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THE JUSTIFICATION FOR CONTROLS

John McMahon, Deputy Director
Central Intelligence Agency

I would like to express my appreciation for the opportunity to address this distinquished assembly. As some of you may recall, the Intelligence Community has worked before with the Academy on technology transfer issues--specifically, the Dale Corson Panel which studied the issue of scientific communication and national security.*

It was not surprising that we didn't agree on all points, but I think our dialogue was a success because it provided valuable insights and publicity about a problem that, until recently, has been largely overlooked. Indeed, the Academy has played an important role in developing awareness throughout academia about technology transfer issues.

What I would like to do today is share with you some of our findings regarding the implications of technology losses to the Soviet Bloc. We are not dealing with a few intelligence officers who get some information every now and then. Rather we face a very well orchestrated effort directed by the Politburo, for acquiring and using Western equipment and technology.

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* Scientific Communication and National Security, a report prepared by the Panel on Scientific Communication and National Security, chaired by Dale R. Corson, President Emeritus, Cornell University.

Technology Transfer has many facets, but in terms of national security, it can be distilled down to a single, overriding problem: the acquisition of Western technologies applicable to military developments by the Communist World--above all, the Soviet Union and its Warsaw Pact allies. About two years ago we alerted our allies to this growing threat, and pointed out that it was not only a question of trade, but of robbery; that the Soviets were running clandestine operations against their technological and industrial base. We believe they now realize the severity of this threat, much more than ever before.

The scope of the Soviet collection effort and the ability of the Soviet military-industrial complex to assimilate Western technology is most impressive. During the late 1970s alone, Soviet collectors acquired about 30,000 pieces of Western controlled and uncontrolled equipment, weapons, military components and manufacturing technology, and over 400,000 technical documents. Unfortunately, a good many of these documents were classified. We know that the KGB, and their counterpart in the military, the GRU, as well as the Ministry of Trade, The Soviet Academy of Sciences, and the State Committee for Science and Technology are seeking and have already acquired, used or copied the following Western items to help solve their problems in developing new weapons and military equipment.

They have acquired hundreds of pieces of microelectronic fabrication and test systems, hundreds of electronic test and metering systems for quality control of aviation, missile and

undersea systems, scores of microwave and other advanced communications equipment, programmable oscilloscopes, high quality large photographic systems for thin film production, multi-million dollar large machining centers for manufacturing tanks and military vehicles, industrial lasers and lasers for communications and weapons R&D, fiber optical production systems, space shuttle equipment and know-how, quality lubricants and rubber products for military vehicles, high density self-contained power supplies, and high modulus glass fibers.

That is just a very small sample of how successful they have been at obtaining Western technology. I am reminded of a glib saying that has survived for years that it doesn't matter how much of our equipment and machinery the Soviets buy or steal, because they can't reproduce it; all we have to do to maintain our technical lead is protect our production technology. This reasoning seriously underestimates our opponents.

Western technology has accelerated the growth of Soviet military power in all key areas, and there has been a steady erosion of the technological superiority on which US security and the security of our allies increasingly depends. The narrowing of the technological gap in turn has compelled the US to make even greater efforts to counter the growing sophistication and lethality of the Soviet military machine.

Although there is growing public awareness of this problem, very few outside the Intelligence Community understand the Soviet program for collecting and exploiting Western technology. It is this issue that I will address today, for the organization of the

Soviet program shows that the military benefits Moscow derives from Western technology is not the result of some haphazard or fortuitous exploitation of normal trade patterns. I submit that it is precisely because of the organization of this acquisition program that tougher enforcement of export controls is imperative.

The intelligence community has collected truly impressive evidence on the Soviet Union's worldwide effort to acquire the latest technology. The program is extraordinarily well-organized, highly centralized, and under the direct supervision of the highest organs of the Party and State: the Politburo of the Central Committee, and the Council of Ministers. The primary control over technology acquisition and exploitation rests with the Military Industrial Commission (VPK) of the Presidium of the Council of Ministers. Significantly, predecessors to the VPK have existed since the 1930s to ensure that the Soviet military gets first choice of the resources it needs from the planned economy. Sometime in the late 1960s, the VPK was directed to expand its role and efforts to acquire technology from the West.

