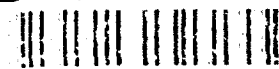


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**SUSTAINING THE
DEFENSE INDUSTRIAL BASE**

BY

LIEUTENANT COLONEL RICHARD O. BAILER
United States Army

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SUSTAINING THE DEFENSE INDUSTRIAL BASE AN INDIVIDUAL STUDY PROJECT

by

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Abstract

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Introduction

Overview.

One of the most striking outcomes of the post-Cold War world is the unchallenged superpower status of the United States. Across the entire horizontal plane of grand strategy, the United States is the unquestioned world leader economically, psychologically, politically and militarily.¹

U.S. National Military Strategy, over the last forty years, focused on the threat posed by the Soviet Union and its communist ideology.² The presence of the Soviet Union and the reality of the communist threat demanded that our nation needed large numbers of modernized weapons systems placed into production as quickly as possible. As the face of the national threat changed, the need for development, production and fielding of large numbers of weapons systems and munitions was reduced. Our military focus has shifted from emphasis on the defense of Europe against massive, technologically sophisticated and heavily armored forces to the need to respond to diverse contingencies of lesser magnitude, throughout the world. Military forces will be smaller, but they must maintain the technological edge demonstrated in Operation Desert Storm. Our nation must maintain a continued capability to deter strategic war and to respond to crisis; at the same time it must be able to reconstitute new forces in response to a renewed global threat. The increasing importance of coalition forces in today's world leads

naturally to increased emphasis on strategic and tactical mobility among allied forces and the interoperability of their tactics, equipment and logistics.³

In order to support contingency operations, we must be able to surge the production of needed items, using peacetime priorities, allocations, authorities, and existing facilities and equipment. At conflict termination, we must, as well, replenish war reserve stocks.

These goals can be accomplished only through the intelligent reshaping of the Cold War U.S. Defense Industrial Base. This is the strategic issue which will be analyzed in this paper.

Thesis Statement.

Will the post Cold War U.S. Defense Industrial Base support the Army in executing the U.S. National Military Strategy out to the 21st Century or is there a strategy-capabilities mismatch?

Concerns.

The single most significant concern facing those responsible for the careful reshaping of the U.S. Defense Industrial Base is the shrinking defense budget. During the Cold War the United States placed a high priority on being self-sufficient. In today's world marketplace the worldwide availability of high quality military technology, at competitively low prices, serves to undermine the once autonomous U.S. industrial base. Europe is moving quickly toward economic unification and the Pacific Rim nations are expanding economically. They will pose a serious challenge to the competitiveness of U.S. industries for global electronics and

armaments. Besides these two areas of the world becoming competitive, since 1988 foreign businesses have acquired more than 20 U.S. computer corporations, 45 U.S. semi-conductor companies, and 35 U.S. advanced materials businesses. ⁴

In order for the U.S. Defense Industrial Base to keep the best technology in the hands of our soldiers, U.S. defense planners need the freedom to operate in a world where the United States no longer enjoys superior military technology. This situation is highlighted by the following U.S. research and development investment trend:

Until 1988 the US.government accounted for 1/2 of the total R&D dollars going to defense related technology. Today that is all but gone, implying greater dependency on off shore technology. Although insisting on domestic sources for U.S. defense systems may not always be prudent, the United States must maintain access to needed materials and production means.⁵

Program management poses a related concern. A DoD policy objective since the early 1980's has been to integrate industrial base operations into the acquisition process. This allows program managers time to address the industrial base issues early in the acquisition cycle, thereby avoiding subsequent producibility, affordability and surge/mobilization problems. However, funds to cover only the immediate costs of force modernization are programmed for the near term, while the needs for readiness and sustainment are pushed into the out years where funding is doubtful.

Despite the clear statements of policy in DoD Directive 5000.1, it is almost impossible to find any acquisition program document that

addresses both the operational requirements and the industrial base.⁶ There is seldom time, manpower or funding at the program manager level to support policies that mandate industrial preparedness.⁷ The defense acquisition system has always focused on the deterrence value of fielding new weapons systems. The portion of the industrial base that supports war fighting with spares, repairs and replacements has had a low priority. There are very mature techniques and analytic tools available for evaluating cost, schedule, and performance which have been refined and supported over the last 20 years. However, the corresponding analytic tools and techniques for the industrial base have not been developed; hence, there is no data collection system in place or procedures available for industrial base evaluation.⁸

U. S. Defense Industrial Base Definition.

A comprehensive vision of the objectives desired from the U.S. Defense Industrial Base in relation to the National Security was approved by the Under Secretary of Defense for Acquisition. The following definition provides a point of reference for further discussion and for realistic planning:

