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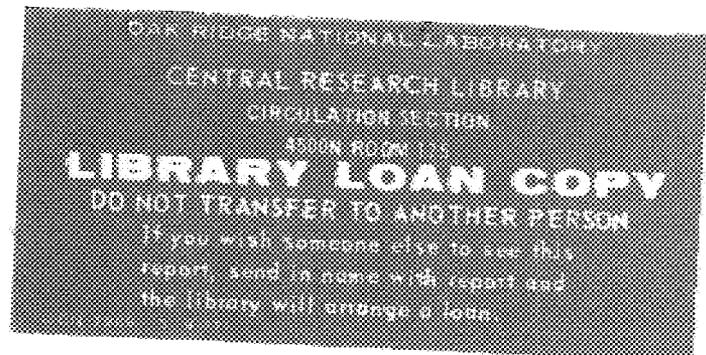


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**Arsenal of Democracy in the  
Face of Change: Issues Underlying  
the Implementation of Industrial  
Mobilization Policy**

**Working Paper No. 3**

John R. Brinkerhoff



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FOR THE UNITED STATES  
DEPARTMENT OF ENERGY

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**ARSENAL OF DEMOCRACY IN THE FACE OF CHANGE:  
ISSUES UNDERLYING THE IMPLEMENTATION OF INDUSTRIAL  
MOBILIZATION POLICY**

**Working Paper No. 3**

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## ABSTRACT

This paper reviews the background and current status of industrial preparedness in the United States and analyzes ways to implement new policy procedures. What will it take to assure that the United States can mobilize its industry rapidly to support a major conventional war?

The report reaches nine important conclusions:

1. Mobilization and industrial preparedness policy must be linked and integrated with other aspects of national security policy and the national military strategy.
2. The United States cannot reverse the flow of time and go back to a period of industrial superiority and self-sufficiency.
3. The United States must come to grips with its responsibilities for providing war materiel for Allies.
4. Similarly, the United States must recognize the interdependency of international trade and industrial production.
5. Graduated Mobilization Response needs to be adopted by the government and DOD and integrated into industrial preparedness policy.
6. The DOD industrial surge program should be fully funded.
7. Industrial preparedness planning should be funded now on a priority basis.
8. Organizational responsibilities and relationships for industrial preparedness have to be clarified, strengthened, and supported.
9. Finally, it is necessary to pay attention to this problem now.

The report concludes by suggesting that the United States must develop a unified, clear statement of preparedness policy, linked with other security/military policies and strategies. This must be accomplished with some swiftness, and with the cognizance of current (and most likely to continue) domestic and international economic interdependencies.



## I. INTRODUCTION

Industrial preparedness to support the Armed Forces of the United States in a major war will be an important element of the National Security Policy of the United States in the 1990s.

The threat of nuclear war is receding. The USA and the USSR are reducing their nuclear arsenals now and may reduce them further in the next decade. The Soviet Union has announced unilateral reductions in conventional forces, and the other Warsaw Pact nations have done the same. The United States has announced similar reductions in active military forces. There is much evidence that the underlying sources of tension in Europe and elsewhere in the World are abating.

Reductions in active forces will have the effect of decreasing the capability of both sides to fight on short notice. The reductions place a premium on being able to generate additional combat power rapidly if necessary. In effect, both sides are converting some existing combat power into potential combat power.

Mobilization is the process which converts potential combat power back into existing combat power. There are several dimensions to mobilization, but perhaps the most important single dimension is the process of expanding production of war materiel. This part of the process is called industrial mobilization, and the actions taken to accomplish the industrial mobilization are called industrial preparedness. The Soviet Union has a managed economy in which transition from peace to war is routinely treated as part of the planning process. The United States, on the other hand, has to make a concerted effort to achieve some measure of industrial preparedness in a free market economy.

make a concerted effort to achieve some measure of industrial preparedness in a free market economy.

The purpose of this paper is to recommend an industrial preparedness policy for the United States in the 1990s. The approach will be economic as opposed to technological or managerial. The United States has the technology and managerial expertise to be ready industrially, but it has not chosen to be ready. The interest, will, and incentives for industrial preparedness apparently are inadequate. So the problem is an economic one: what will it take to assure that the United States can mobilize its industry rapidly to support a major conventional war? The answer to that question constitutes a national industrial preparedness policy.

This paper reviews the background and current status of industrial preparedness in the United States in economic terms. It examines five major options for an industrial preparedness policy and makes some general observations about an Industrial Preparedness Policy for the United States.

## II. THE IMPORTANCE OF INDUSTRIAL PREPAREDNESS

Governments are often accused of preparing for the last war. Many defense analysts have not supported industrial preparedness because they did not want to refight World War II with another World War II style mobilization. Not wanting to refight World War II, however, should not preclude preparing to fight World War III. The nation would be fortunate indeed if it were able to mobilize in what appears in retrospect to be the almost leisurely fashion that was possible in 1940 and 1941. Events in a future war are likely to move faster and be much more difficult to manage than for World War II.

