

Figure 1.6 (1/2)

## GEOLOGIC LOG OF DRILL HOLE

PROJECT

HOLE No. BG-6 (SHEET 1 OF 2)

LOCATION Los Laureles IIDEPTH OF HOLE 30 mCOMMENCED 22-IV-ELEVATION 4031.09 m

DEPTH OF OVERBURDEN \_\_\_\_\_ m

COMPLETED 28-IV-2000

COORDINATE \_\_\_\_\_

LENGTH OF ROCK DRILLING \_\_\_\_\_ m

DRILLED BY \_\_\_\_\_

ANGLE FROM HORIZONTAL -90°

TOTAL LENGTH OF CORE \_\_\_\_\_ m

LOGGED BY \_\_\_\_\_

BEARING OF ANGLE HOLE \_\_\_\_\_

CORE RECOVERY \_\_\_\_\_ %

W. L. 0 m

DEPTH	ROCK NAME	LOG	CORE RECOVERY	CEMENTATION KIND OF BIT CASING	OBSERVATION OF CORE					WATER TABLE	WATER PRESSURE TEST	LEAKAGE OF DRILLING WATER	DEPTH	ELEVATION
					COLOR	WEATHER- ING	HARD- NESS	CORE CUTTING	DESCRIPTION					
0			0 → 100 %										0	
1													1	
2													2	
3													3	
4													4	
5													5	
6													6	
7													7	
8													8	
9													9	
10													10	
11													11	
12													12	
13													13	
14													14	
15													15	
16													16	
17													17	
18													18	
19													19	
20													20	

driller's note

1 (stick) 2 (substick) 3 (piece) 4 (fragment) 5 grain

1 (hard) ~ 5 (soft)

1 (fresh) ~ 5 (decomposed)

1 - 15

core loss

RQD

Figure 1.6 (2/2)

## GEOLOGIC LOG OF DRILL HOLE

PROJECT

HOLE No. BG-6 (SHEET 2 OF 2)

LOCATION \_\_\_\_\_ DEPTH OF HOLE 30 m COMMENCED - -  
 ELEVATION \_\_\_\_\_ m DEPTH OF OVERBURDEN \_\_\_\_\_ m COMPLETED - -  
 COORDINATE \_\_\_\_\_ LENGTH OF ROCK DRILLING \_\_\_\_\_ m DRILLED BY \_\_\_\_\_  
 ANGLE FROM HORIZONTAL \_\_\_\_\_ ° TOTAL LENGTH OF CORE \_\_\_\_\_ m LOGGED BY \_\_\_\_\_  
 BEARING OF ANGLE HOLE \_\_\_\_\_ CORE RECOVERY \_\_\_\_\_ %

DEPTH	ROCK NAME	LOG	CORE RECOVERY	CEMENTATION KIND OF BIT CASING	OBSERVATION OF CORE					WATER TABLE	WATER PRESSURE TEST	LEAKAGE OF DRILLING WATER	DEPTH	ELEVATION
					COLOR	WEATHERING	HARDNESS	CORE CUTTING	DESCRIPTION					
2.0m			0 → 100 %										0	40 ≥ 0m
1	Pyroclastic flow				grey	1	3	1	16.80 ~ 26.00 m (CL) a few joints * bearing quartz grain				1	
2							4						2	
3													3	
4													4	
5	Tuff				reddish				24.50 reddish patch				5	
6													6	
7					reddish	1	2	1	26.0 (CL) reddish				7	
8													8	
9					grey	2	3	3	27.20 siltstone (tuffaceous)				9	
10							4		including pelitic laminae				10	
11					reddish	1	3	2	(28.0 ~ 28.4 m: D)				11	
12									30.00 bottom (CL)				12	
13									27.2 ~ 30.0 m:				13	
14									* lacustrine (lake) deposit				14	
15									* Rio Chiquito formation of Valle de Angeles Group - gravel				15	
16									* Sticked contact between upper Py and lower Siltstone				16	
17													17	
18													18	
19													19	
20													20	



driller's note 4

1 (stick), 2 (substick), 3 (piece), 4 (fragment), 5 grain

1 (hard) ~ 5 (soft)

1 (fresh) ~ 5 (decomposed)

Figure 1.7 (1/2) GEOLOGIC LOG OF DRILL HOLE

PROJECT \_\_\_\_\_ HOLE No. BG-7 (SHEET 1 OF 2)


