HYDROLOGIC ASSOCIATES U.S.A., INC.
ENVIRONMENTAL CONSULTANTS

MIAMI
8925 S. W. 148th Street, Suite 212,
Miami, Florida 33176
Phone: (305) 252-7118 • Fax: (305) 254-0874

ORLANDO
109 Bayberry Road
Altamonte Springs, Florida 32714
Phone: (407) 788-1355 • Fax: (407) 788-1135

July 12, 1994

Mr. Gene McLoughlin, P.E.
MDWASA
P.O. Box 330316
Miami, Florida 33233-0316

Dear Mr. McLoughlin,

The purpose of this letter report is to describe the procedures used and the results obtained from quantitative hydraulic analysis of the middle confining unit penetrated by Injection well I-16. The straddle packer tests and subsequent hydraulic analyses were conducted in the zones of the aquifer between 2020 to 2050 feet and 2220 to 2250 feet below land surface (BLS).

METHOD

A straddle packer was used to isolate the test zone for drawdown and recovery tests. Stress was imposed on the hydraulic system with a 4 inch submersible pump and water level changes were measured in the drill stem with a pressure transducer and recorded on a Hermit 1000-C data logger. Prior to testing, the well was developed by pumping the formation fluid until the specific conductance stabilized. Specific conductance readings taken during the tests are included in Appendix I. The well was then allowed to recover from development before performing the tests.

BACKGROUND

A 17 inch pilot hole was drilled below casing to a depth of 2500 feet below land surface. A suite of geophysical logs were run and, together with the borehole cutting samples, the test zones were selected by the WASA project hydrogeologist. An upper zone was selected between 2020-2050 feet below land surface and a lower zone was selected from 2220-2250 feet below land surface. Each zone was isolated with an inflatable straddle packer. The packer is made up of 2, 15 foot packers seperated by a 30 foot length of drill stem. Ten feet of perforated drill stem is open to the formation between the two packer elements.

The packer assembly was lowered on the drill stem into the original pilot hole to the tested interval of 2220-2250 feet B.L.S. The packer elements were then inflated. A submersible pump was then installed in the drill stem to develop the formation fluids between the packer elements. After eleven hours of pumping, a constant specific conductance of 54,000 umhos was reached. The well was allowed to recover to its initial antecedent conditions. The well was then pumped while drawdown data was recorded. After the pumping was discontinued, recovery data were recorded until formation water level had again reached antecedent conditions. Background, drawdown and recovery water level data is graphed on Figure 1. Raw data are presented in Appendix II.

The packer assembly was then raised to the 2020-2050 feet below land surface zone. The same procedure as above was then followed. The specific conductance for the upper zone stabilized at 55,000 umhos after nine hours of pumping. Background, drawdown and recovery water level data is graphed on Figure 2.

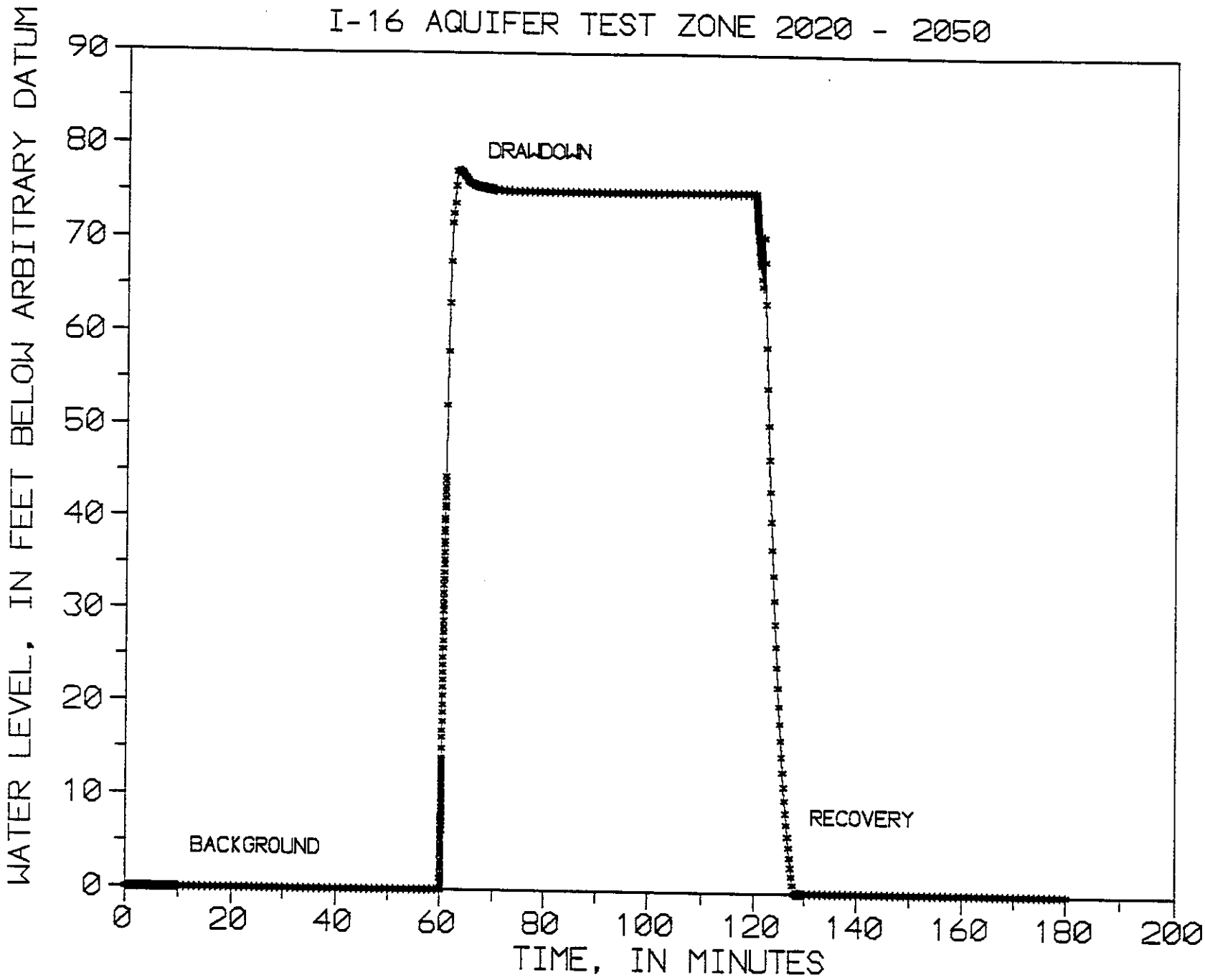


Figure 1.-- Background, drawdown and recovery data from I-16, from 2020 to 2050 zone, arbitrary datum.

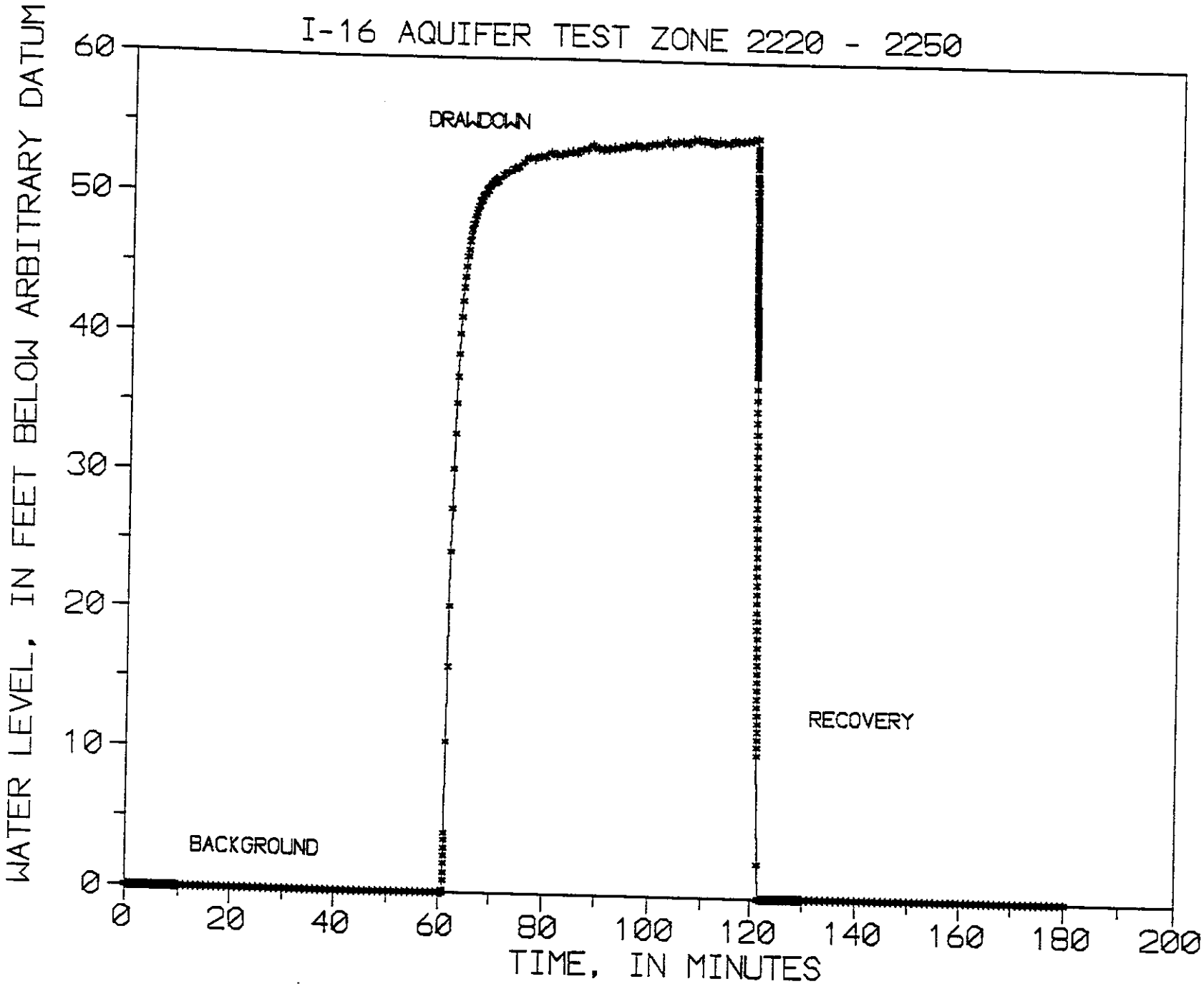


Figure 2.-- Background, drawdown and recovery data I-16, from 2220 to 2250 zone, arbitrary datum.

