BORE HOLE LOG

KULEKHANI-3 HYDROELECTRIC POWER PROJECT

DRILL HOLE NO.: BS-1

COORDINATES:3039796.489N, 602636.927E

DRILLING MACHINE: JOY DRILLING METHOD: ROTARY START DATE: 12/03/2002 COLLAR ELEVATION: 505.384 m ELEVATION HOLE END:395.384m LOCATION: SANUTAR VILLAGE

INCLINATION: VERTICAL Core Recovery kg/cm2 1111 RQD% Level Roughness Joint/R cm aboratory Size Alteration Blows per 15 cm Depth, Description Core L ROD% Water Barrel 8 8 8 5 0-15 15-30 30-45 90.00 Total core loss. Core loss due to soft rock and crushed zone of slate. Dark grey, fine 0 n to medium grain sand size sludge are found.CL: 90.0 to 91 m. 91.00 Total core loss 0 Core loss: 90.00 to 91.50 m. 0 22.60 91.50 Total core loss Core loss: 90.00 to 92.00 m. 92.00 W1, strong hard, dark grey, fine grain, slate with Quartz vein. 40 ' Ir 4 16 Core loss: 92.00 to 92.55 m and 60[,] 92.71 to 93.00 m 93.00 Total core loss. Core loss due to soft rock and crushed zone of slate. Dark grey, fine ٥ 0 to medium grain sand size sludge are found.CL: 93.0 to 94.0 m. 94.00 W1, strong hard, dark grey, fine grain, state with Quartz vein and fine grain sand of crushed materia 20" 100 6 21.30 50 94.50 Total core loss 0 20.70 95.00 Core loss: 94.50 to 95.00 m. W1, strong hard, dark grey, fine grain slate with Quartz vein 12 50 lr 4 Core loss: 95.00 to 95.88 m 96.00 Total core loss. Core loss due to soft rock and crushed zone of slate. Dark grey, fine 0 0 to medium grain sand size sludge are found.CL : 96.0 to 97.m. 97.00 Total core loss 0 Core loss: 97.00 to 97.50 m. 21.50 0 97.50 Total core loss 23.60 0 Core loss: 97.50 to 98.50 m. 98.00 Total core loss. Core loss due to soft rock and crushed zone of state. Dark grey, fine 0 0 to medium grain sand size sludge are found.CL: 98.0 to 99.0 m. 99.00 Total core loss. Core loss due to soft rock and crushed zone of slate. Dark grey, fine 0 0 to medium grain sand size sludge are

ABBREVIATION rough=r, smooth=s, slickensided=sl, un=undulating, pl=planar, clay=cl, sand=sa, mica=mi, crushed=cr, iron stain=FeO Zone, MB-Mechanical Breakage, W1=Fresh, W2=slightly Weathered, W3=Moderately Weathered, W4=Highly Weathered, W5=Decomposed.

FZ= Fractured, CL= Core loss Drilled by: JOON SHRESTHA

found.CL: 99.0 to 100.0 m.

BORE HOLE LOG

KULEKHANI-3 HYDROELECTRIC POWER PROJECT

DRILL HOLE NO.: BS-1

COORDINATES:3039796.489N, 602636.927E

DRILLING MACHINE: JOY DRILLING METHOD: ROTARY

START DATE: 12/03/2002 COLLAR ELEVATION: 505.384 m **ELEVATION HOLE END:395.384m** LOCATION: SANUTAR VILLAGE

INCLINATION: VERTICAL

		1		S	P	Т	Γ		INC	LIIV/	TIC		Col				ery	3	kg/cm2
								,					RQI) %				Œ	
Depth, m	Barrel Size	Core Log	Description		vs per 1		Water Level m	Alteration	Orientation	Ronghness	Joint/R cm	REC%	HQD%	20	40	90	80	100	Laboratory
100.00	56mm	///	W1, loose, coarse grain dark grey slate as crushed material.	0-13	13-30	30-43	21.80	_	-	-	0	86	-						
101.00		//	Core loss : 100.00 to 100.14 m																
102.00			W1, strong hard, dark grey, fine grain, calcarious slate with crushed material as coarse grain sand. Core loss: 101.00 to 102.28 m					-	40 ^υ 60 ^υ	lr	4	72	-						
			W1, strong hard, dark gr. fine grain, slaty cleavage, cal.slate with crushed material.				21.60	-	60 ^u	lr	5	100	-		Ē				
102.50		///	Total core loss crushed materiel as studge of dark grey, fine grain sand. Core loss : 102.00 to 103.00 m				21.60	-	-	-	3	0	-						
100.00			Total core loss, fine grain, dark grey material are colledted as sludge. Core loss: 103.00 to 104.00 m					-	-	-	0	۰0	_						
104.00			W1, medium hard, dark grey, fine grain, slaty cleavage, highly jointed calcarious slate with sludge of fine grain dark grey Core loss: 104.00 to 104.78 m					-	50°	lr	4	22	-						
105.00			Total core loss dark grey, fine grain sludge are found. Core loss : 105.00 to 106.00 m				21.80	-	-	-	0	0	-						
106.00			Total core loss dark grey, fine grain sludge are collected. Core loss: 106.00 to 107.00 m					-	-	-	0	0	-						
107.00			Total core loss, dark grey, fine grain sludge are colleted. Core loss: 107.00 to 108.00 m					-	-	•	0	0	-						
108.00			Total core loss dard grey, fine grain sludge are found. Core loss: 108.00 to 109.00 m					-	-	-	0	0	-						
109.00			Total core loss : dark grey, fine grain sludge are found during drilling. Core loss : 109.00 to 110.00 m					-	-	-	0	0	-						
110.00 ABBRE	▼	N rou	gh=r, smooth=s, slickensided=sl, un=undulating, pl=	planar	, clay=c	l, sand	=sa, mi	ica=n	ni, cru	shed:	=cr, in	on sta	ain=F	eO	<u> </u>	<u></u>		<u> </u>	<u></u>

ABBREVIATION rough=r, smooth=s, slickensided=sl, un=undulating, pl=planar, clay=cl, sand=sa, mica=mi, crushed=cr, iron stain=FeO
Zone, MB=Mechanical Breakage, W1=Fresh, W2=slightly Weathered, W3=Moderately Weathered, W4=Highly Weathered, W5=Decomposed.
FZ= Fractured, CL= Core loss
Drilled by: JOON SHRESTHA

KULEKHANI-3 HYDROELECTRIC POWER PROJECT

DRILL HOLE NO.: DHT-4

COORDINATES: 3039493.555N, 602656.722E

DRILLING MACHINE: VOLT-35 DRILLING METHOD: ROTARY START DATE: 11/03/2002 COLLAR ELEVATION: 483.425 m ELEVATION HOLE END:405.425 m LOCATION: KESHARI KHOLA

