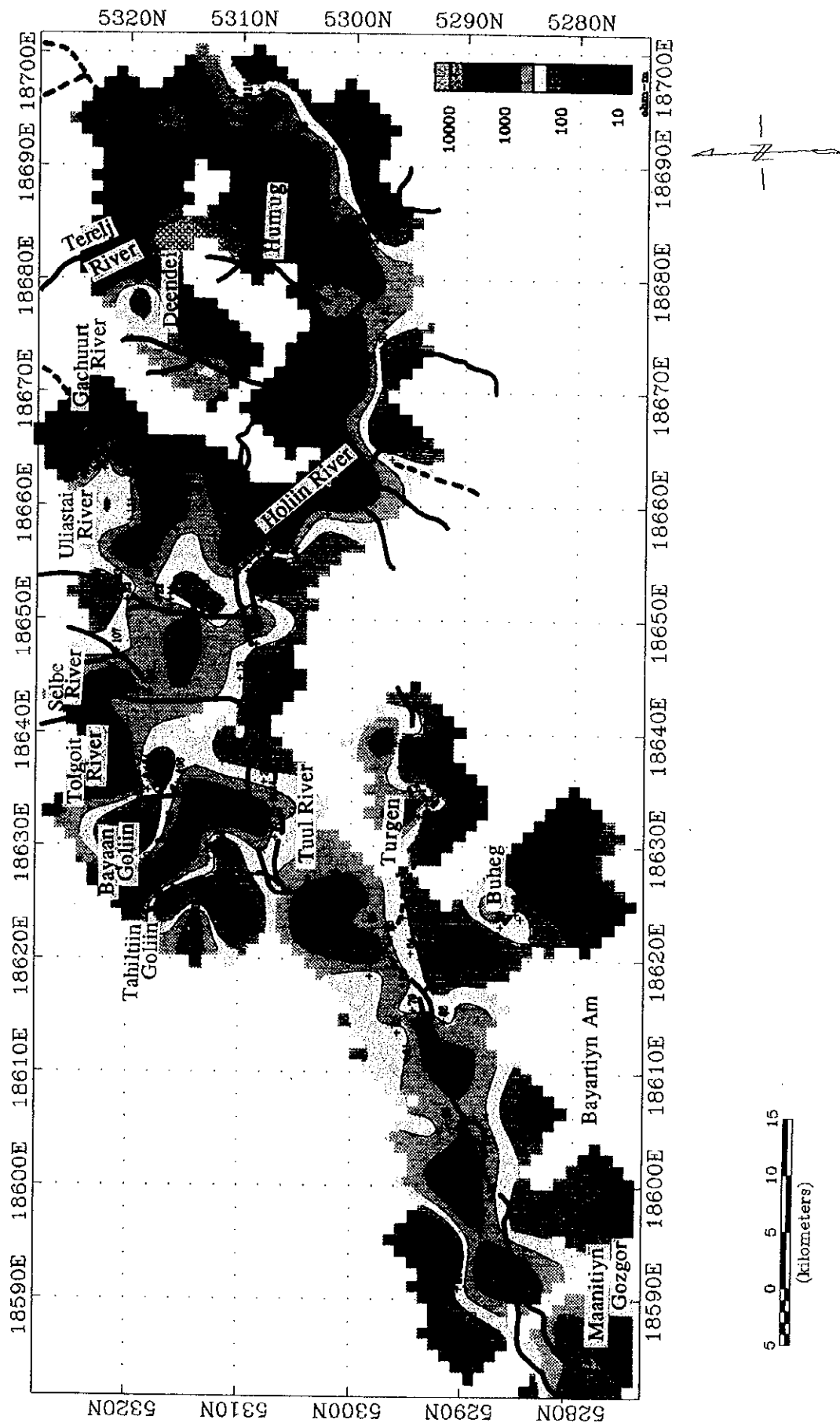


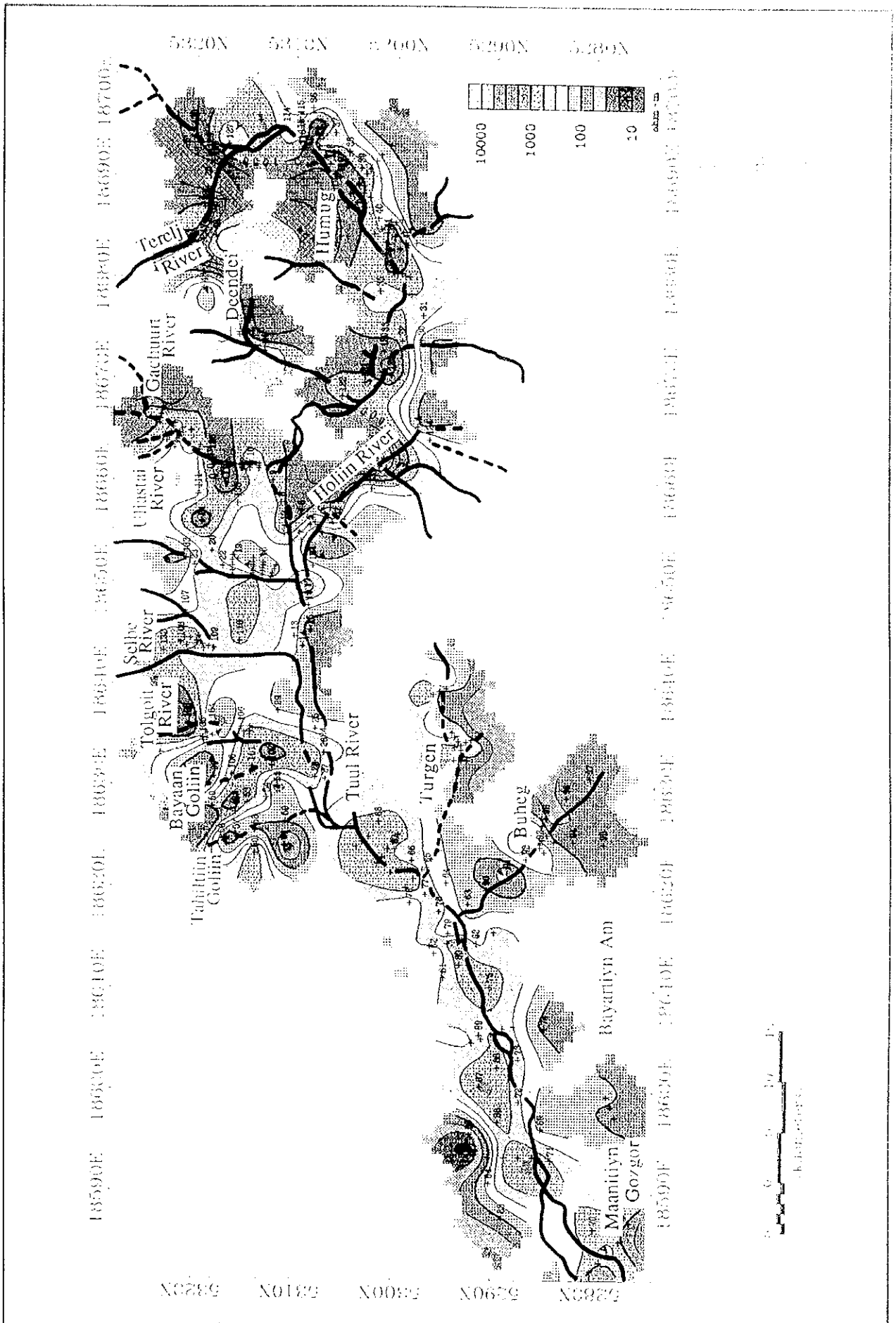
Appendix I.2.4

Compiled Resistivity Map



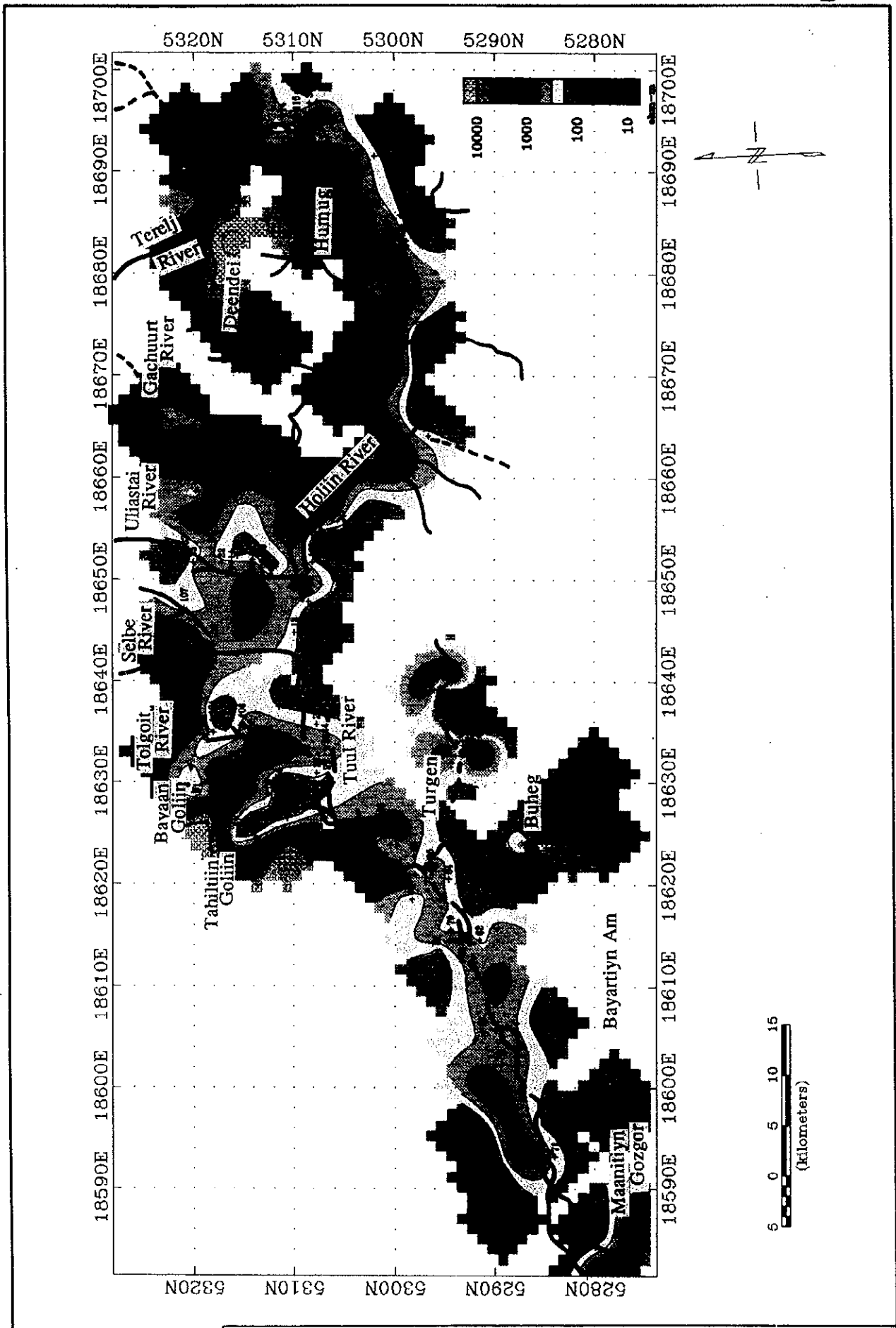
Compiled Resistivity map on -20m Level

JICA | The Study on Water Supply System in Ulaanbaatar and Surroundings



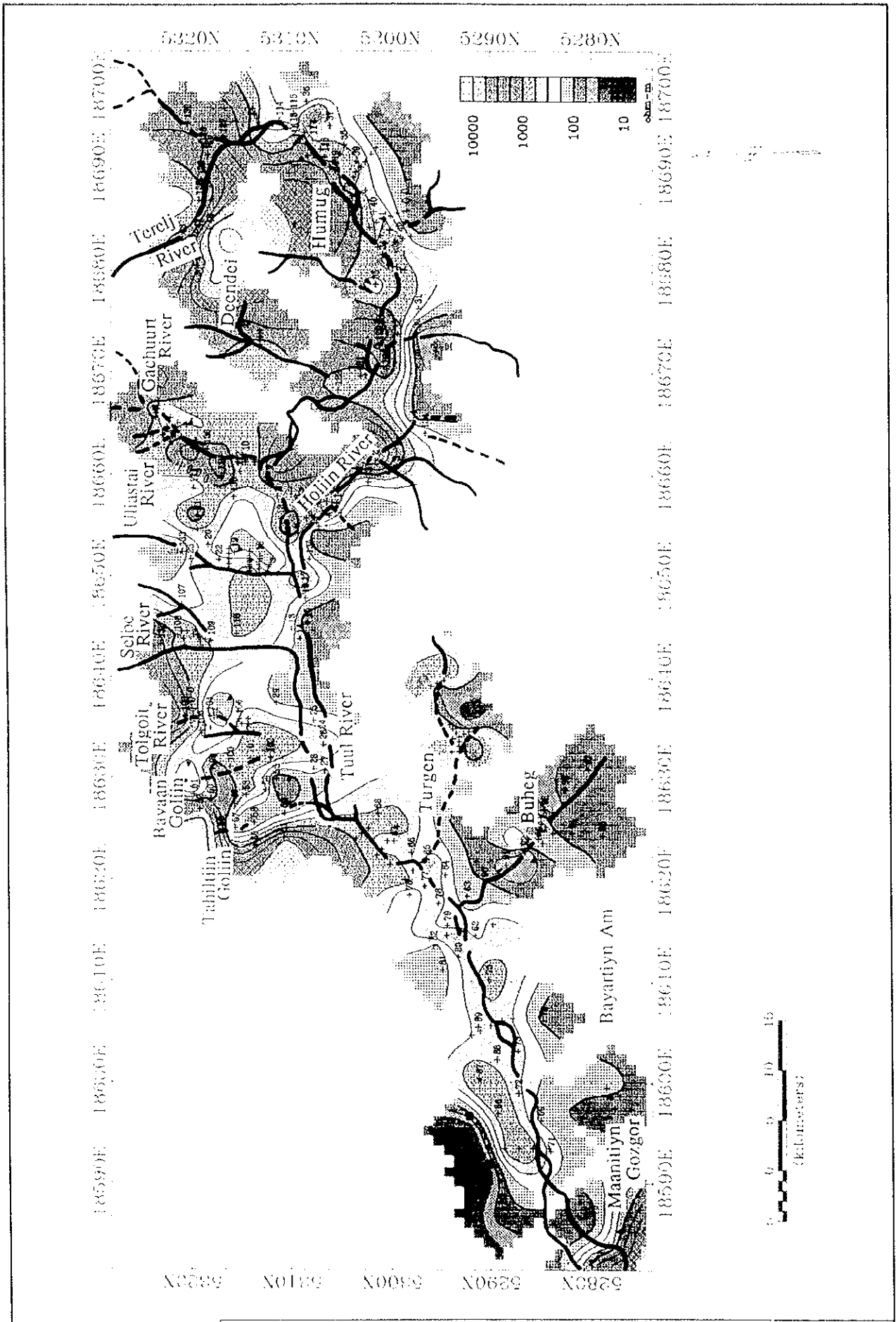
Compiled Resistivity map on -20m Level

JICA	The Study on Water Supply System in Ulaanbaatar and Surroundings
------	--



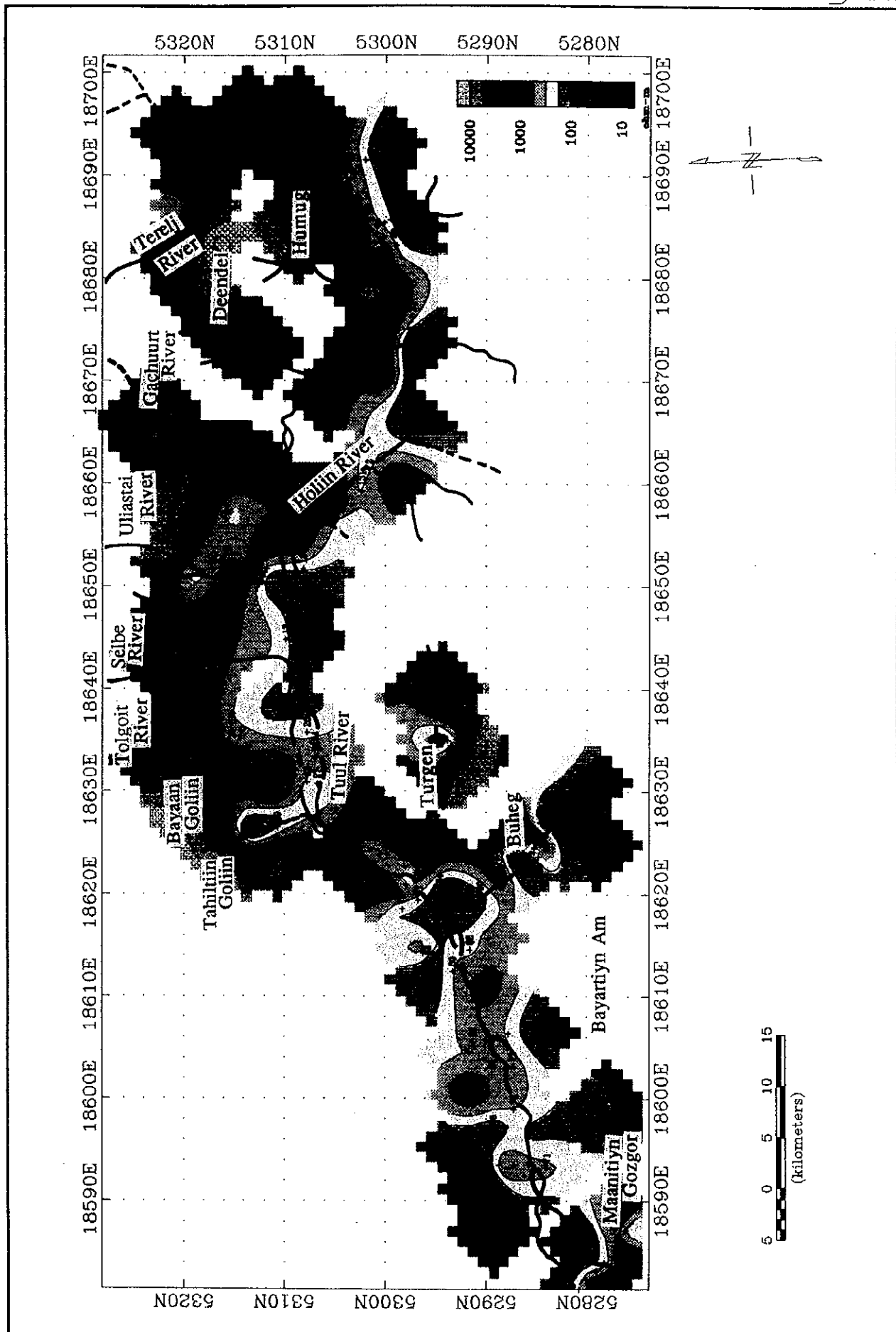
Compiled Resistivity Map on -30m Level

JICA The Study on Water Supply System in Ulaanbaatar and Surroundings



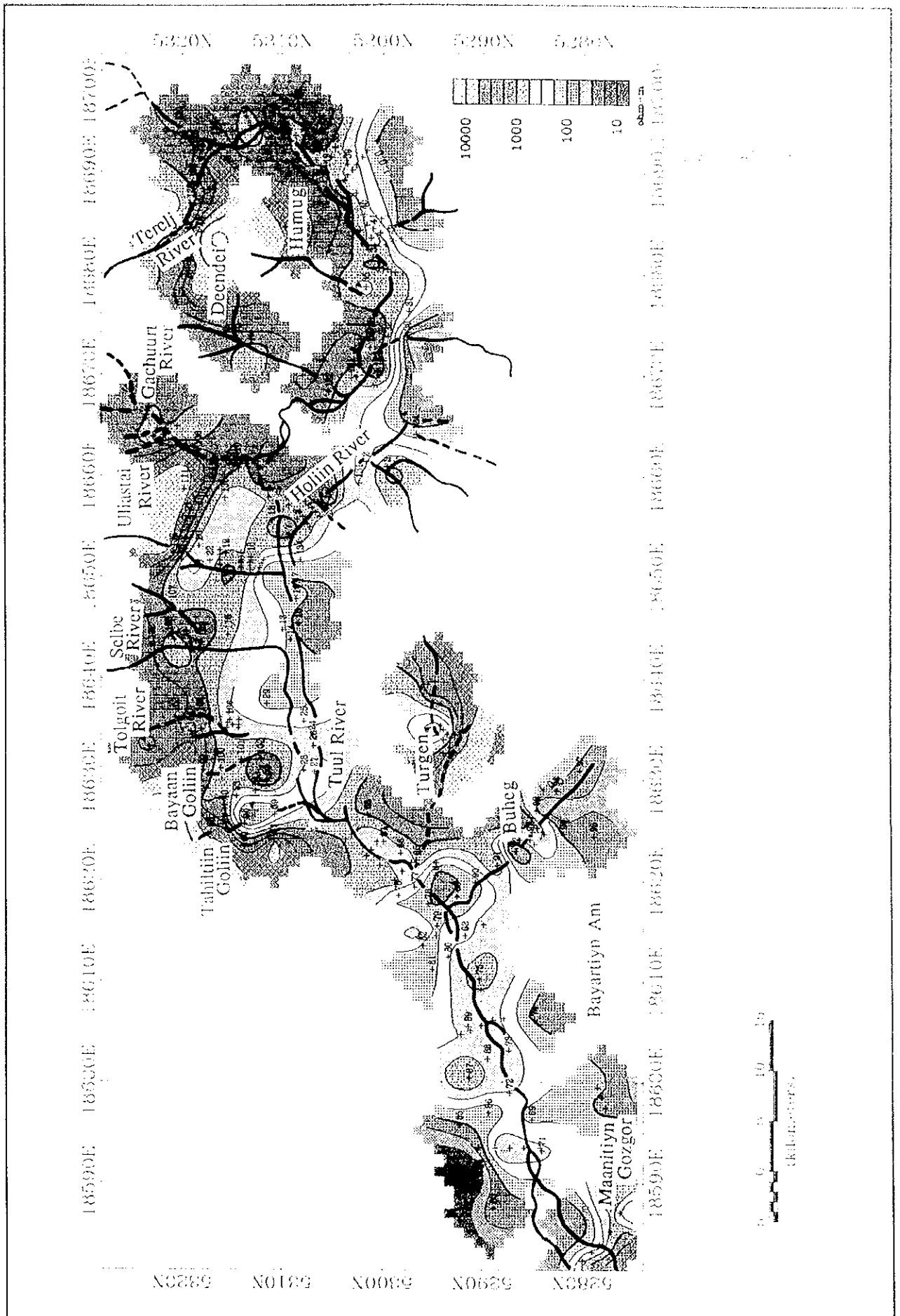
Compiled Resistivity Map on -30m Level

JICA | The Study on Water Supply System in Ulaanbaatar and Surroundings



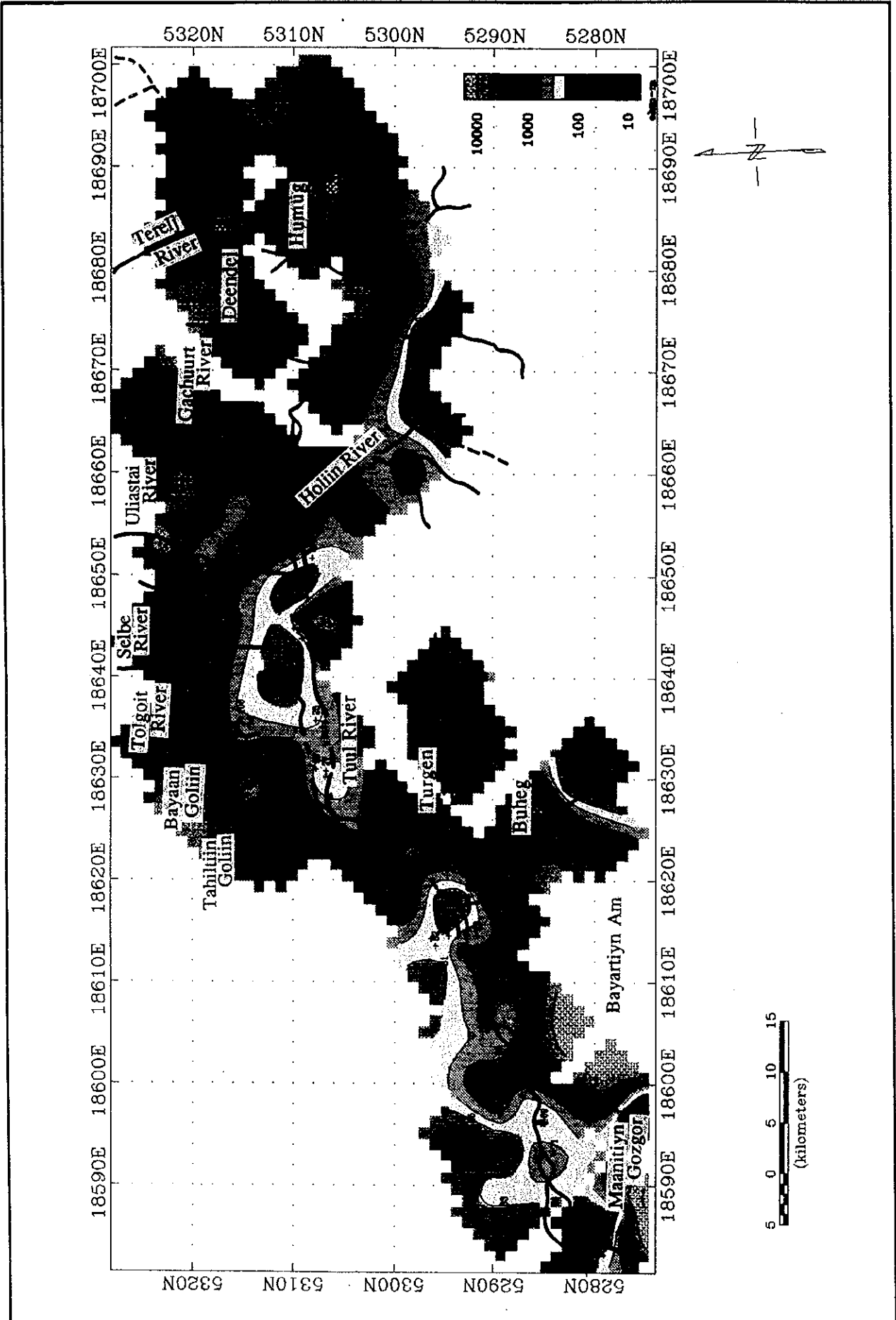
Compiled Resistivity Map on -50m Level

JICA The Study on Water Supply System in Ulaanbaatar and Surroundings

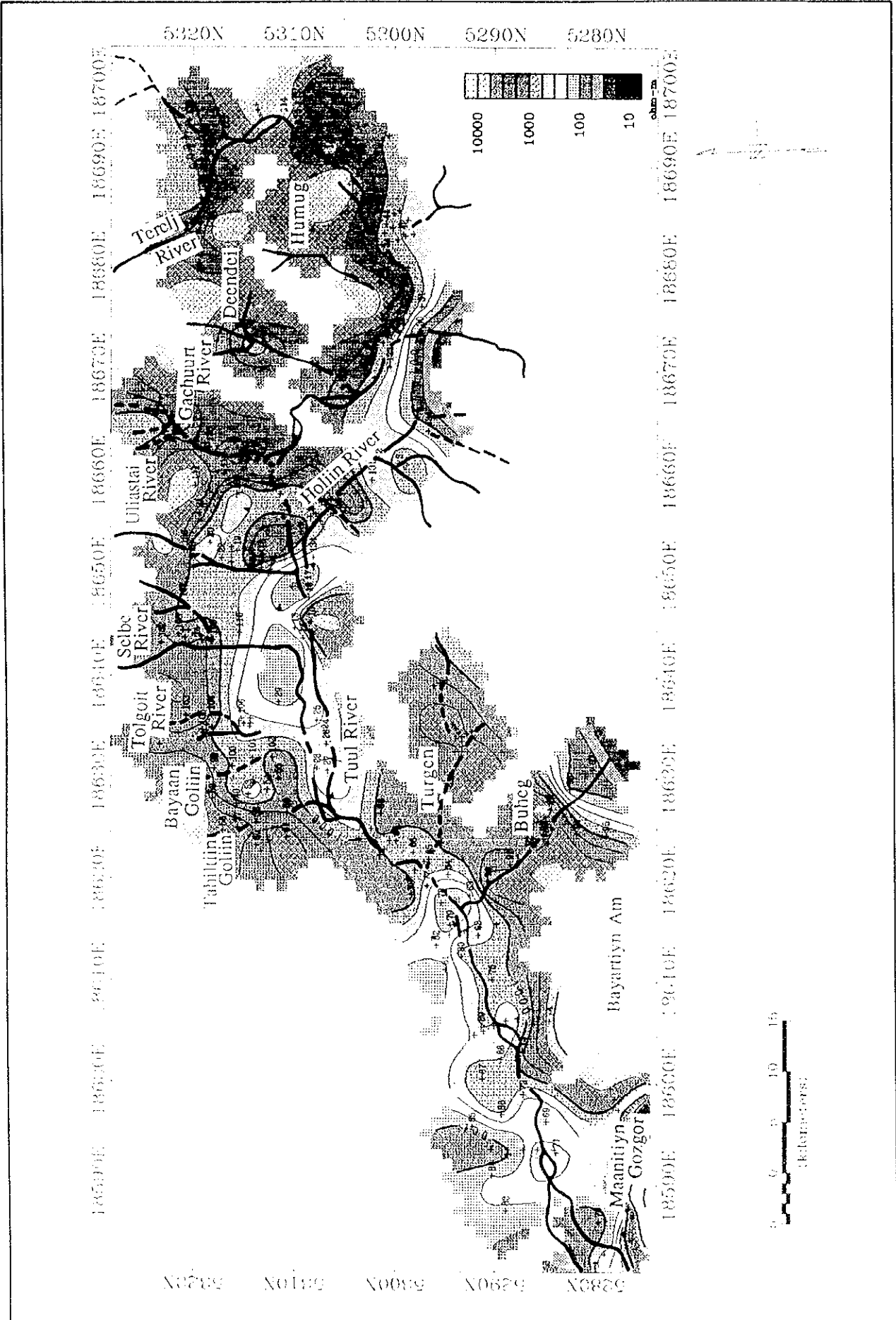


Compiled Resistivity Map on -50m Level

JICA The Study on Water Supply System in Ulaanbaatar and Surroundings