DATA ANALYSIS, UPPER AND LOWER ZONE

Three methods of data analysis are used to calculate the transmissivity for the upper packer setting between 2020 and 2050 feet below land surface and at the lower packer setting, between 2220 and 2250 feet below land surface, and are as follows:

1. Cooper-Jacob Analysis
2. Theis Analysis (Leaky)
3. Theis Recovery Analysis

1. Cooper-Jacob Analysis

The Cooper-Jacob method (figure 3 and 4) (Todd, 1980 p. 129) was used to compute a transmissivity value. The equation is as follows:

$$T=\frac{(2.3)\,(Q)}{(4)\,(\pi)\,(\Delta s_\ell)}$$

where Q=discharge in cubic feet per day
s_ℓ=drawdown over one log cycle of time

The data were plotted on semi-log paper (s verses log t) and a straight line is fitted to the data, (Figure 3).

Using the observed drawdown over a single log cycle, (s), the transmissivity can be determined from the equation given by Todd (1980, p. 130) as:

UPPER UNIT

$$T=\frac{(2.3)\ (13917)\ ft^3/day}{(4)\ (3.1416)\ (69\ ft)}$$

T = 36.9 ft^2/day

LOWER UNIT

$$T=\frac{(2.3)\ (16766)\ ft^3/day}{(4)\ (3.1416)\ (72\ ft)}$$

T= 42.6 ft^2/day

Using a unit thickness of 30 ft., the horizontal hydraulic conductivity is:

UPPER UNIT

K = 1.2 ft/day
K = 4.2 X 10^{-4} cm/sec.

LOWER UNIT

K= 1.4 ft/day
K= 5.0 X 10^{-4} cm/sec.

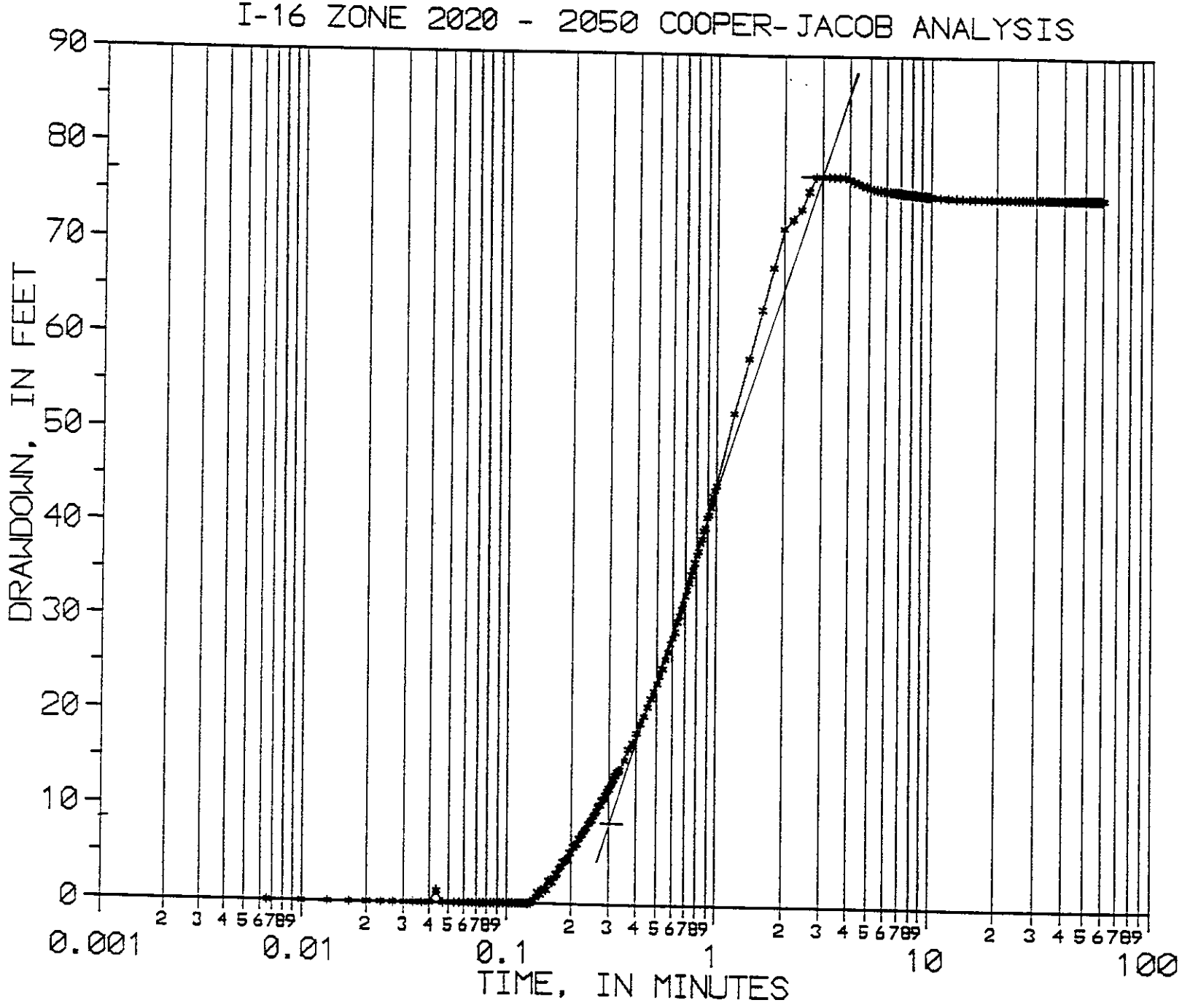


Figure 3.-- Cooper-Jacob Drawdown Analysis I-16, zone 2020 to 2050

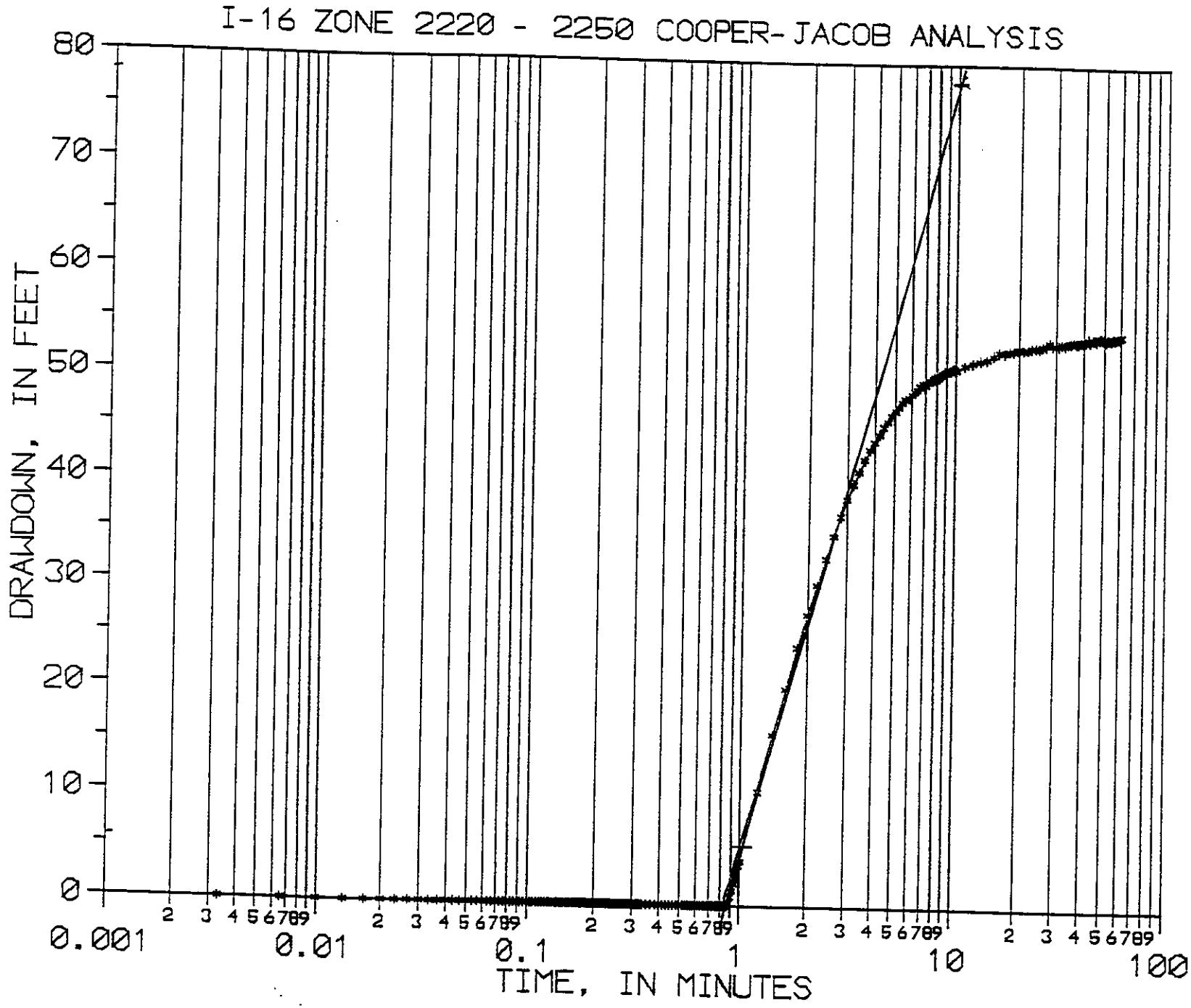


Figure 4.-- Cooper-Jacob Drawdown Analysis I-16, zone 2220 to 2250

2. Theis Analysis

The time-drawdown data for the packer test was analyzed using the Theis nonequilibrium equation given by (Todd, 1980, 123) as:

$$s = \frac{(Q)\ (W(u))}{(4)\ (\pi)\ (T)}$$

Where s is the drawdown, Q is the pumping rate and T is the transmissivity.