The VPK directly oversees the participation of the key Soviet defense industrial ministries that are involved in military production, and in assimilating Western technology. In addition to the VPK, there is a little known organization inside the State Committee for Science and Technology called the Technical Center. It is the central clearinghouse for the program, responsible for collecting the requirements and reports submitted by the defense industrial ministries to the VPK, and

for the intelligence information and materials acquired by the collecting agencies. The defense industrial ministries in turn are required to report regularly to the VPK on their progress in assimilating foreign technology into their weapons programs.

The collection requirements gathered by the Technical Center are blessed by the VPK and given to the collectors for action. The Soviets designate as collectors not only the KGB and GRU, but also the Soviet Academy of Sciences, the State Committee for Science and Technology, the State Committee for Foreign Economic Relations, the Ministry of Foreign Trade, and the intelligence services of their Warsaw Pact allies.

We estimate that the KGB and GRU account for about 70 percent of the most significant military-related items acquired from the West. This includes not only classified items such as weapons system documents and components, but, also such key dual use and export-controlled items as computers, microelectronics, fiber optics, powder metallurgy, composite materials, lasers and the associated production technology. These dual use items are often as important to Soviet military capabilities as stolen weapon systems. In a recent French report,it was estimated that during the last three years the KGB alone acquired 30 percent of France's latest high technology achievements, and 80 percent of this amount was acquired on the open market. In the past year, about half of the 100 plus Soviets expelled from Western countries were involved in scientific and technical espionage.

The role of the State Committee for Science and Technology--the GKNT as we call it--and the Soviet Academy of Sciences in

acquiring Western technology is of particular relevance to this gathering. The GKNT's scientific and technical information gathering and processing activities are vital to the generation of Soviet requirements for foreign technology acquisitions. These activities are conducted through a nationwide, centrally-directed system that comprises some 100,000 individuals and several thousand information departments affiliated with Soviet research institutes, design bureaus, and production facilities. In addition, the GKNT manages efforts to acquire Western technology through the activities of Soviet scientists and engineers involved in academic, commercial, and scientific exchanges with the West, including those sponsored by the Soviet Academy of Sciences.

In an era of quantum leaps in military technology, basic research has become increasingly important to a nation's long-term military potential. Most basic research in the Soviet Union is done under the auspices of the Soviet Academy of Sciences.

A fact difficult to accept in the United States is that the Soviets, with growing frequency, have used the academic exchange programs with Western universities and research centers to acquire sensitive scientific information for use in their weapons and military equipment programs. Western magnetic bubble memory technology, microelectronic and laser research, nuclear energy technology and deep-diving submersibles are but a few of the areas in which Soviet scientific exchanges have scored notable successes.

The Soviet Academy of Sciences, along with the GKNT, work

closely with Soviet intelligence services. Soviet scientists travelling to the West are given S&T requirements before they leave the country, and also are expected to assess their Western colleagues for their potential as intelligence agents. Moreover, an increasing number of intelligence officers are give S&T training to allow them to masquerade as scientists participating in these exchanges.

The Ministry of Foreign Trade is responsible for the majority of the illegal trade conducted through normal trade channels. The Ministry operates a large network of trade offices, joint companies, and purchasing missions, whose staffs are quite adept at obtaining Western equipment. The KGB and GRU regularly coopt members of the Ministry's foreign trade organizations for special collection tasks abroad, and both intelligence services use the trade missions abroad as cover for some of their personnel. Many of the Soviets who have been expelled by Western countries for political, military and industrial espionage within this past year were attached to these trade missions.

