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16 April 1984

MEMORANDUM FOR THE RECORD

SUBJECT: Soviet Trade In Patents and Licenses

The following paper was written in response to a request from the DDO/LA to provide information on Soviet Trade In Patents and Licenses. The paper, itself, is Unclassified.



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Manpower and Planning Branch
Soviet Economy Division

Attachments

1. Patents Granted to the Soviet Union by Industrialized Western Countries
2. Active Soviet Licenses in the United States
3. Select License Agreements Between the Soviets and Western Firms

SOVA-M-84-10060

SUBJECT: Soviet Trade In Patents and Licenses

Distributuon: SOV-M-84-10060

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Soviet Trade in Patents and Licenses

A. Soviet Trade Policy With Regard to Licenses

Soviet technology trade has traditionally been concentrated on machinery imports and non-negotiable covert transfers, instead of licenses. Until the mid 1960's Soviet trade in licenses was virtually negligible. Since then license trade has assuredly grown, but the overall level is still probably low. One Soviet [] has estimated the USSR spends less than 1 percent of its R&D budget on purchasing licenses--Western countries generally spend between 15 - 45 percent. []

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It is likely, however, that this estimate of Soviet spending refers only to the purchases of the Soviet foreign trade organization set up to trade licenses, Litsensintorg. These purchases are for "pure technology" licenses that do not include supporting hardware. Package deals that include licenses and hardware are not handled within Litsensintorg, and while numerous and important, are probably not included in the published Soviet estimates of license trade. If they were included the level of license trade may be significantly increased, but would still constitute a very small share of total Soviet trade and, additionally, would still be much less than the level of license trade carried on by Western countries. []

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The most interesting comparison is with Japan. Like the Soviet Union, Japan entered the post-war period with a wrecked economy and a determination to rebuild quickly. The Japanese, while not allowing direct foreign investment, did actively pursue Western technology and know-how and between the years 1965 and 1971, for instance, purchased 6851 licenses. The USSR, on the other hand, showed little interest in licenses until the mid 1960's and, [redacted] by 1976 had acquired only 1,300 licenses. [redacted]

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Interest in license trade has probably increased since the mid 1970's as Soviet disappointment in the benefits of plant and equipment imported without accompanying know-how has grown. However, the post-Afghanistan East-West political environment and hard currency constraints have probably discouraged Soviet imports of licenses, despite the technological advances the USSR believes such licenses could promote. It is also likely that Soviet exports of licenses--which are probably no more than one-half Soviet imports of licenses with respect to both the number and value of transactions--have not significantly grown. They have been hindered not only by the political climate but by Soviet bureaucratic obstacles which include a general unwillingness to release with the license all needed auxiliary information. [redacted]

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B. Some Facts and Figures on Soviet Trade and Licenses

There is little information on Soviet trade in patents and licenses, but, according to the available evidence;

- Industrialized Western countries have granted the USSR at least 17,000 patents since the mid-1970s (Attachment 1). STAT
- The Soviets sell licenses to more than 30 countries. STAT
- Inter-CEMA license deals are probably relatively few. According to Soviet sources, in the mid 1970's there were only around 100 such arrangements in effect. STAT
- In 1976, the last year for which data are available, Soviet license sales totaled 119 on a world-wide basis. STAT
- The number of Soviet licenses sold to the West totaled around 200 for the years 1962-1976. One study gives a rough estimate of Soviet earnings from sales of licenses to the West from 1964 to 1976 of \$100-107 million and contrasts this with U.S. license earnings in Western Europe in a single year (1977) of \$2,263 million. STAT
- The number of licenses the Soviets sold to the U.S. over the last 15 years is quite small--around 30. The value of these sales, measured in fees and royalties paid, is probably not more than \$50 million. STAT
- Soviet imports of licenses are at least 2-3 times greater (in both value and number) than Soviet license exports. STAT
- Data collected by John Kiser in 1979 implies that about 50 percent of Soviet exports of licenses to the West are in the field of metallurgy. (Attachment 2 is a list of Soviet licenses in the United States compiled last year

by John Kiser. Attachment 3 is a list of select license agreements between the Soviets and Western firms published in a 1980 OECD study.)