W (u) is the well function and (u is the exponential integral function) where

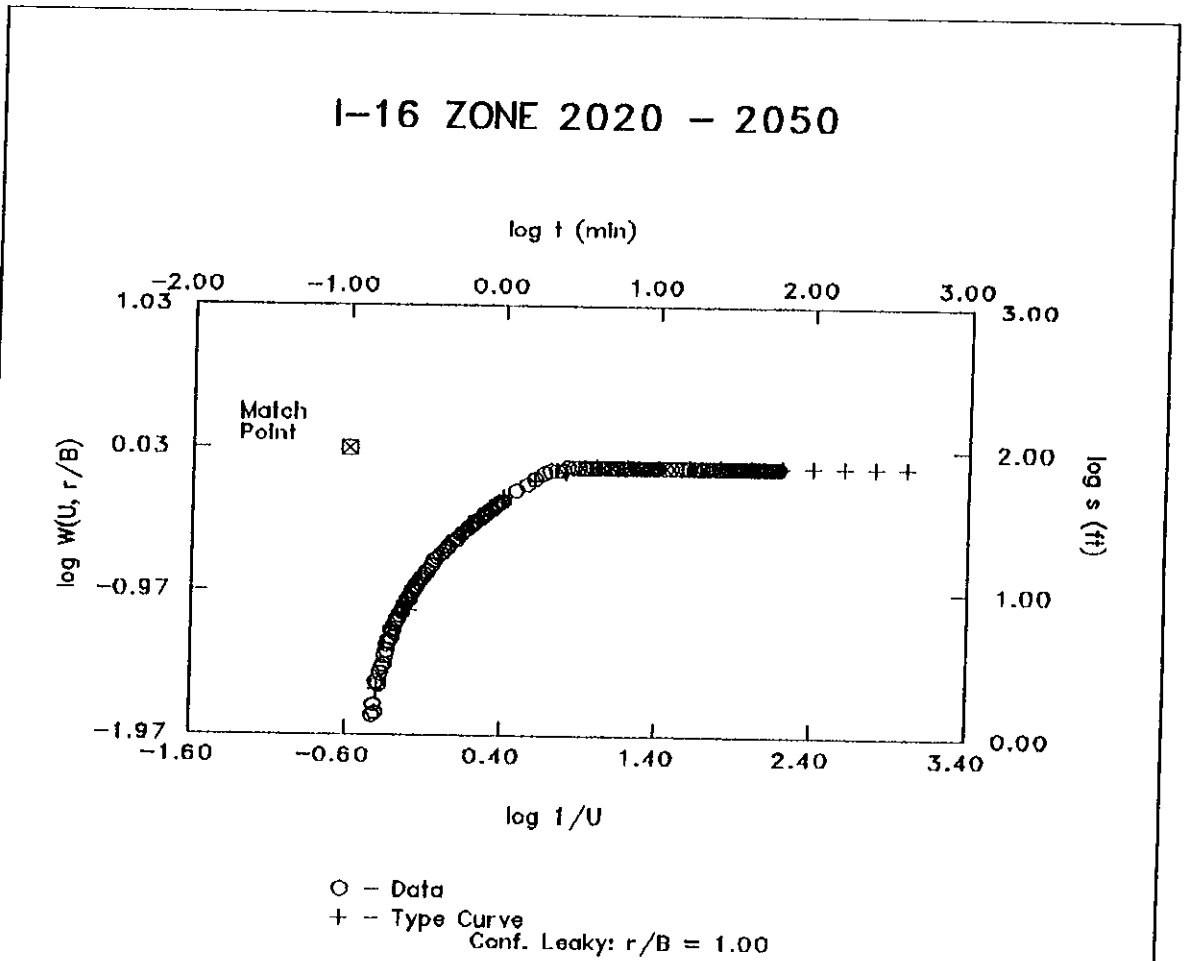
$$u = \frac{(r^2) \cdot (S)}{(4)\ (\pi)\ (T)\ (t)}$$

Where r is the distance to the observation well (r = well radius for a single well test).

S = Storage coefficient
t = Time since the start of pumping

Transmissivity and storage coefficient values were determined from the drawdown data by type - curve matching techniques as described in Todd (P125-128) by using the computer package GWAP (Graphical Well Analysis Package). Figure 5 and 6 show the type curve superimposed on the drawdown data plot and the resulting computed values for transmissivity, hydraulic conductivity and storativity (Storage coefficient divided by unit thickness). Values for horizontal hydraulic conductivity expressed in standard units are:

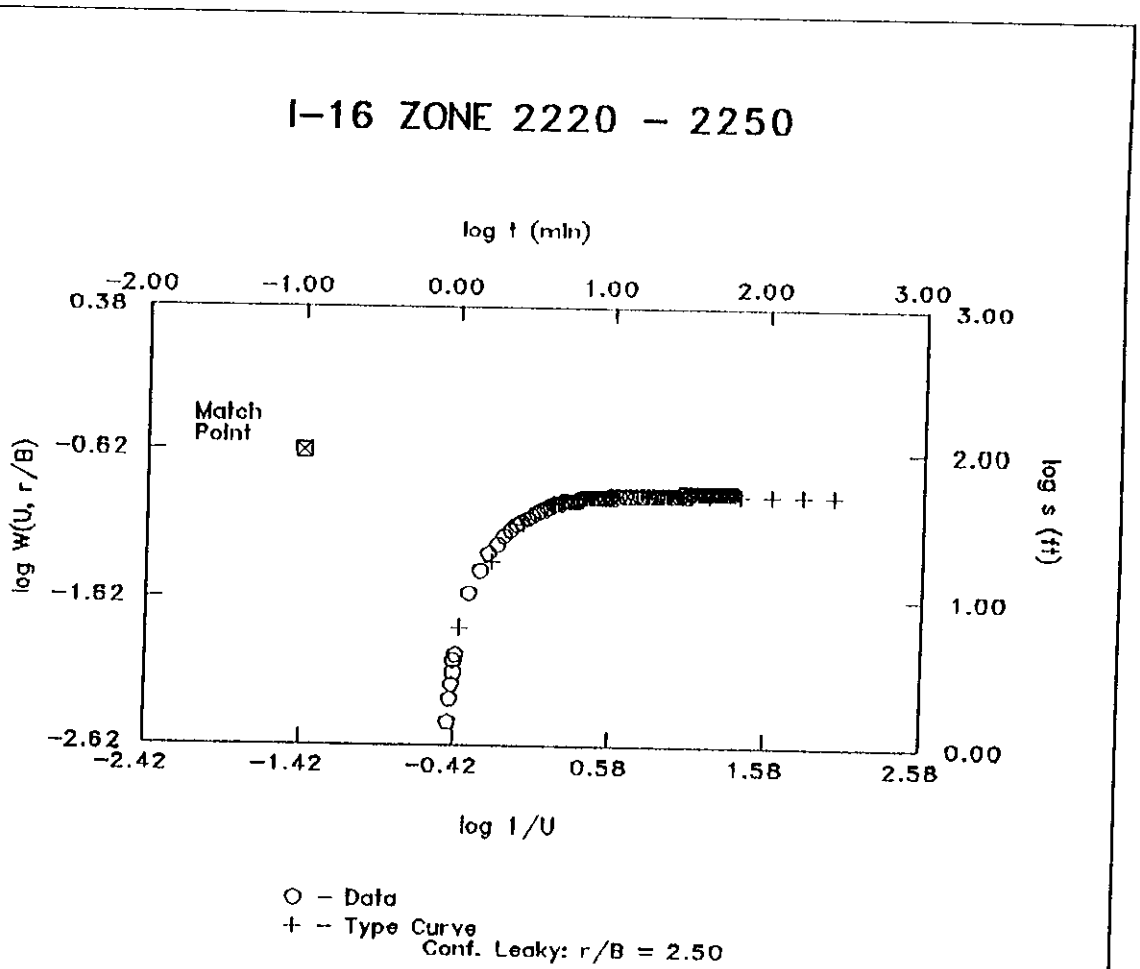
UPPER UNIT	LOWER UNIT
K = 2.9 gal/day/sq.ft.	K = 7.9×10^{-1}
K = 2.6×10^{-3} cm/sec	K = 3.8×10^{-5}



