Chapter 2 Calculation of Ore Reserves

Calculations of ore reserves for veins Nos.1,2,3,6 and 10 were conducted same as the first survey year. For the first survey year, each underground vein extension to as deep as 150 m was calculated, however, maximum extension of each vein for calculation is set to as deep as 120 m this year among which there are some veins such as No.10 not so deep as 120 m, considering the lower limit trend of mineralization. Analyzed value of major vein core was adopted that of assayed at Central Geological Laboratory in Ulaanbaatar.

Ore blocks of individual vein are divided depending on the ore grade of surface portion. Fig.II-2-1 shows the location map, Fig.II-2-2 through II-2-9 illustrate the cross section diagram of ore reserves and Table II-2-1 shows the calculation result of ore reserves respectively.

Ore reserve 284,500 t
Gold content 6,816.1 kg

Gold content as compared to that of the first survey year is as follows.

Vein No.	This Year	The First Year	Difference
1	3,545.2kg(52.0%)	1,244.7kg(19.0%)	2,300.5kg
2	787.9(11.6)	1,746.3(26.6)	-958.4
3	567.4(8.7)	454.2(6.7)	-113.2
6	94.8(1.4)	118.5(1.8)	-23.7
10	1,934.0(28.4)	2,875.0(43.9)	-941.0
Total	6,816.1kg	6,551.9kg	264.2

Vein extension was shortened in calculation this year, gold content however was resulted to increase by 264 kg owing to the acquisition of high grade No. 1 vein which increased by 2,300 kg to 3,545 kg accounting for 52% of the total content. In any event, as the present ore reserve was not sufficiently explored, reliability on ore reserves falls behind than "possible reserves".

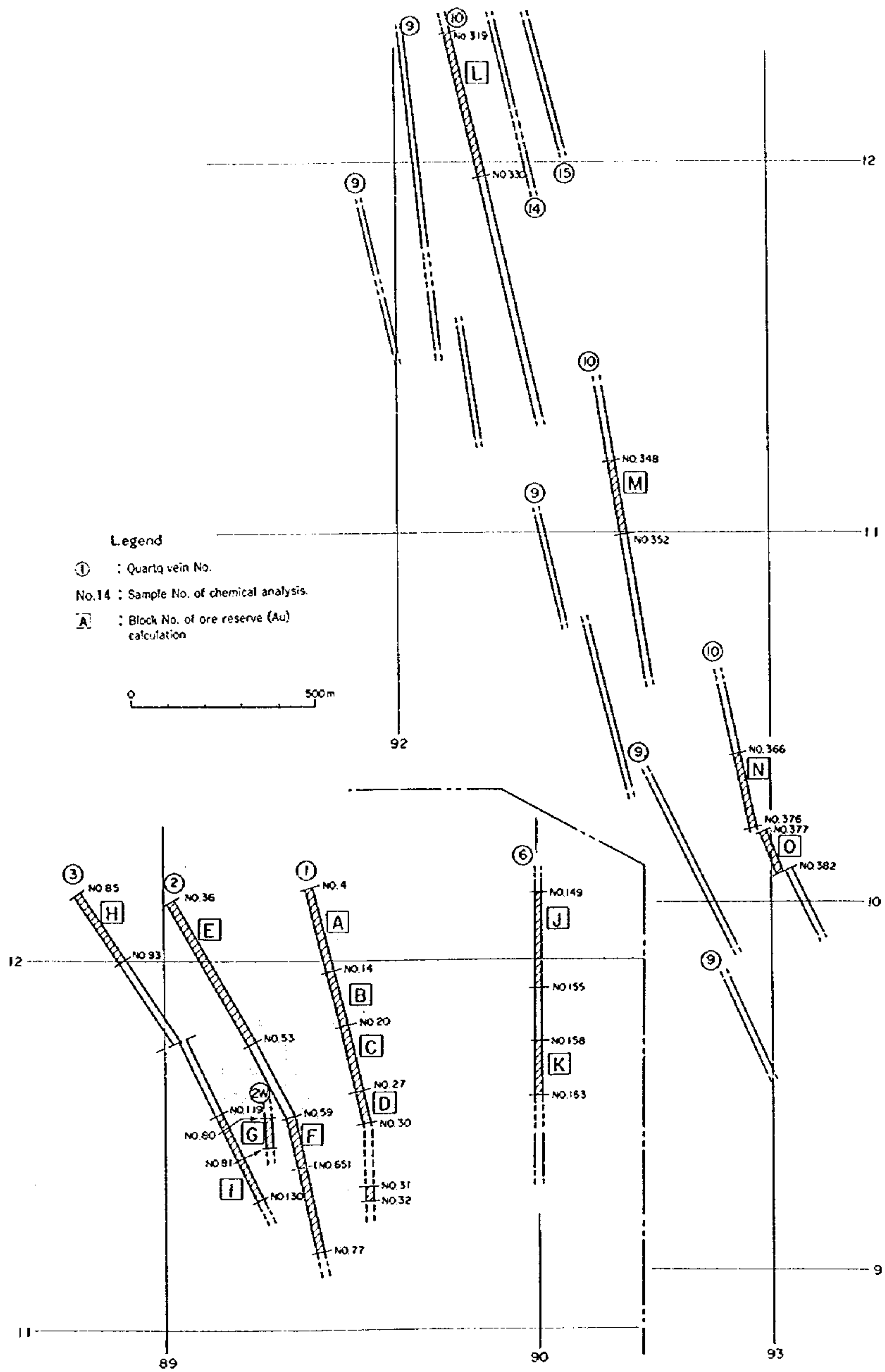
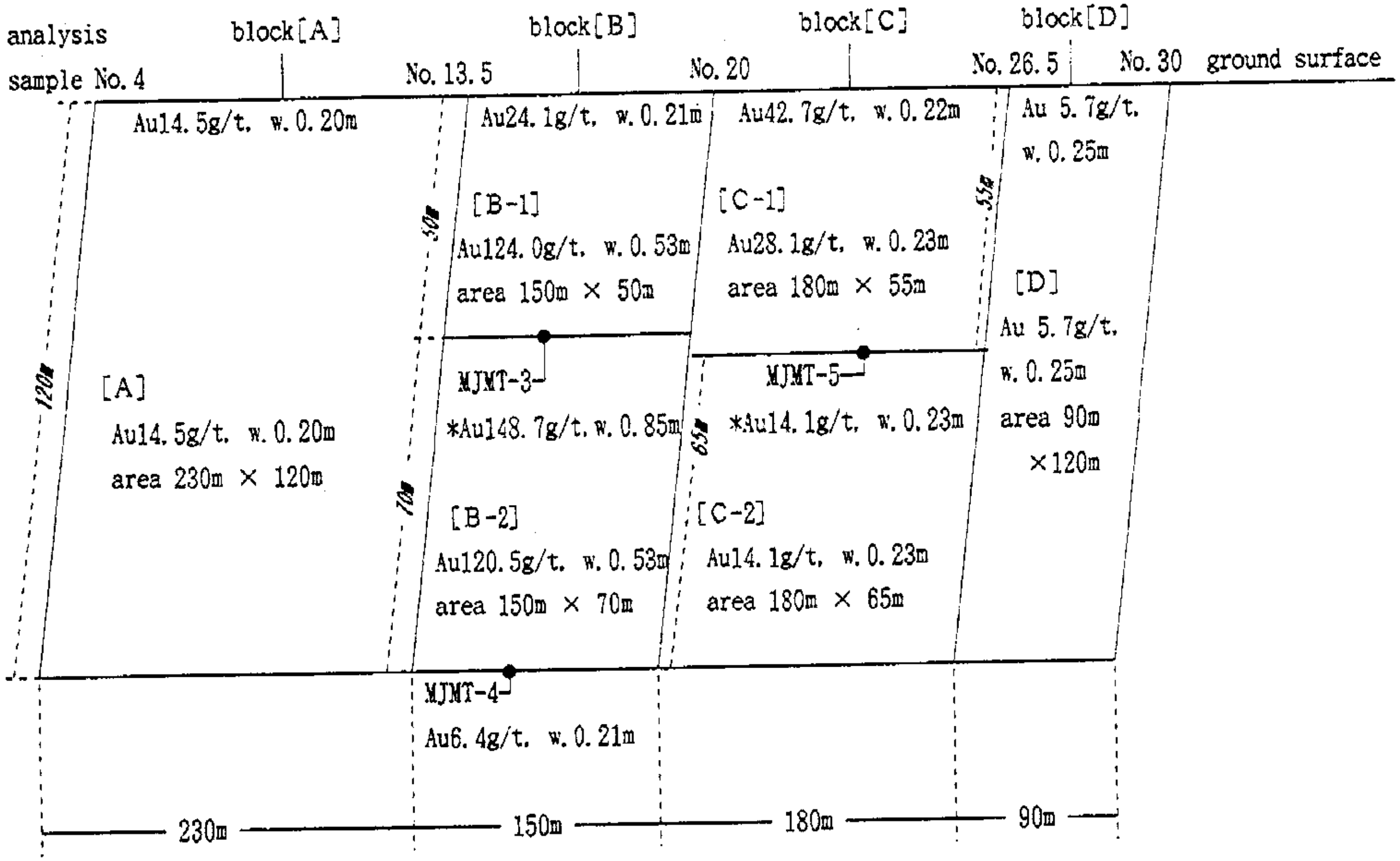


Fig. II-2-1 Location map of vein blocks for ore reserve calculation

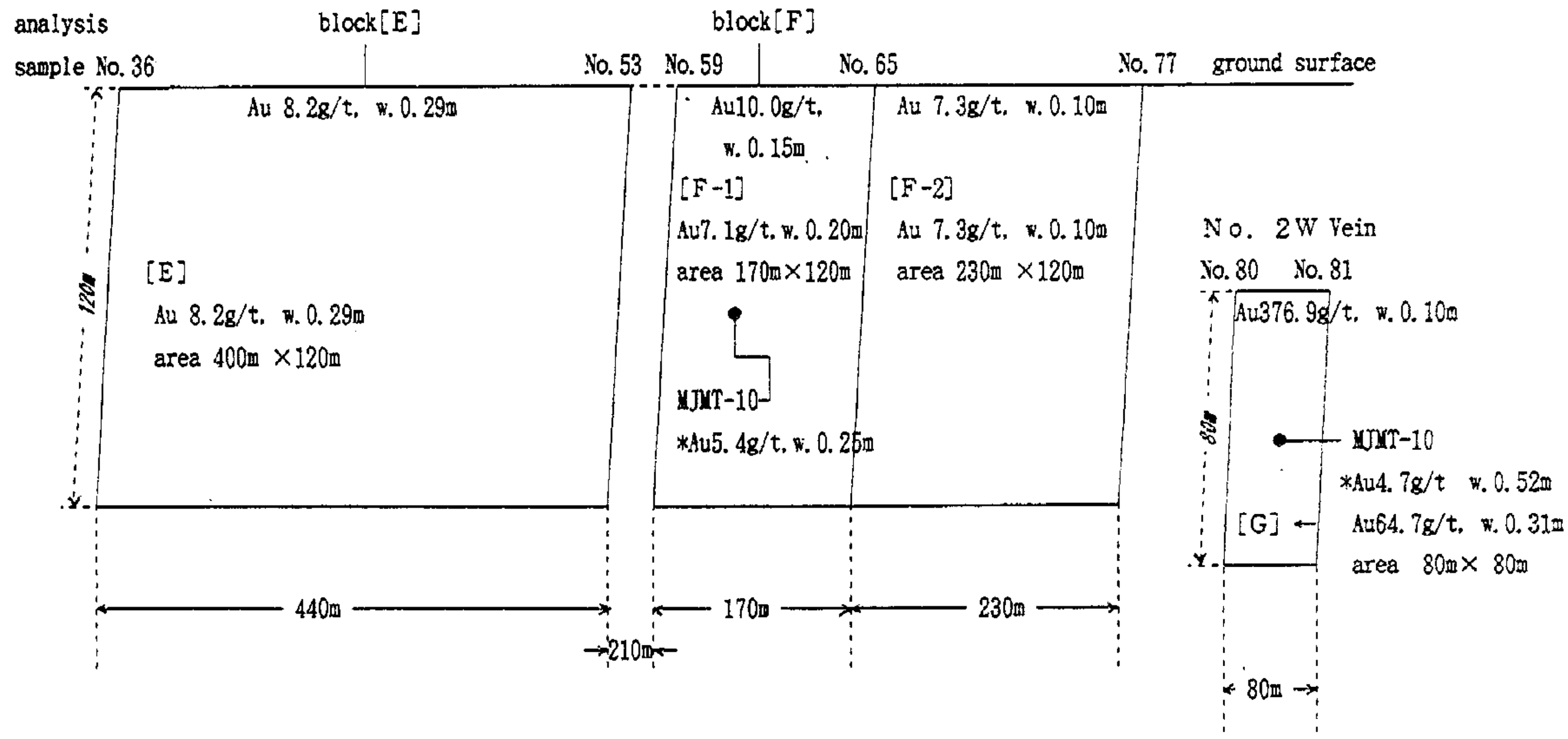
Fig. II-2-2 Vein block section for ore reserve calculation (No. 1 Vein)



scale ratio & vein dip : 3/1 55°

Remark*: Gold content of drilling core is assayed value of Central Geological Laboratory in Ulaanbaatar

Fig. II-2-3 Vein block section for oreu reserve calculation (N o. 2 V e i n)



scale ratio & vein dip : 3 / 50-60° / 1

Remark*: Gold content of drilling core is assayed value of Central Geological Laboratory in Ulaanbaatar

Fig. II-2-4 Vein block section for ore reserve calculation (No. 3 Vein)

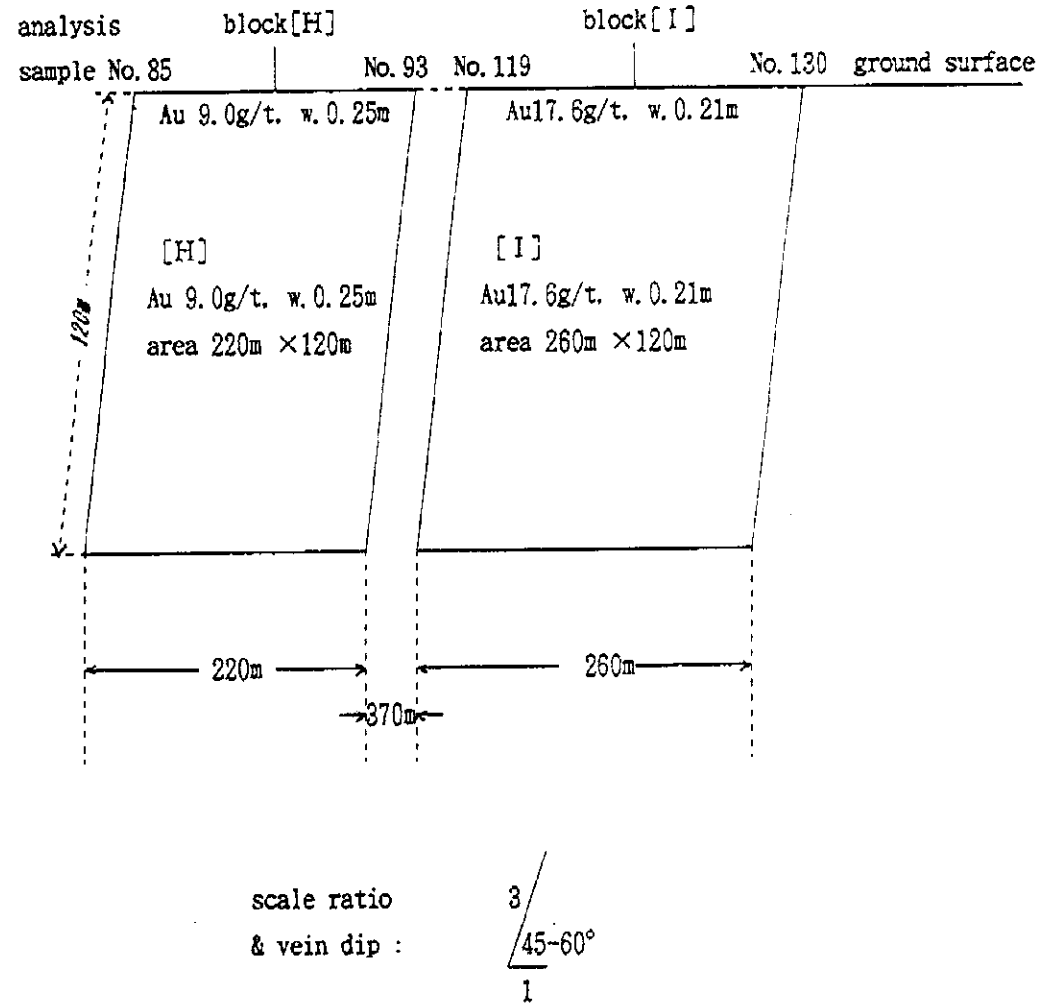


Fig. II-2-5 Vein block section for ore reserve calculation (No. 6 Vein)

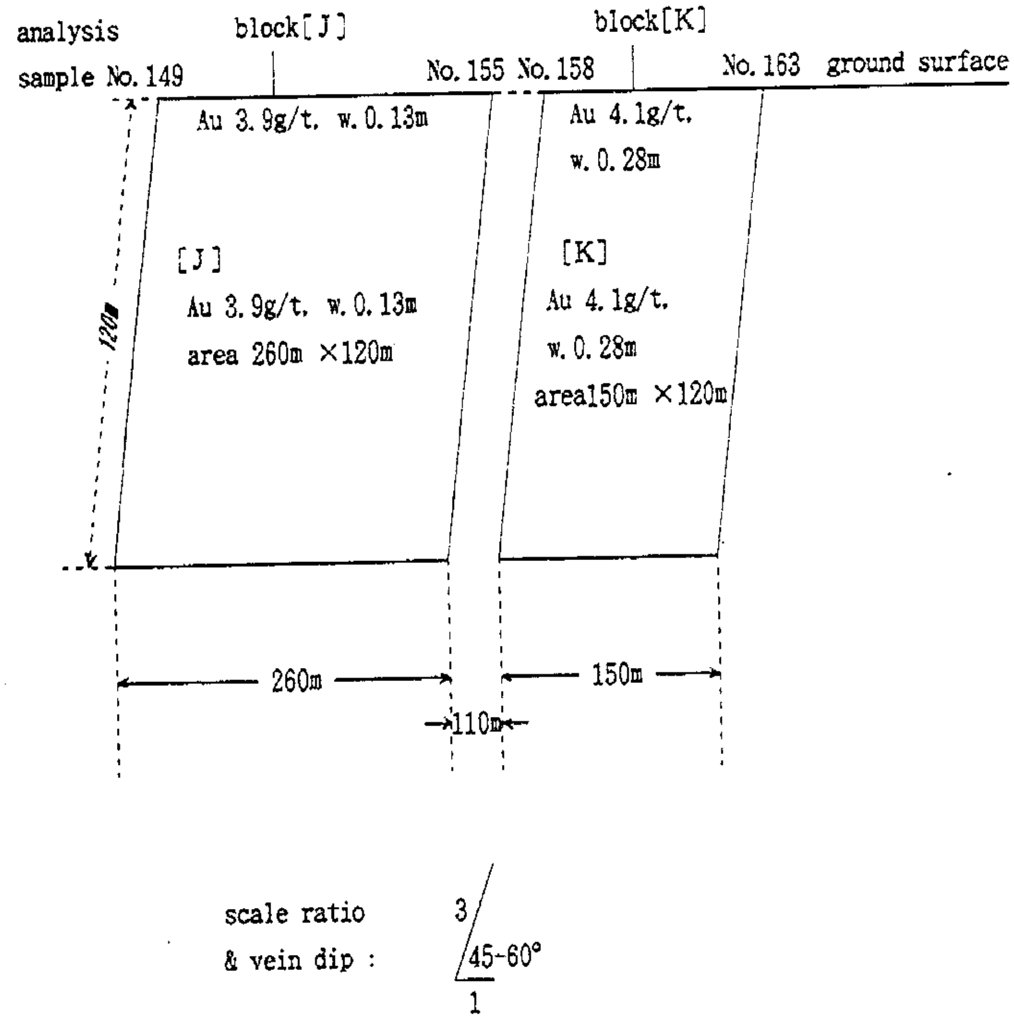
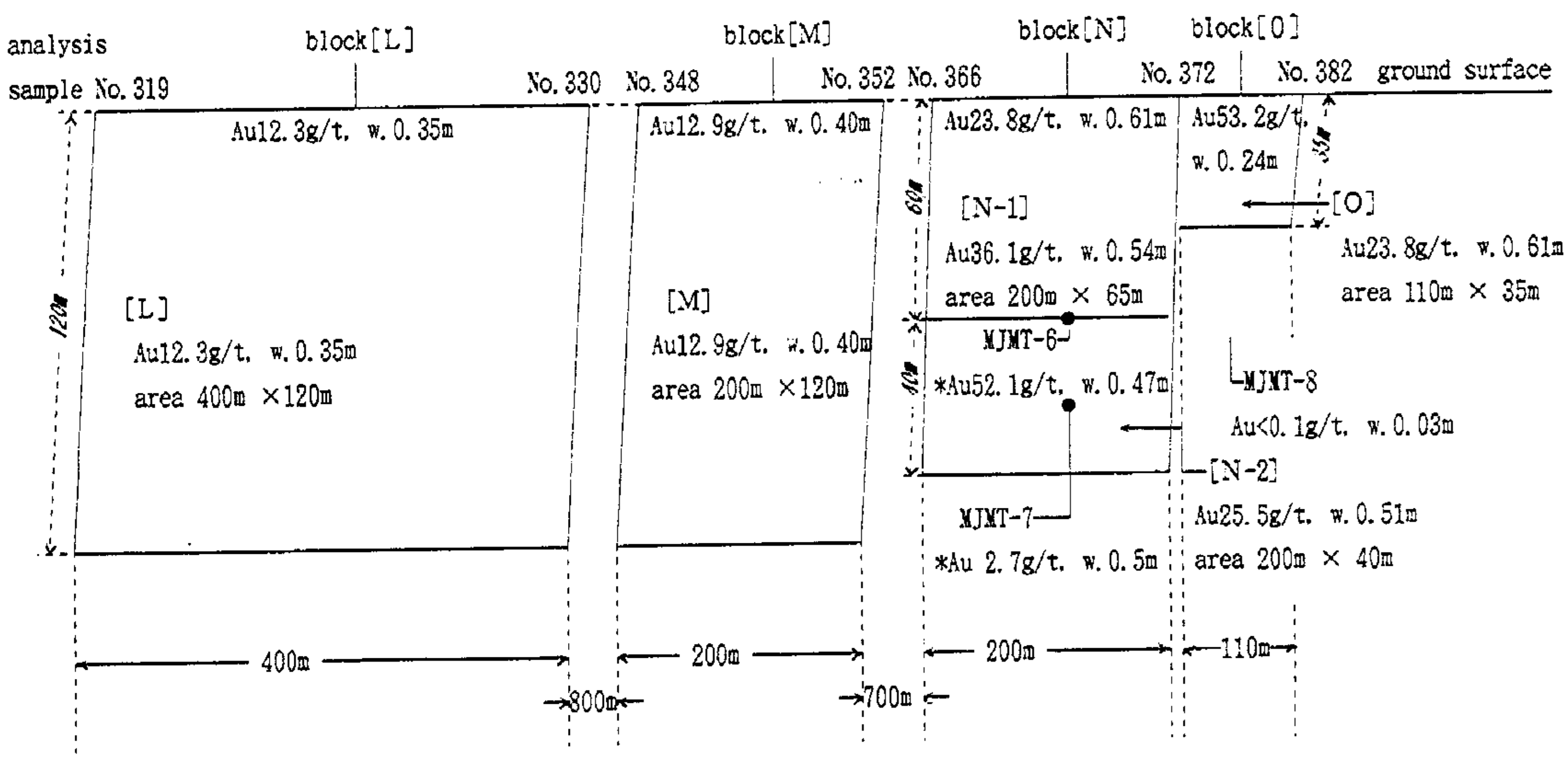


Fig. II-2-6 Vein block section for ore reserve calculation (No. 10 Vein)



scale ratio 3/90°
& vein dip: 1

Remark* : Gold content of drillig core is assayed value of Central Geological Laboratory in Ulaanbaatar

Table II-2-1 Result of ore reserve calculation

Quartz vein No.	Block No.	Block range (analytical sample No)	Thickness (m)	Length (m)	Depth (m)	Volume (m³)	Specific gravity	Weight (t)	Gold grade (g/t)	Gold content (kg)	Remark
1	A	No. 4～ 14	0.20	230	120	5.520	2.6	14.352	14.5	208.1	
1	B-1	14～ 20	0.53	150	50	3.975	2.6	10.335	124.0	1.281.5	
1	B-2	〃	0.53	(150)	70	5.565	2.6	14.469	120.5	1.743.5	
1	C-1	20～ 27	0.23	180	55	2.277	2.6	5.920	28.1	166.4	
1	C-2	〃	0.23	(180)	65	2.691	2.6	6.997	14.1	98.7	
1	D	27～ 30	0.25	90	120	2.700	2.6	7.020	5.7	40.0	
1	none No.	31～ 32	0.10	40	120	480	2.6	1.248	5.6	7.0	
	Sub total			690		23.208		60.341	58.75	3.545.2	
2	E	No. 36～ 53	0.29	440	120	15.312	2.6	39.811	8.2	326.5	
2	F-1	59～ 65	0.20	170	120	4.080	2.6	10.608	7.1	75.3	
2	F-2	65～ 77	0.10	230	120	2.760	2.6	7.176	7.3	52.4	
2	G	80～ 81	0.31	80	80	1.984	2.6	5.158	64.7	333.7	
	Sub total			920		24.136		62.753	12.56	787.9	
3	H	No. 85～ 93	0.25	220	120	6.600	2.6	17.160	9.0	154.4	
3	I	119 ～130	0.21	260	120	6.552	2.6	17.035	17.6	299.8	
	Sub total			480		13.152		34.195	13.28	454.2	
6	J	No. 149～155	0.13	260	120	4.056	2.6	10.545	3.9	41.1	
6	K	158～163	0.28	150	120	5.040	2.6	13.104	4.1	53.7	
	Sub total			410		9.096		23.649	4.00	94.8	
10	L	No. 319～330	0.35	400	120	16.800	2.6	43.680	12.3	537.3	
10	M	348～352	0.40	200	120	9.600	2.6	24.960	12.9	322.0	
10	N-1	366～376	0.54	200	65	7.020	2.6	18.252	36.1	658.9	
10	N-2	〃	0.51	(200)	40	4.080	2.6	10.608	25.5	270.5	
10	O	377～382	0.61	110	35	2.349	2.6	6.107	23.8	145.3	
	Sub total			910		39.849		103.607	18.67	1.934.0	
	Total			3.410		109.441	2.6	284.545	23.95	6.816.1	

Chapter 3 Economic Evaluation

To evaluate the economic merit of the quartz vein as a gold deposit, two possible cases are roughly assumed, namely, Case 1, wherein the ore concentrate in the form of silica ore is transported to Japan for electrorefining of gold from the copper concentrate, and Case 2, wherein ore concentrate is leached at the mine site and gold is refined by a subcontractor.

3-1 Evaluation of Case－1

1. Basic Way of Thinking

1) Objective Vein for Development: No. 1 shall be an only objective. Other veins shall be excluded for various reasons such as that exploration of veins (No. 2, 3 and 6) is not sufficient enough to rely on their reserve; they are too far away; scale is too small (No. 10). Range for the development shall be up to 560 m of vein strike extension and 80 m of undersurface vein extension.

2) Mining Method: "Upward Cut and Fill" method with comparatively small amount of refuses shall be employed. For transportation, trackless system shall be applied for both inclined and level drifts.

3) Production: 6,000 t/year

(Initial Period: 1 year; Operating Period: 7 years)

4) Mineral Processing: Primary crushing up to 5cm square. Refuses shall be pick up manually to make concentrates.

5) Concentrates: They shall be transported to Japan as silica ore. Gold shall be recovered by electrolysis from copper concentrates.

6) Infrastructure

a) Electricity: Generated privately

b) Road Construction: Unnecessary. Construction of one bridge:paid by local government.

c) Drilling of wells for process water and piping (2 km): Not considered.

7) Preparation of Machines and Materials: Except for LHD(Load Haul Dump car), hydraulic drilling machine, crusher, generator and ammunition, shall be prepared within Mongolia.

8) Customs Duties: Repealed

9) Tax on Mining License: Not considered.

(1 to 3 years: $5/ha/year, 3 to 5 years: $7.5/ha/year, over 6 years: $10/ha/year)

10) Royalty: Income×2.5 %

11) Commission of Trading Company: $5/ t-concentrates

12) Corporation Tax:

Profits before tax < 125,000 $ (100,000,000 Tg) 15 %

Profits before tax > 125,000 $

[125,000$ × 15%+(Profits before tax −125,000$) × 40%]

13) Exchange Rate: 800 Tg /$ (Tg: Tugrik)

120 ¥/$ (¥: Yen)

14) Plans of Fund: (Initial Expenses + Operating Funds)

Owned Capital : 1,000,000 $ (Included $400,000 of operating capitals)

Borrowed Capital : 2,100,000 $ (Interest rate 6 %/year)

Total : 3,100,000 $

2. Accounting for Income and Expenditure

1) Ore Reserves

a) Ore Reserves ············34,715 t

vein width·················· 0.28 m

gold grade·················· 68.3 g/t

content ···················· 2,372 kg

b) Minable Ore ········· 29,500 t (Mining recovery 85 %)

c) Minable Crude Ore ··44,250 t (29,500 t + refuse 50 %)

gold grade ················· 45.5 g/t

content ················· 2,014.8 kg

2) Output and revenue

a) Annual Production of Crude Ore ····· 6,000 t (500 t/month)

b) Concentrate of manual dressing ···· 4,000 t (Refuse 50 % removed)

c) Gold content ································ 273.2 kg

d) Recovery of gold content·················· 245.9 kg (Recovery of Refining 90%)

e) Revenue from gold························· 2,451,000 $ (310 $/toz, 1,200 ¥/g)

(Prices of silver which grade is 1/6 of gold and silica ore are not considered.)

f) Fare································ 264,000 $ (Mine→UB: 6 tracks, 10 t each, $66/t)

································ 700,000$(Container railway, Surface freight, 175$/t)

g) T/C&R/C ························· 400,000 $(110 $/t)

3) Business Profits(Income) ········ 1,045,000 $

4) Expenditures

a) Operation Expenses

Mining······ 182,000 $ (Personnel 5,200 $/month, material 10,000 $, 12months)

Ore dressing ·················34 ,000

(Personnel 500 $/month, material 2,000 $, 12months)

Japanese engineers ·······168,000 $(14,000 $/month, 12 months)

Mine management ········ 50,000 $ (Maximum employees: 36 people)

Head office ····················144,000

Sub total························578,000 $

b) Royalty ························ 31,000 $(Income×2.5 %)

c) Commission of trad. Co.··20,000 $ (5$/t)

d) Interest ·····················126,000 $ (Borrowing 2,100,000$; Interest rate 6%)

Sub total ··················177,000 $

Total expeniture····· 755,000 $

5) Profits before Tax ········ 290,000 $

6) Tax ····························· 85,000 $[125,000 $×15%+(290,000$−125,000$)×40%]

7) profits after Tax·········· 205,000 $

8) Initial Expenses (allocated in 7 years)

Excavation Inclined and Level Drifts ···· 250,000 $

(Inclined: 360 m; Level 500 m, 2,000$/m, Total 1,750,000$)

Buildings and crushing room ················ 25,000 $

(Office,Generater, Garage, room, Garage, Repair stop, Power magagine, Total 180,000$)

Machines and facilities(used)················ 100,000 $

(LHD, Hydraulic drills, Crusher, Generator, Fan, jeep, Track,Water car, Total 700,000$)

Site leveling and refuse depository ········ 10,000 $(Total 70,000$)

Total initial cost····························· 386,000 $

9) Loss and Gain·····························−181,000 $

What has been discussed in the foregoing is summarized into an income and expenditure statement shown in Table II-3-1.

