Image of Zinc Ore by Polished Thin Section

(1) IC-12-163

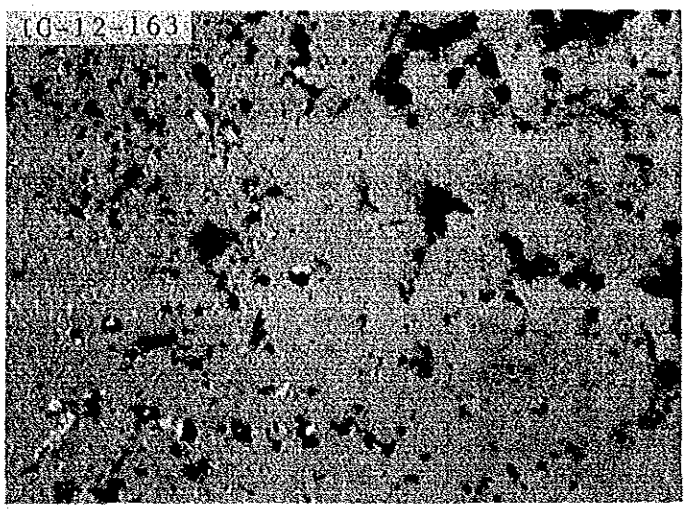
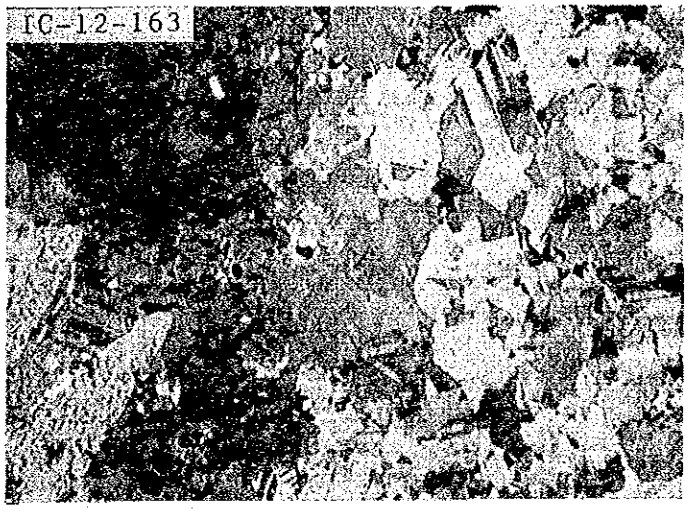


Image of Zinc Ore
by reflected light

The greater portion is sphalerite and left part abounds with chalcopyrite dots.



Etching Image
by reflected light

Boundary of each crystal and twinning structure are clearly observed.

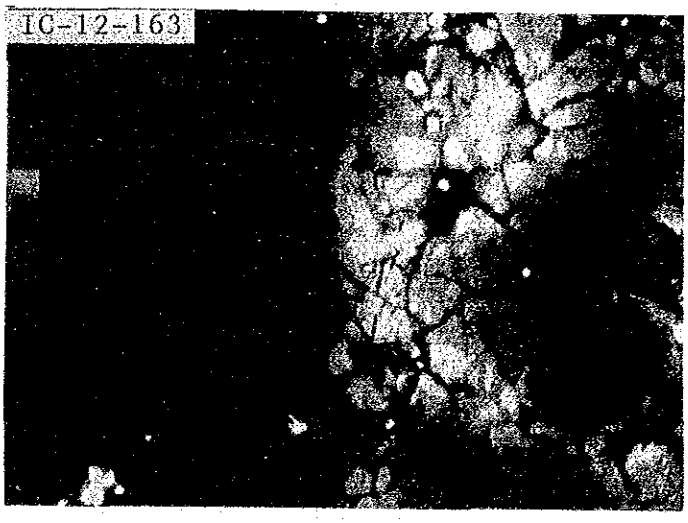


Image by transmitted light

Zoning structure of different type of sphalerites, black, red, pale-yellow, and white colors, is observed.

0 0.5mm

Image of Zinc Ore by Polished Thin Section

(2) IC-12-167

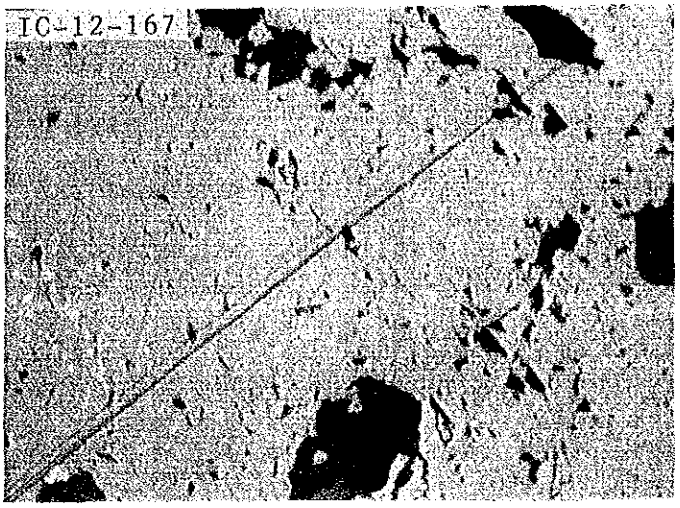
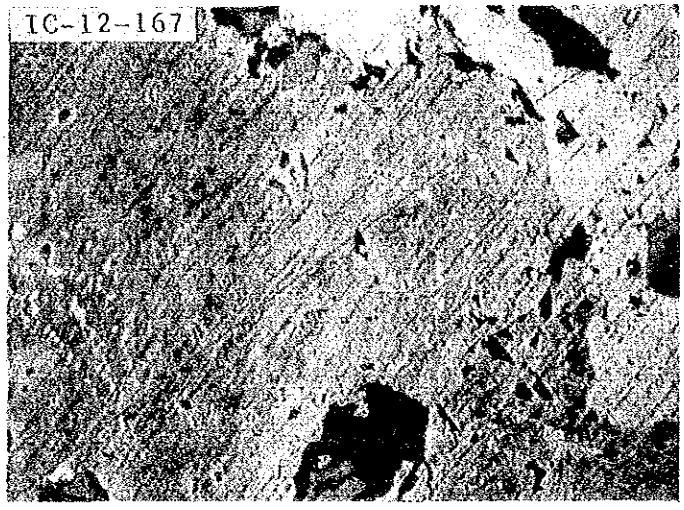


Image of Zinc Ore
by reflected light



Etching Image
by reflected light

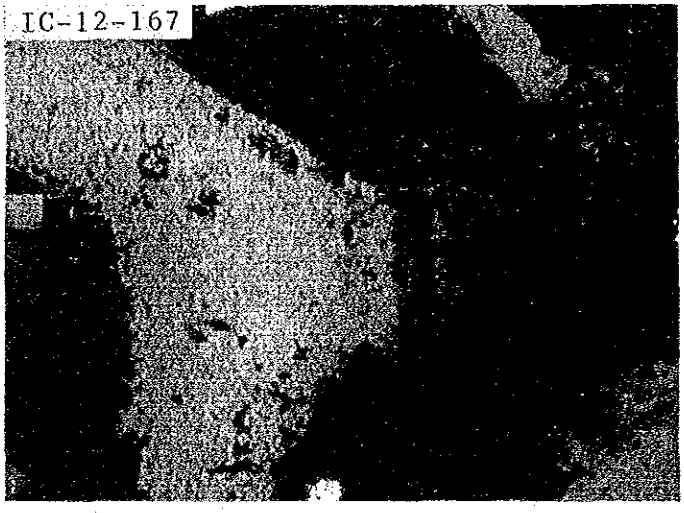


Image by transmitted light

Portion of abundant chalcopyrite dots shows black color and opaque.

Portion of missing chalcopyrite dots shows light color and semi-transparent.

0 0.2mm

Image of Zinc Ore by Polished Thin Section

(3) IC-12-170

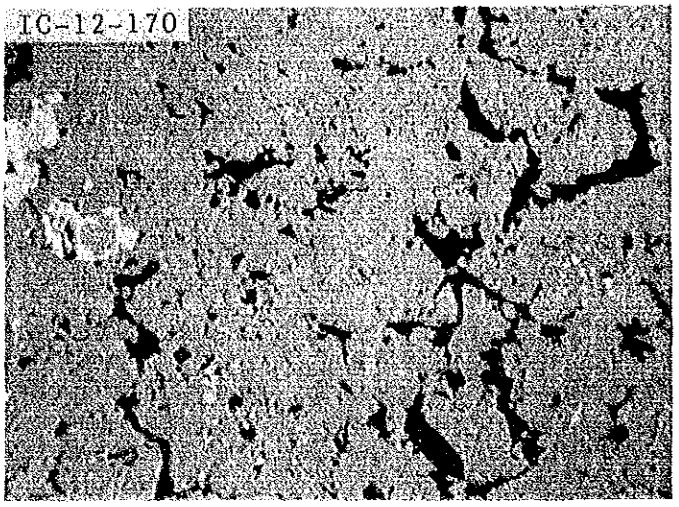
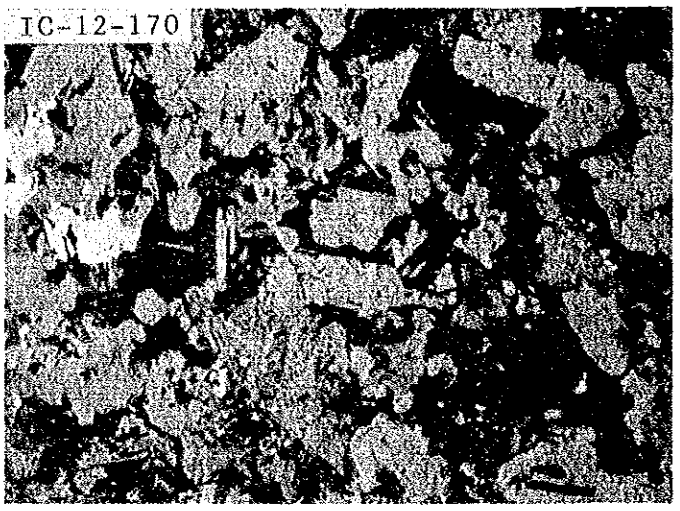


Image of Zinc Ore

The greater part is composed of sphalerite.
Pyrite grains are found to the left side and parts of crowded chalcopyrite dots are observed.



Etching Image
by reflected light

Twinning structure in sphalerite is clearly observed.

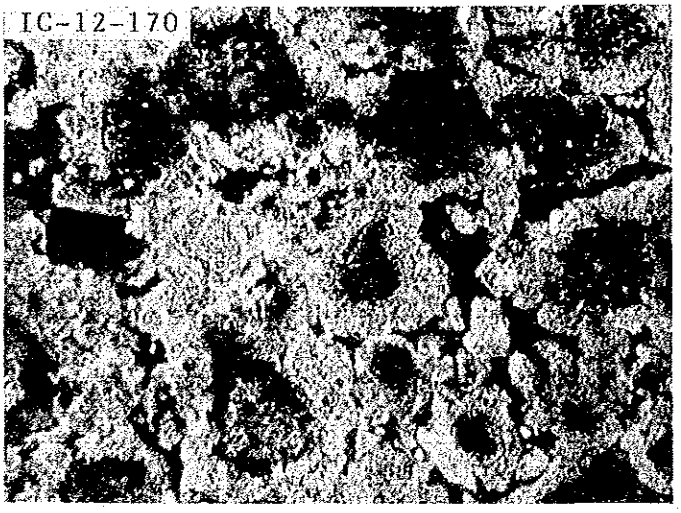


Image by transmitted light

Black parts are scattered sporadically in concordance with the parts of crowded chalcopyrite dots.

0 0.5mm

GEOLOGIC DRILL LOG
ISCAYCRUZ PROJECT

Coordinate N 808,942 E 310,313
Elevation 4,719 m

DDH No. IC-1
Direction 70°
Inclination −60°
Total Depth 251.0 m

Assays: Lang (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Depth: Dep (m)	Core Rec	Symbol	Str. (m)	Occurrence: Rock	Oxd	Alt.	Min.	Color	Fract.	Observations
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
									Sh	Lim		Py	blk	shd	
								∠50°							
					10				Do-Ls	Lim	do		d-gry	shd	
					11.0				Sh	Lim		Py	blk	shd	Contains calcareous parts
					14.3				Do	Lim	do		d-gry		Cal-Sid vs
					16.0				Sh		do		d-gry		Intercalated with Ml
					19.5										
					20			∠55°	Sh	Lim	do	Py	brn-gry	shd	Dolomitized
					24.0				Sh	Lim	do	Py	d-gry		
					28.0				Ml		do	Py	p-gry		Massive, lamella str.
					30			∠75°							
									Sh Ml		do	Py	d-gry		Alt. of Sh-Ml dolomitized generally
					40										
					42.5				Sh		do		blk		Dolomitized
					45.0										
								∠70°	Sh				blk	crd	Phyllitic
					48.0				Do		do		p-gry		Do-Sid vs
					50									shd	Sludge
					52.8				Sh	do	cly	Py	d-gry	shd	Contains dolomitized Ml
								∠50°							
					60			∠50°							
					61.2				Do		do	Py	d-gry		Do-Sid vs are developed
					63.6				Sh			Py	blk	crd	
					66.0				Cal-Ss		cly	Py	d-gry	shd	
					67.5				Cal-Ss Ss			Py	l-gry		Crystalline, fine-grained Ls Lamella str. is developed
					70			∠60°							
									Sh					shd	
									Do-Ls		do	Py	d-gry		
								∠55°	Sh			Py	blk	crd	
					75.6			∠65°	Sh		do	Py	d-gry		
					80			∠55°							
									Ss		do	Py	d-gry	shd	
					81.6				Ss		do	Py Zn	gry		Massive, fine-grained Ss dolomitized partly
															86.6m; Sp diss along joint
					87.8			25°	Cly		cly	Py	d-gry	F	
					90			20°							
									Sh			Py	blk	crd	
								∠35°							
								∠40°							
					96.6			30°							Cly, F
									Sh		sil cly	Py	p-gry		

Assays: Lang (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Depth: Dep (m)	Core Rec	Symbol	Str. (m)	Occurrence: Rock	Oxd	Alt.	Min.	Color	Fract.	Observations
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
					101.3										
					102.8				Sh				blk	shd	Phyllitic Sh
								∠75°	Do-Ml		sil do	Py	p-gry		Do partly Sid vs
								∠65°	Sh			Py	blk	crd shd	Phyllitic Sh 106-107m; Py vs
					110										
					111.9			30°	Do		do sid		p-gry		Sid network
					114.2										114.2-114.4m; cavity
					116.0			∠40°	Do-Sh		do		d-gry		Intercalated with Ml-Do
					118.0			∠35°	o		do		d-gry		
									Sh		cly			shd	
					120				Do		do-sid	Py	d-gry		
					121.0				Sh		cly		d-gry	shd	
2.0	0.08	0.24	5.75	12					Zn-Ore			Zn-Py	d-gry		
2.0	0.06	0.33	1.65	4											
2.0	0.06	0.91	2.95	tr											
2.0	0.06	1.55	4.20	tr											
					129.0										
					130										
									Sh			Py	blk	crd	
									Do		do sid	Py Zn	d-gry		
					133.8										
					136.9				Ls				gry	brc	
					138.5			∠50°	Do		sid	Py	d-gry	brc	Partly Sid
									Do		do		d-grz		
					140										
					142.4				Ml		do		d-gry	shd	
					143.4			∠35°	Do-Ls		do		gry		144.4-144.7m; Sh
					146.1				Sh						
					147.1			∠60°	Ls				l-gry		
					150										
					152.9			∠60°							
									Do-Ls		do		gry		Wht Cal (partly Sid) vs
					155.8			∠65°	Ls				l-gry		Cal vs dev.
					160										
					161.8				Do				d-gry		
					165.6			∠55°	Do-Ls		do		gry		
					168.2										
					170				Ls				l-gry		
								∠65°							
															Cal vs abundant
					178.2										
					180				Do				d-brn gry		
								∠65°	Ls				gry		Cal vs Partly Do
					189.2										
					190			∠75°	Ls				d-gry		Lamella str
					191.2										
								∠65°	Ls				l-gry		

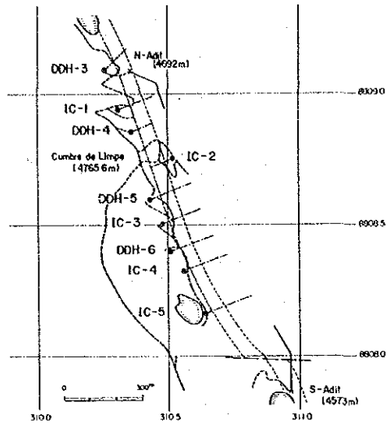
Assays: Lang (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Depth: Dep (m)	Core Rec	Symbol	Str. (m)	Occurrence: Rock	Oxd	Alt.	Min.	Color	Fract.	Observations
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
									Ls				l-gry		Cal vs
								∠65°							
					210										
								∠60°							
					218.3										
					220				Do		do		d-gry		
5.6	0.04	0.02	0.60	tr					Sid		sid		d-brn gry	brc	Brecciated
					225.7				Ls		do		l-gry		
					226.3										
3.7	0.06	1.67	0.80	tr					Do		do		d-gry		
					230										
					231.5				Ls				l-gry		
					232.2				Sid						
									Ls		cal		l-gry		
					237.0										
									Do		do sid		brn-gry	shd F	
					240				Do						
					241.1				Ls		do		gry		
					242.7										
					243.1				Do		do				
									Do		do sid		brn-gry	shd F	
							Non Core								
					250										251.0m end
					260										
					270										
					280										
					290										

PL. 1-1

GEOLOGICAL SURVEY
OF
THE ISCAYCRUZ AREA, PERU
PHASE I

DRILLING EXPLORATION
IN THE LIMPE AREA

GEOLOGIC DRILL LOG
DDH - IC-1



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

MARCH 1983
Prepared by MINDECO

Scale 1 : 200

0 4 8 12 16 20m

LEGEND and ABBREVIATION

10. Rock:	Pebble, sand, clay		Peb	
	Sandstone		Ss	
	Shale		Sh	
	Marl		Ml	
	Limestone		Ls	
	Dolomitic limestone		Do-Ls	
	Dolostone		Do	
	Siderite		Sid	
	Quartzite		Qtz	
	Ore, high grade			
	Ore, low grade			
	Pyrite ore		Py	
	Hematite ore		Hm	
	Skarn		Sk	
	Brecciated rock		Brc	
	Altered rock		A	
	Fault, fracture		F	
11. Oxidation :	oxidized		oxd	
	limonitized		lim	
12. Alteration :	dolomitization		do	
	calcitization		cal	
	argillization		cly	
	silicification		sil	
	sericitization		ser	
13. Mineralization :	Pyrite	Py	Chalcopyrite	Cp
	Pb-minerals	Pb	Chalcocite	Cc
	Zn-minerals	Zn	Hematite	Hm Spc
	Oxide minerals	Oxd	Magnetite	Mt
14. Color :	light	l-	black	blk
	dark	d-	white	wht
	grey	gry	brown	brn
15. Fracture :	Fault		F	
	sheared		shd	
	brecciated		brc	
16. Observations :	dissemination		diss	
	veins		vs	
	veinlets		vls	

GEOLOGIC DRILL LOG
ISCAYCRUZ PROJECT

Coordinate N 808,755 E 310,523
Elevation 4,781m

DDH No. IC-2
Direction 250°
Inclination -75°
Total Depth 250.4m

Lang (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Dep. (m)	Core Rec.	Sym.	Str. (m)	Rock	Oxd.	Alt.	Min.	Color	Fract.	Observations
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
									Ss	Lim		Py	gry		Fine-grained
					28				Ss (Mt)	Lim		Py	brn p-gry		Sandy sh
					7.5				Ss	Lim		Py	l-gry		Medium-grained
					10										
					14.5			∠45°	Ss	Lim		Py	d-gry		Fine-grained
					20				Sh			Py	blk		Phyllitic
					21.0				Ss			Py	gry		Fine-grained
					27.9			∠40°	Ss			Py	l-gry		Medium-grained
					30										
					31.8				Mt		dy		wht		
					32.3			∠40°	Ss			Py	d-gry		Fine-grained
					34.2				Mt	Lim	cly sil	Py	p-gry	shd	Intercalated with Sh
					37.9				Sh		cly	Py	p-gry	shd	Phyllitic
					40										
					41.2 / 41.8				Mt		cly sil	Py	p-gry		
					44.3			25°	Ald-r		cly sil	Hm	p-gry		Wht cly
					47.0				Ald-r Py Ore		sil cly	Py	yel-wht	brc	Py diss along bedding
5.0	0.15	0.03	0.10	12	50										
					52.0			∠60°	Py Ore		sil cly	Py	yel		Massive Py ore
8.0	0.10	0.04	0.15	8											58m, Py network
					60										
8.0	0.16	tr	0.05	20											63m, Cc diss Py druse abundant
								∠50°							
					68.0			∠45°	Ald-r		cly sil	Py	yel-wht		
5.0	0.10	0.12	0.25	52	70		Non Core								
					73.0				Py Ore			Py	yel		Massive Py ore Fine-grained
4.6	0.12	0.02	0.10	32											
1.8	1.48	tr	0.15	12	77.6				Py Ore			Cc-Cp Py	yel		Lang (m) 4.5; Cu (%) 7.10; Pb (%) 0.22; Zn (%) 0.48; Ag (g/t) 5
2.7	0.84	0.37	0.70	--	79.4 / 80 / 80.0				Cu-Py Ore			Py-Cu	blk	shd	
					82.1		Non Core								
1.0	0.46	0.02	18.31	20					Zn Ore			Zn-Fe Py	brn		Massive Zn ore with spotty Py Lang (m) 6.0; Cu (%) 0.17; Pb (%) 2.69; Zn (%) 27.93; Ag (g/t) 39
1.0	0.18	0.20	37.13	48											
1.0	0.10	0.02	30.62	56											
1.0	0.13	3.76	42.58	64											
1.0	0.06	4.59	27.52	8											
1.0	0.10	7.56	11.41	40	87.1				Zn Ore		sil	Zn-Py	d-gry	brc	
1.0	0.06	1.55	4.85	28											Brecciated sh
2.0	0.02	1.84	4.13	20	90				Zn-Py Ore		sil cly	Zn-Cu Py	p-gry	brc	Diss of Py and f-gd Zn 7.0; 0.03; 1.84; 3.63; 10
2.0	0.03	0.02	2.12	--											
2.0	0.04	2.96	4.03	tr	94.3				Pb-Zn Py			Pb-Zn Py	yel		
1.4	0.04	1.61	11.59	tr	96.5				Pb-Zn Ore			Pb-Zn Py	d-gry		Matrix is brn Zn and spotty Pb and Py 9.6; 0.06; 6.01; 15.36; 49
1.0	0.04	8.70	22.58	100											
1.0	0.05	7.28	20.36	140											
1.0	0.06	9.52	21.17	56											
1.0	0.08	8.45	17.01	84											

