DRILL LOG

HOLE NO. CB. 1 SHEET NO. 24 OF

PROJECT	KARIAN MULTIPURPOSE DAM CONSTRUCTION			DEPTH	20 m	ELEVATION	64.77
SITE	CILAWANG DAMSITE	COORDINATE	: :	INCLINATION	90°	DRILL RIG	-22
AVERAGE CORE RECOVERY		DATE	FROM Oct. 7 TO Oct. 1983	DRILLED	DPMA	LOGGED	*

DATE	DEPTH	ELEVATION	ROCK TYPE OR FORMATION	COLUMN SECTION	DESCRIPTION	ROCK GRADE	GROUNDWATER LEVEL	CORE RECOVERY % / cm	R.Q.D %	WATER PRESSURE TEST LUGEON VALUE	DEPTH
7/10	0.7	64.07	Top Soil		Brown, Soft						
	1.2	63.57	Clay		Hard weathered tuffaceous claystone, light brown	D				K = 1.7 × 10⁻⁴	
			Lapilli tuff		Moderate weathered, compact, rather soft, fragmental, light gray					80.9	
	8.1	56.67	Lapilli tuff		pumiceous, weathered, rather soft, fragmental fragile, olive brown	CL				0.9	
Oct. 9	10 10.6	54.17	Alternation of pumice tuff and claystone		weathered poor cemented pumice tuff and hard weathered tuffaceous claystone, dusky yellow		▽			3.2	
	15.1	49.67	Lapilli tuff		pumiceous, weakly cemented, fragmental light gray	CM				3.8	
	17.7	47.07								3.0	
10/11	19.2	45.57	Siltstone		Tuffaceous, compact intebedded pumice layer light gray					7.9	
	20	44.77	Lapilli tuff		Slightly weathered, pumiceous, compact dusky yellow						

Bit diameter 73 mmφ

HOLE NO. CB 1

LOG FORM-B

※R.Q.D is Rock Quality Designation. R.Q.D=(Total length of cylindric cores longer than 10 cm)/(Total core length) × 100%
※LUGEON VALUE is 1 min in under injection water pressure of 10kg/cm²
※DEPTH and ELEVATION are in meter

* Source : Ref. 4 , modified by JICA team's expert.

DRILL LOG

HOLE NO. CB.2 SHEET NO. 2 OF 3

PROJECT	KARIAN MULTIPURPOSE DAM CONSTRUCTION			DEPTH	25 m	ELEVATION	58.00 m
SITE	CILAWANG DAMSITE	COORDINATE	: :	INCLINATION	90°	DRILL RIG	TDC
AVERAGE CORE RECOVERY		DATE	FROM Oct.4 TO Oct.7 '83	DRILLED	DPMA	LOGGED	*

DATE	DEPTH	ELEVATION	ROCK TYPE OR FORMATION	COLUMN SECTION	DESCRIPTION	ROCK GRADE	GROUNDWATER LEVEL	CORE RECOVERY % / cm	R.Q.D	WATER PRESSURE TEST LUGEON VALUE	DEPTH
Oct.5	3.0	55.00	Residual Soil		Grayish brown, soft	D				$K = 2.3 \times 10^{-4}$	
5/6	5		Clay		Hard weathered tuffaceous claystone, soft, cohesive light brown		▽			$K = 4.0 \times 10^{-5}$	
	7.2	50.80								$K = 2.7 \times 10^{-4}$	
	9.0	49.00	Lapilli tuff		Slightly weathered, partly compact, light olive brown	CL					
Oct.6	10		claystone		Very hard weathered Lapilli tuff partly contain pumice, dusky yellow					74.0	
	14.0	44.00								13.7	
	15	43.00	sandstone		Moderate weathered, soft fragile, dusky yellow						
	16.5	41.50	welded tuff		Moderate to hard weathered clayey, dusky yellow					20.6	
Oct.7	20		Lapilli tuff		Pumiceous, weathered fractured, fragile, dusky yellow					0.2	
	22.6	35.40								2.7	
	25	33.00	Lapilli tuff		Slightly weathered, well cemented, compact vertical joint in rich, good coring dusky yellow	CH					

Bit diameter 73 mm φ

HOLE NO. CB.2

LOG FORM-B

※R.Q.D is Rock Quality Designation. R.Q.D= (Total length of cylindric cores longer than 10 cm) / (Total core length) × 100%

※LUGEON VALUE is l-min m under injection water pressure of 10kg/cm²

※DEPTH and ELEVATION are in meter

* Source : Ref. 4 , modified by JICA team's expert.

DRILL LOG

HOLE NO. CB.3 SHEET NO. 2/ OF [illegible]

PROJECT	KARIAN MULTIPURPOSE DAM CONSTRUCTION			DEPTH	40 m.	ELEVATION	48.19
SITE	CILANIAN DAM SITE	COORDINATE	: :	INCLINATION	90°	DRILL RIG	TDC
AVERAGE CORE RECOVERY		DATE	FROM Oct.18 TO Oct.22'83	DRILLED	DPMA	LOGGED	*

DATE	DEPTH	ELEVATION	ROCK TYPE OR FORMATION	COLUMN SECTION	DESCRIPTION	ROCK GRADE	GROUNDWATER LEVEL ▽	CORE RECORDING 0 / 100	R. Q. D 50	WATER PRESSURE TEST LUGEON VALUE 10 20 30 40 50	DEPTH
Oct.18	5	43.19	Conglomerate		Tuffaceous, coarse gravel Pumice, upper part poor cemented lower part well cemented, compact and hard olive gray	CL / CM	+0.2m			No Test	
Oct.19	9.8	38.39	Lapilli tuff		Hard weathered, pumiceous partly contain breccia olive gray, partly fractured	CL				44.3 / 6.5	
	14.2	33.99	clayestone		Tuffaceous sandy compact stiff, partly interbedded lapilli, dusky yellow	CM				0.6 / 7.5	
Oct.20	15 / 18.0	30.19	pumice tuff		Hard weathered, porous, rather soft, uncompacted, light olive brown	CL				5.4	
	21.4	26.79	conglomerate		Tuffaceous, granule gravel and pumice, compact, light olive gray	CM				20.2	
	23.5	24.69	Lapilli tuff		Compact, well sorting, contain Pumice, gray					6.0	
Oct.21	25 / 26.0	22.19	clayestone		Completly clayey lapilli tuff, gray					4.6	
	30 / 31.8	16.39	clayestone		Tuffaceous, pumiceous, partly fragile, and lapilli rather soft, dusky yellow					6.9	
Oct.22	35 / 35.7	12.49	pumice tuff		Moderately weathered, well cemented, partly fractured and contain charcoal fragment, light gray	CL				17.4 / 62.1	
	40	8.19	clayestone		Tuffaceous, partly silty compact, partly fractured interbedded pumice tuff (37.3 – 38.0m), gray					4.8	
					Bit diameter 73mm φ						

HOLE NO. CB3

LOG FORM-B

*R.Q.D is Rock Quality Designation. R.Q.D = (Total length of cylindric cores longer than 10 cm)/(Total core length) × 100%
*LUGEON VALUE is l/min in under injection water pressure of 10kg·cm²
*DEPTH and ELEVATION are in meter

* Source : Ref. 4 , modified by JICA team's expert.

DRILL LOG

HOLE NO. CB.4 SHEET NO. 27 OF 13

PROJECT	KARIAN MULTIPURPOSE DAM CONSTRUCTION		DEPTH	20 m	ELEVATION 68.18
SITE	CILAWANG DAMSITE	COORDINATE : ' :	INCLINATION	90°	DRILL RIG TDC
AVERAGE CORE RECOVERY		DATE FROM Oct. 29 TO Oct. 31 '83	DRILLED	DPMA	LOGGED X

DATE	DEPTH	ELEVATION	ROCK TYPE OR FORMATION	COLUMN SECTION	DESCRIPTION	ROCK GRADE	GROUNDWATER LEVEL	CORE RECOVERY % / cm	R. Q. D	WATER PRESSURE TEST LUGEON VALUE	DEPTH
	2.0	66.18	Pumice tuff		Hard weathered, porous, slight weight	C_L					
	3.0	65.18	Lapilli tuff		rather soft, light olive brown					NO Test	
Oct. 29	5		claystone		Moderate weathered, compact well cemented, light olive brown	C_M	▽			3.6	
Oct. 30	11.8	56.38			Tuffaceous claystone interbedded pumice tuff pumice layers are heavy weathered and fractured.					5.6	
	15		Sandstone		Tuffaceous, compact, dense fine grained gray					3.1	
Oct. 31	16.6	51.58								184.4	
	20	48.18	Conglomerate		Tuffaceous, basaltic gravel and sand, vertical cracks rich, fractured, matrix hard weathered	C_L				107.1	
					Bit diameter 73 mm φ						

HOLE NO. CB4

LOG FORM-R

※R.Q.D is Rock Quality Designation. R.Q.D= (Total length of cylindric cores longer than 10 cm)/(Total core length) × 100%
※LUGEON VALUE is Lumeters under injection water pressure of 10kg/cm²
※DEPTH and ELEVATION are in meter

• Source : Ref. 4 , modified by JICA team's expert.

DRILL LOG

HOLE NO. CB-5 SHEET NO. 28 OF 7*

PROJECT	KARIAN MULTIPURPOSE DAM CONSTRUCTION			DEPTH	20 m.	ELEVATION	48.18
SITE	CILAWANGI DAM SITE	COORDINATE	: :	INCLINATION	90°	DRILL RIG	TDC
AVERAGE CORE RECOVERY		DATE	FROM Oct. 14 TO Oct. 16 '83	DRILLED	DPMA	LOGGED	*

DATE	DEPTH	ELEVATION	ROCK TYPE OR FORMATION	COLUMN SECTION	DESCRIPTION	ROCK GRADE	GROUNDWATER LEVEL ▽	CORE RECOVERY (cm)	R. Q. D	WATER PRESSURE TEST LUGEON VALUE	DEPTH
Oct. 14	5.5	42.68	Pumice tuff		Moderately weathered, conglomeratic, partly fractured, contain some charcoal fragment, light gray	CL	0m			No Test	
	8.4	39.78	Lapilli tuff		Moderate to heavy weathered, partly fractured light olive brown					1.4	
Oct. 15	10	37.38	claystone		Tuffaceous, fractured, rather soft, gray to brown					16.0	
	10.8									23.0	
	13.4	34.78	Conglomerate		Tuffaceous, pumiceous, porous, poorly cemented, partly fractured gray					3.5	
	15		Pumice tuff		Slightly weathered, matrix clayey, compact, yellowish	CM				53.2	
Oct. 16	16.0	32.18								48.8	
	19.2	28.98	Pumice tuff		Moderately weathered, weakly cemented, rather fragile, light olive gray					41.8	
	20	28.18	Sandstone		Tuffaceous, coarse grained well sorted, contain fragment of charcoal						

Bit diameter 73 mm φ

HOLE NO. CB-5

LOG FORM-B

*RQD or Rock Quality Designation. RQD= (Total length of cylindric cores longer than 10 cm)/(Total core length) × 100%
*LUGEON VALUE is l/min/m under injection water pressure of 10kg/cm²
*DEPTH and ELEVATION are in meter

* Source : Ref. 4 , modified by JICA team's expert.

