2) Core Recovery

$$\frac{\text{Total core length recovered: } 836.20\text{m}}{\text{Total hole length drilled: } 902.60\text{m}} = 92.6\ \%$$

3) Drilling Speed and Rod Revolution

Drilling speed 2.3 cm/min. ∿ 8.0 cm/min.

Rod revolution 80 r.p.m. ∿ 200 r.p.m.

Note: In all holes, it was unable to increase the drilling and rod revolution speed because of the rod vibration caused by the frequent water loss due to the rock facies encountered during drilling.

Table II-1 Drilling Machines Used and Materials Consumed

Drilling Machine : TGM-2C.

Item	Model	Quantity	Capacity, Type, and Specification
Drilling Machine	TGM-2C (TONE)	1 set	Capacity BX: 500m Inner Diameter of Spindle 77m/m Weight (Except motor) 1,200kg Hoist Capacity 2,200kg Transmission 4 Speed Gearbox
Engine for Drill	KE-250 (Mitsubishi)	1 set	Diesel 31.5PS 1,800 r.p.m.
Drilling Pump	NAS-3C (TONE)	1 set	Piston Diameter 75m/m 60m/m 47.5m/m Capacity 130, 80, 48 ℓ/min
	MG-10 (KOKEN)	1 set	Piston Diameter 45m/m 52m/m 68m/m Capacity 40, 60, 105 ℓ/min
Engine for Pump	NS-130C	1 set	Diesel 12PS 2,200 r.p.m.
	NS-110C	1 set	Diesel 9.5PS 2,200 r.p.m.
Derrick	DR-10	1 set	Height 10m Max load capacity 5,000kg
Mud Mixer	MCE-100A	1 set	Mixing Capacity 100ℓ 4PS
Generator	YSG-2S	1 set	2KVA 100V 20A
Engine for Generator	NS-40C	1 set	5PS 3,000~3,600 r.p.m.
Drill Rod	HQ	3 pcs	Length 3.0m
	NQ	30 pcs	" 3.0m
	BQ	102 pcs	" 3.0m
Casing Pipe	112 m/m	2 pcs	Length 3.0m
	"	2 pcs	" 0.5m
	NW	26 pcs	" 3.0m
	"	2 pcs	" 1.0m
	"	2 pcs	" 0.5m
	BW	81 pcs	" 3.0m
	"	2 pcs	" 1.0m
	"	2 pcs	" 0.5m

Table Ⅱ -2 Consumables used

Description	Specification	Unit	Quantity			
			53-MJ-1	53-MJ-2	53-MJ-3	Total
Light Oil		ℓ	2,500	2,500	2,600	7,600
Mobil Oil		ℓ	50	50	50	150
Gear Oil		ℓ	25	25	25	75
Hydraulic Oil		ℓ	50	50	50	150
Grease		kg	40	40	20	100
Bentnite		kg	5,900	7,375	11,800	25,075
C. M. C.		kg	34	13	70	117
Libonite		kg	20	150	160	330
TEL STOP		kg	50	25	90	165
Mud Seal		kg	-	50	0	50
Emal 20C		ℓ	54	0	0	54
Metal Crown	116 m/m	pc	1	0	1	2
Diamond Bit	HQ W.L	pc	1	2	1	4
" "	NQ W.L	pc	3	3	4	10
" "	BQ W.L	pc	4	3	4	11
Single Core Tube	116 m/m	set	1	0	1	2
"	HQ W.L	set	1	0	1	2
"	NQ W.L	set	0	1	1	2
"	BQ W.L	set	0	1	1	2
Core Tube Head	HQ W.L	set	1	0	1	2
"	NQ W.L	set	0	1	1	2
"	BQ W.L	set	0	1	1	2
Casing Head	112 m/m	set	1	0	1	2
"	NW	set	1	0	1	2
"	BW	set	0	1	1	2
Casing Metal Shoe	112 m/m	pc	1	1	1	3
" Diamond Shoe	NW	pc	1	1	1	3
" "	BW	pc	1	1	2	4
Cement		kg	500	200	1,450	2,150
Core Box Wooden		pc	49	62	24	135
" Plastic		pc	14	0	26	40
Wire Rope 12 m/m		m				300
Manila Rope 25 m/m		m				200
Board	4.5cm x 1.80	m^2				25
Square Timber	12 cm x 3.60	pc				8
Pump Piston		set	4	4	4	12
" Packing		pc				10
V-Belt		pc				3
Nail		kg				60
Wire #10		kg				150
Core Lifter	HQ W.L	pc	2	2	1	5
"	NQ W.L	pc	3	3	5	11
"	BQ W.L	pc	4	3	7	14
Core Lifter Case	HQ W.L	pc	2	2	2	6
"	NQ W.L	pc	2	2	2	6
"	BQ W.L	pc	2	2	2	6

Table II-3 Working time by Drill Hole.

Borehole No.	Drilling	Miscellaneous			Repairs	Others	Moving operation	Total
		Casing insertion	Hole reaming	Others				
53-MJ-1	144°00'	29°00'	19°00'	135°00'	36°00'	133°00'	422°00'	918°00'
53-MJ-2	133°00'	30°00'	18°00'	125°00'	13°00'	168°00'	263°00'	750°00'
53-MJ-3	136°00'	41°00'	73°00'	135°50'	56°00'	234°30'	75°00'	751°20'
Total								

Table II-4 Results of diamond core drilling.

Drill hole No.	Type of machine	Drilling period	Drilling length	Core		No. of drilling shift			Drilling speed		Remarks
				Length	Recovery	Drilling	Casing etc.	Total	* m/shift	** m/shift	
53-MJ-1	TGM-2C	COM 24th Jul.1978 FIN 11th Aug.1978	302.10m	292.15m	96.7%	40	5	45	7.55	6.71	-
53-MJ-2	TGM-2C	COM 23th Aug.1978 FIN 6th Sep.1978	300.00	282.30	94.1	38	2	40	7.89	7.50	-
53-MJ-3	TGM-2C	COM 20th Jun.1978 FIN 15th Jul.1978	300.50	261.75	87.1	49	9	58	6.13	5.18	-
Total			902.60	836.20	92.6	127	16	143	7.11	6.31	

* Drilled per one shift covering net drilling operations.
** Drilled per one shift covering total works conducted.

Notes: COM: Commenced
FIN: Finished

Table II-5 Moving operations.

Item	Hole No.	53-MJ-1		53-MJ-2		53-MJ-3											
Moving operation	In	21th May 1978		24th Jul. 1978		4th Jun. 1978											
	Out	23th Jul. 1978		22th Aug. 1978		19th Jun. 1978											
		12th Aug. 1978		7th Sep. 1978		16th Jun. 1978											
		12th Aug. 1978		16th Sep. 1978		16th Jun. 1978											
		Days	Man-shifts	Days	Man-shifts	Days	Man-shifts	Days	Man-shifts	Days	Man-shifts	Days	Man-shifts	Days	Man-shifts	Days	Man-shifts
Preparation	Access road	39	553.7	12	96.5	12	162.8										
	Haulage	3	82.5	8	365.1	3	27.5										
	Installation	2	55.0	2	20.0	3	33.3										
	Water pipe	1	27.5	3	18.6	1	10.0										
	Test run, etc.	1	5.0	1	5.0	1	4.0										
	Total	46	723.7	26	505.2	20	237.6										
Removal	Dismantling	0.7	19.5	0.7	7.9	0.7	16.1										
	Pipe removal	0.3	8.3	1.3	9.8	0.3	6.9										
	Haulage			7	283.4												
	Road reinstatement																
	Others																
	Total	1	27.8	9	301.1	1	23.0										
Grand Total		47	751.5	35	806.3	21	260.6										

Table II-6 Operational results by drill hole, No. 53-MJ1.

Working Period

	Period	Number of Days	Actual Working Days	Day Off	Total Number of Workers
Preparation	21th May 1978~23th Jul.1978	50	46	4	723.7
Drilling	24th Jul.1978~11th Aug.1978	19	16	3	266.1
Removing	12th Aug.1978	1	1	0	27.8
Total	21th May 1978~12th Aug.1978	70	63	7	1,017.6

Drilling Length

Planned Length	300.00 m	Over-burden	- m
Increase or Decrease in Length	+ 2.10 m	Core Length	292.15 m
Length Drilled	302.10	Core Recovery	96.7 %

Core Recovery for each 100 m section

Depth of Hole	Section	Total
0.00~105.30m	98.2 %	98.2 %
105.30~191.20m	97.8 %	98.0 %
191.20~302.10m	94.5 %	96.7 %
m	%	%
m	%	%
m	%	%

Working Time

Drilling	144°00'	29.0 %	15.7 %
Hoisting & Lowering Rod			
Hoisting & Lowering I.T.			
Miscellaneous	183°00'	36.9 %	19.9 %
Repairing	36°00'	7.3 %	3.9 %
Others	133°00'	26.8 %	14.5 %
Total	496°00'	100 %	54.0 %
Removing Preparation	398°00'		43.4 %
Removing Moving	24°00'		2.6 %
G. Total	918°00'		100 %

Efficiency of Drilling

302.10 m/Working Period	4.32 m/day
302.10 m/Working Days	4.80 m/day
302.10 m/Drilling Period	15.90 m/day
302.10 m/Net Drilling Days	18.88 m/day
Total workers/ 302.10 m	3.37 Man/m
Total Drilling Workers/302.10 m	0.88 Man/m

Casing Pipe Inserted

Pipe Size & Meterage	Inserted Length (%) / Drilling Length	Recovery of Casing Pipe
112m/m 7.00m	2.3 %	100 %
NW 78.10m	25.9 %	100 %
BW 183.00m	60.6 %	100 %

Remarks

G : Grand

I.T.: Inner Tube

Table II-7 Operational results by drill hole, No. 53-MJ2.

Working Period

	Period	Number of Days	Actual Working Days	Day Off	Total Number of Workers
Preparation	24th Jul.1978∿22th Aug.1978	30	26	4	505.2
Drilling	23th Aug.1978∿ 6th Sep.1978	15	14	1	200
Removing	7th Sep.1978∿16th Sep.1978	10	9	1	301.1
Total	24th Jul.1978∿16th Sep.1978	55	49	6	1,006.3

Drilling Length

Planned Length	300.00 m	Over-burden	- m
Increase or Decrease in Length	- m	Core Length	282.30 m
Length Drilled	300.00	Core Recovery	94.1 %

Core Recovery for each 100 m section

Depth of Hole	Section	Total
0.00∿101.00m	86.9 %	86.9 %
101.00∿201.00m	96.1 %	91.5 %
201.00∿300.00m	99.4 %	94.1 %

Working Time

Drilling	133°00'	27.3 %	17.7 %
Hoisting & Lowering Rod	-		
Hoisting & Lowering I.T.	-		
Miscellaneous	173°00'	35.5 %	23.1 %
Repairing	13°00'	2.7 %	1.7 %
Others	168°00'	34.5 %	22.4 %
Total	487°00'	100 %	64.9 %
Removing: Preparation	179°00'		23.9 %
Removing: Moving	84°00'		11.2 %
G. Total	750°00'		100 %

Efficiency of Drilling

300.00 m/Working Period	5.45 m/day
300.00 m/Working Days	6.12 m/day
300.00 m/Drilling Period	20.00 m/day
300.00 m/Net Drilling Days	21.43 m/day
Total workers/ 300.00 m	0.30 Man/m
Total Drilling Workers/ 300.00 m	1.50 Man/m

Casing Pipe Inserted

Pipe Size & Meterage	Inserted Length (%) / Drilling Length	Recovery of Casing Pipe
112m/m 7.10m	2.4 %	100 %
NW 60.00m	20.0 %	100 %
BW 201.00m	67.0 %	100 %

Remarks

G : Grand

I.T.: Inner Tube

Table II-8 Operational results by dril hole, No. 53-MJ3.

Working Period

	Period	Number of Days	Actual Working Days	Day Off	Total Number of Workers
Preparation	4th Jun.1978~19th Jun.1978	16	16	0	237.6
Drilling	20th Jun.1978~15th Jul.1978	26	24	2	447.0
Removing	16th Jul.1978	1	1	0	23.0
Total	4th Jun.1978~16th Jul.1978	43	41	2	707.6

Drilling Length

Planned Length	300.00 m	Over-burden	- m
Increase or Decrease in Length	+ .50 m	Core Length	261.75 m
Length Drilled	300.50	Core Recovery	87.1 %

Core Recovery for each 100 m section

Depth of Hole	Section	Total
0.00 108.20m	81.7 %	81.7 %
108.20 196.40m	87.2 %	84.2 %
196.40 300.50m	92.6 %	87.1 %
m	%	%
m	%	%
m	%	%

Working Time

Drilling	136°00'	20.1 %	18.1 %
Hoisting & Lowering Rod	-		
Hoisting & Lowering I.T.	-		
Miscellaneous	249°50'	36.9 %	33.2 %
Repairing	56°00'	8.3 %	7.5 %
Others	234°30'	34.7 %	31.2 %
Total	676°20'	100 %	90.0 %
Removing: Preparation	57°00'		7.6 %
Removing: Moving	18°00'		2.4 %
G. Total	751°20'		100 %

Efficiency of Drilling

300.50 m/Working Period	6.99 m/day
300.50 m/Working Days	7.33 m/day
300.50 m/Drilling Period	11.56 m/day
300.50 m/Net Drilling Days	12.52 m/day
Total workers/ 300.50 m	2.35 Man/m
Total Drilling Workers/ 300.50 m	1.49 Man/m

Casing Pipe Inserted

Pipe Size & Meterage	Inserted Length (%) / Drilling Length	Recovery of Casing Pipe
112m/m 4.00m	1.3 %	100 %
NW 31.50m	10.5 %	100 %
BW 168.50m	56.1 %	91.1 %

Remarks

G : Grand

I.T.: Inner Tube

Table II-9 Specifications of diamond bits.

Size	Type	Carats per bit	Matrix	Stones per carat	Water way	Number	Remark
HX	HQ-WL	40	Z	20~40	6	E-2802	Reset
	"	"	Z	"	"	F-1158	"
	"	"	E	"	"	C-8057	"
	"	"	T1	"	"	1958	"
NX	NQ-W	30	ZZ	35~40	6	D-1354	"
	"	"	"	"	"	D-1355	"
	"	"	"	"	"	D-1356	"
	"	"	"	"	"	D-1357	"
	"	"	Z	"	"	D-1332	"
	"	"	"	"	"	D-1333	"
	"	"	"	"	"	D-1334	"
	"	"	"	"	"	D-1335	"
	"	"	E	"	"	18521	"
	"	"	T1	"	"	SCTN-5	"
BX	BQ-WL	20	E	35~40	4	72693	"
	"	"	"	"	"	72694	"
	"	"	"	"	"	72695	"
	"	"	"	"	"	72696	"
	"	"	T1	"	"	1964	"
	"	"	"	"	"	1965	"
	"	"	"	"	"	1966	"
	"	"	"	"	"	1967	"
	"	"	Z	"	"	1373	"
	"	"	"	"	"	1374	"
	"	"	Y	"	"	W-12755	"

Table II-10 Drilling meterage of diamond bits.

Item	Size	Type	Bit No.	Drilling meterage by drill hole. Unite meter			Total
				53-MJ-1	53-MJ-2	53-MJ-3	
Bit	HX	HQ-WL	E-2802	54.50			54.50
			F-1158		31.80		31.80
			C-8057		28.20		28.20
			1958			7.90	7.90
			Total	54.50	60.00	7.90	122.40
	NX	NQ-WL	D-1354	38.30			38.30
			D-1355		42.50		42.50
			D-1356			25.00	25.00
			D-1357			13.60	13.60
			D-1332	40.70			40.70
			D-1333		51.80		51.80
			D-1334		46.70		46.70
			D-1335			40.20	40.20
			18521			38.20	38.20
			SCTN-5	49.50			49.50
			Total	128.50	141.00	117.00	386.50
	BX	BQ-WL	72693	32.90			32.90
			72694	30.60			30.60
			72695		39.30		39.30
			72696			40.40	40.40
			1964	29.50			29.50
			1965		17.70		17.70
			1966			41.80	41.80
			1967			46.60	46.60
			1373		42.00		42.00
			1374			42.70	42.70
			W-12755	26.10			26.10
			Total	119.10	99.00	171.50	389.60

Chapter 3 Geology and Ores of three Drill Holes

3-1 Geology and Ores of each Drill Hole.

3-1-1 No. 53-MJ1 Hole (Depth: 302.1 m)

(1) Between 0 m and 6.00 m,the core consists of surface soil.

(2) Between 6.00 m and 73.8 m, the core consists of grey fine grained silty or muddy dolostone. Partly the brecciation is observed coexisting with recrystallized dolomite. Between 60.5 m and 62.2 m, Bryozoan, coral fragments and foraminifera are observed as fossils. The limonitization is partly recognized. The bedding plane in this vicinity is 50° to 65° to the direction of the drilling.

(3) Between 73.8 m and 107.4 m, the core consists of recrystallized and brecciated dolostone. It shows grey in color and the crystal size is fine grain to medium grain. Sandy dolostone is partially observed. The bedding plane here shows 40° to 60° to the direction of the drilling. Under the microscope, it is composed of sparry dolomite (in lenticular form, 0.5mm x 1mm) and the smaller grains of crystalline dolomite. Opaque mineral shows mostly very fine grained up to 20μ in size and in irregular shape. It fills among the sparry dolomite. The only weak limonitization is partly observed, but the mineralization of lead and zinc is not recognized. The value of chemical analysis of Pb, Zn shows 20 to 30 ppm and near 45 m, the value of Zn shows maximum of this hole, 328 ppm (53103).

(4) Between 107.4 m and 168.9 m, the core is composed of fine to medium grained crystalline dolostone, partly including Breccia Dolomite. Many veinlets of white dolomite (0.2 to 1 cm, in width) are recognized there. The bedding plane here shows 50° to 60° to the direction of the drilling. From the Mg value of chemical analysis (11.1 to 13.0 %), this dolostone consists almost of pure dolomite. The limonitization is weak and both Pb and Zn

values are extremely low showing about 20 ppm.

(5) Between 168.9 m and 225.3 m, the core consists dominantly of the dolostone with so-called zebra-structure. The recrystallized and brecciated dolomite is partly intercalated to zebra-structure. The bedding plane is undistinguishable, but is slightly presumed showing 40° to 70° to the direction of the drilling. The zebra pattern is cross cutting to the bedding plane and is zigzagged irregularly. Under the microscope, the white part of the zebra-structure consists of megacrystals of dolomite, and the dark grey part consists of medium crystals. The impurities are very few (Mg 11.1 ∿ 13.0 %), the only chalcedonic quartz (100 to 300μ in size) is slightly recognized. Opaque minerals are slightly recognized existing within crystallized dolomite. They show irregular shape or microsphere (20 to 40μ in diameter). An argillization is observed from the depth 200.8 m, to 216 m, and a limonitization is also recognized. Both values of Pb and Zn are low.

(6) Between 225.3 m and 243.7 m, the core is composed of dark grey, fine to medium grained, crystallized dolostone partly intercalating calcareous dolostone. At 242 m, black bituminous muddy dolostone is intercalated. The bedding plane here 70° to the direction of the drilling. A weak limonitization is recognized. Both values of Pb, Zn analysis are low. Alteration is none.

(7) Between 243.7 m and 259.6 m, the core is dominantly composed of recrystallized, brecciated dolostone,the breccias of dark grey and medium crystallized dolostone cemented by megacrystals of white dolomite. Under the microscope, the euhedral or subhedral dolomite constitutes mosaic texture. The smaller crystals (15μ to 150μ in size) may be compared with breccias of dolostone. The larger crystals (200μ to 600μ in size) may be compared recrystallized white dolomite. A few calcite and chalcedonic quartz are recognized. Opaque minerals are scarcely observed and they exist

in the shape of irregular microsphere aggregates within the smaller crystals or among crystals. Both mineralization and alteration is almost none, the values of Pb and Zn analysis are very low.

(8) Between 259.6 m and 271.2 m, the core consists of dark grey fine grained silty dolostone and bituminous calcareous dolostone is partly intercalated. The bedding plane here shows about 70° to the direction of the drilling. The weak limonitization and the brecciation is recognized everywhere and values of Pb and Zn are low.

(9) Between 271.2 m and 285.1 m, the core is dominantly composed of recystallized breccia dolostone. The bedding plane here is recognized as the angle 40°-50° to the direction of the drilling, but in the parts of breccia-dolostone, unclearly. An alteration is not recognized, but only from 279.8 m to 282.8 m, some fine grained pyrite are observed in white recrystalline dolomite. Both values of Pb and Zn are low.

(10) Between 285.1 m and 302.1 m (the bottom), the core consists of dark grey fine crystalline dolostone. The recrystallized and brecciated dolostone is partly intercalated in this part. The bedding plane near here is about 50° to the direction of the drilling. Both limonitization and argillization are weakly recognized and the values of Pb and Zn are low.

3-1-2 No. 53-MJ2 (depth 300.0 m)

(1) Between 0 m and 54.7 m, the core consists of grey fine crystallized dolostone. The zebra-structure is partly observed. As the recovery of this part is not in good condition and the core is enoughly crushed, the bedding plane here is not exactly decided. It is only presumed about 60°-70° to the direction of the drilling. A weak limonitization and argillization is recognized. Both values of Pb and Zn are low.

(2) Between 54.7 m and 77.65 m, the core is dominantly composed of dolostone with so-called zebra-structure. Generally, the crushing is observed

everywhere, the bedding plane is not able to distinguish exactly. The crystal grains of dolomite are very large and their size are up to 2 mm. The zebra-structure is very slightly interlayered by sandy dolostone. A limonitization is slightly recognized and an argillization is scarcely observed. Both values of Pb and Zn are low.

(3) Between 77.65 m and 84.7 m, the core is composed of black muddy dolostone. The bedding plane in this vicinity is 50° to the direction of the drilling. Calcite veinlets (0.1-0.5 cm, in width) are observed. A only weak argillization if recognized.

(4) Between 84.7 m and 144.8 m, the core is composed of sandy dolostone and conglomeratic dolostone is alternating layers. The pebbles of this conglomeratic dolostone are derived from muddy or fine grained crystalline dolostone and their morphology is subrounded or angular of 1 cm - 3 cm, in diameter. The matrix is almost composed of sparry dolomite and the crystals are grown largely in size. The zebra-structure is partly accompanied with sandy dolostone, and the Breccia Dolomite is also associated. The bedding plane in this vicinity is 40°-70° to the direction of the drilling. Under the microscope, Breccia Dolomite is classified as sparry dolostone. The impure parts are composed of micritic dolomite, detrital quartz and chalcedonic quartz. The muddy parts occupy about 10-15% in whole area. Opaque minerals show irregular shape also in microsphere and cubic crystals (Sample No. 53206). Both mineralization and alteration are very weak only at 105 m, and 135 m, the impregnation of micro pyrite is recognized. Both values of Pb and Zn are low.

