GEOLOGIC DRILL LOG
ISCAYCRUZ PROJECT

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

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

Assays					Depth	Symbol		Occurrence						Observations
Lang (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Dep. (m)	Core Rec.	Str. (m)	Rock	Oxd	Alt.	Min.	Color	Fract.	
1	2	3	4	5	6	7	8	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			Sh				blk	crd	Phyllitic
					48.0		∠70°	Do		do		p-gry		Do-Sid vs
					50								shd	Sludge
					52.6			Sh	do	cly	Py	d-gry	shd	Contains dolomitized Ml
							∠50°							
					60									
					61.2		∠50°	Do		do	Py	d-gry		Do-Sid vs ore developed
					63.6			Sh			Py	blk	crd	
					66.0			Col-Ss		cly	Py	d-gry	shd	
					67.5			Col-Ss			Py	l-gry		Crystalline, fine-grained Ls
					70		∠60°	Ss						Lamella str. is developed
								Sh					shd	
							∠55°	Do-Ls		do	Py	d-gry		
								Sh			Py	blk	crd	
					75.6		∠65°	Sh		do	Py	d-gry		
							∠55°							
					80			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					Depth	Symbol		Occurrence						Observations
Lang (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Dep. (m)	Core Rec.	Str. (m)	Rock	Oxd	Alt.	Min.	Color	Fract.	
1	2	3	4	5	6	7	8	10	11	12	13	14	15	16
					101.3			Sh				blk	shd	Phyllitic Sh
					102.8		∠75°	Do-Ml		sil do	Py	p-gry		Do partly Sid vs
								Sh			Py	blk	crd shd	Phyllitic Sh 106-107m; Py vs
					110									
					111.9		30°	Do		do std		p-gry		Sid network
					114.2			Do-Sh		do		d-gry		1142-1144m; cavity
					116.0		∠40°	a		do		d-gry		Intercalated with Ml-Do
					118.0		∠35°	Sh		cly			shd	
					120			Do		do-sid	Py	d-gry		
					121.0			Sh		cly		d-gry	shd	
20.0	0.08	0.24	5.75	12				Zn-Ore			Zn-Py	d-gry		Lang (m) 60; Cu (%) 0.07; Pb (%) 0.76; Zn (%) 3.64; Ag (g/t) 4
20.0	0.06	0.33	1.65	4										
20.0	0.06	0.91	2.95	tr										
20.0	0.06	1.55	4.20	tr										
					129.0									
					130			Sh				Py	blk crd	
								Do		do std	Py Zn	d-gry		
					135.8			Ls				gry	brc	
					136.9		∠50°	Do		sid	Py	d-gry	brc	Partly Sid
					138.5			Do		do		d-gry		
					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 Col (partly Sid) vs
					155.8			Ls				l-gry		Col vs dev
					160		∠65°							
					161.6			Do				d-gry		
					165.6		∠55°	Do-Ls		do		gry		
					169.2									
					170			Ls				l-gry		
							∠65°							
														Col vs abundant
					178.2			Do				d-brn gry		
					180									
							∠65°	Ls				gry		Col vs Partly Do
					189.2									
					190		∠75°	Ls				d-gry		Lamella str
					191.2			Ls				l-gry		
							∠65°							

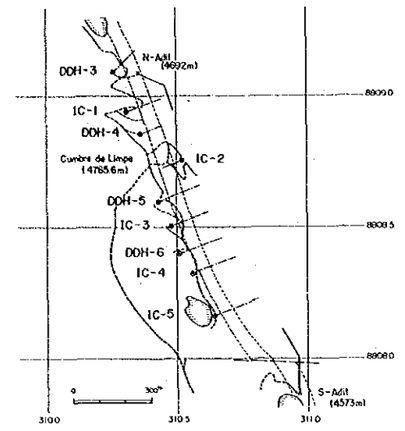
Assays					Depth	Symbol		Occurrence						Observations
Lang (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Dep. (m)	Core Rec.	Str. (m)	Rock	Oxd	Alt.	Min.	Color	Fract.	
1	2	3	4	5	6	7	8	10	11	12	13	14	15	16
								Ls				l-gry		Cal vs
							∠65°							
					210									
							∠60°							
					218.3			Do		do		d-gry		
					220			Sid		sid		d-brn gry	brc	Brecciated
5.6	0.04	0.02	0.60	tr										
					225.7			Ls		do		l-gry		
					226.1									
3.7	0.06	1.67	0.80	tr				Do		do		d-gry		
					230									
								Ls				l-gry		
					234.3			Sid						
					232.2			Ls		cal		l-gry		
					237.0			Do		do sid		brn-gry	shd F	
					240									
					241.1			Do		do				
					241.7			Ls		do		gry		
					243.1			Do		do				
								Do		do sid		brn-gry	shd F	
								Non Core						Druse, cavity
					250									251.0m end
					260									
					270									
					280									
					290									

PL. I - 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	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

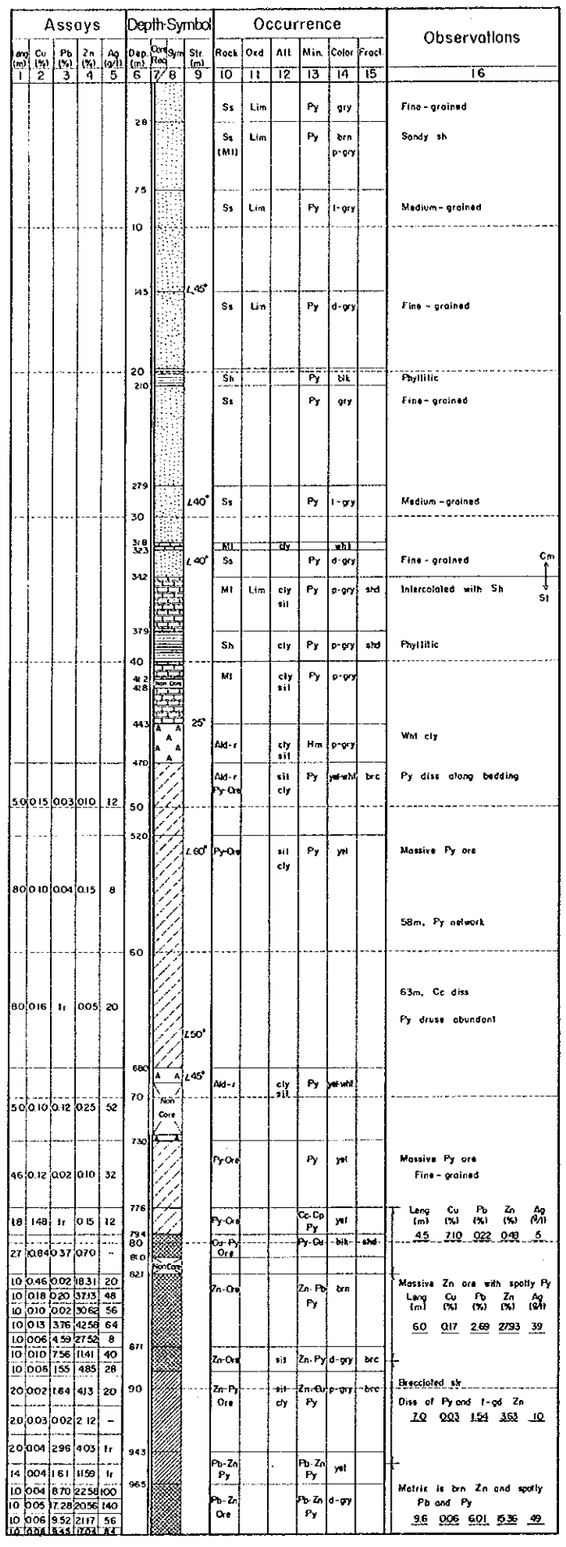
16. Observations:

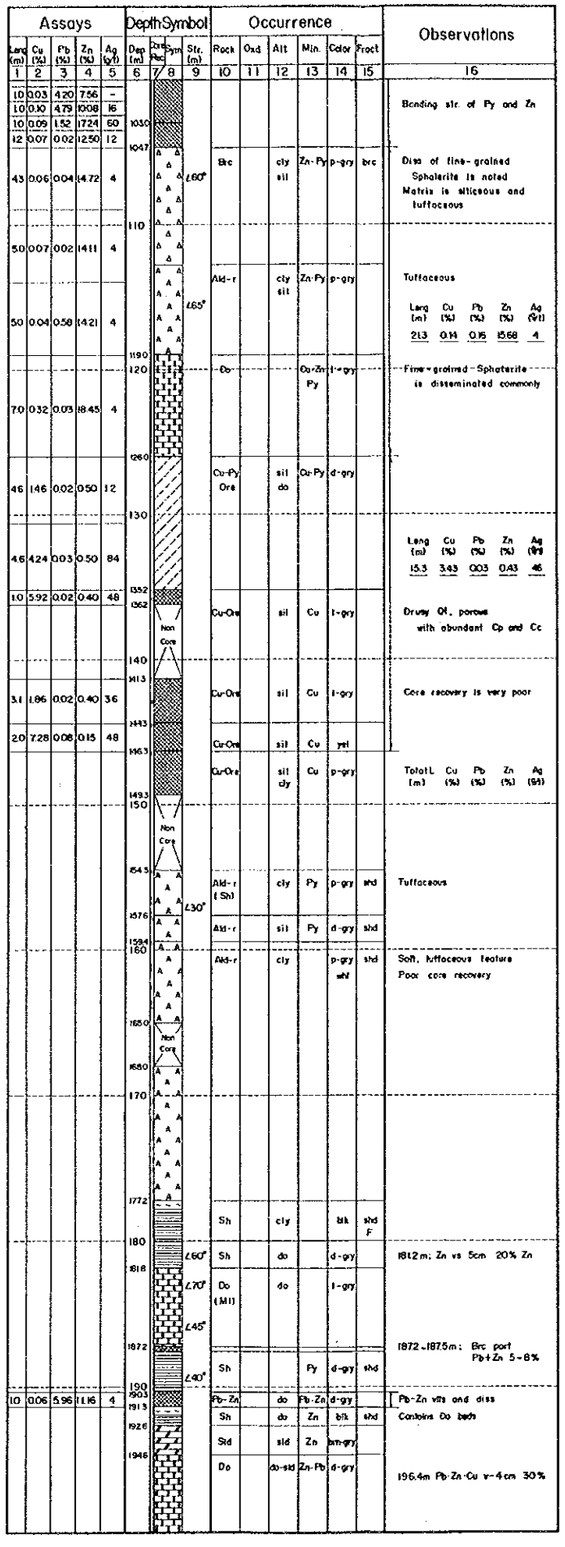
dissemination	diss
veins	vs
veinlets	vls

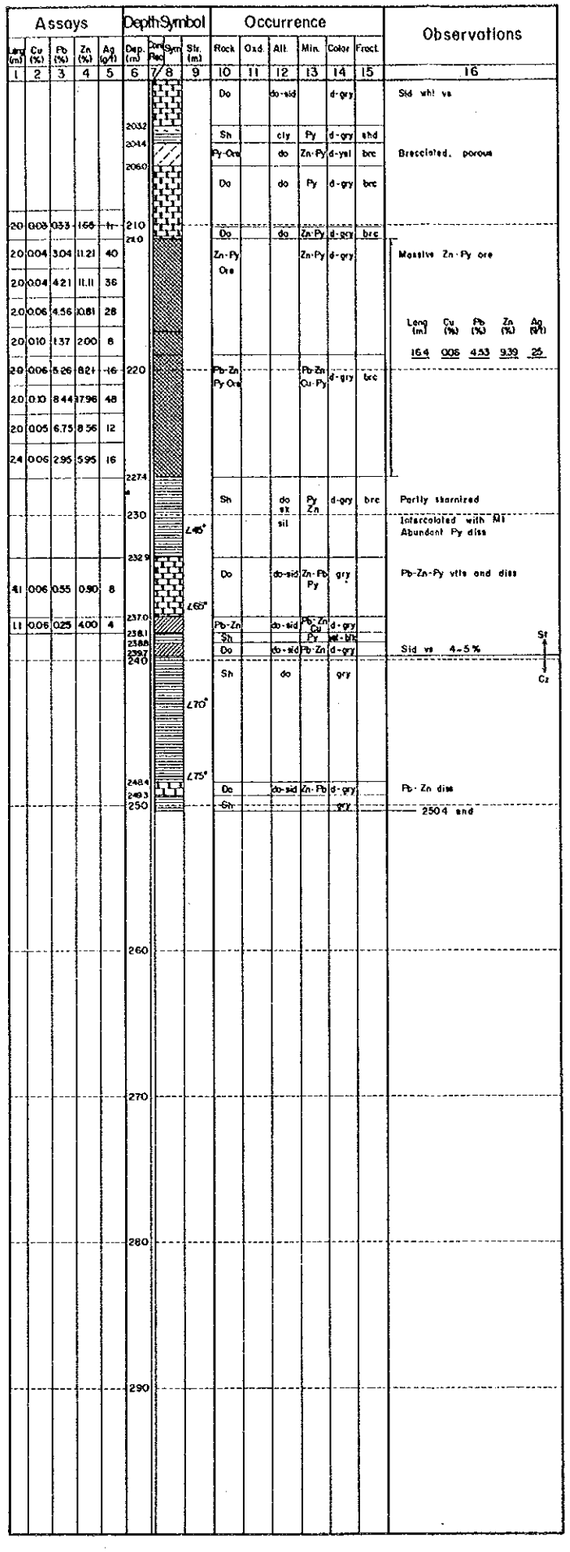
GEOLOGIC DRILL LOG
ISCAYCRUZ PROJECT

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

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





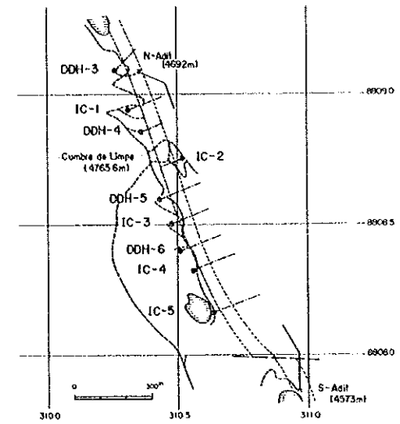


PL. I - 2

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	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	whi
grey	gry	brown	brn

15. Fracture:

Fault	F
sheared	shd
brecciated	brc

16. Observations:

dissemination	diss
veins	vs
veinlets	vis

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					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
					0				Soil						
									Sh	Lim			blk	crd	
					71				Ml	Lim			dk-gry	crd	
					95				Sh				blk		Phyllitic
					10			∠50°							
					128				Ls	Lim			gry		
					165				Sh				blk		Phyllitic
									Ml				gry		
					20			∠55°	Sh			Py	blk		Py diss., patch-like
					233				Ss				gry		23.3 - 24.5m; calcareous Fine-grained Ss
					285										
					30			∠40°	Sh				blk		
					305				Ml				gry		
					320				Ml				d-gry		
					360				Ls				gry		
					381				Ml						
					40										
					413				Sh				blk		Phyllitic
					474			∠50°	Ml				d-gry		Banding sh
													l-gry		Fine alternation of Ml-Sh-Ls
					50										
					541				Sh			Py	blk		Phyllitic
								∠55°							Py diss - vs along bedding Cz
					580				Ls				l-gry		Cal vlts S1
					60										
0.7	0.04	0.06	1.50	tr	609				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			∠55°	Sh				d-gry	brc	
1.5	0.46	0.02	0.17	-	713				Ml		cly chl sk	Py Cp	p-gry	brc	Brecciated, soft and argillic
18	0.74	0.02	0.03	4											739m; Cp patch, 2x6cm
					748				Py-Ore		sil koo ser	Py Cp	yel		
4.0	0.20	0.01	0.03	40											
					80										
40	0.11	0.02	0.05	-				∠55°							
44	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-Ol vlts 93.0m; Do. brc
					944				Ald		cly	Py	wht	brc	
					970				Spc Ore		do-sil	Spc Py	Sid	d-gry	
1.2	0.20	0.02	0.50	tr	982				Do		do		gry		Wht Do vlts dev.

