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Forsmark site investigation

Single-hole injection tests in borehole KFM01D

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Abstract

Borehole KFM01D is a deep core-drilled borehole within the site investigations in the Forsmark area. The borehole is about 800 m long and it is cased and grouted to about 90 m. The inclination of the borehole is c. 55 degrees from the horizontal plane at the surface. The borehole diameter is about 76 mm in the interval c. 91-800 m.

This report presents injection tests performed using the pipe string system PSS3 in borehole KFM01D and the test results.

The main aim of the injection and pressure pulse tests in KFM01D was to characterize the hydraulic conditions of the rock adjacent to the borehole on different measurement scales (100 m, 20 m and 5 m). Hydraulic parameters such as transmissivity and hydraulic conductivity were determined using analysis methods for stationary as well as transient conditions together with the dominating flow regime and possible outer hydraulic boundaries. In addition, a comparison with the results of previously performed difference flow logging in KFM01D was made.

The injection tests gave consistent results on the different measurement scales regarding transmissivity. For more than half of the tests, some period with pseudo-radial flow could be identified making a relatively straight-forward transient evaluation possible. The sections 118.6–123.6 m, 143.6–148.6 m, 303.6–308.6 and 313.6–318.6 m contribute most to the total transmissivity in KFM01D.

The agreement between the injection tests and the previous difference flow logging in KFM01D was somewhat poorer than for earlier measured boreholes in the Forsmark area. The injection test results generally showed higher estimated transmissivity values than the results from the difference flow logging. This fact may be due to the increased number of tests showing effects of apparent no-flow boundaries by the end of the injection period in KFM01D. Such tests may indicate flow features of limited extension or decreasing hydraulic properties away from the borehole. It may be assumed that sections with such characteristics results in a lower transmissivity for the difference flow logging than for the injection tests since *the former* predominantly measure interconnected, conductive fracture networks reaching further away from the borehole while the injection tests also may sample fractures with limited extension, close to the borehole. This is due to the rather long preceding flow period for the difference flow logging while the flow period for the injection test is rather short.

The injection tests provide a database for statistical analysis of the hydraulic conductivity distribution along the borehole on the different measurement scales. Basic statistical parameters are presented in this report.

Sammanfattning

Borrhål KFM01D är ett djupt kärnborrhål borrat inom ramen för platsundersökningarna i Forsmarksområdet. Borrhålet är ca 800 m långt och det är försett med foderrör samt har injekterats till ca 90 m. Lutningen i borrhålet är ca 55 grader från horisontalplanet vid ytan och borrhålsdiametern är ca 76 mm i intervallet ca 91–800 m.

Denna rapport beskriver genomförda injektionstester med rörgångssystemet PSS3 i borrhål KFM01D samt resultaten från desamma.

Huvudsyftet med injektionstesterna var att karaktärisera de hydrauliska förhållandena i berget i anslutning till borrhålet i olika mätskalor (100 m, 20 m och 5 m). Hydrauliska parametrar såsom transmissivitet och hydraulisk konduktivitet tillsammans med dominerande flödes-regim och eventuella yttre hydrauliska randvillkor bestämdes med hjälp av analysmetoder för såväl stationära som transienta förhållanden. En jämförelse med resultaten av den tidigare utförda differensflödesloggningen i KFM01D gjordes också.

Injektionstesterna gav samstämmiga resultat för de olika mätskalorna beträffande transmissivitet. Under drygt hälften av testen kunde en viss period med pseudoradiellt flöde identifieras vilket möjliggjorde en standardmässig transient utvärdering. Sektionerna 118,6–123,6 m, 143,6–148,6 m, 303,6–308,6 m samt 313,6–318,6 bidrar mest till den totala transmissiviteten i KFM01D.

Samstämmigheten mellan resultaten från injektionstesterna och den tidigare utförda differensflödesloggningen i KFM01D var något sämre än den varit för borrhål som tidigare undersökts i Forsmark. Injektionstesternas resultat visade generellt på högre transmissiviteter än vad resultaten från differensflödesloggningen visade. Detta kan bero på att en mängd test uppvisade en tydlig negativ hydraulisk gräns i slutet på injektionsfasen i KFM01D. Sådana test indikerar att de hydrauliska egenskaperna minskar med ett ökat avstånd från borrhålet. Det kan antas att sektioner med sådana egenskaper resulterar i lägre transmissivitet för differensflödesloggningen än för injektionstesterna eftersom den förra huvudsakligen mäter konnekterade, konduktiva spricknätverk som sträcker sig längre ut från borrhålet medan injektionstesterna också kan mäta sprickor med begränsad utbredning nära borrhålet. Detta beror i sin tur på att flödesperioden för differensflödesloggningen är mycket längre än för injektionstesterna.

Resultaten från injektionstesterna utgör en databas för statistisk analys av den hydrauliska konduktivitetens fördelning längs borrhålet i de olika mätskalorna. Viss statistisk analys har utförts inom ramen för denna aktivitet och grundläggande statistiska parametrar presenteras i rapporten.

Contents

1 Introduction

Injection tests were carried out in borehole KFM01D at Forsmark, Sweden, in August–September, 2006, by Geosigma AB. Borehole KFM01D is a deep, cored borehole within the on-going site investigation in the Forsmark area. The location of the borehole is shown in Figure 1-1. The borehole is about 800 m long, cased and grouted to c. 90 m and at the ground inclined c. 55 degrees from the horizontal plane. The borehole is designed as a so called telescopic borehole, with an enlarged diameter in the upper approximately 91.5 m, below which the borehole diameter is c. 76 mm.

In KFM01D, difference flow logging was previously performed during May 2006. According to the results of this investigation, 34 flowing fractures were detected and the most high-transmissive fractures were found at 148.0 m and 144.9 m. Fractures with a relatively high transmissivity were also found at 120.9 m, 145.5 m, 150.8 m, 151.9 m and 316.9 m. Below 571.2 m, no flowing fractures were identified, Väisäsvaara et al. (2006) /1/.

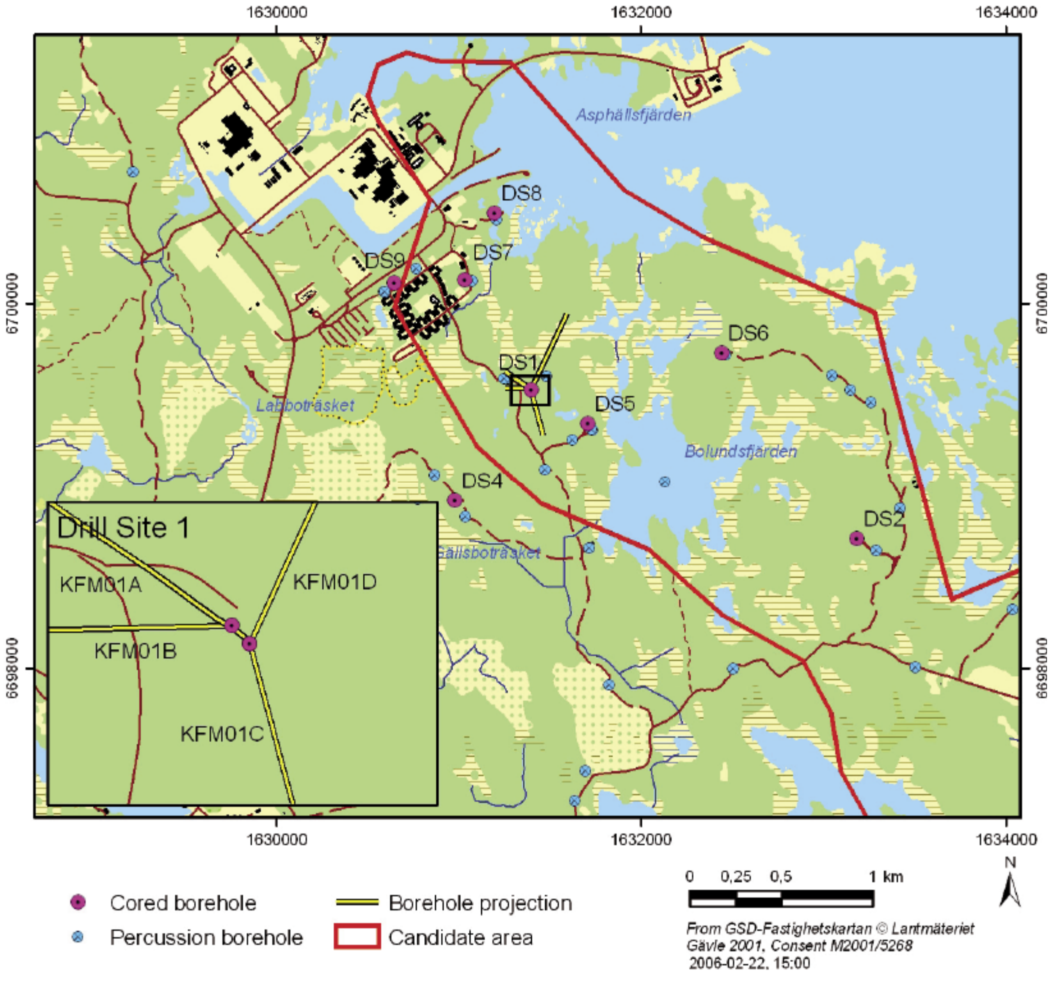

Figure 1-1. *The investigation area at Forsmark including the candidate area selected for more detailed investigations. Borehole KFM01D is situated at drill site DS1. The borehole bearings in the figure are approximate since no adjustment due to borehole deviations has been made.*

This document reports the results obtained from the injection tests in borehole KFM01D. The activity is performed within the Forsmark site investigation. The work was carried out in compliance with the SKB internal controlling documents presented in Table 1-1. Data and results were delivered to the SKB site characterization database, SICADA, where they are traceable by the Activity Plan number.

Table 1-1. SKB internal controlling documents for performance of the activity.

Activity Plans	**Number**	**Version**
Hydraulic injection tests in borehole KFM01D with PSS3	AP PF 400-06-017	1.0
Method documents	**Number**	**Version**
Mätsystembeskrivning (MSB) – Allmän del. Pipe String System (PSS3)	SKB MD 345.100	1.0
Mätsystembeskrivning för: Kalibrering, PSS3	SKB MD 345.122	1.0
Mätsystembeskrivning för: Skötsel, service, serviceprotokoll, PSS3	SKB MD 345.124	1.0
Metodbeskrivning för hydrauliska injektionstester	SKB MD 323.001	1.0
Instruktion för analys av injektions- och enhålspumptester	SKB MD 320.004	1.0
Instruktion för rengöring av borrhålsutrustning och viss markbaserad utrustning	SKB MD 600.004	1.0

2 Objectives

The main aim of the injection tests in borehole KFM01D was to characterize the hydraulic properties of the rock adjacent to the borehole on different measurement scales (100 m, 20 m and 5 m). The primary parameter to be determined was hydraulic transmissivity from which hydraulic conductivity can be derived. The results of the injection tests provide a database which can be used for statistical analyses of the hydraulic conductivity distribution along the borehole on different measurement scales. Basic statistical analyses are presented in this report.

Other hydraulic parameters of interest were flow regimes and outer hydraulic boundaries. These parameters were analysed using transient evaluation on the test responses during the flow- and recovery periods.

A comparison with the results of the previously performed difference flow logging in KFM01D was also included in the activity, as a check of the plausibility of the test results. Further, the combined analysis of the injection tests and the difference flow logging provides a more comprehensive understanding of the hydraulic conditions of boreholes KFM01D.

3 Scope

3.1 Borehole data

Technical data of the tested borehole are shown in Table 3-1 and in Appendix 4. The reference point of the borehole is defined as the centre of top of casing (ToC), given as "Elevation" in the table below. The Swedish National coordinate system (RT90) is used for the horizontal coordinates together with RHB70 for the elevation. "Northing" and "Easting" refer to the top of the boreholes.

3.2 Tests performed

The injection tests in borehole KFM01D, performed according to Activity Plan AP PF 400-06-017 (see Table 1-1), are listed in Table 3-2. The injection tests were carried out with the Pipe String System (PSS3). The test procedure and the equipment are described in the measurement system description for PSS (SKB MD 345.100) and in the corresponding method descriptions for hydraulic injection tests (SKB MD 323.001, Table 1-1).

Some of the tests were not performed as intended because the time required for achieving a constant head in the test section was judged to be too long or, in other cases, equipment malfunctions caused pressure and/or flow rate disturbances. Whenever such disturbances were expected to affect data evaluation, the test was repeated. Test number (Test no in Table 3-2) refers to the number of tests performed in the actual section. For evaluation, generally only data from the last test in each section were used. However, for the test in 263.6–268.6 m data from the first test were considered as more representative and therefore used for evaluation.

Table 3-1. Pertinent technical data of borehole KFM01D (printout from SKB database, SICADA).

Borehole length (m):	**800.24**				
Drilling period(s):	**From date**	**To date**	**Secup (m)**	**Seclow (m)**	**Drilling type**
	2005-11-21	2005-12-05	0.000	89.770	Percussion drilling
	2005-12-18	2006-02-18	0.000	800.240	Core drilling
Starting point coordinate:	**Length (m)**	**Northing (m)**	**Easting (m)**	**Elevation**	**Coord system**
	0.000	6699542.066	1631404.521	2.947	RT90-RHB70
	3.000	6699543.478	1631405.512	0.492	RT90-RHB70
Angles:	**Length (m)**	**Bearing**	**Inclination (– = down)**		**Coord system**
	0.000	35.035	–54.896		RT90-RHB70
Borehole diameter:	**Secup (m)**	**Seclow (m)**	**Hole Diam (m)**		
	0.230	11.610	0.339		
	11.610	89.720	0.245		
	89.770	91.480	0.086		
	91.480	800.240	0.076		
Core diameter:	**Secup (m)**	**Seclow (m)**	**Core diam (m)**		
	89.770	91.480	0.072		
	91.480	800.240	0.051		
Casing diameter:	**Secup (m)**	**Seclow (m)**	**Case in (m)**	**Case out (m)**	
	0.000	83.260	0.200	0.208	
	0.230	11.530	0.310	0.323	
	11.530	11.610	0.281	0.339	
	83.260	89.460	0.200	0.210	
	89.460	89.510	0.170	0.208	

The upper and lower packer positions for the injection test sections were as close as possible to the section limits used during the previous difference flow logging in 5 m sections in KFM01D (Väisäsvaara et al. 2006) /1/. However, after the length calibration of the difference flow logging measurements in KFM01D, it turned out that a short distance was omitted between the sections. In addition, some of the injection test sections were shifted intentionally from the section limits used during the difference flow logging in order to avoid cavities in the borehole. Therefore, the section limits used for the injection tests and difference flow logging respectively differed with a maximum of 1.27 m along the borehole. However, for a majority of the test sections, the maximum difference was less than 0.28 m.

Table 3-2. Single-hole injection tests performed in borehole KFM01D.

Borehole Bh ID	Test section secup	seclow	Section length	Test type[1] (1–6)	Test no	Test start date, time YYYYMMDD hh:mm	Test stop date, time YYYYMMDD hh:mm
KFM01D	93.60	193.60	100.00	3	1	2006-08-28 14:47	2006-08-28 16:40
KFM01D	93.60	193.60	100.00	3	2	2006-08-28 22:56	2006-08-29 07:44
KFM01D	193.60	293.60	100.00	3	1	2006-08-29 08:40	2006-08-29 10:30
KFM01D	293.60	393.60	100.00	3	1	2006-08-29 11:21	2006-08-29 13:47
KFM01D	393.60	493.60	100.00	3	1	2006-08-29 16:44	2006-08-29 18:45
KFM01D	493.60	593.60	100.00	3	1	2006-08-29 20:08	2006-08-29 22:00
KFM01D	588.60	688.60	100.00	3	1	2006-08-30 06:15	2006-08-30 08:06
KFM01D	93.60	113.60	20.00	3	1	2006-09-05 07:02	2006-09-05 08:25
KFM01D	113.60	133.60	20.00	3	1	2006-09-05 08:54	2006-09-05 10:16
KFM01D	133.60	153.60	20.00	3	1	2006-09-05 12:33	2006-09-05 13:54
KFM01D	153.60	173.60	20.00	3	1	2006-09-05 14:11	2006-09-05 15:24
KFM01D	173.60	193.60	20.00	3	1	2006-09-05 15:45	2006-09-05 17:01
KFM01D	193.60	213.60	20.00	3	1	2006-09-05 17:19	2006-09-05 18:33
KFM01D	213.60	233.60	20.00	3	1	2006-09-05 18:49	2006-09-05 19:42
KFM01D	233.60	253.60	20.00	3	1	2006-09-05 20:00	2006-09-05 21:18
KFM01D	253.60	273.60	20.00	3	1	2006-09-05 21:36	2006-09-05 22:54
KFM01D	253.60	273.60	20.00	3	2	2006-09-12 13:59	2006-09-12 15:14
KFM01D	273.60	293.60	20.00	3	1	2006-09-05 23:17	2006-09-06 07:09
KFM01D	293.60	313.60	20.00	3	1	2006-09-06 07:33	2006-09-06 08:51
KFM01D	313.60	333.60	20.00	3	1	2006-09-06 09:14	2006-09-06 10:32
KFM01D	333.60	353.60	20.00	3	1	2006-09-06 11:09	2006-09-06 13:10
KFM01D	353.60	373.60	20.00	3	1	2006-09-06 13:28	2006-09-06 14:48
KFM01D	373.60	393.60	20.00	3	1	2006-09-06 15:19	2006-09-06 16:34
KFM01D	393.60	413.60	20.00	3	1	2006-09-06 17:10	2006-09-06 18:00
KFM01D	413.60	433.60	20.00	3	1	2006-09-06 18:15	2006-09-06 19:33
KFM01D	433.60	453.60	20.00	3	1	2006-09-06 19:55	2006-09-06 21:16
KFM01D	453.60	473.60	20.00	3	1	2006-09-06 21:33	2006-09-06 22:49
KFM01D	473.60	493.60	20.00	3	1	2006-09-06 23:03	2006-09-07 08:35
KFM01D	473.60	493.60	20.00	3	2	2006-09-12 09:57	2006-09-12 11:12
KFM01D	493.60	513.60	20.00	3	1	2006-09-07 09:30	2006-09-07 10:19
KFM01D	513.60	533.60	20.00	3	1	2006-09-07 10:36	2006-09-07 11:22
KFM01D	533.60	553.60	20.00	3	1	2006-09-07 12:47	2006-09-07 13:32
KFM01D	553.60	573.60	20.00	3	1	2006-09-07 13:53	2006-09-07 15:18
KFM01D	573.60	593.60	20.00	3	1	2006-09-07 15:37	2006-09-07 16:23
KFM01D	593.60	613.60	20.00	3	1	2006-09-07 16:49	2006-09-08 08:28
KFM01D	613.60	633.60	20.00	3	1	2006-09-08 08:50	2006-09-08 09:37
KFM01D	633.60	653.60	20.00	3	1	2006-09-08 09:55	2006-09-08 10:43
KFM01D	653.60	673.60	20.00	3	1	2006-09-08 11:00	2006-09-08 11:42
KFM01D	668.60	688.60	20.00	3	1	2006-09-08 13:30	2006-09-08 14:50
KFM01D	688.60	708.60	20.00	3	1	2006-09-08 15:08	2006-09-08 16:23

Borehole Bh ID	Test section secup	seclow	Section length	Test type[1] (1–6)	Test no	Test start date, time YYYYMMDD hh:mm	Test stop date, time YYYYMMDD hh:mm
KFM01D	708.60	728.60	20.00	3	1	2006-09-08 16:42	2006-09-08 17:24
KFM01D	728.60	748.60	20.00	3	1	2006-09-11 08:38	2006-09-11 09:24
KFM01D	748.60	768.60	20.00	3	1	2006-09-11 09:48	2006-09-11 10:33
KFM01D	768.60	788.60	20.00	3	1	2006-09-11 13:02	2006-09-11 13:50
KFM01D	93.60	98.60	5.00	3	1	2006-09-14 09:08	2006-09-14 10:32
KFM01D	98.60	103.60	5.00	3	1	2006-09-14 10:50	2006-09-14 12:04
KFM01D	103.60	108.60	5.00	3	1	2006-09-14 12:26	2006-09-14 13:40
KFM01D	103.60	108.60	5.00	3	2	2006-09-27 12:42	2006-09-27 13:59
KFM01D	108.60	113.60	5.00	3	1	2006-09-14 13:49	2006-09-14 15:03
KFM01D	113.60	118.60	5.00	3	1	2006-09-14 15:14	2006-09-14 15:55
KFM01D	118.60	123.60	5.00	3	1	2006-09-14 16:02	2006-09-14 17:16
KFM01D	123.60	128.60	5.00	3	1	2006-09-15 07:51	2006-09-15 08:40
KFM01D	123.60	128.60	5.00	3	2	2006-09-27 10:25	2006-09-27 11:41
KFM01D	128.60	133.60	5.00	3	1	2006-09-15 08:54	2006-09-15 09:50
KFM01D	128.60	133.60	5.00	3	2	2006-09-27 09:02	2006-09-27 10:16
KFM01D	133.60	138.60	5.00	3	1	2006-09-15 10:06	2006-09-15 10:46
KFM01D	138.60	143.60	5.00	3	1	2006-09-15 11:00	2006-09-15 12:16
KFM01D	143.60	148.60	5.00	3	1	2006-09-15 13:09	2006-09-15 14:25
KFM01D	148.60	153.60	5.00	3	1	2006-09-15 15:12	2006-09-15 16:27
KFM01D	153.60	158.60	5.00	3	1	2006-09-18 08:20	2006-09-18 09:38
KFM01D	158.60	163.60	5.00	3	1	2006-09-18 09:50	2006-09-18 10:31
KFM01D	163.60	168.60	5.00	3	1	2006-09-18 10:44	2006-09-18 11:26
KFM01D	168.60	173.60	5.00	3	1	2006-09-18 11:39	2006-09-18 13:45
KFM01D	173.60	178.60	5.00	3	1	2006-09-18 13:58	2006-09-18 15:20
KFM01D	178.60	183.60	5.00	3	1	2006-09-18 15:33	2006-09-18 16:54
KFM01D	183.60	188.60	5.00	3	1	2006-09-19 06:04	2006-09-19 07:22
KFM01D	188.60	193.60	5.00	3	1	2006-09-19 07:41	2006-09-19 09:04
KFM01D	193.60	198.60	5.00	3	1	2006-09-27 07:16	2006-09-27 08:32
KFM01D	196.60	201.60	5.00	3	1	2006-09-19 09:23	2006-09-19 10:41
KFM01D	198.60	203.60	5.00	3	1	2006-09-19 11:01	2006-09-19 12:38
KFM01D	203.60	208.60	5.00	3	1	2006-09-19 12:53	2006-09-19 13:40
KFM01D	208.60	213.60	5.00	3	1	2006-09-19 13:58	2006-09-19 14:41
KFM01D	233.60	238.60	5.00	3	1	2006-09-19 15:22	2006-09-19 16:05
KFM01D	238.60	243.60	5.00	3	1	2006-09-19 16:15	2006-09-19 17:33
KFM01D	243.60	248.60	5.00	3	1	2006-09-19 17:48	2006-09-19 18:33
KFM01D	248.60	253.60	5.00	3	1	2006-09-19 18:42	2006-09-19 19:26
KFM01D	253.60	258.60	5.00	3	1	2006-09-19 19:36	2006-09-19 21:12
KFM01D	258.60	263.60	5.00	3	1	2006-09-19 21:22	2006-09-19 22:38
KFM01D	263.60	268.60	5.00	3	1	2006-09-19 22:47	2006-09-20 00:02
KFM01D	263.60	268.60	5.00	3	2	2006-09-26 22:13	2006-09-26 23:30
KFM01D	268.60	273.60	5.00	3	1	2006-09-20 06:18	2006-09-20 06:59
KFM01D	293.60	298.60	5.00	3	1	2006-09-20 07:22	2006-09-20 08:05
KFM01D	298.60	303.60	5.00	3	1	2006-09-20 08:16	2006-09-20 09:30
KFM01D	303.60	308.60	5.00	3	1	2006-09-20 09:42	2006-09-20 11:01
KFM01D	308.60	313.60	5.00	3	1	2006-09-20 11:10	2006-09-20 12:45
KFM01D	313.60	318.60	5.00	3	1	2006-09-20 12:55	2006-09-20 14:09
KFM01D	318.60	323.60	5.00	3	1	2006-09-20 14:21	2006-09-20 15:05
KFM01D	323.60	328.60	5.00	3	1	2006-09-20 15:26	2006-09-20 16:13
KFM01D	328.60	333.60	5.00	3	1	2006-09-20 16:24	2006-09-20 17:40
KFM01D	333.60	338.60	5.00	3	1	2006-09-20 17:50	2006-09-20 19:06
KFM01D	338.60	343.60	5.00	3	1	2006-09-20 19:15	2006-09-20 20:23
KFM01D	343.60	348.60	5.00	3	1	2006-09-20 20:40	2006-09-20 21:39

Borehole Bh ID	Test section secup	seclow	Section length	Test type[1] (1–6)	Test no	Test start date, time YYYYMMDD hh:mm	Test stop date, time YYYYMMDD hh:mm
KFM01D	348.60	353.60	5.00	3	1	2006-09-20 21:49	2006-09-20 23:12
KFM01D	353.60	358.60	5.00	3	1	2006-09-20 23:21	2006-09-21 07:20
KFM01D	358.60	363.60	5.00	3	1	2006-09-21 07:34	2006-09-21 08:51
KFM01D	363.60	368.60	5.00	3	1	2006-09-21 09:07	2006-09-21 09:52
KFM01D	368.60	373.60	5.00	3	1	2006-09-21 10:05	2006-09-21 11:20
KFM01D	373.60	378.60	5.00	3	1	2006-09-21 12:14	2006-09-21 13:32
KFM01D	378.60	383.60	5.00	3	1	2006-09-21 13:52	2006-09-21 15:09
KFM01D	383.60	388.60	5.00	3	1	2006-09-21 15:21	2006-09-21 16:35
KFM01D	388.60	393.60	5.00	3	1	2006-09-21 16:45	2006-09-21 18:02
KFM01D	413.60	418.60	5.00	3	1	2006-09-21 18:22	2006-09-21 19:47
KFM01D	418.60	423.60	5.00	3	1	2006-09-21 19:55	2006-09-21 21:22
KFM01D	423.60	428.60	5.00	3	1	2006-09-21 21:31	2006-09-21 22:22
KFM01D	428.60	433.60	5.00	3	1	2006-09-21 22:32	2006-09-21 23:47
KFM01D	433.60	438.60	5.00	3	1	2006-09-22 08:26	2006-09-22 09:46
KFM01D	438.60	443.60	5.00	3	1	2006-09-22 10:01	2006-09-22 10:57
KFM01D	443.60	448.60	5.00	3	1	2006-09-26 20:17	2006-09-26 21:04
KFM01D	448.60	453.60	5.00	3	1	2006-09-22 12:43	2006-09-22 13:29
KFM01D	453.60	458.60	5.00	3	1	2006-09-22 13:39	2006-09-22 14:22
KFM01D	458.60	463.60	5.00	3	1	2006-09-22 14:58	2006-09-22 16:18
KFM01D	463.60	468.60	5.00	3	1	2006-09-22 16:27	2006-09-22 17:16
KFM01D	468.60	473.60	5.00	3	1	2006-09-25 08:19	2006-09-25 08:59
KFM01D	473.60	478.60	5.00	3	1	2006-09-25 09:08	2006-09-25 10:22
KFM01D	478.60	483.60	5.00	3	1	2006-09-25 10:29	2006-09-25 11:09
KFM01D	483.60	488.60	5.00	3	1	2006-09-25 11:17	2006-09-25 12:47
KFM01D	488.60	493.60	5.00	3	1	2006-09-25 12:58	2006-09-25 13:42
KFM01D	553.60	558.60	5.00	3	1	2006-09-25 14:16	2006-09-25 14:59
KFM01D	558.60	563.60	5.00	3	1	2006-09-25 15:11	2006-09-25 15:55
KFM01D	563.60	568.60	5.00	3	1	2006-09-25 16:04	2006-09-25 16:48
KFM01D	568.60	573.60	5.00	3	1	2006-09-26 06:11	2006-09-26 07:25
KFM01D	673.60	678.60	5.00	3	1	2006-09-26 08:21	2006-09-26 09:37
KFM01D	678.60	683.60	5.00	3	1	2006-09-26 09:45	2006-09-26 10:59
KFM01D	683.60	688.60	5.00	3	1	2006-09-26 11:08	2006-09-26 12:25
KFM01D	687.60	692.60	5.00	3	1	2006-09-26 12:34	2006-09-26 13:15
KFM01D	692.60	697.60	5.00	3	1	2006-09-26 13:28	2006-09-26 14:43
KFM01D	697.60	702.60	5.00	3	1	2006-09-26 15:24	2006-09-26 16:09
KFM01D	698.60	703.60	5.00	3	1	2006-09-26 16:17	2006-09-26 16:58
KFM01D	703.60	708.60	5.00	3	1	2006-09-26 17:10	2006-09-26 17:52

[1] 3: Injection test.

3.3 Equipment checks

The PSS3 equipment was serviced, according to SKB internal controlling documents (SKB MD 345.124, service, and SKB MD 345.122, calibration), in January 2006.

Functioning checks of the equipment were performed during the installation of the PSS equipment at the test site. In order to check the function of the pressure sensors, the air pressure was recorded and found to be as expected. While lowering, the sensors showed good agreement with the total head of water (p/ρg). The temperature sensor displayed expected values in the water.

Simple functioning checks of down-hole sensors were done at every change of test section interval. Checks were also made continuously while lowering the pipe string along the borehole.

4 Description of equipment

4.1 Overview

4.1.1 Measurement container

All of the equipment needed to perform the injection tests is located in a steel container (Figure 4-1). The container is divided into two compartments; a data-room and a workshop. The container is placed on pallets in order to obtain a suitable working level in relation to the borehole casing.

The hoisting rig is of a hydraulic chain-feed type. The jaws, holding the pipe string, are opened hydraulically and closed mechanically by springs. The rig is equipped with a load transmitter and the load limit may be adjusted. The maximum load is 22 kN.

The packers and the test valve are operated hydraulically by water filled pressure vessels. Expansion and release of packers, as well as opening and closing of the test valve, is done using magnetic valves controlled by the software in the data acquisition system.

The injection system consists of a tank, a pump and a flow meter. The injection flow rate may be manually or automatically controlled. At small flow rates, a water filled pressure vessel connected to a nitrogen gas regulator is used instead of the pump.

4.1.2 Down-hole equipment

A schematic drawing of the down-hole equipment is shown in Figure 4-2. The pipe string consists of aluminium pipes of 3 m length, connected by stainless steel taps sealed with double o-rings. Pressure is measured above (P_a), within (P) and below (P_b) the test section, which is isolated by two packers. The groundwater temperature in the test section is also measured.

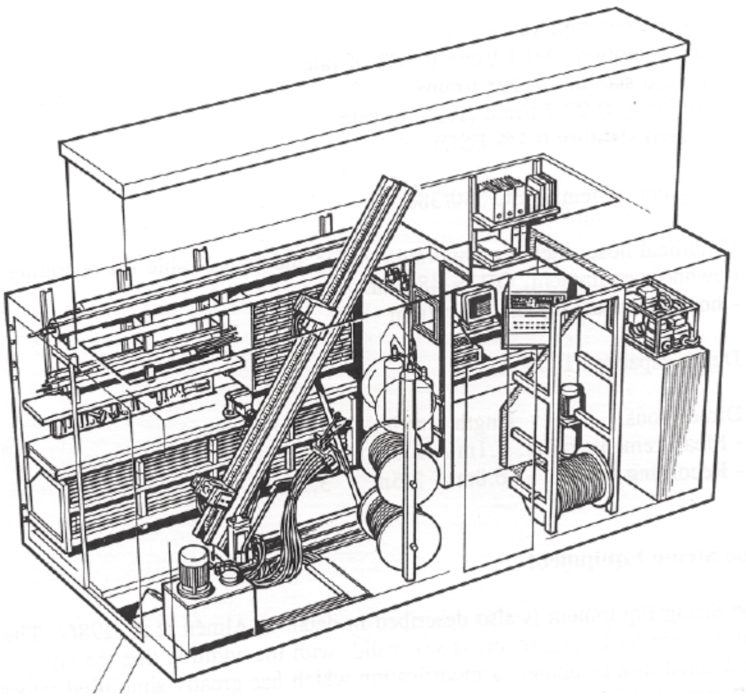

Figure 4-1. Outline of the PSS3 container with equipment.

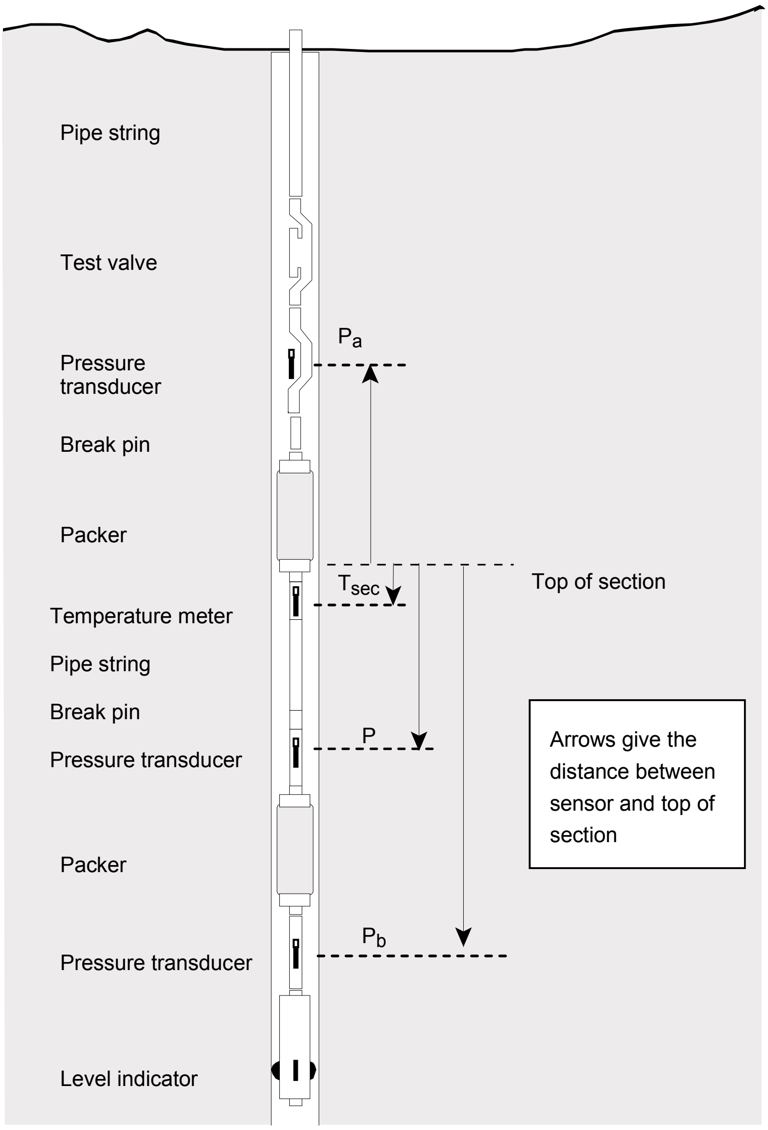

Figure 4-2. *Schematic drawing of the down-hole equipment in the PSS3 system.*

The hydraulic connection between the pipe string and the test section can be closed or opened by a test valve operated by the measurement system.

At the lower end of the borehole equipment, a level indicator (calliper type) gives a signal as the reference depth marks along the borehole are passed.

The length of the test section may be varied (5, 20 or 100 metres).

4.2 Measurement sensors

Technical data for the measurement sensors in the PSS system together with corresponding data of the system are shown in Table 4-1. The sensors are components of the PSS system. The accuracy of the PSS system may also be affected by the I/O-unit, cf. Figure 4-3, and the calibration of the system.

Table 4-1. Technical data for sensors together with estimated data for the PSS system (based on current experience).

