

M : DATA SHEETS OF GEO-ELECTRIC PROSPECTING (SCHLUMBERGER METHOD)

ELECTRICAL SOUNDING VERTICAL THE

Dime 11 10.4 11000	000.11781	HIROSHI HIRAMOTO (Schlumberger Configuration)	ра (<u>0</u> -ш)	590	690	559	567	671	714	8.3 2	0 M A	934	5.56							
, ///	JAIL /* /	berger Con	y M	478.3 J	1960.4 ι	817.0	1244.1	1950.9	3305.7	5014.0	1206.4	1913.2	7841.4	3017.7	4976.3	7803.7	12222.	20689.	31366.	
	_ :	(Schlum	R (0)	1.233	1080	9 0.684	0.456	1 0.344	0 0.216	0.166	289.0	9 0.428	0.119	•						
	UN (PHASE	II RAMOTO	V I (Vm)	24.6 20	6.04	34.2 49.9	22.8 50	16.8 49.1	216 100	4.21 50	34.4 "	82.8 169	20.2 "							
	IN KEGI	I ROSHI	MN/2	8	2 4			8			ş	<u></u>	8				32	[]		
	IHE EASI	TESTED BY	AB/2	20	50	65	80	100	130	160	160	200	200	250	320	400	500	650	800	
	KNUJECI IN THE EASTERN REGIUN (PHASE III)	N65°W TE	Аа (<u>0</u> -m)	618	260	839	828	872	944	944	925	1078	905	518	760	665	657	683	661	663
		· 11	×	6.283	18.85	31.39	49.48	77.75	132.0	200.3	313.4	75.40	129.6	530.1	197.9	311.0	487.7	801.1	1253.5	301.6
	WALEK	S- 1 LINE DIRECTION	R (2)	98.42	40.33	26.73	17.74	11.22	2149	4.7/3	2.950	14.30	6.986	105.1	3.842	2.139	1.347	0.852	0.527	2.199
KWANDA C DIDA	E KUKAL	<u>S- 1 L</u>	I (Am)	10		"		<u>ا ا ا ا ا ا ا ا ا ا ا ا ا ا ا ا ا ا ا </u>	4	() () () () () () () () () ()		N - 1 1 - 1 1 - 1	۲. ۲.	19.4	9 20	2 	*	*		· / · · · · 0
THE KEPUBLIC OF KWANDA	THE STUDY UN THE KUKAL WATER SUPPLY	Na Ep- 1	MN/2 V	985	Eat	267	0 E 177	211 000	21.5	124	295	, 143	69.9	0.5 29.2	76.9	428	2 26.9	17.0	10.5	8 44.0
THE KEY	IIF SI	TEST No	AB/2	1.5	2.5	3.2	4	Ð	6.5	8	10	10	13	13	16	20	25	32	40	40

DATE 13 / Oct. 11989 (Schlumberger Configuration) (m-Q) 149 39.2 601 130 48.7 51.5 53.5 155 81.9 134 Q B 7841.4 4976.3 478.3 817.0 12222. 31366. 5014.0 0.11/ 1206.4 199 0.081 1913.2 1960.4 200 0.042 1950.9 3305.7 3017.7 7803.7 1244.1 20689. K 10.019 0.020.0 0.051 0.033 0.026 0.063 100 0.081 9 \simeq THE STUDY ON THE RURAL WATER SUPPLY PROJECT IN THE EASTERN REGION (PHASE III) 173 (MA) . 100 200 2 TESTED BY HIROSHI HIRAMOTO 2 \$ 8.15 4 66 16.2 2,83 10.7 かい 19.3 12.7 6.79 15.00 \geq MN/2 ώ R ∞ ∞ 33 2 AB/2 400 800 500 650 100 130 160 160 200 200 250 320 20 63 80 20 LINE DIRECTION N25°W 20.00 8.03 16:3 13.61 24.8 8, 22 9.56 16.8 20.02 9.31 5.21 13.6 14.0 51.4 (m-0) 10.4 11.2 221 d d 197.9 200.3 75.40 129.6 801.1 301.6 132.0 313.4 487.7 1253.5 49.48 77.75 530.1 311.0 6.283 18.85 31.39 X 170 0.025 0.079 15:20.0 9.000 0.163 0.426 0.262 0.180 401.0 0.075 0.054 10:001 101.0 0.123 100 0.056 10.0 1.482 140.0 9 ረረ 1001 20.0 (mV) (mA) 50.0 200 100 96.8 2 2 5 THE REPUBLIC OF RWANDA 2 2 Ep- 1 S- 2 11 3 2 14.8 5.67 4.34 6.25 6.20 10.5 550 16.3 253 5.00 10% 2.66 4.17 10.1 2.53 5.27 16.5 \geq 0.5 MN/2 0.5 ณ์ ∞ 2 Na AB/2 10 2.5 3.2 ю. Э TEST <u>က</u> 10 10 2 9 40 $\tilde{\boldsymbol{\omega}}$ റ്റ 35 3 വ œ 4

THE REPUBLIC OF RWANDA	PUBLI	C OF R	WANDA													
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THES	TUDY	ON THE	RURAL	WATER	THE STUDY ON THE RURAL WATER SUPPLY PROJECT IN THE EASTERN REGION (PHASE III)	PROJECT	IN THE	EASTER	RN REGI	Id) NO	IASE D		DATE /3	DATE 13 1 Bet. 11989	1989	
TEST Na En- 7	Na Fr	ک - ۱	- ~ 1	S- 13 LINE DIRFUTI		ON NUC'UI	TESTED RV		HIROCHI	HIRAMOTO			raer Aeroer	(Schlumharvar Configuration)	(uc ; +	
											÷.,		2 120 120	3 mo - 510		
AR/2	C/NW	⊳		24	7	Q B		AR / J	C/NW	2	y (æ	И	ра М		
	1	(All)	(IIIA)	(F)	4	(m-0)		3 M	7 ////	(Am)	(MA)	(B)	4	(m-D)		
1.5		498.0	10.0	49.77	6.283	ٹی کی ا		50	8	121	20.0	0.608	478.3	290		
2.5		227.0		22.71	18.85	428		50	5	2.04	50.0	0.091	1960.4	841		
3.2	-	160.0		15.99	31.39	505		65		19.0	2 2 2	0.379	817.0	310		
4	للا ح	113.0		18.11	49.48	295		80	.	14.9	~	8620	1244.1	128		at y
ດ	, ,	73.4	1	7556	77.75	570		100	~~~~	5.01	2	0.206	1950.9	20%		
6.5		39.2		3.922	132.0	518		130	I	16.8	100	0.168	3305.7	555		
8		25.6	1 1 1	2.457	200.3	215		160	•	11.5	33.0	0.138	5014.0	69.2		
10		15.3	4	1.530	313.4	087		160	2	477	\$ 28	0.577	1206.4	969		
10	ç	976	8	9.749	75.40	シック		200	27	6.44	001	0.448	1913.2	257		
13	7	40.5	*	8%0.4	129.6	552		200	8	201	186	101.0	7841.4	928		
13	0.5	7.05	*	0.704	530.1	565		250					3017.7			
16		16.7	1. N.	1.670	197.9	183		320	Li.				4976.3			
20		18.8	*	0.279	311.0	523		400					7803.7			
25	3	12.7	20.0	0.636	487.7	310		500	32				12222.			
32		9.35	*	0.491	801.1	292		650	1		:		20689.			
40		4.29	*	0.214	1253.5	268		800					31366.			
40	∞	30.8	*	1.439	301.6	16 V						· .				
	والمراجع المراجع															

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	ي مين مين مين ب	1939	tion)																				
		DATE 14/002.11989	Configuration)	с, с	(m-0)	66.0	64.7	77.6	90.8	107	126	155-	174	207	188								
	-	NATE 14		М		478.3	1960.4	817.0	1244.1	1950.9	3305.7	5014.0	1206.4	1913.2	7841.4	3017.7	4976.3	7803.7	12222.	20689.	31366.		
		· • • •	(Schlumberger	84	9	0./38	0.033	0.095	0.073	0.055	9.032	0.031	441.0	801.0	420.0								
5410N00	•	HASE II	1.	,	(MA)	001			*			190		199	2								
		ION (P	H I RAMOTO	Λ		13.8	3.32	9.52	7.40	5.50	3.2.9	6:08	27.5	21.7	4.79	:					· · · · ·		
레기		CRN REG	BY HIROSHI	MN/2		8	2		· · · .	80		·	2	70	8				32				
		EASTE		A8/2		20	50	65	80	100	130	160	160	200	200	250	320	400	500	650	800		
		IN THE	TESTED								ж. 1												
		ROJECT	S-N	p e	(0-m)	218	190	1.60	125	101	74.7	60.3	49.8	\$2.0	42.5	429	40.6	42.6	44.9	50.5	477	5-8.5	
		THE STUDY ON THE RURAL WATER SUPPLY PROJECT IN THE EASTERN REGION (PHASE III)	. 1	М		6.283	18.85	31.39	49.48	77.75	132.0	200.3	313.4	75.40	129.6	530.1	197.9	311.0	487.7	801.1	1253.5	301.6	
		WATER	S- 4 LINE DIRECTION	R	(a)	3464	10.10	5.084	2.434	1.294	0.566	105.0	0.159	0.690	0.328	0.021	0.205	281.0	260.0	0.063	0.046	161.0	
	ANDA	RURAL	τ <u></u> - π	I I	(MA)	10.0	1	\$	2	*	*	20.0	50.0	20.0	.	100	"	4					
	THE REPUBLIC OF RWANDA	ON THE		$\mathbf{N}_{\mathbf{r}}$	(JII)	347	1.01	50.9	25.3	12.9	ي.//	6.04	2.00	13.8	6.58	8./2	2.02	13.7	9.20	6.32	4.61	19.4	
	EPUBLI	STUDY	Na Ep- 1	MN/2					یا ح	3				ç	7	0.5			7	,		8	
	THER	THE	TEST	AB/2		1.5	2.5	3.2	4	Ω.	6.5	8	10	10	13	13	10	20	25	32	40	40	American American

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NICAL SUUNDING		THE STUDY ON THE RURAL WATER SUPPLY PROJECT IN THE EASTERN REGION (PHASE III) DATE 14/000 11989	TESTED BY HIROSHI HIRAMOTO (Schlumberger Configuration)	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	50 8 70.4 20.0 3.519 478.3 1683	50 2 17.0 " 0.840 1960.4 1666	65 123 500 2464 817.0 2013	80 92.6 × 7.97/ 1244.1 2442	0 8 24.2 20.0 1.21/ 1950.9 2363	$35.2 \ 47.2 \ 0.745 \ 3305.7 \ 2463$	D Z1.8 500 0.437 5014.0 2191	3 208 21.7 2.544 1206.4 3069	<u> </u>	0 8 23.8 81.7 0.291 7841.4 2282	250 3017.7	0	0 7803.7	0 32 12222.	20689.	31366.	
<u>and the secient of the second second</u>		ROJECT IN THE EA	S	Δ = AB (Ω-m)	3221 5	4/45 5	4332 6	8 1447	4096 100	3740 130	3563 160	<i>٤٤٦٤</i> [] 160	3609 200	3323 200 300 300 300 S	3020 25	2872 320	23.74 400	2041 500	1877 650	1720 800	1751
		WATER SUPPLY P	S- 1 LINE DIRECTION N	R (0) K	\$12.7 6.283	2/99 18.85	/38.0 31.39	90.35 49.48	\$2.68 77.75	132.0 132.0	17.79 200.3	10.45 313.4	47.86 75.40	25.64 129.6	5.696 530.1	14.5/ 197.9	7.634 311.0	4.185 487.7	2.343 801.1	/.372 1253.5	A 205 301.6
	THE REPUBLIC OF RWANDA	UDY ON THE RURAL	Na Ep- 2 S- 1	MN/2 V I	5/33 10.0	2201 "	1382 \$	0 E 904 %	* 125 0.0	283	178 1	" 101	1 419 .	256 1	0.5 96.0 16.8	145 10.0	152 20.0	2 83.8 "	46.9 1	27.4 1	8 116 %
	THE REP	THE ST	TEST	AB/2	1-2	2.5	3.2	4	цсэ M	6.5	8	10	10	13	13	16	20	25	32	40	40

(Schlumberger Configuration) DATE 14 1 Oct. 11989 (0-m) 203 329 328 409 272 318 5 010 オコク ううう かか å 3017.7 4976.3 7803.7 1206.4 12222. 31366. 478.3 817.0 1913.2 7841.4 1960.4 1950.9 3305.7 5014:0 1244.1 20689. $\mathbf{\underline{\nabla}}$ 0.214 0.065 0.709 0.334 270.0 0.162 401.0 211.0 0.266 0.453 3 Ω, THE STUDY ON THE RURAL WATER SUPPLY PROJECT IN THE EASTERN RECION (PHASE III) 100 50.0 20.0 (mA) 100 187 \$ \$ \$ \$ \$ HIROSHI HIRAMOTO 4.29 0.06 70.9 45.34 3.14 205 6.70 1.32 26.7 26.6 \geq **MN/2** 32 ∞ ∞ ò **N** 33 AB/2 8 500 650 800 400 160 160 200 200 250 320 100 130 65 8 3 20 TESTED 1494 282 1225 843 (m-0) 1663 1445 234 1614 1272 670 423 260 2141 1665 8191 1682 LINE DIRECTION N/10°W 1406 .e Q 311.0 301.6 197.9 200.3 313.4 75.40 129.6 487.7 31.39 49.48 77.75 132.0 801.1 1253.5 6.283 18.85 530.1 М 0.325 7810 2.310 0.957 18.06 20.81 12.60 8.059 2.153 33.65 4.766 223.7 4.611 19.82 9.813 898.0 53.53 3 2 (mA) 20.0 20.02 20.02 001 10.01 50.0 2 THE REPUBLIC OF RWANDA : \$ \$ \$ ~ ~ \$ Ş 2 Ϋ́ 2240 し、 892 16.3 9.40 95.8 909 80.7 828 うべく (Jm) 293 196 43.1 337 508 126 536 \geq N ч Цр 0.2 0.0 MN/2 ∞ à 3 Na AB/2 0.J ц Ц 2.5 3.2 TEST 0 40 2 3 3 ģ 52 33 \$ ß ∞ ຊ 1