MATCH POINT			SOLUTION		
t	=	1.000E-0001	Transmissivity (T)	=	8.876E+0001 gpd/ft
s	=	1.000E+0002	Hydraulic Conductivity (K)	=	2.959E+0000 gpd/sq ft
1/U	=	2.512E-0001	Storativity (S)	=	5.249E-0002
W(U, r/B)	=	1.072E+0000	Leakage Factor (B)	=	5.000E-0001 ft

WELL INFORMATION	
WELL IDENTIFICATION	: I-16
DATE OF AQUIFER TEST	: 7/2/94
AQUIFER THICKNESS (b)	: 3.000E+0001 ft
DISCHARGE RATE (Q)	: 7.230E+0001 gpm
PUMPING WELL RADIUS (r)	: 1.420E+0000 ft
DISTANCE OF OBSERVATION WELL FROM PUMPING WELL (d)	: 5.000E-0001 ft

Figure 5.--Theis Leaky Curve Analysis I-16, zone 2020 to 2050



MATCH POINT			SOLUTION		
t	=	1.000E-0001	Transmissivity (T)	=	2.394E+0001 gpd/ft
s	=	1.000E+0002	Hydraulic Conductivity (K)	=	7.979E-0001 gpd/sq ft
1/U	=	3.802E-0002	Storativity (S)	=	9.354E-0002
W(U, r/B)	=	2.399E-0001	Leakage Factor (B)	=	2.000E-0001 ft

WELL INFORMATION	
WELL IDENTIFICATION	: I-16 22
DATE OF AQUIFER TEST	: 7/1/94
AQUIFER THICKNESS (b)	: 3.000E+0001 ft
DISCHARGE RATE (Q)	: 8.710E+0001 gpm
PUMPING WELL RADIUS (r)	: 1.420E+0000 ft
DISTANCE OF OBSERVATION WELL FROM PUMPING WELL (d)	: 5.000E-0001 ft

Figure 6.-- Theis Leaky Curve Analysis I-16, zone 2220 to 2250

3. Theis Recovery Analysis

The Theis Method was used to analyze recovery in the well after the pump was shut down, using the method as described in Todd (1980 p. 133). Residual drawdown, s′, was plotted against the log of the ratio of time from the start of pumping to the time of shut down (t/t') (see Figures 7 and 8).

A straight line was fitted to the early time data and the change in residual drawdown over a single log cycle (s′) was calculated. Transmissivity was then determined from the equation: Todd (1980, p.134):

Upper Unit

$$T = -\frac{(2.30)\ (13917)\ ft^3/day}{(4)\ (3.1416)\ (100ft)}$$

T = 25.5 ft²/day

Lower Unit

$$T = \frac{(2.3)\ (16766)\ ft^3/day}{(4)\ (3.1416)\ 69\ ft}$$

T = 44.5 ft²/day

Horizontal hydraulic conductivity is calculated by dividing T by the unit thickness of 30.0 ft.

	Upper Unit		Lower Unit
K =	8.5 X 10^{-1} ft/day	=	1.5 ft/day
K =	3.0 X 10^{-4} cm/sec	=	5.3 X 10^{-4} cm/sec

Analytical results of the tests are summarized as follows:

Hydraulic Conductivity

	Upper Unit	Lower Unit
Cooper-Jacob	= 4.2 X 10^{-4} cm/sec	= 5.0 X 10^{-4} cm/sec
Theis	= 1.2 X 10^{-4} cm/sec	= 3.8 X 10^{-5} cm/sec
Theis Recovery	= 3.0 X 10^{-4} cm/sec	= 5.3 X 10^{-4} cm/sec

