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No. 102

DATA BOOK
(DB-2)

GROUNDWATER DATA
(Aquifer Test and Well Survey)

JULY 1992

JAPAN INTERNATIONAL COOPERATION AGENCY

REPUBLIC OF KENYA

MINISTRY OF WATER DEVELOPMENT

THE STUDY

ON

THE NATIONAL WATER MASTER PLAN

DATA BOOK
(DB.2)

GROUNDWATER DATA
(Aquifer Test and Well Survey)

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PREFACE

Administrative Division of Districts

In this Study, the original 41 districts were considered and various statistical data, particularly socio-economic information, were collected for these districts. During the progress of the Study, six districts were were detached from the original ones and established as new districts. In the report, the data on these new districts are grouped together with the corresponding original districts as shown below.

	Original Districts	New Districts	Data included in:
1.	Machakos	Makueni	Machakos/Makueni
2.	Kisii	Nyamira	Kisii/Nyamira
3.	Kakamega	Vihiga	Kakamega/Vihiga
4.	Meru	Tharaka-Nithi	Meru/Tharaka-Nithi
5.	Kericho	Bomet	Kericho/Bomet
6.	South Nyanza	Migori	South Nyanza/Migori

(Note: The last three Districts were established very recently.
The report refers only to the names of the original 41 districts.)

The administrative boundary map used in this Study is the latest complete map set covering the whole country (41 Districts, 233 Divisions and 976 Locations), prepared in 1986 by the Survey of Kenya, Ministry of Land and Housing.

Data and Information

The data and information contained in the report represent those collected in the 1990-1991 period from various documents and reports made available mostly from central government offices in Nairobi and/or those analyzed in this Study based on the collected data. Some of them may be different from those kept in files at some agencies and regional offices. Such discrepancies if any should be collated and adjusted as required in further detailed studies of the relevant development projects.

THE STUDY ON THE NATIONAL WATER MASTER PLAN

DATABOOK : DB.2
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PREFACE

Aquifer Test and Well Survey were carried out under this NWMP study to supplement existing hydrogeological informations during the period of October, 1990 to January, 1991 The field work was conducted on a local contract basis.

The data obtained from the test and survey are compiled in two Parts of Data Book;

Part I : Aquifer Test

Forty five (45) sites were selected for aquifer test in the areas where existing aquifer information is scarce. A continious pumping test and recovery test immediately after the continuous pumping test were carried out.

This Data Book contains all field data obtained from the tests, analytical results of hydraulic characteristics ; i.e T: transmissivity and S: storage coefficient.

Part II : Well Survey

Five hundrend and eighty seven (587) existing wells and boreholes were selected for well survey in whole parts of Kenya to obtain general information of the wells, water levels, production rates and etc. This Data Book contains the results of the survey which refer to information on hydrogeology, present conditions of wells, groundwater abstraction and etc.

PART I : AQUIFER TEST

1. INTRODUCTION

1.1 Selection of Boreholes for Aquifer Test

In order to determine candidate sites for aquifer test, field reconnaissance survey was carried out intensively by teams comprising MOWD, NWCPC and the Study Team's engineers after obtaining the answers to questionnaire survey by MOWD.

During the field study, some candidate sites were changed due to difficulty of road access in the short rain season or inadequate structure of boreholes for the test. Since shallow wells are used widely in the Tana River District and no appropriate boreholes were found, aquifer tests were not carried out in the Tana River District.

Location and name of the tested 45 boreholes are shown in Fig.1 and Table 1 , respectively.

1.2 Method of aquifer test

The aquifer test was carried out in following four cases depending on the actual site conditions of boreholes :

Case	Actual Condition	Pump to be Used for Test	Remarks
A	Machine Pump	Existing	Installation of a dipper tube and use of existing equipment.
B	Machine Pump	Contractor-brought	Removal/re-installation of existing equipment and installation of a dipper tube.
C	Hand Pump	Contractor-brought	Removal/re-installation of existing equipment and installation of a dipper tube.
D	No Pump	Contractor-brought	Installation of equipment and a dipper tube.

Contractor-brought pump : Submersible pumps
SP8A/Grundfos (discharge range=2-11.5m3/h)
SP16/Grundfos (discharge range=10-20m3/h)
ER4G/Caprari (discharge range =6-15m3/h)

The dipper tubes for measurement of water level were left in the tested boreholes.

The test was carried out in two stages. The first stage comprises a continuous pumping test for 24 hours and the second stage consists of 12 hours recovery test immediately after the continuous pumping test.

The discharge rate in the first stage generally reduced to 70 % to 80 % of the yield shown in the borehole completion record and was measured by V-Notch method. At some sites, preceding short pumping was done to know the most reasonable discharge rate before the test, when information on drawdown was not available or questionable.

Drawdown of water level was measured with the frequencies as specified during the test by an electric water indicator (dipper).

Water samples were taken after the recovery test. The water quality test was carried out at the laboratories in Nairobi.

1.3 Aquifer Test Data

Table 1 shows general information on the tested boreholes. Chapters 2.1 and 2.2 refer to data obtained by aquifer test.

Chapter 2.1 contains following data of the aquifer test :

1) Continuous pumping test data together with analytical results of transmissivity (T) and storage coefficient (S)
2) Recovery test data together with calculation of transmissivity
3) Plotting graphs of pumping and recovery test data on a semi-log paper and log-log paper.

Some remarks for calculation and graphing are given as follows :

(1).Pumping test data:

1).$Log(t/r^2)$, $Log(r^2/t)$ and Log(s) are calculated to draw computer graph.
2).Discharge is calculated by Barre's experiment formula of V-Notch method :

$$Q = 0.014H^{5/2}$$

Q : Discharge (l/sec)
H : Over flow height of V-Notch (cm)

3).Transmissivity (T) is calculated.
4).T is calculated for every elapsed time :

$$T = 0.183Q \times \log(t/r^2)'/s'$$

s': difference in each point of drawdown (m)
$Log(t/r^2)'$: difference in each point of $Log(t/r^2)$

5).And also T is calculated by Jacob's method.

$$T = 2.3Q/(4 \times 3.14) \times ds = 0.183Q/ds$$

6).Storage coefficient is calculated by Jacob's method.

$$S = 2.25T\,(t/r^2)o$$

$(t/r^2)o$: value of (t/r^2) at s=0
s : drawdown (m)

where ds and $(t/r^2)o$ are read on a semi-log paper

(2) Recovery test data:

1).Log(t/t') is calculated.
t : Elapsed time after pump started (min)
t': Elapsed time after pump stopped (min)
2).T is calculated for every elapsed time :

$$T = 0.183Q \times Log(t/t')' / s'$$

$Log(t/t')'$: difference in each point of Log(t/t')
3).And also T is calculated on a semi-log paper

1.4 Water Quality Test Data

Chapter 2.2 (Data Table) contains the results of water quality tests for 45 boreholes.

Items of a water quality test are as follows:

(1) Per-Manganate NO
(2) Electric conductivity
(3) pH
(4) Total dissolved solid
(5) Total hardness
(6) Chloride (Cl)
(7) Nitrite (NO_2)
(8) Nitrate (NO_3)
(9) Iron (Fe)
(10) Manganese (Mn)
(11) Fluoride (F)
(12) Sodium (Na)
(13) Potassium (K)
(14) Calcium (Ca)
(15) Magnesium (Mg)
(16) Bicarbonate (HCO_3)
(17) Sulphate (SO_4)
(18) Silica (SiO_2)
(19) Carbonate (CO_3)

Table 1 List of Boreholes Served for Aquifer Test

DC CODE	DISTRICT	B/H No.	LOCALITY	OWNER	PUMP CONDI-TION*	TOTAL DEPTH (m)	YIELD (l/m)
11	Nairobi	C9002	J.K.I.Airport	.	A		
25	Nyeri	C9170	Naro Moru	P.G.W.	D	150.0	60.0
31	Kilifi	C9400	Malindi Prison	M.Pris.	D		
		C4422	Ganze	MOWD	D	300.0	166.0
		C6072	Kikambala	Khosla Farm	D	60.0	60.5
32	Kwale	C6507	Mwangoni	MOWD	C	67.0	
		C3463	Mwena	MOWD	C		
33	Lamu		Witu	Witu Police	B	45.8	28.3
	Taita Tavita	C3360	Lualenyi Ranch	Lualenyi Ranch	D	106.8	136.3
		C4130	Tavita	MOWD	A	64.0	396.7
41	Embu	C8981	Kanyuambora	M.Kiv.	D	115.0	50.0
43	Kitui	C4729	Ikanga	MOWD	A	90.0	136.3
44	Machakos	C6975	Kima	MOWD	A	120.0	150.0
		C3813	Makindu	Makindu Mosque	B	85.0	150.0
45	Marsabit	C3959	Oda	MOWD	B	75.6	36.3
		C7804	Sololo	MOWD	C	77.0	167.0
		C3960	Kargi	MOWD	A	95.7	181.7
		C4573	Sagante	MOWD	A	130.0	135.0
		C3682	Logologo	MOWD	B	122.8	12.7
		C3625	Laisamis	MOWD	B	35.7	181.8
46	Meru	C8923	Chiakariga	MOWD	D		
51	Garissa	C3695	Ifo	MOWD	D	131.2	151.5
		C4270	Abakailey	MOWD	A		
52	Mandera	C3861	Warankar	MOWD		144.8	100.0
		C6084	Elwak	MOWD	D	186.0	140.0
53	Wajir	C3541	Eldas	MOWD	A	45.7	49.2
		C3899	Dambas	MOWD	A	83.8	151.7
		C4124	Wajir Township	MOWD	D	40.5	7.5
		C5795	Habaswein	MOWD	D	152.0	95.0
61	Kisii	C4303	Kiamokoma	KTDA	A	138.0	198.3
62	Kisumu	C8062	Robuor(Chief)Camp	LBDA	C	100.0	200.0
		C4246	Paponditi	MOWD	A	90.0	50.0
63	Siaya	C9180	Ugunja	Kefinco	C	59.2	162.2
64	South Nyanza	C7581	Kendu bay	MOWD	D	50.0	300.0
73	Kajiado	C5894	Isenya	MOWD	A	155.0	545.0
		C4415	Ilbisil	MOWD	A	137.0	225.0
76	Narok	C8298	Keekorok Lodge	Keekorok Lodge	A	139.4	118.2
		C5278	Mutunyi	MOWD	A		
		C4442	Lemek				
82	Turkana	C5627	Kaaling	Diocese of Lodwar	D	40.0	152.7
83	Uasin Gishu	C3660	Soy-Navilius Estate	EATC	A	183.6	151.5
91	Bungoma	C7878	W. Bukusu	Kefinco	C	46.0	70.7
92	Busia	C8810	Angorom	Kefinco	C	37.0	150.0
93	Kakamega	C7064	S. Kabaras	Kefinco	C	40.0	200.0

Total No.45 *Pump Condition A,B,C, and D: See page I-1.

Table 2 Unit of chemical constituents and analytical method used by the Water laboratory of MOWD

PARAMETERS	UNIT	ANALYTICAL METHOD USED
pH	pH Scale	Electromeric
Colour	mf pt/l	Lovibond comparator
Turbidity	N.T.U.	Turbidimeter
Permanganate No. (20 min. boiling)	mgO_2/ l	Permanganate oxidation
Conductivity (25°C)	µS/cm	Conductivity meter
Iron	mgFe/l	Calorimetric
Manganese	mgMn/l	A.A.S
Calcium	mg/Ca/l	EDTA titrimetric
Magnesium	mg/Na/l	Flame photometer
Potassium	mgK/l	
Aluminium	mgAl/l	-
Total Hardness	$mgCaCO_3$/ l	E.D.T.A. titrimetric
Total Alkalinity	$mgCaCO_3$/ l	Acid titration to pH 4.5 using pH meter
Chloride mg Cl/l	mgCl/l	Argentometric titration
Flouride	mgF/l	Ion (Electrode) analyser/Alizarin visual method
Nitrate	mgN/l	-
Nitrite	mgN/l	Azo dye, calorimetric
Ammonia	mgN/l	-
Total Nitrogen	mgN/l	-
Sulphate	$mgSO_4$/ l	Turbidimetric
Orthophosphate	mgP/l	Spectrophotometric
Total Suspended Solids	mg/l	Filtration and drying at 105°C
Free Carbon dioxide	mg/l	Titrimetric
Dissolved Oxygen	mg/l	DO meter
TDS	mg/l	Evaporation/calculation from conductivity
Others		

COMMENTS: All methods are adopted from the standard Methods for the Analysis of Water and Wastewaters by AWWA & APHA.

Fig.

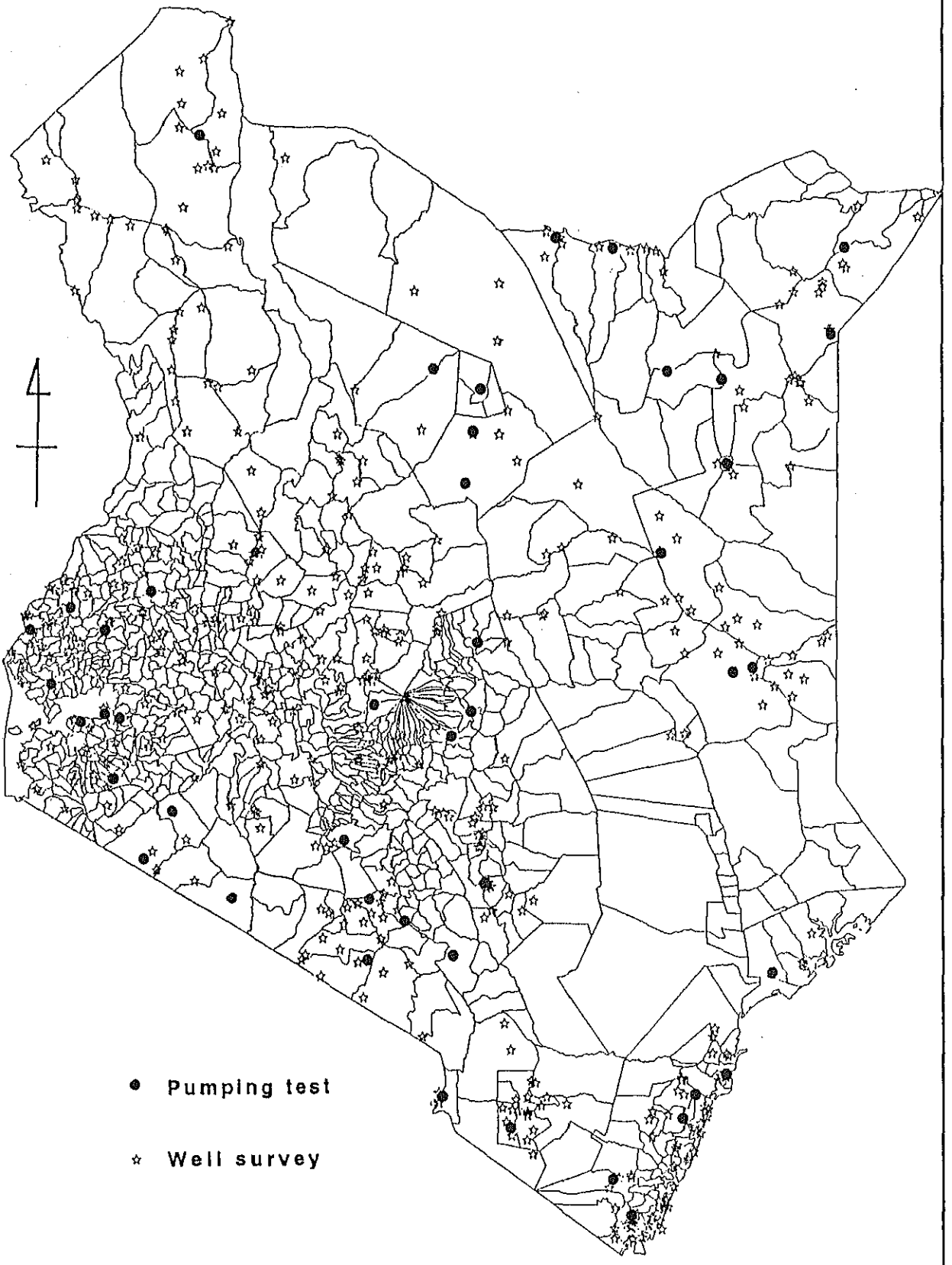


Fig.1 Location map of boreholes served for well survey

THE STUDY
ON
THE NATIONAL WATER MASTER PLAN

JAPAN INTERNATIONAL COOPERATION AGENCY

2. AQUIFER TEST DATA

2.1 Pumping Drawdown and Recovery Data

JACOB : GRAPH:s-LOG(t/r2) THEIS : GRAPH:LOG(s)-LOG (r2/t)

B.H. NO.: C3360 (Taita Taveta)
Owner : Lualenyi Ranching Ltd, P.O Mwatate
Location: Mwatate District: Taita Taveta Area Bura
B.H.Name: Casing Dia.(mm) : 152 Date/Time:31/12/80/ 17.00 a.m
(Pump start)

Elapsed Time(min)	r(n)= LOG(t/r2)	0.076 Water 1 LOG(r2/t) (m/sec)	(n) 29.20	Drawdown s=s0-s1	LOG(s)	V-NOTCH H(cm)	Q (m3/sec)	T=0.1830*log(t/r2)/s Q(m3/sec)
0								
1	2.2384	-0.4602	34.27	5.07	0.7050	6.5	1.51E-03	1.22E-04 (m2/sec)
2	2.5394	-0.7613	37.02	7.82	0.8932	6.5	1.51E-03	8.96E-05
3	2.7155	-0.9373	38.06	8.86	0.9474	6.5	1.51E-03	8.46E-05
4	2.8404	-1.0623	39.30	10.10	1.0043	6.5	1.51E-03	7.76E-05
5	2.9373	-1.1592	40.12	10.92	1.0382	6.5	1.51E-03	7.42E-05
6	3.0165	-1.2384	40.66	11.46	1.0592	6.5	1.51E-03	7.26E-05
7	3.0835	-1.3053	41.21	12.01	1.0795	6.5	1.51E-03	7.09E-05
8	3.1415	-1.3633	41.71	12.51	1.0973	6.5	1.51E-03	6.93E-05
9	3.1926	-1.4145	42.05	12.85	1.1089	6.5	1.51E-03	6.86E-05
10	3.2384	-1.4602	42.51	13.31	1.1242	6.5	1.51E-03	6.71E-05
12	3.3176	-1.5394	43.00	13.80	1.1399	6.5	1.51E-03	6.63E-05
14	3.3845	-1.6063	43.81	14.61	1.1647	6.5	1.51E-03	6.39E-05
16	3.4425	-1.6643	44.82	15.62	1.1937	6.5	1.51E-03	6.08E-05
18	3.4936	-1.7155	45.78	16.58	1.2196	6.5	1.51E-03	5.82E-05
20	3.5394	-1.7613	46.51	17.31	1.2383	6.5	1.51E-03	5.64E-05
25	3.6363	-1.8582	47.83	18.63	1.2702	6.5	1.51E-03	5.39E-05
30	3.7155	-1.9373	48.82	19.62	1.2927	6.5	1.51E-03	5.23E-05
35	3.7824	-2.0043	49.79	20.59	1.3137	6.5	1.51E-03	5.07E-05
40	3.8404	-2.0623	50.51	21.31	1.3286	6.5	1.51E-03	4.97E-05
45	3.8916	-2.1134	51.22	22.02	1.3428	6.5	1.51E-03	4.88E-05
50	3.9373	-2.1592	51.78	22.58	1.3537	6.5	1.51E-03	4.81E-05
55	3.9787	-2.2006	52.43	23.23	1.3660	6.5	1.51E-03	4.73E-05
60	4.0165	-2.2384	52.92	23.72	1.3751	6.5	1.51E-03	4.67E-05
75	4.1134	-2.3353	54.17	24.97	1.3974	6.5	1.51E-03	4.55E-05
90	4.1926	-2.4145	55.19	25.99	1.4148	6.5	1.51E-03	4.45E-05
105	4.2596	-2.4814	56.21	27.01	1.4315	6.5	1.51E-03	4.35E-05
120	4.3176	-2.5394	56.99	27.79	1.4439	6.5	1.51E-03	4.29E-05
135	4.3687	-2.5906	57.61	28.41	1.4535	6.5	1.51E-03	4.24E-05
150	4.4145	-2.6363	58.20	29.00	1.4624	6.5	1.51E-03	4.20E-05
165	4.4559	-2.6777	58.63	29.43	1.4688	6.5	1.51E-03	4.18E-05
180	4.4936	-2.7155	59.21	30.01	1.4773	6.5	1.51E-03	4.13E-05
210	4.5606	-2.7824	59.90	30.70	1.4871	6.5	1.51E-03	4.10E-05
240	4.6186	-2.8404	60.28	31.08	1.4925	6.5	1.51E-03	4.10E-05
270	4.6697	-2.8916	60.85	31.65	1.5004	6.5	1.51E-03	4.07E-05
300	4.7155	-2.9373	61.22	32.02	1.5054	6.5	1.51E-03	4.06E-05
330	4.7569	-2.9787	61.68	32.48	1.5116	6.5	1.51E-03	4.04E-05
360	4.7947	-3.0165	62.23	33.03	1.5189	6.5	1.51E-03	4.01E-05
420	4.8616	-3.0835	62.71	33.51	1.5252	6.5	1.51E-03	4.00E-05
480	4.9196	-3.1415	62.97	33.77	1.5285	6.5	1.51E-03	4.02E-05
540	4.9708	-3.1926	63.51	34.31	1.5354	6.5	1.51E-03	4.00E-05
600	5.0165	-3.2384	63.65	34.45	1.5372	6.5	1.51E-03	4.02E-05
720	5.0957	-3.3176	63.99	34.79	1.5415	6.5	1.51E-03	4.04E-05
840	5.1627	-3.3845	64.03	34.83	1.5420	6.5	1.51E-03	4.09E-05
960	5.2206	-3.4425	64.08	34.88	1.5426	6.5	1.51E-03	4.13E-05
1080	5.2718	-3.4936	64.14	34.94	1.5433	6.5	1.51E-03	4.16E-05
1200	5.3176	-3.5394	64.30	35.10	1.5453	6.5	1.51E-03	4.18E-05
1320	5.3589	-3.5808	64.41	35.21	1.5467	6.5	1.51E-03	4.20E-05
1440	5.3967	-3.6186	64.53	35.33	1.5481	6.5	1.51E-03	4.22E-05
							1.51E-03 (avgQ)	

Transmissibility

T=2.3*Q/(4pi*ds)
(m2/sec)
T(m2/sec)= 2.30E-05
(cm2/sec)= 2.30E-01
(m2/min)= 1.38E-03
(m2/day)= 1.99E+00

avgQ= 1.51E-03
m3/sec

ds:one cycle of LOG(t/r2)
(by graph=LOG(t/r2)
ds= 12.00

Storage coefficient

S=2.25T(t/r2)o
(t/r2)o= 2.10
S= 6.52E-03

RECOVERY GRAPH : s-LOG(t/t')

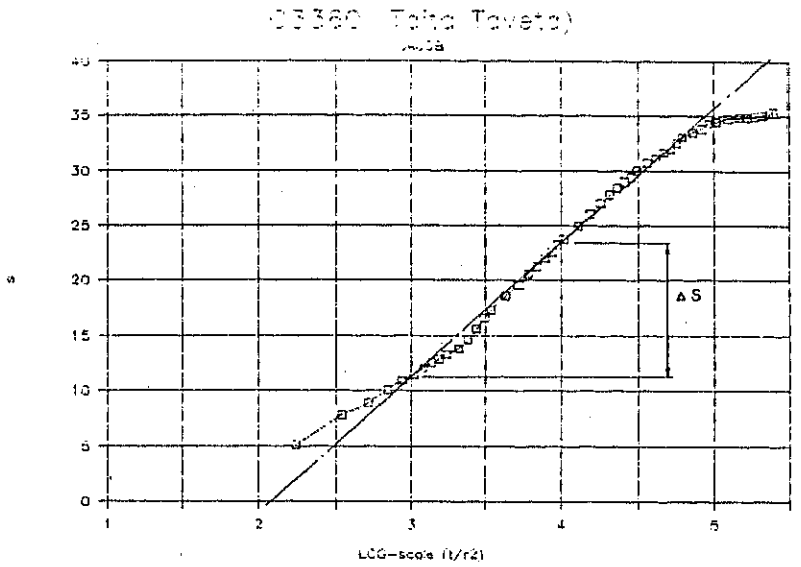
B.H. NO.: C3360 (Taita Taveta)

Owner : Lualenyi Ranching Ltd, P.O Mwatate

Location: Mwatate District: Taita Taveta Area Bura

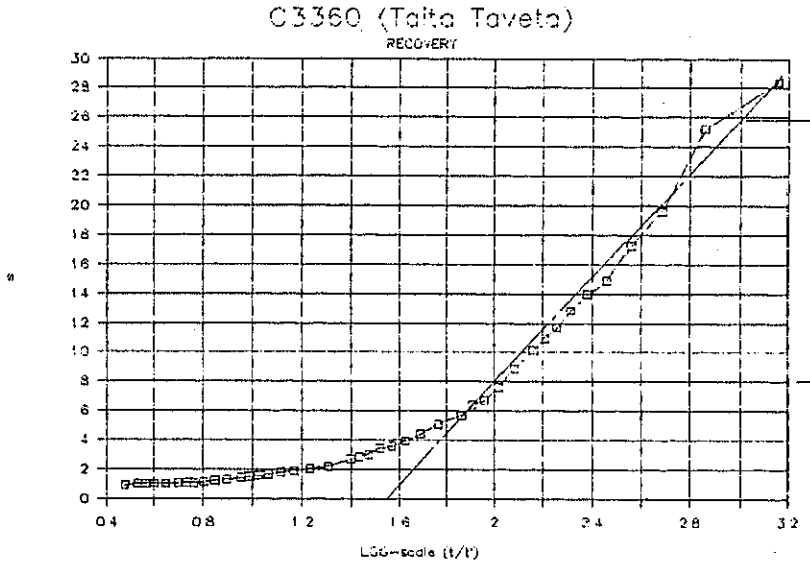
B.H.Name: Casing Dia.(mm) : 152 Date/Time:31/12/90/ 17.00 a.m (Pump start)

Elapsed Time(min)	LOG(t'/r2)	Water l.	s=wl-s0	t/t'	LOG(t/t')	T=0.183Q*log(t/t')/s	T=0.183Q*log(t/t')/s
0		64.53				Q(m3/sec)= 1.51E-03	(m2/sec)
1	2.2384	57.61	28.41	1441.0	3.1587	3.07E-05 (m2/sec)	T(m2/sec)= 1.55E-05
2	2.5394	54.42	25.22	721.0	2.8579	3.13E-05	(cm2/sec)= 1.55E-01
3	2.7155	48.81	19.61	481.0	2.6821	3.77E-05	(m2/hr)= 5.58E-02
4	2.8404	46.49	17.29	361.0	2.5575	4.08E-05	(m2/day)= 1.34E+00
5	2.9373	44.10	14.90	289.0	2.4609	4.56E-05	
6	3.0165	43.12	13.92	241.0	2.3820	4.72E-05	avgQ= 1.51E-03
7	3.0835	42.08	12.88	206.7	2.3154	4.96E-05	(m3/sec)
8	3.1415	40.89	11.69	181.0	2.2577	5.33E-05	
9	3.1926	40.19	10.99	161.0	2.2068	5.54E-05	ds is one LOG(t/t')
10	3.2384	39.33	10.13	145.0	2.1614	5.89E-05	(by graph) 17.80
12	3.3176	38.06	8.86	121.0	2.0828	6.49E-05	(n)
14	3.3845	36.86	7.66	103.9	2.0164	7.26E-05	
16	3.4425	35.92	6.72	91.0	1.9590	8.05E-05	
18	3.4936	35.65	6.45	81.0	1.9085	8.17E-05	
20	3.5394	34.90	5.70	73.0	1.8633	9.02E-05	
25	3.6363	34.32	5.12	58.6	1.7679	9.53E-05	
30	3.7155	33.60	4.40	49.0	1.6902	1.08E-04	
35	3.7824	33.15	3.95	42.1	1.6247	1.14E-04	
40	3.8404	32.80	3.60	37.0	1.5682	1.20E-04	
45	3.8918	32.69	3.49	33.0	1.5185	1.20E-04	
50	3.9373	32.21	3.01	29.8	1.4742	1.35E-04	
55	3.9787	32.06	2.86	27.2	1.4343	1.38E-04	
60	4.0165	31.90	2.70	25.0	1.3979	1.43E-04	
75	4.1134	31.43	2.23	20.2	1.3054	1.62E-04	
90	4.1926	31.27	2.07	17.0	1.2304	1.64E-04	
105	4.2596	31.12	1.92	14.7	1.1677	1.68E-04	
120	4.3176	31.00	1.80	13.0	1.1139	1.71E-04	
135	4.3687	30.87	1.67	11.7	1.0669	1.76E-04	
150	4.4145	30.80	1.60	10.6	1.0253	1.77E-04	
165	4.4559	30.71	1.51	9.7	0.9880	1.81E-04	
180	4.4936	30.65	1.45	9.0	0.9542	1.82E-04	
210	4.5606	30.53	1.33	7.9	0.8953	1.86E-04	
240	4.6186	30.44	1.24	7.0	0.8451	1.88E-04	
270	4.6697	30.35	1.15	6.3	0.8016	1.92E-04	
300	4.7155	30.30	1.10	5.8	0.7634	1.92E-04	
330	4.7569	30.29	1.09	5.4	0.7295	1.85E-04	
360	4.7947	30.26	1.06	5.0	0.6990	1.82E-04	
420	4.8618	30.25	1.05	4.4	0.6463	1.70E-04	
480	4.9198	30.24	1.04	4.0	0.6021	1.60E-04	
540	4.9708	30.23	1.03	3.7	0.5643	1.51E-04	
600	5.0165	30.22	1.02	3.4	0.5315	1.44E-04	
720	5.0957	30.11	0.91	3.0	0.4771	1.45E-04	

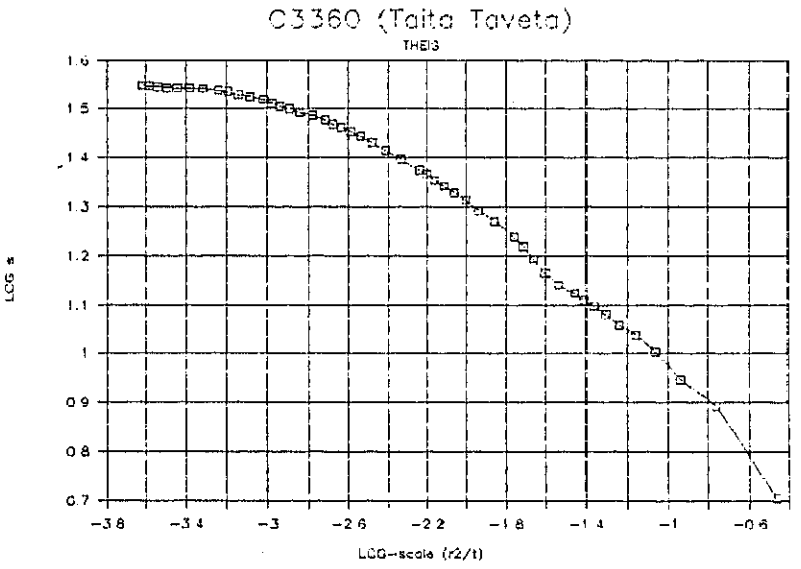


$\Delta s = 12.0$

$(t/r^2)_0 = 2.1$



$\Delta s = 17.8$



JACOB : GRAPH:s-LOG(t/r2) THEIS : GRAPH:LOG(s)-LOG (r2/t)

B.H. NO.: C3463 (Lanu)
Owner : Witu Police Station, Box 41, Witu
Location: Witu District: Lanu Area Witu
B.H.Name: Casing Dia.(mm) : 127 Date/Time:31/12/90/ 2.40 p.m
(Pump start)

Elapsed Time(min)	r(m)= LOG(t/r2)	0.064 LOG(r2/t) (m/sec)	Water l (m) 23.23	Drawdown s=s0-wl	LOG(s)	V-NOTCH H(cm)	Q (m3/sec)	T=0.183Q*log(t/r2)/s Q(m3/sec)
0								
1	2.3945	-0.6163	24.07	0.84	-0.0757	3.9	4.21E-04	2.19E-04 (m2/sec)
2	2.6955	-0.9173	24.65	1.42	0.1523	3.9	4.21E-04	1.46E-04
3	2.8716	-1.0934	24.86	1.63	0.2122	3.9	4.21E-04	1.36E-04
4	2.9965	-1.2184	24.91	1.68	0.2253	3.9	4.21E-04	1.37E-04
5	3.0934	-1.3153	24.97	1.74	0.2405	3.9	4.21E-04	1.37E-04
6	3.1726	-1.3945	24.99	1.76	0.2455	4.0	4.48E-04	1.48E-04
7	3.2396	-1.4614	25.00	1.77	0.2480	4.0	4.48E-04	1.50E-04
8	3.2975	-1.5194	24.95	1.72	0.2355	4.0	4.48E-04	1.57E-04
9	3.3487	-1.5705	24.98	1.75	0.2430	4.0	4.48E-04	1.57E-04
10	3.3945	-1.6163	24.97	1.74	0.2405	4.0	4.48E-04	1.60E-04
12	3.4736	-1.6955	24.97	1.74	0.2405	4.0	4.48E-04	1.64E-04
14	3.5406	-1.7624	24.97	1.74	0.2405	4.0	4.48E-04	1.67E-04
16	3.5986	-1.8204	24.97	1.74	0.2405	4.0	4.48E-04	1.70E-04
18	3.6497	-1.8716	24.98	1.75	0.2430	4.0	4.48E-04	1.71E-04
20	3.6955	-1.9173	24.93	1.70	0.2304	4.0	4.48E-04	1.78E-04
25	3.7924	-2.0142	24.95	1.72	0.2355	4.0	4.48E-04	1.81E-04
30	3.8716	-2.0934	24.93	1.70	0.2304	4.0	4.48E-04	1.87E-04
35	3.9385	-2.1604	24.93	1.70	0.2304	4.0	4.48E-04	1.90E-04
40	3.9965	-2.2184	24.93	1.70	0.2304	4.0	4.48E-04	1.93E-04
45	4.0477	-2.2695	24.97	1.74	0.2405	4.0	4.48E-04	1.91E-04
50	4.0934	-2.3153	24.94	1.71	0.2330	4.0	4.48E-04	1.96E-04
55	4.1348	-2.3567	24.95	1.72	0.2355	4.0	4.48E-04	1.97E-04
60	4.1726	-2.3945	24.95	1.72	0.2355	4.0	4.48E-04	1.99E-04
75	4.2695	-2.4914	24.92	1.69	0.2279	3.9	4.21E-04	1.94E-04
90	4.3487	-2.5705	24.97	1.74	0.2405	3.9	4.21E-04	1.92E-04
105	4.4156	-2.6375	24.94	1.71	0.2330	3.9	4.21E-04	1.99E-04
120	4.4736	-2.6955	24.94	1.71	0.2330	3.9	4.21E-04	2.01E-04
135	4.5248	-2.7466	24.94	1.71	0.2330	3.9	4.21E-04	2.04E-04
150	4.5705	-2.7924	24.95	1.72	0.2355	3.9	4.21E-04	2.04E-04
165	4.6119	-2.8338	24.96	1.73	0.2380	3.9	4.21E-04	2.05E-04
180	4.6497	-2.8716	24.95	1.72	0.2355	3.9	4.21E-04	2.08E-04
210	4.7167	-2.9385	24.92	1.69	0.2279	3.9	4.21E-04	2.15E-04
240	4.7747	-2.9965	24.92	1.69	0.2279	3.9	4.21E-04	2.17E-04
270	4.8258	-3.0477	24.92	1.69	0.2279	3.9	4.21E-04	2.20E-04
300	4.8716	-3.0934	24.92	1.69	0.2279	3.9	4.21E-04	2.22E-04
330	4.9130	-3.1348	24.92	1.69	0.2279	3.9	4.21E-04	2.24E-04
360	4.9508	-3.1726	24.92	1.69	0.2279	3.9	4.21E-04	2.25E-04
420	5.0177	-3.2396	24.92	1.69	0.2279	3.9	4.21E-04	2.28E-04
480	5.0757	-3.2975	24.96	1.73	0.2380	3.9	4.21E-04	2.26E-04
540	5.1268	-3.3487	24.96	1.73	0.2380	3.9	4.21E-04	2.28E-04
600	5.1726	-3.3945	24.95	1.72	0.2355	3.9	4.21E-04	2.31E-04
720	5.2518	-3.4736	24.95	1.72	0.2355	3.9	4.21E-04	2.35E-04
840	5.3187	-3.5406	24.96	1.73	0.2380	3.9	4.21E-04	2.37E-04
960	5.3767	-3.5986	24.96	1.73	0.2380	3.9	4.21E-04	2.39E-04
1080	5.4279	-3.6497	24.94	1.71	0.2330	3.9	4.21E-04	2.44E-04
1200	5.4736	-3.6955	24.94	1.71	0.2330	3.9	4.21E-04	2.46E-04
1320	5.5150	-3.7304	24.94	1.71	0.2330	3.9	4.21E-04	2.48E-04
1440	5.5528	-3.7747	24.94	1.71	0.2330	3.9	4.21E-04	2.50E-04
							4.31E-04 (avgQ)	

