

# Mineral Industry Surveys

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## PRECIOUS METALS IN SEPTEMBER 2000

U.S. mines produced 28,300 kilograms (kg) of gold and 158,000 kg of silver in September 2000. Compared with August, production of gold was up 9% in California.

### Gold

**Domestic.**—The 124-year-old Homestake gold mine in Lead, SD, will shut down by the end of 2001. Homestake Mining Co. plans to produce about 7,500 kg (240,000 troy ounces) of additional gold at the mine before closure. The company expects to spend about \$66 million over 8 years on final reclamation and remediation (American Metal Market, 2000g).

A capital gains reform bill has been proposed in Congress to raise capital gains rates for gold, silver, and platinum investments in coin or bar form. The rates would be the same as those currently applied to securities and bonds (American Metal Market, 2000c).

**International.**—The Australian Bureau of Statistics reported that expenditures for mineral exploration in Australia increased during the second quarter of 2000. The 4% increase in spending marked a reversal in the decline of exploration expenditures in Australia since 1997. Spending for gold exploration, which accounted for the largest share of total spending, rose by more than \$20 million in the second quarter of 2000 (American Metal Market, 2000a).

Australia's Emperor Mines Ltd. laid off 90 of its 1,700 employees at its Vatukoula gold mine in Fiji. The mine produced a record 4,450 kg (143,000 ounces) of gold for the year to June 30, 2000, at a cash cost of \$237 per ounce (Platt's Metals Week, 2000b).

The proposed merger of South Africa's second largest gold producer, Gold Fields Ltd., with Toronto-based Franco-Nevada Mining Corp. was denied by the South African Government. The denial was based on two factors: concern about a loss of tax revenues and the perception that the listing of the merged company

on the Johannesburg Stock Exchange would be secondary to its listing on the Canadian Stock Exchange (Metal Bulletin, 2000).

Gold Fields concluded a labor agreement with an employee union that will result in about 1,350 workers being deployed to other gold mine operations. About 900 workers went to Driefontein, 350 to Kloof, and 100 to the Free State Division (Platt's Metals Week, 2000c).

The Chinese Government has released an outline of how China is restructuring its gold market in a series of economic reforms to comply with standards set by the World Trade Organization for membership. China is also expected to establish a national gold exchange in 2001, which will trade only spot gold. Currently, China produces 156,000 kg of gold from 1,200 mines, and its central bank holds 395,000 kg of gold (American Metal Market, 2000b).

The Delhi Stock Exchange offered online trading in gold bullion early in November and thereby initiated the first stock exchange in India for bullion trading. Almost 29 million kilograms of gold, valued at \$300 billion, are held in India. The government holds only about 400,000 kg of gold, with the remainder in private hands. In addition, India imports over 800,000 kg of gold annually to satisfy its demand for jewelry (American Metal Market, 2000d).

Anglogold has formed a joint venture, named Project AuTEK, with the South African research organization known as Mintek. The new venture focuses on the application of gold in catalysis, and, in particular, on gold's potential for combating air pollution by removing noxious gases such as carbon monoxide and oxides of nitrogen from the environment (Mining Journal, 2000c).

The Bank of England (BoE) sold 25,000 kg of gold at \$270.60 per ounce on September 19. The auction, which was 2.6 times oversubscribed, was the eighth since July 1999. Immediately after the sale, the spot price of gold was trading just below \$271 per ounce (Mining Journal, 2000a).

“Gold Derivatives: The Market View,” a recent study released by the World Gold Council, attributed reduction of the gold derivatives market to gold lending limitations by central banks and a slowdown in gold producer hedging. In December 1999, the total gold liquidity—the amount of gold on loan or swapped—was 5.2 million kg. The peak gold liquidity of 5.5 million kg was reached immediately after the September 1999 Washington Agreement, when certain European central banks agreed to reduce gold sales and limit the amount of gold they lend to banks for forward sales and hedging by gold mining companies. Central Banks and other official institutions supplied over 90% of the total gold liquidity in 1999 (American Metal Market, 2000f).

Central bank gold sales were 10 times higher in the first half of 2000 than for the same period in 1999. Official sector sales amounted to 324,000 kg of gold between March and September, and the signatories of the Washington Agreement in September 1999 accounted for almost 70% of all central banks gold sales. In 2000, gold sold by the Dutch, Austrian, and United Kingdom central banks took place within the framework of the Washington Agreement (Platt’s Metals Week, 2000a).