Compiled Resistivity Map on -100m Level



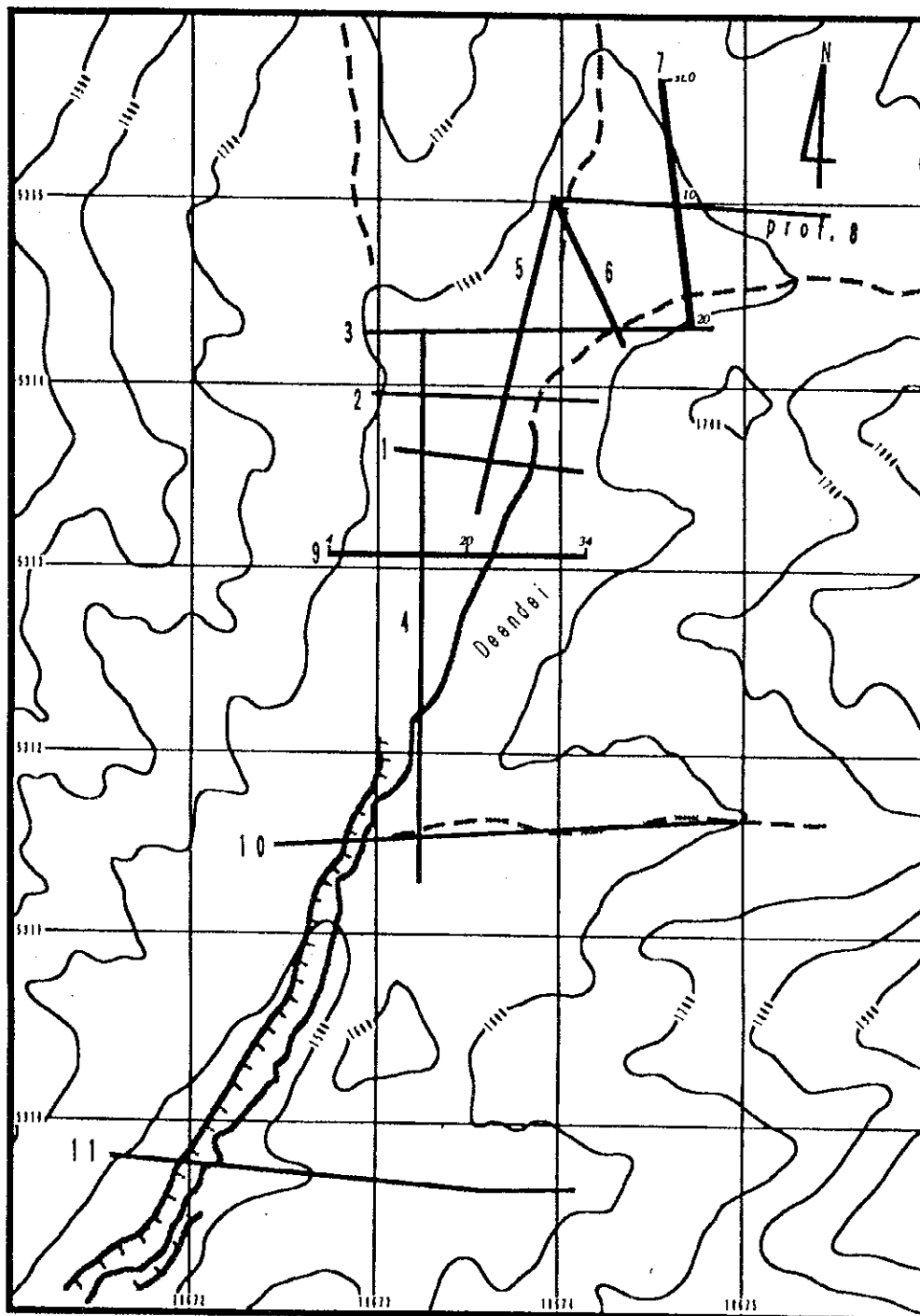
Compiled Resistivity Map on -100m Level

JICA	The Study on Water Supply System in Ulaanbaatar and Surroundings
------	--

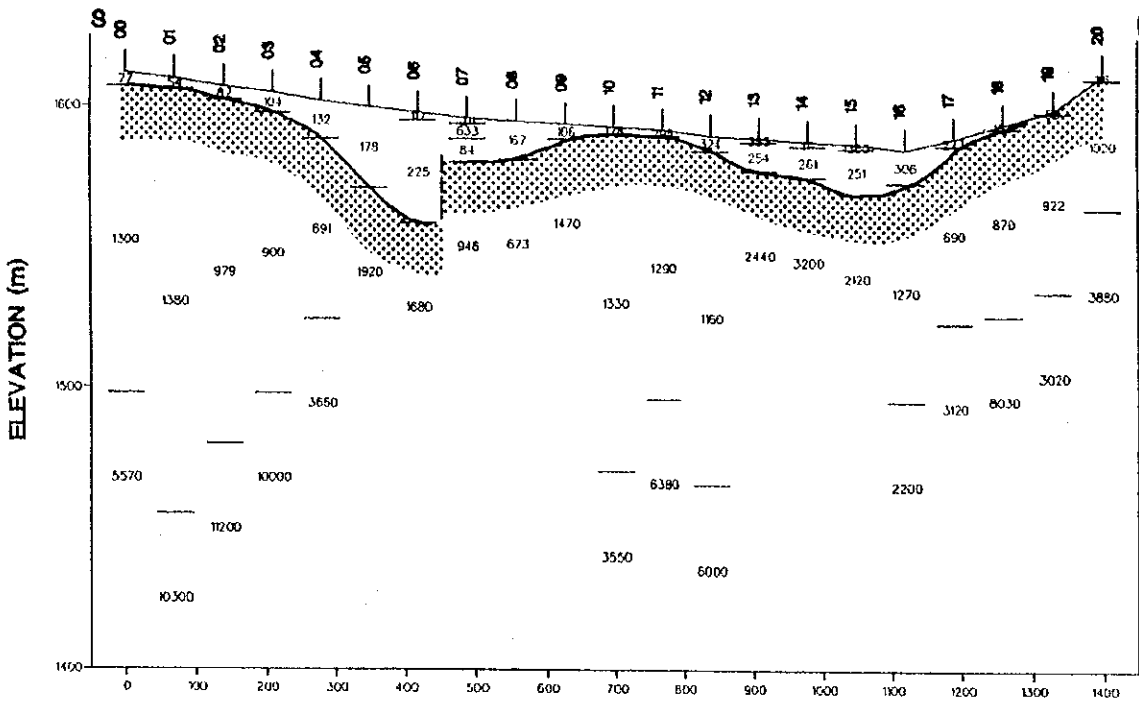
Appendix I.2.5

Existing Data of Electrical Survey in Deendei Area

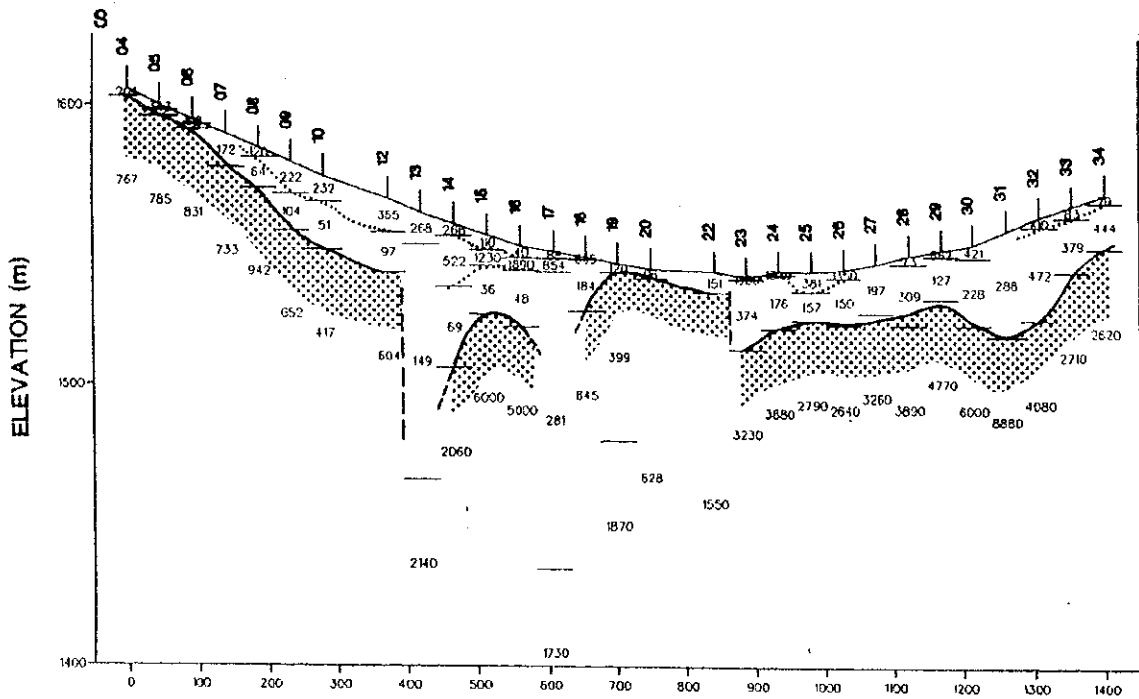




Location Map of Electrical Survey Profiles in Deendei Area	
JICA	The Study on Water Supply System in Ulaanbaatar and Surroundings



RESISTIVITY STRUCTURE FOR PROFILE 07 IN DEENDEI AREA



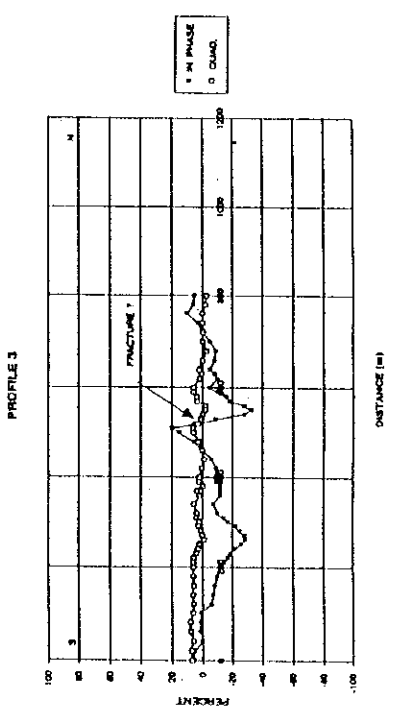
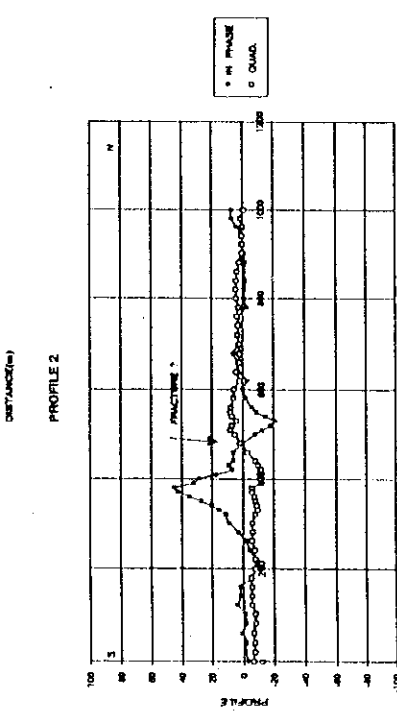
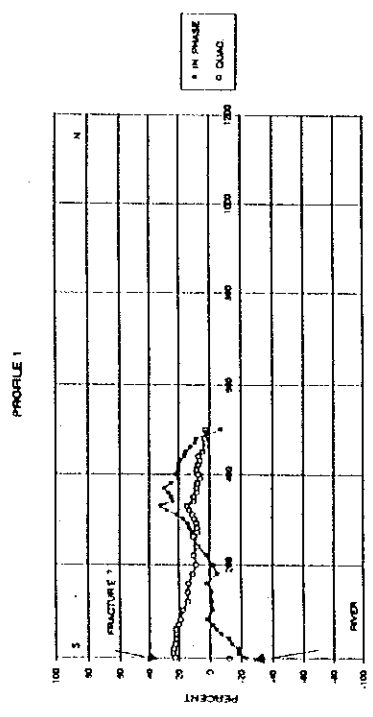
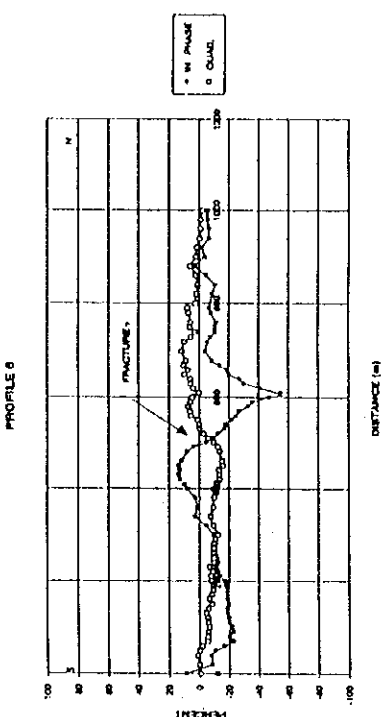
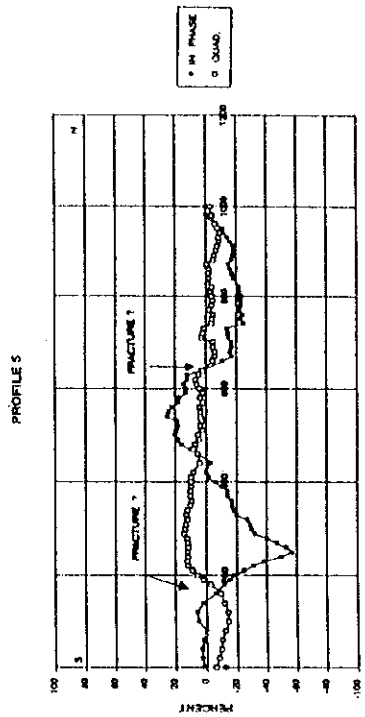
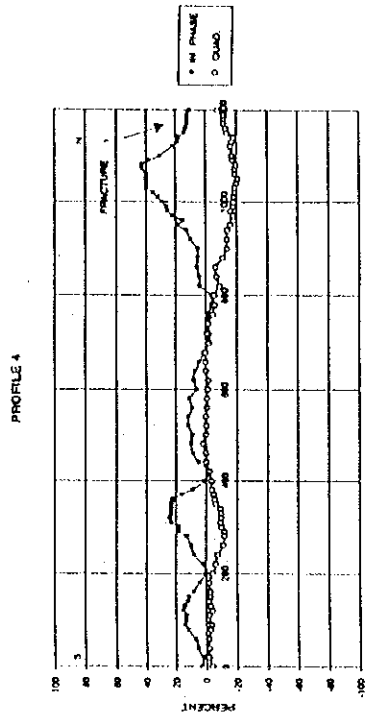
RESISTIVITY STRUCTURE FOR PROFILE 09 IN DEENDEI AREA

Resistivity Sections on Profile 7 and 9 in Deendei Area

Appendix I 2.6

VLf-EM Inphase and Quadrature Profiles

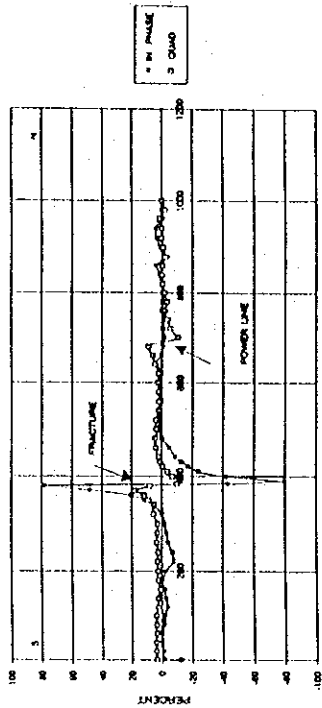




