

GEOLOGICAL RECORD OF BORING										HOLE No. <i>AI-78-14 (004-11), 11)</i>				
PROJECT		AGOS HYDROPOWER			LOCATION		AGOS DAMSITE			X 1625083.347 / Y 557023.491				
ELEVATION OF GROUND SURFACE		118.95			DEPTH OF HOLE		30.0 m			INCLINATION OF HOLE VERTICAL				
DIAMETER OF HOLE		76 mm			MACHINE					DATE OF DRILLING 6 JULY - 29 JULY, 1980				
CORE RECOVERY		64 %			DRILLED BY					LOGGED BY S. NISHIOKA				
DATE	DEPTH (m)	ELEVATION (m)	ROCK TYPE	COLUMN SECTION	CORE RECOVERY		DIAMETER	DESCRIPTION	water pressure test					DEPTH
					%	RECOVERED			Lugeon unit					
			Reddish brown soil				NWL MC	No core recovery.						
	3.10	115.85					0							
			Conglomerate				AG DC	Recovering cores are fresh, hard, and mostly cylindrical.						
	4.30	113.65					110 45							
							45	Black, medium to coarse grained.						
							85	Cracks are at 10 to 30 cm intervals, with water-stains.						
							90	Though recovering cores are fresh and hard, it is deemed that the rocks are for the most part weathered intensively, or fractured.						
							110	Very poor core recoveries below 10 m.						
							110	Brown sandy slime at 10.9 m.						
			Weathered greywacke or fractured				0							
	4.85	97.10					0							
							110	Fresh, hard, solid. Recovering cylindrical cores continuously.						
			Conglomerate				110	Sandstone, calcareous rock and volcanic rock fragments cemented by hard black sedimentary matrix.						
	27.00	41.95					110							
							110	Coarse grained, fresh, hard. Cracks are sparsely at intervals of 30 cm or more.						
	30.00	38.95	Greywacke				110							

GEOLOGICAL RECORD OF BORING										HOLE No. A-80-16 (DDH-11), (12)	
PROJECT AGOS HYDROPOWER				LOCATION		ELEVATION OF GROUND SURFACE		DEPTH OF HOLE		INCLINATION OF HOLE	
DIAMETER OF HOLE			MACHINE		DATE OF DRILLING		CORE RECOVERY		LOGGED BY		
DATE	DEPTH (m)	ELEVATION (m)	ROCK TYPE	COLUMN SECTION	CORE RECOVERY %	BT DIAMETER	DESCRIPTION	A.Q.D. %	water pressure test Liquor unit		DEPTH
	31.0	85.25	Calcareous breccia		ND DC		Many angular limestone fragments with size of 5mm or less are included in matrix of solid greywacke sandstone.  Fresh, hard, solid Cracks in 31.70m ~ 31.80m, and at 32.83m, water stains (B)				
	32.0										
	33.0		Greywacke				Fresh, solid  Intercalating black slate in 38.1m ~ 38.5m, at 45° of dip.  (B)				
	34.0										
	35.0										
	36.0		Calcareous breccia				Angular limestone fragments are densely contained in matrix. Solid, hard, with numerous calcareous veins.  (B)				
	37.0										
	38.0		Greywacke				Fresh, hard. Bedding plane dips 30°, which is distinguished only by difference of grain size; no cleavage planes are formed.  Generally coarser below 44m.  (B)				
	39.0										
	40.0										
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GEOLOGICAL RECORD OF BORING										HOLE No. <i>AL-22-27 (DON-19) (1)</i>	
PROJECT <i>AGAS HYDROPOWER</i>			LOCATION <i>AGAS DAMSITE XIANGJIAN/YICHANG/CHINA</i>								
ELEVATION OF GROUND SURFACE <i>71.765</i>		M <i>24.2</i>	DEPTH OF HOLE <i>52.0m</i>		INCLINATION OF HOLE <i>VERTICAL</i>						
DIAMETER OF HOLE <i>71.765</i>		MACHINE <i>24.2</i>		DATE OF DRILLING							
CORE RECOVERY <i>74%</i>		DRILLED BY		LOGGED BY <i>M. YAKO</i>							
DATE	DEPTH (m)	ELEVATION (m)	ROCK TYPE	COLUMN SECTION	CORE RECOVERY %	NET DIAMETER	DESCRIPTION	RQD %	LITHO UNIT	DEPTH	
	0		<i>Conglomerate - Gypsiferous</i>				From the surface small amount of clgy soil was recovered.				
	2						The cores are predominant of white calcite patches.				
	3.31						partly small pipe holes are present in the calcite pebbles.				
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GEOLOGICAL RECORD OF BORING										HOLE No. AI-22-17 (004-17), (2)		
PROJECT		AGOS HYDROPOWER			LOCATION							
ELEVATION OF GROUND SURFACE				DEPTH OF HOLE		58.0 m		INCLINATION OF HOLE		VERTICAL		
DIAMETER OF HOLE				MACHINE				DATE OF DRILLING				
CORE RECOVERY		74%		DRILLED BY				LOGGED BY		M YAKO		
DATE	DEPTH (m)	ELEVATION (m)	ROCK TYPE	COLUMN SECTION	CORE RECOVERY		BIT DIAMETER	DESCRIPTION	R.Q.D. %		LUGEON UNITS	DEPTH
					%	ft			%	ft		
	29.86		Calcareous Breccia									
	29.92							38.1 - 38.5 m Vertical-slip inclined cracks are present. planes are rusted. Generally long cylindrical cores are recovered. (Cm ~ Ch)				
	30.02		Graywacke					Ruddish brown graywacke partly calcic veins are present. Most of the cracking planes are stepped along calcic veins. Mechanical break causes the clear cracking.				
	30.07							38.0 - 38.0 m Short cylindrical or fragmental cores are only recovered. Cores are reddish brown. (Cm ~ Ch)				

GEOLOGICAL RECORD OF BORING										HOLE No. <i>AI-22-11(BDH-12), (1)</i>				
PROJECT		AGOS HYDROPOWER			LOCATION		AGOS DAMSITE			X 1624911.127 / Y 557141.416				
ELEVATION OF GROUND SURFACE		42.75 m		DEPTH OF HOLE		123.0 m		DIPCLINATION OF HOLE			60° SSE			
DIAMETER OF HOLE		76 mm		MACHINE				DATE OF DRILLING						
CORE RECOVERY		71 %		DRILLED BY				LOGGED BY			S NISHIOKA			
DATE	DEPTH (m)	ELEVATION (m)	ROCK TYPE	COLUMN SECTION	CORE RECOVERY %	M	N	DESCRIPTION	R.Q.D. %		Water pressure test			DEPTH (m)
									1	2	Lugeon unit			
	0				72	NWL		River deposit composed of sand and various sized gravels of greywacke, sandstone, shale, tuff and volcanic rocks.						
	1				0	MC								
	2				0									
	3				0									
	4				25									
	5				2									
	6				0									
	7				0									
	8				64									
	9		Sand and gravels with cobbles and boulders.		64									
	10				10									
	11					BX								
	12				24	MC								
	13													
	14				34									
	15				16									
	16				62									
	17													
	18				30									
	19				30			Boulder in 18.3~20.6m						
	20													
	21				60									
	22													
	23				40									
	24				24									
	25													
	26	26.70	18.63											
	27				0									
	28													
	29		Intensively weathered greywacke					Weathered to soft rock is recovered for 30cm in 24.7~27.0m, and the underlying section down to 27.6m shows no core recovery.						
	30	27.65	17.07	Greywacke		DC		Reach to the sound rock at 27.65m						

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GEOLOGICAL RECORD OF BORING										HOLE No. <i>AI-88-12 (DDH-12)</i>			
PROJECT	AGOS HYDROPOWER				LOCATION		DEPTH OF HOLE		INCLINATION OF HOLE				
ELEVATION OF GROUND SURFACE													
DIAMETER OF HOLE	747				MACHINE		DATE OF DRILLING						
CORE RECOVERY	747				DRILLED BY		LOGGED BY						
DATE	DEPTH (m)	ELEVATION (m)	ROCK TYPE	COLUMN SECTION	CORE RECOVERY %	NO. OF CORE	DESCRIPTION	RQD %		Water pressure test			DEPTH
								NO.	DIAMETER	By	At	Slupee	
							Fresh and hard. Dark grey to black, fine to medium grained sandstone with angular particles. Calcite veins at places.						
							(Cn-B)						
			Greywacke				Cracks with calcite veins are at places. Some of the cracks are water-stained.						
							Fresh, hard, solid rock with little cracks.						
							(B)						
							Water stained crack at 33.70 m.						
							(B)						

