

COUNTY

SHAWNEE

LOCATION

11-15E-13DACC

DATE

JANUARY 15, 1958

PERFORMED BY LAYNE-WESTERN AT THE GOODYEAR TIRE & RUBBER CO.

DISCHARGE

225 gpm

LENGTH OF TEST ~ 2850 min

OF OBSERVATION WELLS ~ 4

DISTANCE(S) TO PUMPING WELL 15', 30', 110', 3', ?

WATER LEVEL = ?

AQUIFER TYPE ALLUVIAL (KANSAS RIVER)

DEPTH OF TEST WELL 49'

SCREEN

— ? no log is available

COMMENTS 15 data points were used in this analysis.
 The computer plots may be showing delayed drainage conditions.

COMPUTER ANALYSIS

METHOD	T (gpd/ft)	S	RMS error	r
Theis	514,830	.00466	.037	30'
Theis	383,000	.052	.012	110'

PUMPING TESTS AT THE GOODYEAR
TIRE AND RUBBER COMPANY, TOPEKA, KANSAS

Prepared as a part of the cooperative
ground-water program of the U. S. Geological
Survey, State Geological Survey, Division of
Water Resources of the State Board of Agri-
culture, and Division of Sanitation of the
State Board of Health

February 1958

PUMPING TESTS AT THE GOODYEAR TIRE AND RUBBER COMPANY,
TOPEKA, KANSAS

Goodyear Tire and Rubber Company located in section 13, T. 11 S., R. 15 E., in north Topeka obtains its water supply from 7 drilled wells in the terrace deposits of Kansas Valley. The wells are approximately 80 feet deep and furnish a total of about 1,800 gallons of water per minute.

During the fall of 1957 five observation wells were constructed by Layne Western Company. These observation wells were constructed with 2-inch pipe having a sandpoint at the base. An observation well was located at a distance of 100 feet from each of five of the production wells. The location of the production wells and observation wells are shown in Figure 1.

A series of pumping tests to begin on January 6, 1958 were scheduled. The pumping tests were made to determine the transmissibility and storage coefficients of the water-bearing material. If the transmissibility and storage coefficients are known, the drawdown of the water table with respect to distance from the pumping wells and time can be computed. Hence, the mutual interference of the pumping wells and the effect of the pumping wells on the water table adjacent to the plant area can be determined.

The pumping tests were scheduled so as not to affect the regular operations of the plant. Six wells operating continuously furnish the water needs of the plant. The schedule was arranged so that the well to be tested was idle from Saturday until the beginning of the test shortly after noon on the following Monday. Other wells were either

pumped at a steady rate from Sunday until the end of the test or were kept off during the test. Although pumping conditions remained unchanged for at least 24 hours preceding the tests, the water levels in the observation wells were still rising or falling slightly in response to previous pumping.

The pumping tests were made at the request of the Chief Engineer, Division of Water Resources of the State Board of Agriculture. They were made by C. V. Lane, C. K. Bayne, B. L. G. Henderson, E. L. Reavis, Wm. Gellinger, K. D. Wahl, and V. C. Fishel of the Ground Water Branch, Federal and Kansas Geological Surveys, and Guy Gibson and Ed Schrock of the Division of Water Resources of the State Board of Agriculture. The pumping tests were coordinated with the plant operations through Verne Albert, Engineer of Goodyear Tire and Rubber Co.

The first test was made by pumping well 7 at a rate of 410 gpm beginning at 1:30 p.m. on January 6. Water-level measurements made during this test were as follows:

Observation well 1A, located 100 feet north of well 1. Depth 70.1 feet. Measuring point top of 2-inch coupling which is 1.8 feet above land surface.

Date	Time	Depth to water, feet	Remarks
Jan. 6, 1958	9:30 a.m.	36.35	Well 1 was pumping
	10:06	36.39	
	10:32	36.43	
	10:55	36.45	
	11:19	36.47	
	11:44	36.50	
	12:25 p.m.	36.53	Well 7 turned on.
	1:30		
	2:10	36.55	
Jan. 8, 1958	11:26 a.m.	37.00	

Observation well 4A, located 100 feet north of well 4. Depth 73.9 feet. Measuring point top of 2-inch coupling which is 1.5 feet above land surface.

Date	Time	Depth to water, feet	Remarks
Jan. 6, 1958	9:41 a.m.	35.02	Well 4 was pumping
	9:43	35.07	
	9:45	35.12	
	10:15	35.19	
	10:38	35.24	
	11:04	35.27	
	11:24	35.25	
	1:30 p.m.		Well 7 turned on
	2:19	35.27	
Jan. 8, 1958	11:35 a.m.	35.52	
Jan. 13, 1958	10:50 a.m.	35.65	

Observation well 5A, located 100 feet east of well 5. Depth 78.1 feet. Measuring point at top edge of 2-inch coupling which is 2.2 feet above land surface.

Date	Time	Depth to water, feet	Remarks
Jan. 6, 1958	9:22 a.m.	31.25	Well 5 was pumping
	9:58	31.52	
	10:00	31.51	
	10:27	31.52	
	10:50	31.51	
	11:13	31.50	
	11:37	31.50	
	12:37 p.m.	31.47	
	1:06	31.48	
	1:13	31.46	
	1:29	31.51	
	1:30		Well 7 turned on
	1:31	31.53	
	1:34	31.53	
	1:36	31.53	
	1:43	31.52	
	1:49	31.47	
	2:00	31.48	
Jan. 8, 1958	11:16 a.m.	31.37	

Observation well 6A, located 110 feet east of well 6. Depth 76.6 feet.

Measuring point top of 2-inch coupling which is 2.3 feet above land surface.

Date	Time	Depth, to water, feet	Remarks
Jan. 6, 1958	9:20 a.m.	32.38	Well 6 not pumping
	9:54	32.33	
	10:25	32.30	
	10:47	32.29	
	11:11	32.28	Well 7 turned on
	11:35	32.26	
	1:28 p.m.	32.21	
	1:30		
	1:35	32.20	
	1:45	32.20	
	2:00	32.19	
	2:31	32.18	
Jan. 8, 1958	11:05 a.m.	31.96	

Observation well 7A, located 100 feet south of well 7. Measuring point 2-inch coupling which is 1.5 feet above land surface.

Date	Time	Depth, to water, feet	Remarks
Jan. 6, 1958	9:25 a.m.	32.29	Well 7 not pumping
	10:02	32.29	
	10:30	32.30	
	10:52	32.30	
	11:16	32.29	
	11:41	32.29	
	1:14 p.m.	32.28	Well 7 turned on
	1:30		
	1:31	32.91	
	1:33	33.10	
	1:35	33.09	
	1:37	33.10	
	1:43	33.10	
	2:31	32.83	
	3:00	32.84	
Jan. 8, 1958	11:20 a.m.	33.25	
	12:30 p.m.	33.22	

Well 7 is not equipped with a water meter and there was no way to check the rate of pumping during the test. The pump was turned off

on January 8, and a Jacuzzi flow meter installed in the water line, and the pump turned on to measure the discharge. The pumping rate determined by means of the Jacuzzi flow meter was 410 gpm. The rate of discharge of the well apparently fluctuated during the pumping period, for there was a considerable fluctuation in the water levels. A reliable value for the transmissibility could not be obtained from this test due to the change in the rate of discharge. The test, however, indicated a transmissibility coefficient of about 330,000 gallons per day per foot.

A pumping test for well 6 to begin on the afternoon of January 13 was scheduled. On the morning of January 13 an additional observation well known as 6B was constructed at a distance of 30 feet from well 6 and in line between wells 6 and 6A. Well 6 B had a depth of 49 feet, a diameter of $1\frac{1}{4}$ inches, and the measuring point was the top edge of the pipe and was 1.0 foot above land surface. Well 6 is not equipped with a water meter and there was no way to check the rate of pumping during the test. The pump was turned off on January 15, a Jacuzzi flow meter installed in the water line, and the pump turned on to measure the discharge. The pumping rate determined by means of the Jacuzzi flow meter was 225 gpm.

Water-level measurements made during the pumping of well 6 were as follows:

Observation well 5A.

Date	Time	Depth to water, feet	Remarks
Jan. 13, 1958	10:33 a.m.	31.66	Well 5 pumping
	12:52 p.m.	31.65	
	1:27		Well 6 turned on
	1:30	31.67	
	1:50	31.67	

(Continued)

	2:15	31.67	
	2:30	31.68	
Jan. 14, 1958	9:29 a.m.	31.71	
	10:28	31.71	
	12:27 p.m.	31.70	
	1:20		Well 7 turned off
	1:47	31.73	
Jan. 15, 1958	11:10 a.m.	31.76	

Observation well 6A

Date	Time	Depth to water, feet	Remarks
Jan. 13, 1958	10:30 a.m.	32.13	Well 6 not pumping
	10:57	32.13	
	12:42 p.m.	32.12	
	1:20	32.12	
	1:27		Well 6 turned on
	1:28 1	32.12	
	1:29 2	32.13 .01	
	1:30 3	32.14 .02	
	1:32 5	32.15 .03	
	1:40 13	32.18 .06	
	1:45 18	32.19 .07	
	2:00 33	32.22 .1	
	2:20 53	32.25 .13	
	3:00 93	32.28 .16	
	3:30 123	32.30 .18	
Jan. 14, 1958	9:19 a.m. 1192	32.46 .34	
	10:19 1252	32.46 .34	
	12:16 p.m. 1369	32.47 .35	
	1:41 1454	32.50 .38	
Jan. 15, 1958	10:55 a.m. 2728	32.55 .43	
	12:57 p.m. 2850	32.55 .43	

$Q = 225 \text{ gpm}$
 $= 30.1 \text{ ft}^3/\text{min}$

Observation well 6B

Date	Time	Depth to water, feet	Remarks
Jan. 13, 1958	11:45 a.m.	30.45	Well 6 not pumping
	12:45 p.m.	30.45	
	1:00	30.46	
	1:27		Well 6 turned on
	1:27:15 .25	30.52 .06	
	1:27:50 .8	30.61 .15	
	1:28:20 1.3	30.65 .19	
	1:28:55 1.9	30.69 .23	
	1:29:30 2.5	30.71 .25	
	1:30 3	30.73 .27	

$Q = 225 \text{ gpm}$
 $= 30.1 \text{ ft}^3/\text{min}$

(Continued)

	1:34	7	30.75	.29
	1:38	11	30.69	
	1:57	30	30.75	.29
	2:07	40	30.77	.31
	2:27	60	30.78	.32
	2:37	70	30.79	.33
	3:20	113	30.81	.35
Jan. 14, 1958	9:22	a.m. 1195	30.97	.51
	12:20	p.m. 1373	30.98	.52
	1:44	1457	31.05	.59
Jan. 15, 1958	10:57	a.m. 2730	31.04	.58
	12:58	p.m. 2851	31.04	.58

Observation well 7A

Date	Time	Depth to water, feet	Remarks
Jan. 13, 1958	10:36 a.m.	33.66	Well 7 pumping
	10:54	33.66	
	1:27 p.m.		Well 6 turned on
	1:40	33.50	
	1:45	33.60	
	2:00	33.62	
	2:30	33.61	
	3:00	33.60	
Jan. 14, 1958	9:35 a.m.	33.57	
	10:33	33.56	
	12:29 p.m.	33.55	
	1:20		Well 7 turned off
	1:56	33.04	
Jan. 15, 1958	11:13 a.m.	33.59	Well 7 pumping

Analysis of Data

The data collected during the pumping test on well 6 were analyzed by modifications of the formula given by Theis in 1935 (C. V. Theis, The relation between the lowering of the piezometric surface and the rate and duration of discharge of a well using ground-water storage: Trans. Amer. Geophys. Union, pp. 519-524, 1935).

