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POSTATTACK RECOVERY STRATEGIES

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FINAL REPORT

POSTATTACK RECOVERY STRATEGIES

By
William M. Brown
Doris Yokelson

HI-3100-RR November 1980

Prepared for
Federal Emergency Management Agency
Washington, D. C. 20472

Under Contract No. DCPA01-79-C-0217

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In the context of low-budget Civil Defense (CD) programs, strategies available for postattack recovery cannot rationally be separated from policies which would support a CD mobilization during an emergency. An assessment is made of 25 areas in which federal policy would strongly affect survival and recovery preparations during a nuclear crisis. Many of these areas have not been adequately studied; also, the needed policies do not exist for nearly all of them. The analysis finds, however, that most of the

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missing policies might be developed during an emergency of several weeks or more, if prior studies are completed to delineate the options.

Two important themes evolved. One was that the survival of the federal government could not be assured following a large attack but that its survivability could be greatly enhanced if the needed CD policies are established in time. The second was that the federal CD role should often be a supportive one, rather than the controlling one that is generally assumed.

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EXECUTIVE SUMMARY

PERSPECTIVE

Many approaches are possible in the analysis of strategies for recovering from the effects of a nuclear attack upon the U.S. None of them appear to lead to conclusions in which we can place high or even moderate confidence. The postattack problems that will require solution are numerous and strongly-interacting, but many of them are ill-defined at present. Just to begin a thoughtful analysis one must determine how much to stress various economic, political or social recovery issues, recognizing that these concepts will resist being separated completely from each other.

Economic recovery studies based upon input-output models which computers can readily manipulate have long been available, and some of them are technically very sophisticated. Nevertheless, that approach avoids some of the more difficult aspects of the postattack environment in favor of a mechanical solution based upon preattack economic interrelations (the coefficients in the input-output matrix). The results tend to be relatively optimistic, but usually are unconvincing and often are simply unbelievable.

Undoubtedly, the dynamic aspects of an attempted civil defense mobilization during a preattack period of tension could have an enormous impact on the subsequent attempt at recovery. So could the pre-existing state of civil preparedness, the size and nature of the attack, the involvement of other countries, and the attitudes of our population both pre and post attack. But these and other factors are all inherently uncertain. Even if they could be clearly specified as initial conditions, it is not at all clear that the calculated course of the subsequent recovery would have much practical meaning.

Rather than attempting such calculations, we chose to approach the topic by considering what policies would be useful for enhancing recovery prospects and for assessing the potential for enacting such policies. Where sufficient information was lacking to make such an assessment we attempted to determine whether subsequent studies might be helpful. For example, establishing a federal policy about war-damage compensation is economically and technically feasible, and certainly appears to be desirable. However, it does not yet exist and it may not be politically feasible in peacetime. Unfortunately the lack of such a policy could result in severe socio-political repercussions, postattack, and with little doubt would have a strong negative impact on the attempted recovery. Could such a policy be established in time prior to an attack? We concluded that it could if its importance were recognized by the federal government.

Similar considerations led us to identify and examine twenty-five issues or topics for which preattack government policy appeared to be important, or crucial, to any subsequent recovery effort. Nearly all of those policies could, in principal, be established without significant expenditures beyond those required for appropriate studies of the alternatives. Without having most of these policies in place before a nuclear attack begins we found that an analysis of "strategies for recovery" tended to become devoid of much tangible significance. That is, a principal prerequisite for examining various strategies is the determination of a set of feasible federal policies which clearly need to be brought into existence preattack. These would provide the primary "building blocks" from which alternative strategies could evolve.

Any recovery strategy will involve some prior mobilization of the population. But to be effective, any such preattack mobilization requires a number of urgent and unprecedented government actions. Our analysis indicates that many of the missing federal policies which appear to be crucial for postattack recovery probably could be brought quickly into being during a nuclear crisis, if the needed studies had been completed prior to the crisis and were kept on file. In principle at least, the administration would be able to respond rapidly to the population's need to mobilize for survival and recovery, if it knew what policy gaps had to be quickly closed and how to close them. Although establishing such policies might not be politically feasible in peacetime, they are likely to receive the highest possible priority during a general mobilization which was stimulated by the perceived threat of a nuclear attack.

The 25 topics discussed for their policy implications seemed to us to be very important, but certainly not exhaustive. Others will undoubtedly emerge over time and may be equally crucial, at least in many possible scenarios. Where the topics are novel, or had received very little prior attention, a preliminary analysis may first be needed to define the relevant issues and discuss their policy implications. Indeed, two such topics evolved during this study and preliminary concept papers were developed for them. These appear in Volume III of this study.

The first concept paper is a discussion of the potential role of the international sector in aiding U.S. recovery (see Volume III, Part A). If assistance from foreign countries could offer substantial help to the recovery effort in a number of scenarios then examining what our government could do to improve the size, scope, and timing of that assistance should receive serious study. That paper represents an initial effort to introduce and define that approach to recovery. It reflects on the changing potential for postattack assistance from the current Less-Developed nations as well as that from the industrialized world after various attack and outcome scenarios. It stresses the potential importance of preattack activities which could increase that potential for aiding economic recovery, while recognizing that only the self-interest of each nation, not altruism, would be a dependable basis for establishing policy and making preparations.

The second paper (see Volume III, Part B) is a preliminary discussion of the concept of political recovery from a nuclear attack. Most prior studies merely assume that our political system survives or is more-or-less quickly reconstituted after an attack in its present form. Yet the basic meaning of government survival, or of political survival and recovery after a large nuclear attack, is not necessarily obvious. The above concept paper was developed to elaborate on this issue. We believe that it represents an initial approach to a difficult but very important subject.

In particular, it sets forth and examines certain critical criteria which are related to the survivability of an effective functioning U.S. government. These include: (1) the possession of a coherent military force, (2) a monopoly on the legitimate use of force, (3) the ability to support governmental actions through taxes, and (4) the ability to transfer assets and to equalize burdens. Related to these, but distinct, are two other requirements for political survival: (1) the need to maintain a democracy and (2) a generalized sense of fairness. These criteria are discussed to establish their underlying importance in a postattack recovery setting and with respect to their impact on the issues of the legitimacy and effectiveness of a postattack government.

INTRODUCTION

Although postattack (PA) recovery activity after a nuclear attack is conceptually distinct in time from peacetime or crisis civil defense measures, clearly it would depend strongly on these prior operations. Many important dynamics of recovery would depend upon the specific measures taken during the preattack crisis, when many of the crucial government policies would be set, new organizations would emerge, and individual and institutional preparations would be made. Consequently, the formulation of PA strategies must be intimately connected with preattack CD preparations.

Two important themes weave themselves throughout this report. One is that the federal government might not survive an attack strong enough to function effectively; the other is the question of whether its preattack CD role during a crisis should be a directly-controlling, centralized one or a supportive, decentralized one. Clearly, many of the federal government's preattack civil defense policies or activities may later become critical at postattack decision points. Often we will conclude, tentatively, that the preferred federal role in a future nuclear emergency would be to establish appropriate policies and guidelines; to provide information, funds and critical resources to local areas; and to delegate an unusual amount of authority to implement these policies to local private and public institutions.

The U.S. civil defense effort, which until now appears to have been based almost exclusively on a centralized-control approach, still has not prepared even a rudimentary program for (a) dispersing the population, (b) providing sufficient survival supplies, (c) creating adequate shelter if an attack should appear to be imminent, or (d) for rescuing, reorganizing and recovering. However, by accepting the concept of a partially decentralized approach during a crisis, the federal government could leave the major responsibility for making emergency preparations to local institutions while it devotes its efforts to providing the kind of help which it uniquely can--the provision of information, funds, credits, new CD policies and minimum guarantees of support to individuals and institutions.

In this study our approach, first, was to list and define a number of civil defense activities for which federal policy decisions would be needed during, if not prior to, a nuclear crisis; and, second, to consider whether these policies should be implemented by federal actions which are centralized and authoritarian, or decentralized and supportive, or an appropriate mixture of both. The framework for examining these topics is a matrix in which the vertical columns are a set of time intervals, preceding and following a nuclear attack. The topics themselves are listed in the rows; each topic is then discussed with the time-axis

in mind, although no attempt has been made to fill in each box of the matrix. Rather, only those of particular interest are emphasized. Thus, the matrix is used as a thought organizer and stimulator rather than as a compelling formula to be rigidly followed (see Figure 1).

To depict a "typical" nuclear crisis, we chose a familiar strategic outbreak scenario which, in modified forms, has been used frequently by DCPA and its predecessors. This crisis builds up over several months. When other outbreak scenarios seem important for federal preparations they are specifically mentioned. The effectiveness of many policies, for example, was found to be sensitive to scenario details, especially to the amount of time available for their formulation and implementation. For reasonable recovery strategies based upon low-budget civil defense programs during peacetime--a central assumption in our analysis--it became clear that survival and recovery activities are inseparable. This conclusion led us to concentrate first upon a number of survival issues which could provide an appropriate basis for understanding recovery strategies.

Most of the CD policy matters considered in this study apparently have not yet been analyzed in sufficient depth. This is not surprising given the complexity of the problems, the relatively small civil defense research budgets, and the radical changes in basic civil defense concepts that have occurred over the past 35 years. The relatively recent concept, that of a federal crisis relocation plan (CRP), involving a timely movement of the population out of the high risk areas during an intense crisis, is used as the basis for examining policy issues. The CRP appears to be a reasonable approach in the absence of prepared, high-quality blast shelters in or near urban areas; but it does pose numerous difficulties which need to be resolved if it is to be effective in a nuclear emergency. The resolution of these difficulties would become a vital part of any recovery strategy which might be employed to help reconstitute the nation.

PART I: MOBILIZATION DURING A NUCLEAR CRISIS: THE DILEMMAS OF SURVIVAL AND RECOVERY PREPARATIONS

Section 1: A Crisis Relocation Orientation

The possibility of periods of mounting crisis suggests that the population might have time not only to take survival actions but, given a sufficiently long crisis, to take actions that could greatly improve the nation's ability to recover. This approach introduces the possibility--and the advantage--of making low-budget plans and deferring the major costs of physical preparations to the time of need, when, presumably, funds would be readily available.

FIGURE 1

A MATRIX FOR THE STUDY OF SELECTED POSTATTACK RECOVERY POLICIES

TIME →

POLICIES	PREATTACK				NUCLEAR WAR	POSTATTACK			
	PEACE	COLD WAR	EARLY CRISIS	SEVERE CRISIS		EARLY SURVIVAL PERIOD	EMERGENCE AND REORGANIZATION	POLITICAL AND ECONOMIC RECOVERY	LONG-TERM ADJUSTMENTS
1. A CRISIS RELOCATION ORIENTATION									
2. INFORMATION AND EDUCATION PROGRAMS									
3. REQUIREMENTS FOR THE CONTINUITY OF GOVERNMENT									
4. A PROFESSIONAL CIVIL DEFENSE CADRE									
5. THE STOCKPILING AND FINANCING OF CRITICAL MATERIALS									
6. THE EMERGENCY REDISTRIBUTION OF FOOD STOCKPILES									
7. NATIONALIZATION POLICY									
8. FEDERAL POLICIES FOR EMERGENCY FUNDS AND CREDIT									
9. POLICIES ON WAGES, PRICES, RENTS AND CONTRACTS									
10. POLICIES FOR POSTATTACK ECONOMIC INVESTMENT									
11. THE ESTABLISHMENT OF USABLE POSTATTACK CURRENCY									
12. FEDERAL RESPONSIBILITY FOR PROPERTY DAMAGE DURING CRISIS RELOCATION									
13. THE CLARIFICATION OF PREATTACK AND POSTATTACK HOUSING RIGHTS									
14. POLICIES FOR POSTATTACK SHARING OF SURVIVING PROPERTY									
15. A PERSPECTIVE ON CRITICAL INDUSTRIES									
16. THE EMERGENCY PROTECTION OF COMMERCIAL ASSETS									
17. REMEDIAL EVACUATION AND POSTATTACK RESCUE: A MAJOR GOVERNMENTAL RESPONSIBILITY									
18. WELFARE POLICIES--PREATTACK AND POSTATTACK									
19. THE FEASIBILITY OF FIREFIGHTING AFTER A NUCLEAR ATTACK									
20. HEALTH CARE: POLICIES AND ACTIVITIES									
21. ENERGY: FUEL AND POWER IN POSTATTACK RECOVERY									
22. TRANSPORTATION POLICIES									
23. MILITARY SUPPORT OF CIVILIAN EMERGENCY PREPARATIONS									
24. THE RESOLUTION OF DISPUTES									
25. PREVENTING POSTATTACK FRAGMENTATION AND CONFLICT									

The relocation of urban populations during an intense crisis is considered capable of saving millions of lives during many types of nuclear attacks. The effectiveness of a CRP would depend not only on the timely movement of people, but of survival and recovery supplies as well. The failure to have the essential policies for such a civil defense program in place before an attack implies that (a) many people could be needlessly killed in the high risk areas; (b) many relocated people might not survive the early postattack period because of inadequate fallout protection; and (c) the supplies required to maintain the relocated population for a few weeks, or months, after the attack could be inadequate. Finally, a lack of timely government policies preattack could greatly impede the ability of the survivors to reorganize effectively postattack and adversely affect the recovery.

Government implementation of a CRP could deliberately be designed to be essentially supportive of state, local and individual survival and recovery activities. Thus, when ordering the relocation, the federal government could offer its support to expedite the movement, but leave the controls with local authorities.

Other potentially effective federal actions would:

--determine the appropriate time for implementing the CRP
--finance the material resources and labor needed for rapidly building high-quality shelters in host areas
--finance local food stockpiling
--provide credit to host area governments for specified civil defense preparations
--guarantee minimum loans to relocated citizens
--assume responsibility for property damage caused by the relocation.

Ideally, the federal government should prepare to stimulate the immense mobilization potential of an awakening population, which in a crisis would demand information, advice, policies, authority and financial assistance as vital inputs to the rapid creation of an extensive survival and recovery system for protection and recovery.

Section 2: Information and Education Programs

During a crisis mobilization there will be a constant, acute need for information which would enhance the nation's ability to survive and recover from a nuclear attack. The types of information that would be desirable in each phase are very briefly distinguished below:

(a) Crisis Mobilization--During a crisis the most critical federal role is likely to be the development of timely policies to facilitate local institutional reorganization in order to stimulate survival and recovery activities, rather than attempting to develop and run an extensive, centrally-controlled program. The former approach would include

providing information on (1) shelter building, (2) housing of evacuees, (3) obtaining food and other supplies for critical survival and recovery stockpiles, (4) institutional survival and recovery preparations, (5) federal financial assistance to facilitate the relocation, and (6) new federal legal and economic policies for assisting the relocation and stimulating recovery preparations.

(b) Postattack Shelter and Reorganization--With advance planning, assuming that it survives as a functioning entity, the federal government should be able to provide some essential information to the survivors. Early after an attack, information from federal sources would be needed about such important matters as the extent of the attack, the damage, the outcome of the war, the distribution of radioactive fallout, the potential for remedial evacuation, and the prospects for obtaining additional supplies.

Previous studies have also recommended educational programs during crises to train special groups in shelter building, decontamination, health and sanitation preparations, communications and postattack occupational skills. A widespread, intensive crisis-education program, using all communications media, could deliver printed and/or broadcast instructions to every home, office and industry on warning, evacuation, survival and recovery supplies and nuclear effects, as well as advice about the government's postattack reconstruction and production policies.

Under low-budget programs realistic preparations that might be made to supply vital information rapidly during a growing nuclear crisis include (a) a professional civil defense cadre (described in Section 4); (b) lists of essential items that private citizens should try to obtain before evacuating; (c) a survival and recovery manual which could be placed in every shelter; and (d) specialized manuals that provide "self-help" CD information to various institutions.

Also, the federal role in supplying postattack information on economic and social conditions would be a very important one. In addition to describing regional and local conditions, it could also help to stabilize expectations and introduce greater coherence into economic decisions by predicting the supply and demand for each basic commodity. This could help to speed the recovery during and after the reorganization period.

Section 3: Requirements for the Continuity of Government

Maintaining continuity of government after a nuclear attack revolves around two considerations: (a) the ability of the government to survive and provide some services to the public; and (b) the adequacy of the continuity-of-government legislation and of the protective arrangements made for key government personnel.

(a) The Survival of the Federal Government

Without a functioning authoritative federal government after a nuclear war, for a time the country could cease to exist as a national entity. There seems to be a money-personnel-authority "loop" in the federal structure which, once broken by an attack, could cause the federal government to collapse. The lack of any element in this loop could make it very difficult for the federal government to be reconstituted postattack. If public confidence in the dollar could be maintained postattack, federal personnel could be supported and the federal authority preserved. One way for the federal government to maintain confidence in its currency would be to requisition surplus stocks of food, fuels, and other assets during the preattack crisis. This action could create real reserves to back its postattack monetary policies.

(b) Present Plans for the Continuity of Government

In addition to establishing lines of succession, the federal government has developed plans to continue its essential, uninterruptible functions, during an extreme crisis by using emergency operating facilities within a "Federal Relocation Arc" near the capital.

Two executive orders outline the role of each federal department and agency in emergency planning. Each is to develop plans which include (1) succession to office, (2) predelegation of emergency authority, (3) safekeeping of essential records, (4) emergency action steps, and (5) protection of government resources, facilities and personnel.

(c) The Real Dimensions of Survival

Although some action has been taken to assure the formal continuity of its authority, the federal government is likely to be very vulnerable unless it makes adequate and timely preparations for its survival. The preparations which appear to be most vital are the principal subject of this study. If government were to survive in form but fail to maintain a capability to control its valuable tangible assets, and to be flexibly responsive to rapidly changing needs, its attempted actions could conceivably become counterproductive to the recovery.

Section 4: A Professional Civil Defense Cadre

A full-time, highly trained professional cadre of a few thousand individuals could be the key to setting up a comparatively inexpensive mobilization base from which rapid increases in civilian protection could be achieved if a nuclear emergency arose. The cadre personnel could be apportioned throughout the country and would be knowledgeable about existing local, regional and national survival and recovery resources and the potential for rapidly expanding them. They are visualized as a semi-autonomous, survival-oriented, self-selecting nonpolitical group.

Ordinarily maintaining a low profile, during a nuclear emergency the cadre could become the most valuable professional group in the country: the emergency civil defense actions of local governments and institutions would depend highly on the cadre's advice, leadership, knowledge, skills and ability.

Section 5: The Stockpiling and Financing of Critical Materials

Because of the potential destruction of critical resources and the possibility of insufficient food production, a viable nation might not survive an attack without prior extensive stockpiling. During the preattack emergency, the federal government might encourage and finance three classes of stockpiles: those within the host areas, those under state or regional control, and those under federal government control as national stockpiles.

Appropriate federal policy could help each host area to obtain and store food, fuel, pharmaceuticals and other critical supplies sufficient to carry it through the early survival and reorganization periods. The regional and national stockpiles could have great potential for the government as a backing for its postattack authority, as well as for helping with welfare emergencies beyond the capacity of local areas.

Section 6: The Emergency Redistribution of Food Stockpiles

Although tremendous stocks of food exist in the U.S., unless they are redistributed preattack there will probably be severe local shortages of food postattack. The availability of sufficient food is likely to be the most important single factor in determining the ability of the economy to recover.

The Federal government can control the redistribution of foodstocks during a crisis by setting guidelines for federal financing of the efforts to build up local stockpiles. If large quantities of food are to be relocated in a very short time it may be essential for the organization of the redistribution to be left to the host areas. With such decentralization it should be possible within as little as two or three days for the host areas to obtain, on average, about a one-month food stockpile.

Postattack, the situation changes drastically. At that time, because of the enormous distribution problem and the likelihood that relatively food-rich areas would not want to part with their resources, the possibility of redistributing surviving food stockpiles is likely to be minimal. Consequently, the relatively easy task of redistributing food preattack should be given an extremely high priority during a crisis.

Section 7: Nationalization Policy

Throughout this study, the temporary nationalization of stockpiles of critical supplies and the associated private commercial establishments is suggested as one federal option to facilitate a rapid redistribution of stockpiles to local areas and to provide a more tangible backing for its currency postattack. The urgency associated with crises suggests that, if nationalized, private establishments might be most effectively managed if they continued to be run by their former owners or managers. In this way the nationalization could help to avoid hoarding, prevent intolerable profits and losses in the nationalized industries, and circumvent the need for ponderous systems of rationing and allocation.

During a sufficiently long severe crisis another possible by-product of nationalization with decentralized management could be an improved adaptation of the commercial segment of the economy to the relocation. In turn this could lead to the development of numerous "paragovernmental" commercial organizations made up of millions of persons, who, although seeming to function essentially as "free-Market" entrepreneurs, would be part of the national authority. The new skills and arrangements which they develop during the crisis should better prepare them to deal with a large range of survival and recovery needs postattack.

Section 8: Federal Policies for Emergency Funds and Credit

The success of a crisis relocation could well depend upon the federal government's assumption of many of the financial liabilities and responsibilities associated with evacuating and protecting the population, storing sufficient survival supplies and preparing for postattack reorganization and recovery. Two such important federal policies would be (a) the guarantee of limited but easy personal loans to evacuees and (b) the funding of mobilization activities by host area institutions. These policies would expedite local survival preparations and provide some cash to evacuees who need it. Most of the mobilization and recovery preparations would probably best be guided by local governments who are directly involved with the institutions in the host and risk areas, with the citizens who might obtain training, skills and education related to the survival and with the recovery tasks of their communities. During the crisis excessive concern about fraud in the issuance of credit or funds should be avoided, as it could unreasonably delay preparations and impose undesirable economic penalties.

Section 9: Policies on Wages, Prices, Rents and Contracts

In prior wartime emergencies the federal government instituted economic controls such as wage and price freezes, rationing, allocation of high-priority goods and moratoria on contractual obligations. These were justified on four major grounds: equity, inflation control, market breakdowns and the effectiveness of the controls themselves. But, unlike past

wars, a nuclear threat might allow only a few weeks for an organized response. However desirable widespread government controls might appear in principle, during a nuclear emergency the mere attempt to set them up could seriously impede more appropriate responses by private institutions and individuals seeking to survive. To enhance survival and recovery prospects government policy should attempt to maintain a reasonable degree of equity, but without stifling the flow of desirable goods and services to the places in which they would support a crisis relocation.

Postattack, if we assume that former prices, wages, rents and contractual arrangements would most likely have become meaningless, any holdover of preattack policies related to these matters might well be essentially unworkable and attempts at maintaining controls might be counterproductive. In the postattack period, effective federal policies might best be improvised within boundaries that are realistically related to the extent and type of the available financial support for them.

Section 10: Policies for Postattack Economic Investment

A surviving functional federal government is most likely to support policies that permit selected insolvent firms to function, guarantee commercial credit, impose taxes and offer special tax inducements for preferred investments. Policies to preserve "going concerns" might be very important, but if a nuclear attack were to cause enormous destruction of wealth it might be more important to preserve raw materials and finished goods rather than going-concern value. Consequently, federal measures to encourage or discourage production, investment and consumption might best be kept at a broad level and made consistent with its overall goals, while private firms make the more specific investment decisions. Federal credit extended to businesses in difficulty would probably be more effective if made available with relatively few strings attached; however, this is a complicated subject in need of further study.

Section 11: The Establishment of Usable Postattack Currency

During peacetime, the federal government could stockpile a special "postattack" currency--so-called "blue" money--in addition to storing extra greenbacks in protected locations. After a nuclear war, for a time this blue currency could be required for special consumer purchases, such as food, fuel, medicine and clothes, thereby eliminating the overhanging burden of preattack purchasing power and circumventing a possible wild inflation. Whether or not this new money would be needed cannot be known, but its peacetime cost would be so insignificant that it is hard to disqualify it on economic grounds.

If the blue money were sufficiently backed, postattack, with enough tangible assets to become generally acceptable it could be used to facilitate some of the essential activities of the reorganization period: for example, as a basis for (a) supporting federal authority, (b) financing

postattack welfare, (c) issuing credit, (d) guaranteeing new investments, or (e) a partial payment of war damage compensation. Its particular value appears to lie in its timely use of resolving urgent economic problems when delay would be extremely costly in terms of loss of life or the viability of the recovery.

Section 12: Federal Responsibility for Property Damage During Crisis Relocation

The crisis relocation of millions of people will undoubtedly cause substantial amounts of economic damage both in the risk and host areas. If the evacuation is carried out rapidly under extreme circumstances there might be little thought given to incidental damage or legacy value. If the relocation is maintained for a relatively long time under crowded conditions there would be more occasions for property damage to occur. In these circumstances the stability of the relocation might be threatened unless questions of property rights and compensation for damage can be settled rapidly.

It seems clear that the federal government should take ultimate responsibility for legitimate damage claims arising out of the crisis relocation. A policy that assures property owners that such claims will be promptly met should be spelled out prior to the evacuation, and should receive a high priority if a CRP is to be the heart of a federal CD response to a nuclear emergency.

Section 13: The Clarification of Preattack and Postattack Housing Rights

A major question in a crisis relocation is whether or when a property owner would have the right to reject or evict an evacuee. During a nuclear emergency, some of the rights of property owners might need to be suspended so that a crisis relocation might not be delayed or jeopardized by their resistance in accommodating evacuees. During the preattack crisis, problems of housing rights might be handled by invoking federal emergency powers; but postattack, when the housing rights problems might be overwhelmingly greater, a national policy would need to be in place that had been established and accepted beforehand. Without preattack public acceptance of a federal housing rights policy, it is possible that none could be formulated and enforced in a postattack society.

Possible policy alternatives include (1) the nationalization of suitable homes and property, (2) the regulation of rights under federal emergency powers with prescribed compensation to property owners, (3) the delegation of regulatory powers to state and local governments supported by federal guidelines and subsidies, and (4) a laissez-faire approach which would allow the owners to share their housing on any mutually acceptable basis. The third alternative seems to be the best,

although policy alternatives which require only minor peacetime efforts would undoubtedly be favored in CD planning.

Section 14: Policies for Postattack Sharing of Surviving Property

The destruction of both real and financial assets by a nuclear attack would leave in its wake enormously distorted distributions of income and wealth. For egalitarian and social reasons, the postattack federal government may need to alter this haphazard outcome.

Possible federal solutions to the problems of postattack economic sharing range from laissez-faire to disaster socialism. Conceptually, they include such options as restoring the prewar income distribution, various degrees of war damage compensation, the acceptance of the new distribution of wealth, an entire "new deal" which redistributes wealth on more egalitarian lines, and even the abolition of private wealth. As either a pure free-market approach or "sudden socialism" appear to be clearly unsatisfactory, an economic reorganization which combines free market exchanges with efforts by the federal government to meet its essential preattack commitments might be more pragmatic. Since no "pure" solution to the problems of postattack economic sharing seems viable, a substantial "mix" of new programs for compensation, taxation, resource distribution and fiscal controls is likely to occur. Any overall policy, however, would need to be presented and accepted preattack if it is to have a reasonable chance of acceptance, postattack, without severe domestic conflicts.

Planning federal responses to a variety of postattack economic problems, such as taxation, credit and bankruptcies, probably cannot be completed without an acceptable policy on war damage compensation. Because of inherent complexities, any initial compensation proposal would probably be judged inequitable by many groups. However, the establishment of almost any of the many possible compensation policies is likely to be far better than none at all. Subsequently a more acceptable solution could evolve, and undoubtedly would consist of a mixture of alternatives. Whatever the initial solution, it could be periodically reviewed and altered as seen fit; but getting the first war-damage compensation policy into existence is the crucial step.

Besides compensation for war damage other likely schemes for redistributing postattack income or wealth could involve some degrees of price controls, new taxation or confiscation. Of these, taxation would probably have the least harmful effect upon economic efficiency. However, given the anticipated nature and severity of the damage, it would need to be harsher and more radical than any in our history--perhaps even invoking a direct levy on wealth, which is now unconstitutional.

The effective postattack implementation of any of these policies would require the existence of a federal authority with the organizational and financial capability to support and enforce them. It is not

obvious that this requirement can be met without serious preattack attention to the many policy issues which are related to preparations for survival and recovery.

Section 15: A Perspective on Critical Industries

The problem of defining a critical industry can be a difficult one. During a growing crisis the need for certain types of industrial production and associated services can change rapidly: for example, as the conflict depicted in the basic scenario accelerates military production as the higher priority activity might give way to the short-term need to protect the population. In a swiftly escalating crisis it might not be at all clear who should make the decisions as to what production or what activities are most critical.

As the threat of a nuclear attack is perceived to become more imminent, it may well be necessary for nearly every institution, including industry, to make its own decisions, based on its perception of national needs and policies. Decisions would be needed about the amount of time to be spent in normal activities, what special protective measures to take and what relationship to maintain with the local civil defense effort. Federal policies might be most effective if they allowed private industry and local government great flexibility in responding to changing circumstances, but attempted to influence their general course mainly by providing timely funding, credits, information and guidelines. At the same time, the federal government clearly must reserve for itself certain indispensable military, monetary, legal and international functions.

Section 16: The Emergency Protection of Commercial Assets

The protection goals for commercial establishments during a preattack crisis might best be accomplished under an overall federal policy which encourages local businesses to determine for themselves how to organize production, assess their resource needs and key personnel, optimize their output and inventories, and prepare for their survival and recovery. It is difficult to believe that when time constraints become critical, as would be expected in many scenarios, effective decisions about protecting vital assets could be made at any but the local level.

The extent to which optimum levels of production are achieved will depend largely on morale and motivation, on optimizing the timing between production and shutdown, on the length and nature of the crisis, and on the perceived urgency of the activities. Federal CD policy can motivate emergency efforts to protect commercial assets by providing appropriate compensatory and cost guarantees against undue losses in case an attack does not occur. Without some prospect of compensation for these losses, too many industries might choose to take the chance that there would be no attack rather than accept the huge costs of

altering their procedures or shutting down part of their operations. Then if an attack occurs, the country would be left with inadequate and unbalanced protection for its industrial resources.

PART II: SOME PERSPECTIVES ON ORGANIZING FOR THE POSTATTACK EARLY SURVIVAL AND REORGANIZATION PERIODS

Section 17: Remedial Evacuation and Postattack Rescue: A Major Governmental Responsibility

During the early postattack survival period, several million persons might attempt to escape from narrow fields of intense radiation surrounding their shelters in order to reach safer outlying areas. A spontaneous movement and absorption of refugees, or a planned emergency rescue of persons "pinned down" in shelters by intense radioactivity, could be one of the most staggering early survival problems. Since any remedial movement would most likely occur between adjacent host areas, the action decisions might have to be made on a local basis. Without adequate planning and preparation beforehand, both locally and nationally, the movement or rescue effort could become chaotic and demoralizing. The influx of many refugees might be resented and even prohibited by the less-affected host areas. Also, in the areas to which they would flee there might be insufficient resources to support the additional refugees.

The federal government could support this kind of rescue operation by making its policy known preattack. Presumably it would guarantee sufficient postattack credits, or other compensation, to both the host areas and the new refugees. If functioning, it could also provide communications and radiation-monitoring to convey vital information or instructions. But further study is needed to consider how, if the federal government were not functional, local areas could respond, or how evacuees might relocate themselves without much direct assistance from nearby communities.

Section 18: Welfare Policies--Preattack and Postattack

After a nuclear war, public welfare may appear radically altered from the usual peacetime concept in which the many provide assistance for the few. Postattack, many millions of people could be in urgent need of survival goods and services. If so, postattack welfare might become a system for distributing survival supplies which had been stored preattack in publicly-owned stockpiles.

For welfare purposes, a surviving federal authority with large stocks of critical supplies under its control would be of great importance. Appropriate preattack preparations would be needed to give the

government a capability of providing this kind of welfare after a nuclear attack.

Section 19: The Feasibility of Firefighting After a Nuclear Attack

The firefighting potential following a nuclear attack has often not been realistically examined in past studies. Since firefighters would have been evacuated with other civilians to the host areas, it might be unreasonable to ask them to leave shelter and expose themselves to radiation and other nuclear effects in order to fight thousands of fires with hopelessly inadequate equipment. With no other choice but to fight fires or move to another dwelling, persons living in regions which are vulnerable to fires might try to snuff the fires out by themselves. But if adequate protective measures are taken during a crisis, few firemen or individuals should have to face such decisions.

Section 20: Health Care: Policies and Activities

Because the population of the U.S. is so highly concentrated in major urban areas, in any future urban-industrial attack, a timely crisis relocation would most likely dramatically reduce the number of casualties. Moreover, medical personnel--who along with medical facilities and the pharmaceutical industry tend to be relatively concentrated in urban areas--could also be largely protected through a CRP. Thus, recovery prospects might be substantially improved by a relocation which included the medical personnel, the redistribution of existing pharmaceuticals and sanitation supplies to the host areas, and an effort to build up inventories of these supplies.

In the host areas, health preparations should (1) provide good sanitation and pest control, (2) encourage the development of a paramedical capability, (3) make common medicines and medical information available in each shelter, and (4) where feasible, provide a communications link from each shelter to a health information center.

One federal approach to facilitating the redistribution and stockpiling of critical medical and sanitation supplies might involve the temporary nationalization of these industries. To create adequate and widely distributed stocks relatively quickly, each establishment might still need to make its own decisions as to which action it should take. A detailed study will be needed to analyze the feasibility and utility of alternative approaches.

Section 21: Energy: Fuel and Power in Postattack Recovery

Of the three principal energy sources for postattack recovery--electricity, natural gas and liquid fuels--liquid fuels appear to be both the most vulnerable and the most critical to recovery. In the

early survival period, when people are in or emerging from shelters, the demand for all types of energy will probably be very low. Moreover, most production and nonurban distribution systems for electric power and natural gas appear to be relatively invulnerable to permanent damage from a nuclear attack and capable of being restored by the time a recovery might be under way. The situation regarding liquid fuels, however, may be quite different. Petroleum refineries tend to be very vulnerable, and in some scenarios, are even deliberately targeted. Although the need for liquid fuels for use in heating might be strongly reduced postattack, farming and the transportation system will continue to depend heavily on petroleum-based fuel; indeed, their viability might be jeopardized if it is in extremely short supply. With various sectors competing for a severely limited postattack liquid fuel production, the supply situation could be grim, and economic recovery endangered.

A special problem connected with both communications and power is the threat of an electromagnetic pulse (EMP) induced by high altitude nuclear bursts. Although some knowledge about EMP has been disseminated, most of our electrical and electronic systems are highly vulnerable to an EMP attack. A study is needed to examine what practical emergency actions can be rapidly taken by professional engineers, electricians and skilled maintenance men to cope with such a nuclear threat.

Section 22: Transportation Policies

During a crisis evacuation, vast numbers of automobiles, trucks, trains, buses, planes, ships and barges could be carrying millions of people and/or millions of tons of cargo from risk to host areas, often repeating trips as time allows before an attack. This relocation could also preserve the transport vehicles.

Postattack, inadequate resources among surviving segments of a possibly fragmented, disorganized society could become a key obstacle to economic recovery. The government's planning should attempt to determine what preattack policies and preparations could help mitigate distribution bottlenecks in an emergency. The rapid preattack redistribution of survival supplies and the protection of the transport vehicles could be important aspects of such planning.

PART III: A LOOK AT SOME HARSH POSSIBILITIES INVOLVING THE FUNCTIONS OF INSTITUTIONS

Section 23: Military Support of Civilian Emergency Preparations

Although in past local disasters, the military services have demonstrated their ability to provide extensive manpower, specialized equipment and supplies in aiding civil authorities, shortly after a

large nuclear attack they might be unable to give much effective assistance. First, some of our military forces might be fighting overseas up to the time of the attack against the U.S. Second, since domestic military installations might be among the prime targets, these military forces could be subjected to a greater casualty rate than civilians would be. Should this be the case, civilians might need to provide assistance to the surviving military forces--the reverse of the peacetime roles. Third, if pinned down by fallout, military personnel could not leave shelters any more than civilians could. Fourth, even if supplies could be sent by helicopter into needy areas, fuel would probably be in such short supply that it is unlikely to be used so inefficiently. Moreover, if radiation levels were too high, or streets made impassible by debris, trucks and rescue units would not be able to move into disaster areas. Fifth, if civilians had evacuated in face of the imminent threat, servicemen might also have become dispersed, with or without official permission--in some cases, perhaps, to help their endangered families.

Finally--in a grim aspect--dispersed military personnel, trying to reform as units, postattack, might aggressively compete with local communities for survival supplies. If a community considered them to be marauders or external "parasitic" groups, it would probably resist their demands, possibly causing intense local conflicts.

In more optimistic scenarios, surviving military forces might be regrouped to clear debris, lay railroad tracks, erect bridges, establish temporary communications, operate distribution systems and give emergency rescue and medical care, among many other important reorganization tasks. The many possible postattack military situations need to be carefully analyzed in a variety of scenarios; these can give insights not only into the military's potential in assisting with the recovery but also into feasible relationships to civil authorities and local communities.