Technical specification Parameter		Unit	Sensor	PSS	Comments
Absolute pressure	Output signal	mA	4–20		
	Meas. range	MPa	0–13.5		
	Resolution	kPa	< 1.0		
	Accuracy[1)]	% F.S	0.1		
Differential pressure, 200 kPa	Accuracy	kPa		< ±5	Estimated value
Temperature	Output signal	mA	4–20		
	Meas. range	°C	0–32		
	Resolution	°C	< 0.01		
	Accuracy	°C	±0.1		
Flow Qbig	Output signal	mA	4–20		
	Meas. range	m^3/s	$1.67\cdot10^{-5}$–$1.67\cdot10^{-3}$		The specific accuracy is depending on actual flow
	Resolution	m^3/s	$6.7\cdot10^{-8}$		
	Accuracy[2)]	% O.R	0.15–0.3	< 1.5	
Flow Qsmall	Output signal	mA	4–20		
	Meas. range	m^3/s	$1.67\cdot10^{-8}$–$1.67\cdot10^{-5}$		The specific accuracy is depending on actual flow
	Resolution	m^3/s	$6.7\cdot10^{-10}$		
	Accuracy[3)]	% O.R	0.1–0.4	0.5–20	

1) 0.1% of Full Scale. Includes hysteresis, linearity and repeatability.

2) Maximum error in % of actual reading (% o.r.).

3) Maximum error in % of actual reading (% o.r.). The higher numbers correspond to the lower flow.

The sensor positions are fixed relative to the top of the test section. In Table 4-2, the position of the sensors is given with top of test section as reference (Figure 4-2).

Table 4-2. Position of sensors in the borehole and displacement volume of equipment in the test section in borehole KFM01D.

Parameter	Length of test section (m) 5 (L)	5 (m)	20 (L)	20 (m)	100 (L)	100 (m)
Equipment displacement volume in test section [1)]	3.6		13		61	
Total volume of test section [2)]	23.5		93.9		469.3	
Position for sensor P_a, pressure above test section, (m above secup) [3)]		1.88		1.88		1.88
Position for sensor P, pressure in test section, (m above secup) [3)]		–4.12		–19.12		–99.12
Position for sensor T_{sec}, temperature in test section, (m above secup) [3)]		–0.97		–0.99		–0.98
Position for sensor P_b, pressure below test section, (m above secup) [3)]		–7.00		–22.00		–102.00

1) Displacement volume in test section due to pipe string, signal cable, sensors and packer ends (in litres).

2) Total volume of test section (V= section length*π*d²/4) (in litres).

3) Position of sensor relative top of test section. A negative value indicates a position below top of test section, (secup).

4.3 Data acquisition system

The data acquisition system in the PSS equipment contains a standard office PC connected to an I/O-unit (Datascan 7320). Using the Orchestrator software, pumping and injection tests are monitored and borehole sensor data are collected. In addition to the borehole parameters, packer and atmospheric pressure, container air temperature and water temperature are logged. Test evaluation may be performed on-site after a conducted test. An external display enables monitoring of test parameters.

The data acquisition system may be used to start and stop the automatic control system (computer and servo motors). These are connected as shown in Figure 4-3. The control system monitors the flow regulator and uses differential pressure across the regulating valve together with pressure in test section as input signals.

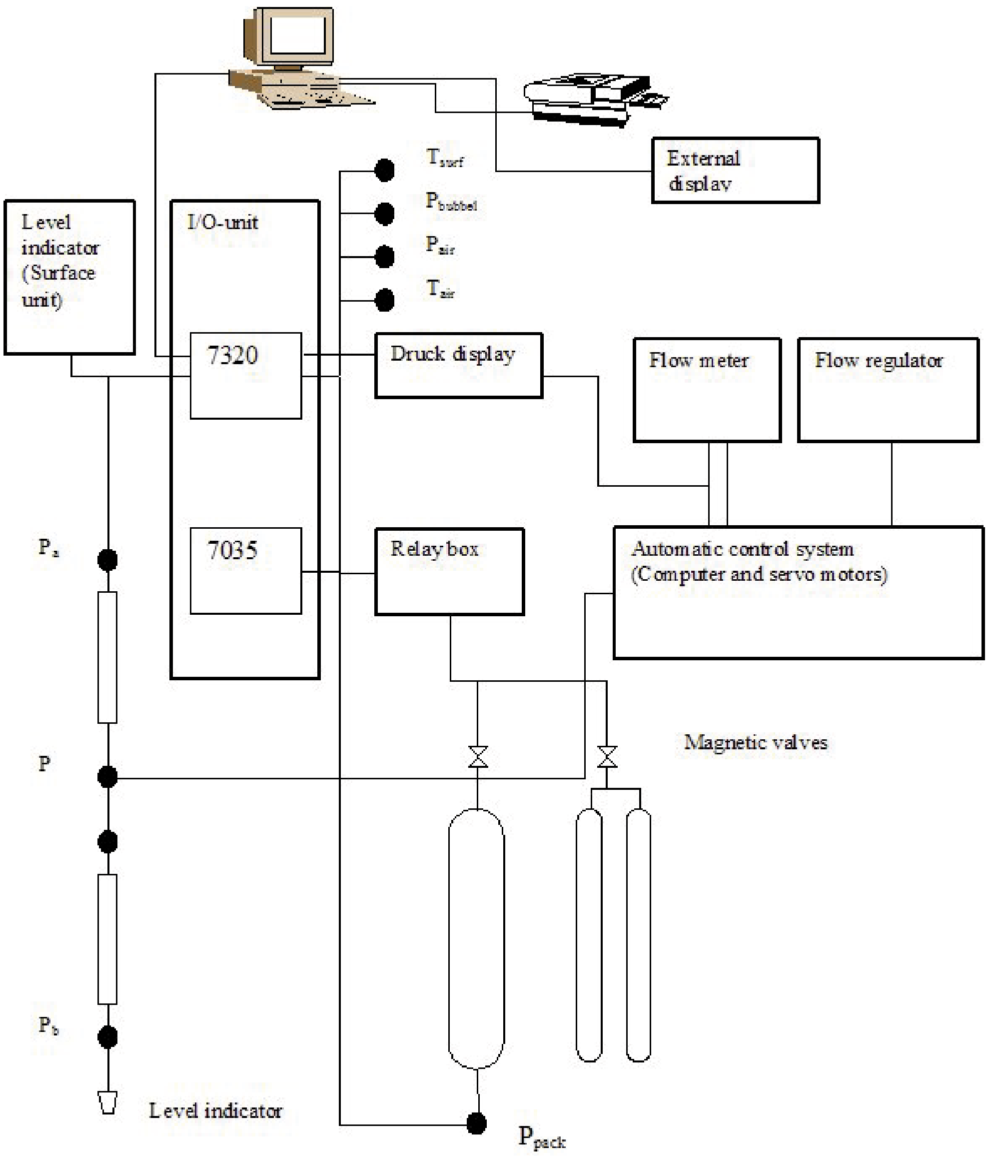

Figure 4-3. Schematic drawing of the data acquisition system and the automatic control system in PSS.

5 Execution

5.1 Preparation

5.1.1 Calibration

All sensors included in PSS are calibrated at the Geosigma engineering service station in Uppsala. Calibration is generally performed at least every year. Results from calibration, e.g. calibration constants, of sensors are kept in a document folder in PSS. If a sensor is replaced at the test site, calibration constants are altered as well. If a new, un-calibrated, sensor is to be used, calibration may be performed afterwards and data re-calculated.

5.1.2 Functioning checks

Equipment functioning checks were performed during the establishment of PSS at the test site. Simple function checks of down-hole sensors were done at every change of test section length, as well as while lowering the pipe string along the borehole.

5.1.3 Cleaning of equipment

Cleaning of the borehole equipment was performed according to the cleaning instruction SKB MD 600.004 (see Table 1-1), level 1.

5.2 Test performance

5.2.1 Test principle

The injection tests in KFM01D were carried out while maintaining a constant head of generally 200 kPa (20 m) in the test section. Before start of the injection period, approximately steady-state pressure conditions prevailed in the test section. After the injection period, the pressure recovery was measured.

For injection tests with 20 m and 5 m section length, the injection phase was interrupted if the injection flow was clearly below the measurement limit. Thereafter, the recovery was measured for at least 5 minutes to verify the low conductivity of the section.

5.2.2 Test procedure

Generally, the tests were performed according to the Activity Plan AP PF 400-06-017. Exceptions to this are presented in Section 5.5.

A test cycle of a standard injection test includes the following phases: 1) Transfer of down-hole equipment to the next section, 2) Packer inflation, 3) Pressure stabilisation, 4) Injection, 5) Pressure recovery and 6) Packer deflation.

The estimated times for the various phases are presented in Table 5-1. Regarding the packer inflation times and actual injection and recovery times, slightly different procedures were used for the tests in 100 m sections compared to the tests in 20 m and 5 m sections in accordance with AP PF 400-06-017. Furthermore, slightly longer test times were used for the tests in 100 m sections, cf. Table 5-1.

Table 5-1. Packer inflation times, pressure stabilisation times and test times used for the injection tests in KFM01D.

Test section length (m)	Packer inflation time (min)	Time for pressure stabilisation (min)	Injection period (min)	Recovery period (min)	Total time/test (min)[1)]
100	30	15	30	30	105
20	25	5	20	20	70
5	25	5	20	20	70

[1)] Exclusive of trip times in the borehole.

5.2.3 Test strategy

Firstly, tests in 100 m sections were performed within the interval 93.6–688.6 m. The test section between 688.6–788.6 m was intended to be tested as well. However, due to equipment problems this test was not performed. This part of the borehole was tested later using 20 m sections. The limits of the test sections were, as far as possible, the same as were used by the difference flow logging, to facilitate comparison of the results.

Secondly, the 100 m sections with a definable flow rate were measured in five successive injection tests using 20 m section length. Tests in 20 m sections were carried out within nearly the same interval as the 100 m sections (93.6-788.6 m).

Finally, tests with 5 m section length were conducted in the 20 m sections which had a definable flow rate.

Since the results of the tests in 100 m sections have a strong effect on the continued test program (i.e. whether a 100 m section would be measured with shorter sections as well), it was particularly important to ensure accurate results of these tests, including sections close to the lower measurement limit.

The total number of injection tests was thus dependent on the results of the previous tests.

5.3 Data handling

With the PSS system, primary data are handled using the Orchestrator software (Version 2.3.8). During a test, data are continuously logged in *.odl-files. After the test is finished, a report file (*.ht2) with space separated data is generated. The *.ht2-file (mio-format) contains logged parameters as well as test-specific information, such as calibration constants and background data. The parameters are presented as percentage of sensor measurement range and not in engineering units. The report file in ASCII-format is the raw data file delivered to the data base SICADA.

The *.ht2-files are automatically named with borehole id, top of test section and date and time of test start (as for example __KFM01D_0093.60_200608281447.ht2). The name differs slightly from the convention stated in Instruction for analysis of injection and single-hole pumping tests, SKB MD 320.004.

Using the IPPLOT software (Version 3.0), the *.ht2-files are converted to parameter files suitable for plotting using the code SKB-plot and analysis with the AQTESOLV software.

A backup of data files was created on a regular basis by CD-storage and by sending the files to the Geosigma office in Uppsala by a file transfer protocol. A file description table is presented in Appendix 1.

5.4 Analysis and interpretation

5.4.1 General

As described in Section 5.2.1, the injection tests in KFM01D were performed as transient constant head tests followed by a pressure recovery period. From the injection period, the (reciprocal) flow rate versus time was plotted in log-log and lin-log diagrams together with the corresponding derivative. From the recovery period, the pressure was plotted versus Agarwal equivalent time in lin-log and log-log diagrams, respectively, together with the corresponding derivative. The routine data processing of the measured data was done according to the Instruction for analysis of injection and single-hole pumping tests (SKB MD 320.004).

For evaluation of the test data, no corrections of the measured flow rate and absolute pressure data (e.g. due to barometric pressure variations or tidal fluctuations) have been made. For short-time single-hole tests, such corrections are generally not needed, unless very small pressure changes are applied. No subtraction of the barometric pressure from the measured absolute pressure has been made, since the length of the test periods are short relative to the time scale for barometric pressure changes. In addition, pressure differences rather than the pressure magnitudes are used by the evaluation.

5.4.2 Measurement limit for flow rate and specific flow rate

The estimated standard lower measurement limit for flow rate for injection tests with PSS is c. 1 mL/min ($1.7 \cdot 10^{-8}$ m^3/s). However, if the flow rate for a test was close to, or below, the standard lower measurement limit, a test-specific estimate of the lower measurement limit of flow rate was made. The test-specific lower limit was based on the measurement noise level of the flow rate before and after the injection period. The decisive factor for the varying lower measurement limit is not identified, but it might be of both technical and hydraulic character.

The lower measurement limit for transmissivity is defined in terms of the specific flow rate (Q/s). The minimum specific flow rate corresponds to the estimated lower measurement limit of the flow rate together with the actual injection pressure during the test, see Table 5-2. The intention during this test campaign was to use a standard injection pressure of 200 kPa (20 m water column). Still, the injection pressure can be considerably different (see Section 6.2.3). An apparently low injection pressure is often the result of a test section of low conductivity due to a pressure increase, caused by packer expansion, before the injection start. A highly conductive section may also result in a low injection pressure due to limited flow capacity of PSS.

Whenever the final flow rate (Q_p) was not defined (i.e. not clearly above the measurement noise before and after the injection period), the estimated lower measurement limit for specific flow rate was based on the estimated lower measurement limit for flow rate for the specific test and a standard injection pressure of 200 kPa. This is done in order to avoid excessively high, apparent estimates of the specific flow rate for these low conductivity sections, which would have resulted if the actual pressure difference at start of injection had been used as injection pressure.

The lower measurement limits for the flow rate correspond to different values of steady-state transmissivity, T_M, depending on the section lengths used in the factor C_M in Moye's formula, as described in the Instruction for analysis of injection and single-hole pumping tests (SKB MD 320.004), see Table 5-2.

The practical upper measurement limit of hydraulic transmissivity for the PSS system is estimated at a flow rate of c. 30 L/min ($5 \cdot 10^{-4}$ m^3/s) and an injection pressure of c. 1 m. Thus, the upper measurement limit for the specific flow rate is $5 \cdot 10^{-4}$ m^2/s. However, the practical upper measurement limit may vary, depending on e.g. depth of the test section (friction losses in the pipe string).

Table 5-2. Estimated lower measurement limit for specific flow rate and steady-state transmissivity for different injection pressures, measurement scales and estimated lower measurement limits for flow rate for the injection tests in borehole KFM01D.

r_w (m)	L_w (m)	Q-measl-L (m^3/s)	Injection pressure (kPa)	Q/s-measl-L (m^2/s)	Factor C_M in Moye's formula	T_M-measl-L (m^2/s)
0.0379	100	1.7E–08	100	1.6E–09	1.30	2.1E–09
0.0379	100	1.7E–08	200	8.2E–10	1.30	1.1E–09
0.0379	100	1.7E–08	300	5.5E–10	1.30	7.1E–10
0.0379	100	1.2E–08	100	1.2E–09	1.30	1.5E–09
0.0379	100	1.2E–08	200	5.9E–10	1.30	7.7E–10
0.0379	100	1.2E–08	300	3.9E–10	1.30	5.1E–10
0.0379	100	5.0E–09	100	4.9E–10	1.30	6.4E–10
0.0379	100	5.0E–09	200	2.5E–10	1.30	3.2E–10
0.0379	100	5.0E–09	300	1.6E–10	1.30	2.1E–10
0.0379	20	1.7E–08	100	1.6E–09	1.05	1.7E–09
0.0379	20	1.7E–08	200	8.2E–10	1.05	8.6E–10
0.0379	20	1.7E–08	300	5.5E–10	1.05	5.7E–10
0.0379	20	1.2E–08	100	1.2E–09	1.05	1.2E–09
0.0379	20	1.2E–08	200	5.9E–10	1.05	6.2E–10
0.0379	20	1.2E–08	300	3.9E–10	1.05	4.1E–10
0.0379	20	5.0E–09	100	4.9E–10	1.05	5.1E–10
0.0379	20	5.0E–09	200	2.5E–10	1.05	2.6E–10
0.0379	20	5.0E–09	300	1.6E–10	1.05	1.7E–10
0.0379	5	1.7E–08	100	1.6E–09	0.83	1.4E–09
0.0379	5	1.7E–08	200	8.2E–10	0.83	6.8E–10
0.0379	5	1.7E–08	300	5.5E–10	0.83	4.5E–10
0.0379	5	1.2E–08	100	1.2E–09	0.83	9.7E–10
0.0379	5	1.2E–08	200	5.9E–10	0.83	4.9E–10
0.0379	5	1.2E–08	300	3.9E–10	0.83	3.2E–10
0.0379	5	5.0E–09	100	4.9E–10	0.83	4.1E–10
0.0379	5	5.0E–09	200	2.5E–10	0.83	2.0E–10
0.0379	5	5.0E–09	300	1.6E–10	0.83	1.4E–10

5.4.3 Qualitative analysis

Initially, a qualitative evaluation of actual flow regimes, e.g. wellbore storage (WBS), pseudo-linear flow regime (PLF), pseudo-radial flow regime (PRF), pseudo-spherical flow regime (PSF) and pseudo-stationary flow regime (PSS), respectively, was performed. In addition, indications of outer boundary conditions during the tests were identified. The qualitative evaluation was mainly interpreted from the log-log plots of flow rate and pressure together with the corresponding derivatives.

In particular, time intervals with pseudo-radial flow, reflected by a constant (horizontal) derivative in the test diagrams, were identified. Pseudo-linear flow may, at the beginning of the test, be reflected by a straight line of slope 0.5 or less in log-log diagrams, both for the measured variable (flow rate or pressure) and the derivative. A true spherical flow regime is reflected by a straight line with a slope of –0.5 for the derivative. However, other slopes may indicate transitions to pseudo-spherical (leaky) or pseudo-stationary flow. The latter flow regime corresponds to almost stationary conditions with a derivative approaching zero.

The interpreted flow regimes can also be described in terms of the distance from the borehole:

- **Inner zone:** Representing very early responses that may correspond to the fracture properties close to the borehole which may possibly be affected by turbulent head losses. These properties are generally reflected by the skin factor.
- **Middle zone:** Representing the first response from which it is considered possible to evaluate the hydraulic properties of the formation close to the borehole.
- **Outer zone:** Representing the response at late times of hydraulic structure(s) connected to the hydraulic feature for the middle zone. Sometimes it is possible to deduce the possible character of the actual feature or boundary and evaluate the hydraulic properties.

Due to the limited resolution of the flow meter and pressure sensor, the derivative may some times indicate a false horizontal line by the end of periods with pseudo-stationary flow. Apparent no-flow (NFB) and constant head boundaries (CHB), or equivalent boundary conditions of fractures, are reflected by an increase/decrease of the derivative, respectively.

5.4.4 Quantitative analysis

Injection tests

A preliminary steady-state analysis of transmissivity according to Moye's formula (denoted T_M) was made for the injection period for all tests in conjunction with the qualitative analysis according to the following equations:

$$T_M = \frac{Q_p \cdot \rho_w \cdot g}{dp_p} \cdot C_M \qquad (5\text{-}1)$$

$$C_M = \frac{1 + \ln\left(\frac{L_w}{2r_w}\right)}{2\pi} \qquad (5\text{-}2)$$

Q_p = flow rate by the end of the flow period (m^3/s)

ρ_w = density of water (kg/m^3)

g = acceleration of gravity (m/s^2)

C_M = geometrical shape factor (-)

dp_p = injection pressure $p_p - p_i$ (Pa)

r_w = borehole radius (m)

L_w = section length (m)

From the results of the qualitative evaluation, appropriate interpretation models for the quantitative evaluation of the tests were selected. When possible, transient analysis was made on both the injection and recovery periods of the tests.

The transient analysis was performed using a special version of the test analysis software AQTESOLV, which enables both visual and automatic type curve matching. The quantitative transient evaluation is generally carried out as an iterative process of manual type curve matching and automatic matching. For the injection period, a model based on the Jacob and Lohman (1952) /2/ solution was applied for estimating the transmissivity and skin factor for an assumed value on the storativity when a certain period with pseudo-radial flow could be identified. The model is based on the effective wellbore radius concept to account for non-zero (negative) skin factors according to Hurst, Clark and Brauer (1969) /3/.

In borehole KFM01D, the storativity was calculated using an empirical regression relationship between storativity and transmissivity, see Equation 5-3 (Rhén et al. 1997) /4/.

$S = 0.0007 \cdot T^{0.5}$ (5-3)

S = storativity (–)

T = transmissivity (m^2/s)

Firstly, the transmissivity and skin factor were obtained by type curve matching on the data curve using a fixed storativity value of 10^{-6}, according to the instruction SKB MD 320.004. From the transmissivity value obtained, the storativity was then calculated according to Equation 5-3 and the type curve matching was repeated. In most cases the change of storativity did not significantly alter the calculated transmissivity by the new type curve matching. Instead, the estimated skin factor, which is strongly correlated to the storativity using the effective borehole radius concept, was altered correspondingly.

For transient analysis of the recovery period, a model presented by Dougherty-Babu (1984) /5/ was used when a certain period with pseudo-radial flow could be identified. In this model, a variety of transient solutions for flow in fractured porous media are available, accounting for e.g. wellbore storage and skin effects, double porosity etc. The solution for wellbore storage and skin effects is analogous to the corresponding solution presented in Earlougher (1977) /6/ based on the effective wellbore radius concept to account for non-zero (negative) skin factors. However, for tests in isolated test sections, wellbore storage is represented by a radius of a fictive standpipe (denoted fictive casing radius, r(c)) connected to the test section, cf. Equation 5-6. This concept is equivalent to calculating the wellbore storage coefficient C from the compressibility in an isolated test section according to Equation 5-5. The storativity was calculated using Equation 5-3 in the same way as described above for the transient analysis of the injection period. In addition, the wellbore storage coefficient was estimated, both from the simulated value on the fictive casing radius r(c) and from the slope of 1:1 in the log-log recovery plots.

For tests characterized by pseudo-spherical (leaky) flow or pseudo-stationary flow during the injection period, a model by Hantush (1959) /7/ for constant head tests was adopted for the evaluation. In this model, the skin factor is not separated but can be calculated from the simulated effective borehole radius according to Equation 5-4. This model also allows calculation of the wellbore storage coefficient according to Equation 5-6. In addition, the leakage coefficient K’/b’ can be calculated from the simulated leakage factor r/B. The corresponding model for constant flow rate tests, Hantush (1955) /8/, was applied for evaluation of the recovery period for tests showing pseudo-spherical- or pseudo-stationary flow during this period.

$\zeta = ln(r_w/r_{wf})$ (5-4)

ζ = skin factor

r_w = borehole radius (m)

r_{wf} = effective borehole radius

Some tests showed fracture responses (a slope of 0.5 or less in a log-log plot). A model for single fractures was then applied for the transient analysis as a complement to the standard models. The model by Ozkan-Raghavan (1991a) /9/ and (1991b) /10/ for a vertical fracture was employed. In this case, the test section length was used to convert K and S_s to T and S, respectively, after analysis by fracture models. The quotient K_x/K_y of the hydraulic conductivity in the x and the y-direction, respectively, was assumed to be 1.0 (one). Type curve matching provided values of K_x and L_f, where L_f is the theoretical fracture length.

The different transient estimates of transmissivity from the injection and recovery period, respectively, were then compared and examined. One of these was chosen as the best representative value of the transient transmissivity of the formation adjacent to the test section. This value is denoted T_T. In cases with more than one pseudo-radial flow regime during the injection or recovery period, the first one is in most cases assumed as the most representative for the hydraulic conditions in the rock close to the tested section.

Finally, a representative value of transmissivity of the test section, T_R, was chosen from T_T and T_M. The latter transmissivity is to be chosen whenever a transient evaluation of the test data is not possible or not being considered as reliable. If the flow rate by the end of an injection period (Q_p) is too low to be defined, and thus neither T_T nor T_M can be estimated, the representative transmissivity for the test section is considered to be less than T_M based on the estimated lower measurement limit for Q/s (i.e. $T_R<T_M$=Q/s-measl-L·C_M).

Estimated values of the borehole storage coefficient, C, based on actual borehole geometrical data and assumed fluid properties are shown in Table 5-3 together with the estimated effective C_{eff} from laboratory experiments (Ludvigsson et al. 2006) /12/. The net water volume in the test section, V_w, has in Table 5-3 been calculated by subtracting the volume of equipment in the test section (pipes and thin hoses) from the total volume of the test section. For an isolated test section, the wellbore storage coefficient, C, may be calculated as by Almén et al. (1986) /11/:

$$C = V_w \cdot c_w = L_w \cdot \pi \cdot r_w^2 \cdot c_w \tag{5-5}$$

V_w = water volume in test section (m^3)

r_w = nominal borehole radius (m)

L_w = section length (m)

c_w = compressibility of water (Pa^{-1})

When appropriate, estimation of the actual borehole storage coefficient C in the test sections was made from the recovery period, based on the early borehole response with 1:1 slope in the log-log diagrams. The coefficient C was calculated only for tests with a well-defined line of slope 1:1 in the beginning of the recovery period. In the most conductive sections, this period occurred during very short periods at early test times. The latter values may be compared with the net values of C based on geometry and the value of C_{eff} based on laboratory experiments /12/, (Table 5-3).

Furthermore, when using the model by Dougherty-Babu (1984) /5/ or Hantush (1955) /8/, a fictive casing radius, r(c), is obtained from the parameter estimation of the recovery period. This value can then be used for calculating C as by Almén et al. (1986) /11/:

$$C = \frac{\pi \cdot r(c)^2}{\rho \cdot g} \tag{5-6}$$

Although this calculation was not done regularly and the results are not presented in this report, the calculations corresponded in most cases well to the value of C obtained from the line of slope 1:1 in the beginning of the recovery period.

The estimated values of C from the tests may differ from the net values in Table 5-3 based on geometry. For example, the effective compressibility for an isolated test section may sometimes be higher than the water compressibility due to e.g. packer compliance, resulting in increased C-values.

Table 5-3. Calculated net values of C, based on the actual geometrical properties of the borehole and equipment configuration in the test section (C_{net}) together with the effective wellbore storage coefficient (C_{eff}) for injection tests from laboratory experiments /12/.

r_w (m)	L_w (m)	Volume of test section (m^3)	Volume of equipment in section (m^3)	V_w (m^3)	C_{net} (m^3/Pa)	C_{eff} (m^3/Pa)
0.0379	100	0.469	0.061	0.390	$1.8 \cdot 10^{-10}$	$1.9 \cdot 10^{-10}$
0.0379	20	0.094	0.013	0.077	$3.6 \cdot 10^{-11}$	$4.3 \cdot 10^{-11}$
0.0379	5	0.023	0.004	0.019	$8.5 \cdot 10^{-12}$	$1.6 \cdot 10^{-11}$

The radius of influence at a certain time may be estimated from Jacob's approximation of the Theis' well function, Cooper and Jacob (1946) /13/:

$$r_i = \sqrt{\frac{2.25Tt}{S}} \quad (5\text{-}7)$$

T = representative transmissivity from the test (m^2/s)

S = storativity estimated from Equation 5-3

r_i = radius of influence (m)

t = time after start of injection (s)

If a certain time interval of pseudo-radial flow (PRF) from t_1 to t_2 can be identified during the test, the radius of influence is estimated using time t_2 in Equation 5-7. If no interval of PRF can be identified, the actual total flow time t_p is used. The radius of influence can be used to deduce the length of the hydraulic feature(s) tested.

Furthermore, a r_i-index (–1, 0 or 1) is defined to characterize the hydraulic conditions by the end of the test. The r_i-index is defined as shown below. It is assumed that a certain time interval of PRF can be identified between t_1 and t_2 during the test.

- r_i-index = 0: The transient response indicates that the size of the hydraulic feature tested is greater than the radius of influence based on the actual test time (t_2=t_p), i.e. the PRF is continuing at stop of the test. This fact is reflected by a flat derivative at this time.
- r_i-index = 1: The transient response indicates that the hydraulic feature tested is connected to a hydraulic feature with lower transmissivity or an apparent barrier boundary (NFB). This fact is reflected by an increase of the derivative. The size of the hydraulic feature tested is estimated as the radius of influence based on t_2.
- r_i-index = –1: The transient response indicates that the hydraulic feature tested is connected to a hydraulic feature with higher transmissivity or an apparent constant head boundary (CHB). This fact is reflected by a decrease of the derivative. The size of the hydraulic feature tested is estimated as the radius of influence based on t_2.

If a certain time interval of PRF cannot be identified during the test, the r_i-indices –1 and 1 are defined as above. In such cases the radius of influence is estimated using the flow time t_p in Equation 5-7.

5.5 Nonconformities

The test program in KFM01D was carried out according to the Activity Plan AP PF 400-06-017 with the following exceptions:

- The packers were expanded progressively and the nominal expansion pressure could not be reached for some sections in the deeper parts of the borehole due to pressure build-up below the test section. This fact makes the effects from packer compliance even more unpredictable. Hence, the actual packer expansion times may differ slightly from test to test.
- Problems with opening and closing of the test valve appeared during the 100 m tests. Due to this fact the section between 688.6–788.6 m was not tested. However, this section was tested later using 20 m sections instead. When the 100 m tests were finished, the test valve was replaced with a new one and no further problems were detected during the test campaign.
- Due to major fractures in the borehole, some of the positions of the test sections were shifted. This resulted in some partly overlapping sections as follows: 493.6–593.6 m and 588.6–688.6 m; 653.6–673.6 m and 668.6–688.6 m; 683.6–688.6 m and 687.6–692.6 m; 697.6–702.6 m and 698.6–703.6 m.
- The test at 196.6–201.6 m was not intended to be performed. The test has not been evaluated and no results are presented in any tables or figures in this report.

6 Results

6.1 Nomenclature and symbols

The nomenclature and symbols used for the results of the injection tests in KFM01D are in accordance with the Instruction for analysis of injection and single-hole pumping tests (SKB MD 320.004). Additional symbols are explained in the text and in Appendix 5. Symbols used by the AQTESOLV software are explained in Appendix 3.

6.2 Routine evaluation of the single-hole injection tests

6.2.1 General test data

General test data and selected pressure and flow data from all tests are listed in Appendix 2.1 and 2.2, respectively.

6.2.2 Length corrections

The down-hole equipment is supplied with a level indicator located c. 3 m below the lower packer in the test section, see Figure 4-2. The level indicator transmits a signal each time a reference mark in the borehole is passed. In KFM01D, reference marks were milled into the borehole wall at approximately every 50 m.

During the injection tests in KFM01D with the PSS, length reference marks were detected as presented in Table 6-1. As seen from Table 6-1, all of the length marks of the borehole were detected. At each mark, the length scale for the injection tests was adjusted according to the reported length to the reference mark.

Table 6-1. Detected reference marks during the injection tests in KFM01D.

Borehole length (m)	Detected during the injection tests in 100 m sections	Detected during the injection tests in 20 m sections	Detected during the injection tests in 5 m sections
150.0	Yes	Yes	Yes
200.0	Yes	Yes	Yes
250.0	Yes	Yes	Yes
300.0	Yes	Yes	Yes
350.0	Yes	Yes	Yes
400.0	Yes	Yes	Yes
450.0	Yes	Yes	Yes
500.0	Yes	Yes	Yes
550.0	Yes	Yes	Yes
600.0	Yes	Yes	Yes
650.0	Yes	Yes	Yes
700.0		Yes	Yes
750.0		Yes	

The largest difference between the reported and measured lengths at the reference marks during the injection tests was 0.43 m, at the 750 m reference mark. The difference between two consecutive measurements over a 50 m borehole interval was 0.05 m or less in all cases. A comparison of the measurements performed with different section lengths results in a maximum difference of 0.03 m.

Since the length scale was adjusted in the field every time a reference mark was passed, and because the difference between consecutive marks was small, it was not found worthwhile to make any further adjustments after the measurements, e.g. by linear interpolation between reference marks.

6.2.3 General results

For the injection tests, transient evaluation was conducted, whenever possible, both on the injection and recovery periods (e.g. transmissivity T_f and T_s, respectively) according to the methods described in Section 5.4.4. The steady-state transmissivity (T_M) was calculated by Moye's formula according to Equation 5-1. Injection tests with a final flow rate below the measurement limit, Q_p, or with a non-definable flow regime were only evaluated by the steady-state method. All other tests were evaluated with both transient and steady-state methods. The quantitative analysis was conducted using the AQTESOLV software. A summary of the results of the routine evaluation of the injection tests can be seen in Table 6-2.

The dominating transient flow regimes during the injection and recovery periods, as interpreted from the qualitative test evaluation, are listed in Table 6-2 and further commented on in Section 6.2.4. The transmissivity considered as the most reliable from the transient evaluation of the flow- and recovery periods of the tests was selected as T_T, see Table 6-2.

For 43 out of 66 tests with a definable final flow rate in KFM01D, the transient evaluation of the injection period was considered to give the most representative transient transmissivity value. The corresponding number for the recovery period was 14. Several of the responses during the recovery period were strongly influenced by wellbore storage effects. On the other hand, during the injection period a certain time interval with pseudo-radial flow could, in more than half of the tests, be identified. Consequently, standard methods for single-hole tests with wellbore storage and skin effects were commonly used for the routine evaluation of the tests. The approximate start and stop times of the pseudo-radial flow regime used for the transient evaluation are also listed in Table 6-2.

For those tests where transient evaluation was not possible or not considered representative, T_M was chosen as the representative transmissivity value, T_R. In 11 out of 66 tests with a definable final flow rate in KFM01D the steady-state transmissivity, T_M, was chosen as the most representative value. This number is rather high, partly because of frequently occurring test responses only indicating apparent no flow boundaries during both the injection and the recovery period. If the final flow rate Q_p was below the actual test-specific measurement limit, the representative transmissivity value was assumed to be less than the estimated T_M, based on Q/s-measl-L.

The estimated standard lower measurement limit for flow rate for injection tests with PSS is c. 1 mL/min ($1.7 \cdot 10^{-8}$ m^3/s). However, for approximately 63% of the injection tests in KFM01D, the lower measurement limit was close to, or below, the standard lower measurement limit. Hence a test-specific estimate of the lower measurement limit of flow rate was made which ranged from $3.7 \cdot 10^{-9}$ m^3/s to $8.4 \cdot 10^{-9}$ m^3/s. The lower measurement limit for transmissivity is defined in terms of the specific flow rate (Q/s), and the overall estimated test specific lower measurement limit for the specific flow rate in KFM01D ranged from $1.7 \cdot 10^{-10}$ m^2/s to $4.2 \cdot 10^{-10}$ m^2/s (see Section 5.4.2).

Selected test diagrams are presented in Appendix 3. In general, one linear diagram showing the entire test sequence together with lin-log and log-log diagrams from the injection and recovery periods, respectively, are presented for the injection tests. The quantitative analysis was performed from such diagrams using the AQTESOLV software. From injection tests with a flow rate below the estimated lower measurement limit for the specific test, only the linear diagram is presented. The results of the routine evaluation of the tests in borehole KFM01D are also compiled in appropriate tables in Appendix 5 to be stored in the SICADA database.

For a few tests, a type curve fit is displayed in the diagrams in Appendix 3 despite the fact that the estimated parameters from the fit are judged as ambiguous or non-representative and not included in the result tables in SICADA. For these tests, the type curve fit is presented as an example, e.g. to illustrate that an assumption of pseudo-radial flow regime is not justified for the test and some other flow regime is dominating or, alternatively, to show one possible fit in the case of unambiguous evaluation. For example, for test responses showing only wellbore storage or no flow boundary response, no unambiguous transient evaluation is possible.

Some of the tests in KFM01D showed unusual responses, both during the injection- and recovery period, possibly representing flow in conductive fractures of limited extension or with varying apertures. During the injection period of these tests the flow rate decreased rapidly during the entire period indicating apparent no-flow boundaries (NFB). No unambiguous transient evaluation of the injection period was possible for these tests. After stop of the injection, the pressure recovered very slowly and only to a limited extent during the recovery period. One possible explanation to these responses is flow in rather high-conductive fractures close to the borehole with decreasing aperture away from the borehole or other geometrical restrictions of the fracture. Some other tests showed initial pseudo-radial flow transitioning to flow in an apparent no-flow boundary, followed by slow and limited pressure recovery after the stop of the injection.

Furthermore, two tests which were performed in each of the sections 103.6–108.6 m and 263.6–268.6 m showed some unusual responses during the injection period. A rapidly decreasing flow rate was followed by an increasing flow rate at the end of the injection period. This flow pattern was repeated in the section 103.6–108.6 m during the second test. The first and the second test in this section had similar injection pressure. In the other section, at 263.6–268.6 m, no increase of flow rate was observed during the second test. The flow rate did in this case steadily decrease during the whole injection period. The second test in this section had a lower injection pressure than the first test. One possible explanation of this behaviour is that there exists a flow feature in the tested rock formation for which the transmissivity is dependent on the applied pressure.

