5-3 Progress of Drilling

The progress of each drill hole is described below. The summary of working time (Table 2-12), records of drilling operation (Tables 2-13 to 2-19), records of drilling performance (Tables 2-20 to 2-26), and charts of drilling progress (Figs. 2-36 to 2-42) are shown in tables and figures.

MIT-1: For surface soil, saprolite and strongly weathered bedrock zones, the conventional drilling method without any circulating mud was adopted aiming at the maximum core recovery. From 0 to 1.60 m, drilling was made by HW metal casing shoe, and HW casing pipes were inserted. From 1.60 to 3.50 m, drilling was made by NW diamond casing shoe, and NW casing pipes were inserted.

From 3.50 to 102.10 m, drilling was conducted by the wireline method using NQ-WL bit. BW casing pipes were inserted in this zone. Clay zones occurred in some part of this zone, especially in 50.10 ~ 52.75 m, where pumice tuff was strongly altered. Bentonite mud with CMC was used as a circulating drilling mud for this zone. Rock cuttings sometimes became gel together with mud. Then rotating rods were stacked. Lubricant chemicals were mixed with mud and were sent in this case.

From 102.10 m down to the end of hole (200.50 m), drilling was made by the wireline method using BQ-WL bit. In some part of fine tuff, which was encountered in the middle part of this hole, incomplete wirelinings were made occasionally. The cores were stacked frequently in the inner tube. Because they were easily broken into wedges. Two zones of strong clayey alteration occurred: 105.80 ~ 114.70 m and 165.40 ~ 169.00 m. Bentonite mud with CMC and Seaclay was used as a circulating drilling mud for these zones. A small amount of water was escaped in two zones: 109.80 ~ 111.60 m and 145.00 ~ 148.00 m. Both corresponded to the mineralized zones where calcite veinlets of a few mm in width were developed. Tel Stop was mixed with mud in these zones for reducing the water loss. The recovery of cores was 100 % in total because of careful drilling operation.

MIT-2: HW casing pipes were inserted to 2.60 m. Drilling for the major part of saprolite was undertaken by the conventional drilling method with NW diamond casing shoe without using any mud water. NW casing pipes were inserted to 3.60 m.

From 3.60 to 83.80 m, drilling was carried out by the wireline method with NQ-WL diamond bit and NQ-WL core tube. A small to medium amount of water was lost at 56.00 ~ 57.00 m, 69.90 ~ 71.40 m and 83.00 ~ 84.50 m where clayey zones and calcite network veins occur. Although Tel Stop and Seaclay were mixed with mud to prevent the water loss, it was not effective. BW casing pipes were inserted down to 83.80 m finally.

From 83.8 m down to the end of hole (200.50 m), drilling was made by the wireline method using BQ-WL diamond bit and BQ-WL core tube. Bentonite, CMC and Libonite were used as the major mud materials. Water was lost at 155.00 and 170.20 m where thin

Table 2-12 Summary of Working Time

Hole No.	Drilling			Shift		Man Working*		Working Time						
	Bit Size	Drilling Length (m)	Core Length (m)	Drilling Shift (shift)	Total Shift (shift)	Engineer (man)	Worker (man)	Drilling (h)	Other Work (h)	Sub-Total (h)	Assem-blage (h)	Disman-tlement (h)	Transpor-tation & Others (h)	Grand Total (h)
MIT-1	NW/NQ/BQ	200.50	200.50	24.0	30.0	64.0	578.0	137.00	55.00	192.00	32.00	8.00	8.00	240.00
MIT-2	NW/NQ/BQ	200.50	197.30	23.0	27.0	52.0	453.0	138.15	45.45	184.00	12.00	8.00	12.00	216.00
MIT-3	NW/NQ/BQ	250.50	245.00	29.0	34.0	60.0	522.0	159.25	72.35	232.00	16.00	8.00	16.00	272.00
MIT-4	NW/NQ/BQ	311.10	308.60	28.0	45.0	108.0	787.0	166.10	57.50	224.00	8.00	8.00	120.00	360.00
MIT-5	NW/NQ/BQ	250.50	247.50	29.0	37.0	76.0	894.0	167.40	64.20	232.00	8.00	8.00	48.00	296.00
MIT-6	NW/NQ/BQ	250.50	245.70	22.0	27.0	52.0	566.0	130.10	45.50	176.00	8.00	4.00	28.00	216.00
MIT-7	NW/NQ/BQ	240.50	232.40	26.0	31.0	60.0	574.0	149.50	58.10	208.00	4.00	8.00	28.00	248.00
Total		1,704.10	1,677.00	181.0	231.0	472.0	4,374.0	1,048.30	399.30	1,448.00	88.00	52.00	260.00	1,848.00

* Geological logging inclusive

Table 2-13 Record of Drilling Operation (MIT-1)

Date		Hole	Drilling Length			Drilling Total				Shift		Man Working	
M	D	No.	Shift 1 (m)	Shift 2 (m)	Shift 3 (m)	Drilling (m)	(Cum m)	Core (m)	(Cum m)	Drill (shift)	Total (shift)	Eng'er (man)	Worker (man)
	20	MIT-1	Site Transp'n										
	21		Assemb										
	22		ditto										
	23		ditto										
	24		ditto										
	25		4.20			4.20	4.20	4.20	4.20				
	26		15.50			15.50	19.70	15.50	19.70				
	27		18.00			18.00	37.70	18.00	37.70				
	28		12.00	12.00	12.00	36.00	73.70	36.00	73.70				
	29		12.00	11.00	5.40	28.40	102.10	28.40	102.10				
	30		6.60	6.20	7.10	19.90	122.00	19.90	122.00				
	31		8.60	6.00	9.00	23.60	145.60	23.60	145.60				
9	1		9.10	9.00	5.60	23.70	169.30	23.70	169.30				
	2		6.10	6.20	6.00	18.30	187.60	18.30	187.60				
	3		6.00	6.90	CP out	12.90	200.50	12.90	200.50				
	4		Dismntl										
Total							200.50		200.50	24.0	30.0	64.0	578.0

Table 2-14 Record of Drilling Operation (MIT-2)

Date		Hole	Drilling Length			Drilling Total				Shift		Man Working	
M	D	No.	Shift 1 (m)	Shift 2 (m)	Shift 3 (m)	Drilling (m)	(Cum m)	Core (m)	(Cum m)	Drill (shift)	Total (shift)	Eng'er (man)	Worker (man)
	5	MIT-2	Mobilz'n										
	6		Mob & Assem										
	7		Assembl										
	8		10.70			10.70	10.70	7.50	7.50				
	9		12.00	12.00	12.00	36.00	46.70	36.00	43.50				
	10		12.00	9.00	3.80	24.80	71.50	24.80	68.30				
	11		8.20	4.10	1.80	14.10	85.60	14.10	82.40				
	12		9.00	9.00	9.00	27.00	112.60	27.00	109.40				
	13		9.00	9.00	9.00	27.00	139.60	27.00	136.40				
	14		12.00	9.00	9.00	30.00	169.60	30.00	166.40				
	15		12.00	9.00	9.90	30.90	200.50	30.90	197.30				
	16		CP-out										
	17		Dismntl										
Total							200.50		197.30	23.0	27.0	52.0	453.0

Table 2-15 Record of Drilling Operation (MIT-3)

Date		Hole	Drilling Length			Drilling Total				Shift		Man Working	
M	D	No.	Shift 1 (m)	Shift 2 (m)	Shift 3 (m)	Drilling (m)	(Cum m)	Core (m)	(Cum m)	Drill (shift)	Total (shift)	Eng'er (man)	Worker (man)
	18	MIT-3	Mobilz'n										
	19		ditto										
	20		Assembl										
	21		ditto										
	22		4.60	6.10		10.70	10.70	5.20	5.20				
	23		12.00	12.00	12.00	36.00	46.70	36.00	41.20				
	24		9.00	14.40	7.80	31.20	77.90	31.20	72.40				
	25		13.80	8.20	2.10	24.10	102.00	24.10	96.50				
	26		3.60	9.50	8.50	21.60	123.60	21.60	118.10				
	27		9.30	9.30	9.40	28.00	151.60	28.00	146.10				
	28		9.00	7.70	9.30	26.00	177.60	26.00	172.10				
	29		9.30	9.30	9.30	27.90	205.50	27.90	200.00				
	30		9.10	9.00	10.00	28.10	233.60	28.10	228.10				
10	1		9.20	7.70	CP-out	16.90	250.50	16.90	245.00				
	2		Dismntl										
Total							250.50		245.00	29.0	34.0	60.0	522.0

Table 2-16 Record of Drilling Operation (MIT-4)

Date M	Date D	Hole No.	Drilling Length Shift 1 (m)	Drilling Length Shift 2 (m)	Drilling Length Shift 3 (m)	Drilling Total Drilling (m)	Drilling Total Drilling (Cum m)	Drilling Total Core (m)	Drilling Total Core (Cum m)	Shift Drill (shift)	Shift Total (shift)	Man Working Eng'er (man)	Man Working Worker (man)
	3	MIT-4	Mobilz'n										
	4		ditto										
	5		Assembl										
	6		15.90	15.80	12.00	43.70	43.70	41.20	41.20				
	7		15.00	15.00	15.00	45.00	88.70	45.00	86.20				
	8		13.30	10.60	15.00	38.90	127.60	38.90	125.10				
	9		14.00	13.00	6.00	33.00	160.60	33.00	158.10				
	10		15.00	12.00	6.00	33.00	193.60	33.00	191.10				
	11		12.00	6.00	15.00	33.00	226.60	33.00	224.10				
	12		15.00	11.40	8.50	34.90	261.50	34.90	259.00				
	13		Road Repair										
	14		ditto										
	15		4.10	15.00	12.00	31.10	292.60	31.10	290.10				
	16		9.00	7.90	1.60	18.50	311.10	18.50	308.60				
	17		CP-out										
	18		Dismntl										
	19		Demobil										
	20		ditto										
	21		ditto										
	22		Maint'ce										
	23		ditto										
	24		ditto										
	25		ditto										
	26		ditto										
	27		ditto										
	28		ditto										
	29		ditto										
Total							311.10		308.60	28.0	45.0	108.0	787.0

Table 2-17 Record of Drilling Operation (MIT-5)

Date M	Date D	Hole No.	Drilling Length Shift 1 (m)	Drilling Length Shift 2 (m)	Drilling Length Shift 3 (m)	Drilling Total Drilling (m)	Drilling Total Drilling (Cum m)	Drilling Total Core (m)	Drilling Total Core (Cum m)	Shift Drill (shift)	Shift Total (shift)	Man Working Eng'er (man)	Man Working Worker (man)
	30	MIT-5	Road Const										
	31		ditto										
11	1		ditto										
	2		ditto										
	3		Road & Mob										
	4		Mobilz'n										
	5		Assembl										
	6		4.90			4.90	4.90	1.90	1.90				
	7		11.80	4.70	10.30	26.80	31.70	26.80	28.70				
	8		11.90	5.80	8.60	26.30	58.00	26.30	55.00				
	9		12.70	12.00	7.30	32.00	90.00	32.00	87.00				
	10		CP	10.60	11.30	21.90	111.90	21.90	108.90				
	11		6.20	3.40	14.50	24.10	136.00	24.10	133.00				
	12		12.60	12.00	12.00	36.60	172.60	36.60	169.60				
	13		12.00	11.90	9.00	32.90	205.50	32.90	202.50				
	14		12.00	8.90	7.70	28.60	234.10	28.60	231.10				
	15		4.40	6.00	6.00	16.40	250.50	16.40	247.50				
	16		CP-out			0.00	250.50	0.00	247.50				
	17		Dismntl										
Total							250.50		247.50	29.0	37.0	76.0	894.0

Table 2-18 Record of Drilling Operation (MIT-6)

Date M	Date D	Hole No.	Drilling Length Shift 1 (m)	Drilling Length Shift 2 (m)	Drilling Length Shift 3 (m)	Drilling Total Drilling (m)	Drilling Total Drilling (Cum m)	Drilling Total Core (m)	Drilling Total Core (Cum m)	Shift Drill (shift)	Shift Total (shift)	Man Working Eng'er (man)	Man Working Worker (man)
	18	MIT-6	Road Const										
	19		Mobiliz'n										
	20		ditto										
	21		Assembl										
	22		4.50			4.50	4.50	0.50	0.50				
	23		15.20	18.00	15.00	48.20	52.70	48.20	48.70				
	24		18.00	19.30	2.70	40.00	92.70	40.00	88.70				
	25		16.90	17.40	12.50	46.80	139.50	46.80	135.50				
	26		11.30	12.80	12.00	36.10	175.60	35.50	171.00				
	27		15.00	4.10	7.90	27.00	202.60	26.80	197.80				
	28		12.00	10.00	11.00	33.00	235.60	33.00	230.80				
	29		6.00	8.90	CP-out	14.90	250.50	14.90	245.70				
	30		Dismntl										
Total							250.50		245.70	22.0	27.0	52.0	566.0

Table 2-19 Record of Drilling Operation (MIT-7)

Date M	Date D	Hole No.	Drilling Length Shift 1 (m)	Drilling Length Shift 2 (m)	Drilling Length Shift 3 (m)	Drilling Total Drilling (m)	Drilling Total Drilling (Cum m)	Drilling Total Core (m)	Drilling Total Core (Cum m)	Shift Drill (shift)	Shift Total (shift)	Man Working Eng'er (man)	Man Working Worker (man)
12	1	MIT-7	Mob & Assem										
	2		6.50			6.50	6.50	0.50	0.50				
	3		6.70	5.40	7.50	19.60	26.10	18.20	18.70				
	4		CP	3.70	4.90	8.60	34.70	8.60	27.30				
	5		7.20	3.60	13.20	24.00	58.70	24.00	51.30				
	6		17.70	13.80	4.20	35.70	94.40	35.70	87.00				
	7		17.60	8.20	18.70	44.50	138.90	44.10	131.10				
	8		18.50	9.00	11.50	39.00	177.90	38.70	169.80				
	9		14.50	13.90	8.20	36.60	214.50	36.60	206.40				
	10		14.00	11.00	1.00	26.00	240.50	26.00	232.40				
	11		CP-out			0.00	240.50	0.00	232.40				
	12		Dismantl										
	13		Demobil										
	14		ditto										
	15		ditto										
Total							240.50		232.40	26.0	31.0	60.0	574.0

Tablo 2-20 Record of Drilling Performance (MIT-1)

MIT-1

Operation	Survey Period: Period	Day	Work Day	Off Day	Total Manday: Engineer	Total Manday: Worker
Preparation	Aug20 - Aug24,1995	5.0	5.0	0.0	20.0	149.0
Drilling	Aug25 - Sep 3	10.0	10.0	0.0	40.0	391.0
Removing	Sep 4	1.0	1.0	0.0	4.0	38.0
Total		16.0	16.0	0.0	64.0	578.0

Drilling Length	m		m
Length Planned	200	Over-burden	0.00
Increase/De-crease in L'th	+0.50	Core Length	200.50
Length Drilled	200.50	Core Recovery	100.0 %

Core Recovery of 200 m Hole (%): Depth of Hole	Core Recovery	Cumulat Core Recovery
0 - 100.00 m	100.0	100.0
100.00 - 200.00 m	100.0	100.0

Working Hours	h	%	%
Drilling	137.00	71.4	57.1
Other Work	55.00	28.6	22.9
Recovering	0.00	0.0	0.0
Subtotal	192.00	100.0	80.0
Assemblage	32.00		13.4
Dismantlement	8.00		3.3
Water Transportation	0.00		0.0
Transportation	8.00		3.3
Grand Total	240.00		100.0

Efficiency of Drilling	
Total Length/ Total Work Days	m/day 12.5
Total Length/ Total Shifts	m/shift 6.7

Drilling Length/Each Bit (m): Bit Size	Drilled Lth	Core Lth
HW	1.60	1.60
NW	1.90	1.90
NQ	98.60	98.60
BQ	98.40	98.40

Casing Pipe Inserted

Size	Meterage (m)	Meterage/ Drilling Length x 100 (%)	Recovery (%)
HW	1.60	0.8	100.0
NW	3.50	1.7	100.0
BW	102.10	50.9	100.0

Table 2-21 Record of Drilling Performance (MIT-2)

MIT-2

Operation	Survey Period: Period	Day	Work Day	Off Day	Total Manday: Engineer	Total Manday: Worker
Preparation	Sep 5 - Sep 7,1995	3.0	3.0	0.0	12.0	125.0
Drilling	Sep 8 - Sep16	9.0	9.0	0.0	36.0	289.0
Removing	Sep17	1.0	1.0	0.0	4.0	39.0
Total		13.0	13.0	0.0	52.0	453.0

Drilling Length	m		m
Length Planned	200	Over-burden	3.20
Increase/De-crease in L'th	+0.50	Core Length	197.30
Length Drilled	200.50	Core Recovery	98.4 %

Core Recovery of 200 m Hole (%): Depth of Hole	Core Recovery	Cumulat Core Recovery
0 - 100.00 m	96.8	96.8
100.00 - 200.00 m	100.0	98.4

Working Hours	h	%	%
Drilling	136.15	75.1	64.0
Other Work	45.45	24.9	21.2
Recovering	0.00	0.0	0.0
Subtotal	184.00	100.0	85.2
Assemblage	12.00		5.5
Dismantlement	8.00		3.7
Water Transportation	0.00		0.0
Transportation	12.00		5.6
Grand Total	216.00		100.0

Efficiency of Drilling	
Total Length/ Total Work Days	m/day 15.4
Total Length/ Total Shifts	m/shift 7.4

Drilling Length/Each Bit (m): Bit Size	Drilled Lth	Core Lth
HW	2.60	0.00
NW	1.00	0.40
NQ	80.20	80.20
BQ	116.70	116.70

Casing Pipe Inserted

Size	Materage (m)	Meterage/ Drilling Length x 100 (%)	Recovery (%)
HW	2.60	1.3	0.0
NW	3.60	1.8	11.1
BW	83.80	41.8	96.2

Table 2-22 Record of Drilling Performance (MIT-3)

MIT-3

Operation	Survey Period: Period	Day	Work Day	Off Day	Total Manday: Engineer	Worker
Preparation	Sep18 - Sep21,1995	4.0	4.0	0.0	16.0	161.0
Drilling	Sep22 - Oct 1	10.0	10.0	0.0	40.0	321.0
Removing	Oct 2	1.0	1.0	0.0	4.0	40.0
Total		15.0	15.0	0.0	60.0	522.0

Drilling Length	m		m
Length Planned	250	Over-burden	0.80
Increase/De-crease in L'th	+0.50	Core Length	245.00
Length Drilled	250.50	Core Recovery (%)	97.8

Core Recovery of 250 m Hole (%)

Depth of Hole	Core Recovery	Cumulat Core Recovery
0 - 100.00 m	94.5	94.5
100.00 - 250.00 m	100.0	97.8

Working Hours	h	%	%
Drilling	159.25	68.7	58.6
Other Work	72.35	31.3	26.7
Recovering	0.00	0.0	0.0
Subtotal	232.00	100.0	85.3
Assemblage	16.00		5.9
Dismantlement	8.00		2.9
Water Transportation	0.00		0.0
Transportation	16.00		5.9
Grand Total	272.00		100.0

Efficiency of Drilling

Total Length/Total Work Days	m/day 16.7
Total Length/Total Shifts	m/shift 7.4

Drilling Length/Each Bit (m)

Bit Size	Drilled Lth	Core Lth
HW	1.60	0.30
NW	5.40	1.20
NQ	95.00	95.00
BQ	148.50	148.50

Casing Pipe Inserted

Size	Meterage (m)	Meterage/Drilling Length x 100 (%)	Recovery (%)
HW	1.60	0.6	18.8
NW	7.00	2.8	21.4
BW	102.00	40.7	94.6

Table 2-23 Record of Drilling Performance (MIT-4)

MIT-4

Operation	Survey Period: Period	Day	Work Day	Off Day	Total Manday: Engineer	Worker
Preparation	Oct 3 - Oct 5,1995	3.0	3.0	0.0	12.0	125.0
Drilling*	Oct 6 - Oct17	12.0	12.0	0.0	48.0	394.0
Removing	Oct18 - Oct29	12.0	12.0	0.0	48.0	268.0
Total		27.0	27.0	0.0	108.0	787.0

Drilling Length	m		m
Length Planned	250	Over-burden	2.50
Increase/De-crease in L'th	+61.10	Core Length	308.60
Length Drilled	311.10	Core Recovery (%)	99.2

Core Recovery of 300 m Hole (%)

Depth of Hole	Core Recovery	Cumulat Core Recovery
0 - 100.00 m	97.5	97.5
100.00 - 300.00 m	100.0	99.2

Working Hours	h	%	%
Drilling	166.10	74.2	46.2
Other Work	57.50	25.8	16.0
Recovering	0.00	0.0	0.0
Subtotal	224.00	100.0	62.2
Assemblage	8.00		2.2
Dismantlement	8.00		2.2
Water Transportation	0.00		0.0
Transportation**	120.00		33.4
Grand Total	360.00		100.0

Efficiency of Drilling

Total Length/Total Work Days	m/day 9.3
Total Length/Total Shifts	m/shift 6.9

Drilling Length/Each Bit (m)

Bit Size	Drilled Lth	Core Lth
HW	1.50	0.00
NW	1.50	0.50
NQ	99.00	99.00
BQ	209.10	209.10

Casing Pipe Inserted

Size	Meterage (m)	Meterage/Drilling Length x 100 (%)	Recovery (%)
HW	1.50	0.5	0.0
NW	3.00	1.0	16.7
BW	102.00	32.8	97.5

*Road repair (2 days) included
**Demobilization & maintenance (88 hours) included

Table 2-24 Record of Drilling Performance (MIT-5)

MIT-5

Operation	Survey Period: Period	Survey Period: Day	Work Day	Off Day	Total Manday: Engineer	Total Manday: Worker
Preparation	Oct30 - Nov 5,1995	7.0	7.0	0.0	28.0	269.0
Drilling	Nov 6 - Nov16	11.0	11.0	0.0	44.0	564.0
Removing	Nov17	1.0	1.0	0.0	4.0	61.0
Total		19.0	19.0	0.0	76.0	894.0

Drilling Length	m		m
Length Planned	250	Over-burden	3.00
Increase/De-crease in L'th	+0.50	Core Length	247.50
Length Drilled	250.5	Core Recovery	98.8 %

Core Recovery of 250 m Hole (%): Depth of Hole	Core Recovery	Cumulat Core Recovery
0 - 100.00 m	97.0	97.0
100.00 - 250.00 m	100.0	98.8

Working Hours	h	%	%
Drilling	167.40	72.2	56.7
Other Work	62.10	26.8	21.0
Recovering	2.10	1.0	0.7
Subtotal	232.00	100.0	78.4
Assemblage	8.00		2.7
Dismantlement	8.00		2.7
Water Transportation	0.00		0.0
Transportation*	48.00		16.2
Grand Total	296.00		100.0

Efficiency of Drilling	
Total Length/Total Work Days	m/day 13.2
Total Length/Total Shifts	m/shift 6.8

Drilling Length/Each Bit (m): Bit Size	Drilled Lth	Core Lth
HW	1.00	0.00
NW	2.00	0.00
NQ	87.00	87.00
BQ	160.50	160.50

Casing Pipe Inserted: Size	Meterage (m)	Meterage/Drilling Length x 100 (%)	Recovery (%)
HW	1.00	0.4	0.0
NW	3.00	1.2	0.0
BW	90.00	35.9	96.7

*Road construction (36 hours) included

Table 2-25 Record of Drilling Performance (MIT-6)

MIT-6

Operation	Survey Period: Period	Survey Period: Day	Work Day	Off Day	Total Manday: Engineer	Total Manday: Worker
Preparation	Nov18 - Nov21,1995	4.0	4.0	0.0	16.0	208.0
Drilling	Nov22 - Nov29	8.0	8.0	0.0	32.0	317.0
Removing	Nov30	1.0	1.0	0.0	4.0	41.0
Total		13.0	13.0	0.0	52.0	566.0

Drilling Length	m		m
Length Planned	250	Over-burden	4.00
Increase/De-crease in L'th	+0.50	Core Length	245.70
Length Drilled	250.5	Core Recovery	98.1 %

Core Recovery of 250 m Hole (%): Depth of Hole	Core Recovery	Cumulat Core Recovery
0 - 100.00 m	96.0	96.0
100.00 - 250.00 m	99.5	98.1

Working Hours	h	%	%
Drilling	130.10	74.0	60.3
Other Work	45.50	26.0	21.2
Recovering	0.00	0.0	0.0
Subtotal	176.00	100.0	81.5
Assemblage	8.00		3.7
Dismantlement	4.00		1.8
Water Transportation	0.00		0.0
Transportation*	28.00		13.0
Grand Total	216.00		100.0

Efficiency of Drilling	
Total Length/Total Work Days	m/day 20.9
Total Length/Total Shifts	m/shift 9.3

Drilling Length/Each Bit (m): Bit Size	Drilled Lth	Core Lth
HW	1.00	0.00
NW	3.50	0.50
NQ	85.50	85.50
BQ	160.50	159.70

Casing Pipe Inserted: Size	Meterage (m)	Meterage/Drilling Length x 100 (%)	Recovery (%)
HW	1.00	0.4	0.0
NW	4.50	1.8	11.1
BW	90.00	35.9	95.6

*Road construction (8 hours) included

Table 2-26 Record of Drilling Performance (MIT-7)

MIT-7

Operation	Survey Period: Period	Day	Work Day	Off Day	Total Manday: Engineer	Total Manday: Worker
Preparation	Dec 1,1995	1.0	1.0	0.0	4.0	50.0
Drilling	Dec 2 - Dec11	10.0	10.0	0.0	40.0	344.0
Removing	Dec12 - Dec15	4.0	4.0	0.0	16.0	180.0
Total		15.0	15.0	0.0	60.0	574.0

Drilling Length	m		m
Length Planned	190	Over-burden	6.45
Increase/De-crease in L'th	+50.50	Core Length	232.40
Length Drilled	240.5	Core Recovery	96.6 %

Core Recovery of 200 m Hole (%): Depth of Hole	Core Recovery	Cumulat Core Recovery
0 - 100.00 m	92.4	92.4
100.00 - 200.00 m	99.3	95.9

Working Hours	h	%	%
Drilling	149.50	72.0	60.4
Other Work	58.10	28.0	23.5
Recovering	0.00	0.0	0.0
Subtotal	208.00	100.0	83.9
Assemblage	4.00		1.6
Dismantlement	8.00		3.2
Water Transportation	0.00		0.0
Transportation*	28.00		11.3
Grand Total	248.00		100.0

Efficiency of Drilling	
Total Length/ Total Work Days	m/day 16.0
Total Length/ Total Shifts	m/shift 7.8

Drilling Length/Each Bit (m): Bit Size	Drilled Lth	Core Lth
BW	1.00	0.00
NW	25.10	18.70
NQ	64.10	64.10
BQ	150.30	149.60

Casing Pipe Inserted

Size	Meterage (m)	Meterage/ Drilling Length x 100 (%)	Recovery (%)
BW	1.00	0.4	0.0
NW	26.10	10.9	71.6
BW	90.20	37.5	91.8

*Demobilization (24 hours) included

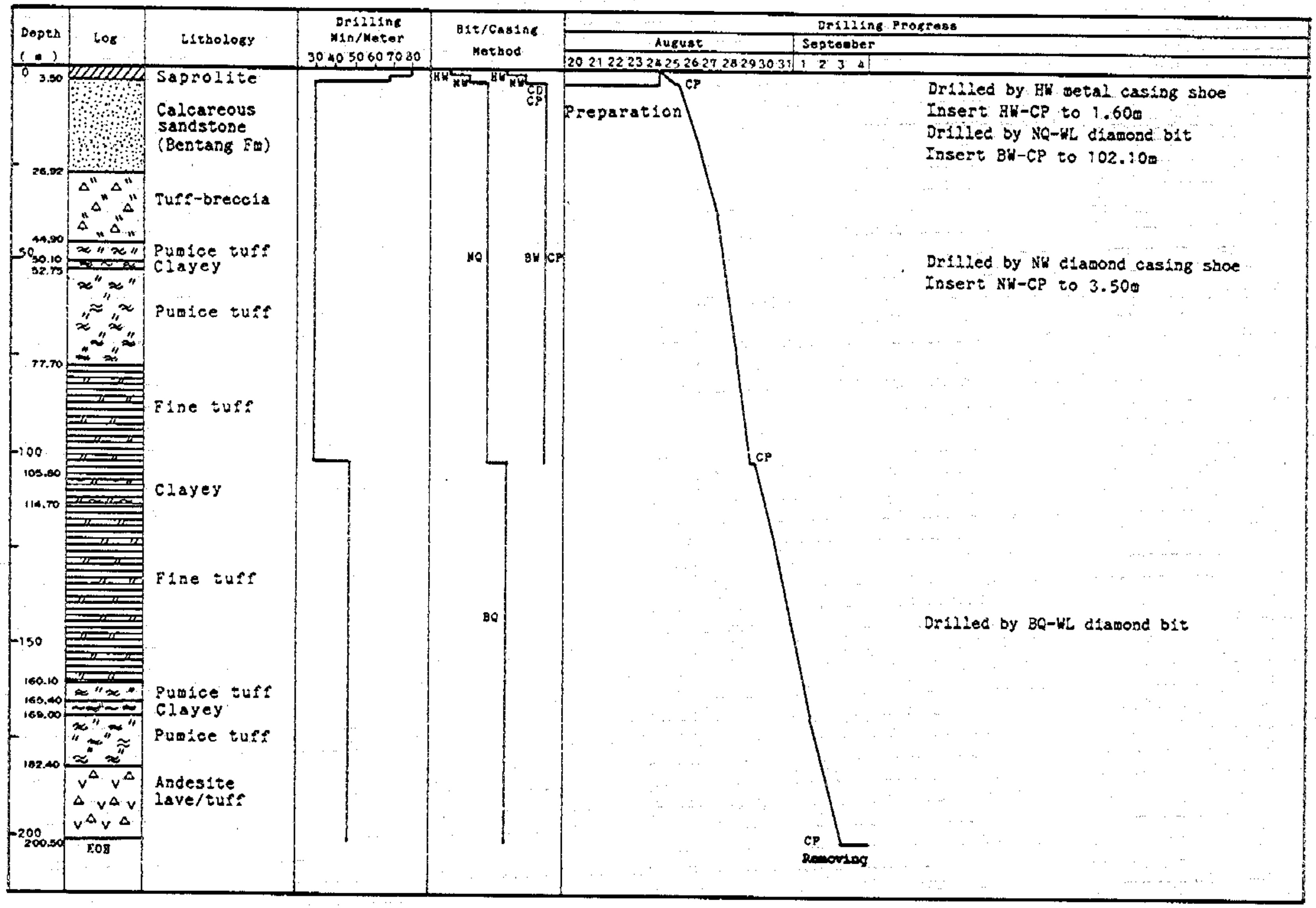


Fig. 2-36 Chart of Drilling Progress (MIT-1)

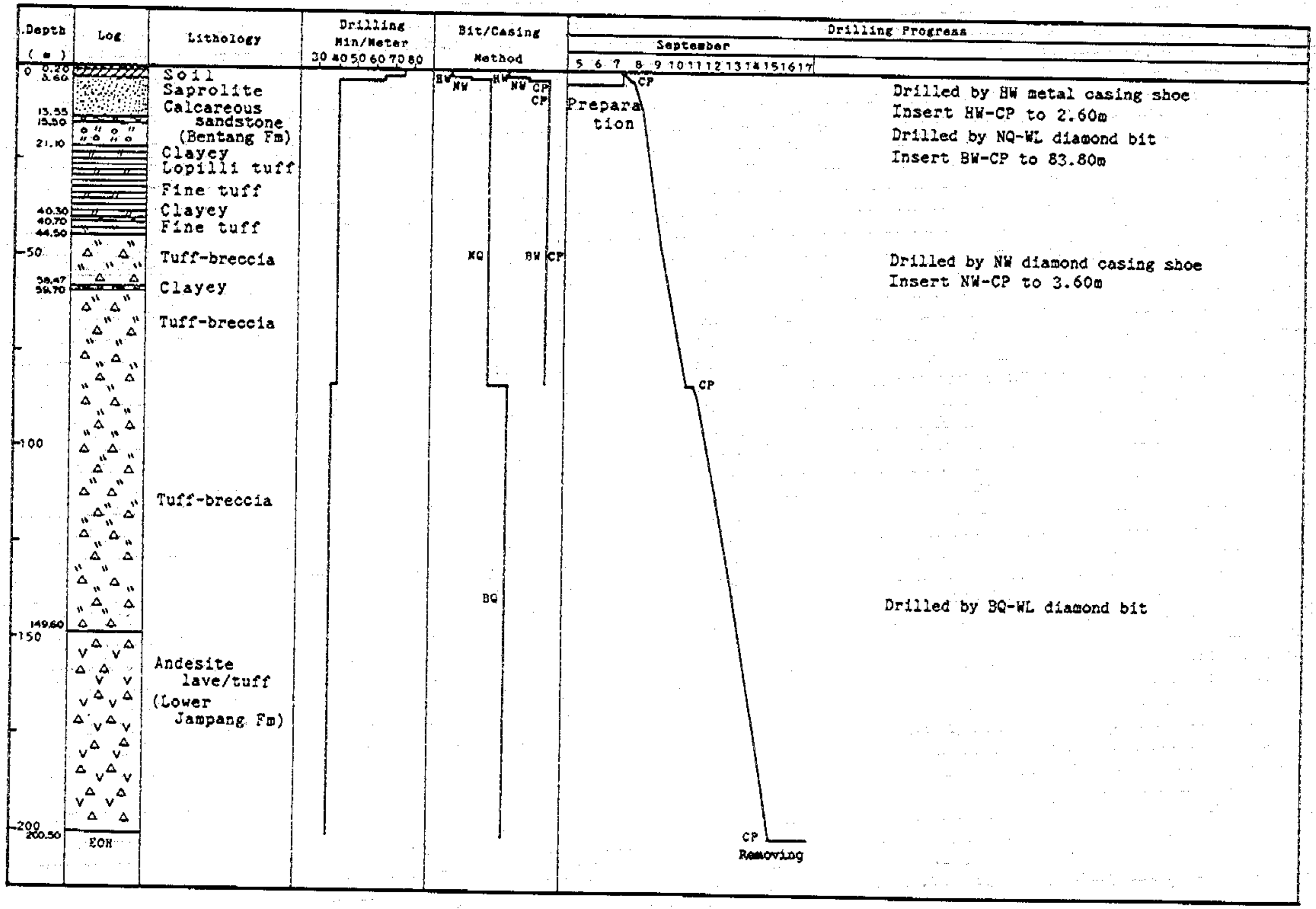


Fig. 2-37 Chart of Drilling Progress (MIT-2)