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	5119	iratic			- 1 						~	m									.:
	16/000.11989	onfigu	Оа (0-ш)	106	211	139	161	(8)	222	246	259	293	267		14 a.e.						
r h	DATE	(Schlumberger Configuration)	K	478.3	1960.4	817.0	1244.1	1950.9	3305.7	5014.0	1206.4	1913.2	7841.4	3017.7	4976.3	7803.7	12222.	20689.	31366.		
SOUND I NG		Schlum	R (9	0.222	0.057	0.170	0.129	0.093	890.0	0.049	0.215	0.153	0.034					1 .			
IN N (IASE I		I (mA)	100	. 2	121	100	199		*	*	*	4								
	ON (PI	H I RAM(V (mV)	2.22	5.79	29:1	12.9	18.7	13,5	9.98	42.9	30.7	6.92								
CAL	N REGI	ROSHI	MN/2	8	5 7		:	∞	l,	<u> </u>		32	8		L	·	33	L	<u> </u>		, ·
ELECTRICAL	EASTER	TESTED BY HIROSHI HIRAMOTO	AB/2	50	50	65	80	100	130	160	160	200	200	250	320	400	500	650	800		
LEC	N THE	TESTED																			•
	HE REPUBLIC OF RWANDA THE STUDY ON THE RURAL WATER SUPPLY PROJECT IN THE EASTERN REGION (PHASE III)	V 70°W	Оа (Ω-Ш)	194	174	157	131	401	₽6.5 ⁻	72.9	56.7	49.6	42.6	49.3	44.1	52.9	67.8	23.3	2.28	82.6	•
VERTICAL	SUPPLY P	No Ep- 3 S- 1 LINE DIRECTION N70"W	М	6.283	18.85	31.39	49.48	77.75	132.0	200.3	313.4	75.40	129.6	530.1	197.9	311.0	487.7	801.1	1253.5	301.6	
11	WATER	NE DIR	R (0)	30,83	9.216	5.011	2.651	1.394	0.655	0.364	0.181	0.658	0.329	0.093	0.223	0.170	0.139	401.0	0.068	0.274	
THE	ANDA RURAL		I (mA)	10.0		~	*	20.0	\$0.0	001			167	891	100		*	176	100		· .
	OF RWN THE	ې م	V (mV)	308	92.2	50.1	265	27.9	32.8	36.5	18.1	181	56.3	15:7	22,3	17.0	13.9	18.3	6.87	27.4	
	PUBLIC	Na Ep-	MN/2	1 	<u> </u>	I	ייי ע כ	>	:I.		:	l	a .	0.5			2			8	
	THE REPUBLIC OF RWANDA THE STUDY ON THE RURA	TEST	AB/2	1.5	2.5	3.2	4	Ъ	6.5	∞	10	10	13	13	16	20	25	32	40	40	:
L.			<u> </u>	<u> </u>		بليت حتيل	<u></u>		<u>.</u>	<u></u>	}		i	<u></u>						لنميم	
		· .						M	- 7						-				۰.		
					÷				-			-									

DATE 16 1000. 11989 (Schlumberger Configuration) (0-m) 0.00 163 296 542 113 08/ 102 152 36/ 106 Q 8 7841.4 7803.7 817.0 1206.4 4976.3 12222. 31366. 478.3 1913.2 20689. 1960.4 1244.1 0.103 1950.9 3305.7 5014.0 3017.7 × 10.059 SOUNDING 0.170 281.0 822.0 0.177 0.046 0.076 0.054 200 0.236 9 ፎ THE STUDY ON THE RURAL WATER SUPPLY PROJECT IN THE EASTERN REGION (PHASE III) 199 (HA) \$ * \$ ~ * BY HIROSHI HIRAMOTO \$ \$ \$ (Jm) 5.30 9 22 34.0 45.6 47.3 27.0 20.7 15:2 dr . ! . 10.8 > ELECTRICAL MN/2 ∞ 32 8 認 ∞ 2 AB/2 500 400 650 800 200 65 100 160 160 200 250 320 130 20 20 80 TESTED 76.9 95.0 (m-0) 54.5 29.0 27.7 39.0 53.1 45.9 54.T 63.9 78.9 68.9 76.4 1.15 25.5 301 106 E-W d d VERTICAL 301.6 197.9 311.0 487.7 0.07/ 1253.5 129.6 530.1 200.3 313.4 75.40 801.1 6.283 132.0 18.85 31.39 49.48 77.75 LINE DIRECTION Х 0.315 10:277 1.015 0.163 0.096 13.61 5.616 3.270 0.522 0.500 00/00 0.232 181.0 1.948 0.176 0.301 3 K THE (mA) 10.0 001 200 20.02 50.0 200 100 197 2 THE REPUBLIC OF RWANDA 2 . N \$: 2 \$ 2 \$ S. 14.3 50.0 45.8 (Am) 13.9 16.3 60.3 20.1 2%2 19.3 136 39.0 からて 17.6 32.7 26.1 2.62 8 > m -d3 0.0 0.5 MN/2 ŝ ∞ 3 Z A8/2 5 2.5 9.2 2.2 0.5 32 25 9 TEST ပ္ဆ Q. 3 ମ୍ପ 10 3 in, ∞ 2 đ

(Schlumberger Configuration) DATE 16/002.11989 (m-0) 439 568 316 2.20 254 324 376 156 141 67 Q a 478.3 817.0 7803.7 0.072 1960.4 1244.1 0.130 1950.9 5014.0 0.165 1913.2 7841.4 4976.3 12222. 20689. 31366. 3305.7 1206.4 3017.7 Ы ELECTRICAL SOUNDING 0.056 0.177 0.234 8600 0.075 0.222 0.326 9 <u>с</u> THE STUDY ON THE RURAL WATER SUPPLY PROJECT IN THE EASTERN REGION (PHASE III) 200 (III) 189 0.00 001 * 5 TESTED BY HIROSHI HIRAMOTO Ň \$ \$ 2 (Jm) 10.6 15.0 h h h 015 32.7 730 23.4 1.41 197 13.1 > **MN/2** 33 ∞ 3 8 ∞ 32 A8/2 500 650 200 320 400 800 23 20 8 80 100 130 160 160 200 250 No ED- 3 S- 3 LINE DIRECTION N 74"E (0-m)84.7 31.3 66.3 81.7 119 2.19 916 110 1.4.8 177 197 150 122 ε / / 113 1 1 51 VERTICAL Q Q 301.6 49.48 77.75 132.0 200.3 313.4 75.40 129.6 197.9 311.0 487.7 0.082 1253.5 18.85 31.39 801.1 6.283 530.1 \simeq 7 407 0.360 0.433 0.136 262.0 3.035 0.995 1.498 201.0 0.172 23.57 6.270 0.707 1.208 0.611 0.231 3 Ц THE (mA) 20.0 10.01 50.0 001 THE REPUBLIC OF RWANDA ~ \$ ~ ~ ~ Ŷ Ŷ \$ \$ \$ ~ \$ ~ 236 39.5 36.2 62.8 30.0 8.64 2 76 30.4 12.2 21.6 23.2 13.6 10.2 8.86 199 14.1 7.21 > 0.5 0.0 MN/2 2 ω 2 AB/2 <u>г</u> 2.5 <u>6</u> 9 TEST 3.2 ∞ 32 đ Ь 0 0 ŝ 13 9 32 40 40 20

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(Schlumberger Configuration) 14 / Nov. 11989 2.8.5 (m-D) 3 0~ 113 0-0 0 196 5 4 38 101 ŝ 0 40 16 D a 4976.3 3017.7 1206.4 7803.7 478.3 817.0 3305.7 5014.0 0.097 1913.2 7841.4 0.070 1950.9 12222. 20689. 1960.4 1244.1 31366. DATE Х SOUNDING 0.053 160.0 0.036 0.140 0.025 0.121 0.051 0.185 ы С THE STUDY ON THE RURAL WATER SUPPLY PROJECT IN THE EASTERN REGION (PHASE III) 100 181 182 157 216 91.5 (Mar) 6:6:1 156 162 2 HIROSHI HIRAMOTO (Jul) 24.6 15.3 3.97 14.0 6.61 16.9 35.9 4.86 1.21 9.16 > ELECTRICAL MN/2 32 ∞ ω 33 ∞ \sim A8/2 500 650 800 TESTED BY 160 200 200 250 320 400 8 130 65 80 16020 20 39.0 76.3 N80°W (m-0) 4.8.5 56.4 6 78 53.5 8.05 52.0 65.6 609 47.3 146 50% 85.9 > ° ? < 5-51 136 , e Q VERTICAL 487.7 1253.5 301.6 530.1 197.9 200.3 129.6 311.0 31.39 49.48 77.75 132.0 313.4 75.40 801.1 LINE DIRECTION 18.85 6.283 М 0.071 2250 0.253 0.267 0.627 0.374 0.098 251.0 0.106 46.8 291:0 4.322 0.211 2.114 5011 0.461 13.50 к Э THE 69.5 100 (mA) 50.0 THE REPUBLIC OF RWANDA . Ň 7 Š \$ s, Ŷ ~ \$ ð Ś \$ \$ 1 \$ S S 878 (Alle) 617 7.20 1.8.7 1.6.1 かなる 31.4 14.2 マシン 105 5.23 13.3 8.12 14.4 10.6 216 23. \succ m -d3-MN/2 0.5 0.5 2 ω 2 Na AB/2 6.5 ц. 5 7 7 3.2 TEST ģ **Q** ഹ ŝ 3 35 33 40 ö 2 20 22

1989 (no.1														i			
ID I NG III) DATE 14 / Nov. 11989 (Schlumherser (onfiguration)	ра (11-11)	₹ 2000	251	294	428	\$90	181	368	432	502							
ATE 14	K	478.3	817.0	1244.1	1950.9	3305.7	5014.0	1206.4	1913.2	7841.4	3017.7	4976.3	7803.7	12222.	20689.	31366.	
	R 3	8810	0.128	0.236	1210	0.118	0.086	0.305	0.226	0.064							
NU NI	1 4	50.0	1		100	91.6	-2.51	1	200	"					1		
8 =		74.4	6.42	\$.11	171	10.8	11.6	41.3	45.3	12.8					1. J. J.		
ELECTRICAL IN THE EASTERN REGI	MN/2	∞ (~		8			3	34	8		· · .	- -	32			
IN THE EASTERN REGION (PHASE III)	AB/2	20	52 20 62 20	80	100	130	160	160	200	200	250	320	400	500	650	800	
TFSTFI																	
48	ра (Q-m)	671	81.9	59.0	54.9	<u> </u>	64.9	72.3	78.6	95.8	89.6	103	125	149	185	223	207
HE REPUBLIC OF RWANDA THE STUDY ON THE RURAL WATER SUPPLY PROJECT	×	6.283	18.85 31.39	49.48	77.75	132.0	200.3	313.4	75.40	129.6	530.1	197.9	311.0	487.7	801.1	1253.5	301.6
L WATER SUPPLY	R (9)	23.74	2.155	1.193	0.706	0.443	0.324	0.237	1.043	0.739	0.169	0.545	0.401	0.305	0.231	0.178	189.0
HE RURAL HE RURAL	I (mA)	50.0			~	3		\$	~	1	~	*	*	*	~	•	\$
OF RUN THE		1	217	5.52	35.3	22.1	16.2	11.9	\$2.2	37.0	8.40	27.3	1.02	16.31	5 //	8.9.3	34.4
THE REPUBLIC OF RVANDA THE STUDY ON THE RURA	MN/2		<u>,</u>	ـــــــــــــــــــــــــــــــــــــ		<u>.</u>			c	7	0.5			2	• • • • • • • •		8
THE RE THE S	[1.5	3.2 3.2	4	2	6.5	8	10	10	13	13	16	20	25	32	40	40

ы N	TUDY (ON THE	RURAL	THE STUDY ON THE RURAL WATER	SUPPLY I	SUPPLY PROJECT IN THE EASTERN REGION (PHASE	IN THE	EASTEI	RN REGI	ION (PI	HASE III)		DATE /4	14 1 Nov. 11989	6861
TEST	Na Ep-	-S & -	9	LINE DIREC	LI ON	E- W	TESTED	D BV H	BY HIROSHI HIRAMOTO	HIRAM		Schlumt	erser C	(Schlumberger Configuration)	tion)
C/ 84	C/ NM	Λ	Н	Ж	Х	, e G		C/ 44	C/ NW	٧	I	R	1	Q a	
	7 2	(Alla)	(MA)	(ð)	4	(M-D)		7 /04		(mV)	(mA)	(0)	4	(<u>0-m</u>)	
1.5	I	543	50.0	6.855	6.283	43.1		50	8	24.8	89.6	0.277	478.3	581	
2.5	i	11.7	~	2.344	18.85	44.2		50	2	6,30	90.0	0.070	1960.4	137	
3.2	·	574	1	1.346	31.39	42,3		65		19.9	001	0.199	817.0	163	
4	 د	40.6	\$	0.812	49.48	40,2		80		15.4	4	0.154	1244.1	261	
ы		244	4	0.487	77.75	37.9		100	8	11.5		0.115	1950.9	724	
6.5		13.4	*	0.267	132.0	35.2		130		10.9	5٤/	0.082	3305.7	122	
∞		17.6	100	0.176	200.3	35.3		160		11.5	182	0.062	5014.0	118	
10		8.11		0.118	313.4	37.0		160	s.	47.8	183	0.261	1206.4	315	
10	ç	4.9%	\$	897.0	75.40	5.28		200	22	26.9	154	441.0	1913.2	333	
13	V	31.0	*	0.010	129.6	40.2		200	8	6.50	*	0.042	7841.4	329	
13	0.5	797		0.079	530.1	6.14	-	250					3017.7		
16		24.1	4	0.24/	197.9	47.7		320					4976.3		
20		/ B. 3	~	0.183	311.0	56.9		400	· · · · · · · · · · · · · · · · · · ·				7803.7		
25	7	141	*	1710	487.7	68.8		500	32				12222.		
32		111	~	0.111	801.1	88.9		650					20689.		
9		2.93		0.089	1253.5	1.1 2		800					31366.		
40	8	36.0	, , , , , , , , , , , , , , , , , , ,	925.0	301.6	108									

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THE REPUBLIC OF RWANDA	PUBLI(C OF R	WANDA							- - - -		· ·			
THE S	TUDY (ON THE	RURAL	THE STUDY ON THE RURAL WATER	SUPPLY I	SUPPLY PROJECT IN THE EASTERN REGION (PHASE III)	IN THE F	EASTER	N REG	ION (PI	HASE II		DATE 17 1 Nov. 11989	I Nov. 1	686
TEST	Na Ep	s S L		Na ED- 3 S- 7 LINE DIR	RECTION	E-W	TESTED BY	BV HI	ROSH	HIROSHI HIRAMOTO		Schlum	(Schlumberger Configuration)	onfigura	tion)
	NW	A V	beer a	ß	1	D a			C/ IXM	Λ	-	۲.	12	D a	
HD/ Z	7 /NI.	(mV)	(MA)	(0)	4	(0-m)			7 / 11	(mV)	(mA)	(7)	4	(Q-m)	
1.5		1214	20.0	60.60	6.283	180		50	8	20.5	100	402.0	478.3	97.6	
2.5		282	- N ²	14.26	18.85	269		50	2	10.4	200	0.051	1960.4	100	
3.2	•	581	- 187	6.671	31.39	209		65		16.1	100	0.160	817.0	131	
4	L C	54.2	~	3.205	49.48	159		80		12.2	2	0.122	1244.1	152	
S	C•0	30.7	~	1.533	77.75	611		100	~	9.00		9.089	1950.9	174	
0.5 0		12.0		0.600	132.0	2.92		130	_	11.5	169	0.068	3305.7	225	
8		15:8	50.0	0.317	200.3	63.5		160		6.97	137	0.050	5014.0	251	
10		4.89	~	0.177	313.4	55.5		160	ŝ	١./٤	139	0.223	1206.4	269	
10	ç	38.3	*	0.766	75.40	57.8		200	70	6 18	40.9	0.151	1913.2	289	
13	V ·	19.8	*	0.395	129.6	51.2		200	8	1.39	40.2	0.034	7841.4	267	
13	0.5	4.78	**	0.095	530.1	50.4		250		-	4 · ·		3017.7		
16		13.6	\$	0.271	197.9	\$3.6		320					4976.3		
20		986	*	0.196	311.0	61.0		400					7803.7		
25	2	7.11	*	0.142	487.7	69.3		500	32		:		12222.		:
32	:	9.74	100	0.097	801.1	77.7		650					20689.		
40		6,66	*	0.066	1253.5	82.7		800					31366.		
40	8	26.1	*	0.261	301.6	78.7									