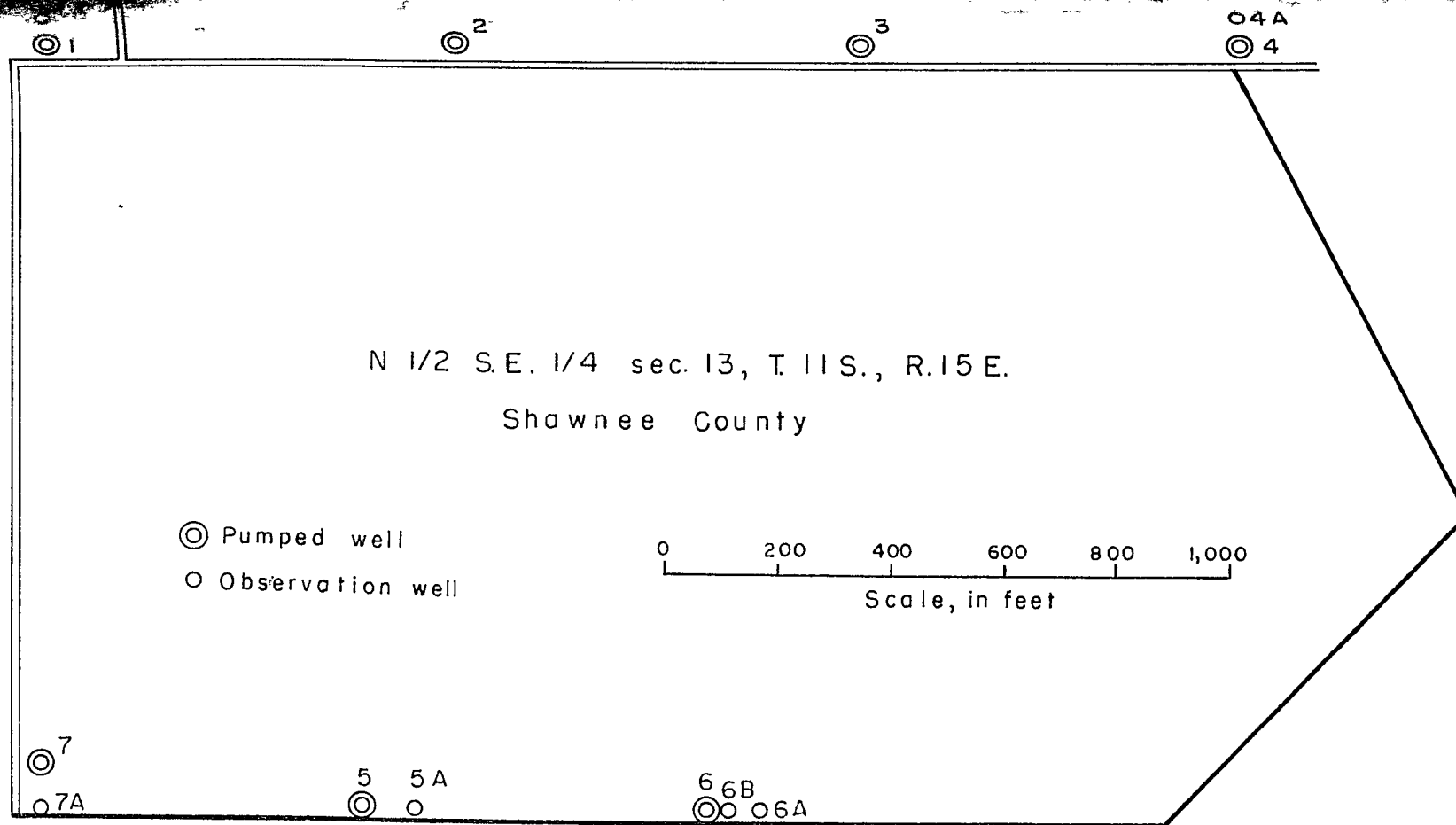


Fig. 1.--Sketch map showing the location of supply wells and observation wells

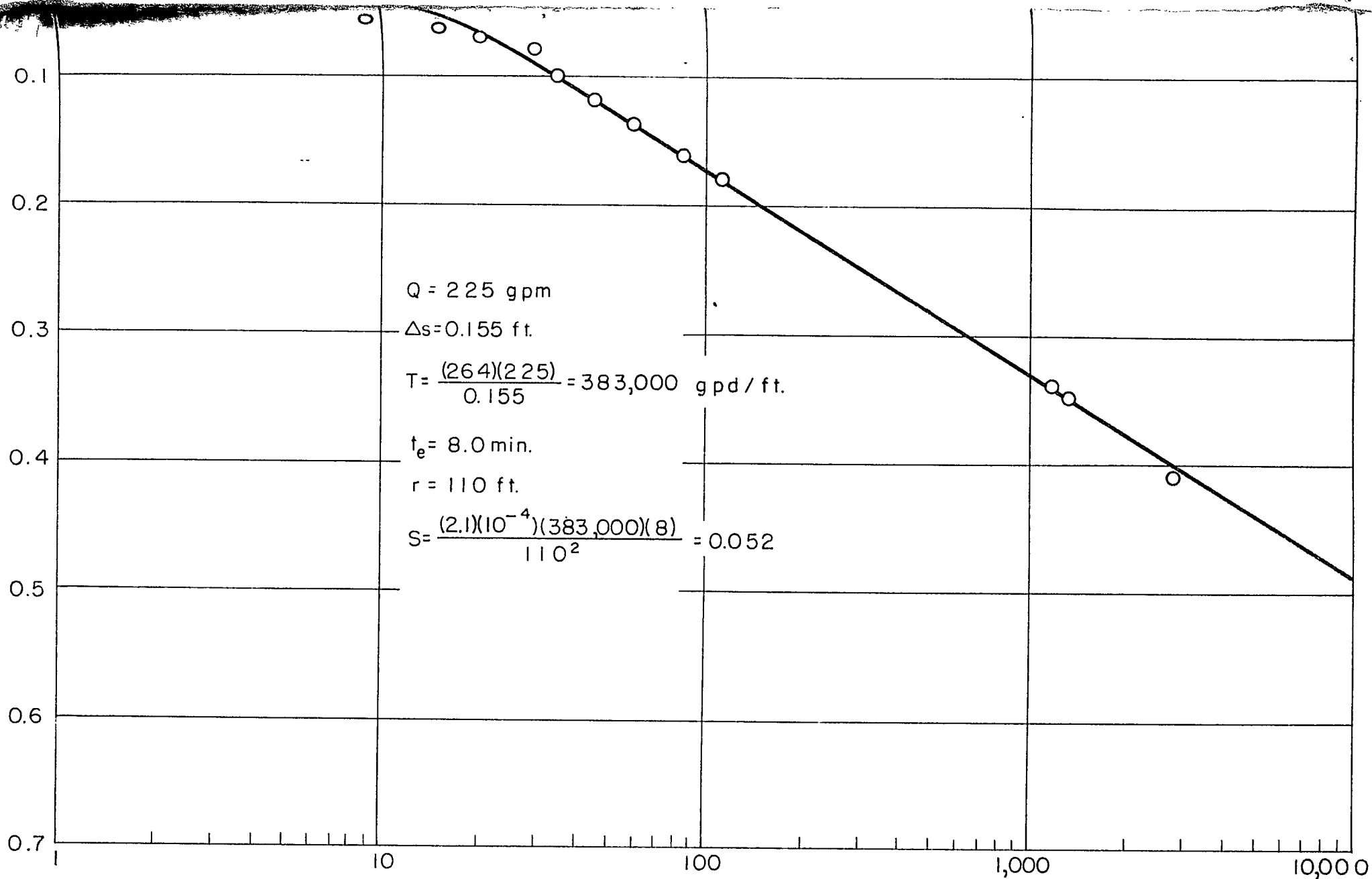


Fig. 2.—Drawdown (s) in observation well 6A plotted against time (t) since pumping started in well 6

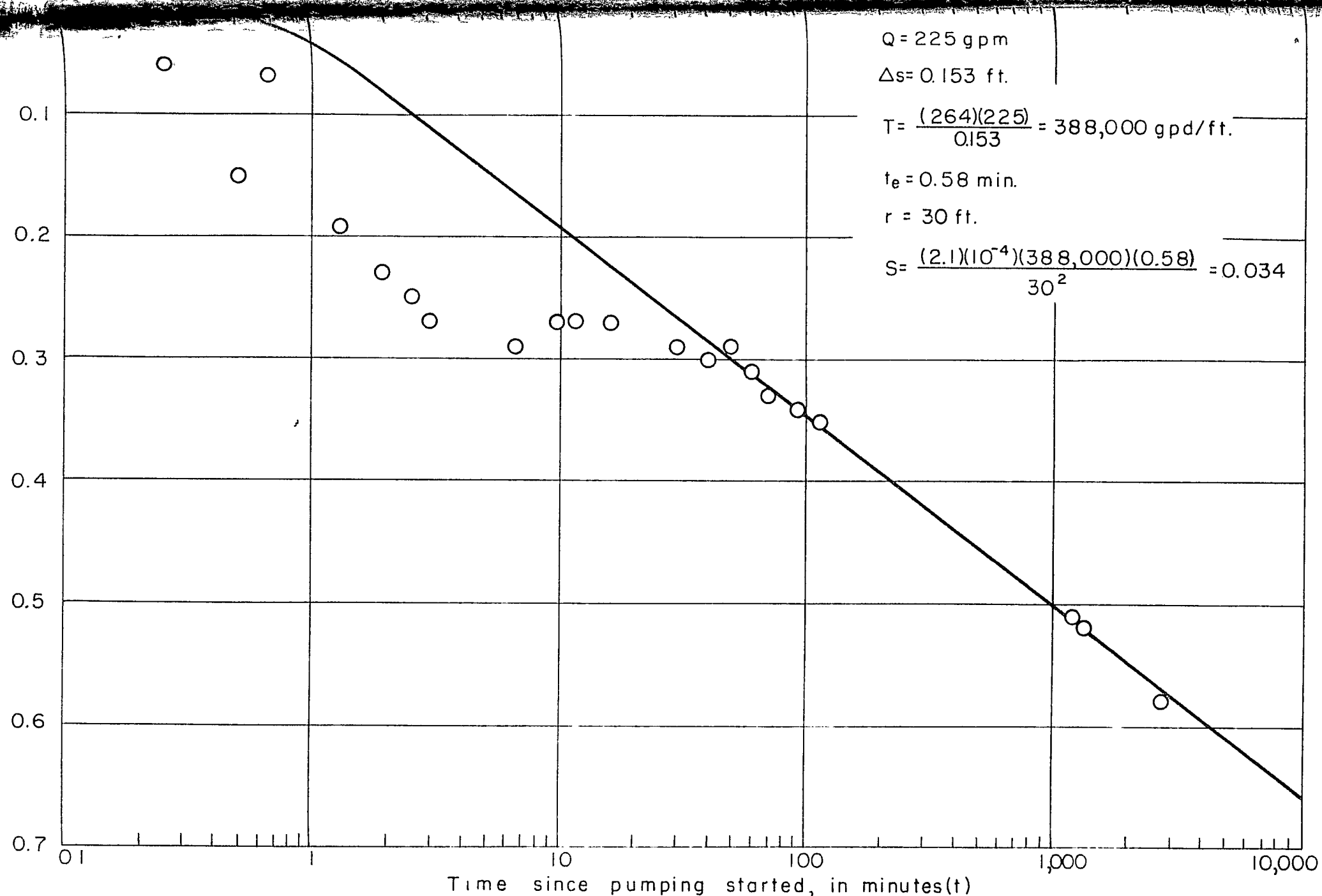


Fig. 3.—Drawdown (s) in observation well 6B plotted against time (t) since pumping started in well 6