LOCATION Los Angeles II DEPTH OF HOLE 30 m COMMENCED 02-V-

ELEVATION 4,031.23 m DEPTH OF OVERBURDEN \_\_\_\_\_ m COMPLETED 06-V-2000

COORDINATE \_\_\_\_\_ LENGTH OF ROCK DRILLING \_\_\_\_\_ m DRILLED BY \_\_\_\_\_

ANGLE FROM HORIZONTAL -90° TOTAL LENGTH OF CORE \_\_\_\_\_ m LOGGED BY \_\_\_\_\_

BEARING OF ANGLE HOLE \_\_\_\_\_ CORE RECOVERY \_\_\_\_\_ % W.L. 0 m

DEPTH	ROCK NAME	LOG	CORE RECOVERY	CEMENTATION KIND OF BIT	CASING	OBSERVATION OF CORE					WATER TABLE  WATER PRESSURE TEST LEAKAGE OF DRILLING WATER	DEPTH	ELEVATION		
						COLOR	WEATHER- ING	HARD- NESS	CORE CUTTING	DESCRIPTION					
0m			0 → 100 %								0	LUGEON	40	0m	▽
1	River deposit.									Recent river deposit. Sand & gravel. gravel : hard rhyolite, basalt.				1	
2														2	
3														3	
4														4	
5														5	
6											6.0			6	
7	Ignimbrite					gray	2	2	1	6.4 CM sample surface is yellow. Internal parts is fresh.				7	
8						gray	2	2	1	8.2 CM fresh & sound rock.				8	
9														9	
10														10	
11	Pyroclastic flow					gray	2	2	1					1	
12														2	
13														3	
14														4	
15										14.5 CL				5	
16										Soft pyroclastic flow				6	
17														7	
18														8	
19														9	
20										19.7				20	

core loss

RQD

driller's note

1 (stick), 2 (substick), 3 (piece), 4 (fragment), 5 grain

1 (hard) ~ 5 (soft)

1 (fresh) ~ 5 (decomposed)

Figure 1.7 (2/2)

## GEOLOGIC LOG OF DRILL HOLE

PROJECT \_\_\_\_\_ HOLE No. BG-7 (SHEET 2 OF 2)

LOCATION Los Lunas II DEPTH OF HOLE 30 m COMMENCED - -

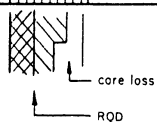
ELEVATION \_\_\_\_\_ m DEPTH OF OVERBURDEN \_\_\_\_\_ m COMPLETED - -

COORDINATE \_\_\_\_\_ LENGTH OF ROCK DRILLING \_\_\_\_\_ m DRILLED BY \_\_\_\_\_

ANGLE FROM HORIZONTAL \_\_\_\_\_ ° TOTAL LENGTH OF CORE \_\_\_\_\_ m LOGGED BY \_\_\_\_\_

BEARING OF ANGLE HOLE \_\_\_\_\_ CORE RECOVERY \_\_\_\_\_ %

DEPTH	ROCK NAME	LOG	CORE RECOVERY	CEMENTATION KIND OF BIT CASING	OBSERVATION OF CORE				WATER TABLE	WATER PRESSURE TEST	LEAKAGE OF DRILLING WATER	DEPTH	ELEVATION
					COLOR	WEATHER- ING	HARD- NESS	CORE CUTTING					
0m			0 → 100%									0	40m
1	Pyroclastic flow											1	
2												2	
3												3	
4												4	
5												5	
6												6	
7												7	
8												8	
9												9	
10	Tuff				brown	2	3	3	29.1			10	
1												1	
2												2	
3												3	
4												4	
5												5	
6												6	
7												7	
8												8	
9												9	
10												10	



driller's note

1 (stick), 2 (substick), 3 (piece), 4 (fragment), 5 grain

1 (hard) ~ 5 (soft)

1 (fresh) ~ 5 (decomposed)