The industrial base will integrate the capabilities of our depots, ammunition plants and arsenals with the capabilities of the defense contractor base and commercial sector. It will be capable of surge production, and in concert with war reserves, be able to sustain the critical war fighting needs of the Army

in contingency operations. Foreign military sales and direct sales will support the base and enhance interoperability.⁹

This paper will analyze the emerging post Cold War U.S. Defense Industrial Base policies under consideration for the Clinton administration, Department of Defense (DoD) and the U.S. Army. It will specify the appropriate objectives of the U.S. Defense Industrial Base strategy (ENDS), the courses of action whereby the Army may pursue these objectives (WAYS), and the methods available for achieving those objectives (MEANS).¹⁰

National Interests and U.S. Defense Industrial Base

Objectives (ENDS)

There is considerable rhetoric on what constitutes a viable and technologically superior U.S. Defense Industrial Base. Congress has the constitutional responsibility to raise and support our armed forces. It thereby directed the Office of Technology Assessment (OTA) to study the effects of the military threats and reduced defense budgets on the future U.S. Defense Industrial Base.

Congressional Tasks and Characteristics.

In its report, OTA identified four tasks for the defense industrial base:

1. Sustain U.S. forces at war.
2. Develop and produce high quality defense material.
3. Enhance deterrence by the perceived capability of the U. S. to mobilize its technology and industrial strength for rapid production of new military systems.
4. Support allies and friends.¹¹

At a time of down sizing and reduced budgets, this represents a significant challenge to the defense industrial base and those charged with managing it. OTA also provided several desirable characteristics for the future defense industrial base:

- Advanced research and development capability.
- Ready access to civilian technology.
- Continuous design and prototyping capability.

- Limited, efficient peacetime engineering and production capabilities in key defense sectors.
- Responsive production of ammunition, spares and consumables for theater conflict.
- Healthy, mobilizable civilian production capability.
- Robust maintenance and overhaul capability.
- Good, integrated management.¹²

These tasks and characteristics define a vision for the U.S. Defense Industrial Base, given the wide range of future force levels and missions which those forces might be asked to accomplish. Several strategies have been proposed to support this vision.

The Clinton Position.

In November 1992, then Governor Clinton articulated a strategy which focused on mobility programs, such as the C17 heavy strategic lift aircraft, fast sealift, the dual mode V-22 aircraft (capable of vertical takeoff and horizontal operation), and high payoff advanced smart weapons. He suggested shaping the industrial base to support key capabilities that are critical to future weapons development, giving special attention to critical components with no civilian counterpart. Emphasis was placed on the need for continued improvements in key technologies, like sensors, surveillance and guidance systems, materials and communications intelligence. Clinton wants the Pentagon to become a smarter buyer and industry to become a smarter seller. To accomplish this he advocates a reduced acquisition bureaucracy and an acquisition

system which supports funding critical dual-use defense technologies, joint procurement among services, and elimination of unnecessary military specifications. Key to his plan is government help to defense firms and workers as they diversify into commercial markets. Clinton firmly advocates supporting only the highest quality personnel in our laboratories, defense factories and armed forces. 13

Analysis/Reaction to the Clinton Position.

His parameters represent a break from the Bush administration's free market approach and hints at the requirement for investment into both the public and private sectors. Clinton's position to make progressive changes to the acquisition process and trim the work force of the low performing employees is on target and needs to be done. However, while this can be accomplished in the private sector and in the military, where the laws of supply and demand prevail, the federal employment laws continue to protect the less talented government workers who have seniority over more talented workers who are new to government service. Additionally, dual-use manufacturing technology, where production lines that make civilian products during peacetime and quickly change to defense items during war, will require significant federal funds to maintain this capability. The concept is too expensive for private industry to maintain this military capability while at the same time trying to remain competitive in the commercial sector. The hard fact here is, once defense manufacturing converts to the commercial

sector they will not be available to the U.S. Defense Industrial Base. Clinton says the right words but the reality is that his plan is not attainable without large expenditures of government funds and by making difficult changes to federal employment laws.

The Aspin Position.

Secretary of Defense Les Aspin, on the other hand, proposes five capabilities the U.S. Defense Industrial Base must provide to the armed forces that are both fiscally and realistically attainable: (1) They must deliver goods currently on contract. (2) Industry must maintain and upgrade existing weapons systems and equipment. (3) The production of the next generation of weapons systems - of high quality and at affordable prices - will come with interim production from certain sectors which have no commercial counterpart. (4) The U.S. must develop new high technology. Finally (5) the industrial base must provide the nucleus from which reconstitution of a more robust manufacturing base can grow.