Section 24: The Resolution of Disputes

It would be hard to exaggerate the enormous disruption and rapid changes that would occur within the country both before and after a nuclear attack. The existing legal structure would almost certainly become grossly inadequate, too complex and too slow to arbitrate the flood of disputes that would need immediate resolution in this transformed environment. As the crisis levels become more intense, adjudication of disputes related to the acquisition of survival supplies, individual and property rights, contracts, compensation, and law and order will have to be made extremely rapidly, perhaps on the spot. The urgency would tend to make such decisions relatively authoritarian and arbitrary.

One of the ways frequently mentioned for bringing order amid severe postattack disruption is the imposition of martial law. Aside from the

possibility that neither military units nor the government might be functional in the early survival period, there are grounds for concern that the potential abuses of military rule might add to the disaster. Unchecked martial law might evolve into local military dictatorships that could become very difficult to eliminate. To the extent that the postattack problems of shortages, inequities, social reorganization and the destruction of the traditional economic and legal system had been reasonably prepared for, preattack, the possibility of a fragmented society with local authoritarianism, social chaos, or incompetent military rule during recovery could be lessened.

A creative study is needed to suggest solutions to the above problems. Use might be made of unusual historical circumstances that involved authoritarian transitions; these might give insights into the unprecedented legal environment of a nuclear disaster, when there might be no external central authority to provide a constraint on the actions of local leaders.

Section 25: Preventing Postattack Fragmentation and Conflict

In some scenarios in which few preattack preparations have been made and there has been a malevolent attack, the country is depicted as fragmenting into numerous independent entities which compete with each other for surviving resources. Intercommunity trading could become primitive and costly, and communities which had few supplies for trading might even resort to robbery, hijacking or armed raids. Struggles between the "haves" and "have-nots"--those who had retained their preattack assets and those who had lost them--could also develop into riots or insurrections.

If appropriate federal and state CD policies exist in peacetime, or if there is sufficient time during the preattack crisis to rapidly develop them, the many potentially severe postattack social conflicts might be mitigated. Moreover, while the population is mobilizing for survival and recovery, new economic and political institutions might emerge that could create a basis for reorganizing society after an attack. In this regard two possible developments appear to be important: (1) the preattack nationalizations of critical resources and commercial establishments, and (2) the growth of "paragovernmental" units--both discussed earlier. With cohesion between these units and the federal and state governments, over a longer crisis they might become able to give significant support to the postattack functioning of the government. This development would tend to counter the forces leading to fragmentation.

A major study would be required to assess the potential of private initiatives in preattack and postattack emergency functions and of the ways in which government and private institutions could become mutually supportive during a future nuclear crisis.

CONCLUSIONS

In each topic of this report we have attempted to consider post-attack recovery in a pragmatic sense: that is, how can the federal government determine what policies and resources might be crucially needed before, during and after a nuclear attack to prepare the nation for recovery? Although the U.S. at present seems ill-prepared to furnish the basic survival and recovery needs of the population, there is still hope that some of the more vital preparations might be made during a crisis mobilization--especially if plans existed to improvise timely and appropriate federal policies.

Our approach to the problem of devising effective postattack recovery strategies rests on the following premises:

--The available peacetime budgets for civil defense against nuclear attacks will continue to be relatively low.

--After a nuclear attack the social and political conditions of the country, as well as its economy would be highly uncertain.

--What appears to be useful is a flexible strategy geared to the survival and recovery preparations which can be made during a nuclear emergency and which would be responsive to possible enormous changes in social, political and economic institutions prior to and after an attack.

--The long-term recovery will be very sensitive to the new federal policies and the actions which the government takes during the crisis to support a national mobilization for survival and recovery, and to enhance its own survivability.

We suggest therefore that an effective recovery strategy should focus on actions which would help solve the problems of a nation in the visualized violent transition: it should supply the missing crucial policies, develop assistance plans, provide information and stockpile resources. These actions could enable the nation to create a posture for surviving the attack with a relatively small number of casualties and give it a better chance to reorganize effectively, within a large range of possible eventualities. How it would recover cannot be known, but how it can better organize itself to improve its ability to recover can be and should be studied and planned for.

Throughout this report, while recognizing the criticality of the federal role in survival and recovery, we have viewed this role from two perspectives:

(1) The degree to which specific kinds of federal actions could support or constrain a crisis mobilization and preparations for post-attack reorganization;

(2) The consequences if the federal government did not survive the attack as an effective functioning institution or did not revive for a prolonged period.

We were led to conclude that the federal government probably would be more effective in emergency survival and recovery operations by restricting itself to a largely decentralized role--one which essentially supported rather than controlled or directed local decisions and actions. Even such an intrinsically governmental decision as the nationalization of specific industries and survival resources seemed likely to be implemented more effectively if the daily operations were left to local management, once the federal government had set overall policy and some general guidelines. The risks involved in a federal relinquishment of direct controls were recognized. However they were considered to be much less than the danger that attempts at highly-centralized federal controls might seriously impede, or even become counterproductive to, the survival and recovery efforts of the population.

We find that the concept of a crisis relocation plan, which is based on an evacuation of the nation's urban population, represents a radical change in civil defense orientation that has not yet been recognized as a preferred policy by all civil defense planners. This study, which uses the concept of crisis relocation as its basic survival plan, attempts to analyze various aspects of this approach and to bring to light certain assumptions about federal, local and individual initiatives which may be intrinsic to its effectiveness. We have concluded that it is important to the design of recovery strategies to consider whether or not a functional federal government is likely to survive an attack and whether or not the federal government should attempt to maintain centralized operational control over preattack protective measures and postattack recovery actions, or if it should authorize many CRP-related action decisions to be made locally by public and private institutions. It will be advisable for FEMA increasingly to clarify its program options, set forth the principal nuclear crisis scenarios to be used in evaluation, and list the major policy assumptions or premises on which further planning and research for survival and recovery planning should be based. This orientation should be made very specific and communicated to research and planning groups inside and outside the government so that future studies can be made consistent with and relavant to it.

Our study is a step toward an explication, and a deeper examination of the major policy issues associated with postattack recovery. It also attempts to gauge the potential responses of the U.S. population in a variety of nuclear-threat scenarios. Hopefully, it will also be a positive step toward achieving useful government plans and programs, ones which will enable our population to respond more effectively during any future nuclear threats.

VOLUME II

POSTATTACK RECOVERY STRATEGIES

POSTATTACK RECOVERY STRATEGIES

INTRODUCTION

Although postattack (PA) recovery is conceptually distinct in time from the prior phases of civil defense (CD)--that is, those related to peacetime planning, crisis preparations, and intrawar actions--it becomes increasingly clear in thinking about PA recovery that it will depend strongly upon the activities which occur during all of these prior phases (see Figure 1). In order to depict the early PA scene relatively clearly, it is first necessary to understand what occurred during the preattack crisis, else we may miss most of the important dynamics of the subsequent social scene. For example, in each surviving group undoubtedly some organization and leadership will become established before the earliest recovery phase begins; some understanding of this outcome is needed in order to project the subsequent development. Also, for better or worse, many of the crucial government policies that are needed to guide the actions of persons and of institutions will somehow have been set, and various individual and institutional preparations for coping with PA problems will have been taken. Thus, just as "the sins of the fathers may be visited on the sons," the "sins" of omission and commission of the federal government (and of other institutions, both public and private) may be visited upon the survivors of a nuclear attack, during their attempt to recover. What these "sins" might be is one of the topics addressed by this study.

In particular, whether or not the federal government itself survives an attack, and in what meaningful sense if it does, may be the single most important factor determining the course of the recovery. However, before delving into that subject we note that the federal government will have been present during all of the preattack phases. Clearly, most of its preattack CD policies and activities will become crucial at PA decision points--that is, federal policy and actions will be extremely important every day during the intense part of any nuclear crisis, at every place, and to every person and institution.

This report will discuss what we believe will be some of the more important policy matters and activities of the federal government that have yet to be determined or completed. We will emphasize that in many, perhaps most, of these decisions it will be important for the government to choose the degree to which its role should be a directly-controlling centralized one, or a policy-making decentralized one coupled with its attempts to make available additional local assistance in the form of information, funds and material resources as the crisis becomes intense. Again and again we will find that such a choice will have to be faced. Moreover, a persuasive case for preferring one of these approaches over the other probably can be made in only a limited number of emergency actions. However, more often than not we will conclude, tentatively, that the preferred federal role is to establish appropriate policies and

FIGURE 1

A MATRIX FOR THE STUDY OF SELECTED POSTATTACK RECOVERY POLICIES

TIME →

POLICIES	PREATTACK				NUCLEAR WAR	POSTATTACK			
	PEACE	COLD WAR	EARLY CRISIS	SEVERE CRISIS		EARLY SURVIVAL PERIOD	EMERGENCE AND REORGANIZATION	POLITICAL AND ECONOMIC RECOVERY	LONG-TERM ADJUSTMENTS
1. A CRISIS RELOCATION ORIENTATION									
2. INFORMATION AND EDUCATION PROGRAMS									
3. REQUIREMENTS FOR THE CONTINUITY OF GOVERNMENT									
4. A PROFESSIONAL CIVIL DEFENSE CADRE									
5. THE STOCKPILING AND FINANCING OF CRITICAL MATERIALS									
6. THE EMERGENCY REDISTRIBUTION OF FOOD STOCKPILES									
7. NATIONALIZATION POLICY									
8. FEDERAL POLICIES FOR EMERGENCY FUNDS AND CREDIT									
9. POLICIES ON WAGES, PRICES, RENTS AND CONTRACTS									
10. POLICIES FOR POSTATTACK ECONOMIC INVESTMENT									
11. THE ESTABLISHMENT OF USABLE POSTATTACK CURRENCY									
12. FEDERAL RESPONSIBILITY FOR PROPERTY DAMAGE DURING CRISIS RELOCATION									
13. THE CLARIFICATION OF PREATTACK AND POSTATTACK HOUSING RIGHTS									
14. POLICIES FOR POSTATTACK SHARING OF SURVIVING PROPERTY									
15. A PERSPECTIVE ON CRITICAL INDUSTRIES									
16. THE EMERGENCY PROTECTION OF COMMERCIAL ASSETS									
17. REMEDIAL EVACUATION AND POSTATTACK RESCUE: A MAJOR GOVERNMENTAL RESPONSIBILITY									
18. WELFARE POLICIES--PREATTACK AND POSTATTACK									
19. THE FEASIBILITY OF FIREFIGHTING AFTER A NUCLEAR ATTACK									
20. HEALTH CARE: POLICIES AND ACTIVITIES									
21. ENERGY: FUEL AND POWER IN POSTATTACK RECOVERY									
22. TRANSPORTATION POLICIES									
23. MILITARY SUPPORT OF CIVILIAN EMERGENCY PREPARATIONS									
24. THE RESOLUTION OF DISPUTES									
25. PREVENTING POSTATTACK FRAGMENTATION AND CONFLICT									

lines of authority, but to decentralize control of the implementation by placing unusual authority to act in the hands of local institutions.

We recognize that it is "natural" for the federal government to lean towards a centralized approach. For one thing, a conceptual model of the series of survival and recovery preparations which might occur under federal leadership becomes relatively easy to analyze with that choice. Unfortunately, we find it hard to place any great confidence in the outcome of a conceptual model of planned responses under federal control; if such circumstances are followed by a nuclear attack we have a rather chaotic and gruesome image of what is likely to happen if the CD preparations at the start of the crisis are as meager as they have been heretofore. An analogy that may clarify this image is one in which a yet unrecruited army is to be used for a major battlefield task. It is to be recruited in a few weeks and sent into battle in an unprecedented situation with little or no equipment, training, supplies, or experienced officers. Under such circumstances could we expect the hypothetical army to maintain order, let alone confront the enemy and emerge with a victory? Although this analogy may appear a bit harsh it does not appear entirely inappropriate in regard to the present U.S. civil defense "posture" when we observe how little has been accomplished after some 30 years of "preparations" based upon miniscule budgets. The U.S. civil defense effort, which until now has been based almost exclusively upon a centralized-control approach, is still without even a rudimentary program for dispersing the population, for providing sufficient survival supplies, for creating an adequate amount of suitable shelter against either blast or fallout threats, or for rescuing, reorganizing and recovering once the hypothetical attack has ended.

By accepting a decentralized approach during a crisis, the federal government would avoid much of the responsibility for making the desired emergency preparations at the local level, but could devote its efforts to providing help in those ways in which it best can--for example, by providing information, funds, credits, legislating its emergency CD policies, and providing guarantees of support upon which citizens can confidently lean in deciding upon appopriate courses of action for themselves and their institutions. Of course, if such a federal policy were announced in peacetime, it would be hardly likely to induce much confidence among the population, and it might not be politically feasible. That could pose an important dilemma. During threatening circumstances people prefer to view the federal government as a nearby protector rather than a distant advisor. However, we are less concerned with image-building or repressing unpleasant perceptions than with examining the effectiveness of sharply contrasting strategies for promoting the survival and recovery of the population from effects of a nuclear attack. Whether or not a preferred approach would be politically feasible is not always possible to determine with confidence at an early stage in an analysis.

What we have done, first, is to list and define a number of CD areas in which important policy decisions are, or will be, needed if an appropriate, effective federal role is to be conducted during and after a burgeoning

nuclear crisis. Second, for some assumed new federal policies we examine briefly two possible federal roles in implementing them. This leads to the two almost diametrically opposite competing strategies: a centralized authoritarian action approach and a decentralized helpful role. Our current preference is usually for the second of these, although we hope that this early bias does not unduly prejudice our analysis. For implementing any specific policy it may turn out that a hybrid approach is best--one which emphasizes a centralized approach for some functions and a decentralized one for others. Rather than looking for persuasive conclusions, our our more immediate purpose is to formulate a perspective on selected PA or problems that seem to require new federal policies. Subsequently, in-depth studies would be required to recommend specific detailed policies and to present designs for appropriate federal programs.

The framework which we have chosen to examine the topics that we believe should be of major interest is illustrated in Figure 1. It is a matrix in which the horizontal divisions are a set of time intervals, both preceding and following a hypothetical nuclear attack against the U.S. The topics to be investigated are listed vertically. Each topic studied in this report is discussed with the time-axis in mind, although no attempt has been made to fill in each box of the matrix. Rather, only those boxes of particular interest are emphasized. Thus the matrix is used as a thought organizer and stimulator rather than as a compelling formula to be rigidly followed.

In our study of the topics vertically listed (see Table of Contents) we found that a basic scenario depicting the outbreak of a nuclear attack was vital for a coherent and unified study. For this purpose we chose a familiar strategic outbreak scenario which has been used frequently by DCPA and its predecessors and which, in modified forms, has been used as a backdrop for many survival and recovery studies. Although we deliberately chose a scenario which provides a crisis build-up over several months and culminates in a malevolent nuclear attack employing several thousand megatons, clearly many other outbreak scenarios are possible as well as many other kinds of nuclear strikes. The resulting huge number of possible combinations was ignored as part of the formal framework but kept in mind during the analysis and contemplation of various CD policies and recovery strategies. That is, for each topic the question arose as to whether other outbreak scenarios or nuclear attacks would affect preferred federal preparations or policies. Where the possible answers were believed to be sufficiently important to affect the analysis they are specifically mentioned. The effectiveness of many of the policies and preparations, for example, was found to be sensitive to the amount of time available for their implementation. Whether or not specific policies should be changed because of such considerations was sometimes clear, other times not.

Clearly, also policies for a small light attack could and should be different from those for the chosen large one. However, without reliable prescience about such matters the large attack prevailed as the basis for a federal program when a compromise could not handle both contingencies

adequately. Generally this appeared to be a satisfactory or at least an acceptable approach.

We found that for a study of recovery strategies an examination of survival issues becomes compelling, except for the unlikely situation in which reliable and extensive CD preparations are made in peacetime. For low-budget CD programs during peacetime--a central assumption in our analysis--the inseparability of survival and recovery activities led us to concentrate first upon survival issues in order to provide an appropriate basis for understanding recovery strategies.

While that approach seems to be mandatory, it also leads quickly to complexities which are not readily resolved. For particular policy issues, too often we had to conclude that the crucial factors were necessarily indeterminate without conducting much deeper studies, and possibly not even then. One crucial factor, for example, is the question of whether or not the federal government would survive the postulated attack as well as what its survival might mean in functional terms.* In fact, it is just this uncertainty that makes it so important for a number of federal CD policies to be established preattack, if they are to be useful postattack.

In attempting to construct useful strategies, our deliberations developed a number of images which might be termed fanciful. One of these depicts a professional, highly-trained, autonomous but federally-supported civil defense cadre which--like our strategic retaliatory capability--is created and maintained to be available only in the event of a threatened nuclear attack. The image is one of a tough, dedicated, self-selecting group of a few thousand full-time professionals optimally deployed about the country. They would be specialists in nuclear war survival and recovery preparations at their local, as well as regional and national, levels. They would be experts whose mission could only be fulfilled during a real nuclear threat and who, in this sense, would probably be condemned to and must accept a life of professional frustration. Meanwhile they would need to remain alert, informed, and responsive to the unlikely eventuality that they would be urgently needed to guide policymakers--and through them the population--in responding appropriately to a nuclear emergency. The feasibility of establishing and maintaining such an organization is necessarily open to question.

Another fanciful image portrays the rise during a nuclear crisis of paragovernmental organizations, involving millions of people, that might form much of the needed basis for supporting or reconstituting the federal government, if such help is needed (see Section 7). Although its evolution can be depicted as a "natural" occurrence during a nuclear crisis, a deeper study than ours would be needed to analyze the nature of, and potential for, such a phenomenon.

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*See William H. Overholt's paper entitled, U.S. Political Recovery from Nuclear War: Prologomena to Planning.

Finally we have found that for an analysis of most of the policy matters that are considered, the available research studies are not yet adequate: generally the problems have not been attacked in depth, if at all. This is not surprising given the awesome scope and complexity of most of the problems and the small research budgets which have been scattered over the numerous relevant CD topics that need to be analyzed. Prior research has occurred over a period of time (the last 35 years) during which the fundamental conception of an appropriate federal program for defense against a nuclear attack has radically changed several times. Thus the principal policy issues dealt with in this study relate to the most recent CD approach, that of a timely crisis relocation plan (CRP) which would encourage and help persons to evacuate the riskier areas of the U.S. before a nuclear attack begins. This approach appears to be eminently reasonable in the absence of prepared, high-quality blast protection in or near the urban areas. However, it does pose numerous difficulties which may not be well known, but which should be resolved if the CRP is to be effective in a real emergency. The resolution of these difficulties is a vital part of any recovery strategies which might be employed to help our nation reconstitute itself in the unfortunate event of a nuclear war.

PART I

MOBILIZATION DURING A NUCLEAR CRISIS: THE DILEMMAS OF SURVIVAL AND RECOVERY PREPARATIONS

I. A CRISIS RELOCATION ORIENTATION

A. Low-Cost Plans and Crisis Mobilization

Until about 1960 most strategic analysis and planning (including civil defense) proceeded within a single framework that represented the beginning and ending of nuclear war in three time phases: peace, war, and recovery--a framework that was related to the concept of a surprise attack. This visualization imposed upon the planner the restriction that survival or recovery preparations must occur during peacetime. It followed logically that large sums (several billions or tens of billions of dollars) would be required for federal preattack and postattack preparations--funds which clearly have not been available.

But during the early 1960s the concept emerged that a nuclear attack on the United States would probably be preceded by a period of great international tension, a severe crisis. The former view of three simple phases has by now generally been replaced by much more complex ones: for example, a six-phase one of peace, crisis, war, and postattack early survival, reorganization and recovery.

For civil defense research and planning, the acceptance of a preattack crisis period complicates the picture by permitting many new response options. However, as a compensating aspect, it enables analysts and planners to see a potential for designing effective, low-cost survival systems. In addition, and of particular importance for this study, the concept of long or short periods of mounting crisis offers a new potential for effective recovery planning. The basic idea is that with plans for a civil defense mobilization during a nuclear emergency, the nation could not only provide the resources for survival actions but, given a sufficiently long crisis, could take measures that might greatly improve its ability to recover. This approach also introduces the possibility--and the advantage--of deferring the major costs of the system to the time of perceived need (when, presumably, funds would be readily available). (Ref. 1)

At the present time, civil defense seems to have little choice, if it is to obtain a highly effective defense, but to adopt a deferred-cost plan based upon rapid mobilization of the skills and physical resources of the nation. Thus, not unreasonably it would seem, a next logical step in the development of civil defense would be to add a capability, through preplanning, to phase in an emergency mobilization of the population in response to a future nuclear threat. (Ref. 2)

B. The Basic Scenario

For the purposes of this report we have adopted the strategic and civil defense-response scenario presented in The Nuclear Crisis of 1979 (NC-79).* No scenario can be presumed to be reliable, but the one we have chosen is useful for planning purposes. It assumes that people are able to complete a relocation program, planning for which had been started earlier by the federal government but had not evolved very far before the crisis struck the country. This assumed situation leads to an important question: To what extent would the reliability of the system have been affected if the government had had a complete set of sensible plans and preparations before the crisis occurred?

In assuming that the improvised response of the people had become sufficiently well organized to enable them to complete in time the preparations which the government had barely started, the NC-79 scenario was relatively optimistic. A crisis relocation with adequate plans and preparations in place should give its implementation much higher credibility than if preparations were lacking: we might suggest a confidence rating of perhaps 50-90 percent rather than one of, say, 10-50 percent.

In the NC-79 scenario a relocation and the associated preparations were accomplished because there was sufficient time to carry them out during the early crisis period (a few months) as well as during the severe crisis (a few weeks). However, if those time periods had been substantially shorter--if there were only weeks rather than months in the early period, and days rather than weeks in the latter one--the response of the population could hardly have been adequate. The way to create high confidence in a Crisis Relocation Plan (CRP) is to have sufficient plans and preparations in place that can adequately respond to a wide range of possible circumstances-- including relatively short warning periods. However, that would not be a cheap option.**

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*William M. Brown, The Nuclear Crisis of 1979 (Washington, D.C.: Defense Civil Preparedness Agency, Final Report WMB-75-9, September 1975), pp. 1-12. The strategic scenario--the intensification of a West-East German crisis leading to a full-scale conventional war and a nuclear confrontation between the Soviet Union and the United States--was based on a plausible war-outbreak scenario developed previously at the Hudson Institute. See Frank E. Armbruster et al., A 1965 European Scenario Leading to Nuclear War (Croton-on-Hudson, N.Y.: Hudson Institute, HI-553-RR/1, June 1965).

**The crisis relocation plans, which are eventually to be detailed for each community, could also be useful in case of local peacetime emergencies: for example, hurricanes, brush fires, floods, tornadoes, nuclear power accidents and chemical spills. In the recent Three-Mile Island accident, the credibility of civil defense was impaired when the public realized that the evacuation preparations were far from adequate.

If such a crisis should end without a nuclear attack, a lack of prior federal actions might in retrospect be characterized as incompetent, uncaring, or worse. The fact that people had to improvise measures to complete a CRP which had not been adequately prepared for might make them extremely critical of the government.

As this report will stress, the effectiveness of a CRP would depend not only on the timely movement of people, but of the stocks of survival and recovery supplies as well. Also, to the extent that a set of appropriate federal civil defense policies had not been developed in peacetime, they would have to be improvised during the crisis period. But in short-warning scenarios there might be insufficient time to make all of the essential federal policies. A glance at the list given in this report of the vital government preattack and postattack functions will make it evident that, unless they have been set forth in peacetime when extensive survival and recovery plans associated with the CRP are formulated, the policy decisions to support most of these complex actions will have to be improvised under most stressful circumstances.

The failure to have the essential policies for a civil defense program in place before an attack occurs implies that (a) many people will be needlessly killed by the nuclear blast because they could not get out of risk areas; (b) many people will not survive the early postattack period, even after relocating, because the fallout protection will be inadequate; and (c) the supplies required to maintain many of the relocated people for a few weeks or months after the attack will be inadequate.

Finally, a lack of timely government policies could greatly impede the ability of the survivors to reorganize effectively and would adversely affect the long-term recovery.

C. Government Implementation of a Crisis Relocation Plan

The relocation during an intense crisis of large populations from areas of potential nuclear risk to outlying host areas has been considered capable of saving millions of lives that would otherwise be lost in many types of nuclear attacks. In the NC-79 scenario, which assumed a 5,000-megaton attack, the lifesaving potential of crisis relocation was estimated to be 100 million lives.*

It has been estimated that within 24 hours, 60-70 percent of the risk area population could be evacuated; within 48 hours, 80-90 percent; and within 72 hours, more than 95 percent. Except for the New York and Los Angeles urban areas, which would require a little more than 3 days to evacuate, the relocation could probably be completed within approximately

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*Brown, Nuclear Crisis of 1979, pp. 57 and 59.

2 days.* Given effective warning--which, in the civil defense context means the time in which an emergency, phased mobilization of the population and planned protective actions can be completed--it should be possible not only to protect the population and stockpiles of important supplies, but equally as important, to adopt the policies and promote the development of organizations which would be urgently needed during the postattack reorganization.**

(1) Federal Government Supports

Federal implementation of a crisis relocation plan may be considered to be essentially supportive of state, local, and individual survival and recovery activities. Thus, if it orders a CRP, the federal government could offer support to expedite the movement, but leave its control to local authorities. The federal government could, for example, take the following actions if they seemed advisable:

-- encourage local food stockpiling with federal financing

-- provide credit to host areas and to all relocated persons in order to cover their potential needs

-- guarantee local bank loans for CRP preparations

-- assume responsibility for property damage caused by the relocation.

The government could also make available nuclear survival information and assist localities in the education and training of local personnel. A professional cadre could be maintained to help perform these functions.***

Ideally, the federal government should be ready to tap the immense potential of an awakening population which in a crisis would demand information, advice, policies and financial assistance as inputs to the rapid

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*Roger J. Sullivan, et al., Candidate U.S. Civil Defense Programs (Arlington, Va.: System Planning Corporation, Report 342, March 1978), p. 15.

**A 1963 Hudson Institute report estimated that if there were appropriate plans and proper motivation, the nation had sufficient resources to develop more civil defense capability during two days or more of crisis mobilization than was obtained during the previous fifteen years. See William M. Brown, ed., Strategic and Tactical Aspects of Civil Defense With Special Emphasis on Crisis Situations (Croton-on-Hudson, N.Y.: Hudson Institute, HI-160-RR, January 7, 1963), Chapter IV, p. 7. That judgment still appears to be correct today.

***See Sections 2 and 4 for more detailed discussions.

creation of an extensive system which could protect them from the nuclear threat. An aroused citizenry could furnish the resources and labor through a massive cooperation effort. The federal government could encourage and support this state of mind if it had already established appropriate and timely policies. (Ref. 3)*

D. Shelter Construction During Crisis Mobilization

It has become difficult to believe that the peacetime national civil defense budget will become large enough for sufficient shelters to be built in all the designated host areas. But, despite this seeming drawback, given a long-enough crisis period, a highly motivated population and a sharply increased emergency CD budget, adequate shelters very probably could be constructed in time in most of the host areas.

This assumes, however, that the federal government possesses inexpensive but thorough plans that have anticipated and solved the problems of providing shelter under crisis relocation conditions--problems that range from financing and the stockpiling of needed resources to providing information about how, where, and with what manpower the shelters can be built.

The war-outbreak scenario can crucially affect the sheltering of the population: with a surprise attack, few of the urban residents would even reach the host areas; but given several days to mobilize after relocation, they could improve and stock relatively good-quality existing shelters, as well as construct new expedient ones. Federal plans could include the possibility of building some of the needed shelters in each of the different time phases: early in a crisis, during a severe crisis but before relocation, and after relocation. It may also be feasible after relocation to construct a few "elaborate" expedient shelters as control centers and to develop the required supporting systems such as radiological defense (RADEF) and communications.

(1) The "Mix" of Federal Roles

In planning to support the creation of an adequate number of high-quality shelters during a crisis, the "mix" of controlling and supportive

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*Decentralized control of evacuation also seems compatible with the experiences in local peacetime emergencies. A well-known phenomenon in disaster literature is that when disaster strikes, new local organizations emerge to cope with the new problems. In natural disasters, federal responses which support local evacuation activities are often similar to those being proposed for nuclear war crises: for example, assuming some of the costs of the evacuation, taking responsibility for property damage, providing information and assisting localities in the education and training of local personnel.

federal roles might be critical. The optimum mix is likely to be one in which the principal federal role is to help to mobilize the huge reservoir of manpower by providing rapid financing for the needed resources and labor--financing which it alone might effectively be able to provide. In scenarios in which the crisis escalates rapidly and shelters have to be built very quickly, this approach could become crucially important.

(2) Rapidly Built, High-Quality Shelter

It should be emphasized that one of the principal resources for providing shelters in many parts of the country are the existing home basements. A single home basement could be improved to provide excellent shelter for more than a hundred people, if necessary; its natural protection could be upgraded rapidly by the evacuees and their hosts--although to achieve the desired level of protection, a significant amount of damage might be involved.

It has been pointed out that to obtain high-quality shelter rapidly, the floor above the basement might have to be covered with a foot or two of earth and the basement ceiling supported with lumber or other locally available materials. (In extreme cases, the lumber could be obtained by dismantling a garage or an interior wall of the house which is not required for roof support.)*

These approaches are a little shocking to contemplate in peacetime; but they should become readily acceptable during an extreme emergency--especially if announced federal policy guaranteed compensation for such damage. (See Section 12.)**

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*Brown, Strategic and Tactical Aspects of Civil Defense, Chapter V, pp. E-1 to E-3, E-8 to E-9.

"A minimum protection factor of 200 or more for improvised shelters is desirable to make it practical for people to live in them almost continuously for a month...During a one-week evacuation able-bodied evacuees, given proper instructions, should be able to construct shelters with protection factors of at least 200 in from 8 to 12 hours." (Chapter V, p. E-6.)

**Ibid.

"It must be recognized that such an all-out improvised shelter-making effort can result in billions of dollars of damages to private property... It will be important to assure local inhabitants of compensation for damages and costs of strategic evacuation and for supplying and sheltering evacuees." (Chap. V, pp. E-1 and E-10.)

2. INFORMATION AND EDUCATION PROGRAMS

A. Information Requirements Pre- and Post-Attack

In a crisis mobilization and during the early postattack periods there will be a constant, acute need for information and education which would enhance our ability to survive and recover from a nuclear attack. During a crisis mobilization people will want to know how and where to relocate, what leads to better protection, what is needed for reorganization. Later, in the shelter phase, they will need to learn how to survive and when to emerge from the shelter; and in reorganization, how to sustain their health, improve economic and social conditions and start rebuilding for the long-term recovery. The types of information that would be desirable in various phases of the preattack and postattack periods are suggested below.

(1) Preattack: Crisis Mobilization

During crisis mobilization, as civil defense becomes the focus of unprecedented national activity, an aroused population will be bombarding all levels of government for information, instructions and education on how to prepare for survival. A number of information and education programs have been recommended in previous studies; some are outlined later in this section. But unfortunately many of these programs are too elaborate for our traditional, low-budget civil defense planning. Consequently, during a crisis mobilization--particularly a rapid one--the government would be less likely to be able to initiate highly centralized, extensive programs than to develop policies to facilite local organization and control of survival and recovery activities.

An optimistic example of such a federal-local collaboration is developed in a sequence of civilian responses to a nuclear threat in the NC-79 scenario. As the leaders of a designated host area attempt to respond to the rapid intensification of the crisis and an impending evacuation, they are stunned by the realization that they have essentially no idea how to accommodate the enormous influx of people: how to house them, provide food for them, put them to work, support them financially, and build adequate shelters. In haste they draw up a partial list of obvious problems that will need consideration and solution.

The list of problems is of particular interest in this section. Though hypothetical, it suggests a premise for thinking about what kinds of information and help may be expected from government sources which have been operating under a low-budget peacetime program and suddenly must meet the demands of an "exploding" crisis:*

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*Brown, Nuclear Crisis of 1979, pp. 14-15.

-- Who had the legal right to assign the visitors to private homes or other places to stay for an indefinite period?

-- How could enough food be obtained, especially if it became a long stay?

-- How would we obtain fallout shelters (in the event of a nuclear attack) for 90,000 people? We had found less than 5,000 spaces according to the last survey taken about 10 years ago!

-- Who would assume the enormous financial responsibility for food, supplies, rent, damage, fuel, shelter, medical care, etc.?

-- Where would we get the extra facilities and trained people for maintaining order and physically handling a huge increase in demand for communications, postal service, groceries, cooking, cleaning, trash collection, electric power, sanitation...?

-- How would we organize such a large group of refugees in a reasonable amount of time to contribute to the work which would need to be done soon after they arrived?

-- Who would pay whom how much for what work?

-- Would a rationing system be needed? If so, for what items, how soon, and would it be feasible?

-- What needed to be done, actually, to prepare for surviving a nuclear attack? In this regard who are the professionals with valid information? Are there enough of them? How many do we get and when?

-- What assistance, if any, can we expect from the federal, state, and county governments: (a) during the planning (beginning now), (b) during the relocation, (c) during the stay, (d) in the event of an attack, and (e) if the visitors go back home leaving a mess?

-- How would we handle various kinds of disputes involving the visitors especially if the number of these disputes became very large?

-- What emergency changes should we expect for the "duration" in federal, state, county and local laws?

-- If we take this job seriously now, it will require immediate funds to make preparations; who provides them, and who bears the costs?

The rest of the sequence describes how the local area organizes itself, seeks information, and anticipates timely and appropriate support from the federal government for the local operations.

a. Shelter Construction Information

Building shelters will be an immediate preoccupation of hosts and evacuees. Based on the assumption that during a crisis relocation the evacuees and residents of host areas will be highly motivated to learn about survival, a previous Hudson Institute study made the following recommendations for advance educational preparations:

-- Maintain a stockpile of instructions for the post office, newspapers, and/or radio stations to disseminate at appropriate intervals. These instructions may relate to shelter construction, ventilation, local and state food stockpiles, water containers, radiation monitoring, local authority, emergency communication, effect of nuclear explosions--especially fallout particles and associated radiation--governmental responsibilities, and assisting the evacuation effort.

-- Maintain a stockpile of instructions to higher levels of authority such as Civil Defense officials, police, firemen, local town and county officials, and possibly army or National Guard officers....These should be educational both in providing basic information and in spelling out a useful role for assisting the emergency plan.*

(2) Postattack: In Shelter and During Reorganization

During the various postattack phases the federal government will find its functions as a collector and disseminator of information changing rapidly. Several of these time phases and examples of the kinds of information people might be seeking are distinguished below:

a. During the First Few Hours of an Attack

Shelterees will be anxiously trying to get news of the following sort:

-- The extent of the attack

-- The expected damage

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*Brown, Strategic and Tactical Aspects of Civil Defense, Chap. V, pp. E-8 to E-9.

-- The levels of radiation inside and outside the shelter

-- The amount of fallout arriving in different parts of the country

-- The possibility of either the prolongation or the cessation of the war.

In a low-budget civil defense program it might not be feasible to have sufficient numbers of trained people and useful dosimeters available. But it should be practicable to have information readily available that will enable some of the more technical people to learn what might be improvised in a short time during the preattack crisis. Radiation-measuring instruments, for example, can be improvised,* and information about radiation provided as part of a shelter information package. If people are given the basic information for understanding ways to measure and improvise protection against radiation--and later to decontaminate the areas in which they live--then they will at least have been provided with the most rudimentary, but possibly very effective, resources for coping intelligently with the long-term problems.

b. A Few Days After an Attack

When the distribution of radioactive fallout becomes reasonably well-known, people will search urgently for information about:

-- The potential for remedial evacuation

-- The localities with the least fallout

-- The possibilities for moving into less-radioactive areas and being reasonably well received

-- Whether the federal government has survived in important ways other than occasional information broadcasts

-- The prospects for sufficient survival supplies and ways to get more within a reasonable time

-- The possibility of renewed hostilities

-- The numbers and location of survivors

-- The extent of the damage throughout the country.

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*See Cresson H. Kearny, Nuclear War Survival Skills (Oak Ridge, Tenn.: Oak Ridge National Laboratory, ORNL-5037, September 1979), pp. 84-85, for a description of an accurate, homemade fallout meter.

c. The First Few Weeks of the Shelter Period

Various kinds of data or technical information might be transferred between communications centers of the federal government and the host areas. These transfers might have to do with the following matters:

-- Decontamination

-- The stocks of food, fuel and other materials for recovery that are in control of the government

-- The possibility of assistance from overseas

-- The general description of damage

-- The estimated ability of various regions of the country to survive and contribute to recovery.

Also, during this period, only the federal government should be in a position to provide people with information about the possible termination of hostilities and what to expect in the weeks ahead. Whether or not the federal government could make and communicate these assessments might depend on its advance preparations. Its surviving resources should include the military communications network as well as some private ones.

d. As the Reorganization Period Approaches

Over time, the bulk of the transmitted information should become more technical and more specific to recovery actions. People should be emerging from shelters and becoming increasingly active in building new economic institutions to improve their lives within the host areas. During this time they will increase their contacts with nearby communities, but will have more difficulty in getting useful information when the distances are greater.

At this time, shortages of supplies in one region might be substantially different from those in a neighboring state or from another part of the country. If the federal government were able to give a reasonable picture of the status of economic supplies and the emerging activity over the various regions of the country, the information could be extremely useful in assisting the reorganization. Many of the information-gathering systems at every level of government as well as in most businesses in the preattack period will have been destroyed by the attack. The ones that will still be functioning effectively should emphasize high-priority uses.