In case the concentrates have to be transported to Japan, annual loss of about 180,000$(50$/t-Crude ore) will be incurred. Such loss is attributable to that the value of the ore per ton is too low.

As far as the Vein No.1 is concerned, it is impossible to expect any higher productivity and greater cost reduction. So that, as long as we insist on this vein, better ratio of expense to revenues to an extent of profitable margin will not be able to expect, even if the present market price becomes higher.

Table II-3 1 Outline of Production Cost and Profit at Vein No. 1 (Case-1)

Production (t/year) (t/day)	6,000 (20)		Remarks
Au content (kg)	273		45.5g/t
Mine life (year)	7		
Au production (kg/year)	245.7		Recovery of refining: 90%
	(US$)	(US$/t)	
Au price	2,449,000	408.2	310$/toz
Fare	964,000	160.7	Mine site ~UB~Japan
T/C & R/C	440,000	73.3	Treating charge & Refining C.
Income	**1,045,000**	**174.2**	
Running cost	578,000	96.3	Mining, Crushing, Others
Interest	126,000	21.0	6%/year, Borrowing 2,100,000$
Others	67,000	11.2	Royalty, Commission of trading Co.
Sub total	755,000	125.8	
Profits before tax	290,000	48.3	
Tax	85,000	2.7	[125,000$ ×15% +(290,000-125,000)×40%]
Profits after tax	**205,000**	**34.2**	
Initial investment			
Main tunnel	250,000	41.7	1,750,000$/7years
Machine facilities	100,000	16.7	700,000$/7 〃
Houses	25,000	4.2	180,000$/7 〃
Others	10,000	1.7	70,000$/7 〃
Sub total	386,000	64.4	(Total 2,700,000$)$/7 〃
Profit and Loss	**- 181,000**	**- 30.2**	

3-2 Evaluation of Case 2

To evaluate the Case 2, the processes ranging from mined ore dressing, crushing, leaching to extraction of crude gold at the miine site, since the gold refining is to be subcontractor.

The outline of the leaching process is illustrated in Fig. II-3-1.

1. Basic Concept

Mining method and production plan are similar to those in Case 1, but the construction work and operation are supposed to be executed on the initiative of the Mongolian mining company. Costs of leaching plant and water supply system shall be included in the initial cost.

According to the fund plan(initial expense:3,8000,000 $; operating capital: 300,000 $) 4,100,000$ is allocated. In this case, 1,100,000$ is owned capital and 3,000,000$ is borrowed capital(interest of 10%).

2. Accounting for Income and Expenditure

1) Output and Revenue

a) Production························· 6,000 tons/year

b) Gold grade ························ 45.5 g/t

c) Gold content······················ 273.0 kg/t

d) Recovery·························· 218.4 kg (Recovery of leaching and refining:80%)

e) Revenue from gold············ 2,177,000 $($310/toz)

f) Cost for refining subcontractor···· 70,000 $

(R/C : 10$/toz, not including transportation cost)

2) Business Profits(Income)······· 2,107,000 $

3) Expenditure

a) Operating expenses

Mining··························· 182,000 $

Ore dressing and leaching ···· 66,000 $

Mine management··············· 50,000 $

Subtotal·························· 298,000 $

b) Royalty·························· 53,000 $(2,107,000$×2.5%)

c) Interest·························· 300,000 $(3,000,000$×10%)

Subtotal··························· 353,000 $

Total expenditure ················· 651,000 $

4) Profit before Tax······················ 1,456,000 $

5) Tax ································· 551,000 $

[125,000$×15%+(1,456,000−125,000$) ×40%]

6) Profit after Tax·· 905,000 $

7) Initial Expenses (all located in 7 years)

a) Excavation of inclined and level drifts ····· 250,000 $(1,750,000$/7 years)

b) Ore dressing and leaching plant··············· 143,000 $ (1,000,000$/7 years)

c) Mining machines and facilities(used)········ 93,000 $(650,000$/7 years)

d) Buildings·· 21,000 $(150,000$/7 years)

e) Refuse and slag depository························ 10,000 $(70,000$/7 years)

f) Water supply system································ 30,000 $

(210,000$/7years,wells,piping of 2km,pumps)

Total Initial cost·· 547,000 $ (Total 3,830,000$/7 years)

8) Loss and Gain·· 358,000 $

The above accounting data is summarized into Table II-3-2. According to the result of above general evaluation, about 360,000$ of profit can be expected.

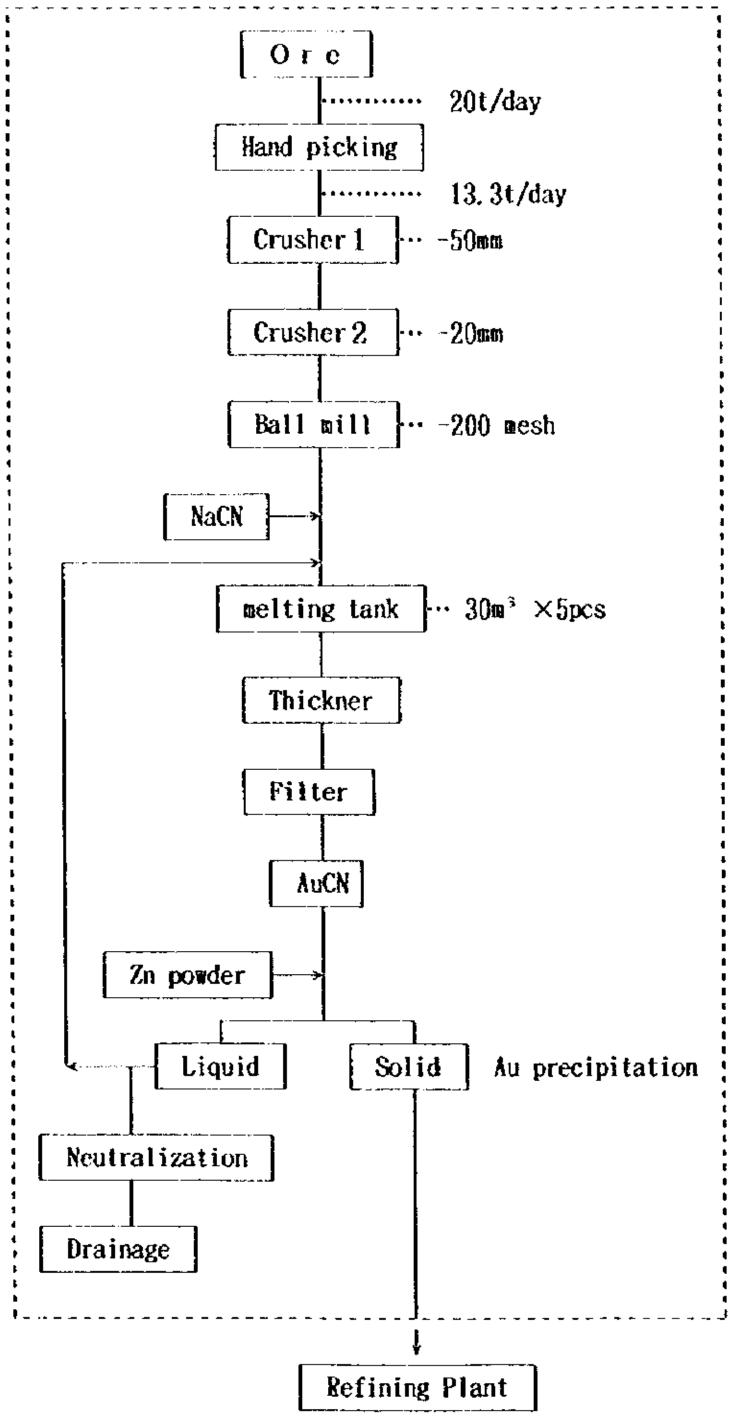


Fig. II-3-1 Outline of gold leaching process

Table II-3-2 Outline of Production Cost and Profit at Vein No. I (Case-2)

Production (t/year) (t/day)	6,000 (20)		Remarks
Au content (kg)	273		45.5g/t
Mine life (year)	7		
Au production (kg/year)	218.4		Recovery of leaching and refining: 80%
	(US$)	(US$/t)	
Au price	2,177,000	362.8	310$/toz
Refining charge (R/C)	70,000	11.7	10$/toz (entrust to refining plant)
Income	2,107,000	351.2	
Cost			
Mining cost	182,000	30.3	
Leaching cost	66,000	11.0	
Management cost	50,000	8.3	
Sub total	298,000	49.7	
Royalty	53,000	8.8	2,107,000$×2.5%
Interest	300,000	50.0	3,000,000$×10%
Sub total	353,000	58.8	
Total	651,000	108.5	
Profit before Tax	1,456,000	242.7	
Tax	551,000	91.8	125,000$×15% +(1,456,000$-125,000$)×40%
Profit after Tax	905,000	150.8	
Initial investment			
Main tunnel	250,000	41.7	1,750,000$/7years
Machine facilities	93,000	15.5	650,000$/7 〃
Leaching plant	143,000	23.8	1,000,000$/7 〃
Houses	21,000	3.5	150,000$/7 〃
Water pipe line	30,000	5.0	well, pump, piping(2km) 210,000$/7 〃
Others	10,000	1.7	70,000$/7 〃
Total	547,000	91.2	(Total 3,830,000$)$/7 〃
Profit and Loss	358,000	59.7	

Part III Conclusion and Recommendation

Part III Conclusions and Proposals

Chapter 1 Conclusions

Judging from the results of 8 holes (advance: 904 m) drilled in the veins Nos. 1, 2 and 10 and various kinds of tests carried out at laboratories, the following conclusions are given about this ore deposit.

1) Characteristics of Mineralization

① Natural gold accumulates in the center or the edges of the vein and coexists with chalcopyrite, galena, Tellurium minerals and others.

② Alteration centers on a vein and at least zoning of 1) sericite and 2) sericite/smectite zones are recognized.

③ Homogenization temperatures and salinity of the fluid inclusions varies greatly even within one section of a vein. The suitable conditions for gold precipitation are estimated to be 125 to 130℃ and 0.1 to 1.0 wt % NaCl respectively.

④ Due to big fluctuations in mineralizations, an ore intersection grade of only one hole can greatly effect the estimated gold content of the whole vein.
(Example: Since a high grade vein was hit at the vein No. 1, its estimated gold content was an increase of 2,300 kg over the first survey year.)

2) The Deepest Limit of Mineralization

As far as the central district of the vein No. 1 and the southern district of the vein No. 10 are concerned, mineralizations have deterioration tendencies in about 120 m and 50 to 80 m respectively along the veins under the surface.

3) Calculation of Ore Reserves

Objective veins are the same with those of the first survey year. According to the result of calculation of the ore blocks of each vein which were made smaller than those of the first year, the ore reserves were 284,000 t and the gold contents were 6,800 kg and an increase of 260 kg over the first year. But these differences are below the reliability of the "possible years".

4) Evaluation of Economic Merit

a) Case 1:

In Case 1, it is estimated that only No. 1 vein with gold content of 3,500 kg will be developed, and the silica ore of 4,000 t / years will be transported to Japan.

In this case, it is roughly estimated that an annual loss of about 180,000$ will be incurred. However, under the present circumstances, significant improvement in the productivity cannot be expected. Furthermore, as long as insisting on the plan for transporting the low grade silica ore to Japan, any market improvement in the profitability cannot be expected even if the present market price changes for the better.

b) Case 2:

In Case 2, it is assumed that the mining method and production scale are the same as those of Case 1. In this case, however, ore will be leached at the mining site, and the refining will be undertaken by the refining subcontractor.

In this case, annual profit of about 360,000$ can be expected after covering operation cost, expense for refining, interest, royalty, taxes and one seventh of initial investment, thereby indicating the future possibility of profitable operation. However, this Case 2 is based on the assumption that the construction work and operation will be executed on the initiative of the Mongolian teams, so that the Mongolian teams are supposed to conduct a prior study of the feasibility for the development.

Chapter 2 Proposal for Future Activity

1) Mineralizations of each vein varies largely, so we would like to recommend the Mongolian teams to conduct drilling in wider areas covering the locations of the principal veins so that the estimate of the ore reserves can be calculated on more practical basis such as "possible reserves" or "probable reserves."

2) Further, in the future, we expect that the planing of the development will be executed under the prior conditions proposed for Case 2. In promoting the future development projects, the various techniques employed for the Bumbat gold mine may be applicable.

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Appendices

A-1 Time table of drillings

A-1

Table II-1-4 Time table of drillings (1)

Drilling No.	Works	August, 1997 (10, 20)	September, 1997 (10, 20)	Remark: Dir.	Inc.	Depth	Recovery
MJMT-3	Set up	2—9		N82° E	-35°	100.5m	96.92%
	Drilling	10—14					
	Withdraw	15-					
	Safe keeping						
MJMT-4	Set up	16-		N82° E	-75°	141.7m	96.40%
	Drilling	16—28					
	Withdraw	29-30					
	Safe keeping						
MJMT-5	Set up	31—1		N77° E	-35°	100.7m	99.30%
	Drilling		1—8				
	Withdraw		8-				
	Safe keeping		18—20				
MJMT-6	Set up	2—7		N72° E	-40°	100.7m	94.84%
	Drilling	8—14					
	Withdraw	15-					
	Safe keeping						
MJMT-7	Set up	15-		N72° E	-55°	160.7m	96.89%
	Drilling	16—3					
	Withdraw		4-				
	Safe keeping						
MJMT-8	Set up	2—5		N70° E	-40°	118.8m	99.58%
	Drilling	6-7 20—2					
	Withdraw		2-4				
	Safe keeping						

A-1

Table Ⅱ-1-4 Time table of drillings (2)

Drilling No.	Works	August, 1997 (10 / 20)	September, 1997 (10 / 20)	Remark: Dir.	Remark: Inc.	Remark: Depth	Remark: Recovery
MJMT- 9	Set up		5–6	N80° E	-65°	80.6m	98.14%
	Drilling		7—11				
	Withdraw		12-				
	Safe keeping		16–17				
MJMT-10	Set up		5–6	N80° E	-45°	100.6m	100.00%
	Drilling		6—13				
	Withdraw		14-				
	Safe keeping		14–15				

A-2 Result of drillings

Table II-1-5 Result of drilling (1)

(MJMT-3)

Class	Working Period	Total Working Days: Day	Total Working Days: Shift	Day Off: Day	Day Off: Shift	True Working Days: Day	True Working Days: Shift	True Working Days: Drilling Engineer	True Working Days: Worker	Remark
Preparation	97/08/02~08/09	8	8	0	0	8	8	24	80	8h/shift
Drilling	97/08/10~08/14	5	15	0	2	5	13	18	65	〃
Withdraw	97/08/15	1	1	0	0	1	1	3	10	〃
Safekeeping	—	—	—	—	—	—	—	—	—	
Total		14	24	0	2	14	22	45	155	

Specifications of Working Days

Drilling Depth			
Planed Depth	100.0m		
Additional Depth	0.5m	Core Length	97.4m
Total Depth	100.5m	Recovery	96.92%

Core Recovery per each 100m: Depth(m)	Core Length and Core Recovery		Accumulative Total
0.0m~7.5m	4.7m	62.7%	62.7%
7.5m~100.5m	92.7m	99.7%	96.9%

Working Time			
Drilling	77.0h	75.9%	47.2%
Without Drilling	18.5h	18.2%	11.3%
Accident Recovery	0.0h	0.0%	0.0%
Water Transportation	6.0h	5.9	3.7%
Others	0.0h	0.0%	0.0%
Sub-Total	101.5h	100.0%	
Moved Out and In			
Rig Up	56.0h		34.4%
Tear Down	5.5h		3.4%
Safekeeping	—		—
Total	163.0h		100.0%

Drilling Efficiency	
Drilling Depth(m)/Total Working Days	7.18m/day
Drilling Depth(m)/Total Shift	4.19m/shift
Drilling Depth(m)/True Working Days	7.18m/day
Drilling Depth(m)/Drilling Shift	7.73m/shift
Drilling Depth(m)/Total Workers	0.65m/worker
Drilling Depth(m)/Actual Working Workers	1.55m/worker
Total Workers/Total Depth(m)	1.54worker/m
Actual Working Workers/Total Depth(m)	0.65worker/m

Casing: Casing Size and Depth		Casing Ratio	Casing Pipe Recovery
114.3mm	—		
88.9mm	2.8m	2.8%	100%

(MJMT-4)

Class	Working Period	Total Working Days: Day	Total Working Days: Shift	Day Off: Day	Day Off: Shift	True Working Days: Day	True Working Days: Shift	True Working Days: Drilling Engineer	True Working Days: Worker	Remark
Preparation	97/08/16	(1)	(1)	0	0	(1)	(1)	(3)	(5)	not calc.
Drilling	97/08/16~08/28	13	26	0	2	13	24	37	120	8h/shift
Withdraw	97/08/29~08/30	2	2	0	0	2	2	6	20	〃
Safekeeping	—	—	—	—	—	—	—	—	—	
Total		15	28	0	2	15	26	43	140	

Specifications of Working Days

Drilling Depth			
Planed Depth	140.0m		
Additional Depth	1.7m	Core Length	136.6m
Total Depth	141.7m	Recovery	96.40%

Core Recovery per each 100m: Depth(m)	Core Length and Core Recovery		Accumulative Total
0.0m~3.0m	1.0m	33.3%	33.3%
3.0m~99.0m	94.1m	98.0%	96.1%
99.0m~141.7m	41.5m	97.2%	96.4%

Working Time			
Drilling	122.5h	69.0%	62.5%
Without Drilling	45.5h	25.6%	23.2%
Accident Recovery	0.0h	0.0%	0.0%
Water Transportation	9.5h	5.4	4.8%
Others	0.0h	0.0%	0.0%
Sub-Total	177.5h	100.0%	
Moved Out and In			
Rig Up	4.5h		2.3%
Tear Down	14.0h		7.1%
Safekeeping	—		—
Total	196.0h		100.0%

Drilling Efficiency	
Drilling Depth(m)/Total Working Days	9.45m/day
Drilling Depth(m)/Total Shift	5.06m/shift
Drilling Depth(m)/True Working Days	9.45m/day
Drilling Depth(m)/Drilling Shift	5.90m/shift
Drilling Depth(m)/Total Workers	1.01m/worker
Drilling Depth(m)/Actual Working Workers	1.18m/worker
Total Workers/Total Depth(m)	0.99worker/m
Actual Working Workers/Total Depth(m)	0.85worker/m

Casing: Casing Size and Depth		Casing Ratio	Casing Pipe Recovery
114.3mm	—		
88.9mm	3.0m	2.1%	100%

A-2

Table II-1-5 Result of drilling (2)

(MJMT-5)

Class	Working Period	Total Working Days: Day	Total Working Days: Shift	Day Off: Day	Day Off: Shift	True Working Days: Day	True Working Days: Shift	Drilling Engineer	Worker	Remark
Preparation	97/08/31~09/01	1.5	2	0	0	1.5	2	4	15	8h/shift
Drilling	97/09/01~09/08	7	14	0	0	7	14	22	70	〃
Withdraw	97/09/08	0.5	1	0	0	0.5	1	1	5	〃
Safekeeping	97/09/18~09/20	3	3	0	0	3	3	9	30	〃
Total		12	20	0	0	12	20	36	120	

Drilling Depth			
Planed Depth	100.0m		
Additional Depth	0.7m	Core Length	100.0m
Total Depth	100.7m	Recovery	99.30%

Core Recovery per each 100m: Depth(m)	Core Length and Core Recovery		Accumulative Total
0.0m~ 5.3m	5.0m	94.3%	62.7%
5.3m~100.7m	95.0m	99.6%	96.9%

Working Time			
Drilling	75.5h	67.4%	49.7%
Without Drilling	24.5h	21.9%	16.1%
Accident Recovery	0.0h	0.0%	0.0%
Water Transportation	12.0h	10.7%	7.9%
Others	0.0h	0.0%	0.0%
Sub-Total	112.0h	100.0%	
Moved Out and In			
Rig Up	14.0h		9.2%
Tear Down	5.0h		3.3%
Safekeeping	21.0h		13.8%
Total	152.0h		100.0%

Drilling Efficiency	
Drilling Depth(m)/Total Working Days	8.39m/day
Drilling Depth(m)/Total Shift	5.04m/shift
Drilling Depth(m)/True Working Days	8.39m/day
Drilling Depth(m)/Drilling Shift	7.19m/shift
Drilling Depth(m)/Total Workers	0.84m/worker
Drilling Depth(m)/Actual Working Workers	1.44m/worker
Total Workers/Total Depth(m)	1.19worker/m
Actual Working Workers/Total Depth(m)	0.70worker/m

Casing Size and Depth		Casing Ratio	Casing Pipe Recovery
114.3mm	--		
88.9mm	2.7m	2.7%	100%

(MJMT-6)

Class	Working Period	Total Working Days: Day	Total Working Days: Shift	Day Off: Day	Day Off: Shift	True Working Days: Day	True Working Days: Shift	Drilling Engineer	Worker	Remark
Preparation	97/08/02~08/07	6	6	0	0	6	6	12	60	8h/shift
Drilling	97/08/08~08/14	7	21	0	4	7	17	19	95	〃
Withdraw	97/08/15	1	1	0	0	1	1	2	10	〃
Safekeeping	—	—	—	—	—	—	—	—	—	
Total		14	28	0	4	14	24	33	165	

Drilling Depth			
Planed Depth	100.0m		
Additional Depth	0.7m	Core Length	95.5m
Total Depth	100.7m	Recovery	94.84%

Core Recovery per each 100m: Depth(m)	Core Length and Core Recovery		Accumulative Total
0.0m~ 10.0m	4.8m	48.0%	48.0%
10.0m~100.7m	90.7m	100.0%	94.8%

Working Time			
Drilling	98.0h	72.9%	53.8%
Without Drilling	22.5h	16.7%	12.4%
Accident Recovery	0.0h	0.0%	0.0%
Water Transportation	14.0h	10.4	7.7%
Others	0.0h	0.0%	0.0%
Sub-Total	134.5h	100.0%	
Moved Out and In			
Rig Up	42.0h		23.1%
Tear Down	5.5h		3.0%
Safekeeping	—		—
Total	182.0h		100.0%

Drilling Efficiency	
Drilling Depth(m)/Total Working Days	7.19m/day
Drilling Depth(m)/Total Shift	3.60m/shift
Drilling Depth(m)/True Working Days	7.19m/day
Drilling Depth(m)/Drilling Shift	5.92m/shift
Drilling Depth(m)/Total Workers	0.61m/worker
Drilling Depth(m)/Actual Working Workers	1.06m/worker
Total Workers/Total Depth(m)	1.64worker/m
Actual Working Workers/Total Depth(m)	0.94worker/m

Casing Size and Depth		Casing Ratio	Casing Pipe Recovery
114.3mm	3.0m	3.0%	100%
88.9mm	6.0m	6.0%	100%

Table II-1-5 Result of drilling (3)

(MJMT-7)

Class	Working Period	Total Working Days: Day	Total Working Days: Shift	Day Off: Day	Day Off: Shift	True Working Days: Day	True Working Days: Shift	True Working Days: Drilling Engineer	True Working Days: Worker	True Working Days: Remark
Preparation	(included in withdraw of MJMT-6)	-	-	-	-	-	-	-	-	
Drilling	97/08/16~09/03	19	38	0	2	19	36	36	180	8h/shift
Withdraw	97/09/03~09/04	1.5	2	0	0	1.5	2	3	15	〃
Safekeeping	—	—	—	—	—	—	—	—	—	
Total		20.5	40	0	2	20.5	38	39	195	

Drilling Depth			
Planed Depth	160.0m		
Additional Depth	0.7m	Core Length	155.7m
Total Depth	160.7m	Recovery	96.89%

Core Recovery per each 100m: Depth(m)	Core Length and Core Recovery		Accumulative Total
0.0m~ 6.8m	1.8m	26.5%	26.5%
6.8m~102.5m	95.7m	100.0%	95.1%
102.5m~160.7m	58.2m	100.0%	96.9%

Working Time			
Drilling	192.5h	71.2%	65.8%
Without Drilling	48.5h	17.9%	16.6%
Accident Recovery	0.0h	0.0%	0.0%
Water Transportation	29.5h	10.9	10.1%
Others	0.0h	0.0%	0.0%
Sub-Total	270.5h	100.0%	
Moved Out and In			
Rig Up	—		—
Tear Down	22.0h		7.5%
Safekeeping	—		—
Total	292.5h		100.0%

Drilling Efficiency	
Drilling Depth(m)/Total Working Days	7.84m/day
Drilling Depth(m)/Total Shift	4.02m/shift
Drilling Depth(m)/True Working Days	7.84m/day
Drilling Depth(m)/Drilling Shift	4.46m/shift
Drilling Depth(m)/Total Workers	0.82m/worker
Drilling Depth(m)/Actual Working Workers	0.89m/worker
Total Workers/Total Depth(m)	1.21worker/m
Actual Working Workers/Total Depth(m)	1.12worker/m

Casing: Casing Size and Depth		Casing Ratio	Casing Pipe Recovery
114.3mm	3.0m	1.9%	100%
88.9mm	6.0m	3.7%	100%

(MJMT-8)

Class	Working Period	Total Working Days: Day	Total Working Days: Shift	Day Off: Day	Day Off: Shift	True Working Days: Day	True Working Days: Shift	True Working Days: Drilling Engineer	True Working Days: Worker	True Working Days: Remark
Preparation	97/08/02~08/05, 8/19	5	5	0	0	5	5	10	50	not calc.
Drilling	97/08/06~07, 08/20 ~09/02	16	32	0	3	16	29	37	155	8h/shift
Withdraw	97/09/02~09/04	2.5	3	0	0	2.5	3	5	25	〃
Safekeeping	—	—	—	—	—	—	—	—	—	
Total		23.5	40	0	3	23.5	37	52	230	

Drilling Depth			
Planed Depth	100.0m		
Additional Depth	18.8m	Core Length	118.3m
Total Depth	118.8m	Recovery	99.58%

Core Recovery per each 100m: Depth(m)	Core Length and Core Recovery		Accumulative Total
0.0m~ 3.0m	2.5m	83.3%	83.3%
3.00~101.5m	98.5m	100.0%	99.5%
101.5m~118.8m	17.3m	100.0%	99.6%

Working Time			
Drilling	132.5h	72.0%	55.6%
Without Drilling	29.0h	15.8%	12.2%
Accident Recovery	0.0h	0.0%	0.0%
Water Transportation	22.5h	12.2	9.4%
Others	0.0h	0.0%	0.0%
Sub-Total	184.0h	100.0%	
Moved Out and In			
Rig Up	28.0h		11.7%
Tear Down	26.5h		11.1%
Safekeeping	0.0h		0.0%
Total	238.5h		100.0%

Drilling Efficiency	
Drilling Depth(m)/Total Working Days	5.06m/day
Drilling Depth(m)/Total Shift	2.97m/shift
Drilling Depth(m)/True Working Days	5.06m/day
Drilling Depth(m)/Drilling Shift	4.10m/shift
Drilling Depth(m)/Total Workers	0.52m/worker
Drilling Depth(m)/Actual Working Workers	0.77m/worker
Total Workers/Total Depth(m)	1.94worker/m
Actual Working Workers/Total Depth(m)	1.30worker/m

Casing: Casing Size and Depth		Casing Ratio	Casing Pipe Recovery
114.3mm	3.0m	2.5%	100%
88.9mm	6.0m	5.1%	100%

Table II-1-5 Result of drilling (4)

(MJMT-9)

Class	Working Period	Total Working Days: Day	Total Working Days: Shift	Day Off: Day	Day Off: Shift	True Working Days: Day	True Working Days: Shift	Drilling Engineer	Worker	Remark
Preparation	97/09/05～09/06	2	2	0	0	2	2	4	16	8h/shift
Drilling	97/09/07～09/11	5	12	0	1	5	11	14	54	〃
Withdraw	97/09/12	1	1	0	0	1	1	3	8	〃
Safekeeping	97/09/14～09/15	2	2	0	0	2	2	6	20	〃
Total		10	17	0	1	10	17	27	98	

Drilling Depth			
Planed Depth	80.0m		
Additional Depth	0.6m	Core Length	79.1m
Total Depth	80.6m	Recovery	98.14%

Core Recovery per each 100m			
Depth(m)	Core Length and Core Recovery		Accumulative Total
0.0m～ 4.7m	4.3m	91.5%	91.5%
4.7m～ 80.6m	74.8m	98.6%	98.1%