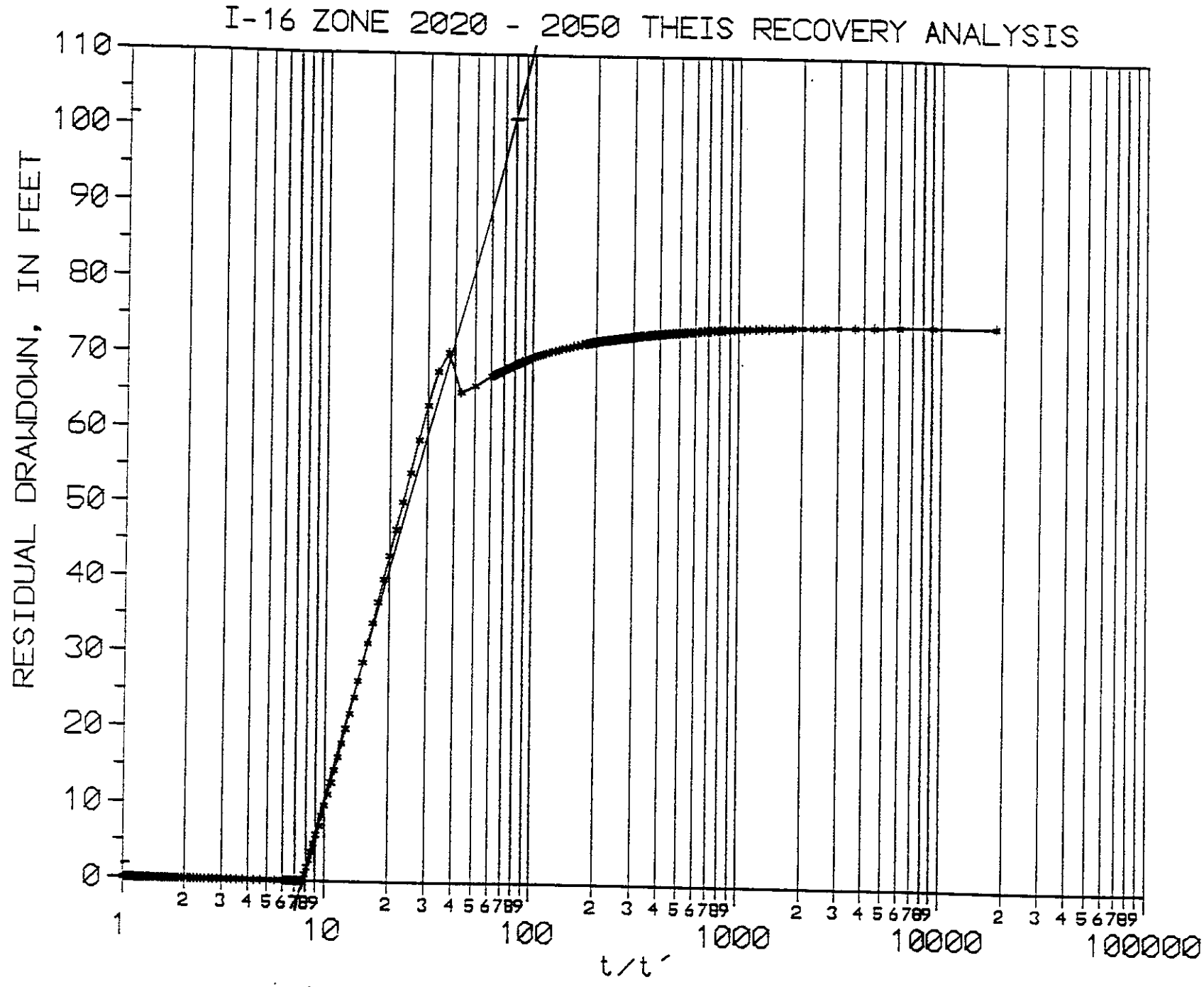


Figure 7.-- Theis Recovery Analysis I-16, zone 2020 to 2050

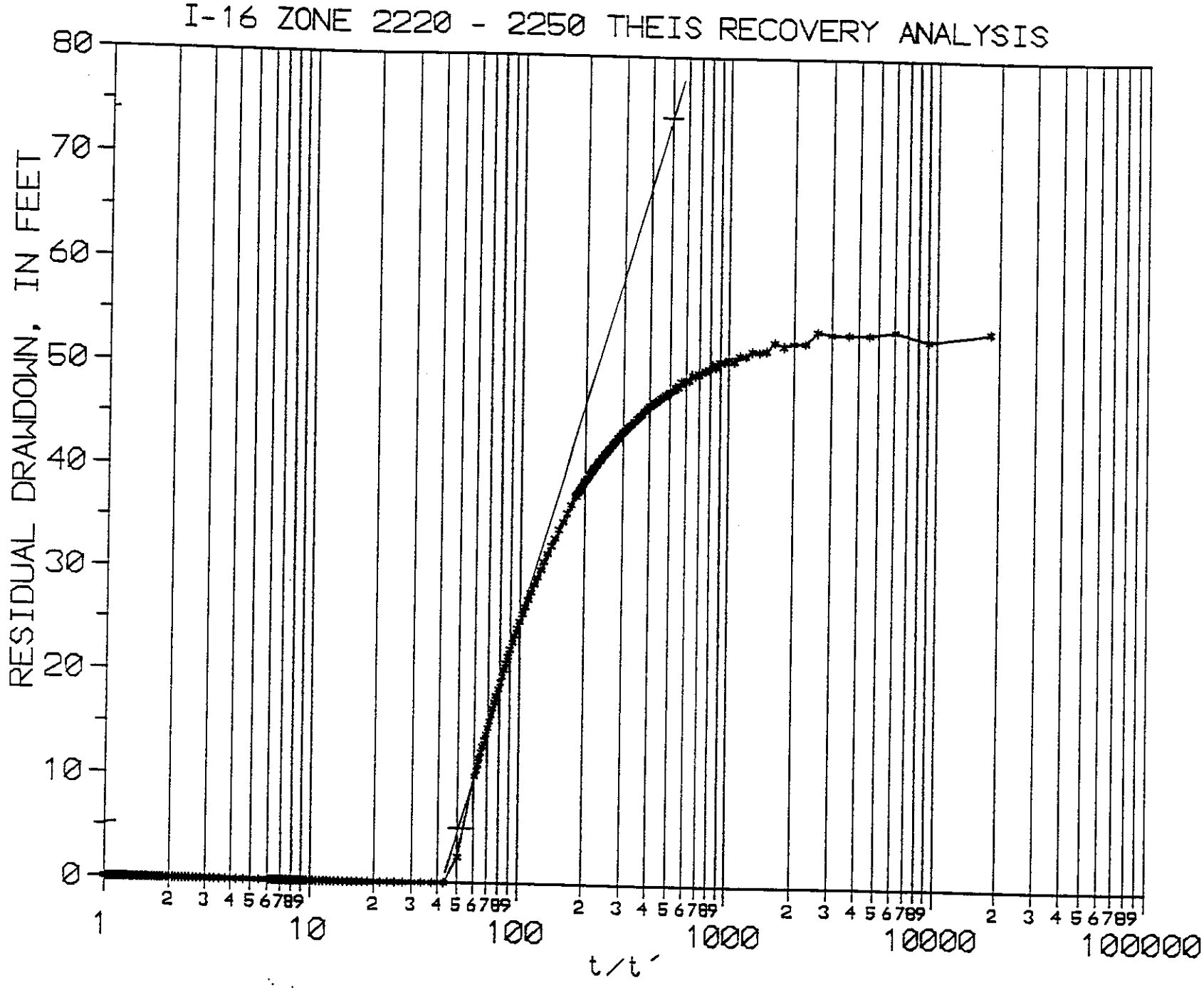


Figure 8.-- Theis Recovery Analysis I-16 zone 2220-2250

If you have any questions or comments please feel free to contact me or Leo Swayze.

Sincerely,

Edmand B. Workman, P.G.

EBW/na

#145
7/11/94

Appendix I
Specific Conductance Stabilization Data

Packer Test (I-16)
Zone 2020' - 2050'

TIME	TEMP ^{0}C	CONDUCTIVITY umhos
05:00	27	58,000
05:30	27	56,000
06:30	27	56,000
06:45	27	55,000
07:00	27	55,000
07:15	27	55,000
07:30	27	55,000
07:45	27	55,000
08:00	27	54,000
08:15	27	54,000
08:30	27	54,000
08:45	27	54,000
9:00	27	54,000
09:15	27	54,000
09:30	27	54,000
09:45	27	54,000
09:45	27	54,000
10:00	27	54,000
10:15	27	54,000
10:30	27	54,000
10:45	27	54,000
11:00	27	54,000
11:15	27	54,000
11:30	27	54,000
11:45	27	54,000
12:00	27	54,000
12:15	27	54,000
12:30	27	54,000
12:45	27	54,000
01:00	28	54,000
01:15	28	54,000

Zone 2020' - 2050' (cont.)

TIME	TEMP ^{0}C	CONDUCTIVITY umhos
1:30	28	54,000
1:45	28	54,000
2:00	28	54,000
2:15	28	54,000
2:30	28	54,000
2:45	28	54,000
3:00	28	54,000
3:15	28	54,000
3:30	28	54,000
3:45	28	54,000

Packer Test (I-16)
Zone 2220' - 2250'

TIME	TEMP ^{0}C	CONDUCTIVITY umhos
07:00	26	55,000
07:15	27	56,000
07:30	27	55,000
07:45	27	56,000
08:00	27	56,000
08:15	27	56,000
08:30	27	56,000
08:45	27	56,000
09:00	27	56,000
09:15	27	56,000
09:30	27	56,000
09:45	27	56,000
10:00	27	56,000
10:15	27	56,000
10:30	27	56,000
10:45	27	56,000
11:00	28	56,000
11:15	28	56,000
11:30	28	56,000
11:45	28	56,000
12:00	28	56,000
12:15	28	56,000
12:30	28	56,000
12:45	28	55,000
01:00	28	55,000
01:15	28	55,000
01:30	28	55,000
01:45	29	55,000
02:00	28	55,000
02:15	28	55,000
02:30	28	55,000
02:45	28	55,000

Zone 2220' - 2250' (cont.)

TIME	TEMP ^{0}C	CONDUCTIVITY umhos
03:15	28	55,000
03:30	28	55,000
03:45	27	55,000
04:00	28	55,000

Appendix II
Raw Aquifer Test Data

SE1000C
Environmental Logger
07/03 13:30

Unit# 01513 Test 0

Setups:	INPUT 1
Type	Level (F)
Mode	TOC
I.D.	00000
Reference	0.000
Linearity	0.280
Scale factor	29.990
Offset	0.120
Delay mSEC	50.000

Step 0 07/01 15:52:58

Elapsed Time	INPUT 1
0.0000	0.000
0.0033	0.000
0.0066	0.000
0.0100	0.000
0.0133	0.000
0.0166	0.000
0.0200	0.000
0.0233	0.000
0.0266	0.000
0.0300	0.000
0.0333	0.000
0.0366	0.000
0.0400	0.000
0.0433	0.000
0.0466	0.000
0.0500	0.000
0.0533	0.000
0.0566	0.000
0.0600	0.000
0.0633	0.000
0.0666	0.000
0.0700	0.000
0.0733	0.000
0.0766	0.000
0.0800	0.000
0.0833	0.000
0.0866	0.000
0.0900	0.000
0.0933	0.000
0.0966	0.000
0.1000	0.000
0.1033	0.000
0.1066	0.000
0.1100	0.000
0.1133	0.000
0.1166	0.000
0.1200	0.000

0.1233	0.000
0.1266	0.000
0.1300	0.000
0.1333	0.000
0.1366	0.000
0.1400	0.000
0.1433	0.000
0.1466	0.000
0.1500	0.000
0.1533	0.000
0.1566	0.000
0.1600	0.000
0.1633	0.000
0.1666	0.000
0.1700	0.000
0.1733	0.000
0.1766	0.000
0.1800	0.000
0.1833	0.000
0.1866	0.000
0.1900	0.000
0.1933	0.000
0.1966	0.000
0.2000	0.000
0.2033	0.000
0.2066	0.000
0.2100	0.000
0.2133	0.000
0.2166	0.000
0.2200	0.000
0.2233	0.000
0.2266	0.000
0.2300	0.000
0.2333	0.000
0.2366	0.000
0.2400	0.000
0.2433	0.000
0.2466	0.000
0.2500	0.000
0.2533	0.000
0.2566	0.000
0.2600	0.000
0.2633	0.000
0.2666	0.000
0.2700	0.000
0.2733	0.000
0.2766	0.000
0.2800	0.000
0.2833	0.000
0.2866	0.000
0.2900	0.000
0.2933	0.000
0.2966	0.000
0.3000	0.000
0.3033	0.000
0.3066	0.000
0.3100	0.000
0.3133	0.000
0.3166	0.000
0.3200	0.000

0.3233	0.000
0.3266	0.000
0.3300	0.000
0.3333	0.000
0.3500	0.000
0.3666	0.000
0.3833	0.000
0.4000	0.000
0.4166	0.000
0.4333	0.000
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0.6666	0.000
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0.7000	0.000
0.7166	0.000
0.7333	0.000
0.7500	0.000
0.7666	0.000
0.7833	0.000
0.8000	0.000
0.8166	0.000
0.8333	0.000
0.8500	0.000
0.8666	0.000
0.8833	0.000
0.9000	0.000
0.9166	0.000
0.9333	0.000
0.9500	0.000
0.9666	0.000
0.9833	0.000
1.0000	0.000
1.2000	0.000
1.4000	0.000
1.6000	0.000
1.8000	0.000
2.0000	0.000
2.2000	0.000
2.4000	0.000
2.6000	0.000
2.8000	0.000
3.0000	0.000
3.2000	0.000
3.4000	0.000
3.6000	0.000
3.8000	0.000
4.0000	0.000
4.2000	0.000

4.4000	0.000
4.6000	0.000
4.8000	0.000
5.0000	0.000
5.2000	0.000
5.4000	0.000
5.6000	0.000
5.8000	0.000
6.0000	0.000
6.2000	0.000
6.4000	0.000
6.6000	0.000
6.8000	0.000
7.0000	0.000
7.2000	0.000
7.4000	0.000
7.6000	0.000
7.8000	0.000
8.0000	0.000
8.2000	0.000
8.4000	0.000
8.6000	0.000
8.8000	0.000
9.0000	0.000
9.2000	0.000
9.4000	0.000
9.6000	0.000
9.8000	0.000
10.0000	0.000
11.0000	0.000
12.0000	0.000
13.0000	0.000
14.0000	0.000
15.0000	0.000
16.0000	0.000
17.0000	0.000
18.0000	0.000
19.0000	0.000
20.0000	0.000
21.0000	0.000
22.0000	0.000
23.0000	0.000
24.0000	0.000
25.0000	0.000
26.0000	0.000
27.0000	0.000
28.0000	0.000
29.0000	0.000
30.0000	0.000
31.0000	0.000
32.0000	0.000
33.0000	0.000
34.0000	0.000
35.0000	0.000
36.0000	0.000
37.0000	0.000
38.0000	0.000
39.0000	0.000
40.0000	0.000
41.0000	0.000