Of course, if the government has not survived or if it has been unable to function in this capacity, people would be left to improvise information systems of their own. If we assume that the federal government is eventually

restored, by the time the longer-term recovery begins it should be functioning usefully. But there is the danger in some circumstances that high levels of government which do not function during the first few postattack months might not be in a position to take over the reins of authority later (see Section 3).

B. Low-Budget Planning

In peacetime, certain preparations can be made under a low-budget program that might prove to be extremely important for supplying information rapidly during a crisis escalation. Moreover, to the extent they were accomplished during the preattack crisis period, these programs could have a great impact on the postattack survival and recovery and could function effectively whether or not the federal government were to survive as an entity.

(1) Professional Civil Defense Cadre

If it came into existence, perhaps the key element in providing information and guidance to a quickly mobilizing population would be a professional civil defense cadre, such as the one described in Section 4 of this report. These would be trained people with special CD skills and competence who would be distributed among local areas and knowledgeable about their resources and conditions; they would be locally oriented, yet up-to-date with the survival and recovery plans of all levels of government. Their special mission would be to maintain a readiness to provide useful information effectively and quickly in any future nuclear emergency.

(2) Lists of Essential Items

One low-cost but fruitful effort, which is described later in Section 5 on critical material stockpiling, would be the publication by federal, state or local governments of lists of valuable items for relocation, survival and recovery. In an intense crisis, as evacuation seemed imminent, these lists could be rapidly printed in newspapers and announced over radio and TV. Four lists of items suggested in previous studies are given in the Appendix to this volume.

(3) Survival and Recovery Manual

For little cost, considering its effectiveness, the federal government could publish a manual providing information on every important survival

and recovery problem.* Written in peacetime, the manual could be printed during a crisis period and dispersed throughout risk and host areas; after relocation at least one should be found in every shelter. The paramount needs of the pre- and post-attack periods should be covered: for example,

-- Obtaining important survival supplies

-- Providing an adequate shelter diet

-- Improvising or improving shelters

-- Maintaining health care and sanitation in shelters and during reorganization

-- Monitoring and determining the effects of radiation

-- Decontamination.

Another portion of the manual could be given over to numerous economic and legal problems an individual might encounter during the various attack phases. Included might be sections on currency, protection of assets and the resolution of disputes. Existing governmental CD policies covering complex matters such as property rights or war damage compensation could be set forth.

(4) Specialized Manuals

Specialized manuals might address particularly critical matters in the survival of individuals and institutions; these can be considered essentially "self-help" manuals. For example, because petroleum refineries are normally located in or near large cities, after most urban attacks there could be an extreme shortage of gasoline and other fuels, which might persist for years. What is less well understood is that there will probably be a glut of crude oil at the same time. In another section of this report we discuss this phenomenon and the possibility that, despite the risks involved, crude "backyard stills" might be improvised to produce fuel for special uses such as farming and local trucking. For this selected, local production, a special manual describing "How to Build Backyard Oil Refineries" might be issued. (The dangers in operating these "stills" are apt to be considerable and are noted in Section 21.)

We can envisage the publication of a series of titles for the agricultural, industrial and business sectors: "What Should the ------ Know?"

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*See Kearny's excellent report, Nuclear War Survival Skills, for a kind of survival manual limited to a particular orientation--that of survival skills for the individual and his family. The manual envisaged here would cover the survival and recovery problems of institutions and people associated with a CRP.

For example, what should the petroleum industry or pharmaceutical manufacturer or the motor industry or the farmer know about preattack preparations and postattack recovery problems in their particular areas?* Farming, for example, may be especially vulnerable to shortages of fuels and insecticides: severe shortages of either might in turn seriously hamper other recovery efforts. The manual might describe how to reduce the impact of these potential postattack shortages.**

C. Previous Recommendations

In previous studies, suggestions have been made for federal initiatives on a range of measures to prepare the population for survival and recovery. As we mentioned earlier, many of these may be infeasible within a low-budget program; this will be particularly true if the preattack crisis period is relatively short, and if, postattack, the federal government does not survive as a functioning entity. Several of these suggestions, which may be highly scenario-dependent, are mentioned here as possible alternatives.

(1) Training During Crises

The point that is particularly relevant in any civil defense strategy is that during crises, when motivation is high, the effectiveness of training and education can be expected to be substantially greater than during peacetime. Besides its potential as an economical and effective means of preparing the general population, crisis training can also be used

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*The sections of this report on health care, energy and transportation offer brief discussions of specialized problems and information requirements.

**Gastil suggests that

> "In previous studies...those supplies and instructional materials which might be helpful in communities faced with large evacuee populations for extended periods may not have been sufficiently emphasized. We note especially:
>
> 1. [In some scenarios] gardening can be a full time subsistence activity. Evacuees need stockpiles of seeds, general instructions and pamphlets, perhaps including instructions on how to collect and store seeds for crops in following years as well as insecticides. Insofar as possible, hand tools and pesticides might also be stocked."

(See Raymond D. Gastil, Postattack Scenarios [Croton-on-Hudson, N.Y.: Hudson Institute, HI-316-RR, January 15, 1964], p. 46.)

to ready special technical groups for emergency assignments. Also, while conditions permit, administrators and the proposed CD cadre can review emergency procedures and alternative solutions to new problems; federal, state and local agencies can determine their functions in the emergency; and shelter leaders and task groups in both the host and risk areas can extend their knowledge and organize to provide critical services. Some of the subjects of an education program for either crisis or postattack conditions are

-- Emergency shelter: improvement and construction

-- Decontamination techniques

-- Survival and recovery supplies

-- Emergency health preparations

-- Sanitation in shelters

-- Communications: pre- and post-attack.

The means for using crisis-engendered motivation could include literature, system exercises, and training by television. In addition, instruction in evacuation, communications, maintaining order, rescue, and other matters could be offered to police and fire personnel. The choice of means and substance should be related to local needs. (Ref. 6)

To recover from a nuclear attack, many people would have to work in jobs for which they were unprepared. Crash, on-the-job occupational training could be offered preattack by skilled personnel in industry, transportation, and commerce. Although many jobs could be learned rapidly in postattack periods, it would surely be advantageous to have training begin as early as motivation will bear it, while the economy is still intact and there is some time to refine skills. Of course, certain training will take place naturally as rapidly expanding war industries employ large numbers of new people in unaccustomed occupations--"Rosie the Riveter"--and as the nation organizes itself for civil defense.

Some of the types of skills likely to be in demand during the postattack reorganization and recovery phases are listed below:

-- Telephone line repair

-- Road maintenance

-- Railroad repair and maintenance

-- Building trades

-- Farming

-- Vehicle repair

-- Refinery repair and maintenance

The existing means for educating both the general public and special groups might be expanded in crisis periods; they include the following:

a. Printed Instructions

With little cost, a wide variety of printed information could be placed in appropriate locations. Every home, office and apartment could be supplied with instructions regarding warning signals and effective responses. Industry and labor unions could stockpile instruction manuals for critical jobs. Medical and health manuals, as well as a manual for postattack survival and recovery, could be placed in shelters.

b. Communications Media

Television and radio-broadcasting studios could offer pretaped instructions on emergency procedures; governnors could rely on previously prepared addresses. These actions would not only eliminate the requirement for developing statements under pressure, but would assure carefully worded messages, so important for effective communications and the avoidance of panic.

Newspapers and television are well suited to lengthy or complex subjects. In many conceivable crisis situations it would be possible to offer information regarding nuclear effects and other subjects through these media. In doing this, previously prepared films and printed instructions would be much preferred to new materials produced under emergency conditions.

c. Training Capability in Industry and Labor Unions

Both industry and labor would be deeply involved in emergency actions of any significant kind. As they do the bulk of job training in peacetime, it is only reasonable and probably natural for them to extend their involvement by preparing personnel for reconstruction and production. Any assistance they could get from government would probably be welcomed. (Ref. 6)

(2) Postattack Economic Conditions

One of the important federal roles for aiding postattack economic recovery will be that of supplying information on economic and social conditions. Certainly this role should go beyond one of merely communicating with existing regional or local conditions, although that will

be an extremely vital one. By acquiring, analyzing and distributing information on the current and prospective economic situation, a functioning federal government could also help stabilize the expectations about the future. Although the government would lack a complete information base, it would have the best capability of determining a reasonable overall picture and using that knowledge as a basis for some future predictions--for example, of the supply and demand for basic commodities. By giving authoritative descriptions of the immediate and expected situations, the government could introduce greater coherence into local economic decisions. Governmental announcements about expected crops, for example, would permit more rational decisions about food inventories. (The government could even choose to lend weight to its predictions by committing itself to act, if necessary, to make the prediction come true--for example, by reducing prices for survival supplies by committing its own stockpiles.*) (Ref. 1)

Assuming that either a medium or large attack occurred, early recovery efforts would need information on monetary and compensation policies, currency, existing resources, requirements and reasonable prices for post-attack commodities. This would be a time when normal communication channels would be largely disrupted, a time during which there would be a large change in the relative values of commodities, and which would require a substantial interval before resources, needs and prices could adjust to a new "normalcy." (Ref. 6)

In its broadest sense--by clarifying federal policies and serving as an economic and social communications link between levels of government, communities, industries and nations--a national information system could be the keystone to the federal role in economic recovery during all post-attack phases.

3. REQUIREMENTS FOR THE CONTINUITY OF GOVERNMENT

The problem of the continuity of government after a nuclear attack revolves around two basic considerations: (a) the ability of government to survive and maintain itself, as well as to provide service to the public; and (b) the adequacy of the provisions of continuity-of-government legislation and of the actual protective arrangements made for the designated government personnel.

A. The Survival of the Federal Government

Without a functioning authoritative federal government in the aftermath of a nuclear war, the country could cease to exist as a national entity for a time and then might find the separated pieces refusing to come together again voluntarily. Initially, almost all institutions would

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*Stockpiling is discussed in Sections 5 and 6.

feel dependent on a usable postattack federal monetary system and nearly all on emergency financial support for themselves or for those commercially connected with them. Inherited problems of debts, contracts, prices, taxes, wages, and damage compensation could not be satisfactorily managed on a local basis.

However great the local need might be for federal assistance, there is no assurance that it will be met. There are reasons to think that the federal government actually might be quite vulnerable. For one, if we are visualizing an urban attack, the federal buildings, offices, and personnel are concentrated in Washington, D.C. Thus, a city attack would certainly destroy their present centers of operations, their contents and the personnel who failed to protect themselves adequately. Moreover, the federal personnel stationed outside the urban centers tend to be local officials without the authority or special competence which might be required for patching together a new national government. (Ref. 1)

(1) The Money-Personnel-Authority Loop

Even if most of the personnel survived by means of a timely evacuation, the government might still collapse. For example, there seems to be a vulnerable "loop" of 3 "elements": (1) usable money, (2) federal personnel, and (3) federal authority. If one of them were to collapse the other two would follow. Certainly the federal government needs personnel, personnel require usable money, and usable money requires public confidence in federal authority. If this loop were broken in a postattack environment, it might not readily be reconstituted. For example, if money became nearly worthless, postattack, the personnel could not be paid and might have to leave in order to survive. The "government" could then disappear or lose its authority.* (Ref. 1)

(2) Sound Money

The major problem (and solution) seems to revolve around sound federal money. If public confidence in the dollar could be maintained, then the personnel could be kept (through preattack and postattack assurances) and the federal authority would be preserved, in principle, by simple provisions of (the existing) continuity-of-government legislation. But what could be done to maintain sufficient confidence in the dollar, or stated differently, to prevent a sudden wild inflation?

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*Some factors would tend to increase the postattack demand for, and hence the value of dollars. These include the traditional emphasis upon liquidity during times of stress, rumors of a restoration of federal authority, or the possible imposition of martial rule under national control. Such factors are discounted here, by assumption, to emphasize the case for preparedness.

One approach (see Section 5) would be for the government to requisition (that is, to purchase or nationalize) during the crisis sufficient stocks of food, petroleum, inventories of raw materials, etc., to be able to give postattack assurances that the dollar would retain much of its value since it, the federal government, would be prepared to redeem dollars with supplies from its stockpiles. To the extent that huge stockpiles of recovery supplies could be created during a preattack crisis there would be real reserves to back postattack monetary policies.* (Ref. 1)

(3) Required Plans

In order to assure its survival, the government will need to have plans on hand (for implementation in a crisis, if not before) for maintaining the money-personnel-authority loop. Depending solely upon a lengthy crisis to provide the time and motivation for making the preparations required by those plans is not a high-confidence approach. But it is a cheap one, and in the absence of vast sums for peacetime preparations, provides a course which could prove extremely valuable in many scenarios--especially those with protracted crises. (Ref. 1)

B. Present Plans for the Continuity of Government

(1) Presidential Succession

In order to assure continuity of government at federal, state and local levels, the federal government has taken steps to encourage its own departments and agencies, and the state and local governments, to take legal and constitutional initiatives to establish an official succession for each important office. A Constitutional Amendment (Article 25) to maintain effective leadership if the President is unable to discharge his duties, was ratified by the states in 1967. The order of Presidential succession was established, ranking the responsible officers as follows: The Vice-President, Speaker of the House, President pro tempore of the Senate, and then the cabinet secretaries, beginning with the Secretaries of State, Treasury and Defense and ending with the Secretary of Energy.

(2) Nuclear Protection

In addition to establishing lines of succession, the federal government has developed plans to protect departments and agencies classified as Category A--those organizations with essential, uninterruptible functions--in emergency facilities scattered in a wide area around Washington;

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*These policies probably would restrict individual purchases of postattack survival supplies. Restrictions could be imposed through blocking of accounts, a currency reform, or other means which could assure both reasonable prices and the meeting of subsistence needs.

this has been named the Federal Relocation Arc. Category A includes the executive departments, some agencies in the Executive Office of the President and a handful of independent agencies, including, for example, the Federal Reserve System (Board), General Services Administration and NASA. In addition to its regular office, each of these organizations has two other geographic locations: a first alternative emergency operating facility (the consolidated emergency operating center) and a second one which is separately maintained by each department and agency.*

(3) Executive Order 11490 and 11921

Executive Order 11490, "Assigning Emergency Preparedness Functions to Federal Departments and Agencies," amended by Executive Order 11921 of June 11, 1976, plans for the continuity of essential government functions. Specifically, the orders provide that each of the several departments and agencies of the Federal Government "which complement the military readiness planning responsibilities of the Department of Defense" is required to plan for and take actions that may be necessary "to assure that it will be able to perform its essential functions, and continue as a viable part of the Federal government during any emergency that might conceivably occur." These plans include the following: (1) succession to office; (2) predelegation of emergency authority; (3) safekeeping of essential records; (4) emergency relocation sites; (5) emergency action steps; (6) alternate headquarters or command facilities; and (7) protection of government resources, facilities and personnel.**

The two executive orders provide in essence an outline as to what role each federal agency is to have in handling emergency planning. For example, the Department of Agriculture is to prepare emeregncy plans and develop preparatory programs relating to food resources, farm equipment and fertilizer, but the Department of Commerce is charged with a similar role regarding production, processing and distribution of food resources and the distribution of farm equipment and fertilizer.

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*U.S. Congress, Joint Committee on Defense Production, Federal, State, and Local Emergency Preparedness, Hearings before the Joint Committee on Defense Production, 94th Cong., 2nd Sess., June 28, 29 and 30, 1976; see especially p. 75 and the responses of Leslie W. Bray, pp. 207-220.

**U.S. Executive Office of the President, Executive Order 11490--Assigning Emergency Preparedness Functions to Federal Departments and Agencies as Amended by Executive Order 11921--Adjusting Emergency Preparedness Assignments to Organizational and Functional Changes in Federal Departments and Agencies, June 11, 1976, Federal Register, Vol. 41, No. 116 (June 15, 1976).

C. Conclusions: The Real Dimensions of Survival

Essentially, we have discussed two versions of the continuity of government. The first is concerned with some of the substantial aspects of actually continuing a federal government that has endured a nuclear attack and is struggling to perform useful functions. We assume that the personnel for staffing the higher levels of government have been clearly defined. The remarks in Section A suggest that continuity in the lists of authoritative federal personnel is necessary but would be far from sufficient to assure a viable government.

Section B indicates that some action (however incomplete) has been taken to assure at least the formal continuity of governmental authority. Indeed, of all the various possible postattack preparations that might be made, the provisions for maintenance of authority at the upper echelons of the federal government--and some state governments--are among the most complete.

This somewhat unfortunate emphasis upon form, rather than substance, tends to be misleading. It enables people to speak of the continuity of government through the preattack and into the postattack period as if the words themselves were substitutes for real authority. What Section A indicates is that, whether or not such formal authority exists, the federal government will be very vulnerable unless it has made effective preparations to survive. We mentioned earlier that even with the proper timely policies, there would be no high-confidence in its survival after a large attack. Without significant preparations, the mere formal structure of the continuity of government on paper might prove to be little more than a futile bureaucratic exercise.

One of the continuing themes throughout this study is that surviving government should be examined on the basis of its capability for useful postattack functions: its ability to be flexibly responsive to rapidly changing needs and its control of tangible assets for supporting the population and lower levels of government with critical materials and services. Without such a capability--that is, if it were to survive in form only--its actions could become a burden, counterproductive to the attempted recovery.

4. A PROFESSIONAL CIVIL DEFENSE CADRE

The acceptance of the notion that there will likely be a longer or shorter period of crisis tension before a nuclear war, and with it, the recognition that effective, low-cost survival and recovery measures can be planned for, provides a conceptual opportunity to create an emergency survival and recovery program that would be both appropriate to a large range of nuclear threats and realistic in cost: a federalized professionalized program oriented toward creating a comparatively inexpensive mobilization base from which rapid and important increase in protection could be achieved if tensions increased or an emergency arose. (Ref. 5)

A. The Make-Up of the Cadre

In particular, what is visualized is the existence of a full-time, highly trained professional core of a few thousand individuals whose lifetime job is to be knowledgeable about existing local, regional, and national survival and recovery resources and the potential for rapidly expanding them into an effective capability-in-being during some future nuclear emergency. The personnel in this cadre would be apportioned throughout the country roughly in accordance with the ratio of existing population. (A study would have to be done to determine an optimum allocation.) They would maintain contact with each other by participating in regional, state, and national civil defense projects through which they would be able to coordinate their local plans and preparations.

The selected individuals would be expected to be (a) survival-oriented, and (b) trained in operations such as rescue, engineering or construction. They would form a semi-autonomus,* self-selecting group that recognizes the particular kind of competence needed in such an organization. For this group to maintain its readiness and effectiveness it would have to maintain a high morale, This would imply that the organization should be formed in such a way that it would resist becoming unduly politicized over time--a possible threat which might have to be fought from its inception. This concern would make an effective cadre more difficult to form initially, but would provide a much more vigorous organization in the long run.

B. The Functions of the Cadre

The cadre would be constantly apprised of and in touch with the plans for survival and postattack recovery at all levels of government. It would be their job to understand what can and should be added to the system during an emergency: where to recruit volunteer help, what policies still needed to be formulated and implemented, and where critical supplies could be found. They would be prepared to give advice to the authorities in local governments (as well as to regional and/or state administrations) during any future crisis--especially one which had built up to such a pitch that civil defense preparedness had become the primary function of every civilian.**

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*Like today's Federal Reserve Board, the cadre would be funded by the government, but would be regarded as an independent entity, vested with limited authority to make binding policy decisions.

**A professional survival-oriented cadre distributed among the nation's localities should also be an invaluable asset during peacetime emergencies. In many such disasters, local organizations could tap their unique skills and their knowledge of local resources and evacuation plans. In any nuclear-power accidents or chemical spills, their specialized knowledge should be of particular importance.

Conceptually, the difference between such a professional cadre and the existing civil defense organizations in state and local communities would be that the cadre would consist of nonpolitical, dedicated, full-time professionals who would be able, if necessary, to cull from their ranks those who did not have the required minimum interest and commitment to the calling.

Although ordinarily it would maintain a low profile, during a nuclear emergency, the cadre might become the most valuable group in the country. Emergency civil defense actions would depend highly on its knowledge, skills and ability to give guidance to the local governments which would formally be in charge of the emergency responses. Its professional orientation would be to remain ready to give localities the advice and guidance needed for survival when--if ever--a nuclear emergency would occur, and for recovery during and after a crisis.

The cadre might contain between 1,000 and 10,000 persons when it is full-strength (in peacetime). The preferred size would be related to the federal budget available for this purpose. Detailed studies could reveal the expected effectiveness of such an institution and its cost. Although it would have some similarities to the military services (e.g., it becomes valuable when war threatens) the differences would be greater than the similarities. First, all of the cadre's personnel would be highly professional. Second, their primary function would be to help the emergency mobilization, not fight an enemy. Third, they would be trained to become extraordinarily valuable leaders in the event of a nuclear crisis, and only then. Thus, instead of comprising an "army," the cadre would contain only "colonels." Its "army" would be composed of the entire civilian population, if the need should arise.

5. THE STOCKPILING AND FINANCING OF CRITICAL MATERIALS

A. The Need for a Federal Policy

Federal financing to assist and encourage local pre-attack efforts in redistributing critical materials--food, fuel and pharmaceuticals--from distant stockpiles to the host areas could provide protected supplies for early survival and recovery in the event of an attack. The visualized program would be designed to (1) help prevent the prodigious waste of effort that would follow if individual families found they had to scrounge or forage independently to secure sufficient supplies; (2) lend support to local cooperative action; (3) help reduce profiteering; and (4) give assurance that the government is actively behind the relocation operations. A bold federal policy, established by the Administration early in the crisis (if not in peacetime) could encourage each relocation center in the host areas to make plans to

-- Obtain and store up to a year's supply of food

-- Bring in as much fuel as it could safely obtain and stockpile

-- Warehouse its proportionate share (as determined by federal guidelines) of all of the important pharmaceuticals in current inventories as well as those which could be subsequently manufactured and distributed

-- Obtain other critical supplies of high priority.

B. The Importance of Critical Materials Stockpiling

Many analysts believe that without distributed stockpiles, a viable nation might not emerge from the postattack reorganization: the country might not be strong enough to renew production of sufficient food and other essentials and still be able to defend itself and recover economically.* If there were, for instance, few local food stockpiles available during the shelter phase and if the availability of new crops during the early postattack months were meager--as would be likely--further food shortages would develop. Without special precautions, a large attack against urban areas would certainly destroy many critical resources which are normally stockpiled, manufactured or used in large cities. This would be especially true for petroleum refineries and the pharmaceutical industry and for a large percentage of their manufacturing facilities and stocks.**

Postattack production of many basic items almost certainly would be impeded while the demand for them can greatly increase. Limitations in normal inventories and the great uncertainty about possible foreign sources of timely supplies would make federal support for the emergency stockpiling of survival and recovery items very important. These items might include food, medicines, sanitation supplies, fuels, tools, lumber, paper, and metals. (Ref. 6)

C. Stockpiling to Enhance Government Survivability

During the preattack emergency, an appropriate federal policy might encourage the building up of three kinds of stockpiles:

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*For a broad discussion, see especially Sidney G. Winter, Jr., Economic Viability After Thermonuclear War: The Limits of Feasible Production (Santa Monica, Ca.: The RAND Corporation, RM-3436-PR, September 1963); Jack Hirshliefer, Economic Recovery (Santa Monica, Ca.: The RAND Corporation, P-3160, August 1965); and William M. Brown, On the Postattack Viability of American Institutions (Santa Monica, Ca.: The RAND Corporation, P-4275, January 1970).

**U.S. Congress, Joint Committee on Defense Production, Economic and Social Consequences of Nuclear Attacks on the United States, prepared by Arthur Katz, published by the Senate Committee on Banking, Housing and Urban Affairs (Washington, D.C.: USGPO, March 1979), pp. 77-79 and 90-94.

(1) Food and other stocks which must be associated with each of the host areas and hopefully would be sufficient to carry the local residents through the early survival and organization periods.

(2) Food and other stocks under the control of a state or regional jurisdiction and intended for subsequent postattack redistribution, as necessary, among the many localities within its purview.

(3) Food and other stocks which belong to the federal government and remain under its control, but which have also been specifically designated as national stockpiles to aid in the recovery process.

Part of the intent in creating national stockpiles in category (3) is to use them as a backing for postattack federal authority and currency, and as assets for compensating federal employees and contractors until sufficient taxes can be collected. (See Section 3.) Also, these stockpiles could be useful in some local welfare emergencies which are beyond the capacity of the state to handle--perhaps those in which local stockpiles were initially insufficient or became destroyed or severely damaged by fire, nuclear effects or weather.

What may also be needed now is an understanding of what might happen to state and federal stockpiles, or other valuable public assets, should the federal or state government not be able to function effectively for a substantial period of time postattack. Without such existing authorities, these assets would be very likely to be "raided" by nearby localities and be impossible to protect. If very many such raids occurred, it would become much more difficult for the federal and state authority to be reconstituted, if only because it would have fewer tangible assets to support its required reorganization and vital postattack functions.

D. Critical Supplies in Various Postattack Phases

The value of local stocks of food and other critical materials would be especially important during the early survival and reorganization period when the flow of goods would be at a minimum. In the first days or weeks after an attack, some supplies may be particularly critical: for example, pharmaceuticals and sanitary supplies, food and water. Later, during the reorganization period, the need for other materials such as fuel, tools, hardware and lumber might be especially important. During the longer-term recovery, certainly several years or more, we can assume that to the extent that fuels can be obtained, transportation would become increasingly available. As radiation diminishes to levels at which most persons would not be excessively worried about exposure, commercial trading in tools and construction materials would gradually resume--with or without the presence of a federal or state government to furnish assistance during those times.

E. The Postattack Usefulness of Existing Strategic Materials Stockpiles

The degree to which specific stockpiles now owned by the government would have a special postattack value or demand should be the subject of a separate study. It should also be determined if the materials found to be valuable should be redistributed preattack, and, if so, to what extent, how and when. The physical redistribution need not fall under federal control in a detailed sense. Rather, at an appropriate time the federal government might make it known that some materials are available for sale and that properly authorized persons can appear at specified locations, pay with cash or credit vouchers for needed quantities of these materials and arrange to move them to preferred redistribution centers. The share of supplies available to each local area could be limited according to set federal guidelines--perhaps by the credit issued. Presumably most of this would be done during a relatively severe crisis. Should the crisis abate without an attack, the cost of returning the materials to their original locations, if deemed necessary, would be relatively small in comparison with their potential postattack value.

It would obviously be even more important to have accomplished this redistribution preattack if the federal government itself failed to survive the attack and no postattack authority existed that could sell or transfer part of the stockpiles. Under such circumstnces most regions of the country might be deprived of their shares of these assets just when they might be crucial to recovery.

F. Essential Items for Relocation and Recovery

It appears that in the private sector many preparations are feasible that would not require costly governmental efforts. One of the important services the federal and local governments could offer would be to provide information about existing supplies, either raw or finished goods, which might be of unusual postattack value. If tools, sanitation supplies, lumber or flashlights might have special usefulness postattack, many persons would probably try to obtain them without federal assistance. Through its emergency plans the government might encourage manufacturers and distributors to direct the flow of such materials or supplies through the normal commercial systems to the host rather than the risk areas.

In the context of their reports, or in some cases, their scenarios, analysts have already devised partial lists of items they considered important to survival. Four of these lists, taken from existing studies, are given in the Appendix to this report.

G. Summary Recommendations

It would seem important for the federal government now to study carefully the particular problems of stockpiling and then to do the following:

(1) Review at an early date the stockpile requirements for local and national survival during successive postattack phases.

(2) Plan for building and maintaining during a nuclear crisis those stockpiles which the federal government alone could finance or supply in large amounts.

(3) Identify its vital allocation functions in the event that a largely decentralized approach would be needed for distributing part of the exising federal stockpiles.

(4) Become prepared to meet the public's demand for information about stocks in relocation areas and provide lists of items essential for survival and recovery that may be available from homes in the risk areas.

6. THE EMERGENCY REDISTRIBUTION OF FOOD STOCKPILES

A. The Significance of Preattack Food Redistribution

After a medium or large-scale nuclear attack on urban and industrial centers, food distribution may be the most critical factor for survival and recovery. Following large attacks, food production and distribution could stop for several months, or in a massive, highly radioactive attack perhaps for a year or more in most of the country, and then might only slowly recover. In such circumstances, existing food stockpiles could be the nation's most important asset. The country is currently fortunate in having tremendous stocks of food, perhaps enough for 1-1/2 or 2 years; but unfortunately they might not be easily available to the population, postattack. Moreover, within a state or country, food distribution is often uneven; many local food stocks, including those in shops, markets and farms, may only be sufficient to last a few weeks.* After a nuclear

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* "An example of the possible scarcity of food in farming districts near big cities is furnished by Orleans County, New York. This is a typical dairy farming county in New York, yet its food stocks on hand in homes, stores and warehouses would only feed local inhabitants for approximately 42 days. If evacuees add six times as many mouths to feed--as is anticipated by our calculations--the existing food supply would last less than a week.

Actually our nation as a whole has stored food reserves--mainly surplus grains--sufficient to feed survivors for several years, but not within reach of consumers in many areas." (Brown, Strategic and Tactical Aspects of Civil Defense, Chap. V, p. F-1.)

attack, without prepared local stockpiles, there is likely to be a tremendous food distribution problem. If damage to the transportation and communications networks should be large, supplying food from distant stockpiles might require most of the available fuel, just when the competing demands for reconstruction would be greatest. (Ref. 6) Even worse, much of the food might be destroyed by the attack or made inaccessible.

If the postattack food distribution problem were solved, the size of the stockpile could determine the ability of U.S. society to recuperate. On the basis of an economic analysis, Sidney Winter arrived at the conclusion that available food is likely to be the most important factor in determining the postattack viability of the economy.*

It is clear that given the expected magnitude of postattack problems, government efforts should be directed toward the redistribution of food stockpiles during the preattack period. It is unlikely, however, that any major effort to redistribute food would be made until the population becomes aware of its urgency and learns that it can do something about it. A crisis relocation provides a very obvious time for hosts and evacuees to move available food stocks to their host areas, especially under the aegis of a federal policy which supports such local action with federal funds or credits. Given enough time in a nuclear crisis, and especially during the relocation mode--two or three weeks--with the activity of a high-morale, motivated and enterprising population, stocks adequate to last at least six months could be built up and stored in warehouses in the host areas as well as in the shelters.**

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*Winter, Economic Viability After Thermonuclear War, p. 116.

**According to Kearny

"...the usually large U.S. stocks of grain and soybeans are an unplanned survival resource resulting from the production of more food than Americans can eat or sell abroad. The high productivity of U.S. agriculture is another unplanned survival asset. Providing enough calories and other essential nutrients for 100 million surviving Americans would necessitate the annual raising of only about 16 percent of our 1974 crop of corn, wheat, wheat, grain sorghum and soybeans--if nothing else were produced....

A total of 2 pounds per person per day of these basis staples...would be sufficient to provide the essentials of an adequate vegetarian diet....

If corn, wheat, grain sorphum, and soybeans were the only crops raised, the annual production would need to be 730 pounds per person. Our 1974 annual production would have supplied every adut, child and infant in a population of 100 million with 4,760 pounds of these four staples." (Nuclear War Survival Skills, pp. 77-78).

B. The Federal Role

The federal government might have two major options for the control of emergency food distribution. First, it could guarantee payments for food requisitioned from any of the major stockpiles, distributors or farmers. Federal guidelines could set a limit to the host areas' food stocks--e.g., a six-months' supply--that it would finance. Presentation of a duly authorized voucher by a mayor or governor might be sufficient to obtain the required credit. These vouchers should be in forms that are acceptable to both suppliers and local bankers, to remove any doubt about their validity. Moreover, during the emergency, the federal government should not unduly worry about fraud in these matters; liability for excesses and prosecution for fraud, when it is suspected, can be considered after the crisis abates. The second option would be for the government to nationalize all major food stockpiles and designate the present managers or owners as its agents--with instructions to respond to federal policy, as indicated above. The government presumably would provide reasonable compensation to the owners for any losses which they might sustain during the emergency redistribution.*

C. The Decentralized Role

If large quantities of food are to be relocated in a very short time, it appears to us almost mandatory that the organization of the transportation, warehousing and control of relocated food be left to the host areas which are to receive it, and that designated persons be authorized to take those responsibilities. The decisions about which forms of transportation are to be used (trucks, trains, barges, etc.), with what schedule, and under whose control or jurisdiction, would be left to the local authorities. Estimates indicate that even after the population has been evacuated, much of the required food relocation, under a decentralized system, might be accomplished within a few days and that a full program could be completed within two or three weeks.**

D. The Timing of Redistribution

The question of timing is also very important. Assuming that extensive plans and preparations have not been made, a preliminary "test" movement, of, say, a one-month's supply of food could be accomplished during a growing crisis, but before a CRP has been implemented. This would achieve perhaps 10 to 20 percent of the overall redistribution that might be required after the implementation of a CRP. The implicit assumption is that sufficient time for these activities would be available both before

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*Section 7, "Nationalization Policy" describes this procedure in more detail.

**Brown, Nuclear Crisis of 1979.

and after the relocation. We expect that, as an average, little more than two or three days will be required to move enough food to give host area civilians a one-month stockpile. Few analysts now doubt that this much time should be available in most of the relevant scenarios. The first experience with massive food relocation should prove to be very valuable subsequently, when the bulk of the redistribution must be accomplished--probably under more stressful circumstances. In effect, it would be a "dry run" to enable the system to respond much more effectively during the really severe crisis and should greatly increase the efficiency and reliability of the major effort.

E. The Consequences of Failure

Without a competent plan for relocating food supplies, the implementation of a CRP would have a much higher probability of failure. Families might be reluctant to leave their homes without assurances of food sufficient to last at least a few months. At minimum, the evacuees would need to be aware of a federally-sponsored program for the simultaneous movement of food stockpiles. Their ability to survive the early postattack period might be very strongly dependent upon the existence of local stockpiles; and moving major food stockpiles after an attack--if it were at all possible--would be enormously more difficult to do than preattack. Since it is not at all clear that many localities would be willing to part with large stockpiles of food in the postattack period--perhaps their only remaining important asset--under many easily visualized circumstances, attempts to requisition food postattack could lead to local armed conflicts.

It must be emphasized that there may or may not be a postattack federal government with authority to order or support a timely relocation of food stockpiles. A lack of federal authority could compound whatever serious problems already existed. Without federal support, it is doubtful that any authority on a state or local level could be very effective in accomplishing food relocation without the expenditure of an oppressive amount of physical force--not at all a pleasant situation to anticipate.

The attempt by any government, whether state, regional or even national, to redistribute food supplies postattack would not only be of doubtful success, but would squander extremely important resources and subject valuable personnel to probable radiation exposure that would make the efforts very costly. It is difficult to believe that food-rich areas would be willing to part with "their" food if they were not given adequate compensation for it. Attempts to force the food from them might not be successful; and if they were, they would likely leave a great deal of resentment and bitterness or possibly lead to riots or insurrections against the authorities. None of these possibilities are pleasant to contemplate: they certainly suggest that the relatively easy task of performing the redistribution before a possible attack be given an extremely high priority.

7. NATIONALIZATION POLICY

A. An Emergency Nationalization Alternative

Throughout this study, nationalization is suggested as one option the federal government might take during a nuclear crisis to facilitate a rapid dispersal of critical supplies into local stockpiles and to provide a postattack government with backing for its currency. The nationalization, which presumably would only be undertaken as a temporary expedient, could include all of the large stockpiles of survival supplies--food, fuel, etc.--and the associated, private commercial establishments. If the federal government did nationalize a number of private establishments, the urgency of the situation suggests that they would be most effectively managed if the active owners or executives of those organizations would continue to run them as agents of the government while the emergency lasted. If the crisis abated without a nuclear attack, we presume that the establishments would be returned to their former owners and that the govern-ment would compensate them for all, or most, of the losses that might have accumulated during the period of nationalization. Because it might be difficult in practice to make the transitions justly and efficiently, in real situations they might well be expedited with some sacrifice of equity.

During the preattack emergency, the federal government might also wish to nationalize the assets and liabilities of selected key industries and financial institutions. As Hirshleifer has said, a nuclear attack against urban areas or industry will destroy a business's assets but not its liabilities (see Section 14). Consequently, bankruptcies will abound throughout the country after any massive attack. This could be prevented if the assets and liabilities were assumed by the government through nationalization. Given sufficient crisis warning time, records of industrial and financial assets and liabilities could be stored; in this way, subsequent computation of net losses would become practical. The compensation policy, clearly, should be specified in advance, as far as is feasible.

B. Some Possible Effects of Nationalization

- -- Because survival stocks would become government supplies, a large portion of which are to be sold and warehoused in host areas, much of the temptation to hoard such stocks for a better price would be circumvented.

- -- The ponderous, traditional wartime system of rationing and allocation, which is likely to be ineffective in an urgent nuclear attack context, would be avoided: these control mechanisms are unlikely to respond rapidly enough to swiftly changing requirements; they might even cause irreparable harm by creating delays and inefficiencies.*

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*See the discussion on government controls in Section 9, "Policies on Wages, Prices, Rents and Contracts."

