a preemptive strike by an enemy, and the current lack of a defensive system that can effectively negate a ballistic missile attack.[91] Even the relatively unsuccessful use of Iraqi Scud-Bs during the Gulf War in the presence of allied coalition air supremacy may have made the acquisition of ballistic missiles attractive to countries who are trying to field their own capability to deliver nuclear weapons and possibly other weapons of mass destruction.[92]

There are three potential avenues of approach for a country to acquire ballistic missile capability: modification of existing systems, self production, and purchase from an external source.[93] Each method offers its own particular advantages over the others and requires its own level of technological expertise and resources.

Most of the modified ballistic missiles that are present in the world today are derived from the Soviet developed and distributed Scud-B.[94] The Soviet Union supplied the Scud-B to Egypt, Syria, Afghanistan, Libya and Yemen during the Cold War years.[95] This initial dispersal of missiles led to the production of a second generation of Scud based derivatives in the above mentioned countries and Iran, Iraq, and North Korea.[96] Iran was able to design and produce their own versions of the Scud called the Al-Hussein (600 kilometer range), Al-Hijarah (600

kilometer range) and Al-Abbas (900 kilometer range) which provide coverage over a substantial portion of the Persian Gulf area.[97] North Korea has been very active in producing and distributing their own variations of the Scud. North Korea originally received its Scud-Bs from Egypt in the 1970s and commenced on a successful program to produce the extended range Scud Mod C with a 500 kilometer range and most recently the No-dong 1 with a 1,000 - 1,300 kilometer range.[98] North Korea provided 100 modified Scud-Bs to Iran in 1987 and agreed to send Scud Mod Cs in 1991.[99] Syria received North Korean Scud Mod Cs in 1992 - 1993 and has incorporated the knowledge of the North Koreans into their own missile modification program along with the Egyptians and Iranians.[100]

The United States, and France have also been active in supplying missile technology for this type of ballistic missile proliferation. South Korea has benefitted from the United States' Lance and Nike-Hercules technology to develop their own surface to surface missiles.[101] Israel has also benefitted from the Lance and quite possibly from illegally supplied technology for their Jericho II program.[102] The Pakistani Hatf-1 a missile of relatively limited capability appears to be based on French technology.[103]

Internal production is the second route to obtaining a ballistic missile capability to deliver nuclear weapons. Argentina, Brazil, India, South Africa, South Korea, and Taiwan all have the personnel, technological and economic means to produce their own ballistic missiles.[104] Although some of these

countries are not suspected of trying to develop their own nuclear weapons they are quite capable of transferring their hardware and technology to those countries who can not produce their own.

The Indians have been remarkably successful in designing and producing their won missiles. The recently test flown Agni ballistic missile is a two stage solid propellant design with a range of 1,500 - 2,500 kilometers.[105] The Prithvi missile, first displayed in 1994, is assessed to have an accuracy of ten meters.[106]

The third route to obtaining a ballistic missile capability is to purchase a complete system from another party. This approach requires the least technological basis for acquiring a ballistic missile and is most attractive to countries with limited technological means. The two most active countries involved in selling missile systems appear to be China and North Korea.[107]

China has sold forty CSS-2 (3,000 kilometer range) to Saudi Arabia and has apparently developed two missiles, the M-9 (600 kilometer range) and M-11 (300 kilometer range) missiles for the Middle East and Asian markets.[108] Iran has already received the M-9 and M-11 technology from China and Pakistan has received the M-11. In an attempt to control this proliferation the United States has attempted to sanction China for violating the Missile Control Technology Regime while China counters with the position that this technology falls outside of agreement parameters.[109]

As a result of its faltering economy, North Korea has been assessed to be

willing to sell its ballistic missile systems to anyone who can deliver the hard cash.[110] Transfer of the No-dong 1, which is assessed to nuclear capable and operational in the 1996-2000 time frame, has been discussed with Iran, Libya and Syria.[111] North Korea is also thought to be developing two new missiles known as the Taep'o-dong 1 (2,000 kilometer range) and Taep'o-dong 2 (3,500 kilometer range) which could be operational as early as 1996 and 2000 respectively.[112] These two missile systems if deployed to the interested countries could threaten every major capital city in Europe. Deployment on North Korean soil would threaten all of Northeast and Southeast Asia, much of the Pacific Ocean and most of Russia. Indications of the development of the No-dong-X (6,000 kilometer range) with the assistance of Russian and Chinese supplied technology are of obvious concern as a strategic delivery system.[113]