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
					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
					1193										
2.5	0.18	0.01	0.05	-	1220				Ls		do	Py	d-gry		Dolomitic Ls
					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, koo and ser ore strong
					1410				Py-Ore		sil cly	Py Lim	yel wht		141.2 - 143m; 145.8 m; Pbk-m is included
4.0	0.16	0.02	0.00	4											
4.0	0.16	0.02	0.00	-											
1.8	1.46	0.01	0.25	-	1490				Ald Sh		cly	Cu	wht		
					150			∠60°							
3.1	0.82	0.02	0.05	8	1506				Cp-Ore			Spc Cu	blk		Leng (m) 4.7; Cu (%) 1.04; Pb (%) 0.02; Zn (%) 0.12; Ag (g/t) 5
					1537				Py-Ore		sil cly	Py	yel		Massive Py ore
4.5	0.24	0.01	0.05	-											
2.0	4.46	0.02	0.05	-	1582				Cu-Ore		sil cly	Cu Py	yel		Cp Cc dss
					160										
4.0	0.48	0.02	0.05	4				∠55°							
									Py-Ore		sil cly	Py	yel	brc	Py druses abundant Brc of ald host r.
					170										
					180										
					1857				Py-Ore		sil cly	Py	yel	dss	
					190										
					1938				Py		sil cly	Py	yel gry		
					1971				Py-Ore						

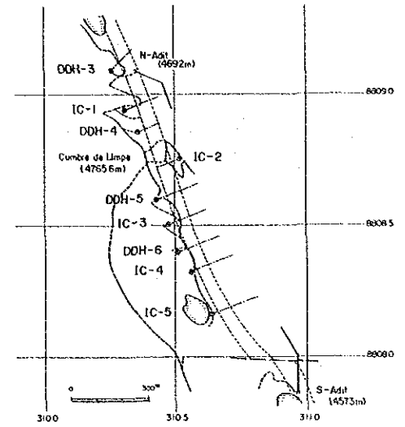
Assays					Depth	Symbol		Occurrence							Observations
Leng (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Dep. (m)	Core Rec.	Sym	Str. (m)	Rock	Oxd	Alt.	Min.	Color	Fract.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
									Py-Ore		sil	Py (Cp)	yel	dss	
4.0	0.20	0.02	0.30	tr	210										209.8m, Cc in Py druse
					2115			∠45°	Py-Ore		Kao sil	Py Cu	yel wht		
6.3	0.58	0.06	0.10	4											
					217.8										
3.6	0.38	0.09	0.15	8	220				Ald (Sh)		cly	Py	p-gry		
					2214										
4.4	0.03	0.02	0.25	-				∠45°	Ald (Sh)		sil cly	Py	p-gry		
					2246				Ald (Ml)		sil chl cly	Hm Py	l-gro gry		
					2268				Ald		do	Hm	d-gry		1266 - 126.8m; Spc
					2289										
					230				Ss (?)		do		l-gry		Fine-med-grained
									Do-Ls		do		gry		Fine-grained Dolomitic Ls
					240										
					2419 2424			∠50°	Sh				blk		
									Do		do	Py	l-gry		Fine-grained, crystalline
					2476				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	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

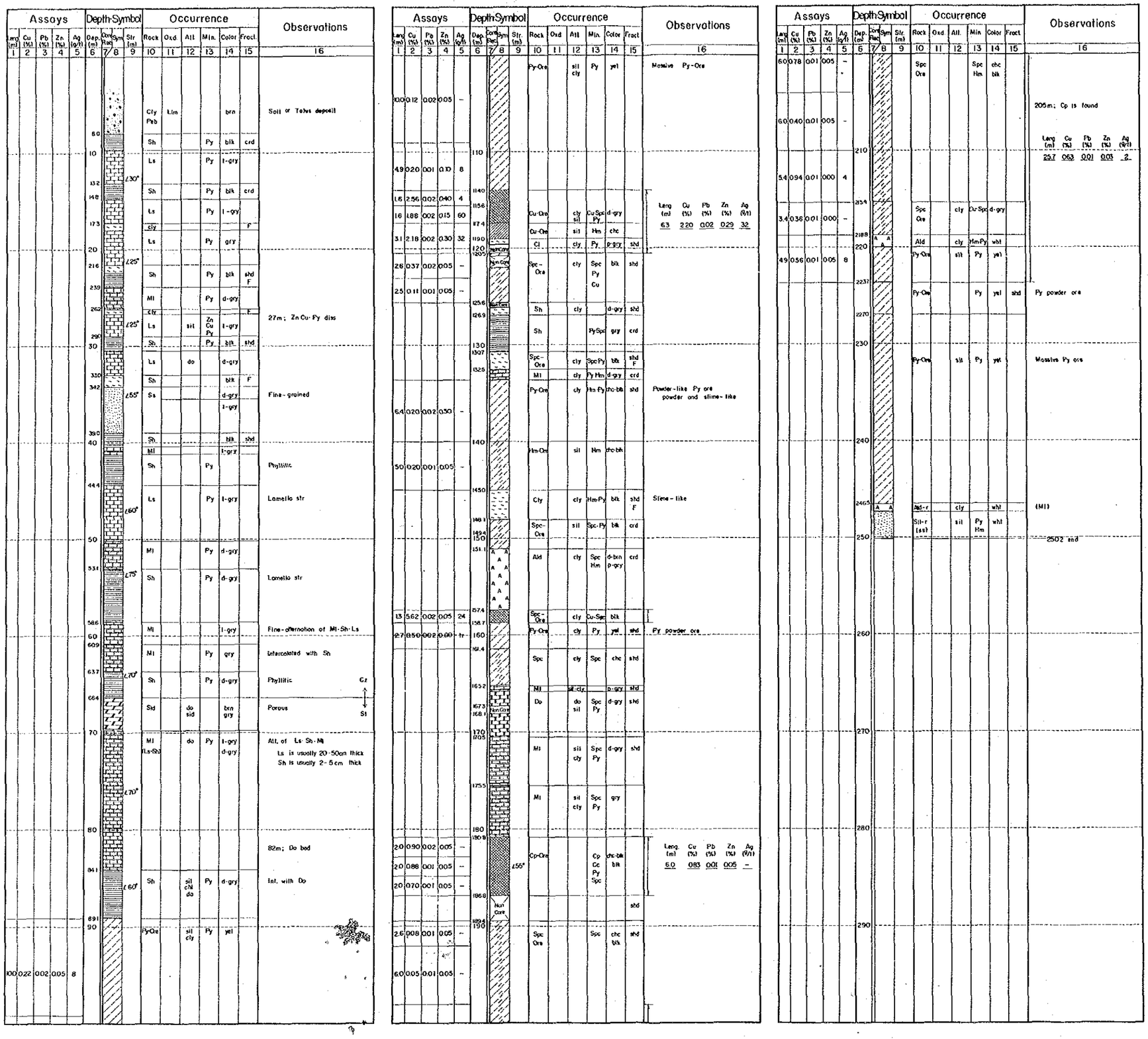
16. Observations:

dissemination	diss
veins	vs
veinlets	vlts

GEOLOGIC DRILL LOG
ISCAYCRUZ PROJECT

Coordinate N 809,322
E 310,562
Elevation 4,676m

DDH No. IC-4
Direction 70°
Inclination -45°
Total Depth 2502m

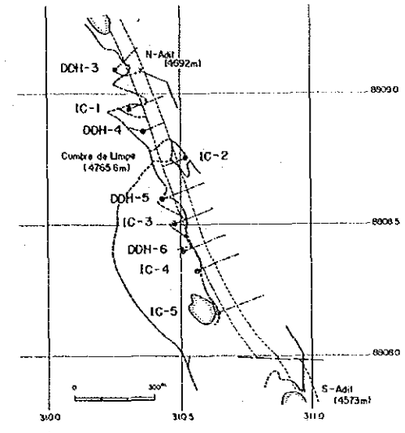


PL. I - 4

GEOLOGICAL SURVEY
OF
THE ISCAYCRUZ AREA, PERU
PHASE I

DRILLING EXPLORATION
IN THE LIMPE AREA

GEOLOGIC DRILL LOG
DDH - IC-4



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	vls

GEOLOGIC DRILL LOG
ISCAYCRUZ PROJECT

Coordinate N 808,158 E 310,639
Elevation 4,674m

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

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
									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
															Cr
					28.4			∠60° 30°							
					30				Ls				l-gry		Cal vs dev abundantly St
					38.0				Do-Ls		do		d-gry	frc	Frc. of 75° dip
					39.4			75°	Do-Ls		do				
0.3	0.09	0.02	5.83	16	40				Sh		do	Zn	d-gry	F	40.4 - 40.7m: Zn vlts
					41.2			65°	Do-Ls		do		gry	frc	Do vs., vlts
					45.0				Ml		do		d-gry	shd	Alteration of Sh-Ml-Ls mainly Sh Fault zone parallel to bedding
					50			∠65°							
					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	0.06	0.01	0.10	8	73.2				Py-Ore		sid	Zn Cu Py	yel		
30	0.06	0.01	0.00	–	76.2				Py-Ore		sid	Zn Py	yel		Sid druses
30	0.04	0.01	0.05	28	80										
					82.2				Ald		cly do	Py	p-gry	shd	
24	0.05	0.01	0.15	4	83.8				Sid		do-sid	Py Spc	gry		
26	0.03	0.01	0.25	4	86.2				Sh		cly	Py	p-gry	shd	
					88.8							Cu Py			
34	0.08	0.01	0.30	tr	90				Sps		do	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					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
					100.8			∠65°	Ls		do	Py	gry		Dolomitic partly
					107.9			∠60°	Ml			Py	blk f-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				Ml		do		d-gry		Alt. of Ml-Sh-Ls, dolomitized generally
					128.8			∠45° ∠60°							
1.6	4.64	0.09	0.20	4	130				Cu Spc		chl sil	Cu Spc	d-gry		
					131.8				Ald		chl	Cu Spc	d-gry		
2.0	0.72	0.01	0.10	4	133.8				Cu Spc		do ald	Cu Spc	blk		
					140				Ald		chl sil	Py Hm	p-gry		
					141.3				Ald		sil kao	Py	wht	shd	
4.2	0.20	0.01	0.10	–	143.1				Py-Ore		sil cly	Py	yel	shd	Contains many druses, cavities and clay parts
					147.4										
					150				Non Core						
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										
					188.0				Py-Ore		sil kao	Py	yel wht		
7.4	0.10	0.01	0.00	4	190										
					196.2				Ald		sil kao	Py	wht	shd	

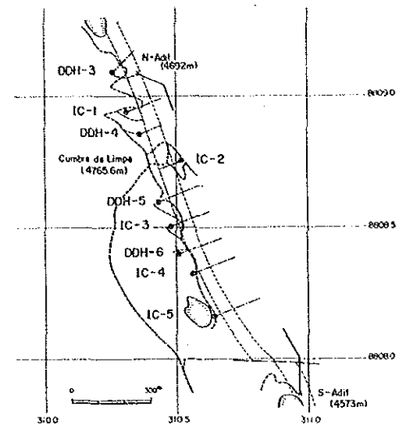
Assays					Depth-Symbol			Occurrence						Observations
Leng (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Dep (m)	Core Rec	Sym	Str. (m)	Rock	Oxd.	Alt.	Min.	Color	Fract	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
									Ald		sil Kao	Py	wht p-gry	Shd	
					205.0				Py-Ore		sil	Py	yel		
					207.6				Ald		sil	Py	d-gry		
					210				Py-Ore		sil cly	Py	yel		
1.0	0.13	0.01	0.20	–											
					220				Ald		cly sil do	Py	yel wht	shd	Cc diss
1.0	0.16	0.01	0.05	4	226.0				Py-Ore		cly	Py	yel	brc	Breccia of wht host rs are contained
					230										
1.0	0.08	0.01	0.05	tr											
					240										
					241.0				Py-Ore			Py	yel		Massive Py ore
1.0	0.06	0.01	0.00	8											
					250				Py-Ore		sil cly	Py Cu	yel		Cc diss
1.0	0.08	0.01	0.05	4											
					260				Py-Ore		sil cly	Py	yel	brc	Breccias are found
1.0	0.10	0.01	0.05	–	268.0										
					270				Py-Ore			Py	yel		Massive Py ore Cc diss
1.0	0.03	0.01	0.05	tr											
					280										
1.0	0.14	0.01	0.05	4											
					288.0				Py-Ore		sil cly	Py	yel wht		
					290										
1.0	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		
	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 8808.854
E 310.528
Elevation 4,692m