In Figure 6-1, a comparison of calculated transmissivities in 5 m sections from steady-state evaluation (T_M) and transmissivity values from the transient evaluation (T_T) is shown. The agreement between the two populations is in general considered as good. Steady-state analysis of transmissivity according to Moye's formula (denoted T_M) may slightly overestimate the transmissivity if steady-state conditions do not prevail in the borehole. This fact is likely to be the main explanation to the predominance of points below the 1:1 curve since steady-state conditions are normally not attained during the injection period. In addition, skin effects (both positive and negative) may cause discrepancies between transient and steady-state evaluation. For low values of transmissivity, discrepancies in transmissivity may also occur due to the definition of the lower measurement limit in transient and steady-state evaluation, respectively. In the latter evaluation the measurement limit is based on the test-specific flow rate while in transient evaluation, the transmissivity is based on the change of the (inverse) flow rate during the injection period.

In cases where apparent no-flow boundaries appear at the end of the injection period and transient evaluation is performed on the early part of the data curve, the steady-state transmissivity T_M may be low in comparison with the transient estimate of transmissivity. In this case, two different zones of the bedrock are measured during the early and late parts of the injection period, respectively.

The lower standard measurement limit of steady-state transmissivity in 5 m sections based on a flow rate of 1 mL/min and an injection pressure of 20 m is indicated in Figure 6-1. However, for some test sections in KFM01D, the actual injection pressure was considerably different, as previously denoted in Section 5.4.2. The highest injection pressure during the tests in KFM01D was 30.07 m, and for seven of the tests the injection pressure was below 10 m in the transient evaluation.

The wellbore storage coefficient, C, was calculated from the straight line with a unit slope in the log-log diagrams from the recovery period, see Table 6-2. The coefficient C was only calculated for tests with a well-defined line of unit slope in the beginning of the recovery period. In the most conductive sections, this period occurred during very short intervals at very early times and is not visible in the diagrams. In sections with a very low transmissivity, the estimates of C may be uncertain due to difficulties in defining an accurate time for the start of the recovery period. Furthermore, the resolution of the pressure sensors causes the recovery to be quite scattered in sections of low transmissivity. The values of C presented in Table 6-2 may be compared with the net values of C, C_{net} (based on geometry) and the value of C obtained from laboratory experiments, C_{eff} /12/, both found in Table 5-3.

The number of injection tests with a well-defined line of unit slope from which it was possible to calculate C was 2 out of 6 tests with a definable Q_p, when using the 100 m test section. The corresponding numbers for the 20 m tests were 4 out of 35, and for the 5 m tests; 6 out of 80. Table 6-2 shows that there is, in general, a relatively good agreement between the calculated C-values from the tests and those listed in Table 5-3, although the calculated values from the tests tend to be slightly higher. The higher C-values observed in the tests may partly be explained by the compressibility contribution of the rock formation and water in good hydraulic connection (i.e. open fractures or cavities) with the section.

When constructing 95% confidence intervals (using a t-distribution) from calculated values of C from the tests, the values of C listed in Table 5-3 are within these confidence intervals for the 20 m and 5 m sections but slightly lower than the confidence interval for the 100 m sections. The wellbore storage coefficient was also calculated from the simulation of the recovery responses in AQTESOLV based on the estimated radius of the fictive standpipe, r(c), to the test section according to Equation 5-6.

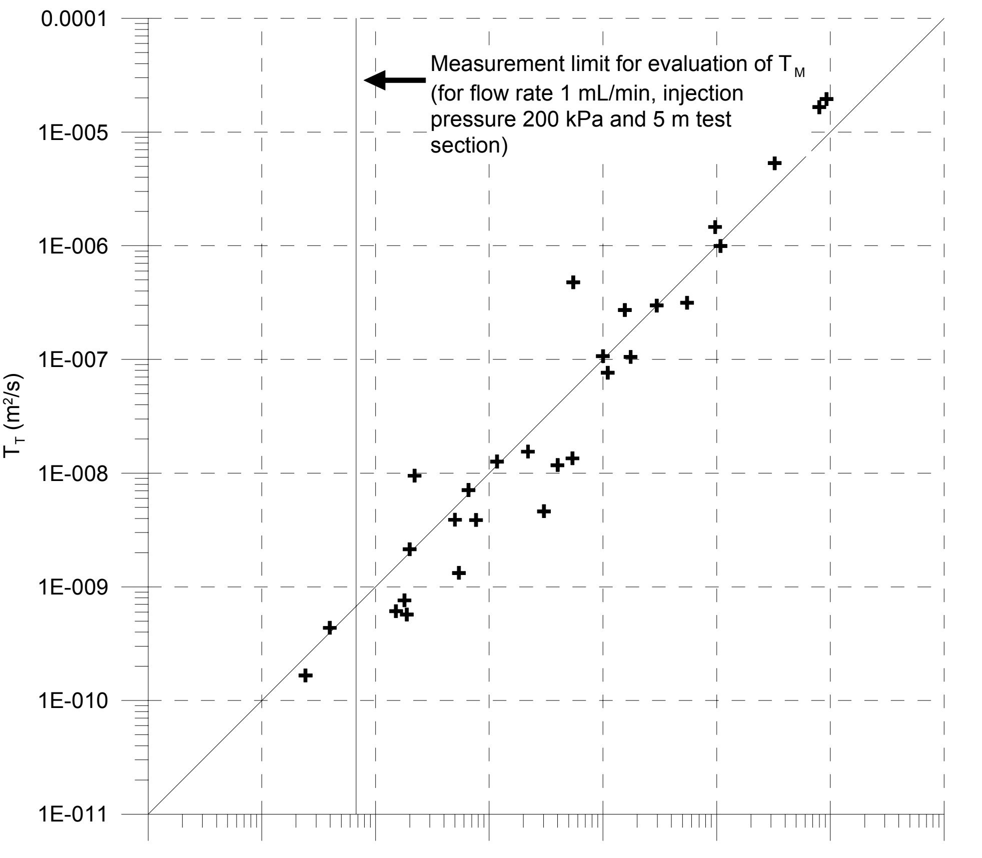

***Figure 6-1.** Estimated transmissivities in 5 m sections from steady-state (T_M) and transient (T_T) evaluation for the injection tests in KFM01D.*

Table 6-2. Summary of the routine evaluation of the single-hole injection tests in borehole KFM01D.

Secup (m)	Seclow (m)	Test start YYYY-MM-DD hh:mm	b (m)	Flow regime [1] injection	Recovery	T_M (m²/s)	T_f (m²/s)	T_s (m²/s)	T_T (m²/s)	T_R [2] (m²/s)	ξ (–)	t_1 (s)	t_2 (s)	dte_1 (s)	dte_2 (s)	C (m³/Pa)	r_i (m)	r_i-index (–)
93.60	193.60	2006-08-28 22:56	100.0	NFB	PLF->(PRF)->NFB	1.78E–05		8.48E–06	8.48E–06	8.48E–06							129.71	1
193.60	293.60	2006-08-29 08:40	100.0	NFB	NFB	1.77E–07				1.77E–07							49.38	–
293.60	393.60	2006-08-29 11:21	100.0	NFB	PLF	1.22E–05		7.57E–06	7.57E–06	7.57E–06							125.63	1
393.60	493.60	2006-08-29 16:44	100.0	PLF->(PRF)	PLF->PSF	1.74E–06	3.33E–07	3.65E–07	3.33E–07	3.33E–07							57.85	–1
493.60	593.60	2006-08-29 20:08	100.0	´->PRF	WBS->	1.54E–08	1.59E–08		1.59E–08	1.59E–08	1.79	400	1,800			3.47E–10	27.00	0
588.60	688.60	2006-08-30 06:15	100.0	PRF	WBS->	3.05E–09	8.69E–10	7.31E–10	8.69E–10	8.69E–10	–3.77	200	1,800			3.33E–10	13.06	0
93.60	113.60	2006-09-05 07:02	20.0	NFB	PLF->	1.08E–06		1.24E–06	1.24E–06	1.24E–06	–7.71						65.67	1
113.60	133.60	2006-09-05 08:54	20.0	NFB	PRF->NFB	1.19E–05		1.95E–05	1.95E–05	1.95E–05	–4.15			20	400		75.38	1
133.60	153.60	2006-09-05 12:33	20.0	PRF	PSF	3.36E–06	7.30E–06	9.00E–06	7.30E–06	7.30E–06	6.36	200	1,200				102.07	0
153.60	173.60	2006-09-05 14:11	20.0	PRF1->PRF2	PRF1->PRF2	2.43E–07	1.08E–07	1.80E–07	1.08E–07	1.08E–07	–4.29	100	500	10	200		22.96	1
173.60	193.60	2006-09-05 15:45	20.0	PLF->(PRF)	PLF	1.16E–08	1.62E–09		1.62E–09	1.62E–09							12.58	1
193.60	213.60	2006-09-05 17:19	20.0	NFB->PRF/PSF	PLF/NFB	8.55E–08	4.44E–08		4.44E–08	4.44E–08	–3.33	700	1,200				28.50	0
213.60	233.60	2006-09-05 18:49	20.0	–	–	<2.09E–10				<2.09E–10							–	–
233.60	253.60	2006-09-05 20:00	20.0	PRF	WBS->PRF->NFB	4.82E–09	1.31E–09	3.02E–09	1.31E–09	1.31E–09	–4.31	200	1,200	200	400	1.28E–10	11.81	0
253.60	273.60	2006-09-12 13:59	20.0	NFB->PSS?	PLF->PRF?	1.52E–07				1.52E–07							39.07	–
273.60	293.60	2006-09-05 23:17	20.0	–	–	<2.85E–10				<2.85E–10							–	–
293.60	313.60	2006-09-06 07:33	20.0	NFB	(PRF)->NFB	7.09E–06				7.09E–06							101.53	–
313.60	333.60	2006-09-06 09:14	20.0	NFB	PRF->NFB	1.03E–05		1.79E–05	1.79E–05	1.79E–05	–2.68			5	100		36.88	1
333.60	353.60	2006-09-06 11:09	20.0	NFB	PRF->NFB	7.77E–08		6.11E–07	6.11E–07	6.11E–07	–1.50			10	100		15.85	1
353.60	373.60	2006-09-06 13:28	20.0	NFB->PSS?	PLF	3.54E–07				3.54E–07							48.26	–
373.60	393.60	2006-09-06 15:19	20.0	PRF->NFB	(WBS)->PRF->NFB	8.17E–07	4.75E–07	9.21E–07	4.75E–07	4.75E–07	–3.66	70	800	40	300		42.09	1
393.60	413.60	2006-09-06 17:10	20.0	–	–	<4.39E–10				<4.39E–10							–	–
413.60	433.60	2006-09-06 18:15	20.0	PRF	WBS->PRF->	1.20E–06	7.49E–07	1.70E–06	7.49E–07	7.49E–07	–3.33	200	1,200	150	500		57.78	0
433.60	453.60	2006-09-06 19:55	20.0	NFB->	PLF	1.03E–07				1.03E–07							35.31	–
453.60	473.60	2006-09-06 21:33	20.0	PRF	WBS->PRF->PSF	9.23E–09	4.24E–09	4.71E–09	4.24E–09	4.24E–09	–3.26	80	1,200	40	200		15.84	0
473.60	493.60	2006-09-12 09:57	20.0	PRF->NFB	WBS->PRF->PSF	9.55E–09	4.46E–09	4.44E–09	4.46E–09	4.46E–09	–3.28	10	600	50	200		11.35	1
493.60	513.60	2006-09-07 09:30	20.0	–	–	<2.58E–10				<2.58E–10							–	–
513.60	533.60	2006-09-07 10:36	20.0	–	–	<2.58E–10				<2.58E–10							–	–
533.60	553.60	2006-09-07 12:47	20.0	–	–	<1.93E–10				<1.93E–10							–	–

Secup (m)	Seclow (m)	Test start YYYY-MM-DD hh:mm	b (m)	Flow regime [1] injection	Recovery	T_M (m^2/s)	T_f (m^2/s)	T_s (m^2/s)	T_T (m^2/s)	T_R [2] (m^2/s)	ξ (–)	t_1 (s)	t_2 (s)	dte_1 (s)	dte_2 (s)	C (m^3/Pa)	r_i (m)	r_i-index (–)
553.60	573.60	2006-09-07 13:53	20.0	PRF	WBS->PSF->NFB?	1.46E–08	2.24E–08		2.24E–08	2.24E–08	3.51	200	1,200			6.97E–11	24.03	0
573.60	593.60	2006-09-07 15:37	20.0	–	–	<2.58E–10				<2.58E–10							–	–
593.60	613.60	2006-09-07 16:49	20.0	–	–	<2.58E–10				<2.58E–10							–	–
613.60	633.60	2006-09-08 08:50	20.0	–	–	<2.58E–10				<2.58E–10							–	–
633.60	653.60	2006-09-08 09:55	20.0	–	–	<2.58E–10				<2.58E–10							–	–
653.60	673.60	2006-09-08 11:00	20.0	–	–	<2.58E–10				<2.58E–10							–	–
668.60	688.60	2006-09-08 13:30	20.0	PRF	WBS->(PRF)	2.28E–09	6.73E–10	1.14E–09	6.73E–10	6.73E–10	–3.92	300	1,200	200	900	5.34E–11	10.00	0
688.60	708.60	2006-09-08 15:08	20.0	PRF->PSF	WBS->(PRF)	2.30E–09	6.93E–10	6.36E–10	6.93E–10	6.93E–10	–3.72	20	800			6.10E–11	8.23	–1
708.60	728.60	2006-09-08 16:42	20.0	–	–	<1.93E–10				<1.93E–10							–	–
728.60	748.60	2006-09-11 08:38	20.0	–	–	<2.90E–10				<2.90E–10							–	–
748.60	768.60	2006-09-11 09:48	20.0	–	–	<1.95E–10				<1.95E–10							–	–
768.60	788.60	2006-09-11 13:02	20.0	–	–	<2.90E–10				<2.90E–10							–	–
93.60	98.60	2006-09-14 09:08	5.0	PRF->PSF	WBS->	1.80E–09	7.60E–10	1.04E–09	7.60E–10	7.60E–10	–3.25	20	100				2.98	–1
98.60	103.60	2006-09-14 10:50	5.0	–	–	<2.46E–10				<2.46E–10							–	–
103.60	108.60	2006-09-27 12:42	5.0	NFB	PLF->(PRF)	9.70E–07		1.46E–06	1.46E–06	9.70E–07							61.54	1
108.60	113.60	2006-09-14 13:49	5.0	PLF->NFB	PLF->PRF	2.21E–09	7.84E–09	9.49E–09	9.49E–09	9.49E–09	–6.15			4,000	13,000		63.80	0
113.60	118.60	2006-09-14 15:14	5.0	–	–	<2.98E–10				<2.98E–10							–	–
118.60	123.60	2006-09-14 16:02	5.0	PRF->NFB	PRF->NFB	9.26E–06	5.70E–06	1.95E–05	1.95E–05	1.95E–05	–4.06	70	300	20	400		75.31	1
123.60	128.60	2006-09-27 10:25	5.0	PRF->PSF	PRF->PSF	2.96E–07	2.98E–07	3.29E–07	2.98E–07	2.98E–07	–1.77	30	300	40	200		22.95	–1
128.60	133.60	2006-09-27 09:02	5.0	PRF	PSF/PSS?	9.97E–08	1.07E–07		1.07E–07	1.07E–07	–1.39	100	1,200				35.50	0
133.60	138.60	2006-09-15 10:06	5.0	–	–	<1.70E–10				<1.70E–10							–	–
138.60	143.60	2006-09-15 11:00	5.0	PLF->PSF	PLF->PSF?	3.99E–08	1.18E–08	2.24E–08	1.18E–08	1.18E–08	–4.49						20.63	–1
143.60	148.60	2006-09-15 13:09	5.0	PRF	PSF/PSS?	3.24E–06	5.32E–06		5.32E–06	5.32E–06	0.65	500	1,200				94.32	0
148.60	153.60	2006-09-15 15:12	5.0	PRF	PLF->PSF/PSS	1.56E–07	2.72E–07		2.72E–07	2.72E–07	1.94	40	1,200				44.86	0
153.60	158.60	2006-09-18 08:20	5.0	PLF->PRF	PLF	5.40E–08	1.35E–08		1.35E–08	1.35E–08	–5.53	200	1,200				21.17	0
158.60	163.60	2006-09-18 09:50	5.0	–	–	<1.54E–10				<1.54E–10							–	–
163.60	168.60	2006-09-18 10:44	5.0	–	–	<2.46E–10				<2.46E–10							–	–
168.60	173.60	2006-09-18 11:39	5.0	PSF->NFB	PSF->NFB	1.75E–07	1.05E–07	3.31E–07	1.05E–07	1.05E–07	–3.85						36.38	1
173.60	178.60	2006-09-18 13:58	5.0	NFB	WBS->	5.41E–09		1.33E–09	1.33E–09	1.33E–09	–6.01					7.80E–10	11.85	1
178.60	183.60	2006-09-18 15:33	5.0	PRF	WBS->	2.00E–09	2.14E–09	4.09E–09	2.14E–09	2.14E–09	–0.31	60	1,200				13.36	0
183.60	188.60	2006-09-19 06:04	5.0	NFB	WBS->	3.96E–10		4.36E–10	4.36E–10	4.36E–10	–5.16						9.05	1
188.60	193.60	2006-09-19 07:41	5.0	–	–	<2.46E–10				<2.46E–10							–	–

Secup (m)	Seclow (m)	Test start YYYY-MM-DD hh:mm	b (m)	Flow regime [1)] injection	Recovery	T_M (m^2/s)	T_f (m^2/s)	T_s (m^2/s)	T_T (m^2/s)	T_R [2)] (m^2/s)	ξ (–)	t_1 (s)	t_2 (s)	dte_1 (s)	dte_2 (s)	C (m^3/Pa)	r_i (m)	r_i-index (–)
193.60	198.60	2006-09-27 07:16	5.0	NFB->PSF?	NFB	9.07E–08				9.07E–08							34.33	–
198.60	203.60	2006-09-19 11:01	5.0	–	–	<2.46E–10				<2.46E–10							–	–
203.60	208.60	2006-09-19 12:53	5.0	–	–	<2.46E–10				<2.46E–10							–	–
208.60	213.60	2006-09-19 13:58	5.0	–	–	<2.46E–10				<2.46E–10							–	–
233.60	238.60	2006-09-19 15:22	5.0	–	–	<2.98E–10				<2.98E–10							–	–
238.60	243.60	2006-09-19 16:15	5.0	PRF1->PRF2	WBS->PRF->NFB	6.56E–09	7.11E–09	6.24E–09	7.11E–09	7.11E–09	–1.50	60	400	300	600	1.18E–10	10.41	1
243.60	248.60	2006-09-19 17:48	5.0	–	–	<2.46E–10				<2.46E–10							–	–
248.60	253.60	2006-09-19 18:42	5.0	–	–	<2.46E–10				<2.46E–10							–	–
253.60	258.60	2006-09-19 19:36	5.0	PLF->(PRF)	WBS->	3.02E–08	4.63E–09	4.08E–09	4.63E–09	4.63E–09	–6.04	500	1,200				16.20	0
258.60	263.60	2006-09-19 21:22	5.0	PRF	WBS->PRF->PSF?	5.00E–09	3.89E–09	4.57E–09	3.89E–09	3.89E–09	–2.04	100	1,200	200	500	1.89E–11	15.51	0
263.60	268.60	2006-09-19 22:47	5.0	NFB	NFB	1.27E–08				1.27E–08							21.00	–
268.60	273.60	2006-09-20 06:18	5.0	–	–	<2.46E–10				<2.46E–10							–	–
293.60	298.60	2006-09-20 07:22	5.0	–	–	<2.46E–10				<2.46E–10							–	–
298.60	303.60	2006-09-20 08:16	5.0	PLF->NFB	WBS->PLF	3.54E–10	6.03E–10		6.03E–10	6.03E–10	–3.49	20	50				1.99	1
303.60	308.60	2006-09-20 09:42	5.0	PLF->NFB	PLF->NFB	6.22E–06	3.71E–06		3.71E–06	3.71E–06							86.70	–
308.60	313.60	2006-09-20 11:10	5.0	–	–	<2.46E–10				<2.46E–10							–	–
313.60	318.60	2006-09-20 12:55	5.0	NFB	PRF->NFB	7.99E–06		1.65E–05	1.65E–05	1.65E–05	–3.11			10	100		36.15	1
318.60	323.60	2006-09-20 14:21	5.0	–	–	<2.98E–10				<2.98E–10							–	–
323.60	328.60	2006-09-20 15:26	5.0	–	–	<2.46E–10				<2.46E–10							–	–
328.60	333.60	2006-09-20 16:24	5.0	NFB	PLF/PRF	1.71E–09		3.04E–09	3.04E–09	3.04E–09	–4.90						14.61	1
333.60	338.60	2006-09-20 17:50	5.0	PLF->PRF	WBS->	4.11E–10	1.63E–10		1.63E–10	1.63E–10	–3.44	100	1,200			2.73E–11	7.01	0
338.60	343.60	2006-09-20 19:15	5.0	–	–	<2.46E–10				<2.46E–10							–	–
343.60	348.60	2006-09-20 20:40	5.0	–	–	<2.46E–10				<2.46E–10							–	–
348.60	353.60	2006-09-20 21:49	5.0	NFB	PRF->NFB	5.46E–08		4.77E–07	4.77E–07	4.77E–07	–2.44			10	200		21.07	1
353.60	358.60	2006-09-20 23:21	5.0	PRF(/PLF)	WBS->NFB	2.19E–08	1.55E–08		1.55E–08	1.55E–08	–2.92	100	1,200				21.91	0
358.60	363.60	2006-09-21 07:34	5.0	PRF1->PRF2	PRF->NFB	1.28E–08	1.27E–08	1.49E–08	1.27E–08	1.27E–08	–2.19	10	100	20	100		6.02	1
363.60	368.60	2006-09-21 09:07	5.0	–	–	<1.96E–10				<1.96E–10							–	–
368.60	373.60	2006-09-21 10:05	5.0	NFB->	PLF	2.53E–07				2.53E–07							44.43	–
373.60	378.60	2006-09-21 12:14	5.0	PLF->PRF	PRF?->PLF	5.48E–07	3.15E–07	6.37E–07	3.15E–07	3.15E–07	–4.31	400	1,200				46.53	0
378.60	383.60	2006-09-21 13:52	5.0	PRF	WBS->NFB	1.10E–07	7.63E–08		7.63E–08	7.63E–08	–3.33	100	1,200				32.64	0
383.60	388.60	2006-09-21 15:21	5.0	PLF	WBS->	3.63E–10	7.07E–11	4.42E–11		3.63E–10							8.65	–
388.60	393.60	2006-09-21 16:45	5.0	PRF	WBS->	5.96E–09	1.95E–09		1.95E–09	1.95E–09	–4.37	80	1,200				13.04	0

Secup (m)	Seclow (m)	Test start YYYY-MM-DD hh:mm	b (m)	Flow regime [1)] injection	Recovery	T_M (m^2/s)	T_f (m^2/s)	T_s (m^2/s)	T_T (m^2/s)	T_R [2)] (m^2/s)	ξ (–)	t_1 (s)	t_2 (s)	dte_1 (s)	dte_2 (s)	C (m^3/Pa)	r_i (m)	r_i-index (–)
413.60	418.60	2006-09-21 18:22	5.0	PRF	WBS->	4.48E–10	2.06E–10		2.06E–10	2.06E–10	–2.80	100	1,200				7.44	0
418.60	423.60	2006-09-21 19:55	5.0	PRF	WBS->(PRF)	3.89E–10	1.65E–10	1.70E–10	1.65E–10	1.65E–10	–4.06	50	1,200	600	800	2.26E–11	7.03	0
423.60	428.60	2006-09-21 21:31	5.0	–	–	<1.96E–10				<1.96E–10							–	–
428.60	433.60	2006-09-21 22:32	5.0	PRF	(WBS)->PRF->PSF	1.08E–06	9.95E–07	1.62E–06	9.95E–07	9.95E–07	–2.73	300	1,200	100	400		62.02	0
433.60	438.60	2006-09-22 08:26	5.0	NFB	PLF	8.09E–08				8.09E–08							33.41	–
438.60	443.60	2006-09-22 10:01	5.0	–	–	<1.96E–10				<1.96E–10							–	–
443.60	448.60	2006-09-26 20:17	5.0	–	–	<1.96E–10				<1.96E–10							–	–
448.60	453.60	2006-09-22 12:43	5.0	–	–	<2.46E–10				<2.46E–10							–	–
453.60	458.60	2006-09-22 13:39	5.0	–	–	<2.46E–10				<2.46E–10							–	–
458.60	463.60	2006-09-22 14:58	5.0	PRF/PLF	WBS->(PRF)->PSF	7.65E–09	3.87E–09	4.52E–09	3.87E–09	3.87E–09	–3.65	200	1,200	20	100		15.49	0
463.60	468.60	2006-09-22 16:27	5.0	–	–	<1.96E–10				<1.96E–10							–	–
468.60	473.60	2006-09-25 08:19	5.0	–	–	<1.96E–10				<1.96E–10							–	–
473.60	478.60	2006-09-25 09:08	5.0	PLF?	WBS->(PRF)	2.42E–10		1.66E–10	1.66E–10	1.66E–10	–3.86			500	1,200		7.05	0
478.60	483.60	2006-09-25 10:29	5.0	–	–	<2.46E–10				<2.46E–10							–	–
483.60	488.60	2006-09-25 11:17	5.0	–	–	<2.46E–10				<2.46E–10							–	–
488.60	493.60	2006-09-25 12:58	5.0	–	–	<2.46E–10				<2.46E–10							–	–
553.60	558.60	2006-09-25 14:16	5.0	–	–	<1.96E–10				<1.96E–10							–	–
558.60	563.60	2006-09-25 15:11	5.0	–	–	<2.46E–10				<2.46E–10							–	–
563.60	568.60	2006-09-25 16:04	5.0	–	–	<2.46E–10				<2.46E–10							–	–
568.60	573.60	2006-09-26 06:11	5.0	PSF	WBS->PSF?	1.17E–08	1.27E–08		1.27E–08	1.27E–08	–0.45						21.01	–1
673.60	678.60	2006-09-26 08:21	5.0	PLF/PRF->PRF	PRF	1.88E–09	5.72E–10	1.17E–09	5.72E–10	5.72E–10	–4.28	500	1,200	20	800		9.60	0
678.60	683.60	2006-09-26 09:45	5.0	–	–	<2.46E–10				<2.46E–10							–	–
683.60	688.60	2006-09-26 11:08	5.0	–	–	<2.46E–10				<2.46E–10							–	–
687.60	692.60	2006-09-26 12:34	5.0	–	–	<1.78E–10				<1.78E–10							–	–
692.60	697.60	2006-09-26 13:28	5.0	PLF->PRF	WBS->PRF	1.51E–09	6.12E–10	6.77E–10	6.12E–10	6.12E–10	–3.70	100	1,200	200	800	2.62E–11	9.77	0
697.60	702.60	2006-09-26 15:24	5.0	–	–	<2.68E–10				<2.68E–10							–	–
698.60	703.60	2006-09-26 16:17	5.0	–	–	<2.04E–10				<2.04E–10							–	–
703.60	708.60	2006-09-26 17:10	5.0	–	–	<1.96E–10				<1.96E–10							–	–

[1)] The acronyms in the column "Flow regime" are as follows: wellbore storage (WBS), pseudo-linear flow (PLF), pseudo-radial flow (PRF), pseudo-spherical flow (PSF), pseudo-stationary flow (PSS) and apparent no-flow boundary (NFB). The flow regime definitions are further discussed in Section 5.4.3 above.

[2)] For the tests where Q_p was not detected, T_R was assumed to be less than T_M based on the estimated Q/s-measl-L

6.2.4 Comments on the tests

Short comments on each test follow below. Tests were performed within the interval 93.6–788.6 m in KFM01D. Flow regimes and hydraulic boundaries, as discussed in Section 5.4.3, are in the text referred to as:

WBS = Wellbore storage
PRF = Pseudo-radial flow regime
PLF = Pseudo-linear flow regime
PSF = Pseudo-spherical flow regime
PSS = Pseudo-stationary flow regime
NFB = No-flow boundary
CHB = Constant-head boundary

93.6–193.6 m

The flow during the initial stage of the injection period was very high and then the flow dropped rapidly causing problems to reach a stable injection pressure. Thus, the time to reach a stable pressure was rather long. The injection period solely indicates an apparent NFB and no representative transient evaluation would therefore be possible. Also the steady-state transmissivity is regarded as uncertain. The recovery period starts with a PLF that makes a transition to a possible PRF after about 100 s, then turning to an apparent NFB after c 400 s. The total recovery in the rather high-transmissive test section is c. 40 kPa of the applied injection pressure of c. 70 kPa, possibly indicating a flow feature of limited extension or decreasing fracture aperture away from the borehole. Thus, the estimated transmissivity from the recovery period is regarded as uncertain. Nevertheless, the transient evaluation on the recovery period is considered as the most representative for the test section. The pressure in the section above the test section increased continuously during the test. This pressure increase cannot be explained by interference but is due to some other, unknown, external effect during the test.

193.6–293.6 m

Due to a rapidly decreasing flow and an unfortunate automatic valve change after about 6 minutes, the injection pressure is rather unstable during the injection period. When the pump and valves were shut off after the injection, the test valve did not close instantaneously. This fact clearly influenced the recovery response. The recovery was plotted with the Agarwal equivalent time based on the actual injection time, tp, in this case. Despite these problems, both the injection and recovery periods are dominated by an apparent NFB, hence no unambiguous transient evaluation is possible on either period. The steady-state transmissivity is therefore chosen as representative for the section. The total recovery in the rather high-transmissive test section is only c. 10 kPa of the applied injection pressure of c. 200 kPa, indicating a flow feature of limited extension or with decreasing fracture aperture away from the borehole. The pressure in the section below the test section increased c. 1.5 kPa during the injection period. Since the transmissivity in the section below 293.6 m is higher than the transmissivity in the section 193.6–293.6 m, this pressure interference possibly resulted in a slight overestimation of the transmissivity in this section.

293.6–393.6 m

The injection period only displays an apparent NFB and no unambiguous transient evaluation is possible. Also the steady-state transmissivity is regarded as uncertain. The recovery period indicates a PLF that lasts throughout the period. Transient evaluations using the Dougherty-Babu model and the Ozkan-Raghavan model give consistent results for the recovery period. The stationary transmissivity value supports the transient evaluation. The test valve closed late and may have disturbed the early part of the recovery. The total recovery in the rather high-transmissive test section is c. 20 kPa of the applied injection pressure of c. 55 kPa, possibly indicating a flow feature of limited extension or decreasing fracture aperture away from the borehole. Thus, the estimated transmissivity from the recovery period is regarded as uncertain. Nevertheless, the transient evaluation on the recovery period is considered as the most representative for the test section. The pressure in the section below the test section increased c. 2.1 kPa during the injection period. Since the transmissivity in the section below is of same magnitude as in the section 293.6–393.6 m, this relatively small pressure interference should not have a major impact of the test performed.

393.6–493.6 m

During the injection period a period of PLF is indicated after c. 80 s to c. 300 s. After this time the derivative decreases which is interpreted as a transition period to an approximate PRF. The decrease in the derivative during the end of the injection period may be interpreted as a PSF or alternatively, caused by variations in the flow rate. The recovery displays a period of PLF and a transition to a PSF. The Hurst-Clark-Brauer model for the injection period and the Ozkan-Raghavan model for both the injection and recovery period give consistent results. The transient evaluation from the injection period is considered as the most representative for the section.

493.6–593.6 m

The pressure during the injection period was rather unstable in the beginning, but when it stabilized after about 200 s, a PRF is assumed during the rest of the period. Recovery started with an initial WBS followed by a transition period after c 100 s. No unambiguous transient evaluation is possible on the recovery period. The same transmissivity and storativity as obtained from the injection period were assumed in estimating the other parameters during the recovery period. Consistent results were obtained from the injection and recovery period. The transient evaluation using the Hurst-Clark-Brauer model from the injection period was selected as representative for the test section.

588.6–688.6 m

This section has a low transmissivity and the flow was too low to get a proper pressure regulation. Due to this fact the injection pressure is somewhat unstable around the mean value. The injection period is dominated by a PRF appearing after about 200 s, lasting for the rest of the injection period. The recovery period starts with a WBS followed by a transition period. Consistent transient evaluations of the injection and recovery period were obtained. The transient evaluation from the injection period is chosen as representative for the test section.

93.6–113.6 m

The time period before a stable pressure in the test section were achieved, was rather long. A switch between two valves c. 12 minutes into the injection period resulted in a small disturbance in the injection pressure. Still, it is obvious that the injection period is dominated by an apparent NFB. The recovery period displays a PLF that gradually transitions into some other flow regime. The total recovery in the test section is only c. 18 kPa of the applied injection head of c. 100 kPa, indicating a flow feature of limited extension, e.g. a decreasing fracture aperture away from the borehole. No unambiguous transient evaluation can be made on the injection period; hence the recovery period is regarded to provide the best estimate of transmissivity. The pressure in the section below the test section increased c. 2.7 kPa during the injection period. Since the transmissivity in the section below 113.6 m is higher than the transmissivity in the section 93.6–113.6 m, this pressure interference possibly resulted in an overestimation of the transmissivity in the tested section. A consistent pressure interference in the section below was observed during the test in 103.6–108.6 m, see page 47.

113.6–133.6 m

A strong NFB is indicated during the entire injection period. The recovery period displays an early PRF transitioning to an apparent NFB. No unambiguous transient evaluation can be made on the injection period; hence the recovery period is regarded to provide the best estimate of transmissivity. The pressure in the section above the test section increased by c. 3.9 kPa during the injection period. Since there are uncertainties about the transmissivity above 93.6 m, this relatively small pressure interference possibly resulted in a slight overestimation of the transmissivity in this section. A comparison with the tests at 93.6–193.6 m supports this conclusion. A consistent pressure interference in the section above was observed also during the test in 118.6–123.6 m, see page 48.

133.6–153.6 m

The injection period displays a possible PRF. However, the estimated skin factor is rather large which may suggest a flow regime of a higher dimension. During the recovery period a decreasing derivate is shown, pointing to a PSF and a possible transient evaluation using a leaky aquifer model results in a fairly good fit. Since the injection period displays a PRF, the transient evaluation of the injection period was regarded as the most representative.

153.6–173.6 m

Both the injection and recovery period is indicated by a first PRF transitioning to a second PRF with a slightly higher transmissivity. The transient evaluation from the first PRF of the injection period is regarded as the most representative.

173.6–193.6 m

The flow rate is low, close to the measurement limit and hence the data, especially the flow derivative, is quite scattered. Still, the injection period displays a PLF subsequently transitioning to some other flow regime, probably a PRF. During the recovery period a PLF is indicated throughout the entire test. However, no unambiguous transient evaluation of the recovery period is possible. Hence, the transient evaluation of the injection period is regarded as the most representative. Since the measurement noise with a zero flow was centered slightly below zero, the flow rate measurement limit as well as the flow data were manually elevated by $2 \cdot 10^{-9}$ m^3/s.

193.6–213.6 m

Due to a much higher initial flow rate than expected and an unfortunate automatic valve change after c. 90 s, the time to reach a stable injection pressure was rather long. The first half of the injection period displays a rapid decrease in flow rate corresponding to an apparent NFB. After c. 500 s, a flow regime develops which could be interpreted as a PRF, possibly transitioning to a PSF. This regime may represent hydraulic communication with a flow feature of higher transmissivity. Transient evaluation of this period was made with the Hurst-Clark-Brauer model for PRF while the Hantush model for PSF gave unambiguous results. The recovery period shows an intermediate between a PLF and NFB, hence no unambiguous transient evaluation is possible on the recovery period. The transient evaluation of the injection period is regarded as the most representative for the test section.

213.6–233.6 m

The test section has a low transmissivity. Since the flow rate was not detectable, neither steady-state nor transient evaluation of transmissivity was possible. Hence, in accordance with AP PF 400-06-017, the injection time was shortened. As a result T_M, based on Q/s-measl-L, was considered to be the most representative transmissivity value for this section. Since the measurement noise with a zero flow was centered slightly below zero, the flow rate measurement limit was manually elevated by $3 \cdot 10^{-9}$ m^3/s.