(5) Between 144.8 m and 181.2 m, the core is composed of dark grey sandy dolostone and muddy dolostone in alternating layers. The Breccia Dolomite is slightly accompanied. The bedding plane is 50°-70° to the direction of the drilling. Under the microscope, this specimen is wholly dolosparite and is

composed of over 90% dolomite. The remnant 10% is composed of amorphous material, clay minerals, detrital quartz and opaque minerals almost pyrite (53211). No mineralization about Pb and Zn except pyritization is observed.

(6) Between 181.2 m and 234.5 m, the core composed of dark grey to black muddy limestone and calcareous siltstone. The both are gradually changed and include appreciably bituminous part. Fossils i.e. ammonite, bivalves and algal debris are included. The stratum here is well stratiformed and the bedding plane is 50°-60° to the direction of the drilling. Under the microscope, the specimen here may be called biomicrite petrographically. It is composed of ostracods, gastropods of sparry calcite and the matrix constructed of pellet and micritic calcite. Detrital quartz is also included up to 10 %. Opaque minerals are very fine grained and are scattered in the matrix. They are also recognized in vein or in irregular aggregates (53215). Between 190 m and 191 m, pyrite is strongly concentrated. The sample of 190.6 m shows the maximum value of Zn analysis i.e. 19,080 ppm. Under the microscope, micrograins of sphalerite are slightly observed around the concentrated pyrite (53213). Pyrite shows euhedral form, 200μ to 500μ in size, consists of the polymerized aggregates constructed of microspheres.

(7) Between 234.5 m and 272.2 m, the core consists of well-stratified black calcareous siltstone and calcareous sandstone. Though bituminous parts are observed, no fossil is recognized. The bedding plane here is 45°-65° to the direction of the drilling. Between 260.3 m and 266.0 m, fine grained pyrite impregnation is recognized.

(8) Between 272.2 m and 300.0 m (the bottom), the core consists of silty black limestone. Here shows well-stratified layer and the bedding plane is 55°-70° to the direction of the drilling. Between 284 m and 300 m, very fine grained pyrite impregnation is observed. Both values of Pb and Zn are low.

3-1-3 No. 53-MJ3 (Depth 300.5 m)

(1) Between 0 m and 2.95 m, the core is composed of light yellowish brown strongly weathered sandstone.

(2) Between 2.95 m and 22.2 m, the core consists of grey fine crystallized limestone. Interlayered sandy limestone is partly observed. The bedding plane is not clear, it is only presumed to be about 70° to the direction of the drilling. Between 17.3 m, and 22.2 m, the fossil zone is formed as brachiopods, bryozoan and coral fragments are concentrated. Neither mineralization nor alteration is recognized.

(3) Between 22.2 m and 54.3 m, the core consists of muddy to silty limestone rich in brachiopods fossils. The bedding plane here is 40°-50° to the direction of the drilling. As a only weak limonitization is recognized, both values of Pb and Zn show about 50 to 300 ppm.

(4) Between 54.3 m and 104.5 m, the core consists of grey fine crystallized and muddy limestone. The upper part is pretty abundant in fossils those are determined as brachiopods, echinoids fragments, ostracods and spines. Under the microscope, the specimen is classified as detrital sparite included quartz detritus up to 25 %. Calcite is sparry and aggregates in subhedral to euhedral form. Micritic calcite filled among sparry calcite, 2 to 5μ in size, coexists with amorphous material, clay minerals and opaque minerals. Although megascopically, galena grains are recognized among sparry calcite at the 3 points, 58.75 m, 71.1 m, and 84.3 m, the Pb values of analysis are low showing about 600 ppm (53304, 53305).

(5) Between 104.5 m and 134.6 m, the core consists of muddy to silty limestone. Fossils such as brachiopods are partly observed. The bedding plane here is 40° to 50° to the direction of the drilling. Under the microscope, the specimen here is designated as bioclasparmicritic composed of calcite up to about 75 % and the remnent as detrital quartz, amorphous

material, clay minerals and so on. Algal debris is partly included. At 123.1 m, the weak galena impregnation is recognized, but the Pb value of analysis is only 158 ppm.

(6) Between 134.6 m and 142.85 m, the core consists of dark grey sandy limestone. In lower part, bryozoan, algal debris and shell of Brachiopods are included. A weak limonitization is recognized.

(7) Between 142.85 m and 149.55 m, the core consists of grey fine grained crystalline limestone. The bedding plane here is unclear. A weak limonitization is recognized.

(8) Between 149.55 m and 162.3 m, the core consists of fossiliferous muddy to silty limestone. Brachiopods, Bryozoan fragments and shells are sufficiently observed as fossils and at 157 m, they are particularly condensed.

(9) Between 162.3 m and 205.6 m, the core consists of grey fine grained limestone partly crystallized. The bedding plane is not clear, only at the lower part it is 15° to 50° to the direction of the drilling. A weak limonitization is generally observed. At 184 m, an argillization is recognized.

(10) Between 205.6 m and 206.6 m, the core is composed of greyish brown sandy dolostone.

(11) Between 206.6 m and 242.8 m, the core consists of grey fine grained limestone partly intercalated silty limestone. The bedding plane is 20° to 30° against the direction of the drilling. A slightly weak limonitization is observed.

(12) Between 242.8 m and 243.5 m, the core consists of greyish brown dolostone.

(13) Between 243.5 m and 266.0 m, the core consists of brownish grey to sandy limestone. The bedding plane makes an angle of 15° to 40° to the direction of the drilling. A weak limonitization is recognized.

(14) Between 266.0 m and 298.3 m, the core consists of strongly limonitized grey medium grained crystalline dolomitic limestone. The bedding plane here is 20° to 30° to the direction of the drilling. Megascopically, neither lead nor zinc minerals are recognized, but the value of Zn shows 2,210 ppm(53318). At 279 m and 284 m, the pyrite impregnation is recognized.

(15) Between 298.3 m and 300.0 m (bottom), the core is composed of black muddy limestone and grey fine sandy limestone.

3-2 The Stratigraphical Correlation of three Drill Holes and Summary.

The stratigraphical correlation in detail based on geological survey, trenching survey and the conclusion had worked until 1977, has aforesaid in the part I, chapter 2. Thus, showing to which submember or stratum these cores of this year may be correlated, the conclusion is described as below.

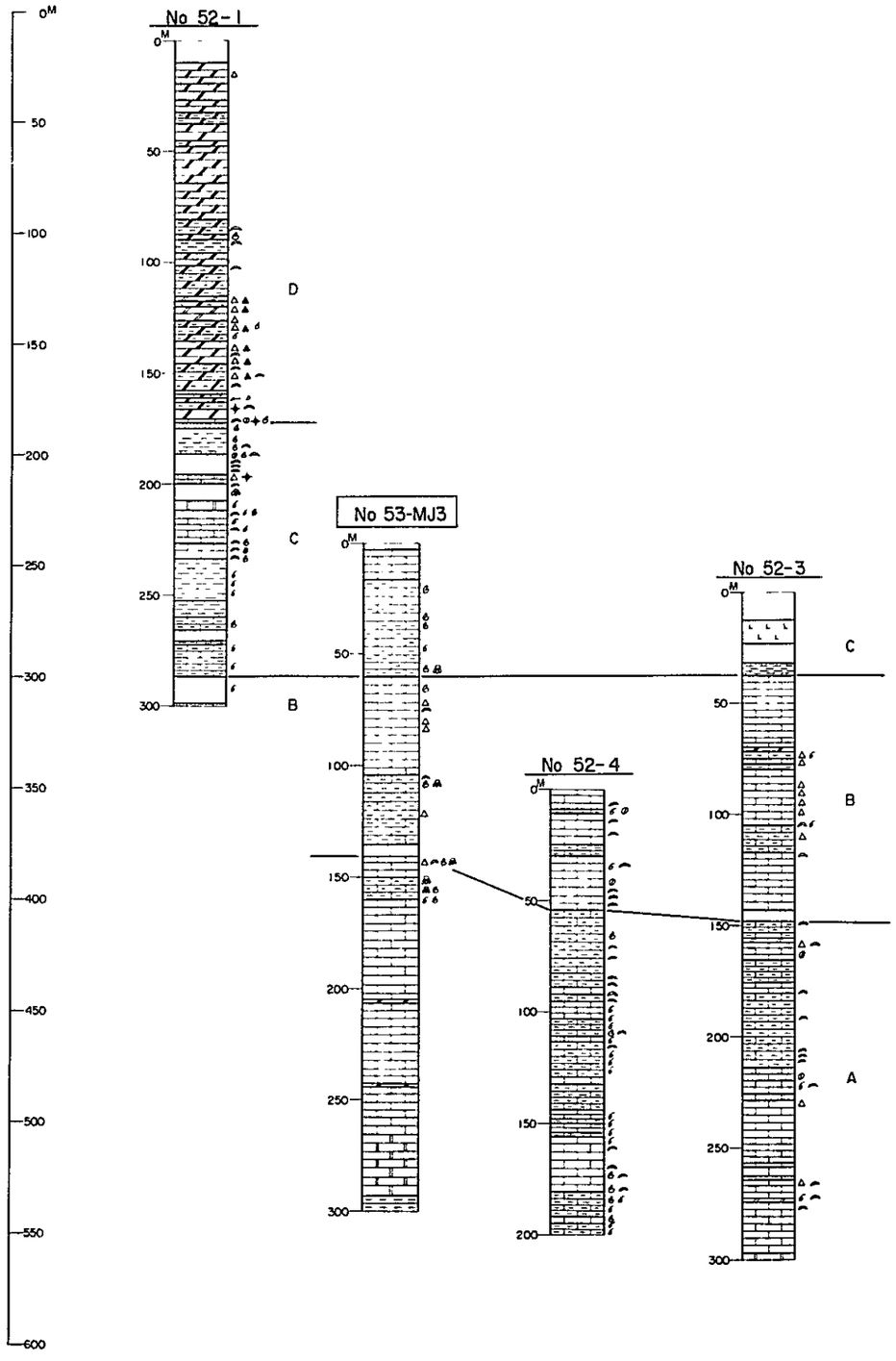
3-2-1 No. 53-MJ1, No. 53-MJ2.

Both these cores in the Tambo maria area are wholly correlated to the III member, Pucara Group (Fig. II-2). In each core, at 260 m or 175 m, although the dolostone with zebra-structure which is correlated same horizon of the Tambo Maria showing discovered in 1976, is exactly caught, any mineralizations are not recognized. In all these two cores but the core of the hole No. 53-MJ2 in which,only a weak sphalerite impregnation (Zn 19,080 ppm) is recognized in mudstone, lower horizon than Zebra Dolomite, any mineralization of lead and zinc are not recognized.

3-2-2 No. 53-MJ3

This core drilled in the San Roque area is wholly correlated to the IV member, Pucara Group. Detailed point of view, the rock facies aforementioned in 3-1-3, (1) to (15), is compared with A, B and C submember (cf. chapter 2, 2-3-1, part I). Then, the part (7) to (15) composed mainly of limestone intercalating dolostone is correlated A submember, the part (4) to

(6) composed of muddy to sandy limestone is B submember, and (1) to (3) composed of limestone is submember C. As to mineralization, only a slight weak lead impregnation is recognized and it is classified as the disseminated type aforesaid (cf. chapter 5, part I).



LEGEND

- Limestone
- Muddy limestone
- Sandy limestone
- Sandy dolomitic limestone
- Dolomitic limestone
- Calcareous dolostone
- Dolostone
- Muddy dolostone & Silty dolostone
- Sandy dolostone & Dolomitic sandstone
- Sandstone
- Muddy sandstone
- Shale & Siltstone
- Igneous rock
- A,B,C,D Submember

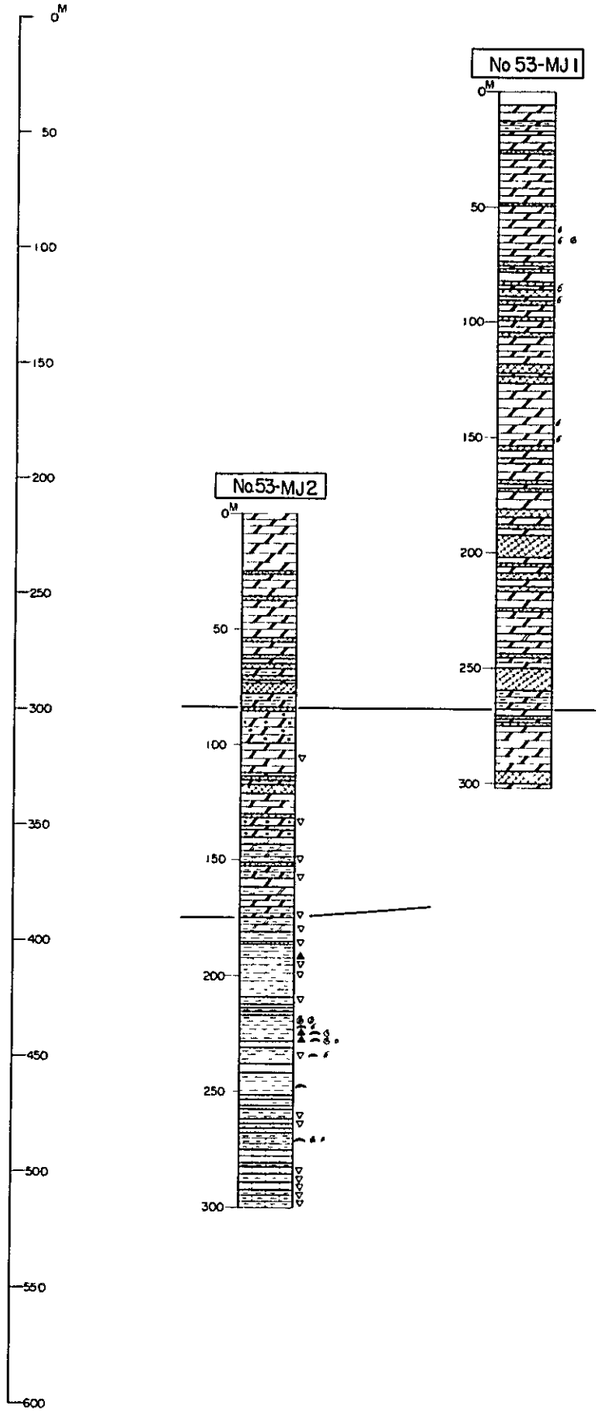
FOSSILS

- Algal debris or Coral fragments
- Bryozoan or Gastropods
- Foraminifera or Microfossil
- Bivalves
- Brachiopods
- Echinoids

MINERALIZATION

- Galena
- Spholerite

Fig. II-1. Columnar Section of the Drill Holes in the San Roque Area



LEGEND

- Limestone
- Muddy limestone
- Sandy limestone
- Dolomitic limestone
- Calcareous dolostone
- Muddy calcareous dolostone
- Sandy calcareous dolostone
- Dolostone
- Zebra Dolomite or Breccia Dolomite
- Conglomeratic dolostone
- Muddy dolostone & Silty dolostone
- Sandy dolostone & Dolomitic sandstone
- Sandstone
- Siltstone

FOSSILS

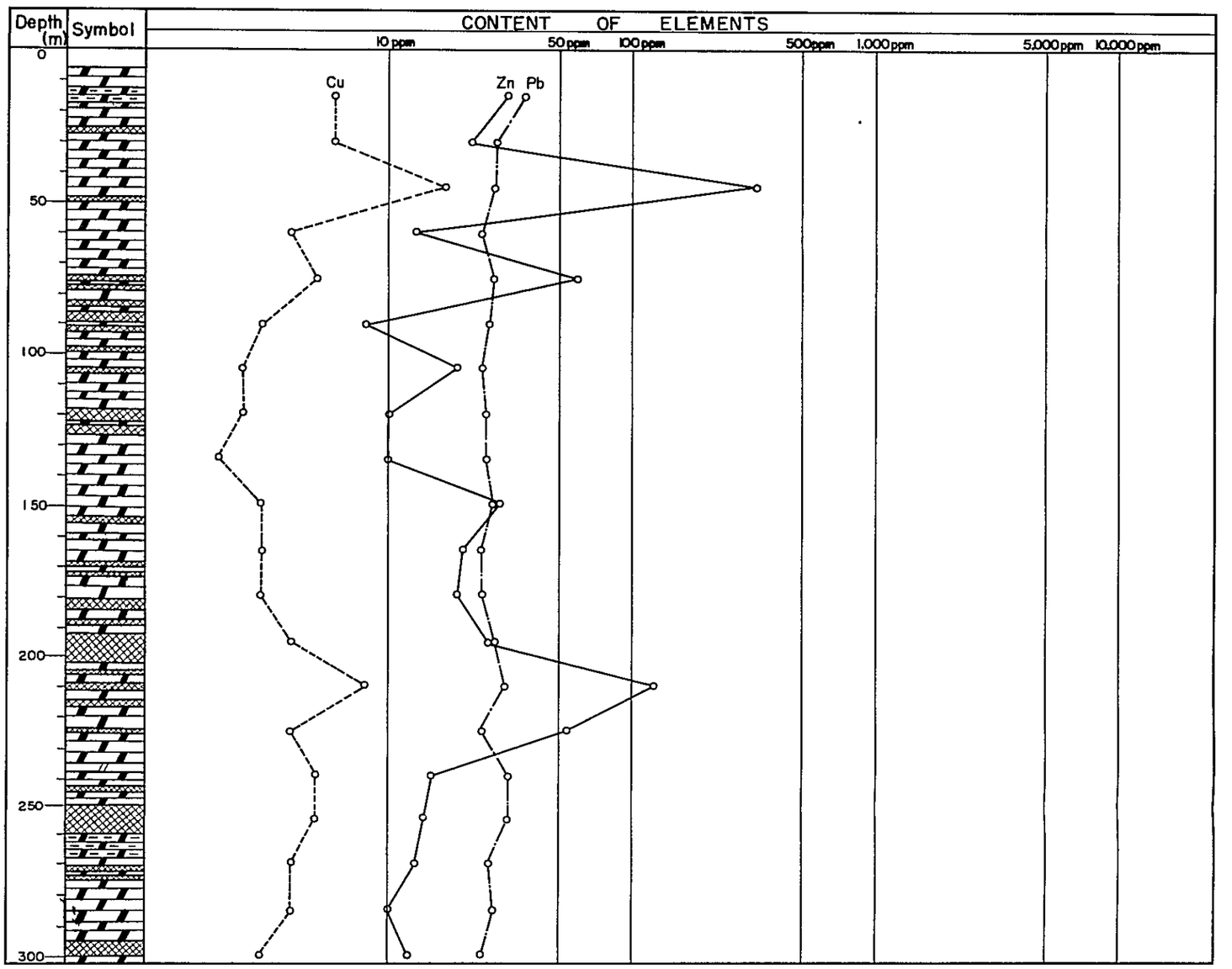
- Algal debris or Coral fragments
- Bryozoan or Gastropods
- Foraminifera or Microfossil
- Ammonite
- Bivalves

MINERALIZATION

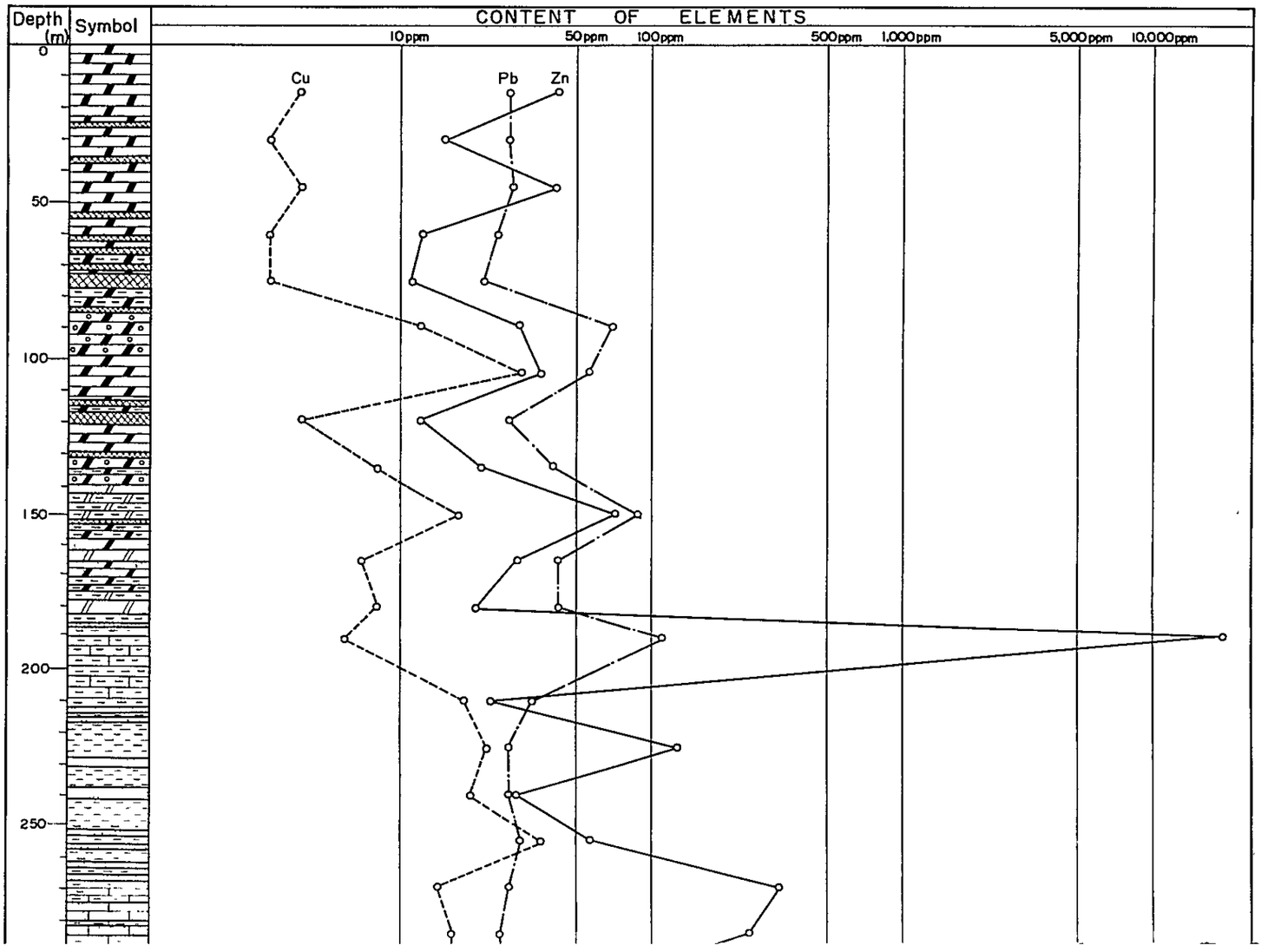
- Galena
- Sphalerite
- Pyrite

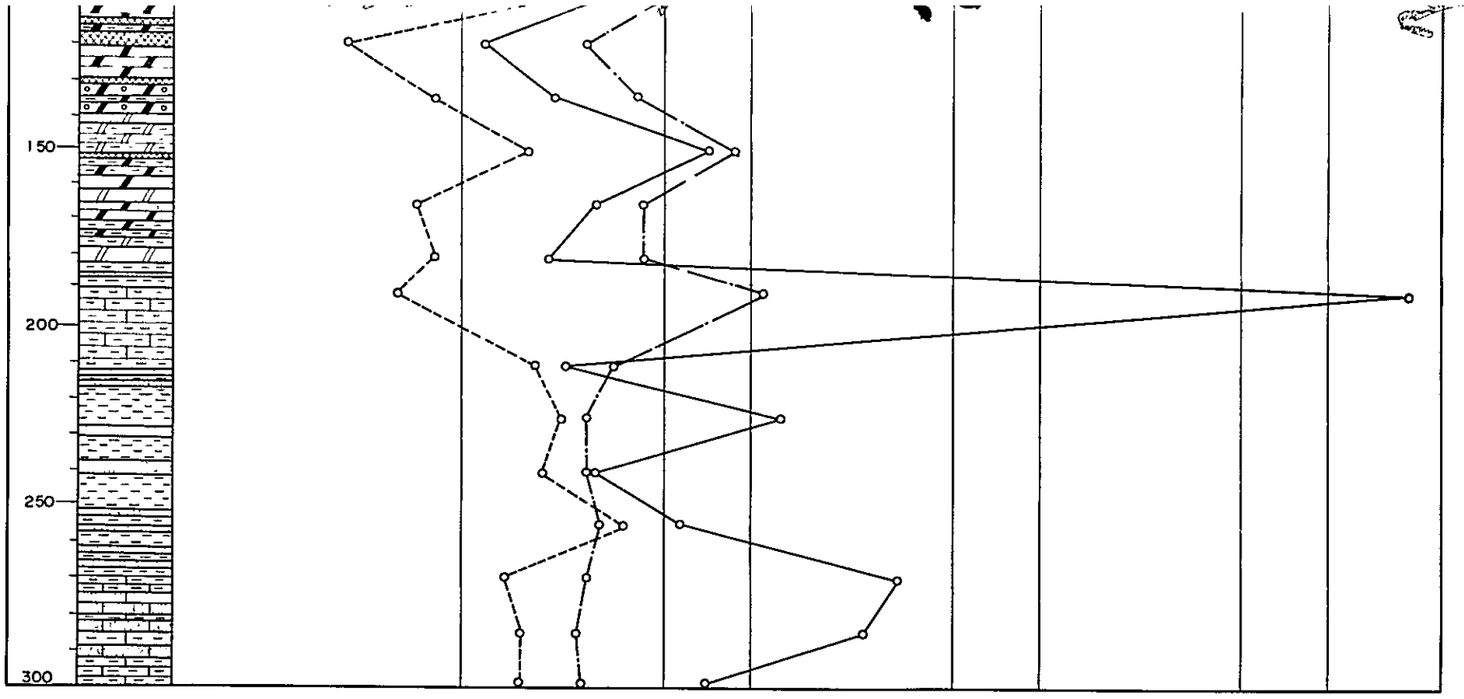
Fig. II-2. Columnar Section of the Drill Holes in the Tambo Maria Area

