

**DA - 10**

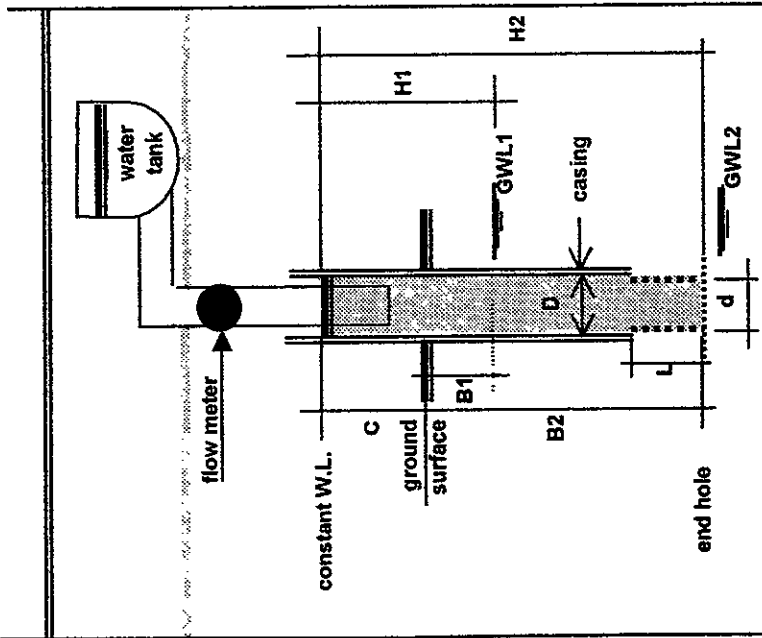
GWL NONE

CONSTANT HEAD TEST

GEOLOGICAL INVESTIGATION AYUNG DAM

LOCATION : LEFT BANK (DAM SITE)  
 DATE : JAN, 10, 2006  
 HOLE NO. : DA-10  
 STAGE NO. : 1  
 DIAMETER OF HOLE : 66

HOLE DIAMETER : 6,60 cm  
 HOLE RADIUS : 3,30 cm  
 CASING DIAMETER : 8,30 cm  
 HOLE DEPTH : 5,00 m  
 GROUND WATER LEVEL DEPTH : NONE  
 HEIGHT OF CASING : 3,00 m  
 LENGTH OF TEST SECTION : 1,20 m  
 WATER LEVEL HEIGHT : 5,00 m  
 CONSTANT WATER LEVEL HEIGHT : 8,00 m  
 STATIC HEAD PRESSURE : 1,265 kg/cm<sup>2</sup>  
 APPLIED EFFECTIVE PRESSURE : 1,265 kg/cm<sup>2</sup>  
 APPLIED DISCHARGE : 47,10 ltr/min  
 COEFFICIENT OF PERMEABILITY : 5,41E-02 cm/sec.  
 LUGEON UNIT : 490,625 water lose



TEST RECORDS :

PRESSURE GAUGE, P0 (kg/cm <sup>2</sup> )	STATIC HEAD, P1 (kg/cm <sup>2</sup> )	EFFECTIVE PRESSURE, P (kg/cm <sup>2</sup> )	INJECTION TIME, t (minute)	ABSORPTION, q (liter)	UNIT TAKE, Q (l/min.)
0,000	1,265	1,265	20,00	942,00	47,10

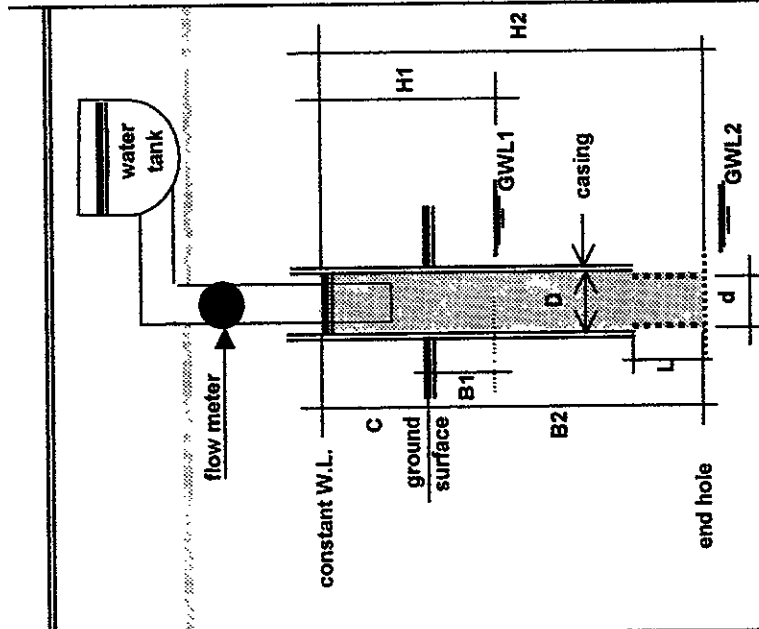
GWL NONE

CONSTANT HEAD TEST

GEOLOGICAL INVESTIGATION AYUNG DAM

LOCATION : LEFT BANK (DAM SITE)  
 DATE : JAN, 9, 2006  
 HOLE NO. : DA-10  
 STAGE NO. : 2  
 DIAMETER OF HOLE : 66

HOLE DIAMETER : 6,60 cm  
 HOLE RADIUS : 3,30 cm  
 CASING DIAMETER : 8,30 cm  
 HOLE DEPTH : 10,00 m  
 GROUND WATER LEVEL DEPTH : NONE  
 HEIGHT OF CASING : 2,00 m  
 LENGTH OF TEST SECTION : 3,00 m  
 WATER LEVEL HEIGHT : 10,00 m  
 CONSTANT WATER LEVEL HEIGHT : 12,00 m  
 STATIC HEAD PRESSURE : 1,898 kg/cm<sup>2</sup>  
 APPLIED EFFECTIVE PRESSURE : 1,898 kg/cm<sup>2</sup>  
 APPLIED DISCHARGE : 38,55 ltr/min  
 COEFFICIENT OF PERMEABILITY : 2,95E-02 cm/sec.  
 LUGEOON UNIT : 107,083



TEST RECORDS :

PRESSURE GAUGE, P0 (kg/cm <sup>2</sup> )	STATIC HEAD, P1 (kg/cm <sup>2</sup> )	EFFECTIVE PRESSURE, P (kg/cm <sup>2</sup> )	INJECTION TIME, t (minute)	ABSORPTION, q (liter)	UNIT TAKE, Q (l/min.)
0,000	1,898	1,898	20,00	771,00	38,55

GWL NONE

**WATER PRESSURE TEST**

**GEOLOGICAL INVESTIGATION AYUNG - DAM**

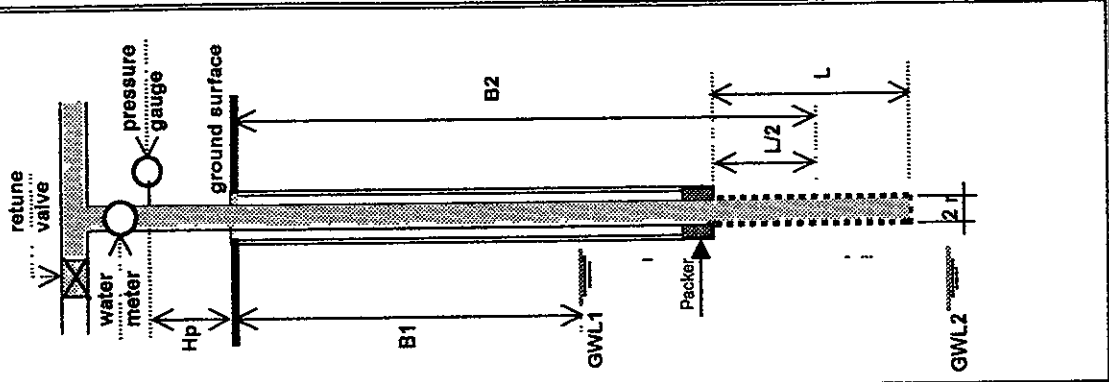
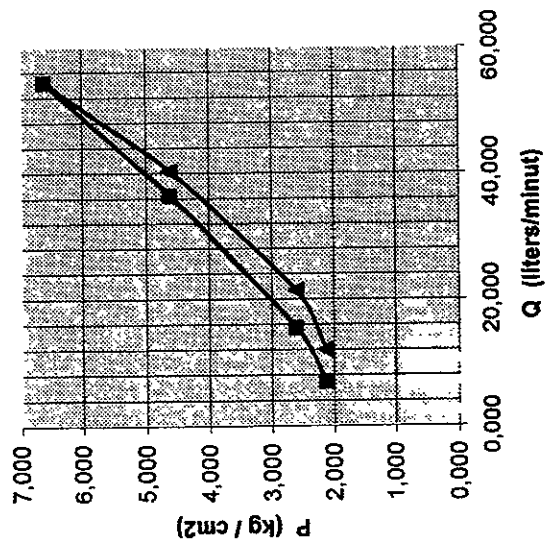
LOCATION : RIGHT/LEFT BANK (DAM SITE)  
 DATE : JAN, 11, 2006  
 HOLE NO. : DA-10  
 STAGE NO. : 3  
 HOLE DIAMETER (cm) D 6,6  
 (cm) r 3,3

HOLE DEPTH : 15,00 m  
 TEST LENGTH : 5,00 m  
 GROUNDWATER LEVEL DEPTH : none  
 STATIC WATER HEAD : 12,50 m  
 PUMPING PRESSURE HEAD : 0,00 m  
 HEIGHT OF WATER PRESSURE GAUGE : 3,80 m  
 FRICTION ENERGY LOSS : 0,00 m  
 WATER PRESSURE IN HEAD : 16,30 m  
 STATIC HEAD : 1,630 kg/cm<sup>2</sup>  
 APPLIED EFFECTIVE PRESSURE : 4,630 kg/cm<sup>2</sup>  
 WATER INJECTION RATE : 36,400 ltr/min  
 COEFFICIENT OF PERMEABILITY : 5,93E-04 cm/sec  
 LUGEOON VALUE : 44,66

**TEST RECORDS :**

PRESSURE GAUGE, P0 (kg/cm <sup>2</sup> )	STATIC HEAD, P1 (kg/cm <sup>2</sup> )	EFFECTIVE PRESSURE, P (kg/cm <sup>2</sup> )	INJECTION TIME, t (minute)	ABSORPTION, Q (liter)	UNIT TAKE, q (l/min.)
0,500	1,630	2,130	10	70	7,000
1,000	1,630	2,630	10	155	15,500
3,000	1,630	4,630	10	364	36,400
5,000	1,630	6,630	10	544	54,400
3,000	1,630	4,630	10	403	40,300
1,000	1,630	2,630	10	213	21,300
0,500	1,630	2,130	10	120	12,000

**P - Q GRAPH**



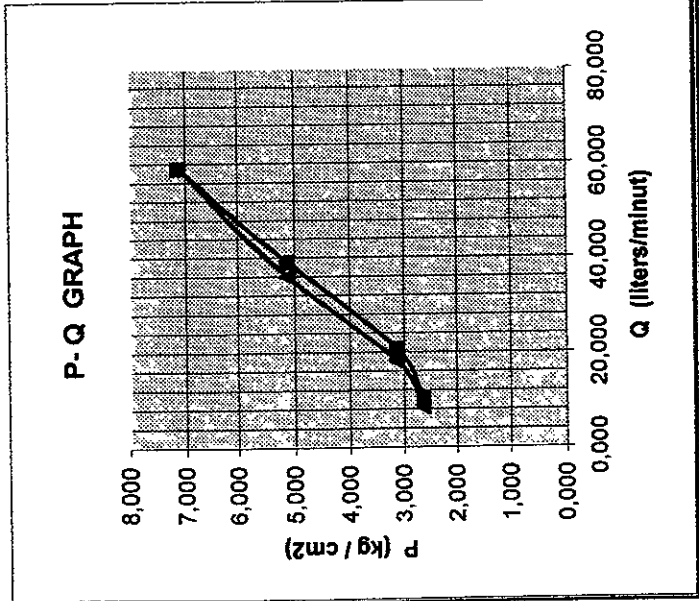
GWL NONE

### WATER PRESSURE TEST

#### GEOLOGICAL INVESTIGATION AYUNG - DAM

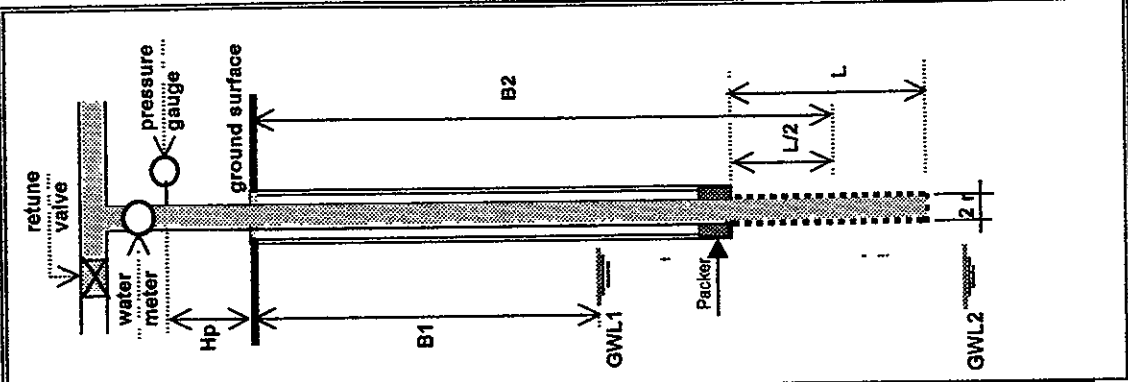
LOCATION : RIGHT/LEFT BANK (DAM SITE)  
 DATE : JAN, 12, 2006  
 HOLE NO : DA-10  
 STAGE NO : 4  
 HOLE DIAMETER (cm) D 6,6  
 (cm) r 3,3

HOLE DEPTH 15,00 m  
 TEST LENGTH L 5,00 m  
 GROUNDWATER LEVEL DEPTH GWL none m  
 STATIC WATER HEAD B2 17,50 m  
 PUMPING PRESSURE HEAD A 0,00 m  
 HEIGHT OF WATER PRESSURE GAUGE C(Hp) 3,80 m  
 FRICTION ENERGY LOSS Hf 0,00 m  
 WATER PRESSURE IN HEAD H2 21,30 m  
 STATIC HEAD P1 2,130 kg/cm<sup>2</sup>  
 APPLIED EFFECTIVE PRESSURE P 5,130 kg/cm<sup>2</sup>  
 WATER INJECTION RATE q 39,000 ltr/min  
 COEFFICIENT OF PERMEABILITY k 4,88E-04 cm/sec  
 LUGEON VALUE Lu 36,62



TEST RECORDS :

PRESSURE GAUGE, P0 (kg/cm <sup>2</sup> )	STATIC HEAD, P1 (kg/cm <sup>2</sup> )	EFFECTIVE PRESSURE, P (kg/cm <sup>2</sup> )	INJECTION TIME, t (minute)	ABSORPTION, Q (liter)	UNIT TAKE, q (l/min.)
0,500	2,130	2,630	10	102	10,200
1,000	2,130	3,130	10	207	20,700
3,000	2,130	5,130	10	390	39,000
5,000	2,130	7,130	10	590	59,000
3,000	2,130	5,130	10	360	36,000
1,000	2,130	3,130	10	180	18,000
0,500	2,130	2,630	10	85	8,500



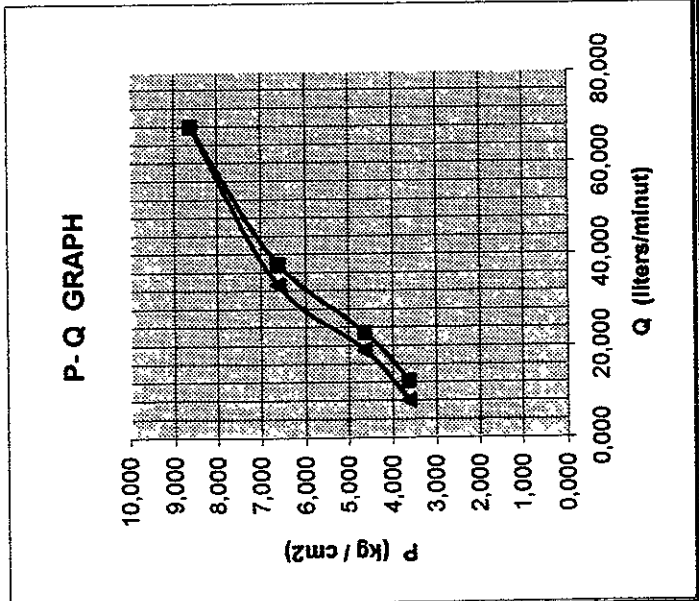
GWL NONE

**WATER PRESSURE TEST**

**GEOLOGICAL INVESTIGATION AYUNG - DAM**

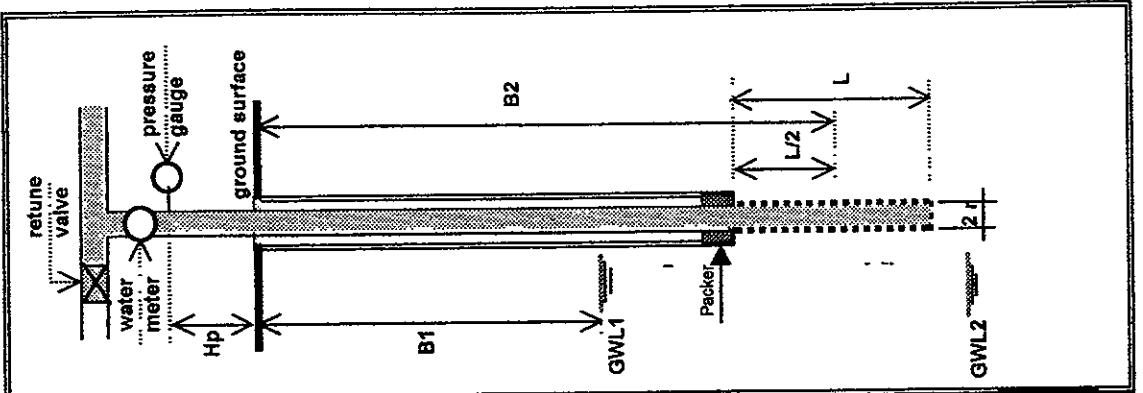
LOCATION : RIGHT/LEFT BANK (DAM SITE)  
 DATE : JAN, 14, 2006  
 HOLE NO. : DA-10  
 STAGE NO : 5  
 HOLE DIAMETER (cm) D 6,6  
 (cm) r 3,3

HOLE DEPTH : 25,00 m  
 TEST LENGTH : 5,00 m  
 GROUNDWATER LEVEL DEPTH : none  
 STATIC WATER HEAD : 22,50 m  
 PUMPING PRESSURE HEAD : A 0,00 m  
 HEIGHT OF WATER PRESSURE GAUGE : C(Hp) 3,80 m  
 FRICTION ENERGY LOSS : Hf 0,00 m  
 WATER PRESSURE IN HEAD : H2 26,30 m  
 STATIC HEAD : P1 2,630 kg/cm<sup>2</sup>  
 APPLIED EFFECTIVE PRESSURE : P 6,630 kg/cm<sup>2</sup>  
 WATER INJECTION RATE : q 37,800 ltr/min  
 COEFFICIENT OF PERMEABILITY : k 3,83E-04 cm/sec  
 LUGEOON VALUE : Lu 28,75