Transmissibility

T=2.3*Q/(4pi*ds)
(m2/sec)
T(m2/sec)= 5.63E-05
(cm2/sec)= 5.63E-01
(m2/min)= 3.38E-03
(m2/day)= 4.87E+00

avgQ= 4.31E-04
m3/sec

ds:one cycle of LOG(t/r2)
(by graph=LOG(t/r2)
ds= 1.40

Storage coefficient

S=2.25T(t/r2)o
(t/r2)o= 1.75
S= 1.33E-02

RECOVERY GRAPH : s-LOG(t/t')

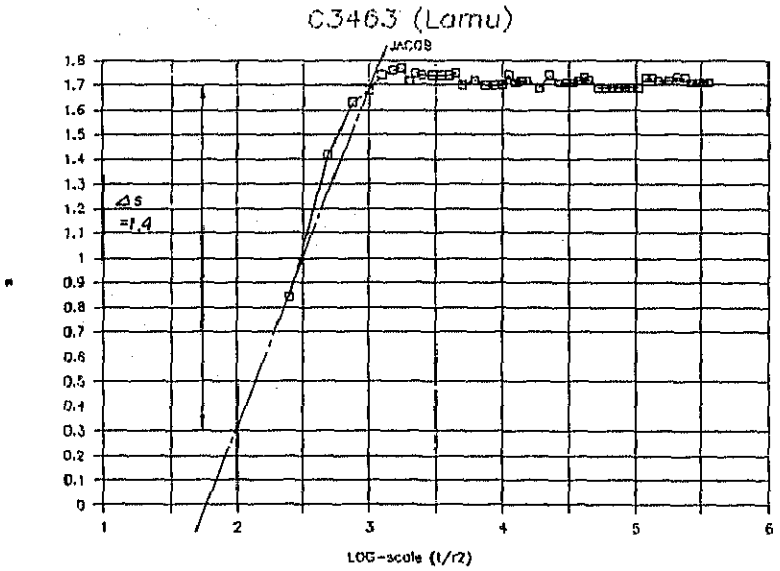
B.H. NO.: C3463 (Lamu)
Owner : Witu Police Station, Box 41, Witu
Location: Witu District: Lamu Area Witu
B.H.Name: Casing Dia.(mm) : 127 Date/Time:31/12/90/ 2.40 p.m
(Pump start)

Elapsed Time(min)	LOG(t'/r2)	Water l.	s=wl-s0	t/t'	LOG(t/t')	T=0.183Q*log(t/t')/s
0		24.94				Q(m3/sec)= 4.31E-04
1	2.3945	23.72	0.49	1441.0	3.1587	5.08E-04 (m2/sec)
2	2.6955	23.38	0.15	721.0	2.8579	1.50E-03
3	2.8716	23.30	0.07	481.0	2.6821	3.02E-03
4	2.9965	23.29	0.06	361.0	2.5575	3.36E-03
5	3.0934	23.27	0.04	289.0	2.4609	4.85E-03
6	3.1726	23.27	0.04	241.0	2.3820	4.70E-03
7	3.2396	23.26	0.03	206.7	2.3154	6.08E-03
8	3.2975	23.26	0.03	181.0	2.2577	5.93E-03
9	3.3487	23.26	0.03	161.0	2.2068	5.80E-03
10	3.3945	23.25	0.02	145.0	2.1614	8.52E-03
12	3.4736	23.25	0.02	121.0	2.0828	8.21E-03
14	3.5406	23.25	0.02	103.9	2.0164	7.95E-03
16	3.5986	23.25	0.02	91.0	1.9590	7.72E-03
18	3.6497	23.25	0.02	81.0	1.9085	7.52E-03
20	3.6955	23.25	0.02	73.0	1.8633	7.35E-03
25	3.7924	23.25	0.02	58.6	1.7679	6.97E-03
30	3.8716	23.25	0.02	49.0	1.6902	6.66E-03

T=0.183Q*log(t/t')/s
(m2/sec)
T(m2/sec)= 7.88E-04
(cm2/sec)= 7.88E+00
(m2/hr)= 2.84E+00
(m2/day)= 6.81E+01

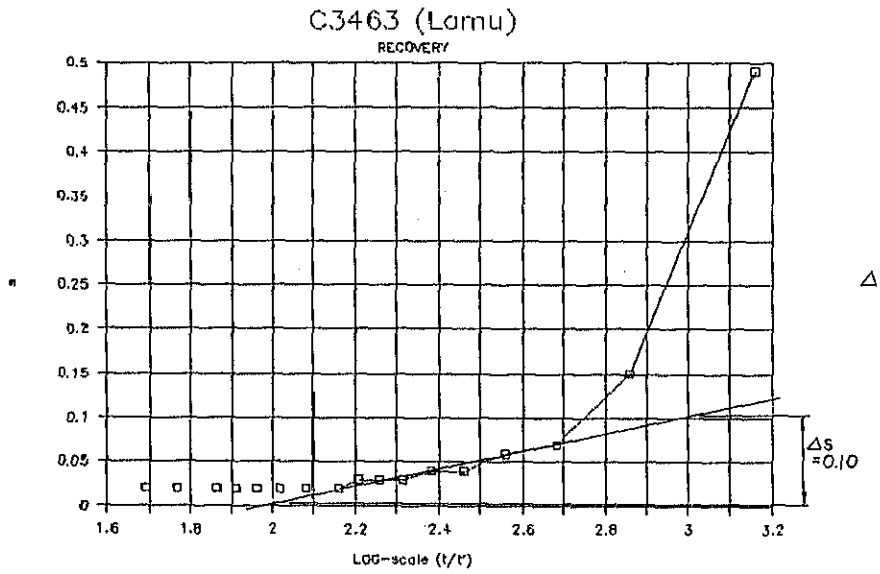
avgQ= 4.31E-04
(m3/sec)

ds is one LOG(t/t')
(by graph) 0.10
(m)

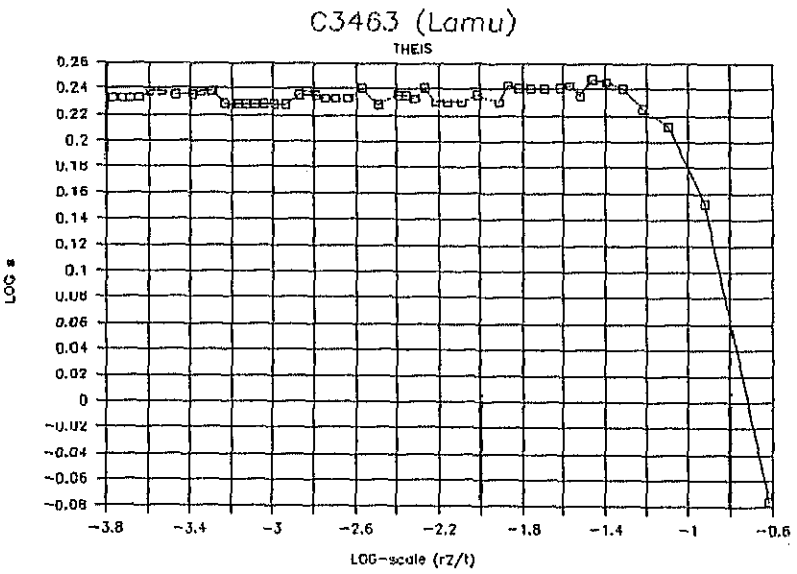


Δs = 1.4

$(t/r^2)_0 = 1.75$



Δs = 0.10



JACOB GRAPH:s-LOG(t/r2) THEIS GRAPH:LOG(s)-LOG (r2/t)

B.H. NO.: C3541 (Wajir)
Owner : MOWD, P.O. Box 41, Wajir
Location: Giriftu District: Wajir Area : Eldas
B.H.Name: Casing Dia.(mm) : 152 Date/Time,11/11/90, 18:00
(Pump start)

Elapsed Time(min)	r(m)= LOG(t/r2)	0.076 LOG(r2/t) (m/sec)	Water l (m) 17.05	Drawdown s=s0-wl	LOG(s)	V-NOTCH H(cm)	Q (m3/sec)	T=0.183Q*log(t/r2)/s Q(m3/sec)
0								
1	2.2384	-0.4602	20.67	3.62	0.5587	6.4	1.45E-03	1.64E-04
2	2.5394	-0.7613	22.52	5.47	0.7380	6.4	1.45E-03	1.23E-04
3	2.7155	-0.9373	23.55	6.50	0.8129	6.4	1.45E-03	1.11E-04
4	2.8404	-1.0623	24.30	7.25	0.8603	6.4	1.45E-03	1.04E-04
5	2.9373	-1.1592	24.91	7.86	0.8954	6.4	1.45E-03	9.92E-05
6	3.0165	-1.2384	25.37	8.32	0.9201	6.4	1.45E-03	9.63E-05
7	3.0835	-1.3053	25.47	8.42	0.9253	6.4	1.45E-03	9.72E-05
8	3.1415	-1.3633	25.63	8.58	0.9335	6.4	1.45E-03	9.72E-05
9	3.1926	-1.4145	25.78	8.73	0.9410	6.4	1.45E-03	9.71E-05
10	3.2384	-1.4602	25.85	8.80	0.9445	6.4	1.45E-03	9.77E-05
12	3.3176	-1.5394	25.99	8.94	0.9513	6.4	1.45E-03	9.85E-05
14	3.3845	-1.6063	26.05	9.00	0.9542	6.4	1.45E-03	9.98E-05
16	3.4425	-1.6643	26.10	9.05	0.9566	6.4	1.45E-03	1.01E-04
18	3.4936	-1.7155	26.12	9.07	0.9576	6.4	1.45E-03	1.02E-04
20	3.5394	-1.7613	26.15	9.10	0.9590	6.4	1.45E-03	1.03E-04
25	3.6363	-1.8582	26.17	9.12	0.9600	6.4	1.45E-03	1.06E-04
30	3.7155	-1.9373	26.15	9.10	0.9590	6.4	1.45E-03	1.08E-04
35	3.7824	-2.0043	26.15	9.10	0.9590	6.4	1.45E-03	1.10E-04
40	3.8404	-2.0623	26.17	9.12	0.9600	6.4	1.45E-03	1.12E-04
45	3.8916	-2.1134	26.17	9.12	0.9600	6.4	1.45E-03	1.13E-04
50	3.9373	-2.1592	26.16	9.11	0.9595	6.4	1.45E-03	1.15E-04
55	3.9787	-2.2006	26.17	9.12	0.9600	6.4	1.45E-03	1.16E-04
60	4.0165	-2.2384	26.18	9.13	0.9605	6.4	1.45E-03	1.17E-04
75	4.1134	-2.3353	26.19	9.14	0.9609	6.4	1.45E-03	1.19E-04
90	4.1926	-2.4145	26.10	9.05	0.9566	6.4	1.45E-03	1.23E-04
105	4.2596	-2.4814	26.24	9.19	0.9633	6.4	1.45E-03	1.23E-04
120	4.3176	-2.5394	26.14	9.09	0.9586	6.4	1.45E-03	1.26E-04
135	4.3687	-2.5906	26.24	9.19	0.9633	6.4	1.45E-03	1.26E-04
150	4.4145	-2.6363	26.20	9.15	0.9614	6.4	1.45E-03	1.28E-04
165	4.4559	-2.6777	26.17	9.12	0.9600	6.4	1.45E-03	1.30E-04
180	4.4936	-2.7155	26.17	9.12	0.9600	6.4	1.45E-03	1.31E-04
210	4.5606	-2.7824	26.17	9.12	0.9600	6.4	1.45E-03	1.33E-04
240	4.6186	-2.8404	26.19	9.14	0.9609	6.4	1.45E-03	1.34E-04
270	4.6697	-2.8916	26.15	9.10	0.9590	6.4	1.45E-03	1.36E-04
300	4.7155	-2.9373	26.15	9.10	0.9590	6.4	1.45E-03	1.38E-04
330	4.7569	-2.9787	26.16	9.11	0.9595	6.4	1.45E-03	1.39E-04
360	4.7947	-3.0165	26.16	9.11	0.9595	6.4	1.45E-03	1.40E-04
420	4.8616	-3.0835	26.16	9.11	0.9595	6.4	1.45E-03	1.42E-04
480	4.9196	-3.1415	26.16	9.11	0.9595	6.4	1.45E-03	1.43E-04
540	4.9708	-3.1926	26.20	9.15	0.9614	6.4	1.45E-03	1.44E-04
600	5.0165	-3.2384	26.17	9.12	0.9600	6.4	1.45E-03	1.46E-04
720	5.0957	-3.3176	26.17	9.12	0.9600	6.4	1.45E-03	1.48E-04
840	5.1627	-3.3845	26.16	9.11	0.9595	6.4	1.45E-03	1.50E-04
960	5.2206	-3.4425	26.17	9.12	0.9600	6.4	1.45E-03	1.52E-04
1080	5.2718	-3.4936	26.17	9.12	0.9600	6.4	1.45E-03	1.53E-04
1200	5.3176	-3.5394	26.16	9.11	0.9595	6.4	1.45E-03	1.55E-04
1320	5.3589	-3.5808	26.16	9.11	0.9595	6.4	1.45E-03	1.56E-04
1440	5.3967	-3.6186	26.16	9.11	0.9595	6.4	1.45E-03	1.57E-04
							1.45E-03 (avgQ)	

Transmissibility

(m2/sec)

T=2.3*Q/(4pi*ds)

(m2/sec)

T(m2/sec)= 4.35E-05
(cm2/sec)= 4.35E-01
(m2/min) 2.61E-03
(m2/day)= 3.76E+00

avgQ= 1.45E-03
m3/sec

ds:one cycle of LOG(t/r2)
(by graph=LOG(t/r2)
ds= 8.10

Storage coefficient

S=2.25T(t/r2)o
(t/r2)o= 1.65
S= 9.70E-03

RECOVERY GRAPH:s-LOG(t/t

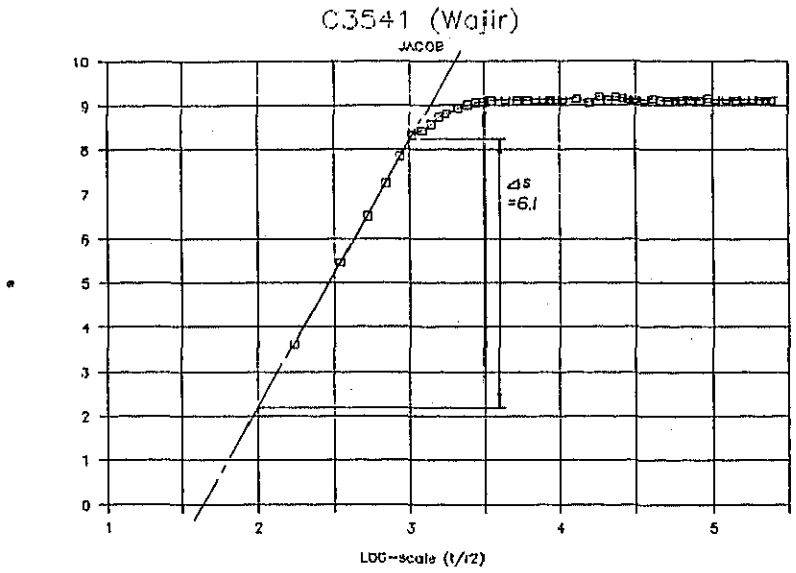
B.H. NO.: C3541 (Wajir)

Owner : MOWD, P.O. Box 41, Wajir

Location: Giriftu District: Wajir Area : Eldas

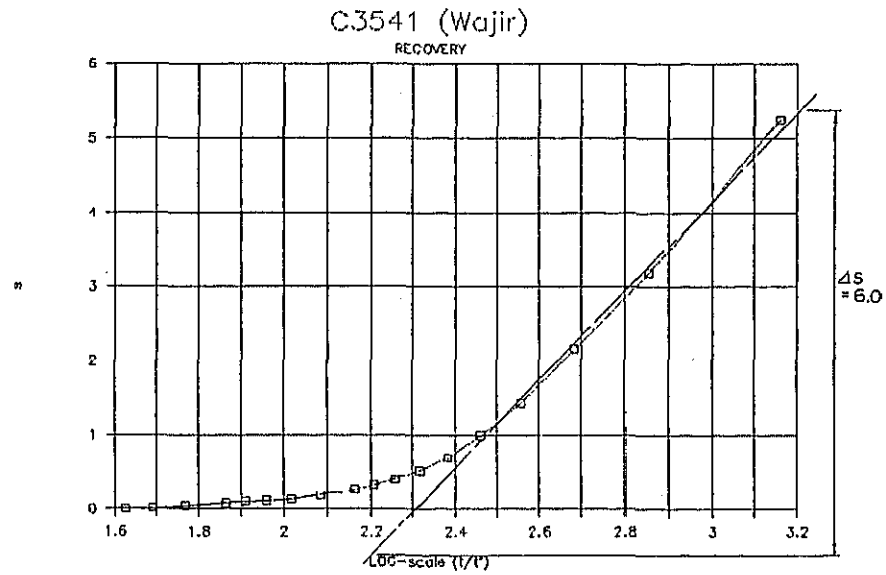
B.H.Name: Casing Dia.(mm) : 152 Date/Time,11/11/90, 18:00 (Pump Start)

Elapsed Time(min)	LOG(t'/r2)	Water l.	s=wl-s0	t/t'	LOG(t/t')	T=0.183Q*log(t/t')/s	T=0.183Q*log(t/t')/s
0		26.16				Q(m3/sec)= 1.45E-03	(m2/sec)
1	2.2384	22.30	5.25	1441.0	3.1587	1.60E-04 (m2/sec)	T(m2/sec)= 4.42E-05
2	2.5394	20.24	3.19	721.0	2.8579	2.38E-04	(cm2/sec)= 4.42E-01
3	2.7155	19.20	2.15	481.0	2.6821	3.31E-04	(m2/hr)= 1.59E-01
4	2.8404	18.48	1.43	361.0	2.5575	4.75E-04	(m2/day)= 3.82E+00
5	2.9373	18.04	0.99	289.0	2.4609	6.60E-04	
6	3.0165	17.74	0.69	241.0	2.3820	9.16E-04	avgQ= 1.45E-03
7	3.0835	17.57	0.52	206.7	2.3154	1.18E-03	(m3/sec)
8	3.1415	17.45	0.40	181.0	2.2577	1.50E-03	
9	3.1926	17.37	0.32	161.0	2.2068	1.83E-03	ds is one LOG(t/t')
10	3.2384	17.31	0.26	145.0	2.1614	2.21E-03	(by graph) 6.00
12	3.3176	17.24	0.19	121.0	2.0828	2.91E-03	(m)
14	3.3845	17.18	0.13	103.9	2.0164	4.12E-03	
16	3.4425	17.16	0.11	91.0	1.9590	4.73E-03	
18	3.4936	17.15	0.10	81.0	1.9085	5.07E-03	
20	3.5394	17.13	0.08	73.0	1.8633	6.18E-03	
25	3.6363	17.09	0.04	58.6	1.7679	1.17E-02	
30	3.7155	17.06	0.01	49.0	1.6902	4.49E-02	
35	3.7824	17.05	0.00	42.1	1.6247		

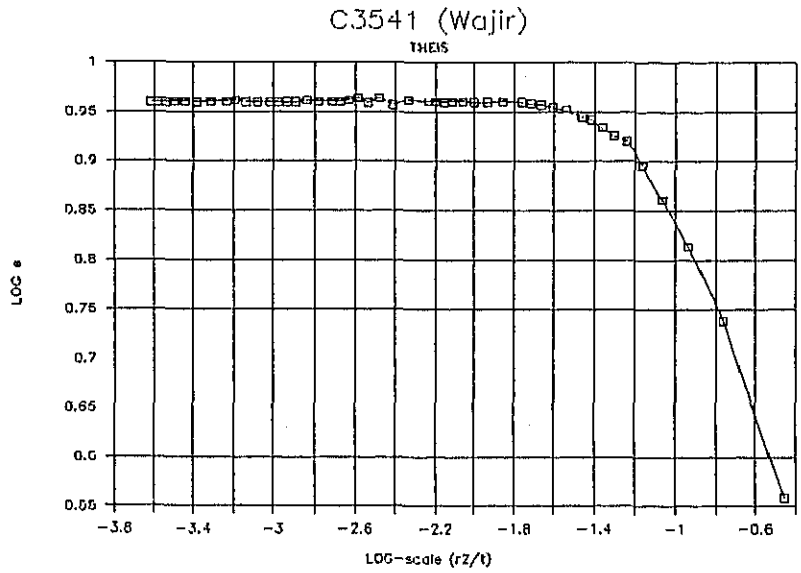


$\Delta S = 6.1$

$(t/r^2)_0 = 1.65$



$\Delta s = 6.0$



JACOB : GRAPH:s-LOG(t/r2) THEIS : GRAPH:LOG(s)-LOG (r2/t)

B.H. NO.: C3625 Marsabit
Owner : MOWD, Box 30521, Nairobi
Location: Laisamis District: Marsabit Area Laisamis
B.H.Name: Casing Dia.(mm) : 203 Date/Time:04/12/90/ 8.00 a.m
(Pump start)

Elapsed Time(min)	r(m)= LOG(t/r2)	0.102 LOG(r2/t) (m/sec)	Water l (m)	Drawdown s=s0-wl	LOG(s)	V-NOTCH H(cm)	Q (m3/sec)	T=0.183Q*log(t/r2)/s Q(m3/sec)
0			5.61					
1	1.9871	-0.2089	6.85	1.24	0.0934	8.0	2.53E-03	7.43E-04
2	2.2881	-0.5099	7.74	2.13	0.3284	8.0	2.53E-03	4.98E-04
3	2.4642	-0.6860	8.16	2.55	0.4065	8.0	2.53E-03	4.48E-04
4	2.5891	-0.8110	8.31	2.70	0.4314	8.0	2.53E-03	4.45E-04
5	2.6860	-0.9079	8.39	2.78	0.4440	8.0	2.53E-03	4.48E-04
6	2.7652	-0.9871	8.50	2.89	0.4609	8.0	2.53E-03	4.44E-04
7	2.8322	-1.0540	8.64	3.03	0.4814	8.0	2.53E-03	4.33E-04
8	2.8902	-1.1120	8.75	3.14	0.4969	8.0	2.53E-03	4.27E-04
9	2.9413	-1.1632	8.84	3.23	0.5092	8.0	2.53E-03	4.22E-04
10	2.9871	-1.2089	8.89	3.28	0.5159	8.0	2.53E-03	4.22E-04
12	3.0662	-1.2881	8.89	3.28	0.5159	8.0	2.53E-03	4.34E-04
14	3.1332	-1.3550	9.09	3.48	0.5416	8.0	2.53E-03	4.18E-04
16	3.1912	-1.4130	9.15	3.54	0.5490	8.0	2.53E-03	4.18E-04
18	3.2423	-1.4642	9.20	3.59	0.5551	8.0	2.53E-03	4.19E-04
20	3.2881	-1.5099	9.22	3.61	0.5575	8.0	2.53E-03	4.22E-04
25	3.3850	-1.6069	9.40	3.79	0.5786	8.0	2.53E-03	4.14E-04
30	3.4642	-1.6860	9.46	3.85	0.5855	8.0	2.53E-03	4.17E-04
35	3.5311	-1.7530	9.50	3.89	0.5899	8.0	2.53E-03	4.21E-04
40	3.5891	-1.8110	9.54	3.93	0.5944	8.0	2.53E-03	4.24E-04
45	3.6403	-1.8621	9.56	3.95	0.5966	8.0	2.53E-03	4.27E-04
50	3.6860	-1.9079	9.57	3.96	0.5977	8.0	2.53E-03	4.32E-04
55	3.7274	-1.9493	9.60	3.99	0.6010	8.0	2.53E-03	4.33E-04
60	3.7652	-1.9871	9.61	4.00	0.6021	8.0	2.53E-03	4.37E-04
75	3.8621	-2.0840	9.63	4.02	0.6042	8.0	2.53E-03	4.46E-04
90	3.9413	-2.1632	9.66	4.05	0.6075	8.0	2.53E-03	4.51E-04
105	4.0083	-2.2301	9.70	4.09	0.6117	8.0	2.53E-03	4.55E-04
120	4.0662	-2.2881	9.72	4.11	0.6138	8.0	2.53E-03	4.59E-04
135	4.1174	-2.3393	9.75	4.14	0.6170	8.0	2.53E-03	4.61E-04
150	4.1632	-2.3850	9.78	4.17	0.6201	8.0	2.53E-03	4.63E-04
165	4.2046	-2.4264	9.82	4.21	0.6243	8.0	2.53E-03	4.63E-04
180	4.2423	-2.4642	9.85	4.24	0.6274	8.0	2.53E-03	4.64E-04
210	4.3093	-2.5311	9.88	4.27	0.6304	8.0	2.53E-03	4.68E-04
240	4.3673	-2.5891	9.90	4.29	0.6325	8.0	2.53E-03	4.72E-04
270	4.4184	-2.6403	10.06	4.45	0.6484	8.0	2.53E-03	4.60E-04
300	4.4642	-2.6860	10.17	4.56	0.6590	8.0	2.53E-03	4.54E-04
330	4.5056	-2.7274	10.24	4.63	0.6656	8.0	2.53E-03	4.51E-04
360	4.5434	-2.7652	10.27	4.66	0.6684	8.0	2.53E-03	4.52E-04
420	4.6103	-2.8322	10.34	4.73	0.6749	8.0	2.53E-03	4.52E-04
480	4.6683	-2.8902	10.42	4.81	0.6821	8.0	2.53E-03	4.50E-04
540	4.7195	-2.9413	10.47	4.86	0.6866	8.0	2.53E-03	4.50E-04
600	4.7652	-2.9871	10.52	4.91	0.6911	8.0	2.53E-03	4.50E-04
720	4.8444	-3.0662	10.53	4.92	0.6920	8.0	2.53E-03	4.57E-04
840	4.9113	-3.1332	10.56	4.95	0.6946	8.0	2.53E-03	4.60E-04
960	4.9693	-3.1912	10.60	4.99	0.6981	8.0	2.53E-03	4.62E-04
1080	5.0205	-3.2423	10.66	5.05	0.7033	8.0	2.53E-03	4.61E-04
1200	5.0662	-3.2881	10.69	5.08	0.7059	8.0	2.53E-03	4.63E-04
1320	5.1076	-3.3295	10.72	5.11	0.7084	8.0	2.53E-03	4.64E-04
1440	5.1454	-3.3673	10.73	5.12	0.7093	8.0	2.53E-03	4.66E-04
							2.53E-03 (avgQ)	

Transmissibility

T=2.3*Q/(4pi*ds)
(m2/sec)
T(m2/sec)= 2.90E-04
(cm2/sec)= 2.90E+00
(m2/min) 1.74E-02
(m2/day)= 2.50E+01

avgQ= 2.53E-03
m3/sec

ds:one cycle of LOG(t/r2)
(by graph=LOG(t/r2)
ds= 1.60

Storage coefficient

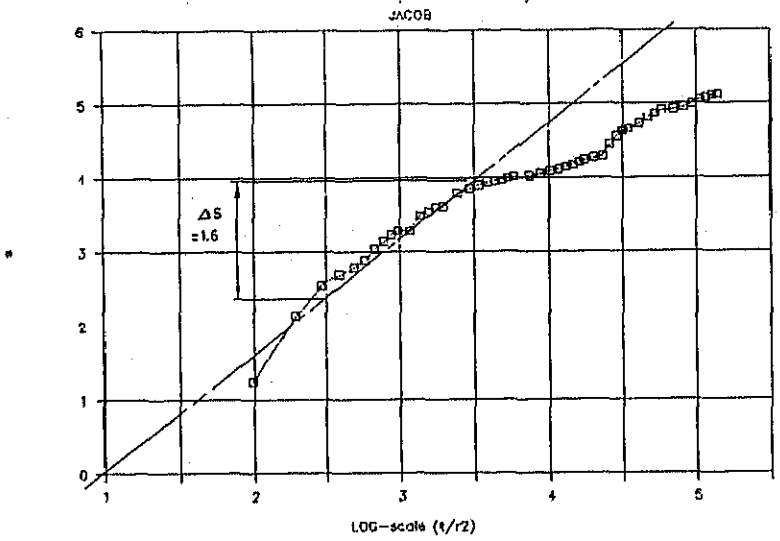
S=2.25T(t/r2)o
(t/r2)o= 1.00
S= 3.91E-02

RECOVERY GRAPH : s-LOG(t/t')

B.H. NO.: C3625 Marsabit
Owner : MOWD, Box 30521, Nairobi
Location: Laisamis District: Marsabit Area Laisamis
B.H.Name: Casing Dia.(mm) : 203 Date/Time:04/12/90/ 8.00 a.m
(Pump start)

Elapsed Time(min)	LOG(t'/r2)	Water l.	s=wl-s0	t/t'	LOG(t/t')	T=0.183Q*log(t/t')/s	T=0.183Q*log(t/t')/s
0		10.73				Q(m3/sec)= 2.53E-03	(m2/sec)
1	1.9871	8.13	2.52	1441.0	3.1587	5.81E-04 (m2/sec)	T(m2/sec)= 2.90E-04
2	2.2881	7.68	2.07	721.0	2.8579	6.40E-04	(cm2/sec)= 2.90E+00
3	2.4642	7.42	1.81	481.0	2.6821	6.87E-04	(m2/hr)= 1.04E+00
4	2.5891	7.26	1.65	361.0	2.5575	7.19E-04	(m2/day)= 2.50E+01
5	2.6860	7.18	1.57	289.0	2.4609	7.27E-04	
6	2.7652	7.10	1.49	241.0	2.3820	7.41E-04	avgQ= 2.53E-03
7	2.8322	7.06	1.45	206.7	2.3154	7.41E-04	(m3/sec)
8	2.8902	7.03	1.42	181.0	2.2577	7.37E-04	
9	2.9413	6.99	1.38	161.0	2.2068	7.42E-04	ds is one LOG(t/t')
10	2.9871	6.96	1.35	145.0	2.1614	7.43E-04	(by graph) 1.60
12	3.0662	6.89	1.28	121.0	2.0828	7.55E-04	(m)
14	3.1332	6.87	1.26	103.9	2.0164	7.42E-04	
16	3.1912	6.83	1.22	91.0	1.9590	7.45E-04	
18	3.2423	6.81	1.20	81.0	1.9085	7.38E-04	
20	3.2881	6.77	1.16	73.0	1.8633	7.45E-04	
25	3.3850	6.73	1.12	58.6	1.7679	7.32E-04	
30	3.4642	6.68	1.07	49.0	1.6902	7.33E-04	
35	3.5311	6.64	1.03	42.1	1.6247	7.32E-04	
40	3.5891	6.59	0.98	37.0	1.5682	7.42E-04	
45	3.6403	6.57	0.96	33.0	1.5185	7.34E-04	
50	3.6860	6.52	0.91	29.8	1.4742	7.51E-04	
55	3.7274	6.51	0.90	27.2	1.4343	7.39E-04	
60	3.7652	6.47	0.86	25.0	1.3979	7.54E-04	
75	3.8621	6.45	0.84	20.2	1.3054	7.21E-04	
90	3.9413	6.34	0.73	17.0	1.2304	7.82E-04	
105	4.0083	6.29	0.68	14.7	1.1677	7.96E-04	
120	4.0662	6.25	0.64	13.0	1.1139	8.07E-04	
135	4.1174	6.22	0.61	11.7	1.0669	8.11E-04	
150	4.1632	6.18	0.57	10.6	1.0253	8.34E-04	
165	4.2046	6.12	0.51	9.7	0.9880	8.98E-04	
180	4.2423	6.09	0.48	9.0	0.9542	9.22E-04	
210	4.3093	6.03	0.42	7.9	0.8953	9.89E-04	
240	4.3673	6.00	0.39	7.0	0.8451	1.00E-03	
270	4.4184	5.95	0.34	6.3	0.8016	1.09E-03	
300	4.4642	5.92	0.31	5.8	0.7634	1.14E-03	
330	4.5056	5.91	0.30	5.4	0.7295	1.13E-03	
360	4.5434	5.88	0.27	5.0	0.6990	1.20E-03	
420	4.6103	5.87	0.26	4.4	0.6463	1.15E-03	
480	4.6683	5.85	0.24	4.0	0.6021	1.16E-03	
540	4.7195	5.83	0.22	3.7	0.5643	1.19E-03	
600	4.7652	5.81	0.20	3.4	0.5315	1.23E-03	
720	4.8444	5.80	0.19	3.0	0.4771	1.16E-03	

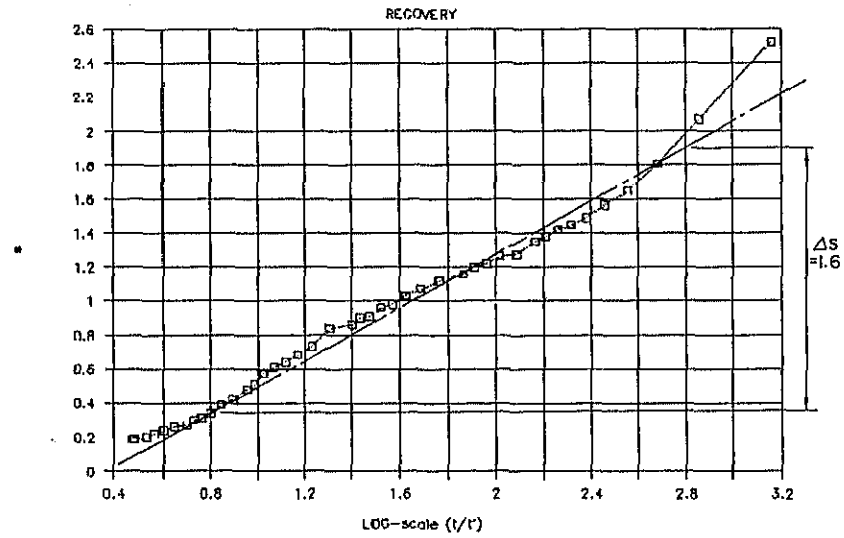
C3625 (Marsabit)



