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By

C.B. Green and T.K. Bundtzen

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794 University Avenue, Suite 200  
Fairbanks, Alaska 99709-3645

# SUMMARY OF ALASKA'S MINERAL INDUSTRY IN 1988

By C.B. Green<sup>1</sup> and T.K. Bundtzen<sup>2</sup>

## INTRODUCTION

Alaska's mineral industry expanded dramatically in 1988 with significant increases in exploration and development expenditures, and in the value of mineral production. Exploration expenditures nearly tripled from \$15.7 million in 1987 to \$44.5 million in 1988. The Greens Creek and Red Dog mines both experienced peak construction activities during the year, more than doubling development expenditures from \$100.3 million in 1987 to \$269.7 million in 1988. The total value of mineral production increased 14 percent in 1988 to \$232.2 million led by a 16-percent increase in gold production (from 229,700 oz in 1987 to 265,500 oz in 1988) and a modest recovery of the building stone and sand and gravel industries.

The total value of Alaska's mineral industry in 1988, measured by the sum of exploration and development expenditures, and the value of mineral production, increased over 72 percent from \$318.4 million in 1987 to \$546.4 million in 1988 (table 1). The number of people employed in the various segments of the mining industry in 1988 is estimated to have increased 49 percent to 4,904 in 1988, up from 3,299 in 1987.

Table 1. Total value of mineral industry in Alaska, 1986-1988.

	<u>1986</u>	<u>1987</u>	<u>1988</u>
Exploration	\$ 8,914,744	\$ 15,734,061	\$ 44,503,800
Development	24,331,972	100,250,848	269,745,400
Production	<u>198,461,007</u>	<u>202,389,898</u>	<u>232,172,200</u>
TOTAL	\$231,707,723	\$318,374,807	\$546,421,400

## PRODUCTION

Gold production again led all other mineral commodities and accounted for 49 percent of total dollar value. An estimated 265,500 oz of gold were produced and valued at \$112.8 million. This represents an increase of 16 percent by quantity and 8 percent by value over 1987 levels. USIBELLI COAL MINE, INC. shipped a record 810,862 tons of coal to the KOREAN ELECTRIC POWER COMPANY, sent 13,467 tons for testing in Japan, and 726,833 tons fueled six interior Alaska power plants. Coal production in 1988 was 1.55 million tons, for an estimated value of \$44 million--about the same as 1987 levels. Sand and gravel production was 17.2 million tons, worth \$48.8 million--again about the same as 1987 levels. Approximately 3.6 million tons of building stone worth \$24.6 million was produced in 1988, up nearly 112 percent by value from 1987 levels. Infrastructure development at the Red Dog mine and Bradley Lake hydroelectric project and at several mine sites in southeast Alaska were responsible for this increase in building stone use. Gold, coal, building stone, and sand and gravel accounted for 99 percent of the total value of Alaska mineral production in 1988. Tin, silver, tungsten, jade, platinum, soapstone, and peat accounted for the remaining 1 percent.

The increase in 1988 gold production reflected increased production from several of the largest placer operations and from two interior hard rock lode mines. The VALDEZ CREEK MINING COMPANY placer operation east of Cantwell produced 52,961 oz of gold and was Alaska's largest gold producer in 1988. Approximately 200 small gold placer operations produced at levels similar to 1987. CITIGOLD ALASKA, INC. and TRICON MINING, INC. produced 21,500 oz of gold-silver bullion from lode deposits on Ester Dome near Fairbanks.

<sup>1</sup>Alaska Division of Business Development, 1001 Noble Street, Ste. 360, Fairbanks, Alaska 99701.

<sup>2</sup>Alaska Division of Geological and Geophysical Surveys, 3700 Airport Way, Fairbanks, Alaska 99709.

Table 2. Reported mineral production in Alaska 1986-1988. <sup>a</sup>

Metals	Quantity			Estimated values <sup>b</sup>		
	1986	1987	1988	1986	1987	1988
Gold (oz)	160,000	229,700	265,500	\$ 60,800,000	\$104,516,230	\$112,837,000
Mercury (lb)	912	NR	W	2,800	NR	W
Antimony (lb)	45,000	NR	NR	67,500	NR	NR
Platinum (oz)	W	W	25	W	W	13,750
Silver (oz)	24,000	54,300	47,790	134,400	390,960	281,950
Tin (lb)	340,000	288,000	300,000	890,000	460,000	950,000
Tungsten (stu)	120	160	240	<u>22,800</u>	<u>11,400</u>	<u>14,000</u>
Subtotal				\$ 61,917,500	\$105,378,590	\$114,096,700
<b>Industrial minerals, coal and peat</b>						
Jade and soapstone (ton)	2.0	3.6	W	\$ 12,000	\$ 78,000	\$ W
Sand and gravel (mt)	20.9	16.7	17.2	75,761,507	42,659,808	48,750,500
Building stone (mt)	4.2	1.8	3.6	<u>20,320,000</u>	<u>11,620,000</u>	<u>24,650,000</u>
Subtotal				\$ 96,093,507	\$ 54,357,808	\$ 73,400,500
Coal (ton)	1,492,707	1,508,927	1,551,162	\$ 40,100,000	\$ 42,354,500	\$ 44,300,000
Peat (yd <sup>3</sup> )	50,000	46,000	55,000	<u>350,000</u>	<u>299,000</u>	<u>375,000</u>
Subtotal				<u>\$ 40,450,000</u>	<u>\$ 42,653,500</u>	<u>\$ 44,675,000</u>
TOTAL				\$198,461,007	\$202,389,898	\$232,172,200