No. 53 – MJ 1

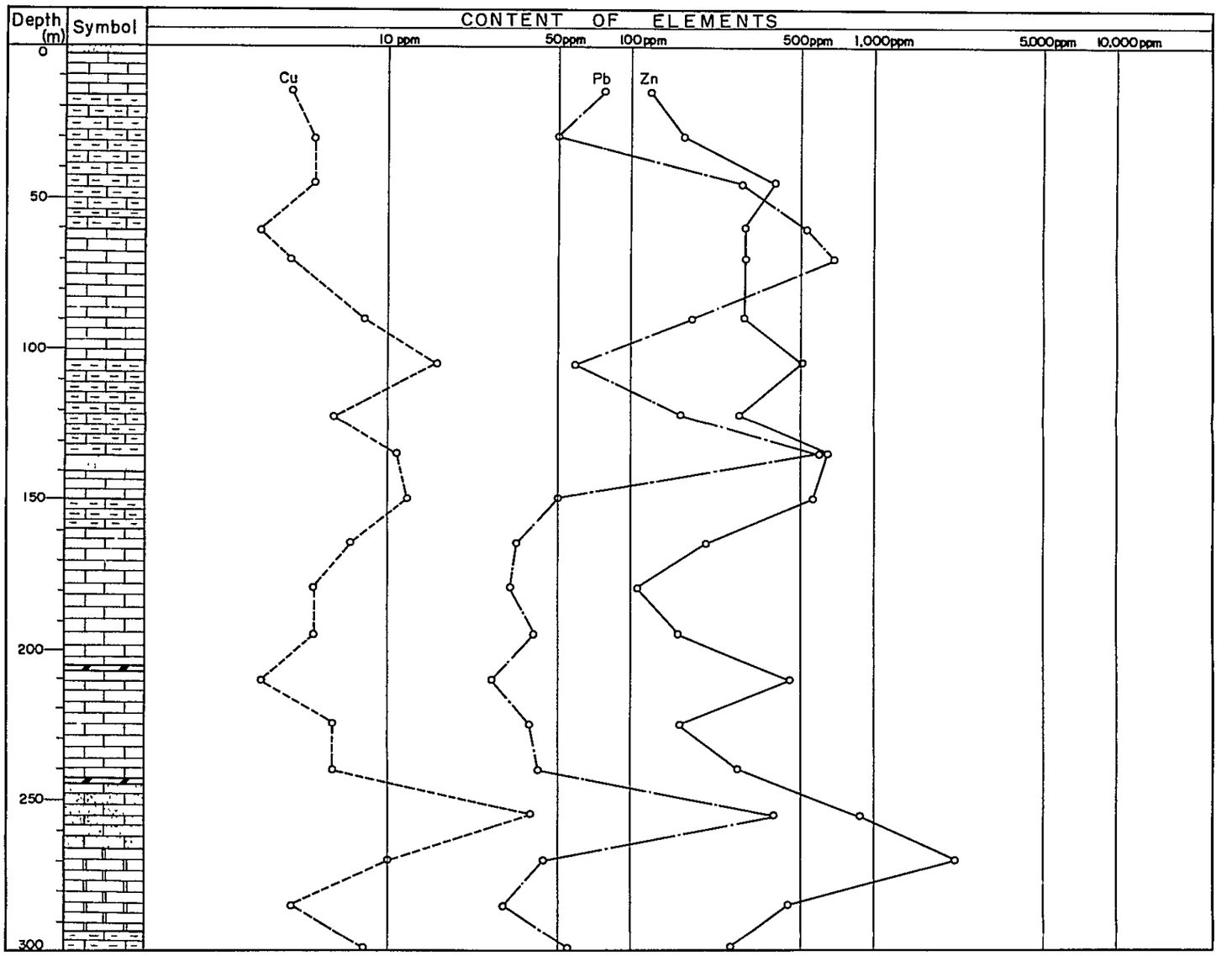


No. 53 – MJ 2





No. 53 – MJ 3



Geological Symbol

- Limestone
- Muddy limestone
- Sandy limestone
- Dolomitic limestone
- Muddy calcareous dolostone
- Sandy calcareous dolostone
- Calcareous dolostone
- Dolostone
- Zebra Dolomite or Breccia Dolomite
- Conglomeratic dolostone
- Muddy dolostone
- Sandy dolostone
- Sandstone
- Siltstone

Fig. II-3. Copper, Lead and Zinc content of each Drill Hole

APPENDICES

PART I

Geological Survey

LIST OF APPENDICES

A. I - 1 List of rock samples.

Geological Index

Sedimentary rocks		Igneous rocks		
Pucara Group ... PU		Tertiary	Dolerite	TD
Mitu Group ..... MI			Quartz porphyry & Granite porphyry	MP

Location Index

Gungapa ..... GG
Tambo de Vaca ..... TV
Huarao Grande ..... HG
San Roque ..... SR
Tambo Maria Trench T.T-15
San Roque Trench S.T-1

Index of X-ray analysis

X-ray diffraction ..... ○
X-ray microanalysis ..... △

Sample No.	Field No.	Location	Geological unit	Rock Name	Geochemical analysis	Thin section	Polished section	Chemical analysis (ore)	X-ray analysis	Fossil	Minor element analysis
925	A701	TV	PU	Limestone	( )						
926	A702	TV	PU	Limestone	( )						
927	A703	TV	PU	Zebra Dolomite	( )						
928	A704	TV	PU	Limestone	( )						
929	A705	TV	PU	Limestone	( )						
930	A707	TV	PU	Limestone	( )						
931	A708	TV	PU	Limestone	( )						
932	A709	TV	PU	Limestone	( )						
933	A723	GG	PU	Limestone	( )						
934	A724	GG	PU	Limestone	( )						
935	A725	GG	PU	Limestone	( )						
936	A726	GG	PU	Limestone	( )						
937	A727	GG	PU	Zebra Dolomite	( )						
938	A730	TV	PU	Limestone	( )						
939	A732	TV	PU	Dolomitic limestone	( )						
940	A733	GG	PU	Limestone	( )						
941	A734	GG	PU	Dolostone	( )	( )					
942	A735	GG	PU	Dolostone	( )						
943	A736	GG	PU	Dolostone	( )						
944	A737	GG	PU	Limestone	( )						
945	A738	GG	PU	Limestone	( )						

Sample No.	Field No.	Location	Geological unit	Rock Name	Geochemical analysis	Thin section	Polished section	Chemical analysis (ore)	X-ray analysis	Fossil	Minor element analysis
946	A739	GG	PU	Limestone	○						
947	A741	GG	PU	Dolostone	○						
948	A743	GG	PU	Zebra Dolomite	○						
949	A746	GG	PU	Dolostone	○	○				○	
950	A747	GG	PU	Dolostone	○						
951	A748	GG	PU	Limestone	○						
952	A750	GG	PU	Limestone	○						
953	A751	GG	PU	Dolostone	○						
954	A752	HG	PU	Galena Ore			○	○			
955	A753	HG	PU	Dolostone	○						
956	A754	HG	PU	Dolostone	○						
957	A755	HG	PU	Dolostone	○						○
958	A756	HG	PU	Limestone	○						
959	A757	HG	PU	Limestone	○						
960	A758	HG	PU	Limestone	○						
961	A759	HG	PU	Limestone		○				○	
962	A760	HG	PU	Zebra Dolomite	○						
963	A761	HG	PU	Limestone	○						
964	A762	HG	PU	Dolostone	○						
965	A763	HG	PU	Zebra Dolomite	○						○
966	A764	HG	PU	Limestone	○						

Sample No.	Field No.	Location	Geological unit	Rock Name	Geochemical analysis	Thin section	Polished section	Chemical analysis (ore)	X-ray analysis	Fossil	Minor element analysis
967	A765	HG	PU	Limestone	( )						
968	A766	HG	PU	Dolostone	( )	( )				○	
969	A767	HG	PU	Dolostone	( )						
970	A768	SR	PU	Dolostone	( )						
971	A770	SR	MI	Quartz porphyry		( )					
972	A771	SR	PU	Dolostone	( )						
973	A772	SR	PU	Dolostone	( )						
974	A773	SR	PU	Dolostone	( )						
975	A774	SR	PU	Dolostone	( )						
976	A775	SR	PU	Dolostone	( )						
977	A776	SR	PU	Limestone	( )						
978	A777	SR	PU	Limestone	( )						
979	A778	SR	PU	Dolostone	( )						
980	A779	SR	PU	Limestone	( )						
981	A780	SR	PU	Dolostone	( )						
982	A781	SR	PU	Limestone	( )						
983	A782	SR	PU	Limestone	( )						
984	A783	SR	PU	Limestone	( )						
985	A784	SR	PU	Dolostone	)						
986	A785	SR	PU	Limestone	( )						
987	A786	SR	PU	Limestone	( )						

Sample No.	Field No.	Location	Geological unit	Rock Name	Geochemical analysis	Thin section	Polished section	Chemical analysis (ore)	X-ray analysis	Fossil	Minor element analysis
988	A787	SR	PU	Dolostone	○						
989	A788	SR	PU	Limestone	○						
990	A789	SR	PU	Limestone	○						
991	A790	SR	PU	Dolostone	○						
992	D 1	HG	PU	Limestone						○	
993	D 2	TV	PU	Limestone						○	
994	D 3	TV	PU	Limestone						○	
995	D 5	TV	PU	Sandstone						○	
996	D 6	TV	PU	Sandstone						○	
997	D 7	TV	PU	Sandstone						○	
998	L702	SR	PU	Limestone	○						
999	L703	SR	PU	Limestone	○						
1000	L704	SR	PU	Limestone						○	
1001	L706	SR	PU	Limestone	○						
1002	L707	S.T-13	PU	Limestone	○						
1003	L708	S.T-13	PU	Limestone	○						
1004	L709	S.T-13	PU	Dolostone	○		○				○
1005	L710	S.T-13	PU	Dolostone	○						
1006	L711	S.T-13	PU	Dolostone	○						
1007	L712	S.T-2	PU	Dolomitic sandstone	○	○					
1008	L713	S.T-2	PU	Sandy limestone	○						○

Sample No.	Field No.	Location	Geological unit	Rock Name	Geochemical analysis	Thin section	Polished section	Chemical analysis (ore)	X-ray analysis	Fossil	Minor element analysis
1009	L715	S.T-2	PU	Sandstone	( )						
1010	L716	S.T-2	PU	Dolostone	( )	( )					
1011	L718	S.T-2	PU	Dolostone	( )						
1012	L719	S.T-2	PU	Dolostone	( )		( )				
1013	L720	S.T-2	PU	Dolostone	( )						
1014	L721	S.T-2	PU	Dolostone	( )						
1015	L722	S.T-2	PU	Dolostone	( )						
1016	L723	S.T-2	PU	Dolostone	( )						
1017	L724	S.T-2	PU	Dolostone	( )						
1018	L725	S.T-2	PU	Limestone	( )						
1019	L726	S.T-2	PU	Dolostone	( )						○
1020	L727	S.T-2	PU	Dolostone	( )						○
1021	L728	S.T-2	PU	Dolostone	( )	( )				○	
1022	L729	S.T-2	PU	Dolostone			○	( )			
1023	L730	S.T-2	PU	Dolostone				( )			
1024	L731	S.T-2	PU	Galena Ore			( )	○	( )		
1025	L732	S.T-1	PU	Dolostone	( )						
1026	L733	S.T-1	PU	Dolostone	( )						○
1027	L734	S.T-1	PU	Dolostone	( )						
1028	L736	S.T-1	PU	Sandstone	( )						
1029	L737	S.T-1	PU	Sandstone	( )						

Sample No.	Field No.	Location	Geological unit	Rock Name	Geochemical analysis	Thin section	Polished section	Chemical analysis (ore)	X-ray analysis	Fossil	Minor element analysis
1030	L740	S.T-3	MI	Tuffaceous sandstone		○					
1031	L741	S.T-5	PU	Dolostone	○						
1032	L742	S.T-5	PU	Dolostone	○						○
1033	L744	S.T-5	PU	Dolostone	○	○					○
1034	L745	S.T-5	PU	Dolostone	○	○					○
1035	L746	S.T-5	PU	Dolostone	○						○
1036	L747	S.T-5	PU	Limestone	○						
1037	L748	S.T-5	PU	Muddy limestone		○				○	
1038	L749	S.T-12	PU	Limestone	○						
1039	L750	S.T-12	PU	Limestone	○						
1040	L751	S.T-12	PU	Limestone	○						
1041	L753	S.T-12	PU	Brecciated limestone	○						
1042	L754	S.T-11	PU	Limestone	○						
1043	L755	S.T-11	PU	Limestone	○						
1044	L757	S.T-11	PU	Limestone	○						
1045	L758	S.T-11	PU	Limestone	○						
1046	L759	T.T-25	PU	Dolostone	○						
1047	L760	T.T-25	PU	Dolostone	○		○				○
1048	L761	T.T-25	PU	Dolostone	○	○	○				○
1049	L762	T.T-25	PU	Dolostone	○						○
1050	L763	T.T-25	PU	Zebra Dolomite	○						

Sample No.	Field No.	Location	Geological unit	Rock Name	Geochemical analysis	Thin section	Polished section	Chemical analysis (ore)	X-ray analysis	Fossil	Minor element analysis
1051	L764	T.T-25	PU	Dolostone	○						○
1052	L766	T.T-24	PU	Dolostone	○	○					○
1053	L767	T.T-24	PU	Dolostone	○	○					
1054	L768	T.T-24	PU	Dolostone	○						
1055	L769	T.T-22	PU	Dolostone	○						
1056	L770	T.T-22	PU	Dolostone	○						
1057	L772	T.T-22	PU	Dolostone	○						○
1058	L773	T.T-22	PU	Dolostone	○						
1059	L774	T.T-21	PU	Dolostone	○						
1060	L775	T.T-21	PU	Dolostone		○					
1061	L776	T.T-21	PU	Dolostone	○						
1062	L777	T.T-21	PU	Zebra Dolomite	○						
1063	L778	T.T-21	PU	Limestone	○						
1064	L779	T.T-21	PU	Zebra Dolomite	○						
1065	L780	T.T-21	PU	Dolostone	○						
1066	L781	T.T-27	PU	Zebra Dolomite	○						
1067	L782	T.T-27	PU	Zebra Dolomite	○						
1068	L783	S.T-28	PU	Sphalerite,Galena ore			○	○			
1069	L783-1	S.T-28	PU	Sphalerite,Galena ore				○			
1070	L783-2	S.T-28	PU	Sphalerite,Galena ore				○			
1071	L783-3	S.T-28	PU	Sphalerite,Galena ore				○			

Sample No.	Field No.	Location	Geological unit	Rock Name	Geochemical analysis	Thin section	Polished section	Chemical analysis (ore)	X-ray analysis	Fossil	Minor element analysis
1072	L783-4	S.T-28	PU	Sphalerite,Galena ore				○			
1073	L783-5	S.T-28	PU	Sphalerite,Galena ore				○			
1074	L784	S.T-28	PU	Sphalerite,Galena ore		○	○		△		
1075	L785	S.T-28	PU	Dolostone	○						○
1076	L786	S.T-28	PU	Dolostone	○						○
1077	L787	S.T-28	PU	Dolostone	○						○
1078	L788	S.T-28	PU	Dolostone	○	○	○				○
1079	L789	S.T-28	PU	Dolostone	○						○
1080	L790	S.T-28	PU	Dolostone	○						○
1081	L791	S.T-28	PU	Dolostone	○						
1082	L793	S.T-28	PU	Dolostone	○						○
1083	L794	S.T-28	PU	Dolostone	○						
1084	L795	S.T-28	PU	Dolostone	○	○	○				○
1085	L796	S.T-28	PU	Shaly dolostone	○	○	○				○
1086	L797	S.T-28	PU	Dolostone	○						○
1087	L798	SR	PU	Dolostone	○						
1088	L799	SR	PU	Dolostone	○						
1089	L800	SR	MP	Quartz porphyry	○						
1090	L801	SR	MP	Quartz porphyry	○						
1091	L802	SR	MP	Quartz porphyry	○						
1092	L803	SR	PU	Limestone	○						

Sample No.	Field No.	Location	Geological unit	Rock Name	Geochemical analysis	Thin section	Polished section	Chemical analysis (ore)	X-ray analysis	Fossil	Minor element analysis
1093	L804	SR	PU	Limestone	○						
1094	L805	SR	PU	Limestone	○						
1095	L806	SR	MP	Biotite Granite	○						
1096	L807	SR	MP	Granite Porphyry	○						
1097	L808	SR	MP	Liparitic quartz porphyry	○	○					
1098	L809	S.T-28	PU	Sandstone		○					
1099	L810	SR	PU	Dolostone				○			
1100	L811	S.T-29	PU	Sandy dolostone	○			○			
1101	L812	S.T-29	PU	Dolostone	○			○			
1102	L813	S.T-29	PU	Dolostone				○			
1103	L814	S.T-29	PU	Dolostone	○			○			
1104	L815	S.T-29	PU	Dolostone				○			
1105	L816	S.T-29	PU	Dolostone				○			
1106	L817	S.T-29	PU	Dolostone				○			
1107	L818	S.T-29	PU	Dolostone				○			
1108	L819	S.T-29	PU	Dolostone				○			
1109	L820	S.T-29	PU	Dolostone		○	○	○	◇		
1110	L821	S.T-29	PU	Dolostone				○			
1111	L822	S.T-29	PU	Dolostone				○			
1112	L823	S.T-29	PU	Dolostone				○			
1113	L824	S.T-29	PU	Dolostone				○			

Sample No.	Field No.	Location	Geological unit	Rock Name	Geochemical analysis	Thin section	Polished section	Chemical analysis (ore)	X-ray analysis	Fossil	Minor element analysis
1114	L825	S.T-29	PU	Dolostone				○			
1115	L826	S.T-29	PU	Dolostone				○			
1116	N701	TV	PU	Limestone	○	○					
1117	N702	TV	PU	Limestone	○						
1118	N703	TV	PU	Zebra Dolomite	○						○
1119	N704	TV	PU	Dolostone	○						
1120	N705	TV	PU	Dolostone	○						
1121	N706	TV	PU	Zebra Dolomite	○						
1122	N707	TV	PU	Zebra Dolomite	○						
1123	N708	TV	PU	Dolostone	○						
1124	N709	TV	PU	Dolostone	○						
1125	N710	HG	PU	Sandstone	○						
1126	N711	HG	PU	Sandstone	○	○					
1127	N712	HG	PU	Dolostone	○						
1128	N713	TV	PU	Limestone	○						
1129	N714	TV	PU	Dolostone	○						
1130	N715	TV	PU	Zebra Dolomite	○						
1131	N716	TV	PU	Dolostone	○						
1132	N717	TV	PU	Zebra Dolomite	○	○					
1133	N718	TV	PU	Dolostone	○	○					
1134	N719	TV	PU	Dolostone	○						○

Sample No.	Field No.	Location	Geological unit	Rock Name	Geochemical analysis	Thin section	Polished section	Chemical analysis (ore)	X-ray analysis	Fossil	Minor element analysis
1135	N720	TV	PU	Dolomitic limestone	○						
1136	N721	TV	PU	Limestone	○						
1137	N722	TV	PU	Dolostone	○						
1138	N724	TV	PU	Limestone	○	○				○	
1139	N725	TV	PU	Dolostone	○						
1140	N726	TV	PU	Dolostone	○						○
1141	N727	TV	PU	Dolostone	○						
1142	N728	TV	PU	Dolostone	○	○				○	
1143	N730	TV	PU	Dolostone	○						
1144	N731	TV	PU	Zebra Dolomite	○						
1145	N732	TV	PU	Zebra Dolomite	○						
1146	N741	TV	PU	Dolostone	○						
1147	N743	TV	PU	Dolostone	○						
1148	N746	TV	PU	Dolostone			○	○	○		
1149	N747	TV	PU	Dolostone	○						
1150	N748	TV	PU	Dolostone	○						
1151	N749	TV	PU	Dolostone	○						
1152	N752	TV	PU	Dolomite limestone	○					○	
1153	N754	TV	PU	Dolostone	○						
1154	N755	TV	PU	Dolostone	○						
1155	N756	TV	PU	Zebra Dolomite	○						○