DRILL LOG

HOLE NO. CB.6 SHEET NO. 2 OF 2

PROJECT	KARIAN MULTIPURPOSE DAM CONSTRUCTION			DEPTH	20 m	ELEVATION	45.11 m
SITE	CILAWANGI DAMSITE	COORDINATE	: :	INCLINATION	90°	DRILL RIG	TDC
AVERAGE CORE RECOVERY	-	DATE	FROM Oct. 23 TO Oct. 26 '83	DRILLED	DPMA	LOGGED	*

DATE	DEPTH	ELEVATION	ROCK TYPE OR FORMATION	COLUMN SECTION	DESCRIPTION	ROCK GRADE	GROUNDWATER LEVEL ▽	CORE RECOVERY % cm	R. Q. D	WATER PRESSURE TEST LUGEON VALUE	DEPTH
OCT. 23	4.5	42.61	Pumice tuff		Slightly weathered, contain fragment of volcanic rock, gravel, not compact fragile gray to light gray		6.1±0.25			0.3	
OCT. 25	10		Welded tuff		Slightly weathered, Contain pumice and lapilli partly fractured and soft gray to dusky yellow	C_L				177.3	
	11.0	33.11								76.1	
										100.4	
	15	33.11	Sandstone		Pumiceous, slightly weathered, partly fractured light olive brown fine to medium grained					148.2	
OCT. 26	18.0	30.11	claystone		Tuffaceous, partly contain pumice and fragile light olive brown	C_M				2.0	
	20	28.11	Sandstone		Tuffaceous, bedded, compact contain pumice partly poor cemented and friable, light gray					NO TEST	
					Bit diameter 73 mm φ						

HOLE NO. CB6

LOG FORM-B

*R.Q.D is Rock Quality Designation. R.Q.D=(Total length of cylindric cores longer than 10 cm)/(Total core length) × 100%
*LUGEON VALUE is l/min/m under injection water pressure of 10kg/cm²
*DEPTH and ELEVATION are in meter

* Source : Ref. 4 , modified by JICA team's expert.

DRILL LOG

HOLE NO. CB.7 SHEET NO. 30 OF 2

PROJECT	KARIAN MULTIPURPOSE DAM CONSTRUCTION			DEPTH	25 m	ELEVATION	79.24 m
SITE	CILAWANG DAMSITE	COORDINATE	: :	INCLINATION	90°	DRILL RIG	TDC
AVERAGE CORE RECOVERY		DATE	FROM Nov. 4 TO Nov. 6 '83	DRILLED	DPMA	LOGGED	*

DATE	DEPTH	ELEVATION	ROCK TYPE OR FORMATION	COLUMN SECTION	DESCRIPTION	ROCK GRADE	GROUNDWATER LEVEL	CORE RECOVERY % / cm	R. Q. D	WATER PRESSURE TEST LUGEON VALUE	DEPTH
Nov. 4	2.0	77.24	Tuffaceous clay		soft, upper part brown clay, light gray	D				No Test	
	4.0	75.24	Sandstone		Tuffaceous, very fine grained, contain pumice moderately weathered white					$K = 3.6 \times 10^{-3}$	
	5		welded tuff		Compact, contain lapilli and pumice, matrix very fine grained tuff with open cracks joint light gray to white	C_M	▽			No Test	
	10					C_L				56.1	
Nov. 5	11.1	68.14	lapilli tuff		Pumiceous, sandy matrix with lapilli, granule and breccia, partly weathered and fractured, poor cemented gray to light brown	C_M				No Test	
	15									0.4	
	20	59.24								2.6	
Nov. 6	21.9	57.34	Claystone		Tuffaceous, lapilli, not compact fractured, light gray	CL				0.8	
	23.1	56.14	Siltstone								
	25	54.24	Claystone		Tuffaceous, contain pumice and lapilli, fractured						
					Tuffaceous, dense, well sorted compact contain some pumice, light gray						
					Bit diameter 73 mm ϕ						

HOLE NO. CB7

LOG FORM-B

※R.Q.D is Rock Quality Designation. R.Q.D = (Total length of cylindric cores longer than 10 cm) / (Total core length) × 100%
※LUGEON VALUE is 1 min. water injection under pressure of 10kg/cm²
※DEPTH and ELEVATION are in meter

* Source : Ref. 4 , modified by JICA team's expert.

DRILL LOG

HOLE NO. TB 1 SHEET NO. 1 OF 2

PROJECT	KARIAN MULTIPURPOSE DAM CONSTRUCTION			DEPTH	25 m	ELEVATION	50.90 m
SITE	CIUYAH TUNNEL	COORDINATE	: :	INCLINATION	90°	DRILL RIG	TONE
AVERAGE CORE RECOVERY		DATE	FROM Sep. 19 TO Sep. 22 82	DRILLED	G. EPSILON	LOGGED	*

DATE	DEPTH	ELEVATION	ROCK TYPE OR FORMATION	COLUMN SECTION	DESCRIPTION	ROCK GRADE	GROUNDWATER LEVEL	CORE RECOVERY % / cm	R. Q. D	WATER PRESSURE TEST LUGEON VALUE	DEPTH
Sep. 19	1.70	49.20	Top Soil		Brown Soft	D					
	2.30	48.60	Residual Soil		Tuffaceous, hard weathered sandstone, whitish brown						
	5		Sandstone		Tuffaceous, fine to medium grained, contain quartz, compact, partly rather weathered and fractured gray	C_M				1.0 / 0.9 / IN + FRACTURE	
	9.20	45.70									
Sep. 20	10		Lapilli tuff		Fractured and fragmental moderately weathered intercalcated Pumice tuff, porous, poor cemented yellowish gray to gray	C_L				1.1	
	15										
Sep. 21	18.00	32.90								1.10	
	20		Pumice tuff		Compact with sandy matrix, partly poor cemented intercalcated fine grained tuff, gray						
	21.00	29.90									
Sep. 22	23.20	27.70	Claystone							1.1	
	25	25.90	Welded tuff		Tuffaceous, compact dense, partly fractured dark gray	C_M					
					Pumiceous, contain lapilli, compact, hard gray						
					Bit diameter 75 mm ϕ						

HOLE NO. TB 1

LOG FORM-B

*R.Q.D is Rock Quality Designation. R.Q.D = (Total length of cylindric cores longer than 10 cm)/(Total core length) × 100%

*LUGEON VALUE is l/min/m under injection water pressure of 10kg/cm²

*DEPTH and ELEVATION are in meter

* Source : Ref. 9 , modified by JICA team's expert.

DRILL LOG

HOLE NO. TB2 SHEET NO. 1 OF 2

PROJECT	KARIAN MULTIPURPOSE DAM CONSTRUCTION			DEPTH	40 m	ELEVATION	70.22 m
SITE	CIOYAH TUNNEL	COORDINATE	: :	INCLINATION	90°	DRILL RIG	TONE
AVERAGE CORE RECOVERY		DATE	FROM Sep. 15 TO Sep. 22 '82	DRILLED	EPSILON	LOGGED	*

DATE	DEPTH	ELEVATION	ROCK TYPE OR FORMATION	COLUMN SECTION	DESCRIPTION	ROCK GRADE	GROUNDWATER LEVEL	CORE RECOVERY (cm)	R.Q.D	WATER PRESSURE TEST LUGEON VALUE	DEPTH
Sep 15	1.00	69.20	Top Soil		Reddish brown, soft						
Sep 16	5		Residual Soil		Hard weathered tuffaceous sandstone whitish yellow	D				18.1	
	6.70	63.50									
	7.70	62.50	Sandstone		Tuffaceous, very fine grained, slightly weathered gray					19.5 N-value	
Sep 17	10		welded Tuff		Pumiceous, contain lapilli partly weathered with cracks, stained light gray					8.3	
	11.60	58.60									
Sep 18	15		claystone		Tuffaceous, compact hard, partly slightly weathered olive gray	C_L				647.8 (?)	
	17.00	53.20								496.9 (?)	
	18.00	52.20	claystone		Compact, white, Tuffaceous						
Sep 19	20		Sandstone		Tuffaceous, contain much pumice, fine to coarse grained, well cemented, laminated, partly fractured with joint, grain size upward become fine. gray					10.8	
	25									17.2	
Sep 20	27.00	43.20								2.3	
	29.00	41.20	pumice tuff		well cemented, contain lapilli, compact, hard gray					2.1	
Sep 21	30		Sandstone		Tuffaceous, fine to coarse grained well sorted, laminated, compact, partly contain rich pumice, fractured with clay seam joint (37.0-37.6 m) gray	C_M				1.6	
										2.1	
Sep 22	40	30.20								2.9	
					Bit diameter: 76 mm φ						

HOLE NO. TB2

LOG FORM-B

※R.Q.D is Rock Quality Designation. R.Q.D= (Total length of cylindric cores longer than 10 cm)/(Total core length) × 100%.
※LUGEON VALUE is l min/m under injection water pressure of 10kg/cm².
※DEPTH and ELEVATION are in meter.

* Source : Ref. 9 , modified by JICA team's expert.

DRILL LOG

HOLE NO. TB 3 SHEET NO. 3 OF 7

PROJECT	KARIAN MULTIPURPOSE DAM CONSTRUCTION			DEPTH	25 m	ELEVATION	51.19 m
SITE	CIUYAH TONNEL	COORDINATE	: :	INCLINATION	90°	DRILL RIG	TONE
AVERAGE CORE RECOVERY		DATE	FROM Sep. 23 TO Sep. 26 '82	DRILLED	A. EPSILON	LOGGED	*

DATE	DEPTH	ELEVATION	ROCK TYPE OR FORMATION	COLUMN SECTION	DESCRIPTION	ROCK GRADE	GROUNDWATER LEVEL	CORE RECOVERY	R. Q. D	WATER PRESSURE TEST LUGEON VALUE	DEPTH
								0 50	0 50	0 5 10 15 20	
Sep. 23	2.10	49.09	Top soil		Brown. soft						
	4.60	46.59	Residual soil		Hard weathered tuffaceous sandstone, cohesive, rather soft, olive brown	D				2.1 N-value	
	8.80	42.39	clayetone		Tuffaceous, compact, slightly weathered olive gray	C_L				1.2	
Sep. 24	10		Pumice tuff interbedded clayetone		slightly weathered, contain pumice, clayey well bedded with quartz light olive brown pumice tuff: Sandy tuff matrix and pumice fragment, porous, fractured with weathered pumice clayetone: Tuffaceous compact contain pumice	C_M				1.1	
Sep. 25	15									1.0	
	20										
	20.8	30.39									
Sep. 26	24.0	27.19	Lapilli tuff		Fine to coarse grained contain pumice poor cement, poor sorted light olive gray	C_L				1.0	
	25	26.19	clayetone		Tuffaceous, contain much quartz, weathered dusky yellow						

Bit diameter 73 mm ϕ

HOLE NO. TB3

LOG FORM-B

*R.Q.D is Rock Quality Designation. R.Q.D = (Total length of cylindric cores longer than 10 cm)/(Total core length) × 100%
*LUGEON VALUE is l/min·m under injection water pressure of 10kg/cm²
*DEPTH and ELEVATION are in meter

* Source : Ref. 9 , modified by JICA team's expert.