Both the United States and its NATO Allies and the Soviet Union and its Warsaw Pact Allies maintain large standing military forces in peacetime. The emphasis is on immediate combat readiness and on modernization of older weapons with newer and more effective weapons. This costs a lot of money, and by the time that new weapons are developed and produced and forces-in-being are trained and equipped, there is little money left for buying stocks of weapons, equipment, ammunition, missiles, and supplies to fight a protracted war. In fact, the nations of NATO and the Warsaw Pact facing each other in Europe all have insufficient stocks of war materiel to fight a protracted war without industrial mobilization.

One of the reasons why the United States has been reluctant to include a mobilization capability in its national strategy is uncertainty about the short-term outcome of combat in Europe. However, an ability to mobilize rapidly is valuable no matter how the first battle of the next war turns out.

If the battle in Europe is lost in the first few days, the reasons it was fought in the first place will have been exacerbated rather than resolved. In that event, a capability for rapid industrial mobilization would be important in dealing with the aftermath of that defeat, either to wage war or seek an acceptable peace.

If, on the other hand, NATO avoids defeat in the first battle in Europe, a capability for rapid industrial mobilization would allow the US and NATO to capitalize on the victory. Without a capability for rapid industrial mobilization, an early victory might be converted into a long-term defeat.

The industrial might of the US and the Free World can prevail ultimately if NATO can avoid defeat initially. This is an important point. It does not make sense to preclude ultimate victory by policies which assure running out of bullets and missiles initially. It is a good idea to hedge against success as well as against defeat.

The essential capability is to be able to provide the necessary war materiel--weapons, ammunition, and missiles--to allow the NATO forces to continue fighting from D-Day until V-Day. The critical period is immediately after M-Day, and the primary need then is to increase production of war materiel rapidly to support consumption rates consistent with military success. Thereafter, the Nation must be able to produce what is needed to assure eventual victory.

It is unlikely that the United States will choose to afford both modernization and sustainability in peacetime. Thus, stockpiles of weapons, equipment, ammunition, and missiles are likely to continue to be insufficient for more than the first few weeks of combat. In hedging against success, the Nation should plan to be able to produce additional war materiel in time to

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supply the troops when the peacetime stocks are exhausted. That is the aim of a national industrial preparedness policy.

An industrial preparedness policy which will provide rapid increases in production of war materiel and continuous growth in that production until victory is assured is an important component of the national security policy of the United States.



### III. THE CURRENT STATUS OF INDUSTRIAL PREPAREDNESS

The current state of industrial preparedness is poor. The ability of the nation to produce war material domestically has diminished, and there is a corresponding increase in dependence on offshore goods and materials. Yet, the United States has neither taken decisive action nor even achieved agreement on what should be done. The result is that the Nation is not prepared to fight a sustained war if that should be necessary.

The United States war machine is like a fancy automobile with the latest in optional accessories and high technology frills, but with trouble starting on cold mornings, only a quarter of a tank of gas, and no spare tire. Instead of having an engine tune-up, filling the gas tank, and buying a spare tire, the United States goes out each year and buys a shiny new bumper for the car. Although the automobile cannot get us to the destination, it looks pretty and costs a lot.

There is no agreed industrial preparedness policy and no focal point for the creation of such a policy. The Federal Emergency Management Agency has neither the authority nor the resources to prepare and obtain approval for an overall policy. There is interest in DOD in having an effective industrial preparedness policy, but this interest is confined to a few offices with few funds and insufficient influence to get the job done. Current efforts at DOD are concentrating on the nuts and bolts of surging a few critical items. The Department of Commerce has not indicated much interest in taking a leadership role in industrial preparedness policy. There is no vision anywhere of an overarching industrial preparedness policy for the nation.

The current non-policy does not even try to pull together the various dimensions of industrial preparedness. Action on warning is gaining some adherents as the Graduated

Mobilization Response (GMR) idea starts to take hold, but even GMR meets with resistance or indifference. There is much sympathy for reliance on the traditional  $M = D$  assumption. War reserve stock objectives remain at about 30 days. Yet, it is admitted that the time to meet demand will be a year or longer for most items of war materiel. The present industrial preparedness policy guarantees a gap between demand and supply but refuses to take official notice of the gap in the national strategy.

Despite heroic efforts by a few friends of mobilization, there is no sense of need for an effective industrial preparedness policy among the political-military strategists in charge of formulating national security policy. Nor is there an effective mechanism to insert industrial preparedness considerations into the policy formulation process. A key element of national strategy is being overlooked because the urgency of day-to-day crises drives out planning for future events, and because resupply traditionally is a minor consideration in peacetime.

It is time for serious consideration of mobilization preparedness in general and of industrial preparedness in particular as an essential element of national security policy.

#### IV. CONDITIONS FOR FUTURE INDUSTRIAL MOBILIZATION

The primary conditions affecting an industrial mobilization in the 1990s are likely to be the following:

Relatively Short Notice: Even if a decision is made to act on ambiguous warning and take some initial steps early, the time frame for industrial mobilization will be measured in days or weeks. This compares to the several months it took to mobilize for WW-II.