INCLINATION: VERTICAL Core Reco Results Description of rock / soil DCPI Description of Discontinuities RQD% HIR LU | kg/cm2 Level Barrel Size Core Log Ε Roughness Orientation Ë .aborator, Depth, Blows per 15 cm .Iteration ROD% Water 8 0-15 15-30 30-45 Alluvium of gravel with cobble, pebbles of pyllitic quartzite and quartzite. W1- \bigcirc 100 W2, dark grey, fine grained quartzite & dolomite 1.00 0 Alluvium denosition of cobble, boulder quartrite NX W1-W2, dark grey, fine grained fractured with mica 60 1.50 37 43 Alluvium deposition of cobble, boulder of quartzite, 26/80 60 W1, dark grey to white, dine grained with mica, 2.00 eldspar, quartz, 0 Alluvium deposition of gravel of quartzite with coarse grained sand 5 found as sludge, W2, dark grey, fine grained quartzite with mica, Quartz. 30 50 3.00 a Alluvium deposition of pebble and cobble of 20/80 2.50 Quartzite and coarse grained size sand as 2.40 sludge. W1-W2, light to dark grey, fine grain 53 Quartzite with mica, feldspar, Quartz. 4.00 0 45 35 Alluvium deposition of W1-W2, white, 30/80 2.00 76mn 2.00 fine grained Quartzite, sludge of coarse 14 grained sand. 0 5.00 20 Alluvium deposition of cobble size, W1-2.30 45/47 W2, white, fine grained, dolomite & 2.00 36 Quartzite, sludge of coarse grained 'O 6.00 20 42 Alluvium deposition of boulder, W1-45/73 56 W2, white, fine grain, fractured 6.50 Alluvium deposition of boulder, W1-W2, dark grey, 0 NX 30 ine grained, lamiliar phyllitte with mica 7 7.00 73 Alluvium deposition of boulder, W1, 20/80 1.80 1.95 light to greenish, coarse grain, 0 39 crystalline Quartzite with mica, quartz. 15 8.00 20 15 Alluvium deposition of fine grain; sand 45/50 .0 and boulder size, W2, greenish to light 18 grey, medium grain Quartzite and dolomite 9.00 32 24 22 Alluvium deposition of fine to coarse 45/78 grain sand and boulder size, W1-W2, 17 light grey, fine to medium grain 27 53 Quartzite and dolomite 17/80 10.00 ABBREVIATION rough-r, smooth-s, slickensided-sl, un-undulating, pl-planar, clay-cl, sand-sa, mica-mi, crushed-cr, iron stain-FeO Zone, MB-Mechanical Breakage, W1-Fresh, W2-slightly Weathered, W3-Moderately Weathered, W4-Highly Weathered, W5-Decomposed, FZ- Fractured, CL- Core loss Drilled by: SHIVA LAMICHHANE

.

EAST DRILLING COMPANY (P) LTD. BORE HOLE LOG KULEKHANI-3 HYDROELECTRIC POWER PROJECT

DRILL HOLE NO.: DHT-4

COORDINATES: 3039493.555N, 602656.722E

DRILLING MACHINE: VOLT-35 DRILLING METHOD: ROTARY

START DATE: 11/03/2002 COLLAR ELEVATION: 483.425 m ELEVATION HOLE END:405.425 m

LOCATION: KESHARI KHOLA INCLINATION: VERTICAL

Depth, m	Barrel size	8			[OCP	T					re R	eco	very				L		H	esults
Depth, m	irrel size	5										30/								111	/0
Depth, m	ırrel size	8	7					Ε		r	RQ	J%	r			╨	Ш	┞—		LU	kg/cm2
	86	Core	החוב רה	·			15 cm 30-45	Water Level r	Alteration	Orientation	Roughness	Joint/R cm	REC%	RQD%	20	40	99	80	100	Permeability	Laboratory
10.00	NX	├	1	Alluvium deposition of medium grain	0-13	15-50	30-43	2.30		 		-	-				ļ	┝	H		
		Ó		sand found as sludge.				2.00	-	-	-	-	0	-							
11.00		· :	-		45	35	-														
11.00			.	Alluvium deposition of fine grain sand found as sludge. Soft rock crushed during drill.	į		25/80		-	_	_	-	0	-				:			
		0	ŀ	ading dim.																	
13.00			;	Initial 12 cm is alluvium deposition of quartzite. Bed rock started from12.12m. that is W1-W2, med. hard, gr. grey, fine grain, massive ss.	80	1	- 6/80			50 ^v 60 ^v -65 ^v	r	3	88	81							
			\ !	W1-W3, soft to medium hard, greenish grey, fine grain sand stone Core loss : 13.07 to 14.00m					-	50 ⁰	r	2	7	-							
14.00			<u>ا</u> ز:	W1-W3, soft to medium hard, greenish grey, fine grain, jointed sand stone CL : 14.00 to 14.75m.					-	40 ^υ 50 ^υ	r	8	25	-							
				W1-W3, soft to medium hard, greenish grey, fine grain, jointed sand stone CL : 15.33 to 15.73m				2.3	•	70 ^u	r	10	60	-							
16.00			١.	W1-W2, medium hard, greenish grey, fine grain, sand stone. CL : 16.00 to 16.74m.					-	50 ⁰	r	3	26	22							
17.00		***	:	W1-W2, soft to medium hard, greenish grey, fine grain sand stone. Soft weathered rock crushed during drill . Core loss: 17.00 to 17.89m					-	40 ^υ 50 ^υ	r	3	11	•							
			,	Total core loss. Soft weathered crushed rock is collected as sludge Core loss: 18.00 to 19.00m						-	-	o	0	-							
19.00	•			W1-W2, soft to medium hard, greenish grey, fine grain ss. Soft weathered rock is crushed that is collected as sludge. CL:1919.73m.					-	30 ^u 60 ^u	Г	4	27	13							

ABBREVIATION rough=r, smooth=s, slickensided=sl, un=undulating, pl=planar, clay=cl, sand=sa, mica=mi, crushed=cr, iron stain=FeO Zone, MB=Mechanical Breakage, W1=Fresh, W2=slightly Weathered, W3=Moderately Weathered, W4=Highly Weathered, W5=Decomposed, FZ= Fractured, CL= Core loss
Drilled by: SHIVA LAMICHHANE

BORE HOLE LOG

KULEKHANI-3 HYDROELECTRIC POWER PROJECT

DRILL HOLE NO.: DHT-4

COORDINATES: 3039493.555N, 602656.722E

DRILLING MACHINE: VOLT-35 DRILLING METHOD: ROTARY

W5=Decomposed, FZ= Fractured, CL= Core loss
Drilled by: SHIVA LAMICHHANE

START DATE: 11/03/2002 COLLAR ELEVATION: 483.425 m ELEVATION HOLE END:405.425 m LOCATION: KESHARI KHOLA

				1						EIN.				KI			esults
									RQ				.,	Œ	Ш	LU	kg/cm2
Depth, m	Barel size	Core Log	Description	Water Table m.	Alteration	Orientation	Roughness	Joint/R cm	REC%	RQD%	20	40	09	80	100	Permeability	Laboratory
21.00	NX 		W1-W2, soft to medium hard, greenish grey, fine grain sand stone. Soft rock crushed and sludge are found. Core loss: 20.00 to 20.90m		-	30°	r	2	10	-							
22.00			W1-W2, soft to medium hard, greenish grey, fine grain, jointed sand stone. Core loss : 21.00 to 21.70m		-	30°	r	6	30	10							
23.00	66		W1-W2, soft to medium hard, greenish grey, fine grain sand stone Core loss : 22.00 to 22.78m	2.25 3.65		60°	r	4	22	11							
24.00			W1-W2, medium hard, greenish grey, fine grain sand stone. Core loss : 23.00 to 23.34m MB : 23.61m		-	50° 60°	r	10	66	22							
25.00			W1-W2, medium hard, greenish grey, fine grain sand stone. Soft, weathered rock found as sludge.CL:: 24.00 to 24.69m		-	50 ^v	r	4	31	20							
26.00			W1-W2, soft to medium hard, greenish grey, fine grain sand stone. Core loss : 25.00 to 25.32m		-	40° 50°	r	10	68	40							
27.00			W1-W2, soft to medium hard, greenish grey, fine grain, jointed sand stone. Core loss: 26.00 to 26.23m		_	20° 40° 60°	r	11	77	14							
28.00			W1- W2, soft to medium hard, greenish grey, fine grain sand stone. Core loss: 27.50 to 27.84m MB: 27.12m	2.00 6.00		40° 50°	r	8	66	40							
29.00			W1-W2, soft to medium hard, greenish grey, fine grain sand stone Core loss: 28.00 to 28.37m MB: 28.57m		-	20 ^u 50 ^u	r	7	63	45							
30.00	\		W1-W2, soft to medium hard, greenish grey, fine grain, jointed sand stone. Core loss: 29.00 to 29.54m gh-r, smooth-s, slickensided-sl, un-undulating, pl-ple		-	30° 40°	r	9	46	12							

BORE HOLE LOG KULEKHANI-3 HYDROELECTRIC POWER PROJECT

DRILL HOLE NO.: DHT-4

COORDINATES: 3039493.555N, 602656.722E

DRILLING MACHINE: VOLT-35 DRILLING METHOD: ROTARY

START DATE: 11/03/2002 **COLLAR ELEVATION: 483.425 m ELEVATION HOLE END:405.425 m** LOCATION: KESHARI KHOLA INCLINATION: VERTICAL