GEOLOGICAL RECORD OF BORING										HOLE No. <i>AI-21-18 (DDP-30), (1)</i>		
PROJECT <i>AGPS HYDROPOWER</i>			LOCATION									
ELEVATION OF GROUND SURFACE				DEPTH OF HOLE			INCLINATION OF HOLE					
DIAMETER OF HOLE			MACHINE		DATE OF DRILLING							
CORE RECOVERY <i>74%</i>			DRILLED BY		LOGGED BY							
DATE	DEPTH (m)	ELEVATION (m)	ROCK TYPE	COLUMN SECTION	CORE RECOVERY %	NET DIAMETER	DESCRIPTION	R.Q.D. %		Water pressure test		DEPTH
										Mugger unit		
							Fresh, hard, solid.					
							Quartz vein at 61.8-61.6m					
							Solid, cracks spaced at more than 80cm. Calcite veins at places.					
							(B)					
							Below 70m, tends to be coarse grained. Black coloured, with many calcite veins.					
			Greynacke				(B)					
							Highly solidified aggregation of angular fragments 5mm in diameter, of limestone and basalt, sandstone, etc.					
							A facies of so-called greynacke, which is characterized by very coarse particle size and high limestone content.					
			Calcareous breccia				Fresh, hard, solid, with little cracks. Occasionally included are calcareous blocks, 5-10 cm in size.					
							75.5m - 75.8m Cracky, fractured with calcite vein. 81.0m - 81.3m 82.3m - 83.9m Core split by cracks					
			Calcareous coarse sandstone				Mainly composed of coarse limestone fragments. Solid, fresh					
							(B)					
			Greynacke				Coarse grained, fresh, hard					
							(B)					
			Fault				Calcareous solid, with fault					
			Fine conglomerate									

GEOLOGICAL RECORD OF BORING										HOLE No. <i>AL-20-18 (ODH-12) (4)</i>	
PROJECT <i>AGOS HYDROPOWER</i>			LOCATION			DEPTH OF HOLE		INCLINATION OF HOLE			
ELEVATION OF GROUND SURFACE			MACHINE			DATE OF DRILLING			LOGGED BY		
DIAMETER OF HOLE			DRILLED BY								
CORE RECOVERY <i>74%</i>											
DATE	DEPTH (m)	ELEVATION (m)	ROCK TYPE	COLUMN SECTION	CORE RECOVERY		DIAMETER	DESCRIPTION	RQD		DEPTH
					%	ft			%	ft	
			<i>Fin. Cgl.</i>	<i>Q08230</i>			<i>NQ</i>	<i>Calcareous</i>			
	<i>91</i>						<i>DC</i>	<i>To 93 m. fine to medium grained. Containing white calcareous fragments. Calcite veins at places. (Cn)</i>			
	<i>92</i>							<i>92.4 m ~ 93.2 m</i>			
	<i>93</i>							<i>many cracks. Recovering cores are partly fragments</i>			
	<i>94</i>							<i>Calcite veins in every cracks, at 0.5 - 1 m interval.</i>			
	<i>95</i>							<i>Below 93 m. particle size varies irregularly from fine to coarse.</i>			
	<i>96</i>							<i>Cracks at 96.3 ~ 96.3 m</i>			
	<i>97</i>							<i>98.9 ~ 99.0 m</i>			
	<i>98</i>							<i>99.3 ~ 99.5 m</i>			
	<i>99</i>							<i>Generally fresh, hard and solid rock. (Cn)</i>			
	<i>100</i>							<i>100 m ~ 105 m</i>			
	<i>101</i>							<i>Fresh and solid, with many calcareous inclusions.</i>			
	<i>102</i>							<i>105 m ~ 110 m</i>			
	<i>103</i>							<i>Occasionally cracks are closely located, and some are water-stained. (Cn)</i>			
	<i>104</i>		<i>Greywacke</i>					<i>110 m ~ 116 m</i>			
	<i>105</i>							<i>Very low core recovery. Recovering cores are hard. Cores in 114 m ~ 115 m are cracky.</i>			
	<i>106</i>							<i>Many calcareous veins in a core at 111.95 m. This zone is deemed fractured.</i>			
	<i>107</i>							<i>116 m ~ 118 m</i>			
	<i>108</i>							<i>Cores with cracks.</i>			
	<i>109</i>										
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GEOLOGICAL RECORD OF BORING										HOLE No. <i>AT-22-12 (DDH-12), 12</i>			
PROJECT <i>AGAS HYDROPOWER</i>					LOCATION								
ELEVATION OF GROUND SURFACE					DEPTH OF HOLE			INCLINATION OF HOLE					
DIAMETER OF HOLE			MACHINE		DATE OF DRILLING								
CORE RECOVERY <i>74%</i>			DRILLED BY		LOGGED BY								
DATE	DEPTH (m)	ELEVATION (m)	ROCK TYPE	COLUMN SECTION	CORE RECOVERY %	DIAMETER (mm)	DESCRIPTION	RQD				DEPTH	
								100	75	50	25		
			<i>Greymacke</i>				<i>Fresh, hard, with calcareous inclusions. 121.1 ~ 121.8m cracky. The other parts are solid. (CH)</i>						
		<i>-6377</i>											

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GEOLOGICAL RECORD OF BORING										HOLE No. <i>A1-28-19 (DDH-1), 11</i>	
PROJECT <i>AGOS HYDROPOWER</i>			LOCATION <i>AGOS DAMSITE</i>		X1624869 446 / Y357162.667						
ELEVATION OF GROUND SURFACE <i>42.28</i>			DEPTH OF HOLE		INCLINATION OF HOLE <i>VERTICAL</i>						
DIAMETER OF HOLE <i>76 mm</i>			MACHINE <i>JOY</i>		DATE OF DRILLING <i>5 AUG. - 19 SEP. 1980</i>						
CORE RECOVERY <i>43%</i>			DRILLED BY		LOGGED BY <i>S. MASHIKI</i>						
DATE	DEPTH (m)	ELEVATION (m)	ROCK TYPE	COLUMN SECTION	CORE RECOVERY		CORRECTION	DESCRIPTION	RQD	DEPTH	
					X	B			%		
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Core recovery is generally low.

Recoveries are hard gravels and cobbles of greywacke and volcanic rocks etc., more than 2cm in size.

Sand and gravels

24.03 m ~ 25.0 m  
Boulder. Cores are cylindrical, fresh, with rather frequent cracks water-stained.

With continuous core recovery and rather many cylindrical cores included, this zone looks like bed rock. However, intercalation of sand layers are reported by the driller.

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GEOLOGICAL RECORD OF BORING										HOLE No. AI-79-20 (DDH-20), (1)		
PROJECT			AGOS HYDROPIPER			LOCATION			AGOS DAM SITE			
ELEVATION OF GROUND SURFACE			22.27m			DEPTH OF HOLE			230.0m			
DIAMETER OF HOLE			4 1/2"			MACHINE			DATE OF DRILLING			
CORE RECOVERY			DRILLED BY			LOGGED BY			M. YAKO			
DATE	DEPTH (m)	ELEVATION (m)	ROCK TYPE	COLUMN SECTION	CORE RECOVERY		EST. DIAMETER	DESCRIPTION	R.O.D.		LUGEON UNIT	DEPTH
					%	B			(%)	(m)		
	1		Disturbed deposit	A	10			Mostly composed of dark grey gneiss. Only short cylindrical - fragmental cores are recovered.				
	2											
	3	26.0						Sandy material is seen to be washed away except the portion between 2.2 ~ 2.5 m.				
	4											
	5	24.2						Rustling of the core is not predominant.				
	6											
	7											
	8											
	9	23.5										
	10											
	11	22.8										
	12											
	13	22.0										
	14											
	15	21.40										
	16	20.70										
	17	20.00										
	18											
	19	19.30										
	20											
	21	18.60										
	22											
	23	17.90										
	24											
	25	17.20										
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	27	16.50										
	28											
	29	15.80										
	30											
	31	15.10										
	32											
	33	14.40										
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	35	13.70										
	36											
	37	13.00										
	38											
	39	12.30										
	40											
	41	11.60										
	42											
	43	10.90										
	44											
	45	10.20										
	46											
	47	9.50										
	48											
	49	8.80										
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GEOLOGICAL RECORD OF BORING										HOLE No. <i>AL-21 (DPH-21), 11</i>	
PROJECT <i>AGOS HYDROPOWER</i>				LOCATION <i>AGOS DAMSITE</i>		<i>X1634771.338 / Y336985.037</i>					
ELEVATION OF GROUND SURFACE <i>42.97</i>			DEPTH OF HOLE <i>35.0M</i>		INCLINATION OF HOLE <i>VERTICAL</i>						
DIAMETER OF HOLE <i>76 mm</i>		MACHINE <i>HILL BILLY</i>		DATE OF DRILLING							
CORE RECOVERY <i>33 %</i>		DRILLED BY				LOGGED BY <i>S. NISHIOKA</i>					
DATE	DEPTH (m)	ELEVATION (m)	ROCK TYPE	COLUMN SECTION	CORE RECOVERY %	REF. DIAMETER	DESCRIPTION	RQD %	DEPTH		
	0						NWL				
	0						MC				
	1										
	2										
	3										
	4										
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*Sand and gravels*