Analysis/Reaction to the Aspin position.

By selectively upgrading existing systems, improvements to weaponry can be made without the expense of new system starts. Then, through selective low-rate production, vital defense-unique suppliers can be maintained for future systems. Technology can be kept fresh by rolling over the most promising technology into new development programs without going into full production.

The cornerstone of the Aspin strategy is "silver bullet" procurement, whereby revolutionary weapons such as the F-117

stealth fighter have the potential to alter the center of gravity on future battlefields.¹⁴ This approach has all the components for success during this period of down sizing and defense conversion. It will require government investment and a control system, but it has attainable goals and can go a long way in meeting the requirements established in the National Military Strategy.

The DoD Position.

To complement Secretary Aspin's defense capabilities, the DoD has formulated four principal objectives for the U.S. Defense Industrial Base, to be implemented over the next ten to twenty years. First, it must support the base force structure in peacetime by continuing to provide cost effective, producible systems or system upgrades which maintain the superiority of U.S. weapons systems. Second, it must be capable of supporting crisis and contingency operations with new and innovative manufacturing technologies which improve the efficiency of the production process. Third, the industrial base must be able to build up to higher levels of production capacity faster than any newly emerging global threat. This will be accomplished using an industrial base oversight process. Those individuals responsible for oversight will identify and monitor critical processes, products or capabilities and provide early warning of their potential loss. This oversight procedure will allow the government to protect those needed processes, products or capabilities in those situations where they may be lost and where there is not enough time to regain them to meet an emerging threat.

The final objective addresses the need to stimulate efficiency and cost effectiveness throughout the U.S. Defense Industrial Base.

Analysis/Reaction to the DoD Position.

The heart of the DoD strategy is to sustain only the programs and production capacity which support the unique manufacturing capabilities of the defense industry, which is to ensure trained and ready forces who are equipped with first-rate weapons. The DoD strategy and supporting policies emphasize the maintenance of the design, production and technological capabilities in special sectors critical to projected defense needs. This strategy relies on maintaining the free market system to shape the future of the U.S. Defense Industrial Base, except where critical processes or technologies have been identified or where there is on-going defense conversion.¹⁵ These objectives combined with the Aspin capabilities provide a logical and tailored set of goals.

The Army Position.

The Army's approach to restructuring the U.S. Defense Industrial Base is to integrate all the strategic proposals from higher authorities with innovative execution options developed within the Army; this in turn supports a cohesive plan that can be executed with a smaller budget. The Army plans to support the private and public sectors with policy which will eliminate unnecessary accounting procedures and cumbersome military specifications and standards. Key to the Army plan is the use of commercial, off-the-shelf / non-developmental item (NDI) acquisitions. NDI will require

the Army to use commercial and international specifications and standards. Private industry will be directed to integrate commercial and defense businesses, which the Army believes will stimulate overall competitiveness in the commercial sectors while reducing their dependence on U.S. defense dollars.¹⁶

Analysis/Reaction to the Army Position.

Here again, as in the Clinton plan, there is no profit incentive for private industry to participate in dual-use manufacturing.

The Army's overall goal is to successfully integrate the industrial base with all the capabilities of the commercial sector, private defense contractors, and governments assets. Army planners believe this goal ensures logistical sustainment and shapes the future industrial base to support U.S. National Military Strategy. The Army's proposal protects only those sectors of the defense industrial base that are critical, and maximizes the efficiency of cycle time from the production decision to delivery of equipment to our soldiers. A secondary goal of the Army is to work toward removing barriers which prevent private defense industry from making full use of commercial markets.¹⁷ These are commendable goals but have a slim chance of success in an environment of reduced budgets. Once a defense industry enters the commercial sector it will not return to the U.S. Defense Industrial Base for the reasons previously discussed in the Clinton position. The Army needs to look at the Aspin approach and integrate their objectives along the lines presented by DoD in order to attain a more realistic plan. The big losers for the

Army proposal are support for dual-use technologies and off the shelf commercial items which are not designed for the combat environments of a power projection force. These acquisitions are good in some areas, (i.e. wheeled vehicles and low impact electronics) but where ruggedized military systems are needed for battle field survival they pose a risk.

The Private Sector Position.

The private sector of the U.S. Defense Industrial Base believes they operate in a monopsony, wherein DoD is the sole domestic buyer and requester of their support. In order to remain solvent in the near term the private defense industry will continue to down size and consolidate. The recent merger of General Dynamics and GM-Hughes, in order to remain competitive with Raytheon for tactical missile revenues, is an excellent example of the future private defense industrial base. It doesn't matter what the government competition laws may require, private industry will continue to consolidate to the point where there may be only one prime contractor left to support each of the military sectors. The government will eventually be given the price for end items in a "take it or leave it" environment.