42.0000	0.000
43.0000	0.000
44.0000	0.000
45.0000	0.000
46.0000	0.000
47.0000	0.000
48.0000	0.000
49.0000	0.000
50.0000	0.000
51.0000	0.000
52.0000	0.000
53.0000	0.000
54.0000	0.000
55.0000	0.000
56.0000	0.000
57.0000	0.000
58.0000	0.000
59.0000	0.000
60.0000	0.000

SE1000C
Environmental Logger
07/03 13:34

Unit# 01513 Test 1

Setups:	INPUT 1
Type	Level (F)
Mode	TOC
I.D.	00000
Reference	0.000
Linearity	0.280
Scale factor	29.990
Offset	0.120
Delay mSEC	50.000

Step 0 07/01 16:54:56

Elapsed Time	INPUT 1
0.0000	0.000
0.0033	0.000
0.0066	0.000
0.0100	0.000
0.0133	0.000
0.0166	0.000
0.0200	0.000
0.0233	0.000
0.0266	0.000
0.0300	0.000
0.0333	0.000
0.0366	0.000
0.0400	0.000
0.0433	0.000
0.0466	0.000
0.0500	0.000
0.0533	0.000
0.0566	0.000
0.0600	0.000
0.0633	0.000
0.0666	0.000
0.0700	0.000
0.0733	0.000
0.0766	0.000
0.0800	0.000
0.0833	0.000
0.0866	0.000
0.0900	0.000
0.0933	0.000
0.0966	0.000
0.1000	0.000
0.1033	0.000
0.1066	0.000
0.1100	0.000
0.1133	0.000
0.1166	0.000
0.1200	0.000

0.1233	0.000
0.1266	0.000
0.1300	0.000
0.1333	0.000
0.1366	0.000
0.1400	0.000
0.1433	0.000
0.1466	0.000
0.1500	0.000
0.1533	0.000
0.1566	0.000
0.1600	0.000
0.1633	0.000
0.1666	0.000
0.1700	0.000
0.1733	0.000
0.1766	0.000
0.1800	0.000
0.1833	0.000
0.1866	0.000
0.1900	0.000
0.1933	0.000
0.1966	0.000
0.2000	0.000
0.2033	0.000
0.2066	0.000
0.2100	0.000
0.2133	0.000
0.2166	0.000
0.2200	0.000
0.2233	0.000
0.2266	0.000
0.2300	0.000
0.2333	0.000
0.2366	0.000
0.2400	0.000
0.2433	0.000
0.2466	0.000
0.2500	0.000
0.2533	0.000
0.2566	0.000
0.2600	0.000
0.2633	0.000
0.2666	0.000
0.2700	0.000
0.2733	0.000
0.2766	0.000
0.2800	0.000
0.2833	0.000
0.2866	0.000
0.2900	0.000
0.2933	0.000
0.2966	0.000
0.3000	0.000
0.3033	0.000
0.3066	0.000
0.3100	0.000
0.3133	0.000
0.3166	0.000
0.3200	0.000

0.3233	0.000
0.3266	0.000
0.3300	0.000
0.3333	0.000
0.3500	0.000
0.3666	0.000
0.3833	0.000
0.4000	0.000
0.4166	0.000
0.4333	0.000
0.4500	0.000
0.4666	0.000
0.4833	0.000
0.5000	0.000
0.5166	0.000
0.5333	0.000
0.5500	0.000
0.5666	0.000
0.5833	0.000
0.6000	0.000
0.6166	0.000
0.6333	0.000
0.6500	0.000
0.6666	0.000
0.6833	0.000
0.7000	0.000
0.7166	0.000
0.7333	0.000
0.7500	0.000
0.7666	0.000
0.7833	0.000
0.8000	0.000
0.8166	0.000
0.8333	0.000
0.8500	0.000
0.8666	0.000
0.8833	0.232
0.9000	0.858
0.9166	1.417
0.9333	2.083
0.9500	2.614
0.9666	3.134
0.9833	3.751
1.0000	4.214
1.2000	10.743
1.4000	16.128
1.6000	20.497
1.8000	24.421
2.0000	27.584
2.2000	30.418
2.4000	32.973
2.6000	35.172
2.8000	37.074
3.0000	38.699
3.2000	40.169
3.4000	41.391
3.6000	42.518
3.8000	43.490
4.0000	44.244
4.2000	44.979

4.4000	45.703
4.6000	46.199
4.8000	46.819
5.0000	47.219
5.2000	47.628
5.4000	48.057
5.6000	48.362
5.8000	48.600
6.0000	48.848
6.2000	49.124
6.4000	49.324
6.6000	49.677
6.8000	49.810
7.0000	49.753
7.2000	50.020
7.4000	50.191
7.6000	50.219
7.8000	50.496
8.0000	50.638
8.2000	50.476
8.4000	50.715
8.6000	50.858
8.8000	51.010
9.0000	51.010
9.2000	51.095
9.4000	51.133
9.6000	51.305
9.8000	51.295
10.0000	51.153
11.0000	51.619
12.0000	51.857
13.0000	52.076
14.0000	52.219
15.0000	52.609
16.0000	52.923
17.0000	52.837
18.0000	53.047
19.0000	53.028
20.0000	53.313
21.0000	53.142
22.0000	53.199
23.0000	53.341
24.0000	53.408
25.0000	53.351
26.0000	53.579
27.0000	53.636
28.0000	53.931
29.0000	53.636
30.0000	53.617
31.0000	53.636
32.0000	53.741
33.0000	53.722
34.0000	53.827
35.0000	53.912
36.0000	54.008
37.0000	53.865
38.0000	53.865
39.0000	54.046
40.0000	54.065
41.0000	54.065

42.0000	54.312
43.0000	54.036
44.0000	54.264
45.0000	54.255
46.0000	54.141
47.0000	54.407
48.0000	54.474
49.0000	54.283
50.0000	54.359
51.0000	54.150
52.0000	54.340
53.0000	54.264
54.0000	54.226
55.0000	54.426
56.0000	54.331
57.0000	54.388
58.0000	54.407
59.0000	54.483
60.0000	54.597

SE1000C
Environmental Logger
07/03 13:38

Unit# 01513 Test 2

Setups:	INPUT 1
Type	Level (F)
Mode	TOC
I.D.	00000
Reference	0.000
Linearity	0.280
Scale factor	29.990
Offset	0.120
Delay mSEC	50.000

Step 0 07/01 17:56:44

Elapsed Time	INPUT 1
0.0000	53.341
0.0033	53.789
0.0066	52.961
0.0100	53.912
0.0133	53.579
0.0166	53.570
0.0200	53.551
0.0233	53.808
0.0266	52.666
0.0300	52.685
0.0333	52.371
0.0366	52.780
0.0400	51.924
0.0433	51.790
0.0466	51.847
0.0500	51.353
0.0533	51.438
0.0566	50.838
0.0600	51.086
0.0633	50.819
0.0666	50.791
0.0700	50.267
0.0733	50.562
0.0766	50.077
0.0800	49.905
0.0833	49.715
0.0866	49.677
0.0900	49.410
0.0933	49.505
0.0966	48.981
0.1000	49.019
0.1033	48.762
0.1066	48.819
0.1100	48.267
0.1133	48.324
0.1166	48.019
0.1200	47.895

0.1233	47.647
0.1266	47.581
0.1300	47.333
0.1333	47.200
0.1366	47.009
0.1400	46.847
0.1433	46.685
0.1466	46.571
0.1500	46.399
0.1533	46.246
0.1566	46.018
0.1600	45.894
0.1633	45.579
0.1666	45.503
0.1700	45.331
0.1733	45.179
0.1766	44.950
0.1800	44.864
0.1833	44.597
0.1866	44.464
0.1900	44.320
0.1933	44.168
0.1966	43.996
0.2000	43.863
0.2033	43.662
0.2066	43.510
0.2100	43.338
0.2133	43.195
0.2166	42.994
0.2200	42.851
0.2233	42.670
0.2266	42.518
0.2300	42.336
0.2333	42.193
0.2366	42.021
0.2400	41.878
0.2433	41.706
0.2466	41.534
0.2500	41.391
0.2533	41.210
0.2566	41.057
0.2600	40.914
0.2633	40.752
0.2666	40.580
0.2700	40.418
0.2733	40.284
0.2766	40.122
0.2800	39.959
0.2833	39.806
0.2866	39.635
0.2900	39.491
0.2933	39.338
0.2966	39.205
0.3000	39.023
0.3033	38.880
0.3066	38.737
0.3100	38.555
0.3133	38.422
0.3166	38.269
0.3200	38.135

0.3233	37.954
0.3266	37.810
0.3300	37.648
0.3333	37.514
0.3500	36.645
0.3666	35.822
0.3833	35.000
0.4000	34.207
0.4166	33.384
0.4333	32.609
0.4500	31.834
0.4666	31.078
0.4833	30.294
0.5000	29.547
0.5166	28.809
0.5333	28.062
0.5500	27.334
0.5666	26.625
0.5833	25.907
0.6000	25.207
0.6166	24.536
0.6333	23.845
0.6500	23.174
0.6666	22.474
0.6833	21.812
0.7000	21.140
0.7166	20.488
0.7333	19.883
0.7500	19.269
0.7666	18.616
0.7833	17.963
0.8000	17.358
0.8166	16.724
0.8333	16.090
0.8500	15.474
0.8666	14.869
0.8833	14.264
0.9000	13.667
0.9166	13.071
0.9333	12.504
0.9500	11.927
0.9666	11.359
0.9833	10.801
1.0000	10.243
1.2000	2.459
1.4000	0.000
1.6000	0.000
1.8000	0.000
2.0000	0.000
2.2000	0.000
2.4000	0.000
2.6000	0.000
2.8000	0.000
3.0000	0.000
3.2000	0.000
3.4000	0.000
3.6000	0.000
3.8000	0.000
4.0000	0.000
4.2000	0.000

