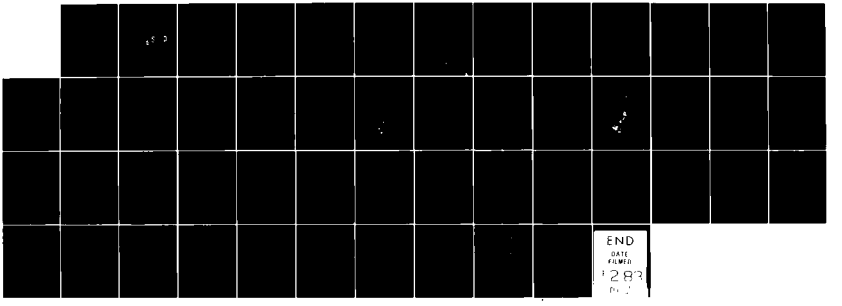
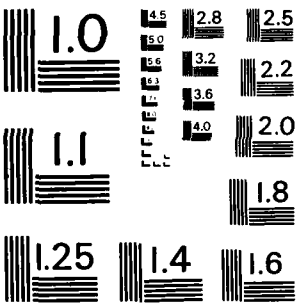
AD-A134 608 THE STRATEGIC IMPLICATIONS OF CIVIL DEFENSE(U) ARMY WAR 1/1
COLL STRATEGIC STUDIES INST CARLISLE BARRACKS PA
J M WEINSTEIN 05 MAY 83

UNCLASSIFIED F/G 15/3 NL





(2)

STRATEGIC STUDIES INSTITUTE
US ARMY WAR COLLEGE
CARLISLE BARRACKS, PENNSYLVANIA 17013

5 MAY 1983

ACN 83012

THE STRATEGIC IMPLICATIONS OF CIVIL DEFENSE

STRATEGIC ISSUES RESEARCH MEMORANDUM

ISSN 0275-2972

STRATEGIC STUDIES INSTITUTE
US ARMY WAR COLLEGE
Carlisle Barracks, Pennsylvania 17013

ACN 83012

THE STRATEGIC IMPLICATIONS OF CIVIL DEFENSE

by

John M. Weinstein

5 May 1983

DISCLAIMER

The views expressed in this article are those of the author and do not reflect the official policy or position of the Department of Defense or the US Government.

Composition of this memorandum was accomplished by Mrs. Kathleen M. Preitz.

FOREWORD

This memorandum explores the relationship between civil defense, national vulnerabilities and the deterrence of nuclear warfare between the Soviet Union and the United States. The author examines the problems and effectiveness of the major elements of Soviet civil defenses (leadership and population protection; industrial protection; and postattack recovery) to determine whether, and to what extent, the Soviet capabilities undermine crisis stability and deterrence. The proposals of the Carter (PD-41) and Reagan (NSDD-26) administrations to strengthen deterrence and to reduce national destruction should deterrence fail are evaluated to determine whether the United States should augment and modernize its civil defenses.

While acknowledging that the United States would experience many of the same problems anticipated for the Soviet Union in the face of crisis relocation or postattack recovery, the author advocates a modest US population evacuation program, but *not* because civil defense planning will make nuclear war less horrific or more winnable. Rather, Americans *will* evacuate high risk areas in the event of a crisis, and it remains the responsibility of government to minimize the chaos and moderate the effects with some prior planning. The costs of such plans, relative to competing strategic military systems and programs, are rather modest. The author is skeptical, however, about the utility and cost-effectiveness of the extensive blast shelter program advocated by some civil defense proponents in the United States.

The Strategic Issues Research Memoranda program of the Strategic Studies Institute, US Army War College, provides a means for timely dissemination of analytical papers which are not necessarily constrained by format or conformity with institutional policy. These memoranda are prepared on subjects of current importance in areas related to the authors' professional work or interests.

This memorandum was prepared as a contribution to the field of national security research and study. As such, it does not reflect the official view of the College, the Department of the Army, or the Department of Defense.

RICHARD D. LAWRENCE
Major General, USA
Commandant

BIOGRAPHICAL SKETCH

JOHN M. WEINSTEIN, Ph.D. is an Assistant Professor of Political Science at Kennesaw College in Marietta, Georgia. Currently, he is a Visiting Research Professor at the Strategic Studies Institute, US Army War College. He earned his bachelor's degree in political science from Emory University, and his master's degree in political science and Ph.D. in international relations from the University of Florida. Dr. Weinstein's essays on strategic policy, Soviet affairs and Third World development have appeared in *Parameters, Arms Control Today, Russia, Military Intelligence, Korea and World Development, Studies in Comparative International Development,* and other professional publications. He is coeditor of *The Defense of the West: Strategic and European Security Issues Reappraised,* forthcoming Fall, 1983, by Westview Press.

SUMMARY

This essay explores the relationship between civil defense, national vulnerabilities, and the deterrence of nuclear warfare between the Soviet Union and the United States.

Some fear that the Soviet Union's extensive—and very expensive—civil defense system gives it the power to blackmail the United States in conflicts over crucial interests, or even to go to war. This is especially true when such programs are viewed within the context of Moscow's massive and increasing military expenditures, its deployment of certain tactical and strategic systems, its continuing research and development programs with counterforce applications, and its opportunistic foreign policy.

Some argue that in a nuclear war the Soviet civil defense programs might allow that state to emerge relatively unscathed, while for the United States, destruction would be complete. Thus, they conclude, the United States must carry out a massive civil defense program as part of an effort to reestablish the credibility of its deterrent. This argument, however, may overstate the defensive capabilities of the Soviet Union, which, in fact, faces a number of problems with its civil defense program. For example, the Soviet population is concentrated in a relatively small number of urban centers, and evacuation plans, never practiced on a large scale, are bedeviled by uncertainties about transportation, supply, climate and shelter. Hence, according to the CIA, Soviet civil defense plans would be unable to prevent massive and unacceptable population losses in a major attack.

Moreover, the high concentration of Soviet industry within a few major complexes, the difficulty in hardening industrial sites effectively against direct attack, the primitive state of Soviet transportation and myriad other problems suggest that the Soviet Union would be hard pressed to protect its economy in the event of a nuclear war.

These problems, in conjunction with the facts that a Soviet directive to put civil defense plans into effect would put US strategic forces on alert (thereby strengthening their destructive capabilities) and that the United States could wreak massive physical damage upon the Soviet Union in a retaliatory strike, attest to the continued credibility of the American deterrent.

There would be other difficulties for the Soviet Union in the event of war, difficulties for which their civil defense program

would offer few answers. First, a major disruption of its centralized system of communication and political control might well jeopardize the continued internal political hegemony of the Communist Party, especially in light of increasingly nationalistic forces among many of the Soviet Union's non-Russian nationalities that are tending to pull them away from the dominant Russians. Second, and related, is the geographical coincidence of Soviet ICBM installations, major Soviet industrial centers, and concentrations of ethnic Great Russians. Even in an American counterforce strike, ethnic Russians would perish in numbers far greater than their current (although declining) percentage of the Soviet population—52 percent. It is likely that a nuclear exchange would disrupt, and possibly end, Russian control over the state political and military apparatuses, thereby threatening the continued existence of the multinational Soviet empire. Finally, the continued allegiance of Warsaw Pact members to the Soviet Union, and Moscow's control over these nations, would certainly be called into question in the event of a nuclear war.

Thus, a nuclear exchange with the United States very likely would result in great physical suffering for the Soviet Union and an end to its superpower status. Therefore, it is imperative that the United States maintain the substantial flexiblity and capability of its nuclear arsenal which is able to mitigate any marginal benefits of the Soviet civil defense program.

The proposals of the Carter (PD-41) and Reagan (NSDD-26) administrations to strengthen deterrence and reduce national destruction should deterrence fail are then evaluated to determine whether the United States should pursue augmenting and modernizing its own civil defenses.

Surely, the United States would experience many of the same problems anticipated for the Soviet Union in the face of crisis relocation or postattack recovery, and few believe that civil defense can make nuclear war winnable or less horrific. Nevertheless, a modest population evacuation program is advisable because Americans *will* evacuate high-risk areas in the event of a crisis, and it remains the responsibility of government to minimize the chaos and to moderate the effects with some prior planning. The costs of such plans, relative to competing strategic military systems and programs are rather modest and, in the opinion of the author, well advised.

THE STRATEGIC IMPLICATIONS OF CIVIL DEFENSE

INTRODUCTION

The cumulative effect of the massive expansion and modernization of the strategic and conventional forces of the Soviet Union has caused many to reevaluate the strategic balance between the superpowers. Specifically, there has been substantial concern about the Soviet development of a potent first-strike capability. This assessment, arrived at by the last two US administrations, reflects a number of technological improvements in the Soviet Strategic Rocket Forces (SRF) which appear ominous in light of Soviet strategic operational employment plans which stress seizing the strategic initiative through preemptive attacks against American ICBM launch silos, launch control facilities, support and maintenance facilities, strategic bomber bases, submarine berths and loading facilities, and nuclear storage and production facilities.[1] Secretary of Defense Caspar Weinberger outlined the principal cause of the Reagan administration's concern in *Soviet Military Power* when he observed:

> The 1970's modernizations, which only now are reaching a conclusion, were largely technological in nature. More than half of the 1,398 Soviet ICBM launchers have been rebuilt to house the SS-17, SS-18 and SS-19 ICBM in vastly more survivable, hardened silos. These ICBMs, all of which are MIRVed, are in the forefront of ICBM technology. Certain versions of the SS-18 and SS-19 are among the most accurate ICBMs operational anywhere. Together, these systems have the capability to destroy a large percentage of the more than 1,000 US ICBM launchers, using only part of their total numbers.[2]

The SS-17, SS-18 and SS-19 ICBMs, which are the focus of the Secretary's most urgent concern, incorporate a cold-launch capability for the SS-17 and SS-18, allowing their silos to be reloaded for subsequent salvos. Furthermore, these recently deployed missiles have impressive accuracies which rival and yields which surpass those of the most accurate US Minuteman III ICBM with the Mk-12A warhead.[3] Most worrisome to Secretary Weinberger is, despite the overall balance in total numbers of US and Soviet ICBM and SLBM warheads (approximately 6,920 [US] v. 7,000 [USSR]), the Soviet Union leads the United States in the number of the highly accurate and hard-target capable warheads by approximately 4,600 (sum of warheads on SS-17, SS-18 and SS-19) to 1,650 (Minuteman III).[4] Secretary Weinberger warns that:

> As the accuracy of future Soviet missiles increases, it will be feasible for the Soviets to reduce the size of individual RVs and thereby to increase the number of MIRVs carried on each missile, assuming no external constraints such as that imposed by arms limitations.[5]

When viewed through the prism of Soviet strategic doctrine, the ongoing improvements to the Soviet SRF, as well as those realized in their submarine and long-range aviation, there is indeed room for genuine concern. Clearly, these trends portend potentially dangerous consequences in a superpower crisis in which the Soviet Union believed war was about to erupt.

Within this context, a number of civilian and military analysts take a particular ominous view of the Soviet Union's long-standing attention to civil defense.[6] In light of America's inattention to civil defense since the aftermath of the Cuban missile crisis, numerous implications have been drawn from alleged Soviet plans and capabilites to undertake crisis relocation of urban populations, to disperse and harden industry, and to achieve rapid postattack recovery. Most serious among these implications is the potential effect of Soviet civil defense capabilities upon the real or perceived

stability of deterrence.[7] Specifically, some contend that the Soviet civil defense program threatens deterrence by upsetting the balance of mutual population vulnerability if, under certain conditions, Soviet civil defense measures might limit their fatalities to the low "tens of millions."[8] According to 1979 projections by the Congressional Office of Technology Assessment and 1982 Congressional testimony, significant asymmetries exist in the number of US and Soviet fatalities that would occur in several nuclear warfighting scenarios.[9] In most scenarios, the percentage of American casualties is double that of the Soviet Union and in an all-out Soviet attack upon the US population and its counterforce, military and economic targets, American fatalities might range as high as 88 percent of the population.[10]

Furthermore, it is frequently argued that Soviet civil defense capabilities could threaten deterrence stability to the degree that they protect that country's economic power and recovery prospects relative to those of the United States. Such projected asymmetries are destabilizing because they suggest that under certain circumstances, the Soviet Union might emerge from a nuclear war in a better position than that of the United States. If the Soviet Union were to perceive nuclear war as potentially less costly and, thus, less frightening, they might feel more inclined in a crisis to launch a preemptive strike against the United States.