Diminished Domestic Industrial Base: The ability of the Nation to produce the hard goods required for military operations is insufficient to meet the demands. The industrial base is relatively less capable and less flexible now than it was during the mobilization for WW-II. New management techniques, such as "just in time" component management, have made it more difficult to surge production rapidly.

Weapons are Complex and Difficult to Make: Modern weapons using the latest in high technology are more difficult and take longer to make than did WW-II weapons.

Heavy Dependence on Other Nations: Some of the end items and many of the components of military weapons and equipment are produced outside the United States.

Responsibility to Support Allies: As in WW-II, the United States will have to make provision to provide war materiel to its Allies and perhaps to some Third World Nations.

Full Employment and High Work Force Participation: Unemployment is low, and there are no large groups of adults who are not represented in the current labor force. Workers in service industries would have to be retrained to work in manufacturing plants. Skilled labor will be a major constraint.

Federal Deficit and High Economic Growth: The relatively large Federal deficit will make it difficult to borrow to finance the war. High economic growth may provide little slack in the economy to accommodate an expansion of production of war materiel without creating shortages in other areas.

Increased Domestic Demands: The mobilization will take place under a heightened threat of nuclear attack and significant threats to domestic security. This will increase the domestic demand for construction resources, trained manpower, and certain weapons and communications equipment. A substantial portion of the increased industrial production will have to be used for these domestic security tasks. These are new demands not present during the mobilization for WW-II.

These conditions are very different from those which the United States faced in mobilizing industry successfully to become the Arsenal of Democracy for World War II. Mobilization for World War III will be more difficult, more complicated, and more urgent than ever before.

## V. ALLOCATION OF INDUSTRIAL PRODUCTION.

The major policy decision in National Mobilization is allocation of resources among various claimants. These claimants include the Armed Forces, the infrastructure systems, industry, and the civil sector. Claimants are domestic, allied, and third world. In the industrial dimension, there are three basic kinds of industry: Defense Industry; Civilian Industry; and Basic Industry.

Defense Industry includes plants producing war materiel under contract to DOD or DOE, including the prime contractors, sub-contractors, and dedicated suppliers. Management and oversight of Defense Industry is the responsibility of DOD in peacetime and wartime.

Civilian Industry includes plants producing goods and services for consumption by the civilian population and non-DOD governmental agencies. Civilian Industry operates in a free-market economy in peacetime. In mobilization, the oversight and coordination of Civilian Industry is the responsibility of the DOC.

Basic Industry includes plants which produce raw materials (extractive industries) and plants which convert raw materials into basic materials for other industry. Basic industry includes steel, aluminum, microchips, chemicals, and plastics. Basic Industry supplies raw and semi-finished materials to both Defense Industry and Civilian Industry. Oversight and planning for Basic Industry is the responsibility of DOC in peacetime and wartime.

Industrial Mobilization and Industrial Preparedness are concerned with Defense Industry and Basic Industry primarily, although the availability of Civilian Industry elements for conversion to Defense Industry is also important.



## VI. INTERNATIONAL ASPECTS OF INDUSTRIAL MOBILIZATION.

Each of these categories of industry exist in three different world regions: North America; accessible foreign nations; inaccessible foreign areas.

North America. The United States and Canada form an integrated industrial base which can be assumed to work as a unit for NATO wars. Supplies of end items, components, and raw materials from North America are certain unless interdicted by enemy action. Although Mexico is continuous to the United States in the South, the certainty of supply from Mexico is not as high as for Canada.

Accessible Foreign Nations. The United States can count on wartime trade with nations whose political stance and location make it difficult for the Soviets to hinder movement of goods. The number and location of accessible foreign nations depends on the situation. Europe cannot be counted on as a source of raw or finished materials during a NATO war. The determination of accessibility depends to an extent on US and NATO military actions. Naval forces are necessary, for example to assure that the Sea Lines of Communications with Japan are kept open. It is possible to place some level of confidence on being able to receive commodities, components, and end items from their accessible foreign nations.

Inaccessible Foreign Nations. It will not be possible to obtain goods from nations in the enemy coalition. It is not prudent to count on obtaining goods from nations who are likely to oppose the US or be uncooperative, or whose location permits easy interdiction of trade by the Soviet Union.



## VII. NATURE OF INDUSTRIAL MOBILIZATION

When mobilization occurs, it affects all three kinds of industry. The primary effect is on Defense Industry which must increase production of war materiel. Basic Industry must also increase production to provide more raw and semi-finished materials to support the mobilization of Defense Industry. Finally, Civilian Industry is involved because it will lose peacetime production capacity to Defense Industry and will need to achieve higher productivity to meet the demand for civilian goods and services.

