

Brown to Congress: Arms Investment Should Focus U.S. on R&D

The following remarks are excerpted from General George Brown's United States Military Posture Statement, a 12 page memorandum addressed to Congress, delivered last week.

While Soviet-United States relations may be characterized by a general relaxation of tension, the Soviets must be expected to continue to probe for targets of opportunity. The Soviets will seek to exploit crises when such action serves their interests, while avoiding direct military confrontation. As the Soviets pursue their military efforts to enhance their position in the overall balance of military power, we should expect hard bargaining in negotiations, an expansion of bilateral cooperation, and strenuous efforts by the Soviets to acquire advanced technology, some of which has significant military application.

Continued improvements in Soviet forces imply that warfighting and war-winning capabilities are fundamental Soviet military goals. This does not mean that the Soviets will be prone to undertake actions entailing a significant risk of war; however, should a conflict develop, it appears they intend to have the means, both conventional and nuclear, to ensure an outcome favorable to them.

It is evident that the Soviet leadership sees no inconsistency between calling for a relaxation of international tensions and simultaneously increasing its military capabilities. In fact, Moscow appears to view its increased military capabilities as the foundation of such a policy.

The present Soviet military capability reflects the achievement of a research and development (R and D) base that has grown steadily since the late fifties. Top priority continues to be accorded military R and D, which receives regular and large infusions of capital investment allocations, the latest and best domestic and foreign equipment, the most highly qualified science and engineering graduates, and the management-guidance efforts of the country's elite.

R and D resources provide the framework for continued development of Soviet weapon systems. Many of the developments noted in the sixties through the present time were based on resource investments made during the fifties and early sixties. The continued growth trends in Soviet R and D investments during the past decade indicate the high priority of future system developments. In addition, increasing scientific and technical capabilities reflect the Soviet Union's growing potential to achieve technological breakthroughs that could alter the military balance.

Perhaps the most important aspect of the Soviet technological base, or that of any country for that matter, is its pool of scientific and technical manpower. The Soviet

Union has long recognized the importance of this resource to its industrial and military strength. Through the years they have made a large and sustained investment in this sector of the scientific and technological (S and T) base, and have established an extensive educational system to support their S and T manpower requirements.

The top scientists and engineers, as well as administrators, are selected and accepted into the country's Defense R and D programs. Prestige, material benefits, high level support, and the best of equipment are part of the advantage of Defense R and D employment.

Perhaps the most important source of R and D manpower is the advanced degree program of the Soviet Union. From these ranks come the leaders of scientific thought and research and the potential for significant advances in science and technology. In 1976, the Soviets awarded an estimated 32,000 candidate degrees. The candidate degree is roughly equivalent to the U.S. PhD. This is slightly less than the number awarded in the United States. However, the Soviet Union places a much greater emphasis on natural sciences and engineering in their advanced degree program, with approximately 80 per cent of the candidate degrees conferred in these disciplines — as compared to 40 per cent of the PhDs for the United States.

The USSR has developed the largest R and D manpower base in the world. In 1976, it is estimated that over 800,000 scientists and engineers were engaged full time in R and D. As a comparative note, the USSR passed the United States in sheer numbers in 1968-69 time frame and presently holds a better than 200,000 lead in their R and D manpower. As the Soviet R and D manpower continues to increase, both qualitatively and quantitatively, the Soviet capability for scientific and technical advances, and consequently their potential for technological surprises, similarly increases.

Science and technology have been among the principal factors in our continued overall military superiority. We have responded to improved Soviet capabilities by developing and procuring many advanced weapons systems. We must continue with logical and sufficient long range research and development programs.

These various research and development efforts are dependent upon our technology base. Last year in my report to you, the Soviet technology base and threat it represented were addressed. This year, our technology base and what it provides to counter the threat and increase the U.S. defense capability will be addressed.

Our technology base is a national asset and an investment in the future. The science and technology available to the country from universities, government agencies, and industry provide the engineering know how to keep our country technologically strong. Military weapon systems are beneficiaries of a high level of technology,

but so are the space shuttle and our growing energy program. This "high technology level" has provided the basis for today's commercial aircraft, the \$10 pocket calculator, advances in medical instrumentation, and new training methods, to name a few. In the three decades since World War II, the national investment in technology has changed all of our lives dramatically.

In my view the technology base provides the military services with a means for generating and testing ideas and for determining the probable feasibility of techniques and prototypes. The scientists and engineers in the base must be leaders in their technical areas. They must be innovative, scanning all the related technology for military applications. For example, the laser or optical laser as it was called at the time, was conceived in 1959 by Dr. Townes while he was under contract to the Department of Defense. The laser was used for instru-

mentation and has now developed to the point where the laser guided bomb is a reality, but this took a 10-15 year period.

Technology is broadly used and government-sponsored scientists must be allowed the freedom to innovate and follow their ideas from technical paper to end use. Their ideas must also be verified and accepted and this is done through advanced development efforts where engineering feasibility is proven. This policy provides the best insurance against technological surprise both from within the U.S. community and without.

Our future is based on a strong technology base with the capacity for innovation and subsequent technological breakthrough. If we do not fully support our research and development efforts, we place the future security of this country in doubt.