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

Assays					Depth	Core Rec	Symbol	Str.	Occurrence						Observations
Leng (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Dep (m)			(m)	Rock	Oxd	Alt	Min	Color	Fract	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
									Qtz	Lim	sil ser	Py	l-gry wht		
					6.5										
									Sh (Ss)			Py	blk		Sandy Sh, phyllic
					10			25°							
					108				Qtz (Ss)			Py	l-gry		Fgd, lamina.
					133				Sh			Py	blk		Sandy sh.
					176			30°	Ss (Qtz)			Py	gry		
					200										
					206				Sh			Py	blk		With Ss patches
					222				Qtz (Ss)			Py	gry		Mgd–fgd
															271–273 : Sh.
					30										
					308				Sh			Py	blk		Transitional zone Phyllitic, flaky 33.4 – 34.5 : dolomitic. 34.7 – 35.5 : cly
								30°							
					365				Sh		cly		p-gry		379–380 : F–cly
					380				Alt						Alt (Sh Ss).
					40										
					423			40°	Do				blk		432, 433, 434: wht–vs, 45°, 02cm.
					442				Qtz	Lim		Py	wht l-gry		Lim–diss along J.
					50										
					530				Alt			Py	d-gry		Alt (Sh – Do – Ss)
					550			35°	Sh		cly ser		d-gry	shd	
					564				Ml (Sh)		cly		p-gry		Very soft.
					60			40°							
					626				Do				gry		Lamination of blk & wht.
									Sh (Ml)				p-gry		
					661			50°	Do			Py	blk		Fgd, cryst. Bedding str.
					70										
					719				Sh				blk		
									Ml (Sh)		cly		p-gry		
								40°							
					80										
					850				Ss (Do)		do		gry		Fgd, dolomitic.
															892–895 : Sh.
					90										
								40°							930–934 : Sh Cm–Fm
13	009	002	080	–	912				Alt		cly	Py Sp	blk	shd	Alt (Sh Do). Sl–Fm
13	002	016	190	4											
12	002	280	210	4											
10	002	012	485	4											
10	001	005	241	4	968				Zn-Ore		sil	Py Sp	d-gry		Zn diss ore (Dolomitic Ss). Soft, cryst, mgd. Av. 42 003 085 527 4

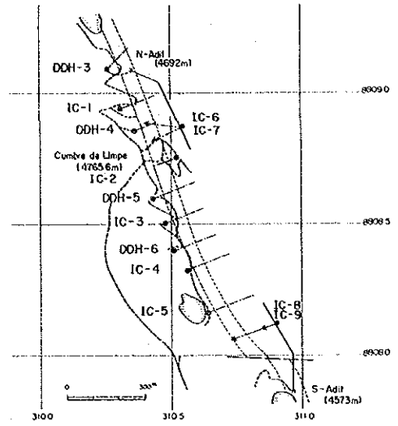
Assays					Depth	Core Rec	Symbol	Str.	Occurrence						Observations
Leng (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Dep (m)			(m)	Rock	Oxd.	Alt.	Min	Color	Fract	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
10	008	005	234	4											
10	002	002	211	4	1020				Ss		sil	Sp	l-gry		
15	002	027	141	4					Do (Ml)		do chl	Py Sp	p-gry		
15	003	002	130	tr											
15	020	002	361	tr											
15	002	002	025	4	1065				Sh		sil cal	Py Sp	p-gry	shd	
13	003	002	642	4											
12	003	003	3020	20	1093										1088 – 112 m : Shd, cly Int Cu Pb Zn Ag (m) (%) (%) (%) (g/t)
15	028	002	2288	4	1110				Zn-Ore Sh (Sh)	Mn	cly sil	Py Cp Cc Sp	blk	shd brc	Carboniferous ? Manganiferous ? Very soft.
15	062	002	2910	4											Av. 70 032 002 2159 15
15	056	001	1906	44											
14	343	002	1120	112	1150				Cu-Ore Ald (Ald)	Mn	cly	Py Cp Cc	blk		
14	459	001	030	4	1178										Int Cu Pb Zn Ag (m) (%) (%) (%) (g/t)
25	083	002	030	4	120			70°	Cu-Py –Ore		sil cly	Py Cp Cc	d-yel		Av. 78 248 002 046 23
25	243	002	030	4	1228										
36	048	002	020	16											
40	299	001	008	8	1264										126m : Cu conc v 10cm, 40
					130										
55	058	002	008	16	1323										Int Cu Pb Zn Ag (m) (%) (%) (%) (g/t) Av. 222 104 002 023 15
					1339										
41	028	002	002	12	1359				Py		cly	Py	d-yel		Py powder ore
					1388	A	A		Ald		cly	Py	wht		
					140										
50	100	003	070	20					Py-Ore		cly sil	Py Cp Cc	d-yel		Py powder ore Py diss in wht clay mats. Core recovery is low
50	018	009	008	12											
					150										
50	074	002	003	36											152.5 – 152.8 : Hm
					1573				Hm-Ore				brn-blk		
50	024	001	090	tr	1590				Ls		do		l-gry		1573–1576 . Do
					160				Sh Ml		do		gry		
					1608				Sh		do		gry		
					1615				Do		do sil		l-gry		Partly remained Ls Do network, vs, patches
								55°							
11	005	001	130	12	1670			40°	Sid		sid	Py-Sp	d-gry		1670 – 1671 Sh 1680 : Gyp v
					1681				Do		do		l-gry		
					170										Wht Do
					1727				Alt		do		l-gry blk		Alt (Do – Sh)
								50°							
					1762				Sh		do		blk		
								35°							
					180				Do		do		gry		
13	004	002	351	4	1809			35°	Sid		gyp	Pb-Sp	l-gry		Wht–Sid network. Gypsum v is determined (181m).
16	004	002	020	20	1822				Pb-Ore		sid		d-brn		Pyrrhotite massive ore Existence of Sid is confirmed by X-ray
16	003	003	030	tr											Sid vs B druses (185m).
09	001	075	391	tr	1854				Py-Ore		sid	Py-Sp	yel		Zn diss.
					1863				Alt						Fine–Alt (Do–Sh) 10 – 20 – 80cm intv
					190										
16	002	003	165	tr	1928				Sid		sid	Py-Sp	l-gry		Sid is determined by X-ray (194m).
15	001	001	160	12											
48	001	001	030	4	1959				Sh			Cu	blk		Native Cu diss.
16	002	002	060	4	1987				Sid		sid	Py-Sp	l-gry		2003 m. end

GEOLOGICAL SURVEY
OF
THE ISCAYCRUZ AREA, PERU
PHASE II

PL. I - 6

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	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 8808.854
E 310.528
Elevation 4.692m

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

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
									Qtz	lim	sil ser	Py	wht		Mgd.
					10										
					103			50°	Ss Sh			Py	d-gry		Ss with Sh
					129				Qtz		sil	Py	wht l-gry		Fgd - mgd.
															From 18.3 - Qtz with Sh thin beds
					20			50°	Sh			Py	gry blk		Sh with Ss patches, pebbles. & beds.
					246				Do			Py	blk		Massive shaly Do.
					275			45°	Qtz		sil	Py	l-gry		Intc. with Sh thin beds.
					30										
					307				Ss Sh				d-gry		Ss with Sh
					327			45°	Qtz		sil	Py	l-gry		
					351				Ss (Qtz)		sil ser	Py	p-gry		Fgd.
					396				Ss				blk		Fine lamination
					40				Qtz		sil ser	Py	l-gry		Py - vs & patches
					442				Alt		ser cly	Py	blk d-gry		Alt (Sh Do Mt - Ss) Sh is predominant
															49.8 - 50.5 : Ss
					50										51.3 - 52.4 : Ss
															55.0 : Py - patch
					55			55°	Do			Py	blk		55.1 - 56.7 : Do.
					567				Qtz	Lim	sil ser	Py	l-gry (brn)		Fgd - mgd
					60										
					678				Ss		cly	Py	d-gry		Ss with Do & Sh
					70										
					716				Sh		cly		blk	shd	
					733				Mt		cly		p-gry		
					780			55°						shd	76.5 - 78.0 : shd
					80				Do (Sh)		cly		blk		
					812				Qtz				wht		
					821				Mt		cly		p-gry		Very soft.
					884			20°							
					90				Qtz		sil	Py	l-gry		Mdg
					968				Ss				gry		
					981				Sh (Do)				d-gry		
					990			40°							

Assays					Depth	Symbol		Occurrence						Observations
Leng (m)	Co (%)	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
									Mt (Ls)			Py	p-gry		Calc.
					104.8										
					106.8			35°	Do				d-gry		Cryst. soft cryst fgd
															Abundant Qt is confirmed by X-ray (106m)
									Ss			Py	p-gry		Fgd
															109.5 - 110.2 : Sh Shd
					110										
															111.3 : Sp - V, 0.5cm 55°
					115.5										
								45°	Col-Ss				gry		Porous Ss, col-parts are leached
					120			45°	Ss				gry		Cm - Fm
					122.0										
									Cly		cly		d-gry	cly	122.0 - 123.4 : Cly. St - Fm
									Do				gry		
								45°	Mt	Lim	cly		p-gry		
					126.8										
					130				Mt		cly		p-gry	crd	
					135.5				Hm	Lim	cly		brn	shd	
					136.8				Do		cly		wht	shd	Do is determined by X-ray (136m).
					138.3				Py-Ore				yel		
20	0.13	0.06	0.36	4	140										
20	0.06	0.03	0.75	–											
20	0.08	0.04	0.75	–											
20	0.11	0.02	0.03	–											
20	0.07	0.02	0.15	tr	146.3				Py-Ore		sil cly		yel		Py - Ol assemblage is determined by X-ray (146m)
20	0.05	0.03	0.13	tr	150										
20	0.04	0.02	0.06	tr											
20	0.06	0.02	0.18	tr	152.2				Py-Ore		sil cly	Py	yel	shd	
					154.9										Druses. Non core.
					160										
					167.2										
28	0.05	0.04	0.90	tr					Do		do		d-gry	shd	
					170										
									Ls		cal		gry		Wht cal - vs & network.
															175.5 - 175.8 : shd
					178.4										
1.1	0.10	0.03	2.80	–	179.5				Do		do		blk		
					180			45°	Ls		cal		l-gry		Cal - vs & network.
					182.9				Sh				shd		
					183.3				Ls-Sh				shd		
									Mt		do		d-gry		Calc. fgd
					187.1				Sh		do		d-gry		Phyllitic.
									Do (Ls)		do		l-gry		Dolomitic Ls.
					190										
									Ls		do cal		l-gry		
					194.4										194.4 - 194.8 : Sh thin bed.
									Ls				l-gry		
					195.8			50°	Sh				d-gry		
					197.5				Do				d-gry		
1.0	0.01	0.02	0.30	–											

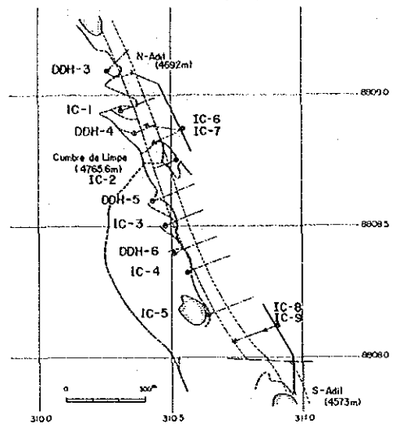
Assays					Depth	Symbol		Occurrence						Observations
Leng (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Dep (m)	Core Rec	Sym	Str. (m)	Rock	Oxd.	Alt.	Min.	Color	Fract	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
									Sh				d-gry		
					206										
									Do		sid	Py-Zn	gry		206.5 - 207.8 : Sid, Py Zn diss
1.3	0.02	0.02	0.90	tr											
					210										Cal - Do - Ol assemblage is determined by X-ray (209m).
					214				Ls				l-gry wht		
1.3	0.05	0.02	0.60	tr					Sd(Do)		do	Py	d-gry		
1.0	0.04	0.03	0.36	tr	216				Py-Pb Ore		sil	Py-Pb	yel		
1.0	0.03	0.02	0.08	4											
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										
									Sh (Dol)		do	Py	blk gry	shd	Intc. with Do
					233										
					230										
					232				Do		do		gry		
									Ls		cal		l-gry		Cal vs
									Do		do		gry		Do vs
					237.2			35°	Sh				blk	shd	
					240										
															242.8m. end
					250										
					260										
					270										
					280										
					290										

GEOLOGICAL SURVEY
OF
THE ISCAYCRUZ AREA, PERU
PHASE II

PL. I - 7

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	cal
orgillization	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					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
									Qtz		sil ser	Py	l-gry		Gry spots in wht mls, mgd., very hard.
					10										80-97 : Crk., 90°.
															99 : Py-calc.
					20										173 : Py-diss along J.
					220		5°								
							5°		Sh		do	Py (Cu)	d-gry		Sandy-Sh, dolomitic
					228		5°								Pyrophyllite-Qt ore determined by X-ray (26m).
					30				Qtz		sil	Py	l-gry		256 : Py-v., 2cm., 5°.
							5°								258 : Py-calc.
									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
					563						cly		p-gry	shd	Lamination is developed
					570						cly		d-gry	shd	568 : F-cly
					576				Qtz		sil ser		l-gry wht		585 : F-cly
					60										
					615		5°		Ss (Qtz)		sil		gry		
					640				Qtz		sil sor	Py	wht		Lim along J
					70										
					705				Sh				blk	shd	714 - 734 : Cly beds
					723				Sh		cly		p-gry		
							5°		Ss						
					750		0°		Sh (Mt)		cly	Py	p-gry		Int. cly beds + Fs paralled to bedding (792 - 810, 825 - 838)
					80										Very sticky
					838										
							10°		Ss (Qtz)		sil	Py	gry		
					90										
					904				Sh		cly	Py	d-gry	shd	
					924				Ss (Qtz)						Cm - Fm
					950				Do		sil do		gry		950 - 954 : shd
					970				Ls		do		gry		Boundary is transitional
					990										St - Fm
									Ald						Druse