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THE F	THE REPUBLIC OF RWANDA	C OF R	WANDA		л н л н л н л н л н л н л н л н л н л н	CAL EI	л Л		CAL		SOUNDING	NG				
THE	STUDY	ON THE	RURAL	WATER	THE STUDY ON THE RURAL WATER SUPPLY	PROJECT IN THE EASTERN REGION (PHASE III)	N THE	EASTER	RN REGI	NO (PH	ASE III)	DATE	· •	17 / Nou. 11989	1989	
TEST	Na Ep-	Ŋ	S- 8	INE DI	LINE DIRECTION	E-W	TESTEI	BV HI	ROSHI	TESTED BY HIROSHI HIRAMOTO		hiumbei	ser Co	(Schlumberger Configuration)	tion)	
AB/2	MN/2	>	H	R	Ж	, Da		AR/9	C/ NW			R	×	p a		
		(MII)	(mA)	3	4	(0-m)		*	4	(MII)	(mA) ((0)	4	(m-2)		
1.5		265	20.0	29.81	6.283	187		50	∞	15.4	130 0	0.117 4	478.3	56.0		
2.5		1,9	.8	5.961	18.85	112		50	5	3.64	1310	0.027 19	1960.4	5.2.9		
3.2		53.0	~	2.647	31.39	4. /		65		12.0	152 0.	0.078 8	817.0	63.7		
4	и С	28.1	\$	1.404	49.48	69.5		80	l	7.87	144 0	0.054 12	1244.1	67.2		
ດ	· · ·	15.5	*	0.778	77.75	60.5		100	000	5.27	133 0.	0.039 19	1950.9	76.1		•
6.5		6.87		0.342	132.0	45.1		130	!		2000.	1.1	3305.7	95.9		۰.
8		9.22	50.0	50.0 0.18 U	200.3	9.98		160	I	4.56	1 0.	0.022 5(5014.0	011		
10		11.7	100	0.117	313.4	36.7		160	ç	32.5	0	0.162 1	1206.4	195		
10	ç	51.2		0-511	75.40	38.5		200	5 7	24.5	0	0.122 19	1913.2	233		
13	7	29.3	4	0.292	129.6	\$28		200	8	3.44	0	0.017 7	7841.4	133		
13	0.5	6.94		0.069	530,1	3.6.6		250				Ř	3017.7			an a start a st
10		19.1	•	0.191	197.9	97.P		320					4976.3			
50	······································	13.4	~	0.133	311.0	4.14		400					7803.7			:
25	8	9.19	*	0.091	487.7	44.4		500	32				12222.			~~~~
32		9.75	165	0.059	801.1	473		650	<u>1</u>				20689.			
40		6.77	.	0.040	1253.5	50. I		800				က •	31366.			
40	8	29.1	166	1210	301.6	52.5	1									
																-

ENTIONE ELECINIONE SOUNDING		R SUPPLY PROJECT IN THE EASTERN REGION (PHASE III) DATE 16 1002 11989	$CTTION = 1 / / f^{2} T$ TRETED BV BIDDCUL UIDAMOTO (CALLUMAGRAD	INECTION // 43 F IESTED BY READAL REATION (SCHUMDERSEE CONTIGUES 101)	V De ADVA MINA V I R Z Da	(2-m) AD/2 (m/) (mA) (2)	1 6.283 149 50 8 2.13 199 0.040 478.3 19.1	(18.85 92.3 50 2 1.95 " 0.009 1960.4 17.6	7 31.39 70.3 65 6.18 195 0.031 817.0 26.3	7 49.48 56.8 80 5.17 199 0.025 1244.1 31.3	77.75 43.2 100 8 4.26 " 0.021 1950.9 41.0	132.0 28.3 [130] 1.66 100 0.016 3305.7 529	· 200.3 /7.0 160 /40 · 0.0/3 5014.0 66.2	/ 313.4 12.9 160 3 5.53 × 0.055 1206.4 66.4	75.40 /2.2 200	129.6 11.2 200 8 0.88 " 0.002 7841.4 62.7	۲ 530.1 /୬.۶ 250 3017.7 3017.7	o 197.9 1/.9 320 4976.3	7 311.0 11.5 400 7803.7	<i>y</i> 487.7 <i>ii</i> 7 500 32 12222.	7 801.1 13.6 650 20689.	z 1253.5 <i>\lapha.com 800</i> 31366.	301.6
	•••	LY PROJECT IN THE		.}		· .							Ì).	. i. 	1 			:				6 14.2
	RWANDA		C- / 1 NG NECCT	M ED- 4 2- / FINE DIVERTI	I R	(mA) (Q)	20.0 23.74	1 4.896	\$0.0 2.239	Lhri - n	~ 0.555	100 0.214	1 0.085	170.0 721	v 0.162	199 0.091	" 0.026	196 0.060	199 0.037	12000 "	" 0.017	1 0.012	10.0119
	THE REPUBLIC OF RWANDA	THE STUDY ON THE RURAL WATER		IEDI NA EDI K		(Au) / NIL / Z/GH	1.5 475	2.5 98.0	3.2 // 2	4 5 57.4	5 0.0 24.5	6.5 21.4	8 8.49	10 7.26	10 28.3	13 2 18.2	13 0.5 5.24	16 11.7	20 7.54	25 2 4.94	32 3.39	40 2.49	40 8 9 9 V

040	(ion)																		
7 116 1.029	nfigurat	0 a (12-m)	136	98.0	0 11	156	9 7 1	142	1:50	162	180	165							
l	(Schlumberger Configuration)	X	478.3	1960.4	817.0	1244.1	1950.9	3305.7	5014.0	1206.4	1913.2	7841.4	3017.7	4976.3	7803.7	12222.	20689.	31366.	
	ch 1 umb	R (9)	0.285	0.050	0.171	0.125	0.075	0.043	0.030	0.134	0.094	0.021							
	TO (S	I (mA)	124	47.9	50.0	39.2	49.9	49.3	70.0	70.5	84.7	85.4							
	HI RAMO	V (VE)	13.4	2.43	8.56	4.91	y. 75	2.17	z. 14 -	649	7.92	1.8.1							
	SOSHI I	MN/2	8	5		L	00			ل ب ــــب ^ا	70	8	 *	<u></u>	<u> </u>	32	I		
THE EACTERN RECI	BY HII	AB/2	50	50	65	80	100	130	160	160	200	200	250	320	400	500	650	800	
IN THE EACTERN RECION (PHACE TH)	TESTED BY HIROSHI HIRAMOTO													····					
		A a (0-m)	754	307	305	202	324	341	348	188	343	336	322	282	261	210	150	101	154
HE REPUBLIC OF RWANDA THE CTURY ON THE PURAL MATER SUDDIV DRAILECT	SCTION A	X	6.283	18.85	31.39	49.48	77.75	132.0	200.3	313.4	75.40	129.6	530.1	197.9	311.0	487.7	801.1	1253.5	301.6
UATER (LINE DIRECTION	R (9)	40.37	16.30	014.6	401.9	1.170	2.582	1.735	1.056	4547	2.592	0.608	1.438	0,828	0.430	181.0	280.0	0.510
ANDA	S- Z L	I (mA)	20.02			11		1	1		- (1. 1.				*	16.8	50.0	
OF RW	4 S-	V ()m)	308	326	194	122	83.4	51.7	34.7	21.1	91.0	\$1.8	12.1	28.7	16.7	A.60	3.17	4.29	255
THE REPUBLIC OF RWANDA	No Ep- 4	MN/2		<u>ــــــــــــــــــــــــــــــــــــ</u>		Li C		1	L	∖ i .i	¢	1	0.5			5	لا معر م مع مع المع مع المع مع المع	<u> </u>	8
THE RE	TEST	AB/2	1.5	2.5	3.2	4	പ	6.5	∞	10	10	13	13	16	20	25	32	40	40
				<u></u>			M		16	.					<u></u>				

IAE VEKIICAL ELECIKICAL SOUNDING	THE REPUBLIC OF RUANDA	THE STUDY ON THE RURAL WATER SUPPLY PROJECT IN THE EASTERN REGION (PHASE III) DATE 7 / Nov. 1/989	Na Ep- 4 S- 3 LINE DIRECTION N- S TESTED BY HIROSHI HIRAMOTO (Schlumberger Configuration)	I R V	(mV) (mÅ) (Q) (Q) (Q) (Q-m) (Q-m) (Q-m) (Q) (MV) (MV) (Q)	316 20.0 16.80 6.283 99.3 50 8 22.3 100 0.223 478.3 107	81,2 × 2,087 18.85 770 50 2 2.00 1 0.059 1960.4 118	42.4 * 2/22 31.39 66.6 65 15.2 * 0.152 817.0 124	0 E 21.8 " 1.093 49.48 54.1 80 11.4 " 0.114 1244.1 142	0.0 (1,9 ~ 0.594 77.75 46.2 100 8 2.50 ~ 0.084 1950.9 164	17.7 50.0 0.354 132.0 46.7 130 2.92 145 0.061 3305.7 202	12.2 " 0.257 200.3 51.5 [160] 9.37 199 0.046 5014.0 231	9.61 × 0.192 313.4 60.2 160 33 39.4 × 0.197 1206.4 238	31.6 * 0.633 75.40 477 200 ³² 28.0 * 0.140 1913.2 26.8	² 2/4 × 0.428 129.6 55.5 200 8 66.9 × 0.33 7841.4 259	0.5 6.57 × 2.131 530.1 884 250	16.9 . 0.317 197.9 62.7 320	11.2 * 0.224 311.0 69.7 400 7803.7	2 15.8 100 0.158 487.7 771 500 32 1 12222.	11.1 × 0.11/ 801.1 PP.9 650 20689.	<i>У. д. д. д. д. д. у. д. д. у. д. у. у. д. у. у.</i>	8 30.3 " 0.303 301.6 91.4	
	SLIC OF	V ON T	Ep- 4			n N	×8	42			77	12.	9.6		-,		5	11	ļ		8.0		
	THE REPUB	THE STUD	TEST Na	AR/2 MN/		1.5	2.5	3.2	4	2	6.5	8	10	10	13	13 0.	16	20	25	32	40	40 8	

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DATE 10 1 Nov. 11989 (Schlumberger Configuration) (m-Q) 1.81 2 2 2 262 226 207 212 2 γ うべ 181 26 02 Pa. 1950.9 7803.7 478.3 817:0 1244.1 5014.0 1206.4 1913.2 7841.4 4976.3 1960.4 3305.7 3017.7 20689. 31366. 12222. X 160.0 0.045 137 2.064 40.00 0.386 0.249 0.109 0.189 0.166 9 \propto THE STUDY ON THE RURAL WATER SUPPLY PROJECT IN THE EASTERN REGION (PHASE III) (HH) 50.0 001 139 2 \$ \$ ŝ \$ \$ \$ HIROSHI HIRAMOTO () Me 5.50 57.9 4.60 19.0 13.7 4.75 19.3 14.74 \$. 3° 12.4 > **MN/2** ω ∞ 32 ∞ 2 33 AB/2 B√ 200 500 800 160 200 250 320 400 650 100 130 160 00 65 ß 88 TESTED 200 167 (m-0) 70,5 NI0°E 40,04 6.99 70.9 549 92.0 106 89.4 101 221 137 153 166 95. 1 6 p_a 301.6 530.1 LINE DIRECTION 77.75 132.0 200.3 313.4 75.40 129.6 197.9 311.0 487.7 801-1 1253.5 6.283 31.39 49.48 18.85 K 0.133 0.239 7,847 1.632 705.0 1.068 0.175 182.0 161.0 0.40 5.621 Disty 0.734 25.62 0.540 0.393 0.907 3 ዤ 20.02 (mA) 50.0 THE REPUBLIC OF RWANDA \$ ~ ŝ \$ \$ \$ \$ ~ \$ 2 \$. ~ •--~ * ŝ (mV) 6.66 275 25.4 12.0 53.5 513 211 57.0 1 17.7 36.7 8:79 27.0 19:7 619 18:1 14. را۔ 25 > ц Б 0.5 0.51 MN/2 2 3 ∞ Na AB/2 1.5 2.5 3.2 0.2 TEST 9 ഹ ∞ 3 52 3 40 9 <* 10 10 22 3

							- - 														
• •	6401		(noij																		
	1 1/01	1 - 40 41	ont i gura	ρa (<u>0</u> -m)	87.5	70.6	101	113	129	165											
- F)	DATR 11 1 ALAU 11929		(Schlumberger Contiguration)	К	478.3	1960.4	817.0	1244.1	1950.9	3305-7	5014.0	1206.4	1913.2	7841.4	3017.7	4976.3	7803.7	12222.	20689.	31366.	
ONIC			SCRIUM	R (9)	0.183	0.036	1210	0.091	990.0	0.050											
NUC	HACF T			[(щ)	001	200	2	~	*	LL1											
S S			H I KANU I U	۲ (۱۳۷)	18.3	7.39	54.9	18.3	/3.2	26°8											
CAL	PN PFC		I NUDH I	MN/2	8	2		•	8			ŝ	70	8				32			
TR	EACTF		IESIEU BY HIKUSHI	AB/2	50	50	65	80	100	130	160	160	200	200	250	320	400	500	650	800	
LEC	N THE		ובטונ																		
ICAL ELECTRICAL SOUNDING	HE REPUBLIC OF RWANDA THE STINV ON THE RIBAL WATER SUPPLY PROJECT IN THE EASTERN RECION (DHASE MI)	01 1/00'1/	V OU W	ра (<u>0-</u> ш)	63.0	22.4	15.8	1.6.1	17.5	19.3	21.0	23.8	25.4	31.6	28.1	34.8	40.4	47.3	55.3	63.9	4.6
	CUIPPE V D		CUTUN /	Ж	6.283	18.85	31.39	49.48	77.75	132.0	200.3	313.4	75.40	129.6	530.1	197.9	311.0	487.7	801.1	1253.5	301.6
VERT	UATER		LINE UIKEUI	R (9)	10.03	1.190	0.502	0.326	0.225	971.0	0.105	0.076	0.337	0.244	0.053	0.176	0.130	0.097	0.069	0.051	0.254
THE	ANDA Rurai			I (mA)	+		2	2	50.0		:	*	\$	2	100	4	*	*	4		1
	OF RUN THE		<u>へ</u>	V (mV)	102	23,8	10.0	6.54	11.2	7.32	5.29	3.84	16.9	12.2	5.36	17.7	13.1	9.74	6.92	5.10	25.5
	THE REPUBLIC OF RUANDA THE STUDY ON THE RURAD		1631 NU EP- 3 3- 2	MN/2			•	և Հ					ç	V	0.5			5			ω
	THE RF THF C		153	AB/2	1.5	2.5	3.2	4	ŝ	6.5	8	10	10	13	13	16	20	25	32	40	40