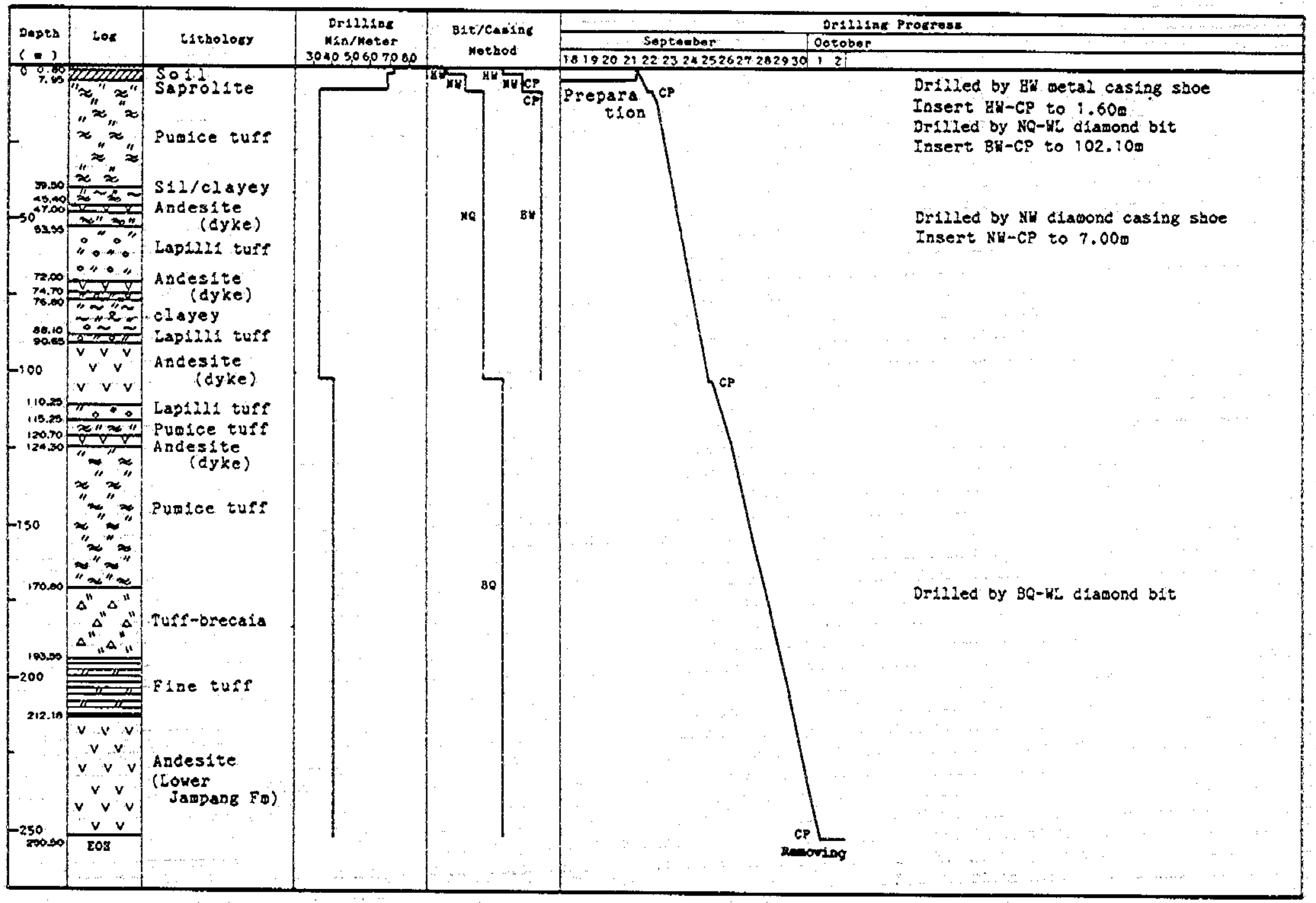


Fig. 2-38 Chart of Drilling Progress (MIT-3)

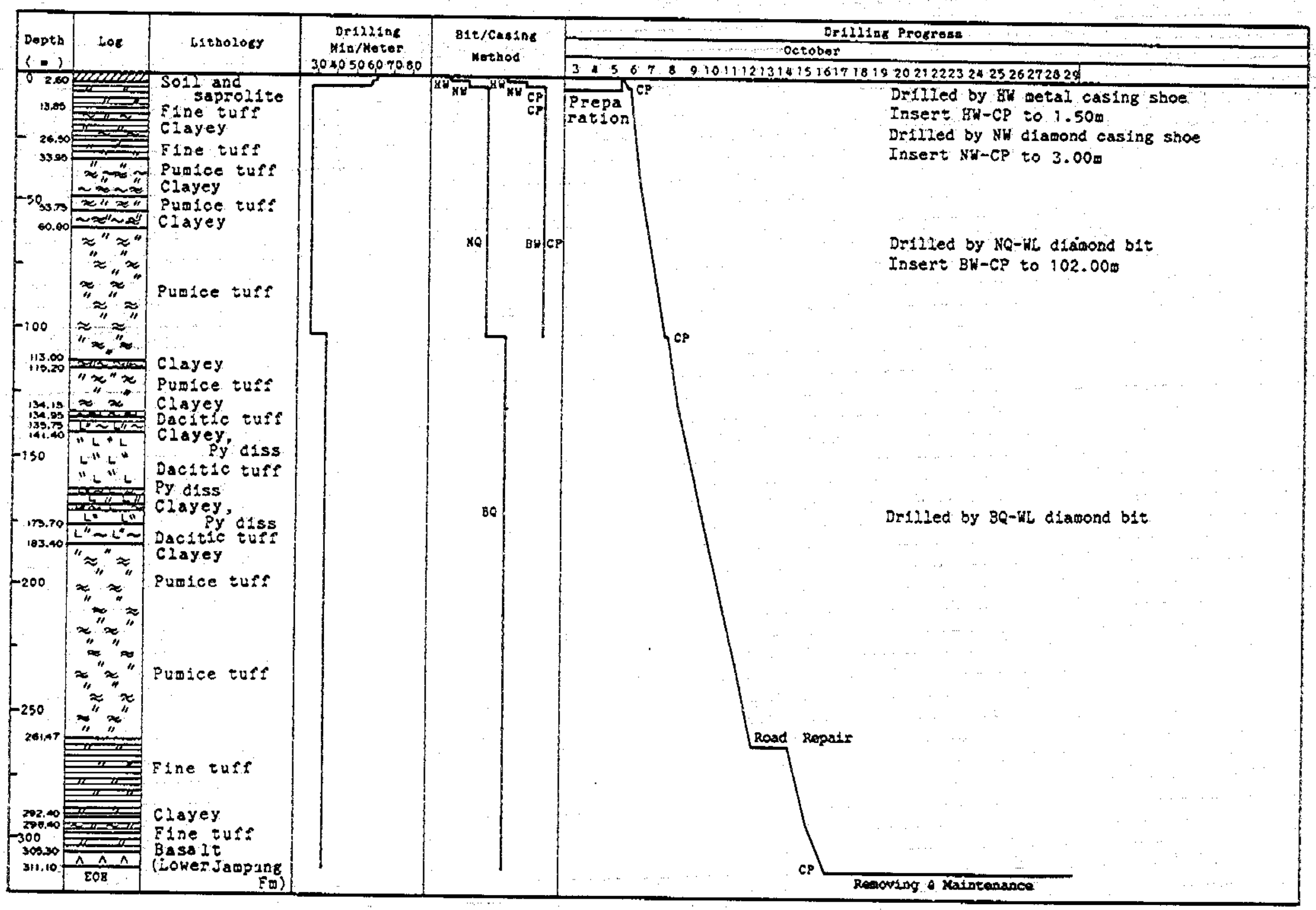


Fig. 2-39 Chart of Drilling Progress (MIT-4)

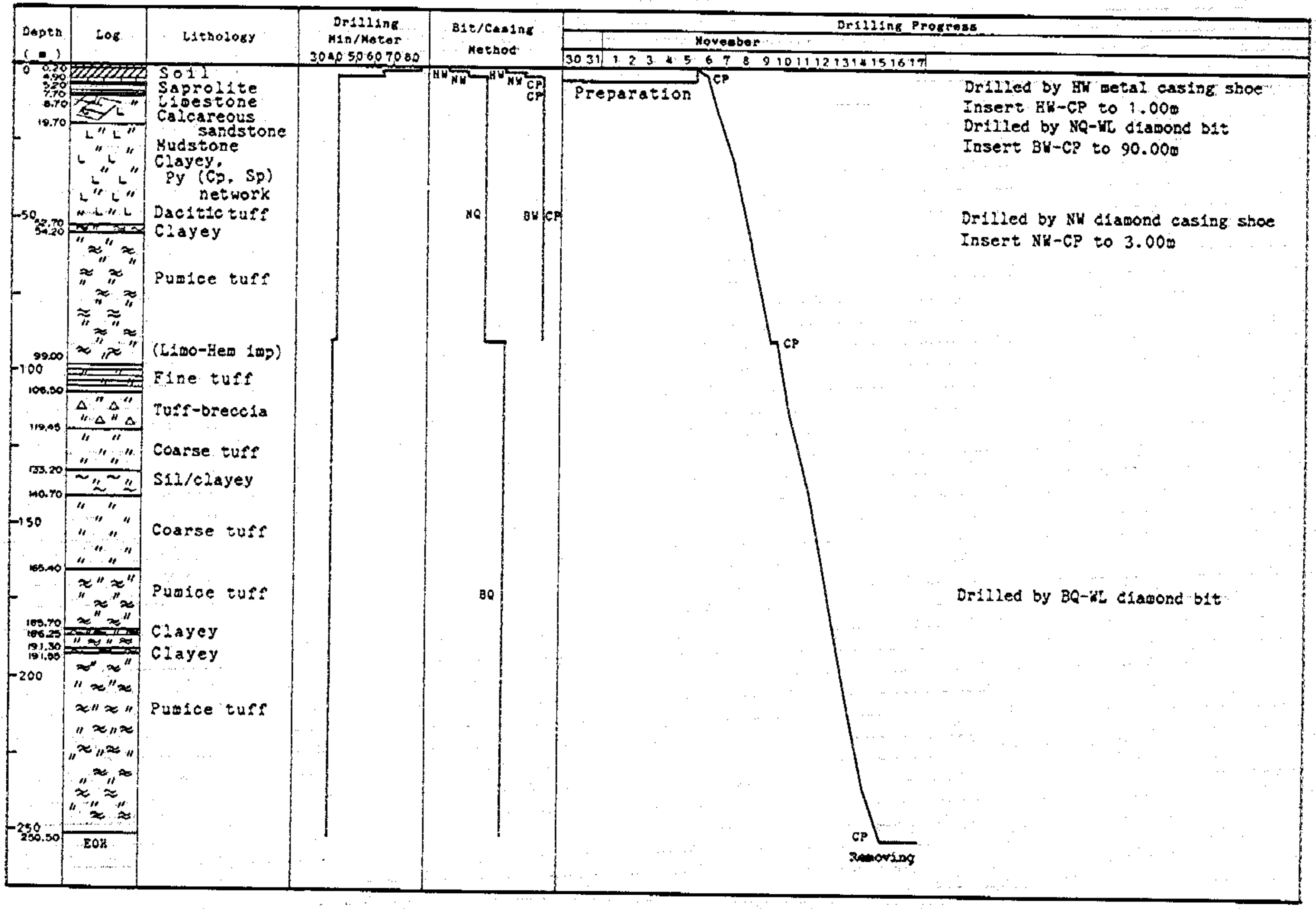


Fig. 2-40 Chart of Drilling Progress (MIT-5)

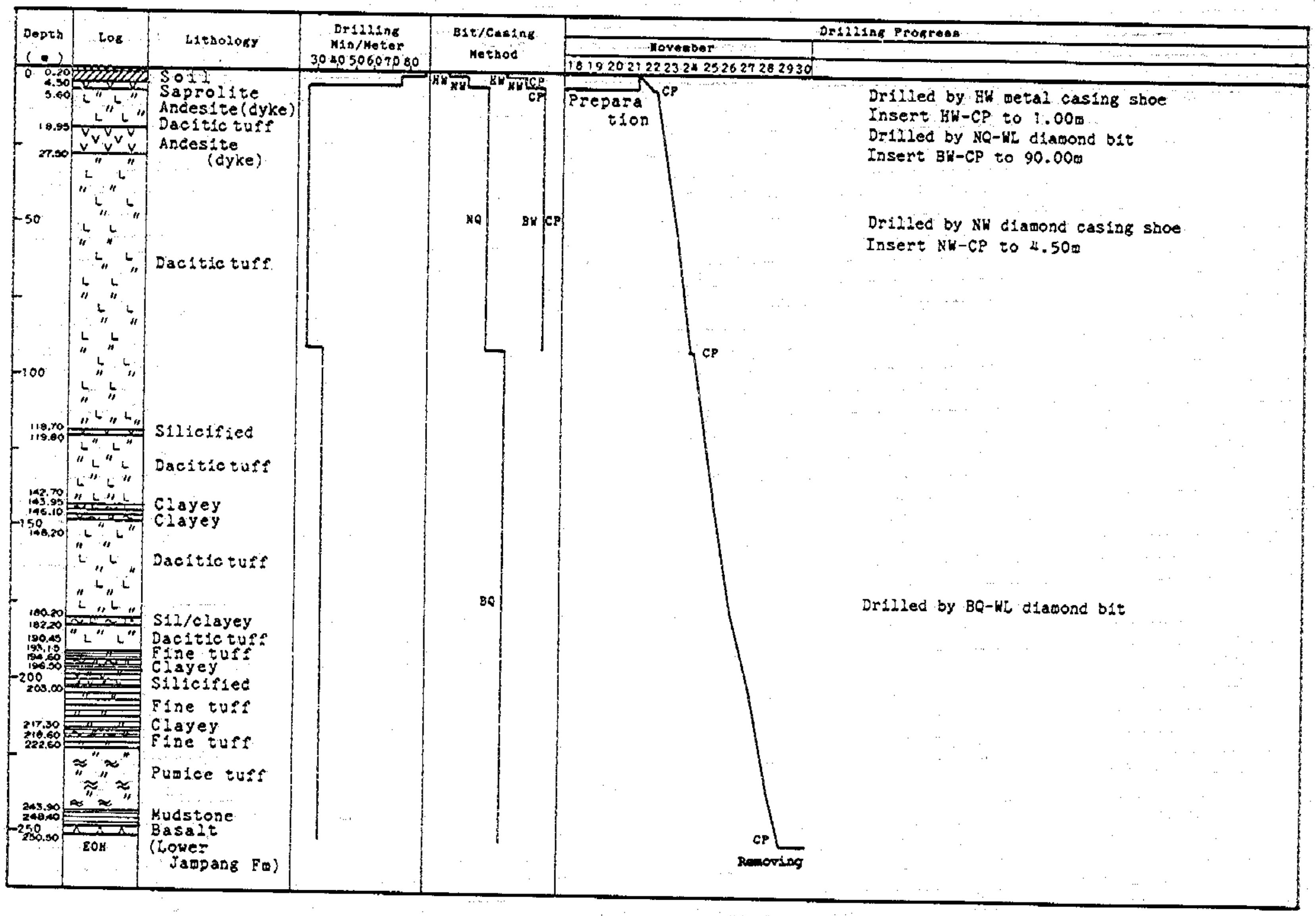


Fig. 2-41 Chart of Drilling Progress (MIT-6)

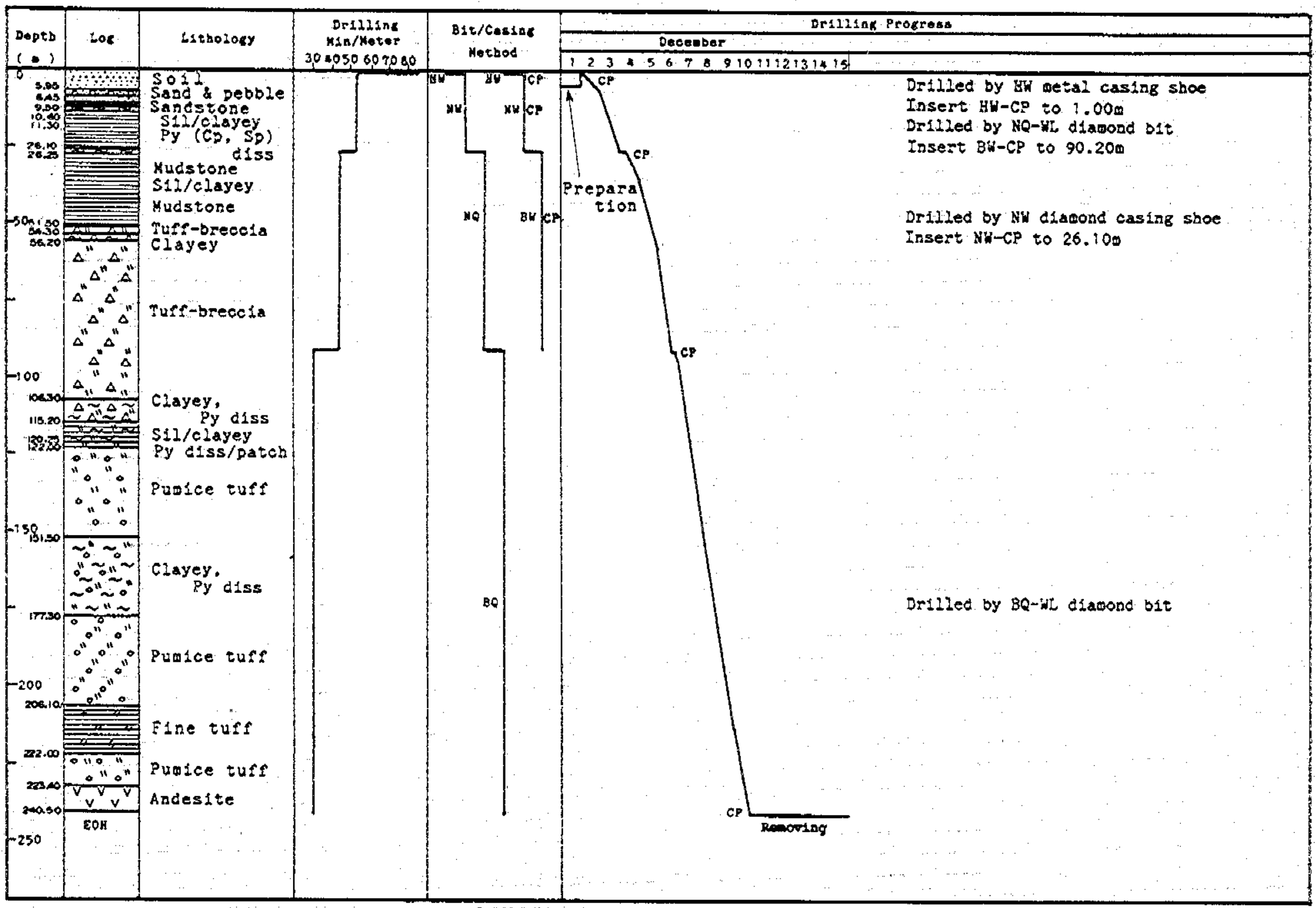


Fig. 2-42 Chart of Drilling Progress (MIT-7)

veinlets of calcite were developed in massive andesite. Telstop and Seaclay were injected to prevent the problem. Overall core recovery was 98.4 % in this hole.

MIT-3: From 0 to 1.60 m, drilling was done by HW metal casing shoe, and HW casing pipes were inserted. Drilling for the major part of saprolite and weathered bed rock (originally pumice tuff) was undertaken by the conventional drilling method with NW diamond casing shoe without using any mud water. NW casing pipes were inserted to 7.00 m.

From 7.00 to 102.00 m, drilling was conducted by the wireline method with NQ-WL diamond bit and NQ-WL core tube. BW casing pipes were inserted to 102.00 m. Water was lost at 77.00 ~ 85.00, 93.00 ~ 99.00 and 106.00 ~ 108.00 m. These depths correspond to calcite network veins. Telstop and Seaclay were injected to prevent the water loss.

From 102.00 m down to the end of hole (250.50 m), drilling was made by the wireline method with BQ-WL diamond bit and BQ-WL core tube. Bentonite, CMC and Libonite were used as the major mud materials. Overall core recovery was 97.8 % in this hole.

MIT-4: From 0 to 1.50 m, drilling was done by HW metal casing shoe, and HW casing pipes were inserted. Drilling for the major part of saprolite was undertaken by the conventional drilling method using NW diamond shoe without using any circulating water. NW casing pipes were inserted to 3.00 m.

From 3.00 to 102.00 m, drilling was conducted by the wireline method with NQ-WL diamond bit and NQ-WL core tube. BW casing pipes were inserted to 102.00 m.

From 102.00 m down to the end of hole (311.10 m), drilling was made by the wireline method with BQ-WL diamond bit and BQ-WL core tube. Bentonite, Libonite and CMC were used as the major mud materials. Water was lost at 138.00 ~ 140.50 m. This depth corresponds to a silicified zone where numerous thin cracks were developed. Telstop and Seaclay were injected to prevent the water loss. At the originally planned depth of 250 m, a green tuff still continued; the basement rock has not been occurred until 305.30 m. This hole was drilled down to 311.10 m. During the supplementary drilling, a strong rain attacked to the site, causing a damage to the supply route. Because of this accident, the work stopped for a couple of days. Overall core recovery was 99.2 % in this hole. After finished this hole, the drilling machine, pump and other equipment were demobilized from the drilling site to the base camp for the maintenance work.

MIT-5: For surface soil, saprolite and strongly weathered bedrock zones, the conventional drilling method without using any circulating water was adopted aiming at the maximum core recovery. From 0 to 1.00 m, drilling was made by HW metal casing shoe, and HW casing pipes were inserted. From 1.00 to 3.00 m, drilling was made by NW diamond shoe, and NW casing pipes were inserted.

From 3.00 to 90.00 m, drilling was conducted by the wireline method using NQ-WL bit. BW casing pipes were inserted in this zone. Some part of this zone, especially in the strongly altered pumice tuff, is clayey. Bentonite mud with CMC and Libonite was used as a circulating drilling mud for this zone. A small amount of water was lost around 18.00 m where limonite network veins occur. Telstop and Seaclay were injected to prevent the water loss. The weak vibration of drill rods occurred around 40 m. Lubricant chemicals were mixed with mud and were sent in this case.

From 90.00 m down to the end of hole (250.50 m), drilling was made by the wireline method using BQ-WL bit. The wirelining went fairly well in the green tuff sequence, despite a few water loss in quartz/calcite veinlet zones. Whereas in an alteration zone, which was encountered at the depth of 133.20 ~ 140.70 m, the collapse of borehole occurred. During the course of deeper drilling, this zone went to collapse again and again, causing bending of drilling rods. It was a reason why we had to stop drilling still in the green tuff sequence. The recovery of cores was 98.8 % in total.

MIT-6: For surface soil and saprolite, the conventional drilling method without using any circulating water was adopted. From 0 to 1.00 m, drilling was made by HW metal casing shoe, and HW casing pipes were inserted. From 1.00 to 4.50 m, drilling was made by NW diamond shoe, and NW casing pipes were inserted.

From 4.50 to 90.00 m, drilling was carried out by the wireline method with NQ-WL diamond bit and NQ-WL core tube. BW casing pipes were inserted to 90.00 m.

From 90.00 m down to the end of hole (250.50 m), drilling was made by the wireline method using BQ-WL diamond bit and BQ-WL core tube. Bentonite, CMC and Libonite were used as the major mud materials. Water was lost at several depths: 119.80, 180.00 ~ 182.00, 205.60, and 233.50 m, where the green tuff is silicified to a certain degree or carbonate veinlets are developed. Telstop and Seaclay were injected to prevent the problem. In an alteration zone, which was encountered at the depth of 142.70 ~ 148.20 m, a small collapse of borehole occurred. Overall core recovery was 98.1 % in this hole.

MIT-7: From 0 to 1.00 m, drilling was done by HW metal casing shoe, and HW casing pipes were inserted. Drilling for surface soil/sand, calcareous sandstone of the Bentang Formation and clayey mudstone of the upper Jampang Formation was undertaken by the conventional drilling method using NW diamond casing shoe without any circulating water. NW casing pipes were inserted to 26.10 m.

From 26.10 to 90.20 m, drilling was conducted by the wireline method with NQ-WL diamond bit and NQ-WL core tube. BW casing pipes were inserted to 90.20 m.

From 90.20 m down to the end of hole (240.50 m), drilling was made by the wireline method with BQ-WL diamond bit and BQ-WL core tube. Bentonite, CMC and Libonite were used as the major mud materials. In a clayey alteration zone, which was encountered at the depth of 151.50 ~ 167.60 m, a small collapse of borehole wall occurred. Overall core recovery was 96.6 % in this hole.

5-4 Geology of Drill Holes

5-4-1 Outline

The geology of the area where drilling exploration was carried out this year is composed of calcareous sandstone (Bentang Formation), tuff and dacite (Upper Member of Jampang Formation).

Saprolite of sandstone and tuff occurs below the surface soil (10 to 80 cm thick), and extends to nearly 10 m deep along the drill hole (every hole has drilled vertically). Fresh bedrock appears below a few to 10 m in depth. The results of laboratory works and assaying of drill cores are briefly listed in Tables 2-27 to 2-30.

5-4-2 Drill Hole Description

MIT-1: The geology around the drill hole MIT-1 is composed of calcareous sandstone of the Bentang Formation. It is located approximately 250 m south of a bridge of S. Cigoronggong, where green tuff is exposed at the riverbed. The purpose of this hole was to investigate the geologic structure of bedrock and ore horizon in the western part of the survey area. The geology of the drill hole is described as follows:

0 ~ 3.50 m Saprolite. Light brownish grey to grey. Originally sandstone. This zone is covered by very thin surface soil.

3.50 ~ 26.92 m Calcareous sandstone of the Bentang Formation. Grey to light grey. Three fossil-rich calcarenite beds are intercalated: 6.50 ~ 8.65 m, 13.90 ~ 15.15 m, and 22.90 ~ 23.20 m. Thin layers of grey mudstone are interbedded within the upper part of sandstone.

26.92 ~ 44.90 m Tuff-breccia. Green. It is composed of green dacitic and grey andesitic breccias and green pumice. Fluidal structure was observed in the dacitic breccia. The pumice is commonly depressed and elongated horizontally. Green fine to coarse tuff layers are intercalated within tuff-breccia: 27.70 ~ 29.50 m and 36.70 ~ 39.35 m. Montmorillonitization and chloritization of weak to medium grade were recognized in this zone. The boundary of this zone and the overlying sandstone is broken and though to be unconformity. This zone is correlated to the Upper Member of the Jampang Formation.

44.90 ~ 77.70 m Pumice tuff. Green. Layered. The upper part of this zone is composed of fine to coarse tuff with small layered pumices. Whereas the lower part is composed of pumice tuff with larger layered pumices and occasional dacitic breccias. Pumice is depressed and elongated nearly horizontally (90 to 65 degrees to the drilling direction). Montmorillonitization and chloritization of medium grade were recognized commonly. A

Table 2-27 Results of Microscopic Observation of Thin Sections in the Cisasah-Cidadap-Cibuniasih Area (Drill Cores)

Sample No.	Hole No. & Depth	Rock Name	Formation	Texture	Phenocryst/Crystal Frag.									Groundmas/Matrix						Alteration
					Qz	Kf	Pl	Bi	Hb	Px	Ol	Ep	Op	Qz	Kf	Pl	Hb	Px	Gl	
	[MIT-1]																			
101T	23.00- 23.10m	Calcarenite	Tmbs	Clas																Ca·Glauconite·Qz·Op
110T	70.00- 70.10m	Pumice Tuff	Tomj	Pycl	·		○						·			○				Pl→Se·Ch
129T	198.00-198.15m	Lapilli Tuff	Tomj	Pycl			○						·			△				Pl→Se·Ch·Ca
	[MIT-2]													·		△				
201T	14.50- 14.60m	Lapilli Tuff	Tomj	Pycl	·		△					·	·			·				Pl→Se,Gy-imp,Sil
206T	41.30- 41.40m	Lapilli Tuff	Tomj	Pycl			△						·			·				Pl→Ch·Se
214T	104.00-104.20m	Lapilli Tuff	Tomj	Pycl			○						·			△				Pl→Ch·Ca
220T	193.20-193.40m	Andesite	Tomj	Porp			●			○			·			○		·		Pl·Px→Ch·Ca·Se
	[MIT-3]						●			○			·			○		△	·	
307T	73.00- 73.10m	Andesite	Tan	Porp			●			△			·			△			·	Pl·Px→Se·Ch
309T	84.50- 84.60m	Lapilli Tuff	Tomj	Pycl			△						·			△				Pl→Ch
310T	94.50- 94.60m	Basalt	Tan	Porp			●			△			·			△		·		Pl·Px→Ch·Se
320T	245.15-245.35m	Andesite	Tomj	Porp			●			△			·			△		·		Pl·Px→Ca·Ch
	[MIT-4]																			
407T	78.70- 78.80m	Pumice Tuff	Tomj	Pycl			○						·						△	Pl·Gl→Ch·Se
415T	152.00-152.20m	Dacitic Tuff	Tomj	Pycl	○		△						·							Pl→Ch·Se
421T	215.00-215.20m	Pumice Tuff	Tomj	Pycl			○						·						△	Pl·Gl→Se·Ch
425T	310.00-310.20m	Basalt	Tomj	Porp			○			○			·			△		·	·	Pl·Px→Ch
	[MIT-5]																			
505T	38.20- 38.30m	Dacitic Tuff	Tomj	Pycl	●	·	○						·						△	
508T	62.35- 62.45m	Pumice Tuff	Tomj	Pycl	△		○						·						△	Pl·Gl→Ch·Se
511T	110.00-110.20m	Tuff-Breccia	Tomj	Pycl	△		○						·						△	Pl·Gl→Ch·Se
	[MIT-6]																			
602T	24.35- 24.45m	Andesite	Tan	Porp			●						△			△			·	Pl→Ch·Se
603T	38.50- 38.60m	Dacitic Tuff	Tomj	Pycl	●		○						·	△		△				Pl→Ch·Se·Ca
	[MIT-7]																			
707T	85.90- 86.00m	Tuff-Breccia	Tomj	Pycl	·		△												△	Pl·Gl→Ch·Ca
712T	130.00-130.20m	Pumice Tuff	Tomj	Pycl			○						·			△			△	Pl·Gl→Ca·Ch,Sil

Abundance of Minerals: ●;Abundant, ○;Common, △;Rare, ·;Trace

Formation Names : Tomj;Jampang Formation, Tmkl;Kalipucang Formation, Tmpa;Pamutuan Formation, Tmbs;Bentang Formation, Tmph; Halang Formation, Qtv;Old Volcanic Rocks, Tgd;Granodiorite, Tda;Dacite, Tan;Andesite (dyke)

Textures : Pycl;Pyroclastic, Clas;Clastic, Porp;Porphyritic, Lepb;Lepidoblastic, Glom-gr;Glomerophyric granular, Hypd-gr;Hypidiomorphic-granular, Ophi;Ophitic, Int-gr;Inter-granular, Hol-pp;Holocrystalline-porphyritic

Minerals : Qz;Quartz, Kf;Potash feldspar, Pl;Plagioclase, Bi;Biotite, Hb;Hornblende, Px;Pyroxene, Ol;Olivine, Ep;Epidote Op;Opaque Minerals, Gl;Glass, Ch;Chlorite, Se;Sericite, Ca;Carbonates

Table 2-28 Results of X-Ray Diffraction Analysis in the Cisasah-Cidadap-Cibuniasih Area (Drill Cores)

No.	Sample No.	Remarks	Rock Unit	Locality	Clay Minerals								Zeolites					S-Salts			Carbonates			Silicates			Flds		Miscellaneous Minerals						
					Mo	Ch	Se	Mu	Ka	Ha	Pr	Mx	Cp	Md	Lm	Hu	Fr	Al	Gy	Ja	Ca	Ak	Si	Cr	Tr	Qz	Pl	Kf	Py	Go	He	Mg	Ba	Sp	Gn
1	102	Calcareous sandstone	Tabs	MIT-1,25.00-25.10m																	A	R?				R									
2	103	Tuff-breccia	Tomj	MIT-1,35.00-35.10m		R	R?																			A	C								
3	108	Pumice tuff, clayey	Tomj	MIT-1,52.00-52.10m			F		R																	C	C								
4	110	Pumice tuff	Tomj	MIT-1,70.00-70.10m			R		R																	F	F								
5	115	Fine tuff, clayey	Tomj	MIT-1,110.00-110.15m			R															F				A	F								
6	124	Pumice tuff, clayey	Tomj	MIT-1,167.00-167.15m		R	R																			C	F								
7	128	Andesite	Tomj	MIT-1,183.50-183.65m		R																				F	C				R				
8	129	Lapilli tuff	Tomj	MIT-1,198.00-198.15m		F																				F	C								
9	201	Lapilli tuff, clayey	Tomj	MIT-2,14.50-14.60m			R																			A		R							
10	203	Pumice tuff	Tomj	MIT-2,20.60-20.70m			R					R														C	F								
11	205	Pumice tuff	Tomj	MIT-2,30.10-30.20m					R			R														A	F								
12	206	Lapilli tuff	Tomj	MIT-2,41.30-41.40m					R			F														A	F								
13	209	Pumice tuff, clayey	Tomj	MIT-2,59.00-59.10m		R			R			R									C					A	F								
14	214	Lapilli tuff	Tomj	MIT-2,104.00-104.20m		F															F					F	F								
15	220	Andesite	Tomj	MIT-2,193.20-193.40m		F																				F	F								
16	301	Pumice tuff	Tomj	MIT-3,35.10-35.20m		R						R														C	F								
17	302	Pumice tuff, Sil & clayey	Tomj	MIT-3,41.90-42.00m	R							F														C	R								
18	304	Fine tuff, Sil & Carb	Tomj	MIT-3,53.00-53.10m																	A					F									
19	309	Lapilli tuff, clayey	Tomj	MIT-3,84.50-84.60m		R			R												A					F									
20	312	Pumice tuff	Tomj	MIT-3,130.35-130.55m		R	R														F					F	F								
21	315	Pumice tuff	Tomj	MIT-3,156.20-156.40m		R			R												F					C	C		R						
22	319	Tuff (sandy)	Tomj	MIT-3,207.20-207.40m		F															R					F	C								
23	402	Tuff, clayey	Tomj	MIT-4,22.00-22.10m																		R					F								
24	403	Pumice tuff	Tomj	MIT-4,37.30-37.40m								R	F	R																					
25	404	Pumice tuff, clayey	Tomj	MIT-4,44.00-44.10m								R	R	R																					
26	405	Pumice tuff, clayey	Tomj	MIT-4,58.90-59.00m									F	R																					
27	410	Pumice tuff, clayey	Tomj	MIT-4,114.00-114.20m										F			F											R							
28	412	Pumice tuff, clayey	Tomj	MIT-4,134.50-134.70m										F			F																		
29	413	Dacitic tuff, clayey	Tomj	MIT-4,136.45-136.65m										F														F							
30	416	Pumice tuff, Py	Tomj	MIT-4,165.00-165.20m									R	F			F																		
31	418	Tuff, clayey	Tomj	MIT-4,169.80-170.00m								F	R	C			R																		
32	419	Dacitic tuff	Tomj	MIT-4,181.80-182.00m									F	F			C											R							
33	426	Fine tuff, clayey	Tomj	MIT-4,298.00-298.20m								R	R	F			F																		
34	502	Tuff, Py-diss	Tomj	MIT-5,10.00-10.10m									R	F																					
35	503	Tuff, Py-diss	Tomj	MIT-5,18.00-18.10m								R	R	F																					
36	507	Fine tuff, clayey	Tomj	MIT-5,53.00-53.10m	R						R?	R														F	C	R							
37	513	Fine tuff, clayey	Tomj	MIT-5,138.20-138.40m									F	F																					
38	514	Tuff (sandy)	Tomj	MIT-5,148.20-148.40m								F	R	F							R					C									
39	517	Pumice tuff, clayey	Tomj	MIT-5,185.70-185.90m					R			F									F					C	F		R						
40	518	Pumice tuff, clayey	Tomj	MIT-5,191.35-191.55m					R			F														A	F								
41	603	Dacitic tuff	Tomj	MIT-6,38.50-38.60m					R			F														A	R								
42	606	Dacitic tuff	Tomj	MIT-6,61.20-61.30m		R						R	R	F												A		R							
43	609	Dacitic tuff	Tomj	MIT-6,95.00-95.20m	R	R						R									F					A	A								
44	611	Dacitic tuff, Sil	Tomj	MIT-6,119.20-119.40m					R																	A	F								
45	613	Fine tuff, Sil & clayey	Tomj	MIT-6,146.80-147.00m					R																	A	F								
46	616	Dacitic tuff, Sil & clayey	Tomj	MIT-6,180.80-181.00m					R																	A	F								
47	617	Fine tuff, Sil	Tomj	MIT-6,196.70-196.90m		R																				C	F								
48	619	Pumice tuff	Tomj	MIT-6,232.00-232.20m		R	R																			C	F								
49	702	Mudstone, clayey	Tomj	MIT-7,19.80-19.90m					R																	A	F				R				
50	705	Mudstone, clayey	Tomj	MIT-7,55.00-55.10m	R							F														F	F								
51	708	Tuff-breccia	Tomj	MIT-7,98.45-98.65m					R			R	R	R												R									
52	711	Fine tuff, Sil & Py	Tomj	MIT-7,119.70-119.90m								F		R										F		F									
53	716	Pumice tuff, clayey	Tomj	MIT-7,165.40-165.60m					R			R									R					A									

Abundance of Minerals : A;Abundant, C;Common, F;Few, R;Rare

Abbreviations : Mo;Montmorillonite, Ch;Chlorite, Se;Sericite, Mu;Muscovite, Ka;Kaolin, Ha;Halloysite, Pr;Pyrophyllite, Mx;Mixed Layer, Cp;Clinoptilolite, Md;Mordenite, Lm;Laumontite, Hu;Heulandite, Fr;Ferrierite, Al;Alunite, Gy;Gypsum, Ja;Jarosite, Ca;Calcite, Ak;Ankerite, Si;Siderite, Cr;Cristobalite, Tr;Tridymite, Qz;Quartz, Pl;Plagioclase, Kf;Potash Feldspar, Py;Pyrite, Go;Goethite, He;Hematite, Mg;Magnetite, Ba;Barite, Sp;Sphalerite, Gn;Galena

Table 2-29 Results of Ore Microscopy in the Cisasah-Cidadap-Cibuniasih Area (Drill Cores)

Sample No.	Hole No. & Depth	Minerals									Remarks
		Py	As	Cp	Sp	Gn	Cv	Ag	Sc	Io	
	[MIT-4]										
413P	136.45-136.65m	·								·	Pyrite dissemination in sil/clayey tuff
416P	165.00-165.20m	·								·	Pyrite dissemination in silicified pumice tuff
417P	168.40-168.60m	·								·	Pyrite dissemination in silicified pumice tuff
418P	169.80-170.00m	·								·	Pyrite dissemination in sil/clayey pumice tuff
	[MIT-5]										
502P	10.00- 10.10m	△		·	·						Py-Cp-Sp network vein in tuff
510P	93.15- 93.30m	·								·	Limonite-Hem impregnation (patchy) in pumice tuff
	[MIT-6]										
616P	180.80-181.00m	·								·	Pyrite dissemination in sil/clayey dacitic tuff
617P	196.70-196.90m	·								·	Pyrite dissemination in sil/clayey fine tuff
	[MIT-7]										
701P	10.80- 10.90m	△		·	·						Py-Cp-Sp dissemination in silicified rock
703P	26.10- 26.25m	·								·	Pyrite dissemination in sil/clayey siltstone
709P	109.70-109.90m	·								·	Pyrite dissemination in sil/clayey tuff-breccia
710P	117.50-117.70m	·								·	Pyrite diss/patch in sil/clayey fine tuff
711P	119.70-119.90m	△									Pyrite seam in sil/clayey fine tuff
715P	161.10-161.30m	△									Pyrite network vein in clayey pumice tuff
716P	166.40-166.60m	△									Pyrite dissemination in clayey pumice tuff

Abundance of Minerals: ○;Common, △;Rare, ·;Trace

Abbreviations : Py;Pyrite, As;Arsenopyrite, Cp;Chalcopyrite, Sp;Sphalerite, Gn;Galena
Cv;Covelline, Ag;Argentite, Sc;Specularite, Io;Iron Oxide

Table 2-30 Assay Results of Core Samples in the Cisasah-Cidadap-Cibuniasih Area

Sample No.	Drill No.	Depth m	Au g/t	Ag ppm	Cu ppm	Pb ppm	Zn ppm	Fe %	Mn ppm	Ba ppm
413M	MIT-4	136.45-136.65	<0.03	<1	45	20	100	0.70	90	40
416M		165.00-165.20	<0.03	<1	30	10	55	0.84	150	40
417M		168.40-168.60	<0.03	<1	20	<5	80	0.71	790	40
418M		169.80-170.00	<0.03	<1	10	10	70	2.05	420	60
501M	MIT-5	8.55-8.65	<0.06	<1	20	10	75	1.60	340	20
502M		10.00-10.10	<0.06	<1	15	5	30	2.12	180	160
503M		18.00-18.10	<0.06	<1	10	10	20	1.48	70	140
510M		93.15-93.30	<0.06	<1	5	5	40	2.12	210	20
616M	MIT-6	180.80-181.00	<0.06	<1	5	10	35	1.70	240	<20
617M		196.70-196.90	<0.06	<1	35	<5	150	2.89	1,620	<20
701M	MIT-7	10.80-10.90	<0.03	1	1,065	30	2,920	2.06	160	20
703M		26.10-26.25	<0.03	<1	50	35	335	3.83	2,730	<20
709M		109.70-109.90	<0.03	<1	20	10	100	3.47	1,140	20
710M		117.50-117.70	<0.03	<1	5	5	50	2.92	120	20
711M		119.70-119.90	<0.03	<1	5	5	60	1.64	390	<20
715M		161.10-161.30	<0.03	<1	5	15	125	3.01	350	<20
716M		166.40-166.60	<0.03	<1	10	5	60	2.59	390	20

clayey alteration zone was caught in the depth of 50.10 ~ 52.75 m. It is composed of sericitization and kaolinization of strong grade.