Lang (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Dep. (m)	Core Rec.	Sym.	Str. (m)	Rock	Oxd.	Alt.	Min.	Color	Fract.	Observations
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1.0	0.03	4.20	7.56	--											Banding str. of Py and Zn
1.0	0.10	4.79	0.08	16											
1.0	0.09	1.52	17.24	60	103.0										
1.2	0.07	0.02	12.50	12	104.7										
4.3	0.06	0.04	14.72	4				∠60°	Brc		cly sil	Zn-Py	p-gry	brc	Diss of fine-grained Sphalerite is noted Matrix is siliceous and tuffaceous
					110										
5.0	0.07	0.02	14.11	4											
									Ald-r		cly sil	Zn-Py	p-gry		Tuffaceous
5.0	0.04	0.58	14.21	4				∠65°							
					119.0										Lang (m) 21.3; Cu (%) 0.14; Pb (%) 0.16; Zn (%) 15.68; Ag (g/t) 4
					120				Do			Cu-Zn Py	l-gry		Fine-grained-Sphalerite is disseminated commonly
7.0	0.32	0.03	18.45	4											
					126.0										
4.6	1.46	0.02	0.50	12					Cu-Py Ore		sil do	Cu-Py	d-gry		
					130										
4.6	4.24	0.03	0.50	84											Lang (m) 15.3; Cu (%) 3.43; Pb (%) 0.03; Zn (%) 0.43; Ag (g/t) 46
1.0	5.92	0.02	0.40	48	133.2 / 136.2				Cu-Ore		sil	Cu	l-gry		Drusy Qt, porous with abundant Cp and Cc
							Non Core								
					140										
3.1	1.86	0.02	0.40	36	141.3				Cu-Ore		sil	Cu	l-gry		Core recovery is very poor
2.0	7.28	0.08	0.15	48	144.3				Cu-Ore		sil	Cu	yel		
					149.3				Cu-Ore		sil cly	Cu	p-gry		Total L (m) Cu (%) Pb (%) Zn (%) Ag (g/t)
					150		Non Core								
					154.5				Ald-r (Sh)		cly	Py	p-gry	shd	Tuffaceous
								∠30°							
					157.6				Ald-r		sil	Py	d-gry	shd	
					159.4 / 160				Ald-r		cly		p-gry wht	shd	Soft, tuffaceous feature Poor core recovery
					165.0		Non Core								
					168.0										
					170										
					177.2				Sh		cly		blk	shd F	
					180			∠60°	Sh		do		d-gry		181.2m; Zn vs 5cm 20% Zn
					181.6			∠70°	Do (Mt)		do		l-gry		
								∠45°							
					187.2										187.2-187.5m: Brc part Pb+Zn 5-8%
									Sh			Py	d-gry	shd	
								∠40°							
					190.3				Pb-Zn		do	Pb-Zn	d-gry		Pb-Zn vits and diss
1.0	0.06	5.96	1.16	4	191.3				Sh		do	Zn	blk	shd	Contains Do beds
					192.8				Sid		sid	Zn	brn-gry		
					194.6				Do		do-sid	Zn-Pb	d-gry		196.4m Pb-Zn-Cu v-4cm 30%

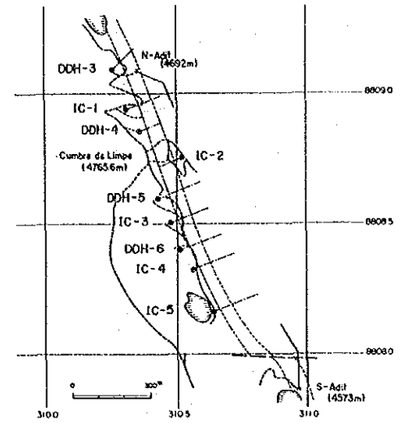
Lang (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Dep. (m)	Core Rec.	Sym.	Str. (m)	Rock	Oxd.	Alt.	Min.	Color	Fract.	Observations
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
									Do		do-sid		d-gry		Sid wht vs
					203.2										
					204.4				Sh		cly	Py	d-gry	shd	
					206.0				Py-Ore		do	Zn-Py	d-yel	brc	Brecciated, porous
									Do		do	Py	d-gry	brc	
2.0	0.08	0.33	1.65	tr	210										
					214.0				Do		do	Zn-Py	d-gry	brc	
2.0	0.04	3.04	11.21	40					Zn-Py Ore			Zn-Py	d-gry		Massive Zn-Py ore
2.0	0.04	4.21	11.11	36											
2.0	0.06	4.56	10.81	28											Lang (m) 16.4; Cu (%) 0.06; Pb (%) 4.53; Zn (%) 9.30; Ag (g/t) 25
2.0	0.10	1.37	2.00	8											
2.0	0.06	5.26	8.21	16	220				Pb-Zn Py-Ore			Pb-Zn Cu-Py	d-gry	brc	
2.0	0.10	8.44	17.96	48											
2.0	0.05	6.75	8.56	12											
2.4	0.05	2.95	5.95	16	227.4										
					230				Sh		do sil	Py Zn	d-gry	brc	Partly skarnized Intercalated with Mt Abundant Py diss
								∠45°							
					232.9				Do		do-sid	Zn-Pb Py	gry		Pb-Zn-Py vits and diss
4.1	0.06	0.55	0.90	8											
								∠65°							
1.1	0.06	0.25	4.00	4	237.0				Pb-Zn		do-sid	Pb-Zn Cu	d-gry		
					238.1				Sh			Py	wt-blk		
					238.8 / 239.7				Do		do-sid	Pb-Zn	d-gry		Sid vs 4-5%
					240				Sh		do		gry		
								∠70°							
					248.4			∠75°	Do		do-sid	Zn-Pb	d-gry		Pb-Zn diss
					249.3										
					250				Sh				gry		250.4 end
					260										
					270										
					280										
					290										

PL. I-2

GEOLOGICAL SURVEY
OF
THE ISCAYCRUZ AREA, PERU
PHASE I

DRILLING EXPLORATION
IN THE LIMPE AREA

GEOLOGIC DRILL LOG
DDH - IC-2



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

MARCH 1983
Prepared by MINDECO

Scale 1 : 200
0 4 8 12 16 20m

LEGEND and ABBREVIATION

10. Rock:	Pebble, sand, clay	Peb			
	Sandstone	Ss			
	Shale	Sh			
	Marl	Mt			
	Limestone	Ls			
	Dolomitic limestone	Do-Ls			
	Dolostone	Do			
	Siderite	Sid			
	Quartzite	Qtz			
	Ore, high grade				
	Ore, low grade				
	Pyrite ore	Py			
	Hematite ore	Hm			
	Skarn	Sk			
	Brecciated rock	Brc			
	Altered rock	A			
	Fault, fracture	F			
11. Oxidation :	oxidized	oxd			
	limonitized	lim			
12. Alteration :	dolomitization	do			
	calcitization	cal			
	argillization	cly			
	silicification	sil			
	sericitization	ser			
13. Mineralization :	Pyrite	Py	Chalcopyrite	Cp	
	Pb-minerals	Pb	Chalcocite	Cc	
	Zn-minerals	Zn	Hematite	Hm	Spc
	Oxide minerals	Oxd	Magnetite	Mt	
14. Color :	light	l-	black	blk	
	dark	d-	white	wht	
	grey	gry	brown	brn	
15. Fracture :	Fault	F			
	sheared	shd			
	brecciated	brc			
16. Observations :	dissemination	diss			
	veins	vs			
	veinlets	vls			

GEOLOGIC DRILL LOG
ISCAYCRUZ PROJECT

Coordinate N 808,503 E 310,481
Elevation 4,700m

DDH No. IC-3
Direction 70°
Inclination -50°
Total Depth 250.2m

Assays: Lang (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Depth (m)	Cond. Rec.	Sym	Str. (m)	Rock	Oxd	Alt	Min.	Color	Fract	Observations
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
									Soil						
					20				Sh	Lim			blk	crd	
					71				Ml	Lim			bm-gry	crd	
					95										
					10			∠50°	Sh				blk		Phyllitic
					120				Ls	Lim			gry		
					165				Sh				blk		Phyllitic
									Ml				gry		
					20			∠55°	Sh			Py	blk		Py diss, patch-like
					233				Ss				gry		233-24.5m; calcareous Fine-grained Ss
					285										
					30			∠40°	Sh				blk		
					305										
					320				Ml				gry		
									Ml				d-gry		
					360										
					381				Ls				gry		
									Ml						
					40										
					413				Sh				blk		Phyllitic
					474			∠50°	Ml				d-gry		Banding str
													t-gry		Fine alternation of Ml-Sh-Ls
					50										
					541			∠55°	Sh			Py	blk		Phyllitic
															Py diss · vs along bedding Cz
					580				Ls				l-gry		Cal vlts
					60										St
0.7	0.04	0.06	1.50	tr	605				Do	Lim		Py-Zn	brn	shd	
					616				Ls	Lim			gry	shd	
					624										
									Ls				l-gry		
					650				Ml				gry		Fine-alternation of Ml-Sh-Ls
										cly			gry	shd	
									Ml				d-gry		
					70										
					702				Sh				d-gry	brc	
					715			∠55°							
1.5	0.46	0.02	0.17	-					Ml		cly chl sk	Py Cp	p-gry	brc	Brecciated, soft and argillic
1.8	0.74	0.02	0.03	4											73.9m; Cp patch, 2x6cm
					728										
4.0	0.20	0.01	0.03	40					Py-Ore		sil koo ser	Py Cp	yel		
					80										
4.0	0.11	0.02	0.05	-				∠55°							
4.4	0.28	0.02	0.00	tr											
					872										
								∠70°	Sh		cly	Py	p-gry		
					892										
					90				Py-Ore		sil cly koo do	Py Hm	yel		
															92.8m; Hm-Qt vlts 93.0m; Do, brc
					944				Ald		cly	Py	wht	brc	
					970										
1.2	0.20	0.02	0.50	tr					Spc-Ore		do-sil	Spc-Sid	d-gry		
					982				Do		do		gry		Wht Do vlts dev.

Assays: Lang (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Depth (m)	Cond. Rec.	Sym	Str. (m)	Rock	Oxd	Alt	Min	Color	Fract	Observations
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
					1003				Sh				blk		
					1007										
									Ls				gry		
					1034			∠60°	Sh				blk		Contains Ml thin beds
					1064				Ls				gry		Contains Cal wht spots
					1079				Sh				blk		
					1087				Ml				d-gry		
					110				Sh				blk		
					1108			∠60°	Ml				d-gry		
					1123				Sh				blk		
					1132				Ls		do		l-gry		Cal vs
					1195										
					120				Ls		do	Py	d-gry		Dolomitic Ls
2.5	0.18	0.01	0.05	-											
					1219										
									Ls				gry		Cal vs
					1298										
					130			∠65°	Sh				blk		
					1320				Ls				l-gry		
					1360				Ald (Ml)		sil do		d-gry		
					140				Ald (Ls)		sil cly	Py	wht	brc	Sil, kao and Py are strong
					1410				Py-Ore		sil cly	Py Lim	yel wht		141.2 - 143m; 145.8 m; Phk-m ls included
4.0	0.16	0.02	0.00	4											
4.0	0.16	0.02	0.00	-											
					1490										
					150			∠60°	Ald		cly	Cu	wht		Ald Sh
1.6	1.46	0.01	0.25	-	1506										
									Cu-Ore			Spc Cu	blk		Lang (m) 4.7; Cu (%) 1.04; Pb (%) 0.02; Zn (%) 0.12; Ag (g/t) 5
3.1	0.82	0.02	0.05	8											
					1537										
									Py-Ore		sil cly	Py	yel		Massive Py ore
4.5	0.24	0.01	0.05	-											
					1582										
2.0	4.46	0.02	0.05	-					Cu-Ore		sil cly	Cu Py	yel		Cp-Cc diss
					160										
4.0	0.48	0.02	0.05	4											
								∠55°							
									Py-Ore		sil cly	Py	yel	brc	Py druses abundant Brc of old host r.
					170										
					180										
					1857				Py-Ore		sil cly	Py	yel	drs	
					190										
					1938				Py		sil cly	Py	yel gry		
					1971										
									Py-Ore						

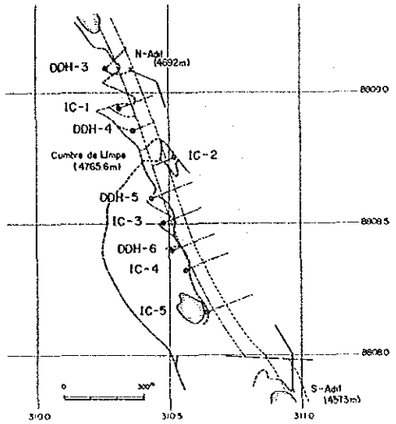
Assays: Lang (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Depth (m)	Cond. Rec.	Sym	Str. (m)	Rock	Oxd	Alt	Min	Color	Fract	Observations
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
									Py-Ore		sil	Py (Cp)	yel	drs	
4.0	0.20	0.02	0.30	tr.	210										209.8m; Cc in Py druse
					215										
								∠45°	Py-Ore		Koo sil	Py Cu	yel wht		
6.3	0.58	0.06	0.10	4											
					217.8										
3.6	0.38	0.08	0.15	8	220				Ald (Sh)		cly	Py	p-gry		
					221.4										
								∠45°	Ald (Sh)		sil cly	Py	p-gry		
4.4	0.03	0.02	0.25	-											
					224.6				Ald (Ml)		sil chl clz	Hm Py	t-grn gry		
					226.8										126.6 - 126.8m; Spc
									Ald		do	Hm	d-gry		
					229.9										
					230				Ss (?)		do		l-gry		Fine-med-grained
									Do-Ls		do		gry		Fine-grained Dolomitic Ls
					240										
					241.9 / 242.4			∠50°	Sh				blk		
									Do		do	Py	l-gry		Fine-grained, crystalline
					247.6				Do		do	Py	d-gry		Fine-grained, crystalline
					250										250.2m end
					260										
					270										
					280										
					290										

PL. 1-3

GEOLOGICAL SURVEY
OF
THE ISCAYCRUZ AREA, PERU
PHASE I

DRILLING EXPLORATION
IN THE LIMPE AREA

GEOLOGIC DRILL LOG
DDH - IC-3



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

MARCH 1983
Prepared by MINDECO

Scale 1 : 200

0 4 8 12 16 20m

LEGEND and ABBREVIATION

10. Rock:	Pebble, sand, clay	Peb	
	Sandstone	Ss	
	Shale	Sh	
	Marl	Ml	
	Limestone	Ls	
	Dolomitic limestone	Do-Ls	
	Dolostone	Do	
	Siderite	Sid	
	Quartzite	Qtz	
	Ore, high grade		
	Ore, low grade		
	Pyrite ore	Py	
	Hematite ore	Hm	
	Skarn	Sk	
	Brecciated rock	Brc	
	Altered rock	A	
	Fault, fracture	F	
11. Oxidation :	oxidized	oxd	
	limonitized	lim	
12. Alteration :	dolomitization	do	
	calcitization	cal	
	argillization	cly	
	silicification	sil	
	sericitization	ser	
13. Mineralization :	Pyrite	Py	
	Pb-minerals	Pb	
	Zn-minerals	Zn	
	Oxide minerals	Oxd	
	Chalcopyrite	Cp	
	Chalcocite	Cc	
	Hematite	Hm	Spc
	Magnetite	Mt	
14. Color :	light	l-	
	dark	d-	
	grey	gry	
	black	blk	
	white	wht	
	brown	brn	
15. Fracture :	Fault	F	
	sheared	shd	
	brecciated	brc	
16. Observations :	dissemination	diss	
	veins	vs	
	veinlets	vlts	

GEOLOGIC DRILL LOG
ISCAYCRUZ PROJECT

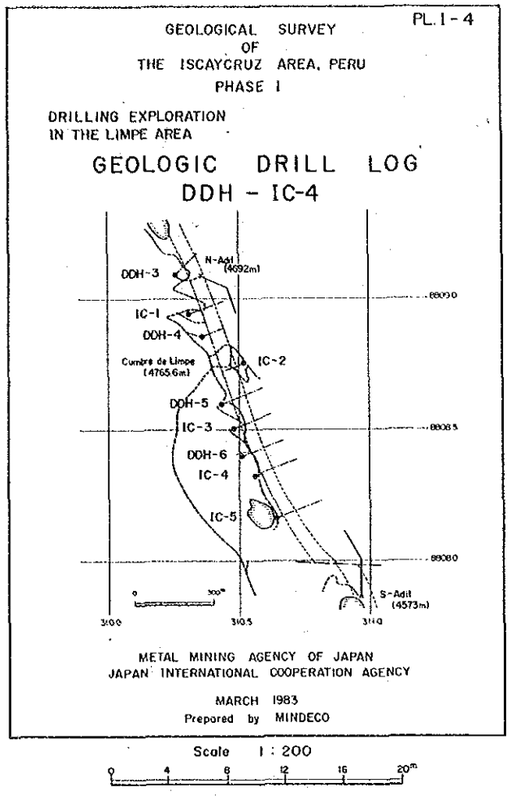
Coordinate N 808,322. E 310,562
Elevation 4,676m

DDH No. IC-4
Direction 70°
Inclination −45°
Total Depth 250.2m

Lang (m) 1	Cu (%) 2	Pb (%) 3	Zn (%) 4	Ag (g/t) 5	Dep (m) 6	Core Rec 7	Sym 8	Str (m) 9	Rock 10	Oxd 11	Alt 12	Min 13	Color 14	Fract 15	Observations 16
									Cly Peb	Lim			brn		Soil or Talus deposit
					8.0				Sh			Py	blk	crd	
					10				Ls			Py	l-gry		
					13.2			∠30°							
					14.8				Sh			Py	blk	crd	
									Ls			Py	l-gry		
					17.3				cly					F	
									Ls			Py	gry		
					20										
					21.6			∠25°	Sh			Py	blk	shd F	
					23.9				Ml			Py	d-gry		
					26.2				cly					F	
								∠25°	Ls		sil	Zn Cu Py	l-gry		27m; Zn·Cu·Py diss
					29.0				Sh			Py	blk	shd	
					30										
									Ls		do		d-gry		
					33.0				Sh				blk	F	
					34.2			∠55°	Ss				d-gry		Fine-grained
													l-gry		
					39.0										
					40				Sh				blk	shd	
									Ml				l-gry		
									Sh			Py			Phyllitic
					44.4			∠60°	Ls			Py	l-gry		Lomalla str
					50				Ml			Py	d-gry		
					53.1			∠75°	Sh			Py	d-gry		Lomalla str
					58.6				Ml				l-gry		Fine-alternation of Ml·Sh·Ls
					60										
					60.9				Ml			Py	gry		Intercolated with Sh
					63.7			∠70°	Sh			Py	d-gry		Phyllitic Cz
					66.4				Sld		do sid		brn gry		Porous Sl
					70				Ml (Ls·Sh)		do	Py	l-gry d-gry		All. of Ls·Sh·Ml Ls is usually 20-50cm thick Sh is usually 2-5cm thick
								∠70°							
					80										
															82m; Do bed
					84.1			∠60°	Sh		sil chl do	Py	d-gry		Int. with Do
					89.1										
					90				Py-Ore		sil cly	Py	yel		
100	0.22	0.02	0.005	8											

Lang (m) 1	Cu (%) 2	Pb (%) 3	Zn (%) 4	Ag (g/t) 5	Dep (m) 6	Core Rec 7	Sym 8	Str (m) 9	Rock 10	Oxd 11	Alt 12	Min 13	Color 14	Fract 15	Observations 16
									Py-Ore		sil cly	Py	yel		Massive Py-Ore
1.00	0.12	0.02	0.03	–											
					11.0										
4.9	0.20	0.01	0.10	8											
					14.0										
1.6	2.56	0.02	0.40	4											
1.6	1.88	0.02	0.15	60					Cu-Ore		cly sil	Cu Spc Py	d-gry		Lang (m) Cu (%) Pb (%) Zn (%) Ag (g/t) 6.3 2.20 0.02 0.29 32
3.1	2.18	0.02	0.30	32					Cu-Ore		sil	Hm	chc		
					19.0				Cl		cly	Py	p-gry	shd	
					20.3	Non Core									
2.6	0.37	0.02	0.05	–		Non Core			Spc-Ore		cly	Spc Py Cu	blk	shd	
2.5	0.11	0.01	0.05	–											
					25.6	Non Core									
					26.9				Sh		cly		d-gry	shd	
									Sh			Py Spc	gry	crd	
					30.0										
					30.7				Spc-Ore		cly	Spc Py	blk	shd F	
					32.5				Ml		cly	Py Hm	d-gry	crd	
									Py-Ore		cly	Hm Py	chc-blk	shd	Powder-like Py ore powder and slime-like
6.4	0.20	0.02	0.50	–											
					14.0										
									Hm-Ore		sil	Hm	chc-blk		
5.0	0.20	0.01	0.05	–											
					14.5										
									Cly		cly	Hm-Py	blk	shd F	Slime-like
					14.8.1				Spc-Ore		sil	Spc-Py	blk	crd	
					14.9.4 15.0										
					15.1.1	A A			Ald		cly	Spc Hm	d-brn p-gry	crd	
					15.7.4				Spc-Ore		cly	Cu-Spc	blk		
1.3	5.62	0.02	0.05	24											
					15.8.7				Py-Ore		cly	Py	yel	shd	Py powder ore
2.7	0.50	0.02	0.00	tr											
					16.0										
					16.1.4				Spc		cly	Spc	chc	shd	
					16.5.2				Ml		ml-cly		p-gry	shd	
					16.7.3	Non Core			Do		do sil	Spc Py	d-gry	shd	
					16.8.1										
					17.0										
					17.0.5				Mi		sil cly	Spc Py	d-gry	shd	
					17.5.5				Ml		sil cly	Spc Py	gry		
					18.0										
					18.0.8										
2.0	0.90	0.02	0.05	–					Cp-Ore			Cp Cc Py Spc	chc-blk blk		Lang (m) Cu (%) Pb (%) Zn (%) Ag (g/t) 6.0 0.83 0.01 0.05 –
2.0	0.88	0.01	0.05	–				∠55°							
2.0	0.70	0.01	0.05	–											
					18.6.8									shd	
					18.8.5	Non Core									
					19.0				Spc Ore			Spc	chc blk	shd	
2.6	0.08	0.01	0.05	–											
6.0	0.05	0.01	0.05	–											

Lang (m) 1	Cu (%) 2	Pb (%) 3	Zn (%) 4	Ag (g/t) 5	Dep (m) 6	Core Rec 7	Sym 8	Str (m) 9	Rock 10	Oxd 11	Alt 12	Min 13	Color 14	Fract 15	Observations 16
6.0	0.78	0.01	0.05	–					Spc Ore			Spc Hm	chc blk		
					20.5										
6.0	0.40	0.01	0.05	–											20.5m; Cp is found
					21.0										Lang (m) Cu (%) Pb (%) Zn (%) Ag (g/t) 2.5 7 0.63 0.01 0.03 2
5.4	0.94	0.01	0.00	4											
					23.4				Spc Ore		cly	Cu-Spc	d-gry		
3.4	0.36	0.01	0.00	–											
					21.8.8	A A			Ald		cly	Hm Py	wht		
					22.0										
4.9	0.56	0.01	0.05	8					Py-Ore		sil	Py	yel		
					22.3.7				Py-Ore			Py	yel	shd	Py powder ore
					22.7.0										
					23.0				Py-Ore		sil	Py	yel		Massive Py ore
					24.0										
					24.6.5	A A			Ald-r		cly		wht		(Ml)
									Sil-r (ss)		sil	Py Hm	wht		
					25.0										25.0.2 end
					26.0										
					27.0										
					28.0										
					29.0										