*River deposit.*

*Consisting mainly of gravels up to 20 cm in size.*

*10.0m - 10.9m  
Boulder of greywacke.*

*12.0m - 19.5m  
High core recovery.  
Cylindrical cores of boulder and small gravels around 3cm of size.*

*Round pebbles and cobbles.*

GEOLOGICAL RECORD OF BORING										HOLE No. A1-PB-21(BDH-21), (2)			
PROJECT			LOCATION			DEPTH OF HOLE		INCLINATION OF HOLE					
ELEVATION OF GROUND SURFACE			MACHINE			DATE OF DRILLING		LOGGED BY					
DIAMETER OF HOLE			DRILLED BY										
CORE RECOVERY													
DATE	DEPTH (m)	ELEVATION (m)	ROCK TYPE	COLUMN SECTION	CORE RECOVERY		BIT DIAMETER	DESCRIPTION	RQD		DEPTH		
					%	m			%	m			
	31		Sand and gravels	[Diagram showing core recovery from 31m to 32m depth]	31		BMM MC	(Continued)					
	32				32								
	33				33								
	34				34								
	35				35								
	36				36								
	37				37								
	38				38								
	39				39								
	40				40								
	41	2.97											

GEOLOGICAL RECORD OF BORING										HOLE No. <i>A1-21-26 (DDH-26)</i>	
PROJECT <i>AGOS HYDRA PUMP</i>			LOCATION <i>AGOS DAM, Major Shaping Canal</i>								
ELEVATION OF GROUND SURFACE			DEPTH OF HOLE		20.0m		INCLINATION OF HOLE			<i>Vertical</i>	
DIAMETER OF HOLE			MACHINE		<i>Long Jaw</i>		DATE OF DRILLING				
CORE RECOVERY			DRILLED BY					LOGGED BY			
DATE	DEPTH (m)	ELEVATION (m)	ROCK TYPE	COLUMN SECTION	CORE RECOVERY		DESCRIPTION	R Q D		DEPTH	
					%	ft		%	ft		
	1		<i>River bed deposit</i>			<i>NA</i>	<i>Mostly gneissic stout cylindrical cores not recovered, a few limestone, sandstone and black shaly cores are seen. Rounded small pebbles are seen interspersed gneissic cylindrical cores. Because of washing away of sandy material, core recovery is poor. Generally both end of cylindrical cores are rusted.</i>				
	2					<i>BA</i>					
	3										
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GEOLOGICAL RECORD OF BORING										HOLE No. <i>AI-72-27 (DBH-27)</i>							
PROJECT <i>AGOS HYDROPOWER</i>			LOCATION <i>AGOS DAMSITE</i>			<i>X1624118.822/Y136822.914</i>		ELEVATION OF GROUND SURFACE <i>66.53</i>			DEPTH OF HOLE <i>30.0 m</i>		INCLINATION OF HOLE <i>VERTICAL</i>				
DIAMETER OF HOLE <i>76 mm</i>			MACHINE			DATE OF DRILLING			CORE RECOVERY <i>53 %</i>			DRILLED BY <i>S NISHIOKA</i>					
DATE	DEPTH (m)	ELEVATION (m)	ROCK TYPE	COLUMN SECTION	CORE RECOVERY %	# OF CORE DIAMETER	DESCRIPTION	R.Q.D. %				water pressure test				DEPTH	
												Lugeon unit					
	0		<i>Sandy loam</i>			NWL	<i>Reddish brown. Only slime is taken</i>										
	3.00	63.53						MC									
	4																
	4		<i>Residual Soil</i>				<i>Decomposed rocks Partly remaining hard rocks.</i>										
	5																
	6																
	8	59.53															
	8	59.00															
	9		<i>Weathered greywacke</i>			NQ	<i>Soft rock. Recovering cores are fresh and hard, with brown water-stains on cracks.</i>										
	10							DC									
	12																
	14	55.72															
	14	55.20															
	15																
	16																
	17																
	18																
	18																
	18		<i>Weathered conglomerate</i>				<i>Weathered, soft rock. Core recovery is very low. Recovering cores are fresh and hard.</i>										
	20	46.94															
	21																
	22																
	22		<i>fault</i>				<i>12.0m ~ 19.0m Vertical crack.</i>										
	23																
	23		<i>Conglomerate</i>				<i>Fresh mica. Cracks are more than 30 cm spaced. Siliceous vein and crack with clay in 21.45m ~ 26.6m a minor fault.</i>										
	24	42.03															
	25																
	25		<i>Greywacke</i>				<i>Fresh, hard Massive. Bedding plane dips 60° on slate layers in 27.11 ~ 27.21 m</i>										
	26																
	27																
	28																
	29	36.33															



GEOLOGICAL RECORD OF BORING										HOLE No. <i>AI-80-29 (B01-29) (1)</i>																			
PROJECT <i>AGOS HYDROPOWER</i>					LOCATION					ELEVATION OF GROUND SURFACE					DEPTH OF HOLE					INCLINATION OF HOLE									
DIAMETER OF HOLE					MACHINE					DATE OF DRILLING					CORE RECOVERY					DRILLED BY					LOGGED BY				
DATE	DEPTH (m)	ELEVATION (m)	ROCK TYPE	COLUMN SECTION	CORE RECOVERY		4 IN. DIAMETER	DESCRIPTION	RQD		Water pressure test		DEPTH																
					%	#			%		%																		
			Intensively weathered greywacke				NO																						
			Weathered greywacke				DC																						
	<i>32.89</i>	<i>117.29</i>																											
	<i>32.82</i>	<i>116.29</i>						<i>(C)</i> Coarse grained, cracky. Weathering on cracks. <i>(Cn)</i>																					
								<i>(Cn)</i> Dark grey to black. Hard, solid. Cracks are sparse, but water-stained.																					
			Greywacke																										
								<i>(Cn - B)</i>																					
	<i>41.44</i>	<i>105.87</i>																											

GEOLOGICAL RECORD OF BORING										HOLE No. 75-1 (1)	
PROJECT		AGAS HYDRO POWER			LOCATION		AGAS No 1 X 11003201021557222066				
ELEVATION OF GROUND SURFACE		227.229		DEPTH OF HOLE		82.5 m		INCLINATION OF HOLE		VERTICAL	
DIAMETER OF HOLE		28.26		MACHINE		DATE OF DRILLING		LOGGED BY		M. YAKH	
CORE RECOVERY		69%		DRILLED BY							
DATE	DEPTH (m)	ELEVATION (m)	ROCK TYPE	COLUMN SECTION	CORE RECOVERY %	DIAMETER (cm)	DESCRIPTION	RQD %		DEPTH (m)	
	0.00		Surface soil				Latent reddish brown clayey soil.			0.00	
	1.00									1.00	
	2.00									2.00	
	3.00	226.629								3.00	
	4.00		Residual soil				Only clay is recovered it is light brown silty sand.			4.00	
	5.00									5.00	
	6.00									6.00	
	7.00									7.00	
	8.00									8.00	
	9.00									9.00	
	10.00	227.229								10.00	
	11.00		Weathered gneiss				Weathered gneiss core and sandy clay is recovered. Core has pitted surface.			11.00	
	12.00									12.00	
	13.00									13.00	
	14.00									14.00	
	15.00						Partly about 30cm long gneiss core was recovered.			15.00	
	16.00									16.00	
	17.00						Unit 4.0 m. core has thin calcite veins frequently.			17.00	
	18.00									18.00	
	19.00									19.00	
	20.00									20.00	
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(C1)