Industrial mobilization includes three overlapping processes, each of which may occur simultaneously:

Industrial Surge is the rapid increase in production of war materiel achieved by increasing the output of existing Defense Industry contractors. This will be the first of the industrial mobilization processes to take place. Increased production is achieved in surge by increasing the number of shifts on existing production lines, bringing stand-by lines into use, speeding up the production lines, and eliminating dead time in peacetime production practices. The nominal multiplier for surge is a three-fold increase based on putting single-shift operations on a three shift basis. Surge can be preplanned on a scenario-independent basis, but doing this requires peacetime expenditure of funds. Surge does not impinge severely on the production of civilian goods and services. A shortage of trained workers is likely to be a major constraint on surge capability. Planning and execution of surge is a DOD responsibility. Surge planning will be limited to DOD contractors, which comprise Defense Industry. This includes contracts with whom a contingency contract has been made for rapid conversion to war materiel production during surge.

War Plant Conversion is the increase in production of war materiel achieved by converting existing production capability from civilian goods and services to war materiel. This industrial mobilization process generally will start after surge actions have been initiated. Initiation of the conversion process will be a major mobilization action, for it will decrease the production of civilian goods and services, at least temporarily. Planning and management of the conversion process is a DOD responsibility. Once the plants are converted, they become units in Defense Industry, which is an overall DOD responsibility. There are three general kinds of war plant conversion:

Pre-Engineered Conversions are arranged in advance in full detail so that the conversion can be implemented in a few hours or days at most. Technology is available to permit a factory to switch from one item to another rapidly. This is done in some cases for plants producing several different civilian items. The engineering techniques include standby machine tools ready to place on the production line, contingency instructions for automatic production machines, and dual purpose production lines with a built-in conversion capability. Pre-engineered conversion also means having backup stocks of raw materials or subcomponents of the war item to be produced. For major items, pre-engineering would have to extend to second and third tier producers as well as primary production facilities. Pre-engineered conversions provide rapid increases in production of war material in the shortest time, but they have the highest peacetime costs. When a pre-engineered conversion is formalized by a contingency contract with DOD, the company involved becomes part of Defense Industry.

Pre-planned conversions are planned in advance, but the actual engineering for the conversion does not take place until conversion is ordered. The planning implies not just analysis but careful match of production capability between the civilian and military items. Plants are

designated for conversion and arrangements made between plant management and DOD. Pre-planned conversions have small peacetime costs, but they take longer to accomplish than pre-engineered conversions.

Impromptu Conversions are decided upon after the need arises during the mobilization. Based on a demand, a plant producing civilian goods or services is converted to produce an item of war materiel. Since there has been no pre-planning, the conversion takes a significant time. The selection of a civilian plant for conversion is based on compatibility of the production processes for the civilian item with the military item. This kind of conversion has no peacetime costs, but it takes a long time to accomplish. Impromptu conversions may be less desirable than new plant in some cases.

New War Plant Construction is the third process in industrial mobilization. This process achieves increased production of war materiel by building new plants to produce it. A decision is made during a stage of the mobilization to build a new war plant. After the time required for construction and tooling, the plant produces the require item of war materiel. This process does not impinge directly on production of civilian goods and services, but it may reduce that production indirectly by diverting labor and resources to the new plant construction. It may also divert labor and resources from surge and plant conversion. New plant construction requires an early decision to commit the necessary resources, and the lead times until output is achieved may be long. New plant construction, therefore, should not be a spur of the moment idea but needs to be carefully considered and planned in advance. New plants should be built only if the other industrial mobilization processes are inadequate for an item and the initial investment will be repaid by the

eventual production. Planning for war plant construction is the responsibility of DOD, for these plants will be part of Defense Industry when they go into production.

Basic Industry. Surge also applies to the production of raw materials and semi-finished materials by Basic Industry. The same organizational principles apply, but DOC is responsible for planning and implementation of Basic Industry surge.

## VIII. THE DEPARTMENT OF DEFENSE ROLE IN INDUSTRIAL MOBILIZATION

The Department of Defense has an important role in industrial mobilization, but DOD is not the only agency having an important role in the process. The Department of Commerce also has an important role, and other cabinet departments and agencies also must contribute.

The role of DOD in industrial mobilization is fourfold:

1. Represent the claims of the Armed Forces for war material and manpower.
2. Oversee Defense Industry in peacetime and wartime.
3. Plan and program the initial surge subprocess of industrial mobilization.
4. Plan for appropriate Conversions and New Plant Construction in coordination with the Department of Commerce.

In addition, DOD is responsible for providing certain resource support to civil agencies. These civil support missions are important but limited in scope and resources. One civil support mission, for example, is the responsibility of the Army Corps of Engineers for national supply of water during mobilization and war. There are other examples, but they are outside the scope of this paper.

Representation of Demand. Since the whole point of a mobilization of the nature under discussion is to enable prosecution of a war, the demands of the Armed Forces for war material and manpower are the driving force behind the entire process. It is the responsibility of the Armed Forces and the Joint Chiefs of Staff to enunciate the numbers and types of weapons,

equipment, ammunition, missiles, and supplies needed for military operations. It is the responsibility of the Office of the Secretary of Defense (OSD) to aggregate and evaluate these military resource claims and to adjust them as appropriate in light of other competing claims and resource realities. It is then the responsibility of OSD to represent DOD in the inter-agency forums where competing claims are compared to availability of resources and allocation decisions are made.