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
					1027				Ald		Do		gry		Wlm Ss & Sh.
					1035										Druse. Flow out water, 600ℓ/mn.
									Ald				gry		Altered r. Pit 2-1
					1076		5°								
					1095		5°		Sh		cly	Mn Fy	p-gry	shd	
					110										1099 - 1113 : Sh; wht., cly.
43	005	004	008	–					Py-Ore		sil cly	Py	yel		
43	004	002	015	–			10°								
					1182										
45	006	002	007	–	120				Py-Ore		cly	Py	yel		Py-powder ore
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
33	006	002	009	tr	1355				Py-Ore		cly	Py	yel		Py-Qt assemblage is determined by X-ray (133m).
31	006	002	006	tr	140										Py powder ore
32	005	001	003	–											
32	004	001	010	–											
					1483										1480 - 1483 : Py, mas, drussy
22	006	001	090	tr	150		5°		Ald		chl cly		p-grn		
					1505										Cly., shd.
11	024	002	070	tr					Cu-Spc Ore			Cp Spc	d-gry		Int. Cu Pb Zn Ag (%) (%) (%) (g/t)
12	087	001	151	tr											Av. 35 050 002 093 tr
12	036	002	055	–											
					1540										1549 : Cp-diss
28	012	002	246	–			5°		Ald		do spc talc	Spc Cp	d-gry		Sp-Talc-Qt assemblage is determined by X-ray (152m).
24	007	002	231	tr											
					1592										1592 - 1598 : cly, F, 70°
					160				Ald		cly chl	Py Hm	p-grn		
46	259	002	030	40											
					1634				Py-Ore		sil	Py	yel		Py massive ore
30	012	001	025	tr											
29	009	002	013	–											
					1697										
					170				Ald (Sh)		cly	Hm Py	p-grn		
35	032	001	055	tr			25°								
					1732										
13	007	172	008	4					Spc-Ore		cly sil	Spc Cp	blk		
13	074	023	020	32	1758										Int. Cu Pb Zn Ag (m) (%) (%) (%) (g/t)
12	010	002	003	tr					Cu-Spc Ore			Cp Spc	blk		Av. 36 243 011 011 23
11	696	005	010	36	1781										
22	003	002	015	tr					Ald (Sh)		chl cly ser	Hm Py Cp	p-grn gry	shd	1890 - 1907 : Shd
					180										
22	002	002	003	tr			5°								Lamina is remarkable
															St - Fm
17	001	002	085	–	1917										
									Sh		sil		d-gry blk		Lamina Cz - Fm
					1983										
					190		5°		Mt		chl sil cly sid	Py	p-gry		
					1940										
									Ls				l-gry		
					1966										
							5°		Sh				d-gry blk		Lamina
					1994				Ss				gry		Fgd

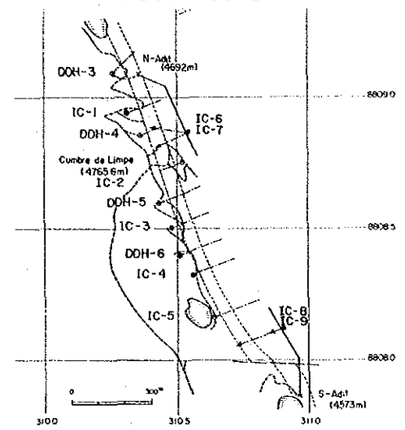
Assays					Depth	Symbol		Occurrence						Observations
Leng (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Dep (m)	Core Rec	Sym	Str (m)	Rock	Oxd.	Alt.	Min.	Color	Fract	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
					2017				Ss				gry		
					208				Sh			Py	blk		202.8m. end
					210										
					220										

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

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
									Qtz		sil	Py	l-gry wht		Very hard, comp, fgd-mgd.
					10										
								65°							
					20										
					30										
					31.0				Qtz	Hm	sil ser	Py	wht l-gry	crd	31.0-33.2m: vertical crk, 80°-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)
					55.0				Do-Ss		do-cly	Py	d-gry wht	shd	
					56.7				Sh		do		blk	shd	
					57.3			45°	Do			Py	blk		Fgd-mgd.
					60										
					62.7			50°	Sh		do	Py	gry blk		
					63.4				Qtz		sil	Py	l-gry wht		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	wht l-gry		Very hard, comp, fgd, sil and Py are strong.
								45°							
					90										
								40°							99-100m: ser is remarkable.

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
					101.3				Sh		cly		d-gry		
					102.4				Ss		sil		gry		
					103.9			50°	Qtz		sil	Py	l-gry		
					107.0										
					108.0			50°	Mt		cly		wht		108.0-108.2m: wht, cal cly.
					108.7				Sh				blk	shd	
					111.8				Ml		cly		d-gry	shd	
					112.2				Sh				blk		
					112.9				Do		do		blk		wht- Do vs.
					115.3										
					117.9				Qtz		sil		wht	crd	
					120			50°	Alt (Sh)		cly		d-gry blk		Alt (Sh-Ss-Do).
					120.8										
					126.5				Alt (Do)				blk		Alt (Do-Ss-Sh).
					130										
					130.5				Alt (Ml)		cly		wht		
					132.0				Qtz		cly	Py	wht	F	
					133.0				Qtz		sil ser	Py	wht	crd	
					135.0				Mt		cly		yel wht		Very soft, massive.
					138.2			25°	Ml		cly		p-gry		Very soft, massive.
					140										
					143.7			55°	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° 310 on w.
					150.3										
					154.4				Ald		sil cly chl		p-grn gry		153.2-153.7m: shd, cly.
					156.6				Ald (Ml)		cly		p-gry	shd	156.2-156.6m: F, cly.
					159.7				Ml		cly		p-gry	shd	157.4-157.7m: crd.
					160			60°	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
					166.3				Ald		sil cly	Py	d-gry	brc	Py diss.
					169.3										169.5-169.9m: crd
					170				Ald		sil cly cht	Py	p-grn gry whl		
					174.6				Cly		cly	Py		shd	
					176.6				Qtz		sil	Py	l-gry wht	crd	Py diss is strong Sil is very strong.
					180										
					184.7										Cm-Fm
					185.4				Cly		cly	Py		shd	
					186.1				Ald		cly	Py	wht	shd	Sl-Fm
					187.0				Ald		sil	Py	wht		Ats(Ss)
53	0.08	0.03	0.04	tr											187.0-187.5m: cly. 189.1-189.5m: cly, Hm.
									Ald (Ml)	Hm	cly chl sil	Py	p-grn p-gry		Ald (Ml)
					190										191.4-191.5m: Spc, mas. 194.2-194.5m: cly.
53	0.10	0.02	0.03	4											
					194.5			50°	Sh		sil	Py	gry		Lamina developed.
					196.3			60°	Py-Ore		sil ser	Py	yel		Intc. wht siliceous mats.
47	0.02	0.02	0.01	tr											

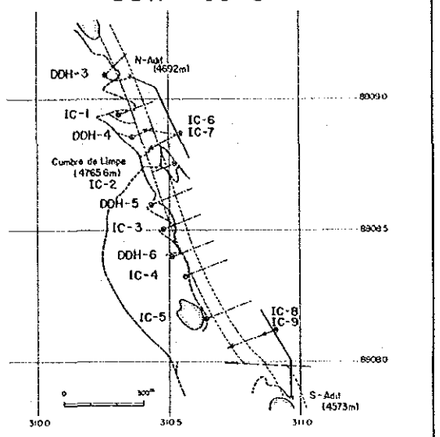
Assays					Depth	Symbol		Occurrence						Observations
Leng (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Dep. (m)	Core Rec.	Sym.	Str. (m)	Rock	Oxd.	Alt.	Min.	Color	Fract.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
5	0.02	0.02	0.08	-	203.7			50°							202.2-202.7m: Py powder.
									Py-Ore			Py	yel		Massive Py-Ore
5	0.05	0.01	0.08	4	210										
5	0.06	0.02	0.09	3											214.4m: drusy Py
5	0.06	0.01	0.01	-	219.5										
					220				Py-Ore (Sh)		cly sil	Py	wht yel	shd	Clear banding str. 220.5-220.8m: Py powder. 223.2-223.8m: shd.
5	0.03	0.01	0.01	4				65°							
					225.6			65°							
5	0.04	0.02	0.01	tr					Py-Ore		sil cly	Py	yel	crd	
					230										
5	0.03	0.02	0.01	132	232.0				Py-Ore		sil	Py	yel	drs	Drusy Py, mgd-cgd.
5	0.04	0.01	0.01	3											
					238.6										
5	0.04	0.02	tr	tr	240			60°	Py-Ore			Py	yel		Massive Py-Ore. 239.8-240.0m: Alt Sh.
5	0.05	0.02	tr	tr	243.8										
					250			60°	Alt (Sh)		cly	Py	wht		
5	0.05	0.02	-	2	254.5				Py-Ore			Py	yel		
					259.3			60°	Py-Ore (Sh)		cly	Py	wht		
5	0.03	0.02	-	4	260				Py-Ore			Py	yel	crd	Massive - Py-Ore
10	0.03	0.02	-	tr	266.5										
									Py-Ore			Py	yel		Cgd Py massive ore, drusy. 269.3-270.1m: drusy, powdery. 270.1m, end.
					270										
					280										
					290										

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		
	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 8809.021
E 3.10.276
Elevation 4.698m

DDH No. IC-10
Direction 70°
Inclination -45°
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						
					62										
					91				Ss	lim		Py	d-gry		
					101				Sh				blk	shd	Sh : phyllitic
					109				Ss		col	Py	p-gry		
					140				Sh (Cal)						
								50°	Ml	lim		Py	gry		
					190			45°							
					20				Sh		col	Py	blk	shd	Phyllitic
															25.1 – 25.5m : Do-Ls
								60°							25.5 – 26.1m : Ml
					278										
					30			35°	Ml			Py	d-gry		Col vs
					323				Sh				blk	shd	
					332				Ml			Py	d-gry		
					386			90°							
					40				Ml				p-gry		
									Sh						
					420				Ml Sh		col		gry		Alt (Ml-Sh-Do)
					460				Sh				blk	F	
									Sh Ml				blk p-gry	shd	Alt (Sh-Ml)
					50										
					522			40°							
					536				Do	do		Py	blk		52.8m : wht-Do vs
									Ml Sh			Py	gry		
					575				Ml		cly			shd	
					60				Cly Brc		cly	Py	d-gry	F brc	Brcs are contained
					616				Ml			Py	p-gry	shd	
					640				Cly		cly		p-brn	F	
					657				Ml		cly		l-gry		
					665				Sh		cly		d-gry	shd	
					683										
					70			25°	Sh		col	Py	gry		
					717				Cly		cly			F	
					721				Ss		col		l-gry		
					747				Sh			Py	d-gry blk	shd	Phyllitic
					80			25°	Alt		col	Py	l-gry		Alt (Ss-Ml-Sh)
					826				Sh			Py	blk	shd	Phyllitic
															Cz – Fm
12	0.01	0.01	0.32	12	868				Pb-Cu			Py-Cu	yel		
					880			25°							St – Fm
									Do			Py-Fb	gry		Wht-Do vs
					90				Sh		cly		gry	shd	
									Do			Py	gry		
13	0.01	0.07	0.21	30					Py				blk		
					947										
					983										
					990				Sh		cly	Py		shd	

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 intercolated with thin Sh
					1060										
					1074				Sh		cly		blk	F	
								40°	Do		do	Py	p-gry		
					110										
					1123				Ls				l-gry		
					1132				Sh		do		blk	shd	
					1147				Do		do	Py	p-gry		
					120				Sh		cly		blk	F	
					1224				Do		do		brn		
									Ls		do	Py	l-gry		
										Lim					
					130										
					1327			50°							
					1353				Do	Lim	do	Py	brn	shd	
					1372				Sh	Lim	do	Py	brn	F	
					140				Do	cly	do sil	Py	brn		
42	0.15	0.22	1.00	10	1443				Cly	Lim			brn	F	
					1451				Sid Do	Lim	do sid cly	Hm	brn	shd	
24	0.02	0.05	0.60	4	1493				Do	Lim	do cly		brn	shd	Do with Sh
					150										
1.8	0.96	0.02	0.16	5	1517				Hm			Hm	brn		
					1534				Ore		sil	Cp-Py	wht		Porus silisified Cp-Py ore
47	0.08	0.07	0.11	6	1539				Ore		sil	Cp-Py	wht		
					1545				Ore		sil	Cp-Zn	wht		
					1567				Cu-ore			Cp-Hm	blk		
					1586				Hm-ore		sil	Hm-Qz	blk		
					160										
1.7	1.09	0.05	0.16	8	1616										
					1633				Py Cu		sil	Py Cc	yel		Cc diss in druse
2.1	0.16	0.02	0.20	10	1654										
					168										
20	0.02	0.03	0.18	4	170				Spc Hm		cly	Spc Hm	blk	shd	
20	0.02	0.07	0.36	3	1706										
					1723										
20	1.57	0.02	0.07	8	1726										
					1745										
29	0.03	0.02	0.35	5					Sh		cly	Py	blk gry	shd	
					1775			55°							
28	0.01	1.42	0.70	38					Do		do		l-gry		
					180										180.3m : end
					190										

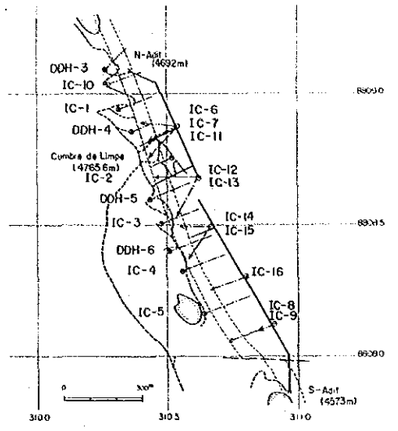
Assays					Depth	Symbol		Occurrence							Observations
Leng (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Dep (m)	Core Rec	Sym	Str. (m)	Rock	Oxd	Alt.	Min.	Color	Fract	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
					210										
					220										
					230										
					240										
					250										
					260		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

PL. 1-10

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		
	Breccioled rock	Brc		
	Altered rock	Ald	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-	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 8808.868, E 310.558 — Elevation 4.692m

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

Columns: Assays — 1 Leng (m), 2 Cu (%), 3 Pb (%), 4 Zn (%), 5 Ag (g/t); Depth·Symbol — 6 Dep (m), 7 Core Rec, 8 Sym, 9 Str (m); Occurrence — 10 Rock, 11 Oxd, 12 Alt, 13 Min, 14 Color, 15 Fract; 16 Observations