4.4000	0.000
4.6000	0.000
4.8000	0.000
5.0000	0.000
5.2000	0.000
5.4000	0.000
5.6000	0.000
5.8000	0.000
6.0000	0.000
6.2000	0.000
6.4000	0.000
6.6000	0.000
6.8000	0.000
7.0000	0.000
7.2000	0.000
7.4000	0.000
7.6000	0.000
7.8000	0.000
8.0000	0.000
8.2000	0.000
8.4000	0.000
8.6000	0.000
8.8000	0.000
9.0000	0.000
9.2000	0.000
9.4000	0.000
9.6000	0.000
9.8000	0.000
10.0000	0.000
11.0000	0.000
12.0000	0.000
13.0000	0.000
14.0000	0.000
15.0000	0.000
16.0000	0.000
17.0000	0.000
18.0000	0.000
19.0000	0.000
20.0000	0.000
21.0000	0.000
22.0000	0.000
23.0000	0.000
24.0000	0.000
25.0000	0.000
26.0000	0.000
27.0000	0.000
28.0000	0.000
29.0000	0.000
30.0000	0.000
31.0000	0.000
32.0000	0.000
33.0000	0.000
34.0000	0.000
35.0000	0.000
36.0000	0.000
37.0000	0.000
38.0000	0.000
39.0000	0.000
40.0000	0.000
41.0000	0.000

42.0000	0.000
43.0000	0.000
44.0000	0.000
45.0000	0.000
46.0000	0.000
47.0000	0.000
48.0000	0.000
49.0000	0.000
50.0000	0.000
51.0000	0.000
52.0000	0.000
53.0000	0.000
54.0000	0.000
55.0000	0.000
56.0000	0.000
57.0000	0.000
58.0000	0.000
59.0000	0.000
60.0000	0.000

SE1000C
Environmental Logger
07/03 13:41

Unit# 01513 Test 3

Setups:	INPUT 1
Type	Level (F)
Mode	TOC
I.D.	00000
Reference	0.000
Linearity	0.280
Scale factor	29.990
Offset	0.120
Delay mSEC	50.000

Step 0 07/02 17:01:19

Elapsed Time	INPUT 1
0.0000	0.000
0.0033	0.000
0.0066	0.000
0.0100	0.000
0.0133	0.000
0.0166	0.000
0.0200	0.000
0.0233	0.000
0.0266	0.000
0.0300	0.000
0.0333	0.000
0.0366	0.000
0.0400	0.000
0.0433	0.000
0.0466	0.000
0.0500	0.000
0.0533	0.000
0.0566	0.000
0.0600	0.000
0.0633	0.000
0.0666	0.000
0.0700	0.000
0.0733	0.000
0.0766	0.000
0.0800	0.000
0.0833	0.000
0.0866	0.000
0.0900	0.000
0.0933	0.000
0.0966	0.000
0.1000	0.000
0.1033	0.000
0.1066	0.000
0.1100	0.000
0.1133	0.000
0.1166	0.000
0.1200	0.000

0.1233	0.000
0.1266	0.000
0.1300	0.000
0.1333	0.000
0.1366	0.000
0.1400	0.000
0.1433	0.000
0.1466	0.000
0.1500	0.000
0.1533	0.000
0.1566	0.000
0.1600	0.000
0.1633	0.000
0.1666	0.000
0.1700	0.000
0.1733	0.000
0.1766	0.000
0.1800	0.000
0.1833	0.000
0.1866	0.000
0.1900	0.000
0.1933	0.000
0.1966	0.000
0.2000	0.000
0.2033	0.000
0.2066	0.000
0.2100	0.000
0.2133	0.000
0.2166	0.000
0.2200	0.000
0.2233	0.000
0.2266	0.000
0.2300	0.000
0.2333	0.000
0.2366	0.000
0.2400	0.000
0.2433	0.000
0.2466	0.000
0.2500	0.000
0.2533	0.000
0.2566	0.000
0.2600	0.000
0.2633	0.000
0.2666	0.000
0.2700	0.000
0.2733	0.000
0.2766	0.000
0.2800	0.000
0.2833	0.000
0.2866	0.000
0.2900	0.000
0.2933	0.000
0.2966	0.000
0.3000	0.000
0.3033	0.000
0.3066	0.000
0.3100	0.000
0.3133	0.000
0.3166	0.000
0.3200	0.000

0.3233	0.000
0.3266	0.000
0.3300	0.000
0.3333	0.000
0.3500	0.000
0.3666	0.000
0.3833	0.000
0.4000	0.000
0.4166	0.000
0.4333	0.000
0.4500	0.000
0.4666	0.000
0.4833	0.000
0.5000	0.000
0.5166	0.000
0.5333	0.000
0.5500	0.000
0.5666	0.000
0.5833	0.000
0.6000	0.000
0.6166	0.000
0.6333	0.000
0.6500	0.000
0.6666	0.000
0.6833	0.000
0.7000	0.000
0.7166	0.000
0.7333	0.000
0.7500	0.000
0.7666	0.000
0.7833	0.000
0.8000	0.000
0.8166	0.000
0.8333	0.000
0.8500	0.000
0.8666	0.000
0.8833	0.000
0.9000	0.000
0.9166	0.000
0.9333	0.000
0.9500	0.000
0.9666	0.000
0.9833	0.000
1.0000	0.000
1.2000	0.000
1.4000	0.000
1.6000	0.000
1.8000	0.000
2.0000	0.000
2.2000	0.000
2.4000	0.000
2.6000	0.000
2.8000	0.000
3.0000	0.000
3.2000	0.000
3.4000	0.000
3.6000	0.000
3.8000	0.000
4.0000	0.000
4.2000	0.000

4.4000	0.000
4.6000	0.000
4.8000	0.000
5.0000	0.000
5.2000	0.000
5.4000	0.000
5.6000	0.000
5.8000	0.000
6.0000	0.000
6.2000	0.000
6.4000	0.000
6.6000	0.000
6.8000	0.000
7.0000	0.000
7.2000	0.000
7.4000	0.000
7.6000	0.000
7.8000	0.000
8.0000	0.000
8.2000	0.000
8.4000	0.000
8.6000	0.000
8.8000	0.000
9.0000	0.000
9.2000	0.000
9.4000	0.000
9.6000	0.000
9.8000	0.000
10.0000	0.000
11.0000	0.000
12.0000	0.000
13.0000	0.000
14.0000	0.000
15.0000	0.000
16.0000	0.000
17.0000	0.000
18.0000	0.000
19.0000	0.000
20.0000	0.000
21.0000	0.000
22.0000	0.000
23.0000	0.000
24.0000	0.000
25.0000	0.000
26.0000	0.000
27.0000	0.000
28.0000	0.000
29.0000	0.000
30.0000	0.000
31.0000	0.000
32.0000	0.000
33.0000	0.000
34.0000	0.000
35.0000	0.000
36.0000	0.000
37.0000	0.000
38.0000	0.000
39.0000	0.000
40.0000	0.000
41.0000	0.000

42.0000	0.000
43.0000	0.000
44.0000	0.000
45.0000	0.000
46.0000	0.000
47.0000	0.000
48.0000	0.000
49.0000	0.000
50.0000	0.000
51.0000	0.000
52.0000	0.000
53.0000	0.000
54.0000	0.000
55.0000	0.000
56.0000	0.000
57.0000	0.000
58.0000	0.000
59.0000	0.000
60.0000	0.000

SE1000C
Environmental Logger
07/03 13:44

Unit# 01513 Test 4

Setups:	INPUT 1
Type	Level (F)
Mode	TOC
I.D.	00000
Reference	0.000
Linearity	0.280
Scale factor	29.990
Offset	0.120
Delay mSEC	50.000

Step 0 07/02 18:03:10

Elapsed Time	INPUT 1
0.0000	0.000
0.0033	0.000
0.0066	0.000
0.0100	0.000
0.0133	0.000
0.0166	0.000
0.0200	0.000
0.0233	0.000
0.0266	0.000
0.0300	0.000
0.0333	0.000
0.0366	0.000
0.0400	0.000
0.0433	1.244
0.0466	0.000
0.0500	0.000
0.0533	0.000
0.0566	0.000
0.0600	0.000
0.0633	0.000
0.0666	0.000
0.0700	0.000
0.0733	0.000
0.0766	0.000
0.0800	0.000
0.0833	0.000
0.0866	0.000
0.0900	0.000
0.0933	0.000
0.0966	0.000
0.1000	0.000
0.1033	0.000
0.1066	0.000
0.1100	0.000
0.1133	0.000
0.1166	0.000
0.1200	0.000