Sample No.	Field No.	Location	Geological unit	Rock Name	Geochemical analysis	Thin section	Polished section	Chemical analysis (ore)	X-ray analysis	Fossil	Minor element analysis
1156	N758	HG	PU	Limestone	○	○					
1157	N759	HG	PU	Limestone						○	
1158	N760	HG	PU	Zebra Dolomite	○						
1159	N761	HG	PU	Dolostone	○						
1160	N762	HG	PU	Dolostone	○						
1161	N763	HG	PU	Dolostone	○						
1162	N764	HG	PU	Zebra Dolomite	○						
1163	N768	TV	PU	Sandstone						○	
1164	N769	GG	PU	Dolomitic limestone	○						
1165	N770	GG	PU	Dolomitic limestone	○	○					
1166	N771	GG	PU	Limestone	○						
1167	N774	TV	PU	Dolostone	○						
1168	N781	TV	PU	Limestone	○						
1169	N783	TV	PU	Dolostone							
1170	N789	TV	PU	Sandstone	○	○					
1171	N790	HG	PU	Dolostone	○						
1172	N791	HG	PU	Zebra Dolomite	○						
1173	N795	GG	PU	Limestone	○						
1174	N796	GG	PU	Dolostone	○						○
1175	N797	GG	PU	Dolostone	○						
1176	N798	GG	PU	Dolostone	○						

Sample No.	Field No.	Location	Geological unit	Rock Name	Geochemical analysis	Thin section	Polished section	Chemical analysis (ore)	X-ray analysis	Fossil	Minor element analysis
1177	N804	T.T-16	PU	Muddy limestone	○						○
1178	N811	T.T-16	PU	Dolostone	○						
1179	N814	T.T-16	PU	Dolostone	○						
1180	N815	T.T-16	PU	Dolostone	○						
1181	N816	T.T-16	PU	Dolostone	○						
1182	N817	T.T-19	PU	Dolostone	○						
1183	N820	T.T-19	PU	Dolostone	○						
1184	N823	T.T-19	PU	Zebra Dolomite	○						
1185	N826	T.T-19	PU	Dolostone	○						
1186	N827	T.T-20	PU	Dolostone	○						
1187	N829	T.T-20	PU	Dolostone	○						
1188	N830	T.T-20	PU	Dolostone	○						
1189	N831	T.T-20	TD	Altered dolarite	○	○					
1190	N833	T.T-20	PU	Dolostone	○	○			○		○
1191	N835	T.T-20	PU	Zebra Dolomite	○						
1192	N837	T.T-20	PU	Brecciated Dolomite	○						
1193	N838	T.T-15	PU	Dolostone	○	○			○		○
1194	N839	T.T-15	PU	Dolostone	○						
1195	N842	T.T-15	PU	Zebra Dolomite	○						
1196	N843	T.T-15	PU	Dolostone	○						○
1197	N845	T.T-15	PU	Zebra Dolomite	○	○			○		○

Sample No.	Field No.	Location	Geological unit	Rock Name	Geochemical analysis	Thin section	Polished section	Chemical analysis (ore)	X-ray analysis	Fossil	Minor element analysis
1198	N846	T.T-15	PU	Zebra Dolomite	○						○
1199	N847	T.T-15	PU	Dolostone	○						
1200	N849	T.T-17	PU	Dolostone	○				○		
1201	N850	T.T-17	PU	Dolostone	○						
1202	N851	T.T-17	PU	Dolostone	○						
1203	N852	T.T-17	PU	Dolostone	○						
1204	N853	T.T-17	PU	Dolostone	○						
1205	N856	T.T-18	PU	Dolostone	○						
1206	N858	T.T-18	PU	Dolostone	○						
1207	N861	T.T-18	PU	Dolostone	○						
1208	N863	T.T-18	PU	Dolostone	○						
1209	N864	T.T-23	PU	Dolostone	○						
1210	N865	T.T-23	PU	Zebra Dolomite	○						
1211	N867	T.T-23	PU	Dolostone	○						
1212	N868	T.T-23	PU	Dolostone	○						
1213	N869	SR	PU	Dolostone	○						
1214	N871	SR	PU	Dolostone	○						
1215	N873	SR	PU	Dolostone	○						
1216	N875	SR	PU	Dolostone	○						
1217	N876	SR	PU	Dolostone	○						
1218	N877	SR	PU	Limestone	○						

Sample No.	Field No.	Location	Geological unit	Rock Name	Geochemical analysis	Thin section	Polished section	Chemical analysis (ore)	X-ray analysis	Fossil	Minor element analysis
1219	N878	SR	PU	Limestone							
1220	N879	SR	PU	Limestone							
1221	N880	SR	PU	Dolomitic limestone							
1222	N881	SR	PU	Limestone	( )						
1223	N884	SR	PU	Limestone	( )						
1224	N885	SR	PU	Dolomitic limestone	( )						
1225	N887	SR	PU	Limestone	)						
1226	N888	SR	PU	Dolostone	( )						
1227	N889	SR	PU	Dolostone	)						
1228	N890	SR	PU	Dolomitic limestone	( )						
1229	N892	SR	PU	Dolostone							
1230	N893	SR	PU	Dolostone	( )						
1231	P 1	TV	PU	Dolostone						( )	
1232	P 7	TV	PU	Sandstone						( )	
1233	P701	TV	PU	Limestone	( )						
1234	P703	TV	PU	Dolostone	( )						
1235	P705	TV	PU	Limestone	( )					( )	
1236	P706	TV	PU	Dolostone	( )	)					
1237	P707	TV	PU	Zebra Dolomite	( )	( )					
1238	P710	TV	PU	Dolostone	( )					( )	
1239	P713*	TV	PU	Limestone							

* P712 (See Sample No. 1377)

Sample No.	Field No.	Location	Geological unit	Rock Name	Geochemical analysis	Thin section	Polished section	Chemical analysis (ore)	X-ray analysis	Fossil	Minor element analysis
1240	P714	TV	PU	Muddy limestone	( )						
1241	P717	TV	PU	Limestone	( )						
1242	P719	TV	PU	Dolostone	( )						
1243	P720	TV	PU	Limestone	( )						
1244	P721	TV	PU	Zebra Dolomite	( )						
1245	P722	TV	PU	Dolostone	( )						
1246	P723	TV	PU	Dolostone	( )						
1247	P725	TV	PU	Dolostone	( )						
1248	P727	TV	PU	Dolostone	( )						
1249	P728	TV	PU	Limestone	( )						
1250	P729	TV	PU	Limestone	( )						
1251	P730	TV	PU	Dolostone	( )						
1252	P731	TV	PU	Dolostone	( )						
1253	P737	TV	PU	Dolostone	( )						
1254	P738	TV	PU	Dolostone	( )						
1255	P739	TV	PU	Dolostone	( )						
1256	P750	GG	PU	Limestone	( )						○
1257	P752	GG	PU	Dolostone	( )						○
1258	P753	GG	PU	Limestone	( )						○
1259	P754	GG	PU	Limestone	( )	○	○		△		○
1260	P756	GG	PU	Dolostone	( )						

Sample No.	Field No.	Location	Geological unit	Rock Name	Geochemical analysis	Thin section	Polished section	Chemical analysis (ore)	X-ray analysis	Fossil	Minor element analysis
1261	P758	GG	PU	Dolostone	( )						
1262	P762	GG	PU	Limestone	( )						
1263	P768	GG	PU	Limestone	( )						
1264	P770	GG	PU	Limestone	( )						
1265	P771	GG	PU	Limestone	( )						
1266	P772	GG	PU	Limestone	( )						
1267	P773	GG	PU	Limestone	( )						
1268	P775	GG	PU	Limestone	( )						
1269	P777	GG	PU	Limestone	( )						
1270	P778	GG	PU	Limestone	( )						
1271	P779	GG	PU	Limestone	( )						
1272	P780	GG	PU	Limestone	( )						
1273	P782	GG	PU	Limestone	( )						
1274	P784	GG	PU	Limestone	( )						
1275	P785	HG	PU	Limestone	( )						
1276	P786	HG	PU	Limestone	( )						
1277	P788	HG	PU	Limestone	( )						
1278	P790	HG	PU	Limestone	( )						
1279	P792	HG	PU	Limestone	( )						
1280	P794	HG	PU	Limestone	( )						
1281	P795	HG	PU	Limestone	( )						

Sample No.	Field No.	Location	Geological unit	Rock Name	Geochemical analysis	Thin section	Polished section	Chemical analysis (ore)	X-ray analysis	Fossil	Minor element analysis
1282	P797	HG	PU	Limestone	○						
1283	P798	HG	PU	Limestone	○						
1284	P799	HG	PU	Zebra Dolomite	○						
1285	P800	HG	PU	Limestone	○	○	○		○ △		○
1286	P801	HG	PU	Dolostone	○						
1287	P803	HG	PU	Dolostone	○						
1288	P804	HG	PU	Dolostone	○						
1289	P807	HG	PU	Galena Ore			○	○			
1290	P809	SR	PU	Limestone	○						
1291	P810	SR	PU	Dolostone	○						
1292	P811	SR	PU	Dolostone	○						
1293	P813	SR	PU	Limestone	○						
1294	P814	SR	PU	Limestone	○						
1295	P815	SR	PU	Dolostone	○						
1296	P816	SR	PU	Limestone	○						
1297	P817	SR	PU	Limestone	○						
1298	P818	SR	PU	Limestone	○						
1299	P819	SR	PU	Limestone	○						
1300	P820	SR	PU	Limestone	○						
1301	P821	SR	PU	Dolostone	○						
1302	P822	SR	PU	Limestone	○						

Sample No.	Field No.	Location	Geological unit	Rock Name	Geochemical analysis	Thin section	Polished section	Chemical analysis (ore)	X-ray analysis	Fossil	Minor element analysis
1303	P823	SR	PU	Limestone	○						
1304	P824	SR	PU	Dolostone	○						
1305	P825	SR	PU	Limestone	○						
1306	P826	SR	PU	Limestone	○						
1307	P827	SR	PU	Limestone	○						
1308	P828	SR	PU	Limestone	○						
1309	P829	SR	PU	Limestone	○						
1310	P830	SR	PU	Limestone	○						
1311	P831	SR	PU	Limestone	○						
1312	P832	SR	PU	Limestone	○						
1313	S712	TV	PU	Sandstone						○	
1314	S714	TV	PU	Dolomitic limestone	○	○					
1315	S715	TV	PU	Limestone	○						
1316	S716	TV	PU	Dolostone	○						
1317	S718	TV	PU	Limestone	○						
1318	S719	TV	PU	Dolomitic limestone	○						
1319	S721	S.T-4	PU	Dolostone	○						○
1320	S724	S.T-4	PU	Dolostone	○						○
1321	S725	S.T-4	PU	Sphalerite ore		○	○	○	○ △		
1322	S727	S.T-4	PU	Dolostone	○	○					○
1323	S728	S.T-4	PU	Muddy dolostone	○	○	○				○

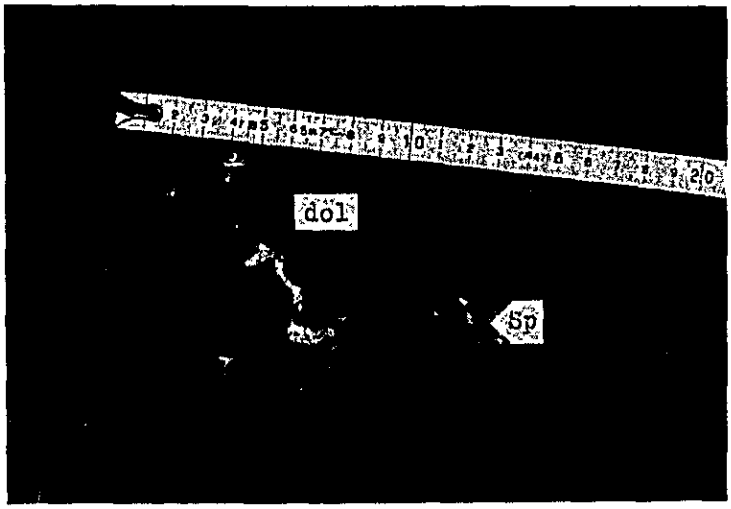
Sample No.	Field No.	Location	Geological unit	Rock Name	Geochemical analysis	Thin section	Polished section	Chemical analysis (ore)	X-ray analysis	Fossil	Minor element analysis
1324	S729	S.T-4	PU	Muddy dolostone	○						
1325	S730	S.T-4	PU	Muddy dolostone	○	○					○
1326	S732	S.T-4	PU	Dolostone	○						○
1327	S737	S.T-7	PU	Limestone	○						
1328	S738	S.T-7	PU	Limestone	○						
1329	S742	S.T-6	PU	Limestone	○						
1330	S743	S.T-6	PU	Limestone	○						
1331	S746	S.T-6	PU	Limestone	○						○
1332	S747	S.T-6	PU	Sandy limestone	○						
1333	S748	S.T-6	PU	Limestone	○						
1334	S749	S.T-6	PU	Limestone	○						
1335	S751	S.T-8	PU	Limestone	○						
1336	S753	S.T-8	PU	Muddy limestone	○						
1337	S754	S.T-8	PU	Muddy limestone	○						
1338	S755	S.T-8	PU	Limestone	○						
1339	S756	S.T-8	PU	Dolostone	○						
1340	S757	S.T-8	PU	Dolostone	○		○		○		
1341	S759	S.T-9	PU	Muddy limestone	○						
1342	S761	S.T-9	PU	Dolomitic limestone	○						○
1343	S770	T.T-27	PU	Zebra Dolomite	○	○	○				
1344	S772	T.T-27	PU	Zebra Dolomite	○						

Sample No.	Field No.	Location	Geological unit	Rock Name	Geochemical analysis	Thin section	Polished section	Chemical analysis (ore)	X-ray analysis	Fossil	Minor element analysis
1345	S773	T.T-27	PU	Zebra Dolomite	( )						
1346	S774	T.T-27	PU	Dolostone	( )						
1347	S775	T.T-27	PU	Dolostone	( )						
1348	S776	T.T-27	PU	Dolostone	( )						
1349	S777	T.T-27	PU	Dolostone	( )						
1350	S779	T.T-26	PU	Dolostone	( )	( )	( )				
1351	S780	T.T-26	PU	Dolostone	( )						
1352	S782	T.T-26	PU	Muddy dolostone	( )						
1353	S783	S.T-10	PU	Galena ore		( )	( )	( )	( )	( )	
1354	S785	S.T-10	PU	Limestone	( )						
1355	S786	S.T-10	PU	Muddy limestone	( )						
1356	S788	S.T-10	PU	Muddy limestone	( )						
1357	S789	S.T-10	PU	Dolostone							( )
1358	Z 2	HG	PU	Dolostone	( )						
1359	Z 3	HG	PU	Zebra Dolomite	( )						
1360	Z 4	HG	PU	Dolostone	( )						( )
1361	Z 5	HG	PU	Limestone	( )						
1362	Z 6	HG	PU	Limestone	( )						
1363	Z 7	HG	PU	Dolostone	( )						
1364	Z 8	HG	PU	Limestone	( )						
1365	Z 11	HG	PU	Dolostone	( )						

Sample No.	Field No.	Location	Geological unit	Rock Name	Geochemical analysis	Thin section	Polished section	Chemical analysis (ore)	X-ray analysis	Fossil	Minor element analysis
1366	Z 12	HG	PU	Dolostone							
1367	Z 13	HG	PU	Dolostone							
1368	Z 14	HG	PU	Limestone							
1369	Z 16	HG	PU	Limestone							
1370	Z 17	HG	PU	Limestone							
1371	Z 18	HG	PU	Limestone							
1372	Z 19	HG	PU	Limestone							
1373	Z 20	HG	PU	Brecciated limestone							
1374	Z 22	GG	PU	Zebra Dolomite							
1375	Z 23	GG	PU	Dolostone							
1376	Z 24	GG	PU	Limestone							
1377	P712	TV	PU	Limestone							

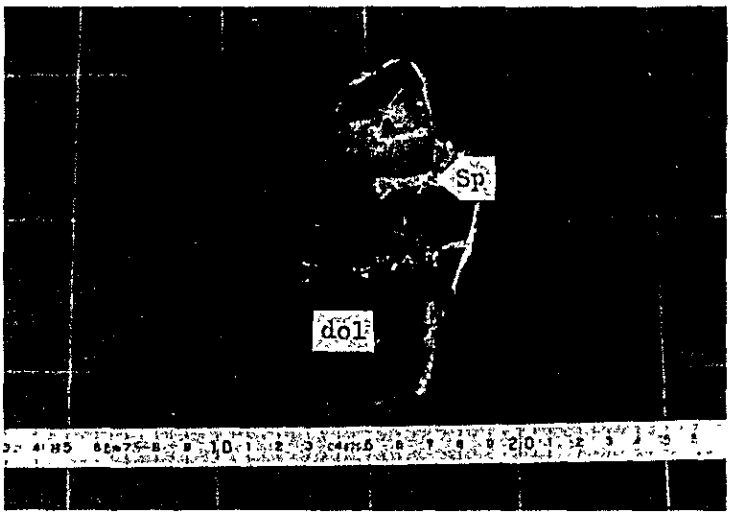
A. I-2 Photographs of ores and others.

Plate 1



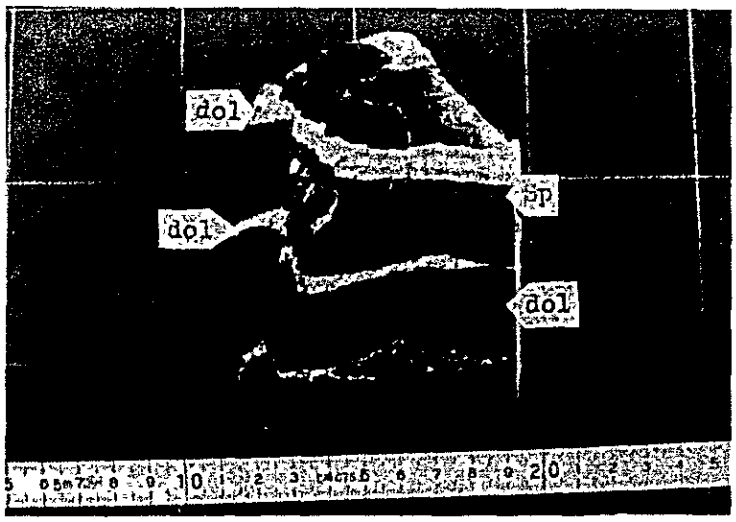
Sphalerite ore of the San Roque trench T-28.

Sp : Sphalerite
dol: Dolostone



Sphalerite ore of the San Roque trench T-28. (Polished)

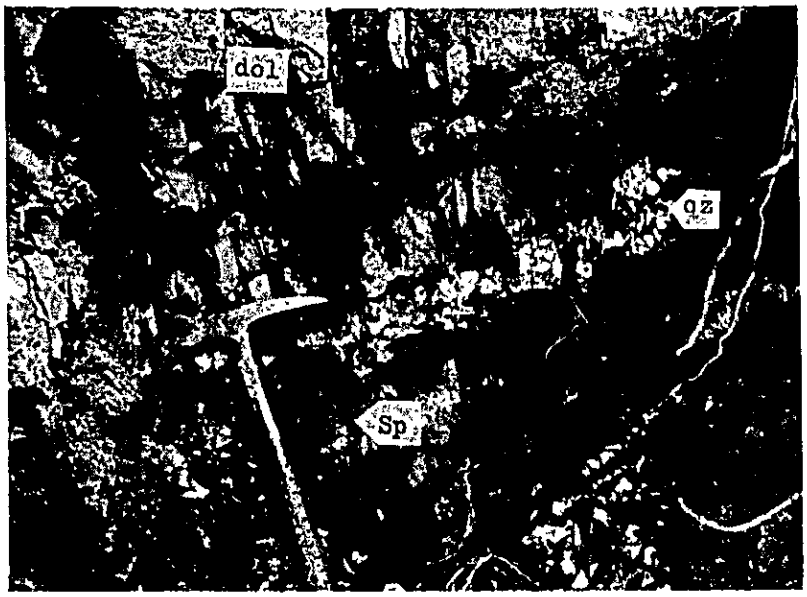
Sp : Sphalerite
dol: Dolostone



Sphalerite ore of the San Vicente mine. (Polished)

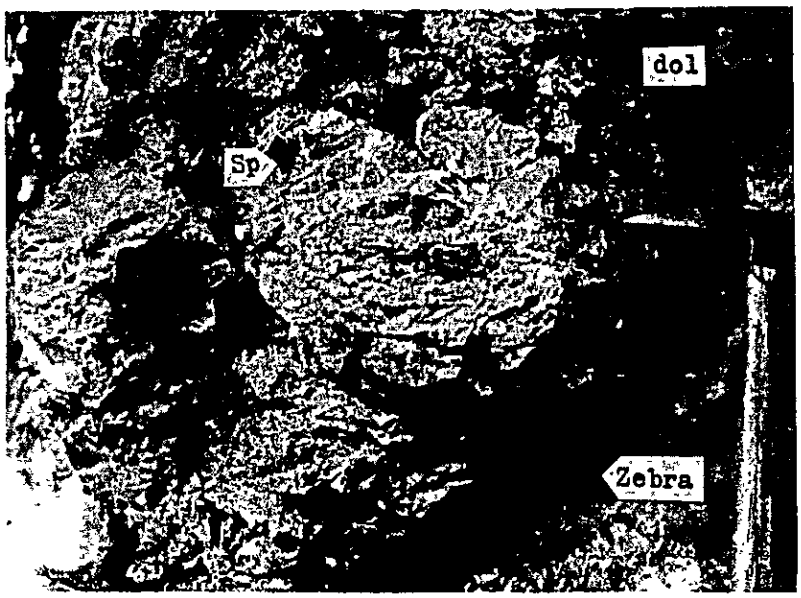
Sp : Sphalerite
dol: Dolomite

Plate 2



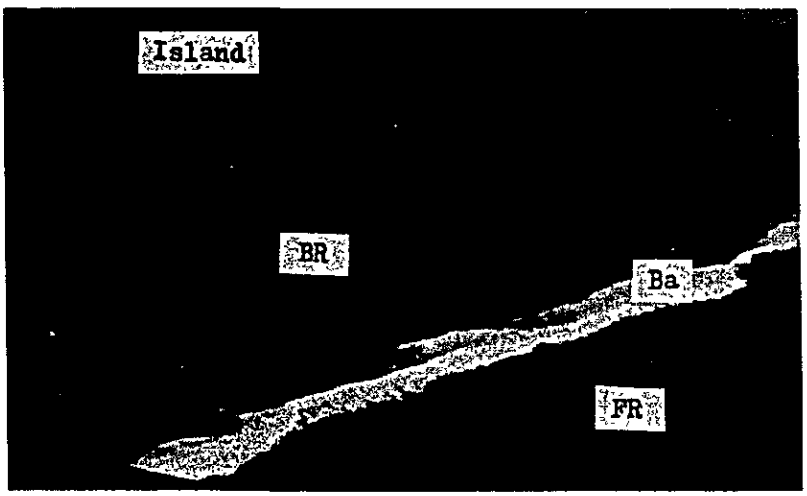
Sphalerite ore of the San Roque trench T-28.