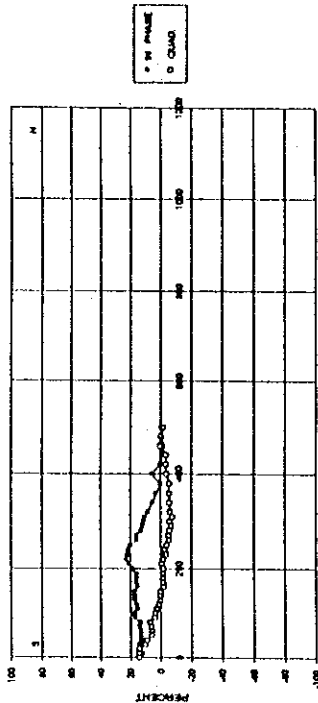
VLF-EM Inphase and Quadrature Profiles
 (No. 1, 2, 3, 4, 5, and 6)

JICA The Study on Water Supply System in Ulaanbaatar and Surroundings

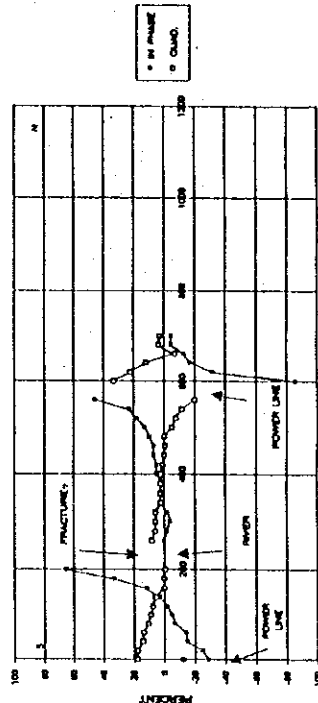
PROFILE 10



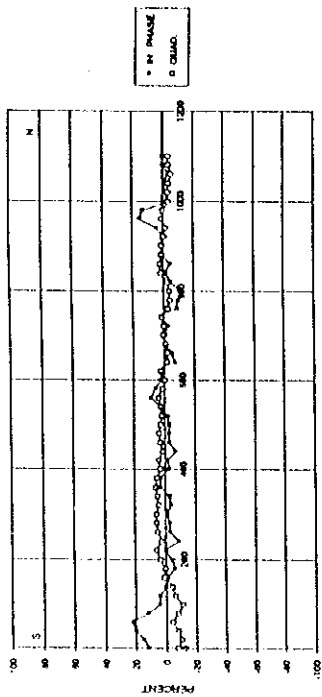
PROFILE 11



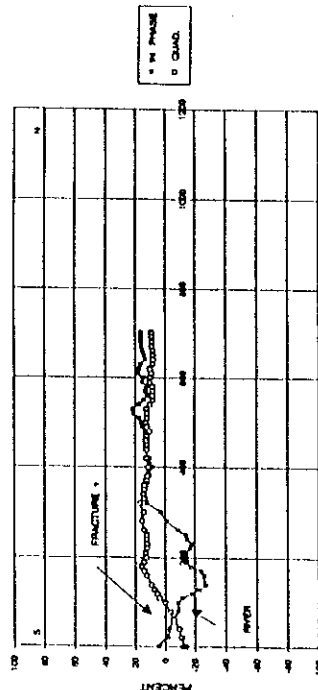
PROFILE 12



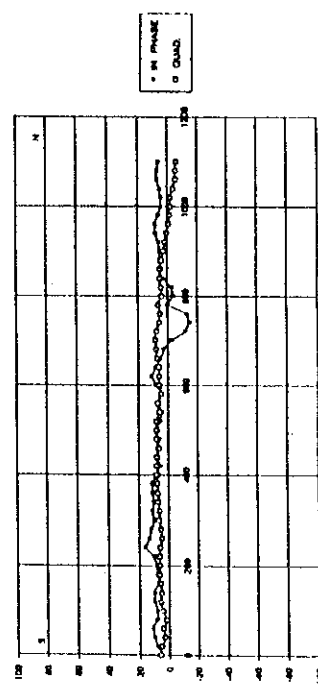
PROFILE 7



PROFILE 8



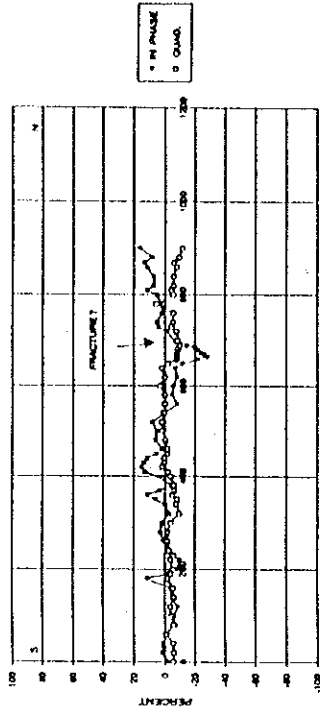
PROFILE 9



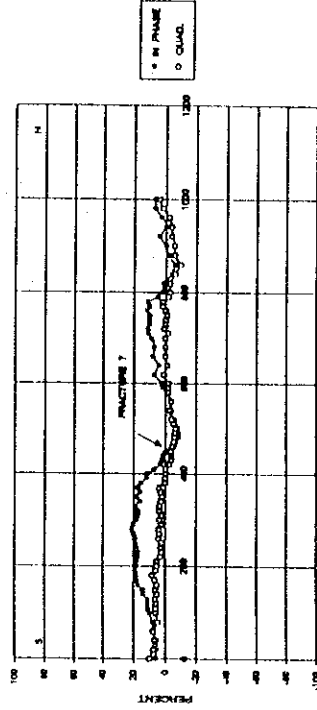
VLF-EM Inphase and Quadrature Profiles
(No. 7, 8, 9, 10, 11 and 12)

JICA The Study on Water Supply System in Ulaanbaatar and Surroundings

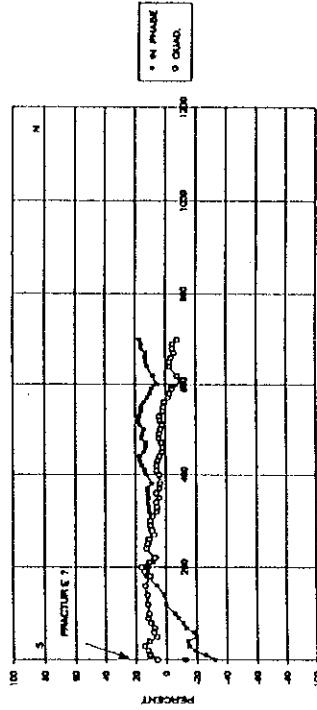
PROFILE 19



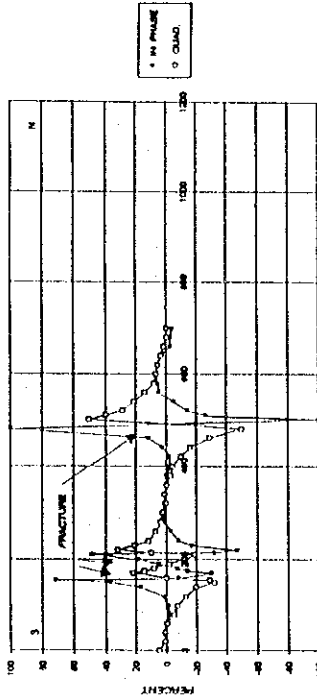
PROFILE 17



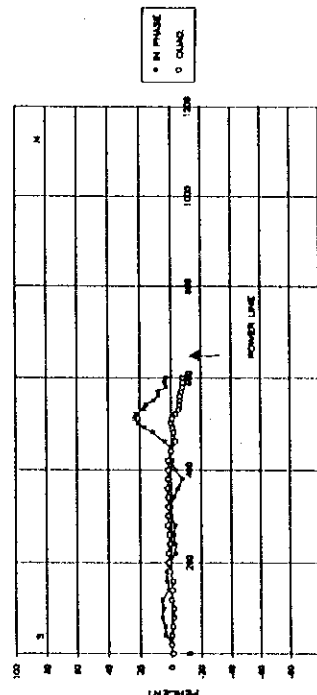
PROFILE 18



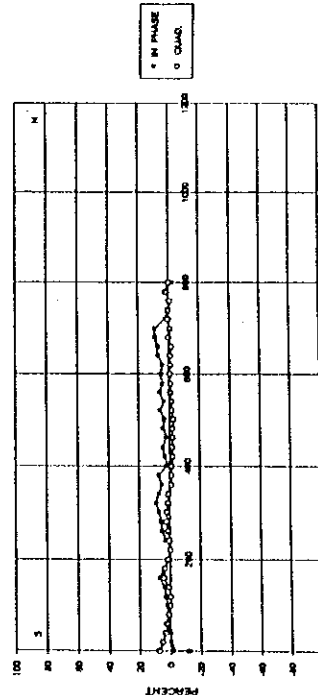
PROFILE 13



PROFILE 14



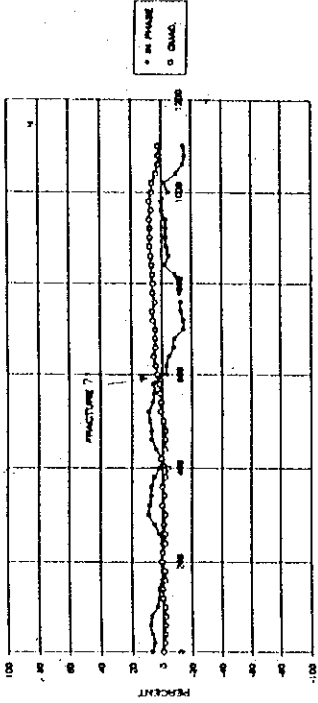
PROFILE 15



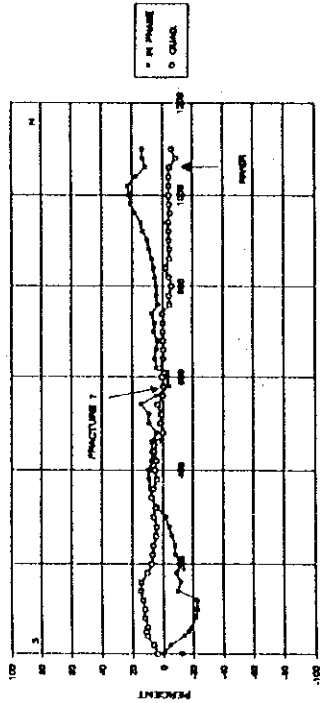
VLF-EM Inphase and Quadrature Profiles
(No. 13, 14, 15, 16, 17 and 18)