Working Time			
Drilling	61.3h	65.4%	46.2%
Without Drilling	18.5h	19.7%	13.9%
Accident Recovery	0.0h	0.0%	0.0%
Water Transportation	14.0h	14.9%	10.5%
Others	0.0h	0.0%	0.0%
Sub-Total	93.8h	100.0%	
Moved Out and In			
Rig Up	21.0h		15.8%
Tear Down	4.0h		3.0%
Safekeeping	14.0h		10.5%
Total	132.8h		100.0%

Drilling Efficiency	
Drilling Depth(m)/Total Working Days	8.06m/day
Drilling Depth(m)/Total Shift	4.74m/shift
Drilling Depth(m)/True Working Days	8.06m/day
Drilling Depth(m)/Drilling Shift	7.33m/shift
Drilling Depth(m)/Total Workers	0.82m/worker
Drilling Depth(m)/Actual Working Workers	1.49m/worker
Total Workers/Total Depth(m)	1.22worker/m
Actual Working Workers/Total Depth(m)	0.67worker/m

Casing			
Casing Size and Depth		Casing Ratio	Casing Pipe Recovery
114.3mm	3.0m	3.7%	100%
88.9mm	3.3m	4.1%	100%

(MJMT-10)

Class	Working Period	Total Working Days: Day	Total Working Days: Shift	Day Off: Day	Day Off: Shift	True Working Days: Day	True Working Days: Shift	Drilling Engineer	Worker	Remark
Preparation	97/09/05～09/06	1.5	1.5	0	0	1.5	1.5	2.5	12	8h/shift
Drilling	97/09/06～09/13	7.5	14.5	0	0	7.5	14.5	19.5	73	〃
Withdraw	97/09/14	0.5	0.5	0	0	0.5	0.5	1	5	〃
Safekeeping	97/09/14～09/15	1.5	1.5	0	0	1.5	1.5	3	15	〃
Total		11.0	18.0	0	0	11.0	18.0	26	105	

Drilling Depth			
Planed Depth	100.0m		
Additional Depth	0.6m	Core Length	100.6m
Total Depth	100.6m	Recovery	100.0%

Core Recovery per each 100m			
Depth(m)	Core Length and Core Recovery		Accumulative Total
0.0m～100.6m	100.6m	100.0%	100.0%

Working Time			
Drilling	76.0h	65.2%	54.1%
Without Drilling	26.0h	23.3%	18.5%
Accident Recovery	0.0h	0.0%	0.0%
Water Transportation	14.5h	12.4	10.3%
Others	0.0h	0.0%	0.0%
Sub-Total	116.5h	100.0%	
Moved Out and In			
Rig Up	10.0h		7.1%
Tear Down	14.0h		10.0%
Safekeeping	0.0h		0.0%
Total	140.5h		100.0%

Drilling Efficiency	
Drilling Depth(m)/Total Working Days	9.15m/day
Drilling Depth(m)/Total Shift	5.59m/shift
Drilling Depth(m)/True Working Days	9.15m/day
Drilling Depth(m)/Drilling Shift	6.94m/shift
Drilling Depth(m)/Total Workers	0.96m/worker
Drilling Depth(m)/Actual Working Workers	1.38m/worker
Total Workers/Total Depth(m)	1.04worker/m
Actual Working Workers/Total Depth(m)	0.73worker/m

Casing			
Casing Size and Depth		Casing Ratio	Casing Pipe Recovery
114.3mm	3.1m	3.1%	100%
88.9mm	4.6m	4.6%	100%

A-3 Geological column of drilling holes

A-3

MJMT−3

0m ～ 100. 5m

Depth (m)	Rock Name	Description	Vein	Alteration
2.60	Soil	Contain a little Granodiorite gravel.		
10.00	Granodiorite	Muscovite, biotite Granodiorite pale grey, medium grain cracks with iron oxide abundant core crushed		
12.50				
20.00		ditto, oxided cracks rare		
30.00				
30.50				
		ditto, oxided cracks very rare rather fresh, homogeneous		
36.90	Quartz vein	36.9～1.5cm, grey, ∠5°	36.9～1.5cm QV	
40.00				
50.00				
	Granodiorite	Muscovite, biotite bearing pale grey, medium～coarse grain, massive homogeneous, very fresh		
60.00				
70.00				
80.00				
85.60	Argillig. Rock	Pale brown～white～grey, altered same, argillized, loose		
85.80	Quartz vein	dark grey, central part (86.35～86.40), banded structure gold grain rich bearing galena, chalco pyrite, sp oxided	85.8～85cm QV	Argillization
86.65				
87.10	Argillig. Rock	ditto with 85.6～85.8		
89.04				
90.00	Quartz vein	89.04～6cm	89.04～6cm QV	
	Granodiorite	87.1～88.0 grey～brown, brittle, oxided cracks rich argillized medium 89.04～89.10 (6cm), Quartz vein, pale grey～whitish		
99.70				
100.50	Granodiorite	Crucky, Argillized week～medium		Argillization

Sample No.	From (m)	To (m)	Length (m)	Au (g/t)	Ag (g/t)	As (ppm)	Sb (ppm)		Au* (g/t)
1 A	85.60	85.70	0.10	1.5	0.7	525	7		
2 A	85.70	85.80	0.10	1.0	0.7	780	12		
3 A	85.80	86.00	0.20	< 0.1	0.7	20	6		8.1
4 A	86.00	86.12	0.12	0.5	0.8	13	10		1.2
5 A	86.12	86.22	0.10	11.2	2.9	30	25		14.7
6 A	86.22	86.35	0.13	138	30.0	17	51		290
7 A	86.35	86.40	0.05	1910	16.9	191	673		1373
8 A	86.40	86.48	0.08	1.6	1.0	4	24		119
9 A	86.48	86.55	0.07	123	12.5	19	14		103
10 A	86.55	86.65	0.10	8.2	2.7	26	7		8.2
11 A	86.65	86.70	0.05	8.2	1.1	361	22		
12 A	86.70	86.90	0.20	5.6	1.1	456	5		
13 A	89.04	89.10	0.06	2.1	0.6	51	2		
1 X	85.60	85.70	0.10						
2 X	85.70	85.80	0.10						
3 X	86.65	86.66	0.01						
4 X	86.66	86.70	0.04						
5 X	86.70	86.90	0.20						
6 X	88.98	88.99	0.01						
1 P	85.85	85.87	0.02						
2 P	86.30	86.33	0.03						
3 P	86.35	86.40	0.05						
～9									
1 I	85.85	85.87	0.02						
2 I	86.33	86.35	0.02						
3 I	86.60	86.62	0.02						
1 E	85.80	85.82	0.02						
2 E	86.22	86.25	0.03						
3 E	86.35	86.40	0.05						
～									
9 E	86.35	86.40	0.05						

Sample (A - Chemical Analysis, P - Polish Section, T - Thin Section, X - X-ray, I - Inclusion, E - EPMA, * - Assayed in central laboratory, Ulanbator)

Fig. II-1-2 Geological column of MJMT-3

A-3

MJMT-4 (1) 0m ~ 100m

Depth (m)	Rock Name	Description	Vein	Alteration	Sample No.	Sample From (m)	Sample To (m)	Sample Length (m)	Au (g/t)	Ag (g/t)	As (ppm)	Sb (ppm)		Au* (g/t)
2.00	Soil													
10.00 / 13.40	Granodiorite	Muscovite, biotite bearing Granodiorite oxided cracks abundant, weathered core brokened.												
20.00	Granodiorite	Pale grey~brown two mica Granodiorite weathered weak.												
23.10 / 24.50	crack with clay	23.1~24.5 width 0.5~1cm ∠85°~90°	23.1~0.5~1cm clay vein	Argillization										
30.00														
32.85	Quartz vein	32.85~32.95 whitish, width 0.5~2cm ∠60° ±	32.85~0.5~2cm QV											
38.30 / 40.00	Granodiorite	38.3~67.8 grey, two mica Granodiorite gneissose? structure, banded weak ∠0°~10°												
50.00														
60.00					1 T	57.65	57.70	0.05						
62.20 / 62.50	Altered zone	62.2~62.5 altered→aphyric texture 3 chlorite veins, interval of 5cm width 0.8~1cm ∠60°	62.2~0.8~1cm chlorite vein	Argillization										
65.50	Chlorite vein	width 1cm, ∠30°	65.05~1cm chlorite vein	Argillization										
67.80 / 70.00														
70.90 / 71.40 / 71.55	Altered zone Quartz Vein	pale brown, glassy 70.8~71.55 many altered (argillized) bands, parallel width ±1cm ∠±20° band part, porphyritic → aphyric	71.4~±1cm QV	Argillization										
80.00														
90.00														
90.80 / 91.30	Altered zone	pale grey, argilized, aphyric, hard		Argillization										
95.50	clay vein	95.5~96.4 grey clay vein, width max 2cm ∠60°	95.5~max 2cm clay vein	Argillization	7 X	95.50	95.52	0.02						
					8 X	96.30	96.40	0.10						
97.50	clay vein	97.5~97.8 grey clay vein, width max 1cm, ∠60°	95.5~max 2cm clay vein											
98.50 / 100.00	Quartz vein	98.5~1.5cm, ∠20°	98.5~1.5cm, QV		14 A	98.50	98.515	0.015	0.3	3.0	21	2		

Sample (A - Chemical Analysis, P - Polish Section, T - Thin Section, X - X-ray, I - Inclusion, E - EPMA, * - Assayed in central laboratory, Ulaanbaatar)

Fig. II-1-3 Geological column of MJMT-4 (1)

A-3

MJMT-4 (2) 100m ~ 200m

Depth (m)	Geologic Column	Rock Name	Description	Vein	Alteration	Sample No.	From (m)	To (m)	Length (m)	Au (g/t)	Ag (g/t)	As (ppm)	Sb (ppm)		Au* (g/t)
100.20		Quartz vein	100.2~0.8cm, grey, glossy, ∠15°	100.2~0.8cm QV											
101.15		Quartz vein	101.15~0.8cm, grey, glossy, ∠15°	101.15~0.8cm QV											
		Granodiorite													
103.80					Argillization	9 X	103.00	104.00	1.00						
			103.8~135.8 oxided crack abundant, core brittle												
105.90		QV	105.9~1.2cm, ∠25°	105.9~1.2cm QV	Argillization	15 A	105.90	105.912	0.012	5.9	7.6	74	3		
106.80		QV+Fault	106.8~25cm, Hol QV Fault clay+QV Framents.	106.8~25cm Hol QV		10 X	106.40	106.41	0.01						
107.00		QV breccia	(106.1~106.8 oxided crack very rich, core crushed			16 A	106.80	106.83	0.03	3.9	0.8	188	3		
107.60			107.6~max 3cm, upper, down sides each 2-5cm	107.6~max 3cm QV		17 A	106.80	106.88	0.08	0.8	0.7	273	5		
110.00			width argillized.			18 A	106.88	106.98	0.10	0.4	0.5	74	3		
						19 A	106.98	107.01	0.03	41.5	5.6	108	2		
111.30						20 A	107.01	107.05	0.04	0.9	0.7	271	2		
			107.05~111.3			11 X	106.80	106.83	0.03						
114.00			altered→aphyric			12 X	106.80	106.98	0.18						
114.10		Fault breccia+clay	(argillize) brittle			13 X	107.01	107.05	0.04						
115.40		QV	115.4~0.6~1cm ∠25°	115.4~1cm QV		21 A	107.60	107.63	0.03	0.7	0.6	60	2		
116.90						14 X	107.60	107.63	0.03						
			111.3~116.9 altered weak			15 X	114.00	114.10	0.10						
			116.9~135.8 altered, aphyric, hard			4 I	107.60	107.63	0.03						
120.00															
		Grano-Diorite													
126.50		Fault breccia	Argillized, brittle			16 X	126.50	127.40	0.90						
127.40															
130.00															
135.80															
		Granodiorite	135.8~141.7 pale grey~green, fine~medium grains gneissose structure, partly argillized vein, width 0.1~0.5cm		partly argillization										
140.00															
141.70															
150.00															
160.00															
170.00															
180.00															
190.00															
200.00															

Sample (A - Chemical Analysis, P - Polish Section, T - Thin Section, X - X-ray, I - Inclusion, E - EPMA, * - Assayed in central laboratory, Ulanbator)

Fig. II-1-3 Geological column of MJMT-4 (2)

MJMT－5

0m ～ 100.5m

Depth (m)	Geologic Column	Rock Name	Description	Vein	Alteration	Sample No.	From (m)	To (m)	Length (m)	Chemical Analysis Au (g/t)	Ag (g/t)	As (ppm)	Sb (ppm)		Au* (g/t)
		Granodiorite	grey, medium grain, biotite > muscovite bearing homogeneous, oxided crack very poor, rather fresh												
10.00															
20.00															
22.90		Quartz Vein	22.9~0.8cm, ∠70°	22.9~0.8cm QV											
23.35		Quartz Vein	23.35~0.5~1cm, ∠45° none mineralization	23.35~1cm QV											
23.40		Quartz Vein	23.4~1.0~1.5cm, ∠45°	23.4~1.5cm QV											
30.00															
33.00			33.0~36.0 oxided crack common												
36.00		Granodiorite	rather fresh												
40.00															
40.50			40.5~43.0 oxided crack abundant crushed core												
43.00															
44.90		Quartz Vein	44.9~0.5~2.5cm ∠45°	44.9~2.5cm QV		22 A	44.90	44.925	0.025	< 0.1	0.5	7	< 1		
45.20		Quartz Vein	45.2~1cm ∠55°	45.2~1cm QV											
50.00		Granodiorite	rather fresh												
59.00															
60.00			59.0~73.3 oxided crack common												
65.80		Quartz Vein	65.8~2cm	65.8~2cm QV		23 A	65.80	65.82	0.02	0.3	0.7	10	< 1		
65.90		Quartz Vein	65.9~1cm ∠0°~5°	65.9~1cm QV		5 T	65.80	65.82	0.02						
66.00		Quartz Vein	66.0~1cm	66.0~1cm QV											
70.00			73.3~78.24 rather altered, argillized												
73.30			73.3~79.6 oxided crack abundant, crushed core												
75.30															
76.10					Argillization	17 X	76.10	76.15	0.05						
78.32			78.24~78.32 [illegible] strong argillized Granodiorite, loose QV (23cm, Not QV) dark grey, 4 gold grains recognized			18 X	78.24	78.32	0.08						
78.55						24 A	78.32	78.40	0.08	2.8	1.8	10	1		9.8
79.60		Quartz vein		78.32~23cm QV		25 A	78.40	78.55	0.15	11.3	5.2	37	< 1		17.4
80.00						10 X	78.43	78.46	0.03						
						6 X	78.44	78.46	0.02						
85.25		Quartz vein	↔	85.25~1cm QV		26 A	85.40	85.43	0.03	10.1	7.3	13	1		
85.40		Quartz vein	secondary Quartz cut (fault)	85.4~3cm QV											
88.80															
90.00			88.8~97.0 altered Granodiorite hard rock forming crystals → obscure → aphyric texture												
100.70															

Sample (A - Chemical Analysis, P - Polish Section, T - Thin Section, X - X-ray, I - Inclusion, E - EPMA, * - Assayed in central laboratory, Ulanbatar)

Fig. II-1-4 Geological column of MJMT-5

MJMT－6 0m ～ 100.7m

Depth (m)	Geologic Column	Rock Name	Description	Vein	Alteration	Sample No.	From (m)	To (m)	Length (m)	Chemical Analysis Au (g/t)	Ag (g/t)	As (ppm)	Sb (ppm)		Au* (g/t)
		Gravel													
5.20															
6.80															
7.20		Adamellite	pale grey, medium grain, biotite bearing												
8.40															
10.00		Basic gneiss	Amphibolite, homogeneous, banded ±45°												
10.50															
12.30		Basic gneiss	banded ∠40°, partry contain pegmatite dyke												
15.20															
17.70		Pegmatite													
20.00															
20.55															
22.80															
24.10															
25.90		Adamellite	biotite bearing												
30.00															
31.80		Basic gneiss	banded ∠15°～20°												
33.80															
36.00		Basic gneiss	banded ∠55			2 T	36.70	36.75	0.05						
37.90															
39.10															
40.00		Quartz vein	39.1～1cm ∠10°	39.1～1cm QV											
		Adamellite													
						19 X	44.19	44.20	0.01						
				No.10W		27 A	44.20	44.36	0.16						
44.20		Quartz vein	No.10 W vein width 33cm, pale grey～	44.2～33cm QV		28 A	44.36	44.53	0.17	0.2	0.6	18	< 1		0.1
44.53		Quartz vein	whitish sulphyde none, boundary sharp no bearing clay zone.			7 I	44.35	44.37	0.02	0.1	0.8	15	< 1		0.2
49.65															
50.00		Quartz vein	49.65～2.5cm ∠30°	49.65～2.5cm QV		29 A	49.65	49.68	0.02	18.5	2.7	22	1		
50.05		Quartz vein	50.05～1cm ∠45°	50.05～1cm QV											
		Adamellite	pale grey～whitish, fine～coarse grain, hetelogeneous bitite bering												
60.00															
70.00															
			No.10 vein, width 60cm, pele grey	No.10											
75.95			contain small chalco pyrite, galena	75.95～60cm QV	Argillization	20 X	75.93	75.95	0.02						
76.55		Quartz vein	(76.20～76.28)			30 A	75.95	76.10	0.15	0.8	1.3	14	2		0.8
			bearing each 2cm clay upper, lower side			31 A	76.10	76.20	0.10	1.2	1.2	5	3		4.8
79.60			76.55～79.6 pale grey fine leucocratic			32 A	76.20	76.28	0.08	29.1	5.4	14	33		395.0
80.00			rock silicified zone? of adamellite			33 A	76.28	76.43	0.15	0.3	1.1	7	1		1.4
						34 A	76.43	76.55	0.12	1.4	1.2	11	1		1.5
		Psammitic gneiss xenolith				8 I	75.95	75.97	0.02						
						9 I	76.25	76.28	0.03						
						10 I	76.53	76.55	0.02						
84.45		Quartz vein	84.45～1cm ∠25°	84.5～1cm QV		11 P	76.20	76.23	0.03						
84.70		Quartz vein	84.7～max 1.5cm ∠10°, bearing each 5cm clay upper, lower side	84.7～1.5cm QV	Argillization	21 X	76.55	76.57	0.02						
			xenolith : irregular size and shape			35 A	84.70	84.715	0.015	< 0.1	0.4	52	5		
		Adamellite	grey, medium～coarse grain												
90.00						10 E	76.20	76.23	0.03						
91.70															
		Psammitic gneiss	pele grey, banded ∠20°～25°												
95.00			pale grey, banded ∠20°～25°												
96.40			96.4～96.62 Argillized strong			22 X	96.40	96.52	0.12						
97.50						23 X	96.52	96.62	0.10						
99.90			grey～dark brown, banded ∠45°												
100.70			biotite												

Sample (A - Chemical Analysis, P - Polish Section, T - Thin Section, X - X-ray, I - Inclusion, E - EPMA, * - Assayed in central laboratory, Ulanbator)

Fig.II-1-5 Geological column of MJMT-6

MJMT-7 (1)

0m ~ 100m

Depth (m)	Geologic Column	Rock Name	Description	Vein	Alteration	Sample No.	From (m)	To (m)	Length (m)	Chemical Analysis Au (g/t)	Ag (g/t)	As (ppm)	Sb (ppm)		Au* (g/t)
		Gravel													
5.00		Basic gneiss	dark blue~brownish blue Amphibolitic, banded ∠10°~20° (5.5~6.3, 6.8~7.3 adamellite)												
10.00		Adamellite	grey, medium grain, biolite bering	9.9~1cm clay V		24 X	9.90	9.91	0.01						
10.60		Basic gneiss	ditto with 5.0~ (11.55~11.7 Adamellite) (11.7~12.0 Pegmatite)												
16.00		Psammitite gneiss	grey, medium~coarse grain, banded ∠25°~30°												
20.00		Adamellite	grey, medium grain, hetelogeneous (biotite rich and poor part)												
27.85 27.90 28.60 30.00		Quartz Vein	26.3~26.4 Quattz vien, xenolith like 27.9~1~2cm none mineralization	27.9~2cm QV											
38.70		Adamellite	grey, coarse grain, biotite rich												
39.40 40.00		Quartz Vein	38.7~0.8cm ∠35°	38.7~0.8cm QV											
43.75			43.0~43.75 oxided crack aboundant, crushed core grey~pale brown, recrystalline, relict												
45.10			band ∠40°												
45.80		Quartz Vein	45.8~1.5cm~2cm ∠10 none mineralization (44.5~3.5cm sedimentary quartz ∠45°	45.8~2cm QV		36 A	45.80	45.82	0.02	0.1	2.2	2	< 1		
47.20 50.00		Basic gneiss	p-gry~p-brw, fin~aphyric, chilled margine like d-blu~blkish, amphibolitic, partly banded ∠40°												
50.20 51.90			grey, fine, massive, partly laminated ∠20°~45°												
52.60			grey, fine~medium grain, massve~laminated ∠20°												
58.25		Quartz Vein	58.25~5cm none mineralliation No.10?, Vein	58.25~5cm QV		37 A	58.25	58.30	0.05	9.5	5.7	136	21		
58.90 60.00		Quartz Vein	58.9~5cm none menerallization	58.9~5cm QV		38 A	58.90	58.95	0.05	1.1	0.6	448	3		
		Psammitic gneiss	(62.1~67.6 Pegmatite dyke) (64.5~65.0 Adamellite) (66.9~67.6 Pegmatite dyke) Turbitite, laminated, grading												
70.00			(69.6~67.0 Pegmatite)												
70.30		Quartz Vein	70.3~70.35(5cm) ∠15°, segregation Q.V.	70.3~5cm QV		39 A	70.30	70.35	0.05	0.2	0.4	6	1		
						11 I	70.32	70.35	0.03						
70.60		Quartz Vein	70.6~70.72(8~12cm) boundery irregular segrg. Q.V. none mineralization	70.6~12cm QV		40 A	70.60	70.72	0.12	< 0.1	0.4	8	1		
			Turbitite, laminated~grading, 1~3cm interval												
78.15		Quartz Vein	78.15~78.35(20cm) segregation Q.V. none	78.15~20cm QV		41 A	78.15	78.27	0.12	< 0.1	0.3	2	< 1		
80.00			minerallization			42 A	78.27	78.35	0.08	< 0.1	0.3	5	< 1		
						3 T	78.40	78.45	0.05						
81.30		Adamellite	grey, medium grain, homogeneous												
84.50 85.40						4 T	93.80	93.85	0.05						
						43 A	90.00	90.04	0.04	< 0.1	0.4	3	< 1		
		Psammitic gneiss	grey, fine~silty, laminated ∠10°			44 A	99.27	99.40	0.13	4.4	9.5	29	8		14.5
90.00						45 A	99.40	99.49	0.09	0.2	2.0	107	16		0.1
		Quartz Vein	90.0~4cm	90.0~4cm QV		46 A	99.49	99.64	0.15	< 0.1	1.7	8	2		< 0.1
		Adamellite	pale pinkish, medium grain, pink feldspar rich			47 A	99.64	99.79	0.15	< 0.1	0.7	2	1		< 0.1
						48 A	99.79	99.91	0.12	< 0.1	0.6	2	1		< 0.1
						49 A	99.91	100.00	0.09	< 0.1	0.7	11	2		0.1
96.10		Psammitic gneiss	pale grey~green, fine grain, lamina ∠0~10° No.10 V			25 X	99.26	99.27	0.01						
			99.27~100.0(73cm) contain a little of galena	No.10		12 P	99.30	99.33	0.03						
99.27		Quartz Vein	(φ4mm), chalcopyrite(φ max 3mm) boundary sharp	99.27~73cm QV		14 I	99.64	99.66	0.02						

Sample (A - Chemical Analysis, P - Polish Section, T - Thin Section, X - X-ray, I - Inclusion, E - EPMA, * - Assayed in central laboratory, Ulanbatar)

Fig. II-1-6 Geological column of MJMT-7 (1)

MJMT−7 (2) 100m ~ 200m

Depth (m)	Geologic Column	Rock Name	Description	Vein	Alteration	Sample No.	From (m)	To (m)	Length (m)	Chemical Analysis Au (g/t)	Ag (g/t)	As (ppm)	Sb (ppm)		Au* (g/t)
	+ +	Adamellite	grey, rather altered? hard, compact		Silicification?	26 X	100.00	100.03	0.03						
		Psammitic gneiss	pale grey, fine, laminated ∠5°~10° (102.0~105 pegmatite? quartz, feldspar not large)												
105.50	+ +	Adamellite	pale~dark grey, medium, gneissose structure ∠30°~50°												
110.00	+ +														
		Basic gneiss	dark blue~blackish, medium, mainly massive, Amphibolitic, partly banded ∠10°												
116.20	+ +	Adamellite	grey, coarse, homogeneous, massive												
120.00															
120.30		Psammitic gneiss	dark blue >> grey, medium, laminated ∠15°~20° d-blue part : Amphibolite many pegmatite dykes (5~20cm) intercalated?												
130.00															
	+ +	Adamellite	dark grey, fine, quartz poor, biotite common Porphyrite like												
134.90		Psammitic gneiss	dark grey, fin~med, lamina ∠5°~10°	135.07~3cm clay V	Argillization										
137.40	+ +	Adamellite	(138.0~138.2 Pegmatite)	Argillis 138.70~20cm	Argillization										
140.00															
140.60	+		dark grey, fine												
142.40															
143.90	+ +	Psammitic gneiss	grey, fine, lamina clear ∠5°~20° partly garnet? crystal (φ ±3mm) partly segregation quartz vein												
150.00															
151.35	+ +														
157.40	+ +	Psammitic gneiss	grey~dark grey, fine, laminated well ∠0°~20°	157.7~8cm QV		50 A	157.70	157.78	0.08	< 0.1	0.4	< 1	< 1		
157.70		Quartz Vein	157.7~8cm segregation quartz vein			13 I	157.73	157.75	0.02						
159.00		Quartz Vein	159.0~13cm segregation quartz vein	159.0~13cm QV		51 A	159.00	159.13	0.13	< 0.1	0.5	< 1	< 1		
160.70			Irregular boundary rather parallel to lamina												
170.00															
180.00															
190.00															
200.00															

Sample (A - Chemical Analysis, P - Polish Section, T - Thin Section, X - X-ray, I - Inclusion, E - EPMA, * - Assayed in central laboratory, Ulanbatar)

Fig. II-1-6 Geological column of MJMT-7 (2)

MJMT-8 (1)

0m ~ 100m

Depth (m)	Geologic Column	Rock Name	Description	Vein	Alteration	Sample No.	From (m)	To (m)	Length (m)	Au (g/t)	Ag (g/t)	As (ppm)	Sb (ppm)		Au* (g/t)
0.50															
8.60		Adamellite	grey, medium~coarse grain, biotite bearing homogeneous (3.05~3.25, 3.35~3.60 pegmatite dyke)												
10.00			dark grey, fine~medium, banded ∠60°												
12.40		Psammitic gneiss													
16.00		Adalt.	gry, med, homog.												
20.00		Psammitic gneiss	ditto with 8.6~ (21.9~22.1, 22.65~22.85 pegmatite, blackish feldspar φ max 1cm contain)												
22.90															
28.00		Adalt.	pale gry, med, homog.												
30.00															
30.05 32.50 34.10 40.00		Pegmatite Psamt. gnis.	gry, med, banded ∠60°~70° 28.0~34.1 blackish biotite banded 38.8~32.5 pegmatite, large quartz, feldspar φ max 1cm			5 T	32.60	32.65	0.05						
41.50															
45.00		Adalt.	gry, med, homog. (44.65~44.9, 45.6~45.8 psamt. xenolyth)												
50.00			gry partly pale greenish, fin~med,												
		Psamt. gnis.	banded ∠60°~70° 53.1~53.8, 54.8~55.8 pegmatite contain white & black feldspar, each size max φ 1.5cm, 2.5cm 53.9~54.8 contain garnet φ±2mm rich			6 T	54.00	54.05	0.05						
60.00		Pegmatite				7 T	55.10	55.15	0.05						
61.50		Quartz Vein	61.5~1.5cm segregation QV	61.5~1.5cm QV											
62.20 68.50		Adamlt.	gry, crs, 66.8~biotite poor												
70.00		Pelitic gneiss	dark gry~blkish, segregation quartz banded ∠±60°												
71.40		Fault Clay	71.4~71.6(20cm) Fault with dark grey clay												
74.10 75.70 77.40 78.70 80.00		Amphibolite	blk, masv. amphibole >> biotite												
82.20		Amphibolite	ditto with 75.7~, partly wht band ∠65°												
83.90 84.90															
87.30		Adamlt.													
90.00		Amphibolite	Gneissose str. wht & blk thin band. ∠50°~60° Tiger skin like												
						8 T	91.00	91.05	0.05						
91.65		Quartz Vein	91.65~3cm ∠30° No.10 QV	91.65~3cm QV		52 A	91.65	91.69	0.03	< 0.1	0.4	< 1	< 1		
92.15		Quartz Vein	92.15~1cm QV	92.15~1cm QV		14 I	91.65	91.67	0.02						
92.40		Quartz Vein	92.90~2cm clay vein	92.9~2cm CV		29 X	92.90	92.92	0.02						
92.90		Psmt. gnis	gry, fin, masv												
94.25 100.00		Amphibolite (gneiss)	ditto with 87.3~												

Sample (A - Chemical Analysis, P - Polish Section, T - Thin Section, X - X-ray, I - Inclusion, E - EPMA, * - Assayed in central laboratory, Ulaanbaatar)

Fig. II-1-7 Geological column of MJMT-8 (1)

A-3

MJMT--8 (2)

100m ~ 200m

Depth (m)	Geologic Column	Rock Name	Description	Vein	Alteration	Sample				Chemical Analysis					
						No.	From (m)	To (m)	Length (m)	Au (g/t)	Ag (g/t)	As (ppm)	Sb (ppm)		Au* (g/t)
101.40	A A														
102.40	+ +														
110.00	A A	Amphibolite gneiss	Gneissose str. blk >> wht ∠45° clear												
110.70	A A														
112.70	# #	Pegmatite	large quartz, blkish feldspar, pink ice												
114.80	A A		ditto with 100.0~												
118.80			gry part / dark gry part (biotite rich?) fin~med, banded weak ∠30°												
120.00															
130.00															
140.00															
150.00															
160.00															
170.00															
180.00															
190.00															
200.00															