**TEST RECORDS :**

PRESSURE GAUGE, P0 (kg/cm <sup>2</sup> )	STATIC HEAD, P1 (kg/cm <sup>2</sup> )	EFFECTIVE PRESSURE, P (kg/cm <sup>2</sup> )	INJECTION TIME, t (minute)	ABSORPTION, Q (liter)	UNIT TAKE, q (l/min.)
1,000	2,630	3,630	10	124	12,400
2,000	2,630	4,630	10	229	22,900
4,000	2,630	6,630	10	373	37,800
6,000	2,630	8,630	10	680	68,000
4,000	2,630	6,630	10	332	33,200
2,000	2,630	4,630	10	190	19,000
1,000	2,630	3,630	10	80	8,000



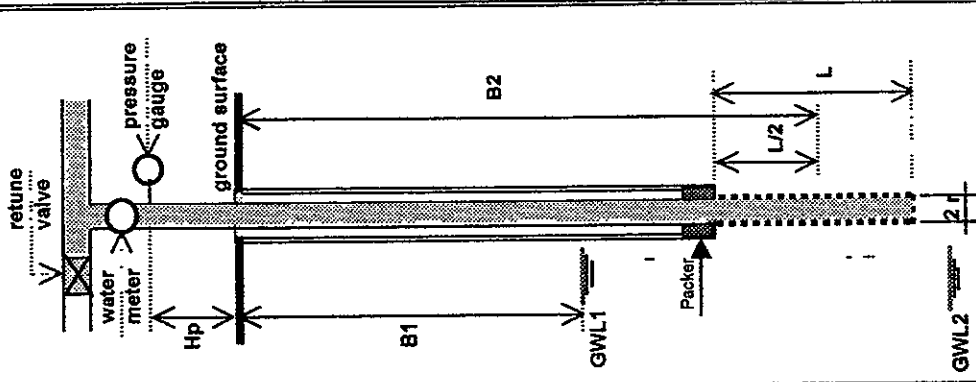
GWL NONE

**WATER PRESSURE TEST**

**GEOLOGICAL INVESTIGATION AYUNG - DAM**

LOCATION : RIGHT/LEFT BANK (DAM SITE)  
 DATE : JAN, 14, 2006  
 HOLE NO : DA-10  
 STAGE NO : 6  
 HOLE DIAMETER (cm) D 6,6  
 (cm) r 3,3

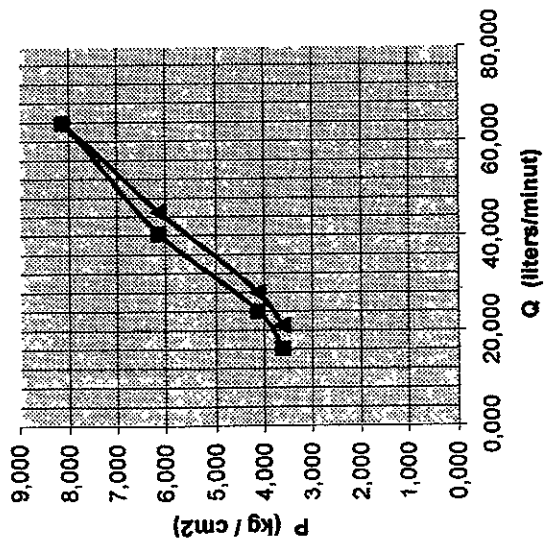
HOLE DEPTH : 25,00 m  
 TEST LENGTH : L 5,00 m  
 GROUNDWATER LEVEL DEPTH : GWL none m  
 STATIC WATER HEAD : B2 27,50 m  
 PUMPING PRESSURE HEAD : A 0,00 m  
 HEIGHT OF WATER PRESSURE GAUGE : C(Hp) 3,80 m  
 FRICTION ENERGY LOSS : Hf 0,00 m  
 WATER PRESSURE IN HEAD : H2 31,30 m  
 STATIC HEAD : P1 3,130 kg/cm2  
 APPLIED EFFECTIVE PRESSURE : P 6,130 kg/cm2  
 WATER INJECTION RATE : q 40,400 ltr/min  
 COEFFICIENT OF PERMEABILITY : k 3,44E-04 cm/sec  
 LUGERON VALUE : Lu 25,81



**TEST RECORDS :**

PRESSURE GAUGE, P0 (kg/cm2)	STATIC HEAD, P1 (kg/cm2)	EFFECTIVE PRESSURE, P (kg/cm2)	INJECTION TIME, t (minute)	ABSORPTION, Q (liter)	UNIT TAKE, q (l/min.)
0,500	3,130	3,630	10	162	16,200
1,000	3,130	4,130	10	240	24,000
<b>3,000</b>	<b>3,130</b>	<b>6,130</b>	<b>10</b>	<b>404</b>	<b>40,400</b>
5,000	3,130	8,130	10	639	63,900
3,000	3,130	6,130	10	450	45,000
1,000	3,130	4,130	10	280	28,000
0,500	3,130	3,630	10	210	21,000

**P - Q GRAPH**



GWL UP

**WATER PRESSURE TEST**

**GEOLOGICAL INVESTIGATION AYUNG - DAM**

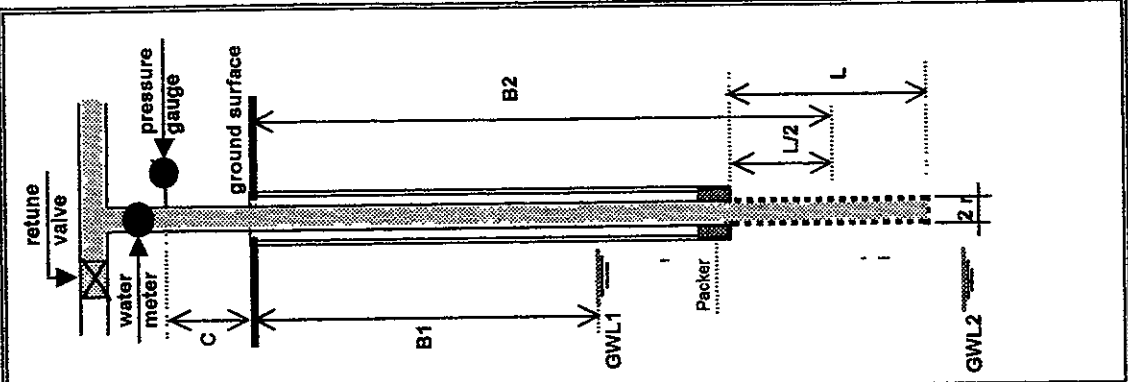
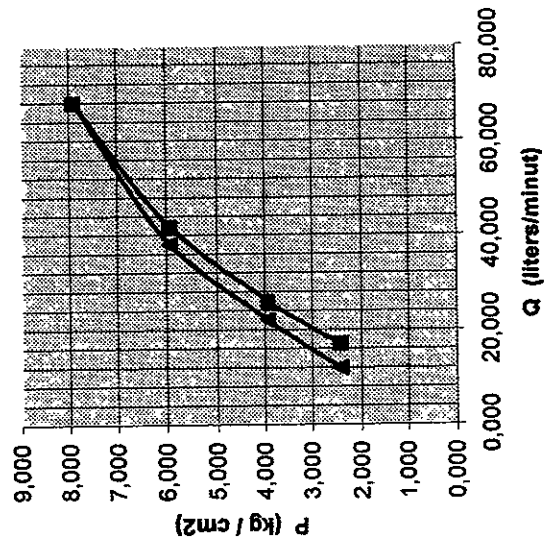
LOCATION: RIGHT/LEFT BANK (DAM SITE)  
 DATE: JAN, 16, 2006  
 HOLE NO: DA-10  
 STAGE NO: 7  
 HOLE DIAMETER (cm) D 6.6  
 (cm) r 3.3

HOLE DEPTH: 35,00 m  
 TEST LENGTH: 5,00 m  
 GROUNDWATER LEVEL DEPTH: 19,50 m  
 STATIC WATER HEAD: 15,50 m  
 PUMPING PRESSURE HEAD: 0,00 m  
 HEIGHT OF WATER PRESSURE GAUGE: 3,80 m  
 FRICTION ENERGY LOSS: 0,00 m  
 WATER PRESSURE IN HEAD: 19,30 m  
 STATIC HEAD: 1,930 kg/cm<sup>2</sup>  
 APPLIED EFFECTIVE PRESSURE: 5,930 kg/cm<sup>2</sup>  
 WATER INJECTION RATE: 41,800 ltr/min  
 COEFFICIENT OF PERMEABILITY: **5,77E-04** cm/sec  
 LUGEON VALUE: 43,32

**TEST RECORDS :**

PRESSURE GAUGE, P0 (kg/cm <sup>2</sup> )	STATIC HEAD, P1 (kg/cm <sup>2</sup> )	EFFECTIVE PRESSURE, P (kg/cm <sup>2</sup> )	INJECTION TIME, t (minute)	ABSORPTION, q (liter)	UNIT TAKE, q (l/min.)
0,500	1,930	2,430	10	170	17,000
2,000	1,930	3,930	10	260	26,000
<b>4,000</b>	<b>1,930</b>	<b>5,930</b>	<b>10</b>	<b>418</b>	<b>41,800</b>
6,000	1,930	7,930	10	680	68,000
4,000	1,930	5,930	10	380	38,000
2,000	1,930	3,930	10	220	22,000
0,500	1,930	2,430	10	120	12,000

**P - Q GRAPH**





GWL UP

**WATER PRESSURE TEST**

**GEOLOGICAL INVESTIGATION AYUNG - DAM**

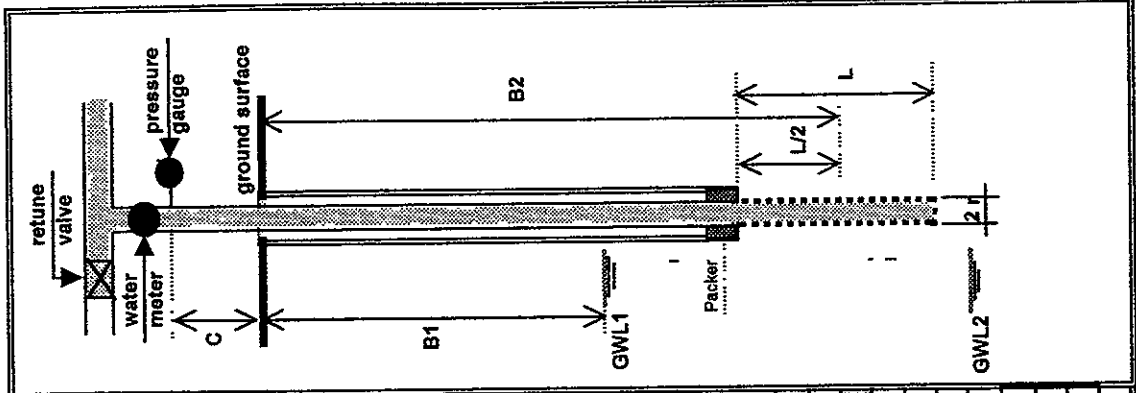
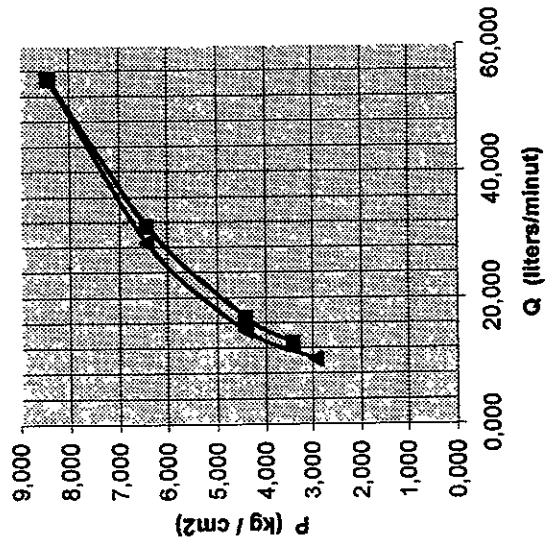
LOCATION : RIGHT/LEFT BANK (DAM SITE)  
 DATE : JAN, 16, 2006  
 HOLE NO : DA-10  
 STAGE NO. : 8  
 HOLE DIAMETER (cm) D 6,6  
 (cm) r 3,3

HOLE DEPTH : 35,00 m  
 TEST LENGTH : L  
 GROUNDWATER LEVEL DEPTH : GWL  
 STATIC WATER HEAD : B1  
 PUMPING PRESSURE HEAD : A  
 HEIGHT OF WATER PRESSURE GAUGE : C(Hp)  
 FRICTION ENERGY LOSS : Hf  
 WATER PRESSURE IN HEAD : H1  
 STATIC HEAD : P1  
 APPLIED EFFECTIVE PRESSURE : P  
 WATER INJECTION RATE : q  
 COEFFICIENT OF PERMEABILITY : k  
 LUGEON VALUE : Lu

**TEST RECORDS :**

PRESSURE GAUGE, P0 (kg/cm <sup>2</sup> )	STATIC HEAD, P1 (kg/cm <sup>2</sup> )	EFFECTIVE PRESSURE, P (kg/cm <sup>2</sup> )	INJECTION TIME, t (minute)	ABSORPTION, q (liter)	UNIT TAKE, q (l/min.)
1,000	2,430	3,430	10	129	12,900
2,000	2,430	4,430	10	168	16,800
4,000	2,430	6,430	10	314	31,400
6,000	2,430	8,430	10	547	54,700
4,000	2,430	6,430	10	288	28,800
2,000	2,430	4,430	10	148	14,800
0,500	2,430	2,930	10	102	10,200

**P - Q GRAPH**



GWL UP

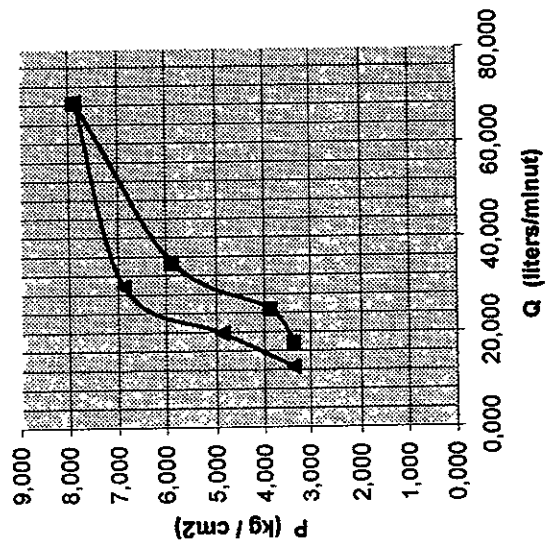
**WATER PRESSURE TEST**

**GEOLOGICAL INVESTIGATION AYUNG - DAM**

LOCATION : RIGHT/LEFT BANK (DAM SITE)  
 DATE : JAN, 17, 2006  
 HOLE NO. : DA-10  
 STAGE NO : 9  
 HOLE DIAMETER (cm) D 6.6  
 (cm) r 3.3

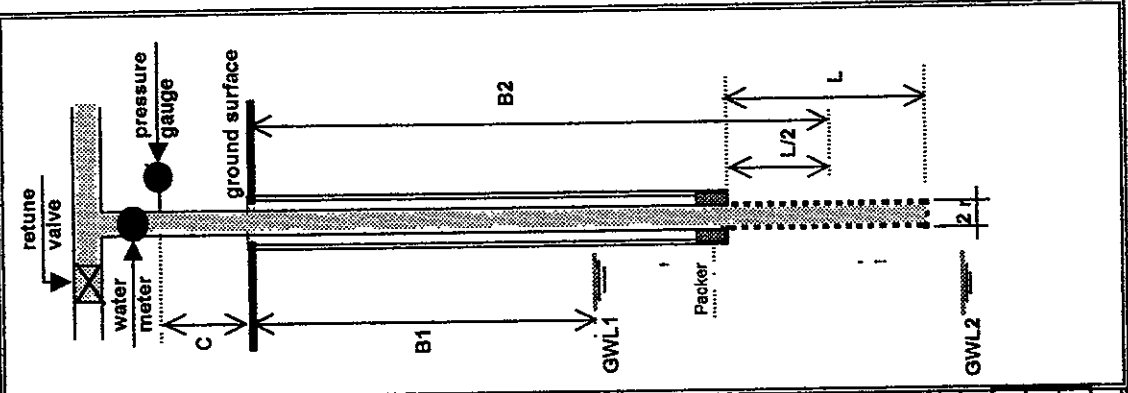
HOLE DEPTH 45,00 m  
 TEST LENGTH L 5,00 m  
 GROUNDWATER LEVEL DEPTH GWL 20,00 m  
 STATIC WATER HEAD B1 25,00 m  
 PUMPING PRESSURE HEAD A 0,00 m  
 HEIGHT OF WATER PRESSURE GAUGE C(Hp) 3,80 m  
 FRICTION ENERGY LOSS Hf 0,00 m  
 WATER PRESSURE IN HEAD H1 28,80 m  
 STATIC HEAD P1 2,880 kg/cm<sup>2</sup>  
 APPLIED EFFECTIVE PRESSURE P 5,880 kg/cm<sup>2</sup>  
 WATER INJECTION RATE q 34,700 ltr/min  
 COEFFICIENT OF PERMEABILITY k 3,21E-04 cm/sec  
 LUGEON VALUE Lu 24,10

**P - Q GRAPH**



**TEST RECORDS :**

PRESSURE GAUGE, P0 (kg/cm <sup>2</sup> )	STATIC HEAD, P1 (kg/cm <sup>2</sup> )	EFFECTIVE PRESSURE, P (kg/cm <sup>2</sup> )	INJECTION TIME, t (minute)	ABSORPTION, q (liter)	UNIT TAKE, q (l/min.)
0,500	2,880	3,380	10	177	17,700
1,000	2,880	3,880	10	248	24,800
3,000	2,880	5,880	10	347	34,700
5,000	2,880	7,880	10	686	68,600
4,000	2,880	6,880	10	297	29,700
2,000	2,880	4,880	10	197	19,700
0,500	2,880	3,380	10	126	12,600



GWL UP

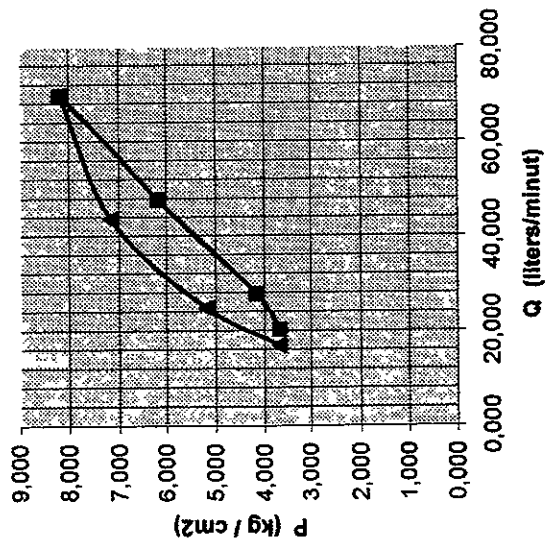
**WATER PRESSURE TEST**

**GEOLOGICAL INVESTIGATION AYUNG - DAM**

LOCATION : RIGHT/LEFT BANK (DAM SITE)  
 DATE : JAN, 18, 2006  
 HOLE NO. : DA-10  
 STAGE NO : 10  
 HOLE DIAMETER (cm) D 6,6  
 (cm) r 3,3

