

MISSIMER & ASSOC., INC.

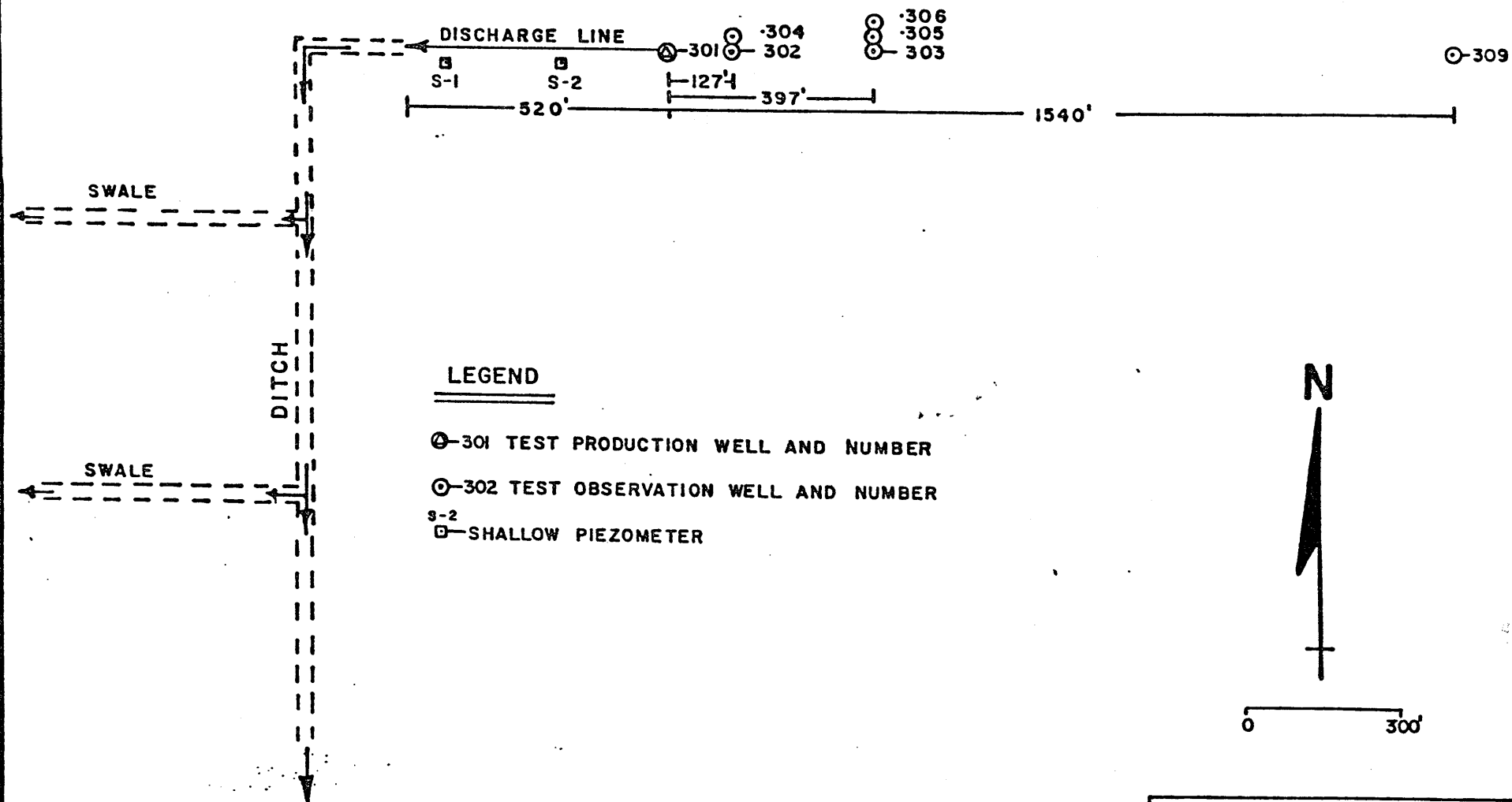
A-0410569-1

1987

LOCATION OF USSC, SOUTHERN DIVISION RANCH AQUIFER TEST
SITES, 4-87

PHASE II AQUIFER TEST SITE

SECTION 29



MISSIMER & ASSOC., INC.

A-0120569-2

1987

SCHEMATIC DIAGRAM SHOWING PHASE II AQUIFER TEST SET-UP.

CONSTRUCTION DETAILS OF MONITOR AND TEST PRODUCTION WELLS

<u>Well Number</u>	<u>Total Depth (feet)</u>	<u>Drilled Depth (feet)</u>	<u>Casing Diameter (inches)</u>	<u>Casing Depth (feet)</u>	<u>Casing Type</u>	<u>Finish</u>
H-M-231	129	200	4	67	PVC	Open Hole
H-M-232	177	180	4	49	PVC	Open Hole
H-M-233	177	180	4	49	PVC	Open Hole
H-M-234	188	190	4	42	PVC	Open Hole
H-M-235	125	125	12	65	PVC	Open Hole
H-M-236	130	131	4	65	PVC	Open Hole
H-M-237	126	193	4	65	PVC	Open Hole
H-M-241	112	--	6	--	Steel	Open Hole
H-M-242	--	--	6	--	Steel	Open Hole
PW H-M-301	124	180	10	76	PVC	Open Hole
1 H-M-302	140	140	4	77	PVC	Open Hole
2 H-M-303	140	140	4	77	PVC	Open Hole
H-M-304	15	15	4	5	PVC	10' PVC
H-M-305	10	10	4	5	PVC	Slot Screen 5' PVC
H-M-306	28	28	4	23	PVC	Slot Screen 5' PVC
3 H-M-309	120	120	8	77	PVC	Slot Screen Open Hole