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C. Effect of Imported Licenses on the Soviet Economy

It is difficult to estimate the impact of importing licenses on the Soviet economy as a whole. Licenses probably have played an important role in the development of specific industrial sectors such as automobiles and chemicals. On the whole, however, the effect of licenses has probably been slight and has definitely been far below potential because of the Soviet policy of severely limiting the personal contacts and exchanges necessary to effectively transfer the know-how embodied in a license. The lack of such personal interaction, coupled with the well know problems the Soviets have in coordinating research, development and production within their civilian economy presents a formidable obstacle to the effective utilization of imported licenses on a broad scale--although high priority licenses are apt to receive enough special resources to serve as exceptions to this general rule.

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D. Evaluation of Soviet Capability to Transfer Licenses and Patents to Different Sectors of the Economy

The Central Research Institute for Patent Information (TsNIPI) acts as a clearing house to collect and disseminate information on Western patents throughout the economy. Its collection and transfer of information on patents to different sectors seems well organized, substantially funded and effective. Efforts to effectively utilize patent information,

however, often fall victim to the influences already cited in section C of this paper--xenophobia and problems in the R&D and production process. These same factors inhibit effective utilization of Western licenses. Even if a single sector surmounts these obstacles, further successful transfer of the technology embodied in a patent on license is likely to be a slow process because of bureaucratic separation and competition between branches.

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Attachment 1

Patents Granted to the Soviet Union (1970-82)
by Industrialized Western Countries*Applicant Country-(Soviet Union) by year

<u>Grant Country</u>	<u>1970</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>
Austria	71	68	57	60	44	54	54	35	41
Belgium	125	42	31	29	13	19	11	9	11
Canada	112	101	120	133	136	105	138	146	147
Denmark	8	15	10	15	16	11	11	12	11
France	326	198	705	542	414	333	553	349	256
FRG	80	351	391	383	373	353	313	239	277
Italy	--	--	--	--	--	--	39	--	--
Japan	78	209	193	337	259	242	225	233	203
Luxembourg	2	3	2	2	2	3	--	1	2
Netherlands	--	23	35	36	40	42	48	32	25
Norway	11	15	13	13	10	14	7	11	14
Sweden	150	171	153	126	124	94	93	85	122
Switzerland	93	101	76	133	8	61	51	71	62
Britain	369	458	430	353	413	250	172	110	191
U.S.	218	404	426	393	411	329	463	373	209
Total	1,643	2,159	2,642	2,555	2,263	1,910	2,178	1,706	1,571

* U.S. Department of Commerce.

Active Soviet Licenses in the United States*

<u>Technology</u>	<u>Sold To</u>	<u>Date Approx.</u>
Surgical Stapling Instruments	U.S. Surgical Corp. 3M	1964 1979
Hydraulic Rock Crusher	Joy Manufacturing	1969
Pneumatic Underground Punch "Hole Hog"	Allied Steel & Tractor	1971
Evaporative Slave Cooling of Blast Furnaces	Andco Engineering	1972
Aluminum Silicon Alloy	Ethyl Corporation	1973
Production of Hollow Ingots by Electroslag Remelting	Cabot	1973
Flux Cored Electrodes	Chemetron	1974
Magnetic Impact Bonding	Maxwell Laboratories	1974
Drug Pyrroxan for Treating Central Nervous System Disorders	American Home Products	1974
Ethnozin for Treating Cardiac Arrest	Dupont	1974
Electromagnetic Casting of Aluminum	Kaiser Aluminum Reynolds Aluminum Alcoa	1975
Carboxide Insect Repellent	American Home Products	1975
In Situ Underground Coal Gasification	Texas Utilities Services, Inc.	1975
Carminomycin and Ftorafur Anti-Cancer Agents	Bristol Myers	1976
Bulat Process for Titanium Nitriding	Multiarc Vacuum Systems	1979
Flash Butt Welding of Large Diameter Pipes	J. R. McDermott	1980
Electromagnetic Casting of Copper Alloys	Olin Brass	1980
Cone Crusher	Rexnord	1981
Air Column Separator	Air Products	1981
Medical Preparation Riocidin	Ciba Geigy USA	1982
Biodegradable Polymer Pin for Orthopedics	Medco	1982