JICA The Study on Water Supply System in Ulaanbaatar and Surroundings

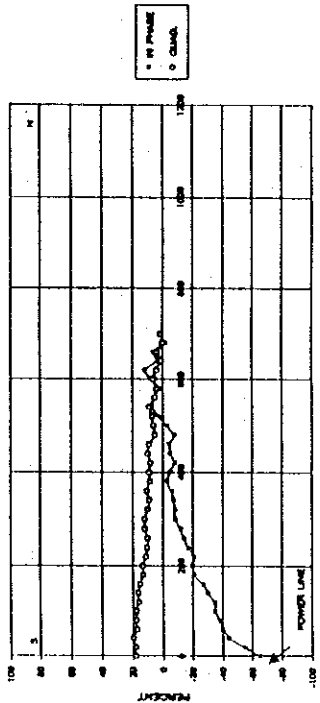
PROFILE 22



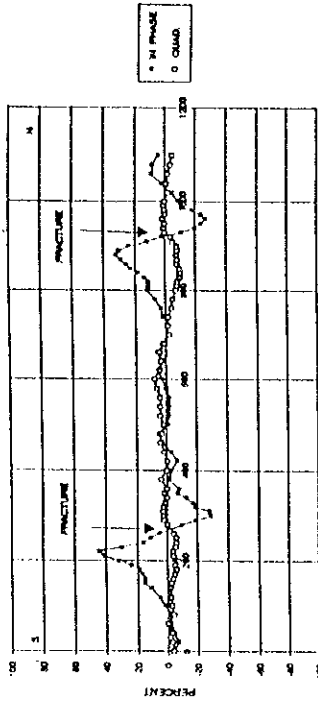
PROFILE 23



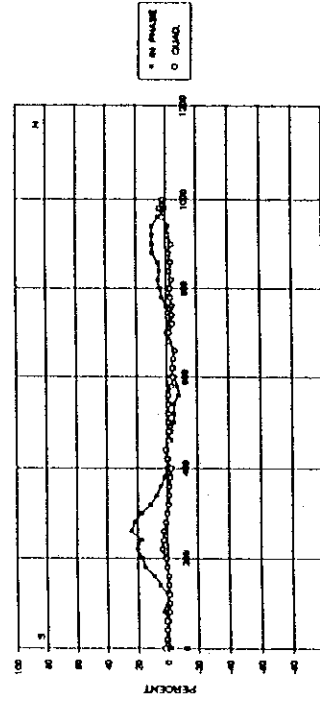
PROFILE 24



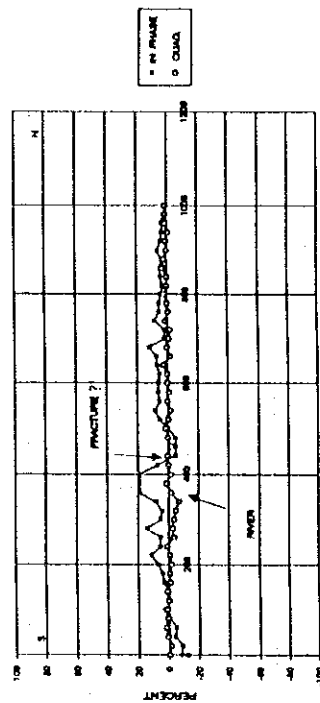
PROFILE 19



PROFILE 20



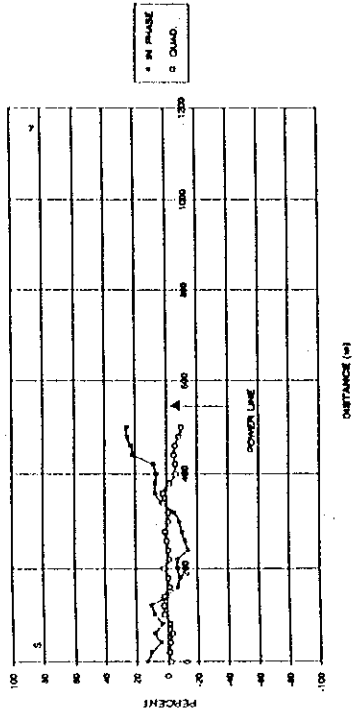
PROFILE 21



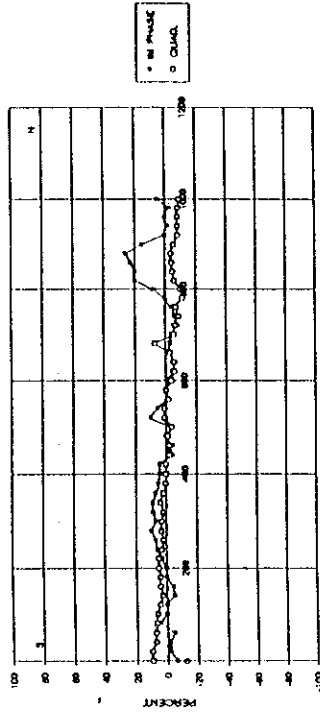
VLF-EM Inphase and Quadrature Profiles
 (No. 19, 20, 21, 22, 23 and 24)

JICA The Study on Water Supply System in Ulaanbaatar and Surroundings

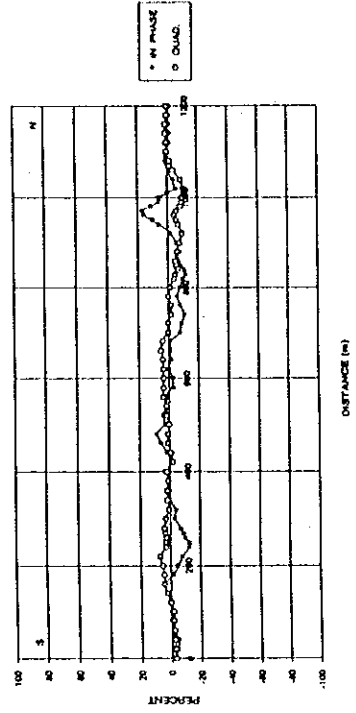
PROFILE 28



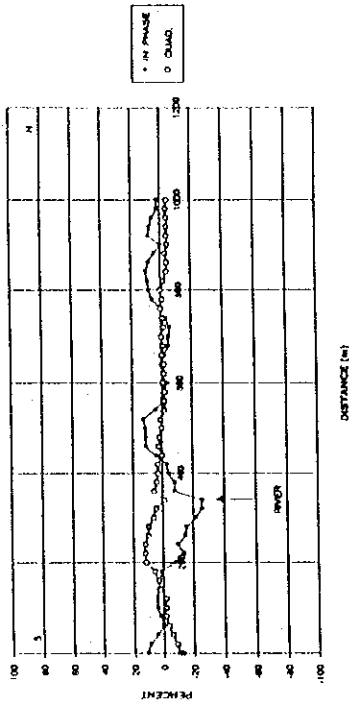
PROFILE 29



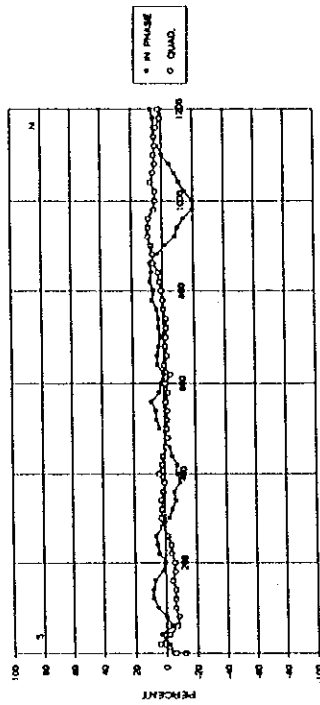
PROFILE 30



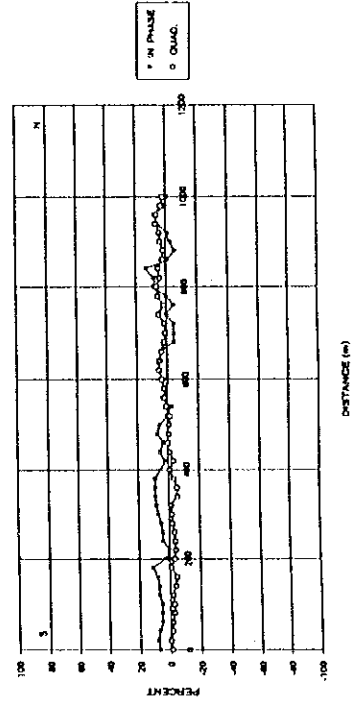
PROFILE 25



PROFILE 26



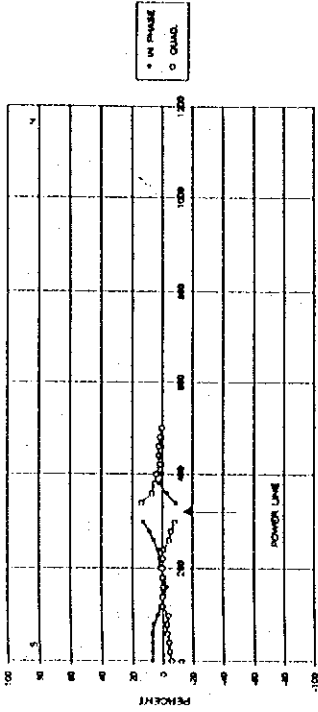
PROFILE 27



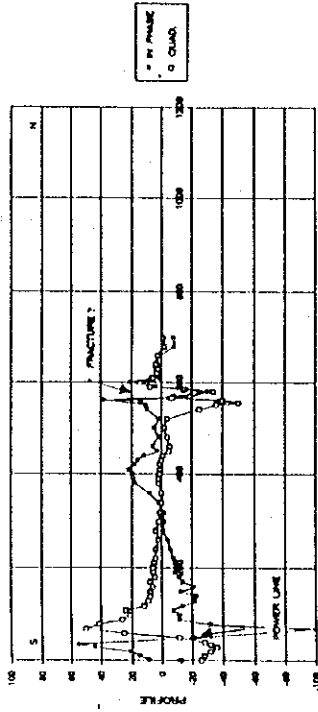
VLF-EM Inphase and Quadrature Profiles
(No. 25, 26, 27, 28, 29 and 30)

JICA The Study on Water Supply System in Ulaanbaatar and Surroundings

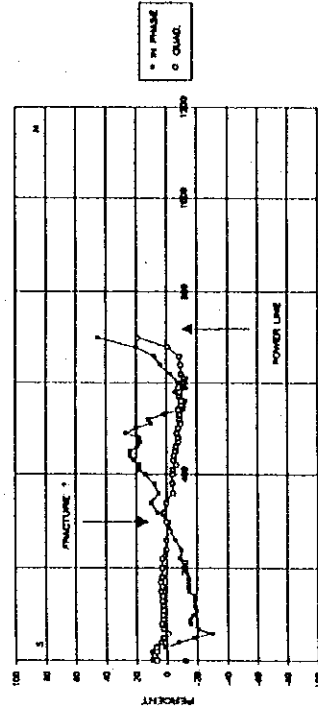
PROFILE 34



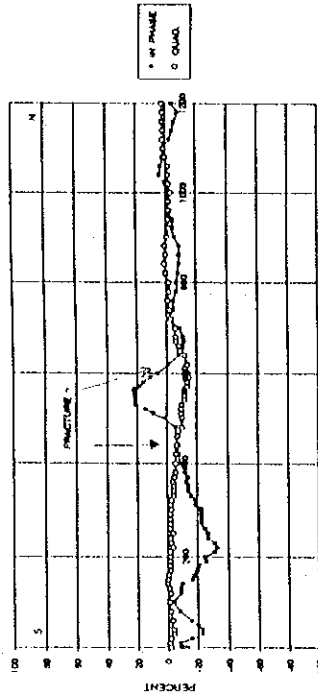
PROFILE 35



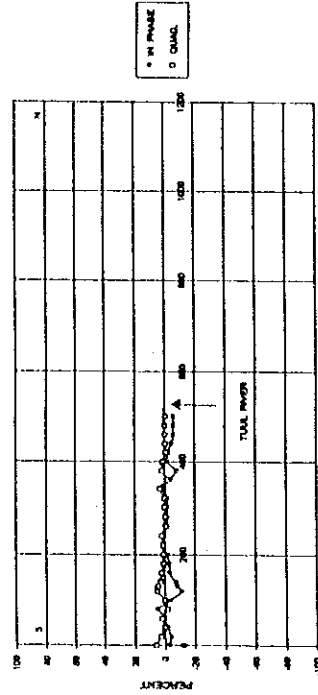
PROFILE 36



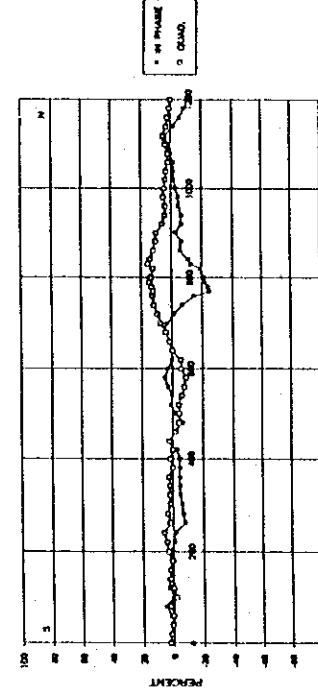
PROFILE 31



PROFILE 32



PROFILE 33

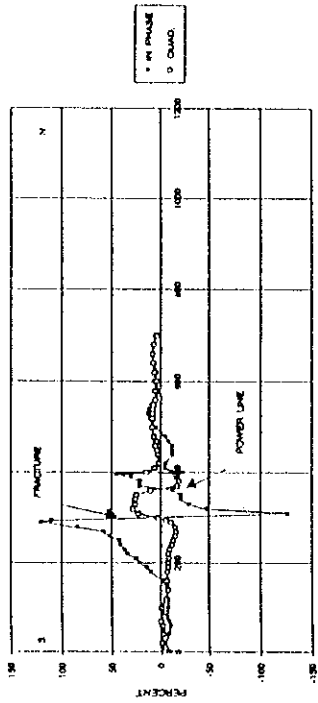


VLF-EM Inphase and Quadrature Profiles
 (No. 31, 32, 33, 34, 35 and 36)

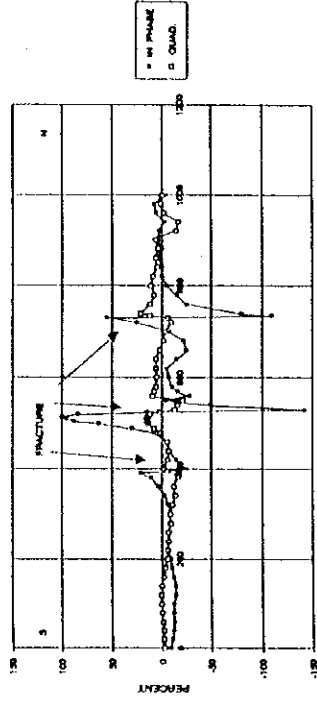
JICA

The Study on Water Supply System in Ulaanbaatar and Surroundings

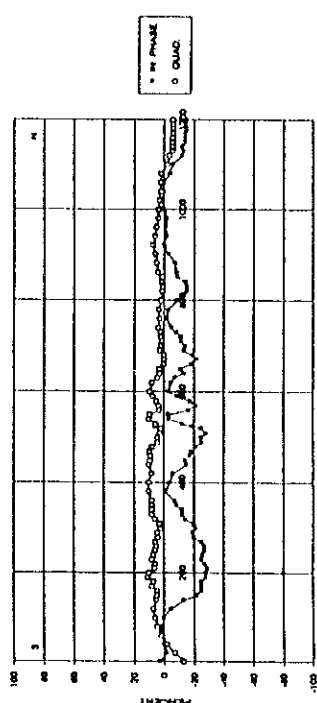
PROFILE 40



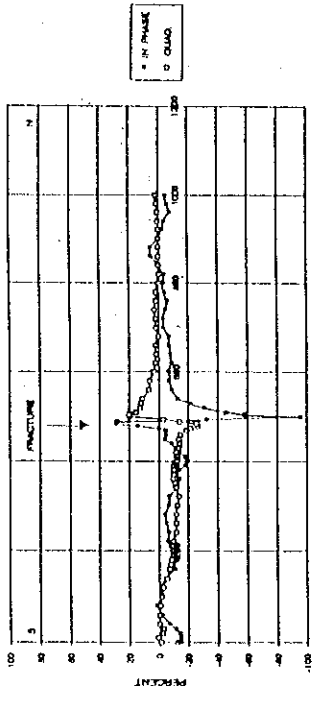
PROFILE 41



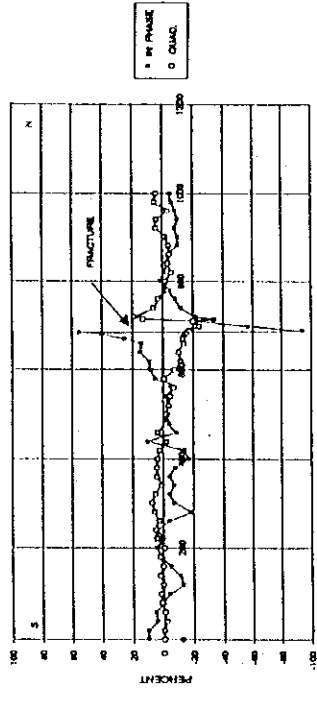
PROFILE 42



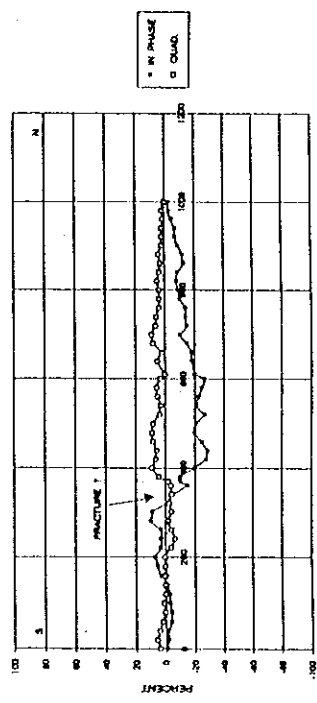
PROFILE 37



PROFILE 38



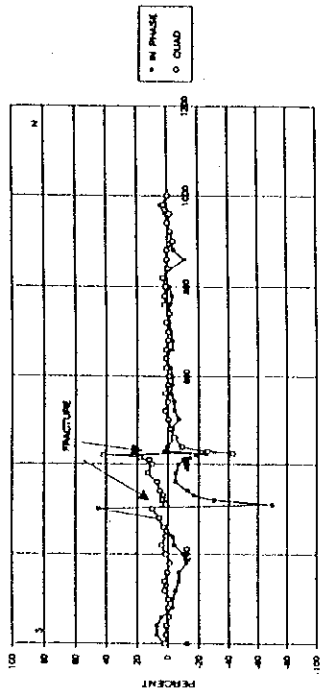
PROFILE 39



VLF-EM Inphase and Quadrature Profiles
 (No. 37, 38, 39, 40, 41 and 42)