Speaking for private industry, The Association of the United States Army and the American Defense Preparedness Association have voiced two expectations from DoD and the Army. First, they expect a long range vision to provide industry with insights for the future which permit prudent, reasoned decisions on restructuring.

Second, they want DoD and Army leadership to insure the end state will support our national military strategy while keeping them financially solvent.¹⁸ These are fair expectations for Secretary Aspin, the administration, and the Army to be able to deliver to the private sector of the U.S. defense Industrial Base.

Secretary Aspin and the DoD have the best combination of objectives for use as the industrial base of the cold war transitions to the new U.S. Defense Industrial Base for the 21st Century, in my opinion. The Clinton approach is very idealistic and contains unattainable goals in the areas of private industry and government worker reforms. The Army needs to match the desired objectives with the realities of the policies being articulated by the current administration and the proposed defense budget for the remainder of this decade.

U.S. Defense Industrial Base Concepts (WAYS)

The purpose of this section is to describe the most common ideas being discussed, throughout government and private industry, to focus strategic leadership on resolution of the very difficult problems associated with defense conversion.

Concepts.

Four basic concepts are proposed which could deliver the new U.S. Defense Industrial Base. The first can be described as "Industrial Darwinism" and was the backbone of the Bush administration's plan. By using the free market, this concept will force the weaker and less efficient private portions of the U.S. Defense Industrial Base to convert to commercial product lines, to consolidate, or in some cases to go out of business. This concept represents the "survival of the fittest" in the world of big business. The second concept which is emerging within the new Clinton administration modifies the free market approach with selective investment into the public and private sectors of the U.S. Defense Industrial Base and protection for critical skills, technologies, and selected weapons systems.

The third approach is one that takes advantage of the global defense industrial base. Under implementation of this concept the U.S. would form industrial coalitions with allies and divide the manufacturing sectors along lines of expertise and capabilities. For example, The U.S. might produce aircraft, Germany tracked vehicles

and Japan electronics. This concept would be a hard sell, both in Congress and to the American public where jobs and an autonomous U.S. Defense Industrial Base have priority.

The use of defense trade to generate revenues whereby Foreign Military Sales (FMS) and commercial sales, of weapon systems to foreign governments, can be used to replace the lost currency from the reduced U.S. defense budget constitutes the fourth concept. Defense trade can be used in conjunction with any of the other concepts to bolster effectiveness. In a post-Cold War world, where international competition is intense, it is highly unlikely that defense trade will replace lost federal funding.

The same organizations that generated the objectives for the U.S. Defense Industrial Base also formulated the courses of action (COA) to be discussed in the following section.

Courses of Action

Realization of the objectives set forth in the previous section can be attained through implementation of one or a combination of the following suggested courses of action.

Sector Surveys/Analysis.

In the examination of the courses of action available for the implementation of the preceding concepts the first requirement is to identify the U.S. Defense Industrial Base strengths and weaknesses. This COA divides the industrial base into six major sectors (aircraft, ships, combat vehicles, missiles and space, munitions, and electronics) allowing DoD to monitor the industrial base. Then, if

necessary, DoD can provide early warning about critical processes, products or capabilities that are in danger of being lost. DoD can then take action if the situation is considered extraordinary.¹⁹

Before resolution on a strategy can be reached, a clear understanding of the capabilities and shortfalls of each sector throughout the defense industrial base must be analyzed. Such a sector analysis will allow the DoD and the Army to evaluate the industrial base against critical war fighting needs. These sector analyses will estimate needs for the anticipated crisis scenarios against provisions available through war reserve stocks, government and commercial production capabilities, foreign military and direct sales. This needs/supply potential analysis will be the basis for DoD' minimum investment levels in each sector. An application of the Army's plan is to use sector surveys in the areas it considers critical to land combat preparedness (i.e. ammunition, aviation, chemical-biological protection, communications equipment and electronics, small and large caliber weapons, and tracked and wheeled vehicles).²⁰

Additionally, information regarding the number of production sites necessary to meet the needs of surge and sustainment for crises response will also be calculated. From these sector analyses, the DoD and the Army can adjust their budget submissions and long range plans to assure each of the identified critical sectors has been adequately resourced by focusing future acquisition strategies on "best value" source selection rather than only competition for the least cost. Then, if spare parts production contracts are also directed

toward these identified critical sectors, confidence in the U.S. Defense Industrial base to respond to a crisis is further strengthened.