	<u> </u>										Co	re F	tec c	ove=	RTIC	F	esults
				=							RQI	%ر	,##			LU	kg/cm2
рерth, т 00.00	Barel size	Core Log	Description	Water Table n	Alteration	Orientation	Roughness	Joint/R cm	REC%	HQD%	20	40	09	80	100	Permeability	Laboratory
31.00	66mm		W1-W2, medium hard, greenish grey to dark grey, fine grain sand stone.		-	40° 50°	r	12	100	58							
32.00			W1-W2, medium hard, greenish grey to dark grey, fine grain sand stone. Core loss : 31.00 to 31.23m		-	60 ^v	r	5	77	61							
32.60			W2, soft to medium hard, dark grey, fine grain, jointed sand stone.		-	50°	r	15	100	-							
33.00	NX 		W1, medium hard, dark to greenish grey, fine grain, massive sand stone. MB : 33.00m.		-	40 ^u	r		100	57							
33.30			W1, medium hard, greenish grey, fine grain, massive sand stone. Core loss: 33.30 to 33.43m.		-	40 ⁰	r	3	80	64							
			W1-W2, medium hard, dark grey to greenish grey, fine grain sand stone. MB : 34.12m and 34.24m		-	20 ^u 40 ^u	r	12	100	58							
36.00			W1, medium hard, dark grey to greenish grey, fine grain, massive sand stone. MB: 36.53m and 36.00m.		-	5° 50°	r	1	100	88							
36.30			W1, medium hard, greenish grey to dark grey, fine grain, massive sand stone. MB: 36.87m.	2.10 4.25	-	10 ⁰	s, r	12	100	16							
			W1-W3, medium hard, greenish grey to dark grey, fine grain, massive, jointed, fractured sand stone.		-	20°-4 60°	 40° r	6	100	73							
38.00	 		W1-W3, medium hard greenish grey to dark brown, fine grain, massive, jointed sand stone. MB: 38.67m.			10 ^u 40 ^u 50 ^u	r	7	100	73							
40.00			W1-W2, medium hard, greenish to dark grey, fine grain, massive jointed sand stone. MB: 39.58m.	2.20 4.20		10 ⁶ 40 ⁶	r	4	100	56							

ABBREVIATION rough-r, smooth-s, slickensided-sl, un-undulating, pl-planar, clay-cl, sand-sa, mica-mi, crushed-cr, iron stain-FeO Zone, MB-Mechanical Breakage, W1-Fresh, W2-slightly Weathered, W3-Moderately Weathered, W4-Highly Weathered,

W5-Decomposed, FZ- Fractured, CL- Core loss Drilled by: SHIVA LAMICHHANE

KULEKHANI-3 HYDROELECTRIC POWER PROJECT

DRILL HOLE NO.: DHT-4

COORDINATES: 3039493.555N, 602656.722E

DRILLING MACHINE: VOLT-35 DRILLING METHOD: ROTARY

START DATE: 11/03/2002 COLLAR ELEVATION: 483.425 m **ELEVATION HOLE END:405.425 m** LOCATION: KESHARI KHOLA **INCLINATION: VERTICAL**

		,		T					Cor	eH				. V L	-111	ICAL R	esults
									RQE				ויי	H	###	נט	kg/cm2
Depth, m	Barel size	Core Log	Description	Water Table m.	Alteration	Orientation	Roughness	Joint/R cm	REC%	RQD%	20	40	60	80	100	Permeability	Laboratory
40.50	NX		W1-W2, medium hard, dark brown to greenish grey, fine grain, jointed sand stone. MB: 41: 69m W1-W3, medium hard, brownish to greenish grey, fine grain, massive sand stone.		-	10° 50°	r	12 3	100	75							
43.00 43.50 44.00 44.45			W1-W2, medium hard, greenish grey to dark brown, fine grain, massive sand stone. MB: 43.91m W2-W3, medium hard, dark brown, fine	2.10	-	40° 50°	r	5	100	87							
46.00			grain, massive jointed and fragmented sand stone. MB: 45.00m and 45.04m. W1-W2, medium hard, dark brown, purple,	4.35	***	10° 30° 40°	lr	7	100	88							
47.00			fine grain, massive, fractured sand stone. W1-W2, medium hard, dark brown to		-	60°	r	5	100	70							
48.00			purple and greenish grey, fine grain, jointed sand stone. W2-W3, soft to medium hard, greenish			20° 50°	r	6	88	41							
49.00			grey to dark brown and purple, fine grain sand stone.		-	20° 40°	lr	7	36	-							
50.00	•		W2, soft to medium hard, greenish grey, fine grain, jointed sand stone. Core loss: 49.00 to 49.62m.		<u> </u>	20° 30°	r	9	38	_							

ABBREVIATION rough-r, smooth-s, slickensided-sl, un-undulating, pl-planar, clay-cl, sand-sa, mica-mi, crushed-cr, iron stain-FeO Zone, MB-Mechanical Breakage, W1-Fresh, W2-slightly Weathered, W3-Moderately Weathered, W4-Highly Weathered, W5=Decomposed, FZ= Fractured, CL= Core loss
Drilled by: SHIVA LAMICHHANE

KULEKHANI-3 HYDROELECTRIC POWER PROJECT

DRILL HOLE NO.: DHT-4

COORDINATES: 3039493.555N, 602656.722E

DRILLING MACHINE: VOLT-35 DRILLING METHOD: ROTARY

START DATE: 11/03/2002 COLLAR ELEVATION: 483.425 m **ELEVATION HOLE END:405.425 m** LOCATION: KESHARI KHOLA

INCLINATION: VERTICAL

									1140			_					
									Cor		ec	ove	ry I				sults
									RQL)%				ш	Ш	LU	kg/cm2
9.95 Depth, m	Barel size	Core Log	Description	Water Table n	Alteration	Orientation	Roughness	Joint/R cm	REC%	RQD%	20	40	60	80	100	Permeability	Laboratory
30.00	NX		W2, soft to medium hard, greenish grey,			-					Ш	Ш		П			
			fine grain, massive sand stone. Core loss : 50.00 to 50.50m.		-	20°	r	2	50	46							
51.00			W2, soft to medium hard, greenish grey,														
52.00			fine grain, massive sand stone. MB : 51.23m and 51.44m		-	20°	r	7	100	65						:	
52.50								8	:								
53.00			W2-W3, soft to medium hard, greenish grey to dark brown, fine grain, massive sand stone with mud. Core loss: 52.80 to 53.21m	2.25 4.50	-	20°	r	7	73	17							
54.00			W2-W3, soft to medium hard, greenish grey to dark brown, fine grain, massive sand stone with thin bed of mud stone. Core loss: 54.00 to 54.14m		-	40° 50°	г	7	86	55							
56.00			W2-W3, soft to medium hard, dark brown to greenish grey, fine grain, massive sand stone with thin bed mud stone (35cm).		-	20° 30°-4 60°	r	10	100	64							
56.50			W1-W2, soft to medium hard, dark					8									
57.00			brown to greenish grey, fine grain, massive sand stone. Core loss: 57.15 to 57.65m		-	50°	r	5	67	26							
58.00			W1, medium hard, greenish grey, fine grain, massive sand stone. MB: 58.49 and 58.79m	2.30 4.35	-	50°	r	4	100	91							
60.00			W1, medium hard, greenish grey, fine grain, massive sand stone.		-	50°	r	3	100	83							
	1.	1.	r smoothes slickensidedes uneundulating n		L			-00 5	2100-		-	20-0					L

ABBREVIATION rough=r, smooth=s, slickensided=sl, un=undulating, pl=planar, clay=cl, sand=sa, mica=mi, crushed=cr, iron stain=FeO Zone, MB=Mechanical Breakage, W1=Fresh, W2=slightly Weathered, W3=Moderately Weathered, W4=Highly Weathered, W5=Decomposed, FZ= Fractured, CL= Core loss
Drilled by: SHIVA LAMICHHANE

