

2 March 1977

The Illegal Acquisition by the USSR and the PRC of
Western Technology and Equipment

Introduction

Illegal transfers are but one of several means by which the Soviets and Chinese acquire advanced Western equipment and technology. The USSR and China have acquired foreign technology mainly by purchasing machinery and equipment. The USSR is currently importing \$5 billion annually from the West, China, almost \$2 billion. Most of these imports embody advanced technology but few have both civilian and military uses (dual use items). Other channels of transfer include purchases of technical data and licenses; acquisition of data and other information through visits to Western firms and via contract negotiations; formal agreements for collaboration in research and exchange of scientific and technical information; contacts with Western specialists at conferences, seminars and exhibits; exploitation of open literature, and others.

Soviet S&T intelligence collection methods, both overt and covert, indicate a coordinated approach. Goals are oriented in two basic directions: one toward technology that could be used to raise the technological level of important industries; the other toward fundamental, experimental, and applied results potentially applicable to the development of new or the improvement of existing weapons. It is assumed that the PRC has a similar collection program. **On file DOC release instructions apply.**

OSD REVIEW COMPLETED
DOS REVIEW COMPLETED

Control of Dual-Use Technology and Equipment

Certain dual-use technology and equipment are controlled unilaterally by the United States or multilaterally by the US and its Allies through the so-called COCOM structure (see Annex for a discussion of the export control structure). Most of the controlled items purchased by the Communist countries -- mainly computer related items and electronic testing equipment -- are acquired legally as exceptions to the control lists administered by the US and COCOM.* Their value is estimated at \$100 million annually. Exceptions are permitted if US and COCOM trade control authorities are reasonably certain that the equipment is for non-strategic uses. In isolated instances, e.g., advanced computer systems, extensive safeguards or other checks have been laid on to insure against diversion to military/strategic uses.

The Communists, however, have not been satisfied with merely buying the products from the West and have turned increasingly toward acquiring the technology and equipment needed to manufacture the items. They have not had much success in achieving this through the COCOM control structure. Consequently, although the Communists often have been capable of producing certain items in their laboratories, such as disc drives and integrated circuits, they have not been able to translate them into series production.

* Strictly military and atomic energy related technology and equipment are administered separately, and exceptions are rare.

Illegal Sales of Controlled Items

Because the Communists have been unable to buy openly in the West some of the advanced equipment and technology they desire, they have attempted to acquire it illegally. They have had some success in this because of the difficulty in detecting illegal sales by Western authorities. Also, because of the handsome profits that accrue to Western firms and individuals involved in the transactions, in many cases all the Communists need is the cash to make a deal.

Perhaps one of the most successful methods for illegal purchases has been the use of legitimate Western firms.

X6

[Redacted] Often equipment is sold to a foreign firm by a US company which has been told that the equipment will be used in a certain foreign factory.

25X1

[Large Redacted Area]

25X1

Dummy corporations also have been used to facilitate the transfer of advanced technology and equipment to the Communists.

X6

X1

equipment. US trade control officials are confident that dummy corporations do not present the same problem as the large number of legitimate firms that either look the other way or actively participate in illegal diversions.

An important technique used both by the legitimate firm and dummy corporation is the falsification of shipping documents. Because much of the equipment in the high technology area is rather exotic and the parameters under which it is controlled so complicated, it has proven relatively easy for a firm to indicate it is shipping a non-controlled item when

25X1

Approved For Release 2005/04/22 : CIA-RDP81B00401R002500150008-4

in fact a controlled item is involved. Many customs officials around the world are not adequately trained to detect falsification.

Equipment Sought by the Communists

25X1

25X1

[REDACTED]

[REDACTED] There are, of course, certain limits to the kind of equipment that can be diverted. Few computers have disappeared into the Communist countries. The incidence has not been high in part because of required maintenance and software support. Moreover, most of the COCOM countries agree on the importance of the larger computers the Communists might seek and thus keep close tabs on them.