Even with this plan fully implemented, there still may not be enough DoD expenditure to maintain a viable production base for the critical sectors. This is a good start, but with no DoD office to evaluate this analysis and to direct resources toward the identified critical industrial shortfalls, lost capability is inevitable. This COA has great potential but there appears to be little congressional and DoD support. Now let's examine the ways to improve efficiency.

Revised Engineering Techniques/Concurrent Engineering.

This approach can best be described as a systematic way to simultaneously integrate the design of products and their related processes, including manufacturing and life-cycle support. Revised engineering techniques/concurrent engineering combines quality engineering methods in a computer integrated environment. Most weapon system programs are managed sequentially to support the very deliberate life cycle acquisition procedures described in DODD 5001.1. In contrast, concurrent engineering as directed in Military Standard-499, with supporting handbooks, will simultaneously manage the entire program from concept exploration, through production and deployment. Theoretically, utilization of concurrent engineering will result in improved operational effectiveness and suitability at a reduced cost. Teamwork, leadership and new management techniques are required to make this COA work and

thus reduce the risk of working system design and production at the same time.

Key to this COA is a time sensitive production system. A decision to enter system engineering development must be made simultaneously with a plan to develop the designs which combine proven technology with flexible manufacturing and tested production processes.²¹ An excellent example of this COA is the Army's Sense and Destroy Armor (SADARM) program. The decision to develop this smart munition and manufacturing plan were simultaneously approved and funded in 1987 and continued to flourish under the "Industrial Darwinism" concept of the Bush administration. At the same time this project illustrates the viability of all the concepts discussed earlier. The SADARM program has allowed the development and test hardware to be built on the same manufacturing line with the same skilled workers as will be used when full production begins, Thereby reducing the time it takes to enter production with improved product performance.²²

This example illustrates how concurrent engineering is being used today to support the concepts and, if fostered, will provide a real payoff for the new U.S. Defense Industrial Base. The fundamental premise to remember is that concurrent engineering is a paradigm, not a discipline. Next is another way the U.S. Defense Industrial Base a can become more effective and efficient.

Rationalization and Consolidation.

Rationalization of the defense industrial base, both public and private, presents perhaps the greatest challenge to leadership in government and industry. Here the plan is less straightforward. Job security has a tendency to overshadow the need for adjustment to the new defense demands of the 1990s. As new roles for the public and private sectors of the U.S. Defense Industrial Base are redefined and resourced, insuring that job security does not become more important than national security may be the most important of the new challenges facing senior leadership.

Industry is finding it impossible to compete with government facilities for scarce defense dollars. The laws which govern procurement and competition were developed for good Cold War reasons. If the government does not intend to turn our war fighting surge and reconstitution capability back to the arsenal system, which existed prior to WWII, then we must change the way we deal with the public and private sectors. Industry must be afforded the opportunity to compete on an equal footing with government institutions. To an extent both the Bush and Clinton administrations support the free market proposition.

Today the public sector is encumbered by different rules of profit and cost accounting.²³ Failure to address this issue through well thought out changes to the Federal Acquisition Regulations could undermine all previous planning procedures which have included the

private sector as a viable component of the U.S. Defense Industrial Base. The potential congressional and government opposition to work being directed away from U.S. arsenals and depots, for the near term, make this COA risky. Congress will be sensitive to protecting government jobs. The military will interpret the loss of the arsenal and depot manufacturing capability as a loss of the in house ability to respond to crisis and will make them dependant on the private sector. The private side of the U.S. Defense Industrial Base will continue to consolidate manufacturing among sectors. This consolidation will allow down sized corporations and companies to make a profit from reduced defense business. The down side of consolidation will be that the government will compete work in an environment where there may only be one corporation or company for each sector; again a "take it or leave it" situation. While the consolidation COA potentially impacts technology, a specific COA addresses technology. Critical to being responsive to the National Military Strategy, for quick and decisive victory with minimum casualties, is keeping the U.S. Defense Industrial Base current with the world's best technology.

Technology Transfer.

The ability to maintain the technological superiority of U.S. equipment in the hands of soldiers requires a COA which seeks out worldwide technological developments and allows for the exchange of technical data and personnel with foreign governments friendly to the United States. International forums afford DoD and the Army

developers the opportunity to exchange ideas and stay current with world technological breakthroughs. Every effort should be made to harmonize requirements and achieve interoperability with our allies - especially in cases where it is cost-effective and politically advantageous to pursue codevelopment opportunities. This will require streamlining the cumbersome processes involved in establishing international programs. Every valid Army requirement should receive a complete international review for a non-developmental item which could fill that requirement, along with the potential for codevelopment and coproduction programs.