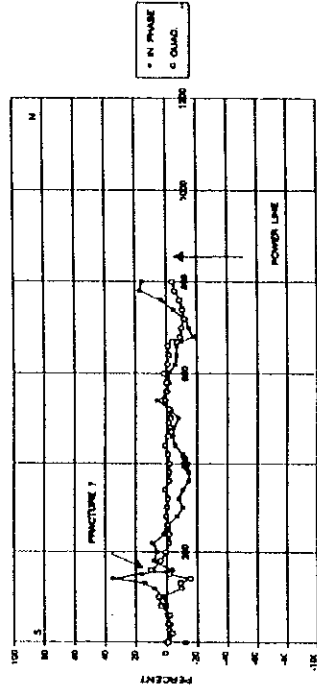
JICA The Study on Water Supply System in Ulaanbaatar and Surroundings

PROFILE 43



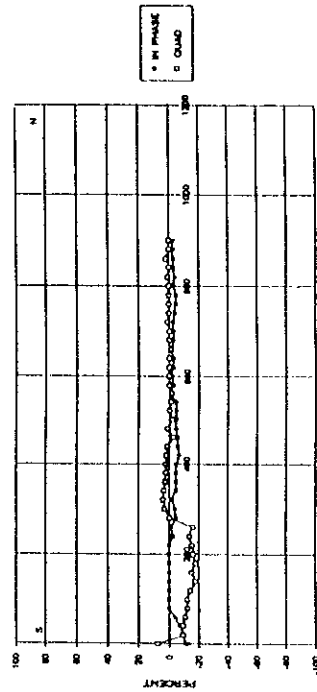
DISTANCE (m)

PROFILE 44



DISTANCE (m)

PROFILE 45



DISTANCE (m)

VLF-EM Inphase and Quadrature Profiles
(No. 43, 44 and 45)

JICA | The Study on Water Supply System in Ulaanbaatar and Surroundings

Appendix I.2.7
Data of VLF-EM Survey



App. 4.3 Data of VLF-EM survey

PRO-41			PRO-42			PRO-43			PRO-44			PRO-45		
DIST.	IN PHASE (%)	QUAD. PHASE (%)	DIST.	IN PHASE (%)	QUAD. PHASE (%)	DIST.	IN PHASE (%)	QUAD. PHASE (%)	DIST.	IN PHASE (%)	QUAD. PHASE (%)	DIST.	IN PHASE (%)	QUAD. PHASE (%)
0	-8	-2	0	3	-13	0	3	2	0	1	-1	0	-11	8
20	-10	-2	20	-2	-7	20	7	1	20	-3	-4	20	-10	-9
40	-12	-2	40	0	-2	40	7	1	40	-3	-1	40	-7	-10
60	-12	-1	60	1	2	60	4	-1	60	0	-2	60	-4	-11
80	-12	-1	80	1	5	80	-3	-0	80	0	4	80	0	-12
100	-12	1	100	0	6	100	-3	-0	100	2	5	100	0	-12
120	-14	0	120	-5	7	120	-5	2	120	8	-10	120	0	-14
140	-14	-0	140	-13	5	140	-7	2	140	14	-9	140	0	-18
160	-12	-2	150	-22	5	160	-7	0	140	35	-16	160	0	-16
180	-10	-4	160	-25	5	180	-12	-1	150	16	-2	180	0	-18
200	-9	-6	170	-25	8	200	-10	1	160	-4	10	200	0	-17
220	-6	-6	180	-25	7	220	-4	4	180	8	4	220	0	-16
240	-7	-7	190	-28	11	240	-3	1	200	6	1	240	-3	-14
260	-8	-7	200	-28	10	260	2	3	220	9	-2	260	-1	-16
280	-8	-10	210	-29	6	280	6	5	240	2	-2	280	-5	-0
300	-8	-9	220	-27	6	300	45	10	260	0	-1	300	-4	3
320	-6	-11	230	-25	8	310	-70	1	280	-7	0	320	-2	4
340	-3	-14	240	-26	7	320	-30	4	300	-11	-0	340	-5	4
360	4	-12	250	-27	6	330	-17	3	320	-8	-1	360	-5	3
380	11	-17	260	-27	5	340	-13	5	340	-11	1	380	-5	2
390	22	-17	270	-25	6	360	-5	7	360	-15	-2	400	-5	2
395	-17	-5	280	-20	4	380	-5	13	380	-15	-2	420	-7	2
400	-25	-2	290	-19	4	400	-7	10	400	-15	-2	440	-6	1
420	-14	-6	300	-21	2	410	-10	12	420	-11	-1	460	-6	-3
440	-8	7	310	-20	3	415	-15	18	440	-6	1	480	-5	1
460	-5	-6	320	-14	6	420	-18	42	460	-4	-1	500	-5	-2
480	8	2	330	-12	8	425	-25	-43	480	-5	-2	520	-5	-0
490	30	8	340	-12	8	430	2	-26	500	-8	-3	540	-5	-1
500	63	14	350	-8	8	440	0	-9	520	-3	-2	560	-2	-2
505	88	16	360	-7	8	460	-5	-4	540	6	1	580	-3	0
510	96	16	380	-1	10	480	-3	-2	560	-1	0	600	-2	0
515	100	14	400	-4	10	500	-7	-0	580	-2	0	620	-3	0
520	84	12	420	-6	8	520	-4	2	600	-1	2	640	-3	0
525	15	2	440	-15	10	540	-4	0	620	-6	-1	660	-2	-1
530	-142	-13	450	-14	9	560	-2	2	640	-7	-2	680	-3	0
540	-50	-16	460	-17	9	580	-3	0	660	-7	-1	700	-3	-0
550	-4	-22	470	-18	10	600	-3	-1	670	-10	-4	720	-3	1
560	-28	10	480	-21	8	620	-2	1	680	-18	-9	740	-4	0
570	-16	8	490	-25	4	640	1	1	700	-15	-10	760	-5	-0
580	-10	6	500	-25	4	660	-3	1	720	-13	-12	780	-5	0
600	-7	5	510	-28	3	680	-3	-0	740	-5	-11	800	-3	0
620	-5	6	520	-25	2	700	-2	-0	760	3	-9	820	-4	1
640	-15	6	525	-18	6	720	-1	1	780	17	-6	840	-3	0
660	-25	2	530	-12	6	740	-2	-1	800	15	-4	860	-3	2
680	-22	-2	540	-3	10	760	-2	2				880	-3	-0
700	-7	-3	550	-3	10	780	-3	2				900	-3	0
720	25	-10	560	-16	3	800	-1	1						
730	55	-6	570	-21	4	820	2	3						
735	-110	12	580	-17	5	840	-2	-0						
740	-80	22	590	-9	8	860	-11	0						
760	-25	12	600	-3	10	880	-4	-0						
780	-15	8	620	-5	8	900	-3	-4						
800	-5	11	630	-7	4	920	-2	-2						
820	0	9	640	-13	3	940	-1	0						
840	0	5	650	-11	3	960	1	-2						
860	4	7	660	-18	0	980	4	2						
880	0	4	670	-22	-0	1000	-1	-0						
900	4	7	680	-19	0									
920	3	-14	690	-13	3									
940	-3	-17	700	-14	2									
960	6	-2	710	-11	1									
980	8	1	720	-11	2									
1000	-4	0	730	-8	2									
			740	-5	4									
			760	-2	3									
			780	-3	4									
			800	-9	2									
			820	-15	1									
			830	-15	1									
			840	-14	2									
			850	-9	1									
			860	-8	4									
			880	-7	5									
			900	-3	6									
			920	0	8									
			940	-2	6									
			960	-1	5									
			980	-2	4									
			1000	0	4									
			1020	2	3									
			1040	0	2									
			1060	0	2									
			1080	-4	2									
			1100	-6	-2									
			1120	-12	-4									
			1130	-13	-6									
			1140	-12	-6									
			1150	-14	-6									
			1160	-14	-6									
			1170	-14	-6									
			1180	-15	-6									
			1190	-14	-6									
			1200	-15	-6									

PRO-1			PRO-2			PRO-3			PRO-4			PRO-5		
DIST.	IN PHASE (%)	QUAD. PHASE (%)	DIST.	IN PHASE (%)	QUAD. PHASE (%)	DIST.	IN PHASE (%)	QUAD. PHASE (%)	DIST.	IN PHASE (%)	QUAD. PHASE (%)	DIST.	IN PHASE (%)	QUAD. PHASE (%)
0	-23	23	0	-3	-7	0	6	7	0	3	-4	0	2	-6
10	-18	24	20	-1	-8	20	5	7	20	2	-2	20	3	-8
20	-18	23	40	-2	-7	40	0	6	40	5	-2	40	3	-10
30	-14	22	60	1	-7	60	2	8	60	7	-2	60	2	-10
40	-12	22	80	-2	-8	80	1	8	80	12	-3	80	0	-12
50	-7	22	100	-1	-8	100	1	6	90	14	-4	100	5	-15
60	-4	22	120	4	-6	120	-5	6	100	13	-1	120	6	-14
70	-2	20	140	2	-6	140	-7	6	110	13	-2	140	2	-12
80	2	19	160	2	-6	160	-8	6	120	15	-4	160	-6	-10
100	-2	17	180	-6	-5	180	-10	6	130	14	-3	180	-12	-3
120	-1	14	200	-10	-8	200	-13	6	140	12	-2	190	-16	2
140	-1	14	220	-9	-8	210	-15	6	150	11	-3	200	-18	6
160	2	14	240	-4	-8	220	-17	6	160	8	-3	210	-25	9
180	-5	11	260	-2	-6	230	-19	4	180	4	-2	220	-31	12
200	-2	8	280	3	-7	240	-22	3	200	0	-4	230	-38	12
220	2	10	300	9	-6	250	-26	2	220	2	-6	240	-50	12
240	7	8	320	11	-8	260	-29	-1	240	8	-8	250	-57	12
260	11	10	330	15	-10	270	-28	0	260	10	-11	260	-53	12
270	11	8	340	20	-9	280	-25	1	280	13	-12	270	-47	12
280	13	8	350	27	-8	290	-22	3	290	18	-12	280	-40	12
290	14	8	360	35	-8	300	-17	2	300	18	-10	290	-32	14
300	17	10	370	43	-6	310	-14	4	310	23	-9	300	-30	14
310	21	11	380	45	-6	320	-10	4	320	24	-10	310	-29	13
320	28	13	390	32	-12	340	-7	6	330	23	-10	320	-27	12
330	32	14	400	28	-11	360	-12	2	340	23	-9	330	-20	13
340	24	10	410	17	-11	370	-12	4	350	23	-6	340	-18	12
350	25	10	420	7	-12	380	-12	-0	360	22	-6	350	-17	10
360	27	8	430	9	-10	390	-9	3	370	16	-5	360	-17	9
370	30	8	440	6	-8	400	-9	2	380	9	-4	370	-14	10
380	25	8	460	6	-3	420	-9	1	400	1	-4	380	-14	10
390	20	6	480	0	2	440	-6	-1	420	-3	-2	390	-10	10
400	22	7	500	-8	5	460	0	0	440	5	0	400	-8	10
410	20	8	510	-13	8	480	6	3	460	9	0	410	-2	10
420	20	7	520	-18	7	500	15	6	480	10	2	420	0	8
430	19	6	530	-21	4	510	20	6	500	9	0	440	-3	4
440	16	7	540	-15	7	520	5	3	520	12	-0	460	5	6
450	15	4	550	-9	8	530	-9	1	540	12	0	470	10	8
460	12	2	560	-6	8	540	-28	-0	560	9	-1	480	16	7
470	9	2	580	-2	6	550	-33	-2	580	11	-1	490	18	5
480	8	3	600	0	8	560	-28	-2	600	8	-1	500	20	5
500	-7	2	620	-3	2	570	-18	4	620	8	-2	510	19	3
			640	3	4	580	-16	4	640	7	-0	520	18	4
			660	3	2	590	-10	6	660	4	0	530	19	3
			680	6	2	600	-5	6	680	1	0	540	25	4
			700	3	2	620	-10	2	700	-3	-2	550	24	4
			720	3	3	630	-8	1	720	-3	-1	560	22	4
			740	2	3	640	-5	2	740	-1	-2	570	18	2
			760	3	4	660	-8	0	760	-2	-5	580	17	4
			780	-3	3	680	-9	-3	780	-4	-6	590	13	2
			800	-1	4	700	-5	-0	800	-4	-6	600	13	4
			820	-1	4	720	0	-0	820	4	-9	610	14	6
			840	-2	4	740	3	-0	840	4	-7	620	12	7
			860	-1	4	760	10	0	860	6	-7	630	12	5
			880	-2	2	780	6	-2	880	5	-11	640	3	2
			900	-1	0	800	5	-3	900	5	-14	660	-11	-4
			920	1	0				920	10	-14	670	-17	-6
			940	1	0				940	13	-14	680	-16	-6
			960	4	0				950	18	-16	690	-17	-5
			980	7	1				980	15	-18	700	-17	-5
			1000	7	-1				970	22	-18	710	-15	3
									980	25	-16	720	-16	2
									990	26	-18	730	-14	1
									1000	29	-18	740	-25	-4
									1010	32	-18	750	-23	-4
									1020	35	-19	760	-24	-5
									1030	40	-19	770	-22	-2
									1040	40	-20	780	-23	-4
									1050	40	-21	790	-23	-5
									1060	40	-19	800	-23	-4
									1070	43	-19	810	-22	-3
									1080	43	-20	820	-22	-4
									1090	38	-18	840	-18	-2
									1100	30	-17	850	-17	-2
									1120	22	-16	860	-16	-2
									1130	18	-17	870	-15	-1
									1140	18	-18	880	-17	-5
									1150	14	-14	890	-18	-6
									1160	13	-13	900	-18	-7
									1170	12	-12	910	-18	-8
									1180	12	-12	920	-16	-9
									1190	12	-12	930	-14	-8
									1200	10	-8	940	-12	-9
												950	-11	-8
												960	-7	-6
												980	0	-4
												1000	0	-3