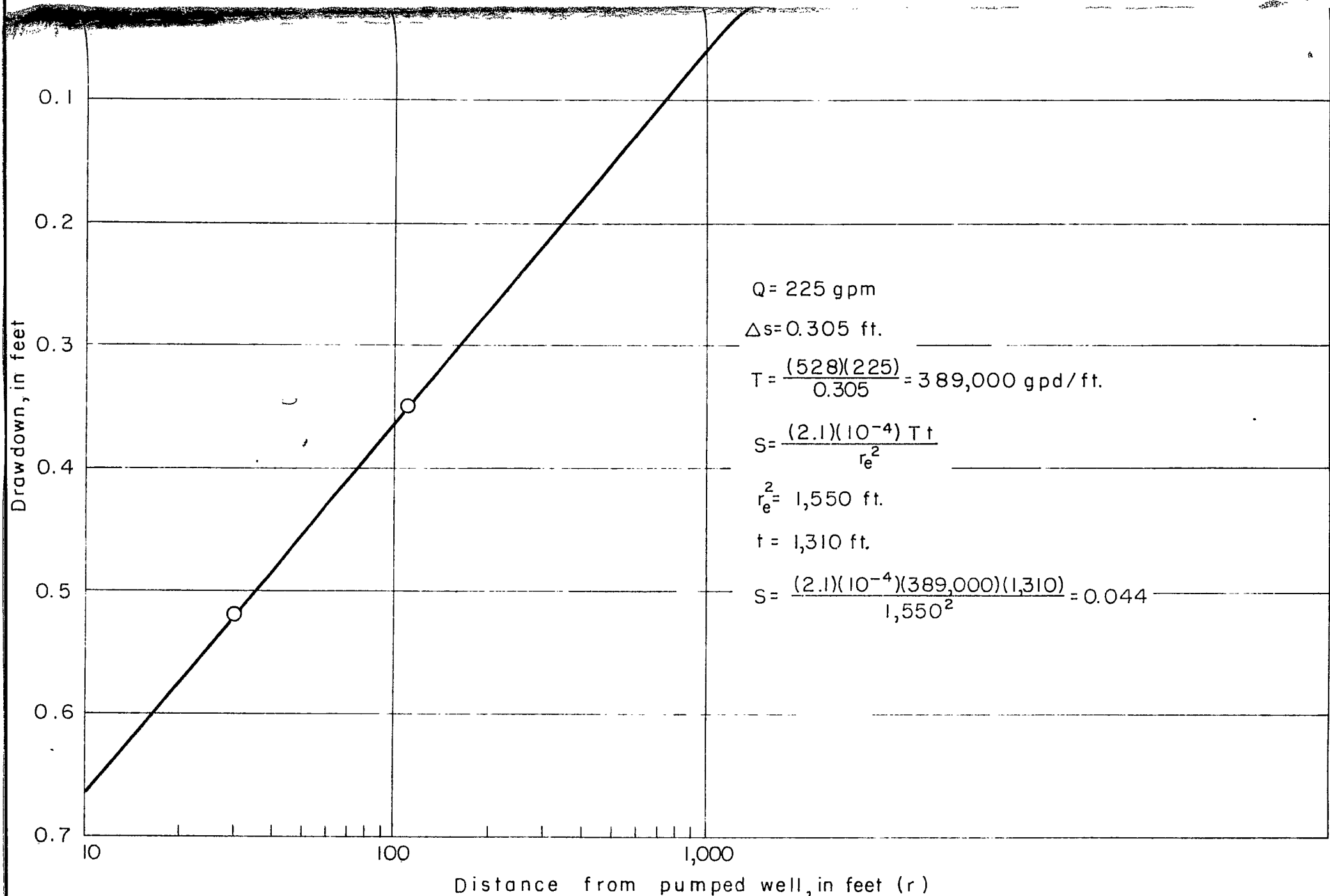


Fig. 4. — Drawdown (s) in observation wells 6A and 6B plotted against distance (r) of observation wells from pump.

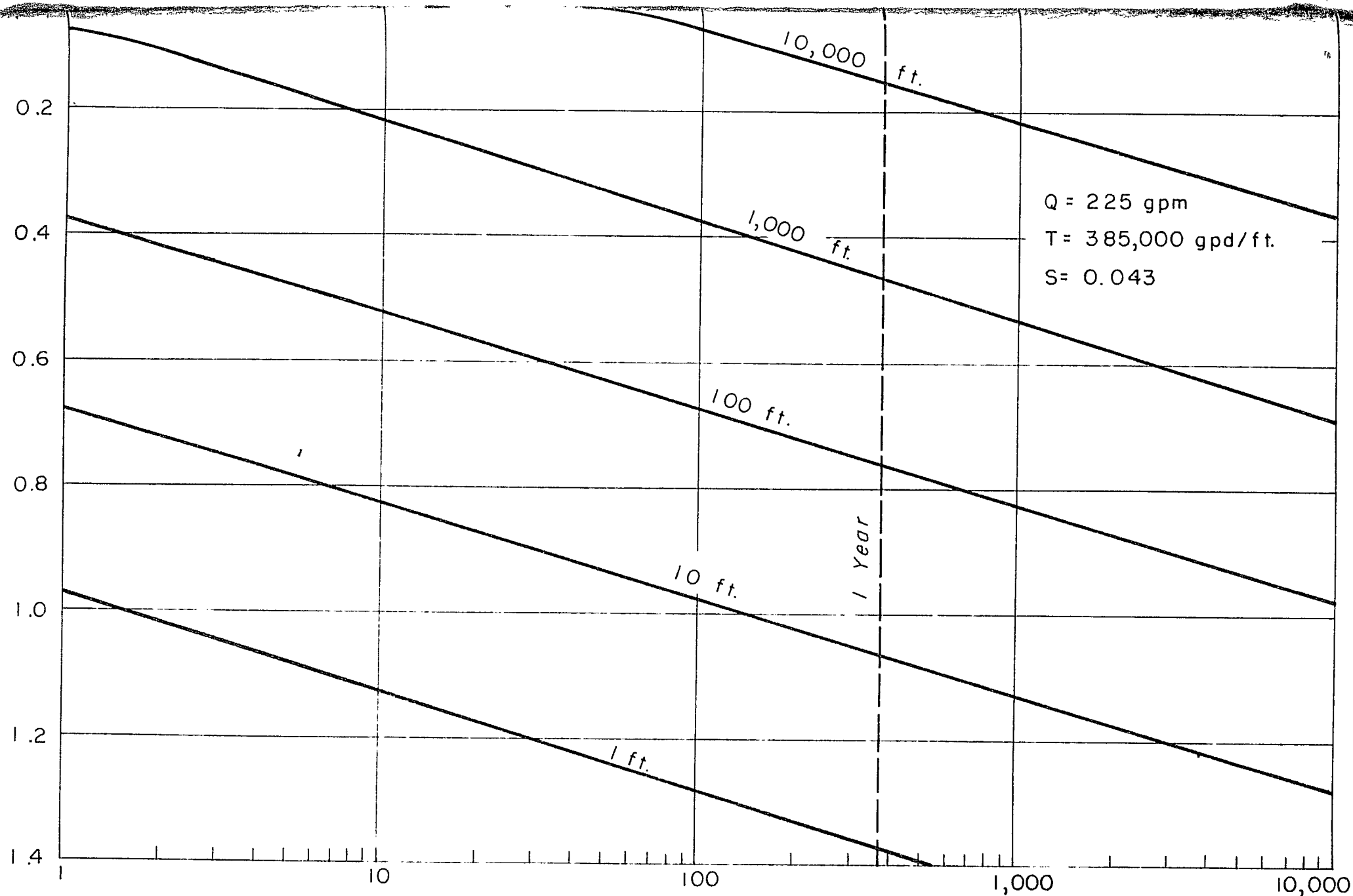


Fig. 5.—Graphs showing the relation between drawdown, time, and distance
 Time since pumping started, in days

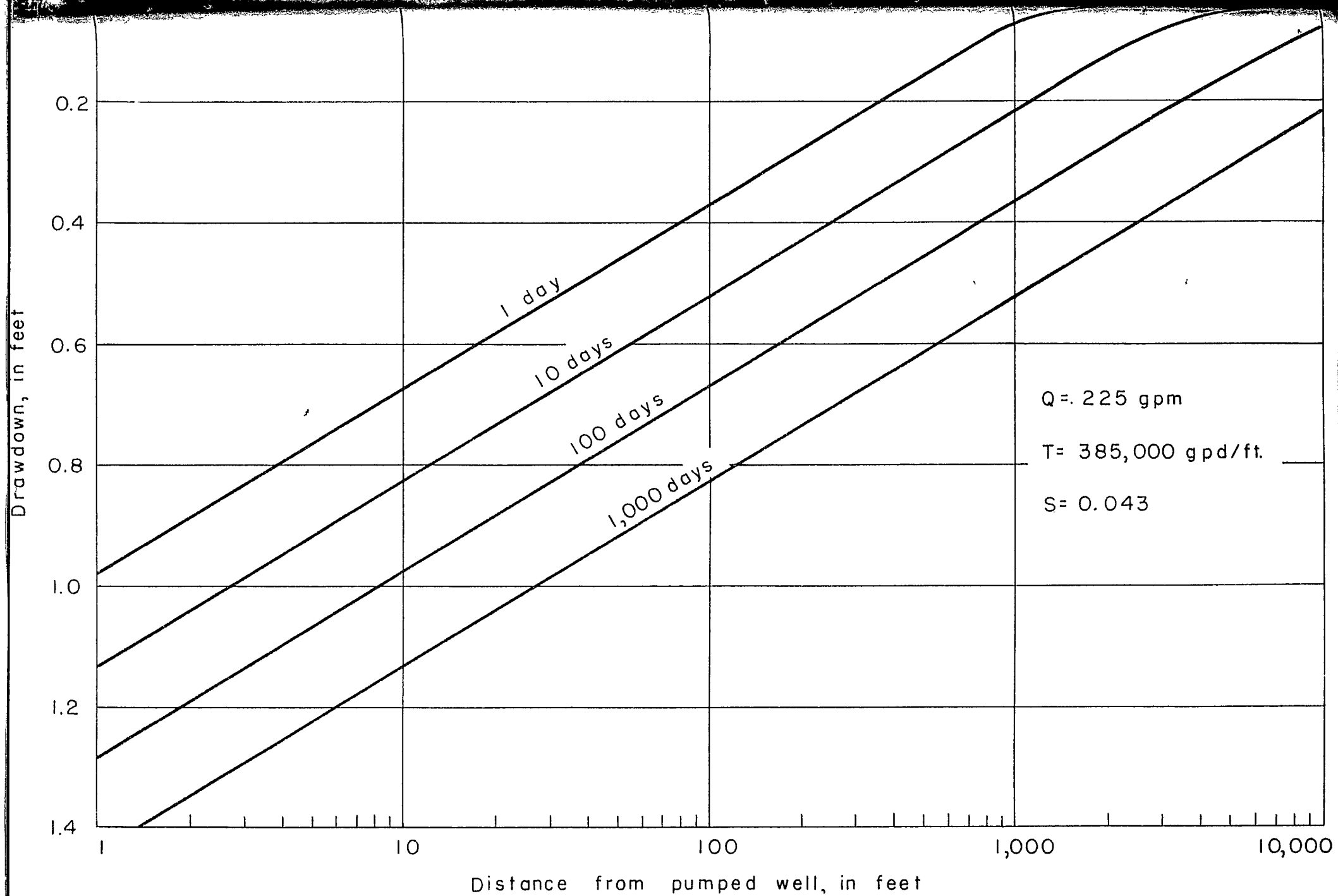


Fig. 6.--Graphs showing the relation between drawdown, time, and distance.