TABLE 2. COMPUTED AQUIFER HYDRAULIC COEFFICIENTS

PHASE I TEST: SECTION 5

<u>Well No.</u>	<u>Method</u>	<u>Transmissivity (gpd/ft)</u>	<u>Storage Coefficient</u>	<u>Leakance Coefficient (gpd/ft³)</u>
H-M-231	Straight Line	106,000	---	---
	Curve Matching	105,000	3.7×10^{-4}	1.1×10^{-3}
H-M-236	Straight Line	114,000	---	---
	Curve Matching	96,000	3.9×10^{-4}	2.5×10^{-3}
H-M-237	Straight Line	125,000	---	---
	Curve Matching	105,000	5.0×10^{-4}	1.1×10^{-3}
H-M-241	Straight Line	139,000	---	---
	Curve Matching	123,000	6.0×10^{-4}	1.1×10^{-3}
H-M-242	Curve Matching	123,000	5.6×10^{-4}	1.3×10^{-3}
--	Distance Drawdown (Straight Line)	100,000	---	---
--	Computer Fit:			
	Equilibrium	105,000	--	1.0×10^{-3}
	Non-Steady State	105,000	5×10^{-4}	1.2×10^{-3}

PHASE II TEST: SECTION 29

<u>Well No.</u>	<u>Method</u>	<u>Transmissivity (gpd/ft)</u>	<u>Storage Coefficient</u>	<u>Leakance Coefficient (gpd/ft³)</u>
H-M-302	Straight Line	330,000	---	---
	Curve Matching	320,000	3.4×10^{-4}	1.3×10^{-4}

TABLE 2. COMPUTER AQUIFER HYDRAULIC COEFFICIENTS - Continued:

<u>Well No.</u>	<u>Method</u>	<u>Transmissivity (gpd/ft)</u>	<u>Storage Coefficient</u>	<u>Leakance Coefficient (gpd/ft³)</u>
H-M-303	Straight Line	330,000	2.4×10^{-4}	---
	Curve Matching	330,000	2.6×10^{-4}	1.0×10^{-4}
H-M-309	Straight Line	380,000	2.1×10^{-4}	---
	Curve Matching	330,000	8.0×10^{-4}	1.4×10^{-3}
--	Distance Drawdown (Straight Line)	360,000	1.7×10^{-4}	---
--	Computer Fit: Equilibrium	330,000	---	1.5×10^{-3}

APPENDIX C

**TIME AND DRAWDOWN OR RECOVERY
MEASUREMENTS OF PHASE II AQUIFER TEST MONITOR WELLS**

TIME VS. DRAWDOWN IN WELL H-M-301 (PRODUCTION)
DURING AQUIFER PERFORMANCE TEST

<u>Time (min.)</u>	<u>Drawdown (ft.)</u>
3.5	9.77
5	8.96
6.5	9.0
8	9.03
10	9.02
12	9.02
14	9.07
16	9.02
20	9.63
25	9.63
30	9.68
35	9.73
40	9.78
50	9.84
62	9.88
78	9.9
93	9.96
108	9.96
119	9.98
148	10.04
192	10.06
235	10.14
308	10.18
360	10.28
430	10.13
505	10.55
565	10.4
630	10.41
675	10.45
765	10.54
850	10.58
1049	10.64
1248	10.62
1340	10.55
1440	10.63
1620	10.56
1800	10.6
2030	10.83
2202	10.87
2425	10.83
2750	10.87
3120	10.65
3370	10.86
3660	10.96
3855	10.92
4158	10.96
4330	10.85

TIME VS. DRAWDOWN IN WELL H-M-302
DURING AQUIFER PERFORMANCE TEST

<u>Time (min.)</u>	<u>Drawdown (ft.)</u>
.25	.29
.33	.425
.50	.575
.67	.700
.85	.770
1	.823
1.25	.880
1.5	.890
1.75	.910
2	.913
2.5	1.02
3	1.065
3.5	1.112
4	1.155
5	1.222
6	1.27
7	1.312
8	1.349
9	1.38
10	1.41
12	1.46
14	1.505
17	1.68
20	1.69
25	1.73
30	1.78
35	1.824
40	1.865
50	1.93
60	1.984
75	2.043
89	2.09
102	2.12
117	2.15
147	2.21
185	2.26
221	2.31
250	2.34
305	2.38
360	2.425
428	2.44
500	2.525
550	2.56
610	2.54
665	2.55
760	2.58
850	2.59
1032	2.6
1235	2.62

TIME VS. DRAWDOWN IN WELL H-M-302
DURING AQUIFER PERFORMANCE TEST - continued:

<u>Time (min.)</u>	<u>Drawdown (ft.)</u>
1320	2.63
1440	2.635
1620	2.645
1800	2.66
2018	2.722
2190	2.75
2420	2.751
2716	2.767
2880	2.739
3120	2.716
3340	2.779
3600	2.818
3850	2.81
4158	2.81
4320	2.79

TIME VS. DRAWDOWN IN WELL H-M-303
DURING AQUIFER PERFORMANCE TEST

<u>Time (min.)</u>	<u>Drawdown (ft.)</u>
.17	.01
.33	.055
.5	.11
.67	.163
.83	.21
1	.25
1.25	.30
1.5	.334
2	.393
2.5	.44
3	.49
3.5	.53
4	.56
5	.62
6	.67
7	.71
8	.74
9	.78
10	.81
12	.86
14	.90
17	1.005
20	1.055
25	1.105
30	1.15
35	1.20
40	1.23
45	1.27
50	1.33
60	1.343
75	1.405
90	1.455
106	1.50
120	1.53
150	1.59
180	1.63
210	1.67
256	1.73
303	1.77
364	1.81
420	1.83
495	1.91
548	1.93
605	1.94
663	1.945
760	1.97
845	1.98

TIME VS. DRAWDOWN IN WELL H-M-303
DURING AQUIFER PERFORMANCE TEST - continued:

<u>Time (min.)</u>	<u>Drawdown (ft.)</u>
1028	1.99
1232	2.01
1318	2.02
1445	2.03
1620	2.01
1800	2.03
2012	2.08
2183	2.109
2415	2.11
2712	2.126
2886	2.109
3127	2.09
3350	2.149
3600	2.158
3845	2.17
4155	2.17
4295	2.16

