

2-6-3 JSC "Balkhashmed"

(1) The Present Situation

The profit-loss of the JSC "Balkhashmed" for the period between 1996 and 2010 has been estimated according to the production plans shown in Table 2-1-2(1) and (2). The result is indicated in Table 2-6-3(1). The economic aspects of the JSC "Balkhashmed" are summarized as follows;

- 1) The mining and ore-dressing operations at the Balkhash (Kounrad and Sayak Mines and Balkhash Concentrator) are economically unjustified.
- 2) Therefore, Balkhash is principally a custom smelter-refinery producing electrolytic copper and critically vulnerable to the raw material supply situation.
- 3) It is essential and urgent for maintaining the Balkhash operation to develop new resources, namely Koktau, Boshukul and others.
- 4) A large amount of losses will be accumulated in the first three years due to unprofitable operations of the Kounrad and Sayak Mines and the Balkhash Concentrator.
- 5) Development of the Aktogai Ore Deposits is not economically justified. Alternative sources of raw materials should also be sought before the year 2005.
- 6) The operation of the Kounrad and the Sayak Mines and the Balkhash Concentrator should definitely be ceased at the earliest possible occasion. Otherwise, their mounting losses will completely ruin the entire combine.
- 7) An urgent study should be made for a plan to drastically reduce the production of copper cathode at the Balkhash Smelting-Refining Plant for the next few years until sufficient raw material sources are secured.
- 8) As explained in 2-3-1(6) and 2-3-2, 250 million tons of oxide ores with an average grade of 0.25% copper and 54 million tons of smelting slag with an average grade of 0.69% copper are available for extraction of copper either by solvent extraction-electrowinning or by flotation.

Under the present situation of the JSC "Balkhashmed" as above explained, closure of the Kounrad and Sayak Mines is inevitable from the economic point of view.

There are three options as follows;

- 1) To maintain the Balkhash production at the level that meets the planned raw material supplies from East Kazakhstan and foreign sources until 1999, and to shift its main raw material sources to the Koktau and the Boshukul Deposits after 1999 by accelerating exploitation of these deposits. This option requires urgent and detailed review of their feasibilities for raising the necessary funds in order to resume their suspended development works. Even if this plan is materialized, the copper production of the JSC "Balkhashmed" may have to be reduced depending on raw materials supplies from other sources.
- 2) To cease the present smelting-refining operation and adopt a solvent extraction-electrowinning process

utilizing 250 million tons of oxide ores after 1999, if the exploitation of the Koktau and the Boschekul Deposits is regarded as uneconomical and raw material supplies from outside sources are terminated. This option will be accompanied by a drastic reduction in the workforce and will limit its operating life.

3) Scheduled termination of the entire operation by the end of 1999, if the above two options are both uneconomical.

Variation and combinations of the above three options may be sought with detailed and thorough economic assessment of the present smelting-refining operation, the plan of the solvent extraction-electrowinning process and of the exploitation of new resources including the Koktau, Boschekul Deposits and others.

(2) Conceptual Plan for Restructuring

Based on the first of the three options as above mentioned, a conceptual plan for restructuring the JSC "Balkhashmed" has been prepared and rough economic estimation has been made according to the following assumptions;

- 1) Cease the mining operations at Kounrad and Sayak by the end of 1996.
- 2) Commence slag flotation at the Balkhash Concentrator from the beginning of 1997 with its feed rate of 1.8 million tons per year at an average grade 0.67% Cu. The expected recovery rate will be 60% for producing copper concentrates with an average grade of 40% Cu (mainly chalcocite). The production plan is shown in Table 2-6-3(2)
- 3) Accelerate the development and construction of the Koktau-Chilisai and Boschekul mine-concentrator complexes in order that the production may commence in 1998 and 1999, respectively. The production plans have been revised from those indicated in Table 2-1-2(1) and are shown in Table 2-6-3(3) and (4).
- 4) Replace the Aktogai Deposit, which is regarded as uneconomical, by the Samarskoe Deposit, as a raw material source.
- 5) Accelerate the exploration of the Samarskoe Deposit and the development and construction of its mine-concentrator complex in order that the production may commence in 2001. The production plan and its economic performance are shown in Table 2-6-3(5).
- 6) Total Investment funds of US\$550 million, including working capital, will be spent on;

• Improvement of the sulphuric acid plant,	US\$50 million
• Upgrading or renewal of the obsolete facilities,	US\$25 million
• Development-construction of the Koktau-Chilisai Complex,	US\$27 million
• Development-construction of the Boschekul Complex,	US\$250 million
• Other New Project	US\$198 million
- 7) The Samarskoe is designated as the new project on which funds totaling US\$198 million will be spent. The JSC "Balkhashmed" will be able to acquire 66.7% (or two-thirds) of the Samarskoe ownership with the following conditions;

a) Make a loan arrangement of US\$154 million amounting to 70% of the total capital requirement of US\$220 millions.

b) Raise funds amounting to US\$44 million on an equity basis.

The remaining US\$22 million of the capital requirement will be raised on equity basis by a group of private companies which is entitled to exploration and development of the Samarskoe Deposit according to the license issued by Min Geo. In return, the group will be able to retain 33.3% (or one-third) of the Samarskoe ownership.

8) All the necessary finances concerned with the entire Balkhash operations should be arranged by a private enterprise that intends to take over 85% ownership of the JSC "Balkhashmed". The funds will basically be raised in the long term for the 70% portion and on an equity basis for the remaining 30%. Repayment guarantee for lenders of the long-term loans has to be assured by the private enterprise.

9) All the present assets of the JSC "Balkhashmed" are assumed to have been written off by the end of 1995.

10) Other fundamental assumptions such as metal prices, interest rates, sales terms and conditions and so forth remain the same as quoted in sections 2-1 and 2-2 of this report. Based on the above assumption, the production plan of the Balkhash Smelter/Refinery has been revised as shown in Table 2-6-3(6). The result of the economic estimation is shown in Table 2-6-3(7).

According to the results, the consequences of the restructuring are summarized as follows:

1) The long-term loans, including the supplemental loans for making up the first two years' losses will be repaid by 2007, provided that everything goes as planned.

2) The cumulative net cash flow to 2010 which is discounted at the rate of 10% per annum to the beginning of 1996 is estimated at US\$71,388 million, far less than the discounted cumulative equity of US\$130 million. It will take a further 7 years before the discounted net cash flow becomes equal to the equity.

3) The Samarskoe Project appears to be potentially profitable and important for the survival of the JSC "Balkhashmed" in two aspects; one as a major raw material supply source and the other as an attractive investment target.

4) When the three deposits are exploited, the raw material supply to the Balkhash Smelter will be secured to produce around 160 thousand tons of cathode per year at least until 2010, without purchasing concentrates from remote foreign sources. However, additional investment will be required to secure a stable source of raw material supplies beyond 2010.

5) The positive cash flows can be used for exploitation of new raw material sources. However, investors may have a different point of view and may seek better profits for their investment on an equity basis.

(3) Privatization Schedule

According to recent information, a negotiation between the Government of Kazakhstan and a group of private enterprises is continuing for the sale of 85% ownership of the JSC "Balkhashmed" by the Government. The conditions are;

- 1) Repayment of the accumulated debt amounting US\$100 million.
- 2) Raising US\$500 million for investment
- 3) Securing working capital amounting of US\$50 million.

The above economic estimation has taken these conditions into account except for repayment of the accumulated debt. According to the result, the repayment of the accumulated debt of US\$100 million in addition to the investment totaling US\$550 million appears to be an excessive burden for the incoming party from the economic point of view. If it is necessary for the incoming party to bear the accumulated debt, the amount of the investment funds must be reduced. In this case, investment in the Samarskoe Project may be abandoned. The entire plan will become less attractive because the funds for the debt repayment are not concerned with production. It is desirable from the Combine's point of view that the Government arranges a special long term loan with a low interest rate for repayment of the accumulated debt. The economic estimation is revised, assuming that a rescue loan with an annual interest rate of 3% is extended to the JSC "Balkhashmed" for repayment of the accumulated debt amounting to US\$100 million. The result is shown in Table 2-6-3(6), together with the privatization schedule.

Assuming that the rescue loan is repaid prior to the other loan, the repayment will be completed in 2001. Otherwise, the completion of repayment for the other loan will be prolonged by two years to 2009. As a matter of course, the net cash flow will be reduced.

With respect to the privatization schedule, the ownership should be transferred to the group of private firms in accordance with the investment funds expended by the group on equity basis as shown in Table 2-6-3(7). Until the group acquires a majority ownership (50% or more), a management committee, comprising representatives of the Kazakhstan Government and the group, should be set up in order to make important decisions on the corporate management by reviewing the corporate performances. Upon the acquisition of the majority of shares, the management should be left with the corporate board comprising representatives of the share holders.

In addition, the following recommendations are made with regard to the privatization;

- 1) It is not advisable to transfer the majority ownership to foreign firms from the point of view of the national interest. For example, foreign ownership of any enterprise is allowed only up to 49% in the Republic of the Philippines.
- 2) It may be desirable to include national private firms in the group that intend to take over the ownership.
- 3) It is also desirable or even essential to introduce a world renowned metal producer into the group in order to raise funds on the world money markets with advantageous terms and conditions. At the present time, the foreign firms which are dealing with the management transfer contract or are acquiring ownership of combines, are mostly trading houses or private financiers. Involvement of a major metal producer will be one of the significant conditions that international funding agencies, such as the World Bank, EBRD, OECF, and so forth, will take into account.

Table 2-6-3(1) Metal Production Plan (1996-2010) and Profit-Loss Estimation

JSC "Balkhashmet"		1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Raw Material Bulk/wh	Conc. Quantity T.T.	200	200	200	179	190	190	64	64	64	64	64	64	64	64	64
	Contained Cu T.T.	29	28	28	31	33	14	9	9	9	9	9	9	9	9	9
	As kg	600	600	600	537	500	300	152	192	192	192	192	192	192	192	192
	As T															
Kobalt	Conc. Quantity T.T.	45,961	45,961	45,961	41,011	41,530	22,980	14,231	14,231	14,231	14,231	14,231	14,231	14,231	14,231	14,231
	Contained Cr T.T.				14	15	15	15	15	15	15	15	15	15	15	15
	As kg				19	19	19	19	19	19	19	19	19	19	19	19
	As T															
Bauxit	Conc. Quantity T.T.			4,425	24,601	24,601	24,601	24,601	24,601	24,601	24,601	24,601	24,601	24,601	24,601	24,601
	Contained Cu T.T.				31	33	130	130	130	130	130	130	130	130	130	130
	As kg				200	200	1,172	1,172	1,172	1,172	1,172	1,172	1,172	1,172	1,172	1,172
	As T															
Almag	Conc. Quantity T.T.				42,711	42,711	43,393	43,393	43,393	43,393	43,393	43,393	43,393	43,393	43,393	43,393
	Contained Cu T.T.															
	As kg															
	As T															
Zhelezo	Conc. Quantity T.T.	147	147	145	176	176	176	176	176	176	176	176	176	176	176	176
	Contained Cu T.T.	30	30	30	41	41	41	41	41	41	41	41	41	41	41	41
	As kg	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
	As T															
URCUC (Ure Tselviki)	Conc. Quantity T.T.	32	32	32	110	110										
	Contained Cu T.T.	16	17	17	20	20										
	As kg	8	79	101	185	173										
	As T															
Ips & Sinter	Blister Quantity T.T.	35	35	35	35	35										
	As kg	14	14	14	14	14										
	As T															
	Conc. Quantity T.T.	10,195	10,195	10,195	10,195	10,195										
Fiksel	Conc. Quantity T.T.	105	105	105	105	105										
	Contained Cu T.T.	20	20	20	20	20										
	As kg	32,447	32,447	32,447	32,447	32,447										
	As T															
Chis	Conc. Quantity T.T.	35	34	34	33	33										
	Contained Cu T.T.	19	19	19	19	19										
	As kg	46,300	46,300	46,300	46,300	46,300										
	As T															
Others	Conc. Quantity T.T.	12	12	12		104	64	250	124	114	124					
	Contained Cu T.T.	12	12	12		20	46	31	31	31	31					
	As kg	20,427	20,427	20,427		44,413	28,120	87,110	52,055	52,055	52,055					
	As T															
Total	Conc. Quantity T.T.	427	420	425	747	744	745	745	744	744	744	744	744	744	744	744
	Contained Cu T.T.	135	135	135	173	155	135	135	135	135	135	135	135	135	135	135
	As kg	404	415	437	1,527	1,430	1,201	1,543	1,745	1,745	1,745	1,745	1,745	1,745	1,745	1,745
	As T															
Product	Conc. Quantity T.T.	200,152	200,152	200,152	200,152	200,152	200,152	200,152	200,152	200,152	200,152	200,152	200,152	200,152	200,152	200,152
	Contained Cu T.T.	29	29	29	31	33	14	9	9	9	9	9	9	9	9	9
	As kg	600	600	600	537	500	300	152	192	192	192	192	192	192	192	192
	As T															
Revenue	Conc. Quantity T.T.	10,019	10,019	10,019	10,019	10,019	10,019	10,019	10,019	10,019	10,019	10,019	10,019	10,019	10,019	10,019
	Contained Cu T.T.	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19
	As kg	160,954	160,954	160,954	160,954	160,954	160,954	160,954	160,954	160,954	160,954	160,954	160,954	160,954	160,954	160,954
	As T															
Cost	Conc. Quantity T.T.	200,152	200,152	200,152	200,152	200,152	200,152	200,152	200,152	200,152	200,152	200,152	200,152	200,152	200,152	200,152
	Contained Cu T.T.	29	29	29	31	33	14	9	9	9	9	9	9	9	9	9
	As kg	600	600	600	537	500	300	152	192	192	192	192	192	192	192	192
	As T															
Operating Profit (Before Markov)	Conc. Quantity T.T.	20,038	20,038	20,038	20,038	20,038	20,038	20,038	20,038	20,038	20,038	20,038	20,038	20,038	20,038	20,038
	Contained Cu T.T.	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38
	As kg	12,023	12,023	12,023	12,023	12,023	12,023	12,023	12,023	12,023	12,023	12,023	12,023	12,023	12,023	12,023
	As T															
Mining Concentrate	Conc. Quantity T.T.	27,017	27,017	27,017	27,017	27,017	27,017	27,017	27,017	27,017	27,017	27,017	27,017	27,017	27,017	27,017
	Contained Cu T.T.	2,510	2,510	2,510	2,510	2,510	2,510	2,510	2,510	2,510	2,510	2,510	2,510	2,510	2,510	2,510
	As kg	14,113	14,113	14,113	14,113	14,113	14,113	14,113	14,113	14,113	14,113	14,113	14,113	14,113	14,113	14,113
	As T															
Sinter Refiner	Conc. Quantity T.T.	27,017	27,017	27,017	27,017	27,017	27,017	27,017	27,017	27,017	27,017	27,017	27,017	27,017	27,017	27,017
	Contained Cu T.T.	2,510	2,510	2,510	2,510	2,510	2,510	2,510	2,510	2,510	2,510	2,510	2,510	2,510	2,510	2,510
	As kg	14,113	14,113	14,113	14,113	14,113	14,113	14,113	14,113	14,113	14,113	14,113	14,113	14,113	14,113	14,113
	As T															
Total Operating Profit/Loss	Conc. Quantity T.T.	20,038	20,038	20,038	20,038	20,038	20,038	20,038	20,038	20,038	20,038	20,038	20,038	20,038	20,038	20,038
	Contained Cu T.T.	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38
	As kg	12,023	12,023	12,023	12,023	12,023	12,023	12,023	12,023	12,023	12,023	12,023	12,023	12,023	12,023	12,023
	As T															

Table 2-6-3(2) Mine-Concentrator Production of JSC "Balkhashmed"