Sp : Sphalerite
gz : Quartz
dol: Dolostone



Sphalerite ore of the Tambo Maria showing

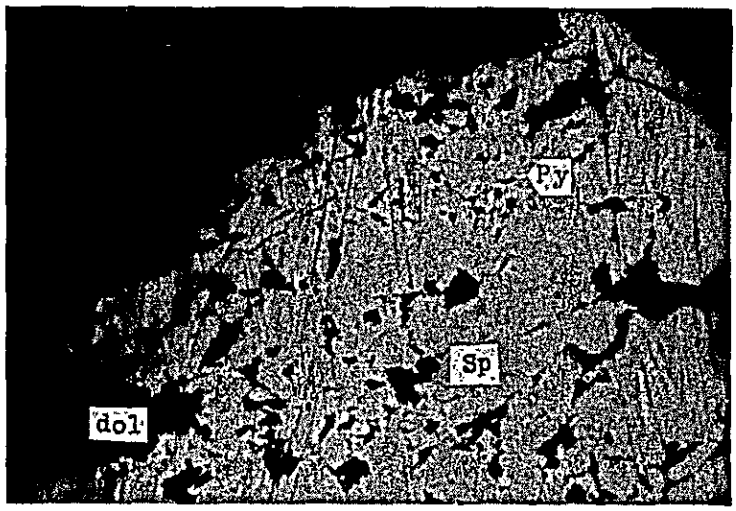
Sp : Sphalerite
dol: Dolostone
Zebra: Zebra Dolomite



View of the reef developing at present in the Tahiti island

BR: Back Reef
Ba: Barrier
FR: Fore Reef

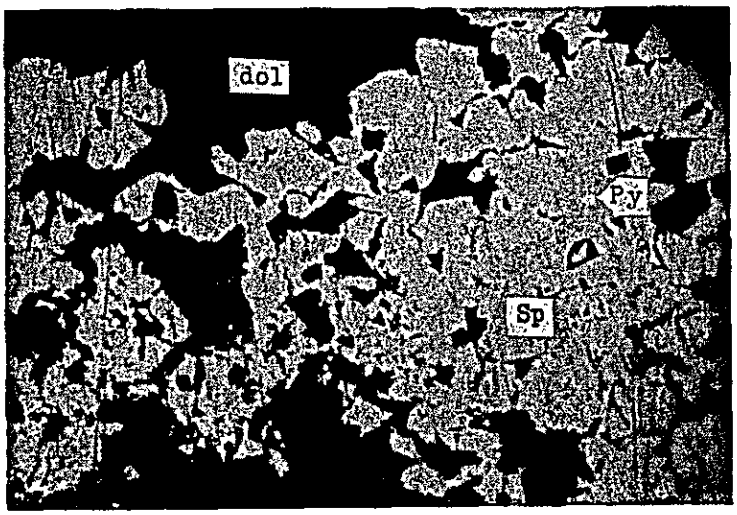
Plate 3



Photomicrograph of sphalerite ore of the San Vicente mine

Sp : Sphalerite
Py : Pyrite
dol: Dolomite

0 0.2 mm



Photomicrograph of sphalerite ore of the San Vicente mine

Sp : Sphalerite
Py : Pyrite
dol: Dolomite

0 0.2 mm

A. I-3 Microscopic observation of the thin section.

A. I-3 Microscopic observation of the thin section.

* stained thin section---stained by $AgNO_3$ and K_2CrO_4 (1)

Sample No.	Field No.	Locality	Group	Rock Name	Microscopic Observation
941	A734	GG	PU	Dolostone (Dolosparite)	The rock shows mosaic texture and consists mostly of medium crystalline dolomite (100 to 200μ in size). Small grains (10 to 30μ in size) of opaque minerals are recognized rarely.
971	A770	SR	MI	Quartz Porphyry	The rock shows porphyritic texture. The phenocryst consists of quartz and potash felspar (50 to 200μ in size). The ground mass consists of fine grained quartz after hyaline, altered potash felspar, altered biotite and opaque minerals and shows flow structure.
1007	L712	S.T-2	PU	Dolomitic sandstone	The rock consists of chalcedonic quartz (80-90%) and micritic dolomite (10-20%). Chalcedonic quartz formed microspheroid (50 to 100μ) is densely spotted in micritic dolomite. Frequently dolorhoms are observed (10 to 20μ) in the matrix. Rarely sparry calcite up to 400 in size, forming long crescents or wisps,is recognized.
1010	L716	S.T-2	PU	Dolostone (Skeltal dolomicrite)	The rock consists of micritic dolomite (70-80%), sparry calcite (10-20%) and chalcedonic quartz (<5%). Brachiopods shells and crinoids (?) are observed. They are composed of sparry calcite aggregates up to 6x3 mm. Rarely sponge spicules of perifera are observed.
1030	L740	S.T-3	MI	Tuffaceous sandstone	The rock consists of vitreous material, clayey material, quartz and potash felspar. The fragments of quartz (30 to 100μ) show corroded form and is recognized reaction rim. The matrix (60-70%) is composed of vitreous material, clayey material, quartz and felspar and its grain size up to 20μ.
1033	L744	S.T-5	PU	Dolostone (Dolomicrite)	The rock consists of micritic dolomite (70-80%) and sparry calcite. Calcite aggregates 5-10 grains in the matrix of dolomite or along fissure. Detrital quartz is rarely observed in the matrix forming subrounded to subangular (10 to 40μ).
1034	L745	S.T-5	PU	Dolostone (Dolosparmicrite)	The rock consists of sparry dolomite (60-70%), micritic dolomite (10-15%), sparry calcite (5-10%) and detrital quartz (1.5-1.0%). The sparry dolomite aggregates of 3 grains or more and is scattered in the micrite matrix. Calcite exists rarely and the crystal is anhedral to subhedral (150 to 300μ).

Sample No.	Field No.	Locality	Group	Rock Name	Microscopic Observation
1048	L761	T.T-25	PU	Dolostone (Dolosparite)	The rock consists of almost sparry dolomite (≥99%) and shows mosaic texture. Calcite exists very rarely as anhedral crystal replaced by dolorhoms. Dolomite crystal is very large up to 600μ. (* Stained thin section)
1052	L766	T.T-24	PU	Dolostone (Dolosparite)	The rock consists of almost sparry dolomite (≥95%) and shows mosaic texture. Calcite (≈2%) and detrital quartz (≈2%) exists very rarely. The crystal size of sparry dolomite is up to 30μ. Opaque mineral (≈1%) is recognized rarely and is scattered in the matrix (20 to 30μ in size).
1053	L767	T.T-24	PU	Dolostone (Dolosparite)	The rock consists of almost sparry dolomite (>99%) and shows mosaic texture. Sparry calcite and detrital quartz is very few. The crystal size of sparry dolomite is up to 600μ. Opaque minerals are recognized very rarely and their sizes are about 10μ.
1060	L775	T.T-21	PU	Dolostone (Dolosparite)	The rock consists of almost sparry dolomite (>98%) and shows mosaic texture of subhedra, up to 100μ in size. Very rarely sparry calcite up to 50μ in size, and detrital quartz up to 20μ in size exist.
1074	L784	S.T-28	PU	Dolostone (Dolosparite with sphalerite and galena)	The rock consists of sparry dolomite (≈75%) and sphalerite (≈20%). Sparry dolomite shows mosaic texture of subhedra to anhedra (30 to 80μ). Sphalerite exists near the larger dolomite crystals and shows translucently dark reddish brown in color. Opaque minerals (5 to 20μ) occur rarely. (* Stained thin section)
1078	L788	S.T-28	PU	Dolostone (Dolomicrite)	The rock consists of micritic dolomite (≈80%), megacrystal quartz (≈10%), sphalerite (≈5%). Micritic dolomite rarely includes sparry calcite up to 100μ in size. Megacrystal quartz aggregates of five or more grains (200 to 700μ in size). Sphalerite shows high relief in dark reddish brown color. (* Stained thin section)
1084	L795	S.T-28	PU	Dolostone (Dolomicrite)	The rock consists of micritic dolomite (>90%), sparry dolomite (<5%), quartz (≈ 2 %), and a few sphalerite (≈2%). Micritic dolomite shows cryptocrystalline up to 5μ in size, forming matrix. Sparry dolomite aggregates of five grains or more and forms vein like shape. Almost quartz may be derived from terrigenous sediment as detritus. Frequently sphalerite is observed as anhedra forming nearly microspheroid up to 400μ in diameter. Rarely opaque mineral is observed in irregular shape up to 10μ. (* Stained thin section)

Sample No.	Field No.	Locality	Group	Rock Name	Microscopic Observation
1085	L796	S.T-28	PU	Shaly Dolostone (Dolomicrite)	The rock consists of micritic dolomite (>85%), sparry dolomite (≈ 10%), calcite (≈ 2%) and detrital quartz (≈ 2%). Micritic dolomite shows cryptocrystalline of anhedra and forms matrix. Sparry dolomite scarcely exists up to 200μ in size. Sparry calcite is rarely observed in anhedral shape. Detrital quartz is scarcely observed in the matrix up to 20μ in size.
1097	L808	SR	MP	Liparitic Quartz-porphyry	The rock is composed of ground mass (≈ 90%) and phenocrysts (≈ 10%). The ground mass consists of detrital quartz (≈ 70%) and hyaline showing flow structure. Phenocrysts consist of potash felspar, plagioclase and quartz. Potash felspar partly alters to clay minerals. Plagioclase shows albite twin up to 18μ in size. Phenocryst quartz of subhedra forms aggregates up to 500μ in size.
1098	L809	S.T-28	PU	Sandstone (Cherty sandstone)	The rock consists of chalcedonic quartz (>90%) and detrital quartz (<10%). The matrix is composed of chalcedonic quartz up to 20μ in size partly microspheroid or showing radiated structure. Detrital quartz is scattered in the matrix up to 30μ in size with detrital felspar.
1109	L820	S.T-29	PU	Dolostone	The rock is composed of dolomite (≈ 80%), calcite (<10%), opaque minerals (≈ 10%) and detrital quartz (≈ 0.5%). Dolomite consists of micrite (50-60%) and sparite (40-50%). Sparry dolomite shows mosaic texture up to 400μ in size. Micritic dolomite forms matrix, 2-10μ in size. Calcite crystals are almost sparry 50-200μ in size. Detrital quartz is very rare and is scattered in the micritic dolomite. Opaque minerals are common forming in various shape but partly cubic up to 50μ in size. Translucent mineral, dark reddish brown in color, may be sphalerite and exists along fissure or in the matrix up to 400μ in size.
1116	N701	TV	PU	Limestone (Pelsparite)	The rock consists of pellets (100 to 500μ in diameter) surrounded by sparry calcite (50 to 200μ in size). Detrital quartz (30 to 40μ in size) is recognized in the pellet. Very small grains (less than 10μ in size) of opaque minerals are recognized rarely.
1126	N711	HG	PU	Sandstone	The rock is composed of 50 percent of rounded calcite (50 to 100μ in diameter) and several percent of detrital quartz, which are cemented by remnants, dark brown to black clayey material.

Sample No.	Field No.	Locality	Group	Rock Name	Microscopic Observation
1132	N717	TV	PU	Zebra Dolomite	The rock shows mosaic texture and consists of coarse crystalline dolomite (300 to 900μ in size) in subhedral.
1133	N718	TV	PU	Dolostone (Dolosparite)	The rock shows mosaic texture and consists of coarse crystalline dolomite (300 to 900μ in size) in subhedral.
1142	N728	TV	PU	Limestone (Pelsparite)	The rock consists of oolite and pellet surrounded by sparry calcite (10 to 30μ in size). Several per cent of detrital quartz (10 to 30μ in size) occur in sparry calcite, oolite and pellet. Very small grains (less than 10μ in size) of opaque mineral are recognized rarely.
1156	N758	HG	PU	Limestone (Micrite)	The rock consists mostly of micritic carbonate mineral (calcite) and a few per cent of detrital quartz (10 to 20μ in grain size). Opaque minerals (10 to 20μ in size) occur rarely.
1165	N770	TV	PU	Limestone (Micrite)	The rock consists of mainly micrite and partially sparry calcite and a few per cent of detrital quartz (10 to 20μ in grain size). Opaque minerals (10 to 20μ in size) occur rarely in sparry calcite.
1170	N789	TV	PU	Limestone (Sparite)	The rock consists of 80 per cent of sparry calcite (40 to 60μ in size) and clayey brown material cemented by calcite grains. A few per cent of rounded and cubic opaque minerals are observed. Small grains of detrital quartz and feldspar are scattered.
1189	N831	T.T-20	post-PU	Altered dolerite	The rock consists of clinopyroxene (30-40%), plagioclase (≈30%), olivine (≈15%), opaque minerals (< 5%) and clayey materials (≈10%). Above texture shows poikilitic. Clinopyroxene up to 700μ formed euhedra shows higher index of refraction than that of plagioclase. The pleochroism of clinopyroxene is weak. The pyroxene grains are partly altered to clayey materials at their rim or along fractures. Plagioclase formed subhedra up to 2 mm. alters partially to clayey materials. Clayey materials derived from plagioclase or clinopyroxene shows low interference color and low grade index of refraction. Olivine included in plagioclase shows very high index of refractions and forms euhedra.

Sample No.	Field No.	Locality	Group	Rock Name	Microscopic Observation
1190	N833	T.T-20	PU	Dolostone (Dolosparite)	The rock consists of almost sparry and micritic dolomite (>97%). Accessory minerals are calcite (<1%), quartz (<1%) and opaque. Sparry dolomite up to 300μ in size is over 90% of total dolomite, and the remnant is micritic. The former shows mosaic texture of subhedra to anhedra and the latter fills cavities of sparry dolomite. Calcite crystals are very large up to 800μ in size. Chalcedonic quartz forms microsphere or micro ellipsoid up to 50μ in diameter.
1193	N838	T.T-20	PU	Dolostone (Dolosparite)	The rock consists of almost sparry dolomite (>99%). Accessory minerals are detrital quartz and opaque (<1%). Sparry dolomite may be classified larger crystals (200 to 500μ) and smaller crystals (30-100μ). Both of them in subhedra to anhedra shows mosaic texture. Detrital quartz shows fragment shape up to 50μ in size. Opaque mineral shows irregular shape up to 50μ in size and partly microsphere.
1197	N845	T.T-15	PU	Zebra Dolomite	The rock consists of almost sparry dolomite (>99%) with opaque minerals (<1%). Sparry dolomite can be classified into megacrystals (1mm. to 3 mm. in size) and smaller crystals (up to 80μ in size). Both of them form banded structure alternatively and show mosaic texture. Opaque minerals show irregular shape filling cavities of dolomite crystals.
1236	P706	TV	PU	Dolostone (Dolosparite)	The rock shows mosaic texture and consists of medium to coarse crystalline dolomite (100 to 500μ in size). Chalcedonic quartz is recognized in spherical shape (600μ in diameter). Small grains of rounded opaque mineral occur rarely.
1237	P707	TV	PU	Zebra Dolomite	The rock consists of almost sparry dolomite (>99%) with opaque minerals. Sparry dolomite can be classified into megacrystals (200 to 500μ in size) and smaller crystals (up to 200μ in size). Opaque minerals are very rarely observed (up to 20μ in size).
1285	P800	HG	PU	Limestone (Sparite)	The rock shows mosaic texture, and consists of mostly sparry calcite (50 to 150μ partially 300 to 500μ in size) and several per cent of detrital quartz. The spheroid of chalcedonic quartz is rarely recognized (50μ in diameter). A few per cent of opaque minerals are observed and small sphalerite grains (30μ in size) are recognized in sparry calcite.

Sample No.	Field No.	Locality	Group	Rock Name	Microscopic Observation
1314	S714	TV	PU	Oolitic Chert	The rock consists of mostly oolite (100-150μ in diameter) composed of microcrystals of quartz. Cemented material amid the oolite is made up of amorphous quartz, organic matters and opaque minerals up to a few microns.
1321	S725	S.T-4	PU	Dolosparite with sphalerite	The rock consists of dolomite (≈ 50%), quartz (≈ 30%), smithsonite (≈ 10%), hemimorphite (≈ 5%), sphalerite (≈ 5%) and opaque minerals (<1%). Dolomite crystals are various in size and may be classified into megacrystal, smaller and micritic. Megacrystals of dolomite (700 to 1200μ in size) are observed in the vicinity of sphalerite. Smaller crystals (100 to 200μ in size) are recognized forming aggregate in the micritic matrix. Micritic dolomite shows partly pelletal form but almost makes up the matrix. Quartz shows megacrystal of euhedra or subhedra in the vicinity of sphalerite (300 to 800μ in size). Sphalerite colored very dark reddish brown is observed in subhedral shape (100 to 500μ). Sphalerite is almost replaced by smithsonite in lattice form and surrounded aureole. Hemimorphite also secondary mineral shows radiated structure with smithsonite (300 to 400μ). Opaque minerals are very rarely recognized in irregular shape spotting in the matrix (10 to 50μ). (* Stained thin section)
1322	S727	S.T-4	PU	Dolostone (Dolomicrite)	The rock consists of micritic dolomite (≈ 85%), quartz (≈15%), calcite (<1%) and opaque minerals (≈ 1%). Micritic dolomite constitutes matrix in equigranular cryptocrystalline grain (2 to 5μ). Quartz is recognized as chalcedony and detritus. Chalcedonic quartz exists more than 80% in all quartz and fills cavities of dolomite crystals. Detrital quartz (20 to 60μ) in subangular to subrounded form are scattered in the matrix. Calcite is very rare up to 200μ in size and partly aggregates. Opaque minerals in irregular shape up to 30μ in size are observed in the matrix.
1323	S728	S.T-4	PU	Muddy dolostone (Micritic dololutite)	The rock consists of micritic dolomite (50-60%), quartz (40-50%) and opaque minerals (≤ 2%). Micritic dolomite formed matrix up to 10μ in size rarely includes anhedral calcite 20 to 50μ in diameter. Quartz exists in two different types i.e. chalcedony and detritus. Chalcedonic quartz formed microspheroid, bleb, sponge spicule and elongated ellipsoid up to 100μ fills up cavities of dolomite grains. Detrital quartz grains up to 50μ in size are scattered in the matrix. Opaque minerals are very fine grained and show partly cubic form up to 15μ in size.

Sample No.	Field No.	Locality	Group	Rock Name	Microscopic Observation
1325	S730	S.T-4	PU	Muddy dolostone (Micritic dololutite)	The rock consists of micritic dolomite (70-80%), quartz (20-30%) and opaque minerals (≤ 1%). Micritic dolomite formed matrix up to 10μ rarely includes an anhedral calcite (30 to 50μ). Quartz is recognized as chalcedony and detritus. Chalcedonic quartz in irregular shape fills cavities among dolomite crystals (20 to 50μ). Detrital quartz shows angular to subangular fragment. Opaque minerals are rarely observed in irregular shape up to 10μ in size.
1343	S770	T.T-27	PU	Zebra Dolomite	The rock consists of well crystalline dolomite (>99%) and opaque minerals (<1%), and shows mosaic texture. Dolomite may be classified into megacrystals (500μ x 600μ to 500μ x 1500μ) and smaller crystals (20μ to 100μ). The both of them forms so-called zebra structure alternatively. Opaque minerals are very rare. (* Stained thin section)
1350	S779	T.T-26	PU	Dolostone	The rock consists of well crystalline dolomite (≈ 99%) and calcite (≈ 1%, stained), showing mosaic texture of subhedra. Dolomite crystals are recognized as megacrystal (100 to 500μ in size) and small crystal (10 to 50μ in size). (* Stained thin section)

A. I-4 Microscopic observation of the polished section.

A. I -4 Microscopic observation of the polished section.

(1)

Sample No.	Field No.	Locality	Rock Name	Reflecting Microscopic Observation
954	A752	HG	Galena ore	The ore mineral is almost composed of galena. Galena is pure white in color and is replaced by cerussite along cleavage and fractures in veinlet-like or network-like. Cerussite also exists surrounding galena (10μ to 50μ in width). Anistropism of cerussite is very clear. Gangue minerals (Fluorite) are included in galena up to 100μ in size. Cu: 8 ppm, Pb: 25.80 %, Zn: 0.11 %, Ag: 74.0 g/t
1004	L709	S.T-13	Dolostone	The ore minerals are recognized as sphalerite, pyrite, goethite,and lepidocrocite. Sphalerite exists very rare in irregular shape 5 to 50μ in size, and is scattered in the matrix. Pyrite, creamy yellow in color, very fine grained up to 10μ in framboidal form is spotted in the matrix. The both of goethite and lepidocrocite is derived from pyrite in pseudomorph, 20 to 50μ in size. The former is brighter than the latter in color or the latter more bluish tint. Cu: 8 ppm, Pb: 51 ppm, Zn: 6,120 ppm
1012	L719	S.T-2	Dolostone	The ore minerals are observed as goethite, sphalerite,and pyrite. Goethite, pseudomorph after pyrite of cube up to 50μ in size,is scattered in the fine grained dolomite. Lepidocrocite is frequently observed with goethite just like exsolution texture. Sphalerite is rarely recognized as irregular shape in dark grey brownish tint color (20 to 50μ in size). Pyrite is replaced by goethite and lepidocrocite, the remnant of alteration is very rare. Pyrite, creamy yellow in color formed in microspheroid, is scattered as monograin in the matrix of dolomite. Cu: 16 ppm, Pb: 217 ppm, Zn: 1,360 ppm

Sample No.	Field No.	Locality	Rock Name	Reflecting Microscopic Observation
1022	L729	S.T-2	Dolostone	The ore minerals are observed as galena, cerussite, goethite,and pyrite. Galena up to 2mm. x 3 mm. in size of anhedra, is adjacent to chalcedonic quartz. Cerussite replaces galena grains along the cleavage or around the rim. Cerussite also exists in veinlet like form among dolomite and quartz crystals (10-50μ in width). Goethite associated with lepidocrocite (more bluish) is recognized as pseudomorph after pyrite in cube or framboid. Pyrite is rarely recognized as remnant of alteration to goethite in cube or as aggregates (5 to 30μ in size). Cu Pb Zn Ag 10 ppm, 0.09 %, 0.35 %, 8.0 g/t
1024	L731	S.T-2	Galena ore	The specimen is mostly composed of galena. Galena is replaced by cerussite along the fractures or the rim up to 50μ in width. Galena partly includes gangue minerals (fluorite) in irregular shape. Cu Pb Zn Ag 10 ppm, 77.30 %, 0.016 %, 40.0 g/t
1047	L760	T.T-25	Dolostone	The specimen is mainly composed of fine grained dolomite. The ore minerals are recognized as pyrite, goethite,and sphalerite. Pyrite is rarely observed in very fine grained framboids and cubes (5-20μ in size). Goethite is rarely observed as pseudomorph after framboidal pyrite. Sphalerite is very rare mineral filling cavities of dolomite crystals (10 to 20μ). The lead mineral is not identified. Cu Pb Zn 3 ppm, 1,500 ppm, 15 ppm
1048	L761	T.T-25	Dolostone	The specimen is mainly composed of fine grained dolomite. Goethite is rarely observed as pseudomorph after pyrite in cubic or framboidal form (20 to 30μ in size). Pyrite is almost framboidal derived from mineralized bacteria (?) (5-10μ in diameter). Lepidocrocite filling fractures of dolomite accompanies with goethite. Sphalerite is very rare mineral in irregular shape 5 to 20μ in size. Cu Pb Zn 8 ppm, 31 ppm, 19 ppm

