swissboring

CLIENT: SANYU CONSULTANTS INC.

			********	presentation to				rameric		Statement but	
Packer or Lu	geon test. Sheet 1			Site:		AL MIL	HIA	Location	on:	AL D	HAID
Depths below	ground level to:			Job No) <u>.</u>	E-2145		Boreh	ofe No:	ВІ	
(a) top of test	section:	18.00	មា	Date:		02.07.9	s :	Sheet:		1 of	2
(b) bottom of	test section:	23.00	m	Groun	d level:		m	Crew/c	operator:	JOHN	i
(c) centre of t	est section	20.50	ra	(Ordn	ince datu	m)	<u>-</u> .				
(d) bottom of	hole at time of test:	200.00	m	Weath	ėt.	hot, win	dy.			:	
(e) bottom of	casing:	15.00	m	Packer	pressure		28 bar	Test N	o:	8	
(f) initial gro	und water level: (see NOTE 2)	16.10	m	Packer	Туре:	:	Pneuma	itic 86 n	un		
Length of test	l section	5.00	m	Ďia jel	l'hole in l	est area:		94	mm .		
Gauge height	above ground level:	0.90	m -	Type o	frock:	CALCA	REOU	S MUD	STONE.		
Test record											
1st period	Time, min	0	5		10		15				Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	30505.2	30507		30510		30513				flow q litres/min
3	Water take, litres	2.1		2.9		2.4					0.49
2nd period	Time, min	0	5		10		15				Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	30512.6	30516		30520		30524	:			flow g litres/min
4	Water take, litres	3.5	:	4.2		4.1	1				0.79
3rd period	Time, min	0	5		10		15				Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	30524.4	30530		30535		30540				flow q litres/min
5	Water take, litres	5.1		5,4		4.9					1.03
4th period	Time, min	0	5		10		15				Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	30539.8	30544		30548		30552				flow q litres/min
4	Water take, litres	4.1		3.8		4.2					0.81
5th period	Time, min	0	5		10		15				Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	30551.9	30554		30556		30558				flow g titres/min
3	Water take, litres	. 1.8		2.4		2.2					0.43

PROJECT	Γ:	CORE DRILL	ING AL DHAID		swis	sboring	j
CLIENT:	:	SANYU CON	SULTANTS				
Packer or Lu	igeon test. She	ct 2		Site:	AL MILHIA	Location: AL	DRAID
NOTE 1. Fo	r test details, s	ee sheet 1.		Job No:	E-2145	Borchole No: B1	
NOTE 2. If	ground water I	evel unknown, or be	low test	Date:	02.07.95	Sheet: 2 o	f 2
section, use o	depth to centre	of test section		Ground level:	n	Crew/operator JO	١N
		-	en e	(Ordnance dat	um)		
				Weather:	hot, windy.		
Computation	ı by:	GEORGE		Test No:	8		
Computatio	n record						
Data (from s	heel 1)			Length of test	section, /:	5.00 (m)	
luitial depth	to ground wat	er:	16.10 (i)	Gauge height	above ground leve	0.90 (m)	(
Period	Flow, q	Gauge pressure		Friction head !	loss, m	Total head, h	
	litres/min	Gauge	Head of	in basic	in extra	(i)+(i)+(i)+(i)-(i)-(i)	•
		pressure (bars)	water, m	pipework	roos and pipes		
	(3)	(4)	(9)	ര	Ø	(8)	
1 51	0,49	3	30	0.0002	0.0000	47.00	
2nd	0.79	4	40	0.0003	0.0001	57.00	
3rd	1.03	5	50	0.0008	0.0001	67.00	
4th	0.81	4	40	0.0005	0.0001	57.00	
5th	0.43	3	30	0.0001	0.0000	47.00	
Now, q., in lites per minute		1 st Sth		and dish		311	
0	10.00	45.00	50.0G 55.0	0 60.0	00 65.0	0 70.00	75.00
			Total	head, h , in mei	tres .		
				Permeability	Estimate:		
Calculations	s:						
Calculations Slope of grap		0.0291			Q (Vmin)	K (m/day) K	(envisee)
Slope of grap			1	Period 1	Q (l/min) 0.49		(cm/sec) 2.21E-06
Slope of grap L = (100/1)*	ph = qh = '(qh) in lugeor		1	Period 1 Period 2		1.91E-03	
Slope of grap L = (100/1)* where I is th	ph = qh = '(qh) in lugeor	า บกใร =			0.49	1.91E-03 2 2.51E-03 2	2.21E-06
Slope of grap L = (100/1)* where I is th	ph = qh = (qh) in lugeon e length of test	n units =	nvday	Period 2	0.49 0.79	1.91E-03 2 2.51E-03 2 2.79E-03 3	2.21E-06 2.91E-06

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PROJECT	CONCONILLING	へしレルカル

swissboring

CLIENT: SANYU CONSULTANTS INC

Packer or Luj	geon test. Sheet I			Site:		AL MII	IHA	Location:	AL D	HAID
Depths below	ground level to:			Job No);	E-2145		Borehole No:	B1	:
(a) top of test	section:	30.00	m :	Date:		02.07.9	5	Sheet:	1 of	2
(b) bottom of	test section:	35.00	m :	Groun	d level:	:	m	Crew/operator:	юн	N.
(c) centre of t	est section	32.50	m	(Ordna	ince datu	m)				
(d) bottom of	hole at time of test:	200.00	m	Weath	er:	нот, у	VINDY.			:
(e) bottom of	casing:	15.00	m	Packer	pressure		32	Test No:	7	
(f) initial grou	and water level: (see NOTE 2)	16.10	m :	Packer	Type:		Pneuma	itic 86 mm		
Length of test	section	5.00	m ,	Dia. ol	hole in t	est area:	-	94 mm		
Gauge height	above ground level:	0.90	m	Type c	frock:	CALCA	REOU	S LIMESTONE	:	
Test record										
Ist period	Time, min	0	5		10		15			Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	30422.3	30423		30423	,	30423			flow q litres/min
5	Water take, litres	0.2		0		0		,		0.01
2nd period	Time, min	0	5		10		15			Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	30422.5	30425		30428		30429			flow <i>q</i> litres/min
6	Water take, litres	2.7		. 2.4		1.6				0.45
3rd period	Time, min	0	5	-	10	~~~	15			Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	30429.2	30432		30435		30438			flow q litres/min
7.	Water take, litres	2.9		3.1		3				0.60
4th period	Tine, min	0	3		10		15			Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	30438.2	30440		30443		30445			flow q titres/min
6	Water take, litres	2.1		2.2	1	2.1				0.43
5th period	Time, min	0	5		10		15			Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	30444.6	30445		30446	:	30446			flow q titres/min
5	Water take, litres	0.7		0.6		0				0.09

Remarks (to include details of pipework where relevant):

very low water intake.

PROJECT: CORE DRILLING AL DHAID. swissboring CLIENT: SANYU CONSULTANTS. Packer or Lugeon test. Sheet 2 AL MILIHA Location: AL DHAID Job No: E-2145 Borehole No: BI NOTE 1. For test details, see sheet 1. Date: 02.07.95 2 of 2 NOTE 2. If ground water level unknown, or below test section, use depth to centre of test section Ground level: Crew/operator JOHN (Ordnance datum) Weather: HOT, WINDY GEORGE Test No: Computation by: Computation record Dala (from sheet 1) Length of test section, I: 5.00 (m) 16.10 (i) 0.90 (m) Initial depth to ground water: Gauge height above ground level (2) Friction head loss, m Period Total head, h Flow, q Gauge pressure litres/min Gauge Head of in basic in extra (1) + (2) + (5) - (6) - (7) pipework pressure (bars) water, m rods and pipes (3) (4) (5) (6) (7) (8) 0.01 5 50 0.0000 0.0000 67.00 lsŧ 2nd 0.45 60 0.0003 0.0000 77.00 70 3rd 0.60 7 0.0005 0.0000 87.00 4th 0.43 6 60 0.0002 0.0000 77.00 5th 50 0.09 0.0000 0.0000 67.00 Flow v. total head 0.9 0.8 0.7 Flow, q, in lites per minute 0.6 0.5 0.4 0.3 0.2 1.0 .O.1 70.00 **75.00** 60.00 65.00 80.00 85.00 90.00 95.00 Total head, h, in metres Calculations: Permeability Estimate: 0.0291 Slope of graph = qh Q (l/min) K (m/day) K (cm/sec) $L = (100/I)^{4}(q h)$ in lugeon units Period I 0.01 3.62E-05 4.20E-08 where I is the length of test section in metres Period 2 0.45 1.06E-03 1.22E-06 5.03E-03 m/day Period 3 1 lugcon 0.60 1.26E-03 1.45E-06

Comments.

Period 4

Period 5

0.43

0.09

1.01E-03

2.36E-04

1.17E-06

2.73E-07

5.82E-06 envisee

PROJECT COREDRILLING AL DHAID

swissboring

CLIENT: SANYU CONSULTANTS INC.

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Packer or Lug	geon test. Sheet 1			Site:		AL MIL	JHA	Locati	on:	AL D	HAID
Depths below	ground level to:	•••		Job No);	E-2145		Borch	ole No:	Bi	:
(a) top of test	section:	78.00	m	Date:		02.07.9	5	Sheet:		ો બ	2
(b) bottom of	test section:	83.00	m :	Groun	d level:		m	Crew/o	operator.	JOH	N
(c) centre of t	est section	80.50	m	(Ordna	ince datu	m)	. ;				
(d) bottom of	hole at time of test:	200.00	ធា	Weath	er:	нот, у	VINDY.				
(e) bottom of	casing:	15.00	m	Packer	pressure	::	32	Test N	o:	6 -	
(f) initial grou	und water level: (see NOTE 2)	16.10	m .	Packer	Туре:		Pneuma	tic 86 r	างา		
Length of test	t section	5.00	m :	Dia. of	hole in t	lest area		94	mm		
Gauge height	above ground level:	0.90	m	Туре с	frock:	CALCA	REOU	S LIME	STONE		1
Test record						er er ers sedmelse		w in al (1966-74)			
1st period	Time, min	0	5		10		15				Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	30356.1	30360	:	30363		30365	. :			flow q litres/min
6	Water take, litres	3.5		2.9		2.7					0.61
2nd period	Time, min	0	5		10	and a service two	15				Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	30365.2	30368		30372		30373				flow g litres/min
7	Water take, litres	2.9		3.6		1.5			or complete to be a		0.53
3rd period	Time, min	0	5		10		15				Average
Gauge pressure (bar):	Flownieter readings, Dipstick litres	30373.2	30377		30380		30384				Now q litres/min
8	Water take, litres	3.5		3.6		3.8					0.73
4th period	Time, min	0	5	1	10		15				Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	30384.1	30387	:	30390		30393				flow q litres/min
7	Water take, litres	3.1		3	7	3.2			wa kaousa		0.62
5th period	Time, min	0	5		10		15				Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	30393.4	30396		30399		30402				flow q fitres/min
6	Water take, litres	2.8		2.7		2.7					0.55
		THE RESERVE AND THE PARTY NAMED IN	THE PERSON NAMED IN		A COLUMN TO SECOND						

PROJ	ECI		CORE DRIL	LING AL DHAID		ewie	sbori	na	-
			. !			24412	SNOTE	ng	1
CLIE	NT:		SANYU CON	ISULTANTS.				. *	
Packer	or Lu	geon test. Shee	12	F accidentation with the Publish House Course	Site:	ALMILIHA	Location:	AL DHAID	
NOTE	i. For	test delails, se	e sheet 1.		Job No:	E-2145	Borchole No:	BI	
NOTE	2. If g	round water la	vel unknown, or t	relow test	Date:	02.07.95	Sheet:	2 of 2	
section,	use o	epth to centre	of test section		Ground level:	m	Cress/operator	JOHN	
				*1	(Ordnance data	ını)	:		
				i ja č.	Weather:	HOT, WINDY.			: :
Comput	ation	by.	GEORGE		Test No.	6			
Compu	tatio	n record							
Data (fr	om si	néal Í)	alah dahiy aya da da aya ka aya ka aya ka aya ka aya ka aya ka aya ay		Length of test	section, 1:	5.00) (m)	
Initial d	epth t	o ground wate	r:	16.10 (i)	Gauge height a	bove ground level	- 0.90) (m)	(2)
Period		Flow, g	Gauge pressure		Friction head k	oss, m	Total head, h		# N +
	i	litres/min	Gauge	Head of	in basic	in extra	(1)+(2)+(5)+(6)-	(7)	٠.
			pressure (bars)	water, ra	pipework	rods and pipes		18	
		(3)	(4)	(5)	(6)	(7)	(8)	· · · · · · · · · · · · · · · · · · ·	
lst .		0.61	6	60	0.0012	0.0000	77.00		
2nd		0.53	7	70	0.0009	0.0000	87.00		
318	· .	0.73	8	80	0.0017	0.0000	97.00		
4th	·	0.62	7	70	0.0012	0.0000	87.00		
Flov	v v. 1	otal head							
	0.8	1				3rd	T T		
						" هـ			:
ě	0.7	ļ						·-·	1
ž) n	سم ا					
ž	0.6	 	-		, ———				
lites				200					
Ē	0.5		Sih				. -		
Flow, q, in lites per minute		ļ			·	· .			_
. ជ័	0.4	 	-				 		
			<u> </u>						
		1	1						1
i	0.3	1	J!_						
i		0.00	80.0	0	90.00	10	<u> </u>	110.	00
	76		80.0		head, h , In metr	es	<u> </u>	110.	0 0
	7(lions:					es stimate:			:
Calculat Slope of	70 Hons:	h≐q/h =	0.0064	Totall	head, h , in metr Permeability E	es stimate: Q (l'min)	K (m/day)	K (cm/sec)	:
Slepe of L = (100	70 Hons: Eraph D/1)*(n = q1n = q1n) in lugeon	0.0064 unils =		Permeability E	es stimate: Q(Emin) 0.61	K (m/day)	K (cm/sec) 1.66£-06	:
Slepe of L = (100	76 Hons: graph O/1)*(is the	h = qh = qh) in lugeon length of test s	0.0064 units = ection in metres	Total l	Permeability E Period 1 Period 2	es	K (m'day) 1.44E-03 1.12E-03	K (cm/sec) 1.66£-06 1.29E-06	:
Slepe of L = (100	76 Hons: graph O/1)*(is the	n = q1n = q1n) in lugeon	0.0064 units = ection in metres 1.11E-03	Totał ł O nưđay	Permeability E Period 1 Period 2 Period 3	es (Stimate: Q (l'min) 0.61 0.53 0.73	K (m'day) 1.44E-03 1.12E-03 1.36E-03	K (cm/sec) 1.66£-06 1.29E-06 1.58E-06	:
Sleps of L = (100	Ilons: graph O/1)*(is the	h = qh = qh) in lugeon length of test s	0.0064 units = ection in metres	Totał ł O nưđay	Permeability E Period 1 Period 2	es	K (m'day) 1.44E-03 1.12E-03	K (cm/sec) 1.66£-06 1.29E-06	:

swissboring

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CLIENT: SANYU CONSULTANTS INC.

