Drill Hole No	: MJP-5
Location	: SURMAI-E
Coordinate Point	: N=1,123,076 E=2,007,983
Depth	: 401.0m
Drilling Machine	: L-38

Elevation	: 1,549.57m
Inclination	: -60°
Core Recovery	: 97.28%
Term	: JUL 20 '88 ~ AUG 9 '88

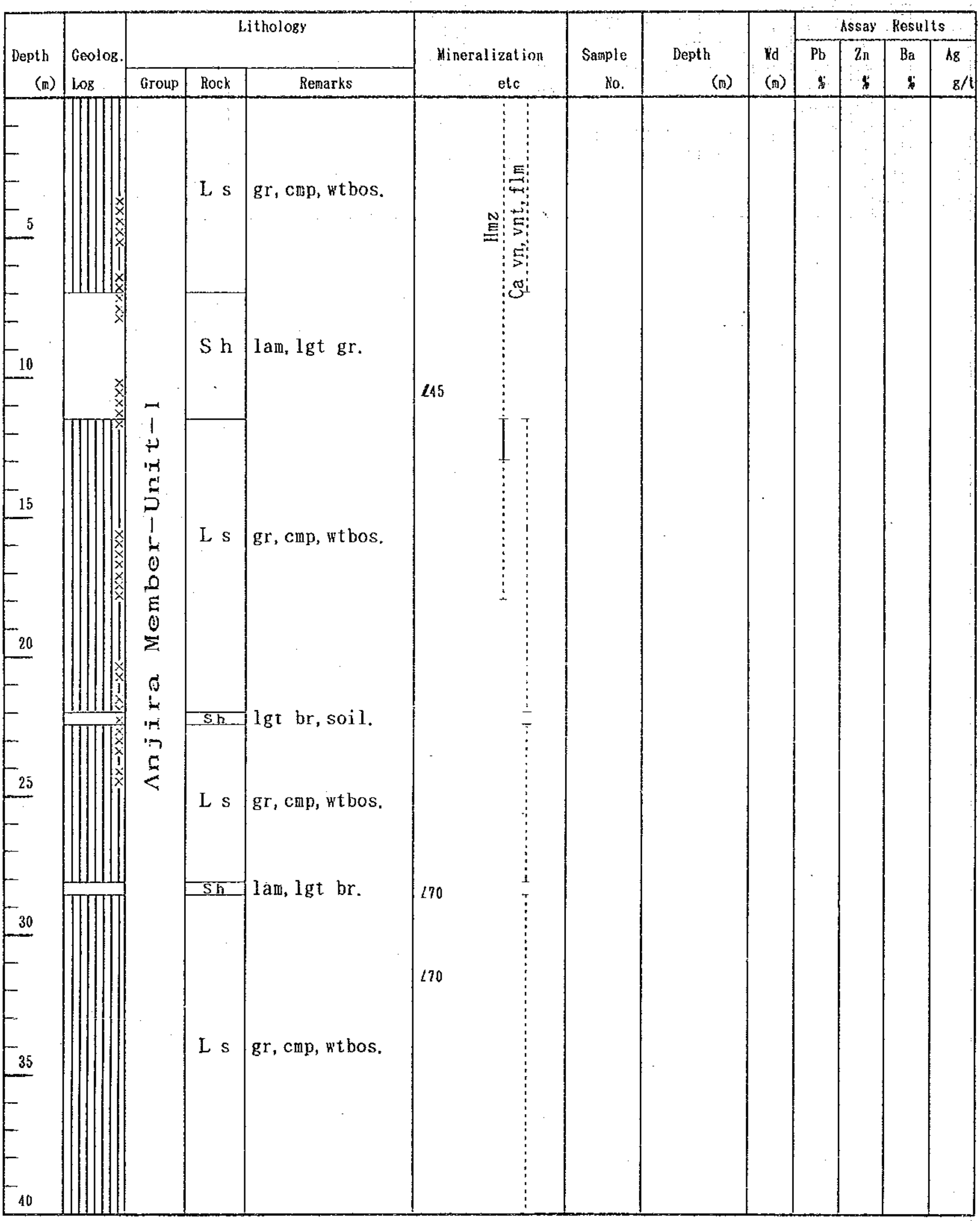


Fig. II-2-18 Drilling Columns of MJP-5

Depth (m)	Geolog. Log	Lithology: Group	Lithology: Rock	Lithology: Remarks	Mineralization etc	Sample No.	Depth (m)	Wd (m)	Assay Results: Pb %	Zn %	Ba %	Ag g/t
		Anjira Member-Unit-I	Ls	gr, cmp, wtbos.	Ca vn, vnt, flm							
			Sh	br, soil.								
45			Ls	gr, cmp, wtbos.	∠70, ∠70							
			Sh	br, soil.	∠70							
50, 55			Ls	gr, cmp, wtbos.	∠70, ∠70; Hmz							
			Sh	cmp~lam, dk gr.								
58.7			Ls	gr, cmp, wtbos.	∠70							
60		Loralai Member-Unit-IV	Sh	cmp, dk gr, lmy.	∠65							
			Ls	gr, cmp.								
65			Sh	cmp, dk gr, lmy.	∠70							
			Ls	gr, cmp, fos.	∠50							
70			Sh	cmp, dk gr~bk, cly	∠80							
			Ls	gr, cmp, fos.	∠90, ∠70, ∠70; Py dis							
75			Sh	cmp~lam, dk gr~bk.								
			Ls	gr, cmp, fos.	∠50							
			Sh	lam,bk,arg.	∠70							
			Ls	gr, cmp, fos.								
			Sh	lam,bk,arg.								
			Ls	gr,cmp,fos.								
80			Sh	cmp~lam,bk,arg~cly.								
			Ls	gr,cmp.								
			Sh	lam~cmp,bk,arg~cly.								
			Ls	gr, cmp, fos.								
			sh	cmp, bk. soil								
85			Ls	gr, cmp, fos. wtbos.								
			Sh	cmp.bk.								
			Ls	gr, cmp, fos.								
			Sh	cmp, bk.	∠60							
90			Ls	gr, cmp, wtbos, fos.								

Depth (m)	Geolog. Log	Lithology: Group	Lithology: Rock	Lithology: Remarks	Mineralization etc	Sample No.	Depth (m)	Wd (m)	Assay Results: Pb %	Zn %	Ba %	Ag g/t
95		Loralai Member－Unit－Ⅳ	L s	gr, cmp, wtbos, fos.	Hmz; Ca vn, vnt, flm; Py diss							
			S h	cmp, bk, arg~cly.								
100			L s	gr, cmp, wtbos.	∠75							
			S h	cmp~lam, bk~dk gr, cly.	∠50							
105			L s	gr, cmp, wtbos.								
			S h	lam~cmp, bk~dk gr.								
110			Ls	gr, cmp.	∠60							
			S h	lam, bk, arg~cly.	∠0~40							
			Ls	gr.								
115			S h	lam, bk, arg~cly.	∠75							
			L s	gr, cmp, fos.								
			S h	cmp~lam, bk~dk gr.								
120			L s	gr, mly. gr, cmp, wtbos.								
125			S h	cmp, dk gr.	∠60							
			L s	gr, cmp, wtbos.								
			S h	lam, bk.	∠70							
130			L s	gr, cmp, wtbos.								
			S h	cml~lam, bk.	∠75							
			L s	gr, cmp.	∠65							
135			S h	cmp~lam, bk.								
			L s	gr, cmp.								
			S h	cmp~lam, dk gr~bk.	∠80							
140			L s	gr, cmp, wtbos.	∠65							

Depth (m)	Geolog. Log	Lithology: Group	Rock	Remarks	Mineralization etc	Sample No.	Depth (m)	Wd (m)	Assay Results: Pb %	Zn %	Ba %	Ag g/t
		Loralai Member−Unit−IV	Sh	Sh.cmp~lam,bk,fos.	Ca vn, vnt, flm							
			Ls	gr, cmp, wtbos.	Py dis							
			Sh	lam,bk,cly								
			Ls	gr, cmp, wtbos.	∠60							
			Sh	cmp~lam, bk.								
			Ls	gr,cmp.	∠65							
145			Sh	cmp~lam, bk, arg~cly.	∠60							
			Ls	gr, cmp, wtbos.	∠45							
			Sh	cmp~lam, bk~dk gr.								
150					∠75							
			Ls	gr, cmp.	∠80							
			Sh	cmp, dk gr.	∠60							
			Ls	gr, cmp, wtbos.								
155			Sh	cly, bk~dk gr.								
			Ls	gr,cmp,wtbos,fos.								
			Sh	lam~cmp, dk gr~bk, fos. cly.	∠70							
160												
			Ls	gr, cmp, fos.	∠70							
			Sh	cmp~lam, dk gr~bk, fos.								
			Ls	gr, crs, fos.								
165			Sh	lam~cmp, bk~dk gr, fos.								
			Ls	gr,cmp,wtbos.								
			Sh	cmp, dk gr.								
170												
			Ls	gr, cmp, wtbos.								
175												
			sh	cmp, dk gr, cly.								
				fos.	∠50							
180												
			Ls	gr, cmp, crs, fos.								
			Sh	cmp, dk gr, fos.	∠55							
185			Ls	gr, cmp, wtbos, fos.	∠45							
			Sh	cmp, dk gr, fos,								
			Ls	gr, cmp, crs, fos.								
190												

Depth (m)	Group	Rock	Remarks	Mineralization etc
	L-IV	Ls		
		Sh	lam~cmp, bk, fos.	∠90, ∠75
		Ls	gr, brc.	∠30
	Loralai Member-Unit-III	Sh	lam, bk, sft, arg~cly.	∠40, ∠60
195		Sh / Ls	Sh:bk~dk gr, lam. Ls:gr, cmp.	∠10
		Sh	cmp~lam, dk gr~bk, fos, arg~cly.	∠70, ∠45
200		Ls	gr, cmp, crs, fos.	∠80
		Sh	cmp, dk gr~bk.	
		Ls	gr, cmp, fos.	∠80
		Sh	cmp~lam, bk, fos.	∠80
		Ls	gr, cmp.	∠25
		Sh	bk, arg.	
205		Ls	gr, fos.	∠40
		Sh	cmp~lam, bk, arg~cly.	∠60, ∠50
		Ls	gr, cmp, wtbos, fos.	∠40
		Sh	cmp~lam, bk, arg.	
		Ls	gr, cmp, wtbos.	∠30
210		Sh	brc. wt Ls, cly~arg. (shear zone)	
210.4	Loralai Member-Unit-II	Ls	gr, wtbos.	∠70
		Sh	lam, bk.	∠80
		Ls	gr, cmp, wtbos.	
		Sh	lam, bk~dk gr.	
		Ls	gr, crs.	
215.0		Sh	cmp~lam, bk, arg.	Sp dis, Ga dis, Si vnt
		Ls	gr, crs, wtbos.	∠90
216.8		Sh	lam~aln wt ml, gr~dk gr.	∠80, ∠80, ∠75; Py dis
220		Ls	gr, cmp.	
		Sh	lam, bk.	
		Ls	gr, cmp, wtbos.	
225		Sha	raosm, bk~gr.	∠80, ∠75, ∠80, ∠65; Ca vn, vnt, flm
230		Lsa	aolm, gr~dk gr.	∠60
		Sha	raosm, bk~gr.	
		Lsa	aolm, gr~dk gr.	Py dis
		Sh	cmp~lam, bk, arg.	∠75
		Ls	gr, cmp~lam.	∠70
235		Sh	cmp~lam, bk~dk gr, arg.	∠70, ∠65
238.1		Ls	gr, cmp, wtbos. Si, Ca vnt.	∠50
238.4				
240		Sha	raosm, gr~dk gr.	∠65

Sample No.	Depth (m)	Wd (m)	Pb %	Zn %	Ba %	Ag g/t
DH5-1	215.0~215.2	0.2	0.12	<0.01	<0.01	1.3
DH5-2	215.2~215.8	0.6	0.39	1.89	<0.01	3.7
DH5-3	215.8~216.8	1.0	0.09	0.40	<0.01	0.8
DH5-1~3	215.0~216.8	1.8	0.19	0.85	<0.01	1.8

Depth (m)	Geolog. Log	Group	Rock	Remarks	Mineralization etc	Sample No.	Depth (m)	Wd (m)	Pb %	Zn %	Ba %	Ag g/t
		L－Ⅱ	Sha	raosm, gr~dk gr.								
			Ls	gr, cmp.	∠65							
			Sha	raosm, gr~dk gr.	∠45 Si vnt							
244.8					∠65							
245.3		Loralai Member－Unit－I	L s	Si>Ca vnt.	Py dis							
				gr, cmp, wtbos.								
247.0				Si>Ca vnt.								
247.2			S h	lam~cmp, arg.	∠65 Ca vn, vnt, flm							
					∠50							
250			L s	gr, cmp, wtbos.								
252.2			S h	cmp, dk gr.								
252.7				Si>Ca vnt.								
255			L s	gr, cmp, wtbos.								
					∠65							
260			Sha	raosm, gr~dk gr.	∠70							
					∠75							
262.0			L s	Si>Ca vnt.								
262.2				gr, cmp, wtbos.								
265.1					∠65							
265.3				Si>Ca vnt.	∠75							
			Sha	raosm, gr~bk.	∠75							
270			L s	gr, cmp, wtbos.	Py dis							
			Sh	lam~cmp, dk gr.	∠50							
			Ls	gr, cmp, wtbos.	∠60							
275.6			S h	cmp~lam, dk gr.	∠60							
276.0			L s	Si>Ca vnt.	∠60							
					∠30							
280				gr, cmp, wtbos.								
					∠75							
			Lsa	aolm, gr~dk gr.	∠70							
			S h	lam~cmp, bk, fos.	∠70							
285			Ls	gr, crs, fos.	∠80							
			Sha	raosm, gr~dk gr.	∠75							
			Ls	gr, crs, fos.								
			Sh	lam, dk gr.	∠75							
			L s	gr, cmp, wtbos.	∠70							
			S h a	raosm, gr~dk gr.								
			S h	lam, bk.	∠70							
290			L s	gr, cmp, wtbos.	∠75							

Depth (m)	Geolog. Log	Lithology: Group	Lithology: Rock	Lithology: Remarks	Mineralization etc	Sample No.	Depth (m)	Wd (m)	Assay Results: Pb %	Assay Results: Zn %	Assay Results: Ba %	Assay Results: Ag g/t
		Loralai Member-Unit-I	L s	gr, cmp, wtbos.	∠75, ∠80; Ca vn, vnt, flm							
			Lsa	aolm,gr.	∠80							
			Sh	lam,bk.								
295			L s	gr, cmp, wtbos.	∠75, ∠70							
			Lsa	aolm, gr~dk gr.	∠70, ∠75							
			Ls	gr, cmp, wtbos.	∠70							
			Lsa	aolm, gr~dk gr.	∠75							
			Sh	cmp~lam, dk gr.								
300			L s	gr, cmp, wtbos.	∠75, ∠75; Py dis							
			Lsa	aolm, gr~dk gr.	∠70							
			Sh	lam~cmp, bk.								
			L s	gr, cmp, wtbos.	∠60							
			S h	bk, brc.	∠75							
305			L s	gr, cmp, wtbos.	∠75							
			Sh	lam,bk.	∠75							
			L s	gr, cmp, wtbos.	∠70, ∠70							
310			S h	cmp~lam, dk gr~bk.								
			L s a	aolm.	∠90							
315			S h	aln of {Sh(dk gr.0.1~2.0mm) Ls(sdy.0.1~1.0mm)}	∠70, ∠80, ∠75, ∠70, ∠80, ∠85, ∠60							
320			L s	gr, cmp, wtbos.	∠90							
			S h	cmp~lam, dk gr.	∠60							
			L s	gr, cmp, wt raosm.	∠90; Py dis							
			Sha	raosm, brc. (shear zone)	∠75, ∠90							
325			L s	gr, cmp, wtbos.	∠70, ∠80							
330					∠80, ∠85							
			Sha	raosm, gr~lgt gr.	∠75							
			L s	lgt gr, cmp.	∠70							
335					∠40							
			Sha	raosm. aln of {Sh(dk gr,0.1~1.0mm) Ls(sdy,gr,0.1~1.0mm)}	∠70, ∠80, ∠60							
			Sh	lam,bk,arg.	∠70							
			L s	gr, bed, sdy.								
340				Lsa.	∠80							

Depth (m)	Geolog. Log	Lithology: Group	Lithology: Rock	Lithology: Remarks	Mineralization etc	Sample No.	Depth (m)	Wd (m)	Assay Results: Pb %	Assay Results: Zn %	Assay Results: Ba %	Assay Results: Ag g/t
		Loralai Member-Unit-I	Lsa	aolm. aln of (Ls(gr, 0.1~10mm) ml(dk gr, 0.1~5mm))	Ca vn, vnt, flm							
			Ls	gr, sdy.	∠80							
345				Sha, raosm, dk gr~gr.	∠85							
				Sh, lam, bk~dk gr.								
			Sha	raosm, dk gr.								
			Lsa	aolm, gr~dk gr.								
			Ls	gr, bed, sdy.								
350			Sha	raosm, aln of (Ls(sdy, lgt gr, 1~2mm) Sh(bk, 1~2mm))	∠80 ∠80 ∠85 ∠80 Py dis							
			Sh	lam~cmp, bk, arg.	∠80							
			Lsa	aolm.								
			Sh	lam~cmp, dk gr, arg.	∠85							
			Lsa	aolm.	∠85							
355			Ls	gr, crs, sdy.	∠85							
			Sha	raosm, lgt gr~bk	∠85 ∠85							
			Lsa	aolm.	∠85							
			Sha	raosm, lgt gr~bk	∠85 ∠85							
360			Sh	lam~cmp, bk, arg.								
			Ls	gr, bed.	∠90 ∠85							
	oo		Sh	lam, bk~dk gr, fos.	∠85 ∠80							
365			Sha	raosm~Sh, dk gr.	∠85 ∠80 ∠85 ∠60							
370												
			Sh	bed, gr.	∠65							
375			Sha	raosm~Sh, dk gr.	∠70 ∠80 ∠70 ∠85 ∠75 ∠85 ∠70							
380												
			Ls	gr~dk gr, arg, sft, cmp.	∠80							
385			Ls	gr, sdy.	∠75							
			Sha	raosm, lgt gr~bk	∠40							
390												

Depth (m)	Geolog. Log	Lithology: Group	Lithology: Rock	Lithology: Remarks	Mineralization etc	Sample No.	Depth (m)	Wd (m)	Assay Results: Pb %	Zn %	Ba %	Ag g/t
395		Loralai Member -Unit-1	Sha	raosm, lgt gr~bk.	∠60 ∠70 ∠45 ∠70 ∠60 ∠40 ∠40 Ca vn, vnt, flm							
400												
401			L s	gr~dk gr, arg, sft, cmp.								

Drill Hole No	: MJP-6		
Location	: SURMAI-F	Elevation	: 1,549.57m
Coordinate Point	: N=1,123,076 E=2,007,983	Inclination	: -30°
Depth	: 401.0m	Core Recovery	: 97.51%
Drilling Machine	: L-38	Term	: JUN 29 '88 ~ JUL 18 '88

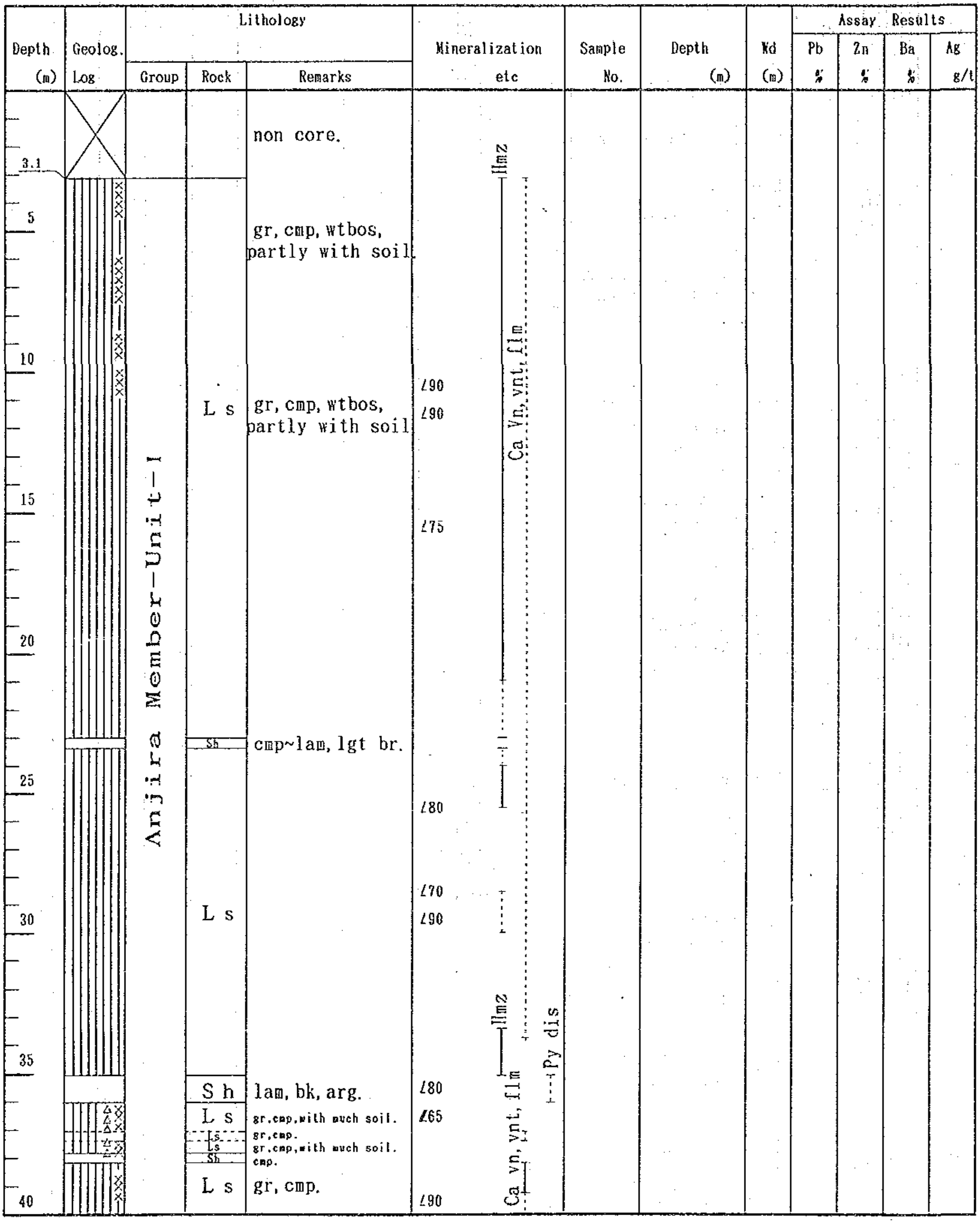


Fig. II-2-19 Drilling Columns of MJP-6

Depth (m)	Geolog. Log	Lithology: Group	Lithology: Rock	Lithology: Remarks	Mineralization etc	Sample No.	Depth (m)	Wd (m)	Assay Results: Pb %	Zn %	Ba %	Ag g/t
		Λ-I		Sh.lam,dk gr.								
			L s	Ls.gr,cmp,with much soil								
				gr,cmp.	∠70							
				Sh.cmp~lam,grs br.								
			L s	gr, cmp.								
45												
			Sh	cmp~lam,grs br.	∠70							
			Ls	gr,cmp.								
		Loralai Member-Unit-IV			∠75							
			S h	cmp~lam, dk gr.								
50												
			S h	lam, bk, arg.								
			L s	gr, cmp, fos.	∠80							
			S h	lam, bk, arg, fos. partly mly~Ls. fos.	∠75							
55					∠75							
					∠65							
					∠65							
			L s	gr, cmp.	∠80							
			S h	lam, bk, arg, fos.	∠55							
			L s	gr, cmp, wtbos.								
60			Sh	lam,bk,arg.	∠50							
			L s	gr, cmp, wtbos.	∠70							
			Sh	lam, bk, arg.	∠65							
			L s	gr, cmp, fos.	∠60							
			S h	lam~cmp, bk~dk gr.	∠65							
65			L s	gr, cmp.								
				Sh. bk, cly.	∠80							
			L s	gr, cmp.								
				Sh. lam, bk.								
70												
			L s	gr, cmp. wtbos.								
75												
			S h	cmp~lam, dk gr~bk.	∠60							
			L s	gr, cmp, wtbos. fos.								
80												
			S h	cmp, gr~dk gr. fos.								
85			L s	gr, wybos.								
			S h	lam, dk gr~bk, arg~cly.	∠65							
					∠55							
			L s	gr, cmp.	∠75							
				lam, bk, arg~cly.	∠75							
			sh	gr, cmp.								
90			Ls / Sh	cmp, dk gr, cly	∠55							