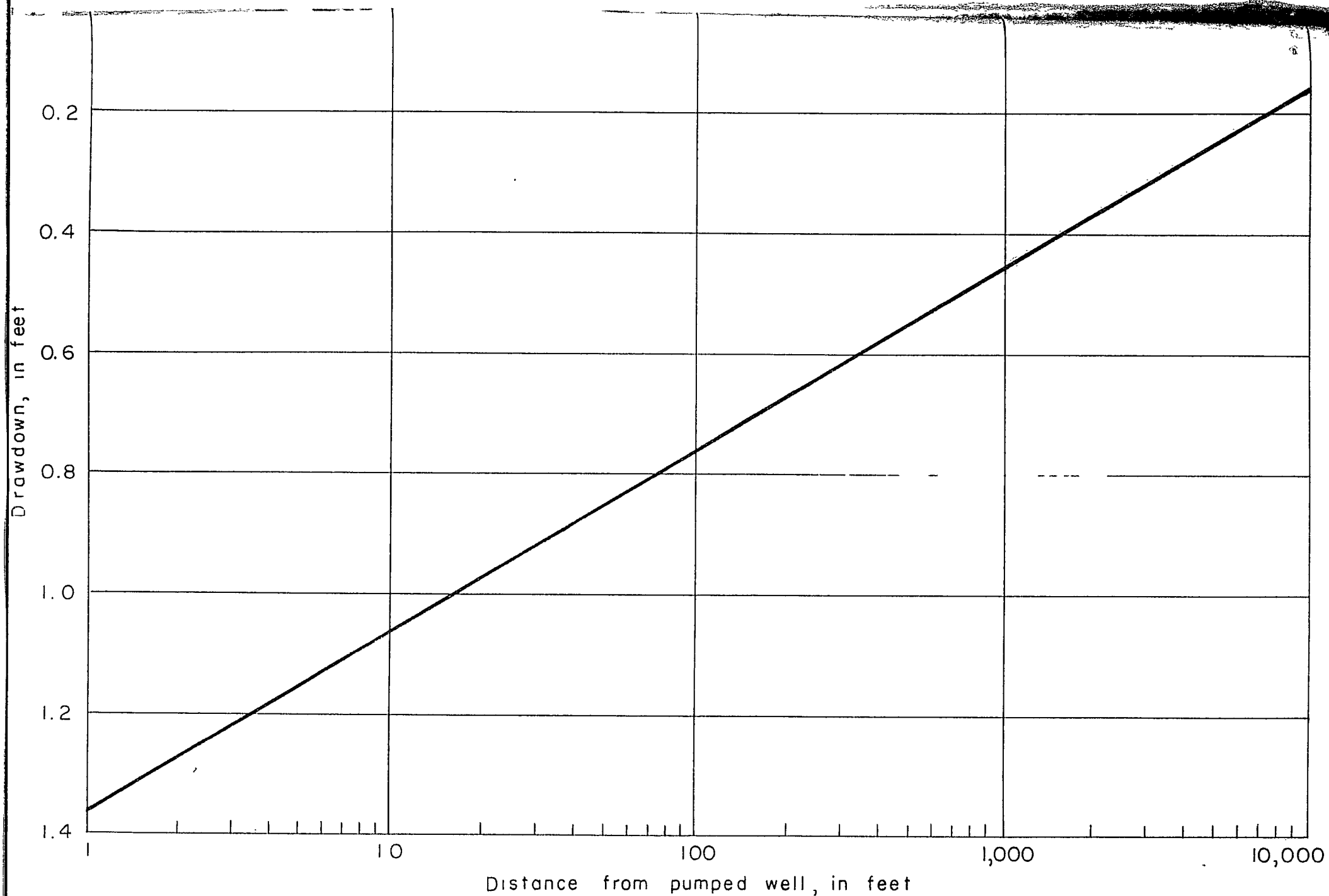
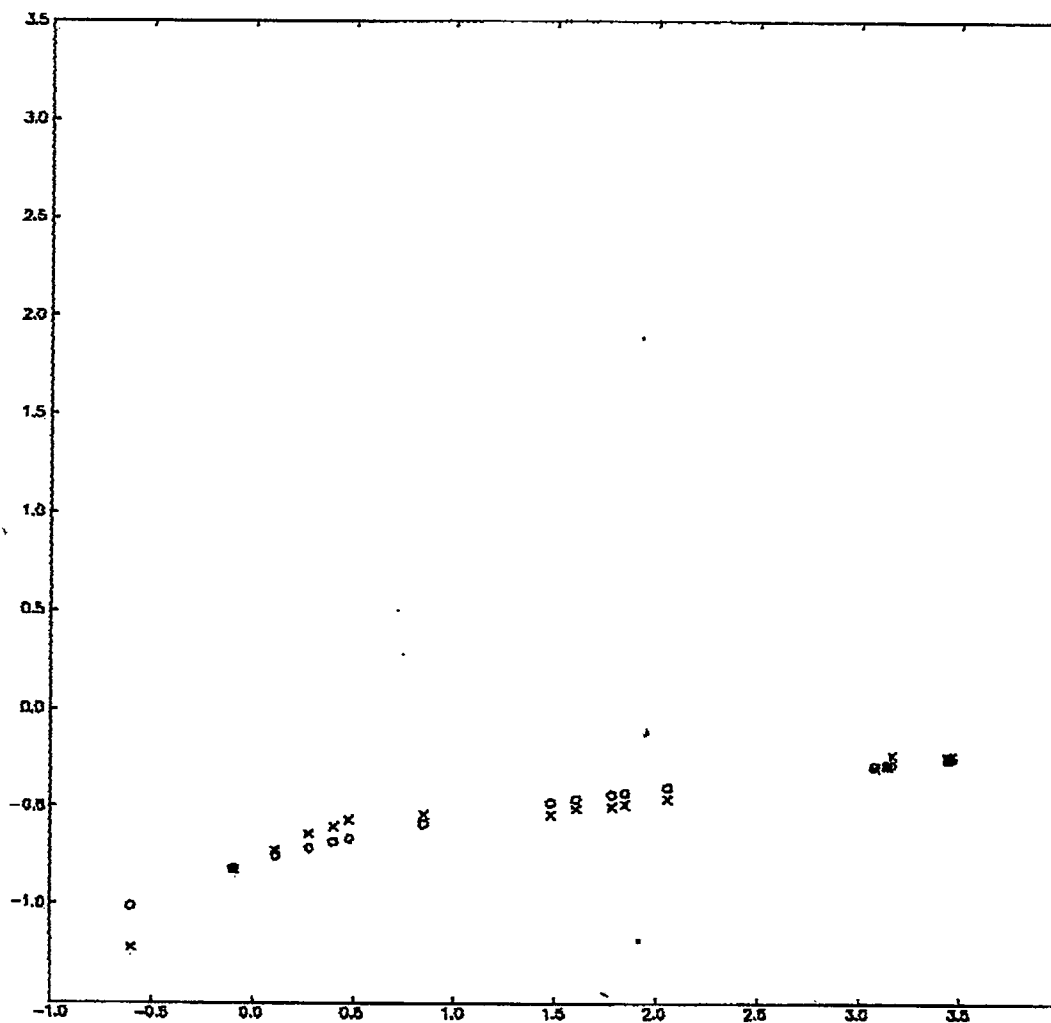


Fig. 7.—Graph showing the relation between drawdown and distance at the end of one year of pumping

DATE 05/21/85 TIME 13:08:28 PLOT# 1 PATH= :SI1:PLOT:WK:LOGPLOT-TIRE-PL0T

LOGPLOT.GOODYEAR.JO
PLOT NO. 1
DATE 05/21/85 TIME 11:18:02

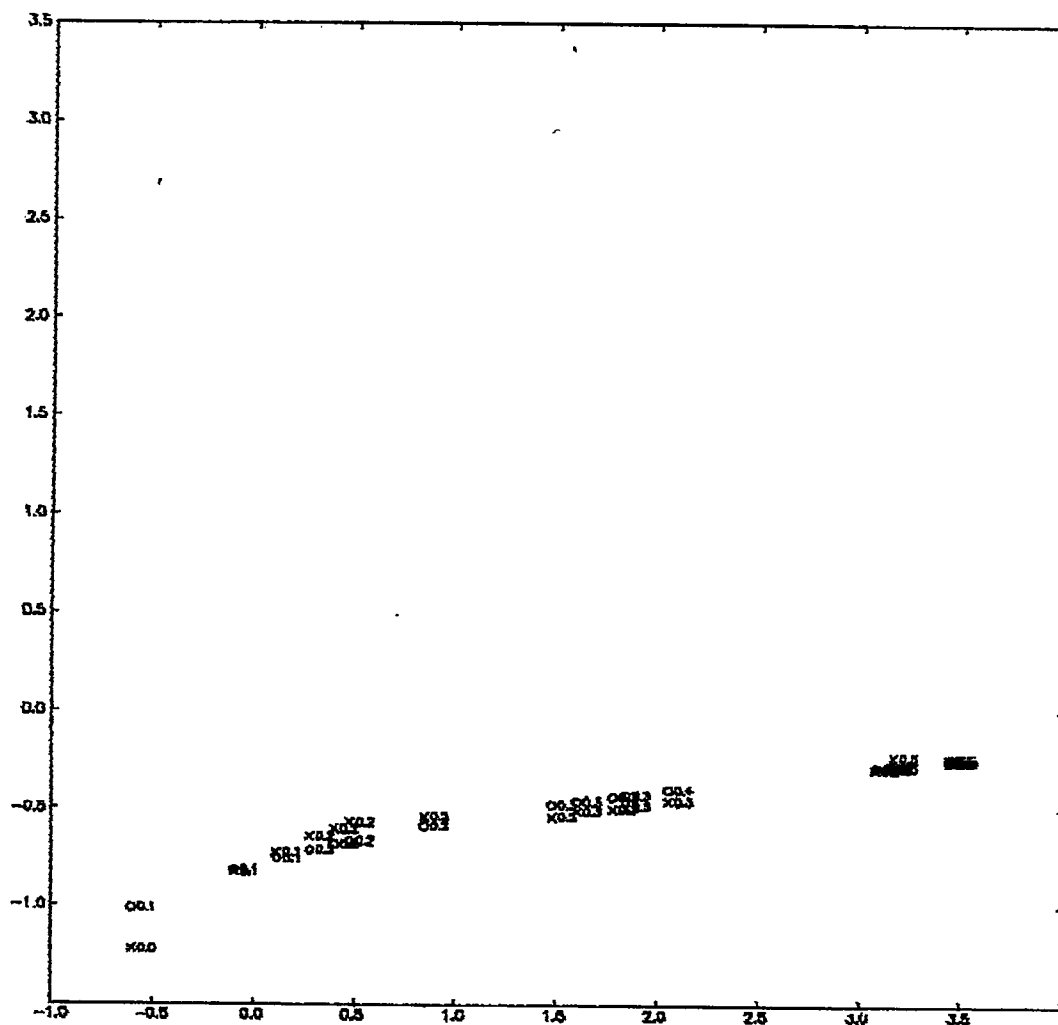


TIRE.CLI
(30')