					arada delemb	30.WE-#3F	-		and the second	
Packer or Lu	geon test. Sheet 1			Site:		AL MII	LIHA	Location:	ALD	HAID.
Depths below	v ground level to:			Job No);	E-2143		Borchole No:	B1	-
(a) top of test	section	122.00	m	Date:		02.07.9	5	Sheet:	1 of	2
(b) bottom of	ftest section:	127.00	m :	Ground	d level:		កា	Crew/operator:	JOH	٧
(c) centre of t	test section	124.50	m	(Ordna	ince datu	m)		: 		
(d) bottom of	Thole at time of test:	200.00	m	Weath	er.	нот, у	VINDY			
(e) bottom of	casing:	15.00	W .	Packer	pressure		32	Test No:	5	1
(f) initial gro	und water level: (see NOTE 2)	16.10	m	Packer	Type:		Pneum	ntie 86 mm	. :	
Length of tes	t section	5.00	m	Dia. of	Thole in 1	est area	:	94 mm		
Gauge heigh	t above ground level:	0.90	m	Type o	frock:	CONG	LOMER	ATE		
Test record										
1st period	Time, min	0	5		10		15			Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	30037.3	30061		30078	·	30095			flow q litres/min
9	Water take, litres	23.5		16.9		17.6				3.87
2nd period	Time, min	0	5		10		15			Average
Gauge pressure (bar)	Flowmeter readings, Dipstick litres	30095.3	30113		30134		30154			flow g litres'min
10	Water take, litres			20.3		20.7				2.73
3rd period	Time, min	0	5	k_ran-Arrenance di.	10	Martine and and	15			Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	30154.2	30178		30200		30223			Bow q litres/min
n	Water take, litres	23.3	1	22.6		22,4				4.55
4th period	Time, min	0	5		10		15		:	Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	30222.5	30243		30264		30283			flow q litres/min
10	Water take, litres	20.8		20.2	: (19.8			0300477	4.05
5th period	Time, min	0	5		10		15			Average
Gauge pressure (bar):	Flowmeter rendings, Dipstick litres	30283.3	30301		30320		30336			flow q litres min

Remarks (to include details of pipework where relevant):

Water take, litres



: .	CT:			CORE	DRIL	AINC	G ĄL	DHA10				S	Wi	S	sb	0	ri	ng]	
CLIEN'	Τ:	• .	٠.	SANYU	CO	NSUI	LTAI	NTS	: '											
Packer or	Lug	eon test.	Sheet	2			30 90 4 00		Site	-	****	AL M	ILIH	1	Locat	ion:	- it-team	AL D	HAID.	
NOTE 1	For	test deta	ls, see	sheet 1.					Job	No:		E-214	5		Bore	hole l	No:	Bi		
NOTE 2.	. If gr	ound wa	iter lev	el unknov	wn, or	below	test		Date	e:		02.07	95		Sheet	:		2 of	2	
ection, u	ise de	pth to ce	ntre el	test secti	ion				Gro	und le	vel:	:		m	Crew	орега	tor	JOH	· ·	
									(Or	dnance	datu	m)						٠		
		- 1	. i	1					We:	ather:		нот.	WIN	DΥ		· .				
Computat	tion	by.		George		:			Tes	t No:			5			:		:		
Comput	ation	record														<u> </u>				
Data (fro	m sh	cet 1)							Lei	ngth ol	iesi s	ection,	1:				5.00	(m)		
nitial dep	բնի (ground	water					16.10 (Gai	ige he	ght al	ove gr	ound l	evel			0.90	(m)		C
Period		Flow, q		Gauge p	ressure	2			Frie	tion h	ead lo	88, m			Total	head	, h			
		litres/m	in .	Gauge			Head	of	in b	asic		in ex	ira		(1) + (1)	D+(5)	· (6) ·	(7)		
			:	pressure	(bars)		water	r, m	pipe	work		rods	and pi	pes	١.				_	
	44	(3)		(4))		(1)	l .		(6)			(7)			(8)				
İst		3.8	7	. 9			90) ,		0.037	1		.0011		1	06.94	}	· .		
2იძ		2.7.	3	10)		10	0		0.030	0	C	.0006		1	16.97				
rđ		4.5	5	11	1		110	0		0.077	3	C	.0014		1	26.92	!			· · ·
lth		4.0	5	10	 ว	1	10	n	.	0.062	3		.0012		1	16.94	1			
				,	" .	1	10		_	0.002	• 5	~~								
	v. (3.5 otal he		9	<u> </u>		90		<u> </u>	0.048			0009			06.95	<u> </u>			
	v. (<u> </u>												T]
	v. (<u> </u>]
Flow	6				<u> </u>								0.0009							
Flow	6				<u> </u>															
Flow	6			9	<u> </u>								0.0009							
Flow	6				<u> </u>								0.0009							
Flow	6 -			9	<u> </u>								0.0009							
Flow	6 -			9									0.0009							
Flow	6 -			9 s									0.0009							
Flow	6 -			9 s					lih				0.0009							
Flow	6 -			9 s					1111				0.0009							
Flow	4			9 s		.000			120				0.0009						14	0.00
Flow	4	otal he		9 s				2116	120 Head,	0.048			0.0009						141	0.00
Flow, q, in lites per minute	4 2	otal he		9 s		.00		2116	l bead,	0.048 0.60 h,in	metr		31		0.00				141	0.00
Flow, q, in lites per minute	4 - 100 ions:	otal he	rad	Jrt Str				2116	l bead,	0.048 0.60 h,in	metr	cs	31	134	0.60	06.93		K	14th	
Flow d'in lites per minute	4 - 2 1000 ions:	otal he	rad	99 3rt 5rt 600325		.000		2116	Pen	0.048 0.60 h,in	metr.	cs	3,7	134	0.00	06.93				:)
Flow d' in fices per minute Flow d' in fices per minute Flow (100)	2 1000 ions:	otal he	rad	9 Snt	1110]		2116	Pen	0.048 0.00 h, In	metro	cs	3r	134	D.00	06.93 (m/da	y)	7.	(ony'sec	·)
ute	2 1000 graph	otal he	rad	5n Sn	1110]	900	2116	Pen	0.048	metro	cs	e: (l'anim	134	0.00 K. 6.	06.93 (m/da 59E-0	y) 3	7. 4.	(cm/sec	s) 5
Flow d'in lites per minute Flow d'in lites per minute Flow (100)	2 1000 graph	otal he	rgeon	9 Sn	110] 3 m/d	900	2116	Peri	0.048 0.00 h, In	metro	c cs	e: (l'mir 2.73	134	0.00 K(06.93 (m/da 59E-0 26E-0	y)	7. 4. 7.	(on)'sec 62E-06 93E-06	s) 5 5

swissboring

CLIENT: SANYU CONSULTANTS INC.

Packer or Lu;	geon test. Sheet 1			Site:	-	AL MI	LIHA	Location:	AL [HAID.
Depths below	ground level to:			Job No): l	E-2145		Borehole No:	BJ	
(a) top of test	section:	127.00	m	Date:	(02.07.9	5	Sheet:	1 of	2
(b) bottom of	test section:	132.00	m	Groun	d level:		n)	Crew/operator:	JOH	N
(c) centre of t	est section	129.50	m	(Ordna	ince datui	nı)	: <u>.</u>			
(d) bottom of	hole at time of test:	200.00	m .	Weath	er:	нот, у	VINDY			
(e) bottom of	casing.	15.00	m :	Packer	pressure	I :	32 BA	Test No.	۱4 ,	
(f) initial gro	und water level: (see NOTE 2) 16.10	m	Packer	Туре:		Pneuma	atic 86 mm		· · · · · · · · · · · · · · · · · · ·
Length of tes	Section	5.00	m .	Dia, ol	f hole in t	est area	i:	94 nvn		
Gauge height	above ground level:	0.90	m	Type o	freck: (CONG	LOMER	RATE/LIMESTO	NE	
Test record										
1st period	Time, min	0	5		10		15			Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	29856.6	29867		29877		29886			flow q litres/min
9	Water take, litres	10.5		9.6		9.6				1.98
2nd period	Tinie, min	0	5	######################################	10		15			Average
Gauge pressure (bar)	Flowmeter readings, Dipstick litres	29886.3	29896		29907		29917			flow q litres/min
10	Water take, lives	9.7)	11.2		10				2.06
3rd period	Time, min	0	5		10)5			Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	29917.2	29928		29940		29952		· .	flow q litres/min
11	Water take, litres	11		31.8		12.4				2.35
4th period	Time, min	0	5		10		15			Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	29952.4	29965		29977	:	29990			flow q litres/min
10	Water take, litres	12.4	1	12.4		12.9				2 51
5th period	Time, min	0	5		10		15			Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	29990.1	30001		30013		30024		:	flow q litres min
9	Water take, litres	11.1	l	11.7	1	10.9				2.25

PROJECT	•	CORE DRIL	IING AL DHAID	. •	ewie	chari	12 A)	
				:	24412	sbori	ny	
CLIENT:	•	SANYU CON	SULTANTS					
Packer or Lu	geon test. Shee	12		Site:	AL MILITIA	Location:	AL DHAID.	record and
NOTE 1. For	lest details, se	e sheet).		Job No:	E-2145	Borchole No:	BI	
NOTE 2. If g	round water le	vel unknown, or b	elow test	Date:	02.07.95	Sheet:	2 of 2	
section, use d	epith to centre o	of test section		Ground level:	(1)	Crew/operator	JOHN	
				(Ordnance datu	m)			:
* 4				Weather:	HOT, WINDY			
Computation	by:	George		Test No:	4	!		
Computation								
Data (from st				Length of test s	ection, 1:	5.00	(m)	-
	o ground water	<u></u>	16.10 (1)		ove ground level	0.90) (m)	- (
Period	Flow, q	Gauge pressure		Friction head lo	ss, m	Total head, h		
. *	litres/min	Gauge	Head of	in basic	in extra	(1)+(2)+(5)-(6)-	(7)	
		pressure (bars)	water, m	pipework	rods and pipes			
	(3)	(9)	(5)	(6)	. `: (7)	(8)		
ļst	1.98	9	90	0.0172	0.0003	106.98		
2nd	2.06	10	100	0.0185	0.0003	116.98		
3rd	2.35	11	110	0.0236	0.0004	126.98		
4uh	2.51	10	100	0.0268	0.0003	116.97		-
5th	2.25	9	90	0.0217	0.0004	106.98		
Flow v.	total head							
Flow v.	total head							
	total head							
	total head				314			
	total head			ta I	344			
	total head	311 514	2nd		34			
	total head				34			
Flow, q., in lites per minute	total head			ta de la constant de	346			
	total head			1	3-4			
Flow, q . in lites per minute					34			
Flow, q. in lites per minute			2nd			10.00	140	00
Flow, q. in lites per minute			2nd	120.00	13	10.00	140.	00
Flow, q. in lites per minute			2nd		13	30.00	140.	00
Flow, q., in lites per minute	00.00		2nd	120.00 head, h, in mete	13 es	10.00	140.	00
Flow, q. in lites per minute	60.00	110.	2nd	120.00	es stimate;			
1.5. In lites per minute [2] 1. In lites per minute [3] 2. In lites per minute [5] 2. In lites per minute [6] 3. In lites per minute [6] 4. In lites per minute [7] 5. In lites per minute [8] 6. In lites per minute [8] 6. In lites per minute [8] 7. In lit lites per minute [8] 7. In lites per minute [8] 7. In lites per	00.00 h=9h=	110.	2nd	120.00 head, h, in mete	13 es	K (m/day) 3.37E-03	140. K (cm/sec) 3.90£-06	
Calculations: [2] [3] [4] [5] [6] [7] [7] [8] [9] [9] [9] [9]	00.00 h = qh = (qh) in lugeon	110.	2nd 2nd 00 Total	120.00 head, h, in meter	stimate: Q(l'min)	K (m/day)	K (cm/sec) 3.90E-06	
1.5 Your Plantions: Calculations: Slope of grap L = (100/1)*(where I is the	00.00 h = qh = (qh) in lugeon	0.0125 units =	OO Total	120.00 head, h, in metr Permeability E Period 1	es Stimate: Q (l'min) 1.98	K (m/day) 3.37E-03	K (cn/sec)	
1.5 Your Plantions: Calculations: Slope of grap L = (100/1)*(where I is the	60.00 h = qh = (qh) in lugeon tength of test	0.0125 units = section in metres	00 Total	120.00 head, h, in metr Permeability E Period 1 Period 2	es Stimate: Q(l'min) 1.98 2.06	K (m/day) 3.37E-03 3.21E-03	K (cm/sec) 3.90£-06 3.71E-05	

swissboring

CLIENT: SANYU CONSULTANTS INC.

Packer or Lug	geon test. Sheet 1			Site:		AL MI	IHA	Location: A	L DHAID.
Depths below	ground level to:			Jeo No):	E-2145		Borchole No: B	1
(a) top of test	section:	140.00	m	Date:		01.07.9	5	Sheet: 1	of 2
(b) bottom of	test section:	145.00	m	Ground	d level:		m	Crew/operator: H	OHN
(c) centre of to	est section	142.50	m	(Ordna	ince datu	ണ)			
(d) bottom of	hole at time of test.	200.00	m	Weath	er:	HOT, V	VINDY	,	
(e) bottom of	casing:	15.00	nı :	Packer	pressure		32 BA	Test No:	3
(f) initial grou	and water level: (see NOTE 2)	16.10	m ·	Packer	Type:		Pneum	itic 86 avn	
Length of test	section	5.00	m	Dia. of	hole in t	est area		94 mm	
Gauge height	above ground fevel:	0.90	m ·	Type o	frock:	CALC	REOU	S MUDSTONE	
Test record									
1st period	Time, min	0	5		10		15		Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	29823.8	29825	. :	29826		29826		flow q litres/min
10	Water take, litres	1.4		0.6		0.1			0.14
2nd period	Time, min	0	5		10	**********	15		Average
Gauge pressure (bar)	Flowmeter readings, Dipstick litres	29825.9	29827		29828		29829		flow q litres/min
H	Water take, litres	i		1.1		0.6			0.18
3rd period	Time, min	0	5		10		15		Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	29828.6	29830		29832		29834		Now q litres/min
12	Water take, litres	1.6		1.7		2.3			0.37
4th period	Time, min	0	5		10		15		Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	29834.2	29836		29838	:	29840	:	flow g litres/min
11	Water take, litres	2.1		2		1.9			0.40
5th period	Time, min	0	5		10		15		Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	29840.2	29841		29842		29843		flow q litres/min
10	Water take, litres	1.1		0.9		0.3		<u> </u>	0.15

PROJECT	↑:	CORE DRILI	ING AL DHAID		swis	sbori	ng
CLIENT:		SANYU CON	SULTANTS	·			· · · · · · · · · · · · · · · · · · ·
Packer or Lu	geon test. Shee	12		Site:	AL MILIHA	Location:	AL DHAID.
NOTE 1. For	test details, se	e sheet 1.		Job No:	E-2145	Borehole No:	Bi
NOTE 2. If a	ground water le	vel unknown, or b	elow test	Date:	01.07.95	Sheet:	2 of 2
section, use d	lepth to centre	of test section		Ground level:	m	Crew/operator	JOHN
• :			# # # # # # # # # # # # # # # # # # #	(Ordnance date	ບຄາ)		•
			Telephone g	Weather:	HOT, WINDY		
Computation	by:	George		Test No:	3		
Computatio	n record						
Data (from s	heet I)			Length of test	section, I:	5.00	0 (m)
Initial depth	o ground wate	r:	16.10 (i)	Gauge height	above ground level	0.90	0 (m)
Period	Flow, q	Gauge pressure		Friction head	oss, m	Total bead, h	
	litres/min	Gauge	Head of	in basic	in extra	(1)+(2)+(5)-(6)	·(7)
		pressure (bars)	water, m	pipework	rods and pipes		
	(3)	(4)	(S)	(6)	(n)	(8)	
Isi	0.14	10	100	0.0001	0.0000	117.00	
2nd	0.18	11	110	0.0002	0.0000	127.00	
3rd	0.37	12	120	0.0009	0.0000	137.00	
4th	0.40	11	110	0.0010	0.0000	127.00	
Silh :	0.15	 					
· · · · · · · · · · · · · · · · · · ·	total head	10	100	0.0002	0.0000	117.00	
Flow v.	L	10	100	0.0002	0.0000	117.00	
Flow v.	L	10	100	0.0002	0.0000	117.00	
Flow, q, in lites per minute	total head	10		***	0.0000	117.00	
Flow, q, in lites per minute	L	110.00	1st 5sh 120.00	2nd	30.60	140.00	150.60
Flow, q. in lites per minute	total head		1st 5sh 120.00	in the second se	30.00 Ires		150.60
Flow, q, in lites per minute	total head		1st 5sh 120.00	2nd land land land land land land land la	30.00 Ires		150.60 K (cm/sec)
Flow v. Flow d. in lites per minute Flow d.	total head	110.00	1st 5sh 120.00	2nd land land land land land land land la	30.00 tres Estimate:	140.00	
Flow v. Flow v. J. in lites per minute Flow of the property o	total head 00.00 : h = qh = (qh) in lugeon	110.00	. 120.00 Total	head, h, in mes	30.00 tres Estimate: Q (l'min)	140.00 K (m'day)	K (cm/sec)
Flow v. Slope of grap L= (100.7)* where I is the	total head 00.00 : h = qh = (qh) in lugeon	110.00 0.0118 units =	120.00 Total	land land land land land land land land	30.00 tres Estimate: Q (l'min) 0.14	140.00 K (m'day) 2.18E-04	K (cm/sec) 2.52E-07
Flow v. spin in the state of graph and	total head 00.00 h = qh = (qh) in lugeon length of test	0.0118 units = section in metres	120.00 Total	head, h, in met Permeability 1 Period 1 Period 2	30.00 tres Estimate: Q(l'min) 0.14 0.18	140.00 K (m'day) 2.18E-04 2.58E-04	K (cm/sec) 2.52E-07 2.99E-07

swissboring

CLIENT: SANYU CONSULTANTS INC.