1996: Kourad and Savak, 1997 to 2010: Slag Flotation (1800 T.T./Year, 0.67% Cu, Recovery 60%)															
	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Mine Output (T)	1,996	1,997	1,998	1,999	2,000	2,001	2,002	2,003	2,004	2,005	2,006	2,007	2,008	2,009	2,010
Mine Output (T)	9,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800
Cu %	0.15	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67
Cu Conc. (T DMT)															
(T WGT. Moist = 8%)															
Cu Conc.	184	18	18	18	18	18	18	18	18	18	18	18	18	18	18
Cu %	14	40	40	40	40	40	40	40	40	40	40	40	40	40	40
Cu T.T.	26	7	7	7	7	7	7	7	7	7	7	7	7	7	7
Au kg	329														
Total Value (T US\$)	57,320	15,432	15,432	15,432	15,432	15,432	15,432	15,432	15,432	15,432	15,432	15,432	15,432	15,432	15,432
Au US\$ 16/oz	4,239														
Total	61,559	15,432	15,432	15,432	15,432	15,432	15,432	15,432	15,432	15,432	15,432	15,432	15,432	15,432	15,432
Profit (US\$ 01/WGT. km)															
Insurance (0.06% of Total Value)															
T.C. (US\$ 80/DMT)	14,720	1,440	1,440	1,440	1,440	1,440	1,440	1,440	1,440	1,440	1,440	1,440	1,440	1,440	1,440
R.C. (US\$ 76/Cu.T.)	4,576	1,232	1,232	1,232	1,232	1,232	1,232	1,232	1,232	1,232	1,232	1,232	1,232	1,232	1,232
Other Cost (Penalty etc.)															
Total	19,296	2,672	2,672	2,672	2,672	2,672	2,672	2,672	2,672	2,672	2,672	2,672	2,672	2,672	2,672
Sales Revenue (T US\$)	47,024	12,760	12,760	12,760	12,760	12,760	12,760	12,760	12,760	12,760	12,760	12,760	12,760	12,760	12,760
Operating Cost:															
(T US\$)	18,130	6,660	6,660	6,660	6,660	6,660	6,660	6,660	6,660	6,660	6,660	6,660	6,660	6,660	6,660
Overhead	16,640	3,060	3,060	3,060	3,060	3,060	3,060	3,060	3,060	3,060	3,060	3,060	3,060	3,060	3,060
Total	108,364	9,720	9,720	9,720	9,720	9,720	9,720	9,720	9,720	9,720	9,720	9,720	9,720	9,720	9,720
Operating Profit (T US\$)	46,121	3,040	3,040	3,040	3,040	3,040	3,040	3,040	3,040	3,040	3,040	3,040	3,040	3,040	3,040
Tax (T US\$)															
Depreciation															
Deferred Loss (Cum)															
Taxable Income															
Income Tax															
Other Taxes and Levies															
Total Taxes and Levies															
Net Profit (T US\$)															
Capital Expenditure (T US\$)															
Cumulative Capital Expenditure															
Equity															
Loan (10%/Annun)															
Loan Repayment															
Cumulative Loan															
Net Cash Flow															
Cumulative															
Discounted Values															
Capital Expenditure															
to Year 0 at															
a Discount Rate of															
11% Per Annum															
Loan															
Loan and Equity															
Loan Repayment Incl. Interest															
Net Cash Flow															
Loan Repayment and Cash Flow															

Table 2-6-3(3) Mine-Concentrator Production of Koktau-Chilisy

		Mining Reserves 40.5 million T, 1.82% Cu, 3.47 g/t Ag, 0.21 g/t Au														
		1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Mine Output (T, T)	Ore Grade	1,997	1,997	1,998	1,999	2,000	2,001	2,002	2,003	2,004	2,005	2,006	2,007	2,008	2,009	2,010
	Cu %															
	Au g/t															
	Ag g/t															
Method (Open Pit)																
(Extraction %)																
(Dilution %)																
Conc.	Cu Conc. (T, DMT)															
	(T, WMT, Moist. %)															
	Conc. Grade															
	Cu %															
	Au g/t															
	Ag g/t															
	Cont. Metals Recovery															
	Cu T															
	Ag T															
	Au %															
	Ag T															
Total Value:	Cu US\$204/GT	50,706	77,161	77,161	77,161	77,161	77,161	77,161	77,161	77,161	77,161	77,161	77,161	77,161	77,161	77,161
(T, US\$)	Au US\$ 12.9/g	298	452	452	452	452	452	452	452	452	452	452	452	452	452	452
	Ag US\$ 161/kg															
Sales Cost:	Total	51,004	77,613	77,613	77,613	77,613	77,613	77,613	77,613	77,613	77,613	77,613	77,613	77,613	77,613	77,613
	Freight (US\$0.01/WMT km)	3,050	4,350	4,350	4,350	4,350	4,350	4,350	4,350	4,350	4,350	4,350	4,350	4,350	4,350	4,350
	Insurance (0.08% of Total Value)	41	62	62	62	62	62	62	62	62	62	62	62	62	62	62
	T.C. (US\$30/DMT)	9,040	13,920	13,920	13,920	13,920	13,920	13,920	13,920	13,920	13,920	13,920	13,920	13,920	13,920	13,920
	R.C. (US\$170/Cu T)	4,048	6,160	6,160	6,160	6,160	6,160	6,160	6,160	6,160	6,160	6,160	6,160	6,160	6,160	6,160
	Other Cost (Penalty etc.)	1,458	2,245	2,245	2,245	2,245	2,245	2,245	2,245	2,245	2,245	2,245	2,245	2,245	2,245	2,245
	Total	17,637	26,737	26,737	26,737	26,737	26,737	26,737	26,737	26,737	26,737	26,737	26,737	26,737	26,737	26,737
Sales Revenue (T, US\$)		33,367	50,424	50,424	50,424	50,424	50,424	50,424	50,424	50,424	50,424	50,424	50,424	50,424	50,424	50,424
Operating Cost:	Mine	8,250	12,650	12,650	12,650	12,650	12,650	12,650	12,650	12,650	12,650	12,650	12,650	12,650	12,650	12,650
	Concentrator	5,550	8,510	8,510	8,510	8,510	8,510	8,510	8,510	8,510	8,510	8,510	8,510	8,510	8,510	8,510
	Overhead	1,800	2,700	2,700	2,700	2,700	2,700	2,700	2,700	2,700	2,700	2,700	2,700	2,700	2,700	2,700
	Interest on Loan															
	10%/An															
Operating Profit (T, US\$)		15,600	23,920	23,920	23,920	23,920	23,920	23,920	23,920	23,920	23,920	23,920	23,920	23,920	23,920	23,920
Tax (T, US\$)		17,767	26,504	26,504	26,504	26,504	26,504	26,504	26,504	26,504	26,504	26,504	26,504	26,504	26,504	26,504
Depreciation																
Deferred Loss (Cum)																
Taxable Income																
Income Tax																
Other Taxes and Levies																
Total Taxes and Levies																
Net Profit (T, US\$)																
Capital Expenditure (T, US\$)																
Cumulative Capital Expenditure																
Equity																
Loan (10%/Annum)																
Loan Repayment																
Cumulative Loan																
Net Cash Flow																
Cumulative																
Discounted Values																
to Year 0 at																
Discount Rate of																
11% Per Annum																
Loan and Equity																
Loan Repayment Incl. Interest																
Net Cash Flow																
Loan Repayment and Cash Flow																

Table 2-6-3(4) Mine-Concentrator Production of Boshukul

		Mining Reserves 176 million T, 0.65% Cu, 7.18 g/t Ag, 0.22 g/t Au														
		1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Mine Output (T)		1,998	1,987	1,998	1,999	2,000	2,001	2,002	2,003	2,004	2,005	2,006	2,007	2,008	2,009	2,010
Method (Open Pit)																
(Extraction 80%)																
(Dilution 20%)																
Grade																
Cu Conc. (T DMT)	Cu %															
(T. Moist. 8%)	Au g/t															
Conc. Grade	Ag g/t															
	Cu %															
	Au g/t															
	Ag g/t															
Cont. Metals Recovered	Cu T.T. %															
	Au %															
	Ag %															
Total Value:																
(T. US\$)																
	Cu US\$2204.6/T															
	Au US\$12.9/g															
	Ag US\$161/g															
	Total															
Sales Cost:																
(T. US\$)																
	Freight (US\$0.017/Mt.km)															
	Insurance (0.06% of Total Value)															
	T. C. (US\$300/Mt)															
	R. C. (US\$174/Cu T.)															
	Other Cost (Penalty etc.)															
	Total															
Sales Revenue (T. US\$)																
Operating Cost:																
(T. US\$)																
	Mine															
	Concentrator															
	Overhead															
	Interest on Loan															
	Total															
Operating Profit (T. US\$)																
Tax (T. US\$)																
Depreciation																
Deferred Loss (Cum)																
Taxable Income																
Income Tax																
Other Taxes and Levies																
Total Taxes and Levies																
Net Profit (T. US\$)																
Capital Expenditure (T. US\$)																
Equity																
Loan (10%/Annum)																
Loan Repayment																
Cumulative Loan																
Net Cash Flow																
Cumulative																
Discounted Values																
to Year 0 at																
a Discount Rate of																
11% Per Annum																
Loan																
Loan and Equity																
Loan Repayment Incl. Interests																
Net Cash Flow																
Loan Repayment and Cash Flow																

Table 2-6-3(8) Revised Economic Estimation of JSC "Balkhashmed"

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
JSC "Balkhashmed"															
Operating Profit	-66,321	3,040	3,040	3,040	3,040	3,040	3,040	3,040	3,040	3,040	3,040	3,040	3,040	3,040	3,040
Koktau-Chitisa			17,670	26,504	26,504	26,504	26,504	26,504	26,504	26,504	26,504	26,504	26,504	26,504	26,504
Boshekul				9,878	17,724	17,724	17,724	17,724	17,724	17,724	17,724	17,724	17,724	17,724	17,724
Smelting/Refining	1,872	3,991	13,347	23,247	26,336	22,252	22,774	22,774	22,774	22,774	22,774	22,774	22,774	22,774	22,774
= Return from New Projects						19,374	37,729	37,729	36,097	33,919	33,333	31,568	21,407	21,407	21,407
Sub total	-64,449	7,031	34,154	62,669	73,604	88,894	107,771	106,739	103,961	103,375	101,610	91,449	91,449	91,449	91,449
Interest on Loan A (7%/Annun)	6,370	18,390	26,640	30,315	33,990	34,480	33,135	29,092	24,852	20,455	15,978	11,310	6,801	1,953	
Interest on Loan B (3%/Annun)	3,000	3,000	3,000	2,835	2,009	941									
Interest Total	9,370	21,390	29,640	33,150	35,999	35,421	33,135	29,092	24,852	20,455	15,978	11,310	6,501	1,953	
Profit after Interest	-73,819	14,359	7,514	29,519	37,605	54,414	74,636	78,679	81,887	83,506	87,397	90,300	84,948	89,496	91,449
Taxes and Levies				5,000	10,000	10,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000
Depreciation															
Deferred Loss (Cum)	73,819	88,178	85,664	66,415	32,810										
Taxable Income	-73,819	-88,178	-85,664	-66,415	-32,810	29,414	49,636	53,679	56,887	58,506	62,397	65,300	59,948	64,496	66,449
Income Tax (30%)						8,824	14,891	16,104	17,067	17,552	18,719	19,590	17,984	19,349	19,935
Other Taxes and Levies	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
Total Taxes and Levies	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
Net profit after Tax	-75,819	-16,359	-514	17,519	25,605	42,414	62,636	76,679	79,887	81,506	85,397	88,300	82,948	87,496	89,449
Profit after Interest	-70,819	-11,149	7,948	33,205	46,324	61,422	76,805	86,953	90,217	92,244	96,534	99,912	91,449	91,449	91,449
Capital Expenditure	10,000	20,000	20,000												
Sulphuric Acid Plant															
Other Facilities	5,000	5,000	5,000	5,000	5,000										
Koktau-Chitisa	15,000	12,000													
Boshekul	100,000	100,000	50,000												
Other New Projects															
Total	130,000	137,000	138,000	68,000	68,000	2,000									
Cumulative	267,000	405,000	405,000	473,000	541,000	550,000									
Equity	39,000	41,100	36,500	15,500	15,500	2,000									
Cumulative Equity	80,100	116,600	132,000	147,600	149,600										
Loan (Investment)	91,000	95,900	101,500	52,500	52,500	7,000									
(Supplement)															
Total Loan (7%/annun)	166,819	112,259	101,500	52,500	52,500	7,000									
Rescue Loan (3%/annun)	100,000														
Repayment Loan															
Rescue Loan															
Cumulative Loan	166,819	279,078	380,578	433,078	485,578	473,350	415,605	355,030	292,210	228,256	161,578	92,868	27,904	0	
Rescue Loan	100,000	100,000	94,486	66,967	31,362	0									
Net Cash Flow														40,243	69,514
Discounted to 1996															(109,937)
at 10%/Annun															17,066
Private Firms															26,891
Government															(43866)
Ownership Kazak (%)															
Private Firms (%)															
Others (%)															
Management															
Management Committee Board Meeting															

2-6-4 Recommendations for Promotion of the Metal Processing Industry

(1) General

Our first recommendation is for Kazakhstan to invigorate the export markets other than the CIS market, thereby raising its capacity utilization rate. In the CIS countries, demand for copper and its alloys have been declining since the collapse of the Soviet Union while the world demand including for electric cables has been increasing.

In 1994, the world demand for copper and copper alloys was approximately 8.2 million tons (MT), of which 1.8 MT was the demand for plates and strips. The annual demand for wire rods was about 7.4 MT. Of the combined total demand of 15.6 MT, 1.8 MT was exported-imported in the world.

On the other hand, the Kazakh production of plates and strips accounted for less than 2.5% of the world's production even if the planned annual production of 45,000T of the Balkhash is fulfilled. The total production capacity of wire rods at Balkhash and Zhezkazgan is 80,000T or only 1% of the world capacity; in other words, the Kazakh production share is very small even if its capacity is fully utilized.

Concerning production costs, a Kazakh worker's monthly wage is equivalent to 15,000 to 30,000 yen, which is the lowest in Asia after China while electric power rate is 2.00 yen per kWh and LPG costs 12.00 yen per kg. This indicates that the country is in an advantageous position in terms of international cost competitiveness.

The present production equipment of plates, strips and wires at Balkhash is too old to be internationally competitive in terms of the productivity and product quality, whereas the equipment for wire rods compares favorably with other countries.

Despite these facts, the capacity utilization rate (annual output/ production capacity) is less than 25% in Kazakhstan which is considered attributable to the fact that the country relies on the CIS market alone. Kazakhstan should activate its exports to other parts of the world.

Although no clear answers/explanations were given in the interviews during our last visit for the reason they do not export to non-CIS countries of the world. We believe that there are the following problems:

- ① Lack of the export competitiveness in terms of the product quality and productivity;
- ② No support for nurturing the processing industry; and,
- ③ Obstacles caused by export procedures and regulations.

Concerning the three problems, we would like to make comments and recommendations in the following paragraphs:

- ① Lack of export competitiveness in terms of the product quality and productivity

The top priority should be given to the question of quality. The current trend in the world market is that users do not buy an inferior quality product even at lower prices. This is simply because purchasing low-quality products/materials leads to troubles which make the users' operation less profitable. A fabricator who buys material that has widely varying quality may be forced to repeat machinery readjustment which keeps him from

increasing fabrication speed or may produce inferior goods which lowers the operation yield and may necessitate time-consuming sorting work.

It is most critical to build a quality control system. The first thing to be done for it is to precisely understand the customer's needs, or to find out what the customer desires from the product. We were told in Kazakhstan that some production managers have never met the user of their products. If this is true, it means they do not know their customers' real needs. The production manager should personally meet his clients to learn their needs in exact details while the top management should induce, urge or even order their managers to do so.

Some Kazakh managers have never received a complaint/grievance from their clients. This seems to be abnormal rather than excellent. When one makes some goods, it is quite normal/natural for him to receive some complaints.

There should be some complaints on the quality of Kazakh products, as discussed later. Presumably, such complaints might have been covered up somewhere in the channel between a customer and a producer, or a customer might have fabricated purchased material and delivered the products to his clients, either without quality inspection or knowing defects of the products. If this continues, the final products made of Kazakh copper or copper products will eventually lose the final users' confidence and lead Kazakh producers to the loss of their clients.