Oversight of Defense Industry. Defense Industry consists of those companies who provide goods and services under contract to DOD. This task is complicated during peacetime by attitudes which tend to create an adversarial relationship between DOD and its contractors.

There has been considerable criticism of Defense Industry on the grounds of waste, fraud, and abuse. Whether or not these charges are true, they create a climate of suspicion and distrust which will be very destructive in a mobilization. One of the reasons for the success of the industrial mobilization for World War II was the close working relationship between the War and Navy Departments and their industrial producers. Businessmen were brought into the Government to manage the mobilization. Government officials, military leaders, and corporate executives worked together as a team to produce the needed war materiel. It is unlikely that this same sense of shared interests would be possible today in a climate of charges and countercharges. Yet, this close working relationship would have to be re-established early in the graduated mobilization process, or the necessary expansion of industrial production could be jeopardized.

The DOD role in the peacetime procurement process has been under study almost continuously for the past 20 years or more; those boards and commissions studying DOD procurement have been highly consistent in their findings and recommendations. Just as consistent

has been their lack of success in having these recommendations implemented by the Congress and Executive Branch. The major recommendations of these groups include the following:

1. Develop a comprehensive data base to identify the elements of Defense Industry. The data base should extend several tiers below the prime contractors and define the relationships of these elements with each other and with the civil sector. Offshore sources of components or materials must be identified.

2. Give each company in Defense Industry a wartime mission. Modify the contracting process and the subcontracting process to include explicit provisions for surge in every contract for production of war material.

3. Establish a close working relationship between DOD and Defense Industry to facilitate planning and preparation for mobilization. This particular action goes against the prevailing policy which is to keep the two groups at arms length to prevent corruption and financial chicanery. However, it should be possible for most honest people on both sides to work together without breaking the law or acting unethically.

4. Establish a procurement concept which will reward innovation and economical production of quality goods rather than high costs and risk aversion.

## **PLANNING AND PREPARING FOR SURGE**

It is the responsibility of DOD to plan and prepare for the industrial surge process of industrial mobilization. Surge, by definition, is limited to Defense Industry. As such, it is within the authority of DOD to perform this task. There are four parts to this task: planning; programming; engineering; and funding.

Surge Planning is the process of identifying critical needs and matching those needs to existing, expandible production capacity. This process requires the identification of all prime contractors, subcontractors, and suppliers in Defense Industry and knowledge of their respective contributions to the production of war materiel. It also requires an ability to understand the interactions of the various producers and suppliers with each other and with producers for civilian consumption. Surge planning involves compilation and maintenance of comprehensive data bases and appropriate utilization of production models which can compare demand and supply for items of war materiel.

Surge Programing is the process of identifying specific companies whose productive capacity will be surged during mobilization. This is a complicated process because it requires identifying subcontractors to the prime contractors and evaluating the interaction among all of the subcontractors and suppliers. Simply tasking prime contractors to perform this chore will suboptimize the process for the primes but may result in unforeseen conflicts at the second or third tiers of production. Programming implies having a firm, time-phased description of potential, feasible surge actions which meet an agreed demand.

Surge Engineering goes beyond programming by defining the specific measures that will be taken to increase production of a particular item rapidly during the surge. These measures may include definition and planning for additional shifts through designation of cadres and transfer of other employees (plus new hires as possible). They may include finding ways to speed up peacetime production lines now designed for economy rather than speed. They may include designing stand-by production lines which could be used to replace older lines. The application of

flexible manufacturing concepts, robotics, automated production, and a whole host of modern technology and concepts is made during surge engineering.

Surge Funding is necessary to pay for the surge actions which have been identified and engineered in the preceeding steps. Surge must be funded in peacetime in order to be effective in wartime. Planning alone will not suffice, for time will be of the essence. If DOD wants to have a plant which can triple production in 48 hours, DOD will have to pay for the extra machines, extra people, extra space, extra components, and extra stocks of raw materiels it will take to do that. If DOD wants a plant pre-engineered for almost instantaneous conversion, the contractor will have to be paid in some way for the extra work involved. Peacetime costs shoulbe be kept as low as possible consistent with a high degree of assurance that the desired results will be available in the event of mobilization. However, in mobilization, as in so many other things, there is no free lunch.

#### **PLANNING FOR CONVERSIONS AND NEW PLANT CONSTRUCTION**

DOD also has the responsibility to plan for converting plants to war production and for creating new plant capacity during the mobilization process. Both of these functions require close coordination with the Department of Commerce and other civil agencies, for these actions impact directly on the civil sector.



## **IX. THE ROLE OF THE CIVIL AGENCIES IN INDUSTRIAL MOBILIZATION**

The civil agencies have two major functions in industrial mobilization:

1. Support the needs of DOD for war materiel.
2. Assure an adequate supply of goods and services for the civil sector.

These two functions are at odds. The most important determination in a mobilization is the basic allocation of resources between military and civilian consumption. The allocation process has to be accomplished by the civil agencies both in general and in detail. It is against human nature to expect DOD to exercise self-restraint in asking for resources for the war effort. Therefore, some adjudication process has to be established to hear the inevitable arguments over resources and make resource allocation decisions.