77.70 ~ 160.10 m Alternation of fine tuff and pumice tuff. Green to pale green. Many sedimentary units were counted in this zone. Fine tuff gradually changes into coarse tuff and pumice tuff at the bottom of each unit. Pumice is depressed and elongated. Green to grey dacitic fragments of lapilli to breccia size were observed in some part of the unit. Thin mudstone beds were found in two depths: 78.85 ~ 79.55 m and 141.35 ~ 141.45 m. Montmorillonitization and chloritization are of medium grade down to the depth of nearly 130 m. A clayey and silicified zone was caught within this depth: 105.80 ~ 114.70 m. It is composed of silicification, sericitization and carbonatization of strong grade. Several calcite veinlets of 1 to 2 cm in width occur in this alteration zone. Below 130 m, alteration becomes weaker. A couple of thin calcite veinlets were found in the depths around 127 m, 146 m and 151 m.

160.10 ~ 182.40 m Pumice tuff. Green to pale green. Pumice is generally small and elongated (0.5 to 3 cm in length). Chloritization again becomes stronger to medium grade in this depth. A clayey zone was caught: 165.40 ~ 169.00 m. Chloritization and sericitization are strong, and thin calcite veinlets of a few mm are developed. The sequence of these green tuffs from 77.70 m down to 182.40 m is correlated to the Upper Member of the Jampang Formation.

182.40 ~ 200.50 m (EOH) Alternation of andesite lava and tuff. Greenish grey to grey with purple tint. Two flow units of andesite were distinguished: 182.40 ~ 184.40 m and 186.20 ~ 188.15 m. Andesite is mostly massive, and partly brecciated.

Propylitization was observed. The lower part of this zone is composed of accidental tuff-breccia. Breccias, whose size range from lapilli to breccia, consist of dacite, andesite and some lithic fragments. Alteration in the lower part of this zone, mostly chloritization, becomes weaker.

MIT-2: The drill hole MIT-2 is situated at the flank of small hill which is composed of calcareous sandstone of the Bentang Formation. The purpose of this hole was to investigate the geologic structure of bedrock and ore horizon in the western part of the survey area together with MIT-1. It also aimed at the extension of a silicified zone found approximately 500 m southwest of the drilling site. The geology of the drill hole is described as follows:

0 ~ 0.20 m Soil. Light brown.

0.20 ~ 3.60 m Saprolite. Grey.

3.60 ~ 13.55 m Sandstone, siltstone and conglomerate of Bentang Formation. Calcareous. Grey to light grey. Partly weathered.

13.55 ~ 21.10 m Lapilli tuff. Pale green to green. Two pumice tuff layers are intercalated: 13.55 ~ 15.50 m and 20.10 ~ 21.10 m. In pumice tuff layers, the pumice is flattened and elongated. Montmorillonitization, sericitization and chloritization of moderate grade were recognized. This green tuff occurs unconformably below the Bentang Formation.

21.10 ~ 44.50 m Fine tuff. Pale green. Mostly massive, partly stratified. Several layers of pumice tuff and lapilli tuff are intercalated: 22.40 ~ 22.55 m (pumice tuff), 27.15 ~ 27.55 m (pumice tuff), 32.40 ~ 33.55 m (lapilli tuff), 34.20 ~ 34.60 m (lapilli tuff), and 40.30 ~ 40.70 m (lapilli tuff). Some part of these zones show montmorillonitization and chloritization of moderate grade.

44.50 ~ 149.60 m Tuff-breccia. Greenish grey. This unit is characterized by the occurrence of accidental fragments such as grey andesite and yellow, brown or dark grey shale. These fragments are generally angular of lapilli to breccia size. Weak chloritization and sericitization were observed. Layers of pumice tuff and coarse tuff are intercalated: 58.47 ~ 59.70 m (pumice tuff), 60.70 ~ 62.30 m (pumice tuff), 118.00 ~ 121.30 m (coarse tuff), and 121.80 ~ 125.00 m (coarse tuff). Alteration is weak; generally composed of chloritization. The sequence of these green tuffs from 13.55 m down to 149.60 m was interpreted to be correlated to the Upper Member of the Jampang Formation.

149.60 ~ 200.50 m (EOH) Andesite lava and tuff-breccia. Grey to greenish grey. Massive zone and brecciated zone were distinguished in the lava part. Chloritization and epidotization were observed. Accidental tuff-breccia occurs between lava units. Breccias, whose size range from lapilli to breccia, consist of dacite, andesite and some lithic fragments.

MIT-3: The drill hole MIT-3 is located approximately 1,500 m southwest of the Cisasah gypsum mine. The green tuff exposes at the drilling site where is situated on the flank of small hill at the eastern side of Ciwulan river. The top of the hill is covered by calcareous sandstone of the Bentang Formation. The purpose of this hole was to test the southwestern extension of the Cisasah mineralized horizon. It is also aimed at one of the significant silicified zones found near Kp. Cipari. The geology of the drill hole is described as follows:

0 ~ 0.80 m Soil. Brown.

0.80 ~ 7.95 m Saprolite. Reddish brown. Mottled. Originally pumice tuff.

7.95 ~ 53.55 m Pumice tuff of the Upper Member of the Jampang Formation. Pale green to green. Pumice is elongated. Thin layers of fine tuff, lapilli-tuff and tuff-breccia are intercalated: 25.70 ~ 28.75 m (fine tuff), 28.75 ~ 33.60 m (tuff-breccia), 38.00 ~ 38.25 m (tuff-breccia), 39.50 ~ 40.90 m (fine tuff), 43.70 ~ 44.00 m (tuff-breccia), 47.00 ~ 49.70 m (lapilli tuff), 49.70 ~ 53.55 m (fine tuff). In general, this zone is moderately altered comprising montmorillonitization and chloritization. The following two zones are significantly decolorized and silicified: 39.50 ~ 45.40 m (silicified and chlorite-mixed layer alteration), and 49.70 ~ 53.55 m (silicified and montmorillonite-chlorite-carbonate alteration). One of these zones could be correlated to the Cisasah mineralized horizon.

Grey massive andesite dyke occurs at 45.40 ~ 47.00 m.

53.55 ~ 115.25 m Lapilli tuff and tuff-breccia. Pale green to green. Accidental lapillis or breccias are recognized in dacitic matrix. This zone is weakly to moderately altered comprising montmorillonitization and chloritization. The following zone is significantly decolorized: 76.80 ~ 88.10 m (chlorite-kaolin-carbonate alteration). Grey to dark grey andesite dyke occurs at 72.00 ~ 74.70 m and 90.65 ~ 110.25 m. The latter one, dark color and brittle, shows a basaltic feature. Calcite network veins are developed in this body.

115.25 ~ 170.80 m Pumice tuff. Pale green. Pumice is elongated. A fine tuff layer is intercalated: 142.10 ~ 145.20 m. This zone is moderately altered (montmorillonit-chlorite-sericite). Dark grey andesite dyke occurs at 120.70 ~ 124.30 m.

170.80 ~ 193.55 m Tuff-breccia. Green to pale green. Accidental (andesitic) breccias are contained. The alteration becomes weaker down to this depth.

193.55 ~ 212.18 m Alternation of fine tuff and coarse tuff (sandy). Green to greenish grey. Small pumices were observed at the bottom of this zone.

212.18 ~ 250.50 m (EOH) Andesite. Light greenish grey. Mostly massive (lava dome?).

MIT-4: MIT-4 was drilled at the northern slope of Cisasah river where decolorized green tuff was extensively exposed. It is located approximately 1,000 m due east of the Cisasah gypsum deposit. A small stratabound manganese deposit occurs 750 m north of the drill hole. The purpose of this hole was to test the eastern extension of the Cisasah gypsum mineralization. The geology of the drill hole is described as follows:

0 ~ 2.60 m Soil and saprolite. Brown to grey. Originally fine tuff.

2.60 ~ 33.95 m Fine tuff of the Upper Member of the Jampang Formation. Light grey. Generally soapy; montmorillonitization is moderate. A strongly decolorized zone occurs at 13.85 ~ 27.70 m. Thin layers of coarse (sandy) tuff and pumice tuff are intercalated.

33.95 ~ 134.95 m Pumice tuff. Light greenish grey to light grey. Dark grey ill-defined fragments, pumice or glass, were observed in greenish soapy matrix. Moderately montmorillonitized and chloritized in common. Five strongly altered (decolorized) zones were caught in this rock: 33.95 ~ 39.70 m (silicified & quartz network), 39.70 ~ 48.90 m (decolorized, montmorillonite-chlorite-mixed layer), 53.75 ~ 60.80 m (decolorized), 113.00 ~ 115.20 m (decolorized), and 134.15 ~ 134.95 m (decolorized).

134.95 ~ 183.40 m Dacitic tuff. Pale green. This rock is composed of pale green dacitic matrix with occasional light grey siliceous breccias. Generally soapy. Strongly altered zones were caught at the following depths: 135.75 ~ 141.40 m (decolorized, partly pyrite-disseminated), 163.35 ~ 165.75 m (pyrite disseminated), 168.40 ~ 168.50 m (pyrite disseminated), 169.80 ~ 170.90 m (montmorillonite-chlorite-mixed layer, pyrite disseminated), and 175.70 ~ 183.40 m (decolorized, montmorillonite-chlorite-mixed layer). Within these alteration zones, pyrite was slightly disseminated. These zones were interpreted to be correlated to the mineralized horizon of the Cisasah gypsum deposit.

183.40 ~ 261.47 m Pumice tuff. Light greenish grey to light grey. Dark grey fragments (ill-defined), pumice or glass, were observed in greenish soapy matrix same as the upper pumice tuff zone. Moderately montmorillonitized and chloritized in common.

261.47 ~ 305.30 m An alternating bed of fine tuff, coarse (sandy) tuff and pumice tuff. Pale green to light greenish grey. Weakly to moderately montmorillonitized and chloritized. Carbonate network veins occur occasionally. A couple of alteration zones (montmorillonite-chlorite-carbonate) of moderate to strong grade was caught at the depths of 292.40 ~ 295.35 and 298.00 ~ 298.40 m.

305.30 ~ 311.10 m (EOH) Basalt. Dark greenish grey, massive. This basalt lava was interpreted to be correlated to the Lower Member of the Jampang Formation.

MIT-5: MIT-5 was drilled at approximately 400 m due south of the Cibuniasih barite bed. The drill hole location is situated structurally in a trough of basement rock which was inferred from the 1-st order trend surface residual map of the Bouguer anomaly. The surface of the hole is just along the boundary of green tuff of the Upper Member of the Jampang Formation and the Kalipucang limestone. The sericite-chlorite alteration zone was detected on the surface near the drill hole by X-ray analysis. The strong alteration zone expressed by the alteration index (A.I.≥ 79 %) was also recognized on the surface in the drill hole location. The target of this hole was the lower extension of massive sulfide mineralization represented by the Cibuniasih barite bed. The geology of the drill hole is described as follows:

0 ~ 0.20 m Soil. Yellow brown.

0.20 ~ 4.90 m Saprolite. Creamy grey. Originally limestone. Partly hard.

4.90 ~ 5.20 m Limestone. White to creamy white. Fossil (shell) rich. This limestone is correlated to the Kalipucang Formation.

5.20 ~ 7.70 m Calcareous sandstone. Light grey.

7.70 ~ 8.70 m Mudstone. Black. The lower part of this unit changes to an alternation of mudstone lens and coarse tuff.

8.70 ~ 52.70 m Dacitic tuff. White to pale green. This rock is further divided into two subunits. The upper part (8.70 ~ 34.20 m) is composed of moya-moya tuff in which plagioclase phenocrysts was observed. Whereas the lower part (34.20 ~ 52.70 m) is characterized by massive dacitic tuff in which quartz phenocryst is distinctive. Several thin layers of green fine tuff occur mainly in the upper unit. This rock is moderately altered into montmorillonite-chlorite alteration assemblage. Two strong alteration zones were found in the upper unit of this rock: 8.70 ~ 13.70 m (decolorized with pyrite network vein/dissemination), and 13.70 ~ 19.70 m (montmorillonite-chlorite-mixed layer with limonite network vein). These zones were interpreted to be correlated to the extension of footwall mineralized zone of the Cibuniasih barite bed.

52.70 ~ 99.00 m Pumice tuff. Pale green to green. Green to dark grey elongated glass/pumice is contained. Several fine/coarse tuff layers are intercalated: 52.70 ~ 61.65 m, 84.40 ~ 84.55 m, 84.90 ~ 85.00 m, and 85.70 ~ 86.30 m. This rock is commonly altered into montmorillonite-chlorite of moderate grade. A strong alteration zone occurs in the depth of 52.70 ~ 54.20 m (montmorillonite-chlorite-mixed layer). Greenish brown patches of limonite and hematite with a small amount of pyrite were found in two places: 86.40 ~ 86.43 m, and 93.20 ~ 93.24 m.

99.00 ~ 106.50 m Fine tuff. Green. This rock is composed of an alternating bed of fine tuff and coarse (sandy) tuff with thin layers of mudstone.

106.50 ~ 119.45 m Tuff-breccia. Greenish grey. Pumice and breccias (dacitic and andesitic) were observed. Two coarse tuff layers are intercalated.

119.45 ~ 165.40 m Coarse tuff. Light grey. Mostly sandy, partly fine. Generally massive, partly laminated. Very small (0.5 cm in diameter) green glass/pumice was occasionally found. A strong silicified and clayey (montmorillonite-chlorite-mixed layer) alteration zone was caught at a depth of 133.20 ~ 140.70 m. The other part of the coarse tuff is moderately montmorillonitized and chloritized.

165.40 ~ 250.50 m (EOH) Pumice tuff. Pale green to light grey. Lapilli, mostly essential, partly accidental, was occasionally found. This rock is commonly altered into chlorite-montmorillonite of moderate grade. Two thin silicified and clayey (kaolin-montmorillonite-chlorite-mixed layer) zones occur: 185.70 ~ 186.25 and 191.30 ~ 191.55 m.

MIT-6: The drilling MIT-6 was carried out at the IP electric survey point A-36 where is located approximately 500 m west-northwest of the Cibuniasih barite bed. The drill hole location is situated structurally on the western flank of the Pasir Gintung basement uplift sloping down to the Cikalong basin. The surface of the hole is just along the boundary of green tuff of the Upper Member of the Jampang Formation and the Kalipucang limestone. The sericite-chlorite alteration zone is developed on the surface near the drill hole. A small chargeability anomaly (chargeability ≥ 4.0 mV•S/V) was detected in a depth (N=5) of this location through the IP survey. The target of this hole was the lower extension of massive sulfide mineralization represented by the Cibuniasih barite bed. It also aimed at testing one of the significant IP anomalies detected in the southwestern part of the Cibuniasih area. The geology of the drill hole is described as follows:

0 ~ 0.20 m Soil. Brown.

0.20 ~ 4.50 m Saprolite. Brown. Originally tuff.

4.50 ~ 5.60 m Andesite dyke. Brownish grey. Weathered. Quartz veinlets with limonite dissemination occur in this rock.

5.60 ~ 18.95 m Dacitic tuff. Pale green. This tuff is characterized by the abundant occurrence of quartz crystals ranging 5 mm to 1 cm in diameter. Green pumice/glass is also contained. It is moderately sericitized and chloritized in general.

18.95 ~ 27.50 m Andesite dyke. Dark grey. Massive.

27.50 ~ 190.45 m Dacitic tuff. Pale green. This tuff is characterized by the abundant occurrence of quartz crystals ranging 5 mm to 1 cm in diameter same as in 5.60 ~ 18.95 m. Green pumice/glass is also contained. Several thin beds comprising fine tuff, pumice tuff and patch tuff are intercalated: 41.80 ~ 45.70 m (fine tuff/pumice tuff), 84.65 ~ 87.70 m (fine tuff), 143.95 ~ 146.10 m (fine tuff), and 148.20 ~ 150.80 m (fine tuff/patch tuff). This rock is moderately sericitized and chloritized in general, and weakly silicified in part. Significantly silicified and/or clayey zones were caught in the following depths: 118.70 ~ 119.80 m (silicified, kaolin-sericite-chlorite), 142.70 ~ 143.95 m (silicified, kaolin-sericite-chlorite), 146.10 ~ 148.20 m (silicified, kaolin-sericite-chlorite), and 180.00 ~ 182.00 m (silicified, kaolin-sericite-chlorite).

190.45 ~ 222.60 m Fine tuff. White to light green. Very thin pumice tuff layers are intercalated. Two clayey zones (sericite-chlorite-carbonate) and one silicified zone occur in this rock: 193.15 ~ 194.60 m (sericite-chlorite), 196.50 ~ 203.00 m (silicified, chlorite-sericite, and pyrite weakly disseminated), and 217.30 ~ 218.60 m (sericite-carbonate).

222.60 ~ 248.40 m Alternating bed of pumice tuff and fine tuff. Pale green to grey. Small pumice/glass and lapilli were observed. The bottom of this zone gradually changes to muddy and basic fine tuff characters.

248.40 ~ 250.50 m (EOH) Basalt lava. Dark grey.

MIT-7: The drill hole MIT-7 was dug at the IP electric survey point I-17 where is located approximately 1,200 m southeast of the Cibuniasih barite bed. The drill hole location is situated structurally on the southern flank of the Pasir Gintung basement uplift sloping down to the Cikalong basin. The surface of the hole is composed of the green tuff member of the Upper Member of the Jampang Formation. The sericite-chlorite alteration zone is developed on the surface near the drill hole. A small chargeability anomaly (chargeability ≥ 4.0 mV•S/V) was detected in the shallow part (N=1) of this location through the IP survey. The target of this hole was the lower extension of massive sulfide mineralization represented by the Cibuniasih barite bed and Pasir Gintung stratabound manganese deposit. It also aimed at testing one of the significant IP anomalies detected in the southern part of the Cibuniasih area. The geology of the drill hole is described as follows:

0 ~ 5.95 m Surface soil. Yellow brown.

5.95 ~ 6.45 m Sand with limestone pebble. Light grey.

6.45 ~ 9.50 m Calcareous sandstone of the Bentang Formation. Reddish to brownish grey, mottled.

9.50 ~ 51.50 m Mudstone. Dark grey to black. Some part silty, another part tuffaceous. Generally brecciated indicating it was formed as turbidite. The upper part of this zone is clayey -- 9.50 ~ 26.25 m. Two silicified zones were caught in this clayey mudstone: 10.60 ~ 11.30 m, and 26.10 ~ 26.25 m. Sulfide minerals such as pyrite, chalcopyrite and sphalerite are disseminated in the former silicified zone.

51.50 ~ 115.20 m Tuff-breccia. Greenish grey. The matrix of this rock is muddy in some part. A few bed of mudstone is intercalated: 56.70 ~ 63.80 m, and 68.80 ~ 69.00 m. Two clayey alteration zones were caught: 54.30 ~ 56.20 m, and 106.30 ~ 115.20 m. The latter is silicified and clayey (sericitized) zone with weak pyrite dissemination.

115.20 ~ 206.10 m Pumice tuff. White to light greenish grey. Pumice/glass is generally small and elongated. This rock is commonly decolorized and moderately altered (sericite-chlorite). Significantly silicified and clayey zone continues from the hanging wall mudstone into this pumice tuff: 115.20 ~ 120.25 m. This alteration zone is subdivided into three: 115.20 ~ 115.90 m (silicified, sericitized and pyrite weakly disseminated), 115.90 ~ 117.70 (silicified and pyrite networking), and 117.70 ~ 120.25 m (silicified, montmorillonite-chlorite-mixed layer, and patches/seams of pyrite contained). Another significantly silicified and clayey zone was caught in the depth of 151.50 ~ 177.30 m. This zone is weakly pyritized in common. A strongly clayey and pyritized zone occurs amidst this alteration zone: 165.50 ~ 167.60 m. Because of strong sericitization and pyritization, it shows grey color.

206.10 ~ 222.00 m Fine tuff. Pale green. Massive. Weakly silicified and sericitized zones with carbonate network veins occur: 206.10 ~ 207.30, and 208.80 ~ 209.10 m.

222.00 ~ 233.40 m Pumice tuff. Pale green. Moderately chloritized.

233.40 ~ 240.50 m (EOH) Andesite lava. Grey, massive.

5-5 Mineralization and Hydrothermal Alteration

(1) Western Area (MIT-1~4)

Four holes totaling 962.60 m were drilled in the western part of the Cisasah-Cidadap-Cibuniasih area in the second phase. Although no intersection of massive sulfide ore has been caught in these reconnaissance drill holes, a significant amount of information regarding the volcano-stratigraphy and hydrothermal alteration associated with massive sulfide mineralization was obtained in the Cisasah-Cidadap area.

MIT-1 is located approximately 5 km northeast of Cidadap. The purpose of this hole was to investigate the geologic structure of bedrock and ore horizon in the western part of the survey area, especially at an area between the Cidadap gypsum deposit and Cikalong green tuff basin. Three clayey-silicified alteration zones were caught in the green tuff succession: 50.10 ~ 52.75 m (sericite-kaolin), 105.80 ~ 114.70 m (sericite-carbonate-quartz), and 165.40 ~ 169.00 m (sericite-chlorite). One of them, probably the middle zone, was thought to be correlated to the Cidadap gypsum ore horizon.

MIT-2 is located about 500 m northeast of the Panyairan sulfide mineral showing. The purpose of this hole was to investigate the geologic structure of bedrock and ore horizon in the western part of the survey area together with MIT-1. It also aimed at the extension of the Panyairan sulfide zone. Two clayey and silicified zones were caught: 13.55 ~ 15.50 m (sericite-quartz), and 58.47 ~ 59.70 m (chlorite-kaolin-mixed layer-carbonate-quartz).

MIT-3 is located approximately 1,500 m southwest of the Cisasah gypsum mine. The purpose of this hole was to test the southwestern extension of the Cisasah mineralized horizon. It also aimed at one of the significant silicified zones found near Kp. Cipari. Three decolorized and /or silicified zones were caught in the green tuff succession: 39.50 ~ 45.40 m (silicified, chlorite-mixed layer), 49.70 ~ 53.55 m (silicified, montmorillonite-chlorite-carbonate), and 76.80 ~ 88.10 m (chlorite-kaolin-carbonate). One of them, probably the lower zone, was thought to be correlated to the Cisasah gypsum ore horizon.

MIT-4 was drilled approximately 1,000 m due east of the Cisasah gypsum deposit. The purpose of this hole was to test the eastern extension of the Cisasah gypsum mineralization. Several decolorized and clayey zones were caught. These were categorized into three alteration zones as follows: (1) upper zone -- 13.85 ~ 27.70 m, 33.95 ~ 48.90 m, 53.75 ~ 60.80 m -- (montmorillonite-chlorite-mixed layer, and partly silicified), (2) middle zone -- 134.15 ~ 134.95 m, 135.75 ~ 141.40 m, 163.35 ~ 165.75 m, 168.40 ~ 168.50 m, 169.80 ~ 170.90 m, 175.70 ~ 183.40 m -- (montmorillonite-chlorite-mixed layer, locally pyrite disseminated), and (3) lower zone -- 292.40 ~ 295.35 m, 298.00 ~ 298.40 m -- (montmorillonite-chlorite-mixed layer-carbonate). One of them, probably the middle zone, was interpreted to be correlated to the Cisasah gypsum ore horizon.

Among four holes, the most intense hydrothermal alteration was caught in MIT-4. It suggests that the potential of massive sulfide ore deposit may exist in the eastern part of the Cisasah gypsum deposit.

(2) Eastern Area (MIT-5~7)

Three holes totaling 741.50 m were drilled in the eastern part of the Cisasah-Cidadap-Cibuniasih area in the second phase. The result of these holes provided a significant amount of information regarding the volcano-stratigraphy and hydrothermal alteration associated with massive sulfide mineralization. It also contributed to check the relationship between the IP anomaly and mineralization/alteration figures in the study area.

MIT-5 was drilled at approximately 400 m due south of the Cibuniasih barite bed. The target of this hole was the lower extension of massive sulfide mineralization represented by the Cibuniasih barite bed. Several silicified and/or clayey zones were caught in the green tuff succession: 8.70 ~ 19.70 m (montmorillonite-chlorite-mixed layer, pyrite/limonite networking), 52.70 ~ 54.20 m (montmorillonite-chlorite-mixed layer), 133.20 ~ 140.70 m (silicified), 185.70 ~ 186.25 m (kaolin-montmorillonite-chlorite-mixed layer-carbonate), and 191.30 ~ 191.55 m (silicified, kaolin-montmorillonite-chlorite-mixed layer). The uppermost zone was interpreted to be correlated to the footwall sulfide network of the Cibuniasih barite ore.

MIT-6 was carried out at the IP electric survey point A-36 where is located approximately 500 m west-northwest of the Cibuniasih barite bed. The target of this hole was the lower extension of massive sulfide mineralization represented by the Cibuniasih barite bed. It also aimed at testing one of the significant IP anomalies detected in the southwestern part of the Cibuniasih area. Several silicified and/or clayey zones were caught in the green tuff succession: 142.70 ~ 143.95 m (silicified, kaolin-chlorite-sericite), 146.10 ~ 148.20 m (silicified, kaolin-chlorite-sericite), 180.00 ~ 182.00 m (silicified, kaolin-sericite-chlorite), 193.15 ~ 194.60 m (chlorite-sericite), 196.60 ~ 203.00 m (silicified, chlorite-sericite, partly pyrite disseminated), and 217.30 ~ 218.60 m (sericite-carbonate).

MIT-7 was dug at the IP electric survey point I-17 where is located approximately 1,200 m southeast of the Cibuniasih barite bed. The target of this hole was the lower extension of massive sulfide mineralization represented by the Cibuniasih barite bed and Pasir Gintung stratabound manganese deposit. It also aimed at testing one of the significant IP anomalies detected in the southern part of the Cibuniasih area. Several silicified and/or clayey zones were caught in the green tuff succession: 9.50 ~ 26.25 m (clayey zone, two silicified zones were caught in this clayey mudstone -- 10.60 ~ 11.30 m, and 26.10 ~ 26.25 m, sulfide minerals such as pyrite, chalcopyrite and sphalerite are disseminated in the former silicified zone), 54.30 ~ 56.20 m (clayey zone), 106.30 ~ 115.20 m (silicified and clayey (sericitized) zone with weak pyrite dissemination), and 115.20 ~ 120.25 m (this zone is subdivided into three -- 115.20 ~ 115.90 m (silicified, montmorillonite-chlorite-mixed layer, and pyrite weakly disseminated), 115.90 ~ 117.70 (silicified and pyrite networking), and 117.70 ~ 120.25 m (silicified, montmorillonite-chlorite-mixed layer, and patches/seams of pyrite contained). Another significantly silicified and clayey zone was caught in the depth of 151.50 ~ 177.30 m. This zone is weakly pyritized in common; a strongly pyritized zone occurs at 165.50 ~ 167.60 m. Either the middle alteration zone (106.30 ~ 120.25 m) or the lower (151.50 ~ 177.30 m) is thought to be correlated to the mineralized horizon of the Pasir Gintung manganese deposit.

Among three holes, the most intense hydrothermal alteration was caught in MIT-7. It suggests that the potential of massive sulfide ore deposit may exist to the southern part of the Cibuniasih barite bed.