**Details of licenses sold through 1976 can be obtained in J.W. Kiser's Report on the Potential for Technology Transfer from the Soviet Union to the United States, prepared for the U.S. Department of State, Office of External Research, 1977. Copies can be obtained through Kiser Research, Inc.*

ATTACHMENT 3: Select LICENSE AGREEMENTS BETWEEN
THE SOVIETS AND WESTERN FIRMS

Table A-29 (cont'd)

Firms to CMEA Countries

Western Licensor ^a	
Remap (Fr)	
Sace (I)	
Mechanite (UK)	
Sulzer (Swi)	
Rubery Owen (UK)	
British Rubber (UK)	
Integral (A)	
Lucas (UK)	
Teijin (Ja)	
Toyo Engineering (Ja)	
Union Carbide (US)	
Vereinigte Kesselwerke (FRG)	
Alsthom (Fr)	
Friedrich Kochs (FRG)	
Merloni (I)	
Bosch (FRG)	
Brown, Boveri (Swi)	
Girling (UK)	
Hampden Industries (US)	
Rocla Industries (Aul)	
San Giorgio (I)	
Semperit (A)	1976
Franz von Furtenbach (A)	1977
Chaffoteaux et Maury (Fr)	1976
MAN (FRG)	1975
Standard-Elektrik Lorenz AG (FRG)	1975
AEG (FRG)	1977
Kömmerling (FRG)	1977
Terosen (FRG)	1977
AGA Svetsprodukter (Swe)	1976
Vauxhall Motors (UK)	1975
Dent, Hellyer (UK)	1976
Steiger (US)	1974
Berliet (Fr)	
Bopp and Reuther (FRG)	
British Petroleum (UK)	
Hitachi (Ja)	
Gillette (US)	
Marubeni-Ida (Ja)	
Toray Industries (Ja)	
Alsa Schuhbedarf (FRG)	1976
Steyer-Daimler-Puch (A)	1975

Buying CMEA Country	Description of the Technology	Western Licensor ^a	
Poland (cont'd)	Licence for making gear boxes for rotary plugs	Huard (Fr)	1977
	Licences for prod. of concrete mixers and containers	Stetter (FRG)	1977
	Licences to produce relays for railway signal boxes	(Swe)	1975
	Licences, know-how for making electric typewriters	(Swe)	1976
	Licence for making construction equipment	Clark Equipment (US)	1972
	Licences for making tractors and accessories	International Harvester (US)	1974
	Licences, equipment for making semi-conductors, rectifiers	Westinghouse (US)	1974
	Licences, machines for making medical equipment	General Electric (US)	1976
Rumana	Semi-conductors	Compagnie générale de TSF (Fr)	
	Transformers for TV sets	Philips (N)	
USSR (not distributed by industrial branches)	Porous acetylene bottles	L'Air Liquide (Fr)	
	Axis-blower for nuclear power stations	A.G. Kühnle, Kopp & Kausch (FRG)	
	Chemical treatment of steel strips	Anchem Products (UK)	
	Furnaces for sulphur burning	Chemibau Zieren (FRG)	
	Numerically controlled machine-tools	Fujitsu (Ja)	
	Modular switches	Isostat (Fr)	
	Motor vehicle brakes	Knorr-Bremse (FRG)	
	Machine-tool heads	Line (Fr)	
	Resistors and equipment for their manufacture	Précis (Fr)	
	Coating of metal sheets for motor vehicles	Pro Finish Metals (US)	
	Prefabricated houses	Tchersmachiner (Swe)	
	Electro-hydraulic cranes	Xegglood and Sioner (Swe)	

(Cont'd on next page)

Table A-29 (cont'd)