Those who are concerned about Soviet civil defense improvements are also frequently among those concerned over the comparative lack of US civil defense measures. Often these critics contend that there are several additional implications that result from the inability of the United States to protect its citizens or production base from nuclear assaults.[11] First, America's allies would naturally have less confidence in the US nuclear umbrella if they could envision a situation in which the United States were facing a choice between sacrificing New York or assenting to Soviet coercion or occupation of Oslo or Bonn.[12] Second, tactical nuclear weapons, whose use might escalate to a strategic exchange, might "no longer substitute for conventional strength as credibly as they did in the past."[13] Any resulting loosening of the bonds between the United States and its NATO allies might contribute ultimately to the disintegration of NATO and other US alliance systems. Such developments would constitute a major blow to US security and realize one of the principal Soviet postwar objectives. Finally,

defensive inferiority might subject the United States to Soviet coercion with few alternatives to acquiescence, irrespective of raw, destructive power.

Such commentary has not fallen upon deaf ears in the executive branch. Recently, numerous analysts in government and academe have argued that the United States must improve the readiness and capabilities of its own civil defense program. They maintain that the United States might protect itself from any attempted Soviet intimidation by evacuating its urban positions during a crisis and accordingly reducing American fatalities, and facilitating economic recovery should deterrence fail.[14]

Presidential Directive 41 (PD 41), issued on September 29, 1978, streamlined America's civil defense goals and committed the country to crisis relocation planning.[15] Recent declarations of the Reagan Administration, including a commitment to double federal allocations for civil defense, provided additional evidence that the subject is being taken even more seriously in the United States.[16]

This paper will (1) examine the effectiveness of the Soviet civil defense program, selected Soviet strategic vulnerabilities, and Soviet views of deterrence, and (2) evaluate the direction and scope of the current US civil defense program. These assessments will explore the relationship between US civil defense and national security and provide a basis for policy recommendations that attempt to identify civil defense goals and initiatives which are desirable and feasible.

SOVIET CIVIL DEFENSE: PLANS AND PROBLEMS

Population Protection. Protection of leadership is considered of paramount importance to Soviet civil defense planners. The CIA notes that sufficient blast-resistant shelter space exists to protect approximately 110,000 Soviet government and Party officials at all levels.[17] A second priority is the protection of workers at essential industrial installations. By current estimates, the Soviet Union has shelter space for 24-48 percent of the essential work force or 12 to 24 percent of the total work force that would be left behind in the event of crisis evacuation.[18] Those most concerned about the estimated Soviet ability to protect much of their critical political and industrial populace point to several disquieting ramifications. First, while conceding the US ability to destroy shelters which are

targetted directly, these shelters must first be identified; hardly an easy or assured task for intelligence. Second, the destruction of these shelters would require continued survival and connectivity of US strategic communications and missile installations as well as the expenditure of a disproportionately large percentage of land-based, hard target-killing warheads on these targets.[19] Third, the survival of the Soviet political and military command and control systems might provide a capability to fight a protracted nuclear war designed to outlast the US adversary.[20] Finally, the survival of key political and industrial cadres would facilitate rapid economic reconstruction vis-a-vis the United States.

Those who question the potential adverse impact of Soviet shelter capabilities counter with several points. First, a first-strike capability that exists on paper does not guarantee that it will exist under uncertain and confusing actual attack conditions.[21] Second, the estimates of available Soviet shelter space are open to question. The CIA estimates that the space available for each person in a shelter would be only one-half to one square meter. This space allotment is inadequate according to most analyses of long-term survival requirements.[22] In addition, the Oak Ridge Laboratories maintain that the shelters' ventilation systems are their most vulnerable aspect and that, even if a shelter were not destroyed by a nuclear blast, its inhabitants would risk suffocation and death from asphyxiation or heat exposure.[23] Starvation also would prove to be a severe problem if shelter were required for more than a few days. Chronic Soviet food shortages make it unlikely that the Soviet Union would prestock shelters for more than a few days during peacetime. Furthermore, normal food distribution snarls, and the fact that Soviet citizens buy their food from day to day, are likely to prevent many from bringing additional supplies of food and water to the shelter. Even current Deputy Under Secretary of Defense for Strategic and Theater Nuclear Forces, T. K. Jones, an analyst who has written extensively on the dangerous implications of Soviet civil defense capabilities, concedes that inplace urban shelters "could not help much against a US attack designed to destroy populations."[24] Thus, it is argued that the Soviet Union is likely to harbor few illusions about the potential success of its civil defense programs in a nuclear war with the United States. Furthermore, since urban shelters are not in place to protect the average Soviet citizen (assigned the lowest priority in the Soviet

civil defense program), such citizens would be forced to build expedient shelters using "handy" materials and tools such as bricks, timber, boards, and shovels.[25] Their plight would be compounded at night; during autumn when the ground is muddy, or winter when the ground is frozen, or during spring and summer when foodstuffs are depleted.

Finally, Leon Goure, author of numerous articles and studies of Soviet civil defense, described elaborate Soviet evacuation plans that are to be carried out by the urban populace within 72 hours after an evacuation order is issued.[26] However, those who question the potential value of such an evacuation point out that the Soviet Union has never practiced full-scale evacuation of a major city; used more than one mode of transportation in their limited practice; conducted a drill without a long period of preparation; or carried out several evacuation exercises simultaneously.[27]

The Soviet road network is one of the country's major strategic vulnerabilities. Because it has been constructed to accommodate travel within that country's cities, it would be hard pressed to support mass exoduses by motor transport or by foot from these cities. One report states that:

> [The Soviet Union] lacks a developed highway system to connect the outlying regions to its industrial hub. Less than 250,000 miles of paved roads exist in the entire nation. No two Soviet cities are connected by a divided highway . . . . In addition, Soviet severe weather conditions hamper what possible road travel exists. During the winter, spring thaw periods, and autumn rainy seasons, Soviet roads are virtually impassable. The Soviets describe their situation as *Rasputitsa* or roadlessness during those months.[28]

In addition to motor transport, Soviet evacuation plans depend heavily on railroads. Most railroads in the Soviet Union, however, are single track. To evacuate large cities by rail transportation, the Soviet Union would have to arrange that the trains were in their assigned evacuation locations and that they were not loaded with freight or allocated to carry troops or supplies to Eastern Europe. That so many logistical problems would be handled by a country whose transportation system is inefficient, at best, during calm and peaceful times is questionable.

Moreover, since most Soviet citizens do not have automobiles,[29] Soviet evacuation plans also call for some 17 million urban residents to walk 30 miles (1.5 mph for 20 hours) and then, build

expedient protection.[30] How the very young, the very old, and the sick are to make such formidable progress (while carrying two weeks' worth of food, water, and supplies), is not clear. Furthermore, how evacuees in expedient shelters would survive the higher levels of radioactive fallout that would result if the US retaliatory strike included ground bursts, is unclear and is seldom addressed by those who assert the effectiveness of Soviet civil defense.

The Soviet urban population, largely an apartment society, is more highly concentrated than the American urban population.[31] This heavy concentration of urban citizens results in certain obstacles to successful evacuation. For instance, Moscow is surrounded on all sides by satellite industrial centers, and Leningrad is similarly bordered on three sides and by water on the fourth. Citizens from these population centers would face major problems evacuating to rural reception centers or areas suitable for the construction of expedient shelters.

Even if one disregards the logistical problems that would attend a decision to evacuate Soviet cities and assumes that such a momentous exodus could be executed, the Soviet Union would still face a major strategic dilemma. The declaratory policy of the United States, as well as employment policies which have resulted in increasing accurate guidance systems, such as the NS-20, eschew the targeting of Soviet population *per se*.[32] Within this context, one may wonder what impact from a Soviet perspective the evacuation of its citizens would have on deterring an American retaliatory strike. Civilian evacuation serves certain humanitarian goals, but it has little effect upon the US ability to destroy critical Soviet military, industrial, and economic targets.[33] The destruction of Soviet civilians would be an unintended effect of US plans to destroy Soviet military and economic infrastructures under certain retaliation scenarios.[34] In some ways, the Soviet Union may see evacuation as potentially counterproductive. In the event of a Soviet evacuation, the United States would undoubtedly undertake a variety of measures (e.g., disperse its bombers and put them on a runway or airborne alert, send its subs in port to sea, and upgrade the readiness of its missile installations) to reduce the effectiveness of a Soviet first strike and increase the destructiveness of a US retaliatory strike. Thus, it could even be argued that the successful evacuation and survival of the Soviet Union's civilian population

might prove detrimental to the country's long-term prospects for recovery. In the aftermath of a US retaliatory strike, one may wonder how the Soviet leadership plans to care for two hundred million survivors with the devastation of its economic, agricultural, medical, and transportation infrastructures.

With "strangelovian" logic, one could argue that rapid recovery indeed might be more expeditious and effective with fewer rather than more survivors to drain scarce recovery materiel. The crucial element of civil defense revolves, then, around the ability of the Soviet Union to protect its economy and sustain survivors of a nuclear war.

The Protection of Soviet Industry. Traditionally, Soviet leadership has sought to protect their industry by two means: geographical dispersal and hardening against nuclear attack. Little is debated about the effectiveness of Soviet programs to protect their industry from the primary and collateral effects of a nuclear attack by means of the former. More recent analytical efforts[35] concur with the 1978 CIA conclusion that the Soviet program for geographical dispersal of industry is not being implemented to a significant extent. The CIA concludes further that:

> . . . new plants have often been built adjacent to major existing plants; existing plants and complexes have been expanded in place; no effort has been made to expand the distance between buildings or to locate additions in such a way as to minimize fire and other hazards in the event of a nuclear attack; [and] previously open spaces at fuel storage sites have been filled in with new storage tanks and processing units.[36]

In fact, because of economic exigencies, the value of productive capacity added to existing areas is increasing more rapidly than in new areas. This trend heightens rather than diminishes the vulnerability of Soviet industry. More debate has concerned the effectiveness and implications of Soviet efforts to harden their industrial installations. Although the Soviet leaders themselves point out that:

> It is impossible to make buildings less vulnerable to a shock wave without radical structural changes that involve considerable difficulty and cost. . . . It is impossible to guarantee building survival in a damage area even by somewhat increasing the strength of individual structures and their components . . . ;"

they probably recognize that vulnerability and even massive impairment do not amount to permanent devastation.[38] Consequently, the Soviet leadership has opted for low-cost means of protecting vital equipment from secondary damage of nuclear explosives. These "engineering-technical" measures include rapid shutdown of equipment for protection against electromagnetic impulse; the use of expedient protective devices (e.g., wooden and metal bracing, covering equipment with sandbags, and the like), acknowledged by the Arms Control and Disarmament Agency (ACDA) as effective in areas on the periphery of a nuclear blast;[39] contamination protection, and the protection of raw material supplies through underground storage. In a two-year study of the effectiveness of Soviet expedient measures, T. K. Jones concluded:

> . . . Russian methods could protect machinery within the three-day warning that would be provided by a Soviet evacuation. A full scale attack could be absorbed and production could renew in four to twelve weeks.[40]

Such projections take on chilling importance if one posits that a Soviet preemptive strike knocked out as much as 90 percent of the accurate land-based US missiles, leaving the United States with less accurate SLBMs and its aging bomber fleet (which would have to penetrate increasingly sophisticated air defenses) to deliver the retaliatory strike. In such a scenario, the relatively limited destructiveness of the US response might seem tolerable to Soviet military planners.[41]