Mineralization labels: Hmz; Ca vn, vnt, flm; Py dis

Depth (m)	Geolog. Log	Group	Rock	Remarks	Mineralization etc	Sample No.	Depth (m)	Wd (m)	Pb %	Zn %	Ba %	Ag g/t
		Loralai Member-Unit-IV	Sh	cmp,dk gr,cly,fos.	∠60							
			Ls	gr, cmp.	∠70							
			Sh	cmp~lam, dk gr.	∠60							
95			Ls	gr, wtbos.	∠70							
			Sh	cmp, dk gr.	∠80							
100			Ls	gr, cmp, wtbos.	∠80							
			Sh	cmp,dk gr.	∠80							
			Ls	gr,cmp.								
			Sh	cmp,dk gr.	∠90							
			Ls	gr,cmp.								
105			Sh	lam~cmp, bk~dk gr.	∠70							
			Ls	gr, cmp.								
110			Sh	cmp~lam, bk~dk gr.	∠90							
			Ls	gr, cmp.								
115			Sh	lam, bk~dk gr.								
			Ls	gr, cmp.	∠85							
			Sh	lam, bk~dk gr.	∠60							
			Ls	gr, cmp.	∠75							
120			Sh	cmp~lam, dk gr.	∠60, ∠45, ∠65							
			Ls	gr, cmp.								
			Sh	cmp, gr~dk gr.	∠70							
125			Ls	gr~lgt gr,cmp,wtbos.	∠70							
			Sh	lam,bk,arg.	∠75							
			Ls	gr,cmp,wtbos.	∠70							
			Sh	lam,dk gr~bk,arg.	∠80							
			Ls	gr,cmp,wtbos.								
			Sh	lam,bk~dk gr,arg.	∠80							
			Ls	gr,cmp.	∠80							
130			Sh	lam,dk gr~bk,arg~cly.	∠75							
			Ls	gr, cmp.	∠80							
			Sh	lam,dk gr~bk,arg~cly.	∠70							
			Ls	gr,cmp.								
135			Sh	lam, bk~dk gr, arg~cly. fos.	∠70, ∠80, ∠80							
			Ls	gr,cmp,wtbos.								
			Sh	lam,dk gr,fos.	∠70							
			Ls	gr,cmp,wtbos.								
			Sh	cmp~lam,dk gr~bk, arg,fos.								
140			Ls	gr,cmp,wtbos.	∠70							
			Sh	lam,bk,arg~cly.								

Mineralization etc (range bars): Hmz; Ca vn, vnt, flm; Py dis (approx. 92–102 m); Py dis (approx. 115–118 m); Hmz (approx. 120 m); Ca vn, vnt, flm (approx. 125–130 m)

Depth (m)	Geolog. Log	Lithology: Group	Lithology: Rock	Lithology: Remarks	Mineralization etc	Sample No.	Depth (m)	Wd (m)	Assay Results: Pb %	Assay Results: Zn %	Assay Results: Ba %	Assay Results: Ag g/t
		Loralai Member－Unit－IV	Ls	gr,cmp,wtbos.	∠60 Py dis, Sp dis, Ca vn, vnt, flm							
			Sh	lam~cmp, bk~dk gr,arg.	∠50 ∠30 ∠50 ∠70							
145			Ls	gr,cmp,wtbos. Sh,cmp~lam,dk gr~bk.	∠60							
				Ls,gr,wtbos.	∠60							
			Sh	lam, bk, arg~cly. Sp,Py dis in Ca vn(149.5m).	∠75							
150			Ls	gr,cmp,wtbos.	∠55							
			Sh	lam,bk.	∠65 ∠60							
			Ls	gr, cmp, wtbos.	∠80							
155			Sh	lam,bk~dk gr.	∠50							
			Ls	gr,cmp,wtbos.	∠60							
			Sh	lam~cmp, bk~dk gr.	∠80							
			Ls	gr.cmp.wtbos.fos.	∠45							
			Sh	cmp,dk gr.	∠80							
160			Ls	gr, cmp, wtbos.	∠60							
			Sh	lam, dk gr~bk.	∠70							
			Ls	gr, wtbos.								
			Sh	cmp~lam,dk gr~bk,fos.								
			Ls	gr, wtbos.	∠75							
			Sh	cmp~lam,dk gr~bk,arg. fos(coral φ 1cm).								
165			Ls	gr,cmp,wtbos.	∠75							
			Sh	lam,bk,arg.	∠50							
			Ls	gr,wtbos.								
			Sh	lam,bk,arg,fos.	∠70 Sp dis, Ga dis, Si vn, vnt, dis, Py dis							
168.5		Loralai Member－Unit－II	Ls	gr.brc.mixed wh Sh. Si,Ca vnt+Sp dis.		DH6－1	168.5~169.5	1.0	0.13	4.26	<0.01	2.0
170			Sh	cmp.dk gr.wh Si vnt.		DH6－2	169.5~170.3	0.8	<0.01	0.04	<0.01	0.5
			Ls	gr.wybos. Si>Ca vn~vnt +Sp≫Ga sg dis.	∠70	DH6－3	170.3~172.4	2.1	1.81	13.90	<0.01	16.8
			Ls	gr.wtbos.Sp>Ga wk dis.		DH6－4	172.4~173.3	0.9	0.97	0.57	<0.01	7.5
			Sh	lam,bk,arg.	∠80	DH6－5	173.3~173.9	0.6	0.11	0.04	<0.01	1.0
175			Ls	gr,wtbos.Si vnt+Ga dis	∠50	DH6－6	173.9~174.6	0.7	0.82	2.96	<0.01	5.8
			Ls	gr,wtbos.Si>Ca vny. Ga>Sp dis.	∠90	DH6－7	174.6~176.2	1.6	1.22	0.51	<0.01	11.0
			sh	bk~dk gr,cly.	∠80	DH6－8	176.2~176.8	0.6	0.14	0.03	<0.01	1.0
			Ls	gr,wtbos. Si>Ca ntwk. Sp,Ga wk dis.		DH6－9	176.8~179.2	2.4	0.37	0.69	<0.01	3.8
180			sh	lam,bk,cly.		DH6-10	179.2~179.4	0.2	<0.01	0.01	<0.01	<0.5
			Ls	gr,wtbos. Ca≫Si vn~ntwk.		DH6-11	179.4~180.8	1.4	0.09	1.11	<0.01	0.8
				non core.		—	180.8~181.3	0.5	—	—	—	—
			Sh	lam,bk,cly.	∠70	DH6-12	181.3~181.5	0.2	0.02	0.01	<0.01	0.8
			Ls	gr,wtbos,fos. Ca Si vnt+Sp dis.		DH6-13	181.5~182.4	0.9	0.31	3.84	<0.01	2.5
			Ls	gr,wtbos.		DH6-14	182.4~184.8	2.4	0.02	0.04	<0.01	<0.5
185					∠70	DH6-15	184.8~185.6	0.8	0.02	0.02	<0.01	<0.5
			Sh	lam,dk gr~bk,arg.		DH6-16	185.6~186.0	0.4	0.06	1.22	<0.01	0.5
			Ls	Ca vn,Si vnt+Sp dis.		DH6-17	186.0~186.6	0.6	0.34	20.90	<0.01	8.5
			Ls	Sp sg dis+Si dis.								
			Ls	ge,wtbos. Si vnt+Sp,Ga dis.	∠65	DH6-18	186.6~187.8	1.2	0.29	2.90	<0.01	3.0
						DH6-19	187.8~188.4	0.6	<0.01	0.04	<0.01	<0.5
			Sh	cmp,gr.		DH6-20	188.4~188.8	0.4	0.66	0.24	<0.01	5.8
			Ls	gr,brc,Si>Ca vnt.								
			Sh	lam,bk.		DH6-21	188.8~189.3	0.5	0.05	0.01	<0.01	1.0
190			Ls	gr,wtbos~brc.		DH6-22	189.3~190.3	1.0	1.57	0.50	<0.01	14.0

Depth (m)	Group	Rock	Remarks	Mineralization etc
	Loralai Member-Unit-II	Ls	Ls.Si>Ca vnt,Ga dis.	
		Ls	gr,wtbos.	
		Sh	lam,bk,cly.	∠70
		Ls	gr,wtbos. Ca,Si vnt+Sp≫Ga dis.	∠70
		Sh	cmp,dk gr.	
195		Ls	gr,wtbos. Ca,Si vnt+Ga dis.	∠70
		Sh	Br.	
		Ls	gr,wtbos.Ca≫Si vn. Ga dis.	∠70
		Sh	cmp~lam,dk gr,arg.	
		Ls	Si,Ca vnt+Ga dis.	
		Ls	gr~lgt,cmp,wtbos.	∠80
200		Ls	Si,Ca vnt+Sp dis.	∠75
		Ls	gr~lgt gr,cmp,wtbos.	
201.1		Sh	lam,dk gr~bk,arg.	∠80
		Ls	gr,wtbos,fos. Ca Si vnt.	∠70
		Sh	lam,dk gr~bk,arg.	∠75, ∠85
205		Ls	gr,dc,crs,fos.	∠80
		Ls	lgt gr,wtbos.	∠85
		Sh	lam,dk gr~bk.	∠80
		Ls	Ls.gr,olc,crs,fos.	
		Sha	raosm,lgt gr~bk.	∠80
		Ls	gr,wtbos.	
		Sha	raosm,lgt gr~bk.	∠80
210		Ls	gr,cmp.	∠90
		Sha	raosm,gr~bk.	∠80
		Ls	gr,crs.	∠85
		Sha	raosm.	
		Ls	gr, cmp, wtbos.	∠85
		Sha	raosm, gr~dk gr.	∠85
		Ls	crs.	
215		Sh	lam, bk.	∠90
		Ls	gr, crs, fos.	∠85
		Ls	aolm.	∠85
		Ls	gr, cmp, wtbos.	∠80
		Sh	lam, bk.	∠80
220		Sha	raosm.	∠85, ∠80, ∠80
225		Ls	gr, cmp, wtbos.	∠80
230, 235		Sha	raosm, gr~dk gr.	∠70, ∠80, ∠80
240		Ls	gr, crs, fos.	

Mineralization: Sp dis; Ga dis; Si vn, vnt, dis; Py dis; Ca vn, vnt, flm

Sample No.	Depth (m)	Wd (m)	Pb %	Zn %	Ba %	Ag g/t
DH6-23	190.3~191.5	1.2	0.05	0.01	<0.01	<0.5
DH6-24	191.5~191.8	0.3	0.01	0.01	<0.01	1.0
DH6-25	191.8~193.8	2.0	0.10	1.59	<0.01	0.8
DH6-26	193.8~194.0	0.2	0.18	0.01	<0.01	2.0
DH6-27	194.0~196.2	2.2	0.44	0.06	<0.01	3.3
DH6-28	196.2~196.4	0.2	0.10	0.01	<0.01	0.5
DH6-29	196.4~197.5	1.1	0.20	0.05	<0.01	1.3
DH6-30	197.5~197.9	0.4	<0.01	1.32	0.02	<0.5
DH6=31	197.919S.1	0.2	<0.01	0.12	<0.01	<0.5
DH6-32	198.1~199.3	1.2	0.03	0.11	<0.01	<0.5
DH6-33	199.3~199.7	0.4	<0.01	4.79	<0.01	<0.5
DH6-34	1999.7~200.2	0.5	<0.01	0.06	<0.01	<0.5
DH6-35	200.2~201.1	0.9	<0.01	0.02	<0.01	<0.5
DH6-36	201.1~201.1	1.0	<0.01	<0.01	<0.01	<0.5
DH6-1~36	168.5~202.1	33.6	0.38	1.99	<0.01	3.7

Depth (m)	Geolog. Log	Group	Rock	Remarks	Mineralization etc	Sample No.	Depth (m)	Wd (m)	Assay Results Pb %	Zn %	Ba %	Ag g/t
		Loralai Member-Unit-II	Ls	gr, crs, fos.	∠70							
			Sha	raosm, gr~dk gr.	∠85 ∠85							
			Ls	gr, cmp.	∠80 Ca vn, vnt, flm							
245			Sh	lam, bk.	∠80							
			Ls	gr, cmp, wtbos.	∠80 ∠80							
250			Sha	raosm, dk gr~gr.	∠75							
252.8		Loralai Member-Unit-I			∠80 Py dis							
255			Ls	gr, cmp, wtbos.	∠85							
			Sh	lam, bk, arg.	∠80							
260			Ls	gr, cmp, wtbos.	∠80							
265					∠80							
			Lsa	aolm.	∠80							
			Ls	gr, cmp, wtbos.	∠80							
			Lsa	aolm.	∠60 Ca vn, vnt, flm							
270			Ls	gr, cmp, wtbos.	∠80							
			Lsa	aolm, gr~bk.	∠75							
275			Sha	raosm, dk gr~bk.	∠80							
			Ls	gr, cmp~lam, wtbos.	∠65							
			Sha	raosm, dk gr.	∠80							
			Ls	gr, cmp.	∠80							
280			Sha	raosm, dk gr.	∠75 ∠80							
285			Ls	gr, cmp, wtbos.	∠75							
			Lsa	aolm.	∠80							
			Sha	raosm, dk gr.	∠80 Py dis							
			Ls	crs, fos, wtbos.	∠80							
			Sha	raosm. dk gr.								
			Sh	lam, bk.								
290			Ls	gr. cmp. wtbos.								

Depth (m)	Geolog. Log	Lithology Group	Rock	Remarks	Mineralization etc	Sample No.	Depth (m)	Wd (m)	Assay Results Pb %	Zn %	Ba %	Ag g/t
		Loralai Member-Unit-1	Ls	gr, cmp, wtbos.	Ca vn, vnt, flm							
			Sha	raosm.								
			Sh	lam, bk, wtbos.								
			L s	gr, cmp, wtbos.								
295			S h	lam, bk, arg.								
			L s	gr, cmp, wtbos.								
300			Lsa	aolm, gr~dk gr.	Py dis							
			S h	lam, bk, arg.								
			L s	gr, cmp, wtbos.								
			Lsa	aolm, gr~dk gr.								
305			S h	lam, bk, arg.								
			L s	gr, cmp, wtbos.								
			S h	lam, bk, arg.								
			L s	gr, cmp, wtbos.								
310			Sh	lam~cmp, bk.								
			L s	gr, cmp, wtbos.								
			S h	lam~cmp, bk.								
315			Lsa	aolm.								
			S h	lam, bk, arg.								
			Lsa	aolm, gr~dk gr.								
			L s	gr, cmp.								
320			Lsa	aolm, gr~dk gr.								
			L s	gr, cmp, wtbos.	Py dis							
325			S h	lam, bk.	Si dis							
326.7			L s	gr, lam. Si, Ca vnt.		DH6-37	326.7~327.1	0.4	<0.01	<0.01	0.23	<0.5
327.1			Sha	raosm.								
			Ls	gr, cmp.								
			Lsa	aolm.								
330			S h	lam, bk.								
			Lsa	aolm, gr.								
335			L s	gr, cmp, wtbos.	Py dis							
			Sh	lam, bk.								
			L s	gr, cmp, wtbos.								
340			S h	lam, bk.								

Depth (m)	Geolog. Log	Lithology: Group	Lithology: Rock	Lithology: Remarks	Mineralization etc	Sample No.	Depth (m)	Wd (m)	Assay Results: Pb %	Zn %	Ba %	Ag g/t
		LOralai Member--Unit-I	Lsa	Sh. lam, bk. aolm.	∠50 ∠50 ∠45 Py dis							
345			L s	gr, cmp, wtbos.	∠40							
			Lsa	aolm.	∠60 ∠50 ∠50							
350			L s	gr, cmp, wtbos.	Ca vn, vnt, flm							
355					∠45							
			Lsa	aolm, gr~dk gr.	∠50							
			L s	gr, cmp, wtbos.	∠55							
360			Lsa	aolm, gr~dk gr.	∠60 ∠50							
365			L s	gr, cmp, wtbos.	∠45 ∠50 ∠45							
370					∠50							
			S h	lam, dk gr~bk.	∠60 ∠55 Ca vn, vnt, flm							
375			L s	gr, cmp, wtbos.	∠55 ∠50							
380			Sha	raosm, dk gr~gr.	∠60 ∠60 ∠60 ∠45							
			L s	gr, cmp, wtbos.	∠45 Py dis							
385			S h	lam, bk, arg, fos.	∠50							
			L s	gr, cmp~bed.	∠45 ∠45							
390			Sha	raosm, dk gr~bk.	∠45							

Depth (m)	Geolog. Log	Lithology Group	Rock	Remarks	Mineralization etc	Sample No.	Depth (m)	Wd (m)	Assay Results Pb %	Zn %	Ba %	Ag g/t
		Loralai Member-Unit-1	Sha	raosm, dk gr~bk.	∠45							
			Ls	gr, crs, br.	Ca vn, vnt, flm; Py dis							
395			Sha	raosm, dk gr~bk.	∠45							
			L s	gr, cmp~bed.	∠45 ∠50							
400			Sha	raosm, dk gr~bk.	∠45							
401												

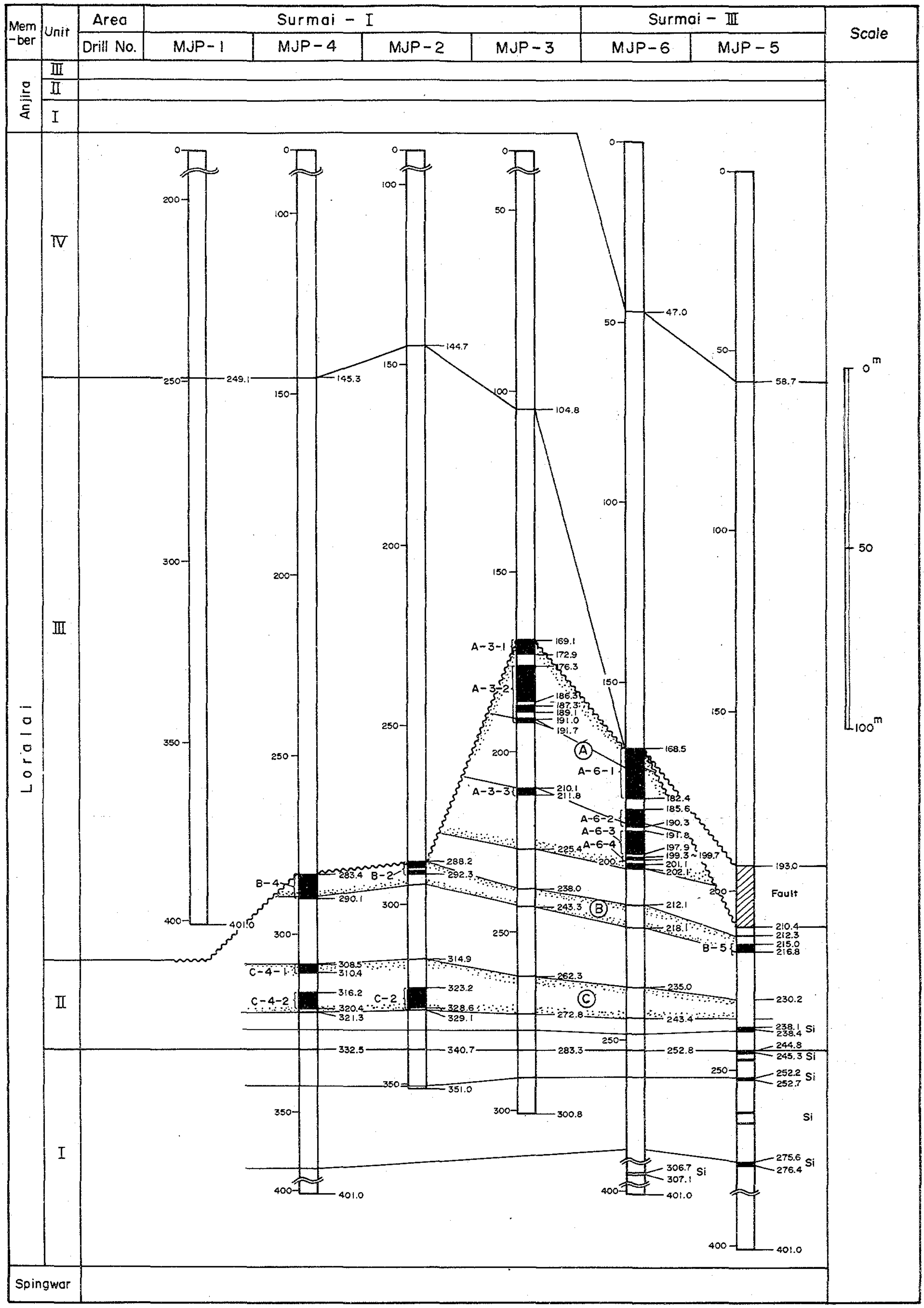


Fig. II-2-20 Geological Correlation Column by Drill Records at the Srumai Area

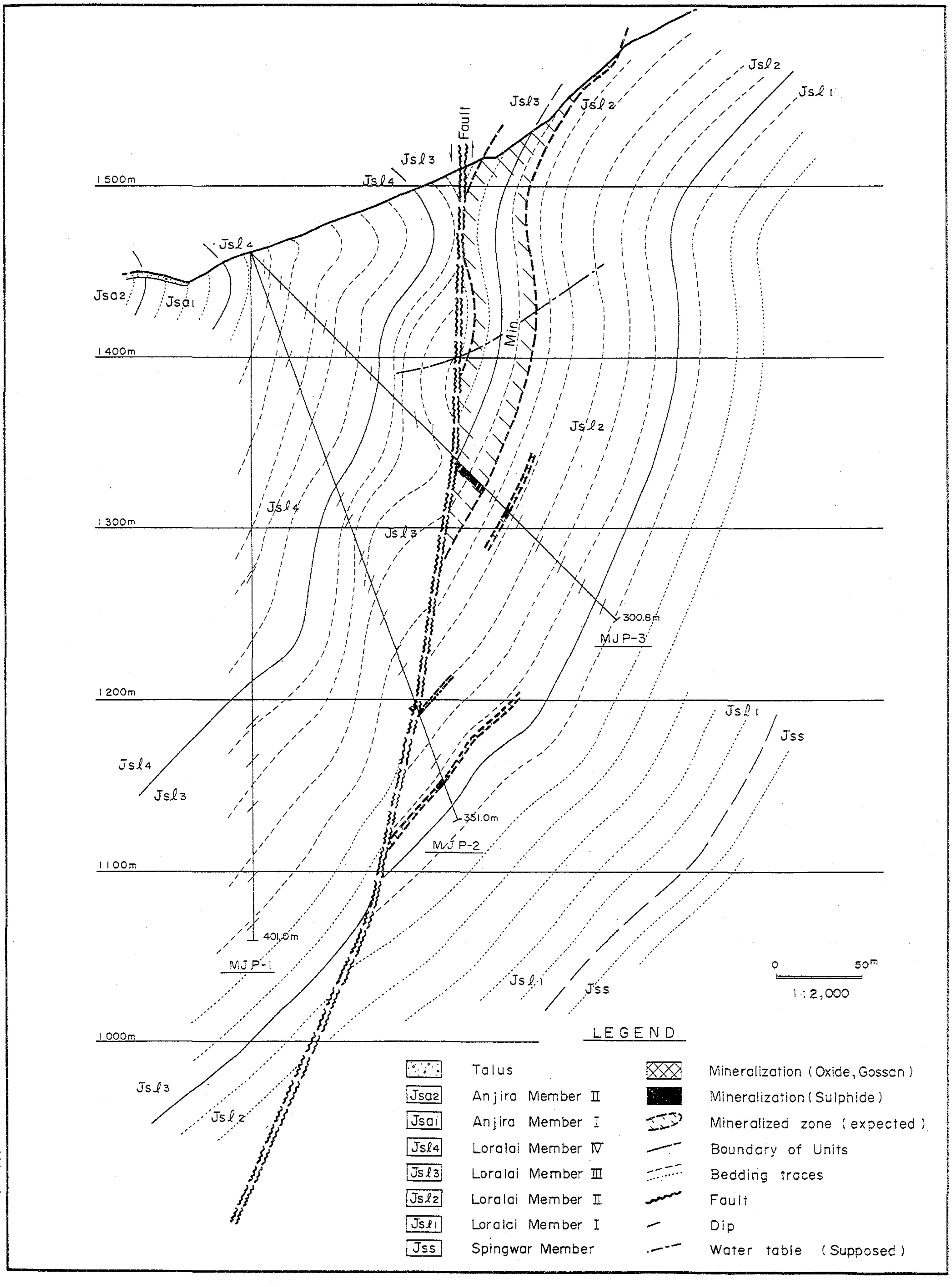


Fig. II-2-21 Geological Profile of Surmai-I (MJP-1~MJP-3)

