

OPTIMIZATION BY LEVENBERG-MARQUARDT MINIMIZATION ALGORITHM

ITER	FUNCTION	TRANSMISS	STORTIVTY	SPEC_LEAK
1	.832E-02	.4278E+05	.3400E-03	.1300E-03
3	.160E-02	.4304E+05	.3317E-03	.2637E-03
5	.145E-02	.4294E+05	.3254E-03	.2964E-03
7	.144E-02	.4305E+05	.3218E-03	.2940E-03
9	.144E-02	.4316E+05	.3171E-03	.2856E-03
11	.144E-02	.4317E+05	.3168E-03	.2849E-03

TERMINATION DUE TO PARAMETER CONVERGENCE

FINAL RESULTS

ITER	FUNCTION	TRANSMISS	STORTIVTY	SPEC_LEAK
11	.144E-02	.4317E+05	.3167E-03	.2849E-03

FRACTIONAL COMPONENTS OF FUNCTION VALUE

WELL #	1	2	3
	1.000	.0000	.0000

DO YOU WANT A SENSITIVITY ANALYSIS ? (Y/N)

SENSITIVITY ANALYSIS

TWO STANDARD DEVIATION CONFIDENCE INTERVALS

PARAMETER	VALUE	LOWER LIMIT	UPPER LIMIT
TRANSMISS	.4317E+05	0.4311E+05	0.4323E+05
STORTIVTY	.3167E-03	0.0000	0.2296E-02
SPEC_LEAK	.2847E-03	0.0000	0.3819E-02

TO CONTINUE ENTER "RETURN"

USSC Phase II well

T = 322,912 gpd/ft

S = 3.167 x 10⁻⁴

K/b' = 2.849 x 10⁻⁴ day⁻¹

OPTIMIZATION BY LEVENBERG-MARQUARDT MINIMIZATION ALGORITHM

ITER	FUNCTION	TRANSMISS	STORTIVTY	SPEC_LEAK
1	.500E-02	.4412E+05	.2600E-03	.1000E-03
3	.633E-03	.4397E+05	.2596E-03	.1961E-03
5	.497E-03	.4353E+05	.2592E-03	.2307E-03
7	.489E-03	.4351E+05	.2596E-03	.2367E-03
8	.489E-03	.4349E+05	.2599E-03	.2376E-03
9	.489E-03	.4348E+05	.2602E-03	.2381E-03
10	.488E-03	.4347E+05	.2603E-03	.2384E-03
11	.488E-03	.4347E+05	.2605E-03	.2387E-03

TERMINATION DUE TO PARAMETER CONVERGENCE

FINAL RESULTS

ITER	FUNCTION	TRANSMISS	STORTIVTY	SPEC_LEAK
11	.488E-03	.4346E+05	.2606E-03	.2387E-03

FRACTIONAL COMPONENTS OF FUNCTION VALUE

WELL #	1	2	3
	.0000	1.000	.0000

DO YOU WANT A SENSITIVITY ANALYSIS ? (Y/N)

SENSITIVITY ANALYSIS

TWO STANDARD DEVIATION CONFIDENCE INTERVALS

PARAMETER	VALUE	LOWER LIMIT	UPPER LIMIT
TRANSMISS	.4346E+05	0.4341E+05	0.4351E+05
STORTIVTY	.2606E-03	0.0000	0.2037E-02
SPEC_LEAK	.2389E-03	0.0000	0.3216E-02

TO CONTINUE ENTER "RETURN"

USSC Phase II well 2

T = 325,081 gpd/ft

S = 2.606 x 10⁻⁴

K/b = 2.387 x 10⁻⁴ day⁻¹

8	.458E-03	.4132E+05	.2882E-03	.2585E-03
9	.436E-03	.4175E+05	.2837E-03	.2469E-03
10	.423E-03	.4207E+05	.2803E-03	.2386E-03
11	.416E-03	.4232E+05	.2777E-03	.2324E-03
12	.411E-03	.4252E+05	.2757E-03	.2277E-03
13	.408E-03	.4267E+05	.2741E-03	.2240E-03
14	.407E-03	.4279E+05	.2728E-03	.2211E-03
15	.405E-03	.4289E+05	.2718E-03	.2188E-03
16	.405E-03	.4297E+05	.2710E-03	.2169E-03
17	.404E-03	.4303E+05	.2704E-03	.2155E-03
19	.404E-03	.4313E+05	.2693E-03	.2131E-03
21	.404E-03	.4321E+05	.2687E-03	.2114E-03
22	.404E-03	.4323E+05	.2685E-03	.2109E-03
23	.404E-03	.4324E+05	.2684E-03	.2106E-03