DATE 05/21/85 TIME 13:09:30 PLOT# 1 PATH= :SI1:PLOT:WK:LABEL.TIRE.PLOT

*
LABELGOODYEAR.30
PLOT NO. 1

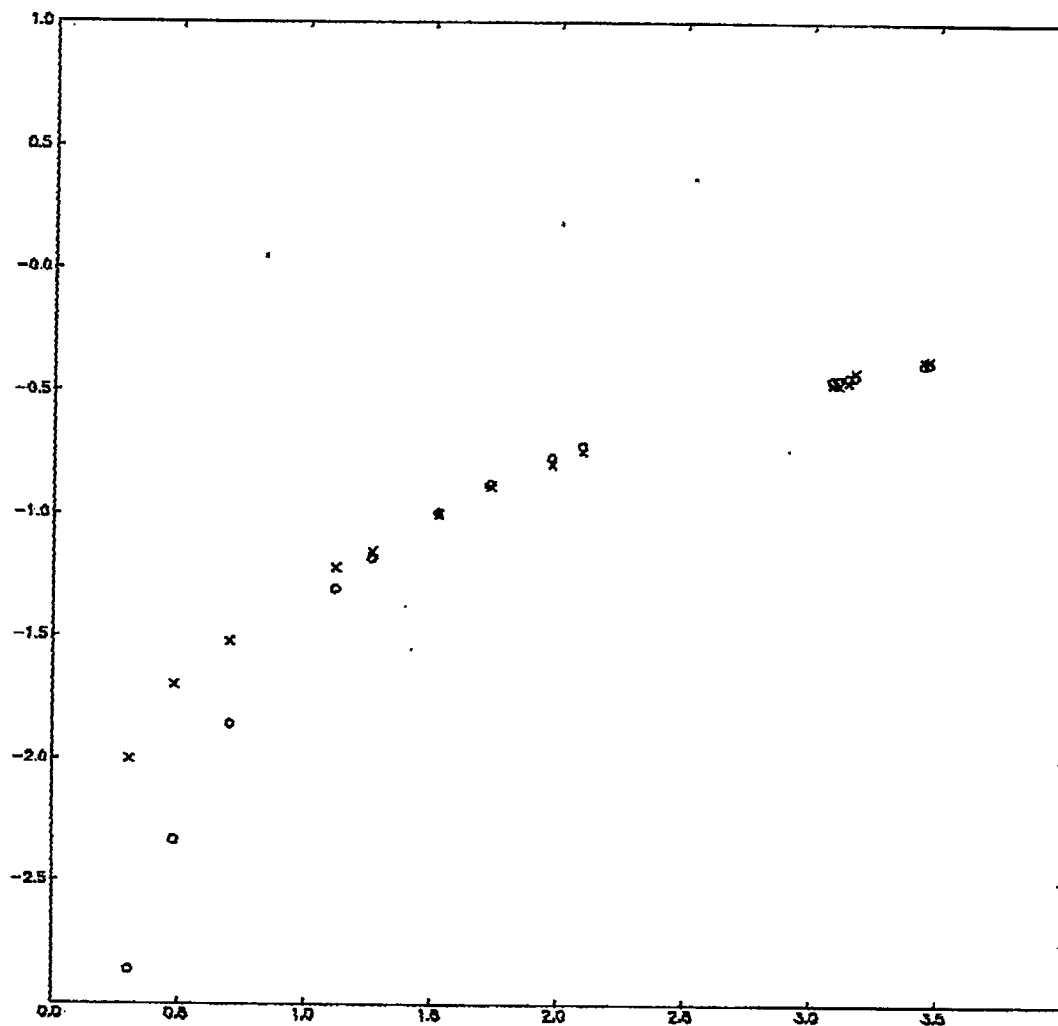
DATE 05/21/85 TIME 11:17:46



TIRE, CL1
(30')

DATE 05/21/85 TIME 13:10:31 PLOT# 1 PATH= :SI1:PLOT:WK:LOGPLOT.TIRE2.PLOT

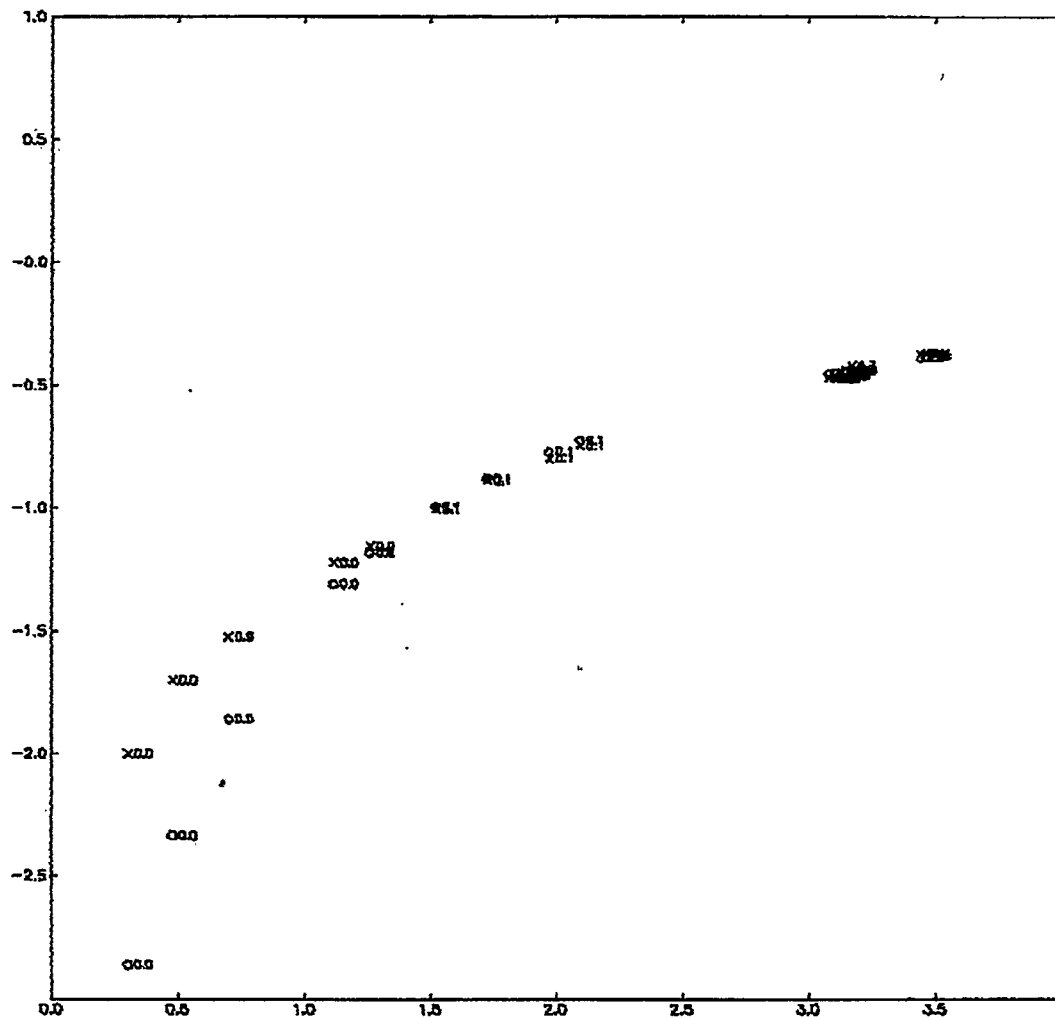
LOGPLOT.GOODYEAR.110
* PLOT NO. 1 DATE 05/21/85 TIME 11:14:28



TIRE2.CLI
(110)

DATE 05/21/85 TIME 13:11:28 PLOT# 1 PATH# :SI1:PLOT:WK:LABEL.TIRE2.PLOT

* LABEL GOODYEAR.110
 PLOT NO. 1
 DATE 05/21/85 TIME 11:15:23

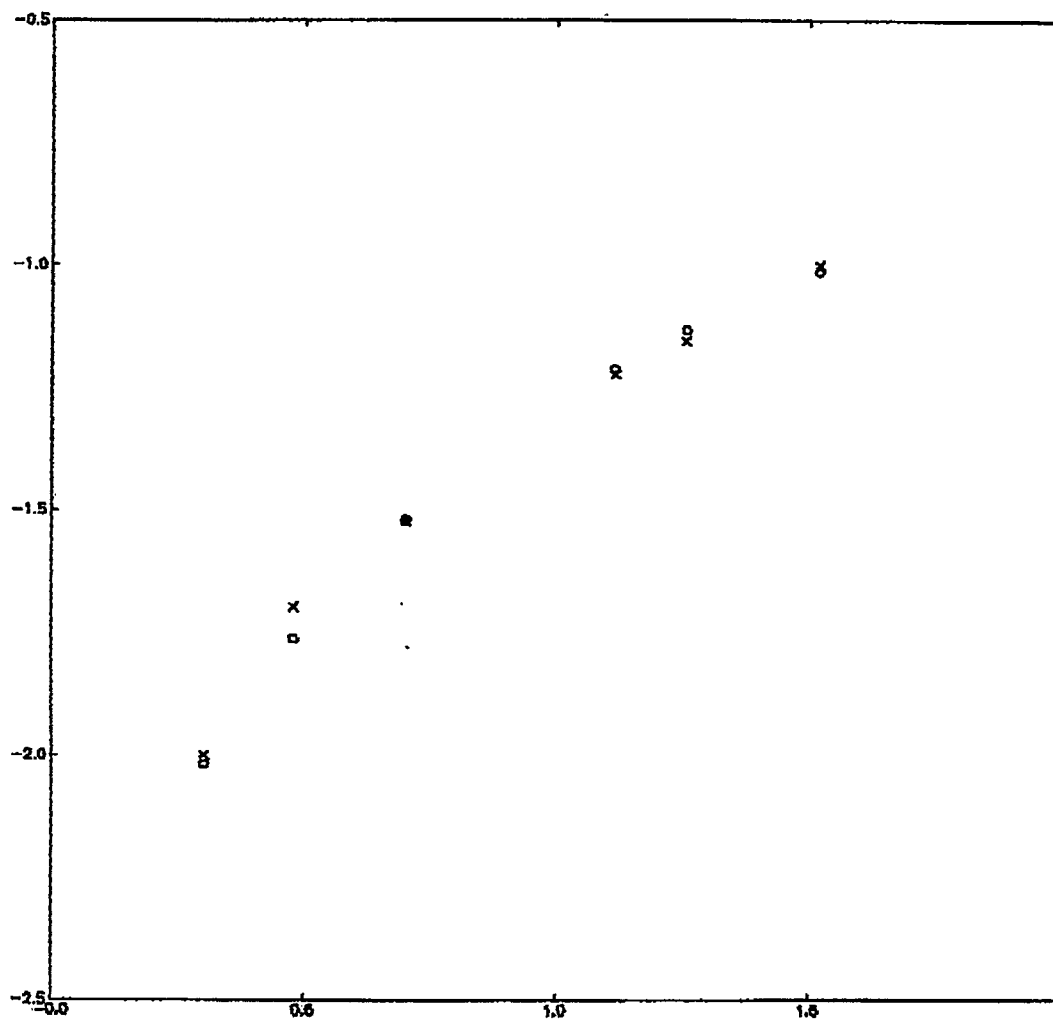


TIRE2, CL1
(110')