$\Delta S = 1.6$

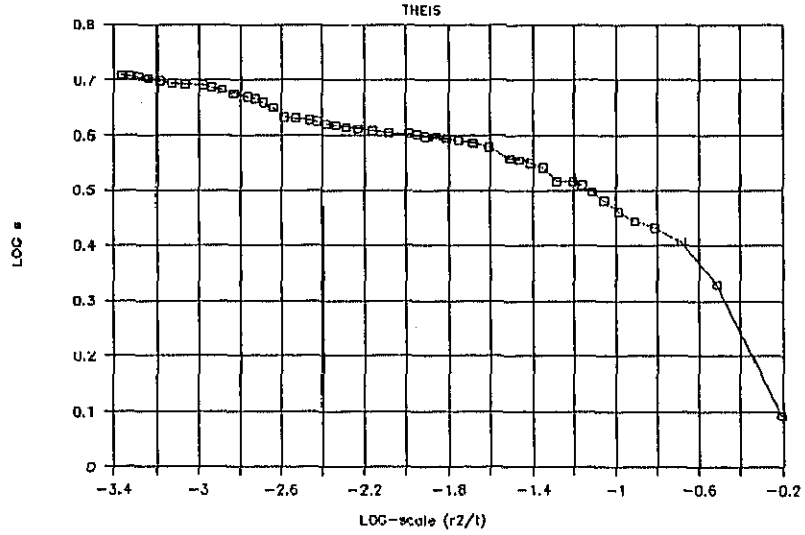
$(t/r^2)_0 = 1.0$

C3625 Marsabit



$\Delta S = 1.6$

C3625 Marsabit



JACOB : GRAPH:s-LOG(t/r2) THEIS : GRAPH:LOG(s)-LOG (r2/t)

B.H. NO.: C3660 (Uasin Gishu)

Owner : EATEC(Navillus Estates), Box 20, Soy, Eldoret

Location: Turbo District: Uasin Gishu Area Soy

B.H.Name: Casing Dia.(mm) : 152 Date/Time:12/11/90, 23/11/90/ 08.20 hrs (Pump start)

Elapsed Time(min)	r(m)= LOG(t/r2)	0.076 LOG(r2/t) (m/sec)	Water 1 (m)	Drawdown s=s0-wl	LOG(s)	V-NOTCH H(cm)	Q (m3/sec)	T=0.183Q*log(t/r2)/s Q(m3/sec)
0			44.34					
1	2.2384	-0.4602	48.41	4.07	0.6096	4.0	4.48E-04	4.51E-05 (m2/sec)
2	2.5394	-0.7613	48.82	4.48	0.6513	4.0	4.48E-04	4.65E-05
3	2.7155	-0.9373	49.10	4.76	0.6776	4.0	4.48E-04	4.68E-05
4	2.8404	-1.0623	49.33	4.99	0.6981	4.0	4.48E-04	4.67E-05
5	2.9373	-1.1592	49.80	5.46	0.7372	4.0	4.48E-04	4.41E-05
6	3.0165	-1.2384	50.04	5.70	0.7559	4.0	4.48E-04	4.34E-05
7	3.0835	-1.3053	50.11	5.77	0.7612	4.0	4.48E-04	4.38E-05
8	3.1415	-1.3633	50.18	5.84	0.7664	4.0	4.48E-04	4.41E-05
9	3.1926	-1.4145	50.20	5.86	0.7679	4.0	4.48E-04	4.47E-05
10	3.2384	-1.4602	50.25	5.91	0.7716	4.0	4.48E-04	4.49E-05
12	3.3176	-1.5394	50.30	5.96	0.7752	4.0	4.48E-04	4.56E-05
14	3.3845	-1.6063	50.35	6.01	0.7789	5.1	8.22E-04	8.47E-05
16	3.4425	-1.6643	50.48	6.14	0.7882	6.0	1.23E-03	1.27E-04
18	3.4936	-1.7155	50.63	6.29	0.7987	6.5	1.51E-03	1.53E-04
20	3.5394	-1.7613	50.72	6.38	0.8048	6.5	1.51E-03	1.53E-04
25	3.6363	-1.8582	50.79	6.45	0.8096	6.5	1.51E-03	1.56E-04
30	3.7155	-1.9373	51.10	6.76	0.8299	6.5	1.51E-03	1.52E-04
35	3.7824	-2.0043	51.13	6.79	0.8319	6.5	1.51E-03	1.54E-04
40	3.8404	-2.0623	51.21	6.87	0.8370	6.5	1.51E-03	1.54E-04
45	3.8916	-2.1134	51.68	7.34	0.8657	7.2	1.95E-03	1.89E-04
50	3.9373	-2.1592	53.71	9.37	0.9717	7.3	2.02E-03	1.55E-04
55	3.9787	-2.2006	54.07	9.73	0.9881	7.3	2.02E-03	1.51E-04
60	4.0165	-2.2384	54.28	9.94	0.9974	7.7	2.30E-03	1.70E-04
75	4.1134	-2.3353	54.81	10.47	1.0199	7.7	2.30E-03	1.66E-04
90	4.1926	-2.4145	54.93	10.59	1.0249	7.8	2.38E-03	1.72E-04
105	4.2596	-2.4814	55.28	10.94	1.0390	7.7	2.30E-03	1.64E-04
120	4.3176	-2.5394	55.39	11.05	1.0434	7.7	2.30E-03	1.65E-04
135	4.3687	-2.5906	55.81	11.47	1.0596	7.7	2.30E-03	1.61E-04
150	4.4145	-2.6363	56.15	11.81	1.0722	7.8	2.38E-03	1.63E-04
165	4.4559	-2.6777	56.44	12.10	1.0828	7.5	2.16E-03	1.45E-04
180	4.4936	-2.7155	56.38	12.04	1.0806	7.6	2.23E-03	1.52E-04
210	4.5606	-2.7824	56.54	12.20	1.0864	7.7	2.30E-03	1.58E-04
240	4.6186	-2.8404	56.92	12.58	1.0997	7.0	1.81E-03	1.22E-04
270	4.6697	-2.8916	57.04	12.70	1.1038	7.4	2.09E-03	1.40E-04
300	4.7155	-2.9373	57.32	12.98	1.1133	7.0	1.81E-03	1.21E-04
330	4.7569	-2.9787	57.52	13.18	1.1199	7.0	1.81E-03	1.20E-04
360	4.7947	-3.0165	57.71	13.37	1.1261	7.0	1.81E-03	1.19E-04
420	4.8616	-3.0835	58.19	13.85	1.1414	7.0	1.81E-03	1.17E-04
480	4.9196	-3.1415	58.60	14.26	1.1541	7.0	1.81E-03	1.15E-04
540	4.9708	-3.1926	58.66	14.32	1.1559	7.0	1.81E-03	1.15E-04
600	5.0165	-3.2384	58.80	14.46	1.1602	7.0	1.81E-03	1.15E-04
720	5.0957	-3.3176	60.00	15.66	1.1948	7.0	1.81E-03	1.08E-04
840	5.1627	-3.3845	60.30	15.96	1.2030	7.0	1.81E-03	1.07E-04
960	5.2206	-3.4425	60.65	16.31	1.2125	7.0	1.81E-03	1.06E-04
1080	5.2718	-3.4936	60.51	16.17	1.2087	7.0	1.81E-03	1.08E-04
1200	5.3176	-3.5394	61.15	16.81	1.2256	7.0	1.81E-03	1.05E-04
1320	5.3589	-3.5808	61.23	16.89	1.2276	7.0	1.81E-03	1.05E-04
1440	5.3967	-3.6186	61.50	17.16	1.2345	7.0	1.81E-03	1.04E-04
							1.55E-03 (avgQ)	

Transmissibility

T=2.3*Q/(4pi*ds)

(m2/sec)

T(m2/sec)= 6.29E-05

(cm2/sec)= 6.29E-01

(m2/min) 3.78E-03

(m2/day)= 5.44E+00

avgQ= 1.55E-03 m3/sec

ds:one cycle of LOG(t/r2)

(by graph=LOG(t/r2)

ds= 4.50

Storage coefficient

S=2.25T(t/r2)o

(t/r2)o= 1.80

S= 1.53E-02

RECOVERY GRAPH : s-LOG(t/t')

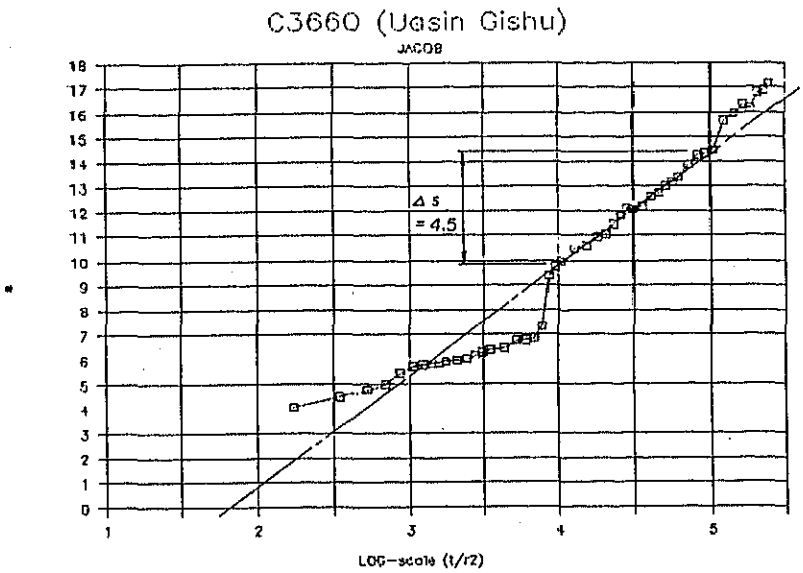
B.H. NO.: C3660 (Uasin Gishu)

Owner : EATEC(Navillus Estates), Box 20, Soy, Eldoret

Location: Turbo District: Uasin Gishu Area Soy

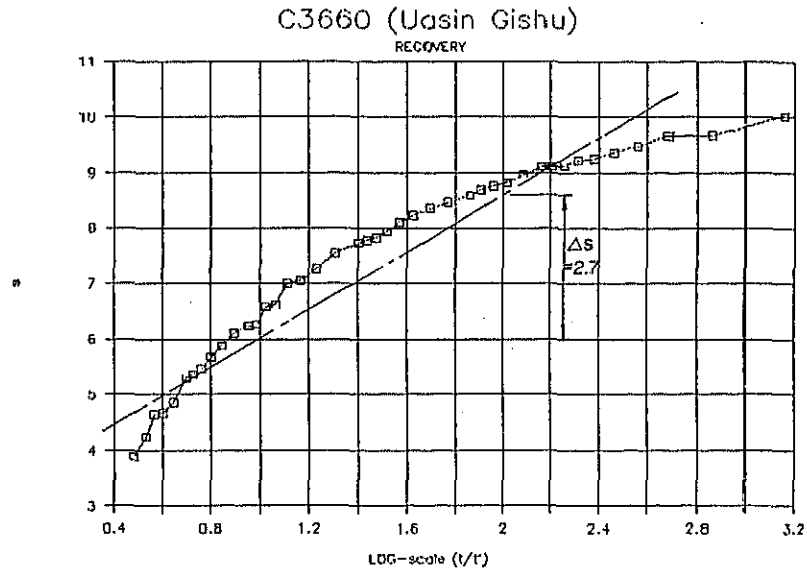
B.H.Name: Casing Dia.(mm) : 152 Date/Time:12/11/90, 23/11/90/ 08.20 hrs (Pump start)

Elapsed Time(min)	LOG(t'/r2)	Water l.	s=wl-s0	t/t'	LOG(t/t')	T=0.183Q*log(t/t')/s	
0		61.50				Q(m3/sec)= 1.55E-03	(m2/sec)
1	2.2384	54.36	10.02	1441.0	3.1587	8.93E-05 (m2/sec)	T(m2/sec)= 1.05E-04
2	2.5394	54.00	9.66	721.0	2.8579	8.38E-05	(cm2/sec)= 1.05E+00
3	2.7155	53.99	9.65	481.0	2.6821	7.87E-05	(m2/hr)= 3.78E-01
4	2.8404	53.81	9.47	361.0	2.5575	7.65E-05	(m2/day)= 9.06E+00
5	2.9373	53.70	9.36	289.0	2.4609	7.45E-05	
6	3.0165	53.59	9.25	241.0	2.3820	7.29E-05	avgQ= 1.55E-03
7	3.0835	53.55	9.21	206.7	2.3154	7.12E-05	(m3/sec)
8	3.1415	53.46	9.12	181.0	2.2577	7.01E-05	
9	3.1926	53.45	9.11	161.0	2.2068	6.86E-05	ds is one LOG(t/t')
10	3.2384	53.45	9.11	145.0	2.1614	6.72E-05	(by graph) 2.70
12	3.3176	53.30	8.96	121.0	2.0828	6.58E-05	(m)
14	3.3845	53.16	8.82	103.9	2.0164	6.47E-05	
16	3.4425	53.10	8.76	91.0	1.9590	6.33E-05	
18	3.4936	53.04	8.70	81.0	1.9085	6.21E-05	
20	3.5394	52.93	8.59	73.0	1.8633	6.14E-05	
25	3.6363	52.80	8.46	58.8	1.7679	5.92E-05	
30	3.7155	52.70	8.36	49.0	1.6902	5.73E-05	
35	3.7824	52.56	8.22	42.1	1.6247	5.60E-05	
40	3.8404	52.45	8.11	37.0	1.5682	5.48E-05	
45	3.8916	52.28	7.94	33.0	1.5185	5.42E-05	
50	3.9373	52.17	7.83	29.8	1.4742	5.33E-05	
55	3.9787	52.12	7.78	27.2	1.4343	5.22E-05	
60	4.0165	52.07	7.73	25.0	1.3979	5.12E-05	
75	4.1134	51.89	7.55	20.2	1.3054	4.90E-05	
90	4.1926	51.60	7.26	17.0	1.2304	4.80E-05	
105	4.2596	51.39	7.05	14.7	1.1677	4.69E-05	
120	4.3176	51.34	7.00	13.0	1.1139	4.51E-05	
135	4.3687	50.96	6.62	11.7	1.0669	4.56E-05	
150	4.4145	50.92	6.58	10.6	1.0253	4.41E-05	
165	4.4559	50.60	6.26	9.7	0.9880	4.47E-05	
180	4.4936	50.58	6.24	9.0	0.9542	4.33E-05	
210	4.5606	50.44	6.10	7.9	0.8953	4.16E-05	
240	4.6186	50.22	5.88	7.0	0.8451	4.07E-05	
270	4.6697	50.02	5.68	6.3	0.8016	4.00E-05	
300	4.7155	49.80	5.46	5.8	0.7634	3.96E-05	
330	4.7569	49.71	5.37	5.4	0.7295	3.85E-05	
360	4.7947	49.65	5.31	5.0	0.6990	3.73E-05	
420	4.8616	49.21	4.87	4.4	0.6463	3.76E-05	
480	4.9196	49.01	4.67	4.0	0.6021	3.65E-05	
540	4.9708	48.98	4.64	3.7	0.5643	3.44E-05	
600	5.0165	48.58	4.24	3.4	0.5315	3.55E-05	
720	5.0957	48.22	3.88	3.0	0.4771	3.48E-05	

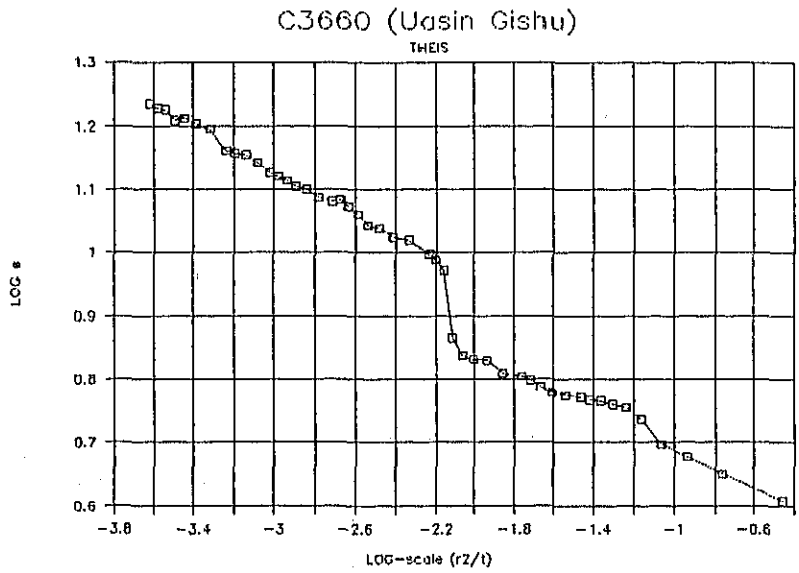


$\Delta s = 4.5$

$(t/r^2)_0 = 1.8$



$\Delta s = 2.7$



JACOB : GRAPH:s-LOG(t/r2) THEIS : GRAPH:LOG(s)-LOG (r2/t)

B.H. NO.: C3682 (Marsabit)
Owner : MOWD, Box 30521, Nairobi
Location: Laisamis District: Marsabit Area Logologo
B.H.Name: Casing Dia.(mm) : 203 Date/Time:30/11/90/ 9.00 a.m
(Pump start)

Elapsed Time(min)	r(m)= LOG(t/r2)	0.102 LOG(r2/t) (m/sec)	Water l (m)	Drawdown s=s0-wl	LOG(s)	V-NOTCH H(cm)	Q (m3/sec)	T=0.183Q*log(t/r2)/s Q(m3/sec)
0			92.29					
1	1.9871	-0.2089	94.34	2.05	0.3118	10.5	5.00E-03	8.87E-04 (m2/sec)
2	2.2881	-0.5099	94.34	2.05	0.3118	10.5	5.00E-03	1.02E-03
3	2.4642	-0.6860	94.24	1.95	0.2900	10.5	5.00E-03	1.16E-03
4	2.5891	-0.8110	94.18	1.89	0.2765	10.5	5.00E-03	1.25E-03
5	2.6860	-0.9079	94.18	1.89	0.2765	10.5	5.00E-03	1.30E-03
6	2.7652	-0.9871	94.18	1.89	0.2765	10.5	5.00E-03	1.34E-03
7	2.8322	-1.0540	94.18	1.89	0.2765	10.5	5.00E-03	1.37E-03
8	2.8902	-1.1120	94.17	1.88	0.2742	10.5	5.00E-03	1.41E-03
9	2.9413	-1.1632	94.17	1.88	0.2742	10.5	5.00E-03	1.43E-03
10	2.9871	-1.2089	94.13	1.84	0.2648	10.5	5.00E-03	1.49E-03
12	3.0662	-1.2881	94.13	1.84	0.2648	10.5	5.00E-03	1.53E-03
14	3.1332	-1.3550	94.13	1.84	0.2648	10.5	5.00E-03	1.56E-03
16	3.1912	-1.4130	94.12	1.83	0.2625	10.5	5.00E-03	1.60E-03
18	3.2423	-1.4642	94.10	1.81	0.2577	10.5	5.00E-03	1.64E-03
20	3.2881	-1.5099	94.10	1.81	0.2577	10.5	5.00E-03	1.66E-03
25	3.3850	-1.6069	94.10	1.81	0.2577	10.5	5.00E-03	1.71E-03
30	3.4642	-1.6860	94.10	1.81	0.2577	10.5	5.00E-03	1.75E-03
35	3.5311	-1.7530	94.08	1.79	0.2529	10.5	5.00E-03	1.81E-03
40	3.5891	-1.8110	94.07	1.78	0.2504	10.5	5.00E-03	1.85E-03
45	3.6403	-1.8621	94.06	1.77	0.2480	10.5	5.00E-03	1.88E-03
50	3.6860	-1.9079	94.06	1.77	0.2480	10.5	5.00E-03	1.91E-03
55	3.7274	-1.9493	94.06	1.77	0.2480	10.5	5.00E-03	1.93E-03
60	3.7652	-1.9871	94.06	1.77	0.2480	10.5	5.00E-03	1.95E-03
75	3.8621	-2.0840	94.05	1.76	0.2455	10.5	5.00E-03	2.01E-03
90	3.9413	-2.1632	94.05	1.76	0.2455	10.5	5.00E-03	2.05E-03
105	4.0083	-2.2301	94.05	1.76	0.2455	10.5	5.00E-03	2.08E-03
120	4.0662	-2.2881	94.05	1.76	0.2455	10.5	5.00E-03	2.11E-03
135	4.1174	-2.3393	94.05	1.76	0.2455	10.5	5.00E-03	2.14E-03
150	4.1632	-2.3850	94.05	1.76	0.2455	10.5	5.00E-03	2.17E-03
165	4.2046	-2.4264	94.05	1.76	0.2455	10.5	5.00E-03	2.19E-03
180	4.2423	-2.4642	94.05	1.76	0.2455	10.5	5.00E-03	2.21E-03
210	4.3093	-2.5311	94.02	1.73	0.2380	10.5	5.00E-03	2.28E-03
240	4.3673	-2.5891	94.01	1.72	0.2355	10.5	5.00E-03	2.32E-03
270	4.4184	-2.6403	94.01	1.72	0.2355	10.5	5.00E-03	2.35E-03
300	4.4642	-2.6860	93.99	1.70	0.2304	10.5	5.00E-03	2.40E-03
330	4.5056	-2.7274	93.99	1.70	0.2304	10.5	5.00E-03	2.43E-03
360	4.5434	-2.7652	93.99	1.70	0.2304	10.5	5.00E-03	2.45E-03
420	4.6103	-2.8322	93.99	1.70	0.2304	10.5	5.00E-03	2.48E-03
480	4.6683	-2.8902	93.98	1.69	0.2279	10.5	5.00E-03	2.53E-03
540	4.7195	-2.9413	93.98	1.69	0.2279	10.5	5.00E-03	2.56E-03
600	4.7652	-2.9871	93.98	1.69	0.2279	10.5	5.00E-03	2.58E-03
720	4.8444	-3.0662	93.97	1.68	0.2253	10.5	5.00E-03	2.64E-03
840	4.9113	-3.1332	93.97	1.68	0.2253	10.5	5.00E-03	2.68E-03
960	4.9693	-3.1912	93.97	1.68	0.2253	10.5	5.00E-03	2.71E-03
1080	5.0205	-3.2423	93.97	1.68	0.2253	10.5	5.00E-03	2.74E-03
1200	5.0662	-3.2881	93.97	1.68	0.2253	10.5	5.00E-03	2.76E-03
1320	5.1076	-3.3295	93.96	1.67	0.2227	10.5	5.00E-03	2.80E-03
1440	5.1454	-3.3673	93.96	1.67	0.2227	10.5	5.00E-03	2.82E-03
							5.00E-03 (avgQ)	

Transmissibility

T=2.3*Q/(4pi*ds)
(m2/sec)
T(m2/sec)=
(cm2/sec)=
(m2/min)
(m2/day)=

avgQ= 5.00E-03
m3/sec

ds:one cycle of LOG(t/r2)
(by graph=LOG(t/r2)
ds= 0.00

Storage coefficient

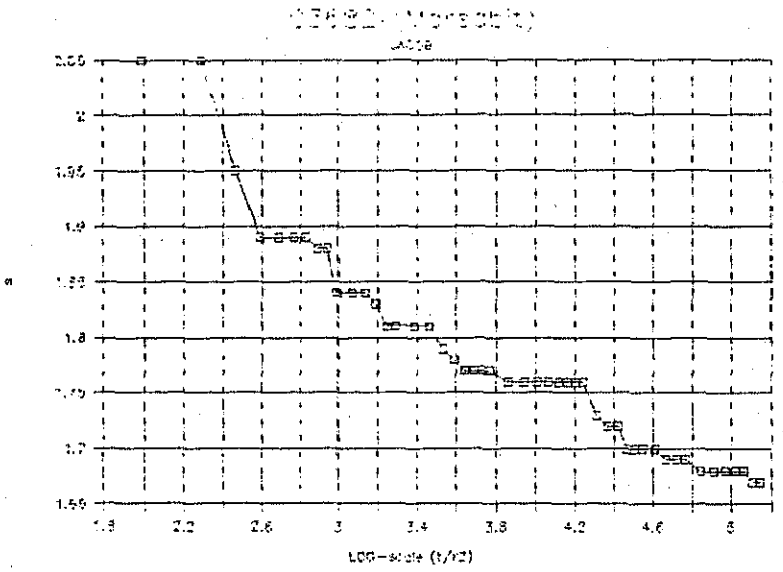
S=2.25T(t/r2)o
(t/r2)o=
S=

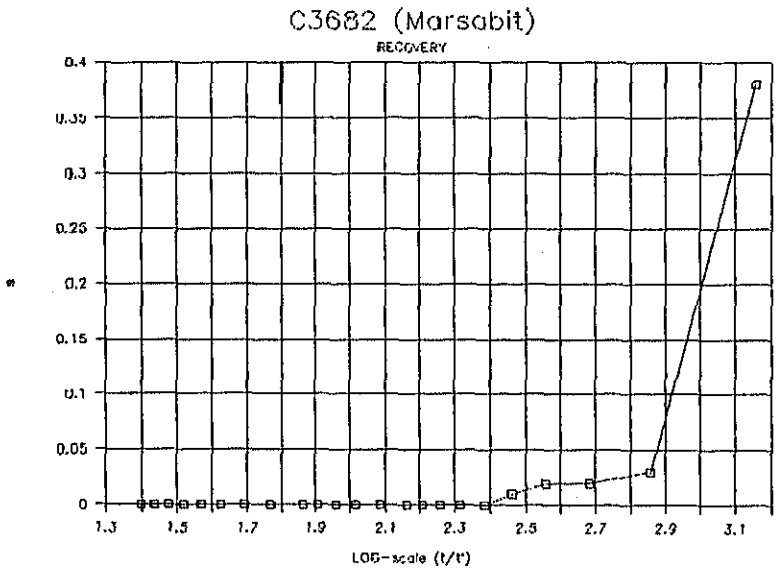
C3682 : This Borehole turned out to be very high yielding and even on pumping at maximum possible with the available pump at 18.3 m3/hr, the resulting drawdown appears to be effected by "Well-Losses" only.

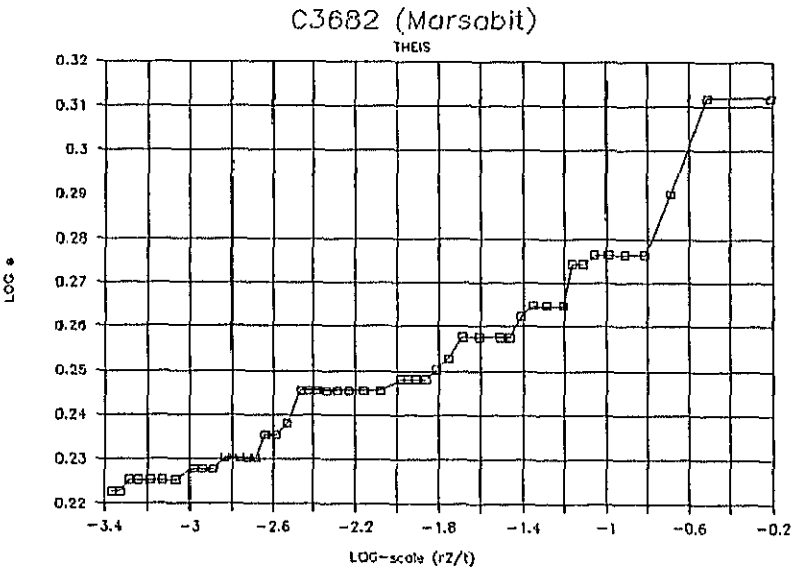
RECOVERY GRAPH : s-LOG(t/t')

B.H. NO.: C3682 (Marsabit)
Owner : MOWD, Box 30521, Nairobi
Location: Laisamis District: Marsabit Area Logologo
B.H.Name: Casing Dia.(mm) : 203 Date/Time:30/11/90/ 9.00 a.m
(Pump start)

Elapsed Time(min)	LOG(t'/r2)	Water l.	s=wl-s0	t/t'	LOG(t/t')	T=0.183Q*log(t/t')/s	T=0.183Q*log(t/t')/s
0		93.96				Q(m3/sec)= 5.00E-03	(m2/sec)
1	1.9871	92.67	0.38	1441.0	3.1587	7.61E-03 (m2/sec)	T(m2/sec)=
2	2.2881	92.32	0.03	721.0	2.8579	8.72E-02	(cm2/sec)=
3	2.4642	92.31	0.02	481.0	2.6821	1.23E-01	(m2/hr)=
4	2.5891	92.31	0.02	361.0	2.5575	1.17E-01	(m2/day)=
5	2.6860	92.30	0.01	289.0	2.4609	2.25E-01	
6	2.7652	92.29	0.00	241.0	2.3820		avgQ= 5.00E-03
7	2.8322	92.29	0.00	206.7	2.3154		(m3/sec)
8	2.8902	92.29	0.00	181.0	2.2577		
9	2.9413	92.29	0.00	161.0	2.2068		ds is one LOG(t/t')
10	2.9871	92.29	0.00	145.0	2.1614		(by graph)
12	3.0662	92.29	0.00	121.0	2.0828		(m)
14	3.1332	92.29	0.00	103.9	2.0164		
16	3.1912	92.29	0.00	91.0	1.9590		
18	3.2423	92.29	0.00	81.0	1.9085		
20	3.2881	92.29	0.00	73.0	1.8633		
25	3.3850	92.29	0.00	58.6	1.7679		
30	3.4642	92.29	0.00	49.0	1.6902		
35	3.5311	92.29	0.00	42.1	1.6247		
40	3.5891	92.29	0.00	37.0	1.5682		
45	3.6403	92.29	0.00	33.0	1.5185		
50	3.6860	92.29	0.00	29.8	1.4742		
55	3.7274	92.29	0.00	27.2	1.4343		
60	3.7652	92.29	0.00	25.0	1.3979		


LOG-scale (t/rZ)


C3682 (Marsabit)
RECOVERY
LOG-scale (t/t')


C3682 (Marsabit)
THEIS
LOG s
LOG-scale (rZ/t)

JACOB : GRAPH:s-LOG(t/r2) THEIS : GRAPH:LOG(s)-LOG (r2/t)

B.H. NO.: C3695 (Garissa)
Owner : MOWD, Box 31, Garissa
Location: Daadab District: Garissa Area Dadaab
B.H.Name: Casing Dia.(mm) : 152 Date/Time:14/12/90/4.00 p.m
(Pump start)

Elapsed Time(min)	r(n)= LOG(t/r2)	0.076 LOG(r2/t) (m/sec)	Water 1 (n) 107.50	Drawdown s=s0-wl	LOG(s)	V-NOTCH H(cm)	Q (m3/sec)		T=0.183Q*log(t/r2)/s Q(m3/sec)
0									
1	2.2384	-0.4602	108.42	0.92	-0.0362	5.9	1.18E-03		5.27E-04 (m2/sec)
2	2.5394	-0.7613	109.20	1.70	0.2304	5.9	1.18E-03		3.24E-04
3	2.7155	-0.9373	109.81	2.31	0.3636	5.9	1.18E-03		2.55E-04
4	2.8404	-1.0623	110.11	2.61	0.4166	5.9	1.18E-03		2.36E-04
5	2.9373	-1.1592	110.32	2.82	0.4502	5.9	1.18E-03		2.26E-04
6	3.0165	-1.2384	110.38	2.88	0.4594	5.9	1.18E-03		2.27E-04
7	3.0835	-1.3053	110.44	2.94	0.4683	5.9	1.18E-03		2.27E-04
8	3.1415	-1.3633	110.46	2.96	0.4713	5.9	1.18E-03		2.30E-04
9	3.1926	-1.4145	110.47	2.97	0.4728	5.9	1.18E-03		2.33E-04
10	3.2384	-1.4602	110.48	2.98	0.4742	5.9	1.18E-03		2.35E-04
12	3.3176	-1.5394	110.48	2.98	0.4742	5.9	1.18E-03		2.41E-04
14	3.3845	-1.6063	110.50	3.00	0.4771	5.9	1.18E-03		2.44E-04
16	3.4425	-1.6643	110.53	3.05	0.4843	5.9	1.18E-03		2.45E-04
18	3.4936	-1.7155	110.60	3.10	0.4914	5.9	1.18E-03		2.44E-04
20	3.5394	-1.7613	110.63	3.13	0.4955	5.9	1.18E-03		2.45E-04
25	3.6363	-1.8582	110.74	3.24	0.5105	5.9	1.18E-03		2.43E-04
30	3.7155	-1.9373	110.80	3.30	0.5185	5.9	1.18E-03		2.44E-04
35	3.7824	-2.0043	110.83	3.33	0.5224	5.9	1.18E-03		2.46E-04
40	3.8404	-2.0623	110.87	3.37	0.5276	5.9	1.18E-03		2.47E-04
45	3.8916	-2.1134	110.89	3.39	0.5302	5.9	1.18E-03		2.49E-04
50	3.9373	-2.1592	110.97	3.47	0.5403	5.9	1.18E-03		2.46E-04
55	3.9787	-2.2006	111.00	3.50	0.5441	5.9	1.18E-03		2.46E-04
60	4.0165	-2.2384	111.00	3.50	0.5441	5.9	1.18E-03		2.49E-04
75	4.1134	-2.3353	111.03	3.53	0.5478	5.9	1.18E-03		2.52E-04
90	4.1926	-2.4145	111.07	3.57	0.5527	5.9	1.18E-03		2.54E-04
105	4.2596	-2.4814	111.11	3.61	0.5575	5.9	1.18E-03		2.56E-04
120	4.3176	-2.5394	111.13	3.63	0.5599	5.9	1.18E-03		2.58E-04
135	4.3687	-2.5906	111.15	3.65	0.5623	5.9	1.18E-03		2.59E-04
150	4.4145	-2.6363	111.15	3.65	0.5623	5.9	1.18E-03		2.62E-04
165	4.4559	-2.6777	111.16	3.66	0.5635	5.9	1.18E-03		2.64E-04
180	4.4936	-2.7155	111.17	3.67	0.5647	5.9	1.18E-03		2.65E-04
210	4.5606	-2.7824	111.17	3.67	0.5647	5.9	1.18E-03		2.69E-04
240	4.6186	-2.8404	111.18	3.68	0.5658	5.9	1.18E-03		2.72E-04
270	4.6697	-2.8916	111.18	3.68	0.5658	5.9	1.18E-03		2.75E-04
300	4.7155	-2.9373	111.18	3.68	0.5658	5.9	1.18E-03		2.78E-04
330	4.7569	-2.9787	111.19	3.69	0.5670	5.9	1.18E-03		2.79E-04
360	4.7947	-3.0165	111.20	3.70	0.5682	5.9	1.18E-03		2.81E-04
420	4.8616	-3.0835	111.23	3.73	0.5717	5.9	1.18E-03		2.82E-04
480	4.9196	-3.1415	111.21	3.71	0.5694	5.9	1.18E-03		2.87E-04
540	4.9708	-3.1926	111.21	3.71	0.5694	5.9	1.18E-03		2.90E-04
600	5.0165	-3.2384	111.17	3.67	0.5647	5.9	1.18E-03		2.96E-04
720	5.0957	-3.3176	111.20	3.70	0.5682	5.9	1.18E-03		2.98E-04
840	5.1627	-3.3845	111.20	3.70	0.5682	5.9	1.18E-03		3.02E-04
960	5.2206	-3.4425	111.20	3.70	0.5682	5.9	1.18E-03		3.06E-04
1080	5.2718	-3.4936	111.17	3.67	0.5647	5.9	1.18E-03		3.11E-04
1200	5.3176	-3.5394	111.17	3.67	0.5647	5.9	1.18E-03		3.14E-04
1320	5.3589	-3.5808	111.17	3.67	0.5647	5.9	1.18E-03		3.16E-04
1440	5.3967	-3.6186	111.11	3.61	0.5575	5.9	1.18E-03		3.24E-04
							1.18E-03	(avgQ)	