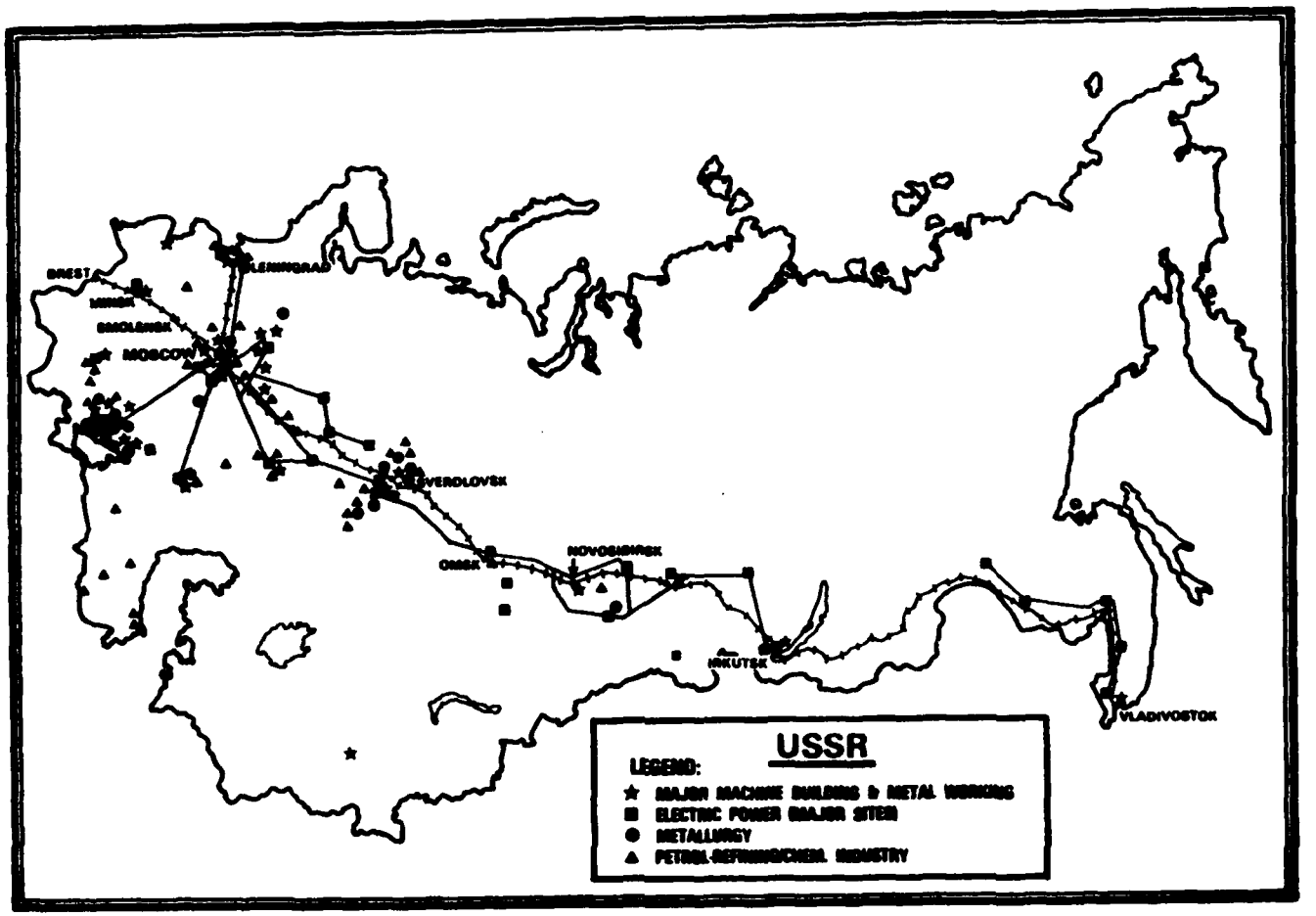
Critics of this line of argumentation respond that a substantial gap exists between the theoretical and actual abilities to mount a successful first-strike. They maintain that the Soviet leaders, who are normally cautious in military operations, would be loathe to gamble the survival of their state on the many unknown parameters relating to the coordination, timing, effects and consequences of so precipitous an action as a nuclear strike against the United States.[42]

These same critics also point to the inability of the Soviet Union to harden many of the critical industries upon which their fragile economy and continued superpower status depend. These vulnerable industries include oil refineries; power plants; chemical storage plants; steel mills; pharmaceutical laboratories; component assembly factories; major truck, tractor, and rolling-stock plants; railheads and marshaling yards; major surface transshipment

points and highway intersections; and pipelines.[43] Because these targets cannot be hardened and their destruction does not require the pinpoint accuracy of ICBMs, they remain vulnerable to a US retaliatory strike. With respect to industries that the Soviet Union might attempt to harden, the critics cite the ACDA conclusion that "any attempt to harden [industrial installations in targetted areas] can be easily overcome by detonating weapons at lower altitude with only a minor reduction in the 10 psi destruction capability."[44] The 10 psi figure is significant because it represents the nuclear blast overpressure that collapses most factories and commercial buildings and destroys and scatters all lesser structures as debris within a 4 to 5 kilometer radius of ground zero.[45] The ACDA study also stated that even the expedient threefold hardening of Soviet equipment in peripheral areas could be offset by greater accuracies and yields of future US weapons.[46]

Third, these critics focus upon the observation of T. K. Jones that after absorbing a first strike, the United States would be able to hit only a "few thousand aim points," precluding the infliction of unacceptable damage on the Soviet Union.[47] Critics committed to an assured destruction philosophy contend that Soviet industry (50 percent of which is contained in 200 complexes[48]) and the transportation and power infrastructure that support it are so concentrated in a narrow crescent stretching from Leningrad through Moscow, Sverdlovsk, Omsk, Novosibirsk and to Irkutsk that the United States would not require many weapons to achieve its Soviet industrial damage requirements.[49] (See Figure 1.) Geoffrey Kemp[50] and Richard Garwin,[51] both prominent students of strategic studies, maintain respectively that as few as seven Poseidon submarines (one-third of the number normally on station at sea) could destroy 61 percent of the Soviet industrial base and that, even if only 10 percent of US ICBMs survived a Soviet preemptive strike, those 100-110 missiles could be retargetted (assuming the survival of American C^3 facilities) to deliver unacceptable damage to the Soviet Union. An ACDA estimate that recognizes the need for no more than 1300 warheads to destroy 70 percent of Soviet industry is consistent with these estimates.[52]

Finally, and most crucial, is that even if one accepts the argument that the Soviet Union can protect individual pieces of industrial equipment from proximate nuclear detonations, it does not follow that the resumption of industrial production will be a



Source: Central Intelligence Agency, USSR Summary Map

Figure 1

near-term proposition. Industrial reconstitution and recovery will be hampered by a number of factors. For instance, how will production be resumed if the electrical infrastructure and available supplies of and transmission lines for diesel fuel, gasoline and petroleum are destroyed? How will industrial activity and recovery be realized if stocks of raw materials and the six rail transshipment points which load 80 percent of all empty railcars[53] and are critical to the Soviet industrial supply and distribution are destroyed also? How will workers deal with residual radiation in targetted areas, especially in the absence of easy access to medical personnel and supplies? And who will feed, clothe and shelter workers and protect their equipment during the recovery phase?

Postattack Recovery. Absent effective protection measures, the significant and vulnerable concentration of Soviet industry cited above makes T. K. Jones' prediction that the Soviet Union could recover "within no more than 2 to 4 years from a US nuclear retaliatory attack"[54] appear optimistic at best.

The psychological condition of the survivors is critically important for postattack recovery. Yet those who examine nuclear attack/recovery scenarios say little about this variable, implicitly assuming that as a result of their civil defense training, (1) the survivors of Armageddon would calmly set about postattack reconstruction in a disciplined and effective manner; and (2) that the termination of the nuclear crisis and threat of continued exchanges would be unambiguous and evacuees would willingly return to their homes to aid their fellow citizens and begin reconstruction.

Such discipline and cooperative effort may not occur in the aftermath of nuclear war. The reactions of the survivors of Hiroshima and Nagasaki offer a limited, though imperfect, insight into what might be expected in the aftermath of a Soviet-American nuclear exchange.[55] They expected that they were about to die. As a means of protection from the grotesque scenes around them, they closed their minds to the ubiquitous horror. This psychic numbing, causing profound blandness and insensitivity to the surrounding suffering, was temporary and dissipated as the outside world responded with aid to the victims of the disaster. A nuclear war, however, would result in unprecedented destruction and limit the amount of aid available from the "outside," especially if the war

were massive in nature. Robert J. Lifton, a noted psychiatrist who has written extensively on the subject, concludes that the devastation that would attend a nuclear exchange would probably give rise to such extreme psychic numbing as described above that its effects would be irreversible.[56] Lifton stated that:

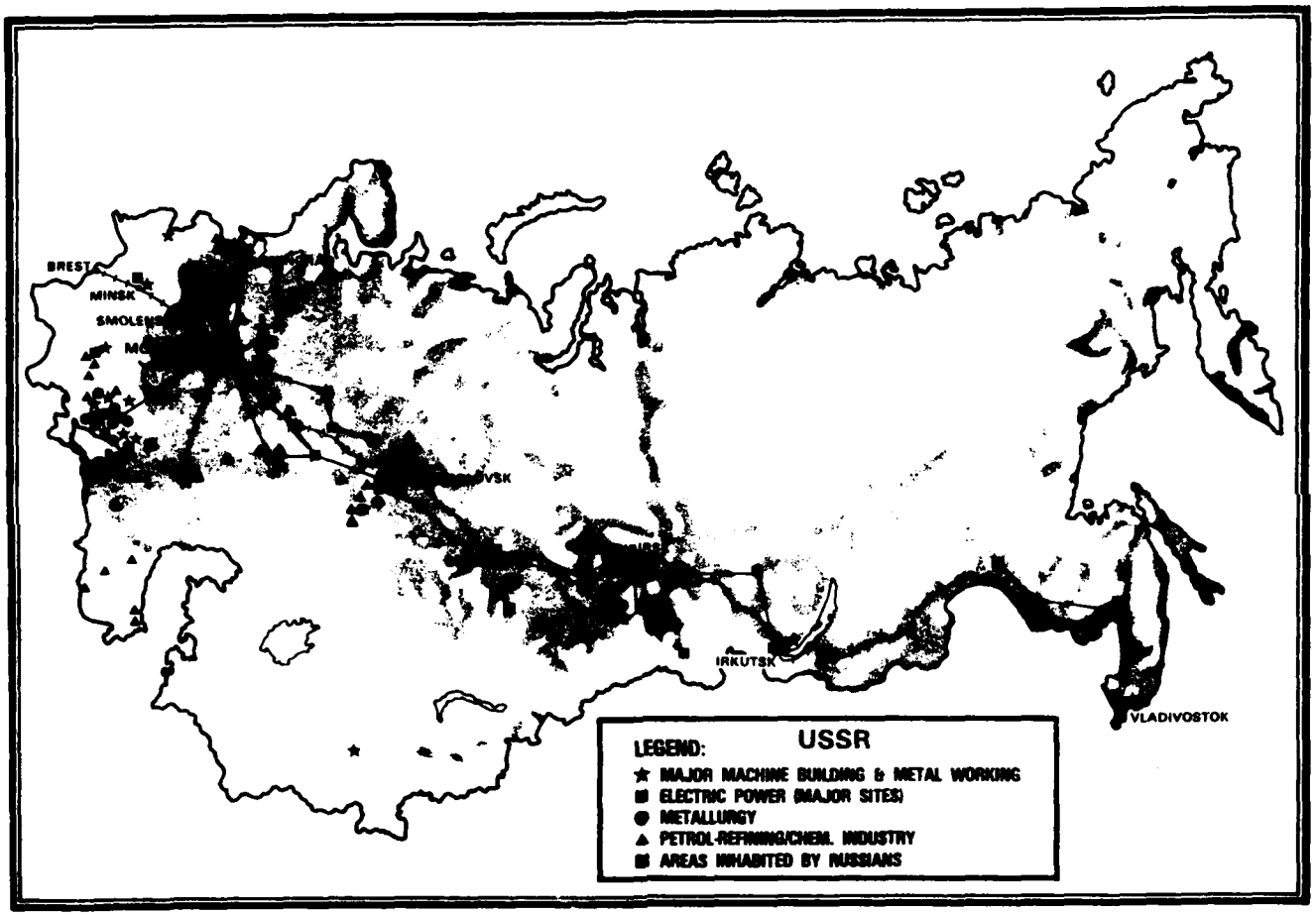
> The suddenness and the sheer ferocity of such a scene would not give survivors any chance to mobilize the usual forms of psychological defense. The normal human response to mass death and profound horror is not rage or depression or panic or mourning or even fear; it is a kind of mental anesthetization that interferes with both judgment and compassion for other people.[57]

In such circumstances, the mind may become desensitized to the degree that it is "no longer connected to its own past" and is, therefore, cut off "from the social forms from which it drew strength and a sense of humanity. The mind would, then, be shut down altogether."[58] According to Lifton, a major consequence of psychic shock could be the inability of the survivors to gather food, to bury their own dead, and perform other basic social rituals. Their behavior could be characterized by extreme suspiciousness and primitive forms of thought. Furthermore, Lifton argues that those from unscathed regions may not be willing to aid the survivors and share their horror. In light of these considerations, the prospects for the assured and disciplined recovery posited by Jones and others appear less certain.