The second step to be taken is to determine what and how to control, in order to make products which satisfy the customers' needs based on which products' quality should be improved and stabilized with the operators' cooperation. For this, a number of control documents will be necessary. Types of documents differ depending on how precisely the control is to be done, but the minimum needs are as follows:

- Regulation of Quality Control, describing the chemical composition, inspection standards, etc. ;
- Flow Chart of Quality Control, describing who, when and how to check which items, at each process ;
- Operation Card, describing the production process flow and contents of jobs, in which lot numbers, date of work and operators' names should be filled in. This ensures the traceability when a complaint arises;
- Technical Standards, describing further details of work conditions to ensure operation without error at each process. (for example, the technical standards for the rolling process describes the pass schedule, rolling speed at each pass, reel tension, etc.);
- Standards of Operation, describing operation procedures for ensuring safe and efficient operations; and,
- Daily Record of Operation, which is to be filled out daily by all operators. Operators' names, lot numbers and dimensions of processed materials, processing temperature, special remarks on quality, repair time, etc. are to be filled in, so that information on the productivity, operation ratio of machinery and quality may be made available.

The third step is to educate site operators utilizing the mentioned control documents, in order to raise the quality level. If the quality level is raised, each operator will come to feel responsible for the products they produce. For example, a person in charge of quality control at Balkhash was seen examining the thickness of

strips at the slitter line. In Japan, Europe and USA, items will be checked at each process, in most cases, by operators themselves. It must be recognized that quality is fostered at the production site.

For the enhancement of productivity, it is necessary to make a job analysis, to review the manner of operations and each operator's scope of work, and to improve equipment.

To encourage the Kazakh non-ferrous metal industry, technological assistance from abroad will become necessary in the future. However, the industry must demonstrate that the Kazakh plants are operating under an attractive management system before it receives foreign technological assistance.

To achieve the improvement of quality and productivity, Kazakhstan's own effort is naturally indispensable so it can expedite the achievement of this goal if Kazakh industries receive the guidance of experienced foreign experts. Besides, the Kazakh producers should send as many managers and technicians as possible abroad so that they may see with their own eyes the quality and productivity level of the world. Needless to say, the future of the Kazakh non-ferrous metals and metal processing industries depend upon how many people can be sent overseas.

② Lack of support for fostering the processing industry

If a copper producer, caught by the thought of immediate gain, keeps selling its copper cathodes to outside users instead of supplying them to its own processing division, the division would not keep the machinery in constant operation, the operators' skill would not be improved and no technical improvement could be expected. If such is the case, the processing division's progress could hardly be expected, either.

It is understandable that the industry cannot expect much from the government currently under the severe financial difficulties, but it is the government who must exhibit powerful leadership to break the vicious circle even if it resorts to some controlling measures.

③ Obstacles caused by the export procedures/regulations

Countermeasures to this problems have presumably been incorporated in the government's special program for export promotion. The program should be implemented as early as possible. A regulation hindering export, if any, must be eased or abolished, while complicated procedures must be simplified. If necessary, export incentives should be created.

Our second recommendation deals with enlargement of the variety of products. We have heard of the Kazakh new projects for production of electric cables and copper tubes.

The world annual demand for electric cables is equivalent to 7.2 MT of wire rod, which is expected to further increase, sustained by the needs for the infrastructure improvement in the developing economies; therefore, the electric cable project appears to be promising.

The world tube market absorbs 1.26 MT annually, or 15% of the total demand for copper and copper alloys. The demand is also expected to expand when the potential market in China, Southeast Asia and the CIS countries are considered. If these countries will use copper tubes not only for heat exchangers but for the city water, as the

United States does, the consumption will dramatically expand. For reference, the US annual demand for copper tubes for city water use is about 500,000 T. Therefore, we believe that the Kazakh tube project should also be promoted, in principle.

Nevertheless, we find it questionable that these new projects are immediately commenced. It would only serve to increase troubles if these projects are hastily started before the future prospect of the existing enterprises becomes certain. In the first place, all the efforts should be concentrated on solidifying the existing enterprises. After their future prospect is made certain, the new projects may be started. For reference, an estimate of construction costs of a copper tube plant is shown in Table 2-6-4(1) on the next page.

The third recommendation concerns fostering the downstream industries which use processed products of copper, zinc, lead, etc.

In terms of the consumption to production ratio in major countries of the world, France is the lowest at 64%, while Spain is the highest at 147%, between which situated are USA (106%), Japan (82%) and Germany (78%). As it indicates, major producing countries of copper and copper alloys have large domestic markets. However in Kazakhstan and the other CIS members, the military industry was the only large domestic user. This caused the quick decline of capacity utilization rate of the Kazakh metal processing industry after the Soviet Union was dismantled.

Generally, domestic users favor domestically produced materials which have advantages over imports in delivery time and after-sales service. As long as the quality of the materials are stable, domestic users will remain as stable customers and not susceptible to variations of the economic conditions.

Based upon these observations, the government is recommended to foster the downstream industries of base metals, such as electrical appliances, automobiles, and gas/oil equipment, with a view to stabilizing the demand for copper, zinc, lead, etc.

(2) Zhezkazgan

① Recommendations relating to Productivity

The Zhezkazgan and a Japanese wire rod plant are using the same type of equipment as seen in the comparative table appearing in the next page (Table 2-6-4(2)). The difference in capacity is due mainly to the difference in the sectional area of an ingot, while both machines are almost the same in respect to length of the line. Comparison of the production capacity and unit weight of coils of the two machines indicate that the quantities of hourly treatment of coil are little different.

On the contrary, personnel assigned to the equipment at Zhezkazgan is about twice the Japanese plant. Generally, the investment may be required to raise the productivity, but this is not the case. The other personnel including managers at Zhezkazgan also appears excessive. In case of the Japanese plant, even if the maintenance and other personnel is included the total number increases only slightly.

In order to improve the productivity, it is necessary to review the manner of operations and the operator's scope of work based on the job analysis of the line and staff personnel.

② Recommendations on quality

The first recommendation concerns the quality of the ingot. The casting conditions must be improved because the ingots have some fundamental defects such as many gas pores and impure substances mixed in them.

Secondly, more attention should be paid to the material's surface conditions. It is necessary to make standards for the periodical check of the material's surface conditions so that operators may check it in accordance with the standards.

More detailed comments on the defects follow in the paragraphs below:

Photo (1) shows the macrostructure of a Japanese ingot. The structure comprises only columnar crystals. The center seams are observed in the upper and lower centers, and a seam from an angle divides the angle equally. This indicates that the molten metal was cooled quickly and uniformly.

Photo (2) shows the macrostructure of a Zhezkazgan ingot. The structure comprises columnar and globular crystals, the latter occupying a greater part. There are some columnar crystals at the both sides, while the upper and lower parts have a few of them. This is attributable either to an excessive drawing speed or to a cooling system being insufficient.

In Photos (2) and (3) -- the latter is an enlargement of "A" portion of the former -- many gas pores are observed which are interpreted as follows: In Zhezkazgan, the cooling speed is so slow that the solidification finishes in the vicinity of the bottom of a casting machine. Covered by the casting drum, the gas in molten metal has no space to go and is trapped within the ingot.

Photo (5) indicates impure substances in the material. Although the impure substances have not been identified due to the limit of time, it is presumed from Photos (4) and (5) that they mixed during casting and, in turn,

appeared on the surface as rolled, where they are partially peeled off. It is necessary to study how such mixture of impure substances took place during casting.

Photos (6) and (7) show surface defects of two types: defects dented with some impure substances which stuck to the roll continuously and defects caused by certain strong scratching taking place somewhere in the final rolling after casting.

Photos (8) to (10) demonstrate the surface situation after a twisting test in which appear some defects similar to those in Photos (6) and (7). Besides, new cracks deriving from certain material's defects are observed.

Table 2-6-4(2) Comparison of Equipment and Personnel of Zhezkazgantsvetmet and a Japanese Wire Rod Plant

	Zhezkazgantsvetmet	Japanese Plant
Manufacturer	Southwire	Southwire
Equipment cap.	12 tons/hr	30 tons/hr
Production cap.*	50,000 tons/y	144,000 tons/y
Coil weight	Normal 3 tons/coil	10 tons/coil
	Max. 5 tons/coil	
Product sizes	8, 16, and 18 mm	8, 10, 13, 18, and 22mm
Personnel	110 Employees	30 Employees
	(Line: 13P x 3 shift = 39P)	(7P x 3 shift = 21P)
	(Staff**: 71P)	(*** 9P)

Note:

* For production capacity, the number of working days and operation ratio of machinery are considered.

** The Zhezkazgan staff personnel includes technical staff and operators for energy, warehouse, repair, electrical equipment, security and cleaning.

*** The Japanese staff personnel includes only technical staff.

Photo (1)

Macro Structure & Situation of Center Seams of Wire Rod Ingot in a Japanese Maker

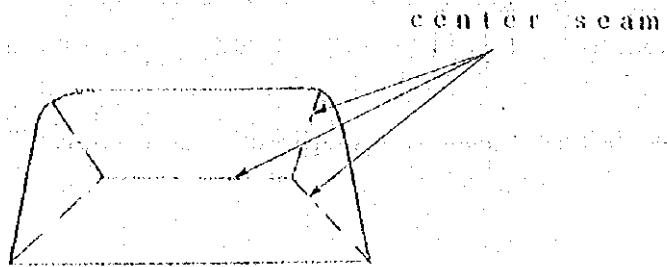
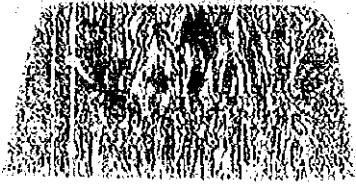
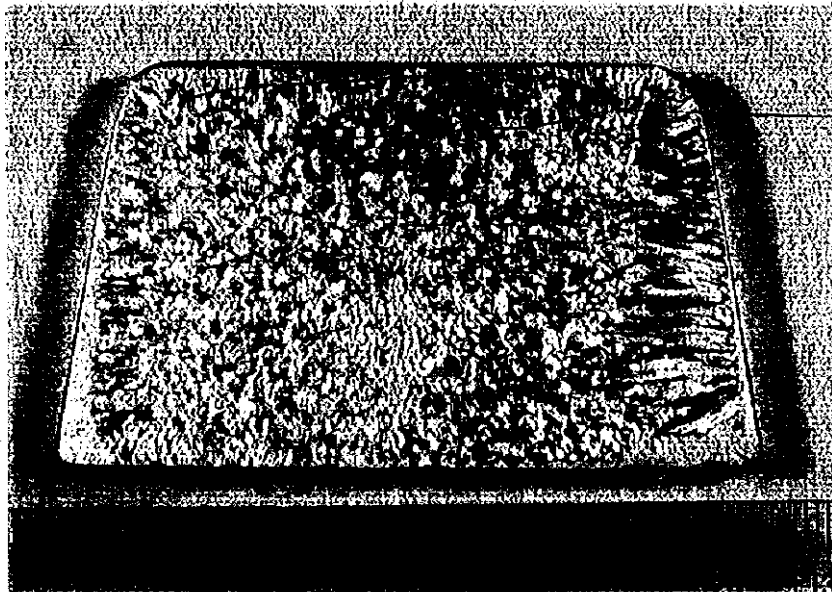


Photo (2) Macro Structure of Wire Rod Ingot



A

Photo (3) Enlargement of "A" (x18)



Gas Holes

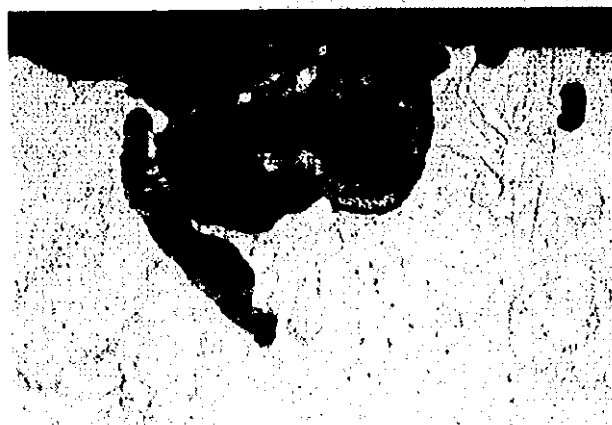
Photo (4) Surface Situation as Rolled (8φ) (x36)



Photo (5) Cross Section of "B"

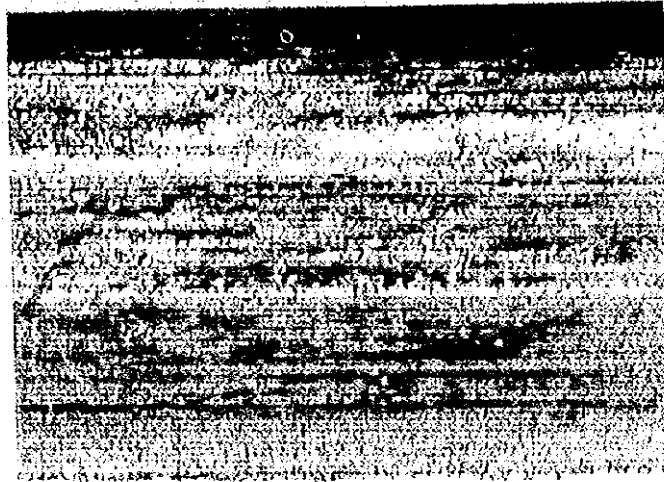
铸造時に混入した異物が轧延中に表面に出てきた。

Alien substances mixed in casting appeared on the surface during rolling.



x 400

Photo (6) Surface Situation as Rolled (8φ)



x 18

Photo (7) Cross Section of "C"

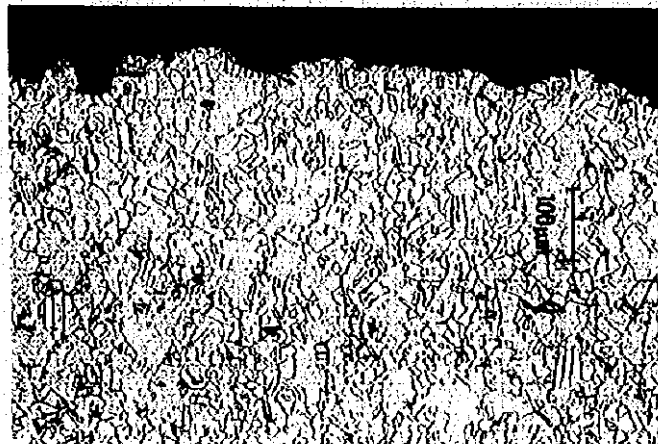
圧延ロールに連続的に付着した異物

より凹んだ疵

Defect dented with
Alien substances which
stuck to Roll continuously

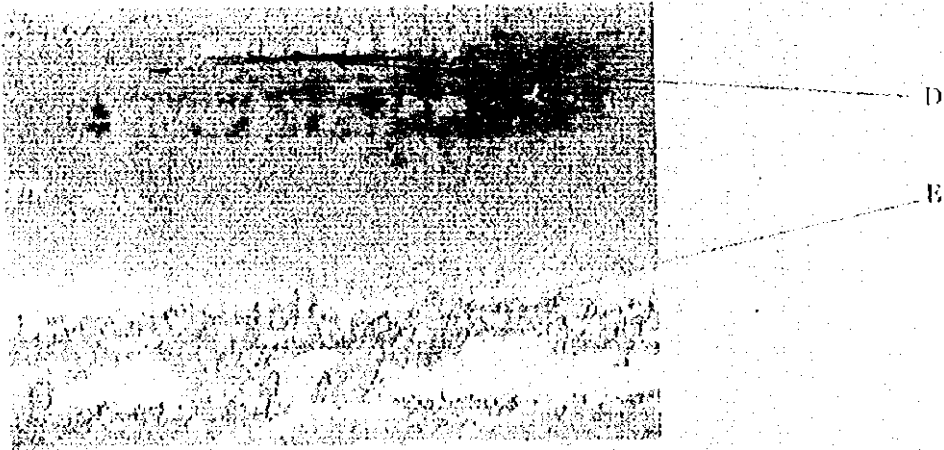
ガイドか何かとの接触に起因する疵

Defects caused by
contact with a Guide
or something



x 100

Photo (8) Surface Situation after Twisting Test (8φ)



x18

Photo (9) Cross Section of "D" (x100)

クラック Crack

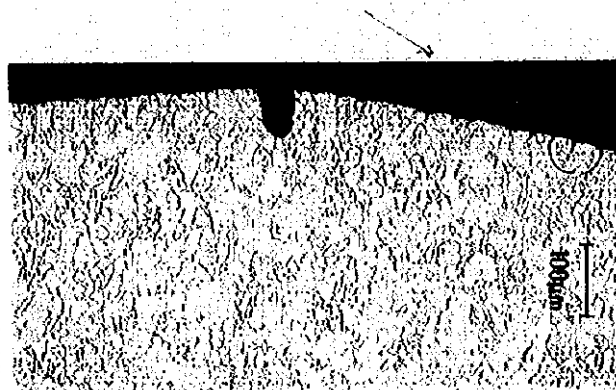
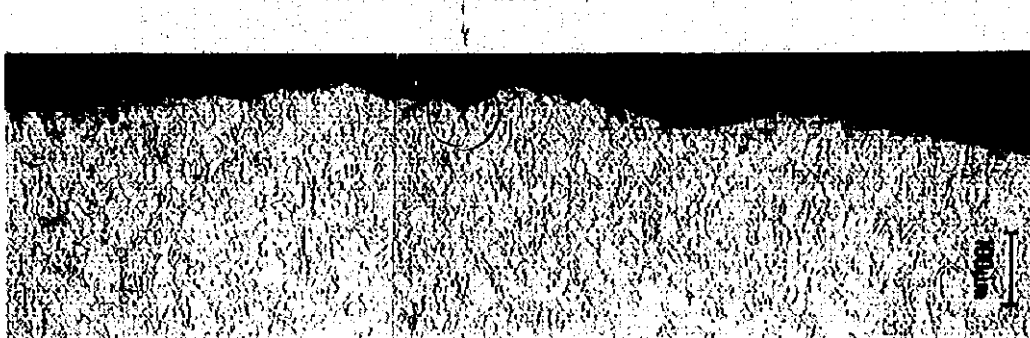


Photo (10) Cross Section of "E" (x100)

クラック Crack



(3) Balkhashmed

① Recommendations on equipment

The equipment for plates and strips at the Balkhash plant is very old. In 1995, Balkhash produced 4,178 tons with the personnel of 1,047; the annual output per capita was only 4.6 tons. The per-capita output was 15.5 tons even in 1990 when the production of plates, strips and wires reached 15,929 tons (on an assumption that the number of personnel is same as the current one.)