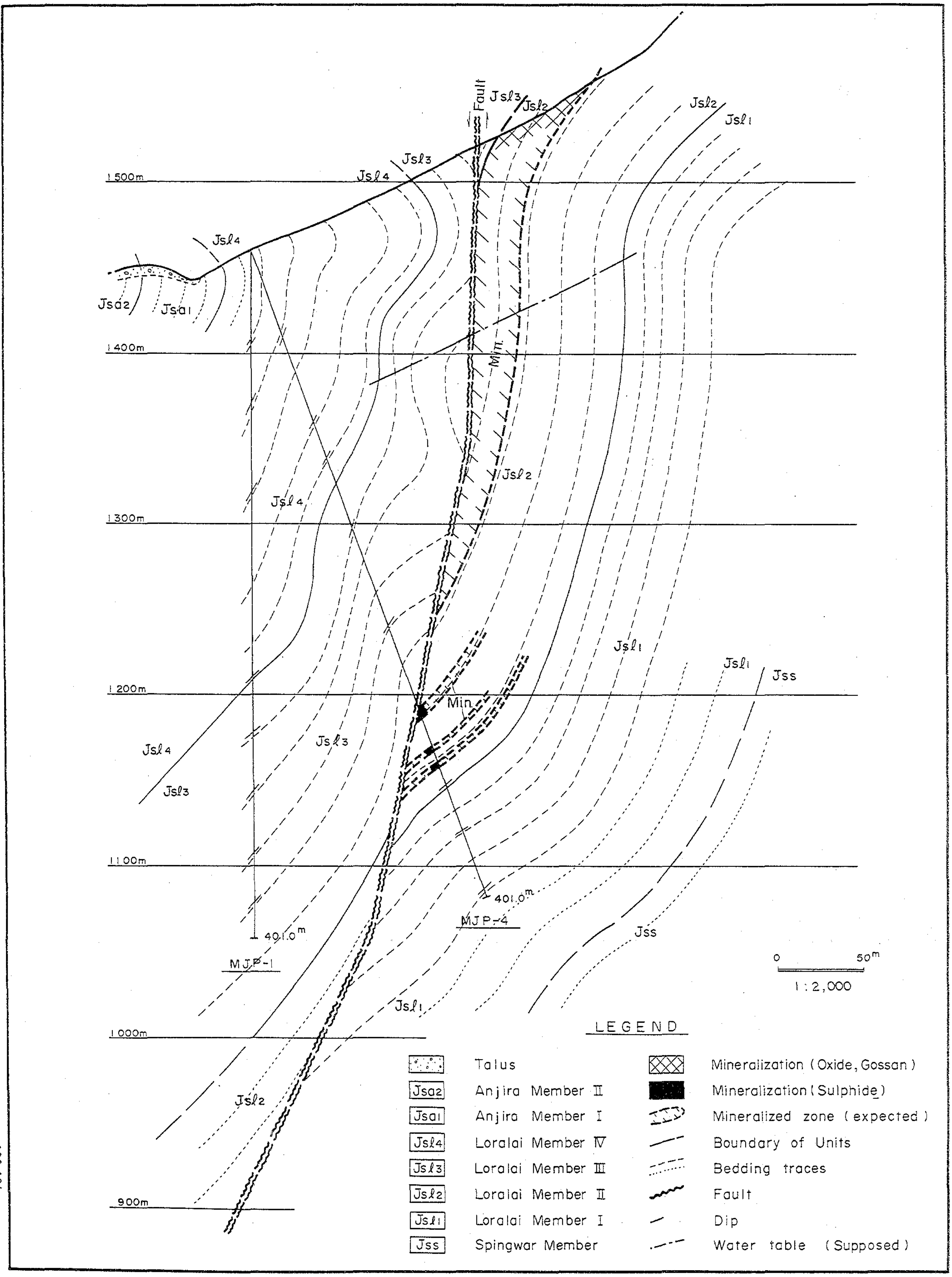


Fig. II-2-22 Geological Profile of Surmai-I (MJP-1, MJP-4)

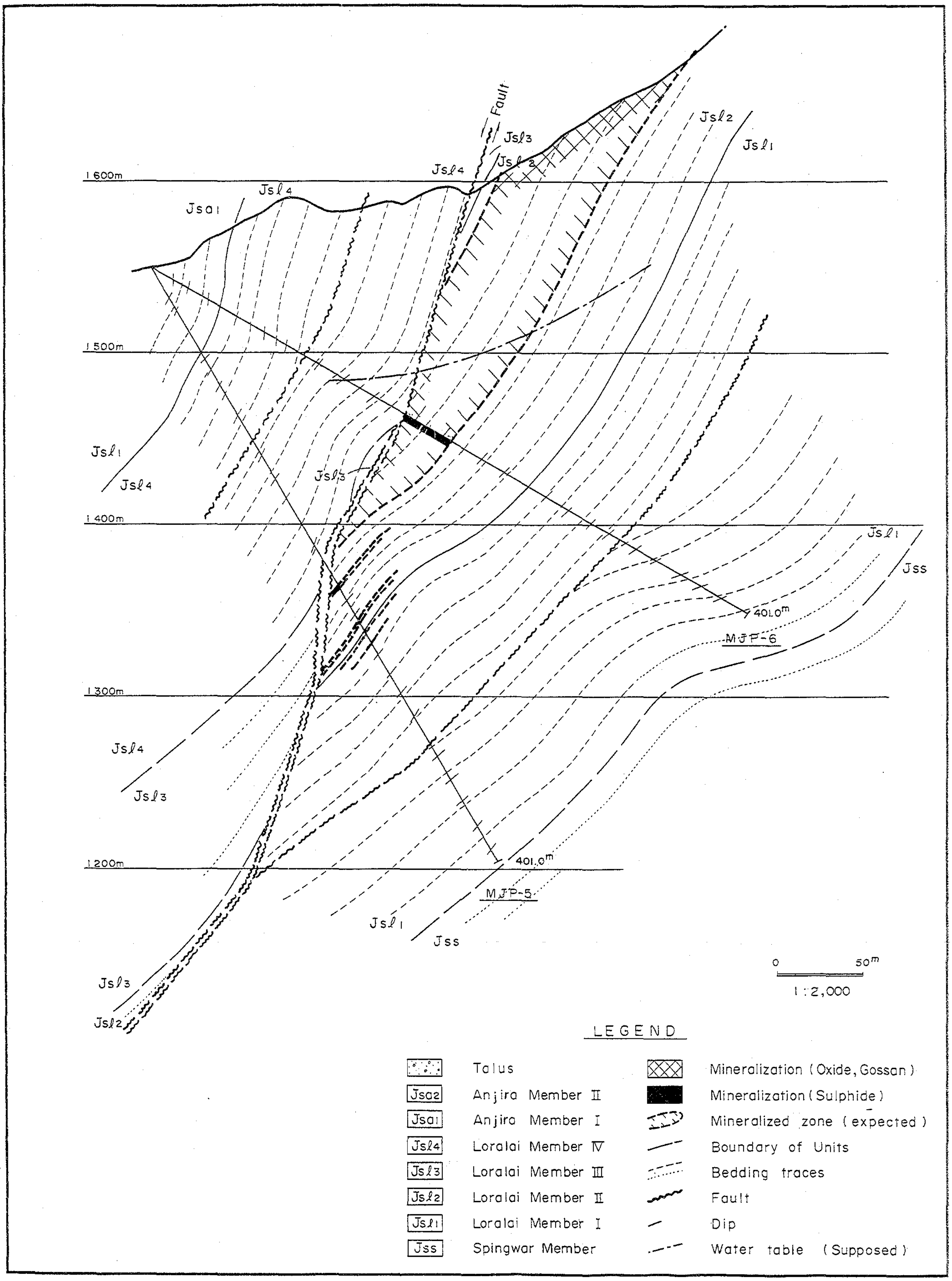


Fig. II-2-23 Geological Profile of Surmai-III (MJP-5~MJP-6)

2 - 4 - 1 - 4 Geologic structure

(1) Surmai-I

The geological profile by drilling for this area is shown in Figure II-2-21~II-2-22 and PL.II-2-2~II-2-3. There are two significant geological characteristics of this area seen from these sections.

a. The beds which constitute the Loralai Units-I~IV dip approximately 70° westward, bend gently and the dip becomes gentler with depth. The above structure was inferred from the correlation of each bed and the cross angle. The cross angle of the Loralai Units-I and II in MJP-2,3 and 4 located below the fault, which will be described later, is very stable and shows that the geologic structure of the vicinity is not disturbed. The cross angle of the Loralai Units-III and IV located above the fault locally varies considerably and indicate the local disturbance of geologic structure and the existence of small faults.

b. In the central part, there is a westward steeply dipping normal fault whose displacement is 300~400 m. This fault was known from surface survey, but the existence, the shape and the exact location were confirmed by the present survey. The correlation of the units above and below this fault among the drill holes is very clear as shown in the cross section, and thus its existence is confirmed. The displacement was estimated from the position of the boundary of Units-II and III on both side of the fault in the cross section.

(2) Surmai-III

There are two structural characteristics of this area interpreted from the geological profiles (Fig.II-2-23 and PL.II-2-4).

a. The beds of the Loralai Unit-I and Anjira Unit-I dip westward at 60°~70° with gentle folding and the dip becomes lower with depth. The above structure was inferred from the correlation of each bed and the cross angle. The cross angle of the Loralai Units-I and II in MJP-5 and 6 below the fault is very stable and indicates that the geologic structure of the vicinity is not disturbed. The cross angle of the Loralai Member Units-IV located above the fault locally varies considerably and it indicates the local disturbance of geological structure and the existence of small faults.

The fact that a strata which would be correlated to the bed at 315~360 m of MJP-6 does not exist in MJP-5 and that the cross angle in MJP-6 changes from 80°~90° in higher horizons to 45°~60° below 315 m and also that there are fractured zones near 315 m of MJP-6 and near 320 m of MJP-5 was interpreted to be the evidence for the existence of a continuous fault at the fractured zone. From similar approach, it is inferred that a fault exists in the central part of Loralai Unit-IV.

b. In the central part of this area, there is a normal fault dipping steeply westward and the displacement is approximately 350 m. This fault was known from the surface survey, but the existence, the shape and the exact location were confirmed by the present survey. The correlation of the units above and below this fault among the drill holes is very clear as shown in the cross section, thus the existence of this fault is confirmed. The displacement was estimated from the position of the boundary of Units-II and III on both sides of the fault in the cross section.

2 - 4 - 1 - 5 Mineralization

As mentioned earlier, lead-zinc sulfide mineralized zones were confirmed by MJP-2~5 drillings. Only MJP-1 did not intercept ore. The characteristics of the mineralization will be reported below.

(1) Nature of Mineralization

The nature of mineralization is similar in both Surmai-I and III. The mineralization is composed mainly of dissemination of powdery to granular sphalerite (ZnS_2) and galena (PbS), pale brown siderite ($FeCO_3$) and calcite vein~veinlets which cut through the zone and is accompanied by smaller amount of pyrite (FeS_2), chalcopyrite ($CuFeS_2$) and also weak silicification.

The ratio of sphalerite and galena is approximately 10:1. The sphalerite is brown and appears to have higher content of iron than those in normal Mississippi Valley type lead-zinc deposits. Siderite and calcite often occurs in the same vein and, in such cases, calcite occurs in the central part and siderite on both sides (host rock side) of calcite, thus it is inferred that siderite crystallized before calcite. In many intensely mineralized zones, the host rock, limestone is fractured. The sketch of the mineralized core is shown in Figure II -2-13.

Aside from the above minerals, minor amount of marcasite and hematite was observed by ore microscopy of 15 samples from the mineralized zone. Sphalerite grains are 0.05~0.2 mm in diameter and occurs scattered or grouped in calcite matrix. Generally, the boundary of the sphalerite grains and the calcite matrix is irregular. This indicates that very fine grains of sphalerite accumulated to form nodular grains. Galena often occurs independently as euhedral grains of around 1 mm. The results of the microscopic study is shown in Table II -2-18 and representative ore texture are shown in Photograph-6 and 7.

X-ray diffraction of ten samples revealed the rather strong reflection of ankerite ($Ca(Fe^2,Mg,Mn)(CO_3)_2$) and weak reflection of chlorite and sericite from several samples. The x-ray diffraction peak of siderite lies between those of $FeCO_3$ and $(Fe,Mn,Zn)CO_3$. The results are laid out in Table II -2-19. The representative x-ray diffraction patterns of above samples are attached in the Appendix.

Seventy eight samples collected from various mineralized parts were assayed. The samples for analysis were prepared by taking a quarter of the core, separating 100 g by quartering, grinding to under 80 mesh and 20 g were extracted for analysis. The samples were analysed for Pb,Zn,Ba and Ag. They were analysed by atomic absorption spectrometry (AAS) at Chemex Labs Ltd., in Canada. The results are shown in Table II -2-20. The Karachi Branch of GSP analysed Cu as well as the above four elements by AAS. The results are shown in the table.

Table II-2-18 Description of Microscopic Observation of Polished Specimens

Sample No.	Minerals						Position & mineralization
	Sp	Ga	Py	Cp	Ma	He	
DH3- 1-1	◎		△				170.0m, Sp>Si dis, Si>Ca vnt.
DH3- 1-2	◎		△		•		170.5m, Sp>Si dis, Si+Ca vnt.
DH3- 1-3	◎	•	△		•		170.8m, Sp>>Si dis, Ca>Si vnt.
DH3- 1-4	○		△				171.3m, Sp dis, Ca>Si vnt.
DH3- 1-5	△				○		171.5m, Sp dis, Ca+Si vnt.
DH3- 3	◎	△	△				See Table-II-2-20.
DH3- 4		○	△				ditto
DH3- 5	○	△	△			△	ditto
DH3- 7	•	○	△				ditto
DH3- 8	△		•	○		△	ditto
DH3-10	◎		△				ditto
DH3-12		○	△				ditto
DH3-14		○	△				ditto
DH3-16	◎	△	△				ditto
DH3-17	◎	•	△				ditto

Legend ◎: abundant ○: common △: a few •: rare

Sp: Sphalerite Ga: Galena Py: Pyrite Cp: Chalcopyrite

Ma: Marcasite He: Hematite Ca: Calcite Si: Siderite

Table II-2-19　X-Ray Diffraction Analyses

Sample No.	Minerals									
	Sp	Ga	Py	Cp	Qz	Si	Ca	Ak	Se	Ch
DH2- 3	○	•			◎	○	○	○		•
DH3- 1	△				△	◎	○	△		△
DH3- 3	○	△			○	○	○	△		•
DH3- 4	○				○	○	•			
DH4- 4	•	•	△		○	○	•	•		
DH4- 6			•		◎	△	△	△	•	
DH5- 2	△				○	○	○	○		•
DH6- 3	○	△			○	○	•	△		
DH6-17	○	•			△	○	•	•		
DH6-20	•	•			○	○	△			

Legend　◎: abundant　○: common　△: a few　•: rare

Sp: Sphalerite　Ga: Galena　Py: Pyrite　Cp: Chalcopyrite

Qz: Quartz　Si: Siderite　Ca: Calcite　Ak: Ankerite

Se: Sericite　Ch: Chlorite

See Table-II-2-20 about the position and mineralization of each samples.

Table II-2-20　Chemical Analyses of Ores　1

Number	Drill No.	Horizon	Sample No.	Depth	Width	Grade Pb %	Zn %	Ba %	Ag g/t	Cu ppm	Mother rock	Mineralization
1	MJP-3	A-3-1	DH3-1	169.1~171.5	2.4	0.02	4.26	<0.01	3.5	44	L-I Ls	Sp>Ga dis,Ca+Si vn~ntwk
2			-2	~171.9	0.4	0.59	0.15	<0.01	8.9	24	L-I Sh	
3			-3	~172.9	1.0	1.17	7.68	<0.01	17.0	132	L-I Ls	Sp>Ga dis,Ca+Si vn~ntwk
				(Average)	3.8	0.38	4.73	<0.01	7.6	65		
4			-4	176.3~177.1	0.8	0.20	8.86	<0.01	15.2	100	L-I Ls	Sp>Ga dis,Si>Ca vn~ntwk
5		A-3-2	-5	~178.0	0.9	0.15	0.96	<0.01	5.0	32	L-I Ls	Sp>Ga dis,Si>Ca vn~ntwk
6			-6	~178.3	0.3	0.02	0.01	<0.01	<0.5	12	L-I Ls	Ca vnt
7			-7	~179.4	1.1	0.34	0.01	<0.01	5.7	68	L-I Ls	Ga dis,Ca>Si ntwk
8			-8	~180.1	0.7	0.16	0.01	<0.01	3.0	580	L-I Ls	Ga dis,Ca>Si vnt,Cp?,Py
9			-9	~180.9	0.8	0.02	0.01	<0.01	<0.5	8	L-I Ls	Ca vnt
10			-10	~183.7	2.8	0.24	0.37	<0.01	3.7	36	L-I Ls	Sp>Ga dis,Si+Ca vn~ntwk,Py
11			-11	~184.2	0.5	0.01	0.01	<0.01	<0.5	Tr	L-I Ls	Ca vnt
12			-12	~186.3	2.1	0.43	0.01	<0.01	5.4	12	L-I Ls	Ga dis,Si+Ca vn~ntwk,Py
13			-13	~187.3	1.0	0.10	0.01	<0.01	2.3	20	L-I Ls,Sh	Py dis
14			-14	~189.1	1.8	0.50	0.07	<0.01	7.4	20	L-I Ls	Ga dis,Si+Ca vn~ntwk,Py
15			-15	~191.0	1.9	0.02	0.01	<0.01	<0.5	12	L-I Ls,Sh	Ca vnt
16			-16	~191.7	0.7	0.63	4.52	<0.01	15.3	20	L-I Ls	Sp>Ga dis,Si>Ca vn~ntwk
				(Average)	15.4	0.25	0.80	<0.01	4.9			
17			-17	210.1~211.8	1.7	0.54	2.02	<0.01	5.7	29	L-I Ls	Sp>Ga dis,Si>Ca vn~ntwk
		A-3-3										
18			DH2-1	288.2~289.7	1.5	0.01	0.05	<0.01	<0.5		L-I Ls	Si,Ca vnt
19	MJP-2	B-2	-2	~290.4	0.7	0.01	<0.01	<0.01	<0.5		L-I Sh	
20			-3	~291.0	0.6	0.23	5.74	<0.01	3.9		L-I Ls	Sp,Ga dis,Si>Ca vnt,Py dis
21			-4	~292.3	1.3	0.01	0.09	<0.01	<0.5		L-I Sh	Sp,Ga,Si wk dis,Ca vnt
				(Average)	4.1	0.04	0.89	<0.01	1.0			
22		C-2	-5	323.2~323.4	0.2	0.01	0.03	<0.01	<0.5		L-I Ls	Si dis
23			-6	~323.9	0.5	0.01	0.41	<0.01	<0.5		L-I Ls,Sh	
24			-7	~326.0	2.1	0.01	0.56	<0.01	<0.5		L-I Ls	Sp,Ga dis,Si>Ca vnt
25			-8	~328.6	2.6	0.06	1.54	<0.01	0.8		L-I Ls	Sp,Ga dis,Si>Ca vnt
				(Average)	5.4	0.03	1.00	<0.01	0.6			
26	MJP-4	B-4	DH4-1	283.4~284.6	1.2	<0.11	0.19	<0.01	<0.5		L-I Sh	Cp wk dis,Ca ntwk
27			-2	~285.6	1.0	0.02	0.18	<0.01	<0.5		L-I Ls	Sp reb+Ga dis,Ca ntwk
28			-3	~286.9	1.3	0.36	0.08	<0.01	2.5		L-I Sh	Py>Ga dis,Si>Ca vnt
29			-4	~289.0	2.1	0.75	0.54	<0.01	7.4		L-I Ls	Sp>Cp,Ga dis,Ca>Si vnt
30			-5	~289.6	0.6	0.16	4.11	<0.01	2.8		L-I Ls	Sp>Ga dis,Si dis,Ca vnt
31			-6	~290.1	0.5	0.02	0.05	<0.01	<0.5		L-I Sh	Si,Ca vnt,Si>Ca vnt
				(Average)	6.7	0.33	0.82	<0.01	3.3			
32		C-4-1	-7	308.5~309.6	1.1	0.01	0.03	<0.01	<0.5		L-I Ls	Py dis,Ca vnt
33			-8	~310.4	0.8	0.01	0.03	<0.01	<0.5		L-I Ls	Ca,Si vnt
				(Average)	1.9	0.01	0.03	<0.01	<0.5			
34		C-4-2	-9	316.2~317.1	0.9	0.01	<0.01	<0.01	<0.5		L-I Ls	Si>Py dis
35			-10	~318.1	1.0	0.01	0.02	<0.01	<0.5		L-I Ls	Sp dis,Ca vn,Si dis
36			-11	~319.9	1.8	0.08	0.72	<0.01	0.5		L-I Ls	Sp>Ga dis,Si dis~vn,Ca vn
37			-12	~320.2	0.3	0.06	11.10	<0.01	5.6		L-I Ls	Si>Py>Ga dis
38			-13	~320.4	0.2	0.02	0.12	<0.01	0.5		L-I Ls	Si>Py dis,Ca vnt
				(Average)	4.2	0.04	1.11	<0.01	0.9			