<sup>a</sup> Production data from DGGs questionnaires, phone interviews with mine operators, Alaska Department of Transportation and Public Facilities, the U.S. Army Corps of Engineers, and other confidential sources.

<sup>b</sup> Values calculated from 1988 annual price averages of gold, silver, and platinum; other values directly supplied by mine operators. NR = not reported; W = withheld; mt = million ton; stu = short-ton unit.

Table 3. Reported refined gold production, number of operators, and industry employment in Alaska by region and mining district, 1987-88.<sup>a</sup>

Region and mining district	1987			1988		
	Number of operators	Production (oz)	Number of employees	Number of operators	Production (oz)	Number of employees
Northern Chandalar Shungnak Koyukuk-Nolan	8	7,256	40	8	6,500	32
Western Nome Kougarok Port Clarence Fairhaven Ruby Solomon Koyuk Council	46	101,244	414	48	98,500	425
Eastern Interior Circle Livengood-Tolovana Fairbanks Fortymile Manley-Eureka Richardson Bonnifield Rampart	81	50,690	380	89	76,550	415
Southcentral Cache Creek Chistochina Valdez Creek Kenai Peninsula Nelchina	29	46,460	251	30	68,300	315
Southwestern Innoko-Tolstoi Iditarod-George River Moore Creek Nyac Crooked Creek Lake Clark-Mulchatna	36	20,650	129	33	14,800	108
Southeastern and Alaska Peninsula	5	3,400	35	3	850	10
TOTAL	205	229,700	1,249	211	265,500	1,305

<sup>a</sup>1988 production estimated from 208 mechanized placer mines and three lode mines statewide. Small 'recreational-assessment' projects that recover bullion from panning, pick-and-shovel prospecting, long-tom sluicing, and suction dredging are not included.

## DEVELOPMENT

Both the Greens Creek and Red Dog mine projects underwent peak construction activities during 1988. An estimated \$269 million were spent in 1988 for the construction of roads, and port, mine, mill and camp facilities at those mine sites.

Greens Creek, located on Admiralty Island near Juneau, will begin production in early 1989 and, at full capacity, is designed to produce 85,000 tons of concentrate annually, containing an estimated 6.4 million oz of silver, 36,000 oz of gold, 24,800 tons of zinc, and 9,000 tons of lead. The mine will become the first major lode producer in Alaska for four decades. The joint venture project is operated by the GREENS CREEK MINING COMPANY, a subsidiary of BP MINERALS AMERICA. The joint venture partners include BP MINERALS AMERICA (53.1 percent), HELCA MINING (28.0 percent), CSX OIL AND GAS CORPORATION (12.6 percent), and EXALAS RESOURCES (6.3 percent). When fully operational, Greens Creek will fill over 200 year-round positions with workers living in the Juneau area and commuting daily to the mine on a specially constructed catamaran ferry.

Construction activities in 1988 brought the Red Dog project, located 90 mi north of Kotzebue in the De Long Mountains, to 60-percent completion. The Red Dog deposit is owned by the NANA REGIONAL CORPORATION and operated by COMINCO ALASKA INCORPORATED. During 1988, the 52-mi road from the port site near Kivalina to the mine site was completed. At the port site, construction of the concentrate storage building, fuel tanks, and ship loading facilities was undertaken. At the mine site, the camp accommodations and mine services buildings were constructed, the foundation for the concentrator mill prepared, and earthwork done at the main pit and tailings impoundment dam. During 1988, an estimated 1,000 people were employed on the construction of the road, port, and mine site. Start-up of the mine is scheduled for early 1990, with the first concentrate shipments to be made during that summer. At full capacity, the mine will produce 580,000 ton/yr of zinc concentrate, 120,000 ton/yr of lead concentrate, and 50,000 ton/yr of concentrate suitable for feed to an Imperial smelter furnace.

## EXPLORATION

Exploration activities in Alaska increased significantly in 1988, with expenditures totaling \$44.5 million, an increase of 184 percent over 1987. Reported exploration employment increased 147 percent to a total of 2,780 person-months, from 1,126 person-months in 1987. As in previous years, the primary focus of exploration programs was precious metals. Over 90 percent of all expenditures were for precious metal exploration, with expenditures for coal and base metal exploration representing 6 percent and 3 percent, respectively.