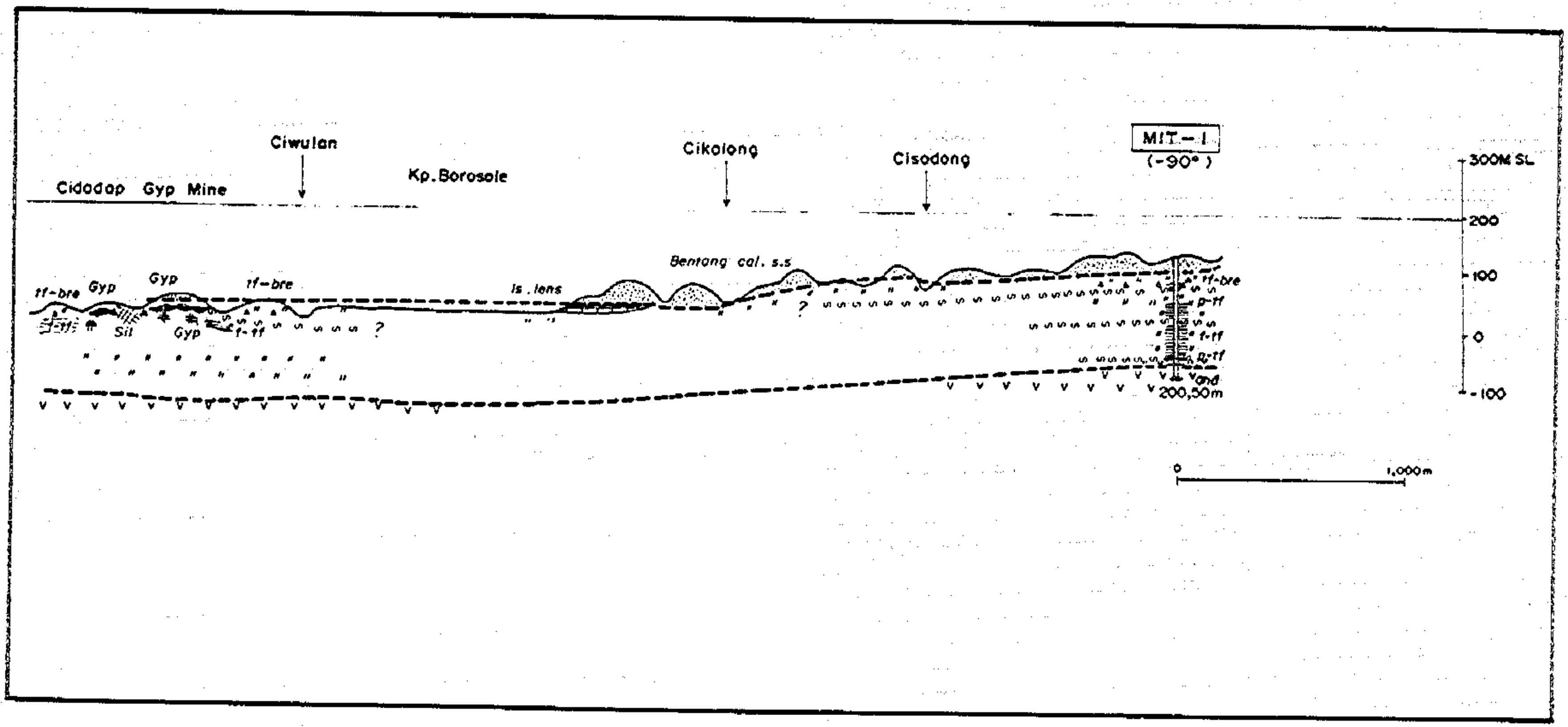


Fig. 2-43 Geologic Section along the Drill Holes (MIT-1)

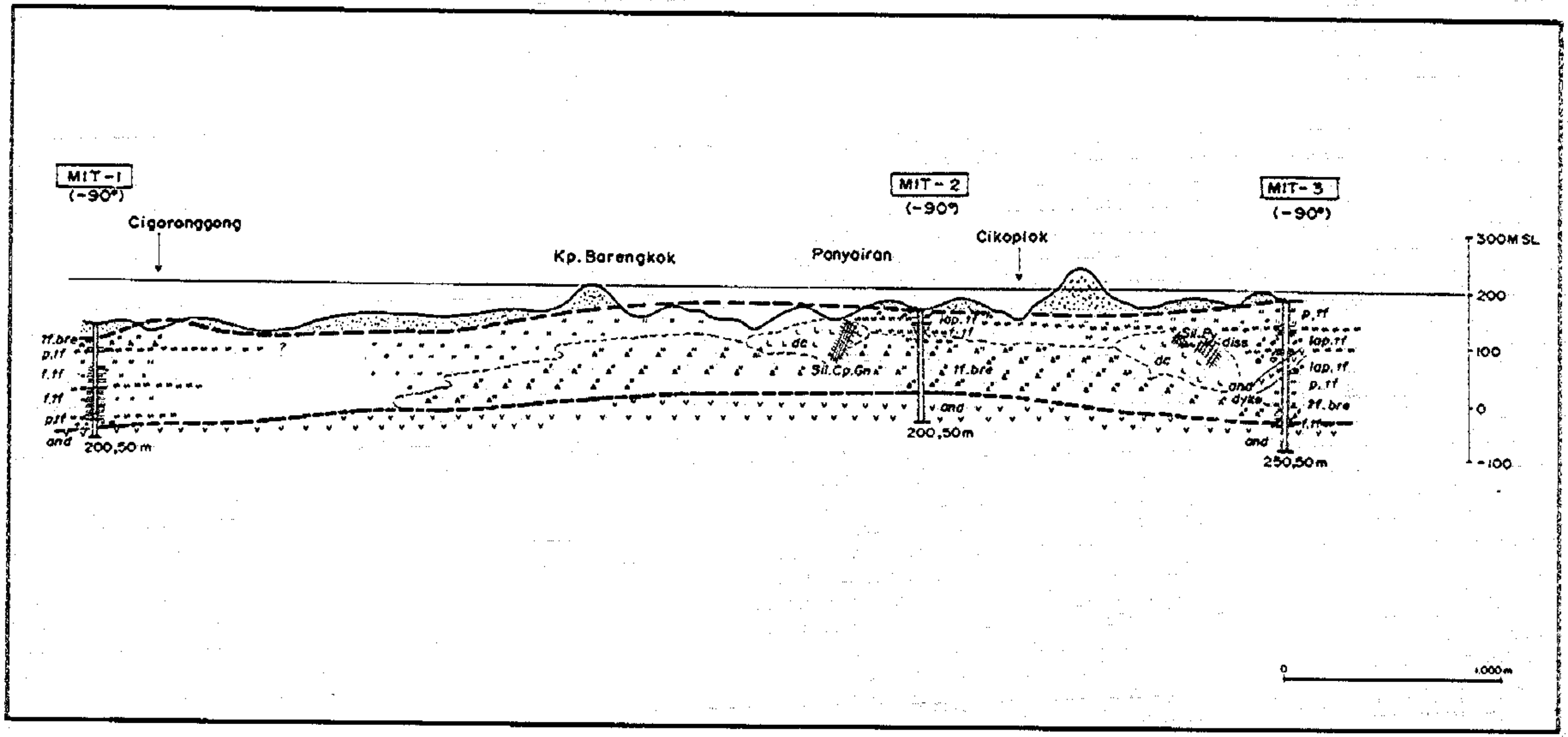


Fig. 2-44 Geologic Section along the Drill Holes (MIT-1, 2 and 3)

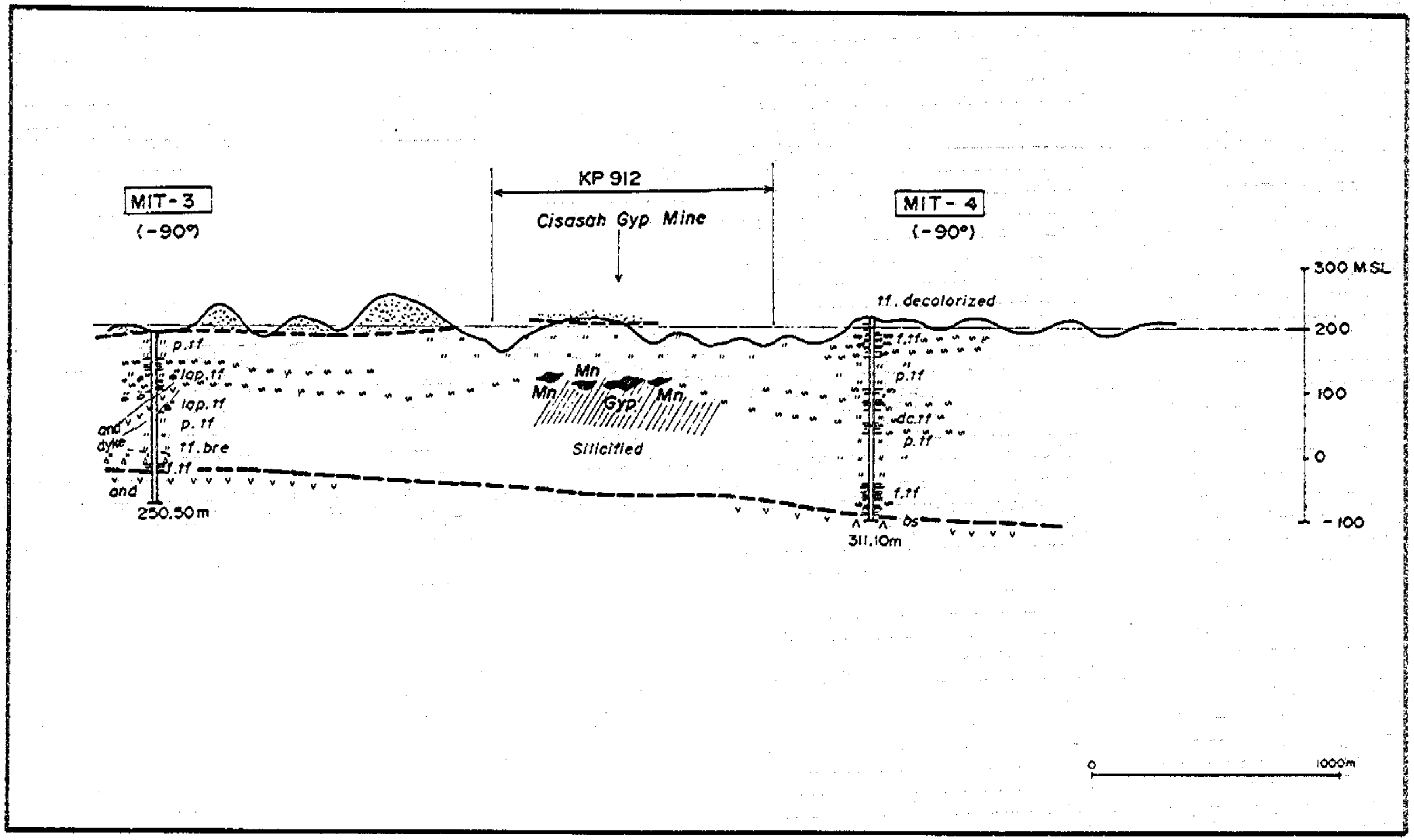


Fig. 2-45 Geologic Section along the Drill Holes (MIT-3 and 4)

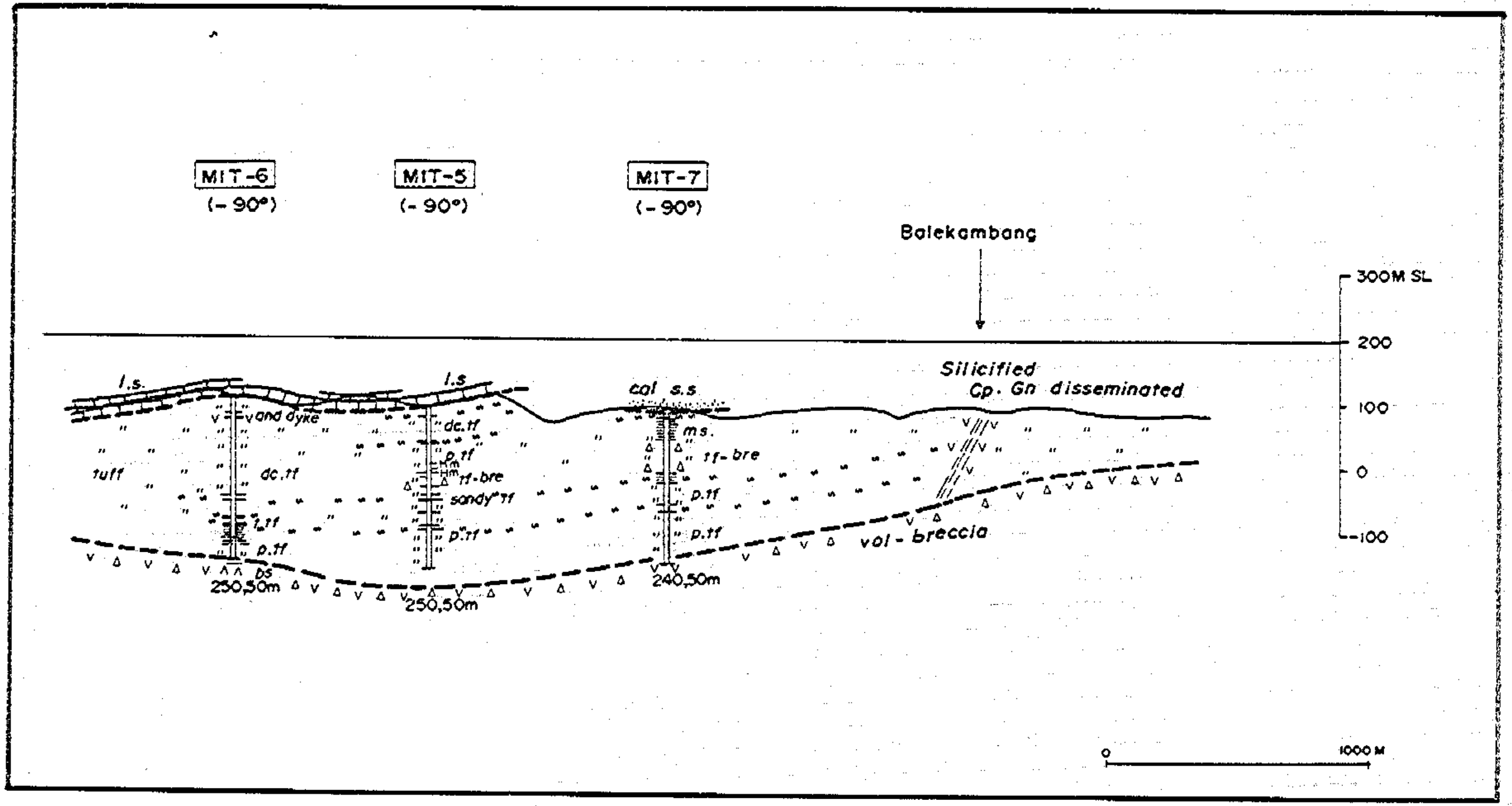
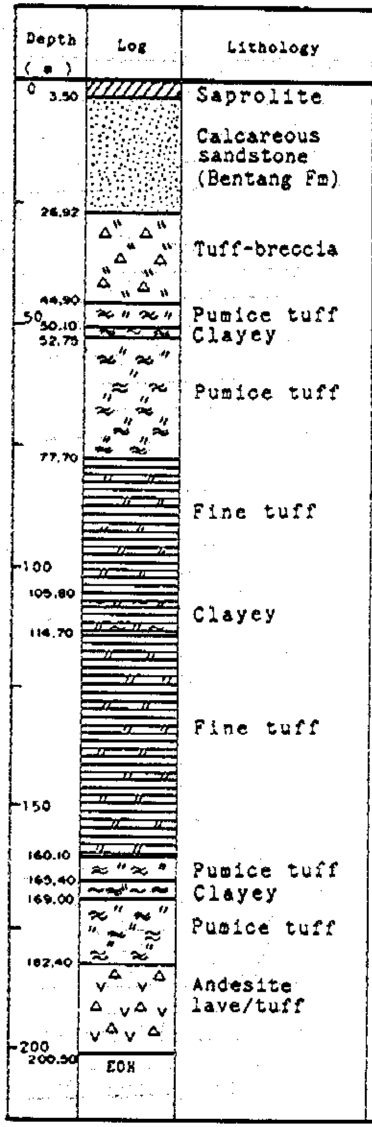


Fig. 2-46 Geologic Section along the Drill Holes (MIT-5, 6 and 7)

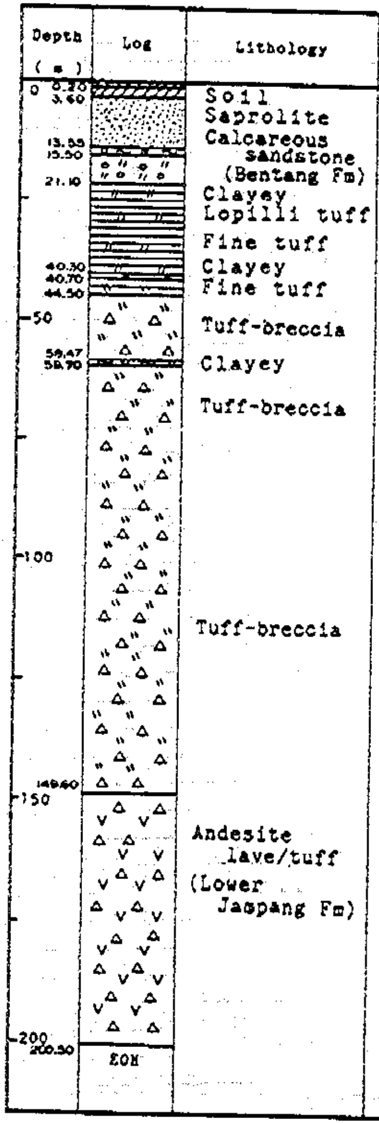


Analytical Results

Geochemistry	Sample No.	Depth m	Au ppb	Ag ppm	Cu ppm	Pb ppm	Zn ppm	As ppm	Sb ppm	Fe %	Mn ppm	Ba ppm	A.I. %
	112	87.00-87.10	<1	0.02	1.8	3.0	84	<.2	<.2	2.4	520	110	77.40
	113	97.30-97.40	1	0.24	78.8	2.0	119	2.2	<.2	4.9	1,200	60	42.62
	117	122.00-122.15	1	0.14	27.4	4.0	109	2.8	<.2	4.1	770	60	56.74
	118	128.90-129.03	4	0.04	4.0	1.5	164	4.4	<.2	4.5	600	200	73.43
	119	129.75-129.90	<1	0.02	11.0	1.0	129	1.4	<.2	4.9	720	220	57.16
	127	183.15-183.30	<1	0.12	3.0	5.0	129	1.4	<.2	5.3	910	40	50.30
	130	199.85-200.00	<1	0.06	35.6	2.0	120	2.2	0.2	5.6	800	70	48.31

X-Ray	Sample No.	Depth m	Alteration Minerals (A:Abundant, C:Common, F:Few, R:Rare)
	102X	25.00-25.10	Ca(A), Ak(R?), Qz(R)
	103X	35.00-35.10	Ch(R), Se(R?), Qz(A), Pl(C)
	108X	52.00-52.10	Se(F), Ka(R), Qz(C), Pl(C)
	110X	70.00-70.10	Se(R), Ka(R), Qz(F), Pl(F)
	115X	110.00-110.15	Se(R), Ak(F), Qz(A), Pl(F)
	124X	167.00-167.15	Ch(R), Se(R), Qz(C), Pl(F)
	128X	183.50-183.65	Ch(R), Qz(F), Pl(C), He(R)
	129X	198.00-198.15	Ch(F), Qz(F), Pl(C)

Fig. 2-47 Summary of Drill Log and Analytical Results of Core Samples (MIT-1)



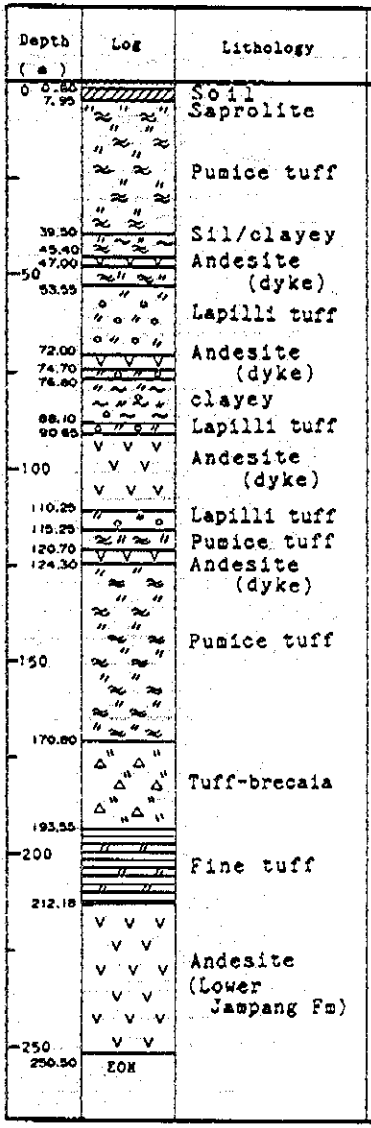
Analytical Results

Geochemistry	Sample No.	Depth m	Au ppb	Ag ppm	Cu ppm	Pb ppm	Zn ppm	As ppm	Sb ppm	Fe %	Mn ppm	Ba ppm	A.I. %
	202	17.75-17.85	3	0.08	9.0	1.0	75	0.6	<2	4.5	1,100	130	55.49
	203	20.60-20.70	2	0.32	26.6	0.5	71	0.4	<2	2.4	680	100	71.73
	207	48.00-48.10	<1	0.04	38.2	1.0	70	1.4	<2	4.8	1,200	100	54.68
	211	72.30-72.40	1	0.12	35.2	1.0	79	0.8	<2	5.3	1,500	80	61.56
	212	83.60-83.80	<1	0.30	65.2	2.0	77	2.6	1.2	4.6	1,350	140	41.43
	213	94.95-95.15	1	0.12	9.0	1.0	80	2.4	<2	5.5	1,250	150	46.00
	214	104.00-104.20	<1	0.02	2.4	1.5	95	3.6	<2	5.3	1,600	140	35.27
	216	125.00-125.20	<1	0.04	6.2	2.0	62	1.6	<2	4.8	1,350	150	41.40
	217	136.20-136.50	1	<.02	2.8	0.5	62	2.4	<2	5.3	1,850	140	39.25
	219	165.00-165.20	1	<.02	1.4	1.0	135	0.8	<2	5.1	1,700	270	50.17
	220	193.20-193.40	2	<.02	35.4	1.0	46	1.2	<2	4.5	590	180	44.23

X-Ray	Sample No.	Depth m	Alteration Minerals (A:Abundant, C:Common, F:Few, R:Rare)
	201X	14.50-14.60	Se(R), Qz(A), Kf(R)
	203X	20.60-20.70	Se(R), Mx(R), Qz(C), Pl(F)
	205X	30.10-30.20	Ka(R), Mx(R), Qz(A), Pl(F)
	206X	41.30-41.40	Ka(R), Mx(F), Qz(A), Pl(F)
	209X	59.00-59.10	Ch(R), Ka(R), Mx(R), Ca(A), Qz(A), Pl(F)
	214X	104.00-104.20	Ch(F), Ca(F), Qz(F), Pl(F)
	220X	193.20-193.40	Ch(F), Qz(F), Pl(F)

Fig. 2-48 Summary of Drill Log and Analytical Results of Core Samples (MIT-2)

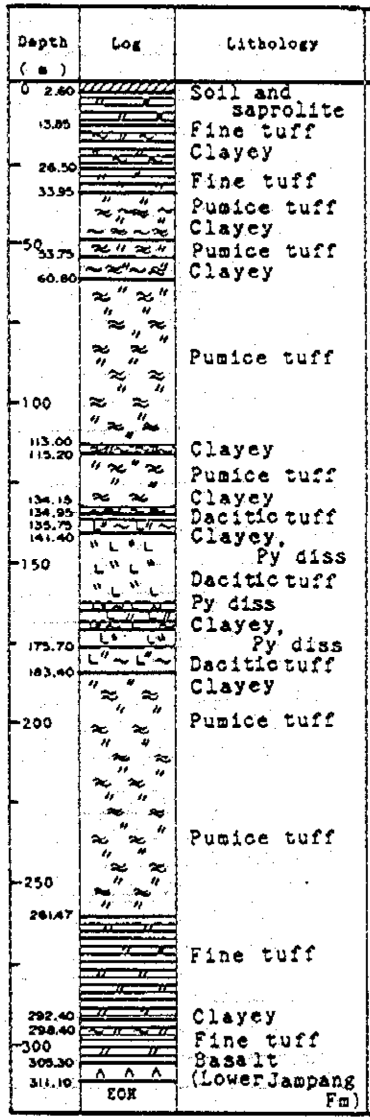
Analytical Results



Geochemistry	Sample	Depth	Au	Ag	Cu	Pb	Zn	As	Sb	Fe	Mn	Ba	A.I.
	No.	m	ppb	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	%
	302	41.90-42.00	<1	0.08	9.0	2.0	69	0.4	<2	1.6	470	110	83.13
	303	48.50-48.60	<1	0.02	1.8	2.0	90	1.0	<2	4.5	800	140	56.71
	304	53.00-53.10	<1	0.02	9.4	1.5	16	0.8	<2	0.45	4,100	240	3.37
	305	60.00-60.10	4	0.02	24.0	2.0	105	0.6	<2	5.9	1,450	110	43.48
	306	70.00-70.10	12	0.52	11.4	3.5	87	22.2	1.0	4.7	1,600	460	76.09
	307	73.00-73.10	6	0.20	6.4	1.5	98	9.8	<2	3.3	1,300	120	20.98
	308	75.00-75.10	11	0.24	1.2	1.5	105	5.6	<2	4.1	1,600	300	52.52
	310	94.50-94.60	2	0.02	32.6	0.5	71	0.6	<2	5.2	1,300	160	55.27
	317	181.90-182.10	<1	0.16	5.8	2.0	93	4.2	<2	4.2	1,400	310	48.72
	318	202.50-202.70	2	0.16	3.2	1.5	130	3.4	<2	6.9	2,050	280	71.28
	319	207.20-207.40	<1	0.12	11.2	0.5	97	0.8	<2	6.1	1,850	420	61.95

X-Ray	Sample	Depth	Alteration Minerals
	No.	m	(A:Abundant, C:Common, F:Few, R:Rare)
	301X	35.10-35.20	Ch(R), Mx(R), Qz(C), Pl(F)
	302X	41.90-42.00	Mo(R), Mx(F), Qz(C), Pl(R)
	304X	53.00-53.10	Ca(A), Qz(F)
	309X	84.50-84.60	Ch(R), Ka(R), Ca(A), Qz(F)
	312X	130.35-130.55	Ch(R), Se(R), Ca(F), Qz(F), Pl(F)
	315X	156.20-156.40	Ch(R), Ka(R), Ca(F), Qz(C), Pl(C), Py(R)
	319X	207.20-207.40	Ch(F), Ca(R), Qz(F), Pl(C)

Fig. 2-49 Summary of Drill Log and Analytical Results of Core Samples (MIT-3)



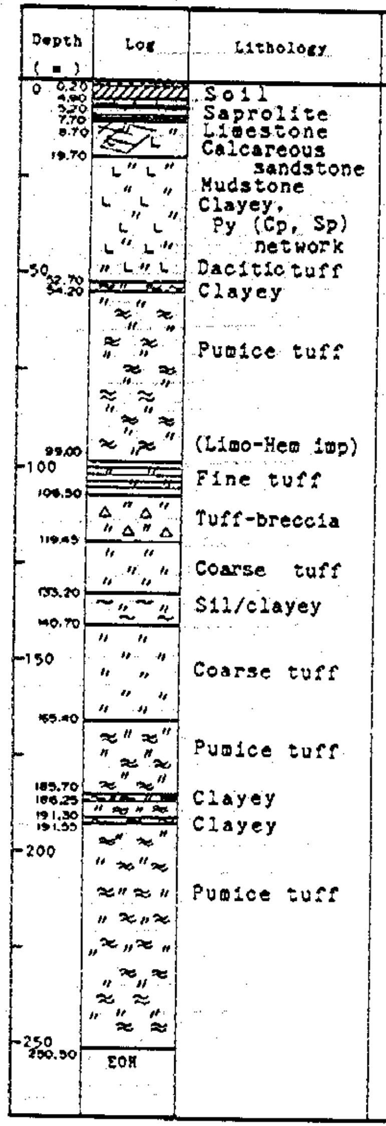
Analytical Results

Assay	Sample No.	Depth m	Au g/t	Ag ppm	Cu ppm	Pb ppm	Zn ppm	Fe %	Mn ppm	Ba ppm
	413M	136.45-136.65	<0.03	<1	45	20	100	0.70	90	40
	416M	165.00-165.20	<0.03	<1	30	10	55	0.84	150	40
	417M	168.40-168.60	<0.03	<1	20	<5	80	0.71	790	40
	418M	169.80-170.00	<0.03	<1	10	10	70	2.05	420	60

Geochemistry	Sample No.	Depth m	Au ppb	Ag ppm	Cu ppm	Pb ppm	Zn ppm	As ppm	Sb ppm	Fe %	Mn ppm	Ba ppm	A.I. %
	411	125.90-126.10	14	<.02	6.8	1.0	35.0	0.8	<.2	1.2	370	130	44.99
	412	134.50-134.70	6	<.02	8.0	0.5	30.0	0.8	<.2	0.35	60	320	37.94
	414	140.20-140.40	11	0.02	11.2	10.0	69.0	3.8	<.2	0.4	85	190	67.20
	415	152.00-152.20	23	<.02	8.0	6.5	29.0	<.2	<.2	1.2	460	120	59.85
	418	169.80-170.00	4	<.02	6.4	3.0	53.0	0.8	<.2	2.1	470	100	57.34
	419	181.80-182.00	3	<.02	3.0	3.0	47.0	<.2	<.2	0.7	110	380	48.35
	422	241.30-241.50	26	<.02	4.0	4.0	28.0	<.2	0.4	1.1	240	200	39.85
	423	269.50-269.70	7	0.14	7.4	8.0	80.0	1.0	<.2	1.5	190	180	51.99
	425	310.00-310.20	8	0.06	36.2	1.5	79.0	1.0	<.2	4.7	1,100	120	35.76
	426	298.00-298.20	6	<.02	16.8	3.5	50.0	0.6	<.2	2.0	460	200	36.85

X-Ray	Sample No.	Depth m	Alteration Minerals (A:Abundant, C:Common, F:Few, R:Rare)
	402X	22.00-22.10	Ak(R), Pl(F)
	403X	37.50-37.60	Mx(R), Cp(F), Md(R)
	404X	44.00-44.10	Mx(R), Cp(R), Md(R)
	405X	58.90-59.00	Cp(F), Md(R)
	410X	114.00-114.20	Md(F), Fr(F), Kf(R)
	412X	134.50-134.70	Md(F), Fr(F)
	413X	136.45-136.65	Md(F), Kf(F)
	416X	165.00-165.20	Cp(R), Md(F), Fr(F)
	418X	169.80-170.00	Mx(F), Cp(R), Md(C), Fr(R)
	419X	181.80-182.00	Cp(F), Md(F), Fr(C), Kf(R)
	426X	298.00-298.20	Mx(R), Cp(R), Md(F), Fr(F)

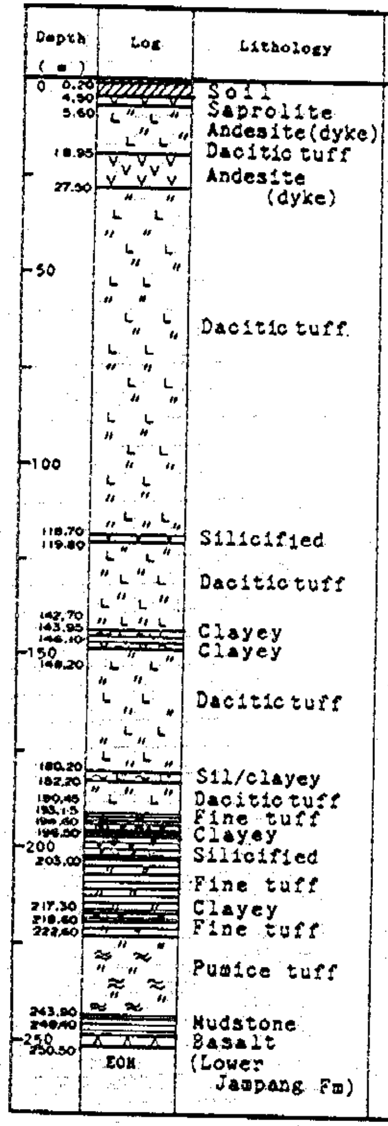
Fig. 2-50 Summary of Drill Log and Analytical Results of Core Samples (MIT-4)



Analytical Results

Assay	Sample	Depth	Au	Ag	Cu	Pb	Zn	Fe	Mn	Ba			
	No.	m	g/t	ppm	ppm	ppm	ppm	%	ppm	ppm			
	501M	8.55-8.65	<0.06	<1	20	10	75	1.60	340	20			
	502M	10.00-10.10	<0.06	<1	15	5	30	2.12	180	160			
	503M	18.00-18.10	<0.06	<1	10	10	20	1.48	70	140			
	510M	93.15-93.30	<0.06	<1	5	5	40	2.12	210	20			
Geochemistry	Sample	Depth	Au	Ag	Cu	Pb	Zn	As	Sb	Fe	Mn	Ba	A.I.
	No.	m	ppb	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	%
	512	125.40-125.60	<1	0.14	38.4	10.0	417	15.0	<2	0.75	170	160	56.96
X-Ray	Sample	Depth	Alteration Minerals										
	No.	m	(A:Abundant, C:Common, F:Few, R:Rare)										
	502X	10.00-10.10	Cp(R), Md(F)										
	503X	18.00-18.10	Mx(R), Cp(R), Md(F)										
	507X	53.00-53.10	Mo(R), Pr(R?), Mx(R), Qz(F), Pl(C), Kf(R)										
	513X	138.20-138.40	Cp(F), Md(F)										
	514X	148.20-148.40	Mx(F), Cp(R), Md(F), Ca(R), Qz(C)										
	517X	185.70-185.90	Ka(R), Mx(F), Ca(F), Qz(C), Pl(F), Py(R)										
	518X	191.35-191.55	Ka(R), Mx(F), Qz(A), Pl(F)										

Fig. 2-51 Summary of Drill Log and Analytical Results of Core Samples (MIT-5)



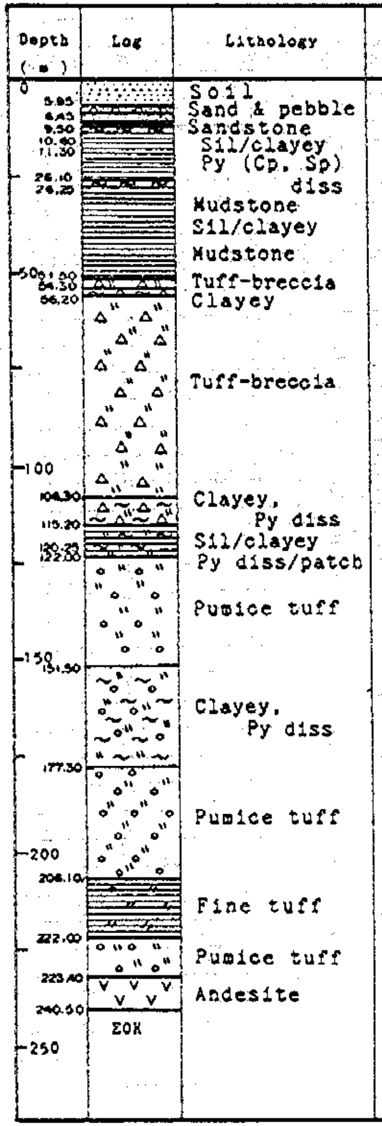
Analytical Results

Assay	Sample	Depth	Au	Ag	Cu	Pb	Zn	Fe	Mn	Be
	No.	m	g/t	ppm	ppm	ppm	ppm	%	ppm	ppm
	616M	180.80-181.00	<0.06	<1	5	10	35	1.70	240	<20
	617M	196.70-196.90	<0.06	<1	35	<5	150	2.89	1,620	<20

Geochemistry	Sample	Depth	Au	Ag	Cu	Pb	Zn	As	Sb	Fe	Mn	Ba	A.I.
	No.	m	ppb	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	%
	601	10.20-10.30	1	0.02	1.0	3.5	28	<2	<2	0.8	180	200	67.03
	608	85.65-85.75	<1	<.02	1.2	3.0	90	0.6	<2	3.7	650	160	70.51

X-Ray	Sample	Depth	Alteration Minerals
	No.	m	(A:Abundant, C:Common, F:Few, R:Rare)
	603X	38.50-38.60	Ka(R), Mx(F), Qz(A), Pl(R)
	606X	61.20-61.30	Ch(R), Mx(R), Cp(R), Md(F), Qz(A), Kf(R)
	609X	95.00-95.20	Mo(R), Ch(R), Mx(R), Ca(F), Qz(A), Pl(A)
	611X	119.20-119.40	Ka(R), Qz(A), Pl(F)
	613X	146.80-147.00	Ka(R), Qz(A), Pl(F)
	616X	180.80-181.00	Ka(R), Qz(A), Pl(F)
	617X	196.70-196.90	Ch(R), Qz(C), Pl(F)
	619X	232.00-232.20	Ch(R), Se(R), Qz(C), Pl(F)

Fig. 2-52 Summary of Drill Log and Analytical Results of Core Samples (MIT-6)



Analytical Results

Assay	Sample	Depth	Au	Ag	Cu	Pb	Zn	Fe	Mn	Ba
	No.	m	g/t	ppm	ppm	ppm	ppm	%	ppm	ppm
	701M	10.80-10.90	<0.03	1	1,065	30	2,920	2.06	160	20
	703M	26.10-26.25	<0.03	<1	50	35	335	3.83	2,730	<20
	709M	109.70-109.90	<0.03	<1	20	10	100	3.47	1,140	20
	710M	117.50-117.70	<0.03	<1	5	5	50	2.92	120	20
	711M	119.70-119.90	<0.03	<1	5	5	60	1.64	390	<20
	715M	161.10-161.30	<0.03	<1	5	15	125	3.01	350	<20
	716M	166.40-166.60	<0.03	<1	10	5	60	2.59	390	20

Geochemistry	Sample	Depth	Au	Ag	Cu	Pb	Zn	As	Sb	Fe	Mn	Ba	A.I.
	No.	m	ppb	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	%
	702	19.80-19.90	9	0.12	52.0	73.5	710	5.4	<.2	4.5	880	80	77.45
	704	42.50-42.60	<1	0.02	37.6	3.0	100	2.0	<.2	5.3	430	20	55.92
	705	55.00-55.10	<1	0.02	30.4	3.0	76	1.8	<.2	4.6	540	40	44.71
	706	64.10-64.20	<1	0.02	21.8	3.5	67	1.4	<.2	4.6	500	50	38.45
	707	85.90-86.00	<1	<.02	17.2	2.5	83	0.8	<.2	5.7	570	60	43.39
	708	98.45-98.65	<1	<.02	19.8	2.0	60	0.8	<.2	4.5	770	70	24.47
	713	145.30-145.50	<1	0.02	10.8	4.0	36	<.2	<.2	1.7	430	50	73.49
	714	155.45-155.65	<1	0.04	6.2	3.0	41	1.2	<.2	1.4	300	80	71.58
	718	183.30-183.50	<1	0.04	6.8	2.0	44	2.2	<.2	2.5	420	60	85.06
	720	200.35-200.55	<1	0.06	7.2	5.5	55	4.8	<.2	2.7	570	90	72.67

X-Ray	Sample	Depth	Alteration Minerals
	No.	m	(A:Abundant, C:Common, F:Few, R:Rare)
	702X	19.80-19.90	Ka(R), Qz(A), Pl(F), He(R)
	705X	55.00-55.10	Mo(R), Mx(F), Qz(F), Pl(F)
	708X	98.45-98.65	Ka(R), Mx(R), Cp(R), Md(R), Qz(R)
	711X	119.70-119.90	Mx(F), Md(R), Cr(F), Qz(F)
	716X	166.40-166.60	Ka(R), Mx(R), Ca(R), Qz(A)

Fig. 2-53 Summary of Drill Log and Analytical Results of Core Samples (MIT-7)

5-6 Discussion

In the western survey area, four holes totaling 962.60 m were drilled in the second phase. Although no intersection of massive sulfide ore has been caught in these reconnaissance drill holes, a significant amount of information regarding the volcano-stratigraphy and hydrothermal alteration associated with massive sulfide mineralization was obtained in the Cisasah-Cidadap area.