GEOLOGICAL RECORD OF BORING										HOLE No. AS-1 (2)	
PROJECT AGOS HYDRO POWER				LOCATION AGOS NA 1 SURGETUNK							
ELEVATION OF GROUND SURFACE				DEPTH OF HOLE		D.B.M.		INCLINATION OF HOLE		VERTICAL	
DIAMETER OF HOLE				MACHINE		DATE OF DRILLING		CORE RECOVERY 69%			
CORE RECOVERY				DRILLED BY		LOGGED BY		M. YAKO			
DATE	DEPTH (m)	ELEVATION (m)	ROCK TYPE	COLUMN SECTION	CORE RECOVERY %	NET DIAMETER	DESCRIPTION	R.O.D.	%	DEPTH	
	27		Granite				27.0-28.0m Core is fragile and fragmented.			27	
	27.74						Generally core is sound rock and in very good condition.			27.74	
	28.21						Mechanical break is often happened along calc. veins.			28.21	
	28.82						Coars are gray and small white patches are predominant.			28.82	
	29.00									29.00	
	29.40									29.40	
	29.60									29.60	
	29.80									29.80	
	30.00									30.00	
	30.20									30.20	
	30.40									30.40	
	30.60									30.60	
	30.80									30.80	
	31.00									31.00	
	31.20									31.20	
	31.40									31.40	
	31.60									31.60	
	31.80									31.80	
	32.00									32.00	
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	39.00									39.00	
	39.20									39.20	
	39.40									39.40	
	39.60									39.60	
	39.80									39.80	
	40.00									40.00	

GEOLOGICAL RECORD OF BORING										HOLE No. <i>PS-1 (2)</i>	
PROJECT <i>AGAS HYDROPIPER</i>		LOCATION <i>AGAS 44-1 SURRE TUNK</i>		ELEVATION OF GROUND SURFACE		DEPTH OF HOLE <i>30.02</i>		INCLINATION OF HOLE <i>VERTICAL</i>			
DIAMETER OF HOLE		MACHINE		DATE OF DRILLING		LOGGED BY <i>M. YAKO</i>					
CORE RECOVERY <i>69%</i>		DRILLED BY									
DATE	DEPTH (m)	ELEVATION (m)	ROCK TYPE	COLUMN SECTION	CORE RECOVERY		NET DIAMETER	DESCRIPTION	R Q D		DEPTH
					%	B			%		
			<i>Conglomerate</i>								
	<i>11.02</i>							<i>The matrix of the core is dark grey and pebbles are light grey</i>			
	<i>12.00</i>							<i>Generally they exhibit coarse and dispersed.</i>			
	<i>13.30</i>	<i>18.129</i>						<i>(CH ~ B)</i>			
			<i>Conglomerate</i>								
	<i>14.00</i>							<i>Core are dark grey and homogeneous.</i>			
	<i>15.00</i>							<i>Caliche veins are partly present and they cause cracks.</i>			
	<i>16.00</i>							<i>Generally caliche veins has gentle inclination and thickness of them are about 5mm width.</i>			
	<i>17.00</i>							<i>17.2-17.3 } Core are</i>			
	<i>18.00</i>							<i>17.3-17.4 } grey, b and brecciated</i>			
	<i>19.00</i>							<i>caused by the presence of caliche veins.</i>			
	<i>20.00</i>	<i>17.2549</i>						<i>(CH ~ B)</i>			

GEOLOGICAL RECORD OF BORING										HOLE No. PS-2	
PROJECT			AGOS HYDRO POWER			LOCATION			AGOS No. 1 X 1628700.299 / Y 559773.281		
ELEVATION OF GROUND SURFACE			1142.22 m			DEPTH OF HOLE			21.0 m		
DIAMETER OF HOLE			76 mm			MACHINE			DATE OF DRILLING		
CORE RECOVERY			58%			DRILLED BY			LOGGED BY		
DATE	DEPTH (m)	ELEVATION (m)	ROCK TYPE	COLUMN SECTION	CORE RECOVERY		DESCRIPTION	R Q D		DEPTH	
					X	B		%	mm		
	1.60		Spargite								
	2.60						2.0-2.5 m Only silty shales was recovered.				
	3.60										
	4.60						Generally core recovery is not good except at 11.0 m. Core has mud phase.				
	5.60						(C1)				
	6.60										
	7.60										
	8.60										
	9.60										
	10.60										
	11.60						11-11.5 m mostly sandy grey shales is recovered this portion is fault?				
	12.60						(D)				
	13.60										
	14.60										
	15.60										
	16.60										
	17.60										
	18.60										
	19.60										
	20.60										
	21.60						Below 20.0 m Cores are friable and intensely weathered. They are sorted strongly and the size of cores are about 2-5 cm & mostly.				
	22.60										
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	99.60										
	100.60										





GEOLOGICAL RECORD OF BORING										HOLE No. 85-3 (2)	
PROJECT			AGOS HYDROPOWER			LOCATION					
ELEVATION OF GROUND SURFACE				DEPTH OF HOLE		INCLINATION OF HOLE					
DIAMETER OF HOLE			MACHINE		DATE OF DRILLING						
CORE RECOVERY			25%		DRILLED BY			LOGGED BY			
DATE	DEPTH (m)	ELEVATION (m)	ROCK TYPE	COLUMN SECTION	CORE RECOVERY		CORRECTION	DESCRIPTION	RQD		DEPTH
					%	REMARKS			%	REMARKS	
	11				0	0	NQ				11
	12				0	0	DC				12
	13				0	0					13
	14				0	0					14
	15				0	0					15
	16				0	0					16
	17				0	0					17
	18				0	0					18
	19				0	0					19
	20				0	0					20
	21				0	0					21
	22				0	0					22
	23				0	0					23
	24				0	0					24
	25				0	0					25
	26				0	0					26
	27				0	0					27
	28				0	0					28
	29				0	0					29
	30				0	0					30
	31				0	0					31
	32				0	0					32
	33				0	0					33
	34				0	0					34
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	36				0	0					36
	37				0	0					37
	38				0	0					38
	39				0	0					39
	40				0	0					40
	41				0	0					41
	42				0	0					42
	43				0	0					43
	44				0	0					44
	45				0	0					45
	46				0	0					46
	47				0	0					47
	48				0	0					48
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	67				0	0					67
	68				0	0					68
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	99				0	0					99
	100				0	0					100

Gravels and cobbles are recovered.

Sandy shale is taken

Sand and gravels

Slightly weathered and frequently cracked; core is separated short, mostly at 5-10 cm of length. Weathered along cracks. (Cm)

Containing many limestone fragments of some 5 mm in size in greywacke matrix. Occasionally containing calcareous rock fragments of 3-5 cm in size.

Weathering along many cracks and joints, all of which are accompanied with calcite veins. Cores are hard, but generally short.

GEOLOGICAL RECORD OF BORING										HOLE No. PS-3 (3)	
PROJECT AGAS HYDROPOWER			LOCATION			DEPTH OF HOLE		INCLINATION OF HOLE			
ELEVATION OF GROUND SURFACE			MACHINE			DATE OF DRILLING			LOGGED BY		
DIAMETER OF HOLE			CORE RECOVERY 25%			DRILLED BY					
DATE	DEPTH (m)	ELEVATION (m)	ROCK TYPE	COLUMN SECTION	CORE RECOVERY %	# OF SAMPLES	DESCRIPTION	R.O.D.		DEPTH	
	60.61	-11.80	Calcareous shale ss		73	1	(C <sub>2</sub> )			61	
	62		Greywacke		73	1	Coarse grained, with angular fragments. Slightly weathered.  Weathering on cracks.			62	
	64				73	1					64
	66				73	1	(C <sub>4</sub> )			66	
	68				73	1				68	
	70				73	1				70	
	72				73	1				72	
	74				73	1				74	
	76				73	1				76	
	78				73	1				78	
	80				73	1				80	
	82				73	1				82	
	84				73	1				84	
	86				73	1				86	
	88				73	1				88	
	90				73	1				90	
	92				73	1				92	
	94				73	1				94	
	96				73	1				96	
	98				73	1				98	
	100				73	1				100	