Finally, the Soviet Union has made increasing use of its East European Intelligence Service surrogates to acquire Western technology. The East European countries generally have a better image in the West than the Soviet Union; thus their intelligence collectors are often able to operate more freely. The Soviets also must have multiple channels for acquiring Western technology so that none of their defense industrial ministries become dependent on a single channel. The USSR Ministry of Radio

Industry, for example, acquires embargoed items routinely through Hungarian collectors. The most active East European countries in acquiring technology for the Soviets are, East Germany, Hungary, Czechoslovakia, and Poland.

The Soviet Union and its East European allies use a vast array of methods to acquire US and other Western technology. I will discuss briefly here only illegal trade through third countries, because this is where international export controls are weakest. Although intelligence officers are involved in arranging diversion operations, the main mechanism for acquiring controlled items through this channel is a host of fraudulent trade schemes.

Computers and semiconductor production equipment are the main targets for diversion operations. We have identified some 300 firms operating from more than 30 countries that have engaged in illegal high-technology trade, and there are probably many more that are unidentified. We know of at least five major diversion networks operating in Western Europe.

Two of these, the Bruchhausen and Mueller networks, are among the Soviet Union's largest suppliers of semiconductor production equipment, and they operate on a global scale. Richard Mueller and Werner Bruchhausen were both indicted in United States Federal Court for illegal trade activities. However, because illegal trading is not an extradictable offense, they remain at large. Bruchhausen, a West German, at one point in the 1970s had more than 60 front companies operating in Austria, France, the United Kingdom, Switzerland, West Germany,

and the United States. From 1977 to 1981, millions of dollars of equipment used to make microprocessors, computers, and integrated circuits were transferred through this network to the Soviet Union.

Richard Mueller, also a West German, is a master at proliferating a maze of front companies with no ostensible connection to himself, and I must say that personally I stand in awe of his ability. We estimate that during the period 1977 to 1980, Mueller smuggled at least $10 million dollars worth of embargoed technology from the United States to the Soviet Union.

Just this past December, West German and Swedish customs seized two US VAX 11/782 computers and tons of related equipment that Mueller was attempting to smuggle to the Soviet Union. The diversion route followed a typically roundabout course, from the United States to a Mueller front company in South Africa, from there to West Germany and Sweden, enroute to the Soviet Union. Fortunately, the shipments were intercepted.

None of our allies, of course, condone the use of their territory for illegal trade activities; the penalties, however, for engaging in diversions have little deterrent value. Fines rarely exceed a few thousand dollars, while the profits for illegally selling controlled equipment to the Soviet Bloc are in the tens of millions. In 1982, Bruchhausen, for example, netted $18 million dollars. Prison terms are rarely imposed, and when they are the sentence is usually suspended.

The United States alone cannot respond adequately to the mounting threat posed by the Soviet technology acquisition

program. Only a concerted, multifaceted approach, combining both effective export control policies and vigorous counter-intelligence programs by the United States and its allies, can thwart this highly organized Soviet acquisition effort. For many reasons, the United States must take the lead in making the case for stricter export controls and enforcement. Some of our allies still believe that trade is a way to persuade the Soviet Union to act more responsibly in the world, despite all the historical evidence to the contrary. Their economies are also far more dependent on exports than is ours, and they have traditionally viewed the Soviet Bloc as a lucrative market.

Proposals to eliminate the requirement to obtain a validated license before exporting strategic items to COCOM countries could jeopardize our whole export control mechanism. The intelligence community believes that removal of validated licenses for goods to be shipped to other COCOM countries would weaken substantially the ability of the United States to monitor the flow of its technology abroad and to prevent the unauthorized re-export of this technology to the Soviet Bloc.

In conclusion, I can only impress upon you that the Soviets have a massive program for acquiring our best technology, a program that works. When we see a Soviet weapons system that is a copy of ours or a derivative of ours, it reaffirms the magnitude of this problem and the success that the Soviets enjoy. It is a problem that merits the attention of the National Academy of Sciences and of every American, including our industrial leaders.