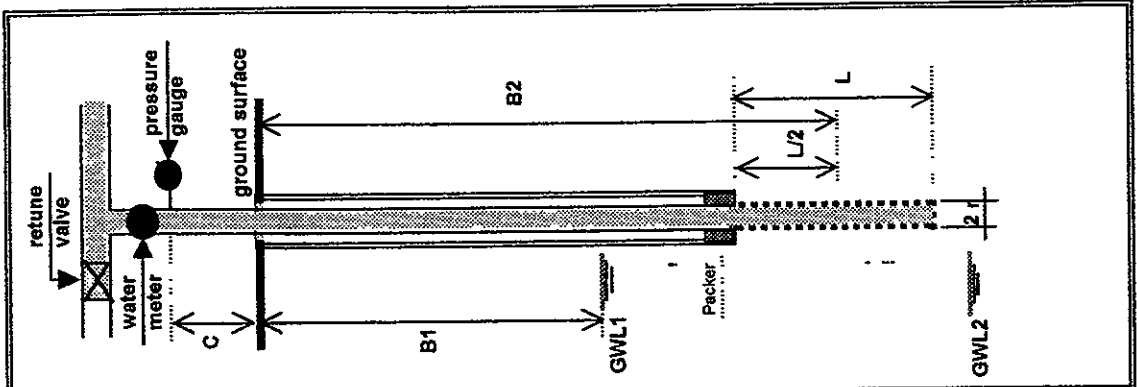
HOLE DEPTH 45,00 m  
 TEST LENGTH L 5,00 m  
 GROUNDWATER LEVEL DEPTH GWL 22,00 m  
 STATIC WATER HEAD B1 28,00 m  
 PUMPING PRESSURE HEAD A 0,00 m  
 HEIGHT OF WATER PRESSURE GAUGE C(Hp) 3,80 m  
 FRICTION ENERGY LOSS Hf 0,00 m  
 WATER PRESSURE IN HEAD H1 31,80 m  
 STATIC HEAD P1 3,180 kg/cm<sup>2</sup>  
 APPLIED EFFECTIVE PRESSURE P 6,180 kg/cm<sup>2</sup>  
 WATER INJECTION RATE q 47,700 ltr/min  
 COEFFICIENT OF PERMEABILITY k 4,00E-04 cm/sec  
 LUGEON VALUE Lu 30,00

**P - Q GRAPH**



**TEST RECORDS :**

PRESSURE GAUGE, P0 (kg/cm <sup>2</sup> )	STATIC HEAD, P1 (kg/cm <sup>2</sup> )	EFFECTIVE PRESSURE, P (kg/cm <sup>2</sup> )	INJECTION TIME, t (minute)	ABSORPTION, q (liter)	UNIT TAKE, q (l/min.)
0,500	3,180	3,680	10	203	20,300
1,000	3,180	4,180	10	278	27,800
3,000	3,180	6,180	10	477	47,700
5,000	3,180	8,180	10	697	69,700
4,000	3,180	7,180	10	436	43,600
2,000	3,180	5,180	10	247	24,700
0,500	3,180	3,680	10	168	16,800



GWL UP

WATER PRESSURE TEST

GEOLOGICAL INVESTIGATION AYUNG - DAM

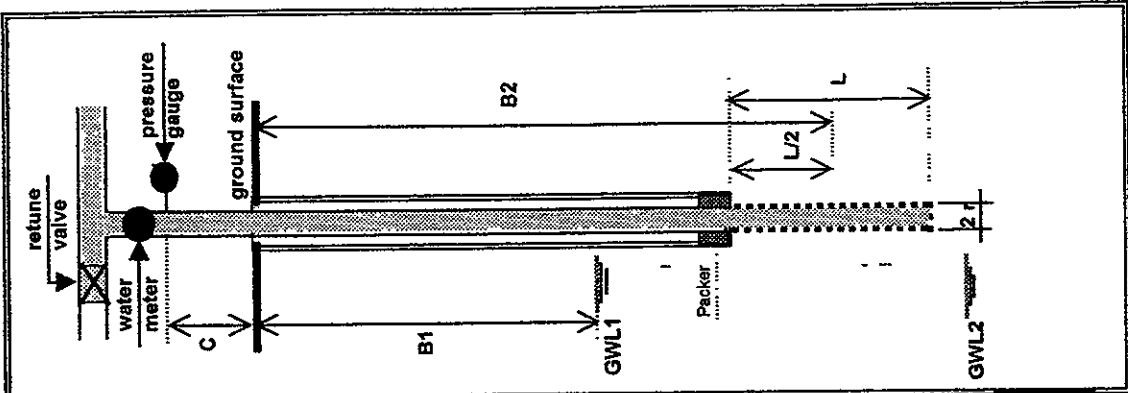
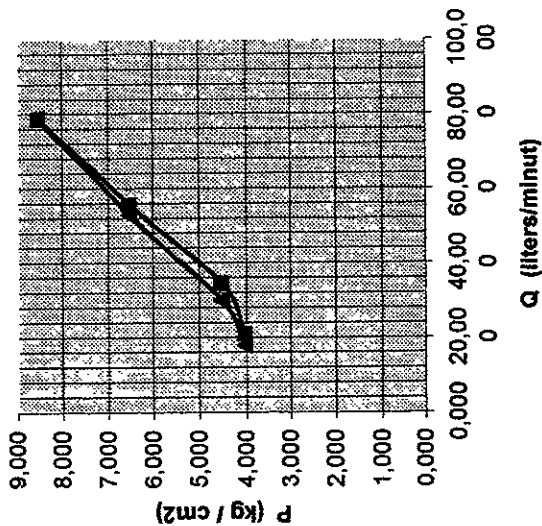
LOCATION : RIGHT/LEFT BANK (DAM SITE)  
 DATE : JAN, 22, 2006  
 HOLE NO. : DA-10  
 STAGE NO : 11  
 HOLE DIAMETER (cm) D 6,6  
 (cm) r 3,3

HOLE DEPTH : 50,00 m  
 TEST LENGTH : L  
 GROUNDWATER LEVEL DEPTH : GWL  
 STATIC WATER HEAD : B1  
 PUMPING PRESSURE HEAD : A  
 HEIGHT OF WATER PRESSURE GAUGE : C(Hp)  
 FRICTION ENERGY LOSS : Hf  
 WATER PRESSURE IN HEAD : H1  
 STATIC HEAD : P1  
 APPLIED EFFECTIVE PRESSURE : P  
 WATER INJECTION RATE : q  
 COEFFICIENT OF PERMEABILITY : k  
 LUGEOON VALUE : Lu

TEST RECORDS :

PRESSURE GAUGE, P0 (kg/cm <sup>2</sup> )	STATIC HEAD, P1 (kg/cm <sup>2</sup> )	EFFECTIVE PRESSURE, P (kg/cm <sup>2</sup> )	INJECTION TIME, t (minute)	ABSORPTION, q (liter)	UNIT TAKE, q (l/min.)
0,500	3,530	4,030	10	209	20,900
1,000	3,530	4,530	10	346	34,600
3,000	3,530	6,530	10	666	66,600
5,000	3,530	8,530	10	787	78,700
3,000	3,530	6,530	10	528	52,800
1,000	3,530	4,530	10	300	30,000
0,500	3,530	4,030	10	178	17,800

P - Q GRAPH



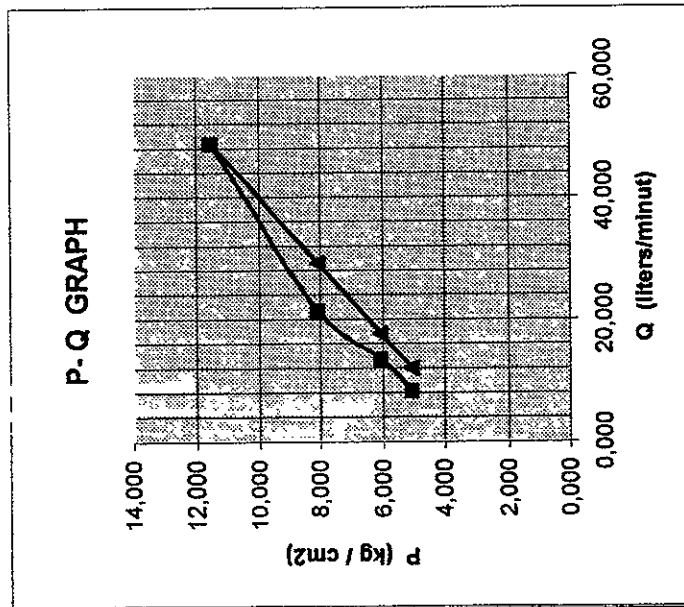
GWL UP

**WATER PRESSURE TEST**

**GEOLOGICAL INVESTIGATION AYUNG - DAM**

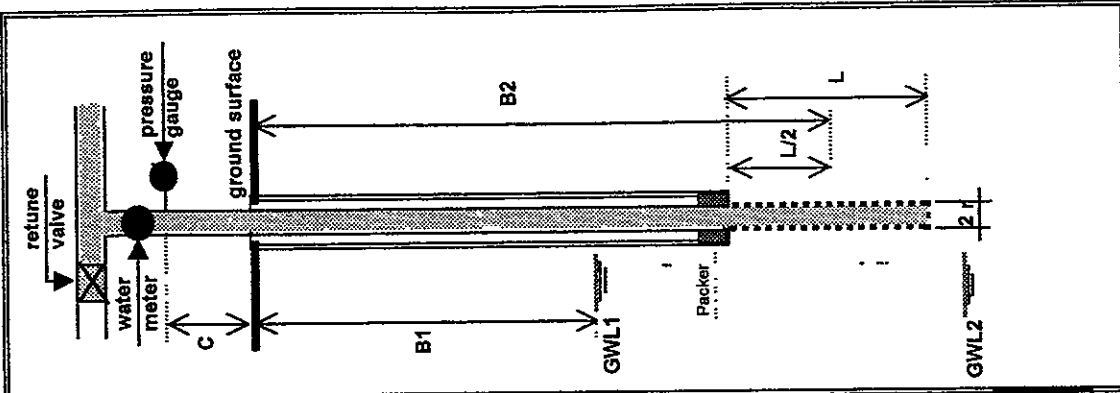
LOCATION : RIGHT/LEFT BANK (DAM SITE)  
 DATE : JAN, 24, 2006  
 HOLE NO : DA-10  
 STAGE NO. : 12  
 HOLE DIAMETER (cm) D 6,6  
 (cm) r 3,3

HOLE DEPTH : 60,00 m  
 TEST LENGTH : L 5,00 m  
 GROUNDWATER LEVEL DEPTH : 22,95 m  
 STATIC WATER HEAD : B1 37,05 m  
 PUMPING PRESSURE HEAD : A 0,00 m  
 HEIGHT OF WATER PRESSURE GAUGE : C(Hp) 3,80 m  
 FRICTION ENERGY LOSS : Hf 0,00 m  
 WATER PRESSURE IN HEAD : H1 40,85 m  
 STATIC HEAD : P1 4,085 kg/cm<sup>2</sup>  
 APPLIED EFFECTIVE PRESSURE : P 8,085 kg/cm<sup>2</sup>  
 WATER INJECTION RATE : q 21,400 ltr/min  
 COEFFICIENT OF PERMEABILITY : k 1,40E-04 cm/sec  
 LUGEON VALUE : Lu 10,48



**TEST RECORDS :**

PRESSURE GAUGE, P0 (kg/cm <sup>2</sup> )	STATIC HEAD, P1 (kg/cm <sup>2</sup> )	EFFECTIVE PRESSURE, P (kg/cm <sup>2</sup> )	INJECTION TIME, t (minutes)	ABSORPTION, q (liter)	UNIT TAKE, q (l/min.)
1,000	4,085	5,085	10	83	8,300
2,000	4,085	6,085	10	135	13,500
4,000	4,085	8,085	10	214	21,400
7,500	4,085	11,585	10	488	48,800
4,000	4,085	8,085	10	292	29,200
2,000	4,085	6,085	10	176	17,600
1,000	4,085	5,085	10	120	12,000



GWL UP

**WATER PRESSURE TEST**

**GEOLOGICAL INVESTIGATION AYUNG - DAM**

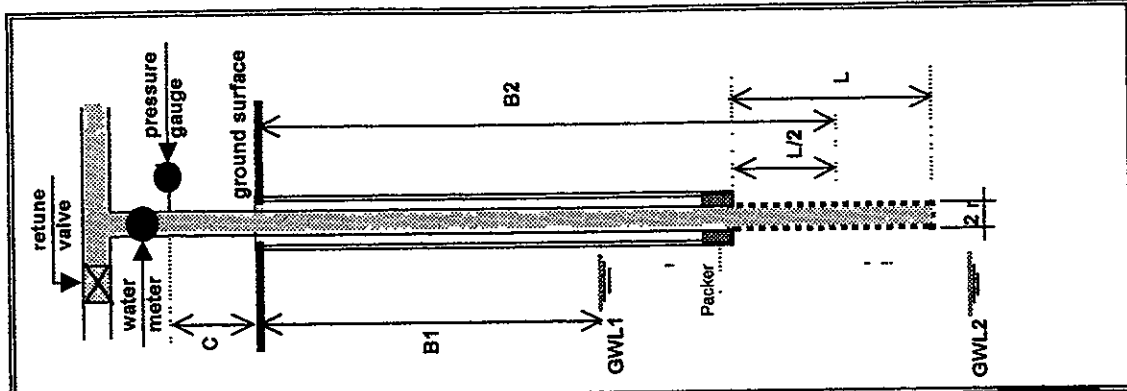
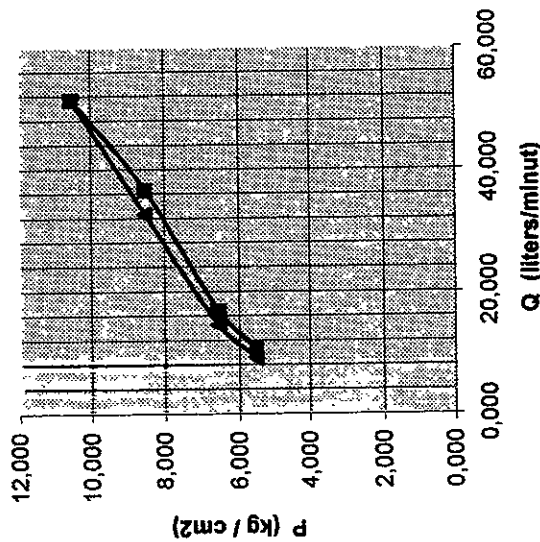
LOCATION : RIGHT/LEFT BANK (DAM SITE)  
 DATE : JAN, 25, 2006  
 HOLE NO : DA-10  
 STAGE NO. : 13  
 HOLE DIAMETER (cm) D 6,6  
 (cm) r 3,3

HOLE DEPTH : 65,00 m  
 TEST LENGTH : L  
 GROUNDWATER LEVEL DEPTH : GWL  
 STATIC WATER HEAD : B1  
 PUMPING PRESSURE HEAD : A  
 HEIGHT OF WATER PRESSURE GAUGE : C(Hp)  
 FRICTION ENERGY LOSS : Hf  
 WATER PRESSURE IN HEAD : H1  
 STATIC HEAD : P1  
 APPLIED EFFECTIVE PRESSURE : P  
 WATER INJECTION RATE : q  
 COEFFICIENT OF PERMEABILITY : k  
 LUGEOON VALUE : Lu

**TEST RECORDS :**

PRESSURE GAUGE, P0 (kg/cm <sup>2</sup> )	STATIC HEAD, P1 (kg/cm <sup>2</sup> )	EFFECTIVE PRESSURE, P (kg/cm <sup>2</sup> )	INJECTION TIME, t (minute)	ABSORPTION, q (liter)	UNIT TAKE, q (l/min.)
1,000	4,530	5,530	10	107	10,700
2,000	4,530	6,530	10	168	16,800
<b>4,000</b>	<b>4,530</b>	<b>8,530</b>	<b>10</b>	<b>366</b>	<b>36,600</b>
6,000	4,530	10,530	10	514	51,400
4,000	4,530	8,530	10	326	32,600
2,000	4,530	6,530	10	145	14,500
1,000	4,530	5,530	10	90	9,000

**P-Q GRAPH**



GWL UP

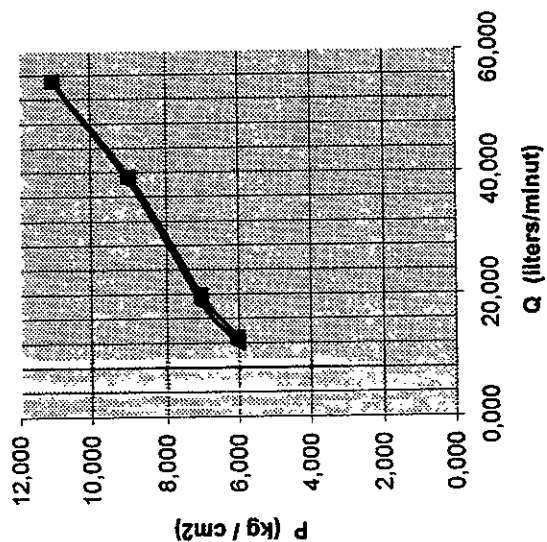
**WATER PRESSURE TEST**

**GEOLOGICAL INVESTIGATION AYUNG - DAM**

LOCATION : RIGHT/LEFT BANK (DAM SITE)  
 DATE : JAN, 26, 2006  
 HOLE NO. : DA-10  
 STAGE NO. : 14  
 HOLE DIAMETER (cm) D 6,6  
 (cm) r 3,3

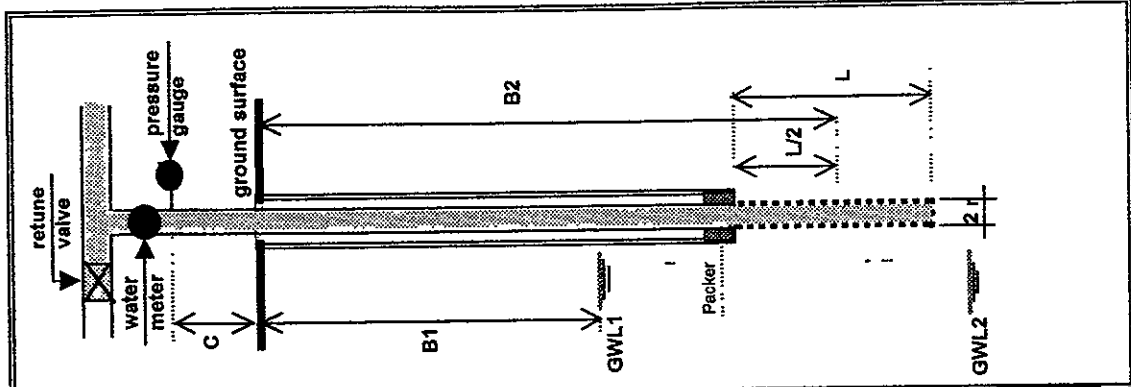
HOLE DEPTH	65,00	m
TEST LENGTH	L	m
GROUNDWATER LEVEL DEPTH	GWL	m
STATIC WATER HEAD	B1	m
PUMPING PRESSURE HEAD	A	m
HEIGHT OF WATER PRESSURE GAUGE	C(Hp)	m
FRICTION ENERGY LOSS	Hf	m
WATER PRESSURE IN HEAD	H1	m
STATIC HEAD	P1	kg/cm <sup>2</sup>
APPLIED EFFECTIVE PRESSURE	P	kg/cm <sup>2</sup>
WATER INJECTION RATE	q	ltr/min
COEFFICIENT OF PERMEABILITY	k	cm/sec
LUGEON VALUE	Lu	-

**P-Q GRAPH**



**TEST RECORDS :**

PRESSURE GAUGE, P0 (kg/cm <sup>2</sup> )	STATIC HEAD, P1 (kg/cm <sup>2</sup> )	EFFECTIVE PRESSURE, P (kg/cm <sup>2</sup> )	INJECTION TIME, t (minute)	ABSORPTION, q (liter)	UNIT TAKE, q (l/min.)
1,000	5,015	6,015	10	130	13,000
2,000	5,015	7,015	10	200	20,000
4,000	5,015	9,015	10	393	39,300
6,000	5,015	11,015	10	550	55,000
4,000	5,015	9,015	10	385	38,500
2,000	5,015	7,015	10	186	18,600
1,000	5,015	6,015	10	120	12,000