Buying CMEA Country	Description of the Technology	Western Licensor ^a		Buying CMEA Country	
USSR (distributed by industrial sectors)			<i>Announced</i>	USSR (cont'd)	
	Automotive				Automatic lin Thermistors p
	Togliattigrad automotive plant - Positork automatic ignition device	DBA (Fr)	1/76		Marlboro cig
	Business Equipment				Photograph c Electric stove
	Electric typewriters	Olympia Werke (FRG) (announced July 1974)			
	Chemicals and Petrochemicals				Conversion o rolled steel Direct reduct to be used Steel structur manufactur
	Aromatics	Arco Chemical (US)	11/72		
	Chloropropene monomer on butadiene base	BP Chemicals International (UK)	3/73		
	Reinforced plastic foil	Ewald Dörken (FRG)	8/73		
	Alpha calcium-sulphate semihydrate refining	Gebr. Giulini (FRG)	9/74		
	High solid latex	International Synthetic Rubber (UK)	3/73		
	Acetic acid	Lummus Co. and Monsanto	12/73		
	Automatic zinc-removing devices used in electrolysis	Montedison (I)	12/72		Wedge presse related tra Abrasive ma Universal pr
	Isocyanate processing 200 cm. reactor for production of suspension PVC	Upjohn Co. (US) Chemische Werke Huels AG (FRG)	10/72		
	"Pattex" contact glue	Henkel & Co. (FRG)	5/75		
	Polymerization agent Liladox, a percarbonic acid derivative	Kemanord (Swe)	7/75		
	"Betanal", a herbicide for turnip and beet fields	Schering AG (FRG)	5/75		Containers
	Porous material for acetylene bottles	L'Air liquide (Fr)	7/76		
	Synthesized standard gases	Seitetsu Kagaku Kogyo (Ja)	3/77		Disposable p
	Construction				Aluminium
	Roadbuilding and paving equipment	CMI Corp. (US)	10/76		
	Consumer Goods				Aluminium manufactu
	Stainless steel razors	Wilkinson Sword (UK)	8/73		
	Padlocks and mortise locks	Wärtsilä (Fin)	8/76		
	Photoflash cubes	Bellmann (FRG)	11/76		
	Electrical Equipment				Nylon film 1
	Air preheaters for power stations	Kraftanlagen Heidelberg (FRG)	2/73		
	Axial bellows for power static cauldrons	Kühnle, Kopp & Kausch (FRG)	8/72		
	Cassette magnet head	Wolfgang Bogen (FRG)	5/74		Ethyl-benze Gas desicc Orenburg
	High-voltage powerline insulation materials	General Cable (US)	2/77		Oil drilling

cont'd)

Western Licensor ^a	
	<i>Announced</i>
DBA (Fr)	1/76
Olympia Werke (FRG) (announced July 1974)	
chemicals	
Arco Chemical (US)	11/72
BP Chemicals International (UK)	3/73
Ewald Dörken (FRG)	8/73
Gebr. Giulini (FRG)	9/74
International Synthetic Rubber (UK)	3/73
Lummus Co. and Monsanto	12/73
Montedison (I)	12/72
Upjohn Co. (US)	10/72
Chemische Werke	
Huels AG (FRG)	4/75
Henkel & Co. (FRG)	5/75
Kemanord (Swe)	7/75
Schering AG (FRG)	5/75
L'Air liquide (Fr)	7/76
Seitetsu Kagaku Kogyo (Ja)	3/77
CMI Corp. (US)	10/76
Wilkinson Sword (UK)	8/73
Wärtsilä (Fin)	8/76
Bellmann (FRG)	11/76
Kraftanlagen Heidelberg (FRG)	2/73
Kühnle, Kopp & Kausch (FRG)	8/72
Wolfgang Bogen (FRG)	5/74
General Cable (US)	2/77

Table A-29 (cont'd)

Buying CMEA Country	Description of the Technology	Western Licensor ^a	
USSR (cont'd)			<i>Announced</i>
	Electronics		
	Automatic line for reed relays	Wm. Günther (FRG)	7/77
	Thermistors plant	Murata Manufacturing (Ja)	8/77
	Food Products and Tobacco		
	Marlboro cigarettes	Philip Morris (US)	2/77
	Household Equipment		
	Phonograph cabinets	Berlin Consult (FRG)	1/74
	Electric stoves	Merloni SpA (I)	9/73
	Iron and Steel		
	Conversion coating of cold rolled steel strips	Amchem Products (UK)	9/72
	Direct reduction process to be used in Kursk furnace	Midrex Corp. (US)	4/75
	Steel structure manufacturing plant	Blohm & Voss (FRG)	1/77
	Machine-Tools		
	Wedge presses and related transport equipment	Eumuco (FRG)	12/73
	Abrasive material	Norton (US)	1/73
	Universal presses	Aida Engineering (Ja)	7/74
	Materials-Handling Equipment		
	Containers	Renault Industries Equipements et Techniques (Fr)	12/73
	Medical Equipment		
	Disposable plastic medical goods	Portex (UK)	8/77
	Metalworking		
	Aluminium wire	W. C. Heraeus (FRG)	8/77
	Mining and Metallurgy		
	Aluminium casting; manufacture of equipment	Péchiney Ugine Kuhlmann (Fr)	11/76
	Packaging		
	Nylon film production plant	Kohjin (Ja)	6/76
	Petroleum and Gas		
	Ethyl-benzene	Universal Oil Products	1/74
	Gas desiccation	Davy Power Gas (FRG)	3/76
	Orenburg natural gas complex		
	Oil drilling platform	Armco International (US)	7/76