	no en con estracionarione esta circinata de la BERTA (CONTRACTOR DE LA CONTRACTOR DE LA CON			THE CHARGE THE PARTY.			Approximately	y an i sida Poli s	N COUNTY PARTY.	-	
Packer or Lug	geon test. Sheel 1			Site:		AL MI	JHA	Locatio	n:	AL D	HAID.
Depths below	ground level to:			Job No	:	E-2145		Boreli	ole No:	BI	
(a) top of test	section:	160.00	c)	Date:		01.07.9	5	Sheet:		l of	2
(b) bottom of	test section:	165.00	m ;	Ground	level:		m	Crew/c	perator.	JOH	١ .
(c) centre of to	est section	162.50	m	(Orden	nce datu	m)					
(d) bottom of	hole at time of test:	200.00	m	Weath	r:	нот, у	VINDY				1 1
(e) bottom of	casing:	15.00	m i	Packer	pressure	:	32bar	Test N	0;	2	
(f) initial grou	and water level: (see NOTE 2)	16.10	m	Packer	Type:		Pneum	tic 86 n	ษท		
Length of test	section	5.00	ពា	Dia. of	hole in t	est area	:	94	mm		
Gauge height	above ground level:	0.90	m i	Турс о	frock:	CALC	AREOU	S MUD	STONE		
Test record											
1st period	Time, min	0	5	22203444	10		15				Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	29781.4	29784		29786		29788				flow g litres/min
10	Water take, litres	2.8		2.1		2					0.46
2nd period	Time, min	0	5		10		15				Average
Gauge pressure (bar)	Flowmeter readings, Dipstick litres	29788.3	29791		29794	:	29796		_		flow g lives/min
11	Water take, litres	3.1		2,3		2.6					0.53
3rd period	Time, min	0	5		10		15				Average
Gauge pressure (har):	Flowmeter readings, Dipstick litres	29796.3	29799		29803		29806				flow g titres/min
12	Water take, litres	2.7		3.7		3.3					0.65
4th period	Time, rain	0	5		10		15				Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	29806	29809		29811		29814				flow g titres/min
11	Water take, litres	2.6		2.6		2.6					0.52
5th period	Time, min	0	5		10		15				Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	29813.8	29816		29817		29819				flow q litres/min
10	Water take, litres	3.1		1.7		1.9					0.36

	Γ:	CORE DRILI	ING AL DHAID		swis	sbori	ng
CLIENT:		SANYU CONS	SULTANTS		* .\$ 		
Packer or Lu	geon test. She	et 2		Site:	AL MILIHA	Location:	AL DHAID.
NOTE 1. Foo	r test details, se	ee sheet 1.		Job No:	E-2145	Borchole No:	Bi
NOTE 2. If g	ground water k	evel unknown, or be	low test	Date:	01.07.95	Sheet:	2 of 2
section, use d	lepth to centre	of test section		Ground level:	m	Crew/operator	JOHN
				(Oronance date	vm)		
				Weather:	HOT, WINDY		
Computation	by.	George	·	Test No:	2		
Computatio	n record	1					<u> </u>
Data (from s	heet 1)			Length of test	section, I:	5.00	(m)
lnitia) depth (to ground wate	H.	16.10 (1)	Gauge height a	ibove ground leve	1 0.90	(m)
Period	Flow, q	Gauge pressure		Friction head I	055, m	Total head, h	
1.	litres'min	Gauge	Head of	in basic	in extra	(1)+(2)+(5)-(6)-	(7)
		buszente (parz)	water, m	pipework	rods and pipes		
	(3)	(4)	(5)	(6)	(7)	(8)	
ব	0.46	10	100	0.0015	0.0000	117.00	
2nd	0.53	11	110	0.0019	0.0000	127.00	<u>;</u>
3rd	0.65	12	120	0.0027	0.0000	137.00	
4Մո	0.52	11	110	0.0018	0.0000	127.00	
Flow v.	total ileau						
Flow v.	totar nead				·		
Flow, q. in lifes per minute		Son.	20,4		3rd		
Flow, q. in lites per minute		5th 5th 115.00 120.0		130.00		40.00 145	.00 150.00
Flow, q. in lites per minute			00 125.00	130.00	135.00	40.00 145	.00 150.00
Flow, q. in lites per minute			00 125.00		135.00	40.00 145	.00 150.00
Flow, q. in lites per minute	10.00		00 125.00	130.00	135.00 1. res	40.00 145	.00 150.00
Flow, q., in lites per minute	110.00		00 125.00	130.00 head, h, in met	135.00 1. res	40.00 145 K (m'day)	.00 150.00 K (cm/sec)
Flow, q. in lites per minute	110.00	0.0118	00 125.00 Fotal	130.00 head, h, in met	135.00 1 res Estimate:		
Calculations: (1) (2) (2) (3) (4) (9) (9) (1) (1) (1) (1) (1) (1	110.00 : : h = q h = (q h) in lugeon	0.0118	00 125.00 Fotal	130.00 head, h, in met	135.00 1 res Estimate: Q(l/min)	K (m'day)	K (cm/sec)
Calculations: (Calculations: Stope of grap L = (100/1)*(where I is the	110.00 : : h = q h = (q h) in lugeon	0.0118	00 125.00 Total	130.00 head, h, in met Permeability &	135.00 1 res Estimate: Q(l/min) 0.46	K (m'day) 7.16E-04	K (cm/sec) 8.29E-07
Calculations: Slope of grap L = (100/1)*(where I is the	in the second of test	0.0118 a units = 0 section in metres	NO 125.00 Fotal	130.00 head, h, in met Permeability & Period 1 Period 2	135.00 1 res Estimate: Q(l/min) 0.46 0.53	K (m'day) 7.16E-04 7.65E-04	K (cm/sec) 8.29E-07 8.85E-07

swissboring

CLIENT: SANYU CONSULTANTS INC.

Packer or Lu	geon test. Sheet 1			Site:		AL MII	JHA	Locati	on:	AL D	HAID.
Depths below	ground level to:			Job No):	E-2145	-	Borch	ole No:	Bl	
(a) top of test	section:	180.00	D)	Date:		01.07.9	5	Sheet:		1 of	2
(b) bottom of	test section:	185.00	ות י	Groun	dlevel:		m	Crew/o	operator:	JOH	N
(c) centre of t	est section	182.50	m .	(Ordna	nce datu	nı)				:	
(d) bettem of	hole at time of test:	200.00	m	Weath	er:	HOT, V	VINDY				
(e) bottom of	casing.	15.00	m	Packer	pressure		34bar	Test N	o:	1	
(f) initial gro	und water level: (see NOTE 2)	16.10	m	Packer	Type:		Poeum	atic 86 n	uni		
Length of tes	tsection	5.00	m	Dia. of	hole in t	est area	.	94	mm		
Gauge height	above ground level:	0.90	m	Type o	frock:	CALCA	REOU	S MUD	STONE		
Test record			-			7. 11. 12. 14. 14. 14. 14. 14. 14. 14. 14. 14. 14					
1st period	Time, min	0	5		10		15			:	Average
Gauge pressure (bor):	Flowmeter readings, Dipstick litres	29713.7	29715		29718		29723			. :	Now q lives/min
П	Water take, litres	1.2		3.4		4.4					0.60
2nd period	Time, min	0	- 5		10		15				Average
Gauge pressure (bar)	Flowmeter readings, Dipstick litres	29724.8	29729		29734		29739				flow q litres/min
12	Water take, litres	4.5		4.3		5.3					0.94
3rd period	Time, min	0	5		10		15				Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	29738.9	29743	:	29747		29752				flow q litres/min
13	Water take, litres	3.6		4.8		4.5					0.86
4th period	Time, min	0	5		10		15	:			Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	29751.8	29756		29759		29763				flow g litres/min
12	Water take, litres	3.8		3.7		3.6	unarahu -				0.74
5th period	Time, min	0	5		10		15				Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	29763.1	29766		29768		29770				flow q litres min
110	Water take, litres	2.4	}	2.3		2.4					0.47

PROJECT: CORE DRILLING ALDHAID swissboring SANYU CONSULTANTS CLIENT: Site: AL MILIHA Location: AL DHAID. Packer of Lugeon lest, Sheet 2 Job No: E-2145 Borehole No: RI NOTE 1. For test details, see sheet 1. 01.07.95 Date: Sheet: 2 of 2 NOTE 2. If ground water level unknown, or below test Ground level: Crew/operator JOHN section, use depth to centre of test section (Ordnance datum) HOT, WINDY Weather. Computation by: George Computation record Length of test section, I: 5.00 (m) Data (from sheet 1) Initial depth to ground water: 16.10 (i) Gauge height above ground level 0.90 (m) (7) Period Flow, q Gauge pressure Friction head loss, m Total head, h in extra Head of in basic 11)+(2)+(5)-(6)-(7) litres/min Gauge rods and pipes pressure (bars) water, m pipework (1) (5) (7) (8) 0.0000 127.00 110 0.0027 0.60 11 l și 12 120 0.0061 0.0001 136.99 2nd 0.94 0.0052 146.99 130 0.0001 310 0.86 13 0.0039 137.00 4th 120 0.0001 0.74 12 11 110 0.0017 0.0000 127.00 5մո 0.47 Flow v. total head How, q , in lites per minute 130.00 110.00 120.00 140.00 150.00 160.00 Total head, h, in metres Calculations: Permeability Estimate: Slope of graph = qh = 0.0182 Q (l'min) K (m'day) K (cnvsec) L = (100/1)*(q·h) in lugeon units Period 1 0.60 8.61E-04 9.96E-07 Period 2 1.25E-03 where I is the length of test section in metres 0.94 1.45E-06 O lugeon 3.14E-03 n/day Period 3 0.86 1.07E-03 1.23E-06

Comments:

Period 4 Period 5 0.74

0.47

9.84E-04

6.79E-04

1.14E-06

7.86E-07

3.64E-06 cm/sec

PROJECT: CORE DRULLING AL AHAID. swissboring CLIENT: SANYU CONSULTANTS AL DHAID Packer or Lugeon test. Sheet 1 Site: AL MILIHA Location: Job No: E-2145 Borehole No: Depths below ground level to: (a) top of test section: 13.00 Date: 08 08 95 Sheet: 1 of 2 m Crew/operator: (b) bottom of test section: 18.00 Ground level: 154 VARGHESE (c) centre of test section 15.50 (Ordnance datum) 300.00 Weather: HOT, WINDY (d) bottom of hole at time of test: 12 Packer pressure: 30 BAI Test No: (e) bottom of casing: 0.00 m (f) initial ground water level: (see NOTE 2) 15.50 Packer Type: Pneumatic 86 mm 3.00 Dia, of hole in test area: Length of test section 140 mm m Type of rock: CONGLOMERATE/GRAVELS. Gauge height above ground level: 0.90 Test record 1st period Average Time, min 15 Gauge îlow q Flowmeter readings, 668 724 779 préssure 610 litres/min Diostick litres (bar): 11.27 Water take, litres 56 55 58 Time, min 2nd period 0 5 10 15 Average Gauge flow q Flowmeter readmes, 800 924 1042 1162 pressure liues/min Dipstick litres (bar): Water take, litres 124 118 120 24.13 5 10 15 Average 3rd period Time, min 0 Bow q Gauge Flowmeter readings, 448 644 839 250 luces/เกลา pressure Dipstick litres (bar): 39.27 Water take, litres 198 4th period Time, min 0 5 10 15 Average Gauge flow q Flowmeter readings, 890 1026 1163 1299 lives/mm pressure

Remarks (to include details of pipework where relevant):

litres

readings,

Diostick

Time, min

Flowmeter

Dipstick

Water take, litres

Water take, litres

(bar):

5th period

Gauge

(bar):

pressure

137

55

10

549

136

5

494

0

420

136

15

622

27.27

13.47

Average

litres/min

flow q

PROJEC:	r:	CORE DRILI	ING AL DIL	ATD		SWIE	sbori	ทก	1
CLIENT:		SANYU CON	SULTANTS	•		avvia	30011	9	
Packer or Lu	igeon test. She	d 2		- 13 · 13 · 13 · 13 · 13 · 13 · 13 · 13	Site:	AL MILIHA	Location:	AL DHAID	elis pres
	r test details, s				Job No:	E-2145	Borebole No:	B2	
100		evel unknown, er b	elow test		Date:	08.08.95	Sheet:	2 of 2	
	-	of test section			Ground level:	154	Crew/operator	VARGHESE	
	•			- 1 - 1 - 1	(Ordnance dat	um)	1 1 1		
	. :		:		Weather	HOT, WINDY.	1		
Computation	ı by:	GEORGE			Test No:	12			
Computation				لسند					
Data (from s					Length of test	section, I:	5.00	(m)	
	to ground water	propiosas successors	15.50	(0)		above ground leve			(
Period	Flow, q	Gauge pressure		-	Friction head	The state of the s	Total head, h	<u> </u>	
CIRCO	litres min	Gauge	Head of		in basic	in extra	11)+(2)+(5)-(6)-	m	
	(A) CS IIIII	pressure (bars)	water, m	.	pipework	rods and pipes		1.	
	(3)	(4)	(5)		(6)	(7)	(8)		
i	11.27		20		0.0468	0.0077	36.35		
lg	24.13	3	30		0.1918	0.0318	46.18		
2nd		- 				0.0782	55.85		
3rd	39.27	4	40		0.4723		46.12		
tth 5th	13,47	3 2	30 20		0.2404 0.0651	0.0398	36.32		-
40	<u> </u>	<u> </u>				1	3ed	1	
				· ·					
almate 30		. 1							
Flow, q. in lites per minut 05					711				
E			`` 		///				
20				H	<u>/</u>			<u> </u>	
Flor									
•			In 4 50						
10 20).00	30.00	40.0			50.00	60.00	70.	.00
			T	otal h	es5, h , in met	res			
Calculation					Permeability				
Stope of gra		1.3751				(nim'1) Q	K (m/day)	K (can/sec)	
	'(qh) in lugeor		28		Period 1	11.27	5.08E-02	5.88E-05	
	e length of test	section in motres			Period 2	24.13	8.57E-02	9.91E-05	
	8 lugeon =	2.38E-01	m/day		Period 3	39.27	1.15E-01	1.33E-04	
	8 lugeon =	2.38E-01 (2.75E-04 (Period 3 Period 4	39.27 27.27	1.15E-01 9.69E-02	1.33E-04 1.12E-04	1