Sample (A - Chemical Analysis, P - Polish Section, T - Thin Section, X - X-ray, I - Inclusion, E - EPMA, * - Assayed in central laboratory, Ulanbator)

Fig.II-1-7 Geological column of MJMT-8 (2)

MJMT－9

0m ～ 100m

Depth (m)	Geologic Column	Rock Name	Description	Vein	Alteration	Sample No.	Sample From (m)	Sample To (m)	Sample Length (m)	Chemical Analysis Au (g/t)	Ag (g/t)	As (ppm)	Sb (ppm)		Au* (g/t)
0.40		Granodiorite	Biotite, muscovite bearing rather fresh												
5.30															
5.90		Coly Vein		5.9~2cm Clay V	Argillization	30 X	5.90	5.92	0.02						
				about		53 A	8.90	9.00	0.10	1.7	0.7	70	3		
8.90		Quartz Vein	8.9~about 30cm, crushed, pale grey	8.9~3cm QV		54 A	9.00	9.10	0.10	1.5	0.6	56	2		
				about		55 A	9.10	9.20	0.10	0.8	0.6	54	4		
11.50		Quartz Vein	11.5~about 20cm, crushed, pale grey	11.5~23cm QV		56 A	11.50	11.60	0.10	0.9	0.6	43	3		
						57 A	11.60	11.70	0.10	0.8	0.4	63	3		
13.65		Quartz Vein	13.65~23cm, crushed, ∠5°?, pale grey	13.65~23cm QV		58 A	13.85	14.00	0.15	1.1	0.6	36	3		
14.80			14.83~23.3 exided crack common			15 I	13.99	14.00	0.02						
		Granodiorite				59 A	14.00	14.08	0.08	1.0	0.6	50	3		
22.05		Fault breccia	22.05~25cm argillized			31 X	22.05	22.30	0.25						
23.30															
29.85			29.85~30.2 brown, strong argillized												
30.00			Gr-Dr		Argillization	32 X	29.85	30.20	0.35						
30.02		Quartz Vein	30.2~63cm No.1 vein, lower boundary	30.2~63cm QV		60 A	30.20	30.35	0.15	< 0.1	0.6	31	2		< 0.1
30.63			bery sharp pale grey~whitish			61 A	30.35	30.51	0.16	< 0.1	1.1	17	2		0.1
			30.63~2cm argillized			62 A	30.51	30.67	0.16	< 0.1	0.8	12	3		0.1
			30.85~rather fresh			16 I	30.65	30.67	0.02						
						63 A	30.67	30.83	0.16	0.2	1.0	21	3		1.1
						33 X	30.83	30.85	0.02						
		Granodiorite													
40.00															
47.60		Clay Vein	47.6~max 1cm, quartz bearing ∠25°	47.6~1cm Clay Vein	Argillization	34 X	47.60	47.61	0.01						
50.00															
51.80		Quartz Vein	51.8~±1cm ∠70°	51.8~1cm QV											
60.00															
62.70		Clay Vein	62.7~64.5 whitish width 0.5~1cm ∠85°~90°	62.7~1cm Clay Vein	Argillization	35 X	62.70	62.71	0.01						
64.50															
						9 T	68.50	68.55	0.05						
70.00															
		Granodiorite	pale grey, medium grain, homogeneous rather fresh												
76.18		Clay Vein	76.18~2cm, whitish, ∠60°	76.18~2cm Clay Vein	Argillization	36 X	76.18	76.20	0.02						
80.00															
80.60															
90.00															
100.00															

Sample (A - Chemical Analysis, P - Polish Section, T - Thin Section, X - X-ray, I - Inclusion, E - EPMA, * - Assayed in central laboratory, Ulaanbaatar)

Fig.II-1-8 Geological column of MJMT-9

A-3

MJMT−10 0m ~ 100.6m

Depth (m)	Geologic Column	Rock Name	Description	Vein	Alteration	Sample No.	From (m)	To (m)	Length (m)	Chemical Analysis Au (g/t)	Ag (g/t)	As (ppm)		Sb (ppm)	Au* (g/t)
		Granodiorite	grey, medium grain, biotite, musscovite bearing 0~31.0 oxided crack common~abundant												
7.45			7.45~5cm argillized strong		Argillization	37 X	7.45	7.50	0.05						
10.00															
20.00															
20.75		Quartz Vein	20.75~2.5cm ∠5°	20.75~2.5cm QV		64 A	20.75	20.775	0.025	41.0	1.1	30	4		
25.40			25.4~31.0 crushed core												
30.00															
34.00		Quartz Vein	34.0~max 2cm ∠75° 31.0~42.8 rather fresh	30.4~2cm QV		65 A	30.40	30.42	0.02	< 0.1	0.6	4	< 1		
40.00															
42.80			42.8~67.0 oxided crack common, partly abundant												
50.00															
58.00			58.0~59.0 oxided crack very abundant core crushed			38 X	59.98	60.00	0.02						
59.98															
60.00			59.98~2cm, arillized weak		Argillization	66 A	60.00	60.10	0.10	0.4	0.6	37	1		0.5
60.01		Quartz Vein	60.0~52cm No.2W vein, grey, none mineralization	60.0~52cm QV		67 A	60.10	60.20	0.10	< 0.1	0.6	< 15	< 1		0.3
60.52						68 A	60.20	60.30	0.10	4.2	1.4	19	< 1		1.5
63.00		Quartz Vein	63.0~0.8cm ∠0°	63.0~0.8cm QV		69 A	60.30	60.40	0.10	3.0	1.6	11	< 1		< 0.1
64.45		Quartz Vein	64.45~0.5cm ∠15°, 64.60~0.8cm ∠5° 64.70~0.8cm ∠5°, 64.75~0.8cm ∠10°	64.5~64.75 0.5~0.8cm 4 QV		70 A	60.40	60.52	0.12	0.7	0.7	8	< 1		18.4
64.75						17 I	60.24	60.26	0.02						
67.00															
68.35		Quartz Vein	68.35~2cm ∠15°	68.35~2cm QV		71 A	68.35	68.37	0.02	6.0	2.3	23	2		
70.00			67.0~76.0 rather fresh												
76.00															
77.80		Quartz Vein	77.8~2cm ∠15°	77.8~2cm QV		72 A	77.80	77.82	0.02	0.6	0.9	40	2		
80.00						39 X	80.44	80.45	0.01						
80.45		Quartz Vein	80.45~25cm No.2 vein, grey, none mineralization	80.45~25cm QV		73 A	80.45	80.57	0.12	6.1	1.1	10	1		10.5
80.70						74 A	80.57	80.73	0.16	0.4	1.1	5	< 1		0.7
						18 I	80.55	80.57	0.02						
90.00															
99.65		Quartz Vein	99.65~0.5cm ∠5°	99.65~0.5cm QV											
100.00															
100.60															

Sample (A - Chemical Analysis, P - Polish Section, T - Thin Section, X - X-ray, I - Inclusion, E - EPMA, * - Assayed in central laboratory, Ulanbator)

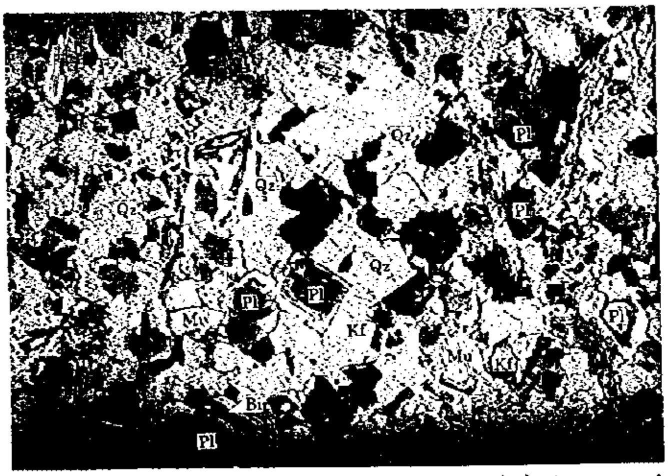
Fig.II-1-9 Geological column of MJMT-10

A-4 Microohotographs of rock thin section

Abbreviations of mineral names in the plate

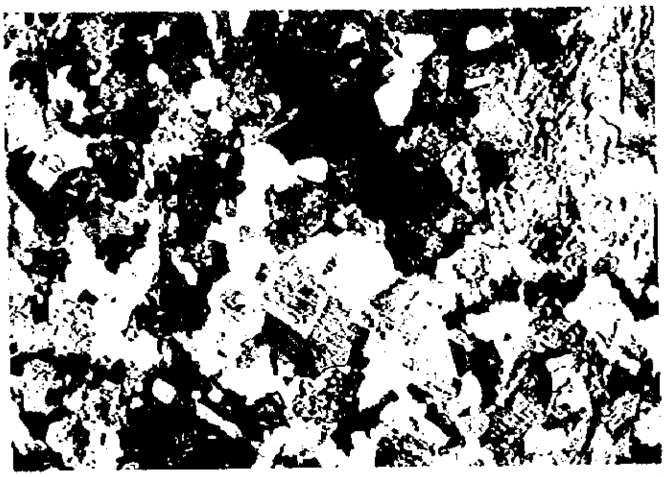
Qz : quartz
Pl : plagioclase
Kf : potassium feldspar
Bi : biotite
Mu : muscovite
Ho : hornblende

A-4 Microphotographs of rock thin section

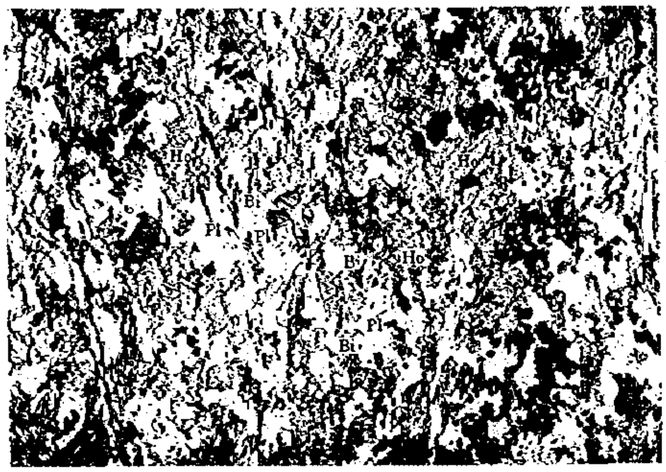


No.1 MJMT-4 57.65m Open nicol 1mm

Two mica granodiorite

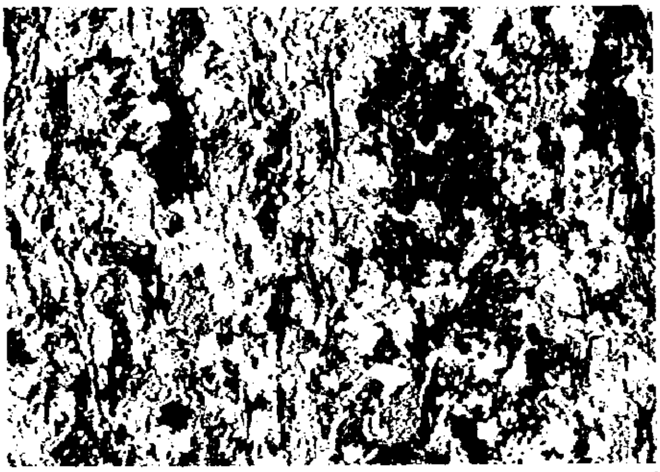


Cross nicol 1mm



No.2 MJMT-6 36.70m Open nicol 1mm

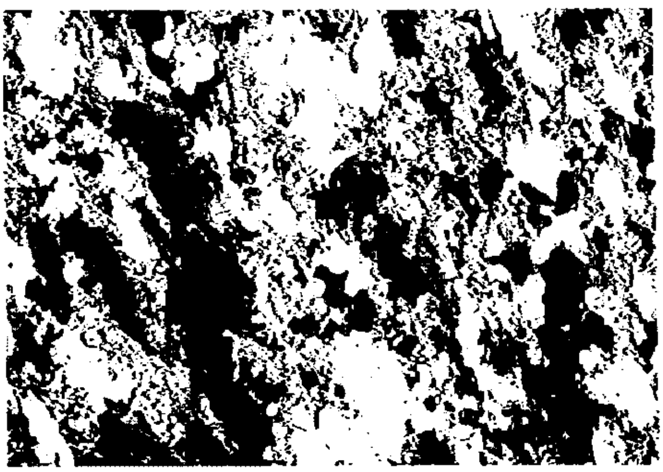
Biotite bearing hornblende gneiss



Cross nicol 1mm

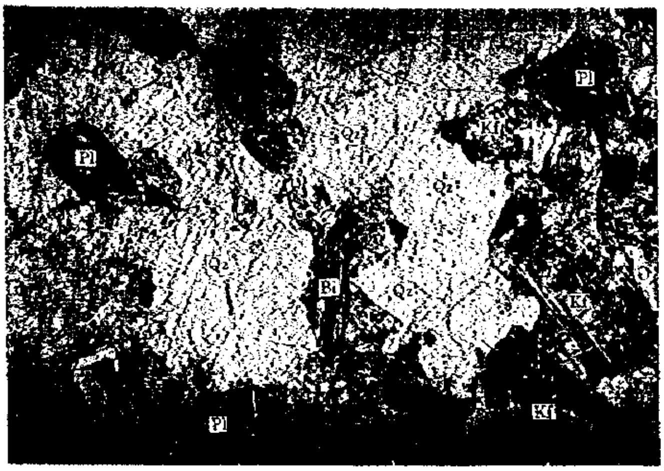
No.3 MJMT-7 78.30m Open nicol 1mm

Psammitic gneiss



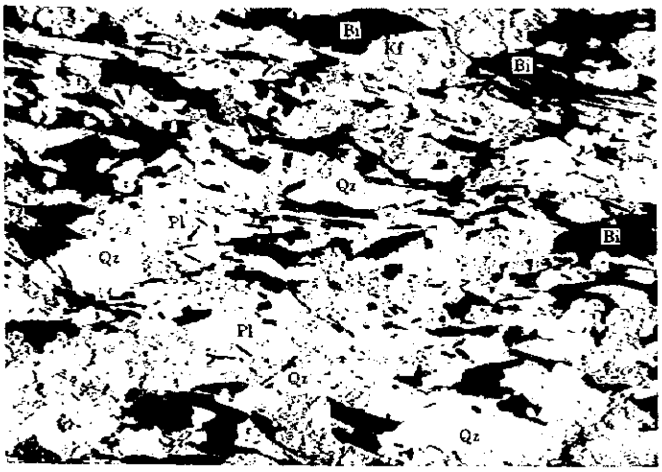
Cross nicol 1mm

A-4 Microphotographs of rock thin section

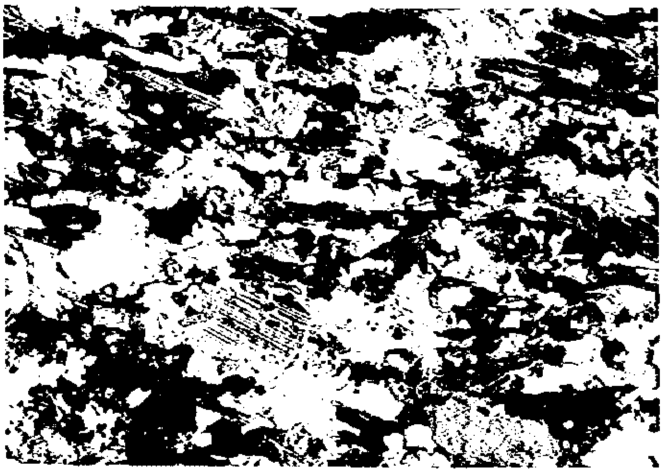


No.4 MJMT-7 93.80m Open nicol 1mm
Adamellite

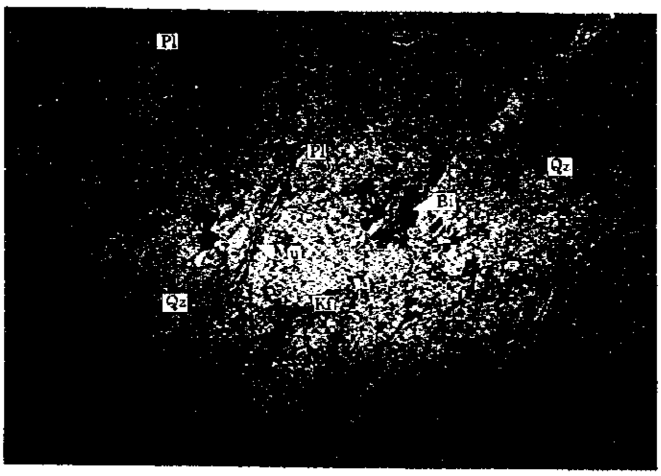
Cross nicol 1mm



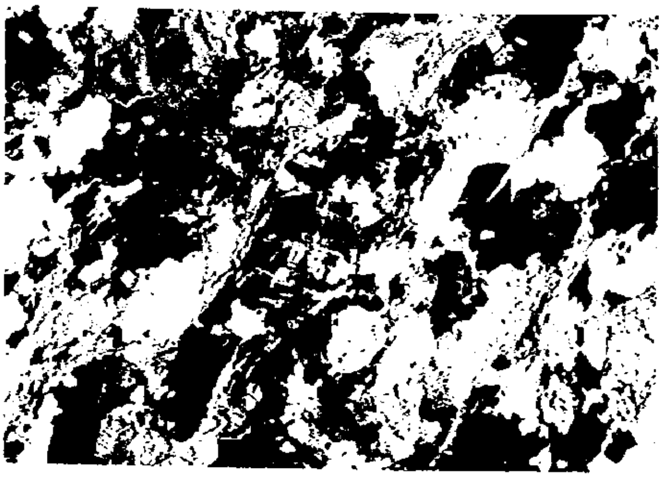
No.5 MJMT-8 32.60m Open nicol 1mm
Psammitic gneiss



Cross nicol 1mm

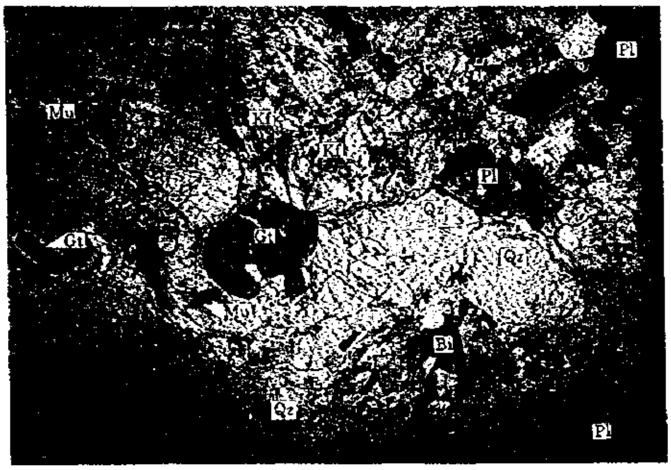


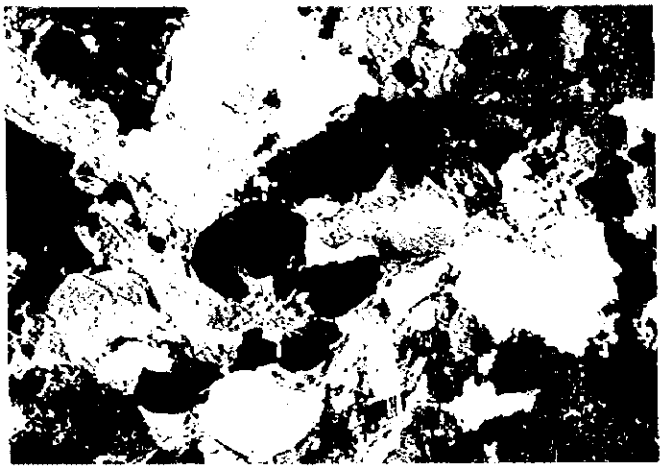
No.6 MJMT-8 54.00m Open nicol 1mm
Psammitic gneiss



Cross nicol 1mm

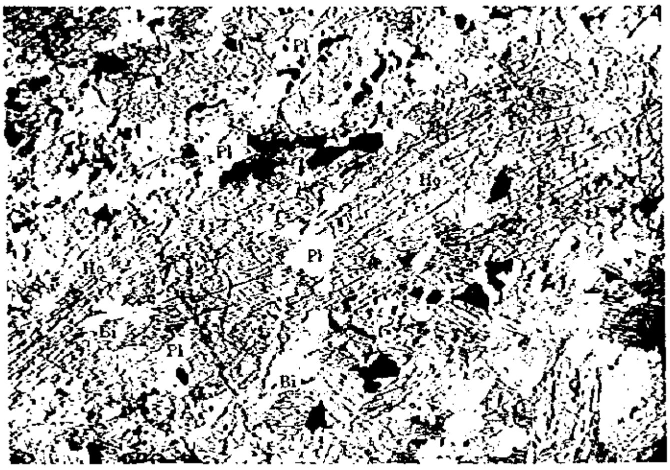
A-4 Microphotographs of rock thin section

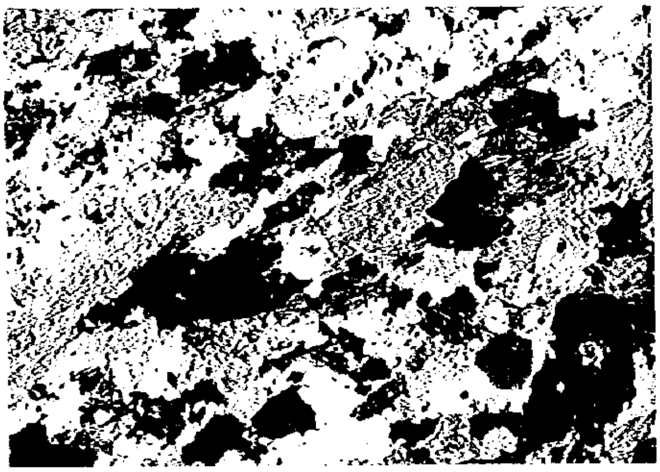




No.7 MJMT-8 55.10m Open nicol 1mm Cross nicol 1mm

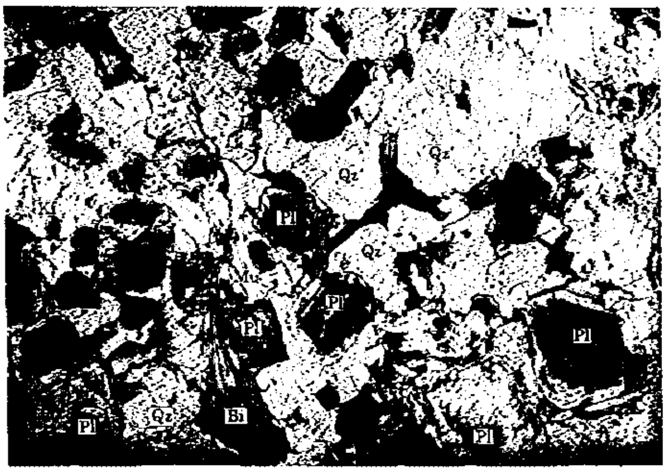
Psammitic gneiss

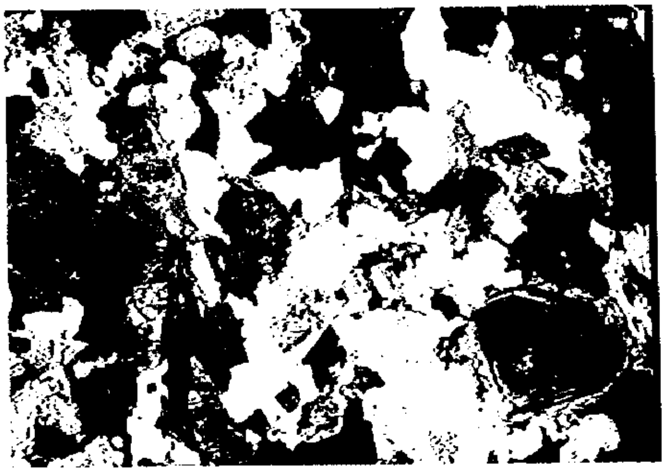




No.8 MJMT-8 91.00m Open nicol 1mm Cross nicol 1mm

Amphibolite

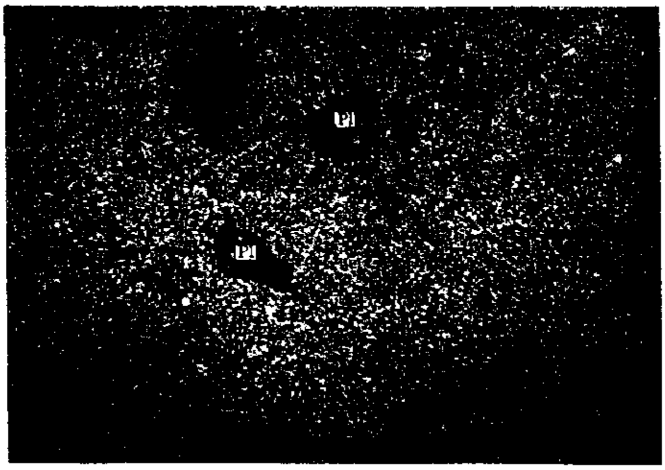




No.9 MJMT-9 68.50m Open nicol 1mm Cross nicol 1mm

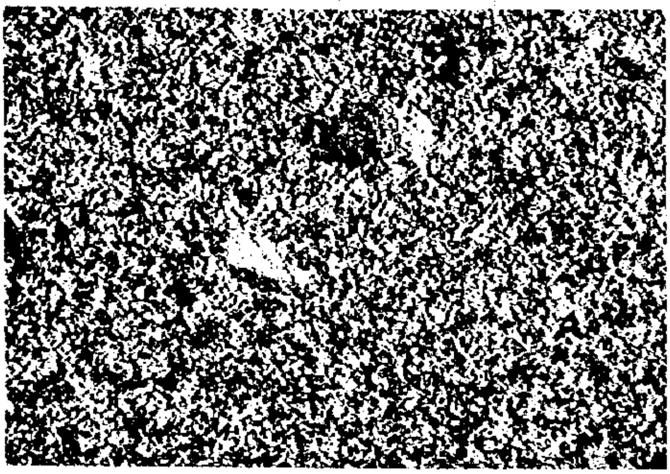
Two mica granodiorite

A-4 Microphotographs of rock thin section



No.10 野外 Open nicol 1mm

Aphyric rhyolite



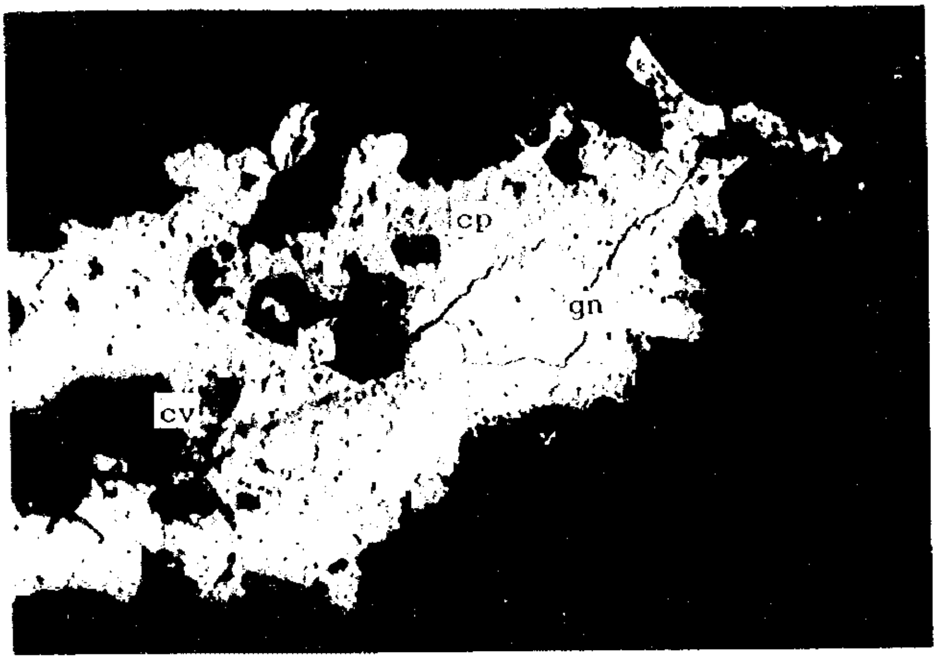
Cross nicol 1mm

A-5 Microohotographs of ore polished section

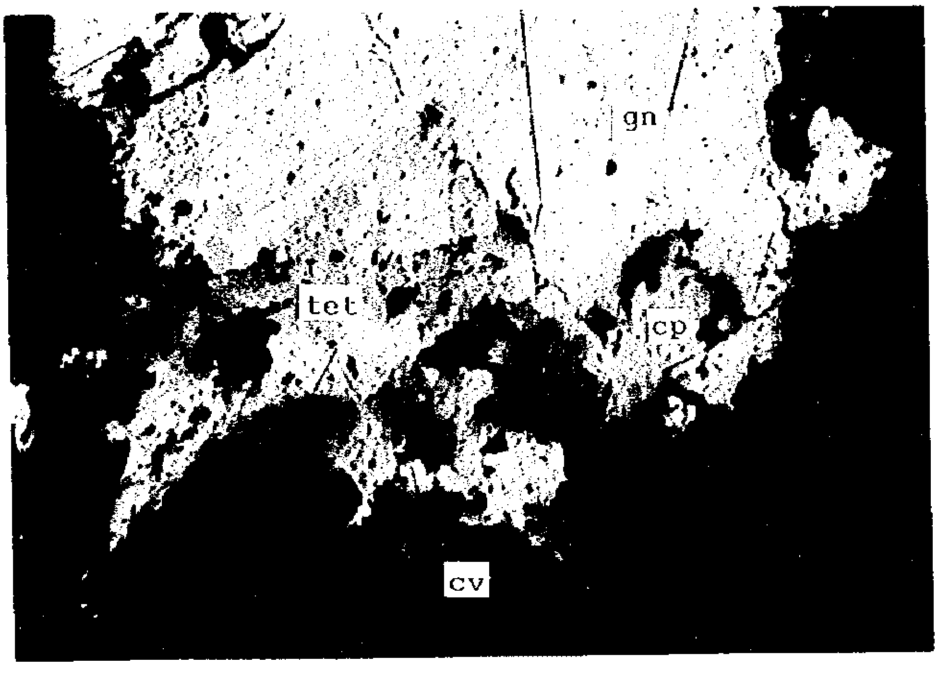
Abbreviations of mineral names in the plate