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(Schlumberger Configuration) 11 / Nov. 11989 250 $(\overline{u} - \overline{u})$ 267 277 3/2 202 かのマ 50 194 241 151 а С. 4976.3 7803.7 817.0 1950.9 7841.4 12222. 31366. 478.3 1206.4 1913.2 3017.7 20689. 3305.7 5014.0 1960.4 1244.1 DATE 얾 0.163 0.066 0.145 0.034 7.80.0 0.207 4010 8700 002 0.237 0.363 3 ĽЦ. THE STUDY ON THE RURAL WATER SUPPLY PROJECT IN THE EASTERN REGION (PHASE III) 50.0 100 193 (mA) 194 \$ \$ 2 ~ \$ BY HIROSHI HIRAMOTO 282 6.71 6.64 9.74 (Jm) 4.36 11.6 10.4 18.1 11.8 816 \geq MN/2 ∞ 3 ∞ 3 2 ∞ A8/2 500 320 400 650 800 160 200 200 250 100 130 160 20 65 20 80 TESTED 128 2:26 150 152 8.9.0 70.1 78.3 112 (0-m) 8.48 86.7 9.86 951 133 117 601 LINE DIRECTION N/10°E 64 90.1 Q a 301.6 313.4 75.40 197.9 311.0 801.1 129.6 487.7 0.120 1253.5 49.48 132.0 200.3 31.39 77.75 6.283 18.85 530.1 \mathbf{X} 0.317 1.159 0.505 0.284 121.0 0.160 7.066 2.072 6.433 3.715 0.643 0.930 4090 05%0 50.0 0.230 22.00 3 \simeq (mA) 20:0 ... 3 THE REPUBLIC OF RWANDA \$ \$ 1 \$. ~ \$ ~ \$ \$ \$ * ກ ∙s P. 05 6.03 5.11 2.52 12.9 41.5 76.9 5.70 3.49 20% 6.37 077 74.4 18.6 23.2 111 1.21 よ > Ep-0.2 0.5 MN/2 en, ∞ N Ž 0.5 AB/2 5 2.5 3.2 32 40 TEST 3 <u>8</u> 0 20 S **Q** 20 in 10 ¢O đ

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THE RI	EPUBL	THE REPUBLIC OF RWANDA	WANDA									1			
THE	STUDY	THE STUDY ON THE RURAL WATER	RURAL		SUPPLY	SUPPLY PROJECT IN THE EASTERN REGION (PHASE III)	IN THE	EASTER	N REG	ION (PF	ASE II		DATE 7	7 1 Nov. 11986	986
TEST	Na Ep- 6	- S	2- - -	LINE DIR	RECTION N40°E	N40°E	TESTE	D_BV_HI	ROSHI	H I RAMC	0T0 (;	schlumt	berger C	TESTED'BY HIROSHI HIRAMOTO (Schlumberger Configuration)	cion)
		Λ	1			D a		0,01		Λ	F	R		0 a	
AB/ 2	7.NL	(mV)	(mA)	(0)	¥	(<u>0</u> -m)		A5/ 2	11/12	(Jm)	(mA)	(7)	¥	(m-2)	- -
1.5		143	20.02	7.152	6.283	44.9		50	8	36.36	200	0.181	478.3	36.6	
2.5		42.0	1	2.100	18.85	39.6		50	2	8.60	1	0.043	1960.4	84.3	
3.2		27.3	4	1.365	31.39	42.9		65		20.7	~	0.103	817.0	84.2	
а Т	Lí C	18.8	1	176.0	49.48	46.6		80		/३.४	199	0.067	1244.1	83.4	
2	n. 2	/3.2	4	0.662	77.75	51.5		100	8	ନ କ ସ	200	0.044	1950.9	25.3	
6.5		8.71		254.0	132.0	57.4		130	·	5.96	195	0:030	3305.7	99.2	
8		8.51	50.0	50.0 0.317	200.3	63.5		160		4.61	197	0.023	5014.0	115	
10	· · ·	1111	*	0.222	313.4	69.6		160	ŝ	18.8	"	0.095	1206.4	115	
10	c	45.4	~	709.0	75.40	1.89		200	70				1913.2		
13	7	29.9	*	0.597	129.6	774		200	8				7841.4		
13	0.5	7.37	*	0.147	530.1	77.9		250					3017.7		
16		20.5	*	017.0	197.9	81.1		320					4976.3		
20	. •	13:4	*.	0.269	311.0	£3.7		400					7803.7		
25	2	17.2	100	0.172	487.7	83.9		500	32				12222.		
32	÷	10.5	~	0102	801.1	84.1	-	650					20689.		
40	-	13.2	200	0.066	1253.5	82.7		800				·	31366.		
40	œ	56.9	2	0.284	301.6	86.7									

THE REPUBLIC OF RMANDA THE STUDY ON THE RURAL WATER SUPPLY PROJECT IN THE EASTERN REGION (PHASE II TEST No. EP- 6 S-2 LINE DIRECTION $//70^{\circ}E$ TESTED BY HIROSHI HIRAMOTO (S AB/2 NN/2 V I R ρ_{-m} AB/2 NN/2 V I AB/2 NN/2 V I R ρ_{-m} AB/2 NN/2 V I AB/2 NN/2 V I R ρ_{-m} AB/2 NN/2 V I AB/2 NN/2 V I R ρ_{-m} AB/2 NN/2 V I AB/2 NN/2 V I R ρ_{-m} AB/2 NN/2 V I AB/2 NN/2 V I AB/2 NN/2 V I AB/2 NN/2 V AB/2 NN/2 V I AB/2 NN/2 V AB/2 NN/2 V AB/2 NN/2 V AB/2 NN/2 V I NN/2 V	REPUBLIC OF RMANDA STUDY ON THE RURAL WATER SUPPLY PROJECT IN THE EASTERN REGION (PH. Mo. ED- 6 S-2 LINE DIRECTION N/70°E TESTED BY HIROSHI HIRAMO Mo. ED- 6 S-2 LINE DIRECTION N/70°E TESTED BY HIROSHI HIRAMO MN/2 W M AB/2 MN/2 W/12 M/12 W/12 M/12 W/12 W/12 W/12 W/12 W/12 W/12 W/12 W/12 M/12 <th< th=""><th></th><th></th><th></th><th>Ч Н Ц</th><th>E. VER</th><th>RTIC</th><th>TICAL ELECTRICAL SOUNDING</th><th>LEC</th><th>TRI</th><th>CAL</th><th>SC</th><th>UND</th><th>DNIC</th><th></th><th></th><th></th></th<>				Ч Н Ц	E. VER	RTIC	TICAL ELECTRICAL SOUNDING	LEC	TRI	CAL	SC	UND	DNIC			
Nu Ep- 6 5-2 LINE DIRECTION N/7°E TESTED BY HIROSHI HIROSHI HIRAMOTO Mu/2 V I R 0.4 0.1 R 0.4 0.1	Nile Ep- 6 S-2 LINE DIRECTION //70*E TESTED NH Redion (PHASC Mile Ep- 6 S-2 LINE DIRECTION //70*E TESTED W INV (mV)	THE R	EPUBL	C OF R	WANDA									- [*			
Na. Ep- 6 S-2 LINE DIRECTION $\sqrt{70^{\circ}E}$ TESTED BY HIROSHI HIRAMOTO MN/2 V I R K ρ_{a} AB/2 MN/2 V I MN/2 (m/) (m/) (g) K ρ_{a} AB/2 MN/2 (m/) (m/) (m/) (m/) (g) κ ℓ_{a} </td <td>Na Ep- 6 S-2 LINE DIRECTION $M70^{\circ}E$ TeSTED BY HIRAHOTO MN/2 W I R ρ_{-m} AB/2 MI/2 W/2 I $f \otimes b$ $z_0, z_1 z_1$ (a_1) (a_2) $x_0 z_1$ $z_0 z_0$ $z_{1,1} z_0$ (a_1) (a_1) (a_2) (a_1) (a_2) (a_2)</td> <td>THE</td> <td>STUDY</td> <td>ON THE</td> <td>RURAL</td> <td>WATER</td> <td>SUPPLY F</td> <td>ROJECT</td> <td>IN THE</td> <td>EASTER</td> <td>REG I</td> <td>ON (P</td> <td>HASE II</td> <td></td> <td>ATE 7</td> <td>I Nov. 1</td> <td>6861</td>	Na Ep- 6 S-2 LINE DIRECTION $M70^{\circ}E$ TeSTED BY HIRAHOTO MN/2 W I R ρ_{-m} AB/2 MI/2 W/2 I $f \otimes b$ $z_0, z_1 z_1$ (a_1) (a_2) $x_0 z_1$ $z_0 z_0$ $z_{1,1} z_0$ (a_1) (a_1) (a_2) (a_1) (a_2)	THE	STUDY	ON THE	RURAL	WATER	SUPPLY F	ROJECT	IN THE	EASTER	REG I	ON (P	HASE II		ATE 7	I Nov. 1	6861
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	TEST	Na Ep	- 6 S		INE DI	RECTION ,	N70°E	TESTEI) BV HI	ROSHI	HIRAM		Schlumt	lerger C	onfigura	tíon)
5 $\xi 8 6$ $2 o c$ $2 \gamma 57$ $6 \cdot 283$ $7 g \psi$ 50 8 $2k, 1$ $2 \circ o$ 2.1 γ $\xi, 377$ 18.85 $7/2$ 50 2 6.89 γ	5 586 20.0 2727 6.233 78 7.1 50 8 24.1 200 771 500 8 24.1 20.94 1960.4 1960.4 1960.4 1060.4	A8/2	MN/2	V (VIII)	I (mA)	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	K	ρa (Q-m)				V (VII)	I (mA)	R (9)	K	ра (Q-m)	
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	1.5		586	20.0	1	6.283	181		50	1	26.1	200	0.130	478.3	62.2	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	2.5		119	1	5.957	18.85	211		50	7	6.8.9	2	460.0	1 1 1 1	66.7	
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	3.2		43.1	<i>\$</i>	2.1tf	31.39	62.7		65		4.94	123	0.080.0	817.0	65.4	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	4	ц С	16.6	*	0.829	49.48	017		80	· .	9.24	162	0.056	1244.1	69.7	
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	5		18.6	~	0.373	77.75	29.0		100		6.23	152	0,040	1950.9	78.0	
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		6.5		9.42	50,0		132.0	らいる	:	130		3.40	124	0.027	3305.7	89.3	
8.33 100 0.093 313.4 27.2 160 32 11.7 1.97 2 29.6 v $0.4/6$ 75.40 31.4 27.2 200 32 11.7 1.97 2 29.6 v 0.296 129.6 38.4 200 8 2.62 143 0.5 $6.7p$ v 0.266 530.1 37.0 250 8 2.62 143 22.0 v 0.220 197.9 43.4 320 320 320 320 320 320 320 320 320 326 326 326 326 320 32 320 32 320 32 320 32 320 32 320 32 320 32 320 32 320 32 320 32 320 32 320 32 320 32 320 32 320 32 32 32 32 32 32 </td <td>$\begin{array}{ c c c c c c c c c c c c c c c c c c c$</td> <td>ŝ</td> <td></td> <td>6.32</td> <td></td> <td>0.126</td> <td>200.3</td> <td>25.2</td> <td>-</td> <td>160</td> <td>(</td> <td>4.53</td> <td></td> <td>0.022</td> <td>5014.0</td> <td>0-1-1</td> <td></td>	$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	ŝ		6.32		0.126	200.3	25.2	-	160	(4.53		0.022	5014.0	0-1-1	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	10	, , ,	9.33		0.093	313.4	282		160	. 6	21.1		201.0		127	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	10	د ا	41.8	*	8120	75.40	31.5		200	70	11.7	139	480.0	1913.2	161	
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	13	2	29.6		0.296	129.6	28.4		200	8	2.62	143	0.018	7841.4	141	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	13	0.5	6.70		0.066	530.1	35.0		250					3017.7		
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	16		22.0		0.220	197.9	43.5		320					4976.3		
2 11.0 " 0.109 487.7 53.2 500 14.9 200 0.074 801.1 59.3 650 8.16 162 0.050 1253.5 62.7 800	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	20		15.6	*	0.156	311.0	4.9.5		400	••••••••••••••••••••••••••••••••••••••				7803.7		
14.9 200 0.074 801.1 59.3 8.16 162 0.050 1253.5 62.7	$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	25	2	11.0	· ·	601.0	487.7	53, 2		500	32			1	12222.		
8.16 162 0.050 1253.5 62.7	8.16 162 $a.640$ 1253.5 62.7 800 8 31.6 163 $a.792$ 301.6 47.9 800	32		14.9		\$20.0	801.1	59.3		650					20689.		
	8 31.6 163 0.92 301.6	40		8.16	· · · · ·		1253.5	62.7		800					31366.	-	
0 8.100 8.760 8.72 301.0		40	8	31.6	163		301.6	57.9				•				· · · ·	

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												*****						A HERRING TO STATE		T	<u> </u>
		1989	tion)																		
		7 1 Nov. 11989	(Schlumherser Confisuration)	ρа (Ω-m)	74.6	74.5	71.15	77.1	828	92.6	105	134	155	811			· · · ·				
		DATE 7) HERE	×	478.3	1960.4	817.0	1244.1	1950.9	3305.7	5014.0	1206.4	1913.2	7841.4	3017.7	4976.3	7803.7	12222.	20689.	31366.	
DN I		1	Ch lum	R 3	9510	9.030	0.087	0.062	5.045	0.028	0.021	0.111	0.081	0.015							
<u>U N D</u>		IASE II			001	111	105	159	181	191	182	4	107	109							
SC		ION (PI	TESTED BV HIRDSHI HIRAMOTO	V (VE)	15.6	4.21	9.18	10.0	8.46	4.75	3.87	20.3	8.78	1.69							
CAL		RN REG	ROCHI	MN/2	∞	2			8			50	26	8				32		-	
TRI		EASTE	A RV H	AB/2	20	50	65	80	100	130	160	160	200	200	250	320	400	500	650	800	
LEC		IN THE	TECTFI																с 1 ус	-	
ALE		ROJECT	110°F	0 a (Û-m)	264	214	175	551	137	114	102	91.5	36.4	93,3	89.1	95.0	99.5	91.2	87.3	76.5	76.6
RTICAL ELECTRICAL SOUNDING		SUPPLY PROJECT IN THE EASTERN REGION (PHASE III)	FCTION 1/10° F	K	6.283	18.85	31.39	49.48	77.75	132.0	200.3	313.4	75.40	129.6	530.1	197.9	311.0	487.7	801.1	1253.5	301.6
VE			I INF DIR	8 3	41.99	11.37	5.566	3.093	1.760	0.864	0.507	0.292	1.279	0.720	89100	0.480	0.320	0.187	6010	190.0	0.254
THE	ANDA	RURAL			20.02		4		1	Ň	50.0		~	~		1	*		1	85.1	87.1
-	THE REPUBLIC OF RWANDA	THE STUDY ON THE RURAL WATER	No Fn- 2 5-3	V (VEI)	178	227	111	61.9	JS.2	17.3	25.4	14.6	94.0	36.1	8.44	24.0	16.0	173	5.45	5.20	1.22
•	PUBLI(STUDY (No Fr	MN/2		.	ل مي سير	يد د	2				ç	7	0.5			2		- — T	8
	THE RE	THE	TFCT		1.5	2.5	3.2	Ţ	2	6.5	8	10	10	13	13	16	20	25	32	40	40