In the last five years, the major Soviet illegal acquisition effort has been directed toward semiconductor manufacturing and test equipment. Moscow has been unable to keep pace with rapid technological change in the West and thus produce in large quantities the complex semiconductors required for its advanced weapons and other high priority programs. Moreover, the quality of Soviet integrated circuits (ICs) that form the basis of many advanced computers, electronic gear, radars and a host of other high technology items are well below Western state-of-the-art and reliability standards. Acquiring ICs from the West would make the USSR dependent on an external supply for their military needs -- a situation Moscow could not tolerate.

Approved For Release 2005/04/22 : CIA-RDP81B00401R002500150008-4

25X1

Fashioning a Modern Semiconductor Industry

25X1

25X1

[REDACTED]

[REDACTED] As of early 1976, Moscow had purchased illegally at least \$40 million worth of machinery and equipment for the manufacture of semiconductors, much of it the most advanced available in the West. About two-thirds of the purchases were from Japan, probably without the knowledge of the Japanese government. One-third is US origin, purchased through third parties in Western Europe. The equipment that Moscow has acquired covers nearly the entire range of processes in an integrated, modern semiconductor industry.

Soviet efforts are continuing and total purchases and orders may now total some \$100 million. Although much of the equipment ordered has probably been delivered, US export control authorities have been advised of the Soviet acquisitions and have held up certain items critical to the operation of automated handling and environmental control systems in the manufacture of ICs.

One characteristic of the Soviet effort in the semiconductor area -- other than that it dwarfs all of their other known illegal purchase efforts -- is that Moscow has sought complete systems, rather than discrete items of equipment and has also engaged in an ambitious scheme to

25X1

[REDACTED]

obtain "know-how" and training. Earlier attempts by the Soviets at using Western equipment to fill in the gaps in otherwise domestically equipped production lines failed.

As far as we know, the Soviets have not yet acquired the manufacturing technology or "know-how" to make effective use of all of the illegally purchased semiconductor equipment. They are, however, searching for a Western partner to form a joint venture for semiconductor research, development, and production. The partner desired may be in a non-COCOM member country so as to circumvent Western controls. [REDACTED]

25X1

[REDACTED]

25X1

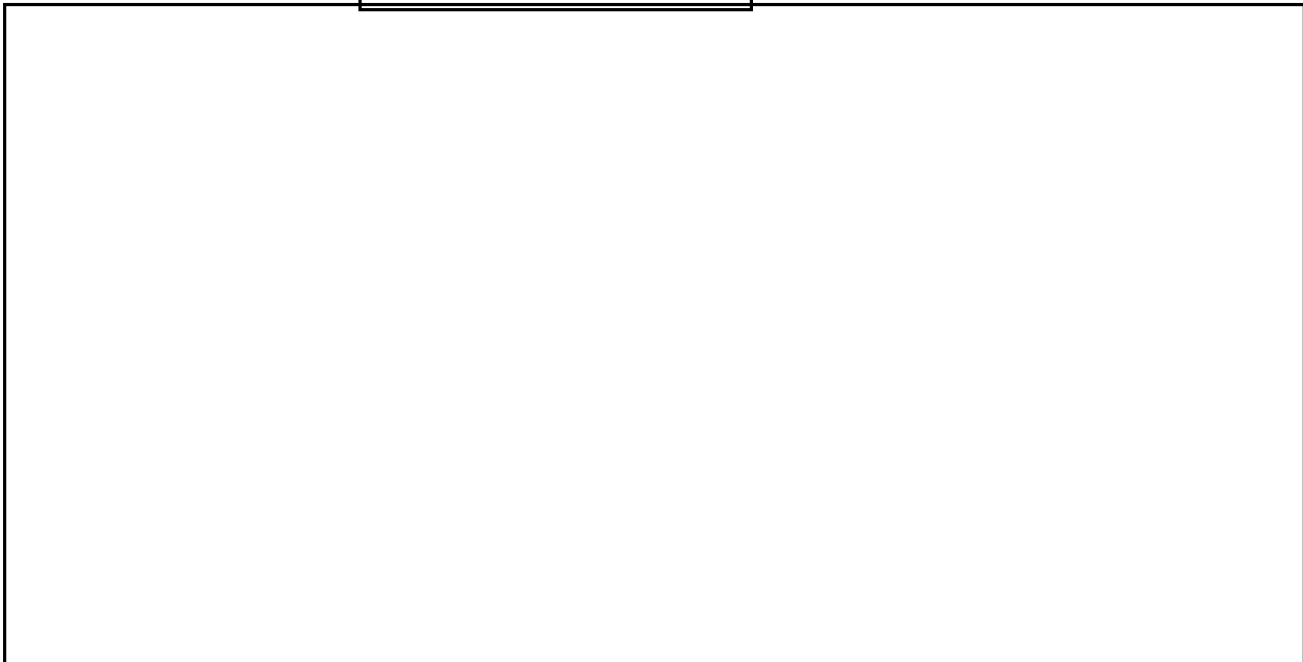
The Soviets hope that by using this technique, they ultimately will be able to produce a wide spectrum of semiconductor and IC devices.