Southeast Alaska was the most active region in the state in terms of expenditures and employment. Over \$20 million was spent and 1,200 person-months of employment were reported in the region, representing 46 percent of statewide exploration project expenditures. Several southeastern exploration projects advanced to the point where feasibility studies, and preliminary environmental baseline and permitting activities, will be undertaken in 1989. These include the AJ Mine and Kensington Mine projects operated by ECHO BAY MINES and the Jualin Mine project operated by CURATOR AMERICAN. Other notable lode gold projects with significant exploration drilling programs in the region were carried out by LAC MINERALS, NEWMONT GOLD, and FMC GOLD. While much additional exploration activity is focusing on the reexamination of historical mines and properties in the region, grass-roots exploration efforts resulted in significant new mineral discoveries in 1988.

All other regions of the state experienced significant increases in exploration activity. Notable projects with major exploration drilling programs on lode gold deposits were carried out by PLACER DOME, SOLOMON GOLD, and BHP UTAH INTERNATIONAL near Nome in the western region; by TRICON MINING, NERCO MINERALS, AMERICAN COPPER & NICKEL, and BP MINERALS in the eastern interior region; by BATTLE MOUNTAIN and COMINCO in the southwestern region; by GOLDEN ZONE RESOURCES, COMINCO, AMAX EXPLORATION, and HUNT, WARE & PROFFETT in the southcentral region; and by BATTLE MOUNTAIN and ASHTON MINING in the Alaska Peninsula region.

In coal exploration, IDEMITSU ALASKA INC. carried out a major program on its state leases in the Matanuska coalfield near Palmer. In June 1988, IDEMITSU announced that UNION PACIFIC RESOURCES, its partner in the project, had withdrawn. IDEMITSU acquired UNION PACIFIC'S interest, and, under a preliminary project schedule, could complete project permitting in 1990 and could begin export in 1991 of up to 1.1 million ton/yr of bituminous coal to Japan.

Table 4. Reported Alaska mineral exploration expenditures by region 1986-88.<sup>a</sup>

Region	1986	1987	1988
Northern	\$ 601,000	\$ 621,000	\$ 993,000
Western	582,800	1,176,500	3,836,550
Eastern interior	2,378,174	3,337,931	6,163,100
Southcentral	2,408,850	3,430,470	9,187,650
Southwestern	176,200	615,000	1,885,000
Southeastern	2,746,220	5,846,000	20,641,500
Alaska Peninsula	21,500	707,160	1,797,000
	\$8,914,744	\$15,734,061	\$44,503,800

#### GOVERNMENT ACTIONS

Several significant legal or governmental actions affecting Alaska's mineral industry took place in 1988. The U.S. Supreme Court declined to hear the State of Alaska's appeal of the Alaska Supreme Court's interpretation of section 6(i) of the Alaska Statehood Act. As a result, the 1989 Alaska legislature will be amending certain state laws governing the location of state mining claims, addressing the implementation of rental and royalty fees, and determining which state lands will be subject to the new laws.

The Alaska Department of Environmental Conservation adopted new mixing zone water quality regulations in 1988 that may help placer miners and other industrial water users comply with the state's turbidity standards. Guidelines are being developed to allow the new regulations to be tested in 1989 and implemented in the 1990 season. The federal Environmental Protection Agency issued effluent guidelines for placer mining, which will go into effect in 1989 and will require 100-percent recycling of mine process waters for the placer mining industry. The 1989 Placer Mining Conference, to be held in Fairbanks March 29-April 1, 1989, will focus on the mine water recycling and reclamation technologies currently in use nationwide.

In federal actions, the U.S. Bureau of Land Management (BLM) completed draft environmental impact statements (EIS) on the cumulative effects of placer mining on four interior Alaska river drainages. In late 1988, the first of the final EIS's to be issued identified a preferred alternative that proposed allowing placer mining to continue under management policies adopted in 1987. As part of the federal court order that mandated the preparation of the EIS's, an injunction was granted against the operation of placer mines disturbing more than five acres. A record of decision by the Secretary of the Interior on the EIS's is expected in early 1989; however, the lifting of the injunction will be at the discretion of the federal courts. In a similar action, the National Park Service is in its third year of preparing a court ordered EIS on mining in Alaska's National Parks, where all mining has been indefinitely halted since 1985.

In late 1987, the U.S. Minerals Management Service took steps to hold a lease sale for the mining of gold and other minerals on submerged federal lands in Norton Sound. The proposed federal lease tracts are located adjacent to state offshore leases where WESTGOLD is presently operating the Bima bucketline dredge. The draft EIS for the lease sale was completed in November 1988, and the preferred alternative identified 178,282

<sup>a</sup>Both regional and statewide totals are preliminary for 1988 and will be updated in the final report.

acres of outer continental shelf lands for leasing. The final EIS is expected to be complete in May 1989. If a decision is made to proceed with the sale, a notice would be published in October 1989, with the lease sale scheduled for late 1989.