-- Nationalization could help reduce problems associated with huge profits and losses during a period of wildly fluctuating demand.

-- During reorganization period, the government would have huge tangible reserves to effectively bolster the dollar or any other postattack money it might wish to issue. If the federal government could back its currency with the entire national stockpile of food and other critical materials, it would probably command much greater respect. (Refs. 3 and 7)

C. A Centralized-Decentralized Nationalization Program

A federal policy that is both centralized--in that it determines which establishments should be nationalized preattack and provides them with goals and guidelines--and decentralized--in that within the bounds of federal policies the detailed decisions about how to run these establishments would be left to the local existing managements as agents of the federal government--would first need to be carefully examined in a major study and then defined as a useful contingent program. That this approach might become another hard-to-resolve dilemma would not be surprising: large-scale nuclear warfare poses many of them. Without meaning to prejudge the results of any subsequent study, our present belief is that during a nuclear crisis, nationalization without provisions for decentralized management would probably constitute a serious mistake. We present below some preliminary thoughts on this matter.

(1) Proposed Bases of a Nationalization Program

-- The federal government might need to rely upon a new spirit of unity and cooperation growing out of a crisis mobilization to assure a reasonable amount of equity in the distribution of critical goods and services.

-- Management decisions would be left to the "marketplace," based upon local felt needs and the perceptions of millions of local decision-makers.

-- The effect of the federal program should be equivalent to that of decentralized operations constrained by announced goals and guidelines.

-- It should be made very clear that if no attack occurs the nationalization will end shortly after the crisis abates. (Ref. 3)

Although there are some clear conceptual advantages to nationalization, there are also a number of great dangers. One of the principal

dangers is that it might prove extremely difficult for the federal government to tolerate decentralized management of its assets. As far as we know, this approach is unprecedented in history (as is large-scale nuclear warfare) and might be too "far-out" for practical federal policy. Without decentralized management, however, it is doubtful whether the nationalization could be effective; in fact, it might prove to be counterproductive. In contrast, a "laissez faire" solution--however inequitable it might be--would at least permit many important preparations to be done quickly.

If the government did nationalize some critical industries during the crisis, and did authorize decentralized management, there would be at least some hope that the exigencies of the situation would lead to reasonably cooperative action among people as they came to realize the crucial importance of pulling together. The nationalization of these business establishments would, in effect, preclude the possibility of their having huge profits or losses--possibly of their having any profits or losses. Providing protection againt loss to these businessmen would at least help their organizations to function relatively smoothly during the preattack crisis; the motivation for efficiency would be provided by the emergency and by federal guidelines.

Part of the job of the federal government, after a nationalization was announced, would be to describe to the managers of the nationalized organizations the principal changes in the nature and importance of their new roles. They would be encouraged to operate their enterprises in accordance with the stated aims of the government, both in its conduct of the crisis and in terms of its policies and programs for preparing the population against any nuclear attack. Clearly, this approach would not be a high-confidence one, but it might be the best available option under many circumstances--such as those of the NC-79 scenario.

D. The Evolution of "Paragovernmental" Organizations

Assuming that decentralized management of nationalized firms was reasonably effective during an itense crisis, over a period of weeks--possibly months in some scenarios--a partial restructuring of the commercial segment of the U.S. economy would occur; this could lead to the development within the nation of numerous "paragovernmental" commercial organizations. Although they would function somewhat like "free-market" entrepreneurs, technically they would be part of a temporary new national authority. As these organizations evolved, they would presumably attain new skills and interior structures with which to cope with the changing requirements of an accelerating emergency. Thus, for large food stocks to be moved into host areas, the transportation system would need to be rapidly reorganized. Some industries would be shut down, others converted to produce higher priority items wherever this were feasible; and other changes would be made in the distribution and production system which would be consonant with the needs of the time.

E. The Postattack Utility of a Paragovernmental Organization

The growth of paragovernmental organizations might prove to be valuable during the postattack period in two ways. First, by virtue of their previous experience, they would be better attuned to the posttack needs--especially if they had done some thinking and taken some actions preattack in anticipation of recovery needs. Second, we can visualize these paragovernmental organizations providing functional support to the postattack government. These could be the organizations that might be able to carry out many of the more important postattack recovery functions: preattack they may already have improvised emergency communication and transportation systems, set up local rationing systems for food and fuel, and created protected stockpiles of key assets (food, medicine, computers, component parts, tools, instruments, etc.). To the extent that these organizations became effective preattack they would have reorganized the normal modes of functioning and have completed a large number of specific preparations which could be used for, or adapted to, both postattack survival and recovery. Thus, in this rather unconventional way, we can visualize the growth of an important underpinning to the postattack federal government. This underpinning would be based upon literally millions of persons--technically government employees--who had established an enormous amount of federal assets in the form of critical survival and recovery supplies and who could provide a vast base of practical knowledge and experience for postattack recovery. In this sense, if nationalization were reasonably effective preattack, it could be extended into the postattack reorganization period to help form an operating basis for an effective surviving government before being dismantled in favor of private ownership. Of course, there can be no guarantee that the system would not disintegrate under the impact of a large nuclear attack--but there are probably no high-confidence solutions to the impact of that disaster.

8. FEDERAL POLICIES FOR EMERGENCY FUNDS AND CREDIT

A. *Helping a Crisis Relocation to Work*

The thrust of the federal government's preattack civil defense policies should be designed to help make certain that the CRP can be properly executed and that the posture achieved would be the desired one. This posture would not only have put the bulk of the population in a relatively protected position and have stored survival supplies sufficient for several months or more, but it also would have created a basis for postattack reorganization and recovery--to the extent that this could reasonably be done through preattack emergency actions.

The success or failure of the crisis relocation could well depend upon the existence of appropriate supportive federal policies; these would require the federal government to assume many of the financial liabilities and responsibilities for the associated preparations. Also, these policies might need to be implemented in a way that neglects most of the usual

peacetime concerns about potential fraudulent behavior, as excessive concern of this type could paralyze the relocation. (Ref. 3)

During and after the relocation many activities of the federal government will be critical, but the efficiency of the relocation may well depend upon federal actions helping and advising local areas rather than of directing local behavior through bureaucratic controls. This is another aspect of decentralization: removing controls over local choices while encouraging timely public acceptance of the CRP. Some of the important specific federal policies in this regard are described below. (Ref. 3)

(1) Personal Credit to Evacuated Families

A federal policy of offering limited but easy personal credit to evacuees could have a large impact on morale. By making a modest amount of credit rapidly available to each family, the fears of a liquidity crisis among individuals could be avoided. This would also enhance the cooperation of the host areas. The credit could be arranged by authorizing each relocated adult and minor to borrow a stipulated amount of money per week from local banks, on demand--for example, $100 per adult and $50 per child. The federal government would guarantee the loans. (Ref. 3)

This policy would have the effect of expediting crisis location and survival preparations and providing a measure of equity for persons who would have left "everything" behind in risk areas.

(2) Funding Preparations in Host Areas

In accordance with stated policy limits, banks could be encouraged to disburse funds to eligible institutions on demand for all authorized crisis relocation activities, again with federal guarantees of repayment. To encourage sufficient host area preparations relating to reception, food, shelter, housing, etc., the federal government might give each host area government carte blanche to spend up to a specified amount of money for each person assigned to it from a risk area. (Ref. 3)

Most of the mobilization operations in a crisis relocation would probably have to be financed with federal funds or through federal guarantees of loans. This might be preferred federal policy for a number of reasons:

-- Most of the mobilization and recovery preparations should be executed by local organizations. Community and state governments would be considerably more intimately in touch with local needs and conditions than the federal government.

-- Local and state governments would be directly involved with institutions in both host and risk areas, with the

professional civil defense cadre (if one exists; see Section 4), and with potentially millions of people nationwide who might obtain special training, skills and education related to the survival and recovery tasks of their local areas.

-- Individuals who relocated to host areas could rapidly be given credit, food, shelter and housing by a host area government authorized to do so and backed by a promise of federal funds.

-- In some programs, combined host-community, city, state and federal efforts might be necessary to make significant preparations. Federal funds or loan guarantees should greatly facilitate such cooperative activities.

B. Postcrisis Claim Settlements

As the ultimate consequences of any emergency solution to foreseeable economic problems are apt to be very scenario-dependent, if a crisis ends without an attack it will be difficult to determine the postcrisis effects of the federal financing policies designed to facilitate the CRP. One of the underlying principles of federal policy should be that no unusual burdens or costs should settle on any particular state or local government; rather, they should be fairly distributed among the population--that is, largely borne by the federal government. How this might be expressed specifically in a formal preattack policy must be left to a special study. Such a study should not only consider appropriate policies, but also the means for making practical settlements under various circumstances. As there might be millions of specific settlements to be made, some of their implementation problems might be extremely difficult. To make such settlements on anything less than a wholesale basis, and therefore very imperfectly, would probably prove to be impractical--a statement which implies that their resolution cannot be expected to be fully equitable.

In making settlements, opportunities for massive amounts of fraud would exist. In an abating crisis this would become a matter of greater concern than in an escalating crisis. Even then, excessive concern over fraud might unduly delay the settlement of the bulk of legitimate claims and create undesirable economic penalties. These matters should be mulled over well in advance if the postcrisis settlements are to be handled expeditiously.

9. POLICIES ON WAGES, PRICES, RENTS AND CONTRACTS

A. The Historical Use of Federal Controls in Crisis or War

Traditionally, the principal methods of government control of resources during emergencies have been wage, price and rent freezes as of some base

date; moratoria on selected contract and mortgage obligations; rationing of consumer goods; a scheme of industrial priorities; and the use of direct allocations when priorities proved ineffective (as occurred during World War II). Basically the four arguments in favor of these control devices have been those related to equity, inflation control, market breakdowns and the effectiveness of the controls themselves.

(1) Equity

The equity argument relates largely to consumer controls. When goods are in short supply, it is argued that it is inequitable to allow those who control more wealth than others to command a greater portion of these goods. It should also be noted that, apart from equity considerations, rationing is also a necessary supplement to price controls, since the effect of a price freeze will be artificially to increase effective demand or reduce the supply of goods. Related to the equity argument is the political argument that Americans are accustomed to these kinds of controls being imposed during periods of crisis. They would anticipate having them again and might indeed object strenuously if the controls did not reappear.

(2) Inflation

Inflation control is the frequently advanced argument for a freeze on prices, wages, rents and other costs. Undoubtedly the danger of a soaring inflation during a severe crisis or in a postattack economy would be very great. Wage and price controls do nothing, of course, about the increase in money supply (except indirectly, as surplus amounts may be channeled back to investment and savings). Rather these controls attack the symptoms of inflation, higher prices and wages. Furthermore, there are very pragmatic arguments in favor of such controls: that they were used in every nation with an advanced economy during World War II, and--especially in the United States--that they were successful in suppressing inflationary forces during the time of war. Moreover, at least in the United States, the amount of inflation following removal of controls after World War II was not overwhelming or disastrous.

(3) Market Malfunction

A strong argument in favor of allocation and priority devices is that during emergencies the free market does not function satisfactorily. The use of the free market, it is argued, requires stability, peace, mobility of resources, communications and some degree of confidence about the future course of events. During a preattack crisis and after a nuclear war, normal sources of supply at normal prices will have disappeared. Communications will be impaired, many services will be unavailable, uncertainty about markets will be endemic and generally it will be extremely difficult to make intelligent business decisions regarding either investments or

current operations. The government, it is argued, will not be seriously hampered, as is the individual entrepreneur, by loss of confidence, lack of market information, and the inability to control resources and plan future production and needs intelligently.

(4) The Effectiveness of Wartime Controls in the U.S.

It is generally assumed that the controls worked with a reasonable degree of success in the United States during World War II and the Korean War. But it can be argued that the tremendous expansion of production that took place in the U.S. during World War II substantially offset inflationary forces that would otherwise have been generated. It may account for some of the success usually attributed to the economic control programs. It is also noteworthy that it took approximately a year and a half after the beginning of hostilities for the program to be made effective, and that during the ensuing two years of controls, profound and radical shifts in policy took place.

B. Controls During and After Nuclear Crises

The circumstances before and after thermonuclear war present dramatically different problems. In the first place, there may be severe time constraints: a crisis may last only weeks. Second, it is probable that a thermonuclear attack on the United States would signal not the beginning but the termination of hostilities. (This assumes no protracted conventional war after an ICBM exchange.) Third, there may be no clean cutoff point, such as the close of hostilities of World War II and Korea, to signal the appropriate time for termination of controls: thus, if central planning were the dominant mode of economics in the United States it would tend to become prolonged.

Unlike World War II, or the Korean War, the contemplated thermonuclear war would do tremendous and drastic damage to American industrial capacity. There would be no suplus capacities such as existed at the beginning of World War II. Thus the inflation would be considerably more difficult to control, and the job of planning priorities and allocations would be many times more complex. Not only would it be more difficult to get information when plants were destroyed, but the demands for particular consumer goods could not be assumed to remain relatively constant, as was true in World War II and Korea. Even if the government were still intact and in the best position to collect and process valuable data, it would not follow that governmental planners could use the information more intelligently than private entrepreneurs.

Historically, the most pertinent example seems to be the experience of postwar German recovery, beginning in 1948.* Currency reforms

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*Jack Hirshleifer, Disaster and Recovery: A Historical Survey (Santa Monica, Ca.: The RAND Corporation, RM-3079, April 1963), pp. 82-112.

designed to overcome the immediate, debilitating effects of a very substantial inflation) and removal of production controls, allocation schemes, price and wage controls and rationing resulted in perhaps the most dramatic improvement in a complex economy known to history.* (Ref. 6)

C. Policy Choices for a Nuclear Crisis

However important equity considerations may appear during either a cold war or even the early part of a more serious crisis, as we approach a truly severe crisis--one in which the CRP might need to be implemented--it would becme essential for the flow of survival goods to proceed in a relatively unhampered manner. As we know from historical examples, the existence of price controls tends to stifle such a flow whenever goods are in short supply and to siphon them to a grey or black market. Many economists, who have reviewed the utility of such markets either in the U.S. or other places in the world, have come to the conclusion that they often serve a useful function; that is, they make important exchanges happen which otherwise would be impossible. A good argument can be made that grey or black markets should be tolerated during a period of extreme crisis when people will be eager to obtain rapidly the limited quantities of survival and recovery supplies. Whatever may be the problems associated with inequitable prices, it is hard to imagine worse consequences than a breakdown in the distribution system that prevented available supplies from being delivered to the population in the host areas.

Consequently, a fairly elaborate study may be needed to determine how government policy can be adapted to maintain some reasonable degree of equity in certain portions of a preattack economy without stifling the flow of desirable goods and services to the areas in which they would be very supportive of a crisis relocation. It is unlikely that a complete satisfactory solution can be devised. The choice, however, should lead toward a system that emphasizes speed and quantity in the production and distribution of high-priority civilian goods more strongly than equity considerations. In such a study one option to be examined would be a

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*In Germany after World War II "for three years the Allies adhered strictly...to the policy of a price and wage freeze...the preservation of archaic prices of Nazi vintage meant that producers could not produce useful and needed goods, even though demand was high, because the prices generally did not cover the costs of production, let alone allow for profits. The easiest way out of the loss squeeze was the production of 'new' commodities--formerly unproduced, semiluxurious items such as ash trays, fancy lamps, and dolls. The relative ease of obtaining higher prices for these goods meant that the available manpower and scarce raw materials were virtually squandered. For this reason the postwar price freeze constituted an integral part of the Allied policy of industrial disarmament of Germany." (Nicholas Balabkins, Germany Under Direct Controls [New Brunswick, N.J.: Rutgers Univerity Press, 1964], pp. 210-211.)

nationalization of the more critical goods and services. But nationalization would only be of help if it were accompanied by a program to assure timely distribution of these goods and services. Nationalization and some of its possibilities and ramifications were discussed in Section 7 of this report.

D. Policy Choices for Postattack Recovery

Preattack solutions to these problems will probably have little relevance in the postattack world. Of course, the preattack choices will be critical in determining the initial postattack posture: if survival and recovery supplies have been reasonably well distributed during the preattack period, the population should be better able to deal with the postattack reorganization. But the introduction of "appropriate" prices and the possible extension of government price controls from the preattack to the postattack period poses an enormous problem, optimum solutions which are extremely scenario-dependent--that is, dependent on many factors such as: (1) the size and nature of the attack, (2) the time required to reform the federal government, (3) the responses of desperate people at the local level, and (4) the effectiveness of governments below the federal level, whether or not they formally exist in their preattack configurations.

It is rather easy to imagine that prices, wages, rents, contractual obligations, etc., have become meaningless postattack, and that any preattack policies which were meant to extend over into the postattack period would be essentially unworkable--and might be nearly worthless, in the sense that they might be ignored by almost every one concerned with them. Indeed, meeting early postattack needs may mean that goods and services will more likely be exchanged on a barter basis rather than sold for preattack dollars. Even if dollars were usable to some extent, price controls that had been established preattack could hardly be expected to remain serviceable.

Indeed, one suggestion that appears to be worthy of consideration would be for the federal government to avoid trying to set postattack prices, wages, rents, or methods for settlement of debts, contracts, etc. To a large extent, effective postattack procedures might best be improvised--probably first at local levels. However, if the federal policy is to be effective and acceptable, postattack, it would need to provide some guidelines which indicate the eventual amount of support that the national government itself would offer.

The postattack continuation of a preattack nationalization of important supplies, mentioned earlier, might possibly be another worthwhile alternative to explore. Nationalization might prove to be effective in some postattack situations, but useless or worse in others. Because it would have to be related to various scenarios, a substantial analysis of how such a program might be formulated and carried out would be required.

There is perhaps one guiding principle to keep in mind in any of these policy choices: it must carefully avoid the danger of government action becoming counterproductive to the struggles of people and institutions to effectively prepare for survival and reorganize for recovery.

10. POLICIES FOR POSTATTACK ECONOMIC INVESTMENT

A. The Distinctive Role of a Surviving Federal Government

Assuming its effective survival, the federal government has the most significant capability for affecting postattack investment and consumption attitudes during the long-term recovery. It uniquely can support policies that (1) permit insolvent firms to function where this is important; (2) guarantee commercial credit; (3) offer special taxation inducements; (4) establish prices for transport, communications, and the utilities services in accordance with the new realities; (5) stabilize prices, when desirable, with the use of federal resources at home and abroad; and (6) impose penalties, including discouraging taxes, upon luxury items which would unduly dissipate recovery resources. (Ref. 1)

B. Austerity Vs. Maximum Production

One of the important policy decisions that might be required from the federal government relates to the degree of austerity needed in consumer goods production during recuperation in order to provide funds for rebuilding the economy. Much planning has emphasized getting maximum production in nearly all areas. This occurs partly because the planning is done by people with a financial background who have a tendency to view the problem as one of safeguarding "going-concern" values. These people are very conscious of the fact that a bankrupt business is usually worth enormously less when liquidated (and is only a collection of used physical assets) than it is as a going concern. They have a natural desire to avoid bankruptcies and to preserve current patterns in order to prevent devaluation, dislocations and depressions. These need not be important objectives of a postattack government in many scenarios. If a war is so large that enormous destruction of wealth occurs, the essential things to preserve might not be the going-concern values, but raw materials and finished goods. In part, this is also a matter of conserving machinery and plants rather than wearing them out on low-priority items.

It might be important for the government to try to preserve going business concerns, or at least their staffs and organizations, to the extent that this is useful. The danger is that a major attempt to do this tends to create pressures toward inflation and hoarding and the commandeering and consumption of valuable raw materials for the wrong products.

Some vital materials could be made available at high prices so that people would be discouraged from using them excessively and would understand that these resources are to be used only for the highest priorities.

As an alternative, if a currency reform followed very early in the post-attack period, even if prices were kept only modestly high in terms of the new currency, it could still discourage excessive buying, as it would take a long time to accumulate much of the new capital. (Ref. 6)

(1) What Controls Will be Appropriate?

Which commodities or manufactured goods should continue to be produced or accelerated and which should be stopped because very scarce inventories that are crucially needed elsewhere are being carelessly dissipated? What measures should be undertaken to encourage or discourage production, investment and consumption, and to what extent? If, for example, prices are not to be frozen, how should they be stabilized in the postwar context, with its possibility of serious inflation, and the money flow controlled? These questions have always been critical after wars; but after the devastation of a nuclear attack in which the Federal Reserve system, the network of banks, their records and their credit and cash flow--the financial and economic structure as we know it now--may be destroyed with one blow, sensible answers now may defy the imagination.

C. Preattack Investment: Preparation for Postattack Recovery

Some preparations for these postattack problems might be made through the encouragement of economic investment in critical industries in the preattack crisis period, thereby building up production and foreshadowing a structure for appropriate postattack investment. The federal government could encourage or discourage investment, production and consumption decisions--although time might be very limited--taking into account the criticality of ongoing production needs and shortages. They might also guarantee some prewar investments that might be wiped out by postwar policies and values. Which investments deserve such special consideration are not now obvious. A concentrated study of such options is needed to make that determination.

The greatest impediment, however, to effective prewar investments for postattack needs might be the changing nature of criticality itself. The answer to the question, What is critical?, is likely to change as the crisis situation changes; also, it will surely alter radically from prewar to postwar.* Moreover, since the preattack period will be characterized by an intact resource base running at full-steam, it might well be impossible to compare it convincingly with the postattack era, when vast portions of commerce, industry and banking may be lying in ruins.

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*For a further discussion, see Section 15 of this report, "A Perspective on Critical Industries."

D. Foreign Investment and the Futures Market

An additional area that should be looked into is the private and governmental investment through foreign firms in the futures market--buying contracts for the future (postwar) delivery of commodities or foreign exchange. Foreign investments as a whole and the development of credit and stockpiles overseas may be an important resource for our postwar economic reorganization and recovery.*

E. Centralization Vs. Decentralization of Investment Policies

Obviously intertwined with what has been stated above is the question of the degree of centralized control over many of the new postattack investments. In peacetime, it is the usual practice for strings to be attached to any governmment credit extended to businesses in difficulty. During the postattack reorganization period, it would probably be necessary for credit to be made available with relatively few strings attached. Thus, federal policies should probably be kept at a rather broad level; most of the specific decisions about investments could better be made by private firms. This would, of course, raise numerous questions about appropriate monitoring and possible fraudulent behavior; but if excessive worry is placed on matters of that kind, it is unlikely that much could get done. Devising appropriate policies for such contingencies should first be considered through careful studies done in peacetime.

II. THE ESTABLISHMENT OF USABLE POSTATTACK CURRENCY

A. The Stockpiling of Special Currency

If there is extensive damage as a result of a nuclear war, it is unlikely that any kind of free market could be put into operation quickly without a currency reform. As a precautionary peacetime measure, the federal government could, at small cost, stockpile a special "postattack" currency (of different size or color, e.g., so-called "blue" money), in addition to storing extra greenbacks in protected locations. When the federal government becomes functional, this currency could for a time be required for special consumer purchases (e.g., food, fuel, medicines and clothes), thereby eliminating the overhanging burden of preattack purchasing power. It might be used as an inflation-controlling measure or to provide an optional tool for introducing a general rationing of a group of scarce commodities. Whether or not this new money is needed, its economic cost in peacetime can only be insignificant. (Ref. 6)

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*See a discussion of the potential of "reverse foreign aid" by Jimmy W. Wheeler in The International Sector in a Nuclear Crisis.

B. Currency Reform

There are no known historical instances in which a previously sound government, forced to go through currency reform, had difficulty in having its money accepted the first time. If, however, it needs frequent currency reforms, then it will naturally run into problems such as lack of confidence in the "new" money that some Federal Reserve Board officials may fear. Yet, the likelihood that the nation will be able to continue with greenbacks postattack without a sudden great inflation seems quite remote. Attempting to do so would mean that tremendous amounts of purchasing power would be available to people who, from an efficiency point of view, would have no justified claims on postattack resources. (Ref. 6)

C. The Postattack Potential of Blue Currency

Since this is an option that might be purchased at slight cost and have great postattack utility it should be a desirable one. One of its more valuable aspects is that it would help avoid delay during a time when delay would be extremely costly and might even result in numerous fatalities. If we assume that the federal government survives and announces that blue money will be the official currency for the foreseeable future, and if the blue money is sufficently backed with tangible assets to become acceptable, it could be used to facilitate the essential activities of the reorganization. It would, in particular, support the federal authority and enable some of the more important aspects of postattack welfare to be financed: for example, the economic burden caused by the influx of evacuees, through postattack remedial evacuation, into communities already under stress. Undoubtedly many other desirable postattack functions discussed in other sections of this report--credit, new investments, compensation for local or general war damage, etc.--could be facilitated. Because time will be of the essence in many situations, blue money could be a key element for facilitating a better resolution of the urgent problems.

The same argument might well apply for giving an option to the states to stockpile special scrip should there be a failure of federal money for a period of time--a situation which is not too difficult to visualize in some kinds of nuclear wars. To the extent that the federal government does not prepare for these measures, and possibly even if it does, it could be important for the states to have emergency plans of their own so that resources within their borders will not be lost or wasted. In addition, this scrip might help to prevent unwarranted hoarding or the disappearance of inventories of raw materials, manufactured goods and commodities. (Ref. 6)

A separate careful study on the subject of special currency and its postattack potential, based upon a number of scenarios related to expected human behavior, will be needed to formulate sensible and more detailed policy options.

D. Conclusions

-- Stockpiling a new type of currency might provide an enhanced postattack recovery potential.

-- It is hard to find any important peacetime costs involved in stockpiling it.

-- The usefulness of blue money could be especially great during the reorganization period, when people would be leaving the shelters and attempting to refashion a functioning economy, at least at the local level.

-- A careful study should be done to consider policy options in various postattack scenarios.

12. FEDERAL RESPONSIBILITY FOR PROPERTY DAMAGE DURING CRISIS RELOCATION

A. Damage to Property During Evacuation

With the relocation of millions of people from risk to host areas there is a probability that substantial amounts of economic damage will occur (1) when evacuees must leave the urban areas relatively unprotected, (2) while they are en route to and settling into the host areas, and (3) while they are maintaining and improving the evacuation posture. The extent of the damage will in some measure depend upon the urgency of the relocation, the preparations made for it prior to and during the evacuation, and, of course, the length of time the evacuation must be sustained. If few preparations have been made and if the nuclear attack seems imminent, the relocation will be carried out with relatively little thought about incidental damage or reduced legacy value. At the host area, shelters might be built hastily, and some structures torn apart, if need be, for materials to improvise or improve protection.

If maintaining a long evacuation under crowded conditions is required, the occasions for damage to property are likely to occur more often. Also, as wartime and disaster research has shown, social tensions will begin to mount.* In these circumstances, the need to settle questions of property rights and damage compensation rapidly can become inceasingly more demanding, perhaps sharply so at times.

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*See Section 13, "The Clarification of Preattack and Postattack Housing Rights" for references to research on the lengthy Holland flood evacuation.

B. The Need for a Federal Policy During the Crisis

Although cooperation with local and state governments might be required, it seems clear that the federal government should take ultimate responsibility for legitimate damage claims arising out of the CRP. Very specific assurances might need to be given in order to make it clear to the property owners that their cooperation would be vital to the national interest. Certainly, the government should remove doubts about the possibility that, if the crisis should end and the refugees return home, property owners in the host areas might be saddled with the damage costs. During the crisis, the concern about possible damage might be substantial, and assurances of rapid compensation for reasonable claims could become very important to them--and to the stability of a relocation.*

Should a nuclear attack occur, all prior claims might be in doubt. Whether or not adequate compensation for damage resulting from the CRP would ever be paid is intrinsically hypothetical and cannot be convincingly guaranteed--despite the legality of claims which property owners might have against a surviving government or some equivalent authority. When the country faces the horrendous problems associated with recovery from a large nuclear attack it may be hard to make a persuasive case for the restitution of unsettled claims for preattack damage compensation that is based upon preattack values. Indeed, there may no longer even be a responsible authority.

C. Policy Requirements

As part of a CD program to facilitate and maintain a crisis relocation, appropriate policies should be developed by the federal government that would encourage cooperation with the CRP by providing appropriate federal guarantees of damage compensation. Procedures for adjudicating claims might have to be streamlined; local courts or new boards might need to be set up with special procedures--perhaps an extraordinary use of masters--for quickly resolving dubious claims and awarding just compensation. The damage compensation policy should be clearly spelled out prior to the implementation of a CRP. Determining the practical essentials of such a policy should receive a high priority if a CRP is to be the heart of a federal CD response to a nuclear emergency.**

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*Section 24, "The Resolution of Disputes," presents an overall discussion of the need for urgent solutions to legal conflicts in a nuclear environment.

**If a federal crisis relocation plan were also adapted to local evacuation in peacetime emergencies, a part of the plan could include some federal guarantees of damage compensation to the unprotected disaster area, en route and at the billeting area. As part of the evacuation plan, federal guarantees of the compensation to property owners would encourage more people to leave the disaster area in a timely manner.

13. THE CLARIFICATION OF PREATTACK AND POSTATTACK HOUSING RIGHTS

A. The Usefulness of a Preexisting Policy

We are examining the question of housing rights with the understanding that the normal peacetime rights of a property owner might need to be suspended during an emergency: first, to enable a crisis relocation to proceed expeditiously; and second, because unrestrained rights to evict refugees who are sharing housing during either the preattack or postattack period would hardly provide a viable basis for a CRP.

Whether or not the federal government should choose to legislate a formal policy about housing rights in the preattack period is not clear and should be studied; perhaps it might be preferable to handle that matter with emergency powers exercised by the federal, state and possibly local government.

But postattack, the situation could change abruptly. Amid the disruption following a nuclear attack, while a federal housing-rights policy might be very desirable, it might be impossible to enforce unless it had been codified preattack. Obviously, if the federal government cannot reconstitute itself within a relatively short period of time, the formulation of needed policy would devolve to the levels of government that can. This is a clear argument for the establishment of at least a broad national policy on postattack housing rights during or before the crisis. A policy should be worked out in such a way that it can span the essential differences among the various regions of the United States. (A housing policy for communities of condominiums or garden apartments might be considerably different from that for communities made up of private homes; the policy needed for the Sunbelt might be inappropriate for the Snowbelt.)

Although there is no assurance that the federal government's preattack intentions will be practical in the postattack world, without a preattack public acceptance of an in-place policy, in many postattack scenarios it is possible that none could be formulated and enforced.

B. The Requirements of a Housing Policy

A major question of a crisis relocation, especially a protracted one, is whether or when a property owner would have the right to reject or evict a refugee. Even though a host were reasonably compensated for the economic value of his shared premises, sooner or later he would want the right to choose his own living companions to be returned. It is clear that the host would prefer the right to evict sooner and that the refugee would prefer later. Federal policy should balance these personal needs with the requirements for a rapid recovery.

Most nonurban homes might experience a substantial crowding as refugees appeared pre- or post-attack. Also, historical evidence suggests that initially the hosts would tend to open their doors to the refugees,

in some cases because no other reasonable course was available, and also because of a desire to help their less fortunate countrymen. As weeks or months passed, however, most of the hosts would be likely to become irritated with the new mode of living.

Research on the evacuation in Holland after the floods in 1953 showed that interpersonal tensions increased significantly as the evacuation lingered on in time.* According to a report of these findings:

> Apparently, people can adjust remarkably well to great hardships if an early end is in sight. Furthermore, the initial adjustment between host and evacuee is aided by an outburst of altruism and sympathy on the part of the hosts and by a prevailing feeling of solidarity in times of national crisis. However, when the prospect of long inconvenience appears and when the original hospitality wears off under the continuous inroads on privacy and the daily occasions for friction, social tensions will gradually increase. The factors which seemed to be particularly related to the incidence of tension between hosts and evacuees in Holland were differences in religious beliefs and income levels. The latter became important only in the long run. Furthermore, evacuated families with children experienced significantly more tensions than those without children, probably because the children place a great burden on the hosts.**

Conceivably, as tensions mounted during a protracted crisis relocation, many of the hosts would strongly regret their earlier altruism and would seek ways to redress the intolerable situation, that is, to relocate or simply evict the annoying "strangers."

The mere possibility of such an act either on an individual or community basis could lead both hosts and refugees into actions which tend to preserve their "rights" as they see them. Refugees under such pressure might become subservient and accommodating--that is, voluntarily accepting a second-class role--or they might become aggressive and organized, perhaps able to resist the hosts physically and/or politically--thereby increasing the potential for violence between the competing groups.

Both of the above outcomes appear to be undesirable from the federal viewpoint. Our culture is built upon resisting undesirable constraints upon an individual's freedom and also guaranteeing rights to a minimal

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*Fred C. Iklé and Harry V. Kincaid, Social Aspects of Wartime Evacuation of American Cities (Washington, D.C.: National Academy of Sciences--National Research Council, Publication 393, 1956), p. 94.

**Fred C. Iklé, The Social Impact of Bomb Destruction (Norman, Oklahoma: University of Oklahoma Press, 1958), p. 119.

security. At the same time, there would exist a great need to avoid fights, riots, and insurgency in the postattack society--recovery would be difficult enough with a cooperative population. Therefore, the question arises, how can the federal government minimize the potential conflict through announced policy and through preparations made in peacetime, or even during a nuclear crisis?

Clearly some suspensions of individual rights would become necessary during the emergency. Which ones? For how long? With what mechanisms for their suspension and restoration? To help answer these questions, four policies ranging from disaster socialism to laissez faire are presented below.

C. Four Policy Choices

(1) Nationalization of all homes and property suitable as living quarters. The standards and guidelines for the occupation of these properties are to be developed by federal planners in peacetime. Responsibility for the enforcement of the policy will be delegated to local governments whenever the federal capability is insufficient.

(2) Rights to determine the occupants of all property suitable for living quarters to be regulated by the federal government under emergency powers. Compensation to be provided to property owners who share their facilities. Federal policy requires periodic reviews on a regional basis in order to hasten a return to normalcy. Property rights revert to preattack basis whenever the emergency policy is not renewed.

(2) State and local governments are delegated the power to regulate the sharing of private property with refugees. Federal policy provides guidelines to the local governments and subsidizes their costs when they comply with the federal regulations.

(4) All local arrangements for sharing private property are voluntary. Refugees would receive welfare payments directly from the government. No federal regulations or guidance provided for housing arrangements.

The first alternative is consistent with the view that a strong central government would survive and effectively manage the important aspects of the recovery, and that it would nationalize housing for the duration and determine an appropriate occupation policy. Two major arguments against this alternative are (1) the federal government may be too weak to enforce this policy during the crucial early months, and (2) even if it had the strength it would not have the experience to do the job

efficiently--especially in a disrupted society.* There would probably not be enough time or manpower available to cope with resistance by individuals and communities. The federal government would be swamped with so many tasks of higher urgency, such as public health, decontamination, welfare and economic reorganization that a complicated matter of this kind would probably be forced to find its own resolution.

The second alternative avoids nationalization and attempts to use federal power to regulate the rights of the refugees and hosts to housing facilities. It is presumed that the regulations are clear and either would be complied with voluntarily or enforced by local governments. This last point is of somewhat doubtful utility. Postattack traditions for the effective enforcement of federal regulations would not exist, the courts are likely to be in disarray, and many local government administrators are apt to be sympathetic to the property owners. Although the property owners who do share with the refugees would expect to be compensated by the federal government sooner or later, it is doubtful that this would add sufficient incentive to assure widespread compliance with the federal policy.

The third alternative delegates the responsibility for adherence to federal policy directly upon the state and local governments and subsidizes the costs through payment to them--much as is done today in federal aid to highway construction or to education. The federal government can tie its payments or obligations to proper compliance with the regulations. Although this method would not preclude some evasion, it does place the onus for preventing widespread disregard of federal policy upon the local governments. The federal payments should be very important since even the undamaged communities are apt to be experiencing extreme economic stresses, although some individuals might not be.

The last alternative most closely reflects current policy. It is one of laissez faire or muddling through as best one can at the time. One may assume that needy refugees would receive some assistance to offset the cost of housing and other subsistence requirements, although no firm commitment exists in any present plans. This is the harshest alternative for the refugees since it leaves them almost totally at the mercy of the local inhabitants. Still, it might be argued that the nuclear attack had created a hard world in which "government coddling" must be kept at a minimum to prevent unnecessary diversion of scarce resources. This argument does not, however, allow much weight to the need for early unity in the country, without which a collapse of the nation as an effective entity seems more likely. This policy also places a relatively greater burden on those hosts who are more accepting and tolerant of the refugees because of the risk of inadequate compensation or substantial delays before receiving reimbursement, or both.

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*Sidney G. Winter, Jr., The Federal Role in Postattack Economic Organization (Santa Monica, Ca.: The RAND Corporation, P-3737, November 1967), passim.