The general organization of the Nation for mobilization is not the subject of this paper. There are a few specific points, however, that pertain to industrial preparedness policy which are appropriate to bring out at this time.

The Department of Commerce (DOC) has the leading role in industrial preparedness planning among the civil agencies. The DOC is responsible for coordination of basic industry and of that portion of industry which produces goods and services for consumption by the civil sector. Once a company enters into a contract to produce war materiel, it becomes an element of Defense Industry and falls under the cognisance of DOD. However, there will be numerous boundary problems and tension between Defense Industry, Basic Industry, and Civilian Industry. DOC must coordinate and adjudicate among all element of industry in conformance with direction from the

President. To do this, DOC must have a comprehensive data base and a plan for guiding the production areas of greatest advantage to the overall war effort.

Acting for the President or the President's designated agent, FEMA will have the role of hearing and negotiating agreement or adjudicating disputes over resource allocation issues. This will involve deciding how many and what kind of resources will be available for production of war materiel, expansion of basic industry, support of infrastructure systems, or production of goods and services for the civil sector.

The other Government agencies will have the responsibility for representing the demands of their constituencies for resources and for assuring that the resources produced by those constituencies are produced properly and allocated in accordance with Presidential policy.

The exact nature of the goals and problems to be encountered by the Federal Government depends to a great extent on the Industrial Preparedness Policy adopted prior to the mobilization.

## X. INDUSTRIAL PREPAREDNESS POLICY OPTIONS

A wide range of actions is available for the United States to take with respect to industrial preparedness. In this paper, five representative options are stated and evaluated. One of these five is the current situation; the other four are new options for consideration.

The options are comprised of seven basic variables, and different values of the variables are combined to create each option. It is possible to generate a large number of options using this approach, but only four have been selected for consideration. The seven variables are as follows:

Scope refers to the extent of the industrial base to be used for US mobilization. The possible values of this variable are the following:

US Only

North America

NATO

Free World

Non-Soviet World

Each of these values includes the previous value. That is, the Non-Soviet World includes the Free World, which includes NATO. The effect of scope is to permit planning within, or conversely restrict planning to, the area designated. A North American scope would mean that the US defense industrial base would consider only plants and materials available in Canada and the United States. The Free World value would rely on all productive capacity and raw materials available in nations allied with or friendly to the United States throughout the World.

Warning refers to the relationship between M-Day, the nominal start of mobilization, and D-Day, the start of the war. Recognizing that mobilization will be implemented gradually as indications of enemy activity are received, it is nevertheless appropriate to indicate the general assumption of the D-Day to M-Day relationship for which the Industrial Preparedness Plan will be targetted. The most conservative assumption is that D-Day is M-Day. The other assumptions are only valid if acted on properly in the event. The selected values of this variable are the following:

M-Day = D-Day

M-Day will occur 30 days before D-Day

M-Day will occur 90 days before D-Day

M-Day will occur 360 days before D-Day

Speed is a variable which describes the rate of buildup of a mobilization. Speed of mobilization is primarily a function of the Surge process and tends to be inversely proportional to peacetime cost. For an individual item, speed is the time it takes to produce the quantity needed to match demand. The values of the speed variable are as follows:

90 days to meet demand

180 days to meet demand

360 days or more to meet demand

Stocks is the variable which describes the amount of war materiel which would have to be on hand in stockpiles to assure that the fighting forces will have sufficient war materiel to fight effectively. This variable is related inversely to speed. Generally, the faster the buildup for a given demand, the smaller the stockpiles have to be. The values of this variable are as follows:

30 Days of supplies

60 days of supplies

90 days of supplies

120 days of supplies

360 days of supplies

Allies are still another consideration. The question is whether to plan to and actually provide war materiel for Allied military forces as well as US military forces. These supplies would be integrated into US production planning as necessary to augment the capability of the Allies to support themselves. For a NATO War, rapid initial advances or air attacks by the Soviets could deprive NATO of much of the European industrial base early in the war. In this event the US would have to supply the NATO armed forces if they were to continue fighting. The values for this variable are just two:

No support for Allies

Full support to augment Allies

Funding is an estimate of what the Nation would have to spend in peacetime on industrial preparedness. No exact numbers of dollars are assigned to this variable, but three general levels of assumed funding are specified as values of the variable:

Low: Funding for planning only

Medium: Funding for selected projects

High: Funding to meet objectives

Incentive is the variable which changes the method used to get private sector companies to take the actions necessary for industrial preparedness. The method of incentive is as important

as, or perhaps even more important than, the amount of money spent on industrial preparedness. Combinations of incentive methods will occur in all real options, but this variable shows the principal and favored method. The values of this variable are as follows:

Direct Funding

Tax Breaks

Indirect Subsidies

Good Will

Combinations of various values for the seven variables are used to describe the five policy options below. In order for a policy option to be valid, the sum of the stockage objective and the warning assumption must equal the time to attain production equal to consumption. That is,

$$\text{Stocks} + \text{Warning} = \text{Speed}$$

All of the policy options below have been designed to be valid in this respect. The current policy does not meet this basic test.