This COA has good support in the military, however, congress and private industry look to the world as a one way street, from foreign industry into the U.S. Defense Industrial Base. This is why most efforts to establish joint ventures with foreign industry have failed. The most recent example of this defense industrial protectionism, occurring during the Bush administration and supported by the Clinton concept, is the Artillery Precision Guided Munition (APGM) where congress withdrew funding and left our NATO allies to go it alone. Each program office for major weapons systems in the Army does, however, have an international office tasked to seek out and incorporate the best world class technology with U.S. weapon systems. These international business experts will have increasingly significant roles as the new post Cold War U.S. Defense Industrial Base develops and as defense trade becomes a national security priority.

Defense Trade.

Direct sales, foreign military sales and coproduction offers a viable source of cash to the U.S. Defense Industrial Base during a time of reduced funding and down sizing. Defense trade must remain consistent with national policy as a means to support the national security infrastructure and foster standardization. This portion of the industrial base can develop markets through demonstrations and displays at industry trade shows of military hardware in foreign countries. Export policy and technology security and transfer issues need to be addressed early in the acquisition process if U.S. defense trade is to be competitive on a global scale. To often, waiting for an export license, we lose sales to our foreign competitors. Needed is a strong policy to aggressively pursue the best worldwide manufacturing technology and quality strategies, while minimizing dependency for critical items on sole-source foreign providers.

The Army plans to establish working groups, at the Army Materiel Command level, tasked to identify key opportunities for cooperation by country, technology and system in the three areas of coproduction, direct commercial sales and foreign military sales. This information will be provided to program managers tasked with overall industrial base policy implementation.²⁴ Defense trade will facilitate a responsive and flexible industrial base that makes full use of international cooperative opportunities to support critical sector capabilities.

Industrial Preparedness

There are two processes available to tie the preceding COAs together with the concepts in order to deliver a viable U.S. Defense Industrial Base. The first process is the Graduated Mobilization Response (GMR) which will allow for the systematic mobilization of U.S. industry to support regional conflicts (Desert Storm) of contingency operations (Somalia).

Graduated Mobilization Response (GMR).

The GMR program is based on a concept originally designated by the term Industrial Alert Condition (INDCON). While the system is similar to the Defense Condition (DEFCON), which specifies a system of actions taken automatically in response to a crisis, the INDCON and the emerging GMR process serve only to suggest actions and options that should be considered at each crisis stage. The original INDCON system is being incorporated into the GMR concept, with the scale for INDCONs/GMR levels being similar to the DEFCON scale (where DEFCON 1 is the highest state of alert). GMR levels range from GMR 6 - deliberate planning and investment - thru GMR 5 -3 - crisis management - to GMR 2 - full -mobilization, ending with the highest level GMR 1- total mobilization, which signals that the current level of mobilization is not sufficient to overcome the threat.

The GMR concept suggests a comprehensive peacetime preparedness program involving the entire U.S. Defense Industrial Base. It will identify problems and industrial options to respond to

future crisis scenarios and prepare possible methods for response and resolution. The fundamental premise of the GMR program is that effective planning and preparedness actions, coupled with timely decision making in the early stages of a crisis, will allow the defense industrial base to be both timely and operationally responsive.²⁵

Using this concept, DoD and other federal agencies will have a system for crisis action planning and preparation which will allow the U.S. and Canada to harness economic industrial potential to respond to a wide variety of regional crises. To support this concept in peacetime, planners will identify and catalog relevant industrial base capabilities, prepare specific response options, and create a series of graduated response measures to be implemented within the existing capabilities at the time of the crisis.

The GMR system is a great COA but has had little effect on ensuring a responsive U.S. Defense Industrial Base. Those individuals responsible for the industrial preparedness can ignore GMR with no legal or administrative repercussions. Therefore GMR will not have a significant impact on the development of the new post-Cold War U.S. Defense Industrial Base. On the other hand one of the most promising concepts being developed by the Joint Chiefs of Staff (JCS) is the Joint Industrial Mobilization Planning Process (JIMPP).

Joint Industrial Mobilization Planning Process (JIMPP).

Tied closely to the GMR program is the new JIMPP concept. Through it, the JCS can have their war fighting campaign needs

linked to the capabilities of the U.S. Defense Industrial Base. For the first time it provides industrial mobilization planning within the JCS deliberate planning process. JIMPP is an analytical tool which will allow JCS and DOD planners to prepare industrial mobilization plans related to operational plans for crisis action development and execution. It will provide the mobilization attainability analysis required by the Joint Strategic Planning System (JSPS), leading to a baseline of capability goals tied to the potential military demands identified in the JSPS. Questions from both the supply and demand sides of the industrial base can be analyzed in terms of the production capabilities of current suppliers, allowing for identification of bottlenecks and conflicting demands.