LEGEND and ABBREVIATION

10. Rock:	Pebble, sand, clay	Peb	
	Sandstone	Ss	
	Shale	Sh	
	Marl	Ml	
	Limestone	Ls	
	Dolomitic limestone	Do-Ls	
	Dolostone	Do	
	Siderite	Sid	
	Quartzite	Qtz	
	Ore, high grade		
	Ore, low grade		
	Pyrite ore	Py	
	Hematite ore	Hm	
	Skarn	Sk	
	Brecciated rock	Brc	
	Altered rock	A	
	Fault, fracture	F	
11. Oxidation:	oxidized	oxd	
	limonitized	lim	
12. Alteration:	dolomitization	do	
	calcitization	cal	
	argillization	cly	
	silicification	sil	
	sericitization	ser	
13. Mineralization:	Pyrite	Py	Chalcopyrite Cp
	Pb-minerals	Pb	Chalcocite Cc
	Zn-minerals	Zn	Hematite Hm·Spc
	Oxide minerals	Oxd	Magnetite Mt
14. Color:	light	l-	black blk
	dark	d-	white wht
	grey	gry	brown brn
15. Fracture:	Fault		F
	sheared		shd
	brecciated		brc
16. Observations:	dissemination		diss
	veins		vs
	veinlets		vls

GEOLOGIC DRILL LOG
ISCAYCRUZ PROJECT

Coordinate N 808,158 E 310,039
Elevation 4674m

DDH No. IC-5
Direction 70°
Inclination -50°
Total Depth 302.5m

Assays: Lang (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Depth (m)	Core Rec	Symbol	Str. (m)	Rock	Oxd	Alt	Min.	Color	Fract	Observations
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
									Qtz Brc				wht		Talus deposit
					10			∠60°	Sh				blk		
					12.5				Ls				l-gry		
					15.4				Ml				d-gry		Fine-alternation of Ml-Ls-Sh
					20			∠65°							
					23.0				Sh				blk		Phyllitic
					28.4			∠60° 30°							Cz
					30				Ls				l-gry		Cal vs dev abundantly Sil
					35.0				Do-Ls		do		d-gry	frc	Frc. of 75° dip
0.3	0.008	0.02	3.83	tr.	39.4 / 40			75°	Do-Ls Sh		do	Zn	d-gry	F	40.4 - 40.7m: Zn vlts
					42			65°	Do-Ls		do		gry	frc	Do vs., vlts
					45.0			∠65°	Ml		do		d-gry	shd	Alternation of Sh-Ml-Ls mainly Sh. Fault zone parallel to bedding
					50										
					51.8				Ls				l-gry		
					56.0				Ls				l-gry d-gry	shd	Intercalated with Sh (10 - 50cm int.)
					60			∠65°							
					62.2				Do-Ls		do		d-gry		Dolomitic Ls
					67.7				Brc		do		d-gry	brc	Brecciated r. Host rs. are Ml-Sh and Do
					70										
30	0.006	0.01	0.10	8	73.2				Py-Ore		sid	Zn Cu Py	yel		
30	0.006	0.01	0.00	–	76.2				Py-Ore		sid	Zn Py	yel		Sid druses
30	0.004	0.01	0.05	28	80										
					82.2				Ald		cly do	Py	p-gry	shd	
24	0.005	0.01	0.15	4	83.8				Sid		do-sid	Py Spc	gry		
26	0.003	0.01	0.25	4	86.2				Sh		cly	Py	p-gry	shd	
34	0.008	0.01	0.30	tr	88.8 / 90				Sps		do	Cu Py Spc	blk		
					92.2				Brc		do	Spc Py	gry	brc	Host rs. are Do-Ls-Ml and Sh. Do vs dev. Py patches diss

Assays: Lang (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Depth (m)	Core Rec	Symbol	Str. (m)	Rock	Oxd	Alt	Min.	Color	Fract	Observations
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
					101.8			∠65°	Ls		do	Py	gry		Dolomitic partly
					107.9			∠60°	Ml			Py	blk gry		Alt. of Sh-Ml-Ls. Py patches diss
					110										
					116.9				Ls		do		gry		Intercalated Sh thin beds, partly dolomitic
					120			∠50°							
					121.0				Do		do		l-gry		Wht Do vs
					123.9			∠45°	Ml		do		d-gry		Alt. of Ml-Sh-Ls, dolomitized generally
					128.8			∠55°							
16	1.64	0.09	0.20	4	130				Cu Spc		chl sil	Cu Spc	d-gry		
					131.8				Ald		chl	Cu Spc	d-gry		
20	0.72	0.01	0.10	4	133.8				Cu Spc		do-sid	Cu Spc	blk		
					140				Ald		chl sil	Py Hm	p-gry		
					141.3										
					143.1				Ald		sil kao	Py	wht	shd	
42	0.20	0.01	0.10	–	147.4				Py-Ore		sil cly	Py	yel	shd	Contains many druses, cavities and clay parts
					150										
3.7	0.05	0.01	0.00	–	151.1				Py-Ore		cly sil	Py	wht yel	shd	
					154.0				Py-Ore		sil	Py	yel		
					160										
					161.8				Py-Ore		cly sil		yel	shd	161.8 - 172.5m; mainly Py sludge. Py powder-like soft clay ore with lots of druses
					170										
					172.5				Py-Ore		sil	Py	yel		Py massive ore containes breccias, Py druses and cavities
					180										
					198.0										
					199.0				Py-Ore		sil kao	Py	yel wht		
7.4	0.10	0.01	0.00	4											
					196.2				Ald		sil kao	Py	wht	shd	

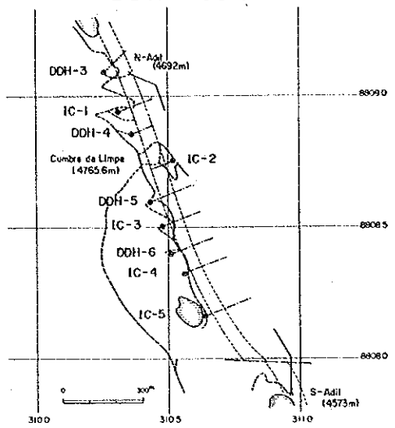
Assays: Lang (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Depth (m)	Core Rec	Symbol	Str. (m)	Rock	Oxd	Alt.	Min.	Color	Fract	Observations
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
									Ald		sil Kao	Py	wht p-gry	Shd	
					205.0				Py-Ore		sil	Py	yel		
					207.6				Ald		sil	Py	d-gry		
					210										
									Py-Ore		sil cly	Py	yel		
10	0.13	0.01	0.20	–											
					220										
									Ald		cly sil do	Py	yel wht	shd	Cc diss
10	0.16	0.01	0.05	4	226.0										
									Py-Ore		cly	Py	yel	brc	Breccia of wht host rs are contained
					230										
10	0.08	0.01	0.05	tr											
					240										
					241.0				Py-Ore			Py	yel		Massive Py ore
10	0.06	0.01	0.00	8											
					250				Py-Ore		sil cly	Py Cu	yel		Cc diss
10	0.08	0.01	0.05	4											
					260										
10	0.10	0.01	0.05	–					Py-Ore		sil cly	Py		brc	Breccias are found
					268.0				Py-Ore			Py	yel		Massive Py ore Cc diss
					270										
10	0.03	0.01	0.05	tr											
					280										
10	0.14	0.01	0.05	4											
					288.0				Py-Ore		sil cly	Py	yel wht		
					290										
10	0.12	0.01	0.05	4											
					300										
					301.5			∠40°	Sh		sil	Py	p-grn		302.5m end

PL. I-5

GEOLOGICAL SURVEY
OF
THE ISCAYCRUZ AREA, PERU
PHASE I

DRILLING EXPLORATION
IN THE LIMPE AREA

GEOLOGIC DRILL LOG
DDH - IC-5



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

MARCH 1983
Prepared by MINDECO

Scale 1 : 200
0 4 8 12 16 20m

LEGEND and ABBREVIATION

10. Rock:

Pebble, sand, clay	Peb	
Sandstone	Ss	
Shale	Sh	
Marl	Ml	
Limestone	Ls	
Dolomitic limestone	Do-Ls	
Dolostone	Do	
Siderite	Sid	
Quartzite	Qtz	
Ore, high grade		
Ore, low grade		
Pyrite ore	Py	
Hematite ore	Hm	
Skarn	Sk	
Brecciated rock	Brc	
Altered rock	A	A
Fault, fracture	F	

11. Oxidation:

oxidized	oxd
limonitized	lim

12. Alteration:

dolomitization	do
calcitization	cal
argillization	cly
silicification	sil
sericitization	ser

13. Mineralization:

Pyrite	Py	Chalcopyrite	Cp
Pb-minerals	Pb	Chalcocite	Cc
Zn-minerals	Zn	Hematite	Hm Spc
Oxide minerals	Oxd	Magnetite	Mt

14. Color:

light	l-	black	blk
dark	d-	white	wht
grey	gry	brown	brn

15. Fracture:

Fault	F
sheared	shd
brecciated	brc

16. Observations:

dissemination	diss
veins	vs
veinlets	vlts

GEOLOGIC DRILL LOG
ISCAYCRUZ PROJECT

Coordinate N 8808,854 E 310,628
Elevation 4,692m

DDH No. IC-6
Direction 270°
Inclination -40°
Total Depth 242.8m

Assays: Leng (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Depth (m)	Core Rec	Symbol	Str. (m)	Occurrence: Rock	Oxd	Alt	Min	Color	Fract	Observations
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
									Qtz	Lim	sil ser	Py	l-gry wht		
					6.0										
									Sh (Ss)			Py	blk		Sandy Sh, phyllitic
								25°							
					10 / 10.8										
									Qtz (Ss)			Py	l-gry		Fgd, lomina.
					13.3										
									Sh			Py	blk		Sandy sh.
					17.8										
								30°	Ss (Qtz)			Py	gry		
					20 / 20.4										
									Sh			Py	blk		With Ss patches
					22.2										
									Qtz (Ss)			Py	gry		Mgd-fgd
															27.1-27.3: Sh.
					30 / 30.8										
									Sh			Py	blk		Transitional zone. Phyllitic, flaky. 33.4-34.5: dolomitic. 34.7-36.5: cly.
								30°							
					36.5										
									Sh		cly		p-gry		37.9-38.0: F-cly.
					38.0										
									Alt						Alt (Sh · Ss).
					40										
					42.3										43.2, 43.3, 43.4: wht-vs, 45°, Ø2cm.
								40°	Do				blk		
					44.2										
									Qtz	Lim		Py	wht l-gry		Lim-diss along J.
					50										
					53.0										
									Alt			Py	d-gry		Alt (Sh · Do · Ss)
					55.0			35°	Sh		cly ser		d-gry	shd	
					56.4										
									Ml (Sh)		cly		p-gry		Very soft.
					60										
								45°	Do				gry		Lamination of blk & wht.
					62.8										
									Sh (Ml)				p-gry		
					66.1			50°	Do			Py	blk		Fgd, cryst. Bedding str.
					70										
					71.9				Sh				blk		
									Ml (Sh)		cly		p-gry		
								45°							
					80										
					85.0				Ss (Do)		do		gry		Fgd, dolomitic.
															89.2-89.5: Sh.
					90										
								40°							93.0-93.4: Sh. Cm-Fm
					94.2										
1.3	0.09	0.02	0.80	-					All		cly	Py Sp	blk	shd	All (Sh, Do). St-Fm
1.3	0.02	0.16	1.90	4											
1.2	0.02	2.80	2.10	4											
1.0	0.02	0.12	4.85	4											
1.0	0.01	0.05	2.41	4	96.6				Zn-Ore		sil	Py Sp	d-gry		Zn diss ore (Dolomitic Ss). Soft, cryst, mgd. Av. 42 0.03 0.85 5.27 4

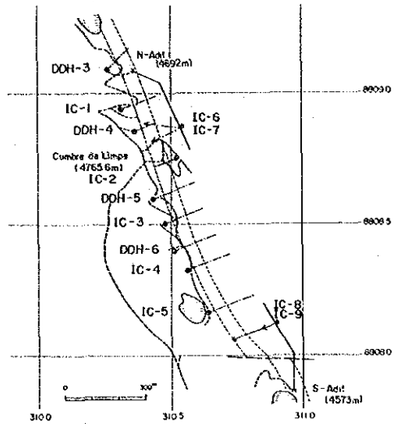
Assays: Leng (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Depth (m)	Core Rec	Symbol	Str. (m)	Occurrence: Rock	Oxd	Alt	Min	Color	Fract	Observations
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1.0	0.08	0.05	2.34	4											100.7-102.0: Ss, dolomitic
1.0	0.02	0.02	2.11	4	102.0				Ss		sil	Sp	l-gry		Dolomitic
1.5	0.02	0.27	1.41	4					Do (Ml)		do chl	Py Sp	p-gry		
1.5	0.03	0.02	1.30	tr											
1.5	0.20	0.02	3.61	tr											
1.5	0.02	0.02	0.25	4	106.5			35°	Sh		sil col	Py Sp	p-gry	shd	
1.3	0.03	0.02	6.42	4											
1.2	0.03	0.03	30.21	20	109.3 / 110										108-112m: Sid, cly. Int. (m) Cu (%) Pb (%) Zn (%) Ag (g/t)
1.5	0.28	0.02	22.88	4					Zn-Ore Sh (Sh)	Mn	cly sil	Py Cp Cc Sp	blk	shd brc	Carboniferous ? Manganiferous ? Very soft. Av. 7.0 0.32 0.02 21.59 15
1.5	0.62	0.02	29.10	4											
1.5	0.56	0.01	18.06	44											
1.4	3.43	0.02	1.20	112	115.0				Cu-Ore Ald (Ald)	Mn	cly	Py Cp Cc	blk		
1.4	4.59	0.01	0.30	4	117.8										
2.5	0.83	0.02	0.30	4					Cu-Py-Ore		sil cly	Py Cp Cc	d-yel		Int. (m) Cu (%) Pb (%) Zn (%) Ag (g/t) Av. 7.8 2.48 0.02 0.46 23.
2.5	2.43	0.02	0.30	4	120			10°							
3.6	0.48	0.02	0.20	16	122.8										
4.0	2.99	0.01	0.08	8	126.4										128m: Cu conc v 10cm. 40
					130										
5.5	0.58	0.02	0.08	16	132.3 / 133.9										Int. (m) Cu (%) Pb (%) Zn (%) Ag (g/t) Av. 22.2 1.04 0.02 0.23 15
4.1	0.28	0.02	0.02	12	135.9				Py		cly	Py	d-yel		Py powder ore
					138.8	A	A		Ald		cly	Py	wht		
5.0	1.00	0.03	0.70	20	140				Py-Ore		cly sil	Py Cp Cc	d-yel		Py powder ore. Py diss in wht clay matx. Core recovery is low.
5.0	0.18	0.09	0.08	12											
					150										
5.0	0.74	0.02	0.03	36											152.5-152.8: Hm
					157.3				Mn-Ore				brn-blk		
5.0	0.24	0.01	0.90	tr					Ls		do		l-gry		157.3-157.6. Do
					159.6 / 160				Sh (Ml)		do		gry		
					160.8 / 161.5				Sh		do		gry		
								55°	Do		do sil		l-gry		Partly remained Ls. Do patchwork, vs, patches
1.1	0.05	0.01	1.30	12	167.0			45°	Sid		sid	Py-Sp	d-gry		167.0-167.1 Sh. 168.0: Gyp v.
					168.1				Do		do		l-gry		
					170										Wht Do
					172.7				All		do		l-gry blk		All (Do · Sh)
					176.2			50°							
								35°	Sh		do		blk		
					180				Do		do		gry		
					180.9			35°	Sid		gyp	Pb-Sp	l-gry		Wht-Sid network.
1.3	0.04	0.02	3.51	4	182.2										Gypsum v is determined (181m).
1.6	0.04	0.02	0.20	20					Pb-Ore		sid		d-brn		Pyrrhotite massive ore
1.6	0.08	0.03	0.30	tr											Existence of Sid is confirmed by X-ray. Sid vs & druses (185m).
0.9	0.01	0.75	3.31	tr	185.4 / 185.3				Py-Ore		sid	Py-Sp	yel		Zn diss.
									All						Fine-All (Do-Sh). 10-20-80cm intv
					190										
					192.6				Sid		sid	Py-Sp	l-gry		Sid is determined by X-ray (194m).
1.6	0.02	0.03	1.65	tr											
1.5	0.01	0.01	1.60	12	195.9				Sh			Cu	blk		Native Cu diss.
4.8	0.01	0.01	0.30	4											
1.6	0.02	0.02	0.60	4	198.7				Sid		sid	Py-Sp	l-gry		200.3m. end

PL. I-6

GEOLOGICAL SURVEY
OF
THE ISCAYCRUZ AREA, PERU
PHASE II

DRILLING EXPLORATION
IN THE LIMPE AREA (UNDERGROUND)

GEOLOGIC DRILL LOG
DDH - IC-6



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

APRIL 1984
Prepared by MINDECO

Scale 1 : 200

0 4 8 12 16 20m

LEGEND and ABBREVIATION

10. Rock:	Pebble, sand, clay	Peb		
	Sandstone	Ss		
	Shale	Sh		
	Marl	Ml		
	Limestone	Ls		
	Dolomitic limestone	Do-Ls		
	Dolostone	Do		
	Siderite	Sid		
	Quartzite	Qtz		
	Ore, high grade			
	Ore, low grade			
	Pyrite ore	Py		
	Hematite ore	Hm		
	Skarn	Sk		
	Brecciated rock	Brc		
	Altered rock	A		
	Fault, fracture	F		
11. Oxidation :	oxidized	oxd		
	limonitized	lim		
12. Alteration :	dolomitization	do		
	calcitization	col		
	argillization	cly		
	silicification	sil		
	sericitization	ser		
13. Mineralization :	Pyrite	Py	Chalcopyrite	Cp
	Pb-minerals	Pb	Chalcocite	Cc
	Zn-minerals	Zn	Hematite	Hm Spc
	Oxide minerals	Oxd	Magnetite	Mt
14. Color :	light	l-	black	blk
	dark	d-	white	wht
	grey	gry	brown	brn
15. Fracture :	Fault		F	
	sheared		shd	
	brecciated		brc	
16. Observations :	dissemination		diss	
	veins		vs	
	veinlets		vls	

GEOLOGIC DRILL LOG
ISCAYCRUZ PROJECT

Coordinate N 8808.854 E 310.528
Elevation 4.692m

DDH No. IC-7
Direction 240°
Inclination -60°
Total Depth 242.8m

Assays: Leng (m) 1	Cu (%) 2	Pb (%) 3	Zn (%) 4	Ag (g/t) 5	Depth Symbol: Dep (m) 6	Core Rec 7	Sym 8	Str. (m) 9	Occurrence: Rock 10	Oxd 11	Alt 12	Min 13	Color 14	Fract 15	Observations 16
									Qtz	Lim	sil ser	Py	wht		Mgd
					10										
					10.3			50°	Ss Sh			Py	d-gry		Ss with Sh
					12.9										
									Qtz		sil	Py	wht l-gry		Fgd - mgd
					20 20.6			50°	Sh			Py	gry blk		Sh with Ss patches, pebbles, & beds.
					24.6										
								45°	Do			Py	blk		Massive shaly Do
					27.5										
									Qtz		sil	Py	l-gry		Intc with Sh thin beds.
					30 30.7										
									Ss Sh				d-gry		Ss with Sh
					32.7			45°							
									Qtz		sil	Py	l-gry		
					35.1										
									Ss (Qtz)		si ser	Py	p-gry		Fgd
					39.6 40.0				Sh				blk		Fine lamination.
									Qtz		sil ser	Py	l-gry		Py-vs & patches
					44.2				Alt		ser cly	Py	blk d-gry		Alt (Sh · Do · Ml · Ss) Sh is predominant.
					50										49.8 - 50.5 : Ss. 51.3 - 52.4 : Ss
					55			50°	Do			Py	blk		55.0 : Py - patch 55.1 - 56.7 : Do
					56.7				Qtz	Lim	si ser	Py	l-gry (brn)		Fgd - mgd
					60										
					67.8				Ss		cly	Py	d-gry		Ss with Do & Sh.
					70										
					71.6				Sh		cly		blk	shd	
					73.3				Ml		cly		p-gry	shd	76.5 - 78.0 : shd
					78.0			50°	Do (Sh)		cly		blk		
					80										
					81.2				Qtz				wht		
					82.1				Ml		cly		p-gry		Very soft.
								20°							
					82.4 90				Qtz		si	Py	l-gry		Mdg
					96.0				Ss				gry		
					96.4				Sh (Do)				d-gry		
					99.8			40°							

Assays: Leng (m) 1	Cu (%) 2	Pb (%) 3	Zn (%) 4	Ag (g/t) 5	Depth Symbol: Dep (m) 6	Core Rec 7	Sym 8	Str. (m) 9	Occurrence: Rock 10	Oxd 11	Alt 12	Min 13	Color 14	Fract 15	Observations 16
									Ml (Ls)			Py	p-gry		Calc.
					104.8										
					106.6			35°	Do				d-gry		Cryst. soft cryst. fgd Abundant Qt is confirmed by X-ray (106m).
									Ss			Py	p-gry		Fgd
					110										109.5 - 110.2 : Sh, Shd
															111.3 : Sp - V, 0.5cm 55°.
					115.5										
									Col-Ss				gry		Porous Ss, col-parts are leached
								45°							
					120			45°	Ss				gry		Cm - Fm
					122.0				Cly		cly		d-gry	cly	122.0 - 123.4 : Cly. St - Fm
									Do				gry		
									Ml	Lim	cly		p-gry		
					127.6										
									Ml		cly		p-gry	crd	
					130										
					135.5				Hm	Lim	cly		brn	shd	
					136.8				Do		cly		wht	shd	Do is determined by X-ray (136m).
					140				Py-Ore				yel		
2.0	0.13	0.06	0.36	4											
2.0	0.06	0.03	0.75	-											
2.0	0.08	0.04	0.75	-											
2.0	0.11	0.02	0.03	-											
2.0	0.07	0.02	0.15	tr	146.3				Py-Ore		sil cly		yel		Py - Qt assemblage is determined by X-ray (146m)
2.0	0.05	0.03	0.13	tr											
					150										
2.0	0.04	0.02	0.06	tr											
					152.2										
2.0	0.06	0.02	0.18	tr					Py Ore		sil cly	Py	yel	shd	
					154.9										Druses. Non core.
					160										
					167.2										
2.8	0.05	0.04	0.90	tr					Do		do		d-gry	shd	
					170										
									Ls		col		gry		Wht col-vs & network.
															175.5 - 175.8 : shd
					178.4				Do		do		blk		
1.1	0.10	0.03	2.80	-	179.5 180										
								85°	Ls		col		l-gry		Col-vs & network.
					188.8 189.3				Ss Cl-Sh					shd shd	
									Ml		do		d-gry		Calc, fgd
					197.1				Sh		do		d-gry		Phyllitic.
									Do (Ls)		do		l-gry		Dolomitic Ls.
					199.0										
									Ls		do col		l-gry		
					194.4										
					196.8				Ls				l-gry		194.4 - 194.8 : Sh thin bed.
								50°	Sh				d-gry		
					197.5				Do				d-gry		

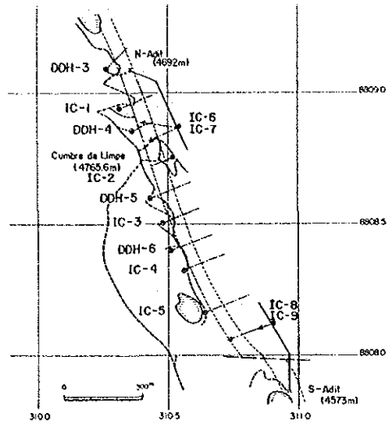
Assays: Leng (m) 1	Cu (%) 2	Pb (%) 3	Zn (%) 4	Ag (g/t) 5	Depth Symbol: Dep (m) 6	Core Rec 7	Sym 8	Str. (m) 9	Occurrence: Rock 10	Oxd 11	Alt 12	Min 13	Color 14	Fract 15	Observations 16
									Sh				d-gry		
					206.6										
									Do		sid	Py-Zn	gry		
															206.5 - 207.8 : Sid, Py Zn diss
															Col - Do - Qt assemblage is determined by X-ray (209m).
					210										
					208										
									Ls				l-gry wht		
1.3	0.02	0.02	0.90	tr											
					214.7										
1.3	0.05	0.02	0.60	tr	216.0				Shd (Do)		do	Py	d-gry		
1.0	0.04	0.03	0.36	tr											
1.0	0.03	0.02	0.08	4					Py-Pb Ore		sil	Py-Pb	yel		
1.0	0.05	0.02	0.25	tr											
1.0	0.03	0.03	0.20	tr	220										
1.0	0.03	0.05	0.12	tr											
1.0	0.04	0.03	0.20	tr											
1.0	0.05	0.02	0.20	tr	223.0										
									Sh (Do)		do	Py	blk gry	shd	Intc. wth Do
								40							
					229.3 230										
									Do		do		gry		
					232										
									Ls		col		l-gry		Col vs
									Do		do		gry		Do vs
					237.2										
								35°	Sh				blk	shd	
					240										
															242.8m, end
					250										
					260										
					270										
					280										
					290										

PL. I - 7

GEOLOGICAL SURVEY
OF
THE ISCAYCRUZ AREA, PERU
PHASE II

DRILLING EXPLORATION
IN THE LIMPE AREA (UNDERGROUND)

GEOLOGIC DRILL LOG
DDH - IC-7



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

APRIL 1984
Prepared by MINDECO

Scale 1 : 200

0 4 8 12 16 20m

LEGEND and ABBREVIATION

10. Rock:	Pebble, sand, clay		Peb		
	Sandstone		Ss		
	Shale		Sh		
	Marl		Ml		
	Limestone		Ls		
	Dolomitic limestone		Do - Ls		
	Dolostone		Do		
	Siderite		Sid		
	Quartzite		Qtz		
	Ore, high grade				
	Ore, low grade				
	Pyrite ore		Py		
	Hematite ore		Hm		
	Skarn		Sk		
	Brecciated rock		Brc		
	Altered rock		A		
	Fault, fracture		F		
11. Oxidation :	oxidized		oxd		
	limonitized		lim		
12. Alteration	dolomitization		do		
	calcitization		col		
	argillization		cly		
	silicification		sil		
	sericitization		ser		
13 Mineralization	Pyrite	Py	Chalcopyrite	Cp	
	Pb-minerals	Pb	Chalcocite	Cc	
	Zn-minerals	Zn	Hematite	Hm	Spc
	Oxide minerals	Oxd	Magnetite	Mt	
14 Color	light	l -	black	blk	
	dark	d -	white	wht	
	grey	gry	brown	brn	
15 Fracture :	Fault		F		
	sheared		shd		
	brecciated		brc		
16 Observations :	dissemination		diss		
	veins		vs		
	veinlets		vls		

GEOLOGIC DRILL LOG
ISCAYCRUZ PROJECT

Coordinate N 8808.112 E 310.904
Elevation 4.573m

DDH No. IC-8
Direction 250°
Inclination -30°
Total Depth 202.8m.