Recovery from a nuclear attack depends heavily on the capability to rescue, feed, and care for the survivors and on the capability to provide repair parts and energy for capital reconstruction. Under certain strategic exchange scenarios described by the National Academy of Sciences, Soviet recovery efforts would be hampered severely by numerous obstacles. Massive urban areas could be too "hot"—too radioactive—to enter for several months. Depending upon the profile and scale of a US retaliatory strike, radiation sickness could be widespread, with 80 percent of the Soviet population, including the evacuees, having been exposed to at least 100 roentgens of radioactivity. In light of the coincidence of Soviet major food producing regions and its ICBM fields which would surely be targetted in a counterforce scenario, food would be in short supply. Half of the country's grazing livestock would be dead and, if the attack occurred during the growing season, 30 percent of

all crops would be destroyed. Attempts to distribute surviving foodstuffs from farms and emergency storage sites could be delayed for several months, and this estimate is probably optimistic since the Soviet Union's 28 ICBM installations are interspersed throughout the heart of the rail network (See Figure 2). The ozone layer might be so depleted that outdoor activity beyond 30 minutes in duration would be hazardous for several years.[59] As much as 80 percent of all medical personnel, supplies, and hospitals are likely to be destroyed. And, of course, a host of social and psychological problems would ensue. Additional problems would result from the low horsepower design and disrepair of Soviet heavy equipment[60] as well as the destruction of the chemical fertilizer industry, upon which an already woefully deficit Soviet agriculture is heavily dependent.

The most critical obstacle that would hamper Soviet efforts to achieve postwar recovery, however, relates to command and control (C^2). The pace and extent of recovery will depend heavily upon the ability of the national and regional political and party leaders to establish a concensus on national priorities, communicate their directives, and coordinate materiel supply and human effort. These recovery requisites, however, are likely to be affected adversely by the multinational nature of the Soviet society and the potential fragility of the various infrastructures of control. While many analysts have described (l) the polyglot composition of the Soviet Union; (2) the declining percentage of Great Russians and ethnic Slavs in the population relative to the rapidly increasing numbers of Moslems and Central Asians (who traditionally have resisted incorporation into the Russian empire); and (3) the ominous economic and political consequences of these developments for the Soviet policy,[61] relatively few have recognized the Soviet state as multinational when the discussion turns to the matter of strategic deterrence and the requisites of postattack recovery. Indeed this consideration is paramount in Soviet strategic calculations.[62] Recognizing the geographical coincidence of the majority of ICBM fields, key industrial installations and rail lines, and Great Russian population concentrations in a narrow Leningrad to Irkutsk crescent (See Figure 2), Gary Guertner of the US Army War College observed that even a limited American counterforce strike against the Soviet Union's missile and C^3 installations would affect most seriously the Great Russians[63] who



Sources: CIA, "USSR Summary Map;" DOD, Soviet Military Power, 1983.

Figure 2

would perish in numbers disproportionately higher than their rapidly declining percentage (52 percent) of the total population. Whether they would be able to maintain control of the vast governmental, Communist Party, educational, and military hierarchies is questionable. Nuclear war might well usher in the decline of the Soviet empire in light of the current American interest in retaliatory targeting of the Russian dominated infrastructures of political and ethnic control, communication, and transportation in various escalation scenarios.[64] Adam Ulam recognized this possibility (and implicitly explained the Soviet emphasis upon the protection of its leadership) even in the event of a "small" nuclear war when he asked:

> As to the possibility of a 'small' nuclear war, the USSR has to think in political terms: against a small nuclear power she would undoubtedly emerge victorious; but could a Communist regime survive such a war? What would be the consequences of even one nuclear missile falling on Moscow and destroying the top leadership of the Party and state?[65]

Even if one assumes that the Soviet infrastructure of political control remained intact in the aftermath of a nuclear strike, it would still have to confront the problem of economic recovery. In the previous section, the hypothesized 2- to 4-year economic recovery period was criticized as overly optimistic. Four years is hardly enough time for economic recovery assuming the large-scale physical destruction that many believe the United States could inflict upon the Soviet Union. Moreover, 2 to 4 years may be an eternity in the political dimension. During this period of incapacitation, could the Soviet leaders be confident that they could maintain the integrity of the Soviet Union? Is it likely that the Soviet-Moslem population might reaffirm religious and territorial ties to a Pan-Moslem movement? Would the nationalists in the Ukraine or the Baltic republics attempt to secede? And would the Russians have the wherewithal to prevent such centrifugal forces? Finally, would the East Europeans be inclined to maintain their political and economic ties to the Soviet Union? Assumptions and the role of uncertainty play heavily on the calculas of deterrence and one cannot be certain of the way leaders in the Kremlin arrive at their strategic estimates.

It is quite possible that, given the priority placed upon leadership survival in Soviet civil defense plans, the Russian leadership may

view its own survival as a sufficient objective in its own right. If, however, the Russian leaders entertain uncertainties such as those described above, and in my opinion they do, and if they view civil defense as having a limited mitigating effect upon the problems outlined above, nuclear war necessarily would be viewed as counterproductive to their most basic national interests: the survival and integrity of the Soviet state, its rapid reconstitution and continuation of superpower status.

SOVIET CIVIL DEFENSE: IN SEARCH OF A BOTTOM LINE

The essential debate surrounding the Soviet civil defense program is the extent to which Soviet plans and goals could be translated into damage-limiting benefits in an actual nuclear exchange with the United States. In brief, those who fear the Soviet civil defense capabilities point to the prestige of Soviet General A. Altunin who directs civil defense efforts and the continuing massive monies and attention his programs receive. They also argue that the myriad programs described in Soviet civil defense manuals are designed expressly to mitigate the very obstacles and war consequences identified by those who view said programs with skepticism. Furthermore, while acknowledging the unprecedented destruction that would attend a massive and spasmodic nuclear exchange between the superpowers, those who view Soviet civil defense as threatening contend that if escalation control is feasible, then defensive preparations, indeed, may serve the USSR well in a limited war scenario. Civil defense, though admittedly imperfect, takes on substantial weight when viewed as a component of a Soviet warfighting strategy that also emphasizes other damage-limiting expedients such as a first strike against US warmaking capabilities and active (e.g., air and antisatellite) defense against actual US retaliatory strikes. If not, why would the Soviet leaders continue to spend increasingly scarce defense rubles on a civil defense program they consider ineffective? Jones and others fear that the synergistic effects of these components might lead the Soviet Union under certain crisis scenarios to perceive an exploitable strategic advantage which, through miscalculation, could lead to a nuclear conflict of disasterous proportions. While few Americans can accommodate themselves to the plausibility of such grave calculations, the Soviet (and Russian before them)

history of invasions, revolution and civil war, purges, and suffering imposed by a harsh and unforgiving climate and land are cited by Richard Pipes to demonstrate that the memories and attitudes of the Soviet leaders have hardened them so that losses in the "low tens of millions" in a nuclear war might seem acceptable.[66]

Skeptics of the Soviet civil defense program make several counterarguments. Civil defense spending, they argue, continues due to a number of extraneous factors, such as bureaucratic inertia, legitimizing the continuation of the garrison state, Leninist ideological imperatives, and so forth.[67] Also, to the skeptics, either the devastation of limited war is so great as to render it indistinguishable from unlimited war or there is little chance that a limited war would remain limited.[68] Therefore, they liken Soviet (and US) civil defense efforts to the uneasy whistling of a frightened stroller in a cemetery at midnight. Surely, they argue, the normally cautious Soviet leaders recognize (1) the numerous, uncontrollable and uncertain nature of nuclear war, (2) the likelihood that the US deterrent will remain credible into the 1990's[69] and (3) that nuclear war between the superpowers will be an unprecedented disaster for each combatant—his civil defense preparations notwithstanding. They refute Pipes' contention, noting that the 10-20 million deaths suffered over a period of 5 years during World War II is hardly analogous to a self-initiated holocaust that results at a minimum in the same number of deaths and widespread economic destruction within a matter of hours or days.[70] Indeed, Soviet political and military leaders have consistently acknowledged the fact that the disruption, destruction and suffering of the Second World War would pale to insignificance against even a limited nuclear war.[71] And, finally, critics explain the asymmetry of war casualties by pointing out that the higher US estimates are predicted on a Soviet first strike designed to reduce the destructiveness of a US retaliatory strike.[72]

What can be concluded from the point-counterpoint discussions of civil defense and deterrence? It is evident that the Soviet civil defense programs are imperfect and are beset most certainly with herculean problems. However, such programs are firmly in place and would probably reduce the number of deaths and contribute to economic recovery in the aftermath of a strategic exchange with the United States. The exact contributions of Soviet civil defense to their warfighting and war-survival capabilities as well as their

perceptions of security are impossible to determine. The ambiguity of such speculation is illustrated in the "bottom line" of the CIA's 1978 study which, while stating that civil defense capabilities will not alter the Soviet leadership's evaluation of their efficacy, offers no insight into the actual level of those perceived capabilities. A conclusion of the CIA study was that:

> Present evidence does not suggest that in the foreseeable future there will be any significant change in the Soviet leaders' judgment that civil defense contributes to warfighting and war-survival capablities, nor that their uncertainties about its effectiveness would be lessened. Thus we have no reason to believe that the Soviet leaders' perception of the contribution of civil defense to their capabilities for strategic nuclear conflict will change significantly."

CIVIL DEFENSE PLANNING IN THE UNITED STATES

The Recent Initiatives. The increasing lethality of the Soviet nuclear threat, as well as asymmetries in the projected numbers of Soviet and American citizens that would survive a hypothetical major nuclear exchange in the mid-1980's, were major factors in the renewed emphasis upon civil defense in the United States.

This emphasis was made explicit in 1978 by the Carter Administration with the promulgation of Presidential Directive 41 (PD 41). Concerned that the absence of a credible civil defense program in the United States might destabilize deterrence if the Soviet leaders perceived nuclear war as less devastating to their own population and industry than to those of the United States, PD 41 committed the United States to a program of crisis relocation planning. The proponents of PD 41 argued that the planned ability to evacuate over 140 million Americans from more than 400 military and industrial high-risk areas would redress the asymmetry of superpower population vulnerability. Such an initiative would discourage the Soviet leaders from concluding that they enjoyed a decisive strategic advantage that could support attempts at coercion or greater risk-taking in a nuclear crisis. Moreover, it was argued that an increased civil defense capability would bolster the credibility of the US commitment to the nuclear defense of NATO. It should be pointed out that the renewed US interest in civil defense was not, simply, a knee-jerk reaction which concluded that such a US program was needed simply because the USSR had one.

In other words, there were and are other humanitarian, political and economic factors unrelated to deterrence that generated renewed interest in an American civil defense effort.