TERMINATION DUE TO PARAMETER CONVERGENCE

FINAL RESULTS

ITER	FUNCTION	TRANSMISS	STORTIVTY	SPEC_LEAK
24	.404E-03	.4325E+05	.2683E-03	.2106E-03

FRACTIONAL COMPONENTS OF FUNCTION VALUE

WELL #	1	2	3
	.0000	.0000	1.000

DO YOU WANT A SENSITIVITY ANALYSIS ? (Y/N)

SENSITIVITY ANALYSIS

TWO STANDARD DEVIATION CONFIDENCE INTERVALS

PARAMETER	VALUE	LOWER LIMIT	UPPER LIMIT
TRANSMISS	.4325E+05	0.4318E+05	0.4331E+05
STORTIVTY	.2683E-03	0.0000	0.2560E-02
SPEC_LEAK	.2104E-03	0.0000	0.2881E-02

TO CONTINUE ENTER "RETURN"

USC Phase II well 3

$$T = 323,510 \text{ gpd/ft}$$

$$S = 2.683 \times 10^{-4}$$

$$k/b = 2.106 \times 10^{-4} \text{ day}^{-1}$$

OPTIMIZATION BY LEVENBERG-MARQUARDT MINIMIZATION ALGORITHM

ITER	FUNCTION	TRANSMISS	STORTIVTY	SPEC_LEAK
1	.582E-02	.4325E+05	.2683E-03	.2104E-03
3	.336E-02	.4411E+05	.2687E-03	.2156E-03
5	.317E-02	.4459E+05	.2647E-03	.1922E-03
6	.314E-02	.4460E+05	.2623E-03	.1899E-03
7	.314E-02	.4466E+05	.2608E-03	.1887E-03
8	.313E-02	.4469E+05	.2598E-03	.1878E-03
9	.313E-02	.4471E+05	.2591E-03	.1873E-03
10	.313E-02	.4472E+05	.2587E-03	.1869E-03
11	.313E-02	.4473E+05	.2584E-03	.1866E-03

TERMINATION DUE TO PARAMETER CONVERGENCE

FINAL RESULTS

ITER	FUNCTION	TRANSMISS	STORTIVTY	SPEC_LEAK
11	.313E-02	.4473E+05	.2582E-03	.1866E-03

FRACTIONAL COMPONENTS OF FUNCTION VALUE

WELL #	1	2	3
	.6054	.2480	.1466

DO YOU WANT A SENSITIVITY ANALYSIS ? (Y/N)

SENSITIVITY ANALYSIS

TWO STANDARD DEVIATION CONFIDENCE INTERVALS

PARAMETER	VALUE	LOWER LIMIT	UPPER LIMIT
TRANSMISS	.4473E+05	0.4470E+05	0.4477E+05
STORTIVTY	.2582E-03	0.0000	0.1320E-02
SPEC_LEAK	.1865E-03	0.0000	0.1699E-02

TO CONTINUE ENTER "RETURN"