Occurrence and observations (0 – 98.4 m)

Dep (m)	Str	Rock	Oxd	Alt	Min	Color	Fract	Observations
0		Qtz	lim	sil		l-gry		Very hard, mgd-fgd.
8.4	30°	Sh				blk		Phyllitic
12.4		Qtz		sil		l-gry		
17.5		Sh				blk		Intc with Ss brc and peb.
20	40°, 30°	Qtz (Ss)		sil	Py	gry		23.3 ~ 23.7m : Sh
31.7	35°	Sh			Py	blk	shd	31.7 ~ 31.8m : Py·Cu diss 32.6 ~ 32.8m : Py·Cu diss 33.9 ~ 35.0m : shd
35.9		Alt			Py (Cu)	gry		Alt (Ss·Sh·Do) mainly fgd Ss
41.4		Ss				gry		Ss : fgd, very hard
49.7	30°	Sh				blk		
53.1		Cly		cly		blk	F	
	35°	Ss						Ss : dolomitic
53.8		Ml		cly		p-gry	shd	very soft
56.6	40°	Ss (Do)				gry		Dolomitic Ss : mgd, wht grains
58.8		Sh				blk		
60		Qtz		sil		l-gry		
62.8	30°	Ml				p-gry	shd	Ml Ald wht
71.0		Ss (Qtz)		sil		l-gry		
79.7	35°	Sh				blk		
81.6		Ml				l-gry		86.0 ~ 86.7m : Ls
86.7	30°	Ss (Qtz)		sil		l-gry		Cm - Fm
98.4								St - Fm

Occurrence and observations (to 190 m)

Dep (m)	Str	Rock	Oxd	Alt	Min	Color	Fract	Observations
	35°	Do		cly chl		l-gry l-grn		
104.5		Sh		cly	Py	d-gry	shd	
105.5	45°	Do		sil chl	Py-Mg Zn	d-gry		
107.2	35°	Zn-Pb ore			Zn-Pb Py			Pb-Zn ore
109.8		Zn-Pb ore			Zn-Pb Py Ml	d-yel	drs	(Sp·Py·Mcr·Gl·Po) 8.2m 0.05 4.44 7.97 39
115.4	40°	Zn-ore		sil	Zn-Py	d-brn		Zn massive ore : Zn 40~50 % dendric Py in Sp mtx. (Py·Sp·Gl·Cp·Po)
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 / 135.5		Alt		cly	Zn-Py	d-gry	shd	Av. 26.7m 0.04 3.16 22.69 38 Int. Cu(%) Pb(%) Zn(%) Ag(g/t)
136.8 / 137.3		Cly		cly			shd	
138.8 / 139.3		Sid		cly		blk	shd	
140								
146.5		Sh		cly		blk	shd	
		Ald		cly		wht	shd	
152.7 / 153.2		Cly		cly		blk	shd	
156.6		Do		cly		d-gry	shd	Core recovery is bad
164.8		Zn-ore		sil	Zn-Py	yel		
166.7 / 167.7	40°	Sh		cly	Py	blk	shd	
169.2		Py-ore		sil	Py	yel		Massive Py-ore
177.4	50°	Sh		cly	Py	d-gry	shd	
	35°							
183.2		Py-ore		sil	Py	yel		St - Fm
186.2	30°, 40°	Sh		do		gry blk		Phyllitic — Cz - Fm

Assays

Leng (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)
1.7	0.01	0.06	0.85	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	3.60	32.2	44
1.0	0.09	0.64	46.5	74
1.0	0.00	0.98	29.8	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	61
1.0	0.06	0.42	51.8	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	26
1.9	0.03	3.90	10.0	23
1.8	0.04	3.60	24.0	25
1.9	0.06	4.60	29.6	27
4.9	0.10	0.20	5.90	19
7.7	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	0.80	9
4.1	0.01	0.09	2.35	6
4.1	0.00	0.10	2.00	7

Occurrence and observations (to 221.1 m)

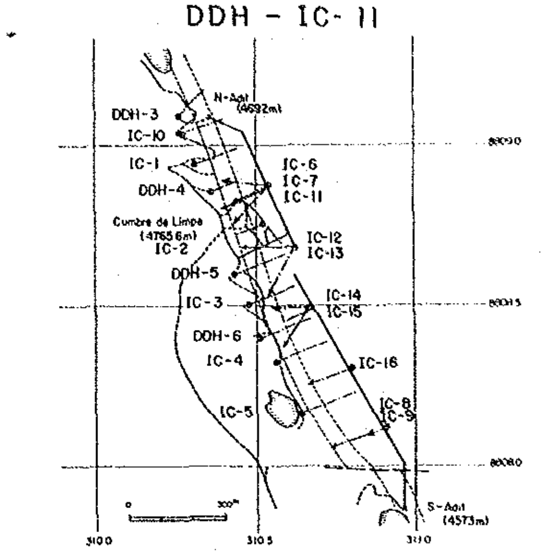
Dep (m)	Str	Rock	Oxd	Alt	Min	Color	Fract	Observations
		Sh				d-gry		
201.7		Ml				p-gry		
203.8		Sh				d-gry		Phyllitic
206.9		Ml				gry		Do vn
207.8	30°	Sh				d-gry		Phyllitic 209.2 ~ 209.6m : Ml 211.4 ~ 211.8m : Ml
214.5		Ss		sil		l-gry		Ss : fgd silic hard
218.6	50°	Sh				d-gry		
								221.1 end

PL. I - 11

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

No.	Item	Term	Abbr.	Term	Abbr.
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		
		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 8808.694 E 310.650
Elevation 4.693m

DDH No. IC-12
Direction 270°
Inclination -45°
Total Depth 220.6m

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
									Qtz		sil		wht		Qtz : fgd - mgd qt onty strong sil very hard
					10										
								30°							
					30										
					36.8			30°	Ml		cly		p-gry		Ml(Md) : banding str
					38.1				Qtz						
					39.4				Ml		cly		p-gry		Ml(Md)
					40				Qtz		sil		wht		
					43.5										
					45.0				Alt		cly		p-gry		Alt (Ss, Ml) : banding str
					46.1			30°	Ml		cly		d-gry		
					50				Qtz		sil		wht		
								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		
					77.5			35°	Do				d-gry		
					80				Ml (Md)				p-gry		
					83.6				Cly		cly		p-gry	shd	
					84.5				Do				blk		
					86.2				Ml		cly		p-gry	shd	
					86.9				Cly					F	86.5-86.9m : Cly, F
					87.2				Ml				p-gry		86.9-87.2m : Ss
					88.9										
					90				Ml (Ms)		cly		p-gry		Ml (Mudstone) : massive very soft
					96.2			40°	Ss		sil		gry		Ss : fgd-mgd, very hard quartzose

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
					101.0				Do				blk		(Qt · Sid · Rutile · Py)
					102.8				Ss		sil		l-gry		
					104.2				Ss		do		gry		Ss with dolomitic parts
					107.1			45°	Sh		do		blk		Sh with dolomitic parts
					110										109.9m : Zn, glss, 10cm
					112.1				Ls		col		gry		
					113.2				Ss				gry		
					115.0			40°	Ls		col		gry		Col vs
									Ml				p-gry		Ml with Sh and dolomitic parts
					119.3				Ss		sil		gry		
					120										
					122.6				Sh				blk	fnd	
					126.0				Ss				gry		Ss dolomitic 122.3m : Zn diss 122.4m and 122.7m : gypsum vs.
					130				Do				d-gry		
					130.9			45°	Ss		sil		l-gry		
															Cm - Fm
					133.7				Do		do sil cly		d-gry		St - Fm
					134.4				Sh				blk		
					135.8				Ml		do		p-gry		
					137.2				Sh		do		p-gry		
									Ml		do-slt		p-gry		
					140			50°	Sh				p-gry		
					141.8				Ml		do sil		p-gry		
					142.6				Cly		do-sil cly		p-gry	shd	
					144.3				Ald		cly		blk	shd	
					145.5			40°	Ald		sil-cly	Zn	d-gry		
					146.6				Zn-ore		sil	Zn	blk		(Sp · Qt · Sid · Amr)
					147.4				Ald		cly	Zn	blk	brc	Pb-Zn ore : Pb+Zn 5-15%
					149.2				Py-ore			Py-Zn	d-yel	shd	
					150				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 Po mas (Po · Sp · Py · Gl) 172m 0.01 2.11 8.37 40
					156.2			35°	Zn-Hm -ore		brc	Zn-Hm	d-brn	brc	
					159.1				Ald		cly			brc	160.5-160.6m : cly-shd
					160.3				Py-ore			Py-Zn	d-yel		(Sp · Gl · Py · Po)
					161.5				Pb-Zn ore	brc	Zn-Pb	Zn-Pb	brn	brc	Zn mas ore : brn and yel typ Sp (Sp · Gl · Qt · Sid · Chl) Pb+Zn 40~50 % (Sp · Gl · Po · Py) (Sp · Cp · Py · Gl) (Sp · Cp · Py · Qt) Sp : d-gmish type (Sp · Cp · Py · Gl)
					164.5						cly	Py-Zn		shd	
					166.1			50°	Zn-ore			Zn	brn		
					167.5				Zn-ore			Zn	brn		
					169.0				Zn-ore			Zn-Py	p-brn blk		
					170										
					172.0			35°	Pb-Zn ore			Zn-Pb	brn		Pb-Zn mas ore : 40~50% d-brn, brn and yel types. three types of Sp ore observed 140m 0.48 3.23 44.80 153 (Sp · Gl · Py · Cp)
					173.5			25°			cly	Py		shd	
					175.8				Zn-ore			Zn	d-brn		
					176.8				Pb-Zn Py-ore			Pb-Zn Py	d-yel		(Sp · Gl · Py · Po)
					178.4				Zn-ore			Zn-Py	brn		
					180										
					180.9			30°	Do		do sil		l-gry		80m 0.06 2.64 21.59 32 (Sp · Gl · Py · Cp · Po)
					182.3				Zn-ore			Zn-Py	d-brn		
					183.5				Sh				blk		
					184.5				Sh			Zn-Py	blk		
					185.5								blk	shd	
					186.4				Do		do		d-gry		Av. 39.2m 0.19 2.61 24.08 78
					188.2			35°	Sh					shd	Ins. Cu(%) Pb(%) Zn(%) Ag(g/t)
					189.0				Ald		do cly	Zn	d-gry	shd	
					190				Do		do		d-gry		Do wht vs
					190.6				Sid						
					191.8			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	

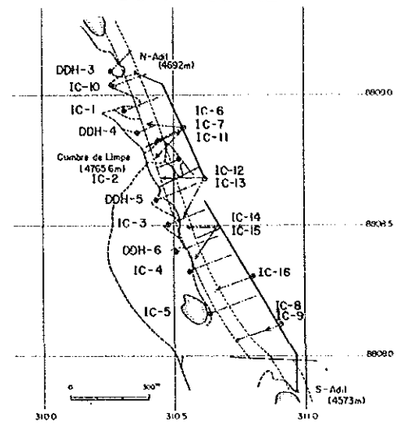
Assays					Depth-Symbol			Occurrence						Observations
Leng (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Dep (m)	Core Rec.	Sym	Str. (m)	Rock	Oxd	Alt	Min.	Color	Fract	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
									Ls		brc		gry	brc	
					201.0				Do		do	Po	d-gry		203.8-204.2m : Sh
2.3	0.01	0.24	1.18	30	204.2				Pb-ore		sil	Pb	d-brn		
2.3	0.04	0.06	1.00	30	208.8										
					210			35°	Brc		brc		d-gry	shd	
					211.6				Sh		brc		blk	shd	
									Do		do		gry		
					215.0			35°	Sh			Py	d-gry		
2.2	0.01	0.08	0.18	40	216.3				Py-ore		Sid	Py	yel		Massive Py ore (Sid · Py · Chl · Qt)
					218.5				Sh			Py	blk		Phyllitic
					220			35°							220.6 m 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	
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 8808.692
E 310.654
Elevation 4.693m

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

Assays					Depth-Symbol			Occurrence						Observations
Larg (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
									Qtz		sil		wht		Qtz : qz grains dominant fgd - mgd very hard
					10			50°							
											cly			shd	
					20										
					24.3									F	24.3~24.5m : cly
					28.8			55°							
					30				Qtz		sil		wht	crd	
					32.2										
					34.1									F	Sludge
					36.0										
									Qtz		sil		wht	crd	
					40										
								50°	Ml		cly		wht	shd	
					44.5										
									Qtz		sil		wht	crd	
					48.7										
					50			50°	Qtz		cly		brn	F	
									Alt		cly		p-gry	shd	Alt (Ml · Ss · Do)
					53.7				Do		cly		d-gry	shd	
					54.9				Qtz	lim	cly		wht brn	crd	
										lim				F	Sludge
					60										
					60.9				Qtz	lim	cly		brn	brc shd	
					63.5				fz	lim	sil		brn l-gry	crd	
					70									brc	
					74.7				Ml				p-gry		
									Carb				brk		
									Ml				p-gry		
					78.3			45°	Qtz		sil		wht l-gry		
					80										
					81.2				Qtz	lim	brc		brn	brc F	
					83.5										
								50°	Qtz (Ss)	lim		Py	wht		Qtz : fgd
					90										
					96.8			60°	Sh			Py	blk		
					99.5										

Assays					Depth-Symbol			Occurrence						Observations
Larg (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
					101.4				Ss		cly	Py	gry		
					102.5				Sh			Py	blk		
									Ml (Md)		cly		p-gry		Ml (Mudstone) : massive soft
					110			45°							
					114.4				Ml		cly		p-gry	shd	
									Ml		cly		p-gry		
					120			45°							
					121.7				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				Sh		do	Py	blk		
					133.1			55°	Ml		do	Py	gry		Ml including pure Ls
					135.6				Ls				l-gry		
					136.8				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
									Ml				gry		Ml including pure Ls
					159.3			50°							
					160				Ls				l-gry		
					161.3				Alt		do sil		gry p-gry		Alt (Ml · Ls · Do · Sh)
					164.0				Ald		chl-do dy-sil	Hm	Py d-gry		
					165.5				Py-ore		cly	Py Hm	p-gry yel	brc	Py clay ore
5.0	0.06	0.02	0.19	30											
					170										
5.0	0.24	0.03	0.26	50											
					175.0				Py-ore		sil cly	Py	yel		Py massive ore
								40°							
					180										
					185.3			45°	Ald		cly sil	Py	gry		Py clay ore
					188.2										
					190				Py-ore		sil cly	Py	yel		
					196.2				Py-ore		cly sil	Py Cc	yel	drs	Py ore with druses