DRILL LOG

HOLE NO. TB4 SHEET NO. 3/ OF 12

PROJECT	FARIAN MULTIPURPOSE DAM CONSTRUCTION			DEPTH	45m	ELEVATION	59.07m
SITE	CIUYAH TUNNEL	COORDINATE	: :	INCLINATION	30°	DRILL RIG	TONE
AVERAGE CORE RECOVERY		DATE	FROM Sep.19 TO Sep.26'82	DRILLED	GEPSILON	LOGGED	*

DATE	DEPTH	ELEVATION	ROCK TYPE OR FORMATION	COLUMN SECTION	DESCRIPTION	ROCK GRADE	GROUNDWATER LEVEL	CORE RECOVERY cm	R.Q.D %	WATER PRESSURE TEST LUGEON VALUE	DEPTH
Sep.19	1.00	58.19	Top Soil		Brown, silty, soft						
	3.00	57.51	lies and Soil		Tuffaceous friable weathered sandstone white brown, soft consistence	D				3.3 N-value 7	
Sep.20	5		Lapilli tuff		pumiceous, sandy matrix porous, poor cement partly very friable, gray					4.3	
	9.30	49.79								1.6	
Sep.21	15		welded tuff		Pumiceous, compact, dense, partly fractured with open crack joint gray					0.9	
	19.00	43.59				CL				1.8	
Sep.22			sandstone		Tuffaceous, fine to coarse grained, slightly weathered, partly contain pumice and lapilli, gray					1.5	
Sep.23	25.00	34.09									
Sep.24	30		claystone		Tuffaceous, fractured very low R.Q.D value gray					1.8	
	33.50	25.59								1.4	
Sep.25	37.60	21.49	welded tuff		Compact, contain fragment of pumice, well cemented partly fractured with slightly weathered joint and contain much lapilli gray					V.3	
Sep.26	40		Sandstone		Tuffaceous, fine to medium grained contain pumice, lapilli and quartz, fractured at open crack joint with clay seam, gray					1.7	
	45	14.09									
					Bit diameter 73mmφ						

HOLE NO. TB4

LOG FORM-B

*R.Q.D is Rock Quality Designation. R.Q.D = (Total length of cylindric cores longer than 10 cm)/(Total core length) × 100%

*LUGEON VALUE is l min m under injection water pressure of 10kg/cm²

*DEPTH and ELEVATION are in meter

* Source : Ref. 9 , modified by JICA team's expert.

DRILL LOG

HOLE NO. TB 5 SHEET NO. 3 OF 3

PROJECT	FARIAN MULTIPURPOSE DAM CONSTRUCTION			DEPTH	40 m	ELEVATION	80.12 m
SITE	CIUYAH TUNNEL	COORDINATE	: :	INCLINATION	90°	DRILL RIG	TONE
AVERAGE CORE RECOVERY		DATE	FROM Sep.21 TO Sep.28 82	DRILLED	GEPSILON	LOGGED	*

DATE	DEPTH	ELEVATION	ROCK TYPE OR FORMATION	COLUMN SECTION	DESCRIPTION	ROCK GRADE	GROUNDWATER LEVEL	CORE RECOVERY	R. Q. D	WATER PRESSURE TEST LUGEON VALUE
Sep. 21	1.80		Residual soil		Brown, Tuffaceous hard weathered sandstone	D				
	3.20		claystone		Tuffaceous, slightly weathered compact, white					
Sep. 22	5		Lapilli tuff		pumiceous, moderately weathered, contain lapilli and volcanic sand well cemented, compact white gray to white bt.	CL				N-value 2.4
	9.60	70.52								
	10.80	69.32	claystone		Tuffaceous, slightly weathered compact light weight, light olive brown	CM				1.1
Sep. 23	15		welded tuff		Alternation of sandy pumice tuff and fine grained tuff, pumice layer showing moderately weathered, porous, and light weight tuff layer showing compact, gray					0.9
Sep. 24	20.30	59.82								
Sep. 25	24.00	56.12	Sandstone		Tuffaceous, fine to medium grained contain pumice rather friable gray	CL				0.8
Sep. 26	25		Lapilli tuff		pumiceous, fractured at upper part, contain much pumice at lower part. crack joint with clayseam, dark gray					1.4
Sep. 27	30					CM				3.2
	35									
Sep. 28	36.00	44.12	Sandstone		Tuffaceous, fine to medium grained contain Pumice, fractured with crack joint	CL				6.6
	40	40.12				CM				

Bit diameter 75 mm ϕ

HOLE NO. TB 5

LOG FORM-B

*R.Q.D is Rock Quality Designation. R.Q.D= (Total length of cylindric cores longer than 10 cm)/(Total core length) × 100%
*LUGEON VALUE is lemin-m under injection water pressure of 10kg cm²
*DEPTH and ELEVATION are in meter

* Source : Ref. 9 , modified by JICA team's expert.

DRILL LOG

HOLE NO. TB 6 SHEET NO. 3 OF 13

PROJECT	KARIAH MULTIPURPOSE DAM CONSTRUCTION			DEPTH	60.00m	ELEVATION	91.02m
SITE	CIUYAH TUNNEL	COORDINATE	: :	INCLINATION	90°	DRILL RIG	TAS
AVERAGE CORE RECOVERY		DATE	FROM Aug 27 TO Sep 9 '82	DRILLED	A. EPSILON	LOGGED	Y

DATE	DEPTH	ELEVATION	ROCK TYPE OR FORMATION	COLUMN SECTION	DESCRIPTION	ROCK GRADE	GROUNDWATER LEVEL	CORE RECOVERY	R.Q.D	WATER PRESSURE TEST LUGEON VALUE	DEPTH
Aug. 27	5		Sandstone		Tuffaceous, very fine to fine grained, compact contain pumice, quartz vertical joint, modelately weathered upper part whitish yellow to gray	D				0.9	
Aug. 28	7.50	83.52									
	10		Lapilli tuff		well sorted, matrix consist of fine grained tuff. Compact lower part contain some pumice well cemented light olive gray					1.7 N-value	
	12.70	78.32								2.5	
Aug. 29			Lapilli tuff		slightly weathered partly loose, frangible clayey, light gray					0.5	
	17.70	73.32								2.2	
Aug. 31			claystone		Tuffaceous, dark gray, compact					2.9	
	20	71.02									
			Pumice tuff		Rather loose, contain Lapilli, grayish white					NO TEST	
Sep. 1	23.40	67.62	welded tuff		Compact, contain Lapilli. Light weight gray						
	25.50	65.52	welded tuff		slickenside modelately weathered compact, clayey, gray	C_L				56.1	
Sep. 2	28.70	62.32									
	30	61.02	Lapilli tuff		Slightly weathered contain Pumice, gray					16.1	
Sep. 3			Sandstone		Tuffaceous, very fine to fine grained, compact well cemented, light gray					1.2	
	36.00	55.02								1.1	
Sep. 4			claystone		Tuffaceous, dense, Compact, dark gray compact.					0.9	
Sep. 5	40									1.0	
	42.80	48.22			compact, contain some pumice. cemented by fine tuff. gray to brown					0.8	
Sep. 6	45.00	46.02	Lapilli tuff		Tuffaceous, fractured with slickenside and calcite seam, contain charcoal fragment, gray					0.9	
	48.20	42.82	claystone		Tuffaceous, very fine grained, slightly weathered gray					0.9	
Sep. 7	50.70	40.32	Sandstone		Contain lapilli and quartz, Compact, hard dark gray					NO TEST	
Sep. 8	53.00	38.02	welded tuff		Contain pumice well sorted matrix consist of sandy tuff; Calcite seam dark gray					1.5	
Sep. 9			Lapilli tuff		Tuffaceous, compact dusky yellow					1.3	
	58.80	32.22									
	60	31.02	claystone								

HOLE NO. TB6

LOG FORM-B

*R.Q.D is Rock Quality Designation. R.Q.D= (Total length of cylindric cores longer than 10 cm)/(Total core length) × 100%.

**LUGEON VALUE is l min at under injection water pressure of 10kg cm²

***DEPTH and ELEVATION are in meter

° 3" diameter 73 mmφ

* Source : Ref. 9 , modified by JICA team's expert.

DRILL LOG

HOLE NO. TB 7 SHEET NO. 3 OF 7

PROJECT	EARIAN MULTI PURPOSE DAM CONSTRUCTION			DEPTH	25 m	ELEVATION	54.21 m
SITE	CHUYAH TUNNEL	COORDINATE	: :	INCLINATION	90°	DRILL RIG	TONE
AVERAGE CORE RECOVERY		DATE	FROM Aug. 24 TO Aug. 31 '82	DRILLED	G. EPSILON	LOGGED	X

DATE	DEPTH	ELEVATION	ROCK TYPE OR FORMATION	COLUMN SECTION	DESCRIPTION	ROCK GRADE	GROUNDWATER LEVEL	CORE RECOVERY (cm)	R. Q. D (%)	WATER PRESSURE TEST LUGEON VALUE	DEPTH
Aug. 24	1.30	52.91	Topsoil		Reddish brown soft	D					
	3.10	51.11	Residual soil		Hard weathered tuffaceous sandstone, Yellow brown						
Aug. 25	4.05	50.21	claystone		Tuffaceous, slightly weathered, slightly compact, Light gray	C$_L$					
	7.40	46.81	Sandstone							8.4 W-value	
Aug. 26	10	44.21	claystone		Tuffaceous, hardly weathered, poor cemented fine grained contain quartz, sometimes brown					5.2	
	12.00	42.21	claystone		Tuffaceous, hardly weathered fractured Soft. gray					1.6	
Aug. 29	15		welded tuff		Tuffaceous, Compact and fractured, dipping joint to dark gray					1.5	
Aug. 30	19.80	34.41			Consolid hard fragmable, many joint water soft					1.6	
	21.00	33.41	Sandstone			CM				1.5	
Aug. 31	25	29.41	Lapilli tuff		Tuffaceous, slightly weathered, well bedded laminated compact light gray	C$_L$				NO TEST	
					Pumiceous, sandy tuff matrix, slightly weathered compact dark gray						
					Bit diameter 73 mm φ						

HOLE NO. TB 7

LOG FORM-B

※R.Q.D is Rock Quality Designation. R.Q.D = (Total length of cylindric cores longer than 10 cm) / (Total core length) × 100%.
※LUGEON VALUE is l·min m under injection water pressure of 10kg cm²
※DEPTH and ELEVATION are in meter

* Source : Ref. 9 , modified by JICA team's expert.

DRILL LOG

HOLE NO. CCB1 SHEET NO. 2P OF [illegible]

PROJECT	KARIAN MULTIPURPOSE DAM CONSTRUCTION			DEPTH	20m	ELEVATION	67.49
SITE	CICINTA TUNNEL	COURDINATE	: :	INCLINATION	90°	DRILL RIG	TDH
AVERAGE CORE RECOVERY		DATE	FROM Oct. 20 TO Oct 22 '84	DRILLED	DPMA	LOGGED	M.F

DATE	DEPTH	ELEVATION	ROCK TYPE OR FORMATION	COLUMN SECTION	DESCRIPTION	ROCK GRADE	GROUNDWATER LEVEL	CORE RECOVERY %	CORE RECOVERY cm	R. Q. D	WATER PRESSURE TEST LUGEON VALUE	DEPTH
Oct. 20	1.45	67.49	Siltstone		weathered, soft to stiff brown	D						
	2.6	64.89	LOST		Tuffaceous, fine to coarse grained slightly weathered contain pumice, porous		▽				K= 2.4 x 10⁻⁶	
	5		Sandstone		lower part showing like welded tuff, grey to yellow brown							
	6.7	60.79										
	7.6	59.89	claystone		Tuffaceous, slightly weathered, cream yellow, slickenside						16.7	
Oct. 21	10		Sandstone		Tuffaceous, medium to coarse grained, well sorted contain pumice, granule gravel, and lapilli, yellow brown, porous	CL					5.1	
	13.4	54.09										
	15		claystone		Tuffaceous, soft, cracky yellow brown							
	16.4	51.09										
	18.2	49.29	siltstone		Tuffaceous, hard, compact with slickenside						No Test	
Oct. 22	20	47.49	Sandstone		Tuffaceous, fine grained olive gray, Lost core from 18.5 to 19.5 m							
					Bit diameter 76 mm ϕ							

HOLE NO. CCB1

LOG FORM-B

※ R.Q.D is Rock Quality Designation. R.Q.D= (Total length of cylindric cores longer than 10 cm)/(Total core length) × 100%