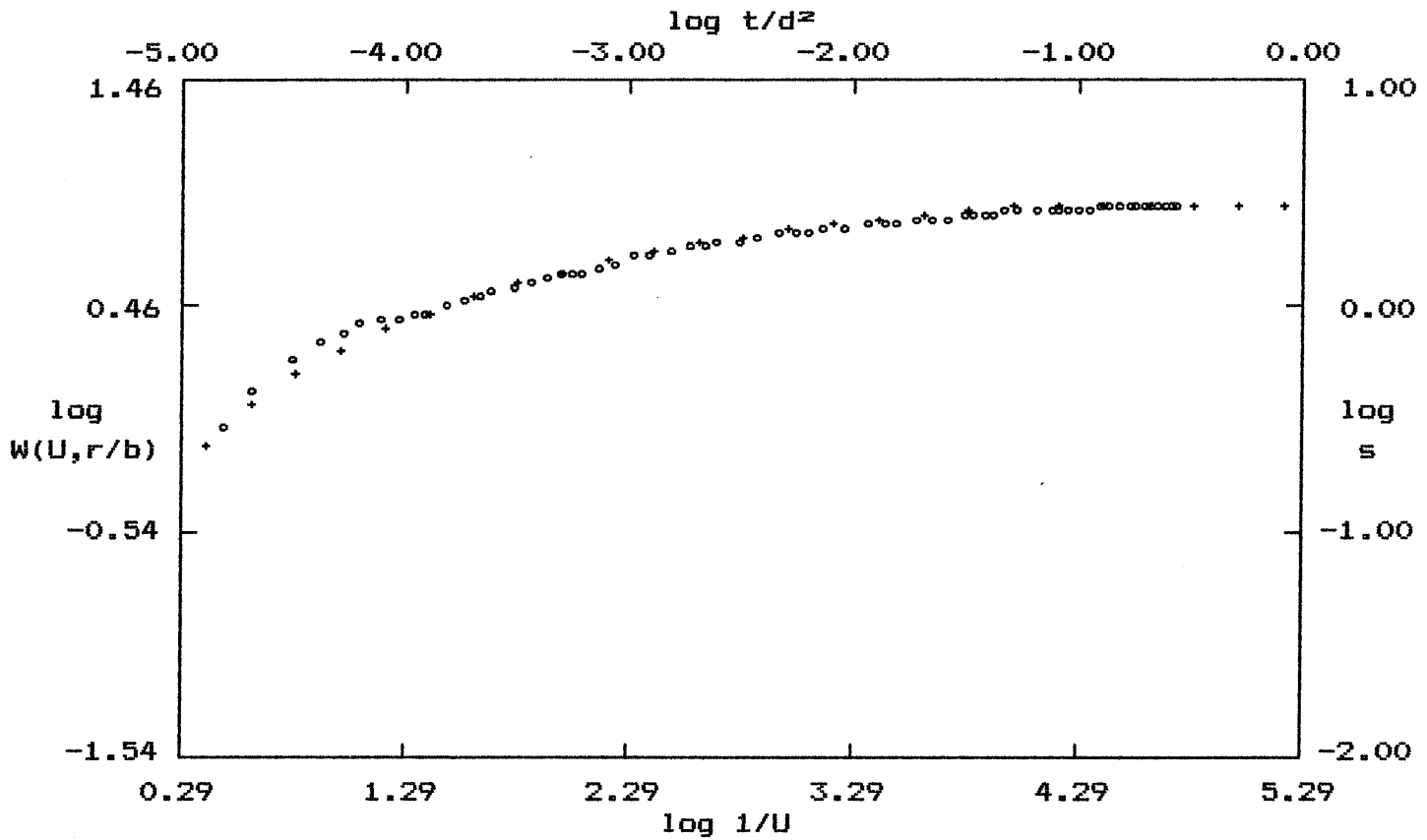
USSC Phase II all wells

$$T = 334,580 \text{ gpd/ft}$$

$$S = 2.582 \times 10^{-4}$$

$$K'/b = 1.866 \times 10^{-4} \text{ day}^{-1}$$

PUMP TEST DATA



o - Data