GEOLOGICAL RECORD OF BORING										HOLE No. PS-5 (1)	
PROJECT			AFOS HYDRO/DWER			LOCATION			AFOS No. 1 X1125219.22/Y552292672		
ELEVATION OF GROUND SURFACE			49.221			DEPTH OF HOLE			55.90m		
DIAMETER OF HOLE			36 2/8"			MACHINE			JOY RAMMER		
CORE RECOVERY						DATE OF DRILLING			7 JAN. ~ 13 FEB. 1980		
						DRILLED BY			LOGGED BY		
DATE	DEPTH (m)	ELEVATION (m)	ROCK TYPE	COLUMN SECTION	CORE RECOVERY %	CORE DIAMETER	DESCRIPTION	R.R.O.		DEPTH	
								%	Standard penetration test Blow count per meter (N)		
			Surface deposit	Δ Δ			Mostly subangular silt.				
	4.40	44.821		Δ Δ			Light brown unconsolidated soil				
	4.50			Δ Δ			Slightly clayey, water stained				
	4.60			Δ Δ							
	4.70			Δ Δ							
	4.80			Δ Δ							
	4.90			Δ Δ							
	5.00			Δ Δ							
	5.10			Δ Δ							
	5.20			Δ Δ							
	5.30			Δ Δ							
	5.40			Δ Δ							
	5.50			Δ Δ							
	5.60			Δ Δ							
	5.70			Δ Δ							
	5.80			Δ Δ							
	5.90			Δ Δ							
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	6.50			Δ Δ							
	6.60			Δ Δ							
	6.70			Δ Δ							
	6.80			Δ Δ							
	6.90			Δ Δ							
	7.00			Δ Δ							
	7.10			Δ Δ							
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	7.60			Δ Δ							
	7.70			Δ Δ							
	7.80			Δ Δ							
	7.90			Δ Δ							
	8.00			Δ Δ							
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	8.60			Δ Δ							
	8.70			Δ Δ							
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	8.90			Δ Δ							
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	15.90			Δ Δ							
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	19.80			Δ Δ							
	19.90			Δ Δ							
	20.00			Δ Δ							



GEOLOGICAL RECORD OF BORING										HOLE No. A2-22-1 (A2-DDH-1), 11)		
PROJECT   AGPS HYDRO POWER			LOCATION   AFTERBAY WEIR			X 16.25 17.27 11 / Y 12.26 15.245						
ELEVATION OF GROUND SURFACE   17.97 m		DEPTH OF HOLE   40.00 m		INCLINATION OF HOLE   VERTICAL								
DIAMETER OF HOLE   76 mm		MACHINE   ACKER ACE		DATE OF DRILLING   20 NOV. 1979 ~ 8 DEC. 1979		LOGGED BY   M YAKO						
CORE RECOVERY   74 %		DRILLED BY										
DATE	DEPTH (m)	ELEVATION (m)	ROCK TYPE	COLUMN SECTION	CORE RECOVERY		BIT DIAMETER	DESCRIPTION	LOGS ON UNIT			DEPTH
					%	RECOVERED			RQD (%)	SP1 (m)	SP2 (m)	
	0.00		Laminar weathered soil					Reddish brown clay soil. Hgt. weathered				
	1.00											
	2.00											
	3.00											
	4.00											
	5.10	63.77	Residual soil					Light brown residual soil associated with small rock fragments				
	6.00											
	7.00											
	8.00											
	9.00											
	10.00											
	11.00											
	12.00											
	13.00											
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	39.00											
	40.00											


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GEOLOGICAL RECORD OF BORING										HOLE No. A2-77-1 (A2-00H-1) (12)					
PROJECT		A905 HYDROPOWER			LOCATION		DEPTH OF HOLE		4100m		INCLINATION OF HOLE		VERTICAL		
ELEVATION OF GROUND SURFACE		DIAMETER OF HOLE		MACHINE		DATE OF DRILLING		CORE RECOVERY		74%		LOGGED BY		M YAKO	
DATE	DEPTH (m)	ELEVATION (m)	ROCK TYPE	COLUMN SECTION	CORE RECOVERY		DESCRIPTION	R. Q. D. (%)				DEPTH			
					A	B		50	60	70	80				
	21.60		Calcareous limestone		20	21	207-220m Vertical cracks are present.								
	21.12				22	23	221-224 225-228 229-232						Mostly fragmental cracks are observed		
	20.60				24	25								cracks cause the fragmental cores. Cracking planes are visible in between.	
	20.10				26	27	Except above portions, mostly cylindrical cores are recovered (C-1)								
	19.60				28	29									
	19.10				30	31									
	18.60				32	33									
	18.10				34	35									
	17.60				36	37									
	17.10				38	39									
	16.60		40	41											
	16.10		42	43											
	15.60		44	45											
	15.10		46	47											
	14.60		48	49											
	14.10	22.971	50	51											

6A

GEOLOGICAL RECORD OF BORING										HOLE No. A2-77-2 (B2-DDH-2), (1)		
PROJECT <i>AGOS HYDROPOWER</i>				LOCATION <i>ATEMY VEIR</i>		ELEVATION OF GROUND SURFACE <i>2587.7</i>		DEPTH OF HOLE <i>62.11</i>		INCLINATION OF HOLE <i>VERTICAL</i>		
DIAMETER OF HOLE <i>96 mm</i>				MACHINE		DATE OF DRILLING		LOGGED BY <i>M. YAKO</i>				
CORE RECOVERY <i>58%</i>				DRILLED BY		LUGEON UNIT						
DATE	DEPTH (m)	ELEVATION (m)	ROCK TYPE	COLUMN SECTION	CORE RECOVERY %	REMARKS	DESCRIPTION	LUGEON UNIT				DEPTH
	0.62		<i>Surface soil</i>				<i>Light gray sandy silt</i>					
	1.12											
	1.62											
	2.12											
	2.62											
	3.12	<i>22.667</i>	<i>Residual soil</i>				<i>Light brown residual soil associated with small fragments.</i>					
	3.62											
	4.12	<i>21.217</i>	<i>Gneiss Conglomerate</i>				<i>Dark gray shaly gneiss - fragmental cores are recovered.</i>					
	4.62				10							
	5.12				12							
	5.62				35							
	6.12				24		<i>Cores are partly porphyritic and partly conglomeratic. Pebbles sizes about 2cm.</i>					
	6.62				90							
	7.12				25		<i>Generally cores have 3-6 cm length.</i>					
	7.62				22							
	8.12				29							
	8.62				20							
	9.12				23							
	9.62				77							
	10.12				20							
	10.62				18	<i>Ax</i>						
	11.12				12	<i>Ax</i>						
	11.62				32							
	12.12				16							
	12.62				15							
	13.12				33							
	13.62				20							
	14.12				50							
	14.62	<i>7.217</i>	<i>Calcareous breccia</i>				<i>Whitish green long conglomerate. Core has many long pebbles and lots of calcite veins.</i>					
	15.12				12							
	15.62				40		<i>Cores are rather fragmental and mostly shaly gneissic cores are recovered.</i>					
	16.12				40							
	16.62				77		<i>1800-2200m Crystalline phases are intensely rusted and they are brown. These phases are present in every 1-2m (C<sub>1</sub>)</i>					
	17.12				75							
	17.62				125							
	18.12				100		<i>Above 2200m, fragmental cores are recovered. This was caused by mechanical break because of fragmental condition. In this part rusted phase is seldom to be found.</i>					
	18.62				60							
	19.12				73							
	19.62				65							
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	62.12											

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GEOLOGICAL RECORD OF BORING										HOLE No. A2-79-2 (A2-DOH-2), (2)				
PROJECT		AGOS HYDROPOWER			LOCATION		DEPTH OF HOLE		INCLINATION OF HOLE		VERTICAL			
ELEVATION OF GROUND SURFACE		DIAMETER OF HOLE		CORE RECOVERY		MACHINE		DATE OF DRILLING		LOGGED BY				
CORE RECOVERY		58%		DRILLED BY						M YAKO				
DATE	DEPTH (m)	ELEVATION (m)	ROCK TYPE	COLUMN SECTION	CORE RECOVERY		% BET. DIAMETER	DESCRIPTION	LUGEON UNIT				DEPTH	
					%				R.Q.D. (%)					
									0	10	20	30		
	11 21.00		Calcareous limestone		74								21	
	12 21.50				70								22	
	13 22.00				72								23	
	14 22.50				72								24	
	15 23.00				33			Below 21.00m. along cracking plane reddish brown material (full core?) is found.					25	
	16 23.50				70								26	
	17 24.00				75								27	
	18 24.50				75			(C <sub>2</sub> ~ C <sub>4</sub> )					28	