※ LUGEON VALUE is l-min-m under injection water pressure of 10kg/cm²

※ DEPTH and ELEVATION are in meter

DRILL LOG

HOLE NO. CCB2 SHEET NO. 3 OF 4

PROJECT	KARIAN MULTIPURPOSE DAM CONSTRUCTION		DEPTH	20 m	ELEVATION	83.44
SITE	CICINTA TUNNEL	COORDINATE	: :	INCLINATION	90°	DRILL RIG	TDH
AVERAGE CORE RECOVERY		DATE	FROM Oct. 24 TO Oct. 26'84	DRILLED	DPMA	LOGGED	A. F

DATE	DEPTH	ELEVATION	ROCK TYPE OR FORMATION	COLUMN SECTION	DESCRIPTION	ROCK GRADE	GROUNDWATER LEVEL	CORE RECOVERY % / cm	R. Q. D	WATER PRESSURE TEST LUGEON VALUE	DEPTH
Oct. 24	1.0	82.44	clay		Top soil and silty clay brown soft	D	▽				
	4.2	79.24	Sandstone		Tuffaceous, hard weathered poor cemented, porous, pumiceous, well bedded, fine to coarse grained light brown to yellow	CL				K = 1.5 × 10⁻⁴ cm/sec	
	7.4	76.04	Sandstone		Tuffaceous, fine to medium grained contain Pumiceous fragments. Medium weathered poor cemented, gray					K = 1.4 × 10⁻³ cm/sec	
	10		Siltstone		Tuffaceous, contain pumice tuff Compact, light brown	CM					
	12.6	70.84			fine volcanic ash flow rather soft, with silicification dark gray, compact					18.5	
Oct. 25	15	68.44	weized tuff								
	17.8	65.64	Sandstone		Tuffaceous, fine grained cracky, loose, olive gray almost core lost	CL				No Test	
	20	63.44	claystone		Tuffaceous frogementale interbedded sandy layer dark gray						

Bit diameter 71 mm ϕ

HOLE NO. CCB2

LOG FORM-B

※R.Q.D is Rock Quality Designation. R.Q.D= (Total length of cylindric cores longer than 10 cm / Total core length) × 100%

※LUGEON VALUE is 1 min m under injection water pressure of 10kg/cm²

※DEPTH and ELEVATION are in meter

DRILL LOG

HOLE NO. CCB 3 SHEET NO. 40 OF 73

PROJECT	KARIAN MULTIPURPOSE DAM CONSTRUCTION			DEPTH	20 m	ELEVATION	71.21
SITE	CICINTA TUNNEL	COORDINATE	: :	INCLINATION	90°	DRILL RIG	TDH
AVERAGE CORE RECOVERY		DATE	FROM oct. 29 TO oct. 30 84	DRILLED	DPMA	LOGGED	M.F

DATE	DEPTH	ELEVATION	ROCK TYPE OR FORMATION	COLUMN SECTION	DESCRIPTION	ROCK GRADE	GROUNDWATER LEVEL
OCT. 29	1.1	70.11	soil		Top soil, brown clay, soft		▽
	3.9	67.31	Siltstone		Tuffaceous, hard weathered fine grained, loose and soft, yellow brown	D	
	5	66.21	Sandstone		Pumiceous, medium to coarse grained, slightly weathered, rather soft, gray		
	9.2	62.01	Siltstone		Tuffaceous, compact, conted bedded with rich slickenside, fractured, yellow br.	CL	
	10		claystone				
	11.0	60.21	Siltstone		Tuffaceous, fractured with slickenside, yellow brown		
OCT. 30	11.7	59.51	Sandstone		Tuffaceous, compact, yellow brown		
	14.0	57.21	pumice tuff		Tuffaceous, fine to coarse grained, fractured, contain pumice, brown	CM	
	15		claystone		Slightly weathered, rather soft, contain sand and granule gravel, light yellow brown	CL	
	16.4	54.81	Sandstone		Tuffaceous, silty, friable with slickenside light brown		
	19.2	52.01			Tuffaceous, fine grained compact, light brown		
	20	51.21			Bit diameter 76 mm φ		

DATE	CORE RECOVERY (Cm)	CORE RECOVERY (%)	R. Q. D	WATER PRESSURE TEST LUGEON VALUE	DEPTH
			50	10 20 30 40 50	
				K = 1.2 × 10⁻⁴ cm/sec	
				38.0	
				25.2	
				29.2	

HOLE NO. CCB 3

LOG FORM-B

※ R.Q.D is Rock Quality Designation. R.Q.D = (Total length of cylindric cores longer than 10 cm) / (Total core length) × 100%
※ LUGEON VALUE is 1 minute under injection water pressure of 10kg/cm²
※ DEPTH and ELEVATION are in meter

DRILL LOG

HOLE NO. CCB 4 SHEET NO. 4/ OF [illegible]

PROJECT	KARIAN MULTIPURPOSE DAM CONSTRUCTION			DEPTH	5 m.	ELEVATION	72.89 m
SITE	CICINTA TUNNEL	COORDINATE	: :	INCLINATION	90°	DRILL RIG	TOH
AVERAGE CORE RECOVERY		DATE	FROM Nov. 1 TO Nov. 2 '84	DRILLED	DPMA	LOGGED	M.F

DATE	DEPTH	ELEVATION	ROCK TYPE OR FORMATION	COLUMN SECTION	DESCRIPTION	ROCK GRADE	GROUNDWATER LEVEL	CORE RECOVERY % / cm	R. Q. D %	WATER PRESSURE TEST LUGEON VALUE	DEPTH
Nov. 1	2.0	70.89	Soil		Topsoil, clay, soft dark brown	D					
	5		Sandstone		Tuffaceous, very fine to coarse grained, sorted, well bedded, Compact slightly weathered, Contain some pumice yellowish gray.	CL CM	▽			K = 4.9 x 10⁻⁶ cm/sec	
	7.7	65.19								22.5	
Nov. 2	8.0	64.89	claystone		Tuffaceous, compact, light gray						
	10		Conglomerate		Pumiceous, welded tuff, friable, Contain sandstone gray	CL					
	11.5	61.39								17.7	
			Sandstone		Tuffaceous, fine to medium grained, compact, rather soft yellow brown						
	15	57.89									
					Bit diameter 76 mm φ						

LOG FORM-B

HOLE NO. CCB4

※R.Q.D is Rock Quality Designation. R.Q.D= (Total length of cylindric cores longer than 10 cm)/(Total core length) × 100%.
※LUGEON VALUE is 1 min m under injection water pressure of 10kg cm²
※DEPTH and ELEVATION are in meter

DRILL LOG

HOLE NO. CC85 SHEET NO. 42 OF 72

PROJECT	KARIAN MULTIPURPOSE DAM CONSTRUCTION			DEPTH	15 m	ELEVATION	69.80 m
SITE	CICINTA TUNNEL	COORDINATE	: :	INCLINATION	90°	DRILL RIG	TDH
AVERAGE CORE RECOVERY		DATE	FROM Nov 4 TO Nov 5 '84	DRILLED	DPMA	LOGGED	M.F

DATE	DEPTH	ELEVATION	ROCK TYPE OR FORMATION	COLUMN SECTION	DESCRIPTION	ROCK GRADE	GROUNDWATER LEVEL	CORE RECOVERY %	CORE RECOVERY cm	R. Q. D	WATER PRESSURE TEST LUGEON VALUE	DEPTH
Nov. 4	1.0	69.8	Top Soil		Soft. Silty, brown	D	▽					
	1.7	68.1	Sandstone		Hard weathered, reft. br.							
	5		Sandstone		Tuffaceous, Pumiceous, bedded, cross laminated, slightly weathered, fragments partly poor cemented, yellow brown, fine to coarse grained	CL					K = 1.2 × 10⁻⁵ cm/sec	
Nov. 5	6.3	63.5									25.5	
	10		Sandstone		Tuffaceous, fine grained partly poor cemented and contain pumice fragments gray							
	10.7	59.1	welded tuff		Pumiceous, porous, slightly weathered, gray						14.6	
	12.5	57.3	Sandstone		Tuffaceous fine to coarse grained, fragmental, gray							
	14.3	55.5	Sandstone		Tuffaceous, very fine to fine grained, well sorted cross laminated, olive gray compact	CM						
	15.0	54.8										

Bit diam'r: 76 mm φ

HOLE NO. CC85

LOG FORM-B

*R.Q.D as Rock Quality Designation. R.Q.D = (Total length of cylindric cores longer than 10 cm)/(Total core length) × 100%

*LUGEON VALUE is 1 mm·m under injection water pressure of 10kg/cm²

*DEPTH and ELEVATION are in meter

DRILL LOG

HOLE NO. DH 1 SHEET NO. 1 OF 2

PROJECT	KARIAN MULTIPURPOSE DAM CONSTRUCTION			DEPTH	15 m	ELEVATION	32.80 m
SITE	BUYUT DIVERSION	COORDINATE	: :	INCLINATION	90°	DRILL RIG	
AVERAGE CORE RECOVERY		DATE	FROM Oct. 27 TO Oct. 27 84	DRILLED	K. HEXAGON	LOGGED	M. F

DATE	DEPTH	ELEVATION	ROCK TYPE OR FORMATION	COLUMN SECTION	DESCRIPTION	ROCK GRADE	GROUNDWATER LEVEL	CORE RECOVERY %	CORE RECOVERY cm	R. Q. D	WATER PRESSURE TEST LUGEON VALUE	DEPTH
Oct. 27	1.5	32.30	Top Soil		Brown Soft	D						
	2.0	31.60			Sticky and soft, brown							
	3.0	30.80	Sandstone		weathered sandstone yellow brown, soft							
	5	27.80	claystone		weathered welded tuff partly (4.5→5.0m) interbedded pumiceous flow, yellow brown	CM						
	7.6	25.20	siltstone		Tuffaceous, well sorted contain pumice fragments yellow brown to gray							
	10	22.80	clay stone		Compact very dense	CL						
	15	18.00	sandstone		medium to coarse grained welded, dense, quartz yellow brown to gray							
		17.80	claystone		Tuffaceous, dense gray							

Bit diameter 73mm ϕ

N value

HOLE NO. DH - 1

LOG FORM—B

※R.Q.D is Rock Quality Designation. R.Q.D = (Total length of cylindric cores longer than 10 cm)/(Total core length) × 100%
※LUGEON VALUE is l/min/m under injection water pressure of 10kg/cm²
※DEPTH and ELEVATION are in meter

DRILL LOG

HOLE NO. DH 2 SHEET NO. 4 OF 5

PROJECT	KARIAN MULTIPURPOSE DAM CONSTRUCTION			DEPTH	10 m	ELEVATION	41.80 m
SITE	BUYUT DIVERSION	COORDINATE	: :	INCLINATION	90°	DRILL RIG	Acker
AVERAGE CORE RECOVERY		DATE	FROM Oct. 26 TO Oct. 26 '84	DRILLED	K. HEXAGON	LOGGED	M. F

DATE	DEPTH	ELEVATION	ROCK TYPE OR FORMATION	COLUMN SECTION	DESCRIPTION	ROCK GRADE	GROUNDWATER LEVEL ▽	CORE RECOVERY %	CORE RECOVERY cm	R. Q. D 0 50	WATER PRESSURE TEST LUGEON VALUE 0 10 20 30 40 50	DEPTH
Oct. 26	0.0	41.00	Silt & Gravel		River deposits; loose sand mixed gravel, loose medium sorted, gray	L	+0.5					
	5		clay stone		Slightly weathered, thin layer tuffaceous sandstone (2.5-3.0m, 4.5-5.0m), partly fractured in 5 m depth, yellow brown	CL						
	7.0	34.80										
	9.6	32.20	Sandstone		Medium to coarse grained well bedded, dense to very dense, gray	CM						
	10	31.80	clay stone		compact, moderate hard dense fresh fractured at 9.15 - 9.40m gray						N value	