KULEKHANI-3 HYDROELECTRIC POWER PROJECT

DRILL HOLE NO.: DHT-4

COORDINATES: 3039493.555N, 602656.722E

DRILLING MACHINE: VOLT-35 DRILLING METHOD: ROTARY

START DATE: 11/03/2002

COLLAR ELEVATION: 483.425 m **ELEVATION HOLE END:405.425 m** LOCATION: KESHARI KHOLA

INCLINATION: VERTICAL

				T				INC			ON: V		ICA.		Б	esults
									RQI		ecuv	еі у	—	***	LU	kg/cm2
	<u> </u>	_		-	т—	1		r	nui	J90	Т	т	T 111		LU	Ky/CITIZ
Depth, m 6.60	Barel size	Core Log	Description	Water Level m	Alteration	Orientation	Roughness	Joint/R cm	REC%	RQD%	20	9	80	100	Permeability	Laboratory
	NX 		W1, medium hard, greenish grey, fine grain, massive sand stone. Core loss : 60.34 to 60.65m.		-	50°	r	5	69	29						
62.00			W2-W3, soft to medium hard, greenish grey, fine grain sand stone and dark brown massive mud stone. Core loss: 61.27 to 61.50m.		-	30° 50°	ľ	9	85	19						
62.50			W2-W3, soft to medium hard, dark brown to purple, fine grain, massive mud stone. Core loss: 62.88 to 63.46m.		-	20 ^ບ 40 ^ບ 50 ^ບ	r	12 7	61	13				3		
64.00			W2-W3, soft to medium hard, dark brown, fine grain, massive mud stone. Core loss: 64.00 to 64.28m.		-	50 [∪]	r	6	72	36						
65.00 66.00			W2-W4, soft to medium hard, dark brown to greenish grey, fine grain. mud stone and sand stone. CL: 65.0 to 65.36 & 65.46 to 65.88m	2.30 2.10	-	50 ^u	r	5	22	,						
67.00			W3-W5, soft, greenish grey to brownish, fine grain sand stone Core loss: 66.00 to 66.21m.		-	50 [∪]	r	12	79	-						
68.00			W2-W5, soft to medium hard, brownish to greenish grey, fine grain, massive sand stone. Core loss: 67.00 to 67.10m and 67.52 to 67.73m		•	30 ^u 50 ^u	r	10	69	-						
69.00			W2-W3, soft to medium hard, greenish grey, brownish to purple, fine grain sand stone and mud stone. Core loss: 68.00 to 68.60m		-	50°	r	5	40	-						
70.00			W3-W4, soft to medium hard, dark brown, massive mud stone Core loss : 69.00 to 69.62m.		-	50 ^u	r	4	38	10						

ABBREVIATION rough-r, smooth-s, slickensided-sl, un-undulating, pl-planar, clay-cl, sand-sa, mica-mi, crushed-cr, iron stain-FeO Zone, MB-Mechanical Breakage, W1-Fresh, W2-slightly Weathered, W3-Moderately Weathered, W4-Highly Weathered, W5-Decomposed, FZ- Fractured, CL- Core loss Drilled by: SHIVA LAMICHHANE

KULEKHANI-3 HYDROELECTRIC POWER PROJECT

DRILL HOLE NO.: DHT-4

COORDINATES: 3039493.555N, 602656.722E

DRILLING MACHINE: VOLT-35 DRILLING METHOD: ROTARY

START DATE: 11/03/2002 COLLAR ELEVATION: 483.425 m **ELEVATION HOLE END:405.425 m** LOCATION: KESHARI KHOLA **INCLINATION: VERTICAL**

<u></u>	1			Γ					Coi		eco			/ER			esults
									RQI					H	田	LU	kg/cm2
Depth, m	Barel size	Core Log	Description	Water Table m.	Alteration	Orientation	Roughness	Joint/ cm	REC%	RQD%	20	40	90	80	100	Permeability	Laboratory
71.00	NX 		W3-W4, soft to medium hard, dark brown to purple, massive mud stone. Core loss: 71.00 to 71.08m		-	50 ^u	r	12	95	13							
71.50 72.00 73.00	66mm		W3-W5, soft to medium hard, dark brown, massive mud stone.	2.10 4.00		30° 50°	r	10	100	37							
74.00			W2-W4, soft to medium hard, brownish to purple, massive mud stone. Core loss: 74.00 to 74.26m		-	30° 50″	r	16	83	12							
74.50 75.00 76.00			W1-W2, medium to strong hard, brownish to purple, massive mud stone. MB: 75.52m and 75.84m		-	20° 30° 50°	r	11	100	35							·
77.00			W1-W4, soft to strong hard, brownish to purple, massive mud stone. Core loss: 76.00 to 76.39m and 77.00 to 77.08m	***************************************	-	20° 40° 50°	r	7	69	15							
77.50 78.00 78.20 79.00	+		W1-W3, soft to medium hard, purple to brownish massive mudstone. [END OF THE HOLE]	2.10 4.00	-	50°	ſ	12	100	•							
80.00	VIATIO	N rou	igh-r, smooth-s, slickensided-sl, un-undulating, p	ol=pla	nar, c	lay=c	, san	d=sa,	mica	≠mi,	crush	ed=cr	, iron	stain-	-FeO		

Zone, MB-Mechanical Breakage, W1-Fresh, W2-slightly Weathered, W3-Moderately Weathered, W4-Highly Weathered, W5-Decomposed, FZ= Fractured, CL= Core loss
Drilled by: SHIVA LAMICHHANE

BORE HOLE LOG

KULEKHANI-3 HYDROELECTRIC POWER PROJECT DRILL HOLE NO.: DHT-6 COORDINATES: 3039334.844N, 602651.540Em COL

W5-Decomposed, FZ- Fractured, CL- Core loss Drilled by: SANTA MAJHI

DRILLING MACHINE: Vol-35 DRILLING METHOD: ROTARY

START DATE: 06/04/2002 COLLAR ELEVATION: 512.640 m **ELEVATION HOLE END:452.640 m** LOCATION: KESARI KHOLA

								Cor RQI				· , ,	Ш	Ш	kg
Barrel Size	Core Log	Description	Water Level m	Alteration	Orientation	Roughness	Joint/R cm	REC%	RQD%	20	40	90	80	100	
NX 		W1-W2, medium hard, light to greenish grey, fine grain, massive sand stone. Core loss: 20.10 to 20.85 m.			30° 50°	ir	5	25	0						
- - - - - - -		W1-W2, medium to strong hard, greenish to dark grey, fine grain massive sand Core loss : 21.00 to 21.42 m	18.6		50 ^u	ir	6	58	18						
		W1, soft to strong hard, greenish grey to dark grey, fine grain, massive sand stone. Core loss: 22.43 to 22.62 m			50 ^u	ir	5	81	51						
		Total core loss, softsand stone washed away during drilling Core loss: 23.00 to 24.00 m	_					0	0	##		₽			
		W1-W2, medium hard, dark grey, fine grain massive sand stone. Core loss: 24.00 to 24.70 m			50°	ir	4	30	21						
66		W2, soft, light to dark grey, fine grain, massive fossiliferous sand stone. Core loss: 25.00 to 25.39 m			50°	ir	7	61	18						
		W1-W2, soft to medium hard, light to greenish grey, fine grain, massive sand stone.	_		50°	ir	4	100	58						
		W1-W2, soft to medium hard, light to dark grey, fine grain, massive sand stone. Core loss: 27.51 to 28.00 m			30 ⁰ 50 ⁰	ir	5	67	27						
		W1, medium to strong hard, light grey to	_		200		7	100	ee						
		greenish grey, fine grain, massive sand stone. MB: 28.00 m			20° 50°	r	6	100	55						

B-A-92

BORE HOLE LOG

KULEKHANI-3 HYDROELECTRIC POWER PROJECT

DRILL HOLE NO.: DHT-6

COORDINATES: 3039334.844N, 602651.540Em

DRILLING MACHINE: Vol-35 DRILLING METHOD: ROTARY START DATE: 06/04/2002 COLLAR ELEVATION: 512.640 m ELEVATION HOLE END:452.640 m LOCATION: KESARI KHOLA