Assays: Leng (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Depth (m)	Core Rec	Symbol	Str. (m)	Occurrence: Rock	Oxd.	Alt.	Min.	Color	Fract	Observations
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
									Qtz		sil ser	Py	l-gry		Gry spots in whl mta. mgd. very hard
															80-97: Crs, 90°.
															99: Py-netw
					10										
															173: Py-diss along J.
					20										
					220			5°							
								5°	Sh		do	Py (Cu)	d-gry		Sandy-Sh, dolomitic Pyrophyllite-Qt ore determined by X-ray (26m).
								5°							26.6: Py-v, 2cm, 5°.
					278										26.8: Py-netw.
					30				Qtz		sil	Py	l-gry		
								5°	Ss		sil	Py	l-gry		
					362			10°	Sh				blk		Sh with Ss
					369										
									Ss (Qtz)		sil	Py	gry		
					40										
					50										
					510			5°	Ss				gry		
					522				Qtz				l-gry		
					543				Sh		cly		blk	shd	Carboniferous Lamination is developed
					563						cly		p-gry	shd	
					569						cly		d-gry	shd	568: F-cly
					576										58.5: F-cly
									Qtz		sil ser		l-gry + wht-		
					60										
					615			5°	Ss (Qtz)		sil		gry		
					640				Qtz		sil ser	Py	wht		Lim along J
					70										
					705				Sh				blk	shd	71.4-73.4: Cly beds
					723				Sh		cly		p-gry		
								5°	Ss						
					750			0°	Sh (Mt)		cly	Py	p-gry		Int. cly beds = Fs parallel to bedding (792-810, 825.-838.)
					80			0°							Very slty
					838			10°	Ss (Qtz)		sil	Py	gry		
					90										
					901				Sh		cly	Py	d-gry	shd	
					924				Ss (Qtz)						Cm-Fm
					950				Do		sil do		gry		950-954: shd Boundary is transitional
					970				Ls		do		gry		Sl-Fm
					991				Alt						Druse

Assays: Leng (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Depth (m)	Core Rec	Symbol	Str. (m)	Occurrence: Rock	Oxd	Alt	Min	Color	Fract	Observations
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
									Ald		Do		gry		With Ss & Sh
					1027										Druse Flow out water. 600 l/min. PH 2-1
					1035				Ald				gry		Altered r.
					1076			5°							
					1088			5°	Sh		cly	Hm Py	p-gry	shd	
					110										109.9-111.3: Sh: wht, cly
43	005	004	008	–					Py-Ore		sil cly	Py	yel		
								10°							
43	004	002	015	–											
					1182										
					120				Py-Ore		cly	Py	yel		Py powder ore
45	006	002	007	–											
45	006	001	008	–											
44	004	002	006	tr											
					130										
					1316										
39	004	002	007	tr					Py-Ore		sil cly	Py	yel gry		Py drussy ore Py-Qt assemblage is determined by X-ray (133m).
					1355										
33	006	002	009	tr					Py-Ore		cly	Py	yel		Py powder ore
31	006	002	006	tr											
					190										
32	005	001	003	–											
32	004	001	010	–											
					1483										1480-1483: Py, mas. drussy
22	006	001	090	tr				5°	Ald		chl cly		p-grn		
					150										Cly, shd.
11	024	002	070	tr					Cu-Spc Ore			Cp Spc	d-gry		Int. (m) Cu (%) Pb (%) Zn (%) Ag (g/t)
12	087	001	151	tr											Av. 3.5 050 002 093 tr
12	036	002	055	–											
28	012	002	246	–				5°	Ald		do spc talc	Spc Cp	d-gry		154.4: Cp-diss Sp-Talc-Qt assemblage is determined by X-ray (152m).
24	007	002	231	tr											
					1592										159.2-159.8: cly, F, 70°
					160										
46	253	002	030	40					Ald		cly chl	Py Hm	p-grn		
					1638										
30	012	001	025	tr					Py-Ore		sil	Py	yel		Py massive ore
29	009	002	013	–											
					1697										
					170										
35	032	001	055	tr				25°	Ald (Sh)		cly	Hm Py	p-grn		
					1732										
13	007	172	008	4					Spc-Ore		cly sil	Spc Cp	blk		
13	074	023	020	32											Int (m) Cu (%) Pb (%) Zn (%) Ag (g/t)
12	010	002	003	tr					Cu-Spc Ore			Cp Spc	blk		Av. 3.6 243 011 011 23
11	696	005	010	36											
22	003	002	015	tr					Ald (Sh)		chl cly sid	Hm Py Cp	p-grn p-gry	shd	189.0-189.7: Shd
					180										
22	002	002	003	tr				5°							Lamina is remarkable
															Sl-Fm
17	001	002	085	–											
					1847				Sh		sil		d-gry blk		Lamina Cz-Fm
					1885										
					190			5°	Ml		chl sil cly sid	Py	p-gry		
					1940				Ls				l-gry		
					1968			5°	Sh				d-gry blk		Lamina
					1994										Fgd

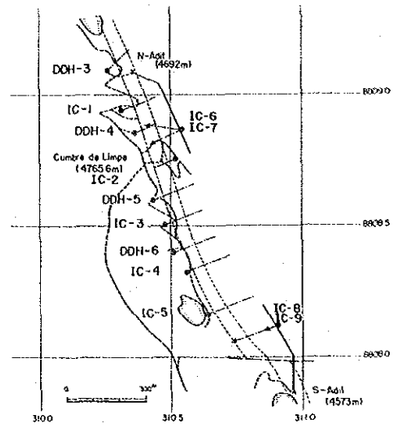
Assays: Leng (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Depth (m)	Core Rec	Symbol	Str. (m)	Occurrence: Rock	Oxd	Alt	Min	Color	Fract	Observations
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
									Ss				gry		
					201.7				Sh			Py	blk		202.8m, end
					202.8										
					210										
					220										

PL. I-8

GEOLOGICAL SURVEY OF THE ISCAYCRUZ AREA, PERU
PHASE II

DRILLING EXPLORATION IN THE LIMPE AREA (UNDERGROUND)

GEOLOGIC DRILL LOG
DDH - IC-8



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

APRIL 1984
Prepared by MINDECO

Scale 1 : 200
0 4 8 12 16 20m

LEGEND and ABBREVIATION

10. Rock:	Pebble, sand, clay	Peb	
	Sandstone	Ss	
	Shale	Sh	
	Marl	Ml	
	Limestone	Ls	
	Dolomitic limestone	Do-Ls	
	Dolostone	Do	
	Siderite	Sid	
	Quartzite	Qtz	
	Ore, high grade		
	Ore, low grade		
	Pyrite ore	Py	
	Hematite ore	Hm	
	Skarn	Sk	
	Brecciated rock	Brc	
	Altered rock	A	
	Fault, fracture	F	
11. Oxidation:	oxidized	oxd	
	limonitized	lim	
12. Alteration:	dolomitization	do	
	calcitization	cal	
	argillization	cly	
	silicification	sil	
	sericitization	ser	
13. Mineralization:	Pyrite	Py	Chalcopyrite Cp
	Pb-minerals	Pb	Chalcocite Cc
	Zn-minerals	Zn	Hematite Hm Spc
	Oxide minerals	Oxd	Magnetite Mt
14. Color:	light	l-	black blk
	dark	d-	white wht
	grey	gry	brown brn
15. Fracture:	Fault		F
	sheared		shd
	brecciated		brc
16. Observations	dissemination		diss
	veins		vs
	veinlets		vls

GEOLOGIC DRILL LOG
ISCAYCRUZ PROJECT

Coordinate N 8808.112 E 310.904
Elevation 4,573m

DDH No. IC-9
Direction 250°
Inclination -80°
Total Depth 270.1m

Dep (m)	Str (m)	Rock	Oxd	Alt	Min	Color	Fract	Observations
6	9	10	11	12	13	14	15	16
		Qtz		sil	Py	l-gry whl		Very hard, comp, fgd-mgd
10								
	65°							
20								
30								
31.0		Qtz	Hm	sil ser	Py	whl l-gry	crd	31.0-33.2m: vertical crk. 60°-70° with Hm. Js. 25°. 33.2-48.5 : Js. 50°-80° with Hm.
	65° 70°							
40								
50								
53.7	55°	Ss			Py	gry		53.7-63.5m: Alt(Do, Do-Ss, Sh)
56.0		Do-Ss	do-cly		Py	d-gry whl	shd	
56.7		Sh	do			blk	shd	
57.3	45°	Do			Py	blk		Fgd-mgd.
60								
62.7	50°	Sh	do		Py	gry-bk		
63.5		Qtz		sil	Py	l-gry whl		Very hard, comp, fgd-mgd.
70								70.2-70.5m: Py patch.
	50°							
77.2		Do-Ss		sil	Py	d-gry		
78.2	40°	Sh			Py	blk		Intc. Ss patch
79.0								78.2-78.3m: shd.
80		Qtz		sil	Py	whl l-gry		Very hard, comp, fgd, sil and Py ore strong.
	45°							
90								
								99-100m: ser is remarkable.
	40°							

Dep (m)	Str (m)	Rock	Oxd	Alt	Min	Color	Fract	Observations
6	9	10	11	12	13	14	15	16
101.3		Sh		cly		d-gry		
102.4		Ss		sil		gry		
103.9	50°	Qtz		sil	Py	l-gry		
107.0								
108.0	50°	Ml		cly		whl		108.0-108.2m: wh. col cly.
108.7		Sh				blk	shd	
112.1		Ml		cly		d-gry	shd	
112.2		Sh				blk		
112.9		Do		do		blk		wht-Do vs.
115.3								
		Qtz		sil		wht	crd	
117.9								
	65°	All (Sh)		cly		d-gry blk		All (Sh-Ss-Do).
120.0	50°							
120.8		All (Do)				blk		All (Do-Ss-Sh).
124.5								
		Qtz		sil	Py	whl		
	35°							
130.0								
130.3		Ald (Ml)		cly		whl		
132.0		Qtz		cly	Py	whl	F	
133.0		Qtz		sil ser	Py	wht	crd	
135.0		Ml		cly		yel whl		Very soft, massive.
138.2	25°							
140.0		Ml		cly		p-gry		Very soft, massive.
	55°							
143.7		Do (Sh)			Py	blk		Massive, fgd crystalline.
146.0		Do			Py	d-gry		Massive, mgd-fgd crystalline.
148.6		Ml (Do)		cly		p-gry	crd	148.8-150.3m: F. 55°. 110cm w.
150.0								
150.3		Ald		sil cly chl		p-grn gry		153.2-153.7m: shd, cly.
154.4		Ald (Ml)		cly		p-gry	shd	
156.6		Ml		cly		p-gry	shd	156.2-156.6m: F. cly. 157.4-157.7m: crd.
159.7								
160	40°	Qtz		sil	Py	l-gry	crd	Mgd, Qtz vs.
161.7	40°	Ss		sil	Py	d-gry		Mgd, very hard
164.5		Do-Ss			Py	d-gry	crd	Mgd-fgd
166.5		Ald		sil cly	Py	d-gry	brc	Py diss. 169.5-169.9m: crd
169.5								
170		Ald		sil cly chl	Py	p-grn gry whl		
174.6		Cly		cly	Py		shd	
		Qtz		sil	Py	l-gry whl	crd	Py diss is strong Sil is very strong
180								
								Cm-Fm
184.1		Cly		cly	Py		shd	
185.4		Ald		cly	Py	whl	shd	St-Fm
186.1		Ald		sil	Py	wht		Ald(Ss)
187.0		Ald (Ml)	Hm	cly chl sil	Py	p-grn p-gry		187.0-187.5m: cly. 189.1-189.5m: cly. Hm. Ald (Ml)
190								191.4-191.5m: Spc, mas. 194.2-194.5m: cly.
194.5	50°	Sh		sil	Py	gry		Lamina developed.
195.3	60°	Py-Ore		sil ser	Py	yel		Intc. wht siliceous matx.

Dep (m)	Str (m)	Rock	Oxd	Alt	Min	Color	Fract	Observations
6	9	10	11	12	13	14	15	16
203.7	50°							202.2-202.7m: Py powder.
		Py-Ore			Py	yel		Massive Py-Ore
210								
								214m: drusy Py.
219.5								
220		Py-Ore (Sh)		cly sil	Py	whl yel	shd	Clear banding str. 220.5-220.8m: Py powder. 223.2-223.8m: shd.
	65° 65°							
225.6		Py-Ore		sil cly	Py	yel	crd	
230								
232.0		Py-Ore		sil	Py	yel	dss	Drusy Py, mgd-cgd.
238.6								Massive Py-Ore.
240	60°	Py-Ore			Py	yel		238.8-240.0m: Ald Sh.
249.8								
250	60°	Ald (SN)		cly	Py	whl		
251.5		Py-Ore			Py	yel		
255.9								
256.5	60°	Py-Ore (Sh)		cly	Py	whl		
260		Py-Ore			Py	yel	crd	Massive Py-Ore
266.5		Py-Ore			Py	yel		Cgd Py massive ore, drusy. 269.3-270.1m: drusy, powdery.
270								270.1m, esd.
280								
290								

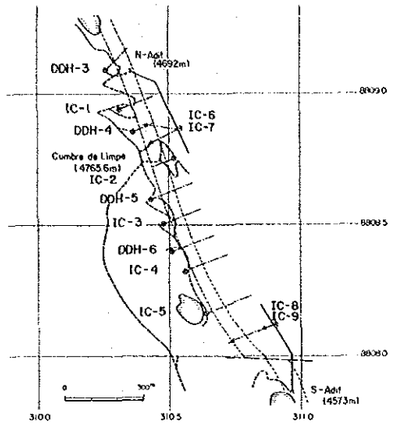
Dep (m)	Lang (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)
6	1	2	3	4	5
203.7	5	0.02	0.02	0.08	-
210	5	0.05	0.01	0.06	4
215.5	5	0.06	0.02	0.09	3
219.5	5	0.06	0.01	0.01	-
225.6	5	0.03	0.01	0.01	4
230	5	0.04	0.02	0.01	tr
232.0	5	0.03	0.02	0.01	132
238.6	5	0.04	0.01	0.01	3
240	5	0.04	0.02	tr	tr
249.8	5	0.05	0.02	tr	tr
250	5	0.05	0.02	-	2
255.9	5	0.03	0.02	-	4
260	10	0.03	0.02	-	tr
53	0.08	0.03	0.04	tr	
53	0.10	0.02	0.03	4	
47	0.02	0.02	0.01	tr	

PL. I - 9

GEOLOGICAL SURVEY
OF
THE ISCAYCRUZ AREA, PERU
PHASE II

DRILLING EXPLORATION
IN THE LIMPE AREA (UNDERGROUND)

GEOLOGIC DRILL LOG
DDH - IC-9



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

APRIL 1984
Prepared by MINDECO

Scale 1 : 200
0 4 8 12 16 20m

LEGEND and ABBREVIATION

10. Rock:

Pebble, sand, clay	Peb	
Sandstone	Ss	
Shale	Sh	
Marl	Ml	
Limestone	Ls	
Dolomitic limestone	Do-Ls	
Dolostone	Do	
Siderite	Sid	
Quartzite	Qtz	
Ore, high grade		
Ore, low grade		
Pyrite ore	Py	
Hematite ore	Hm	
Skarn	Sk	
Brecciated rock	Brc	
Altered rock	A	A
Fault, fracture	F	

11. Oxidation :

oxidized	oxd
limonitized	lim

12. Alteration :

dolomitization	do
calcitization	cal
argillization	cly
silicification	sil
sericitization	ser

13. Mineralization :

Pyrite	Py	Chalcopyrite	Cp	
Pb-minerals	Pb	Chalcocite	Cc	
Zn-minerals	Zn	Hematite	Hm	Spc
Oxide minerals	Oxd	Magnetite	Mt	

14. Color :

light	l-	black	blk
dark	d-	white	wht
grey	gry	brown	brn

15. Fracture :

Fault	F
sheared	shd
brecciated	brc

16 Observations :

dissemination	diss
veins	vs
veinlets	vls

GEOLOGIC DRILL LOG
ISCAYCRUZ PROJECT

DDH No. IC-10

Coordinate	N 8809.021	Direction	70°
	E 310.276	Inclination	-45°
Elevation	4.698m	Total Depth	180.3m

Assays					Depth	Symbol			Occurrence						Observations
Leng (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Dep. (m)	Core Rec	Sym	Str. (m)	Rock	Oxd.	Alt.	Min.	Color	Fract.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
									Soil						
					6.2										
									Ss	lim		Py	d-gry		
					9.1										
					10				Sh				blk	shd	Sh : phyllitic
					10.9										
									Ss		col	Py	p-gry		
									Sh						
									(Col)						
					14.0										
									Ml	lim		Py	gry		
								50°							
					19.0			45°							
					20				Sh		col	Py	blk	shd	Phyllitic
															25.1 – 25.5m : Do·Ls
															25.5 – 26.1m : Ml
								60°							
					27.8										
									Ml			Py	d-gry		Col vs
					30			35°							
					32.3										
					33.2				Sh				blk	shd	
									Ml			Py	d-gry		
					38.6			40°							
					40				Ml				p-gry		
									Sh						
					42.0										
									Ml		col		gry		Alt (Ml · Sh · Do)
									Sh						
					46.0				Sh				blk	F	
									Sh				blk		Alt (Sh · Ml)
									Ml				p-gry	shd	
					50										
					52.2			40°							
					53.6				Do		do	Py	blk		52.8m : wht – Do vs
									Ml			Py	gry		
									Sh						
									Ml		cly			shd	
					57.5										
									Cly		cly	Py	d-gry	F	Brcs ore contained
					60				Brc					brc	
					61.6										
									Ml			Py	p-gry	shd	
					64.0										
									Cly		cly		p-brn	F	
					65.7				Ml		cly		l-gry		
					66.5										
									Sh		cly		d-gry	shd	
					68.3										
					70			25°	Sh		col	Py	gry		
					71.7										
					72.1				Cly		cly			F	
									Ss		col		l-gry		
					74.7										
									Sh			Py	d-gry blk	shd	Phyllitic
					80			25°	Alt		col	Py	l-gry		Alt (Ss · Ml · Sh)
					82.6										
									Sh			Py	blk	shd	Phyllitic
															Cz – Fm
					86.8										
1.2	0.01	0.01	0.32	12	88.0			25°	Pb-Cu			Py-Cu	yel		St – Fm
									Do			Py-Pb	gry		Wht-Do vs
					90				Sh		cly		gry	shd	
									Do			Py	gry		
1.3	0.01	0.07	0.21	30					Py				blk		
					94.7										
					98.3				Sh		cly	Py		shd	
					99.0										

Assays					Depth	Symbol			Occurrence						Observations
Leng (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Dep. (m)	Core Rec	Sym	Str. (m)	Rock	Oxd	Alt	Min	Color	Fract	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
									Do		do	Py	gry		Do intercalated with thin Sh
					106.0										
									Sh		cly		blk	F	
					107.4			40°	Do		do	Py	p-gry		
					110										
					112.3										
					113.2				Ls				l-gry		
					114.7				Sh		do		blk	shd	
									Do		do	Py	p-gry		
					120										
									Sh		cly		blk	F	
					122.4				Do		do		brn		
									Ls	Lim	do	Py	l-gry		
					130										
					132.7			50°							
					135.3				Do	Lim	do	Py	brn	shd	
					137.7										
									Sh	Lim	do	Py	brn	F	
					140				Do	cly	do sil	Py	brn		
					143.5										
					145.1				Cly	Lim			brn	F	
4.2	0.15	0.22	1.00	10					Sid Do	Lim	do sid cly	Hm	brn	shd	
					149.3										
2.4	0.02	0.05	0.60	4	150				Do	Lim	do cly		brn	shd	Do with Sh
					151.7										
1.8	0.98	0.02	0.15	5					Hm			Hm	brn		
					153.3				Cu-ore		sil	Cp-Py	wht		Porus silisified Cp-Py ore
					154.5				Ore						
4.7	0.08	0.07	0.11	6											
					156.7				Ore		sil	Cp-Zn	wht		
					156.8				Cu-ore			Cp-Hm	blk		
					158.8										
					160				Hm-ore		cly	Hm-Cc	blk		
					161.6										
1.7	1.09	0.05	0.16	8											
					163.3										
2.1	0.14	0.02	0.20	10					Py Cu		sil	Py Cc	yel		Cc diss in druse
					165.4										
					168.6										
2.0	0.02	0.03	0.10	4	170				Spc Hm		cly	Spc Hm	blk	shd	
					170.6										
2.0	0.02	0.07	0.36	3	172.3										
					172.8										
2.0	1.57	0.02	0.07	8											
					174.5										
2.9	0.03	0.02	0.35	5					Sh		cly	Py	blk gry	shd	
					177.5			55°							
2.8	0.01	1.42	0.70	38					Do		do		l-gry		
					180										180.3m end