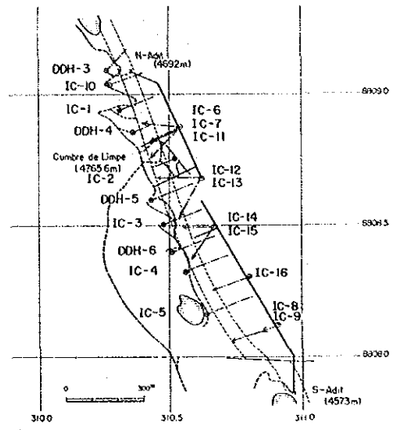
Assays					Depth-Symbol			Occurrence						Observations
Larg (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Dep. (m)	Core Rec.	Sym	Str. (m)	Rock	Oxd	Alt	Min	Color	Fract.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
					200.5				Py-ore		sil cly	Py	yel		Py massive ore
					210										
					212.2				Sh		cly	Py	yel blk		
					214.1			50°	Py-ore		sil	Py	yel		
					216.4			45°	Sh		cly	Py	d-gry		
					217.1				Ald (Ml)		cly	Py	p-gry		
					220										
					221.8				Py-ore		cly sil	Py Hm		shd drs	
1.8	0.04	0.00	0.05	10											
					227.2										
					230			50°	Ald		chl	Hm	p-gry		
					230.6				Py-ore		sid chl	Cp Cc	d-gry		
1.3	0.25	0.00	0.47	30											
					231.9				Sh		cly	Py	blk	shd	
					235.8			45°	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	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 8808,497 E 310,685 Elevation 4,575m

DDH No. IC-14
Direction 270°
Inclination -30°
Total Depth 140.2m

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
									Md				p-gry		
									Ss				gry		
					26				Mt		cly		p-gry		Massive, soft
									(Md)						
					10										
					136										
					150			35°	Qtz		sil	Py	l-gry		Mgd – cgd
									Sh			Py	blk		Dolomitic, massive
					168				Ss		sil	Py	gry		Fgd
					20										
					226	A	A		Ald		cly		p-grn		Ald – Do
					236				Ss		sil	Py	l-gry		
									(Qtz)						
					30										
								25°							
					342										342-345m : Sh
									Ss		sil	Py	d-gry	crd	
											cly	Hm			366-384m : Zn diss
18	0.05	0.02	4.60	2								Zn			
					40										395-397m . Hm. vs
					41.5				Qtz		sil	Py	l-gry		
									Alt				d-gry		Alt (Do-Sh) Cm-Fm
					43.8	A	A		Ald		do		wht		437-438m cly St-Fm
						A	A				cly		p-grn		
						A	A				chl				462-465m : Shd
50	0.35	0.02	0.03	30	48.3	A	A	25°							
					50				Py-ore		sil	Py	yel		Massive Py ore
											cly				
											ser				
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											636m . Cc in dtuse
50	0.09	0.01	0.04	28											
					70										
50	0.02	0.01	0.05	41											
								30°							
50	0.63	0.06	0.06	63											
					79.0										
					80				Ald		sil	Py	wht		Py diss ore
								25°	(Py)		cly				
50	0.48	0.02	0.04	40											
50	0.14	0.04	0.32	70	85.5										
					87.6				Hm-ore		cly	Hm	brn		
					90							Py			
50	0.50	0.01	0.08	40					Py-ore		sil	Py	yel		Cp-Cc diss
											cly	Cu			
					94.0	A	A		Ald		cly	Py	p-grn		(Chl-Qt-Py)
32	0.35	0.01	0.44	30	96.1	A					chl				
					98.2				Ald		cly	Hm-Py	d-gry	shd	
25	0.66	0.01	0.80	20					Alt		cly	Hm-Py	blk	shd	Alt (Sh-Do)

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
17	0.43	0.02	17.5	30	100.7				Zn-ore		chl sil	Zn	d-grn		
					102.4			35°	Mt		do		p-gry		Ls originoly 1055-1056m : Sh
12	0.02	0.01	8.9	5	107.1				Zn-ore		chl sil	Zn	gry		Zn diss ore
18	0.04	0.04	5.3	12	108.3				Sh		do	Zn	gry blk		Alt (Sh-Mt)
18	0.12	0.07	16.6	25	110										
20	0.01	0.03	8.6	25	111.9			40°	Ald		do sil	Zn	d-gry		68m 0.05 0.04 9.90 18
12	0.18	0.07	20.8	40	113.9				Zn-Cu		sil	Zn-Cu	d-gry		(Sp-Mt-Ser-Qt-Chl)
13	0.14	0.05	10.9	20	115.1				Sh		do-chl	Zn	d-gry		(Sp-Mt-Gl-Cp)
10	0.23	0.08	24.7	50	116.4				Zn-ore		sil	Zn-Cu Py	d-yel d-brn		Zn-Py mas ore (Sp-Py-Gl-Cp)
10	0.19	0.01	24.0	30											
10	0.23	0.07	29.0	30											
60	0.15	0.32	23.0	60	120										98m 0.27 0.19 21.56 42
11	0.23	0.07	23.0	50											
11	0.35	0.28	24.3	60											
11	0.73	0.07	17.7	40	123.7										
11	3.02	0.05	0.36	80	124.8				Fy-ore				yel		Av. 16.6m 0.18 0.13 16.78 32
															Int. Cu(%) Pb(%) Zn(%) Ag(g/t)
					127.4										
					128.0				Sid		cly	Hm	blk		
						A	A		Ald		chl sil	Py-Zn	p-grn		
					130	A	A	40°							
16	0.06	0.03	2.38	10		A	A		Ald		chl sil	Zn-Py	d-gry		
11	0.36	0.06	32.8	30	131.6	A		45°	Zn-ore		do sil	Zn-Py	d-brn		(Sp-Cp-Py) St-Fm 2.2m 0.28 0.06 31.00 28
11	0.19	0.05	29.2	25	133.8										
									Sh		sil chl		gry blk		Cz-Fm
					140			55°							
								50°							140.2m end
					150										
					160										
					170										
					180										
					190										

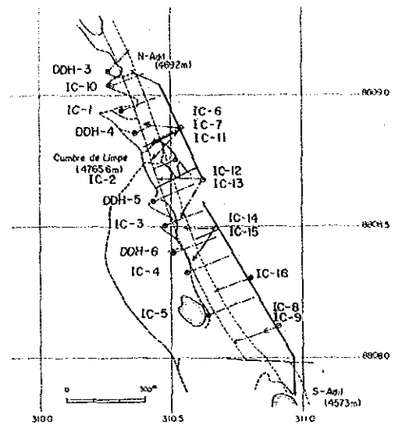
Assays					Depth	Symbol			Occurrence						Observations
Leng (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Dep (m)	Core Rec	Sym	Str (m)	Rock	Oxd	Alt	Min	Color	Fract	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
					200										
					210										
					220										
					230										
					240										
					250										
					260										
					270										
					280										
					290										

PL. 1-14

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		
	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 8808.496 E 310.688 Elevation 4.575m

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

Assays					Depth	Symbol		Occurrence						Observations
Leng (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Dep (m)	Core Rec	Str (m)	Rock	Oxd	Alt	Min	Color	Fract	
1	2	3	4	5	6	7 8	9	10	11	12	13	14	15	16
					3.2		40°	Ml (Md)		cly		p-gry	crd	
					4.4			Do-Ss				gry		
								Ml (Md)				p-gry		Ml : massive , soft
					10									
					11.6			Ml		cly		p-gry	shd	
								Ml		do	Py	p-gry		
					16.2									
					17			Ss		do		gry		
								Do			Py	blk		
					20			Ss		do		gry		
					21.2			Do						
					21.6			Ss		sil do		gry		
					23.8									
					25.1		40°	Do				blk		
					27.2			All		cly		p-gry	shd	All (Ml-Do-Sh)
								Qtz		sil		gry		Qtz : fgd-mgd, sil very hard
					30									
					38.5			Ml		cly		d-gry	shd	
					37.8			fz		sil		gry		39.2m : Zn diss in J
					40		45°	Do-Ss		do	Py	d-gry		Py vs and diss
					41.6			Cd-Ss			Py	gry		
					48.5			Ss		sil		gry		Cm – Fm
					50									
					51.8		45°	Do				d-gry		Boundary of Cm and St-Rms is transitional
					52.5			Ls				l-gry		
								Ml		do-sil		p-gry		53.5–54.3m : Do
					55.4			Ml		cly-chl	Hm Py	p-gry	shd	
					56.6			Cly		cly	Hm-Py		shd	
					57.3			Ml		cly	Hm-Py			St – Fm
20	0.06	0.01	0.08	6	57.9									
					60		40°	Cu-Py ore		sil cly	Py Cp-Cc	yel wht		
20	0.15	0.02	0.15	15	61.6									
20	0.13	0.01	0.04	15				Py-ore			Py	yel		Py massive ore
					64.5									
					66.7			Py-ore		sil	Py	yel wht		Py siliceous ore
								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									
32	0.13	0.02	0.14	15				Py-ore		sil	Py Cc	yel		
					93.2									
40	0.07	0.01	0.80	15				Hm-ore		cly sil	Spc	wht d-brn		
15	1.89	0.01	0.81	20	97.3			Py-Cu		sil-cly	Cc-Py	yel		
14	0.15	0.01	0.14	30	98.8			Cu-Py		sil-cly	Cp-Py	yel		

Assays					Depth	Symbol		Occurrence						Observations
Leng (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Dep (m)	Core Rec	Str (m)	Rock	Oxd	Alt	Min	Color	Fract	
1	2	3	4	5	6	7 8	9	10	11	12	13	14	15	16
					102.2	A A A		Ald		cly	Py-Hm	p-gry	shd	
					102.6			Hm ore		cly	Spc	blk		
					103.4	A A A		Ald		do-sil cly-chl	Zn-Cu Hm-Py			105.8m : Zn-Cu diss
						A A A								107.4–107.7m : Sh
					107.7		40°	Ls		col		l-gry		Col vs
					110									
					118.0			Sh				blk		
					120			Ls				gry		
					122.0									
					123.0		45°	Sh		sil		blk		
								Ls				gry		126.2–126.8m : Col v
													brc	126.8–130.5m : Brc
					130									
							40°							
					133.0			Do		do-sil	Zn-Py	p-gry		
					134.3			Sh				blk		135.1–135.3m : 20cm Zn ore 15%
					135.1			Zn			Zn			
								Ls		do		l-gry		137.6–140.0m : Zn diss 4%
					138.0			Zn			Zn			
29	0.03	0.21	2.71	18				Py-Pb ore		sil	Py-Pb Pb-Zn	d-yel		138.8m : Pb-Zn patch
					140									
29	0.04	0.24	2.48	20										
					143.8									
12	0.12	0.02	0.31	20	145.0			Do		do	Zn-Py	brc		Zn diss ore in brc Do
					147.2			All				d-gry	brc	All (Sh·Ml·Ls)
							45°	Ls				gry		
					150									
														St – Fm
					155.0			Sh		cly			shd	Cz – Fm
					156.9			Ls				gry		
								Sh		col		blk		Calc Sh
					160									
							40°							
					162.8			Ls				gry		
								Sh				blk		Calc Sh
					166.6			Alt (Ls)			Py	l-gry		Alt (Ls·Sh·Ml)
					168.8			Alt (Sh)				d-gry		Alt (Ls·Sh·Ml·Ls)
					171.4			Sh			Py	blk		
							50°							
					178.5			Col-Sh				blk		
					180			Ls						180.4m end
					190									

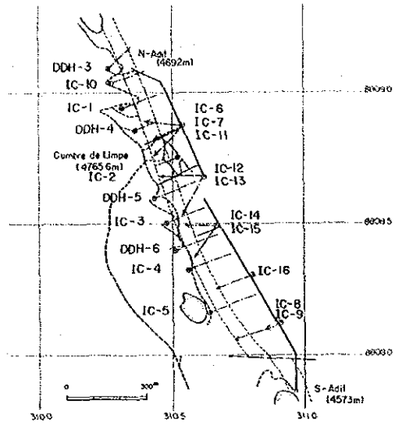
Assays					Depth	Symbol		Occurrence						Observations
Leng (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Dep (m)	Core Rec	Str (m)	Rock	Oxd	Alt.	Min	Color	Fract	
1	2	3	4	5	6	7 8	9	10	11	12	13	14	15	16
					210									
					220									
					230									
					240									
					250									
					260									
				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

PL. I-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		
	Hemolite 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		shd	
	brecciated		brc	
16 Observations	dissemination		diss	
	veins		vs	
	veinlets		vls	

GEOLOGIC DRILL LOG
ISCAYCRUZ PROJECT

Coordinate N 8808,315 E 310,796
Elevation 4,574m

DDH No. IC-16
Direction 250°
Inclination -30°
Total Depth 161.0m

Assays					Depth	Symbol		Occurrence						Observations
Leng (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Dep. (m)	Core Rec.	Syn.	Str. (m)	Rock	Oxd.	Alt.	Min.	Color	Fract.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
					0				Qtz	lim	sil	Py	l-gry		
					5.0			20°	Ml	lim	cly		wht		Bond str
					8.5										
					10				Qtz	lim	sil	Py	l-gry		Qtz : massive, silic very hard
					15.1										
									Brc	lim	cly brc		brn	F brc	16.1 – 16.5m : non core
					19.2										
					20				Qtz	lim			brn	crd	
									Qtz		sil		l-gry		
					24.2				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			10°	Ss		sil		gry		Intc with Ml
					40				Do		do		blk		Mgd
					40.8				Ss			Py	gry		
					41.8				Alt (Ml)		cly	Py-Hm	p-grn p-gry	snd	
					45.8			10°	Ald (Qtz)		sil	Py	l-gry		Sil is very strong Py is diss abundantly Qtz originally Ss
50	003	000	004	5	50										51.8–52.0m : Py v
															Cm – Fm
50	064	003	026	4	57.5				Ald	sil-dy	Py	wht			Cly 10cm St – Fm
					58.4										
					60				Ald	su. cly chl	Py	p-grn p-gry			
50	003	001	008	4											
					64.4				Py-ore	sil	Py	yel			
50	065	001	047	4											
					70										
50	010	000	020	10											
50	005	003	008	5											
					80										
50	036	000	053	5											
					85.4										
60	003	000	016	5					Py-ore		cly ser sil	Py	yel wht		
					90										
					91.0										
20	011	001	007	4					Spc ore		cly sil	Spc	blk brn wht		Spc crysts are up to 2cm
20	023	001	006	4											
20	032	001	015	4											
20	067	004	023	6											