The Reagan Program. Early in 1982, President Reagan built upon President Carter's foundation with the signing of National Security Decision Directive Number 26 (NSDD 26). In this document, the President identified civil defense as "an essential ingredient of our nuclear forces." Noting that while the United States would continue to rely upon its strategic nuclear offensive forces (rather than civil defense) as the preponderant factor in maintaining deterrence, he observed that US civil defense efforts must contribute to "an improved basis for dealing with crises and carrying out eventual national recovery" in the event of the failure of deterrence. Specifically, he established the following goals for a revitalized civil defense program:

- Enhance deterrence and stability in conjunction with our strategic offensive and other strategic defensive forces. Civil defense, as an element of the strategic balance, should assist in maintaining perceptions that this balance is favorable to the US.
- Reduce the possibility that the US could be coerced in time of crisis.
- Provide for survival of a substantial portion of the US population in the event of nuclear attack preceded by strategic warning and for continuity of government, should deterrence and escalation control fail.
- Provide an improved ability to deal with natural disasters and other large-scale domestic emergencies."[4]

The Federal Emergency Management Agency (FEMA), which had replaced the Defense Civil Preparedness Agency, was given overall operational supervision of a program that was to include the following elements:

- *Population Protection.* By the end of 1989, the development of plans and deployment of supporting operational systems will be completed. Primary reliance will be placed upon relocating the population of US metropolitan and other potential high-risk areas to surrounding areas of lower risk during a period of international crisis, taking advantage of extensive US transportation resources.
- *Industrial Protection.* Analyses and preparation will be completed which will allow a funding decision to be made on a program to protect key defense and population relocation support industries.
- *Blast Sheltering* Analyses and preparation will be completed which will allow a funding decision on blast shelters for key industrial workers in defense and population relocation support industries."[5]

The most significant and immediate thrust of the President's civil defense program emphasizes population evacuation and protection. This emphasis distinguishes the population protection program (which requests $4.2 billion over a 7-year period)[76] from the Soviet program which assigns to population protection the lowest priority of importance after the protection of the leadership and industry.

An analysis of the recent and current spending allocations demonstrates the high priority assigned by the President's civil defense initiatives to the identification and restoration of existing civil defense facilities, public education, improvement in the warning and communication infrastructure, and the management and support of an evacuation program. Currently, relatively meager funds are allocated to industrial hardening and onsite protection of key workers pending the results of feasibility studies beginninig in FY 1983.[77]

The Administration has argued that the scope of its civil defense program is modest compared to that of the Soviet Union as well as to costly US offensive and defensive systems such as the MX, Trident and BMD. The scope, as Assistant Secretary of Defense Richard Perle noted in his March 1983 statement to the Senate Foreign Relations Committee, is consistent with the US view that modest civil defense expenditures "represent little more than insurance—insurance that in circumstances short of a central strategic exchange—some lives might be saved that would otherwise be lost."[78] Mr. Perle observed in his testimony that such a program would not lead the Administration to a false sense of security inasmuch as:

> We do not seek, nor do we believe that it is possible to obtain, levels of protection from the effects of all out nuclear war that would reduce significantly the unspeakable horror of such an event.[79]

He went on to argue that the horror which would surely attend any nuclear exchange would not absolve any political administration from its responsibility to strive for the protection of the populace, however problematic such plans might appear;

> But neither do we believe that we can, in good conscience, make a deliberate decision to refrain from even those minimal plans for expedient measures that might diminish the loss of life that a nuclear war would entail.[80]

CIVIL DEFENSE AND CRISIS STABILITY

Two principal goals for civil defense planning by NSDD-26 were established: (1) to contribute together with strategic nuclear offensive forces to the deterrence of nuclear war between the superpowers and (2) to limit the number of casualties and amount of destruction should deterrence fail. While listed as separate objectives in NSDD-26, the contributions of civil defense to deterrence and to mitigating the effects of nuclear war cannot, in fact, be separated. Obviously, the effectiveness of civil defense plans and consequences as well as the credibility of the adversary's deterrent are important variables in the cost/benefit strategic calculus that leaders will assess in a crisis as they ponder the initiation of nuclear war.

In the absence of precise and unambiguous determinations of the damage-limiting effectiveness of civil defense plans or a clear understanding of an adversary's intent if civil defense plans are implemented during a crisis, it is impossible to ascertain the ultimate impact of these plans on the minds of Soviet and American strategic planners as they perceived their respective capabilities. Therefore, much debate has surrounded the issue of whether civil defense planning and the implementation of such plans would stabilize or destabilize superpower deterrence. To American proponents of civil defense who seek to redress the asymmetries of Soviet-American programs, the Soviet Union's unique possession of a defensive capability—assessed by its American evaluators as effective—destabilizes deterrence because it suggests to the Soviet leadership that nuclear war will be less destructive to the USSR than it will be to the United States. Such an assessment might make the Soviet leaders more, rather than less, inclined to institute a preemptive strike during a severe crisis in an attempt to limit further potential damage to the Soviet Union. Likewise, if the United States lacks an effective evacuation program and its leaders observe the initiation of a massive Soviet evacuation during a crisis (real or perceived by Soviet leaders but consistent with US interpretations of Soviet warfighting doctrine and capabilities), pressure might motivate an early, damage-limiting American strike. In either case, civil defense might be viewed as destabilizing.

Civil defense planning and implementation, however, during crises must not be viewed in a vacuum. Under almost any

conceivable scenario the implementation of civil defense plans would take place in conjunction with a wide variety of other events, many of which would be observed by Soviet leaders and some of which would be specifically communicated to them in Moscow. For example, if the United States implemented its civil defense plans while simultaneously placing its forces on full alert and communicating to Moscow a desire to defuse the crisis along with a warning that any premature strike would fall on vacant US silos and vacated runways, would the Soviet leadership be inclined to execute a preemptive first strike for fear of a simultaneous US strike? Or, would Moscow believe any preemption now might more clearly result in risks which outweigh benefits? If such American events took place during an ongoing conflict in Europe, would the Soviet leaders believe that strategic nuclear war was inevitable and be inclined to preempt? Or, might they believe that further risks associated with war in Europe were not warranted and, thus, seek to de-escalate the conflict in Europe? Likewise, if the Soviet Union implemented its civil defense plans and commenced an evacuation, would the United States be inclined toward a preemptive nuclear strike? In short, much would depend upon who evacuated first, upon the relative abilities of each side to evacuate, and a number of complex and uncertain calculations made by US and Soviet decisionmakers relative to their independent perceptions of the intent of the other.

It would appear that civil defense plans and implementation during a crisis are likely to have less of an effect on the question of crises stability than a host of other factors and signals during a crisis. Furthermore, there is reason to believe that their impact is not inalterably and unambiguously in the direction of instability.

CIVIL DEFENSE PLANNING IN AN UNCERTAIN ENVIRONMENT

The expression by Mr. Perle that civil defense "might diminish" the loss of life in the place of a more definitive prognostication illustrates the uncertainties that must attend all models, scenarios and plans for nuclear war contingencies. Whether, as examined above, civil defense planning is a benign instrument of strategic policy or a provocative and destabilizing gesture which might result in the very war it seeks to avoid is, at present, an unanswerable

question that has generated much debate.[81] Furthermore, whether, and the extent to which, one can draw lessons from the strategic bombing survey of World War II or the 1979 evacuation of Three Mile Island which underlie certain assumptions about the effects of nuclear war and the consequences of relocation are questions similarly shrouded in uncertainty.[82]

Nevertheless, even the casual observer of the nuclear war/civil defense issue can be fairly certain in at least one speculation: that in the event of a severe crisis between the United States and the Soviet Union, millions of Americans who perceive themselves to be in high-risk areas will evacuate to areas they believe to be safer.[83] Moreover, in such a situation, one can expect them to look to their government for assistance. To the extent that such anticipations are valid, and short of an ability to guarantee the nonoccurrence of such crises, it becomes incumbent upon the government to identify safe host areas, designate appropriate travel routes, provide for the support of the evacuees, and plan for the aftermath of the crisis.

This is the essential thrust of the current civil defense program being directed by FEMA. Indeed, the ACDA has concluded that the United States is in a much superior position relative to the Soviet Union to mount such an ambitious and difficult program and at far less cost. This optimism is due to the following factors that favor the United States: (1) the US population is more dispersed than that of the USSR; (2) the United States has developed a superior rural infrastructure, an extensive highway system, plentiful food reserves, efficient distribution system, and a high degree of industrial redundance; and (3) the uniform belief of all Americans that the political integrity of the United States as currently constituted should continue to exist in the aftermath of a nuclear war.[84]

It is imperative to note, however, that the importance and desirability of such planning and even the advantages the United States may enjoy in its pursuit reduce neither the uncertainties that attend such planning nor the obstacles that would impede the effective execution of civil defense plans in time of crisis or war. Certainly, many of the difficulties that bedevil the Soviet programs are also applicable to the United States. Let us consider some of the uncertainties and economic, social and political obstacles that might occur in a crisis scenario where the United States implemented the evacuation of its population from the more than

400 high-risk areas identified by FEMA. While such estimations are inherently open to conjecture, they illustrate the complexity of the task facing FEMA planners.

Evacuation/No War. Laurino, Trinkl, Miller, and Harker, authors of several computer simulations of the effects of crisis relocation (CR), have estimated that in a crisis, 13-26 million Americans would evacuate before any directions to do so were issued.[85] As a result of these evacuations, there would be a doubling of unemployment, and absenteeism would reduce industrial productivity by about 10 percent.[86] Furthermore, individuals with reduced incomes and access to savings would engage in savings withdrawals, hoarding and panic buying. These effects on individuals in the pre-CR phase would ripple through the economy, greatly affecting businesses and banks and other financial institutions.

Upon the initation of a preplanned CR, many of the problems noted above would be amplified and new ones would develop. For many individuals, income would cease, their checks and credit cards would be less acceptable in host areas and cash shortages would be experienced, all at a time when emergency costs would soar. Businesses would be confronted by general shutdowns (resulting in the unemployment of 60-70 percent of all nongovernment workers),[87] freezes on assets and payment, unprecedented security problems, and distribution stoppages resulting in the need to find alternate supplies. This latter need would be difficult to satisfy due to the evacuation of central management and corporation headquarters,[88] as well as to problems associated with rerouting goods in transit. Banks in high-risk areas, already forced to balance large withdrawals from domestic and foreign accounts with greatly reduced and delayed accounts receivable, deposits and interbank loans, would shut down and would face increased security problems. Meanwhile, banks in host areas would undergo extraordinarily high service demands, all at a time of reduced interbank transfers and the closing of financial exchanges.

As the CR's duration increased, the evacuees in the host areas would find it increasingly difficult to pay for services. Businesses in risk areas would remain shut down and would experience reduced accounts receivable, and businesses in host areas would face

distribution problems and low support from essential industries. Banks would (1) receive reduced debt payments from individuals, businesses, and governments in high-risk areas and (2) be confronted by continued withdrawals, resulting in lower profitability and increases in their net borrowers' reserves. Local and state governments would continue to face greatly increased emergency costs; although restricted access to liquid credits, reduced revenue from intergovernment transfers, and reduced tax revenues would impede the discharge of their financial obligations.

Economic problems would not disappear with the end of the CR and the return of the evacuees to the high risk areas.[89] Citizens and businesses, with greatly reduced assets, would likely face overdue financial obligations. Businesses would need time to sort out their debts and financial situations (inadequate working credit, loss of asset values, and reduced access to credit) and reconcile their depleted inventories and resource imbalances with their production obligations. Hence, the buildup of production would be slow, and unemployment would be prolonged. The collapse of businesses which were marginal before the CR would aggravate an already bad situation. Banks would be required to undertake massive records updating and the clearing of backlogged checks. The maintenance of bank liquidity would be endangered by recent outflows, delayed revenues, a lowered savings rate and excessive credit demands. The developments might reduce further the prospects of numerous marginal economic concerns with effects that would ripple through the economy for some time.[90]

Many of the economic consequences of an evacuation can be expressed in quantitative terms and, as such, are calculable. The social and political effects of an evacuation are more speculative. Nevertheless, the maintenance of social and political concerns is equally critical to the country's well-being.