	PROJECI	e: CORE DR	ILLING AL A	MIAD).		SI	νi≤	sh	ori	na	I
Section 32.00 m	CLIENT:	SANYU CO	ONSULTANI	s			See !	, , , ,	, 451 k7		•••	
	Packer or Lu	geon test. Sheet 1		mary alexadade	Site:	NOSTE ANTON	AL MII	LIRA	Locati	on:	AL D	HAID
Section 37.00 m Ground level 154 m Crew/operator: VARGHESE	_	ground level to:	er terene action vor brown alteren une		Job No	·	E-2145		Borch	ole No:	B2	
Strice S	(a) top of test	section:	32.00	m	Date:	P-6-6-2-6-2-4-2	04.08.9	5	Sheet:		1 of	2
at time of test: 300.00 m Weather: HOT, WINDY 182: 30.00 m Packer pressure: 30 BA Test No: 11 183: 10 BA Test No: 11 184: 11 BA Packer Type: Pneurostic 63mm 185: 10 BA Test No: 11 186: 11 BA Packer Type: Pneurostic 63mm 187: 11 BA Packer Type: Pneurostic 63mm 188: 186: 11 BA Packer Type: Pneurostic 63mm 188: 188: 188: 188 188: 188: 188: 188: 188 189: 188: 188: 188: 188: 188: 188: 188:	(b) bottom of	test section:	37.00	m	Ground	level:	154	zh	Crew/c	oerator:	VAR	OHESE
	(c) cantre of t	test section	34.50	m	(Ordna	nce dati	um)					
Packer Type: Pneumatic 63mm Packer Type of rock: Pneumatic 63mm Packer Type of rock: Pneumatic 63mm Pn	(d) bottom of	hole at time of test:	300.00	m	Weath	er:	нот, у	VINDY				
	(e) bottom of	casing:	30.00	m	Packer	pressur	е.	30 BAI	Test N	0:	11	
Ne ground level: 0.90 m Type of rock: GRAVELS	(f) initial grou	und water level: (see NOTE 2) 15.50	m	Packer	Type:		Pnéum	tic 63m	m		
Average Section Sect	Length of tes	t section	5.00	m	Dia. of	hole in	test area	i;	94	rom		
winder readings, stick litres 350 456 567 681 flow q litres/min ter take, litres 106 111 114 22.07 ne, min 0 5 10 15 Average flow q litres/min winder readings, stick litres 162 159 157 31.87 ne, min 0 5 10 15 Average flow q litres/min winder readings, stick litres 330 531 739 939 flow q litres/min ter take, litres 201 208 200 15 Average flow q litres/min winder readings, stick litres 0 168 334 503 flow q litres/min ter take, litres 168 166 169 33.53 ne, min 0 5 10 15 Average flow q litres/min ter take, litres 168 166 169 33.53 160 q litres/min ter take, litres 570 711 847 985 litres/min ter take, litres	Gauge height	t above ground level:	0.90	m	Type o	frock:	GRAVI	ELS				
winder readings, stick litres 350 456 567 681 flow q litres/min litres/min ter take, litres 106 111 114 22.07 ne, min 0 5 10 15 Average flow q litres/min litres/min winder readings, stick litres 162 159 157 31.87 ne, min 0 5 10 15 Average flow q litres/min litres/min ter take, litres 330 531 739 939 Iltres/min litres/min ter take, litres 201 208 200 40.60 ne, min 0 5 10 15 Average flow q litres/min ter take, litres 168 166 169 33.53 ne, min 0 5 10 15 Average flow q litres/min ter take, litres 168 166 169 33.53 160 q litres/min ter take, litres 570 711 847 985 litres/min ter take, litres 141 136 <td>Test record</td> <td></td>	Test record											
Serick Iteres 350 456 567 681 Iteres/min	1st period	Time, min	O	5		10		15				Average
New	Gauge pressure (bar):	Flowmeter readings, Dipstick litres	350	456		567		681				
wineter readings, stick litres 162 159 157 31.87 Average flow q litres/min 162 159 157 31.87 Average flow q litres/min 0 5 10 15 Average flow q litres/min 164 175 175 186 187 187 187 187 187 187 187	3	Water take, litres	106		111		114					22.07
Stick litres 162 159 157 31.87 Stick litres 163 164 173 1739 1739 Stick litres 168 166 169 173 Stick litres 168 166 169 174 Stick litres 174 174 175 174 Stick litres 174 175 175 Stick litres 175 175 St	2nd period	Time, min	0	5		10		15				Average
Average Average Stick Bitres S	Gauge pressure (bar):	Flowmeter readings, Dipstick litres	740	902		1061		1218				-
wineter readings, stick litres 330 531 739 939 flow q litres/min ter take, litres 201 208 200 1 40.60 ne, min 0 5 10 15 Average flow q litres/min winder readings, stick litres 0 168 334 503 168 litres/min ne, min 0 5 10 15 Average flow q litres/min winder readings, stick litres 570 711 847 985 160 q litres/min ter take, litres 141 136 138 27.67	4	Water take, litres	162	.	159	\	157		Crus contraine of co.	e armite more no	~~~~	31.87
winder readings, stick litres 330 531 739 939 litres/min ter take, litres 201 208 200) 40.60 ne, min 0 5 10 15 Average flow q litres/min wmeter readings, stick litres 0 168 166 169 33.53 ne, min 0 5 10 15 Average flow q litres/min wmeter readings, stick litres 570 711 847 985 litres/min ter take, litres 141 136 138 27.67	3rd period	Time, min	0	5		10	3-186-4-3-0-0 ₋ 0	15	***************************************	ENTER CHOCK PROPERTY	******	Average
ne, min 0 5 10 15 Average winder readings, o 168 334 503 flow q litres/min 168 166 169 33.53 he, min 0 5 10 15 Average winder readings, stick litres 570 711 847 985 flow q litres/min stick litres 570 711 847 985 flow q litres/min 178 flow q l	Gauge pressure (bar):	• .	330	531		739		939				. •
wmeter readings, stick litres 0 168 334 503 flow q litres/min ter take, litres 168 166 169 33.53 ne, min 0 5 10 15 Average flow q litres/min wmeter readings, stick litres 570 711 847 985 litres/min ter take, litres 141 136 138 27.67	3	Water take, lives	201	A.,,	208		200	.]				40.60
winder readings, stick 0 168 334 503 litres/min ter take, litres 168 166 169 33.53 ne, min 0 5 10 15 Average winder readings, stick 570 711 847 985 Blow q litres/min ter take, litres 141 136 138 27.67	4th period	Time, min	 	5		10		15		- Secretary		Average
ne, min 0 5 10 15 Average wmeter readings, stick litres 570 711 847 985 Blow q litres/min ter take, litres 141 136 138 27.67	Gauge pressure (bar):		o	168		334		503				
wmeter readings, stick litres 570 711 847 985 litres/min stick litres 141 136 138 27.67	4.	Water take, litres	168	l	166		169					33.53
wineter readings, 570 711 847 985 litres/min stick litres 141 136 138 27.67	AND RESIDENCE PROPERTY.	Time, min	٥	5		10		15		VIEREITE AU	<i>∳</i>	Average
<u>and the state of </u>	Gauge pressure	Flowmeter readings,	570	711		847		985	-		****	flow q
	3	Water take, litres	141		136		138					27.67
1	Sth period Gauge pressure (bar):	Time, min Flowmeter readings, Dipstick litres Water take, litres	570 141	5					985	15 985	15 985	15 985

PROJECT: CORE DRILLING AL DHAID swissboring SANYU CONSULTANTS CLIENT: AL MILIHA Location: AL DHAID Site: Packer or Lugeon test. Sheet 2 Job No: E-2145 Borehole No: B2 NOTE 1. For test details, see sheet 1. Date: 04.08.93 Sheet: 2 of 2 NOTE 2. If ground water level unknown, or below test Ground level: Crew/operator VARGHESE section, use depth to centre of test section (Orônance datum) Weather: HOT, WINDY. GEORGE Test No: Computation by: Compulation record Longth of test section, I: 5.00 (m) Data (from sheet 1) Initial depth to ground water: 15.50 (t) Gauge height above ground level 0.90 (m) (2) Total head, h Friction head loss, m Period Flow, q Gauge pressure litres min Head of in basic in extra ti)+ti)+ti)・(i)・(i)・(i) Gauge pressure (bars) water, m pipework rods and pipes (3) (4) (5) **(8)** (7) 0.3845 0.0269 45.99 1st 22.07 30 40 0.7594 0.0531 55.59 2nd 31.87 4 1.1893 0.0832 3rd 40.60 Ś 50 65.13 40 0.0584 35.51 33.53 0.8346 4th 30 0.5846 0.0409 45.77 27.67 5th Flow v. total head 50 Flow, q , in likes per minute 40 30 20 40.00 50.00 60.00 70.00 Total head, h, in metres Permeability Estimate: Calculations: Slope of graph = q h Q (l'min) K (m'day) K (cm/sec) Period 1 22.07 8.74E-02 1.01E-04 $L = (100/1)^{*}(qh)$ in lugeon unks 16 where I is the length of test section in metres Period 2 31.87 1.04E-01 1.21E-04 16 Jugeon 1.41E-01 m/day Period 3 40.60 1.14E-01 1.31E-04 1.63E-04 cm/sec Period 4 33.53 1.10E-01 1.27E-04 Comments: Period 3 27.67 1.10E-01 1.27E-04

CORE DRILLING AL AHAID.

swissboring

CLIENT:

SANYU CONSULTANTS

Packer or Lug	geon test. Sheet 1	_		Site:		AL MII	JHA	Location:	AL	DHAID
Depths below	ground level to:			Job No		E-2145		Borehole	No: B2	
(a) top of test	section:	70.00	m .	Date:		04.08.9	5	Sheet:	1 0	of 2
(b) bottom of	test section:	75.00	m	Ground	level:	154	m	Crew/oper	rator: VA	RGHESE
(c) centre of t	est section	72.50	m	(Ordna	nce datu	un)				
(d) bottom of	hole at time of test:	300.00	m	Weathe	r:	HOT, V	VINDY			
(e) bottom of	casing:	30.00	m	Packer	pressur	32 BAF	t	Test No:	14)
	ınd water level: (see NOTE 2)	15.50	m	Packer	Туре:		Pneum	atic 63mm	1	
Length of test	section	5.00	m	Dia. of	hole in t	lest area	1.	94 mr	n	
Gauge height	shove ground level:	0.90	m	Type o	frock:	LIMES	TONE	CONGLON	ERATE	
Test record										
1st period	Time, min	0	3		10	Service Late	15			Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	118	136.9		152.1		167.3			flow q litres/min
3	Water take, litres	18.9		15.2		15.2				3.29
2nd period	Time, min	0	3		10		15			Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	186	243.2	-	302.8		365.9			flow g litres/min
5	Water take, litres	57.2		59.6		63.1				11.99
3rd period	Time, min	0	5		10		15			Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	458	613.8	·	749.3		879			flow q litres min
8	Water take, litres	155.8	. 	135.5		129.7]			28.07
4th period	Time, min	0	5		10		15			Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	913	986.5		1049		1109	·		flow g litres/min
5	Water take, litres	73.5		62.5		60.3				13.09
5th period	Time, min	0	5		10		15			Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	0	33.8		63.7		91.8			flow q litres/min
3	Water take, litres	33.8		29.9		28.1				6.12

	r:	CORE DRIL	LING AL DHAID					
				-	SWIS	sbori	ng	
CLIENT:		SANYU CON	SULTANTS		1 + 1 + 1			:
Packer or Lu	geon test. She	et 2	NESS E ATTOCKES (CONTROLES SANTOS CONTROLES)	Site:	AL MILIHA	Location:	AL DHAID	-
NOTE 1. Fo	r test details, s	ce sheet 1.		Job No:	E-2145	Borehole No:	B2	
NOTE 2. If	ground water I	evel unionown, or b	elow test	Date:	04.08.95	Sheet:	2 of 2	
section, use	depth to centre	oftest section		Ground level:	154	Crew/operator	VARGHESE	
1 .				(Ordnance dat	lum)			
				Weather:	HOT, WINDY.			
Computation	by:	GEORGE		Test No:	10			· ·
Computatio	n record							
Data (from s	hect 1)			Length of test	l section, 1:	5.00	(m)	
Initial depth	to ground wat	er;	15.50 (t)	Gauge height	above ground level	0.90	(m)	0
Period	Flow, q	Gauge pressure	***************************************	Friction head !	loss, m	Total bead, h		-
	litres/min	Gauge	Head of	in basic	in extra	(i) + (2) + (5) - (6) - (Ø	
		pressuré (bars)	water, m	pipework	rods and pipes			
	(3)	(4)	(5)	(6)	(7)	(8)	~~~	
ld	3.29	3	30	0.0244	0.0008	46.37		
2nd	11.99	5	50	0.2679	0.0087	66.12		
Bid	28.07	8	80	1.2937	0.0420	95.06		
th ·	13.09	5	50	0.3149	0.0102	66.07		
,								
Flow v.	total head					318		
	ļ:	<u> </u>						
· ğ								
)nuje 21			 					
)nuju 21								
n lites per minut			2nd					
q, in likes per minut			2n6					:
Now, q , in likes per minut			226					
, in likes per minu			2n6					
Flow, q, in lites per minut	ist \$50		226					
Flow, q, in likes per minut			16					
Flow, q, in likes per minu			2n6	80.0	0 90.00	100.00	110.0	0
Flow, q, in likes per minut			0.60 70.00	80.00 ead, h, in metu		100.00	110.0	0
Flow, q, in likes per minu	.00		0.60 70.00		res .	100.00	110.0	0
Tower of the little of the lit	.00	50.00 64	0.60 70.00	ead, h , lo metr	res .	100.00 K (m/dsy)	110.0°	0
night 21 roll in the control of the	.00	50.00 64	0.60 70.00	ead, h , lo metr	res Estimate:			0
Calculations Calculations L = (100/1)*	.00 : h=qh = (qh) in lugeon	50.00 64	0.00 70.00 Total b	ead, h , in metr	Fetimale: Q(l'min)	K (m/day)	K (an/sec)	0
Calculations Calculations L = (100/1)* where I is th	.00 : h=qh = (qh) in lugeon	0.4752 0.4752	0.00 70.00 Total b	Permeability I	Estimate: Q(l'min) 3.29	K (m/day) 1.29E-02	K (cm/sec) 1.49E-05	0
Calculations Slope of grap L = (100/1)* where I is th	.00 : h=qh = (qh) in lugeon e length of test	0.4752 0.4752 0.4752 0.4752 0.4752 0.4752	0.00 70.00 Total b	Period 1 Period 2	Estimate: Q(l'min) 3.29 11.99	K (m/day) 1.29E-02 3.30E-02	K (cm/sec) 1.49E-05 3.82E-05	0

PROJECT	: CORE DR	ILLING AL A	HAII).		es i		. e la i	n ei		
						31	MIS	sb	<i>)</i>	Ų	, ,
CLIENT:	SANYU C	ONSULTANT	s			· .	:	1 :			
Packer or Lu	geon test. Sheet 1	Di Paris Brando di Arico de Constante de Constante de Constante de Constante de Constante de Constante de Cons		Site:		AL MI	LIHA	Location	;	ÁL D	HAID
Depths below	ground level to:			Job No	ċ	E-2145		Borchol	e No:	B2	
(a) top of test	section:	112.00	m	Date:	: :	04.08.9	5	Sheet:		l of	2
(b) bottom of	test section:	117.00	m	Groun	i level:	154	ល	Crew/op	retor:	VAR	GHESE
(c) centre of	est section	114.50	m	(Ordna	noe dati	m)					
(d) bottom of	hole at time of test:	300.00	m .	Weath	er:	нот, у	VINDY				
(e) bottom of	casing:	30.00	m	Facker	pressur-	35 BAF		Test No:		9	
(f) initial gro	and water level: (see NOTE 2) 15.50	m		Type:			tic 63mm			
Longth of tes	t section	5.00	m	ļ	bole in			94 n	m	·	
Gauge height	above ground level:	0.90	n	Type o	freck:	LIMES	TONE				
Test record	Carlo Managara de la Carlo Managara de Carlo Man				The Chief	ender september 1		comments.	T-153-7 T-163	DE MEET	******
1st period	Time, min	0	5		10		15		************		Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	812	816.8		821.6		826.3				flow q litres/min
6	Water take, litres	4.8	procession.	4.8		4.7	Per trade and a second	Spiritual series	, grafes francis	-32-20-20-20-20-20-20-20-20-20-20-20-20-20	0.95
2nd period	Time, min	0	3		10		15			~	Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	829	835.7		842.6		849.5				flow q litres/min
8	Water take, litres	6.7		6.9	VI # \0 v = 10	6.9	TO SERVICE NAME OF THE PERSON				1.37
3rd period	Time, min	٥	5		10		15		-Acer-Art-Bris Sec		Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	857	866.2		886.3		908.8				flow q litres/min
10	Water take, litres	9.2		20.1		22.5	}				3.45
4th period	Tune, min	0	5		10		15				Average
Gauge pressure (bar):	Flowmater readings, Dipstick litres	918	937.8		957.2		976.7				flow q litres/min
8	Water take, litres	19.8		19.4		19.5			TO COMPANY OF THE PARTY OF THE		3.91
5th period	Time, min	0	5		10		15				Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	984	1002		1019		1035				flow q litres/min
6	Water take, litres	17.7		16.8		16.8					3.42
Remarks (to	include details of pipework wi	ere relevant):									
	•										}
											4 · · · · · · · · · · · · · · · · · · ·
		•									
	e e e e e e e e e e										
.]											
1					. :						
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											•
				-		و مساخوا دسران د	وجرد مرشعي جرمادة				