PRO-6			PRO-7			PRO-8			PRO-9			PRO-10		
DIST.	IN PHASE	QUAD. PHASE	DIST.	IN PHASE	QUAD. PHASE	DIST.	IN PHASE	QUAD. PHASE	DIST.	IN PHASE	QUAD. PHASE	DIST.	IN PHASE	QUAD. PHASE
(m)	(%)	(%)	(m)	(%)	(%)	(m)	(%)	(%)	(m)	(%)	(%)	(m)	(%)	(%)
0	9	-1	0	12	-8	0	4	-14	0	5	6	0	-2	4
20	-9	0	20	15	-10	20	-2	-11	20	8	5	20	-1	4
40	-8	1	40	20	-8	40	-3	-10	40	10	3	40	0	4
50	-11	-0	60	22	-4	60	-5	-6	60	11	4	60	0	4
60	-17	-2	80	12	-8	80	-9	-4	80	8	2	80	-2	4
70	-23	-6	100	4	-11	100	-9	0	100	8	4	100	-2	4
80	-20	-6	120	4	-6	110	-12	4	120	10	6	120	-4	2
90	-23	-6	140	0	-4	120	-18	5	140	10	5	140	-3	3
100	-22	-7	160	-1	1	130	-23	7	160	7	6	160	-2	1
110	-20	-6	180	-6	0	140	-27	9	180	8	6	180	0	2
120	-20	-6	200	-4	4	160	-26	12	200	8	6	200	-3	3
130	-19	-5	220	0	6	170	-24	14	220	10	6	220	-8	3
140	-19	-7	240	-9	3	180	-17	16	240	16	6	240	-7	2
150	-20	-9	260	-3	5	190	-15	14	260	13	5	260	-4	4
160	-19	-7	280	-3	6	200	-14	13	280	12	5	280	-3	3
170	-19	-9	300	-1	6	210	-14	13	300	10	6	300	-2	3
180	-19	-10	320	-4	4	220	-17	12	320	11	6	320	0	6
190	-18	-10	340	-3	5	230	-18	12	340	10	7	340	5	5
200	-17	-8	360	3	7	240	-15	12	360	11	7	350	12	9
210	-14	-8	380	3	6	250	-14	12	380	11	8	360	20	12
220	-13	-9	400	-3	3	260	-9	14	400	7	8	370	48	18
230	-12	-7	420	-2	4	280	-1	15	420	5	8	380	78	8
240	-13	-10	440	-7	1	300	3	14	440	7	8	385	-43	-10
250	-12	-10	460	-3	3	320	12	17	460	7	6	390	-80	-12
260	-11	-10	480	-3	4	330	13	14	480	6	8	400	-42	-7
270	-11	-10	500	-3	3	340	14	14	500	7	8	410	-24	-4
280	-11	-10	520	-2	2	350	13	14	520	5	8	420	-17	-1
290	-11	-11	540	3	3	360	12	14	540	4	6	430	-13	1
300	-10	-13	560	9	4	370	13	12	560	6	7	440	-9	2
320	-5	-10	580	6	1	380	10	12	580	4	5	460	-5	4
340	3	-8	600	2	-0	400	8	11	600	8	6	480	0	4
360	1	-10	620	3	2	420	10	12	620	11	6	500	2	4
380	3	-10	640	-7	-2	440	13	12	640	8	6	520	1	4
400	8	-10	660	-5	-2	450	13	12	660	5	8	540	1	2
410	10	-12	680	-1	-1	460	13	13	680	3	8	560	0	2
420	13	-14	700	-1	1	470	13	12	700	-3	9	580	2	2
430	14	-14	720	-3	0	480	13	10	720	-12	8	600	1	3
440	13	-14	740	2	1	490	15	12	740	-15	6	620	0	2
450	14	-16	760	-9	-3	500	16	12	760	-13	5	640	5	4
460	12	-16	780	-10	-4	510	17	12	780	0	7	660	0	6
480	8	-14	800	-11	-4	520	21	12	800	-4	4	680	-1	9
490	4	-13	820	-5	-3	530	22	12	820	-3	5	700	-2	-11
500	-5	-10	840	-2	2	540	17	10	840	3	5	720	-1	-6
510	-10	-6	860	-5	2	550	14	8	860	4	5	740	-2	-4
520	-13	-3	880	0	1	560	12	8	880	5	4	760	0	-2
530	-17	0	900	0	1	570	13	8	900	5	2	780	-1	-4
540	-18	0	920	-2	-0	580	12	8	920	6	2	800	-1	-2
550	-22	1	940	4	-2	590	15	10	940	8	0	820	0	-1
560	-25	6	960	15	1	600	14	10	960	8	-1	840	1	-0
570	-27	6	980	13	0	610	18	9	980	6	-2	860	4	-1
580	-33	8	1000	-4	-4	620	17	10	1000	4	-2	880	-4	-2
590	-36	6	1020	-2	-4	630	16	8	1020	4	-2	900	1	-1
600	-47	5	1040	-1	-4	640	13	8	1040	5	-4	920	4	0
605	-55	1	1060	-4	-6	650	14	8	1060	7	-6	940	4	0
610	-55	0	1080	0	-4	660	15	8	1080	7	-6	960	-1	2
620	-41	4	1100	0	-4	670	16	9	1100	6	-6	980	0	-2
630	-30	6				680	16	9				1000	0	0
640	-27	6				690	16	9						
650	-20	10				700	16	9						
660	-19	8												
670	-14	11												
680	-9	9												
700	-4	12												
720	-6	10												
730	-8	6												
740	-11	3												
750	-11	6												
760	-12	6												
780	-8	7												
790	-7	8												
800	-12	3												
820	-9	2												
840	-11	1												
860	-5	2												
880	3	6												
900	-4	2												
920	-2	2												
940	-7	-1												
960	-7	-1												
980	-6	-1												
1000	-6	-3												

	PRO-11			PRO-12			PRO-13			PRO-14			PRO-15	
DIST.	IN	QUAD.	DIST.	IN	QUAD.	DIST.	IN	QUAD.	DIST.	IN	QUAD.	DIST.	IN	QUAD.
(m)	PHASE (%)	PHASE (%)	(m)	PHASE (%)	PHASE (%)	(m)	PHASE (%)	PHASE (%)	(m)	PHASE (%)	PHASE (%)	(m)	PHASE (%)	PHASE (%)
0	14	14	0	-29	18	0	0	5	0	0	-1	0	-2	7
10	12	14	20	-25	18	20	1	1	20	0	0	20	0	5
20	14	14	40	-15	14	40	1	1	40	4	-0	40	0	3
30	14	10	60	-14	14	60	-1	-0	60	4	-1	60	3	2
40	13	9	80	-7	11	80	-2	-5	80	6	-2	80	1	1
50	13	6	100	-5	9	100	-1	-7	100	5	-2	100	2	0
60	13	6	120	-2	8	120	2	-13	120	6	0	120	3	-0
70	14	6	140	3	6	140	17	-20	140	2	-1	140	4	1
80	13	7	160	12	0	150	37	-32	160	3	-1	160	7	4
90	17	4	180	33	-0	155	72	-29	180	3	1	180	4	4
100	17	4	200	65	-1	160	-8	0	200	2	2	200	0	2
110	15	2	220			170	-30	22	220	-3	2	220	0	-0
120	16	1	240			175	-14	15	240	-3	1	240	3	0
130	17	0	260	0	9	180	-7	9	260	-2	1	260	5	1
140	17	-0	280	-2	6	190	5	-2	280	-3	2	280	6	2
150	17	0	300	-4	6	200	18	-12	300	0	2	300	7	2
160	15	-2	320	-2	6	210	48	-19	320	0	2	320	9	1
170	16	-2	340	2	2	215	-32	10	340	-2	2	340	7	1
180	16	-2	360	2	3	220	-47	32	360	-5	3	360	5	-1
190	16	-2	380	2	3	230	-17	21	380	-8	2	380	7	-1
200	19	-2	400	5	2	240	-8	12	400	-3	2	400	2	-1
210	21	-1	420	5	1	260	-3	7	420	-1	2	420	3	-2
220	23	-2	440	7	-0	280	1	4	440	0	0	440	4	-2
230	22	-4	460	7	-1	300	3	3	460	4	-3	460	2	-2
240	21	-3	480	10	-0	320	1	0	480	12	-2	480	4	-2
250	20	-4	500	13	-6	340	2	1	490	17	-1	500	3	-3
260	16	-6	520	18	-8	360	0	-0	500	21	0	520	6	-2
270	16	-6	540	23	-12	380	0	-3	510	23	-1	540	3	-2
280	13	-6	560	46	-20	400	-3	-4	520	22	-3	560	6	-1
290	12	-7	580			420	-2	-10	530	17	-6	580	4	-1
300	11	-6	600	-86	33	440	3	-16	540	16	-6	600	5	-1
310	10	-8	620	-32	22	460	12	-29	550	11	-6	620	4	-1
320	8	-6	640	-17	12	480	100	-50	560	8	-6	640	7	-1
340	5	-6	660	-13	-8	500	-100	50	570	8	-7	660	7	-2
360	3	-6	680	-5	4	510	-26	40	580	3	-8	680	9	0
380	0	-6	700	-5	3	520	-14	29	590	4	-8	700	9	-1
400	5	-4				540	-5	21	600	3	-8	720	2	0
420	0	-4				560	5	14				740	0	0
440	-1	-4				580	6	8				760	0	-1
460	-2	0				600	7	7				780	2	1
480	0	-0				620	6	6				800	-3	-0
500	0	-2				640	3	4						
						660	-3	2						
						680	-3	0						
						700	-4	0						

PRO-16			PRO-17			PRO-18			PRO-19			PRO-20		
DIST.	IN PHASE	QUAD. PHASE	DIST.	IN PHASE	QUAD. PHASE	DIST.	IN PHASE	QUAD. PHASE	DIST.	IN PHASE	QUAD. PHASE	DIST.	IN PHASE	QUAD. PHASE
(m)	(%)	(%)	(m)	(%)	(%)	(m)	(%)	(%)	(m)	(%)	(%)	(m)	(%)	(%)
0	-2	-6	0	6	10	0	-32	6	0	-4	-4	0	-2	2
20	2	-6	20	5	8	10	-26	11	20	-7	-3	20	0	1
40	1	-6	40	5	7	20	-19	12	40	-4	-3	40	0	1
60	-2	-1	60	8	8	30	-15	14	60	-2	0	60	-1	1
80	-7	-6	80	8	5	40	-14	11	80	-2	-4	80	3	-1
100	-6	-4	100	10	6	50	-20	6	100	2	-3	100	0	-1
120	-9	-4	110	11	6	60	-18	8	120	5	-2	120	0	-1
140	-5	-6	120	11	6	70	-13	8	140	11	-2	140	5	-1
160	-4	-6	130	11	6	80	-11	10	150	15	-3	160	9	-1
180	11	-2	140	14	5	90	-8	12	160	15	-4	180	15	0
190	-3	-4	150	14	6	100	-6	11	170	17	-5	200	17	1
200	-9	-6	160	17	5	120	0	12	180	19	-6	220	20	3
220	-10	-4	170	18	7	140	1	12	190	24	-5	240	17	2
230	-5	-6	180	18	8	160	6	14	200	32	-8	260	24	2
240	-2	-3	190	19	6	180	13	10	210	41	-4	280	22	1
260	1	-2	200	18	5	190	12	14	220	44	-4	300	17	0
280	3	-2	210	18	5	200	11	16	230	30	-6	320	11	-1
300	2	-4	220	17	3	210	8	11	240	16	-6	340	7	-1
320	-3	-10	230	17	2	220	6	7	250	11	-6	360	4	-1
340	0	-8	240	18	3	240	12	13	260	5	-4	380	2	-2
350	6	-8	250	19	2	250	11	12	280	-10	-0	400	0	-3
360	11	-5	260	19	4	260	12	11	290	-19	2	420	-1	0
370	3	-6	270	20	4	270	9	8	300	-29	2	440	0	1
380	-5	-6	280	21	4	280	10	9	310	-28	3	460	-3	-1
400	4	-4	290	20	2	290	11	10	320	-19	2	480	-3	-1
410	13	-2	300	18	4	300	11	10	330	-17	1	500	-5	-1
420	15	2	310	17	2	310	9	9	340	-13	0	520	-5	-1
430	13	0	320	17	4	320	11	6	350	-7	2	540	-5	-1
440	11	0	330	19	4	330	11	6	360	-8	0	560	-8	-1
450	5	-2	340	16	3	340	12	6	380	-2	4	580	-7	-3
460	2	-2	350	18	2	350	11	4	400	-3	0	600	-5	-4
480	6	-0	360	16	3	360	12	6	420	-7	-0	620	-5	-4
500	5	2	370	17	4	370	12	4	440	-3	2	640	-5	-4
520	8	2	380	15	0	380	9	4	460	3	4	660	-5	-6
540	1	0	390	12	0	400	13	4	480	5	3	680	-1	-2
560	-8	0	400	11	-0	410	14	6	500	-1	2	700	0	-2
580	-5	0	410	7	-0	420	16	6	520	-2	4	720	-2	-4
600	-6	3	420	3	-3	430	17	5	540	-2	4	740	-3	-4
620	-8	0	430	2	-4	440	17	4	560	-2	4	760	0	-4
640	-7	2	440	1	-4	450	14	2	580	0	6	780	3	-3
650	-12	-2	445	0	-4	460	13	2	600	3	8	800	4	-3
660	-22	-8	450	-3	-4	470	13	3	620	4	4	820	5	-4
665	-28	-8	460	-6	-5	480	16	4	640	2	4	840	4	-2
670	-26	-8	470	-7	-6	490	15	4	660	6	4	860	5	-3
675	-24	-8	480	-9	-6	500	14	3	680	0	2	880	9	-2
680	-22	-9	490	-9	-6	510	17	2	700	-3	-2	900	9	-4
685	-20	-10	500	-8	-7	520	18	4	720	-2	-2	920	9	-1
690	-15	-10	510	-5	-6	530	17	4	740	2	-2	940	9	-1
700	-7	-9	520	-6	-4	540	16	2	760	3	-4	960	5	2
720	-2	-8	540	-4	-3	550	16	1	780	7	-5	980	0	4
730	4	-4	560	-4	-4	560	14	1	800	12	-7	1000	2	2
740	5	-6	580	-1	-2	570	12	-2	810	11	-8			
760	2	-6	590	2	-2	580	10	-3	820	11	-8			
780	3	6	600	2	-2	590	9	-4	830	14	-10			
800	5	-6	620	7	1	600	5	-10	840	18	-10			
810	11	-4	640	4	-1	620	8	-8	850	23	-10			
820	7	-6	660	8	0	640	12	-3	860	26	-8			
840	7	-6	680	7	0	650	13	-3	870	29	-8			
860	11	-8	700	9	0	660	13	-4	880	32	-8			
870	13	-6	710	11	-2	670	13	-6	890	30	-8			
880	8	-10	720	11	1	680	16	-5	900	24	-8			
900	16	-12	730	10	0	690	16	-5	910	12	-5			
			740	10	-0	700	17	-8	920	2	-4			
			750	10	-1				930	-11	0			
			760	12	0				940	-20	1			
			770	10	2				950	-24	0			
			780	11	2				960	-27	2			
			790	5	-2				970	-24	-0			
			800	2	-3				980	-18	0			
			820	1	-3				990	-11	1			
			840	-4	-6				1000	-9	-0			
			860	-6	-10				1020	-5	-2			
			880	-2	-6				1040	2	-1			
			900	0	-6				1060	9	-2			
			920	4	-4				1080	8	-4			
			940	0	-4				1100	4	-5			
			960	3	-2									
			980	7	2									
			1000	7	4									

PRO-21			PRO-22			PRO-23			PRO-24			PRO-25		
DIST.	IN	QUAD.	DIST.	IN	QUAD.	DIST.	IN	QUAD.	DIST.	IN	QUAD.	DIST.	IN	QUAD.
(m)	PHASE (%)	PHASE (%)	(m)	PHASE (%)	PHASE (%)	(m)	PHASE (%)	PHASE (%)	(m)	PHASE (%)	PHASE (%)	(m)	PHASE (%)	PHASE (%)
0	-8	-0	0	7	-0	0	0	4	0	-65	18	0	11	-11
20	-9	-2	20	5	-1	20	-5	6	20	-55	18	20	9	-9
40	-4	1	40	7	-2	40	-14	10	40	-44	20	40	4	-6
60	-5	2	60	8	-2	50	-17	11	60	-40	17	60	0	-4
80	0	1	80	7	-2	60	-19	10	80	-38	18	80	2	-2
100	3	1	100	3	-2	80	-22	12	100	-35	18	100	4	-2
120	-1	0	120	2	-0	100	-23	12	120	-35	16	120	4	-2
140	0	1	140	2	-0	120	-23	13	140	-30	16	140	3	2
160	3	-1	160	0	-2	140	-10	14	160	-27	15	160	3	3
180	4	-1	180	0	-2	160	-12	14	180	-21	13	180	1	6
200	7	-2	200	1	0	180	-9	10	200	-20	13	200	-8	12
220	11	-1	220	0	-0	200	-11	7	220	-21	11	220	-14	12
240	5	1	240	0	-2	220	-8	7	240	-17	10	240	-10	12
260	5	-4	260	2	-2	240	-8	6	260	-14	10	260	-15	10
280	14	-3	280	5	-1	260	-6	5	280	-12	12	280	-16	10
300	5	-4	300	9	-2	280	-4	4	300	-8	12	300	-22	6
320	4	-5	320	8	0	300	-2	6	320	-8	10	320	-26	4
340	8	-7	340	7	-2	320	4	5	340	-7	9	340	-26	-1
360	19	-2	360	7	-0	340	7	7	360	-6	11	360	-8	6
380	19	1	380	5	-2	360	8	6	380	-3	9	380	-8	4
400	19	-2	400	2	-4	380	9	4	400	-5	9	400	-4	3
420	7	-0	420	0	1	400	9	5	420	-8	8	420	-3	3
440	-5	0	440	4	-2	420	7	4	440	-5	10	440	4	0
460	-5	-2	460	7	-2	440	7	6	460	-4	9	460	11	2
480	-5	0	480	7	-2	460	7	3	480	-8	5	480	11	2
500	0	2	500	8	-1	480	4	0	500	-3	6	500	11	0
520	5	-1	520	9	1	500	9	2	520	3	7	520	13	1
540	8	-2	540	6	1	520	9	1	540	7	9	540	4	-2
560	5	0	560	5	1	540	14	4	560	5	5	560	-1	-2
580	6	-1	580	6	2	560	4	0	580	2	4	580	-3	-2
600	6	0	600	-3	3	580	-4	-0	600	8	6	600	-4	-1
620	5	0	620	-3	4	600	-3	1	620	12	4	620	-1	-2
640	7	3	640	-5	5	610	-3	-1	640	2	1	640	0	-2
660	7	-2	660	-8	4	620	4	2	660	6	4	660	-2	-0
680	12	0	680	-9	4	640	5	-0	680	-2	0	680	-5	-1
700	2	-1	700	-15	4	660	4	-0	700	2	1	700	-5	-0
720	2	-2	720	-15	6	680	3	-0	720			720	-6	-2
740	8	1	740	-13	6	700	6	0	740			740	-3	-1
760	5	-1	760	-13	4	720	5	0	760			760	0	-0
780	5	0	780	-12	6	740	7	0	780			780	6	-1
800	4	2	800	-12	6	760	3	-5	800			800	8	0
820	3	0	820	-9	6	780	4	-4	820			820	9	-2
840	4	0	840	-2	7	800	4	-6	840			840	10	-4
860	4	3	860	-5	7	820	5	-4	860			860	8	-4
880	3	2	880	-3	8	840	6	-2	880			880	4	-3
900	6	0	900	-3	8	860	7	-4	900			900	0	-5
920	4	1	920	-3	8	880	9	-4	920			920	8	-4
940	3	-1	940	-3	8	900	10	-4	940			940	7	-4
960	3	1	960	0	7	920	13	-4	960			960	5	-4
980	1	1	980	0	8	940	14	-4	980			980	2	-4
1000	1	1	1000	-5	7	960	18	-5	1000			1000	2	-5
			1020	-2	6	980	21	-4						
			1040	-10	4	1000	22	-4						
			1060	-15	2	1020	23	-4						
			1080	-16	2	1040	17	-4						
			1100	-15	2	1060	11	-5						
						1080	13	-9						
						1100	13	-6						