PRC Acquisitions

Chinese illegal imports from the West of controlled equipment, materials, and technology have played an important role in the development and modernization of Peking's national defense system.

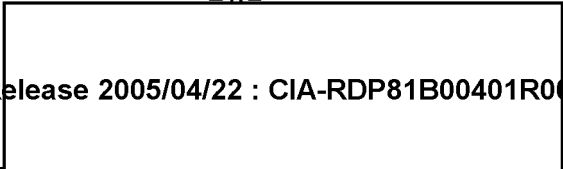
[REDACTED]

25X1



25X1

As China has advanced its level of technology in the electronics components field, its requirements for more advanced semiconductor production and test instrumentation has similarly increased. The Chinese have now reached a stage of large scale integration of electronic devices, and their requirements for the relevant technology and equipment in this advanced area of electronic development are generally only fulfilled through violation of Western trade control regulations.



In the area of special purpose machine tools, a clear-cut breach of the COCOM embargo on the sale of strategic machinery to China is less apparent. Nevertheless, machine tools imported by China are equivalent to those being used in the US for the manufacture of aircraft, helicopters, short-range guided missiles, radar components, and many types of conventional armaments and munitions.

A major contract with China for gear grinding machines recently fulfilled by a US manufacturer was almost entirely consigned to Chinese defense industries. Although the transaction met with US and COCOM approval, the end-user of the machines was impossible to determine when the sale was being negotiated. As a result, the Chinese aircraft and helicopter manufacturing industries now have some of the best production machinery available.

K1

25X1

Approved For Release 2005/04/22 : CIA-RDP81B00401R002500150008-4

Approved For Release 2005/04/22 : CIA-RDP81B00401R002500150008-4

Usefulness of Illegal Acquisitions

As with other aspects of technology transfer to Communist countries, the Intelligence Community has insufficient data to make quantitative judgments as to the importance of illegally acquired technology to the economic and military strength of the USSR and the PRC. Some general considerations, however, lead us to the conclusion that illegal acquisitions are likely to be less useful than are legal acquisitions.

A report by the Defense Science Board Task Force on Export of U.S. Technology, the so-called Bucy report published a year ago, concluded that the transfer mechanisms most useful to the recipient countries were those that involve "active" relationships, that is, frequent and specific communications between the provider and the recipient. The process of transfer may last several years until the receiver understands the equipment or process. Clearly, the use of "illegal" mechanisms impose serious constraints on this process. The recipient is not likely to receive the detailed know-how that he must have to exploit the technology. It is just this shortcoming that the Soviets have tried to correct in their effort to obtain know-how and training for recently acquired semiconductor production equipment.

The Task Force Report also concludes that products transferred without accompanying active relationships

25X1

generally involve little in the way of technology transfer. The report found that "reverse engineering" of products, through engineering analysis, is rarely an effective technique for discovering current design and manufacturing technology.

One category of equipment that does have intrinsic technological value, according to the Report, is "keystone" equipment that completes a process line. Computer-controlled process, inspection, and test equipment is often "keystone" equipment. Such equipment, however, requires maintenance and spare parts from the original manufacturer which

might be difficult to obtain under the circumstances of illegal acquisition. It is, moreover, doubtful that the Soviets or Chinese would place the success or failure of an important production line on a piece of equipment for which they had no assurance of maintenance and parts.