INCLINATION: VERTICAL

			Description	C	ОСР	Т	Desc	riptio	n of					Core I	Reco	ver	Æ	kg/cm2
Depth, m	Barrel Size	Core Log			s per 1		Water Level m	Alteration	Orientation	Roughness	Joint/R cm	REC%	RQD%	20 40	09	80	100	Laboratory
	NX		Initial 90cm is colluvium deposition of fine	0-15	15-30	30-45	-											
1.00			to coarse grain, brown sand. Bed rock started from 0.90m that is W2, light to greenish grey, fine grain sand stone.	60	20	- 18/80	1.15	-	30°	r	3	32	-					,
			W2-W3, medium hard, dark brown to greenish grey, fine grain sand stone.					Feo	30° 40°	lr	11	100	-					
3.00			W2-W3, medium hard, dark grey to greenish grey, fine grain, jointed sand stone. Core loss: 2.20 to 2.46 m.				Dry	Feo	40° 50°	łr	10	74	-					
4.00		: .	W2-W3, medium hard, dark to greenish grey, fine grain, jointed sand stone. Core loss: 3.16 to 3.78 m.					Feo	30° 40°	ir	9	38	-					
			W2, medium hard, purple to greenish grey, fine, fine grain, massive sand stone. Core loss: 4.89 to 5.00 m.					-	40°	tr	3	89	81					:
5.70			W2, soft to medium hard, dark brown mud stone and fine grain, greenish grey sand stone.					-	30° 50°	lr	5	100	76					:
6.00			W2, medium hard, dark grey to greenish grey, fine grain, massive sand stone. M.B: 6.00 m. W1-W3, medium hard, greenish grey, fine				2.40	•	50°	lr	2	100	100					
7.00			grain, massive sand stone. Core loss : 6.35 to 6.65 m. MB : 6.76 m, 6.85m, 7.17m & 7.59m				:	•	50°	r	1	77	77					:
7.75			W1-W3, soft to medium hard, greenish grey, fine grain, massive sand stone. Core loss: 7.75 to 8.00 m.					-	30° 50°	lr	9	80	34					
9.00	•		W1-W2, medium hard, greenish grey, fine grain, massive sand stone Core loss: 9.00 to 9.69 m.					-	10° 40°	łr	5	31	10					
Zone, M	B≖Me compo	chan sed,	ugh-r, smooth-s, slickensided-sl, un-undulating, ical Breakage, W1-Fresh, W2-slightly Weathered, FZ- Fractured, CL- Core loss MAJHI	pi=plan W3=M	ar, clay oderate	=cl, sai	nd=sa, athered	mica d, W4	≖mi, o =High	crush nly Wo	ed=cr eathe	r, iron red,	stair	n=FeO				

BORE HOLE LOG

KULEKHANI-3 HYDROELECTRIC POWER PROJECT

DRILL HOLE NO.: DHT-6

COORDINATES: 3039334.844N, 602651.540Em

DRILLING MACHINE: Vol-35 DRILLING METHOD: ROTARY START DATE: 06/04/2002 COLLAR ELEVATION: 512,640 m **ELEVATION HOLE END:452.640 m** LOCATION: KESARI KHOLA

INCLINATION: VERTICAL INATION: v....
Core Recovery kg/cm2 Barrel Size Water Level Core Log Orientation Roughness Joint/R cm -aboratory Alteration Description RQD% REC% 8 8 5 8 8 W1-W2, medium to strong hard, greenish grey, fine grain, massive sand stone.

W1-W2, medium hard, greenish grey fine 10.00 50 lr 63 100 10.80 11.00 W1-W2, medium hard, greenish grey, fine grain, massive sand stone. 204 Core loss: 11.52 to 11.78 m Ir 87 53 50° 6 MB: 11.00 m 12.00 W1-W3, medium hard, greenish grey, fine grain, massive sand stone. 5 20° 7 73 33 Core loss : 12.23 to 12.50 m 50° 13.00 W1-W2, medium to strong hard, greenish grey, fine grain, massive sand stone. 50° łr 68 36 6 Core loss: 13.00 to 13.29 m. 13.90 14.00 W1-W2, medium hard, greenish grey, to light brown, fine grain, massive sand stone. Feo 50 66 42 Core loss: 14,23 to 14,57 m. 7 14.90 MB: 14.00 m 15.00 W1-W3, medium hard, light brown to greenish 19.00 grey, fine grain, massive sand stone. 50 lr 6 54 11 Core loss: 15.15 to 15.66 m. 16.00 W1. medium hard, light grey, fine grain, massive sand stone. 50 Ir 4 81 76 Core loss: 16.31 to 16.50 m MB: 16.83 m 17.00 W1, medium hard, light grey, fine grain, massive sand stone. 50° lr 77 61 Core loss :17.07 to 17.30 m 18.00 W1-W2, medium hard, light grey, fine grain, massive sand stone. 50° Ir 87 73 Core loss: 18,00 to 18,13 m 19.00 W1, medium hard, light grey, fine grain. massive sand stone. 50 Ir 3 38 Core loss: 19.00 to 19.56 m.

ABBREVIATION rough-r, smooth-s, slickensided-sl, un-undulating, pl-planar, clay-cl, sand-sa, mica-mi, crushed-cr, iron Zone, MB-Mechanical Breakage, W1-Fresh, W2-slightly Weathered, W3-Moderately Weathered, W4-Highly Weathered, W5=Decomposed, FZ= Fractured, CL= Core loss Drilled by: SANTA MAJHI

BORE HOLE LOG

KULEKHANI-3 HYDROELECTRIC POWER PROJECT DRILL HOLE NO.: DHT-6 START COORDINATES: 3039334.844N, 602651.540Em COLLA

DRILLING MACHINE: Vol-35 DRILLING METHOD: ROTARY

W5=Decomposed, FZ= Fractured, CL= Core loss

Drilled by: SANTA MAJHI

START DATE: 06/04/2002 COLLAR ELEVATION: 512.640 m ELEVATION HOLE END:452.640 m LOCATION: KESARI KHOLA

—	-	_		т					INC	LIN	ATIO	N: V	ERT	ICA	L	
				<u> </u>	,			y	RQE	e n)%	ecov	/ery	Ш			kg/cm
90	Barrel Size	Core Log	Description	Water Level m	Alteration	Orientation	Roughness	Joint/R cm	REC%	RQD%	20	40	90	80	100	Laboratory
	66 	1	W1, strong hfard, light to dark grey, fine grain, massive, fossiliferous sand stone			50°	r	2	100	7						
30			Core loss: 31.05 to 31.14 m W1, medium to strong hard, light grey, fine			30 ^u	ir	4	94	91						
<u> </u>			grain, massive sand stone. Core loss: 31.30 to 31.39 m MB: 32.00 m & 32.48 m W1, soft to medium hard, light grey to			30⁰		2	100							
<u> </u>		• •	greenish grey, fine grain, massive fossiliferous sand stone.			50°	ir	6	100	59						
10110			W1, soft to medium hard, light to greenish grey, fine grain, massive fossiliferous sand stone			30° 50°	ir	6	100	69						
0 0		$\cdot \cdot \cdot $	W1, soft, light grey to black, fine grain, massive sand stone with hard coal. Core loss: 36.03 to 36.68 m			50 ^u	ir	4	54	22						
			W1-W2, medium hard, greenish grey, fine grain, massive sand stone. Core loss: 37.20 to 37.32 m W1-W2, soft to medium hard, greenish			50 ^u	ir	5	85	76					•	
	11		grey, fine grain, massive sand stone. Core loss : 38.07 to 38.20 m MB : 38.94 m & 39.00 m			50 ^u	ir	4		70						
5 '			V1-W3, soft to medium hard, greenish grey to brown, fine grain, massive sand stone with mud. Core loss: 39.20 to 39.36 m cough=r, smooth=s, slickensided=sl, un=undulating	10.4		40 ^υ 50 ^υ	ir	6		14						