GEOLOGICAL RECORD OF BORING										HOLE No. 12-79-3 (A2-004-2), (1)		
PROJECT			AGOS HYDROPOWER			LOCATION			ATERRAY WEIR			
ELEVATION OF GROUND SURFACE			17.022 m			DEPTH OF HOLE			60.00 m			
DIAMETER OF HOLE			21.25 m			MACHINE			DATE OF DRILLING			
CORE RECOVERY			53%			DRILLED BY			LOGGED BY M. YAKO			
DATE	DEPTH (m)	ELEVATION (m)	ROCK TYPE	COLUMN SECTION	CORE RECOVERY		CORRECTION	DESCRIPTION	ROD		LUGGED UNIT	DEPTH
					%	REMARKS			(%)			
	1.00		Riverbed deposit silty sand					light brown silty sand No rock fragments present				
	2.00	17.022										
	2.60		Riverbed deposit					Mostly gneissic fragment is recovered. Many rounded pebbles are recovered.				
	3.30											
	4.00											
	4.70											
	5.40											
	6.10											
	6.80							16-22" dark grey medium coarse sand associated with shales.				
	7.50											
	8.20											
	8.90							2.2-4.0" short cylindrical cores recovered. Cores are composed with gneissic mostly.				
	9.60											
	10.30											
	11.00							18-22" Medium coarse dark grey sandy shales is recovered. Partly rounded riverbed deposit cores are recovered.				
	11.70											
	12.40											
	13.10											
	13.80											
	14.50											
	15.20											
	15.90											
	16.60											
	17.30											
	18.00											
	18.70											
	19.40											
	20.10											
	20.80											
	21.50							21.5-25.0" Blue grey silty shales is recovered. Partly cores of gneissic and shales are recovered.				
	22.20											
	22.90											
	23.60											
	24.30											
	25.00											
	25.70											
	26.40							26.5-30.0" Blue grey shales is recovered partly associated with rounded pebbles.				
	27.10											
	27.80											
	28.50											
	29.20											
	29.90											
	30.60											



GEOLOGICAL RECORD OF BORING										HOLE No. A2-79-4 (A2-PDH-5) (11)									
PROJECT <b>AGOS HYDRO POWER</b>			LOCATION <b>ATERRAY VEIR</b>			INCLINATION OF HOLE <b>VERTICAL</b>													
ELEVATION OF GROUND SURFACE <b>23,127</b>			DEPTH OF HOLE <b>2800.00</b>			DATE OF DRILLING													
DIAMETER OF HOLE <b>7 1/2"</b>			MACHINE			DRILLED BY			LOGGED BY <b>M. YAKA</b>										
CORE RECOVERY <b>69%</b>																			
DATE	DEPTH (m)	ELEVATION (m)	ROCK TYPE	COLUMN SECTION	CORE RECOVERY		* CORE DIAMETER	DESCRIPTION	LUGER UNIT				DEPTH						
					%	ft			R	O	O	U		U	U				
	1	23.127	Riverbed deposit	1	20			Riverbed deposit mostly composed of pyroclastic tuff, partly sandstone tuff is recovered.						1					
	2	23.10		2	40										2				
	3	23.07		3	60										3				
	4	23.04		4	80										4				
	5	23.01		5	100	12x									5				
	6	22.98		6	120	8x									6				
	7	22.95	Calcareous tuff	7	130			Calcareous conglomerate up to 5cm, core is homogeneous. Cores are composed of basalt sandstone and porphyritic tuff.  8.2-30"   Cores are mostly fragmented and fragments easy to be broken.  10.0-10.8 11.0-11.8  12.0-12.8  13.0-13.8  14.0-14.8  15.0-15.8  16.0-16.8  17.0-17.8  18.0-18.8  19.0-19.8  20.0-20.8  21.0-21.8  22.0-22.8  23.0-23.8  24.0-24.8  25.0-25.8  26.0-26.8  27.0-27.8  28.0-28.8  29.0-29.8  30.0-30.8  31.0-31.8  32.0-32.8  33.0-33.8  34.0-34.8  35.0-35.8  36.0-36.8  37.0-37.8  38.0-38.8  39.0-39.8  40.0-40.8  41.0-41.8  42.0-42.8  43.0-43.8  44.0-44.8  45.0-45.8  46.0-46.8  47.0-47.8  48.0-48.8  49.0-49.8  50.0-50.8  51.0-51.8  52.0-52.8  53.0-53.8  54.0-54.8  55.0-55.8  56.0-56.8  57.0-57.8  58.0-58.8  59.0-59.8  60.0-60.8  61.0-61.8  62.0-62.8  63.0-63.8  64.0-64.8  65.0-65.8  66.0-66.8  67.0-67.8  68.0-68.8  69.0-69.8  70.0-70.8  71.0-71.8  72.0-72.8  73.0-73.8  74.0-74.8  75.0-75.8  76.0-76.8  77.0-77.8  78.0-78.8  79.0-79.8  80.0-80.8  81.0-81.8  82.0-82.8  83.0-83.8  84.0-84.8  85.0-85.8  86.0-86.8  87.0-87.8  88.0-88.8  89.0-89.8  90.0-90.8  91.0-91.8  92.0-92.8  93.0-93.8  94.0-94.8  95.0-95.8  96.0-96.8  97.0-97.8  98.0-98.8  99.0-99.8  100.0-100.8											
	8	22.92		8	140											8			
	9	22.89		9	150											9			
	10	22.86		10	160											10			
	11	22.83		11	170											11			
	12	22.80		12	180											12			
	13	22.77		13	190											13			
	14	22.74		14	200											14			
	15	22.71		15	210											15			
	16	22.68		16	220											16			
	17	22.65		17	230											17			
	18	22.62		18	240											18			
	19	22.59		19	250											19			
	20	22.56		20	260											20			
	21	22.53	21	270										21					
	22	22.50	22	280										22					
	23	22.47	23	290										23					
	24	22.44	24	300										24					
	25	22.41	25	310										25					
	26	22.38	26	320										26					
	27	22.35	27	330										27					
	28	22.32	28	340										28					
	29	22.29	29	350										29					
	30	22.26	30	360										30					
	31	22.23	31	370										31					
	32	22.20	32	380										32					
	33	22.17	33	390										33					
	34	22.14	34	400										34					
	35	22.11	35	410										35					
	36	22.08	36	420										36					
	37	22.05	37	430										37					
	38	22.02	38	440										38					
	39	21.99	39	450										39					
	40	21.96	40	460										40					
	41	21.93	41	470										41					
	42	21.90	42	480										42					
	43	21.87	43	490										43					
	44	21.84	44	500										44					
	45	21.81	45	510										45					
	46	21.78	46	520										46					
	47	21.75	47	530										47					
	48	21.72	48	540										48					
	49	21.69	49	550										49					
	50	21.66	50	560										50					
	51	21.63	51	570										51					
	52	21.60	52	580										52					
	53	21.57	53	590										53					
	54	21.54	54	600										54					
	55	21.51	55	610										55					
	56	21.48	56	620										56					
	57	21.45	57	630										57					
	58	21.42	58	640										58					
	59	21.39	59	650										59					
	60	21.36	60	660										60					
	61	21.33	61	670										61					
	62	21.30	62	680										62					
	63	21.27	63	690										63					
	64	21.24	64	700										64					
	65	21.21	65	710										65					
	66	21.18	66	720										66					
	67	21.15	67	730										67					
	68	21.12	68	740										68					
	69	21.09	69	750										69					
	70	21.06	70	760										70					
	71	21.03	71	770										71					
	72	21.00	72	780										72					
	73	20.97	73	790										73					
	74	20.94	74	800										74					
	75	20.91	75	810										75					
	76	20.88	76	820										76					
	77	20.85	77	830										77					
	78	20.82	78	840										78					
	79	20.79	79	850										79					
	80	20.76	80	860										80					
	81	20.73	81	870										81					
	82	20.70	82	880										82					
	83	20.67	83	890										83					
	84	20.64	84	900										84					
	85	20.61	85	910										85					
	86	20.58	86	920										86					
	87	20.55	87	930										87					
	88	20.52	88	940										88					
	89	20.49	89	950										89					
	90	20.46	90	960										90					
	91	20.43	91	970										91					
	92	20.40	92	980										92					
	93	20.37	93	990										93					
	94	20.34	94	1000										94					