Figure 1.8 (1/2) GEOLOGIC LOG OF DRILL HOLE

PROJECT										HOLE No. BG-8 (SHEET 1 OF 2)									
LOCATION <u>Los Laureles</u>					DEPTH OF HOLE <u>40</u> m					COMMENCED <u>05-V-</u>									
ELEVATION <u>1060.29</u> m					DEPTH OF OVERBURDEN _____ m					COMPLETED <u>07-V-2000</u>									
COORDINATE _____					LENGTH OF ROCK DRILLING _____ m					DRILLED BY _____									
ANGLE FROM HORIZONTAL <u>-90°</u>					TOTAL LENGTH OF CORE _____ m					LOGGED BY _____									
BEARING OF ANGLE HOLE _____					CORE RECOVERY _____ %					W.L. > -40 m									
DEPTH	ROCK NAME	LOG	CORE RECOVERY	CEMENTATION KIND OF BIT CASING	OBSERVATION OF CORE					WATER TABLE					DEPTH	ELEVATION			
					COLOR	WEATHERING	HARDNESS	CORE CUTTING	DESCRIPTION	WATER PRESSURE TEST LEAKAGE OF DRILLING WATER									
0m			0 → 100 %								LUGEON					40	0m		
1	Talus									Talus deposit					1				
2	Lapilli tuff									1.95 Weathered zone (CL)					2				
3						3	4			Soft					3				
4						3	3	4		2.9 86					4				
5										Strongly welded. (CM)					5				
6										1 with pumice grain & 6.4 quality vein.					6				
7										5.4 ~ 25 m: drilling for vertical joint.					7				
8										1 CM in the field.					8				
9										(3) 9.5					9				
0	Ignimbrite									(CM)					0				
1						2	2								1				
2															2				
3						5									3				
4								1							4				
5															5				
6															6				
7										12.4					7				
8						2				(CM), Jointless secondary clay.					8				
9						c				18.5					9				
0										(CM) (to = 1204/M)					0				

driller's note

1 (stick), 2 (substick), 3 (piece), 4 (fragment), 5 grain

1 (hard) ~ 5 (soft)

1 (fresh) ~ 5 (decomposed)

core loss

RQD

Figure 1.8 (2/2)

## GEOLOGIC LOG OF DRILL HOLE

PROJECT

HOLE No. BG-8 (SHEET 2 OF 2)

LOCATION Los Laureles II DEPTH OF HOLE 40 m COMMENCED - -  
 ELEVATION - m DEPTH OF OVERBURDEN - m COMPLETED - -  
 COORDINATE - LENGTH OF ROCK DRILLING - m DRILLED BY -  
 ANGLE FROM HORIZONTAL -° TOTAL LENGTH OF CORE - m LOGGED BY -  
 BEARING OF ANGLE HOLE - CORE RECOVERY - %

DEPTH	ROCK NAME	LOG	CORE RECOVERY	CEMENTATION KIND OF BIT CASING	OBSERVATION OF CORE				WATER TABLE	WATER PRESSURE TEST	LEAKAGE OF DRILLING WATER	DEPTH	ELEVATION
					COLOR	WEATHER- ING	HARD- NESS	CORE CUTTING					
0m			0 → 100 %								LUGEON	0	40m
1						1	2	1					
2													
3						b							
4													
5						2	2	11					
6						c							
7													
8						1	2	1					
9													
30						c							
1						2	2-3	2					
2													
3						b							
4						2	2	3					
5						b							
6													
7						1	2	2					
8						a							
9													
40						c							

Ignimbrite

gloss

fresh & sound rock  
 CM  
 23.0  
 Drilling for along vertical joint.  
 quartz/calcite vein.  
 26.2 CM (Lo = 80 (m<sup>2</sup>))  
 26.2 ~ 30.2 m :  
 Joints bear calcite powder.  
 CM (Lo = 100 (m<sup>2</sup>))  
 30.2  
 30.6 b (secondary clay)  
 CM  
 23.1  
 CL  
 Joints bear rust.  
 35.1  
 CM  
 36.6  
 39.2 b (rust)  
 CM  
 38.1  
 CM  
 40.0 bottom

driller's note  
 1 (stick), 2 (substick), 3 (piece), 4 (fragment), 5 grain  
 1 (hard) ~ 5 (soft)  
 1 (fresh) ~ 5 (decomposed)  
 core loss  
 RQD

Figure 1.9 (1/2)

## GEOLOGIC LOG OF DRILL HOLE

PROJECT

HOLE No. BG-9 (SHEET 1 OF 2)