233.6–253.6 m

The data, especially the flow derivative, are quite scattered due to the low flow rate and an unfortunate change of regulation valves during the injection period. Still, the injection period clearly indicates a dominating PRF. The recovery period exhibits a WBS transitioning to a PRF subsequently transitioning to a NFB after c. 400 s. The Hurst-Clark-Brauer model for the injection period and the Dougherty-Babu model for the recovery period give consistent results. Since the measurement noise with a zero flow was centered slightly below zero, the flow rate measurement limit as well as the flow data were manually elevated by $5.17 \cdot 10^{-9}$ m^3/s.

253.6–273.6 m

A strong apparent NFB is indicated during the injection period. However, towards the end of the injection period, the flow rate increases and becomes rather stable which may possibly indicate a PSS. No unambiguous transient evaluation can be made on the injection period. The recovery period displays a PLF transitioning to a possible PRF. However, this interpretation is regarded as uncertain. The total recovery in the test section is only c. 6 kPa of the applied injection head of c. 160 kPa. The apparent NFB during the injection period together with the small recovery may indicate a flow feature of limited extension or decreasing fracture aperture away from the borehole. The transient evaluation of the recovery period is thus regarded as uncertain. As a result, T_M was considered to be the most representative transmissivity value for this section.

273.6–293.6 m

The test section has a low transmissivity. Since the flow rate was not detectable, neither steady-state nor transient evaluation of transmissivity was possible. Hence, in accordance with AP PF 400-06-017, the injection time was shortened. As a result T_M, based on Q/s-measl-L, was considered to be the most representative transmissivity value for this section. Since the measurement noise with a zero flow was centered slightly below zero, the flow rate measurement limit was manually elevated by $2 \cdot 10^{-9}$ m^3/s.

293.6–313.6 m

Due to a poor initial pressure regulation, the time to achieve a stable injection pressure was rather long for this test. Still, the injection period is clearly dominated by an apparent NFB. The recovery period is also displaying an apparent NFB, possibly preceded by a short PRF. The total recovery in the rather high-transmissive test section is only c. 15 kPa of the applied injection head of c. 75 kPa. The apparent NFB during the injection period together with the small recovery may indicate a flow feature of limited extension or decreasing fracture aperture away from the borehole. No unambiguous transient evaluation of either the injection or the recovery period is possible. Hence, TM was considered to be the most representative transmissivity value for this section. The pressure in the section below the test section increased c. 7 kPa during the injection period. Since the transmissivity in the section below is slightly higher than in section 293.6–313.6, this relatively low pressure interference probably resulted in an overestimation of the transmissivity in the test section. A comparison with the test in 293.6–393.6 m supports this conclusion. A consistent pressure interference in the section below was observed also during the test in 303.6–308.6 m, see page 53–54.

313.6–333.6 m

The time to reach a stable injection pressure was rather long due to an unfortunate automatic change of pressure regulation valves and a rapidly decreasing flow rate. Still, it is clear that the entire injection period is dominated by an apparent NFB. The total recovery in the test section is only c. 60 kPa of the applied injection head of c. 110 kPa. The apparent NFB during the injection period together with the small recovery may indicate a flow feature of limited extension or decreasing fracture aperture away from the borehole. No unambiguous transient evaluation of the injection period is possible. The recovery period begins with a short PRF lasting until

c. 100 s followed by a transition to an apparent NFB. The Dougherty-Babu model for PRF for the recovery period and the stationary evaluation give consistent results. The pressure in the section above and below the test section increased c. 1.7 kPa and 2 kPa, respectively. Since the transmissivity in the borehole interval above is at least of the same magnitude as in the section 313.6–333.6, this relatively small pressure interference possibly resulted in a slight overestimation of the transmissivity in the section. A comparison with the tests at 293.6–393.6 m supports this conclusion. A consistent pressure interference in the section above was observed also during the test at 313.6–318.6 m, see page 54.

333.6–353.6 m

The injection period is dominated entirely by an apparent NFB and no unambiguous transient evaluation is possible of the period. The recovery initially displays a PRF that transitions into an apparent NFB after c. 100 s. The total recovery in the test section is only c. 45 kPa of the applied injection head of c. 200 kPa. The apparent NFB during the injection period together with the small recovery may indicate a flow feature of limited extension or decreasing fracture aperture away from the borehole. The transient evaluation by Dougherty-Babu model for the recovery period, which was considered to give the most representative transmissivity value for this section, results in a higher transmissivity value than the stationary evaluation.

353.6-373.6 m

The injection period indicates an apparent NFB up to c. 800 s where the flow rate stabilizes significantly. This may indicate a possible PSS towards the end of the injection period. An automatic change of pressure regulation valves is clearly visible in the overview plot, but it is considered not to have disturbed the performance of the test significantly. No unambiguous transient evaluation was possible of the injection period. The recovery period is dominated by a PLF, however, no unambiguous transient evaluation was possible of the recovery period since the PLF does not display sufficient character. An example of a possible transient evaluation on the recovery period is shown. The total recovery in the test section is only c. 90 kPa of the applied injection head of c. 210 kPa. The apparent NFB during the injection period together with the small recovery may indicate a flow feature of limited extension or decreasing fracture aperture away from the borehole. The stationary evaluation was considered to give the most representative transmissivity value for this section. The pressure in the section below the test section increased c. 2.5 kPa during the injection period. Since the transmissivity in the section below is of same magnitude as in the section 353.6–373.6 m, this relatively small pressure interference should not have a major impact of the test performed in the section. A consistent pressure interference in the section below was observed also during the test at 368.6–373.6 m, see page 56.

373.6–393.6 m

Both the injection- and recovery period displays a clear PRF transitioning to an apparent NFB. During the recovery period it is preceded by a short period of WBS. The Hurst-Clark-Brauer model for the injection period, the Dougherty-Babu model for the recovery period as well as the stationary evaluation give consistent results.

393.6–413.6 m

The test section has a low transmissivity. Since the flow rate was not detectable, neither steady-state nor transient evaluation of transmissivity was possible. Hence, in accordance with AP PF 400-06-017, the injection time was shortened. As a result T_M, based on Q/s-measl-L, was considered to be the most representative transmissivity value for this section. Since the measurement noise with a zero flow was centered slightly below zero, the flow rate measurement limit was manually elevated by $4.94 \cdot 10^{-9}$ m^3/s.

413.6–433.6 m

Both the injection- and recovery period displays a distinct period of PRF. The PRF during the recovery period is preceded by a short period of WBS. After c. 500 s of the recovery period the PRF transitions into some other flow regime, indicated by a rapid decrease of the derivative. The Dougherty-Babu model for the recovery period gives a slightly higher estimate of transmissivity and skin factor than the Hurst-Clark-Brauer model for the injection period. The pressure in the section below the test section increased c. 2.8 kPa during the injection period. Since the transmissivity in the section below is slightly lower than in the section 413.6–433.6 m, this relatively small pressure interference should not have a major impact of the test performed in the section. However, the reported transmissivity in the longer section 393.6–493.6 m is significantly lower which may indicate that this hydraulic interference has a greater importance than the relatively low pressure response indicates. A consistent pressure interference in the section below was observed also during the test at 428.6–433.6 m, see page 58.

433.6–453.6 m

Due to an unfortunate automatic change of pressure regulation valves after c. 250 s, the injection pressure is somewhat disturbed during the early phase of the injection period. Still, it is obvious that an apparent NFB dominates the entire injection period. Towards the end of the period a possible transition to some other flow regime is indicated, but it is not developed sufficiently to support any transient evaluation of the injection period. The recovery period only displays a PLF. However, no unambiguous transient evaluation is possible since the PLF does not display sufficient character. The total recovery in the test section is only c. 35 kPa of the applied injection head of c. 170 kPa. The apparent NFB during the injection period together with the small recovery may indicate a flow feature of limited extension or decreasing fracture aperture away from the borehole. Hence, T_M was considered to be the most representative transmissivity value for this section.

453.6–473.6 m

A PRF is indicated from c. 80 s and throughout the injection period. The recovery period displays an initial WBS followed by a PRF and finally a PSF. Transient evaluations using the Dougherty-Babu model and the Hantush model for the recovery period and the Hurst-Clark-Brauer model for the injection give consistent results for the injection period.

473.6–493.6 m

The injection period displays a PRF transitioning in to an apparent NFB after c. 600 s. The recovery period is indicating a WBS followed by a short period of a PRF and finally a PSF. Transient evaluations using the Dougherty-Babu model and the Hantush model for the recovery period and the Hurst-Clark-Brauer model for the injection give consistent results for the injection period.

493.6–513.6 m

The test section has a low transmissivity. Since the flow rate was not detectable, neither steady-state nor transient evaluation of transmissivity was possible. Hence, in accordance with AP PF 400-06-017, the injection time was shortened. As a result T_M, based on Q/s-measl-L, was considered to be the most representative transmissivity value for this section. Since the measurement noise with a zero flow was centered slightly below zero, the flow rate measurement limit was manually elevated by $2.70 \cdot 10^{-9}$ m^3/s.

513.6–533.6 m

The test section has a very low transmissivity. Since the flow rate was not detectable, neither steady-state nor transient evaluation of transmissivity was possible. Hence, in accordance with AP PF AP PF 400-06-017, the injection time was shortened. As a result T_M, based on Q/s-measl-L, was considered to be the most representative transmissivity value for this section. The period of measured recovery only showed a pressure increase, indicating that the section is of such low transmissivity that packer expansion affects the pressure throughout the period. Since the measurement noise with a zero flow was centered slightly below zero, the flow rate measurement limit was manually elevated by $4.94 \cdot 10^{-9}$ m^3/s.

533.6–553.6 m

The test section has a low transmissivity. Since the flow rate was not detectable, neither steady-state nor transient evaluation of transmissivity was possible. Hence, in accordance with AP PF 400-06-017, the injection time was shortened. As a result T_M, based on Q/s-measl-L, was considered to be the most representative transmissivity value for this section. Since the measurement noise with a zero flow was centered slightly below zero, the flow rate measurement limit was manually elevated by $2.70 \cdot 10^{-9}$ m^3/s.

553.6–573.6 m

A PRF is indicated from c. 200 s and throughout the injection period. The recovery period shows initial WBS transitioning to a PSF and, possibly, an apparent NFB at the end of the period. No unambiguous transient evaluation of the recovery period is possible but an example of an evaluation on the recovery period is shown. The transient evaluation of the injection period is regarded as the most representative.

573.6–593.6 m

The test section has a low transmissivity. Since the flow rate was not detectable, neither steady-state nor transient evaluation of transmissivity was possible. Hence, in accordance with AP PF 400-06-017, the injection time was shortened. As a result T_M, based on Q/s-measl-L, was considered to be the most representative transmissivity value for this section. Since the measurement noise with a zero flow was centered slightly below zero, the flow rate measurement limit was manually elevated by $2.70 \cdot 10^{-9}$ m^3/s.

593.6–613.6 m

The test section has a low transmissivity. Since the flow rate was not detectable, neither steady-state nor transient evaluation of transmissivity was possible. Hence, in accordance with AP PF 400-06-017, the injection time was shortened. As a result T_M, based on Q/s-measl-L, was considered to be the most representative transmissivity value for this section. Since the measurement noise with a zero flow was centered slightly below zero, the flow rate measurement limit was manually elevated by $2.70 \cdot 10^{-9}$ m^3/s.

613.6–633.6 m

The test section has a low transmissivity. Since the flow rate was not detectable, neither steady-state nor transient evaluation of transmissivity was possible. Hence, in accordance with AP PF 400-06-017, the injection time was shortened. As a result T_M, based on Q/s-measl-L, was considered to be the most representative transmissivity value for this section. Since the measurement noise with a zero flow was centered slightly below zero, the flow rate measurement limit was manually elevated by $2.70 \cdot 10^{-9}$ m^3/s.

633.6–653.6 m

The test section has a low transmissivity. Since the flow rate was not detectable, neither steady-state nor transient evaluation of transmissivity was possible. Hence, in accordance with AP PF 400-06-017, the injection time was shortened. As a result T_M, based on Q/s-measl-L, was considered to be the most representative transmissivity value for this section. Since the measurement noise with a zero flow was centered slightly below zero, the flow rate measurement limit was manually elevated by $3.95 \cdot 10^{-9}$ m^3/s.

653.6–673.6 m

The test section has a low transmissivity. Since the flow rate was not detectable, neither steady-state nor transient evaluation of transmissivity was possible. Hence, in accordance with AP PF 400-06-017, the injection time was shortened. As a result T_M, based on Q/s-measl-L, was considered to be the most representative transmissivity value for this section. Since the measurement noise with a zero flow was centered slightly below zero, the flow rate measurement limit was manually elevated by $5.17 \cdot 10^{-9}$ m^3/s.

668.6–688.6 m

The flow rate is low, close to the measurement limit. Hence the data, especially the flow derivative, are quite scattered. Still, a PRF is assumed to dominate the injection period from c. 300 s and throughout the period. The recovery displays WBS and a transition to an approximate PRF. The Hurst-Clark-Brauer model for the injection period and the Dougherty-Babu model for the recovery period give fairly consistent results. The transient evaluation of the injection period is regarded as most representative. Since the measurement noise with a zero flow was centered slightly below zero, the flow rate measurement limit as well as the flow data were manually elevated by $2.70 \cdot 10^{-9}$ m^3/s.

688.6–708.6 m

The injection period displays a PRF that transitions into a PSF after c. 800 s. The recovery only displays WBS and a transition to some other flow regime, possibly a PRF. Transient evaluations using the Hurst-Clark-Brauer model and the Hantush model for the injection period as well as the Dougherty-Babu model for the recovery period give consistent results. Since the measurement noise with a zero flow was centered slightly below zero, the flow rate measurement limit as well as the flow data were manually elevated by $5.57 \cdot 10^{-9}$ m^3/s.

708.6–728.6 m

The test section has a very low transmissivity. Since the flow rate was not detectable, neither steady-state nor transient evaluation of transmissivity was possible. Hence, in accordance with AP PF 400-06-017, the injection time was shortened. As a result T_M, based on Q/s-measl-L, was considered to be the most representative transmissivity value for this section. The period of measured recovery only showed a pressure increase, indicating that the section is of such low transmissivity that packer expansion affects the pressure throughout the period. Since the measurement noise with a zero flow was centered slightly below zero, the flow rate measurement limit was manually elevated by $5.17 \cdot 10^{-9}$ m^3/s. The pressure in the section below the test section increased c. 1.8 kPa during the injection period. However, since the flow rate was below the measurement limit, this pressure interference has not affected the result.

728.6–748.6 m

The test section has a very low transmissivity. Since the flow rate was not detectable, neither steady-state nor transient evaluation of transmissivity was possible. Hence, in accordance with AP PF 400-06-017, the injection time was shortened. As a result T_M, based on Q/s-measl-L, was considered to be the most representative transmissivity value for this section. The period of measured recovery only showed a pressure increase, indicating that the section is of such low transmissivity that packer expansion affects the pressure throughout the period. The pressure in the section below the test section increased c. 6.9 kPa during the injection period. However, since the flow rate was below the measurement limit, this pressure interference has not affected the result.

748.6–768.6 m

The test section has a very low transmissivity. Since the flow rate was not detectable, neither steady-state nor transient evaluation of transmissivity was possible. Hence, in accordance with AP PF 400-06-017, the injection time was shortened. As a result T_M, based on Q/s-measl-L, was considered to be the most representative transmissivity value for this section. The period of measured recovery only showed a pressure increase, indicating that the section is of such low transmissivity that packer expansion affects the pressure throughout the period. Since the measurement noise with a zero flow was centered slightly below zero, the flow rate measurement limit was manually elevated by $1.48 \cdot 10^{-9}$ m^3/s. The pressure in the section below the test section increased by c. 5.3 kPa during the injection period. However, since the flow rate was below the measurement limit, this pressure interference has not affected the result.

768.6–788.6 m

The test section has a very low transmissivity. Since the flow rate was not detectable, neither steady-state nor transient evaluation of transmissivity was possible. Hence, in accordance with AP PF 400-06-017, the injection time was shortened. As a result T_M, based on Q/s-measl-L, was considered to be the most representative transmissivity value for this section. The period of measured recovery only showed a pressure increase, indicating that the section is of such low transmissivity that packer expansion affects the pressure throughout the period. The pressure in the section below the test section increased c. 9.1 kPa during the injection period. However, since the flow rate was below the measurement limit, this pressure interference has not affected the result.

93.6–98.6 m

The injection period displays an initial PRF followed by a PSF after c. 100 s. The recovery period shows an initial WBS and a transition period. Since the injection period displays a PRF with a good fit, the transient evaluation of this period was considered as the most representative for this section.

98.6–103.6 m

The test section has a low transmissivity. Since the flow rate was not detectable, neither steady-state nor transient evaluation of transmissivity was possible. As a result T_M, based on Q/s-measl-L, was considered to be the most representative transmissivity value for this section.

103.6–108.6 m

The flow rate during the beginning of the injection period is decreasing rapidly, indicating an apparent NFB. Towards the end of the injection period the flow rate stabilizes and even increases despite that the injection pressure decreases slightly. This fact could possibly indicate a transition to some other flow regime or hydraulic connection with fractures outside the test section. This is the second test performed in this section. The first test also displays an apparent NFB followed by an increasing flow rate. Thus, this behaviour is repeatable. During the recovery period a PLF is indicated with a transition towards a possible PRF at the end. The small recovery (c. 15 kPa of the applied injection pressure of c. 85 kPa) and the rather irregular flow rate during the injection period make the transient evaluation of the recovery period uncertain eventhough it is consistent with the stationary evaluation of transmissivity. Thus, the latter transmissivity, T_M, is considered as the most representative transmissivity value for the test section. The pressure in the section below the test section increased c. 2.2 kPa during the injection period. Since the transmissivity in the section below 108.6 m is higher than the transmissivity in the section 103.6–108.6 m, this pressure interference possibly resulted in a slight overestimation of the transmissivity in this section. A consistent pressure interference in the section below was observed also during the test at 93.6–113.6 m, see page 38.

108.6–113.6 m

During the beginning of the injection period a PLF is indicated. After c. 200 s, there are strong indications of an apparent NFB. There is a sudden increase in the flow rate after c. 70 s of the injection period but no reasonable explanation related to the test equipment has been found for this behaviour. Hence, it seems to be a property of the rock formation. The Hurst-Clark-Brauer model was fitted to the period from 70 s to 200 s of the injection period. The recovery period displays a PLF transitioning to a PRF. The total recovery in the test section is only c. 20 kPa of the applied injection head of c. 185 kPa. The apparent NFB during the injection period together with the small recovery may indicate a flow feature of limited extension or decreasing fracture aperture away from the borehole. The Hurst-Clark-Brauer model for the injection period and the Dougherty-Babu model for the recovery period give consistent results. Although somewhat uncertain, the transient evaluation of the recovery period was considered as the most representative for this section.

113.6–118.6 m

The test section has a low transmissivity. Since the flow rate was not detectable, neither steady-state nor transient evaluation of transmissivity was possible. Hence, in accordance with AP PF 400-06-017, the injection time was shortened. As a result T_M, based on Q/s-measl-L, was considered to be the most representative transmissivity value for this section.

118.6–123.6 m

During the injection period a short period of PRF is indicated after c. 70 s to c. 300 s. From c. 300 s and throughout the injection period there are strong indications of an apparent NFB. The recovery also displays a PRF and a transition to an apparent NFB. The Hurst-Clark-Brauer model for the injection period and the Dougherty-Babu model for the recovery period give rather consistent results. However, the PRF during the injection period is rather short and not as well-defined as the PRF during the recovery. Hence, the transient evaluation of the recovery period is regarded as the most representative. The pressure in the section above the test section increased c. 3.9 kPa during the injection period. Since there are uncertainties about the transmissivity above 93.6 m, this relatively small pressure interference possibly resulted in a slight overestimation of the transmissivity in the tested section. A comparison with the tests at 93.6–193.6 m supports this conclusion. A consistent pressure interference in the section above was observed also during the test at 113.6–133.6 m, see page 38.

Both the injection- and recovery period clearly indicate a PRF transitioning to a PSF. The Hurst-Clark-Brauer model for the injection period and the Dougherty-Babu model for the recovery period as well as the Hantush model for both periods give consistent results. The transient evaluation of the injection period is considered as the most representative for this section.

128.6–133.6 m

Due to a poor initial pressure regulation, the flow rate during the first 100 s is quite unstable. Still, the injection period clearly demonstrates a PRF from c. 100 s lasting throughout the period. The recovery period is fast and a virtually flat derivative is observed indicating an apparent PRF. However, transient evaluation using the model by Dougherty-Babu for PRF results in a very high positive skin factor. Thus, the recovery period may possibly instead be dominated by a PSF approaching a PSS, or a combination of flow regimes caused by other phenomena, e.g. turbulence etc. No unambiguous transient evaluation of the recovery period is possible. An example evaluation is shown. The transient evaluation of the injection period is considered as the most representative for this section.

133.6–138.6 m

The test section has a very low transmissivity. Since the flow rate was not detectable, neither steady-state nor transient evaluation of transmissivity was possible. Hence, in accordance with AP PF 400-06-017, the injection time was shortened. As a result T_M, based on Q/s-measl-L, was considered to be the most representative transmissivity value for this section. The period of measured recovery only showed a pressure increase, indicating that the section is of such low transmissivity that packer expansion affects the pressure throughout the period.

138.6–143.6 m

The first part of the injection period displays a period of a PLF which transitions into a PSF after c. 200 s. The recovery period shows a short and early period of a possible PLF transitioning to a possible PSF after c. 250 s. The Hantush model for PSF from the injection period and the Dougherty-Babu model for PRF during the recovery period give consistent results. The transient evaluation of the injection period is regarded as the most representative for the test section.

143.6–148.6 m

Although the injection pressure was not entirely stable during the beginning of the injection period an approximate PRF is displayed during the entire period. The recovery period is fast and a virtually flat derivative is observed indicating an apparent PRF. However, transient evaluation using the model by Dougherty-Babu for PRF results in a very high positive skin factor. Thus, the recovery period may possibly instead be dominated by a PSF approaching a PSS or a combination of flow regimes, caused by other phenomena, e g turbulence etc. No unambiguous transient evaluation of the recovery is possible. An example evaluation is shown. The transient evaluation from the injection period is regarded as the most representative for this section.

148.6–153.6 m

The injection period indicates a PRF from c. 40 s lasting throughout the entire period. The pressure recovery is fast. The recovery period initially indicates a short PLF, after c. 30 s transitioning to a PSF/PSS by the end. No unambiguous transient evaluation of the recovery is possible. An example evaluation is shown assuming the same transmissivity and storativity as obtained from the injection period. The transient evaluation from the injection period is regarded as the most representative for this section.

153.6–158.6 m

The injection period clearly displays a PLF transitioning to a PRF after c. 200 s. The recovery only displays a PLF. However, no unambiguous transient evaluation was possible of the recovery period since the PLF does not display sufficient character. Transient evaluations using the Hurst-Clark-Brauer model and the Ozkan-Raghavan model give consistent results for the injection period.

158.6–163.6 m

The test section has a very low transmissivity. Since the flow rate was not detectable, neither steady-state nor transient evaluation of transmissivity was possible. Hence, in accordance with AP PF 400-06-017, the injection time was shortened. As a result T_M, based on Q/s-measl-L, was considered to be the most representative transmissivity value for this section. The period of measured recovery only showed a pressure increase, indicating that the section is of such low transmissivity that packer expansion affects the pressure throughout the period. Since the measurement noise with a zero flow was centered slightly below zero, the flow rate measurement limit was manually elevated by $1.45 \cdot 10^{-9}$ m^3/s.

163.6–168.6 m

The test section has a low transmissivity. Since the flow rate was not detectable, neither steady-state nor transient evaluation of transmissivity was possible. Hence, in accordance with AP PF 400-06-017, the injection time was shortened. As a result T_M, based on Q/s-measl-L, was considered to be the most representative transmissivity value for this section.

168.6–173.6 m

The beginning of the injection period indicates a PSF transitioning to an apparent NFB by the end. An alternative interpretation would be the presence of an apparent PRF during intermediate times during the injection period. Models assuming a PSF and PRF, respectively, give similar results in this case. Furthermore, transient evaluations from the injection period and recovery period give consistent results. The transient evaluation from the injection period is regarded as the most representative for this section.

173.6–178.6 m

The flow rate is low, close to the measurement limit and hence the data, especially the flow derivative, are quite scattered. The injection period only shows indications of an apparent NFB. No unambiguous transient evaluation of the injection period is possible. During the recovery period WBS is observed and a transition period. Transient evaluation using the model by Dougherty-Babu results in a good type curve fitting during the recovery period. Thus, the latter evaluation was considered to be the most representative for this section.

178.6–183.6 m

The flow rate is low, close to the measurement limit and hence the data, especially the flow derivative, are quite scattered. Still, the injection period clearly displays a PRF from c. 60 s and throughout the period. The recovery period displays WBS and a transition period. The transient evaluation from the injection period is regarded as the most representative for this section.

183.6–188.6 m

The flow rate is low, close to the measurement limit and hence the data, especially the flow derivative, are quite scattered. Still, it is obvious that a strong NFB dominates the injection period. No unambiguous transient evaluation can be made on the injection period. The recovery period indicates WBS and a transition period. The Dougherty-Babu model for the recovery period and the stationary transmissivity give consistent results. Thus, the transient evaluation on the recovery period was considered to be the most representative for this section.

188.6–193.6 m

The test section has a low transmissivity. Since the flow rate was not detectable, neither steady-state nor transient evaluation of transmissivity was possible. As a result T_M, based on Q/s-measl-L, was considered to be the most representative transmissivity value for this section.

193.6–198.6 m

The injection period indicates an initial apparent NFB. After c. 600 s, a transition period to some other flow regime, possibly a PSF, is indicated. This fact may possibly reflect induced hydraulic connection with other fractures outside the test section. The recovery period also displays an apparent NFB throughout the period. No unambiguous transient evaluation was possible on either the injection or the recovery period. As a result, T_M was considered to be the most representative transmissivity value for this section.

198.6–203.6 m

The test section has a low transmissivity. Since the flow rate was not detectable, neither steady-state nor transient evaluation of transmissivity was possible. Hence, in accordance with AP PF 400-06-017, the injection time was shortened. As a result T_M, based on Q/s-measl-L, was considered to be the most representative transmissivity value for this section.

203.6–208.6 m

The test section has a low transmissivity. Since the flow rate was not detectable, neither steady-state nor transient evaluation of transmissivity was possible. Hence, in accordance with AP PF 400-06-017, the injection time was shortened. As a result T_M, based on Q/s-measl-L, was considered to be the most representative transmissivity value for this section. The period of measured recovery only showed a pressure increase indicating that the section is of such low transmissivity that packer expansion affects the pressure throughout the period.

208.6–213.6 m

The test section has a low transmissivity. Since the flow rate was not detectable, neither steady-state nor transient evaluation of transmissivity was possible. Hence, in accordance with AP PF 400-06-017, the injection time was shortened. As a result T_M, based on Q/s-measl-L, was considered to be the most representative transmissivity value for this section. The period of measured recovery only showed a pressure increase indicating that the section is of such low transmissivity that packer expansion affects the pressure throughout the period.

233.6–238.6 m

The test section has a low transmissivity. Since the flow rate was not detectable, neither steady-state nor transient evaluation of transmissivity was possible. Hence, in accordance with AP PF 400-06-017, the injection time was shortened. As a result T_M, based on Q/s-measl-L, was considered to be the most representative transmissivity value for this section. The period of measured recovery only showed a pressure increase indicating that the section is of such low transmissivity that packer expansion affects the pressure throughout the period.

238.6–243.6 m

The injection period displays two separate periods of PRF, where the first has a higher transmissivity than the second. The recovery period initially demonstrates WBS and a transition period to a short PRF between 300 s and 600 s. After 600 s an apparent NFB is appearing. The Hurst-Clark-Brauer model for the first period of PRF during the injection period and the Dougherty-Babu model for the recovery period give consistent results.

243.6–248.6 m

The test section has a low transmissivity. Since the flow rate was not detectable, neither steady-state nor transient evaluation of transmissivity was possible. Hence, in accordance with AP PF 400-06-017, the injection time was shortened. As a result T_M, based on Q/s-measl-L, was considered to be the most representative transmissivity value for this section. The period of measured recovery only showed a pressure increase indicating that the section is of such low transmissivity that packer expansion affects the pressure throughout the period.

248.6–253.6 m

The test section has a low transmissivity. Since the flow rate was not detectable, neither steady-state nor transient evaluation of transmissivity was possible. Hence, in accordance with AP PF 400-06-017, the injection time was shortened. As a result T_M, based on Q/s-measl-L, was considered to be the most representative transmissivity value for this section.

253.6–258.6 m

Due to a poor initial pressure regulation, the time to achieve a stable injection pressure was unusually long for this test. Still, the injection period indicates a PLF transitioning towards an approximate PRF after c. 500 s. The recovery period displays WBS followed by a transition period to some other flow regime. The transient evaluation of the injection period with the Hurst-Clark-Brauer model is supported by the evaluation with the Ozkan-Raghavan model for PLF and the Dougherty-Babu model for the recovery period. The transient evaluation on the injection period was considered to be the most representative for this section.

258.6–263.6 m

A PRF is indicated after c. 100 s and throughout the injection period. The recovery period initially displays WBS followed by a PRF after a transition period. By the end of the recovery period the derivative decreases which would possibly indicate a transition to a PSF. The Hurst-Clark-Brauer model for the injection period and the Dougherty-Babu model for the period of PRF during the recovery period give consistent results regarding the transmissivity.

263.6–268.6 m

A strong apparent NFB is indicated for both the injection- and recovery period. No unambiguous transient evaluation can be made on either period; hence the stationary transmissivity is regarded to provide the best estimate of the transmissivity. This test was performed twice with different responses regarding the flow pattern during the injection period. In the first test the flow rate decreased rapidly and then increased at the end of the period. In the second test the flow rate decreased rapidly during the whole injection period. Thus, this behaviour was not repeatable in this section (see Section 6.2.3).

268.6–273.6 m

The test section has a very low transmissivity. Since the flow rate was not detectable, neither steady-state nor transient evaluation of transmissivity was possible. Hence, in accordance with AP PF 400-06-017, the injection time was shortened. As a result T_M, based on Q/s-measl-L, was considered to be the most representative transmissivity value for this section. The period of measured recovery only showed a pressure increase, indicating that the section is of such low transmissivity that packer expansion affects the pressure throughout the period.

293.6–298.6 m

The test section has a low transmissivity. Since the flow rate was not detectable, neither steady-state nor transient evaluation of transmissivity was possible. Hence, in accordance with AP PF 400-06-017, the injection time was shortened. As a result T_M, based on Q/s-measl-L, was considered to be the most representative transmissivity value for this section.

298.6–303.6 m

The injection period indicates a short period of a PLF followed by a strong indication of an apparent NFB. The recovery period displays WBS and a transition to a PLF. No unambiguous transient evaluation was possible of the recovery period since the PLF does not display sufficient character. Although the transient evaluation of the injection period is regarded as uncertain, this evaluation was considered to be the most representative for this section.

303.6–308.6 m

Both the injection- and recovery period is dominated by a NFB. However, a short period in the beginning of both periods may be interpreted as a PLF. An approximate transient evaluation was made on the first part of the period. No unambiguous transient evaluation can be made on the recovery period due to the very small recovery, and hence scattered data. The total recovery in this section, with rather high transmissivity, is only c. 20 kPa, indicating a flow feature of limited extension, i.e. decreasing fracture aperture away from the borehole. Although the transient evaluation on the injection period is uncertain, it is still considered to be the most representative for this section. The pressure in the section below the test section increased by c. 8.4 kPa during the injection period. Since the transmissivity in the section below 308.6 m is higher than the transmissivity in the section 303.6–308.6 m, this pressure interference has probably resulted in a slight overestimation of the transmissivity in the tested section. A consistent pressure interference in the section below was observed also during the test at 293.6–313.6 m, see page 40.

308.6–313.6 m

The test section has a low transmissivity. Since the flow rate was not detectable, neither steady-state nor transient evaluation of transmissivity was possible. Hence, in accordance with AP PF 400-06-017, the injection time was shortened. As a result T_M, based on Q/s-measl-L, was considered to be the most representative transmissivity value for this section.

313.6–318.6 m

The injection period only displays an apparent NFB. The recovery period exhibits a PRF between 10 s and 100 s followed by an apparent NFB. Since no unambiguous transient evaluation of the injection period is possible and the recovery displays a clear PRF, the transient evaluation of the recovery period was considered to give the most representative transmissivity value for this section. The pressure in the section above the test section increased c. 2.7 kPa during the injection period whereas the pressure in the section below increased c. 2.2 kPa. Since the transmissivity in the section above is at least of the same magnitude as in the section 313.6–318.6, this relatively small pressure interference possibly resulted in a slight overestimation of the transmissivity in the section. A comparison with the tests at 293.6–393.6 m supports this conclusion. A consistent pressure interference in the section above was observed also during the test at 293.6–318.6 m, seee page 41

318.6–323.6 m

The test section has a low transmissivity. Since the flow rate was not detectable, neither steady-state nor transient evaluation of transmissivity was possible. Hence, in accordance with AP PF 400-06-017, the injection time was shortened. As a result T_M, based on Q/s-measl-L, was considered to be the most representative transmissivity value for this section.

323.6–328.6 m

The test section has a low transmissivity. Since the flow rate was not detectable, neither steady-state nor transient evaluation of transmissivity was possible. Hence, in accordance with AP PF 400-06-017, the injection time was shortened. As a result T_M, based on Q/s-measl-L, was considered to be the most representative transmissivity value for this section. Since the measurement noise with a zero flow after the injection was centered slightly above zero, the flow rate measurement limit was manually lowered by $1.25 \cdot 10^{-9}$ m^3/s.

328.6–333.6 m

The injection period only displays an apparent NFB. No unambiguous transient evaluation of the injection period is possible. The recovery period is dominated by an intermediate between a PLF and a PRF throughout the period. The model by Ozkan-Raghavan supports the estimated transmissivity value from the Dougherty-Babu model from the recovery period. The transient evaluation from the recovery period was considered as the most representative for this section.

333.6–338.6 m

The flow rate is low, close to the measurement limit, and hence the data, especially the flow derivative, are quite scattered. Still, the injection period indicates a PLF and a transition to a PRF. The recovery period only displays WBS and a transition to some other flow regime. No unambiguous transient evaluation with a good fit of the recovery period was possible. The Hurst-Clark-Brauer model for the injection period was considered to give the most representative transmissivity value for this section. The model by Ozkan-Raghavan for the injection period supports the estimated transmissivity value. Since the measurement noise with a zero flow was centered slightly above zero, the flow rate measurement limit as well as the flow data were manually lowered by $1.02 \cdot 10^{-9}$ m^3/s.

338.6–343.6 m

The test section has a low transmissivity. Since the flow rate was not detectable, neither steady-state nor transient evaluation of transmissivity was possible. Hence, in accordance with AP PF 400-06-017, the injection time was shortened. As a result T_M, based on Q/s-measl-L, was considered to be the most representative transmissivity value for this section.

343.6–348.6 m

The test section has a low transmissivity. Since the flow rate was not detectable, neither steady-state nor transient evaluation of transmissivity was possible. Hence, in accordance with AP PF 400-06-017, the injection time was shortened. As a result T_M, based on Q/s-measl-L, was considered to be the most representative transmissivity value for this section. Since the measurement noise with a zero flow after the injection was centered slightly above zero, the flow rate measurement limit was manually lowered by $1.25 \cdot 10^{-9}$ m^3/s.

348.6–353.6 m

A strong apparent NFB is indicated for the entire injection period. No unambiguous transient evaluation can be made on the injection period. The recovery period also displays an apparent NFB, possibly preceded by a PRF between 10 s and 200 s. The transient evaluation on the recovery period is uncertain. Thus, the stationary transmissivity, T_M, is regarded to provide the best estimate of transmissivity of this section.

353.6–358.6 m

A PRF, or possible an intermediate between PLF and PRF, seems to dominate the injection period from c. 100 s and throughout the period. The recovery period only indicates WBS and a transition period which turns to an apparent NFB by the end. The transient evaluation from the injection period was considered as the most representative for this section.

358.6–363.6 m

The injection period indicates a PRF with a transition to a second PRF with slightly lower transmissivity. During the recovery period a PRF is shown from c. 20–100 s transitioning to an apparent NFB. The Hurst-Clark-Brauer model for the first PRF during the injection period and the Dougherty-Babu model for the recovery period as well as the stationary evaluation give consistent results.