Transmissibility

T=2.3*Q/(4pi*ds)
(m2/sec)
T(m2/sec)= 8.33E-05
(cm2/sec)= 8.33E-01
(m2/min) 5.00E-03
(m2/day)= 7.20E+00

avgQ= 1.18E-03
m3/sec

ds:one cycle of LOG(t/r2)
(by graph=LOG(t/r2)
ds= 2.60

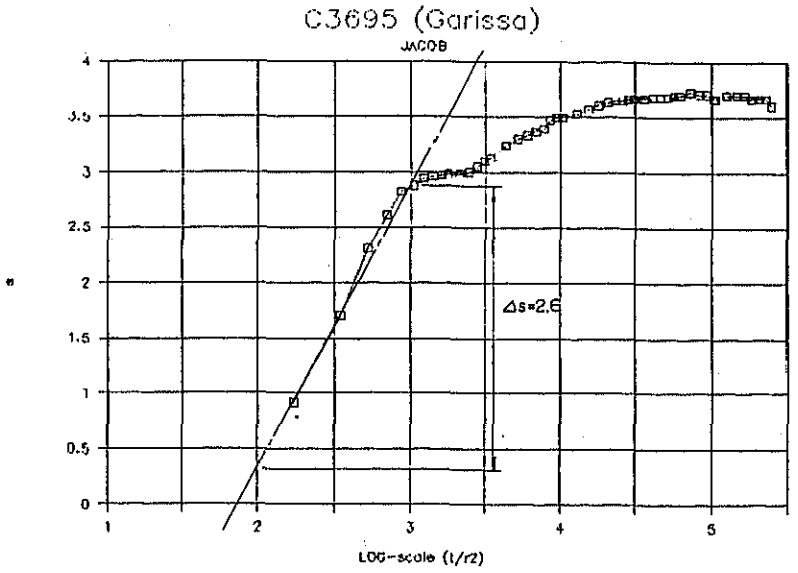
Storage coefficient

S=2.25T(t/r2)o
(t/r2)o= 1.85
S= 2.08E-02

RECOVERY GRAPH : s-LOG(t/t')

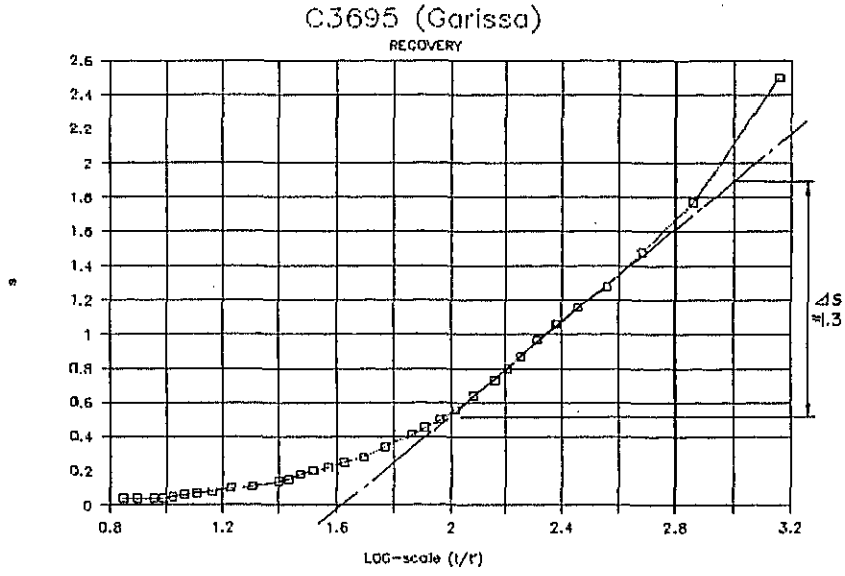
B.H. NO.: C3695 (Garissa)
Owner : MOWD, Box 31, Garissa
Location: Daadab District: Garissa Area Dadaab
B.H.Name: Casing Dia.(mm) : 152 Date/Time:14/12/90/4.00 p.m
(Pump start)

Elapsed Time(min)	LOG(t'/r2)	Water l.	s=wl-s0	t/t'	LOG(t/t')	T=0.183Q*log(t/t')/s	T=0.183Q*log(t/t')/s (m2/sec)
0		111.11				Q(m3/sec)= 1.18E-03	
1	2.2384	110.00	2.50	1441.0	3.1587	2.74E-04 (m2/sec)	T(m2/sec)= 1.67E-04
2	2.5394	109.27	1.77	721.0	2.8579	3.50E-04	(cm2/sec)= 1.67E+00
3	2.7155	108.98	1.48	481.0	2.6821	3.93E-04	(m2/hr)= 6.00E-01
4	2.8404	108.78	1.28	361.0	2.5575	4.33E-04	(m2/day)= 1.44E+01
5	2.9373	108.66	1.16	289.0	2.4609	4.60E-04	
6	3.0165	108.56	1.06	241.0	2.3820	4.87E-04	avgQ= 1.18E-03
7	3.0835	108.47	0.97	206.7	2.3154	5.17E-04	(m3/sec)
8	3.1415	108.37	0.87	181.0	2.2577	5.62E-04	
9	3.1926	108.30	0.80	161.0	2.2068	5.98E-04	ds is one LOG(t/t')
10	3.2384	108.23	0.73	145.0	2.1614	6.41E-04	(by graph) 1.30
12	3.3176	108.14	0.64	121.0	2.0828	7.05E-04	(m)
14	3.3845	108.06	0.56	103.9	2.0164	7.80E-04	
16	3.4425	108.00	0.50	91.0	1.9580	8.49E-04	
18	3.4936	107.95	0.45	81.0	1.9085	9.19E-04	
20	3.5394	107.91	0.41	73.0	1.8633	9.84E-04	
25	3.6363	107.84	0.34	58.6	1.7679	1.13E-03	
30	3.7155	107.78	0.28	49.0	1.6902	1.31E-03	
35	3.7824	107.75	0.25	42.1	1.6247	1.41E-03	
40	3.8404	107.72	0.22	37.0	1.5682	1.54E-03	
45	3.8916	107.70	0.20	33.0	1.5185	1.64E-03	
50	3.9373	107.68	0.18	29.8	1.4742	1.77E-03	
55	3.9787	107.65	0.15	27.2	1.4343	2.07E-03	
60	4.0165	107.64	0.14	25.0	1.3979	2.16E-03	
75	4.1134	107.61	0.11	20.2	1.3054	2.57E-03	
90	4.1926	107.60	0.10	17.0	1.2304	2.67E-03	
105	4.2596	107.58	0.08	14.7	1.1677	3.16E-03	
120	4.3176	107.57	0.07	13.0	1.1139	3.45E-03	
135	4.3687	107.56	0.06	11.7	1.0669	3.85E-03	
150	4.4145	107.55	0.05	10.6	1.0253	4.44E-03	
165	4.4559	107.54	0.04	9.7	0.9880	5.35E-03	
180	4.4936	107.54	0.04	9.0	0.9542	5.17E-03	
210	4.5606	107.54	0.04	7.9	0.8953	4.85E-03	
240	4.6186	107.54	0.04	7.0	0.8451	4.58E-03	

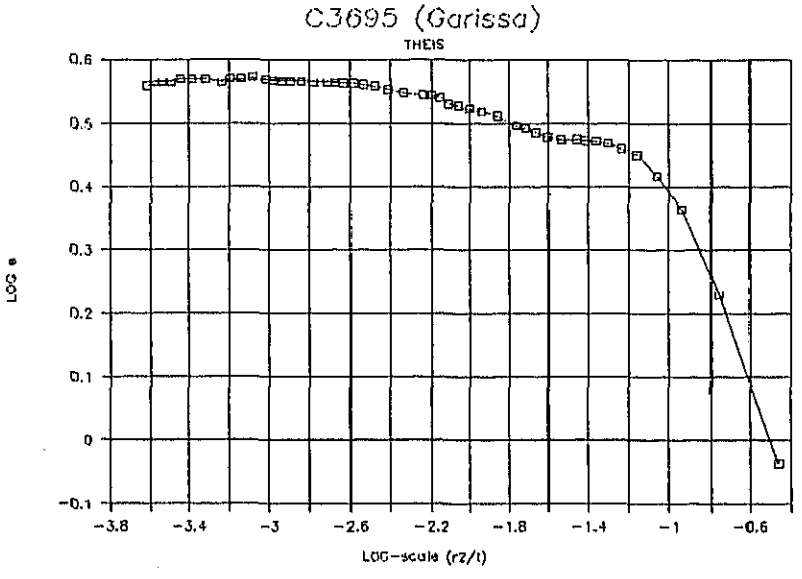


Δs = 2.6

$(T/r^2)_0 = 1.85$



Δs = 1.3



JACOB : GRAPH:s-LOG(t/r2) THEIS : GRAPH:LOG(s)-LOG (r2/t)

B.H. NO.: C3813 (Machakos)
Owner : Sikh Temple, Box 43, Makindu
Location: Makindu District: Machakos Area Makindu Town
B.H.Name: Casing Dia.(mm) : 152 Date/Time:22/01/91,07:00
(Pump start)

Elapsed Time(min)	r(m)= LOG(t/r2)	0.076 LOG(r2/t) (m/sec)	Water l (m) 18.05	Drawdown s=s0-wl	LOG(s)	V-NOTCH H(cm)	Q (m3/sec)	T=0.183Q*log(t/r2)/s Q(m3/sec)
0								
1	2.2384	-0.4602	18.45	0.40	-0.3979	4.5	6.01E-04	6.16E-04 (m2/sec)
2	2.5394	-0.7613	18.52	0.47	-0.3279	4.5	6.01E-04	5.95E-04
3	2.7155	-0.9373	18.64	0.59	-0.2291	4.5	6.01E-04	5.07E-04
4	2.8404	-1.0623	18.73	0.68	-0.1675	4.5	6.01E-04	4.60E-04
5	2.9373	-1.1592	18.79	0.74	-0.1308	4.5	6.01E-04	4.37E-04
6	3.0165	-1.2384	18.84	0.79	-0.1024	4.5	6.01E-04	4.20E-04
7	3.0835	-1.3053	18.89	0.84	-0.0757	4.5	6.01E-04	4.04E-04
8	3.1415	-1.3633	18.91	0.86	-0.0655	4.5	6.01E-04	4.02E-04
9	3.1926	-1.4145	18.95	0.90	-0.0458	4.5	6.01E-04	3.90E-04
10	3.2384	-1.4602	18.97	0.92	-0.0362	4.5	6.01E-04	3.87E-04
12	3.3176	-1.5394	19.01	0.96	-0.0177	4.5	6.01E-04	3.80E-04
14	3.3845	-1.6063	19.04	0.99	-0.0044	4.5	6.01E-04	3.76E-04
16	3.4425	-1.6643	19.08	1.03	0.0128	4.5	6.01E-04	3.68E-04
18	3.4936	-1.7155	19.12	1.07	0.0294	4.5	6.01E-04	3.59E-04
20	3.5394	-1.7613	19.14	1.09	0.0374	4.5	6.01E-04	3.57E-04
25	3.6383	-1.8582	19.20	1.15	0.0607	4.5	6.01E-04	3.48E-04
30	3.7155	-1.9373	19.23	1.18	0.0719	4.5	6.01E-04	3.47E-04
35	3.7824	-2.0043	19.26	1.21	0.0828	4.5	6.01E-04	3.44E-04
40	3.8404	-2.0623	19.28	1.24	0.0934	4.5	6.01E-04	3.41E-04
45	3.8916	-2.1134	19.32	1.27	0.1038	4.5	6.01E-04	3.37E-04
50	3.9373	-2.1592	19.33	1.28	0.1072	4.5	6.01E-04	3.39E-04
55	3.9787	-2.2006	19.35	1.30	0.1139	4.5	6.01E-04	3.37E-04
60	4.0165	-2.2384	19.36	1.31	0.1173	4.5	6.01E-04	3.37E-04
75	4.1134	-2.3353	19.38	1.33	0.1239	4.5	6.01E-04	3.40E-04
90	4.1926	-2.4145	19.40	1.35	0.1303	4.5	6.01E-04	3.42E-04
105	4.2596	-2.4814	19.41	1.36	0.1335	4.5	6.01E-04	3.45E-04
120	4.3176	-2.5394	19.42	1.36	0.1351	4.5	6.01E-04	3.48E-04
135	4.3687	-2.5906	19.42	1.37	0.1367	4.5	6.01E-04	3.51E-04
150	4.4145	-2.6363	19.43	1.38	0.1383	4.5	6.01E-04	3.53E-04
165	4.4559	-2.6777	19.43	1.38	0.1399	4.5	6.01E-04	3.55E-04
180	4.4936	-2.7155	19.43	1.38	0.1399	4.5	6.01E-04	3.58E-04
210	4.5606	-2.7824	19.44	1.38	0.1414	4.5	6.01E-04	3.62E-04
240	4.6186	-2.8404	19.44	1.39	0.1430	4.5	6.01E-04	3.66E-04
270	4.6697	-2.8916	19.45	1.39	0.1446	4.5	6.01E-04	3.68E-04
300	4.7155	-2.9373	19.45	1.40	0.1461	4.5	6.01E-04	3.71E-04
330	4.7569	-2.9787	19.45	1.40	0.1461	4.5	6.01E-04	3.74E-04
360	4.7947	-3.0165	19.46	1.40	0.1477	4.5	6.01E-04	3.76E-04
420	4.8616	-3.0835	19.46	1.41	0.1492	4.5	6.01E-04	3.79E-04
480	4.9196	-3.1415	19.47	1.41	0.1508	4.5	6.01E-04	3.83E-04
540	4.9708	-3.1926	19.47	1.42	0.1523	4.5	6.01E-04	3.85E-04
600	5.0165	-3.2384	19.48	1.43	0.1538	4.5	6.01E-04	3.87E-04
720	5.0957	-3.3176	19.48	1.43	0.1553	4.5	6.01E-04	3.92E-04
840	5.1627	-3.3845	19.49	1.43	0.1569	4.5	6.01E-04	3.96E-04
960	5.2206	-3.4425	19.49	1.44	0.1584	4.5	6.01E-04	3.99E-04
1080	5.2718	-3.4936	19.50	1.45	0.1599	4.5	6.01E-04	4.02E-04
1200	5.3176	-3.5394	19.50	1.45	0.1614	4.5	6.01E-04	4.04E-04
1320	5.3589	-3.5808	19.50	1.45	0.1614	4.5	6.01E-04	4.07E-04
1440	5.3967	-3.6186	19.50	1.45	0.1614	4.5	6.01E-04	4.10E-04
							6.01E-04 (avgQ)	

Transmissibility

T=2.3*Q/(4pi*ds)
(m2/sec)
T(m2/sec)= 1.83E-04
(cm2/sec)= 1.83E+00
(m2/min) 1.10E-02
(m2/day)= 1.59E+01

avgQ= 6.01E-04
m3/sec

ds:one cycle of LOG(t/r2)
(by graph=LOG(t/r2)
ds= 0.60

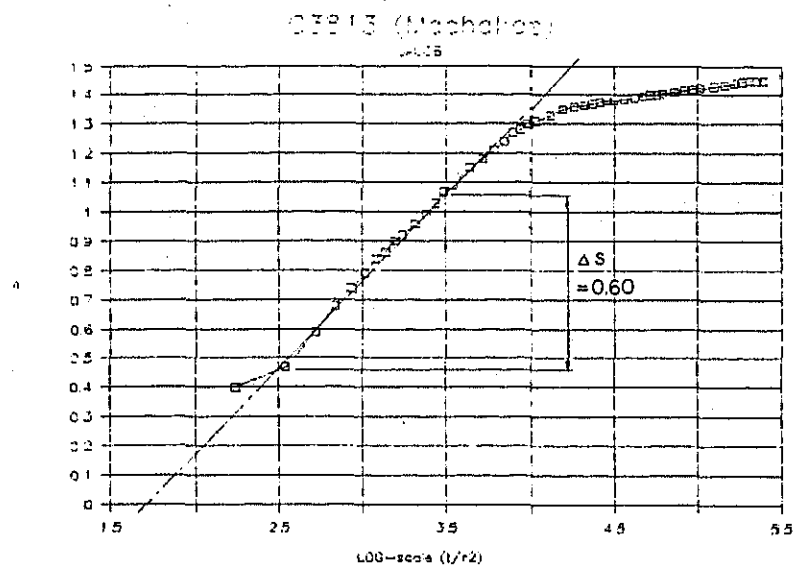
Storage coefficient

S=2.25T(t/r2)o
(t/r2)o= 1.70
S= 4.21E-02

RECOVERY GRAPH : s-LOG(t/t')

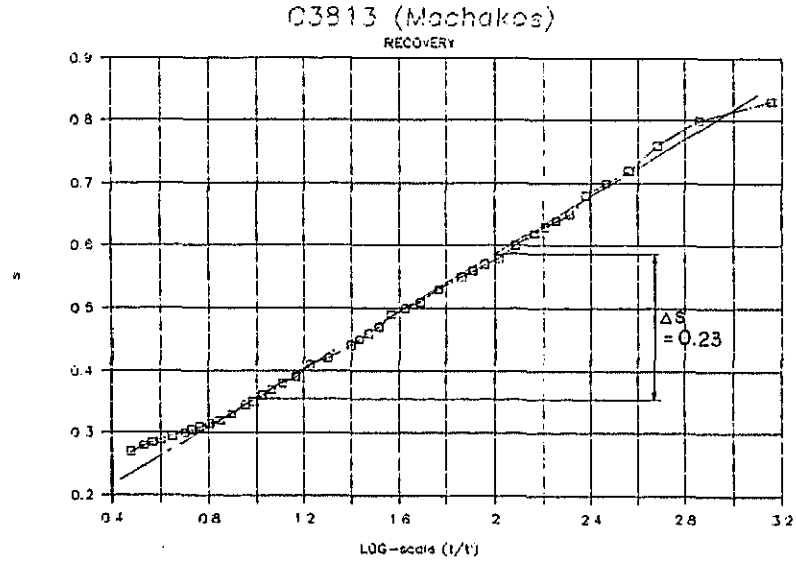
B.H. NO.: C3813 (Machakos)
Owner : Sikh Temple, Box 43, Makindu
Location: Makindu District: Machakos Area Makindu Town
B.H.Name: Casing Dia.(mm) : 152 Date/Time:22/01/91,07:00
(Pump start)

Elapsed Time(min)	LOG(t'/r2)	Water l.	s=wl-s0	t/t'	LOG(t/t')	T=0.183Q*log(t/t')/s	T=0.183Q*log(t/t')/s
0		19.50				Q(m3/sec)= 6.01E-04	(m2/sec)
1	2.2384	18.88	0.83	1441.0	3.1587	4.19E-04 (m2/sec)	T(m2/sec)= 4.79E-04
2	2.5394	18.85	0.80	721.0	2.8579	3.93E-04	(cm2/sec)= 4.79E+00
3	2.7155	18.81	0.76	481.0	2.6821	3.88E-04	(m2/hr)= 1.72E+00
4	2.8404	18.77	0.72	361.0	2.5575	3.91E-04	(m2/day)= 4.13E+01
5	2.9373	18.75	0.70	289.0	2.4609	3.87E-04	
6	3.0165	18.73	0.68	241.0	2.3820	3.86E-04	avgQ= 6.01E-04
7	3.0835	18.70	0.65	206.7	2.3154	3.92E-04	(m3/sec)
8	3.1415	18.69	0.64	181.0	2.2577	3.88E-04	
9	3.1926	18.68	0.63	161.0	2.2068	3.86E-04	ds is one LOG(t/t')
10	3.2384	18.67	0.62	145.0	2.1614	3.84E-04	(by graph) 0.23
12	3.3176	18.65	0.60	121.0	2.0828	3.82E-04	(m)
14	3.3845	18.63	0.58	103.9	2.0164	3.83E-04	
16	3.4425	18.62	0.57	91.0	1.9590	3.78E-04	
18	3.4936	18.61	0.56	81.0	1.9085	3.75E-04	
20	3.5394	18.60	0.55	73.0	1.8633	3.73E-04	
25	3.6363	18.58	0.53	58.6	1.7679	3.67E-04	
30	3.7155	18.56	0.51	49.0	1.6902	3.65E-04	
35	3.7824	18.55	0.50	42.1	1.6247	3.58E-04	
40	3.8404	18.54	0.49	37.0	1.5682	3.52E-04	
45	3.8916	18.52	0.47	33.0	1.5185	3.56E-04	
50	3.9373	18.51	0.46	29.8	1.4742	3.53E-04	
55	3.9787	18.50	0.45	27.2	1.4343	3.51E-04	
60	4.0165	18.49	0.44	25.0	1.3979	3.50E-04	
75	4.1134	18.47	0.42	20.2	1.3054	3.42E-04	
90	4.1926	18.46	0.41	17.0	1.2304	3.30E-04	
105	4.2596	18.44	0.39	14.7	1.1677	3.30E-04	
120	4.3176	18.43	0.38	13.0	1.1139	3.23E-04	
135	4.3687	18.42	0.37	11.7	1.0669	3.17E-04	
150	4.4145	18.41	0.36	10.6	1.0253	3.13E-04	
165	4.4559	18.40	0.35	9.7	0.9880	3.11E-04	
180	4.4936	18.40	0.34	9.0	0.9542	3.04E-04	
210	4.5606	18.38	0.33	7.9	0.8953	2.99E-04	
240	4.6186	18.37	0.32	7.0	0.8451	2.91E-04	
270	4.6697	18.37	0.31	6.3	0.8016	2.80E-04	
300	4.7155	18.36	0.31	5.8	0.7634	2.71E-04	
330	4.7569	18.36	0.30	5.4	0.7295	2.63E-04	
360	4.7947	18.35	0.30	5.0	0.6990	2.56E-04	
420	4.8616	18.35	0.29	4.4	0.6463	2.41E-04	
480	4.9196	18.34	0.29	4.0	0.6021	2.28E-04	
540	4.9708	18.34	0.29	3.7	0.5643	2.18E-04	
600	5.0165	18.33	0.28	3.4	0.5315	2.09E-04	
720	5.0957	18.32	0.27	3.0	0.4771	1.94E-04	

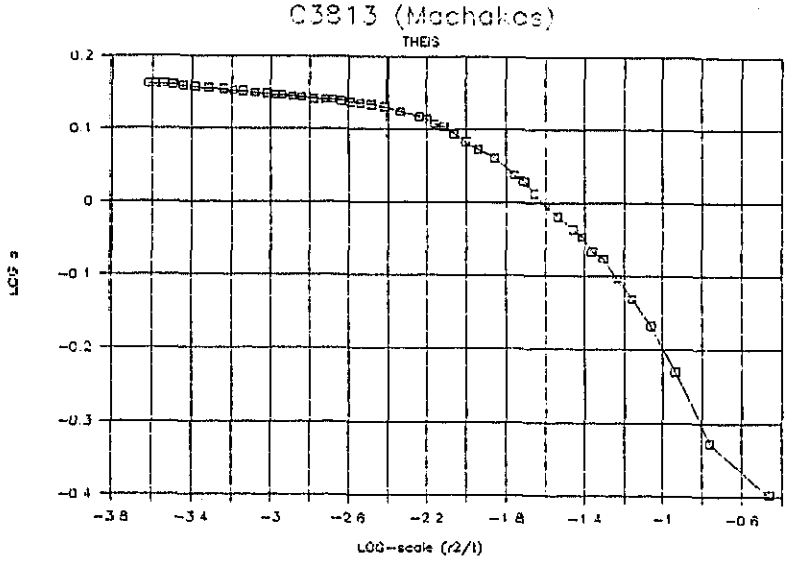


$\Delta S = 0.60$

$(t/r^2)_0 = 1.70$



$\Delta S = 0.23$



JACOB : GRAPH:s-LOG(t/r2) THEIS : GRAPH:LOG(s)-LOG (r2/t)

B.H. NO.: C3861 (Mandera)
Owner : MOWD, Box 45, Mandera
Location: Fino District: Mandera Area Lafey
B.H.Name: Casing Dia.(mm) : 152 Date/Time:12/11/90, 27/11/90/ 12.30
(Pump start)

Elapsed Time(min)	r(m)= LOG(t/r2)	0.076 LOG(r2/t) (m/sec)	Water l (m)	Drawdown s=s0-wl	LOG(s)	V-NOTCH H(cm)	Q (m3/sec)	T=0.183Q*log(t/r2)/s Q(m3/sec)
0			50.24					
1	2.2384	-0.4602	52.08	1.84	0.2648	4.5	6.01E-04	1.34E-04 (m2/sec)
2	2.5394	-0.7613	53.73	3.49	0.5428	4.5	6.01E-04	8.01E-05
3	2.7155	-0.9373	54.47	4.23	0.6263	4.5	6.01E-04	7.07E-05
4	2.8404	-1.0623	55.37	5.13	0.7101	4.5	6.01E-04	6.09E-05
5	2.9373	-1.1592	56.11	5.87	0.7686	4.5	6.01E-04	5.51E-05
6	3.0165	-1.2384	56.74	6.50	0.8129	4.5	6.01E-04	5.11E-05
7	3.0835	-1.3053	57.14	6.90	0.8388	4.5	6.01E-04	4.92E-05
8	3.1415	-1.3633	57.52	7.28	0.8621	4.5	6.01E-04	4.75E-05
9	3.1926	-1.4145	57.92	7.68	0.8854	4.5	6.01E-04	4.58E-05
10	3.2384	-1.4602	58.32	8.08	0.9074	4.5	6.01E-04	4.41E-05
12	3.3176	-1.5394	58.76	8.52	0.9304	4.5	6.01E-04	4.29E-05
14	3.3845	-1.6063	59.08	8.84	0.9465	4.5	6.01E-04	4.21E-05
16	3.4425	-1.6643	59.39	9.15	0.9614	4.5	6.01E-04	4.14E-05
18	3.4936	-1.7155	59.68	9.44	0.9750	4.5	6.01E-04	4.07E-05
20	3.5394	-1.7613	59.82	9.58	0.9814	4.5	6.01E-04	4.07E-05
25	3.6363	-1.8582	60.24	10.00	1.0000	4.5	6.01E-04	4.00E-05
30	3.7155	-1.9373	60.66	10.42	1.0179	4.5	6.01E-04	3.92E-05
35	3.7824	-2.0043	61.03	10.79	1.0330	4.5	6.01E-04	3.86E-05
40	3.8404	-2.0623	61.35	11.11	1.0457	4.5	6.01E-04	3.80E-05
45	3.8916	-2.1134	61.61	11.37	1.0558	4.5	6.01E-04	3.77E-05
50	3.9373	-2.1592	61.80	11.56	1.0630	4.5	6.01E-04	3.75E-05
55	3.9787	-2.2006	62.00	11.76	1.0704	4.5	6.01E-04	3.72E-05
60	4.0165	-2.2384	62.15	11.91	1.0759	4.5	6.01E-04	3.71E-05
75	4.1134	-2.3353	62.65	12.41	1.0938	4.5	6.01E-04	3.65E-05
90	4.1926	-2.4145	62.86	12.72	1.1045	4.5	6.01E-04	3.63E-05
105	4.2596	-2.4814	63.22	12.98	1.1133	4.5	6.01E-04	3.61E-05
120	4.3176	-2.5394	63.38	13.14	1.1186	4.5	6.01E-04	3.62E-05
135	4.3687	-2.5906	63.54	13.30	1.1239	4.5	6.01E-04	3.62E-05
150	4.4145	-2.6363	63.72	13.48	1.1297	4.5	6.01E-04	3.60E-05
165	4.4559	-2.6777	63.72	13.48	1.1297	4.5	6.01E-04	3.64E-05
180	4.4936	-2.7155	63.90	13.66	1.1355	4.5	6.01E-04	3.62E-05
210	4.5606	-2.7824	64.07	13.83	1.1408	4.5	6.01E-04	3.63E-05
240	4.6186	-2.8404	64.23	13.99	1.1458	4.5	6.01E-04	3.63E-05
270	4.6697	-2.8916	64.39	14.15	1.1508	4.5	6.01E-04	3.63E-05
300	4.7155	-2.9373	64.47	14.23	1.1532	4.5	6.01E-04	3.65E-05
330	4.7569	-2.9787	64.56	14.32	1.1559	4.5	6.01E-04	3.66E-05
360	4.7947	-3.0165	64.64	14.40	1.1584	4.5	6.01E-04	3.66E-05
420	4.8616	-3.0835	64.79	14.55	1.1629	4.5	6.01E-04	3.68E-05
480	4.9196	-3.1415	64.96	14.72	1.1679	4.5	6.01E-04	3.68E-05
540	4.9708	-3.1926	65.11	14.87	1.1723	4.5	6.01E-04	3.68E-05
600	5.0165	-3.2384	65.31	15.07	1.1781	4.5	6.01E-04	3.66E-05
720	5.0957	-3.3176	65.51	15.27	1.1838	4.5	6.01E-04	3.67E-05
840	5.1627	-3.3845	65.76	15.52	1.1909	4.5	6.01E-04	3.66E-05
960	5.2206	-3.4425	66.10	15.86	1.2003	4.5	6.01E-04	3.62E-05
1080	5.2718	-3.4936	66.20	15.96	1.2030	4.5	6.01E-04	3.64E-05
1200	5.3176	-3.5394	66.36	16.12	1.2074	4.5	6.01E-04	3.63E-05
1320	5.3589	-3.5808	66.42	16.18	1.2090	4.5	6.01E-04	3.65E-05
1440	5.3967	-3.6186	66.45	16.21	1.2098	4.5	6.01E-04	3.66E-05
							6.01E-04 (avgQ)	

Transmissibility

T=2.3*Q/(4pi*ds)
(m2/sec)
T(m2/sec)= 1.87E-05
(cm2/sec)= 1.87E-01
(m2/min) 1.12E-03
(m2/day)= 1.61E+00

avgQ= 6.01E-04
m3/sec

ds:one cycle of LOG(t/r2)
(by graph=LOG(t/r2)
ds= 5.90

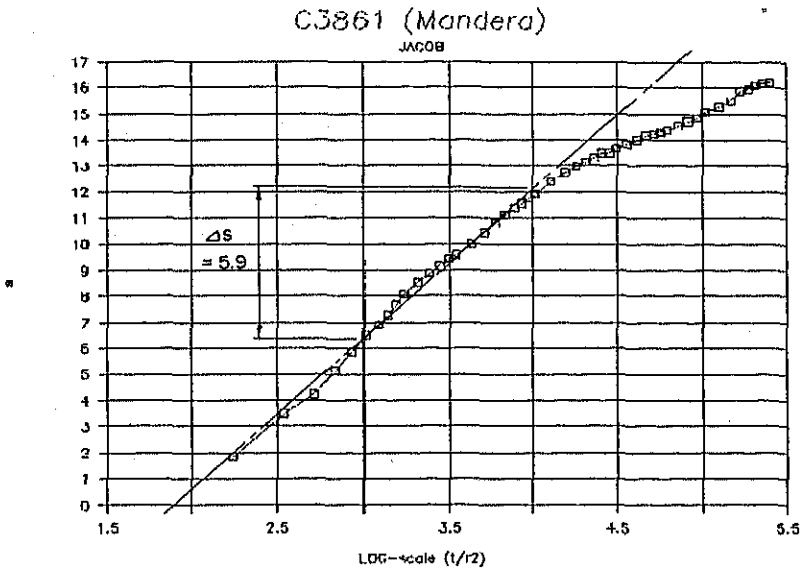
Storage coefficient

S=2.25T(t/r2)o
(t/r2)o= 1.90
S= 4.79E-03

RECOVERY GRAPH : s-LOG(t/t')

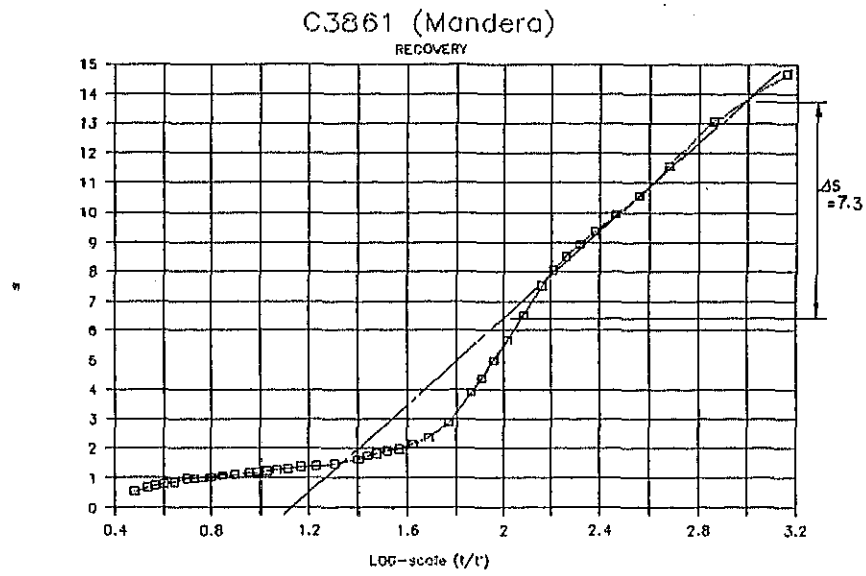
B.H. NO.: C3861 (Mandera)
Owner : MOWD, Box 45, Mandera
Location: Fino District: Mandera Area Lafey
B.H.Name: Casing Dia.(mm) : 152 Date/Time:12/11/90, 27/11/90/ 12.30
(Pump start)