Sample No.	Field No.	Locality	Rock Name	Reflecting Microscopic Observation
1068	L783	S.T-28	Sphalerite, Galena ore	The ore minerals are recognized as sphalerite, galena, smithsonite, cerussite, pyrite,and goethite. Sphalerite filled many fractures up to 10 mm. in width coexists with galena and alters partly to smithsonite. Surrounding rim of galena and along cleavage of galena, cerussite is recognized. Galena of anhedra accompanies with sphalerite in veinlet like or in irregular shape (1 to 3 mm. in width). Smithsonite derived from sphalerite in vein-like or in lattice form is colored very dark grey brownish tint and shows clear anistropism. Cerussite derived from galena in veinlet like or network is pure grey in color. The strong reflection pleochroism is observed. Pyrite is rarely recognized as the relict of alteration to goethite up to 20μ in size. Goethite is often observed with lepidocrocite in the matrix as the pseudomorph after pyrite (5 to 10μ in size). Cu 24 ppm, Pb 0.15 %, Zn 20.72 %, Ag 24.0 g/t
1074	L784	S.T-28	Sphalerite, Galena ore	The ore minerals are determined as sphalerite, goethite, lepidocrocite, pyrite, smithsonite,and galena. Sphalerite filled fracture in vien like up to 2mm. in width is colored dark grey brownish tint. The internal reflections are very numerous. Goethite coexisted frequently with lepidocrocite in pseudo-exsolution texture is recognized as pseudomorph after pyrite. Pyrite is observed as mono grain of euhedra or as aggregate in the matrix up to 20μ in size. Smithsonite derived from sphalerite exists along the cleavage and the rim in network form up to 30μ in width. Galena associated with sphalerite up to 1 mm. x 1.5 mm in size is purely white in color and is partly replaced by cerussite along the cleavage and the aureole. (not analyzed)
1078	L788	S.T-28	Dolostone	The ore minerals are determined as goethite, lepidocrocite, pyrite,and sphalerite. Goethite colored dark grey bluish tint is recognized as pseudomorph after framboidal pyrite up to 100μ in size. Lepidocrocite often accompanies with goethite in pseudo-exolution texture. The distinction between the goethite and lepidocrocite is very difficult, the former is a little darker in bluish grey than the latter. Pyrite is the only remnant of replacement to the goethite and lepidocrocite and is dispersed in the matrix (2 to 20μ in size). Sphalerite is scarcely observed in irregular shape showing dark grey brownish tint in color (5 to 10μ in size). Cu 4 ppm, Pb 107 ppm, Zn 760 ppm

Sample No.	Field No.	Locality	Rock Name	Reflecting Microscopic Observation
1084	L795	S.T-28	Dolostone	The ore minerals are determined as goethite, lepidocrocite, pyrite,and sphalerite. Both goethite and lepidocrocite are recognized as pseudomorph after pyrite and form myrmekitic texture. Pyrite is rarely recognized as the remnant of replacement and exists in monograin up to 20μ in size. Sphalerite is scarcely observed filling cavities of dolomite crystals in irregular shape up to 50μ in size. Cu Pb Zn 3 ppm, 2,320 ppm, 7,160 ppm
1085	L796	S.T-28	Shaly dolostone	The ore minerals are very few and are determined as goethite, lepidocrocite, pyrite,and sphalerite. Goethite derived from framboidal or cubic pyrite grows in cavities up to 100μ in size. Lepidocrocite also replaced pyrite with goethite in myrmekitic texture is colored grey bluish tint. Pyrite, the remnant of replacement is ordinarily framboidal or aggregates in cubic crystals up to 100μ in size. Sphalerite is very rare mineral and shows colloform structure up to 30μ in size. Cu Pb Zn 4 ppm, 146 ppm, 558 ppm
1109	L820	S.T-29	Dolostone with sphalerite	The specimen shows sphalerite ore in vein-like form with lepidocrocite up to 2 mm in width. The ore minerals consist of sphalerite, goethite with lepidocrocite, smithsonite,and pyrite. Sphalerite formed in vein-like up to 3mm x 8mm in grain size is replaced by smithsonite along the cleavage and the rim. Both goethite and lepidocrocite are recognized as pseudomorph after pyrite and form myrmekitic texture (100μ x 500μ to 2 mm x 1.5 mm in size). Smithsonite derived from sphalerite shows lattice form up to 30μ in width. Framboidal pyrite up to 20μ in size is rarely recognized as the remnant of replacement to goethite. Cu Pb Zn Ag 8 ppm, 0.16 %, 10.74 %, 23.5 g/t

Sample No.	Field No.	Locality	Rock Name	Reflecting Microscopic Observation
1148	N746	TV	Galena ore	The specimen shows galena ore with calcite. Galena (7mm x 7mm) shows pure white in color and is replaced by cerussite along cleavage, fractures and surrounding rim. Cerussite is grey in color and the reflection pleochroism is clear. Cu: 20 ppm, Pb: 4.33 %, Zn: 0.01 %, Ag: 18.0 g/t
1259	P754	GG	Limestone	The ore minerals are recognized as goethite, pyrite,and sphalerite. Goethite shows very fine grained aggregate (up to 5μ) and is partly observed as pseudomorph after pyrite up to 50μ in size. Framboidal pyrite is rarely observed up to 5μ in diameter. Sphalerite is very rare mineral forming microsphere or irregular shape up to 10μ in size. Cu: 5 ppm, Pb: 222 ppm, Zn: 648 ppm
1285	P800	HG	Limestone	The ore minerals are determined as pyrite, goethite,and sphalerite. Framboidal pyrite shows in aggregate form 70 to 100μ in diameter and is partly replaced by goethite up to 5μ in size in the finer grained calcite. Sphalerite spotted in cavities and fractures up to 150μ is partly replaced by hemimorphite and smithsonite. Cu: 3 ppm, Pb: 26 ppm, Zn: 1,270 ppm
1289	P807	HG	Galena ore	The specimen is almost composed of galena. Galena is pure white in color and consists of tiny grains up to 1 mm in size. Cerussite replaces galena along the cleavage, fractures and around the rim in network form or spot-like (50 to 100μ in width). Cu: 70 ppm, Pb: 23.68 %, Zn: 0.04 %, Ag: 62.0 g/t

Sample No.	Field No.	Locality	Rock Name	Reflecting Microscopic Observation
1321	S725	S.T-4	Sphalerite ore	The ore minerals consist of sphalerite, smithsonite, galena, cerussite, pyrite, goethite,and lepidocrocite. Sphalerite (1 mm x 1 mm - 3 mm x 2 mm) dark grey ocher tint in color, is replaced by smithsonite along cleavage and fractures in network and includes lepidocrocite in bleb-like. Galena, pure white in color (0.5 mm x 1 mm - 1 mm x 2 mm) is replaced by cerussite along fractures and rim (30μ to 50μ in width). Pyrite, creamy yellow in color, is mostly replaced by goethite and lepidocrocite. The cubic or the framboidal pyrite also exists in the finer grains of dolomite (2 to 10μ in size). Goethite is recognized as the pseudomorph after pyrite of euhedra forming myrmekitic texture with lepidocrocite (30μ to 80μ in size). Cu: 24 ppm, Pb: 0.07 %, Zn: 0.18 %, Ag: 4.0 g/t
1323	S728	S.T-4	Muddy dolostone	The ore minerals are very few, and are only recognized as goethite, pyrite and sphalerite. Goethite, formed pseudomorph after pyrite in cube or framboid up to 50μ in size, associates with lepidocrocite in myrmekitic texture. Pyrite, creamy yellow in color, is rarely recognized as the remnant of replacement in framboidal form up to 5μ. Sphalerite is very rare in irregular shape or framboid up to 20μ. Cu: 3 ppm, Pb: 23 ppm, Zn: 172 ppm
1340	S757	S.T-8	Dolostone	The ore minerals are recognized as goethite, lepidocrocite, pyrite,and sphalerite. Goethite derived from pyrite associates with lepidocrocite in myrmekitic texture up to 300μ. Cubes or framboids of pyrite up to 30μ in size are scattered in the matrix of fine grained dolomite. The larger euhedras of pyrite are mainly replaced by goethite. Sphalerite, darker than goethite in color, is rarely observed filling fractures and pores of dolomite up to 50μ in size. Cu: 7 ppm, Pb: 62 ppm, Zn: 17,900 ppm

Sample No.	Field No.	Locality	Rock Name	Reflecting Microscopic Observation
1343	S770	T.T-27	Zebra dolomite	The ore minerals are very few and are mostly recognized as goethite. Goethite is observed as the pseudomorph after pyrite in microsphere and irregular shape. Pyrite is rarely observed as very fine grained framboid or microsphere up to 10μ in diameter. Cu Pb Zn 2 ppm, 19 ppm, 7 ppm
1350	S779	T.T-26	Dolostone	The ore minerals are very few in this specimen. They are recognized as pyrite and goethite. Pyrite grains in irregular shape up to 10μ in size are scattered among the dolomite crystals. Goethite, dark grey bluish tint in color, in microsphere of pseudomorph after pyrite up to 10μ in diameter, also fills open spaces among dolomite crystals. Cu Pb Zn 3 ppm, 25 ppm, 26 ppm
1353	S783	S.T-10	Galena ore	A few galena grains are megascopically observed in the original piece sample. But, in this polished specimen no galena is observed under the microscope. The ore minerals are determined as pyrite, goethite, lepidocrocite, magnetite, sphalerite and smithsonite. Pyrite is mostly replaced by goethite and lepidocrocite. The remnant of replacement i.e. pyrite is scattered in framboidal form up to 5μ. Goethite and lepidocrocite shows myrmekitic texture in pseudomorph up to 50μ in size. Magnetite fragments are observed up to 50μ in size showing harder than sphalerite. Sphalerite, dark grey brownish tint, is almost replaced by smithsonite and hemimorphite (?) up to 150μ in size. Smithsonite, dark grey near gangue minerals in color, is recognized in lattice form or fracture filling. Cu Pb Zn Ag 48 ppm, 6.56 %, 19.16 %, 16.0 g/t

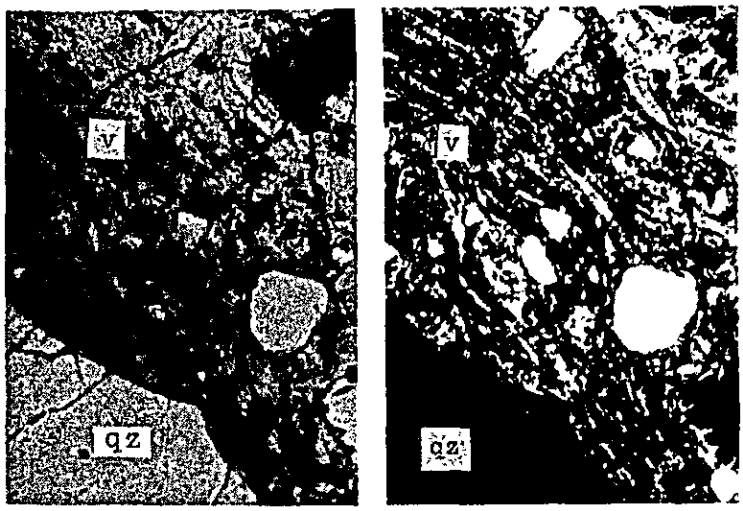
A. I-5 Photomicrographs of rocks and ores.

Thin Section

Sample No.	Field No.	Locality	Geological Unit	Rock Name
971	A770	SR	MI	Quartz porphyry
1007	L712	S.T-2	PU	Dolomitic sandstone
1010	L716	S.T-2	PU	Dolostone
1034	L745	S.T-5	PU	Dolostone
1048	L761	T.T-25	PU	Dolostone
1053	L767	T.T-24	PU	Dolostone
1060	L775	T.T-21	PU	Dolostone
1074	L784	T.T-28	PU	Dolostone with ore
1085	L796	S.T-28	PU	Shaly dolostone
1098	L809	S.T-28	PU	Sandstone
1109	L820	S.T-29	PU	Dolostone
1116	N701	TV	PU	Limestone
1126	N711	HG	PU	Sandstone
1197	N845	T.T-15	PU	Zebra dolomite
1237	P707	TV	PU	Zebra dolomite
1285	P800	HG	PU	Limestone
1314	S714	TV	PU	Oolitic chert
1321	S725	S.T-4	PU	Dolostone with sphalerite
1322	S727	S.T-4	PU	Dolostone
1323	S728	S.T-4	PU	Muddy dolostone
1325	S730	S.T-4	PU	Muddy dolostone
1350	S779	T.T-26	PU	Dolostone
1353	S783	S.T-10	PU	Galena ore

Abbreviations

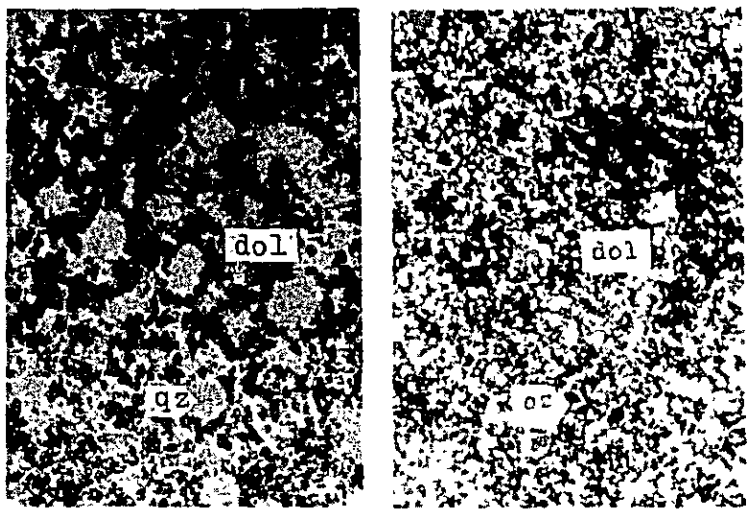
Bit : Bituminous
cal : calcite
dol : dolomite
Gn : Galena
He : Hemimorphite
Pel : Pellet
Py : Pyrite
qz : quartz
Sp : Sphalerite
v : vitreous material



0 0.1 0.2 0.3mm

Sample No. 971
Field No. A770
Location SR
Geological unit MI
Rock name, Quartz porphyry

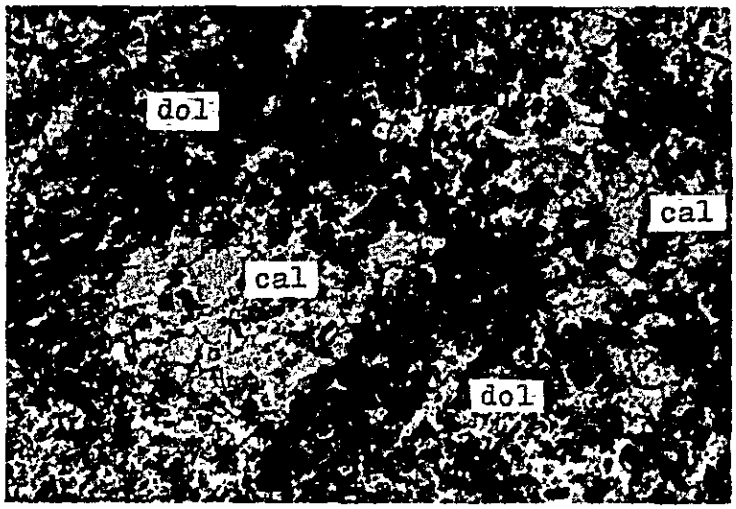
Left: Open nicol
Right: Crossed nicols



0 0.1 0.2 0.3mm

Sample No. 1007
Field No. L712
Location S.T-2
Geological unit PU
Rock name, Dolomitic sandstone

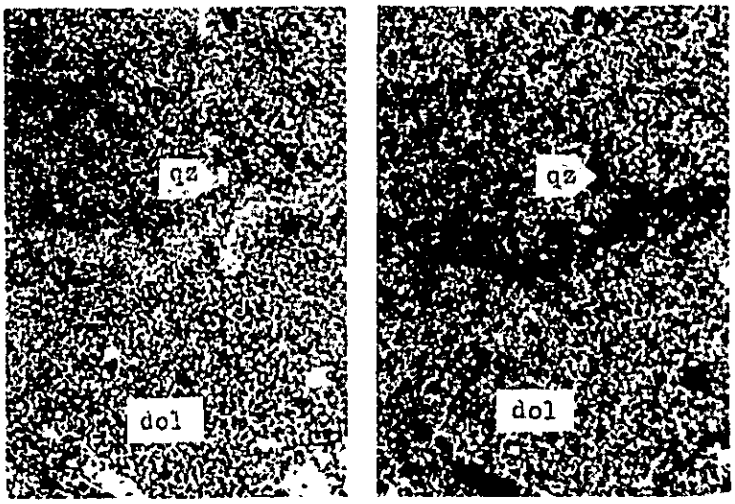
Left: Open nicol
Right: Crossed nicols



0 0.1 0.2 0.3mm

Sample No. 1010
Field No. L716
Location S.T-2
Geological unit PU
Rock name, Dolostone

Open nicol.



0 0.1 0.2 0.3mm

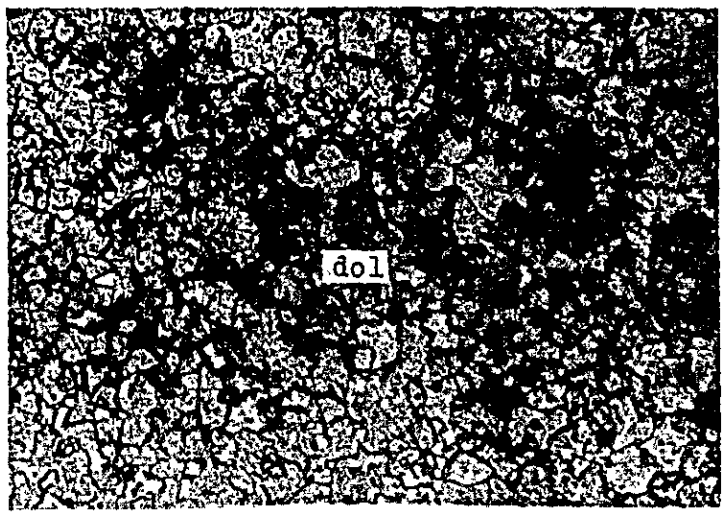
Sample No. 1034
Field No. L745
Location S.T-5
Geological unit PU
Rock name, Dolostone

Left: Open nicol
Right: Crossed nicols

0 0.1 0.2 0.3mm

Sample No. 1048
Field No. L745
Location T.T-25
Geological unit PU
Rock name, Dolostone

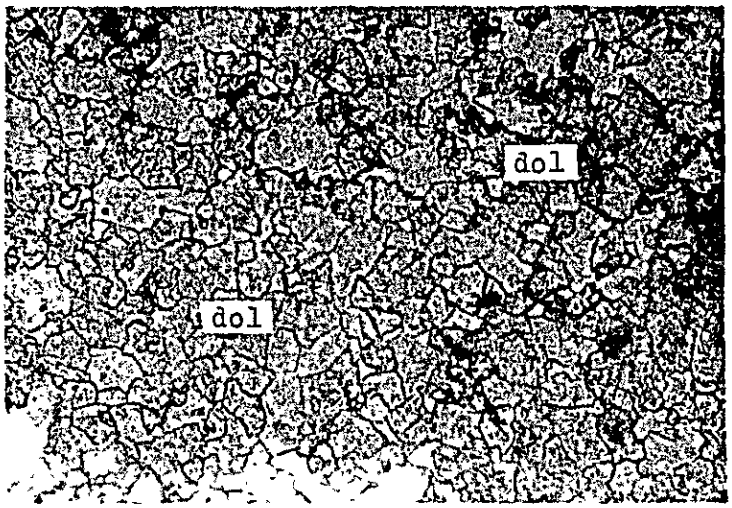
Stained thin section.
Left: Open nicol
Right: Crossed nicols



0 0.1 0.2 0.3mm

Sample No. 1053
Field No. L767
Location T.T-24
Geological unit PU
Rock name, Dolostone

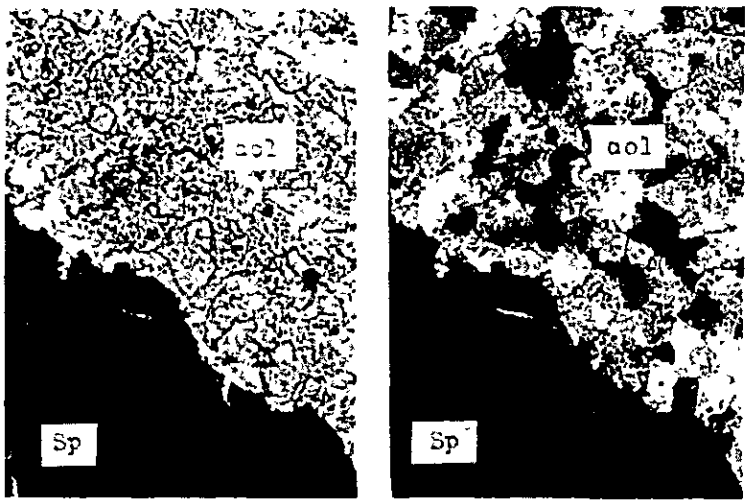
Open nicol



Sample No. 1060
Field No. L775
Location T.T-21
Geological unit PU
Rock name, Dolostone

Open nicol

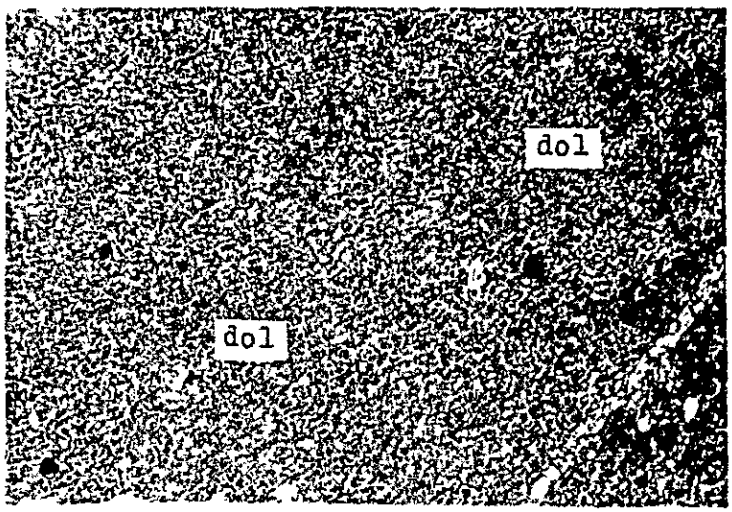
0 0.1 0.2 0.3mm



Sample No. 1074
Field No. L784
Location T.T-28
Geological unit PU
Rock name, Dolostone with ore