The London Bullion Market Association’s gold clearing statistics fell to new lows during August 2000. Gold transfers were down about 3.5% in comparison with those of the preceding month, falling to a daily average of 19.8 million ounces (616,000 kg). The daily average number of gold transfers rose slightly from 734 to 747. In addition, the quantity of gold transferred in August 2000 was almost 50% lower than that of August 1999 (American Metal Market, 2000e).

The Swiss National Bank (SNB) sold 7,600 kg of gold reserves in a 10-day period ending September 8. Between May and September 2000, sales totaled 102,100 kg of gold reserves. The SNB sold an additional 120,000 kg of gold reserves by the end of September and plans to sell another 200,000 kg in 2001 (American Metal Market, 2000h).

## Silver

Canada-based Pan American Silver Corp. and Russia’s Polymetall have agreed to jointly develop the suspended Dukat silver project in the Magadan region of Russia. Through the agreement, Pan American and Polymetall will form a new company that will combine the mining license and assets of the Dukat project. Pan American will hold a 20% interest in the new company with no future management or capital obligations. Polymetall, which will hold an 80% interest, will fund all on-going expenditures and operate the project. The agreement resolves a protracted project suspension that began in December 1999, when the Russian company Kaskol won the Dukat mill building and related infrastructure at auction. Pan American planned to use the mill to process the Dukat ore. Kaskol was unable to operate the mine or ore processing mill as the mining license still belonged to Pan American. In April 2000, Kaskol transferred its interest in these assets to Polymetall. Once operational, Dukat is expected to produce 498 metric tons (t) of silver and about 1 t of gold in concentrate per year for at least 15 years (Pan American Silver Corp, 2000).

## Platinum-Group Metals

Canadian-based North American Palladium, which produced 2,000 kg of palladium in 1999, expects to boost its annual output

to more than 7,000 kg by 2002, according to company officials. The major expansion of the company’s Lac des Iles mine is on schedule and commissioning is expected in the second quarter of 2001. Proven and probable ore reserves at Lac des Iles reportedly have increased from 40,000 kg of palladium in 1998 to 193,000 kg in August 2000. The company is constructing a 15,000 ton-per-day concentrator to process ore from the expansion. The Lac des Iles Mine, an open-pit operation, is 85 kilometers north of Thunder Bay, Ontario, west of Sudbury. The company produced 1,440 kg of palladium in the first 6 months of 2000, up from 961 kg in the first half of 1999 (Platt’s Metals Week, 2000d).

Platt’s Metals Week reported that Russia’s production of platinum in 2001 could be much less than in 2000 unless the state stockpile agency, Gokhran, abandons its pricing policy that offers producers between 20% and 30% less than international market value for their metal. By offering to pay prices for platinum that are below the London fix, Gokhran is forcing producers to stockpile their metal and borrow to pay their debts instead of selling. Although Russia does not publish its PGM statistics, it is generally accepted by the industry that Norilsk Nickel, the leading producer, has an annual output of 20 to 22 metric tons per year (t/yr). Norilsk has an annual quota, authorized by the government, to export its platinum (also palladium and rhodium), and it receives the world market value from buyers. This policy does not apply to other Russian producers. Koryakgeoldobycha, Russia’s leading alluvial producer, and other alluvial producers concentrated in the Russian far east, account for about 10 t/yr of PGM output (Platt’s Metals Week, 2000e).

Arctic Platinum Partnership, the joint venture between Gold Fields Ltd. and Outokumpu Oyj to explore for PGM in Finland has outlined an initial resource of more than 93,000 kg of PGM plus gold at properties south of Rovaniemi. Preliminary resource estimates at the Portimo and Penikat intrusions indicates that 49.2 million metric tons (Mt) of resources exist at the Ahmavaara and Konttijärvi deposits within the Portimo intrusion, at an average grade of 0.34 grams per ton (g/t) platinum (Pt), 1.40 g/t palladium (Pd), 0.12 g/t gold (Au), 0.10% nickel (Ni), and 0.19% copper (Cu). At Konttijärvi, resources are estimated at 23.6 Mt with 0.43 g/t Pt, 1.57 g/t Pd, 0.11g/t Au, 0.09% Ni, and 0.14% Cu. Ahmavaara is estimated to contain 25.6 Mt at 0.26 g/t Pt, 1.25 g/t Pd, 0.12 g/t Au, 0.11% Ni, and 0.24% Cu. A further five deposits have been identified at the two intrusions, and data compilations, resource assessment, and drilling are reportedly in progress (Mining Journal, 2000b, p. 174).