363.6–368.6 m

The test section has a low transmissivity. Since the flow rate was not detectable, neither steady-state nor transient evaluation of transmissivity was possible. Hence, in accordance with AP PF 400-06-017, the injection time was shortened. As a result T_M, based on Q/s-measl-L, was considered to be the most representative transmissivity value for this section. Since the measurement noise with a zero flow after the injection was centered slightly above zero, the flow rate measurement limit was manually lowered by $2.47 \cdot 10^{-9}$ m^3/s.

368.6–373.6 m

The injection period indicates a NFB transitioning to some other flow regime after c. 700 s. Hence, no unambiguous transient evaluation of the injection period is possible. The recovery period only displays a PLF and no unambiguous transient evaluation is possible since the PLF does not display sufficient character. As a result, T_M, was considered to be the most representative transmissivity value for this section. The pressure in the section below the test section increased c. 3.1 kPa during the injection period. The transmissivity in the section below 373.6 m is higher than the transmissivity in the section 368.6–373.6 m; hence this relatively small pressure interference should not affect the transmissivity in this section.

373.6–378.6 m

The injection period indicates a PLF in the beginning and a transition to a PRF after c. 400 s. The recovery period possibly displays an early PRF followed by an increase in the derivative which is interpreted as a PLF. The transient evaluation from the injection period was considered as the most representative for this section.

378.6–383.6 m

The injection period is entirely dominated by a PRF. The recovery period starts with a WBS followed by a transition that seems to end with an apparent NFB. The transient evaluation of the injection period is regarded as the most representative.

383.6–388.6 m

The section has a very low transmissivity. The injection period seems to be dominated by a PLF from c. 100 s and throughout the period. The recovery displays WBS followed by a transition period. The Ozkan model for the injection period and the Dougherty-Babu model for the recovery period give consistent transmissivity values. However, the estimated transmissivity is regarded as below the measurement limit and thus uncertain. The stationary transmissivity from the injection period is regarded as the most representative for the section.

388.6–393.6 m

The regulation valve used in this test was working in an inefficient position causing the pressure in the test to be unstable during the injection. Still, the pressure was varying around a mean value that made it possible to make a transient evaluation. The injection is dominated entirely by a PRF. The recovery only displays WBS and a transition to some other flow regime. Even though it is not possible to obtain an unambiguous transient evaluation of the recovery period, the transient evaluation displayed in the appendix for the recovery period support the evaluation of the injection period.

413.6–418.6 m

The flow rate is low, close to the measurement limit, and hence the data, especially the flow derivative, are quite scattered. Still, a PRF is assumed to dominate the injection period from 100 s and throughout the period. The recovery period only displays WBS and a transition to some other flow regime. No unambiguous evaluation of the recovery is possible.

418.6–423.6 m

The flow rate is low, close to the measurement limit, and hence the data, especially the flow derivative, are quite scattered. Still, there are indications of a dominating PRF during the injection period. The recovery only displays WBS and a transition to some other flow regime, possibly a PRF. The Hurst-Clark-Brauer model for the injection period and the Dougherty-Babu model for the recovery period give consistent results. The transient evaluation of the injection period is regarded as the most representative.

423.6–428.6 m

The test section has a very low transmissivity. Since the flow rate was not detectable, neither steady-state nor transient evaluation of transmissivity was possible. Hence, in accordance with AP PF 400-06-017, the injection time was shortened. As a result T_M, based on Q/s-measl-L, was considered to be the most representative transmissivity value for this section. The period of measured recovery only showed a pressure increase, indicating that the section is of such low transmissivity that packer expansion affects the pressure throughout the period. Since the measurement noise with a zero flow after the injection was centered slightly above zero, the flow rate measurement limit was manually lowered by $4.93 \cdot 10^{-9}$ m^3/s.

428.6–433.6 m

During the injection period a clear PRF is observed from c. 300 s and throughout the period. The recovery period indicates a very short initial WBS transitioning into a PRF and a PSF by the end. The transient evaluation with the Hurst-Clark-Brauer model for the injection period was considered to give the most representative transmissivity value for this section. It is supported by the evaluations of the recovery period with the Dougherty-Babu model and the Hantush model. The pressure in the section below the test section increased c. 2.8 kPa during the injection period. Since the transmissivity in the section below is slightly lower than in the section 428.6–433.6 m, this relatively small pressure interference should not have a major impact of the test performed. However, the reported transmissivity in the longer section 393.6–493.6 m is significantly lower, which may indicate that this hydraulic interference has a greater importance than the relatively low pressure response indicates. A consistent pressure interference in the section below was observed also during the test at 413.6–433.6 m, see page 42.

433.6–438.6 m

The injection period only displays a NFB and no unambiguous transient evaluation is possible. The recovery only shows a PLF. However, no unambiguous transient evaluation was possible of the recovery period since the PLF does not display sufficient character. As a result, the stationary evaluation was considered to give the most representative transmissivity value for this section. During the injection period there is a change of regulation valves after c. 300 s which results in a brief pressure increase. However, this is considered to not have influenced the performance of the test in any decisive way.

438.6–443.6 m

The test section has a low transmissivity. Since the flow rate was not detectable, neither steady-state nor transient evaluation of transmissivity was possible. Hence, in accordance with AP PF 400-06-017, the injection time was shortened. As a result T_M, based on Q/s-measl-L, was considered to be the most representative transmissivity value for this section. Since the measurement noise with a zero flow after the injection was centered slightly above zero, the flow rate measurement limit was manually lowered by $2.47 \cdot 10^{-9}$ m^3/s.

443.6–448.6 m

The test section has a very low transmissivity. Since the flow rate was not detectable, neither steady-state nor transient evaluation of transmissivity was possible. Hence, in accordance with AP PF 400-06-017, the injection time was shortened. As a result T_M, based on Q/s-measl-L, was considered to be the most representative transmissivity value for this section. The period of measured recovery only showed a pressure increase, indicating that the section is of such low transmissivity that packer expansion affects the pressure throughout the period. Since the measurement noise with a zero flow after the injection was centered slightly above zero, the flow rate measurement limit was manually lowered by $2.47 \cdot 10^{-9}$ m^3/s.

448.6–453.6 m

The test section has a low transmissivity. Since the flow rate was not detectable, neither steady-state nor transient evaluation of transmissivity was possible. Hence, in accordance with AP PF 400-06-017, the injection time was shortened. As a result T_M, based on Q/s-measl-L, was considered to be the most representative transmissivity value for this section. Since the measurement noise with a zero flow after the injection was centered slightly above zero, the flow rate measurement limit was manually lowered by $3.68 \cdot 10^{-9}$ m^3/s.

453.6–458.6 m

The test section has a very low transmissivity. Since the flow rate was not detectable, neither steady-state nor transient evaluation of transmissivity was possible. Hence, in accordance with AP PF 400-06-017, the injection time was shortened. As a result T_M, based on Q/s-measl-L, was considered to be the most representative transmissivity value for this section. The period of measured recovery only showed a pressure increase, indicating that the section is of such low transmissivity that packer expansion affects the pressure throughout the period. Since the measurement noise with a zero flow after the injection was centered slightly above zero, the flow rate measurement limit was manually lowered by $3.68 \cdot 10^{-9}$ m^3/s.

458.6–463.6 m

The injection period is assumed to be dominated by an intermediate between PLF and PRF from c. 200 s and throughout the period. The recovery period initially displays WBS followed by a short period of a possible PRF from c. 15 s to c. 100 s. After 100 s the recovery period appears to be dominated by PSF. Transient evaluations with the Hurst-Clark-Brauer and Ozkan-Raghavan model for the injection period and the Dougherty-Babu and Hantush model all give consistent results. The transient evaluation from the injection period was considered as the most representative for this section.

463.6–468.6 m

The test section has a very low transmissivity. Since the flow rate was not detectable, neither steady-state nor transient evaluation of transmissivity was possible. Hence, in accordance with AP PF 400-06-017, the injection time was shortened. As a result T_M, based on Q/s-measl-L, was considered to be the most representative transmissivity value for this section. The period of measured recovery only showed a pressure increase indicating that the section is of such low transmissivity that packer expansion affects the pressure throughout the period. Since the measurement noise with a zero flow after the injection was centered slightly above zero, the flow rate measurement limit was manually lowered by $2.47 \cdot 10^{-9}$ m^3/s.

468.6–473.6 m

The test section has a very low transmissivity. Since the flow rate was not detectable, neither steady-state nor transient evaluation of transmissivity was possible. Hence, in accordance with AP PF 400-06-017, the injection time was shortened. As a result T_M, based on Q/s-measl-L, was considered to be the most representative transmissivity value for this section. The period of measured recovery only showed a pressure increase indicating that the section is of such low transmissivity that packer expansion affects the pressure throughout the period.

473.6–478.6 m

The flow rate is low, close to the measurement limit, and hence the data, especially the flow derivative, are quite scattered. Hence, it is difficult to interpret the flow regime during the injection period. However, there are indications of a dominating PLF but no unambiguous transient evaluation of the period is possible. The recovery, on the other hand, clearly displays a PRF after an initial WBS. The Dougherty-Babu model for the recovery period and the stationary evaluation give consistent results. The transient evaluation of the recovery period is regarded as the most representative for this section.

478.6–483.6 m

The test section has a low transmissivity. Since the flow rate was not detectable, neither steady-state nor transient evaluation of transmissivity was possible. Hence, in accordance with AP PF 400-06-017, the injection time was shortened. As a result T_M, based on Q/s-measl-L, was considered to be the most representative transmissivity value for this section.

483.6–488.6 m

The test section has a low transmissivity. Since the flow rate was not detectable, neither steady-state nor transient evaluation of transmissivity was possible. Hence, in accordance with AP PF 400-06-017, the injection time was shortened. As a result T_M, based on Q/s-measl-L, was considered to be the most representative transmissivity value for this section.

488.6–493.6 m

The test section has a low transmissivity. Since the flow rate was not detectable, neither steady-state nor transient evaluation of transmissivity was possible. Hence, in accordance with AP PF 400-06-017, the injection time was shortened. As a result T_M, based on Q/s-measl-L, was considered to be the most representative transmissivity value for this section.

553.6–558.6 m

The test section has a very low transmissivity. Since the flow rate was not detectable, neither steady-state nor transient evaluation of transmissivity was possible. Hence, in accordance with AP PF 400-06-017, the injection time was shortened. As a result T_M, based on Q/s-measl-L, was considered to be the most representative transmissivity value for this section. The period of measured recovery only showed a pressure increase indicating that the section is of such low transmissivity that packer expansion affects the pressure throughout the period. Since the measurement noise with a zero flow after the injection period was centered slightly above zero, the flow rate measurement limit was manually lowered by $2.27 \cdot 10^{-9}$ m^3/s.

558.6–563.6 m

The test section has a very low transmissivity. Since the flow rate was not detectable, neither steady-state nor transient evaluation of transmissivity was possible. Hence, in accordance with AP PF 400-06-017, the injection time was shortened. As a result T_M, based on Q/s-measl-L, was considered to be the most representative transmissivity value for this section. The period of measured recovery only showed a pressure increase indicating that the section is of such low transmissivity that packer expansion affects the pressure throughout the period. Since the measurement noise with a zero flow after the injection period was centered slightly above zero, the flow rate measurement limit was manually lowered by $2.27 \cdot 10^{-9}$ m^3/s.

563.6–568.6 m

The test section has a low transmissivity. Since the flow rate was not detectable, neither steady-state nor transient evaluation of transmissivity was possible. Hence, in accordance with AP PF 400-06-017, the injection time was shortened. As a result T_M, based on Q/s-measl-L, was considered to be the most representative transmissivity value for this section. Since the measurement noise with a zero flow after the injection period was centered slightly above zero, the flow rate measurement limit was manually lowered by $2.27 \cdot 10^{-9}$ m^3/s.

568.6–573.6 m

Due to a poor initial regulation the time to achieve a stable injection pressure was unusually long for this test. However, the injection period indicates a dominating PSF throughout the period. The recovery period is rather fast and begins with a short WBS followed by a transition period to another flow regime with an apparently flat derivative after c. 200 s and slightly increasing by the end. Transient evaluation using the model by Dougherty-Babu assuming PRF results in a very high positive skin factor. Thus, the recovery period may possibly be dominated by a PSF or a combination of flow regimes, caused by other phenomena, e g turbulence etc. The transient evaluation of the recovery period is considered as very uncertain and only shown as an example. As a result, the transient evaluation of the injection period is regarded as the most representative for the section.

673.6–678.6 m

The injection period display an intermediate between a PLF and a PRF up to c. 500 s whereafter a PRF is indicated. The recovery also displays a PRF preceded by a short period of WBS. The Hurst-Clark-Brauer model for the injection period and the Dougherty-Babu model for the recovery period give consistent results. The transient evaluation of the injection period is regarded as the most representative for this section.

678.6–683.6 m

The test section has a low transmissivity. Since the flow rate was not detectable, neither steady-state nor transient evaluation of transmissivity was possible. As a result T_M, based on Q/s-measl-L, was considered to be the most representative transmissivity value for this section.

683.6–688.6 m

The test section has a low transmissivity. Since the flow rate was not detectable, neither steady-state nor transient evaluation of transmissivity was possible. Hence, in accordance with AP PF 400-06-017, the injection time was shortened. As a result T_M, based on Q/s-measl-L, was considered to be the most representative transmissivity value for this section.

687.6–692.6 m

The test section has a low transmissivity. Since the flow rate was not detectable, neither steady-state nor transient evaluation of transmissivity was possible. Hence, in accordance with AP PF 400-06-017, the injection time was shortened. As a result T_M, based on Q/s-measl-L, was considered to be the most representative transmissivity value for this section. Since the measurement noise with a zero flow after the injection period was centered slightly above zero, the flow rate measurement limit was manually lowered by $1.65 \cdot 10^{-9}$ m^3/s.

692.6–697.6 m

The injection period clearly shows a PLF transitioning to a PRF after c. 100 s. The recovery period displays WBS with a transition to a PRF. The Hurst-Clark-Brauer model and the Ozkan-Raghavan model for the injection period and the Dougherty-Babu model for the recovery period give consistent results. Since the injection period displays a clear PRF, a transient evaluation of the period was considered to give the most representative transmissivity value for this section. Since the measurement noise with a zero flow was centered slightly above zero, the flow rate measurement limit as well as the flow data were manually lowered by $1.65 \cdot 10^{-9}$ m^3/s.

697.6–702.6 m

The test section has a low transmissivity. Since the flow rate was not detectable, neither steady-state nor transient evaluation of transmissivity was possible. Hence, in accordance with AP PF 400-06-017, the injection time was shortened. As a result T_M, based on Q/s-measl-L, was considered to be the most representative transmissivity value for this section. Since the measurement noise with a zero flow after the injection period was centered slightly above zero, the flow rate measurement limit was manually lowered by $1.65 \cdot 10^{-9}$ m^3/s.

698.6–703.6 m

The test section has a low transmissivity. Since the flow rate was not detectable, neither steady-state nor transient evaluation of transmissivity was possible. Hence, in accordance with AP PF 400-06-017, the injection time was shortened. As a result T_M, based on Q/s-measl-L, was considered to be the most representative transmissivity value for this section. Since the measurement noise with a zero flow after the injection period was centered slightly above zero, the flow rate measurement limit was manually lowered by $2.27 \cdot 10^{-9}$ m^3/s.

703.6–708.6 m

The test section has a very low transmissivity. Since the flow rate was not detectable, neither steady-state nor transient evaluation of transmissivity was possible. Hence, in accordance with AP PF 400-06-017, the injection time was shortened. As a result T_M, based on Q/s-measl-L, was considered to be the most representative transmissivity value for this section. The period of measured recovery only showed a pressure increase, indicating that the section is of such low transmissivity that packer expansion affects the pressure throughout the period. Since the measurement noise with a zero flow after the injection period was centered slightly above zero, the flow rate measurement limit was manually lowered by $2.27 \cdot 10^{-9}$ m^3/s.

6.2.5 Flow regimes

A summary of the frequency of identified flow regimes on different scales is presented in Table 6-3, which shows all identified flow regimes during the tests. For example, a pseudo-radial flow regime (PRF) transitioning to a pseudo-spherical flow regime (PSF) will contribute to one observation of PRF and one observation of PSF. The numbers within parenthesis denote the number of tests where the actual flow regime is the only one present.

It should be noted that the interpretation of flow regimes is only tentative and just based on visual inspection of the data curves. It should also be observed that the number of tests with a pseudo-linear flow regime during the beginning of the injection period may be underestimated due to the fact that a certain time is required for achieving a constant pressure, which fact may mask the initial flow regime.

Table 6-3 shows that a certain period of pseudo-radial flow could be identified from the injection period in c. 59% of the tests with a definable final flow rate for KFM01D. For the recovery period, the corresponding result is c. 47%. It should be observed that the measured borehole intervals with 5 m, 20 m and 100 m sections are slightly different in KFM01D, see Table 6-3. Noticeable is also that apparent NFB occurs frequently in KFM01D compared to previously measured boreholes in Forsmark, e.g. KFM03A /14/, KFM04A /15/ and KFM06A /16/, except for KFM08A /19/ where NFB also occurred more often.

For c. 38% of the tests in the borehole, more than one flow regime during the injection period could be identified. The following transitions in KFM01D during the injection period were most common: from PLF to PRF, from PRF to PSF, from PLF to NFB, from PRF to NFB. During the recovery period the most common transitions were from PRF to NFB followed by WBS to PRF and PRF to PSF.

6.3 Comparison of transmissivity values on different test scales

The transmissivity values considered the most representative, T_R, from the injection tests in KFM01D in the tested sections of 100 m, 20 m and 5 m length, respectively, are shown in Figure 6-2. This figure demonstrates a fairly good agreement between results obtained from tests on different scales in KFM01D. However, some tests in short section lengths display a higher transmissivity than the corresponding longer section length. This discrepancy may be caused by interference with adjacent sections. A consistency check of the transmissivity values on the different scales was made by summation of calculated values from smaller scales (20 m and 5 m) and comparing with the estimated values in longer sections (100 m and 20 m). The total transmissivity of KFM01D is dominated by the intervals between 118.6–123.6 m, 143.6–148.6 m, 313.6–318.6 m and 303.6–308.6 m.

Table 6-3. Interpreted flow regimes during the injection tests in KFM01D.

Section length (m)	Number of tests	Borehole interval (m)	Number of tests with definable Qp	Injection period					Recovery period					
				PLF	PRF	PSF	PSS	NFB	WBS	PLF	PRF	PSF	PSS	NFB
5	80	93.6–708.6	40	13(1)	24(13)	6(1)	0(0)	14(8)	21(9)	11(3)	17(0)	10(0)	3(0)	10(1)
20	35	93.6–788.6	20	1(0)	12(7)	2(0)	2(0)	11(6)	8(0)	6(4)	13(1)	4(1)	0(0)	8(0)
100	6	93.6–688.6	6	1(0)	3(2)	0(0)	0(0)	3(3)	2(2)	3(1)	1(0)	1(0)	0(0)	2(1)

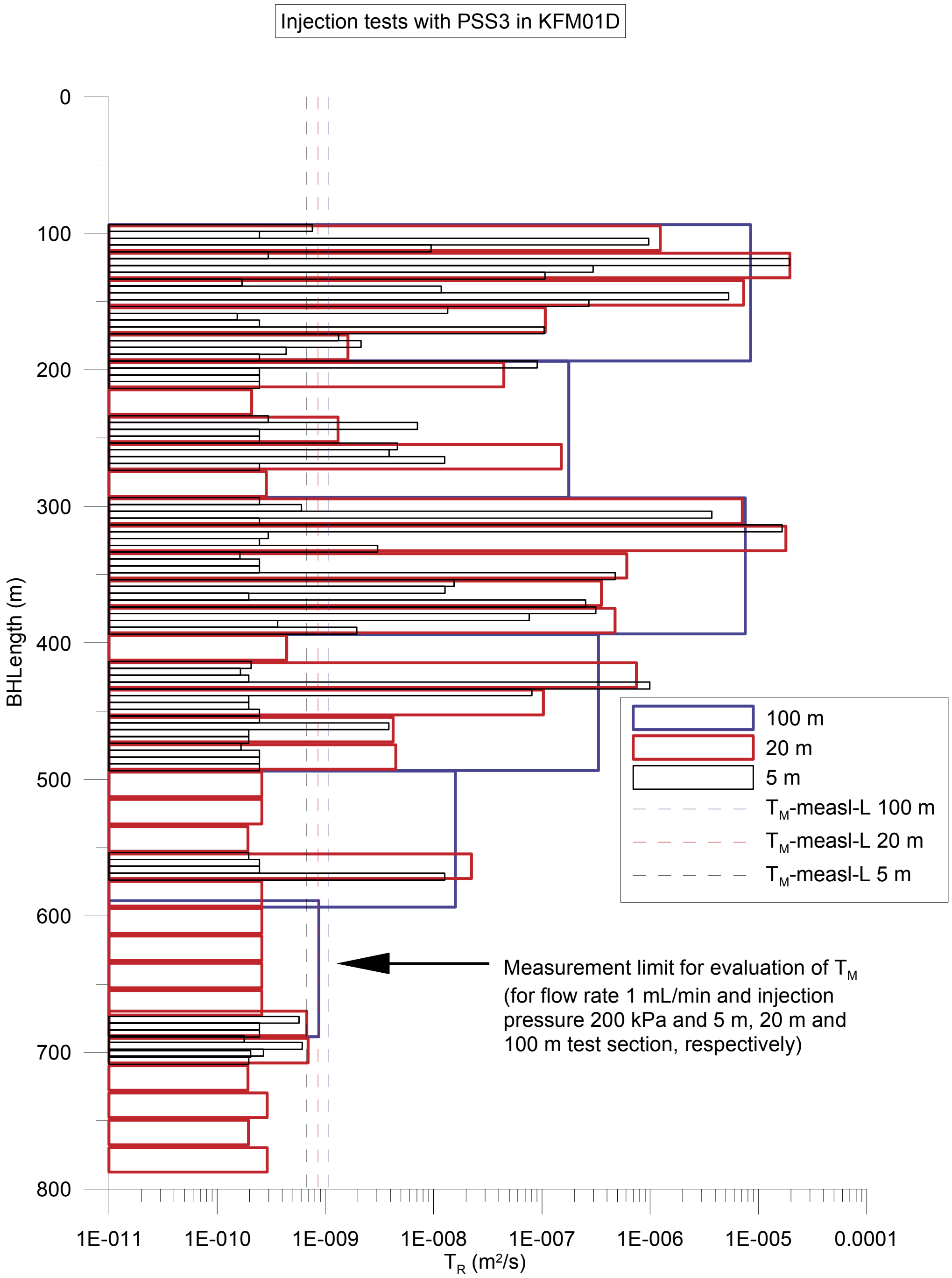

Figure 6-2. *Estimated best representative transmissivity values (T_R) from injection tests for sections of 100 m, 20 m and 5 m length in borehole KFM01D. Estimated transmissivity values for the lower standard measurement limit from stationary evaluation (T_M-measl-L) for different test section lengths are also shown.*

In Table 6-4, estimated transmissivity values in 100 m and 20 m test sections in KFM01D according to steady-state (T_M) and most representative evaluation (T_R) are listed together with summed transmissivities in 20 m and 5 m sections over the corresponding 100 m and 20 m sections. Also, the corresponding sum of transmissivity values from the difference flow logging in 5 m sections is shown. When the transmissivity values are below the measurement limit (Q_p could not be defined), the most representative transmissivity value, T_R, was considered to be less than T_M, based on Q/s-measl-L, for the test section. The measurement limit values are included in the summed values in Table 6-4. This leads to overestimated values of the summed transmissivities.

Table 6-4. Estimated transmissivity values in 100 m and 20 m test sections together with summed up transmissivity values in 20 m and 5 m sections in the corresponding borehole intervals from the injection tests in KFM01D. In addition, the corresponding sum of transmissivity values from the difference flow logging in 5 m sections is shown.

Borehole Idcode	Secup inj/pulse (m)	Seclow inj/pulse (m)	L_w (m)	T_M inj. tests (m^2/ s)	T_R inj/pulse (m^2/s)	SUM T_M (20 m) inj. tests (m^2/s)	SUM T_R (20 m) inj/pulse (m^2/s)	SUM T_M (5 m) inj. tests (m^2/s)	SUM T_R (5 m) inj/pulse (m^2/s)	Secup Diff-flow log (m)	Seclow diff-flow log (m)	SUM-T_D (5 m) diff-flow log (m^2/s)
KFM01D	93.60	193.60	100.00	1.78E–05	8.48E–06	1.66E–05	2.82E–05	1.43E–05	2.66E–05	93.59	193.59	5.35E–06
KFM01D	193.60	293.60	100.00	1.77E–07	1.77E–07	2.42E–07	1.98E–07	1.47E–07	1.21E–07	193.59	293.68	2.96E–08
KFM01D	293.60	393.60	100.00	1.22E–05	7.57E–06	1.87E–05	2.64E–05	1.52E–05	2.14E–05	293.68	393.74	5.57E–07
KFM01D	393.60	493.60	100.00	1.74E–06	3.33E–07	1.32E–06	8.62E–07	1.17E–06[1)]	1.08E–06[1)]	393.75	493.77	1.72E–07
KFM01D	493.60	593.60	100.00	1.54E–08	1.59E–08	1.56E–08	2.34E–08	1.24E–08[1)]	1.33E–08[1)]	493.77	593.84	6.78E–08
KFM01D	588.60	688.60	100.00	3.05E–09	8.69E–10	3.31E–09[1)]	1.71E–09[1)]	2.37E–09[1)]	1.06E–09[1)]	588.84	688.88	5.30E–08
KFM01D	93.60	113.60	20.00	1.08E–06	1.24E–06			9.75E–07	9.81E–07	93.59	113.62	6.84E–08
KFM01D	113.60	133.60	20.00	1.19E–05	1.95E–05			9.66E–06	1.99E–05	113.62	133.63	4.12E–07
KFM01D	133.60	153.60	20.00	3.36E–06	7.30E–06			3.43E–06	5.60E–06	133.63	153.63	4.83E–06
KFM01D	153.60	173.60	20.00	2.43E–07	1.08E–07			2.30E–07	1.19E–07	153.63	173.61	3.84E–08
KFM01D	173.60	193.60	20.00	1.16E–08	1.62E–09			8.06E–09	4.15E–09	173.61	193.59	3.16E–09
KFM01D	193.60	213.60	20.00	8.55E–08	4.44E–08			9.14E–08	9.14E–08	193.59	213.59	1.24E–08
KFM01D	213.60	233.60	20.00	<2.09E–10	<2.09E–10			n.m. 5 m	n.m. 5 m	213.60	233.62	3.16E–09
KFM01D	233.60	253.60	20.00	4.82E–09	1.31E–09			7.35E–09	7.90E–09	233.62	253.63	3.16E–09
KFM01D	253.60	273.60	20.00	1.52E–07	1.52E–07			4.81E–08	2.14E–08	253.64	273.65	7.76E–09
KFM01D	273.60	293.60	20.00	<2.85E–10	<2.85E–10			n.m. 5 m	n.m. 5 m	273.66	293.68	3.12E–09
KFM01D	293.60	313.60	20.00	7.09E–06	7.09E–06			6.22E–06	3.71E–06	293.68	313.69	5.43E–08
KFM01D	313.60	333.60	20.00	1.03E–05	1.79E–05			8.00E–06	1.65E–05	313.69	333.71	2.92E–07
KFM01D	333.60	353.60	20.00	7.77E–08	6.11E–07			5.55E–08	4.78E–07	333.71	353.72	6.72E–09
KFM01D	353.60	373.60	20.00	3.54E–07	3.54E–07			2.88E–07	2.81E–07	353.73	373.73	3.10E–08
KFM01D	373.60	393.60	20.00	8.17E–07	4.75E–07			6.65E–07	3.94E–07	373.74	393.74	1.73E–07
KFM01D	393.60	413.60	20.00	<4.39E–10	<4.39E–10			n.m. 5 m	n.m. 5 m	393.75	413.75	5.20E–09
KFM01D	413.60	433.60	20.00	1.20E–06	7.49E–07			1.08E–06	9.95E–07	413.75	433.76	1.35E–07

Borehole Idcode	Secup inj/pulse (m)	Seclow inj/pulse (m)	L_w (m)	T_M inj. tests (m^2/ s)	T_R inj/pulse (m^2/s)	SUM T_M (20 m) inj. tests (m^2/s)	SUM T_R (20 m) inj/pulse (m^2/s)	SUM T_M (5 m) inj. tests (m^2/s)	SUM T_R (5 m) inj/pulse (m^2/s)	Secup Diff-flow log (m)	Seclow diff-flow log (m)	SUM-T_D (5 m) diff-flow log (m^2/s)
KFM01D	433.60	453.60	20.00	1.03E–07	1.03E–07			8.15E–08	8.15E–08	433.77	453.77	1.04E–08
KFM01D	453.60	473.60	20.00	9.23E–09	4.24E–09			8.29E–09	4.50E–09	453.77	473.77	1.04E–08
KFM01D	473.60	493.60	20.00	9.55E–09	4.46E–09			9.80E–10	9.04E–10	473.77	493.77	1.04E–08
KFM01D	493.60	513.60	20.00	<2.58E–10	<2.58E–10			n.m. 5 m	n.m. 5 m	493.77	513.78	1.07E–08
KFM01D	513.60	533.60	20.00	<2.58E–10	<2.58E–10			n.m. 5 m	n.m. 5 m	513.78	533.79	1.08E–08
KFM01D	533.60	553.60	20.00	<1.93E–10	<1.93E–10			n.m. 5 m	n.m. 5 m	533.79	553.81	1.08E–08
KFM01D	553.60	573.60	20.00	1.46E–08	2.24E–08			1.24E–08	1.33E–08	553.81	573.82	2.51E–08
KFM01D	573.60	593.60	20.00	<2.58E–10	<2.58E–10			n.m. 5 m	n.m. 5 m	573.82	593.84	1.04E–08
KFM01D	593.60	613.60	20.00	<2.58E–10	<2.58E–10			n.m. 5 m	n.m. 5 m	593.84	613.85	1.04E–08
KFM01D	613.60	633.60	20.00	<2.58E–10	<2.58E–10			n.m. 5 m	n.m. 5 m	613.85	633.87	1.04E–08
KFM01D	633.60	653.60	20.00	<2.58E–10	<2.58E–10			n.m. 5 m	n.m. 5 m	633.87	653.88	1.07E–08
KFM01D	653.60	673.60	20.00	<2.58E–10	<2.58E–10			n.m. 5 m	n.m. 5 m	653.88	673.88	1.08E–08
KFM01D	668.60	688.60	20.00	2.28E–09	6.73E–10			2.37E–09[1)]	1.06E–09[1)]	668.88	688.88	1.08E–08
KFM01D	688.60	708.60	20.00	2.30E–09	6.93E–10			2.16E–09[1)]	1.25E–09[1)]	688.87	708.88	1.08E–08
KFM01D	708.60	728.60	20.00	<1.93E–10	<1.93E–10			n.m. 5 m	n.m. 5 m	708.88	728.88	1.12E–08
KFM01D	728.60	748.60	20.00	<2.90E–10	<2.90E–10			n.m. 5 m	n.m. 5 m	728.88	748.89	1.12E–08
KFM01D	748.60	768.60	20.00	<1.95E–10	<1.95E–10			n.m. 5 m	n.m. 5 m	748.89	768.89	1.12E–08
KFM01D	768.60	788.60	20.00	<2.90E–10	<2.90E–10			n.m. 5 m	n.m. 5 m	768.89	788.89	9.24E–09

[1)] Measured intervals not identical.

n.m. = not measured.

In Figure 6-3, transmissivity values considered as the most representative for 100 m and 20 m sections (T_R–100 m and T_R–20 m, respectively) in KFM01D are plotted versus the sum of the transmissivity values considered most representative in 5 m sections in the corresponding intervals (SUM T_R–5 m). The lower measurement limit of T_M for the different section lengths (Q_p=1 mL/min and an assumed pressure difference of 200 kPa) together with the cumulative measurement limit for the sum of 5 m sections are also shown in the figure.

Figure 6-3 indicates a good agreement between estimated transmissivity values in longer sections and summed transmissivity values in corresponding 5 m sections for the injection tests. However, some data points are located slightly below the straight line. This indicates that the sum of the transmissivity from the shorter sections is slightly higher than the estimated transmissivity in longer sections. Hydraulic interference between adjacent sections may contribute to an overestimation of the sum of transmissivity when summing the transmissivity from several sections together. Hydraulic interference has been considered to have a significant effect on the evaluated transmissivity in several test section in KFM01D. For further details, see the comments on the tests above. Since the measurement limit values also are summed up, the sum of transmissivity in shorter sections can become higher than the estimated transmissivity value in the longer section for very low conductive sections. There might also be other reasons for discrepancies.

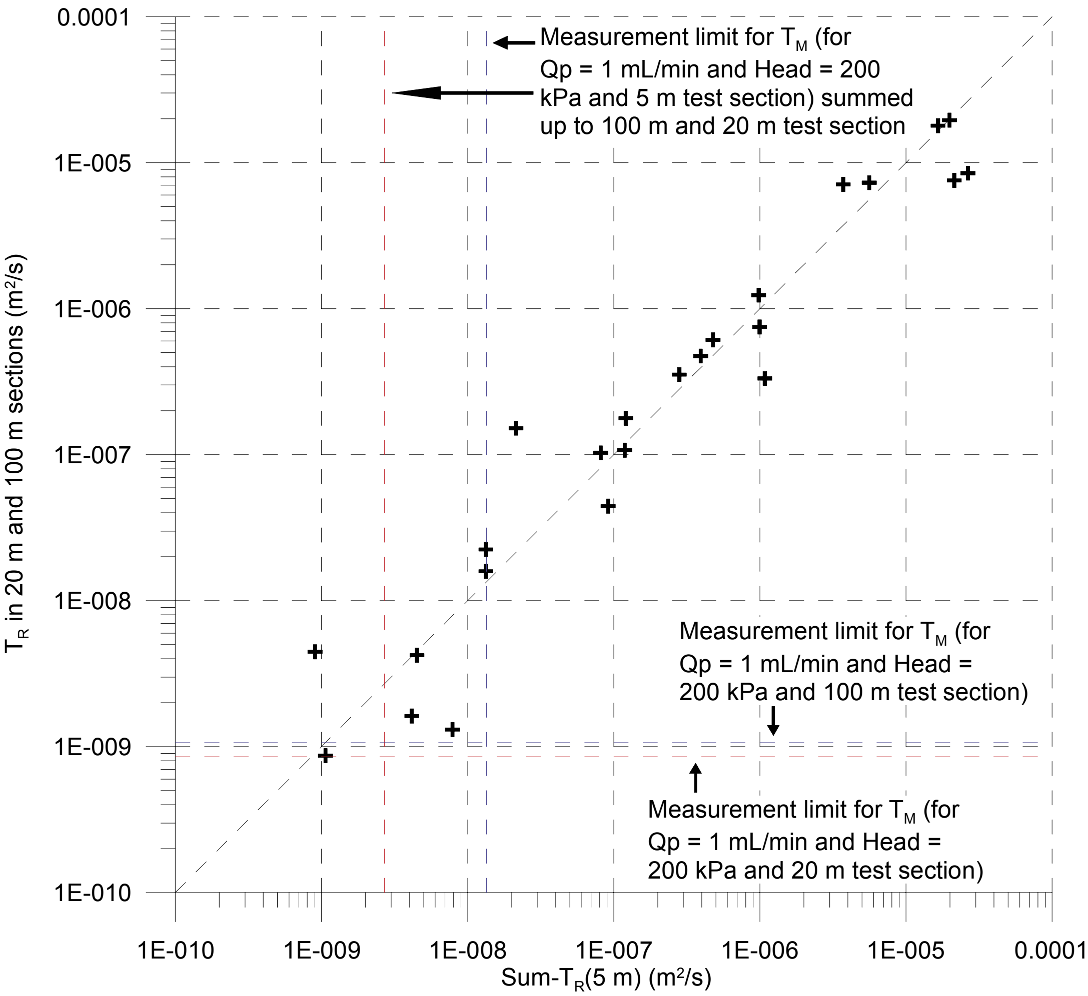

Figure 6-3. *Transmissivity values considered most representative (T_R) for 100 m and 20 m sections versus the sum of most representative transmissivity values (T_R) in 5 m sections in the corresponding borehole intervals from the injection tests in KFM01D together with the standard lower measurement limit at different scales.*

6.4 Comparison with results from the difference flow logging in KFM01D

As discussed in Section 3.2, the position of the measured sections for the injection tests and the difference flow logging deviated up to 1.27 m in KFM01D. However, for these tests the difference flow logging reported a transmissivity below the measurement limit.