Left: Open nicol
Right: Crossed nicols

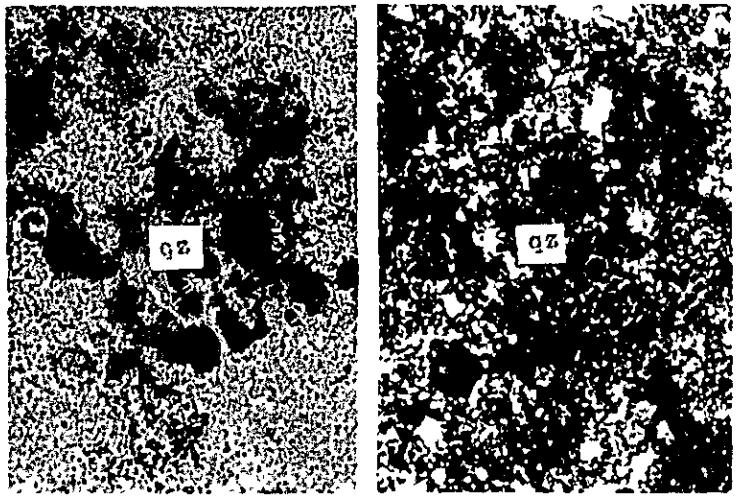
0 0.1 0.2 0.3mm



Sample No. 1085
Field No. L796
Location S.T-28
Geological unit PU
Rock name, Shaly dolostone

Open nicol

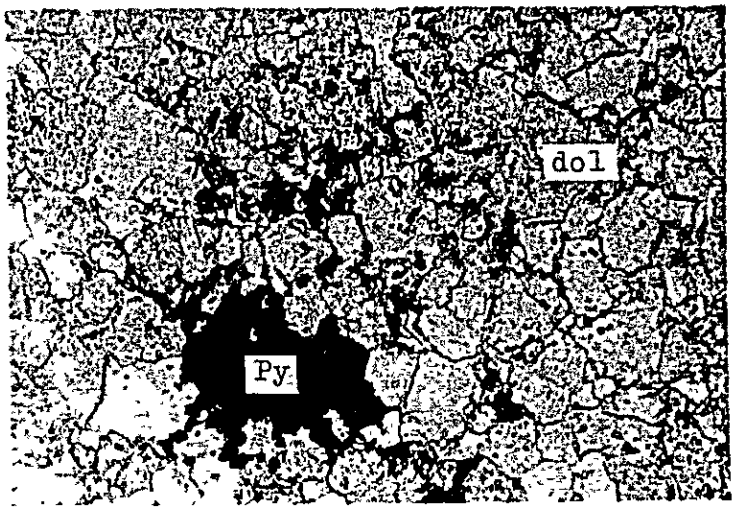
0 0.1 0.2 0.3mm



Sample No. 1098
Field No. L809
Location S.T-28
Geological unit PU
Rock name, Sandstone

Left: Open nicol
Right: Crossed nicols

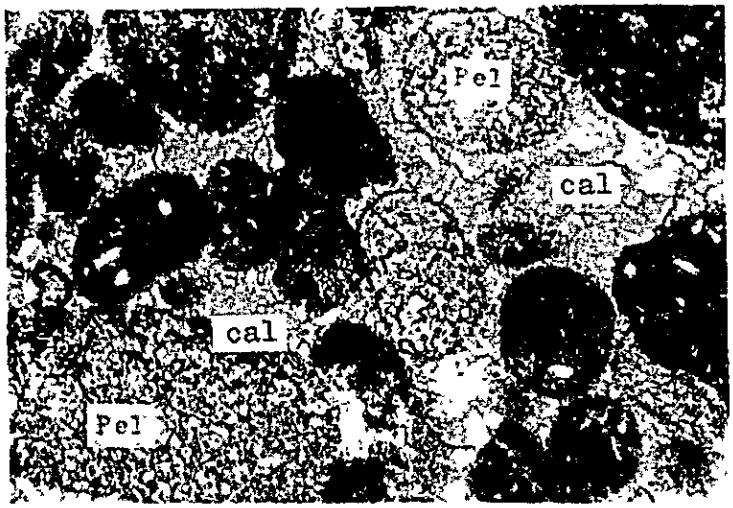
0 0.1 0.2 0.3mm



Sample No. 1109
Field No. L820
Location S.T-29
Geological unit PU
Rock name, Dolostone

Open nicol

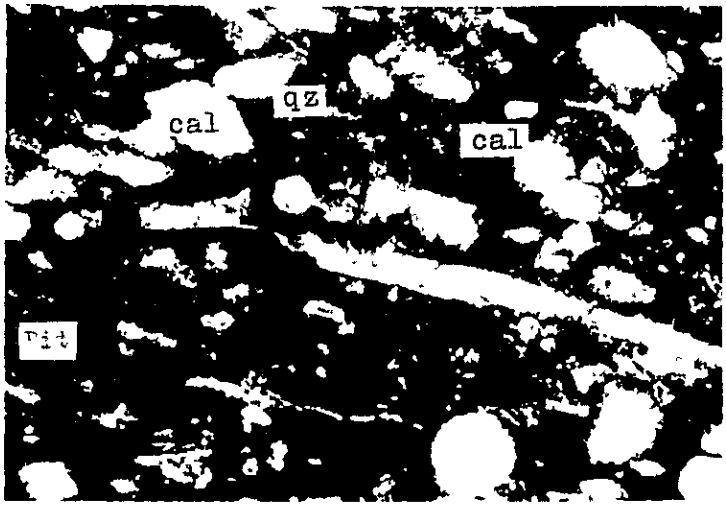
0 0.1 0.2 0.3mm



Sample No. 1116
Field No. N701
Location TV
Geological unit PU
Rock name, Limestone

Open nicol

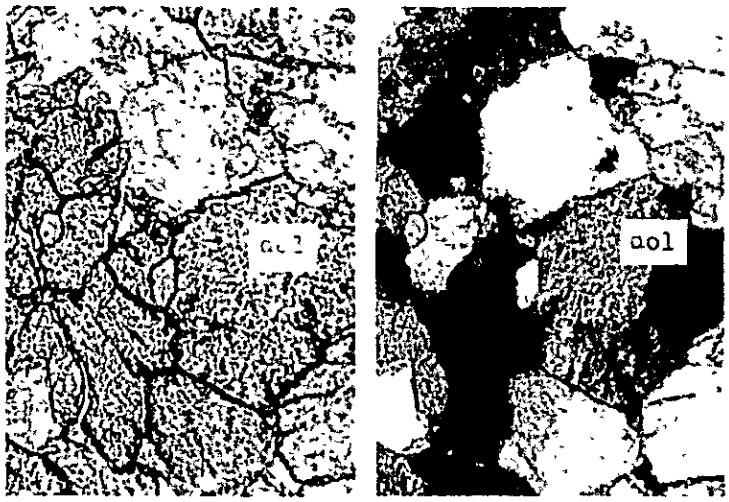
0 0.1 0.2 0.3mm



Sample No. 1126
Field No. N711
Location HG
Geological unit PU
Rock name, Sandstone

Open nicol

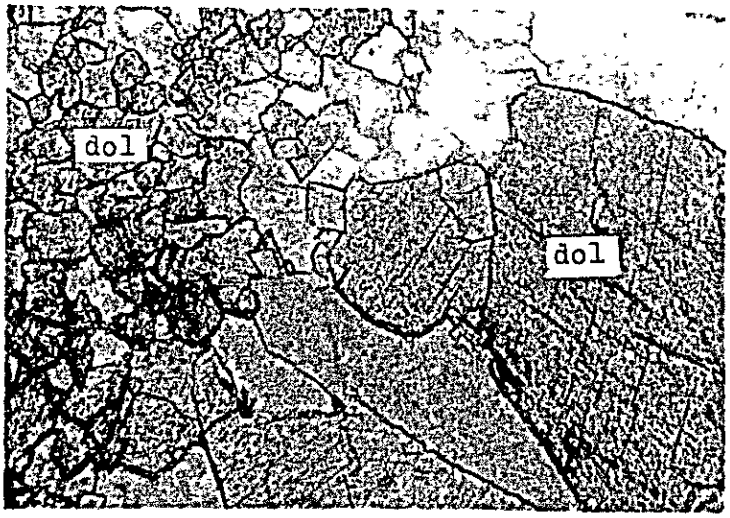
0 0.1 0.2 0.3mm



Sample No. 1197
Field No. N845
Location T.T-15
Geological unit PU
Rock name, Zebra Dolomite

Left: Open nicol
Right: Crossed nicols

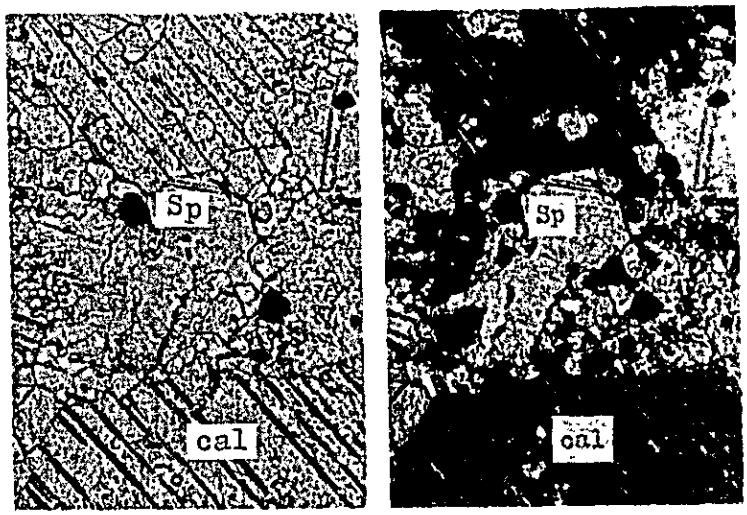
0 0.1 0.2 0.3mm



Sample No. 1237
Field No. P707
Location TV
Geological unit PU
Rock name, Zebra Dolomite

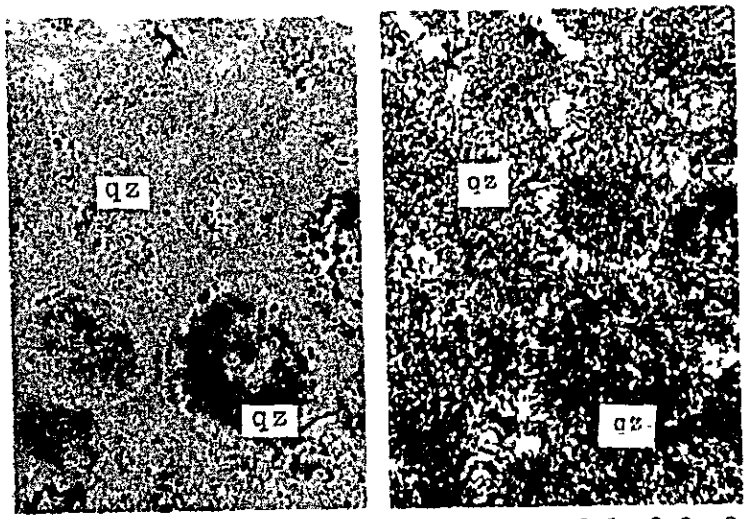
Open nicol

0 0.1 0.2 0.3mm



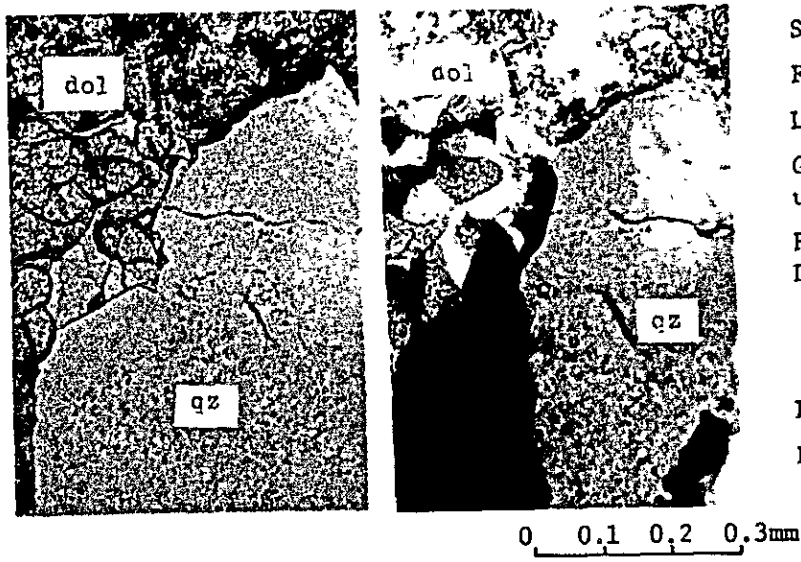
Sample No. 1285
Field No. P800
Location HG
Geological unit PU
Rock name, Limestone

Left: Open nicol
Right: Crossed nicols.



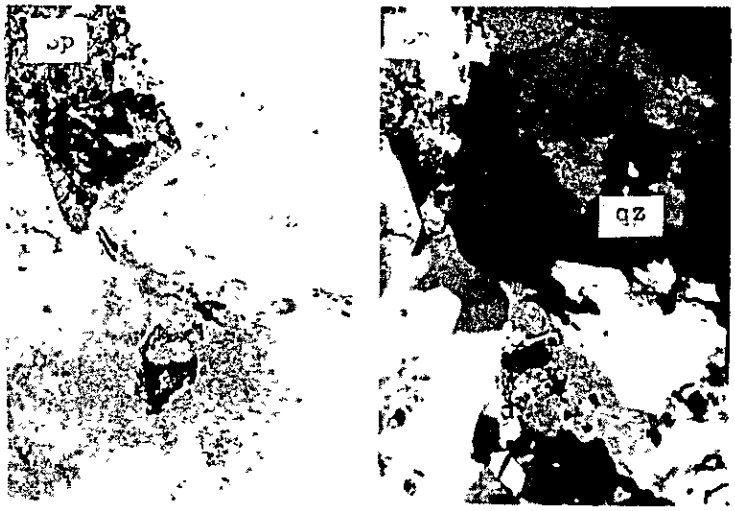
Sample No. 1314
Field No. S714
Location TV
Geological unit PU
Rock name, Oolitic chert

Left: Open nicol
Right: Crossed nicols



Sample No. 1321
Field No. S725
Location S.T-4
Geological unit PU
Rock name, Dolostone

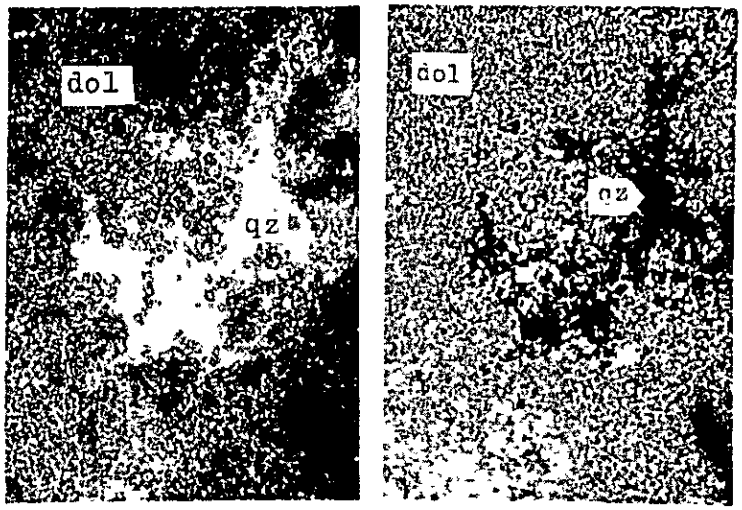
Left: Open nicol
Right: Crossed nicols



0 0.1 0.2 0.3mm

Sample No. 1321
Field No. S725
Location S.T-4
Geological unit PU
Rock name, Dolostone

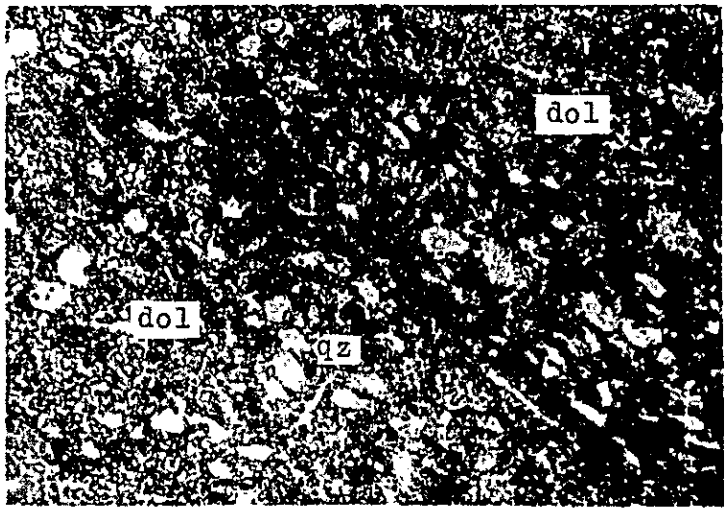
Left: Open nicol
Right: Crossed nicols



0 0.1 0.2 0.3mm

Sample No. 1322
Field No. S727
Location S.T-4
Geological unit PU
Rock name, Dolostone

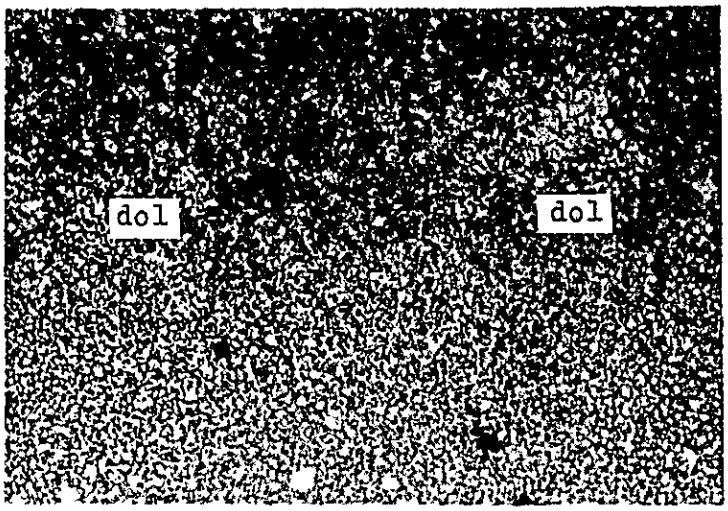
Left: Open nicol
Right: Crossed nicols



0 0.1 0.2 0.3mm

Sample No. 1323
Field No. S728
Location S.T-4
Geological unit PU
Rock name, Muddy dolostone

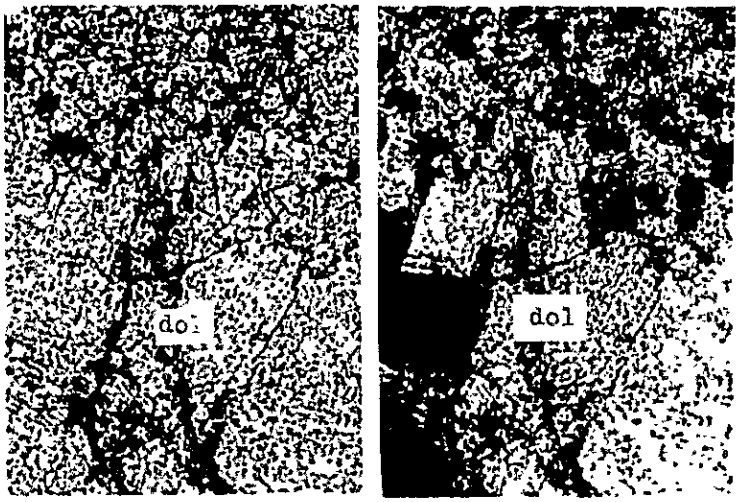
Open nicol



Sample No. 1325
Field No. S730
Location S.T-4
Geological unit PU
Rock name, Muddy dolostone

Open nicol

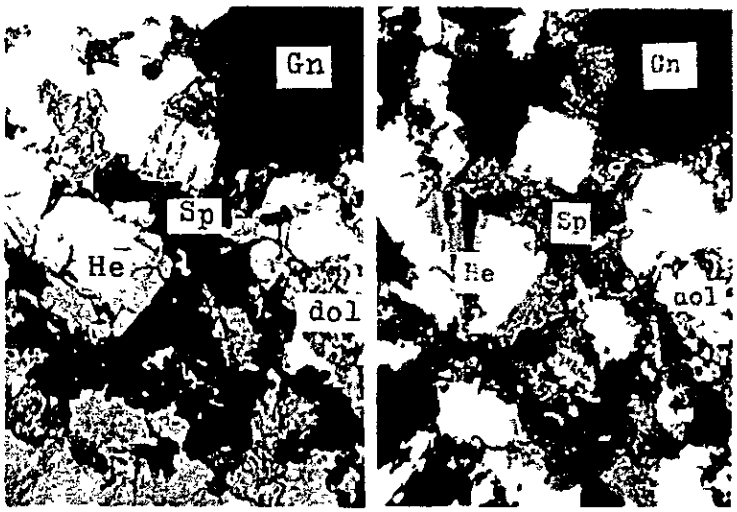
0 0.1 0.2 0.3mm



Sample No. 1350
Field No. S779
Location T.T-26
Geological unit PU
Rock name, Dolostone

Left: Open nicol
Right: Crossed nicols

0 0.1 0.2 0.3mm



Sample No. 1353
Field No. S783
Location S.T-10
Geological unit PU
Rock name, Dolostone with ore.