+ - Type Curve

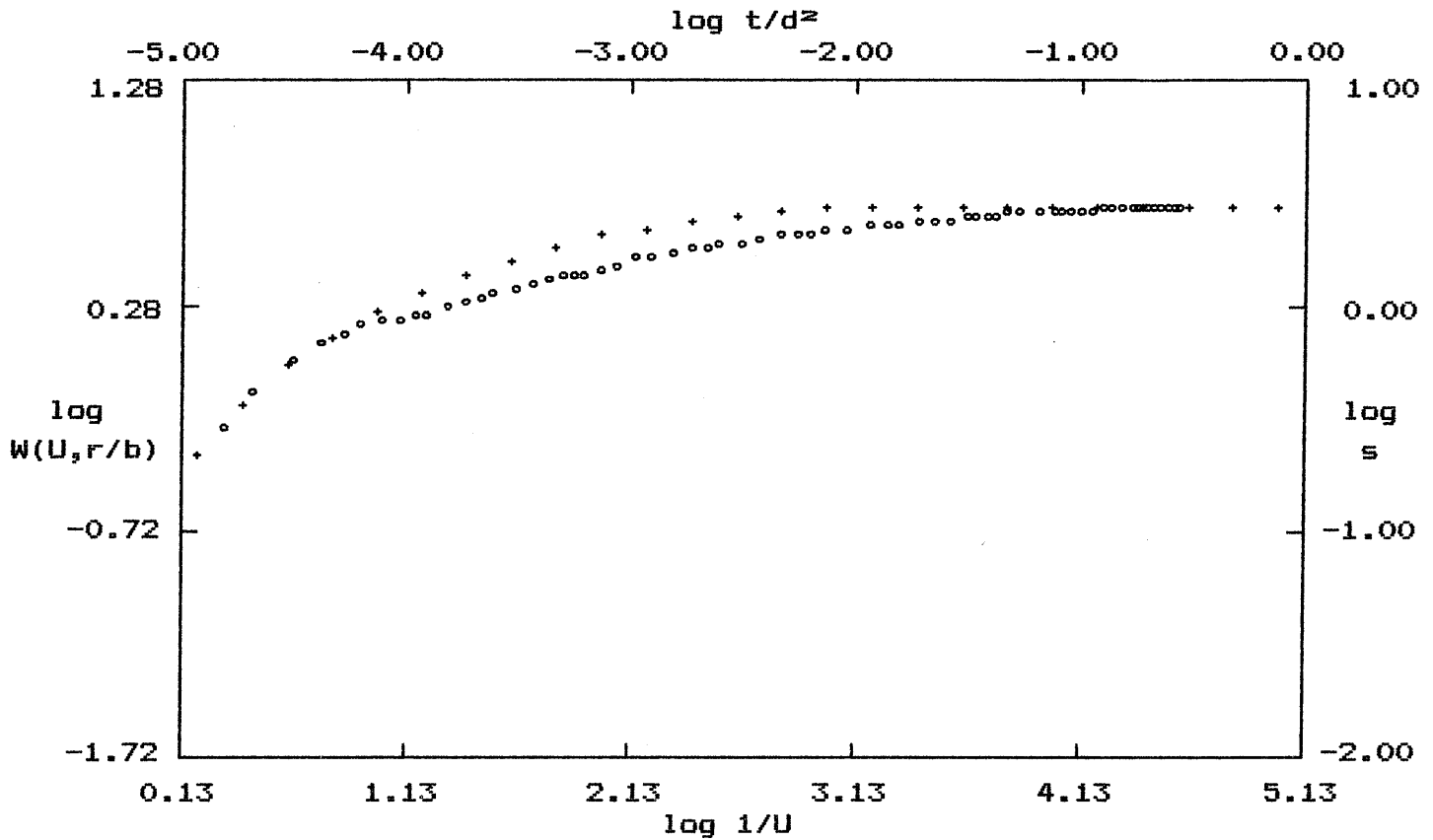
Confined Leaky: $r/B = 0.02$

SOLUTION

Transmissivity = $2.550E+01$ ft.²/min. = 274,666 gpd/ft
 Storativity = $5.230E-04$

USSE Phase II well 1 (HM 302)