Number	Drill No.	Horizon	Sample No.	Depth	Width	Grade Pb %	Zn %	Ba %	Ag g/t	Cu ppm	Mother rock	Mineralization
39	MJP-6	A-6-1	DH6-1	168.5~169.5	1.0	0.13	4.26	<0.01	2.0	57	L-I Ls	Sp dis,Si+Ca vnt
40			-2	~170.3	0.8	<0.01	0.04	<0.01	0.5	20	L-I Sh	Si vnt,wk Sp dis
41			-3	~172.4	2.1	1.81	13.90	<0.01	16.8	154	L-I Ls	Sp>Ga dis,Si>Ca vn~vnt
42			-4	~173.3	0.9	0.97	0.57	<0.01	7.5	16	L-I Ls	Sp>Ga dis
43			-5	~173.9	0.6	0.11	0.04	<0.01	1.0	31	L-I Sh	arg
44			-6	~174.6	0.7	0.82	2.96	<0.01	5.8	41	L-I Ls	Si dis,Si vnt
45			-7	~176.2	1.6	1.22	0.51	<0.01	11.0	21	L-I Ls	Ga>Sp dis,Si>Ca vnt
46			-8	~176.8	0.6	0.14	0.03	<0.01	1.0	32	L-I Sh	cly
47			-9	~179.2	2.4	0.37	0.69	<0.01	3.8	15	L-I Ls	Sp,Ga wk dis,Si>Ca ntwk
48			-10	~179.4	0.2	<0.01	0.01	<0.01	<0.5	33	L-I Sh	cly
49			-11	~180.8	1.4	0.09	1.11	<0.01	0.8	19	L-I Ls	Ca)Si vn~ntwk
				~181.3	0.5	—	—	(Non core) —				
50			-12	~181.5	0.2	0.02	0.01	<0.01	0.8	35	L-I Sh	cly
51			-13	~182.4	0.9	0.31	3.84	<0.01	2.5	49	L-I Ls	Sp dis,Ca,Si vnt
				(Average)	13.9	0.66	3.25	<0.01	6.0	45		
52			-14	~184.8	2.4	0.02	0.04	<0.01	<0.5	11	L-I Ls	
53			-15	~185.6	0.3	0.02	0.02	<0.01	<0.5	30	L-I Sh	arg
54		A-6-2	-16	~186.0	0.4	0.06	1.22	<0.01	0.5	25	L-I Ls	Sp dis,Ca vn,Si vnt
55			-17	~186.6	0.6	0.34	20.90	<0.01	8.5	224	L-I Ls	Sp,Sg dis,Si dis
56			-18	~187.8	1.2	0.29	2.96	<0.01	3.0	37	L-I Ls	Sp,Ga dis,Si vnt
57			-19	~188.4	0.6	<0.01	0.04	<0.01	<0.5	15	L-I Sh	
58			-20	~188.8	0.4	0.66	0.24	<0.01	5.8	19	L-I Ls	Si>Ca vnt
59			-21	~189.3	0.5	0.05	0.01	<0.01	1.0	35	L-I Sh	
60			-22	~190.3	1.0	1.51	0.50	<0.01	14.0	17	L-I Ls	Ga dis,Si>Ca vnt
				(Average)	4.7	0.51	3.66	00.01	5.5	51		
61			-23	~191.5	1.2	0.05	0.01	<0.01	<0.5	10	L-I Ls	
62			-24	~191.8	0.3	0.01	0.01	<0.01	1.0	36	L-I Sh	cly
63		A-6-3	-25	~193.8	2.0	0.10	1.59	<0.01	0.8	23	L-I Ls	Sp)Ga dis,Ca,Si vnt
64			-26	~194.0	0.2	0.18	0.01	<0.01	2.0	15	L-I Sh	
65			-27	~196.2	2.2	0.44	0.06	<0.01	3.3	10	L-I Ls	Ga dis,Ca,Si vnt
66			-28	~196.4	0.2	0.10	0.01	<0.01	0.5	18	L-I Sh	
67			-29	~197.5	1.1	0.20	0.05	<0.01	1.3	11	L-I Ls	Ga dis,Ca)Si vn
68			-30	~197.9	0.4	<0.01	1.32	0.02	<0.5	29	L-I Sh	arg
				(Average)	6.1	0.24	0.64	<0.01	0.7	21		
69			-31	~198.1	0.2	<0.01	0.12	<0.01	<0.5	9	L-I Ls	Ga dis,Si,Ca vnt
70			-32	~199.3	1.2	0.03	0.11	<0.01	<0.5	12	L-I Ls	
71		A-6-4	-33	~199.7	0.4	<0.01	4.79	<0.01	<0.5	38	L-I Ls	Sp dis,Si,Ca vnt,Py
72			-34	~200.2	0.5	<0.01	0.06	<0.01	<0.5	14	L-I Ls	
73			-35	~201.1	0.9	<0.01	0.02	<0.01	<0.5	30	L-I Sh	arg
74			-36	~202.1	1.0	<0.01	<0.01	<0.01	<0.5	11	L-I Ls	Ca,Si vnt
				(Ground Av)	33.6	0.38	1.99	<0.01	3.7	34		
75			-37	326.7~327.1	0.4	<0.01	<0.01	0.23	<0.5	10	Ls	Si,Ca vnt
76	MJP-5	B-5	DH5-1	215.0~215.2	0.2	0.12	<0.01	<0.01	1.3		L-I Sh	Si>Ca vnt
77			-2	~215.8	0.6	0.39	1.89	<0.01	3.7		L-I Ls	Sp>Ga dis,Si,Ca vnt
78			-3	~216.8	1.0	0.09	0.40	<0.01	0.8		L-I Ls	Sp>Ga dis,Si,Ca vnt
				(Average)	1.8	0.19	0.85	<0.01	1.8			

(2) Mineralized horizon

It is seen from the results of the geological survey that most of the mineralized zone are controled stratigraphically and they are emplaced in Loralai.

We have located the stratigraphic position of the mineralization, correlated the horizons and prepared a drill hole stratigraphic correlation diagram in scale of 1:1,000 (Fig.II-2-20). The stratigraphic correlation diagram for other drill holes is shown in PL.II-2-1, which is an attempt to correlate the mineralization horizon and the individual beds by using 1:200 scale column.

The lead-zinc sulfide mineralized horizons all belong to the three horizons of the Loralai Unit-II which have been designated as A,B,C horizons in descending order. The mineralized parts of each hole are given drilling numbers after the horizon name such as A-3,B-2,C-2 (Fig.II-2-20). Horizon A indicates the upper to middle part of Loralai-II , B the middle part and C horizon the lower part. The thickness of the mineralized horizons are, A >55 m, B 6~7 m and C 10~15 m. The mineralization occurs in these horizons with slightly varying position. The A horizon is confirmed in MJP-3 and MJP-6, B and C horizon in all drill holes except MJP-1. These three horizons occur continuously in Surmai-I to III . Also concentration of siderite veinlets occur in narrow parts (20~50 cm) of Loralai Unit-II ~ I of MJP-5 and MJP-6.

(3) Stratigraphic positions and conditions of mineralized zones

The stratigraphic position, the average grade, the highest grade of the mineralized zone, as well as the promising zone for mining for each area and drilling site are reported below. The conditions for the promising zone are; more than 2.5 m wide and higher than Pb+Zn 5 %.

The chracteristics of the assay results are; althouth high Zn parts occur locally, the Pb+Zn content is generally low and the promising zone is small, the Ba content is generally very low, the Ag content is somewhat high compared to other Mississippi Valley type lead-zinc deposits. The highest contents are, Pb; 1.81 % at A-6-1, Zn; 20.90 % at A-6-2, Ba; 0.23 % at 327 m of MJP-6, Ag; 17.0 % at A-3-1.

a. Surmai-I

In this area, mineralization was confirmed in A horizon by MJP-3, in B and C horizons by MJP-2 and 4. The mineralized zone (A-3) in A horizon is divided into, A-3-1, A-3-2 and A-3-3 by MJP-3. The conditions are as follows.

Horizon	Grade	Depth (m)	Width(m)	Pb(%)	Zn(%)	Ba(%)	Ag(g/t)
A-3-1	Average	169.1~172.9	3.8	0.38	4.73	< 0.01	7.6
	Maximum	171.9~172.9	1.0	1.17	7.68	< 0.01	17.0
	P.Z.M.	169.1~172.9	3.8	0.38	4.73	< 0.01	7.6
A-3-2	Average	176.3~191.7	15.4	0.25	0.80	< 0.01	4.9
	Maximum	176.3~177.1	0.8	0.20	8.86	< 0.01	15.2
A-3-3	Av.& Max.	210.1~211.8	1.7	0.54	2.02	< 0.01	5.7

Note) P.Z.M.:Promising Zone for Mining
Av.& Max.:Average & Maximum

The mineralized zone in B horizon is divided into two parts B-2 and B-4 by MJP-2 and 4. The conditions are listed below.

Horizon	Grade	Depth (m)	Width(m)	Pb(%)	Zn(%)	Ba(%)	Ag(g/t)
B-2	Average	288.2~292.3	4.1	0.04	0.89	< 0.01	1.0
	Maximum	290.4~291.0	0.6	0.23	5.74	< 0.01	3.9
B-4	Average	283.4~290.1	6.7	0.33	0.62	< 0.01	3.3
	Maximum	289.0~289.6	0.6	0.16	4.11	< 0.01	2.8

The mineralized zone in C horizon is divided into two parts C-2 and C-4 by MJP-2 and 4. C-4 is further subdivided into C-4-1 and C-4-2. The conditions are listed below.

Horizon	Grade	Depth (m)	Width(m)	Pb(%)	Zn(%)	Ba(%)	Ag(g/t)
C-2	Average	323.2~328.6	5.4	0.03	1.00	< 0.01	0.6
	Maximum	326.0~328.6	2.6	0.06	1.54	< 0.01	0.8
C-4-1	Average	308.5~310.4	1.9	0.01	0.03	< 0.01	<0.5
	Maximum	308.5~309.6	1.1	0.01	0.03	< 0.01	<0.5
C-4-2	Average	316.2~320.4	4.2	0.04	1.11	< 0.01	0.9
	Maximum	319.9~320.2	0.3	0.06	11.10	< 0.01	5.6

Thus the mineralized zones in Surmai-I are largely grouped into three locations; A-3 in A, B-2～B-4 in B and C-2～C-4 in C horizons.

There is a promising zone for mining in the uppermost part of A-3. It is seen from the geological profiles by drilling that the A-3-1 and A-3-2 continues to the large and extensive oxidized exposures on the surface. It is highly possible, therefore, that the sulfide mineralization in Loralai Unit-III which could not be confirmed by this year's drilling, is emplaced at higher horizon than A-3.

The horizontal distances between B-2 and B-4, and C-2 and C-4 are close, approximately 20 m. Thus they can largely be cosidered as continuous, but in detail there are many parts which cannot be correlated. The B-2～B-4 and C-2～C-4 mineralizations are not observed in MJP-3 which lies 120 m along the bedding. The grade is locally high, at over 10 % Zn, but it is generally low.

b. Surmai-III

Mineralized zones were confirmed in A horizon by MJP-6 and B horizon by MJP-5 in this area. Mineralized zone of A horizon in MJP-6 is divided in to five parts, A-6-1~5. But A-6-5 is excluded because it consists of siderite and calcite veinlets and the Pb+Zn grade is below the limit of detection. In extracting the promising zone for mining of A-6-1, two calculations were made, one with emphasis on the grade and the other on the width of the zone. The conditions are listed below.

Horizon	Grade	Depth (m)	Width(m)	Pb(%)	Zn(%)	Ba(%)	Ag(g/t)
A-6-1	Average	168.5~182.4	13.9	0.66	3.25	< 0.01	6.0
	Maximum	170.3~172.4	2.1	1.81	13.90	< 0.01	16.8
	P.Z.M.	170.3~172.8	2.5	1.68	11.77	< 0.01	15.3
	P.Z.M.	168.5~172.4	3.9	1.01	8.59	< 0.01	9.7
A-6-2	Average	185.6~190.3	4.7	0.51	3.66	< 0.01	5.5
	Maximum	186.0~186.6	0.6	0.34	20.90	< 0.01	8.5
	P.Z.M.	185.6~188.1	2.5	0.23	6.64	< 0.01	3.6
A-6-3	Average	191.8~197.9	6.1	0.24	0.64	< 0.01	0.7
	Maximum	191.8~193.8	2.0	0.10	1.59	< 0.01	0.8
A-6-4	Av.& Max.	199.3~199.7	0.4	<0.01	4.79	< 0.01	<0.5

B-5 is the only mineralization in MJP-5, and the conditions are listed below.

Horizon	Grade	Depth (m)	Width(m)	Pb(%)	Zn(%)	Ba(%)	Ag(g/t)
B-5	Average	215.0~216.8	1.8	0.19	0.85	< 0.01	1.8
	Maximum	215.2~215.8	0.6	0.39	1.89	< 0.01	3.7

Thus, in Surmai-Ⅲ ,mineralization occur in two stratigraphic positions A-6 in A and B-5 in B horizons. There are two promising zones for mining in A-6. It is clear from the cross section that the A-6 mineralization and the large continuous oxide exposure at the surface are connected. Therefore, it is highly possible that the sulfide mineralization in Loralai Unit-Ⅲ , which could not be confirmed by drilling this year also lies stratigraphically higher than A-6 in underground. B-5 mineralization does not occur in B horizon in MJP-6 which is located about 110 m along the bedding from A-6.

2－5 Discussions

2－5－1 Characteristics of the Geologic Structure and Mineralization

It was clarified by the work of the first phase that the mineralization in Surmai area consisted of bedded orebodies emplaced along the bedding and of bodies emplaced along faults and fractures. Also it was shown that the larger bedded bodies were developed in Loralai Unit-Ⅱ to Ⅲ of the Surumai-Ⅰ and Ⅲ prospects, and that smaller fissure-filling type occured accompanying the bedded bodies. The mineralized horizons confirmed by drilling in the above area in the second phase agreed with those of the gossan on the surface. Therefore, it was proved that the inferrence during the first phase, that the gossan was formed by oxidation of the primary sulfides and that the primary mineralization was controled stratigraphically was correct.

Usually the division of oxide and sulfide ores occur at the water table. It is inferred from the depth of the circulation loss during drilling and the distribution of hematitization of limestone that the water table is located at the depth of about 100 m from the surface.

There is a westward dipping normal fault with a displacement of 300~400 m on the hanging wall side of the mineralized horizon of Surmai-Ⅰ and Surmai-Ⅲ. This fault cuts the mineralized horizon at 150~250 m below the surface.

The water table and the fault are the factors which restrict the distribution of the sulfide ores.

Generally, the Mississippi Valley type deposits are characterized by the following six features.

(1) They occur mostly in Paleozoic～Mesozoic limestone～dolomite horizon.

(2) They are formed epigenetically by precipitation and are accompanied by replacement process along fractured zones, fissures and voids. In many cases, solution collapse breccia formed prior to the pricipitation provided the coduits for ore fluid and thus emplacement.

(3) There are no igneous activity in the vicinity which would be related to the ore genesis.

(4) The composition of the deposit is relatively simple with galena and sphalerite as the main constituent minerals, pyrite and chalcopyrite are minor constituents if they exist.

(5) The iron content of sphalerite is low. The gold and silver contents are lower than in other types of lead-zinc deposits.

(6) Fluid inclusion studies have shown that the ore-forming fluids were saline water of about 100°C containing Na-Ca salts.

The results of the works of both phases of this project including drilling show that the mineralization in the Khuzdar District has features which mostly agree with those of Mississippi Valley type deposits. The process of forming of the Mississippi Valley type deposits in this area is considered to have proceeded as follows.

(1) Since Early Jurassic time, sedimentary basins which formed relatively unstable shallow seas were distributed in this area. Clastic rocks such as the shale dominant Wulgai Formation and sandstone dominant Spingwar Member of the Shirinab Formation were deposited. Subsequently, limestone and shale alternation and limestone of Loralai were later deposited. Pyrite dissemination which is believed to be of chemical precipitation origin occur in the shale of Loralai.

(2) The saline water, similar to the oil-field brine, was formed by evaporation and reaction of the sea water with sediments. This water was trapped as interlayer water in the clastic rocks and migrated to the periphery of the sedimentary basins during compaction.

(3) The clastic rocks were dehydrated by the rise of temperature at the lower parts of the sedimentary basins due to ophiolite activities. This caused the solution of Pb,Zn,Ba and other heavy metals into the interlayer water.

(4) Voids such as the pores, solution brecciated parts had existed in the limestone near the basin. These were formed by groundwater. The movement of groundwater was controlled by faults, joints, and bedding.

(5) The old interlayer water containing the metals which migrated into the voids through structural lineations, were mixed with groundwater, cooled, diluted and reduced by H_2S present in the sediments. Thus the solubility of the metals decreased, and first the Pb-Zn-Hg-S was precipitated and then the siderite-calcite fluids were squeezed into thin veinlets. Thus the lead-zinc sulfide deposits were formed. The deposit can be largely grouped into those which filled the faults, solution collapse breccia and those which replaced the limestone widely in stratiform manner. The latter type is developed in the thick limestone of the Loralai Member (Units-Ⅱ~Ⅲ at Surmai Area), and is considered to be related to the fissile nature of the rock.

(6) After the deposition of Pb-Zn-Hg, Ba-Mg deposited and formed the mineralization in the periphery of the Pb-Zn-Hg zone in a larger area with some time lag. The Ba-Mg bearing fluid migrated through the same channels or at some distances from those of Pb-Zn-Hg.

(7) Sulfur existed in shale of the Loralai as primary pyrite and also widely as sulfide due to mineralization, but it was later oxidized and leached.

(8) Subsequent to the above, small veins were formed near the Pb-Zn deposits by diagenesis associated with structural movements and other phenomena.

(9) The exposed surfacial part of the deposit was weathered and oxidized gossan was formed. The pyrite bearing shale patches in the limestone of the Loralai was hematitized by weathering and caused the colouring.

2－5－2 Geophysical Anomalies and Mineralization

(1) Surumai-I

Drilling of the second phase was conducted at approximately 20 m south of Point 7, Line C of the geophysical traverse of the first phase. The directions of the holes are oblique to Line C by 18° and 28°. Thus, although it is not possible to directly correlate the drilling results to the simulation analysis for Line C (Fig. Ⅲ-3-42, of First Phase Report = Report on the Cooperative Mineral exploration in Khuzdar Area of Baluchistan, Phase I = henceforth; FPR), the relation of the two is considered as follows.

The existence of an source with resistivity 100 ohm-m, PFE 10 % under Points 9 and 10 and another with resistivity 10 ohm-m, PFE 10 % under Points 11 and 12 both of Line C was inferred by the simulation. It was shown by drilling that the geology of this area cosists of alternation of limestone and shale and that fine-grained pyrite occurs throughout the shale. The content of sulfur in the shale due to the pyrite is considered to be less than 10 %. This is believed to be the cause of the PFE values in the vicinity of 1 % which is the PFE background. The lead-zinc mineralized zone with Pb+Zn combined grade of 1.6 % at 169.1~191.7 m of MJP-3 is believed to correspond to the weak anomalous zone of over 1.5% PFE under Points 9~12 (Fig. Ⅲ-3-19, of FPR).

(2) Surumai-Ⅲ

Two holes were drilled in this area during the second phase. They were drilled along Line R from near Points 1 and 2 (Fig. Ⅲ-3-48, of FPR). Line R section (Fig. Ⅲ-3-23(1), of FPR) shows weak anomaly of PFE over

1.5 % under Points 3 and 4. And Line J section (Fig.Ⅲ-3-23(1), of FPR) confirms the existence, in the deeper parts, of anomaly of PFE over 3 % which corresponds to the weak anomaly of Line R. Lines J and R cross each other obliquely.

Drilling MJP-6 revealed the lead-zinc anomalous zone with combined Pb+Zn grade of 2.4 % at 168.5~202.1 m, and as in the case of Surmai-Ⅰ, the disseminated pyrite was observed in the shale of alternation with limestone. For the above lead-zinc mineralized zone, 0.8 % PFE is obtained in Line R and 1.1 % PFE in Line J. These values are higher than the background, but is not high enough to form anomalous zones. The fact that the dimensions of the deposit in Surmai-Ⅲ are similar to the Main Orebody of Surmai-Ⅰ, leads to the conclusion that this discrepancy is the result of the longer spacing of measurements (a=100m) in Surmai-Ⅲ, compared to Surmai-Ⅰ (a=50m) which made the determination of PFE anomalies difficult.

The PFE anomaly in the deeper parts of Points 3~6 of Line J (Fig. Ⅲ-3-44, of FPR) suggests the existence of mineralization. But MJP-5 has not reached the mineralized zones in spite of the fact that it has reached the inferred locality. This PFE could have been affected by the pyrite in shale and/or the graphite which was found in the shale by x-ray diffraction.

During the first phase, physical properties were measured for rock samples and the data was used for interpretation. For future work, it is desirable to measure the physical properties of the drill cores and conduct simulation on the basis of obtained data.

2 - 5 - 3 Mineral Potential of the Area

The mineralization in Surumai-Ⅰ occurs largely in three geologic localities, namely A-3 in A horizon, B-2~4 in B horizon and C-2~4 in C horizon.

A promising zone (3.8 m wide, Pb+Zn 5.11 %) occurs in the uppermost part of A-3 and it warrants further exploration. It is quite clear from the cross section that the mineralized zones A-3-1 and A-3-2 is connected with the extensive (450 m in strike direction) oxidized exposure on the surface. It is, thus, expected that A-3 mineralization extends around the drill hole of the mineralized zone. Although it was not possible to confirm by this drilling because of fault, it is believed that sulfide mineralization occurs stratigraphically above A-3 which is correlated to the oxidized exposure in Loralai Unit-Ⅲ. In other words, A-3 has the potential for expansion.