GWL UP

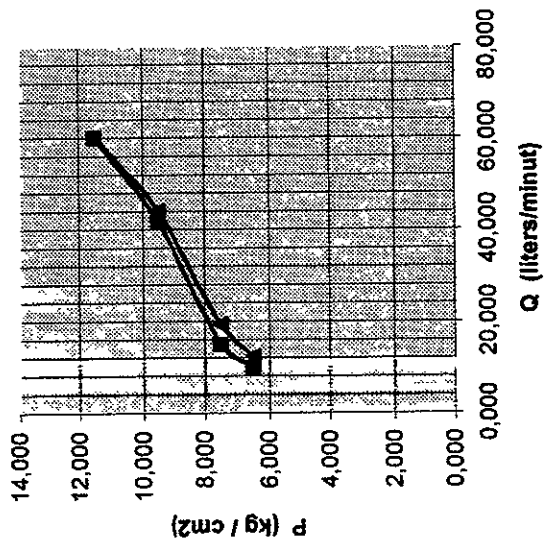
**WATER PRESSURE TEST**

**GEOLOGICAL INVESTIGATION AYUNG - DAM**

LOCATION : RIGHT/LEFT BANK (DAM SITE)  
 DATE : JAN, 26, 2006  
 HOLE NO. : DA-10  
 STAGE NO. : 15  
 HOLE DIAMETER (cm) D 6,6  
 (cm) r 3,3

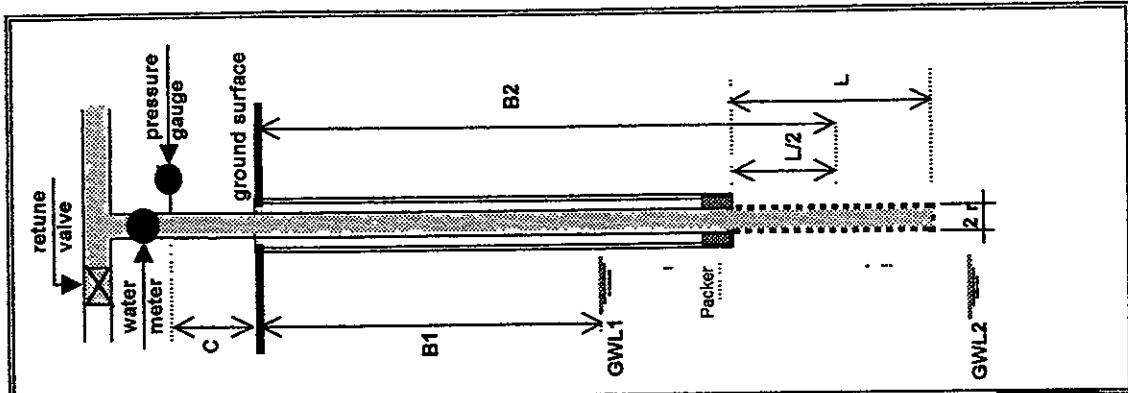
HOLE DEPTH : 70,00 m  
 TEST LENGTH : L 5,00 m  
 GROUNDWATER LEVEL DEPTH : GWL 23,65 m  
 STATIC WATER HEAD : B1 51,35 m  
 PUMPING PRESSURE HEAD : A 0,00 m  
 HEIGHT OF WATER PRESSURE GAUGE : C(Hp) 3,80 m  
 FRICTION ENERGY LOSS : Hf 0,00 m  
 WATER PRESSURE IN HEAD : H1 55,15 m  
 STATIC HEAD : P1 5,515 kg/cm<sup>2</sup>  
 APPLIED EFFECTIVE PRESSURE : P 9,515 kg/cm<sup>2</sup>  
 WATER INJECTION RATE : q 41,700 ltr/min  
 COEFFICIENT OF PERMEABILITY : k 2,01E-04 cm/sec  
 LUGEON VALUE : Lu 15,12

**P-Q GRAPH**



**TEST RECORDS :**

PRESSURE GAUGE, P <sub>0</sub> (kg/cm <sup>2</sup> )	STATIC HEAD, P <sub>1</sub> (kg/cm <sup>2</sup> )	EFFECTIVE PRESSURE, P (kg/cm <sup>2</sup> )	INJECTION TIME, t (minute)	ABSORPTION, q (liter)	UNIT TAKE, q (l/min.)
1,000	5,515	6,515	10	99	9,900
2,000	5,515	7,515	10	151	15,100
4,000	5,515	9,515	10	417	41,700
6,000	5,515	11,515	10	602	60,200
4,000	5,515	9,515	10	441	44,100
2,000	5,515	7,515	10	194	19,400
1,000	5,515	6,515	10	123	12,300





GWL UP

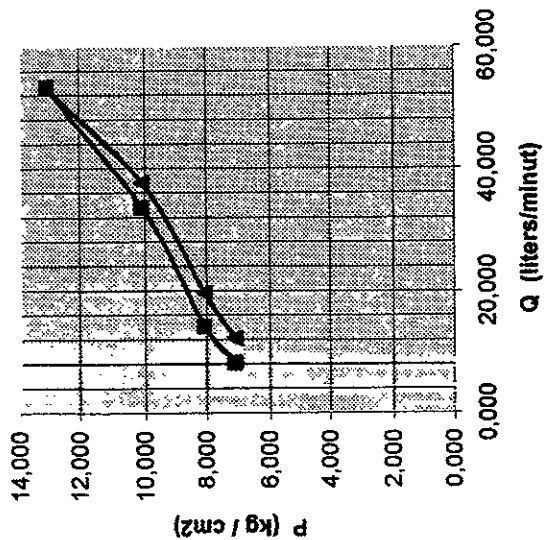
**WATER PRESSURE TEST**

**GEOLOGICAL INVESTIGATION AYUNG - DAM**

LOCATION : RIGHT/LEFT BANK (DAM SITE)  
 DATE : JAN, 30, 2006  
 HOLE NO. : DA-10  
 STAGE NO. : 16  
 HOLE DIAMETER (cm) D 6,6  
 (cm) r 3,3

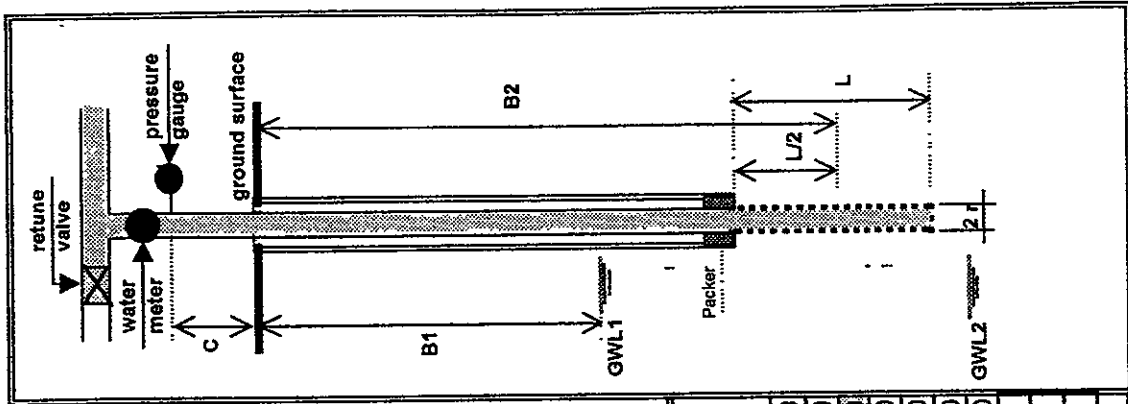
HOLE DEPTH : 75,00 m  
 TEST LENGTH : L 5,00 m  
 GROUNDWATER LEVEL DEPTH : GWL 22,90 m  
 STATIC WATER HEAD : B1 57,10 m  
 PUMPING PRESSURE HEAD : A 0,00 m  
 HEIGHT OF WATER PRESSURE GAUGE : C(Hp) 3,80 m  
 FRICTION ENERGY LOSS : Hf 0,00 m  
 WATER PRESSURE IN HEAD : H1 60,90 m  
 STATIC HEAD : P1 6,090 kg/cm<sup>2</sup>  
 APPLIED EFFECTIVE PRESSURE : P 10,090 kg/cm<sup>2</sup>  
 WATER INJECTION RATE : q 33,600 ltr/min  
 COEFFICIENT OF PERMEABILITY : k 1,47E-04 cm/sec  
 LUGEOON VALUE : Lu 11,03

**P-Q GRAPH**



**TEST RECORDS :**

PRESSURE GAUGE, P <sub>0</sub> (kg/cm <sup>2</sup> )	STATIC HEAD, P <sub>1</sub> (kg/cm <sup>2</sup> )	EFFECTIVE PRESSURE, P (kg/cm <sup>2</sup> )	INJECTION TIME, t (minute)	ABSORPTION, q (liter)	UNIT TAKE, q (l/min.)
1,000	6,090	7,090	10	82	8,200
2,000	6,090	8,090	10	142	14,200
4,000	6,090	10,090	10	336	33,600
7,000	6,090	13,090	10	534	53,400
4,000	6,090	10,090	10	377	37,700
2,000	6,090	8,090	10	196	19,600
1,000	6,090	7,090	10	122	12,200



GWL UP

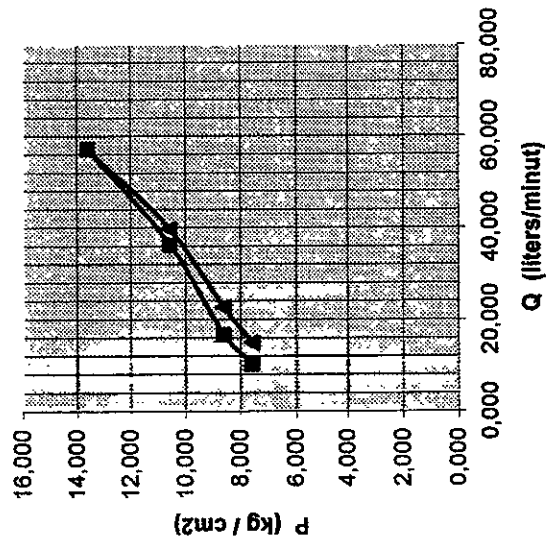
**WATER PRESSURE TEST**

**GEOLOGICAL INVESTIGATION AYUNG - DAM**

LOCATION : RIGHT/LEFT BANK (DAM SITE)  
 DATE : JAN, 31, 2006  
 HOLE NO : DA-10  
 STAGE NO : 17  
 HOLE DIAMETER (cm) O 6.6  
 (cm) r 3.3

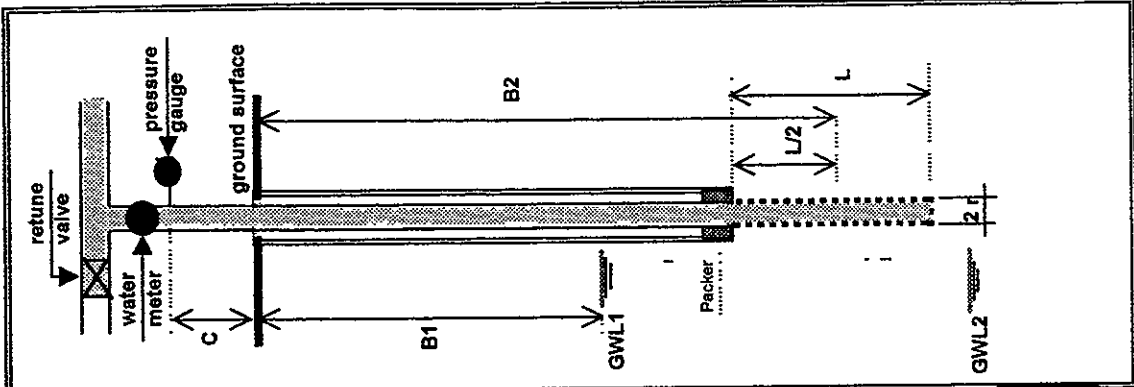
HOLE DEPTH : 80,00 m  
 TEST LENGTH : L 5,00 m  
 GROUNDWATER LEVEL DEPTH : GWL 22,90 m  
 STATIC WATER HEAD : B1 82,10 m  
 PUMPING PRESSURE HEAD : A 0,00 m  
 HEIGHT OF WATER PRESSURE GAUGE : C(Hp) 3,80 m  
 FRICTION ENERGY LOSS : Hf 0,00 m  
 WATER PRESSURE IN HEAD : H1 65,90 m  
 STATIC HEAD : P1 6,590 kg/cm<sup>2</sup>  
 APPLIED EFFECTIVE PRESSURE : P 10,590 kg/cm<sup>2</sup>  
 WATER INJECTION RATE : q 36,300 ltr/min  
 COEFFICIENT OF PERMEABILITY : k 1,47E-04 cm/sec  
 LUGEOON VALUE : Lu 11,02 -

**P-Q GRAPH**



**TEST RECORDS :**

PRESSURE GAUGE, P0 (kg/cm <sup>2</sup> )	STATIC HEAD, P1 (kg/cm <sup>2</sup> )	EFFECTIVE PRESSURE, P (kg/cm <sup>2</sup> )	INJECTION TIME, t (minute)	ABSORPTION, q (liter)	UNIT TAKE, q (l/min.)
1,000	6,590	7,590	10	103	10,300
2,000	6,590	8,590	10	167	16,700
4,000	6,590	10,590	10	363	36,300
7,000	6,590	13,590	10	572	57,200
4,000	6,590	10,590	10	397	39,700
2,000	6,590	8,590	10	227	22,700
1,000	6,590	7,590	10	150	15,000



GWL UP

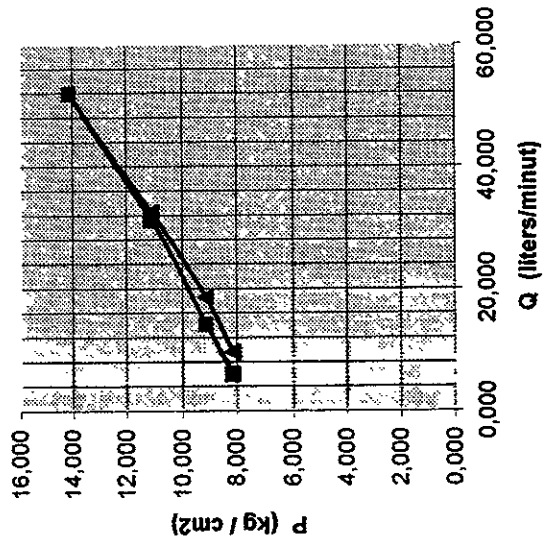
**WATER PRESSURE TEST**

**GEOLOGICAL INVESTIGATION AYUNG - DAM**

LOCATION : RIGHT/LEFT BANK (DAM SITE)  
 DATE : FEB, 1, 2008  
 HOLE NO. : DA-10  
 STAGE NO : 18  
 HOLE DIAMETER (cm) D 6,6  
 (cm) r 3,3

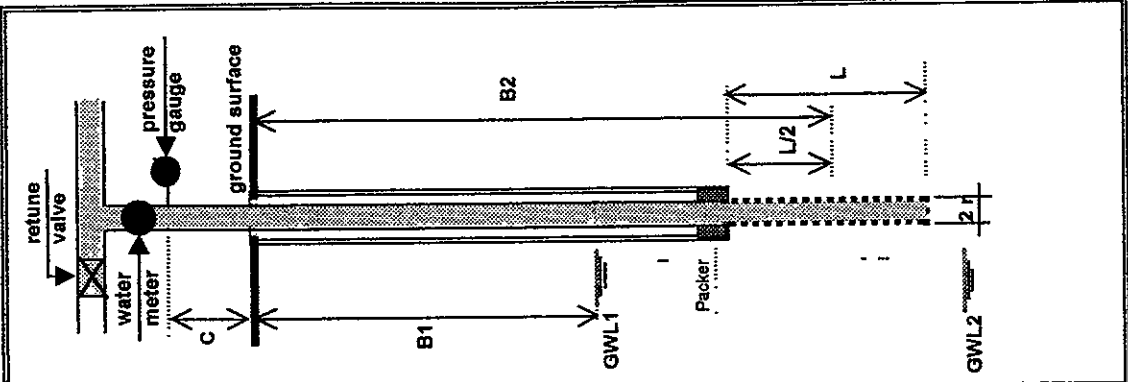
HOLE DEPTH : 85,00 m  
 TEST LENGTH : L 5,00 m  
 GROUNDWATER LEVEL DEPTH : GWL 22,50 m  
 STATIC WATER HEAD : B1 67,50 m  
 PUMPING PRESSURE HEAD : A 0,00 m  
 HEIGHT OF WATER PRESSURE GAUGE : C(Hp) 3,80 m  
 FRICTION ENERGY LOSS : HF 0,00 m  
 WATER PRESSURE IN HEAD : H1 71,30 m  
 STATIC HEAD : P1 7,130 kg/cm<sup>2</sup>  
 APPLIED EFFECTIVE PRESSURE : P 11,130 kg/cm<sup>2</sup>  
 WATER INJECTION RATE : q 31,200 ltr/min  
 COEFFICIENT OF PERMEABILITY : k 1,17E-04 cm/sec  
 LUGEON VALUE : Lu 8,75

**P-Q GRAPH**



**TEST RECORDS :**

PRESSURE GAUGE, P0 (kg/cm <sup>2</sup> )	STATIC HEAD, P1 (kg/cm <sup>2</sup> )	EFFECTIVE PRESSURE, P (kg/cm <sup>2</sup> )	INJECTION TIME, t (minute)	ABSORPTION, q (liter)	UNIT TAKE, q (l/min.)
1,000	7,130	8,130	10	60	6,000
2,000	7,130	9,130	10	142	14,200
4,000	7,130	11,130	10	312	31,200
7,000	7,130	14,130	10	519	51,900
4,000	7,130	11,130	10	325	32,500
2,000	7,130	9,130	10	186	18,600
1,000	7,130	8,130	10	96	9,600



GWL UP

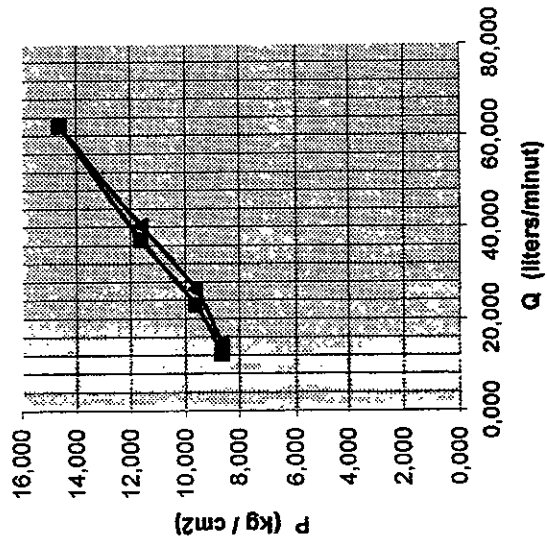
**WATER PRESSURE TEST**

**GEOLOGICAL INVESTIGATION AYUNG - DAM**

LOCATION : RIGHT/LEFT BANK (DAM SITE)  
 DATE : FEB, 1, 2006  
 HOLE NO : DA-10  
 STAGE NO. : 19  
 HOLE DIAMETER (cm) D 6.6  
 (cm) r 3.3