LOCATION Los Laureles IIDEPTH OF HOLE 30 mCOMMENCED 19-V-ELEVATION 1,090.58 m

DEPTH OF OVERBURDEN \_\_\_\_\_ m

COMPLETED 20-V-2000COORDINATE Rosa Hilit

LENGTH OF ROCK DRILLING \_\_\_\_\_ m

DRILLED BY \_\_\_\_\_

ANGLE FROM HORIZONTAL -90°

TOTAL LENGTH OF CORE \_\_\_\_\_ m

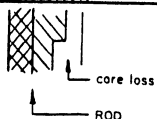
LOGGED BY \_\_\_\_\_

BEARING OF ANGLE HOLE -

CORE RECOVERY \_\_\_\_\_ %

W.L. > -30 m

DEPTH	ROCK NAME	LOG	CORE RECOVERY	CEMENTATION KIND OF BIT CASING	OBSERVATION OF CORE					WATER TABLE		DEPTH	ELEVATION	
					COLOR	WEATHER- ING	HARD- NESS	CORE CUTTING	DESCRIPTION	WATER PRESSURE TEST	LEAKAGE OF DRILLING WATER			
0			0 → 100%								0 10 20 30 40 50 S.P.T.	0m		
1	Talus alt.				brown				Embarkment for road.					
2									20 gravel & clay.					
3									Talus deposit					
4									sand, gravel with clay					
5	Ignimbrite				brown	3	4	5	4.7					
6									CLD non-water drilling					
7									5.9 weathered zone					
8									CL. loosened zone					
9									with secondary clay					
10									2.55					
11									2.70 CM					
12									2.85 CL					
13									CM					
14									Sandy tuff					
15	CL													
16	12.65													
17	① non-water drilling													
18					brown	3	3	4	heavily weathered					
19									zone with original					
20									rock texture.					
21									16.05					
22					light buffish grey	3	3	2	① CL					
23									17.0					
24									① non-water drilling.					
25									It remains original					
26					W	3	4		rock texture.					
27									18.9					
28									12.5 ① CL					
29														




driller's note 4



1 (stick), 2 (substick), 3 (piece), 4 (fragment), 5 grain

1 (hard) ~ 5 (soft)

1 (fresh) ~ 5 (decomposed)

Figure 1.9 (2/2) **GEOLOGIC LOG OF DRILL HOLE**

PROJECT										HOLE No. BG-9 (SHEET 2 OF 2)									
LOCATION _____					DEPTH OF HOLE <u>30</u> m					COMMENCED _____									
ELEVATION _____ m					DEPTH OF OVERBURDEN _____ m					COMPLETED _____									
COORDINATE _____					LENGTH OF ROCK DRILLING _____ m					DRILLED BY _____									
ANGLE FROM HORIZONTAL _____ °					TOTAL LENGTH OF CORE _____ m					LOGGED BY _____									
BEARING OF ANGLE HOLE _____					CORE RECOVERY _____ %														
DEPTH	ROCK NAME	LOG	CORE RECOVERY	CEMENTATION KIND OF BIT CASING	OBSERVATION OF CORE				DESCRIPTION	WATER TABLE 			DEPTH	ELEVATION					
					COLOR	WEATHERING	HARDNESS	CORE CUTTING		WATER PRESSURE TEST	LEAKAGE OF DRILLING WATER								
0			0 → 100 %							0	LUGEON		40	0m					
1	Sandy tuff				brown	3	3	4	(D) non-water drilling It remains original rock texture 22.5										
2																			
3																			
4																			
5	Sandy tuff				brown	3	2	4	26.8 (CL) Tuff breccia 25.8 gravel: hard.										
6																			
7																			
8																			
9	Sandy tuff				reddish brown	2	3	1	27.85 (CL) Fine tuff										
10																			
11																			
12																			
13	Sandy tuff				reddish brown	2	3	1	27.5 (CL)										
14																			
15																			
16																			
17	Sandy tuff				reddish brown	2	4	1	30.0 (CL) bottom										
18																			
19																			
20																			
21	Sandy tuff								It may keep zone up to 16.05 m										
22																			
23																			
24																			
25	Sandy tuff																		
26																			
27																			
28																			
29	Sandy tuff																		
30																			
31																			
32																			
33	Sandy tuff																		
34																			
35																			
36																			
37	Sandy tuff																		
38																			
39																			
40																			
41	Sandy tuff																		
42																			
43																			
44																			
45	Sandy tuff																		
46																			
47																			
48																			
49	Sandy tuff																		
50																			
51																			
52																			
53	Sandy tuff																		
54																			
55																			
56																			
57	Sandy tuff																		
58																			
59																			
60																			