In MIT-1, three clayey-silicified alteration zones were caught in the green tuff succession: 50.10 ~ 52.75 m (sericite-kaolin), 105.80 ~ 114.70 m (sericite-carbonate-quartz), and 165.40 ~ 169.00 m (sericite-chlorite). One of them, probably the middle zone, was thought to be correlated to the Cidadap gypsum ore horizon.

In MIT-2, two clayey and silicified zones were caught: 13.55 ~ 15.50 m (sericite-quartz), and 58.47 ~ 59.70 m (chlorite-kaolin-mixed layer-carbonate-quartz).

In MIT-3, three decolorized and /or silicified zones were caught in the green tuff succession: 39.50 ~ 45.40 m (silicified, chlorite-mixed layer), 49.70 ~ 53.55 m (silicified, montmorillonite-chlorite-carbonate), and 76.80 ~ 88.10 m (chlorite-kaolin-carbonate). One of them, probably the lower zone, was thought to be correlated to the Cisasah gypsum ore horizon.

In MIT-4, several decolorized and clayey zones were caught. These were categorized into three alteration zones as follows: (1) upper zone -- 13.85 ~ 27.70 m, 33.95 ~ 48.90 m, 53.75 ~ 60.80 m -- (montmorillonite-chlorite-mixed layer, and partly silicified), (2) middle zone -- 134.15 ~ 134.95 m, 135.75 ~ 141.40 m, 163.35 ~ 165.75 m, 168.40 ~ 168.50 m, 169.80 ~ 170.90 m, 175.70 ~ 183.40 m -- (montmorillonite-chlorite-mixed layer, locally pyrite disseminated), and (3) lower zone -- 292.40 ~ 295.35 m, 298.00 ~ 298.40 m -- (montmorillonite-chlorite-mixed layer-carbonate). One of them, probably the middle zone, was interpreted to be correlated to the Cisasah gypsum ore horizon.

Among these four holes, the most intense hydrothermal alteration was caught in MIT-4. It suggests that the potential of massive sulfide ore deposit may exist in the eastern part of the Cisasah gypsum deposit. The area in the vicinity of Cisasah, especially from the Cisasah gypsum mine to Panyosogan, is a significant potential prospect of massive sulfide deposit. Because it is situated geologically on a favorable structural location: at the margin of the Cibongas basin where is facing to the Middle Ciwulan basement uplift, and also because pervasive sericite-chlorite alteration is distributed both on the surface and below the surface. The southeastern part of the area is covered by the Bentang calcareous sandstone. Several alteration horizons were caught in the drill holes.

Three holes totaling 741.50 m were drilled in the eastern part of the Cisasah-Cidadap-Cibuniasih area in the second phase. The result of these holes provided a significant amount of information regarding the volcano-stratigraphy and hydrothermal alteration associated with massive sulfide mineralization. It also contributed to check the relationship between the IP anomaly and mineralization/alteration figures in the study area.

In MIT-5, several silicified and/or clayey zones were caught in the green tuff succession: 8.70 ~ 19.70 m (montmorillonite-chlorite-mixed layer, pyrite/limonite networking), 52.70 ~ 54.20 m (montmorillonite-chlorite-mixed layer), 133.20 ~ 140.70 m (silicified), 185.70 ~ 186.25 m (kaolin-montmorillonite-chlorite-mixed layer-carbonate), and 191.30 ~ 191.55 m (silicified, kaolin-montmorillonite-chlorite-mixed layer). The uppermost zone was interpreted to be correlated to the footwall sulfide network of the Cibuniasih barite ore.

In MIT-6, several silicified and/or clayey zones were caught in the green tuff succession: 142.70 ~ 143.95 m (silicified, kaolin-chlorite-sericite), 146.10 ~ 148.20 m (silicified, kaolin-chlorite-sericite), 180.00 ~ 182.00 m (silicified, kaolin-sericite-chlorite), 193.15 ~ 194.60 m (chlorite-sericite), 196.60 ~ 203.00 m (silicified, chlorite-sericite, partly pyrite disseminated), and 217.30 ~ 218.60 m (sericite-carbonate).

In MIT-7, several silicified and/or clayey zones were caught in the green tuff succession: 9.50 ~ 26.25 m (clayey zone, two silicified zones were caught in this clayey mudstone -- 10.60 ~ 11.30 m, and 26.10 ~ 26.25 m, sulfide minerals such as pyrite, chalcopyrite and sphalerite are disseminated in the former silicified zone), 54.30 ~ 56.20 m (clayey zone), 106.30 ~ 115.20 m (silicified and clayey (sericitized) zone with weak pyrite dissemination), and 115.20 ~ 120.25 m (this zone is subdivided into three -- 115.20 ~ 115.90 m (silicified, montmorillonite-chlorite-mixed layer, and pyrite weakly disseminated), 115.90 ~ 117.70 (silicified and pyrite networking), and 117.70 ~ 120.25 m (silicified, montmorillonite-chlorite-mixed layer, and patches/seams of pyrite contained). Another significantly silicified and clayey zone was caught in the depth of 151.50 ~ 177.30 m. This zone is weakly pyritized in common; a strongly pyritized zone occurs at 165.50 ~ 167.60 m. Either the middle alteration zone (106.30 ~ 120.25 m) or the lower (151.50 ~ 177.30 m) is thought to be correlated to the mineralized horizon of the Pasir Gintung manganese deposit.

Among these three holes, the most intense hydrothermal alteration was caught in MIT-7. It suggests that the potential of massive sulfide ore deposit may exist to the southern part of the Cibuniasih barite bed. The area in the vicinity of Cibuniasih, especially to the south of the Cibuniasih barite bed, is thought to be another significant potential prospect of massive sulfide deposit; it is situated structurally at the marginal part of the Cikalong basin facing to the Pasir Gintung basement uplift; an extensive sericite-chlorite alteration zone occurs on the surface and in the depth; and a series of distinctive IP chargeability anomalies was detected at several places. The prospective locations are Sukasari and Bihbul. Sukasari is located 1,200 m southwest of the Cibuniasih barite bed. The surface of the location is widely covered by the Kalipucang limestone. Some of the chargeability anomalies caught in Sukasari are still open both to the northwest and to the southeast. The other alteration zones occur to the southwest of Sukasari as well. Bihbul is located 1,200 m southeast of Cibuniasih barite bed. Remarkable IP chargeability anomalies were detected below the rice-field where some quartz floats with limonite dissemination were found in green tuff outcrops.

Drill holes MIT-6 and 7 were dug for testing chargeability anomalies detected trough the IP survey. In both cases, several significant silicified and clayey alteration zones with some sulfide dissemination were caught. Although these alteration zones occur in somewhat different depths from the estimation by the IP result, the chargeability anomaly, which is characterized by the low apparent resistivity, has been confirmed to represent the hydrothermal alteration zone associated by the massive sulfide mineralization.

PART III CONCLUSIONS AND RECOMMENDATIONS

PART III CONCLUSIONS AND RECOMMENDATIONS

Chapter 1 Conclusions

On the basis of the results of the second phase works comprising geological survey, rock-chip geochemical survey, gravity geophysical survey, IP electric survey and drilling exploration, the following conclusions are obtained.

(1) Miocene dacitic volcanic and pyroclastic rocks (called green tuff) are widespread in the Cisasah-Cidadap-Cibuniasih area. Two massive anhydrite-gypsum ore deposits and a barite bed were found within the green tuff. Stratabound manganese ores, ferruginous chert layers and silicified zones are developed near these gypsum and barite occurrences. Details of the volcano-stratigraphy and hydrothermal alteration of these mineral occurrences were studied this phase. These stratabound deposits occur at a couple of horizons within the green tuff succession. The structure of the green tuff is characterized by a regional gentle synclinorium with axes of N-S to NE-SW and local basin structures. A couple of basin structures, about 10 km in diameter was recognized in the central northern and central southern parts of the area. The total thickness of the green tuff was estimated to exceed to 300 m amidst the basin. The Bentang calcareous sandstone, and Kalipucang limestone in some cases, occur above the green tuff.

(2) On the basis of the result of the X-ray diffraction analysis, six hydrothermal alteration zones -- silicified zone, sericite-chlorite-mixed layer zone, montmorillonite-kaolin zone, zeolite zone, pyrophyllite-kaolin zone, and carbonitized zone -- were distinguished regionally in this area. Among these alteration zones, three zones were recognized to be closely related to the massive sulfide mineralization arranging in the order of -- central sericite-chlorite zone, intermediate montmorillonite-kaolin zone, and peripheral zeolite zone. The alteration survey revealed several intense sericite-chlorite alteration zones within the survey area. The stratigraphic succession of the massive sulfide mineralization was categorized into several zones together with the host green tuff members. The assemblage of alteration minerals in each zone was defined in details this phase. The mode of occurrence and distribution of geochemical anomalies for metallic elements and alkali components (and alteration index A.I. calculated from alkali components) were examined through the rock-chip geochemical survey, and several significant anomalous zones such as Cisasah and Cibuniasih were outlined in the survey area.

(3) As a result of the gravity survey in conjunction with the geologic structure of this area, three important structural components -- basin and basement uplift, fault, and local trough -- were defined. Two basins and two uplifts were distinguished in the survey area: Cikalong

basin, Cibongas basin, Middle Ciwulan uplift, Pasir Gintung uplift, and Pasir Garu uplift. The known stratabound mineral showings lie on the flank of the gravity structure from an uplift to a basin, which was interpreted to be situated at the margin of a basin facing to a basement uplift. The Cibuniasih barite bed occurs on the flank of the Pasir Gintung uplift to the Cikalong basin. The Cisasah gypsum deposit is situated on the flank of the Middle Ciwulan uplift to the Cibongas basin. The Cidadap gypsum deposit, which is not so distinctive as the former two cases, looks to be located at the middle of the Middle Ciwulan basin down to a gravity low near the coast of Indian Ocean. Several steep gravity gradients were observed and considered geologically as faults of N-S and E-W systems. A local trough structure of the basement was found in the vicinity of Cibuniasih barite bed on the gravity residuals map. It is located at the flank of the gravity structure between the Pasir Gintung uplift and Cikalong basin, stretching to the southwest. Another trough structure was recognized at the south of Cisasah gypsum mine stretching to the northeast.

(4) Time-Domain IP (Induced Polarization) electric survey was carried out in the Cibuniasih area. Anomalies of the chargeability (more than 4.0 mV•S/V) were mainly detected at: (a) south-western part of lines C, D, (b) south-western part of line A ((a) and (b) are located in Sukasari), and (c) middle part of lines J, K, L (Bihbul). These anomalies occur from shallow into deep zones (about 150 m below the surface) in distinct expanse. These anomalies were interpreted to be related to the mineralization with clay alteration. Smaller scale anomalies were detected at: (d) in the vicinity of Nos. 11 and 16 on line I, (e) in the vicinity of No. 8 on line H, (f) in the vicinity of No. 5 on line E, and (g) in the vicinity of No. 36 on line A.

(5) A drilling program comprising 7 holes totaling 1,704.10 m was conducted in the Cisasah-Cidadap-Cibuniasih area this phase. Four holes (MIT-1~4) totaling 962.60 m were drilled in the western part, and another 3 holes (MIT-5~7) totaling 741.50 m in the eastern part. The results of these holes provided a significant amount of information regarding the volcano-stratigraphy and hydrothermal alteration associated with massive sulfide mineralization, although no intersection of massive sulfide ore has been caught in these holes. It also contributed to check the relationship between the IP anomaly and mineralization/alteration figures in the survey area. Among these holes, relatively intense hydrothermal alteration was caught in MIT-4 in the western area, and MIT-7 in the eastern area respectively.

(6) The area in the vicinity of Cisasah, especially from the Cisasah gypsum mine to Panyosogan, is a significant potential prospect of massive sulfide deposit. Because it is situated geologically on a favorable structural location: at the margin of the Cibongas basin where is facing to the Middle Ciwulan basement uplift, and also because pervasive sericite-chlorite alteration is distributed both on the surface and below the surface. The southeastern part of the area is covered by the Bentang calcareous sandstone. Several alteration horizons were caught in the drill hole MIT-4. One of them, probably the middle one in which

significant pyrite dissemination was accompanied, was interpreted to be correlated to the Cisasah gypsum ore horizon. Due to the existence of a mining concession (KP 912), the drilling activity was limited this year. After the expiration of this concession in the next phase, an exploration program comprising IP survey and follow-up drilling can evaluate the potential of this area.

(7) The area in the vicinity of Cibuniasih, especially to the south of the Cibuniasih barite bed, is thought to be another significant potential prospect of massive sulfide deposit; it is situated structurally at the marginal part of the Cikalong basin facing to the Pasir Gintung basement uplift; an extensive sericite-chlorite alteration zone occurs on the surface and in the depth; and a series of distinctive IP chargeability anomalies was detected at several places. The prospective locations are Sukasari and Bihbul. Sukasari is located 1,200 m southwest of the Cibuniasih barite bed. The surface of the location is widely covered by the Kalipucang limestone. Some of the chargeability anomalies caught in Sukasari are still open both to the northwest and to the southeast. The other alteration zones occur to the southwest of Sukasari as well. Bihbul is located 1,200 m southeast of Cibuniasih barite bed. Remarkable IP chargeability anomalies were detected below the rice-field where some quartz floats with limonite dissemination were found in green tuff outcrops. Two drill holes (MIT-6 and 7) were dug in these IP anomalies, and three intensive alteration zones (upper, middle and lower horizon) consisting mainly of silicification and sericitization-chloritization with significant dissemination of pyrite were caught in these drill holes. The drilling activity this phase was limited because it was done in the rainy season. The follow-up drilling for targeting some IP anomalies which were caught this phase and will be detected by the additional IP survey next phase is necessary in the dry season next year.

Chapter 2 Recommendations for the Third Phase Survey

East of Cisasah Prospect

It is recommended that the detailed IP survey shall be made within an area of 4 to 5 km^2 which covers the Cisasah gypsum deposit and its eastern area. After the IP survey, a reconnaissance drilling for testing the IP anomalies shall be made. The target depths should be set slightly deeper to the east because it is going to approach the green tuff basin.

South of Cibuniasih Prospect

An exploration program comprising the additional IP survey and reconnaissance drilling for the area of about 20 km^2 is recommended in the next phase. The additional IP survey must be made in Sukasari where IP chargeability anomalies caught this phase are still open to three directions: to NW, SW and SE. After defining IP anomalies, the drilling shall be carried out in Sukasari and Bihbul for the purpose of evaluating the potential for the massive sulfide ore deposit.

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APPENDICES

App. 1 Assay Results of Ore Samples

【Surface Samples】

SAMPLE No.	Au g/t	Ag ppm	Cu ppm	Pb ppm	Zn ppm	Fe %	Mn ppm	Ba ppm
AI002	<0.03	2	20	55	130	0.69	220	20
AI003	<0.03	<1	10	<5	40	0.53	100	<20
AI006	<0.03	1	310	35	780	3.24	290	60
AI009	<0.03	<1	240	15	60	2.77	680	280
AI010	<0.03	95	9650	4600	>50000	6.66	780	20
AI026	<0.03	<1	30	5	185	4.46	>50000	1140
AI040	<0.03	17	6420	590	>50000	11.50	900	<20
AI058	<0.03	<1	60	5	765	13.65	210	20
AH009	0.51	>200	730	12420	8290	0.76	70	10720
AH039	<0.03	<1	15	20	30	0.88	60	520
AH048	<0.03	1	15	30	400	25.00	2860	540
AH056	0.06	34	34600	1160	>50000	7.90	740	20
AH057	<0.03	2	4910	5	7370	6.43	740	20
AH059	<0.03	1	2180	5	990	5.91	1080	20
AH068	<0.03	8	580	2130	2600	0.58	>50000	16540
AH076	<0.03	<1	20	10	55	1.90	1060	40
AH077	<0.03	<1	10	<5	105	5.01	320	20
AH079	<0.03	<1	10	<5	<5	4.46	50	20
AH081	<0.03	<1	10	<5	5	4.78	90	<20
AH094	<0.03	64	14060	480	11080	10.25	3850	80
AH095	<0.03	8	100	15	20	9.04	40	<20
AH096	<0.03	5	75	20	5	9.69	20	20
AH144	<0.03	<1	65	55	65	7.37	8620	360
AH148	<0.03	<1	45	<5	70	4.32	>50000	16020
AK003	<0.03	<1	10	<5	5	0.32	1640	33600
AD010	<0.03	<1	80	45	210	>30.00	11280	1300
AD013	<0.03	<1	75	30	20	3.35	90	120
AD032	<0.03	<1	550	10	495	4.17	5380	820
AD034	<0.03	<1	110	<5	160	>24.00	8610	400
AD083	<0.03	<1	20	<5	20	3.34	220	20

【Core Samples】

SAMPLE No.	Au g/t	Ag ppm	Cu ppm	Pb ppm	Zn ppm	Fe %	Mn ppm	Ba ppm
413M	<0.03	<1	45	20	100	0.70	90	40
416M	<0.03	<1	30	10	55	0.84	150	40
417M	<0.03	<1	20	<5	80	0.71	790	40
418M	<0.03	<1	10	10	70	2.05	420	60
501M	<0.06	<1	20	10	75	1.60	340	20
502M	<0.06	<1	15	5	30	2.12	180	160
503M	<0.06	<1	10	10	20	1.48	70	140
510M	<0.06	<1	5	5	40	2.12	210	20
616M	<0.06	<1	5	10	35	1.70	240	<20
617M	<0.06	<1	35	<5	150	2.89	1620	<20
701M	<0.03	1	1065	30	2920	2.06	160	20
703M	<0.03	<1	50	35	335	3.83	2730	<20
709M	<0.03	<1	20	10	100	3.47	1140	20
710M	<0.03	<1	5	5	50	2.92	120	20
711M	<0.03	<1	5	5	60	1.64	390	<20
715M	<0.03	<1	5	15	125	3.01	350	<20
716M	<0.03	<1	10	5	60	2.59	390	20

App. 2 Analytical Results of Rock-Chip Samples

【Surface Samples】

Sample No.	Au ppb	Ag ppm	Cu ppm	Pb ppm	Zn ppm	As ppm	Sb ppm	Fe %	Mn ppm	Ba ppm	CaO %	K_2O %	MgO %	Na_2O %	Al %
AI001	20	1.20	13.0	31.0	20	160.0	9.0	3.6	80	440	0.45	6.33	2.77	0.11	94.20
AI002	1	0.34	7.4	55.0	45	23.8	1.2	0.5	180	80	29.18	0.19	2.14	0.11	7.37
AI003	1	0.34	1.4	2.5	39	47.4	1.4	0.5	190	60	30.08	0.15	2.13	0.09	7.03
AI004	32	0.42	209.0	807.0	1910	100.0	<0.2	2.1	800	1720	3.77	4.30	4.04	0.18	67.86
AI005	1	0.14	6.0	8.5	74	3.6	<0.2	1.7	170	380	0.46	1.09	2.82	1.86	62.76
AI006	1	0.02	127.5	5.5	37	595.0	7.6	2.4	160	80	0.08	0.14	0.23	<0.01	80.61
AI007	<1	<1.00	4530.0	20.0	1900	—	—	6.4	2000	140	0.06	2.90	8.63	0.03	99.23
AI008	19	1.82	813.0	25.5	325	99.8	<0.2	2.1	60	1660	3.98	4.39	1.21	0.21	57.20
AI009	7	0.02	333.0	17.5	68	334.0	7.2	3.8	760	280	0.44	1.95	0.45	<0.01	84.24
AI011	<1	0.18	22.4	10.0	246	18.4	<0.2	4.8	860	80	1.15	1.52	3.61	3.29	53.61
AI012	<1	<0.02	1.2	1.0	65	1.2	<0.2	1.8	870	140	2.59	2.47	2.23	2.22	49.42
AI013	<1	<0.02	0.8	0.5	114	0.4	<0.2	4.0	1800	180	2.23	1.89	3.56	2.49	53.59
AI014	<1	0.02	12.0	3.0	43	3.6	<0.2	1.8	1500	200	1.29	0.43	1.21	3.73	24.62
AI015	<1	<0.02	4.0	3.5	79	8.0	<0.2	3.6	2100	300	2.53	4.81	1.32	0.99	63.52
AI016	<1	0.04	8.8	4.5	57	1.6	<0.2	2.4	590	240	1.96	1.76	1.95	2.43	45.80
AI017	<1	<0.02	11.6	1.5	36	0.6	<0.2	2.6	510	260	1.67	1.68	1.34	3.90	35.16
AI018	<1	<0.02	51.2	<0.5	69	0.2	<0.2	5.7	660	40	3.36	0.28	8.58	1.96	62.48
AI019	<1	<0.02	3.4	2.0	111	1.4	<0.2	3.8	1800	120	2.09	0.55	2.80	5.59	30.37
AI020	<1	<0.02	0.8	5.0	79	3.2	<0.2	1.5	1500	200	1.00	2.13	2.13	0.86	69.61
AI021	1	<0.02	1.6	2.0	44	1.0	<0.2	0.9	95	120	0.46	3.41	1.59	0.17	88.87
AI022	<1	0.02	6.8	2.5	109	2.6	<0.2	4.0	1200	150	2.37	1.53	4.10	2.74	52.42
AI023	2	<0.02	0.4	4.0	94	0.8	<0.2	2.0	780	940	3.29	2.04	1.48	1.40	42.87
AI024	1	<0.02	7.0	19.0	63	2.6	<0.2	8.9	6400	220	35.20	0.21	1.72	0.01	5.20
AI025	<1	<0.02	1.2	4.0	57	0.6	<0.2	2.1	250	60	2.01	0.82	4.47	0.15	71.01
AI026	<1	<0.02	16.4	4.5	69	238.0	2.4	4.7	>10000	1180	0.29	0.68	0.40	0.19	69.23
AI027	<1	<0.02	12.8	3.5	54	53.4	0.4	3.7	7900	180	0.10	0.13	0.09	<0.01	66.87
AI028	<1	<0.02	2.6	2.0	50	3.2	<0.2	2.5	610	200	1.54	1.29	2.33	3.42	42.19
AI029	<1	0.04	2.8	48.0	161	2.0	<0.2	2.6	880	100	2.91	0.44	1.61	3.38	24.58
AI030	<1	0.06	29.4	13.5	112	2.4	<0.2	3.5	1500	460	6.06	2.25	5.16	1.54	49.37
AI031	1	0.06	30.8	3.0	50	2.6	<0.2	5.0	1800	220	4.99	1.22	2.27	3.10	30.14
AI032	1	0.04	7.8	3.0	20	1.6	<0.2	4.5	310	260	2.72	1.20	1.21	3.15	29.11
AI033	<1	0.90	2.2	3.0	162	4.8	<0.2	2.9	1600	360	1.75	2.48	2.46	3.51	48.43
AI034	<1	0.90	3.2	1.0	100	1.0	<0.2	2.6	1700	460	1.47	3.94	2.93	3.42	58.42
AI035	<1	0.02	22.0	4.5	1255	1.8	<0.2	2.7	1600	160	2.90	1.67	2.40	3.42	39.17
AI036	<1	<0.02	3.2	1.0	59	0.6	<0.2	1.0	140	300	0.23	2.32	0.66	0.89	72.68
AI037	<1	<0.02	3.8	43.5	127	2.6	<0.2	1.8	1000	350	0.73	4.50	1.02	1.97	67.15
AI038	<1	0.02	3.4	2.0	25	1.4	<0.2	1.1	650	200	0.57	2.47	0.71	0.45	75.71
AI039	<1	0.14	19.0	3.5	47	13.8	<0.2	2.0	1400	320	1.30	1.76	1.85	3.10	45.07
AI041	<1	<0.02	2.8	3.0	21	0.6	<0.2	1.3	330	200	4.97	5.39	1.15	2.05	48.23
AI042	<1	<0.02	4.6	17.5	98	0.6	<0.2	2.6	230	150	0.13	8.09	0.40	0.13	97.03
AI043	<1	0.10	12.8	12.0	27	4.8	<0.2	6.0	55	10	0.08	0.17	0.13	<0.01	77.12
AI044	<1	<0.02	16.4	14.5	165	7.4	<0.2	4.0	180	120	0.06	3.53	1.02	<0.01	98.51
AI045	<1	<0.02	9.6	15.5	43	16.0	<0.2	2.5	1500	100	0.05	0.11	0.12	<0.01	79.58
AI046	<1	<0.02	60.6	3.5	114	7.0	<0.2	6.0	780	80	1.47	0.51	3.70	0.71	65.88
AI047	<1	<0.02	8.4	4.0	91	0.4	<0.2	2.2	270	40	0.07	0.55	1.14	0.08	91.85
AI048	<1	<0.02	26.4	4.5	123	0.2	<0.2	6.4	1100	130	4.51	1.44	4.51	2.73	45.11
AI049	<1	<0.02	2.2	1.5	25	0.6	<0.2	1.0	100	50	1.08	1.03	2.46	<0.01	76.22
AI050	<1	0.02	19.4	2.0	330	0.2	<0.2	0.3	40	220	1.63	3.27	1.20	0.98	63.14
AI051	<1	<0.02	4.6	9.0	37	0.4	<0.2	0.8	480	140	0.39	4.42	1.39	0.28	89.66
AI052	<1	<0.02	8.2	9.5	44	6.6	<0.2	5.6	140	10	0.48	0.37	0.71	<0.01	68.83
AI053	<1	<0.02	2.4	1.5	164	1.2	<0.2	1.6	330	360	0.11	6.59	1.10	0.74	90.05
AI054	<1	<0.02	14.8	1.0	134	2.6	<0.2	6.3	1700	70	1.95	2.41	5.20	3.01	60.54
AI055	<1	<0.02	1.4	<0.5	13	0.2	<0.2	0.3	40	150	0.09	4.18	0.63	0.01	97.96
AI056	<1	<0.02	3.6	4.5	85	2.2	<0.2	1.7	280	140	0.69	3.16	1.96	0.36	82.98
AI057	<1	0.02	2.8	7.5	14	1.0	<0.2	0.4	350	1760	1.42	3.91	0.39	0.54	68.69
AI058	<1	0.10	16.4	12.0	11	47.4	30.8	9.4	170	20	0.09	0.09	0.04	<0.01	56.77
AI059	<1	<0.02	1.6	4.5	9	1.2	<0.2	0.5	2600	1000	2.41	2.90	0.63	0.86	51.91
AI060	<1	<0.02	1.6	3.5	4	0.4	<0.2	0.4	65	360	0.68	4.83	0.43	0.41	82.83
AI061	<1	<0.02	9.8	3.0	44	126.0	11.4	0.7	>10000	2000	1.82	0.95	2.01	0.79	53.14
AI062	<1	<0.02	1.6	1.0	4	1.6	<0.2	0.5	710	20	1.73	0.37	3.04	0.31	62.57
AI063	<1	<0.02	1.6	13.0	28	0.2	<0.2	0.9	120	50	0.22	1.56	2.11	<0.01	94.13
AI064	<1	<0.02	0.3	6.0	19	0.8	0.6	4.5	110	60	0.18	1.45	1.99	0.30	87.76
AI065	<1	6.40	4.6	548.0	10	217.0	959.0	20.0	1700	120	0.11	0.18	0.19	0.01	75.51
AI066	<1	0.08	11.0	10.0	4	25.4	8.2	1.2	70	80	0.09	7.87	0.21	0.03	98.54
AI067	1	2.10	19.6	24.5	7	68.2	9.0	8.2	190	120	0.23	0.32	0.15	<0.01	66.29
AI068	<1	not/ss	not/ss	not/ss	not/ss	not/ss	not/ss	0.5	85	360	not/ss	not/ss	not/ss	not/ss	#DIV/0!
AI069	240	6.32	22.2	198.0	277	36.0	0.8	0.9	240	80	1.70	0.12	2.70	0.39	57.43
AI070	<1	0.02	2.2	6.5	21	1.4	0.4	1.0	420	40	1.82	2.13	1.37	1.02	55.21
AH001	1	0.28	7.4	26.5	45	5.8	0.2	1.5	450	1240	0.68	2.85	1.41	0.63	77.88
AH004	1	0.02	1.4	18.0	15	0.6	<0.2	1.0	75	760	0.67	2.78	0.66	0.34	77.30
AH007	190	64.60	31.4	522.0	155	39.2	30.0	0.6	150	>10000	0.29	0.55	0.98	0.20	75.74
AH010	1	3.28	3.0	15.0	35	<0.2	0.4	1.0	240	1300	0.80	1.47	1.02	0.27	69.94
AH013	<1	0.22	4.0	13.0	44	0.6	<0.2	1.2	110	900	0.52	0.42	0.54	0.16	58.51
AH014	<1	0.06	10.0	3.5	42	1.0	<0.2	1.7	170	2000	2.30	1.96	0.72	0.90	45.58
AH015	<1	0.02	8.4	4.0	38	<0.2	<0.2	1.3	150	840	1.41	1.91	0.61	0.66	54.90
AH016	<1	<0.02	12.2	3.5	184	<0.2	<0.2	5.7	700	120	0.16	1.01	2.95	0.26	90.00
AH017	9	0.50	152.5	39.5	43	39.2	0.2	6.6	80	110	0.05	1.84	0.50	<0.01	97.54
AH018	<1	0.04	6.8	5.0	196	4.0	0.4	3.9	3600	200	1.05	0.28	3.15	3.77	41.58
AH019	<1	0.10	18.0	8.5	106	0.8	<0.2	6.4	1500	300	2.22	1.69	5.29	2.06	61.99
AH020	<1	0.04	11.0	17.0	27	0.8	<0.2	1.7	70	600	0.57	0.47	1.21	0.11	71.19
AH022	<1	0.02	9.4	6.0	31	0.8	<0.2	1.2	670	1200	2.30	1.87	0.73	0.84	45.30
AH024	2	0.02	4.2	5.0	32	0.8	<0.2	1.0	45	600	1.44	0.68	2.24	0.50	60.08
AH025	<1	0.08	3.0	2.0	17	0.6	<0.2	0.5	25	200	1.66	1.72	1.61	0.72	58.32
AH028	2	1.32	7.6	53.0	46	1.6	0.4	1.0	160	2200	3.09	2.02	1.55	1.70	42.70
AH030	<1	<0.02	2.8	3.5	18	0.2	<0.2	0.6	110	200	2.23	2.92	0.90	0.64	57.10