**Palladium-Silver Resistors for High-Power Applications.**— With the advent of ruthenium-based resistors, the use of palladium-silver resistors on thick film circuits was all but discontinued until the 1990s when demand in new niche applications led to their resurgence. The relatively high power-handling of these metallic resistors enabled them to be used as secondary lightening surge protection devices for communications equipment. For such applications, low-value compositions, about 0.1 to 1 ohm-millimeter<sup>2</sup>/meter ( $S/\square$ ), are printed in a serpentine configuration, typically about 0.5-inch x 1-inch area, to fabricate 10- to 300- ohm components. More recently, the resistance range of interest to circuit designers has shifted down to as low as 5.6 ohms. Although it is possible to design 5.6-ohm resistors using the existing 0.1  $S/\square$ -inks, the resulting area would be quite large, resulting in bulky circuits. This points to a need for low resistivity inks with

more robust power handling capability. A new series of palladium-silver inks with resistivity as low as  $0.015 \text{ S}/\square$  have been developed. The palladium-silver resistors can extend the reach of thick film technology into high power applications that were formerly reserved for bulky wire-wound resistors (Printed Circuit Design, 2000, p. 46-50).

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TABLE 1  
MINE PRODUCTION OF RECOVERABLE GOLD AND SILVER IN THE UNITED STATES, BY STATE 1/

(Kilograms)

Gold	Alaska	California	Nevada	Other States 2/	Total
1999: p/					
September	1,360	1,370	21,200	4,310	28,300
October	1,260	1,540	21,800	4,440	29,000
November	1,180	1,640	22,200	4,470	29,500
December	1,260	1,810	21,900	4,620	29,600
January-December	15,700	17,500	257,000	51,300	341,000
2000:					
January r/	1,270	1,480	21,300	4,170	28,200
February r/	1,190	1,390	19,100	4,000	25,600
March r/	1,270	1,680	20,700	4,370	28,000
April r/	1,310	1,210	19,800	4,230	26,500
May r/	1,350	1,460	17,700	4,470	25,000
June r/	1,310	1,600	19,700	4,720	27,300
July	1,460	1,470	19,500 r/	4,480	26,900
August	1,460	1,340 r/	22,000 r/	4,980 r/	29,800
September	1,510	1,460	21,600 r/	3,780 r/	28,300
January-September r/	12,100	13,100	181,000	39,200	246,000
Silver	Arizona	Idaho	Nevada	Other States 3/	Total
1999: p/					
September	13,900	34,400	47,600	59,900	156,000
October	13,500	35,100	48,700	63,500	161,000
November	12,100	34,400	41,500	61,500	150,000
December	14,700	34,400	75,100	61,800	187,000
January-December	183,000	417,000	577,000	769,000	1,950,000
2000:					
January	W	34,400	58,300	75,200	168,000
February	W	34,300	63,100	69,900	167,000
March	W	34,300	71,000	75,000	180,000
April	W	34,300	57,500	72,900	165,000
May	W	34,300	73,800	73,400	182,000
June	W	34,200	59,800	74,500	168,000
July	W	34,200	56,700	71,200	162,000
August	W	34,800	53,100	73,200	161,000
September	W	34,500	53,700	69,500	158,000
January-September	W	313,000	568,000	652,000	1,530,000

p/ Preliminary. W Withheld to avoid disclosing company proprietary data, included with "Other States."

1/ Data are rounded to no more than three significant digits; may not add to totals shown.

2/ Includes Arizona, Colorado, Idaho, Montana, New Mexico, South Carolina, South Dakota, Utah, and Washington.

3/ Includes Alaska, California, Colorado, Missouri, Montana, New Mexico, New York, South Carolina, South Dakota, Tennessee, Utah, Washington, and State indicated by symbol W.