PROJECT	:	CORE DRILL	ING AL DHAID		swis	sborin	a
					31.10		9
CLIENT:		SANYU CON	SULTANTS	+	** **,		
Packer or Lug	geon test. Shee	. 12		Site:	AL MOLIHA	Location: Al.	. DHAID
	test details, se			Job No:	E-2145	Borehole No: B2	
		vel unimown, or b	elow test	Date:	04.08.95	Sheet: 2	of 2
	epth to centre			Ground level:	154	Crew/operator VA	RGHESE
•				(Ordnance datu	ım)	,	
				Weather:	HOT, WINDY.		
Computation	by:	GEORGE		Test No:	9		
Computation							
Data (from sl				Length of test	section, 1:	5.00 (m)
Initial depth t	o grand wate	τ.	15.50 (1)	Gauge height a	bove ground leve	0.90 (m) (
Period	Flow, q	Gauge pressure		Friction head lo	058, m	Total head, h	:
	livres/min	Gauge	Head of	in basic	in extra	11)+(1)+(5)-(6)-(7)	
		pressure (bars)	water, m	pipework	rods and pipes		
1 -1	(3)	(4)	(5)	(6)	Ø	(8)	
lst	0.95	6	60	0.0039	0.0001	76.40	
2nd	1.37	8	80	0.0076	0.0002	96.39	
318	3.45	10	100	0.0425	0.0009	116.36	
4th	3.91	8	80	0.0536	0.0011	96.35	
5th	3.42	6	60	0.0418	0.0009	76.36	:
:				 	+++-	Srê	
minute				415			
	1 1 1		1 1 1 1 1				
e, q , in lites per				206			
Flow, q . in likes per minute		Irt		206			
0.5	0.00	70.00	80.00 S Total		100.00	310.00	10.00
0.5			80.00 S Total	0.00	res	110.00	20.00
0.5 60 Calculations	*		80.00 S Total	0.00 head, h, in metr	res		k (cm/sec)
0.5 60 Calculations Slope of grap	*	70.00	80.00 S Total	0.00 head, h, in metr	Estimate:	· · · · · · · · · · · · · · · · · · ·	
0.5 60 Calculations Slope of grap L=(100/1)*	; h=qh = (qh) in lugeor	70.00	Total	0.00 head, h, in metr	Estimate: Q(l/min)	K (m'day)	K (em/sec)
0.5 60 Calculations Slope of grap L=(1007)* where I is th	; h=qh = (qh) in lugeor	70.00 0.0303	Total	0.00 head, h, in metr	Estimate: Q(l/min) 0.95	K (m/day) 2.27E-03	K (em/sec) 2.63E-06
0.5 60 Calculations Slope of grap L=(1007)* where I is th	: h = qh = (qh) in lugeon e length of test	70.00 0.0303 n units = t section in metres	Total	0.00 head, h, in metro Permeability I Period 1 Period 2	Estimate: Q(l/min) 0.95 1.37	K (m/day) 2.27E-03 2.58E-03	K (cm/sec) 2.63E-06 2.99E-06

CORE DRILLING AL AHAID.

swissboring

Packer or Lu	geon test. Sheet 1		***********	Site:		AL MI	AHL	Location:	AL	DHAID
Depths below	ground level to:			Job No	:	E-2145		Borebole l	No: B2	
(a) top of test	section:	158.00	m	Date:		04.08.9	5	Sheet:	1 of	2
(b) bottom of	test section:	163.00	m:	Green	level:	154	im	Crew/opera	stor: VAI	RGHESE
(c) centre of	test section	160.50	m	(Ordna	nce datu	m)				
(d) bottom of	hole at time of test:	300.00	m	Weath	er:	нот, у	TNDY			
(e) bottom of	casing:	30.00	m	Packer	pressur	35 BAR		Test No:	8	
(í) initial gro	und water level: (see NOTE	2) 15.50	m	Packer	Type:		Pneuma	rtic 63 rum		
Length of tes		5.00	m	Dia. of	hole in t	est area	:	94 mo	1	
Gauge heigh	t above ground level:	0.90	m	Type o	frock:	SANDS	TONE	CONGLON	ERATE	
Test record										:
1st period	Time, min	0	5	****	10		15			Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	706	710.1		714.1		718.1			flow q litres/min
6	Water take, litres	4.1		4		4				0.81
2nd period	Time, min	0	5	2	10		15			Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	720	725.1		729.9		734.8			flow g litres/min
8	Water take, litres	5.1		4.8		4.9				0.99
3rd period	Time, min	0	5	To the Little Bride	10		15			Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	737.4	743.6		749.7		755.7			flow g litres/min
10	Water take, litres	6.2		6.1		6)			1.22
4th period	Time, min	0	5		10		15			Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	757.5	762 6		767.6		772.6			Bovr q litres/min
8	Water take, litres	5.1		5		5	: :			1.01
5th period	Time, min	0	5		10		15			Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	774.4	778.6		782.8		786.9			flow q litres min
6	Water take, lives	4.2	<u></u>	4.2	L	4.1				0.83

PROJECT: CORE DRILLING AL DHAID swissboring SANYU CONSULTANTS CLIENT: AL MILIHA Location: AL DHAID Site: Packer or Lugeon test. Sheet 2 Job No: E-2145 Borchole No: **B2** NOTE 1. For test details, see sheet 1. NOTE 2. If ground water level unknown, or below test Date. 04.08.95 Ground level: Crew/operator VARGHESE section, use depth to centre of test section (Ordnance datum) Weather: HOT, WINDY Ťest No: GEORGE Computation by: Computation record Length of test section, I: 5.00 (m) Data (from sheet 1) Gauge height above ground level 0.90 (m) (2) Initial depth to ground water: 15.50 (i) Friction head loss, m Total head, h Period Flow, q Gauge pressure Head of in basic in extra (1)+(2)+(5)-(6)-(7) lives min Gauge pressure (bars) water, m pipework rods and pipes (7) (5) (6) (8) (3) (4) 0.81 60 0.0041 0.0001 76.40 151 0.0059 0.0001 96.39 80 2nd 0.99 8 100 0.0087 0.0001 116.39 1.22 10 318 1.01 8 80 0.0061 0.0001 96.39 4th 60 0.0043 0.0001 76.40 5th 0.83 Flow v. total head 1.2 Tow, q , in lites per minute 0.7 90.00 100.00 Total head, h, in metres 70.00 80.00 110.00 120.00 Calculations: Permeability Estimate: Slope of graph = qh Q (limin) K (nyday) K (cm/sec) 2.23E-06 $L = (100\%)^{\circ}(qh)$ in lugeon units Period 1 0.81 1.92E-03 Period 2 where I is the length of test section in metres 0.99 1.86E-03 2.168-06 Period 3 0 lugeon 1.70E-03 m/day 1.22 1.91E-03 2.21E-06 Period 4 1.97E-06 envice 1.01 1.90E-03 2.20E-06 Period 5 0.83 1.998-03 2.30E-06 Comments:

PROJECT: CORE DRILLING AL AHAID. swissboring CLIENT: SANYU CONSULTANTS AL DHAID Site: AL MILIHA Location: Packer or Lugeon test. Sheet 1 E-2145 Deoths below ground level to: Job No: Borehole No: R) Date. 03.08.95 Steet: 1 of 2 (a) top of test section: 199.00 VARGHESE Ground level: 154 Crew operator: 204.00 (b) bottom of test section: 201.50 (Ordnance datum) (e) centre of test section HOT, WINDY (d) bottom of hole at time of test: 300.00 m Weather Packer pressur- 40BAR 7 Test No: 195.00 (e) bottom of casing: m Pneumatic 63mm 15.50 Packer Type: (f) initial ground water level: (see NOTE 2) m 94 mm Length of test section 5.00 Dia. of hole in test area: Type of rock: SANDSTONE 0.90 Gauge height above ground level: m Test record 1st period 0 10 15 Average Time, min flow q Gauge readings, Flowmeter 643.6 644.9 642.3 pressure 641 lares/man Dipstick litres (bar): Water take, litres 1.3 1.3 1.3 0.26 10 15 Average 0 5 Time, min 2nd period Bow q Gauge Flowmeter readings, 650.8 652.4 653.9 649.2 litres min pressure Dipstick litres (bar): 1.6 1.6 1.5 0.31 Water take, litres 0 10 15 Average 3rd period Time, min Gauge flow o Flowmeter readings, 658.5 661 663.4 665.9 irres min pressure Dipstick litres (bar): 0.49 Water take, litres 2.5 2.4 2.5 4th period Time mm 5 10. 15 Average Gauge flow q Flowmeter readings, 670.5 672.7 674.7 676.6 litres/min pressure Dipstick litres (bar): 0.41 Ž 1.9 Water take, litres 2.2 0 5 10 15 Average 5th period Time, min flow q Gauge readings, Flowmeter 681.4 682.8 684.2 pressure litres/min Dipstick (bar): 0.28 1.4 1.4 Water take, litres 1.4

PROJEC	ХΤ:			:	CC	OR!	E D	RIL	LU	ΝG	ΑL	DΉ	AII	•					S	W	is	\$	b	O	r	i	1(9		
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Packer or 1	JUES	on t	est.	Shee	: 2	uara ita	ne men	edreletiket	E9-0*	CONTRACTOR OF THE PERSON NAMED IN COLUMN TWO	स्ट ^{्र} म		-	Ts	de:		PARCE !	A	L M	LIH	À	L	ocat	ion:			AL	DH	AJD	
NOTE 1. F	_ <u>~</u>				-	રત	l					-		 	ob N	0:		E-	214	5		В	ore	hole	No	:	B2			
NOTE 2. L								i, of	bek	w te	st :			þ	ate:			03	.08.	95		SI	reel	:			2 0	f 2		
section, use	-									:				G	rour	d le	vel:			:	154	C	rew.	ope	rato	ſ	VΑ	RG	HES	E
	•							:				-	1	10	Ordin	ance	date	um)		:										
														V	Ve atl	er:		H	OT,	WIN	DY.					٠	:			
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Computati			rd					·. · ·							•••••• :										-	•			·	
Date (from					~							:		Ti	eng	h o	test	sec	ion,	i :					5.0	ю	 (m)			
Initial depti				n ale	r;						<u>, , , , , , , , , , , , , , , , , , , </u>	15.5	0 (1)	_j		-				ound	leve	1				سنب	(m)			
Period		Flow			T	aues	pres	sure						-	rictio	-						-	ctal	hea	d, h				 -	
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3rd).49		 - -		10		╁╴		100			十		002		╁		0000		┢┈		16.4						
4th			3.41		[8				80			╁		001			-	0000		╁╌		6.4		-				
5th			2.28		-		6		 		60			╁╌		000		+-	.	0000		╁┈		6.40						
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0	.2 . 1 70.	00										,	·	. ,									٠.			٠.				
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'alculation	70.				à œ	154								Pe	rme	a bit	ity E	stin						, ,- Ut-				······································	······································	
'alculation Slope of gra	70. s: ph =	- q h			0.00									Pe				stin	Q(lmin)			n'da		:		_	v'sec	
Talculation Slope of gra L = (1007)	70. s: ph = (q1	-għ h)in	lug	eon I	mits	\$	Pa.		0					Pe	Per	iod	1	stin	Q(/min .26)		6.2	0E-	04	1	7	.17	E-07	
Calculation Slope of gra L = (100/1) where I is the	70. s: ph = (q1	q h h) in	lug of t	eon i	mits	s on ir	n met					urin terun		Pe	Per Per	iod	1	stin	Q (0 0	l'min .26 .31)		6.2 5.9	0E-4	04	1	6	.17	E-07 E-07	
Calculation Slope of gra L = (100/1) where I is the	70. s: ph = (q1	-għ h)in	lug of t	eon I	mits	s on in 9	5 met	-04	m/c					Pe	Per Per	iod iod :	1 2 3	stin	Q(0 0	.26 .31 .49)		6.2 5.9 7.7	0E 4 2E 4	04 04 04		7 6 8	.177 .851 .941	E-07 E-07 E-07	
Calculation Slope of gra = (100/I) where I is the	70. s: ph = (q1	q h h) in	lug of t	eon i	mits	s on in 9	n met	-04	m/c					Pe	Per Per	iod	1 2 3	stin	Q(0 0	l'min .26 .31)		6.2 5.9 7.7	0E-4	04 04 04		7 6 8	.177 .851 .941	E-07 E-07	

CORE DRILLING AL AHAID.

swissboring

Packer or Lu	geon test. Sheet	i marakan da kanan a kanan]			Site:		AL MIL	IHA	Location:	ALI	DHAID
	ground level to				Job No	:	E-2145		Borehole N	io: B2	
(a) top of test	=		220.00	m	Date:	(03.08.9.	5	Sheet:	1 of	7 2
(b) bottom of			225.00	m .	Ground	levet:	154	m	Crew/operat	tor: VAI	RGHESE
(c) centre of t	est section		223.50	m	(Ordna	nce datu	m)				
(d) bottom of	hole at time of t	est:	300.00	m	Weath	:r: .	HOT, V	INDY			
(e) bottom of	casing:		195.00	m	Packer	pressur	40 BAR		Test No:	. 6	
(f) initial gro	and water level:	(see NOTE 2)	15.50	m	Packer	Type:		Paevina	tic 63mm		
Length of tes			5.00	m	Dia. of	hole in t	est area		94 mm		
Gauge heigh	above ground le	evel:	0.90	m	Type o	frock:	CONGI	OMER	ATE		
Test record											-
Ist peried	Time, min		0	5		10		15			Average
Gauge pressure (bar):	Dipsuck lives		536.4	539.6		542.8		\$45.9		· <u>:</u>	flow q litres/min
4	Water take, lit	Vater takė, litres			3.2		3.1				0.63
2nd period			0	5		10		15			Average
Gauge pressure (bar):		readings, litres	548.5	552.1		555.8		559.6			flow g litres'min
6	Water take, like	res	3.6	30,00	3.7		3.8				0.74
3rd period	Time, min	alle della planta della ser managament	0	5		10		15			Average
Gauge pressure (bar):	l .	readings, litres	561.5	566.3		571.1		576.1			flow q litres/inin
. 8	Water take, lik	168	4.8		4.8		5]			0.97
401 period	Time, min		0	5		10		15			Average
Gauge pressure (bar):	• • • • • • • • • • • • • • • • • • • •	readings, litres	577	580.4		584	:	587.2		:	flow q litres/min
6	Water take, lit	168	3.4		3.6	:	3.2	************			0.68
5th period	Time, min	: :	¢ .	5		10		15			Average
Gauge pressure (bar):	Flowmeter Dipstick	readings, litres	588.1	591		593.9		596.7	Ì		flow q litres/min
(Dar):	Water take, In		2.9		2.9	٠	2.8		1		0.57