TIME VS. DRAWDOWN IN WELL H-M-304
DURING AQUIFER PERFORMANCE TEST

<u>Time (min.)</u>	<u>Drawdown (ft.)</u>
2	0
5	0.005
7	0.005
30	0.011
88	0.024
102	0.037
116	0.048
147	0.063
186	0.083
222	0.103
250	0.115
361	0.139
427	0.15
500	0.139
550	0.131
610	0.129
665	0.128
850	0.128
1032	0.12
1320	0.137
1440	0.13
1620	0.18
2209	0.231
2880	0.224
3350	0.36
3600	0.334
4320	0.252

TIME VS. DRAWDOWN IN WELL H-M-305
DURING AQUIFER PERFORMANCE TEST

<u>Time (min.)</u>	<u>Drawdown (ft.)</u>
4	0.015
5	0.015
7	0.017
12	0.021
18	0.029
27	0.041
42	0.053
50	0.063
61	0.07
76	0.083
90	0.093
120	0.09
150	0.115
180	0.124
210	0.165
256	0.165
305	0.18
540	0.192
600	0.192
660	0.192
760	0.190
845	0.184
1028	0.168
1230	0.193
1318	0.196
1445	0.183
1620	0.29
1800	0.335
2013	0.316
2183	0.306
2413	0.285
2710	0.304
2880	0.296
3120	0.435
3350	0.446
3600	0.415
3845	0.383
4155	0.354

TIME VS. DRAWDOWN IN WELL H-M-306
DURING AQUIFER PERFORMANCE TEST

<u>Time (min.)</u>	<u>Drawdown (ft.)</u>
2	0
4	0.002
5.5	0.01
7.5	0.02
10	0.034
14	0.044
20.5	0.057
25.5	0.061
30	0.067
50	0.078
61	0.082
75	0.093
86	0.109
116	0.118
147	0.142
181	0.145
222	0.166
240	0.178
305	0.182
362	0.203
426	0.208
500	0.212
550	0.202
610	0.201
665	0.201
760	0.205
850	0.205
1032	0.196
1235	0.208
1320	0.216
1440	0.212
1620	0.272
1800	0.329
1980	0.319
2160	0.318
2400	0.288
2706	0.298
2880	0.306
3120	0.406
3350	0.421
3600	0.37
3850	0.338
4158	0.33

TIME VS. DRAWDOWN IN WELL H-M-309
DURING AQUIFER PERFORMANCE TEST

<u>Time (min.)</u>	<u>Drawdown (ft.)</u>
1	.002
1.25	.006
2	.009
2.5	.015
3	.022
3.5	.030
4	.040
5	.059
6	.078
7	.097
8	.117
9	.134
10	.151
12	.181
14	.213
17	.253
20	.293
25	.350
30	.386
35	.424
40	.455
50	.511
60	.558
75	.615
90	.665
107	.713
120	.743
150	.80
180	.85
212	.89
262	.95
300	.99
370	1.05
410	1.065
490	1.12
540	1.15
598	1.17
659	1.18
753	1.205
840	1.22
1022	1.23
1228	1.25
1315	1.26
1440	1.26
1620	1.242
1800	1.252
2006	1.304
2178	1.33

TIME VS. DRAWDOWN IN WELL H-M-309
DURING AQUIFER PERFORMANCE TEST - continued:

<u>Time (min.)</u>	<u>Drawdown (ft.)</u>
2409	1.332
2704	1.349
2880	1.34
3120	1.325
3360	1.387
3605	1.427
3840	1.415
4150	1.41
4320	1.41

MEASURED WATER LEVEL FLUCTUATION IN
SHALLOW PIEZOMETERS #1 & #2

Time from start
of test (min.)

Water level, relative to static
water level (ft)

	<u>P-2</u>	<u>P-1</u>
60	+ 0.01	+ 0.03
210	+ 0.04	+ 0.09
310	+ 0.04	+ 0.09
450	+ 0.05	+ 0.1
620	+ 0.06	+ 0.09
1040	+ 0.03	+ 0.07
1240	+ 0.02	+ 0.06
1485	+ 0.01	+ 0.07
1800	+ 0.01	+ 0.04
2200	--	+ 0.08
2750	- 0.06	+ 0.04
2900	- 0.01	+ 0.05
3120	+ 0.04	+ 0.13
3600	- 0.04	--
4120	--	+ 0.08
4320	- 0.02	+ 0.05

TIME VS. RECOVERY IN WELL H-M-302

<u>Time (min.)</u>	<u>Recovery (ft.)</u>
5	+ 1.135
6	1.185
7	1.228
8	1.26
9	1.295
10	1.328
12	1.377
14	1.42
17	1.472
20	1.518
25	1.57
31	1.63
35	1.663
43	1.726
60	1.845
75	1.938
90	1.903
105	2.06
120	2.105
180	2.254
240	2.333
300	2.391
360	2.428
420	2.453
480	2.474
540	2.491
600	2.501
660	2.511
720	2.522
840	2.558
960	2.584
1080	2.612
1200	2.613
1320	2.618
1440	2.629
1620	2.663
1800	2.648
1980	2.608
2160	2.595
2400	2.626
2640	2.638
2880	2.622
3120	2.64
3360	2.597
3600	2.564
3840	2.603
4080	2.621
4320	2.598

TIME VS. RECOVERY IN WELL H-M-303

<u>Time (min.)</u>	<u>Recovery (ft.)</u>
0.1	0
0.2	0.058
0.4	0.082
0.5	0.112
0.7	0.142
0.8	0.178
1	0.203
1.25	0.242
1.5	0.279
2	0.332
3	0.44
3.5	0.478
4	0.517
5	0.569
6	0.619
7	0.658
8	0.698
9	0.732
10	0.75
12	0.798
14	0.84
17	0.892
20	0.93
25	0.988
30	1.032
35	1.069
42.5	1.12
50	1.166
60	1.222
75	1.301
90	1.368
105	1.422
120	1.47
180	1.64
240	1.72
300	1.778
360	1.816
420	1.84
480	1.86
540	1.87
600	1.88
660	1.892
720	1.91
840	1.94
960	1.966
1080	1.983
1200	1.988
1320	1.99
1440	2.01