Of the four alternatives, the third seems to be clearly preferred in this brief analysis, although the arguments need to be taken to greater depths and more alternatives considered. Raymond Gastil has suggested that families that volunteered to share their homes without charge could be allowed to select their own "quests." Those who received payment would have to accept the assigned refugees.* It is not clear whether this method would be considered fair or feasible, although it has both economic and social advantages. Policy alternatives which require only minor peacetime efforts (3rd and 4th) undoubtedly would be favored, since relatively costly preparations are hard to justify while the likelihood of a nuclear attack seems remote. (Ref. 8)

14. POLICIES FOR POSTATTACK SHARING OF SURVIVING PROPERTY

A. Postattack Financial Chaos

Undoubtedly one of the knottiest, yet most important, problems that will emerge in the postattack period will be that of the sharing of surviving property. In the aftermath of a devastating nuclear attack, the legal holding of surviving property--assuming that the entanglements have been straightened out--will be enormously distorted from its preattack configuration: the destruction of both real and financial assets will leave a large number of survivors with a limited or nonexistent capability to generate income. This means that the distribution of income and wealth will tend to be sharply skewed; a relatively small minority may own the vast majority of income-producing assets. For egalitarian ("no one should be inordinately wealthy") or social ("inequity breeds rebellion") reasons, if the federal government survives, it may need to mitigate or alter this distribution. (Ref. 10)

The immediate difficulties arising from the nuclear destruction of property appear formidable. A picture of the postattack financial turmoil has been drawn by Jack Hirshleifer:**

> When we consider that titles to wealth are in almost every case evidenced by ink scratches on paper we begin to have good cause for concern as to the ability of many property-owners to prove title to their claims. The relevant bits of paper include deeds, stock certificates, and bonds in the personal possession of property-owners; bank accounts, as evidenced by pass books and duplicated on the records of

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*Raymond D. Gastil, Scenario for Postattack Social Reorganization (Croton-on-Hudson, N.Y.: Hudson Institute, HI-1188-RR, August 20, 1969), p. 69.

**Jack Hirshleifer, Some Thoughts on the Social Structure After a Bombing Disaster (Santa Monica, Ca.: The RAND Corporation, P-674, May 11, 1955, Rev. August 18, 1955), pp. 22-23.

banks; currency, notes due, and accounts receivable; and various balances, such as brokerage accounts, in their favor. While there usually will be some duplicate record as evidence of holdings (though this is not the case for currency, for example), this duplicate may be even more vulnerable than the property-holders' own records. Thus, banks are more concentrated in cities than residents, and records of stock ownership are extremely concentrated in New York City. Furthermore, in some cases the duplicate records will be in the control of adverse parties, as in the case of accounts receivable. We must add the further consideration that even if the true owners could be determined, they would in a very large fraction of cases have died--in many cases intestate, and in other cases having left wills which cannot now be found. In all of these cases the attempt to straighten out the tangled claims would completely overburden the courts and the accounting and legal professions, which are in fact so extremely concentrated in cities as to be among the most severely damaged sectors themselves.

Nor is it the case, as might first be thought, that this shattering of existing patterns of property relationships can be confined to areas in close proximity to the actual bomb drops. Many firms in undamaged areas will be bankrupted by the inability of firms in damaged areas to pay their accounts receivable. Checks drawn on banks in damaged areas will be uncollectible. Insurance companies will have a large part of their assets destroyed, and of course they will be snowed under by claims; in a great number of cases, probably the great majority, the equity of policyholders or stockholders would be completely wiped out in the absence of government intervention. In fact, a wave of bankruptcies similar to, but far more serious than, that characteristic of business crises would sweep over the entire economy in the absence of special measures to arrest this development. While this crisis effect could be stopped by appropriate government interventions (these might include moratoria on debts and the granting of emergency government loans), a large fraction of the undamaged firms and individuals will still be legally bankrupt, and most of the remainder would also have their net wealth position affected in varying degrees. The reason for this is that, legally speaking, destruction extinguishes assets but not liabilities. While many debts will be wiped out or at least will not lead to insolvency if creditors do not appear and press their claims, the legal asymmetry in the treatment of assets and liabilities is certain on balance to affect adversely property rights in the undamaged areas.

B. Postattack Policies for Redistribution of Wealth

General policies that have been considered as possible solutions to postattack conflicting claims range from attempts to restore the prewar income distribution to disaster socialism. Hirshleifer gives four examples of such policies:*

> (1) proportionate compensation for war damage (i.e., shifting the incidence of the loss from those suffering immediately to the nation's property-owners in the aggregate); (2) acceptance and stabilization of the post-bombing distribution of wealth; (3) an entirely "new deal" of wealth, presumably on more or less equalitarian lines; and (4) abolition of private wealth (i.e., socialization) in greater or lesser degree.

These options either pose enormous problems or seem unacceptable because of adverse effects on the nation's economic or social order. Some proportionate plan for sharing of surviving property through schemes of compensation, taxation, resource distribution and fiscal controls, however, would need to be prepared and presented preattack if prior acceptance of a policy for equitable postattack sharing is to be gained. It should be readily recognized that there can be no "pure" solution to the question of economic sharing and government controls in a postattack period. There may well be a substantial "mix" of schemes representing various possibilities. At the one extreme is government ownership and control of the resources in question. At the other is pure laissez faire. Clearly, the free-market approach alone would be an unsatisfactory solution to the manifold postattack recovery problems. On the other hand, central government administration as a solution to these problems seems equally unsatisfactory: inherent in the concept of government administration is the possibility of errors on a grand scale. An alternative emergency economic organization which civil defense planners may consider might be one which combines both the advantages of market exchange and the fulfillment of preattack government commitments, as mentioned earlier.** (Ref. 6)

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*Ibid., p. 21.

**On the general issue of postattack solvency, according to Chipman:

> "The approach which was proposed by the Federal Reserve Governors . . . is to plan for immediate postattack validation of banks and financial institution assets, pending ultimate equalization of losses. The Federal Reserve study proposes that a self-liquidating Asset Validation and Equalization Corporation (AVEC) be established before attack, to shore up the solvency and liquidity of financial institutions in the immediate postattack period, and to provide a mechanism for eventual loss equalization.
>
> The AVEC would issue 'Validation Bonds' to banks and financial institutions on the basis of par-for-par exchange for

(1) A War Damage Compensation Policy

An acceptable war damage compensation policy might be critical to any postattack recovery capability and, preattack, could be arranged only by the federal government. Such a policy should be established as early as possible as a vital part of the government's civil defense preparations. If it is to be an insurance plan which requires premiums then a very early start would be mandatory. War damage compensation has been seen as a way to help maintain a "going-concern" economy, as well as to compensate for personal or institutional losses.

Although, for the sake of efficiency, avoiding war damage compensation might be appropriate in the early postattack phase, in the later phases perceived inequities will probably become increasingly more intolerable, possibly causing the country to be split into two groups--the "haves" and the "have-nots"--and posing social problems urgently in need of amelioration.

a. World War II Experience and Nuclear War

During and after World War II, the United States, Great Britain, France, Germany and Japan had compensation laws to cover war-caused property losses. Germany and France provided for compensation without any insurance feature, but the American and British plans were based on the prepayment of insurance premiums. The United States instituted a program at the beginning of the war and set up a War Damage Corporation, which collected $260 million in payments for $114 billion worth of insurance. The magnitude of the problem and the need for assistance after a possible nuclear war can be seen in one calculation which shows that a "light" attack of approximately 500 one-megaton nuclear weapons could effectively wipe out the industry of the 71 largest SMSA's--over 60 percent of the U.S. total.*

b. Compensation Approaches

Hirshleifer has suggested that the following general systems of war damage compensation might be considered:**

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instruments of indebtedness of every type whose value was impaired or put in doubt by the attack." (William K. Chipman, Nonmilitary Defense for the United States [Madison, Wisconsin: The National Security Studies Group at the University of Wisconsin, May 1961], p. 181.)

*Katz, Economic and Social Consequences of Nuclear Attacks on the United States, p. 9.

**Jack Hirshleifer, Compensation for War Damage: An Economic View (Santa Monica, Ca.: The RAND Corporation, P-517, April 1954), p. 10.

-- War damage insurance with premiums based or risk. Some economists have favored this system because it may induce private institutions to reduce their vulnerability;

-- No insurance, but compensation for damage;

-- Insurance without discrimination or with inadequate discrimination between categories of risks.

c. The Need for a Compensation Policy

In various important aspects intelligent planning for a variety of postattack economic problems cannot be completed unless there is a clear government policy on war damage compensation. The matter of taxation, for example, would depend on the existence of, or lack of, compensation policies. Government plans for assisting the postattack economy could prove to have been a meaningless exercise if large uncertainty remained about compensation. Finally, there would be a strong interaction between a compensation program and the functioning of private enterprise. This relationship would need to be clarified before intelligent postattack planning by much of the private sector could reasonably be completed. Until the amount of compensation can be calculated (which would often involve the possibility for the avoidance of bankruptcy), it might be impossible for effective reorganization to be expected in many, perhaps most, former enterprises. Thus, implementing an equalization policy could prove to be one of the most important postattack economic functions of the national government. It must be acknowledged that attempts at implementing a war damage compensation policy--as well as all others relating to the postattack distribution of wealth--could also pose some extremely serious political problems, possibly imperiling the ability of a weakened postattack government to function. Nevertheless, such threats would have to be met and resolved. (Ref. 6)

It seems reasonable to conclude that a preattack selection of almost any of the many possible compensation policies is likely to be far better than none. Because of the inherent complexity of the problems involved, it is probable that any initial plan would be judged inequitable by many groups, but a more acceptable solution could eventually evolve, undoubtedly consisting of a mixture of alternatives. It would be unwise, however, to wait until a proposed system is judged completely satisfactory before adopting it; that might lead only to endless procrastination. It would seem much more reasonable to establish almost any policy quickly. It could then periodically be reviewed and altered as seen fit; but one would always be in existence. (Ref. 6)

(2) Taxation, Price Control and Confiscation

Three other most likely means to implement a policy for redistribution of wealth in order to effect a more-or-less equitable postattack sharing of surviving property would be through price controls, taxation, and

confiscation. Ceilings on prices would encourage consumption, but also discourage production, and thus make producers with assets relatively worse off and consumers with expanded buying power relatively better off. Taxation--perhaps steeply regressive--on the wealth and income of the rich, with the proceeds expended on the not-so-rich, is even now routinely practised in a relatively benign form. Finally, confiscation of all or a part of the assets of the rich to be distributed to another economic group represents the most drastic alternative. Any one of these alternatives would achieve the objective intended--the redistribution of postattack income and wealth. But the harmful effects upon economic efficiency would be minimized, although they would probably not be nominal, if the redistribution were carried out through taxation. Price controls would most likely be the most difficult scheme to implement successfully, but would still have less serious implications for economic efficiency than would confiscation unmitigated by compensation. (Ref. 10)

a. A New Taxation

Taxes to effect a massive transfer of wealth would obviously need to be harsher and more radical than any in our history. Various types of taxes, or a mixture of them, could be used to redistribute surviving property: (1) income taxes, both proportional and progressive; (2) an estate tax; (3) a tax on capital gains, including unrealized capital gains; and (4) a direct levy on the postattack net worth of all individuals and businesses. (The direct levy, however, is not constitutional, and would probably encounter great resistance if it were considered preattack.)

Essentially very little research has been done to provide a basis for understanding the problems of tax policies or tax collection on federal, state, or local levels in the postattack context. It does seem likely that new policies and new methods of collection might be required that would need to be related to the anticipated nature and severity of the damage. Studies to define the range of problems and offer recommendations for possible modes of action are needed at all government levels. These studies should include the possibilities that the government might tax windfall profits and impound scarce or critical commodities in order to effect an equitable distribution of resources. (Ref. 6)

C. Will the National Entity Survive?

Most of the material in this section implicitly assumes that the federal government survives a nuclear war relatively intact or is soon able to reconstitute itself essentially in its preattack form. It also assumes that the government is able to maintain cohesion at a national level and then deal with the nation's longer-term recovery problems.

An alternative point of view visualizes that the federal government does not survive or reconstitute itself in any meaningful way, and that, consequently, no federal authority will exist for a substantial length

of time (months or years). As a result, there would be no national authority to help cope with the important problem of sharing surviving property during the reorganization period. Under these circumstances a recovery scenario could change quite drastically.

One scenario describes a relatively pervasive fragmentation of American society into small towns or clusters of small towns; these become the entities that attempt to cope with "local" problems as they develop.* Under these conditions, property that is to be shared would be controlled by these "localities," and the method by which it is shared would be determined by the local governments that evolve within these enclaves. In such an outcome any presumed preattack federal policy requiring equitable sharing of surviving property would effectively become moot.

We do not attempt in this study to picture in any detail the possible eventual outcomes of a fragmented United States. It requires a set of grim images which might be appropriate for future studies or for fictional portrayals.** Although a number of such fictional descriptions have already appeared in novels, plays and movies, none appear to have much validity in a technical sense. Yet, at the moment, little more than that is available. The major point is that federal policies--such as one for war damage compensation--are likely to require the continuation of federal authority if they are to be useful in an attempt to recover from a nuclear attack.

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*William M. Brown, Recovery From a Nuclear Attack (Washington, D.C.: Office of Civil Defense, Final Report, October 1971), passim.

**Section 25 of this report, "Preventing Postattack Fragmentation and Conflict," contains, however, a discussion of possible postattack disorder; it also stresses the need for preattack governmental preparations to mitigate gross inequities in postattack distribution.

15. A PERSPECTIVE ON CRITICAL INDUSTRIES

A. The Difficulty of Defining a Critical Industry

What is a critical industry? During an intense crisis the view of what production is critical can change rapidly. If an ongoing conflict were to shift from a relatively limited conventional war to a tactical nuclear one which threatened to escalate into a general nuclear exchange, then a different set of priorities would settle upon the nation. In a conventional war the highest priority might be for the production of military goods and services; but during a tactical nuclear war the short-term need to protect the population would very likely take precedence (at least many individuals and perhaps local governments would believe that it should). One argument supporting this priority change is that very little that civilians could produce in a few weeks, or even months, would be very effective for military purposes, but their actions might be crucial for their survival and recovery in the event of a nuclear exchange; that is, the lead time for the two goals is quite different. In a rapidly escalating military conflict how should the decisions be made as to which work is critical and which is not? This leads us again to the problem of defining critical industries under changing circumstances. It will also lead us to wonder whether the resolution of this problem should not be left largely in the hands of private institutions.

B. The Government Role in Planning and Decision-Making

As far as we can tell from historical evidence, the federal government seldom seems to be capable of responding both rapidly and effectively to very short-term external changes which it has not specifically anticipated and prepared for extensively. From this view it should follow that the more urgent the postulated nuclear crisis becomes, the more decentralized should most of the related CD decision-making become. We are suggesting that almost every institution, including nearly every industry, may need to make its own decision about what hours to be productive, what protective measures to take, and what its relationship with the community CD effort must be--with due regard for other regional or national needs and policies.

Federal CD preparations might be most effective if they are based on policies which allow private institutions and local governments a great deal of flexibility in responding to emerging circumstances and if they attempt to influence the general course of preparatory activities by providing timely information, funding, credits and other supports. At the same time, the federal government must reserve for itself certain areas in which it has clearly indispensable or utilitarian functions to perform, or in which there are vital equity considerations.

Indispensable federal functions include military responses, monetary policy and foreign relations; utilitarian ones include providing information and financial supports for individual and institutional responses to the crisis; equity considerations would require special legal rights and

welfare for evacuees, and compensation policies for damage associated with the CRP or with an actual attack. None of these functions, however, appear to require federal operational control over civilian sectors during a nuclear emergency.

The concept of allowing individual, private or local governmental institutions determine--largely on their own, but within federal guidelines--their role in the rapidly changing crisis is one which may not be easy for a federal administration to accept--at least not overtly. Nevertheless, it may be difficult to find a logical alternative applicable to the central scenario on which this report is based, and one may or may not be found through further study.

16. THE EMERGENCY PROTECTION OF COMMERCIAL ASSETS

A. Vulnerability to Nuclear Attacks

As industry is heavily concentrated in major urban areas, many possible nuclear attacks would place the economy of the country in extreme jeopardy. As mentioned earlier, a "light" attack of approximately 500 one-megaton weapons against the major urban centers could effectively destroy close to two-thirds of all U.S. industry, and, if designed to do so, could even more severely cripple a few selected critical industries (e.g., petroleum refining and iron and steel works).* Equally vulnerable are all the inventories, stockpiles and personal property located in the target areas.

B. A Decentralized Approach

Both production and protection of commercial establishments during the preattack crisis might be best accomplished through a policy which would leave local businesses to (1) determine their own utility in the crisis, (2) set their own goals for required labor, (3) change working hours or personnel as required, (4) determine their key personnel, (5) optimize their output to meet anticipated needs, and (6) simultaneously prepare for the survival and recovery of the firm and its key personnel to the extent that appears practical. The allocation of resources to these tasks would be left to the management--with some assistance, undoubtedly, from the employees. The sooner the management of any enterprise realizes that it will be primarily dependent on its own judgments and resources, the sooner would it be likely to obtain the information which would enable it to make a concerted effort to support both its own survival and the national interest. An important part of the vital information would be an understanding of the CD policies and programs of the federal government. That even these are likely to be changing rapidly will be one of the important inputs in making practical local decisions.

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*Katz, Economic and Social Consequences of Nuclear Attack on the United States, pp. 4-13 and 40-41.

C. Preattack Preparations

(1) Industrial

During a protracted crisis, an industry might be able to take various actions for protection of its production resources. The extent to which effective protection might be accomplished would depend in large measure on the inherent nature of the industry, on its motivation, on sheer luck in optimizing the timing between production and shutdown, on the length of the crisis, and on the perceived relative urgency of the possible activities. Obviously, measures undertaken in a methodical, careful way during a longer crisis period could be much more effective for postattack recovery than those carried out hastily, with little preplanning for legacy value. Still, the preferred course might not be obvious at the time.

Some of the actions an industry might consider taking during a low-level crisis and an intense crisis are listed below:

a. Low-Level Crisis

-- Storing vital records in remote locations

-- Setting up alternate headquarters facilities

-- Planning for the timely dispersal of key personnel

-- Planning, building and equipping shelters for key personnel

-- Training personnel and disseminating civil defense information

-- Preparing a management succession plan

-- Studying ways to protect equipment and prepare for an orderly shutdown.

b. Intense Crisis

-- Increasing critical materials production while operations continue

-- Providing for an orderly, rapid shutdown when the need arises

-- Creating protected stockpiles of valuable inventory items for use during postattack recovery

-- Designating key employees and planning for their protection and emergency evacuation

-- Preparing to protect or relocate selected valuable equipment. (Ref. 6)

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The timing and extent of a shutdown on operations would determine how much equipment would be damaged if a relatively hasty exodus were required. Certain industries--some of which may need to continue production up until an attack appears quite imminent--need several days to be shut down without damage (steel mills, refineries, etc.). The perceived optimum timing between continuing production and shutting down facilities to preserve their post-attack value could shift quickly with changes in the crisis; therefore, to be effective such decision-making may have to be flexible, decentralized, and, at times, rapid.

(2) Governmental

As part of its low-budget CD program in peacetime, the federal government can prepare information to guide the protection or "hardening" of factories, facilities and equipment during a subsequent crisis. Such information, to be held for later use, could include alternatives for shielding against blast and/or fallout, and, for a sufficiently prolonged period of tension, for providing below-ground protection for some of the more valuable equipment--computers, instruments, and special tools, for example. In some industries, if there is sufficient time, it might become important to protect some of the inventory by stockpiling it in a safer area.

D. The Improbability of a Long-Term Industrial Dispersal Program

A program for the gradual dispersal of some important industries--petroleum and chemicals, for example--would increase the probability that a relatively large industrial capability would survive a nuclear attack. However, there are construction and operating costs to be calculated to determine the utility of such a program. In the past, basic economic and other factors influencing the location of various industries have outweighed arguments for dispersal against hypothetical, future nuclear attacks. Certain existing industries located in urban-industrial areas are tied to very large physical plants that for economic reasons do not lend themselves to dispersal. Steel mills, petroleum refineries, chemical plants and electrical power generation stations are in this category. But the constant expansion in new plant capacity because of obsolescence and growth could possibly provide opportunities for dispersal. (Ref. 6)

Since we are generally assuming low--perhaps very low--budgets for peacetime civil defense preparations, a discussion of a long-term program for industrial dispersal almost assumes the appearance of a "fairy tale." Any meaningful dispersal of industrial capability over time implies the need for very large subsidies. This does not mean that the government could not try to "persuade" selected industries to contemplate the possibility of dispersing plants or equipment during peacetime; it means only that there would be little reason to hope that persuasion alone would be very effective. Industry and commerce are dominated in peacetime by economic considerations; and, as many have pointed out, small variations

from optimum decisions can often lead to serious business consequences, if not actual bankruptcy. We should therefore expect that without relatively massive federal subsidies, there will be little dispersal beyond that which occurs under normal business circumstances.

E. Policy Choices

(1) A Centralized-Decentralized Nationalization?

If the federal government should decide to nationalize some of the key civilian industries, as described in Section 7 of this study, then it should also assume some responsibility for providing protection for those industries. Some of the policy options are described above. Whether decisions about specific actions should subsequently be left to the local management or whether it should await instructions made at the federal level might be a matter for debate. It is difficult to believe, however, that when time constraints become critical--as would be expected in many scenarios--these decisions could be made appropriately and effectively at any but the local level. Thus, the situation would seem to call for the federal government to be responsible for high-level, overall policy, while the most important action decisions are made and carried out at the local levels. This would be centralized policy-making coupled with decentralized decisions to take specific actions. When the federal government becomes the property owner, authority for local decisions of a drastic nature must be granted well in advance.

(2) Encouraging Private Protective Measures

Without nationalization, decisions to take protective measures become the responsibility of the private owners. To what extent might the government provide them with preattack commitments (or offer insurance) to compensate for some of the possible resulting damage (with or without an attack) or offset some of the costs that might be involved in providing the required protection? Without some prospect of compensation for these losses, many more industries would choose to take the chance that there would be no attack rather than risk the costs of altering their precedures or of shutting down a good part of their operations and perhaps physically moving some of their supplies and equipment to protected locations. These diverse decisions, made by thousands of different owners, might leave the country with inadequate and unbalanced protection for its industrial resources. Thus, if the government wished to encourage the emergency protection of commercial assets, its policy should motivate it by providing appropriate guarantees against undue burdens which could result if protective actions were taken but were not needed in the end.

The possibility of the owners ever being compensated for these costs would depend not only on whether an attack occurred, but on whether the federal government survived an attack or eventually became reconstituted with sufficient authority. If the attack did not occur, then the costs of

restoring the "status quo" would be shared by all citizens in accordance with the preattack policy. In the event of an attack, with or without federal compensation, most of the businesses that had protected some of their equipment and supplies would be in a relatively better position than those that had not.

At present, federal civil defense policy does not provide for the compensation which might encourage emergency protective measures. A study of the potential costs and benefits of the emergency actions which could result from such a policy would appear to be desirable in the near future.

PART II

SOME PERSPECTIVES ON ORGANIZING FOR THE POSTATTACK EARLY SURVIVAL AND REORGANIZATION PERIODS

17. REMEDIAL EVACUATION AND POSTATTACK RESCUE: A MAJOR GOVERNMENTAL RESPONSIBILITY

A. Remedial Evacuation: Potential Difficulties

After a nuclear attack, the fallout patterns from ground-burst weapons would probably create narrow fields of intense radiation, each stretching for possibly one or two hundred miles from the point of the explosion. Because of the unpredictable wind directions, any part of the country could conceivably lie within one or more of these "fingers" of intense fallout. During the early postattack survival period, there might be a movement--perhaps a great movement--of people escaping from these highly radioactive "fingers" to safer outlying areas in which radiation intensities might be lower by a factor of 10 or more.

This postattack remedial movement has been visualized both as an evacuation program which should be relatively cheap to plan, and, in principle, reliable to execute, and as an almost insurmountable social problem in a forbidding, socially fragmented, radioactive world. (The problem would become even more complicated if there were successive attacks, several days or weeks apart, some of which were followed by poorly directed movements of people--some already sick from radiation--desperately trying to find safety.) Undoubtedly, either a spontaneous movement and absorption of refugees or a planned emergency rescue of persons "pinned down" in their shelters by intense radioactivity could be one of the most staggering early survival problems. Unfortunately, if cities and industries were attacked, the heaviest fallout threats would tend to be among the highest concentrations of population relocated outside, of, but close to, these target areas.

Any remedial movement would most likely occur between "adjacent" host areas; so decisions might have to be made on a local basis, sometimes even on a shelter-by-shelter basis. Without careful planning and organizational preparation beforehand--both locally and nationally--the movement and rescue could become willy-nilly, chaotic and demoralizing. Simple estimates suggest that several million persons might require assistance in moving quickly from their shelters in "hot spots" to other accommodations, perhaps from 5 to 50 or more miles away. An effective rescue operation would require sufficient prearranged areas of responsibility, radiological monitoring, communications, transport capability, fuel, dedicated rescue workers, and a number of social welfare inputs related to shelter, housing, health and sustenance. Wherever insufficient prior preparations had been made, a rescue operation would have to be either improvised--or avoided. (Ref. 3)

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Some examples of major problems that might appear during an evacuation or rescue operation are given below:

-- The influx of many refugees from hot-spot areas might be strongly resented in the less-affected host areas and perhaps even prohibited--especially where local economic reorganization did not appear assured or if anticipated assistance from the state and local governments had not arrived.

-- The parts of the country with the least fallout might correlate strongly with the least recovery resources--but nevertheless might become increasingly overloaded with refugees trying to reduce long-term exposure to radiation.

-- Rescue workers during the immediate postattack period might resist entering areas with higher levels of radiation--thereby reducing the likelihood of rescue, first aid and a flow of food and goods to trapped persons.

-- It will be unlikely that refugees from hot-spot areas will have enough resources to pay for aid or reception. If the postattack regional and federal governments are too weak to help assure the required readjustments, masses of people could become displaced, helpless and homeless. (Ref. 3)

B. Federal Support

To assist local organizations and individuals, the federal government could provide at least low-cost systems to monitor radiation, improve local weather-prediction capabilities and establish portable communications which would help shelterees trapped in heavy fallout spots to obtain needed information and instructions. Plans might also include information on available nearby shelters, either specially prepared or expedient ones, such as mines, tunnels, caves and ships. If some communications systems were to remain reasonably intact, information could be conveyed about the location of private, public and military vehicles (buses, trucks, trains, helicopters, autos, boats). The remedial movement could then be assisted either by persons from local areas or by military forces working in combination with local organizations.

To further support this operation, the federal government should have a policy, which it could make public at an early preattack stage, guaranteeing appropriate postattack credits and compensation both to the host areas and the new refugees in much the same way as appears desirable for crisis relocation (see Section 8). Even if the federal government were temporarily paralyzed after the attack, the credit policy would provide

some assurance of subsequent payment. Compensation could begin after the federal government became able to function and an acceptable currency was established. To encourage volunteers for the rescue operation, the federal (or state) government could also offer special compensation to rescue workers who were exposed to additional radiation.

C. The Need for Further Study

A study seems to be needed on the potential of both postattack rescue and remedial evacuation that would provide a greater sense of realism than that found in some earlier studies. It should take into account the characteristics of decentralized operations, whose motivation will largely depend on the "spirit" with which nearby, less-damaged localities respond to a call to perform rescue services and become reception areas for those relocated in the remedial evacuation. There should also be a rather strong emphasis on the communications that will be needed and on the ability of evacuees to relocate themselves, without much direct assistance from nearby communities which are likely to be occupied with their own problems.

Barring the existence of a dependable federal or state compensation mechanism adequate for the purpose, an analysis should be made--involving several scenarios--of the degree to which presumably heavily burdened local areas could be expected to respond to the rescue needs of others in nearby communities. Providing it survives with assets and authority, the federal government could play a crucial role. But without the survival of the federal government, the plight of those who would require rescue or remedial evacuation could become serious indeed--especially if there were not high confidence that the federal authority would soon be reconstituted.

The problems of remedial evacuation could be so great that an analysis might show that it cannot be expected to work successfully except in relatively uninteresting circumstances. If these problems should become pervasive, then the more important kinds of preattack preparations would be those that would provide higher standards for radiation protection and seek to provide local stockpiles of critical survival supplies sufficient to last the sheltered population for at least 6 months. If remedial movement from "hot spots" could be postponed for up to several months, then local or higher levels of government would be more likely to have become sufficiently reorganized to provide the needed assistance.

At present, the concept of postattack remedial evacuation is surrounded by a considerable amount of uncertainty about its realistic potential: this may or may not be resolvable through more intense study--but, clearly, such a study should be attempted.

18. WELFARE POLICIES--PREATTACK AND POSTATTACK

A. The Postattack Concept of Welfare

In attempting to visualize welfare needs after a large nuclear attack we have found that the customary concepts of welfare are unlikely to fit postattack conditions. Normally, welfare is a transfer of goods and services from the many who are prosperous to the few who are most in need. But in the aftermath of a nuclear attack, within localities--and perhaps across most of the country--the reverse is more likely to be true: that is, it will be the many who will be in great need; and if there are a few left who still have large amounts of undamaged property, the chances are they will be physically far removed from those who might otherwise benefit from such assets.

Soon after a nuclear war, a desirable national concept of welfare should be closely related to an equitable system for the distribution of locally available survival supplies which had been stored nearby during the preattack emergency or which could be readily obtained from federal, state or other publicly owned stockpiles located within a reasonable distance. To meet this potential need, the planned distribution (and possibly some production) of these supplies might best have to be arranged during the preattack crisis period; otherwise it would need to be improvised postattack. In the first few postattack weeks it is unlikely that the federal or state government would be much involved with local distribution.

The question arises as to what might constitute appropriate federal policies in anticipation of special postattack welfare problems--problems that have been discussed elsewhere in this report: for example, remedial evacuation from "hot-spot" areas, the need for food and fuel, the possibility of rescue, unusual medical or health emergencies. It is not at all clear how these emergencies should be related to federal policies, although a detailed study might help to define them and the nature of potential responses. We emphasize, however, that postattack welfare should be viewed as a general problem which, in its various possible dimensions, would affect the entire nation. One important possible contribution of the federal government to postattack welfare would be its potential for providing large stocks of survival supplies. Expectations that such assistance would be forthcoming would enable local authorities to make more equitable decisions about the postattack uses of their stockpiled supplies in ways which would be consonant with the national interest. Without such expectations, the felt need for local security would cause extensive needless damage to the long-term recovery.

B. The Need for a Functioning Federal Authority

Without very substantial amounts of assets under its control, within as well as outside this country, the federal government would be severely hampered in providing postattack welfare for the nation. For welfare purposes alone, a surviving and solvent federal authority would be of

considerable importance. Nevertheless, its conceptual importance offers no guarantee or assurance that it will actually be able to function after a large nuclear attack. Only appropriate policies supported by specific, preattack actions can provide a greater hope for that outcome.

19. THE FEASIBILITY OF FIREFIGHTING AFTER A NUCLEAR ATTACK

A. Firefighting Scenarios

Scenarios have been written that seem to derive from some earlier, nonnuclear wartime experiences depicting rapid-response operations of firefighting and rescue teams shortly after a nuclear attack. But firefighting during such times can hardly be compared to that of extinguishing accidental peacetime fires or even wartime fires caused by high explosives and incendiary weapons.

Firefighting immediately following a nuclear attack appears to be a somewhat surrealistic concept. To begin with, the implementation of the CRP presumably would involve the relocation of firefighting forces as well as other civilians from the high-risk areas. It is difficult to believe that local authorities would ask the remaining firefighters to rush out from their shelters immediately after a nuclear detonation has occurred to extinguish a few of the tens of thousands of fires which may have been caused by it. Such a response, in which the firefighters would be exposed to the early radiation and other lingering effects of nuclear weapons in order to fight mass fires with hopelessly inadequate equipment, is likely to be little more than a suicide mission. Moreover, who is to know, after the first detonation sets a city on fire, when the next weapon might arrive? Also, the usual firefighting tools and equipment could be almost useless against the profusion of fires burning in any target area, or made superfluous by the disappearance of water pressure at the hydrants.

It might be much more reasonable to expect persons living in regions which have escaped the direct effects of a nuclear blast, or have suffered only minor damage, but are subject to fires, to snuff out local fires by themselves. For them it might either be necessary to extinguish a fire or to evacuate to some other dwelling: immediate evacuation might be more difficult than firefighting under many circumstances. Neither firemen nor individuals, however, should have to face such decisions. Only an unhappy lack of even rudimentary plans and preparations are likely to create such circumstances.

We are led to conclude the potential for firefighting during nuclear attacks--especially large nuclear attacks--by and large has not been realistically examined in the past. A study of what might be a realistic potential under a set of scenarios and postures involving a partially relocated population evidently still remains to be accomplished.

20. HEALTH CARE: POLICIES AND ACTIVITIES

In any future urban-industrial nuclear attack, it is likely that a crisis relocation program would dramatically reduce the numbers of people killed and injured. Although the demand for medicines and medical attention is likely to be overwhelming following any large nuclear attack, a reduction in the number of casualties, through timely relocation, would also reduce the demand for--and increase the availability of--medicines and medical personnel, thereby improving recovery prospects. (Ref. 8)

A. Vulnerability of the Population in Risk Areas

The potential severity of the medical problem among the unevacuated survivors in urban areas targeted in an industrial attack has been described in a study presented to Congress:*

> The immediate post-attack medical problem will be treatment of the injured from burns, blast effects and radiation exposure. This problem will be complicated by the likelihood of multiple injuries, i.e., individuals suffering from combinations of burn, blast and radiation injuries.
>
> Under the attacks envisioned in this study, medical care for the injured will be further complicated by the virtual elimination of the pharmaceutical industry, one of the eight critical industries targeted for maximum destruction. Even simple protection against infection will be difficult because infection control requires antibiotics and other prophylactics. Urban stocks of these medicines will be, in large measure, destroyed and new supplies will be unavailable as a result of the destruction of the pharmaceutical industry. These losses will also be critical for chronically ill individuals (heart disease, diabetes, etc.) who depend on drugs for their capacity to sustain physical activity or life itself.
>
> Medical personnel especially specialists and facilities--including medical schools, and teaching hospitals are more numerous in areas of high population density and therefore vulnerable to the urban nuclear attacks postulated in this study. Indeed, medical care personnel, in general, tend to be even more concentrated in urban areas than the general population itself....

This study shows that a relatively high proportion of medical personnel and facilities (70 percent of all physicians, 55 percent of all hospital beds and 65 percent of all dentists) are presently located within the top 71 major U.S. SMSA's (Standard Metropolitan Statistical Areas).

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*Katz, Economic and Social Consequences of Nuclear Attacks on the United States, pp. 19-20.

B. The Advantages of Crisis Relocation

Given the nature of the postattack medical problem, it would seem apparent that a timely relocation of the vulnerable population to host areas, the preparations of key health and sanitation industries, the redistribution of existing pharmaceuticals and sanitation supplies to the host areas and shelters, and a build-up of these inventories during a crisis could all help substantially. Most of the physicians, who would otherwise be killed or injured if they were to stay in the cities, could move to the host areas and be sheltered with the rest of the population--a major long-term health-care advantage of a timely urban evacuation.

Still, postattack medical responsibilities could challenge the physician and other medical workers with choices that may have profound ethical implications: When should a doctor leave the protection of a shelter to give help to others and risk the personal consequences of exposure to high radiation levels? If he is sheltered in an area of intense radiation, should he leave the local injured to their own resources in order to secure his own safety? If he saves himself, would not many other patients profit even more from his services later on? These are harsh questions, the resolution of which may best be left to the survivors, should such a situation arise. One of the purposes of a properly-designed CRP is to minimize the likelihood of such choices arising.

C. The Danger of Epidemics

Besides the specific medical problems created by blast, thermal, and radiation injuries which surviving physicians may need to cope with, postattack, there is the danger of one or more epidemics breaking out, particularly if there is a protracted stay in shelter during the early survival period, or if the subsequent reorganization period is prolonged. There are several reasons why epidemics may tend to occur:

-- Medical supplies are likely to be inadequate and transportation facilities disrupted.

-- Food rations might be below normal requirements in many areas, or the diets unbalanced.

-- Many people would be excessively exposed to harsh weather or to working conditions to which they were not accustomed. Lack of fuel, improper heating and cooling, or a lack of appropriate clothing could all be contributive factors.

-- If the CRP does not proceed smoothly the mortality might be disproportionately high among doctors, nurses, and other health service personnel.

-- Concentrations of people in host communities could create conditions in which poor sanitation or the improper preparation, storage, and serving of food would increase their susceptibility to diseases.

-- The corpses of people and animals probably could not be properly attended to in or near many target areas.

-- Water supplies in some areas would become inadequate and/or impure. (Ref. 11)

D. Health Preparations During a Relocation

With the anticipation of a few weeks in a shelter--when the chances might be about 10 to 1 that a physician will not be one of the shelter residents, and when radioactivity can prevent travel between shelters--certain important preparatory measures should be taken where time and resources are available:

(1) Perhaps the most important need would be the maintenance of good sanitation standards. Fulfilling this need may be assisted by providing the public with information on shelter sanitation practices, thereby encouraging them to participate in stockpiling available sanitation supplies in the host areas. After the relocation, the selection and training of a shelter sanitation specialist for each shelter group should also be useful.

(2) The growth of a paramedical capability could be encouraged. A great majority of medical cases normally handled by physicians could be cared for by paramedics and nurses. The sheltered population might also be able to receive more specialized advice through communications with an emergency health center set up for that purpose. A do-it-yourself book in each shelter, emphasizing appropriate emergency aid for radiation sickness, burns, respiratory, and a few other communicable diseases, would enable paramedical attention to be more effective. When available, some common useful medicines and instruments could be stocked in shelters.