The horizontal distance between B-2 and B-4, C-2 and C-4 is small, approximately 20 m and probably these mineralized zones are largely continuous, but there are many parts of the mineralized zones which cannot be correlated. Also the mineralization of B-2~B-4 and C-2~C-4 is not observed in B and C horizons of MJP-3 which is only 120 m along the bedding from the ore in MJP-2 and 4. This indicates that the stratigraphic positions and the conditions of the mineralization vary rapidly in B and C horizons. The grade is generally low although it locally exceeds Zn 10 %.

The mineralization of the Surumai-Ⅲ is grouped into two stratigraphic positions, A-6 of A horizon and B-5 of B horizon.

There are two promising zones for mining (3.9 m wide, Pb+Zn 9.60 %; 2.5 m wide, Pb+Zn 6.87 %) in A-6. Higher grade is expected. It is clear from the geological profiles on drilling that the A-6 mineralization continues to the extensive (450 m in strike direction) oxidized exposure on the surface. It is, thus, expected that A-6 mineralization extends around the drill hole of the mineralized zone. Although it was not possible to confirm by this drilling because of fault, it is believed that sulfide mineralization occurs stratigraphically above A-6 which is correlated to the oxidized exposure in Loralai Unit-Ⅲ. In other words, A-6 has the potential for expansion in volume.

B-5 mineralization is not observed in B horizon of MJP-6 which is approximately 110 m along the bedding from the ore in MJP-5. The grade is generally low.

It has been shown that there are promising zones in A horizon of Surumai-I and III. The grade and the volume can be expected to rise. The mineralization in B and C horizon is locally of high grade, but the volume is small and it lacks continuity. Thus the Main Orebody of Surumai-I prospect and the A horizon in the lower part of Loralai Unit-III under the oxidized exposure of the Northwest Orebody of the West Deposit at Surumai-III showing have high potential. The potential of B and C horizons are not high but they warrant further prospecting.

PART III

CONCLUSIONS

AND

RECOMMENDATIONS

PART III CONCLUSION AND RECOMMENDATIONS

CHAPTER 1 CONCLUSIONS

During the second phase, geological and geochemical survey have been carried out in the Northern Khuzdar District. And drilling survey have been done in the Surmai Area.

The following are the results of the surveys.

1－1 Northern Khuzdar District

(1) The Jurassic limestone of this district consists of Shirinab Formation which is of Early Jurassic age. This formation comprises, in ascending order, Spingwar Member consisting mainly of calcareous sandstone, Loralai Member composed of limestone, shale alternation and Anjira Member.

(2) The Shirinab Formation is distributed largely in eight zones, and it extends in east-west direction and is gently protruding northward in conformity with the large scale structure of Khuzdar Knot. The members of this formation show complex anticlinal and synclinal structure with axes along the general trend.

(3) Promising mineral showings such as those observed in the Surmai～Sekran Zone of the Southern Khuzdar District, do not exist in the Northern Khuzdar District. In the Northern Khuzdar District, only a few small occurrences of limonite, siderite and calcite veins～veinlets were confirmed in the southern part of the district. The mineral showings in district of both phases are distributed around the ophiolite zone in the Surmai～Sekran Zone. This zone is located in the southwestern part of the Southern Khuzdar District. The area surveyed during this second phase lies on the outerside of the Surumai~Sekran Zone, and mineral showings were not

observed.

(4) The results of the second phase geochemical prospecting do not yield promising anomalous zones. In the Northern Khuzdar District, the anomalies are scattered and the values are low. The highest rank for complex anomalous zones was C for barium, and the lead-zinc zones were ranked the lowest E. The lead-zinc anomalous zones reflecting the Surmai～Sekran Zone mineral showings are distributed around the ophiolite zone and the barium anomalous zones occur on the outerside of the lead-zinc zones. These are in the southwestern part of the Southern Khuzdar District. The lead-zinc zones with rank E in the southernmost part of the Northern Khuzdar District are located at the northernmost part of the above anomalous zone.

(5) The study of all geochemical data obtained by this project during the last two phases, also clearly shows that the promising geochemical anomalies all exist in the Southern Khuzdar District, the Surumai～Shekran zone.

(6) Thus, it is concluded that the mineral potential of the Northern Khuzdar District is very low.

1－2 Surmai Area

(1) The Surmai Area is underlain by three members of the Shirinab Formation. They are, in ascending order, Spingwar, Loralai and Anjira. Loralai and Anjira are divided, respectively, into four Units (I～IV) and three Units (I～III). The units, confirmed to contain mineralized zone by drilling, range between Loralai Unit-I to the overlying Anjira Unit-I. The rocks of these units are mainly limestone and shale with minor amount of two types of limestone, shale and marly shale alternation. These four types of rocks form alternation with individual beds of 0.2～10 m thick.

(2) The geologic units of the area drilled dip 60°～70° westward with gentle folding in both Surmai-I and III area. Also the central part dips steeply westward and fault with 300~400 m displacement transects the formation.

(3) Mineralized zones of lead-zinc sulfides considered to be of Mississippi Valley type were confirmed by five drill holes MJP-2~6 aimed at the lower parts of the oxide outcrops. The only hole which did not intercept a mineralized zone was MJP-1. The mineralization consists mainly of disseminated powdery to granular sphlerite and galena in limestone, and siderite and calcite vein~veinlets which transects the above.

(4) The stratigraphic horizon of lead-zinc mineralization is the same for all drill cores as well as for the outcrops. Thus it is clear that the mineralization is stratigraphically controled. The mineralized horizons confirmed by drilling are all in Loralai Unit-II and are divided into A,B,C in descending order.

(5) The distribution of the lead-zinc sulfides is controled by the water table at about 100 m depth and the fault mentioned in (2).

(6) The promising mineralization confirmed in Surmai-I area is that located by MJP-3, at depth 169.1~172.9 m (approximately 180 m below the surface) in A horizon. It is 3.8 m wide and the grade of Pb+Zn is 5.11 %. Those in Surmai-III occur at two locations in MJP-6, in A horizon, depth 168.5~172.4 m and 185.6~188.1 m (approximately 140 m below the surface). They are 3.9 m wide, Pb+Zn 9.60 % and 2.5 m wide, Pb+Zn 6.87 %.

(7) In the Surmai-I area, the mineralization zone confirmed by MJP-3 corrseponds to the PFE anomaly detected in geophysical traverse C (IP,SIP) carried out during the first phase. Also mineralized zone was confirmed by MJP-6 in Surmai-III area at a location where geophysical anomalies were not very clearly detected. It is inferred that the reason for not detecting this mineralized zone is that the length of the intervals in Surmai-III was too long(100m in Surmai-III and 50m in Surmai-I areas).

(8) The mineralization in the A horizon of both Surmai-I and III is promising in both grade and scope and its development is anticipated. The mineralization in B and C horizons is small and discontinuous, but as there are parts of high grade, we recommend that the prospecting be continued.

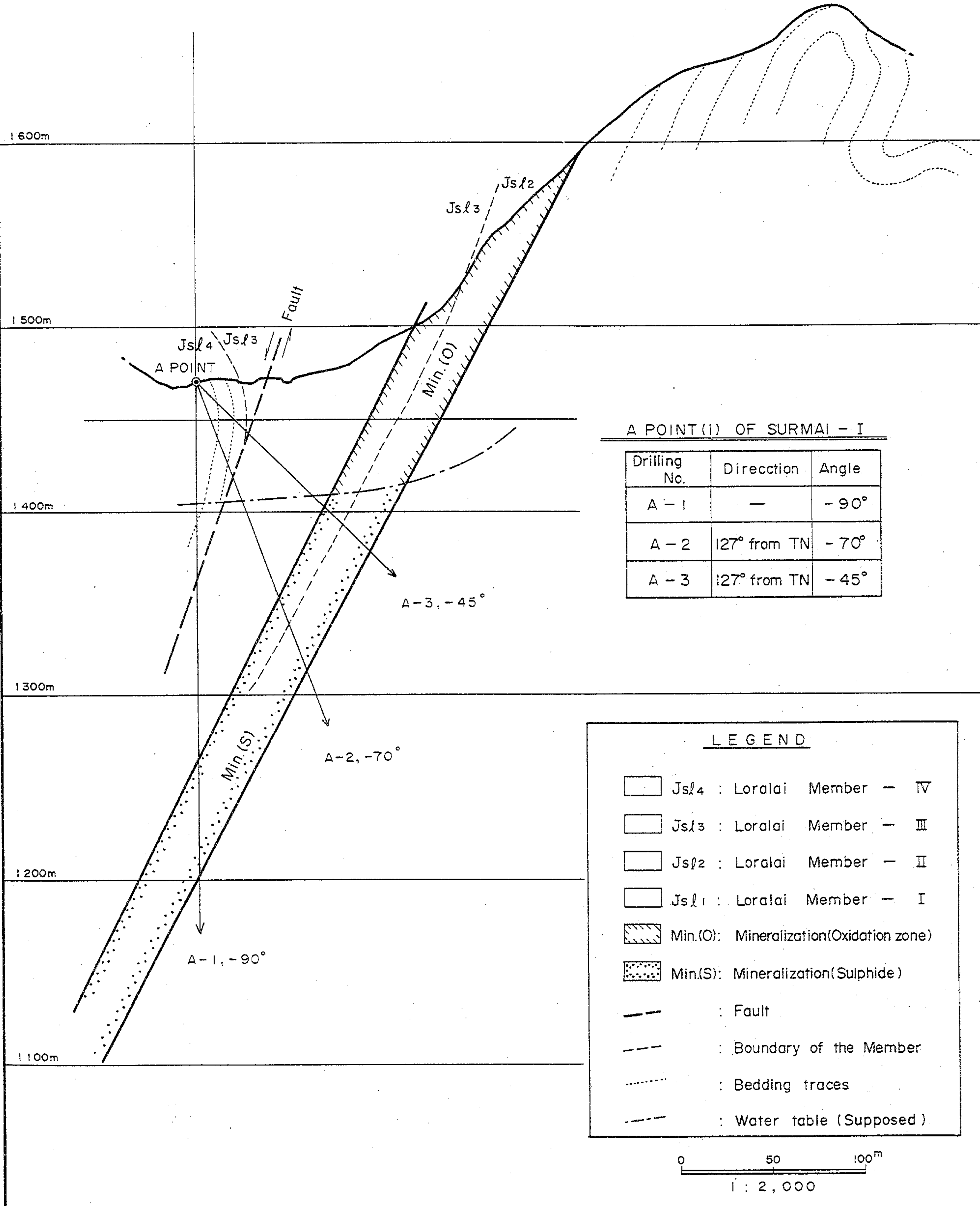
CHAPTER 2 RECOMMENDATIONS FOR PHASE III SURVEY

2-1 Surmai Area

(1) Drilling in Surmai-I and III

During the work of the second phase, lead-zinc sulfide mineralized zones were confirmed in the lower parts of the Main Orebody of Surmai-I and the Northwest Orebody of Surmai-III, by drilling. It is recommended that drilling be carried out in the vicinity of the findings of this year to confirm the shape, grade, continuity and the possibility of development of these zones.

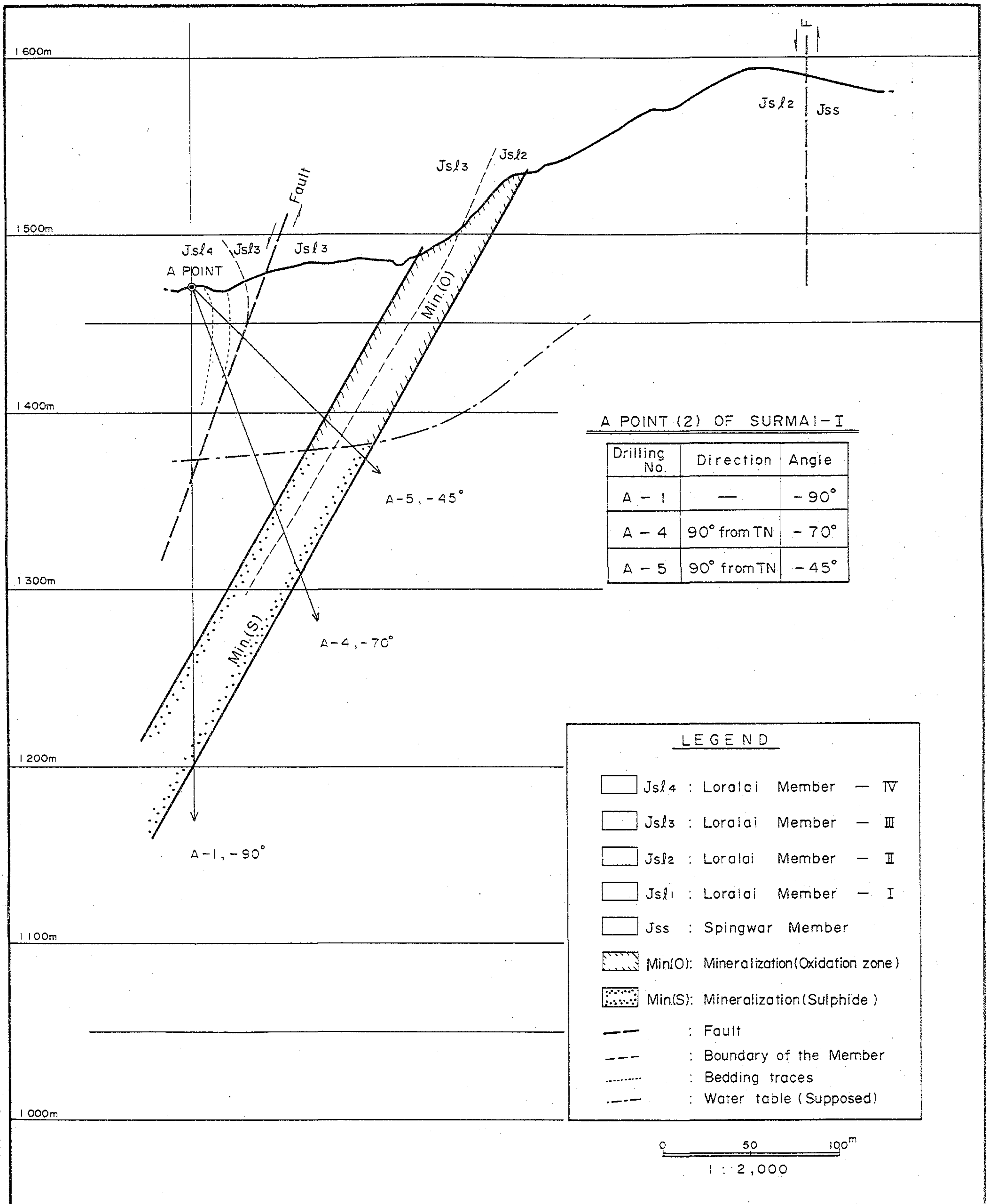
Regarding the above drilling of the third phase, we recommened that five holes at one site in Surumai-I area and also five holes at two sites in Surumai-III be carried out. The draft implementation plan --the site and direction-- are laid out in Figures II-2-11 and II-2-12. Also the inferred cross sections of the geology and ore deposit are shown in Figures III-1-1~III-1-4.



A POINT (1) OF SURMAI - I

Drilling No.	Direcction	Angle
A - 1	—	- 90°
A - 2	127° from TN	- 70°
A - 3	127° from TN	- 45°

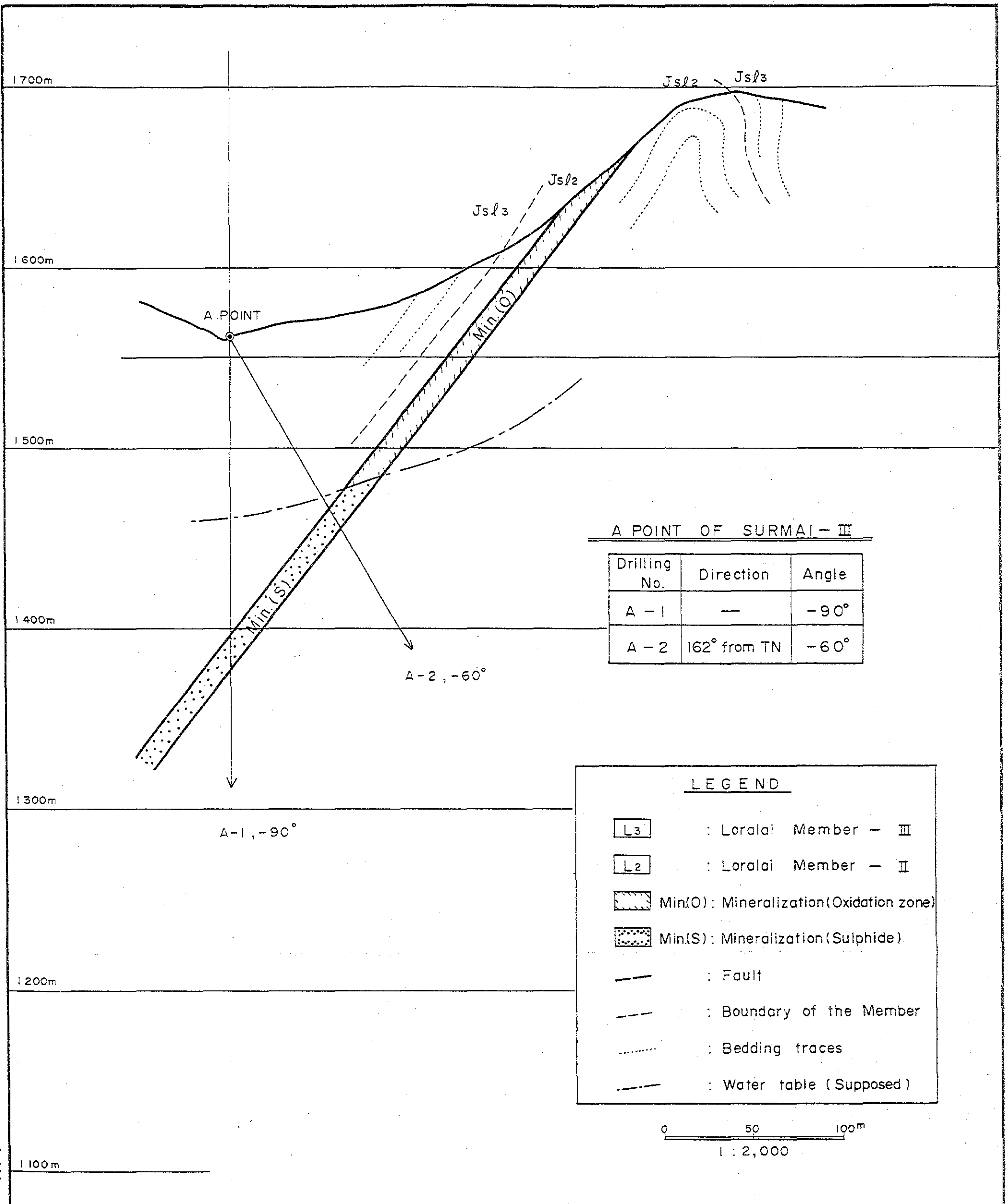
Fig. III-1-1. Proposed Drillings in Cross-section for the Third Phase Survey in Surmai-I



A POINT (2) OF SURMAI-I

Drilling No.	Direction	Angle
A - 1	—	- 90°
A - 4	90° from TN	- 70°
A - 5	90° from TN	- 45°

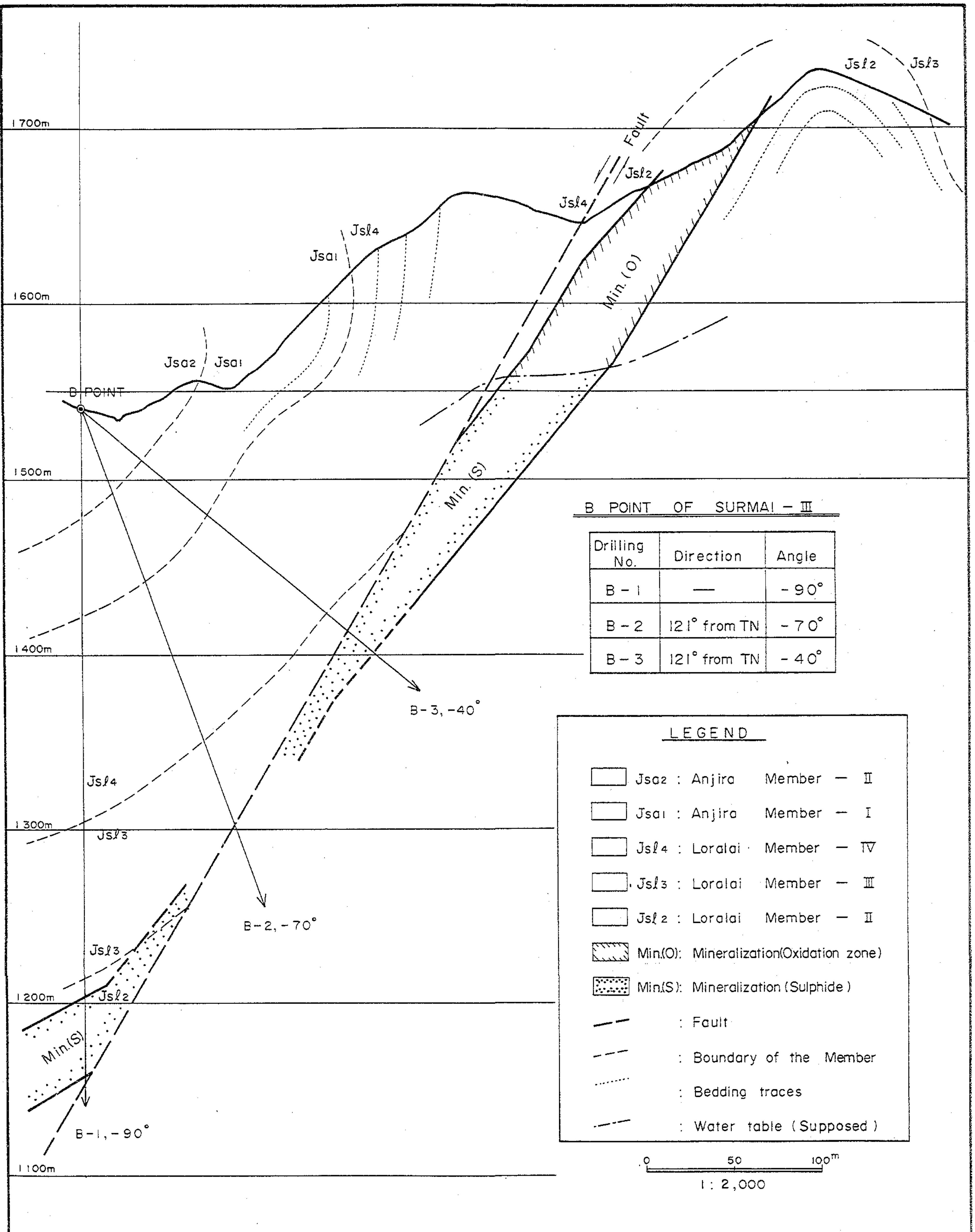
Fig. III-1-2 Proposed Drillings in Cross-section for the Third Phase Survey in Surmai-I



A POINT OF SURMAI – III

Drilling No.	Direction	Angle
A – 1	—	-90°
A – 2	162° from TN	-60°

Fig. III-1-3 Proposed Drillings in Cross-section for the Third Phase Survey in Surmai-III