TABLE 2  
SELECTED PRECIOUS METAL PRICES

(Dollars per troy ounce)

	Gold	Silver	Platinum	Palladium
<b>Engelhard Industries:</b>				
<b>1999:</b>				
Low/date	253.88 (July 20)	4.91 (January 4, April 14, May 28, June 4)	344.00 (January 28)	293.00 (May 4)
High/date	326.70 (October 5)	5.75 (September 28)	457.00 (November 16)	456.00 (December 29)
Average	279.91	5.25	378.94	363.20
<b>2000:</b>				
<b>August:</b>				
Low/date	273.11/9	4.83/23	568.00/7	720.00/28
High/date	278.72/1 and 2	5.03/31	615.00/2	865.00/2
Average	275.57	4.93	583.739	769.26
<b>September:</b>				
Low/date	270.61/21	4.89/21	582.00/26	720.00/28
High/date	277.52/28	5.02/27	615.00/11 and 12	775.00/13
Average	274.65	4.95	595.75	738.85
<b>October:</b>				
Low/date	264.90/27	4.76/30	575.00/3 and 4	722.00/2
High/date	275.12/12	4.95/5 and 10	593.00/19 and 20	766.00/31
Average	271.11	4.88	584.36	748.46
<b>Year to date:</b>				
Low/date	264.90 (October 27)	4.76 (October 30)	416.00 (January 6)	437.00 (January 6)
High/date	313.88 (February 7)	5.53 (February 7)	615.00 (August 2, September 11 and 12)	865.00 (August 2)
Average	282.12	5.06	537.74	658.10
<b>Handy and Harman:</b>				
<b>1999</b>				
	278.81	5.25	XX	XX
<b>2000:</b>				
August	274.44	4.93	XX	XX
September	273.53	4.95	XX	XX
October	270.00	4.88	XX	XX
Average year to date	280.98	5.06	XX	XX
<b>London Final: 1/</b>				
<b>1999</b>				
	278.77	5.22	XX	XX
<b>2000:</b>				
August	274.47	4.88	XX	XX
September	273.68	4.89	XX	XX
October	270.00	4.83	XX	XX
Average year to date	281.09	5.01	XX	XX

XX Not applicable.

1/ Silver price reported as "London Spot/US Equiv."

Source: Platt's Metals Week.

TABLE 3  
U.S. IMPORTS AND EXPORTS OF GOLD 1/

(Kilograms of gold content, unless otherwise specified)

Period and country	Ores and concentrates 2/	Doré and precipitates	Refined bullion 3/	Ash and residues	Total 4/	Waste and scrap (gross weight)	Metal powder (gross weight)	Gold compounds (gross weight)
<b>Imports for consumption:</b>								
1999	117	24,700	196,000	133	221,000	30,500	5,500	9,400
<b>2000:</b>								
June	3	1,910	10,400	8	12,300	1,820	600	144
July	8	1,590	14,300	2	15,900	789	797	114
<b>August:</b>								
Brazil	--	--	3,140	--	3,140	--	--	154
Canada	12	96	12,200 5/	--	12,400	26	608	--
Chile	--	--	550	--	550	--	--	--
Colombia	--	86	341	--	427	10	--	--
Costa Rica	--	16	--	--	16	129	--	--
Dominican Republic	--	--	8	--	8	524	2	--
Fiji	--	--	185	--	185	--	--	--
Japan	--	--	--	--	--	12	--	292 5/
Mexico	--	449	43	1	493	304	--	--
Peru	--	1,210	--	--	1,210	--	--	--
Switzerland	--	--	156	--	156	--	1	--
Other	1	195	158	--	354	96	4	--
Total	13	2,050	16,800	1	18,900	1,100	614	446
Year to date	40	23,900	117,000	15	141,000	12,500	3,050	7,300
<b>Exports:</b>								
1999	117	87,300	435,000	--	523,000	40,000	270	561,000
<b>2000:</b>								
June	96	10,000	29,800	--	39,900	3,550	208	275,000
July	270	10,700	5,510	--	16,500	3,130	46	55,100
<b>August:</b>								
Belgium	--	--	--	--	--	212	--	--
Canada	--	452	41	--	493	2,180	7	216,000 5/
Germany	318	--	--	--	318	62	1	6 5/
Israel	--	--	1	--	1	10	2	17,400 5/
Japan	--	110	6	--	116	--	9	--
Lebanon	--	--	--	--	--	--	2	--
Mexico	--	178	2,420	--	2,600	--	2	2
Peru	--	--	641	--	641	--	--	--
Switzerland	2	6,200	1,000	--	7,200	--	--	--
United Arab Emirates	--	--	1,500	--	1,500	--	--	--
United Kingdom	--	--	15,400	--	15,400	1,460	--	1
Other	--	22	256	--	279	23	(6/)	95 5/
Total	320	6,960	21,300	--	28,600	3,940	22	233,000
Year to date	691	74,100	266,000	--	341,000	36,600	61	1,130,000

-- Zero.