As a management tool, JIMPP will consolidate information on production facilities for defense equipment, document data sources and points of contact, provide options for reallocating production or expanding production; include service planning factors; and incorporate supply side production base analysis data. Campaign planning data will be included, citing equipment needed to support the force and time-phasing the shortfalls that are identified in the logistical planning data.²⁶

Both GMR and JIMPP are good processes and should be actively pursued as the new post-Cold War U.S. Defense Industrial Base develops. For the near term the GMR program will have no affect on the readiness or responsiveness of the U.S. Defense Industrial Base for the reasons previously discussed. However, because of the need

to balance campaign apportionments against the capability of the U.S. Defense Industrial Base to support those apportioned forces in combat the JIMPP will weigh-in heavily at the JCS level.

U. S. Defense Industrial Base Resources (MEANS)

This section will discuss the limited assets available to our nation as we seek to reach consensus on what constitutes a viable post Cold War U.S. Defense Industrial Base.

The U.S. Defense Budget.

By 1997 the defense budget will be only 3.4% of the GNP, which represents the lowest level since before WWII.²⁷ The danger this reduction presents is, in order to protect many critical technologies and skills, the U.S. Defense Industrial Base will be forced to compete with foreign industry in the exploitation of defense trade for hard currency. This is occurring at a time when many of our international competitors can offer military combat systems at extremely attractive prices. Russia for example is selling new T72 main battle tanks for \$52,000 per tank.²⁸

Under current plans, between Fiscal Year 1993 and Fiscal Year 1997, \$190B will be spent on research and development and \$300B is projected for production programs.²⁹ Because the DoD looks at total budget dollars it is their position that the continuation of current competitive acquisition practices will cause neither the technology base nor the major defense prime contractor and subcontractor production base to reach dangerously low levels. This is a very dangerous position and could lead to a serious shortfall in the capability to execute our National Military Strategy. The only alternate sources of defense funds come from the Congress and

defense trade. Even if adequate funds are available, those funds, without leadership, will have minimal impact.

Leadership.

At this time the courses of action remain, for the most part, untested. However, we have new leadership at the national level, a leadership avowedly committed to change. This new leadership appears willing to take a fresh look at the unique needs of the U.S. Defense Industrial Base. Of all the issues facing the defense industry, the cry for strong leadership has been the unifying complaint of both our public and private sectors.³⁰ Assuming we have strong patriotic leadership, the following represent additional sources of currency in need of immediate new implementation policy.

Congressional Arms Initiatives.

Starting in Fiscal Year 93, Congress intends to provide yearly funding increments to the U.S. Defense Industrial Base under Title 42 of the authorization bill called "Defense Technology and Industrial Base, Reinvestment and Conversion," a Bush administration initiative. The intent of this bill is to make up part of the revenues lost by down sizing, especially in the sectors losing critical manufacturing techniques, facilities and skilled workers. This appears at first glance to be pure "pork". However, during Fiscal Year 93 \$200M is being pumped into the critical ammunition sector which is in danger of dissolution. A strategy focused on the 21st century with flexible manufacturing techniques, was all Congress needed to stovepipe money into the Army's ammunition sector. The ammunition sector

will manufacture different defense products on new ammunition lines designed for flexible manufacturing. Then, during times when ammunition production is slow, other selected defense products can be manufactured maintaining the skills and processes needed to keep the ammunition base in a warm status. This means contrasts the Clinton and Army policy objectives of dual-use technologies in that, in this case, the flexible manufacturing will not attempt to manufacture commercial products during defense production down time. Ammunition is currently the only sector receiving conversion funds representing the first step in the right direction to deliver a smaller more efficient post-Cold War U.S. Defense Industrial Base. In fact, even such components of the ammunition base as composites and electronics are not being addressed under this initiative.

Recently, in support of defense conversion, President Clinton directed the Pentagon to spend an additional \$550 million, from this Bush administration initiative, that was appropriated but never spent in FY93. The initiative represents a potential source of additional funds which could be targeted at other key critical sectors or portions of sectors that are identified as being at risk of disappearing from neglect or are victims of program terminations.³¹

Defense Trade.

The changing international security environment and declining defense budgets have substantially altered the way we conduct the business of Army research, development and acquisition. While research, development, test and evaluation funding has remained

fairly level, the procurement budget fell from \$14 billion to less than \$7 billion over the last two years.³² One way to make up this loss in cash flow is through defense trade. Defense trade includes both foreign military sales and direct sales tied to coproduction, where appropriate. Defense trade has the potential to assume an important role in coming years as U.S. defense procurement budgets decline and coalition warfare becomes more prevalent.