(3) Pregnant women nearing delivery should be assigned to larger shelters to which an MD is assigned or could be obtained.

(4) Where feasible, communications from the shelters to a health information center should be securely established.

(5) Each shelter should contain an adequate amount of written information on the control of insects and rodents. (Ref. 3)

E. Federal Policy

The preferred federal role in local health preparations during a crisis has not been fully analyzed. It might or might not entail the nationalization of pharmaceuticals, other medical supplies, medical instruments and sanitation supplies in order to facilitate their redistribution and stockpiling for postattack use. Still, if a relocation of the population is attempted together with such a nationalization program, each nationalized establishment may need to determine--or even be encouraged to take--actions which it deems most appropriate to promote the maintenance of the relocated population and enhance its own survival and recovery prospects in the event of an attack. To create adequate and widely distributed stocks of medical and sanitation supplies, this decentralized approach might well be the most effective one when the crisis becomes urgent. To secure their cooperation, the government could guarantee the nationalized firms against financial losses as a result of their compliance with the federal policy--that of quickly distributing available supplies and services and concentrating surpluses or larger stockpiles in host areas. In a rapidly-escalating crisis, the effect of such an unorthodox federal policy is likely to be more effective than a nationalization dependent upon direct federal controls. Whether or not such a policy would be feasible, or as effective as envisaged, remains to be corroborated through a more detailed study.

21. ENERGY: FUEL AND POWER IN POSTATTACK RECOVERY

A. The Special Position of Liquid Fuels After a Nuclear Attack

The energy sources of postattack recovery can be grouped into three principal categories: electricity, natural gas and liquid fuels. Of these, liquid fuels appear to be both the most vulnerable and the most critical to recovery. The three types are considered separately below.

(1) Electricity

Electric power might be the least vulnerable form of energy because much of the production capacity--and distribution network--would probably survive an attack. Moreover, according to our crude estimates, the demand for electric power is apt to be reduced greatly postattack--perhaps to less than 5 percent of the preattack demand during the early survival period (while most of the population is in shelters) and to something between 10 and 20 percent during the early months of reorganization. In addition, supplies of the basic fuels sufficient for several months or more of normal peacetime requirements--including coal, uranium, and water stored in dams--are usually stockpiled by the electric utility industry. Given a great reduction in postattack demand, there would probably be sufficient fuel and production capacity available to cover most of the domestic requirements for about a year or more. Stockpiled coal alone would probably last at least a year; and the nuclear facilities, which now produce about 13 percent of the nation's power, could still be virtually unchanged after one year, postattack.

(2) Natural Gas

The natural gas system also seems to be relatively invulnerable to permanent damage. Wherever it is piped into risk areas, the flow could be quickly shut off when necessary. Except for occasional pipeline breaks, which could also be closed off (and repaired during or shortly after the reorganization period), there does not seem to be any obvious reason why the production and distribution system for natural gas should be particularly vulnerable. Consequently, most of the host areas that had been supplied with natural gas preattack might expect those supplies to continue postattack--or to be restored relatively quickly, if interrupted. Also, as for almost any other fuel, the demand for natural gas should be substantially below normal until the recovery is well underway--and that might not occur until several years after the attack.

(3) Liquid Fuels

Probably the most critical situation will be that which might prevail in local requirements for liquid fuels. Most liquid fuels flow from refineries and, as has been observed in many studies, the refinery industry tends to be very vulnerable; in fact, in some scenarios it is deliberately targeted.

Although demand for liquid fuels might be very low during the early survival period, the need would increase rapidly during the reorganization phase, and almost without question, would become overwhelmingly acute during the subsequent recovery. Most farming in the United States depends primarily on petroleum-based fuels; so does our transportation system. The need for liquid fuels for use in heating, postattack, might be much less pressing than for other normal uses. This would be partly due to the redistribution of the population and partly because other heating alternatives--for example, gas or electricity--would be available to offset some of the demand. This observation might also be to some extent appropriate for surviving industry as well as for homes and buildings. A partial reduction in heating demand could also result from changes in lifestyles; for example, lower temperatures could be tolerated by wearing more clothing.*

Despite the possible conservation measures and changes in lifestyles, compared to other sources of energy, liquid fuels will probably be in extremely short supply, postattack, and liquid fuel prices consequently very high. A careful analysis needs to be made of the ability of the country to minimize the postattack demand for liquid fuels through conservation, substitution and the use of imports.

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*Kearny provides suggestions for keeping warm in below-freezing weather without any fuels. Nuclear War Survival Skills, pp. 113-117.

The farming requirement for refined fuels in the U.S. is now about 10 percent of the total supply. If, shortly after the reorganization period, farm production is to be restored to approximately its preattack level, then we should anticipate a requirement for the same amount of fuel.* Unfortunately, this might be roughly equal to the total U.S. postattack productive capacity. Should this be true, the competition between the farm and other competing sectors (including trucking, personal transportation, the military and chemical feedstocks) could become quite severe. Thus, except for the limited fuel stockpiles that might be available postattack and the unknown offsetting potential for imports, the supply situation is likely to be grim. Some concentrated study should be given to the possible options for rapidly producing liquid fuels during the early recovery period.

(4) The Availability of Crude Oil

It should be noted that the anticipated reduction in refinery capacity might strongly contrast with the availability of crude oil. After the destruction of most cities, crude supplies might be excessive for several years postattack. Consequently, civil defense planners might even consider the option of improvising homemade petroleum stills which, during a postattack emergency, might produce enough fuel for selected local uses: motorcycles, trucking, farms. These relatively inefficient "backyard" stills, though dangerous, might be quickly built and could become temporarily acceptable in some regions. One could imagine that if gasoline were to cost $20 per gallon (in today's dollars) during the first postattack year, the temptation to improvise such stills would be very great despite the risks involved.**

B. The Potential Threat of the Electromagnetic Pulse

Connected with communications and power is the potential impact of a nuclear attack employing a deliberately induced electromagnetic pulse (EMP). One of the principal effects produced by a nuclear weapon detonated

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*"The sensitive relationship between fuel and farming in the U.S. suggests that the postattack harvests may be in jeopardy [if the petroleum industry is specifically targeted] unless special provision is made for storing fuel at farms sufficient for one or two growing seasons. At some risk this could be a planned measure to be implemented during times of severe tension, although the plans and preparations would probably have to be made well in advance." (William M. Brown and Herman Kahn, eds., Nonmilitary Defense Policies: A Context, Reappraisal, and Commentary, Vol. 2 [Croton-on-Hudson, N.Y.: Hudson Institute, HI-359-RR, May 15, 1964], Chapter IX, p. 9-6.

**In Section 2 we briefly discuss the publication of specialized manuals on how to perform numerous postattack recovery operations, including the building of such "backyard" stills.

at high altitudes consists of a short transient pulse of very intense electric and magnetic fields; although this EMP surge is considerably briefer than a lightning bolt, it could knock out the entire power grid as well as most communications equipment over very large areas. In fact, one large weapon, strategically placed, could paralyze commercial power and communications in nearly the entire country--perhaps for months or years.

Although some of the basic technological effects of EMP are well understood, its full impact is hard to calculate for actual situations. Few official civil defense plans or policies have as yet been adjusted to cope with the EMP effects. Although knowledge about the EMP has been disseminated to some extent throughout the communications and electric power industry, and possibly a few precautions have even been taken, most of our systems are highly vulnerable to an EMP attack and probably will remain so during the 1980s.

C. A Crisis Response to the EMP Threat

Of great potential value would be the knowledge of the effective emergency actions that might be taken by professional engineers, electricians and skilled maintenance men during the first few weeks or months of a growing crisis to prevent or reduce the damage from an EMP attack. A study to provide this knowledge might prove to be of considerable utility in indentifying components, facilities or systems that could be rapidly protected. The degree to which special anti-EMP actions might make use of readily available shielding materials, bypass diodes and other electronic or electrical parts--transistors, switches, etc.--could be determined. What parts or information might be advantageously stockpiled for crisis utilization should be the subject of a separate, adequately-funded study. At the moment we seem to have little knowledge about how much might be accomplished within a few days, weeks, or months, if some preparations and subsequent appropriate efforts are made during an emergency. We are also unaware of how much protection against the EMP might be improvised, even without advance physical preparations, if only the knowledge of what could be done during the emergency were "stockpiled." What useful components, for example, might be scavenged from other existing equipment? How rapidly could we train relatively unskilled persons to perform some of the significant protective functions? It could be extremely important to have even preliminary answers to these and other technical questions before a nuclear crisis begins.

22. TRANSPORTATION POLICIES

A. The Preattack Transport of Goods from Risk to Host Areas

A timely crisis evacuation of risk areas is not only likely to save millions of lives, but it could also be accompanied by the transport of food, personal effects, critical materials, corporate records and many other valuable forms of property to the less vulnerable areas.

One report published in 1966 discussed the quantity and value of potentially useful property that could be moved out of the cities in a short time. (Ref. 12) The study concluded that the then existing transportation equipment (trucks, ships, trains) could hold roughly 150 million tons when fully loaded; these vehicles alone could provide an immense emergency "warehouse" of survival and recovery supplies. Of course, if time permitted, some of the vehicles could even be unloaded and returned for additional supplies. In addition, each of the millions of personal autos involved in a relocation could be expected to move about 300-500 pounds of personal property, such as food, clothes, tools and other valuables.* With the removal of large amounts of valuable goods from the risk areas, the need for bringing new supplies into the host areas could be significantly reduced.

B. The Role of Railroads

Railroads could obviously play an important part in any mass evacuation of people. But their additional role in the emergency relocation of supplies vital to postattack recovery could also be enormous. In addition to carrying millions of tons of freight out of target areas, railroad cars might also be used for "temporary" storage during the most severe part of the crisis. Large quantities of fuel will need to be stored locally, and it might be feasible for some tank cars to be used for this purpose. Other specialized cars--refrigerator cars, closed gondola and hopper cars, special purpose boxcars, etc.--might also be used for temporary storage if permanent storage space were not available. Also, the relocation of rolling stock would be advantageous, not only because it would transfer people and valuable cargoes, but because it would preserve the vehicles in non-risk areas. This might be a possible benefit for all transport vehicles. (Ref. 3)

C. Evacuation by Automobile

Private automobile is considered to be the principal means by which people will move to host areas. The central factors involved in rapid relocation by automobile are (1) the bottlenecks in the roads to distant reception areas, (2) the average number of people per car, (3) the refueling requirements, (4) the breakdown rate, and (5) the weather. (Ref. 4)

Making sufficient fuel available en route might be one of the knottiest problems of the relocation movement: the ability to fuel up or refuel might make the distributors and retail station personnel key figures in a successful relocation. The fuel needed during the crisis relocation might compete with that required for war production and other military

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*See the appendix to this volume for a description of an "average" lightweight survival and recovery package, weighing about 300 pounds.

demands; indeed, in the central scenario, the start of the evacuation and the CD mobilization is caused by a full-scale conventional war in Europe.

If emergency planning has been ineffective on the local level, one of the least satisfactory operations might be that of relocating people without access to autos. Evacuees who are dependent upon the government for special transportation arrangements might, given insufficient volunteers and time, be expected to be among the last to leave. Although some of this problem might be ameliorated by promoting the renting or lending of surplus autos during the CRP, little analysis or planning has been devoted to this potential problem. (Ref. 3)

D. Transportation Before and After a Nuclear Attack

(1) Preattack Relocation

In the relocation mode, vast numbers of automobiles, trucks, trains, buses, planes, ships and barges will be carrying millions of people and millions of tons of cargo from risk to host areas, often repeating trips as time allows before an attack. The movement itself will be mainly carried out by local administration, industry and transportation groups as well as by individuals; of course, the government can inform and support this movement, particularly with fiscal policies.

(2) Postattack Transportation

In the postattack period, inadequate or nonexistent distribution of resources by a possibly fragmented, disorganized society or government could be a key obstacle to economic recovery. Vital railroad and highway links, located in bombed cities, will have to be rebuilt, or if destruction is vast and the cities uninhabitable, bypassed or relocated elsewhere--perhaps while a dispersed population depends on relocated stockpiles or subsistence farming. Much of the government's preplanning should examine ways in which it uniquely--and perhaps only by preattack policies and preparations--can help mitigate distribution bottlenecks. The preattack protection of vehicles could be an important aspect of such planning.

PART III

A LOOK AT SOME HARSH POSSIBILITIES INVOLVING THE FUNCTIONS OF INSTITUTIONS

23. MILITARY SUPPORT OF CIVILIAN EMERGENCY PREPARATIONS

In past emergencies, the military services have provided an extensive source of manpower, specialized equipment and supplies to aid civil authorities: military organizations have the advantage of strict discipline allowing them to coordinate and control large trained labor forces in emergencies, an ability to respond relatively quickly in a large range of novel situations, and much experience in the conduct of emergency operations. Their capabilities have been demonstrated during tornadoes, hurricanes, accidental explosions, floods and earthquakes--in addition to war-related destruction. In natural or accidental disasters the military habitually moves in when asked to do so by the local community, and once invited, generally works under the authority of the civilian administration.

A. Military Support, Postattack

In assessing the potential for military support to civilians after a nuclear attack, the natural tendency is to place reliance on the military capabilities demonstrated in the past. It should be realized, however, that in the standard disaster scenario, hurricanes, tornadoes, and floods occur locally and strike the civilian, not the military, sector. The intact military services then can converge on the disaster area with their organization, experience and supplies and effectively provide some essential services. But in a large nuclear attack, the conditions for rendering effective military assistance might be considerably different. What are some of these possible, divergent conditions?

(1) The basic scenario leading to a nuclear attack envisages a severe crisis in which the military forces are deployed to provide the logistic and fighting capability for a conventional overseas war. This deployment coupled with their war-fighting requirements, places the military units in a relatively disadvantageous position for responding to civilian needs.

(2) Since in most nuclear war scenarios military installations are among the prime targets, an attack could conceivably be more destructive to such forces stationed in the U.S. than it is to civilians, especially if most civilians have evacuated the cities. If this should be the case, a situation could be visualized in which, on balance, civilians might need to provide postattack assistance to the surviving military forces--just the reverse of the usual peacetime roles.

(3) Throughout the various postattack time periods indicated in our matrix, military personnel are just as apt to be pinned down by fallout as civilians--perhaps even more so if they are based in or near target areas. Also, while civilians are pinned down in shelters, it might be essentially impossible for military help to reach them, since military personnel, too, would need to remain in shelters.

(4) Although one might envisage postattack supplies being dropped by helicopter into areas with food shortages, given the parallel postattack problems of liquid fuel shortages and the desperate need for conserving gasoline, it is hardly likely that refined fuels would be "squandered" on such an inefficient distribution of food supplies. If radiation levels were too high (and if they weren't, people could leave the area in vehicles rather than wait for the arrival of food), or if the streets were made impassable by debris, it might also be essentially impossible for trucks to enter areas where food is needed.

After a nuclear attack, it appears likely that wherever military forces might be sufficiently mobile to be of use, civilians would also be somewhat mobile and able to move in stricken areas for short time periods. Whenever the military might undertake some less urgent role--for example, moving casualties to havens outside an intensely radioactive area--the injured might as often as not be military as civilian personnel. And if the military emergency system were not sufficiently mobile during the first several weeks postattack, when the movement would be most needed, its overall utility or effectiveness could be severely degraded.

Thus, the aftermath of nuclear attacks may provide few obviously apt parallels with peactime disasters in which the military can be useful to civil authorities. This observation makes us cautious about casually employing historical examples in a nuclear attack context.

B. Choices by Servicemen During Severe Crises

Another important question that can be raised in many scenarios is whether many military personnel stationed in the United States would actually remain at their bases when an attack threatens. If a fear of a nuclear attack had swept the country and civilians were evacuating risky areas, should we not imagine that military units would also disperse? During that time of stress many of the servicemen might be principally motivated to return to their families in order to help them with the tremendous problems they would face during the days or weeks before an imminent attack. Also, during the emergency many military units might be assigned to various locations to help facilitate the relocation. For many

servicemen this kind of deployment might conflict powerfully with their desires to help their families, as well as with the military need to protect the integrity of their own units and assist the troops overseas. Consequently, in trying to determine an optimal role, each serviceman could find himself in a position of great stress. It is not at all clear how many will make what decisions when a choice is available.

C. The Military Need for Survival Supplies

In a postattack situation in which there has been immense destruction of both military installations and the urban-industrial areas, the traditional sources of supplies for the surviving military units may have vanished. If military personnel had been dispersed from their bases as a protective action, they might possibly try to reform as military units as soon as feasible after the attack. As military units they would need a share of the available survival supplies and might have to compete for them with civilians. But if existing or available stocks were inadequate for their requirements, how would a local unit go about replenishing them? To a military commander an obvious solution might be to attempt to seize some of the supplies stocked in nearby communities, a maneuver which might meet with a great deal of resistance from the local civilians. If a military unit were perceived to be an integrated and helpful part of the community, then it would likely receive a fair share of the supplies. But if it were seen to be an external "parasitic" organization--that is, a drain on the survival potential of the community--its demands would probably be resisted.

There are no easy solutions to the problems depicted above nor are we confident they have been properly portrayed or analyzed. We mention them as possible grim aspects of some imaginable scenarios, aspects which could be extremely important if they were to prove to be at all realistic.

D. The Potential for Military Support

In a more optimistic scenario, one in which military units survive an attack and regroup to aid civil authorities, an enterprising military organization might be capable of performing an extensive range of reorganization and recovery tasks. Below we suggest what some of the military resources and capabilities might be.

The services have transportation, communications, housing, construction and other facilities that could be very valuable as an addition to civilian resources. During a crisis many military units could even be provided with training to assist in civil defense preparations. Thus, some early planning and preparation for subsequent emergency operations might prove to be feasible; the costs involved would probably be negligible, even if the efforts were fairly extensive, because comparable training and planning ordinarily form such a large part of the military's peacetime functions.

If their movement, postattack, is not prevented by high radioactivity levels or lack of fuels, military units might perform some of the following reorganization tasks:

(1) Clearing debris from roads. The services have suitable--or adaptable--equipment.

(2) Laying or repairing railroad tracks.

(3) Erecting temporary bridges.

(4) Building both temporary and permanent docks.

(5) Establishing temporary communications.

(6) Transporting food and materials by ground, sea and air.

(7) Developing and operating temporary distribution systems.

(8) Administering emergency medical care. (Ref. 6)

Thus, it would be very unfortunate if surviving military units were viewed as hostile intruders rather than cooperative neighbors by the nearby civilian communities.

E. Limits to Military Authority

The use of the military services for civilian support should be carefully considered, not only in terms of their eventual potential or capacity to provide men and resources for survival preparations and to help with postattack recovery, but also in defining their postattack legal relations and liability to federal, state and local civil authorities. The clearest example we have in recent American history of a military takeover of executive and legal functions through a declaration of martial law--Hawaii in World War II--has been generally considered to have been unconscionable and counterproductive. Policy considerations might conclude that it is important to prevent the imposition of martial law when other options exist.

Military authorities at present recognize the concern Americans have with the overinvolvement of the military in civilian affairs and are usually careful to give disaster aid within traditional and legal limits.

> Yet, the character of natural disaster is such that new expectations sometimes emerge at variance with the established ones, which put pressure on the military to assume a different role. When this occurs, military organizations may attempt to somehow adapt to the new

> expectations without outwardly breaking the old rules, for military authorities recognize that once the immediate emergency is over, their performance may be judged in retrospect by the prior established norms rather than the emergent norms.*

There is no evidence in present planning to indicate an expected role for the military during a postattack recovery. Although the task would be difficult, it is not too soon to begin probing for a reasonable analysis of its potential postattack employment in a variety of scenarios. Such conceptual studies might provide important insights for future CD planning.

24. THE RESOLUTION OF DISPUTES

We can reasonably assume that an extraordinarily large number of personal, economic, political and legal difficulties will have to be resolved quickly, both during and after a crisis relocation of civilians, and after the immense destruction of a nuclear attack. Included in such disputes would be problems of (1) law and order, (2) individual and governmental rights, (3) property rights and liability for damage, (4) war damage compensation, (5) bankruptcies, (6) rights to estates, (7) contract violations, (8) the validation of claims and settlement of legal suits, (9) compliance with new government orders and policy, (10) the legality of governmental and military policies and actions, and (11) political rights--especially of evacuees.

A. The New Legal Environment

The principal problem in resolving preattack and postattack disputes will be the need for their rapid resolution. For higher levels of crisis which more closely approach the possibility of a nuclear attack, appropriate responses to the perceived threat will require that many decisions, which in normal times might take months or years, be made in minutes or hours. The existing peacetime system for the adjudication of disputes will almost certainly be grossly inadequate during these emergencies. Until now, little has been formulated in federal or local CD policy that is specifically aimed at speeding-up the process for resolving disputes in a crisis. From the historical evidence, even the use of wartime emergency powers is unlikely to provide sufficient speed in decision-making.

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*William A. Anderson, "Military Organizations in Natural Disaster," American Behavioral Scientist, Vol. 13, No. 3 (January/February 1970), p. 41.

During a crisis relocation, for example, a particular property owner might simply refuse to allow the use of his property for housing evacuees, although it is stipulated by the federal CRP. How would such resistance be "handled"? Similar situations might arise with regard to (1) the acquisition and distribution of food and other survival supplies; (2) the requisition of key workers in specialized industries; (3) cooperation with federal policy for issuance of emergency credit; and (4) the allocation of supplies that are available for local stockpiling or distribution.

The postattack situation might even be worse if, for a substantial period of time, higher levels of the government and the judicial system did not survive or could not function effectively. How then would decisions be made? This political and legal vacuum, coupled with the massive destruction and the need to operate under a "blanket of fallout", implies that urgent local decisions would have to be made on a largely arbitrary basis, without the earlier regard for existing law or prior traditions.

During the early postattack periods, crucial decisions in the host areas would be needed for (1) the distribution of survival supplies, (2) the acceptance of new refugees during remedial evacuation, (3) the organization of the decontamination effort, and (4) the effective use of local labor during the reorganization period. This should be a time when U.S. society once again attempts to organize itself in a viable fashion. Assuming that war damage compensation claims or the determination of the solvency of businesses probably could not be settled for some time, how might society continue to function effectively without a resolution of the millions of legal disputes predicated on preattack laws?

B. Authoritarian Solutions

It would be hard to exaggerate the enormous confusion that could arise as the country perceives the approach of a nuclear attack. To maintain some semblance of order during the most severely disrupted times--just before, during and directly after an attack--local decisions almost certainly must become more authoritarian, more arbitrary and more rapid! This is conceptually illustrated in Figure 2. The speed and arbitrariness of the required decisions implies that somehow a new "pecking order" will become established preattack within each of the host areas and that--whatever the social dynamics that give rise to it--"strong leaders" will emerge and impose new decision-making systems on the local citizens. Although the forms might differ considerably in detail among various localities, they will undoubtedly be strongly authoritarian. In those critical hours, the dominant need will be for urgency and effectiveness rather than for justice or equality.

Under these extraordinary conditions, it is not at all clear whether those who refuse to comply with the new authorities will be apprehended and jailed, put into concentration camps, or even, in some extreme

cases, summarily executed! All of these possibilities are conceivable, especially during the early postattack period, if for weeks or months the likelihood of intercession by government at higher levels is found to be essentially nonexistent. These would be times when many normal conventions of civilized life would tend to be discarded--and probably more and more so, as the crisis point shown in Figure 2 is approached.

C. The Lack of Useful Historical Parallels

The difficulty in obtaining guidance from historical parallels to human behavior during extreme nuclear crises is that there may be few, if any, useful ones--that is, ones in which there is no existing central authority or its equivalent to provide a constraint on the actions of individuals. We might, for example, think of some possible grim parallels, such as reported instances of cannabalism during treks over the Brenner Pass, or of a shipwreck in which several hundred survivors found themselves cast away on an island without supplies and with little hope of discovery. What could happen when traditional, higher levels of government are removed from the scene may be illustrated by the recent appalling event of mass suicide among the members of the People's Temple of Disciples of Christ, led by the cultist leader Rev. Jim Jones. The major conclusion that we might draw from an examination of such rare events is that it is within the realm of *possibility for almost anything* to happen and become acceptable to survivors under a prevailing authoritarian leadership.

What we have tried to indicate above is that enormous changes could be expected to take place as an extreme nuclear crisis approaches, or immediately after it occurs, and that there is little in our existing legal structure to permit the effective handling of disputes in this transformed environment. This raises the serious question as to what preparations the federal and state governments can make that might be appropriate and effective during these times. The answers are not at all obvious; nor are we aware of sufficiently specific studies that provide the necessary guidance. Some existing studies point out the nature of changes that can occur during an extreme emergency and suggest approaches based on historical parallels. But confidence in any of these approaches cannot be high until they have been translated into a detailed program and subjected to analysis.

D. Martial Law vs. Local Authoritarianism

One of the frequent ways of resolving dilemmas of this type is to turn to martial law.* Instead of coping directly with the situation, a functional government might find it simpler--or hope that it will be more effective--to turn the responsibility over to available military units, however competent or incompetent they might actually be under such unusual circumstances. But, because it might be months before either military units or the government would be functional, even this option might not be feasible in the postattack scenario we are envisioning. What seems more likely to happen is that ways to settle local disputes would evolve during the preattack crisis period, generally after the relocation, but prior to the hypothetical attack. Local "institutions" that evolved during crisis mobilization would be likely to carry over into the postattack period, retaining much of the authority that had somehow settled upon them earlier. Such "institutions" might resist an attempted infringement on their power by an outside authority--for example, through the imposition of martial law. Of course, if the federal government were to survive throughout the crisis as a functioning entity and then choose to declare martial law for a time, it would be hard to prevent its occurrence. But neither the survival of the federal government nor its ability or desire to opt for martial law would be at all certain after a large, malevolent attack.

Imposing martial law in the disrupted areas after a nuclear attack, when the normal checks on its potential abuses might be nonexistent, could add to the disaster. In the past, many possible levels of operation for declared martial law have occurred, each deemed necessary because of the perceived dangers of the prevailing circumstances. Military activities under martial law have included (1) quelling disorders and insurrections; (2) making arrests; (3) detaining violators and prisoners; (4) arbitrating as military tribunals; and (5) administering all civilian executive and legal functions. Following the chaos of a nuclear

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* "Martial law . . . deals with the control of civilians by their own military forces in time of emergency. It is not military law, which is the jurisdiction exercised by the armed services over their own members. It is not military government which is concerned with military control of conquered, not domestic, territory. It is not the authority given the President to use force to suppress insurrections in a state or to enforce the laws of the United States. It is not necessarily the suspension of the privilege of the writ of habeas corpus, which may be suspended in the absence of martial law; also, and more important, martial law need not include suspension of the writ.

Martial law is in effect when the military, in domestic territory, have temporarily assumed some or all of the responsibilities of government." (Chipman, Nonmilitary Defense for the U.S., p. 274.)

attack a declaration of martial law might evolve into some kind of local military dictatorship, one that could become very difficult to eliminate. Would this be better than local civilian authoritarianism?

Federal policy should aim at mitigating not only some of the potential survival and recovery problems of shortages and inequities, but also those of social reorganization and the destruction of the traditional economic and legal systems. To the extent that these problems are reasonably prepared for preattack, the possibility of fragmented local authoritarianism, social chaos or of an incompetent military rule during postattack recovery will be lessened.

E. Modified Traditional measures

If an attempt were made to resolve the flood of postattack problems through an extraordinary adaptation of existing legal procedures, approaches such as the following might be tried--although the likelihood of a satisfactory outcome seems dubious:

> Restoring incoming flows and property ownership requires authority for integrating all postattack payments to individuals. It also requires that the federal court system be braced against the effects of an attack and be prepared to operate flexibly in the postattack environment. The case capacity of the federal courts must be increased manyfold, by provision for the increased use of court commissioners, masters, and referees, especially in matters relating to the salvage of damaged enterprises and the liquidation of those destroyed. Rules of procedure must be reviewed to provide, among other things, for preserving the rights of parties to preattack litigation, and for limiting postattack litigation; to simplify laws and rules on pleadings, on parties, on pretrial and trial procedures, on evidence on appeals and on statutes of limitations. Finally, federal legislation should be enacted to permit federal or state courts to override or change the provision of wills, trusts or contracts made unjust or ineffective by postattack conditions.*

F. The Need for Creative Study

It should be clear that the problem of resolution of disputes during pre- or post-attack emergencies is one of the most complex that is likely to demand federal attention. Certainly, it is not too early for a concerted study effort to be made to determine the extent to which preattack preparations might be helpful in resolving it. The natural tendency would be to assign such a study to judges, lawyers and others associated

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*Chipman, Nonmilitary Defense for the U.S., p. 356.

with the legal profession. But would these be the proper persons? The answer is not at all clear. These legal experts are knowledgeable in traditional domestic law; but what we may need are persons with experience or insights into how to make a rapid transition to a legal system based on unprecedented, decentralized, temporary, authoritarian decision-making which could suspend most of the existing legal traditions. This suggests that the kinds of people who might be consulted in such studies are those who, through historical circumstances, have been involved with events or movements incorporating unusual authoritarian transitions--for example, revolutionary movements, terrorists, the Mafia, cultist societies, shipwrecked or lost expeditions, "social systems" in prisons or concentration camps, and other nonorthodox situations. It is clear that any such study could be difficult and provoking and, given the traditional niceties of peacetime investigations, perhaps politically unacceptable or untenable. Are other approaches practical? We need to evaluate some creative suggestions to answer this question.

25. PREVENTING POSTATTACK FRAGMENTATION AND CONFLICT

A. America in Fragments: A Grim Scenario

> The country is on the verge of a second major disaster--a collapse of all but local community authority with little prospect of an early re-establishment of a preattack constitutional structure. The prevailing expectation among the pessimists is a shattering of the country into numerous independent areas which over years--perhaps decades--would have to evolve a new federation into the "second U.S.A.". The optimists are hoping that an effective federal authority can be reconstituted within a year or two through the imposition of martial law--an action which is made difficult by the magnitude of the problem, the inexperience of the army, the weakness of federal authority, and the widespread factionalism and loyalty conflicts within the military forces.*

In some postattack scenarios, such as the one above, the paucity of survival and recovery preparations, coupled with an enormous and malevolent enemy attack, leads to a fragmentation of the country into perhaps thousands of independent entities. Each struggles with internal problems while trying to cope with neighbors who might be hostile. The preattack culture provides the basis for the emerging institutional forms, including an authoritarianism in local government which seems to be natural in these extreme emergencies. However, the continuing environmental threats and the competition for resources create suspicion and hostility which are easily directed toward "strangers" in neighboring communities. (Ref. 8)

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*William M. Brown, On Reorganizing After Nuclear Attack (Santa Monica, Ca.: The RAND Corporation, P-3674, January 1968), pp. 13-14.

The severe fragmentation of the country into numerous independent societies would increase the difficulties of achieving an effective production and distribution system. It would be as if the U.S. had suddenly decomposed into thousands of underdeveloped countries, each without traditions for carrying out economic or political relationships with neighboring or distant communities, most of whom might be perceived as competitive, if not hostile. Yet the evident need for the exchange of goods would force intercommunity trading, however costly. For example, if food or fuel had to pass through ten communities to reach its final destination, it might have to be bought or sold, unloaded and loaded, ten times along the way. The extra costs would clearly penalize the recovery. (Ref. 8)

Communities with minimal supplies or goods for trading might adopt "unlawful" methods such as robbery, hijacking, or armed raids. Presumably these would not only have the blessing of the local authorities but might be planned and justified by them by the need to survive or by the "selfishness" of their neighbors. The consequent interplay between the forces needed to protect supplies and those attempting to "pirate" them would also divert energy and resources from the recovery effort. In addition, there might be a huge price to pay in further casualties from the struggles. (Ref. 8)

B. Conflict Among Classes

Prolonged unresolved disparities of wealth and resources might cause a dangerous rift between those who have retained their preattack assets and those who have lost them--the "haves" and the "have-nots."

> Perhaps the most explosive phenomenon of all consequent upon the bombing will be the alterations of status, which will be both radical and fortuitous. The stage is set for potentially violent conflict between the dispossessed class who may have lost home, property, job, and possibly family, and the retaining class who will be trying to preserve its own standard of life. Conflict seems the more likely in that the former will constitute a mass of refugees quartered in the undestroyed regions and even homes normally inhabited by the latter, and so awareness of the unjust disparities of fortune will be high. It may be expected that the newly dispossessed class would demand adequate and speedy compensation for injury to person and property, in real as well as monetary terms. While this demand is not fundamentally out of harmony with our existing socioeconomic order, the indications are that it will be very difficult to satisfy under post-bombing conditions. Failing some compensation, however, demands will probably be generated for radical equalitarian redistributions, and these may be fundamentally disruptive of the social order. In this connection it should be pointed out that the more powerful position will be held by the comparatively undamaged

social groupings resident in the areas who will be providing food, shelter, and clothing to a dependent class of refugees. These relatively more powerful groups will be strongly impelled toward conservatism and the preservation of law and order.*

C. Preattack Policies for the Sharing and Distribution of Resources

What combination of federal policy and inducements to establish an equitable distribution of resources would be appropriate? This cannot be determined completely, even with extensive preattack planning. What seems to be clear, however, if the potential for a violent postattack struggle between the haves and have-nots is to be averted, is that the relevant federal policies and plans we have mentioned throughout this study would need to be set forth preattack! The best time for their first presentation would seem to be in peacetime; but even if it has not been done earlier, it would be advisable to begin during a crisis. An added calamity could result if the implementation of an ad hoc policy were first attempted post-attack. Without being mitigated by a preattack acceptance of a more-or-less equitable plan for sharing surviving resources, the struggle between the haves (who would find unacceptable the increased threat to their recovery) and the have-nots (who would find great injustice in the meager share offered them) could develop into riots or, possibly, insurrections. Providing fully equitable plans preattack might not be feasible, but almost any would be better than none. Once a plan were adopted, some of the inequities could be attended to in periodic revisions. Only the circumstances of no plan for an equitable sharing of resources would pose the greatest threat to postattack recovery. (Ref. 1)

Within regions, if the surviving ratio of resources to population were roughly equal in most local areas, then much less intercommunity conflict could be expected. In turn, this could lead to rapidly increasing trade and facilitate a reunification of the country. This would suggest that any relatively even preattack distribution of survival supplies among the survivors could be very important for the reorganization; in addition, it would minimize the difficulty in meeting the welfare and subsistence requirements of the first few months. (Ref. 8)

D. Postcrisis Blame

If the government had not appropriately understood and planned for the postattack survival of the economic and social systems, the survivors would be likely to "blame the government" for having failed in its responsibilities to them. Even preattack, an especially severe political crisis could quickly lead to an ugly change in public mood regarding the government's discharge of its responsibilities for an effective civil

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*Hirshleifer, Some Thoughts on the Social Structure After a Bombing Disaster, pp. 13-14

defense. If there were only haphazard plans or preparations for greatly accelerating the CD response, it would not be surprising, following the shock of the crisis, if the public were to make the federal government the principal scapegoat for having failed in its preparations to take the actions that suddenly seemed so obvious. (Ref. 6)

E. Government Effectiveness During Crisis Mobilization

One message that seems to follow from the above discussion of postattack societal fragmentation and its potential for conflict is that appropriate federal and state programs could have an important influence on retarding the more unpleasant possibilities. But even if substantial civil defense programs were not in place in peacetime, the federal and state governments might be reasonably able to coordinate their actions with improvised civilian preparations if they were to respond boldly and appropriately early during a nuclear crisis.

One of the inherent vulnerabilities in any improvised CD response is that its effectiveness would depend on the amount of available warning (in the strategic, not the tactical, sense) and in appropriate responses to the opportunity for additional preparations. As the basic outbreak scenario implies, a slowly developing crisis could enable the government, in principle, to adopt many new policies and take many emergency actions to strengthen the country's civil defense posture and reinforce its own ability to function effectively during the preattack and postattack phases.

F. The Emergence of Crisis Organizations

Another aspect of the CD mobilization that may be sensitive to the duration of the crisis is the potential emergence of new institutions and an effective restructuring of many existing ones. Such adaptations could create an improved basis for reorganizing society after an attack--certainly at the local, and probably at regional and higher, levels. If there is a reasonable amount of time during the preattack emergency for such institutions to develop, they could help to make federal and state civil defense policies more effective and to accumulate relatively large, protected stockpiles of survival and recovery assets. In this way many potential postattack conflicts might be precluded and societal fragmentation averted.

G. Political and Social Restructurization

As indicated in prior sections, with sufficient time and some advance planning, the government might not only obtain large stocks of survival resources, but also become intimately connected with the economic and political restructuring associated with the relocation. This restructuring might evolve through two possible developments, described in some detail in Section 7, "Nationalization Policy."

(1) The preattack nationalization of a number of important resources as well as the work force which is associated with the production and distribution of these resources. This work force could become temporary federal employees operating on behalf of the government. They would tend to develop into a body of knowledgeable persons who are very actively engaged in survival and recovery functions which support the announced government policies.