Bit diameter 73 mm ϕ

HOLE NO. DH-2

LOG FORM-B

*R.Q.D is Rock Quality Designation. R.Q.D=(Total length of cylindric cores longer than 10 cm)/(Total core length) × 100%

*LUGEON VALUE is l/min/m under injection water pressure of 10kg/cm²

*DEPTH and ELEVATION are in meter

DRILL LOG

HOLE NO. DH 3 SHEET NO. 4 OF 5

PROJECT	KARIAN MULTIPURPOSE DAM CONSTRUCTION			DEPTH	15 m	ELEVATION	41.80 m
SITE	BUYUT DIVERSION	COORDINATE	: :	INCLINATION	90°	DRILL RIG	Acker
AVERAGE CORE RECOVERY		DATE	FROM Oct. 24 TO Oct. 24 84	DRILLED	K. HEXAGON	LOGGED	M. F

DATE	DEPTH	ELEVATION	ROCK TYPE OR FORMATION	COLUMN SECTION	DESCRIPTION	ROCK GRADE	GROUNDWATER LEVEL	CORE RECOVERY %	CORE RECOVERY cm	R. Q. D	WATER PRESSURE TEST LUGEON VALUE	DEPTH
Oct. 24	0.8	41.00	Top soil		brown Soil							
	1.1	40.70	clay		Sticky, soft, dark brown	D						
	3.2	38.50	Sandstone		Tuffaceous medium to coarse grained, weathered yellow brown, pumice contain		▽					
	5 4.6	35.20	Sandstone		Tuffaceous fine to medium grained, well sorted, gray to bluish gray, compact, partly fractured (5.6 - 5.8")	CL						
	8.0	33.80	claystone									
	8.2	33.10	Sandstone		Tuffaceous, dense, gray							
	10 10.8	31.00	claystone		Tuffaceous, well sorted, gray							
			Sandstone		coarse, fixed, mixed tuff gray	CM						
	15	26.80			Tuffaceous, fine to medium grained, interbedded clayst and pumice bluish gray						W-value 1	

Bit diameter 73 mm ϕ

HOLE NO. DH-3

LOG FORM-B

*R.Q.D is Rock Quality Designation, R.Q.D= (Total length of cylindric cores longer than 10 cm)/(Total core length) × 100%
*LUGEON VALUE is Lmin·m under injection water pressure of 10kg·cm²
*DEPTH and ELEVATION are in meter

DRILL LOG

HOLE NO. DH4 SHEET NO. 46 OF 53

PROJECT	KARIAN MULTIPURPOSE DAM CONSTRUCTION			DEPTH	30 m	ELEVATION	44.70 m
SITE	BUYUT DIVERSION	COORDINATE	: :	INCLINATION	90°	DRILL RIG	Acker
AVERAGE CORE RECOVERY		DATE	FROM Oct. 21 TO Oct. 22 '84	DRILLED	K. HEXAGON	LOGGED	M. F

DATE	DEPTH	ELEVATION	ROCK TYPE OR FORMATION	COLUMN SECTION	DESCRIPTION	ROCK GRADE	GROUNDWATER LEVEL	CORE RECOVERY %	CORE RECOVERY cm	R. Q. D	WATER PRESSURE TEST LUGEON VALUE	DEPTH
OCT. 21	1.0	43.70	Top soil		dark brown, soft, contain roots	D						
	2.3	42.40	clay		Sticky clay, brown							
	5.1	39.60	claystone		Tuffaceous, slightly weathered, soft, dense, yellow brown to gray	C_L	▽					
	5.9	39.00	sandstone									
	10		claystone		Tuffaceous finegrained contain pumice gray							
	10.5	34.20			Tuffaceous, partly silty dense, fractured at pumice interface point, LGT from 7.5~7.6 and 9.1~9.45, gray							
	10.9	33.75	sandstone									
	11	33.10	claystone									
	11.7	31.70	sandstone									
	12.9	30.80	claystone		Tuffaceous, contain white pumice fragments (50×3 mm) brown dark brown							
	15.2	29.50	Siltstone									
OCT. 22	17.0	26.70	claystone		Tuffaceous, well sorted gray	C_M						
	19.8	24.90	welded tuff		Tuffaceous, fine grained well sorted blueish gray							
					Tuffaceous, compact, dense, gray							
					Tuffaceous, soft dark gray							
			Alternation of claystone and sandstone		Tuffaceous, partly weathered gray							
					Slightly weathered compact dense, gray, clayey	C_L						
	30	14.70			Alternation of claystone and Pumiceous sandstone: claystone: tuffaceous compact partly silty and laminated light gray sandstone: tuffaceous and pumiceous cross laminated partly poor cemented, gray to dark gray						N-value	
					Exit diameter: 73 mm φ							

HOLE NO. DH-4

LOG FORM-B

*R.Q.D is Rock Quality Designation. R.Q.D= (Total length of cylindric cores longer than 10 cm)/(Total core length) × 100%

+LUGEON VALUE is l/min/m under injection water pressure of 10kg/cm²

*DEPTH and ELEVATION are in meter

DRILL LOG

HOLE NO. DH 5 SHEET NO. 4) OF 7)

PROJECT	KARIAN MULTIPURPOSE DAM CONSTRUCTION		DEPTH	35 m	ELEVATION	52.50 m
SITE	BUYUT DIVERSION	COORDINATE : :	INCLINATION	90°	DRILL RIG	Acker
AVERAGE CORE RECOVERY		DATE FROM Oct.15 TO Oct.17'84	DRILLED	K.HEXAGON	LOGGED	M. F

DATE	DEPTH	ELEVATION	ROCK TYPE OR FORMATION	COLUMN SECTION	DESCRIPTION	ROCK GRADE	GROUNDWATER LEVEL	CORE RECOVERY %	CORE RECOVERY cm	R. Q. D	WATER PRESSURE TEST LUGEON VALUE	DEPTH
	0.6	51.90	Top Soil		Dark brown, soft							
	2.2	50.20	Clay		Sticky, red brown, soft							
	5.2	47.30	Sandy Silt		weathered sandstone, soft, fine medium, yellow brown	D						
Oct.15	9.4	43.10	Sandstone		fine to medium grained, pro-consolidated (since) partly [illegible] grains, yellow brown	C_L						
	10											
	12.0	40.50	Sandstone		Tuffaceous, fine grained, compacted, [illegible] cross laminated parts, silty, lower part rather hard, yellow brown to gray	C_M						
	15	37.50	claystone									
Oct.16	21.1	31.40	claystone		Compact, dense, medium to [illegible], gray							
	22.3	30.20	silty Tuff		Tuffaceous [illegible], partly intermixed pottery pumiceous sandstone (No.3 19.7m, 20.1–20.3m) [illegible] part rather silty, grayish brown	C_L						
	25		Siltstone		Compact, medium to soft, olive brown	C_M						
Oct.17	27.7	24.80			Tuffaceous, compact, soft, olive brown to gray	CL					(N-value)	
	29.7	22.80	Sandstone		Fine grained, soft to medium, cross laminated	C_M						
	32.15	20.35	claystone		Tuffaceous, weathered, [illegible] inside, [illegible] compact, soft, gray							
	35	17.50	Siltstone		Tuffaceous, [illegible] cross laminated, compact, soft, well sorted, partly (33–35m) Pumiceous, [illegible]	C_L						

Bit diameter 73mm φ

HOLE NO. DH-5

LOG FORM-B

※R.Q.D is Rock Quality Designation, R.Q.D=(Total length of cylindric cores longer than 10 cm)/(Total core length) × 100%
※LUGEON VALUE is l/min·m under injection water pressure of 10kg/cm²
※DEPTH and ELEVATION are in meter

DRILL LOG

HOLE NO. DH6 SHEET NO. 48 OF 73

PROJECT	KARIAN MULTIPURPOSE DAM CONSTRUCTION			DEPTH	35 m	ELEVATION	55.80 m
SITE	BUYUT DIVERSION	COORDINATE	: :	INCLINATION	90°	DRILL RIG	Acker
AVERAGE CORE RECOVERY		DATE	FROM oct. 12 TO oct. 14 '84	DRILLED	K. HEXAGON	LOGGED	M. F

DATE	DEPTH	ELEVATION	ROCK TYPE OR FORMATION	COLUMN SECTION	DESCRIPTION	ROCK GRADE	GROUNDWATER LEVEL	CORE RECOVERY %	CORE RECOVERY cm	R. Q. D	WATER PRESSURE TEST LUGEON VALUE	DEPTH
oct. 12	0	55.80	Top soil		Dark brown, silty, soft	D						
	1.5	54.30	clay		Red brown, sticky							
	4.35	51.45	Siltstone		Tuffaceous, slightly weathered, dark brown compact							
	5		Sandstone		Tuffaceous, medium to coarse grained, poorly sorted, cross laminated, well graded, contain quartz and [illegible]	C_L						
	10	43.60					▽					
	11.1	41.30	clay-tone		Tuffaceous, [illegible]							
	13.3	42.50	[illegible]		Slightly weathered, [illegible] contain parallel [illegible]							
	16.45	39.35	clay-tone		Tuffaceous, [illegible]	CM						
oct. 13	18.9	36.50	Sandstone		Tuffaceous, medium to coarse grained, [illegible] Contain much [illegible]							
	20		claystone		Tuffaceous, [illegible]	C_L						
	22.0	33.30			Tuffaceous, [illegible]							
	25	29.80	Sandstone		Tuffaceous, [illegible]	CM						
	28.2	28.20										
	28.5	27.40	[illegible]		Tuffaceous, medium to coarse grained, [illegible] Contain [illegible]	C_L						
oct. 14	30		Sandstone									
	33.25	22.55										
	33.6	22.20	claystone									
	35	20.80	Sandstone									
					Bit diameter 73 mm φ							

HOLE NO. DH-6

LOG FORM-B

*R.Q.D is Rock Quality Designation. R.Q.D=(Total length of cylindric cores longer than 10 cm)/(Total core length) × 100%
*LUGEON VALUE is 1 minute under injection water pressure of 10kg/cm²
*DEPTH and ELEVATION are in meter

DRILL LOG

HOLE NO. DH 7 SHEET NO. 4? OF 7?