Sales of U.S. weapons to our allies and other friendly nations provides a powerful mechanism for the preservation of critical sectors in the U.S. Defense Industrial Base. Last summer, in response to the private sector of the defense industry, President Bush lifted the requirement to recoup money expended by the government in the development of weapons systems and battlefield support equipment for direct commercial sales. This de-regulation has put new life into commercial sales to foreign governments. Presently, there is no system to track how much money the commercial sector is making, however; strong sales, in terms of weapon systems, are being reported to the Department of State. Additionally, this executive order provides an advantage to private industry when competing with the U.S. government's FMS cases, where the government must still recoup development costs. FMS, orders so far in Fiscal Year 93, amount to \$4.1 billion. This money, if managed properly, will go a long way toward replacing the funds lost from decreasing defense budgets.³³

Reflection upon the analysis of the above mentioned means suggests imaginative, developing, experimental programs which could empower us to maintain credible U.S. and allied forces, ready for regional conflicts, supported by the best quality of technologically superior weapons and equipment. There appears to be enough money if a base force is built around new roles and missions in support of our national security objectives for the 21st Century and not along traditional partisan lines. The reality check here is not good. The services and branches within those services have never down sized by voluntarily giving up roles and missions. What we need immediately is a new U.S. National Security Strategy and National Military Strategy combined with strong JCS guidance. Then by using the available resources in the most efficient manner, the JCS could provide significant assistance in matching that strategy to the capabilities of the U.S. Defense Industrial Base.

Conclusion

This essay has broadly set forth the ends, ways and means whereby the Army can support our emerging strategy for the post-Cold War U.S. Defense Industrial Base of the future.

One reality of the drawdown is that the immediate loss of skilled workers and plant closures will cause considerable short-term dislocation and lost defense manufacturing capability. This drawdown is occurring at a time of significant defense transition. The new administration is faced with difficult domestic issues and, the American people who are demanding a visible peace dividend. Congress and the administration will continue to cut the defense budget in order to deliver this expectation.

The major issue facing those who worry about national security is the continuing lack of government leadership and a clear policy statement to guide both the public and private sectors of the U.S. Defense Industrial Base. The capabilities addressed in the National Military Strategy cannot be supported by the emerging U.S. Defense Industrial Base and it is not clear that this emerging base is structured for the effectiveness and efficiency requirements of the 21st Century. This will remain a serious issue until a new National Security Strategy is published by the Clinton administration which addresses the growing mismatch between the strategy and capabilities discussed in this paper.

Analysis of all available policy objectives and potential COAs demonstrated no clear win-win options in this complex process of matching capability to strategy. The Cold War U.S. Defense Industrial Base can no longer be sustained with the proposed defense budget. Even when supplemented with defense trade and critical sector funding there exists a resource shortfall. The question is how to reverse the lose-lose direction of a decaying Cold War U.S. Defense Industrial Base which is trying to support a complex National Military Strategy, itself not clearly defined.

A win-lose option could be the product of a new National Military Strategy tailored to the new world order as seen by the Clinton administration. To do this the U.S. Defense Industrial Base must be clearly defined and supported in the Clinton U.S. National Security Strategy. Because the nature of the threat from regional conflicts requires a smaller base force, the new U.S. Defense Industrial Base can likewise be smaller. However, a smaller Cold War U.S. Defense Industrial Base without fundamental changes will not sustain even a smaller base force. These fundamental changes are currently in the "too hard" category with Congress and the military both protecting their parochial paradigms, leaving the U.S. Defense Industrial Base to down size, convert, and consolidate with little or no government involvement. Additionally, the administration's policies appear to be headed toward the continued funding of domestic programs and defense conversion ahead of military programs. The resultant future looks

bleak for a U.S. Defense Industrial Base which will be capable of supporting the National Military Strategy.

Solutions are available, but as I see it, action is and will remain slow. Maintaining an effective U.S. Defense Industrial Base will require effective, high-level leadership to reach a common understanding of military needs and industrial capabilities, to instill industrial preparedness planning in the acquisition process so that potential bottlenecks are continually identified and to provide a means of maintaining threatened critical capabilities until remedies are designed and implemented.

The bottom line being, in today's U.S. defense environment, even the best conceived strategy for the new post-Cold War U.S. Defense Industrial Base will fail. The mismatch between capabilities and National Military Strategy will worsen into the 21st Century unless our vital or survival interests are threatened in a way in which Congress and the American people can understand and support with increased funding.

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