TIME VS. RECOVERY IN WELL H-M-303 - continued:

<u>Time (min.)</u>	<u>Recovery (ft.)</u>
1620	2.031
1800	2.009
1980	1.976
2160	1.963
2400	2.0
2640	2.007
2880	1.992
3120	2.008
3360	1.962
3600	1.941
3840	1.98
4080	1.984
4320	1.968

TIME VS. RECOVERY IN WELL H-M-309

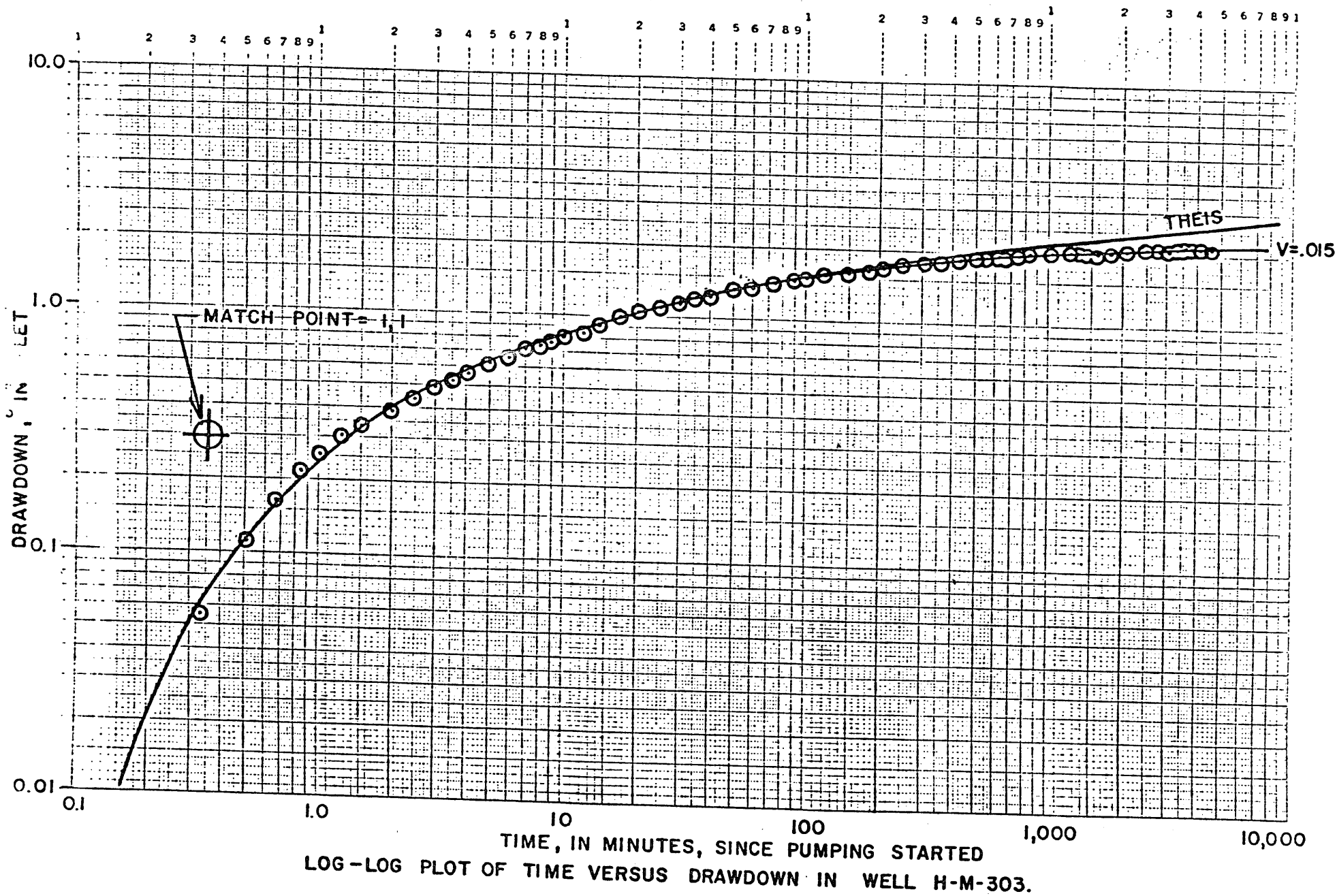
<u>Time (min.)</u>	<u>Recovery (ft.)</u>
0-1	0
1.5	0.004
2	0.008
3	0.012
4	0.032
5	0.058
6	0.076
7	0.09
8	0.107
9	0.119
10	0.135
12	0.159
14	0.184
17	0.216
20	0.245
24	0.299
31	0.326
35	0.351
40	0.38
50	0.433
60	0.48
93	0.617
110	0.653
127	0.688
180	0.708
240	0.768
300	0.788
360	0.798
420	0.805
480	0.809
540	0.81
600	0.813
660	0.818
720	0.819
840	0.821
960	0.83
1080	0.831
1200	0.831
1320	0.832
1440	0.841
1620	0.857
1800	0.858
1980	0.858
2160	0.858
2400	0.928
2640	0.928
2880	0.929
3120	0.985
3360	0.985