In case of Japan, annual per-capita output of plates and strips is about 200 tons while wire is about 100 tons.

The planned renewal of the plate and strip equipment at Balkhash, currently under temporary suspension, must be resumed and encouraged. For the renewal, governmental and overseas assistance will be necessary. In order to obtain such assistance, it would be required for the plant to establish a quality control system as soon as possible to raise the productivity even before the renewal thereby demonstrating that the plant is essentially capable of producing good products at low cost.

Our comments on the selection of new equipment in relation to marketing are as follows:

Kazakhstan is contemplating to export its products to China, India and Southeast Asia in the future. However presently in China, materials for general uses are in oversupply and China is believed to be producing their products at lower costs than those of Balkhash. For exporting products, an elaborate research of the destination country is indispensable, especially on the demand-supply position, product quality and prices of competitors in that country.

Regarding the equipment investment for plates and strips, the Hot process has been most highly evaluated in Kazakhstan. It is generally said that the HCC process is advantageous for small-scale production. For the second-stage production of 75,000 tons per year as planned by Balkhash, the hot rolling process is expected to yield sufficient investment return. It should also be noted that the HCC process has certain limits as to materials to be treated. With an only exception of the Outokumpu plant in Sweden, all the plants in the world whose annual production rate is 30,000 tons or more are using hot rolling as the main process while using the HCC as a complement mainly for production of phosphor bronze and nickel silver.

Besides, a study will be necessary if a strand-type annealing furnace is not included in the Balkhash equipment plan, and if materials of 0.5mm or less in thickness which require annealing are to be treated. It is difficult to anneal such materials in coil form, as in the case of an Ebner furnace. If thin materials are treated, strong winding force is added as it is rolled. When such a coil is heated for annealing, the material expands and layers of the coil stick easily to each other.

It will be necessary to review the quality of materials and sizes of products to be treated/produced in the future, so that the equipment investment may be reconsidered in case of necessity.

Concerning the equipment for wires, we consider that large investment should not be made for its renewal as the wire market is not large. The renewal should be limited to minor changes for raising the productivity for which improvement of operations will be necessary, as well.

② Recommendations on quality

Regarding the quality of wires, it will be required to improve the casting conditions because there are many cracks and gas pore-like defects on the surface of casting materials. Attention should also be given to the numerous scratches occurring while material is drawn down to 8mm ϕ . The materials appear to have been deeply scratched with some part of a machine. The place where these defects occurred should be determined for future prevention.

The material also has many defects of another type. These appear to have been caused by contact with some sharp part of the equipment during drawing, presumably by rough handling, if not having occurred at the time of taking samples.

In the following paragraphs, these defects are discussed in detail:

In the macrostructure of a Balkhash ingot, as seen in Photos (12) and (13), the lengths of the columnar crystals are not uniform, while many of globular crystals are observed in the central portion. This indicates that the cooling is not uniform along the circumference and is insufficient in the less crystallized portion. The insufficient cooling is presumable from the fact that the strand marks of ingots are made spiral. The cracks seen in Photos (11), (14) and (15) derive from the insufficient cooling and the lack of uniformity. At the side of the shorter columnar crystals, the shells formed during solidification are so thin and weak due to the insufficient cooling that they are broken and cracks appear at the time of drawing action following stoppage.

As seen in Photos (15), (16) and (17), the microstructure of an ingot has many gas pore-like defects. The defects have not yet been identified. The O₂ content of an ingot as measured by the Balkhash side was 13.3 ppm while our measurement showed 10 ppm. The O₂ in an 8mm ϕ rod was 5 ppm according to the Balkhash measurement, which compares to our measurement of 16.2 ppm. In either case, however, the oxygen contents at these levels seem unrelated to the gas pore-like defects.

Photo (18) shows a situation where cracks occurring in the HCC process appeared conspicuously after the twisting test.

Photos (19) to (22) indicate the defects "F" and "G" which were caused by hitting some sharp part of the equipment.

Photos (23) and (24) indicate defects caused by deep abrasion between coil loops during material handling after drawing.

Photos (25) and (26) shows a situation after drawing of a defect which had existed before the drawing.

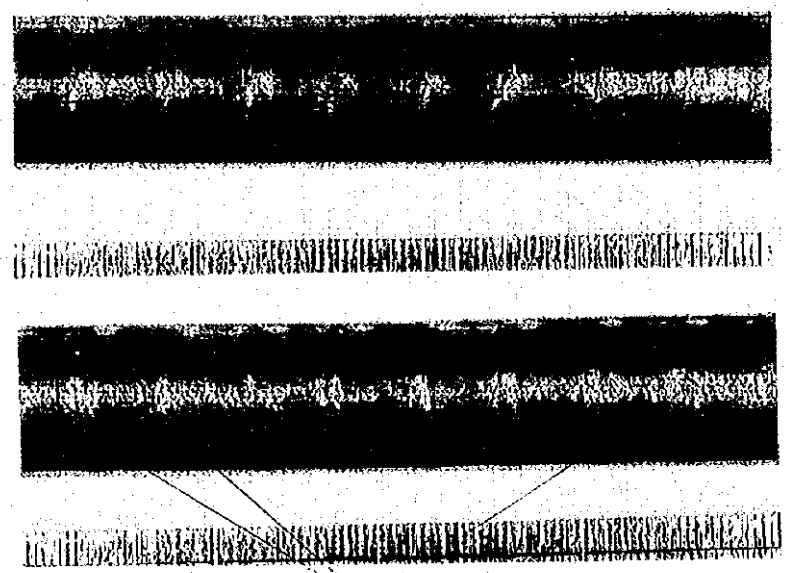
The following recommendations relate to the quality of plates and strips:

More attention and care must be given to factors spoiling the flatness during the rolling and washing processes and also to scratches caused by abrasion with a part of the machines or by rough handling. A defect was found even in a small piece of sample used for mechanical property tests, which is the only sample we obtained. (Photos (27) to (29)) It is observable that the defect was caused by deep abrasion with some machine part prior to rolling. Photo (30) shows poor flatness. The poor portions at both sides are caused by a washing

machine while it appears to have occurred during rolling that the strip turns into a concave shape entirely in the lateral direction.

Photo (31) shows workers rolling on a table. The two hoops whose edges are overlapped when wound up by the winder of slitting machine in an effort to separate them. Hoops have to be handled with more care because, if handled this way, the layers of a hoop abrade each other to cause scratches in case the hoop is rolled up even a little more loosely.

Photo (11) Surface Situation of HCC Ingot



〃〃〃 Cracks

Photo (12) Macro Structure of Cross Section Photo (13) Macro Structure of Longitudinal Section

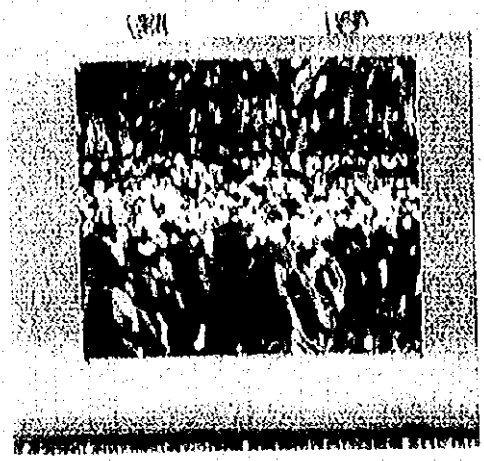
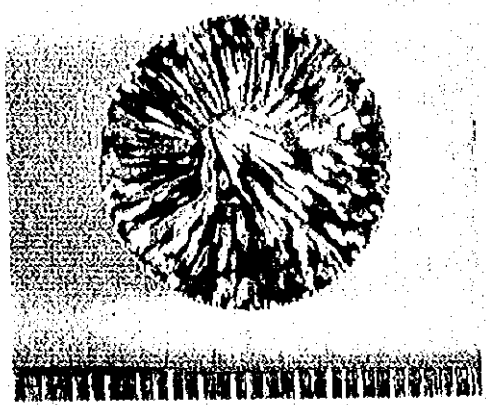


Photo (14) Cracks at a Strand Mark (x18)

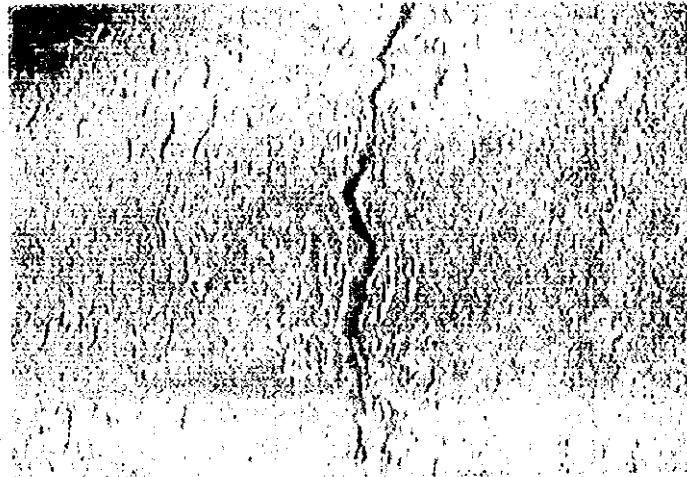


Photo (15) Longitudinal Section of Cracks (x100)

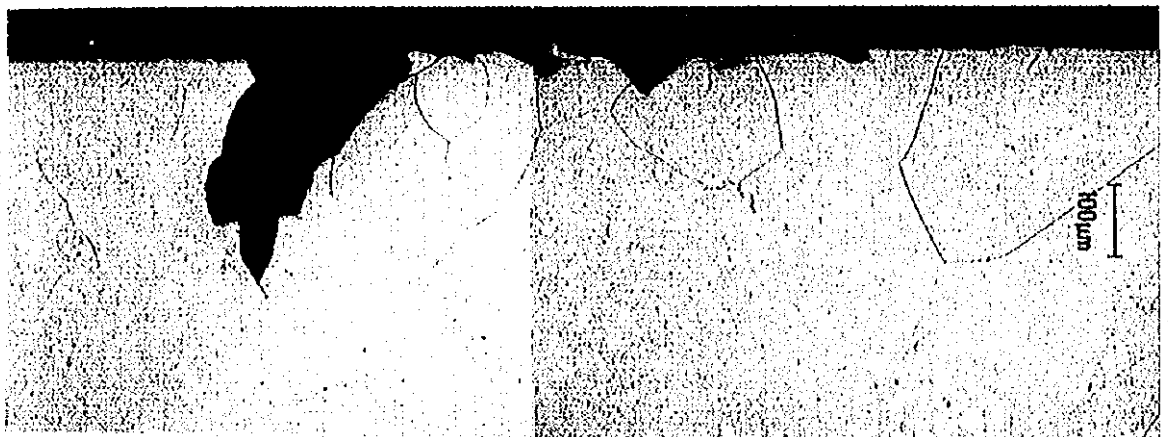


Photo (16) Micro Structure of Cross Section of HCC Ingot

Outer Side



Photo (17) Center

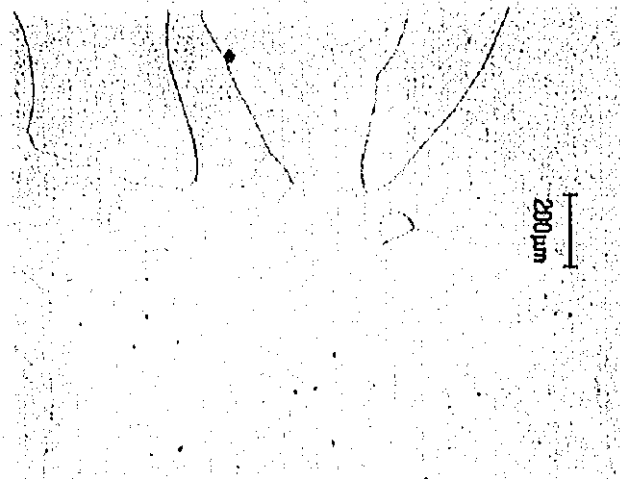


Photo (18) Surface Situation after Twisting Test (8φ)



x 18

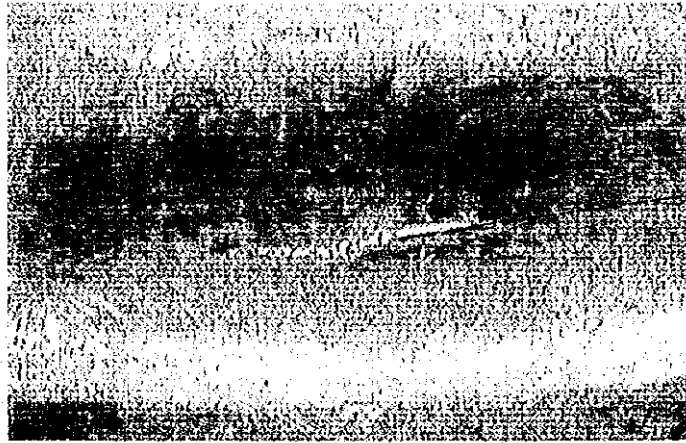
Photo (19) Surface Condition as Drawn (8φ) (x18)



Photo (20) Cross Section of "P" (x200)



Photo (21) Surface Condition as Drawn (8 ϕ) (x18)



G

Photo (22) Cross Section of "G" (x200)

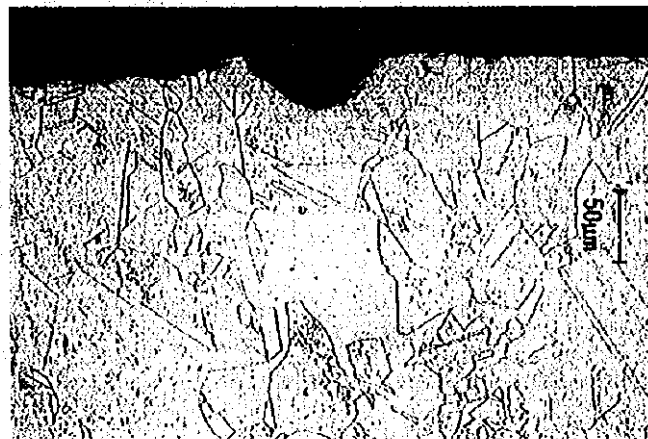


Photo (23) Surface Condition as Drawn (8 ϕ) (x18)