Au : native gold
cp : chalcopyrite
gn : galena
cv : covellite
cc : chalcocite
tet: tetrahedrite
tet-ten : tetrahedrite-tennantite solid solution
Cu, Pb, Sb, As oxides : oxide assemblage of each
element individual
Cu oxide+zik+Te : assemblage of cupper oxide, zinkenite and
tellurium mineral

A-5 Microphotographs of ore polished section



EPMA-2

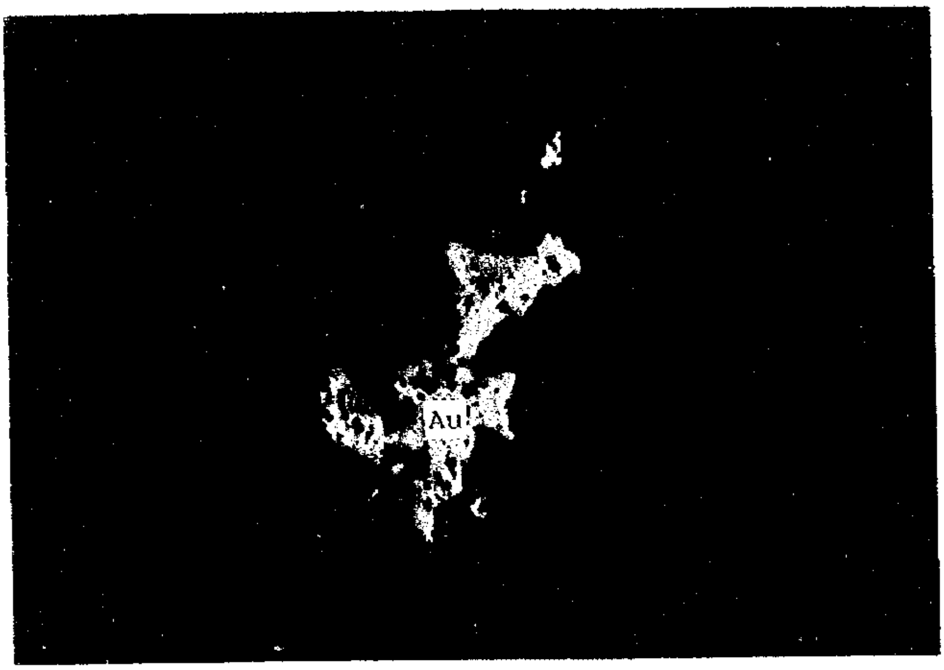


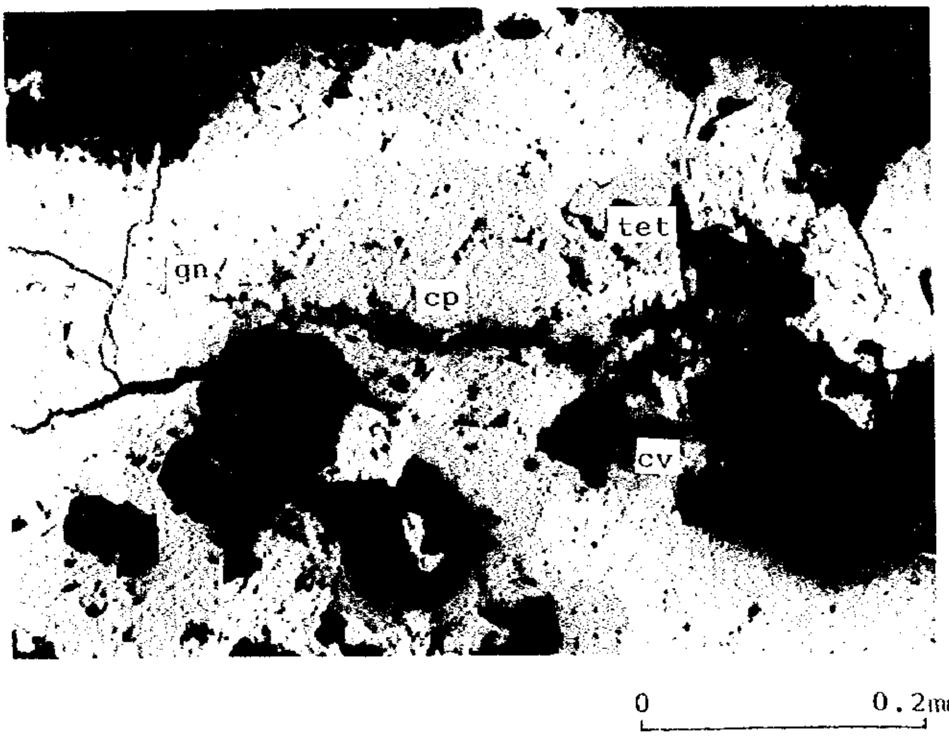
EPMA-1

0 0.2mm

Fig.1 Galena-chalcopyrite ore (MJMT-3 85.80m)

A-5 Microphotographs of ore polished section

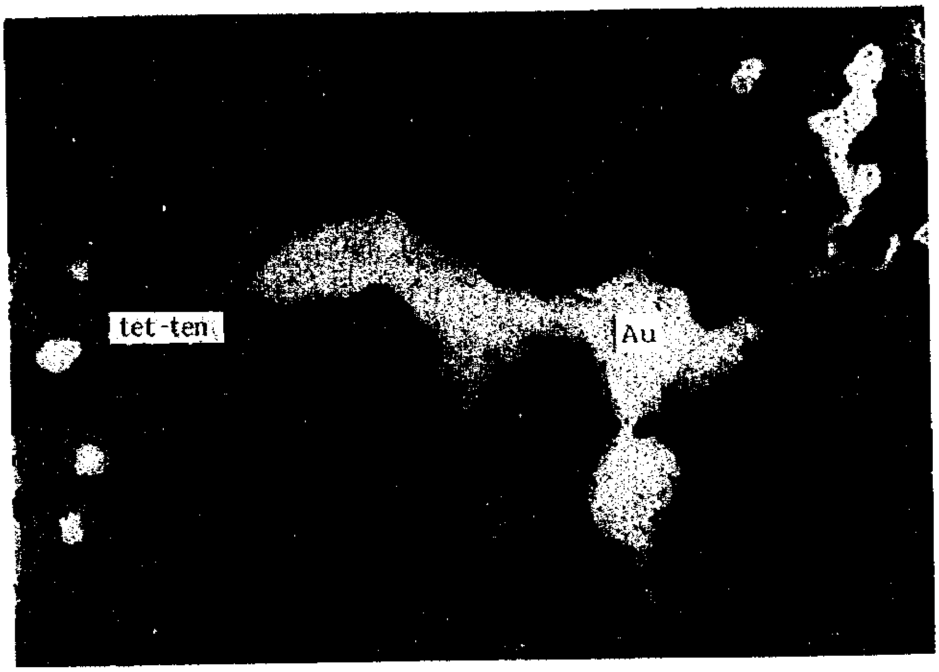




EPMA-3

Fig.2-a Au ore (MJMT-3 86.22m)

A-5 Microphotographs of ore polished section



EPMA-5

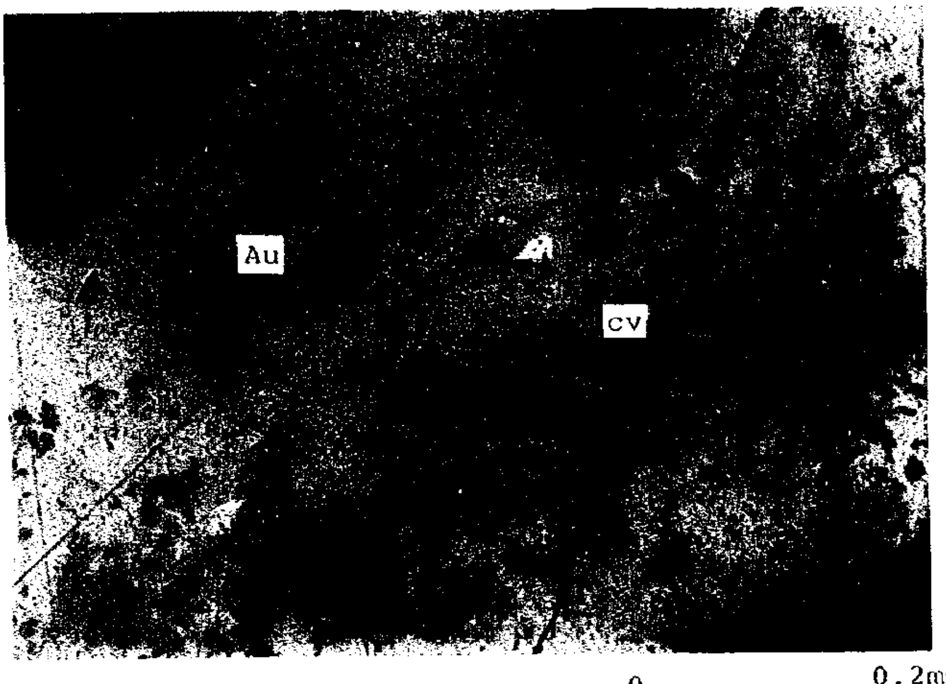
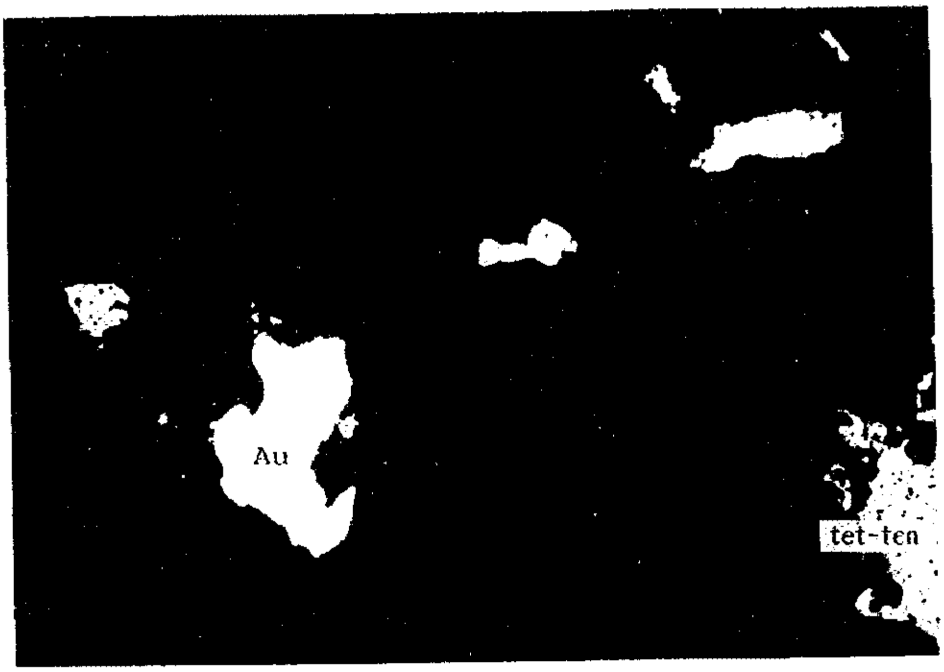
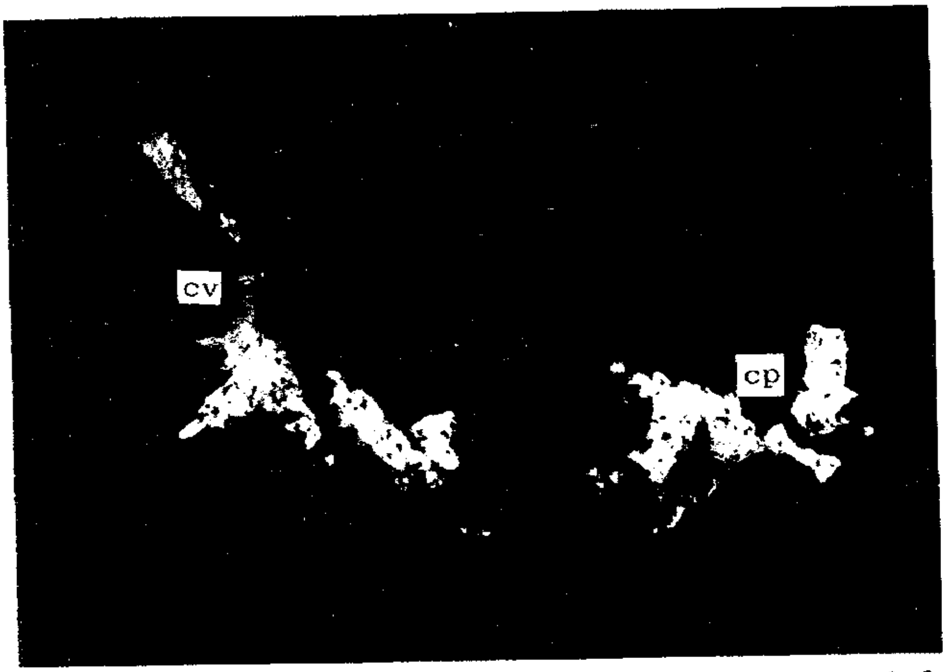


Fig.4 Au ore (MJMT-3 86.35m(2))

A-5 Microphotographs of ore polished section



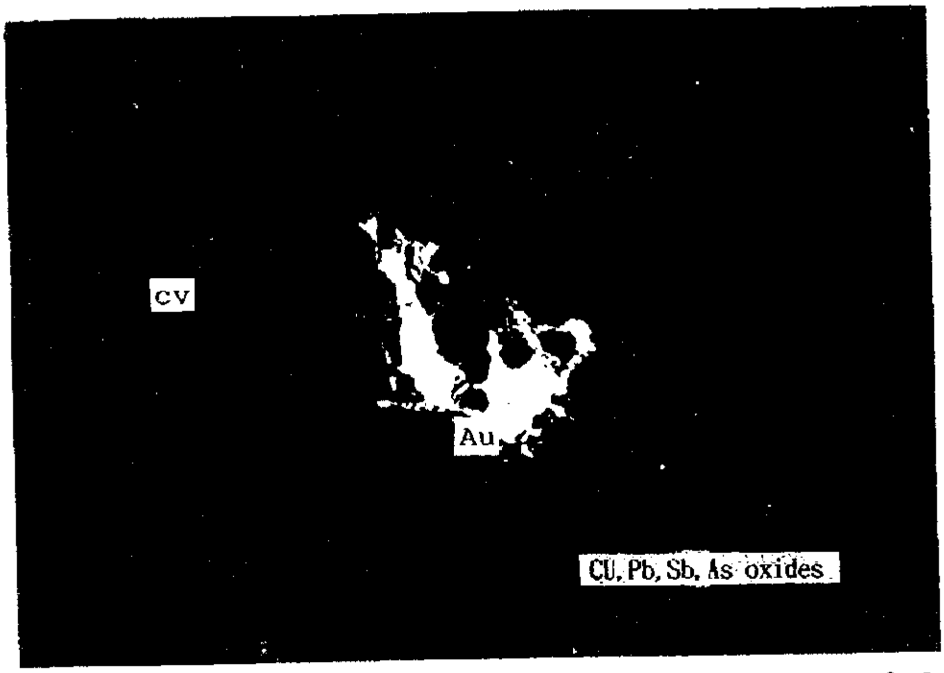
EPMA-6



0 0.2mm

Fig.6 Au ore (MJMT-3 86.35m(4))

A-5 Microphotographs of ore polished section

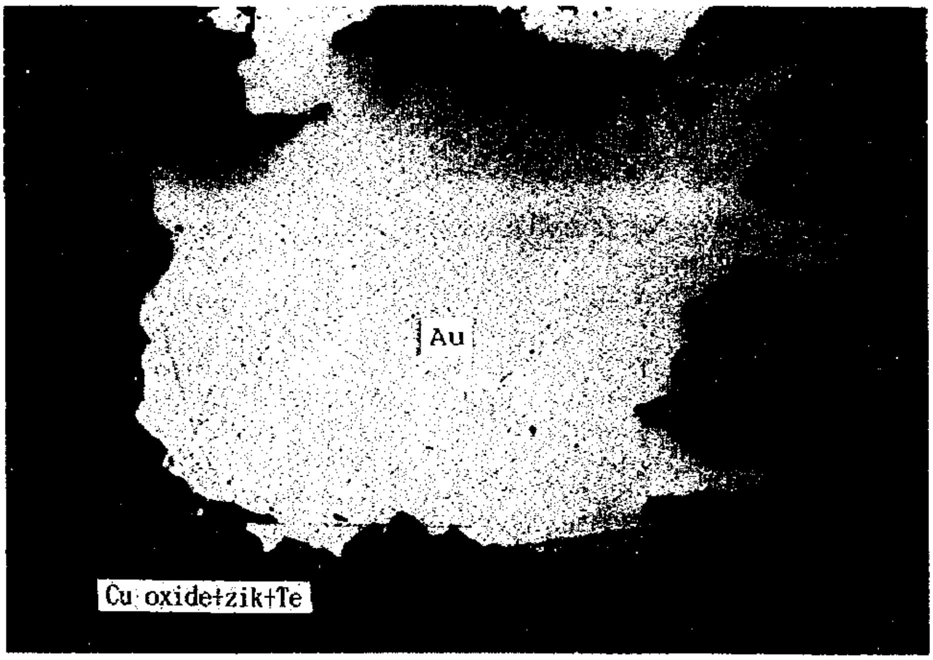


EPMA-7

0 0.2mm

Fig.5 Au ore (MJMT-3 86.35m(3))

A-5 Microphotographs of ore polished section

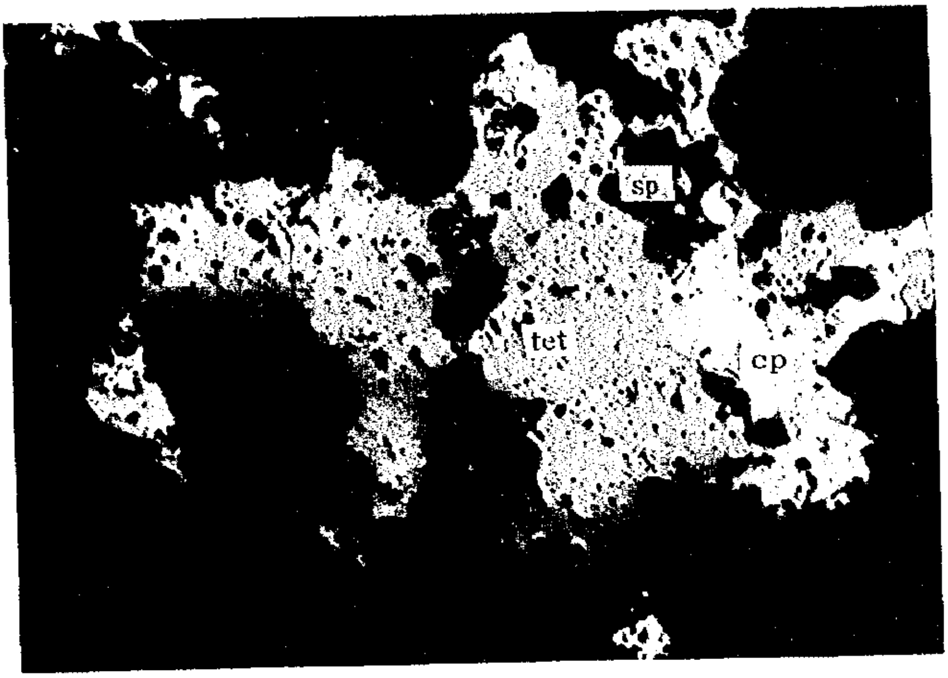


EPMA-10

0 0.2mm

Fig.9 Au ore (MJMT-3 86.35m(7))

A-5 Microphotographs of ore polished section



EPMA-11

0 0.2mm

Fig.11 chalcopyrite ore (MJMT-6 76.20m)

A-6 Image map of EPMA

Au : gold (electrum)

cp : chalcopyrite

gn : galena

sp : sphalerite

th : tetrahedrite

A-6 EPMA-1 (MJMT-3, 85.80m)

Feb 21 20:23 1998 .map/tmp Page 1

>>> Map Measurement condition. <<<

Group : publicjx3 Sample : jx3pub1
Comment : Fig 1 MJMT3 85.8m

Feb 21 20:23 1998
Stage No.1 Position mm X : 67.1292 Y : 4.9992 Z : 11.5831

Accelerating Voltage 25.0 kV
Dwell Time 25.0 m sec.
No. of Pixels X : 250 Y : 250
Pixel size (um) X : 3.00 Y : 3.00
Condenser Lens (C,F) 18, 36 Object Lens (C,F) 186, 452
Magnification 500
Probe Diameter (um) 0
Probe Scan Off, Scan Mode PIC , Scan Speed SR
Probe Current (A) 2.016E-07

	Elem-1	Elem-2	Elem-3	Elem-4	Elem-5
Elements	As	Ag	Bi	S	Cu
Signal	WDS	WDS	WDS	WDS	WDS
X-ray Name	La	La	La	Ka	Ka
Order	1	1	1	1	1
Channel	1	3	4	3	4
Crystal	TAP	PETJ	LIF	PETJ	LIF
Spect. Pos.	105.1420	133.1400	79.2940	172.1590	107.2430
PHA Gain	32	64	32	64	32
High Volt(V)	1698	1690	1648	1724	1700
Base Level(V)	1.0000	1.2000	1.0000	1.0000	1.0000
Window (V)	9.0000	8.8000	9.0000	9.0000	9.0000
Diff/Int	Int	Int	Int	Int	Int
Max. data	81	36	699	1568	2584
Min. data	0	0	1	0	0
Ave. data	10	5	43	371	216

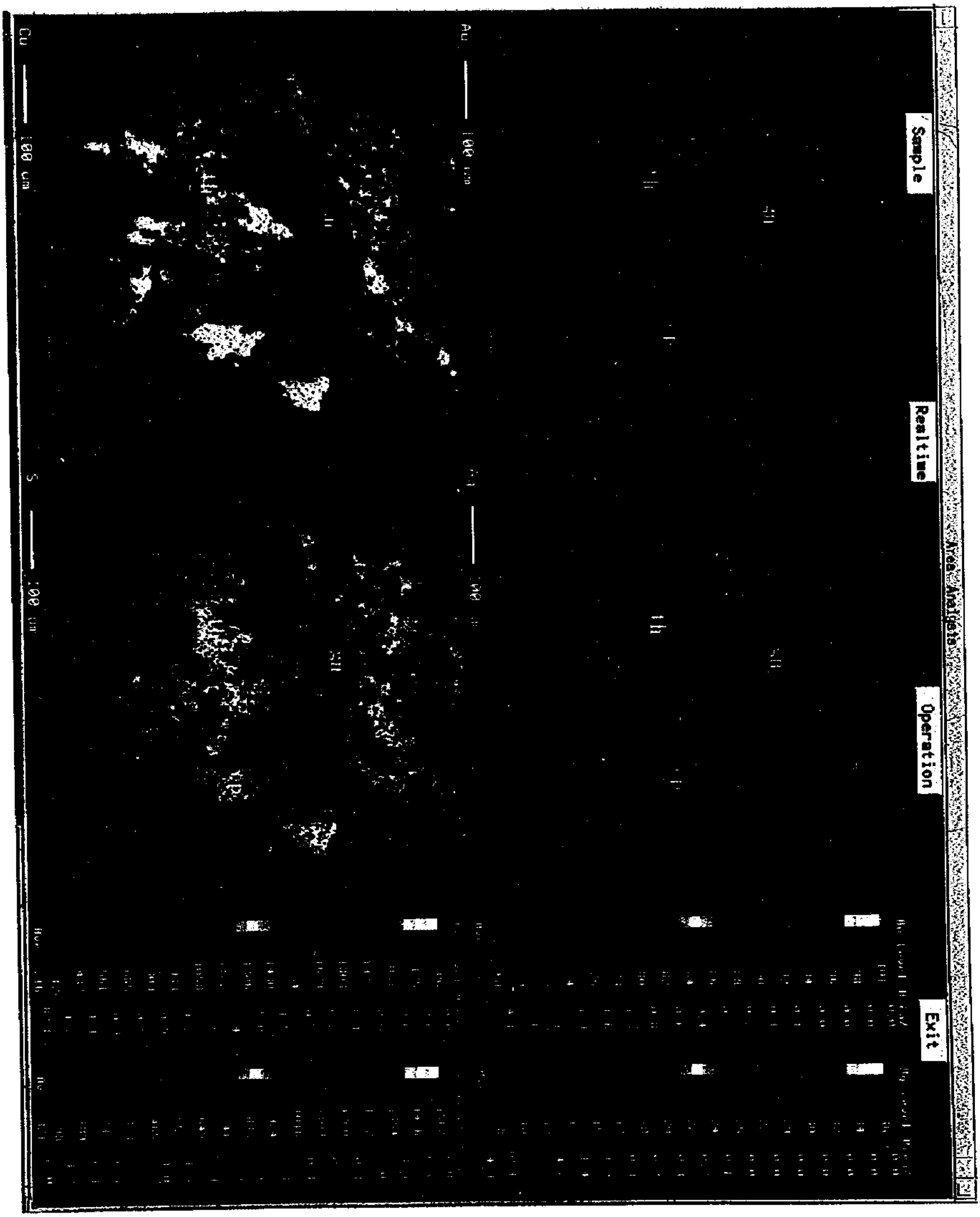
	Elem-6	Elem-7	Elem-8	Elem-9	Elem-10
Elements	Te	Au	Pb	Fe	Sb
Signal	WDS	WDS	WDS	WDS	WDS
X-ray Name	La	La	Ma	Ka	La
Order	1	1	1	1	1
Channel	3	4	3	4	3
Crystal	PETJ	LIF	PETJ	LIF	PETJ
Spect. Pos.	105.4260	88.7400	169.3220	134.7480	110.2460
PHA Gain	64	32	64	32	64
High Volt(V)	1664	1664	1688	1648	1672
Base Level(V)	1.2000	1.2000	1.0000	1.0000	1.2000
Window (V)	8.8000	8.8000	9.0000	9.0000	8.8000
Diff/Int	Int	Int	Int	Int	Int
Max. data	993	101	1058	2059	1021
Min. data	0	0	0	0	0
Ave. data	15	32	295	102	57

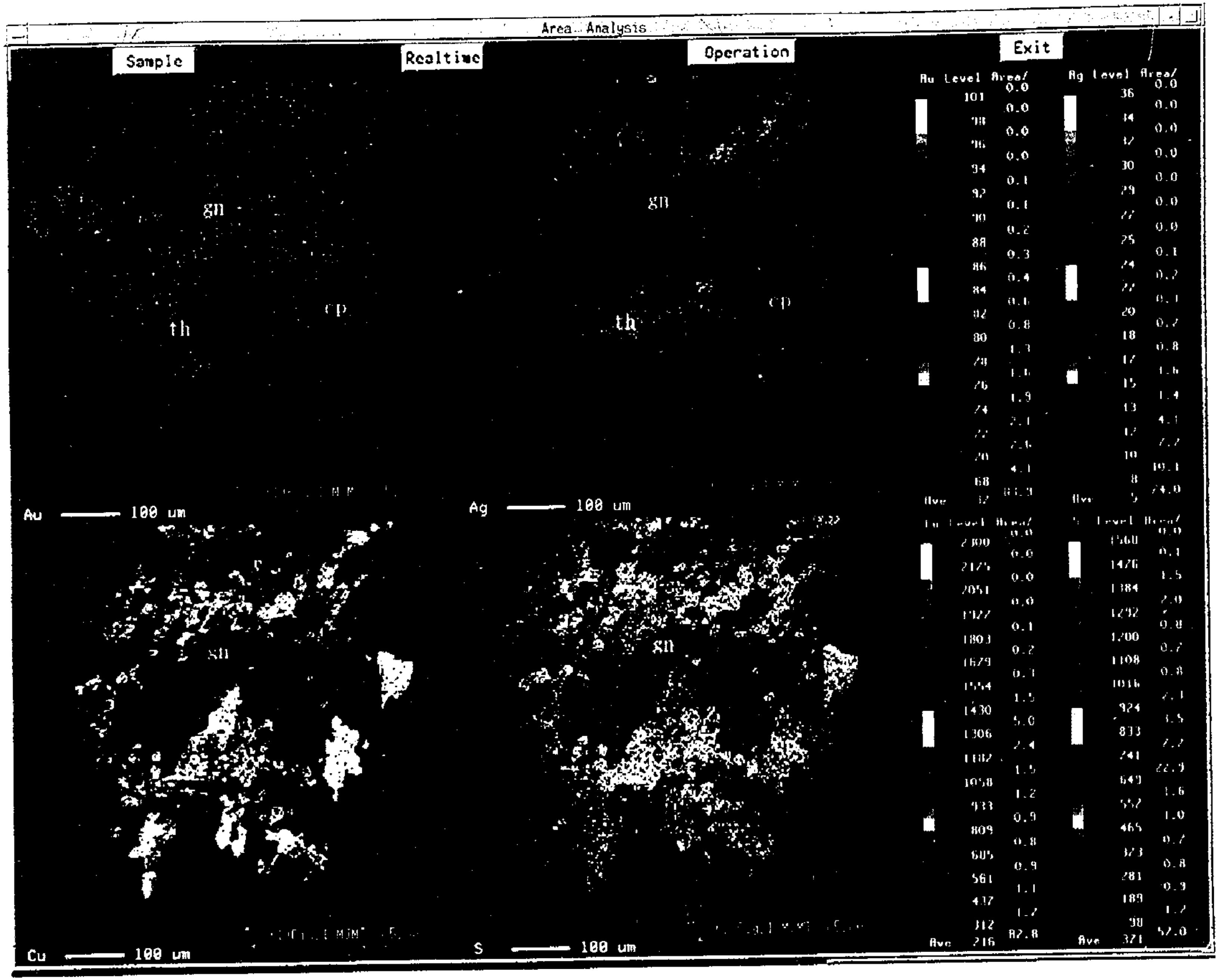
FPMA-1

Feb 21 20:23 1998 .map/tmp Page 2

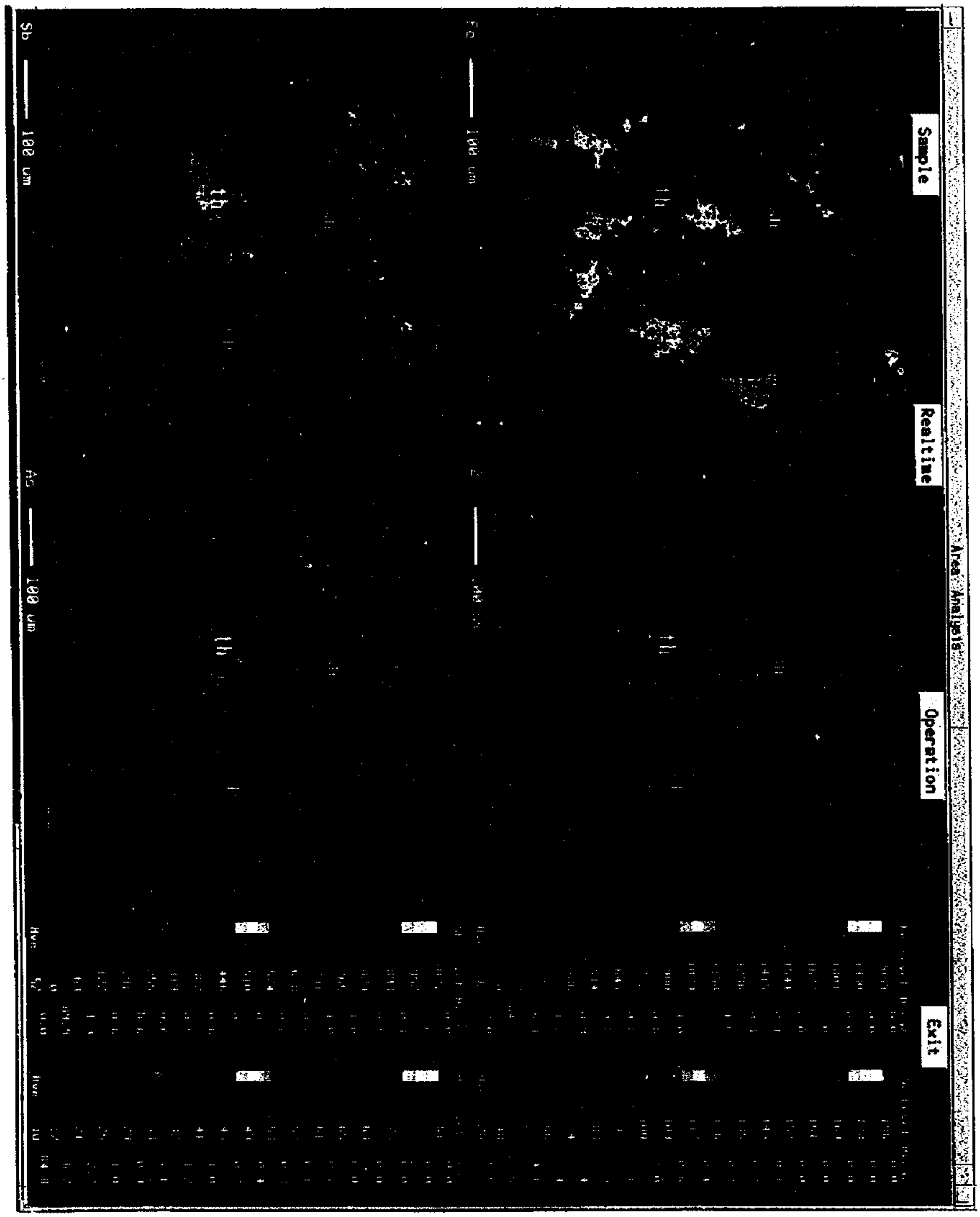
	Elem-11
Elements	Zn
Signal	WDS
X-ray Name	Ka
Order	1
Channel	4
Crystal	LIF
Spect. Pos.	99.8620
PHA Gain	32
High Volt(V)	1678
Base Level(V)	1.2000
Window (V)	8.8000
Diff/Int	Int
Max. data	317
Min. data	0
Ave. data	28