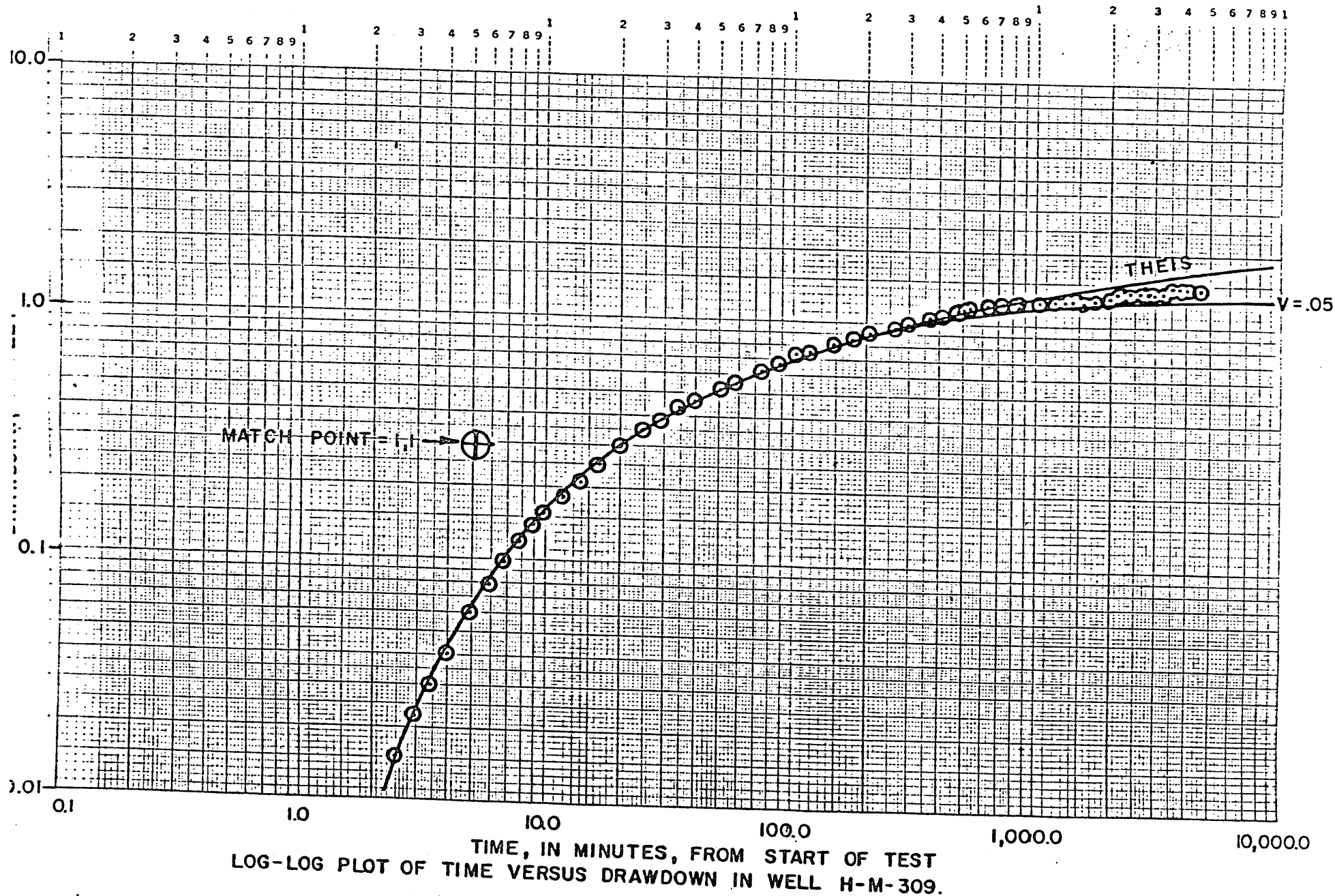
TIME VS. RECOVERY IN WELL H-M-309 - continued:

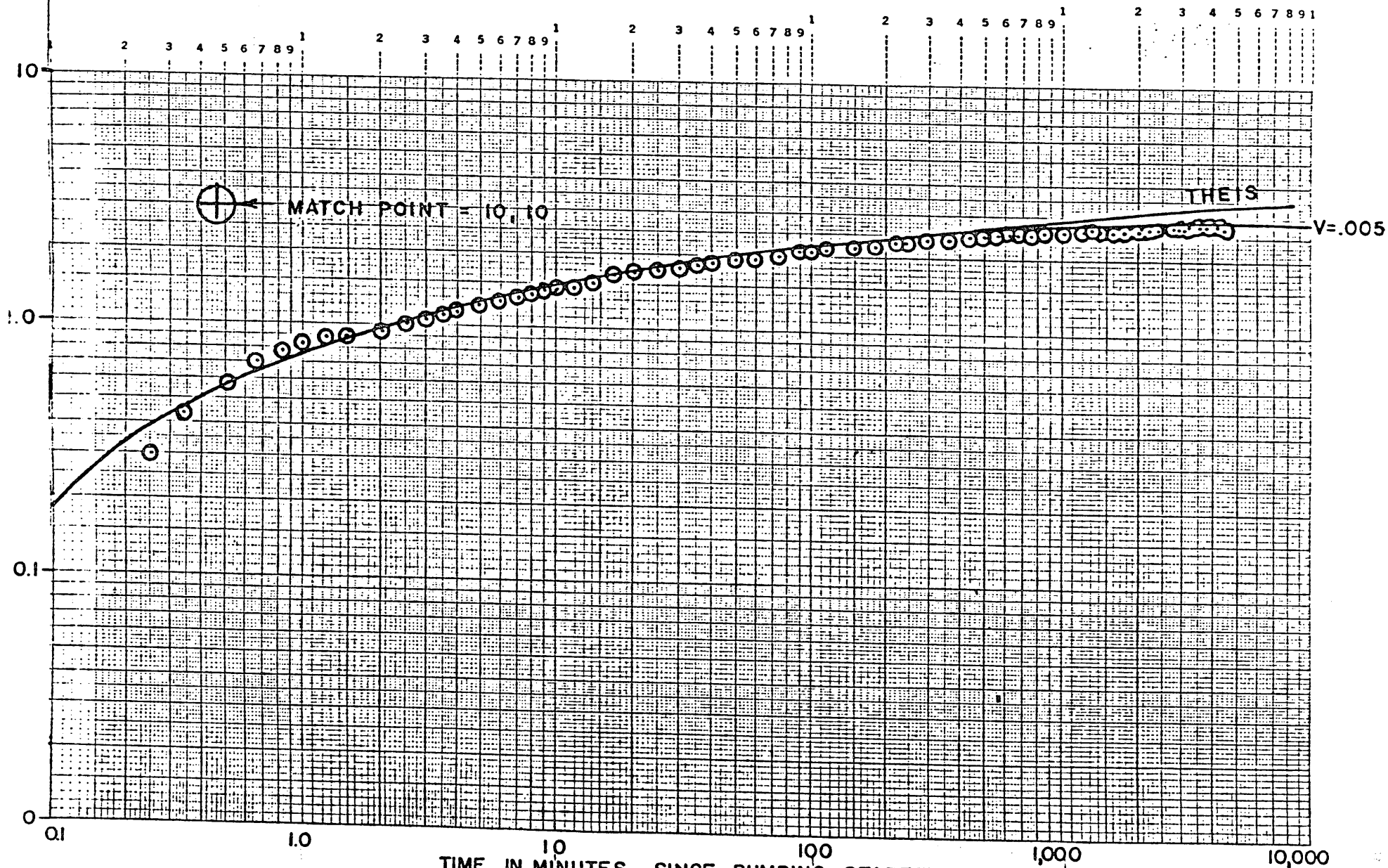
<u>Time (min.)</u>	<u>Recovery (ft.)</u>
3600	0.985
3840	0.986
4080	0.988
4320	0.988