B POINT OF SURMAI – III

Drilling No.	Direction	Angle
B – 1	—	-90°
B – 2	121° from TN	-70°
B – 3	121° from TN	-40°

Fig. III-1-4 Proposed Drillings in Cross-section for the Third Phase Survey in Surmai-III

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GSJ : Geological Survey of Japan

GSP : Geological Survey of Pakistan

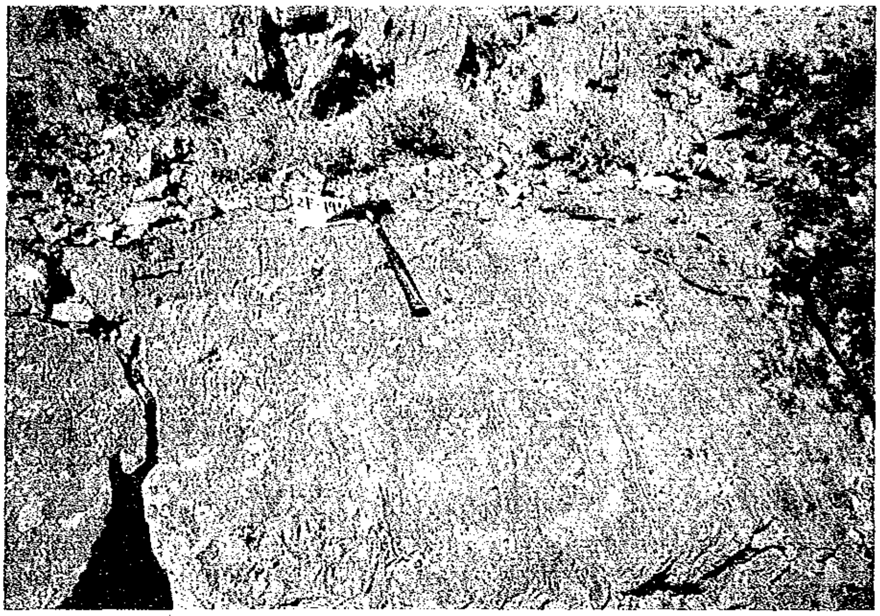
JICA : Japan International Coperation Agency

MMAJ : Metal Mining Agency of Japan

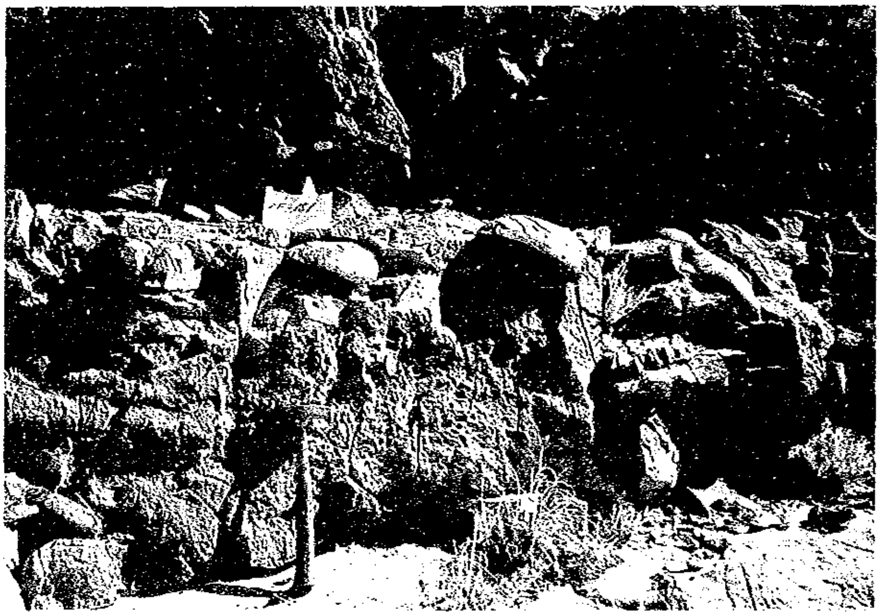
OTCA : Overseas Technical Cooperation Agency

USGS : United States Geological Survey

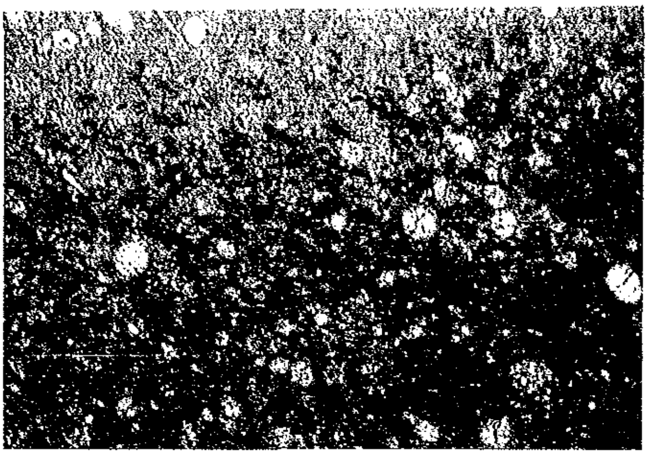
PHOTOGRAPHS



Phot. — 3 Mottled limestone
Location : 34 L/4
Formation : Loralai Member



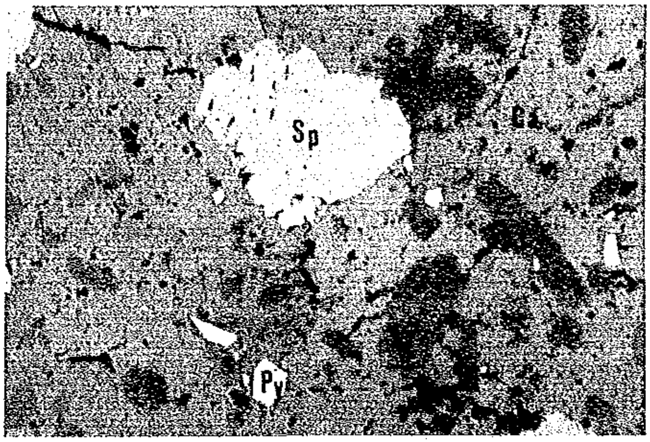
Phot. — 4 Concretion in limestone
Location : 34 L/11
Formation : Loralai Member



Phot. – 5

ThinSection(X nicol)

SampleNo. : 2G-40
Formation : Loralai M.
Rock Name : Limestone
Location : 34 L/8
Allochems : Ooids, bioclasts
Orthochems: Micrits



Phot. – 6

POlished Section

Sample No. : DH3-1-2
Drill No. : MJP-3
Position : 170.5m

Phot. – 7

Polished Section

Sample No. : DH3-1
Drill No. : MJP-3
Position : 185.0m

LEGEND : SP : Spharelite Py : Pyrite
Ga : Galena Ca : Calcite

0 0.2mm

APPENDICES

SAMPLE NAME:DH3-3	DATE:88.08.29	
TARGET :Cu		
VOL and CUR: 30KV 15mA	SMOOTHING NO.: 15	
SLITS :DS 1 RS .3 SS 1	THRESH.INTEN.: 25 CPS	
SCAN SPEED: 4 DEG/MIN.	2nd DERIV.: 74 CPS/(DEGxDEG)	
STEP/SAMPL.: .02 DEG	WIDTH: .12 DEG	
PRESET TIME: 0 SEC	B.G. (SAMP.) : 32	
FILE NAME :DH33100	B.G. (CYCLE) : 32	
OPERATOR :	OUTPUT FILE :	
COMMENT :		

No.	2-Theta	INTEN.	d	WIDTH	I/I0
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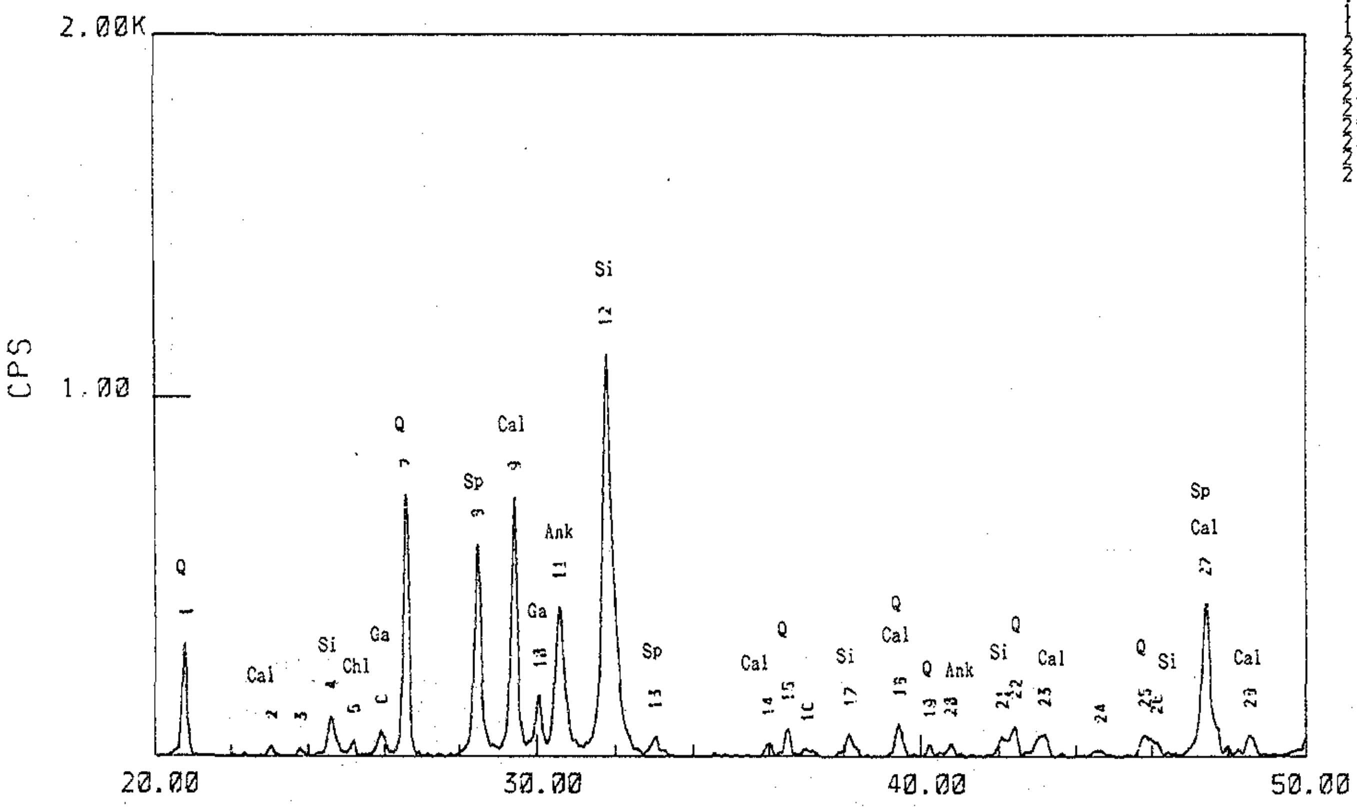
2	23.04	28	3.857	.33	3
3	23.5	22	3.785	.33	2
4	24.6	111	3.615	.39	10
5	25.2	44	3.531	.33	4
6	25.92	70	3.434	.39	6
7	26.58	232	3.351	.36	21
8	28.48	594	3.131	.36	53
9	29.44	725	3.031	.36	65
10	30.06	170	2.970	.33	15
11	30.58	417	2.921	.45	37
12	31.78	1118	2.813	.42	100
13	33.02	57	2.710	.33	5
14	35.98	37	2.494	.42	3
15	36.5	26	2.459	.33	2
16	37.02	21	2.426	.33	2
17	38.16	65	2.356	.33	6
18	39.44	93	2.282	.39	8
19	40.24	33	2.239	.33	3
20	40.76	37	2.211	.33	3
21	42.08	56	2.145	.33	5
22	42.42	85	2.129	.33	8
23	43.2	62	2.092	.63	6
24	44.66	19	2.027	.48	2
25	45.8	61	1.979	.51	5
26	46.12	43	1.966	.33	4
27	47.42	425	1.915	.39	38
28	48.58	61	1.872	.42	5



L E G E N D

Q : Quartz
Cal : Calcite
Si : Siderite
Ga : Galena
Sp : Sphalerite
Py : Pyrite
Ank : Ankerite
Chl : Chlorite
Se : Sericite

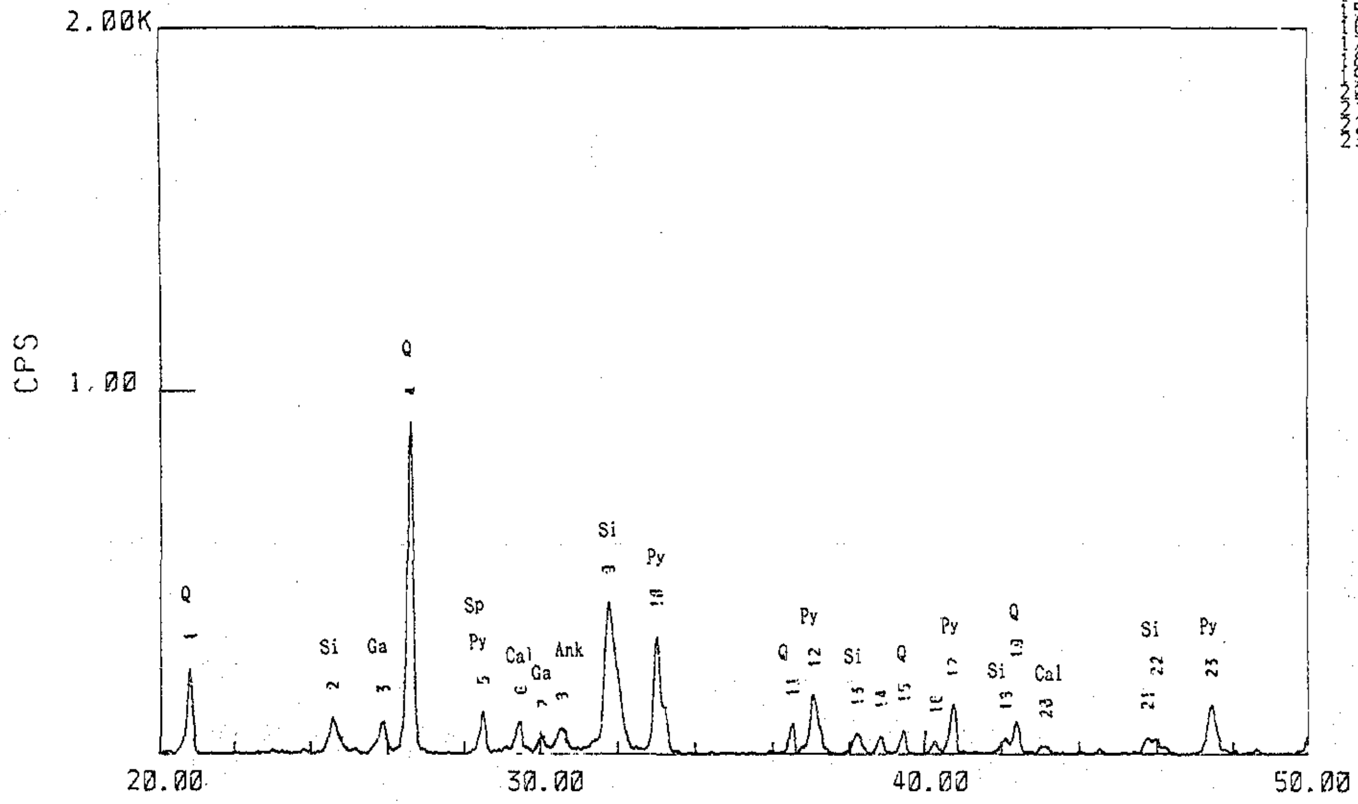
1. Chart of X-Ray Diffrection Analysis (1)

SAMPLE NAME	:DH4-4
TARGET	:Cu
VOL and CUR	: 30KV 15mA
SLITS	:DS 1 RS .3 SS 1
SCAN SPEED	: 4 DEG/MIN.
STEP/SAMPL.	: .02 DEG
PRESET TIME	: 0 SEC
FILE NAME	:DH44100
OPERATOR	:
COMMENT	:

DATE:88.08.29

SMOOTHING NO.	: 15
THRESH. INTEN.	: 24 CPS
2nd DERIV.	: 74 CPS/(DEGxDEG)
WIDTH	: .12 DEG
B.G. (SAMP.)	: 32
B.G. (CYCLE)	: 32
OUTPUT FILE	:

No.	2-Theta	INTEN.	d	WIDTH	I/I0
1	20.8	234	4.267	.33	26
2	24.58	100	3.618	.36	11
3	25.88	89	3.439	.36	10
4	26.6	911	3.348	.36	100
5	28.48	115	3.131	.33	13
6	29.46	89	3.029	.33	10
7	30.06	49	2.97	.36	5
8	30.56	71	2.922	.42	8
9	31.78	417	2.813	.66	46
10	33	324	2.712	.36	36
11	36.5	82	2.459	.33	9
12	37.06	162	2.423	.42	18
13	38.18	57	2.355	.42	6
14	38.82	49	2.317	.33	5
15	39.42	65	2.283	.33	7
16	40.26	35	2.238	.36	4
17	40.74	136	2.212	.36	15
18	42.1	45	2.144	.33	5
19	42.38	91	2.131	.33	10
20	43.12	23	2.096	.42	3
21	45.72	45	1.982	.33	5
22	45.96	43	1.973	.27	5
23	47.42	139	1.915	.48	15



L E G E N D

Q	: Quartz
Cal	: Calcite
Si	: Siderite
Ga	: Galena
Sp	: Sphalerite
Py	: Pyrite
Ank	: Ankerite
Chl	: Chlorite
Se	: Sericite

1. Chart of X-Ray Diffrection Analysis (2)

SAMPLE NAME	:DH4-6
TARGET	:Cu
VOL and CUR	: 30KV 15mA
SLITS	:DS 1 RS .3 SS 1
SCAN SPEED	: 4 DEG/MIN.
STEP/SAMPL.	: .02 DEG
PRESET TIME	: 0 SEC
FILE NAME	:DH46100
OPERATOR	:
COMMENT	:

DATE:88.08.29

SMOOTHING NO.	: 15
THRESH.INTEN.	: 30 CPS
2nd DERIV.	: 74 CPS/(DEG×DEG)
WIDTH	: .12 DEG
B.G. (SAMP.)	: 32
B.G. (CYCLE)	: 32
OUTPUT FILE	:

No.	2-Theta	INTEN.	d	WIDTH	I/I0
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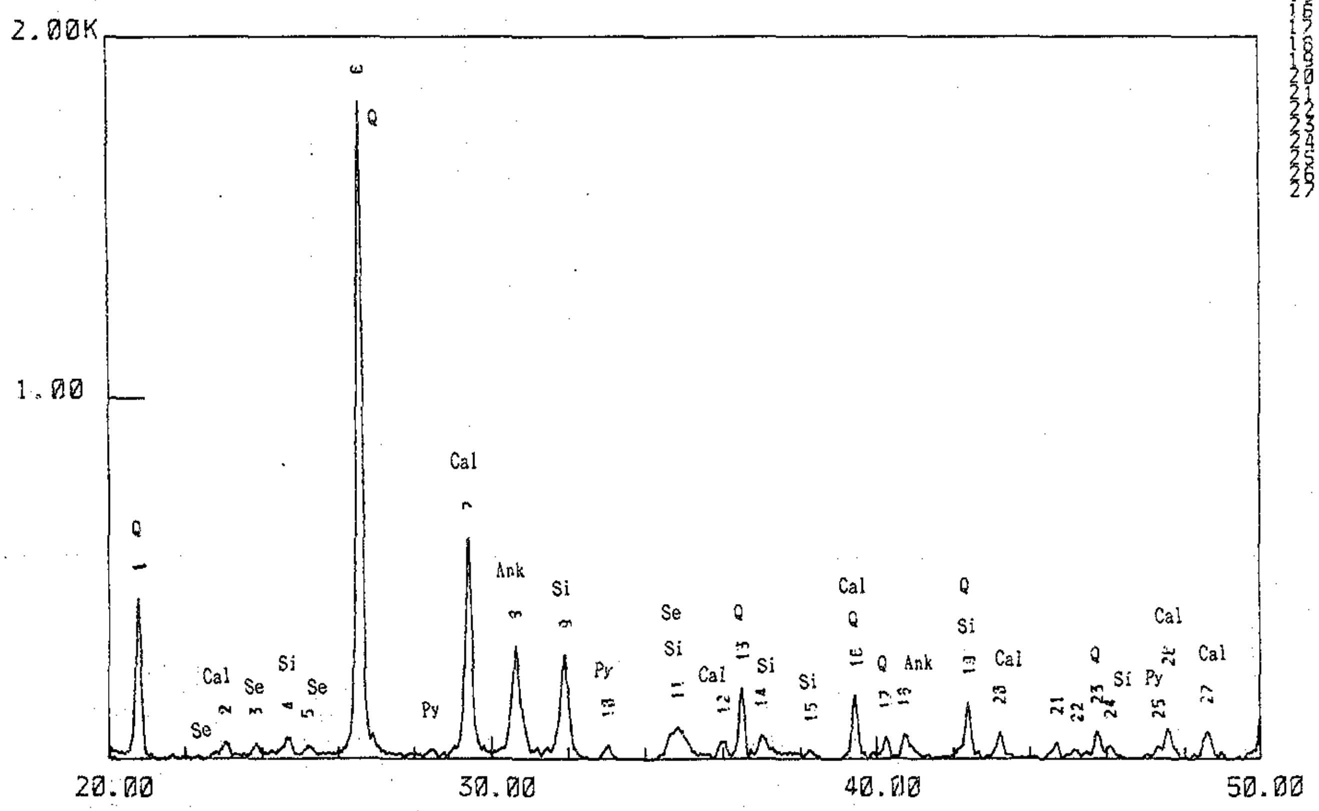
2	23.02	46	3.86	.33	3
3	23.82	43	3.732	.33	2
4	24.7	59	3.601	.33	3
5	25.2	37	3.531	.39	2
6	26.58	1822	3.35	.33	100
7	29.42	618	3.033	.39	34
8	30.64	317	2.915	.39	17
9	31.92	291	2.801	.42	16
10	33.02	39	2.71	.39	2
11	34.84	90	2.573	.57	5
12	36.02	49	2.491	.39	3
13	36.5	196	2.459	.33	11
14	37.	67	2.427	.36	4
15	38.26	27	2.35	.3	1
16	39.44	178	2.282	.33	10
17	40.24	60	2.239	.3	3
18	40.72	69	2.214	.3	4
19	42.38	157	2.131	.33	9
20	43.2	72	2.092	.36	4
21	44.7	47	2.025	.33	3
22	45.22	26	2.003	.3	1
23	45.74	77	1.982	.3	4
24	46.08	37	1.968	.24	2
25	47.32	34	1.919	.24	2
26	47.56	82	1.91	.33	4
27	48.58	77	1.672	.45	4



L E G E N D

Q : Quartz
Cal : Calcite
Si : Siderite
Ga : Galena
Sp : Sphalerite
Py : Pyrite
Ank : Ankerite
Chl : Chlorite
Se : Sericite