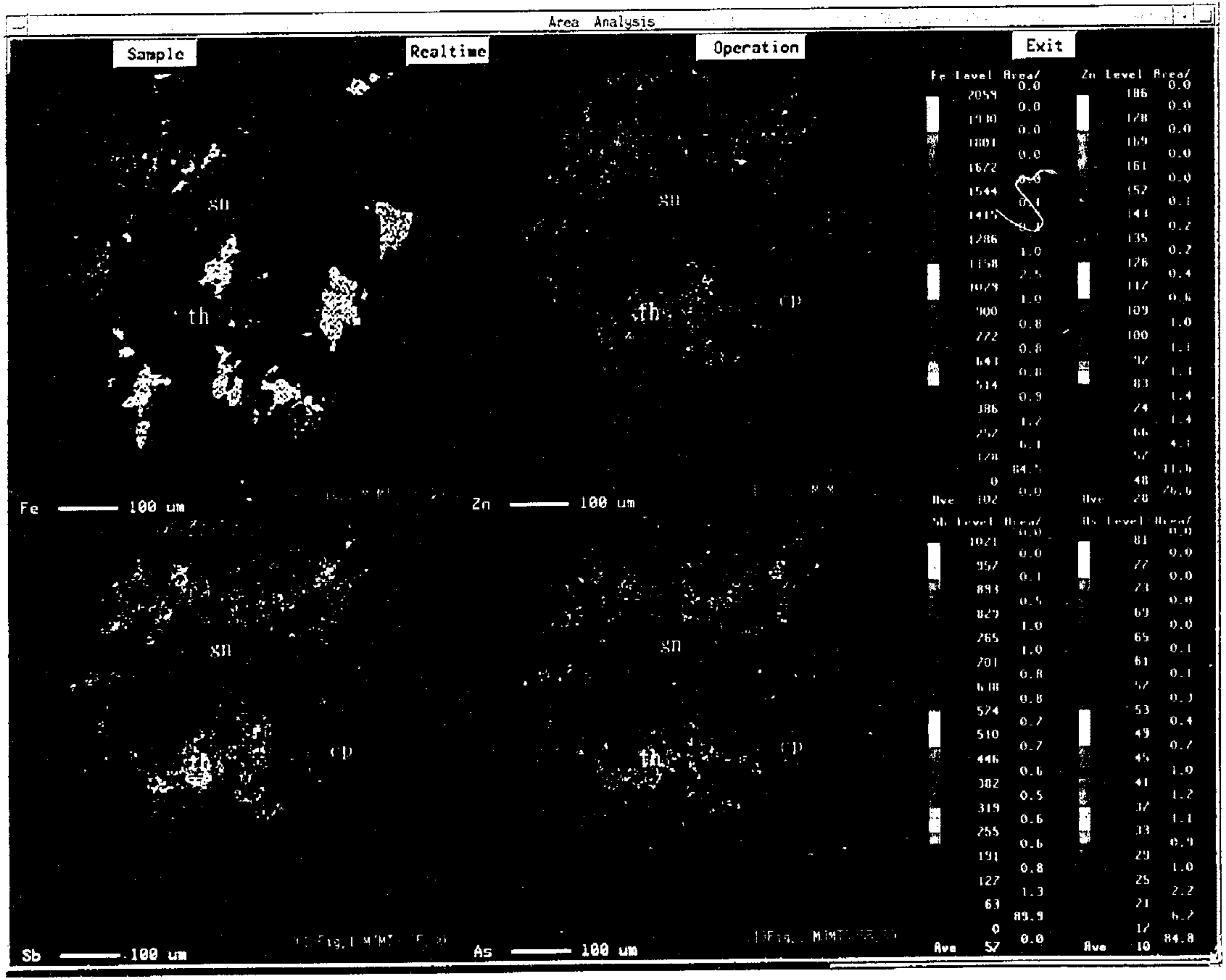
A-6 EPMA-1 (KJMT-3, 35.80m)




Area Analysis
Sample
Realtime
Operation
Exit
gn
th
cp
Au 100 um
Ag 100 um
Cu 100 um
S 100 um
Au Level Area/
Ag Level Area/
Ave

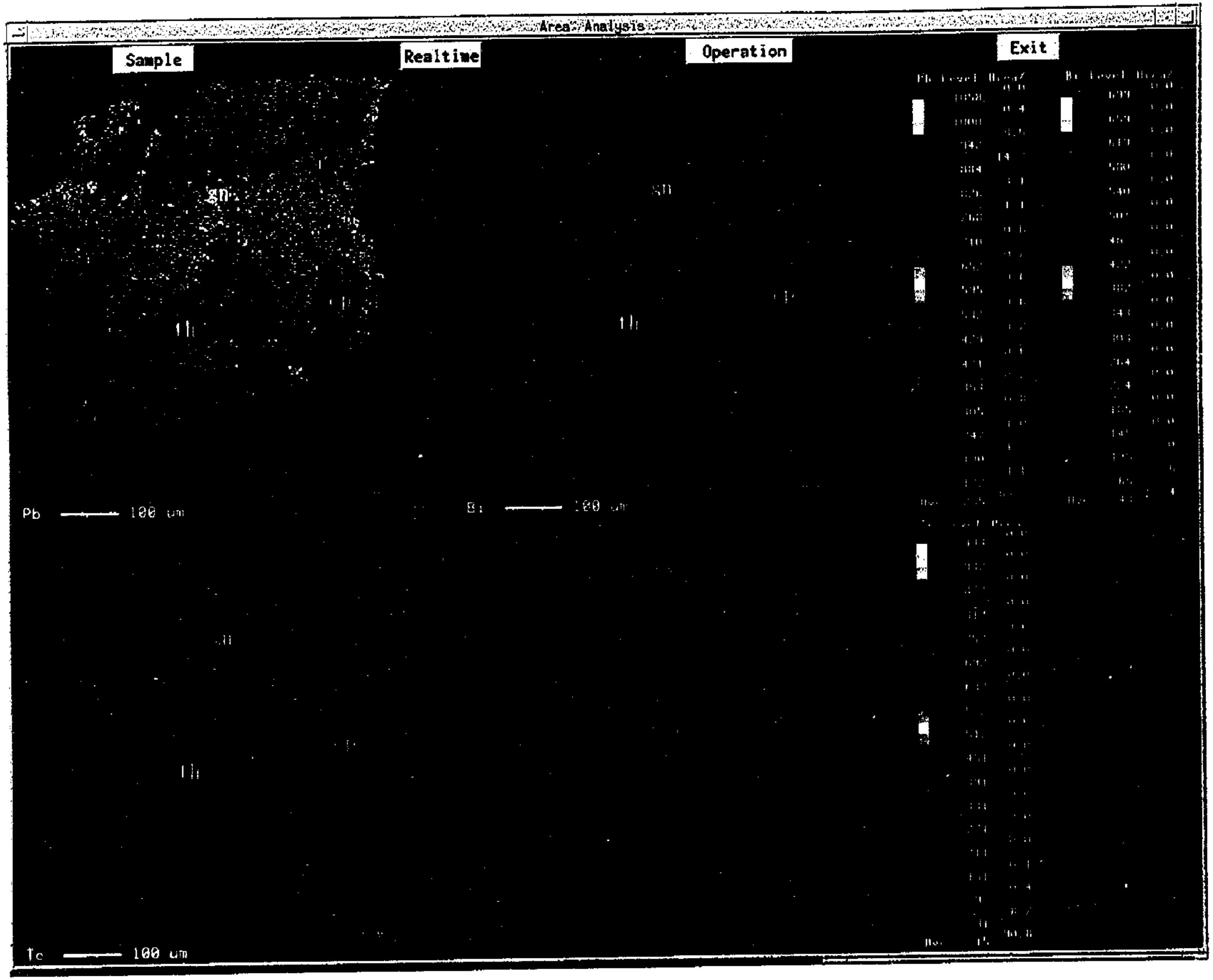
EPMA-1

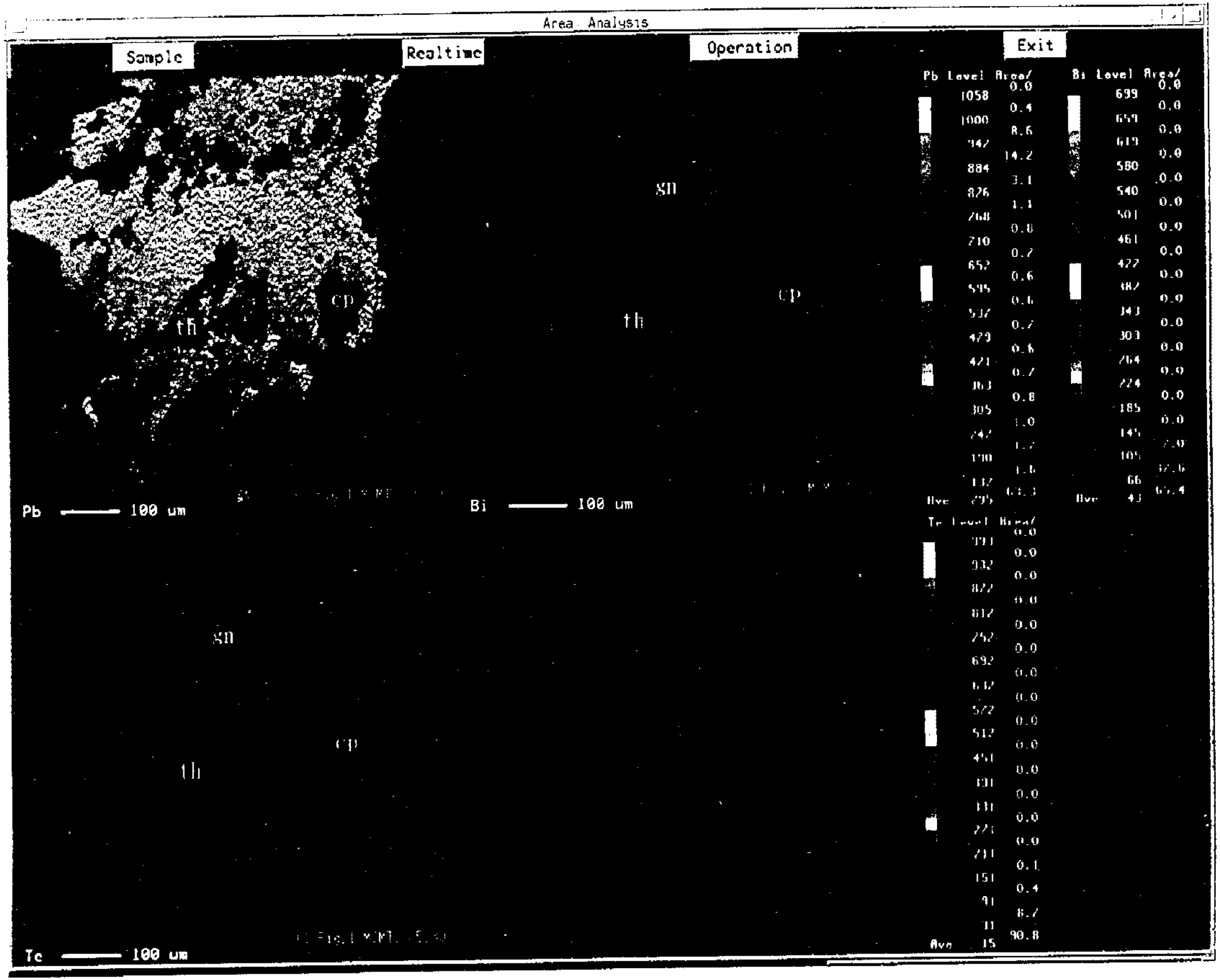

Sample
Realtime
Area Analysis
Operation
Exit
Sb
100 um
As
100 um



Area Analysis
Sample
Realtime
Operation
Exit
Fe Level Area/
Zn Level Area/
Sb Level Area/
As Level Area/
sn
th
cp
Fe 100 um
Zn 100 um
Sb 100 um
As 100 um

EPMA-4


Area Analysis
Sample
Realtime
Operation
Exit
gn
Pb 100 um
Bi 100 um
Tc 100 um


Area Analysis
Sample
Realtime
Operation
Exit
Pb Level Area/
Bi Level Area/
Te Level Area/
Ave
sn
th
cp
Pb 100 um
Bi 100 um
Te 100 um

A-6 EPMA-2 (MJMT-3, 85.80m)

Feb 21 23:06 1998 .map/tmp Page 1

>>> Map Measurement condition. <<<

Group : publicjx3 Sample : jx3pub1
Comment : Fig 2b MJMT3 85.8m

Feb 21 23:06 1998
Stage No.2 Position mm X : 69.9965 Y : 18.6725 Z : 11.5423

Accelerating Voltage 25.0 kV
Dwell Time 25.0 m sec.
No. of Pixels X : 250 Y : 250
Pixel size (um) X : 3.00 Y : 3.00
Condenser Lens (C,F) 18, 36 Object Lens (C,F) 186, 452
Magnification 500
Probe Diameter (um) 0
Probe Scan Off, Scan Mode PIC , Scan Speed SR
Probe Current (A) 2.034E-07

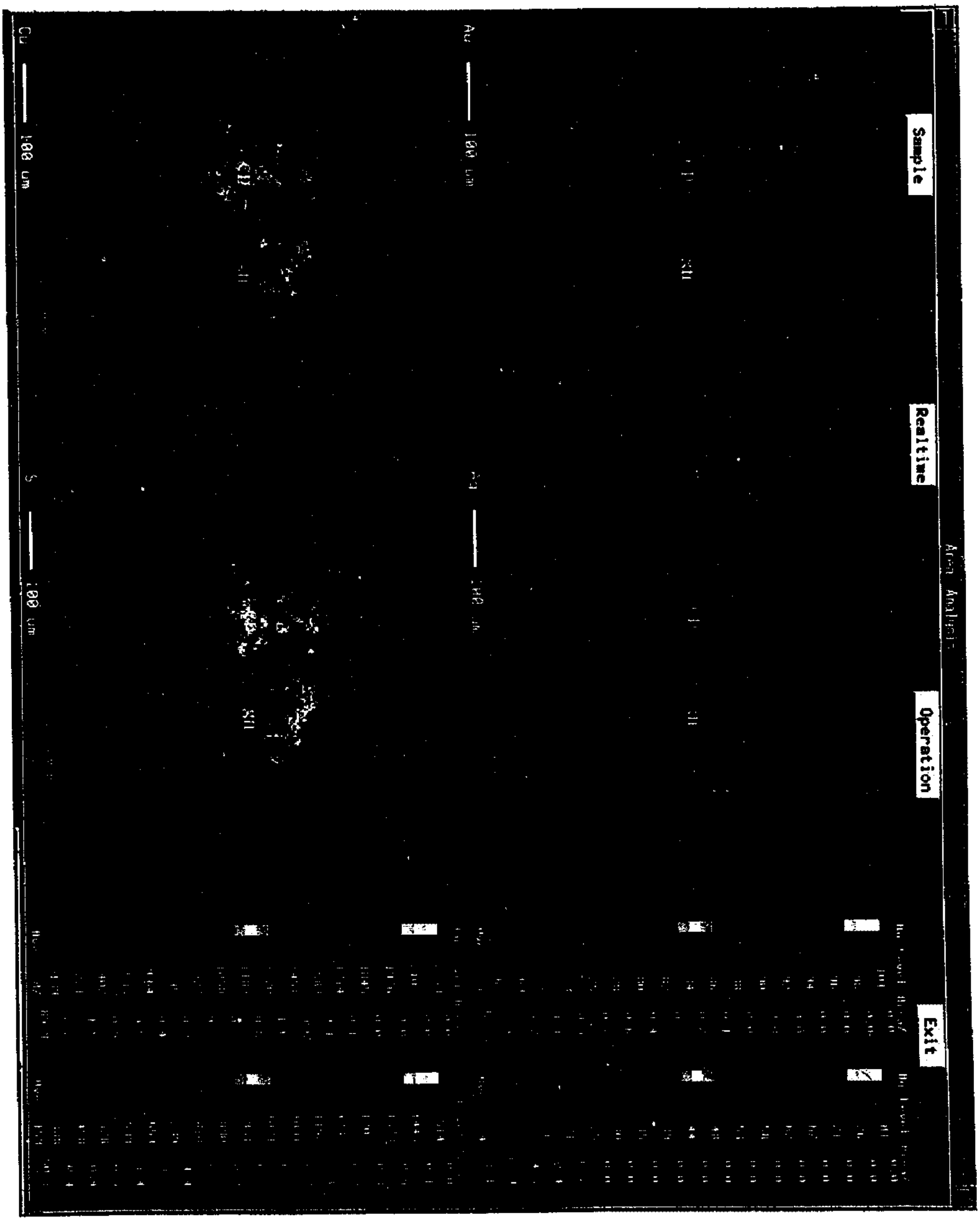
	Elem-1	Elem-2	Elem-3	Elem-4	Elem-5
Elements	As	Ag	Bi	S	Cu
Signal	WDS	WDS	WDS	WDS	WDS
X-ray Name	La	La	La	Ka	Ka
Order	1	1	1	1	1
Channel	1	3	4	3	4
Crystal	TAP	PETJ	LIF	PETJ	LIF
Spect. Pos.	105.1420	133.1400	79.2940	172.1590	107.2430
PHA Gain	32	64	32	64	32
High Volt(V)	1698	1690	1648	1724	1700
Base Level(V)	1.0000	1.2000	1.0000	1.0000	1.0000
Window (V)	9.0000	8.8000	9.0000	9.0000	9.0000
Diff/Int	Int	Int	Int	Int	Int
Max. data	158	81	923	1774	2239
Min. data	0	0	1	0	0
Ave. data	6	4	28	159	87

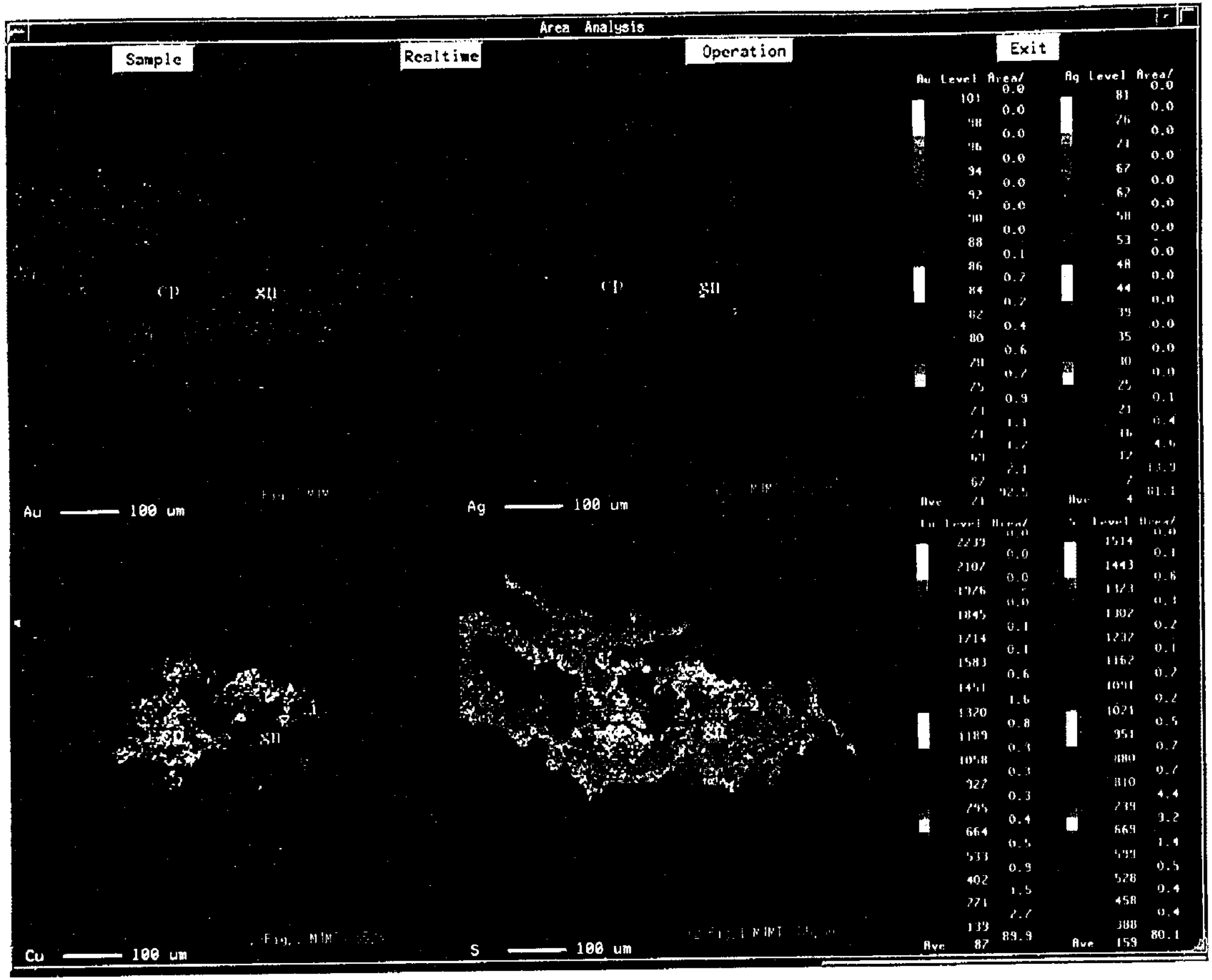
	Elem-6	Elem-7	Elem-8	Elem-9	Elem-10
Elements	Te	Au	Pb	Fe	Sb
Signal	WDS	WDS	WDS	WDS	WDS
X-ray Name	La	La	Ma	Ka	La
Order	1	1	1	1	1
Channel	3	4	3	4	3
Crystal	PETJ	LIF	PETJ	LIF	PETJ
Spect. Pos.	105.4260	88.7400	169.3220	134.7480	110.2460
PHA Gain	64	32	64	32	64
High Volt(V)	1664	1664	1688	1648	1672
Base Level(V)	1.2000	1.2000	1.0000	1.0000	1.2000
Window (V)	8.8000	8.8000	9.0000	9.0000	8.8000
Diff/Int	Int	Int	Int	Int	Int
Max. data	1090	101	1062	1514	981
Min. data	0	0	0	0	0
Ave. data	10	21	148	28	22

Feb 21 23:06 1998 .map/tmp Page 2

	Elem-11
Elements	Zn
Signal	WDS
X-ray Name	Ka
Order	1
Channel	4
Crystal	LIF
Spect. Pos.	99.8620
PHA Gain	32
High Volt(V)	1678
Base Level(V)	1.2000
Window (V)	8.8000
Diff/Int	Int
Max. data	264
Min. data	0
Ave. data	18

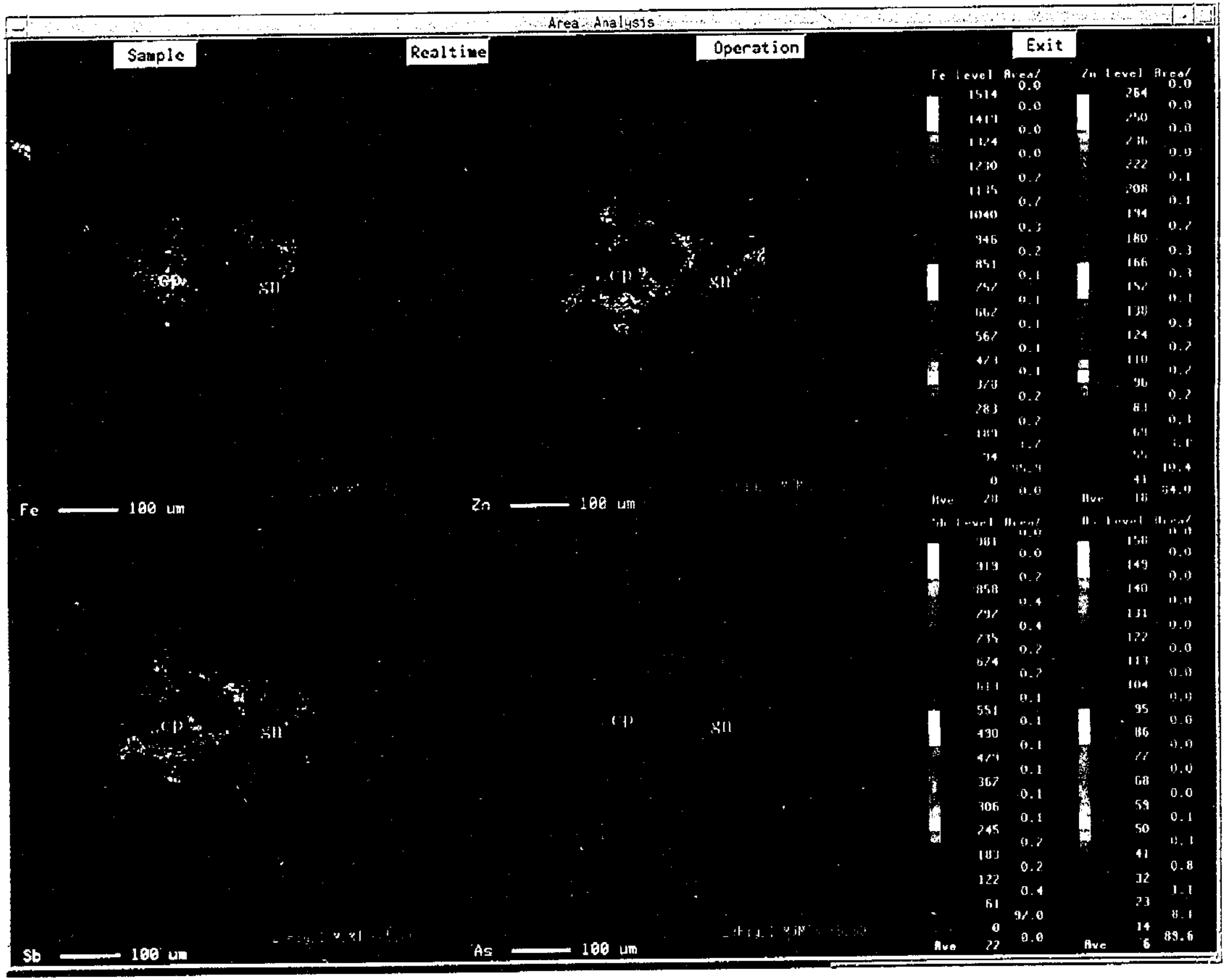
A-6 EPMA-2 (MJMT-3, 85.80m)