Photo (20) Cross Section (x100)

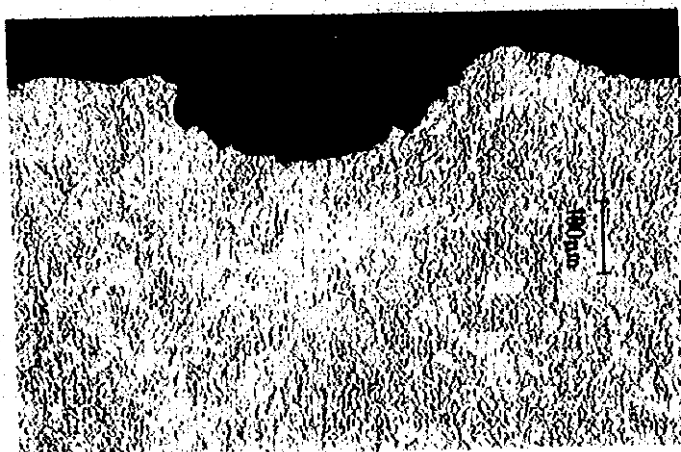


Photo (25) Surface Condition as Drawn (8φ) (x18)

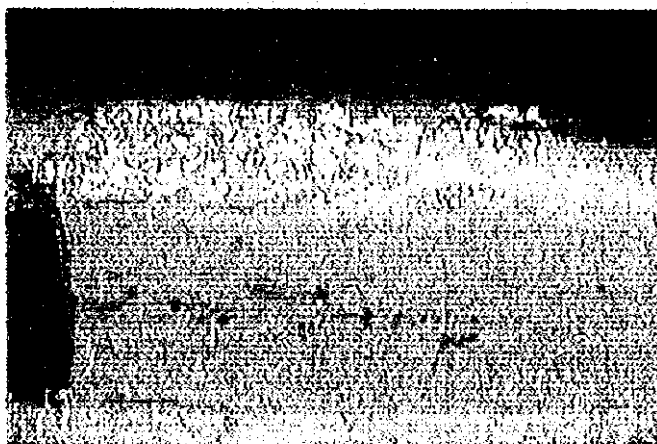


Photo (26) Cross Section



x 200

Photo (27) Surface Condition (x2)



Photo (28) Enlargement of "H" (x18)

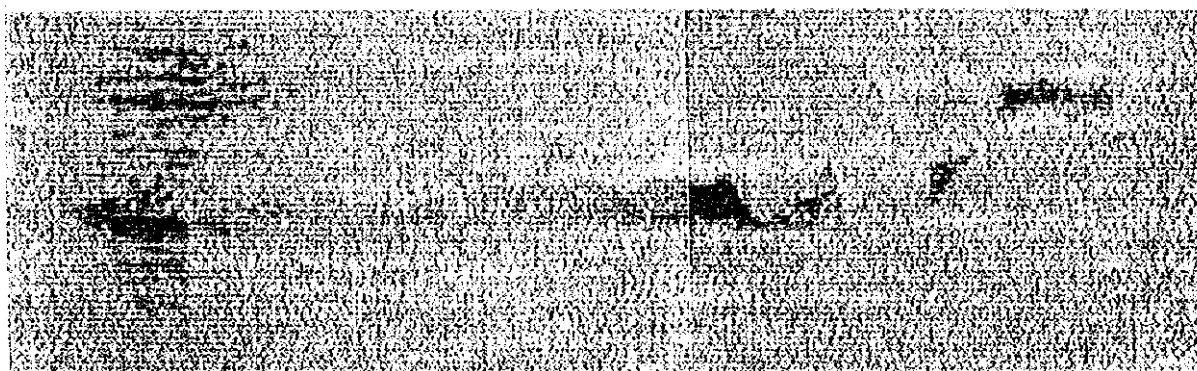


Photo (29) Cross Section of "H" (x200)

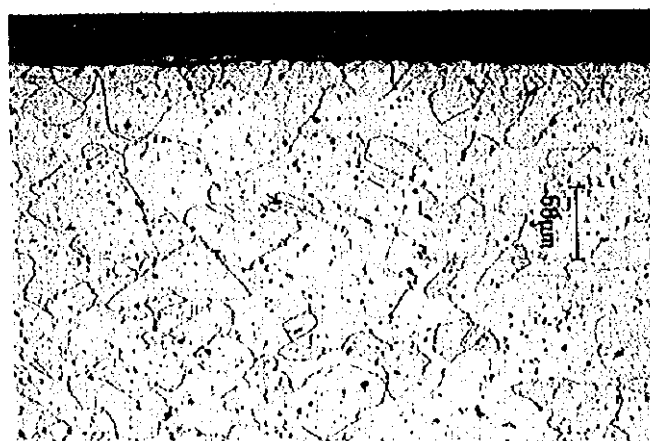


Photo (30) Frattness of Strip

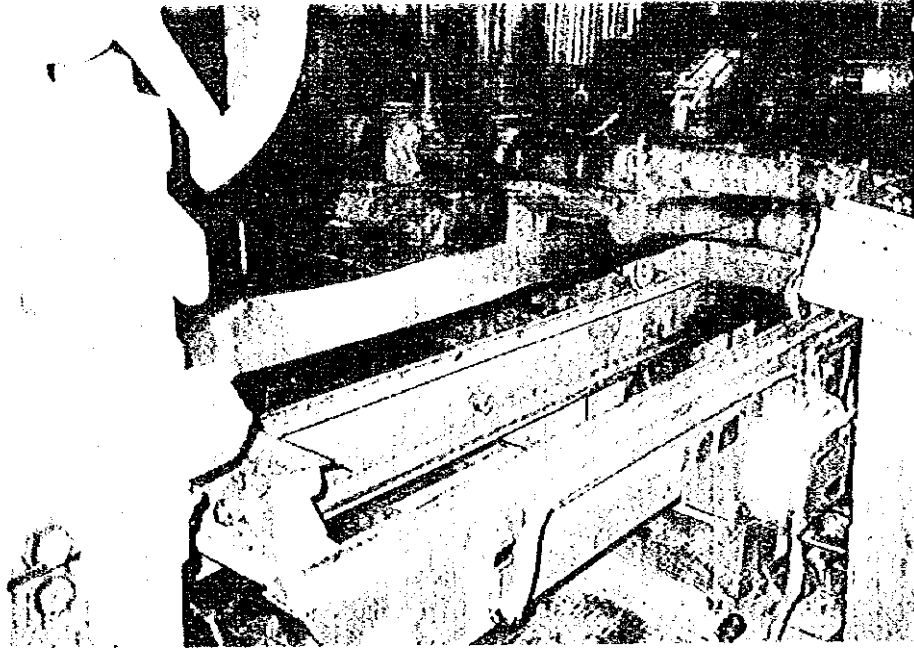


Photo (31) Handling of Material after Slitting



(4) Lead Battery

The principal portion of lead demand is for battery. In Kazakhstan, the construction of lead battery plants were planned by the Shymkent, Leninogorsk and Ust-Kamenogorsk refineries, respectively.

The following is data showing the relationship between the number of cars and annual consumption of lead batteries in Japan:

Number of cars	65,000,000 units
(for private use)	(12 ~ 13,000,000 units)
Demand for lead battery	26,000,000 units/year
for new cars	11,000,000 units/year
for replacement	15,000,000 units/year
Lead requirement for car battery	250,000 tons/year*
Lead requirement per battery	9.6 kg/unit(= 250,000/26M)

Note: * includes new cars and replacement

If the above data is applied to Kazakhstan (on an assumption that the number of cars in Kazakhstan is 10,000,000 units) :

Number of replacement of lead battery	2,300,000 units/year (= 15M x 10M/65M)
Lead requirement for battery	22,000 t/year(replacement)

1) Current production and future plan of lead battery

In the CIS countries, lead batteries are produced at eight plants, one of which is at Taldy-Korgan, Kazakhstan. The Taldy-Korgan Plant commenced production of car batteries in 1975, currently producing 1,500,000 units a year for which 29,000 tons of lead (19 kg per unit) is consumed. The lead consumption per battery is for the above mentioned Japanese data of 9.6 kg which may be attributable to the fact that the ratio of large batteries for trucks is higher in Kazakhstan.

Regarding electrodes, only the grid type is in use while the paste type is not produced. The plastic case is produced in-house. For the electrodes, Sb alloys are used.

As mentioned, the three projects for lead battery production were considered in Kazakhstan, but it was learned during our third survey that Leninogorsk and Ust-Kamenogorsk projects were about to be discontinued. At present, the Shymkent is the only remaining project which envisages annual production of 1,200,000 units. The construction work, started already in 1993, was suspended due to shortage of funds and was 6-7% completed. The Shymkent plant is an international joint venture, in which an Austrian private company holds 49% interest.

A calculation based on the above data indicates that 22,800 tons per year of lead is required for annual production of 1,200,000 units of battery; the project will create stable and the largest demand for lead produced at

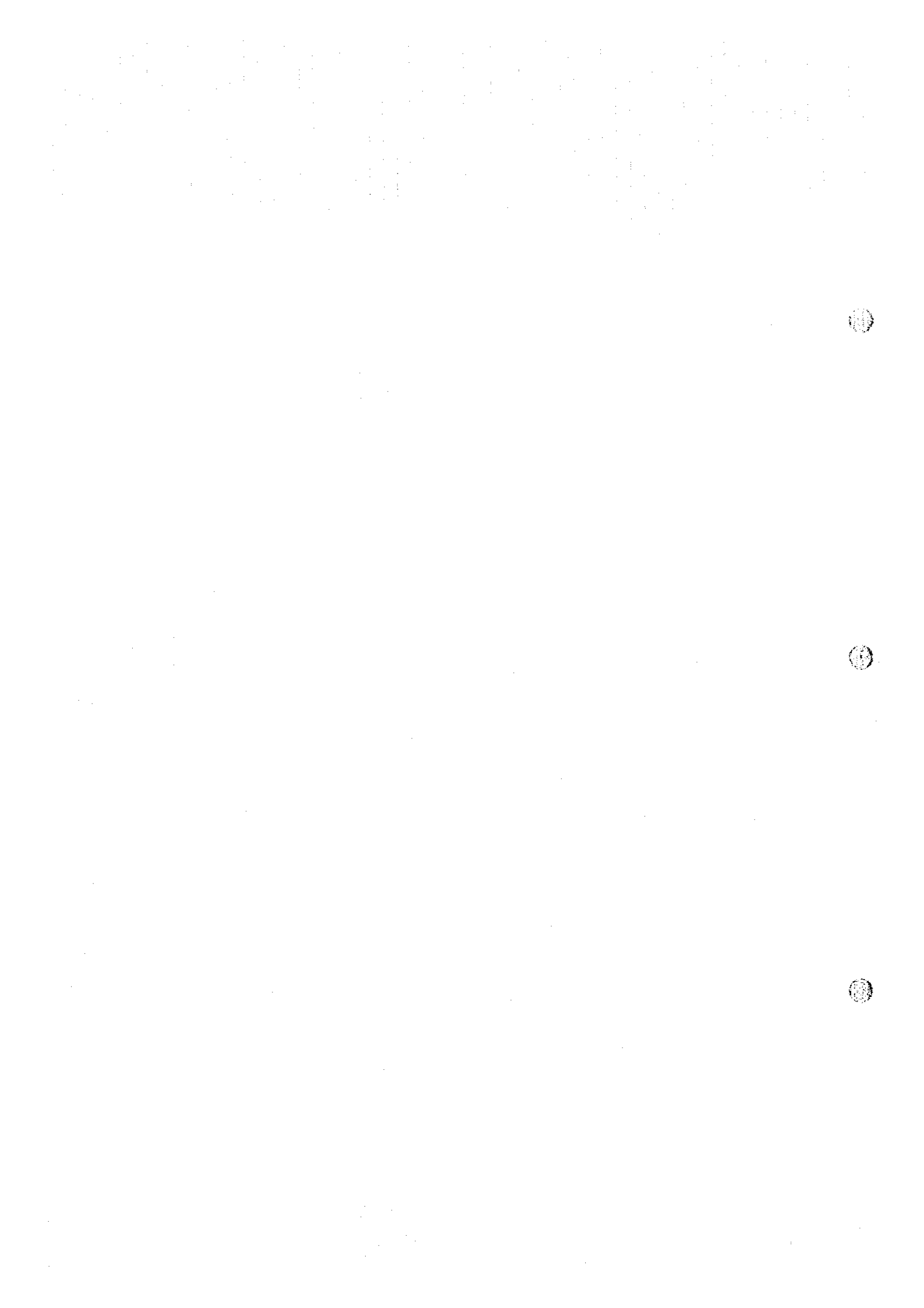
Shymkent.

With the planned annual production of 1,200,000 units at Shymkent, the Kazakh total production of lead batteries will surpass the estimated demand, but the plan seems to be adequate if future growth of car demand is considered.

2) Comments on the production plan

Required types of lead battery differ from country to country depending on the local conditions such as temperature and type of cars mainly used. In this sense, the lead battery is not an international commodity; therefore, it is not desirable to rely on imports to fill local demand. In the United States, lead batteries for the replacement use are supplied within the respective states. Accordingly, it is considered to be an appropriate policy for Kazakhstan to go ahead with domestic production of lead batteries which will also serve for the stabilization of lead demand.

Although electrodes of lead batteries currently produced in Kazakhstan are mostly made of Sb alloys, it should be taken into account that in the Western nations including Japan, maintenance-free batteries have formed the main stream of battery market and for electrodes of lead batteries, low Sb alloys and Pb-Ca alloys are increasingly used. In case the Pb-Ca alloys become dominant, the reutilization method by recycling of scrap batteries will have to be changed. As the conventional kettle refining has difficulty in controlling Ca grade, it would become necessary to use another type of furnace such as blast furnace.



3. Support Measures for the Implementation of Promotion Plan

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3. Support Measures for the Implementation of Promotion Plan

3-1 Government Support Plan

3-1-1 Planning of Policy for Industry Promotion

(1) Policy Position

After its independence in 1993, Kazakhstan's non-ferrous metal industry employed about 2% of the population, contributed by about 12% to Kazakhstan's GDP and earned about 27% of the foreign currency. This indicates that the non-ferrous metal industry is the main industry of Kazakhstan economy and has a high potential. The Kazakhstan non-ferrous metal industry is in a crisis condition. Therefore, the non-ferrous metal industry has an urgent problem to reconstruct itself as quickly as possible.

Historically, the Kazakhstan's non-ferrous metal industry was established for supplying raw materials to the former USSR economy and has been greatly contributing to the foundation of economic development of Kazakhstan. Now, the present situation of the non-ferrous metal industry is not depended on basic management of each enterprise under the former USSR economic system but on unsuitable production activity and confusion caused by the collapse of the old structure of the USSR. The reconstruction of the non-ferrous metal industry to change to a free market economic system is the issue for the economic system of Kazakhstan.

Thus, the promotion of the non-ferrous metal industry is positioned as the fundamental and important industrial policy of Kazakhstan. The government should make the promotion plan and implement it using its strong guidance.

For this purpose, the government makes an action program for a public economic plan, agriculture and energy industries (electricity, oil, gas and coal). The non-ferrous metal industry with the agriculture and energy industry systems are the most important economic sectors in the action program.

To receive the public's understanding, it depends on the above mentioned active policy of the government. These actions are expected for the introduction of foreign capital and finance from international organizations.

(2) Promotion Plan

To make the Kazakhstan's non-ferrous metal industry overcome the present crisis and make its promotion:

- ① the reconstruction plan based on proper evaluation
- ② depends on the re-arrangement of the distribution system
- ③ large-scale investment for the modernization of the facilities
- ④ rationalization of production and management system of the enterprise by introduction of capital.

The implementation of the above mentioned measures needs the effort of each enterprise. At the same time, there are matters which are beyond the control of the individual companies such as capital for renovation, foreign capital and trade management and tax system, etc., and/or the necessary support for example the re-arrangement related to government organizations.

It is also important that there is a relation between privatization of the enterprise and management transfer policy that is implemented under the government's guidance. The promotion plan is needed on the above mentioned items.