B-A-95

BORE HOLE LOG KULEKHANI-3 HYDROELECTRIC POWER PROJECT

DRILL HOLE NO.: DHT-6

COORDINATES: 3039334.844N, 602651.540Em

DRILLING MACHINE: Vol-35 DRILLING METHOD: ROTARY START DATE: 06/04/2002 COLLAR ELEVATION: 512.640 m ELEVATION HOLE END:452.640 m LOCATION: KESARI KHOLA

		T. T						INC	CAT CLIN	ATIO	ON:	VEI	RI K	CAL	LA
								RQI	re F	lecc	ver	У	H	Ħ	kg/cm2
E (40.00	Barrel Size	Description	Water Level m.	Alteration	Orientation	Roughness	Joint/R cm	REC%	RQD%	20	40	90	80	100	Laboratory
40.90	m	Core loss : 40.00 to 40.45 m					5								
42.00		W1-W3, soft to medium hard, light to dark, greenish grey, fine grain, massive sand stone with mud and pebbles as clast Core loss: 41.23 to 41.56 m & 41.86 to 42.10 m			50°	ir	6	63	23						
43.00		W1-W2, medium to srtong hard, greenish grey, fine grain, massive sand stone. Core loss: 43.81 to 43.90 m			40 ⁰ 50 ⁰	ir	3	94	88						
43.90		W1-W3, soft to medium hard, light grey to greenish grey, fine grain, sand stone with			50 ^υ	ir	6	77	28						
45.00 45.40		pebbles as clast. Core loss: 44.00 to 44.34 m W1-W3, soft to strong hard, light grey to greenish grey, fine grain, massive sand stone.	17		30°	ir	4	81	46						
46.00 46.90		Core loss: 45.47 to 45.75 m			50°		6								
88.00		Total core loss, conglomerate rock with pebble, the matrix material washed away during drilling. Core loss: 46.90 to 48.00 m					0	0	0						
9.00 BX		W1, strong hard, grey to greenish pebbles Core loss : 48.00 to 48.9 m Total core loss	10.35				0	0	0						
0.00		Core loss : 49.00 to 50.00 m		laves)	eand										
one, MB≖M	ecnanio osed, F	cal Breakage, W1=Fresh, W2=slightly Weathered, W3 FZ= Fractured, CL= Core loss	-Moder	ately V	sand= Veathe	sa, m red, V	N4=I	rnı, c Highl	y We	ea=c	er, iro	on st	ain=	reO	

BORE HOLE LOG

KULEKHANI-3 HYDROELECTRIC POWER PROJECT

DRILL HOLE NO.: DHT-6

COORDINATES: 3039334.844N, 602651.540Em

DRILLING MACHINE: Vol-35 DRILLING METHOD: ROTARY START DATE: 06/04/2002 COLLAR ELEVATION: 512.640 m ELEVATION HOLE END:452.640 m LOCATION: KESARI KHOLA

JUNICE	ING M	CIN	OD: HOTARY									: KE: ON: \				1
									Co	re F		very				
 	<u> </u>	-		E	T	Т	Т-	Т	IRQ	D% T	Т	<u> </u>	Τ	-		kg/cm2
ш Depth, ш	Barrel Size	Core Log	Description	Water Level m	Alteration	Orientation	Roughness	Joint/R cm	REC%	RQD%	20	40	09	80	100	Laboratory
	ВХ	- :	Total core loss	1		1	<u> </u>		T	\vdash			H			
			Core loss : 50.00 to 51.00 m					0								
51.00]		WO WO													
		* +	W2-W3, soft to medium hard, greenish grey, fine grain, massive sand stone.			50°	ir	4	27	0						
52.00			Core loss : 51.00 to 51.73 m W2-W3, soft to medium hard,													
			greenish grey, fine grain, massive sand stone Core loss: 52.00 to 52.70 m			50°	ir	4	30	13						
53.00			W1-W2, medium hard, greenish grey, fine grain, massive sand stone.			20°	ir		68	13						
53.75			Core loss :53.05 to 53.19 m & 53.48 to 53.58 m			50°		11								
54.00			W1-W2, medium hard, greenish grey fine grain, massive fossiliferous sand stone. Core loss: 54.00 to 54.58 m	10.25		50°	ir	6	54	0						
55.00			Oute loss : 54.00 to 54.56 m													
55.55			W1-W2, medium to strong hard, light to greenish grey, fine grain, massive sand stone. Core loss: 55.00 to 55.34 m			30° 40°	ir	10	66	10						
56.00		:1	W1, strong to medium hard, light grey			30°	ir	ļ	67	45						
			to greenish grey, fine grain, massive sand stone. Core loss : 56.00 to 56.33 m			50°		5								
57.00		[W1-W2, medium to strong hard, light grey, fine grain, massive sand stone Core loss: 57.00 to 57.70 m			50°	ir	4	30	13						
58.00																
		c r	W1-W2, medium to strong hard, greenish grey to light grey, fine grain, massive sand stone. Core loss: 58.00 to 58.56 m			30° 50°	ir	8	44	13						
59.00			W3, soft to medium hard, greenish			30°	ir	4	22	0						
			grey, fine grain sand stone Core loss : 59.00 to 59.78 m			50°										
60.00	▼ ,	·.L			- 1		- 1			E						

ABBREVIATION rough=r, smooth=s, slickensided=sl, un=undulating, pl=planar, clay=cl, sand=sa, mica=mi, crushed=cr, iron stain=FeO Zone, MB=Mechanical Breakage, W1=Fresh, W2=slightly Weathered, W3=Moderately Weathered, W4=Highly Weathered, W5=Decomposed, FZ= Fractured, CL= Core loss

Drilled by: SANTA MAJHI

BORE HOLE LOG

KULEKHANI-3 HYDROELECTRIC POWER PROJECT

DRILL HOLE NO.: BD-4

FZ= Fractured, CL= Core loss Drilled by: SANJEEV POKHAREL

COORDINATES; 3040889.416 N, 602335.992 E DRILLING MACHINE: KOKEN

DRILLING METHOD: ROTARY

START DATE: 10/04/2002 COLLAR ELEVATION:562.083m **ELEVATION HOLE END:512.083 m** LOCATION: YANGRANG KHOLA

		Ţ		Т —					Coi		200	VIV.	VEF	HIC		
		<u> </u>							RQE		1000	ve		1111		esults kg/d
.00	Barrel Size	Core Log	Description	Water Level n	Alteration	Orientation	Roughness	Joint/R cm	REC%	RQD%	82	40	09	0	Permeability	o de l
.00	76mm		Colluvium deposition of dark grey, medium grain sand, mud and pebble cobble size phyllite. Colluvium deposition of medium to coarse grain, greenish grey sand and cobble, boulder size, dark grey phylite.	1.35	<i>3</i> 4				100							
00		To the control of the	Initially 11 cm of run is cobble size, dark grey to greenish phyllite. From 2.11 m bed rock is observed, W1, strong hard light to dard grey, fine grain, laminated light to dark grey, fine grain, laminated and highly jointed and fragmented phyllite. W1, strong hard, dark grey, fine grain laminated, highly jointed and fragmented phyllite.			30° 50° 30° 50°	ir ir	9	100	0						
00			W1, strong hard, dark grey, fine grain, laminated, moderately jointed phyllite			20° 50°	ir	8	100	20						
00			W1, strong hard, dard grey, fine grain, laminated dolomatic phyllite. W1, srong hard, dark grey, fine grain, laminated dolomatic phyllite			20° 50° 30° 50°	ir	6	100	74						
0			W1, strong hard, dark grey, fine grain, laminated dolomatic phyllite.			20° 50°	ir	6	100	46						
0			W1, strong hard, dark grey, fine grain, laminated dolomatic phyllite MB: 8.98 m. W1, strong hard, dark grey, fine grain, laminated			30° 50°	ir	5		58 82						
OO SRE	VIATIO		dolomatic phyllite. MB : 9.29 m, 9.59 m and 9.85 m ugh=r, smooth=s, slickensided=sl, un=undulating, p	l=plan		50°		5							n eta	-