Assays					Depth	Symbol		Occurrence						Observations
Leng (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Dep. (m)	Core Rec.	Syn.	Str. (m)	Rock	Oxd.	Alt.	Min.	Color	Fract.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
2.3	0.13	0.00	0.04	4	101.3										
3.5	0.06	0.03	0.13	5					Py-ore		cly sil	Py	yel wht		
					104.8										
					106.6				Ald		do sil		d-gry		
									Ls		col		l-gry		107.4–107.6m : Sid
					108.8				Sh				blk		108.0m : Col drs
					110			25°	Ls		col		l-gry		
					114.7										114.7–115.0m : Sh
					115.0				Ls		col		l-gry		Intc with Sh thin beds
					120										
					122.9				Sh		col	Py	blk		
					124.0			25°	Ls		col		l-gry		
					126.8				Do		do		d-gry		
					127.6				Ls		col		l-gry		
					129.0				Ald			Py-Zn	p-grn		
1.5	0.05	0.03	3.90	5	130										
1.3	0.05	0.01	1.90	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.
					140										
4.9	0.65	0.19	0.59	20											
					143.4				Ald		chl sil	Py	p-grn	shd	
					145.6				Ald		sil	Py	p-grn		
					146.2			15°	Ls		col		l-gry wht		Col vs
					150										St – Fm
					153.2				Sh			Py	blk		Phyllitic Cz – Fm
					156.5			15°	Ml			Py	p-gry		
					156.2				Sh			Py	blk		
					157.6				Ml			Py	p-gry		All (Sh · Ml · Ls)
					160.2			15°	Sh			Py	blk		161.0m end
					170										
					180										
					190										

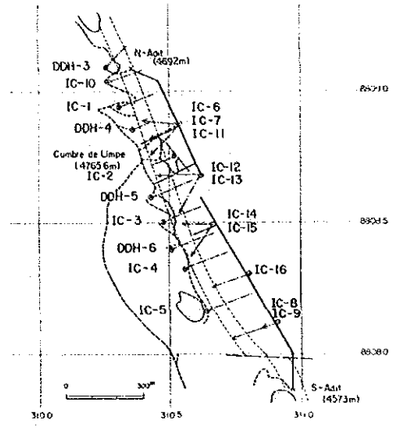
Assays					Depth	Symbol		Occurrence						Observations
Leng (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Dep. (m)	Core Rec.	Syn.	Str. (m)	Rock	Oxd.	Alt.	Min.	Color	Fract.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
					200										
					210										
					220										
					230										
					240										
					250										
					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		
	argilization	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 8906,960 E 311,480
Elevation 4,617m

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

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
									Qtz	lim	sil		wht		
					10			25°							
					12.5				Ss	lim		Py	brn		
					14.4				Qtz	lim	sil		wht		
					20										
					24.4				Ml (Ms)	lim		Py	p-gry		
					27.8			10°							
					30				Qtz	lim	sil	Py	wht		
								20°							
					40										
								30°							
					44.9				Ss	lim	cly	Py	d-brn	shd	45.1~46.6m: shd
					48.0				Ss	lim		Py	p-gry		Alt (Ss-Ml)
					50			35°							Ss: mudy
									Ml (Ms)			Py			49.0m: cly. 10cm. 35°
					55.1			30°	Cly		cly		p-yel	F	
									Ss	lim	cly		p-gry	shd	56.1-56.6m: cly
									Qtz		sil	Py	wht		Qtz: mgd, very hard
															58.5m: Py v. 10cm
					60										
												Cc			65.2m: Cc-Py v. 3cm, 45°
					65.5			25°	Alt		cly chl	Py	p-grn		Alt (Ss-Ml)
					67.1				Sh		chl		d-grn	F	
					67.5										
					68.9				Ss		cly	Py	p-gry		
					70				Ald		chl	Py	grn		Ald (Do)
									Ss (Qtz)		cly chl col	Py	p-grn d-gry	brc	Ss (Qtz) with Ml-Sh
								20°							
					77.7									sfd	
															Py vs
					80									shd	
					83.0				Alt		chl cly sil	Py	p-gry d-grn		Alt (Ml-Do-Ss)
								20°							
															Cm-Fm
24	0.34	0.00	0.53	6	88.4				Ald		cly chl	Py-Mt	d-grn	shd	
20	1.16	0.01	0.04	10	90				Py-ore					shd	Py powder ore Sl-Fm
20	0.17	0.01	0.04	6	90.8				Hm-ore		cly	Hm	blk	shd	Soft powdery Hm ore
20	1.02	0.00	0.02	6								Cc	brn		
14	1.18	0.00	0.18	15	96.8				Mt-Py ore		cly	Mt-Py	blk		
13	1.67	0.01	0.10	15											(Mt·Py·Cp·Hm)

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
									Ald		sil cly chl	Ml	wht d-grn	brc	101.0-101.4 m: brc
1.3	0.50	0.01	0.08	8	103.5				Mt-ore		cly	Mt-Py	d-brn		
					104.8				Ald		chl	Ml	p-gry		
					105.5				Py-ore			Py Cc	yel		Py massive ore
5.0	0.02	0.01	0.03	5											
					110										
5.0	0.03	0.03	0.20	4											
															115.7-120.2m: Py sludge
5.0	0.21	0.01	0.11	6										abd	
					120									shd	
5.0	0.04	0.01	0.06	5											
					125.4				Ald		sil cly chl	y Sp	d-gry		
0.4	9.00	0.00	36.40	11	127.5										127.3-127.7m: Sp Conc ore, Zn 40%
					128.0				Ls		chl sil		wht p-grn		(Sp·Cp·Py)
					130										
1.2	0.09	0.00	0.80	6	131.8			25°							
1.2	0.30	0.01	0.56	6	134.2				Py-ore		cly	Cp-Py	d-ysl		
									Ml		sil chl	Py	p-gry		Cal vlt
								30°							
2.0	0.42	0.00	22.00	8	140				Zn-ore		chl-sil	Zn	d-grn		Zn 20%
					140.4				Ml		sil chl	Py	p-gry p-grn		Py vs Cal vlt
								35°							
					147.1				Ald		chl	Py	d-grn		Ald (Ml) Sl-Fm
					149.0				Alt		chl	Py	d-gry		Alt (Ml-Ss) Cz-Fm
					150										
								30°	Sh				p-gry		Sh: phyllitic
					152.5				Ss		sil chl	Py	p-gry		
					157.2				Sh		sil chl	Py	p-gry d-grn		
					160			30°							160.2m end
					170										
					180										
					190										

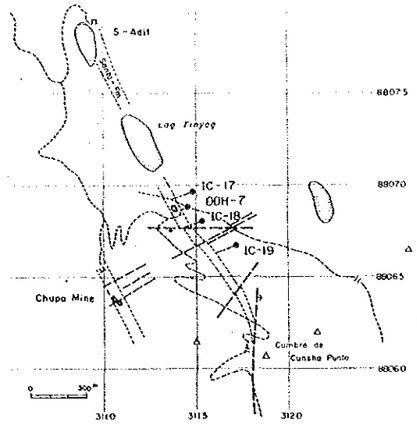
Assays					Depth	Symbol		Occurrence						Observations
Leng. (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Dep. (m)	Core Rec.	Sym.	Str. (m)	Rock	Oxd	Alt	Min	Color	Fract.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
					210										
					220										
					230										
					240										
					250										
					260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

PL. I-17

GEOLOGICAL SURVEY
OF
THE ISCAYCRUZ AREA, PERU
PHASE II

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		
	calcification	cal		
	argillization	cly		
	silicification	sil		
	sericitization	ser		
13. Mineralization	Pyrite	Py	Chalcopyrite	Cp
	Pb-minerals	Pb	Chalcocite	Cc
	Zn-minerals	Zn	Hematite	rim 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		sha	
	brecciated		brc	
16. Observations	dissemination		dss	
	veins		vs	
	veinlets		vls	

GEOLOGIC DRILL LOG
ISCAYCRUZ PROJECT

Coordinate N 8806,800 E 311,530
Elevation 4,680m

DDH No. IC-18
Direction 250°
Inclination -50°
Total Depth 200.5m

Assays					Depth	Symbol		Occurrence						Observations
Leng (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Dep (m)	Core Rec	Str. (m)	Rock	Oxd	Alt	Min	Color	Fract	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
							40°	Qtz	lim	sil	(Py)	wht		Fgd-mgd, very hard
														5.3-5.8m: sludge
					10									
							40°							
					20									
					30									
					32.7			Ml (Mkd)	lim	cly	(Py)	p-brn	crd	32.7-32.9m: Cly Massive, soft 34.9-35.1m: Cly
														38.4-38.8m: Cly 40.4-40.7m: Cly
					40 40.7			Qtz	lim		(Py)	p-brn wht	crd	
					45.8 46.5			Cly		cly		brn	F	
					50			Qtz	lim		(Py)	p-brn wht	crd	53.2-55.6m: Lim strong. cly
					60									
					68.8									
					70 70.4			Qtz	lim	cly		brn	shd	Cm - Fm
50	0.02	0.01	0.06	10				Lim Gos	lim	cly lim		d-brn	F	Completely limonitized and argillized. 72.4-72.6m: Sh?
50	0.08	0.01	0.31	6	75.4			Lim Gos	lim	lim cly		d-brn	shd	Fault zone (St-Fm) 76-78m: Sid? silic
					80									82-83m: Sid? silic
50	0.09	0.01	0.10	8	91.4								F	
50	0.06	0.01	0.19	6	96.4 88.2			Py-ore		cly	Py	d-yel		St - Fm
					90			Py-ore		cly	Py	d-yel	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	95.9			Cu-Py		sil	Cp-Py	d-gry		49m 2.86 0.03 2.160 8
1.4	0.95	0.02	2.749	8	98.5			Zn-Py	lim	cly	Py	d-brn	shd	(Talc · Sp · Chl · Cal)

Assays					Depth	Symbol		Occurrence						Observations
Leng (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Dep (m)	Core Rec	Str. (m)	Rock	Oxd	Alt	Min	Color	Fract	
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		Tremolite SK
1.0	0.39	0.01	25.50	5	102.3			Py-ore			Py	yel		
1.0	3.06	0.02	34.60	14	102.9 103.3			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	31.80	8	104.5									
1.0	0.46	0.00	29.80	6										90m 0.90 0.01 28.89 9
1.0	0.51	0.01	22.40	10										
1.0	0.32	0.01	20.80	10										
1.0	0.77	0.01	39.00	10	107.4			Alt			Py	d-grn	shd	
1.0	0.78	0.00	32.00	10	109.3			Zn-ore		sil	Zn	blk		102.8-108.2m: Shd
1.0	0.75	0.00	24.15	10	110			Zn-ore		chl	Zn-Py	d-grn		
1.6	0.24	0.03	5.25	4	110.5			Ald		cly chl sil	Py-Zn Ml	d-grn d-gry		Tremolite SK
1.6	0.15	0.00	8.00	4	114.0									
1.3	0.48	0.01	16.62	7	115.5			Ald		cly	Ml-Py	p-yel	shd	
1.1	1.71	0.01	1.09	14	116.4			Sh-ore		cly	Ml	blk		
1.6	0.28	0.04	8.00	6				Ald		cly	Zn-Ml	d-brn	shd	
1.1	0.51	0.01	28.33	13	118.0			Zn-Py Ald		sil cly	Py-Zn	d-yel		
1.1	0.36	0.01	11.66	8	120									
1.0	4.20	0.01	25.83	10	121.2			Zn-ore		sil	Zn-Py	blk		
1.0	1.18	0.00	14.50	4	122.2									
					124.2									X 127m 0.97 0.01 12.24 7 (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	0.65	6	131		45°	Py-ore			Py	yel		
0.9	1.13	0.01	5.20	10	133.9									
2.0	0.08	0.01	0.26	2	134.5			Alt		sil	Py	l-gry wht		Alt (Sh - Ml) Cz - Fm Siliceous Py with Cc vt dev.
					137.7									
2.3	0.10	0.01	0.07	3	140									
2.4	0.05	0.01	0.05	5	142.4			Ald		chl	Py	p-grn		
0.9	0.07	0.01	0.16	3	143.3			Sh		sil	Py	l-gry wht		Alt (Sh - Ss)
					150		35°							147.8m Cc-Py v 2cm 40°
					151.0			Sh		sil	Py	p-grn wht		Alt (Sh · Ss · Ml)
					155.5		40°							155.3-155.5m Cly-F
					157.5			Ss (Qtz)		sil	Py	wht		
					158.2			Py			Py			Py v
					160			Sh		cly sil	Py	p-grn	shd	
					161.0									
					165		35°	Sh (Qtz)		sil	Py	l-gry wht		162.5-162.8m: shd Siliceous, very-fgd, sandy
					170									
							65°							
					177.0									
					180		40°	Ss (Qtz)		sil	Py	l-gry wht		Py vs develope abundantly Siliceous, fgd Ss
					190		50°							
														200.5m end

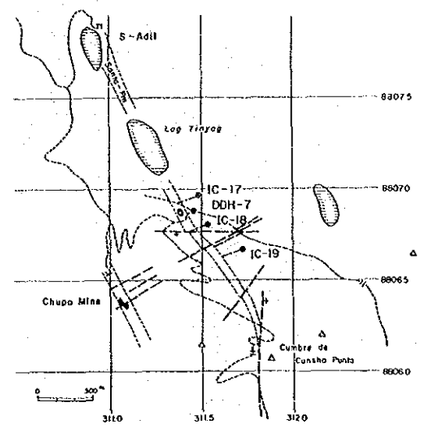
Assays					Depth	Symbol		Occurrence						Observations
Leng (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Dep (m)	Core Rec	Str. (m)	Rock	Oxd	Alt	Min	Color	Fract	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
					210									
					220									
					230									
					240									
					250									
					260									
				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