(Cont'd on next page)

Table A-29 (cont'd)

Buying COMECON Country	Description of the Technology	Western Licensor ^a	Announced
USSR (cont'd)			
	Offshore exploitation of gas and oil, including blowout preventers, preventer control devices, Sea King and Marine Riser systems	Seitetsu Kagaku (Ja)	5/77
	Printing		
	Two-web offset presses	Maschinenfabrik Augsburg-Nürnberg (FRG)	9/74
	Pulp and Paper		
	Know-how and equipment for production of "Super Perga" paper	Greiner Industrier (No)	5/75
	Rubber		
	Butadiene-type poly-chloroprene rubber	DuPont de Nemours (US)	8/74
	Shipping and Shipbuilding		
	Pipe-sealing technology	Chuetsu-Waukesha (Ja)	6/77
	Textiles, Clothing and Leather		
	Yield-increasing raw wool scouring	Sover SA (Be)	1/74
	Clothing factory	McIntosh Confectie (N)	1/77
	Corset tulle	Gold-Zack Werke (FRG)	8/77

a) Country abbreviations: A: Austria, Aus: Australia, Be: Belgium, Fin: Finland, Fr: France, FRG: Federal Republic of Germany, I: Italy, Ja: Japan, N: Netherlands, No: Norway, Swe: Sweden, Swi: Switzerland, UK: United Kingdom, US: United States.

Sources:
 — "Doing Business with Eastern Europe", *Business International*, October 1975.
 — J. Wilczynski, *Technology in Comecon*, MacMillan, London and Basingstoke, 1974, p. 303.
 — J. Wilczynski, "Licenses in the West-East-West Transfer of Technology", *Journal of World Trade Law*, March-April, 1977, p. 133.
 — Office of East-West Policy and Planning, Bureau of East-West Trade, US Department of Commerce, 8th June, 1977.

Note of Bureau of East-West Trade: Although information on these transactions has been taken from published sources, the Bureau cannot vouch for its accuracy.

The Selling Comecon Country	Examples
German Democratic Republic	Steel bar
Bulgaria	Automat spinnin Electroly Perfected yoghur Protectio steel p
Czechoslovakia	Automat Spindek Producti Soft con Skin pre Spindiel Vertical
Hungary	Manufa conde Manufa batter Method Rust pr Protein Substitu
Poland	Manufa house Method Forging Carous Autom
USSR	Autom. Casting Constr Improv Manuf metz Manuf gaug Manuf mac Produc tube Synth Needl Steel s Anti-c Coolin Thin-

(cont'd)

Western Licenses ^a		
		Announced
Oil,	Seitetsu Kagaku (Ja)	5/77
g	Maschinenfabrik Augsburg-Nürnberg (FRG)	9/74
aper	Greiner Industrier (No)	5/75
	DuPont de Nemours (US)	8/74
building	Chuetsu-Waukesha (Ja)	6/77
and Leather	Sover SA (Be)	1/74
	McIntosh Confectie (N)	1/77
	Gold-Zack Werke (FRG)	8/77

a: Finland, Fr: France, FRG: Federal Republic of Germany, Gerland, UK: United Kingdom, US: United States.

sober 1975.
tsingtoke, 1974, p. 303.
ology", *Journal of World Trade Law*, March-April, 1977,

le, US Department of Commerce, 8th June, 1977.