PROJECT	KARIAN MULTIPURPOSE DAM CONSTRUCTION		DEPTH	15 m	ELEVATION 42.20 m
SITE	BUYUT DIVERSION	COORDINATE : :	INCLINATION	90°	DRILL RIG Acker
AVERAGE CORE RECOVERY		DATE FROM oct.10 TO oct.11 '84	DRILLED	K. HEXAGON	LOGGED M.F

DATE	DEPTH	ELEVATION	ROCK TYPE OR FORMATION	COLUMN SECTION	ROCK GRADE	GROUNDWATER LEVEL
OCT. 10	[illegible]	41.80	[illegible]		D	
	[illegible]	41.20	Soil			
	[illegible]	40.80	LOST			
	3.0	39.20	welded tuff		CL	
	4.0	38.20	Sandstone			
	5.9	36.30	Siltstone			▽
	7.2	35.00	claystone		CM	
OCT 11	11.0	31.20	Sandstone		CL	
	[illegible]	30.30	claystone			
	15	27.20	welded tuff		CM	

DESCRIPTION

- Loam brown soft
- Silt clay brown
- Slightly weathered yellow brown
- Pumiceous porous poor cemented light brown medium to coarse
- Tuffaceous partly hard weathered [illegible]
- Tuffaceous hard compact dark gray
- Tuffaceous fine to medium [illegible] [illegible], lower part coarse grained [illegible] cemented cracks gray
- Tuffaceous hard [illegible] dark gray
- Compact contain pumice lower part [illegible] gray

Bit diameter 73 mm

CORE RECOVERY (% / cm) | R.Q.D | WATER PRESSURE TEST LUGEON VALUE | DEPTH

HOLE NO. DH 7

LOG FORM-B

*R.Q.D is Rock Quality Designation. R.Q.D= (Total length of cylindric cores longer than 10 cm)/(Total core length) x 100%
*LUGEON VALUE is l/min/m under injection water pressure of 10kg/cm²
*DEPTH and ELEVATION are in meter

DRILL LOG

HOLE NO. DH 8 SHEET NO. 50 OF 73

PROJECT	KARIAN MULTIPURPOSE DAM CONSTRUCTION			DEPTH	50 m	ELEVATION	45.3 m
SITE	BUYUT DIVERSION	COORDINATE	: :	INCLINATION	90°	DRILL RIG	Acker
AVERAGE CORE RECOVERY		DATE	FROM Oct. 8 TO Oct 9 '84	DRILLED	K. HEYASEN	LOGGED	M. F

DATE	DEPTH	ELEVATION	ROCK TYPE OR FORMATION	COLUMN SECTION	DESCRIPTION	ROCK GRADE	GROUNDWATER LEVEL	CORE RECOVERY % / cm	R. Q. D %	WATER PRESSURE TEST LUGEON VALUE	DEPTH
8.10.84	0	45.3	Top Soil		Red brown, soft						
	4.8	41.5	Sandstone		Tuffaceous, hard weathered fine to medium grained soft, rather clayey yellow brown	D	▽				
	6.2	40.1	claystone		Tuffaceous. Compact rather soft, dark gray	CM					
	8.6	37.7	claystone		Tuffaceous, compact soft, gray						
9.10.84	10	35.6	claystone		Tuffaceous slightly weathered partly contain breccia rather soft gray	CL					
	13	31.3	Alternation of Sandstone and claystone		Sandstone: Tuffaceous fine to medium grained dark gray, soft claystone: Tuffaceous rather compact hard gray						
					Bit diameter 73 mm φ						

HOLE NO. DH8

LOG FORM-B

*R.Q.D is Rock Quality Designation. R.Q.D= Total length of cylindric cores longer than 10 cm/Total core length × 100%
*LUGEON VALUE is l·min m under injection water pressure of 10kg·cm²
*DEPTH and ELEVATION are in meter

DRILL LOG

HOLE NO. DH 9 SHEET NO. 1 OF 3

PROJECT	KARIAN MULTI PURPOSE DAM CONSTRUCTION			DEPTH	15 m	ELEVATION	2.8'
SITE	BUYUT DIVERSION	COORDINATE	: :	INCLINATION	90°	DRILL RIG	Acker
AVERAGE CORE RECOVERY		DATE	FROM Nov. 12 TO Nov. 13 '84	DRILLED	K. HEXASON	LOGGED	M. F

DATE	DEPTH	ELEVATION	ROCK TYPE OR FORMATION	COLUMN SECTION	DESCRIPTION	ROCK GRADE	GROUNDWATER LEVEL	CORE RECOVERY % / cm	R. Q. D %	WATER PRESSURE TEST LUGEON VALUE	DEPTH
Nov. 12	0	44.40								N-value	
	0.5	44.30			Rather Soft, Tuffaceous Silty, Contain pumice yellow brown	D					
	0.5	44.30	Alternation of Sandstone and Claystone		Sandstone: well bedded Tuffaceous fine to coarse upper low rather fine gravel and weathered section layer contain	C_L	▽				
Nov. 13	5					~					
	10					C_M					
	15	32.80			Claystone Tuffaceous Compact, dense, well bedded, rather soft gray olive brown						

Bit diameter 73 mm φ

HOLE NO. DH 9

LOG FORM-B

*R.Q.D is Rock Quality Designation. R.Q.D= (Total length of cylindric cores longer than 10 cm)/(Total core length) × 100%
*LUGEON VALUE is 1 min/m under injection water pressure of 10kg·cm²
*DEPTH and ELEVATION are in meter

DRILL LOG

HOLE NO. DH10 SHEET NO. 12 OF 23

PROJECT	KARIAN MULTIPURPOSE DAM CONSTRUCTION	DEPTH	10 m	ELEVATION	35.5 m
SITE	BUYUT DIVERSION COORDINATE : :	INCLINATION	90°	DRILL RIG	Acker
AVERAGE CORE RECOVERY	DATE FROM Nov. 18 TO Nov. 19 '84	DRILLED	K.HEYAGTON	LOGGED	M.F

DATE	DEPTH	ELEVATION	ROCK TYPE OR FORMATION	COLUMN SECTION	DESCRIPTION	ROCK GRADE	GROUNDWATER LEVEL	CORE RECOVERY	R.Q.D	WATER PRESSURE TEST LUGEON VALUE
Nov. 18	0.3	35.20	Top Soil		Soft, brown					No value
			Residual Soil		[illegible], heavily weathered, [illegible] yellow brown	D	▽			No Test
	3.3	32.20								
	3.7	31.80	Claystone		Fractured, hard, blue gray					
	5		Sandstone		Tuffaceous, compact well bedded fine to coarse grained partly fractured and weathered, and contain charcoal, gray	CL				
Nov. 19	7.6	27.90								
	10	25.50	Claystone		Compact, dense, rather hard, lower part [illegible] gray, blue gray					

Bit diameter 73 mm φ

HOLE NO. DH10

LOG FORM-B

* R.Q.D is Rock Quality Designation. R.Q.D = (Total length of cylindric cores longer than 10 cm) / Total core length × 100%
* LUGEON VALUE is l/min/m under injection water pressure of 10kg/cm²
* DEPTH and ELEVATION are in meter

DRILL LOG

HOLE NO. DH 11 SHEET NO. 53 OF 73

PROJECT	KARIAN MULTIPURPOSE DAM CONSTRUCTION			DEPTH	10m.	ELEVATION	33.75m
SITE	BUYUT DIVERSION	COORDINATE	: :	INCLINATION	90°	DRILL RIG	Acker
AVERAGE CORE RECOVERY		DATE	FROM Nov. 21 TO Nov. 22 '84	DRILLED	K.HEXAGON	LOGGED	M.F

DATE	DEPTH	ELEVATION	ROCK TYPE OR FORMATION	COLUMN SECTION	DESCRIPTION	ROCK GRADE	GROUNDWATER LEVEL	CORE RECOVERY %	CORE RECOVERY cm	R. Q. D %	WATER PRESSURE TEST LUGEON VALUE 10 20 30 40 50	DEPTH
Nov. 21	1.5	32.25	clay		Stiffly soft clay brown to grey							
			Residual Soil		Highly weathered tuffaceous sandstone, soft, containing yellow brown	D	▽					
	5											
	6.5	28.95										
Nov. 22			Lapilli tuff		Soft, loose, not compact sandy matrix, brown	C_L						
	9.0	24.75										
	10	23.75	sandstone		Tuffaceous, clayey, soft in ce, loose part rather compact sandstone brown							

Bit diameter 73mm φ

HOLE NO. DH 11

LOG FORM-B

*R.Q.D is Rock Quality Designation, R.Q.D=(Total length of cylindric cores longer than 10 cm)/(Total core length) x 100%
*LUGEON VALUE is l/min/m under injection water pressure of 10kg·cm²
*DEPTH and ELEVATION are in meter

DRILL LOG

HOLE NO. DH 12 SHEET NO. 34 OF 73

PROJECT	KARIAN MULTI PURPOSE DAM CONSTRUCTION			DEPTH	15 m	ELEVATION	40.[illegible]
SITE	BUYUT DIVERSION	COORDINATE	: :	INCLINATION	90°	DRILL RIG	Acker
AVERAGE CORE RECOVERY		DATE	FROM Nov. 23 TO Nov. 24 '84	DRILLED	K. HEXAGON	LOGGED	M. F

DATE	DEPTH	ELEVATION	ROCK TYPE OR FORMATION	COLUMN SECTION	DESCRIPTION	ROCK GRADE	GROUNDWATER LEVEL	CORE RECOVERY (% / cm)	R. Q. D	WATER PRESSURE TEST LUGEON VALUE	DEPTH
Nov. 23	[illegible]	39.40	Top soil		Brown, soft	D	7				
	[illegible]	38.20	Residual soil		[illegible], soft, [illegible] gray, [illegible]						
	[illegible]	36.20	[illegible]		[illegible] cemented, [illegible] contain some gravel, brown						
	5										
	6.4	33.80	Sandstone		Tuffaceous, loose, not compact, medium grained, nearly weathered, gray						
	10		[illegible] Tuff		Very fine grained, contain rich pumice	CM					
Nov. 24	[illegible]	28.00									
	[illegible]	26.90	Claystone		Compact, dense, hard, stiff, brown						
	[illegible]	26.20	[illegible] Tuff		Tuffaceous, hard, compact with slicken-side, reddish brown						
	15	25.20	Sandstone		Compact, gray						
					With [illegible], laminated, dense, compact, hard, dark gray						

Bit diameter 73 mm φ

*R.Q.D is Rock Quality Designation. R.Q.D = (Total length of cylindric cores longer than 10 cm) / (Total core length) × 100%
*LUGEON VALUE is l/min m under injection water pressure of 10kg/cm²
*DEPTH and ELEVATION are in meter

LOG FORM-B

HOLE NO. DH 12

DRILL LOG

HOLE NO. DH 13 SHEET NO. 55 OF 73

PROJECT	KARIAN MULTI PURPOSE DAM CONSTRUCTION			DEPTH	10 m	ELEVATION	34.8 m
SITE	BUYUT DIVERSION	COORDINATE	: :	INCLINATION	90°	DRILL RIG	Acker
AVERAGE CORE RECOVERY		DATE	FROM Nov.25 TO Nov 26 '84	DRILLED	K.HEXAGON	LOGGED	M.F

DATE	DEPTH	ELEVATION	ROCK TYPE OR FORMATION	COLUMN SECTION	DESCRIPTION	ROCK GRADE	GROUNDWATER LEVEL	CORE RECOVERY (% / cm)	R. Q. D	WATER PRESSURE TEST LUGEON VALUE	DEPTH
Nov.25	1.0	33.80	Soil		Top soil [illegible]						
	5.7	29.10	clay		[illegible]	D					
	6.3		claystone		soft, gray						
	7.1		lapilli Tuff		Loose not compact gray						
Nov.26	10	24.80	welded tuff		Rather soft, clayey Contain charcoal material dark gray	C_L					

Bit diameter 73 mm φ

HOLE NO. DH 13

LOG FORM-B

*R.Q.D is Rock Quality Designation. R.Q.D=(Total length of cylindric cores longer than 10 cm)/(Total core length) × 100%
*LUGEON VALUE is l/min/m under injection water pressure of 10kg/cm²
*DEPTH and ELEVATION are in meter

DRILL LOG

HOLE NO. DH 14 SHEET NO. 55 OF 73

PROJECT	KARIAN MULTIPURPOSE DAM CONSTRUCTION			DEPTH	35 m	ELEVATION	47.80
SITE	BUYUT DIVERSION	COORDINATE	: :	INCLINATION	90°	DRILL RIG	Acker
AVERAGE CORE RECOVERY		DATE	FROM Oct 27 TO Oct 29	DRILLED	K.HEXAGON	LOGGED	M. F