DATE 05/28/85 TIME 13:39:17 PLOT# 1 PATH= :SI1:PLOT:WK:LOGPLOT.TIRE2.2.PLOT

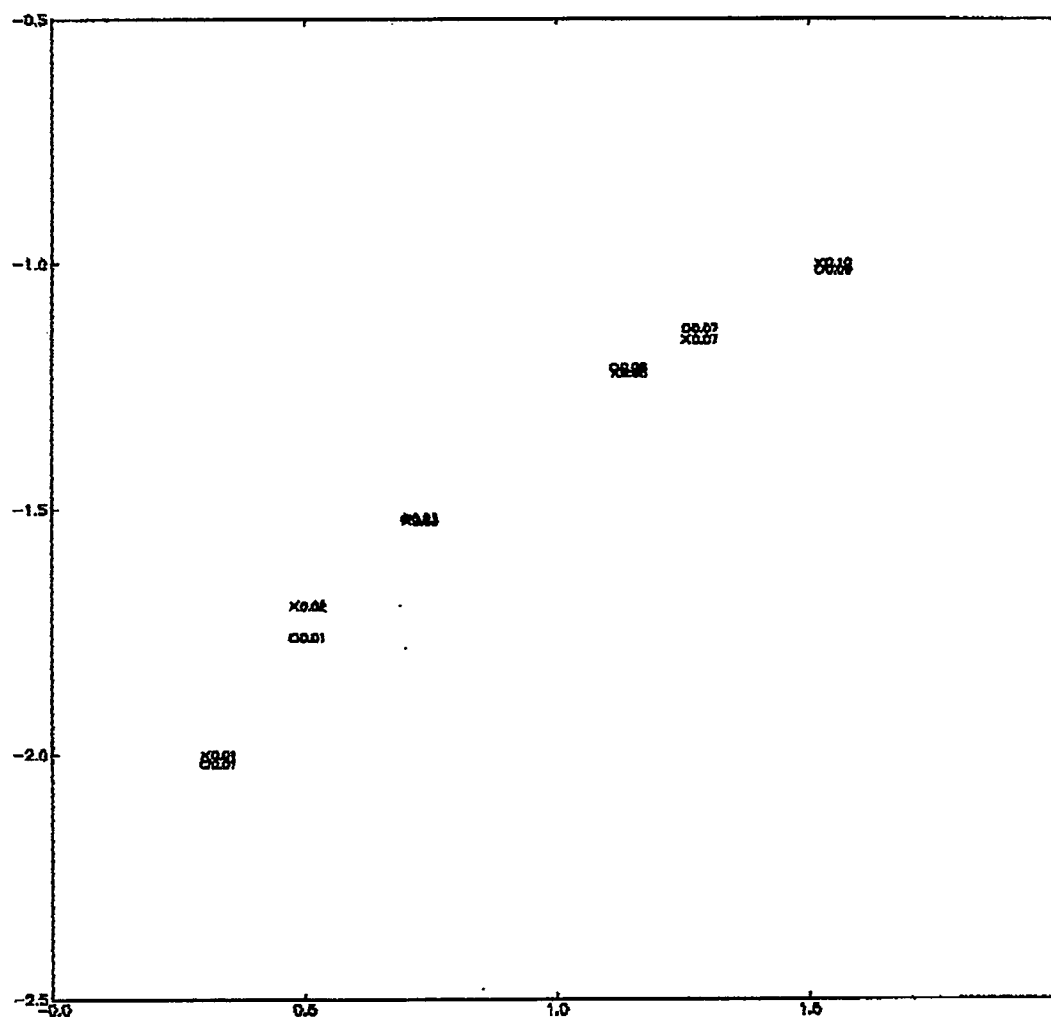
LOGPLOT.TIRE2.33MIN
PLOT NO. 1

DATE 05/28/85 TIME 13:37:47



(110)
~~110~~ early data

* LABEL TIREZ.3JMIN
PLOT NO. 1



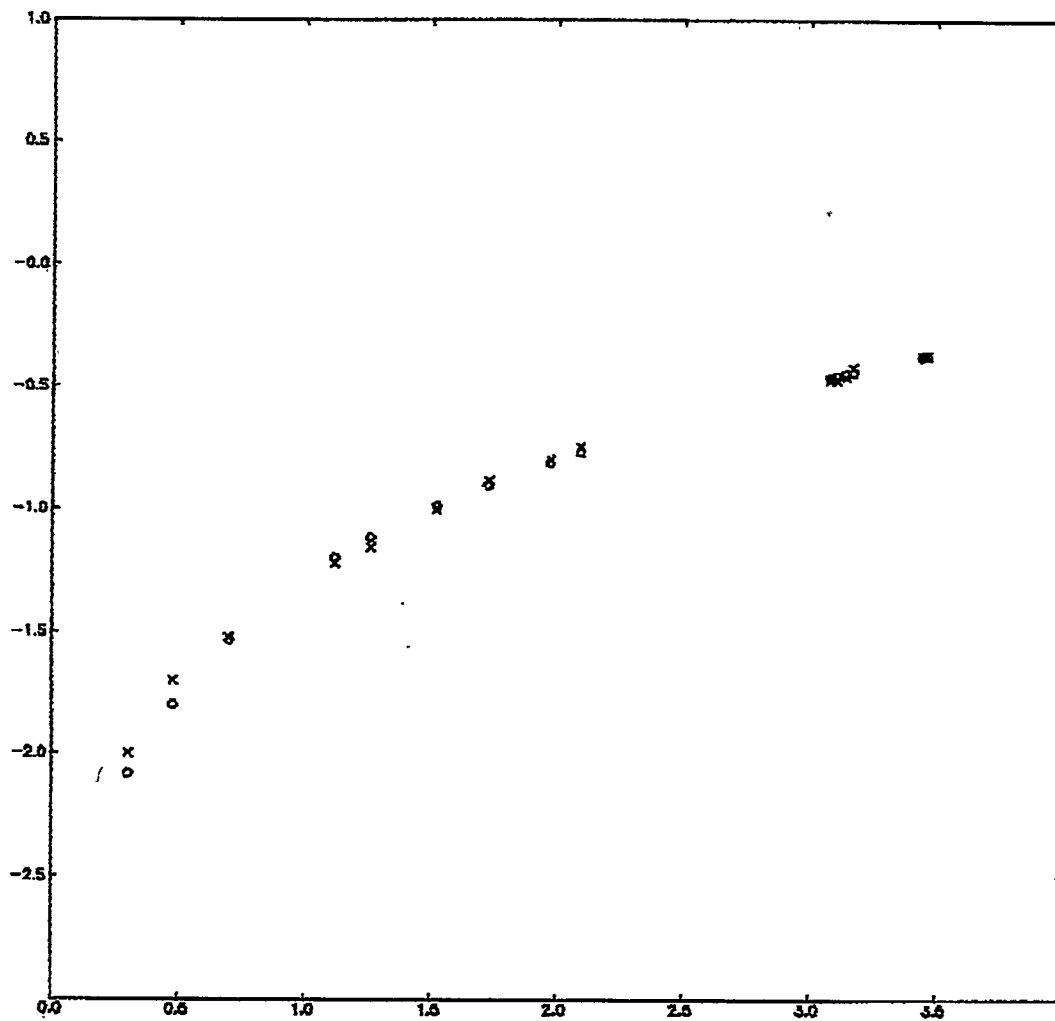
(110')

early data

DATE 05/29/85 TIME 11:06:41 PLOT# 1 PATH= :S11:PLOT:WK:LOGPLOT.TIRE2.RIM.PLOT

LOGPLOT.TIRE2.RIM
PLOT NO. 1

DATE 05/29/85 TIME 10:48:53

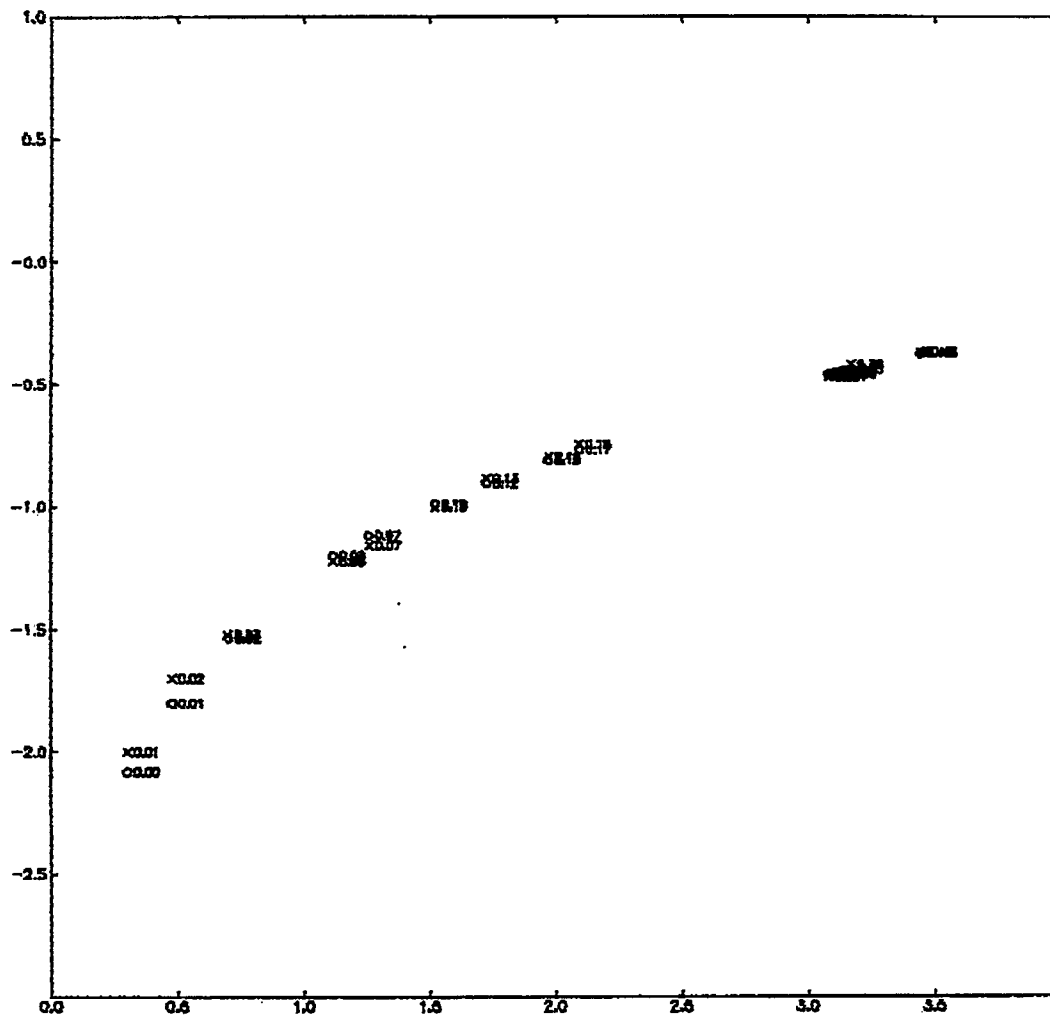


Recharge
(110')

DATE 05/29/85 TIME 11:08:40 PLOT# 1 PATH= :SI1:PLOT:WK:LABEL.TIRE2.RIM.PLOT

* LABEL.TIRE2.RIM
PLOT NO. 1

DATE 05/28/85 TIME 10:50:22



Recharge
(110')

COUNTY

SHAWNEE

LOCATION

11-15E -13 DAD

DATE

April 13, 1960

PERFORMED BY

Layne Western FOR the GOODYEAR TIRE & RUBBER CO.