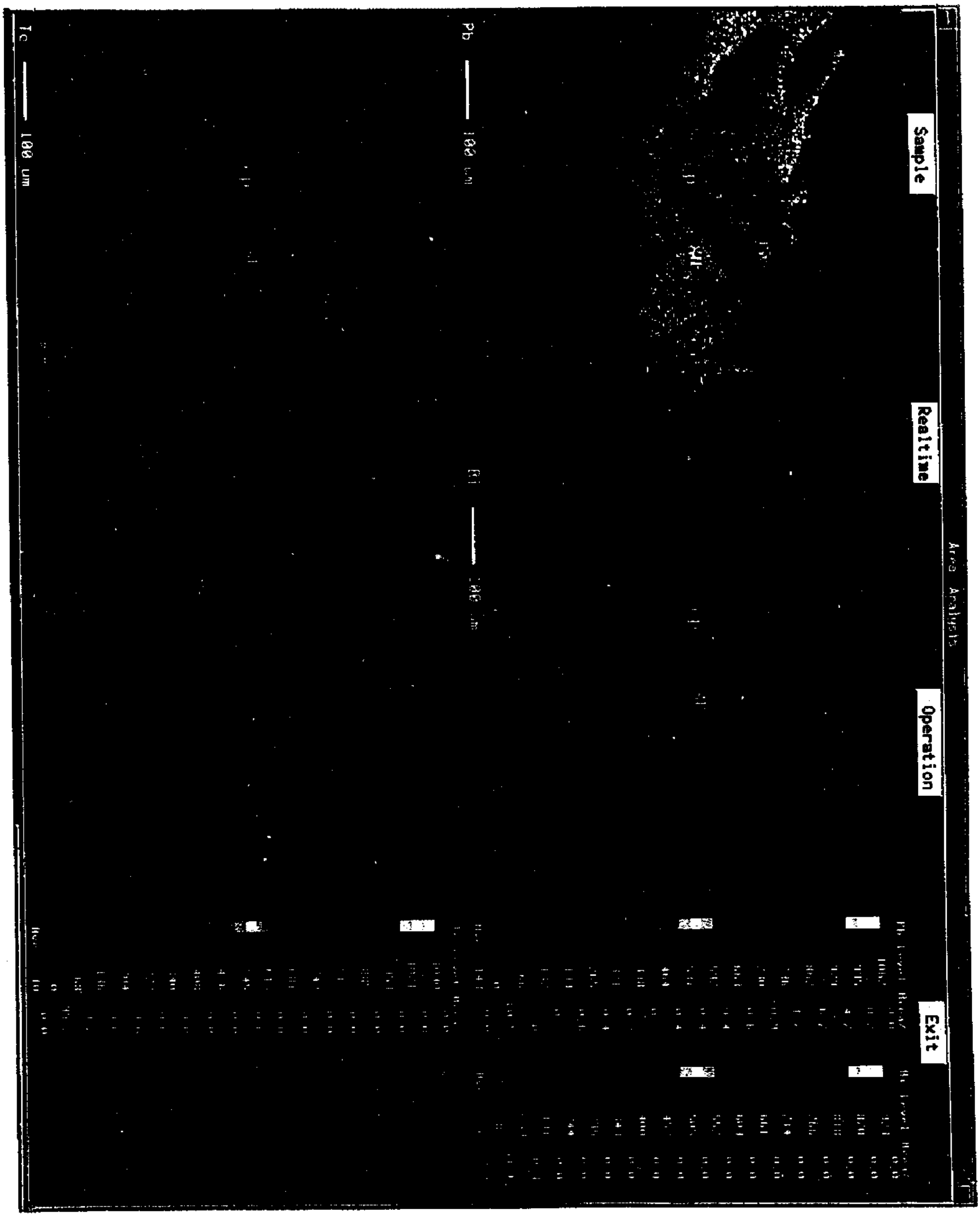

Area Analysis
Sample
Realtime
Operation
Exit
Au Level Area/
Ag Level Area/
CP
SH
Au 100 um
Ag 100 um
Cu 100 um
S 100 um
Ave

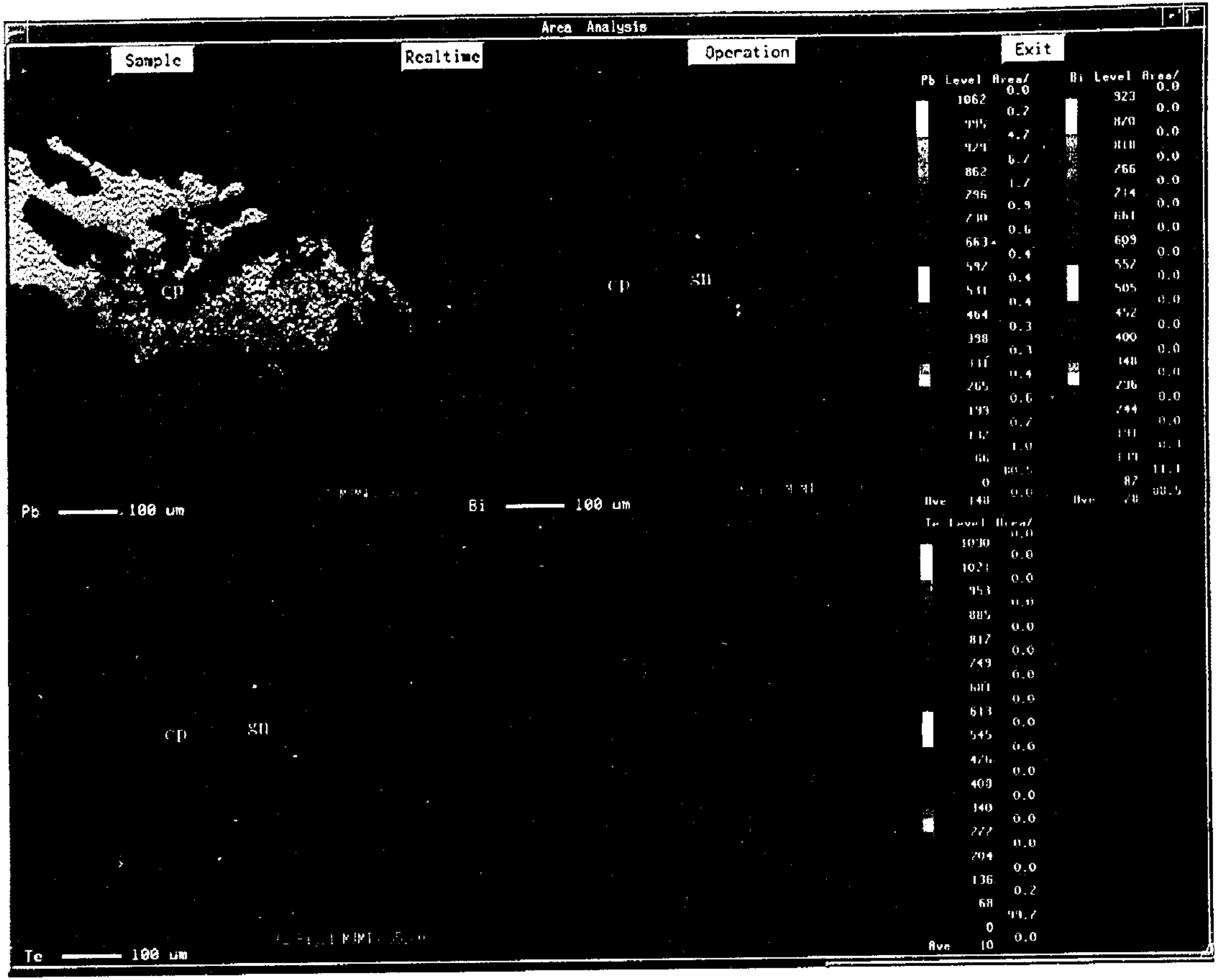
EPMA-2


Area Analysis
Sample
Realtime
Operation
Exit
Fe 100 um
Sb 100 um
As 100 um


Area Analysis
Sample
Realtime
Operation
Exit
Fe
100 um
Zn
100 um
Sb
100 um
As
100 um
CP
SD

EPMA-2


Sample
Realtime
Operation
Exit
Area Analysis
Pb
100 um
Tc
100 um


Area Analysis
Sample
Realtime
Operation
Exit
CP
SH
CP
SH
CP
SH
Pb 100 um
Bi 100 um
Te 100 um
Pb Level Area/
Bi Level Area/
Te Level Area/
Ave

A-6 EPMA-3 (MJMT-3, 86.22m)

Feb 22 02:58 1998 .map/tmp Page 1

>>> Map Measurement condition. <<<

Group : publicjx3   Sample : jx3publ
Comment : Fig - MJMT3 86.22m

Feb 22 02:58 1998
Stage No.3   Position mm X : 33.5603   Y : 11.9418   Z : 11.3704

Accelerating Voltage   25.0 kV
Dwell Time   25.0 m sec.
No. of Pixels   X : 300   Y : 300
Pixel size (um)   X : 3.00   Y : 3.00
Condenser Lens (C,F) 18, 36   Object Lens (C,F) 186, 452
Magnification   500
Probe Diameter (um)   0
Probe Scan Off, Scan Mode PIC   , Scan Speed SR
Probe Current (A)   2.045E-07

	Elem-1	Elem-2	Elem-3	Elem-4	Elem-5
Elements	As	Ag	Bi	S	Cu
Signal	WDS	WDS	WDS	WDS	WDS
X-ray Name	La	La	La	Ka	Ka
Order	1	1	1	1	1
Channel	1	3	4	3	4
Crystal	TAP	PETJ	LIF	PETJ	LIF
Spect. Pos.	105.1420	133.1400	79.2940	172.1590	107.2430
PHA Gain	32	64	32	64	32
High Volt(V)	1698	1690	1648	1724	1700
Base Level(V)	1.0000	1.2000	1.0000	1.0000	1.0000
Window (V)	9.0000	8.8000	9.0000	9.0000	9.0000
Diff/Int	Int	Int	Int	Int	Int
Max. data	148	88	597	2079	3026
Min. data	0	0	1	0	0
Ave. data	8	5	36	310	436

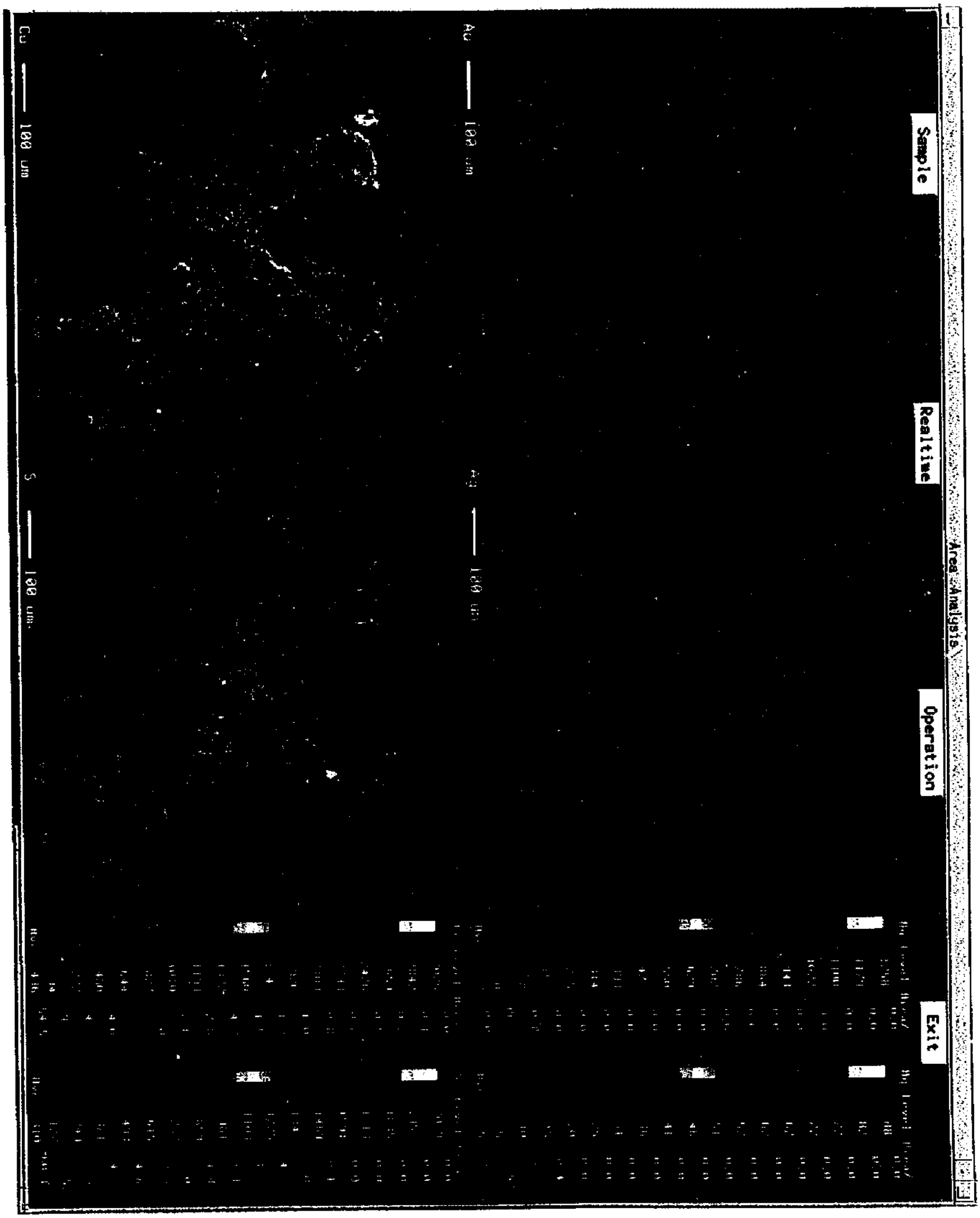
	Elem-6	Elem-7	Elem-8	Elem-9	Elem-10
Elements	Te	Au	Pb	Fe	Sb
Signal	WDS	WDS	WDS	WDS	WDS
X-ray Name	La	La	Ma	Ka	La
Order	1	1	1	1	1
Channel	3	4	3	4	3
Crystal	PETJ	LIF	PETJ	LIF	PETJ
Spect. Pos.	105.4260	88.7400	169.3220	134.7480	110.2460
PHA Gain	64	32	64	32	64
High Volt(V)	1664	1664	1688	1648	1672
Base Level(V)	1.2000	1.2000	1.0000	1.0000	1.2000
Window (V)	8.8000	8.8000	9.0000	9.0000	8.8000
Diff/Int	Int	Int	Int	Int	Int
Max. data	383	1258	1033	1788	1059
Min. data	0	0	0	0	0
Ave. data	12	27	180	237	33

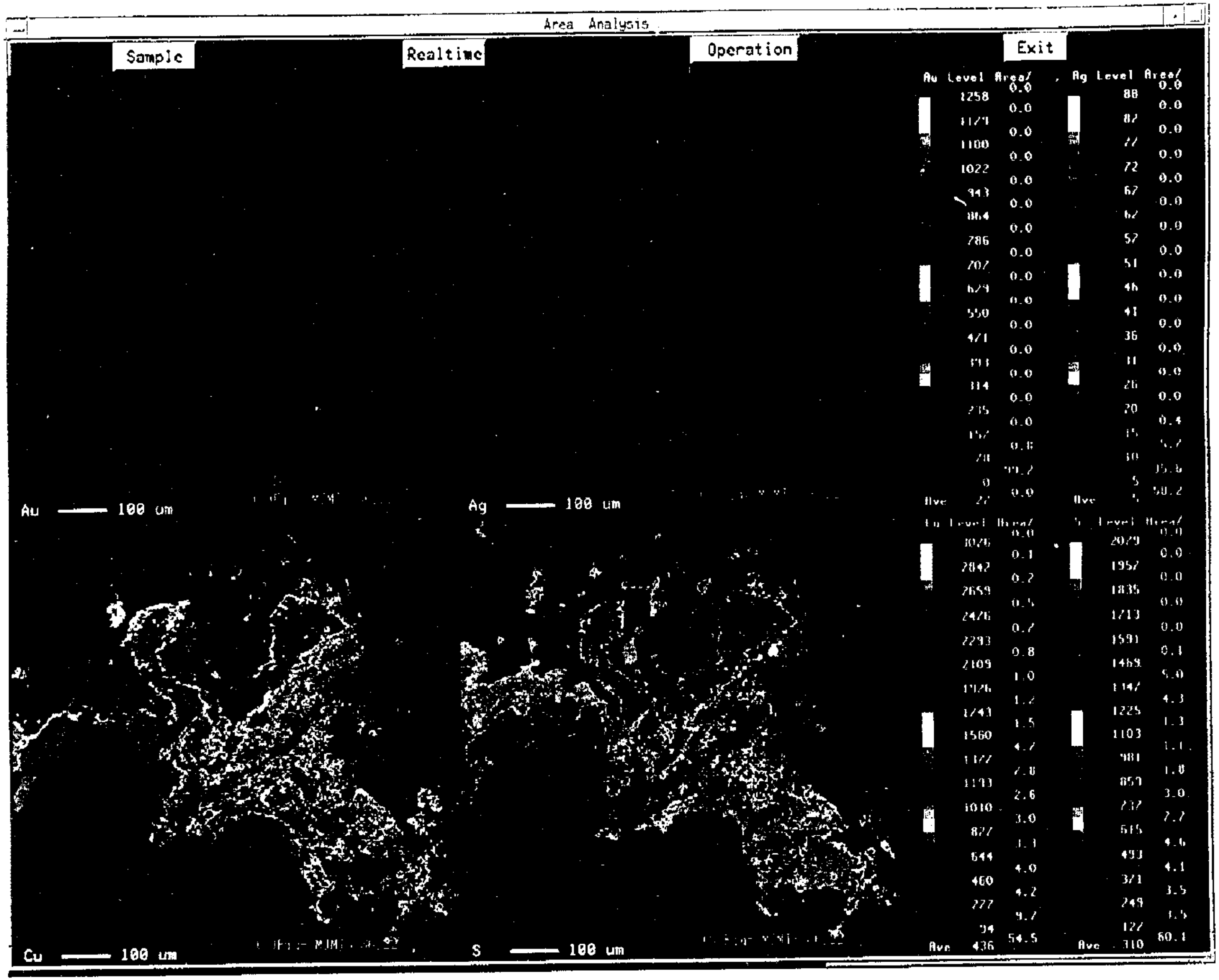
EPMA-3

Feb 22 02:58 1998 ,map/tmp Page 2

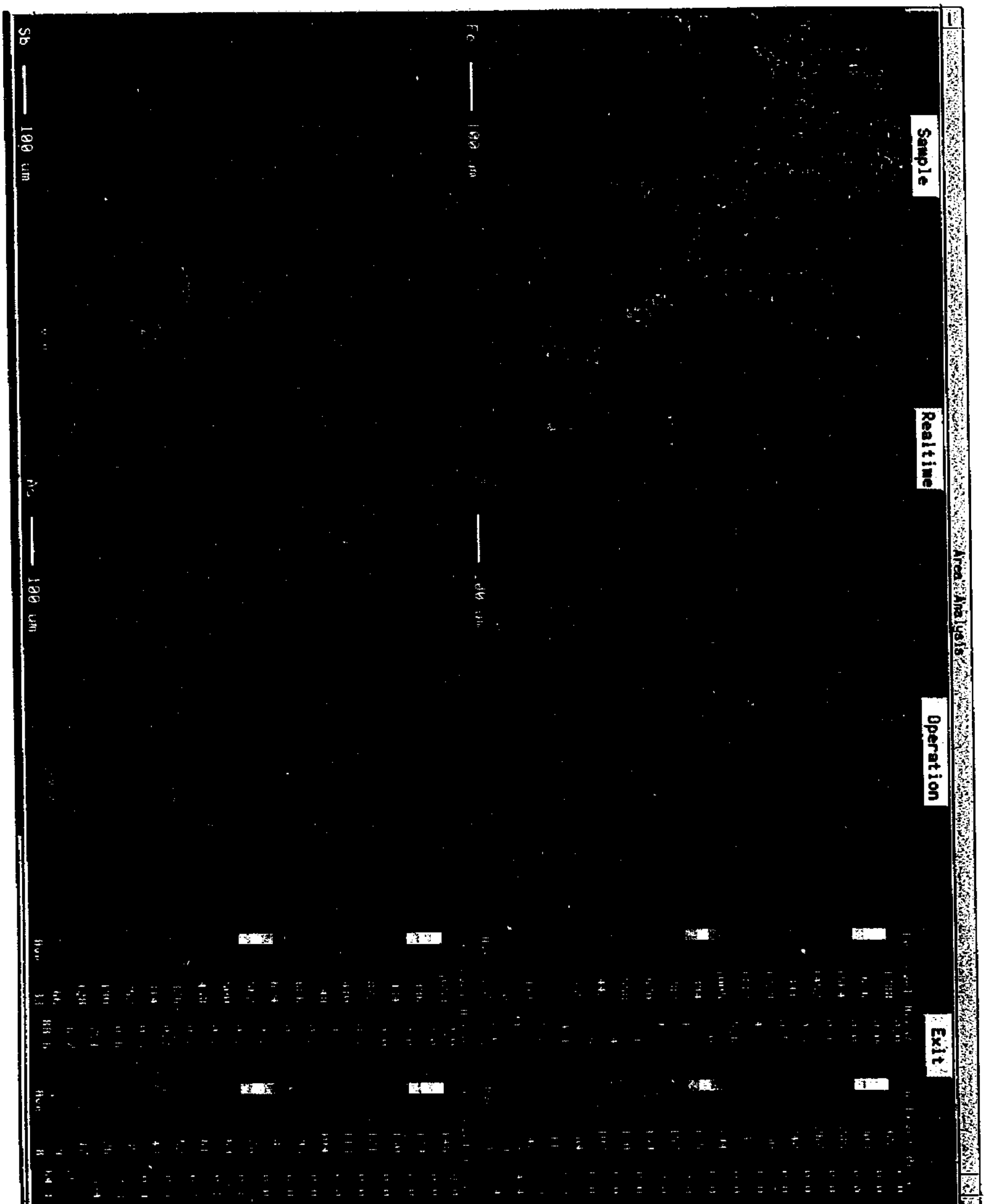
	Elem-11
Elements	Zn
Signal	WDS
X-ray Name	Ka
Order	1
Channel	4
Crystal	LIF
Spect. Pos.	99.8620
PHA Gain	32
High Volt(V)	1678
Base Level(V)	1.2000
Window (V)	8.8000
Diff/Int	Int
Max. data	322
Min. data	0
Ave. data	21

A-6 EPMA-3 (MJMT-3. 86.22m)



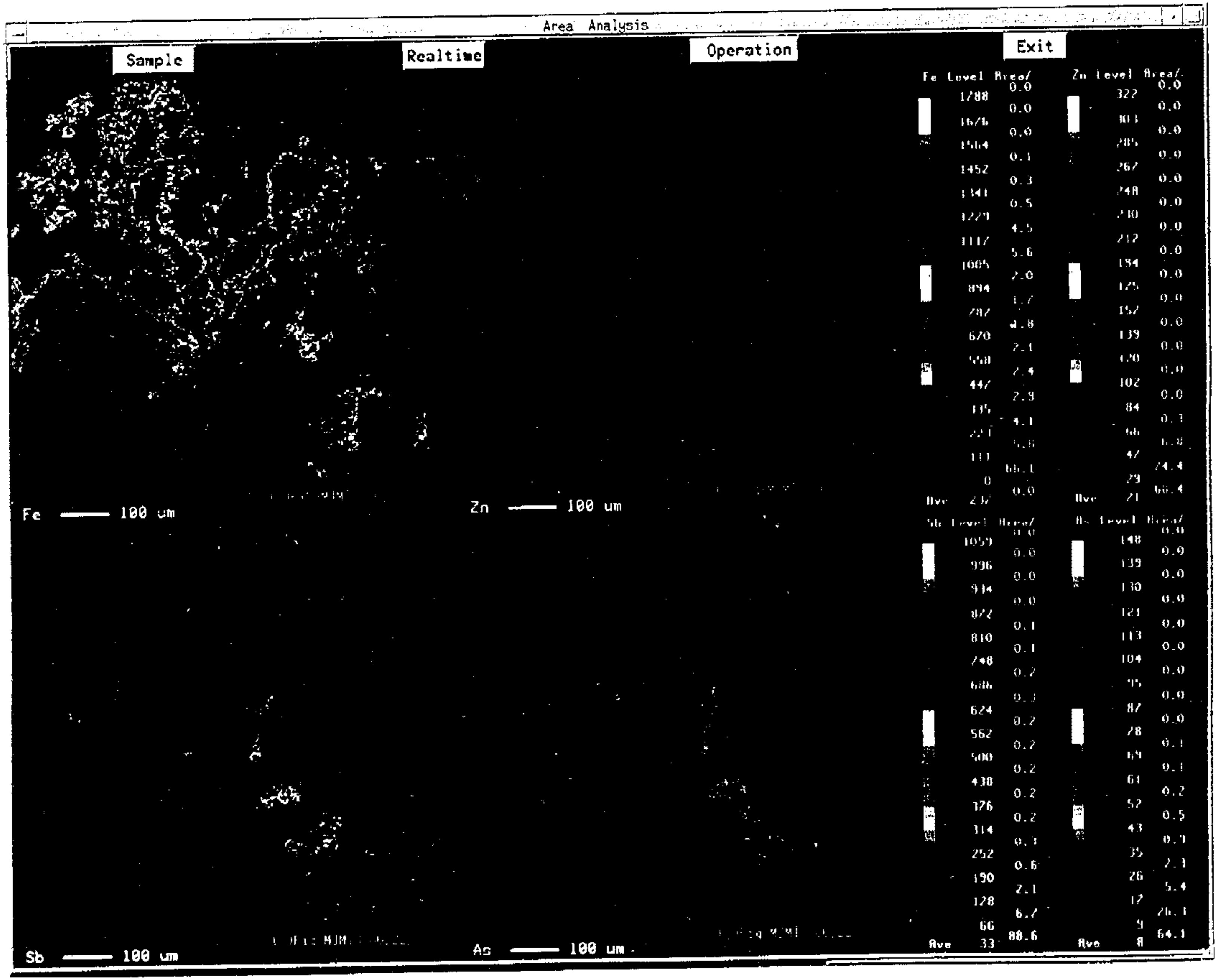

Area Analysis
Sample
Realtime
Operation
Exit
Au 100 um
Ag 100 um
Cu 100 um
S 100 um

EPMA-3



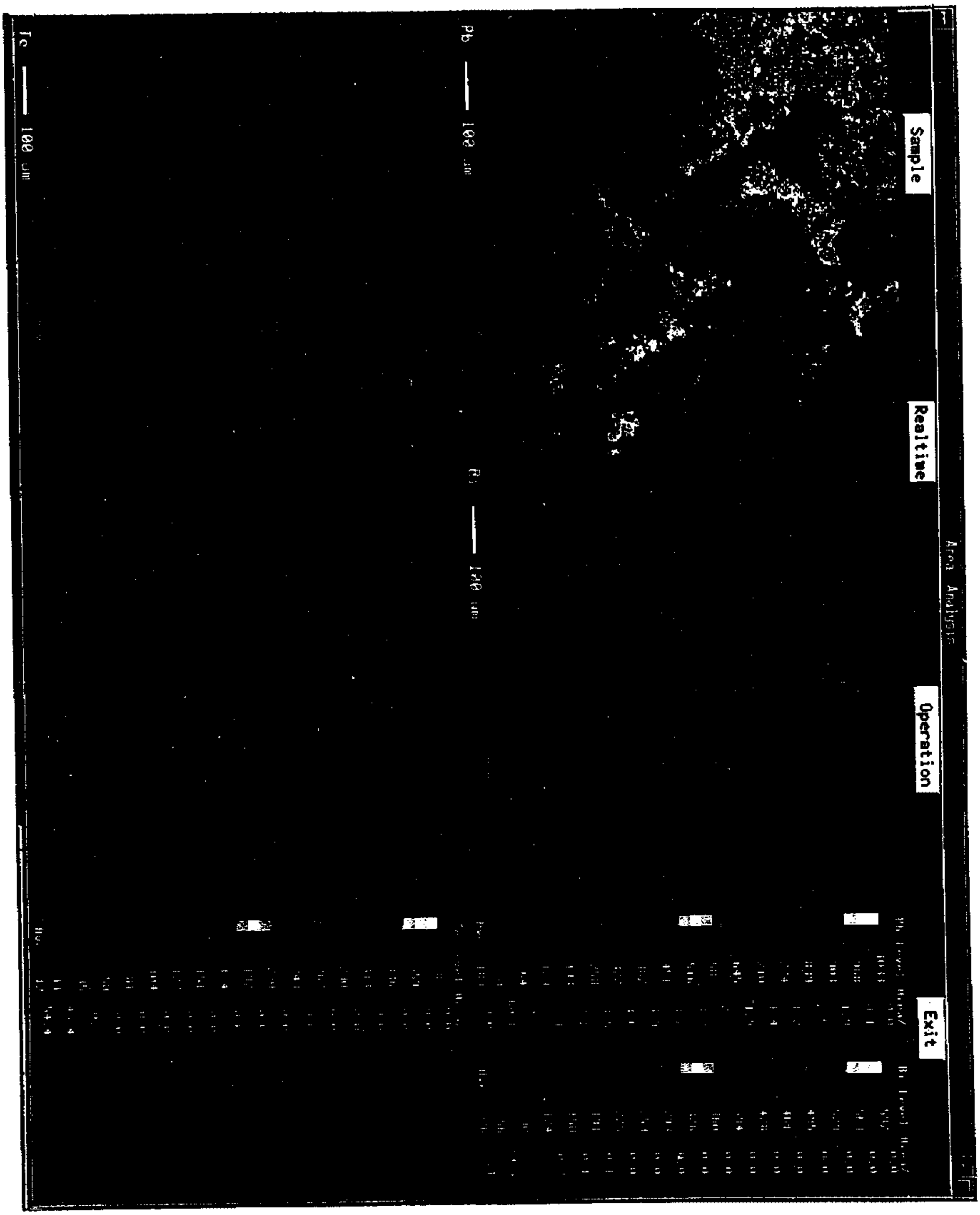
Sample
Realtime
Area Analysis
Operation
Exit
Sb
100 um
100 um