Left: Open nicol
Right: Crossed nicols

0 0.1 0.2 0.3mm

Polished Section

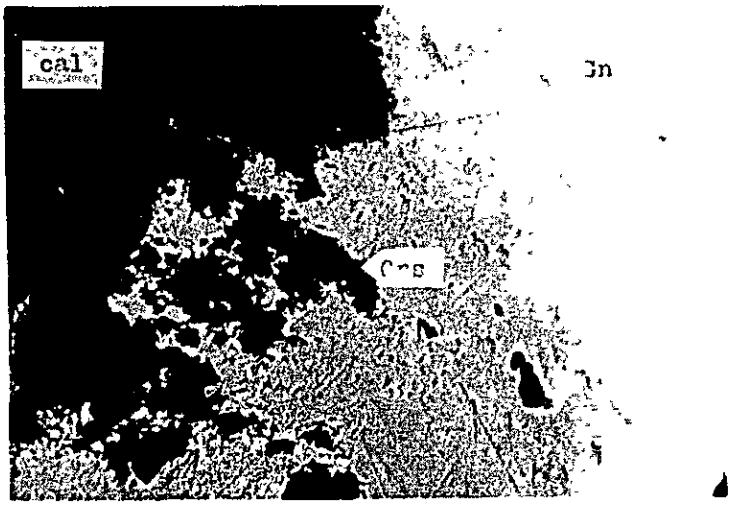
Sample No.	Field No.	Locality	Rock Name
954	A752	HG	Galena ore
1022	L729	S.T-2	Dolostone
1047	L760	T.T-25	Dolostone
1068	L783	S.T-28	Sphalerite Galena ore
1074	L784	S.T-28	Sphalerite Galena ore
1109	L820	S.T-29	Dolostone
1259	P754	GG	Limestone
1285	P800	HG	Limestone
1321	S725	S.T-4	Sphalerite ore
1323	S728	S.T-4	Muddy dolostone

Abbreviations

cal : calcite Crs : Cerussite dol : dolomite

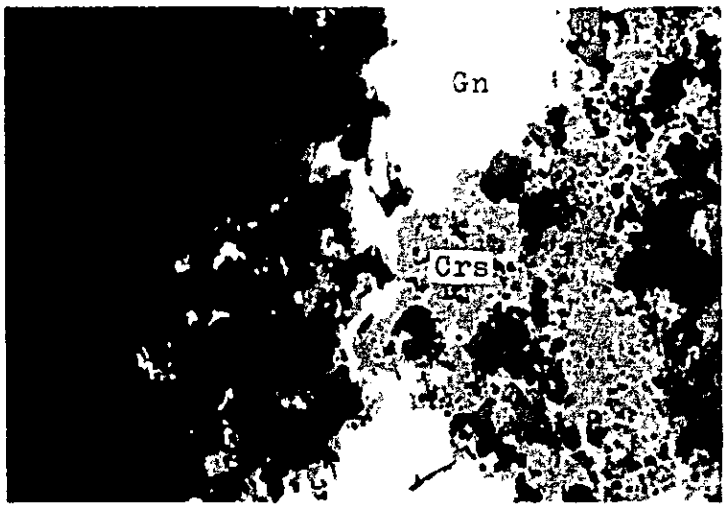
Ge : Goethite Gn : Galena Py : Pyrite

qz : quartz Sm : Smithsonite Sp : Sphalerite



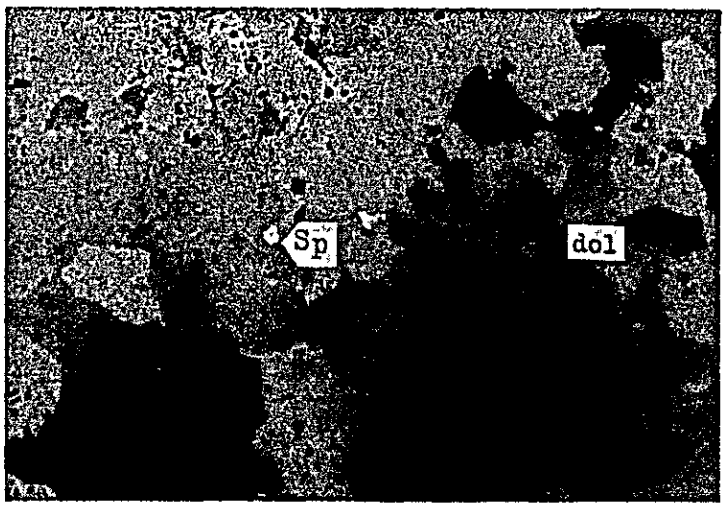
Sample No. 954
Field No. A752
Location HG
Rock name,
Galena ore.

0 0.1 0.2 0.3mm



Sample No. 1022
Field No. L729
Location S.T-2
Rock name,
Dolostone

0 0.1 0.2 0.3mm

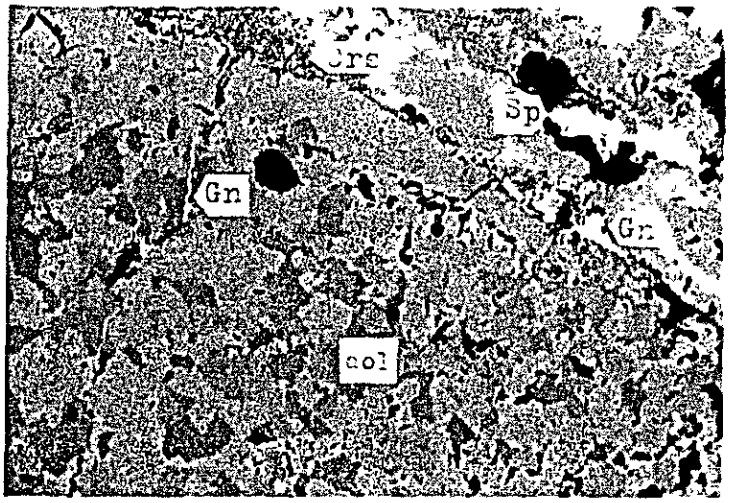


Sample No. 1047
Field No. L760
Location T.T-25
Rock name,
Dolostone

0 0.1 0.2 0.3mm

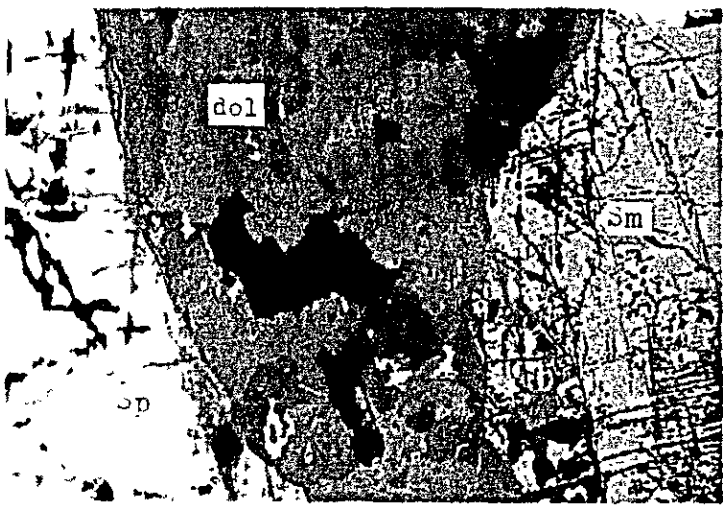
0 0.1 0.2 0.3mm

Sample No. 1068
Field No. L783
Location S.T-28
Rock name,
Sphalerite, Galena ore



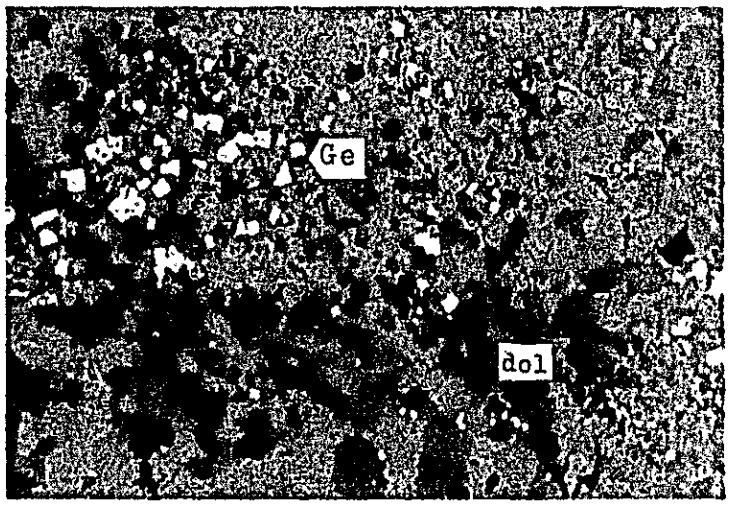
0 0.1 0.2 0.3mm

Sample No. 1068
Field No. L783
Location S.T-28
Rock Name,
Dolostone with ore.



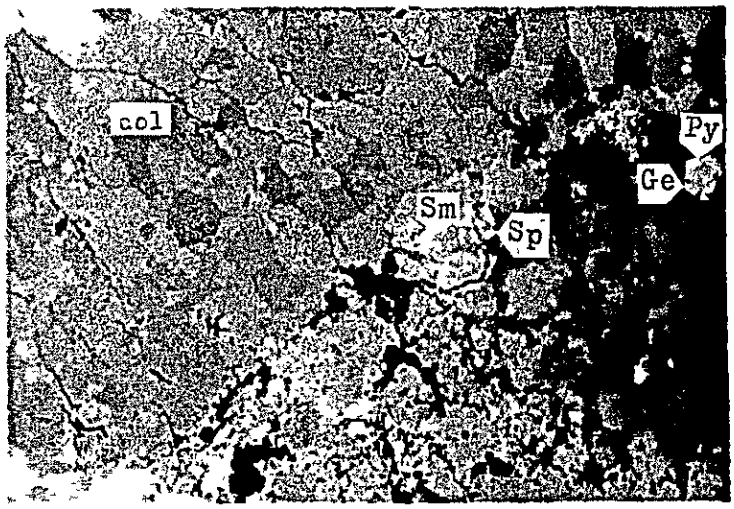
0 0.1 0.2 0.3mm

Sample No. 1068
Field No. L783
Location S.T-28
Rock name,
Dolostone with ore.



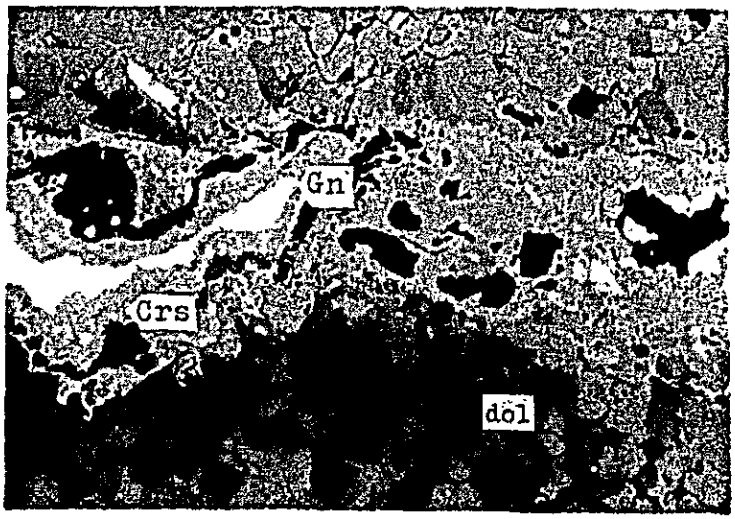
0 0.1 0.2 0.3mm

Sample No. 1068
Field No. L783
Location S.T-28
Rock name,
Dolostone with ore.



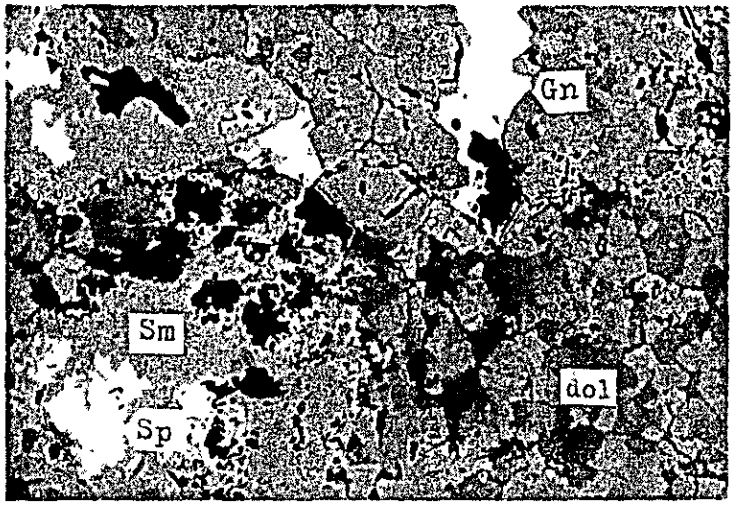
0 0.1 0.2 0.3mm

Sample No. 1068
Field No. L783
Location S.T-28
Rock name,
Dolostone with ore.



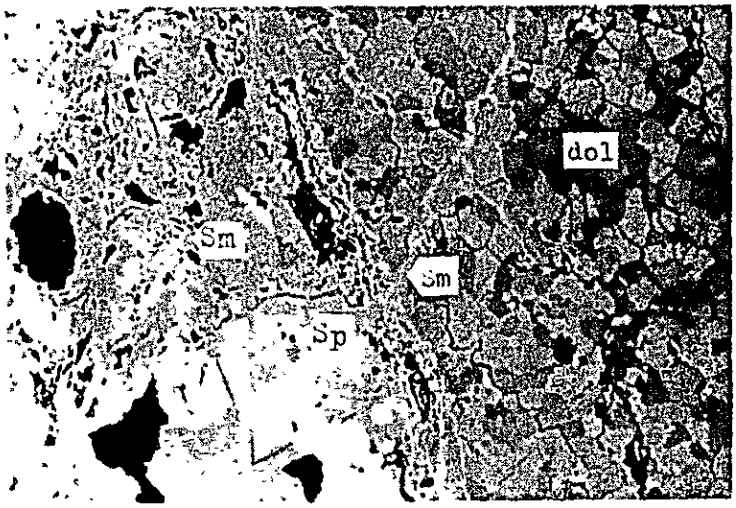
0 0.1 0.2 0.3mm

Sample No. 1068
Field No. L783
Location S.T-28
Rock name,
Dolostone with ore.



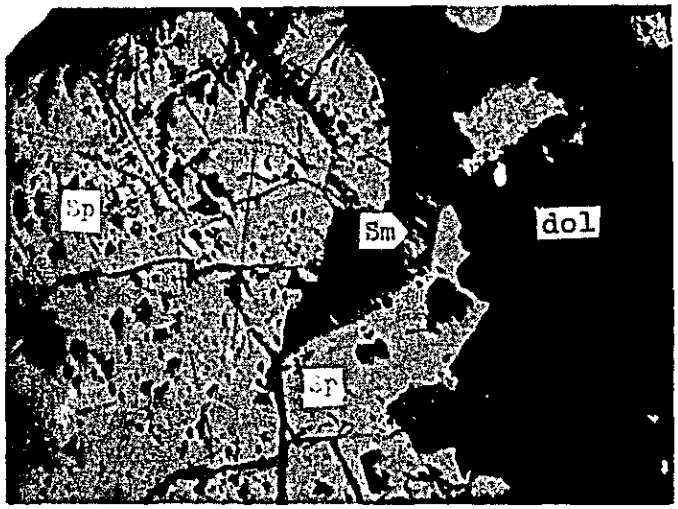
0 0.1 0.2 0.3mm

Sample No. 1068
Field No. L783
Location S.T-28
Rock name,
Dolostone with ore.



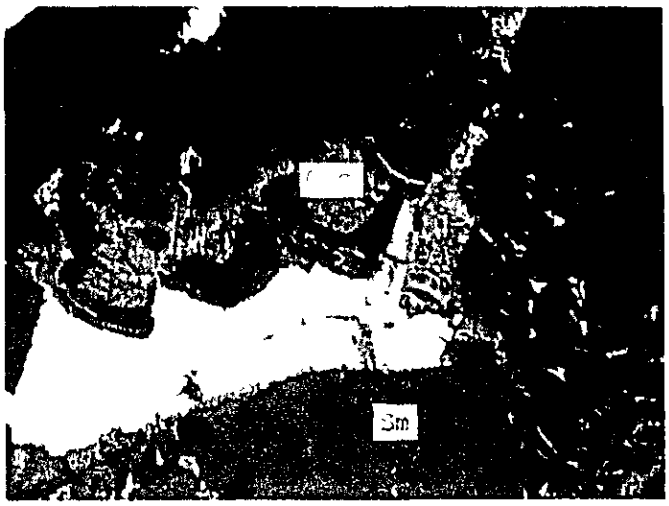
0 0.1 0.2 0.3mm

Sample No. 1068
Field No. L783
Location S.T-28
Rock name,
Dolostone with ore.



0 0.1mm

Sample No. 1074
Field No. L784
Location S.T-28
Rock name,
Dolostone with ore.



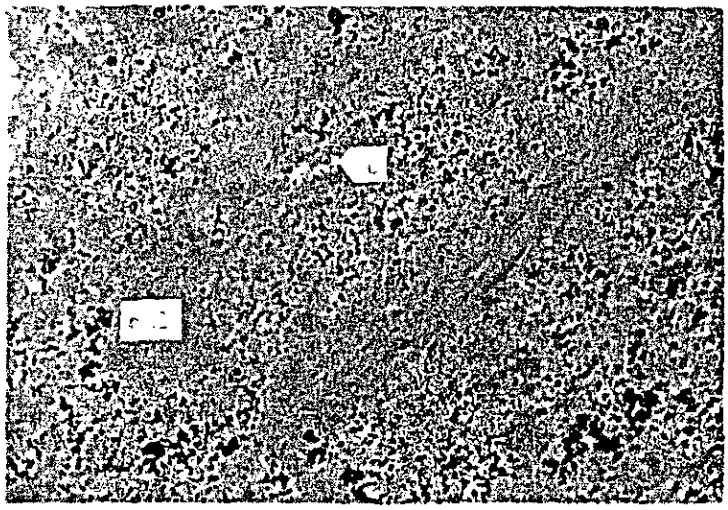
Sampel No. 1109

Field No. L820

Location S.T-29

Rock name,
Galena ore.

0 0.1mm



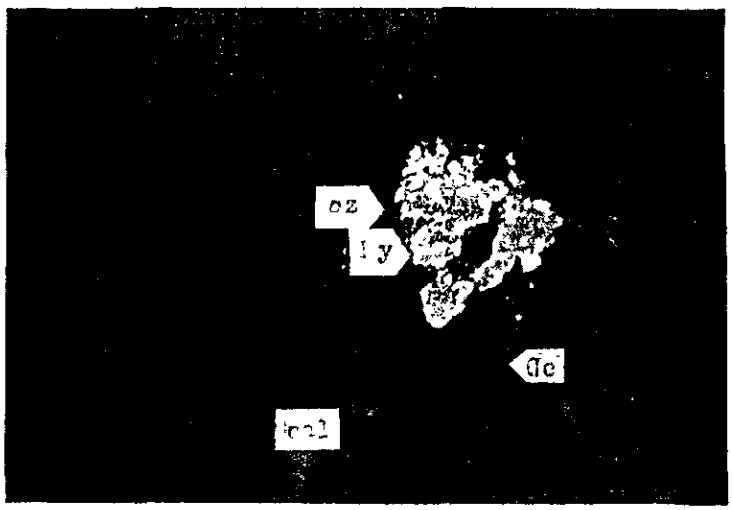
Sample No. 1259

Field No. P754

Location GG

Rock name,
Limestone

0 0.1mm



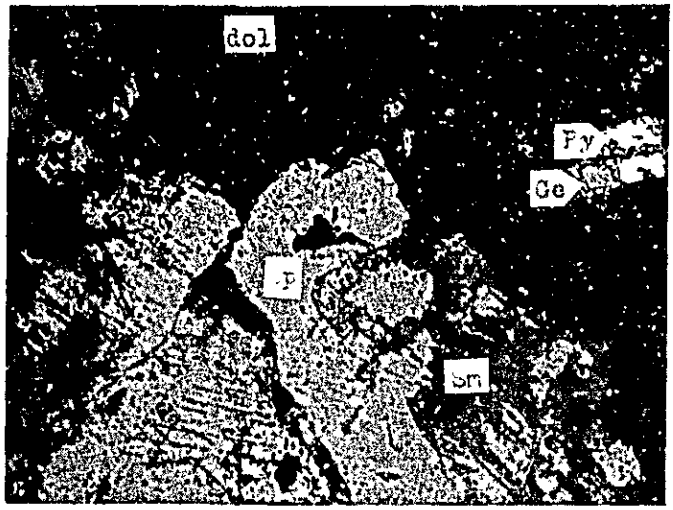
Sample No. 1285

Field No. P800

Location HG

Rock name,
Limestone

0 0.1mm

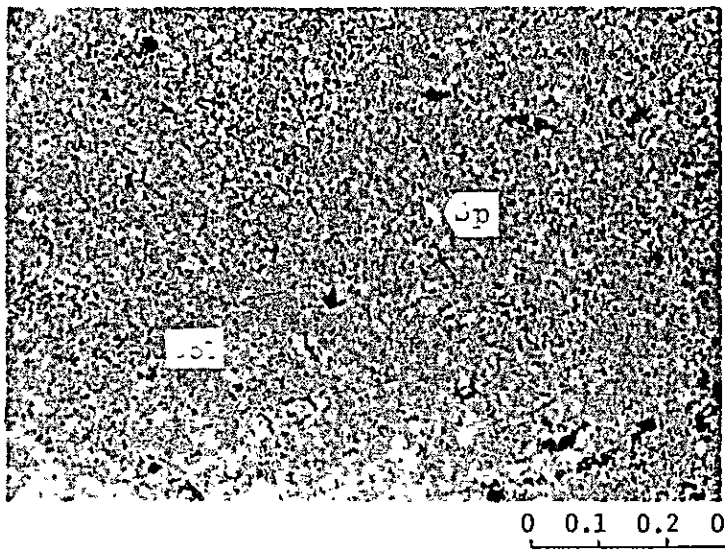


Sample No. 1321

Field No. S725

Location S.T-4

Rock name,
Dolostone with ore.



Sample No. 1323

Field No. S728

Location S.T-4

Rock name,
Muddy dolostone with ore.

A. I-6 Chemical composition of ore samples.

Sample No.	Field No.	Analysis			
		Cu(ppm)	Pb(%)	Zn(%)	Ag(g/t)
954	A752	8	25.80	0.11	74.0
1022	L729	10	0.09	0.35	8.0
1023	L730	30	0.75	0.05	10.0
1024	L731	10	77.30	0.02	40.0
1068	L783	24	0.15	20.72	24.0
1069	L783-1	14	2.30	2.22	6.0
1070	L783-2	10	0.62	1.92	6.0
1071	L783-3	20	1.08	2.48	8.0
1072	L783-4	28	0.09	1.83	4.0
1073	L783-5	14	0.24	3.30	6.0
1099	L810	7	0.10	0.27	7.9
1100	L811	40	0.01	0.04	10.6
1101	L812	6	0.01	0.03	9.1
1102	L813	7	0.02	0.28	8.9
1103	L814	5	0.02	0.05	7.0
1104	L815	8	2.11	11.06	17.0
1105	L816	28	0.09	11.17	23.3
1106	L817	9	2.53	2.36	8.9
1107	L818	6	0.01	0.09	44.5
1108	L819	17	0.13	4.59	10.0
1109	L820	8	0.16	10.74	23.5
1110	L821	8	0.08	3.14	8.2
1111	L822	14	0.10	0.21	4.3
1112	L823	10	0.06	0.11	4.2
1113	L824	13	0.09	0.26	3.9
1114	L825	33	0.13	0.34	4.1