GEOLOGICAL RECORD OF BORING

HOLE No. A2-79 - 5 (A2-004-5), 111

PROJECT	AGPS HYDROPOWER		LOCATION	AFFRAY WEIR 211/12/2091 / YODISA 409	
ELEVATION OF GROUND SURFACE	19.138 m	DEPTH OF HOLE	50.00 m	INCLINATION OF HOLE	VERTICAL
DIAMETER OF HOLE	71 mm	MACHINE	ACKER AC8	DATE OF DRILLING	12 OCT ~ 11 NOV 1977
CORE RECOVERY	6.9%	DRILLED BY		LOGGED BY	M. YAKK

DATE	DEPTH (m)	ELEVATION (m)	ROCK TYPE	COLUMN SECTION	CORE RECOVERY %	CORE RECOVERY #	DESCRIPTION	R Q D		LU GEN UNIT		DEPTH
								X				
	1	18.138	Surface soil				Dark brown, clayey					1
	2	2.22	Residual soil				Red brown, sticky, some rock fragments as gravel.					2
	3	3.88										3
	4	4.22										4
	5	13.138										5
	6	1.11	Conglomerate				Cases are seen to be conglomerate but not seen because of poor core recovery.					6
	7	2.22					Mostly fragmental, partly short cylindrical cases are recovered.					7
	8	2.22										8
	9	2.22										9
	10	2.22										10
	11	16.65										11
	12	17.26										12
	13	17.18										13
	14	17.20										14
	15	17.32										15
	16	17.32										16
	17	17.32										17
	18	17.32										18
	19	17.32										19
	20	17.32										20
	21	17.32										21
	22	17.32										22
	23	17.32										23
	24	17.32										24
	25	17.32										25
	26	17.32										26
	27	17.32										27
	28	17.32										28
	29	17.32										29
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	37	17.32										37
	38	17.32										38
	39	17.32										39
	40	17.32										40
	41	17.32										41
	42	17.32										42
	43	17.32										43
	44	17.32										44
	45	17.32										45
	46	17.32										46
	47	17.32										47
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	90	17.32										90
	91	17.32										91
	92	17.32										92
	93	17.32										93
	94	17.32										94
	95	17.32										95
	96	17.32										96
	97	17.32										97
	98	17.32										98
	99	17.32										99
	100	17.32										100

Cases are credited to be angular. Joint planes are sharp and fractured. Most of them are vertical or steep inclined.

50-100  
Case recovery is very poor. (C1 ~ D)

Dark grey conglomerate partly porphyritic case, present. Generally cases are fragmental and short cylindrical cases are recovered.

GEOLOGICAL RECORD OF BORING										HOLE No. A2-79-5 (A2-004-5), (4)					
PROJECT		AGOS HYDROPOWER			LOCATION			ELEVATION OF GROUND SURFACE		DEPTH OF HOLE		INCLINATION OF HOLE		VERTICAL	
DIAMETER OF HOLE		CORE RECOVERY		49%		MACHINE		DATE OF DRILLING		LOGGED BY		M. YAKO			
D. P. S.	DEPTH (m)	ELEVATION (m)	ROCK TYPE	COLUMN SECTION	CORE RECOVERY		DESCRIPTION	LOGS AND UNIT				DEPTH			
					%	BT DIAMETER		%							
20	22.10		Conglomerate	1/6	70	20	26.0-28.0 <sup>m</sup> Vertical - slip 28.0-28.5 <sup>m</sup> inclined joint, ore 29.1-29.2 <sup>m</sup> present. Most of the joint happens along caliche veins. Generally joint planes are not traced.								
21	22.20														
22	22.30														
23	22.40														
24	22.50														
25	22.60														
26	22.70														
27	22.80														
28	22.90														
29	23.00														
30	23.10														
31	23.20														
32	23.30														
33	23.40														
34	23.50														
35	23.60														
36	23.70														
37	23.80														
38	23.90			25	Dark blue grey fine sandstone Mainly good cases are (C <sub>1</sub> )										
39	24.00														
40	24.10														
41	24.20														
42	24.30														
43	24.40														
44	24.50														
45	24.60														
46	24.70														
47	24.80												25	Conglomerate composed of rather small size of pebbles as 3 cm φ.  Pebbles are composed of slate, anditic rock.	
48	24.90														
49	25.00														
50	25.10														
51	25.20														
52	25.30														
53	25.40														
54	25.50														
55	25.60														
56	25.70			25	Cylindric whitish case are retained. Mainly cases are in good condition and slightly porous. Pebbles are mostly basaltic.  28.5-29.0 <sup>m</sup> Only fragmental cases are retained.										
57	25.80														
58	25.90														
59	26.00														
60	26.10														
61	26.20														
62	26.30														
63	26.40														
64	26.50														
65	26.60												25	(C <sub>1</sub> -C <sub>2</sub> )	
66	26.70														
67	26.80														
68	26.90														
69	27.00														
70	27.10														
71	27.20														
72	27.30														
73	27.40														
74	27.50			25	Cataclastic breccia										
75	27.60														
76	27.70														
77	27.80														
78	27.90														
79	28.00														
80	28.10														
81	28.20														
82	28.30														
83	28.40												25	(C <sub>1</sub> )	
84	28.50														
85	28.60														
86	28.70														
87	28.80														
88	28.90														
89	29.00														
90	29.10														
91	29.20														
92	29.30														

GEOLOGICAL RECORD OF BORING

HOLE No. A2-79-6(A2-D04-1), (1)

PROJECT	AGOS HYDRO POWER		LOCATION	AFIRRAY WEIR, X/145632, Y/142144229	
ELEVATION OF GROUND SURFACE	25.292 m	DEPTH OF HOLE	40.00 m	INCLINATION OF HOLE VERTICAL	
DIAMETER OF HOLE	78 mm	MACHINE	ACKER ACE	DATE OF DRILLING 9 DEC ~ 14 DEC 1979	
CORE RECOVERY	65%	DRILLED BY		LOGGED BY M. YAKO	

DATE	DEPTH (m)	ELEVATION (m)	ROCK TYPE	COLUMN SECTION	CORE RECOVERY %	CORE RECOVERY #	CORE RECOVERY Ø (mm)	DESCRIPTION	LUGGON UNIT			DEPTH
									10	20	30	
	0		Weathered overburden					Red brown tabular clay cont. water stained				0
	5.82	19.472	Residual soil					Yellowish brown residual material associated with small rock fragments.				5
	6.85	18.443	Calcareous breccia		20			White granitic lining conglomerate associated with many calcareous pebbles.				10
	7.82	17.466			35			The size of pebbles are 2-3 5 cm Ø, and mostly composed of basaltic rock matrix is hard. Easy to break by hammer striking.				15
	8.82	16.466			45							20
	10.00	15.292			60							25
	11.00	14.292			70			5.8 ~ 12.0 m 12.0 ~ 17.0 17.0 ~ 24.0 24.0 ~ 28.0				30
	12.00	13.292			74			Short cylindrical cores and fragmental cores are recovered.				35
	12.82	12.472			82			Joint planes at this zone are rusted deeply				40
	13.00	12.112			85							45
	14.00	11.112			90			Generally surface of the core is not smooth because of porosity				50
	15.00	10.112			95							55
	16.00	9.112			98							60
	17.00	8.112			100							65
	18.00	7.112			100							70
	19.82	5.472			70			28.5 ~ 22.0 m 20.0 ~ 24.6				75
	20.82	4.472			85			rather long cylindrical cores are recovered				80
	22.00	3.292			100							85
	23.00	2.292			85							90
	24.00	1.292			92							95
	25.00	0.292			100							100
	26.00		Basaltic conglomerate		100			(C1)	Basaltic white granitic cores are recovered Composition of this part is very similar to the above portion of 24.0 m			105
	27.00				100							110
	28.00				100							115
	29.00				100							120
	30.00				100							125
	31.00				100							130
	32.00				100							135
	33.00				100							140
	34.00				100							145
	35.00				100							150
	36.00				100							155
	37.00				100							160
	38.00				100							165
	39.00				100							170
	40.00				100							175
	41.00				100							180
	42.00				100							185
	43.00				100							190
	44.00				100							195
	45.00				100							200
	46.00				100							205
	47.00				100							210
	48.00				100							215
	49.00				100							220
	50.00				100							225
	51.00				100							230
	52.00				100							235
	53.00				100							240
	54.00				100							245
	55.00				100							250
	56.00				100							255
	57.00				100							260
	58.00				100							265
	59.00				100							270
	60.00				100							275
	61.00				100							280
	62.00				100							285
	63.00				100							290
	64.00				100							295
	65.00				100							300
	66.00				100							305
	67.00				100							310
	68.00				100							315
	69.00				100							320
	70.00				100							325
	71.00				100							330
	72.00				100							335
	73.00				100							340
	74.00				100							345
	75.00				100							350
	76.00				100							355
	77.00				100							360
	78.00				100							365
	79.00				100							370
	80.00				100							375
	81.00				100							380
	82.00				100							385
	83.00				100							390
	84.00				100							395
	85.00				100							400
	86.00				100							405
	87.00				100							410
	88.00				100							415
	89.00				100							420
	90.00				100							425
	91.00				100							430
	92.00				100							435
	93.00				100							440
	94.00				100							445
	95.00				100							450
	96.00				100							455
	97.00				100							460
	98.00				100							465
	99.00				100							470
	100.00				100							475