- ① To clarify the problem points through scientific and objective analysis of the present situation and establish the objectives for the direction of the industry or enterprise.
- ② From a general viewpoint, the responsible division or other related organizations implements the adjustment. Each division makes a concrete reasonable plan and clarifies the important points, priorities, and procedures.
- ③ Give future expectations and information of the industry or enterprise to the people of the region to receive their understanding and cooperation of the plan and have their consideration to meet the goal.

(3) Governmental Support

The present situation is already mentioned above. It is impossible to reconstruct by the improvement and strengthening of the structure by only the enterprises' efforts. Much government support is needed. The supporting measures of finance and tax system are mentioned in Table 3-1-1(1) and Table 3-1-1(2) based on Japan and other foreign countries' mining policy.

These measures are related to many sections. Its implementation needs good political judgment and adjustment. The Kazakhstan government must decide on concrete plans considering the amount of capital, urgency and duration, the balance of other industries and its reasonableness against other policies, etc.

(1)
Table 3-1-1(1) Policies for Resources of Major Advanced Countries

Country	JAPAN	WEST GERMANY	FRANCE
Collection of Information	<p>(Domestic)</p> <ul style="list-style-type: none"> - Geological Research Institute - Evaluation of resources, studies of origins of resources and study of minerals - Presentation of information based on the results of studies <p>(Overseas)</p> <ul style="list-style-type: none"> - Metal Mining Agency of Japan - Study of mineral industries of various countries - Offer of information through data base system - Collection and offer of related books and literatures 	<p>(Domestic)</p> <ul style="list-style-type: none"> - Earth Science and Natural Resources Research Institute - Collection of information relating to mineral resources and mining industry - Statistics, analysis and survey of mineral resources deposits and outputs, etc. - Establishment of data bank <p>(Overseas)</p> <ul style="list-style-type: none"> - Earth Science and Natural Resources Research Institute - The same as the domestic cases 	<p>(Domestic)</p> <ul style="list-style-type: none"> - BRGM (Geological Features and Mine Research Institute) - Collection, preservation and disclosure of information concerning surveys and prospecting - Formation and disclosure of databank - Publication of technical books and non-technical books <p>(Overseas)</p> <ul style="list-style-type: none"> - BRGM (Geological Features and Mine Research Institute) - The same as the domestic case
Basic Study	<p>(Domestic)</p> <ul style="list-style-type: none"> - Metal Mining Agency of Japan - Study of geological structure <p>(Overseas)</p> <ul style="list-style-type: none"> - Metal Mining Agency of Japan - Study of geological structure - Providing subsidies to geological structure study projects - Execution of deep sea bottom mineral resources distribution study 	<p>(Domestic)</p> <ul style="list-style-type: none"> - Earth Science and Natural Resources Research Institute - Execution of prospecting projects <p>(Overseas)</p> <ul style="list-style-type: none"> - Earth Science and Natural Resources Research Institute - The same as the domestic case <p>German Technology Cooperation Corporation</p> <ul style="list-style-type: none"> - Execution of projects in the mineral resources field 	<p>(Domestic)</p> <ul style="list-style-type: none"> - BRGM (Geological Features and Mine Research Institute) - Confirmation of mineral reserves of individual mineral deposit and feasibility study of development <p>(Overseas)</p> <ul style="list-style-type: none"> - BRGM (Geological Features and Mine Research Institute) - Prospecting using own fund - Prospecting using subsidy from Cooperation and Aid Fund
Commercial Prospecting	<p>(Domestic)</p> <ul style="list-style-type: none"> - Ministry of International Trade and Industry - Subsidies to small- and medium-scale mines <p>Metal Mining Agency of Japan</p> <ul style="list-style-type: none"> - Financing to large-scale mines <p>(Overseas)</p> <ul style="list-style-type: none"> - Metal Mining Agency of Japan - Investment and financing for prospecting projects - Overseas Economic Cooperation Fund - Financing for prospecting projects (Limited to developing countries) <p>(Taxation System)</p> <ul style="list-style-type: none"> - Tax reduction or exemption for depletion - Reserve for loss from overseas investment, etc 	<p>(Domestic)</p> <ul style="list-style-type: none"> - Ministry of Economy - Financing for prospecting projects (No-interest financing to be refunded when successful) <p>(Overseas)</p> <ul style="list-style-type: none"> - Ministry of Economy - The same as the domestic case 	<p>(Domestic)</p> <ul style="list-style-type: none"> - Ministry of Industry, Ministry of Post and Ministry of Tourism - Grant of subsidies to metal mines development projects (Fund is to be refunded when successful) <p>(Overseas)</p> <ul style="list-style-type: none"> - Ministry of Industry, Ministry of Post and Ministry of Tourism - The same as the domestic case
Development	<p>(Domestic)</p> <ul style="list-style-type: none"> - Emergency Financing Fund for Metal Mining Industries - Financing for mine operation stabilization <p>(Overseas)</p> <ul style="list-style-type: none"> - Metal Mining Agency of Japan - Guarantee of obligation for the development projects - Export-Import Bank of Japan - Financing for development projects <p>(Taxation System)</p> <ul style="list-style-type: none"> - Reserve for loss from overseas investment, etc 	<p>(Overseas)</p> <ul style="list-style-type: none"> - German Development Corporation - Investment and financing for the enterprises of developing countries - Restoration Financing Corporation - Financing and subsidies to the projects of developing countries - Financing for former West German enterprises 	<p>(Domestic)</p> <ul style="list-style-type: none"> - Land Planning and Local Regions Development Agency - Financing for development of underdeveloped regions <p>BRGM (Geological Features and Mine Research Institute)</p> <ul style="list-style-type: none"> - Grant of fund for development <p>(Overseas)</p> <ul style="list-style-type: none"> - BRGM (Geological Features and Mine Research Institute) - Grant of fund for development

Country	UNITED KINGDOM	UNITED STATES	CANADA
Collection of Information	(Domestic) Geological Features Research Institute - Collection of information relating to mining industry. - Advisory services to government agencies and to non-governmental organizations (Overseas) Geological Features Research Institute - The same as the domestic case	(Domestic) Geological Features Research Institute - Collection of materials concerning mineral resources - Publishing and disclosure Mines Bureau - Prospecting of mineral resources and collection of statistics and information concerning the prices, imports and exports of mineral resources. - Publishing and disclosure (Overseas) Geological Features Research Institute - The same as the domestic case Mines Bureau - The same as the domestic case East West Center - Collection and offer of information concerning resources - Formation and offer of data base system	(Domestic) Mineral Policy Bureau - Collection of data concerning mineral industry and compilation of statistics - Establishment of data base system - Offer of information concerning world's mineral markets and mineral outputs (Overseas) Mineral Policy Bureau - The same as the domestic case
Basic Study	(Domestic) Geological Features Research Institute - Minerals supply prediction and planning. - Great Britain land geological features survey. - Wide area geochemical prospecting prediction and planning (Overseas) Geological Features Research Institute - Geological features survey and preparation of geological features maps	(Domestic) Geological Features Research Institute - Geological features survey and studies concerning mineral resources. Mines Bureau - Surveys and studies concerning mines (Taxation System) - Deduction for prospecting expenses	(Domestic) Geological Features Research Institute - Basic survey and study of mineral deposit distribution CANMET - Survey, development and research of technologies relating to mining
Commercial Prospecting	(Overseas) British Commonwealth Development Corporation - Financing for projects	(Domestic) Ministry of Regional Industry Development - Grant of subsidies for geological, geochemical and physical surveys and the like - Grant of subsidies for the technology, research and study such as ore processing Investment of Federal Government - Investment for prospecting enterprises (Taxation System) - Deduction of whole overseas prospecting cost as loss from income - Deduction of whole overseas prospecting cost as loss from income at fixed percentage	(Domestic) Ministry of Regional Industry Development - Grant of subsidies for geological, geochemical and physical surveys and the like - Grant of subsidies for the technology, research and study such as ore processing Investment of Federal Government - Investment for prospecting enterprises (Taxation System) - Deduction of whole overseas prospecting cost as loss from income - Deduction of whole overseas prospecting cost as loss from income at fixed percentage
Development	(Domestic) - Indirect aids to enterprises (Overseas) British Commonwealth Development Corporation - investment and financing for projects	(Taxation System) - Deduction for depletion computed by fixed percentage method	(Domestic) Investment of Federal Government - Investment for development project (Taxation System) - Deduction for depletion - Accelerating depreciation - Treatment of development cost as loss at fixed percentage to income - Deduction of tax for overseas prospecting expense

(3)

Country	AUSTRALIA	
Collection of Information	<p>(Domestic)</p> <p>Mineral and Resources Bureau</p> <ul style="list-style-type: none">- Collection of information relating to prospecting and development of mineral resources.- Publishing and offer of information <p>(Overseas)</p> <p>Mineral and Resources Bureau</p> <ul style="list-style-type: none">- The same as the domestic case	
Basic Study	<p>(Domestic)</p> <p>Mineral and Resources Bureau</p> <ul style="list-style-type: none">- Geological and geophysical survey and research for examining mineral resources deposits and distribution <p>State Government</p> <ul style="list-style-type: none">- Preparation of geological survey maps- Survey of prospective regions by boring	
Commercial Prospecting	<p>(Domestic)</p> <ul style="list-style-type: none">- Financing for prospecting expense to be refunded when successful <p>(Taxation System)</p> <ul style="list-style-type: none">- Deduction of tax for prospecting expense	
Development	<p>(Domestic)</p> <p>Federal Government</p> <ul style="list-style-type: none">- Medium- and long-term financing for mineral and manufacturing industries. <p>(Taxation System)</p> <ul style="list-style-type: none">- Deduction of tax for acquisition cost of mining facilities	

Table 3-1-1(2) Nonferrous Metal Industry Promotion Support Policy

Financing Policy (Governmental Agencies)	
Metal Industry Promotion Fund	(Operation of governmental investment, fiscal fund and government-guaranteed foreign investment for enterprises to be built up)
(Time-Limited Emergency Financing)	
1. Improvement of production system	..... Fund for reorganization of an enterprise and fund for rationalization of large equipment.
2. Improvement of management	..... Financing for repayment of accumulated liabilities, payment of outstanding wages payable, etc. financing for low-interest working capital, financing for support of operation (financial aids for transportation, energy expenses, etc.)
3. Structural reformation	..... Separation of indirect departments such as welfare department, etc. Launching of new business.
4. Preparation for discontinuation of operation (Preparation for close of mine)	..... Disposal of assets such as production facilities, licenses, recovery of original state of infrastructure, financial support of local community where the mine is located.
Rehabilitation Bank	(Operation of governmental investment, fiscal fund and government-guaranteed foreign fund for enterprises to be discontinued)
(Time-Limited Emergency Financing)	
1. Structural reformation	..... Establishment of independent department. Launching new business.
2. Preparation for discontinuation of operation (Preparation for close of mine)	..... Financing for repayment of accumulated liabilities, payment of outstanding, labor management, financial support of local community where the mine is located.
Metal Industry Promotion Corporation	(Utilization of governmental investment, fiscal fund and from special national budget corresponding to anticipated tax income from nonferrous metal industry)
(Permanent measures for strengthening ability of enterprise)	
1. Subsidy for supporting operation	..... Subsidies for prevention of pollutions, environmental measures (nonprofit business)
2. Special low-interest financing	..... Financing for prospecting fund, fund for purchasing of new facilities, fund for rationalization of existing facilities, investment fund for modernization of facilities, fund for rationalization of management.
3. Supplementation of credit standing	..... Guarantee of obligation for enterprise to make borrowing.
Export-Import Bank of Japan	(Operation of governmental investment and fiscal fund)
(International trade financing)	
1. Promotion of export	..... Financing for working capital.

Nonferrous
Metal
Industry
Promotion
Support
Policy

(Introduction of foreign capital)

International financial institutions, etc.

(Certification of payment by government)

- 1. Rehabilitation Bank → (Time-limited emergency financing)
- 2. Metal Industry Promotion Fund → Refer to above governmental agencies.
- 3. Improvement of Industrial Structure ... Industrial complex or project of enterprise.
- 4. Preparation for discontinuation of enterprise
- 5. Preparation for close of mines operated by industrial complex or enterprise.
- 6. Environmental conservation and prevention of pollutions
- 7. Project of industrial complex or enterprise.

Cooperation and Aid on G-G Base

- 1. National development project.
- 2. Survey for development of resources.
- 3. Establishment of environmental control system.

Management Transfer Agreement

- 1. Improvement of management Settlement of accumulated liabilities of enterprise and introduction of short-term working capital.
- 2. Technical assistance Introduction of new technology and fund for equipment investment.

Measures for Taxation

Reduction or Exemption of Taxes for Promotion of Industry

(Reduction or exemption of taxes for the promotion of industry, promotion prospecting project, promotion of modernization of facilities, execution of environmental conservation measures, improvement of management)

- 1. National taxes Corporation profit tax (30% currently)
- Value added tax (20% currently)
- Commodity tax
- Underground resources development (Bonus, royalty, windfall tax)
- Land tax
- 2. Local taxes..... Tax on assets
- Registration tax
- Traffic tax
- 3. Customs duty Import duty (20% for machines)
- Export duty (30% for nonferrous metals)

Special Measures for Business Accounting (Special measures for promotion of industry)

- 1. Treatment as loss Deduction for depletion (Reserve for prospecting, etc.)
- 2. Special depreciation..... Depreciations for underground gallery for mining, rationalized facilities, pollution preventive facilities, etc.

Organizations Relating to Government

New Organizations

1. Ministry of International Trade and Industry
..... Non-ferrous Metal Industry Promotion Fund (Administered jointly with Ministry of Finance)
Non-ferrous Metal Industry Promotion Agency
Trade Promotion Agency
Nonferrous Metal Industry Council
Society of Non-ferrous Metal Industry
2. MINGEO
..... Exploration Agency
3. Ministry of Environment and Bioresources
..... Environment Control Technology Center
4. Ministry of Finance Metal Industry Promotion Fund (Administered jointly with Ministry of International Trade and Industry).
5. Ministry of Economy Industrial Structure Council

Other Measures

Enactment of Laws and Ordinances

1. Enactment of new laws and ordinances .. Metal Industry Promotion Law
Initial establishments of organizations (fund, corporation, etc.)
2. Amendment of old laws and ordinances .. Establishment of new organizations and reformation of existing organizations.
Measures for Tax system

Promotion of Introduction of Foreign Capitals

1. Laws and application
 2. Foreign exchange control
 3. Preferential treatment of foreign capitals
..... Application of grandfather clause and incentive system for taxation.
 4. Guaranteed investment
- Conclusion of international agreement.
Guarantee against nationalization, takeover, etc.

Others

1. Labor insurance system
2. Labor annuity system

3-1-2 Government Related Organizations

(1) Related Organizations

Ministry of Geology and Mineral Resources and Conservation manages the licensing of investigation and exploration of mineral resources but the Ministry of Industry and Trade manages the metal industry for the exploration of ore and the whole metal industry. There are many ministries and related organizations that manage the non-ferrous metal industry policy. From the company viewpoint, in Kazakhstan many laws and modifications are made so it seems the administration structure is very complicated especially in economics. There are many kinds of committees established so companies are confused about the relationship between the committee and the ministry. The foreign company viewpoint is the government seems to be unstable and can not trust the Kazakhstan economy. This fact has prevented the smooth introduction of capital.

Recently, the reorganization of regulations is progressing for the market economy system. Each related organizations fully understood the laws, arranged the structure mutually and clarified the responsibility of work and management of each organization. Depending on these implementations, the supporting structure for the non-ferrous metal industry is organized and able to implement the reasonable countermeasures.

Organizations Having Authority To Make Decisions on Administrative Policy for Mineral Industry in the Republic of Kazakhstan is shown in Table 3-1-2(1) Decision making organizations of mining sector in Kazakhstan.