BORE HOLE LOG

KULEKHANI-3 HYDROELECTRIC POWER PROJECT

DRILL HOLE NO.: BD-4

COORDINATES; 3040889.416 N, 602335.992 E

DRILLING MACHINE: KOKEN DRILLING METHOD: ROTARY

START DATE: 10/04/2002 COLLAR ELEVATION:562.083m ELEVATION HOLE END:512.083 m LOCATION: YANGRANG KHOLA

Description W1, strong hard, dark grey, fine grain, laminated dolomatic phyllite	Water	Alteration	ation	sse	E	<u> </u>	RQI		Reco	vei			LU	esults kg/cn
Description W1, strong hard, dark grey, fine grain,	Water	ration	ation	SSS	٤		RQ.	D%	T	Т	塂	##		kg/cn
Description W1, strong hard, dark grey, fine grain,	Water Level	ration	ation	SSS	ے					- 1			_	
W1, strong hard, dark grey, fine grain, laminated dolomatic phyllite		Alfe	Orientation	Roughness	Joint/R cm	REC%	RQD%	20	40	8	80	100	Permeability	Laboratory
Core loss : 10.56 to 11.00 m MB : 10.06 m and 10.32 m			30° 50°	ir	5	56	0							
W1, strong hard, dark grey to greenish grey, fine grain, laminated phyllite and dolomatic phyllite			30° 50°	ir	6	100	40							
W1, strong hard, dark grey, fine grain, laminated, jointed and fragmented dolomatic phyllite.	3.5		30° 50°	ir	10	100	24							
W1, strong hard, dark grey, fine grain, laminated dolomaic phyllite			30° 50°	ir	6	100	63							
W1, strong hard, dark gtey, fine grain, laminated, jointed and fragmented dolomitic phyllite.			30° 50°	ir	8	100	51							
W1, strong hard, dark grey, fine grain, laminated, fragmented dolomtic phyllite.			20° 50°	ir	9	100	12							
W1, strong hard, dark grey, fine grain, laminated, highly jointed and fragmented dolomitic phyllite with Quartz vein.			10° 50°	ir	12	100								
W1, strong hard, dark grey to greenish grey, fine grain, laminated, highly jointed and fragmented dolomitic phyllite.	9.3		10° 50°	ir	9	100	0							
W1, strong hard, dark grey, fine grain, laminated, highly jointed and fractured dolomitic phyllite Core loss: 18.58 to 19.00 m	1		5° 50°	ir	8	58	٥							
W1, strong hard, white to dark grey, fine grain, laminated, highly jointed and fragmented phyllitic dolomite with Quartz vein.			30° 50°	ir	9									
2	fine grain, laminated phyllite and dolomatic phyllite W1, strong hard, dark grey, fine grain, laminated, jointed and fragmented dolomatic phyllite. W1, strong hard, dark grey, fine grain, laminated dolomatic phyllite W1, strong hard, dark gtey, fine grain, laminated, jointed and fragmented dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, fragmented dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, highly jointed and fragmented dolomitic phyllite with Quartz vein. W1, strong hard, dark grey to greenish grey, fine grain, laminated, highly jointed and fragmented dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, highly jointed and fractured dolomitic phyllite Core loss: 18.58 to 19.00 m W1, strong hard, white to dark grey, fine grain, laminated, highly jointed and fragmented phyllitic dolomite with Quartz vein.	fine grain, laminated phyllite and dolomatic phyllite W1, strong hard, dark grey, fine grain, laminated, jointed and fragmented dolomatic phyllite. W1, strong hard, dark grey, fine grain, laminated dolomaic phyllite W1, strong hard, dark gtey, fine grain, laminated, jointed and fragmented dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, fragmented dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, highly jointed and fragmented dolomitic phyllite with Quartz vein. W1, strong hard, dark grey to greenish grey, fine grain, laminated, highly jointed and fragmented dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, highly jointed and fractured dolomitic phyllite Core loss: 18.58 to 19.00 m W1, strong hard, white to dark grey, fine grain, laminated, highly jointed and fragmented phyllitic dolomite with Quartz vein. ugh-r, smooth-s, slickensided-sl, un-undulating, pl-planar, clayed all Breakage, W1-Fresh, W2-slightly Weathered, W3-Moderately and Breakage, W1-Fresh, W2-slightly Weathered, W3-Moderately	fine grain, laminated phyllite and dolomatic phyllite W1, strong hard, dark grey, fine grain, laminated, jointed and fragmented dolomatic phyllite. W1, strong hard, dark grey, fine grain, laminated dolomaic phyllite W1, strong hard, dark grey, fine grain, laminated, jointed and fragmented dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, fragmented dolomtic phyllite. W1, strong hard, dark grey, fine grain, laminated, highly jointed and fragmented dolomitic phyllite with Quartz vein. W1, strong hard, dark grey to greenish grey, fine grain, laminated, highly jointed and fragmented dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, highly jointed and fractured dolomitic phyllite Core loss: 18.58 to 19.00 m W1, strong hard, white to dark grey, fine grain, laminated, highly jointed and fragmented phyllitic dolomite with Quartz vein. ugh-r, smooth-s, slickensided-sl, un-undulating, pl-planar, clay-cl, san all Breakage, W1-Fresh, W2-slightly Weathered, W3-Moderately Weathered, W3-Moderately Weathered	fine grain, laminated phyllite and dolomatic phyllite W1, strong hard, dark grey, fine grain, laminated, jointed and fragmented dolomatic phyllite. W1, strong hard, dark grey, fine grain, laminated dolomatic phyllite W1, strong hard, dark gtey, fine grain, laminated, jointed and fragmented dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, fragmented dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, highly jointed and fragmented dolomitic phyllite with Quartz vein. W1, strong hard, dark grey to greenish grey, fine grain, laminated, highly jointed and fragmented dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, highly jointed and fractured dolomitic phyllite Core loss: 18.58 to 19.00 m W1, strong hard, white to dark grey, fine grain, laminated, highly jointed and fragmented phyllitic dolomite with Quartz vein. 9.3 5° 50° 10° 50° 5	fine grain, laminated phyllite and dolomatic phyllite W1, strong hard, dark grey, fine grain, laminated, jointed and fragmented dolomatic phyllite. W1, strong hard, dark grey, fine grain, laminated dolomaic phyllite W1, strong hard, dark grey, fine grain, laminated, jointed and fragmented dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, fragmented dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, highly jointed and fragmented dolomitic phyllite with Quartz vein. W1, strong hard, dark grey to greenish grey, fine grain, laminated, highly jointed and fragmented dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, highly jointed and fractured dolomitic phyllite Core loss: 18.58 to 19.00 m W1, strong hard, white to dark grey, fine grain, laminated, highly jointed and fragmented phyllitic dolomite with Quartz vein.	fine grain, laminated phyllite and dolomatic phyllite W1, strong hard, dark grey, fine grain, laminated, jointed and fragmented dolomatic phyllite. W1, strong hard, dark grey, fine grain, laminated dolomatic phyllite W1, strong hard, dark gtey, fine grain, laminated, jointed and fragmented dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, fragmented dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, highly jointed and fragmented dolomitic phyllite with Quartz vein. W1, strong hard, dark grey to greenish grey, fine grain, laminated, highly jointed and fragmented dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, highly jointed and fractured dolomitic phyllite Core loss: 18.58 to 19.00 m W1, strong hard, white to dark grey, fine grain, laminated, highly jointed and fragmented phyllitic dolomite with Quartz vein.	fine grain, laminated phyllite and dolomatic phyllite W1, strong hard, dark grey, fine grain, laminated, jointed and fragmented dolomatic phyllite. W1, strong hard, dark grey, fine grain, laminated dolomatic phyllite W1, strong hard, dark grey, fine grain, laminated, jointed and fragmented dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, fragmented dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, highly jointed and fragmented dolomitic phyllite with Quartz vein. W1, strong hard, dark grey to greenish grey, fine grain, laminated, highly jointed and fractured dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, highly jointed and fractured dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, highly jointed and fractured dolomitic phyllite Core loss: 18.58 to 19.00 m W1, strong hard, white to dark grey, fine grain, laminated, highly jointed and fragmented phyllitic dolomite with Quartz vein.	fine grain, laminated phyllite and dolomatic phyllite W1, strong hard, dark grey, fine grain, laminated, jointed and fragmented dolomatic phyllite. W1, strong hard, dark grey, fine grain, laminated dolomaic phyllite W1, strong hard, dark grey, fine grain, laminated, jointed and fragmented dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, fragmented dolomic phyllite. W1, strong hard, dark grey, fine grain, laminated, highly jointed and fragmented dolomitic phyllite with Quartz vein. W1, strong hard, dark grey to greenish grey, fine grain, laminated, highly jointed and fractured dolomitic phyllite W1, strong hard, dark grey, fine grain, laminated, highly jointed and fractured dolomitic phyllite Core loss: 18.58 to 19.00 m W1, strong hard, white to dark grey, fine grain, laminated, highly jointed and fragmented phyllitic dolomite with Quartz vein.	fine grain, laminated phyllite and dolomatic phyllite W1, strong hard, dark grey, fine grain, laminated, jointed and fragmented dolomatic phyllite. W1, strong hard, dark grey, fine grain, laminated, jointed and fragmented dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, fragmented dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, fragmented dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, highly jointed and fragmented dolomitic phyllite with Quartz vein. W1, strong hard, dark grey, fine grain, laminated, highly jointed and fragmented dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, highly jointed and fragmented dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, highly jointed and fractured dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, highly jointed and fractured dolomitic phyllite W1, strong hard, dark grey, fine grain, laminated, highly jointed and fragmented phyllitic dolomite with Quartz vein.	fine grain, laminated phyllite and dolomatic phyllite W1, strong hard, dark grey, fine grain, laminated, jointed and fragmented dolomatic phyllite. W1, strong hard, dark grey, fine grain, laminated, jointed and fragmented dolomitic phyllite. W1, strong hard, dark gtey, fine grain, laminated, fragmented dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, fragmented dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, highly jointed and fragmented dolomitic phyllite with Quartz vein. W1, strong hard, dark grey to greenish grey, fine grain, laminated, highly jointed and fragmented dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, highly jointed and fractured dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, highly jointed and fractured dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, highly jointed and fractured dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, highly jointed and fractured dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, highly jointed and fragmented phyllitic dolomite with Quartz vein.	fine grain, laminated phyllite and dolomatic phyllite W1, strong hard, dark grey, fine grain, laminated, jointed and fragmented dolomatic phyllite. W1, strong hard, dark grey, fine grain, laminated dolomaic phyllite W1, strong hard, dark gtey, fine grain, laminated, jointed and fragmented dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, fragmented dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, highly jointed and fragmented dolomitic phyllite with Quartz vein. W1, strong hard, dark grey to greenish grey, fine grain, laminated, highly jointed and fragmented dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, highly jointed and fragmented dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, highly jointed and fractured dolomitic phyllite Core loss: 18.58 to 19.00 m W1, strong hard, white to dark grey, fine grain, laminated, highly jointed and fragmented phyllitic dolomite with Quartz vein.	fine grain, laminated phyllite and dolomatic phyllite W1, strong hard, dark grey, fine grain, laminated, jointed and fragmented dolomatic phyllite. W1, strong hard, dark grey, fine grain, laminated dolomaic phyllite W1, strong hard, dark gtey, fine grain, laminated, jointed and fragmented dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, fragmented dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, highly jointed and fragmented dolomitic phyllite with Quartz vein. W1, strong hard, dark grey to greenish grey, fine grain, laminated, highly jointed and fragmented dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, highly jointed and fragmented dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, highly jointed and fractured dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, highly jointed and fractured dolomitic phyllite Core loss: 18.58 to 19.00 m W1, strong hard, white to dark grey, fine grain, laminated, highly jointed and fragmented phyllitic dolomite with Quartz vein.	fine grain, laminated phyllite and dolomatic phyllite W1, strong hard, dark grey, fine grain, laminated, jointed and fragmented dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, jointed and fragmented dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, jointed and fragmented dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, fragmented dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, highly jointed and fragmented dolomitic phyllite with Quartz vein. W1, strong hard, dark grey to greenish grey, fine grain, laminated, highly jointed and fragmented dolomitic phyllite. W1, strong hard, dark grey to greenish grey, fine grain, laminated, highly jointed and fragmented dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, highly jointed and fractured dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, highly jointed and fractured dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, highly jointed and fractured dolomitic phyllite. W1, strong hard, white to dark grey, fine grain, laminated, highly jointed and fragmented phyllitic dolomite with Quartz vein.	ffine grain, laminated phyllite and dolomatic phyllite W1, strong hard, dark grey, fine grain, laminated, jointed and fragmented dolomatic phyllite. W1, strong hard, dark grey, fine grain, laminated, jointed and fragmented dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, fragmented dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, highly jointed and fragmented dolomitic phyllite with Quartz vein. W1, strong hard, dark grey to greenish grey, fine grain, laminated, highly jointed and fragmented dolomitic phyllite. W1, strong hard, dark grey to greenish grey, fine grain, laminated, highly jointed and fractured dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, highly jointed and fractured dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, highly jointed and fractured dolomitic phyllite. W1, strong hard, dark grey, fine grain, laminated, highly jointed and fractured dolomitic phyllite W1, strong hard, white to dark grey, fine grain, laminated, highly jointed and fragmented phyllitic dolomite with Quartz vein.