DATE	DEPTH	ELEVATION	ROCK TYPE OR FORMATION	COLUMN SECTION	DESCRIPTION	ROCK GRADE	GROUNDWATER LEVEL	CORE RECOVERY %	CORE RECOVERY cm	R. Q. D %	WATER PRESSURE TEST LUGEON VALUE	DEPTH
Oct. 27	.0	47.80	Top soil		Top soil and silt dark brown soft clayey	D						
	4.5	43.30	Sandstone		Tuffaceous, weathered fine to medium grained reduced to yellow brown							
	5.3	42.50	Lost									
	7.9	39.90	Sandstone		Tuffaceous, coarse grained well reduced poor cemented contain quartz and pumice yellow brown	C_L						
	8.2	39.60	Sandstone									
	9.5	38.30	Lapilli tuff		Tuffaceous clay soft							
	11.25	36.55	Sandstone		Tuffaceous medium grained contain quartz and pumice brown not sandy, hard							
	12.0	35.80	Pumice				▽					
	14.2	33.60	clay stone		Moderate weathered brown to gray, rather clean	C_M						
	15.7	32.10	Pumice		Tuffaceous pumice fine sandy, medium to coarse grained, olive gray							
	19.1	28.70	clay stone		Tuffaceous, dense, compact olive brown							
Oct. 28	25		Sandstone		Moderate weathered, fine to coarse grained porous	C_L						
					Tuffaceous, compact, hard, dark yellow, olive brown							
Oct. 29	30				Tuffaceous, coarse grained partly contain lapilli, pumice and quartz sand poor cemented, porous, olive brown to gray							
	33.5	14.30			Tuffaceous medium soft, light olive gray							
	35	9.80	clay stone								N-value	

Bit diameter 73 mm ϕ

HOLE NO. DH 14

LOG FORM-B

※R.Q.D is Rock Quality Designation. R.Q.D = (Total length of cylindric cores longer than 10 cm) / (Total core length) × 100%
※LUGEON VALUE is l-min/m under injection water pressure of 10kg-cm²
※DEPTH and ELEVATION are in meter

DRILL LOG

HOLE NO. DH 15 SHEET NO. 37 OF 73

PROJECT	KARIAN MULTIPURPOSE DAM CONSTRUCTION			DEPTH	35 m	ELEVATION	45.51 m
SITE	BUYUT DIVERSION	COORDINATE	: :	INCLINATION	90°	DRILL RIG	Acker
AVERAGE CORE RECOVERY		DATE	FROM Oct. 30 TO Nov. 1 '84	DRILLED	K. HEXAGON	LOGGED	M. F

DATE	DEPTH	ELEVATION	ROCK TYPE OR FORMATION	COLUMN SECTION	DESCRIPTION	ROCK GRADE	GROUNDWATER LEVEL	CORE RECOVERY % / cm	R. Q. D %	WATER PRESSURE TEST LUGEON VALUE	DEPTH
Oct. 30	0.4	45.11	Topsoil		Brown. Soft	D				N value	
	2.0	43.5	Clay		Soft, sticky, brown	CL					
	2.8	42.70	Claystone		Tuffaceous, medium grain moderately weathered Light brown						
	6.0	39.50	Sandstone		Tuffaceous, fine to coarse contain white pumice light brown						
	6.4	39.10	L.O.S.T								
	10		Alternation of Sandstone and Claystone		Alternation of Sandstone and Claystone Sandstone: Tuffaceous fine grained compact, brown Claystone: Tuffaceous compact olive gray to gray	C_M					
	15	30.50									
Oct. 31	16.0	29.50	Sandstone		Tuffaceous, coarse grained compacted well cemented light brown						
	20.1	25.40	Sandstone		Tuffaceous, coarse grained loose, porous, contain quartz and pumice, gray	C_L					
	22.35	23.15	welded tuff		Compact, hard. gray						
	24.0	21.50	Sandstone		Tuffaceous, very fine grained, gray, compact						
	25		Sandstone		Tuffaceous, medium hard contain, lapilli and pumice. gray	C_M					
	26.8	18.70	Siltstone		Tuffaceous, well bedded Contain pumice, light gray						
Nov. 1	28.8	16.70	Claystone		Tuffaceous. hard. Compact, gray						
	30				Tuffaceous medium to coarse grained, gray						
	31.4	14.10	Sandstone		Tuffaceous, compact dense gray to light gray.						
	32.2	13.30	Siltstone								
	35	10.50									

Bit diameter 73 mm φ

HOLE NO. DH 15

LOG FORM-B

*R.Q.D is Rock Quality Designation. R.Q.D = (Total length of cylindric cores longer than 10 cm)/(Total core length) × 100%
*LUGEON VALUE is l/min/m under injection water pressure of 10kg/cm²
*DEPTH and ELEVATION are in meter

DRILL LOG

HOLE NO. B 1 SHEET NO. 12 OF 73

PROJECT	KARIAN MULTIPURPOSE DAM CONSTRUCTION			DEPTH	30 m	ELEVATION	51.00 m
SITE	GADEGI INTAKE S	COORDINATE	: :	INCLINATION	90°	DRILL RIG	
AVERAGE CORE RECOVERY		DATE	FROM Nov. 18 TO Nov. 22 1982	DRILLED	DPMA	LOGGED	

DATE	DEPTH	ELEVATION	ROCK TYPE OR FORMATION	COLUMN SECTION	DESCRIPTION	ROCK GRADE	GROUNDWATER LEVEL	CORE RECOVERY % / cm	R. Q. D	WATER PRESSURE TEST LUGEON VALUE	DEPTH
Nov. 18	0	51.00	TOP SOIL		Gray, Soil	D					
	3.0	48.00	Claystone		Tuffaceous, Hard weathered, Fragmental, Light olive brown					3.4 6.4	
	7.3	43.50	Claystone		Tuffaceous, Slightly weathered, fractured joint rich, partly loose dusky yellow to light olive brown					16.0	
Jan. 19	10.2	40.80	Sandstone		Tuffaceous, fine grained slightly weathered, soft, fractured, Light olive gray					0.2	
Nov. 20	16.5	34.50	Claystone		Tuffaceous, Hard weathered, fractured, soft lower part rather compact light olive brown	CL				NO TEST	
	20	31.00	Pumice tuff		Moderate to hard weathered contain shells, lightweight fractured, Light olive gray	CM				17.2	
Nov. 21	24.7	26.30	Claystone		Tuffaceous, Slightly weathered, rather compact brown, grayish brown color from 24.7 to 26.5 m					26.56	
Nov. 22	30	21.00	Claystone		Moderate to hard weathered Tuffaceous, Contain Shells fractured Light olive brown	CL				NO TEST	
										8.3	
										2.3	
										2.2	

HOLE NO. B1

LOG FORM-B

* R.Q.D is Rock Quality Designation. R.Q.D= (Total length of cylindric cores longer than 10 cm)/(Total core length) × 100%
* LUGEON VALUE is 1 min m under injection water pressure of 10kg cm²
* DEPTH and ELEVATION are in meter

* Source : Ref. 5 , modified by JICA team's expert.

DRILL LOG

HOLE NO. B 2 SHEET NO. 1 OF 2

PROJECT	KARIAN MULTIPURPOSE DAM CONSTRUCTION			DEPTH	30 m	ELEVATION	
SITE	GADEG DIVERSION	COORDINATE	: :	INCLINATION	90°	DRILL RIG	
AVERAGE CORE RECOVERY		DATE	FROM Oct. 5 TO Oct. 9, 1982	DRILLED	P.T. Kertahayu	LOGGED	

DATE	DEPTH	ELEVATION	ROCK TYPE OR FORMATION	COLUMN SECTION	DESCRIPTION	ROCK GRADE	GROUNDWATER LEVEL	CORE RECOVERY %	CORE RECOVERY cm	R. Q. D	WATER PRESSURE TEST LUGEON VALUE (N-value)	DEPTH
Oct. 5	2.0		Top Soil		Clay, brown	D						
	3.2		clay		Tuffaceous sandstone, clay, fine grained							
Oct. 6	8.3		sandstone		Tuffaceous sandstone Mainly coarse grained and contain liquified lower part portion contain clay and small grained		▽					
Oct. 7	9.62		Sandstone intercalate claystone		Tuffaceous, fine to coarse grained, slightly weathered, gray to brown	CL						
Oct. 8	19.93		claystone		Tuffaceous, silty Coarse - Comp T. gray to brown	CL						
	23.94		Sandstone		Tuffaceous, coarse grained, partly contain clayey text, white gray							
Oct. 9	30.00		Alternation of claystone and sandstone		Tuffaceous, white gray to brown							

LOG FORM-B

HOLE NO. B 2

※R.Q.D is Rock Quality Designation. R.Q.D= (Total length of cylindric cores longer than 10 cm)/(Total core length) x 100%
※LUGEON VALUE is l/min/m under injection water pressure of 10kg/cm²
※DEPTH and ELEVATION are in meter

* Source : Ref. 7 , modified by JICA team's expert.

DRILL LOG

HOLE NO. B 3 SHEET NO. [illegible] OF [illegible]

PROJECT	KARIAN MULTIPURPOSE DAM CONSTRUCTION			DEPTH	25 m	ELEVATION	
SITE	GADEG DIVERSION	COORDINATE	: :	INCLINATION	90°	DRILL RIG	
AVERAGE CORE RECOVERY		DATE	FROM Oct. 11 TO Oct. 13, 1982	DRILLED	P.T. Kertahayu	LOGGED	[illegible]

DATE	DEPTH	ELEVATION	ROCK TYPE OR FORMATION	COLUMN SECTION	DESCRIPTION	ROCK GRADE	GROUNDWATER LEVEL	CORE RECOVERY %	CORE RECOVERY cm	R. Q. D	WATER PRESSURE TEST LUGEON VALUE (K)-Value	DEPTH
Oct 11	0.0		Soil		Soil clay, brown	D						
	2.0		Clay		Tuffaceous, weak, silty clay, brown							
	6.0		Claystone		Tuffaceous, weak, brownish gray						K = 2.84 x 10⁻⁵ cm/sec K = 5.81 x 10⁻⁵ cm/sec	
			Sandstone intercalate claystone		Tuffaceous, fine to coarse grained sand stone contain lapilli and carbonaceous material	C_L	▽				K = 2.14 x 10⁻⁴ cm/sec	
Oct 12	10.00		Claystone		Tuffaceous, silty, compact brown						K = 1.3 x 10⁻⁵ cm/sec	
Oct. 13	13.80		Sandstone intercalate claystone		Tuffaceous, fine to coarse grained, contain lapilli, compact in upper part gray to brown	C_M					K = 8.48 x 10⁻⁶ cm/sec	
	15.00		Claystone		Tuffaceous, silty, grayish brown						K = 5.29 x 10⁻⁶ cm/sec	

HOLE NO. B 3

LOG FORM-B

*R.Q.D is Rock Quality Designation, R.Q.D=(Total length of cylindric cores longer than 10 cm)/(Total core length) x 100%
*LUGEON VALUE is l/min/m under injection water pressure of 10kg/cm²
*DEPTH and ELEVATION are in meter

* Source : Ref. 7 , modified by JICA team's expert.

DRILL LOG

HOLE NO. B4 SHEET NO. 1 OF 2

PROJECT	KARIAN MULTIPURPOSE DAM CONSTRUCTION		DEPTH	25 m	ELEVATION	
SITE	GADEG DIVERSION	COORDINATE	: :	INCLINATION	90°	DRILL RIG	
AVERAGE CORE RECOVERY		DATE	FROM Sep 29 TO Oct. 4, 1982	DRILLED	P.T. Kerta Hasta	LOGGED	X

DATE	DEPTH	ELEVATION	ROCK TYPE OR FORMATION	COLUMN SECTION	DESCRIPTION	ROCK GRADE	GROUNDWATER LEVEL	CORE RECOVERY %	CORE RECOVERY cm	R. Q. D	WATER PRESSURE TEST LUGEON VALUE. (N-value)	DEPTH
Sep 29	0.00		Top Soil		Silty clay, brown	D						
	3.00		Sand		Tuffaceous, loose sand gravish brown						K= 1.42 x 10⁻³ cm/sec	
	5.00		claystone		Tuffaceous, soft, consist partially, to low some sand, gray to brown	CL					K= 1.59 x 10⁻⁴ cm/sec	
Sep 30	7.00		Siltstone		Tuffaceous, yellow gray contain clay mass						K= 1.73 x 10⁻⁴ cm/sec	
Oct. 1			Sandstone		Tuffaceous, hard compact, partly contain clay mass, intercalate thin tuffaceous claystone gray to yellowish gray	CM					K= 9.70 x 10⁻⁵ cm/sec	
Oct. 2	16.30											
Oct. 3	18.90		claystone		Tuffaceous, rather silty, brown gray						K= 8.86 x 10⁻⁴ cm/sec	
	21.90		Sandstone		Tuffaceous, fine to medium grained contain some clay, upper part rather hard							
Oct. 4	23.00		Siltstone								K= 4.78 x 10⁻⁴ cm/sec	
	25.00		Sandstone		Tuffaceous, gray							
					Tuffaceous, medium to coarse grained contain mica, gray							

HOLE NO. B4

LOG FORM-B

※R.Q.D is Rock Quality Designation. R.Q.D = (Total length of cylindric cores longer than 10 cm)/(Total core length) x 100%

※LUGEON VALUE is l/min/m under injection water pressure of 10kg/cm²

※DEPTH and ELEVATION are in meter

* Source : Ref. 7 , modified by JICA team's expert.