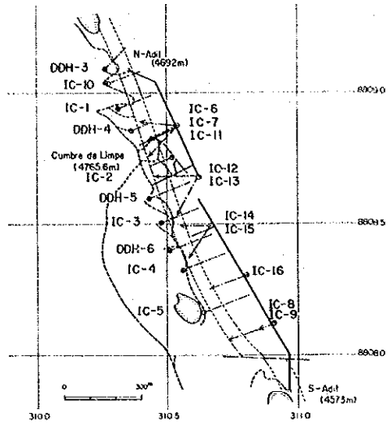
Assays					Depth	Symbol			Occurrence						Observations
Leng (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Dep. (m)	Core Rec	Sym	Str. (m)	Rock	Oxd	Alt	Min	Color	Fract	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
					210										
					220										
					230										
					240										
					250										
					260										
					270										
					280										
					290										

PL. I-10

GEOLOGICAL SURVEY
OF
THE ISCAYCRUZ AREA, PERU
PHASE III

DRILLING EXPLORATION
IN THE LIMPE AREA (UNDERGROUND)

GEOLOGIC DRILL LOG
DDH – IC-10



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

MARCH 1985
Prepared by MINDECO

Scale 1 : 200

0 4 8 12 16 20m

LEGEND and ABBREVIATION

10. Rock	Pebble, sand, clay		Peb		
	Sandstone		Ss		
	Shale		Sh		
	Marl		Ml		
	Limestone		Ls		
	Dolomitic limestone		Do – Ls		
	Dolostone		Do		
	Siderite		Sid		
	Quartzite		Qtz		
	Ore, high grade				
	Ore, low grade				
	Pyrite ore		Py		
	Hematite ore		Hm		
	Skarn		Sk		
	Brecciated rock		Brc		
	Altered rock		Ald		
	Fault, fracture		F		
11. Oxidation	oxidized		oxd		
	limonitized		lim		
12. Alteration	dolomitization		do		
	calcitization		cal		
	argillization		cly		
	silicification		sil		
	sericitization		ser		
13. Mineralization	Pyrite	Py	Chalcopyrite	Cp	
	Pb-minerals	Pb	Chalcocite	Cc	
	Zn-minerals	Zn	Hematite	Hm	Spc
	Oxide minerals	Oxd	Magnetite	Mt	
14. Color	light	l-	gray	gry	
	dark	d-	white	wht	
	pale	p-	brown	brn	
15. Fracture	Fault		F		
	sheared		shd		
	brecciated		brc		
16. Observations	dissemination		diss		
	veins		vs		
	veinlets		vls		

GEOLOGIC DRILL LOG
ISCAYCRUZ PROJECT

Coordinate N 8908.860 E 310.558
Elevation 4.692m

DDH No. IC-11
Direction 225°
Inclination -40°
Total Depth 221.1m

Depth (m)	Rock	Oxd.	Alt.	Min.	Color	Fract.	Observations
	Qtz	lim	sil		l-gry		Very hard, mgd-fgd.
8.4							
10	Sh				blk		Phyllitic
12.4	Qtz		sil		l-gry		
17.5	Sh				blk		Intc with Ss brc and pab.
20	Qtz (Ss)		sil	Py	gry		23.3 - 23.7m: Sh
30							
31.7	Sh			Py	blk	shd	31.7 - 31.8m: Py·Cu diss 32.6 - 32.8m: Py·Cu diss 33.9 - 35.0m: shd
33.9	Alt			Py (Cu)	gry		Alt (Ss·Sh·Do) mainly fgd Ss
40							
41.4	Ss				gry		Ss: fgd, very hard
50.7	Sh				blk		
53	Cly		cly		blk	F	
53.6	Ss						Ss: dolomitic
56.6	Mt		cly		p-gry	shd	very soft
58.8	Ss (Do)				gry		Dolomitic Ss: mgd, wht grains
60	Sh				blk		
62.8	Qtz		sil		l-gry		
70	Mt				p-gry	shd	Mt Ald wht
71.0	Ss (Qtz)		sil		l-gry		
78.7							
80	Sh				blk		
81.6	Mt				l-gry		86.0 - 86.7m: Ls
86.7	Ss (Qtz)		sil		l-gry		
90							
98.4							Cm - Fm St - Fm

Depth (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)
1.7	0.01	0.06	0.88	45
1.2	0.01	3.60	6.80	20
1.2	0.03	4.00	6.40	31
1.9	0.15	7.60	11.20	62
1.9	0.01	3.20	7.30	35
2.0	0.01	3.40	7.20	38
1.0	0.04	4.10	37.7	35
1.0	0.03	3.80	32.2	44
1.0	0.09	0.84	46.5	74
1.0	0.00	0.98	29.9	34
1.0	0.02	0.45	21.0	27
1.0	0.05	0.43	34.9	38
1.0	0.06	1.28	47.1	81
1.0	0.06	0.42	31.8	59
1.1	0.06	0.63	50.4	51
1.1	0.03	2.46	15.0	25
1.2	0.04	4.00	12.6	28
1.9	0.03	3.90	10.0	23
1.8	0.04	3.60	24.0	25
1.9	0.06	4.80	29.6	27
4.9	0.10	0.20	5.90	19
1.7	0.05	0.98	6.30	5
4.1	0.00	0.08	0.77	4
4.1	0.05	0.75	4.15	4
1.9	0.03	6.10	29.50	41
1.0	0.01	0.24	0.90	9
4.1	0.01	0.09	2.35	6
4.1	0.00	0.10	2.00	7

Depth (m)	Rock	Oxd.	Alt.	Min.	Color	Fract.	Observations
	Do		cly chl		l-gry l-grn		
104.5	Sh		cly	Py	d-gry	shd	
105.5	Do		sil chl	Py Mg Zn	d-gry		
107.2	Zn-Pb ore			Zn-Pb Py			Pb·Zn ore
108.6	Zn-Pb ore			Zn-Pb Py Mt	d-yel	drs	(Sp·Py·Mar·Gl·Po) 82m 0.05 4.44 7.97 39
115.4	Zn-ore		sil	Zn-Py	d-brn		Zn massive ore: Zn 40-50% dendric Py in Sp mix. (Py·Sp·Gl·Cp·Po)
120							
121.4	Zn-ore			Zn	d-brn blk		9.1m 0.05 1.38 39.16 47
124.5	Zn-Py ore		sil	Py-Zn	d-yel		
126.8							
128.3	Zn-Pb ore		sil	Zn Pb	d-yel		
130	Zn-ore		cly	Py-Zn	d-brn		9.4m 0.04 3.94 19.00 25
133.9							
134.8	Alt		cly	Zn-Py	d-gry	shd	Av. 26.7m 0.04 3.16 22.69 38 1m. 0.04 Pb(%) Zn(%) Ag(g/t)
135.5							
136.5	Cly		cly			shd	
137.5							
138.9	Sid		cly		blk	shd	
139.3							
140							
146.5	Sh		cly		blk	shd	
	Ald		cly		wht	shd	
150							
152.7	Cly		cly		blk	shd	
153.2							
156.6	Do		cly		d-gry	shd	Core recovery is bad
160							
164.8	Zn-ore		sil	Zn-Py	yel		
166.7							
167.7							
169.2	Sh		cly	Py	blk	shd	
170	Py-ore		sil	Py	yel		Massive Py-ore
177.4	Sh		cly	Py	d-gry	shd	
180							
183.2	Py-ore		sil	Py	yel		St - Fm
186.2	Sh		do		gry blk		Phyllitic Cz - Fm
190							

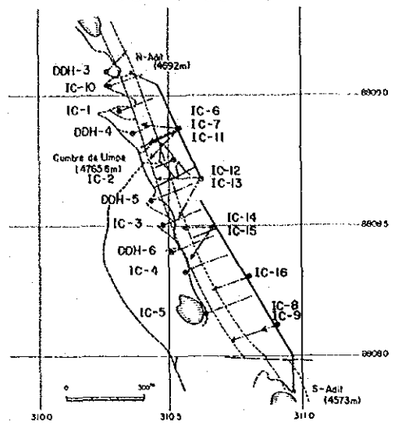
Depth (m)	Rock	Oxd.	Alt.	Min.	Color	Fract.	Observations
201.7	Sh				d-gry		
203.6	Mt				p-gry		
	Sh				d-gry		Phyllitic
206.9	Mt				gry		Do vs
207.8	Sh				d-gry		Phyllitic 209.2 - 209.6m: Mt
210							211.4 - 211.8m: Mt
214.5	Ss		sil		l-gry		Ss: fgd silic hard
218.6	Sh				d-gry		
220							221.1 end
230							
240							
250							
260							
270							
280							
290							

PL. I - II

GEOLOGICAL SURVEY
OF
THE ISCAYCRUZ AREA, PERU
PHASE III

DRILLING EXPLORATION
IN THE LIMPE AREA (UNDERGROUND)

GEOLOGIC DRILL LOG
DDH - IC- 11



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

MARCH 1985
Prepared by MINDECO

Scale 1 : 200
0 4 8 12 16 20m

LEGEND and ABBREVIATION

10. Rock:	Pebble, sand, clay	Peb	
	Sandstone	Ss	
	Shale	Sh	
	Marl	Mt	
	Limestone	Ls	
	Dolomitic limestone	Do - Ls	
	Dolostone	Do	
	Siderite	Sid	
	Quartzite	Qtz	
	Ore, high grade		
	Ore, low grade		
	Pyrite ore	Py	
	Hematite ore	Hm	
	Skarn	Sk	
	Brecciated rock	Brc	
	Altered rock	Ald	A
	Fault, fracture	F	
11. Oxidation:	oxidized	oxd	
	limonitized	lim	
12. Alteration:	dolomitization	do	
	calcitization	cal	
	argillization	cly	
	silicification	sil	
	sericitization	ser	

13. Mineralization:	Pyrite	Py	Chalcopyrite	Cp
	Pb-minerals	Pb	Chalcocite	Cc
	Zn-minerals	Zn	Hematite	Hm · Spc
	Oxide minerals	Oxd	Magnetite	Mt
14. Color:	light	l-	gray	gry
	dark	d-	white	wht
	pale	p-	brown	brn
15. Fracture:	Fault		F	
	sheared		shd	
	brecciated		brc	
16 Observations:	dissemination		diss	
	veins		vs	
	veinlets		vls	

GEOLOGIC DRILL LOG
ISCAYCRUZ PROJECT

DDH No. IC-12

Coordinate	N 8808.694	Direction	270°
	E 310.650	Inclination	-45°
Elevation	4.693m	Total Depth	220.6m

Assays: Leng (m) 1	Cu (%) 2	Pb (%) 3	Zn (%) 4	Ag (g/t) 5	Depth (m) 6	Symbol: Core Rec 7	Sym 8	Str. (m) 9	Occurrence: Rock 10	Oxd 11	Alt 12	Min 13	Color 14	Fract 15	Observations 16
									Qtz		sil		wht		Qtz : fgd~mgd qt only strong sil very hard
					10										
								30°							
					20										
								30°	Ml		cly		p-gry		Ml(Md) : bonding str
					36.8				Qtz						
					38.1				Ml		cly		p-gry		Ml(Md)
					39.4										
					40				Qtz		sil		wht		
					43.5				Alt		cly		p-gry		Alt (Ss, Ml) : bonding str
					45.0			30°	Ml		cly		d-gry		
					46.1				Qtz		sil		wht		
					50										
								35°							
					56.6			30°	Sh				blk		Sh : blk, phyllitic 59.0~59.2m : Carbone
					60										60.6~60.9m : Ss
					61.8			30°	Qtz		sil		wht		
					63.2				Do				d-gry		
					65.3				Qtz		sil		wht		
					70										
					75.0				Sh				blk	shd	
					76.6				Ss		sil		gry		
					77.2			35°	Do				d-gry		
					78.5										
					80				Ml (Md)				p-gry		
					83.8				Cly		cly		p-gry	shd	
					84.5				Do				blk		
									Ml		cly		p-gry	shd	86.5~86.9m : Cly, F 86.9~87.2m : Ss
					86.5				Cly					F	
					86.9										
					87.2				Ml				p-gry		
					88.9										
					90				Ml (Md)		cly		p-gry		Ml(Mudstone): massive very soft
					96.2			40°	Ss		sil		gry		Ss : fgd~mgd, very hard quartzose

Assays: Leng (m) 1	Cu (%) 2	Pb (%) 3	Zn (%) 4	Ag (g/t) 5	Depth (m) 6	Symbol: Core Rec 7	Sym 8	Str. (m) 9	Occurrence: Rock 10	Oxd 11	Alt 12	Min 13	Color 14	Fract 15	Observations 16
					101.0										
					102.2				Do				blk		(Qt · Sid · Rutile · Py)
									Ss		sil		l-gry		
					104.2										
									Ss		do		gry		Ss with dolomitic parts
					107.1										
									Sh		do		blk		Sh with dolomitic parts
								45°							
					110										109.9m : Zn diss, 10cm
									Ls		cal		gry		
					112.1				Ss				gry		
					113.2				Ls		cal		gry		Cal vs
								40°							
									Ml				p-gry		Ml with Sh and dolomitic parts
					115.0										
									Ss		sil		gry		
					119.3				Sh				NK	shd	
					120										
									Ss				gry		Ss dolomitic 122.3m : Zn diss 122.4m and 122.7m : gypsum vs.
					122.6										
									Do				d-gry		
					126.0										
									Ss		sil		l-gry		
					130										Cm ~ Fm
					130.9										
								45°	Do		do sil cly		d-gry		St ~ Fm
					133.7				Sh				blk		
					134.4				Ml		do		a-gry		
					135.8				Sh		do		a-gry		
									Ml		do-sil		p-gry		
					137.2				Sh						
								50°	Ml		do sil		p-gry		
					140										
									Ml		do-sil cly		p-gry	shd	
					141.8				Cly		cly		p-gry	shd	
					142.6										
									Ald		cly		blk	shd	
					143.3										
								40°	Ald		sil-cly	Zn	d-gry		
					145.3										
									Zn-ore		sil	Zn	blk		(Sp · Qt · Sid · Amr)
					146.6				Ald		cly	Zn	blk	brc	Pb-Zn ore : Pb+Zn 5~15%
					147.4										
									Py-ore			Py-Zn	d-yel	shd	
					149.2										
					150.0				Py-Zn bre			Py-Zn	d-yel		
					151.4			45°	Zn-Pb			Zn-Pb Py	brn		
					152.7			35°							
									Py-ore			Py	yel		
					153.8										
									Zn-Pb ore			Pb-Py Hm-Zn	brn		Zn diss in Pb mas (Pb · Sp · Py · Gl)
					156.7			35°							17.2m 0.01 2.11 8.37 40
									Zn-Hm -ore		brc	Zn-Hm	d-brn	brc	
					159.8										
					160.6				Ald		cly			brc	160.5~160.6m : cly-shd
					161.1				Py-ore			Py-Zn	d-yel		(Sp · Gl · Py · Pb)
									Pb-Zn ore		brc	Zn-Pb	brn	brc	Zn mas ore : brn and yel typ Sp (Sp · Gl · Qt · Sid · Chl)
					164.5						cly	Py-Zn		shd	Pb+Zn 40~50%
								50°	Zn-ore			Zn	brn		(Sp · Gl · Pb · Py)
					166.8										
									Zn-ore			Zn	brn		(Sp · Cp · Py · Gl)
					167.5										
															(Sp · Cp · Py · Qt)
									Zn-ore			Zn-Py	p-brn blk		Sp : d-gmish type (Sp · Cp · Py · Gl)
					169.8										
					170										
									Pb-Zn ore			Zn-Pb	brn		Pb-Zn mas ore : 40~50% d-brn, brn and yel types. three types of Sp are observed
								35°							
								25°							
					175.6						cly	Py		shd	14.0m 0.48 3.23 44.80 153
									Zn-ore			Zn	d-brn		(Sp · Gl · Py · Cp)
					176.8				Pb-Zn Py-ore			Pb-Zn Py	d-yel		
					178.4										(Sp · Gl · Py · Pb)
									Zn-ore			Zn-Py	brn		
					180										
					180.5										
								30°	Do		do sil		l-gry		8.0m 0.06 2.64~21.59 32
					182.3										
									Zn-ore			Zn-Py	d-brn		(Sp · Gl · Py · Cp · Pb)
					183.3				Sh				blk		
					184.5				Sh			Zn-Py	blk		Av. 39.2m 0.19 2.61 24.08 78
					185.5				Sh				blk	shd	Int. Cu(%) Pb(%) Zn(%) Ag(g/t)
					186.4										
									Do		do		d-gry		Do wht vs
					188.2										
								35°	Sh					shd	
					189.0				Ald		do cly	Zn	d-gry	shd	
					190.6				Do		sh		d-gry		
									Sid						
					191.6			45°	Sh		do	Py	blk		
					193.3			45°	Do		do		gry		
					194.4				Ls-Do		do	Py	gry		
					195.4			45°	Ls				gry		
					197.4				Sid		do-sid	Zn-Py	d-brn		
					198.3				Ls		brc		gry	brc	

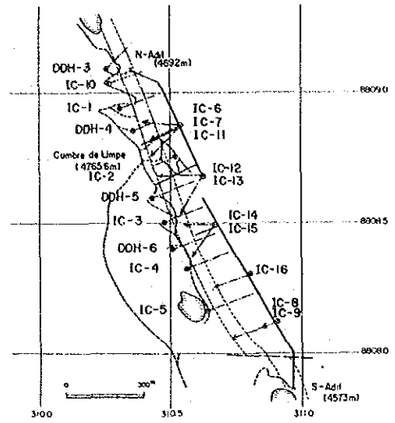
Assays: Leng (m) 1	Cu (%) 2	Pb (%) 3	Zn (%) 4	Ag (g/t) 5	Depth (m) 6	Symbol: Core Rec 7	Sym 8	Str. (m) 9	Occurrence: Rock 10	Oxd 11	Alt 12	Min 13	Color 14	Fract 15	Observations 16
									Ls		brc		gry	brc	
					201.0				Do		do	Po	d-gry		
															203.8~204.2m : Sh
					204.2										
2.3	0.01	0.24	1.18	30					Po-ore		sil	Po	d-brn		
2.3	0.04	0.06	1.00	30											
					206.8										
					210			35°	Brc		brc		d-gry	shd	
					211.6				Sh		brc		blk	shd	
									Do		do		gry		
					215.0										
								35°	Sh			Py	d-gry		
					216.3				Py-ore		Sid	Py	yel		Massive Py ore (Sid · Py · Chl · Qt)
2.2	0.01	0.06	0.18	40											
					218.5										Phyllitic
					220			35°	Sh			Py	blk		220.6m end
					230										
					240										
					250										
					260										
					270										
					280										
					290										

PL. I-12

GEOLOGICAL SURVEY
OF
THE ISCAYCRUZ AREA, PERU
PHASE III

DRILLING EXPLORATION
IN THE LIMPE AREA (UNDERGROUND)

GEOLOGIC DRILL LOG
DDH - IC- 12



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

MARCH 1985
Prepared by MINDECO

Scale 1 : 200

0 4 8 12 16 20m

LEGEND and ABBREVIATION

10. Rock:	Pebble, sand, clay	Peb		
	Sandstone	Ss		
	Shale	Sh		
	Marl	Ml		
	Limestone	Ls		
	Dolomitic limestone	Do-Ls		
	Dolostone	Do		
	Siderite	Sid		
	Quartzite	Qtz		
	Ore, high grade			
	Ore, low grade			
	Pyrite ore	Py		
	Hematite ore	Hm		
	Skarn	Sk		
	Brecciated rock	Brc		
	Altered rock	Ald		
	Foult, fracture	F		
11. Oxidation :	oxidized	oxd		
	limonitized	lim		
12. Alteration :	dolomitization	do		
	calcitization	cal		
	argillization	cly		
	silicification	sil		
	sericitization	ser		
13. Mineralization :	Pyrite	Py	Chalcopyrite	Cp
	Pb-minerals	Pb	Chalcocite	Cc
	Zn-minerals	Zn	Hematite	Hm · Spc
	Oxide minerals	Oxd	Magnetite	Mt
14. Color :	light	l-	gray	gry
	dark	d-	white	wht
	pale	p-	brown	brn
15. Fracture :	Foult		F	
	sheared		shd	
	brecciated		brc	
16. Observations :	dissemination		diss	
	veins		vs	
	veinlets		vls	

GEOLOGIC DRILL LOG
ISCAYCRUZ PROJECT

Coordinate N 8808,692 E 310,654
Elevation 4,693m

DDH No. IC-13
Direction 210°
Inclination -45°
Total Depth 240.6m

Assays: Leng (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Depth (m)	Core Rec.	Symbol	Str. (m)	Rock	Oxd	Alt.	Min.	Color	Fract.	Observations
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
									Qtz		sil		wht		Qtz : qt grains dominant fgd - mgd very hard
					10			50°							
											cly			shd	
					24.3			55°						F	24.3-24.5m : cly
					28.8				Qtz		sil		wht	crd	
					30										
					32.2										
					34.1									F	Sludge
					36.0				Qtz		sil		wht	crd	
					40			50°	Mt		cly		wht		
														shd	
					44.5				Qtz		sil		wht	crd	
					49.7										
					50			50°	Cly		cly		brn	F	
									Alt		cly		p-gry	shd	Alt (Mt · Ss · Do)
					53.7				Do		cly		d-gry	shd	
					54.9				Qtz	lim	cly		wht brn	crd	
										lim				F	Sludge
					60										
					60.5				Qtz	lim	cly		brn	brc shd	
					63.5				Tz	lim	sil		brn l-gry	crd	
					70										
														brc	
					74.7				Mt				p-gry		
									Carb				brx		
					78.3				Mt				p-gry		
								45°	Qtz		sil		wht l-gry		
					81.2										
					81.8				Qtz	lim	brc		brn	brc F	
					83.5										
								50°	Qtz (Ss)	lim		Py	wht		Qtz : fgd
					90										
					96.8			60°	Sh			Py	blk		
					99.8										