CORE DRILLING AL DHAID

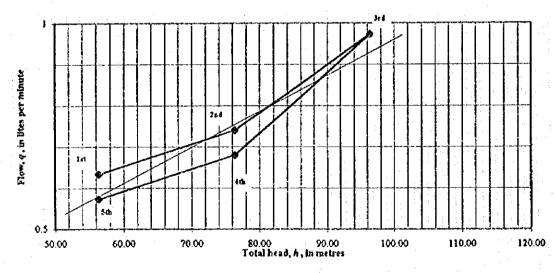
swissboring

CLIENT:

SANYU CONSULTANTS

	•						and the second section of the Section	-Contractorio
Packer or Lu	geon test. Shee	₹ 2		Site:	AL MILIHA	Location:	AL DHAID	
NOTE 1. For	test details, se	e sheet 1.		Joo No:	E-2145	Borehole No:	B2	
NOTE 2. If g	gound water le	vel unknown, or b	elow test	Date:	03.08.95	Sheet:	2 of 2	
section, use d	lepth to centre	of test section	*	Ground level:	154	Crew/operator	VARGHESE	
				(Ordnance date Weather:	um) HOT, WINDY.			
Computation	by:	GEORGE		Test No:	6			
Computatio	n record							
Data (from s	heet 1)			Length of test	section, 1:	5.00	(m)	
Initial depth (to ground water	r.	15.50 (1)	Gauge height	bove ground leve	0.90	(m)	(2)
Period	Flow, q	Gauge pressure		Friction head l	oss, m	Total head, h	:	
	litres mus	Gauge	Head of	in basic	in extra	(I)+(I)+(S-(G-	(7)	
•	(3)	pressure (bars)	water, m	pipework (6)	rods and pipes	,: <u>(</u> 8)		:
1st	0.63	4	40	0.0036	0.0000	56.40		
2nd	0.74	6	60	0.0048	0.0001	76.40		.,
318	0.97	8	80	0.0080	0.0001	96.39		
4th	0.68	6	60	0.0041	0.0000	76.40		: .
5th	0.57	4	40	0.0030	0.0000	56.40	1	

Flow v. total head



Calculations:	Permeability E	istimate:		
Slope of graph = qh = 0.0687		Q(l'min)	K (m'dəy)	K (cm/sec)
L = (100/1)*(q h) in lugeon units = 0	Period 1	0.63	2.05E-03	2.37E-06
where I is the length of test section in metres	Period 2	0.74	1.76E-03	2.04E-06
0 lugeon = 1.50E-03 m/day	Period 3	0.97	1.84E-03	2.13E-06
= 1.74E-06 cm/sec	Period 4	0.68	1.62E-03	1.88E-06
Comments:	Period 5	0.57	1.85E-03	2.14E-06

PROJECT: CORE DRILLING AL AHAID. swissboring CLIENT: SANYU CONSULTANTS Site: AL MILIHA Location: AL DHAID Packer or Lugeon test. Sheet 1 Depths below ground level to: Job No: E-2145 Borehole No: B2 03.08.95 1 of 2 Date: Sheet: (a) top of test section: 225.00 Ground level: 134 VARGHESE 230.00 Crew/operator. (b) bottom of test section: 227.50 (Ordnance datum) (c) centre of test section (d) bottom of hole at time of test: Weather: HOT, WINDY 300.00 m Packer pressur, 40 BAR Test No: 195.00 (e) bottom of casing: m Pneumatic 63mm (f) initial ground water level: (see NOTE 2) 15.50 Packer Type: m 94 mm Length of test section 5.00 Dia. of hole in test area: 0.90 Type of rock: CONGLOMERATE Gauge height above ground level: m Test record 0 5 10 15 Average lst period Time, min Gauge flow q Flowmeter readings. 453.4 456.4 459.5 450.3 pressure litres/min Dipstick litres (bar): Water take, litres 3.1 3.1 0 5 10 15 Average 2nd period Time, min flow q Gauge Flowmeter readings, 465.7 458.8 472 462.4 pressure litres/min Dipstick litres (bar): Water take, Eures 3.3 3.1 3.2 0.64 0 5 10 15 Average 3rd period Time, min Gauge flow q Flowmeter readings, 489.2 476 480.1 484.6 litres/mm pressure Dipstick litres (bar): 0.88 Water take, litres 4.1 4.6 15 4th period Time, min 0 5 10 Average Gauge flow q Flowmeter readings, 493.2 500.2 503.7 496.7 litres/min pressure Dipstick litres (bar): 0.70 3.5 3.5 Water take, lives 3.5 15 5 10 Average 5th period Time, min 0 flow q Gauge Flowmeter readings, 504.7 507.6 510.6 513.5 pressure litres'min Diestick litres (bar): 3 2.9 0.59 Water take, litres Remarks (to include details of pipework where relevant):

	ī: 	CORE DRILI	ANG AL DHAID		swis	sbori	ng
CLIENT:		SANYU CON	SULTANTS				
Packer or Lu;	geon test. Shee	12		Site:	AL MOLIHA	Location:	AL DHAID
	test details, se			Job No:	E-2145	Borehole No:	B2
NOTE 2. If g	gound water le	evel unknown, or b	elow test	Date:	03.08.95	Sheet:	2 of 2
section, use d	lepth to centre	of test section		Ground level:	154	Crew/operator	VARGHESE
				(Ordnance datu	m)	1	
			•	Weather:	HOT, WINDY		·
Computation	by:	GEORGE		Test No:	5		
Computatio	n record	- Carried and designation of the Carried State of t					
Data (from st	ect i)			Length of test :	section, i:	5.00	(m)
Initial depth t	o ground wate	1:	15.50 (i)	Gauge height a	bove ground level	0.90	(m)
Period	Flow, q	Gauge pressure		Friction head lo	ss, m	Total head, h	
	litres min	Gauge	Head of	in basic	in extra	(1)+(2)+(5)+(6)+	(7)
		pressure (bars)	water, m	pipework	roos and pipes		***
	(3)	(6)	(5)	(6)	თ	(8)	
ld	0.61	4	40	0.0035	0.0000	56,40	
2nd	0.64	6	60	0.0038	0.0000	76.40	
3rd	0.88	8	80	0.0068	0.0001	96.39	
fth	0.70	6	60	0.0044	0.0000	76.40	
Sth :	0.59	4	40		1		~ ************************************
Fion v.	total head		17	0.0032	0.0000	56.40	
Flow v.	total head			0.0032	0.0000	\$6.40	
Flow v.	total head			0,0032	374	36.40	
1 · 1 ·	total head			0.0032		36.40	
1	total head			0.0032		\$6.40	
1	total head			0.0032		36.40	
1	total head			0.0032		\$6.40	
1			200	0.0032		56.40	
1	total head			0.0032		36.40	
Plow, q., in liter per minute			20.8	0.0032		56.40	
1	Id.		20.8	0.0032		56.40	
1	la •		224	0.0032		36.40	
Flow, q, in lites per minute	la •		204 40		3,4		0 120.00
Flow, q, in liters per minute	1d 50		204 40	90.00	3r4		D 320.0X
Plow, q. in likes per minute 20.5	In Su		204 40	90.00 head, h, in metro	3r4		0 120.00 K (cm/sec)
Plow, q. in likes per minute of Salar minute o	In Su	60.00 7	0.00 80.00 Total	90.00 head, h, in metro	374 374 160.00 es 160.00	110.00	
elculations: Flow, q. in lifes per minute (1001), ((1001)	1st 200 a = qh = qh) in lugeon	60.00 7	0.00 80.00 Total	90.00 head, h, in metro Permeability E	stimate: Q(i'min)) 110.00 K (m:day)	K (an/sec)
0.5 50 alculations: lope of graph = (100/1)*(c) here I is the	1st 200 a = qh = qh) in lugeon	60.00 7 0.0065 units = (0.00 80.00 Total	90.00 head, h, in metro Permeability E Period 1	3r4 3r4 100.00 es stimate: Q(l'min) 0.61	K (m'day) 1.98E-03	K (om/sec) 2.29E-06
0.5 shoulations: lope of graph = (100/1)*(c) here I is the	1st 5st 200 1 = qh = qh) in lugeon length of test	60.00 7 0.0065 units = 6 section in metres	0.00 80.00 Total)	Period 1 Period 2	374 374 100.00 es 100.00 es stimate: Q(i/min) 0.61 0.64	K (m'day) 1.98E-03 1.53E-03	K (on/sec) 2.29E-06 1.77E-06

CORE DRILLING AL AHAID.

swissboring

CLIENT:

SANYU CONSULTANTS

Packer or Lu	geon test. Sheet I			Site:		AL MIL	JHA	Location:	AL DHAID
Depths below	ground level to:	-		Job No	;	E-2145		Borehole No:	Bž
(a) top of test	section:	230.00	m	Date:		03.08.9	5	Sheet:	1 of 2
(b) bottom of	test section:	235.00	m	Ground	level:	154	m	Crew/operator:	VARGHESE
(c) centre of	lest section	232.50	m	(Ordna	nce datu	m)			
7 7 7	hole at time of test:	300.00	m	Weath	er:	нот, ч	TNDY		
(e) bottom of	casing:	195.00	m	Packer	pressur	40 BAR		Test No:	4
(f) initial gro	und water level: (see NOTE 2	15.50	m	Packer	Туре:		Pneum	atic 63mm	
Length of tes		3.00	m	Dia. of	hole in t	lest area	;	94 mm	
Gauge heigh	t above ground level:	0.90	m	Type o	freek	CONG	OMER	ATE/LIMESTO	NE
Test record	The second secon								
1st period	Time, min	0	5		10		15		Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	338.5	341.6		344.8		348		flow q litres/min
4	Water take, litres	3.	1	3.2		3.2			0.63
2nd period	Time, min	0	5	A	10		15		Average
Gauge pressure (bat):	Flowmeter readings, Dipstick litres	350.9	355.7		360		365.4		flow q litres/mir
6	Water take, litres	4.	8	4.3		5.4			0.91
3rd period	Time, min	0	5		10		15		Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	370.8	378.3		385.6		392.8		flow q lares/mir
8	Water take, litres	7.	3	7.3	*	7.2)		1.4
4th period	Time, min	0	5		10		15		Average
Gauge pressure (bar):	Flowmeter readings, Dipstick littes	395.9	401.7		407.3		412.9		flow q litres/mir
6	Water take, litres	5	.8	5.6		5.6		trainer agerting 22 Post	1.13
5th period	Time, min	0	5	و موسود المال	10		15		Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	415.4	420.1		424.7		429.2		flow g litres min
4	Water take, litres	4	7	4.6		4.5			0.93

PROJEC	Т:	CORE DRIL	LING AL DHAN)	swis	sbori	na
CLIENT	• • • • • • • • • • • • • • • • • • •	SANYU CON	SULTANTS			· · · · · · · · · · · · · · · · · · ·	
Dankar or 1	ugeon test. She			T Site:	ÀL MILIHA	Location:	AL DHAID
	or test details, s	Charles de la Carle de la Carl	et anadare de mattierne betar i andrés administration	Job No:	E-2145	Borehole No:	
		evel unknown, or b	alou tad	Date:	03.08.95	Sheet:	2 of 2
	depth to centre	:	Clow lest	Ground level:		Crew/operator	
Section, use	ocporto cena c	of test section		(Ordnance dat	A Committee of the Comm	Crewioperator	VAKUILEE
				Weather:	HOT, WINDY.		
Computatio	n he	GEORGE		Test No:	4	L	
Computati	Michigan Strategies and Alberta Alberta Al	GLOKOL		Ties No.	7		
Data (from				Length of test	tection I	(///	(m)
	to ground water	**************************************	15.50 (i)		shove ground level	-	(m) (2
Period	Flow, a	Gauge pressure	13.50 (1)	Friction head	*****	Total head, h	(4) (4)
a ci iou	litres min	Gauge pressure	Head of	in basic	in extra	(1) + (2) + (5) - (6) -	m i
	(in ce igi	pressure (bars)		pipework	rods and pipes	(1) + (4) + (3) - (0) -	v)
	(3)	pressure (bars)	water, m (5)	papework (6)		(8)	
1st	0.63	4	40	0.0038	0.0000	56.40	
2nd	0.03		60	0.0082	0.0001	76.39	
2110 3rd	- 		80	0.0082	0.0002	96.38	
310 4th	1.47	 	60				
401 58h	0.92	4 4	40	0.0111	0.0001	76.39 56.39	
	<u> </u>						·
1.5	,				318		
. 33							
						7	
Flow, q , in lites per minute						·	
			1				
្នឹ រ	<u> </u>		71170				
. £			1				-
0	51	·	1				
<u> </u>	in						
	•						
0.5						:	
	50.00	60.00 7	0.00 80.0 Total	0 90.0 bead, A , in met	00 100.00 res	110.00	120.00
Calculation	\$:			Permeability 1	Estimate:		
Slope of gra	թի≃գի ∈	0.0167			Q (l'min)	K (m'day)	K (an/sec)
L=(1007)	(q h) in lugeon	units = (0	Period 1	0.63	2.05E-03	2.37E-06
where l is th	he length of test	section in metres		Period 2	0.97	2.30F-03	2.67E-06
,	0 lugcon =	2.89E-03 1	midex	Period 3	1.47	2.77E-03	2 010 04
			115 4 11	I MAN 3	1.47	4.111703	3.21E-06
	=	3.35E-06	* * * * * * * * * * * * * * * * * * *	Period 4	1.13	2.70E-03	3.13E-06

PROJECT	: CORE DR	ILLING AL	AHAID	· · · · · · · · · · · · · · · · · · ·		S	vis	sb	ori	ng)
CLIENT:	SANYU CO	ONSULTAN'	rs		:						
Packer or Lu	geon test. Sheet 1			Site:		AL MII	LIHA	Locati	on:	AJ, E	HAID
Depths below	ground level to:			Job No	:	E-2145		Borch	ole No:	B2	
(a) top of test	section:	235.00	m	Date:		02.08.9	5	Sheet:		1 of	2
(b) bottom of	· · ·	240.00	m ,	Ground	level:	154	n	Crew/e	operator:	VAR	GHESE
(c) centre of t		237.50	113	(Orána	nce datu	m)					
	hole at time of test:	300.00	m	Weath	er:	нот, у	VINDY			!	
(e) bottom of	The second secon	233.95	m	Packer	pressur	48 BAI	}	Test N	0;	3	
	and water level: (see NOTE 2	1.5	m	Packer				etic 63n	ut		
Length of tes		5.00	m -			lest area		94	mm		
	t above ground level:	0.90	m			LIMES					
Test record	1 above Bomb level										
Ist period	Time, min	10	5	Commission Co.	10	yaya je ne mba d	15				Average
Gauge pressure	Flowmeter readings, Dipstick litres	241.5	244,5		247.6		250.6				flow g litres/min
(bar):	Water take, litres		- I	3.1		3	Agen, and start with 1989	<u> </u>	L		0.61
2nd period	Time, min	0	5	Large	10		15	l-orașe	- Zamiron drags		Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	261.7	265.3		268.7	;	272.2				flow q litres min
8	Water take, litres	3.4	5	3.4		3.5					0.70
3rd period	Time, min	0	5	******	10		15				Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	286.6	292.3		297.6		302.9				flow q litres/min
10	Water take, litres	5.	7	5.3		5.3]			- Contract Contract	1.09
4th period	Time, min	0	5		10	ı'	15				Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	305	309.6	:	314		318.2				flow g litres/min
8	Water take, litres	4.	6	4.4		4.2					0.88
5th period	Time, min	0	5		10		15				Average
Gauge pressure (bar):	Floumeter readings, Dipstick litres	319.5	322.6		325.8		329				flow q litres/min
6	Water take, litres	3.	1	3.2		3.2					0.63