PRO-26			PRO-27			PRO-28			PRO-29			PRO-30		
DIST.	IN	QUAD.	DIST.	IN	QUAD.	DIST.	IN	QUAD.	DIST.	IN	QUAD.	DIST.	IN	QUAD.
(m)	PHASE (%)	PHASE (%)	(m)	PHASE (%)	PHASE (%)	(m)	PHASE (%)	PHASE (%)	(m)	PHASE (%)	PHASE (%)	(m)	PHASE (%)	PHASE (%)
0	-4	-6	0	7	-1	0	13	-2	0	-6	10	0	-3	-3
20	-2	4	20	8	-0	20	10	-1	20	-2	10	20	-4	-3
40	3	-2	40	7	-2	40	4	-2	40	-2	7	40	-5	-2
60	-4	-7	60	5	-2	60	8	-3	60	-5	7	60	-3	-2
80	0	-9	80	5	-3	80	3	-2	80	4	7	80	0	-2
100	5	-6	100	5	-3	100	8	2	100	0	6	100	0	-2
120	8	-6	120	7	-2	120	10	2	120	0	4	120	1	0
140	8	-6	140	7	-4	140	0	2	140	-5	3	140	2	2
160	7	-4	160	8	-5	160	-7	-2	160	-4	4	160	4	4
180	2	-6	180	11	-1	180	-9	-1	180	0	4	180	-2	4
200	0	-6	200	2	-4	200	-7	2	200	0	5	200	-5	5
220	4	-4	220	0	-4	220	-7	-2	220	3	5	220	-8	7
240	5	-4	240	4	-4	240	-14	-1	240	6	3	240	-13	3
260	6	-2	260	4	-4	260	-12	0	260	7	2	250	-13	3
280	2	2	280	5	-2	280	-10	1	280	10	3	260	-10	3
300	-3	2	300	7	-2	300	-8	-1	300	7	3	270	-9	3
320	-5	2	320	8	-2	320	-5	-1	320	9	2	280	-7	4
340	-7	2	340	9	-6	340	3	2	340	9	4	300	-3	3
360	-6	1	360	9	-6	360	7	2	360	7	2	320	-4	1
380	-10	0	380	9	-4	380	7	-2	380	5	0	340	0	2
400	-8	4	400	5	-1	400	6	-6	400	4	0	360	0	2
420	-8	2	420	2	-4	420	8	-6	420	4	0	380	1	1
440	-5	1	440	5	-1	440	22	-5	440	-4	-2	400	3	2
460	-3	-1	460	3	-0	460	23	-6	460	-4	-2	420	-1	-2
480	-3	-2	480	7	-1	480	25	-8	480	0	-1	440	2	-1
500	3	-2	500	5	-1	500	25	-10	500	-4	-4	460	6	1
520	5	-2	520	0	-2				520	10	1	480	9	1
540	5	-2	540	-3	1				540	5	1	500	3	0
560	8	-1	560	3	2				560	-1	-2	520	4	2
580	3	-3	580	2	2				580	0	-0	540	1	2
600	2	-1	600	3	4				600	-2	-4	560	2	4
620	0	-4	620	5	6				620	-5	-6	580	-3	4
640	4	-0	640	4	5				640	-5	-6	600	-3	4
660	4	-2	660	3	4				660	-3	-3	620	0	4
680	3	-1	680	-5	2				680	-3	7	640	-2	4
700	2	-2	700	-5	1				700	-4	-6	660	-1	5
720	3	-2	720	-5	1				720	-8	-6	680	-1	4
740	3	-2	740	0	5				740	-6	-9	700	-8	0
760	4	-0	760	-5	2				760	-4	-7	720	-9	0
780	7	0	780	0	6				780	0	-11	740	-11	-2
800	6	1	800	8	6				800	8	-10	760	-8	-2
820	9	2	820	8	4				820	20	-6	780	-6	-0
840	7	3	840	13	5				840	20	-5	800	-8	-1
860	8	6	860	-1	2				860	23	-4	820	-10	-4
880	3	6	880	-6	2				880	26	-4	830	-12	-5
900	-2	7	900	-3	4				900	15	-6	840	-11	-7
920	-8	9	920	-1	4				920	0	-8	850	-9	-6
940	-10	9	940	7	6				940	-2	-8	860	-7	-5
960	-14	9	960	7	6				960	0	-8	880	-8	-6
980	-20	5	980	0	3				980	-3	-9	900	-6	-8
1000	-20	4	1000	-1	2				1000	5	-10	920	-2	-10
1020	-15	4										940	6	-7
1040	-11	7										950	10	-6
1060	-8	6										960	16	-4
1080	-5	4										970	17	-6
1100	0	5										980	11	-9
1120	3	4										990	6	-10
1140	5	5										1000	5	-10
1160	5	3										1010	0	-11
1180	5	1										1020	-6	-11
1200	7	2										1040	-4	-9
												1060	-1	-4
												1080	1	-2
												1100	1	0
												1120	-2	1
												1140	-2	1
												1160	-2	1
												1180	-2	0
												1200	-2	0

PRO-31			PRO-32			PRO-33			PRO-34			PRO-35		
DIST.	IN PHASE	QUAD. PHASE	DIST.	IN PHASE	QUAD. PHASE	DIST.	IN PHASE	QUAD. PHASE	DIST.	IN PHASE	QUAD. PHASE	DIST.	IN PHASE	QUAD. PHASE
(m)	(%)	(%)	(m)	(%)	(%)	(m)	(%)	(%)	(m)	(%)	(%)	(m)	(%)	(%)
0	-9	-2	0	-3	6	0	2	3	0	7	-6	0	9	-26
10	-8	-1	20	-4	3	20	2	2	20	7	-4	10	15	-28
20	-16	-2	40	-2	0	40	1	1	40	7	-4	20	21	-32
30	-23	-4	60	0	2	60	2	0	60	7	-3	30	44	-36
40	-23	-4	80	5	-2	80	5	2	80	6	-3	35	55	-32
50	-20	-2	100	-4	0	100	0	-2	100	3	-4	40	-28	-28
60	-16	-3	120	-11	5	120	3	0	120	1	0	50	-21	-12
80	-8	-2	130	-8	5	140	3	2	140	-1	0	60	25	25
100	-4	-1	140	-7	3	160	2	2	160	-3	-0	70	-100	50
120	-9	-2	160	-3	2	180	0	1	180	-1	0	80	-32	41
130	-9	-1	180	-3	1	200	1	3	200	2	-0	90	-12	26
140	-10	-0	200	-2	1	220	-1	4	220	2	-0	100	-12	21
150	-17	-0	220	1	1	240	-2	6	240	3	-1	110	-8	24
160	-18	-1	240	0	2	260	-8	2	260	6	-4	120	-14	12
170	-20	-2	260	-2	-1	280	-7	4	280	9	-6	130	-22	9
180	-21	-2	280	-2	-1	300	-6	2	300	13	-8	140	-23	8
190	-26	-2	300	-2	0	320	-5	2	320	100	-50	150	-13	8
200	-25	-2	320	-2	0	340	-5	2	340	-9	14	160	-21	6
210	-31	-2	340	0	3	360	-5	3	360	-3	7	170	-14	8
220	-33	-4	360	-4	-2	380	-5	0	380	2	5	180	-12	5
230	-31	-2	380	-8	2	400	-5	2	400	0	4	190	-9	6
240	-27	-2	400	-2	1	420	-3	0	420	0	2	200	-10	6
250	-27	-4	420	-3	-1	440	3	2	440	1	2	210	-9	5
260	-25	-2	440	-5	-1	460	-3	-2	460	0	2	220	-8	4
270	-23	-2	460	-6	-1	480	-7	-4	480	0	2	240	-6	4
280	-23	-2	480	-6	-1	500	-2	-5	500	1	0	260	-4	2
290	-23	-2	500	-6	-1	520	1	-4				280	-1	4
300	-23	-3				540	0	-8				300	-2	2
310	-19	-2				560	3	-8				320	-2	1
320	-19	-3				580	5	-9				340	2	0
330	-16	-4				600	3	-6				360	8	0
340	-14	-4				620	0	-6				380	18	2
350	-14	-4				640	0	-0				390	19	2
360	-13	-4				660	1	2				400	20	1
370	-14	-5				680	5	4				410	22	1
380	-12	-6				700	3	8				420	18	1
400	-9	-6				720	-2	10				430	16	0
420	-8	-6				740	-7	12				440	12	-1
440	-8	-7				760	-15	13				450	3	-5
460	-7	-7				770	-25	12				460	6	-6
480	-6	-10				780	-24	13				480	2	-4
500	1	-10				790	-22	15				500	6	-2
510	9	-10				800	-21	14				520	2	-4
520	14	-10				820	-19	12				540	10	-25
530	21	-19				830	-13	15				550	11	-36
540	21	-12				840	-11	14				555	14	-50
550	22	-12				860	-6	12				560	38	-40
560	22	-12				880	-7	10				565	-5	-7
565	22	-12				900	-3	10				570	-8	-19
570	18	-14				920	-7	6				580	-30	-34
580	16	-14				940	-7	4				585	-17	-15
590	11	-15				960	-5	4				580	4	8
600	6	-14				980	-5	5				600	21	14
620	-1	-14				1000	-3	5				610	1	6
640	-8	-12				1020	-2	4				620	1	3
650	-10	-9				1040	-2	3				630	4	2
660	-11	-8				1060	-2	2				640	3	4
670	-12	-6				1080	0	2				660	2	3
680	-11	-6				1100	2	4				680	-9	-2
700	-9	-6				1120	4	5				700	-8	-1
720	-2	-3				1140	-2	3						
740	-5	-2				1160	-6	2						
760	-5	-1				1180	-9	1						
780	-7	-2				1200	-12	0						
800	-7	-2												
820	-8	-0												
840	-9	1												
860	-9	0												
880	-9	1												
900	-6	-1												
920	-5	-2												
940	-5	-2												
960	-3	-2												
980	-2	-2												
1000	-2	-3												
1020	0	-2												
1040	4	-2												
1060	3	-2												
1080	2	0												
1100	1	1												
1120	-3	2												
1140	-5	1												
1160	-6	2												
1180	-8	2												
1200	-4	2												

PRO-36			PRO-37			PRO-38			PRO-39			PRO-40		
DIST.	IN PHASE (%)	QUAD. PHASE (%)	DIST.	IN PHASE (%)	QUAD. PHASE (%)	DIST.	IN PHASE (%)	QUAD. PHASE (%)	DIST.	IN PHASE (%)	QUAD. PHASE (%)	DIST.	IN PHASE (%)	QUAD. PHASE (%)
(m)			(m)			(m)			(m)			(m)		
0	10	7	0	-15	-1	0	10	-0	0	-1	4	0	-10	-4
20	10	7	10	-15	1	20	10	-0	20	-2	6	20	-4	-1
30	1	7	20	-14	-2	40	4	-2	40	-2	4	40	-9	-3
40	-8	4	30	-11	-3	60	5	-1	60	-4	2	60	-11	-2
50	-18	2	40	-7	0	80	0	1	80	-4	0	70	-9	-0
60	-30	-1	60	-2	0	100	-4	2	100	-3	1	80	-7	-4
70	-21	2	80	2	-1	120	-13	0	120	-3	0	100	-8	-1
80	-16	3	100	-2	-2	140	-11	2	140	-1	0	120	-8	-6
90	-16	2	120	-1	-3	160	-5	0	160	3	0	140	-7	-8
100	-18	2	140	-5	-6	180	2	2	180	5	0	160	-2	-7
110	-20	2	160	-11	-7	200	4	-1	200	7	0	180	10	-8
120	-19	2	170	-10	-8	220	0	4	220	3	-4	190	14	-8
130	-19	3	180	-13	-9	240	5	5	240	3	-6	200	21	-8
140	-19	2	190	-11	-10	260	-4	3	260	3	-4	210	25	-9
150	-15	4	200	-11	-10	280	-18	6	280	10	-2	220	34	-8
160	-15	3	210	-8	-10	300	-7	7	300	9	-4	230	37	-10
170	-15	4	220	-6	-10	320	-4	5	320	-2	-3	240	41	-12
180	-15	3	240	-7	-12	340	-7	1	340	-5	-4	250	42	-14
200	-13	3	260	-5	-12	360	-4	4	360	-15	-4	260	52	-16
220	-9	3	280	-4	-12	380	-8	4	370	-10	-2	270	58	-16
240	-10	0	300	-7	-13	400	-17	4	380	-10	5	280	84	-16
260	-6	0	320	-7	-14	420	-14	2	400	-20	9	290	120	-11
280	-3	-2	340	-12	-12	440	10	-2	420	-28	7	295	110	-6
300	-2	0	350	-13	-11	460	-9	4	440	-29	6	300	2	3
320	6	2	360	-14	-10	480	-4	-2	460	-25	8	310	-126	23
340	10	0	370	-12	-10	500	-3	-2	480	-20	9	320	-48	28
360	5	-5	380	-14	-10	520	-4	-4	500	-21	8	330	-30	26
380	8	-4	390	-18	-10	540	-2	-5	520	-27	4	340	-22	26
400	14	-4	400	-20	-12	560	-6	-7	540	-21	3	350	-22	25
410	18	-4	410	-18	-13	580	5	-1	560	-23	5	360	-13	10
420	18	-7	420	-14	-12	600	8	-8	580	-25	6	370	21	-18
430	22	-5	430	-12	-14	620	9	-12	600	-27	3	380	21	-20
440	24	-5	440	-9	-14	640	15	-10	610	-20	0	390	30	-17
450	24	-6	450	-4	-14	660	14	-14	640	-18	5	395	45	-16
460	19	-7	460	-5	-15	670	25	-13	660	-18	2	400	-24	14
470	17	-8	470	-5	-19	680	40	-14	680	-15	8	410	-5	6
480	18	-8	475	0	-22	685	55	-16	700	-10	9	420	-5	2
490	27	-7	480	14	-27	690	-94	-18	720	-15	6	440	-13	3
500	20	-8	485	29	-26	700	-57	-24	740	-14	6	450	-12	4
510	10	-10	490	28	-14	710	-22	-20	760	-14	4	460	-12	5
520	12	-9	495	-33	-3	715	-34	13	780	-10	4	470	-8	4
530	2	-9	500	-96	20	720	-22	19	800	-9	4	480	-5	7
540	-12	-8	505	-58	20	740	-12	6	820	-8	5	500	5	9
550	-12	-10	510	-46	15	760	-8	3	840	-9	4	520	11	8
560	-13	-10	520	-31	12	780	-4	-3	860	-13	3	530	13	8
570	-8	-9	530	-22	12	800	1	-2	880	-12	4	540	11	8
580	-6	-9	540	-13	11	820	-1	-6	900	-9	2	550	9	7
600	-8	-11	560	-9	7	840	-4	-4	920	-7	2	560	6	5
620	-3	-10	580	-7	6	860	-5	-5	940	-7	2	580	2	6
640	4	-10	600	-7	3	880	-10	-4	960	-5	1	600	7	4
660	8	-9	620	-9	2	900	-10	-2	980	-3	2	620	4	6
680	20	-1	640	-8	2	920	-8	4	1000	-3	0	640	6	8
700	45	19	660	-7	2	940	-10	4				660	8	8
			680	-7	0	960	-8	-4				680	6	7
			700	-3	2	980	-6	5				700	5	4
			720	-3	2	1000	-5	4						
			740	-5	3									
			760	-6	2									
			780	-4	2									
			800	-3	0									
			820	-4	-0									
			840	0	0									
			860	5	0									
			880	5	0									
			900	0	0									
			920	-3	0									
			940	-4	0									
			960	-8	1									
			980	-6	1									
			1000	-5	2									

Appendix I.2.8

Drillhole Logs of JICA Test Wells

Drillhole log of A-1

Well number : A-1

DEPTH (m)	LITHOLOGY	PERIOD	LITHOLOGICAL DESCRIPTION	CASING DESIGN (m)	SPONTANEOUS POTENTIAL (mv)	RESISTIVITY Sho(ohm-m): --- Lon(ohm-m): ----	GAMMA RAY (cps)	TEMPERATURE	WELL DATA
0									Well Location Well No. : A-1 Location : Utiasta river Elevation : 1442.5 mmasl Latitude : 48-00'25" Longitude : 107-03'22" Constructed : Date : 20/09/94 Drilling Data Drilling Depth : 183.8m Bit Size : 12-1/4" Logging Depth : 183m Casing Length : 8' x 89.5m Screen Length : 8' x 93.5m Pumping Test Static Water Level: 12.4 m Specific capacity : 19 m ³ /d/m Water Quality : EC= 330 : TDS=1945 mg/l : pH= 7.7 : T= 3 °C
3.1			Alluvial	3.1					
24			dark grey siliceous shale, fresh	12.4					
54			dark grey shale, crackey						
66			dark grey shale						
78			greenish grey shale						
90			dark grey siliceous shale	84.0					
120			greenish grey siliceous shale						
120			95-125m cracky						
150		Carboniferous C1-2	grey sandstone and dark grey shale alteration						
150			135-145m cracky,						
150			145-170m slightly cracky						
183.8			bottom of the well	177.5					

Drillhole log of A-2

Well number : A-2

DEPTH (m)	LITHOLOGY	PERIOD	LITHOLOGICAL DESCRIPTION	CASING DESIGN (m)	SPONTANEOUS POTENTIAL (mv)	RESISTIVITY Sho(ohm-m) --- Lon(ohm-m) ----	GAMMA RAY (cps)	TEMPERATURE	WELL DATA
0								0	Well Location Well No. : A-2 Location : Selbe river Elevation : 1431.5 mmasl Latitude : 48-03'23" Longitude : 106-54'20" Constructed Date : 13 / 08 / 94 Drilling Data Drilling Depth : 201.8m Bit Size : 12-1/4" Logging Depth : 201m Casing Length : 8" x 108.3m Screen Length : 8" x 92.5m Pumping Test Static Water Level: 11.8 m Specific capacity : 1 m ³ /d/m Water Quality : EC= 400 m-s/cm TDS= 280.5 mg/l pH= 8.2 T= 4 °C
8.3			sand/gravel with clay	8.3				20	
24			grey medium sandstone, siliceous, cracky	11.8					
39.8			grey, fine to medium sandstone with quartzite, siliceous cracky						
50									
88									
100			dark grey, siliceous slate, slightly cracky	102.8					
130		Devonian D1-2							
150			dark grey siliceous slate						
196.3			130-170m cracky						
201.8			bottom of the well	196.3					

Drillhole log of A-3

Well number : A-3

DEPTH (m)	LITHOLOGY	PERIOD	LITHOLOGICAL DESCRIPTION	CASING DESIGN (m)	SPONTANEOUS POTENTIAL (mv)	RESISTIVITY Shot(m-m); --- Lon.(ohm-m); ----	GAMMA RAY (cps)	TEMPERATURE	WELL DATA
0				12.7	185				Well Location Well No. : A-3 Location : Bayangol river Elevation : 1374.6 mmasl Latitude : 47° 58' 28" Longitude : 105° 42' 48" Constructed Date : 08/07/94 Drilling Data Drilling Depth : 200.5m Bit Size : 12-1/4" Logging Depth : 200m Casing Length : 8" x 117.8m Screen Length : 8" x 82.5m Pumping Test Static Water Level: 5.61 m Specific capacity : 45 m ³ /d/m Water Quality : EC = 240 mS/cm : TDS = 230 mg/l : pH = 7.8 : T = 4 °C
22			yellowish grey, tuffaceous sandstone, weathered	5.61					
28			slightly weathered						
50			siliceous fine sandstone, fresh						
58			dark grey shale						
76			grey fine to medium sandstone	95.5					
100		Carboniferous C2-3	95-120 m, cracky						
124			yellowish grey sandstone, slightly weathered	123					
150			water passage	134					
154			alternation of sandstone and shale, to 197m cracky	178					
183.5				183.5					
194.5			bottom of the well	194.5					
200.3									