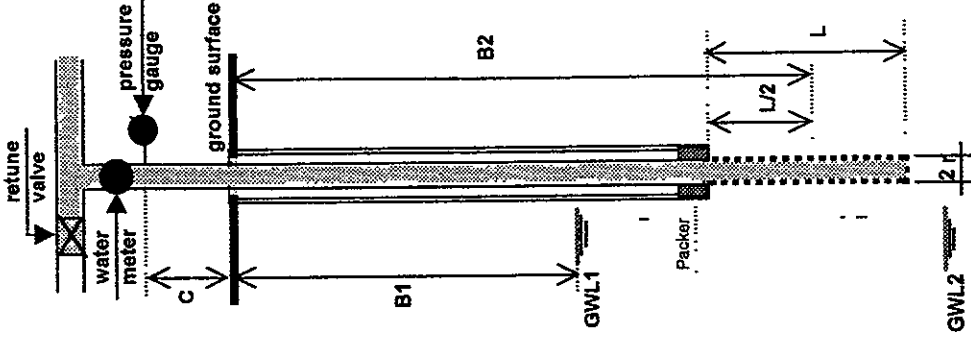
HOLE DEPTH 90,00 m  
 TEST LENGTH L 5,00 m  
 GROUNDWATER LEVEL DEPTH GWL 22,50 m  
 STATIC WATER HEAD B1 72,50 m  
 PUMPING PRESSURE HEAD A 0,00 m  
 HEIGHT OF WATER PRESSURE GAUGE G(Hp) 3,80 m  
 FRICTION ENERGY LOSS Hf 0,00 m  
 WATER PRESSURE IN HEAD H1 76,30 m  
 STATIC HEAD P1 7,630 kg/cm2  
 APPLIED EFFECTIVE PRESSURE P 11,630 kg/cm2  
 WATER INJECTION RATE q 37,200 ltr/min  
 COEFFICIENT OF PERMEABILITY k 1.30E-04 cm/sec  
 LUGEOON VALUE Lu 9,75 -

**P-Q GRAPH**



**TEST RECORDS :**

PRESSURE GAUGE, P0 (kg/cm2)	STATIC HEAD, P1 (kg/cm2)	EFFECTIVE PRESSURE, P (kg/cm2)	INJECTION TIME, t (minute)	ABSORPTION, q (liter)	UNIT TAKE, q (l/min.)
1,000	7,630	8,630	10	124	12,400
2,000	7,630	9,630	10	230	23,000
4,000	7,630	11,630	10	372	37,200
7,000	7,630	14,630	10	621	62,100
4,000	7,630	11,630	10	403	40,300
2,000	7,630	9,630	10	264	26,400
1,000	7,630	8,630	10	146	14,600



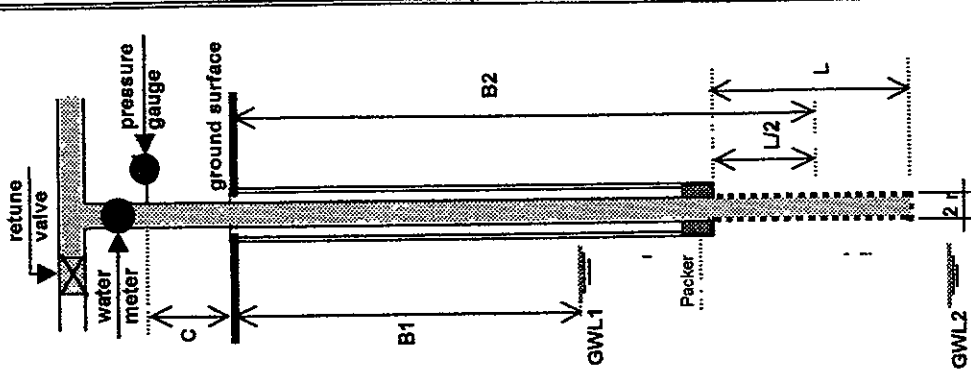
GWL UP

**WATER PRESSURE TEST**

**GEOLOGICAL INVESTIGATION AYUNG - DAM**

LOCATION : RIGHT/LEFT BANK (DAM SITE)  
 DATE : FEB.2, 2006  
 HOLE NO. : DA-10  
 STAGE NO. : 20  
 HOLE DIAMETER (cm) D 6,6  
 (cm) r 3,3

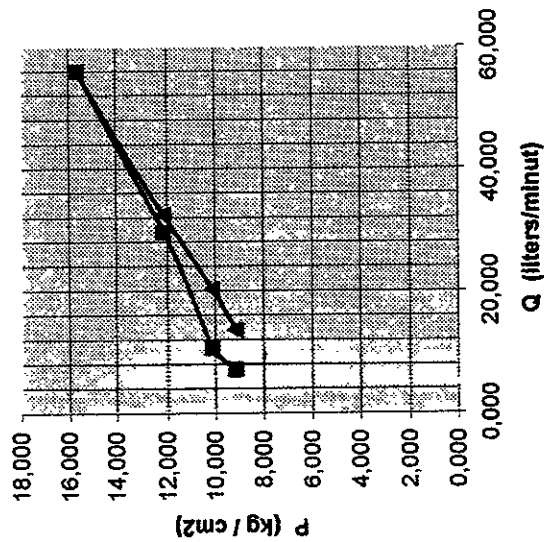
HOLE DEPTH 100,00 m  
 TEST LENGTH 5,00 m  
 GROUNDWATER LEVEL DEPTH 22,40 m  
 STATIC WATER HEAD 77,60 m  
 PUMPING PRESSURE HEAD 0,00 m  
 HEIGHT OF WATER PRESSURE GAUGE C(Hp) 3,80 m  
 FRICTION ENERGY LOSS Hf 0,00 m  
 WATER PRESSURE IN HEAD H1 81,40 m  
 STATIC HEAD P1 8,140 kg/cm<sup>2</sup>  
 APPLIED EFFECTIVE PRESSURE P 12,140 kg/cm<sup>2</sup>  
 WATER INJECTION RATE q 29,600 ltr/mln  
 COEFFICIENT OF PERMEABILITY k 9,6906E-05 cm/sec  
 LUGEON VALUE Lu 7,27



**TEST RECORDS :**

PRESSURE GAUGE, P0 (kg/cm <sup>2</sup> )	STATIC HEAD, P1 (kg/cm <sup>2</sup> )	EFFECTIVE PRESSURE, P (kg/cm <sup>2</sup> )	INJECTION TIME, t (minute)	ABSORPTION, q (liter)	UNIT TAKE, q (l/min.)
1,000	8,140	9,140	10	72	7,200
2,000	8,140	10,140	10	107	10,700
4,000	8,140	12,140	10	296	29,600
7,500	8,140	15,640	10	560	56,000
4,000	8,140	12,140	10	324	32,400
2,000	8,140	10,140	10	202	20,200
1,000	8,140	9,140	10	136	13,600

**P - Q GRAPH**



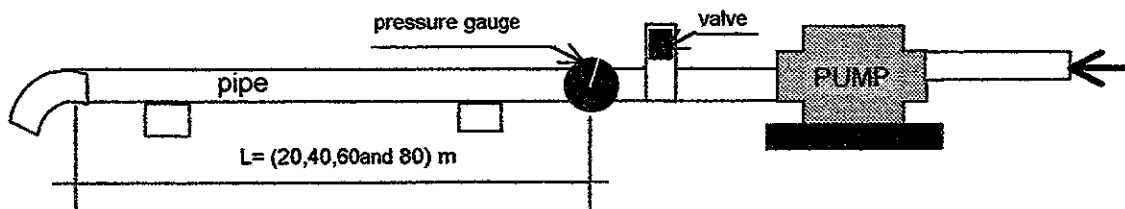
## **B5 Friction Test for Water Pressure Test Analysis**

# **FRICTION TEST**

**FRICION TESTS DATA OF AYUNG DAM SITE**

P (kg/cm <sup>2</sup> ) \ L (m)	20,00	40,00	60,00	80,00	REMARKS
	Q (liters/minut)				
0,50	72	71	62	59	Tested on Mart, 4-5, 2006
	72	71	62	59	
	72	71	62	59	
	72	71	62	59	
	72	71	62	59	
1,00	75	74	67	63	
	75	74	67	63	
	75	74	67	63	
	75	74	67	63	
	75	74	67	63	
1,50	79	77	70	67	
	79	77	70	67	
	79	77	70	67	
	79	77	70	67	
	79	77	70	67	

P (kg/cm <sup>2</sup> ) \ L (m)	20,00	40,00	60,00	80,00	REMARKS
	Q (liters/minut)				
0,50	80		39	38	Tested on February, 27,2006
	81		39	38	
	81		39	39	
	80		40	40	
	80		40	39	
0,80		80			
		81			
		80			
		80			
1,00			76	60	
			76	58	
			76	60	
			74	60	
			75	59	
1,50			80	72	
			80	71	
			81	72	
			80	70	
			80	71	
2,00				80	
				81	
				81	
				80	
				80	





# **B6 Laboratory Tests for Concrete Aggregates**

## **CONCRETE AGGREGATE TEST**

1. SIEVE ANALYSIS AGGREGATES
2. SPECIFIC GRAVITY AND WATER ABSORPTION FINE AGGREGATE
3. SPECIFIC GRAVITY AND WATER ABSORPTION OF COARSE AGGREGATE
4. CLAY LUMP AND FRIABLE PARTICLES CONTENTS
5. SOUNDNESS TEST BY SODIUM SULFATE
6. ABRASION TEST COARSE AGGREGATE BY LOS ANGELES MACHINE
7. CHEMICAL/ALKALI REACTIVITY TEST

## SUMMARY OF AGGREGATE TEST

PROJECT :		D/D AYUNG DAM BALI						JANUARI , 2006			
MATERIAL		AGGREGATE									
		RANDOM		GRAVEL		SAND washing 1 x		RANDOM		BOULDER	
<b>I. SIEVE ANALYSIS TEST</b>											
Sample		AKR - 1		AKR - 2		AKR - 3		AKL - 1		AKL - 2	
Sieve opening ( mm )											
SIEVE ANALYSIS	150 mm	-	-	-	-	-	-	-	-	-	-
	101.6 mm	-	-	-	-	-	-	-	-	-	-
	76.2 mm	100	-	-	-	-	-	100	-	-	-
	63.5 mm	95,04	-	-	-	-	-	95,43	-	-	-
	50.8 mm	91,78	-	-	-	-	-	91,10	-	-	-
	38.1 mm	87,55	-	100,00	-	-	-	88,24	-	-	-
	25.4 mm	83,68	-	98,49	-	-	-	85,17	-	-	-
	19.1 mm	80,72	-	87,38	-	-	-	82,10	-	-	-
	15.9 mm	78,70	-	58,07	-	-	-	80,25	-	-	-
	9.52 mm	72,97	-	3,92	-	-	100,00	76,25	-	-	-
	4.76 mm	67,47	100,00	0,51	-	-	97,75	71,21	100,00	-	-
	2.5 mm	59,23	87,79	-	-	-	80,16	61,15	85,88	-	-
	1.2 mm	49,95	73,04	-	-	-	66,10	49,34	69,29	-	-
	0.6 mm	38,32	56,79	-	-	-	48,78	36,54	51,31	-	-
	0.3 mm	23,78	35,24	-	-	-	31,79	24,20	33,98	-	-
0.15 mm	12,37	18,34	-	-	-	16,43	15,32	21,52	-	-	
0.074 mm	7,35	10,89	-	-	-	7,05	15,32	15,69	-	-	
<b>II. CLAY LUMP AND FRIABLE PARTICLE CONTENT</b>		0,45	-	0,33	-	-	0,68	1,35	-	-	-
<b>III. WASHING SIEVE No 200 ( 0.074 mm ) PASSING 1.18 mm</b>		-	9,69	-	-	-	7,64	-	6,73	-	-
<b>IV. SPECIFIC GRAVITY</b>		Gravel	Sand	Gravel	Sand	Gravel	Sand	Gravel	Sand	Gravel	Sand
Bulk Dry Basis		2,480	2,314	2,582	-	-	2,614	2,609	2,575	2,521	-
Saturated Surface Dry Condrtion (SSDC)		2,608	2,437	2,638	-	-	2,655	2,655	2,629	2,572	-
Apparent		2,845	2,640	2,736	-	-	2,725	2,729	2,723	2,656	-
<b>V. ABSORPTION</b>											
Absorption ( % )		5,16	5,34	2,18	-	-	1,56	1,77	2,12	1,16	-
<b>VI. SOUNDNESS</b>											
Soundness ( % )		10,45	3,12	5,44	-	-	4,10	4,18	5,02	4,55	-
<b>VII. ABRASION</b>											
GRADING TYPE		A		B		-		A		A	
LOS ANGELES ABRASION TEST ( % )		28,80		16,82		-		18,08		16,65	
<b>VIII. ALKALI REACTIVITY</b>											
AAR + ASR	Reactivity Concentration ( RC ) mmol/L	189,66	290,472	292,448	-	-	292,448	339,872	340,86	298,376	
	Sihca Concentration ( SC ) mmol/L	31,776	31,716	31,971	-	-	30,914	31,323	32,830	31,740	

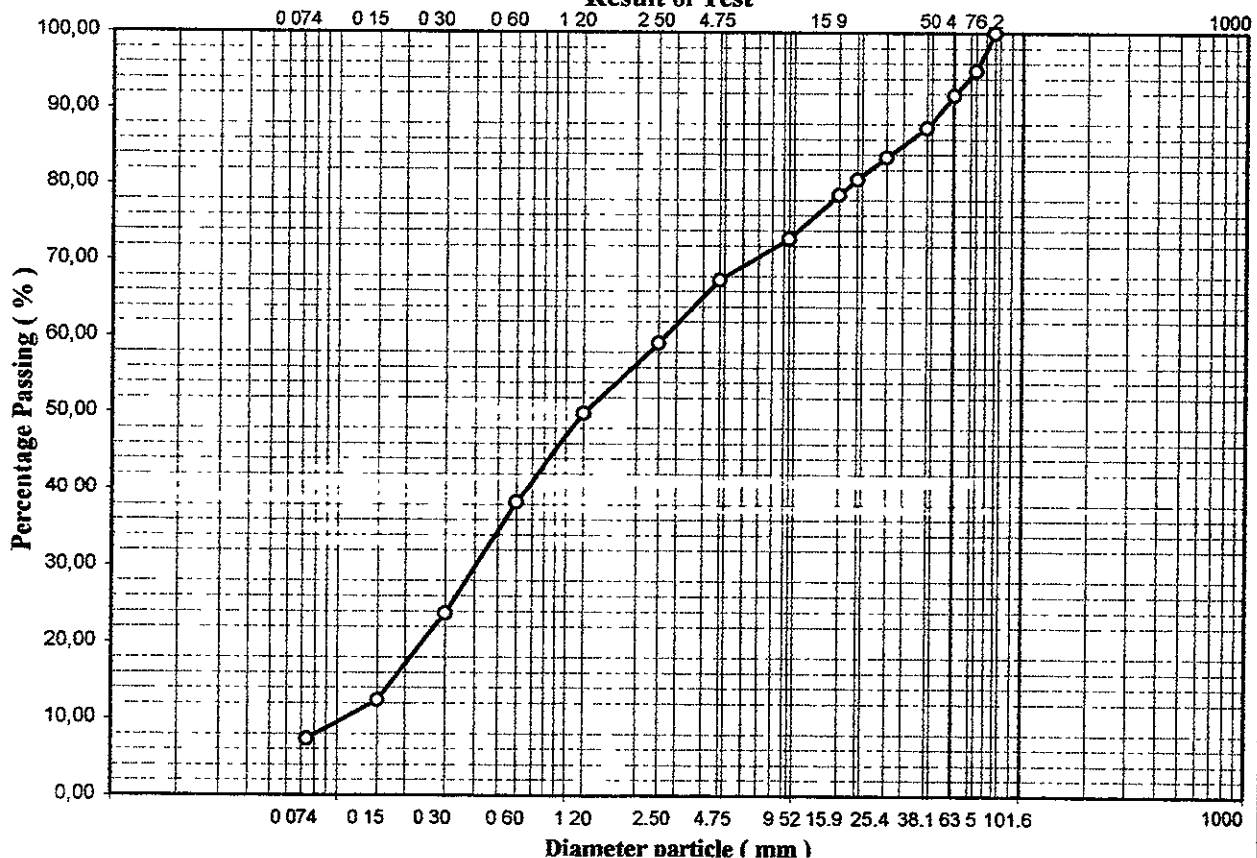
## GRADATION OF COARSE AGGREGATE

Project	D/D AYUNG DAM BALI	Date	Januari 27, 2006
Location	RANDOM	Sample no :	AKR - 1
		Tested by	LABORATORY

Weight of Sample + Container ( S + C ) = 14412,0 gr  
 Weight of Container ( C ) = 1114,0 gr  
 Weight of Sample ( S ) = 13298,0 gr

SIEVE mm	Cumulative weight retained					Remark
	( S + C ) ( gr )	( C ) ( gr )	( S ) ( gr )	Retained ( % )	Passing ( % )	
150						
101,6						
76,2				0,00	100,00	
63,5	1327	668	659	4,96	95,04	
50,8	1761		1093	8,22	91,78	
38,1	2323		1655	12,45	87,55	
25,4	2838,5		2170,5	16,32	83,68	
19,1	3232,5		2564,5	19,28	80,72	
15,9	3500		2832	21,30	78,70	
9,52	4263		3595	27,03	72,97	
4,76	4993,8		4325,8	32,53	67,47	
2,5				12,21	59,23	
1,2				25,97	49,95	
0,6				43,21	38,32	
0,3				64,76	23,78	
0,15				81,66	12,37	
0,074				89,11	7,35	
Passing				100	0	

### Result of Test



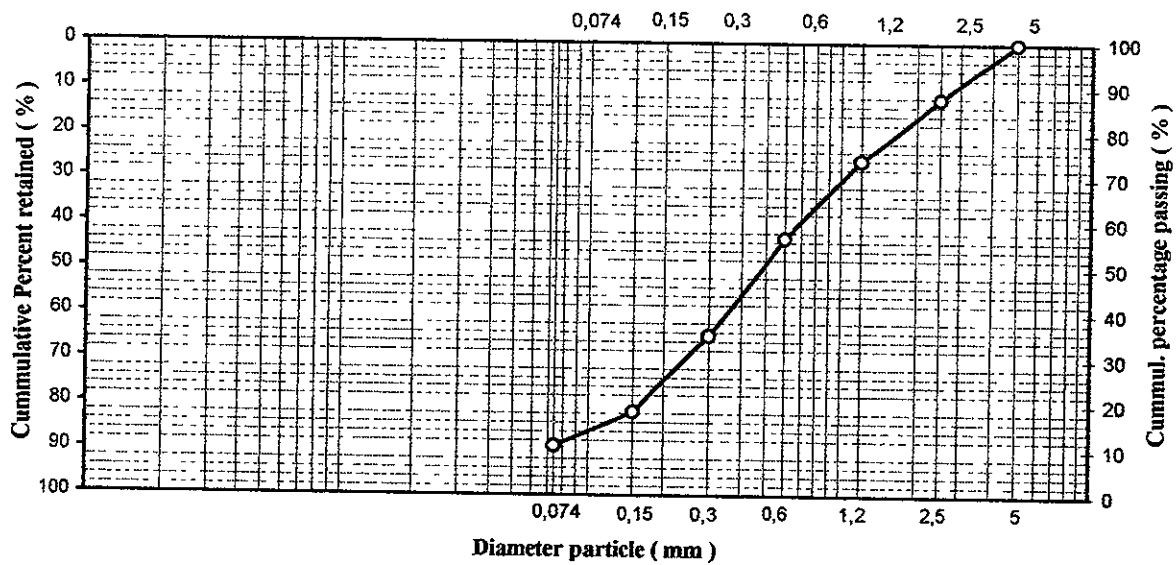
## GRADATION AGGREGATE TEST I (ASTM C.136 - 46) (SAND TEST)

Project	D/D AYUNG DAM BALI	Date	Januari 27, 2006
Location	SAND (RANDOM)	Sample no .	AKR - 1 Tested by
			LABORATORY

Weight of Sample + Container ( S + C ) = 707,0 gr  
 Weight of Container ( C ) = 103,5 gr  
 Weight of Sample ( S ) = 603,5 gr

SIEVE size mm	( S + C ) ( gr )	( C ) ( gr )	Retained ( S ) ( gr )	CUMMULATIVE		
				retained ( gr )	retained ( % )	Passing ( % )
10						
5					0,00	100,00
2,5	215,7	142	73,7	73,7	12,21	87,79
1,2	225		83	156,7	25,97	74,03
0,6	246,1		104,1	260,8	43,21	56,79
0,3	272		130	390,8	64,76	35,24
0,15	244		102	492,8	81,66	18,34
0,074	187		45	537,8	89,11	10,89
pass.	207,7		65,7	603,5	100,00	0,00