PUMP TEST DATA



o - Data

+ - Type Curve

Confined Leaky: $r/B = 0.08$

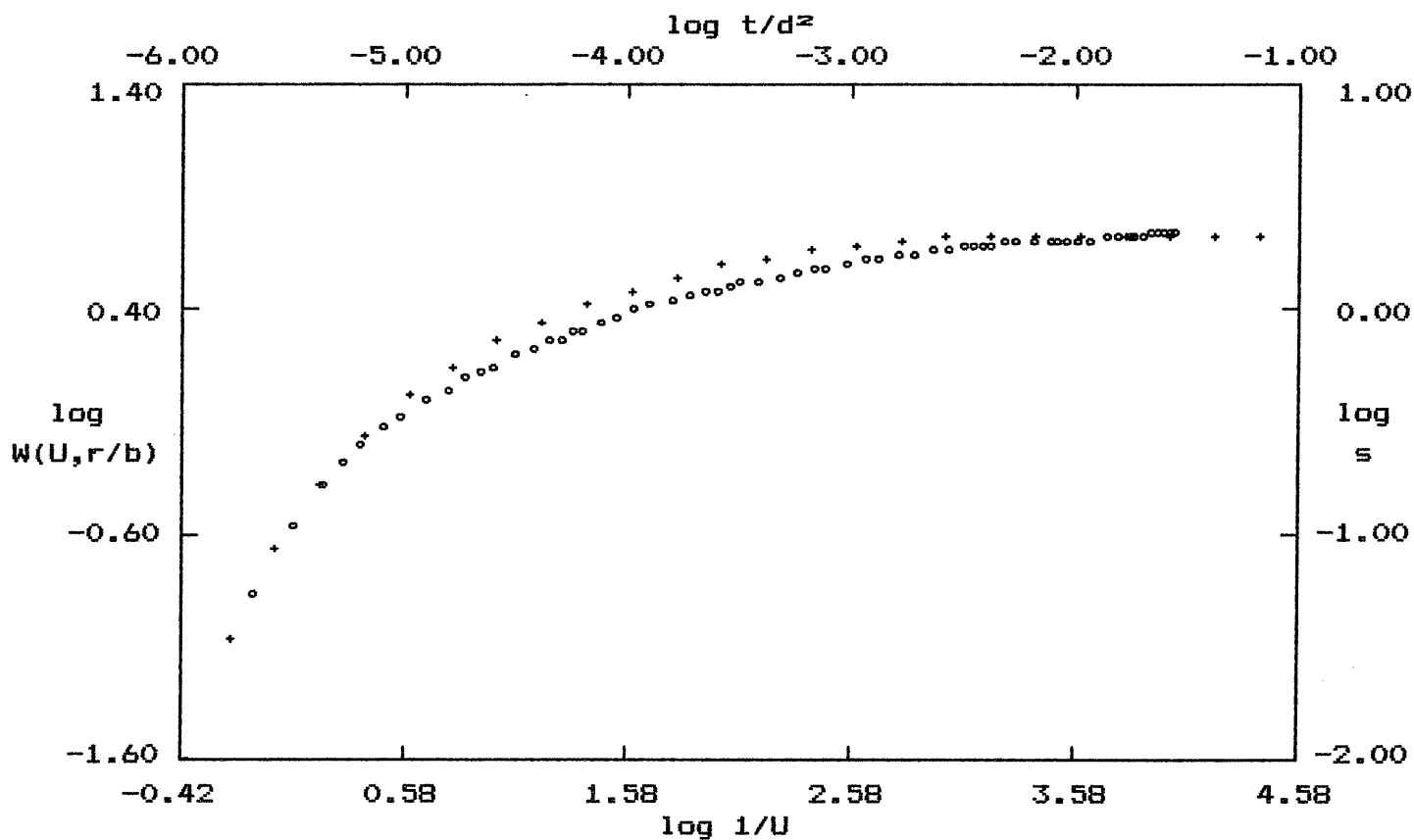
SOLUTION

Transmissivity = $1.684E+01$ ft.²/min. $\approx 18,387$ gpd/ft
 Storativity = $4.995E-04$