 core loss  
 RQD

1 (stick), 2 (substick), 3 (piece), 4 (fragment), 5 grain  
 1 (hard) ~ 5 (soft)  
 1 (fresh) ~ 5 (decomposed)

driller's note 4



Figure 1.10 (1/2) GEOLOGIC LOG OF DRILL HOLE

PROJECT										HOLE No. BG-10 (SHEET 1 OF 2)												
LOCATION <u>Los Laureles II</u>					DEPTH OF HOLE <u>30</u> m					COMMENCED <u>14-V-</u>												
ELEVATION <u>4,059.78</u> m					DEPTH OF OVERBURDEN _____ m					COMPLETED <u>16-V-2000</u>												
COORDINATE <u>Reset rock</u>					LENGTH OF ROCK DRILLING _____ m					DRILLED BY _____												
ANGLE FROM HORIZONTAL <u>-90°</u>					TOTAL LENGTH OF CORE _____ m					LOGGED BY _____												
BEARING OF ANGLE HOLE _____					CORE RECOVERY _____ %					W.L. > -30 m												
DEPTH	ROCK NAME	LOG	CORE RECOVERY	CEMENTATION KIND OF BIT CASING	OBSERVATION OF CORE					WATER TABLE					DEPTH	ELEVATION						
					COLOR	WEATHER- ING	HARD- NESS	CORE CUTTING	DESCRIPTION	WATER PRESSURE TEST	LEAKAGE OF DRILLING WATER											
0m			0 → 100%										0	10	20	30	40	50	S.P.T.	40	0m	
1	Talus deposit				brown					Talus deposit sand and clay with hard ignimbrite gravels.												
2																						
3																						
4																						
5																						
6	Ignimbrite				grey	2	2	4	(3)	CL. cheep zone gravel: hard												
7																						
8																						
9	Sandy tuff				brown	4	4	4		D heavily weathered zone												
0																						
1																						
2																						
3																						
4																						
5																						
6																						
7					grey	2	3	4	1275 1250	CL soft rock												
8																						
9																						
0																						

driller's note 4

1 (stick) 2 (substick) 3 (piece) 4 (fragment) 5 grain

1 (hard) ~ 5 (soft)

1 (fresh) ~ 5 (decomposed)

core loss

RQD

Figure 1.10 (2/2) GEOLOGIC LOG OF DRILL HOLE

PROJECT				HOLE No. BG-10 (SHEET 2 OF 2)			
LOCATION				DEPTH OF HOLE	30 m		
ELEVATION				DEPTH OF OVERBURDEN			
COORDINATE				LENGTH OF ROCK DRILLING			
ANGLE FROM HORIZONTAL				TOTAL LENGTH OF CORE			
BEARING OF ANGLE HOLE				CORE RECOVERY			

DEPTH	ROCK NAME	LOG	CORE RECOVERY	CEMENTATION KIND OF BIT CASING	OBSERVATION OF CORE				DESCRIPTION	WATER TABLE			DEPTH	ELEVATION		
					COLOR	WEATHER- ING	HARD- NESS	CORE CUTTING		WATER PRESSURE TEST	LEAKAGE OF DRILLING WATER					
0m			0 → 100%							0	LUGEON			40 → 0m		
1	Sandy Tuff				grey	2	3	3	(CL)	soft Ignimbrite				1		
2															2	
3						2 (3)	-	22.3	CL	non-water drilling					3	
4						2	3	4	24.9	CL	17.75~30.0m: Soft sandy				4	
5															5	
6					reddish brown	2	3	2							6	
7						2	3	1	27.4	CL	tuff				7	
8															8	
9						2	3	1							9	
30															30	
1												1				
2												2				
3												3				
4												4				
5												5				
6												6				
7												7				
8												8				
9												9				
0												0				

core loss

RQD

driller's note

1 (stick), 2 (substick), 3 (piece), 4 (fragment), 5 grain

1 (hard) ~ 5 (soft)

1 (fresh) ~ 5 (decomposed)