### RESULT OF TEST



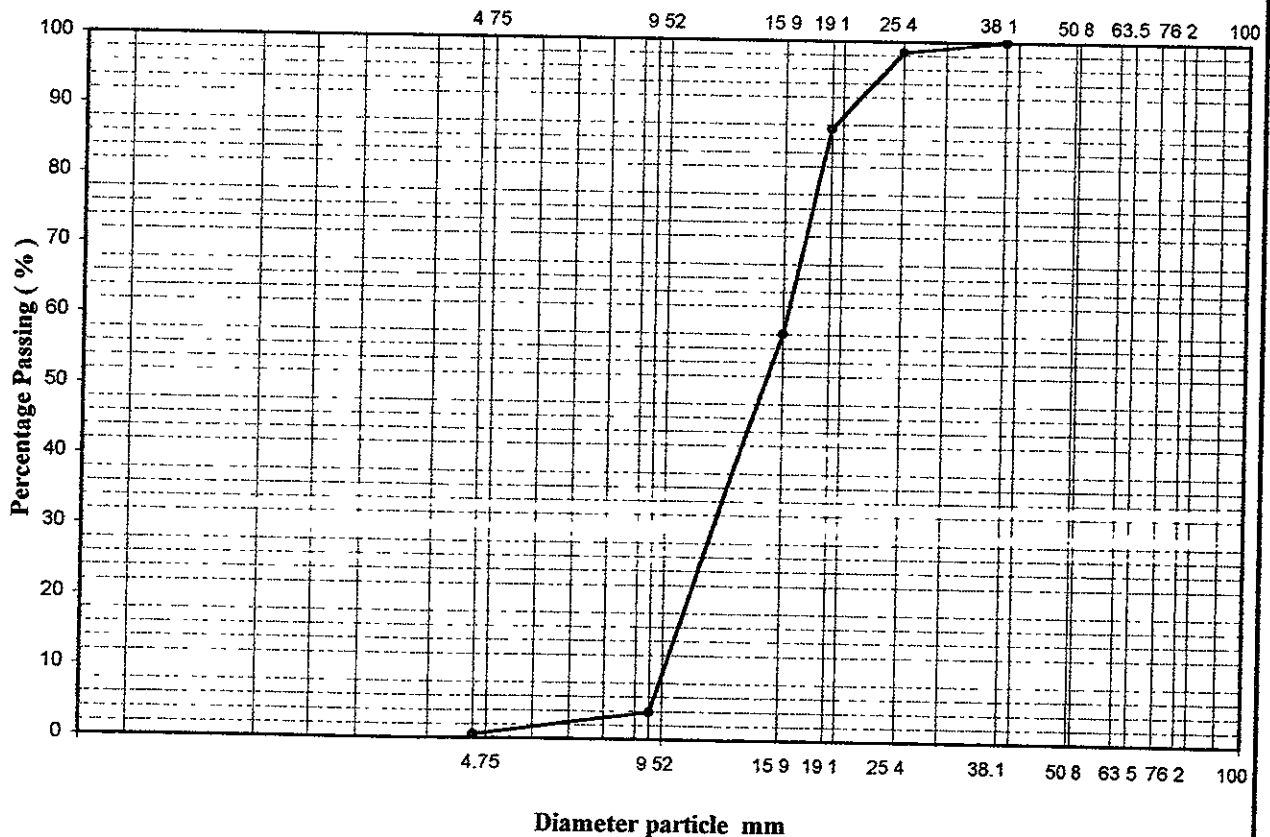
### II. WASHING SIEVE No 200 ( 0.074 mm )

A	Before test	No container	G-42	F-23	F-11
		Weight of Sample+Container	707	643,5	638,0
		Weight of Container	103,5	132,5	134,6
		Weight of Sample	603,5	511,0	503,4
B	After test	Weight of Sample+Container	650	593	589
		Weight of Container	103,5	132,5	134,6
		Wet Weight of Sample	546,5	460,5	454,4
	Decantation	$\frac{(A) - (B)}{(A)} \times 100 \%$	9,44	9,88	9,73
			Average =		9,69

## GRADATION OF COARSE AGGREGATE

Project	D/D AYUNG DAM BALI			Date	Januari 26, 2006	
Location	Split quality 1 & 2	Sample no	AKR - 2	Tested by	LABORATORY	
Weight of Sample + Container ( S + C ) = 6558,5 gr						
Weight of Container ( C ) = 712,0 gr						
Weight of Sample ( S ) = 5846,5 gr						
SIEVE mm	Cumulative weight retained.					Remark
	( S + C ) ( gr )	( C ) ( gr )	( S ) ( gr )	Retained ( % )	Passing ( % )	
150						
101,6						
76,2						
63,5						
50,8						
38,1				0,00	100,00	
25,4	800,5	712	88,5	1,51	98,49	
19,1	1449,7		737,7	12,62	87,38	
15,9	3163,7		2451,7	41,93	58,07	
9,52	6329,3		5617,3	96,08	3,92	
4,76	6528,7		5816,7	99,49	0,51	
Passing	6558,5		5846,5	100,00	0,00	

### Result of Test



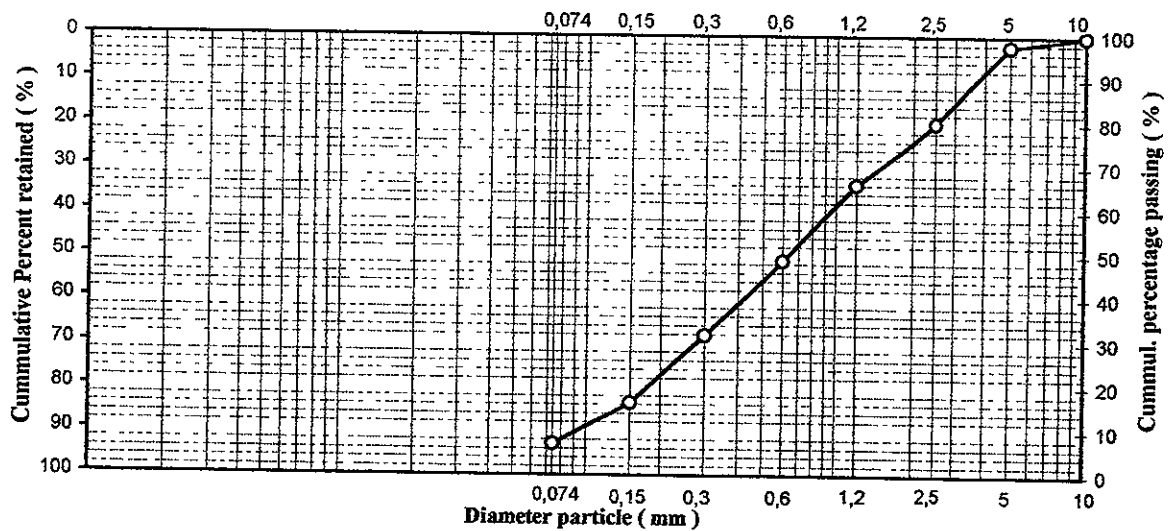
**GRADATION AGGREGATE TEST I (ASTM C.136 - 46)  
(SAND TEST)**

Proyect	D/D AYUNG DAM BALI	Date	Januari 27, 2006
Location	SAND WASHING I x	Sample no :	AKR - 3 Tested by LABORATORY

Weight of Sample + Container (S + C) = 680,0 gr  
 Weight of Container (C) = 125,5 gr  
 Weight of Sample (S) = 554,5 gr

SIEVE size mm	(S + C) (gr)	(C) (gr)	Retained (S) (gr)	CUMMULATIVE		
				retained (gr)	retained (%)	Passing (%)
10					0,00	100,00
5	154,5	142	12,5	12,5	2,25	97,75
2,5	239,5		97,5	110,0	19,84	80,16
1,2	220		78	188,0	33,90	66,10
0,6	238		96	284,0	51,22	48,78
0,3	236,2		94,2	378,2	68,21	31,79
0,15	227,2		85,2	463,4	83,57	16,43
0,074	194		52	515,4	92,95	7,05
pass.	181,1		39,1	554,5	100,00	0,00

**RESULT OF TEST**



**III. WASHING SIEVE 75 μ m**

A	Before test	No container	D-06	D-05	E-3
		Weight of Sample+Container	680	643,5	638,0
		Weight of Container	125,5	130,5	133,0
B	After test	Weight of Sample	554,5	513,0	505,0
		Weight of Sample+Container	641	604,1	596,6
		Weight of Container	125,5	130,5	133,0
	Decantation	Wet Weight of Sample	515,5	473,6	463,6
		$\frac{(A) - (B)}{(A)} \times 100 \%$	7,03	7,68	8,20
		Average =	7,64		

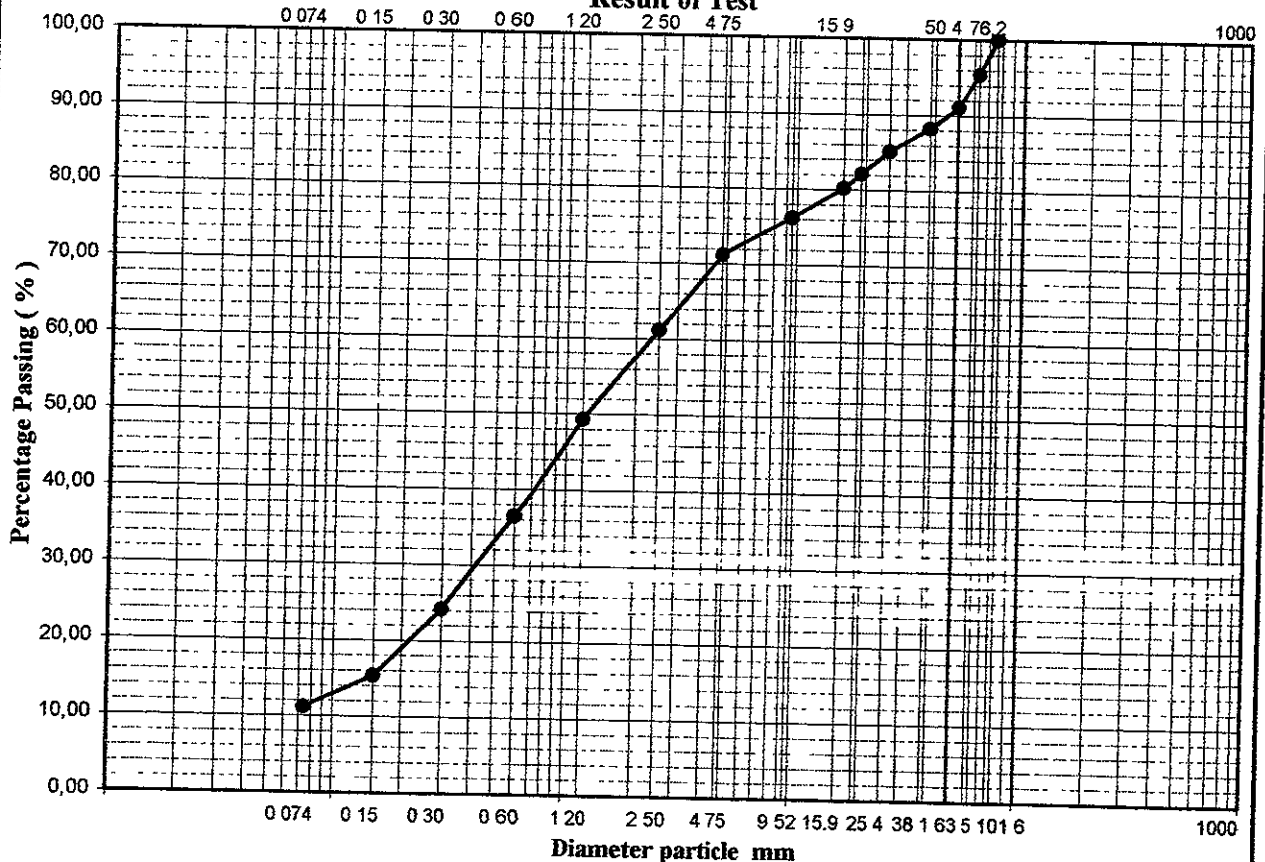
## GRADATION OF COARSE AGGREGATE

Project	D/D AYUNG DAM BALI	Date	Januari 27, 2006
Location	-	Sample no	AKL - 1
		Tested by	LABORATORY

Weight of Sample + Container (S + C) = 13975,0 gr  
 Weight of Container (C) = 1109,0 gr  
 Weight of Sample (S) = 12866,0 gr

SIEVE mm	Cumulative weight retained.					Remark
	(S+C) (gr)	(C) (gr)	(S) (gr)	Retained (%)	Passing (%)	
150						
101,6						
76,2				0,00	100,00	
63,5	1384	796,5	587,5	4,57	95,43	
50,8	1941		1144,5	8,90	91,10	
38,1	2309,7		1513,2	11,76	88,24	
25,4	2705		1908,5	14,83	85,17	
19,1	3099		2302,5	17,90	82,10	
15,9	3338		2541,5	19,75	80,25	
9,52	3852		3055,5	23,75	76,25	
4,76	4501		3704,5	28,79	71,21	
2,5				14,12	61,15	
1,2				30,71	49,34	
0,6				48,69	36,54	
0,3				66,02	24,20	
0,15				78,48	15,32	
0,074				84,31	11,17	
Passing				100	0	

**Result of Test**





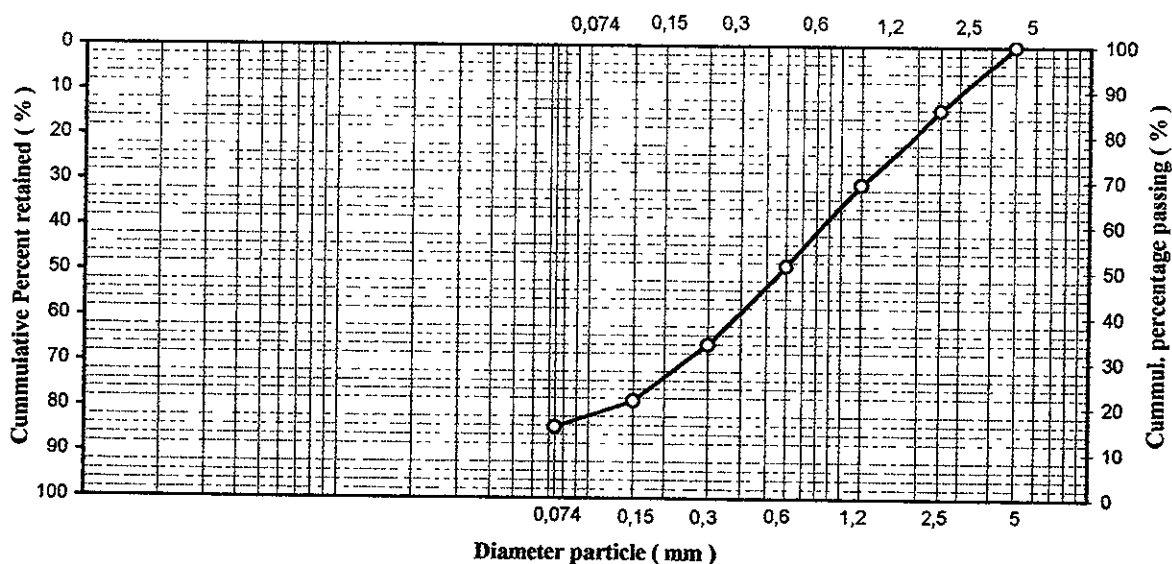
## GRADATION AGGREGATE TEST I (ASTM C.136 - 46) (SAND TEST)

Project	D/D AYUNG DAM BALI	Date	Januari 27, 2006
Location	SAND (RANDOM)	Sample no	AKL - 1
		Tested by	LABORATORY

Weight of Sample + Container (S + C) = 700,0 gr  
 Weight of Container (C) = 134,0 gr  
 Weight of Sample (S) = 566,0 gr

SIEVE size mm	(S + C) (gr)	(C) (gr)	Retained (S) (gr)	CUMMULATIVE		
				retained (gr)	retained (%)	Passing (%)
10						
5					0,00	100,00
2,5	221,9	142	79,9	79,9	14,12	85,88
1,2	235,9		93,9	173,8	30,71	69,29
0,6	243,8		101,8	275,6	48,69	51,31
0,3	240,1		98,1	373,7	66,02	33,98
0,15	212,5		70,5	444,2	78,48	21,52
0,074	175		33	477,2	84,31	15,69
pass.	230,8		88,8	566,0	100,00	0,00

### RESULT OF TEST



### ILWASHING SIEVE No 200 (0.074 mm)

A	Before test	No container	D-25	F-28	F-24
		Weight of Sample+Container	700	649,5	673,5
	Weight of Container	134,0	133,4	136,4	
	Weight of Sample	566,0	516,1	537,1	
B	After test	Weight of Sample+Container	664,8	613	636,5
		Weight of Container	134,0	133,4	136,4
		Wet Weight of Sample	530,8	479,6	500,1
	Decantation	$\frac{(A) - (B)}{(A)} \times 100 \%$	6,22	7,07	6,89
			Average =		6,73

## CLAY LUMPS AND FRIABLE PARTICLES IN AGGREGATE TEST

PROJECT D/D AYUNG DAM BALI DATE \_\_\_\_\_  
 LOCATION \_\_\_\_\_ TESTED BY \_\_\_\_\_  
 SAMPLE A K R - 1

ORIGINAL GRADING		WEIGHT OF SAMPLE BEFORE TEST in gram	AFTER TEST		CLAY LUMPS AND FRIABLE PARTICLES		PERCENT AVERAGE
			Size of Washing screen in mm	Weight of Sample in gram	(3) - (5) in gram	(6) x 100 in %	
Sieve Size in mm	Individual in %						
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1.18 - 4.75 ( Sand )	64,60	218,0	0,074	217,0	1,0	0,46	0,30
4.75 - 9.5	16,05	1026,5	2,36	1025,0	1,5	0,15	0,02
9.5 - 19.1	8,52	2044,0	4,75	2033,5	10,5	0,51	0,04
19.1 - 38.1	4,03	3028,3	4,75	3020,0	8,3	0,27	0,01
Over 38.1	6,80	3660,0	4,75	3619,0	41,0	1,12	0,08
TOTAL	100,00	9976,80		9914,5	62,3		0,45

## CLAY LUMPS AND FRIABLE PARTICLES IN AGGREGATE TEST

PROJECT D/D AYUNG DAM BALI DATE \_\_\_\_\_  
 LOCATION - TESTED BY \_\_\_\_\_  
 SAMPLE A K R - 2

ORIGINAL GRADING		WEIGHT OF SAMPLE BEFORE TEST in gram	AFTER TEST		CLAY LUMPS AND FRIABLE PARTICLES		PERCENT AVERAGE in %
			Size of Washing screen in mm	Weight of Sample in gram	(3) - (5) in gram	(6) x $\frac{100}{(3)}$	
Sieve Size in mm	Individual in %	(3)	(4)	(5)	(6)	(7)	(7) x $\frac{(2)}{100}$
1.18 - 4.75 (Sand)	-	-	-	-	-	-	-
4.75 - 9.5	9,87	557,0	2,36	556,0	1,0	0,18	0,02
9.5 - 19.1	36,45	2057,0	4,75	2053,6	3,4	0,17	0,06
19.1 - 38.1	53,68	3028,8	4,75	3014,6	14,2	0,47	0,25
Over 38.1	-	-	-	-	-	-	-
<b>TOTAL</b>	<b>100,00</b>	<b>5642,80</b>		<b>5624,2</b>	<b>18,6</b>		<b>0,33</b>