(2) The growth of "paragovernmental" institutions. These would arise from private institutions on a number of levels--local, county, state and regional--and would be likely to form somewhat naturally. They could be greatly encouraged and supported by the various levels of government if their purpose and utility were understood. These paragovernmental units would emerge to engage in survival and recovery activities for which the government did not have the time or the capability. Such efforts would need to begin during the preattack crisis--the earlier the better.

Presumably, if there were sufficient cohesion between these units and the federal and state governments, then--time permitting--they could grow to involve millions of people who could subsequently give significant support to the postattack functioning of the federal and other levels of government. This kind of development would tend to provide some cohesion to counter the forces leading to fragmentation.

It might be difficult for the federal government to know how to support such improvised institutional developments. Indeed, unless their usefulness is anticipated, many federal actions might hinder their development. Because of this possibility, we believe that a major study should be done which attempts to visualize (1) the potential for private initiatives which can help with both preattack and postattack functions and (2) the policies and activities by which the federal government and these emerging private institutions could become mutually supportive.

CONCLUSIONS

It has been our purpose in each topic covered in this report to consider postattack recovery strategy in its most pragmatic sense: that is, how can the federal government determine which policies and what resources might be crucially needed before, during, and after a nuclear attack to prepare the nation for an effective recovery? For a nation which is at present poorly prepared to furnish even the basic survival needs of the civilian population, the possibility of a longer or shorter crisis period before a nuclear attack offers some hope. Some of the vital preparations for survival and recovery might be made during some future emergency--especially if plans existed that spelled out how and when missing federal policies might be created in a timely and appropriate manner.

Until now, most recovery studies have assumed a postattack configuration of the nation and the economy which, in its essential aspects would be similar to the preattack one. That is, we would have a President, a Congress, a functioning democracy, a useful currency, state and local governments, a national banking system, etc. The underlying social, political and economic dynamics are presumed to be much the same, although the demography and the resources have been greatly scrambled. With this picture of the country, postattack, the economy has been represented through familiar input-output models, based on preattack relationships. Applying these models to the assumed surviving segments of the economy will provide estimates of the recovery over time. Although it is important to have these models, the approach might have only a very limited value if it focuses on the long-term aspects of recovery without taking into account the volcanic socio-political changes the country would undergo in preparing for and living through a large nuclear attack. To make modeling a useful activity we should first have answers to the urgent questions of how the nation is likely to respond to a real nuclear threat, how its people and institutions will survive the holocaust and with what social and political postattack dynamics, as well as resources, it will begin to prepare for recovery.

Sidney Winter once described why a postattack recovery strategy cannot rest upon a predictable peacetime economy projected into a hypothetical postattack world:

> If we ask why the American economic system as we know it today is not characterized by "confusion and chaos," the most important part of the answer is the simple continuity of events, the finiteness of the changes that occur over finite periods of time. Untold numbers of economic decisions are made every day which involve the implicit prediction that the future will closely resemble the present . . . . These predictions form a coordinated mutually consistent pattern precisely because they have common roots in the present. More than Pearl Harbor, more than the most massive invasion by conventional armies, nuclear

> attack would break those threads of continuity . . . . Neither will [the survivors], in looking ahead, have any confidence in whatever picture of the future they are able to form.*

Clearly, the ability to recover is highly scenario-dependent; for example, much would depend on the size and extent of the attack and on the time available for the nation to prepare for survival and recovery. We suggest therefore that an effective recovery strategy should focus on actions which would help to solve the problems of a nation in a violent transition: it should supply missing policies, plans, information and resources needed to provide the nation with a posture for surviving the attack and developing a position from which it could reasonably find a way to reorganize effectively, within a range of possible eventualities. How it would recover cannot be known, but how it can better organize itself for recovery can be and should be studied and planned for.

In brief, therefore, our perspective on the problem of postattack recovery rests on the following premises:

--The social and political conditions of the country as well as its economy after a hypothetical nuclear attack are highly uncertain.

--Because of this uncertainty it is of limited value to prepare for a postattack recovery which assumes that preattack values and institutional forms remain dominant, postattack.

--What appears to be useful is a flexible strategy geared to the survival and recovery preparations that can be made during a nuclear emergency and that would be responsive to possible enormous changes in social, political and economic institutions prior to and after an attack.

--The long-term recovery will be very sensitive to the new federal policies and the actions which the government takes during the crisis to support a national mobilization for survival and recovery.

In the past, the assumption has generally been made that postattack recovery operations would be under the direct control of the federal government. Winter writes about this presumed federal role in recovery and questions its credibility:

> Curiously, it is a widely accepted axiom that reliance must be placed upon a rapid recovery of . . . governmental regulatory and control capabilities. Indeed, what is envisioned is not merely a recovery of these capabilities, but a rapid surpassing

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*Winter, The Federal Role in Postattack Economic Organization, pp. 2-3.

> of preattack levels, to the point where the government would engage in detailed control of the directions of economic activity on an unprecedented scale . . . .
>
> What mainly is involved seems to be simple horror at the complexity of the problems and the immensity of the stakes, a simple reaction that "something should be done about it," and the simple observation that, in past national crises, it has been up to the Federal Government to "do something about it...."
>
> Neither historical precedents nor the incapacities of other institutions will confer upon the surviving elements of the Federal Government the needed capabilities.*

Throughout this report, while recognizing the criticality of the federal role in enabling the country to survive and recover from a hypothetical nuclear attack, we have viewed its role from two perspectives:

(1) The degree to which the federal government's actions would support or constrain the effectiveness of a crisis mobilization and a subsequent postattack reorganization effort;

(2) The consequences if the federal government failed to survive the attack or did not revive for a more-or-less prolonged period.

In analyzing each of the areas in which the federal government would need to make important policy decisions, we were led to conclude that in many instances--and as a general approach--survival and recovery operations might best be served if the federal government maintained a largely decentralized role, one which essentially supported rather than controlled most local decisions and actions. Even such intrinsically governmental decisions as the nationalization of specific industries and of food stockpiles and other survival resources seemed likely to be implemented more effectively during a nuclear emergency if the daily operations were left to local management, once the federal government had set overall policy and some general guidelines.

Clearly, in a crisis mobilization or during a postattack reorganization, there would usually be a need for quick responses. If it would speed up the evacuation, the distribution of stockpiles, the financing of critical production, the resolution of disputes and many other actions, it seemed better for the response to sacrifice equity for the sake of efficiency. The risks involved if the federal government relinquished a large degree of direct control are recognized. However, in many instances they were considered to be far smaller than the danger that highly centralized federal controls might greatly impede--or even

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*Ibid., pp. 3-4

prove to be counterproductive to--the survival and recovery efforts of the population.

The history of the DCPA and its predecessors showed a substantial evolution of the basic concepts of which protective measures should be taken for the population of the United States in the event of nuclear war. Although the present concept of the CRP, which is based upon the timely evacuation of the bulk of the urban population of the United States, has gained considerable favor in civil defense ideology, it has not yet penetrated far enough into the actual plans and preparations for the country as a whole. This study presumes that this concept is basically a correct one and attempts to examine the elements of federal policy and federal, local government and private actions that would be needed to support it in many of the potentially realistic scenarios depicting future nuclear attacks.

One of our more general conclusions is that the nature of the change from past approaches is so radical that many of the previous civil defense concepts are inappropriate today, yet they are being relinquished somewhat reluctantly. Indeed, in many research studies the orientation of the contractors may not be completely appropriate since the underlying assumptions in the studies which are underway are not always consistent. One of our fundamental questions, for example, is whether or not the federal government survives; another is whether or not the federal government should try to maintain centralized control over both preattack and postattack survival and recovery actions. In the first case preattack federal controls may be undesirable in many scenarios, and in the second they may be inappropriate even if the government survives--a doubtful assumption, in any case. Finally, this study tends to stress the amount of civil protection which can be developed through private action, especially action which is encouraged by and supportive of general federal policy, rather than a program in which the civilian population is basically passive except in its response to direct federal orders. In order to make future studies, plans, and programs more realistic in the context which we are urging as a more reliable one, it will be necessary for the FEMA to revise the present program. It will need to select the principal planning scenarios, set forth the assumptions upon which further planning and research should be based, and communicate this orientation to the groups both inside and outside the government who are involved in research and planning.

In this regard, it may no longer be appropriate to make the implicit assumptions that federal agencies, currency, and support systems will function postattack; nor may it be desirable even to assume that a complete set of federal preparations will exist to guide civilian actions during a potential nuclear crisis. Rather, until such a program is clearly in place, it may be necessary to consider that many policies, plans and specific protective measures and supports of the federal government will be, in fact, lacking when a nuclear crisis arises; and it will be necessary to ask what emergency preparations may be needed during the following days, weeks (or months) that could affect the protective postu

protective posture of the population and the potential for survival, reorganization and recovery, should an attack occur.

Without meaning to belabor some of the above points--which appear several times throughout the text of this report--we feel that the importance of this orientation cannot easily be overestimated. Indeed, this study appears to us as just a first step towards a much deeper examination of the issues and potential responses of the U.S. population in a variety of scenarios. Hopefully it will constitute a positive step towards achieving the necessary federal and state plans and programs that would enable the governments to be much more responsive to future nuclear threats.

APPENDIX

LISTS OF HELPFUL SURVIVAL ITEMS

Below are lists, adapted from four previous studies, of items which the authors considered to be especially helpful in evacuation and survival. The lists are presented with selected introductory remarks by the authors to place their choices in context or make the choices clearer.

I. William M. Brown, "Nuclear Crisis of 1979," pp. 25-26.

[When crisis relocation is announced] here is the list of things I am supposed to do, courtesy of the Star-News . . . .

(1) Take along as much food as possible.
(2) Take a pick, a shovel, and other construction tools.
(3) Keep gas tank nearly full.
(4) Special medicines.
(5) Work clothes and gloves.
(6) Bedding and blankets.
(7) Protect valuables.
(8) Take $50 or more in cash.
(9) Toys and games for small children.
(10) Bicycles, if possible.
(11) 1 minimum set of kitchenware, tableware, and utensils, unbreakable, if available.
(12) Flashlight, transistor radio and extra batteries.
(13) Rain protection.

II. Raymond D. Gastil, "Postattack Scenarios," pp. 45-46.

If one were to stockpile any one most valuable article for transattack and postattack efficiency, it would be flexible, adaptable persons capable of leadership in crises. To aid these people the construction of the scenario suggested to us that certain items should be stockpiled in rural areas, which are not currently being considered for stockpiling on a decentralized basis (including rural shelters), or perhaps not in sufficient quantity. Everyone has his own favorite items, but in the context of our tale we note the following:

1. a large and decentralized supply of blankets for use as beds, clothes, and for covering openings after windows are gone, for poorly heated houses.

2. old clothes and shoes, especially when clothes must be be taken off on entrance. Paper or thin plastic clothing might be used for expeditions outside when radiation levels are still high. These might be especially useful for farmers when they must go out. Material for clothes-making might be stocked, as an immediately useful recreation for shelterees.

3. water and fire-resistant sprays might be made available for last-minute spraying of all fireprone areas or buildings. This might be quicker and more efficient than actual painting and clean-up.

4. heavy plastic sheets for quick window replacement after blast damage--which for windows often reaches into rural areas. This could also be used outside and inside over windows for heat preservation, etc. Heavy brown paper would be a temporary expedient.

III. Frederick C. Rockett and William M. Brown, "Crisis Preparations for Postattack Economic Recovery," pp. 12-13.

[The "average survival and recovery package" shown] on the following page presents an estimate of the property that a family could transport with them as they evacuated.

Important items in the home of possible value to people evacuating to non-urban shelters are probably limited to those directly related to survival and recovery. Highest priority survival and recovery items may generally be defined to include clothing, tools, food, drugs, and utensils of various kinds, but seasonal and other factors could radically change the utility of items. The availability to families of useful items probably varies considerably but we have listed some common family possessions in the hope that their total weight is representative of the many possible survival and recovery packages.

The light-weight (300 pounds) and generally familiar dimensions of these items suggest that most families could take this "package" along in the car. Furthermore, it suggests that many families could take even larger loads--perhaps 500 pounds or more in addition to family members. Of course, more items could be relocated during longer crises permitting several trips.

AN "AVERAGE" SURVIVAL AND RECOVERY PACKAGE

ITEM	WEIGHT (LBS.)*
Tool kit	
138 pieces	38
Electric Drill Set (1/4")	5
Axe	4
Shovel	4
Blankets (4)	
Full size, heavy acrilan, 5.25 lbs. each	21
Clothing	
1 Man	
Coat	5
Shoes (4) 2.75 lbs./pair	11
Pants (4) 2.00 lbs./pair	8
Jackets (2) 2 lbs. each	4
Underwear (10) T-shirts 7 oz. each	5
Briefs 5 oz. each	3
Socks (16) 2 oz./pair	2
Shirts (4) 1.0 lb. each	4
1 Woman	
Coat	4
Dresses (4) 2.0 lbs. each	8
Shoes (4) 1.5 lbs. each	6
Sweaters (4) 1.0 lb. each	4
Underwear (4)	2
2 Children	
Coats (2) 3.0 lbs. each	6
Shoes (4) 1.0 lb. each	4
Pants & Shirts (10) 2.0 lbs./pair	20
Underwear & Socks (10) 1 lb./set	10
Food	70
Kitchenware	
Flatware	8
Cooking	10
Plates, etc.	20
Towels (6)	1.5
Misc.	2.5
TOTAL:	290

*The weights (except food) are mailing weights taken from Montgomery Ward's Catalog (1965 Spring, Summer). Actual weights would be somewhat less.

IV. Cresson H. Kearny, "Nuclear War Survival Skills," pp. 25-26.

A good flyer, no matter how many years he has flown, runs through a checklist covering his plane before taking off. Similarly, a citizen preparing under crisis pressures to do something he has never done before--evacuate--should use a checklist to be sure that he takes with him the most useful of his available possessions . . . .

EVACUATION CHECKLIST

(Includes items for building or improving shelters)

Loading Procedure: Make separate piles for each category (except categories 1 and 5). Then load the car with some items from each category, taking as much as can be safely carried and being careful to leave room for all passengers.

A. The Most Needed Items

Category 1. Survival Information: Shelter-building and other nuclear survival instructions, maps, all available small battery-powered radios and extra batteries, and a fallout meter such as a homemade KFM (see Appendix C).

Category 2. Tools: Shovel, pick, saw (a bow-saw is best), ax or hatchet, file, knife, pliers, and any other tools specified in the building instructions for the shelter planned. Also take work gloves.

Category 3. Shelter-Building Materials: Rain-proofing materials (plastic, shower curtains, cloth, etc.) as specified in the instructions for the type of shelter planned. Also, unless the weather is very cold, a homemade shelter-ventilating pump such as a KAP, or the materials to build one (see Appendix B).

Category 4. Water: Small, filled containers plus all available large polyethylene trash bags, smaller plastic bags and pillow cases, water-purifying material such as Clorox, and a teaspoon for measuring.

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*Note: all references in this list are made to appendices and chapters in the Kearny study.

Category 5. Peacetime valuables: Money, credit cards, negotiable securities, valuable jewelry, checkbooks, and the most important documents kept at home.

Category 6. Light: Flashlights, candles, materials to improvise cooking-oil lamps (2 clear glass jars of about 1-pint size, cooking oil, cotton string for wicks (see Chapter 11, Light), kitchen matches, and a moisture-proof jar for storing matches.

Category 7. Clothing: Cold-weather boots, overshoes, and warm outdoor clothing (even in summer, since after an attack these would be unobtainable), raincoats and ponchos. Wear work clothes and work shoes.

Category 8. Sleeping Gear: A compact sleeping bag or two blankets per person.

Category 9. Food: Food for babies (including milk powder, cooking oil, and sugar) has the highest priority. Compact foods that require no cooking are preferred. Include at least one pound of salt, available vitamins, a can and bottle opener, for each person one cup, bowl, and large spoon, and 2 cooking pots with lids (4-qt. size preferred). Also, minimum materials for making a bucket-stove: a metal bucket, 10 all-wire coat hangers, a nail, and a cold chisel or screwdriver (see Chapter 9, Food).

Category 10. Sanitation Items: Plastic film or plastic bags in which to collect and contain excrement; a bucket or plastic container for urine; toilet paper, tampons, diapers, and soap.

Category 11. Medical Items: Aspirin, a first-aid kit, all available antibiotics and disinfectants, special prescription medicines (if essential to a member of the family), potassium iodine (for protection against radioactive iodine, see Chapter 13), spare eyeglasses, and contact lenses.

Category 12. Miscellaneous: Two square yards of mosquito netting or insect screen with which to screen the shelter openings if insects are a problem, insect repellents, a favorite book or two.

B. Some Useful Items (To take if car space is available):

1. Additional tools.

2. A tent, a small camp stove, and some additional kitchen utensils.

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PRELIMINARY CONCEPT PAPERS

PART A:

THE INTERNATIONAL SECTOR IN A NUCLEAR CRISIS

Jimmy W. Wheeler

Introduction and Summary

A major nuclear attack on the United States would seriously disrupt the world economy. Yet, studies and planning concerning recovery after a nuclear war have concentrated almost exclusively on conditions and resources within borders of the combatants. The degree to which such a conflict would disrupt the world economy and the potential role of the rest of the world in aiding or retarding economic recovery in the United States is virtually unexplored, and is scenario-dependent. Since the U.S. is such a major component of the world economy, a nuclear attack which seriously damages the U.S. economy would necessarily disrupt the world economy. However, it is also quite conceivable that the Soviet Union would target from one to perhaps 20 other countries for military effectivenesss, and that she could easily divert 100 or more warheads with the goal of disrupting the free world economy.

History has shown that linkages to the rest of the world, such as prompt disaster relief and preferential access to certain markets, can be exceptionally important in ameliorating critical bottlenecks and contributing to an acceleration of the recovery process. Classic examples such as the Marshall Plan* demonstrate that aid and access to world markets does not have to be very large to make a critical contribution to recovery. The importance lies in permitting certain economic sectors and industries to begin operation without hard currency, and directing resources to investment in plant and equipment rather than basic consumption needs; thus, in general, permitting economic growth to be reinitiated at a high level.** Because of the major role of the U.S. as both consumer and producer, there would be strong incentives for our major trading partners to take actions that would help the U.S. recover--in their own self-interest.

In the 1950s U.S. planners had much greater justification in ignoring the rest of the world. The share of international trade in GNP was less than half what it is today (though the world still had to worry about us since we were the world's largest exporter and importer), and the primary reliance on the outside world was in the area of raw materials, semi-processed goods, and relatively low skilled manufacturers (in which a large domestic production base existed). The U.S. was the major world producer of the goods and services that would be required for recovery. Thus, planning to concentrate almost exclusively on reconstruction of the U.S. industrial base was not unreasonable.

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*U.S. aid program for the reconstruction and recovery of western Europe after World War II.

**The Marshall Plan's success also reflected important political and psychological elements.

Today the world is much different. The U.S., of course, retains an incredibly diversified and deep manufacturing base, which produces all of the goods necessary for recovery. Yet, we are much more dependent on the rest of the world, and this interdependence is critical to the maintenance of our high consumption society. On the other hand, after an attack, dependence would be much reduced. Even our current serious energy dependence would become much less important. The critical difference for civil defense planning is that many countries now produce the principal products required for economic recovery--those industries are the building blocks required for economic development. The U.S. would no longer necessarily have to rely only on its own productive capabilities in the early months and years of the recovery process. For example, generators, switches, transformers, etc., needed to rebuild critical power networks, could be purchased from Korea, Mexico, Japan, Western Europe or many others, without having to wait for reconstruction of those industries in the United States that could build the same components. Indeed, even under worst case assumptions (that the Soviet Union seriously targets all of the major free world industrial powers with an eye to disrupting not only military but industrial activity), the rapidly growing industrial capabilities of the developing countries represent a phenomenal potential addition to the ability of the U.S., and the free world in general, to recover.

However, this great world recovery process would not occur easily or smoothly. U.S. planners must think about the political and economic implications of a nuclear crisis ending in conflict, and how international political and economic relations could be handled in such an uncertain and nasty environment. Clearly the U.S. and the Soviet Union would be blamed for the most serious crisis in world history. There is no reason to believe that altruism would be very important. Self-interest is the only emotional response that we can rely on, and bitterness may cause even self-interest to take a secondary role, at least initially. Perhaps the central policy issue is how to harness self-interest in ways that best contribute to U.S. recovery.

Key Variables

Any conflict more extensive than a very limited nuclear exchange would sharply impair economic activity in the U.S., and thus could be expected to seriously disrupt the world economy. The degree of disruption and the precise problems that would be created remain open questions. For example, the extent to which other industrial countries were directly involved in the conflict would strongly influence the degree of disruption.*

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*The industrial countries referred to are NATO members and Japan. Most of the more plausible scenarios leading to nuclear war involve a central European conflict that escalated out of control. In addition, as a major industrial power and a U.S. ally, Japan could be targeted--first to remove U.S. bases and second as a precaution. One would presume that the post-attack balance of power in Asia would be important to

The scenario-dependence of the impact of a nuclear exchange on the world economy, and on the contribution of the world economy to post-attack economic recovery of the United States, can be characterized by a small set of major variables.* The following list summarizes some of these critical variables:

1. Magnitude and targeting of an attack on the United States**

   a. Limited scale attacks

   b. Counterforce targets only

   c. Counterforce and major industrial complex targets

   d. Military, major industrial complex, and economic recovery targets

   e. All of above, plus major population centers

2. Duration of Nuclear Conflict

   a. Very short, with a clear termination of hostilities

   b. Very short, with no clear termination of hostilities

   c. Extended, with clear termination of hostilities

   d. Extended, without clear termination of hostilities

   e. Indefinite

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the Soviets. With the very large weapon inventories postulated, and the kinds of crises that could lead to a conflict, any large scale war would likely include significant Soviet targeting outside the U.S. World market disruption would probably increase more than in proportion to productivity capacity destroyed.

*A seemingly infinite number of factors affecting the international economy vary among possible scenarios. The few noted in the text will establish the context within which post-attack international interactions would take place.

**Magnitude and targeting are, of course, much more complex issues than can be summarized by the simple categories listed. Specifics such as high altitude EMP bursts to maximize disruption of both military and civilian C^3, multiple warhead targeting to maximize destruction, and dispersed ground bursts to maximize fallout are relevant to economic recovery and thus to the possible role of the rest of the world in that recovery.

3. Outcome of conflict

   a. Ambiguous (no clear winner)

   b. Clear U.S. post-war superiority

   c. Clear Soviet Union post-war superiority

4. Geographical scope of the nuclear conflict and associated or induced "more or less" conventional confrontations

   a. Were major NATO and Japanese military and economic complexes targeted? Do these countries remain functioning industrial entities?

   b. Is there a continued ground war on European soil?

   c. Was Western Europe lost to Soviet forces, or devastated to an extent comparable to the United States?

   d. To what extent is the People's Republic of China involved in the conflict? Can we presume a major conflict along the Sino-Soviet border that diverts Soviet attention and resources from the West to the East?

   e. To what extent are the smaller industrial countries, the newly industrializing countries, and the rest of the developing world engaged in the nuclear conflict? (Were the industrial complexes of Canada, Mexico, and other Western hemisphere countries subject to attack? Were U.S. overseas bases indiscriminately targeted?)

   f. Which hotspots around the world flare into conflict due to the removal or reduction of super-power restraint?

5. Economic strength of nations not involved in the nuclear conflict

   a. In the context of rapid economic growth in the developing countries, more potential economic help would be available the further in the future that any nuclear conflict actually occurred.

6. Political relationships between the U.S. and foreign governments in the period preceding the crisis

7. Degree of political dominance of the Soviet Union in various potentially important regions of the world, post-attack, e.g., West Europe, the Middle East, Latin America

8. Level of destruction to critical links to the outside world (e.g., transportation and communication facilities)

9. Resources available to the United States

   a. Real assets on foreign soil owned by the U.S. Government or private U.S. entities (land, buildings, plants, etc.)

   b. U.S. Government and U.S. private holdings of foreign financial assets

   c. Ability to draw on the financial resources of international organizations and foreign private and governmental organizations

   d. Domestic real resources (government or privately held) which are easily marketable for foreign resources (e.g., gold; silver; other precious metals; gem stones; a whole spectrum of other important materials for industrial production such as processed uranium for nuclear power plants, stockpiles of other minerals and agricultural products necessary for production and consumption in the rest of the world; and stockpiles of manufactured products that could be used as trade goods).

This paper does not attempt to deal with all of these variables in any comprehensive fashion. Such an effort would require a large number of very detailed scenarios. Rather, certain important economic aspects of the crisis, nuclear attack environment are selected to demonstrate the potentially crucial role of the international sector for emergency preparedness planning.

Effects of Crises and Attack on the U.S. Dollar and Some Economic Implications

The U.S. dollar serves as the key international currency. Although the recent past has seen dominance of the U.S. dollar begin to decline, and this decline is expected to continue, it remains the major means of exchange for the flow of goods, services, and financial transactions among countries.

As long as there is a large dollar overhang,* serious threat of a nuclear confrontation would create a crisis in international financial markets. It would trigger a massive move to shift out of dollars and dollar-denominated assets, which, in turn, would create a plunge of the dollar on foreign exchange markets. These pressures would occur

*"Dollar overhang" refers to the excess of dollars and dollar denominated assets held outside the U.S. (beyond what is desired).

early in the period of tension, perhaps even before the President would consider calling crisis relocation, and would in no way depend on the crisis ending in a war. However, the degree of trouble is scenario-dependent.

During normal times an increase in the perceived risk of holding a currency will induce a shift toward "stronger" currencies. But, in the event of a prospective nuclear crisis, the peacetime strong currencies of Japan, West Germany, etc., may also appear extremely risky. For example, one of the major crises potentially leading to nuclear conflict is a European war. Because of the extreme uncertainties involved, it is likely that even with explicit governmental actions, private markets will drive exchange rates of potential combatants to extremely low levels. In a world of fiat money,* the long-term value of a currency will depend upon many things, most importantly the productive capability of the nation, its political and social stability, and its long-term growth and inflation prospects. However, in the short-run, the perceived risk of nuclear conflict would dominate.

Prices of certain real assets would rise sharply, as would the value of currencies of countries unlikely to be directly involved in the prospective conflict. The financial position of all firms based in, or strongly linked to the nations in which conflict may erupt would become extremely precarious. Both assets and liabilities would be abruptly reevaluated by investors and management, and protective actions would be undertaken to preserve the financial and real resources of firms. These actions would have different repercussions among the various countries of the world, depending on legal structures, government actions, long-term contracts, treaties, diplomatic relationships, and the degree of ownership by foreign private and governmental entities. The short-term chaos that might be triggered in international exchange and financial markets by a crisis potentially leading to nuclear conflict could paralyze the global economy. Indeed, pre-attack planning for a possible nuclear exchange must include consideration of actions to ameliorate possible pre-attack monetary chaos which could seriously interfere with post-attack economic recovery, or for that matter with the reestablishment of peacetime economic relations in the event the crisis did not escalate into a nuclear war.

The value and usefulness of dollars and dollars denominated assets in a post-attack world, of course, also remain highly scenario and policy dependent. In a scenario where the nuclear conflict was predominantly an exchange of military targets, with a small chance of continued conflict, the productive capability of the United States would be reduced only temporarily. The economic strength of the United States would almost certainly return to something like its pre-conflict level.

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*Fiat money has no intrinsic value. It serves the functions of money by government decree (fiat) only.

Further, attack-induced social and political instability within the U.S. should be manageable.* Therefore, long-term prospects for the dollar would be relatively strong. Foreign governments and corporations would be more willing to extend long-term credit, provide aid, and generally create a climate favorable to economic recovery and growth.** This would not be altruistic, but rather the most beneficial way to stimulate their own economic recovery from the shock to the world economy induced by nuclear warfare.

If western Europe and/or Japan were attacked and perceived as having more difficulty in reestablishing economic recovery than the United States, the value of the dollar on a long-term basis could actually rise vis-a-vis these countries' currencies. However, the value of the dollar and currencies of other countries engaged in the conflict would fall relative to currencies of countries not attacked.

If an attack destroyed a major fraction of productive capacity in the United States, the value of the dollar would fall dramatically, creating serious international financial chaos, over and above the problems created by termination of most trade flows to and from the United States, and the disruption caused by pre-attack speculation.***

Domestic and international policies**** followed by the United States during the reconstruction and recovery phases would have a major impact on how quickly the international system was reestablished as a

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*A case can be made for very serious domestic instability. W.M. Brown provides a clear presentation of such possibilities in The Nuclear Crisis of 1979 (Washington, D. C.: Defense Civil Preparedness Agency, final report, WMB-75-9, September 1975). The larger scale the attack the more likely are domestic conditions to become unmanageable.

**The outcome of the conflict would be very important to the economic climate. To the extent that the U.S. won or the outcome was a standoff, this statement holds. However, if the U.S.S.R. dominated the conflict, the U.S. economic interaction with the rest of the world would be strongly influenced by Soviet policies--for example, they could probably enforce a sharp reduction in oil shipments, thus seriously restraining recovery of economic activity in the U.S. (and its allies).

***As with a smaller scale conflict, the outcome of a large scale attack will be important. However, depending upon the level of destruction and the post-attack military strengh of the combatants, neither side may have much leverage on third countries for many years.

****Monetary reform (use of "blue" currency, etc.) or other means of reestablishing a working domestic economy, bilateral and multilateral trade and financial agreements with foreign governments, treatment of official assets (U.S. government securities) and liabilities of foreign entities, etc.

working entity. Reestablishment of a stable value for the dollar, even if much depreciated, would permit transactions among third parties of the many dollar-denominated assets and liabilities. Since the United States is a net creditor in the world economy, the greatest beneficiary of a reestablishment of stability would likely be the United States itself.

Possible Role of the International Sector for U.S. Recovery

As noted above, historical crises have shown that the outside world can be extremely important to recovery. Of course, the historical crises that we can study effectively are small scale and restricted to a limited area of a system that is largely undisrupted compared to what we can expect from a large scale nuclear conflict. In most of these cases benefits from the international sector were available very early; food, medical aid, and other critical materials were provided from the outside world immediately following the crisis. Aid generally continued, with its composition shifting towards relief of production bottlenecks, during the reconstruction and recovery phases. Financing created problems during the later phases; the more adroit the financial policies the faster and more balanced the recovery. Disaster relief may be extended on altruistic grounds, but reconstruction and recovery require financing.

In a relatively "small scale" attack (primarily military targets),* critical production and distribution linkages likely survive, as would the overall political and economic organization. Although seriously damaged, the economic system would remain functional along lines comparable to the past. With major public and private efforts to increase production and provide innovative financing, the international economy could probably continue to operate as in the past, though not without serious interruption. This presumes that the other advanced industrial economies could enter into international exchange on a basis comparable to the United States, and that the U.S.S.R. did not emerge from this relatively small scale nuclear exchange with enough political and military power to seriously disrupt production and exchange (which is not highly probable after a small scale exchange). It also presumes that the U.S. wishes to reestablish a similar system and is willing to make the serious effort required. The terms of trade, of course, would shift dramatically in favor of the newly industrialized countries, and careful diplomatic relations would be required during the reestablishment of multilateral trade and financial flows.

Assessment of those activities required for economic recovery should reveal a list of potential bottlenecks which could be relieved by recourse to the international economy. After a relatively small scale attack, among those recovery activities facing the most serious

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*The definition of small scale is very amorphous and becomes circular if pressed too hard.

bottlenecks would be those closely linked to the construction industry. Transportation and communications links would have to be rebuilt in or around target areas. Fallout would have to be cleaned up. Housing and public facilities would need reconstruction and refurbishing. That part of the relocated population that could not return home would require long-term living quarters. Industry would have to dig out and get back into operation. New military construction could have very high priority, depending upon the conflict scenario.

Most of the supply industries for construction activity are capital intensive, but require only limited technological capability and skill level of the work force. These are some of the earliest industries (structural steel, hand tools, reinforcing rods, nails, nuts and bolts, etc.) internalized in countries as they advance through stages of development. Today many developing countries have built up extensive industrial capabilities of this type. By the mid-1980s, the number of such countries will expand, while the level of sophistication and diversity of their production structures increases. Therefore, important bottlenecks could be alleviated by international trade.

One possibility that policy should minimize is large-scale international competitive bidding among U.S.-based entities driving world prices up. As it is, in a counterforce attack scenario which also involved Western Europe and possibly Japan, there would be serious competition for similar types of equipment and materials among the Western industrialized countries. Government-to-government contracts and efficient use of military construction equipment, manpower, and stockpiles could moderate speculative bidding in these markets and reduce the costs of reconstruction. On the other hand, government control and intervention based on the ponderous bureaucratic nightmare of the existing peacetime structure would seriously impede the use of vital foreign resources.

Attacks of much greater destruction (industrial and economic targeting) greatly complicate using foreign production to relieve bottlenecks, and yet, at the same time, vastly increase the potential usefulness of foreign production. Under any scenario where economic targets are attacked, certain sectors are likely to face serious damage, causing special bottleneck problems: communications and transportation centers; refineries and other key energy system components such as pipeline terminals; major ports; manufacturing centers with such importance that their destruction could disrupt entire industries; etc. Of course, the various bottlenecks will become serious at different times in the recovery process. Using the examples listed, transportation and communication would be critical within days after the attack, mass distribution of energy from weeks to months; ports and manufacturing centers from months to years. In a large-scale attack scenario it is less probable that Western Europe, and perhaps Japan, would be able to supply much in the way of critical recovery needs, since it is more likely that they also would be attacked, and may be in equal, if not worse, shape and may indeed be engaged in a continued large-scale, more or less, conventional war. Of course, to the extent that one or more of the large industrial countries received only limited damage,

economic recovery in the others could be greatly accelerated.* Indeed, self-interest imperatives would create enormous pressures on any country not seriously damaged in the conflict to become both a net creditor and supplier to those more heavily involved.**

Transportation and communications within the United States would probably be severely disrupted for an extended period. Thus, early help from the outside world may not be very effective, if offered, since the internal organization would be unable to efficiently utilize available resources, including outside aid. Previous studies have shown that domestic stockpiles of food, fuel, and pharmaceuticals are likely to be sufficient even under very serious attacks. The major bottleneck is distribution.*** We would be unable to get the supplies to where they are most needed. Of course, to the extent that available outside help could be delivered to particular locations in the United States, those areas would find it extremely useful. Effective use of aid from the outside world on other than a purely local basis could only be realized once effective communication was reestablished among major population centers. Even then, aid might well be limited by internal transportation bottlenecks--in some instances perhaps for years.

With establishment of effective communications, however, airlifts (or ocean shipments) of critical materials from foreign sources under auspices of some sort of national authority could greatly aid in reestablishing confidence and respect for national authority, and thus contribute to the continued existence of the United States as a nation.**** Of course, many options are available. Preparations to disperse aircraft to foreign airports before attack (either empty or loaded with supplies that could be useful after an attack), would greatly facilitate protection of

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*The international context for economic recovery from a large-scale attack is extremely military scenario dependent. Reasonable cases can be made for many different levels of attack on non-U.S. targets.

**This statement requires many caveats: among others, the war must be over, or, at least, the risk of retaliation for engaging in trade must be very low; and governmental or private entities must have the organization and power to enter into reasonably safe contracts in the targeted countries.

***The intelligence problem may be even more important. One must gather and process massive amounts of information on local conditions before reasonable decisions on distribution can be prepared (from a centralized location).

****Continuity of government is a central problem after any large-scale attack. All emergency preparedness planning and research must concern itself with implications for continuity, even if such concern appears peripheral to the question at hand.

this critical transportation hardware. One could negotiate agreements to temporarily base U.S.-owned commercial shipping at friendly ports with the same goal in mind--maximize economic recovery of the United States.* Foreign stockpiles of certain materials, or the negotiation of contingency-type contracts (delivery "in the event of" at stipulated terms) for these materials, would simplify the process of materials acquisition in a post-attack environment.** Of course, any kind of economic negotiations in the strained pre-attack crisis period will face serious problems--perhaps most critically over payment terms. Local U.S. authorities (embassy and consulate staff) will have to have the authority to negotiate for and commit the U.S. government to a range of unconventional contract terms such as payment in gold, other precious metals, or trade goods; the use of floating prices tied to the exchange rate; etc.***

To the extent that it was believed that U.S. military bases on foreign soil (outside NATO, and perhaps Japan, which are presumed to be under attack, e.g., Subic Bay) were unlikely to be attacked, larger than normal inventories of men, materials and equipment useful to post-attack recovery could be maintained there. This would make them more liable to attack, but at the same time, would also present the Soviet Union with the undesirable option of widening the scope of the war and targeting a much larger portion of the world to remove this small addition to U.S. recovery potential.

Physical links to the outside world (primarily ports and airports) are likely to be very important for economic recovery. They can become centers of economic growth through which recovery is accelerated in the rest of the country. Therefore, planning for international transportation is an important component of planning for recovery of the entire transportation and communication network. This means high-priority construction or reconstruction of selected key sea and airports around the country with hardware and inventories sufficient for refueling, maintenance, freight handling, and warehousing.