App. 2 Analytical Results of Rock-Chip Samples

【Surface Samples】

Sample No.	Au ppb	Ag ppm	Cu ppm	Pb ppm	Zn ppm	As ppm	Sb ppm	Fe %	Mn ppm	Ba ppm	CaO %	K_2O %	MgO %	Na_2O %	Al %
AH032	<1	0.02	1.4	3.5	13	4.4	<0.2	1.2	65	300	0.33	0.10	2.06	<0.01	86.43
AH033	<1	0.02	2.8	5.0	35	<0.2	<0.2	1.4	85	100	0.40	0.18	1.74	<0.01	82.44
AH034	<1	0.24	15.0	12.0	22	<0.2	<0.2	0.8	110	160	2.12	1.20	0.28	1.53	28.85
AH037	<1	<0.02	2.4	1.5	16	<0.2	<0.2	0.9	75	280	3.38	1.59	0.42	2.22	26.41
AH044	<1	<0.02	3.4	4.0	39	<0.2	<0.2	1.0	210	200	2.46	1.90	1.32	1.42	45.35
AH045	<1	not/ss	not/ss	not/ss	not/ss	not/ss	not/ss	0.8	140	240	1.85	1.96	1.29	1.01	53.19
AH046	10	1.24	4.4	56.5	42	2.6	<0.2	0.8	130	2200	2.56	0.83	1.09	0.52	38.40
AH047	77	3.14	6.8	181.0	26	469.0	5.6	1.5	100	1200	0.92	9.93	0.72	0.71	86.73
AH049	<1	0.02	5.6	7.5	131	4.8	<0.2	1.1	390	1860	2.27	2.39	0.98	0.92	51.37
AH050	<1	<0.02	12.2	4.5	107	<0.2	<0.2	4.3	970	180	4.03	0.75	1.86	3.56	25.59
AH052	<1	<0.02	9.8	1.5	1225	<0.2	<0.2	5.4	830	320	0.35	2.14	3.22	0.70	83.62
AH055	<1	<0.02	0.4	1.5	105	0.6	<0.2	2.7	610	80	0.33	0.69	2.39	3.01	47.98
AH056	<1	<0.02	5.8	5.5	219	0.6	<0.2	5.3	1300	100	0.23	0.66	1.66	1.93	51.79
AH060	<1	0.04	5.4	1.5	134	4.2	<0.2	3.5	1100	260	0.86	2.57	2.79	2.57	60.98
AH061	<1	<0.02	2.8	1.5	434	0.2	<0.2	5.7	3000	170	0.53	0.31	3.24	4.71	40.39
AH062	<1	0.40	100.0	9.0	176	0.4	0.4	6.5	730	80	5.83	0.31	4.43	2.59	36.02
AH063	<1	0.02	8.8	6.5	64	2.6	<0.2	2.1	340	120	2.41	1.45	1.99	1.20	48.79
AH064	<1	<0.02	10.4	8.0	21	0.6	<0.2	1.1	240	150	1.24	1.87	2.01	0.70	66.67
AH065	<1	<0.02	6.0	3.0	12	23.8	<0.2	0.8	150	160	1.73	0.69	0.74	0.88	35.40
AH066	<1	<0.02	4.6	3.5	14	<0.2	<0.2	0.5	100	40	0.13	0.89	0.97	<0.01	93.05
AH067	<1	<0.02	8.0	5.5	65	88.8	0.4	2.5	>10000	920	0.33	1.45	2.24	0.28	85.81
AH069	<1	<0.02	1.4	1.0	12	13.2	<0.2	0.8	370	640	1.51	0.14	2.58	0.25	60.71
AH071	<1	<0.02	9.0	1.5	100	3.4	<0.2	5.4	1600	140	2.19	2.09	1.96	2.18	48.10
AH072	14	<0.02	4.4	5.0	75	0.2	<0.2	2.0	580	840	2.76	1.89	1.09	1.44	41.50
AH073	<1	0.02	43.8	1.5	61	1.0	<0.2	4.6	1400	150	12.40	0.40	4.15	0.89	25.50
AH074	<1	<0.02	2.6	4.0	210	<0.2	<0.2	2.4	170	60	0.26	0.61	1.51	<0.01	88.74
AH075	<1	0.04	8.2	4.5	173	9.4	<0.2	5.7	1900	160	1.16	0.96	4.30	3.26	54.34
AH077	<1	0.16	1.6	1.0	74	1.8	<0.2	3.3	210	120	0.15	2.64	5.25	0.85	88.75
AH078	<1	0.02	17.2	2.0	67	1.6	<0.2	4.2	700	120	2.21	0.78	2.32	3.55	34.99
AH081	<1	<0.02	1.2	3.0	1	2.8	<0.2	3.6	10	80	0.09	0.99	0.30	0.29	77.25
AH083	<1	0.02	9.8	30.5	342	1.4	<0.2	6.4	3900	100	0.94	0.16	5.75	3.86	55.18
AH085	<1	0.12	34.4	145.0	257	10.8	<0.2	3.8	3200	1060	0.11	5.20	0.40	0.07	96.89
AH086	<1	not/ss	not/ss	not/ss	not/ss	not/ss	not/ss	1.7	270	540	not/ss	not/ss	not/ss	not/ss	#DIV/0!
AH088	<1	0.02	4.4	6.5	44	0.6	<0.2	1.4	500	380	2.41	0.72	1.76	1.53	38.63
AH090	<1	0.02	2.8	1.5	14	0.8	<0.2	0.3	45	360	0.07	3.84	1.45	0.15	96.01
AH091	<1	0.50	2.0	6.5	19	0.2	<0.2	2.5	3100	200	0.10	2.24	1.33	0.04	96.23
AH092	<1	0.02	13.0	9.5	29	75.6	5.2	2.4	5700	190	0.15	0.51	1.74	0.01	92.98
AH094	<1	<1.00	10760.0	280.0	7220	—	—	8.6	3500	120	0.20	0.70	3.43	0.95	78.22
AH096	33	4.00	80.0	7.0	17	68.6	0.2	8.2	60	40	0.03	1.42	0.24	0.04	93.26
AH097	4	not/ss	not/ss	not/ss	not/ss	not/ss	not/ss	1.0	500	380	1.11	5.27	0.91	2.07	66.03
AH098	<1	0.16	30.0	3.5	86	3.2	<0.2	5.3	1200	150	2.66	0.45	4.78	3.07	47.72
AH101	<1	0.02	38.6	3.5	257	1.4	<0.2	6.2	2500	2500	0.09	6.07	1.28	0.07	97.87
AH102	<1	<0.02	82.0	2.0	48	2.2	<0.2	4.0	360	120	9.14	0.45	2.99	2.43	22.92
AH103	<1	<0.02	49.2	1.5	61	15.2	1.6	3.8	5500	640	3.95	0.36	1.16	1.69	23.17
AH104	<1	<0.02	30.0	3.5	886	1.6	<0.2	4.4	1100	100	0.30	1.27	3.64	0.81	81.56
AH105	<1	<0.02	18.2	9.0	174	7.2	<0.2	5.7	970	80	0.52	0.23	1.91	1.60	50.23
AH106	500	0.12	14.4	61.0	21	8.2	<0.2	2.3	550	80	0.11	0.15	0.09	<0.01	66.85
AH108	<1	0.02	6.8	6.0	21	2.6	<0.2	1.5	360	460	1.99	1.71	1.28	0.70	52.64
AH109	<1	<0.02	3.8	4.5	62	<.2	<0.2	1.6	140	260	1.90	2.26	1.34	1.08	54.71
AH111	3	1.04	14.8	93.0	84	1.6	0.4	1.3	550	3400	1.92	2.23	1.79	1.22	56.15
AH112	<1	0.04	1.6	3.0	18	0.4	0.4	0.6	60	120	1.63	0.52	2.03	0.71	52.15
AH113	<1	<0.02	3.4	2.5	15	<0.2	<0.2	0.7	140	640	1.80	1.52	1.46	0.73	54.08
AH114	<1	<0.02	5.0	3.5	28	<0.2	<0.2	1.0	520	900	2.56	1.50	0.80	0.67	41.59
AH115	<1	<0.02	2.8	1.0	12	4.0	<0.2	1.1	120	150	2.07	1.65	1.91	0.94	54.19
AH116	1100	3.92	95.2	594.0	562	399.0	0.2	3.6	140	50	0.67	7.41	2.54	0.12	92.64
AH117	17	1.64	4.6	26.0	9	43.8	0.2	0.3	70	100	29.97	0.63	0.35	0.13	3.15
AH118	28	0.06	3.2	15.0	56	3.0	<0.2	0.5	330	820	2.33	2.96	0.76	0.93	53.30
AH119	12	0.02	4.6	5.0	20	<0.2	<0.2	0.7	850	600	2.55	3.80	1.09	0.35	58.99
AH120	<1	0.04	0.4	2.0	4	0.4	0.4	0.4	60	400	1.84	3.89	0.70	0.66	64.74
AH121	<1	<0.02	3.6	3.0	25	0.6	<0.2	0.7	390	400	1.43	2.46	1.90	1.02	64.02
AH122	<1	<0.02	2.0	2.0	21	<0.2	<0.2	0.7	270	1020	1.49	1.32	1.36	0.89	52.96
AH123	<1	<0.02	2.8	1.0	25	<0.2	<0.2	1.0	140	220	1.88	1.77	2.05	1.19	55.44
AH125	<1	0.04	4.8	6.0	18	0.4	0.4	1.4	85	80	0.88	0.36	1.42	0.09	64.73
AH128	<1	0.10	1.0	1.0	5	0.2	<0.2	0.3	40	1000	1.63	1.75	0.41	1.21	43.20
AH130	<1	<0.02	3.2	4.5	30	1.4	<0.2	1.1	3100	1680	1.66	3.59	0.94	0.66	66.13
AH131	<1	<0.02	2.4	2.0	16	1.2	<0.2	0.8	1200	1060	1.85	2.74	0.65	0.84	55.76
AH132	<1	not/ss	not/ss	not/ss	not/ss	not/ss	not/ss	0.8	500	210	2.06	2.24	0.62	1.07	47.75
AH133	<1	0.04	1.2	1.0	34	0.4	0.4	0.6	200	500	1.47	5.49	0.45	0.38	76.25
AH134	<1	0.04	1.6	5.0	34	0.8	0.4	1.0	310	1060	1.68	3.62	1.44	0.67	68.29
AH135	<1	<0.02	1.2	2.0	10	0.8	<0.2	1.5	360	1660	2.25	2.52	0.27	0.53	50.09
AH136	<1	<0.02	0.8	3.0	5	0.4	<0.2	0.9	85	1300	1.34	2.18	0.32	0.64	55.80
AH137	<1	<0.02	1.0	1.5	10	0.4	<0.2	0.5	95	520	1.93	3.26	0.64	1.08	56.44
AH138	<1	<0.02	1.6	3.0	22	0.2	<0.2	0.7	90	1780	1.47	2.18	1.16	0.46	63.36
AH139	<1	<0.02	2.4	4.5	27	<0.2	<0.2	0.9	280	2200	1.15	2.02	1.47	0.36	69.80
AH140	<1	<0.02	0.6	3.5	13	<0.2	<0.2	0.5	60	1800	1.32	2.24	0.85	0.58	61.92
AH141	<1	<0.02	0.6	3.0	6	0.6	<0.2	0.5	510	2000	1.60	2.13	0.60	0.67	54.60
AH142	<1	<0.02	1.2	1.5	8	8.2	<0.2	0.5	160	100	0.15	4.32	0.78	0.12	94.97
AH144	<1	<0.02	7.8	2.5	24	2.8	<0.2	2.5	80	30	0.19	1.24	2.51	0.01	94.94
AH145	<1	<0.02	10.6	5.5	95	0.6	<0.2	2.0	1600	300	1.13	1.34	1.07	3.93	32.26
AH146	<1	<0.02	5.2	2.0	7	<0.2	<0.2	0.9	20	220	0.15	1.93	0.68	0.03	93.55
AH147	<1	0.06	6.0	22.5	37	0.6	<0.2	1.0	1000	320	0.45	2.39	0.81	0.11	85.11
AD001	<1	<0.02	1.8	1.0	4	1.8	<0.2	0.3	100	220	52.99	0.09	0.19	0.11	0.52
AD002	<1	<0.02	2.0	1.0	12	1.6	<0.2	0.2	100	160	55.52	0.07	0.39	0.23	0.82
AD003	<1	0.04	3.2	3.5	4	1.2	1.4	1.0	450	180	39.22	0.23	1.39	0.13	3.96
AD004	<1	0.04	84.0	55.0	168	2.4	<0.2	4.7	1100	60	0.78	0.28	2.75	2.29	49.67

App. 2 Analytical Rosults of Rock-Chip Samples

【Surface Samples】

Sample No.	Au ppb	Ag ppm	Cu ppm	Pb ppm	Zn ppm	As ppm	Sb ppm	Fe %	Mn ppm	Ba ppm	CaO %	K_2O %	MgO %	Na_2O %	Al %
AD005	<1	0.04	8.6	6.5	51	<0.2	<0.2	1.7	230	130	2.70	1.65	1.60	1.02	46.63
AD006	<1	<0.02	30.2	15.0	31	27.6	<0.2	7.7	230	30	0.28	0.39	1.40	<0.01	86.10
AD007	<1	<0.02	20.2	8.0	44	2.6	<0.2	3.2	50	40	0.09	0.14	1.00	<0.01	92.01
AD008	<1	<0.02	95.0	13.0	75	19.4	<0.2	12.4	95	50	0.31	0.18	1.55	0.42	70.33
AD009	<1	<0.02	28.4	4.0	83	2.0	<0.2	4.3	330	100	0.61	1.00	1.21	0.47	67.17
AD010	<1	0.08	68.6	81.0	105	84.4	1.6	20.0	>10000	2700	0.32	0.06	0.39	0.11	51.14
AD011	<1	<0.02	2.4	1.0	11	0.8	<0.2	0.6	210	220	0.15	4.53	0.75	0.67	86.56
AD012	<1	0.02	1.6	1.0	121	2.2	<0.2	3.3	1400	100	0.99	1.33	4.69	2.11	66.01
AD013	<1	0.36	50.6	27.0	13	73.2	<0.2	2.8	30	100	0.09	3.07	0.53	0.06	96.00
AD014	<1	<0.02	1.6	12.0	60	5.4	<0.2	4.1	160	80	0.19	1.10	1.12	<0.01	91.77
AD016	<1	<0.02	6.6	4.5	41	<0.2	<0.2	1.0	1000	1450	1.68	2.80	1.36	1.28	58.43
AD017	<1	<0.02	4.4	3.0	26	1.0	<0.2	1.3	120	20	0.41	0.91	0.77	0.59	62.69
AD018	<1	<0.02	9.2	12.0	58	84.6	<0.2	4.2	55	20	0.09	0.11	0.43	<0.01	84.51
AD019	<1	<0.02	43.2	21.0	73	8.0	<0.2	9.4	240	220	0.55	0.73	1.86	0.05	81.19
AD020	<1	0.04	11.4	13.0	99	<0.2	<0.2	3.4	550	480	2.59	0.92	2.22	1.06	46.24
AD023	<1	<0.02	5.6	5.0	34	<0.2	<0.2	1.5	560	320	1.89	2.60	1.41	0.30	64.68
AD024	<1	<0.02	12.8	8.5	17	9.4	<0.2	0.8	45	540	1.73	3.41	1.02	0.45	67.02
AD025	<1	0.22	115.0	32.0	236	<0.2	<0.2	0.3	110	940	1.10	3.38	0.76	0.26	75.27
AD026	<1	<0.02	4.0	7.5	11	<0.2	<0.2	0.4	15	1000	2.49	0.87	1.01	1.21	33.69
AD027	<1	0.02	10.2	7.0	29	<0.2	<0.2	0.5	65	150	3.12	1.29	0.66	1.69	28.85
AD028	<1	0.02	8.6	5.5	30	0.8	<0.2	1.0	65	140	3.09	1.26	0.40	1.51	26.52
AD029	1	0.10	16.6	8.0	105	9.2	<0.2	1.2	850	180	11.32	0.58	1.33	2.64	12.04
AD030	3	3.38	6.6	70.5	66	103.0	24.6	0.6	50	680	0.91	1.46	1.68	0.02	77.15
AD031	<1	0.02	35.8	23.5	104	1.4	<0.2	3.9	5800	840	1.34	1.32	4.44	0.03	80.79
AD032	2	0.06	79.8	2.0	120	11.8	<0.2	1.7	850	140	0.11	0.12	0.19	<0.01	72.26
AD033	<1	<0.02	16.8	1.5	67	1.4	<0.2	3.4	170	20	1.79	0.79	4.60	<0.01	74.98
AD034	<1	<0.02	21.4	1.5	87	13.6	<0.2	3.6	600	20	1.00	1.15	1.67	<0.01	73.65
AD035	<1	<0.02	25.8	2.0	36	0.8	<0.2	2.5	420	30	2.23	0.32	3.52	<0.01	63.17
AD036	<1	<0.02	6.4	<0.5	189	0.8	<0.2	6.0	830	60	0.20	0.41	6.30	4.18	60.50
AD037	<1	<0.02	2.8	18.0	169	21.4	2.0	6.9	850	30	0.38	0.60	5.65	4.81	54.63
AD038	<1	0.04	764.0	2.5	170	52.4	<0.2	7.5	510	40	0.47	0.97	6.35	3.72	63.60
AD039	<1	<0.02	2.2	1.5	117	2.6	<0.2	6.3	380	90	1.73	1.97	5.70	1.99	67.34
AD040	<1	<0.02	1.8	3.0	108	<0.2	<0.2	2.1	340	160	2.77	2.22	2.95	1.24	56.32
AD041	<1	0.20	128.0	3.5	120	1.8	<0.2	5.8	1500	90	1.76	0.46	4.69	3.48	49.57
AD043	<1	<0.02	12.0	1.0	105	1.6	<0.2	3.9	920	300	1.30	1.81	2.10	5.47	36.61
AD044	<1	0.06	8.6	4.5	108	3.0	<0.2	5.1	900	300	1.49	2.23	5.16	2.00	67.92
AD045	<1	<0.02	7.4	1.5	74	4.8	<0.2	4.6	200	100	1.57	1.37	1.88	0.80	57.83
AD046	<1	<0.02	2.8	1.5	28	4.2	<0.2	1.1	990	100	1.01	3.12	1.39	1.08	68.33
AD047	1	<0.02	3.6	1.0	45	2.2	<0.2	1.2	400	60	1.58	2.28	0.92	4.34	35.09
AD048	<1	<0.02	4.0	0.5	87	5.8	<0.2	1.1	1200	120	0.92	0.57	0.96	5.11	20.24
AD050	<1	<0.02	25.8	12.0	48	35.4	<0.2	7.3	170	40	0.85	0.23	2.15	<0.01	73.48
AD051	<1	<0.02	6.6	4.0	24	2.6	<0.2	1.9	90	280	2.92	1.08	0.82	1.09	32.15
AD052	<1	<0.02	9.2	6.0	35	2.0	<0.2	1.6	330	420	2.96	1.82	1.26	1.29	42.02
AD053	<1	<0.02	18.9	6.0	55	1.6	<0.2	2.5	700	120	1.71	0.60	1.59	2.13	36.32
AD054	<1	<0.02	13.0	6.5	54	1.0	<0.2	2.2	310	170	1.53	1.14	0.95	2.72	32.97
AD055	<1	0.04	13.2	3.5	63	6.0	<0.2	4.1	930	240	3.72	1.60	1.69	3.10	32.54
AD056	<1	<0.02	2.8	1.0	3	3.8	<0.2	2.3	25	180	0.35	2.54	0.15	0.55	74.93
AD057	<1	0.22	4.8	16.0	144	9.4	<0.2	3.5	1000	330	2.01	0.38	1.31	2.78	26.08
AD058	<1	<0.02	2.8	3.0	102	12.6	0.8	2.2	660	150	1.91	0.91	1.12	3.35	27.85
AD059	<1	0.02	3.6	6.0	121	3.6	<0.2	2.0	1000	160	0.91	1.72	2.67	2.58	55.71
AD060	<1	<0.02	16.6	33.0	76	2.4	<0.2	1.0	240	60	0.07	0.52	0.60	0.29	75.68
AD061	<1	0.02	12.6	1.5	61	3.4	<0.2	2.7	760	240	1.42	1.79	1.11	3.30	38.06
AD062	<1	<0.02	2.2	21.0	192	<0.2	<0.2	3.5	1500	30	0.42	0.25	4.54	2.07	65.80
AD063	<1	<0.02	2.2	3.5	16	3.8	<0.2	2.4	1200	120	0.57	0.62	1.63	0.02	79.23
AD064	<1	0.02	9.0	1.0	90	3.4	<0.2	4.2	850	120	2.98	2.06	4.12	0.86	61.68
AD065	<1	<0.02	5.2	2.0	117	11.8	<0.2	4.1	460	70	1.59	1.19	3.39	2.35	54.33
AD066	<1	<0.02	2.0	4.5	39	1.6	<0.2	1.0	240	40	0.41	0.67	0.44	0.12	67.68
AD067	<1	<0.02	10.8	4.5	63	6.8	<0.2	2.5	450	40	0.71	1.03	1.23	1.42	51.48
AD068	<1	<0.02	1.6	3.5	18	10.4	0.2	1.5	390	40	0.43	0.91	0.33	4.74	19.34
AD069	<1	<0.02	3.4	1.5	4	0.2	0.4	0.4	200	220	2.03	4.72	0.29	0.83	63.66
AD070	<1	<0.02	1.4	3.0	9	<0.2	<0.2	0.4	50	1000	2.17	1.58	0.69	1.49	38.28
AD071	<1	<0.02	1.2	1.5	11	0.6	<0.2	0.4	55	160	1.87	2.88	0.70	0.72	58.02
AD072	<1	0.06	14.2	6.0	33	4.6	<0.2	0.4	60	60	1.49	0.60	2.08	0.65	55.60
AD073	<1	<0.02	15.4	8.0	79	1.6	<0.2	0.8	100	220	1.77	4.16	0.52	2.67	51.32
AD074	<1	<0.02	2.4	3.0	34	0.2	<0.2	0.4	95	210	1.83	2.70	0.76	1.23	53.07
AD075	<1	<0.02	6.2	4.5	91	0.4	<0.2	2.6	250	140	2.00	1.08	1.24	3.40	30.05
AD076	<1	<0.02	35.6	1.0	202	0.8	<0.2	2.0	140	70	1.85	2.73	3.06	0.04	75.39
AD077	<1	<0.02	3.6	10.5	40	3.0	<0.2	2.1	690	300	0.19	0.34	1.92	<0.01	91.91
AD078	<1	0.08	30.0	18.0	32	0.8	0.8	1.3	40	20	1.64	1.74	1.31	0.42	59.69
AD079	<1	<0.02	5.4	3.5	20	1.4	<0.2	0.8	100	240	1.72	3.13	1.43	0.93	63.25
AD080	<1	<0.02	40.2	2.5	72	1.0	<0.2	2.7	200	620	0.86	3.81	0.98	0.27	80.91
AD081	<1	0.04	30.0	7.0	28	0.4	0.4	4.0	120	20	0.16	0.20	0.63	<0.01	83.08
AD082	<1	<0.02	2.6	6.0	28	0.4	<0.2	0.8	90	60	0.77	0.39	1.29	0.52	56.57
AD083	<1	<0.02	6.4	3.0	8	9.8	0.4	2.6	170	40	0.09	0.14	0.08	<0.01	68.97
AD084	<1	<0.02	4.6	4.5	22	<0.2	<0.2	0.8	130	240	1.97	1.88	0.39	1.60	38.87
AK002	<1	<0.02	35.0	19.5	18	2.8	0.8	0.5	80	20	0.08	0.12	0.33	0.06	76.27
AK004	<1	<0.02	10.8	13.0	32	0.4	<0.2	1.3	130	50	1.77	0.17	5.42	0.04	75.54
AK005	<1	<0.02	16.0	5.0	64	3.8	<0.2	3.3	460	140	16.12	0.53	4.05	0.94	21.16
AK006	<1	0.02	18.8	8.5	69	5.0	<0.2	3.0	280	180	11.69	1.11	2.52	1.55	21.52
AK007	<1	0.02	25.6	9.0	44	3.4	<0.2	1.5	140	140	9.60	0.62	2.61	1.93	21.88
AK010	<1	<0.02	29.6	5.0	66	1.2	<0.2	2.5	360	340	1.41	2.63	2.10	0.38	72.55
AK011	<1	<0.02	29.4	0.5	61	2.0	<0.2	2.4	120	110	4.51	1.41	1.57	2.22	30.69
AK013	<1	<0.02	12.4	4.0	30	22.2	<0.2	4.6	85	30	0.69	0.20	1.43	0.03	69.36
AK014	<1	<0.02	6.4	1.0	39	13.8	<0.2	2.2	380	220	3.40	1.48	1.71	2.12	36.62
AK015	<1	<0.02	9.2	1.5	34	1.6	<0.2	0.8	320	80	3.28	0.74	2.66	0.85	45.15

App.2 Analytical Results of Rock-Chip Samples

【Surface Samples】

Sample No.	Au ppb	Ag ppm	Cu ppm	Pb ppm	Zn ppm	As ppm	Sb ppm	Fe %	Mn ppm	Ba ppm	CaO %	K_2O %	MgO %	Na_2O %	Al %
AK016	<1	<0.02	16.0	1.5	51	0.2	<0.2	2.8	600	100	2.01	0.60	3.10	0.98	55.31
AK017	<1	0.62	6.8	21.5	2	2280.0	29.8	7.3	70	160	1.22	2.78	0.30	2.46	45.56
AK018	<1	0.06	69.0	10.5	48	49.0	<0.2	2.5	100	40	2.20	0.39	3.63	0.11	63.51
AK020	<1	<0.02	5.2	2.5	19	14.6	<0.2	1.1	85	200	2.18	1.90	1.46	1.92	45.04
AK021	<1	<0.02	6.4	1.5	23	0.6	<0.2	0.6	800	240	37.97	0.49	1.13	0.42	4.05
AK022	<1	<0.02	13.4	3.5	59	2.6	<0.2	0.9	200	460	4.57	1.40	1.03	2.75	24.92
AK024	<1	<0.02	7.0	2.5	27	<0.2	<0.2	1.7	290	100	4.66	1.22	2.50	1.38	38.11
AK025	<1	<0.02	16.0	4.0	25	0.6	<0.2	1.4	120	50	3.47	0.41	1.81	0.65	35.02
AK026	<1	<0.02	2.8	4.5	25	0.2	<0.2	0.8	110	200	1.94	0.36	2.55	0.27	56.84
AK027	<1	<0.02	4.8	1.5	25	0.4	<0.2	0.4	35	100	2.23	1.85	2.45	1.17	55.84
AK029	<1	0.02	3.2	5.0	26	0.4	<0.2	0.4	50	280	2.02	0.16	2.79	0.37	55.24
AK030	<1	<0.02	8.2	2.0	41	<0.2	<0.2	1.9	210	100	2.48	0.96	2.09	1.06	46.28
AK031	<1	<0.02	10.8	1.5	34	<0.2	<0.2	2.0	490	180	3.61	1.97	2.05	2.04	41.57
AK032	<1	<0.02	2.4	0.5	18	<0.2	<0.2	0.8	1200	190	1.71	3.12	0.69	1.82	51.91
AK033	<1	<0.02	2.2	<0.5	11	<0.2	<0.2	0.5	20	200	1.88	2.72	0.65	2.47	43.65
AK034	<1	<0.02	3.0	<0.5	19	<0.2	<0.2	0.8	200	160	2.11	2.74	0.99	2.44	45.05
AK035	<1	<0.02	4.0	3.0	36	<0.2	<0.2	1.4	140	140	2.52	1.71	2.40	1.93	48.01
AK036	<1	0.02	4.4	10.5	144	<0.2	<0.2	1.8	100	70	2.21	0.17	4.55	0.38	64.57
AK037	<1	0.02	4.6	3.0	95	<0.2	<0.2	2.9	870	300	2.88	2.26	2.12	1.09	52.46
AK038	<1	0.02	11.2	1.5	94	<0.2	<0.2	3.2	250	50	2.96	0.58	4.11	0.80	55.50
AK039	<1	<0.02	10.2	1.0	34	<0.2	<0.2	2.1	170	80	3.28	1.41	2.78	1.59	46.25
AK040	<1	<0.02	5.4	1.0	47	<0.2	<0.2	2.0	1000	180	2.90	1.00	3.18	1.30	49.88
AK041	<1	<0.02	10.2	1.5	34	<0.2	<0.2	2.2	450	100	2.46	1.73	2.86	1.16	55.91
AK042	<1	0.06	4.0	4.0	39	<0.2	<0.2	0.8	1900	780	23.34	0.86	1.63	1.03	9.27
AK043	<1	<0.02	9.2	4.5	46	<0.2	<0.2	1.5	2900	860	24.05	1.96	1.98	0.11	14.02
AK044	<1	<0.02	3.2	2.0	25	<0.2	<0.2	0.9	250	200	1.96	2.70	1.49	1.94	51.79
AK045	<1	<0.02	4.0	3.0	58	<0.2	<0.2	1.2	100	100	1.82	1.39	2.54	0.81	59.91
AK046	<1	0.02	3.6	7.0	63	0.6	<0.2	1.8	210	1360	2.44	0.66	2.48	0.36	52.86
AK047	<1	0.02	4.0	4.0	64	7.0	<0.2	2.2	190	120	2.58	1.55	0.69	1.68	34.46
AK048	<1	0.02	3.4	1.5	56	0.6	<0.2	1.7	800	220	3.87	2.52	3.99	0.52	59.72
AK049	<1	<0.02	1.6	0.5	92	1.2	<0.2	5.3	910	160	1.86	1.55	4.58	0.57	71.61
AK050	<1	<0.03	0.6	1.5	55	<0.2	<0.2	2.5	540	220	0.95	3.43	3.24	2.25	67.58
AK051	<1	<0.02	5.0	1.0	86	<0.2	<0.2	4.6	1100	60	0.96	1.87	5.61	1.54	74.95
AK052	<1	<0.02	2.6	1.0	92	<0.2	<0.2	4.7	1200	120	0.68	2.54	5.13	1.48	78.03
AK053	<1	0.06	3.2	1.0	82	<0.2	<0.2	4.3	1100	100	0.95	2.45	5.29	1.69	74.57
AK054	<1	<0.02	21.8	5.0	88	<0.2	<0.2	2.3	370	140	0.96	3.78	3.13	0.09	86.81
AK055	<1	0.04	5.0	8.0	66	4.4	<0.2	2.1	1600	170	2.83	2.38	3.23	2.75	50.13
AK056	<1	<0.02	13.6	15.5	45	2.4	<0.2	1.4	170	500	1.92	1.05	2.82	0.39	62.62
AK058	<1	<0.02	11.8	2.5	50	<0.2	<0.2	1.6	310	240	2.91	1.78	2.51	0.98	52.44
AK059	<1	<0.02	10.0	2.5	31	<0.2	<0.2	1.2	150	190	2.15	1.87	2.23	1.30	54.30
AK060	<1	<0.02	11.0	2.5	37	<0.2	<0.2	1.3	90	360	2.18	2.28	2.23	0.51	62.64
AK062	<1	0.02	13.2	4.5	60	<0.2	<0.2	1.9	850	170	3.13	1.77	1.92	0.37	51.32
AK063	<1	0.02	20.6	4.5	37	0.2	<0.2	1.6	200	160	2.33	2.39	1.72	1.02	55.09
AK064	<1	<0.02	11.4	3.5	31	<0.2	<0.2	1.3	310	340	2.12	1.88	1.83	1.00	54.32
AK065	<1	<0.02	7.0	3.5	29	0.4	<0.2	1.1	100	200	2.60	1.07	1.37	1.52	37.20
AK066	<1	<0.02	7.6	3.5	95	<0.2	<0.2	4.0	850	360	3.14	2.99	1.83	1.69	49.95
AK067	<1	<0.02	0.6	3.5	80	<0.2	<0.2	3.5	600	120	3.62	2.20	1.83	2.27	40.63
AK068	<1	<0.02	6.8	2.5	39	<0.2	<0.2	1.8	170	90	1.43	0.89	3.18	0.70	65.65
AK069	<1	<0.02	15.8	1.0	32	<0.2	<0.2	2.1	370	80	4.10	1.26	2.24	1.20	39.77
AK070	<1	<0.02	14.0	6.0	29	2.8	<0.2	5.5	200	10	0.21	0.08	1.10	<0.01	84.35
AK071	<1	<0.02	9.6	2.0	28	<0.2	<0.2	2.4	890	110	2.38	0.71	1.98	1.19	42.97
AK072	<1	<0.02	19.8	1.5	34	<0.2	<0.2	2.6	220	80	3.05	0.68	2.13	1.28	39.36
AK073	<1	<0.02	21.4	7.0	26	2.0	<0.2	5.1	360	30	0.67	0.09	0.53	<0.01	47.73
AK074	<1	<0.02	12.2	4.5	19	<0.2	<0.2	1.1	55	160	2.28	0.71	1.69	1.14	41.24
AK075	<1	<0.02	17.4	5.0	63	<0.2	<0.2	8.6	300	140	2.33	0.39	2.60	1.11	46.50
AK076	<1	<0.02	8.6	5.0	21	0.6	<0.2	0.6	100	280	1.64	1.33	1.18	0.66	52.18
AK077	<1	<0.02	14.0	7.5	62	0.8	<0.2	1.9	250	200	4.22	0.73	1.59	1.01	30.73
AK078	<1	0.04	19.0	4.0	49	1.4	<0.2	2.1	1400	100	17.53	0.40	2.23	0.93	12.47
AK079	<1	<0.02	14.2	5.0	83	11.6	<0.2	5.0	1600	220	3.98	1.25	1.57	1.62	33.49
AK080	<1	<0.02	1.8	0.5	9	<0.2	<0.2	0.5	55	160	1.87	2.15	1.41	1.87	48.77
AK082	<1	<0.02	1.2	1.0	17	1.4	<0.2	0.7	40	140	1.78	2.36	0.79	2.15	44.49
AK083	<1	<0.02	2.6	0.5	18	0.4	<0.2	0.5	25	220	2.31	1.88	0.77	3.45	31.51
AK084	<1	<0.02	2.8	0.5	10	0.4	<0.2	0.6	40	140	2.08	2.31	1.19	2.51	43.26
AK085	<1	0.02	6.8	7.0	35	0.6	<0.2	1.4	170	180	2.97	0.38	2.58	0.29	47.59

App. 2 Analytical Results of Rock-Chip Samples

【Core Samples】

Sample No.	Au ppb	Ag ppm	Cu ppm	Pb ppm	Zn ppm	As ppm	Sb ppm	Fe %	Mn ppm	Ba ppm	CaO %	K_2O %	MgO %	Na_2O %	Al %
102	1	0.02	15	12	51	7	<.2	1.9	1100	180	39.43	0.29	3.34	0.14	8.40
103	<1	<.02	6.6	1	50	<.2	<.2	1.5	210	60	0.39	1.31	1.35	4.15	36.94
105	<1	<.02	2.4	0.5	75	<.2	<.2	2.1	750	100	1.73	2.69	2.24	3.82	47.04
106	<1	<.02	4	1	69	0.2	<.2	1.8	370	120	1.18	3.66	3.15	1.39	72.60
108	<1	<.02	2.8	1	59	<.2	<.2	1.2	490	80	0.86	3.43	2.05	3.24	57.42
109	<1	<.02	6.8	<.5	71	<.2	<.2	1.5	580	50	0.98	3.13	2.15	3.25	55.52
111	<1	<.02	3.2	1	39	<.2	<.2	0.8	580	120	2.91	2.27	1.44	3.83	35.50
112	<1	0.02	1.8	3	84	<.2	<.2	2.4	520	110	0.59	2.27	3.86	1.2	77.40
113	1	0.24	78.8	2	119	2.2	<.2	4.9	1200	60	2.12	0.29	5.31	5.42	42.62
114	<1	0.24	33.4	3	111	1.6	0.4	4	1850	140	5.54	2.37	5.67	2.69	49.42
116	<1	<.02	9.8	3.5	132	<.2	<.2	2.8	1200	540	4.66	1.71	3.79	4.05	38.71
117	1	0.14	27.4	4	109	2.8	<.2	4.1	770	60	1.27	0.53	5.83	3.58	56.74
118	4	0.04	4	1.5	164	4.4	<.2	4.5	600	200	1.36	2.16	6.82	1.89	73.43
119	<1	0.02	11	1	129	1.4	<.2	4.9	720	220	4.17	1.81	6.69	2.2	57.16
121	<1	0.04	5	1.5	75	0.6	<.2	1.8	1500	250	21.49	1.06	2.43	2.55	12.68
122	<1	0.14	4.2	5	113	1.4	<.2	3.2	940	240	2.45	1.85	3.42	4.35	43.66
123	<1	<.02	0.2	<.5	123	0.2	<.2	3.1	1100	250	1.34	3.23	4.57	2.52	66.90
126	<1	<.02	1.2	1	104	<.2	<.2	1.8	500	230	0.88	2.05	4.92	2.26	68.94
127	<1	0.12	3	5	129	1.4	<.2	5.9	910	40	1.82	0.17	7.42	5.68	50.30
130	<1	0.06	35.6	2	120	2.2	0.2	5.6	800	70	2.77	0.53	5.2	3.36	48.31
201	<1	0.06	5.2	3.5	98	7	<.2	1.1	160	100	2.93	2.9	1.09	0.27	55.49
202	3	0.08	9	1	75	0.6	<.2	4.5	1100	130	5.7	2.67	5.32	0.71	55.49
203	2	0.32	28.6	0.5	71	0.4	<.2	2.4	680	100	1.65	4.86	2.83	1.4	71.73
204	1	0.16	16.4	1	50	0.4	<.2	1.5	450	140	0.93	3.87	2	2.05	66.33
205	2	<.02	1.2	0.5	42	0.6	<.2	1.2	470	200	1.25	4.16	1.5	2.66	59.14
206	<1	<.02	6.6	<.5	35	0.4	<.2	1.3	410	120	1.39	2.05	2.09	2.2	53.56
207	<1	0.04	38.2	1	70	1.4	<.2	4.8	1200	100	4.63	2.48	5.53	2.01	54.68
208	<1	<.02	3.4	0.5	49	1.6	0.8	2.6	2600	160	22.63	1.61	4.23	1.1	19.75
209	<1	<.02	2	<.5	44	0.8	<.2	1.4	950	80	8.25	0.77	2.8	3.32	23.58
210	<1	<.02	1.2	1	71	1.4	<.2	2.5	790	120	5.51	1.16	3.89	4.31	33.96
211	1	0.12	35.2	1	79	0.8	<.2	5.3	1500	80	1.93	1.43	6.08	2.76	61.56
212	<1	0.3	65.2	2	77	2.6	1.2	4.6	1350	140	7.25	0.81	6.54	3.14	41.43
213	1	0.12	9	1	80	2.4	<.2	5.5	1250	150	4.02	1.39	4.76	3.2	46.00
214	<1	0.02	2.4	1.5	95	3.6	<.2	5.3	1600	140	5.38	1	4.27	4.29	35.27
215	<1	<.02	1.4	0.5	68	0.6	<.2	3.4	1300	200	2.68	2.27	2.51	4.12	41.28
216	<1	0.04	6.2	2	62	1.6	<.2	4.8	1350	150	4.11	1.73	3.71	3.59	41.40
217	1	<.02	2.8	0.5	62	2.4	<.2	5.3	1850	140	4.08	1.4	3.71	3.83	39.25
218	<1	<.02	2.2	0.5	83	1	0.8	3.1	1150	260	1.44	4.27	2.59	2.91	61.20
219	1	<.02	1.4	1	135	0.8	<.2	5.1	1700	270	1.51	1.51	4.26	4.22	50.17
220	2	<.02	35.4	1	46	1.2	<.2	4.5	590	180	3.6	1.26	5.1	4.42	44.23
301	<1	<.02	3.8	1	54	<.2	<.2	1.7	530	140	1.65	1.68	2.11	4.1	39.73
302	<1	0.08	9	2	69	0.4	<.2	1.6	470	110	1.04	3.55	4.48	0.59	83.15
303	<1	0.02	1.8	2	90	1	<.2	4.5	800	140	1.84	1.77	5.54	3.74	56.71
304	<1	0.02	9.4	1.5	16	0.8	<.2	0.45	4100	240	36.88	0.62	0.67	0.13	3.37
305	4	0.02	24	2	105	0.6	<.2	5.9	1450	110	3.83	0.7	5.2	3.84	43.48
306	12	0.52	11.4	3.5	87	22.2	1	4.7	1600	460	0.82	3.9	5.68	2.19	76.09
307	6	0.2	6.4	1.5	98	9.8	<.2	3.3	1300	120	1.78	0.7	1.65	7.07	20.98
308	11	0.24	1.2	1.5	105	5.6	<.2	4.1	1600	300	2.78	1.64	5.04	3.26	52.52
309	2	0.1	0.8	1	93	1.4	<.2	3.1	1400	260	9.44	2.01	3.57	2.8	31.31
310	2	0.02	32.6	0.5	71	0.6	<.2	5.2	1300	160	4.87	0.68	7.76	1.96	55.27
311	<1	0.06	5.8	1	115	0.4	<.2	3.4	890	160	1.23	1.97	2.7	4.08	46.79
312	<1	0.02	1.4	1.5	82	<.2	<.2	2.9	740	280	2.52	4.52	2.94	2.05	62.01
313	<1	0.02	2.2	1.5	66	0.4	<.2	2.1	690	220	2.67	3.09	2.01	2.59	49.23
314	<1	0.04	1.8	1.5	77	<.2	<.2	2.6	930	180	2.18	3.48	2.48	3.12	52.93
315	<1	0.04	3.2	1	105	<.2	<.2	5	1650	240	3.69	2.51	4.65	3.31	50.56
316	<1	0.02	2.8	1	77	0.2	1.2	2.9	1300	390	1.88	3.54	2.91	3.11	56.38
317	<1	0.16	5.8	2	93	4.2	<.2	4.2	1400	310	2.96	2.62	3.45	3.43	48.72
318	2	0.16	3.2	1.5	130	3.4	<.2	5.9	2050	280	0.73	2.96	6.77	3.19	71.28