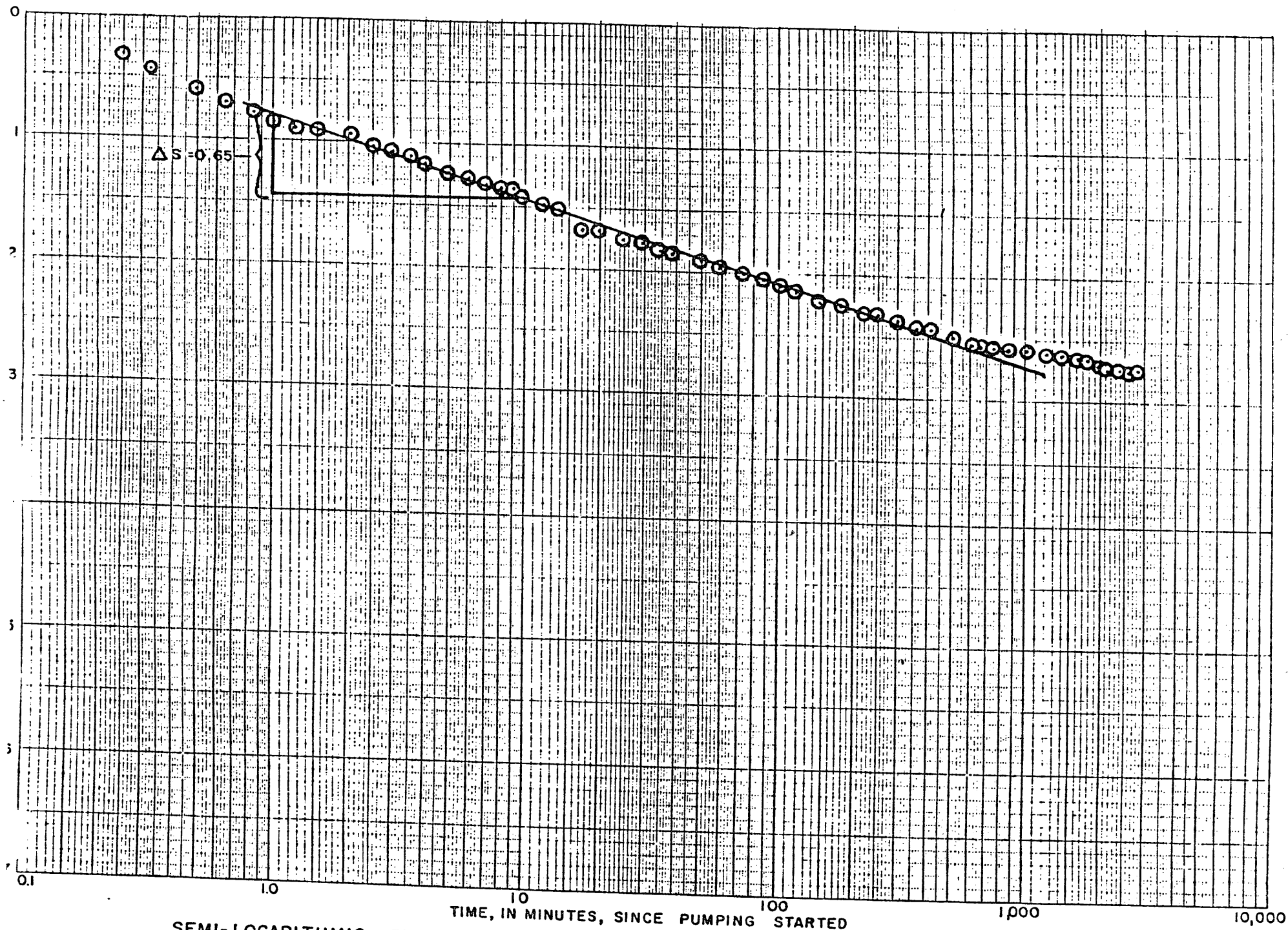
APPENDIX E

**GRAPHS OF TIME VERSUS DRAWDOWN
IN MONITOR WELLS FOR PHASE II AQUIFER TEST**

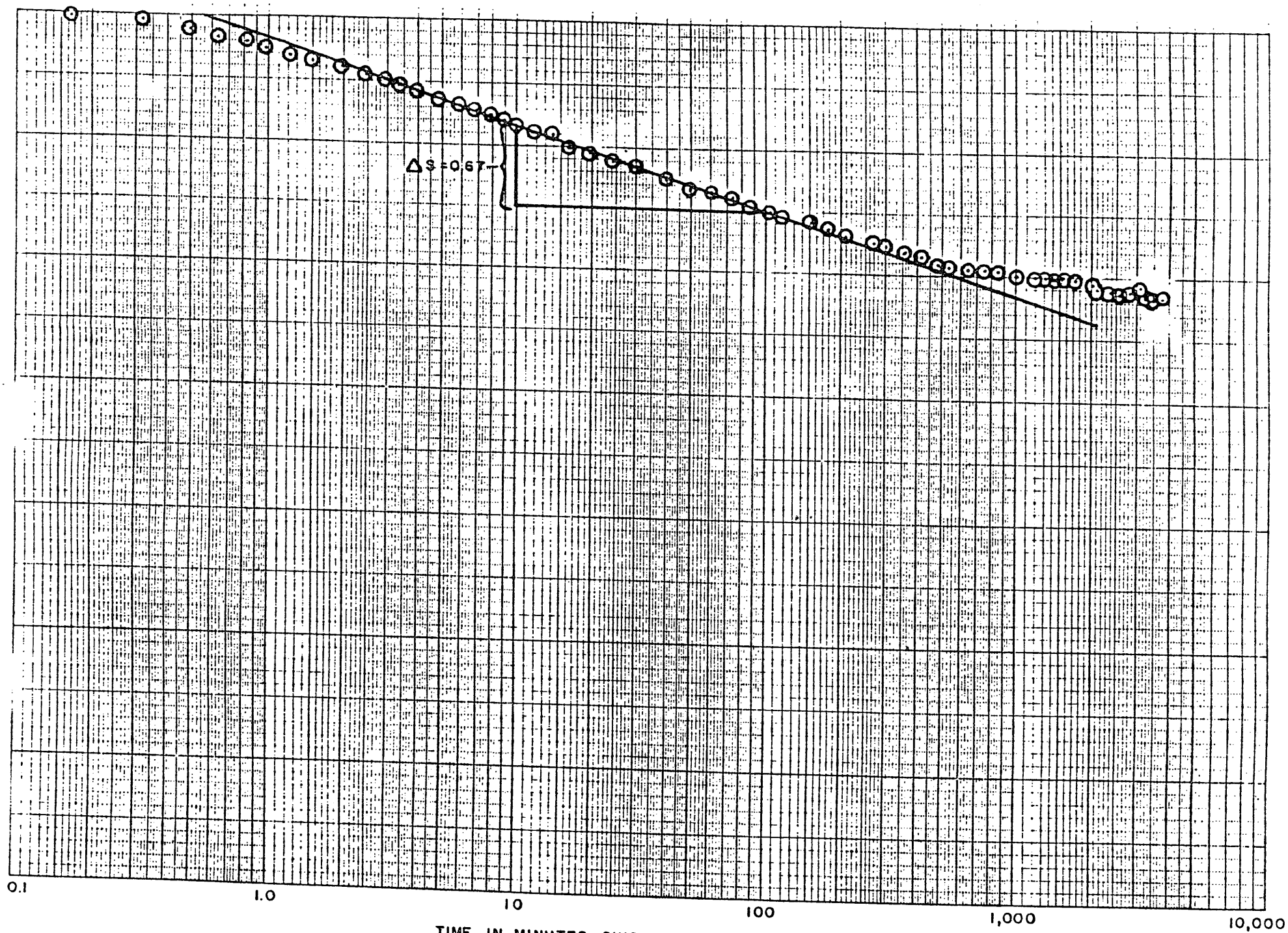