> Without the political and social consensus that binds disparate groups into a nation, the organization necessary to guide and focus recovery effort, and the individual's ability to confront and overcome disruptive personal emotional demands, all the surviving economic and military capability will be of little concern.[91]

Particularly serious social problems would arise from a temporary or permanent evacuation as a result of the differences between urban and rural racial compositions[92] and lifestyles. It may

be optimistic to expect that in a moment of peril and uncertainty, host area residents will welcome a massive influx of these urban individuals. In addition, latent racial, cultural and religious prejudices may mitigate against the effective relocation of the evacuees in the host areas, especially if the evacuees are viewed by their hosts as interlopers, burdens and competitors for scarce provisions. Moreover, the tremendous overcrowding in many of the Eastern states[93] would further intensify these hostilities and prejudices.

Ironically, even a decision *not* to evacuate the largest, high-risk metropolitan areas would be socially disruptive and politically dangerous since the urban poor and minorities would surmise that, at best, they were not welcome by their rural compatriots and, at worst, they were expendable. The social and political consequences of these perceptions would undermine the country's social cohesion and erode the legitimacy and support for future initiatives of the political leadership.

The sick, the very young and the very old—those groups requiring the most attention and care in society—would also suffer severely in the evacuation. These individuals would face numerous physical rigors in an evacuation, reduced attention and support services in the relocation centers and, possibly, death in many circumstances.[94] Given all this suffering, the anger, remorse and recriminations among the host area individuals and the evacuees would be heightened at the end of a crisis in which a war did not occur

Essential workers assigned to remain at their posts, yet who desire not to be separated from their families in time of crisis, will face incredible psychological strains. Since "the powerful need to remain with community and family was . . . the reality that undermined the British evacuation plans,"[95] one may expect that many essential workers will evacuate the risk areas with their families, irrespective of official procedures and pleas. It is uncertain that those who design CR plans can calculate accurately the effects of these pulls both into and away from the high-risk areas.

Hence, a CR could have numerous and severe social effects upon the young and the old, the sick, the poor, and the minority individual. Many of these effects could be translated into unprecedented political developments. Even if war did not occur,

the government's assertion that it was the evacuation that helped to avoid Armageddon would be difficult to prove. While the nonoccurrence of war would be attributed by some as testimony to the government's efficient CR planning, others might view a return to the risk areas as an admission of error in the government's estimation of the crisis' seriousness and its ability to plan adequately for the welfare of the citizenry. The government's assertions to the contrary would probably be belied by internal allegations and recriminations of faulty analysis.

> The experience of evacuation and its anxiety-producing sense of vulnerability may traumatize the evacuees into losing faith in the government in power. Implicity, this may be translated into a sense that stability and continuity has been lost; that the government has failed in its most basic function, which is to act as a protector, a surrogate parent, in providing security. A loss of this implicit trust cannot help but injure the government's prestige, and thus, its ability to lead."[96]

NUCLEAR WAR AND POSTATTACK RECOVERY.

This analysis suggests that even a logistically "successful" evacuation would have numerous and long-lasting deleterious economic, social, and political ramifications. Hence, the cumulative effects of the evacuation experience might well mitigate against *future* successful evacuations, irrespective of the prior evacuation's logistical success.

These effects of CR, however, would pale to insignificance if a nuclear exchange actually did ensue between the United States and the Soviet Union. Mr. Perle underscored the Administration's position when he noted that while the magnitude of death, physical destruction, social disruption, and psychological distress would vary with the size, timing and target selection of the attack, one should not believe that some proper mix of strategic retaliation against the Soviet Union and US civil defense preparation would make nuclear war anything less than a nightmare surpassing all comprehension.[97] When one considers (l) the existence of scores of industrial and military targets in the United States;[98] (2) the Soviet denigration of limited warfighting scenarios;[99] (3) the easterly direction of the prevailing winds across the United States which will carry radioactive fallout to major population centers;[100] (4) the location of many strategic targets in the country's breadbasket[101]

Many of the problems for economic recovery that would confront the Soviet Union also would apply for the United States. According to the Stanford Research Institute's (SRI) input-output study of the United States, economic recovery from even a less than all-out nuclear attack would be most problematic, especially if the Soviet Union complemented its counterforce strikes with an economic "bottlenecking" target strategy.[103] For instance, a Soviet attack of 750 warheads against the 15 major sectors of the US economy would require more than 9 years to engage fully the amount of initially surviving industrial capacity (67 percent). In other words, a substantial part of the surviving industrial capacity would not be used in the early years following an attack due, in part, to the loss of producers and consumers as well as capital investment and supporting infrastructures. Moreover, reflecting the sensitivity of econometric models to their assumed parameters and the difficulties involved in predicting far into the future, the SRI estimates depict nothing of how much time would be required to return to preattack GNP levels. SRI estimated that the GNP would remain only two-thirds to three-fourths of the preattack levels 9 years after Soviet attacks using 750-1250 warheads against US economic targets. During these years, one would expect that the experiences of infrastructural reconstitution would override investments in consumer goods. The result would be slow recovery of the quality of life at a time when the war's survivors would require much support and be least able and willing to make sacrifices.

One must bring caution to the interpretation of these figures since their aggregate nature may obscure the actual vulnerability of key industries. In *Economic and Social Consequences of Nuclear Attack on the United States,* Arthur Katz examines the percent of surviving industrial capacity that would remain if the Soviet Union attacked critical industrial targets in the 71 largest standard metropolitan areas (SMSA).[104] He then computes the additional numbers of weapons that would be required to reduce the remaining capacity to 10 percent and then to 2-3 percent. According to Katz's calculations, only 481 additional warheads (beyond those used to attack the 71 SMSA) would be required to reduce these eight critical industries to 2-3 percent of their prewar levels. In light of the interdependent nature of the input-output US economy, these few warheads, which constitute far less than 10

percent of the Soviet Union's strategic arsenal, would be quite well invested from the Soviet Union's perspective.

Political and Social Problems. Many of the economic, political and social problems associated with a CR are germane to postattack scenarios because for many, a CR becomes permanent after a nuclear exchange. Those local, state and federal officials who survived would face a host of difficult problems. They would have to begin economic reconstruction without a once mighty industrial/financial infrastructure and thousands of skilled workers and consumers, along with massive regional imbalances, few prospects of international trade or aid and the threat of continued occasional nuclear attacks. Competing with economic reconstruction for scarce government resources would be incredible demands for social services and government intervention required by the millions of dead and injured. Certainly, the destruction of many hospitals, medical supplies, and trained personnel, along with the psychological trauma and numbing induced by the shock of war, would mitigate against the provision of orderly, rapid, and effective aid to the survivors. Whether the government chooses to emphasize the country's economic or social needs, it can expect significant opposition. When one considers that this decision would be made within the context of (1) the disruption of social, especally racial, stability due to the forced interaction of the country's rural and urban residents, (2) the government's allocation of the greatest recovery resources to some areas ahead of others; (3) confusion about jurisdictional authority among local, state and federal governments; and (4) the possibility that the government may be obligated to wage protracted war, thereby postponing any kind of reconstruction although not obviating the possibility of future destruction, it is quite possible the authority of past leaders would not be acknowledged and that the country's federal structure would disappear, being replaced by a confederated patchwork of quasi-feudal areas of association.

CONCLUSIONS

The relationship between Soviet offensive and defensive capabilities and the intentions of the Soviet Communist regime is speculative at best. In fact, the extent of Soviet civil defense effectiveness is a matter still debated with vigor by strategic

analysts. The entire issue of civil defense and deterrence is arcane and necessarily dependent upon various assumptions, uncertainties and scenarios. Hence, it is unlikely that facile solutions or an unshakeable consensus will attend efforts to develop a civil defense policy that is militarily prudent and feasible politically as well as economically.

In this paper, I have examined the arguments of those who fear and those who dismiss as ineffective the efforts of Soviet civil defense planners. The actual effectiveness of their programs probably lies somewhere in between. Those who criticize the Soviet program are likely correct in noting that such initiatives would not spare the Soviet Union from massive and unprecedented destruction. Their conclusion that these efforts would not contribute much to making nuclear war a more feasible policy option to the Soviet leadership is persuasive to this author. However, it is also probable that these, albeit imperfect, programs would reduce significantly the number of casualties in a nuclear war with the United States and contribute to postwar recovery. Hence, former Secretary of Defense Donald H. Rumsfeld was correct in his observation that:

> . . . while the Soviets may not preserve or succeed in this admittedly complex and difficult task, their growing capabilities must play a major role in U.S. force planning.[105]

The attention directed to civil defense by the Carter and Reagan Administrations has been consistent and justified in light of even the limited capabilities ascribed to civil defense. Since one can only speculate about the extent to which Soviet civil defense capabilities destabilize deterrence, the contributions of an American program of population evacuation as initiated in PD-41 and expanded upon in NSDD-26 must also remain within the realm of conjecture.

Current US initiatives in civil defense planning are most accurately viewed as humanitarian and contributing little to a warfighting capability. In the first place, as is also the case with the Soviet Union, industry cannot be moved quickly or easily and, therefore, remains vulnerable to the increasingly accurate and destructive warheads found in the strategic arsenals of both superpowers. Moreover, it is not a particularly difficult objective for one superpower to destroy its adversary's industrial

infrastructure, its civil defense efforts notwithstanding. Each superpower recognizes that the destruction of its adversary's population as an end in itself is neither desirable nor necessary to guarantee deterrence. Second, as John Troxall observed in his assessment of the US civil defense program:

> . . . there is no claim being made concerning the efficacy of such a program that would cause any leader to disregard the disasterous consequences of a nuclear exchange and thus lead to a greater willingness to initiate such an exchange.[106]

Nevertheless, it remains an obligation of any government responsible to its citizens to plan for the preservation of life in the event of a nuclear war. The horror that would attend a strategic exchange and the imperfections of the civil defense plans do not relieve the government of this responsibility. Furthermore, if we assume that people will evacuate what they perceive as high-risk areas in a nuclear crisis, well coordinated plans identifying safe areas and assisting the populace in their efforts to relocate are prudent and necessary. While no amount of planning can ever mitigate the tragedy of nuclear war, there is no reason why efforts directed at reducing some of the economic and social dislocations described above should not be made.

As to the question of how much civil defense is enough, it appears to this author that the $4.2 billion which would be allocated over 7 years would be money well spent if, as argued, it is not inherently destabilizing and is able to increase to even a modest degree the percentage of Americans who would survive a medium to heavy Soviet strike. Relative to other high cost research, development and acquisition programs such as the MX-ICBM and Trident submarine,[107] the costs of an American crisis relocation capability are rather modest.

However, it may be a mistake for future US administrations to pursue a major blast-shelter program for essential industrial workers for several reasons. First, the proliferation of highly accurate warheads in the Soviet strategic aresenal makes it likely that the Soviet Union could target these installations more rapidly and at a lower relative cost than the United States could build them. In fact, the initiation of an American shelter program might provide the incentive for the Soviet Union to expand its already

massive arsenal, further thwarting efforts to slow down the arms race. Second, the cost of such a program would be quite high and could place major strains upon the US economy.[108] Related to this question of economic feasibility is the impact upon the development and acquisition of other weapons systems and defense initiatives which are crucial to the maintenance of stable deterrence. At a time when defense spending is coming under increasing public criticism and heightened congressional scrutiny and control, it is quite possible that efforts to secure billions for a shelter program of questionable effectiveness will jeopardize funding for more necessary and urgent defense priorities identified by the Reagan Administration—such as increasing the survivability of the country's command, control, communications and intelligence (C^3) facilities; deploying a new manned bomber fleet, cruise missiles, and the Trident D-5 SLBM; and strengthening America's conventional forces and improving their mobility. Finally, the development of a shelter program may generate various cultural, political and social issues that would be a consequence of and problematic for this country's democratic institutions.[109]