PL. I - 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	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

Coordinate N 8906,740 E 311,630
Elevation 4,694m

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

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
									Qtz	lim	sil		wht		Qtz: mgd, very hard
								45°							
					10										
					20										
					23.5			30°	Qtz	lim	sil cly		wht		Qtz lnte. with Sh thin beds
					28.8				Ml	lim	cly		p-brn		
					30			30°	Qtz	lim	sil		wht		
					39.0										
					40				Alt (Ss)		cly		l-gry		Alt (Ss: Ml)
					40.8				Ml	lim	cly		p-brn		40.4-40.5m: crd
					42.1				Qtz	lim	sil		wht		
								25°							44.2m: Qtz-Lim v
					50										
					50.6				Qtz	lim	sil		d-brn	crd	50.6-50.9m: brn cly F
					55.6				Cly		cly		p-gry	shd	
					56.4				Ml		cly		p-brn		Ml: massive, soft
					58.8										
					60			30°	Qtz	lim	sil		red-brn wht	crd	
					63.3				Qtz		sil		wht		
					67.6				Qtz	lim	sil		red-brn	crd drs	
					70			30°					wht		
					78.5										
					80				Qtz	lim	sil		d-brn	crd	
					81.0										
					90			30°	Ml	frm	cly		p-brn p-gry		
					96.1									F	95.9-96.1m: cly F
									Qtz	lim	sil		wht d-brn	drs	96.4-96.7m: cly F

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
									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	Cm-Fm
					127.6									shd frc brc	
					130										
					140										
					144.0				Ald (F)	lim	cly		brn wht	frc F	
					147.6										
					149.0				Gos	lim			brn	frc	
					150	A A		35°	Ald		cly chl	Py		shd	St-Fm
5	0.06	0.3	0.8	38					Ald (Sk)		cly chl sk sil	Py	p-gry		
5	0.25	0.1	1.2	10											
5	1.57	0.1	1.4	10	159.0			40°							156.4m: Zn patch
					160				F		cly		p-brn	F brc	
5	0.41	0.1	2.2	10	160.6										
					163.7										
					164.3										
					165.0				Fy-ore		sil cly	Py			
4.4	0.17	0.1	2.7	10	166.5										
					167.7	A A		40°	Ald		sil	Py	wht		Ald (Sh)
					168.7										
					170				Fy-ore		sil cly	Py	yel		
5.2	0.12	0.1	0.3	7											
					173.9										
1.5	0.02	0.1	0.2	10	178.2										
					180	A A									
4.3	0.06	0.1	0.3	7		A A			Ald		cly	Py	wht		
						A A		30°							
3.0	0.04	0.0	0.1	10		A A									
					187.0	A A									
					190			20°	Sh (Alt)		cly	Py	wht		Cz-Fm
6.9	0.03	0.1	0.2	69					Sh (Ald)		cly	Py	wht		
					192.2	A A			Ald			Py	d-yel		
					193.9	A									
								10°	Sh (Ald)		cly sil	Py	wht		
					198.7										
									Ss		cly sil	Py	wht		Fgd 203.6m end

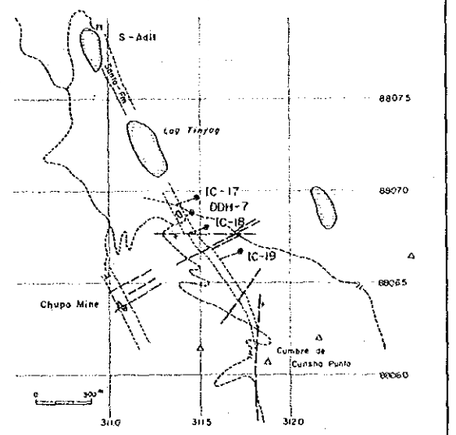
Assays					Depth	Symbol		Occurrence							Observations
Leng (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Dep (m)	Core Rec	Sym	Str (m)	Rock	Oxd	Alt	Min	Color	Fract	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
					210										
					220										
					230										
					240										
					250										
					260					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

PL. I-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

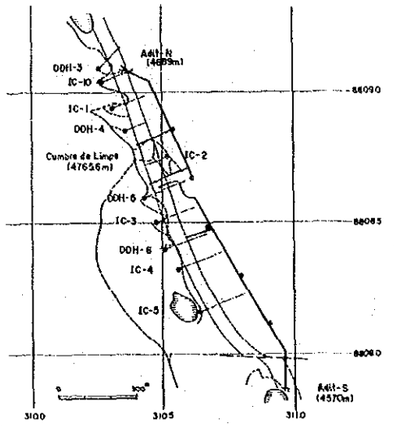
10. Rock	Pebble, sand, clay	Peb			
	Sandstone	Ss			
	Shale	Sh			
	Marl	Ml			
	Limestone	Ls			
	Dolomitic limestone	Do-Ls			
	Dolostone	Do			
	Siderite	Sid			
	Quartzite	Qtz			
	Ore, high grade				
	Ore, low grade				
	Pyrite ore	Py			
	Hematite ore	Hm			
	Skarn	Sk			
	Brecciated rock	Brc			
	Altered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

PL. II - 1 - 1

GEOLOGICAL SURVEY
OF
THE ISCAYCRUZ AREA, PERU
PHASE III

UNDERGROUND EXPLORATION
IN THE LIMPE AREA

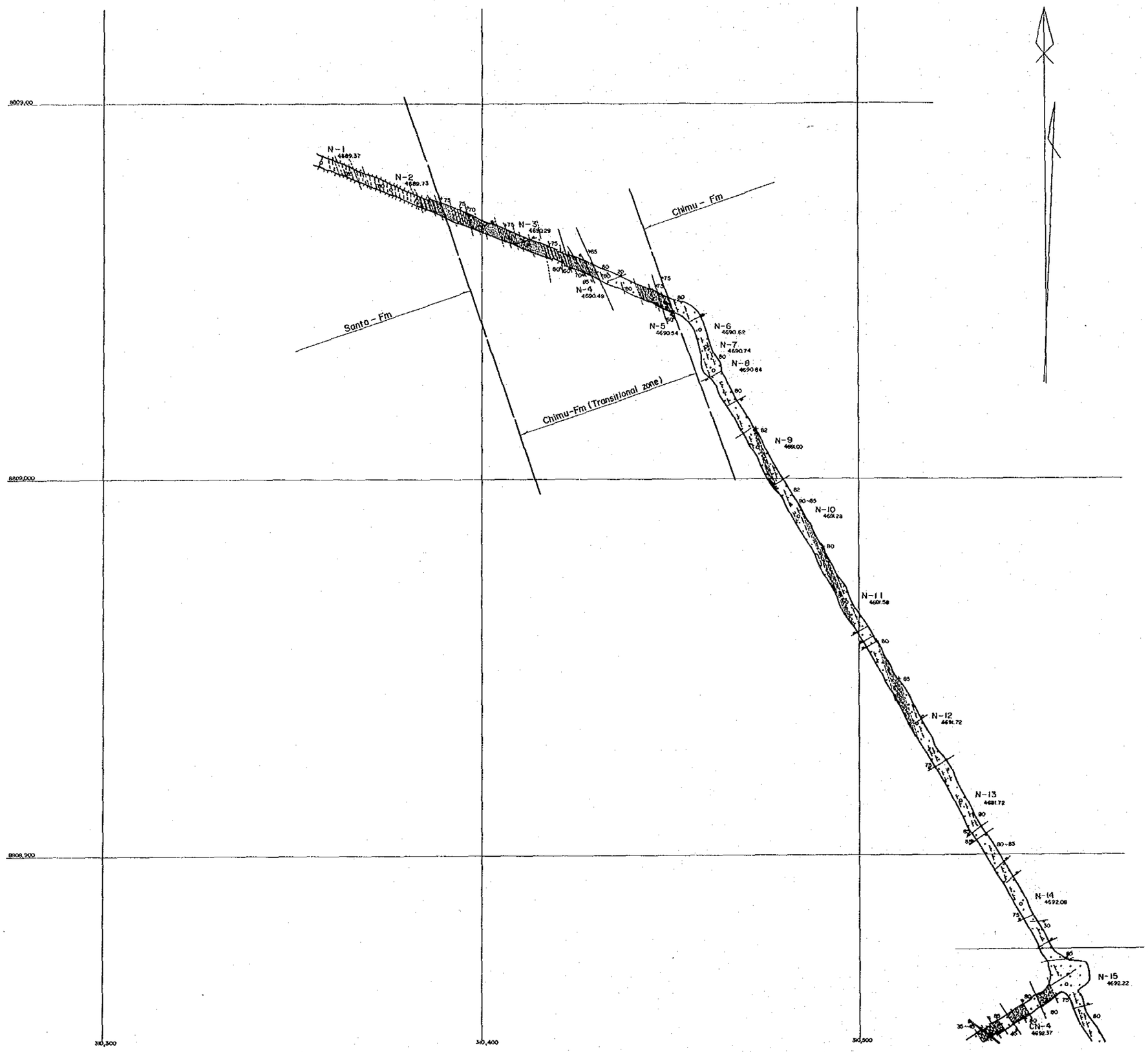
GEOLOGICAL COMPILED MAP
ADIT - N (1)



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

JULY 1985
Prepared by MINDECO

0 10 20 30 40 50m



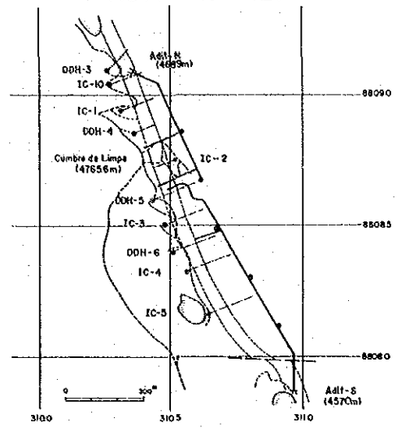
LEGEND

Pebble, sand, clay	Peb
Sandstone	Ss
Shale	Sh
Marl	Ml
Limstone	Ls
Dolomitic limestone	Do-Ls
Dolostone	Do
Siderite	Sid
Quarizite	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	

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

8808,800

8808,700

310,400

310,500

310,600

N-15 4692.22
N-16 4692.39
N-17 4692.49
N-18 4692.61
N-19 4692.80
N-20 4693.10
N-21 4693.31
CN-4 4692.37
CN-5 4692.56
CN-6 4693.02
CN-7 4693.41
CN-8 4693.90
NN-1 4693.45
NN-4 4693.78
NN-3 4694.00
NN-4 4694.66

Assay Result

	Right wall	Left wall	Av.	Length (m)	No. of Samples	Au (g/t)	Cu (%)	Pb (%)	Zn (%)
	12	12	12	24	2	17.25	0.07	0.08	0.10
	12	12	12	8	1	17.16	0.04	0.08	0.10
	12	12	12	5	1	17.11	0.10	0.11	0.10
	11	11	11	11	2	17.11	0.10	0.11	0.10

Carhuaz-Fm
Chimu-Fm (Transitional zone)
Chimu-Fm
Santa-Fm

LEGEND

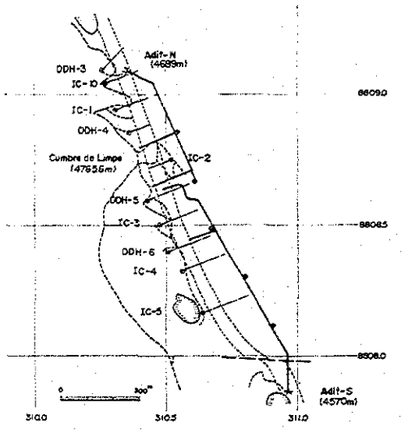
Pebble, sand, clay	Peb	
Sandstone	Ss	
Shale	Sh	
Marl	Ml	
Limstone	Ls	
Dolomitic limestone	Do-Ls	
Dolostone	Do	
Siderite	Sid	
Quartzite	Qtz	
Ore, high grade		
Ore, low grade		
Pyrite ore	Py	
Hematite ore	Hm	
Skarn	Sk	
Brecciolad rock	Brc	
Altered rock	Ald	A
Sheared zone	Shd	
Fault	F	
Fracture and joint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



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

JULY 1985
Prepared by MINDECO

0 10 20 30 40 50m

LEGEND

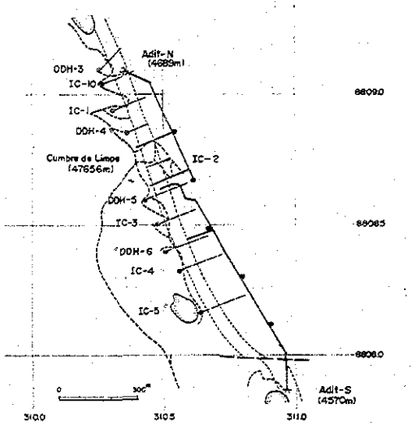
Pebble, sand, clay	Peb
Sandstone	Ss
Shale	Sh
Marl	Ml
Limestone	Ls
Dolomitic limestone	Do~Ls
Dolostone	Do
Siderite	Sid
Quartzite	Qtz
Ore, high grade	
Ore, low grade	
Pyrite ore	Py
Hematite ore	Hm
Skarn	Sk
Brecciated rock	Brc
Altered rock	Ald
Sheared zone	Shd
Fault	F
Fracture and joint	J
Bedding	

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 4575.64
700m
SX-0 4575.73
S-24 4575.72
SX-1 4576.49
SX-2
SX-3
S-23 4575.34
S-22 4574.86
600m
S-21 4574.53
S-20 4574.44
S-19 4574.28
500m
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

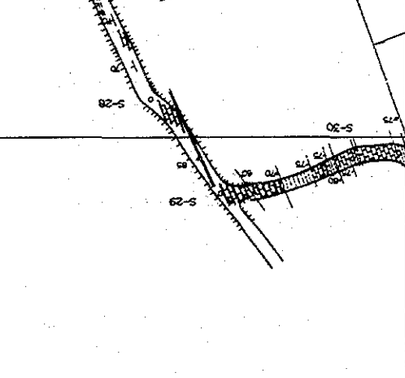
GEOLOGICAL COMPILED MAP

ADIT-S (3)

METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION-AGENCY

JULY 1983

Prepared by MINDECO



0 10 20 30 40 50m

LEGEND

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