Elapsed Time(min)	LOG(t'/r2)	Water l.	s=wl-s0	t/t'	LOG(t/t')	T=0.183Q*log(t/t')/s	T=0.183Q*log(t/t')/s
0		66.45				Q(m3/sec)= 6.01E-04	(m2/sec)
1	2.2384	64.90	14.66	1441.0	3.1587	2.37E-05 (m2/sec)	T(m2/sec)= 1.51E-05
2	2.5394	63.31	13.07	721.0	2.8579	2.41E-05	(cm2/sec)= 1.51E-01
3	2.7155	61.82	11.58	481.0	2.6821	2.55E-05	(m2/hr)= 5.43E-02
4	2.8404	60.80	10.56	361.0	2.5575	2.67E-05	(m2/day)= 1.30E+00
5	2.9373	60.18	9.94	289.0	2.4609	2.72E-05	
6	3.0165	59.62	9.38	241.0	2.3820	2.79E-05	avgQ= 6.01E-04
7	3.0835	59.17	8.93	206.7	2.3154	2.85E-05	(m3/sec)
8	3.1415	58.77	8.53	181.0	2.2577	2.91E-05	
9	3.1926	58.28	8.04	161.0	2.2068	3.02E-05	ds is one LOG(t/t')
10	3.2384	57.77	7.53	145.0	2.1614	3.16E-05	(by graph) 7.30
12	3.3176	56.78	6.54	121.0	2.0828	3.50E-05	(m)
14	3.3845	55.92	5.68	103.9	2.0164	3.91E-05	
16	3.4425	55.23	4.99	91.0	1.9590	4.32E-05	
18	3.4936	54.63	4.39	81.0	1.9085	4.78E-05	
20	3.5394	54.14	3.90	73.0	1.8633	5.26E-05	
25	3.6363	53.12	2.88	58.8	1.7679	6.76E-05	
30	3.7155	52.62	2.38	49.0	1.6902	7.82E-05	
35	3.7824	52.40	2.16	42.1	1.6247	8.28E-05	
40	3.8404	52.22	1.98	37.0	1.5682	8.72E-05	
45	3.8916	52.18	1.94	33.0	1.5185	8.61E-05	
50	3.9373	52.08	1.84	29.8	1.4742	8.82E-05	
55	3.9787	52.00	1.76	27.2	1.4343	8.97E-05	
60	4.0165	51.87	1.63	25.0	1.3979	9.44E-05	
75	4.1134	51.71	1.47	20.2	1.3054	9.77E-05	
90	4.1926	51.64	1.40	17.0	1.2304	9.67E-05	
105	4.2596	51.62	1.38	14.7	1.1677	9.31E-05	
120	4.3176	51.56	1.32	13.0	1.1139	9.29E-05	
135	4.3687	51.52	1.28	11.7	1.0669	9.17E-05	
150	4.4145	51.49	1.25	10.6	1.0253	9.03E-05	
165	4.4559	51.44	1.20	9.7	0.9880	9.06E-05	
180	4.4936	51.42	1.18	9.0	0.9542	8.90E-05	
210	4.5606	51.36	1.12	7.9	0.8953	8.80E-05	
240	4.6186	51.33	1.09	7.0	0.8451	8.53E-05	
270	4.6697	51.28	1.04	6.3	0.8016	8.48E-05	
300	4.7155	51.27	1.03	5.8	0.7634	8.16E-05	
330	4.7569	51.23	0.99	5.4	0.7295	8.11E-05	
360	4.7947	51.21	0.97	5.0	0.6990	7.93E-05	
420	4.8616	51.11	0.87	4.4	0.6463	8.18E-05	
480	4.9196	51.06	0.82	4.0	0.6021	8.08E-05	
540	4.9708	51.00	0.76	3.7	0.5643	8.17E-05	
600	5.0165	50.93	0.69	3.4	0.5315	8.48E-05	
720	5.0957	50.80	0.56	3.0	0.4771	9.38E-05	

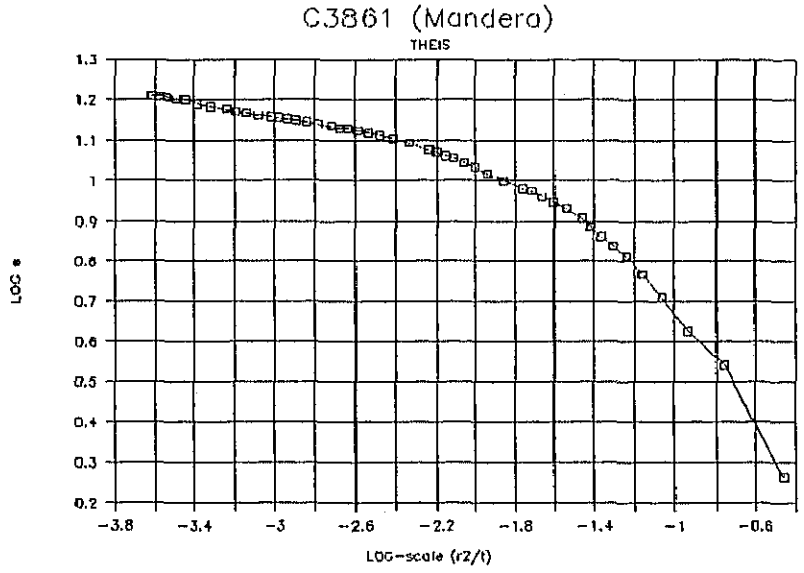


Δs 5.9

$(t/r^2)_0 = 1.9$



Δs = 7.3



JACOB GRAPH:s-LOG(t/r2) THEIS GRAPH:LOG(s)-LOG (r2/t)

B.H. NO.: C3899 (Wajir)
Owner : MOWD, P.O. Box 41, Wajir
Location: Central District Wajir Area Tarbaj
B.H.Name: Casing Dia.(mm) : 152 Date/Time:04/11/90, 10:15
(Pump start)

Elapsed Time(min)	r(n)= LOG(t/r2)	0.076 LOG(r2/t) (n/sec)	Water l (m)	Drawdown s=s0-wl	LOG(s)	V-NOTCH H(cm)	Q (m3/sec)	T=0.183Q*log(t/r2)/s Q(m3/sec)
0			31.49					
1	2.2384	-0.4602	38.16	6.67	0.8241	10.0	4.43E-03	2.72E-04 (n2/sec)
2	2.5394	-0.7613	40.42	8.93	0.9509	10.0	4.43E-03	2.30E-04
3	2.7155	-0.9373	41.56	10.07	1.0030	10.0	4.43E-03	2.18E-04
4	2.8404	-1.0623	42.10	10.61	1.0257	10.0	4.43E-03	2.17E-04
5	2.9373	-1.1592	42.54	11.05	1.0434	10.0	4.43E-03	2.15E-04
6	3.0165	-1.2384	42.63	11.14	1.0469	10.0	4.43E-03	2.19E-04
7	3.0835	-1.3053	43.18	11.69	1.0678	10.0	4.43E-03	2.14E-04
8	3.1415	-1.3633	43.24	11.75	1.0700	10.0	4.43E-03	2.17E-04
9	3.1926	-1.4145	43.32	11.83	1.0730	10.0	4.43E-03	2.19E-04
10	3.2384	-1.4602	43.35	11.86	1.0741	10.0	4.43E-03	2.21E-04
12	3.3176	-1.5394	43.52	12.03	1.0803	10.0	4.43E-03	2.23E-04
14	3.3845	-1.6063	43.61	12.12	1.0835	10.0	4.43E-03	2.26E-04
16	3.4425	-1.6643	43.70	12.21	1.0867	9.0	3.40E-03	1.76E-04
18	3.4936	-1.7155	43.76	12.27	1.0888	9.0	3.40E-03	1.77E-04
20	3.5394	-1.7613	43.82	12.33	1.0910	9.0	3.40E-03	1.79E-04
25	3.6363	-1.8582	43.91	12.42	1.0941	9.0	3.40E-03	1.82E-04
30	3.7155	-1.9373	43.89	12.40	1.0934	9.0	3.40E-03	1.87E-04
35	3.7824	-2.0043	43.90	12.41	1.0938	9.0	3.40E-03	1.90E-04
40	3.8404	-2.0623	43.91	12.42	1.0941	9.0	3.40E-03	1.93E-04
45	3.8916	-2.1134	43.92	12.43	1.0945	9.0	3.40E-03	1.95E-04
50	3.9373	-2.1592	43.93	12.44	1.0948	9.0	3.40E-03	1.97E-04
55	3.9787	-2.2006	43.94	12.45	1.0952	9.0	3.40E-03	1.99E-04
60	4.0165	-2.2384	43.95	12.46	1.0955	9.0	3.40E-03	2.01E-04
75	4.1134	-2.3353	43.97	12.48	1.0962	9.0	3.40E-03	2.05E-04
90	4.1926	-2.4145	43.99	12.50	1.0969	9.0	3.40E-03	2.09E-04
105	4.2596	-2.4814	44.01	12.52	1.0976	9.0	3.40E-03	2.12E-04
120	4.3176	-2.5394	44.03	12.54	1.0983	9.0	3.40E-03	2.14E-04
135	4.3687	-2.5906	44.20	12.71	1.1041	9.0	3.40E-03	2.14E-04
150	4.4145	-2.6363	44.23	12.74	1.1052	9.0	3.40E-03	2.16E-04
165	4.4559	-2.6777	44.25	12.76	1.1059	9.0	3.40E-03	2.17E-04
180	4.4936	-2.7155	44.19	12.70	1.1038	9.0	3.40E-03	2.20E-04
210	4.5606	-2.7824	44.29	12.80	1.1072	9.0	3.40E-03	2.22E-04
240	4.6186	-2.8404	44.34	12.85	1.1089	9.0	3.40E-03	2.24E-04
270	4.6697	-2.8916	44.26	12.77	1.1062	9.0	3.40E-03	2.28E-04
300	4.7155	-2.9373	44.22	12.73	1.1048	9.0	3.40E-03	2.31E-04
330	4.7569	-2.9787	44.29	12.80	1.1072	9.0	3.40E-03	2.31E-04
360	4.7947	-3.0165	44.20	12.71	1.1041	9.0	3.40E-03	2.35E-04
420	4.8616	-3.0835	44.69	13.20	1.1206	9.0	3.40E-03	2.29E-04
480	4.9196	-3.1415	44.96	13.47	1.1294	9.0	3.40E-03	2.27E-04
540	4.9708	-3.1926	45.03	13.54	1.1316	9.0	3.40E-03	2.29E-04
600	5.0165	-3.2384	45.31	13.82	1.1405	9.0	3.40E-03	2.26E-04
720	5.0957	-3.3176	45.58	14.09	1.1489	9.0	3.40E-03	2.25E-04
840	5.1627	-3.3845	45.75	14.26	1.1541	9.0	3.40E-03	2.25E-04
960	5.2206	-3.4425	46.64	15.15	1.1804	9.0	3.40E-03	2.15E-04
1080	5.2718	-3.4936	46.73	15.24	1.1830	9.0	3.40E-03	2.15E-04
1200	5.3176	-3.5394	47.01	15.52	1.1909	9.0	3.40E-03	2.13E-04
1320	5.3589	-3.5808	47.21	15.72	1.1965	9.0	3.40E-03	2.12E-04
1440	5.3967	-3.6186	47.38	15.89	1.2011	9.0	3.40E-03	2.11E-04
							3.66E-03 (avgQ)	

Transmissibility

T=2.3*Q/(4pi*ds)
(n2/sec)
T(m2/sec)= 4.18E-04
(cm2/sec)= 4.18E+00
(m2/min) 2.51E-02
(m2/day)= 3.62E+01

avgQ= 3.66E-03
m3/sec

ds:one cycle of LOG(t/r2
(by graph=LOG(t/r2)
ds= 1.60

Storage coefficient

S=2.25T(t/r2)o
(t/r2)o= 1.10
S= 6.21E-02

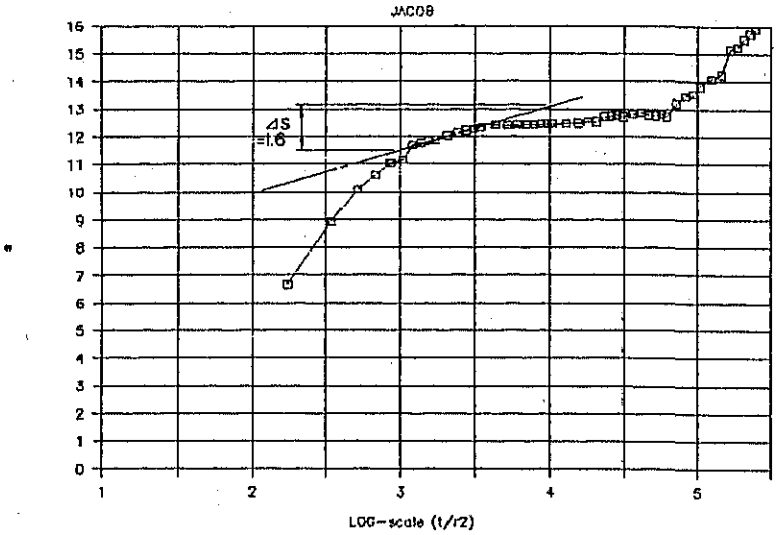
RECOVERY GRAPH:s-LOG(t/t')

B.H. NO.: C3899 (Wajir)
Owner : MOWD, P.O. Box 41, Wajir
Location: Central District Wajir Area :Tarbaj
B.H.Name: Casing Dia.(mm) : 152 Date/Time:04/11/90, 10:15
(Pump start)

Elapsed Time(min)	LOG(t'/r2)	Water l.	s=wl-s0	t/t'	LOG(t/t')	T=0.183Q*log(t/t')/s	
0		47.38				Q(m3/sec)= 3.66E-03	(m2/sec)
1	2.2384	41.28	9.79	1441.0	3.1587	2.16E-04 (m2/sec)	T(m2/sec)= 4.18E-04
2	2.5394	38.49	7.00	721.0	2.8579	2.73E-04	(cm2/sec)= 4.18E+00
3	2.7155	36.75	5.26	481.0	2.6821	3.41E-04	(m2/hr)= 1.51E+00
4	2.8404	35.94	4.45	361.0	2.5575	3.85E-04	(m2/day)= 3.62E+01
5	2.9373	35.50	4.01	289.0	2.4609	4.11E-04	
6	3.0165	35.26	3.77	241.0	2.3820	4.23E-04	avgQ= 3.66E-03
7	3.0835	35.01	3.52	206.7	2.3154	4.40E-04	(m3/sec)
8	3.1415	34.88	3.39	181.0	2.2577	4.46E-04	
9	3.1926	34.77	3.28	161.0	2.2068	4.50E-04	ds is one LOG(t/t')
10	3.2384	34.70	3.21	145.0	2.1614	4.51E-04	(by graph) 1.60
12	3.3176	34.57	3.08	121.0	2.0828	4.53E-04	(m)
14	3.3845	34.47	2.98	103.9	2.0164	4.53E-04	
16	3.4425	34.38	2.89	91.0	1.9590	4.54E-04	
18	3.4936	34.32	2.83	81.0	1.9085	4.51E-04	
20	3.5394	34.26	2.77	73.0	1.8633	4.50E-04	
25	3.6363	34.14	2.65	58.6	1.7679	4.47E-04	
30	3.7155	34.02	2.53	49.0	1.6902	4.47E-04	
35	3.7824	33.95	2.46	42.1	1.6247	4.42E-04	
40	3.8404	33.85	2.36	37.0	1.5682	4.45E-04	
45	3.8916	33.78	2.29	33.0	1.5185	4.44E-04	
50	3.9373	33.71	2.22	29.8	1.4742	4.45E-04	
55	3.9787	33.65	2.16	27.2	1.4343	4.45E-04	
60	4.0165	33.60	2.11	25.0	1.3979	4.44E-04	
75	4.1134	33.47	1.98	20.2	1.3054	4.41E-04	
90	4.1926	33.39	1.90	17.0	1.2304	4.34E-04	
105	4.2596	33.31	1.82	14.7	1.1677	4.30E-04	
120	4.3176	33.21	1.72	13.0	1.1139	4.34E-04	
135	4.3687	33.10	1.61	11.7	1.0669	4.44E-04	
150	4.4145	33.04	1.55	10.6	1.0253	4.43E-04	
165	4.4559	32.97	1.48	9.7	0.9880	4.47E-04	
180	4.4936	32.90	1.41	9.0	0.9542	4.53E-04	
210	4.5606	32.80	1.31	7.9	0.8953	4.58E-04	
240	4.6186	32.72	1.23	7.0	0.8451	4.60E-04	
270	4.6697	32.68	1.19	6.3	0.8016	4.51E-04	
300	4.7155	32.61	1.12	5.8	0.7634	4.56E-04	
330	4.7569	32.55	1.06	5.4	0.7295	4.61E-04	
360	4.7947	32.53	1.04	5.0	0.6990	4.50E-04	
420	4.8616	32.42	0.93	4.4	0.6463	4.65E-04	
480	4.9196	32.35	0.86	4.0	0.6021	4.69E-04	
540	4.9708	32.31	0.82	3.7	0.5643	4.61E-04	
600	5.0165	32.21	0.72	3.4	0.5315	4.94E-04	
720	5.0957	32.12	0.63	3.0	0.4771	5.07E-04	

C3899 (Wajir)

JACOB

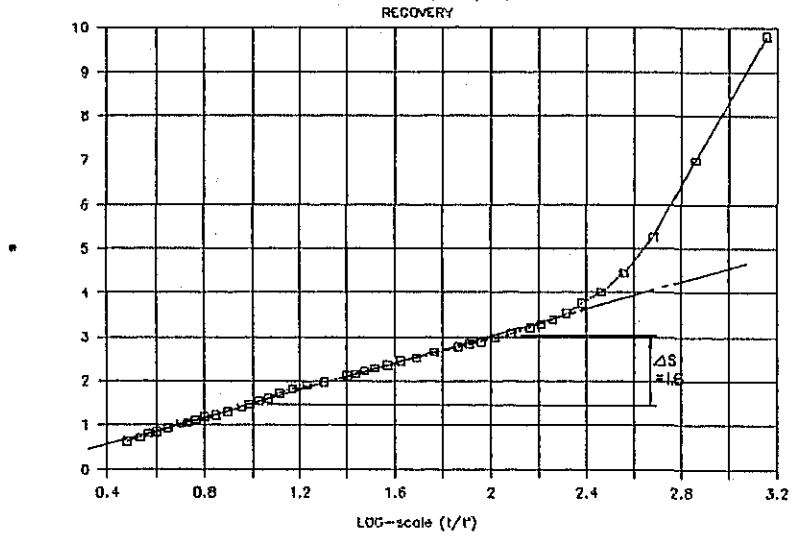


ΔS = 1.6

$(1/r^2)_0 = 1.1$

C3899 (Wajir)

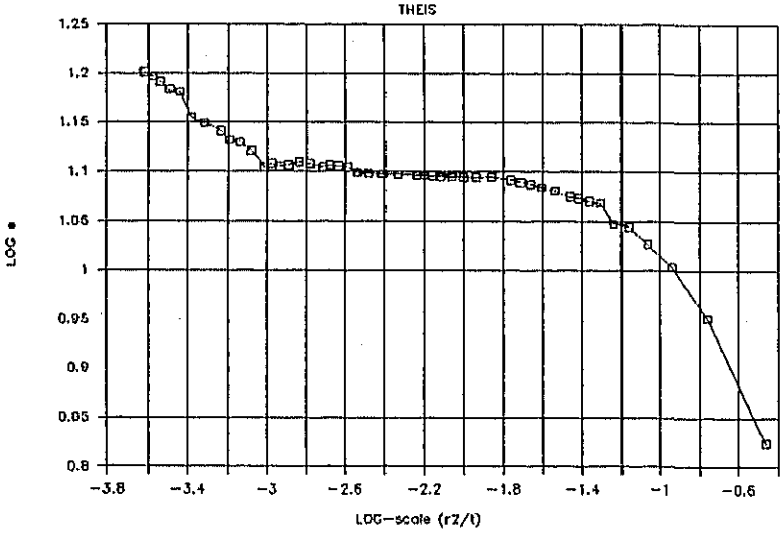
RECOVERY



ΔS = 1.6

C3899 (Wajir)

THEIS



JACOB : GRAPH:s-LOG(t/r2) THEIS : GRAPH:LOG(s)-LOG (r2/t)

B.H. NO.: C3959 (Marsabit)
Owner : MOWD,P O Box 30521, Nairobi
Location: Moyale District: Marsabit Area Butie
B.H.Name: Casing Dia.(mm) : 254 Date/Time:17/10/90/ 10.00 a.m
(Pump start)

Elapsed Time(min)	r(m)= LOG(t/r2)	0.127 LOG(r2/t) (m/sec)	Water l (m)	Drawdown s=s0-wl	LOG(s)	V-NOTCH H(cm)	Q (m3/sec)	T=0.183Q*log(t/r2)/s Q(m3/sec)
0			30.83					
1	1.7924	-0.0142	35.67	4.84	0.6848	4.2	5.06E-04	3.43E-05 (m2/sec)
2	2.0934	-0.3153	37.60	6.77	0.8306	4.2	5.06E-04	2.86E-05
3	2.2695	-0.4914	37.93	7.10	0.8513	4.2	5.06E-04	2.96E-05
4	2.3945	-0.6163	38.63	7.80	0.8921	4.2	5.06E-04	2.84E-05
5	2.4914	-0.7132	39.17	8.34	0.9212	4.2	5.06E-04	2.77E-05
6	2.5705	-0.7924	39.59	8.76	0.9425	4.2	5.06E-04	2.72E-05
7	2.6375	-0.8593	40.00	9.17	0.9624	4.2	5.06E-04	2.66E-05
8	2.6955	-0.9173	40.34	9.51	0.9782	4.2	5.06E-04	2.63E-05
9	2.7466	-0.9685	40.60	9.77	0.9899	4.2	5.06E-04	2.60E-05
10	2.7924	-1.0142	40.88	10.05	1.0022	4.2	5.06E-04	2.57E-05
12	2.8716	-1.0934	41.44	10.61	1.0257	4.2	5.06E-04	2.51E-05
14	2.9385	-1.1604	41.99	11.16	1.0477	4.2	5.06E-04	2.44E-05
16	2.9965	-1.2184	42.32	11.49	1.0603	4.2	5.06E-04	2.42E-05
18	3.0477	-1.2695	42.67	11.84	1.0734	4.2	5.06E-04	2.38E-05
20	3.0934	-1.3153	43.04	12.21	1.0867	4.2	5.06E-04	2.35E-05
25	3.1903	-1.4122	43.51	12.68	1.1031	4.2	5.06E-04	2.33E-05
30	3.2695	-1.4914	43.93	13.10	1.1173	4.2	5.06E-04	2.31E-05
35	3.3365	-1.5583	44.41	13.58	1.1329	4.2	5.06E-04	2.28E-05
40	3.3945	-1.6163	44.81	13.98	1.1455	4.2	5.06E-04	2.25E-05
45	3.4456	-1.6675	45.21	14.38	1.1578	4.2	5.06E-04	2.22E-05
50	3.4914	-1.7132	45.56	14.73	1.1682	4.2	5.06E-04	2.20E-05
55	3.5328	-1.7546	45.86	15.03	1.1770	4.2	5.06E-04	2.18E-05
60	3.5705	-1.7924	46.21	15.38	1.1870	4.2	5.06E-04	2.15E-05
75	3.6675	-1.8893	46.70	15.87	1.2006	4.2	5.06E-04	2.14E-05
90	3.7466	-1.9685	46.70	15.87	1.2006	4.2	5.06E-04	2.19E-05
105	3.8136	-2.0354	46.70	15.87	1.2006	4.2	5.06E-04	2.23E-05
120	3.8716	-2.0934	46.70	15.87	1.2006	4.2	5.06E-04	2.26E-05
135	3.9227	-2.1446	46.70	15.87	1.2006	4.2	5.06E-04	2.29E-05
150	3.9685	-2.1903	47.15	16.32	1.2127	4.2	5.06E-04	2.25E-05
165	4.0099	-2.2317	47.15	16.32	1.2127	4.2	5.06E-04	2.28E-05
180	4.0477	-2.2695	47.15	16.32	1.2127	4.2	5.06E-04	2.30E-05
210	4.1146	-2.3365	47.15	16.32	1.2127	4.2	5.06E-04	2.34E-05
240	4.1726	-2.3945	47.15	16.32	1.2127	4.2	5.06E-04	2.37E-05
270	4.2238	-2.4456	47.15	16.32	1.2127	4.2	5.06E-04	2.40E-05
300	4.2695	-2.4914	47.15	16.32	1.2127	4.2	5.06E-04	2.42E-05
330	4.3109	-2.5328	47.22	16.39	1.2146	4.2	5.06E-04	2.44E-05
360	4.3487	-2.5705	47.22	16.39	1.2146	4.2	5.06E-04	2.46E-05
420	4.4156	-2.6375	47.22	16.39	1.2146	4.2	5.06E-04	2.50E-05
480	4.4736	-2.6955	47.22	16.39	1.2146	4.2	5.06E-04	2.53E-05
540	4.5248	-2.7466	47.47	16.64	1.2212	4.2	5.06E-04	2.52E-05
600	4.5705	-2.7924	47.67	16.84	1.2263	4.2	5.06E-04	2.51E-05
720	4.6497	-2.8716	47.73	16.90	1.2279	4.2	5.06E-04	2.55E-05
840	4.7167	-2.9385	47.86	17.03	1.2312	4.2	5.06E-04	2.57E-05
960	4.7747	-2.9965	48.14	17.31	1.2383	4.2	5.06E-04	2.55E-05
1080	4.8258	-3.0477	48.21	17.38	1.2400	4.2	5.06E-04	2.57E-05
1200	4.8716	-3.0934	48.22	17.39	1.2403	4.2	5.06E-04	2.59E-05
1320	4.9130	-3.1348	48.26	17.43	1.2413	4.2	5.06E-04	2.61E-05
1440	4.9508	-3.1726	48.26	17.43	1.2413	4.2	5.06E-04	2.63E-05
							5.06E-04 (avgQ)	

Transmissibility

T=2.3*Q/(4pi*ds)
(m2/sec)
T(m2/sec)= 1.43E-05
(cm2/sec)= 1.43E-01
(m2/min) 8.55E-04
(m2/day)= 1.23E+00

avgQ= 5.06E-04
m3/sec

ds:one cycle of LOG(t/r2)
(by graph=LOG(t/r2)
ds= 6.50

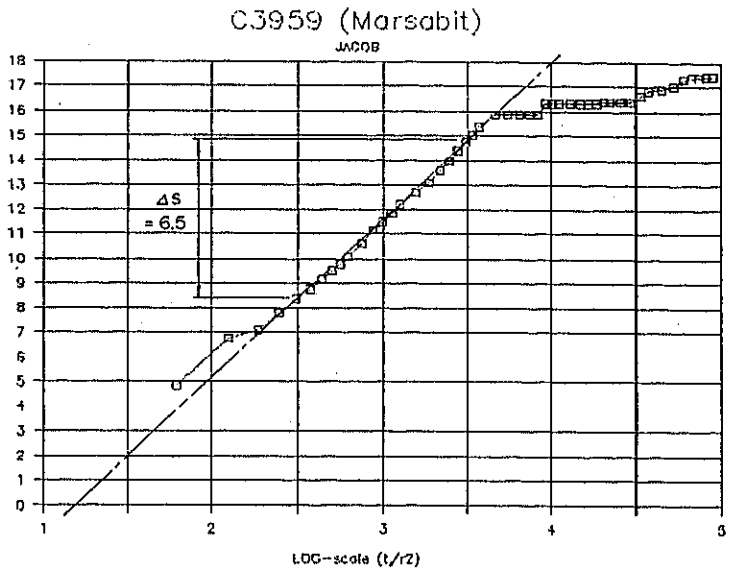
Storage coefficient

S=2.25T(t/r2)o
(t/r2)o= 1.20
S= 2.31E-03

RECOVERY GRAPH : s-LOG(t/t')

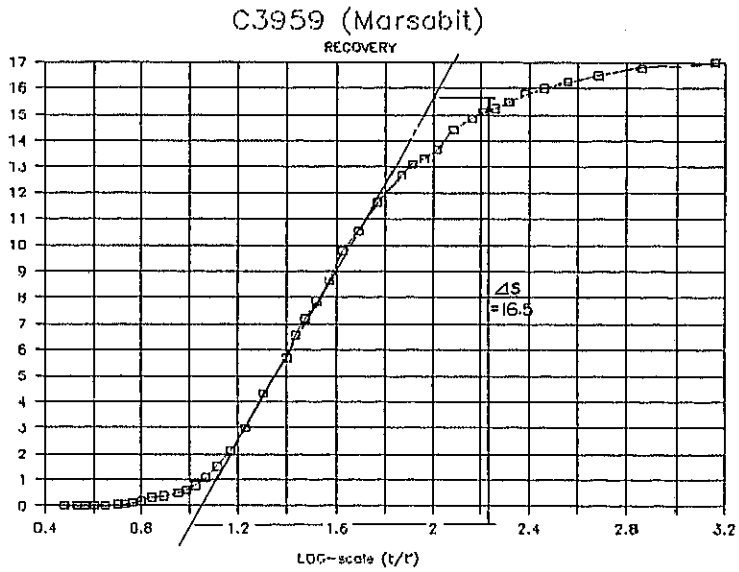
B.H. NO.: C3959 (Marsabit)
Owner : MOWD,P O Box 30521, Nairobi
Location: Moyale District: Marsabit Area Butie
B.H.Name: Casing Dia.(mm) : 254 Date/Time:17/10/90/ 10.00 a.m
(Pump start)

Elapsed Time(min)	LOG(t'/r2)	Water l.	s=wl-s0	t/t'	LOG(t/t')	T=0.183Q*log(t/t')/s	T=0.183Q*log(t/t')/s
0		48.26				Q(m3/sec)= 5.06E-04	(m2/sec)
1	1.7924	47.82	16.99	1441.0	3.1587	1.72E-05 (m2/sec)	T(m2/sec)= 5.61E-06
2	2.0934	47.62	16.79	721.0	2.8579	1.58E-05	(cm2/sec)= 5.61E-02
3	2.2695	47.33	16.50	481.0	2.6821	1.51E-05	(m2/hr)= 2.02E-02
4	2.3945	47.09	16.26	361.0	2.5575	1.46E-05	(m2/day)= 4.85E-01
5	2.4914	46.83	16.00	289.0	2.4609	1.42E-05	
6	2.5705	46.62	15.79	241.0	2.3820	1.40E-05	avgQ= 5.06E-04
7	2.6375	46.31	15.48	206.7	2.3154	1.39E-05	(m3/sec)
8	2.6955	46.08	15.25	181.0	2.2577	1.37E-05	
9	2.7466	45.92	15.09	161.0	2.2068	1.35E-05	ds is one LOG(t/t')
10	2.7924	45.70	14.87	145.0	2.1614	1.35E-05	(by graph) 16.50
12	2.8716	45.26	14.43	121.0	2.0828	1.34E-05	(m)
14	2.9385	44.49	13.66	103.9	2.0164	1.37E-05	
16	2.9965	44.13	13.30	91.0	1.9590	1.36E-05	
18	3.0477	43.93	13.10	81.0	1.9085	1.35E-05	
20	3.0934	43.51	12.68	73.0	1.8633	1.36E-05	
25	3.1903	42.45	11.62	58.6	1.7679	1.41E-05	
30	3.2695	41.38	10.55	49.0	1.6902	1.48E-05	
35	3.3365	40.62	9.79	42.1	1.6247	1.54E-05	
40	3.3945	39.47	8.64	37.0	1.5682	1.68E-05	
45	3.4456	38.70	7.87	33.0	1.5185	1.79E-05	
50	3.4914	38.02	7.19	29.8	1.4742	1.90E-05	
55	3.5328	37.36	6.53	27.2	1.4343	2.03E-05	
60	3.5705	36.52	5.69	25.0	1.3979	2.28E-05	
75	3.6675	35.17	4.34	20.2	1.3054	2.79E-05	
90	3.7466	33.82	2.99	17.0	1.2304	3.81E-05	
105	3.8136	32.94	2.11	14.7	1.1677	5.13E-05	
120	3.8716	32.36	1.53	13.0	1.1139	6.74E-05	
135	3.9227	31.90	1.07	11.7	1.0669	9.24E-05	
150	3.9685	31.62	0.79	10.6	1.0253	1.20E-04	
165	4.0099	31.43	0.60	9.7	0.9880	1.53E-04	
180	4.0477	31.33	0.50	9.0	0.9542	1.77E-04	
210	4.1146	31.19	0.36	7.9	0.8953	2.30E-04	
240	4.1726	31.15	0.32	7.0	0.8451	2.45E-04	
270	4.2238	31.03	0.20	6.3	0.8016	3.71E-04	
300	4.2695	30.95	0.12	5.8	0.7634	5.89E-04	
330	4.3109	30.90	0.07	5.4	0.7295	9.65E-04	
360	4.3487	30.88	0.05	5.0	0.6990	1.29E-03	
420	4.4156	30.85	0.02	4.4	0.6463	2.99E-03	
480	4.4736	30.85	0.02	4.0	0.6021	2.79E-03	
540	4.5248	30.84	0.01	3.7	0.5643	5.23E-03	
600	4.5705	30.84	0.01	3.4	0.5315	4.92E-03	
720	4.6497	30.84	0.01	3.0	0.4771	4.42E-03	

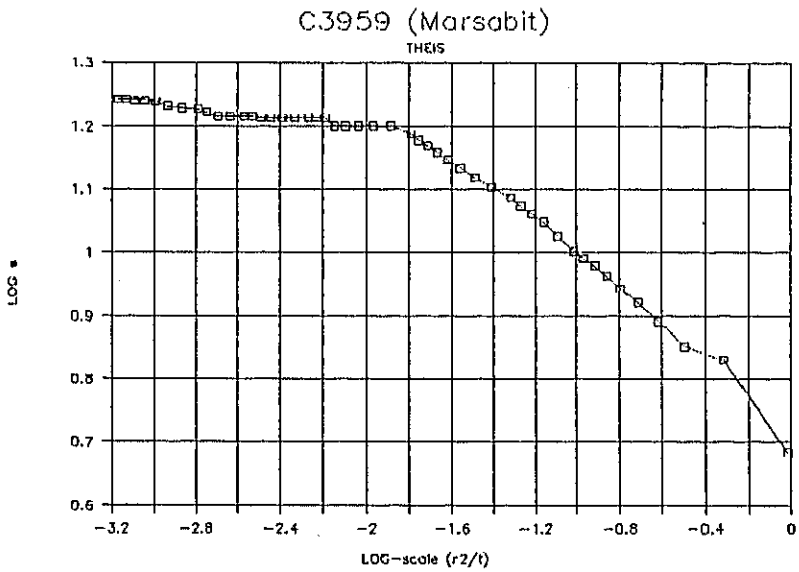


ΔS = 6.5

$(t/r^2)_0 = 1.2$



ΔS=16.5



JACOB GRAPH:s-LOG(t/r2) THEIS GRAPH:LOG(s)-LOG (r2/t)

B.H. NO.: C3960 (Marsabit)
Owner : MOWD
Location: Loyangalani District: Marsabit Area : Kaargi
B.H.Name: Casing Dia.(mm) : 152 Date/Time ,03/11/90/ 9.00 a.m