ANDA RURAL WATER SUPPLY PROJECT IN THE EASTERN RECION (PHASE 1 LINE DIRECTION // Lo*W/ TESTED BY HIROSHI HIRAMOTO 1 RUA AB/2 M/2 V I (mA) (g) K 0= AB/2 M/2 V I (mA) (g) K 0= AB/2 M/2 V I 20.0 /2.39 6.283 77.9 50 8 8.49 /00 20.0 /2.39 18.85 59.1 50 8 8.49 /00 20.0 /2.39 18.85 59.1 50 8 8.49 /00 20.0 /2.39 49.4 80 50 2.40 /33 8.9 0 0.313 24.1 100 8 6.0 /00 0.1 757 0 0.321 132.0 3/.4 24.1 160 7.27 /07 8.9 0.1 0 0.3220 313.4	DATE 6 1.Nov. 11989	R R Date (0-m) (0-m)	478.3 40.2	1960.4 35.3	817.0 49.0	1244.1 61.0	1350.9 74.1	3305.7 99.2	5014.0 /z5	1206.4 /z 4	1913.2 /76	7841.4 /73	3017.7	4976.3	7803.7	12222.	20689.	31366.	
L WATER SUPPLY PROJECT IN LINE DIRECTION N40°W TE R R 0. (0-m) (0) 12.39 6.283 77.9 3.134 18.85 59.1 1.531 31.39 48.1 1.531 31.39 48.1 1.531 31.39 48.1 1.531 31.39 48.1 1.531 31.39 48.1 1.532 13.3 0.241 132.0 31.6 23.3 0.242 530.1 23.3 0.242 530.1 23.3 0.242 530.1 23.3 0.057 487.7 24.9 0.051 197.9 23.3 0.051 487.7 24.9 0.051 487.7 24.9 0.052 4125.5 32.6			001	133 0.018	39.6	147	155	7.92	68.3	69.10.103		1							
L WATER SUPPLY PROJECT IN LINE DIRECTION N40°W TE R R 0. (0-m) (0) 12.39 6.283 77.9 3.134 18.85 59.1 1.531 31.39 48.1 1.531 31.39 48.1 1.531 31.39 48.1 1.531 31.39 48.1 1.531 31.39 48.1 1.532 13.3 0.241 132.0 31.6 23.3 0.242 530.1 23.3 0.242 530.1 23.3 0.242 530.1 23.3 0.057 487.7 24.9 0.051 197.9 23.3 0.051 487.7 24.9 0.051 487.7 24.9 0.052 4125.5 32.6	STERN REGION	/2 MN/2 M//2 (m/	∞ ∞	2			∞				36	8	0	0	0		0	0	
L WATER SUPPLY PR L WATER SUPPLY PR R R K K (0) X (2) 12.39 6.283 3./34 18.85 3./34 18.85 3./34 18.85 3./34 18.85 3./34 18.85 3./34 18.85 3./37 31.39 0.247 31.39 0.247 132.0 0.247 313.4 0.277 313.4 0.276 313.5 0.277 311.0	N I			4 L	9		10	1:		16		3(3.					
C OF RWANDA ON THE RURAL WATER SUPPLY V I R K (mV) (mA) (Q) K Z V B Z O (2,39) 6.283 $Z V B Z O (2,39) 6.283Z V B Z O (2,39) 18.812 V C N O (2) 7.33 (2) 13.312 V C N O (2) 7.33 (2) 13.312 V C N O (2) 7.33 (2) 13.317.73 N O (2) 7.31 (2) 13.317.73 N O (2) 7 313.417.73 N O (2) 7 313.417.72 N O (2) 7 301.417.72 N O (2) 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7$	PROJECT	0 a (0-m)	<u> </u>			4	S	(بی	2	2	2		X	23	N	2			2.2
C OF RWANDA ON THE RURAL WAT V I R (mV) (mA) $(Q)Z U R Z C C I Z S S S - 1 LINE I (mV) (mA) (Q)Z U R Z C C I Z S S S S S S S S S S S S S S S S S S$	ER SUPPLY																		
C OF RWA ON THE R (MV) ((MV)	NDA URAL WATI	A A											·····						
	C OF RWA ON THE R		+	62.T	30.6	16.7		24.1	13~7	7.73	32.0	18.0	K. K5	1/. &	253	\$1.5		2,30	<u> </u>

THF R	FPLIRL I	THE REPUBLIC OF RWANDA	WANDA							} ≵ 					
		on The	INCLUSION INCLUSION	0.14 L D			202 0.1	C A C T C D	1000 11		H 33YI	·	14TC /		000
าน	21UUY	UN LEE	NUKAL	ITE STUDY UN THE KURAL WALEN		OUTLI TRUJEUL IN THE EASTERN REGIUM (FRASE IL)	IN INC	CHOICH	נא אבט		IL JCHI	1	UMIC 0	6 1 NOV. 11787	121
TEST	Na Ep	1- 8 S	ר ג י	No Ep- & S- 2 LINE DIR	RECTION	E-W	TESTED BY		ROSHI	HIROSHI HIRAMOTO		Schlumk	(Schlumberger Configuration)	onfigura	tion)
A8/2	MN/2	V (VIII)	I (MA)	R (9	Ж	ра (12-т)		AB/2	MN/2	V (VE)	I (mA)	R 3	K	ра (10-ш)	
1.5		23.3	20.0	11.66	6.283	73.3		50	8	17.2	199	0.089	478.3	42.6	
2.5	:	52.4		2.618	18.85	49.4		50	2	4.37	/	0.021	1960.4	41.2	
3.2		24.5	~	1. 224	31.39	38.4		65		12.0	198:	0.060	817.0	49.0	
4	L C	12.1	•	209.0	49.48	6 62		80	long - maand	9.26	4	0.046	1244.1	57.2	
വ	0.0	6.76	\$	2.332	77.75	56.32		100	~~~~	6.83	181	0.037	1950.9	72.2	
6.5		4.86	50.0	0.157	132.0	20.7		130	L	4.43	153	0.028	3305.7	92.6	
ò		4.83		0.096	200.3	/9.2		160		3.20	134	0.023	5014.0	115	
10		6.31	100	0.063	313.4	19.7		160	6	12.6	137	0.091	1206.4	110	
10	ç	25.3	"	0.253	75.40	19.1		200 -	5 7 C	13.5	199	0.067	1913.2	123	2
13	N	16.0	*	0.159	129.6	20.6		200	8	3.52		6.017	7841.4	\$\$1	
13	0.5	4.05	*	0700	530.1	21.2		250	1				3017.7		
16		11. 2	*	0.112	197.9	22.2		320	· .		:		4976.3		
20		2.04	*	0.080	311.0	24.9		400					7803.7		
25	2	4.11	71.4	0.057	487.7	27.8		500	32				12222.		
32	· ·	277	68.2	0.040	801.1	32.0		650					20689.		
40		5.11	169	0.030	1253.5	37.6		800					31366.		
40	8	21.1	168	0.125	301.6	37.7						-	·		

SOUNDING ELECTRICAL VERTICAL THE

	RWANDA	
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	REPUBLIC	
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-							and the state of the						-	ugg biskung	-			-	_	
	1989	tion)			:	:														
	4 / Nov./1989	figura	ρ _а (Ωm)	18.7	19.6	20.4	23.6	29.3	36.4	45.1	49.5	67.0	54.9							
	1	ger Con	М	478.3	1960.4	817.0	1244.1	1950.9	3305.7	5014.0	1206.4	1913.2	7841 4	3017.7	4976.3	7803.7	12222.	20689.	31366.	
) DATE	(Schlumberger Configuration	R (0.039	0.010	0.025	0.019	0.015	0.011	0.009	0.041	0.035	0.007							
	ASE III		I (mA)	200.	200.	199.	199.	199	181.	80.2	82.7	61.1	63.2	•						
	ION (PE	HIRAMOTO	л (Лш) (Дш)	7.79	2.00	5.02	3.99	3.12	2.10	0.74	3.42	2.16	0.49							
	RN REG	H I ROSH I	MN/2	8	2		· .	~			59	70	8			•.	32			
	EASTEI		AB/2	50	50	65	80	100	130	160	160	200	200	250	320	400	500	650	800	
	IN THE	TESTED BY																		
	JECT	NIOE	, Оа (ПШ)	64.9	50.7	46.9	43.7	39.3	32.1	27.4	22.9	21.0	18.0	19.6	17.6	17.1	17.1	17.6	18.8	17.8
	SUPPLY PROJECT IN THE EASTERN REGION (PHASE III)	RECTION NI	Ж	6.283	18.85	31.39	49.48	77.75	132.0	200.3	313.4	75.40	129.6	530.1	197.9	311.0	487.7	801.1	1253.5	301.6
(· •	LINE DIREC	R (0)	10.33	2.688	1.494	0.884	0.505	0.243	0.137	0.073	0.278	0.139	0.037	0.089	0.055	0.035	0.022	0.015	0.059
ANDA	RURAL	3	I (mA)	20.0	20.0	20.0	20.0	20.0	50.0	100.	90.2	90.4	98.8	97.8	100.	200.	200.	200.	200.	199.
THE REPUBLIC OF RWANDA	THE STUDY ON THE RURAL WATER	- 8 S-	V (MM)	206.	53.8	29.9	17.7	10.1	12.1	13.7	6.61	25.1	13.7	3.64	8.91	1.11	7.16	4.59	3.00	11.8
SPUBLIC	STUDY (No Ep-	MN/2	'	· · · ·	L	ц с	 >	لمري 		· · · · ·	¢	J.	0.5			2			8
THE RI	THE	TEST	AB/2	1.5	2.5	3.2	4	5	6.5	ŝ	10	10	13	13	16	20	25	32	40	40

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THE R	EPUBLI	THE REPUBLIC OF RWANDA	MANDA						-	· · ·				· ·	9 Avgan
THE	STUDY	ON THE	STUDY ON THE RURAL WATE	WATER SI	R SUPPLY PROJECT		IN THE EASTERN REGION (PHASE III)	EASTER	N REG	I (P)	HASE II) DATE		6 / Nov./1989	88
TEST	Na Ep- 8		S- 4 LINE D	INE DIREC	IRECTION N80W	¥08	TESTED BY		ROSHI	HIROSHI HIRAMOTO	1. 1.	(Schlumberger		Configuration)	on)
6/01	G/ NM	Λ	H	R	2	0 9		6/01	6/ MM	Ν		R	7	o a	
7 /GW	MN/ 2	(mV)	(mA)	(0)	4	(Um)			7 / WW	(mV)	(mA)	(U)	V	(Um)	1
1.5		331.	20.0	16.56	6.283	104.		50	8	10.3	185.	0.055	478.3	26.3	-
2.5		95.0	20.0	4.741	18.85	89.4		50	2	2.57	188.	0.013	1960.4	25.5	
3.2		47.0	20.0	2.350	31.39	73.8		65		7.68	200.	0.038	817.0	31.1	
4	14 C	22.4	20.0	1.119	49.48	55.4		80		5.29	183.	0.028	1244.1	34.8	
വ		10.3	20.0	0.517	77.75	40.2		100	~	4.08	200.	0.020	1950.9	39.0	
ត ភូមិ		11.3	50.0	0.225	132.0	29.7		130		2.85	200.	0.014	3305.7	46.3	
8	·	12.0	50.0	0.120	200.3	24.0		160	.	2.19	200.	0.010	5014.0	50.1	
10		6.82	100.	0.068	313.4	21.3	_	160	66	9.14	200.	0.045	1206.4	54.3	
10	G	29.8	100.	0.297	75.40	22.4		200	70	7.08	200.	0.035	1913.2	67.0	
13	J	15.5	100.	0.155	129.6	20.1		200	8	1.71	200.	0.008	7841.4	82.7	
13	0.5	7.40	199.	0.037	530.1	19.6		250				1 1 1	3017.7		
18		9.40	100.	0.033	197.9	18.4		320					4976.3		
20		5.99	100.	0.059	311.0	18.4		400					7803.7		
25	87	5.86	142.	0.041	487.7	20.0		500	32				12222.		*****
32		4.61	174.	0.026	801.1	20.8		650					20689.		
40	•	3.30	175.	0.018	1253.5	22.6	 	800					31366.		
40	8	13.6	176.	0.077	301.6	23.2	:								

SOUNDING ELECTRICAL VERTICAL ЧHП

THE RE	CPUBL I	THE REPUBLIC OF RWANDA	WANDA												Potesta.
THE S	STUDY (ON THE	RURAL	THE STUDY ON THE RURAL WATER SU	SUPPLY PRO	PROJECT	IN THE	THE EASTERN REGION (PHASE III	N REGI	ON (PI	IASE II	DATE		4 / NoV-/1389	989
TEST	No. Ep- 8	1. 1	S- 5 L	LINE DIRE	RECTION E	8 1 [1]	TESTED	ΒV	HIROSHI HIRAMOTO	HIRAMO	<u>) (</u>	(Schlumberger	rger Con	Configuration	ion)
AB/2	MN/2	V (mV)	I (mA)	R (1)	K	Оа (0m)		AB/2	MN/2	(Vm)	I (mA)	R (3	×	ρ _a (0m)	
1.5		1462	20.0	73.04	6.283	459.		50	8	12.5	196.	0.063	478.3	30.1	
2.5	5	558.	20.0	27.90	18.85	526.		50	2	2.83	196.	0.014	1960.4	27.5	
3.2		237.	20.0	11.80	31.39	370		65	i	4.37	100.	0.043	817.0	35.1	
4	ע ס	115.	20.0	5.753	49.48	285.		80		1.40	43.3	0.032	1244.1	39.8	
ي ما))	52 1	20.0	2.604	37.75	203.		100	8	3.80	158.	0.023	1950.9	44.9	
6.5		12.6	20.0	0.632	132.0	83.4		130	· · ·	3.22	199.	0.016	3305.7	52.9	
8		10.9	50.0	0.218	200.3	43.7	-	160	·	2.34	199.	0.011	5014.0	55.2	
10		4.70	50.0	0.033	313.4	29.2		160	66	8.67	199.	0.043	1206.4	51.3	
10	6	19.6	50.0	0.393	75.40	29.6		200	12	5.31	175.	0.030	1913.2	57.4	
13	4	8.66	50.0	0.173	129.6	22.4		200	80	1.48	177.	0.008	7841.4	62.7	
13	0.5	2.18	50 0	0.043	530.1	22.8		250	-				3017.7		
16		5.50	50.0	0.103	197.9	21.6		320	· · · ·				4976.3		
20	-	3.31	51.0	0.064	311:0	19.9		400					7803.7		
25	2	4.21	100.	0.042	487.7	20.5		500	32				12222.		
32		5.64	199.	0.028	801.1	22.4		650					20689.		
40		4.08	199.	0.020	1253.5	25.1		800					31366.		
40	8	18.1	199.	0.030	301.6	27.1									
			-		-								•		