## XI. CURRENT INDUSTRIAL PREPAREDNESS POLICY

This policy is described as follows:

<u>Scope</u>	<u>Warning</u>	<u>Speed</u>	<u>Allies</u>	<u>Stocks</u>	<u>Funding</u>	<u>Incentive</u>
US	M = D	360days+	No	30 days	Low	Good Will

The Current Industrial Preparedness Policy is inconsistent. It effectively limits industrial preparedness planning to the US, except for some work with Canada. It makes the most conservative assumption about action on warning but fails to maintain the stocks necessary to back up that assumption. It makes no provision to support Allies. It takes 1 year or more to get production up to demand, but it fails to stock supplies to cover the gap. It provides a very low level of funding for industrial preparedness and, therefore, has to rely on the good will of the Defense Industry for any preparedness actions. In the meantime it does all it can to eliminate good will by treating defense contractors as adversaries or crooks. The current policy is unworkable and ineffective. Its sole virtue is that it does not cost much.

Fortress America. This policy option is described as follows:

<u>Scope</u>	<u>Warning</u>	<u>Speed</u>	<u>Allies</u>	<u>Stocks</u>	<u>Funding</u>	<u>Incentive</u>
US	M = D	180 days	No	180 days	High	Subsidies

Fortress America is the most conservative industrial preparedness policy option. The basic idea of Fortress America is to trust no one else with the security of the Nation. The US industrial base will be made ready to meet demand in 6 months. The domestic industrial capability to do this

is sequestered by subsidies, tariffs, and other protective measures. Reliance on imports of items, components, or materials is ended in favor of domestic self-sufficiency. Raw materials not available domestically are stockpiled. The conservative assumption of no action on warning is backed up by 6 months worth of stocks for US forces. No war materiel is to be provided to Allies. However, the industrial preparedness program is fully funded as an integral part of national security policy.

Long Warning. This policy option is described as follows:

	<u>Scope</u>	<u>Warning</u>	<u>Speed</u>	<u>Allies</u>	<u>Stocks</u>	<u>Funding</u>	<u>Incentive</u>
US		360 days	360 days	Limited	60 days	Medium	Tax Breaks

The Long Warning option assumes that time will be available to conduct an orderly buildup of domestic industrial capacity to meet demands for war materiel. Since so much time is available, there is no need to look outside the United States for items, components, or materials. Stocks of war materiel will be held to low levels to save money. In recognition of treaty commitments, some of the new production will be made available for limited support of Allies. There will be some funding for planning and for engineering some of the surge and pre-planned conversions. Funding will be backed up by tax concessions for companies who agree to take measures to convert to production of war materiel. This option is quite close to the policy carried out from 1939 to 1942 when the nation mobilized for World War II. The advantage of this option is that it depends on acting long before the war starts. The disadvantage of this option is also that it depends on acting long before the war starts.

Alliance Economy: This option is described as follows:

<u>Scope</u>	<u>Warning</u>	<u>Speed</u>	<u>Allies</u>	<u>Stocks</u>	<u>Funding</u>	<u>Incentive</u>
NATO	30 days	180 days	Full	120 days	High	Direct

The Alliance Economy is designed to maximize interdependence within NATO. The US, Canada, and the European members of NATO integrate their economies and defense industries to promote a unified approach. Standardization and interoperability become more than buzz words. The NATO surge is planned and pre-engineered, and direct government subsidies are used to provide incentives for defense industry companies. A realistic target of 180 days for the surge to meet demand is set, and stockpiles are set at 120 days based on an assumption of NATO action 60 days before the start of hostilities. The option is funded fully by means of direct payments to contractors with contingency contracts for pre-engineered surge measures.

International Economy: This option is described as follows:

<u>Scope</u>	<u>Warning</u>	<u>Speed</u>	<u>Allies</u>	<u>Stocks</u>	<u>Funding</u>	<u>Incentive</u>
World	90 days	180 days	Full	90 days	Medium	Direct

In the International Economy option, the United States accepts the condition of economic and industrial interdependency among non-Warsaw Pact nations. Plans are made for full utilization of the industrial capacity and raw materials of accessible nations. Plans are made for appropriate support for Allies in a coalition war. A moderate assumption of action on warning 90 days before hostilities start is complemented with a 90 day stockage objective, which is funded and carried out. The reasonable goal of 180 days to meet demand completes the process of providing enough war

material to support wartime operations. The funding is selective for critical items and is accomplished by direct payments to companies for actions to assist in surge and conversion.

It is apparent that a large number of industrial preparedness policy options can be generated by combining values of the variables. Most of these make sense from a logical viewpoint, although some may not make sense from a strategic or economic viewpoint. The four options discussed above are presented to illustrate the element of such a policy and to demonstrate the range of possible options.

## XII. EVALUATION OF POLICY OPTIONS

These five policy options are evaluated using four criteria to judge acceptability. The four criteria are effectiveness, peacetime cost, military implications, and strategic implications.