BORE HOLE LOG

KULEKHANI-3 HYDROELECTRIC POWER PROJECT

DRILL HOLE NO.: BD-4

COORDINATES; 3040889.416 N, 602335.992 E

DRILLING MACHINE: KOKEN DRILLING METHOD: ROTARY START DATE: 10/04/2002 COLLAR ELEVATION:562.083m **ELEVATION HOLE END:512.083 m** LOCATION: YANGRANG KHOLA INCLINATION: VERTICAL

									ATIO		EF	TIC		
		T							cover	у	Ε			esults
		E	1	Т	Τ	Т	RQI	J% 	П		_	4	H LU	kg/cn
Ba	Description	Water I evel m	Alteration	Orientation	Roughness	Joint/R cm	REC%	RQD%	20	9 09	3 3	200	Permeability	Laboratory
imm	W1, strong hard, light to dark grey, fine grain, laminated, highly jointed and fragmented dolomite and phyllitic dolomite with mica parting.			30° 50°	ir	12	100	0						
The second secon	W1, strong hard, dark grey, fine grain, laminated, highly jointed and fractured dolomitic phyllite with mica parting. Core loss: 21.48 to 22.00 m			15 ⁰ 30 ⁰ 60 ⁰	ir	9	48	0						
and the second s	W1, strong hard, light grey to greenish fine grain, highly jointed and fragmented dolomite Core loss: 22.66 to 23.00 m	10		50°	ir	4	66	0						
	W1, strong hard, light grey to dark green, fine grain, jointed and fractured dolomite. Core loss: 23.00 to 23.10 m		FeS	20° 50°	ir	11	90	24						
	W1, strong hard, light grey to dark green, fine grain, highlly jointed and fractured dolomite		FeS	20° 50°	ir	14	100	0						
	W1, strong hard, dark grey to dark green, fine grain, highly jointed and fragmented calcatious phyllitic dolomite with pyrite and feldspar		FeS	20 ^υ 50 ^υ	ir	11	100	٥						
	W1, strong hard, dark green, fine grain, jointed and fragmented calcarious phyllitic dolomite with pyrite and Quartz vein. Core loss: 26.13 to 26.51 m		FeS	60°	ir	6	62	10						
e bille d'elle problème à dell'especie de consequent de consequent de consequence	W1, strong hard, dark green, fine grain jointed calcarious phyllitic dolomite with pyrite and Quartz vein Core loss: 27.45 to 28.00 m		FeS	50°	ir	7	45	24						
	W1, strong hard, dark green to grey, fine grain, highly jointed and fragmented phyllitic dolomite with Quartz vein. Core loss: 28.00 to 28.44 m		FeS	50°	ir	3	56	0						
S. Principles (Spine)	W1, strong hard, light grey to greenish fine grain, highly jointed and fragmented phyllitic dolomite with Quartz vein and pyrite.	11	FeS	50 ^υ 50 ^υ	ir	10	100	٥						