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*Particularly with respect to aircraft, both the feasibility and value of more than just a marginal shift toward foreign basing is limited. Firstly, the air fleet would have very high value uses during crisis relocation; secondly, nearby foreign governments would be reluctant to increase the possibility of the U.S.S.R. targeting their key economic centers; and thirdly, a great deal of dispersion is possible within the U.S.

**This, of course, assumes that these contracts would be honored. The likelihood of a breach of contract is very country and scenario specific.

***These representatives must be subject to budgetary and coordination constraints to prevent overcommitments, duplicate ordering, etc.

Key Policy Issues

History has shown that external resources can make a critical contribution to recovery after disaster. Yet policy research, or even conjecture about the potential usefulness of the rest of the world in a post-attack environment, seems extremely limited. The extent to which this potential can be utilized depends upon many factors, some of the most important being:

1. the immediate pre-crisis political and economic relations with various countries;

2. the understanding by the U.S. diplomatic community (including those heavily involved with international trade and finance but not formally in foreign service) of the critical problems of a world facing an imminent nuclear exchange;

3. the extent to which it is clear to the rest of the world that the United States is trying to minimize the chance of a nuclear exchange, and if it occurs, its economic impact;

4. the extent to which the U.S. diplomatic community understands the leverage that the U.S. could apply to various countries and what this leverage could achieve;

5. the degree to which the U.S. diplomatic community recognizes the importance of the various countries for U.S. post-attack political and economic goals;

6. the extent to which planning has developed a set of viable options for utilizing the world economy for aiding domestic recovery, or at least provided a framework for understanding the world context for post-attack operations;

7. the extent to which negotiations with foreign governments have explored the economic and political imperatives of a post-nuclear conflict world (or indeed even for a period of intense crisis);*

8. the relationship developed with multinational corporations concerning their potential role in post-attack recovery;

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*One may not want to actually negotiate except perhaps within NATO or the confines of the U.S.-Japanese mutual defense treaty, partly for security reasons but more importantly it could be construed as aggressive and destabilizing by the U.S.S.R. However, the extent to which serious concern has been given to how one would approach such negotiations in a crisis atmosphere could contribute greatly to handling of the situation.

9. the degree of preparation and authority given to the U.S. diplomatic community to take reasonable and consistent policy actions on an individual country basis, in the event of crisis and possible subsequent conflict;

10. the degree to which a viable U.S. government survives and is perceived as legitimate both domestically and by the rest of the world.

Any assessment of these factors clearly reveals almost total lack of preparation. Emergency preparedness research has largely ignored the international sector, and without guidance the operational agencies have had only limited incentive to speculate or plan.

Much of the background information needed is available. However, this information has not been organized or analyzed from a nuclear crisis perspective. Naturally, it is almost impossible to get the diplomatic community to think about such an issue with any seriousness. At most one can only expect to engage them in the process by special exercises, and by formalizing selected aspects of the required intelligence and political analysis. Current activity should provide intelligence and policy analyses concerning these issues with periodic updates which need not be all that frequent. To the extent possible updates should focus on detailed strategic and tactical elements of a full scenario--i.e., crisis through recovery. Diplomatic strategies for particular countries in the event of selected scenarios should be developed. These plans must include the whole spectrum of political, military, and economic options keyed to an evolving crisis time frame, and must reflect domestic recovery priorities.

Once basic thinking on the subject has been developed (framework, key questions, general strategic issues, etc.), the expertise of the diplomatic community must be utilized to assess the policy analysis, refine the basic thinking, and comment on the preparation of more formal planning documents, and updates. In turn this would expose the community to the problems and complexities of a nuclear crisis to an extent that some of the more obvious mistakes would not be made. Some of the elements requiring detailed research and periodic updating are discussed below.

1. Determine goods and services that could be supplied from outside the U.S. that would have the greatest effect on recovery bottlenecks.

2. The diplomatic and intelligence communities should be able to assess the extent to which a given country is likely to take advantage of a crisis situation by taking over U.S. (NATO and Japan)-owned assets, joining in supply cartels, impeding military or economic actions (such as by closing ports and airports to U.S. military and civilian craft, reducing or cutting off supplies, forcing evacuation of U.S. citizens, severing diplomatic relations, etc.), and many other actions of a similar nature. Naturally, such assessments would have a high degree of uncertainty and would be extremely scenario dependent. Their major benefits would

derive from the insights which could emerge from a thinking through of various possibilities.*

3. It is important to understand any countries' dependency on the United States (or its allies) and vice versa with respect to critical economic inputs and the degree to which substitutes (sources and goods) can be found. Critical resources in this context do not mean merely trade and finance requirements in a peace-time political-economic environment, but those resources that could become critical in a crisis and attack environment. These resources may become important international bargaining chips. A basic understanding of the overall post-attack recovery strategy and the potential gains from foreign interaction is required by the diplomatic community so its members can evaluate various political and economic policy options with respect to the long-term economic recovery of the United States.

4. In the event of an impending crisis, the exchange markets could become extremely volatile or even chaotic as dollars and dollar-denominated assets are dumped. Immediate policy actions (support operations, emergency capital controls, imposition of special multiple exchange rate systems, etc.) on the part of the cognizant agencies in conjunction with major foreign economic powers could reduce this turbulence. This would create an environment favorable to other agreements and negotiations with foreign powers, since it would indicate a concern and willingness to act on the part of the United States to minimize disruption of the world economy (granted for self-interested reasons). At the same time, it would demonstrate to the Soviet Union the opening actions of an organized foreign policy strategy to mobilize world-wide resources for economic recovery in the event of a nuclear strike. Though perhaps not much of a deterrent, it should contribute marginally to the United States' bargaining posture.**

5. Various contingency plans must be formulated and triggers designed for acquiring assets which would have international purchasing power in the event of a nuclear conflict. For example, to the extent consistent with peacetime international monetary policy, stocks of precious metals and other commodities that would be in great demand, and thus easily tradable in a post-attack world, should be maintained or perhaps increased. Indeed, some consideration must be given to the possibility of maintaining these

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*For example, a case can be made that Mexico and Brazil would be willing to sustain high economic costs to restrain recovery of U.S. economic and political power. Elaboration and scenario development of such a proposition could help focus and clarify our current and longer term policies toward these countries--although current foreign policy was not the explicit goal of the exercise.

**Of course, mobilizing world-wide resources is a somewhat ambitious goal, but, in a sense, it is what this essay is all about. Any deterrent would be an unintentional but welcome side effect.

stockpiles outside the United States or in scattered locations within the country in order to minimize the possibility of their being targeted. Included in this planning should be continued updates of the quantity and location of stocks of such items within the U.S., but not owned by the government, and policies for their possible use by the national authorities in the event of a crisis.* An added advantage of such stockpiles is their use as currency backing in the event of the need for a monetary reform.

6. Determine a selection of goods that are likely to be important trade goods in a post-attack environment. Assess if a net gain would accrue from programs to insure survivability of a minimum production capacity, either onshore or overseas, which could provide a steady flow of items for exchange. These are national security goods of a rather new definition. It is not clear that anything beyond a stockpile policy is at all useful (see 5 above).

7. Various means for encouraging the accumulation of non-dollar-denominated financial assets in the United States should be investigated--particularly the possibility of acquiring assets denominated in currencies likely to be "hard" in a post-attack environment. For example, expansion of the so-called soft currency programs** might provide very useful currency reserves in a post-attack environment. At the same time, expansion of these programs would be consistent with current policy programs of expanding aid to developing countries.

8. Investigate the relative costs and benefits of maintaining foreign stockpiles of critical goods.*** Especially look at policy actions that could expand existing private and public inventories to a level that will enhance U.S. recovery potential at relatively low cost.

The world economic and political context has changed dramatically in recent years, the possibility of extremely large-scale attacks (5,000 to 10,000 weapons) has emerged, concern about civil defense has risen, civil defense policy is undergoing transformation (e.g., crisis relocation, and

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*This use should be on a "fair" nationalization basis--not simply expropriation. Among other things, contingency plans in this area should be classified to reduce speculation and black marketing activity.

**"Soft currency programs" are development aid programs that permit purchase of goods and services or repayment of loans in terms of the LDC's own "soft" currency rather than U.S. dollars. These currency reserves are then used by the U.S. government to finance such programs as visiting scholars or research projects through the N.S.F.

***Of course, this must be incorporated in a full-scale assessment of stockpile policy in general, covering both domestic and foreign stockpiles.

we have seen a reorganization of the cognizant agencies. All of this suggests that a complete reassessment of doctrine and policy (especially the national plan) is in order. An important new aspect of planning for a potential nuclear war with the U.S.S.R. is consideration of the global political/economic context within which it would occur. International interaction could ameliorate or intensify recovery problems. This paper has attempted to determine some of the important variables, problems, and policy directions. As such, it is only a starting point for more comprehensive research and, ultimately, operational planning.

PART B:

U.S. POLITICAL RECOVERY FROM NUCLEAR WAR: PROLEGOMENA TO PLANNING

William H. Overholt

Scenarios and plans for U.S. recovery from nuclear warfare have focused heavily on military protection of the integrity of the country and upon the process of economic recovery. While studies of the military and economic situation leave, inevitably, much to be desired, they do tend to have a fundamental concept of the nature of the problem and a more or less detailed conceptual approach to the problem of restoration. Discussion of the problem of political survival and recovery is far less mature conceptually than the military and economic discussions. While political issues have not been entirely neglected, discussions of them have tended to proceed on the basis of intuitive concepts of the meaning of survival and on technocratic rather than political concepts of the nature of recovery. The purpose of this paper is to inquire somewhat more deeply about the meaning of governmental and political survival and the problems attending political recovery than has heretofore been undertaken. The purpose of this paper is more to raise questions than to answer them; the hope is that it will direct attention to a more fundamental level of issues than has been typical of earlier discussion.

To this end, it will be useful to discuss what we mean by governmental survival, what we mean by political survival and recovery, what characteristics of the U.S social system bear on the problems of governmental and political recovery, and what fundamental policy issues arise from these discussions.

A. The Problem of Governmental Survival

Many discussions of U.S. recovery from nuclear war assume either the survival of the central government or the failure of the central government to survive. The concept of survival conveys an image of Washington damaged physically but of the government functioning in something like its present form. In this image, Washington may not survive, but some combination of mountain hideaways and executive aircraft do survive; many individual officials and executives may have lost their lives or their ability to function, but some basic networks of authority remain intact. The image of failure to survive is one of complete annihilation of Washington and of all critical networks of authority. This image is powerful although not very detailed. Indeed the force of the image, or the pair of images, has been so great that it has driven most, if not all, thinking about post-attack governmental and political problems.

The policy issue dictated by the pair of images is how to approximate the more favorable of the pair as nearly as possible at every moment from the attack through a long period of recovery. The image tends to focus attention on detailed technical issues related to repair of specific items of governmental machinery. It often takes for granted that the old machinery should be maintained to as large an extent as possible, and it tends not to question that there will be general cooperation in working toward a common image of recovery. In other words, it tends to focus on technical rather than political issues, on pieces of the system rather than the system as a whole, and on protection of old components rather than on selection of new ones. Despite the focus on components, it tends to take a rather undifferentiated view of the problem of recovery, and an undifferentiated view may hamper the establishment of priorities.

How would we know in what sense, or to what extent, the government continued to exist after a nuclear attack? What criteria would be critical?

Given the wartime context, an initial search for criteria naturally focuses upon ability to defend the country. Possession of a coherent military force able to defend all or part of the national territory is certainly a key criterion for continued governmental effectiveness. It need not be entirely coherent, and it need not even be capable of defending all of the original territory of the country, but it must be able to conduct a basic defense, not only against the original attacker (which in the current situation would presumably be the Soviet Union) but conceivably also against other potential attackers who previously could have been ignored. One such example which could assume significance, in the event the United States were drastically enfeebled by a massive nuclear attack, would be a massive movement of Mexican population northward, in the manner of American encroachment on Mexico more than a century earlier, with post hoc support by the Mexican government.

The functioning of goverment, however, refers primarily to the functioning of domestic governance. The most basic definition of government is that propounded by Max Weber, namely that government is that entity which possesses a monopoly of the legitimate use of force. In other words, government is the social organization which has the sole right to use force in implementing its decisions. The definition does not propose that government has monopoly of force, only that it has a monopoly of the right to use force (or presumably to delegate its use). The Weber definition highlights the importance of overall political beliefs in the legitimacy of the central government, of the organizational processes which relate local police and military action to the central government, of symbols of delegation, and of the communications which tie the locality to the governmental center. Weber's definition goes to the heart of the issue of governance, because any effort to set up another standard for using force implies a second judicial system

and a second center of ultimate social decision, and therefore by definition a competing government.

Given the degree of political consensus with which the United States is favored, maintaining a monopoly of the legitimate use of force is ordinarily no problem, and it can even be difficult to conceive of it becoming a problem. However, the current absence of such problems does not mean they are unthinkable. The United States is a country with a long history of vigilante groups and of local rebellions against central power. The disappearance of these problems is largely a function of the central government's triumph in a long series of conflicts ranging from Shay's rebellion to the Civil War to the desegregation battles of the 1950s. It is also a function of the degree to which economic modernization has unified the country and the degree to which repetition of established patterns of local-state-national interaction have made those patterns something to be taken for granted. All these conditions could be altered substantially by an all-out nuclear war.

The appearance of behavior which presents a challenge to central authority can begin even in minor crises and can begin with relatively innocuous forms. For instance, to take an example that is relevant although technically tangential, during the aftermath of Tropical Storm David in early September of 1979, there were severe electric power outages in some parts of Westchester County, New York. Citizens of Croton-on-Hudson, New York came to believe that other areas were being given excessively favorable treatment compared with Yorktown. The problem was a relatively minor one in any absolute sense, having been caused by winds of 35 miles per hour which occasionally gusted to 55 miles per hour. The storm caused inconvenience rather than disaster. However, officials of the village of Croton-on-Hudson, which had experienced relatively severe electric power outages, felt that their village was being shortchanged by repairmen of the major electric power company in the area, and the Croton-on-Hudson police therefore seized a repair truck, owned by the utility, which was on its way to another town. They served notice that the truck would be impounded for ambiguous violations unless the utility agreed to repair the Croton-on-Hudson lines immediately. They succeeded. This was a laughably small incident in response to a laughably small storm. Moreover, it concerned a power company rather than the government. Nonetheless, it illustrates in microcosm a problem that can quickly arise in nearly all difficult situations, namely the tendency of local officials to take into their own hands authority which is rightfully vested elsewhere.

In the aftermath of a nuclear war, the problems would be infinitely greater, because many of the issues would concern life and death. In a truly major emergency, the town of Yorktown, which was the orignal destination of the repair truck, probably would have retaliated somehow, and some kind of escalating confrontation damaging to both sides would then be possible. The point is that the first domestic criterion for effective survival of any government will be its ability to assert

with authority that it is the ultimate arbitrator of all uses of force, and that even such local police actions as the one described above are illegitimate unless they are undertaken with specific and valid reference to the principles laid down by central authority.

Actually maintaining order is one step down from the criterion of maintaining a monopoly of the legitimate use of force. So long as there is a widespread consensus that the only legitimate use of force is one sanctioned by the central government, the occasional appearance of disorderly incidents is a matter of lesser concern. Nonetheless, the ability to maintain order is extremely important. In most political traditions, the primary active responsibility of the government is to maintain order. Any government which fails to maintain order for a prolonged period of time is likely to lose its legitimacy. Quite apart from the disruptions of economic recovery, the loss of property, and the personal harm that can be caused by disorder, this consensus on the overwhelming importance of the government's responsibility for maintaining order makes this the second most important domestic criterion for government survival.

Maintaining order could well be a severe problem in the aftermath of nuclear war. During major power outages in New York City, widespread violence has occurred, particularly focused upon rioting and looting in ghetto areas. Elsewhere, after hurricanes, and in the period when areas are evacuated in anticipation of hurricanes, extensive looting is quite common. During the period of Tropical Storm David mentioned above, large vigilante gangs roamed key areas of New York City.

Once riots, looting and various other forms of disorder become extensive, they can be extremely difficult to stop. There is therefore a premium upon speedy and decisive intervention to prevent outbreaks or to terminate them in their earliest phases. There is moreover a premium to undercutting any rationale which might be exploited to lend legitimacy to such outbreaks. In ordinary times, there is sometimes a controversial liberal view that certain kinds of routine crime need to be understood as an understandable response to social problems; any hint that such a view is an acceptable motive for rioting, looting or other violent behavior in the aftermath of a major disaster such as nuclear war would be explosively dangerous. The attitude of any successful government in such a period would have to be that, under the circumstances of nuclear recovery more than any other time, destructive behavior is totally intolerable. There must in such situations be an expectation of swift justice, a problem to which it will be necessary to return below.

The third domestic requirement for governmental survival is the ability to support governmental actions through taxes. The government's ability to tax in the aftermath of nuclear war presumes public ability to pay, public willingness to pay, governmental possessions of some of the bureaucratic machinery for assessing taxes, and survival or creation of some of the national financial records necessary for levying taxes. To some extent the early recovery programs may be financed through the inflation tax, that is, by printing money to pay the government's bills

and thereby inflating the currency. Such a system is sometimes used in all countries, but particularly in Third World countries such as Brazil. It could be employed whether the old money was still in use or some new currency had been instituted. But under circumstances of great devastation it could not long be used without permanent damage both to the economy and to public support of the government.

In a modern society, no government could long survive if it were unable to maintain a viable currency. As the examples of countries such as Argentina demonstrate, populations can live with inflation even on the order of 200 to 300 percent per year, but no economy can survive without a liquid currency.

The final criterion of governmental survival and effectiveness is its ability to transfer assets and to equalize burdens. The job of equalizing burdens and transferring assets is inherently difficult for any government and has many times proved divisive for the United States. It was the inability of the central government under the Articles of Confederation to set national standards of fairness and to equalize burdens that proved the undoing of that system. It was the inability of the federal government to establish or enforce national standards regarding slavery which, via the states rights issue, led to the Civil War. The federal government used troops to impose a national standard on a dissident state as late as the 1950s, when President Eisenhower employed the National Guard to force desegregation on the University of Mississippi. Federal efforts to impose national energy programs on states with diverse ecological and safety rules may yet create a federal-state confrontation. Under conditions of nuclear war, movements of oil from Texas to New England, movements of food from the Midwest to the coasts, and movements of funds from the least damaged to the most damaged areas could create extraordinary strains. Taking food from very hungry people who are not starving and giving to people who are starving could be delicate. Imposing drastic reductions on the living standards of relatively untouched cities in order to rehabilitate devastated cities could conceivably be both necessary and difficult.

These then are the criteria of governmental survival: coherent military force, monopoly of the legitimate use of force, maintaining order, maintaining a currency, taxing, and equalizing burdens. Governments do many other things, but these five are the minimum criteria of survival.

B. Political Survival

Closely related to the criteria of governmental survival, but not at all identical to them, are criteria of political survival. Governments do not survive merely because they are effective at performing a given list of functions. A government could run an economy fairly, maintain a currency, collect taxes, maintain order, and deploy coherent military

forces and still fall apart from lack of public support and absence of internal cohesion.

In the United States the ultimate criteria of political justification are democracy and a generalized sense of fairness. The criteria differ for other political systems, such as those of the Soviet Union and Zaire. In this respect they differ from the criteria of governmental effectiveness, which are universal for all modern and modernizing nations.

Democracy is the ultimate cement which holds the United States together. Some nations are bound together by commmon language, some by a more general common culture, some by racial ties, and some by a shared sense of history. While the U.S. is bound in part by a shared sense of history, the predominant cement for the American polity is democratic ideology. The United States comprises such different groups that only a very strong cement is adequate to the task. Devotion to democratic values is so intense that no substitute form of cement would likely be adequate. Argentina and Brazil and Italy share the democratic values of the United States, but the mix of social elements is weighted more heavily in favor of non-ideological concerns, and the willingness to tolerate undemocratic forms of government in certain circumstances is therefore far higher. No U.S. government can long maintain public support without a democratic mandate. The democratic mandate must be regularly renewed, and the authority of any particular governing structure will be regarded as legitimate only by those citizens who participated in electing its leaders. Given the important divisive tides discussed earlier, no government will long survive the pressure of group interests and assertions of states' rights unless its electoral mandate is renewed on a regular basis. Given the demand for representation, a politician from Virginia might well have difficulty maintaining authority over Texans for a prolonged period of severe post-nuclear-war strain even if he attained national office by virtue of a legitimately ordered constitutional succession.

The American system will work under unusual circumstances for short periods of time, particularly under crisis conditions. For instance, Americans quite willingly accepted the ascension of Lyndon Johnson after the assassination of President Kennedy. However Johnson was a nationally elected leader. Had a nuclear war occurred and killed the President, the Vice President and several others in the line of succession, life could have become very difficult for a president who was a non-elected bureaucrat or a politician representing a single state and who faced the necessity of undertaking major transfers of assets from undevastated areas to devastated areas. Such leadership can normally be maintained as long as regularly scheduled elections are held, but the moment even overwhelming circumstances appear to lead to the conclusion that an election need be postponed, the system as a whole is immediately in danger. To an extent that is not true of most nations of the world, the U.S. has poor tolerance for missed elections. It is quite easily imaginable that post-nuclear-attack circumstances would make holding an election technically difficult or make it seem a waste of urgently needed resources. Most democracies

have at one time or another taken decisions to defer elections or to alter their electoral systems under circumstances considerably less pressing than those of nuclear war. It is therefore important to underline that, to an extent not true of most nations, the United States seems likely to be vulnerable to tremendous centrifugal forces in the absence of its regular elections.

The second criterion of political survival, namely a generalized sense of fairness, is less easily definable. Because it is more ambiguous, it is less susceptible to neat analysis and specific criteria. However it is no less real. Moreover, in its very ambiguity it is a source of flexibility and resilience. The sense of fairness appears to have four major components: a sense that certain absolute rights must not be infringed, a sense that rules must be universal in application and effect, a sense that assets must be distributed reasonably, and a sense that honest and proper procedures must be followed.

The basic rights demanded by most Americans are enshrined in the Bill of Rights and need no further commentary here. Americans further have a strong sense of property rights; although the American tradition encompasses some redistributive measures, such as progressive income taxes and inheritance taxes, and although the U.S. (like every other nation) allows the government to expropriate an individual's property in the general interest with adequate compensation, the extent to which the government should have the right, in times of extraordinary disaster such as could result from nuclear war, to commandeer the property of individuals or of groups could easily be a source of major controversy unless satisfactory criteria are worked out in advance and are widely understood. For instance, if most of a city is razed and a single major construction firm remains the only source of certain tools and skills, the extent to which the government can commandeer its resources could prove to be a substantial controversy. This is true even if technical legal methods have been correctly employed, unless the procedures have been widely understood in advance.

The perceived fairness of rules and of distribution of assets hinges upon a sense that burdens and opportunities should be equally distributed throughout the country and throughout sections of the population. Even laws stated in universal terms which would allow some states to be energy-rich and others to be energy-poor, or which would provide water to some states and no water to others, will be interpreted as unjust. Americans' sense of what is fair varies widely from group to group: some Americans still deeply resent the progressive income tax. Nonetheless the country as a whole will accept ideas such as the progressive income tax so long as there is a reasonable explanation which is widely understood, based upon a problem which is also widely acknowledged. In the aftermath of nuclear war there would certainly be a problem which is widely acknowledged. However, it would be crucial that the rationale for any extensive redistribution of assets be clear, that policies deriving from the rationale be consistent, and that government actions therefore be predictable and widely understood. A widespread sense of arbitrariness or inconsistency

could be politically devastating. Even the vagaries of decision which are widely accepted as an inevitable concomitant of military operations would cause great discontent in civilian life. Catch 22 is more socially acceptable under military discipline than it is outside such discipline.

Finally, and overwhelmingly important, is the problem of propriety and honesty in decisions. In post-nuclear-war conditions, there will be an overwhelming temptation to corruption. To return to the example of Tropical Storm David mentioned earlier, one Westchester County, New York, community found itself with only one repair truck attending to electrical outages affecting a substantial proportion of a major community. Citizens found themselves with problems which are insignificant by wartime standards, but which seemed quite important to them: inability to conduct normal business in the absence of telephone communications, loss of food stored in freezers due to lack of electric power, and the like. For a day or two the response was to make polite calls to the utilities concerned and to grumble mildly. However, toward the end of the second day, some people began to roam the streets in their cars looking for repair trucks and demanding that their individual problems be resolved. One group found a repair truck parked by a bowling alley and persuaded the crew to drive a considerable distance and restore power to one particular street by threatening the crew with revelation of the bowling party and by bribing them with a collection taken up from people who lived in the street. This occurred in an upper-middle class, professional neighborhood. In the aftermath of a nuclear war, such behavior would quickly become near-universal.

Such behavior is harmless when it does not damage anyone else. It can have positive benefits when it encourages people to do a job they should have been doing anyway. But when the stakes are life and death, or major welfare concerns, then it becomes radically unacceptable for major decisions to be made on the basis of the highest bid. It is socially acceptable, and often even socially necessary, for degrees of comfort to be rationed according to the raw standards of the marketplace. It is a source of potentially revolutionary discontent for matters of life, health and safety, decided under the aegis of the government, to be rationed according to the criteria of the marketplace. Given the extraordinary incentives for corrupt behavior in the aftermath of nuclear war, and given the cumbersome processes by which democracies typically deal with such problems, American ability to cope with the pressures for corruption might well be in doubt. Failure to cope with this problem could endanger the authority of the government and could degrade the polity which emerged from the recovery process.

To take an example which will seem farfetched to those who believe America is not subject to the pressures so many other societies face, the Philippines in World War II provide a case in point. Prior to World War II, the Philippine government was widely acknowleged as one of the world's more honest and effective administrative mechanisms. However, in the process of dealing with the Japanese, corruption became widely accepted, and in the aftermath of World War II, severe economic problems

and massive government controls made the temptations to corruption overwhelming. The government never recovered even minimally honest administration, and reaction against corruption was the most important single reason for the willingness of the middle class and the military to tolerate the downfall of democracy in 1972 and thereafter. While the U.S. is hardly in a situation comparable to the Philippines, the difficulty of recovering honest administration and public respect after systematic corruption has taken root could become an American problem. It is currently a chronic issue in some individual U.S. states.

C. Is Legitimacy or Effectiveness the Central Issue?

One of the major themes of the foregoing discussion is easily summarized. Governments must be legitimate as well as effective. They must of course be competent at such principal tasks as those specific activities mentioned in the criteria for governmental survival; those are primarily criteria of effectiveness. The necessity for effectiveness has been the predominant focus of attention for most planners considering recovery after nuclear attack. The problems of legitimacy have received considerably less attention. Clearly, legitimacy and effectiveness are intertwined. No government can maintain a monopoly of the legitimate use of force unless it possesses some overall legitimacy. Similarly, no government can be perceived as democratic and fair unless it conducts at least some of its basic functions effectively. But governments differ greatly in the extent to which they emphasize legitimacy as the primary basis for governing and neglect effectiveness (for instance, as Mao Tse-tung did after 1958) or alternatively emphasize how effective they are despite the lack of a widely recognized basis for legitimacy (for instance, Mussolini making the trains run on time). Analyses also differ in the extent to which they emphasize one aspect of governance or the other. The burden of most post-nuclear-attack recovery scenarios and plans has been to make government more effective by protecting certain mechanisms. There is at least a strong case to be made that the issue of legitimacy deserves equal or greater emphasis.

The case for an equal or greater emphasis on legitimacy rests on two pillars: the likely ability of the government to resolve the problems of effectiveness, and the existence of a major problem of legitimacy. Although the attention of post-attack studies tends to focus on issues of effectiveness, there is a remarkably strong case to be made that the U.S. administrative system, like a planarium, can regenerate itself easily. The U.S. has an extraordinary supply of managers, entrepreneurs, politicians, engineers and scientists. The U.S. has demonstrated the ability to endure mediocre presidents. The great problems the U.S. has suffered have seldom derived from lack of administrative capacities. They have typically derived from political dissonance and from the consequences

of political conflict and political immobilism.* This is not to say that problems of effectiveness are insignificant or that they should be neglected. They are very important. They can sometimes be difficult to solve even conceptually. But the effectiveness issues must not obscure the legitimacy issues.

The above remarks have several times emphasized the need for quick and decisive action at times when quick and decisive action might not be easily forthcoming. However, having said this, it remains true that the resources available for resolving problems of administrative effectiveness are truly extraordinary, and the problems are visible ones that are likely to receive adequate attention.

The problems of legitimacy on the other hand are more subtle. The United States is a lucky country which has never had to cope with the consequences of massive foreign invasion or conquest (1812 does not really count), with the strains of extraordinary social inequality perpetuated over generations, with foreign problems that could destroy the country if it succumbs momentarily to immobilism, or with many other problems faced by less lucky democracies. It is difficult for many people even to imagine that the U.S. could face severe political problems in the aftermath of a crisis. But a little reflection on the history of rioting in response to blackouts, of the kinds of local problems that crop up when local disasters occur, and the history of Shay's rebellion, the Articles of Confederation, one of the bloodiest civil wars in human history, the confrontations over desegregation, and many others, quickly reveals that the U.S. is not a country capable of completely avoiding major political strains. The problem of the legitimacy of central government decisions is inescapably one of the major problems the United States would face in the aftermath of nuclear war.

Addressing the problem of legitimacy requires actions which are simpler but more subtle than measures addressing the problems of effectiveness. A focus on the problems of legitimacy begins with the extraordinary importance of holding early elections. Spending scarce advance planning resources on election preparations is technocratically frivolous but politically essential. Second, an emphasis on problems of legitimacy implies a focus on public education programs, on justifying to the public what would likely be done in the event of major nuclear war rather than just on planning for what should be done. There will be many cases in which deciding on what should be done will be relatively easy as compared with convincing people to accept what is done. The way must be prepared for educating the public as to how crisis decisions should be made, what criteria should be used for redistribution of assets, and why key familiar institutions must be modified.

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*Immobilism is an inability to make coherent decisions. Several French governments have failed due to immobilism. U.S. inability to formulate and implement a coherent national energy policy after 1974 illustrates the problem.

Given the importance of legitimacy issues, it is worth noting how little the cost of tackling them might be. Establishing a plan for holding elections under difficult circumstances requires mainly that one take the issue seriously, that one analyze what ground rules might change under the conditions of a nuclear attack recovery period, and that the resulting plans be distributed widely enough so that they would be easily available. The public education issues mainly require rather simple training programs, seminars, and wide distribution of pamphlets. The information in the pamphlets may be controversial or painful, but the programs themselves are straightforward and do not require extensive technology or exotic forms of protection.

D. The Necessity to Modify Major Institutions

Few things are so difficult as the modification of major, familiar social institutions under conditions of severe stress. Nuclear war would cause massive public disorientation. Institutional changes would risk exacerbating the disorientation. Nonetheless, it seems certain that major institutional changes would be required to cope with the effects of nuclear devastation.

It has been noted that corruption and disorder are major possibilities, and that there would be the utmost necessity for coping with them quite rapidly. It is not at all clear that, under the circumstances attendant upon nuclear devastation, the intricate adversary judicial system with all its nuances of court-provided lawyers and layer upon layer of appeals could be sustained. Some would take this to mean that a declaration of martial law would be necessary, but there are strong reasons to avoid such an outcome. If so, there may be a need to study ways in which summary court processes could be introduced for limited periods of time, consistent with the ideals of American civilization. Efficiency in the first few days and weeks after a nuclear conflict could be extremely important. On the other hand, efficiency purchased at the cost of disregarding basic American ideals would probably have political consequences that would make such efficiency counterproductive. A study of ways in which massive riots have been handled in the past, coupled with a study of how the typically tedious subsequent court procedures could be abbreviated, might be extemely valuable.

During a period of Congressional assertion of its power in competition with the Presidency, it goes somewhat against the grain to discuss the probable necessity for building up the capacity of the Executive for decisive action. The immobilism that has recently attended U.S. energy policy, and other policy areas where advocates of competing policy options all succeed in defeating one another, would be intolerable. It is probable that under the circumstances of nuclear devastation, there would be near-universal recognition of the need for decisive leadership. The danger would not be that Congressional immobilism and endless judicial appeals would long be allowed to persist. The danger would be that public outrage over any form of immobilism would induce overwhelming public

demand for decisive executive leadership that would ignore Congressional and judicial imperatives. Examples of this phenomenon in times of crisis bespatter the entire history of political democracy in all regions of the world from ancient Greece to de Gaulle's France to many of today's Third World countries. Given the diversity of situations that could emerge from nuclear war, the political leadership of the country should have ready at hand a guide to possible options, or scenarios, for the evolution of executive power in a crisis. The issue is one of sufficient delicacy that perhaps the options prepared should not even be an official document.

Many traditional union institutions would quickly prove unacceptable in the aftermath of nuclear war. Detailed constraints on what members of one union are allowed to do in deference to the prerogatives of other unions would likely prove unacceptable at least until the initial shock had been dissipated by a period of substantial recovery. What purposes would be acceptable and what would not? In the event that severe problems arose out of the conflict between the needs of the times and the traditions of the past, would traditional Taft-Hartley-style measures be adequate?

At least for an initial period, many aspects of building codes, zoning regulations, and the like, might severely impede recovery. If a city has been devastated, at what point would one want to return to enforcement of such laws? If some of the laws are to be held in abeyance, which ones? Would local officials decide this? State officials?

The point of these remarks is that the nation would be caught between the absolute necessity of adjusting key major institutions and the danger of further disorienting an already disoriented society. It would be caught between the danger of inability to act in a crisis and the danger of acting in ways that undermine public support for government because they seem inconsistent with democratic ideals. Meanwhile, planning is caught between the danger of causing a disruptive furor by discussing these highly controversial issues and the danger of having to improvise and implement controversial policies in the face of an uninformed public after a nuclear war.

E. An Approach to Effectiveness Issues

While the relative importance of legitimacy issues has been the central theme of this essay so far, effectiveness issues must receive their due. Effectiveness issues take two forms. The first is, how does one displace or modify institutions whose ordinary social roles need to be eliminated, reduced, or greatly modified in the aftermath of nuclear war? Such issues have been mentioned briefly above.

The second kind of effectiveness issue, and the kind ordinarily discussed in planning documents, is the protection or restoration of those authority networks necessary to conduct the basic government survival

functions discussed earlier. With regard to those networks, the focus of much of the literature is on protection of key officials. However, we have observed above that the United States has a good supply of the principal kinds of talents necessary to manage its governmental business. If any town loses its mayor, it can find a dozen others qualified to be mayor. If a company loses some of its engineers, it can often choose from thousands of other engineers. Scientists of nearly all kinds are in surplus to an extent that has left numerous able and well-trained individuals unemployable in their basic professions. Even the skills required to be president of the United States are not particularly scarce in relation to the number required (although the current political system has some difficulty in choosing such individuals).

This generous supply of available talents creates an extraordinary dilemma for the post-nuclear-attack planner who is oriented to protecting key individuals. When one looks for individuals in government who are indispensable, one finds virtually none. Most of the nation's senior political officers are changed regularly after elections, and the individuals who replace former top officials are brought in from diverse parts of the country. Therefore, the destruction of Washington and even of most major cities is likely to leave adequate talent in existence to run the country. The problem is not therefore that indispensable individuals must be protected. The problem is different, and it has two components:

1. The first problem is that in the immediate aftermath of nuclear warfare there must be some individuals or groups which are generally regarded as having the right to make decisions. The constitutional succession is the principal effort made in the past to assure that some individual is designated as having the legitimate right to guide the country. Likewise, there are critical functions, particularly police and organizational functions, which are critical to the ability of the country to function and to begin their recovery process in the days immediately following the nuclear war. The problem here, as with the Presidential succession, is one of identification, selection and legitimacy in the weeks immediately after the war.

2. Second, there are the vast organizational networks composed of individuals whose positions are not critical to organizing the first few days or weeks of recovery.

In both categories, the problem is one of selection, not a problem of indispensable talents or indispensable individuals. The job of post-attack planning therefore must focus heavily on facilitating selection processes. The selection processes must be speedy, accurate, and legitimate. They must be speedy so that the work of government gets done with reasonable dispatch. They must be accurate in that appropriate talents are selected. They must be legitimate in the sense that there

is general assent that proper democratic and meritocratic procedures of selection have been followed.

The selection problem for the president can be facilitated by extending the list of constitutional successors, by making provisions for speedy elections, and by making provisions for momentary deviations from normal patterns under the most peculiar circumstances. The selection processes for most official positions, including the vast majority of the most senior positions, can be facilitated by maintaining good lists (preferably not all computerized) of talented people available in the country. Lists of people who have occupied high positions in government or industry and lists of members of major professional associations, properly distributed so that they would always be available regardless of the exigencies of war, would presumably be the principal resource. An emphasis on assuring the availability of post-attack communications, so that relevant talents could be quickly located, would be the only technologically or financially significant aspect of such a plan to facilitate the selection process.

In short, survival of the government will depend in some degree on lists and selection processes as well as upon protection schemes. Survival of the nation will depend upon the ballot box.

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Two important themes evolved. One was that the survival of the federal government could not be assured following a large attack but that its survivability could be greatly enhanced if the needed CD policies are established in time. The second was that the federal CD role should often be a supportive one, rather than the controlling one that is generally assumed.

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