sections has been taken from published sources, the Bureau

Table A-30
Examples of Licences sold by the COMECON Countries
to Western Firms

The Selling Comecon Country	Description of the Technology	Western License Firm ^a
German Democratic Republic	Steel bar fagoting machines	Ataka and Co. (Ja)
Bulgaria	Automatic reeling and placing of spinning spools Electrolytic refining of copper Perfected process for producing yoghurt Protection of graphite electrodes in steel production	Carelli Industriali Tessili (I) Inspiration Consolidated Co. (US) Miliboma (FRG) British Steel Corp. (UK)
Czechoslovakia	Automatic textile-winding machines Spindleless spinning machines Production of electric ovens Soft contact lenses Skin protection varnish Spindleless spinning machines Vertical forging presses	Ensu (Ja) Daiwa Spinning (Ja) Horn (FRG) Bausch and Lomb (US) Albus (Sp) Nuova San Giorgio (I) Kurimoto (Ja)
Hungary	Manufacture of equipment for condensing air Manufacture of small rechargeable battery cells Method of water purification Rust prevention process Proteins from grasses Substitute body tissues	Mitsubishi Heavy Industries (Ja) William Old (UK) Ebara Infilco (Ja) Teccomex (Sp) Alfa-Laval (Swe) MGA Technology (US)
Poland	Manufacture of extract of the smoking-house smoke Method of forging crankshafts Forging of crankshafts Carousel furnaces Automatic safety winches	Hercules Powder (US) Sulzer (Swi) Endo Ironworks (Ja) Creusot-Loire (Fr) Dusterloch (FRG)
USSR	Automatic loading of pulpwood Casting of aluminium ingots Construction of blast furnaces Improved methods of steel making Manufacture of a new type of metalcutting machine Manufacturing of a pulsed waterflow gauge used in mining Manufacture of specialised mining machines Production of double-walled plastic tubes by extrusion Synthetic acids from paraffin Needle-cutting technique Steel and alloys Anti-cancer drug Cooling of blast furnaces Thin-walled tubing	J. M. Voith (A) Kaiser Aluminium Chemical Corp. (US) Andco (Can) Ashmore, Benson, Pease & Co. (UK) Demag (FRG) Joy Manufacturing Co. (US) Sociedad Metallurgica Duro Felguera (Sp) Anger Plastik Verarbeitungsmaaschinen Gesellschaft (A) Adzina Moto (Ja) Amtel (US) Avesta (Swe) Bristol-Myers (US) Broken Hill (Aul) Carpenter Technology (US)

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Table 30 (cont'd)

The Selling Comcon Country	Description of the Technology	Western License Firm ^a
USSR (cont'd)	Continuous welding electrodes	Chemetron (US)
	Particle accelerators	Energy Science (US)
	Tube cold rolling mills	Innocenti (US)
	Polycarbonates	Montedison (I)
	Gas-permeating membrane	Rhône-Poulenc (Fr)
	High pressure polyethylene	Salzgitter (FRG)
	Rotary printing machines	Schnellpressen Fabrik (FRG)
	Aluminium from alunite	Southwire (US)
	Pneumatic transporter system	Sumitomo (Ja)
	Chemical disposal of waste	Toyo Engineering (Ja)
	Surgical instruments	US Surgical (US)

^a Country abbreviations: A: Austria, Aus: Australia, Can: Canada, Fr: France, FRG: Federal Republic of Germany, I: Italy, Ja: Japan, Sp: Spain, Swe: Sweden, Swi: Switzerland, UK: United Kingdom, US: United States.

Source: J. Wilczynski, *Technology in Comcon*, op. cit., p. 309; and J. Wilczynski, "Licenses in the West-East-West Transfer of Technology", *op. cit.*, p. 133.

Table A-31
Recent Co-operation Agreements with the USSR

Western Partner	Soviet Partner	Purpose of Agreement	Announced
Agriculture			
Gi è Gi SAS (Italy)	Tractoresport	Production and marketing cattle-feeding complexes.	1/74
Elanco (US)	Ministry of Agriculture	Joint tests of antibiotics for livestock breeding; exchange of results.	10/75
E. I. DuPont de Nemours (US)	SCST*	Research, production and application of agricultural chemicals.	8/77
Agricultural Equipment			
Robert Bosch (Germany)	SCST	Outfitting vehicles incl. tractors and agricultural machines, hydraulics and pneumatics, TV technology.	12/73
Vereingde Machinefabrieken	SCST	Production of turbine blades, rotary screen printing machines, mill	1973