Russian resolve to support the non-proliferation of ballistic missile technology is wavering under their difficult economic conditions. They have been caught trying to market their SS-23 surface to surface missile system as a civilian rocket and in 1993 they were advertising the availability of an improved warhead for their Scud family of missiles.[114]

There is clearly a pronounced trend in the 1990s toward the proliferation of ballistic missiles among third world countries desiring to establish their own nuclear weapons capability. As the technology base allows for longer range, increased payload, increased accuracy and better reliability, these systems will

only become a higher priority in the formula for becoming a regional power.

VI. IMPLICATIONS FOR STRATEGIC PLANNERS

The Russian and Chinese strategic nuclear arsenals along with those of the emerging third world threat present a serious challenge to those responsible for formulating national and theater strategy for containing and confronting these weapons. With regard to the Russian threat the national strategy is essentially centered on the START treaties and the effort to cut the size of the nuclear arsenals of both Russia and the United States. These weapons reductions for the most part are energized by a "how low can we go" perspective as opposed to determining how many nuclear weapons are required to meet our defense needs and then negotiating a reduction to that level.[115] The U.S. must not allow the deterrent value its of nuclear weapons to erode as a result of the absence of a credible national policy regarding their use.[116] U.S. leadership must provide to any potential adversary an unambiguous statement of policy to deter the use of nuclear weapons against ourselves or our allies.

The third world threat is a perplexing problem in that the emerging nuclear powers do not possess the capability to directly attack the United States from their own soil but can directly impact upon key national assets and security interests of both ourselves and our allies. A third world crisis involving nuclear-capable states has the ability to affect the following national security interests and

our nation should be prepared with a range of possible responses for each theater before the event erupts: U.S. forces and citizens stationed abroad, allied nations, escalation of hostilities, wide spread contamination, loss of access to natural resources, and the setting of a precedent for using nuclear weapons.[117] The introduction of a nuclear weapons capability in a third world regional crisis scenario would have the effect of making the consequences of a crisis more severe but decrease the likelihood of occurrence when compared to the conventional crisis that have been witnessed to date. U.S. response to a regional crisis would be dependent on the perceived threat to national security balanced against the risks associated with trying to influence the outcome.

Before taking any direct action against a nuclear capable adversary in a crisis situation, actions could be taken that would serve to deter or dissuade the use of nuclear weapons. Military assets could be relocated and postured to imply the dire consequences of facing U.S. forces in the event of an attack. However, care must be exercised to ensure such a show of force does not threaten the adversary to the point that an attack is initiated out of fear of a preemptive attack. Additionally, the imposition of economic and diplomatic sanctions by the world community might also have the effect of deterring a nuclear attack.

One potential use of U.S. military power in a third world crisis could conceivably occur as a preemptive measure to thwart the impending use of nuclear weapons by one or more of the protagonists. In addition to national

interests at stake the decision to attempt such an effort is complex and is subject to several other considerations including the correct determination of the imminence of nuclear weapon use, the level of technical sophistication of the belligerent, and the political acceptability of initiating intervention.[118] Political leaders and military commanders will have to carefully weigh these factors in arriving at a decision to attempt a preemptive strike.

With regard to imminent use of nuclear weapons the U.S. intelligence community must accurately detect the preparation of the weapons and also recognize that deterrence is on the verge of failing. Should these two situations be correctly analyzed, policy makers will be faced with two potentially risky alternatives. The first would be to initiate a conventional counter force attack which if not successful might initiate the very action it was designed to avoid.[119] The second course of action would be to take no action and hope that an attack is not initiated or relying on missile defense systems to neutralize the attack.[120]

The level of sophistication of an opponent directly influences the ability to successfully execute a counter force attack. If U.S. interests are threatened by an adversary whose capabilities present a low confidence of successful preemption, our decision makers may have to give serious consideration to accepting the consequences of a nuclear attack before we take any action.[121]

Even if military intervention proves to be a viable option our leaders will undoubtedly consider the political acceptability of such an action before

launching an attack. World opinion, public reaction, and Congressional pressure will prove to be major factors in making the decision to intervene.[122] Certain scenarios will bring about a high level of public and worldwide support while other instances may not evoke the requisite backing because the perceived threat to security is not apparent.