DRILL LOG

HOLE NO. B5 SHEET NO. 6 OF 23

PROJECT	KARIAN MULTIPURPOSE DAM CONSTRUCTION			DEPTH	25 m	ELEVATION	
SITE	GADEG DIVERSION	COORDINATE	: :	INCLINATION	90°	DRILL RIG	
AVERAGE CORE RECOVERY		DATE	FROM SEP 24 TO SEP 27, 1982	DRILLED	P.T. Kerta Bayu	LOGGED	*

DATE	DEPTH	ELEVATION	ROCK TYPE OR FORMATION	COLUMN SECTION	DESCRIPTION	ROCK GRADE	GROUNDWATER LEVEL	CORE RECOVERY %	CORE RECOVERY cm	R. Q. D	WATER PRESSURE TEST LUGEON VALUE (Lu-value)	DEPTH
SEP 24	2.05		Top Soil		Silty clay, mixed sandy at upper portion, brown	D					K = 1.4 × 10⁻³ cm/sec	
	5.50		Sandstone		Tuffaceous, soft rock mixed with clay	CL					K = 2.1 × 10⁻³ cm/sec	
SEP 25	12.84		Sandstone intercalation claystone		Tuffaceous, compact and hard, very fine to coarse grained, contain gravel (12-13 m in depth), brown gray	CH					K = 1.22 × 10⁻³ cm/sec	
SEP 26	15.84		Claystone		Tuffaceous, compact partly contain some sand, gray brown						K = 2.27 × 10⁻⁴ cm/sec	
			Sandstone		Tuffaceous, fine to coarse grained compact and hard, partly contain clay, gray brown						K = 1.43 × 10⁻⁴ cm/sec	
SEP 27	21.43		claystone		Tuffaceous, compact contain carbonaceous (24-25 m in depth)						K = 1.8 × 10⁻⁴ cm/sec	

HOLE NO. B5

LOG FORM-B

*R.Q.D is Rock Quality Designation, R.Q.D = (Total length of cylindric cores longer than 10 cm)/(Total core length) × 100%
*LUGEON VALUE is l/min·m under injection water pressure of 10kg/cm²
*DEPTH and ELEVATION are in meter

* Source : Ref. 7 , modified by JICA team's expert.

DRILL LOG

HOLE NO. B6 SHEET NO. 13 OF 23

PROJECT	KARIAN MULTIPURPOSE DAM CONSTRUCTION			DEPTH	15 m	ELEVATION	
SITE	GADEG DIVERSION	COORDINATE	: :	INCLINATION	90°	DRILL RIG	
AVERAGE CORE RECOVERY		DATE	FROM Oct 14 TO Oct. 16, 1982	DRILLED	P.T. Kertamuri	LOGGED	A

DATE	DEPTH	ELEVATION	ROCK TYPE OR FORMATION	COLUMN SECTION	DESCRIPTION	ROCK GRADE	GROUNDWATER LEVEL	CORE RECOVERY %	CORE RECOVERY cm	R. Q. D	WATER PRESSURE TEST LUGEON VALUE (N-value)	DEPTH
Oct. 14	.00		Silty Sand		Soft, contain gravel brown							
			Claystone		Tuffaceous, weathered Soft to Moderate, deeper portion rather sandy (9.0 – 11.0m in depth) N-value = 18~21	L					K = 4.72 × 10⁻⁵ cm/sec K = 4.2 × 10⁻⁴ cm/sec K = 5.23 × 10⁻⁵ cm/sec K = 3.09 × 10⁻⁴ cm/sec	
Oct. 15	10.00		Sandstone		Tuffaceous, compact gray	CL						
Oct. 16	12.00		Claystone		Tuffaceous, compact silty, gray	CM						
	15.00											

HOLE NO. B6

LOG FORM—B

※R.Q.D is Rock Quality Designation, R.Q.D=(Total length of cylindric cores longer than 10 cm)/(Total core length) × 100%
※LUGEON VALUE is l/min/m under injection water pressure of 10kg/cm²
※DEPTH and ELEVATION are in meter

• Source : Ref. 7 , modified by JICA team's expert.

DRILL LOG

HOLE NO. B 11 SHEET NO. 16 OF 73

PROJECT	KARIAN MULTIPURPOSE DAM CONSTRUCTION			DEPTH	30 m	ELEVATION	45.00 m
SITE	GADE & INTAKES	COORDINATE	: :	INCLINATION	90°	DRILL RIG	
AVERAGE CORE RECOVERY		DATE	FROM Nov. 1 TO Nov. 5 1982	DRILLED	DPMA	LOGGED	A

DATE	DEPTH	ELEVATION	ROCK TYPE OF FORMATION	COLUMN SECTION	DESCRIPTION	ROCK GRADE	GROUNDWATER LEVEL	CORE RECOVERY %	R.Q.D %	WATER PRESSURE TEST LUGEON VALUE	DEPTH
Nov. 1	1.0	44.00	Top soil		Soft, contains granel dusky red					N-value	
	3.5	41.50	Residual soil		Weathered tuffaceous clay-stone, red to dusky yellow					$K=1.4\times10^{-3}$ cm/sec	
Nov. 2	7.8	37.20	claystone		Tuffaceous Hard weathered, loose weakly cemented, light gray					$K=3.5\times10^{-5}$ cm/sec	
	10	44.00	claystone		Tuffaceous, weathered rather compact, dark greenish gray	CL				$K=2.7\times10^{-4}$ cm/sec	
Nov. 3	17.5	27.50	pumice Tuff		weathered, compact partly hard weathered and fractured. Specially from 10 to 12.62 m, intercalated charcal material at 14.5 m Contain lapilli, brown to light gray		▽			$K=2.0\times10^{-4}$ cm/sec	
										$K=1.3\times10^{-4}$ cm/sec	
										$K=3.3\times10^{-6}$ cm/sec	
Nov. 4	20	23.50	claystone		Tuffaceous, compact slightly weathered, partly laminated, stained brown color, gray to white					No Test	
	21.4		lapilli Tuff							30.9	
	27.0	18.00	Sandstone		weathered, weakly cemented, soft, porous light olive brown	CM				4.1	
Nov. 5	30	15.00			Tuffaceous, contains pelli well sorted, laminated rather loose and soft Light olive brown					22.0	

HOLE NO. B11

LOG FORM-B

※R.Q.D is Rock Quality Designation. R.Q.D = (Total length of cylindric cores longer than 10 cm)/(Total core length) × 100%

※LUGEON VALUE is l min at under injection water pressure of 10kg/cm²

※DEPTH and ELEVATION are in meter

* Source : Ref. 5 , modified by JICA team's expert.

DRILL LOG

HOLE NO. B12 SHEET NO. 6 OF 13

PROJECT	KARIAN MULTIPURPOSE DAM CONSTRUCTION			DEPTH	30 m	ELEVATION	37.00m
SITE	GADEBY INTAKES	COORDINATE	: :	INCLINATION	90°	DRILL RIG	
AVERAGE CORE RECOVERY		DATE	FROM Nov. 6 TO Nov. 11 1982	DRILLED	DPMA	LOGGED	*

DATE	DEPTH	ELEVATION	ROCK TYPE OR FORMATION	COLUMN SECTION	DESCRIPTION	ROCK GRADE	GROUNDWATER LEVEL	CORE RECOVERY % / cm	R. Q. D	WATER PRESSURE TEST LUGEON VALUE	DEPTH
Nov. 6	1.3	35.70	Top soil		Tuffaceous clay soft grayish brown to light brown	D					
	3.0	34.00	claystone		Hard weathered Tuffaceous rich joint, light weight gray						
Nov. 7	7.8	29.20	Lapilli tuff		weathered, contain pumice soft, compact, rich joint coarse to medium grained sand contain. brown					88.2	
					Tuffaceous, compact slightly weathered, partly (9.4-9.8m) Sandy and fractured, olive gray		▽			70.1	
Nov. 8	15.0	22.00								35.7	
	16.0	21.00	pumice tuff		weathered, contain lapilli, weakly cemented light olive brown	CL				6.6	
Nov. 9	21.5	15.50	claystone		Tuffaceous, medium to hard weathered lower part (19-21.0m) contain pumice and charcoal. Light olive brown					25.8	
										9.2	
Nov. 10			lapilli tuff		weathered, weakly cemented Contain Coarse grained volcanic sand, fourth fractured light gray to light olive brown					16.7	
Nov. 11	29.2	7.80			Tuffaceous, compact, vertical joint rich, olive brown					9.7	
	30.0	7.00	claystone								

HOLE NO. B12

LOG FORM-B

*R.Q.D is Rock Quality Designation. R.Q.D= (Total length of cylindric cores longer than 10 cm)/(Total core length) × 100%
*LUGEON VALUE is Lmin m under injection water pressure of 10kg/cm²
*DEPTH and ELEVATION are in meter

* Source : Ref. 5 , modified by JICA team's expert.

DRILL LOG

HOLE NO. B13 SHEET NO. 6 OF 20

PROJECT	KARIAN MULTIPURPOSE DAM CONSTRUCTION			DEPTH	15 m	ELEVATION	28.00 m
SITE	GADEG INTAKES	COORDINATE	: :	INCLINATION	90°	DRILL RIG	
AVERAGE CORE RECOVERY		DATE	FROM Nov. 14 TO Nov. 17 1982	DRILLED	DPMA	LOGGED	-*-

DATE	DEPTH	ELEVATION	ROCK TYPE OR FORMATION	COLUMN SECTION	DESCRIPTION	ROCK GRADE	GROUNDWATER LEVEL	CORE RECOVERY % / cm	R.Q.D	WATER PRESSURE TEST LUGEON VALUE	DEPTH
Nov. 14	2.65	25.35	Top Soil		Soft, brown, sticky	D	▽				
	5.50	22.50	Sandstone		Tuffaceous, fine grained weathered, loose						
Nov. 15	8.00	20.00	Conglomerate		weakly cemented, contain rounded gravel and pumice	CL				74.4	
Nov. 16	11.60	16.40	clay stone		weathered, partly contain pumice, mainly compact and massive, white gray Tuffaceous					67.9	
Nov. 17	15.00	13.00	Pumice Tuff		weathered, compact slightly weathered white gray	CM				144.1	
										109.1	

HOLE NO. B13

LOG FORM-B

*RQD is Rock Quality Designation. R.Q.D= (Total length of cylindric cores longer than 10 cm)/(Total core length) × 100%

+ LUGEON VALUE is 1 min-m under injection water pressure of 10kg/cm²

*DEPTH and ELEVATION are in meter

* Source : Ref. 5 , modified by JICA team's expert.