App.2 Analytical Results of Rock-Chip Samples

【Core Samples】

Sample No.	Au ppb	Ag ppm	Cu ppm	Pb ppm	Zn ppm	As ppm	Sb ppm	Fe %	Mn ppm	Ba ppm	CaO %	K_2O %	MgO %	Na_2O %	Al %
319	<1	0.12	11.2	0.5	97	0.8	<.2	6.1	1850	420	2.03	2.35	6.54	3.43	61.95
320	<1	<.02	7.4	1	53	<.2	<.2	2.5	780	180	1.42	1.72	2.06	4.87	37.54
401	<1	0.02	18.4	3.5	34	2	<.2	1.7	210	140	2.82	1.57	3.45	1.86	51.75
402	<1	<.02	20.4	1	26	<.2	<.2	0.9	120	140	3.03	1.7	1.73	2.54	38.11
403	<1	0.06	34.2	6	24	1.2	<.2	0.65	110	280	1.88	1.17	2.61	1.34	54.00
404	<1	<.02	10.8	3.5	23	1.2	<.2	0.6	200	170	1.95	1.99	2.17	2.56	47.98
405	<1	0.04	11	4	37	2	<.2	0.6	240	340	1.78	2.07	1.83	1.99	50.85
406	<1	0.02	7.8	4	41	0.4	<.2	0.7	210	120	2.17	2.12	0.85	3.1	36.04
407	<1	0.04	8.4	3.5	43	0.6	<.2	1	240	180	1.88	3.74	1.16	2.56	52.46
408	<1	<.02	9	4	45	1.4	<.2	0.55	190	100	2.2	2.89	1.21	2.71	45.50
409	<1	<.02	8.4	3	36	<.2	<.2	1.2	340	240	2.15	3.07	1.28	2.67	47.44
410	<1	0.02	24.2	1.5	23	0.2	<.2	1.3	120	110	2.09	2.97	0.73	3.07	41.76
411	14	<.02	6.8	1	35	0.8	<.2	1.2	370	130	2.48	3.67	0.78	2.96	44.99
412	6	<.02	8	0.5	30	0.8	<.2	0.35	60	320	1.87	2.3	0.69	3.02	37.94
413	<1	0.04	11.6	7.5	48	2.6	<.2	0.45	70	160	1.31	3.56	0.14	1.75	54.73
414	11	0.02	11.2	10	69	3.8	<.2	0.4	85	190	1.03	5.1	0.41	1.66	67.20
415	23	<.02	8	6.5	29	<.2	<.2	1.2	460	120	1.77	1.3	3.47	1.43	59.85
416	<1	<.02	8	4.5	41	4.4	<.2	0.55	70	320	1.53	2.07	0.54	2.33	40.34
417	1	0.02	14.6	6	97	2.6	<.2	0.55	2200	220	3.58	1.58	0.33	1.33	28.01
418	4	<.02	6.4	3	53	0.8	<.2	2.1	470	100	2.06	1.5	3.46	1.63	57.34
419	3	<.02	3	3	47	<.2	<.2	0.7	110	380	1.93	3.46	0.93	2.76	48.35
420	<1	<.02	2	3	19	<.2	<.2	0.7	170	220	2	1.93	1.49	2.26	44.53
421	<1	0.02	3.4	3	29	<.2	<.2	0.8	170	240	2.59	2.05	1.14	2.87	36.88
422	26	<.02	4	4	28	<.2	0.4	1.1	240	200	2.45	1.67	1.61	2.5	39.85
423	7	0.14	7.4	8	80	1	<.2	1.5	190	180	2.69	4.92	1.21	2.97	51.99
424	1	<.02	5.4	2	32	0.6	<.2	1.7	170	240	2.3	2.95	1.39	2.96	45.21
425	8	0.06	36.2	1.5	79	1	<.2	4.7	1100	120	5.63	1	4.11	3.55	35.76
426	6	<.02	16.8	3.5	50	0.6	<.2	2	460	200	3.59	1.61	2.16	2.87	36.85
501	<1	<.02	17.4	5	18	6.6	<.2	1.7	250	190	2.96	1.78	1.79	1.06	47.04
502	<1	0.04	14.8	4.5	26	<.2	<.2	1.6	140	180	2.61	1.61	1.63	1.09	46.69
503	<1	<.02	8	4	19	<.2	<.2	1.3	60	140	3.48	1.6	1.47	2.25	34.89
504	1	0.02	6.6	4.5	44	<.2	<.2	0.9	80	130	2.55	1.56	1.08	2.5	34.33
505	<1	<.02	6.6	3.5	48	<.2	<.2	1.1	80	130	3.54	1.25	0.78	3.17	23.23
506	<1	<.02	8.8	4.5	70	<.2	<.2	1.4	120	130	2.65	1.47	1.2	2.73	33.17
507	<1	<.02	12.4	4.5	66	<.2	<.2	2.5	570	130	3.65	1.37	2.02	2.82	34.38
508	<1	0.02	5.2	4	32	<.2	<.2	1.2	140	240	2.03	1.31	1.55	2.62	38.08
509	<1	<.02	4.8	4	33	<.2	<.2	1.5	260	50	1.54	0.81	3.38	1.32	59.43
510	<1	<.02	2	5	37	<.2	<.2	1.8	230	30	2.17	0.54	3.35	1.48	51.59
511	<1	0.04	15.6	7.5	165	6.4	<.2	2.4	250	70	3.21	1.45	2.64	2.44	41.99
512	<1	0.14	38.4	10	417	15	<.2	0.75	170	160	1.6	3.69	1.34	2.2	56.96
513	<1	0.06	12.8	3	51	0.2	<.2	1.6	340	60	2.02	1.19	2.78	1.64	52.03
514	<1	<.02	10.8	3	53	<.2	<.2	2.1	390	40	2.65	0.96	3.11	1.94	47.00
515	<1	<.02	9	2	53	<.2	<.2	2.1	530	60	2.48	1.48	3.44	1.69	54.13
516	<1	<.02	7.2	4.5	76	<.2	<.2	2.4	640	170	2.04	1.95	3.15	1.87	56.60
517	<1	<.02	3.6	2.5	67	<.2	<.2	2.4	640	120	2.5	1.81	3.33	1.92	53.77
518	<1	<.02	4.6	2.5	65	<.2	<.2	2	650	110	1.87	2.27	3.31	2	59.05
519	<1	<.02	9.6	3	96	<.2	<.2	2.3	620	90	1.75	2.02	3.52	3.33	52.17
520	<1	<.02	6.4	2	57	<.2	<.2	1.9	730	150	1.27	2.82	3.15	2.74	59.82
601	1	0.02	1	3.5	28	<.2	<.2	0.8	180	200	0.59	4.32	1.92	0.34	87.03
602	<1	0.04	46	3	90	1	<.2	3.5	670	90	1.46	1.12	4.18	1.1	67.43
603	<1	<.02	6.6	0.5	45	<.2	<.2	1.5	320	240	2.45	2.64	1.98	2.73	47.14
604	<1	<.02	4	1.5	33	<.2	<.2	1	230	190	1.7	2.38	1.53	2.89	46.00
605	<1	<.02	5.8	4	40	<.2	<.2	1.3	240	190	1.71	1.41	1.55	3.99	34.18
606	1	0.02	6.2	5	52	<.2	<.2	1.7	280	140	2.38	1.62	2.14	2.29	44.60
607	1	<.02	6	0.5	57	0.4	<.2	1.9	390	130	2.48	1.73	2.15	3.16	40.76
608	<1	<.02	1.2	3	90	0.6	<.2	3.7	650	160	1.81	2.62	4.96	1.36	70.51
609	1	0.02	17.8	3	50	<.2	<.2	1.9	410	190	2.15	1.8	1.88	3.24	40.57
610	1	0.02	24	3	39	0.4	<.2	1.7	370	190	2.11	1.54	1.74	2.99	39.14

App. 2 Analytical Results of Rock-Chip Samples

【Core Samples】

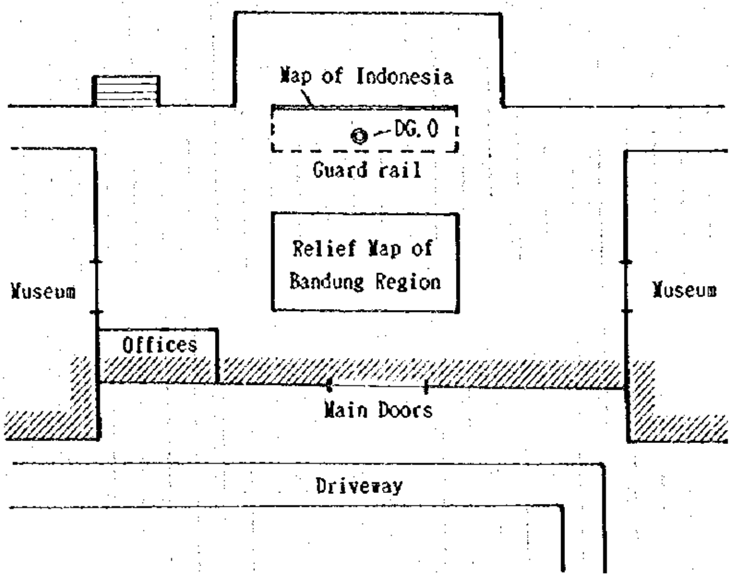
Sample No.	Au ppb	Ag ppm	Cu ppm	Pb ppm	Zn ppm	As ppm	Sb ppm	Fe %	Mn ppm	Ba ppm	CaO %	K_2O %	MgO %	Na_2O %	Al %
611	<1	0.02	18.8	4	76	<.2	<.2	2.6	710	190	1.88	2.04	3.98	2.5	57.88
612	<1	<.02	16.8	2.5	45	0.2	<.2	1.6	340	140	1.96	2.45	3.12	3.09	52.45
613	1	0.02	12.2	3.5	36	<.2	<.2	1.2	300	240	1.32	3.71	1.74	2.61	58.10
614	<1	0.08	33.6	20.5	106	9.4	<.2	1.7	500	190	1.24	2.87	4.15	2.04	68.16
615	<1	<.02	7.8	1	34	<.2	<.2	1.4	320	220	1.73	1.93	1.97	3.44	43.00
616	<1	<.02	7	1.5	27	<.2	<.2	1.3	190	120	1.79	0.67	1.43	3.64	27.89
617	<1	0.02	20	1	112	1.4	<.2	2	1000	220	3.9	2.29	1.93	3.74	55.58
618	<1	0.06	2.2	1.5	86	0.4	<.2	1.5	840	110	0.56	1.91	2.55	2.88	56.46
619	1	<.02	8.2	2	79	0.6	<.2	3.3	760	150	2.29	2.66	3.51	2.96	54.03
620	1	0.04	18.2	5	60	<.2	<.2	3.2	1300	280	10.81	1.45	3.24	2.86	25.54
702	9	0.12	52	73.5	710	5.4	<.2	4.5	880	80	0.43	1.32	2.56	0.7	77.45
704	<1	0.02	87.6	3	100	2	<.2	5.3	430	20	2.96	0.32	5.68	1.77	55.92
705	<1	0.02	30.4	3	76	1.8	<.2	4.6	540	40	3.89	0.57	4.21	2.02	44.71
706	<1	0.02	21.8	3.5	67	1.4	<.2	4.6	500	50	4.19	0.66	3.77	2.9	38.45
707	<1	<.02	17.2	2.5	83	0.8	<.2	5.7	570	60	3.54	0.93	4.32	3.31	43.39
708	<1	<.02	19.8	2	60	0.8	<.2	4.5	770	70	5.44	1.01	1.52	2.37	24.47
712	2	<.02	5.8	3.5	38	0.6	<.2	1.8	280	70	3.02	1.59	1.39	2.65	34.45
713	<1	0.02	10.8	4	36	<.2	<.2	1.7	430	50	0.7	1.62	3.37	1.1	73.49
714	<1	0.04	8.2	3	41	1.2	<.2	1.4	300	80	1.45	2.68	3.39	0.96	71.58
715	<1	0.14	4.2	5	84	5.6	<.2	2	360	70	1.14	0.76	2.97	3.21	46.16
717	1	0.16	4.8	7.5	78	11.2	<.2	1.6	410	90	0.87	1.36	2.99	2.24	58.31
718	<1	0.04	6.8	2	44	2.2	<.2	2.5	420	60	0.67	2.5	4.39	0.54	85.06
719	<1	0.06	10.6	3.5	58	7.6	<.2	2.1	840	140	2.98	2.09	3.55	0.59	61.24
720	<1	0.06	7.2	5.5	55	4.8	<.2	2.7	570	90	1.43	2.33	4.77	1.24	72.67
721	2	0.18	4.8	8	48	27.6	0.2	2.2	850	130	3.9	0.99	2.51	3.09	33.37
722	<1	0.02	4.6	2.5	55	6.6	<.2	2.1	420	80	0.71	1.43	4.48	2.33	66.03

App. 3 Descriptions of Gravity Reference Station and Gravity Base Station

GRAVITY REFERENCE STATION DESCRIPTION

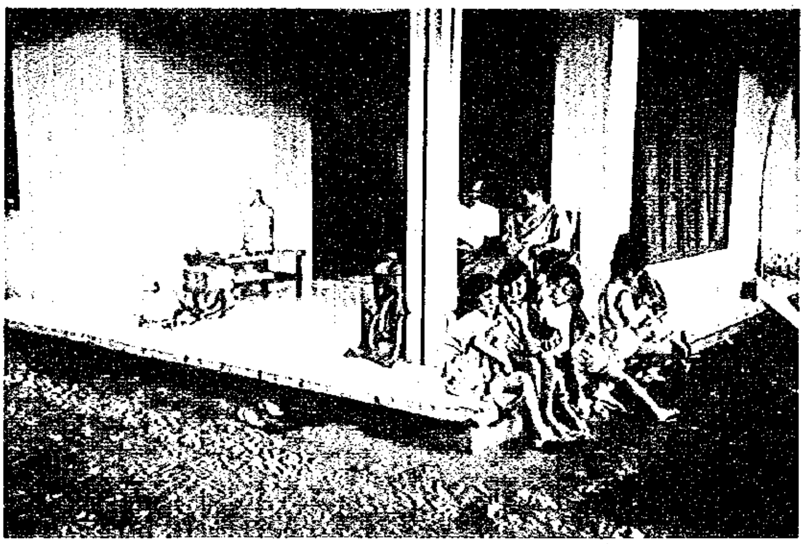
DG. 0

LOCATION	BUNDUNG	DATE OF MEASUREMENT	29/6, 31/7 1995
ELEVATION	718.0m	GRAVITY VALUE	977,976.38mgal
LATITUDE	6°53.90'S	LONGITUDE	107°37 .90'E

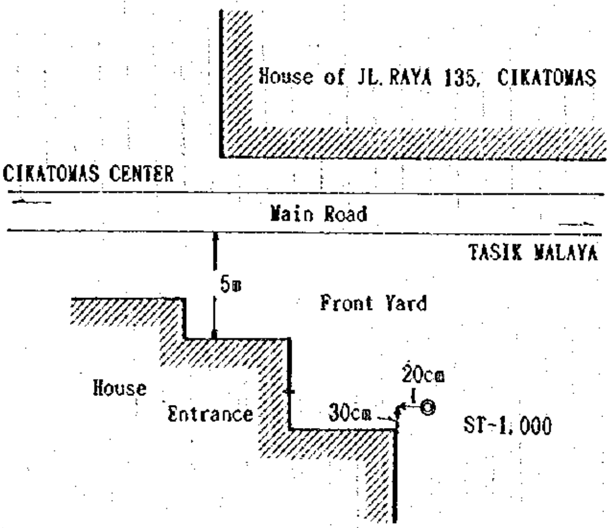


GRAVITY BASE STATION DESCRIPTION

No. 1,000



LOCATION	JL. RAYA 135, CIKATOMAS	DATE OF MEASUREMENT	5/6/1995
ELEVATION	252.6m	GRAVITY VALUE	978,192.43mgal
LATITUDE	7°37.11'S	LONGITUDE	108°15 .42'E



App. 4 Method of Data Processing for Gravity Survey

Data Processing

Data processing for gravity survey largely consists of the following two parts.

- Calculation of gravity values from the dial readings (gravity calculation).
- Calculation of Bouguer anomalies (gravity reduction).

These are processed on the basis of the data files prepared for each station.

(1) Preparation of original data files

The original data file contains; station number, date and time of measurement, gravimeter dial reading, instrument height, latitude, longitude, elevation, terrain correction of "neighbor", code number of gravimeter, leveling method, terrain correction of "close" which are relevant for subsequent processing. These data are stored in a floppy disc by the format of 80 figures

(2) Calculation of gravity values

In order to calculate the gravity values from the dial readings, "milligal conversion", "tidal correction", "instrument height correction" and "drift correction" are carried out.

a. Milligal conversion

This process converts the dial readings to milligal value. In the case of LaCoste gravimeters, the scale constant slightly changes with the stretching of the spring. Therefore, this conversion is carried out using the milligal constant (K) and scale constant (κ) designated for every 100 units of the reading value.

The basic equation for the conversion is as follows.

$$Vr = K + (R - R_0) \times \kappa \qquad (1)$$

Vr : Measured value in milligal
R : Gravimeter readings
R_0 : Under 100 omitted from R

For example, if R is 2,062.364, R_0 is 2,000, K is 2,093.73, scale constant(κ) is 1.04780. Therefore, the equation will be,

$$Vr = 2{,}093.73 + (2{,}062.364 - 2{,}000) + 1.04780 \qquad (2)$$

b. Tidal correction

The observed gravity values vary periodically within the range of 0.2 mgal because of the following two factors. The correction for these variations is the tidal correction.

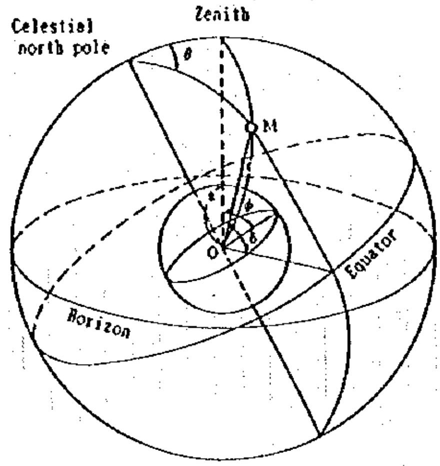
i) Periodic variation by tidal force.

ii) Very small deformation of the earth by the tidal force (earth tide).

This force is expressed by equation (3).

$$U = \frac{3}{2} \cdot G \cdot M \frac{a}{r^3} \{3(\sin^2 \delta - \frac{1}{3}) \cdot (\sin^2 \phi - \frac{1}{3}) + \sin 2\delta \cdot \sin 2\phi \cdot \cos \theta + \cos^2 \delta \cdot \cos^2 \phi \cdot \cos 2\theta\} \qquad (3)$$

U : Tidal force of celestial bodies
G : Gravitational constant
M : Mass of celestial bodies (sun, moon etc.)
a : Distance from the center of the earth to the station (earth's radius)
ϕ : Latitude of the station
r : Distance between the earth and the celestial bodies
δ : Declination of the celestial bodies (angle from the equator)
θ : Hour angle of the celestial bodies (angle between terrestrial and celestial meridian plane)



The tidal force of the sun and moon is overwhelmingly greater than that of other celestial bodies. Therefore, the correction for these two bodies will suffice for gravity prospecting.

The gravity variation caused by earth tide has the same sense as that by the tidal force and the rate of change differs somewhat by the elasticity of the rocks of the area, but it is in the order of 20 % of that caused by tidal force. Therefore, in normal tidal correction, the tidal force by the sun and moon is multiplied by 1.20 which is called the tidal constant.

c. Correction for instrument height

This correction is made in order to compensate for the difference of the height for leveling and gravity measurements.

The correction is done by using the vertical normal gravity gradient on the surface of the ellipsoid of revolution (0.3086 mgal/m) on equation (4).

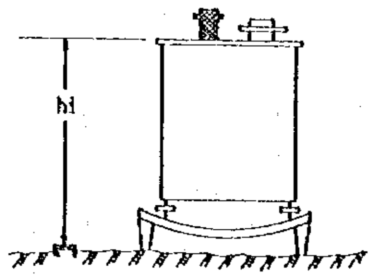
$$Vhi = \frac{2\gamma_0}{R} hi = 0.3086\ hi \qquad (4)$$

Vhi : Instrument height correction value

γ_0 : Normal gravity

R : Distance from the earth's center to the station

hi : Height from the leveled point on the earth's surface to the top of the gravimeter



d. Drift correction

The drift is the variation of reading values of the gravimeter caused by the stretching of the spring. The value of the drift is roughly proportional to time. The correction for this drift is done by time-proportional allotment of the closed error for each station. The variation of readings are caused not only by drift, but also by the changes of temperature, atmospheric pressure and mechanical shock during transportation. In practice, these changes are also corrected by this process.

e. Calculation of gravity values

All corrections for measured gravity values are expressed by equation (5).

$$Vc = Vr + Vt + Vhi + Vd \qquad (5)$$

Vc : Corrected gravity value

Vt : Tidal correction value

Vd : Drift correction value

The corrected gravity value Vc shows the relative value of gravity and not the absolute value of gravity. The gravity value of each station is calculated by obtaining the difference of the corrected gravity values between the station and the base station and then adding the gravity value of the base station to this difference. The gravity value of the base station is obtained by separate measurement between the base station and the reference station where the gravity value is known.

(3) Gravity reduction

The process of calculating the Bouguer anomaly values is called the gravity reduction and it consists of "latitude correction", "terrain correction", "atmospheric correction", "free air correction" and "Bouguer correction".

a. Latitude correction

This correction is done by subtracting the standard gravity of the earth from the gravity value. The standard gravity is given as a function of the latitude and normal gravity γ_0 of equation (6) is presently used as the standard gravity.

$$\gamma_0 = \frac{a\,\gamma_E \cos^2\phi + b\,\gamma_P \sin^2\phi}{(a^2\cos^2\phi + b^2\sin^2\phi)^{1/2}} \qquad (6)$$

a : Equatorial radius of the ellipsoid of revolution (6,378.14 km)

b : Polar radius of the ellipsoid of revolution (6,356.75 km)

γ_E : Equatorial normal gravity of the ellipsoid of revolution (978.032 gal)

γ_P : Polar normal gravity of the ellipsoid of revolution (983.218 gal)

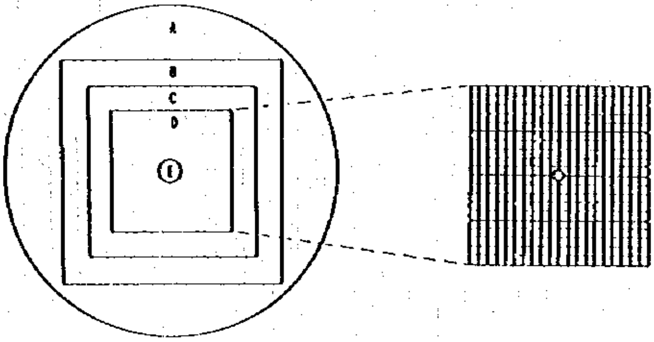
However, the following approximate formula for normal gravity of Geodetic Reference System 1967 will be used.

$$\gamma_0 = 979031.85\,(1 + 0.5278895 \sin^2\phi + 0.000023462 \sin^4\phi)\ (\text{mgal}) \qquad (7)$$

b. Terrain correction

This correction is made in order to correct the effect of the topographic relief of the vicinity of the stations on gravity values. It is done in a fashion by which high reliefs are shaved off and depressions are buried and a flat surface is assumed. The correction for both cases is positive. The correction for flat surface is 0 mgal and for areas with rugged relief, it may reaches tens of milligals.

For the present survey, the range of terrain correction was set for a radius of 60 km and the area was divided into six correction zones as follows.



Terrain Correction Concept

Items of Terrain Correction

Zone	Range of correction	Grid Interval	Correction type
A	60km radius - zone B	4 km x 4 km	Far
B	32km x 32km - zone C	1 km x 1 km	Medium
C	8 km x 8 km - zone D	250 m x 250 m	Near
D	1 km x 1 km - zone E	50 m x 50 m	Neighbor
E	20m radius from station		Close

The effect of the topography is stronger near the stations and is inversely proportional to the square of the distance from the station. Therefore, the grid is set densely closer to the station. The topographic elevation grid data which were read from 1:25,000, 1:50,000, 1:500,000 topographic maps were used for the correction of zone A-D. For zone E, topographic profile of 20 m radius from the sketched station was used for correction.

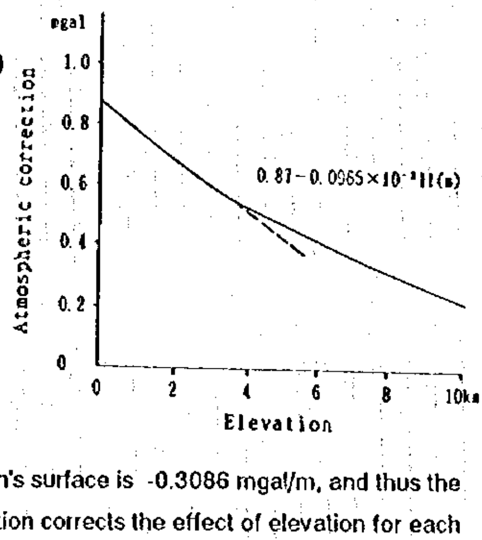
c. Atmospheric correction

This is done in order to correct the effect of the atmosphere to gravity measurement. The atmospheric pressure will be integrated to a height of 50 km above the station using the atmospheric density distribution based on standard atmospheric model. The correction value decreases exponentially with altitude. The variation of the correction values, however, can be approximated by a linear function for altitude below 3 km. And equation (8) is usually used for this correction.

$$\delta g_A = 0.87 - 0.0965 \times 10^{-3} H \quad (8)$$

δg_A : Atmospheric correction value (mgal)

H : Elevation of the station (m)



d. Free air correction

The vertical gravity gradient near the earth's surface is -0.3086 mgal/m, and thus the gravity decreases with height. The free air correction corrects the effect of elevation for each station.

$$\delta g_F = \frac{2\gamma_0 H}{R} = 0.3086\,H \qquad (9)$$

δg_F : Free air correction value

γ_0 : Normal gravity

R : Distance from the earth's center to the station

H : Elevation from the geoid

The value defined by equation (10) is called the free air anomaly.

$$\Delta g_F = g - \gamma_0 + \sum \delta gT + 0.3086H \qquad (10)$$

Δg_F : Free air anomaly

g : Gravity value

$\sum \delta g_T$: Terrain correction value

e. Bouguer correction

The difference of the gravity values measured at different elevations corresponds to the attraction of the material (rocks) which exists between the elevations of the stations. Bouguer correction eliminates this difference by setting a datum plane and eliminating material between the datum and a parallel plane passing through each station. Usually geoid is used as the datum. A homogeneous circular slab is assumed to exist between the geoid and a parallel plane including the station for the correction (equation (11)). The radius of this slab is set at 60 km, the same as the range of terrain correction.

$$\delta g_B = -2\pi G\rho(A+H-(A^2+H^2)^{1/2}) \qquad (11)$$
$$= -0.0419\rho(A+H-(A^2+H^2)^{1/2})$$

δg_B : Bouguer correction value

G : Gravitational constant

ρ : Density, average density of rocks between the geoid and earth's surface

A : Circular slab radius (60 km)

H : Station elevation

f. Bouguer anomaly values

The values obtained by correcting the gravity values for latitude,terrain, atmosphere, free air and Bouguer are called the Bouguer anomalies Δg_B and are expressed by equation (12).

$$\Delta g_B = g - \gamma_0 + \sum\delta g_T + \delta g_A + \delta g_F + \delta g_B \tag{12}$$

$\sum\delta g_T$: value of terrain correction

The Bouguer anomaly is defined at the earth's surface and the value varies by the density used for the Bouguer and terrain corrections. Thus the Bouguer anomaly contains information not only on the density structure below the geoid but also the difference of the real and the assumed density used in correction for the rocks between the geoid and the surface.

Tables of relevant data regarding this gravity survey are attached in the Appendices 5, 6 and 7. These data include; location (coordinates and elevation) of stations, gravity values, various correction values, normal gravity values and Bouguer anomalies, and Bouguer anomalies for eight different assumed density values.

App. 5 List of Gravity Values

ST.NO	Station No.
OBS.DAY	Observed date (year/month/day)
LATITUDE	Latitude
LONGITUDE	Longitude
LEVEL	Elevation (m)
ABS.G	Gravity value
E T C	G:GPS, L:Levelling
TERR.C	Terrain correction value
F.E.C	Free-air correction value
B.G.C	Bouguer correction value
NORM.G	Normal gravity value
ANOM.F	Free-air anomaly value
ANOM.B	Bouguer anomaly value

95(YEAR) ***** THE LIST OF GRAVITY SURVEY ***** INDONESIA DENSITY = 2.00 (G/CM**3) PAGE= 1

ST.NO	OBS.DAY	LATITUDE D M S	LONGITUDE D M S	LEVEL	ABS.G	ETC	*	TERR.C	F.E.C	B.G.C	NORM.G	ANOM.F	ANOM.B
1	95 7 5	-7 38 45.6	108 15 39.6	204.895	978.203593	L3 GPS	*	0.373	64.081	-17.141	978.123256	144.791	127.650
2	95 7 5	-7 38 54.6	108 15 30.6	228.735	978.199142	L3 GPS	*	0.866	71.436	-19.131	978.123315	148.129	128.997
3	95 7 6	-7 38 55.2	108 15 9.6	262.921	978.193242	L3 GPS	*	0.800	81.982	-21.985	978.123319	152.705	130.721
4	95 7 6	-7 39 1.8	108 14 46.2	276.042	978.192612	L3 GPS	*	1.978	86.030	-23.079	973.123363	157.257	134.177
5	95 7 6	-7 39 17.4	108 14 42.0	319.118	978.184826	L3 GPS	*	1.775	99.319	-26.671	978.123466	162.455	135.784
6	95 7 8	-7 39 21.6	108 14 21.6	318.788	978.185223	L3 GPS	*	1.379	99.217	-26.643	978.123494	162.326	135.682
7	95 7 6	-7 39 19.8	108 14 1.2	313.000	978.184481	L3 GPS	*	1.553	97.432	-26.161	978.123482	159.984	133.823
8	95 7 6	-7 39 24.6	108 13 49.2	325.508	978.179714	L3 GPS	*	1.556	101.290	-27.204	978.123514	159.047	131.843
9	95 7 6	-7 39 37.2	108 13 45.6	320.518	978.181862	L3 GPS	*	1.222	99.751	-26.788	978.123597	159.238	132.451
10	95 7 6	-7 39 39.0	108 13 27.0	304.216	978.181782	L3 GPS	*	1.357	94.722	-25.429	978.123609	154.252	128.823
11	95 7 6	-7 39 39.0	108 13 10.2	307.083	978.178926	L3 GPS	*	1.854	95.606	-25.668	978.123609	152.777	127.110
12	95 7 6	-7 39 49.8	108 13 4.8	289.751	978.185181	L3 GPS	*	1.202	90.259	-24.223	978.123680	152.963	128.740
13	95 7 8	-7 40 3.0	108 12 50.4	272.866	978.190255	L3 GPS	*	1.364	85.050	-22.814	978.123768	152.902	130.088
14	95 7 8	-7 40 22.2	108 13 1.2	281.363	978.191754	L3 GPS	*	0.890	87.671	-23.523	978.123895	156.421	132.898
15	95 7 8	-7 40 40.2	108 13 3.0	290.426	978.190987	L3 GPS	*	1.015	90.467	-24.279	978.124014	158.455	134.176
16	95 7 8	-7 40 55.2	108 13 9.6	282.168	978.193994	L3 GPS	*	0.963	87.920	-23.590	978.124114	158.763	135.173
17	95 7 8	-7 41 11.4	108 13 4.8	262.722	978.200446	L3 GPS	*	0.864	81.921	-21.968	978.124221	159.010	137.042
18	95 7 8	-7 41 28.2	108 13 0.6	264.950	973.200848	L3 GPS	*	0.844	82.608	-22.154	978.124333	159.967	137.813
19	95 7 8	-7 41 34.8	108 12 49.8	266.375	978.201180	L3 GPS	*	0.753	83.048	-22.273	978.124376	160.604	138.331
20	95 7 8	-7 41 51.6	108 12 40.2	255.648	978.204365	L3 GPS	*	1.045	79.738	-21.378	978.124488	160.660	139.283
21	95 7 8	-7 42 7.8	108 12 27.6	208.386	978.216154	L3 GPS	*	0.609	65.158	-17.432	978.124596	157.325	139.893
22	95 7 8	-7 42 16.8	108 12 3.0	166.022	978.229474	L3 GPS	*	0.845	52.088	-13.893	978.124656	157.752	143.859
23	95 7 8	-7 42 24.0	108 11 43.8	155.449	978.234951	L3 GPS	*	0.323	48.827	-13.010	978.124703	159.397	146.387
24	95 7 9	-7 42 36.6	108 11 33.6	152.782	978.238411	L3 GPS	*	0.310	48.004	-12.787	978.124787	161.937	149.150
25	95 7 9	-7 42 51.0	108 11 23.4	153.218	978.239917	L3 GPS	*	0.272	48.138	-12.823	978.124883	163.445	150.622
26	95 7 9	-7 42 58.8	108 11 10.2	148.878	978.242881	L3 GPS	*	0.268	46.799	-12.460	978.124935	165.013	152.553
27	95 7 9	-7 43 0.6	108 10 53.4	158.809	978.243156	L3 GPS	*	0.336	49.863	-13.291	978.124947	168.408	155.117
28	95 7 9	-7 42 57.0	108 10 30.6	161.765	978.243476	L3 GPS	*	0.647	50.775	-13.538	978.124923	169.975	156.437
29	95 7 9	-7 43 12.0	108 10 30.0	145.074	978.249539	L3 GPS	*	0.359	45.626	-12.143	978.125023	170.501	158.358
30	95 7 9	-7 43 30.0	108 10 32.4	132.538	978.252499	L3 GPS	*	0.280	41.758	-11.094	978.125143	169.394	158.300
31	95 7 9	-7 43 48.0	108 10 34.8	124.116	978.254665	L3 GPS	*	0.205	39.160	-10.390	978.125263	168.767	158.377
32	95 7 9	-7 44 6.0	108 10 41.4	109.964	978.258210	L3 GPS	*	0.312	34.794	-9.207	978.125383	167.933	158.727
33	95 7 9	-7 44 23.4	108 10 58.2	121.459	978.255710	L3 GPS	*	0.391	38.341	-10.168	978.125500	168.943	158.775
34	95 7 9	-7 44 41.4	108 10 54.0	110.992	978.259038	L3 GPS	*	0.374	35.111	-9.293	978.125620	168.903	159.611
35	95 7 9	-7 44 54.0	108 10 47.4	96.233	978.262916	L3 GPS	*	0.561	30.558	-8.058	978.125704	168.331	160.273
36	95 7 9	-7 45 7.2	108 10 39.0	70.112	978.269621	L3 GPS	*	0.662	22.500	-5.872	978.125792	166.991	161.119
37	95 7 9	-7 45 21.0	108 10 36.0	37.579	978.277673	L3 GPS	*	0.455	12.463	-3.148	978.125885	164.707	161.559
38	95 710	-7 45 34.2	108 10 33.6	13.094	978.283405	L3 GPS	*	0.345	4.910	-1.097	978.125973	162.687	161.590
39	95 710	-7 45 46.8	108 10 22.2	14.592	978.283561	L3 GPS	*	0.427	5.372	-1.223	978.126058	163.302	162.079
40	95 710	-7 41 52.2	108 13 34.2	237.932	978.204336	L3 GPS	*	1.016	74.273	-19.899	978.124492	155.133	135.234
41	95 710	-7 41 43.2	108 13 13.8	267.445	978.198673	L3 GPS	*	1.064	83.378	-22.362	978.124432	158.683	136.321
42	95 7 5	-7 45 57.0	108 10 15.6	17.862	978.283422	L1 GPS	*	0.243	6.380	-1.497	978.126126	163.920	162.423
43	95 719	-7 45 57.0	108 9 57.0	21.785	978.283266	L1 L	*	0.195	7.591	-1.825	978.126126	164.926	163.101
44	95 719	-7 46 16.2	108 10 0.	25.105	978.281763	L1 L	*	0.230	8.615	-2.103	978.126255	164.353	162.250
45	95 719	-7 46 28.8	108 9 48.0	17.360	978.282511	L1 L	*	0.231	6.226	-1.455	978.126339	162.629	161.174
46	95 719	-7 46 36.0	108 9 30.0	15.044	978.283857	L1 L	*	0.237	5.511	-1.261	978.126388	163.218	161.957
47	95 719	-7 46 31.2	108 9 12.0	11.289	978.285948	L1 L	*	0.188	4.353	-0.946	978.126355	164.133	163.187
48	95 719	-7 46 22.2	108 9 0.	11.946	978.288974	L1 L	*	0.272	4.555	-1.001	978.126295	167.506	166.505
49	95 719	-7 46 27.0	108 8 43.8	16.744	978.288670	L1 L	*	0.189	6.036	-1.403	978.126327	168.568	167.165
50	95 719	-7 46 28.2	108 8 30.0	9.291	978.289593	L1 L	*	0.197	3.736	-0.779	978.126335	167.191	166.413