	T:	CORE DRILL	ING AL DHAID		swis	sbori	ng
CLIENT:		SANYU CONS	SULTANTS				
Packer or L	ugeon test. She	et 2		Site:	AL MILIHA	Location:	AL DHAID
NOTE 1. Fo	or test details, s	ce sheet 1.	THE ROLL OF THE PARTY OF THE PA	Job No:	E-2145	Borehole No:	B2
NOTE 2. If	ground water I	evel unknown, or be	low test	Date:	02.08.95	Sheet.	2 of 2
section, use	depth to centre	of test section		Ground level:	154	Crew/operator	VARGHESE
		1 1		(Ordnance dati	rm)		*
				Weather:	HOT, WINDY.		
Computation	n by:	GEORGE		Test No:	3		
Computati	on record						
Data (from :	sheet 1)			Longth of test	section, 1:	5.00	(m)
Initial depth	to ground wat	er:	15.50 (i)	Gauge height a	bove ground leve	1 0.90	(m) (2
Period	Flow, q	Gauge pressure		Friction head le	oss, m	Total head, h	
	litres min	Gauge	Head of	in basic	in extra	(1)+(1)+(5)·(0)-	(7)
		pressure (bars)	water, m	pipework	rods and pipes	1	
	(3)	(4)	(S)	(6)	n	(8)	
lst	0.61	. 6	60	0.0035	0.0000	76.40	
2nd	0.70	8	80	0.0046	0.0000	96.40	
3rd	1.09	10	100	0.0104	0.0001	116.39	
4th	0.88	8	80	0.0071	0.0001	96.39	
. 	0.63						
	. total head	6	60	0.0038	0.0000	76.40	
Flow v	. total head	6	60	0.0038	6.0000	76.40	
Flow v	. total head	6	60	0.0038	0.0000		
Flow v	. total head	6	60	0.0038	0.0000		
Flow v	. total head	6	60		0.0000		
Flow v	. total head	6	22.	0.0038	0.0000		
Flow v	. total head		220		0.0000		
Flow, q. in lifes per minute	total head	80.00	210		1100		120.00
Flow of the lifes per minute	total head	50.	210	100.00 nead, h, in metr	110.ves		120.00
Flow, q., in lifes per minute	total head	80.00	210	100.00	110. res	30 00	ng, manaran ngara-prong-man-ran-ran-galam gankyra sag-
Flow v 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.	. total head	80.00	90.00 Total i	100.00 nead, h, in metr	110.ves		120.00 K (can/sec) 1.67E-06
Flow v 1.5 1.5 2.5 2.5 2.5 2.5 2.5 2.5	total head to a line 70.00 s: ph = qh = (qh) in lugeon	80.00 0.0112 units = 0	90.00 Total i	100.00 nead, h, in metr	110.res Sistimate: Q(l'min)	oo K (m'day)	K (an/sec)
Flow v 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.	total head in 70.00 s: ch = qh = ch (qh) in lugeon in length of test	\$0.00 0.0112 units = 0 section in metres	90.00 Total I	100.00 nead, h, in metr Perraeability E	110.res Stirnate: Q(l/min) 0.61	N (m'day) 1.45E-03	K (cm/sec) 1.67E-06 1.33E-06
Flow v 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.	total head to a line 70.00 s: ph = qh = (qh) in lugeon	80.00 0.0112 units = 0	90.00 Total i	100.00 nead, h, in metr Perrocability E Period 1 Period 2	110. res 2 (l'min) 0.61 0.70	00 K (m'day) 1.45E-03 1.32E-13	K (an/sec)

PROJECT:

CORE DRILLING AL AHAID.

swissboring

CLIENT:

SANYU CONSULTANTS

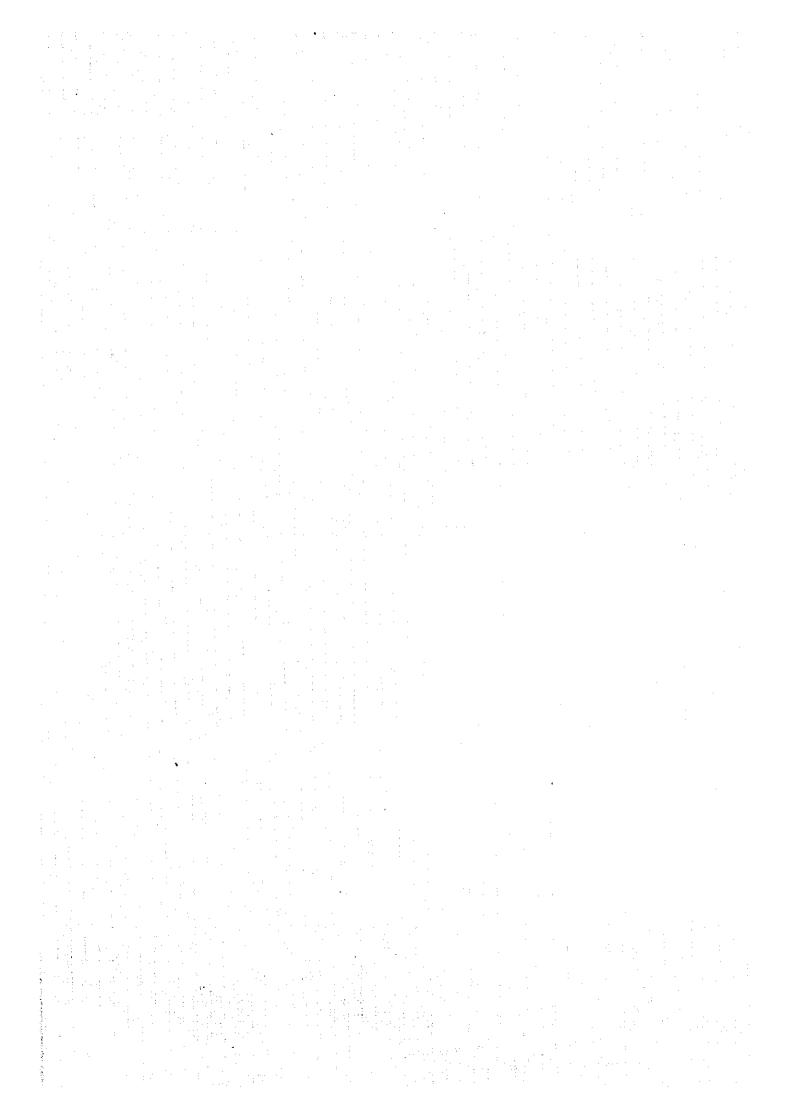
Packer or Lug	geon test. Sheet 1			Site:		AL Mil	JHA	Location:	ALD	HAID
Depths below	ground level to:			Job No	:	E-2145		Borehole No:	B2	
(a) top of test	section:	244.00	m	Date:		02.08.9	5	Sheet:) of	2
(b) bottom of	test section:	249.00	m	Ground	level:	154	ris	Crew/operator:	VAR	GHESE
(c) centre of t	est section	246.50	$\mathbf{m}^{(1)}$	(Ordna	nce datu	ım)				
(d) bottom of	hole at time of test:	300.00	m	Weath	7:	нот, у	YTNDY			
(e) bottom of	casing:	233.95	m	Packer	pressur	40BAR		Test No:	2	
(f) initial grou	und water level: (see NOTE 2	15.50	m	Packer	Type:		Pnëumi	itie 63mm		
Length of test	section	\$.00	m	Dia. of	hole in t	lest area		94 nm		
Gauge height	above ground level:	0.90	រា	Type o	frock:	LIMES	TONE			
Test record					-					
1st period	Time, min	0	5		10		15		demonstrate (E)	Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	977.2	984.8		991		997.2			flow q litres/min
4	Water take, litres	7,6		6.2		6.2			2- 1/2- 1/2- 1/2- 1/2- 1/2- 1/2- 1/2- 1/	1.33
2nd period	Time, min	0	5		10		15			Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	1	10.6		19.3		27.7		-1	flow g litres/min
6	Water take, litres	9.6		8.7		8,4				1.78
3rd period	Time, min	0	5		10		15			Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	40.5	54.2		68.6		82.5			flow g litres/min
8	Water take, litres	13.7		144		13.9)			2.80
4th period	Time, min	0	5		10		15			Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	90	98.4	:	106.6		114.8		:	flow q litres/min
6	Water take, litres	8.4	-	8.2		8.2				1.65
5th period	Tune, min	0	5	H.A.	10		15			Average
Gauge pressure (bar):	Flowmeter readings, Dipstick litres	117	123.1		129		134.9			flow g litres/min
4	Water take, litres	6.1		5.9		5.9				1.19

Remarks (to include details of pipework where relevant):

	T: .	CORE DRIL	LING AL DHAID	•	swis	sbori	na	:
	To be seen							
CLIENT:		SANYU CON	SULTANTS				1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	٠
Packer or Lu	geon test. She	d 2		Site:	AL MILIHA	Location:	AL DHAID	erat al
NOTE 1. Fo	r test details, se	eé sheet 1.	1	Job No:	E-2145	Borehole No:	B2	
NOTE 2. II s	ground water le	evel unknown, or l	elow test	Date:	02.08.95	Sheet:	2 of 2	,
section, use o	lepth to centre	of test section		Ground level:	154	Crew/operator	VARGHESE	
		•		(Ordnance dat	lum)			
14 1				Weather:	HOT, WINDY.	1 1		
Computation	by:	GEORGE		Test No:	2			~
Computatio	n record							1
Data (from sl	heet 1)			Length of test	section, I:	5.00	(m)	
initial depth t	lo ground wate	r:	15.50 (1)	Gauge height	above ground level	-		
Period	Flow, q	Gauge pressure		Friction head		Total head, h		
4 12	litres/min	Gauge	Head of	in basic	in extra	(1)+(2)+(5)-(6)-(7)	
		pressure (bars)	water, m	pipework	rods and pipes			
	(3)	(4)	(i)	(6)	(7)	(8)		• .
lst	1.33	4	40	0.0158	0.0001	56.38		
and	1.78	6	60	0.0270	0.0003	76.37		
1đ	2.80	8		}	-			
	ļ		80	0.0626	0.0006	96.34	*************	
th	1.65	6	60	0.0236	0.0002	76.38		•
Flow v.	1.19 total bead		40	0.0129	0.0001	56.39		
			40	0.0129	0.0001	56.39		
		4	40	0.0129	0.0001	56.39		
Flow v.		4	40	0.0129	0.0001			
Flow v.		4	40	0.0129	0.0001			
Flow v.		4	40	0.0129	0.0001			
Flow v.		1.4	40		0.0001			
Flow v.		14	40		0.0001			
Flow, q. in liter, per minate	total bead	14	90 70,00	2nd 4th 80 000	9000	314	1100	~~
Flow v. th lites per minate 40.0	total bead	14	00 70.00 Total h	2nd 4th 80.00 rad, h, in metro	90.00		110.0	200
Flow v. How d. in like ber minute 40.0	total bead	1a 3 5a 50.00 60	00 70.00 Total h	2nd 4th 80 000	90.00 stimate;	100.00		00
Flow v. 3 1 40.0 deutations:	total bead o so	0.00 60	00 70.00 Total h	1 ad 4th 80.00 rad, h, in metro	90.00	100.00 K (m/day)	110.c	200
Flow v. Flow v. Low d'th liter per minute 40.0 Acutations: ope of graph (100.7) (c.	total bead 0 50	0.000 60 0.0362 units =	00 70.00 Total h	10d 80.00 rad, h, in metro	90.00 PS 90.00 PS Q (i/min) 1.33	100.00		200
Flow v. 3 1 40.0 alculations: lope of graph = (100.7)*(c) here l is the	total head 0 50 1 = qh = qh) in lugeon tength of test s	0.00 60 0.0362 units = 1	00 70.00 Fotal h	2nd 4th 80.00 rad, h, in metro	90.00 stimate: Q(l'min)	100.00 K (m/day)	K (crn'sec)	00
Flow v. 3 1 40.0 alculations: lope of graph = (100.7)*(c) here l is the	total bead 0 50	0.000 60 0.0362 units =	00 70.00 Fotal h	10d 80.00 rad, h, in metro	90.00 PS 90.00 PS Q (i/min) 1.33	100.00 K (m/day) 4.31E-03	K (cra'sec) 4.99E-06	200

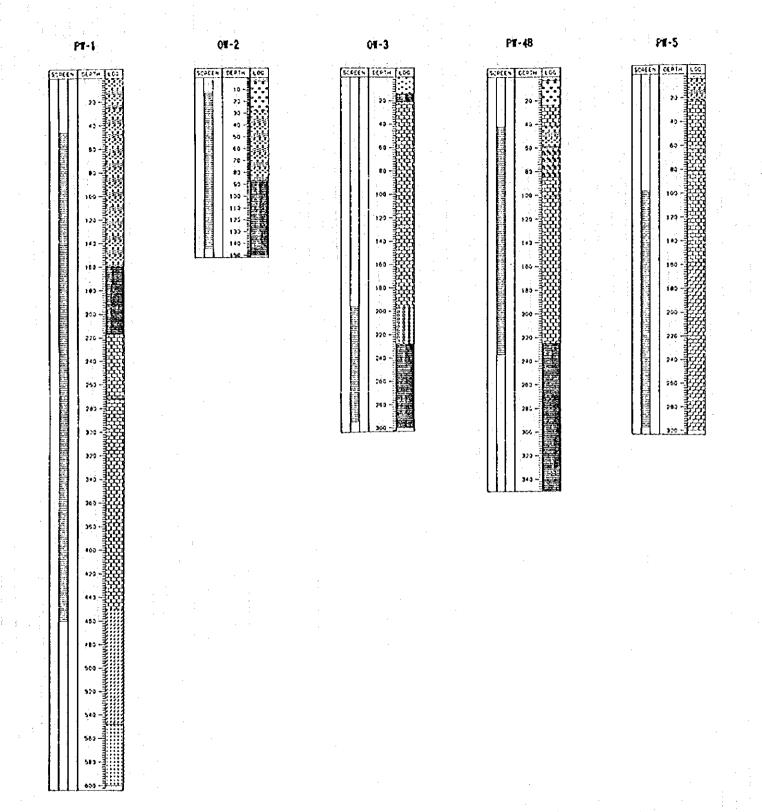
PROJECT		E DRILLING AL				5	Wis	sb	ori	ng	
	CAND	TI CONCID TAN									
CLIENT:	SAN	'U CONSULTAN'	15				•				
acker or Lu	geon test. Sheet 1			Site	ar 4 mag and 1	AL MI	LIHA	Locati	erenos mentres Ora:	AL DI	IAID
	ground level to:		**************************************	Job No)	E-2145		Boreh	ole No:	B2	
) top of test		272.00	m	Date:		01.08.9	5	Sheet:		1 of 2	
b) bottom of	test section	277.00	m	Groun	d level:	154	m	Crew/e	operator.	VARG	HESE
c) centre of t	est section	274.50	m	(Orana	nce dati	(מונ					(C) The CHAPTER CONTRACTOR
d) bettom of	hole at time of test:	300.00	m	Weath	er:	нот, у	VINDY		inage alla film galla galla dal		
e) bottom of	casing:	270.25	m	Packer	pressur	45 BA	}	Test N	o:	1	
) initial groi	and water level: (see NO	OTE 2) 15.50	m	Packer	Type:		Pneum	nie 63m	m		A-deal-mass tend a
ength of tes	section	5.00	m :	Dia. ol	hole in	test area	:	94	mm		
izuge height	above ground level:	0.90	m	Type o	freck	CONG	LOME	ATE/L	MESTO:	Æ	
est record	r deng <u>ander dir ying den den negaran produmbles den den den den den den de</u>			******		K.V. & */		uder or areas or ele		- Maria - Mari	
st period	Time, min	0	5	HCPL THE RAN	10		15	ACCOUNT OF		,	Average
auge	Flowmeter reading	8	2015		703		00.			1	low q
ressure par):	Dipstick litres	776.5	784.5		793.2		801.5			_	itres min
4	Water take, litres	8	}	8.7		8.3					1.67
nd period	Time, min	0	5		10		15	areterator		/	Average
auge	Flowmeter reading	s			0040		0244				low q
rëssure par):	Dipstick litres	805	815		824.8		834.5	:	٠.	1	itres min
6	Water take, litres	10)	9.8	,	9.7			property designations		1.97
rd period	Time, min	0	3		10		15			1	Average
lauge ressure par):	Flowmeter reading Dipstick litres	838.7	850.5		862.3		873.8				low g itres/min
8	Water take, litres	11.8		11.8	<u> </u>	11.5]	[~	2.34
th period	Time, min	0	3		10		15	Accessing to the same	· ALTERNATION	1	Average
auge ressure par):	Flowmeter reading Dipstick litres	s, 880.3	890.4		900.4	*	910.5	:			low <i>q</i> kres/min
6	Water take, litres	10.1	·	10		10.1					2.01
th period	Time, min	0	5	The same of the same of	10	la sur-somi	15		7.E.M. (12.17) PER	/	lverage
iauge ressure bar):	Flowmeter reading Dipstick litres	s, 917.4	925.4		933.8		942				low g itres/min
4	Water take, litres			8.4		8.2				1	1.64
emarks (to	include details of pipew	ork where relevant):	\$	and the same		THE PERSON		Carlo and Salton	and the second second	ears on the second	**************************************
				-							
	•										
										•	
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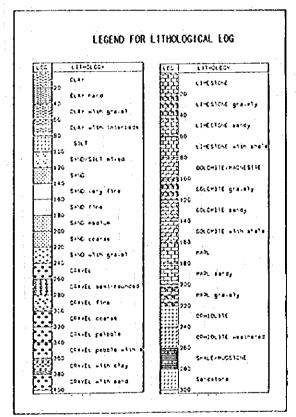
PROJECT	:	CORE DRILL	ING AL DHAID	1.	swis	sbori	ng	
CLIENT:		SANYU CON	SULTANTS					
Packer or Lu	geon test. She	d 2		Site:	AL MILIHA	Location:	AL DHAID	r. Tak
	test details, s	AND DESCRIPTION OF THE PARTY.		Job No:	E-2145	Borehole No:	82	
		evel unknown, or b	elow test	Date:	01.08.95	Sheet:	2 of 2	
	and the state of the state of	of test section	\$	Ground level:	154	Crew/operator	VARGHESE	
		1 :		(Ordnance date	m)			
				Weather:	HOT, WINDY			
Computation	by:	GEORGE		Test No:	1			
Computation	~ ~~~~			J.,				
Data (from sl		Programmy and a substitution of the substitution		Length of test	section, 1:	5.00	(m)	
	o ground wat		15.50 (i)		bove ground level		(m)	(
Period	Flow, q	Gauge pressure		Friction head to		Total head, h		
. 64100	litres min	Gauge	Head of	in basic	in extra	(1)+(2)+(5)+(6)+	<u>თ</u>	٠.
	in es indi	pressure (bars)	water, m	pipework	rods and pipes		et Visit de la companya de la companya de la companya de la companya de la companya de la companya de la companya	
		pressure (tars)	(5)	(6)	(7)	(8)		
	(3)		40	0.0267	0.0002	56.37	-	
lst .	1 67	4	60	0.0362	0.0003	76,36		
2nd	1.97	6		0.0500	0.0004	96.35		
3rd	2.34	8	80					
‡ኒክ	2.01							
	1.64 total head	4	60 40	0.0379	0.0003	76.36 56.37		
						 		
