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PROSPECTS FOR AMERICA'S DEFENSE TECHNOLOGY AND INDUSTRIAL BASE

by

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(AUSA has sponsored a series of seminars which address the defense industrial base. The focus of the seminars has been defense sectors [land systems, aviation, missiles, munitions, and high technology and communications] of importance to future Army requirements as well as to the requirements of the other services. The seminars concluded that the ability to meet future military crises will in part be dependent on the continued viability of each sector. This essay presents an independent viewpoint on the subject.)

The "Report to the Congress on the Defense Industrial Base," prepared by the Department of Defense and dated November 1991, concludes that uncontrolled downsizing of the defense technology and industrial base (DTIB) will not hamper DoD in meeting future defense threats. Initiatives such as "dual-use technologies," "promotion of civil-military integration" and "adoption of procedures more consistent with commercial practice," coupled with a free market economy, are offered as sufficient to keep an adequate American DTIB as defense budgets decline. It is the view of this writer that such is not the case. This is illustrated in part through examination of the energetic consumables industry.

Nature of Energetic Consumables

Military combat operations involve destruction of enemy forces by warheads, munitions, bullets and bombs. These critical products are all energetic consumables, the segment of our DTIB most dependent on defense funding, but not addressed in the DoD report.

Modern weapons are often rocket powered, or guided with precision servos powered by propellant. To maintain a superior force, consumables technology must continually move forward. This technology is independent of commercial market potential but is dependent on commercial technology for raw materials and vulnerable to mounting pressure to comply with tightening environmental restrictions.

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Role of Technology

Tactics and technology work together to drive an army's effectiveness. Tactics can position forces to surprise and destroy the enemy. Technology impacts all areas of military hardware and tactics, multiplying effectiveness of forces. Technology assists in intelligence gathering, which leads to tactics providing location and time advantages, giving the element of surprise.

Dramatic miniaturization in sensors and electronics allows the collection of direct intelligence from satellites and placement of terminal homing sensors on guided smart munitions. Using the intelligence available in modern microprocessors, munitions can be delivered with great precision, improving killing power.

The Gulf War saw the effects of technology-driven tactics. It also provided clear evidence of the high military losses when forces are unable to counter technology.

Rate of Technology Change

Technology is a perishable commodity. The rate at which technology is developed has increased dramatically over the past century. Previously, new items stayed new for many years. Today we see computerized design aids bringing products into being at a rate faster than ever before imaginable. Much technology introduced today is dominant for only 30 months before the next generation of technology enters the market.

This rapid rate of technological change makes it imperative that we maintain sufficient focus on technology in military areas. Some defense technology is driven by commercial markets. Electronics, aircraft and a few other industrial segments where there is a large, active commercial market see defense and commercial technology running a parallel path. Within fully defense-dependent areas such as energetic consumables, there is no commensurate commercial path.

Technology development in defense-specific segments of America's DTIB must remain at a rate sufficient to maintain the nation's ability to field an effective defense as needed. DTIB technology is funded through direct development contracts and independent research and development (IR&D) charged against production programs. Furthermore, IR&D will decline in proportion to production contract funding reductions.

The DoD report to Congress alluded to the possibility of dual-use technology (useful in both commercial and military worlds). This is not possible in the area of defense energetic consumables. While there are common technologies that do work in both military and commercial aviation applications, there are not commensurate commercial markets for most defense consumables. This differential is significant and demands serious attention from appropriate levels of government; failure to take timely action will result in serious national security deficiencies.

Procurement Law

Current procurement policy provides no bureaucratic incentives to make exceptions to the Competition in Contracting Act (CICA). Currently, government procurement centers are competing production orders for items developed by a given firm to other companies with little or no

development capability. In some cases, awards go to government-owned, contractor-operated plants (GOCOs) that maintain no development staffs at all. The lack of technical staffs means that there is no technology component associated with dollars placed into GOCOs or private firms lacking technical capability.

Firms with no technology capability will always have lower overheads than those with full technical staffs. Failure to change policy, laws and regulations now to encourage preservation of firms with technology development capability will lead to precipitous erosion of the technology component of our DTIB. This is particularly so for battlefield consumables dealing with energetic materials such as propellants and explosives.

One hundred years ago the rate of technology change was low. After World War I an arsenal system was established to surge existing consumable designs. We were able to rely on facilities in layaway to produce what were at that time stable designs. However, modern rates of technological change make it unwise to rely on this approach. Instead, we must sustain the key technical capabilities available in the commercial marketplace.