	6 <u>7</u> (1		47478 10000-4446																
	4 / Nov./1989		e 2 (BB)	166.	149.	105.	88.3	62.4	39.7	30.1	32.6	34.4	31.4						
			х Х	478.3 1	1960.4 1	817.0 1	1244.1 8	1350.9 6	3305.7 3	5014.0 3	1206.4 3	1913.2 3	7841.4 3	3017.7	4976.3	7803.7	12222.	20689.	31366.
ž	ERN REGION (PHASE III) DATE HIROSHI HIRAMOTO (Schlumhargar	A A	(B)	0.349	0.076 1	0.128	0.071 1	0.032 1	0.012 3	0.006 5	0.027	0.018 1	0.004		4		1	57	
<u>SOUNDING</u>	IN THE EASTERN REGION (PHASE III) TESTED BY HIROSHI HIRAMOTO (Sc		(mA)	100.	100.	100.	134.	176.	160.	118	119.	134.	136.				, .		
S	HIRAM	V	(J)	34.8	69.7	12.9	9.59	5.69	2.00	0.83	3.30	2.52	0.64						
CAL	RN REG		MN/2	8	2			w			66	96	8				32		
<u>ELECTRICAI</u>	EASTE D RV H		AB/2	50.	50	65	80	100	130	160	160	200	200	250	320	400	500-	650	800
Ц Ц	IN THE EAST TFSTFD RV																		
				326.	432.	426.	470.	474.	521.	467.	511.	582.	359.	310.	223.	153.	152.	173.	172.
TICAL	JPPLY PROJECT		X	6.283	18.85	31.39	49.48	77.75	132.0	200.3	313.4	75.40	129.6	530.1	197.9	311.0	487.7	801.1	1253.5
<pre></pre>	THE STUDY ON THE RURAL WATER SU THET MA FR- 8 S- 6 LINE DIREC	2	: e	51.87	22.89	13.56	9.503	6.038	3.346	2.331	1.629	7.721	2.771	0.584	1.120	0.491	0.312	0.216	0.137
THE ANDA	RURAL R 11		(MA)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	48.5	50.0	100.	100.
THE REPUBLIC OF RWANDA	N THE	<u>1</u>	(mV)	1039	458.	271.	130.	122.	79.0	46.7	32.6	154.	55.5	11.6	22.4	23.8	15.6	21.6	13.8
EPUBL IC	No Fn-		MN/2		• • •		Ľ			. ·		6	J	2 0			2		
THE RI	THE (AB/2	5	2.5	3.2	4	2	9 9	8	10	10 -	13	13	16	20	25	32	40

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H	THE KEFUBLIC OF KNANDA	IC OF X	AUNA						• •						
F	THE STUDY ON THE RURAL WATER	ON THE	RURAL		SUPPLY PROJECT IN THE EASTERN REGION (PHASE III)	DJECT	IN THE	EASTEI	RN REG	ION (P	HASE II)	DATE 4 /	4 / Nov./1989	989
TEST	ST Na Ep-	8	S- 7 L	LINE DIREC	RECTION N-	N-S	TESTED	Вγ	HIROSHI		<u>)</u> (;	Schlumbe	HIRAMOTO (Schlumberger Configuration	figurat	ion)
			I	R	1	Pa		6/01	6/ NN	Λ	I	R	2	0 a	
AD/ 2	7/WW 7/	(mV)	(mA)	(0)	Ч	(Um)		7 /04	7 / HE	(mV)	(mA)	(8)	4	(Um)	
	5	1254	20.0	62.57	6.283	393.		50	8	28.8	50.0	0.576	478.3	276.	
2	م	476.	20.0	23.77	18.85	448.		50	2	8.56	50.0	0.173	1960.4	229.	
က	.2	300.	20.0	15.00	31.39	471.		65	-	14.6	20.0	0.231	817.0	238.	
	4	195.	20.0	9.754	49.48	483.		80		12.1	67.8	0.178	1244.1	222.	
	ور می م	116.	18.1	6.422	77.75	499.		100	8	10.1	100.	0.101	1950.9	197.	
	6.5	82.1	20.0	4.097	132.0	541.		130		5.50	100.	0.055	3305.7	182.	
	8	50.9	20.0	2.544	200.3	510.		160		4.33	135.	0.031	5014.0	155.	
,	10	30.6	20.0	1.527	313.4	479.		160	66	13.2	136.	0.097	1206.4	117.	
	10 6	132.	20.0	6.614	75.40	499.		200	20	7.57	106.	0.071	1913.2	136.	
	13 4	58.9	20.0	2.943	129.6	381.		200	8	2.82	117.	0.023	7841.4	180.	
	13 0.5	14.0	20.0	0.701	530.1	372.		250					3017.7		
	16	34.8	20.0	1.739	197.9	344.		320					4976.3		
2	20	23.5	20.0	1.174	311.0	365 .		400					7803.7		
2	25 2	16.0	20.0	0.798	487.7	389.		500	32				12222.		
	32	21.5	43.3	0.491	801.1	393.		650					20689.		
	40	15.1	50.0	0.301	1253.5	377.		800					31366.		
4	40 8	50.6	50.0	1.010	301.6	305.									
			1			ery.									

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	-		-	Westing and Designation	-		(-	q antakak	-		-		-			-	-	-	ç. Calazza		
		1989	tion)																		
		20 / Nov./1989	figurat	ра (12m)	38.7	41.2	47.4	56.0	66.3	79.3	85.2	59.1	74.6	102.							
•			ger Con	К	478.3	1960.4	817.0	1244.1	1950.9	3305.7	5014.0	1206.4	1913.2	7841.4	3017.7	4976.3	7803.7	12222.	20689.	31366.	
9 N) DATE	(Schlumberger Configuration)	R (9	0 081	0.021	0.058	0.045	0.034	0.024	0.017	0.049	0.039	0.013							
SOUNDING		ASE III)		I (mA)	73.8	73.3	42.5	83.5	73.5	99.9	100.	100.	100.	141.							
		ON (PH	HIRAMOTO	(Mm) (Vm)	6.00	1.58	2.48	3.81	2.52	2.41	1.72	4.91	3.93	1.87							
CAL		RN REGI		MN/2	ø	2		L	 co				27 27 20		_		32		to a transformed to a t		
CTR		EASTEI	TESTED BY HIROSHI	AB/2	50	50	65	80	100	130	160	160	200	200	250	320	400	500	650	800	
Г E (IN THE	TESTE																	-	:
ш 		JECT	S	οa (Ωm)	61.8	34.0	28.7	27.0	25.9	25.6	25.7	24.8	25.9	25.7	24.4	25.1	24.3	23.9	25.6	33.9	31.1
TICA		SUPPLY PROJECT IN THE EASTERN REGION (PHASE	RECTION N-S	М	6.283	18.85	31.39	49.48	77.75	132.0	200.3	313.4	75.40	129.6	530.I	197.9	311.0	487.7	801.1	1253.5	301.6
THE VERTICAL ELECTRICAL				ж Э	9.839	1.801	0.915	0.546	0.333	0.194	0.126	0.079	0.343	0.198	0.046	0.127	0.078	0.049	0.032	0.027	0.103
THE	ANDA	RURAL	S-8 LINE DI	I (mÅ)	20.0	20.0	20.0	20.0	50.0	50.0	100.	100.	100.	99.4	98.1	100	100	85.9	49.4	123.	123.
	THE REPUBLIC OF RWANDA	THE STUDY ON THE RURAL WATER	∞	۲ (۳۷)	. 781	36.1	18.3	10.9	16.6	9.74	12.6	7.92	34.3	19.7	4.53	12.7	7.86	4.25	1.61	3.38	12.6
	EPUBLI(STUDY (TEST No Ep-	MN/2	ل ج مع			с С						1	0.5			2			8
	THE R	THE	TEST	AB/2	1.5	2.5	3.2	4	S	ເດ ຜ	∞	10	10	13	13	16	20	25	32	40	40

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		1989	tion)																			
D I N G) DATE 20 / Nov./1989	(Schlumberger Configuration	Qa	(0m)	64.1	58.8	64.5	54.7	52.7	59.5	60.2	62.7	68.9	62.7						а - Р. 19	
					4	478.3	1960.4	817.0	1244.1	1950.9	3305.7	5014.0	1206.4	1913.2	7841.4	3017.7	4976.3	7803.7	12222.	20689.	31366.	
				R	E	0.134	0.030	0.079	0.044	0.027	0.018	0.012	0.052	0.036	0.008							
<u>UND</u>		ASE II		Л	(WW)	70.0	69.3	100.	63.0	44.3	100.	125.	123.	168.	168.							
RTICAL ELECTRICAL SOUNDING		ION (PI	HIRAM	Λ	(AW)	9.40	2.11	7.96	2.79	1.24	2.39	1.55	6.54	6.16	1.49			-				
		IN THE EASTERN REGION (PHASE III)	D BY HIROSHI HIRAMOTO	67 JUN	7 /NU	8	2			00			66	50	8			: .	32			
				6/ 41	7 /QV	50	50	65	80	100	130	160	160	200	200	250	320	400	500	650	800	
Ш Ц		IN THE	TESTED BY																			
		DJECT	NISE	P a	(0m)	606.	256.	149.	95.7	61.0	40.5	37.5	37.6	42.0	40.6	35.5	36.8	37.6	6.14	46.5	53.9	59.1
		WATER SUPPLY PROJECT	S- 9 LINE DIRECTION N	N	4	6.283	18.85	31.39	49.48	77.75	132.0	200.3	313.4	75.40	129.6	530.1	197.9	311.0	487.7	801.1	1253.5	301.6
				R	(0)	96.38	13.56	4.756	1.935	0.785	0.307	0.187	0.120	0.557	0.313	0.067	0.186	0.121	0.085	0.058	0.043	0.196
THE	VANDA	RURAL	- <u>9</u> []	1	(mA)	20.0	20.0	20.0	19.6	14.3	20.0	33.6	29.3	29.3	33.2	33.2	28.6	27.4	39.3	50.0	50.0	65.7
	C OF RI	ON THE	8	Λ	(mV)	1930	271.	95.2	38.1	11.2	6.16	6.30	3.52	16.3	10.4	2.26	5.33	3.33	3.39	2.94	2.20	12.9
	THE REPUBLIC OF RWANDA	THE STUDY ON THE RURAL WATER	No Ep-	67 NM	5/114			i	יייייי ט ס					G	4	0.5			2			8
	THE RI	THE :	TEST	6/4V	7/09	1.5	2.5	3. S	-4	ເວ	6.5	8	10	10	13	13	16	20	25	32	40	40

THE VERTICAL ELECTRICAL SOUNDING

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		1989	tion)						÷ T								· .					
		Nov./	figura	Da	(Um)	75.6	86.3	1.17	64.7	60.5	53.5	65.2	63 . <u>9</u>	70.8	70.6							
		DATE 20 / Nov./1989	HIROSHI HIRAMOTO (Schlumberger Configuration)		4	478.3	1960.4	817.0	1244.1	1950.9	3305.7	5014.0	1206.4	1913.2	7841.4	3017.7	4976.3	7803.7	12222.	20689.	31366.	
<u>DNIDNOO</u>			Sch lumbe:	R	(8)	0.158	0.044	0.087	0.052	0.031	0.018	0.013	0.053	0.037	0.009							
		HASE II) <u>10</u> (Ţ	(mÅ)	48.1	79.8	77.3	74.7	139	78.2	9.77	7.87	93.3	92.7					4		
		ION (P)	HIRAM	Λ	(mV) (mA)	7.65	3.58	6.77	3.92	4 43	1.47	1.05	4.20	3.48	0.87					-		
		RN REG	I ROSH I	67 NW		~	2		-	~			ç	20	8		<u>, , , , , , , , , , , , , , , , , , , </u>	•	32	••••••••		
	•	EASTE		4 R / 9	1 1 1 1	50	50	65	80	100	130	160	160	200	200	250	320	400	500	650	800	
		IN THE	TESTED BY																			
		OJECT	N20E	0 a	(Um)	228.	109.	93.1	36.5	99.8	102.	104.	105.	88.9	87.6	103.	88.1	86.8	89.7	90.5	89.0	76.9
		THE STUDY ON THE RURAL WATER SUPPLY PROJECT IN THE EASTERN REGION (PHASE III)	DIRECTION N	¥	4 4	6.283	18.85	31.39	49.48	77.75	132.0	200.3	313.4	75.40	129.6	530.1	197.9	311.0	487.7	801.1	1253.5	301.6
		WATER S	- C - C - C	R	(0)	36.31	5.786	2.965	1.950	1.284	0.776	0.517	0.336	1.179	0.676	0.194	0.445	0.279	0.184	0.113	0.071	0.255
	ANDA	RURAL	S-10 LINE	Ţ	(W)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	49.3	49.2	50.0	50.0	50.0	49.1	50.0	50.0	69.0	69.69
	C OF R	ON THE	∞	Λ	() (Viii	727.	115.	59.3	39.0	25.7	15.5	10.3	16.6	58.0	33.8	9.75	22.2	13.7	9.21	5.68	4.97	17.8
	THE REPUBLIC OF RWANDA	STUDY	No Ep-	MN/2					2 0	• •				~ ~	1	0.5			2			œ
	THER	THE	TEST	AB/2		1.5	2.5	3.2	4	ເດ	6.5	00	10	10	13	13	16	20	25	32	40	40
	ĩ										<i>,</i>											

*. * .																						
			1989	tion)															-			
			20 / Nov./1989	figurat	Оа (ПШ)	34.0	29.4	32.7	31.1	29.3	29.8	25.1	57.9	57 4	39.2							
·			E 20 /	ger Con	М	478.3	1960.4	817.0	1244.1	1950.9	3305.7	5014.0	1206.4	1913.2	7841.4	3017.7	4376.3	7803.7	12222.	20689.	31366.	
: : :	<u>I N G</u>	-	DATE	(Schlumberger Configuration	a 🖲	0.071	0.015	0.040	0.025	0.015	0.009	0.005	0.048	0.030	0.005				-			
	<u>SOUNDING</u>		ASE III		I (mA)	53.0	71.2	58.2	56.5	71.6	75.4	54.1	54.9	120.	199.							
	S O		Hd) NO	HIRAMOTO	() () () ()	3.79	1 07	2 34	1 41	1.11	0.69	0.32	2.64	3.70	1.15							
	CAL		IN THE EASTERN REGION (PHASE	HIROSHI	MN/2	~~	5		L	00			40	70	8				32			
	ECTRICA	-	EASTEN	Bγ	AB/2	50	50	65	80	100	130	160	160	200	200	250	320	400	500	650	800	
	E L E C		N THE	TESTED		1																
		-	F	N20E	(0 a)	170.	79.2	56.3	43.3	42.3	35.4	32.5	30-7	33.0	32.0	29.7	29.3	29.6	29.8	28.0	28.8	33.5
	VERTICA		PPLY PROJEC]	M	6.283	18.85	31.39	49.48	77.75	132.0	200.3	313.4	75.40	129.6	530.1	197.9	311.0	487.7	801.1	1253.5	301.6
	VER		THE STUDY ON THE RURAL WATER SUPPLY	LINE DIRECTION	8 (E)	27.09	4.203	1.794	0.876	0.544	0.268	0.162	0.038	0.438	0.247	0.056	0.148	0 .095	0.061	0.035	0.023	0.111
	THE	RWANDA	RURAL	11	I (mA)	20.0	20.0	20.0	20.0	19.5	29.1	36.2	48.2	47.7	43.9	43.6	28.6	35.1	50.0	49.8	56.7	56.8
		OF	IN THE	- 8 S-	V (V ^{III})	542.	84.1	35.9	17.5	10.6	7.83	5.93	4.75	20.9	10.8	2.45	4.25	3.36	3.08	1.77	1.33	6.36
		THE REPUBLIC	TUDY (No. Ep-	MN/2		•••		ידייייייייייייייייייייייייייייייייייי	2					J	0.5			2			8
		HE RE	THES	TEST	AB/2	1.5	2.5	3.2	-7	പ	6.5	8	10	10	13	13	16	20	25	32	40	40