## CLAY LUMPS AND FRIABLE PARTICLES IN AGGREGATE TEST

PROJECT D/D AYUNG DAM BALI DATE \_\_\_\_\_  
 LOCATION \_\_\_\_\_ TESTED BY \_\_\_\_\_  
 SAMPLE A K R - 3 Sand washing : 1 x

ORIGINAL GRADING		WEIGHT OF SAMPLE BEFORE TEST in gram	AFTER TEST		CLAY LUMPS AND FRIABLE PARTICLES		PERCENT AVERAGE in %
			Size of Washing screen in mm	Weight of Sample in gram	(3) - (5) in gram	(6) x $\frac{100}{(3)}$	
Sieve Size in mm	Individual in %	(3)	(4)	(5)	(6)	(7)	(7) x $\frac{(2)}{100}$
1.18 - 4.75 ( Sand )	100,00	236,5	0,074	234,9	1,6	0,68	
4.75 - 9.5	-	-	-	-	-	-	-
9.5 - 19.1	-	-	-	-	-	-	-
19.1 - 38.1	-	-	-	-	-	-	-
Over 38.1	-	-	-	-	-	-	-
<b>TOTAL</b>	<b>100,00</b>	<b>236,50</b>		<b>234,9</b>	<b>1,6</b>	<b>0,68</b>	<b>0,68</b>

## CLAY LUMPS AND FRIABLE PARTICLES IN AGGREGATE TEST

PROJECT D/D AYUNG DAM BALI DATE \_\_\_\_\_  
 LOCATION \_\_\_\_\_ TESTED BY \_\_\_\_\_  
 SAMPLE AKL - 1

ORIGINAL GRADING		WEIGHT OF SAMPLE BEFORE TEST in gram	AFTER TEST		CLAY LUMPS AND FRIABLE PARTICLES		PERCENT AVERAGE in %
			Size of Washing screen in mm	Weight of Sample in gram	(3) - (5) in gram	(6) x 100 100	
Sieve Size in mm	Individual in %	(3)	(4)	(5)	(6)	(7)	(7) x (2) 100
1.18 - 4.75 (Sand)	64,60	211,4	0,074	209,0	2,4	1,14	0,73
4.75 - 9.5	16,05	1029,0	2,36	1012,0	17,0	1,65	0,27
9.5 - 19.1	8,52	2039,0	4,75	2012,0	27,0	1,32	0,11
19.1 - 38.1	4,03	3025,0	4,75	2932,0	93,0	3,07	0,12
Over 38.1	6,80	5057,3	4,75	4973,3	84,0	1,66	0,11
TOTAL	100,00	11361,70		11138,3	223,4		1,35

## SPECIFIC GRAVITY OF COARSE AGGREGATE

PROJECT	D/D AYUNG DAM BALI			Date	Januari 27, 2006		
LOCATION	AKR - 1			Tested by	Lab. IKA		
<b>I. SPECIFIC GRAVITY AND ABSORPTION</b>							
Saturated Surface Dry Condition	Weight in	(C + S)	gr	5098,0	5133,0	5182,0	Average
	Air	(C)	gr	720,0	723,5	658,0	
	(B)	(S)	gr	4378,0	4409,5	4524,0	
	Weight in	(C + S)	gr	3405,8	3430,4	3491,5	
	Water	(C)	gr	706,5	706,5	706,5	
	(C)	(S)	gr	2699,3	2723,9	2785,0	
	Weight of	(C + S)	gr	4880,0	4906,0	4974,0	
	oven dry	(C)	gr	720,0	723,5	658,0	
	(A)	(S)	gr	4160,0	4182,5	4316,0	
Specific Gravity	Bulk	Dry Basis	$\frac{A}{B - C}$	2,478	2,481	2,482	2,480
		SSDC	$\frac{B}{B - C}$	2,608	2,616	2,601	2,608
	Apparent	$\frac{A}{A - C}$	2,848	2,867	2,819	2,845	
ABSORPTION		$\frac{B - A}{A} \times 100 \%$		5,24	5,43	4,82	5,16
<b>II. SOUNDNESS TEST</b>							
SIZE	Weight in gram			(2) - (3)	(4) / (2) x 100 (%)	(5) x (1) / 100 (%)	
	(%)	Before test	after test				
mm	(1)	(2)	(3)	(4)	(5)	(6)	
9.51 - 4.75	10,70	300,0	182,9	117,1	39,03	4,18	
19.1 - 9.51	35,66	1000,0	876,5	123,5	12,35	4,40	
38.1 - 19.1	53,65	1504,5	1452	52,5	3,49	1,87	
		2804,5		<b>TOTAL (%) =</b>		<b>10,45</b>	

## AGGREGATE TEST II

### ( SAND TEST )

PROJECT	D/D AYUNG DAM BALI	Date	Januari 29, 2006
LOCATION	AKR - 1	Tested by	Lab. IKA

### III. SPECIFIC GRAVITY ( ASTM C. 128 - 68 )

Flask no				10	8	12	Average
Capacity flask				500,0	500,0	500,0	
Weight of flask				155,5	173,0	162,0	
				H-27	H-30	H-35	
A	Saturated Surface Dry Condition	( C + S )	in gram	590,5	596,0	591,0	
		( C )	in gram	90,5	96,0	91,0	
		( S )	in gram	500,0	500,0	500,0	
B	Oven Dry Condition	( C + S )	in gram	565,2	570,0	566,3	
		( C )	in gram	90,5	96,0	91,0	
		( S )	in gram	474,7	474,0	475,3	
C	Weight of flask + water			653,5	677,0	663,0	
D	Weight of flask + water + sample			950,0	969,0	959,0	
Volume sample ( C ) + ( A ) - ( D )				203,5	208,0	204,0	
Specific Gravity	Bulk	DRY BASIS $\frac{B}{(C)+(A)-(D)}$		2,333	2,279	2,330	2,314
		S . S D . $\frac{A}{(C)+(A)-(D)}$		2,457	2,404	2,451	2,437
		APPARENT $\frac{B}{(C)+(B)-(D)}$		2,664	2,604	2,651	2,640

### IV. ABSORPTION ( % )

Absorption = $\frac{A - B}{B} \times 100 \%$	5,33	5,49	5,20	5,34
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### V. SOUNDNESS TEST ( ASTM C. 88 - 68 )

SIZE mm	( % )	Weight in gram		( 2 ) - ( 3 )	( 4 ) / ( 2 ) x 100 ( % )	( 5 ) x ( 1 ) / 100	Remarks
		Before test	after test				
0.30 - 0.60	4,73	100	95,4	4,6	4,60	0,22	
0.60 - 1.20	26,48	100	98,9	1,1	1,10	0,29	
1.20 - 2.50	36,84	100	96,9	3,1	3,10	1,14	
2.50 - 5.00	31,95	100	95,4	4,6	4,60	1,47	
<b>Total ( % ) =</b>						<b>3,12</b>	

SPECIFIC GRAVITY OF COARSE AGGREGATE									
PROJECT	D/D AYUNG DAM BALI			Date	Januari 27, 2006				
LOCATION	AKR - 2			Tested by	Lab. IKA				
<b>I. SPECIFIC GRAVITY AND ABSORPTION</b>									
Saturated Surface Dry Condition	Weight in Air (B)	(C + S)	gr	4833,0	5078,0	3426,0	Average		
		(C)	gr	310,0	375,5	297,0			
		(S)	gr	4523,0	4702,5	3129,0			
	Weight in Water (C)	(C + S)	gr	3507,0	3628,0	2644,5			
		(C)	gr	702,5	702,5	702,5			
		(S)	gr	2804,5	2925,5	1942,0			
	Weight of oven dry (A)	(C + S)	gr	4733,0	4983,0	3358,3			
		(C)	gr	310,0	375,5	297,0			
		(S)	gr	4423,0	4607,5	3061,3			
Specific Gravity	Bulk	Dry Basis	$\frac{A}{B - C}$	2,574	2,593	2,579	2,582		
		S S D C	$\frac{B}{B - C}$	2,632	2,646	2,636	2,638		
	Apparent	$\frac{A}{A - C}$	2,733	2,739	2,735	2,736			
ABSORPTION		$\frac{B - A}{A} \times 100 \%$		2,26	2,06	2,21	2,18		
<b>II. SOUNDNESS TEST</b>									
SIZE	Weight in gram			(2) - (3)	(4) / (2) x 100 (%)	(5) x (1) / 100 (%)			
	(%)	Before test	after test						
mm	(1)	(2)	(3)	(4)	(5)	(6)			
9.51 - 4.75	10,68	300,0	295	5,0	1,67	0,18			
19.1 - 9.51	35,60	1000,0	925,8	74,2	7,42	2,64			
38.1 - 19.1	53,73	1509,3	1435,7	73,6	4,88	2,62			
		2809,3		TOTAL (%) =		5,44			



**AGGREGATE TEST II**  
**( SAND TEST )**

PROJECT	D/D AYUNG DAM BALI		Date	Januari 27, 2006
LOCATION	AKR - 3	Sand washing 1 x	Tested by	Lab. IKA

**III. SPECIFIC GRAVITY ( ASTM C. 128 - 68 )**

Flask no				10	9	12	Average
Capacity flask				500,0	500,0	500,0	
Weight of flask				155,5	184,0	162,0	
				G-3	G-15	G-9	
A	Saturated Surface Dry Condition	(C + S)	in gram	583,5	573,5	575,5	
		(C)	in gram	83,5	73,5	75,5	
		(S)	in gram	500,0	500,0	500,0	
B	Oven Dry Condition	(C + S)	in gram	577,0	566,0	566,5	
		(C)	in gram	83,5	73,5	75,5	
		(S)	in gram	493,5	492,5	491,0	
C	Weight of flask + water			653,5	682,0	663,0	
D	Weight of flask + water + sample			966,0	993,5	974,0	
Volume sample (C) + (A) - (D)				187,5	188,5	189,0	
Specific Gravity	Bulk	DRY BASIS $\frac{B}{(C) + (A) - (D)}$		2,632	2,613	2,598	2,614
		S. S. D. $\frac{A}{(C) + (A) - (D)}$		2,667	2,653	2,646	2,655
		APPARENT $\frac{B}{(C) + (B) - (D)}$		2,727	2,721	2,728	2,725

**IV. ABSORPTION (%)**

Absorption = $\frac{A - B}{B} \times 100 \%$	1,32	1,52	1,83	1,56
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**V. SOUNDNESS TEST ( ASTM C. 88 - 68 )**

SIZE mm	(%) (1)	Weight in gram		(2) - (3) (4)	(4)/(2)x100 (%) (5)	(5)x(1)/100 (6)	Remarks
		Before test (2)	after test (3)				
0.30 - 0.60	25,00	100	92,4	7,6	7,60	1,90	
0.60 - 1.20	25,00	100	94,4	5,6	5,60	1,40	
1.20 - 2.50	25,00	100	98,4	1,6	1,60	0,40	
2.50 - 5.00	25,00	100	98,4	1,6	1,60	0,40	
	100,00	400,00					
<b>Total (%) =</b>						<b>4,10</b>	

## SPECIFIC GRAVITY OF COARSE AGGREGATE

PROJECT	D/D AYUNG DAM BALI	Date	Januari 27, 2006
LOCATION	AKL - 1	Tested by	Lab. IKA

### I. SPECIFIC GRAVITY AND ABSORPTION

Saturated Surface Dry Condition	Weight in	(C + S)	gr	4724,0	4684,0	4613,0	Average
		Air	(C)	gr	719,0	712,0	
	(B)	(S)	gr	4005,0	3972,0	3873,2	
	Weight in	(C + S)	gr	3194,5	3179,6	3120,7	
	Water	(C)	gr	702,5	702,5	702,5	
	(C)	(S)	gr	2492,0	2477,1	2418,2	
	Weight of	(C + S)	gr	4650,0	4607,3	4557,0	
	oven dry	(C)	gr	719,0	712,0	739,8	
	(A)	(S)	gr	3931,0	3895,3	3817,2	
Specific Gravity	Bulk	Dry Basis	$\frac{A}{B - C}$	2,598	2,606	2,624	2,609
		S S D C	$\frac{B}{B - C}$	2,647	2,657	2,662	2,655
	Apparent	$\frac{A}{A - C}$	2,732	2,747	2,729	2,736	
ABSORPTION		$\frac{B - A}{A} \times 100 \%$		1,88	1,97	1,47	1,77

### II. SOUNDNESS TEST

SIZE	Weight in gram			(2) - (3)	(4) / (2) x 100 (%)	(5) x (1) / 100 (%)
	(%)	Before test	after test			
mm	(1)	(2)	(3)	(4)	(5)	(6)
9.51 - 4.75	10,68	300,0	298	2,0	0,67	0,07
19.1 - 9.51	35,60	1000,0	994	6,0	0,60	0,21
38.1 - 19.1	53,73	1509,3	1400	109,3	7,24	3,89
	100,0	2809,3		<b>TOTAL (%) =</b>		<b>4,18</b>

## AGGREGATE TEST II

### ( SAND TEST )

PROJECT	D/D AYUNG DAM BALI	Date	Januari 27, 2006
LOCATION	AKL - 1	Tested by	Lab. IKA

#### III. SPECIFIC GRAVITY ( ASTM C. 128 - 68 )

Flask no				4	11	14	Average
Capacity flask				500,0	500,0	500,0	
Weight of flask				164,0	153,0	162,0	
				G-45	G-18	H-31	
A	Saturated	( C + S )	in gram	578,0	576,5	595,5	
	Surface Dry	( C )	in gram	78,0	76,5	95,5	
	Condition	( S )	in gram	500,0	500,0	500,0	
B	Oven	( C + S )	in gram	568,5	566,2	584,2	
	Dry	( C )	in gram	78,0	76,5	95,5	
	Condition	( S )	in gram	490,5	489,7	488,7	
C	Weight of flask + water			660,0	653,0	660,0	
D	Weight of flask + water + sample			970,0	963,0	969,5	
Volume sample ( C ) + ( A ) - ( D )				190,0	190,0	190,5	
Specific Gravity	Bulk	DRY BASIS $\frac{B}{(C) + (A) - (D)}$		2,582	2,577	2,565	2,575
		S S . D $\frac{A}{(C) + (A) - (D)}$		2,632	2,632	2,625	2,629
		APPARENT $\frac{B}{(C) + (B) - (D)}$		2,717	2,725	2,727	2,723

#### IV. ABSORPTION ( % )

Absorption = $\frac{A - B}{B} \times 100 \%$	1,94	2,10	2,31	2,12
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#### V. SOUNDNESS TEST ( ASTM C. 88 - 68 )

SIZE mm	( % )	Weight in gram		( 2 ) - ( 3 )	( 4 ) / ( 2 ) x 100 ( % )	( 5 ) x ( 1 ) / 100	Remarks
		Before test	after test				
	( 1 )	( 2 )	( 3 )	( 4 )	( 5 )	( 6 )	
0.30 - 0.60	25,00	100	94,7	5,3	5,30	1,33	
0.60 - 1.20	25,00	100	96,4	3,6	3,60	0,90	
1.20 - 2.50	25,00	100	92,4	7,6	7,60	1,90	
2.50 - 5.00	25,00	100	96,4	3,6	3,60	0,90	
	100,00	400					
<b>Total ( % ) =</b>						<b>5,02</b>	

SPECIFIC GRAVITY OF COARSE AGGREGATE							
PROJECT	D/D AYUNG DAM BALI			Date	Januari 27, 2006		
LOCATION	AKL - 2			Tested by	Lab. IKA		
<b>I. SPECIFIC GRAVITY AND ABSORPTION</b>							
Saturated Surface Dry Condition	Weight in	(C + S)	gr	6236,0	5750,0	5070,0	Average
	Air	(C)	gr	799,0	799,0	799,0	
	(B)	(S)	gr	5437,0	4951,0	4271,0	
	Weight in	(C + S)	gr	4026,5	3730,0	3311,0	
	Water	(C)	gr	702,5	702,5	702,5	
	(C)	(S)	gr	3324,0	3027,5	2608,5	
	Weight of	(C + S)	gr	6132,0	5650,0	4985,4	
	oven dry	(C)	gr	799,0	799,0	799,0	
	(A)	(S)	gr	5333,0	4851,0	4186,4	
Specific Gravity	Bulk	Dry Basis	$\frac{A}{B - C}$	2,524	2,522	2,518	2,521
		S S D C	$\frac{B}{B - C}$	2,573	2,574	2,569	2,572
	Apparent	$\frac{A}{A - C}$	2,655	2,660	2,653	2,656	
ABSORPTION		$\frac{B - A}{A} \times 100 \%$		1,95	2,06	2,02	2,01
<b>II. SOUNDNESS TEST</b>							
SIZE	Weight in gram			(2) - (3)	(4) / (2) x 100 (%)	(5) x (1) / 100 (%)	
	(%)	Before test	after test				
mm	(1)	(2)	(3)	(4)	(5)	(6)	
9.51 - 4.75	10,69	300,0	297	3,0	1,00	0,11	
19.1 - 9.51	35,63	1000,0	995	5,0	0,50	0,18	
38.1 - 19.1	53,68	1506,5	1482	24,5	1,63	0,87	
	100,0	2806,5		TOTAL (%) =		1,16	

<b>( JIS A 1121 )</b>		<b>ABRASION TEST OF COARSE AGGREGATE BY USE OF THE LOS ANGELES MACHINE</b>				<b>TESTED BY :</b>  <b>LABORATORY</b>	
<b>PROJECT</b>		<b>D/D AYUNG DAM BALI</b>					
<b>DATE OF TESTING</b>				Januar 27, 2006			
<b>SAMPLE AKR - 1</b>	<b>TYPE</b>		A				
	<b>SOURCE</b>						
	<b>DATE OF SAMPLING</b>						
	<b>PLACE OF SAMPLING</b>						
<b>COARSE AGGREGATE ( 5 - 40 mm )</b>							
<b>BEFORE ABRASION</b>							
<b>SIEVE</b>		<b>WEIGHT AND GRADING OF TEST SAMPLE ( gr )</b>					
<b>PASSING</b>	<b>RETAINED</b>						
mm	mm	A	B	C	D	E	F
40	25	1253,5					
25	20	1251					
20	13	1251					
13	10	1250					
10	6						
6	5						
5	2,5						
A	TOTAL	5005,5					
<b>NUMBER OF SPHERES</b>		12					
<b>AFTER ABRASION</b>							
<b>RETAINED ON 17 mm (gr)</b>			<b>PERCENT WEAR (%)</b>		<b>REMARKS</b>		
	<b>Revolution</b>	<b>Weight (gr)</b>					
<b>B</b>	100	4655,5	<b>6,99</b>				
<b>C</b>	500	3564,0	<b>28,80</b>				

<b>( JIS A 1121 )</b>		<b>ABRASION TEST OF COARSE AGGREGATE BY USE OF THE LOS ANGELES MACHINE</b>				<b>TESTED BY · LABORATORY</b>	
<b>PROJECT</b>		<b>D/D AYUNG DAM BALI</b>					
<b>DATE OF TESTING</b>				<b>Januari 27, 2006</b>			
<b>SAMPLE AKL - 1</b>	<b>TYPE</b>			<b>A</b>			
	<b>SOURCE</b>						
	<b>DATE OF SAMPLING</b>						
	<b>PLACE OF SAMPLING</b>						
<b>COARSE AGGREGATE ( 5 - 40 mm )</b>							
<b>BEFORE ABRASION</b>							
<b>SIEVE</b>		<b>WEIGHT AND GRADING OF TEST SAMPLE ( gr )</b>					
<b>PASSING</b>	<b>RETAINED</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>
mm	mm						
40	25	1251,5					
25	20	1250,5					
20	13	1250					
13	10	1250					
10	6						
6	5						
5	2,5						
<b>A</b>	<b>TOTAL</b>	<b>5002</b>					
<b>NUMBER OF SPHERES</b>		12					
<b>AFTER ABRASION</b>							
<b>RETAINED ON 17 mm (gr)</b>			<b>PERCENT WEAR (%)</b>		<b>REMARKS</b>		
	<b>Revolution</b>	<b>Weight (gr)</b>					
<b>B</b>	100	4843,0	<b>3,18</b>				
<b>C</b>	500	4097,5	<b>18,08</b>				