Table 3-1-2(1) Decision making organization of mining sector in Kazakhstan

1. Ministry of Industry and Trade
 - 1-1 Mines and Metallurgy Complex Bureau
 - 1-2 Pacific Region and Africa Trade and Economic Relations Department
 - 1-3 General Industrial and Trade Policy Bureau
 - 1-4 General Economic and Market Relations Bureau
2. Ministry of Economy
 - 2-1 Overseas Investment Agency
 - 2-2 Main Industrial Bureau
3. Ministry of Environment and Bioresources
 - 3-1 International Relations Bureau
 - 3-2 Science and Technology Bureau
4. Ministry of Geology and Mineral Resources and Conservation
 - 4-1 Underground Resources Conservation Bureau
 - 4-2 Mineral Resources Bureau
5. Committee of National Properties Administration
6. National Committee of Privatization

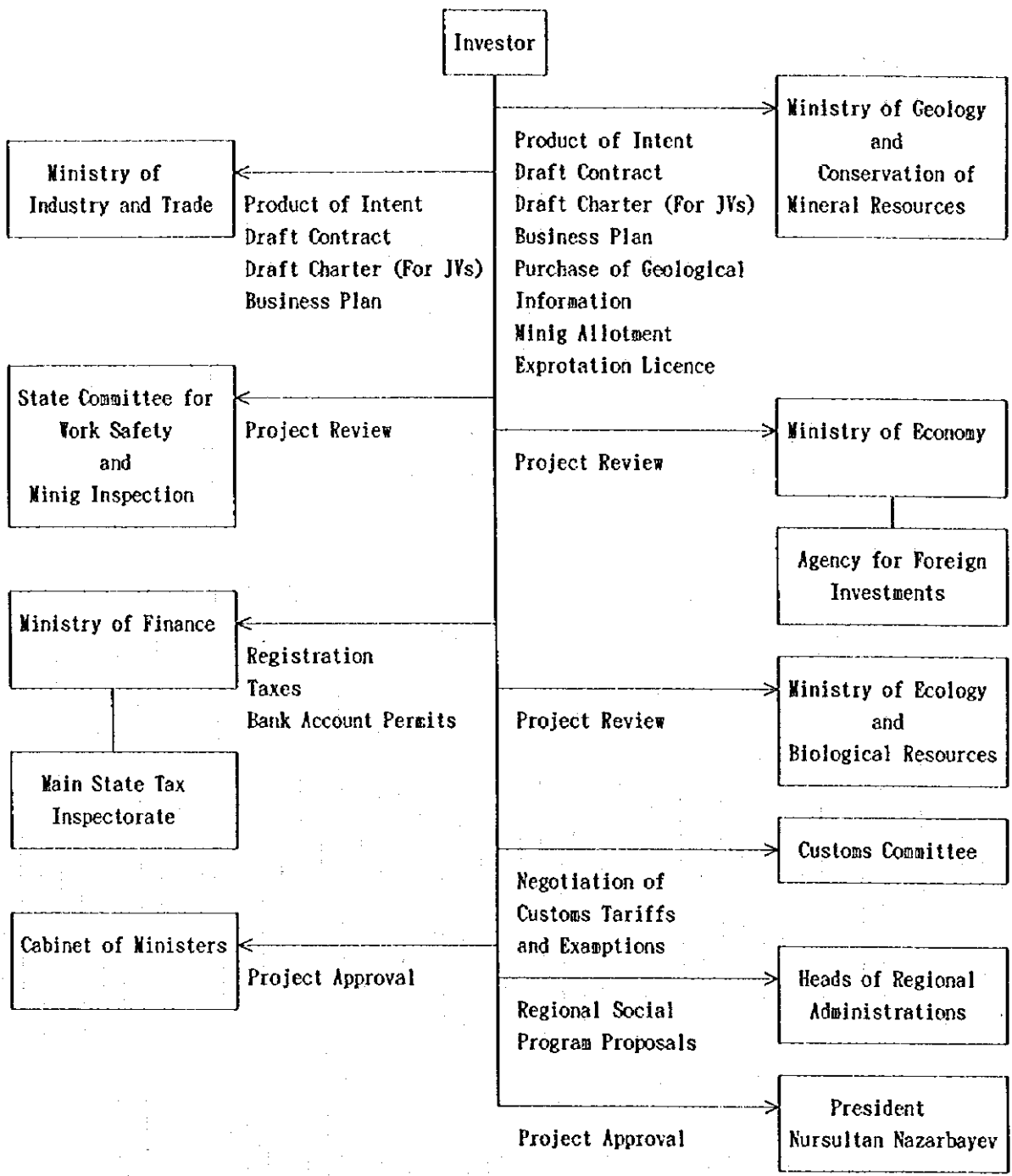


Fig.3-1-2(1) Project Approvals Process in Kazakhstan

(2) Enhancement of function of policy decision organization

The enhancement of function of policy decision organization are for the support the promotion of the non-ferrous metal industry in Kazakhstan. Here are mentioned the desirable new organizations adding to the existing government organizations.

- Ministry of Industry and Trade (MIT) -

① Non-ferrous Metal Industry Promotion Fund

This organization is established for the non-ferrous metal industry to escape from the economic crisis it now faces and the self-reconstruction using urgent financial support in 2000.

The main object of the finance is the active investment for the build up of the enterprises. (Refer to Note).

The government capital and working capital are supplied by the government budget (government guarantee) and international finance organization capital.

(Main Functions)

- i) Loans for the improvement of the production systems in the non-ferrous metal industry.
- ii) Loans for the improvement of management in the non-ferrous metal industry.
- iii) Loans for the structural improvement of the non-ferrous metal industry.
- iv) Loans for the reorganization of enterprises in non-ferrous metal industry.

② Non-ferrous Metal Industry Promotion Agency

This agency will support stable management using a long-term view for the non-ferrous metal industry related mineral resources.

It will establish the special agency from funds from the government capital and working capital which depends on the government budget. It is possible to receive government revenues from the non-ferrous metal industry (profit tax, royalty, customs, duty, etc.).

(Main Functions)

- i) Give support to pollution control and conservation of the environment.
- ii) Low-interest loans for the promotion of non-ferrous metal industry.
- iii) Guarantee of debt the promotion of non-ferrous metal industry.
- iv) Collect and disclose information on the non-ferrous metal industry.

③ Trade Promotion Agency

The promotion of trade especially exports is the objective of this agency. The effective implementation is related to the promotion of trade especially all exports. Capital is dependent on the government.

(Main Functions)

- i) Investigation of the supply, demand and market conditions of goods and promote the import and export markets.
- ii) Implementation of advertisement of industry and goods of Kazakhstan.
- iii) Assistance of trade.
- iv) Sponsor or assist convention.
- v) Treatment of disputes involving trade by foreign country.

④ Non-ferrous Metal Industry Council

Establish as a subsidiary organization of MIT. Investigate and discuss about the basic policy and technical matters for basic problem and exploitation, development, concentration and smelting. It will submit its opinion to MIT.

The council is organized by the people with knowledge and experience, depending on scientific and objective analysis make the recommendation.

(Main Functions)

- i) Examination of non-ferrous metal industry promotion plan.

A discussion of the basic problems and its countermeasures of the non-ferrous metal industry by the rationalization of the industry, customs, duty, financing and taxation systems, which the non-ferrous metal industry will confront in the transition to the market economy system.

⑤ Non-ferrous Metal Industry Association

The members are composed of the non-ferrous metals industry enterprises. The members implement the information, cooperation, friendship mutually and promote the healthy development of the non-ferrous metal industry.

(Main Functions)

- i) Investigate and research areas related to the non-ferrous metal industry.
- ii) Advertise and announce all information about the non-ferrous metals industry.
- iii) Recommendations about the non-ferrous metals industry.

Ministry of Geological and Mineral Resources and Conservation

① Exploration Agency

It is necessary for a long lead time for mine development and depletion of the resource. In the case of the non-ferrous metals industry, its resources are depleted so it is necessary to explore continuously to discover new deposits. The exploration agency must secure the long-term stable supply of resources and non-ferrous metals industry must be able to manage it continuously for the future.

In the present crisis by the transition to a market economy system, it is difficult to invest for exploration by a single enterprise, so government support is necessary at each stage of exploration. The exploration agency is fully funded by the government.

(Main Functions)

- i) Wide area geological survey (funded by the government).
- ii) Detailed geological survey (with fund partially provided by the enterprise and the remainder provided by the government).
- iii) Aid to the enterprise exploration (with financed by borrowing or half of the aid provided by the government).

This function is the responsibility of the non-ferrous metals industry promotion agency or MIT or the management of MIT and the Ministry of Geological and Mineral Resources and Conservation.

- Ministry of Environment -

① Environment Control Technology Center

A part of the environment administration, a bureau guides the environmental monitoring periodical and guides the environment conservation by inspection.

(Main Functions)

- i) Implementation and analysis of environmental monitoring.
- ii) Guide and manage environmental conservation. Optionally, this section is responsible to the non-ferrous metals industry and managed by the MIT as a subsidiary organization of MIT. In this case, the scope of work is not only environmental conservation but also to guide and manage for the prevention of industrial accidents.

- Ministry of Finance -

① Non-ferrous Metal Industry Promotion Fund (in cooperation with MIT).

Please refer to the MIT table.

- Ministry of Economy -

① Industrial Structure Council

This council is established as an official organization of the Ministry of Economy. It investigates and discusses the basic policy of the domestic industry and submits recommendations to the Ministry of Economy.

The members are composed of people having knowledge and experience in various fields and designated by the Minister of Economy.

(Main functions)

- i) Proposal of industry structure from a long-term viewpoint (long-term trend of the main industries, production amount, the number of employees, profit, etc.)
- ii) Necessary countermeasures.

- Research Organization -

Related organizations of the institute and local institutes and local offices are managed by the central government budget so these organizations have many employees. However, recently the budget has been reduced and they try to contract between enterprises and become profitable. However, the present situation of the industry, there is a limit for these functions so the employee that expects to be laid off should be laid off. But this manpower and technology is very important for the future development of the non-ferrous metals industry. It is necessary to examine the long-term strategy of the government considering the exploration survey and development of mining technology.

3-1-3 Roles of Provincial Government, etc.,

As shown in table, mining and metallurgy industry complex of Kazakhstan are distributed to each province because of geographic reasons. In each state, there is a difference if economical position and there is a large difference of behavior among each provincial government as shown in the table. In the East Kazakhstan Province, there are many combines. They have a strong interest to the non-ferrous metal industry and take positive action.

Now, these combines are managed by the central government but they are implementing to transfer their non-production divisions to the local government. Therefore, the provincial government must have an interest in the industry.

Already, it appears that the local employment issue is becoming a big problem by the managing policy of the non-ferrous metal industry.

From this point of view, it will review the relationship between the central government, local government and non-ferrous metal industrial combine. It is necessary to establish the countermeasure under a mutual relationship at that time to make the non-ferrous metal industry promotion plan. Therefore, the provincial government must make a feasible plan that is adapted to the views of the other related provincial governments.

Number of Enterprises in Kazakhstan Mines and Metallurgy Complex in Various Provinces

Province	of	Akmora	3
"	"	Aktyubinsk	7
"	"	Almaty	7
"	"	East Kazakhstan	14
"	"	Zhambyl	2
"	"	Dzhezkazgan	8
"	"	Karaganda	6
"	"	Kzyl-Orda	1
"	"	Kokchetav	1
"	"	Kustanai	6
"	"	Pavlodar	3
"	"	Senipalatinsk	6
"	"	Taldy-Kurgan	3
"	"	Turgai	1
"	"	South Kazakhstan	3
Total			71 (Enterprises)

3-1-4 Legal Institution

The economy-related legal institution of Kazakhstan is still in a transitional period. Frequent revisions and uncertainties in application of laws aroused dissatisfaction among foreign investors with the Kazakh legal regime which is the basis for investment decisions. The following are some comments/suggestions regarding the current legal institution, as viewed from the 1) promotion of the non-ferrous industry and 2) introduction of foreign capital needed for it:

(1) Taxation

Selective tax incentives should be given to non-ferrous mineral producers. For instance, the Ministry of Industry and Trade would examine such corporations' reconstruction programs so that those which pass the examination may be granted tax holidays for a certain period. Implementation of programs should be audited periodically. The inability to fulfill the programs would result in loss of the tax incentive. This incentive system is expected to prove effective as it motivates corporations to exert themselves for reconstruction.

(2) Foreign investment law

Revival of beneficial treatment to the foreign capital should be considered. The complete abolition of benefits formerly granted to foreign capital has caused the loss of its attraction. Although it is an evident fact that Kazakhstan is richly endowed with mineral resources, it is a simple way of thinking if one thinks that this fact alone would cause foreign capital to rush into the country. Due to the lack of physical infrastructure, the foreign investor has no justification to choose Kazakhstan as an investment target unless the country offers attractive legal structure.

In case preferential treatment is given to foreign capital, it would be essential to establish a selection criteria regarding preferred areas and activities, instead of impartial application of benefit to all the foreign capital as practiced in the past. One example is that a foreign company which participates in non-ferrous industrial production by making investment in production facilities would be granted the maximum tax benefit. It would be important to specify, in the statutory form, qualifications/eligibility for the preferential treatment, which constitute the examination criteria.

(3) Trade regulation

It is desirable for the export tariff on non-ferrous minerals be reduced. High tariff rates cause the loss of its international competitive edge for the nation's exports.

(4) Other laws

The legal basis for the Management Contract (MC) formula should be further solidified. The new Privatization Law defines that leasing and placing under trusteeship of state assets are regarded to fall under the preceding phase of privatization. Notwithstanding, there are no laws referring directly to the lease and placement

under trusteeship of a corporation and conditions for the purchase of corporate stock during the term of MC or after expiration of MC. An institutional framework is urgently needed for regulating the practical aspect of MC. A regulatory provision to prevent disorderly development of mineral resources by an outside company would be desirable and should be considered.

Besides, it is desirable to simplify the license and MC systems (unification of negotiation channels, abolition of exceptional measures such as "bonus," etc.) and apply preferential treatment to non-ferrous mineral producers for energy and freight rates.

(5) Laws regulating the non-ferrous metal mining industry in Japan

1. Enterprises pertaining to the Japanese non-ferrous metal industry, similar to those of the other industrial sectors, are subject to the State's regulation based on provisions of the public laws, civil laws (especially the Commercial Code and Corporation Law) and social laws (especially labor laws). Unlike general industries, however, the non-ferrous metal industry which involves mining of subsoil resources is placed in a special area of jurisprudence, where State regulations are provided in specific details.

① The basic Mining Law establishes the regime for granting the mining rights which gives the legal basis for mining, the regime for the State's direction of the exercise of mining right and its relationship with the other rights.

② The Mining Law and its sister law, Mine Safety Law which establishes the regime for the mine safety supervision, combine to integrate the State's supervision of mining.

③ The Mine Safety Law coupled with the Law on Special Measures for Mine Pollution Caused by the Metal Mining Industry, etc. governs implementation of work for prevention of metal mining-induced environmental pollution.

④ Implementation of mining is often affected/restricted, directly or indirectly, by provisions of other laws, for example, Natural Park Law, Forest Act, Hot Springs Act and Law concerning Protection of Cultural Assets. Furthermore, mining may possibly be constrained by such laws as Agricultural Land Act, Marine Resources Protection Act, Seashore Act, River Act, Sand Control Act, Port Act, and Landslide Prevention Act. These laws may impose the obligation to obtain certain State approvals to protect other legal interests.

2. This paper outlines the Japan's legal regulation based on the Mining Law and the Mine Safety Law.

1) The Mining Law

The Mining Law (Law No.289 of 1950) is intended to ensure rational exploitation of mineral resources, thereby contributing to the public welfare.

① Mining Right

a. The mining right comprises two types: the prospecting right and the digging right.(Art.11) The former is a right to explore mineral resources in preparation for future mining operations, whereas the latter is a right to carry out regular mining operations.

b. The mining right constitutes a right to mine and obtain registered minerals within mining claims, separated from land property. Mining is not permitted to a land owner unless he has a proper mining right.(Art. 5 and 7)

c. The mining right is regarded as a real right, to which regulations applicable to the real property are applied mutatis mutandis. (Art. 12) The mining right may be transferred, assigned and hypothecated, but may not be leased nor pledged. (Art. 13)

d. Only Japanese natural or legal persons are allowed to become mining right owners (Art. 17) but if otherwise provided in a treaty, a foreigner may become a mining right owner. (Art. 17, proviso)

e. Granting of the mining right is based on the so-called "earliest arrival" principle. (Art. 27) The Law provides no requirement of qualification for an applicant's capability in implementing mining.