USC Phase II well 1 (H4302)

use other match

PUMP TEST DATA



o - Data

+ - Type Curve

Confined Leaky: $r/B = 0.08$

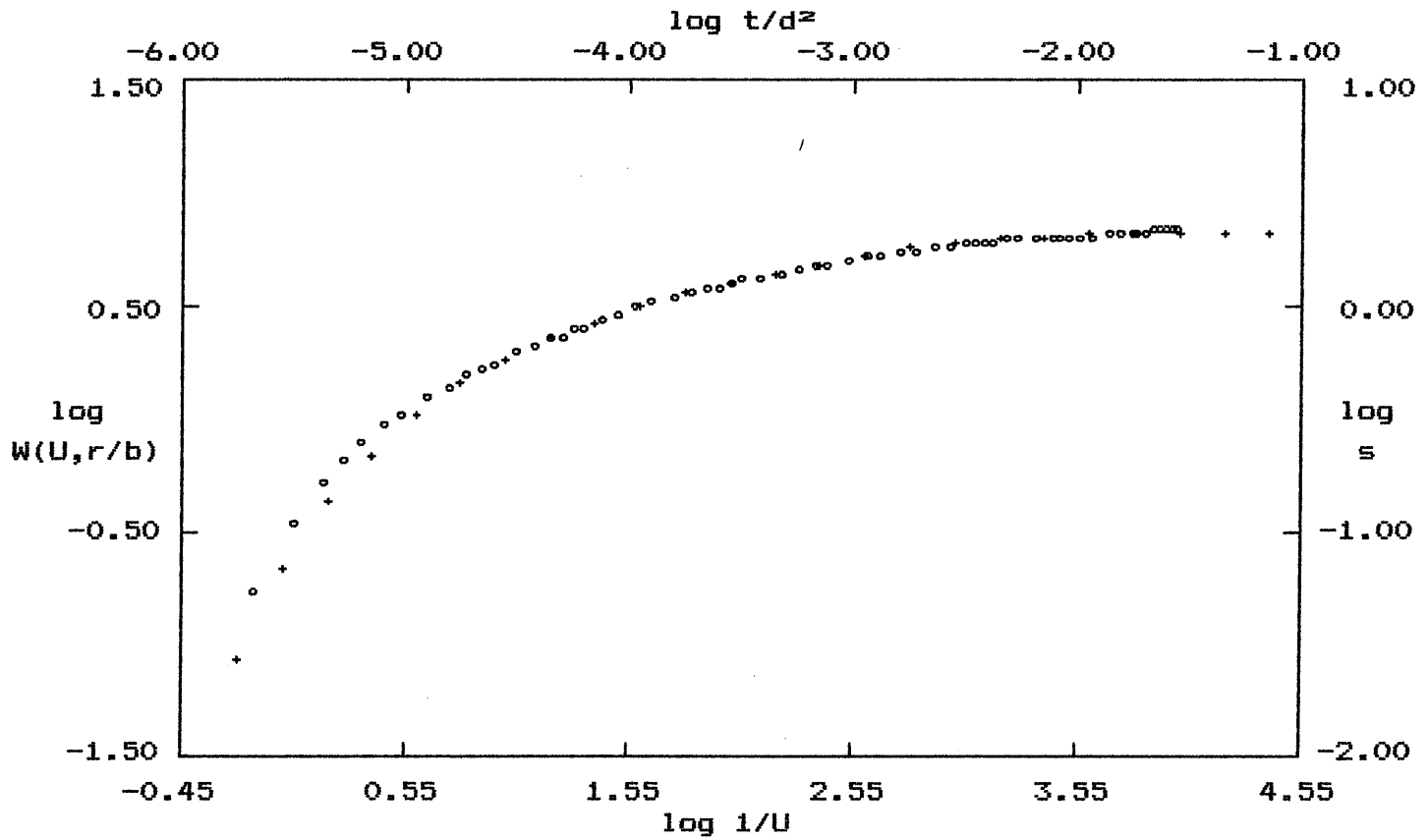
SOLUTION

Transmissivity = $2.221E+01$ ft.²/min. = 239,228 gpd/ft
 Storativity = $2.336E-04$