Figure 6-4 shows a comparison of the calculated steady-state- (T_M) and most representative transmissivity (T_R) from the injection tests in 5 m sections with the calculated transmissivity values in the corresponding 5 m sections from the difference flow logging (T_D) in KFM01D. In Figure 6-5, T_R and T_D are plotted versus borehole length. The presented measurement limit for the difference flow logging is the practical lower measurement limit (varying along the borehole) in KFM01D which for most sections was between $8.0 \cdot 10^{-10}$ to $2.8 \cdot 10^{-9}$ m²/s, cf. Figure 6-5. This limit is higher than the corresponding test-specific measurement limit for the injection tests in KFM01D, cf. Table 6-2. This is clearly seen in Figure 6-4 as a difference between T_D, T_M and T_R, respectively, for low transmissivity values.

Figure 6-6 shows a comparison of the estimated steady-state transmissivity values from the injection tests in 100 m and 20 m test sections with summed transmissivity values for 5 m sections from the difference flow logging (SUM T_D(5 m)) in the corresponding borehole intervals. The latter sums are shown in Table 6-4. Figure 6-6 demonstrates that the estimated transmissivity values from the injection tests in 100 m and 20 m sections are distributed over

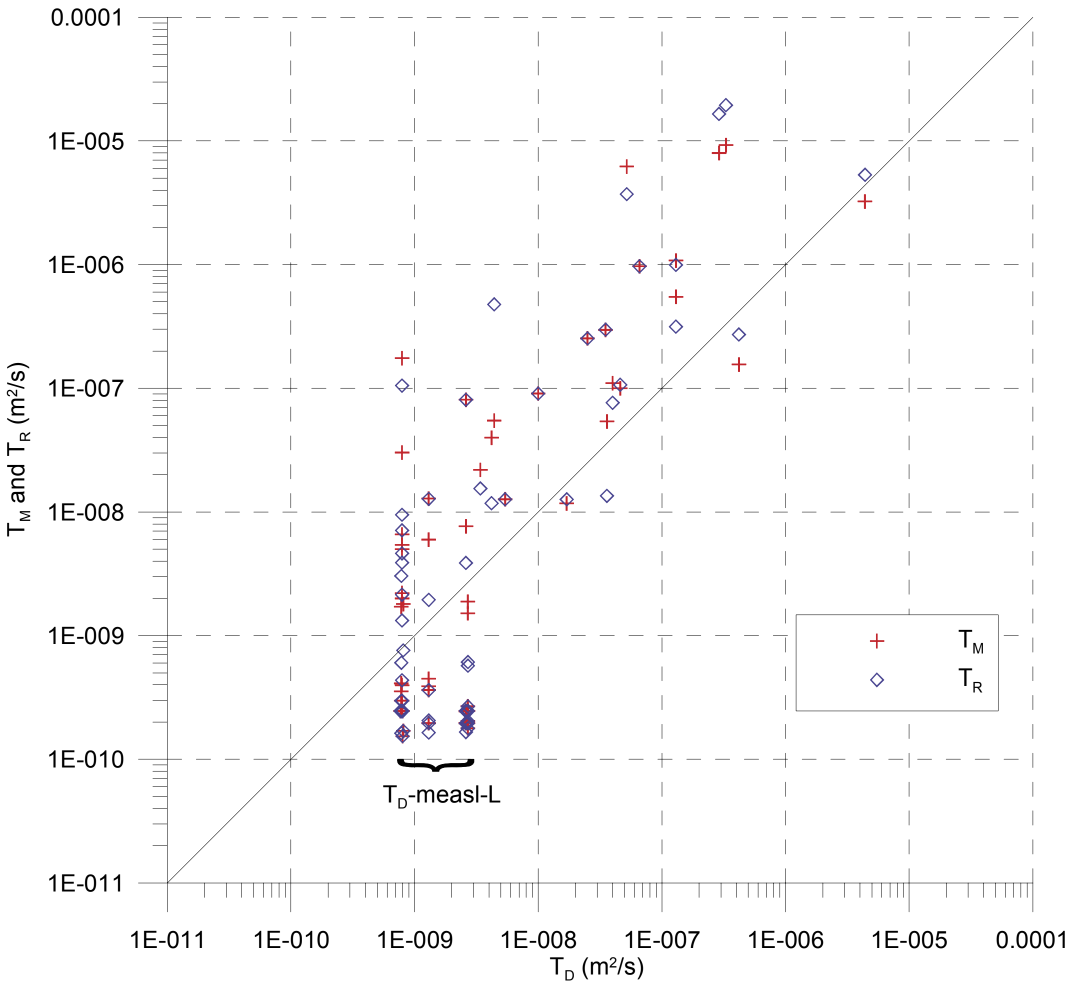

***Figure 6-4.** Comparison of estimated steady-state (T_M) from the injection tests and most representative (T_R) transmissivity values from the injection tests in 5 m sections with estimated transmissivity values in the corresponding 5 m sections from the previous difference flow logging (T_D) in KFM01D.*

a wider range than the sum of transmissivity values from the difference flow logging. This is partly a result of the lower measurement limit values being included in the sum for the difference flow logging. In Figure 6-7, T_R and SUM T_D(5 m) are plotted versus the borehole length for the injection test intervals in 20 m and 100 m sections.

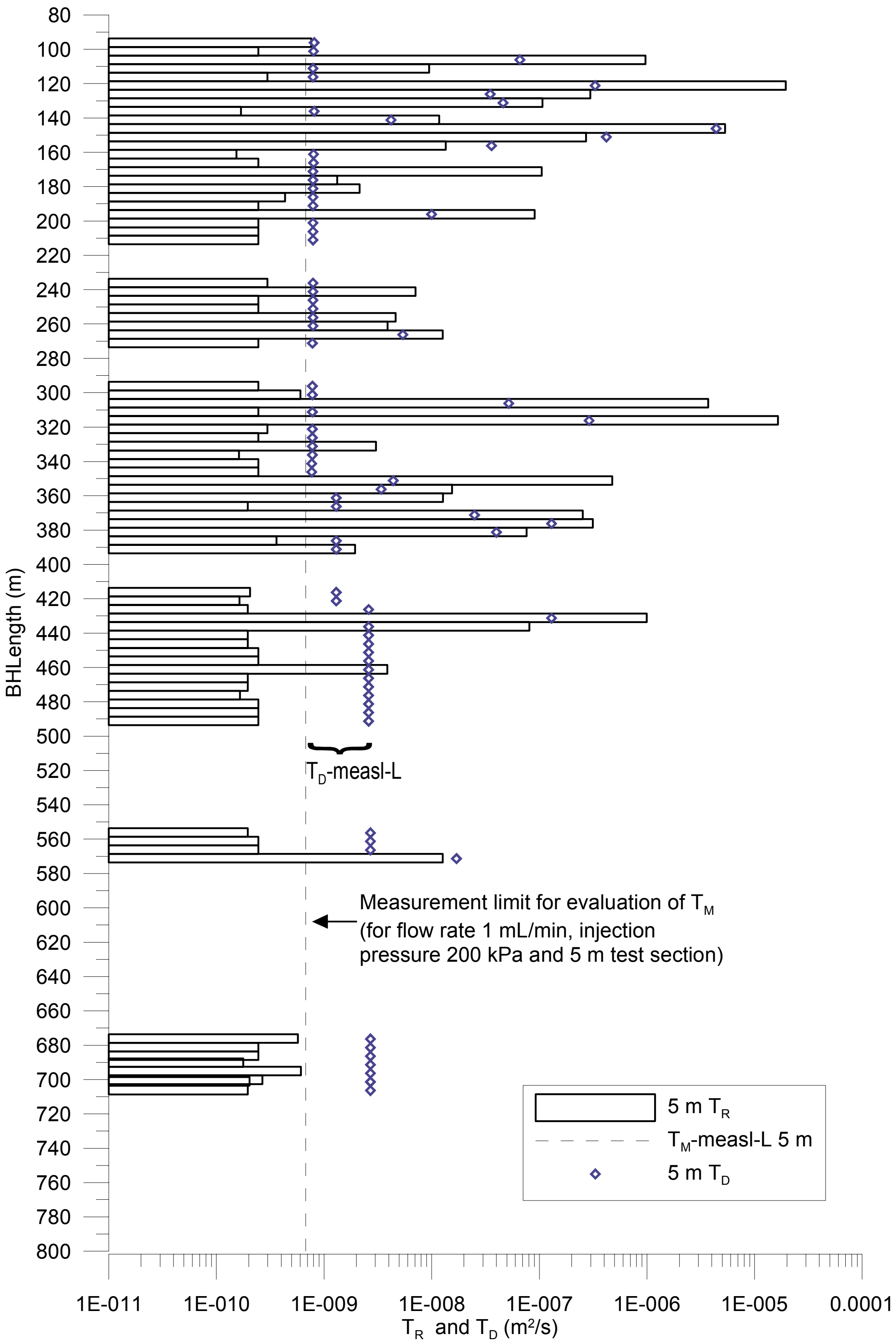

Figure 6-5. *Comparison of most representative (T_R) transmissivity values from the injection tests in 5 m sections with estimated transmissivity values in the corresponding 5 m sections from the previous difference flow logging (T_D) in KFM01D.*

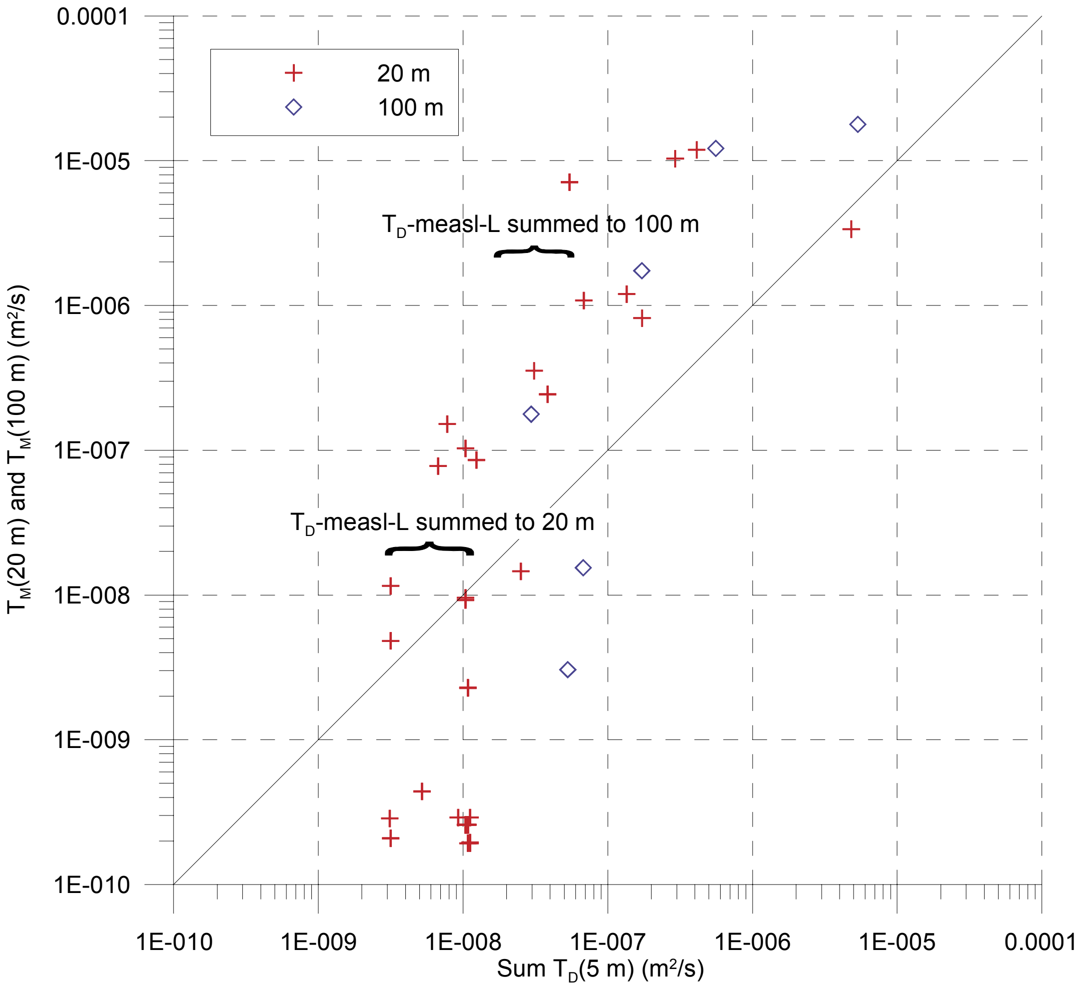

***Figure 6-6.** Comparison of estimated steady-state transmissivity values from injection tests in 20 m and 100 m sections with summed transmissivity values in 5 m sections in the corresponding borehole intervals from difference flow logging in KFM01D.*

Figures 6-4, 6-5, 6-6 and 6-7 show that the injection tests results, in most cases, reveal higher estimated transmissivities than the results from the difference flow logging. This fact has also been observed in a few other boreholes in Forsmark, cf. /14/, /15/, /16/ and /19/. For the difference flow logging, the preceding flow period in the borehole before the flow measurements was much longer than the short flow period for the injection tests. Therefore, the difference flow logging is assumed to predominantly measure interconnected, conductive fracture networks reaching further away from the borehole while the injection tests also may sample fractures with limited extension, close to the borehole. This fact may possibly explain the significantly higher T_R from the injection tests than T_D from difference flow logging in some sections, assuming that the fractures in these sections are of limited extent or with decreasing aperture away from the borehole and not connected to a larger fracture network. Thus, the transmissivity of such fractures is assumed to decrease with increasing flow times, eventually reflected by effects of apparent no-flow boundaries during the injection tests. As mentioned in Section 6.2.5, apparent no-flow boundaries were observed more frequently in KFM01D than in previously measured boreholes in Forsmark, except for KFM08A /19/ where NFB also occurred rather frequently. However, during short injection tests, such effects may not always be seen. It should also be noted that the two methods differ regarding assumptions and associated uncertainties. Potential uncertainties for difference flow logging results are discussed in Ludvigson et al. (2002) /17/ and for injection tests in Andersson et al. (1993) /18/.

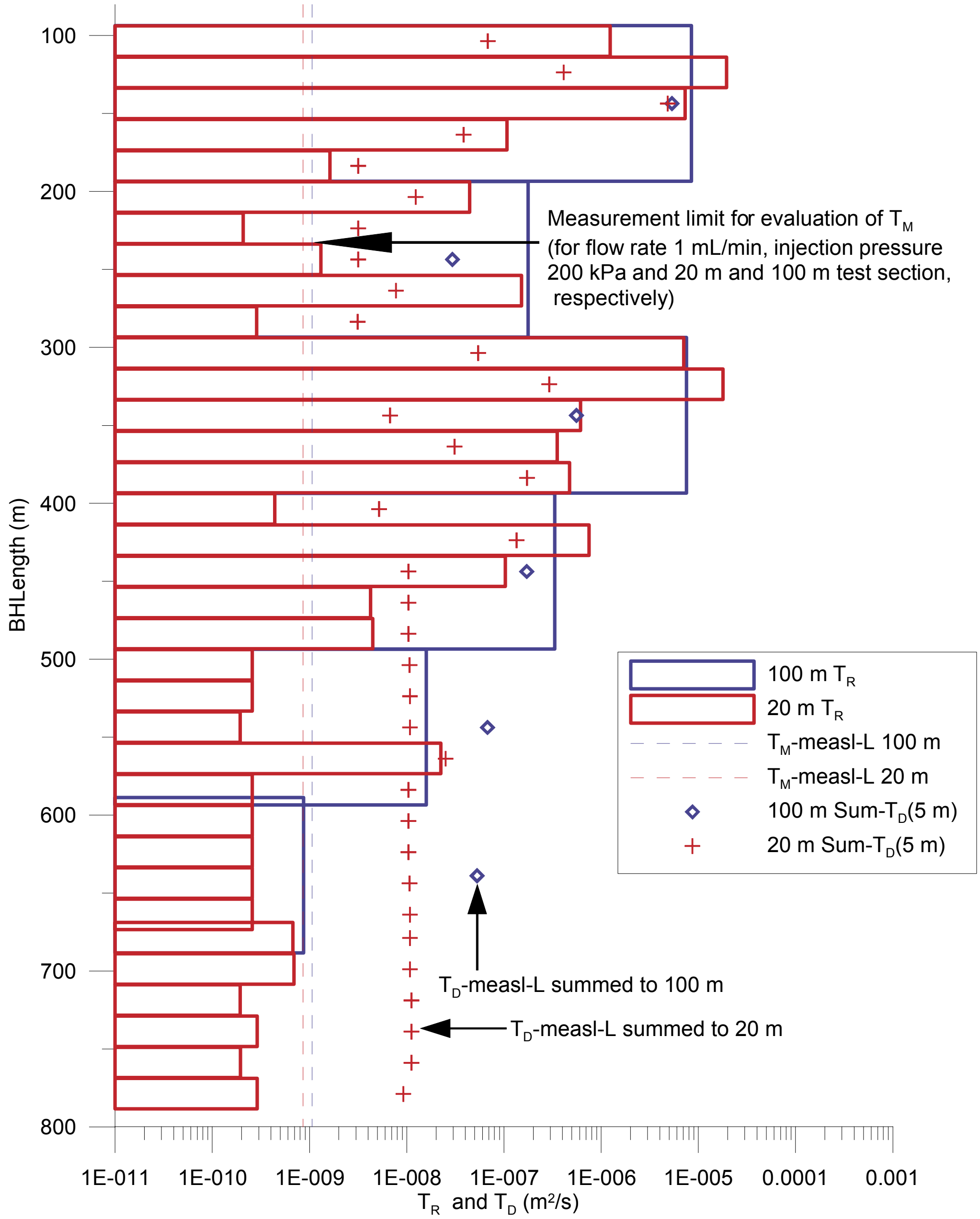

Figure 6-7. *Comparison of most representative (TR) transmissivity values from injection tests in 20 m and 100 m sections with summed transmissivity values in 5 m sections in the corresponding borehole intervals from difference flow logging in KFM01D.*

6.5 Basic statistics of hydraulic conductivity distributions in different scales

Some basic statistical parameters were calculated for the steady-state hydraulic conductivity (K_M) distributions in different scales (100 m, 20 m and 5 m) from the injection tests in borehole KFM01D. The hydraulic conductivity is obtained by dividing the transmissivity by the section length, in this case T_M/L_w. Results from tests where Q_p was below the estimated test-specific measurement limit were not included in the statistical analyses of K_M. The same basic statistical parameters were derived for the hydraulic conductivity considered most representative ($K_R=T_R/L_w$), including all tests. In the statistical analysis, the logarithm (base 10) of K_M and K_R was used. Selected results are shown in Table 6-5. It should be noted that the statistics for the different section lengths is based on different borehole intervals.

Table 6-5. Basic statistical parameters for steady-state hydraulic conductivity (K_M) and hydraulic conductivity considered most representative (K_R) in borehole KFM01D. L_w=section length, m=arithmetic mean, s=standard deviation.

Parameter	Unit	KFM01D L_w=100 m	KFM01D L_w=20 m	KFM01D L_w=5 m
Measured borehole interval	m	93.6–688.6	93.6–788.6[2)]	93.6–708.6[3), 4)]
Number of tests	–	6	35	80
N:o of tests below E.L.M.L.[1)]	–	0	15	40
m (Log10(KM))	Log10(m/s)	–8.42	–8.15	–8.36
s (Log10(KM))	–	1.54	1.21	1.33
m (Log10(KR))	Log10(m/s)	–8.71	–9.39	–9.41
s (Log10(KR))	–	1.55	1.72	1.35

1) Number of tests where Q_p could not be defined (E.L.M.L. = estimated test-specific lower measurement limit).

2) Sections with very low or non-detectable flow (with 100 m section length) are not measured with 20 m section length.

3) Sections with very low or non-detectable flow (with 20 m section length) are not measured with 5 m section length.

4) Sections 683.6–688.6 and 687.6–692.6 m are partly overlapping.

6.6 Comparison of results from different hydraulic tests in KFM01D

In Table 6-6 a comparison of the sum of estimated transmissivity values from different hydraulic tests with different section lengths in KFM01D is presented. It should be observed that the summed transmissivity values only include the tests actually performed for each section length. However, the most conductive sections are measured. It is also important to point out that this is a very rough way of comparing the tests in different test scales, since no consideration to overlapping sections are made. The tendency that the sum of transmissivities from shorter sections is slightly higher than the transmissivity in the corresponding longer section can be seen between 100 m and 20 m sections on T_R in Table 6-6.

Table 6-6 shows that the transmissivity evaluated from the difference flow logging is lower than the transmissivity evaluated from the injection tests, see Section 6.4.

Table 6-6. Comparison of calculated transmissivity values from different hydraulic tests in borehole KFM01D.

Hydraulic test method		Sum of T (m^2/s)
Injection tests	$\sum T_M$(100 m)[1)]	3.19E–05
	$\sum T_R$(100 m)[1)]	1.66E–05
	$\sum T_M$(20 m)[2)]	2.96E–05
	$\sum T_R$(20 m)[2)]	4.84E–05
	$\sum T_M$(5 m)[3)]	3.09E–05
	$\sum T_R$(5 m)[3)]	4.92E–05
Difference flow logging	$\sum T_D$(5 m)[4)]	6.28E–06
	$\sum T_{Df}$ (flow anomalies)[4)]	5.83E–06

1) Actual measured interval was 93.6–688.6 m and it contained partly overlapping sections.

2) Actual measured intervals were 93.6–253.6 m, 313.6–673.6 m and 668.6–788.6 m.

3) Actual measured intervals were 93.6–213.6 m, 233.6–273.6 m, 293.6–393.6 m, 413.6–493.6 m, 553.6–573.6 m and 673.6–708.6 m.

4) Actual measured interval was 93.59–788.89 m.

7 References

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Appendix 1. File description table

Bh id	Test section		Test type	Test no	Test start Date, time	Test stop Date, time	Data files of raw and primary data	Parameters in file	Comments
idcode	(m)	(m)	(1-6)[1)]		YYYYMMDD hh:mm	YYYYMMDD hh:mm	__Borehole id_secup_date and time of test start		
KFM01D	93.60	193.60	3	1	2006-08-28 14:47	2006-08-28 16:40	__KFM01D_0093.60_200608281447.ht2	P, Q, Te	Interrupted[2)]
KFM01D	93.60	193.60	3	2	2006-08-28 22:56	2006-08-29 07:44	__KFM01D_0093.60_200608282256.ht2	P, Q, Te	
KFM01D	193.60	293.60	3	1	2006-08-29 08:40	2006-08-29 10:30	__KFM01D_0193.60_200608290840.ht2	P, Q, Te	
KFM01D	293.60	393.60	3	1	2006-08-29 11:21	2006-08-29 13:47	__KFM01D_0293.60_200608291121.ht2	P, Q, Te	
KFM01D	393.60	493.60	3	1	2006-08-29 16:44	2006-08-29 18:45	__KFM01D_0393.60_200608291644.ht2	P, Q, Te	
KFM01D	493.60	593.60	3	1	2006-08-29 20:08	2006-08-29 22:00	__KFM01D_0493.60_200608292008.ht2	P, Q, Te	
KFM01D	588.60	688.60	3	1	2006-08-30 06:15	2006-08-30 08:06	__KFM01D_0588.60_200608300615.ht2	P, Q, Te	
KFM01D	93.60	113.60	3	1	2006-09-05 07:02	2006-09-05 08:25	__KFM01D_0093.60_200609050702.ht2	P, Q, Te	
KFM01D	113.60	133.60	3	1	2006-09-05 08:54	2006-09-05 10:16	__KFM01D_0113.60_200609050854.ht2	P, Q, Te	
KFM01D	133.60	153.60	3	1	2006-09-05 12:33	2006-09-05 13:54	__KFM01D_0133.60_200609051233.ht2	P, Q, Te	
KFM01D	153.60	173.60	3	1	2006-09-05 14:11	2006-09-05 15:24	__KFM01D_0153.60_200609051411.ht2	P, Q, Te	
KFM01D	173.60	193.60	3	1	2006-09-05 15:45	2006-09-05 17:01	__KFM01D_0173.60_200609051545.ht2	P, Q, Te	
KFM01D	193.60	213.60	3	1	2006-09-05 17:19	2006-09-05 18:33	__KFM01D_0193.60_200609051719.ht2	P, Q, Te	
KFM01D	213.60	233.60	3	1	2006-09-05 18:49	2006-09-05 19:42	__KFM01D_0213.60_200609051849.ht2	P, Q, Te	
KFM01D	233.60	253.60	3	1	2006-09-05 20:00	2006-09-05 21:18	__KFM01D_0233.60_200609052000.ht2	P, Q, Te	
KFM01D	253.60	273.60	3	1	2006-09-05 21:36	2006-09-05 22:54	__KFM01D_0253.60_200609052136.ht2	P, Q, Te	Interrupted[2)]
KFM01D	253.60	273.60	3	2	2006-09-12 13:59	2006-09-12 15:14	__KFM01D_0253.60_200609121359.ht2	P, Q, Te	
KFM01D	273.60	293.60	3	1	2006-09-05 23:17	2006-09-06 07:09	__KFM01D_0273.60_200609052317.ht2	P, Q, Te	
KFM01D	293.60	313.60	3	1	2006-09-06 07:33	2006-09-06 08:51	__KFM01D_0293.60_200609060733.ht2	P, Q, Te	
KFM01D	313.60	333.60	3	1	2006-09-06 09:14	2006-09-06 10:32	__KFM01D_0313.60_200609060914.ht2	P, Q, Te	
KFM01D	333.60	353.60	3	1	2006-09-06 11:09	2006-09-06 13:10	__KFM01D_0333.60_200609061109.ht2	P, Q, Te	
KFM01D	353.60	373.60	3	1	2006-09-06 13:28	2006-09-06 14:48	__KFM01D_0353.60_200609061328.ht2	P, Q, Te	
KFM01D	373.60	393.60	3	1	2006-09-06 15:19	2006-09-06 16:34	__KFM01D_0373.60_200609061519.ht2	P, Q, Te	
KFM01D	393.60	413.60	3	1	2006-09-06 17:10	2006-09-06 18:00	__KFM01D_0393.60_200609061710.ht2	P, Q, Te	
KFM01D	413.60	433.60	3	1	2006-09-06 18:15	2006-09-06 19:33	__KFM01D_0413.60_200609061815.ht2	P, Q, Te	
KFM01D	433.60	453.60	3	1	2006-09-06 19:55	2006-09-06 21:16	__KFM01D_0433.60_200609061955.ht2	P, Q, Te	
KFM01D	453.60	473.60	3	1	2006-09-06 21:33	2006-09-06 22:49	__KFM01D_0453.60_200609062133.ht2	P, Q, Te	
KFM01D	473.60	493.60	3	1	2006-09-06 23:03	2006-09-07 08:35	__KFM01D_0473.60_200609062303.ht2	P, Q, Te	Interrupted[2)]
KFM01D	473.60	493.60	3	2	2006-09-12 09:57	2006-09-12 11:12	__KFM01D_0473.60_200609120957.ht2	P, Q, Te	
KFM01D	493.60	513.60	3	1	2006-09-07 09:30	2006-09-07 10:19	__KFM01D_0493.60_200609070930.ht2	P, Q, Te	
KFM01D	513.60	533.60	3	1	2006-09-07 10:36	2006-09-07 11:22	__KFM01D_0513.60_200609071036.ht2	P, Q, Te	
KFM01D	533.60	553.60	3	1	2006-09-07 12:47	2006-09-07 13:32	__KFM01D_0533.60_200609071247.ht2	P, Q, Te	
KFM01D	553.60	573.60	3	1	2006-09-07 13:53	2006-09-07 15:18	__KFM01D_0553.60_200609071353.ht2	P, Q, Te	
KFM01D	573.60	593.60	3	1	2006-09-07 15:37	2006-09-07 16:23	__KFM01D_0573.60_200609071537.ht2	P, Q, Te	
KFM01D	593.60	613.60	3	1	2006-09-07 16:49	2006-09-08 08:28	__KFM01D_0593.60_200609071649.ht2	P, Q, Te	

Bh id	Test section		Test type	Test no	Test start Date, time	Test stop Date, time	Data files of raw and primary data	Parameters in file	Comments
idcode	(m)	(m)	(1-6)[1)]		YYYYMMDD hh:mm	YYYYMMDD hh:mm	__Borehole id_secup_date and time of test start		
KFM01D	613.60	633.60	3	1	2006-09-08 08:50	2006-09-08 09:37	__KFM01D_0613.60_200609080850.ht2	P, Q, Te	
KFM01D	633.60	653.60	3	1	2006-09-08 09:55	2006-09-08 10:43	__KFM01D_0633.60_200609080955.ht2	P, Q, Te	
KFM01D	653.60	673.60	3	1	2006-09-08 11:00	2006-09-08 11:42	__KFM01D_0653.60_200609081100.ht2	P, Q, Te	
KFM01D	668.60	688.60	3	1	2006-09-08 13:30	2006-09-08 14:50	__KFM01D_0668.60_200609081330.ht2	P, Q, Te	
KFM01D	688.60	708.60	3	1	2006-09-08 15:08	2006-09-08 16:23	__KFM01D_0688.60_200609081508.ht2	P, Q, Te	
KFM01D	708.60	728.60	3	1	2006-09-08 16:42	2006-09-08 17:24	__KFM01D_0708.60_200609081642.ht2	P, Q, Te	
KFM01D	728.60	748.60	3	1	2006-09-11 08:38	2006-09-11 09:24	__KFM01D_0728.60_200609110838.ht2	P, Q, Te	
KFM01D	748.60	768.60	3	1	2006-09-11 09:48	2006-09-11 10:33	__KFM01D_0748.60_200609110948.ht2	P, Q, Te	
KFM01D	768.60	788.60	3	1	2006-09-11 13:02	2006-09-11 13:50	__KFM01D_0768.60_200609111302.ht2	P, Q, Te	
KFM01D	93.60	98.60	3	1	2006-09-14 09:08	2006-09-14 10:32	__KFM01D_0093.60_200609140908.ht2	P, Q, Te	
KFM01D	98.60	103.60	3	1	2006-09-14 10:50	2006-09-14 12:04	__KFM01D_0098.60_200609141050.ht2	P, Q, Te	
KFM01D	103.60	108.60	3	1	2006-09-14 12:26	2006-09-14 13:40	__KFM01D_0103.60_200609141226.ht2	P, Q, Te	Interrupted[2)]
KFM01D	103.60	108.60	3	2	2006-09-27 12:42	2006-09-27 13:59	__KFM01D_0103.60_200609271242.ht2	P, Q, Te	
KFM01D	108.60	113.60	3	1	2006-09-14 13:49	2006-09-14 15:03	__KFM01D_0108.60_200609141349.ht2	P, Q, Te	
KFM01D	113.60	118.60	3	1	2006-09-14 15:14	2006-09-14 15:55	__KFM01D_0113.60_200609141514.ht2	P, Q, Te	
KFM01D	118.60	123.60	3	1	2006-09-14 16:02	2006-09-14 17:16	__KFM01D_0118.60_200609141602.ht2	P, Q, Te	
KFM01D	123.60	128.60	3	1	2006-09-15 07:51	2006-09-15 08:40	__KFM01D_0123.60_200609150751.ht2	P, Q, Te	Interrupted[2)]
KFM01D	123.60	128.60	3	2	2006-09-27 10:25	2006-09-27 11:41	__KFM01D_0123.60_200609271025.ht2	P, Q, Te	
KFM01D	128.60	133.60	3	1	2006-09-15 08:54	2006-09-15 09:50	__KFM01D_0128.60_200609150854.ht2	P, Q, Te	Interrupted[2)]
KFM01D	128.60	133.60	3	2	2006-09-27 09:02	2006-09-27 10:16	__KFM01D_0128.60_200609270902.ht2	P, Q, Te	
KFM01D	133.60	138.60	3	1	2006-09-15 10:06	2006-09-15 10:46	__KFM01D_0133.60_200609151006.ht2	P, Q, Te	
KFM01D	138.60	143.60	3	1	2006-09-15 11:00	2006-09-15 12:16	__KFM01D_0138.60_200609151100.ht2	P, Q, Te	
KFM01D	143.60	148.60	3	1	2006-09-15 13:09	2006-09-15 14:25	__KFM01D_0143.60_200609151309.ht2	P, Q, Te	
KFM01D	148.60	153.60	3	1	2006-09-15 15:12	2006-09-15 16:27	__KFM01D_0148.60_200609151512.ht2	P, Q, Te	
KFM01D	153.60	158.60	3	1	2006-09-18 08:20	2006-09-18 09:38	__KFM01D_0153.60_200609180820.ht2	P, Q, Te	
KFM01D	158.60	163.60	3	1	2006-09-18 09:50	2006-09-18 10:31	__KFM01D_0158.60_200609180950.ht2	P, Q, Te	
KFM01D	163.60	168.60	3	1	2006-09-18 10:44	2006-09-18 11:26	__KFM01D_0163.60_200609181044.ht2	P, Q, Te	
KFM01D	168.60	173.60	3	1	2006-09-18 11:39	2006-09-18 13:45	__KFM01D_0168.60_200609181139.ht2	P, Q, Te	
KFM01D	173.60	178.60	3	1	2006-09-18 13:58	2006-09-18 15:20	__KFM01D_0173.60_200609181358.ht2	P, Q, Te	
KFM01D	178.60	183.60	3	1	2006-09-18 15:33	2006-09-18 16:54	__KFM01D_0178.60_200609181533.ht2	P, Q, Te	
KFM01D	183.60	188.60	3	1	2006-09-19 06:04	2006-09-19 07:22	__KFM01D_0183.60_200609190604.ht2	P, Q, Te	
KFM01D	188.60	193.60	3	1	2006-09-19 07:41	2006-09-19 09:04	__KFM01D_0188.60_200609190741.ht2	P, Q, Te	
KFM01D	193.60	198.60	3	1	2006-09-27 07:16	2006-09-27 08:32	__KFM01D_0193.60_200609270716.ht2	P, Q, Te	
KFM01D	196.60	201.60	3	1	2006-09-19 09:23	2006-09-19 10:41	__KFM01D_0196.60_200609190923.ht2	P, Q, Te	Incorrect position[3)]
KFM01D	198.60	203.60	3	1	2006-09-19 11:01	2006-09-19 12:38	__KFM01D_0198.60_200609191101.ht2	P, Q, Te	
KFM01D	203.60	208.60	3	1	2006-09-19 12:53	2006-09-19 13:40	__KFM01D_0203.60_200609191253.ht2	P, Q, Te	
KFM01D	208.60	213.60	3	1	2006-09-19 13:58	2006-09-19 14:41	__KFM01D_0208.60_200609191358.ht2	P, Q, Te	