② Application for mining right

a. The mining right is granted by the State. (Art. 2) and takes effect if an applicant submits application to Director of Bureau of International Trade and Industry (hereafter abbreviated as "BITI Director") and registers it when granted. (Art. 21-12, 59 and 60)

Note: The regional branches of the Bureau of International Trade and Industry are located in the cities of Sapporo, Sendai, Tokyo, Nagoya, Osaka, Hiroshima, Takamatsu and Fukuoka.

b. Application for the mining right is rejected if:

- i) the mining is of no economic value (Art. 35)
- ii) the mining operation is harmful to general public interest and other industries (Art. 35)
- iii) the mining operation disturbs other mining operations (Art. 34)
- iv) mining claims applied for are overlapped with other existing claims (Art. 29 and 30)
- v) the application is made during a certain prohibition period (Art. 32, 32-2, and 33)

③ Adjustment of Mining Claims

a. In case mining claims are intricate in an area, the BITI Director may recommend the mining right owners concerned to exchange or sell such mining claims, if it will serve for economical and effective exploitation of a mineral deposit thereby benefiting public interest. (Art. 88)

b. In case, between neighboring mining claims, location and shape of mining claims are unconformable with those of a mineral deposit, whereby effective development of minerals is hindered unless the location and shape of the mining claims are changed, the digging right owners concerned may, through mutual consultation, petition expansion or reduction of mining claims to make them conformable with the mineral deposit. The BITI Director may recommend such consultation. (Art. 89) In case the consultation is unsuccessful, the BITI Director shall make a decision on expansion/reduction of the mining claims (Art. 93), upon petition of persons concerned. (Art. 90)

④ Suspension of mining

a. The mining right owner is obligated to commence operations within 6 months of the date of registration. In case he fails to fulfill the obligation due to reasons beyond control, he shall apply for permission of the BITI Director. Permission is required also in case a mining right owner intends to suspend operations for one

continuous year or longer.(Art. 62) The BITI Director may cancel a mining right in case of violation of these obligations, to ensure fulfillment of the obligations.(Art. 55)

b. Prior to start of operations, the mining right owner shall elaborate and submit a plan of operations to the BITI Director. While the prospecting right owner has only to submit the plan, the digging right owner shall obtain the BITI Director's approval of the plan and shall conduct operations in accordance with the approved plan.(Art. 63)

The BITI Director may recommend/direct a digging right owner to change the operation plan, to ensure complete exploitation of a mineral deposit.(Art. 100)

c. When operation is commenced, the mining right owner shall establish a mining office near the mining area and notify the BITI Director of its location and the date of start of operations.(Art. 68)

The digging right owner shall elaborate and keep at the mining office survey maps of pits showing the progress of digging and records of mining operations.(Art. 70)

d. The BITI Director may cancel mining right by way of sanction, in case of violation of provisions of the Mining Law or the Mine Safety Law, or in case of a failure to obey orders based on the Laws.(Art.55)

⑤ Adjustment with other interests

a. No mining right may be granted upon an area designated by the Environmental Dispute Coordination Commission* as the "area where mining is prohibited," on the ground that mining of minerals is considered inappropriate in relation with public interests or other industries.(Art. 15-1) In case an existing mining right within such an area is considered seriously harmful to the public welfare, the said Commission may recommend the BITI Director to cancel the mining right or reduce the area.(Art.15-2)

Note: *An administrative committee attached to the Prime Minister's Office, in accordance with the Law concerning Establishment of Environmental Dispute Coordination Commission.

b. When application for the mining right is filed, the BITI Director shall ask for opinions of the prefectural governor concerned regarding adjustment with public interests and other industries' interest, before taking a decision.(Art. 24) An application is rejected if it falls under the cases enumerated in above ②-b.

c. In case a mining right owner intends to mine minerals within 50 meters in all direction from railroads, roads, ports, rivers, lakes, bridges, dams, irrigation/drain facilities, parks, schools, hospital and other public facilities, or from buildings, the custodian's consent shall be obtained.(Art.64) If such consent is not given without due reasons, the mining right owner may petition the BITI Director for a decision.(Art. 64-2)

⑥ Indemnity for damage caused by mining

a. In case (i) digging of earth for mining of minerals, (ii) discharging of mine water or waste water, (iii) piling of abandoned rocks and tailings, or (iv) emission of gas causes damage to other persons, the mining right owner concerned at the time of occurrence of the damage shall be responsible for indemnity.

In case the mining right has extinguished at the time of occurrence of damage, the owner at the time of extinction of the mining right shall be held responsible for indemnity.(Art.109-12)

b. In case mining right has been transferred after occurrence of damage, the new owner and the former owner at the time of occurrence of the damage shall jointly be responsible for indemnity. (Art. 109-3)

c. Indemnity shall in principle be paid in money.(Art.111-22) In case damage is restorable without huge expenditure in excess of an amount of indemnity, an injured person may claim for restitution. (Art.111-22 proviso) Restitution, in place of monetary indemnity, may be ordered by the court if so pleaded by a mining right owner and if found appropriate.(Art. 111-3)

d. In order to help prevent and solve disputes on indemnity, the BITI Director may consult with the Local Mining Council, to draw up general standards for the limits and methods of indemnity and make them public.(Art.112)

In case a dispute arises out of indemnity for mining-induced damage, the persons concerned may plead with the BITI Director for intermediation for settlement.(Art.122)

⑦ Other Provisions

a. In case the BITI Director cancels a mining right or reduces a mining claim for the purpose of adjustment with public interests, the State shall indemnify the losses suffered by the mining right owner.(Art. 53-2-12)

b. A complaint against the BITI Director's disposition in accordance with the Mining Law may be lodged with the Minister of International Trade and Industry.(Art. 171)

2) The Mine Safety Law

The Mine Safety Law (Law No.70 of 1949) is intended to prevent dangers and injuries to the mine worker, to control mining-induced environmental pollution and to facilitate rational exploitation of mineral resources.

Used in this Law, the term "mine safety" means prevention of dangers and injuries to persons working at mines, protection of mineral resources, preservation of mining facilities and control of mining-induced environmental pollution.

① Responsibilities of mining right owner and mine worker for safety

a. The mining right owner shall take measures(as detailed in the Ministerial Ordinance pursuant to this Law) to secure the mine safety(Art. 4) and shall give its mine workers instruction regarding safety measures necessary for the performance of their work.(Art. 6)

b. The mine worker shall observe matters necessary for the mine safety.(Art. 5)

c. The mining right owner shall adopt safety rules for his mine pursuant to the Ministerial Ordinance.(Art. 10) The safety rules shall be observed by the mine right owner and the mine worker.(Art. 12)

No safety rules instituted, amended or modified shall take effect unless approved by the Director General of the Mine Safety and Inspection Bureau(hereafter abbreviated as "MSIB")(Art. 10-4) The Director General of MSIB or the Director of Mine Safety and Inspection Department(hereafter abbreviated as "MSID") may order a change of the safety rules of a mine when he finds it necessary. (Art.10-32)

② Setup for mine safety

a. Pursuant to the Ministerial Ordinance, the mining right owner shall appoint a safety supervisor, a technical safety manager, assistant technical managers and members of the technical safety staff at its mine, as well as a safety inspector and assistant safety inspectors. (Art.12-2-12 and 32; Art. 15-12)

When the mining right owner appoints the safety-related personnel, he shall notify the Director General of MSIB or the Director of MSID of such appointments pursuant to the Ministerial Ordinance.(Art.12-2-4 and Art. 15-5)

b. The mining right owner shall investigate and deliberate important safety matters and cooperate with the safety supervisor in the execution of his duties, and shall, pursuant to the Ministerial Ordinance, establish a mine safety committee which is to give recommendations to the safety supervisor.(Art.19)

③ Administration of safety supervision

a. For the purpose of enforcing this Law, a Bureau in charge of the mine safety supervision* shall be installed within the Ministry of International Trade and Industry, as well as MSIB and MSID as the Ministry's local offices(Art. 32), to each of which mine affairs inspectors shall be assigned.(Art. 34)

Note : *Currently called "Industrial Location and Environmental Protection Bureau," which constitutes an administrative subdivision of the Ministry.

The mine affairs inspector has the authority to enter the premises of a mine and its auxiliary facilities when he finds it necessary for the mine safety control.(Art. 35) When there is an imminent danger to the mine safety, the mine affairs inspector may exercise the authority of the Director General of MSIB or the Director of MSID prescribed in the Law.(Art.36-1-4)

b. When a mining right owner plans to erect or alter buildings or facilities which may affect the mine safety, he shall obtain a prior approval of the Director General of MSIB or the Director of MSID.(Art. 8)

c. The Minister of International Trade and Industry may order a mine right owner to suspend the mining operations wherever necessary, if he finds that the operations will, or threatens to, cause dangers or mining-induced pollution or damage mineral resources or mining facilities.(Art. 24)

d. The Director General of MSIB or the Director of MSID may order a mining right owner to take measures necessary for the mine safety, if he finds that the method of use of equipment or facilities or the methods of mining operations are in violation of this Law or the Ministerial Ordinance.(Art. 25)

e. During the five years following the termination of a mining right, the Director General of MSIB or the Director of MSID may order the former mining right owner to install facilities necessary for prevention of dangers or mining-induced pollution caused or generated by the mining operation conducted by him.(Art. 26)

3-1-5 Financial System

1. Present Situation and Future Policy

Since the former USSR economy collapsed and Kazakhstan insisted on its independence, many local industries had a serious lack of capital and shortage of working capital. Depending on the lack of capital, it delayed the payment of wages and there was no payment for electricity and tariffs. There is difficulty raising capital for equipment so the interest for the renewal of equipment is low. Therefore, has become superannuated.

The solution to the capital raising problem is most important and urgent for the future development of Kazakhstan. The Kazakhstan government has given much effort but there are few good results.

Based on the judgment of the situation of the Kazakhstan economy the important measures for raising capital are mentioned as follows.

(1) Increase Domestic Capital

- ① Improve the banking system and strengthen the banking structure (For indirect financing).
- ② Nurture those enterprises which are attractive for the investors and reconstruct the capital market (For direct financing).

(2) Introduction of Foreign Capital

- ① Further improvement of the existing legal system and treatment for the foreign capital (For direct investment).
- ② Increasing the capacities of domestic enterprises (For financing by the foreign private financial organizations).
- ③ Introduction of project financing (For the introduction of the financing from EBRD, IFC and foreign private financial organizations).

(3) Nurture of Industries by Government

- ① Promotion of exports and change the policy by combining the introduction of foreign capital and promotion of exports. (To be aided by institutional financing and interest subsidy).
- ② Implement the long-term high level development (For allowing government-guaranteed borrowings from the public financial institutions).

In the case of the economic development of Southeast Asia, it is very important to increase the domestic capital based on increasing the rate of deposits. In the case of Kazakhstan depending on the reconstruction of the capital market and improvement of the banking system, the central government will make the effort to strengthen the banks and industry. As a result of these measures, there will be a recovery trend of the deposit amount in the

commercial banks. However, people exchange their tenge into dollars and store it at home. The borrowing conditions at the bank are very strict but there are a few local enterprises able to raise capital in the stock market. This condition means that the banks and capital markets do not have any functions in finance.

For the reconstruction of the Kazakhstan economy, it is necessary to raise capital from other sources beside the banks and capital markets. The government requests the strong impact of the economical development to introduce foreign capital and nurture strategic industry.

One of the measures for the improvement of the banking system, it is mentioned the establishment of the Rehabilitation Bank. The Rehabilitation Bank was established in 1992 as a bank that treated bad debt and its objective was to support State enterprises who could not repay its debt. The enterprise was selected by the national asset committee as a bankrupt enterprise. The Rehabilitation Bank loans to bankrupt enterprises that are suitable using supporting standards. The capital for loans is owned by the government. In the 1996 budget, there is 6 billion tenge about \$100 million for the bank but this loan is not being utilized effectively. The judgment on the loan has political considerations.

2. Introduction of Foreign Capital

(1) Direct Investment

The active introduction of foreign capital has a large impact on the development of the economy. This is the same for the Southeast Asia countries. The Southeast Asia countries generally promote and nurture the industries producing important goods by domestic capital after the introduction of foreign capital (direct investment).

Conversely, foreign capital generally decides the company for investment based on the examination and comparison of the political and economic situation of the surrounding countries, legal and taxation systems and employment conditions. The surrounding countries are under these competitive conditions. In the case of Southeast Asia, the surrounding countries compete based on the business climate (the country that has the most favorable treatment of business than the other countries can introduce foreign capital). Once foreign capital is introduced into the country, it enables the introduction of other foreign capital. In the case of Kazakhstan, it has huge mineral resources from a global viewpoint so it must compete with other resource countries for the introduction of foreign capital. It is necessary to compare itself with other countries on its treatment of business and make a plan.

The policy of favorable business treatment depends on the 1995 foreign capital law grandfathering for 10 years, guarantee against nationalization and validity of decisions made at international arbitration organizations. Conversely compared to Uzbekistan capital law that was established in 1991, Uzbekistan maintains the favorable business treatment to foreign capital. The Kazakhstan modification of the 1995 foreign capital law is less favorable than the Uzbekistan in viewpoint of introducing foreign capital. In the long-term viewpoint, foreign capital will go to another Central Asia country and exclude Kazakhstan. In this case, there is a possibility that Kazakhstan will be excluded from economic development. It is hoped that there will be more favorable business treatment for introducing foreign capital by the tax system, law system, etc.

(2) Active Introduction of Project Finance

Recently, one of the methods of raising capital for large projects did not increase the debt to foreign countries. The project finance system needs to gain attention. Project financing is different with the usual methods of raising capital by the government. It requires the government guarantee as security. To repay the loan by the income generated by the project. In the developing countries, they hope to minimize the borrowing of foreign capital by government guarantees. In the case of the construction of roads, power station, waterworks and sanitation facilities, enterprises can raise the capital by project finance. In the case of Kazakhstan in the future, they should think about applying the project finance system for mine development, construction of power plants and other projects.

The public financial organizations, EBRD, IFC, ABD announced the policy of utilizing the public financing actively in Central Asian countries. In the case of Kazakhstan, these finance organizations are expected to reconstruct the finance system based on these public organizations. However, these organizations have requirements for finance. The borrower must have sufficient capability of management. Foreign capital organization participates in the management of local enterprises and transfers the management skills that Kazakhstan lacks.

3. Nurture of Industry by Government

At the time of the promotion of the economic development, there was much controversy on the many relations that the government has. After the World War II using the East Asia as a model, this area grew their economy as (Northeast Asia model) Japan, Taiwan, Taipei and Korea. The government actively makes the industrial policy and public capital was invested in strategic industries and promoted the economic growth by mainly domestic capital. The other East Asia group, Hong Kong, Malaysia and Indonesia, (Southeast Asia model), actively promoted the deregulation and free market system. It raised capital through the capital markets and gave investment opportunity for foreign capital to promote economic growth. The model that is suitable depends on the situation, age and location of the country. However, generally the economy is now becoming global. It is believed that to reach the accomplish the economic development quickly Southeast Asia model has the advantage.

In the case of Southeast Asia model, the government makes a national economic plan to effectively indicate the direction of the economic growth for the domestic and foreign investment and promotion of the growth of related industries. For example, the promotion of the non-ferrous metal industry development depends on the production of sulfuric acid that is a by-product so the fertilizer industry needs to be developed. By making the national plan, it prepares the foundation related to industry development. It needs to promote the construction of the infrastructure which is the bottleneck in the development of industry and the economy.

The characteristics of both the northeast and southeast countries are the government promoted the exports actively. In the case of Japan, the proportion of domestic production against the export amount including tax is 8.6%. The influence of the export trend is very large for the economy. The proportion in Korea, Malaysia and

Kazakhstan are 27.4%, 83.0% and 30.1%, respectively. In the undeveloped countries where the economy does not grow much, the increase in their international competitiveness in export industry has an especially large effect on their economies. It is believed that the government actively supported this industry. Government established the financial organizations for export promotion (Kazakhstan Non-ferrous Metal Industry Rehabilitation Plan Fund). The supply of low interest export capital and construction of the infrastructure by borrowing from foreign capital are very effective measures. (In Southeast Asia, Japanese government gives loans and uses loans and finance from Import-Export Bank to support the construction of the infrastructure and growth of strategic industry.)

The prediction of the effect to the economy by the Kazakhstan Non-ferrous Metal Rehabilitation Plan Fund and examination of the financial standards of the funds are outside the scope of this investigation. However, this work is necessary to receive the support from the World Bank and other financial organizations.