95(YEAR) ***** THE LIST OF GRAVITY SURVEY ***** INDONESIA DENSITY = 2.00 (G/CM**3) PAGE= 2

ST.NO	OBS.DAY	LATITUDE D M S	LONGITUDE D M S	LEVEL	ABS.G	ETC	*	TERR.C	F.E.C	B.G.C	NORM.G	ANOM.F	ANOM.B
51	95 719	-7 46 7.8	108 10 28.8	15.333	978.284743	L1 L	*	0.243	5.600	-1.285	978.126198	164.388	163.104
52	95 719	-7 46 16.2	108 10 43.2	9.793	978.284194	L1 L	*	0.222	3.891	-0.821	978.126255	162.052	161.231
53	95 719	-7 46 25.8	108 10 55.2	8.485	978.284439	L1 L	*	0.238	3.488	-0.711	978.126319	161.846	161.135
54	95 719	-7 46 43.2	108 10 58.2	9.759	978.284970	L1 L	*	0.412	3.881	-0.818	978.126436	162.827	162.009
55	95 719	-7 46 58.8	108 10 55.8	6.998	978.286143	L1 L	*	0.178	3.029	-0.586	978.126541	162.810	162.223
56	95 719	-7 47 15.0	108 10 55.8	5.676	978.287010	L1 L	*	0.160	2.621	-0.476	978.126650	163.142	162.667
57	95 719	-7 47 30.0	108 11 1.8	6.483	978.287168	L1 L	*	0.136	2.870	-0.543	978.126750	163.423	162.880
58	95 719	-7 47 33.0	108 11 18.0	6.602	978.286825	L1 L	*	0.135	2.907	-0.553	978.126771	163.106	162.553
59	95 719	-7 47 34.8	108 11 34.8	6.548	978.286394	L1 L	*	0.133	2.890	-0.549	978.126783	162.634	162.085
60	95 719	-7 47 37.8	108 11 49.8	7.112	978.285165	L1 L	*	0.129	3.064	-0.596	978.126803	161.556	160.960
61	95 719	-7 47 40.2	108 12 6.0	5.164	978.284307	L1 L	*	0.129	2.463	-0.433	978.126819	160.080	159.648
62	95 719	-7 47 43.2	108 12 22.8	5.196	978.283320	L1 L	*	0.126	2.473	-0.435	978.126839	159.080	158.645
63	95 719	-7 47 46.2	108 12 39.0	6.229	978.282514	L1 L	*	0.133	2.792	-0.522	978.126859	158.579	158.057
64	95 719	-7 47 48.0	108 12 55.2	6.332	978.281743	L1 L	*	0.141	2.823	-0.531	978.126872	157.836	157.305
65	95 719	-7 47 51.0	108 13 12.0	5.945	978.280776	L1 L	*	0.130	2.704	-0.498	978.126892	156.719	156.220
66	95 719	-7 47 54.0	108 13 28.8	5.661	978.280164	L1 L	*	0.130	2.616	-0.474	978.126912	155.998	155.524
67	95 719	-7 47 55.8	108 13 48.0	5.940	978.279192	L1 L	*	0.116	2.703	-0.498	978.126924	155.086	154.588
68	95 719	-7 47 58.8	108 14 10.2	5.936	978.278780	L1 L	*	0.132	2.701	-0.497	978.126944	154.669	154.171
69	95 719	-7 47 58.2	108 14 19.8	3.945	978.279874	L1 L	*	0.175	2.087	-0.331	978.126940	155.195	154.865
70	95 719	-7 47 55.2	108 14 37.2	6.662	978.279692	L1 L	*	0.201	2.925	-0.558	978.126920	155.898	155.340
71	95 719	-7 47 51.0	108 14 55.2	5.430	978.280068	L1 L	*	0.154	2.545	-0.455	978.126892	155.876	155.421
72	95 719	-7 47 52.2	108 15 10.2	3.150	978.281572	L1 L	*	0.116	1.842	-0.264	978.126900	156.630	156.366
73	95 719	-7 47 55.2	108 15 25.8	5.739	978.283462	L1 L	*	0.100	2.641	-0.481	978.126920	159.282	158.801
74	95 719	-7 47 55.2	108 15 42.0	4.758	978.284842	L1 L	*	0.111	2.338	-0.399	978.126920	160.371	159.972
75	95 717	-7 46 49.8	108 13 8.4	15.306	978.276891	L1 GPS	*	0.146	5.592	-1.282	978.126480	156.149	154.866
76	95 7 5	-7 47 57.0	108 16 1.8	5.198	978.283742	L1 GPS	*	0.162	2.474	-0.436	978.126932	159.445	159.009
77	95 719	-7 48 1.8	108 16 15.0	4.606	978.283599	L1 L	*	0.111	2.291	-0.386	978.126964	159.036	158.650
78	95 719	-7 48 4.8	108 16 31.8	3.506	978.283688	L1 L	*	0.125	1.952	-0.294	978.126985	158.779	158.486
79	95 719	-7 48 15.0	108 16 45.0	6.100	978.283418	L1 L	*	0.095	2.752	-0.511	978.127053	159.212	158.700
80	95 719	-7 48 21.0	108 16 58.8	6.682	978.284151	L1 L	*	0.093	2.931	-0.560	978.127094	160.081	159.521
81	95 719	-7 48 25.2	108 17 15.0	6.848	978.285239	L1 L	*	0.102	2.983	-0.574	978.127122	161.202	160.628
82	95 712	-7 48 28.2	108 17 28.8	7.761	978.286191	L1 L	*	0.101	3.264	-0.650	978.127142	162.414	161.764
83	95 712	-7 48 31.2	108 17 46.2	4.203	978.286743	L1 L	*	0.239	2.167	-0.352	978.127162	161.986	161.633
84	95 712	-7 48 37.8	108 18 1.2	15.079	978.284042	L1 L	*	0.151	5.522	-1.263	978.127207	162.507	161.244
85	95 712	-7 48 37.2	108 18 16.8	4.398	978.286641	L1 L	*	0.129	2.227	-0.369	978.127203	161.794	161.425
86	95 712	-7 48 39.0	108 18 34.2	4.877	978.286910	L1 L	*	0.136	2.375	-0.409	978.127215	162.206	161.797
87	95 712	-7 48 42.0	108 18 49.2	4.719	978.288166	L1 L	*	0.105	2.326	-0.395	978.127235	163.361	162.966
88	95 712	-7 48 46.8	108 19 6.0	4.746	978.289166	L1 L	*	0.104	2.334	-0.398	978.127268	164.336	163.939
89	95 712	-7 48 51.0	108 19 22.2	2.799	978.289151	L1 L	*	0.216	1.734	-0.235	978.127296	163.805	163.570
90	95 7 9	-7 39 45.6	108 19 27.6	191.666	978.199228	L1 GPS	*	0.274	60.000	-16.036	978.123652	135.849	119.813
91	95 7 9	-7 39 28.2	108 19 28.2	187.056	978.199544	L1 GPS	*	0.244	58.577	-15.651	978.123537	134.828	119.177
92	95 7 9	-7 39 12.6	108 19 18.0	189.701	978.199030	L1 GPS	*	0.322	59.393	-15.872	978.123434	135.312	119.440
93	95 7 9	-7 39 7.8	108 19 6.0	178.267	978.202338	L1 GPS	*	0.225	55.866	-14.917	978.123402	135.026	120.109
94	95 7 9	-7 39 4.8	108 18 45.0	174.005	978.203411	L1 GPS	*	0.295	54.551	-14.560	978.123383	134.875	120.315
95	95 7 9	-7 39 1.3	108 18 28.8	183.719	978.202483	L1 GPS	*	0.208	57.548	-15.372	978.123363	136.876	121.504
96	95 7 9	-7 38 45.0	108 18 22.8	180.935	978.204335	L1 GPS	*	0.202	56.689	-15.139	978.123252	137.974	122.834
97	95 7 9	-7 39 12.6	108 18 21.6	188.257	978.201499	L1 GPS	*	0.235	58.948	-15.751	978.123434	137.248	121.497
98	95 711	-7 40 32.4	108 15 54.6	177.521	978.215874	L1 GPS	*	0.379	55.636	-14.854	978.123962	147.927	133.072
99	95 711	-7 39 27.6	108 18 4.8	200.508	978.198781	L1 GPS	*	0.296	62.727	-16.774	978.123533	138.272	121.497
100	95 711	-7 39 49.2	108 17 33.0	168.931	978.208470	L1 GPS	*	0.261	52.986	-14.136	978.123676	138.041	123.905

ST.NO	OBS.DAY	LATITUDE D M S	LONGITUDE D M S	LEVEL	ABS.G	ETC	*	TERR.C	F.E.C	B.G.C	NORM.G	ANOM.F	ANOM.B
101	95 711	-7 39 59.4	108 17 49.8	159.636	978.209751	L1 GPS	*	0.350	50.118	-13.360	978.123744	136.475	123.116
102	95 7 9	-7 40 19.2	108 17 52.2	146.699	978.213448	L1 GPS	*	0.298	46.127	-12.278	978.123875	135.998	123.720
103	95 711	-7 40 39.0	108 17 42.6	198.013	978.202466	L1 GPS	*	0.892	61.958	-16.566	978.124006	141.310	124.744
104	95 711	-7 40 43.2	108 17 26.4	195.640	978.204677	L1 GPS	*	0.916	61.226	-16.368	978.124034	142.784	126.417
106	95 7 6	-7 41 22.8	108 17 23.4	145.054	978.219050	L1 GPS	*	0.303	45.620	-12.141	978.124297	140.676	128.535
107	95 7 6	-7 41 36.6	108 17 16.8	141.382	978.221348	L1 GPS	*	0.270	44.487	-11.834	978.124388	141.717	129.883
108	95 7 6	-7 41 50.4	108 17 13.2	145.700	978.221874	L1 GPS	*	0.233	45.819	-12.195	978.124480	143.446	131.251
109	95 7 6	-7 41 58.2	108 16 58.8	148.099	978.222562	L1 GPS	*	0.244	46.559	-12.395	978.124532	144.834	132.439
110	95 7 6	-7 41 54.6	108 16 41.4	154.479	978.221102	L1 GPS	*	0.233	48.527	-12.929	978.124508	145.355	132.426
111	95 7 6	-7 41 59.4	108 16 27.6	159.495	978.220740	L1 GPS	*	0.230	50.075	-13.348	978.124540	146.504	133.156
112	95 7 6	-7 42 12.0	108 16 9.0	205.773	978.211069	L1 GPS	*	0.534	64.352	-17.214	978.124624	151.331	134.117
113	95 7 6	-7 42 26.4	108 16 15.0	146.314	978.226581	L1 GPS	*	0.389	46.008	-12.246	978.124719	148.258	136.012
114	95 7 8	-7 42 40.8	108 16 8.4	133.643	978.231357	L1 GPS	*	0.293	42.099	-11.187	978.124815	148.934	137.747
115	95 7 8	-7 42 55.8	108 16 12.6	131.489	978.235205	L1 GPS	*	0.280	41.435	-11.007	978.124915	152.005	140.998
116	95 7 8	-7 43 11.4	108 16 24.6	127.870	978.237728	L1 GPS	*	0.185	40.318	-10.704	978.125019	153.213	142.509
117	95 7 8	-7 43 36.6	108 16 24.0	108.624	978.244093	L1 GPS	*	0.232	34.381	-9.094	978.125187	153.519	144.424
118	95 7 8	-7 43 54.0	108 16 31.2	98.130	978.248208	L1 GPS	*	0.267	31.143	-8.217	978.125303	154.316	146.099
119	95 7 8	-7 44 7.2	108 16 39.6	99.353	978.249670	L1 GPS	*	0.244	31.521	-8.319	978.125391	156.043	147.724
120	95 7 8	-7 44 17.4	108 16 51.0	101.482	978.251388	L1 GPS	*	0.136	32.178	-8.497	978.125459	158.242	149.745
122	95 7 8	-7 44 45.6	108 17 6.0	94.153	978.256635	L1 GPS	*	0.129	29.917	-7.884	978.125648	161.033	153.149
123	95 7 8	-7 45 4.8	108 17 5.4	94.944	978.257743	L1 GPS	*	0.132	30.161	-7.950	978.125776	162.259	154.309
124	95 7 8	-7 45 23.4	108 16 52.8	96.525	978.258565	L1 GPS	*	0.179	30.648	-8.082	978.125901	163.491	155.409
125	95 7 8	-7 45 32.4	108 16 32.4	77.259	978.261488	L1 GPS	*	0.198	24.705	-6.470	978.125961	160.430	153.960
126	95 7 8	-7 45 50.4	108 16 28.8	80.949	978.260287	L1 GPS	*	0.187	25.843	-6.779	978.126082	160.236	153.457
127	95 7 8	-7 46 4.8	108 16 37.8	58.802	978.266291	L1 GPS	*	0.379	19.011	-4.925	978.126178	159.503	154.578
128	95 7 8	-7 46 16.8	108 16 49.8	9.753	978.278365	L1 GPS	*	0.426	3.880	-0.818	978.126259	156.413	155.596
129	95 7 8	-7 46 31.2	108 16 43.8	8.032	978.278956	L1 GPS	*	0.290	3.363	-0.677	978.126355	156.253	155.576
130	95 7 8	-7 46 48.0	108 16 42.0	9.577	978.280452	L1 GPS	*	0.256	3.825	-0.802	978.126468	158.065	157.262
131	95 7 9	-7 40 33.6	108 18 6.6	143.165	978.214519	L1 GPS	*	0.346	45.037	-11.983	978.123970	135.932	123.949
132	95 710	-7 47 1.8	108 16 46.8	7.295	978.281582	L1 GPS	*	0.210	3.121	-0.611	978.126561	158.352	157.741
133	95 710	-7 47 15.6	108 16 40.8	8.380	978.281265	L1 GPS	*	0.313	3.455	-0.702	978.126654	158.380	157.678
134	95 710	-7 47 32.4	108 16 30.6	3.266	978.282728	L1 GPS	*	0.237	1.878	-0.274	978.126767	158.076	157.802
135	95 710	-7 47 51.0	108 16 22.8	3.908	978.283152	L1 GPS	*	0.194	2.076	-0.327	978.126892	158.529	158.202
136	95 716	-7 38 47.4	108 9 3.6	244.093	978.202872	L3 GPS	*	0.313	76.174	-20.413	978.123268	156.090	135.677
137	95 716	-7 38 54.0	108 9 21.0	230.546	978.207066	L3 GPS	*	0.282	71.994	-19.283	978.123311	156.030	136.748
138	95 715	-7 39 40.8	108 9 3.0	233.053	978.210948	L3 GPS	*	0.364	72.768	-19.492	978.123621	160.459	140.967
139	95 715	-7 39 33.0	108 8 42.0	228.749	978.213067	L3 GPS	*	0.848	71.440	-19.133	978.123569	161.785	142.653
140	95 715	-7 39 54.6	108 8 44.4	225.289	978.216796	L3 GPS	*	0.716	70.372	-18.844	978.123712	164.173	145.329
141	95 715	-7 40 10.8	108 8 49.8	221.895	978.219752	L3 GPS	*	0.451	69.325	-18.560	978.123819	165.710	147.149
142	95 715	-7 40 18.6	108 8 30.6	220.137	978.222888	L3 GPS	*	0.549	68.783	-18.414	978.123871	168.349	149.935
143	95 715	-7 40 14.4	108 9 12.6	234.004	978.214194	L3 GPS	*	1.051	73.061	-19.571	978.123843	164.463	144.892
144	95 716	-7 39 1.8	108 9 41.4	248.324	978.201141	L3 GPS	*	0.307	77.479	-20.766	978.123363	155.564	134.797
145	95 715	-7 40 12.0	108 9 34.2	201.489	978.218308	L3 GPS	*	1.939	63.030	-16.856	978.123827	159.450	142.593
146	95 716	-7 38 58.8	108 10 7.2	242.786	978.199794	L3 GPS	*	0.300	75.770	-20.304	978.123343	152.520	132.216
147	95 716	-7 38 46.8	108 10 21.6	238.200	978.198581	L3 GPS	*	0.336	74.356	-19.922	978.123264	150.008	130.087
148	95 716	-7 38 39.6	108 10 29.4	251.077	978.194580	L3 GPS	*	0.524	78.328	-20.996	978.123216	150.216	129.220
149	95 716	-7 39 0.	108 10 25.2	242.642	978.198837	L3 GPS	*	0.319	75.726	-20.292	978.123351	151.531	131.239
150	95 716	-7 39 19.2	108 10 22.2	231.996	978.203122	L3 GPS	*	0.341	72.442	-19.404	978.123478	152.426	133.022
151	95 716	-7 39 39.6	108 10 21.6	213.311	978.209796	L3 GPS	*	0.528	66.677	-17.844	978.123613	153.389	135.545

ST.NO	OBS.DAY	LATITUDE D M S	LONGITUDE D M S	LEVEL	ABS.G	ETC	*	TERR.C	F.E.C	B.G.C	NORM.G	ANOM.F	ANOM.B
152	95 716	-7 39 35.4	108 10 43.2	227.564	978.203806	L3 GPS	*	0.548	71.074	-19.034	978.123585	151.843	132.810
153	95 716	-7 39 13.8	108 11 4.8	243.249	978.196691	L3 GPS	*	0.437	75.913	-20.343	978.123442	149.599	129.256
154	95 716	-7 38 52.2	108 11 15.6	244.677	978.194267	L3 GPS	*	0.435	76.354	-20.462	978.123299	147.756	127.294
155	95 716	-7 38 57.0	108 11 52.2	246.224	978.193251	L3 GPS	*	0.774	76.831	-20.591	978.123331	147.525	126.933
156	95 711	-7 42 3.0	108 11 34.8	161.183	978.230528	L3 GPS	*	0.451	50.596	-13.489	978.124564	157.011	143.522
157	95 711	-7 41 50.4	108 11 13.2	165.327	978.230213	L3 GPS	*	0.380	51.874	-13.835	978.124480	157.987	144.152
158	95 711	-7 41 29.4	108 11 16.2	175.798	978.223275	L3 GPS	*	0.701	55.104	-14.710	978.124340	154.740	140.030
159	95 711	-7 41 13.8	108 11 3.0	247.694	978.205107	L3 GPS	*	0.838	77.284	-20.714	978.124237	158.993	138.279
160	95 713	-7 40 46.8	108 11 15.6	196.657	978.212723	L3 GPS	*	0.396	61.539	-16.453	978.124058	150.601	134.148
161	95 711	-7 41 0.	108 10 29.4	204.869	978.220774	L3 GPS	*	0.500	64.073	-17.139	978.124145	161.202	144.063
162	95 711	-7 41 17.4	108 10 20.4	184.145	978.228653	L3 GPS	*	0.278	57.679	-15.408	978.124261	162.349	146.942
163	95 711	-7 41 30.0	108 10 6.0	187.572	978.230281	L3 GPS	*	0.314	58.737	-15.694	978.124344	164.987	149.293
164	95 711	-7 41 47.4	108 10 25.8	181.755	978.230210	L3 GPS	*	0.714	56.942	-15.208	978.124460	163.405	148.197
165	95 721	-7 44 25.2	108 15 45.0	69.870	978.255930	L3 GPS	*	0.524	22.425	-5.852	978.125512	153.368	147.516
166	95 711	-7 42 4.2	108 10 22.2	174.262	978.233989	L3 GPS	*	0.406	54.630	-14.582	978.124572	164.453	149.871
167	95 711	-7 42 11.4	108 10 32.4	167.369	978.235731	L3 GPS	*	0.257	52.504	-14.006	978.124620	163.872	149.866
168	95 711	-7 42 34.8	108 10 30.6	156.041	978.242317	L3 GPS	*	0.566	49.009	-13.059	978.124775	167.116	154.057
169	95 713	-7 40 48.6	108 10 53.4	201.835	978.214971	L3 GPS	*	0.394	63.137	-16.885	978.124070	154.432	137.547
170	95 721	-7 42 1.2	108 9 46.8	216.667	978.229253	L1 GPS	*	0.943	67.713	-18.124	978.124552	173.358	155.234
171	95 721	-7 44 6.6	108 9 8.4	109.505	978.261743	L1 GPS	*	0.552	34.653	-9.168	978.125387	171.560	162.392
172	95 712	-7 43 43.8	108 10 15.0	125.388	978.255474	L3 GPS	*	0.230	39.553	-10.497	978.125235	170.021	159.525
173	95 712	-7 43 37.8	108 9 55.2	125.081	978.255400	L3 GPS	*	0.250	39.458	-10.471	978.125195	169.913	159.442
174	95 712	-7 43 45.0	108 9 40.2	128.372	978.256737	L3 GPS	*	0.299	40.473	-10.746	978.125243	172.266	161.520
175	95 712	-7 43 35.4	108 9 21.6	107.046	978.258369	L3 GPS	*	0.396	33.894	-8.962	978.125179	167.980	159.018
176	95 712	-7 43 21.0	108 9 10.8	121.479	978.255365	L3 GPS	*	0.403	38.347	-10.170	978.125083	169.031	158.862
177	95 712	-7 43 3.6	108 8 58.2	27.255	978.275316	L3 GPS	*	0.995	9.278	-2.283	978.124967	160.623	158.339
178	95 719	-7 45 6.0	108 8 27.6	136.913	978.258095	L1 GPS	*	1.213	43.108	-11.460	978.125784	176.631	165.171
179	95 712	-7 44 30.0	108 10 3.0	117.487	978.258588	L3 GPS	*	0.344	37.115	-9.836	978.125544	170.504	160.668
180	95 721	-7 43 57.0	108 9 21.0	113.874	978.260236	L1 GPS	*	0.571	36.001	-9.534	978.125323	171.484	161.951
181	95 718	-7 44 52.2	108 9 55.8	102.441	978.263070	L1 GPS	*	0.490	32.473	-8.577	978.125692	170.342	161.765
182	25 719	-7 43 3.0	108 8 34.8	127.896	978.253861	L1 GPS	*	1.467	40.326	-10.706	978.124963	170.691	159.984
183	95 718	-7 44 27.6	108 9 30.0	83.988	978.266334	L1 GPS	*	0.845	26.781	-7.033	978.125528	168.432	161.398
184	95 719	-7 45 16.2	108 9 22.2	35.328	978.281020	L1 L	*	0.411	11.769	-2.960	978.125853	167.347	164.387
185	95 719	-7 46 7.2	108 9 9.0	39.763	978.282019	L1 L	*	0.405	13.137	-3.331	978.126194	169.367	166.036
186	95 719	-7 45 58.8	108 9 25.8	17.066	978.285982	L1 L	*	0.217	6.135	-1.430	978.126138	166.196	164.766
187	95 719	-7 45 39.0	108 9 34.2	18.727	978.283202	L1 L	*	0.256	6.647	-1.569	978.126005	164.100	162.531
188	95 7 5	-7 38 58.2	108 15 45.6	236.463	978.197366	L1 GPS	*	0.404	73.820	-19.777	978.123339	148.251	128.474
189	95 7 5	-7 39 16.2	108 15 55.8	240.191	978.196953	L1 GPS	*	0.603	74.970	-20.083	978.123458	149.068	128.980
190	95 7 6	-7 39 27.6	108 16 11.4	191.587	978.206860	L1 GPS	*	0.313	59.975	-16.029	978.123533	143.615	127.586
191	95 7 6	-7 39 42.0	108 16 17.4	181.822	978.209034	L1 GPS	*	0.253	56.963	-15.214	978.123629	142.621	127.407
192	95 7 6	-7 39 55.8	108 16 18.0	185.322	978.208732	L1 GPS	*	0.252	58.042	-15.506	978.123720	143.307	127.801
193	95 7 6	-7 40 14.4	108 16 18.6	180.230	978.210245	L1 GPS	*	0.514	56.472	-15.081	978.123843	143.387	128.306
194	95 7 6	-7 40 33.0	108 16 16.8	176.114	978.211684	L1 GPS	*	0.268	55.202	-14.737	978.123966	143.188	128.451
195	95 7 6	-7 40 49.8	108 16 12.0	175.116	978.213894	L1 GPS	*	0.415	54.894	-14.653	978.124078	145.125	130.471
196	95 7 6	-7 41 2.4	108 16 4.8	194.950	978.211416	L1 GPS	*	0.603	61.013	-16.310	978.124161	148.871	132.560
197	95 7 6	-7 41 19.8	108 15 54.6	211.817	978.207241	L1 GPS	*	0.552	66.216	-17.719	978.124277	149.733	132.014
198	95 7 6	-7 41 39.6	108 15 54.0	183.947	978.213823	L1 GPS	*	0.237	57.618	-15.391	978.124408	147.270	131.879
199	95 7 6	-7 41 53.4	108 16 1.2	162.842	978.219677	L1 GPS	*	0.239	51.107	-13.628	978.124500	146.524	132.896
200	95 711	-7 40 50.4	108 15 45.0	178.056	978.215660	L1 GPS	*	0.515	55.801	-14.899	978.124082	147.895	132.996
201	95 711	-7 40 53.4	108 15 19.8	228.770	978.202309	L1 GPS	*	1.083	71.446	-19.134	978.124102	150.736	131.602

95(YEAR) ***** THE LIST OF GRAVITY SURVEY ***** INDONESIA DENSITY = 2.00 (G/CM**3) PAGE= 5

ST.NO	OBS.DAY	LATITUDE D	M	S	LONGITUDE D	M	S	LEVEL	ABS.G	ETC	*	TERR.C	F.E.C	B.G.C	NORM.G	ANOM.F	ANOM.B
202	95 717	-7	42	7.2	108	15	19.8	202.091	978.211384	L3 GPS	*	0.560	63.216	-16.907	978.124592	150.569	133.662
203	95 717	-7	41	49.2	108	14	22.8	106.613	978.231208	L3 GPS	*	1.644	33.760	-8.926	978.124472	142.147	133.214
204	95 717	-7	42	15.0	108	14	37.8	155.871	978.221722	L3 GPS	*	1.079	48.957	-13.045	978.124644	147.114	134.069
205	95 717	-7	42	45.0	108	14	45.0	213.816	978.211599	L3 GPS	*	0.924	66.833	-17.886	978.124843	154.513	136.627
206	95 717	-7	43	31.2	108	15	9.6	166.526	978.230685	L3 GPS	*	0.814	52.244	-13.936	978.125151	158.592	144.657
207	95 717	-7	41	22.8	108	15	20.4	242.073	978.199039	L3 GPS	*	0.888	75.550	-20.245	978.124297	151.181	130.936
208	95 717	-7	41	9.0	108	14	48.0	218.891	978.205242	L3 GPS	*	1.450	68.399	-18.310	978.124205	150.886	132.576
209	96 713	-7	40	31.2	108	10	57.6	207.801	978.211741	L3 GPS	*	0.895	64.977	-17.384	978.123954	153.659	136.276
210	95 713	-7	40	36.6	108	10	13.8	131.058	978.234807	L3 GPS	*	2.453	41.302	-10.971	978.123990	154.571	143.600
211	95 713	-7	40	35.4	108	10	29.4	138.870	978.231256	L3 GPS	*	1.464	43.712	-11.624	978.123982	152.450	140.826
212	95 719	-7	45	15.0	108	16	12.0	64.492	978.261261	L3 GPS	*	0.185	20.766	-5.402	978.125845	156.366	150.965
213	95 719	-7	45	42.0	108	16	9.6	67.426	978.260467	L3 GPS	*	0.159	21.671	-5.647	978.126025	156.271	150.624
214	95 719	-7	45	49.2	108	15	50.4	63.750	978.258820	L3 GPS	*	0.312	20.537	-5.339	978.126074	153.595	148.255
215	95 719	-7	46	0.6	108	15	29.4	38.425	978.263918	L3 GPS	*	0.273	12.724	-3.219	978.126150	150.765	147.546
216	95 719	-7	45	55.2	108	15	6.0	27.780	978.265221	L3 GPS	*	0.200	9.440	-2.327	978.126114	148.748	146.421
217	95 712	-7	47	37.2	108	15	34.8	5.739	978.283093	L1 L	*	0.142	2.641	-0.481	978.126799	159.077	158.596
218	95 712	-7	47	16.2	108	15	40.8	4.229	978.280610	L1 L	*	0.200	2.175	-0.354	978.126658	156.328	155.973
219	95 712	-7	47	3.0	108	15	25.2	10.267	978.278688	L1 L	*	0.164	4.037	-0.860	978.126569	156.320	155.460
220	95 712	-7	46	40.2	108	15	22.2	40.128	978.267040	L1 L	*	0.372	13.250	-3.362	978.126416	154.246	150.885
221	95 712	-7	46	37.8	108	14	58.2	10.122	978.275400	L1 L	*	0.228	3.993	-0.848	978.126400	153.221	152.373
222	95 712	-7	46	33.0	108	14	36.0	10.948	978.273278	L1 L	*	0.186	4.247	-0.917	978.126367	151.344	150.427
223	95 712	-7	46	28.2	108	14	13.8	10.999	978.269389	L1 L	*	0.206	4.263	-0.922	978.126335	147.523	146.601
224	95 712	-7	46	22.8	108	13	58.2	13.767	978.269253	L1 L	*	0.260	5.117	-1.154	978.126299	148.331	147.178
225	95 712	-7	46	43.2	108	13	55.2	13.662	978.274370	L1 L	*	0.147	5.085	-1.145	978.126436	153.165	152.021
226	95 712	-7	47	4.8	108	13	54.0	10.071	978.276364	L1 L	*	0.133	3.977	-0.844	978.126581	153.893	153.049
227	95 712	-7	47	24.0	108	13	45.0	5.368	978.279360	L1 L	*	0.162	2.526	-0.450	978.126710	155.338	154.888
228	95 713	-7	40	40.8	108	12	35.4	224.150	978.206463	L3 GPS	*	0.773	70.021	-18.749	978.124018	153.239	134.491
229	95 713	-7	40	49.8	108	12	4.2	200.860	978.212647	L3 GPS	*	0.318	62.836	-16.804	978.124078	151.723	134.919
230	95 713	-7	40	46.8	108	11	41.4	196.343	978.212390	L3 GPS	*	0.321	61.597	-16.468	978.124058	150.250	133.782
231	95 718	-7	43	3.0	108	11	40.8	183.161	978.231732	L1 GPS	*	0.636	57.376	-15.325	978.124963	164.781	149.456
232	95 718	-7	43	20.4	108	11	52.8	138.939	978.243974	L1 GPS	*	0.622	43.733	-11.630	978.125079	163.250	151.620
233	95 718	-7	43	43.2	108	12	0.6	141.859	978.243246	L1 GPS	*	0.360	44.634	-11.874	978.125231	163.009	151.135
234	95 718	-7	44	2.4	108	12	15.0	111.992	978.245678	L1 GPS	*	0.370	35.420	-9.376	978.125359	156.109	146.733
235	95 716	-7	44	16.2	108	12	10.2	146.183	978.236667	L1 GPS	*	0.324	45.968	-12.235	978.125451	157.507	145.272
236	95 716	-7	44	16.2	108	12	37.8	127.801	978.241469	L1 GPS	*	0.415	40.297	-10.698	978.125451	156.730	146.031
237	95 716	-7	43	56.4	108	12	46.2	138.508	978.242305	L1 GPS	*	0.570	43.600	-11.594	978.125319	161.155	149.562
238	95 716	-7	43	36.0	108	12	56.4	180.446	978.233514	L1 GPS	*	0.909	56.538	-15.099	978.125183	165.778	150.680
239	95 716	-7	44	21.0	108	13	0.6	126.840	978.242179	L1 GPS	*	0.532	40.001	-10.618	978.125484	157.228	146.610
240	95 716	-7	44	24.6	108	13	19.2	105.052	978.248390	L1 GPS	*	0.469	33.279	-8.796	978.125508	156.630	147.835
241	95 716	-7	44	30.0	108	13	37.8	112.337	978.245510	L1 GPS	*	0.632	35.526	-9.405	978.125544	156.124	146.719
242	95 716	-7	44	37.2	108	13	57.0	111.987	978.245592	L1 GPS	*	0.684	35.418	-9.376	978.125592	156.102	146.727
243	95 716	-7	44	41.4	108	14	19.8	85.894	978.251778	L1 GPS	*	0.983	27.369	-7.193	978.125620	154.509	147.316
244	95 716	-7	44	18.6	108	11	46.2	146.229	978.239612	L1 GPS	*	0.339	45.982	-12.239	978.125467	160.466	148.227
245	95 716	-7	44	21.6	108	11	22.2	135.537	978.245561	L1 GPS	*	0.436	42.684	-11.345	978.125488	163.193	151.848
246	95 719	-7	46	4.8	108	14	45.0	54.143	978.259036	L3 GPS	*	0.348	17.573	-4.535	978.126178	150.779	146.244
247	95 717	-7	44	36.0	108	12	37.2	100.362	978.247283	L1 GPS	*	0.515	31.832	-8.403	978.125584	154.046	145.643
248	95 717	-7	44	59.4	108	12	33.0	77.900	978.250041	L1 GPS	*	0.285	24.902	-6.524	978.125740	149.488	142.964
249	95 717	-7	45	18.0	108	12	46.8	55.531	978.255685	L1 GPS	*	0.656	18.002	-4.651	978.125865	148.478	143.827
250	95 717	-7	45	25.8	108	13	7.2	26.066	978.263683	L1 GPS	*	0.306	8.911	-2.184	978.125917	146.383	144.800
251	95 717	-7	45	25.2	108	13	31.2	18.454	978.266243	L1 GPS	*	0.400	6.563	-1.546	978.125913	147.293	145.747