1/ Data are rounded to no more than three significant digits; may not add to totals shown.

2/ Includes gold content of base metal ores, concentrates, and matte imported for refining.

3/ Bullion also moves in both directions between U.S. markets and foreign stocks on deposit in the Federal Reserve Bank. Monetary gold excluded.

4/ "Waste and scrap," "Metal powder," or "Gold compounds" not included in "Total."

5/ All or part of these data have been referred to the U.S. Census Bureau for verification.

6/ Less than 1/2 unit.

Source: U.S. Census Bureau.

TABLE 4  
U.S. IMPORTS AND EXPORTS OF SILVER, REFINED AND AS NITRATE 1/

(Kilograms)

Period and country	Bullion (silver content)	Doré (silver content)	Total (silver content)	Other unwrought silver (gross weight)	Metal powder (gross weight)	Silver nitrate (gross weight)
<b>Imports for consumption:</b>						
1999	2,660,000	407,000	3,070,000	126,000	120,000	4,480
<b>2000:</b>						
June	222,000	3,650	226,000	10,600	40,100	23
July	197,000	--	197,000	19,600	19,500	1,000
<b>August:</b>						
Canada	112,000	--	112,000	9,530	--	--
Chile	1,000	--	1,000	--	--	--
Colombia	456	--	456	--	--	--
Fiji	70	--	70	--	--	--
Germany	--	--	--	--	2,390	--
Japan	--	--	--	--	8,730	--
Mexico	125,000	--	125,000	10,100 2/	--	--
Peru	2,100	--	2,100	--	--	--
Switzerland	--	--	--	--	54	--
Other	--	--	--	9 2/	41	--
Total	241,000	--	241,000	19,600	11,200	--
Year to date	2,780,000	68,300	2,850,000	128,000	179,000	8,230
<b>Exports:</b>						
1999	481,000	64,400	545,000	75,100	324,000	62,500
<b>2000:</b>						
June	860	4,760	5,620	7,370	32,000	24,500
July	323	1,250	1,570	3,720	43,200	25,100
<b>August:</b>						
Australia	--	--	--	--	--	2,000
Bahamas, The	--	--	--	21	--	100
Belgium	--	--	--	59	--	--
Canada	58	--	58	88	1,700	18,900
China	--	--	--	--	273	--
Dominican Republic	--	--	--	116	--	--
France	666	--	666	--	1,930	--
Germany	--	--	--	79	5,180	--
Hong Kong	--	--	--	--	1,070	--
India	19,100	--	19,100	--	--	--
Ireland	--	--	--	--	188	--
Japan	--	--	--	81	9,120	--
Korea, Republic of	--	--	--	70	1,440	--
Lebanon	--	--	--	--	111	--
Mexico	4,780	--	4,780	--	472	294
Netherlands	--	--	--	24	533	--
Singapore	--	--	--	165	225	--
Sweden	--	--	--	--	3,470	--
Switzerland	--	1,170	1,170	12 2/	--	--
Taiwan	--	--	--	2,130	4,360	--
United Kingdom	--	568	568	23	6,330 2/	--
Other	--	--	--	80	34 2/	--
Total	24,600	1,740	26,300	2,940	36,400	21,300
Year to date	174,000	32,600	207,000	41,200	269,000	154,000

-- Zero.

1/ Data are rounded to no more than three significant digits; may not add to totals shown.

2/ All or part of these data have been referred to the U.S. Census Bureau for verification.

Source: U.S. Census Bureau.