DISCHARGE

variable, 370 - 990 gpm

LENGTH OF TEST

~ 29 hours, recovery - to 435 mm

OF OBSERVATION WELLS

4

DISTANCE(S) TO PUMPING WELL

72, 100, 200, 400, 541'

WATER LEVEL = 34.36'

AQUIFER TYPE

ALLUVIAL (KANSAS RIVER)

DEPTH OF TEST WELL

81'

SCREEN

gravel packed

COMMENTS Drawdowns were in hundredths of a foot. - This probably accounts for the unreasonably high transmissivity values. This data should be analyzed under recharge conditions to see if more reasonable values can be obtained. Notice, the RMS errors are in hundredths of a foot, also.

COMPUTER ANALYSIS

METHOD	T (gpd/ft)	S	RMS error	r
THEIS.VQ	1,026,340	.0001	.086	100'
REL	794,213	.51	—	100'
LEAKY	123,464	.0021	(.05)	100' $\beta = .0086$
THEIS.VQ	3,078,370	.00004	.015	400'
LEAKY	2,280,000	.00014	.014	400' $\beta = .00011$
REL	2,441,761	.015	—	400'
LEAKY	829,128	.00037	.04	200' $\beta = .013$
THEIS.VQ	1,405,749	.000046	.047	200'
REL	1,122,044	.152	.027	200'
THEIM	364,736	.0254	(.12)	4 OBS. wells @ 120' $\bar{Q}$
THEIM	598,025	.0042	.35	" " " " 3 Q's

—CONT.—

COUNTY SHAWNEE

LOCATION 11-15E-13 DAFD

DATE April 13, 1960, 1960

PERFORMED BY Layne-western

DISCHARGE 4

LENGTH OF TEST

OF OBSERVATION WELLS 4

DISTANCE(S) TO PUMPING WELL 175', 541', 400', 200', 100'

AQUIFER TYPE

DEPTH OF TEST WELL
SCREEN

COMMENTS SAME TEST (CONT.)

COMPUTER ANALYSIS

METHOD	T (gpd/ft)	S	RMS error	r
THOIM	215,694	.0064	.54)	4 obs wells @ 20 min
THOINQ	3,355,222	.021	.0084	514'



Layne- Western Company

City Topoka State Kansas Date 2/10/60
Contract Goodyear Tire & Rubber Plant Driller Paul Harper
Test No. 1 - 1960 for No. 8 Well Job No. KC863

TEST LOG			Static Water Level
FROM	TO	MUD LOSS IN.	FORMATION
0'0"	1'0"		Top soil
1'0"	27'0"		Sandy brown clay, med.
27'0"	43'0"		Brown med. & med. coarse sand with
			sand and gravel
43'0"	47'0"		Gray med. & med. coarse sand with
			coarse sand and gravel, few
			boulders
47'0"	78'0"		Brown med. & med. coarse sand with
			coarse sand and gravel, boulder
			on bottom, rough
78'0"	Total depth		Limestone, hard
27'0"	33'0"	4" water	
33'0"	47'0"	1" water	
47'0"	63'0"	6" - 53 sec.	
63'0"	77'0"	1" - 1 min.	
77'0"	78'0"	3" - 1 min.	

NOTES: Size of Pit 2'6" X 3' X 3'6"
DEEP

Map on Back

(T in gpd/ft)

Goodyr 1960

April 13, 14

	$r=175'$ 8	$r=541'$ 6A	$r=400'$ 8C	$r=200'$ 8B	$r=100'$ 8A
(27) 1	5.22	0	.14	.21	.41
4	5.75	.01	.23	.58	.83
15	5.96	.02	.25	.62	.86
(28) 20	5.98	.03	.27	.63	.91
50		.06	.3	.69	.95
(30) 60		.06	.31	.71	.97
(32) 120		.11	.34	.76	1.05

$T =$	227,658	3,552,222	3,078,370	1,405,749	1,026,340
$S_c =$	.000315	.021	.00004	.000046	.0001

Distance for 4 obs. wells to 120 minutes
(see above data)

→ D_0 for just
120 min
@ 120 $T = 364,736$
 $S_c = .0254$

$$T = 598,005$$

$$S_c = .0042$$

Distance for 5 obs. wells + Pumping well to 20 minutes
(see above data)

$$T = 215,694$$

$$S_c = .0064$$

using Theim Method

values for report are:

$$T = 420,000$$

$$S_c = .26$$

eg. for artesian conditions was used

use Recovery data?

Shawnee #5

U/D

Pumping Tests with Well No. 8
Goodyear Tire and Rubber Company
Topeka, Kansas
13 and 14 April, 1960

Listed below is the information on the wells measured for the tests. Altitudes of measuring points shown are mean sea level elevations. All depths to water in the accompanying tabulations are below the measuring point.

Discharge measurements were made with a 5 inch orifice plate and an in-line orifice installed in the discharge line. Generally, the two orifices agreed within 2 per cent. No other water measuring devices were considered necessary. The in-line orifice read higher than the end orifice in all cases. The discharge readings listed were an average of the two readings.

Well No. 8 - 5

Goodyear Tire and Rubber Company Well No. 8 which was the pumped well during the test located near the south center of the NE $\frac{1}{4}$ of the SE $\frac{1}{4}$ of Section 13, Township 11 South, Range 15 East, in Shawnee County, Kansas. Casing 18 inch gravel packed well, depth 80.8 feet. Measuring point top East edge of casing, 891.58 m.s.l., 3.80 above land surface datum.

Observation Well 8A - 59

Temporary observation well located 100 feet east of the pumped well, in the NE $\frac{1}{4}$ of the SE $\frac{1}{4}$ of Section 13, Township 11 South, Range 15 East in Shawnee County, Kansas. Diameter 1 $\frac{1}{2}$ inches, depth 47.3 feet, measuring point top of pipe coupling, 888.83 m.s.l., 1.0 feet above land surface.

Observation Well 8B - 56

Temporary observation well located 200 feet east of the pumped well, in the NE $\frac{1}{4}$ of the SE $\frac{1}{4}$ of Section 13, Township 11 South, Range 15 East, diameter 1 $\frac{1}{2}$ inch pipe, depth 69.87 feet. Measuring point top edge of pipe coupling, which was 5.15 feet above land surface. At the end of the test the M.P. datum was 893.08 m.s.l. At the time of installation the M.P. datum was 893.24 m.s.l. It was assumed most of the settlement took place prior to beginning of the tests. This was the only well installed that settlement may have occurred.

Observation Well 8C - 50

Temporary observation well located 400 feet east of the pumped well, in the NE $\frac{1}{4}$ of the SE $\frac{1}{4}$ of Section 13, Township 11 South, Range 15 East, diameter 1 $\frac{1}{2}$ inch pipe, depth 51.65 feet. Measuring point top of pipe coupling, 883 m.s.l. which was 0.70 feet above land surface.

✓

Observation Well 6A

Permanent observation well located 341 feet west of Well No. 8. (the pumped well for the tests) and located 110 feet east of Goodyear Well No. 6 in the NE $\frac{1}{4}$ of the SE $\frac{1}{4}$ of Section 13, Township 11 South, Range 13 East, diameter 2 inch pipe, depth 76.6 feet. Measuring point top East edge of pipe coupling, 2.30 feet above land surface datum, 889.31 m.s.l.

Goodyear deep Well No. 6 was not pumped, prior and during the tests on Well No. 8. Miscellaneous measurements were made on other wells in the vicinity before and after the tests to determine any natural changes that may have taken place. These wells and measurements will be listed in the tabulation.

**Pumping Test Well 8
Goodyear Tire and Rubber Co.
13 and 14 April, 1960**

Well 8 (Pumped Well) #5

<u>Date</u>	<u>Time</u>	<u>Depth to water in feet below measuring point</u>	<u>Remarks</u>
April 12	10:10 p	34.39	static
April 13	7:50 a	34.33	static
	8:10	34.34	static
	8:21	34.36	static
	8:30		pump on
	8:51	37.34 0	400 + gpm
	8:52	17.21	
	8:53	37.21	adjusting pump
	8:54	36.50 1.14	" "
	8:56	36.39 1.12	" "
	8:58	36.39 1.13	
	8:40	36.41 2.05	370 gpm
	8:42	36.41	
	8:44	36.41	
	8:46	36.41	
	8:48	36.41	
	8:50	36.42 1.06	
	8:52	36.42	
	8:56	36.42	
	9:06	36.46 1.0	
	9:13	36.46 2.11	370 gpm
	9:58	36.51 1.14	
	10:35	36.50 1.14	377 gpm
	11:33	36.51 1.15	
	11:57	36.54 1.18	380 gpm
	1:06 p	36.57 1.1	373 gpm
	2:07	36.55 1.19	
	2:25	36.51 1.16	
	2:30		pump off
	2:30 p 35"	34.33	
	2:31	34.25	
	2:31 30"	34.28	
	2:32	34.30	
	2:32 30"	34.30	
	2:33	34.28	
	2:34	34.30	
	2:35	34.30	
	2:36	34.29	
	2:38	34.29	Log Line
	2:42	34.48	Tape measure
		34.28	Log Line
	2:50	34.48	Tape measure
		34.27	Log line
	2:56	34.46	Tape measure
		34.27	Log Line

✓

Well 8 (continued)

<u>Date</u>	<u>Time</u>	<u>Depth to water in feet below measuring point</u>	<u>Remarks</u>
April 13	3:14 44	34.46	
	3:45 75	34.26	Tape measure
	3:01	34.48	Log line
	7:04 P 274	34.41	Tape measure
April 14	7:58 a	34.39	
	8:16	34.38	
	8:30	34.32	
	8:30 50" 1.23	38.00	Start pump
	8:31 15" 1.25	39.34	950 gpm
	8:52 2	39.74	
	8:52 30" 2.00	40.00	
	8:52 45" -	40.04	
	8:53	40.03	
	8:53 50"	40.05	
	8:54	40.07	
	8:55	40.07	
	8:56	40.09	
	8:57	40.11	
	8:58	40.13	
	8:59	40.16	
	8:40	40.20	
	8:41	40.23	
	8:42	40.26	
	8:43	40.27	
	8:44	40.27	
	8:45	40.28	
	8:46	40.28	
	8:47	40.28	
	8:48	40.29	
	8:49	40.29	
	8:50	40.30	
	8:55	40.29	
	9:00	40.29	
	9:05	40.29	960 gpm
	9:15	40.29	
	9:25	40.22	
	9:30	40.23	
	10:00	40.27	975 gpm
	10:30	40.32	980 gpm
	10:45		990 gpm
	10:47	34.42	Engine stopped
	10:49	34.41	
	10:51	34.39	
	10:54	34.38	
	10:58	34.365	
	11:00	34.35	
	11:24	34.34	

Well 8 (continued)

<u>Date</u>	<u>Time</u>	<u>Depth to water in</u> <u>feet below measuring point</u>	<u>Remarks</u>
April 14	11:37 a 52	34.32 - .04	Log line
	12:40 p 45	34.43 .17	Tape measure
	3:40 325	34.41 .05	
April 15	Well capped could not measure at measuring point.		