73

78

GEOLOGICAL RECORD OF BORING										HOLE No. A2-11-1 (A2-204-1) (2)	
PROJECT			LOCATION			DEPTH OF HOLE		INCLINATION OF HOLE			
1963 HYDRO POWER						40.00m		VERTICAL			
ELEVATION OF GROUND SURFACE			MACHINE			DATE OF DRILLING			LOGGED BY		
									M. YAKO		
DIAMETER OF HOLE			CORE RECOVERY			DRILLED BY			LOGGED BY		
			65%						M. YAKO		
DATE	DEPTH (m)	ELEVATION (m)	ROCK TYPE	COLUMN SECTION	CORE RECOVERY %	NO. OF CORES	DESCRIPTION	RQD %	LU GEIN UNIT		DEPTH
	2814		Gneiss				260-265m				
	2815		Crystalline				265-270m				
	2816						Mostly fragmental and short gneissic cores are recovered.				
	2817						Many calcite veins are present. Cores are long.				
	2818						Generally on striking plane striking is not seen.				
	2819						Many cracks seem to be happened because of mechanical break.				
	2820										
	2821										
	2822						270-275m				
	2823						Extremely brecciated and frag. b.				
	2824										
	2825										
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	2827										
	2828										
	2829										
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	2900										



GEOLOGICAL RECORD OF BORING										HOLE No. A2-12-7 (A2-004-7), (1)			
PROJECT <i>AGS HYDROPOWER</i>					LOCATION <i>ATERPAT 461R 3628724 17.852.389</i>								
ELEVATION OF GROUND SURFACE			DEPTH OF HOLE		INCLINATION OF HOLE								
			<i>5140m</i>		<i>VERTICAL</i>								
DIAMETER OF HOLE		MACHINE		DATE OF DRILLING									
<i>260mm</i>		<i>ACKER ACE</i>		<i>15 JULY - 19 OCT 1979</i>									
CORE RECOVERY		DRILLED BY		LOGGED BY									
<i>66%</i>				<i>M. YAKO</i>									
DATE	DEPTH (m)	ELEVATION (m)	ROCK TYPE	COLUMN SECTION	CORE RECOVERY %	DESCRIPTION	RQD %	LITHO UNIT			DEPTH (m)		
			<i>Residual Soil</i>			<i>Yellow-brown residual soil, it is mostly clayey.</i>							
	<i>1.62</i>												
	<i>2.62</i>												
	<i>3.62</i>												
	<i>4.62</i>												
	<i>5.62</i>												
	<i>5.37</i>		<i>Residual soil</i>			<i>Yellow brown residual soil associated with rock fragments. Specific gravity is around 2.65 small.</i>							
	<i>6.00</i>												
	<i>6.11</i>												
	<i>7.70</i>												
	<i>8.00</i>												
	<i>10.00</i>												
	<i>11.00</i>												
	<i>12.00</i>												
	<i>13.00</i>												
	<i>14.00</i>												
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	<i>48.00</i>												
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	<i>50.00</i>												

GEOLOGICAL RECORD OF BORING										HOLE No. A2-79-7 (A2-204-7), (2)										
PROJECT <i>AGOS HYDROPOWER</i>			LOCATION							ELEVATION OF GROUND SURFACE		DEPTH OF HOLE		INCLINATION OF HOLE		VERTICAL				
DIAMETER OF HOLE			MACHINE			DATE OF DRILLING					CORE RECOVERY		66%		DRILLED BY		LOGGED BY		M YAKO	
DATE	DEPTH (m)	ELEVATION (m)	ROCK TYPE	COLUMN SECTION	CORE RECOVERY		DESCRIPTION	RQD		LUGEN UNIT		DEPTH								
					X	B		%		%										
	21.20		<i>Gneiss</i>		21	21	21.0 - 21.0m Vertical cracks are present, mostly fragmental cores are measured.					21								
	22.60						22						22	22.1 - 22.0m Rather good cylindrical cores are measured, partly vertical cracks are present. (C <sub>2</sub> - C <sub>1</sub> )					22	
	23.60						23						23	23.0 - 23.0m Fragmental core, caused by crushing, are only measured. Generally crushing planes are not visible, core recovery is very poor. (C <sub>1</sub> )					23	
	24.60						24						24	24.0 - 23.0m Mostly short cylindrical cores are measured. There are many vertical - steep inclined cracks. Most of the cracks are banded along columnar joints. Crushing planes are not well marked. (C <sub>2</sub> - C <sub>1</sub> )						24
	25.60						25						25	25.0 - 25.0m Dark blue gneiss, partly gran size is changed. (C <sub>2</sub> - C <sub>1</sub> )						25
	26.60						26						26	26.0 - 26.0m Cores are frag. because of vertical - steep inclined cracks. Mostly fragmental cores are measured. (C <sub>2</sub> - C <sub>1</sub> )						26
	27.60						27						27							27
	28.60						28						28							28
	29.60						29						29							29
	30.60						30						30							30

GEOLOGICAL RECORD OF BORING										HOLE No. Q-A1-2 (1)	
PROJECT			AGAS HYDROPOWER			LOCATION			AREA 101 QUARRY SITE, KILIMANGARU / YSSG 702.170		
ELEVATION OF GROUND SURFACE			176.92 m			DEPTH OF HOLE			47.0 m		
DIAMETER OF HOLE			21 1/2"			MACHINE			DATE OF DRILLING		
CORE RECOVERY			95 %			DRILLED BY			LOGGED BY		
DATE	DEPTH (m)	ELEVATION (m)	ROCK TYPE	COLUMN SECTION	CORE RECOVERY %	NO. OF CORES	DESCRIPTION	ROD	DEPTH (m)		
	1.00	175.926	Residual soil		30		Brown soil, partly with fragments are present.		1		
	2.00	174.926			30				2		
	3.00	173.926			40				3		
	4.00	172.926			40				4		
	5.00	171.926			40				5		
	6.00	170.926	Granite		100	100	Dark grey, mostly homogeneous. Partly fine grained and also calcite veins are present.		6		
	6.20	170.181			37				6.2		
	7.00	169.000			100	100	Mostly hard, sound cores are recovered.		7		
	8.00	167.926			100	100			8		
	9.00	166.926			100	100			9		
	10.00	165.926			100	100			10		
	11.00	164.926			100	100			11		
	12.00	163.926			100	100			12		
	13.00	162.926			100	100			13		
	14.00	161.926			100	100			14		
	15.00	160.926			100	100			15		
	16.00	159.926			100	100			16		
	17.00	158.926			100	100			17		
	18.00	157.926			100	100			18		
	19.00	156.926			100	100			19		
	20.00	155.926			100	100			20		
	21.00	154.926			100	100			21		
	22.00	153.926			100	100			22		
	23.00	152.926			100	100			23		
	24.00	151.926			100	100			24		
	25.00	150.926			100	100			25		
	26.00	149.926			100	100			26		
	27.00	148.926			100	100			27		
	28.00	147.926			100	100			28		
	29.00	146.926			100	100			29		
	30.00	145.926			100	100			30		