0.1233	0.000
0.1266	0.000
0.1300	0.000
0.1333	0.443
0.1366	0.646
0.1400	1.167
0.1433	0.955
0.1466	1.369
0.1500	1.630
0.1533	1.466
0.1566	2.430
0.1600	2.402
0.1633	2.276
0.1666	2.700
0.1700	3.067
0.1733	3.095
0.1766	3.684
0.1800	3.896
0.1833	4.387
0.1866	4.484
0.1900	4.657
0.1933	4.782
0.1966	5.380
0.2000	5.361
0.2033	5.968
0.2066	5.958
0.2100	6.189
0.2133	6.363
0.2166	6.864
0.2200	6.941
0.2233	7.249
0.2266	7.374
0.2300	7.634
0.2333	7.817
0.2366	7.990
0.2400	8.404
0.2433	8.568
0.2466	8.789
0.2500	8.886
0.2533	9.252
0.2566	9.386
0.2600	9.694
0.2633	9.839
0.2666	10.195
0.2700	10.416
0.2733	10.455
0.2766	10.868
0.2800	11.013
0.2833	11.109
0.2866	11.388
0.2900	11.484
0.2933	11.831
0.2966	11.946
0.3000	12.167
0.3033	12.446
0.3066	12.619
0.3100	12.812
0.3133	13.004
0.3166	13.167
0.3200	13.494

0.3233	13.581
0.3266	13.888
0.3300	13.965
0.3333	14.110
0.3500	15.148
0.3666	16.310
0.3833	17.012
0.4000	18.030
0.4166	19.067
0.4333	19.806
0.4500	20.814
0.4666	21.726
0.4833	22.560
0.5000	23.356
0.5166	24.162
0.5333	24.929
0.5500	25.936
0.5666	26.750
0.5833	27.641
0.6000	28.273
0.6166	28.886
0.6333	29.997
0.6500	30.657
0.6666	31.298
0.6833	31.939
0.7000	32.810
0.7166	33.461
0.7333	34.121
0.7500	35.000
0.7666	35.536
0.7833	36.300
0.8000	37.132
0.8166	37.533
0.8333	38.479
0.8500	38.813
0.8666	39.759
0.8833	40.026
0.9000	41.143
0.9166	41.477
0.9333	42.279
0.9500	42.880
0.9666	43.443
0.9833	44.092
1.0000	44.549
1.2000	52.238
1.4000	58.067
1.6000	63.224
1.8000	67.691
2.0000	71.745
2.2000	72.777
2.4000	73.874
2.6000	75.738
2.8000	77.298
3.0000	77.289
3.2000	77.298
3.4000	77.298
3.6000	77.298
3.8000	77.308
4.0000	77.109
4.2000	76.863

4.4000	76.665
4.6000	76.485
4.8000	76.324
5.0000	76.201
5.2000	76.097
5.4000	76.012
5.6000	75.937
5.8000	75.880
6.0000	75.842
6.2000	75.804
6.4000	75.776
6.6000	75.738
6.8000	75.719
7.0000	75.691
7.2000	75.662
7.4000	75.634
7.6000	75.606
7.8000	75.587
8.0000	75.558
8.2000	75.530
8.4000	75.511
8.6000	75.483
8.8000	75.464
9.0000	75.445
9.2000	75.435
9.4000	75.407
9.6000	75.388
9.8000	75.360
10.0000	75.350
11.0000	75.275
12.0000	75.237
13.0000	75.208
14.0000	75.199
15.0000	75.199
16.0000	75.190
17.0000	75.190
18.0000	75.190
19.0000	75.180
20.0000	75.171
21.0000	75.180
22.0000	75.180
23.0000	75.180
24.0000	75.171
25.0000	75.171
26.0000	75.171
27.0000	75.180
28.0000	75.161
29.0000	75.171
30.0000	75.171
31.0000	75.171
32.0000	75.190
33.0000	75.190
34.0000	75.161
35.0000	75.161
36.0000	75.161
37.0000	75.161
38.0000	75.161
39.0000	75.161
40.0000	75.161
41.0000	75.152

42.0000	75.161
43.0000	75.161
44.0000	75.161
45.0000	75.161
46.0000	75.161
47.0000	75.161
48.0000	75.161
49.0000	75.161
50.0000	75.161
51.0000	75.161
52.0000	75.161
53.0000	75.152
54.0000	75.161
55.0000	75.152
56.0000	75.161
57.0000	75.152
58.0000	75.161
59.0000	75.152
60.0000	75.152

SE1000C
Environmental Logger
07/03 13:50

Unit# 01513 Test 5

Setups:	INPUT 1
Type	Level (F)
Mode	TOC
I.D.	00000
Reference	0.000
Linearity	0.280
Scale factor	29.990
Offset	0.120
Delay mSEC	50.000

Step 0 07/02 19:04:07

Elapsed Time	INPUT 1
0.0000	74.840
0.0033	74.792
0.0066	74.754
0.0100	74.717
0.0133	74.679
0.0166	74.650
0.0200	74.612
0.0233	74.575
0.0266	74.537
0.0300	74.508
0.0333	74.471
0.0366	74.433
0.0400	74.404
0.0433	74.367
0.0466	74.338
0.0500	74.300
0.0533	74.272
0.0566	74.234
0.0600	74.206
0.0633	74.168
0.0666	74.139
0.0700	74.111
0.0733	74.073
0.0766	74.045
0.0800	74.016
0.0833	73.988
0.0866	73.950
0.0900	73.931
0.0933	73.893
0.0966	73.865
0.1000	73.837
0.1033	73.808
0.1066	73.780
0.1100	73.751
0.1133	73.723
0.1166	73.685
0.1200	73.657

0.1233	73.628
0.1266	73.600
0.1300	73.572
0.1333	73.543
0.1366	73.515
0.1400	73.487
0.1433	73.458
0.1466	73.430
0.1500	73.411
0.1533	73.373
0.1566	73.345
0.1600	73.326
0.1633	73.297
0.1666	73.269
0.1700	73.240
0.1733	73.212
0.1766	73.184
0.1800	73.155
0.1833	73.127
0.1866	73.108
0.1900	73.080
0.1933	73.051
0.1966	73.023
0.2000	72.994
0.2033	72.975
0.2066	72.947
0.2100	72.919
0.2133	72.890
0.2166	72.862
0.2200	72.843
0.2233	72.815
0.2266	72.786
0.2300	72.758
0.2333	72.729
0.2366	72.710
0.2400	72.682
0.2433	72.663
0.2466	72.635
0.2500	72.606
0.2533	72.587
0.2566	72.559
0.2600	72.531
0.2633	72.502
0.2666	72.483
0.2700	72.455
0.2733	72.427
0.2766	72.408
0.2800	72.379
0.2833	72.351
0.2866	72.332
0.2900	72.303
0.2933	72.285
0.2966	72.256
0.3000	72.228
0.3033	72.209
0.3066	72.180
0.3100	72.152
0.3133	72.133
0.3166	72.105
0.3200	72.086

0.3233	72.057
0.3266	72.029
0.3300	72.010
0.3333	71.982
0.3500	71.859
0.3666	71.726
0.3833	71.603
0.4000	71.470
0.4166	71.347
0.4333	71.224
0.4500	71.101
0.4666	70.968
0.4833	70.845
0.5000	70.722
0.5166	70.599
0.5333	70.485
0.5500	70.353
0.5666	70.239
0.5833	70.116
0.6000	70.002
0.6166	69.879
0.6333	69.766
0.6500	69.652
0.6666	69.529
0.6833	69.415
0.7000	69.311
0.7166	69.197
0.7333	69.083
0.7500	68.970
0.7666	68.866
0.7833	68.752
0.8000	68.648
0.8166	68.543
0.8333	68.439
0.8500	68.335
0.8666	68.231
0.8833	68.126
0.9000	68.032
0.9166	67.927
0.9333	67.833
0.9500	67.738
0.9666	67.634
0.9833	67.539
1.0000	67.435
1.2000	66.069
1.4000	65.244
1.6000	70.457
1.8000	67.908
2.0000	63.413
2.2000	58.751
2.4000	54.379
2.6000	50.372
2.8000	46.704
3.0000	43.233
3.2000	39.988
3.4000	36.960
3.6000	34.130
3.8000	31.471
4.0000	28.905
4.2000	26.472

4.4000	24.210
4.6000	22.071
4.8000	20.036
5.0000	18.136
5.2000	16.310
5.4000	14.581
5.6000	12.937
5.8000	11.388
6.0000	9.926
6.2000	8.578
6.4000	7.287
6.6000	6.064
6.8000	4.918
7.0000	3.819
7.2000	2.777
7.4000	1.804
7.6000	0.878
7.8000	0.000
8.0000	0.000
8.2000	0.000
8.4000	0.000
8.6000	0.000
8.8000	0.000
9.0000	0.000
9.2000	0.000
9.4000	0.000
9.6000	0.000
9.8000	0.000
10.0000	0.000
11.0000	0.000
12.0000	0.000
13.0000	0.000
14.0000	0.000
15.0000	0.000
16.0000	0.000
17.0000	0.000
18.0000	0.000
19.0000	0.000
20.0000	0.000
21.0000	0.000
22.0000	0.000
23.0000	0.000
24.0000	0.000
25.0000	0.000
26.0000	0.000
27.0000	0.000
28.0000	0.000
29.0000	0.000
30.0000	0.000
31.0000	0.000
32.0000	0.000
33.0000	0.000
34.0000	0.000
35.0000	0.000
36.0000	0.000
37.0000	0.000
38.0000	0.000
39.0000	0.000
40.0000	0.000
41.0000	0.000

42.0000	0.000
43.0000	0.000
44.0000	0.000
45.0000	0.000
46.0000	0.000
47.0000	0.000
48.0000	0.000
49.0000	0.000
50.0000	0.000
51.0000	0.000
52.0000	0.000
53.0000	0.000
54.0000	0.000
55.0000	0.000
56.0000	0.000
57.0000	0.000
58.0000	0.000
59.0000	0.000
60.0000	0.000