Elapsed Time(min)	r(m)= LOG(t/r2)	0.076 LOG(r2/t) (m/sec)	Water l (m) 13.00	Drawdown s=s0-wl(m)	LOG(s)	V-NOTCH H(cm)	Q (m3/sec)	T=0.183Q*log(t/r2)/s Q(m3/sec)
0								
1	2.2384	-0.4602	16.60	3.60	0.5563	8.5	2.95E-03	3.36E-04 (m2/sec)
2	2.5394	-0.7613	16.60	3.60	0.5563	8.5	2.95E-03	3.81E-04
3	2.7155	-0.9373	16.60	3.60	0.5563	8.5	2.95E-03	4.07E-04
4	2.8404	-1.0623	16.62	3.62	0.5587	8.5	2.95E-03	4.23E-04
5	2.9373	-1.1592	16.67	3.67	0.5647	8.5	2.95E-03	4.32E-04
6	3.0165	-1.2384	16.67	3.67	0.5647	8.5	2.95E-03	4.44E-04
7	3.0835	-1.3053	16.67	3.67	0.5647	8.5	2.95E-03	4.53E-04
8	3.1415	-1.3633	16.67	3.67	0.5647	8.5	2.95E-03	4.62E-04
9	3.1926	-1.4145	16.67	3.67	0.5647	8.5	2.95E-03	4.69E-04
10	3.2384	-1.4602	16.67	3.67	0.5647	8.5	2.95E-03	4.76E-04
12	3.3176	-1.5394	16.67	3.67	0.5647	8.5	2.95E-03	4.88E-04
14	3.3845	-1.6063	16.67	3.67	0.5647	8.5	2.95E-03	4.98E-04
16	3.4425	-1.6643	16.67	3.67	0.5647	8.5	2.95E-03	5.06E-04
18	3.4936	-1.7155	16.67	3.67	0.5647	8.5	2.95E-03	5.14E-04
20	3.5394	-1.7613	16.67	3.67	0.5647	8.5	2.95E-03	5.20E-04
25	3.6363	-1.8582	16.67	3.67	0.5647	8.5	2.95E-03	5.35E-04
30	3.7155	-1.9373	16.68	3.68	0.5658	8.5	2.95E-03	5.45E-04
35	3.7824	-2.0043	16.70	3.70	0.5682	8.5	2.95E-03	5.52E-04
40	3.8404	-2.0623	16.71	3.71	0.5694	8.5	2.95E-03	5.59E-04
45	3.8916	-2.1134	16.71	3.71	0.5694	8.5	2.95E-03	5.66E-04
50	3.9373	-2.1592	16.71	3.71	0.5694	8.5	2.95E-03	5.73E-04
55	3.9787	-2.2006	16.71	3.71	0.5694	8.5	2.95E-03	5.79E-04
60	4.0165	-2.2384	16.71	3.71	0.5694	8.5	2.95E-03	5.84E-04
75	4.1134	-2.3353	16.71	3.71	0.5694	8.5	2.95E-03	5.98E-04
90	4.1926	-2.4145	16.71	3.71	0.5694	8.5	2.95E-03	6.10E-04
105	4.2596	-2.4814	16.71	3.71	0.5694	8.5	2.95E-03	6.20E-04
120	4.3176	-2.5394	16.72	3.72	0.5705	8.5	2.95E-03	6.26E-04
135	4.3687	-2.5906	16.72	3.72	0.5705	8.5	2.95E-03	6.34E-04
150	4.4145	-2.6363	16.72	3.72	0.5705	8.5	2.95E-03	6.40E-04
165	4.4559	-2.6777	16.72	3.72	0.5705	8.5	2.95E-03	6.46E-04
180	4.4936	-2.7155	16.72	3.72	0.5705	8.5	2.95E-03	6.52E-04
210	4.5606	-2.7824	16.72	3.72	0.5705	8.5	2.95E-03	6.62E-04
240	4.6186	-2.8404	16.72	3.72	0.5705	8.5	2.95E-03	6.70E-04
270	4.6697	-2.8916	16.72	3.72	0.5705	8.5	2.95E-03	6.77E-04
300	4.7155	-2.9373	16.72	3.72	0.5705	8.5	2.95E-03	6.84E-04
330	4.7569	-2.9787	16.72	3.72	0.5705	8.5	2.95E-03	6.90E-04
360	4.7947	-3.0165	16.72	3.72	0.5705	8.5	2.95E-03	6.96E-04
420	4.8616	-3.0835	16.72	3.72	0.5705	8.5	2.95E-03	7.05E-04
480	4.9196	-3.1415	16.72	3.72	0.5705	8.5	2.95E-03	7.14E-04
540	4.9708	-3.1926	16.72	3.72	0.5705	8.5	2.95E-03	7.21E-04
600	5.0165	-3.2384	16.72	3.72	0.5705	8.5	2.95E-03	7.28E-04
720	5.0957	-3.3176	16.72	3.72	0.5705	8.5	2.95E-03	7.39E-04
840	5.1627	-3.3845	16.72	3.72	0.5705	8.5	2.95E-03	7.49E-04
960	5.2206	-3.4425	16.72	3.72	0.5705	8.5	2.95E-03	7.57E-04
1080	5.2718	-3.4936	16.72	3.72	0.5705	8.5	2.95E-03	7.65E-04
1200	5.3176	-3.5394	16.72	3.72	0.5705	8.5	2.95E-03	7.71E-04
1320	5.3589	-3.5808	16.72	3.72	0.5705	8.5	2.95E-03	7.77E-04
1440	5.3987	-3.6186	16.72	3.72	0.5705	8.5	2.95E-03	7.83E-04
							2.95E-03 (avgQ)	

Transmissibility

T=2.3*Q/(4pi*ds)
(m2/sec)
T(m2/sec)= 9.00E-03
(cm2/sec)= 9.00E+01
(m2/min) 5.40E-01
(m2/day)= 7.77E+02

avgQ= 2.95E-03
m3/sec

ds:one cycle of LOG(t/r2)
(by graph=LOG(t/r2)
ds= 0.06

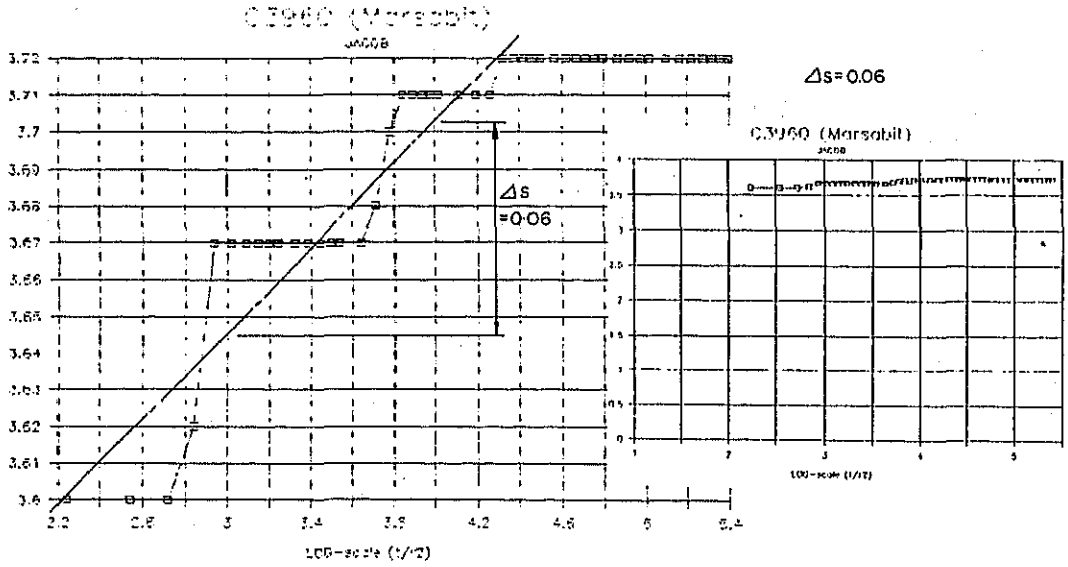
Storage coefficient

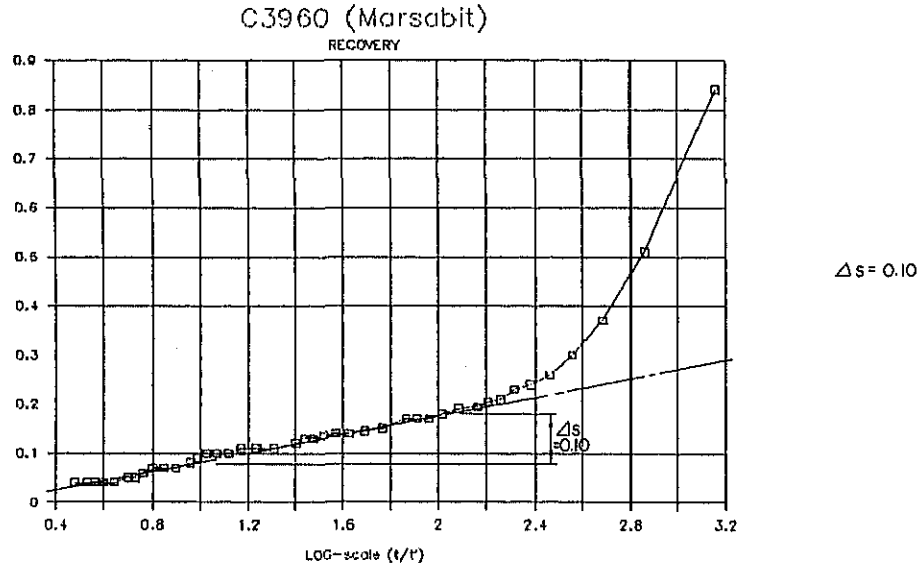
S=2.25T(t/r2)o
(t/r2)o=
S= 0.00E+00

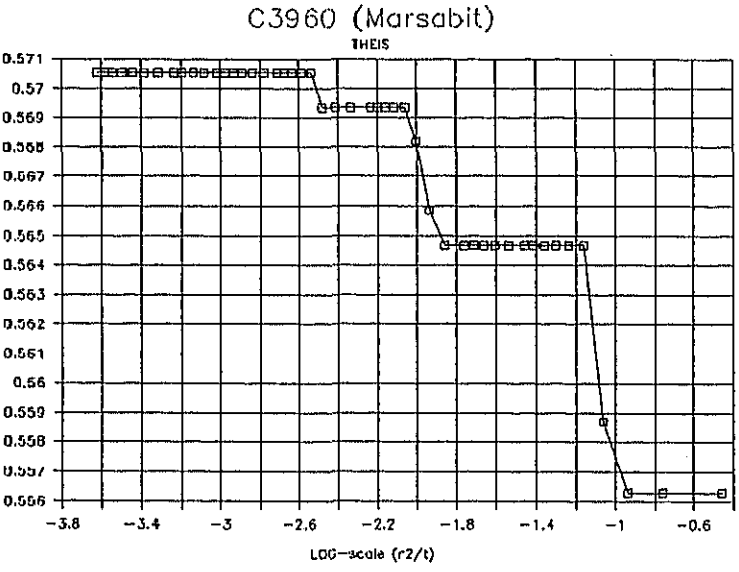
RECOVERY GRAPH:s-LOG(t/t')

B.H. NO.: C3960 (Marsabit)
Owner : MOWD
Location: Loyangalani District: Marsabit Area : Kaargi
B.H.Name: Casing Dia.(mm) : 152 Date/Time ,03/11/90/ 9.00 a.m
(Pump start)

Elapsed Time(min)	LOG(t'/r2)	Water l.	s=wl-s0	t/t'	LOG(t/t')	T=0.183Q*log(t/t')/s	T=0.183Q*log(t/t')/s
0		16.72	3.72			Q(m3/sec)= 2.95E-03	(m2/sec)
1	2.24	13.84	0.84	1441.0	3.16	2.03E-03 (m2/sec)	T(m2/sec)= 5.40E-03
2	2.54	13.51	0.51	721.0	2.86	3.02E-03	(cm2/sec)= 5.40E+01
3	2.72	13.37	0.37	481.0	2.68	3.91E-03	(m2/hr)= 1.94E+01
4	2.84	13.30	0.30	361.0	2.56	4.60E-03	(m2/day)= 4.66E+02
5	2.94	13.26	0.26	289.0	2.46	5.11E-03	
6	3.02	13.24	0.24	241.0	2.38	5.36E-03	avgQ= 2.95E-03
7	3.08	13.23	0.23	206.7	2.32	5.43E-03	(m3/sec)
8	3.14	13.21	0.21	181.0	2.26	5.80E-03	
9	3.19	13.21	0.21	161.0	2.21	5.81E-03	ds is one LOG(t/t')
10	3.24	13.20	0.20	145.0	2.16	5.98E-03	(by graph) 0.10
12	3.32	13.19	0.19	121.0	2.08	5.92E-03	(m)
14	3.38	13.18	0.18	103.9	2.02	6.05E-03	
16	3.44	13.17	0.17	91.0	1.96	6.22E-03	
18	3.49	13.17	0.17	81.0	1.91	6.06E-03	
20	3.54	13.17	0.17	73.0	1.86	5.92E-03	
25	3.64	13.15	0.15	58.6	1.77	6.36E-03	
30	3.72	13.15	0.14	49.0	1.69	6.29E-03	
35	3.78	13.14	0.14	42.1	1.62	6.26E-03	
40	3.84	13.14	0.14	37.0	1.57	6.05E-03	
45	3.89	13.14	0.13	33.0	1.52	6.07E-03	
50	3.94	13.13	0.13	29.8	1.47	6.12E-03	
55	3.98	13.13	0.13	27.2	1.43	5.95E-03	
60	4.02	13.12	0.12	25.0	1.40	6.29E-03	
75	4.11	13.11	0.11	20.2	1.31	6.40E-03	
90	4.19	13.11	0.11	17.0	1.23	6.04E-03	
105	4.26	13.11	0.11	14.7	1.17	5.73E-03	
120	4.32	13.10	0.10	13.0	1.11	6.01E-03	
135	4.37	13.10	0.10	11.7	1.07	5.76E-03	
150	4.41	13.10	0.10	10.6	1.03	5.53E-03	
165	4.46	13.09	0.09	9.7	0.99	5.92E-03	
180	4.49	13.08	0.08	9.0	0.95	6.44E-03	
210	4.56	13.07	0.07	7.9	0.90	6.90E-03	
240	4.62	13.07	0.07	7.0	0.85	6.52E-03	
270	4.67	13.07	0.07	6.3	0.80	6.18E-03	
300	4.72	13.06	0.06	5.8	0.76	6.87E-03	
330	4.76	13.05	0.05	5.4	0.73	7.87E-03	
360	4.79	13.05	0.05	5.0	0.70	7.54E-03	
420	4.86	13.04	0.04	4.4	0.65	8.72E-03	
480	4.92	13.04	0.04	4.0	0.60	8.12E-03	
540	4.97	13.04	0.04	3.7	0.56	7.61E-03	
600	5.02	13.04	0.04	3.4	0.53	7.17E-03	
720	5.10	13.04	0.04	3.0	0.48	6.44E-03	


C3960 (Marsabit)
Δs=0.06
Δs
=0.06
LOG-scale (t/r2)


C3960 (Marsabit)
RECOVERY
Δs= 0.10
Δs
=0.10
LOG-scale (t/t')


C3960 (Marsabit)
THEIS
LOG-scale (r2/t)

JACOB : GRAPH:s-LOG(t/r2) THEIS : GRAPH:LOG(s)-LOG (r2/t)

B.H. NO.: C4124 (Wajir)
Owner : MOWD, P.O. Box 41, Wajir
Location: Central District: Wajir Area Wajir
B.H.Name: Casing Dia.(mm) : 152 Date/Time:9/11/90/ 2.40 p.m
(Pump start)

Elapsed Time(min)	r(m)= LOG(t/r2)	0.076 LOG(r2/t) (m/sec)	Water l (m) 6.28	Drawdown s=s0-wl	LOG(s)	V-NOTCH H(cm)	Q (m3/sec)	T=0.183Q*log(t/r2)/s Q(m3/sec)
0								
1	2.2384	-0.4602	9.76	3.48	0.5416	3.9	4.21E-04	4.95E-05 (m2/sec)
2	2.5394	-0.7613	12.17	5.89	0.7701	3.9	4.21E-04	3.32E-05
3	2.7155	-0.9373	14.84	8.56	0.9325	3.9	4.21E-04	2.44E-05
4	2.8404	-1.0623	16.48	10.20	1.0086	3.9	4.21E-04	2.14E-05
5	2.9373	-1.1592	17.75	11.47	1.0596	3.9	4.21E-04	1.97E-05
6	3.0165	-1.2384	19.49	13.21	1.1209	3.9	4.21E-04	1.76E-05
7	3.0835	-1.3053	20.90	14.62	1.1649	3.9	4.21E-04	1.62E-05
8	3.1415	-1.3633	21.98	15.68	1.1953	3.9	4.21E-04	1.54E-05
9	3.1926	-1.4145	23.25	16.97	1.2297	3.9	4.21E-04	1.45E-05
10	3.2384	-1.4602	24.64	18.36	1.2639	3.9	4.21E-04	1.36E-05
12	3.3176	-1.5394	28.02	21.74	1.3373	3.9	4.21E-04	1.17E-05
14	3.3845	-1.6063	30.45	24.17	1.3833	3.9	4.21E-04	1.08E-05
16	3.4425	-1.6643	31.75	25.47	1.4060	3.9	4.21E-04	1.04E-05

Transmissibility

T=2.3*Q/(4pi*ds)
(m2/sec)
T(m2/sec)= 3.75E-06
(cm2/sec)= 3.75E-02
(m2/min) 2.25E-04
(m2/day)= 3.24E-01

avgQ= 4.21E-04
m3/sec

ds:one cycle of LOG(t/r2)
(by graph=LOG(t/r2)
ds= 20.50

Storage coefficient

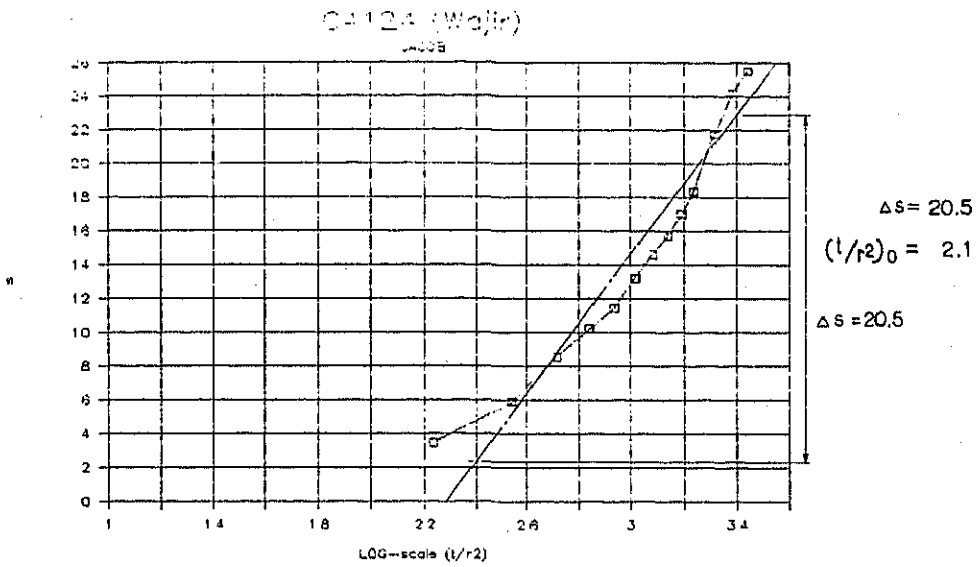
S=2.25T(t/r2)o
(t/r2)o= 2.10
S= 1.06E-03

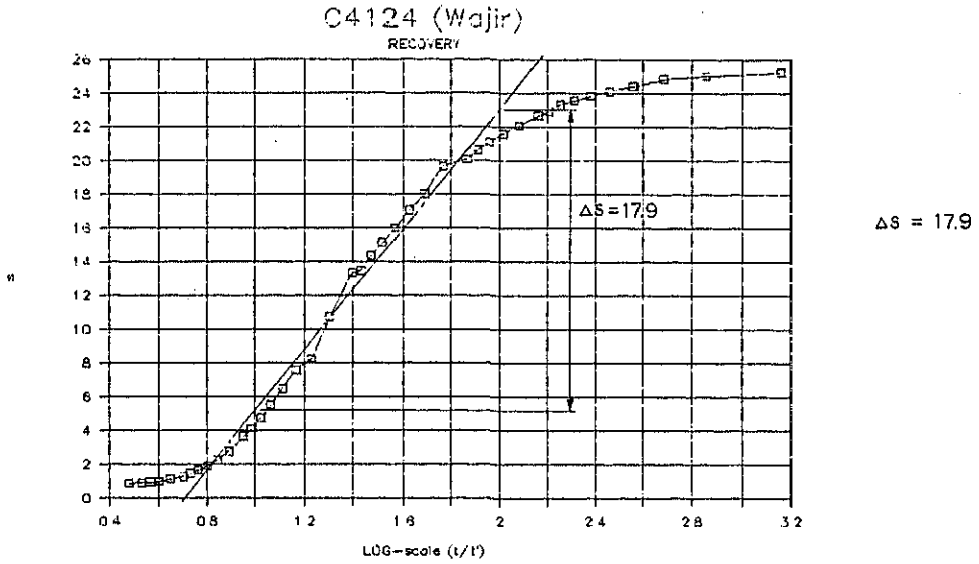
4.21E-04 (avgQ)

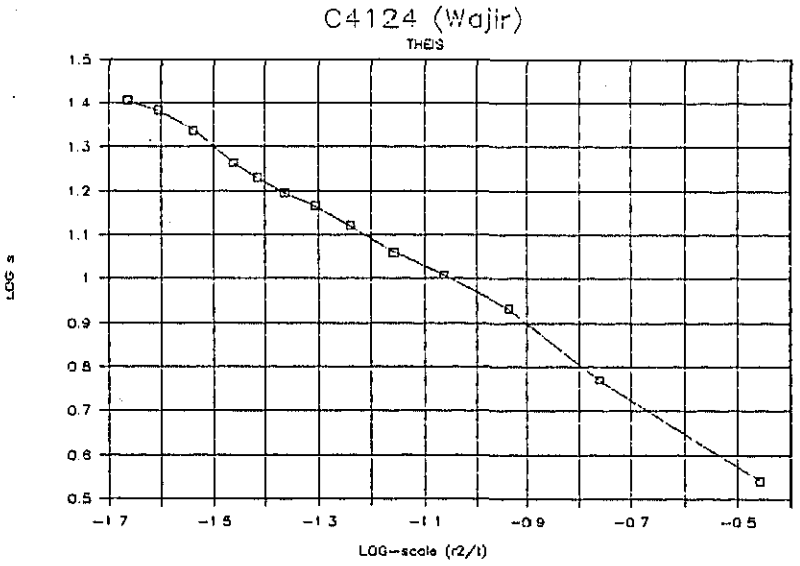
RECOVERY GRAPH : s-LOG(t/t')

B.H. NO.: C4124 (Wajir)
Owner : MOWD, P.O. Box 41, Wajir
Location: Central District: Wajir Area Wajir
B.H.Name: Casing Dia.(mm) : 152 Date/Time:9/11/90/ 2.40 p.m
(Pump start)

Elapsed Time(min)	LOG(t'/r2)	Water l.	s=wl-s0	t/t'	LOG(t/t')	T=0.183Q*log(t/t')/s	T=0.183Q*log(t/t')/s
0		31.75				Q(m3/sec)= 4.21E-04	(m2/sec)
1	2.2384	31.50	25.22	1441.0	3.1587	9.64E-06 (m2/sec)	T(m2/sec)= 4.30E-06
2	2.5394	31.30	25.02	721.0	2.8579	8.79E-06	(cm2/sec)= 4.30E-02
3	2.7155	31.13	24.85	481.0	2.6821	8.31E-06	(m2/hr)= 1.55E-02
4	2.8404	30.68	24.40	361.0	2.5575	8.07E-06	(m2/day)= 3.71E-01
5	2.9373	30.38	24.10	289.0	2.4609	7.86E-06	
6	3.0165	30.11	23.83	241.0	2.3820	7.69E-06	avgQ= 4.21E-04
7	3.0835	29.84	23.56	206.7	2.3154	7.56E-06	(m3/sec)
8	3.1415	29.60	23.32	181.0	2.2577	7.45E-06	
9	3.1926	29.20	22.92	161.0	2.2068	7.41E-06	ds is one LOG(t/t')
10	3.2384	28.93	22.65	145.0	2.1614	7.34E-06	(by graph) 17.90
12	3.3176	28.33	22.05	121.0	2.0828	7.27E-06	(m)
14	3.3845	27.87	21.59	103.9	2.0164	7.19E-06	
16	3.4425	27.36	21.08	91.0	1.9590	7.15E-06	
18	3.4936	26.90	20.62	81.0	1.9085	7.12E-06	
20	3.5394	26.34	20.06	73.0	1.8633	7.15E-06	
25	3.6363	25.92	19.64	58.6	1.7679	6.93E-06	
30	3.7155	24.29	18.01	49.0	1.6902	7.22E-06	
35	3.7824	23.33	17.05	42.1	1.6247	7.33E-06	
40	3.8404	22.27	15.99	37.0	1.5682	7.55E-06	
45	3.8916	21.38	15.10	33.0	1.5185	7.74E-06	
50	3.9373	20.63	14.35	29.8	1.4742	7.91E-06	
55	3.9787	19.75	13.47	27.2	1.4343	8.19E-06	
60	4.0165	19.58	13.30	25.0	1.3979	8.09E-06	
75	4.1134	17.00	10.72	20.2	1.3054	9.37E-06	
90	4.1926	14.53	8.25	17.0	1.2304	1.15E-05	
105	4.2596	13.87	7.59	14.7	1.1677	1.18E-05	
120	4.3176	12.77	6.49	13.0	1.1139	1.32E-05	
135	4.3687	11.78	5.50	11.7	1.0669	1.49E-05	
150	4.4145	11.02	4.74	10.6	1.0253	1.66E-05	
165	4.4559	10.42	4.14	9.7	0.9880	1.84E-05	
180	4.4936	9.90	3.62	9.0	0.9542	2.03E-05	
210	4.5606	9.03	2.75	7.9	0.8953	2.51E-05	
240	4.6186	8.52	2.24	7.0	0.8451	2.90E-05	
270	4.6697	8.18	1.90	6.3	0.8016	3.25E-05	
300	4.7155	7.91	1.63	5.8	0.7634	3.60E-05	
330	4.7569	7.71	1.43	5.4	0.7295	3.93E-05	
360	4.7947	7.55	1.27	5.0	0.6990	4.24E-05	
420	4.8616	7.39	1.11	4.4	0.6463	4.48E-05	
480	4.9196	7.25	0.97	4.0	0.6021	4.78E-05	
540	4.9708	7.22	0.94	3.7	0.5643	4.62E-05	
600	5.0165	7.16	0.88	3.4	0.5315	4.65E-05	
720	5.0957	7.13	0.85	3.0	0.4771	4.32E-05	


C4124 (Wajir)
s
LOG-scale (t/r2)
ΔS= 20.5
(t/r2)0 = 2.1
ΔS =20.5


C4124 (Wajir)
RECOVERY
s
LOG-scale (t/t')
ΔS=17.9
ΔS = 17.9


C4124 (Wajir)
THEIS
LOG s
LOG-scale (r2/t)

JACOB : GRAPH:s-LOG(t/r2) THEIS : GRAPH:LOG(s)-LOG (r2/t)

B.H. NO.: C4130 (Taita Taveta)
Owner : MOWD, Box 6, Voi
Location: Taveta District: Taita Taveta Area Taveta
B.H.Name: Casing Dia.(mm) : 152 Date/Time:27/12/90/ 11.00 a.m
(Pump start)

Elapsed Time(min)	r(m)= LOG(t/r2)	0.076 LOG(r2/t) (m/sec)	Water l (m) 27.00	Drawdown s=s0-sl	LOG(s)	V-NOTCH H(cm)	Q (m3/sec)	T=0.183Q*log(t/r2)/s Q(m3/sec)
0								
1	2.2384	-0.4602	27.04	0.04	-1.3979	11.8	6.70E-03	6.86E-02 (m2/sec)
2	2.5394	-0.7613	27.04	0.04	-1.3979	11.8	6.70E-03	7.78E-02
3	2.7155	-0.9373	27.04	0.04	-1.3979	11.8	6.70E-03	8.32E-02
4	2.8404	-1.0623	27.04	0.04	-1.3979	11.8	6.70E-03	8.70E-02
5	2.9373	-1.1592	27.04	0.04	-1.3979	11.8	6.70E-03	9.00E-02
6	3.0165	-1.2384	27.04	0.04	-1.3979	11.8	6.70E-03	9.24E-02
7	3.0835	-1.3053	27.04	0.04	-1.3979	11.8	6.70E-03	9.45E-02
8	3.1415	-1.3633	27.04	0.04	-1.3979	11.8	6.70E-03	9.62E-02
9	3.1926	-1.4145	27.04	0.04	-1.3979	11.8	6.70E-03	9.78E-02
10	3.2384	-1.4602	27.04	0.04	-1.3979	11.8	6.70E-03	9.92E-02
12	3.3176	-1.5394	27.04	0.04	-1.3979	11.8	6.70E-03	1.02E-01
14	3.3845	-1.6063	27.04	0.04	-1.3979	11.8	6.70E-03	1.04E-01
16	3.4425	-1.6643	27.04	0.04	-1.3979	11.8	6.70E-03	1.05E-01
18	3.4936	-1.7155	27.04	0.04	-1.3979	11.8	6.70E-03	1.07E-01
20	3.5394	-1.7613	27.04	0.04	-1.3979	11.8	6.70E-03	1.08E-01
25	3.6363	-1.8582	27.04	0.04	-1.3979	11.8	6.70E-03	1.11E-01
30	3.7155	-1.9373	27.04	0.04	-1.3979	11.8	6.70E-03	1.14E-01
35	3.7824	-2.0043	27.04	0.04	-1.3979	11.8	6.70E-03	1.16E-01
40	3.8404	-2.0623	27.04	0.04	-1.3979	11.8	6.70E-03	1.18E-01
45	3.8916	-2.1134	27.04	0.04	-1.3979	11.8	6.70E-03	1.19E-01
50	3.9373	-2.1592	27.04	0.04	-1.3979	11.8	6.70E-03	1.21E-01
55	3.9787	-2.2006	27.04	0.04	-1.3979	11.8	6.70E-03	1.22E-01
60	4.0165	-2.2384	27.04	0.04	-1.3979	11.8	6.70E-03	1.23E-01
75	4.1134	-2.3353	27.04	0.04	-1.3979	11.8	6.70E-03	1.26E-01
90	4.1926	-2.4145	27.04	0.04	-1.3979	11.8	6.70E-03	1.28E-01
105	4.2596	-2.4814	27.04	0.04	-1.3979	11.8	6.70E-03	1.30E-01
120	4.3176	-2.5394	27.04	0.04	-1.3979	11.8	6.70E-03	1.32E-01
135	4.3687	-2.5906	27.04	0.04	-1.3979	11.8	6.70E-03	1.34E-01
150	4.4145	-2.6363	27.04	0.04	-1.3979	11.8	6.70E-03	1.35E-01
165	4.4559	-2.6777	27.04	0.04	-1.3979	11.8	6.70E-03	1.37E-01
180	4.4936	-2.7155	27.04	0.04	-1.3979	11.8	6.70E-03	1.38E-01
210	4.5606	-2.7824	27.04	0.04	-1.3979	11.8	6.70E-03	1.40E-01
240	4.6186	-2.8404	27.04	0.04	-1.3979	11.8	6.70E-03	1.41E-01
270	4.6697	-2.8916	27.04	0.04	-1.3979	11.8	6.70E-03	1.43E-01
300	4.7155	-2.9373	27.04	0.04	-1.3979	11.8	6.70E-03	1.44E-01
330	4.7569	-2.9787	27.04	0.04	-1.3979	11.8	6.70E-03	1.46E-01
360	4.7947	-3.0165	27.04	0.04	-1.3979	11.8	6.70E-03	1.47E-01
420	4.8616	-3.0835	27.04	0.04	-1.3979	11.8	6.70E-03	1.49E-01
480	4.9196	-3.1415	27.04	0.04	-1.3979	11.8	6.70E-03	1.51E-01
540	4.9708	-3.1926	27.04	0.04	-1.3979	11.8	6.70E-03	1.52E-01
600	5.0165	-3.2384	27.04	0.04	-1.3979	11.8	6.70E-03	1.54E-01
720	5.0957	-3.3176	27.04	0.04	-1.3979	11.8	6.70E-03	1.56E-01
840	5.1627	-3.3845	27.04	0.04	-1.3979	11.8	6.70E-03	1.58E-01
960	5.2206	-3.4425	27.04	0.04	-1.3979	11.8	6.70E-03	1.60E-01
1080	5.2718	-3.4936	27.04	0.04	-1.3979	11.8	6.70E-03	1.62E-01
1200	5.3176	-3.5394	27.04	0.04	-1.3979	11.8	6.70E-03	1.63E-01
1320	5.3589	-3.5808	27.04	0.04	-1.3979	11.8	6.70E-03	1.64E-01
1440	5.3967	-3.6186	27.04	0.04	-1.3979	11.8	6.70E-03	1.65E-01
							6.70E-03 (avgQ)	

Transmissibility

T=2.3*Q/(4pi*ds)
(m2/sec)
T(m2/sec)=
(cm2/sec)=
(m2/min)
(m2/day)=

avgQ= 6.70E-03
m3/sec

ds:one cycle of LOG(t/r2)
(by graph=LOG(t/r2)
ds=

Storage coefficient

S=2.25T(t/r2)o
(t/r2)o=
S=

C4130 : Very high yield. This Borehole required a greater yield for an effective test- this is a particularly productive aquifer (Kilimanjaro Volcanics).