Assays: Leng (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Depth (m)	Core Rec.	Symbol	Str. (m)	Rock	Oxd	Alt.	Min.	Color	Fract.	Observations
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
					101.4				Ss		cly	Py	gry		
					102.5				Sh			Py	blk		
									Mt (Md)		cly		p-gry		Mt (Mudstone) : massive soft
					110			45°							
					114.4				Mt		cly		p-gry	shd	
								45°	Mt		cly		p-gry		
					120										
					121.3				Ss		sil		gry		Ss : sil, mgd
					123.1				Ss		cly chl	Py	d-gry		Py diss.
					124.8				Alt Do-Ss				gry blk.		Alt (Ss · Do)
					126.8				Ss		sil		gry		
					130										
					131.0			55°	Sh		do	Py	blk		
					133.1				Mt		do	Py	gry		Mt including pure Ls
					135.6				Ls				l-gry		
					136.6				Do		sid	Py	d-gry		
					137.5				Ss		sil		gry		Ss : fgd, sil
					140										
					142.4			45°	Sh				blk		
									Ss		sil do		d-gry		
					145.6				Sh				blk	shd	
									Do-Ss		sil do	Py	d-gry		
					150										
					151.7				Do		sid	Py	d-brn		
									Ss		sil do		l-gry		Cm - Fm
					155.4				Ls				l-gry		
					157.1				Do				d-gry		St - Fm
									Mt				gry		Mt including pure Ls
					159.3			50°							
					160				Ls				l-gry		
					161.3				Alt		do sil		gry p-gry		Alt (Mt · Ls · Do · Sh)
					164.0				Ald		chl-do cly-sil	Hm Py	d-gry		
5.0	0.06	0.02	0.19	30	165.5				Py-ore		cly	Py Hm	p-gry yel	brc	Py clay ore
					170										
5.0	0.24	0.03	0.26	50											
					175.0										
									Py-ore		sil cly	Py	yel		Py massive ore
								40°							
					185.3			45°	Ald		cly sil	Py	gry		Py clay ore
					188.2										
					190				Py-ore		sil cly	Py	yel		
					195.5				Py-ore		cly sil	Py Cc	yel	drs	Py ore with druses

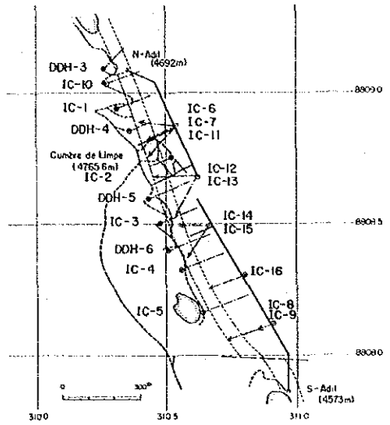
Assays: Leng (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Depth (m)	Core Rec.	Symbol	Str. (m)	Rock	Oxd	Alt.	Min.	Color	Fract.	Observations
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
					200.5				Py-ore		sil cly	Py	yel		Py massive ore
					210										
					212.2				Sh		cly	Py	yel blk		
					214.1			50°	Py-ore		sil	Py	yel		
					216.4			45°	Sh		cly	Py	d-gry		
					217.1				Ald (Mt)		cly	Py	p-gry		
					220										
					221.8				Py-ore		cly sil	Py Hm		shd drs	
					227.2										
1.8	0.04	0.00	0.05	10											
					230			50°	Ald		chl	Hm	p-grn		
					230.6				Hm-ore		sid chl	Spc-Cp	d-gry		
1.3	0.25	0.00	0.47	30											
					231.9				Sh		cly	Py	blk	shd	
								45°							
					235.8				Do		do sid	Py	p-gry		Wht Sid vs with diss Py
									Ls		do		l-gry		Ls with Sh thin bed
					240										240.6m end
					250										
					260										
					270										
					280										
					290										

PL. I - 13

GEOLOGICAL SURVEY
OF
THE ISCAYCRUZ AREA, PERU
PHASE III

DRILLING EXPLORATION
IN THE LIMPE AREA (UNDERGROUND)

GEOLOGIC DRILL LOG
DDH - IC-13



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

MARCH 1985
Prepared by MINDECO

Scale 1 : 200

0 4 8 12 16 20m

LEGEND and ABBREVIATION

10. Rock	Pebble, sand, clay		Peb		
	Sandstone		Ss		
	Shale		Sh		
	Marl		Mt		
	Limestone		Ls		
	Dolomitic limestone		Do - Ls		
	Dolostone		Do		
	Siderite		Sid		
	Quartzite		Qtz		
	Ore, high grade				
	Ore, low grade				
	Pyrite ore		Py		
	Hematite ore		Hm		
	Skarn		Sk		
	Brecciated rock		Brc		
	Altered rock		Ald		
	Fault, fracture		F		
11. Oxidation :	oxidized		oxd		
	limonitized		lim		
12. Alteration :	dolomitization		do		
	calcitization		cal		
	argillization		cly		
	silicification		sil		
	sericitization		ser		
13. Mineralization :	Pyrite	Py	Chalcopyrite	Cp	
	Pb-minerals	Pb	Chalcocite	Cc	
	Zn-minerals	Zn	Hematite	Hm	Spc
	Oxide minerals	Oxd	Magnetite	Mt	
14. Color :	light	l -	gray	gry	
	dark	d -	white	wht	
	pale	p -	brown	brn	
15. Fracture :	Fault		F		
	sheared		shd		
	brecciated		brc		
16 Observations	dissemination		diss		
	veins		vs		
	veinlets		vls		

GEOLOGIC DRILL LOG
ISCAYCRUZ PROJECT

DDH No. IC-14

Coordinate N 8808.497 / E 310.685
Elevation 4,575m
Direction 270°
Inclination -30°
Total Depth 140.2m

Assays: Ang (m) 1	Cu (%) 2	Pb (%) 3	Zn (%) 4	Ag (g/t) 5	Depth (m) 6	Core Rec. 7	Symbol 8	Str. (m) 9	Occurrence: Rock 10	Oxd 11	Alt 12	Min 13	Color 14	Fract 15	Observations 16
					12				Md				p-gry		
									Ss				gry		
					26				Ml (Md)		cly		p-gry		Massive, soft
					10										
					136				Qtz		sil	Py	l-gry		Mgd – cgd
					150			35°	Sh			Py	blk		Dolomitic, massive
					168				Ss		sil	Py	gry		Fgd
					20										
					226 / 236	A	A		Ald		cly		p-grn		Ald – Do
									Ss (Qtz)		sil	Py	l-gry		
					30										
								25°							
					342										342-345m : Sh
									Ss		sil cly	Py Hm Zn	d-gry	crd	366-384m : Zn diss
18	0.05	0.02	4.60	2											
					40										395-397m : Hm vs
									Qtz		sil	Py	l-gry		
					415										
									Alt				d-gry		Alt (Do · Sh) Cm – Fm
					438	A	A								
						A			Ald		do cly chl		wht p-grn		437-438m cly St – Fm
						A	A								462-465m : Shd
						A	A	25°							
50	0.35	0.02	0.03	30	483										
					50				Py-ore		sil cly ser	Py	yel		Massive Py ore
50	0.01	0.03	0.48	50											
								30°							
50	0.05	0.02	0.17	44											
					60										
50	0.08	0.02	0.09	30											63.6m : Cc in druse
50	0.09	0.01	0.04	28											
					70										
50	0.02	0.01	0.05	41											
								30°							
50	0.63	0.06	0.08	63											
					790										
					80				Ald (Py)		sil cly	Py	wht		Py diss ore
								25°							
50	0.48	0.02	0.04	40											
					862 / 876				Hm-ore		cly	Hm Py	brn		
50	0.14	0.04	0.32	70											
					90										
									Py-ore		sil cly	Py Cu	yel		Cp · Cc diss
50	0.50	0.01	0.08	40											
					940	A	A		Ald		cly chl	Py	p-grn		(Chl · Qt · Py)
						A									
32	0.35	0.01	0.44	30	961				Ald		cly	Hm-Py	d-gry	shd	
					982										
25	0.66	0.01	0.80	20					All		cly	Hm-Py	blk	shd	Alt (Sh-Do)

Assays: Ang (m) 1	Cu (%) 2	Pb (%) 3	Zn (%) 4	Ag (g/t) 5	Depth (m) 6	Core Rec. 7	Symbol 8	Str. (m) 9	Occurrence: Rock 10	Oxd 11	Alt 12	Min 13	Color 14	Fract 15	Observations 16
1.7	0.43	0.02	17.5	30	1007										
					1024			35°	Zn-ore		chl sil	Zn	d-grn		
									Ml		do		p-gry		Ls originally 1055-1056m : Sh
					1071										
1.2	0.02	0.01	8.9	5	1083				Zn-ore		chl sil	Zn	gry		Zn diss ore
1.8	0.04	0.04	5.3	12					Sh		do	Zn	gry blk		Alt (Sh-Ml)
1.8	0.12	0.07	16.6	25	1110			40°							
2.0	0.01	0.03	8.6	25	1115				Ald		do sil	Zn	d-gry		6.8m 0.05 0.04 9.90 18
1.2	0.18	0.07	20.8	40	1139				Zn-Cu		sil	Zn-Cu	d-gry		(Sp · Ml · Ser · Qt · Chl)
1.3	0.14	0.03	10.9	20	1151				Sh		do-chl	Zn	d-gry		(Sp · Mt · Gl · Cp)
1.0	0.23	0.08	24.7	50	1164										
1.0	0.19	0.01	24.0	30					Zn-ore		sil	Zn-Cu Py	d-yel d-brn		Zn-Py mas ore (Sp · Py · Gl · Cp)
1.0	0.23	0.07	29.0	30	1200										
1.0	0.15	0.32	23.0	60											
1.1	0.23	0.87	23.0	50											9.8m 0.27 0.19 21.56 42
1.1	0.35	0.28	24.3	60											
1.1	0.73	0.07	17.7	40											
1.1	3.02	0.05	0.36	80	1237										
					1248				Fy-ore				yel		Av. 16.6m 0.18 0.13 16.78 32
															Int. Cu(%) Pb(%) Zn(%) Ag(g/t)
					1274 / 1280	A	A		Sid		cly	Hm	blk		
						A	A		Ald		chl sil	Py-Zn	p-grn		
					130	A	A	40°							
1.6	0.06	0.03	2.39	10				45°	Ald		chl sil	Zn-Py	d-gry		
1.1	0.36	0.06	3.28	30	1316				Zn-ore		do sil	Zn-Py	d-brn		(Sp · Cp · Py) St – Fm
1.1	0.19	0.05	2.92	25	1338										2.2m 0.28 0.06 31.00 28
									Sh		sil chl		gry blk		Cz – Fm
								55°							
								50°							
					140										140.2m end
					150										
					160										
					170										
					180										
					190										

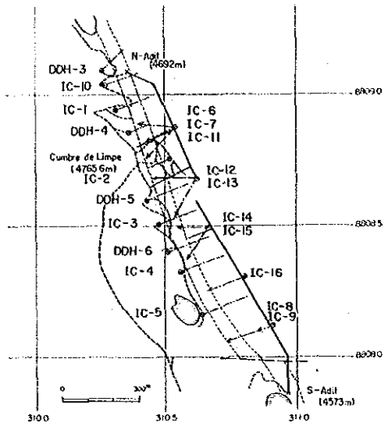
Assays: Ang (m) 1	Cu (%) 2	Pb (%) 3	Zn (%) 4	Ag (g/t) 5	Depth (m) 6	Core Rec. 7	Symbol 8	Str. (m) 9	Occurrence: Rock 10	Oxd 11	Alt 12	Min 13	Color 14	Fract 15	Observations 16
					210										
					220										
					230										
					240										
					250										
					260										
					270										
					280										
					290										

PL. I - 14

GEOLOGICAL SURVEY
OF
THE ISCAYCRUZ AREA, PERU
PHASE III

DRILLING EXPLORATION
IN THE LIMPE AREA (UNDERGROUND)

GEOLOGIC DRILL LOG
DDH - IC-14



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

MARCH 1985
Prepared by MINDECO

Scale 1 : 200

0 4 8 12 16 20m

LEGEND and ABBREVIATION

10. Rock	Pebble, sand, clay	Peb	
	Sandstone	Ss	
	Shale	Sh	
	Marl	Ml	
	Limestone	Ls	
	Dolomitic limestone	Do - Ls	
	Dolostone	Do	
	Siderite	Sid	
	Quartzite	Qtz	
	Ore, high grade		
	Ore, low grade		
	Pyrite ore	Py	
	Hematite ore	Hm	
	Skarn	Sk	
	Brecciated rock	Brc	
	Altered rock	Ald	A
	Fault, fracture	F	
11. Oxidation :	oxidized	oxd	
	limonitized	lim	
12 Alteration :	dolomitization	do	
	calcilization	cal	
	argillization	cly	
	silicification	sil	
	sericitization	ser	
13 Mineralization	Pyrite	Py	Chalcopyrite Cp
	Pb-minerals	Pb	Chalcocite Cc
	Zn-minerals	Zn	Hematite Hm Spc
	Oxide minerals	Oxd	Magnetite Mt
14 Color	light	l -	gray gry
	dark	d -	white wht
	pale	p -	brown brn
15. Fracture	Fault		F
	sheared		shd
	brecciated		brc
16 Observations :	dissemination		diss
	veins		vs
	veinlets		vls

GEOLOGIC DRILL LOG
ISCAYCRUZ PROJECT

Coordinate N 8808,496 E 310,688
Elevation 4,575m

DDH No. IC-15
Direction 220°
Inclination -30°
Total Depth 180.4m

Assays: Leng (m) 1	Cu (%) 2	Pb (%) 3	Zn (%) 4	Ag (g/t) 5	Depth: Dep. (m) 6	Core Rec 7	Symbol 8	Str. (m) 9	Occurrence: Rock 10	Oxd 11	Alt 12	Min. 13	Color 14	Fract. 15	Observations 16
									Ml (Md)		cly		p-gry	crd	
					3.2			40°							
					4.4				Do-Ss				gry		
									Ml (Md)				p-gry		Ml : massive, soft
					10										
									Ml		cly		p-gry	shd	
					11.6										
									Ml		do	Py	p-gry		
					16.2				Ss		do		gry		
					17										
									Do			Py	blk		
					20				Ss		do		gry		
					21.2				Do						
					21.6										
									Ss		sil do		gry		
					24.8				Do				blk		
					25.5			40°							
									Alt		cly		p-gry	shd	Alt (Ml · Do · Sh)
					27.8										
									Qtz		sil		gry		Qtz : fgd-mgd, sil very hard
					30										
					36.5										
					37.8				Ml		cly		d-gry	shd	
									Iz		sil		gry		39.2m : Zn diss in J
					40			40°							
					41.6				Do-Ss		do	Py	d-gry		Py vs and diss
									Cal-Ss			Py	gry		
					48.5				Ss		sil		gry		Cm — Fm
					50										
									Do				d-gry		Boundary of Cm and St-Fms is transitional
					51.8			45°	Ls				l-gry		
					52.5										
									Ml		do-sil		p-gry		53.5-54.3m : Do
					55.4										
									Ml		dy-cly	Hm	p-gry	shd	
					56.6				Cly		cly	Hm-Py		shd	
					57.3				Ml		cly	Hm-Py			St — Fm
					57.9										
2.0	0.06	0.01	0.08	6				40°	Cu-Py ore		sil cly	Py Cp-Cc	yel wht		
2.0	0.15	0.00	0.15	15	60										
2.0	0.13	0.01	0.04	15	61.6				Py-ore			Py	yel		Py massive ore
					64.5				Py-ore		sil	Py	yel wht		Py siliceous ore
					66.7				Py-ore			Py	yel		Py massive ore 66.8m : Cc diss in druse
					70			40°							
					74.2				Py-ore		sil	Py	yel wht		
					77.0				Py-ore			Py	yel		Py massive ore
					80			45°							
					83.0				Py-ore		sil	Py Cc Eng	yel wht		Py siliceous ore 84.9-85.4m : Energite · Cp 8%
					90										
3.2	0.13	0.00	0.14	15					Py-ore		sil	Py Cc	yel		
					93.2				Hm-ore		cly sil	Spc	wht d-bra		
4.0	0.07	0.01	0.80	15											
1.6	1.69	0.01	0.87	20	97.2				Py-Cu		sil-cly	Cc-Py	yel		
1.4	0.15	0.01	0.14	50	98.8				Cu-Py		sil-cly	Cp-Py	yel		

Assays: Leng (m) 1	Cu (%) 2	Pb (%) 3	Zn (%) 4	Ag (g/t) 5	Depth: Dep. (m) 6	Core Rec 7	Symbol 8	Str. (m) 9	Occurrence: Rock 10	Oxd 11	Alt 12	Min. 13	Color 14	Fract 15	Observations 16
					100.2				Ald		cly	Py-Hm	p-gry	shd	
					102.6				Hm-ore		cly	Spc	blk		
					103.4				Ald		do-sil cht-cly	Zn-Cu Hm-Py			105.8m : Zn-Cu diss
					107.7			40°	Ls		col		l-gry		107.4-107.7m : Sh Col vs
					110										
					118.0				Sh				blk		
					120				Ls				gry		
					122.0				Sh		sil		blk		
					123.0			45°	Ls				gry		
														brc	126.2-126.8m : Col v 126.8-130.5m : Brc
					130										
					133.0			40°	Do		do-sil	Zn-Py	p-gry		
					134.3				Sh				blk		
					135.1				Zn			Zn			135.1-135.3m : 20cm Zn ore 15%
									Ls		do		l-gry		
					137.0				Zn			Zn			137.6-140.0m : Zn diss 4%
2.9	0.03	0.21	2.71	18					Py-Pb ord		sil	Py-Pb Pb-Zn	d-yel		138.8m : Pb-Zn patch
					140										
2.9	0.04	0.24	2.48	20											
1.2	0.12	0.02	8.31	20	143.8				Do		do	Zn-Py		brc	Zn diss ore in brc Do
					145.5				Alt				d-gry	brc	Alt (Sh · Ml · Ls)
					147.2			45°	Ls				gry		
					150										
															St — Fm
					155.0				Sh		cly			shd	Cz — Fm
					156.9				Ls				gry		
									Sh		col		blk		Calc Sh
					160										
					162.8			40°	Ls				gry		
									Sh				blk		Calc Sh
					166.6				Alt (Ls)			Py	l-gry		Alt (Ls · Sh · Ml)
					169.8										
					170				Alt (Sh)				d-gry		Alt (Sh · Ml · Ls)
					171.4										
									Sh			Py	blk		
								50°							
					178.5				Ls						
									Cal-Sh				blk		
					180				Ls						180.4m : end
					190										

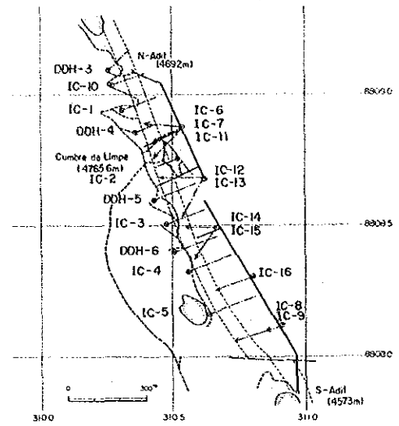
Assays: Leng (m) 1	Cu (%) 2	Pb (%) 3	Zn (%) 4	Ag (g/t) 5	Depth: Dep. (m) 6	Core Rec 7	Symbol 8	Str. (m) 9	Occurrence: Rock 10	Oxd 11	Alt 12	Min. 13	Color 14	Fract 15	Observations 16
					210										
					220										
					230										
					240										
					250										
					260										
					270										
					280										
					290										

PL. 1-15

GEOLOGICAL SURVEY
OF
THE ISCAYCRUZ AREA, PERU
PHASE III

DRILLING EXPLORATION
IN THE LIMPE AREA (UNDERGROUND)

GEOLOGIC DRILL LOG
DDH - IC- 15



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

MARCH 1985
Prepared by MINDECO

Scale 1 : 200
0 4 8 12 16 20m

LEGEND and ABBREVIATION

10. Rock	Pebble, sand, clay	Peb		
	Sandstone	Ss		
	Shale	Sh		
	Marl	Ml		
	Limestone	Ls		
	Dolomitic limestone	Do-Ls		
	Dolostone	Do		
	Siderite	Sid		
	Quartzite	Qtz		
	Ore, high grade			
	Ore, low grade			
	Pyrite ore	Py		
	Hematite ore	Hm		
	Skarn	Sk		
	Brecciated rock	Brc		
	Altered rock	Ald	A	
	Fault, fracture	F		
11. Oxidation	oxidized	oxd		
	limonitized	lim		
12. Alteration	dolomitization	do		
	calcitization	cal		
	argillization	cly		
	silicification	sil		
	sericitization	ser		
13. Mineralization	Pyrite	Py	Chalcopyrite	Cp
	Pb-minerals	Pb	Chalcocite	Cc
	Zn-minerals	Zn	Hematite	Hm
	Oxide minerals	Oxd	Magnetite	Mt
				Spc
14. Color	light	l-	gray	gry
	dark	d-	white	wht
	pale	p-	brown	brn
15. Fracture	Fault		F	
	sheared		sha	
	brecciated		brc	
16. Observations	dissemination		diss	
	veins		vs	
	veinlets		vls	

GEOLOGIC DRILL LOG
ISCAYCRUZ PROJECT

DDH No. IC-16

Coordinate	N 8808.315	Direction	250°
	E 310.796	Inclination	-30°
Elevation	4,574 m	Total Depth	161.0m

Assays: Leng (m) 1	Cu (%) 2	Pb (%) 3	Zn (%) 4	Ag (g/t) 5	Dep (m) 6	Depth Symbol: Core Rec 7	Sym 8	Str (m) 9	Occurrence: Rock 10	Oxd 11	Alt 12	Min 13	Color 14	Fract 15	Observations 16
									Qtz	lim	sil	Py	l-gry		
					50			20°	Ml	lim	cly		whl		Bond str
					85										
					10				Qtz	Lim	sil	Py	l-gry		Qtz : massive, silic very hard
					151										161 – 16.5m : non core
									Brc	lim	cly brc		brn	F brc	
					192 20				Qtz	lim			brn	crc	
									Qtz		sil		l-gry		
					242										
									Ml		cly		p-gry	snd	
								10°	Ml (Md)		cly		p-gry		Very soft, massive
					30										
					31.3						cly				30.5–30.9m : Cly, shd
					33.0				Ss		cly		p-gry		Mgd – cgd
									Qtz		sil		l-gry		Cgd
					35.6										
								40°	Ss		sil		gry		Intc with Ml
					40										
					40.6				Do		do		blk		Mgd
					41.8				Ss			Py	gry		
									Alt (Ml)		cly	Py Hm	p-grn p-gry	shd	
					45.8										
								10°	Ald (Qtz)		sil	Py	l-gry		Sil is very strong Py is diss abundantly Qtz originally Ss
					50										
50	0.03	0.00	0.04	5											51.8–52.0m : Py v
															Cm – Fm
50	0.64	0.00	0.26	4	57.5 58.4				Ald		sil-cly	Py	wht		Cly 10cm Sl – Fm
					60				Ald		sil cly chl	Py	p-grn p-gry		
50	0.03	0.01	0.08	4											
					64.4				Pyore		sil	Py	yel		
50	0.05	0.01	0.17	4											
					70										
50	0.10	0.00	0.00	10											
50	0.05	0.00	0.04	5											
					80										
50	0.06	0.00	0.53	5											
					85.4										
60	0.03	0.00	0.16	5					Py-ore		cly ser sil	Py	yel wht		
					90 91.0										
20	0.11	0.01	0.07	4					Spc ore		cly sil	Spc	blk brn wht		Spc crysts are up to 2cm
20	0.23	0.01	0.06	4											
20	0.32	0.01	0.15	4											
20	0.67	0.04	0.23	6											