If deterrence fails and a nuclear attack by a third world country occurs, the issue of how to employ military force will be faced by strategic planners. A primary course of action would most likely include the decision to destroy or neutralize any remaining nuclear weapons before they can be employed.[123] The decision to respond in kind to a nuclear attack will generate controversy and be a complex issue. Retaliation with nuclear weapons might further increase proliferation by demonstrating our national resolve to use them and reinforce the notion that nuclear weapons are a mandatory element of national power for a country aspiring to become a regional influence.[124] The destruction of an enemy's conventional forces in addition to elimination of nuclear weapons is also a possible course of action when responding to a nuclear attack.[125]

VII. CONCLUSION

Although the cold war nuclear struggle is now behind us the significance of nuclear weapons, most notably their presence in an uncertain and unstable world, remains at a high level. Russia and China have substantial nuclear arsenals and

are continuing efforts to modernized their weapons systems. Third world countries still continue their efforts to obtain nuclear status in order to establish themselves as regional powers. The ballistic missile and nuclear weapon threat to Europe and United States forces stationed there is now upon us.[126]

The uncertainty that surrounds the Russian and Chinese nuclear arsenal is a justifiable cause for concern. The efforts to continue to modernize strategic nuclear forces while at the same time downsizing arsenals in accordance with START agreements should not be lost on policy planners. Clearly these nations still view nuclear weapons as important elements of national power and must be accounted for during force planning. The political uncertainties in Russia, which in turn causes instability in the neighboring republics that still possess remnants of the Soviet nuclear arsenal brings questions regarding the long term viability of the START agreements. It is entirely possible that the denuclearization effort currently under way could be derailed by a number of political and military forces.

The quick and efficient draw-down of the former Soviet strategic nuclear stockpile is clearly in our nations' best interest and we should capitalize on the current window of opportunity to continue to fund and assist the irreversible transformation of weapon grade material for non-weapon purposes. The risks associated with unauthorized access to nuclear materials are too great to devote anything but the greatest urgency to improving the accountability and control of

nuclear weapons as they proceed through the transfer process. Not only will this assist in quickly reducing the Russian arsenal, it will reduce the possibility that nuclear weapons or components may fall into the hands of terrorists, criminals, or "rogue states."

The acquisition of nuclear weapons by third world countries is a particularly worrisome aspect of proliferation. Several of the leaders of countries that have or are trying to acquire nuclear weapons have been characterized by the CIA as "strongmen of proven inhumanity " accompanied by "weak, unstable, or illegitimate governments."[127] This trend leads to the conclusion that nuclear weapons in the hands of these countries are weapons of genocide that are targeted at eliminating ethnic and religious enemies. In an era of increasing regional conflict the threatened use of nuclear weapons provides a major destabilizing effect. This is particularly important considering that most of these countries lack the sophisticated command and control systems that minimizes the chance of unauthorized use of nuclear weapons.

The United States should also conduct foreign policy that supports counter proliferation efforts across the spectrum. We can no longer afford to selectively "look the other way" while nuclear weapons proliferation is occurring for the sake of supporting another area of national security interests. Efforts at limiting the spread of nuclear weapons must be equally applied in all cases or we will undoubtedly undermine the total counter proliferation process.

The continued proliferation of ballistic missile technology coupled with the apparent lack of total accountability of the former Soviet nuclear arsenal has the potential to make deliverable nuclear weapons more readily available to rogue states. As long as there is a market for security, nations will continue to try to obtain what they believe will give them what they want by any means available. The weapons control and anti-proliferation treaties that were designed to prevent the spread of weapons of mass destruction have not been totally successful in halting the flow of technology and material.

Perhaps the only way to control the spread of nuclear weapons is to remove the perceived need for them. Countries developing a nuclear capability must understand that proliferation will in the long run undermine their security. Long standing conflicts must be resolved and nations made to feel secure in their existence as a sovereign entity. The third world's abundance of regional conflict that seems to resist effective outside influence to resolve crisis may prove to be the area most likely to lead the world to the brink of a nuclear conflict. It is of vital interest to the world community to see that nuclear weapons proliferation is contained to the maximum extent possible and until these security concerns are resolved, nuclear weapons will continue to remain a significant feature in the post cold war world.

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