Bh id	Test section		Test type	Test no	Test start Date, time	Test stop Date, time	Data files of raw and primary data	Parameters in file	Comments
idcode	(m)	(m)	(1-6)[1)]		YYYYMMDD hh:mm	YYYYMMDD hh:mm	__Borehole id_secup_date and time of test start		
KFM01D	233.60	238.60	3	1	2006-09-19 15:22	2006-09-19 16:05	__KFM01D_0233.60_200609191522.ht2	P, Q, Te	
KFM01D	238.60	243.60	3	1	2006-09-19 16:15	2006-09-19 17:33	__KFM01D_0238.60_200609191615.ht2	P, Q, Te	
KFM01D	243.60	248.60	3	1	2006-09-19 17:48	2006-09-19 18:33	__KFM01D_0243.60_200609191748.ht2	P, Q, Te	
KFM01D	248.60	253.60	3	1	2006-09-19 18:42	2006-09-19 19:26	__KFM01D_0248.60_200609191842.ht2	P, Q, Te	
KFM01D	253.60	258.60	3	1	2006-09-19 19:36	2006-09-19 21:12	__KFM01D_0253.60_200609191936.ht2	P, Q, Te	
KFM01D	258.60	263.60	3	1	2006-09-19 21:22	2006-09-19 22:38	__KFM01D_0258.60_200609192122.ht2	P, Q, Te	
KFM01D	263.60	268.60	3	1	2006-09-19 22:47	2006-09-20 00:02	__KFM01D_0263.60_200609192247.ht2	P, Q, Te	Re-performed[4)]
KFM01D	263.60	268.60	3	2	2006-09-26 22:13	2006-09-26 23:30	__KFM01D_0263.60_200609262213.ht2	P, Q, Te	
KFM01D	268.60	273.60	3	1	2006-09-20 06:18	2006-09-20 06:59	__KFM01D_0268.60_200609200618.ht2	P, Q, Te	
KFM01D	293.60	298.60	3	1	2006-09-20 07:22	2006-09-20 08:05	__KFM01D_0293.60_200609200722.ht2	P, Q, Te	
KFM01D	298.60	303.60	3	1	2006-09-20 08:16	2006-09-20 09:30	__KFM01D_0298.60_200609200816.ht2	P, Q, Te	
KFM01D	303.60	308.60	3	1	2006-09-20 09:42	2006-09-20 11:01	__KFM01D_0303.60_200609200942.ht2	P, Q, Te	
KFM01D	308.60	313.60	3	1	2006-09-20 11:10	2006-09-20 12:45	__KFM01D_0308.60_200609201110.ht2	P, Q, Te	
KFM01D	313.60	318.60	3	1	2006-09-20 12:55	2006-09-20 14:09	__KFM01D_0313.60_200609201255.ht2	P, Q, Te	
KFM01D	318.60	323.60	3	1	2006-09-20 14:21	2006-09-20 15:05	__KFM01D_0318.60_200609201421.ht2	P, Q, Te	
KFM01D	323.60	328.60	3	1	2006-09-20 15:26	2006-09-20 16:13	__KFM01D_0323.60_200609201526.ht2	P, Q, Te	
KFM01D	328.60	333.60	3	1	2006-09-20 16:24	2006-09-20 17:40	__KFM01D_0328.60_200609201624.ht2	P, Q, Te	
KFM01D	333.60	338.60	3	1	2006-09-20 17:50	2006-09-20 19:06	__KFM01D_0333.60_200609201750.ht2	P, Q, Te	
KFM01D	338.60	343.60	3	1	2006-09-20 19:15	2006-09-20 20:23	__KFM01D_0338.60_200609201915.ht2	P, Q, Te	
KFM01D	343.60	348.60	3	1	2006-09-20 20:40	2006-09-20 21:39	__KFM01D_0343.60_200609202040.ht2	P, Q, Te	
KFM01D	348.60	353.60	3	1	2006-09-20 21:49	2006-09-20 23:12	__KFM01D_0348.60_200609202149.ht2	P, Q, Te	
KFM01D	353.60	358.60	3	1	2006-09-20 23:21	2006-09-21 07:20	__KFM01D_0353.60_200609202321.ht2	P, Q, Te	
KFM01D	358.60	363.60	3	1	2006-09-21 07:34	2006-09-21 08:51	__KFM01D_0358.60_200609210734.ht2	P, Q, Te	
KFM01D	363.60	368.60	3	1	2006-09-21 09:07	2006-09-21 09:52	__KFM01D_0363.60_200609210907.ht2	P, Q, Te	
KFM01D	368.60	373.60	3	1	2006-09-21 10:05	2006-09-21 11:20	__KFM01D_0368.60_200609211005.ht2	P, Q, Te	
KFM01D	373.60	378.60	3	1	2006-09-21 12:14	2006-09-21 13:32	__KFM01D_0373.60_200609211214.ht2	P, Q, Te	
KFM01D	378.60	383.60	3	1	2006-09-21 13:52	2006-09-21 15:09	__KFM01D_0378.60_200609211352.ht2	P, Q, Te	
KFM01D	383.60	388.60	3	1	2006-09-21 15:21	2006-09-21 16:35	__KFM01D_0383.60_200609211521.ht2	P, Q, Te	
KFM01D	388.60	393.60	3	1	2006-09-21 16:45	2006-09-21 18:02	__KFM01D_0388.60_200609211645.ht2	P, Q, Te	
KFM01D	413.60	418.60	3	1	2006-09-21 18:22	2006-09-21 19:47	__KFM01D_0413.60_200609211822.ht2	P, Q, Te	
KFM01D	418.60	423.60	3	1	2006-09-21 19:55	2006-09-21 21:22	__KFM01D_0418.60_200609211955.ht2	P, Q, Te	
KFM01D	423.60	428.60	3	1	2006-09-21 21:31	2006-09-21 22:22	__KFM01D_0423.60_200609212131.ht2	P, Q, Te	
KFM01D	428.60	433.60	3	1	2006-09-21 22:32	2006-09-21 23:47	__KFM01D_0428.60_200609212232.ht2	P, Q, Te	
KFM01D	433.60	438.60	3	1	2006-09-22 08:26	2006-09-22 09:46	__KFM01D_0433.60_200609220826.ht2	P, Q, Te	
KFM01D	438.60	443.60	3	1	2006-09-22 10:01	2006-09-22 10:57	__KFM01D_0438.60_200609221001.ht2	P, Q, Te	
KFM01D	443.60	448.60	3	1	2006-09-26 20:17	2006-09-26 21:04	__KFM01D_0443.60_200609262017.ht2	P, Q, Te	
KFM01D	448.60	453.60	3	1	2006-09-22 12:43	2006-09-22 13:29	__KFM01D_0448.60_200609221243.ht2	P, Q, Te	
KFM01D	453.60	458.60	3	1	2006-09-22 13:39	2006-09-22 14:22	__KFM01D_0453.60_200609221339.ht2	P, Q, Te	

Bh id	Test section		Test type	Test no	Test start Date, time	Test stop Date, time	Data files of raw and primary data	Parameters in file	Comments
idcode	(m)	(m)	(1-6)[1)]		YYYYMMDD hh:mm	YYYYMMDD hh:mm	__Borehole id_secup_date and time of test start		
KFM01D	458.60	463.60	3	1	2006-09-22 14:58	2006-09-22 16:18	__KFM01D_0458.60_200609221458.ht2	P, Q, Te	
KFM01D	463.60	468.60	3	1	2006-09-22 16:27	2006-09-22 17:16	__KFM01D_0463.60_200609221627.ht2	P, Q, Te	
KFM01D	468.60	473.60	3	1	2006-09-25 08:19	2006-09-25 08:59	__KFM01D_0468.60_200609250819.ht2	P, Q, Te	
KFM01D	473.60	478.60	3	1	2006-09-25 09:08	2006-09-25 10:22	__KFM01D_0473.60_200609250908.ht2	P, Q, Te	
KFM01D	478.60	483.60	3	1	2006-09-25 10:29	2006-09-25 11:09	__KFM01D_0478.60_200609251029.ht2	P, Q, Te	
KFM01D	483.60	488.60	3	1	2006-09-25 11:17	2006-09-25 12:47	__KFM01D_0483.60_200609251117.ht2	P, Q, Te	
KFM01D	488.60	493.60	3	1	2006-09-25 12:58	2006-09-25 13:42	__KFM01D_0488.60_200609251258.ht2	P, Q, Te	
KFM01D	553.60	558.60	3	1	2006-09-25 14:16	2006-09-25 14:59	__KFM01D_0553.60_200609251416.ht2	P, Q, Te	
KFM01D	558.60	563.60	3	1	2006-09-25 15:11	2006-09-25 15:55	__KFM01D_0558.60_200609251511.ht2	P, Q, Te	
KFM01D	563.60	568.60	3	1	2006-09-25 16:04	2006-09-25 16:48	__KFM01D_0563.60_200609251604.ht2	P, Q, Te	
KFM01D	568.60	573.60	3	1	2006-09-26 06:11	2006-09-26 07:25	__KFM01D_0568.60_200609260611.ht2	P, Q, Te	
KFM01D	673.60	678.60	3	1	2006-09-26 08:21	2006-09-26 09:37	__KFM01D_0673.60_200609260821.ht2	P, Q, Te	
KFM01D	678.60	683.60	3	1	2006-09-26 09:45	2006-09-26 10:59	__KFM01D_0678.60_200609260945.ht2	P, Q, Te	
KFM01D	683.60	688.60	3	1	2006-09-26 11:08	2006-09-26 12:25	__KFM01D_0683.60_200609261108.ht2	P, Q, Te	
KFM01D	687.60	692.60	3	1	2006-09-26 12:34	2006-09-26 13:15	__KFM01D_0687.60_200609261234.ht2	P, Q, Te	
KFM01D	692.60	697.60	3	1	2006-09-26 13:28	2006-09-26 14:43	__KFM01D_0692.60_200609261328.ht2	P, Q, Te	
KFM01D	697.60	702.60	3	1	2006-09-26 15:24	2006-09-26 16:09	__KFM01D_0697.60_200609261524.ht2	P, Q, Te	
KFM01D	698.60	703.60	3	1	2006-09-26 16:17	2006-09-26 16:58	__KFM01D_0698.60_200609261617.ht2	P, Q, Te	
KFM01D	703.60	708.60	3	1	2006-09-26 17:10	2006-09-26 17:52	__KFM01D_0703.60_200609261710.ht2	P, Q, Te	
KFM01D	428.60	433.60	3	1	2006-09-21 22:32	2006-09-21 23:47	__KFM01D_0428.60_200609212232.ht2	P, Q, Te	
KFM01D	433.60	438.60	3	1	2006-09-22 08:26	2006-09-22 09:46	__KFM01D_0433.60_200609220826.ht2	P, Q, Te	
KFM01D	438.60	443.60	3	1	2006-09-22 10:01	2006-09-22 10:57	__KFM01D_0438.60_200609221001.ht2	P, Q, Te	
KFM01D	443.60	448.60	3	1	2006-09-26 20:17	2006-09-26 21:04	__KFM01D_0443.60_200609262017.ht2	P, Q, Te	
KFM01D	448.60	453.60	3	1	2006-09-22 12:43	2006-09-22 13:29	__KFM01D_0448.60_200609221243.ht2	P, Q, Te	
KFM01D	453.60	458.60	3	1	2006-09-22 13:39	2006-09-22 14:22	__KFM01D_0453.60_200609221339.ht2	P, Q, Te	
KFM01D	458.60	463.60	3	1	2006-09-22 14:58	2006-09-22 16:18	__KFM01D_0458.60_200609221458.ht2	P, Q, Te	
KFM01D	463.60	468.60	3	1	2006-09-22 16:27	2006-09-22 17:16	__KFM01D_0463.60_200609221627.ht2	P, Q, Te	
KFM01D	468.60	473.60	3	1	2006-09-25 08:19	2006-09-25 08:59	__KFM01D_0468.60_200609250819.ht2	P, Q, Te	
KFM01D	473.60	478.60	3	1	2006-09-25 09:08	2006-09-25 10:22	__KFM01D_0473.60_200609250908.ht2	P, Q, Te	
KFM01D	478.60	483.60	3	1	2006-09-25 10:29	2006-09-25 11:09	__KFM01D_0478.60_200609251029.ht2	P, Q, Te	
KFM01D	483.60	488.60	3	1	2006-09-25 11:17	2006-09-25 12:47	__KFM01D_0483.60_200609251117.ht2	P, Q, Te	
KFM01D	488.60	493.60	3	1	2006-09-25 12:58	2006-09-25 13:42	__KFM01D_0488.60_200609251258.ht2	P, Q, Te	

[1)] 3: Injection test
[2)] The tests were interrupted for various reasons or did not provide satisfying data for the evaluation and were hence re-performed later
[3)] The test was performed at an incorrect position and therefore not evaluated.
[4)] The test was completed but not used for analysis

Appendix 2.1. General test data

Borehole:	KFM01D
Testtype:	CHir (Constant Head injection and recovery)
Field crew:	C. Hjerne, J. Harrström, E. Gustavsson, E. Walger, J. Florberger
General comment:	

Test section secup	**Test section seclow**	**Test start**	**Start of flow period**	**Stop of flow period**	**Test stop**	**Total flow time t_p**	**Total recovery time t_F**
(m)	(m)	YYYYMMDD hh:mm	YYYYMMDD hh:mm:ss	YYYYMMDD hh:mm:ss	YYYYMMDD hh:mm	(min)	(min)
93.60	193.60	2006-08-28 22:56	2006-08-29 06:41:48	2006-08-29 07:12:01	2006-08-29 07:44	30	30
193.60	293.60	2006-08-29 08:40	2006-08-29 09:27:55	2006-08-29 09:57:56	2006-08-29 10:30	30	30
293.60	393.60	2006-08-29 11:21	2006-08-29 12:44:46	2006-08-29 13:15:15	2006-08-29 13:47	30	30
393.60	493.60	2006-08-29 16:44	2006-08-29 17:43:07	2006-08-29 18:13:11	2006-08-29 18:45	30	30
493.60	593.60	2006-08-29 20:08	2006-08-29 20:58:09	2006-08-29 21:28:48	2006-08-29 22:00	31	30
588.60	688.60	2006-08-30 06:15	2006-08-30 07:03:35	2006-08-30 07:33:56	2006-08-30 08:06	30	30
93.60	113.60	2006-09-05 07:02	2006-09-05 07:43:34	2006-09-05 08:03:47	2006-09-05 08:25	20	20
113.60	133.60	2006-09-05 08:54	2006-09-05 09:34:16	2006-09-05 09:54:17	2006-09-05 10:16	20	20
133.60	153.60	2006-09-05 12:33	2006-09-05 13:12:22	2006-09-05 13:32:27	2006-09-05 13:54	20	20
153.60	173.60	2006-09-05 14:11	2006-09-05 14:42:24	2006-09-05 15:02:43	2006-09-05 15:24	20	20
173.60	193.60	2006-09-05 15:45	2006-09-05 16:19:14	2006-09-05 16:39:37	2006-09-05 17:01	20	20
193.60	213.60	2006-09-05 17:19	2006-09-05 17:51:14	2006-09-05 18:11:39	2006-09-05 18:33	20	20
213.60	233.60	2006-09-05 18:49	2006-09-05 19:31:58	2006-09-05 19:35:09	2006-09-05 19:42	3	5
233.60	253.60	2006-09-05 20:00	2006-09-05 20:35:44	2006-09-05 20:56:07	2006-09-05 21:18	20	20
253.60	273.60	2006-09-12 13:59	2006-09-12 14:31:50	2006-09-12 14:52:10	2006-09-12 15:14	20	20
273.60	293.60	2006-09-05 23:17	2006-09-06 06:52:53	2006-09-06 07:02:24	2006-09-06 07:09	10	5
293.60	313.60	2006-09-06 07:33	2006-09-06 08:09:17	2006-09-06 08:29:21	2006-09-06 08:51	20	20
313.60	333.60	2006-09-06 09:14	2006-09-06 09:50:17	2006-09-06 10:10:29	2006-09-06 10:32	20	20
333.60	353.60	2006-09-06 11:09	2006-09-06 12:27:47	2006-09-06 12:48:09	2006-09-06 13:10	20	20
353.60	373.60	2006-09-06 13:28	2006-09-06 14:06:21	2006-09-06 14:26:39	2006-09-06 14:48	20	20
373.60	393.60	2006-09-06 15:19	2006-09-06 15:51:44	2006-09-06 16:12:04	2006-09-06 16:34	20	20
393.60	413.60	2006-09-06 17:10	2006-09-06 17:43:48	2006-09-06 17:52:40	2006-09-06 18:00	9	5
413.60	433.60	2006-09-06 18:15	2006-09-06 18:51:08	2006-09-06 19:11:25	2006-09-06 19:33	20	20
433.60	453.60	2006-09-06 19:55	2006-09-06 20:33:36	2006-09-06 20:53:44	2006-09-06 21:16	20	20
453.60	473.60	2006-09-06 21:33	2006-09-06 22:06:28	2006-09-06 22:26:44	2006-09-06 22:49	20	20
473.60	493.60	2006-09-12 09:57	2006-09-12 10:29:31	2006-09-12 10:49:52	2006-09-12 11:12	20	20
493.60	513.60	2006-09-07 09:30	2006-09-07 10:06:34	2006-09-07 10:11:54	2006-09-07 10:19	5	5
513.60	533.60	2006-09-07 10:36	2006-09-07 11:12:04	2006-09-07 11:14:47	2006-09-07 11:22	3	5
533.60	553.60	2006-09-07 12:47	2006-09-07 13:21:16	2006-09-07 13:24:57	2006-09-07 13:32	4	5
553.60	573.60	2006-09-07 13:53	2006-09-07 14:35:51	2006-09-07 14:56:15	2006-09-07 15:18	20	20
573.60	593.60	2006-09-07 15:37	2006-09-07 16:11:24	2006-09-07 16:15:40	2006-09-07 16:23	4	5
593.60	613.60	2006-09-07 16:49	2006-09-08 08:15:01	2006-09-08 08:20:44	2006-09-08 08:28	6	5
613.60	633.60	2006-09-08 08:50	2006-09-08 09:22:07	2006-09-08 09:30:11	2006-09-08 09:37	8	5
633.60	653.60	2006-09-08 09:55	2006-09-08 10:29:04	2006-09-08 10:35:30	2006-09-08 10:43	6	5
653.60	673.60	2006-09-08 11:00	2006-09-08 11:32:24	2006-09-08 11:35:15	2006-09-08 11:42	3	5
668.60	688.60	2006-09-08 13:30	2006-09-08 14:07:56	2006-09-08 14:28:06	2006-09-08 14:50	20	20
688.60	708.60	2006-09-08 15:08	2006-09-08 15:40:42	2006-09-08 16:01:06	2006-09-08 16:23	20	20
708.60	728.60	2006-09-08 16:42	2006-09-08 17:13:58	2006-09-08 17:17:05	2006-09-08 17:24	3	5
728.60	748.60	2006-09-11 08:38	2006-09-11 09:11:43	2006-09-11 09:16:48	2006-09-11 09:24	5	5
748.60	768.60	2006-09-11 09:48	2006-09-11 10:22:40	2006-09-11 10:25:32	2006-09-11 10:33	3	5
768.60	788.60	2006-09-11 13:02	2006-09-11 13:38:37	2006-09-11 13:42:54	2006-09-11 13:50	4	5
93.60	98.60	2006-09-14 09:08	2006-09-14 09:49:45	2006-09-14 10:10:05	2006-09-14 10:32	20	20
98.60	103.60	2006-09-14 10:50	2006-09-14 11:21:27	2006-09-14 11:41:32	2006-09-14 12:04	20	20
103.60	108.60	2006-09-27 12:42	2006-09-27 13:16:50	2006-09-27 13:36:46	2006-09-27 13:59	20	20
108.60	113.60	2006-09-14 13:49	2006-09-14 14:20:40	2006-09-14 14:40:58	2006-09-14 15:03	20	20
113.60	118.60	2006-09-14 15:14	2006-09-14 15:45:23	2006-09-14 15:48:01	2006-09-14 15:55	3	5
118.60	123.60	2006-09-14 16:02	2006-09-14 16:33:34	2006-09-14 16:53:49	2006-09-14 17:16	20	20
123.60	128.60	2006-09-27 10:25	2006-09-27 10:58:52	2006-09-27 11:19:02	2006-09-27 11:41	20	20
128.60	133.60	2006-09-27 09:02	2006-09-27 09:33:53	2006-09-27 09:54:11	2006-09-27 10:16	20	20
133.60	138.60	2006-09-15 10:06	2006-09-15 10:37:46	2006-09-15 10:39:28	2006-09-15 10:46	2	5
138.60	143.60	2006-09-15 11:00	2006-09-15 11:33:48	2006-09-15 11:54:08	2006-09-15 12:16	20	20
143.60	148.60	2006-09-15 13:09	2006-09-15 13:43:03	2006-09-15 14:03:19	2006-09-15 14:25	20	20
148.60	153.60	2006-09-15 15:12	2006-09-15 15:45:10	2006-09-15 16:05:28	2006-09-15 16:27	20	20
153.60	158.60	2006-09-18 08:20	2006-09-18 08:56:03	2006-09-18 09:16:23	2006-09-18 09:38	20	20
158.60	163.60	2006-09-18 09:50	2006-09-18 10:22:43	2006-09-18 10:24:28	2006-09-18 10:31	2	5
163.60	168.60	2006-09-18 10:44	2006-09-18 11:16:01	2006-09-18 11:18:42	2006-09-18 11:26	3	5
168.60	173.60	2006-09-18 11:39	2006-09-18 12:56:11	2006-09-18 13:17:22	2006-09-18 13:45	21	20
173.60	178.60	2006-09-18 13:58	2006-09-18 14:38:19	2006-09-18 14:58:37	2006-09-18 15:20	20	20

Test section secup (m)	Test section seclow (m)	Test start YYYYMMDD hh:mm	Start of flow period YYYYMMDD hh:mm:ss	Stop of flow period YYYYMMDD hh:mm:ss	Test stop YYYYMMDD hh:mm	Total flow time t_p (min)	Total recovery time t_F (min)
178.60	183.60	2006-09-18 15:33	2006-09-18 16:11:45	2006-09-18 16:32:03	2006-09-18 16:54	20	20
183.60	188.60	2006-09-19 06:04	2006-09-19 06:40:09	2006-09-19 07:00:29	2006-09-19 07:22	20	20
188.60	193.60	2006-09-19 07:41	2006-09-19 08:22:18	2006-09-19 08:42:36	2006-09-19 09:04	20	20
193.60	198.60	2006-09-27 07:16	2006-09-27 07:49:52	2006-09-27 08:10:10	2006-09-27 08:32	20	20
198.60	203.60	2006-09-19 11:01	2006-09-19 12:27:28	2006-09-19 12:31:01	2006-09-19 12:38	4	5
203.60	208.60	2006-09-19 12:53	2006-09-19 13:30:43	2006-09-19 13:32:34	2006-09-19 13:40	2	5
208.60	213.60	2006-09-19 13:58	2006-09-19 14:32:10	2006-09-19 14:34:08	2006-09-19 14:41	2	5
233.60	238.60	2006-09-19 15:22	2006-09-19 15:55:50	2006-09-19 15:58:01	2006-09-19 16:05	2	5
238.60	243.60	2006-09-19 16:15	2006-09-19 16:50:35	2006-09-19 17:10:53	2006-09-19 17:33	20	20
243.60	248.60	2006-09-19 17:48	2006-09-19 18:23:16	2006-09-19 18:26:07	2006-09-19 18:33	3	5
248.60	253.60	2006-09-19 18:42	2006-09-19 19:15:54	2006-09-19 19:18:49	2006-09-19 19:26	3	5
253.60	258.60	2006-09-19 19:36	2006-09-19 20:29:28	2006-09-19 20:49:46	2006-09-19 21:12	20	20
258.60	263.60	2006-09-19 21:22	2006-09-19 21:56:15	2006-09-19 22:16:33	2006-09-19 22:38	20	20
263.60	268.60	2006-09-26 22:13	2006-09-26 22:47:31	2006-09-26 23:07:36	2006-09-26 23:30	20	20
268.60	273.60	2006-09-20 06:18	2006-09-20 06:49:57	2006-09-20 06:52:24	2006-09-20 06:59	2	5
293.60	298.60	2006-09-20 07:22	2006-09-20 07:55:02	2006-09-20 07:57:30	2006-09-20 08:05	2	5
298.60	303.60	2006-09-20 08:16	2006-09-20 08:47:56	2006-09-20 09:08:15	2006-09-20 09:30	20	20
303.60	308.60	2006-09-20 09:42	2006-09-20 10:18:59	2006-09-20 10:39:13	2006-09-20 11:01	20	20
308.60	313.60	2006-09-20 11:10	2006-09-20 12:35:57	2006-09-20 12:38:16	2006-09-20 12:45	2	5
313.60	318.60	2006-09-20 12:55	2006-09-20 13:26:54	2006-09-20 13:47:09	2006-09-20 14:09	20	20
318.60	323.60	2006-09-20 14:21	2006-09-20 14:54:34	2006-09-20 14:57:43	2006-09-20 15:05	3	5
323.60	328.60	2006-09-20 15:26	2006-09-20 16:04:01	2006-09-20 16:06:13	2006-09-20 16:13	2	5
328.60	333.60	2006-09-20 16:24	2006-09-20 16:57:46	2006-09-20 17:18:04	2006-09-20 17:40	20	20
333.60	338.60	2006-09-20 17:50	2006-09-20 18:23:33	2006-09-20 18:43:51	2006-09-20 19:06	20	20
338.60	343.60	2006-09-20 19:15	2006-09-20 20:08:02	2006-09-20 20:15:30	2006-09-20 20:23	7	5
343.60	348.60	2006-09-20 20:40	2006-09-20 21:11:42	2006-09-20 21:31:47	2006-09-20 21:39	20	5
348.60	353.60	2006-09-20 21:49	2006-09-20 22:30:06	2006-09-20 22:50:24	2006-09-20 23:12	20	20
353.60	358.60	2006-09-20 23:21	2006-09-21 06:37:07	2006-09-21 06:58:01	2006-09-21 07:20	21	20
358.60	363.60	2006-09-21 07:34	2006-09-21 08:08:43	2006-09-21 08:29:02	2006-09-21 08:51	20	20
363.60	368.60	2006-09-21 09:07	2006-09-21 09:41:36	2006-09-21 09:43:29	2006-09-21 09:52	2	7
368.60	373.60	2006-09-21 10:05	2006-09-21 10:37:59	2006-09-21 10:58:20	2006-09-21 11:20	20	20
373.60	378.60	2006-09-21 12:14	2006-09-21 12:49:36	2006-09-21 13:09:57	2006-09-21 13:32	20	20
378.60	383.60	2006-09-21 13:52	2006-09-21 14:26:32	2006-09-21 14:46:53	2006-09-21 15:09	20	20
383.60	388.60	2006-09-21 15:21	2006-09-21 15:52:45	2006-09-21 16:13:06	2006-09-21 16:35	20	20
388.60	393.60	2006-09-21 16:45	2006-09-21 17:20:16	2006-09-21 17:40:37	2006-09-21 18:02	20	20
413.60	418.60	2006-09-21 18:22	2006-09-21 19:04:53	2006-09-21 19:25:14	2006-09-21 19:47	20	20
418.60	423.60	2006-09-21 19:55	2006-09-21 20:39:37	2006-09-21 20:59:42	2006-09-21 21:22	20	20
423.60	428.60	2006-09-21 21:31	2006-09-21 22:07:44	2006-09-21 22:15:13	2006-09-21 22:22	7	5
428.60	433.60	2006-09-21 22:32	2006-09-21 23:05:00	2006-09-21 23:25:13	2006-09-21 23:47	20	20
433.60	438.60	2006-09-22 08:26	2006-09-22 09:04:03	2006-09-22 09:24:24	2006-09-22 09:46	20	20
438.60	443.60	2006-09-22 10:01	2006-09-22 10:46:13	2006-09-22 10:48:56	2006-09-22 10:57	3	6
443.60	448.60	2006-09-26 20:17	2006-09-26 20:55:08	2006-09-26 20:56:37	2006-09-26 21:04	1	5
448.60	453.60	2006-09-22 12:43	2006-09-22 13:19:34	2006-09-22 13:22:05	2006-09-22 13:29	3	5
453.60	458.60	2006-09-22 13:39	2006-09-22 14:10:59	2006-09-22 14:15:07	2006-09-22 14:22	4	5
458.60	463.60	2006-09-22 14:58	2006-09-22 15:36:19	2006-09-22 15:56:40	2006-09-22 16:18	20	20
463.60	468.60	2006-09-22 16:27	2006-09-22 17:06:13	2006-09-22 17:08:34	2006-09-22 17:16	2	5
468.60	473.60	2006-09-25 08:19	2006-09-25 08:50:40	2006-09-25 08:52:18	2006-09-25 08:59	2	5
473.60	478.60	2006-09-25 09:08	2006-09-25 09:39:46	2006-09-25 10:00:07	2006-09-25 10:22	20	20
478.60	483.60	2006-09-25 10:29	2006-09-25 11:00:53	2006-09-25 11:02:22	2006-09-25 11:09	1	5
483.60	488.60	2006-09-25 11:17	2006-09-25 12:38:06	2006-09-25 12:39:38	2006-09-25 12:47	2	5
488.60	493.60	2006-09-25 12:58	2006-09-25 13:29:45	2006-09-25 13:34:33	2006-09-25 13:42	5	5
553.60	558.60	2006-09-25 14:16	2006-09-25 14:48:17	2006-09-25 14:51:53	2006-09-25 14:59	4	5
558.60	563.60	2006-09-25 15:11	2006-09-25 15:43:26	2006-09-25 15:47:42	2006-09-25 15:55	4	5
563.60	568.60	2006-09-25 16:04	2006-09-25 16:35:30	2006-09-25 16:40:40	2006-09-25 16:48	5	5
568.60	573.60	2006-09-26 06:11	2006-09-26 06:42:35	2006-09-26 07:02:55	2006-09-26 07:25	20	20
673.60	678.60	2006-09-26 08:21	2006-09-26 08:55:14	2006-09-26 09:15:30	2006-09-26 09:37	20	20
678.60	683.60	2006-09-26 09:45	2006-09-26 10:17:16	2006-09-26 10:37:36	2006-09-26 10:59	20	20
683.60	688.60	2006-09-26 11:08	2006-09-26 12:14:41	2006-09-26 12:17:35	2006-09-26 12:25	3	5
687.60	692.60	2006-09-26 12:34	2006-09-26 13:05:19	2006-09-26 13:08:27	2006-09-26 13:15	3	5
692.60	697.60	2006-09-26 13:28	2006-09-26 14:01:09	2006-09-26 14:21:27	2006-09-26 14:43	20	20
697.60	702.60	2006-09-26 15:24	2006-09-26 15:59:17	2006-09-26 16:02:19	2006-09-26 16:09	3	5
698.60	703.60	2006-09-26 16:17	2006-09-26 16:49:19	2006-09-26 16:50:45	2006-09-26 16:58	1	5
703.60	708.60	2006-09-26 17:10	2006-09-26 17:43:27	2006-09-26 17:45:13	2006-09-26 17:52	2	5
93.60[1)]	193.60	2006-08-28 14:47	2006-08-28 15:50:11	2006-08-28 16:07:34	2006-08-28 16:40	17	30
253.60[1)]	273.60	2006-09-05 21:36	2006-09-05 22:12:04	2006-09-05 22:32:47	2006-09-05 22:54	21	20
473.60[1)]	493.60	2006-09-06 23:03	2006-09-07 08:28:36	2006-09-07 08:31:43	2006-09-07 08:35	3	2
103.60[1)]	108.60	2006-09-14 12:26	2006-09-14 12:58:17	2006-09-14 13:18:46	2006-09-14 13:40	20	20
123.60[1)]	128.60	2006-09-15 07:51	2006-09-15 08:24:56	2006-09-15 08:36:04	2006-09-15 08:40	11	2

Test section secup	Test section seclow	Test start	Start of flow period	Stop of flow period	Test stop	Total flow time t_p	Total recovery time t_F
(m)	(m)	YYYYMMDD hh:mm	YYYYMMDD hh:mm:ss	YYYYMMDD hh:mm:ss	YYYYMMDD hh:mm	(min)	(min)
128.60 1)	133.60	2006-09-15 08:54	2006-09-15 09:28:44	2006-09-15 09:38:34	2006-09-15 09:50	10	10
196.60 2)	201.60	2006-09-19 09:23	2006-09-19 09:59:14	2006-09-19 10:19:56	2006-09-19 10:41	21	20
263.60 3)	268.60	2006-09-19 22:47	2006-09-19 23:20:12	2006-09-19 23:40:50	2006-09-20 00:02	21	20

1) The tests were interrupted for various reasons or did not provide satisfying data for the evaluation and were hence re-performed later
2) The test was perfomed at an incorrect position and therefore not evaluated
3) The test was completed but not used for analysis

Appendix 2.2 Pressure and flow data

Summary of pressure and flow data for all tests in KFM01C

Test section		Pressure			Flow		
secup	seclow	p_i	p_p	p_F	Q_p 1)	Q_m 1)	V_p 1)
(m)	(m)	(kPa)	(kPa)	(kPa)	(m^3/s)	(m^3/s)	(m^3)
93.60	193.60	822.78	888.98	852.64	0.0000923	0.000171	3.10E-01
193.60	293.60	1623.29	1822.01	1806.60	2.758E-06	3.15E-05	5.66E-02
293.60	393.60	2391.19	2445.4	2429.18	5.162E-05	0.000149	2.73E-01
393.60	493.60	3152.48	3357.8	3177.25	2.794E-05	3.79E-05	6.86E-02
493.60	593.60	3858.31	4038.17	3863.13	2.171E-07	2.46E-07	4.53E-04
588.60	688.60	4569.23	4764.8	4634.88	4.67E-08	9.15E-08	1.68E-04
93.60	113.60	817.5061	912.18	894.57	9.97E-06	6.35E-05	7.69E-02
113.60	133.60	981.95	1077.32	1038.79	0.0001104	0.000194	2.33E-01
133.60	153.60	1139.66	1341.27	1140.08	6.602E-05	6.73E-05	8.12E-02
153.60	173.60	1310.72	1512.05	1374.58	4.767E-06	6.21E-06	7.59E-03
173.60	193.60	1470.21	1683.4	1590.36	2.4E-07	5.89E-07	7.25E-04
193.60	213.60	1629.99	1851.14	1754.40	1.841E-06	4.72E-06	5.78E-03
213.60	233.60	1818.24	1997.28	1994.39			
233.60	253.60	1944.85	2136.97	1993.84	9.014E-08	1.25E-07	1.53E-04
253.60	273.60	2085.22	2243.75	2237.70	2.34E-06	2.83E-05	3.51E-02
273.60	293.60	2262.19	2525.73	2522.28			
293.60	313.60	2411.089	2484.856	2468.34	5.096E-05	0.000145	1.75E-01
313.60	333.60	2572.38	2682.47	2618.62	0.0001107	0.00016	1.94E-01
333.60	353.60	2729.81	2932.92	2889.99	1.537E-06	5.16E-06	6.31E-03
353.60	373.60	2878.84	3090.37	3004.50	7.288E-06	2.02E-05	2.47E-02
373.60	393.60	3028.99	3219.27	3063.40	1.514E-05	1.81E-05	2.21E-02
393.60	413.60	3183.53	3396.42	3388.17			
413.60	433.60	3333.12	3529.62	3347.44	2.292E-05	2.65E-05	3.24E-02
433.60	453.60	3485.59	3649.09	3615.50	1.641E-06	7.98E-06	9.65E-03
453.60	473.60	3632.57	3927.62	3703.57	2.652E-07	3.43E-07	4.18E-04
473.60	493.60	3615.37	3842.16	3681.56	2.109E-07	2.71E-07	3.32E-04
493.60	513.60	3987.62	4136.25	4132.39			
513.60	533.60	4083.67	4285.97	4284.32			
533.60	553.60	4232.3	4435.15	4434.05			
553.60	573.60	4347.61	4501.75	4353.12	2.19E-07	2.33E-07	2.86E-04
573.60	593.60	4523.22	4726.34	4723.60			
593.60	613.60	4670.18	4884.32	4879.92			
613.60	633.60	4832.72	5025.52	5016.99			
633.60	653.60	4968.27	5163.41	5162.86			
653.60	673.60	5114.97	5310.93	5310.93			
668.60	688.60	5208.13	5451.98	5255.88	5.403E-08	7.77E-08	9.42E-05
688.60	708.60	5363.77	5560.29	5395.15	4.392E-08	5.19E-08	6.37E-05
708.60	728.60	5507.86	5706.03	5707.27			
728.60	748.60	5646.71	5853.69	5856.45			
748.60	768.60	5814.74	5993.09	6007.81			
768.60	788.60	5946.72	6134.56	6154.24			
93.60	98.60	822.12	1043.41	845.93	4.914E-08	6.26E-08	7.65E-05
98.60	103.60	864.1	1083.18	1077.12			
103.60	108.60	901.67	985.2	969.78	0.00001	5.51E-05	6.73E-02
108.60	113.60	947.35	1128.87	1109.60	4.945E-08	3.9E-07	4.76E-04
113.60	118.60	988.22	1200.43	1180.07			
118.60	123.60	1025.656	1131.07	1087.58	0.0001205	0.00021	2.55E-01
123.60	128.60	1061.3	1223.96	1064.46	5.945E-06	6.48E-06	7.84E-03
128.60	133.60	1102.03	1252.72	1108.50	1.854E-06	1.98E-06	2.41E-03
133.60	138.60	1175.52	1366.12	1376.03			
138.60	143.60	1186.95	1404.65	1189.42	1.071E-06	1.22E-06	1.49E-03
143.60	148.60	1225.75	1347.4	1226.85	4.86E-05	5.18E-05	6.31E-02
148.60	153.60	1266.9	1486.95	1267.58	4.226E-06	4.61E-06	5.62E-03
153.60	158.60	1306.12	1509.52	1360.61	1.354E-06	2.07E-06	2.53E-03
158.60	163.60	1385.79	1557.96	1576.39			
163.60	168.60	1392.95	1596.21	1592.35			
168.60	173.60	1428.46	1633.91	1532.36	4.441E-06	5.95E-06	7.56E-03
173.60	178.60	1467.54	1677.6	1600.62	1.403E-07	4.4E-07	5.40E-04
178.60	183.60	1510.34	1725.85	1515.29	5.315E-08	6.38E-08	7.79E-05
183.60	188.60	1547.77	1764.24	1716.22	1.059E-08	4.97E-08	5.99E-05
188.60	193.60	1594.01	1806.83	1728.33			
193.60	198.60	1625.38	1789.42	1699.70	1.835E-06	4.01E-06	4.89E-03
198.60	203.60	1772.63	1876.39	1858.77			