Pumping Test Well No. 8
Goodyear Tire and Rubber Company
Topeka, Kansas.
13 and 14 April, 1960

Observation Well 8A

<u>Date</u>	<u>Time</u>	<u>Depth to water in feet below measuring point</u>	<u>Remarks</u>
April 12	10:05 p	31.53	
April 13	7:34 a	31.47	static
	8:06	31.48	static
	8:30	31.48	static
	8:51	31.93	pump on
	8:52	31.93	
	8:53	31.92	
	8:54	31.85	
	8:55	31.82	
	8:56	31.80	
	8:57	31.31	
	8:58	31.30	
	8:40	31.81	
	8:49	31.81	
	8:55	31.84	
	9:00	31.83	
	9:15	31.85	
	10:00	31.89	
	10:33	31.90	
	11:02	31.90	
	11:32	31.90	
	11:54	31.91	
	12:38 p	31.92	
	1:04	31.93	
	1:39	31.93	
	2:25	31.95	
	2:30	31.76	pump off
	2:31	31.63	
	2:33	31.62	
	2:35	31.62	
	2:57	31.62	
	2:59	31.61	
	2:41	31.61	
	2:43	31.60	
	2:45	31.60	
	2:47	31.60	
	2:50	31.60	
	2:53	31.60	
	3:00	31.59	
	3:03	31.59	
	3:10	31.59	
	3:20	31.58	

Observation Well 8A (continued)

<u>Date</u>	<u>Time</u>	<u>Depth to water in feet below measuring point</u>	<u>Remarks</u>
April 13	3:40 p	31.57 .08	
	5:05	31.55 .07	
	7:09	31.52 .04	
April 14	8:20	31.49 -.07	static
	8:28	31.46 -.02	static
	8:30		pump on
	8:30 30"	31.63 .17	
	8:31	31.67 .19	
	8:32 10"	32.26 .17	
	8:33	32.28 .11	
	8:34	32.29 .11	
	8:35	32.30 .15	
	8:37	32.31 .13	
	8:39	32.31 .11	
	8:41	32.31 .11	
	8:43	32.31 .11	
	8:45	32.32 .11	
	8:47	32.35 .18	
	8:49	32.36 .26	
	8:51	32.37 .11	
	8:53	32.38 .11	
	8:55	32.38 .11	
	8:57	32.38 .11	
	9:00	32.38 .11	
	9:04	32.40 .92	
	9:08	32.41 .92	
	9:12	32.42 .91	
	9:16	32.42 .74	
	9:20	32.42 .76	
	9:30	32.44 .11	
	9:45	32.47 .11	
	10:00	32.47 .11	
	10:28	32.52 1.04	
	10:30	32.52 1.04	
	10:45		Engine stopped
	10:46	31.71 .23 .81	
	10:48	31.69 .20 .84	
	10:50	31.67 .35 .17	
	10:52	31.67 .35 .19	
	10:55	31.67 .19	
	10:58	31.65 .37 .17	
	11:01	31.64 .26 .11	
	11:04	31.64 .66 .11	
	11:07	31.62 .41 .14	
	11:10	31.63 .11	
	11:15	31.62 .11	
	11:20	31.61 .12	
	11:30	31.61 .11	
	11:45	31.60 .11	

Observation Well 8A (continued)

<u>Date</u>	<u>Time</u>	<u>Depth to water in</u> <u>feet below measuring point</u>	<u>Remarks</u>
April 14	12:00 p 2 1/2 1.64	31.59 .11 .73	
	12:37 2 1/2 1.54	31.57 .09 .67	
	2:32 3 1/2 1.38	31.33 .07 .57	
	3:57 4 1/2 1.34	31.34 .06 .48	
	5:00 5 1/2 1.27	31.50 .02 1.02	
April 15	7:19 a 6 1/2 1.21	31.62 -.06 1.1	

Pumping Test Well 8
Goodyear Tire and Rubber Co.
Topeka, Kansas
13 and 14 April, 1960

Observation Well 8B

<u>Date</u>	<u>Time</u>	<u>Depth to water in</u> <u>feet below measuring point</u>	<u>Remarks</u>
April 12	10:01 p	35.60	static
April 13	7:56 a	35.58	static
	8:20	35.61	static
	8:23	35.61	static
	8:30	35.61	pump on
	8:52	35.90 .32	
	8:54	35.89 .31	
	8:56	35.84 .26	
	8:58	35.82 .20	
	8:40	35.82	
	8:42	35.83	
	8:44	35.82	
	8:46	35.83	
	8:50	35.82	
	8:55	35.84	
	9:00	35.84	
	9:10	35.85	
	9:25	35.86	
	9:35	35.84	
	9:48	35.86	
	10:00 .90	35.86	
	10:15 1.05	35.87	
	10:37 1.27	35.88	
	11:05 1.5	35.89	
	11:35 a	35.90	
	12:35 p .00	35.91	
	1:08	35.93	
	2:01	35.93	
	2:26 .57	35.94	
	2:30 p		pump off
	2:31	35.76 .13	
	2:34	35.72 .14	
	2:36	35.72 .10	
	2:38	35.70 .12	
	2:40	35.70 .12	
	2:42	35.70 .12	
	2:44 1.0	35.70 .12	
	2:46 1.5	35.69 .11	
	2:52 2.0	35.68 .10	
	2:55 2.5	35.69 .11	
	3:00 3.0	35.69 .11	
	3:03 3.5	35.69 .11	
	3:10	35.68 .10	
	3:20	35.68 .11	

Observation Well SB (continued)

<u>Date</u>	<u>Time</u>	<u>Depth to water in</u> <u>feet below measuring point</u>	<u>Remarks</u>
April 13	5:40 p 70	35.68 .10	
	5:03 153 7.84	35.69 .07	
	7:12 p 152	35.65 .17	
April 14	8:23 a 151	35.57 .01	static
	8:30		pump on
	8:31 1	35.78 .20	
	8:32 2	36.03 .59	
	8:34 4	36.15 .57	
	8:36 6	36.15 .57	
	8:38 8	36.19 .59	
	8:40 10	36.17 .59	
	8:42 12	36.17 .61	
	8:44 14	36.19 .62	
	8:46 16	36.20 .61	
	8:48 18	36.19 .61	
	8:50 20	36.20 .62	
	8:53 23	36.21 .63	
	8:56 26	36.22 .64	
	9:00 a 30	36.23 .65	
	9:05 35	36.24 .66	
	9:10 40	36.24 .66	
	9:15 45	36.26 .68	
	9:20 50	36.26	
	9:25 55	36.26	
	9:30 60	36.28 .70	
	9:35 65	36.30 .72	
	10:00 70	36.30 .72	
	10:30 75	36.33 .74	
	10:46		Engine stopped
	10:46 50m 1.4	35.80 .22	
	10:48	35.74 .16	
	10:50 4	35.73 .15	
	10:52 6	35.73 .16	
	10:55 8	35.71 .17	
	10:57 10	35.70 .12	
	11:00 12	35.70	
	11:02 14	35.70	
	11:06 16	35.70	
	11:10 18	35.70	
	11:15 20	35.69 .11	
	11:20 22	35.68 .11	
	11:30 24	35.68 .10	
	11:45 a 26	35.67 .09	
	12:42 p 28	35.67 .08	
	2:50 p 30	35.66 .08	
	3:35 32	35.65 .07	
	5:01 p 34	35.62 .04	
April 15	7:14 a 36	35.56 .04	

Pumping Test Well No. 3
Goodyear Tire and Rubber Co.
Topeka, Kansas
13 and 14 April, 1960

Observation Well 8C

<u>Date</u>	<u>Time</u>	<u>Depth to water in</u> <u>feet below measuring point</u>	<u>Remarks</u>
April 12	9:55 p	25.82	
April 13	7:40 a	25.80	static
	8:10 a	25.80	
	8:30	25.81	pump on
	8:31 1	25.90 .03	
	8:33 3	25.94 .12	
	8:34 4	25.96 .14	
	8:35 5	25.93 .12	
	8:37 7	25.91 .10	
	8:39 9	25.91	
	8:42 12	25.91	
	8:45 1	25.91 .11	
	8:50 20	25.92 .11	
	8:55 30	25.92 .11	
	8:55 35	25.93 .12	
	9:00 40	25.91 .10	
	9:10 50	25.93 .12	
	9:18 60	25.92 .11	
	9:30 70	25.94 .13	
	9:45 74	25.94	
	10:00 80	25.94	
	10:36 126	25.94 .13	
	11:09 14	25.95 .14	
	11:38 14	25.95 .14	
	11:53 a 2.2	25.96 .15	
	12:38 p 3.0	25.97 .16	
	1:10 280	25.97 .16	
	2:02 332	25.98 .17	
	2:30 260		pump off
	2:46 16	25.89	
	2:58 2	25.88	
	3:19 3	25.89	
	3:50 80	25.89	
	5:11 11	25.85 .04	
	7:13 p 14	25.85 .04	
April 14	8:25 a	25.80 .12	static
	8:30	25.84 .12	pump on
	8:50 30"	25.93 .12	
	8:51 1	25.99	
	8:51 30"	26.02 .11	
	8:53 3	26.03 .12	

Observation Well 8C (continued)

<u>Date</u>	<u>Time</u>	<u>Depth to water in</u> <u>feet below measuring point</u>	<u>Remarks</u>
April 14	8:34 a	30" 4.3 (100 FT) 26.05	.22
	8:35	5 26.05	.21
	8:36	6 26.05	.24
	8:37	7 26.05	.24
	8:40	10 26.04	.23
	8:43	13 26.05	.24
	8:50	20 26.07	.26
	8:55	25 26.08	.27
	9:00	30 26.08	.27
	9:06	36 26.09	.28
	9:10	40 26.10	.24
	9:15	45 26.10	.24
	9:20	50 26.10	.24
	9:30	60 26.11	.24
	9:45	75 26.11	.24
	10:00	90 26.12	.24
	10:10	120 26.14	.24
	10:45		
	10:46	136 25.98	.17
	10:46 30"	5 90 25.95	.10
	10:47 a	67 25.95	.10
	10:49 a	3 46 25.92	.10
	10:50		.10
	10:51	25 25.91	"
	10:52	23 25.91	"
	10:54	8 13 25.91	"
	10:55	11 16 25.91	"
	10:57	11 25.90	.09
	10:59	1 11 25.90	.09
	11:00	12 25.90	.09
	11:05	9 25.89	.08
	11:10	24 25.88	.07
	11:15	20 5 25.88	.07
	11:25	37 4.4 25.88	.07
	11:50	44 4.1 25.88	.07
	11:40 a	54 25.87	.06
	12:44 p	11 2 25.87	"
	2:20	222 1.1 25.85	.14
	3:30	294 1.4 25.85	.14
	5:04 p	370 25.82	.01
April 15	7:07 a	5 1 25.76	-.05

Engine stopped