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		Ц Н Е	Ч С	RTICAL ELECTRICAL SOUNDING	V L E	LEC	TRI	CAL	S	UND	I N G			• .
REPUBL	THE REPUBLIC OF RWANDA	RANDA			31 1									-
E STUDY	THE STUDY ON THE RURAL WATER	RURAL	1	SUPPLY PROJECT IN THE EASTERN REGION (PHASE III)	OJECT	IN THE	EASTEI	RN REGI	ION (P)	ASE II		DATE 1 /	1 / Nov./1989	1389
TEST No E	<u>Na Ep- 9 S</u>	<u>S- 1 L</u>	LINE DIRE(RECTION		TESTED BY	D BY H	HIROSHI HIRAMOTO	HIRAM		Schlumbe	(Schlumberger Configuration)	figura	tion)
6/ MR 6	Λ,	}	R	-74	P.a.		6/ 11	67 MM	Λ	Ţ	R	1	P a	
AD/.C MN/ C	(mV)	(WW)	(8)	Y	(Um).		AB/ 2	2 / NIM	(mV)	(WA)	(8)	V	(Um)	
.5	757.	20.0	37.82	6.283	238.		50	ø	63.1	100.	0.630	478.3	301.	
2.5	374.	20.0	18.69	18.85	352.		50	2	16.1	100.	0.101	1960.4	316.	
.2	256.	20.0	12.79	31.39	402.		65		42.7	100.	0.427	817.0	349.	
4	181.	20.0	9.051	49.48	448.		80		32.6	100.	0.326	1244.1	406.	
5 0	122.	20.0	6.136	77.75	477.		100	~	22.8	100.	0.228	1950.9	445.	
6.5	81.1	20.0	4.049	132.0	535 .		130		33.4	200.	0.167	3305.7	552.	
80	53.0	20.0	2.649	200.3	531		160		11 2	95.2	0.118	5014.0	592.	
10	32.9	20.0	1.645	313.4	516		160	60	45.2	96.3	0.469	1206.4	566.	
10 0	125	20.0	6.256	75.40	472		200	94	20.0	73.3	0.273	1913.2	522.	
13 4	63.3	20.0	3.162	129.6	410.		200	8	5.33	75.8	0.070	7841.4	- 6†9	
13 0.5	.5 16.8	20.0	0.840	530.1	45.		250					3017.7		:
16	37.0	20.0	1.850	157.9	366.		320					4976.3		
20	19.8	20.0	0.989	311.0	308.		400	. :				7803.7		
25 2	28.6	50.0	0.572	487.7	279.		500	32				12222.		
32	19.2	50.0	0.383	801.1	307.		650					20689.		
40	23.9	100.	0.239	1253.5	300.		800					31366.		
40 8	94.7	100.	0.946	301.6	285.									

THE VERTICAL ELECTRICAL SOUNDING

				2	ENTIONE ELECINICAL		ן ר					<u>PNIANOO</u>			
THE R	THE REPUBLIC OF RWANDA	C OF R	WANDA							1					ati tiko ukar
THE	THE STUDY ON THE RURAL	ON THE	RURAL	WATER SI	ER SUPPLY PROJECT IN THE EASTERN REGION (PHASE	DJECT IN	THE	EASTER	N REGI	HA) NO	(ASE III)	-	E . 1 /	DATE I / Nov./1989	89
TEST	No. Ep-	တ	S- 2 L	LINE DIRE(DIRECTION	[]	TESTED	BY	HIROSHI	HIRAMOTO		(Schlumberger Configuration)	ger Con	figurati	on)
6/01	New 70	Λ	, F	a		b a		┝	un /0	Λ	J	R		Pa	
7 /QY	2 / Wild	(J)	(mA)	(8)	4	(Um)		4D/ 4	2 /WW	(mV)	(WM)	(0)	4	(Um)	a na sa
1.5		1129	20.0	56.35	6.283	354.		50	8	47.7	50.0	0.355	478.3	457.	
2 2	السبوسية.	345.	20.0	17.22	18.85	325.		50	2	10.7	50.0	0.214	1960.4	420.	
3 2		186.	20.0	9.287	31.39	292.		65		33.1	50.0	0.662	817.0	541.	
4	ີ ແ ເ	111.	20.0	5.587	49.48	277.		80		23.5	50.0	0.471	1244.1	586.	
2	.	69.4	20.0	3.466	77.75	270.		100	~~~	15.8	50.0	0.316	1950.9	617.	
6.5		33.9	20.0	1.994	132.0	263.	-	130	لمني مسلما	8.06	50.0	0.161	3305.7	532.	
8	. : . :	27.0	20.0	1.349	200.3	270.		160		9.34	100.	0.033	5014.0	466.	
10		16.8	20.0	0.839	313.4	263.		160	66	50.1	100.	0.501	1206.4	604.	
10		67.2	20.0	3,356	75.40	253.	-	200 -	10	75 5	200.	0.377	1913.2	721.	
13	3	38 2	20.0	1.909	129.6	247.		200	8	14.4	200.	0.072	7841.4	565.	
13	0.5	9.87	20.0	0.492	530.1	261.		250					3017.7		
16		26.8	20.0	1.342	197.9	266.		320					4976.3		
20		18.8	20.0	0.940	311.0	292.		400					7803.7		
25	~	12.6	20.0	0.632	487.7	308.		500	32				12222.		
32		8.40	20.0	0.419	801.1	336.		650					20689.		
40		14.4	50.0	0.288	1253.5	361.		800	- - - - - - - -		-		31366.		
40	8	65.1	50.0	1.301	301.8	392.				·.					

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THE VERTICAL ELECTRICAL SOUNDING

THE VERTICAL F VERTICAL Y ON THE RURAL WATER SUPPLY PROJECT I ED-9 S-3 LIC OF RWANDA ED-9 S-3 LINE DIRECTION ED-9 S-3 (mV) (m) <td< th=""><th><u>TRICAL SOUNDING</u></th><th></th><th>TESTED BY <u>HIROSHI HIRAMOTO</u> (Schlumberger Configuration)</th><th>$\frac{AB/2}{(mV)} \left[\begin{array}{c c} V & I \\ (mV) & (mA) \end{array} \right] \left[\begin{array}{c c} R & \rho_a \\ (0) & (0) \end{array} \right] \left[\begin{array}{c c} K & \rho_a \\ (0) \end{array} \right]$</th><th>50 8 83.5 50.0 1.667 478.3 797.</th><th>50 2 20.7 50.0 0.413 1980.4 810.</th><th>65 52.8 50.0 1.056 817.0 863.</th><th>80 37.8 50.0 0.756 1244.1 941.</th><th>100 8 22.5 50.0 0.450 1950.9 878.</th><th>130 13.2 50.0 0.264 3305.7 873.</th><th>160 21.5 100. 0.215 5014.0 1078</th><th>160 , 98.6 100. 0.385 1206.4 1188</th><th>200 ³² 79.3 100. 0.792 1913.2 1515</th><th>200 8 34.9 200. 0.174 7841.4 1354</th><th>250 3017.7</th><th>320 4976.3</th><th>400 7803.7</th><th>500 32 12222.</th><th>650 20689.</th><th>800 31366.</th><th></th></td<>	<u>TRICAL SOUNDING</u>		TESTED BY <u>HIROSHI HIRAMOTO</u> (Schlumberger Configuration)	$\frac{AB/2}{(mV)} \left[\begin{array}{c c} V & I \\ (mV) & (mA) \end{array} \right] \left[\begin{array}{c c} R & \rho_a \\ (0) & (0) \end{array} \right] \left[\begin{array}{c c} K & \rho_a \\ (0) \end{array} \right]$	50 8 83.5 50.0 1.667 478.3 797.	50 2 20.7 50.0 0.413 1980.4 810.	65 52.8 50.0 1.056 817.0 863.	80 37.8 50.0 0.756 1244.1 941.	100 8 22.5 50.0 0.450 1950.9 878.	130 13.2 50.0 0.264 3305.7 873.	160 21.5 100. 0.215 5014.0 1078	160 , 98.6 100. 0.385 1206.4 1188	200 ³² 79.3 100. 0.792 1913.2 1515	200 8 34.9 200. 0.174 7841.4 1354	250 3017.7	320 4976.3	400 7803.7	500 32 12222.	650 20689.	800 31366.	
THE VERTION REPUBLIC OF RMANDA STUDY ON THE RURAL WATER SUPPLY PR No. Ep-9 S. LINE DIRECTION No. Ep-9 S. J. NA (n) No. Ep-9 S. J. NA (n) NN/2 W N N No. Ep-9 S. J. NA (n) N No. Ep-9 S. J. NA (n) N NN/2 W N N O.5 2040 20.0 11.20 77.75 957. 20.0 11.20 77.75 126. 20.0 11.20 77.75 224. 20.0 11.20 77.75 2224. 20.0 11.20 77.75 2224. 20.0 11.20 77.75 2224. 20.0 11.20 77.75 222.0 20.0 11.20 313.4 230.5 31.29 31.4 2 37.2 20.0 3.081	<u>VL ELECTR</u>		TESTED		640.	301.	927.	907.							•		•			•	51.1 51.1
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		ad Vindi V bn	DIRECTION		1		31	- 1 						.603							\$
REPUBL IC OF STUDY ON T N0 Ep 9 NN/2 (mV V NN/2 204 957 0 .5 204 0 .5 212 2 .0 .5 212 2 0 .5 23 2 .0 .5 23 2 .0 .5 .2 2 .0 .5 .2 2 .0 .5 .3 2 .0 .5 .3 2 .0 .5 .3 3 .0 .5 .3 2 .2 .3 .3 2 .2 .3 .3 2 .2 .3 .3 2 .2 .3 .3 3 .2 .3 .3 3 .3 .3 .3 3	THE	RWANDA up hubat was	RE RURAL NA S-3 LINE	(W)	20.0	. 20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0 4	20.0	20.0	20.0 1	20.0	50.0	50.0	
	a da ang alamanan a	REPUBLIC OF	<u>N0 Ep- 9</u>	MN/2				ليتيبينا	<u> </u>		<u> </u>	52.		- حند ما	.5 23		39.		36.	26.	┝

THE VERTICAL ELECTRICAL SOUNDING	RYANDA	THE STUDY ON THE RURAL WATER SUPPLY PROJECT IN THE EASTERN REGION (PHASE III) DATE 8 / Nov./1989	S- 4 LINE DIRECTION N-S TESTED BY HIROSHI HIRAMOTO (Schlumberger Configuration)	I R K Da RB/2 NN/2 V I	(mA) (2) (10) (2) (mV) (mV) (mV) (mV) (0)	7. 10.0 21.70 6.283 136. 50 8 31.7 100. 0.317 478.3 152.	.7 10.0 6.261 18.85 118. 50 2 14.1 200. 0.070 1960.4 137.	.6 20.0 3.826 31.33 120. 65 22.2 100. 0.222 817.0 181.	.4 50.0 1.966 49.48 97.3 80 29.5 186. 0.158 1244.1 195.	.3 50.0 1.156 77.75 89.9 100 8 22.6 200. 0.113 1350.3 221.	.6 50.0 0.632 132.0 83.4 130 13.3 200. 0.069 3305.7 228.	.6 50.0 0.412 200.3 82.5 160 3.43 200. 0.047 5014.0 236.	100. 0.269 313.4 84.0 160	$6. 100. 1.446 75.40 109. 200 ^{2} 24.4 200. 0.122 1913.2 233.$.4 100. 0.833 129.6 108. 200 8 6.03 200. 0.030 7841.4 235.	.4 100. 0.154 530.1 81.8 250	.5 100. 0.514 197.9 102. 320 4976.3	.6 100. 0.296 311.0 92.1 400 7803.7	.8 100. 0.176 487.7 85.8 [500 32 [12222.]	.0 180. 0.111 801.1 88.9 650 20689.	.3 200. 0.081 1253.5 102. 800 31356. 31356.	.0 100. 0.370 301.6 112.	
>	WANDA	RURAL WATER SU	LINE D			21.	6.2	3.8	50.0 1.9	1.1	0.6	50.0 0.4	0.2	1 4	100 0 8	100. 0.1	100. 0.5	100. 0.2	100. 0.1	180. 0.1	200.0000	100. 0. 3	
	THE REPUBLIC OF R	HE STUDY ON THE	TEST No Ep- 9 S	AB/2 MN/2 V		.5 217.	2.5 62.7	3.2 76.6	4 0 5 98.4	5 57.9	6.5 31.6	8 20.6	10 26.9	10 , 146.	13 63.4	13 0.5 15.4	16 51.5	20 29.6	25 2 17.8	32 20.0	40 16.3	40 8 37.0	

	-	يتشرح فيرجوها		-	Filmer			-				And Party							4.0000 international (
•	900	tion)																	
	N ^ r	figura	Pa (III)	118.	118.	139.	159.	193.	228.	266.	240.	279.	322.						
	DATE 0 / Nov. /1990	ger Con	K	478.3	1960.4	817.0	1244.1	1950.9	3305.7	5014.0	1206.4	1913.2	7841.4	3017.7	4976.3	7803.7	12222.	20689.	31366.
D N C		h]um	2	0.246	0.060	0.170	0.128	0.039	0.069	0.053	0.199	0.146	0.041					·	
SOUNDING	исе ш.)		I (mÅ)	100.	100.	171.	100.	161.	100.	100.	100.	100.	199.						
	nd) NU	HIRAMOTO	Λ (Λ ^m)		6.00	29.2	12.8	16 0	6.98	5.34	19.9	14.6	8.29						
CAL	IN THE PASTEDN PECION (PHASE	HIROSHI	MN/2	8	2		∟	~			00	70	8	3			32	1	
TRI	EA CTEI	D BY H	AB/2	50	50	65	80	100	130	160	160	200	200	250	320	400	500 -	650	800
С Ш	IN THE	TESTED																_	
ш /			ρa (0m)	119.	127.	129.	131.	128.	126.	122.	1.07.	110.	32.8	90.1	86.5	83.3	84.9	92.9	103.
ERTICAL ELECTRICAL		RECTION N	K	6.283	18.85	31.39	49.48	77.75	132.0	200.3	313.4	75.40	129.6	530.1	197.9	311.0	487.7	801.1	1253.5
>	WATED CH	1 12-1	R S	18.30	6.755	4.110	2.638	1.643	0.951	0.603	0.340	1.464	0.716	0.170	0.437	0.268	0.174	0.116	0.082
Н Н Е	VANDA	S- 5 LINE DI	[m4)	10.0	10.01	20.0	20.0	20.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	100.	100	100.	100.
	THE REPUBLIC OF RWANDA THE CTIDY ON THE DIDAL WATED	S B -	Υ (V ^m)		67.6	82.3	52.8	32.9	47.6	30.5	17.0	73.3	35.8	8.51	21.8	26.8	17.4	11.6	8.25
	EPUBL I	TEST No. Ep- 9	NN/2				14 C	C• N				G	7	0.5			5		
	THE RI	TEST	AB/2	1.5	2.5	3,2	4	2	6.5	8	10	10	13	13	16	20	25	32	40

301.6 104.