Although illegal acquisition is probably not a good mechanism for technology transfer, it does have other informational value to the Soviets and Chinese. It is of use to decisionmakers faced with making a choice between alternative courses of development of an item. A US success may be considered to be more likely repeatable than an unknown course of development.

The USSR and the PRC may also use illegally acquired equipment as a basis for judging US military technological capabilities in certain areas.

ANNEX

The US and COCOM Trade Control Structure

US controls are administered by the Department of Commerce's Office of Export Administration (OEA). This office receives thousands of applications each year from US companies to sell controlled items to the Communist countries; 90 percent of them are handled routinely within 30 days. About nine percent require additional review either through bilateral coordination with one or another Department -- mainly Defense or State -- or multilateral coordination with several agencies. The remaining one percent is handled by the interagency Operating Committee (OC) of the Advisory Committee on Export Controls (ACEP). The OC meets weekly to review these more difficult cases and includes members from State- Commerce, Defense, ERDA, Treasury and others. The chairman of the OC is a Commerce official whose task is to study the positions of the members and recommend approval or denial of an application. CIA is represented on the OC by an advisor who does not vote except when a item under review could affect US intelligence operations.

If no agreement can be reached in the OC, the case can be appealed at the discretion of the dissenting party to a group at the deputy assistant secretary or assistant secretary level. If the case cannot be resolved there, the next step is

25X1

Approved For Release 2005/04/22 : CIA-RDP81B00401R002500150008-4

an appeal to the Cabinet-level Export Administration Review Board (EARB). If a decision still cannot be reached, the case may go to the President -- a rare event.

When US approval is granted, the case is then submitted for international approval to COCOM. COCOM maintains a list of controlled items -- the international list -- which is updated periodically. Since the 1950s the List has been periodically reduced from hundreds of items to about 60 items currently. The next revision is scheduled for 1978 and a new list may be issued in 1979.

The COCOM phase of the licensing procedure in the United States is handled by the Department of State. COCOM consists of the NATO countries plus Japan less Iceland and has been in operation for more than 25 years. Although it consists of 15 members, in practice the major participants are France, West Germany, the United Kingdom, Japan, Belgium, the Netherlands, and the United States. Many of the other countries do not attend the daily meetings in Paris. The US submits about one half of the cases for exceptions -- mostly in the computer area -- and is the strongest proponent of the system. None of the other countries match the size of the US effort in trade controls. Many countries have only one or two people working on COCOM matters, whereas US manpower devoted to the process -- including US licensing described above -- probably exceeds 200 people.

-14-

Approved For Release 2005/04/22 : CIA-RDP81B00401R002500150008-4

25X1

Normally, most US cases submitted to COCOM are approved. If they have gotten through the more stringent US review process, there are few technical reasons why a case should be denied by the other COCOM members. It should be noted that COCOM decisions are not legally binding on the members because the COCOM accord is a gentlemen's agreement and not a formal treaty. Because of this, countries on occasion sell items even though they have been disapproved by COCOM. Moreover, there are frequent disagreements over what is and is not controlled with respect to specific pieces of equipment. Thus, equipment may be exported to a Communist destination that the US believes is controlled although the exporting country does not.

* * * *

US Export Control Legislation

The Export Control Act of 1969 provides the legislative authority for the US unilateral trade control system. It expired in late 1976, however, and Congress is now in the process of drafting a new Act which is expected to increase the amount of reporting the Department of Commerce must submit to Congress concerning the Department's dealings with the Communists. It also may have some new provisions concerning the Arab boycott and the nuclear proliferation issue.

Some of the provisions under the old Act will be retained. The President will still have the authority to embargo items for reasons of national security, foreign policy, or because of domestic short supply. Denial of a license application must be justified to the applicant and to Congress. In addition, the Jackson amendment to the 1969 Act gives the Secretary of Defense broad powers to determine whether the export of goods and technology will increase significantly the military capability of any Communist country and, if so, to recommend to the President that the export be disapproved. If the President overrules the recommendation of the Secretary of Defense, the Congress must be informed.