The Current Industrial Preparedness Policy is ineffective. It has low peacetime cost. The major military implication of this policy is that US and NATO forces would face a resupply gap of several months between about 60 days and a year. This resupply gap would force NATO forces to fight cautiously and economically, perhaps leading to loss of territory or defeat. Once the gap is closed, however, the NATO forces would have sufficient materiel to wage war successfully, *ceteris paribus*.

From a strategic viewpoint, this policy puts the United States in the position of facing an early decision on the use of nuclear weapons in Europe. It also means that in the event of either success or failure in Central Europe, the United States would be in a poor position to pursue military operations elsewhere in the World in order to achieve conflict termination on satisfactory terms.

The Fortress America Policy would be effective. It would also be very expensive in peacetime. Economically and militarily, the United States would be withdrawing from the international community and international security treaty obligations. The ability of NATO to fight would be hampered if the United States refused to support Allies with war materiel after their industry has been put out of action. Adoption of this option would mean a return to an isolationist approach to National Security.

The Long Warning Policy would be effective. It would be a low cost policy in peacetime.

The Long Warning Policy would be effective. It would be a low cost policy in peacetime. Militarily, this policy would make it difficult for the United States or NATO to take positive military action until the lengthy buildup is well along. It would also make the United States vulnerable to surprise or short-warning attacks by the Soviet Union.

The Coalition Policy would be effective. It would have a high peacetime cost. Militarily, this policy option would put NATO in a much stronger position to defend Europe conventionally and would raise the nuclear threshold. The policy would, however, constrain the ability of the United States to engage in non-NATO wars or even operate globally in a NATO war.

The International Policy would be effective. It would have a moderate peacetime cost. This policy would require the United States to provide sufficient military forces to assure the operation of lines of communication with offshore suppliers. It would require the United States to operate globally even in a NATO war. Strategically, this policy might require the systematic elimination of Soviet areas of influence outside of Europe early in a war. It would also require enlisting all or most of the nations outside of Europe in a war against the Soviet Union. This is the most complicated policy option.

All of the options offered for consideration were designed to be effective. The important considerations are cost and the military and strategic implications. It is possible to have an ineffective policy, as is our current policy, but there is no point in inventing new policy options designed not to work.

### XIII. OBSERVATIONS

The purpose of this paper is to shed light on the subject of industrial preparedness and suggest the possible elements of a national security policy for the 1990s. This paper does not propose such a policy. It does lay the foundation for formulation of such a policy by the National Security Council. Thus, it would be inappropriate to present conclusions or recommendations in this paper. Instead, it is sufficient to provide some observations on industrial preparedness policy.

1. Mobilization and industrial preparedness policy must be linked and integrated with other aspects of national security policy and the national military strategy. We can no longer afford to ignore the sustainability dimension of military combat.

2. The United States cannot reverse the flow of time and go back to a period of industrial superiority and self-sufficiency. We must deal with the world we have and not the world we would prefer to have.

3. The United States must come to grips with its responsibilities for providing war materiel for Allies. We cannot count the benefits of alliances without paying the price as well. The policy on Allied supply is an integral part of any industrial preparedness policy, for it increase demand and places a premium on standardization and interoperability.

4. Similarly, the United States must recognize the interdependency of international trade and industrial production. Instead of resisting offshore procurement, we should embrace it and make certain that it will work for us. Our advantage as a maritime nation with access to the Pacific and the Atlantic would be foresaken unless we forge firm trade links for both peace and war with the other nations facing those oceans.

5. Graduated Mobilization Response needs to be adopted by the Government and DOD and integrated into industrial preparedness policy. We must make it easy for our national leaders to take small steps which provide great benefit in increased industrial preparedness.

6. The DOD industrial surge program should be fully funded. The surge program should be independent of a specific scenario and constitute the pre-scripted initial stage of any future mobilization. In accordance with GMR, the surge program should be structured as a set of parallel event-chains across time. Each single event may be small and even reversible, but the cumulative effect of initiating consecutive events in an event-chain is powerful. This surge program should be pre-engineered and paid for in advance. Fully Funded Surge is an essential element of any sound industrial preparedness policy.

7. Industrial preparedness planning should be funded now on a priority basis. Although the peacetime cost of planning is low, this is the biggest current weakness in industrial preparedness. The economy of the United States is more robust than is generally realized and can increase production of war materiel significantly if it has to. The biggest problem at this time is simply lack of data, lack of understanding, and lack of a coherent conceptual framework for industrial preparedness planning. The money to do the planning has to be made available in order to harness the potential power of United States and offshore industry.

8. Organizational responsibilities and relationships for industrial preparedness have to be clarified, strengthened, and supported. There should be no opportunity to ask: "Who's in charge?" This needs to be accomplished before it will even be possible to establish a national industrial preparedness policy.

*Arsenal of Democracy in the Face of Change: Issues Underlying the Implementation of Industrial Mobilization Policy, Working Paper No. 3*

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9. Finally, it is necessary to pay attention to this problem now. The traditional American approach of neglecting to prepare and then improvising brilliantly when trouble comes is simply not good enough. We need to put the war machine into operational condition before we even can think about taking a trip.



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