USSC Phase II well 2 (Hm303)

use other match

PUMP TEST DATA



o - Data

+ - Type Curve

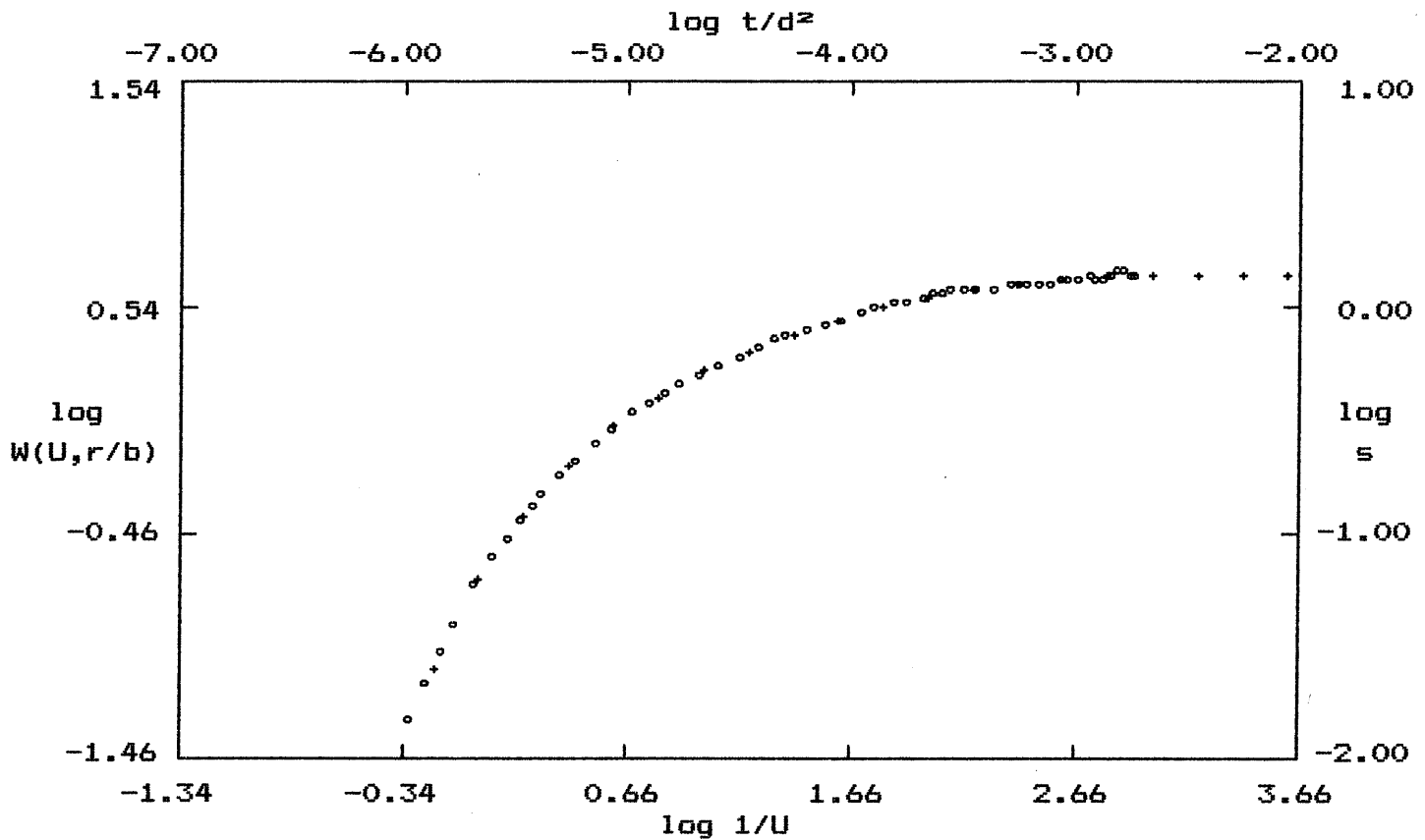
Confined Leaky: $r/B = 0.04$

SOLUTION

Transmissivity = $2.795E+01$ ft.²/min. = 30,055 gpd/ft
 Storativity = $3.152E-04$

USSC Phase II well 2 (HM 303)

PUMP TEST DATA



o - Data

+ - Type Curve

Confined Leaky: $r/B = 0.10$

SOLUTION

Transmissivity = $3.065E+01$ ft.²/min. = 330,137 gpd/ft
 Storativity = $2.682E-04$

USSC Phase II well 3 (HM 309)