ENDNOTES

1. Caspar Weinberger, *Soviet Military Power*, Washington: US Government Printing Office, 1981, p. 54.

2. *Ibid.*

3. International Institute of Strategic Studies (IISS), *Military Balance, 1982-83*, London, 1982, p. 140.

4. *Ibid.*

5. Weinberger, p. 54.

6. For studies citing the effectiveness of Soviet civil defense programs, see Leon Goure, "Another Interpretation," *Bulletin of the Atomic Scientists*, Vol. 34, April 1978, pp. 48-51; *Shelter and Soviet War Survival Strategy*, Coral Gables, Florida: University of Miami, 1978, and numerous other studies cited herein. See also T. K. Jones, *Effect of Evacuation and Sheltering on Potential Fatalities from a Nuclear Exchange*, Seattle: The Boeing Aerospace Co., 1977; and *Defense Industrial Base: Industrial Preparedness and Nuclear War Survival*, testimony before Joint Committee on Defense Production, Part 1, November 17, 1976; and John Troxall, "Soviet Civil Defense and the American Response," *Military Review*, January 1983, pp. 36-46. Studies and essays that are skeptical of the effectiveness of the Soviet civil defense program include US Arms Control and Disarmament Agency, *An Analysis of Civil Defense in Nuclear War*, Washington: ACDA, December 1978, (hereinafter referred to as ACDA study); Central Intelligence Agency, *Soviet Civil Defense*, NI-78-1000 3, July 1978 (hereinafter referred to as CIA study); Oak Ridge National Laboratory, trans. *Grazhdanskaya Oborona*, Civil Defense, 1974; Fred Kaplan, "The Soviet Civil Defense Myth," (in two parts), *Bulletin of the Atomic Scientists*, Vol. 34, March 1978, pp. 14-20 and April 1978, pp. 41-48; Robert Kennedy, "The Strategic Balance in Transition," in *Soviet Armed Forces Review Annual*, ed. David Jones, Gulf Breeze, Florida: Academic International Press, 1980: Ed Zuckerman, "Hiding from the Bomb Again," *Harper's*, Vol. 259, August 1979, pp. 33-40, 90; William Kincade, "Repeating History: The Civil Defense Debate Renewed," *International Security*, Winter 1978, pp. 99-120; and National Academy of Sciences, *Long Term Worldwide Effects of Multiple Nuclear Weapons Detonation*, Washington: 1975; Arthur M. Katz, *Life After Nuclear War: The Economic and Social Impacts of Nuclear Attacks on the United States*, Cambridge, Massachusetts: Ballinger Publishing Company, 1982; and John Weinstein, "Soviet Civil Defense and the US Deterrent," *Parameters*, March 1982, pp. 70-83.

7. See Richard Pipes, "The Soviet Strategy for Nuclear Victory," *Commentary*, Vol. 64, July 1977, pp. 21-34; Leon Goure, *War Survival in Soviet Strategy*, Coral Gables: Center for Advanced International Studies, University of Miami, 1976; T. K. Jones, *Industrial Survival and Recovery After a Nuclear Attack: A Report to the Joint Committee on Defense Production, US Congress*, Seattle: The Boeing Aerospace Co., November 1976, p. 84; Leon Goure, F. D. Kohler, and M. L. Harvey, eds., *The Role of Nuclear Forces in Current Soviet Strategy*, Coral Gables: University of Miami, 1974, p. 60.

8. CIA study, p. 4.

9. See US Congress, Office of Technology Assessment, (OTA), *The Effects of Nuclear War*, 1979, p. 140 (hereinafter referred to as OTA). Also see *Military Posture and H.R. 3519. DOD Authorization for Appropriations for FY 1982*, Hearings, House Committee on Armed Services, 97th Cong., 1st Sess., February 26-27, 1981, p. 862.

10. OTA, p. 140.

11. John Collins, *US-Soviet Military Balance,* New York: McGraw-Hill, 1980, pp. 174-175.

12. America's commitment to risk annihilation in the defense of Europe has long been a matter of concern and debate. DeGaulle questioned it two decades ago. More recently, former Secretary of State Kissinger's acknowledgment of certain scenario-dependent divergencies between European and American security interests ("The Future of NATO," *The Washington Quarterly,* Vol. 2, Autumn 1979, pp. 6-7) shocked NATO members.

> It is absurd to base the strategy of the West on the credibility of the threat of mutual suicide. [NATO should not rely too strongly on] strategic assurances that [America] cannot possibly mean, or if we do mean, we shouldn't want to execute, because if we do execute them we risk the destruction of our civlization.

13. *Ibid.*, Collins, p. 175.

14. House Record 3519, p. 862; Troxall, pp. 45-46. Also, see United States, *Military Posture for FY 1983,* prepared by the Organization of the Joint Chiefs of Staff, pp. 25, 77-78. For a complete statement of the Administration's civil defense plans and objectives, see "Civil Defense Program Overview," March 12, 1982, distributed by the Federal Emergency Management Agency.

15. PD-41, issued on September 29, 1978, seeks to improve deterrence by increasing the number of Americans who would survive a nuclear attack (through crisis relocation planning from more than 400 high-risk areas) and insuring greater continuity of government.

16. "US Official Supports Civil Defense Proposal," *The New York Times,* April 1, 1982, p. 17.

17. CIA study, pp. 1-3.

18. *Ibid.*, p. 9.

19. *Military Balance 1982-1983,* p. 140.

20. Weinberger, *Soviet Military Power,* p. 56. Also, see T. Powers, "Choosing a Strategy for World War III," *The Atlantic Monthly,* November 1982, pp. 82-110 (esp. p. 103-107).

21. Kennedy, pp. 366-367.

22. *Ibid.*, and ACDA study, Kaplan, and Oak Ridge.

23. Oak Ridge Laboratory, p. vii.

24. Jones, 1976, pp. 7, 10.

25. Goure, 1976, pp. 3, 125, 177.

26. *Ibid.*, pp. 3, 11, 77-119.

27. Kaplan, Goure, 1976, pp. 114, 118.

28. Keith A. Dunn, *Soviet Military Weaknesses and Vulnerabilities: A Critique of the Short War Advocates,* Strategic Issues Research Memorandum, Strategic Studies Institute, July 31, 1978, p. 12.

29. In 1977, there was only one automobile for every 52 citizens. See M. Elizabeth Denton, "Soviet Consumer Policy: Trends and Prospects" in M. Bornstein, ed. *The Soviet Economy: Continuity and Change,* Boulder, Colorado: Westview Press, 1981, pp. 172, 180. There were 109 million automobiles in use in 1976 in the United States, almost one for every two citizens. *The World Almanac and Fact Book, 1982,* New York: Newspaper Enterprises Assoc.

30. Jones, 1976. T. K. Jones is currently Deputy Under Secretary of Defense for Strategic and Theater Nuclear Weapons.

31. ACDA study, p. 3. Approximately 49 percent of the Soviet urban population is located within less than 5000 nautical square miles. Sixty-one percent of the US urban populace lives within a 13,000 nmi^2 area.

32. Powers, pp. 90-91, 104-110. In National Security Decision Memorandum, No. 242, developed by Secretary of Defense James Schlesinger and signed by President Nixon in January 1974, the United States adopted a nuclear policy characterized by a) counterforce targetting, b) escalation control, and c) the specification of "nontargets" and "withholds." Among the counterforce targets was the Soviet economic infrastructure, 70 percent of which was to be destroyed according to US plans (Policy Guidance for the Employment of Nuclear Weapons). See Desmond Ball, "Counterforce Targetting: How New? How Viable?," *Arms Control Today,* Vol. II, No. 2, February 1981.

33. *Ibid.*

34. Moreover, if war occurred and a US retaliatory strike arrived before the Soviet evacuation could be completed, the number of civilian casualties could be very high indeed.

35. Weinberger, p. 69; Troxall, p. 43.

36. CIA study, p. 10.

37. Oak Ridge, pp. 50-54.

38. Troxall, p. 43.

39. CIA study, p. 10.

40. T. K. Jones and W. Scott Thompson, "Central War and Civil Defense," *Orbis,* Fall 1978, p. 699.

41. Troxall, pp. 37-38.

42. Kennedy, pp. 366-367. More recently, the President's Commission on Strategic Forces reversed what had become conventional wisdom in their affirmation that the vulnerability of the United States' ICBM force will remain within tolerable limits until the 1990's. Also, see Benjamin Lambeth's "Uncertainties for the Soviet War Planner," *International Security,* Winter 1982/1983, pp. 139-166.

43. US Joint Committee on Defense Production, *Civil Preparedness Review, Part II: Industrial Defense and Nuclear Attack,* April 1977, pp. 20, 68.

44. ACDA study, p. II.

45. OTA, p. 18 (A 1 megaton airburst at 8000 feet produces a 10 psi. radius of 4.8 km and a wind velocity of 290 mph.

46. ACDA study, p. II.

47. Jones, 1976, p. 7.

48. ACDA study, p. 5. In the Soviet Union, there are only 15 integrated iron and steel mills; 34 sizeable petroleum reserves; 8 copper refineries; 6 lead-zinc refineries; 17 meat-packing plants; 8 major shipbuilding works; 5 factories processing 65 percent of the USSR's aluminum, and so forth.

49. Kincade and Kaplan. See Gary Guertner, "Strategic Vulnerabilities of a Multinational State: Deterring the Soviet Union," *Political Science Quarterly,* Vol. 96, Summer 1981, pp. 209-223. Also, see Powers, p. 109, who also discusses the high level of concentration of Soviet military targets:

> The Soviets have 1,398 missiles in twenty-eight missile fields (including the test centers at Tyura Tam and Pletetsk with 300 command-and-control

centers, 500 airfields with runways longer than 4,000 feet (suitable for intercontinental bombers), three submarine bases (Murmansk, Petropavlosk, Vladivostok), 167 infantry and armored divisions, sixteen headquarters of PVO Strany (the Soviet air-defense command), and five naval fleet headquarters. Fifty percent of key Soviet industry is contained in 200 complexes. Only six Soviet rail transshipment yards load 80 percent of all empty railcars. There are twenty-six low-frequency radio transmitting stations that broadcast military traffic, and thirty-six stations of one type or another that handle communications with satellites. This comes to a total of 3,543 'targets.'

50. See Geoffrey Kemp, *Nuclear Forces for Medium Powers,* Part II, Adelphi Paper No. 107, International Institute for Strategic Studies, 1974, pp. 5,9.

51. Richard Garwin, Testimony Before Joint Committee on Defense Production, *Civil Preparedness and Limited Nuclear War,* April 28, 1976, p. 55.

52. ACDA study, p. 5.

53. Powers, p. 109.

54. Jones, 1976, p. 84.

55. Robert J. Lifton and Kai Erikson, "Nuclear War's Effect on the Mind," *The New York Times,* March 15, 1982, p. A17. Dr. Lifton's other publications which examine the psychiatric effects of nuclear war include *Death in Life: Survivors of Hiroshima* and a coedited volume, *Last Aid: The Medical Dimensions of Nuclear War,* Freeman: San Francisco, 1982.

56. Lifton and Erikson, p. 17.

57. *Ibid.*

58. *Ibid.*

59. E. J. Sternglass and W. T. Land, Letter to the Editor, *The New York Times,* May 28, 1982, p. A26. The authors, professors of radiological physics and geology, respectively, note:

> . . . the real amount of sunlight-reflecting stratospheric particles would be 20 to 40 times greater per megaton detonated than estimated earlier, so that a 10,000 megaton nuclear war would produce a cooling effect . . . equivalent to some 10,000 Mt. St. Helen eruptions.
>
> Since a 10-degree reduction in the average temperature of the earth would be able to trigger another ice age, even a limited nuclear [war], using some 2,000 to 3,000 megatons for an attack on purely military targets is likely to result in an irreversible lowering of the earth's climate, accompanied by a reduction in rainfall in the mid-latitudes.
>
> That would destroy the wheat-producing areas of North and South America, Europe, Russia and China, areas on which the world's population depends for survival. And what followed would be another advance of the polar ice sheets . . . .

60. Earl Rubenking, "The Soviet Tractor Industry: Progress and Problems," *Soviet Economy in a New Perspective, US Congress Joint Economic Committee,* October 14, 1976, p. 55.

61. Murray Feshbach, "Population and Manpower Trends in the USSR," *The USSR and the Sources of Soviet Policy,* Washington: The Council on Foreign Relations and the Kennan Institute, 1978; and Hugh Seton-Watson, "The Last of the Empires," *The Washington Quarterly,* Vol. 3, No. 2, Spring, 1980, pp. 41-46.

62. See Guertner, 1981, and Desmond Ball, "Soviet ICBM Deployment," *Survival,* Vol. 22, July-August 1980, pp. 167-170. The Great Russian percentage of the Soviet population will drop below 50 percent by the year 2000. See Murray Feshbach, "Between the Lines of the 1979 Census," *Problems of Communism,* January-February 1982, pp. 27-37.