Flow v.						 		
Flow v.						56.37		
				0.0259		56.37		
Flow, q. in lites per minage		111 111 111	50.00 70.00	2n4 4tb	0.0002	344	0 110	000
Flow v. Show as on mings	total head	In So	50.00 70.00	284	0.0002 0.0002	344		000
Flow v. 4 to liters per mindle	total head	In So	50.00 70.00	2nd 4th 4th 80.0 head, A. in metr	0.0002 0.0002	344	K (onvised)	000
Flow v. Flow v. Flow v. Solution and spit up b most	total head	50.00 (0.0171 1 units =	40 50.00 70.00 Total	0.0259 2nd 4th 80.0 head, h, in metr Permeability F	0.0002 0.0002 0.0002	3c4 100 0 K (m'day) 5.39E-03	K (onvised) 6.23E-06	000
Flow v. Flow v. Flow v. 1.4 4(*alculations: = (100/l)*(total head	3n Stb. 50.00 0.0171	40 50.00 70.00 Total	0.0259 2nd 4th 80.0 head, h, in meta	0.0002 0 90.00 es 90.00 estimate: Q(l'min)	3:4 100.00 K(m'day)	K (onvised)	000
Flow v. Flow v. Flow v. 1.4 Acculations: Cooling Cooling	total head	50.00 (0.0171 1 units =	50.00 70.00 Total	0.0259 2nd 4th 80.0 head, h, in metr Permeability F Period 1 Period 2 Period 3	0.0002 0.0002 0.0002 0.0002 0.0002	3c4 100 0 K (m'day) 5.39E-03	K (on/sec) 6 23E-06 5.43E-06 5.12E-06	00
1.4 Alculations: Clove of grap L = (100/1)*(where I is the	total head	50.00 0.0171 n units = I section in metres	40 50.00 70.00 Total	2nd 4th 80.0 head, h, in metr Permeability F	0.0002 0 90.00 es stimate: Q(l'min) 1.67	3x4 3x4 100.00 K (m'day) 5.39E-03 4.69E-03	K (on/sec) 6.23E-06 5.43E-06	00

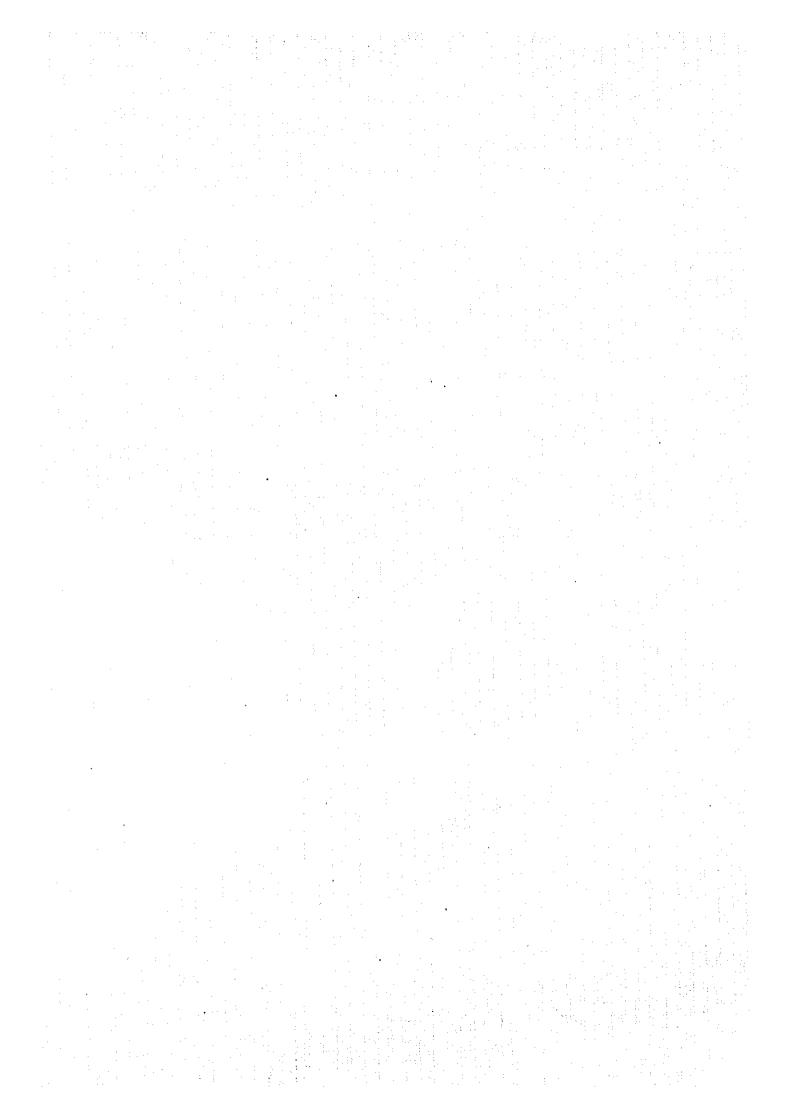


3.3. 1. Summary of Well Logs

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3.3.2. Well Logs (PW1, PW2/OW2, PW3/OW3, PW4b, OW5)

MASTERPLAN STUDY IN DHAID1995-96 JICA STUDY TEAM

ethod of Drilling: Rotary,Betonite Mud rilling Dates : - Jan-96	
illing Dates : - Jan-96	_
otal Depth : 600.00	
omments: PW1(600m)	

WELL LOG

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E	200 -			mudstone, shale n=5-20%
	-		217	U=0-50V
	Ξ			calcareous
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	250 -		4	& cemented gravel n=15-20%
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PUMPING TEST

Date: - Jan-96
Capacity: 17.8 m3/hr
Duration: 24 hrs
Transmiss.: 8.2 m2/day
SML: GL -54.29 m
DWL: GL -69.7 m

OW2/PW2 Khuderah Well No. Location: Elevation: 177.86m x = 3943002785600 Rotary, Bentonite Mud Method of Brilling: Jan-95 Orilling Dates Total Depth 150.00 Comments: 0W2(150m), PW2(70m)

WELL LOG

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United Nations GW Software

PUMPING TEST

Date: Jan-96 Capacity: 5.1 m3/hr
Duration: 24 hrs
Transmiss.: 16.35 m2/day
Stor.Coeff.: 0.002

SWL: GL -34.8m OWL: GL -48.7m

Pumped Well: PW2

MASTERPLAN STUDY IN DHAID1995-96 JICA STUDY TEAM

Elevation: 162.52m X = 391000 Y = 2782369 Method of Orilling: OW3(Rotary, Airform), PW3(Rotary, Airform)	
<u> </u>	
0 05/000 0000	y Mu
Drilling Dates : Dec-95(OW3,PW3)	
Total Depth : 300.00	
Comments: OW3(300m),PW3(250m)	5

WELL LOG

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SCREEN	DEPTH LOG	LITHOLOGY
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	260 -	calcareous
		mudstone n=10-15%
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	300 -	
	300	300 tons GW Software

PUMPING TEST

Date: Dec-95
Capacity: 25.2 m3/hr
Duration: 24 hr
Transmiss.: 1.148 m2/day
Stor.Coeff.: 0.003

SWE: GL -34.9m DWL: GL -64.9m

Pumping WelliMunucipality Well

MASTERPLAN STUDY IN DHAID1995-96 JICA STUDY TEAM

well No. PW4b	Location: Mana	amah	
Elevation: 131.55	x = 391257	v = 28029	81
Method of Drilling:	Rotary, Bentoni	ite Mud	
Drilling Dates :	- Jan-96		
Total Depth :			
Comments : PWb4(35	Om)		

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PUMPING TEST

Date: - Jan96
Capacity: 79.2 m3/hr
Duration: 24 hrs
Transmiss.: 290 m2/day
SWL: GL -28.0m
DWL: Gl -79.2m

MASTERPLAN STUDY IN DHAID1995-96 JICA STUDY TEAM

Well No. OW5	Location: Fili
Elevation: 178.10	x = 387299 $y = 2771060$
Method of Drilling:	Rotary, Bentonite Mud
Drilling Dates :	Jan-96
Total Depth :	300.00
Comments: 0W5(300)m)
•	

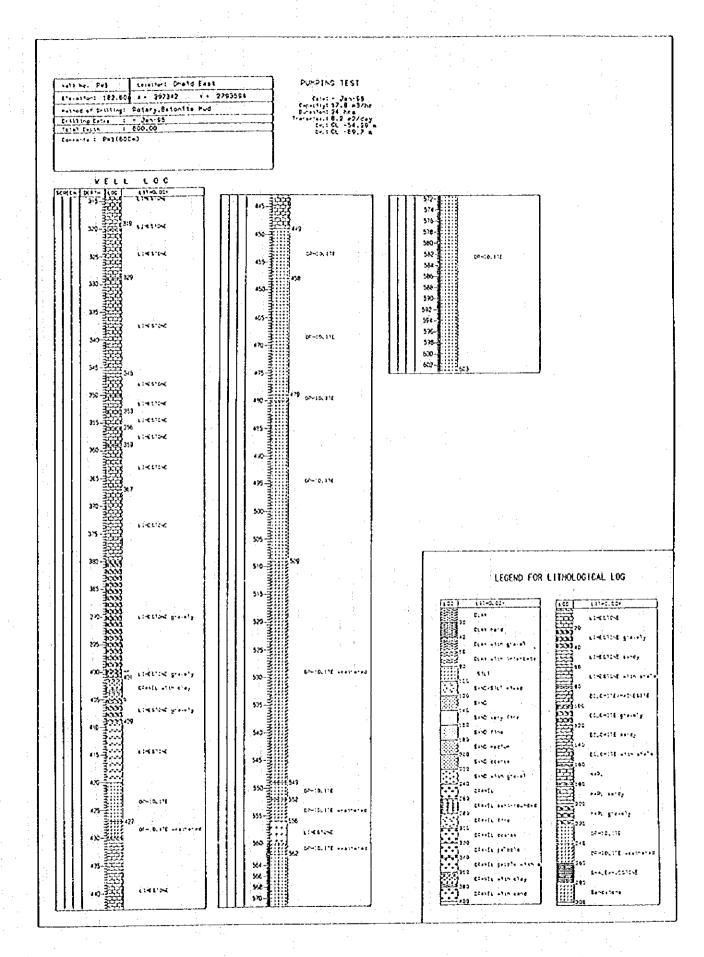
WELL LOG

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PUMPING TEST

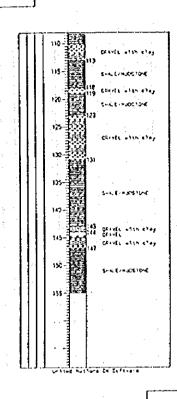
Date: Jan-96
Capacity: 18.9 m3/hr
Duration: 24 hrs
Transmiss.: 4.6 m2/day
SWL: GL -16.4m
DWL: GL -68.3m

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PUMPING TEST

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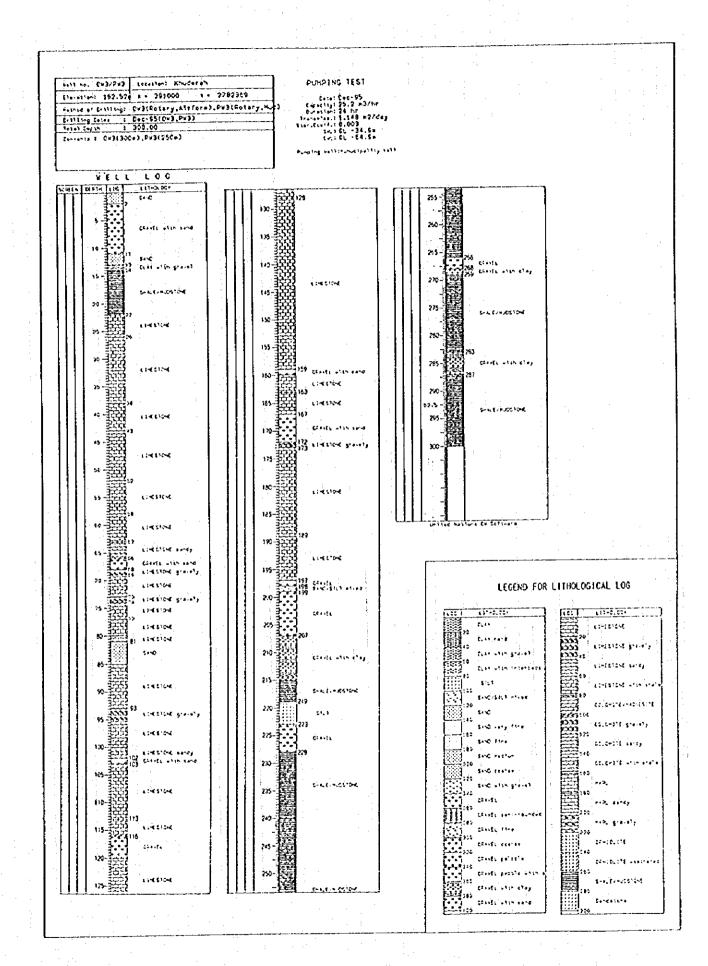
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11 hg. Pa45 Lecetion: Pa-anon	PUMPING TEST Event - Janks Control: 24 hrs Invents: 250 m2/day Laid: -28.0m Cattle -29.2m		
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