TABLE 5  
U.S. IMPORTS AND EXPORTS OF SILVER, RAW, SEMIMANUFACTURED, AND WASTE AND SCRAP 1/

(Kilograms of silver content, unless otherwise specified)

Period and country	Silver ores and concentrates	Base metal ores and concentrates	Ash and residues	Total	Semimanufactured form 2/ 3/ (gross weight)	Waste and scrap (gross weight)
Imports for consumption:						
1999	10,800	2,750	101,000	115,000	137,000	1,640,000
2000:						
June	55	--	5,240	5,290	4,670	93,200
July	--	--	2,470	2,470	15,300	100,000
August:						
Australia	--	--	245	245	--	8
Belgium	--	--	--	--	--	674
Brazil	--	--	--	--	3,500	297
Canada	337	--	1,460	1,800	170 4/	5,360
China	--	--	--	--	--	1,040
Costa Rica	--	--	--	--	--	1,160
Dominican Republic	--	--	--	--	--	153
France	--	--	--	--	117 4/	1,080
Germany	--	--	--	--	2,610	3,010
India	--	--	--	--	121	--
Japan	--	--	--	--	124 4/	--
Korea, Republic of	--	--	--	--	--	176
Malaysia	--	--	--	--	--	4,160
Mexico	--	--	214	214	202	213
Netherlands	--	--	--	--	100 4/	--
Pakistan	--	--	--	--	--	126
Singapore	--	--	--	--	--	71
Switzerland	--	--	--	--	73	--
United Kingdom	--	--	1,550	1,550	149 4/	105
Other	--	--	--	--	15 4/	2
Total	337	--	3,470	3,800	7,180	17,600
Year to date	1,420	--	31,700	33,100	69,200	708,000
Exports:						
1999	70,800	--	--	70,800	122,000	1,310,000
2000:						
June	5	--	--	5	10,300	136,000
July	30,000	--	--	30,000	9,630	86,300
August:						
Argentina	--	--	--	--	139	--
Belgium	--	--	--	--	559	29,200
Brazil	60	--	--	60	368	--
Canada	--	--	--	--	2,770	37,700
China	--	--	--	--	964	18,800
Ecuador	--	--	--	--	--	1,090
Germany	--	--	--	--	213 4/	14,600
Hong Kong	--	--	--	--	669 4/	26
Ireland	--	--	--	--	--	278
Israel	--	--	--	--	58	--
Italy	--	--	--	--	44 4/	16,300
Japan	--	--	--	--	251 4/	181
Korea, Republic of	--	--	--	--	496	--
Mexico	5,350	--	--	5,350	1,030	--
Singapore	--	--	--	--	53 4/	317
Spain	--	--	--	--	482 4/	--
Sweden	--	--	--	--	--	77
Taiwan	--	--	--	--	599	62
Thailand	--	--	--	--	218	--
United Kingdom	--	--	--	--	180 4/	69,900
Other	--	--	--	--	138 4/	--
Total	5,410	--	--	5,410	9,230	188,000
Year to date	62,000	--	--	62,000	109,000	1,100,000

-- Zero.

1/ Data are rounded to no more than three significant digits; may not add to totals shown.

2/ Containing 99.5% or more by weight of silver. Imports only.

3/ Semimanufactured (including silver plated with gold or platinum) forms of silver.

4/ All or part of these data have been referred to the U.S. Census Bureau for verification.

Source: U.S. Census Bureau.



TABLE 6  
U.S. IMPORTS FOR CONSUMPTION OF PLATINUM-GROUP METALS 1/

(Kilograms of metal content, unless otherwise specified)