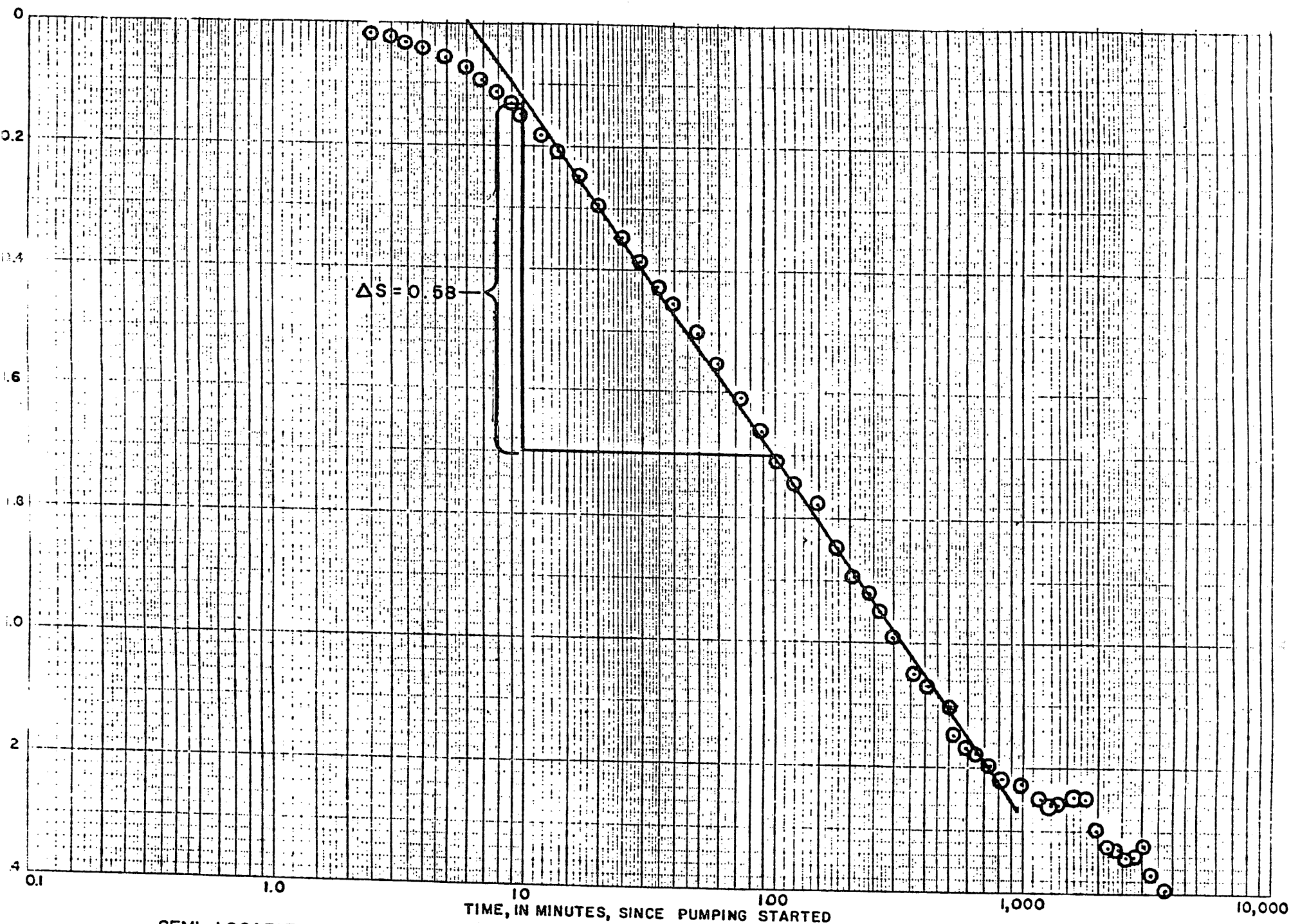


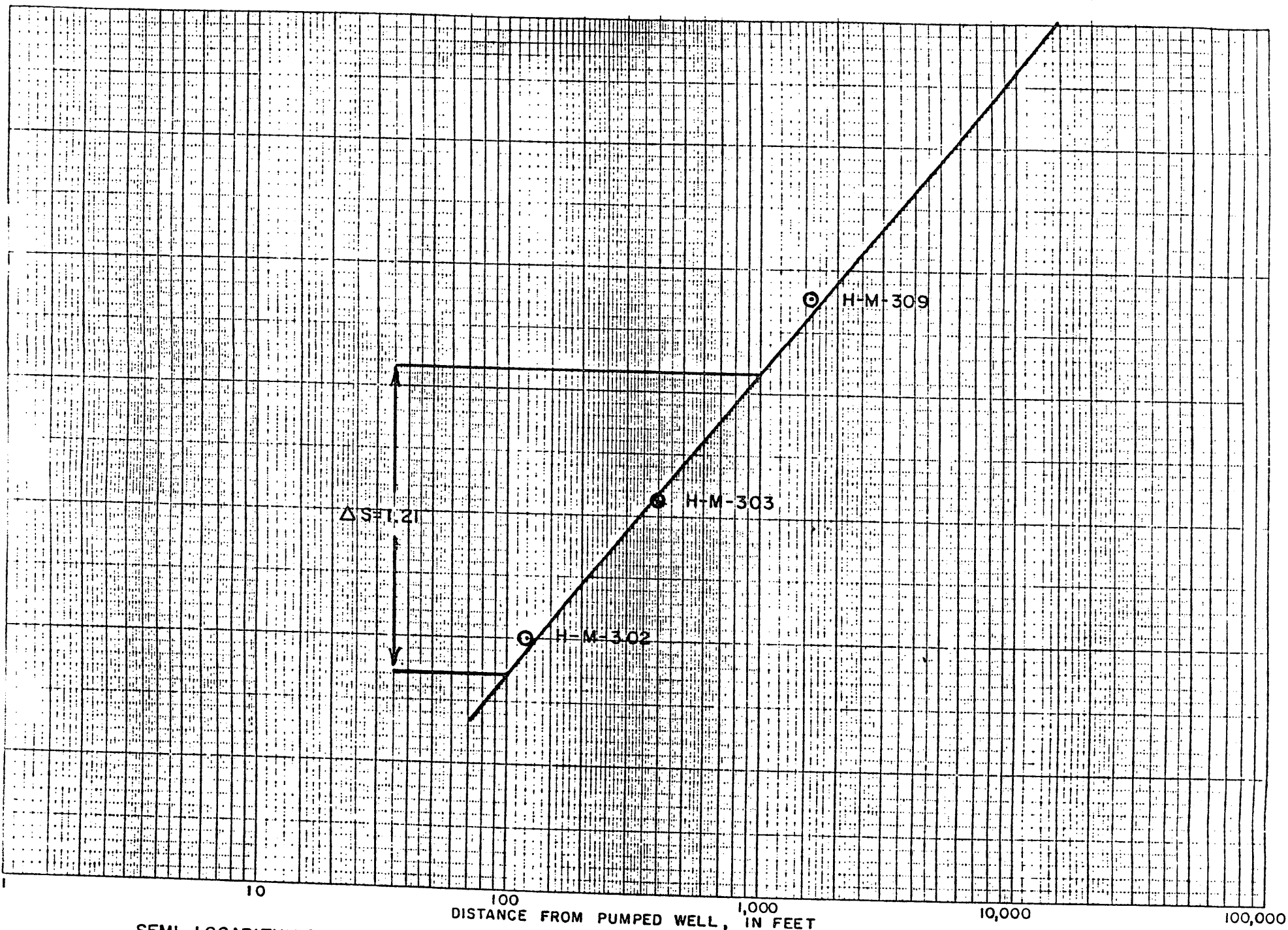


SEMI-LOGARITHMIC PLOT OF TIME VERSUS DRAWDOWN IN WELL H-M-302



TIME, IN MINUTES, SINCE PUMPING STARTED
SEMI-LOGARITHMIC PLOT OF TIME VERSUS DRAWDOWN IN WELL H-M-303





SEMI-LOGARITHMIC PLOT OF DISTANCE VERSUS DRAWDOWN AFTER PUMPING 500 MINUTES.