<b>( JIS A 1121 )</b>		<b>ABRASION TEST OF COARSE AGGREGATE BY USE OF THE LOS ANGELES MACHINE</b>				<b>TESTED BY . LABORATORY</b>	
<b>PROJECT</b>		<b>D/D AYUNG DAM BALI</b>					
<b>DATE OF TESTING</b>				Januari 27, 2006			
<b>SAMPLE AKR - 2</b>	<b>TYPE</b>			B			
	<b>SOURCE</b>						
	<b>DATE OF SAMPLING</b>						
	<b>PLACE OF SAMPLING</b>						
<b>COARSE AGGREGATE ( 5 - 25 mm )</b>							
<b>BEFORE ABRASION</b>							
<b>SIEVE</b>		<b>WEIGHT AND GRADING OF TEST SAMPLE ( gr )</b>					
<b>PASSING</b>	<b>RETAINED</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>
mm	mm						
25	20		2505				
20	15		2500				
<b>A</b>	<b>TOTAL</b>		<b>5005</b>				
<b>NUMBER OF SPHERES</b>		12					
<b>AFTER ABRASION</b>							
<b>RETAINED ON 1 7 mm (gr)</b>			<b>PERCENT WEAR ( % )</b>		<b>REMARKS</b>		
	<b>Revolution</b>	<b>Weight (gr)</b>					
<b>B</b>	100	4436,0	<b>11,37</b>				
<b>C</b>	500	4163,0	<b>16,82</b>				

<b>( JIS A 1121 )</b>		<b>ABRASION TEST OF COARSE AGGREGATE BY USE OF THE LOS ANGELES MACHINE</b>				<b>TESTED BY LABORATORY</b>	
<b>PROJECT</b>		D/D AYUNG DAM BALI					
<b>DATE OF TESTING</b>				Januari 27, 2006			
<b>SAMPLE AKL - 2</b>	<b>TYPE</b>			A			
	<b>SOURCE</b>						
	<b>DATE OF SAMPLING</b>						
	<b>PLACE OF SAMPLING</b>						
<b>COARSE AGGREGATE ( 5 - 40 mm )</b>							
<b>BEFORE ABRASION</b>							
<b>SIEVE</b>		<b>WEIGHT AND GRADING OF TEST SAMPLE ( gr )</b>					
<b>PASSING</b>	<b>RETAINED</b>						
<b>mm</b>	<b>mm</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>
40	25	1250					
25	20	1255					
20	13	1255					
13	10	1253					
10	6						
6	5						
5	2,5						
<b>A</b>	<b>TOTAL</b>	<b>5013</b>					
<b>NUMBER OF SPHERES</b>		12					
<b>AFTER ABRASION</b>							
<b>RETAINED ON 17 mm (gr)</b>			<b>PERCENT WEAR (%)</b>		<b>REMARKS</b>		
	<b>Revolution</b>	<b>Weight (gr)</b>					
<b>B</b>	100	4798,5	<b>4,28</b>				
<b>C</b>	500	4178,5	<b>16,65</b>				



## RESULT PONTENTIAL REACTIVITY OF AGGREGATE

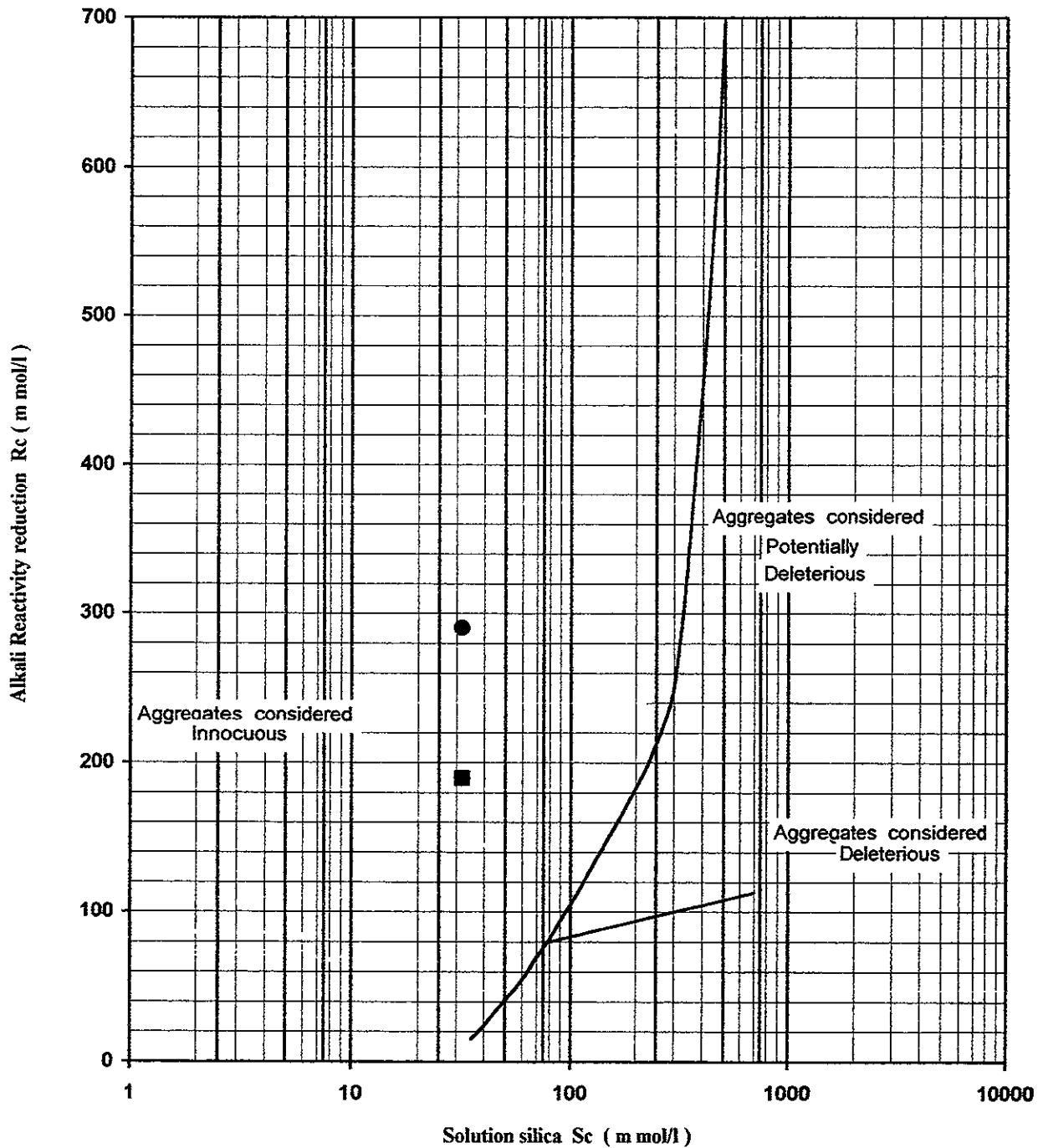
Project AYUNG DAM

Sample : AKR - 1

Date : Februari 1, 2006

Tested by :

Sample	Rc mmol/l	Sc mmol/l	Remarks
1	189,66	31,776	Gravel
2	290,472	31,716	Sand



## RESULT PONTENTIAL REACTIVITY OF AGGREGATE

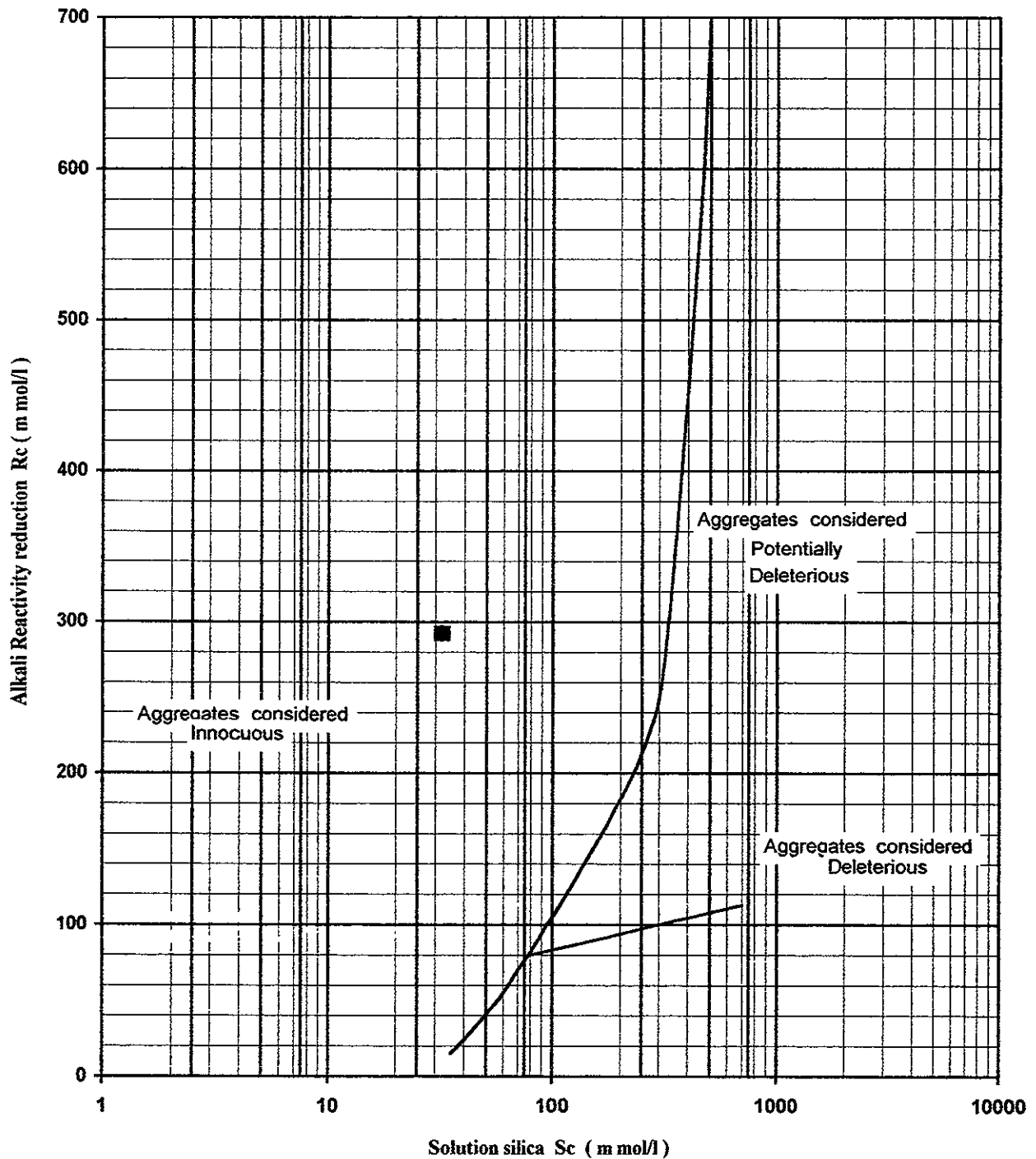
Project AYUNG DAM

Sample AKR - 2

Date Februari 1, 2006

Tested by :

Sample	Rc mmol/l	Sc mmol/l	Remarks
1	292,448	31,971	Gravel



## RESULT PONTENTIAL REACTIVITY OF AGGREGATE

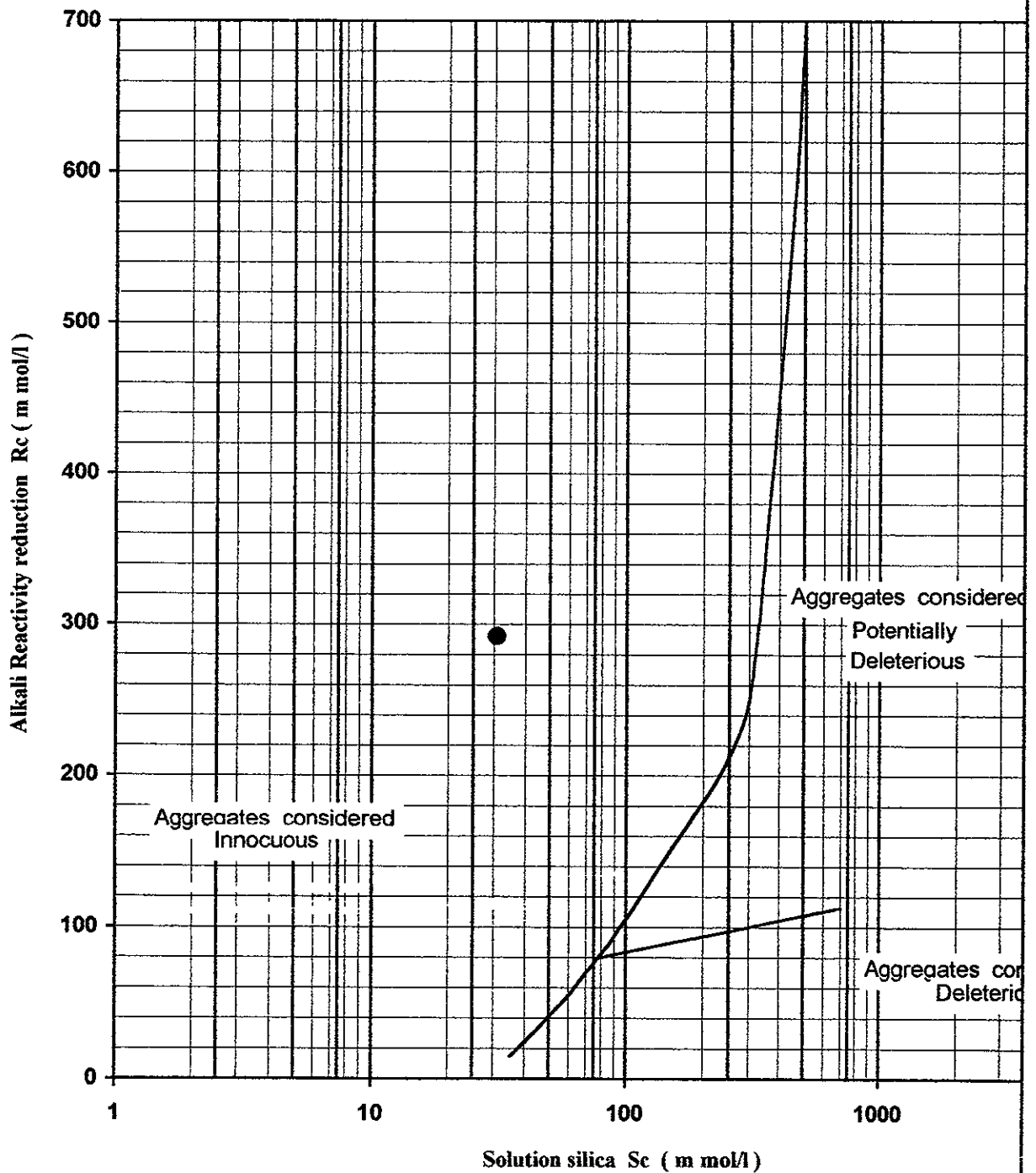
Project AYUNG DAM

Sample AKR - 3

Date . Februari 3, 2006

Tested by

Sample	Rc	Sc	Remarks
	mmol/l	mmol/l	
1	292,448	30,914	Sand



## RESULT PONTENTIAL REACTIVITY OF AGGREGATE

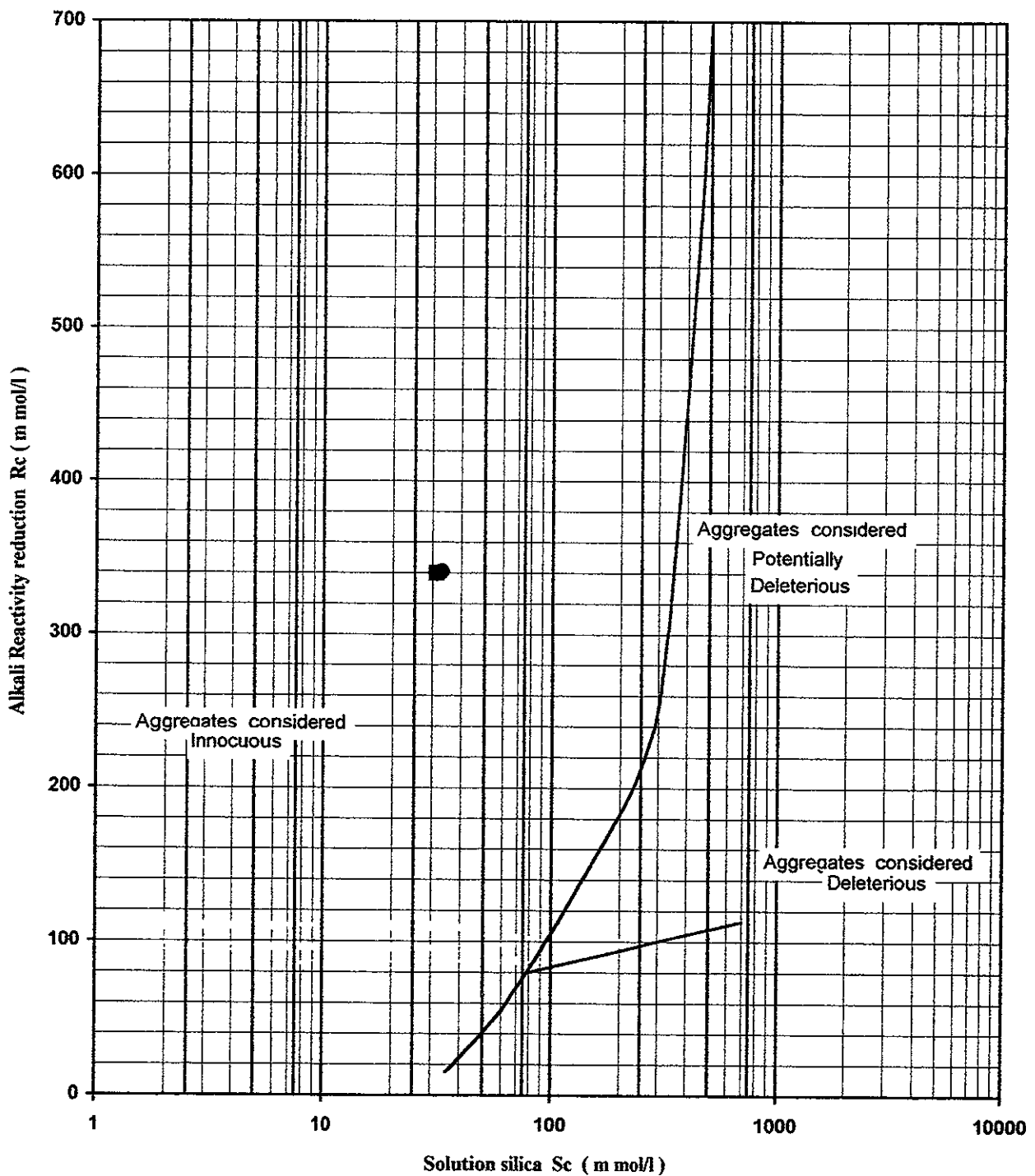
Project AYUNG DAM

Sample : AKL - 1

Date : Februari 1, 2006

Tested by :

Sample	Rc	Sc	Remarks
	mmol/l	mmol/l	
1	339,872	31,323	Gravel
2	340,860	32,830	Sand



## RESULT PONTENTIAL REACTIVITY OF AGGREGATE

Project AYUNG DAM

Sample : AKL - 2

Date Februari 1, 2006

Tested by

Sample	Rc mmol/l	Sc mmol/l	Remarks
1	298,376	31,740	Gravel