Energetic consumables is one of the most critical areas of our DTIB. The consumable and the delivery platform play together as a system. Delivering outdated ordnance with modern weapon platforms can result in loss of the technology advantages in the platform.

Commercial Roadblocks

The precept that the DTIB will be able to support future defense needs, based in part on the potential for diversification into commercial areas and foreign sales, is not realistic.

"Nonmilitary sales" implies that defense firms have products and distribution networks in place and can shift assets immediately into previously nonexistent, unserved markets. Development of products and distribution channels takes time. Realities of the current economic situation make commercial diversification untenable.

DoD regulations, and court decisions supporting them, provide the government unlimited access to the financial records of defense firms. To facilitate the access process most firms have to maintain the government-related documentation separately, not an insignificant additional overhead expense. The multitude of DoD regulations beyond those needed for U.S. tax purposes creates burdensome administrative costs. These costs mean commercial inefficiency and reduced competitiveness.

U.S. firms face serious competition in the smaller foreign market. In many cases, national ownership of foreign defense companies and participation in their defense industries put U.S. firms in direct competition with the national leadership of competing countries. No equivalent U.S. policy supports American firms.

U.S. government approvals are required for all international sales of defense products and technology, to include offset arrangements (e.g., use of foreign components). In this regard, the DoD report states, "Although the U.S. Government is not a party to these arrangements, it retains the right to view offsets as a part of its review and approval of proposed international defense cooperative programs."

The U.S. government is a party to all offshore sales of American defense products. Regulations limit the payment of fees considered normal to firms from competing countries. U.S. approval is required for each and every sale from an international partner or sovereign foreign government. In the international sale or use of a system containing U.S. content, the U.S. government is a full party; as a consequence, U.S. firms are often not desired partners for commercial international consortia.

Technological Investment Drivers

Technology creation is driven by payback potential for investment, need, and dedication of adequate intellectual assets. Central to technology advancement in consumables are assets in propulsion and energetic materials within private industry. There are a limited number of firms who supply these items. In some cases the items can also be manufactured in government facilities (GOCOs).

The difference between GOCOs and commercial facilities is significant. Those commercial producers who maintain technical staffs must have production. Failing to have sustaining production placed into firms capable of technology development puts an important defense capability in jeopardy. American managers of private firms cannot afford to invest in technical staff maintenance when the products their companies develop are produced in GOCO facilities.

Policy Needs

Many foreign firms have been able to seek and capture permanent market shares due in part to the enabling long-term policies of their respective national governments. This is not true in the United States. America has no active long-term national policy for promotion and protection of its industry. Our national industrial/commercial engine was founded in the era of the industrial revolution. We operate as if the markets of the country and the world are in continuous expansion and the ability of American industry to create profits, capital and jobs to fuel the cycle is limitless.

Japanese rebirth under U.S. supervision following World War II led to the greatest commercial creation in world history. Their new foundation, laid 50 years after America's, provided high leverage to replace American industrial leadership. In addition, former communist economies may begin to open. Failure to create a national industrial policy fully cognizant of the proactive efforts of not only the Japanese but the many other governments now exercising their economic potential can weaken the economic future of the United States.

10 U.S. Code 2509 cited considerations for analysis of the industrial base. Mergers, acquisitions and takeovers within the defense and technology industrial base (DTIB) ran at a high rate during the past five years. Debt was increased within defense, as within many other parts of the economy. Many firms are faced with debt from buying defense businesses now confronted with dramatic market declines. Because of the declining DoD budget, these firms have difficulty selling their defense subsidiaries or finding ownership partners. In many cases, commercial segments of firms holding defense businesses are also in decline. The combined effect of declines in both sectors forces managers to chose where they will keep technical staffs.

Prospects for the Future

Failing to protect the defense sectors with managed awards to those firms capable of developing technology will force top managers holding portfolios of businesses to preserve those with commercial potential. This is because they must choose to continue investments in staff and product development where they expect returns for their stockholders.

Erosion of American heavy industry and manufacturing, from steel to automotive, has taken over 20 years. The erosion took place in a gradually changing commercial infrastructure. Our ability to reconstitute these national wealth-producing assets has proven implausible.

Defense budget declines drop away at a sharp rate. Lacking a more assertive policy for defense industry preservation, our reconstitution of an adequate base for defense consumables in the face of serious security threats will prove equally implausible.

We must formulate new national industrial strategies capable of reenergizing American ability to create wealth in the changing world market for our population as a whole.

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