Assays: Leng (m) 1	Cu (%) 2	Pb (%) 3	Zn (%) 4	Ag (g/t) 5	Dep (m) 6	Depth Symbol: Core Rec 7	Sym 8	Str (m) 9	Occurrence: Rock 10	Oxd 11	Alt 12	Min 13	Color 14	Fract 15	Observations 16
2.3	0.13	0.00	0.04	4											
3.5	0.06	0.03	0.13	5	101.3										
					104.8				Py-ore		cly sil	Py	yel wht		
					106.6				Ald		do sil		d-gry		107.4–107.6m : Sid
									Ls		col		l-gry		108.0m : Col drs
					108.8 108.9 110				Sh				blk		
								25°	Ls		col		l-gry		
															114.7–115.0m : Sh
					115.0										
								20°	Ls		col		l-gry		Intc with Sh thin beds
					120										
					122.9										
					124.0			25°	Sh		col	Py	blk		
									Ls		col		l-gry		
					126.6				Do		do		d-gry		
					127.6				Ls		col		l-gry		
					129.0				Ald			Py-Zn	p-grn		
1.5	0.05	0.03	3.50	3	130										
1.3	0.05	0.01	9.00	7	130.5				Ald			Zn-Py Mt	p-grn		
1.0	0.58	0.02	2.75	2	132.8				Ald			Hm	blk		
0.8	0.01	0.04	0.03	7	133.6										
4.9	0.80	0.13	0.25	30					Py-ore			Py Cc	yel		Py only partly mas, partly powder. Cc diss along J.
4.9	0.65	0.19	0.59	20	140										
					143.6				Ald		chl sil	Py	p-grn	shd	
					145.4				Ald		sil	Py	p-grn		
					146.2			15°	Ls		col		l-gry wht		Col vs
					150										
															Sl – Fm
					153.2				Sh			Py	blk		Phyllitic Cz – Fm
					155.5 156.2			15°	Ml			Py	p-gry		
									Sh			Py	blk		
					157.6				Ml			Py	p-gry		Alt (Sh · Ml · Ls)
					160 160.2			15°	Sh			Py	blk		161.0m end
					170										
					180										
					190										

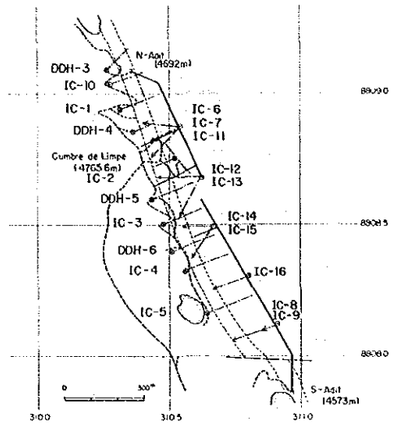
Assays: Leng (m) 1	Cu (%) 2	Pb (%) 3	Zn (%) 4	Ag (g/t) 5	Dep (m) 6	Depth Symbol: Core Rec 7	Sym 8	Str (m) 9	Occurrence: Rock 10	Oxd 11	Alt 12	Min 13	Color 14	Fract 15	Observations 16
					210										
					220										
					230										
					240										
					250										
					260										
					270										
					280										
					290										

PL. I-16

GEOLOGICAL SURVEY
OF
THE ISCAYCRUZ AREA, PERU
PHASE III

DRILLING EXPLORATION
IN THE LIMPE AREA (UNDERGROUND)

GEOLOGIC DRILL LOG
DDH – IC-16



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

MARCH 1985
Prepared by MINDECO

Scale 1 : 200

0 4 8 12 16 20m

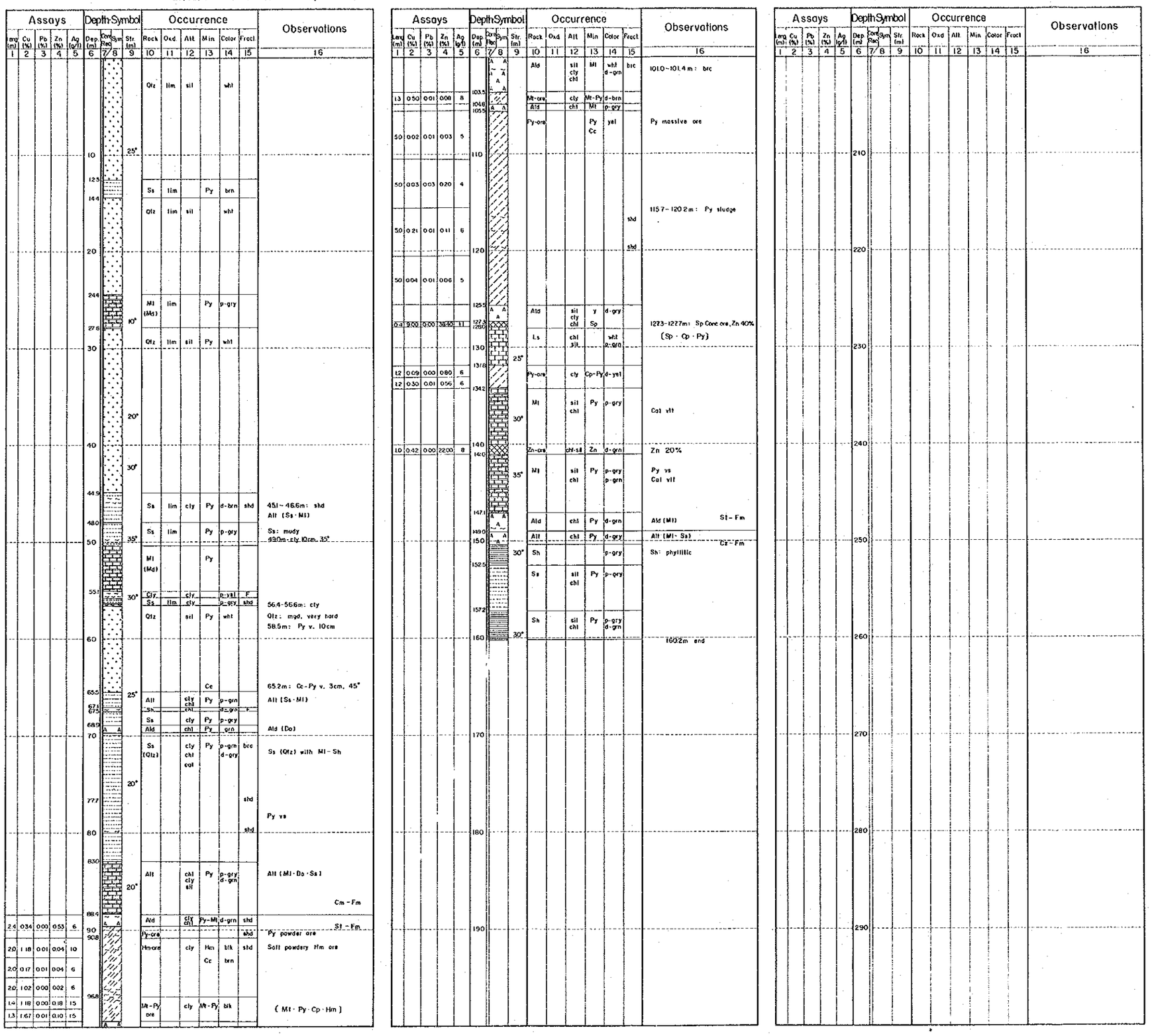
LEGEND and ABBREVIATION

10	Rock	Pebble, sand, clay		Peb	
		Sandstone		Ss	
		Shale		Sh	
		Marl		Ml	
		Limestone		Ls	
		Dolomitic limestone		Do-Ls	
		Dolostone		Do	
		Siderite		Sid	
		Quartzite		Qtz	
		Ore, high grade			
		Ore, low grade			
		Pyrite ore		Py	
		Hematite ore		Hm	
		Skarn		Sk	
		Brecciated rock		Brc	
		Altered rock		Ald	
		Fault, fracture		F	
11.	Oxidation	oxidized		oxd	
		limonitized		lim	
12.	Alteration	dolomitization		do	
		calcitization		col	
		argillization		cly	
		silicification		sil	
		sericitization		ser	
13	Mineralization	Pyrite	Py	Chalcopyrite	Cp
		Pb-minerals	Pb	Chalcocite	Cc
		Zn-minerals	Zn	Hematite	Hm Spc
		Oxide minerals	Oxd	Magnetite	Mt
14	Color :	light	l-	gray	gry
		dark	d-	white	wht
		pale	p-	brown	brn
15	Fracture	Fault		F	
		sheared		snd	
		brecciated		brc	
16	Observations	dissemination		diss	
		veins		vs	
		veinlets		vls	

GEOLOGIC DRILL LOG
ISCAYCRUZ PROJECT

Coordinate N 8806,960 E 311,460
Elevation 4,617m

DDH No. IC-17
Direction 250°
Inclination -45°
Total Depth 160.2m

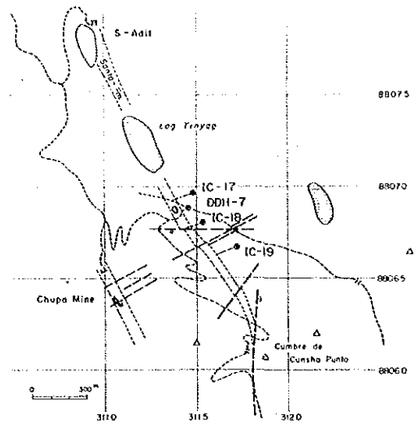


PL. I-17

GEOLOGICAL SURVEY
OF
THE ISCAYCRUZ AREA, PERU
PHASE III

DRILLING EXPLORATION
IN THE LINPE-S (TINYAG) AREA

GEOLOGIC DRILL LOG
DDH - IC-17



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

MARCH 1985
Prepared by MINDECO

Scale 1 : 200
0 4 8 12 16 20m

LEGEND and ABBREVIATION

10. Rock	Pebble, sand, clay		Peb	
	Sandstone		Ss	
	Shale		Sh	
	Marl		Ml	
	Limestone		Ls	
	Dolomitic limestone		Do-Ls	
	Dolostone		Do	
	Siderite		Sid	
	Quartzite		Qtz	
	Ore, high grade			
	Ore, low grade			
	Pyrite ore		Py	
	Hematite ore		Hm	
	Skarn		Sk	
	Brecciated rock		Brc	
	Altered rock		Ald	A
	Fault, fracture		F	
11. Oxidation	oxidized		oxd	
	limonitized		lim	
12. Alteration	dolomitization		do	
	calcitization		cal	
	argillization		cly	
	silicification		sil	
	sericitization		ser	
13. Mineralization	Pyrite	Py	Chalcopyrite	Cp
	Pb-minerals	Pb	Chalcocite	Cc
	Zn-minerals	Zn	Hematite	Hm Spc
	Oxide minerals	Oxd	Magnetite	Mt
14. Color	light	l-	gray	gry
	dark	d-	white	wht
	pale	p-	brown	brn
15. Fracture	Fault		F	
	sheared		shd	
	brecciated		brc	
16. Observations	dissemination		diss	
	veins		vs	
	veinlets		vls	

GEOLOGIC DRILL LOG
ISCAYCRUZ PROJECT

DDH No. IC-18

Coordinate N 8906800 E 311,530
Elevation 4,680m

Direction 250°
Inclination -50°
Total Depth 200.5m

Assays: Leng (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Depth (m)	Core Rec	Symbol	Str. (m)	Occurrence: Rock	Oxd.	Alt.	Min.	Color	Fract.	Observations
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
								40°	Qtz	lim	sil	(Py)	whl		Fgd-mgd, very hard
															5.3-5.8m: sludge
					10										
					20			40°							
					30										
					32.7				Ml (Md)	lim	cly	(Py)	p-brn	crd	32.7-32.9m: Cly Massive, soft 34.9-35.1m: Cly
															38.6-38.8m: Cly 40.4-40.7m: Cly
					40 40.7				Qtz	lim		(Py)	p-brn whl	crd	
					45.8 46.5				Cly		cly		brn	F	
									Qtz	ilm		(Py)	p-brn whl	crd	
					50										53.2-55.6m: Lim strong. cly
					60										
					68.6				Qtz	lim	cly		brn	shd	Cm - Fm
					70 70.4				Lim Gos	lim	cly lim		d-brn	F	Completely limonitized and argillized 72.4-72.6m: Sh ?
5.0	0.02	0.01	0.06	10											
					75.6				Lim Gos	lim	lim cly		d-brn	shd	Fault zone (Sl - Fm) 76-78m: Sld ? silic
5.0	0.08	0.01	0.31	6											
					80										82-83m: Sld ? silic
5.0	0.09	0.01	0.10	8											
					89.4									F	
5.0	0.06	0.01	0.18	6	96.4 86.2				Py-ore		cly	Py	d-ysl		St - Fm
					90				Py-ore		cly	Py	d-ysl	shd	Py powdery ore
5.4	0.30	0.01	0.12	4											
1.5	0.22	0.00	0.12	4	95.4				Py-ore		cly	Py	d-brn	shd	Int. Cu(%) Pb(%) Zn(%) Ag(g/t)
1.6	7.46	0.05	26.66	13	96.9				Cu-Py		sil	Cp-Py	d-gry		49m 2.86 0.03 21.60 8
1.4	0.95	0.02	27.49	8	98.5 99.9				Zn-Py	lim	cly	Py	d-brn	shd	(Talc - Sp - Chl - Cal)

Assays: Leng (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Depth (m)	Core Rec	Symbol	Str. (m)	Occurrence: Rock	Oxd.	Alt.	Min.	Color	Fract.	Observations
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1.9	0.40	0.01	13.00	5					Alt		cly	Py	d-gry		Tremonite SK
1.0	0.39	0.01	25.50	5	102.3 102.8				Py-ore			Py	yel		
1.0	3.06	0.02	34.60	14	103.7 104.3				Zn-Py ore		sil chl	Zn-Py	yel blk		Zn-Py ore: Zn 20~30% Sp is massive Py diss in Sp
1.0	1.09	0.01	31.00	8											
1.0	0.46	0.00	29.80	6	104.6										
1.0	0.51	0.01	22.49	10											90m 0.90 0.01 26.89 9
1.0	0.32	0.01	20.83	10	107.8 108.4				Alt.			Py	d-ocr	shd	
1.0	0.77	0.01	39.00	10					Zn-ore			Zn	blk		
1.0	0.78	0.00	32.00	10	109.3						sil				107.8-108.2m: Shd
1.0	0.75	0.00	24.16	10	110 110.8				Zn-ore		chl	Zn-Py	d-grn		
1.6	0.24	0.03	5.25	4					Ald		cly chl sil	Py-Zn Mt	d-grn d-gry		Tremonite SK
1.6	0.15	0.00	8.00	4	114.0										
1.3	0.48	0.01	16.62	7					Ald		cly	Mt-Py	p-yel	shd	
1.1	1.71	0.01	1.09	14	115.3 116.4				Mt-ore		cly	Mt	blk		
1.6	0.26	0.04	6.00	6					Ald		cly	Zn-Mt	d-brn	shd	
1.1	0.51	0.01	28.33	13	118.0										
1.1	0.36	0.01	11.56	8	120 120.6				Zn-Py Ald		sil cly	Py-Zn	d-yel		
1.0	4.20	0.01	24.83	10					Zn-ore		sil	Zn-Py	blk		
1.0	1.18	0.00	14.50	4	122.2										X 12.7m 0.97 0.01 12.24 7
					124.2										(Py · Sp · Cp · Cc)
1.3	2.44	0.00	17.50	8					Py-ore		cly sil	Py Cc	d-yel		X 26.6m 1.32 0.01 19.79 8
1.3	0.58	0.01	0.22	6	126.8										Int. Cu(%) Pb(%) Zn(%) Ag(g/t)
															-X excluded of Non-core part 2.0m.
					130				Ald		cly		p-yel		St - Fm
0.7	0.10	0.01	0.05	6	131			45°	Py-ore			Py	yel		
0.9	1.13	0.01	5.20	10	132.0 132.5										
2.0	0.08	0.01	0.26	2					Alt		sil	Py	l-gry whl		Alt (Sh - Ml) Cz - Fm Siliceous Py with Cc vs dev.
					134.5										
					137.7										
2.3	0.10	0.01	0.07	3											
					140										
2.4	0.05	0.01	0.05	5											
0.9	0.07	0.01	0.16	3	142.4 143.3				Ald		chl	Py	p-grn		
									Sh		sil	Py	l-gry whl		Alt (Sh - Ss) 147.8m Cc-Py v 2cm 40°
					150			35°							
					151.0				Sh		sil	Py	p-grn whl		Alt (Sh · Ss · Ml) 155.3-155.5m Cly-F
					155.5			40°	Ss (Qtz)		sil	Py	whl		
					157.5 158.2				Py			Py			Py v
									Sh		cly sil	Py	p-grn	shd	
					160 161.0										
								35°	Sh (Qtz)		sil	Py	l-gry whl		162.5-162.8m: shd Siliceous, very-fgd, sandy
					170			65°							
								40°							
					177.0				Ss (Qtz)		sil	Py	l-gry whl		Py vs develope abundantly Siliceous, fgd Ss
					180										
					190			50°							
															200.5m end

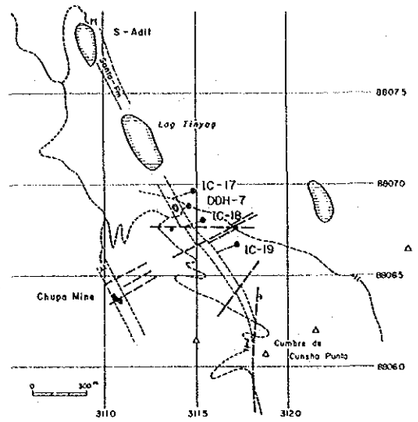
Assays: Leng (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Depth (m)	Core Rec	Symbol	Str. (m)	Occurrence: Rock	Oxd.	Alt.	Min.	Color	Fract.	Observations
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
					210										
					220										
					230										
					240										
					250										
					260										
					270										
					280										
					290										

PL. I-18

GEOLOGICAL SURVEY
OF
THE ISCAYCRUZ AREA, PERU
PHASE III

DRILLING EXPLORATION
IN THE LINPE-S (TINYAG) AREA

GEOLOGIC DRILL LOG
DDH - IC - 18



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

MARCH 1985
Prepared by MINDECO

Scale 1 : 200

0 4 8 12 16 20m

LEGEND and ABBREVIATION

10. Rock:	Pebble, sand, clay	Peb		
	Sandstone	Ss		
	Shale	Sh		
	Marl	Ml		
	Limestone	Ls		
	Dolomitic limestone	Do-Ls		
	Dolostone	Do		
	Siderite	Sid		
	Quartzite	Qtz		
	Ore, high grade			
	Ore, low grade			
	Pyrite ore	Py		
	Hematite ore	Hm		
	Skarn	Sk		
	Brecciated rock	Brc		
	Altered rock	Ald		
	Fault, fracture	F		
11. Oxidation :	oxidized	oxd		
	limonitized	lim		
12. Alteration :	dolomitization	do		
	calcitization	cal		
	argillization	cly		
	silicification	sil		
	sericitization	ser		
13. Mineralization :	Pyrite	Py	Chalcopyrite	Cp
	Pb-minerals	Pb	Chalcocite	Cc
	Zn-minerals	Zn	Hematite	Hm Spc
	Oxide minerals	Oxd	Magnetite	Mt
14. Color :	light	l-	gray	gry
	dark	d-	white	wht
	pale	p-	brown	brn
15. Fracture :	Fault	F		
	sheared	shd		
	brecciated	brc		
16. Observations :	dissemination	diss		
	veins	vs		
	veinlets	vls		

GEOLOGIC DRILL LOG
ISCAYCRUZ PROJECT

Coordinate N 8906.740 E 311.630
Elevation 4,694m

DDH No. IC-19
Direction 250°
Inclination -50°
Total Depth 203.6m

Dep. (m)	Str. (m)	Rock	Oxd	Alt	Min	Color	Fract	Observations
	45°	Qtz	lim	sil		wht		Qtz: mgd, very hard
23.5	30°	Qtz	lim	sil, cly		wht		Qtz intc. with Sh lim beds
28.8		Ml	lim	cly		p-brn		
30	30°	Qtz	lim	sil		wht		
39.0		Alt (Ss)		cly		l-gry		Alt (Ss-Ml)
40								40.4-40.5m: crd
40.8		Ml	lim	cly		p-brn		
42.1	25°	Qtz	lim	sil		wht		44.2m: Qtz-Lim v
50								
50.6								50.6-50.9m: brn cly F
		Qtz	lim	sil		d-brn	crd	
55.6		Cly		cly		p-gry	shd	
56.4		Ml		cly		p-brn		Ml: massive, soft
58.8								
60	35°	Qtz	lim	sil		red-brn, wht	crd	
65.3		Qtz		sil		wht		
67.6		Qtz	hm	sil		red-brn, wht	crd drs	
70	30°							
78.5								
80		Qtz	lim	sil		d-brn	crd	
82.0		Ml	lim	cly		p-brn, p-gry		
90	30°							
96.1							F	95.9-96.1m: cly F; 96.4-96.7m: cly F
		Qtz	lim	sil		wht, d-brn	drs	

Lang (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)
5	0.05	0.3	0.8	3.8
5	0.25	0.1	1.2	1.0
5	1.57	0.1	1.4	1.0
5.3	0.41	0.1	2.2	1.0
4.4	0.17	0.1	2.7	1.0
5.2	0.12	0.1	0.3	7
1.5	0.02	0.1	0.2	1.0
4.3	0.06	0.1	0.3	7
3.0	0.04	0.0	0.1	1.0
6.9	0.03	0.1	0.2	6.9

Dep. (m)	Str. (m)	Rock	Oxd	Alt	Min	Color	Fract	Observations
		Qtz	lim	sil	Py	d-brn	crd	
104.8		Ss		cly		d-brn		
106.0		Qtz		sil, ser	Py	wht		
110	40°							
120								
121.0		Ss	lim	sil	Py	wht		Ss (Qtz): fgd
125.5							shd	
127.6								Cm - Fm
							shd, frc, brc	
130								
140								
144.0		Ald (F)	lim	cly		brn, wht	frc, F	
147.6		Gos	lim			brn	frc	
149.0		Ald		cly, chl	Py		shd	St - Fm
150	35°	Ald (Sk)		cly, chl, sk, sil	Py	p-gry		
	40°							156.4m: Zn patch
159.0								
160		F		cly		p-brn	F, brc	
160.8								
163.7								
164.3								
165.0		Py-ore		sil, cly	Py			
166.5								
167.7	40°	Ald		sil	Py	wht		Ald (Sh)
168.7								
170		Py-ore		sil, cly	Py	yel		
173.9								
178.2								
180		Ald		cly	Py	wht		
	30°							
187.0		Sh (Alt)		cly	Py	wht		Cz - Fm
	20°							
190		Sh (Ald)		cly	Py	wht		
192.2		Ald			Py	d-yel		
193.9		Sh (Ald)		cly, sil	Py	wht		
	10°							
198.7		Ss		cly, sil	Py	wht		Fgd 203.6m end

Dep. (m)	Str. (m)	Rock	Oxd	Alt	Min	Color	Fract	Observations
21.0								
22.0								
23.0								
24.0								
25.0								
26.0								
27.0								
28.0								
29.0								
30.0								
31.0								
32.0								
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35.0								
36.0								
37.0								
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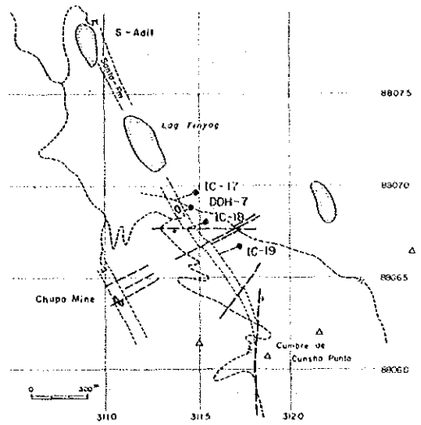
195.0								
196.0								
197.0								
198.0								
199.0								
200.0								
201.0								
202.0								
203.0								