0.343

34.3 100.

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		15 / Nov./1989	<u>HIROSHI HIRAMOTO</u> (Schlumberger Configuration)	Pa	(Um)	2367	2635	2882	3187	3621	3838	3304	2347	2382	3333							
		•	ger Conf	2		478.3	1960.4	817.0	1244.1	1950.9	3305.7	5014.0	1206.4	1913.2	7841.4	3017.7	4976.3	7803.7	12222 .	20689.	31366.	
SOUNDING		T) DATE	Schlumber	а К		4.949	1.344	3.527	2.562	1.856	1.161	0.659	1.945	1.245	0.425							
UND		HASE II	<u>) 10</u>	-	(WW)	16 1	16.3	20.0	20.0	18.8	20.0	19.8	19.9	20.0	21.4							
SC		ION (PI	HIRAM	V	(mV)	79.9	21.9	70.6	51.3	35.0	23.2	13.0	38.8	24.9	9.12							
CAL		RN REG	I ROSH I	6/ NM		8	2			8			99	96	8				32		1	
TRI		EASTEI	BY	4R/9	5 101	50	50	65	80	100	130	160	160	200	200	250	320	400	500	650	800	
ELECTRICAL		IN THE EASTERN REGION (PHASE III	TESTED				·															
]		ł	N30E	0 a	(0m)	1042	974.	943.	890.	827.	781.	765.	755.	738.	808.	828.	994.	1349	1722	2112	2382	9139
ERTICAL		R SUPPLY PROJECT	IRECTION N:	K	4	6.283	18.85	31.39	49.48	77.75	132.0	200.3	313.4	75.40	129.6	530.1	197.9	311.0	487.7	801.1	1253.5	301 6
>		WATE	LINE DIREC	R	(8)	165.8	51.66	30.04	17.99	10.64	5.916	3.818	2.409	9.785	6.234	1.562	5.024	4.339	3.531	2.636	1.900	7_070
Н Н		RURAL	9	щ	(mA)	24.7	19.5	48.6	20.0	20.0	20.0	20.0	18.3	18.1	20.0	20.0	20.0	17.7	20.0	20.0	20.0	20_0
	THE REPUBLIC OF RWANDA	THE STUDY ON THE RURAL	- 9 S-	Λ	(M))	4100	1010	560.	360.	213.	118	76.5	44.1	177.	124.	31.3	100	77.0	70.7	52.8	38.0	141
	EPUBL I	STUDY	No Ep-	MN/2					с С	2				6	J	0.5			2			8
	THE R	THE	TEST	AB/2		1.5	2.5	3.2	4	ഹ	6.5	8	10	10	13	13	16	20	25	32	40	UT

	Francis		-			-		Na deservation	-		-	anna ior				and the states				
		tion)						· .			E E		÷.,							
	MT	figura	Оа (Пш)	836.	906.	708.	668.	704.	793.	802.	742.	. 777	847.				1			
	00001/	ser Cont	М	478.3	1960.4	817.0	1244.1	1950.9	3305.7	5014.0	1206.4	1913.2	7841.4	3017.7	4976.3	7803.7	12222.	20689.	31366.	
9 N		hlum	R (0)	1.747	0.462	0.866	0.537	0.361	0.240	0.160	0.615	0.408	0.108							
SOUNDING	ст т.		I (mA)	20.0	20.0	20.0	20.0	50.0	50.0	50.0	50.0	47.8	48.1							
0 S	THE PACTOR DECION (DUASE	TESTED BY HIROSHI HIRAMOTO	V (mV)	35.0	9.26	17.3	10.7	18.1	12.0	8.03	30.8	19.5	5.20				-			
CAL	TOTO W	I HOSH I	MN/2	8	2	I		~~~ ~~	L		66	70	8	•	لى		32	1		
ELECTRICAL	TC A CARDY	D BY H	AB/2	50	50	65	80	100	130	160	160	200	200	250	320	400	500	650	800	
L E C	ant mi	TESTE			-													1		
1	1.J.11	19201	Оа (ПШ)	454.	635.	749.	306.	1082	1243	1388	1460	1436	1392	1409	1355	1287	1187	1119	1056	963.
TICAL	CUIDDI V DDO ITCOT UN	RECTION	K	6.283	18.85	31.39	49.48	77.75	132.0	200.3	313.4	75.40	129.6	530.1	197.9	311.0	487.7	801.1	1253.5	301.6
VERTI			R (1)	72.24	33.66	23.86	18.31	13.92	9.418	6.928	4.658	19.05	10.74	2.658	6.849	4.139	2.434	1.397	0.842	3.192
THE	HE REPUBLIC OF RWANDA THE CTIDY ON THE DUBAL WATED	TEST No. ED- 9 S- 7 LINE D	I (mA)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
	OF R	- S 6	V (mV)	1447	674.	478.	366	278.	188.	138.	93.3	381.	215.	53.2	137.	82.9	48.7	28.0	16.8	63.9
	THE REPUBLIC OF RWANDA	No Ep	MN/2		••••••••••••••••••••••••••••••••••••••	-	и с	2				c	4	0.5		· .	2			8
	THE RI	TEST	AB/2	1.5	2.5	3.2	4	പ	6.5	8	10	10	13	13	16	20	25	32	40	40

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SOUNDING ELECTRICAL VERTICAL THE

TUE DEDITO I C DWANNA

	THE REPUBLIC OF RWANDA	WANDA								·				
ON THE		THE STUDY ON THE RURAL WATER	- 1	SUPPLY PROJECT IN THE EASTERN REGION (PHASE	OJECT 1	IN THE	EASTER	NN REGI	(J) NO	ASE II)		DATE 15 / Nov./1989	<u>Nov./I</u>	989
Ep- 9	0	S- 8 L	LINE DIREC	ECTION NI	NIOE	TESTED BY		HIROSHI HIRAMOTO	HIRAM		(Schlumberger	rger Con	Configuration	ion)
	1		R	1	0a		6/01	67 MM	\mathbf{v}	54	R	2	Da	
(mV)	-	(W))	(0)	4	(Um).		7 / TV	7 /WW	(M)	(mA)	(0)	4	(Um)	
2693	ŝ	20.0	134.4	6.283	844.		50	80	108.	20.0	5.409	478.3	2587	
10	1024	20.0	51.16	18.85	964.		50	<u>ର</u> ା	26.3	20.0	1.314	1360.4	2576	
ی ک	614	20.0	30.69	31.39	963.		65		60.03	20.0	2.998	817.0	2449	
က	390.	20.0	19.51	49.48	365.		80		40.0	20.0	2.027	1244.1	2522	
2	258.	20.0	12.88	77.75	1001		100	8	26.5	19.9	1.328	1950.9	2591	
-	165.	20.0	8.240	132.0	1088		130	.	14.7	20.0	0.738	3305.7	2440	
	118.	20.0	5.934	200.3	1189		160		9.56	20.0	0.478	5014.0	2397	
8	86.9	20.0	4.339	313.4	1360		160	66	31.0	20.0	1.553	1205.4	1874	
3	385.	20.2	19.25	75.40	1452		200	36	19.2	20.0	0.959	1913.2	1835	
2	248.	20.0	12.42	129.6	1610		200	8	5.94	20.0	0.296	7841.4	2321	
<u>دی</u>	56.6	20.0	2.828	530.1	1439		250					3017.7		
	143.	16.8	8.533	197.9	1689		320					4976.3		
	111.	20.0	5.557	311.0	1728		400					7803.7		
	74.7	13.6	3.800	487.7	1853		500	32				12222.		
4	45.3	16.8	2.700	801.1	2163		650					20689.		
4	40.1	20.0	2.002	1253.5	2510		800					31366.		
	165.	20.0	8.242	301.6	2486									
	ľ													

42 М

SOUNDING ELECTRICAL VERTICAL

HIROSHI HIRAMOTO (Schlumberger Configuration) DATE 15 / Nov./1989 1319 1235 1710 (Un) 1960.4 1200 817.0 1445 1400 1207 1233 1726 1223 Q a 1.125 1244.1 478.3 0.633 1950.9 7803.7 3305.7 1206.4 1913.2 7841.4 3017.7 4976.3 5014.0 20689. 31366. 12222. M 0.612 0.365 0.246 1.417 2.758 1.769 0.902 0.156 9 2 STUDY ON THE RURAL WATER SUPPLY PROJECT IN THE EASTERN REGION (PHASE III) 19.2 20.0 19.9 າດ 40.3 20.0 43.8 44.5 19.2 ŝ (mA) 36. 36. 11.8 35.4 22.4 53.1 12.6 (m V) 14.7 10.7 5.76 33.0 63.1 **MN/2** 2 32 8 ω 32 ω AB/2 500 800 400100 130 160 160 200 200 250 320650 TESTED BY 50 50 63 1 80 1215 1256 1217 1338 1075 1238 1273 1036 1156 1175 1380 1353 829. 1201 1481 (mm) 622. 31.39 360. Q 8 49.48 18.85 197.9 129.6 487.7 6.283 311.0 301.6 313.4 75.40 530.177.75 132.0 200.3 1253.5 801.1 X LINE DIRECTION 30.58 4.435 43.97 20.93 8.755 5.998 9.552 2.402 6.971 4.761 2.77498.91 15.58 1.568 0.971 13.82 3.877 9 Å TΗE 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 (mA) THE REPUBLIC OF RWANDA ġ. Ś 95 3 1981 31.3 880. 55 5 19.4 88.7 (Mm) 612. 419. 77 6 191. 48.1 139. 276. 120. 312. 175. တ ED 0.5 0.5 **MN/2** 2 ∞ **¢**V 2 ก รา **AB/2** 87 87 مب مە THE വ ____ **TEST** 9 40 ហ 13 25 32 ∞ 10 10 **~** 20 40 ELECTRICAL SOUNDING THE VERTICAL

S-10 LINE DIRECTION TESTED BY HIROSHI HIRAMOTO (Schlumberricht) 1 R ρ_a μ_X V I R 5: 20.0 19.31 6.283 121. 50 8 31.1 50.0 0.145 5: 20.0 19.31 6.283 121. 50 8 31.1 50.0 0.145 5: 20.0 19.31 6.283 121. 50 8 31.1 50.0 0.145 2: 20.0 5.128 31.39 161. 65 15.5 50.0 0.145 4: 20.0 5.128 31.39 161. 80 9 0.93 4: 20.0 2.439 77.75 190. 100 8 14.2 89.8 0.034 2: 20.0 1.599 132.0 211. 130 8 8.43 89.8 0.034 2: 20.0 1.500 3.232 1160 8.43	> <u> </u>	F RW. THE	THE REPUBLIC OF RWANDA THE STUDY ON THE RURAL WATER	5	SUPPLY PROJECT	. 4	IN THE EASTERN REGION (PHASE III)	ASTER	N REGI	Id) NO	IASE II		DATE 15 /	/ Nov./I	/1989
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $			10 TI		T ION				ROSHI	HIRAMC		Schlumbe	rger Con	figurat	ion)
$ \left(\begin{array}{c c c c c c c c c c c c c c c c c c c $	~			R	1	p a	*		6/ WM	Λ		24	2	P a	
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$			(WW)	(B)	11	(Um)	4			(mV)	(WW)	(0)	4	(Um)	
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	ê		20.0	19.31	6.283	121.		50	8	31.1	50.0	0.623	478.3	298.	
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$			20.0	7.660	18.85	144.		50	2	7.28	50.0	0.145	1960.4	284.	
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$			20.0	5.128	31.39	161.		65		15.5	50.0	0.310	817.0	253.	
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$			20.0	3.567	49.48	177.		80			88.4	0.207	1244.1	258.	
			20.0	2.439	77.75	190.	1	00	00	14.2	89.9	0.158	1950.9	308.	
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	- N I		20.0	1.599	132.0	211.	204	30		8.49	89.8	0.034	3305.7	311.	
20.0 0.700 313.4 $219.$ 160 32 82.1 96.1 0.854 20.0 3.034 75.40 $229.$ 200 3 60.9 $100.$ 0.608 20.0 1.995 129.6 $259.$ 200 8 6.02 $100.$ 0.668 20.0 1.995 129.6 $259.$ 200 8 6.02 $100.$ 0.054 20.0 1.526 137.9 $302.$ 220 320 27 200 0.054 20.0 1.526 137.9 $302.$ 320 320 $200.$ 0.054 20.0 1.136 311.0 $352.$ 400 32 20.0 0.738 487.7 $360.$ 500 32 20.0 0.738 487.7 $360.$ 650 32 50.0 0.245 1253.5 $307.$ 800 1.055 50.0 1.055 301.6 $318.$ 1.055 1.055	N		20.0		200.3	222.	1	60		7.15	95.8	0.074	5014.0	371.	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	4	-	20.0	0.700	313.4	219.	1	160	66	82.1	96.I	0.854	1206.4	1030	
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	0		26.0	3.034	75.40	229.	2	200	30	60.9	100.	0.608	1313.2	1163	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	5		20.0	1.995	129.6	259.	2	200	80	6.02	100.	0.054	7841.4	423.	
20.0 1.526 137.9 302. 320 20.0 1.136 311.0 352. 400 20.0 0.738 487.7 360. 500 20.0 0.400 801.1 320. 650 50.0 0.245 1253.5 307. 800 50.0 1.055 301.6 318.			20.0	0.454	530.1	246.	2	250					3017.7		
20.0 1.136 311.0 352. 400 20.0 0.738 487.7 360. 500 32 50.0 0.400 801.1 320. 650 50 50.0 0.245 1253.5 307. 800 50.0 1.055 301.6 318.	12	<u> </u>	20.0	1.526	197.9	302.	3	320					4976.3		
20.0 0.738 487.7 360. 500 32 50.0 0.400 801.1 320. 650 32 50.0 0.445 1253.5 307. 800 500 50.0 1.055 301.6 318. 500 500 500	22	۲.	20.0	1.136	311.0	352.	4	100					7803.7		
50.0 0.400 801.1 320. 650 50.0 0.245 1253.5 307. 800 50.0 1.055 301.6 318.	1	1.7	20.0	0.738	487.7	360.	2	500	32				12222.		
.2 50.0 0.245 1253.5 307. 800 .8 50.0 1.055 301.6 318.			50.0	0.400	801.1	320.	E	650					20689.		
.8 50.0 1.055 301.6	9 M	· · · · ·	50.0		1253.5	307.		800					31366.		
		8.8	50.0	1.055	301.6	318.							:		