EPMA 3

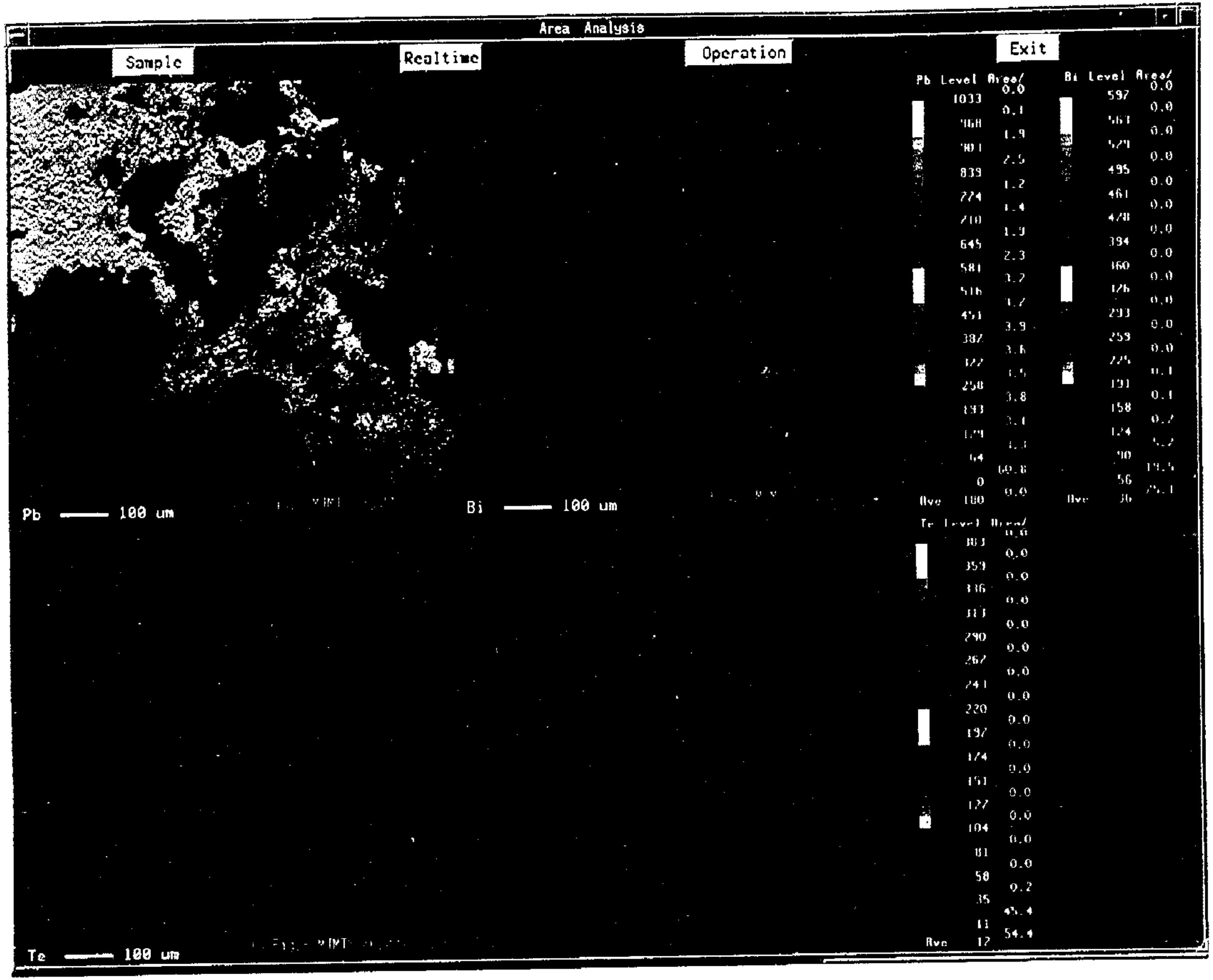


Area Analysis
Sample
Realtime
Operation
Exit
Fe 100 um
Zn 100 um
Sb 100 um
As 100 um
Fe Level Area/
Zn Level Area/
Ave

EPMA-3


Sample
Realtime
Operation
Exit
Area Analysis
Pb
100 um
100 um
100 um

EPMA 3


Area Analysis
Sample
Realtime
Operation
Exit
Pb Level Area/
Bi Level Area/
Te Level Area/
Pb 100 um
Bi 100 um
Te 100 um

A-6 EPMA-4 (MJMT-3, 85.80m)

Feb 22 06:49 1998 .map/tmp Page 1

>>> Map Measurement condition. <<<

Group : publicjx3 Sample : jx3pub1
Comment : Fig 4 MJMT3 86.35m (2)

Feb 22 06:49 1998
Stage No.4 Position mm X : 15.8653 Y : 19.5538 Z : 11.2947

Accelerating Voltage 25.0 kV
Dwell Time 25.0 m sec.
No. of Pixels X : 300 Y : 300
Pixel size (um) X : 3.00 Y : 3.00
Condenser Lens (C,F) 18, 36 Object Lens (C,F) 186, 452
Magnification 500
Probe Diameter (um) 0
Probe Scan Off, Scan Mode PIC , Scan Speed SR
Probe Current (A) 2.034E-07

	Elem-1	Elem-2	Elem-3	Elem-4	Elem-5
Elements	As	Ag	Bi	S	Cu
Signal	WDS	WDS	WDS	WDS	WDS
X-ray Name	La	La	La	Ka	Ka
Order	1	1	1	1	1
Channel	1	3	4	3	4
Crystal	TAP	PETJ	LIF	PETJ	LIF
Spect. Pos.	105.1420	133.1400	79.2940	172.1590	107.2430
PHA Gain	32	64	32	64	32
High Volt(V)	1698	1690	1648	1724	1700
Base Level(V)	1.0000	1.2000	1.0000	1.0000	1.0000
Window (V)	9.0000	8.8000	9.0000	9.0000	9.0000
Diff/Int	Int	Int	Int	Int	Int
Max. data	248	137	519	1498	3026
Min. data	0	0	1	0	0
Ave. data	14	6	47	489	418

	Elem-6	Elem-7	Elem-8	Elem-9	Elem-10
Elements	Te	Au	Pb	Fe	Sb
Signal	WDS	WDS	WDS	WDS	WDS
X-ray Name	La	La	Ma	Ka	La
Order	1	1	1	1	1
Channel	3	4	3	4	3
Crystal	PETJ	LIF	PETJ	LIF	PETJ
Spect. Pos.	105.4260	88.7400	169.3220	134.7480	110.2460
PHA Gain	64	32	64	32	64
High Volt(V)	1664	1664	1688	1648	1672
Base Level(V)	1.2000	1.2000	1.0000	1.0000	1.2000
Window (V)	8.8000	8.8000	9.0000	9.0000	8.8000
Diff/Int	Int	Int	Int	Int	Int
Max. data	1511	531	1029	1710	1136
Min. data	0	1	0	0	0
Ave. data	17	37	357	122	64

EPMA-4

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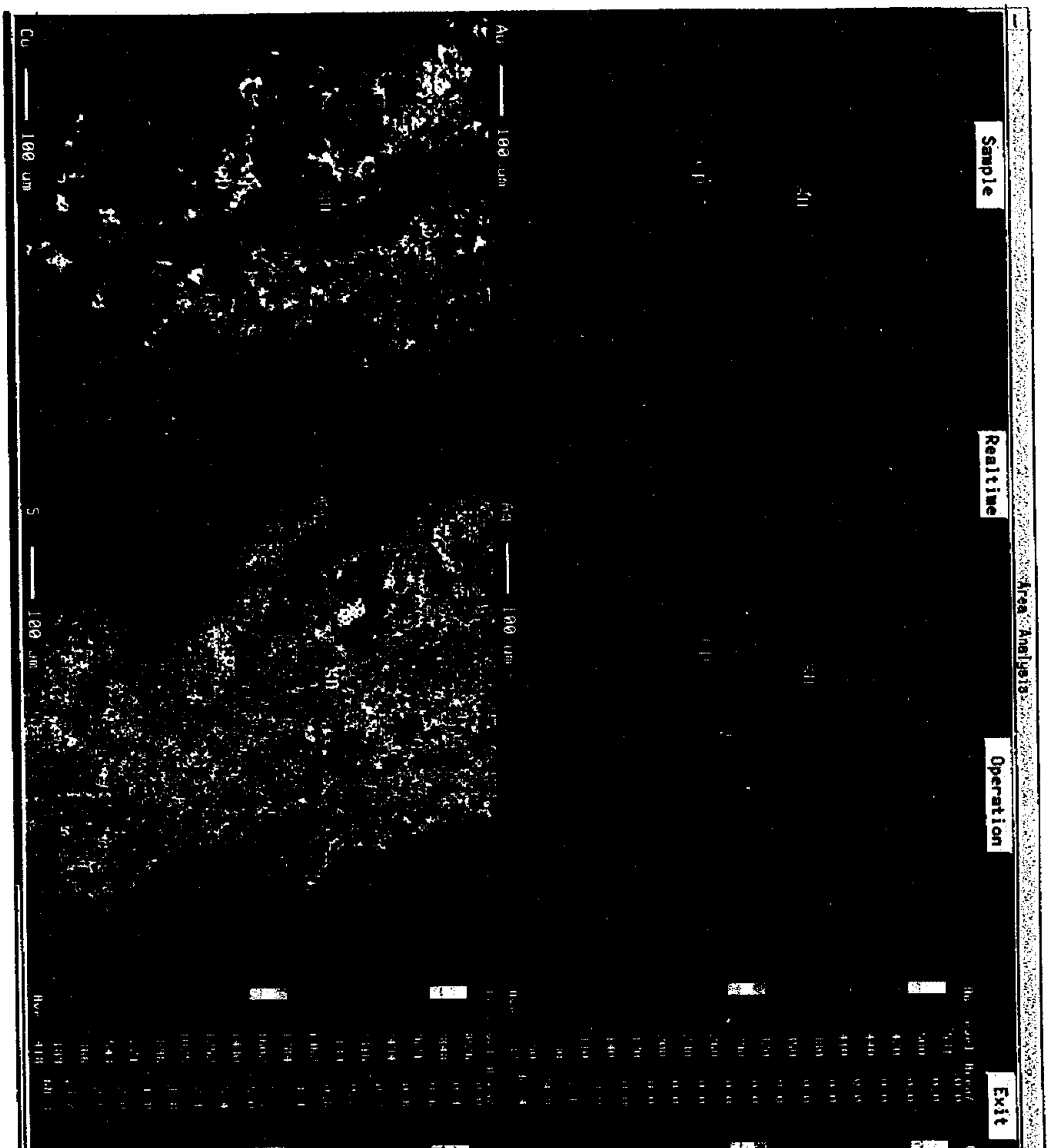
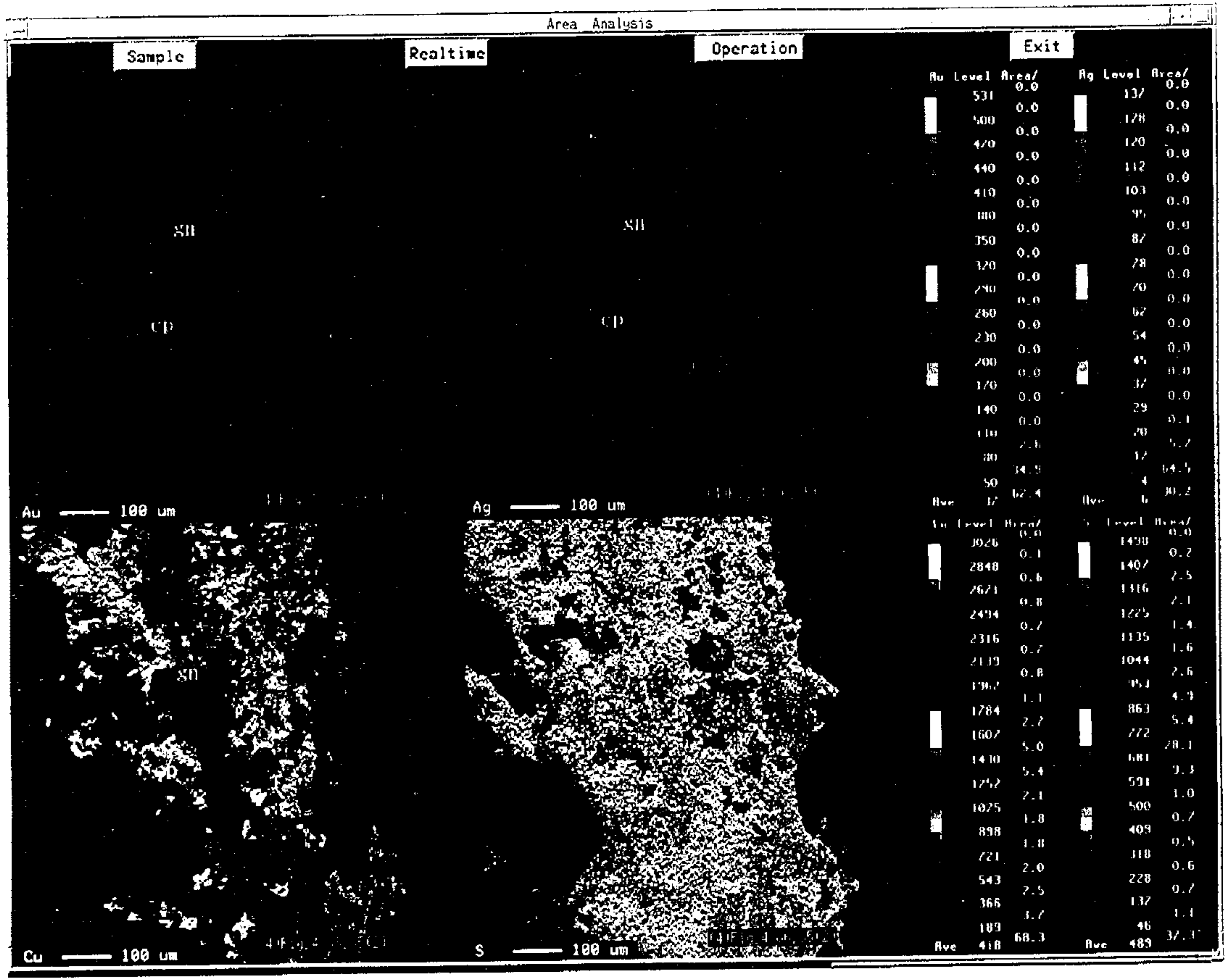
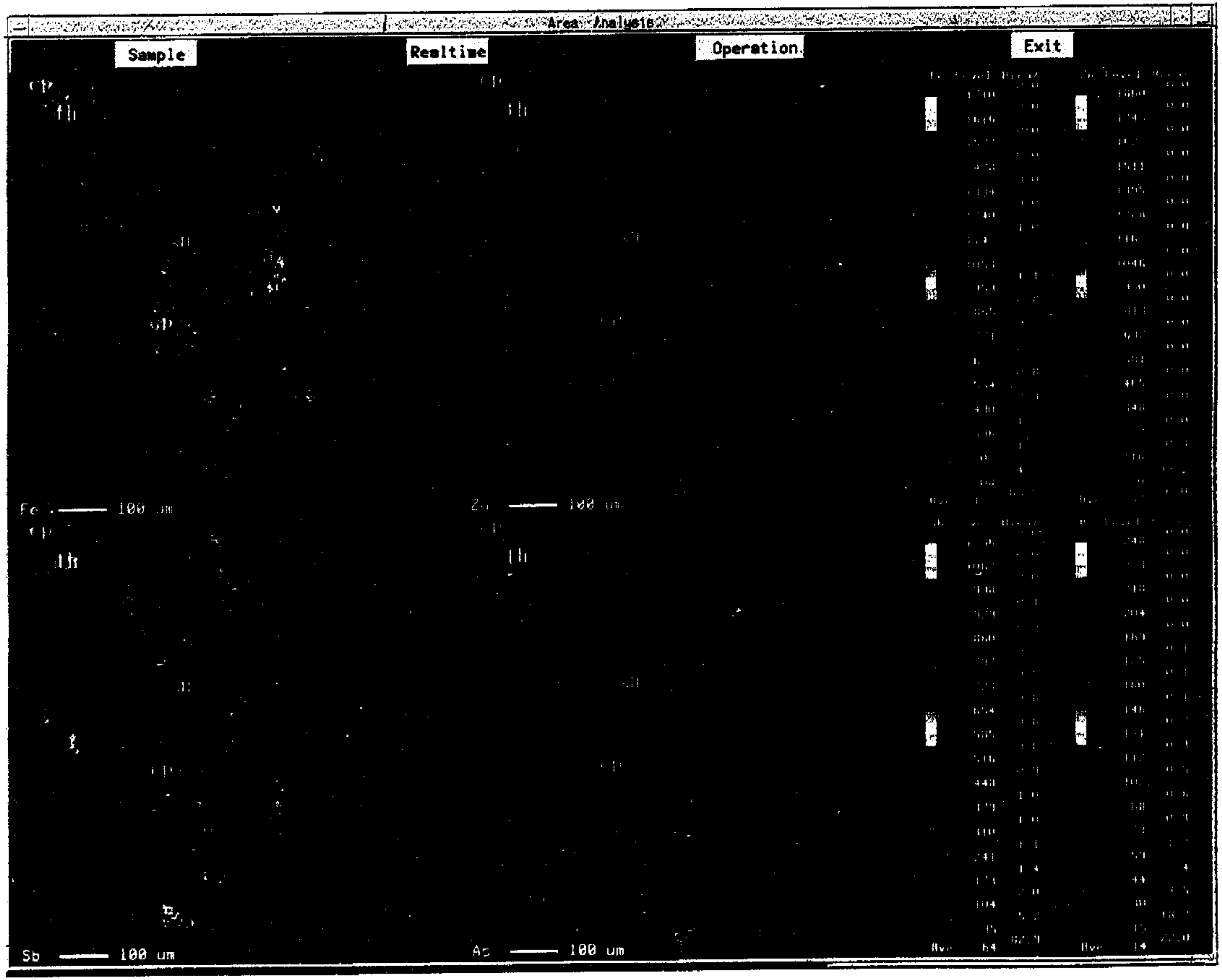
	Elem-11
Elements	Zn
Signal	WDS
X-ray Name	Ka
Order	1
Channel	4
Crystal	LIF
Spect. Pos.	99.8620
PHA Gain	32
High Volt(V)	1678
Base Level(V)	1.2000
Window (V)	8.8000
Diff/Int	Int
Max. data	1860
Min. data	0
Ave. data	32

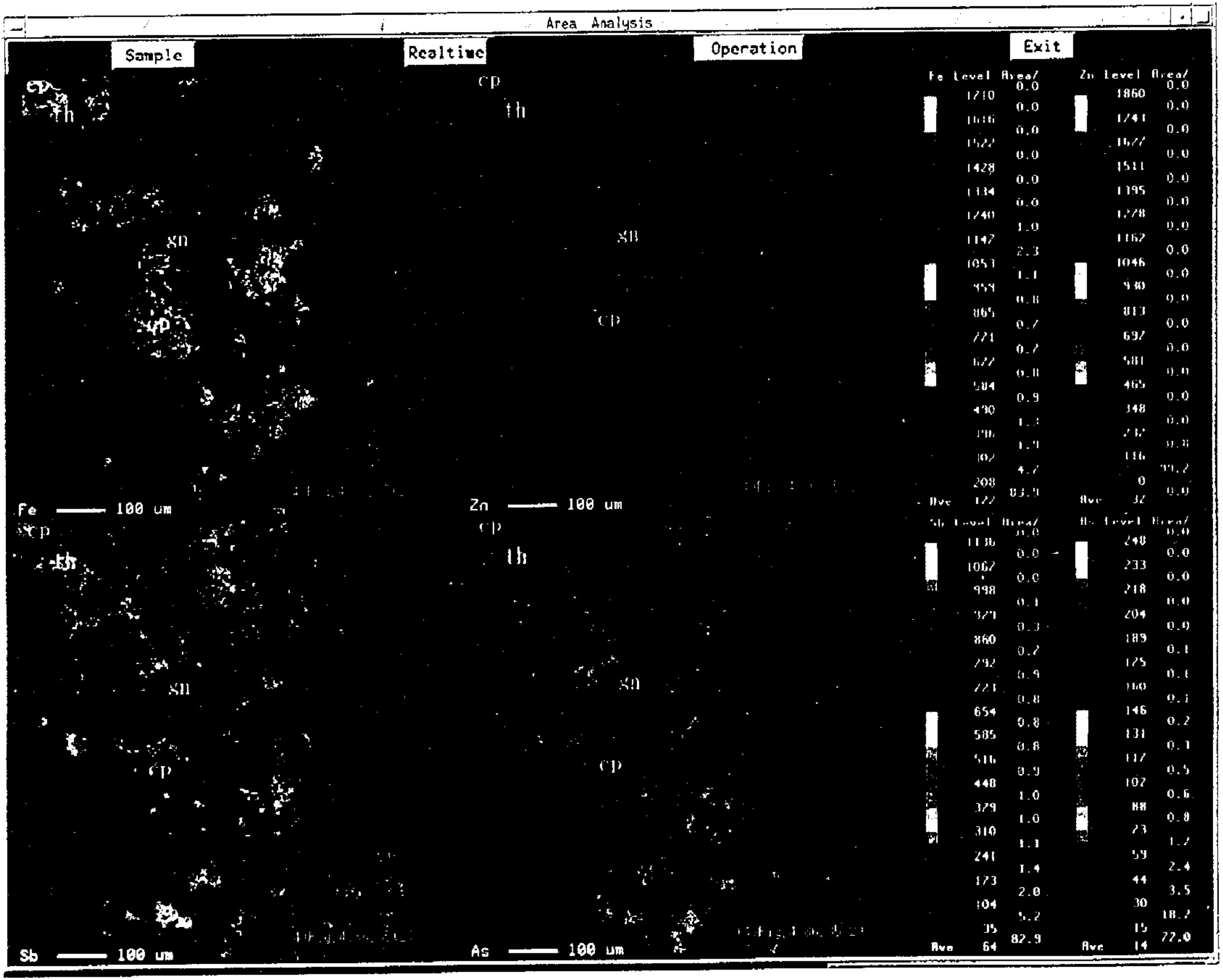
A-6 EPMA-4 (MJMT-3, 85.80m)



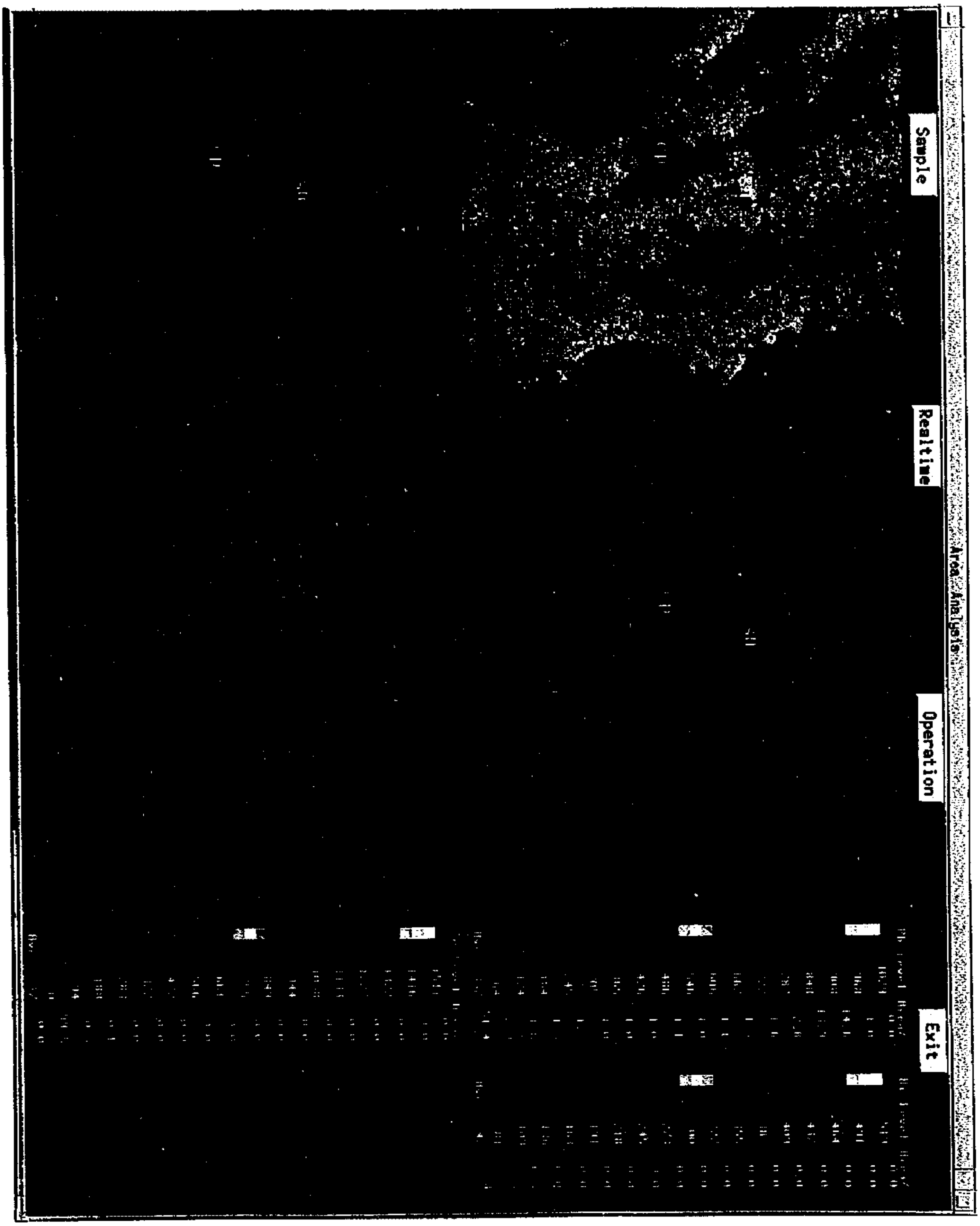

Area Analysis
Sample
Realtime
Operation
Exit
SB
CP
Au Level Area/
Ag Level Area/
Ave
Au 100 um
Ag 100 um
Cu 100 um
S 100 um

SPMA-4

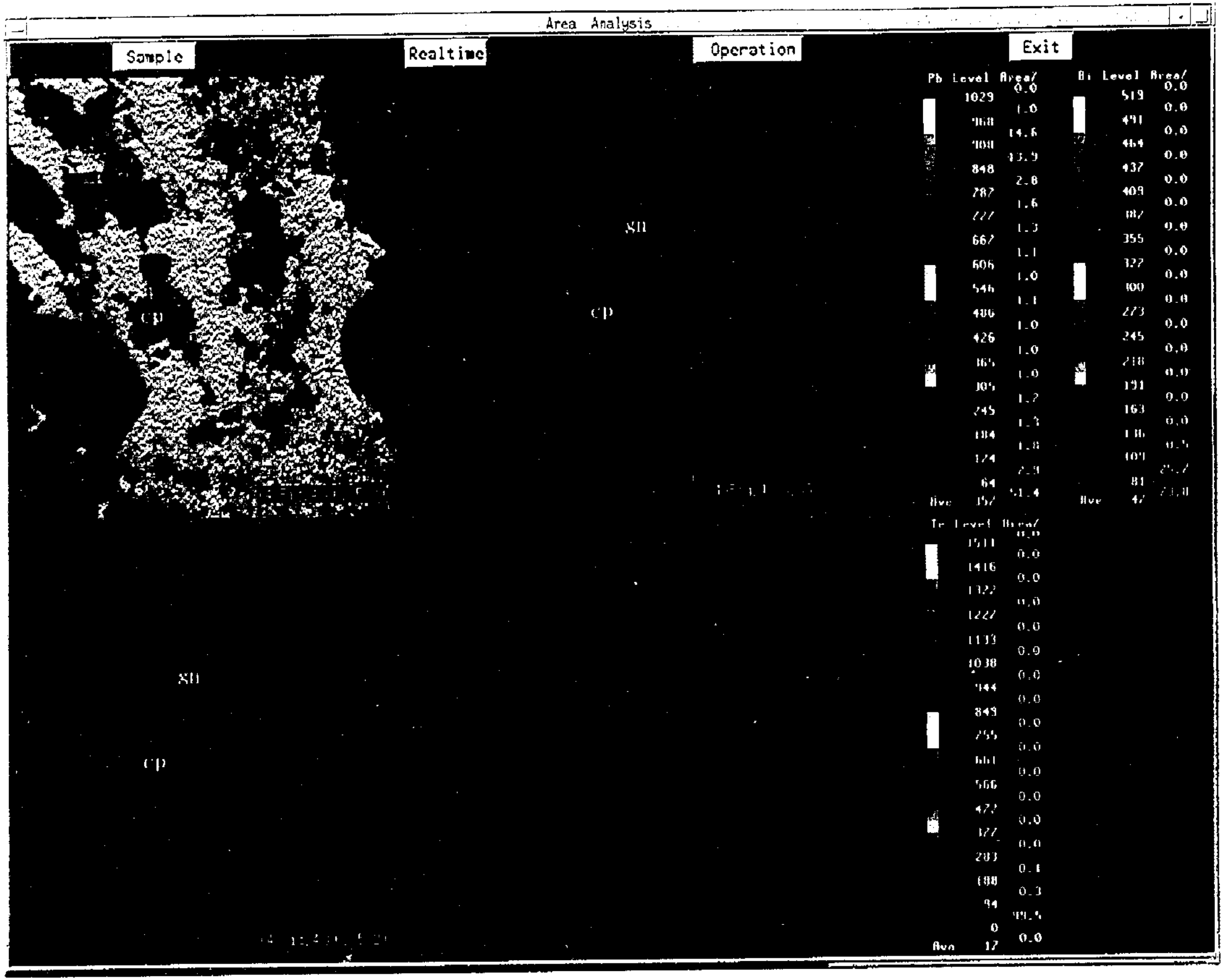

Area Analysis
Sample
Realtime
Operation
Exit
Fe 100 um
Zn 100 um
Sb 100 um
As 100 um


Area Analysis
Sample
Realtime
Operation
Exit
Fe Level Area/
Zn Level Area/
Sb Level Area/
As Level Area/
Ave
cp
th
sn
Fe 100 um
Zn 100 um
Sb 100 um
As 100 um

EPMA-4



EPMA 1


Area Analysis
Sample
Realtime
Operation
Exit
Pb Level Area/
Bi Level Area/