Drillhole log of A-4

well number : A-4

DEPTH (m)	LITHOLOGY	PERIOD	LITHOLOGICAL DESCRIPTION	CASING DESIGN (m)	SPONTANEOUS POTENTIAL (mv)	RESISTIVITY (ohm-m)	GAMMA RAY (cps)	TEMPERATURE	WELL DATA
0				3.48	57	Sho (ohm-m): --- Lon (ohm-m): ----			Well Location
10			sand/gravel with clay, river deposit	18.5					Well No. : A-4
20			dark grey fine sandstone, siliceous, slightly tuffaceous	49.5					Location : Solbe river
30		Carboniferous C-3	60-80 m cracky						Elevation : 1425.2 mmal
40									Latitude : 48-03'02"
50									Longitude : 106-54'03"
78			greenish grey tuffaceous fine sandstone siliceous						Constructed
99-124m			99-124m cracky drilling mud lost						Date : 18/9/94
134			bottom of the well						Drilling Data
									Drilling Depth : 134.0m
									Rt Size : 12-1/4"
									Logging Depth : 134m
									Casing Length : 8" x 108.3m
									Screen Length : 8" x 93.5m
									Pumping Test
									Static Water Level: 3.48m
									Specific capacity : 30m ³ /d/m
									Water Quality
									EC = 340 m-s/cm
									TDS = 212.5 mg/l
									pH = 8.1
									T = 2 °C

Drillhole log of B-1

Well number : B-1

DEPTH (m)	LITHOLOGY	PERIOD	LITHOLOGICAL DESCRIPTION	CASING DESIGN (m)	SPONTANEOUS POTENTIAL (mv)	RESISTIVITY Sho (ohm-m): --- Lm (ohm-m): ----	GAMMA RAY (cps)	TEMPERATURE	WELL DATA
0									Well Location Well No. : B-1 Location : Babeg river Elevation : 4305.5 mmsl Latitude : 47-38'18" Longitude : 106-45'00" Constructed Date : 19/ 08/94 Drilling Data Drilling Depth : 50.0m Bit Size : 14" Logging Depth : 50m Casing Length : 10" x 33.5m Screen Length : 10" x 16.5m Pumping Test Static Water Level: +2.0 m (spring) Specific capacity : 25 m ³ /d/m Water Quality : EC = 570 μs/cm TDS = 221.5 mg/l pH = 8.0 T = 4 °C
4			sand and gravel-- granule to cobble	-2.0					
8									
12									
15									
16			Clay with gravel-- pebble to cobble						
20									
21.5				22.5					
40		Alluvial	sand with gravel	39.0					
45			gravel with sand						
50			bottom of the well						

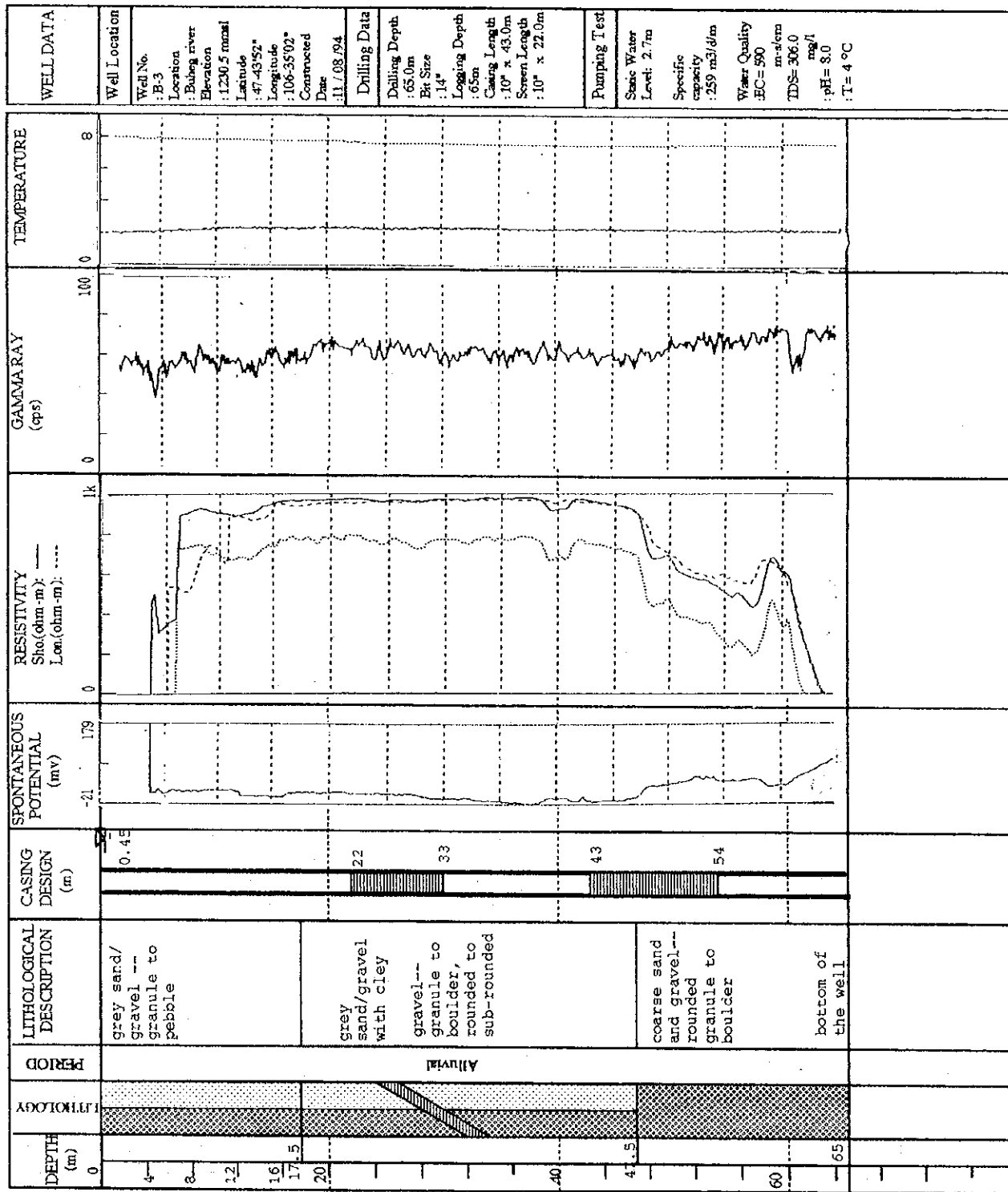
Drillhole log of B-2

Well number : B-2

DEPTH (m)	LITHOLOGY	PERIOD	LITHOLOGICAL DESCRIPTION	CASING DESIGN (m)	SPONTANEOUS POTENTIAL (mV)	RESISTIVITY Sho. (ohm-m) : — Loc. (ohm-m) : - - -	GAMMA RAY (cps)	TEMPERATURE	WELL DATA
0									Well Location Well No. : B-2 Location : Babag river Elevation : 1297.0 mmsl Latitude : 47°39'45" Longitude : 106°42'56" Constructed : Date : 16/08/94 Drilling Data Drilling Depth : 50.0m Bit Size : 14" Logging Depth : 50m Casing Length : 10" x 33.5m Screen Length : 10" x 16.5m Pumping Test Static Water Level: 0.45 m Specific capacity : 104 m ³ /dm Water Quality : EC=400 <small>µs/cm</small> TDS=232.5 <small>mg/l</small> pH=8.1 T=6°C
4			brownish grey sand/ gravel	0.45					
5			grey sand/ gravel with clay						
8									
12									
16				16.0					
17.5									
20			brown sand/gravel with clay	21.5					
32.5		Alluvial							
40			brown clay, sand, gravel						
42.5				38.0					
50			grey sand/gravel with clay	49.0					
			bottom of the well						

Drillhole log of B-3

Well number : B-3



Drillhole log of C-1

Well number : C-1

DEPTH (m)	LITHOLOGY	PERIOD	LITHOLOGICAL DESCRIPTION	CASING DESIGN (m)	SPONTANEOUS POTENTIAL (mv)	RESISTIVITY Sho(ohm-m); --- Lon(ohm-m); ----	ELECTRIC CONDUCTIVITY (cps)	TEMPERATURE (°C)	WELL DATA
0									Well Location Well No. : C-1 Location : Tual river Nalah Elevation : 1392.3 mmsl Latitude : 47-48'52" Longitude : 107-21'59" Constructed date : 02/10/1994 Drilling Data Drilling Depth : 30.5m Bit Size : 14" Logging Depth : 30m Casing Length : 10' x 19.5m Screen Length : 10' x 11.0m Pumping Test Static Water Level: 0.75m Specific capacity : 118 m ³ /d/m Water Quality : EC=160 µm/cm : TDS=115.0 mg/l : pH= 7.8 : T= 3 °C
2			top soil with roots	0.75					
4.5			brown sand with gravel pebble	5.8					
7.5			grey sandy gravel, pebble-cobble						
10			brownish grey sandy gravel	10.0					
12		Alluvial	bluish grey sandy gravel						
21				21.0					
23		Devonian D1-2	21.0-23.0 weathered alternation of sandstone and shale						
30.5			bottom of the well						

Drillhole log of C-2

Well number : C-2

DEPTH (m)	LITHOLOGY	PERIOD	LITHOLOGICAL DESCRIPTION	CASING DESIGN (m)	SPONTANEOUS POTENTIAL (mv)	RESISTIVITY Sho(ohm-m) : — Lon(ohm-m) :	ELECTRIC CONDUCTIVITY (ops)	TEMPERATURE	WELL DATA
0									Well Location Well No. : C-2 Location : Tsal river Nalath : Elevation : 1386.6 mmasl Latitude : 47-49'10" Longitude : 107-19'51" Constructed : Date : 04 / 07 / 94 Drilling Data Drilling Depth : 24.0m Bt Size : 14" Logging Depth : 24m Casing Length : 10" x 13.0m Screen Length : 10" x 11.0m Pumping Test Static Water Level: 1.71 m Specific capacity : 71 m ³ /d/m Water Quality : EC = 140 m-s/cm TDS = 98.0 mg/l pH = 7.5 T = 4 °C
1			top soil	1.71					
2			brownish grey, sandy clay with gravel						
4			brownish grey sand and gravel	3.8					
6									
8									
10									
12		Aluvial	sand/gravel with clay	11.0					
14			bluish grey sand and gravel						
20									
24		Devonian D1-2	alternation of sandstone and shale	22.0					
			bottom of the well						

Drillhole log of C-3

Well number : C-3

DEPTH (m)	LITHOLOGY	PERIOD	LITHOLOGICAL DESCRIPTION	CASING DESIGN (m)	SPONTANEOUS POTENTIAL (mv)	RESISTIVITY Sho(ohm-m); --- Lom(ohm-m); ----	ELECTRIC CONDUCTIVITY (cps)	TEMPERATURE	WELL DATA
0			top soil						Well Location Well No. : C-3 Location : Tital river District : Deenderi Elevation : 1370.7 mmal Latitude : 47°50'52" Longitude : 107°15'10" Constructed : Date : 27 / 07/94 Drilling Data Drilling Depth : 31.0m Bit Size : 14" Logging Depth : 31m Casing Length : 10" x 25.5m Screen Length : 10" x 5.5m Pumping Test Static Water Level: 2.47 m Specific capacity : 18 m ³ /d/m Water Quality : EC=210 m-s/cm TDS= 169.0 mg/l pH=7.6 T= 4 °C
1			sandy clay with gravel	2.47					
3			brownish grey sand and gravel	5.0					
6			sand and gravel with clay						
8			pebble to cobble						
10									
13		Alluvial	bluish grey sand and gravel with clay						
20			pebble to boulder						
28.0				24.5					
30		Carboniferous	alternation of sandstone and shale						
31.0		CI-2	bottom of the well	30.0					

Drillhole log of C-4

Well number : C-4

DEPTH (m)	LITHOLOGY	PERIOD	LITHOLOGICAL DESCRIPTION	CASING DESIGN (m)	SPONTANEOUS POTENTIAL (mV)	RESISTIVITY Sho.(ohm-m): — Lon.(ohm-m): - - -	ELECTRIC CONDUCTIVITY (cps)	TEMPERATURE	WELL DATA
0									Well Location Well No. : C-4 Location : Toal river Gachhaur Elevation : 1331.7 mmsl Latitude : 47-55'12" Longitude : 107-09'55" Constructed Date : 14/07/94 Drilling Data Drilling Depth : 22.3m Bit Size : 14" Logging Depth : 22m Casing Length : 10" x 16.8m Screen Length : 10" x 5.5m Pumping Test Static Water Level: 1.08 m Specific capacity : 62 m ³ /d/m Water Quality : EC=180 m-s/cm : TD8= 85.5 mg/l : pH= 7.6 : T= 5 °C
1			top soil	1.08					
2			sand with gravel	4.0					
3			grey sand and gravel						
4		Alluvial	yellowish brown sand and gravel	9.1					
6									
8									
10									
14.0		Carboniferous C2-3	sandstone 14.0-15.5 weathered	14.6					
20									
22.3			shale						
			bottom of the well						

Drillhole log of C-5

Well number : C-5

DEPTH (m)	LITHOLOGY	PERIOD	LITHOLOGICAL DESCRIPTION	CASING DESIGN (m)	SPONTANEOUS POTENTIAL (mv)	RESISTIVITY Sho(ohm-m) : — Lm(ohm-m) :	ELECTRIC CONDUCTIVITY (eps)	TEMPERATURE	WELL DATA
0					-788			0	Well Location Well No. : C-5 Location : Tsal river Bubeg Elevation : 1226.6m Latitude : 47-46'17" Longitude : 106-35'20" Constructed Date : 09/08/94 Drilling Data Drilling Depth : 30.0m Bit Size : 14" Logging Depth : 30m Casing Length : 10" x 19.0m Screen Length : 10" x 11.0m Pumping Test Static Water Level: 5.47m Specific capacity : 36 m ³ /m Water Quality : EC = 260 m-s/cm TDS = 183.5 mg/l pH = 7.9 T = 3 °C
1			top soil					0	
2			grey sand and gravel	5.47				0	
4			granul to pebble					0	
5								0	
6								0	
15		Alluvial	bluish grey sand and gravel	13.5				0	
20			granul to pebble					0	
24.5				24.5				0	
30			bottom of the well					0	

Drillhole log of C-6

Well number : C-6

DEPTH (m)	LITHOLOGY	PERIOD	LITHOLOGICAL DESCRIPTION	CASING DESIGN (m)	SPONTANEOUS POTENTIAL (mv)	RESISTIVITY Sho(ohm-m); --- Loo(ohm-m); ----	ELECTRIC CONDUCTIVITY (eps)	TEMPERATURE	WELL DATA
0			top soil						Well Location Well No. : C-6 Location : Tual river Elevation : 1204.5 mmsl Latitude : 47-45'52" Longitude : 106-30'36" Constructed Date : 31/ 07/94 Drilling Data Drilling Depth : 32.0m Bit Size : 14" Logging Depth : 32m Casing Length : 10" x 15.5m Screen Length : 10" x 16.5m Pumping Test Static Water Level: 1.93 m Specific capacity : 1227m ³ /d/m Water Quality : EC= 260 m-s/cm TDS= 175.0 mg/l pH= 8.0 T= 5 °C
0.5			light grey gravel with clay	1.93					
4			grey sand and gravel --granule to pebble						
10			s/g with clay	10.0					
11		Alluvial	bluish grey sand and gravel-- pebble	13.5					
20			bluish grey sand and gravel-- cobble						
28			sand and gravel-- granule	30.0					
32			bottom of the well						

Drillhole log of C-7

Well number : C-7

DEPTH (m)	PERIOD	LITHOLOGICAL DESCRIPTION	CASING DESIGN (m)	SPONTANEOUS POTENTIAL (mv)	RESISTIVITY Sho (ohm-m); --- Lm (ohm-m);	ELECTRIC CONDUCTIVITY (cps)	TEMPERATURE	WELL DATA
0				-417				Well Location Well No. : C-7 Location : Tuzi river Elevation : 1174.2 mm Latitude : 47°43'35" Longitude : 106°17'20" Constructed : Date : 20/ 07/94 Drilling Data Drilling Depth : 30.0m Bk Size : 14" Logging Depth : 30m Casing Length : 10" x 19.0m Screen Length : 10" x 11.0m Pumping Test Static Water Level: 1.80 m Specific capacity : 2018m ³ /m Water Quality : EC = 250 μm/cm TDS = 159.0 mg/l pH = 8.1 T = 4 °C
0.5		top soil	1.80					
2		sand/gravel with clay-granule						
3		sand and gravel with clay-pebble						
4		sand and gravel with clay-pebble						
6		sand and gravel -- rounded to subangular	10.0					
8		sand and gravel -- rounded to subangular						
10		sand and gravel -- rounded to subangular						
12	Aluvial	gravel with sand -- pebble	13.5					
17		s/g with clay						
19		sand and gravel -- cobble						
20		sand and gravel -- cobble						
22		sand and gravel -- granule to cobble	24.5					
30		bottom of the well						

Drillhole log of C-8

Well number : C-8

DEPTH (m)	LITHOLOGY	PERIOD	LITHOLOGICAL DESCRIPTION	CASING DESIGN (m)	SPONTANEOUS POTENTIAL (mv)	RESISTIVITY Shot(ohm-m): — Log(ohm-m):	ELECTRIC CONDUCTIVITY (ops)	TEMPERATURE	WELL DATA
0			top soil		161				Well Location Well No. : C-8 Location : Tual river Elevation : 1173.0 mmsl Latitude : 47-42'50" Longitude : 106-18'10" Constructed : Date : 27/07/94 Drilling Data Drilling Depth : 30.0m Bt Size : 14" Logging Depth : 30m Casing Length : 19" x 19.0m Screen Length : 10" x 11.0m Pumping Test Static Water Level: 1.20m Specific capacity : 56 m ³ /d/m Water Quality : EC= 240 TDS= 146.5 mg/l pH= 7.9 T= 4 °C
0.5			light grey sand and gravel with clay-granule	1.2					
2			blue s/g with clay						
4			grey sand and gravel --pebble	10.0					
6			grey sand and gravel --granule to pebble						
8									
10									
13		Alluvial		16.0					
20			grey sand and gravel--cobble						
28			yellowish s/g -pebble	27.0					
30			bottom of the well						