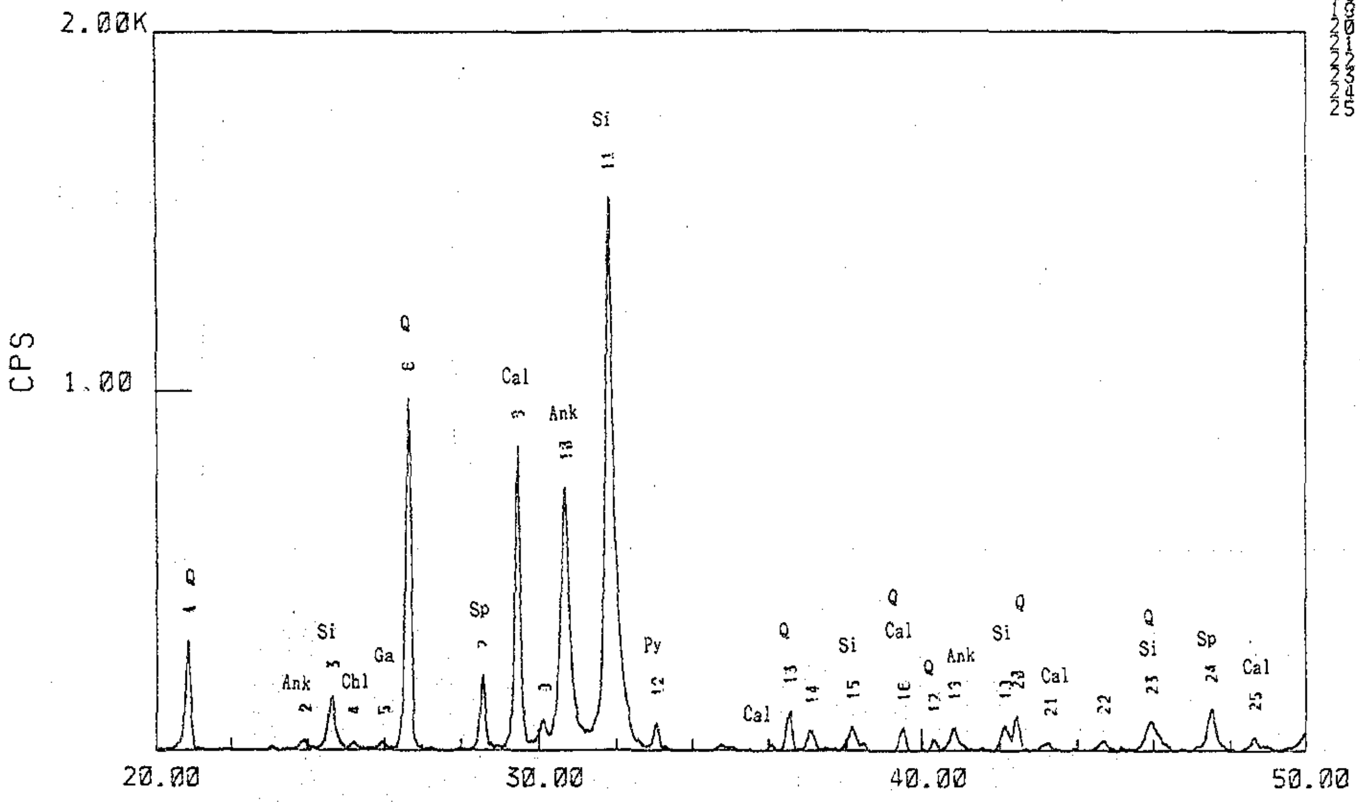
1. Chart of X-Ray Diffrection Analysis (3)

SAMPLE NAME	:DH5-2
TARGET	:Cu
VOL and CUR	: 30KV 15mA
SLITS	:DS 1 RS .3 SS 1
SCAN SPEED	: 4 DEG/MIN.
STEP/SAMPL.	: .02 DEG
PRESET TIME	: 0 SEC
FILE NAME	: DH52100
OPERATOR	:
COMMENT	:

DATE:88.08.29

SMOOTHING NO.	: 15
THRESH. INTEN.	: 25 CPS
2nd DERIV.	: 74 CPS/(DEGxDEG)
WIDTH	: .12 DEG
B.G. (SAMP.)	: 32
B.G. (CYCLE)	: 32
OUTPUT FILE	:

No.	2-Theta	INTEN.	d	WIDTH	I/I0
1	20.86	308	4.254	.33	20
2	23.92	30	3.717	.36	2
3	24.66	150	3.607	.36	10
4	25.22	22	3.528	.33	1
5	25.98	22	3.426	.33	1
6	26.64	980	3.343	.33	64
7	28.56	210	3.122	.33	14
8	29.46	848	3.029	.33	55
9	30.14	86	2.962	.33	6
10	30.68	732	2.911	.45	48
11	31.82	1535	2.811	.36	100
12	33.06	77	2.707	.33	5
13	36.56	110	2.455	.33	7
14	37.12	56	2.422	.33	4
15	38.16	66	2.356	.36	4
16	39.50	64	2.279	.36	4
17	40.30	33	2.236	.33	2
18	40.64	67	2.207	.33	4
19	42.14	80	2.142	.36	5
20	42.44	98	2.128	.36	6
21	43.28	22	2.088	.42	1
22	44.68	28	2.026	.33	2
23	45.94	85	1.973	.48	6
24	47.48	116	1.913	.39	8
25	48.64	38	1.87	.33	2



LEGEND

Q : Quartz
Cal : Calcite
Si : Siderite
Ga : Galena
Sp : Sphalerite
Py : Pyrite
Ank : Ankerite
Chl : Chlorite
Se : Sericite

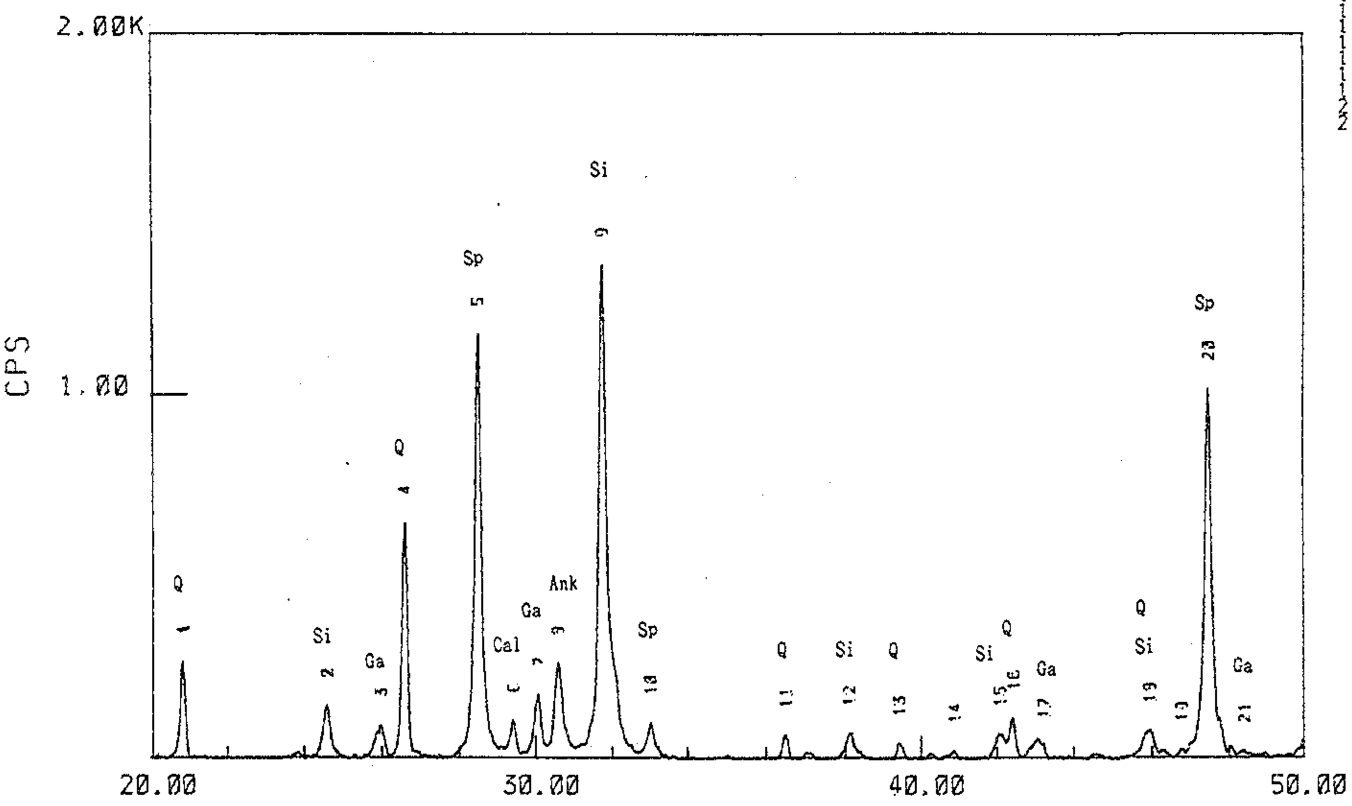
1. Chart of X-Ray Diffrection Analysis (4)

SAMPLE NAME: DH6-3	
TARGET	: Cu
VOL and CUR	: 30KV 15mA
SLITS	: DS 1 RS .3 SS 1
SCAN SPEED	: 4 DEG/MIN.
STEP/SAMPL.	: .02 DEG
PRESET TIME	: 0 SEC
FILE NAME	: DH63100
OPERATOR	:
COMMENT	:

DATE: 68.08.29

SMOOTHING NO.	: 15
THRESH. INTEN.	: 25 CPS
2nd DERIV.	: 74 CPS/(DEG×DEG)
WIDTH	: .12 DEG
B.G. (SAMP.)	: 32
B.G. (CYCLE)	: 32
OUTPUT FILE	:

No.	2-Theta	INTEN	d	WIDTH	I/I0
1	20.8	266	4.267	.33	20
2	24.6	145	3.615	.39	11
3	25.98	90	3.426	.31	7
4	26.6	65[illegible]	3.348	.33	48
5	28.52	1168	3.127	.33	86
6	29.42	[illegible]	3.033	.33	8
7	30.08	[illegible]	2.968	.36	13
8	30.6	26[illegible]	2.919	.36	20
9	31.78	1359	2.813	.36	100
10	33.02	[illegible]	[illegible]	.33	[illegible]
11	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
12	[illegible].12	71	[illegible]	.36	5
13	39.4	43	2.285	.36	3
14	40.88	22	2.205	[illegible]	2
15	42.06	69	2.14[illegible]	.42	5
16	42.42	112	2.129	[illegible]	8
17	43.24	[illegible]	[illegible]	.54	3
18	45.94	77	[illegible]	.54	[illegible]
19	46.76	24	1.941	.24	2
20	47.46	1016	1.914	.39	75
21	48.38	21	1.679	.24	2



L E G E N D

Q : Quartz
Cal : Calcite
Si : Siderite
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Sp : Sphalerite
Py : Pyrite
Ank : Ankerite
Chl : Chlorite
Se : Sericite

1. Chart of X-Ray Diffrection Analysis (5)

2 Geochemical Analysis Data of Rock Samples from Northern Khuzdar District (1)

Sample No.	Pb ppm	Zn ppm	Hg ppb	Ba ppm	Mg ppm	S %
2A-01	1	25	50	160	4250	<0.001
2A-02	1	11	40	960	1600	<0.001
2A-03	1	9	40	140	2500	<0.001
2A-04	1	27	70	620	5500	<0.001
2A-05	1	23	50	480	5000	<0.001
2A-06	7	46	70	200	6000	<0.001
2A-07	1	15	50	140	3000	<0.001
2A-08	1	12	30	80	5000	<0.001
2A-09	1	23	40	120	3150	<0.001
2A-10	1	110	30	140	3400	<0.001
2A-11	1	11	30	140	2900	<0.001
2A-12	1	11	20	160	3800	<0.001
2A-13	1	13	30	180	4300	<0.001
2A-14	1	7	20	140	3300	<0.001
2A-15	1	9	20	120	3550	<0.001
2A-16	1	11	20	180	13500	<0.001
2A-17	1	6	20	180	9000	<0.001
2A-18	1	6	20	160	5250	<0.001
2A-19	1	6	30	80	10500	<0.001
2A-20	1	12	20	160	5000	<0.001
2A-21	1	13	40	140	4500	<0.001
2A-24	1	26	50	220	6500	<0.001
2A-25	2	23	30	120	6500	<0.001
2A-26	1	24	30	200	7500	<0.001
2A-27	1	16	70	220	2750	<0.001
2A-28	1	16	40	280	1600	<0.001
2A-29	1	41	40	280	3400	<0.001
2A-30	1	38	50	360	3900	<0.001
2A-31	1	8	20	140	3500	<0.001
2A-32	1	15	70	160	2100	<0.001
2A-33	1	11	30	180	3650	<0.001
2A-34	1	12	50	1200	2500	<0.001
2A-35	1	15	30	220	2650	<0.001
2A-36	1	42	50	800	5250	<0.001
2A-37	1	7	30	180	3700	<0.001
2A-38	1	13	30	180	2300	<0.001
2A-39	1	16	40	180	2850	<0.001
2A-40	1	26	30	140	3950	<0.001
2A-41	1	15	50	200	2650	<0.001
2A-42	1	34	140	440	3200	<0.001
2A-43	1	10	40	200	3100	<0.001
2A-44	1	17	30	320	2700	<0.001
2A-45	1	20	40	1040	4800	<0.001
2A-46	1	11	30	100	2850	<0.001
2A-47	1	14	30	120	2750	<0.001
2A-48	1	13	30	100	2350	<0.001
2A-49	1	13	20	280	7000	<0.001
2A-50	2	9	40	160	6000	0.191
2A-51	1	40	30	320	6000	0.017
2A-52	1	17	50	140	3700	0.015
2A-53	1	5	20	120	2550	<0.001
2A-54	1	7	30	140	3400	0.002
2A-55	1	8	20	100	3200	0.009
2A-56	1	13	20	160	6000	<0.001
2A-57	1	10	20	110	4000	0.001
2A-58	1	12	20	140	3600	0.021
2A-59	1	8	20	180	3600	0.018
2A-60	1	17	50	160	4050	0.010
2A-61	1	7	20	180	3150	0.001
2A-62	4	63	30	240	7500	0.004
2A-63	3	30	40	180	4600	0.010
2A-64	1	27	40	240	5500	0.012
2A-65	1	26	20	200	5000	0.008
2A-66	1	44	20	220	6500	0.009
2A-67	1	30	30	220	5500	0.002
2A-68	1	96	40	140	8500	0.002
2A-69	1	10	20	160	3300	<0.001
2A-70	1	46	30	140	5500	<0.001
2A-71	1	21	30	420	5500	0.018
2A-72	1	10	20	200	4100	0.003
2A-73	1	20	50	580	4300	0.026
2A-74	1	17	20	360	3750	0.014
2A-75	1	32	30	320	6000	0.001
2A-76	1	35	30	200	6000	0.009
2A-77	1	19	30	200	4900	0.014
2A-78	1	11	20	240	3800	0.018
2A-79	1	13	20	220	3900	0.015
2A-80	1	7	20	180	6000	0.006
2A-81	1	9	20	200	3400	0.018
2A-82	1	26	40	360	6500	0.043
2A-83	1	13	30	180	3600	0.023
2A-84	1	8	30	140	10000	<0.001
2A-85	1	9	40	200	3750	0.028
2A-86	1	25	40	220	4800	0.001
2A-87	3	43	50	220	4000	0.167
2A-88	1	11	40	240	2250	0.032
2A-89	1	11	30	200	3650	0.001
2A-90	1	7	20	200	3450	0.001
2A-91	1	8	20	220	3150	0.002
2A-92	1	11	10	180	4100	0.003
2A-93	1	7	20	200	2800	0.016
2A-94	1	10	20	180	2450	0.001
2A-95	1	6	20	200	7500	0.016
2A-96	1	19	110	220	2600	0.007
2A-97	1	8	20	200	9500	<0.001
2A-98	1	10	30	200	2600	<0.001
2A-99	1	11	20	180	3800	<0.001
2A-100	1	16	20	160	4100	<0.001
2A-101	6	38	30	220	9000	0.170
2A-102	1	16	20	160	3150	0.003
2A-103	1	17	30	120	3250	0.026
2A-104	1	20	50	80	3500	<0.001
2A-105	1	22	30	110	6000	0.009
2A-106	1	21	30	80	4650	0.011
2A-107	1	10	20	160	2850	0.002
2A-108	1	6	30	180	3200	0.002
2A-109	1	11	20	100	2800	0.001
2A-110	3	23	30	140	9000	0.031
2A-111	1	7	30	140	3600	<0.001
2A-112	1	24	30	140	4850	0.003
2A-113	1	12	20	160	3350	0.006
2A-114	1	11	100	140	2050	0.010
2A-115	1	13	60	140	2000	0.002
2A-116	1	8	20	80	2800	<0.001
2A-117	1	23	30	220	4050	0.087
2A-118	1	23	40	140	3200	0.025
2A-119	1	7	40	140	2600	<0.001
2A-120	1	10	10	140	2900	0.002
2A-121	1	18	20	120	2200	0.003
2A-122	1	11	10	200	2300	<0.001
2A-123	1	12	80	180	2800	<0.001
2A-124	1	7	30	100	2650	<0.001
2A-125	1	10	20	180	2800	<0.001
2A-126	1	6	40	200	2750	0.003
2A-127	1	11	40	100	2250	0.002
2A-128	1	33	50	1100	5500	0.039
2A-129	1	10	50	80	2550	<0.001
2A-130	1	9	20	140	2100	0.008
2A-131	1	6	30	180	2800	<0.001
2A-132	1	10	20	200	2750	0.003
2A-133	1	10	20	220	3000	0.003
2A-134	1	21	20	200	3100	0.016
2A-135	1	77	20	160	3550	0.015
2A-136	1	15	20	160	2200	<0.001
2A-137	1	16	20	180	2100	<0.001
2A-138	1	17	10	200	2900	0.014
2A-139	1	8	10	200	3650	0.002
2A-140	1	17	20	150	6500	0.002
2A-141	1	20	20	180	2950	<0.001
2A-142	1	7	20	220	3500	0.021
2A-143	1	8	20	300	3100	0.019
2A-144	1	15	20	200	2650	0.003
2A-145	1	6	10	120	2250	<0.001
2A-146	1	9	10	160	3250	0.002
2A-147	1	9	10	160	3100	<0.001
2A-148	1	7	10	140	3400	0.004
2A-149	1	18	20	200	4400	0.013
2A-150	1	33	10	140	3200	0.015
2A-151	1	26	160	20	5500	0.005
2A-152	1	16	200	30	3250	0.003
2A-153	1	8	160	20	3500	0.004
2A-154	1	7	200	20	3250	0.012
2A-155	1	7	160	10	2950	0.004
2A-156	1	8	140	20	1950	<0.001
2A-157	1	8	200	20	3500	0.005
2A-158	1	10	140	30	2500	<0.001
2A-159	1	8	100	20	3350	0.003
2A-160	1	12	140	20	2900	0.007
2A-161	1	11	140	10	2600	<0.001
2A-162	1	8	140	20	3000	0.005
2A-163	1	9	120	20	2850	0.002
2A-164	1	6	140	10	3000	0.005
2A-165	1	8	120	10	6000	0.008
2A-166	1	33	140	20	6000	<0.001
2A-167	1	47	140	30	3250	0.006
2A-168	1	14	120	20	3000	0.001
2A-169	1	11	120	20	2900	0.003
2A-170	1	9	120	30	3500	0.012
2A-171	1	20	100	20	3250	0.004
2A-172	1	13	140	20	3100	<0.001
2A-173	1	21	160	10	3600	0.023
2A-174	1	12	400	30	2250	0.001
2A-175	1	8	140	20	5500	0.002
2A-176	1	10	160	20	3400	0.003