63. Guertner.

64. Helene Carrere d'Encausse, *Decline of an Empire,* New York: Newsweek Books,1979, Chapter IV.

65. Adam Ulam, *Expansion and Coexistence: Soviet Foreign Policy 1917-1973,*(2d ed.), New York: Praeger, 1974, pp. 663-664. Also, see Colin Gray "Targeting Problems for Central War," *Naval War College Review,* January-February, 1980, pp 3-21, for a persuasive discussion of the deterrent value of prospects of the demise of the Soviet state.

66. Pipes, pp. 21-34.

67. Weinstein, pp. 77-79.

68. Louis R. Beres, *Myths and Realities: US Nuclear Strategy,* Occasional Paper 32 of the Stanley Foundation, Muscatine, Iowa, 1982, pp. 6-7. Also, see Collins, p. 118; Pipes, p. 30, and S. Drell and F. von Hippel, "Limited Nuclear War," *Scientific American,* November 1976, pp.27-37. In his confirmation hearings for the Directorship of the ACDA, Kenneth L. Adelman noted: "If nuclear weapons are ever used, there can be no guarantee that their use would remain limited. In fact, I believe the chances of escalation would be dangerously high." See "US Arms-Control Nominee Asserts He Backs Reductions," *The New York Times,* February 4, 1983, p. 8.

69. Congressional Budget Office, *Retaliatory Issues for the US Strategic Nuclear Forces,* Congress of the United States, June 1978. Also, see Arthur M. Katz, *Life After Nuclear War,* Chapter 10, 1982.

A Carnegie Endowment Panel of high ranking defense experts also has maintained that the credibility of the US deterrent would remain secure in the 1990's. See *Challenges for U.S. National Security: Defense Spending and the Economy/The Strategic Balance and Strategic Arms Limitation.* The Carnegie Panel on US Security and the Future of Arms Control, Washington: The Carnegie Endowment for International Peace, 1981, see pp. 7-10 and Chapter 1; another report by the same panel entitled *Nuclear Strategy Issues of the 1980's,* 1982, supports this view, see pp. 3-13 and Chapter 1.

70. Kennedy, pp. 367-368.

71. See Kennedy, pp. 356-357. Also, see Fritz Ermarth, "Contrasts in American and Soviet Strategic Thought," *International Security,* Fall, 1978; Robert Legvold, "Strategic 'Doctrine' and SALT: Soviet and American Views," *Survival,* January-February 1979, pp. 8-13; and Raymond Garthoff, "Mutual Deterrence and Strategic Arms Limitations in Soviet Policy," *International Security,* Summer, 1978, pp. 113-125.

72. CIA study, p. 12. Asymmetric albeit artificial casualty estimates favoring the United States could be achieved if the scenario were reversed.

73. *Ibid.* p. 13.

74. An unclassified version of NSDD-26 was released by the White House on March 16, 1982. Also see S. Norris "President Reagan's Civil Defense Program," *The Defense Monitor XI,* Vol. 5, 1982, pp. 1-8, for a critique of US defense planning.

75. *Ibid.*

76. *The New York Times,* April 1, 1982, p. 17.

77. Office of the Secretary of Defense, "OSD Assessment: The FY 1983 Federal Emergency Management Agency Civil Defense Program" transmitted February 8, 1982, by Frank Carlucci to Senator John Tower and Representative Melvin Price, Washington, p. 16.

78. Richard Perle, "Statement to Subcommittee on Arms Control, Senate Foreign Relations Committee," Washington, March 31, 1982, p. 5.

79. *Ibid.*, p. 4.

80. *Ibid.*, p. 4-5.

81. See Perle and Norris for arguments debating the nonprovocative nature of civil defense. For instance, a great deal of anger was focused on the federal government in connection with the Three Mile Island evacuation. See *Report of the President's Commission on the Accident at Three Mile Island,* October 1979, p. 7.

82. Also, see Cynthia B. Flynn and J. A. Chalmers, *The Social and Economic Effects of the Accident at Three Mile Island: Findings to Date,* NUREG-CR-1215, Washington, January 1980, also see Katz, pp. 197-200 for a discussion of the applicability of lessons learned from the study of conventional bombing in WWII to planning for nuclear war.

83. This was the case during the Cuban missile crisis. R. H. Laurino, *et. al.,* estimate that 13-26 million Americans will evacuate in a crisis before any order is given, also see note 85, below (*Impacts of Crisis Relocation).*

84. ACDA study, p. 3.

85. R. K. Laurino, F. Trinkl, C. F. Miller and R. A. Harker, *Economic and Industrial Aspects of Crisis Relocation: An Overview,* DCPA 01-75-c-0279, Palo Alto: Center for Planning and Research, May 1977; and R. K. Laurino, F. Trinkl, R. Berry, R. Schnider, W MacDougell, *Impacts of Crisis Relocation on U.S. Economic and Industrial Activity,* DCPA 01-76-c-0331, Palo Alto: Center for Planning and Research, October 1978, pp. 5-ll, also Katz, pp. 29l-308.

86. Laurino, *et. al.,* 1977, p. 33.

87. *Ibid.*

88. Ninety and 95 percent, respectively, of central management and corporate headquarters are in high-risk metropolitan areas.

89. This scenario assumes that the end of the crisis will be unambiguous and that people will return to the high-risk areas without fear of future attack.

90. See Laurino, *Impacts,* pp. 5-ll. The cost of a CR is estimated at $100 million during the following two years. There would be numerous severe and long-lived effects of a CR on the international economy as well. The needs of Third World states requiring food and economic aid would go unfilled. International businesses would confront reduced and delayed demands from US consumers and delayed deliveries from American producers. The international monetary system would probably require restructuring due to the reduced value of OPEC holdings and myriad related problems. The interdependence of the global economy in general and western economies in particular assure that the serious effects of a CR in the United States would be widespread.

91. Katz, p. 193.

92. *Ibid.*, p. 73. Approximately 25 percent of the central city populations in the 157 largest metropolitan areas is nonwhite compared to only 6 percent of the country's rural populations.

93. A relocation housing factor of three in the event of a full evacuation is considered normal. However, 18 states east of the Mississippi River have relocation factors equal to four (8 states), five (1 state, Florida) or six (9 states, including Massachusetts, New Jersey, New York and Pennsylvania). See C. M. Hoaland, C. V. Chester and E. P. Wigner, *Survival of the Relocated Population of the US After a Nuclear Attack*, ORNL-5401, Oak Ridge Laboratory, June 1976, p. 28.

94. For a discussion of British experiences with evacuated populations during World War II, see R. Mitmus, *Problems of Social Policy*, London: His Majesty's Stationary Office and Longmans, Green and Co., 1950, p. 334.

95. Katz, p. 301; Ronald Perry, Michael Lindell, and Marjorie Greene, *The Implications of Natural Hazard Evacuation Warning Studies for Crisis Location Planning*, Final Report, Seattle, Washington: Battelle Human Affairs Research Center, February 1980, p. 24.

96. Katz, p. 74.

97. Perle, pp. 3-5.

98. Center for Defense Information, *The Defense Monitor*, July 1982, pp. 4-5. The CDI is a private research institute with no official ties to the US Government.

99. Collins, p. 118. Also John Erickson, *Soviet Military Power*, London: Royal United States Institute for Defense Studies, 1971, p. 35.

100. US Congress, Committee on Foreign Relations, Subcommittee on Arms Control, International Organizations and Security Agreements, *Analyses of Effects of Limited Nuclear War*, Committee on Foreign Relations, United States Senate, Washington: September 1975, p. 52; also, see Drell and von Hippel, p. 34.

101. See Stephen L. Brown and Ulrich F. Pilz, "U.S. Agriculture: Potential Vulnerabilities," Menlo Park, California: Stanford Research Institute, 1969, p. 60; also, see Katz, pp. 50-62 for an analysis of the coincidence of the major food-producing areas of the United States with ICBM installations.

102. Perle, p. 3.

103. F. W. Dresch and S. Baum, *Analysis of the U.S. and USSR Potential for Economic Recovery Following a Nuclear Attack*, Menlo Park: Stanford Research Institute, Strategic Studies Center, January 1983, p. II-7.

104. Arthur Katz, US Congress, Committee on Banking, Housing, and Urban Affairs, *Economic and Social Consequences of Nuclear Attacks on the United States*, Washington: 1979.

105. *Civil Preparedness Review-Part II: Industrial Defense and Nuclear Attack*, Joint Committee of Defense Production, 95th Cong., 1st Sess., Washington: April 1977, p. 75.

106. Troxall, p. 45.

107. The costs (in billions), according to Secretary Weinberger, FY 1983, *Annual Report to Congress*, Washington: 1982, p. III-58-60, of the MX program are $4.256 and $5.844 in FYs 1983 and 1984. For Trident, these years' costs are $3.132 and $3.152, respectively. These prices include the development and procurement costs of the MX and the costs of the Trident sub and missiles.

108. The cost of a shelter program envisaged by NSDD-26 could run to $10 billion; also see Norris, p. 1-2.

109. Arthur Washow, "The Shelter-Centered Society," *Scientific American*, Vol. 201, No. 6, May 1962, pp. 44-51.

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER ACN 83012	2. GOVT ACCESSION NO. AD-A134608	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) THE STRATEGIC IMPLICATIONS OF CIVIL DEFENSE		5. TYPE OF REPORT & PERIOD COVERED Strategic Issues Research Memorandum
		6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) John M. Weinstein		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS Strategic Studies Institute US Army War College Carlisle Barracks, PA. 17013		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS		12. REPORT DATE 5 May 1983
		13. NUMBER OF PAGES 40
14. MONITORING AGENCY NAME & ADDRESS(if different from Controlling Office)		15. SECURITY CLASS. (of this report) Unclassified
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

Approved for public release; unlimited distribution.

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Soviet civil defense; civil defense; deterrence; strategic balance, postattack recovery; damage limitation; national survival; crisis relocation; population evacuation; continuity of government; counterforce; national vulnerabilities; nuclear war; NSDD-26; crisis stability.

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This essay explores the relationship between civil defense, national vulnerabilities, and the deterrence of nuclear warfare between the Soviet Union and the United States.

Some fear that the Soviet Union's extensive--and very expensive--civil defense system gives it the power to blackmail the United States in conflicts over our crucial interests, or even to go to war. This is especially true when such programs are viewed within the context of Moscow's massive and increasing

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

military expenditures, its deployment of certain tactical and strategic systems, its continuing research and development programs with counterforce applications, and its opportunistic foreign policy. This may overstate the defensive capabilities of the Soviet Union, which, in fact, faces a number of problems with its civil defense program. For example, the Soviet population is concentrated in a relatively small number of urban centers, and evacuation plans, never practiced on a large scale, are bedeviled by uncertainties about transportation, supply, climate and shelter. Moreover, the high concentration of Soviet industry within a few major complexes, the difficulty in hardening industrial sites effectively against direct attack, the primitive state of Soviet transportation and myriad other problems suggest that the Soviet Union would be hard pressed to protect their economy in the event of a nuclear war.

These problems, in conjunction with the facts that a Soviet directive to put civil defense plans into effect would put US strategic forces on alert (thereby strengthening their destructive capabilities) and that the United States could wreak massive physical damage upon the Soviet Union in a retaliatory strike, attest to the continued credibility of the American deterrent. Thus, a nuclear exchange with the United States very likely would result in great physical suffering for the Soviet Union and an end to its superpower status. Therefore, it is imperative that the United States maintain the substantial flexibility and capability of its nuclear arsenal which is able to mitigate any marginal benefits of the Soviet civil defense program.

The United States surely would experience many of the same problems anticipated for the Soviet Union in the face of crisis relocation or post-attack recovery, and few believe that civil defense can make nuclear war winnable or less horrific. Nevertheless, a modest population evacuation program is advisable because Americans <u>will</u> evacuate high-risk areas in the event of a crisis, and it remains the responsibility of government to minimize the chaos and to moderate the effects with some prior planning.


ATE
LMED