America's lost capacity for defense production

by Dr. John Schoonover

The United States economy, and specifically the defense industry sector, are in no shape to carry out the kind of military build-up which President Carter's policies now demand. According to a survey of the aerospace and related industries published in the Feb. 3, 1979 issue of *Business Week*, industry sources have grave doubts that, barring the declaration of a national emergency, the nation has the industrial capacity to produce enough hardware to correspond to the $100 billion increase in the defense budget that Carter is seeking.

While *Business Week* points to important bottlenecks in supplying key components such as large forgings and castings, bearings, and other parts, the problem goes much deeper. The decline in civilian and military R and D, the on-again-off-again situation in defense procurement (orders to industry), and the deterioration in *all* U.S. basic industry have created a situation in which a thorough revamping of the economy on a technology-intensive basis would be required to make a significant increase in military production possible.

At the present time, the plant and equipment of the defense industry is *more antiquated* than that of civilian aerospace or of U.S. industry at large. Deputy Secretary of Defense Jacques S. Gansler described the situation in a 1977 *Harvard Business Review* article as one in which defense contractors reinvest about 70 percent less in capital equipment than do commercial firms. Over 60 percent of the metal-cutting machinery used in defense production is more than 20 years old, and 90 percent of it is more than ten years old. By comparison, only 28 percent of the total U.S. inventory of this type of machinery is more than 20 years old.

Yet the overall inventory of U.S. machine tools is older than that of any industrialized nation, and is outnumbered by Soviet machine-tool stocks by about two to one.

The reason for the worse condition of defense aerospace compared to civilian is that defense contracting has been much less profitable, particularly as government orders declined following the Vietnam war. The large aerospace firms shifted into commercial aircraft production, whereas many small subcontracting firms simply went out of business. Boeing began stepped-up production of its new 757 and 767 commercial jet airliners two years ago, tying up the remaining subcontractors, labor and materials. Industry production rates tripled rapidly, and in 1980 commercial aerospace sales are expected to reach $20.2 billion, topping defense sales for the first time.

Jumbo-jet production has done nothing to increase the overall capacity of the industry, however, as the problem of subcontracting reveals. Aerospace is a highly interlocked industry; large contracts are frequently subcontracted to the tune of 50 percent of the whole project. Boeing, for example, produces only one portion of the 747 fuselage; LTV's subsidiary Vaught Aerospace produces the tail and aft body, while Northrop turns out the main fuselage section and various other components. Engines and electronics are generally put in by other companies with appropriate specialized facilities, such as General Electric and United Technologies for engines; Northrop and others for guidnace and control systems.

As for new development efforts, historically a major role has been played by a multitude of small companies, specializing in the development of some new technology which can then be adopted by the larger firms for mass production. These smaller firms have in the past assumed a disproportionate share of the risk in RDT&E efforts, especially during high-inflation periods when they have had less financial flexibility and sheer clout to modify original contracts. They also have operated on a much slimmer profit margin. In 1968, some 6,000 aerospace sucontractors were in business; through shifts to other work and bankruptcies, only 3,700 remained as of early 1978. The research and development capabilities which they repesented no longer exist.

This points up the fool-hardiness of the "growing belief in the Pentagon and in industry that the U.S. must pull back from high technology" which *Business Week* reports. The magazine quotes Philip C. Norwine of Textron urging a shift toward "the Russian philosophy of adequate quality in sufficient quantity." In fact, as accompanying articles in this Special Report demonstrate, the Russians have abandoned that "philosophy"—which never existed except out of dire necessity—and are now ahead of the United States in many areas of military research and development.

The decline in the technological base of the U.S. industry is also gravely reflected in the current skilled manpower crunch. The technicians and engineers laid off during the early 1970s are not easily reclaimable; and a recent survey by the National Machine Tool Builders' Association reports that 70 percent of its members are seriously short of technicians. "We're facing one of the greatest skill shortages in the history of this country," the association's president James A. Gray told *Business Week*.

Reflecting the shortages of skilled labor, the glut of more profitable commercial business and the deterioration of production equipment, long delivery times are now the rule for large machined parts such as those used in airplane construction. Large aircraft forgings have to be ordered up to 28 months before they will be needed, and the companies that produce them say they cannot handle any more orders, whether for military or any other purposes.

Stocks of critical metals like titanium, cobalt and chromium needed to make specialty steels for aircraft are in short supply. U.S. sources of cobalt are underdeveloped, leaving us dependent on Zaire, which stopped exports in 1978. South Africa, the largest supplier of chromium, would also be subject to cut-off under wartime conditions. Furthermore, U.S. strategic stockpiles of many essential metals are significantly short of goals and the quality of the materials is poor.

But even more significant than the case of such specialty metals is the fact that production of basic industrial materials and fuels that would be essential for any war effort is stagnating. Although U.S. energy consumption has continued to rise, the domestic production of energy has decreased from a high point of 62.5 Quads in 1970 to about 60 Quads during the last several years. During the same time, Soviet domestic energy production has increased from about 40 percent of the U.S. figure in the early 1960s to equality within the last year. The significance of this trend is emphasized by the figures for production of raw steel. While U.S. production peaked in the early 1970s, and has plummeted since, Soviet production has continuously increased, far surpassing the U.S. output and ranking first in world production.

Military R & D:

by Dr. Steven Bardwell

Because of declining expenditures on research and development, the U.S. military has armed itself with too few of the wrong weapons for a type of war which will never be fought and faces an adversary who has, over the past two years especially, accumulated an armory of superior weapons in overwhelming number for the kind of war which they can assure will be fought.

The true picture of the effects of almost two decades of incompetent war fighting doctrine in the civilian leadership of the U.S. military is only now clear: The much vaunted qualitative superiority of U.S. weapons has disappeared—the U.S. military is inferior in quantity *and quality* of almost every weapons system. In a word, the U.S. would lose a war with the Soviet Union.

The most immediate cause for this erosion of the U.S. military posture is research and development. During the 1965-75 period, the overall research budget decreased by over 50 percent in constant dollars. The private industry component of military R and D decreased by even more. This situation was so glaringly serious in 1976 that Secretary of Defense Harold Brown called for a 10 percent annual growth in military-related R and D as the minimum prerequisite for remedying the gap between U.S. and Soviet military progress. However, due to the combined effects of inflation, realignment of budget line items, and Congressional cuts, the research budget has barely grown 1 percent per year between 1975 and 1979. In the fiscal 1980 budget, the Secretary of Defense reaffirmed his evaluation that at least a 10 percent growth in research was necessary and requested that amount in the FY1980 budget; the same combination of congressional cuts, inflation and short-term considerations has already ensured that the final expenditures will be much less than a 10 percent increase over 1979—probably much closer to the 1 percent increase of the last five years. In other words, the situation has not changed over the period since 1965. Military R and D is still treated with contempt.