2 Geochemical Analysis Data of Rock Samples from Northern Khuzdar District (2)

Sample No.	Pb ppm	Zn ppm	Hg ppb	Ba ppm	Mg ppm	S %
2A-177	1	8	120	10	3500	0.003
2A-178	1	12	100	10	2900	0.005
2A-179	1	59	120	70	2100	0.003
2A-180	1	12	140	20	2500	0.010
2A-181	1	19	200	30	1850	<0.001
2A-182	1	8	120	30	2300	0.001
2A-184	1	12	120	40	1800	0.002
2A-185	1	19	100	30	1900	0.006
2A-186	1	9	120	20	2700	0.007
2A-187	1	11	120	20	2800	0.001
2A-188	1	25	140	50	3150	0.020
2A-189	1	13	120	10	2150	<0.001
2A-190	1	11	200	20	3400	0.020
2A-191	1	15	120	10	3500	0.012
2A-192	1	31	160	50	3700	0.015
2A-193	1	9	180	20	3600	0.034
2A-194	1	7	120	10	1850	<0.001
2A-195	1	13	200	10	4450	0.024
2A-196	1	8	400	10	2700	<0.001
2A-197	1	7	120	20	2500	0.005
2A-198	1	10	120	20	18000	0.002
2A-199	1	9	140	10	3000	0.001
2A-200	1	10	120	10	3200	0.003
2A-201	1	22	200	20	3000	0.017
2A-202	1	20	180	10	4200	0.028
2A-203	1	14	160	10	4000	0.004
2A-204	1	14	180	10	2700	0.004
2A-205	1	28	200	20	4000	0.008
2A-206	1	8	200	20	2250	0.001
2A-207	1	10	140	10	3300	0.002
2A-208	1	11	160	20	5500	0.003
2A-209	1	14	120	10	2950	0.006
2A-210	1	12	140	10	2700	0.010
2A-211	1	8	200	10	3200	0.028
2A-212	1	14	100	50	3100	0.012
2A-213	1	14	140	10	3750	0.007
2A-214	1	63	200	10	3500	0.033
2A-215	1	18	5500	20	4350	0.144
2A-217	1	9	540	30	3950	0.013
2A-218	1	13	260	80	3000	0.011
2A-219	1	26	180	80	3600	0.048
2A-220	1	10	120	10	2400	0.002
2A-222	1	13	140	20	4500	0.023
2A-223	1	7	440	10	3500	0.012
2A-224	1	20	100	10	3500	0.007
2A-225	1	5	120	10	15500	<0.001
2A-226	1	5	140	10	2000	<0.001
2A-227	1	12	100	10	3000	0.005
2A-228	1	22	180	50	6000	0.011
2A-229	1	9	120	20	5500	0.006
2A-230	1	15	140	20	2550	0.004
2B-01	3	26	20	120	2700	0.024
2B-02	1	44	10	140	3100	0.004
2B-03	1	8	30	160	1650	<0.001
2B-04	1	7	30	180	2100	<0.001
2B-05	1	7	30	140	2100	<0.001
2B-06	1	15	30	300	4050	0.029
2B-07	1	129	20	260	7500	0.006
2B-08	1	27	10	140	7500	0.001
2B-09	1	16	20	160	3600	0.007
2B-10	1	10	10	200	2550	0.003
2B-11	1	13	20	140	3250	0.002
2B-12	1	8	20	180	3400	0.030
2B-13	1	26	20	160	3700	0.006
2B-14	1	13	30	400	6500	0.025
2B-15	1	11	20	200	4250	0.011
2B-16	1	15	20	200	3800	0.014
2B-17	1	6	20	140	5500	<0.001
2B-18	1	40	20	200	3800	0.006
2B-19	1	7	20	160	3500	<0.001
2B-20	1	18	20	200	4900	0.004
2B-21	1	13	20	120	2250	<0.001
2B-22	1	9	10	100	2600	0.007
2B-23	1	7	10	100	1500	<0.001
2B-24	1	11	20	160	2500	0.001
2B-25	1	7	20	120	2300	0.002
2B-26	1	13	10	120	2900	<0.001
2B-27	1	10	20	200	2000	0.008
2B-28	1	6	20	120	1450	<0.001
2B-29	1	7	10	160	1900	0.002
2B-30	1	7	10	120	10000	<0.001
2B-31	1	30	10	140	2300	<0.001
2B-32	1	29	10	160	2500	<0.001
2B-33	1	23	30	100	1600	<0.001
2B-34	1	36	20	120	4200	0.001
2B-35	1	8	20	200	3700	0.003
2B-36	1	8	20	140	2900	<0.001
2B-37	1	11	20	240	4500	0.003
2B-38	1	9	10	140	1200	<0.001
2B-39	1	10	10	160	12500	0.002
2B-40	1	10	10	180	7500	0.031
2B-41	1	15	10	100	4750	0.002
2B-42	1	12	20	200	3900	0.009
2B-43	1	7	10	180	2650	<0.001
2B-44	1	9	30	160	2600	0.002
2B-45	1	57	20	160	2650	<0.001
2B-46	1	8	20	280	2600	<0.001
2B-47	1	9	20	340	1850	0.004
2B-48	1	7	20	160	1400	<0.001
2B-49	1	12	20	400	8000	0.003
2B-50	1	28	20	220	2650	<0.001
2B-51	1	7	20	160	3850	<0.001
2B-52	1	7	30	140	1900	<0.001
2B-53	1	10	100	180	3300	<0.001
2B-54	1	12	120	120	4050	0.002
2B-55	1	6	20	100	1450	0.002
2B-56	1	15	40	110	2900	0.006
2B-57	1	12	20	120	2400	<0.001
2B-58	1	24	50	140	5000	0.004
2B-59	1	28	40	200	1850	0.002
2B-60	1	33	30	160	5500	0.002
2B-61	1	48	30	260	6500	0.003
2B-62	1	30	40	260	3200	0.003
2B-63	1	10	30	600	2100	0.024
2B-64	1	17	40	200	3200	0.008
2B-65	1	15	50	340	2200	<0.001
2B-66	1	35	30	200	6500	0.003
2B-67	1	35	30	220	6000	<0.001
2B-68	1	34	30	180	4750	0.005
2B-69	1	37	30	180	5500	0.006
2B-70	1	14	30	200	3850	0.005
2B-71	1	9	20	140	1950	<0.001
2B-72	1	7	20	220	5500	<0.001
2B-73	1	24	40	120	1650	<0.001
2B-74	1	7	40	140	1800	<0.001
2B-75	1	25	20	160	3600	<0.001
2B-76	1	12	40	220	1450	0.009
2B-77	1	16	40	340	3350	0.004
2B-78	1	18	30	420	3950	0.009
2B-79	1	33	30	220	4700	<0.001
2B-80	1	9	20	160	2900	<0.001
2B-81	3	38	50	300	6500	0.008
2B-82	3	59	30	220	5500	0.004
2B-83	1	24	20	140	2650	0.003
2B-84	1	11	20	160	3350	0.002
2B-85	1	14	20	100	3800	0.007
2B-86	1	38	20	120	2650	<0.001
2B-87	1	10	10	200	2650	<0.001
2B-88	1	10	10	140	11500	0.003
2B-89	1	10	50	100	2750	0.001
2B-90	1	40	30	120	5500	0.002
2B-91	1	7	20	140	8500	0.003
2B-92	1	14	20	120	3050	0.001
2B-093	1	10	280	40	5500	0.103
2B-94	1	7	20	100	2700	0.004
2B-95	1	32	30	200	4000	0.002
2B-96	1	86	50	180	4600	<0.001
2B-97	2	37	40	200	4250	0.003
2B-98	1	7	20	120	2950	0.002
2B-99	1	7	30	100	3300	0.002
2B-100	1	8	20	140	3150	<0.001
2B-101	1	7	20	100	2750	<0.001
2B-102	1	8	20	100	2900	0.005
2B-103	1	8	10	110	3800	0.001
2B-104	2	7	20	140	3450	<0.001
2B-105	1	16	20	110	3350	0.002
2B-106	1	18	20	160	4700	0.002
2B-107	1	7	10	140	3400	<0.001
2B-108	1	7	20	120	3050	0.001
2B-109	1	7	10	100	6500	<0.001
2B-110	1	7	20	160	3450	<0.001
2B-111	1	6	50	100	2550	0.013
2B-112	1	8	50	160	2700	0.002
2B-113	1	8	60	120	2750	0.006
2B-114	1	12	30	120	3500	<0.001
2B-115	1	8	20	140	2700	0.002
2B-116	1	18	20	140	3650	<0.001
2B-117	1	15	10	200	3700	0.002
2B-118	1	13	20	160	2600	0.005
2B-119	1	7	30	100	3600	<0.001
2B-120	1	8	10	140	3150	0.002
2B-121	1	17	30	200	4900	0.003
2B-122	3	34	30	220	7500	0.019
2B-123	3	34	40	140	7500	0.068

Geochemical Analysis Data of Rock Samples from Northern Khuzdar District (3)

Sample No.	Pb ppm	Zn ppm	Hg ppb	Ba ppm	Mg ppm	S %
2B-124	1	24	40	200	4950	0.018
2B-125	1	18	30	300	3400	0.004
2B-126	3	30	50	160	5500	<0.001
2B-127	3	30	30	300	8000	0.053
2B-128	1	12	20	180	3800	0.002
2B-129	1	21	40	180	4050	0.003
2B-130	1	8	50	180	3200	0.031
2B-131	1	12	20	140	2800	0.006
2B-132	1	14	20	140	16500	0.002
2B-133	1	15	20	140	7000	0.005
2B-134	1	10	30	300	3750	0.004
2B-135	1	17	40	140	3100	0.003
2B-136	1	20	40	200	3100	<0.001
2B-137	1	10	20	200	3050	0.003
2B-138	1	10	40	140	2500	0.009
2B-139	1	18	40	200	3100	0.008
2B-140	1	8	20	220	2900	0.002
2B-141	1	14	20	560	3500	0.019
2B-142	1	24	40	300	3500	0.006
2B-143	1	10	10	160	6500	0.009
2B-144	1	13	20	200	3100	0.017
2B-145	1	8	20	120	1900	0.007
2B-146	1	11	20	140	2150	0.008
2B-147	1	8	10	140	2650	0.011
2B-148	1	7	20	120	2450	0.008
2B-149	1	13	70	180	2800	0.002
2B-150	1	6	20	180	3150	0.017
2B-151	1	9	200	10	3700	0.013
2B-152	1	8	140	20	3100	0.022
2B-153	1	33	760	30	6000	0.027
2B-154	1	41	260	20	4250	0.011
2B-155	1	9	200	10	3350	0.005
2B-156	1	22	160	10	3350	0.006
2B-157	1	16	280	30	62500	0.002
2B-158	1	22	140	20	1950	<0.001
2B-159	1	14	140	20	2000	<0.001
2B-160	1	10	180	10	3400	0.004
2B-161	1	10	180	10	3000	0.005
2B-162	1	7	900	10	2500	<0.001
2B-163	1	14	120	40	9000	0.002
2B-164	1	9	160	10	29000	<0.001
2B-165	1	21	260	20	4500	<0.001
2B-166	1	29	240	20	4150	0.003
2B-167	1	18	200	10	2150	0.001
2B-168	1	23	120	10	2000	0.002
2B-169	1	10	120	10	6000	0.002
2B-170	1	17	100	20	1550	<0.001
2B-171	1	16	120	10	1450	<0.001
2B-172	1	13	140	30	3000	<0.001
2B-173	1	20	160	30	3100	<0.001
2B-174	1	7	140	10	3150	0.002
2B-175	1	10	100	10	2250	0.002
2B-176	1	9	120	10	2100	0.002
2B-177	1	17	120	10	2400	0.003
2B-178	1	8	120	40	2600	<0.001
2B-179	1	11	140	20	5000	0.187
2B-180	1	8	140	10	4000	0.093
2B-181	1	12	120	40	2150	<0.001
2B-182	1	7	100	60	2100	<0.001
2B-183	1	17	120	20	3750	0.002
2B-184	1	7	140	20	2250	<0.001
2B-185	1	15	200	20	3250	0.002
2B-186	1	14	200	20	3400	0.006
2B-187	1	20	160	10	3300	0.005
2B-188	1	66	120	40	5000	0.013
2B-189	1	11	120	30	2650	0.007
2B-190	1	7	100	10	6000	<0.001
2B-191	1	7	100	10	13500	0.001
2B-192	1	11	120	10	4100	<0.001
2B-193	1	48	600	60	6000	0.003
2B-194	1	32	180	50	3000	0.022
2B-195	1	24	180	40	2900	0.006
2B-196	1	127	300	10	3250	0.008
2B-197	1	65	280	40	2700	0.003
2B-198	1	9	160	20	2550	<0.001
2B-199	1	10	120	70	3250	0.015
2B-200	1	34	160	30	6000	0.003
2B-201	1	22	180	30	4450	0.003
2B-202	1	30	1500	30	6000	0.033
2B-203	1	10	220	10	3450	<0.001
2B-204	1	21	120	10	2300	<0.001
2B-205	1	48	160	10	4000	<0.001
2B-206	12	2400	80	60	2400	0.030
2B-207	1	15	120	20	3850	<0.001
2B-208	1	18	140	10	2650	<0.001
2B-209	1	9	120	10	4300	<0.001
2B-210	1	9	140	10	2250	<0.001

Sample No.	Pb ppm	Zn ppm	Hg ppb	Ba ppm	Mg ppm	S %
2B-211	1	12	140	10	2850	0.014
2B-212	1	15	160	10	2800	<0.001
2B-213	1	13	120	20	1650	<0.001
2B-214	2	14	180	20	3700	0.008
2B-215	1	8	160	20	800	0.007
2B-216	1	15	120	10	2300	<0.001
2B-217	1	9	160	10	3150	0.068
2B-218	1	10	200	10	2900	0.002
2B-219	1	15	140	10	3250	0.004
2B-220	1	13	140	10	4250	0.007
2B-221	1	15	80	10	3650	0.006
2B-222	1	12	200	10	4300	0.019
2B-223	1	21	160	10	3850	0.015
2B-224	1	7	140	10	2550	0.008
2B-225	1	9	120	10	3350	0.025
2B-226	1	8	180	10	3250	0.011
2B-227	1	7	160	20	2900	0.011
2B-228	1	16	200	10	3400	0.009
2B-229	1	12	120	40	2200	0.021
2B-230	1	8	120	20	4000	0.015
2B-231	1	11	140	20	3450	0.019
2B-232	1	12	160	20	2350	0.011
2B-233	1	14	180	10	2200	0.003
2B-234	1	15	140	10	4150	0.018
2B-235	1	8	120	10	3250	0.007
2B-236	1	25	140	10	2350	<0.001
2B-237	1	7	180	20	2550	0.004
2B-238	1	9	120	10	2250	<0.001
2B-239	1	8	120	20	6000	<0.001
2B-240	1	13	140	20	2950	<0.001
2B-241	1	9	140	20	3400	0.004
2B-242	1	11	120	20	3000	0.010
2B-243	1	13	160	50	1700	<0.001
2B-244	1	27	160	10	6000	0.001
2B-245	1	15	160	10	3350	0.006
2B-246	1	9	140	10	3050	0.003
2B-247	1	28	160	10	3400	0.002
2B-248	1	16	160	10	2850	0.002
2B-249	1	8	140	20	2300	0.005
2B-250	1	13	200	10	45500	<0.001
2B-251	1	7	140	40	5500	<0.001
2B-252	1	14	160	10	2950	0.004
2B-253	1	12	120	30	2200	<0.001
2B-254	1	17	160	30	6000	<0.001
2B-255	1	36	200	20	4250	0.013
2B-256	1	9	140	10	4050	0.009
2B-258	1	9	160	80	5500	0.007
2B-259	1	9	160	20	49000	<0.001
2B-260	1	10	120	40	3350	<0.001
2B-261	1	9	120	20	2800	<0.001
2B-262	1	14	160	10	3100	<0.001
2B-263	1	7	160	10	3250	<0.001
2B-264	1	13	240	20	3500	0.002
2B-265	1	8	140	10	2850	0.002
2B-266	1	18	180	10	3450	0.002
2B-267	1	8	160	10	3350	0.003
2B-268	1	34	220	20	5500	0.003
2B-269	1	7	180	10	3100	<0.001
2B-270	1	11	120	10	9500	<0.001
2B-271	1	10	140	10	2050	<0.001
2B-272	1	11	160	10	2050	<0.001
2B-273	1	8	160	10	3200	0.002
2B-274	1	12	120	10	2900	0.007
2B-275	1	11	160	10	3750	<0.001
2B-276	1	8	160	10	4450	<0.001
2B-277	1	8	120	10	2550	<0.001
2C-01	1	8	10	140	2850	0.007
2C-02	1	5	20	140	1050	<0.001
2C-03	1	5	10	140	1200	<0.001
2C-04	1	6	20	160	2000	0.004
2C-05	1	6	10	160	2000	<0.001
2C-06	1	6	10	140	1450	<0.001
2C-07	1	7	10	200	1800	0.001
2C-08	1	10	10	160	1850	<0.001
2C-09	1	6	10	140	1500	0.002
2C-10	1	5	10	140	1300	<0.001
2C-11	1	6	10	160	2400	0.002
2C-12	1	5	20	140	1600	<0.001
2C-13	1	6	20	160	3500	<0.001
2C-14	1	24	10	120	3250	0.002
2C-15	1	11	20	160	2800	<0.001
2C-16	1	18	10	180	2150	<0.001
2C-17	1	17	10	140	1450	<0.001
2C-18	1	9	20	160	2800	<0.001
2C-19	2	30	10	140	4250	0.002
2C-20	1	15	10	140	1500	<0.001
2C-21	1	19	20	120	3700	0.028

2 Geochemical Analysis Data of Rock Samples from Northern Khuzdar District (4)

Sample No.	Pb ppm	Zn ppm	Hg ppb	Ba ppm	Mg ppm	S %
2C-22	1	8	30	200	3000	0.002
2C-23	1	11	40	360	1550	0.004
2C-24	1	6	10	200	2200	<0.001
2C-25	1	7	10	160	1300	<0.001
2C-26	1	10	10	140	2500	0.007
2C-27	1	27	10	120	6500	0.065
2C-28	1	7	10	140	1850	0.005
2C-29	1	9	10	420	3700	0.018
2C-30	1	6	10	180	3250	<0.001
2C-31	1	39	30	160	5500	0.028
2C-32	1	9	40	180	3600	0.009
2C-33	1	15	30	120	1450	<0.001
2C-34	1	15	20	120	2500	<0.001
2C-35	1	11	20	120	3050	0.003
2C-36	1	11	20	120	2100	0.015
2C-37	1	7	20	140	1650	0.001
2C-38	1	13	10	120	70000	0.060
2C-39	1	7	20	100	1750	<0.001
2C-40	1	6	20	140	1600	<0.001
2C-41	1	7	20	100	1500	0.002
2C-42	1	17	40	120	37500	0.075
2C-43	1	16	30	120	1800	0.013
2C-44	1	16	40	120	4250	0.009
2C-45	1	6	20	120	3200	0.011
2C-46	1	10	30	110	1600	<0.001
2C-47	1	10	50	100	18000	0.001
2C-48	1	17	90	240	9000	0.015
2C-49	1	14	110	5800	2750	0.182
2C-50	1	18	90	180	2300	0.001
2C-51	1	21	110	1260	1850	0.001
2C-52	2	22	60	440	5500	0.045
2C-53	2	24	30	220	3700	<0.001
2C-54	1	32	30	140	3050	<0.001
2C-55	1	10	10	160	1600	<0.001
2C-56	1	12	10	180	1500	<0.001
2C-57	1	7	10	140	1500	<0.001
2C-58	1	7	10	140	16500	<0.001
2C-59	1	7	10	160	4350	<0.001
2C-60	1	6	20	140	6000	<0.001
2C-61	1	10	20	120	3150	<0.001
2C-62	1	8	20	140	18000	<0.001
2C-63	1	8	20	200	11500	<0.001
2C-64	1	7	20	120	2200	<0.001
2C-65	1	12	20	140	2900	<0.001
2C-66	1	8	20	160	2750	0.002
2C-67	1	6	20	180	2900	0.002
2C-68	1	21	60	600	4900	0.008
2C-69	1	22	20	320	13000	0.097
2C-70	1	8	130	280	3050	<0.001
2C-71	1	12	80	940	3750	0.014
2C-72	1	30	40	360	3900	0.009
2C-73	1	25	20	780	2900	0.020
2C-74	1	9	50	2200	2650	0.084
2C-75	1	25	40	440	5500	0.006
2C-76	1	17	40	160	1900	0.001
2C-77	1	28	20	420	4000	<0.001
2C-78	1	19	20	240	3900	<0.001
2C-79	2	46	30	640	6500	0.002
2C-80	1	39	40	760	7000	0.025
2C-81	1	26	30	660	5500	0.028
2C-82	1	12	30	240	4400	<0.001
2C-83	1	45	30	240	7500	<0.001
2C-84	2	35	40	240	8500	0.143
2C-85	1	21	40	180	6000	<0.001
2C-86	1	20	30	200	6000	<0.001
2C-87	1	35	60	580	5500	0.053
2C-88	1	24	30	460	4900	<0.001
2C-89	1	46	20	160	3400	0.028
2C-90	1	18	10	160	2650	<0.001
2C-91	1	22	20	320	4600	<0.001
2C-92	1	11	20	200	3900	<0.001
2C-93	1	19	30	400	3250	0.031
2C-94	1	34	20	140	3900	<0.001
2C-95	1	7	20	120	2150	<0.001
2C-96	1	23	10	220	4500	<0.001
2C-97	1	6	40	140	2000	<0.001
2C-98	1	9	20	300	2150	<0.001
2C-99	1	11	20	220	15000	<0.001
2C-100	1	8	30	120	3250	<0.001
2C-101	1	7	20	140	2000	<0.001
2C-102	1	7	10	200	1650	<0.001
2C-103	1	21	10	140	2300	<0.001
2C-104	1	6	20	140	3850	<0.001
2C-105	1	8	10	100	3800	<0.001
2C-106	1	23	20	100	1600	<0.001
2C-107	1	33	20	120	2300	<0.001
2C-108	1	10	20	140	2500	<0.001
2C-109	1	19	10	140	3400	<0.001
2C-110	1	26	10	160	11500	<0.001
2C-111	1	10	20	120	15500	<0.001
2C-112	1	8	20	160	17500	<0.001
2C-113	1	8	20	160	3750	0.001
2C-114	1	8	10	160	3100	<0.001
2C-115	1	13	20	180	3550	<0.001
2C-116	1	8	10	140	2500	<0.001
2C-117	1	9	20	160	3000	<0.001
2C-118	1	7	10	200	2500	<0.001
2C-119	1	13	10	200	4400	<0.001
2C-120	1	10	10	160	1850	<0.001
2C-121	1	7	10	200	3150	<0.001
2C-122	1	13	20	140	5000	<0.001
2C-123	1	8	20	160	3650	<0.001
2C-124	1	12	10	200	4000	<0.001
2C-125	1	8	30	160	2850	0.013
2C-126	1	7	10	160	2750	0.002
2C-127	1	7	10	180	10000	<0.001
2C-128	1	6	10	120	3000	0.003
2C-129	1	7	20	180	2800	<0.001
2C-130	1	7	20	180	2800	0.018
2C-131	1	10	10	200	3900	0.001
2C-132	1	29	10	180	3600	0.018
2C-133	1	6	10	160	1500	<0.001
2C-134	1	15	20	200	3200	<0.001
2C-135	1	8	10	140	2900	0.002
2C-136	1	6	10	160	2000	<0.001
2C-137	1	10	10	280	2400	<0.001
2C-138	1	6	20	160	3000	0.002
2C-139	1	12	20	180	3150	<0.001
2C-140	1	8	10	240	2850	<0.001
2C-141	1	6	10	160	2700	<0.001
2C-142	1	9	30	140	2200	0.007
2C-143	1	10	20	140	2500	0.002
2C-144	1	21	20	140	4350	<0.001
2C-145	1	30	20	160	3700	<0.001
2C-146	1	8	10	140	2100	<0.001
2C-147	1	13	10	140	1800	<0.001
2C-148	1	11	10	160	13500	<0.001
2C-149	1	13	20	560	3200	0.032
2C-150	1	30	10	320	2750	0.013
2C-151	1	10	20	160	3400	<0.001
2C-152	1	6	20	220	2100	<0.001
2C-153	1	10	40	140	2650	<0.001
2C-154	1	7	30	160	3050	0.003
2C-155	1	23	10	140	1750	<0.001
2C-156	1	10	20	140	2500	0.006
2C-157	1	10	10	150	4050	<0.001
2C-158	1	6	10	160	2650	<0.001
2C-159	1	11	10	140	2450	<0.001
2C-160	1	14	10	120	3900	<0.001
2C-161	1	6	20	140	2600	<0.001
2C-162	1	6	20	180	7000	0.011
2C-163	1	6	20	160	3500	0.394
2C-164	1	9	10	120	3500	0.003
2C-165	1	10	10	160	1950	<0.001
2C-166	1	7	10	180	29000	<0.001
2C-167	1	6	20	140	2050	<0.001
2C-168	1	6	10	160	13000	0.019
2C-169	1	10	10	140	3000	<0.001
2C-170	1	7	10	140	2100	<0.001
2C-171	1	8	10	140	2250	<0.001
2C-172	1	5	10	160	1800	<0.001
2C-173	1	9	20	140	2400	<0.001
2C-174	1	7	10	160	3300	0.001
2C-175	1	10	10	160	2850	<0.001
2C-176	1	13	10	240	3150	0.002
2C-177	1	8	20	260	3100	<0.001
2C-178	1	7	10	220	3250	0.018
2C-179	1	18	20	980	4300	0.015
2C-180	1	17	10	280	3400	0.031
2C-181	1	10	20	200	3300	0.002
2C-182	1	8	10	140	3400	0.016
2C-183	1	9	20	180	3750	0.001
2C-184	1	10	10	140	2250	<0.001
2C-185	1	24	140	10	2900	0.003
2C-186	1	9	140	10	2800	0.058
2C-187	1	22	200	20	3350	0.029
2C-188	1	16	200	10	4450	0.022
2C-189	1	13	160	20	2050	<0.001
2C-190	1	8	140	10	3150	0.008
2C-191	1	16	140	20	2250	<0.001
2C-192	1	29	160	20	3600	0.023
2C-193	1	53	400	10	3000	0.003
2C-194	1	11	120	10	2900	0.013
2C-195	2	38	140	10	3000	0.001