RECOVERY GRAPH : s-LOG(t/t')

B.H. NO.: C4130 (Taita Taveta)
Owner : MOWD, Box 6, Voi
Location: Taveta District: Taita Taveta Area Taveta
B.H.Name: Casing Dia.(mm) : 152 Date/Time:27/12/90/ 11.00 a.m
(Pump start)

Elapsed Time(min)	LOG(t'/r2)	Water l.	s=wl-s0	t/t'	LOG(t/t')	T=0.183Q*log(t/t')/s	T=0.183Q*log(t/t')/s
0		27.04				Q(m3/sec)= 6.70E-03	(m2/sec)
1	2.2384	27.04	0.04	1441.0	3.1587	9.68E-02 (m2/sec)	T(m2/sec)=
2	2.5394	27.04	0.04	721.0	2.8579	8.76E-02	(cm2/sec)=
3	2.7155	27.04	0.04	481.0	2.6821	8.22E-02	(m2/hr)=
4	2.8404	27.04	0.04	361.0	2.5575	7.84E-02	(m2/day)=
5	2.9373	27.04	0.04	289.0	2.4609	7.54E-02	
6	3.0165	27.04	0.04	241.0	2.3820	7.30E-02	avgQ= 6.70E-03
7	3.0835	27.04	0.04	206.7	2.3154	7.09E-02	(m3/sec)
8	3.1415	27.04	0.04	181.0	2.2577	6.92E-02	
9	3.1926	27.04	0.04	161.0	2.2068	6.76E-02	ds is one LOG(t/t')
10	3.2384	27.03	0.03	145.0	2.1614	8.83E-02	(by graph)
12	3.3176	27.03	0.03	121.0	2.0828	8.51E-02	(m)
14	3.3845	27.03	0.03	103.9	2.0164	8.24E-02	
16	3.4425	27.03	0.03	91.0	1.9590	8.00E-02	
18	3.4936	27.03	0.03	81.0	1.9085	7.80E-02	
20	3.5394	27.02	0.02	73.0	1.8633	1.14E-01	
25	3.6363	27.02	0.02	58.6	1.7679	1.08E-01	
30	3.7155	27.01	0.01	49.0	1.6902	2.07E-01	
35	3.7824	27.01	0.01	42.1	1.6247	1.99E-01	
40	3.8404	27.00	0.00	37.0	1.5682		

JACOB : GRAPH:s-LOG(t/r2) THEIS : GRAPH:LOG(s)-LOG (r2/t)

B.H. NO.: C4246-2 (Kisumu)
Owner : Orembo S. School P.O.Box 51 Onditi
Location: C.Nyakachi District: Kisumu Area Onditi
B.H.Name: Casing Dia.(mm) : 152 Date/Time:25/1/1991 12:30
(Pump start)

Elapsed Time(min)	r(m)= LOG(t/r2)	0.076 LOG(r2/t) (m/sec)	Water l (m)	Drawdown s=s0-wl	LOG(s)	V-NOTCH H(cm)	Q (m3/sec)	T=0.183Q*log(t/r2)/s Q(m3/sec)
0			12.77					
1	2.2384	-0.4602	16.56	3.79	0.5786	7.3	2.02E-03	2.18E-04 (m2/sec)
2	2.5394	-0.7613	20.39	7.62	0.8820	7.3	2.02E-03	1.23E-04
3	2.7155	-0.9373	22.14	9.37	0.9717	7.3	2.02E-03	1.07E-04
4	2.8404	-1.0623	23.66	10.89	1.0370	7.3	2.02E-03	9.62E-05
5	2.9373	-1.1592	25.56	12.79	1.1069	7.3	2.02E-03	8.47E-05
6	3.0165	-1.2384	26.32	13.55	1.1319	7.3	2.02E-03	8.21E-05
7	3.0835	-1.3053	27.36	14.59	1.1641	7.3	2.02E-03	7.80E-05
8	3.1415	-1.3633	28.48	15.71	1.1962	7.3	2.02E-03	7.38E-05
9	3.1926	-1.4145	29.45	16.68	1.2222	7.3	2.02E-03	7.06E-05
10	3.2384	-1.4602	30.00	17.23	1.2363	7.3	2.02E-03	6.93E-05
12	3.3176	-1.5394	31.00	18.23	1.2608	7.3	2.02E-03	6.71E-05
14	3.3845	-1.6063	32.48	19.71	1.2947	7.3	2.02E-03	6.33E-05
16	3.4425	-1.6643	33.58	20.81	1.3183	7.3	2.02E-03	6.10E-05
18	3.4936	-1.7155	34.45	21.68	1.3361	7.3	2.02E-03	5.94E-05
20	3.5394	-1.7613	35.38	22.61	1.3543	7.3	2.02E-03	5.77E-05
25	3.6363	-1.8582	37.21	24.44	1.3881	7.3	2.02E-03	5.49E-05
30	3.7155	-1.9373	39.05	26.28	1.4196	7.3	2.02E-03	5.22E-05
35	3.7824	-2.0043	40.48	27.71	1.4426	7.3	2.02E-03	5.04E-05
40	3.8404	-2.0623	41.83	29.06	1.4633	7.3	2.02E-03	4.87E-05
45	3.8916	-2.1134	42.75	29.98	1.4768	7.3	2.02E-03	4.79E-05
50	3.9373	-2.1592	44.45	31.68	1.5008	7.3	2.02E-03	4.58E-05
55	3.9787	-2.2006	45.71	32.94	1.5177	7.3	2.02E-03	4.46E-05
60	4.0165	-2.2384	46.99	34.22	1.5343	7.3	2.02E-03	4.33E-05
75	4.1134	-2.3353	49.91	37.14	1.5698	7.3	2.02E-03	4.09E-05
90	4.1926	-2.4145	51.64	38.87	1.5896	7.3	2.02E-03	3.98E-05
105	4.2596	-2.4814	52.99	40.22	1.6044	7.3	2.02E-03	3.91E-05
120	4.3176	-2.5394	54.24	41.47	1.6177	7.3	2.02E-03	3.84E-05
135	4.3687	-2.5906	54.95	42.18	1.6251	7.3	2.02E-03	3.82E-05
150	4.4145	-2.6363	55.72	42.95	1.6330	7.3	2.02E-03	3.79E-05
165	4.4559	-2.6777	56.30	43.53	1.6388	7.3	2.02E-03	3.78E-05
180	4.4936	-2.7155	56.73	43.96	1.6431	7.3	2.02E-03	3.77E-05
210	4.5606	-2.7824	57.48	44.71	1.6504	7.3	2.02E-03	3.76E-05
240	4.6186	-2.8404	58.10	45.33	1.6564	7.3	2.02E-03	3.76E-05
270	4.6697	-2.8916	58.67	45.90	1.6618	7.3	2.02E-03	3.75E-05
300	4.7155	-2.9373	59.15	46.38	1.6663	6.8	1.69E-03	3.14E-05
330	4.7569	-2.9787	59.15	46.38	1.6663	6.8	1.69E-03	3.17E-05
360	4.7947	-3.0165	59.40	46.63	1.6687	6.8	1.69E-03	3.18E-05
420	4.8616	-3.0835	59.87	47.10	1.6730	6.8	1.69E-03	3.19E-05
480	4.9196	-3.1415	60.78	48.01	1.6813	6.8	1.69E-03	3.17E-05
540	4.9708	-3.1926	61.26	48.49	1.6857	6.8	1.69E-03	3.17E-05
600	5.0165	-3.2384	61.45	48.68	1.6874	6.8	1.69E-03	3.18E-05
720	5.0957	-3.3176	62.26	49.49	1.6945	6.8	1.69E-03	3.18E-05
840	5.1627	-3.3845	61.25	48.48	1.6856	6.8	1.69E-03	3.29E-05
960	5.2206	-3.4425	60.65	47.88	1.6802	6.8	1.69E-03	3.37E-05
1080	5.2718	-3.4936	60.93	48.16	1.6827	6.8	1.69E-03	3.38E-05
1200	5.3176	-3.5394	61.42	48.65	1.6871	6.8	1.69E-03	3.38E-05
1320	5.3589	-3.5808	62.11	49.34	1.6932	6.8	1.69E-03	3.36E-05
1440	5.3967	-3.6186	62.29	49.52	1.6948	6.8	1.69E-03	3.37E-05
							1.92E-03 (avgQ)	

Transmissibility

T=2.3*Q/(4pi*ds)
(m2/sec)
T(m2/sec)= 1.76E-05
(cm2/sec)= 1.76E-01
(m2/min) 1.05E-03
(m2/day)= 1.52E+00

avgQ= 1.92E-03
m3/sec

ds:one cycle of LOG(t/r
(by graph=LOG(t/r2)
ds= 20.00

Storage coefficient

S=2.25T(t/r2)o
(t/r2)o= 2.30
S= 5.46E-03

RECOVERY GRAPH : s-LOG(t/t')

B.H. NO.: C4246-2 (Kisumu)

Owner : Orembo S. School P.O.Box 51 Onditi

Location: C.Nyakachi District: Kisumu Area Ondiki

B.H.Name: Casing Dia.(mm) : 152 Date/Time:25/1/1991 12:30

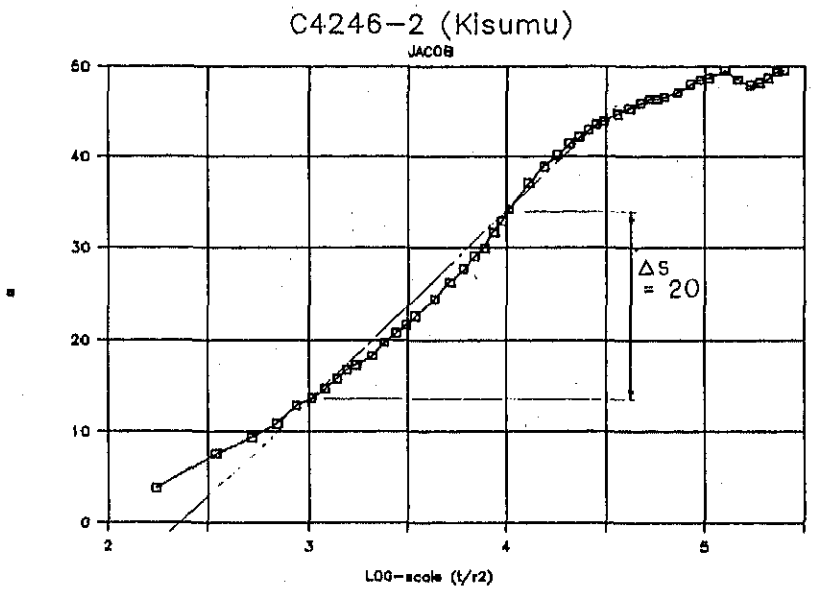
(Pump start)

Elapsed Time(min)	LOG(t'/r2)	Water l.	s=wl-s0	t/t'	LOG(t/t')	T=0.183Q*log(t/t')/s
0		62.29				Q(m3/sec)=1.92E-03
1	2.2384	59.41	46.64	1441.0	3.1587	2.38E-05 (m2/sec)
2	2.5394	57.42	44.65	721.0	2.8579	2.25E-05
3	2.7155	54.98	42.21	481.0	2.6821	2.23E-05
4	2.8404	52.88	40.11	361.0	2.5575	2.24E-05
5	2.9373	50.26	37.49	289.0	2.4609	2.31E-05
6	3.0165	47.83	35.06	241.0	2.3820	2.39E-05
7	3.0835	45.77	33.00	206.7	2.3154	2.47E-05
8	3.1415	44.04	31.27	181.0	2.2577	2.54E-05
9	3.1926	42.49	29.72	161.0	2.2068	2.61E-05
10	3.2384	41.55	28.78	145.0	2.1614	2.64E-05
12	3.3176	38.90	26.13	121.0	2.0828	2.80E-05
14	3.3845	36.21	23.44	103.9	2.0164	3.02E-05
16	3.4425	35.08	22.31	91.0	1.9590	3.09E-05
18	3.4936	33.57	20.80	81.0	1.9085	3.22E-05
20	3.5394	32.00	19.23	73.0	1.8633	3.40E-05
25	3.6363	29.19	16.42	58.6	1.7679	3.78E-05
30	3.7155	26.90	14.13	49.0	1.6902	4.20E-05
35	3.7824	25.10	12.33	42.1	1.6247	4.63E-05
40	3.8404	24.00	11.23	37.0	1.5682	4.91E-05
45	3.8916	22.98	10.21	33.0	1.5185	5.23E-05
50	3.9373	22.17	9.40	29.8	1.4742	5.51E-05
55	3.9787	21.77	9.00	27.2	1.4343	5.60E-05
60	4.0165	21.06	8.29	25.0	1.3979	5.93E-05
75	4.1134	19.67	6.90	20.2	1.3054	6.65E-05
90	4.1926	18.91	6.14	17.0	1.2304	7.04E-05
105	4.2596	18.36	5.59	14.7	1.1677	7.34E-05
120	4.3176	17.92	5.15	13.0	1.1139	7.60E-05
135	4.3687	17.58	4.81	11.7	1.0669	7.79E-05
150	4.4145	17.27	4.50	10.6	1.0253	8.01E-05
165	4.4559	17.01	4.24	9.7	0.9880	8.19E-05
180	4.4936	16.72	3.95	9.0	0.9542	8.49E-05
210	4.5606	16.36	3.59	7.9	0.8953	8.76E-05
240	4.6186	16.01	3.24	7.0	0.8451	9.17E-05
270	4.6697	15.69	2.92	6.3	0.8016	9.65E-05
300	4.7155	15.42	2.65	5.8	0.7634	1.01E-04
330	4.7569	15.17	2.40	5.4	0.7295	1.07E-04
360	4.7947	14.97	2.20	5.0	0.6990	1.12E-04
420	4.8616	14.59	1.82	4.4	0.6463	1.25E-04
480	4.9196	14.30	1.53	4.0	0.6021	1.38E-04
540	4.9708	14.07	1.30	3.7	0.5643	1.53E-04
600	5.0165	13.82	1.05	3.4	0.5315	1.78E-04
720	5.0957	13.25	0.48	3.0	0.4771	3.49E-04

T=0.183Q*log(t/t')/s
(m2/sec)
T(m2/sec)= 1.17E-05
(cm2/sec)= 1.17E-01
(m2/hr)= 4.22E-02
(m2/day)= 1.01E+00

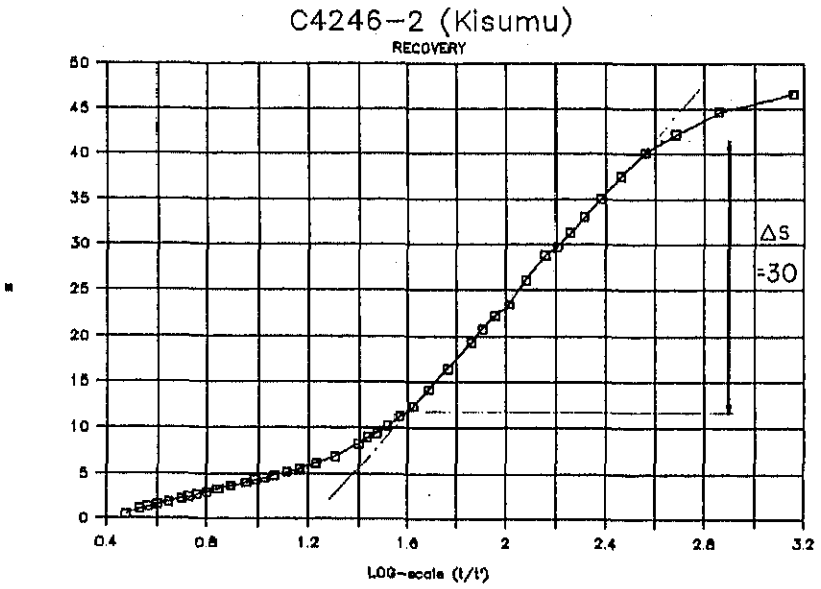
avgQ= 1.92E-03
(m3/sec)

ds is one LOG(t/t')
(by graph) 30.00
(m)

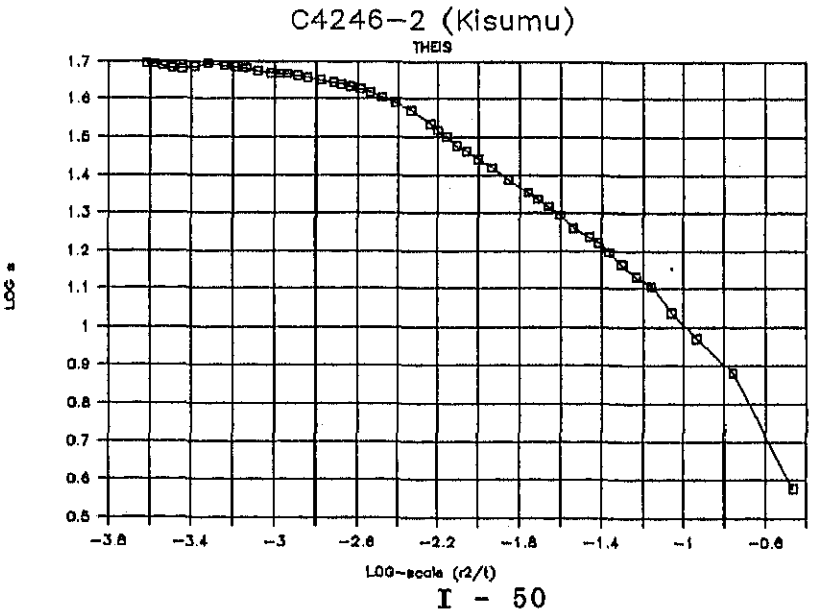


$\Delta s = 20$

$(t/r^2)_0 = 2.3$



$\Delta s = 30$



JACOB : GRAPH:s-LOG(t/r2) THEIS : GRAPH:LOG(s)-LOG (r2/t)

B.H. NO.: C4270 Garissa
Owner : MOWD, Box 31, Garissa
Location: Dadaab District: Garissa Area Dadaab
B.H.Name: Casing Dia.(mm) : 152 Date/Time:12/12/90/ 9.10 a.m
(Pump start)

Elapsed Time(min)	r(m)= LOG(t/r2)	0.076 LOG(r2/t) (m/sec)	Water l (m) 130.66	Drawdown s=s0-wl	LOG(s)	V-NOTCH H(cm)	Q (m3/sec)	T=0.183Q*log(t/r2)/s Q(m3/sec)
0								
1	2.2384	-0.4602	136.13	5.47	0.7380	7.6	2.23E-03	1.67E-04 (m2/sec)
2	2.5394	-0.7613	137.61	6.95	0.8420	7.6	2.23E-03	1.49E-04
3	2.7155	-0.9373	138.42	7.76	0.8899	7.6	2.23E-03	1.43E-04
4	2.8404	-1.0623	138.64	7.98	0.9020	7.6	2.23E-03	1.45E-04
5	2.9373	-1.1592	138.76	8.10	0.9085	7.6	2.23E-03	1.48E-04
6	3.0165	-1.2384	138.83	8.17	0.9122	7.6	2.23E-03	1.51E-04
7	3.0835	-1.3053	138.89	8.23	0.9154	7.6	2.23E-03	1.53E-04
8	3.1415	-1.3633	138.89	8.23	0.9154	7.6	2.23E-03	1.56E-04
9	3.1926	-1.4145	138.94	8.28	0.9180	7.6	2.23E-03	1.57E-04
10	3.2384	-1.4602	138.94	8.28	0.9180	7.6	2.23E-03	1.60E-04
12	3.3176	-1.5394	139.06	8.40	0.9243	7.6	2.23E-03	1.61E-04
14	3.3845	-1.6063	139.01	8.35	0.9217	7.6	2.23E-03	1.65E-04
16	3.4425	-1.6643	139.00	8.34	0.9212	7.6	2.23E-03	1.68E-04
18	3.4936	-1.7155	139.00	8.34	0.9212	7.6	2.23E-03	1.71E-04
20	3.5394	-1.7613	138.98	8.32	0.9201	7.6	2.23E-03	1.74E-04
25	3.6363	-1.8582	138.93	8.27	0.9175	7.6	2.23E-03	1.79E-04
30	3.7155	-1.9373	138.94	8.28	0.9180	7.6	2.23E-03	1.83E-04
35	3.7824	-2.0043	138.95	8.29	0.9186	7.6	2.23E-03	1.86E-04
40	3.8404	-2.0623	138.94	8.28	0.9180	7.6	2.23E-03	1.89E-04
45	3.8916	-2.1134	138.94	8.28	0.9180	7.6	2.23E-03	1.92E-04
50	3.9373	-2.1592	138.94	8.28	0.9180	7.6	2.23E-03	1.94E-04
55	3.9787	-2.2006	138.94	8.28	0.9180	7.6	2.23E-03	1.96E-04
60	4.0165	-2.2384	138.94	8.28	0.9180	7.6	2.23E-03	1.98E-04
75	4.1134	-2.3353	138.94	8.28	0.9180	7.6	2.23E-03	2.03E-04
90	4.1926	-2.4145	139.02	8.36	0.9222	7.6	2.23E-03	2.05E-04
105	4.2598	-2.4814	138.99	8.33	0.9206	7.6	2.23E-03	2.09E-04
120	4.3176	-2.5394	138.97	8.31	0.9196	7.6	2.23E-03	2.12E-04
135	4.3687	-2.5906	138.99	8.33	0.9206	7.6	2.23E-03	2.14E-04
150	4.4145	-2.6363	139.01	8.35	0.9217	7.6	2.23E-03	2.16E-04
165	4.4559	-2.6777	139.03	8.37	0.9227	7.6	2.23E-03	2.17E-04
180	4.4936	-2.7155	139.03	8.37	0.9227	7.6	2.23E-03	2.19E-04
210	4.5606	-2.7824	139.03	8.37	0.9227	7.6	2.23E-03	2.22E-04
240	4.6186	-2.8404	138.99	8.33	0.9206	7.6	2.23E-03	2.26E-04
270	4.6697	-2.8916	139.00	8.34	0.9212	7.6	2.23E-03	2.28E-04
300	4.7155	-2.9373	139.00	8.34	0.9212	7.6	2.23E-03	2.31E-04
330	4.7569	-2.9787	139.00	8.34	0.9212	7.6	2.23E-03	2.33E-04
360	4.7947	-3.0165	139.00	8.34	0.9212	7.6	2.23E-03	2.35E-04
420	4.8616	-3.0835	139.08	8.42	0.9253	7.6	2.23E-03	2.36E-04
480	4.9196	-3.1415	139.11	8.45	0.9269	7.6	2.23E-03	2.38E-04
540	4.9708	-3.1926	139.04	8.38	0.9232	7.6	2.23E-03	2.42E-04
600	5.0165	-3.2384	139.06	8.40	0.9243	7.6	2.23E-03	2.44E-04
720	5.0957	-3.3176	139.00	8.34	0.9212	7.6	2.23E-03	2.49E-04
840	5.1627	-3.3845	138.99	8.33	0.9206	7.6	2.23E-03	2.53E-04
960	5.2206	-3.4425	139.05	8.39	0.9238	7.6	2.23E-03	2.54E-04
1080	5.2718	-3.4936	139.08	8.42	0.9253	7.6	2.23E-03	2.55E-04
1200	5.3176	-3.5394	139.06	8.40	0.9243	7.6	2.23E-03	2.58E-04
1320	5.3589	-3.5808	139.05	8.39	0.9238	7.6	2.23E-03	2.61E-04
1440	5.3967	-3.6186	139.05	8.39	0.9238	7.6	2.23E-03	2.62E-04
							2.23E-03 (avgQ)	

Transmissibility

T=2.3*Q/(4pi*ds)
(m2/sec)
T(m2/sec)= 4.08E-03
(cm2/sec)= 4.08E+01
(m2/min) 2.45E-01
(m2/day)= 3.53E+02

avgQ= 2.23E-03
m3/sec

ds:one cycle of LOG(t/r2
(by graph=LOG(t/r2)
ds= 0.10

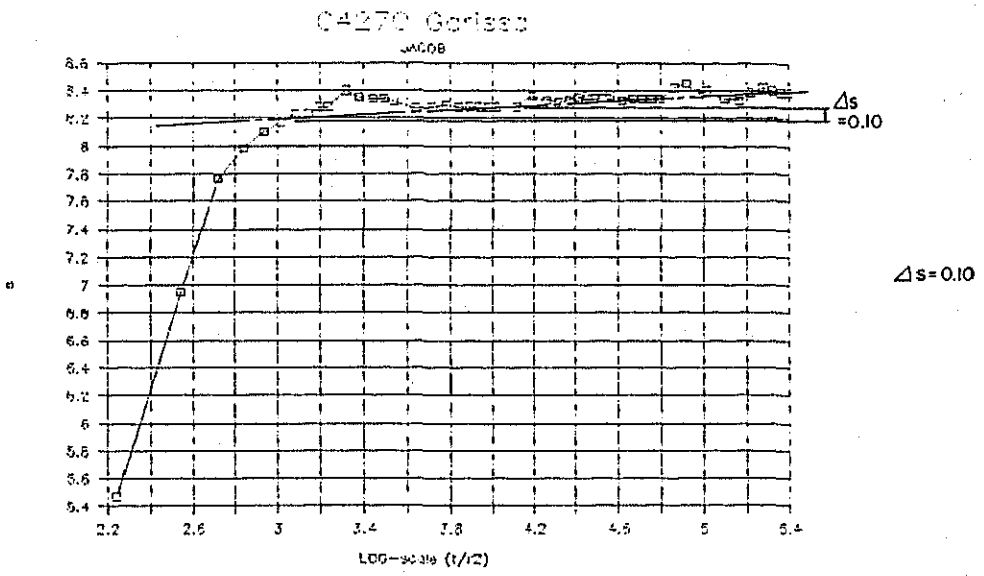
Storage coefficient

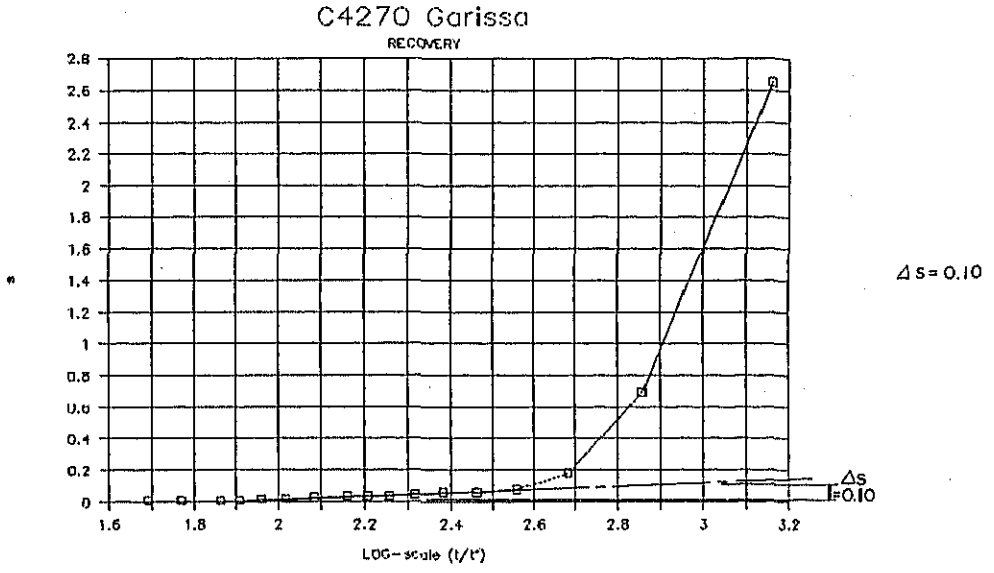
S=2.25T(t/r2)o
(t/r2)o=
S= 0.00E+00

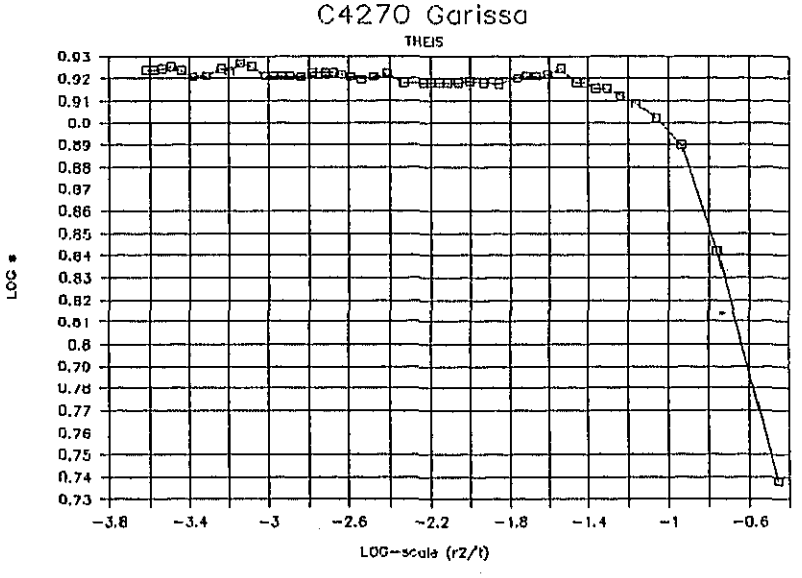
RECOVERY GRAPH : s-LOG(t/t')

B.H. NO.: C4270 Garissa
Owner : MOWD, Box 31, Garissa
Location: Dadaab District: Garissa Area Dadaab
B.H.Name: Casing Dia.(mm) : 152 Date/Time:12/12/90/ 9.10 a.m
(Pump start)

Elapsed Time(min)	LOG(t'/r2)	Water l.	s=wl-s0	t/t'	LOG(t/t')	T=0.183Q*log(t/t')/s	T=0.183Q*log(t/t')/s
0		139.05				Q(m3/sec)= 2.23E-03	(m2/sec)
1	2.2384	133.31	2.65	1441.0	3.1587	4.86E-04 (m2/sec)	T(m2/sec)= 4.08E-03
2	2.5394	131.35	0.69	721.0	2.8579	1.69E-03	(cm2/sec)= 4.08E+01
3	2.7155	130.84	0.18	481.0	2.6821	6.08E-03	(m2/hr)= 1.47E+01
4	2.8404	130.74	0.08	361.0	2.5575	1.30E-02	(m2/day)= 3.52E+02
5	2.9373	130.72	0.06	289.0	2.4609	1.67E-02	
6	3.0165	130.72	0.06	241.0	2.3820	1.62E-02	avgQ= 2.23E-03
7	3.0835	130.71	0.05	206.7	2.3154	1.89E-02	(m3/sec)
8	3.1415	130.70	0.04	181.0	2.2577	2.30E-02	
9	3.1926	130.70	0.04	161.0	2.2088	2.25E-02	ds is one LOG(t/t')
10	3.2384	130.70	0.04	145.0	2.1614	2.20E-02	(by graph) 0.10
12	3.3176	130.69	0.03	121.0	2.0828	2.83E-02	(m)
14	3.3845	130.68	0.02	103.9	2.0164	4.11E-02	
16	3.4425	130.68	0.02	91.0	1.9590	4.00E-02	
18	3.4936	130.67	0.01	81.0	1.9085	7.79E-02	
20	3.5394	130.67	0.01	73.0	1.8633	7.60E-02	
25	3.6363	130.67	0.01	58.6	1.7679	7.21E-02	
30	3.7155	130.67	0.01	49.0	1.6902	6.90E-02	


C4270 Garissa
JACOB
Δs =0.10
Δs = 0.10
LOG-scale (t/r2)


C4270 Garissa
RECOVERY
Δs = 0.10
Δs =0.10
LOG-scale (t/t')


C4270 Garissa
THEIS
LOG-scale (r2/t)

JACOB : GRAPH:s-LOG(t/r2) THEIS : GRAPH:LOG(s)-LOG (r2/t)

B.H. NO.: C4303 (Kisii)
Owner : KTDA, Box 30213, Nairobi
Location: Nyanira District: Kisii Area Nyaribari
B.H.Name: Casing Dia.(mm) : 152 Date/Time:12/11/90, 07/12/90/ 09.40hrs
(Pump start)

Elapsed Time(min)	r(m)= LOG(t/r2)	0.076 Water 1 LOG(r2/t) (m/sec)	(m) 29.75	Drawdown s=s0-wl	LOG(s)	V-NOTCH H(cm)	Q (m3/sec)	T=0.183Q*log(t/r2)/s Q(m3/sec)
0								
1	2.2384	-0.4602	31.50	1.75	0.2430	2.8	1.84E-04	4.30E-05 (m2/sec)
2	2.5394	-0.7613	32.90	3.15	0.4983	2.8	1.84E-04	2.71E-05
3	2.7155	-0.9373	34.30	4.55	0.6580	2.8	1.84E-04	2.01E-05
4	2.8404	-1.0623	35.06	5.31	0.7251	2.8	1.84E-04	1.80E-05
5	2.9373	-1.1592	35.94	6.19	0.7917	2.8	1.84E-04	1.59E-05
6	3.0165	-1.2384	36.28	6.53	0.8149	2.8	1.84E-04	1.55E-05
7	3.0835	-1.3053	36.87	7.12	0.8525	2.8	1.84E-04	1.46E-05
8	3.1415	-1.3633	37.23	7.48	0.8739	2.8	1.84E-04	1.41E-05
9	3.1926	-1.4145	37.88	8.13	0.9101	2.8	1.84E-04	1.32E-05
10	3.2384	-1.4602	38.38	8.63	0.9360	2.8	1.84E-04	1.26E-05
12	3.3176	-1.5394	38.90	9.15	0.9614	5.5	9.93E-04	6.59E-05
14	3.3845	-1.6063	39.54	9.79	0.9908	6.0	1.23E-03	7.81E-05
16	3.4425	-1.6643	40.09	10.34	1.0145	6.0	1.23E-03	7.52E-05
18	3.4936	-1.7155	40.51	10.76	1.0318	6.1	1.29E-03	7.64E-05
20	3.5394	-1.7613	41.09	11.34	1.0546	6.0	1.23E-03	7.05E-05
25	3.6363	-1.8582	41.64	11.89	1.0752	6.2	1.34E-03	7.50E-05
30	3.7155	-1.9373	42.28	12.53	1.0980	6.0	1.23E-03	6.70E-05
35	3.7824	-2.0043	42.90	13.15	1.1189	6.0	1.23E-03	6.50E-05
40	3.8404	-2.0623	43.03	13.28	1.1232	6.0	1.23E-03	6.53E-05
45	3.8916	-2.1134	43.44	13.69	1.1364	6.0	1.23E-03	6.42E-05
50	3.9373	-2.1592	43.79	14.04	1.1474	6.1	1.29E-03	6.60E-05
55	3.9787	-2.2006	44.13	14.38	1.1578	6.0	1.23E-03	6.25E-05
60	4.0165	-2.2384	44.33	14.58	1.1638	6.2	1.34E-03	6.76E-05
75	4.1134	-2.3353	44.77	15.02	1.1767	6.1	1.29E-03	6.45E-05
90	4.1926	-2.4145	45.25	15.50	1.1903	6.1	1.29E-03	6.37E-05
105	4.2596	-2.4814	45.62	15.87	1.2006	6.1	1.29E-03	6.32E-05
120	4.3176	-2.5394	46.10	16.35	1.2135	6.2	1.34E-03	6.48E-05
135	4.3687	-2.5906	46.17	16.42	1.2154	6.0	1.23E-03	6.01E-05
								ｲﾗ-
								ｲﾗ-
								ｲﾗ-
								ｲﾗ-
240	4.6186	-2.8404	32.84	3.09	0.4900	9.4	3.79E-03	1.04E-03
270	4.6697	-2.8916	34.95	5.20	0.7160	9.5	3.89E-03	6.40E-04
300	4.7155	-2.9373	34.93	5.18	0.7143	9.4	3.79E-03	6.32E-04
330	4.7569	-2.9787	35.90	6.15	0.7889	9.5	3.89E-03	5.51E-04
360	4.7947	-3.0165	36.00	6.25	0.7959	9.5	3.89E-03	5.47E-04
420	4.8616	-3.0835	36.13	6.38	0.8048	9.5	3.89E-03	5.43E-04
480	4.9196	-3.1415	36.20	6.45	0.8096	9.5	3.89E-03	5.44E-04
540	4.9708	-3.1926	36.20	6.45	0.8096	9.5	3.89E-03	5.49E-04
600	5.0165	-3.2384	36.08	6.33	0.8014	9.5	3.89E-03	5.65E-04
720	5.0957	-3.3176	36.25	6.50	0.8129	9.5	3.89E-03	5.59E-04
840	5.1627	-3.3845	36.99	7.24	0.8597	9.5	3.89E-03	5.08E-04
960	5.2206	-3.4425	37.51	7.76	0.8899	9.5	3.89E-03	4.79E-04
1080	5.2718	-3.4936	38.04	8.29	0.9186	9.5	3.89E-03	4.53E-04
1200	5.3176	-3.5394	38.48	8.73	0.9410	9.5	3.89E-03	4.34E-04
1320	5.3589	-3.5808	39.52	9.77	0.9899	9.5	3.89E-03	3.91E-04
1440	5.3967	-3.6186	41.78	12.03	1.0803	9.5	3.89E-03	3.20E-04
							1.97E-03 (avgQ)	

Transmissibility

T=2.3*Q/(4pi*ds)
(m2/sec)
T(m2/sec)= 4.50E-05
(cm2/sec)= 4.50E-01
(m2/min) 2.70E-03
(m2/day)= 3.89E+00

avgQ= 1.97E-03
m3/sec

ds:one cycle of LOG(t/r2)
(by graph=LOG(t/r2)
ds= 8.00

Storage coefficient

S=2.25T(t/r2)o
(t/r2)o= 2.15
S= 1.31E-02

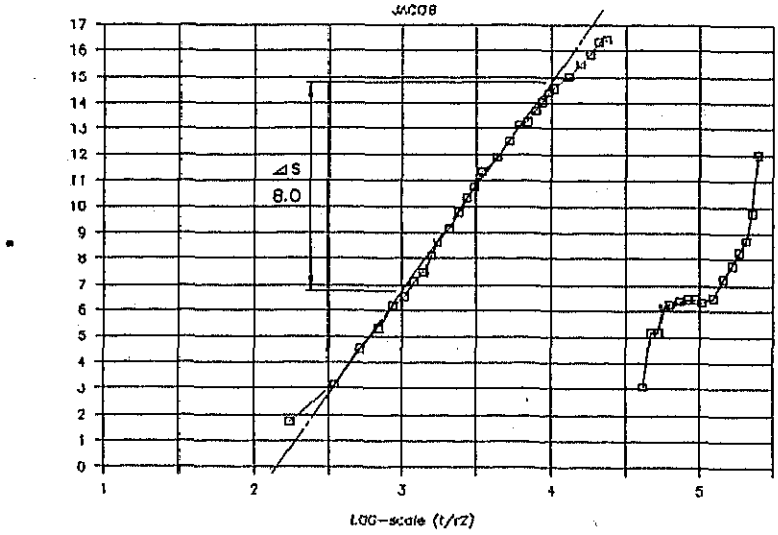
RECOVERY GRAPH : s-LOG(t/t')