PL I-19

GEOLOGICAL SURVEY
OF
THE ISCAYCRUZ AREA, PERU
PHASE III

DRILLING EXPLORATION
IN THE LINPE-S (TINYAG) AREA

GEOLOGIC DRILL LOG
DDH - IC-19



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

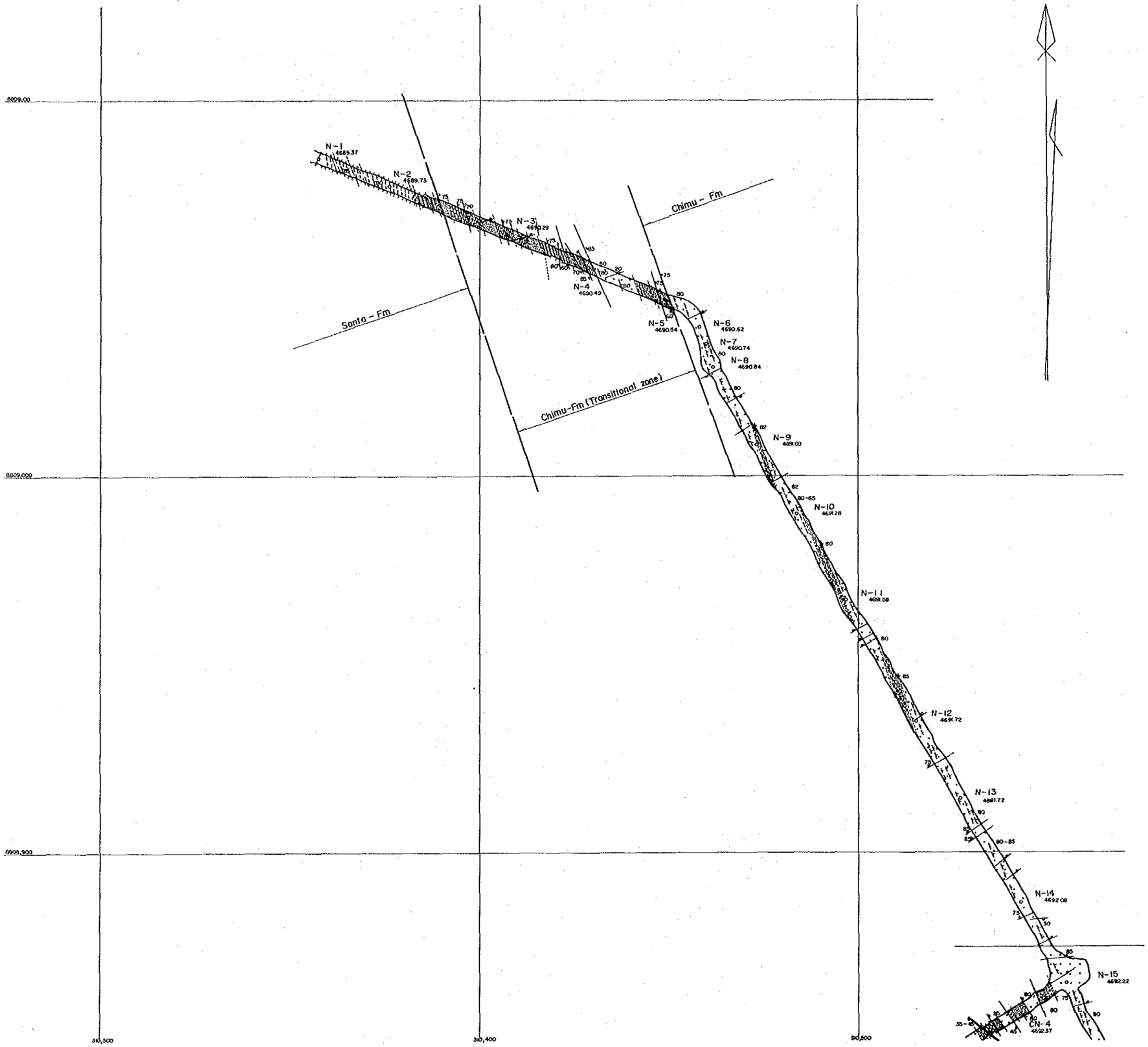
MARCH 1985
Prepared by MINDECO

Scale 1 : 200
0 4 8 12 16 20m

LEGEND and ABBREVIATION

10. Rock	Pebble, sand, clay	Peb	
	Sandstone	Ss	
	Shale	Sh	
	Marl	Ml	
	Limestone	Ls	
	Dolomitic limestone	Do-Ls	
	Dolostone	Do	
	Siderite	Sid	
	Quartzite	Qtz	
	Ore, high grade		
	Ore, low grade		
	Pyrite ore	Py	
	Hematite ore	Hm	
	Skarn	Sk	
	Brecciated rock	Brc	
	Altered rock	Alt	
	Fault, fracture	F	
11. Oxidation	oxidized	oxd	
	limonitized	lim	
12. Alteration	dolomitization	do	
	calcitization	cal	
	argillization	cly	
	silicification	sil	
	sericitization	ser	
13. Mineralization	Pyrite	Py	
	Pb-minerals	Pb	
	Zn-minerals	Zn	
	Oxide minerals	Oxd	
14. Color	light	l-	
	dark	d-	
	pale	p-	
15. Fracture	Fault	F	
	sheared	shd	
	brecciated	brc	
16. Observations	dissemination	diss	
	veins	vs	
	veinlets	vls	

Pyrite	Py	Chalcopyrite	Cp
Pb-minerals	Pb	Chalcocite	Cc
Zn-minerals	Zn	Hematite	Hm, Spc
Oxide minerals	Oxd	Magnetite	Mt
gray	gry		
white	wht		
brown	brn		

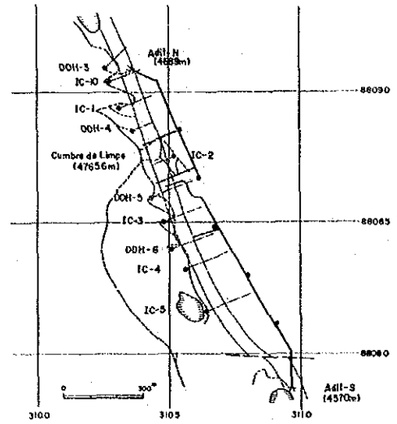


PL. II-1-1

GEOLOGICAL SURVEY
OF
THE ISCAYCRUZ AREA, PERU
PHASE III

UNDERGROUND EXPLORATION
IN THE LIMPE AREA

GEOLOGICAL COMPILED MAP
ADIT - N (1)



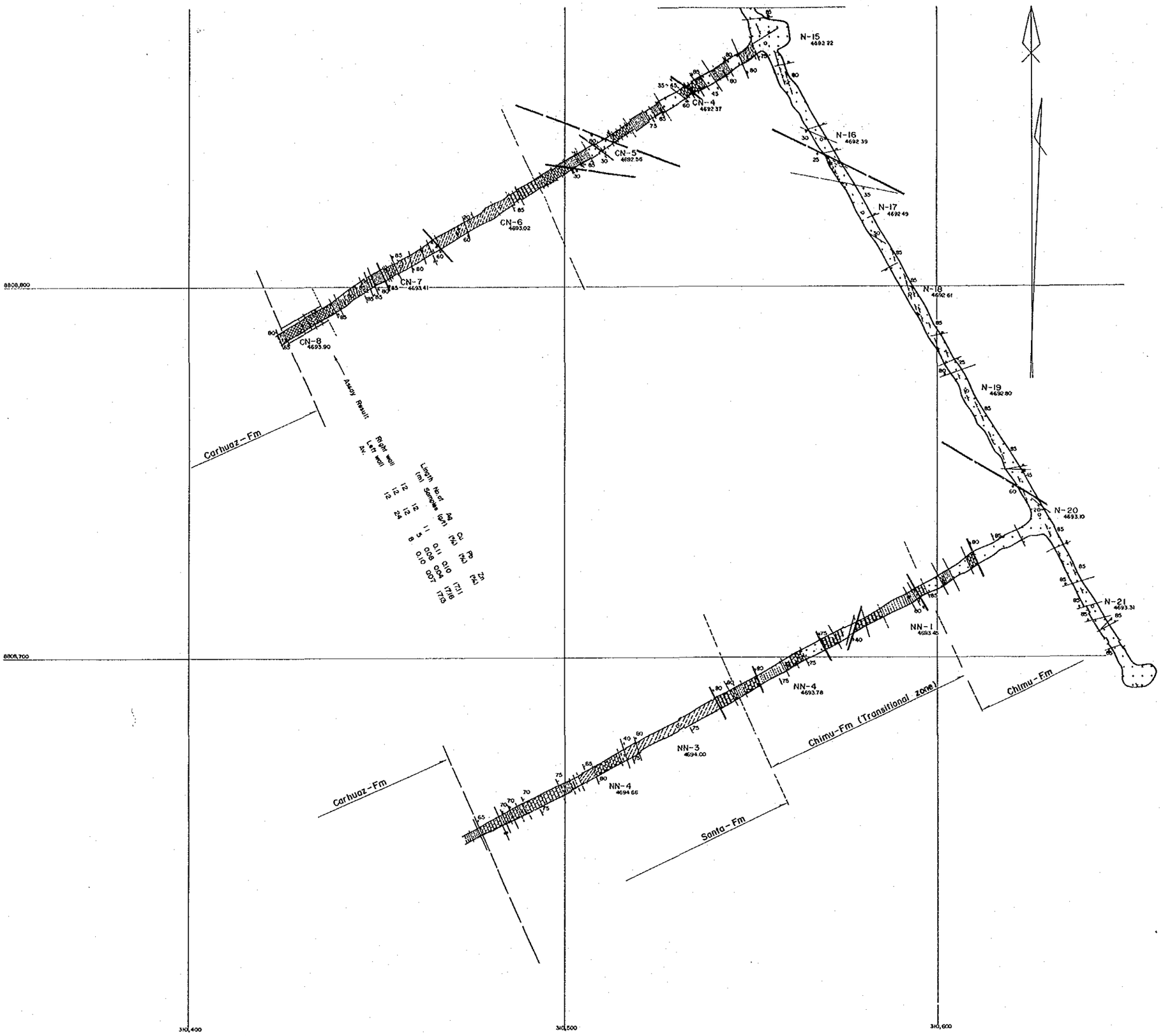
METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

JULY 1985
Prepared by MINDECO

0 10 20 30 40 50m

LEGEND

Pebble, sand, clay	Peb	
Sandstone	Ss	
Shale	Sh	
Marl	Ml	
Limstone	Ls	
Dolomitic limestone	Do-Ls	
Dolostone	Do	
Siderite	Sid	
Quartzite	Qtz	
Ore, high grade		
Ore, low grade		
Pyrite ore	Py	
Hematite ore	Hm	
Skarn	Sk	
Brecciated rock	Brc	
Altered rock	Atd	
Sheared zone	Shd	
Fault	F	
Fracture and joint	J	
Bedding		

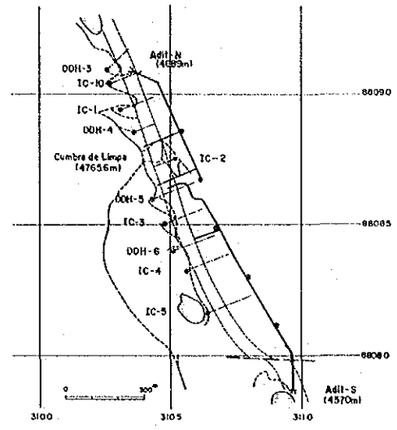


PL. II-1-2

GEOLOGICAL SURVEY
OF
THE ISCAYCRUZ AREA, PERU
PHASE III

UNDERGROUND EXPLORATION
IN THE LIMPE AREA

GEOLOGICAL COMPILED MAP
ADIT - N (2)



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

JULY 1985
Prepared by MINDECO

0 10 20 30 40 50m

LEGEND

Pebble, sand, clay	Peb	
Sandstone	Ss	
Shale	Sh	
Marl	Ml	
Limstone	Ls	
Dolomitic limestone	Do-Ls	
Dolostone	Do	
Siderite	Sid	
Quartzite	Qtz	
Ore, high grade		
Ore, low grade		
Pyrite ore	Py	
Hematite ore	Hm	
Skarn	Sk	
Brecciated rock	Brc	
Altered rock	Alt	A
Sheared zone	Shd	
Fault	F	
Fracture and joint	J	
Bedding		

PL. II-2-1

GEOLOGICAL SURVEY
OF
THE ISCAYCRUZ AREA, PERU
PHASE III

UNDERGROUND EXPLORATION
IN THE LIMPE AREA

GEOLOGICAL COMPILED MAP
ADIT-S (1)

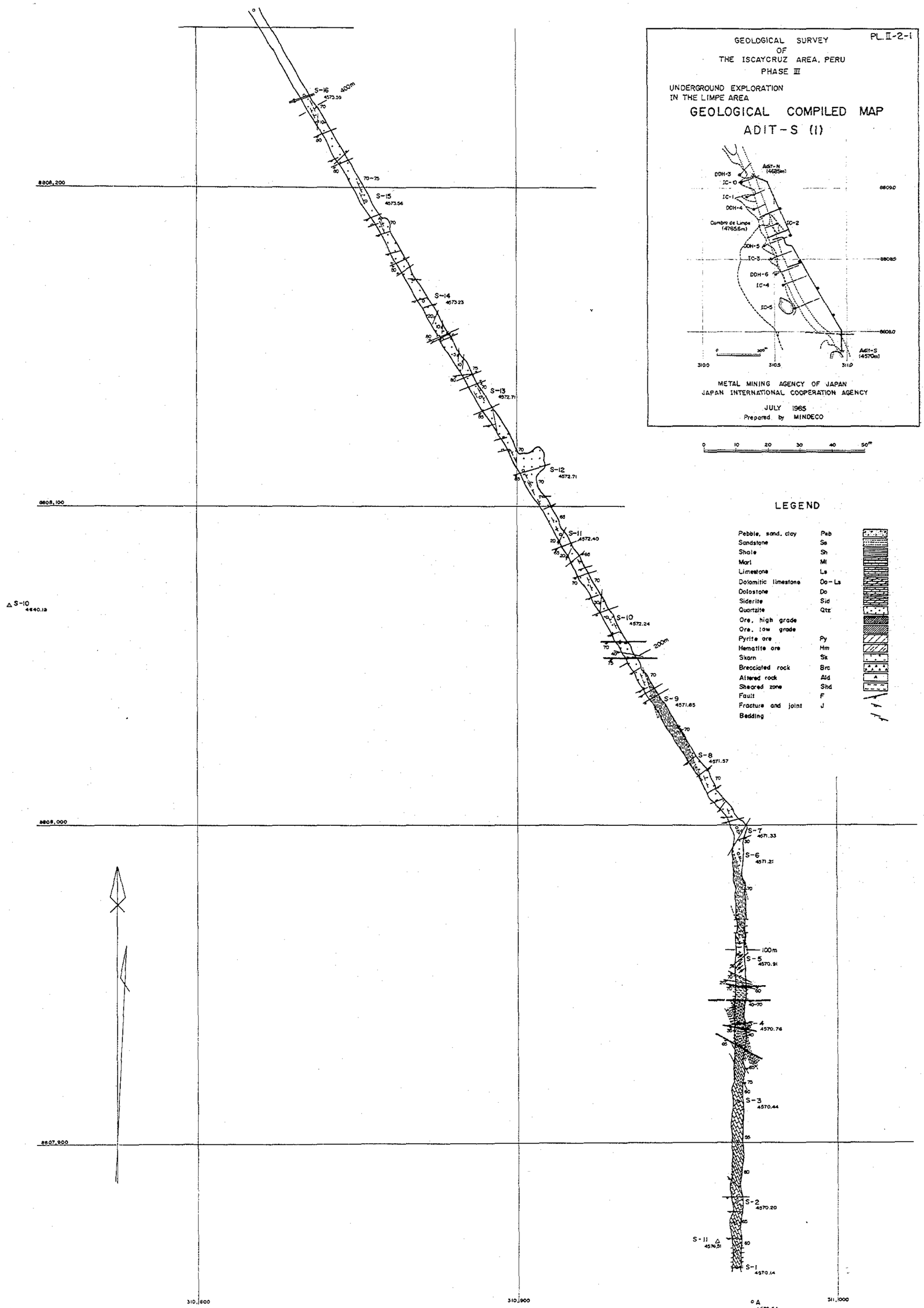
METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

JULY 1985
Prepared by MINDECO

0 10 20 30 40 50m

LEGEND

Pebble, sand, clay	Peb	
Sandstone	Ss	
Shale	Sh	
Marl	Ml	
Limestone	Ls	
Dolomitic limestone	Do-Ls	
Dolostone	Do	
Siderite	Sid	
Quartzite	Qtz	
Ore, high grade		
Ore, low grade		
Pyrite ore	Py	
Hematite ore	Hm	
Skarn	Sk	
Brecciated rock	Brc	
Altered rock	Ald	
Sheared zone	Shd	
Fault	F	
Fracture and joint	J	
Bedding		

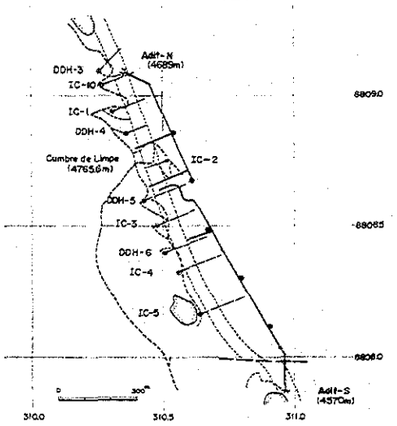


PL. II-2-2

GEOLOGICAL SURVEY
OF
THE ISCAYCRUZ AREA, PERU
PHASE III

UNDERGROUND EXPLORATION
IN THE LIMPE AREA

GEOLOGICAL COMPILED MAP
ADIT-S (2)



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

JULY 1985
Prepared by MINDECO

0 10 20 30 40 50m

8808.600
8808.500
8808.400
8808.300
8808.200
310.600
310.700
310.800

S-26
4576.78
S-25
4575.84
700m
SX-0
4575.73
S-24
4575.72
SX-1
4576.49
SX-2
SX-3
S-23
4575.34
S-22
4574.85
600m
S-21
4574.53
65-70
S-20
4574.44
S-19
4574.28
500m
70-80
S-18
4574.21
S-17

PL. II-2-3

GEOLOGICAL SURVEY
OF
THE ISCAYCRUZ AREA, PERU
PHASE III

UNDERGROUND EXPLORATION
IN THE LIMPE AREA

GEOLOGICAL COMPILED MAP
ADIT-S (3)

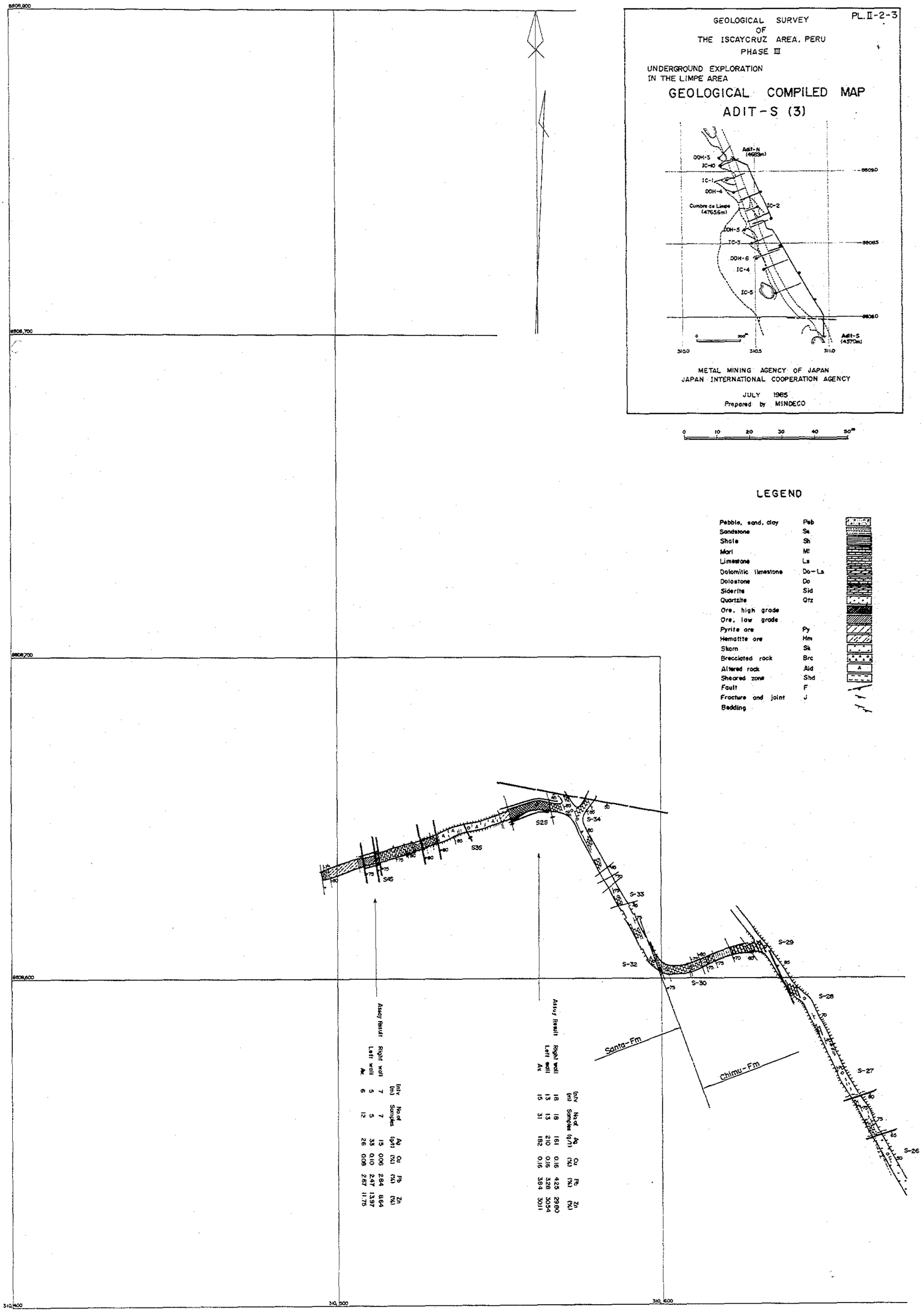
METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

JULY 1985
Prepared by MINDECO

0 10 20 30 40 50m

LEGEND

Pebble, sand, clay	Peb	
Sandstone	Ss	
Shale	Sh	
Marl	Mt	
Limestone	Ls	
Dolomitic limestone	Do-Ls	
Dolostone	Do	
Siderite	Sid	
Quartzite	Qtz	
Ore, high grade		
Ore, low grade		
Pyrite ore	Py	
Hematite ore	Hm	
Skarn	Sk	
Brecciated rock	Brc	
Altered rock	Ald	A
Sheared zone	Shd	
Fault	F	
Fracture and joint	J	
Bedding		



Assay Result

	Intv (m)	No. of Samples	Ag (g/t)	Cu (%)	Pb (%)	Zn (%)
Right wall	18	18	161	0.16	4.25	29.80
Left wall	13	13	210	0.16	3.28	30.54
Av.	15	31	182	0.16	3.84	30.11

Assay Result

	Intv (m)	No. of Samples	Ag (g/t)	Cu (%)	Pb (%)	Zn (%)
Right wall	7	7	15	0.06	2.84	8.54
Left wall	5	5	33	0.10	2.47	13.97
Av.	6	12	26	0.08	2.67	11.75