Period and country	Platinum grain and nuggets	Platinum sponge	Other unwrought platinum	Platinum, other	Platinum waste and scrap	Platinum coins	Unwrought palladium	Palladium, other	Iridium 2/	Unwrought osmium	Unwrought ruthenium	Rhodium 3/
1999	6,100	74,300	7,820	16,500	19,700	171	165,000	24,100	2,250	23	11,400	10,300
2000:												
June	531	5,600	840	351	156	2	12,600	2,340	71	--	712	1,240
July	551	6,710	690	636	291	(4/)	5,970	2,280	131	79	741	776
August:												
Australia	--	--	--	--	32	(4/) 5/	--	--	--	--	--	--
Belgium	--	449	--	--	--	--	1,120	--	--	--	--	142
Brazil	--	--	--	54	93	--	--	--	--	--	--	--
Canada	1	--	2	128	15	--	338	33	6	--	--	13 5/
China	--	--	5	--	--	--	94	87	--	--	--	2
Colombia	--	--	10	--	--	--	--	--	--	--	--	--
Estonia	--	--	9	--	--	--	38	--	--	--	--	--
France	--	--	--	--	14	--	--	--	--	--	--	--
Germany	64	303	30	248	26	--	358	242	9	--	55 5/	40
Hong Kong	--	--	--	--	43	--	--	--	--	--	--	--
Indonesia	--	--	--	--	102	--	--	--	--	--	--	--
Israel	--	--	45	--	--	--	--	--	--	--	--	--
Italy	--	2	--	--	80	--	--	29	--	--	--	--
Japan	(4/)	--	--	10	--	--	643	6	3	--	--	(4/)
Korea, Republic of	--	--	--	--	12	--	--	--	--	--	--	--
Malaysia	--	--	--	--	3	--	--	--	--	--	--	--
Mexico	--	--	--	1	12	--	--	--	--	--	--	--
Netherlands	--	--	--	6	--	--	--	2	--	--	--	--
Norway	--	--	--	--	--	--	118	--	--	--	--	--
Russia	--	309	--	--	--	--	4,230	1,030	--	--	--	112
South Africa	187	2,990	62	--	--	--	950	118	34	--	8,510 5/	459
Spain	--	--	--	33	--	--	--	--	--	--	--	--
Switzerland	--	139	--	99	--	--	78	45 5/	--	--	--	--
Taiwan	--	--	--	(4/) 5/	--	--	--	--	--	--	--	--
United Kingdom	--	1,560	(4/)	94	--	(4/)	315	1	86	--	214	389
Total	253	5,750	163	674	431	(4/)	8,290	1,590	138	--	8,780	1,160
Year to date	2,040	47,200	2,520	4,490	11,000	19	87,800	24,100	1,590	102	17,800	11,900

-- Zero.

1/ Data are rounded to no more than three significant digits; may not add to totals shown.

2/ Unwrought and other forms of iridium.

3/ Unwrought and other forms of rhodium.

4/ Less than 1/2 unit.

5/ All or part of these data have been referred to the U.S. Census Bureau for verification.

Source: U.S. Census Bureau.

TABLE 7  
U.S. EXPORTS OF PLATINUM GROUP METALS 1/

(Kilograms of metal content, unless otherwise specified)

Period and country	Palladium 2/	Platinum 2/	Platinum waste and scrap	Iridium, osmium and ruthenium 2/ 3/	Rhodium 2/
1999	43,800	19,400	7,660	851	114
2000:					
June	8,080	4,960	1,130	102	64
July	4,600	1,410	303	296	143
August:					
Australia	28	8	--	1	--
Belgium	138	27	10	--	--
Brazil	(4/)	8 5/	--	(4/)	--
Canada	652	293	45	--	(4/)
Cayman Islands	--	1	--	--	--
China	50	18	--	--	--
Denmark	8	2	--	--	--
Finland	1	1	--	--	--
France	5	8	--	3	--
Germany	399	62 5/	238	5	1 5/
Hong Kong	2	15	--	--	(4/)
India	--	3	--	--	--
Indonesia	--	--	--	--	(4/)
Ireland	--	55	--	--	(4/)
Israel	1,410 5/	(4/)	--	--	--
Italy	--	18	1	--	--
Japan	505 5/	520 5/	41	--	56 5/
Korea, Republic of	223	31	--	--	(4/)
Kuwait	2	4	--	--	--
Malaysia	3	10	--	--	--
Mexico	5 5/	14	--	--	(4/)
Netherlands	151	3	--	1	--
New Zealand	6 5/	--	--	--	--
Philippines	12 5/	--	--	--	--
Saudi Arabia	--	--	9	--	--
Singapore	3	--	--	--	--
South Africa	--	1	1	--	--
Spain	3	19	--	--	--
Sweden	2	1 5/	--	4	--
Switzerland	--	1	--	--	--
Taiwan	195	7	--	--	--
Thailand	2	4	--	--	(4/)
Turkey	1	--	--	--	--
United Arab Emirates	--	--	--	--	(4/)
United Kingdom	143 5/	1,250	88	76	--
Total	3,940	2,380	434	91	59
Year to date	36,000	20,100	4,650	1,010	584

-- Zero.

1/ Data are rounded to no more than three significant digits; may not add to totals shown.

2/ Unwrought and other forms.

3/ Gross weight.

4/ Less than 1/2 unit.

5/ All or part of these data have been referred to the U.S. Census Bureau for verification.

Source: U.S. Census Bureau.