B.H. NO.: C4303 (Kisii)
Owner : KTDA, Box 30213, Nairobi
Location: Nyamira District: Kisii Area Nyaribari
B.H.Name: Casing Dia.(mm) : 152 Date/Time:12/11/90, 07/12/90/ 09.40hrs
(Pump start)

Elapsed Time(min)	LOG(t'/r2)	Water l.	s=wl-s0	t/t'	LOG(t/t')	T=0.183Q*log(t/t')/s Q(m3/sec)= 1.97E-03	T=0.183Q*log(t/t')/s (m2/sec)
0		41.78					
1	2.2384	40.91	11.16	1441.0	3.1587	1.02E-04 (m2/sec)	T(m2/sec)= 6.10E-05
2	2.5394	40.08	10.33	721.0	2.8579	9.95E-05	(cm2/sec)= 6.10E-01
3	2.7155	39.83	10.08	481.0	2.6821	9.57E-05	(m2/hr)= 2.20E-01
4	2.8404	39.78	10.03	361.0	2.5575	9.17E-05	(m2/day)= 5.27E+00
5	2.9373	39.56	9.81	289.0	2.4609	9.02E-05	
6	3.0165	39.06	9.31	241.0	2.3820	9.20E-05	avgQ= 1.97E-03
7	3.0835	38.91	9.16	206.7	2.3154	9.09E-05	(m3/sec)
8	3.1415	38.70	8.95	181.0	2.2577	9.08E-05	
9	3.1926	38.15	8.40	161.0	2.2068	9.45E-05	ds is one LOG(t/t')
10	3.2384	37.99	8.24	145.0	2.1614	9.44E-05	(by graph) 5.90
12	3.3176	37.82	8.07	121.0	2.0828	9.29E-05	(m)
14	3.3845	37.71	7.96	103.9	2.0164	9.11E-05	
16	3.4425	37.18	7.43	91.0	1.9590	9.49E-05	
18	3.4936	37.01	7.26	81.0	1.9085	9.46E-05	
20	3.5394	36.81	7.06	73.0	1.8633	9.50E-05	
25	3.6363	36.70	6.95	58.6	1.7679	9.15E-05	
30	3.7155	36.51	6.76	49.0	1.6902	9.00E-05	
35	3.7824	36.42	6.67	42.1	1.6247	8.76E-05	
40	3.8404	36.08	6.33	37.0	1.5682	8.91E-05	
45	3.8916	35.19	5.44	33.0	1.5185	1.00E-04	
50	3.9373	34.10	4.35	29.8	1.4742	1.22E-04	
55	3.9787	33.90	4.15	27.2	1.4343	1.24E-04	
60	4.0165	33.17	3.42	25.0	1.3979	1.47E-04	
75	4.1134	32.86	3.11	20.2	1.3054	1.51E-04	
90	4.1926	31.01	1.26	17.0	1.2304	3.51E-04	
105	4.2596	30.81	1.06	14.7	1.1677	3.96E-04	
120	4.3176	30.68	0.93	13.0	1.1139	4.31E-04	
135	4.3687	30.52	0.77	11.7	1.0669	4.99E-04	
150	4.4145	30.37	0.62	10.6	1.0253	5.95E-04	
165	4.4559	30.37	0.62	9.7	0.9880	5.73E-04	
180	4.4936	30.36	0.61	9.0	0.9542	5.63E-04	
210	4.5606	30.35	0.60	7.9	0.8953	5.37E-04	
240	4.6186	30.32	0.57	7.0	0.8451	5.33E-04	
270	4.6697	30.30	0.55	6.3	0.8016	5.24E-04	
300	4.7155	30.28	0.53	5.8	0.7634	5.18E-04	
330	4.7569	30.28	0.53	5.4	0.7295	4.95E-04	
360	4.7947	30.28	0.53	5.0	0.6990	4.74E-04	
420	4.8616	30.24	0.49	4.4	0.6463	4.74E-04	
480	4.9196	30.21	0.46	4.0	0.6021	4.71E-04	
540	4.9708	30.15	0.40	3.7	0.5643	5.08E-04	
600	5.0165	30.01	0.26	3.4	0.5315	7.35E-04	
720	5.0957	29.86	0.11	3.0	0.4771	1.56E-03	

C4303 (Kisii)

JACOB

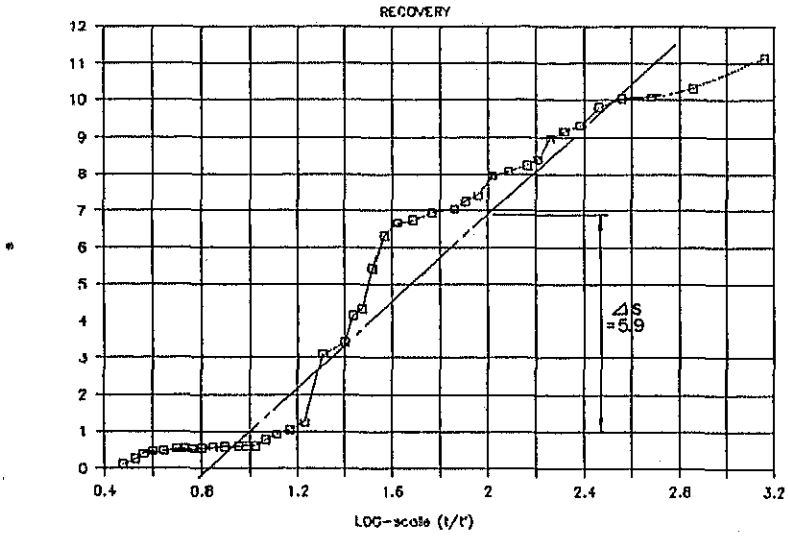


$\Delta s = 8.0$

$(1/r^2)_0 = 2.15$

C4303 (Kisii)

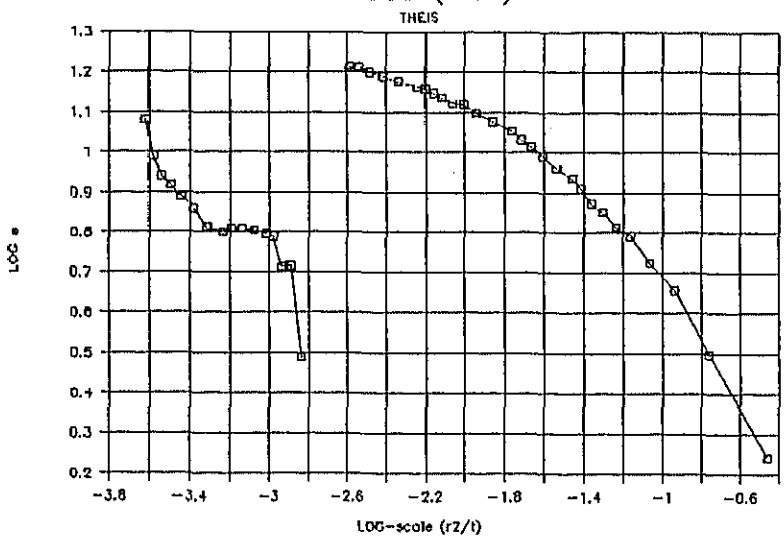
RECOVERY



$\Delta s = 5.9$

C4303 (Kisii)

THEIS



JACOB : GRAPH:s-LOG(t/r2) THEIS : GRAPH:LOG(s)-LOG (r2/t)

B.H. NO.: C4415 (Kajiado)
Owner : MOWD, P.O, Box 71, Kajiado
Location: Matapato District: Kajiado Area :Kajiado
B.H.Name: Casing Dia.(mm) : 152 Date/Time:31/12/90 06:40
(Pump start)

Elapsed Time(min)	r(m)= LOG(t/r2)	0.076 Water 1 LOG(r2/t) (m/sec)	(m) 27.42	Drawdown s=s0-wl	LOG(s)	V-NOTCH H(cm)	Q (m3/sec)	T=0.183Q*log(t/r2)/s Q(m3/sec)
0								
1	2.2384	-0.4602	27.82	0.40	-0.3979	8.0	2.53E-03	2.60E-03 (m2/sec)
2	2.5394	-0.7613	27.87	0.45	-0.3468	8.0	2.53E-03	2.62E-03
3	2.7155	-0.9373	27.89	0.47	-0.3279	8.0	2.53E-03	2.68E-03
4	2.8404	-1.0623	27.90	0.48	-0.3188	8.0	2.53E-03	2.74E-03
5	2.9373	-1.1592	27.91	0.49	-0.3098	8.0	2.53E-03	2.78E-03
6	3.0165	-1.2384	27.91	0.49	-0.3098	8.0	2.53E-03	2.86E-03
7	3.0835	-1.3053	27.99	0.57	-0.2441	8.0	2.53E-03	2.51E-03
8	3.1415	-1.3633	27.89	0.47	-0.3279	8.0	2.53E-03	3.10E-03
9	3.1926	-1.4145	27.88	0.46	-0.3372	8.0	2.53E-03	3.22E-03
10	3.2384	-1.4602	27.90	0.48	-0.3188	8.0	2.53E-03	3.13E-03
12	3.3176	-1.5394	27.90	0.48	-0.3188	8.0	2.53E-03	3.21E-03
14	3.3845	-1.6063	27.90	0.48	-0.3188	8.0	2.53E-03	3.27E-03
16	3.4425	-1.6643	27.89	0.47	-0.3279	8.0	2.53E-03	3.40E-03
18	3.4936	-1.7155	27.89	0.47	-0.3279	8.0	2.53E-03	3.45E-03
20	3.5394	-1.7613	27.89	0.47	-0.3279	8.5	2.95E-03	4.06E-03
25	3.6363	-1.8582	27.85	0.43	-0.3665	8.5	2.95E-03	4.56E-03
30	3.7155	-1.9373	27.80	0.38	-0.4202	9.0	3.40E-03	6.09E-03
35	3.7824	-2.0043	27.80	0.38	-0.4202	9.0	3.40E-03	6.20E-03
40	3.8404	-2.0623	27.80	0.38	-0.4202	9.0	3.40E-03	6.29E-03
45	3.8916	-2.1134	27.80	0.38	-0.4202	9.0	3.40E-03	6.38E-03
50	3.9373	-2.1592	27.80	0.38	-0.4202	9.0	3.40E-03	6.45E-03
55	3.9787	-2.2006	27.82	0.40	-0.3979	9.0	3.40E-03	6.19E-03
60	4.0165	-2.2384	27.80	0.38	-0.4202	9.0	3.40E-03	6.58E-03
75	4.1134	-2.3353	27.88	0.46	-0.3372	9.0	3.40E-03	5.57E-03
90	4.1926	-2.4145	27.88	0.46	-0.3372	9.0	3.40E-03	5.67E-03
105	4.2596	-2.4814	27.89	0.47	-0.3279	9.0	3.40E-03	5.64E-03
120	4.3176	-2.5394	27.80	0.38	-0.4202	9.0	3.40E-03	7.07E-03
135	4.3687	-2.5906	27.80	0.38	-0.4202	9.0	3.40E-03	7.16E-03
150	4.4145	-2.6363	27.82	0.40	-0.3979	9.0	3.40E-03	6.87E-03
165	4.4559	-2.6777	27.82	0.40	-0.3979	9.0	3.40E-03	6.94E-03
180	4.4936	-2.7155	27.80	0.38	-0.4202	9.0	3.40E-03	7.36E-03
210	4.5606	-2.7824	27.80	0.38	-0.4202	9.0	3.40E-03	7.47E-03
240	4.6186	-2.8404	27.80	0.38	-0.4202	9.0	3.40E-03	7.57E-03
270	4.6697	-2.8916	27.80	0.38	-0.4202	9.0	3.40E-03	7.65E-03
300	4.7155	-2.9373	27.83	0.41	-0.3872	9.0	3.40E-03	7.16E-03
330	4.7569	-2.9787	27.80	0.38	-0.4202	9.0	3.40E-03	7.79E-03
360	4.7947	-3.0165	27.80	0.38	-0.4202	9.0	3.40E-03	7.86E-03
420	4.8616	-3.0835	27.80	0.38	-0.4202	9.0	3.40E-03	7.96E-03
480	4.9196	-3.1415	27.80	0.38	-0.4202	9.0	3.40E-03	8.06E-03
540	4.9708	-3.1926	27.78	0.36	-0.4437	9.0	3.40E-03	8.60E-03
600	5.0165	-3.2384	27.80	0.38	-0.4202	9.0	3.40E-03	8.22E-03
720	5.0957	-3.3176	27.80	0.38	-0.4202	9.0	3.40E-03	8.35E-03
840	5.1627	-3.3845	27.80	0.38	-0.4202	9.0	3.40E-03	8.46E-03
960	5.2206	-3.4425	27.80	0.38	-0.4202	9.0	3.40E-03	8.55E-03
1080	5.2718	-3.4936	27.80	0.38	-0.4202	9.0	3.40E-03	8.64E-03
1200	5.3176	-3.5394	27.80	0.38	-0.4202	9.0	3.40E-03	8.71E-03
1320	5.3589	-3.5808	27.80	0.38	-0.4202	9.0	3.40E-03	8.78E-03
1440	5.3967	-3.6186	27.80	0.38	-0.4202	9.0	3.40E-03	8.84E-03
							3.13E-03 (avgQ)	

Transmissibility

T=2.3*Q/(4pi*ds)
(m2/sec)
T(m2/sec)=
(cm2/sec)=
(m2/min)
(m2/day)=

avgQ= 3.13E-03
m3/sec

ds:one cycle of LOG(t/r2)
(by graph=LOG(t/r2)
ds=

Storage coefficient

S=2.25T(t/r2)o
(t/r2)o=
S=

RECOVERY GRAPH : s-LOG(t/t')

B.H. NO.: C4415

Owner : NOWD, P.O, Box 71, Kajiado

Location: Kajiado District: Kajiado Area Kajiado

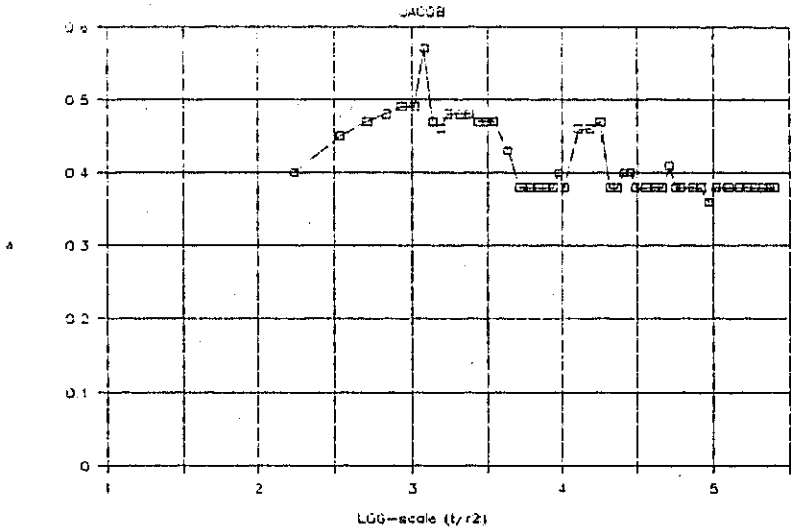
B.H.Name: Casing Dia.(mm) : 152 Date/Time:31/12/90 06:40

(Pump start)

Elapsed Time(min)	LOG(t'/r2)	Water l.	s=wl-s0	t/t'	LOG(t/t')	T=0.183Q*log(t/t')/s	T=0.183Q*log(t/t')/s
0		27.80				Q(m3/sec)= 3.13E-03	(m2/sec)
1	2.2384	27.56	0.14	1441.0	3.1587	1.29E-02 (m2/sec)	T(m2/sec)= 1.22E-02
2	2.5394	27.56	0.14	721.0	2.8579	1.17E-02	(cm2/sec)= 1.22E+02
3	2.7155	27.56	0.14	481.0	2.6821	1.10E-02	(m2/hr)= 4.39E+01
4	2.8404	27.54	0.12	361.0	2.5575	1.22E-02	(m2/day)= 1.05E+03
5	2.9373	27.54	0.12	289.0	2.4609	1.17E-02	
6	3.0165	27.51	0.09	241.0	2.3820	1.52E-02	avgQ= 3.13E-03
7	3.0835	27.50	0.08	206.7	2.3154	1.66E-02	(m3/sec)
8	3.1415	27.50	0.08	181.0	2.2577	1.62E-02	
9	3.1926	27.50	0.08	161.0	2.2068	1.58E-02	ds is one LOG(t/t')
10	3.2384	27.50	0.08	145.0	2.1614	1.55E-02	(by graph) 0.05
12	3.3176	27.50	0.08	121.0	2.0828	1.49E-02	(m)
14	3.3845	27.49	0.07	103.9	2.0164	1.65E-02	
16	3.4425	27.48	0.06	91.0	1.9590	1.87E-02	
18	3.4936	27.48	0.06	81.0	1.9085	1.82E-02	
20	3.5394	27.48	0.06	73.0	1.8633	1.78E-02	
25	3.6363	27.48	0.06	58.6	1.7679	1.69E-02	
30	3.7155	27.48	0.06	49.0	1.6902	1.61E-02	
35	3.7824	27.48	0.06	42.1	1.6247	1.55E-02	
40	3.8404	27.48	0.06	37.0	1.5682	1.50E-02	
45	3.8916	27.48	0.06	33.0	1.5185	1.45E-02	
50	3.9373	27.48	0.06	29.8	1.4742	1.41E-02	
55	3.9787	27.48	0.06	27.2	1.4343	1.37E-02	
60	4.0165	27.48	0.06	25.0	1.3979	1.33E-02	
75	4.1134	27.47	0.05	20.2	1.3054	1.50E-02	
90	4.1926	27.47	0.05	17.0	1.2304	1.41E-02	
105	4.2596	27.47	0.05	14.7	1.1677	1.34E-02	
120	4.3176	27.47	0.05	13.0	1.1139	1.28E-02	
135	4.3687	27.47	0.05	11.7	1.0669	1.22E-02	
150	4.4145	27.47	0.05	10.6	1.0253	1.17E-02	
165	4.4559	27.47	0.05	9.7	0.9880	1.13E-02	
180	4.4936	27.47	0.05	9.0	0.9542	1.09E-02	
210	4.5606	27.47	0.05	7.9	0.8953	1.03E-02	
240	4.6186	27.46	0.04	7.0	0.8451	1.21E-02	
270	4.6697	27.46	0.04	6.3	0.8016	1.15E-02	
300	4.7155	27.46	0.04	5.8	0.7634	1.09E-02	
330	4.7569	27.46	0.04	5.4	0.7295	1.04E-02	
360	4.7947	27.46	0.04	5.0	0.6990	1.00E-02	
420	4.8616	27.45	0.03	4.4	0.6463	1.23E-02	
480	4.9196	27.44	0.02	4.0	0.6021	1.72E-02	
540	4.9708	27.44	0.02	3.7	0.5643	1.62E-02	
600	5.0165	27.44	0.02	3.4	0.5315	1.52E-02	
720	5.0957	27.43	0.01	3.0	0.4771	2.73E-02	

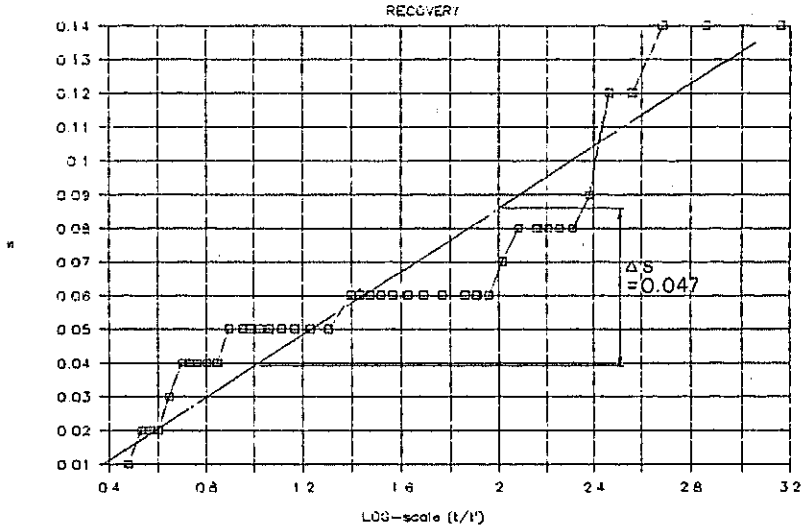
C4415

JACOB



C4415

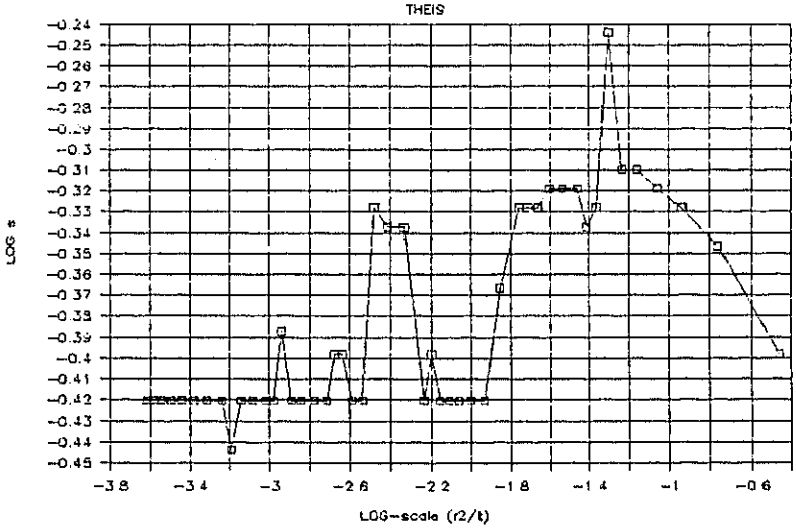
RECOVERY



ΔS = 0.047

C4415

THEIS



JACOB : GRAPH:s-LOG(t/r2) THEIS : GRAPH:LOG(s)-LOG (r2/t)

B.H. NO.: C4422 (Kilifi)
Owner : MOWD, Box 3052, Nairobi
Location: Ganze District: Kilifi Area Ganze
B.H.Name: Casing Dia.(mm) : 152 Date/Time:9/1/91/ 7.30 a.m
(Pump start)

Elapsed Time(min)	r(m)= LOG(t/r2)	0.076 LOG(r2/t) (m/sec)	Water l (m)	Drawdown s=s0-wl	LOG(s)	V-NOTCH H(cm)	Q (m3/sec)	T=0.183Q*log(t/r2)/s Q(m3/sec)
0			66.01					
1	2.2384	-0.4602	79.05	13.04	1.1153	6.8	1.69E-03	5.30E-05 (m2/sec)
2	2.5394	-0.7613	89.57	23.56	1.3722	6.8	1.69E-03	3.33E-05
3	2.7155	-0.9373	96.79	30.78	1.4883	6.8	1.69E-03	2.73E-05
4	2.8404	-1.0623	103.54	37.53	1.5744	6.8	1.69E-03	2.34E-05
5	2.9373	-1.1592	109.84	43.83	1.6418	6.8	1.69E-03	2.07E-05
6	3.0165	-1.2384	116.02	50.01	1.6991	6.8	1.69E-03	1.86E-05
7	3.0835	-1.3053	121.30	55.29	1.7426	6.8	1.69E-03	1.72E-05
8	3.1415	-1.3633	125.11	59.10	1.7716	6.8	1.69E-03	1.64E-05
9	3.1926	-1.4145	130.69	64.68	1.8108	6.8	1.69E-03	1.52E-05
10	3.2384	-1.4602	133.79	67.78	1.8311	4.6	6.35E-04	5.56E-06
12	3.3176	-1.5394	134.71	68.70	1.8370	4.6	6.35E-04	5.61E-06
14	3.3845	-1.6063	137.20	71.19	1.8524	4.6	6.35E-04	5.53E-06
16	3.4425	-1.6643	138.49	72.48	1.8602	4.6	6.35E-04	5.52E-06
18	3.4936	-1.7155	139.58	73.55	1.8666	4.6	6.35E-04	5.52E-06
20	3.5394	-1.7613	140.58	74.57	1.8726	4.6	6.35E-04	5.52E-06
25	3.6363	-1.8582	138.22	72.21	1.8586	4.6	6.35E-04	5.86E-06
30	3.7155	-1.9373	136.26	70.25	1.8466	3.6	3.44E-04	3.33E-06
35	3.7824	-2.0043	134.32	68.31	1.8345	3.6	3.44E-04	3.49E-06
40	3.8404	-2.0623	135.76	69.75	1.8435	3.8	3.94E-04	3.97E-06
45	3.8916	-2.1134	137.21	71.20	1.8525	3.8	3.94E-04	3.94E-06
50	3.9373	-2.1592	138.79	72.78	1.8620	3.8	3.94E-04	3.90E-06
55	3.9787	-2.2006	140.22	74.21	1.8705	3.8	3.94E-04	3.87E-06
60	4.0165	-2.2384	140.96	74.95	1.8748	3.8	3.94E-04	3.86E-06
75	4.1134	-2.3353	143.22	77.21	1.8877	3.8	3.94E-04	3.84E-06
90	4.1926	-2.4145	145.22	79.21	1.8988	3.8	3.94E-04	3.82E-06
105	4.2596	-2.4814	146.44	80.43	1.9054	3.8	3.94E-04	3.82E-06
120	4.3176	-2.5394	147.59	81.58	1.9116	3.8	3.94E-04	3.82E-06
135	4.3687	-2.5906	149.09	83.08	1.9195	3.8	3.94E-04	3.79E-06
150	4.4145	-2.6363	149.85	83.84	1.9235	3.8	3.94E-04	3.80E-06
165	4.4559	-2.6777	149.98	83.97	1.9241	3.8	3.94E-04	3.83E-06
180	4.4936	-2.7155	150.81	84.80	1.9284	3.8	3.94E-04	3.82E-06
210	4.5606	-2.7824	151.59	85.58	1.9324	3.8	3.94E-04	3.84E-06
240	4.6186	-2.8404	152.12	86.11	1.9351	3.8	3.94E-04	3.87E-06
270	4.6697	-2.8916	152.17	86.16	1.9353	3.8	3.94E-04	3.91E-06
300	4.7155	-2.9373	152.20	86.19	1.9355	3.8	3.94E-04	3.95E-06
330	4.7569	-2.9787	152.22	86.21	1.9356	3.8	3.94E-04	3.98E-06
360	4.7947	-3.0165	152.22	86.21	1.9356	3.8	3.94E-04	4.01E-06
420	4.8616	-3.0835	151.28	85.27	1.9308	3.8	3.94E-04	4.11E-06
480	4.9196	-3.1415	151.05	85.04	1.9296	3.8	3.94E-04	4.17E-06
540	4.9708	-3.1926	151.05	85.04	1.9296	3.8	3.94E-04	4.22E-06
600	5.0165	-3.2384	149.07	83.06	1.9194	3.5	3.21E-04	3.55E-06
720	5.0957	-3.3176	147.63	81.62	1.9118	3.5	3.21E-04	3.67E-06
840	5.1627	-3.3845	147.67	81.66	1.9120	3.5	3.21E-04	3.71E-06
960	5.2206	-3.4425	147.59	81.58	1.9116	3.5	3.21E-04	3.76E-06
1080	5.2718	-3.4936	146.94	80.93	1.9081	3.5	3.21E-04	3.82E-06
1200	5.3176	-3.5394	147.04	81.03	1.9086	3.5	3.21E-04	3.85E-06
1320	5.3589	-3.5808	146.90	80.89	1.9079	3.5	3.21E-04	3.89E-06
1440	5.3967	-3.6186	147.52	81.51	1.9112	3.5	3.21E-04	3.89E-06
							6.58E-04 (avgQ)	

Transmissibility

T=2.3*Q/(4pi*ds)
(m2/sec)
T(m2/sec)= 4.15E-06
(cm2/sec)= 4.15E-02
(m2/min) 2.49E-04
(m2/day)= 3.59E-01

avgQ= 6.58E-04
m3/sec

ds:one cycle of LOG(t/r2)
(by graph=LOG(t/r2)
ds= 29.00

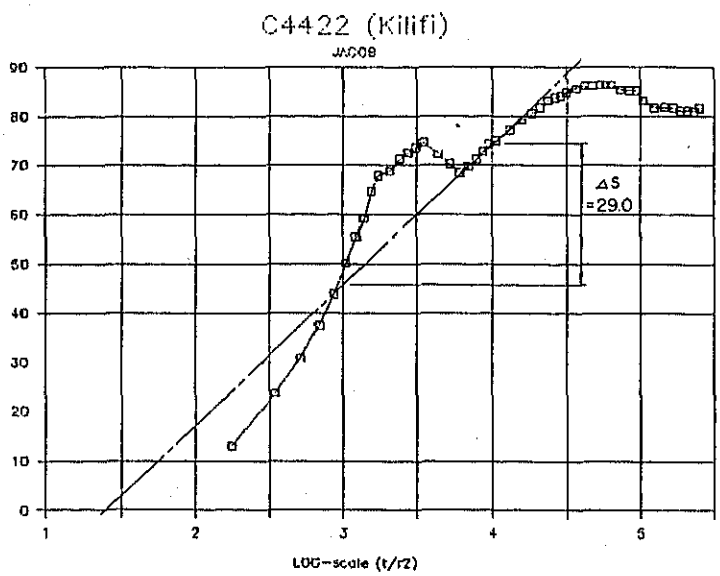
Storage coefficient

S=2.25T(t/r2)o
(t/r2)o= 1.40
S= 7.84E-04

RECOVERY GRAPH : s-LOG(t/t')

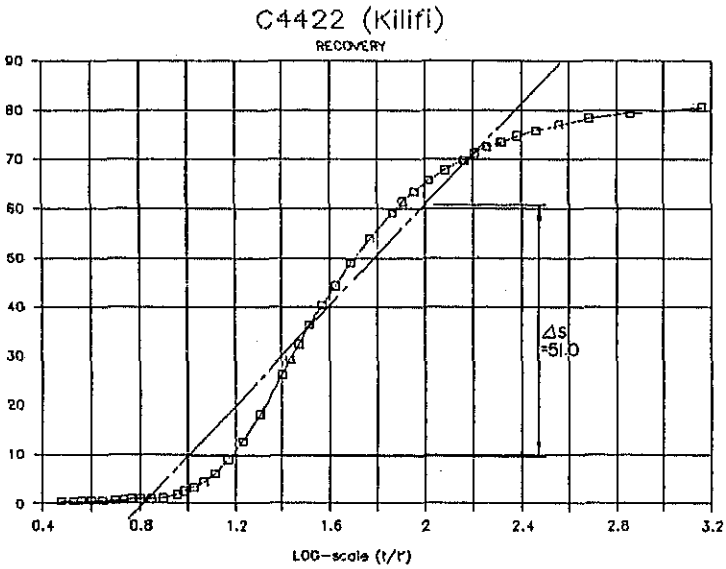
B.H. NO.: C4422 (Kilifi)
Owner : MOWD, Box 3052, Nairobi
Location: Ganze District: Kilifi Area Ganze
B.H.Name: Casing Dia.(mm) : 152 Date/Time:9/1/91/ 7.30 a.m
(Pump start)

Elapsed Time(min)	LOG(t'/r2)	Water l.	s=wl-s0	t/t'	LOG(t/t')	T=0.183Q*log(t/t')/s	T=0.183Q*log(t/t')/s
0		147.52				Q(m3/sec)= 6.58E-04	(m2/sec)
1	2.2384	146.53	80.52	1441.0	3.1587	4.72E-06 (m2/sec)	T(m2/sec)= 2.36E-06
2	2.5394	145.24	79.23	721.0	2.8579	4.34E-06	(cm2/sec)= 2.36E-02
3	2.7155	144.22	78.21	481.0	2.6821	4.13E-06	(m2/hr)= 8.49E-03
4	2.8404	143.02	77.01	361.0	2.5575	4.00E-06	(m2/day)= 2.04E-01
5	2.9373	141.78	75.77	289.0	2.4609	3.91E-06	
6	3.0165	140.64	74.63	241.0	2.3820	3.84E-06	avgQ= 6.58E-04
7	3.0835	139.49	73.48	206.7	2.3154	3.79E-06	(m3/sec)
8	3.1415	138.50	72.49	181.0	2.2577	3.75E-06	
9	3.1926	137.29	71.28	161.0	2.2068	3.73E-06	ds is one LOG(t/t')
10	3.2384	135.71	69.70	145.0	2.1614	3.73E-06	(by graph) 51.00
12	3.3176	133.86	67.85	121.0	2.0828	3.69E-06	(n)
14	3.3845	131.72	65.71	103.9	2.0164	3.69E-06	
16	3.4425	129.41	63.40	91.0	1.9590	3.72E-06	
18	3.4936	127.30	61.29	81.0	1.9085	3.75E-06	
20	3.5394	125.17	59.16	73.0	1.8633	3.79E-06	
25	3.6363	119.89	53.88	58.6	1.7679	3.95E-06	
30	3.7155	114.97	48.96	49.0	1.6902	4.15E-06	
35	3.7824	110.18	44.17	42.1	1.6247	4.43E-06	
40	3.8404	106.24	40.23	37.0	1.5682	4.69E-06	
45	3.8916	102.32	36.31	33.0	1.5185	5.03E-06	
50	3.9373	98.34	32.33	29.8	1.4742	5.49E-06	
55	3.9787	95.24	29.23	27.2	1.4343	5.91E-06	
60	4.0165	92.13	26.12	25.0	1.3979	6.44E-06	
75	4.1134	84.04	18.03	20.2	1.3054	8.71E-06	
90	4.1926	78.67	12.66	17.0	1.2304	1.17E-05	
105	4.2596	74.74	8.73	14.7	1.1677	1.61E-05	
120	4.3176	71.97	5.96	13.0	1.1139	2.25E-05	
135	4.3687	70.32	4.31	11.7	1.0669	2.98E-05	
150	4.4145	69.24	3.23	10.6	1.0253	3.82E-05	
165	4.4559	68.53	2.52	9.7	0.9880	4.72E-05	
180	4.4936	67.87	1.86	9.0	0.9542	6.17E-05	
210	4.5606	67.23	1.22	7.9	0.8953	8.83E-05	
240	4.6186	67.09	1.08	7.0	0.8451	9.42E-05	
270	4.6697	67.06	1.05	6.3	0.8016	9.19E-05	
300	4.7155	67.04	1.03	5.8	0.7634	8.92E-05	
330	4.7569	66.71	0.70	5.4	0.7295	1.25E-04	
360	4.7947	66.67	0.66	5.0	0.6990	1.27E-04	
420	4.8616	66.61	0.60	4.4	0.6463	1.30E-04	
480	4.9196	66.58	0.57	4.0	0.6021	1.27E-04	
540	4.9708	66.55	0.54	3.7	0.5643	1.26E-04	
600	5.0165	66.54	0.53	3.4	0.5315	1.21E-04	
720	5.0957	66.50	0.49	3.0	0.4771	1.17E-04	



$\Delta s = 29.0$

$(t/r^2)_0 = 1.4$



$\Delta s = 51.0$