Test section		Pressure			Flow		
secup	seclow	p_i	p_p	p_F	Q_p [1)]	Q_m [1)]	V_p [1)]
(m)	(m)	(kPa)	(kPa)	(kPa)	(m^3/s)	(m^3/s)	(m^3)
203.60	208.60	1771.53	1918.51	1938.60			
208.60	213.60	1802.77	1958.96	1983.19			
233.60	238.60	1996.54	2157.41	2179.70			
238.60	243.60	1982.92	2196.76	2007.41	1.732E-07	2.26E-07	2.76E-04
243.60	248.60	2072.36	2236.95	2245.76			
248.60	253.60	2082.96	2279.33	2277.69			
253.60	258.60	2104.29	2308.23	2192.92	7.594E-07	1.44E-06	1.77E-03
258.60	263.60	2147.78	2358.74	2163.74	1.301E-07	1.52E-07	1.85E-04
263.60	268.60	2172.41	2318.97	2316.76			
268.60	273.60	2256.08	2442.82	2452.73			
293.60	298.60	2422.45	2639.33	2636.59			
298.60	303.60	2463.184	2677.32	2610.16	9.361E-09	3E-08	3.62E-05
303.60	308.60	2494.68	2575.49	2556.23	6.205E-05	0.000164	1.99E-01
308.60	313.60	2547.28	2752.18	2748.33			
313.60	318.60	2575.5	2688.05	2624.48	0.000111	0.000166	2.02E-01
318.60	323.60	2686.81	2829.8	2813.83			
323.60	328.60	2667.82	2869.85	2868.89			
328.60	333.60	2694.8	2906	2862.28	4.452E-08	1.73E-07	2.11E-04
333.60	338.60	2743.92	2960.8	2868.33	1.1E-08	1.73E-08	2.08E-05
338.60	343.60	2770.76	3001.81	2955.86			
343.60	348.60	2834.34	3040.63	3016.41			
348.60	353.60	2843.7	3036.22	2998.24	1.298E-06	4.71E-06	5.75E-03
353.60	358.60	2883.74	3108.88	2909.06	6.074E-07	7.3E-07	9.16E-04
358.60	363.60	2920.07	3145.22	2953.65	3.562E-07	4.48E-07	5.47E-04
363.60	368.60	2971.81	3186.63	3168.34			
368.60	373.60	2993.84	3204.94	3122.10	6.59E-06	1.9E-05	2.32E-02
373.60	378.60	3032.37	3234.39	3072.00	1.367E-05	1.59E-05	1.95E-02
378.60	383.60	3072	3272.92	3087.41	2.723E-06	3.36E-06	4.11E-03
383.60	388.60	3122.1	3330.71	3238.80	9.351E-09	1.57E-08	1.89E-05
388.60	393.60	3145.36	3350.01	3252.00	1.506E-07	2.99E-07	3.67E-04
413.60	418.60	3349.43	3541.13	3378.61	1.059E-08	1.24E-08	1.49E-05
418.60	423.60	3414.39	3581	3439.16	8E-09	1.27E-08	1.53E-05
423.60	428.60	3429.25	3619.71	3624.11			
428.60	433.60	3449.62	3634.02	3464.49	2.456E-05	2.83E-05	3.43E-02
433.60	438.60	3487.05	3686.32	3646.68	1.988E-06	9.53E-06	1.17E-02
438.60	443.60	3533.01	3736.42	3736.96			
443.60	448.60	3568.52	3778.25	3778.25			
448.60	453.60	3608.98	3816.37	3815.13			
453.60	458.60	3647.37	3853.8	3855.31			
458.60	463.60	3675.86	3856.96	3724.30	1.71E-07	2.17E-07	2.65E-04
463.60	468.60	3741.92	3935.68	3936.78			
468.60	473.60	3834.26	3976.96	4033.11			
473.60	478.60	3793.25	4013.29	3931.82	6.581E-09	1.58E-08	1.90E-05
478.60	483.60	3832.2	4050.45	4047.98			
483.60	488.60	3870.31	4088.71	4088.71			
488.60	493.60	3941.73	4126	4112.37			
553.60	558.60	4395.73	4608.35	4610.55			
558.60	563.60	4436.05	4645.22	4649.62			
563.60	568.60	4474.03	4680.32	4669.44			
568.60	573.60	4481.18	4668.34	4487.79	2.705E-07	2.85E-07	3.48E-04
673.60	678.60	5265.59	5471.97	5306.88	4.791E-08	6.4E-08	7.79E-05
678.60	683.60	5318.99	5509.49	5396.06			
683.60	688.60	5339.77	5545.78	5529.82			
687.60	692.60	5415.33	5574.96	5536.97			
692.60	697.60	5402.66	5609.08	5436.25	3.855E-08	5.69E-08	6.94E-05
697.60	702.60	5459.36	5644.04	5634.95			
698.60	703.60	5461.01	5651.61	5640.47			
703.60	708.60	5498.44	5686.84	5694.96			
93.60[3)]	193.60	823.46	823.06	822.92			
253.60[3)]	273.60	2102.28	2281.19	2274.58	1.159E-06	3.34E-05	4.15E-02
473.60[3)]	493.60	3785.32	4159.09	4111.48	2.91E-08	2.35E-07	4.40E-05
103.60[3)]	108.60	902.21	973.77	961.52	3.157E-08	4.58E-05	5.63E-02
123.60[3)]	128.60	1065.56	1355.93	1104.09	1.051E-05	1.19E-05	7.93E-03
128.60[3)]	133.60	1106.84	1375.48	1114.55	2.36E-06	3.38E-06	2.00E-03
196.60[4)]	201.60	1652.35	1862.08	1856.57	1.157E-07	2.74E-06	3.40E-03
263.60[3)]	268.60	2181.9	2356.4	2353.10	2.286E-07	3.18E-05	3.94E-02

[1)] No value indicates a flow below measurement limit (measurement limit is unique for each test but nominally 1.67 E-8 m^3/s).
[2)] No value indicates that the parameter could not be calculated due to low and uncertain flow rates during a major part of flow period

[3] The tests were interrupted for various reasons or did not provide satisfying data for the evaluation and were hence re-performed later.
[4] The test was performed at an incorrect position and therefore not evaluated.

p_i	Pressure in test section before start of flow period
p_p	Pressure in test section before stop of flow period
p_F	Pressure in test section at the end of recovery period
Q_p	Flow rate just before stop of flow period
Q_m	Mean (arithmetic) flow rate during flow period
V_p	Total volume injected during the flow period

Appendix 3. Test diagrams – Injection and pressure pulse tests

In the following pages the selected test diagrams are presented for all test sections. A linear diagram of pressure and flow rate is presented for each test. For most tests are lin-log and log-log diagrams presented, from injection and recovery period respectively. From the pulse tests and tests with a flow rate below the estimated lower measurement limit for the specific test, only the linear diagram is presented. Additionally, for a few tests, a type curve fit is displayed in the diagrams despite the the fact that the estimated parameters from the fit are judged as non-representative. For these tests, the type curve fit is presented, as an example, to illustrate that an assumption of a certain flow regime is not justified for the test. Instead, some other flow regime is likely to dominate.

Nomenclature for Aqtesolv:

T	=	transmissivity (m^2/s)
S	=	storativity (-)
K_z/K_r	=	ratio of hydraulic conductivities in the vertical and radial direction (set to 1)
Sw	=	skin factor
r(w)	=	borehole radius (m)
r(c)	=	effective casing radius (m)
C	=	well loss constant (set to 0)
r/B	=	leakage factor (-)

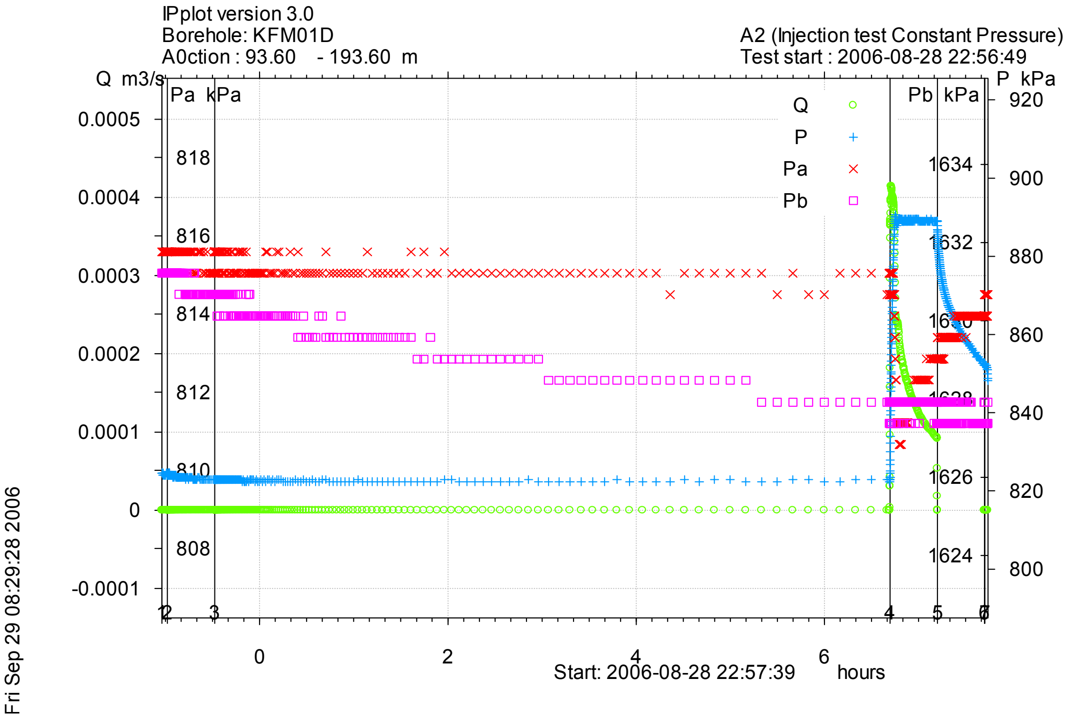


Figure A3-1. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 93.6-193.6 m in borehole KFM01D.*

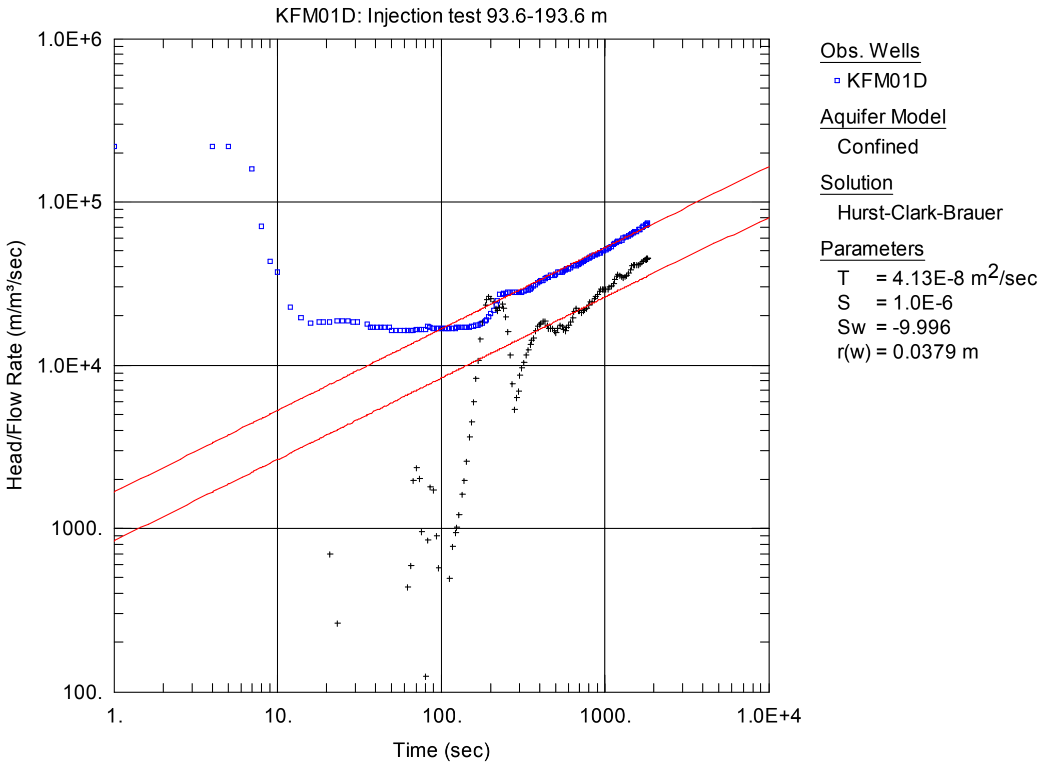


Figure A3-2. *Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 93.6-193.6 m in KFM01D. The type curve fit is showing a possible, however not unambiguous, evaluation.*

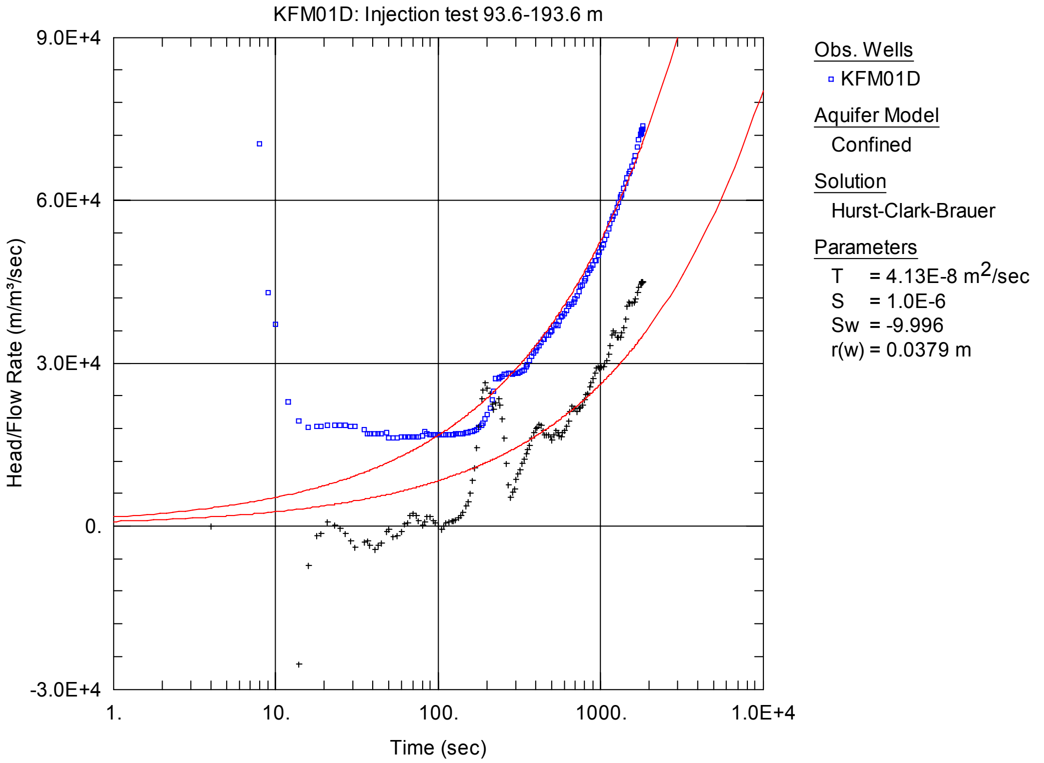


Figure A3-3. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 93.6-193.6 m in KFM01D. The type curve fit is showing a possible, however not unambiguous, evaluation.*

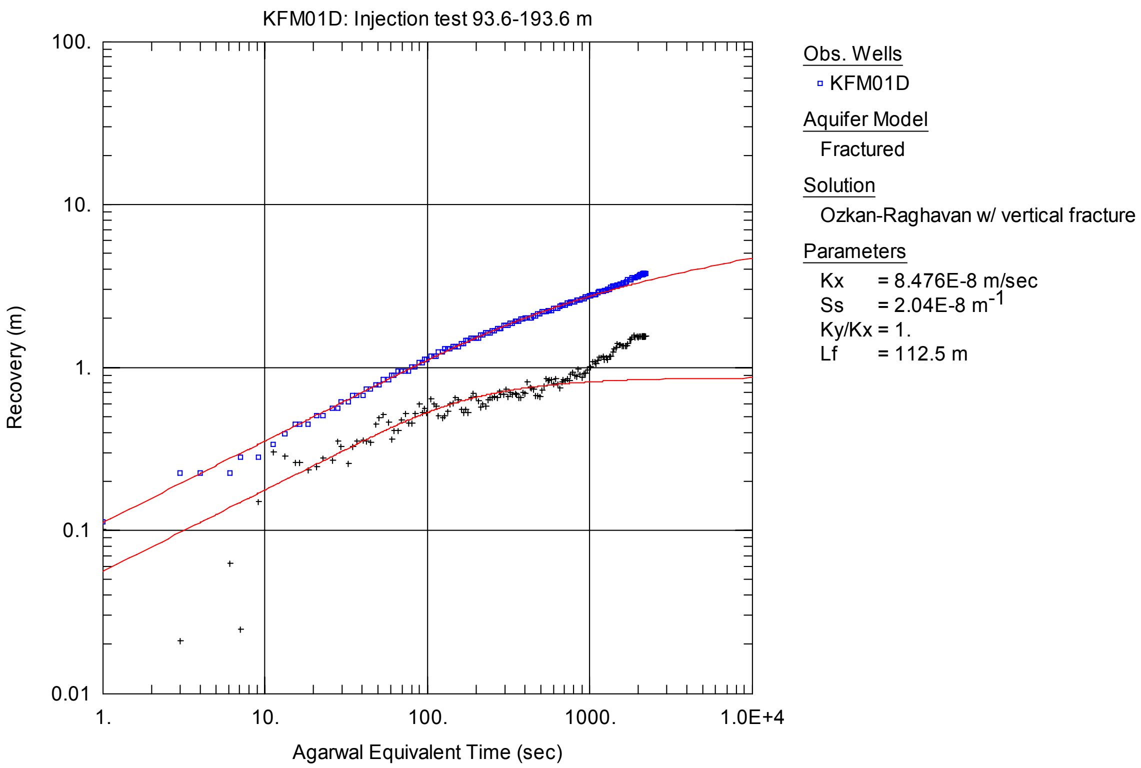


Figure A3-4. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 93.6-193.6 m in KFM01D.*

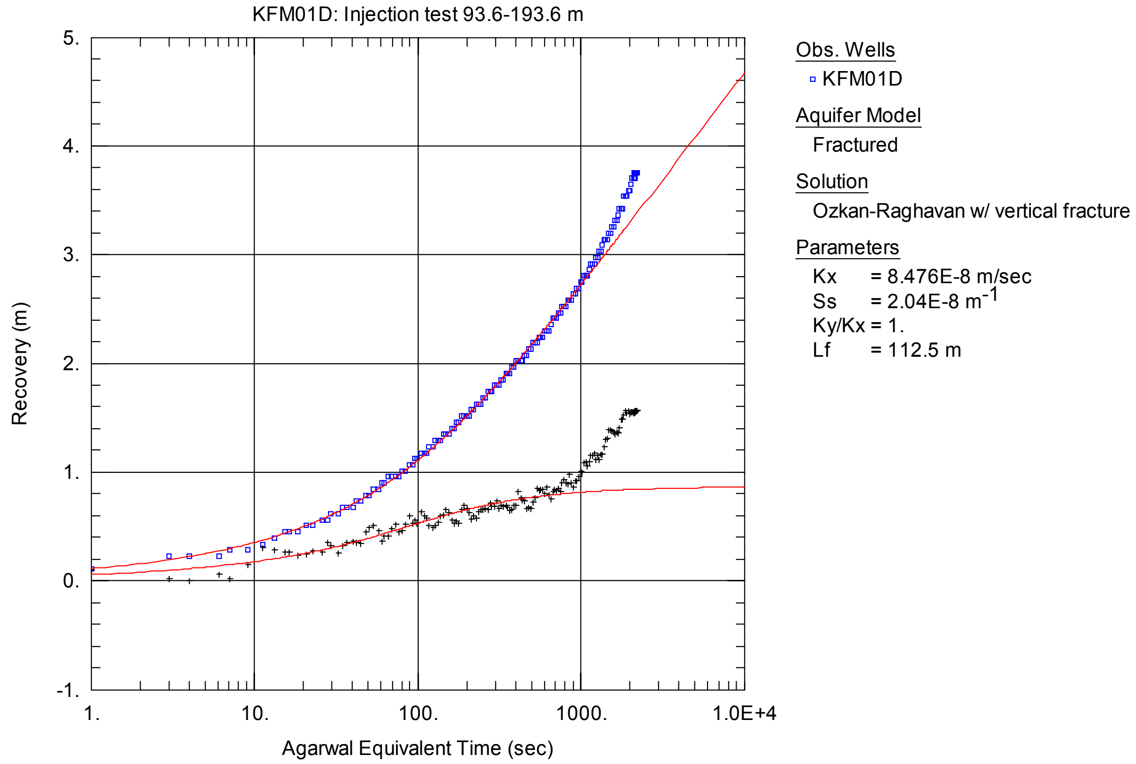


Figure A3-5. *Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 93.6-193.6 m in KFM01D.*

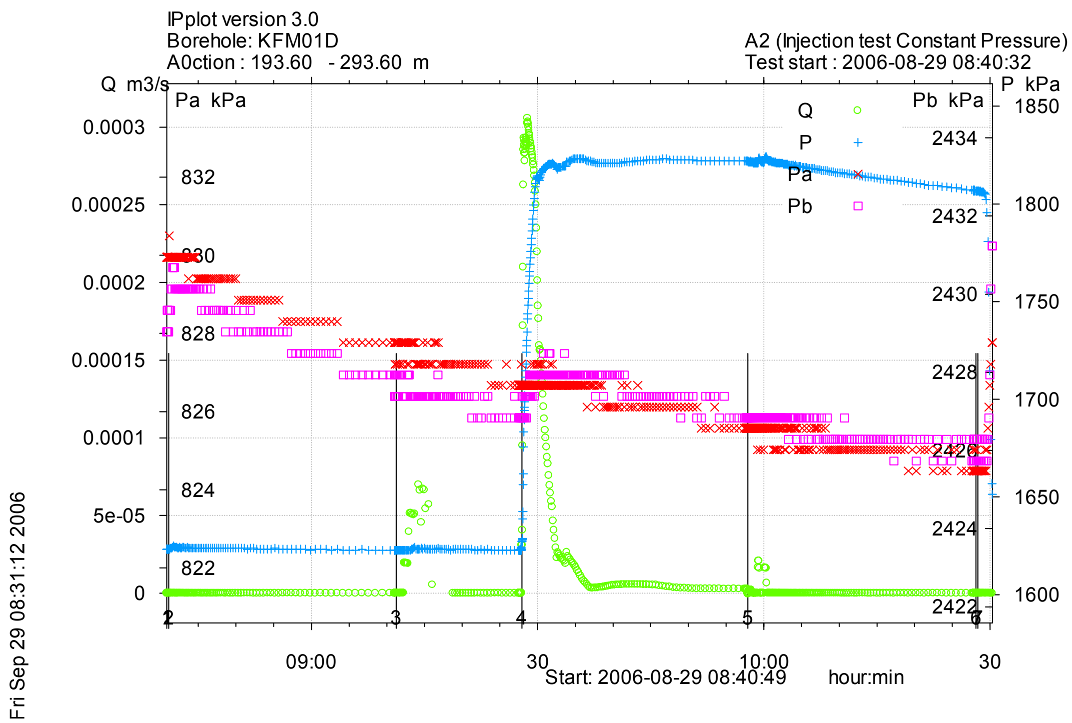


Figure A3-6. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 193.6-293.6 m in borehole KFM01D.*

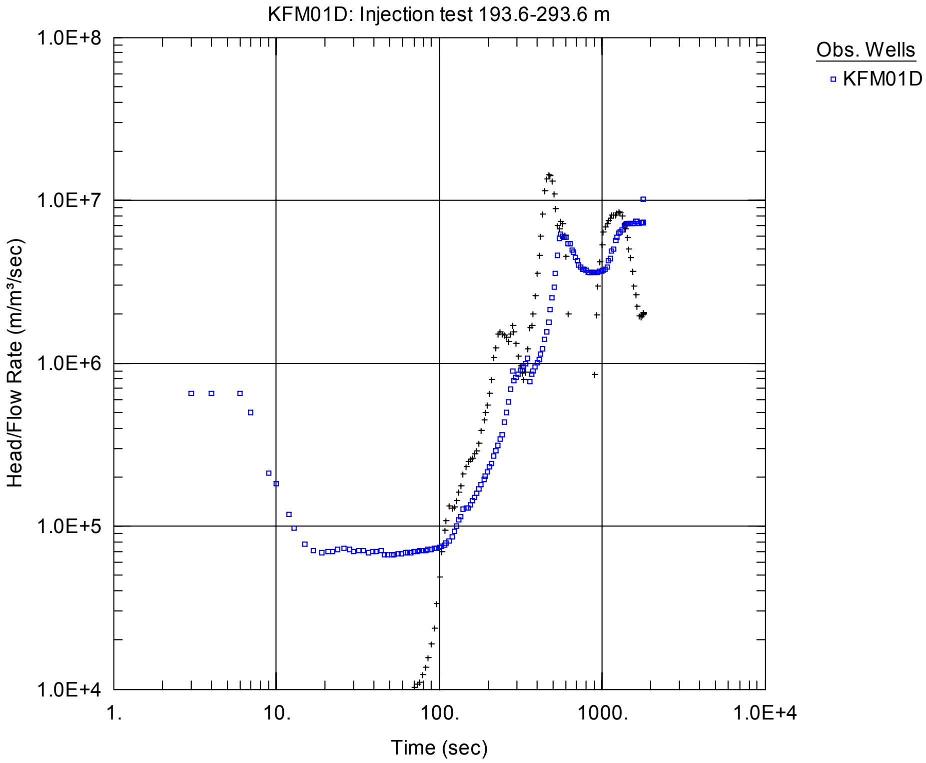


Figure A3-7. *Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 193.6-293.6 m in KFM01D. No type curve fit is shown since no unambiguous transient evaluation is possible.*

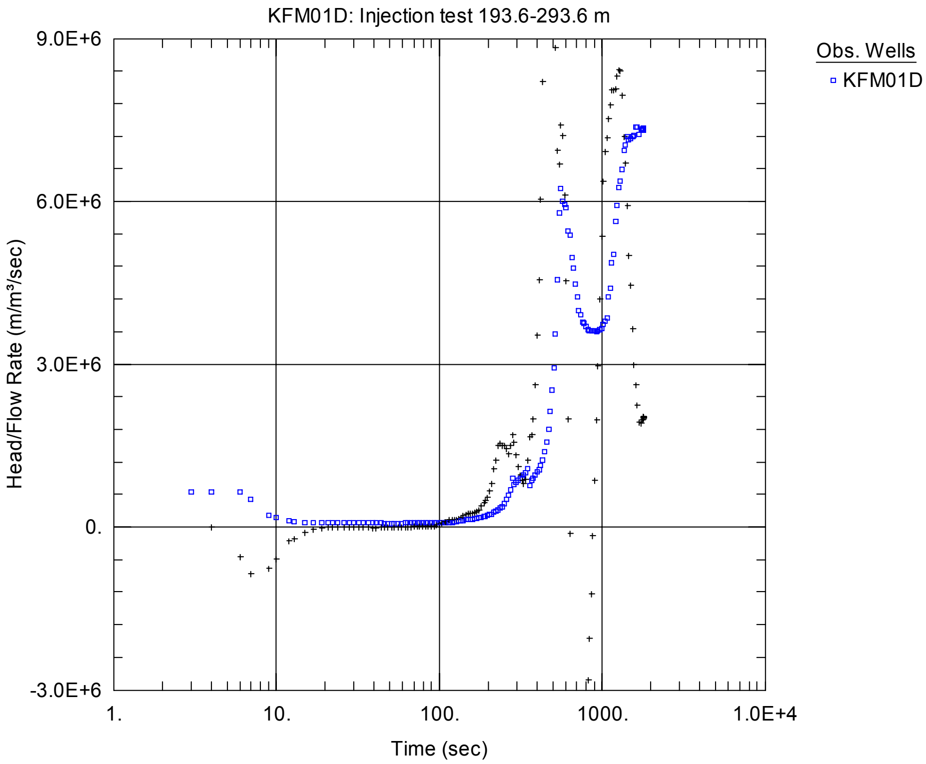


Figure A3-8. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 193.6-293.6 m in KFM01D. No type curve fit is shown since no unambiguous transient evaluation is possible.*

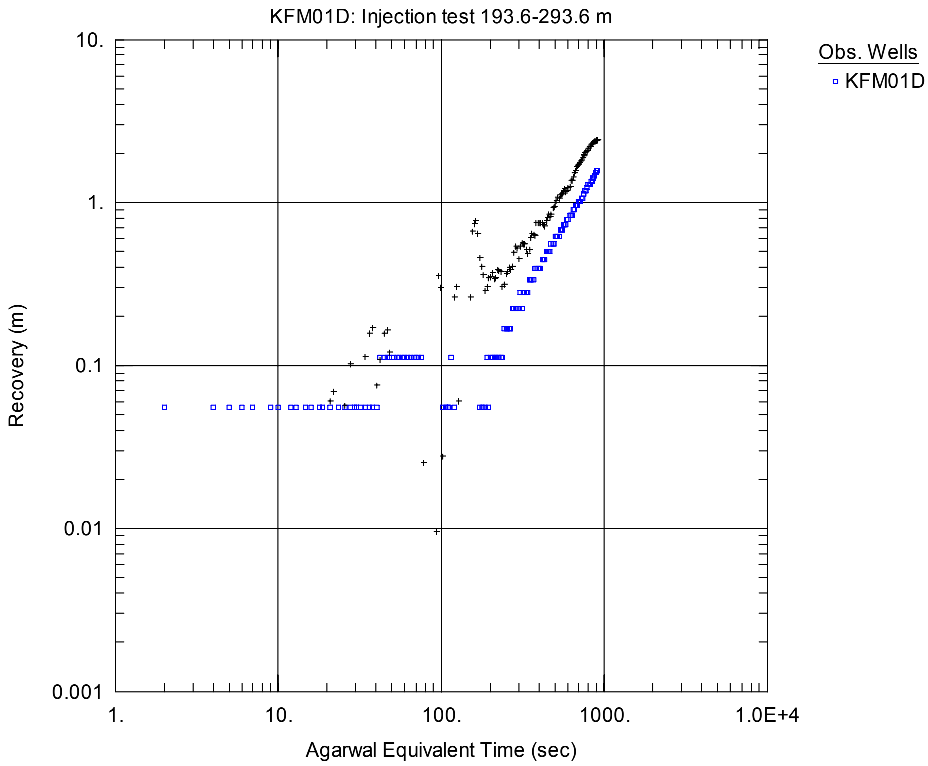


Figure A3-9. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 193.6-293.6 m in KFM01D. No type curve fit is shown since no unambiguous transient evaluation is possible.*

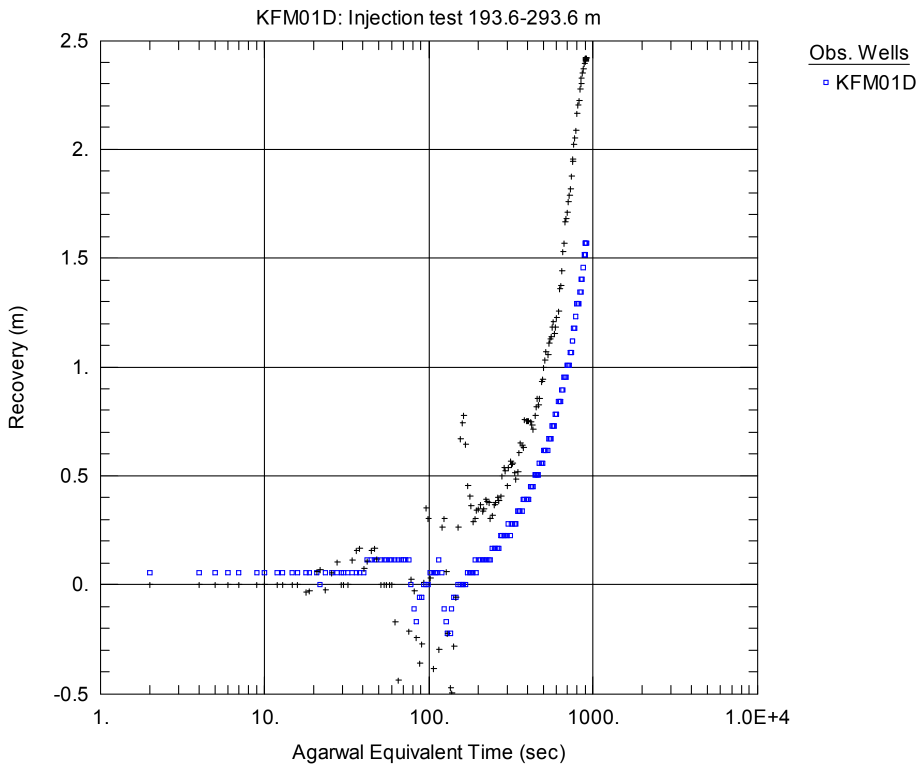


Figure A3-10. *Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 193.6-293.6 m in KFM01D. No type curve fit is shown since no unambiguous transient evaluation is possible.*

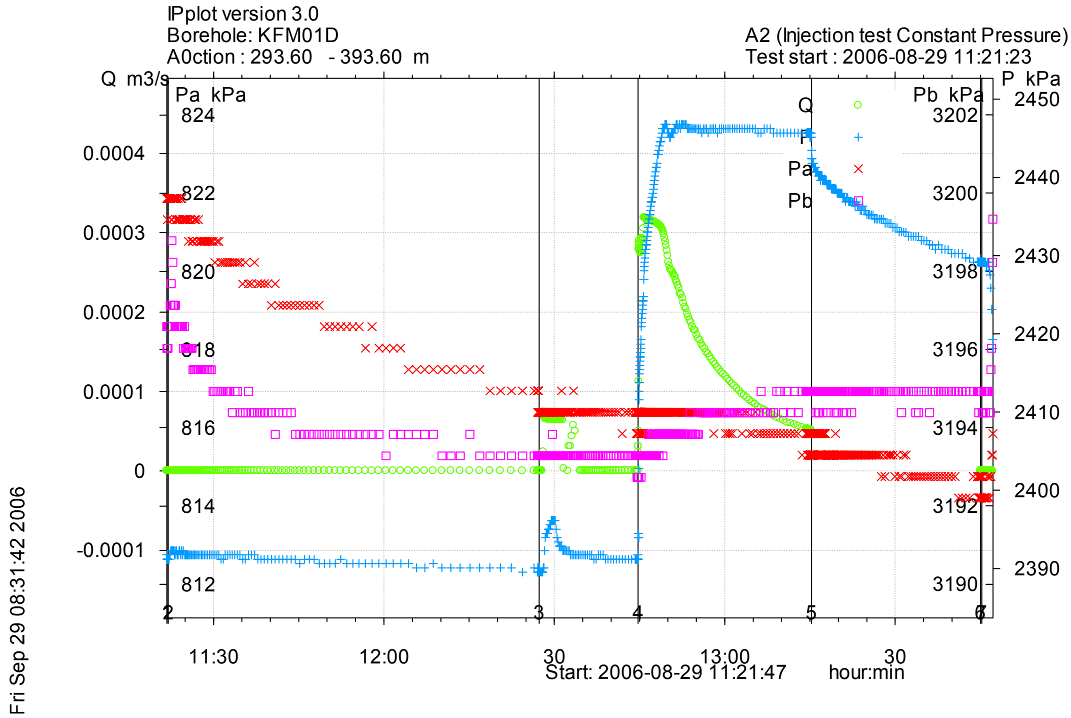


Figure A3-11. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 293.6-393.6 m in borehole KFM01D.*

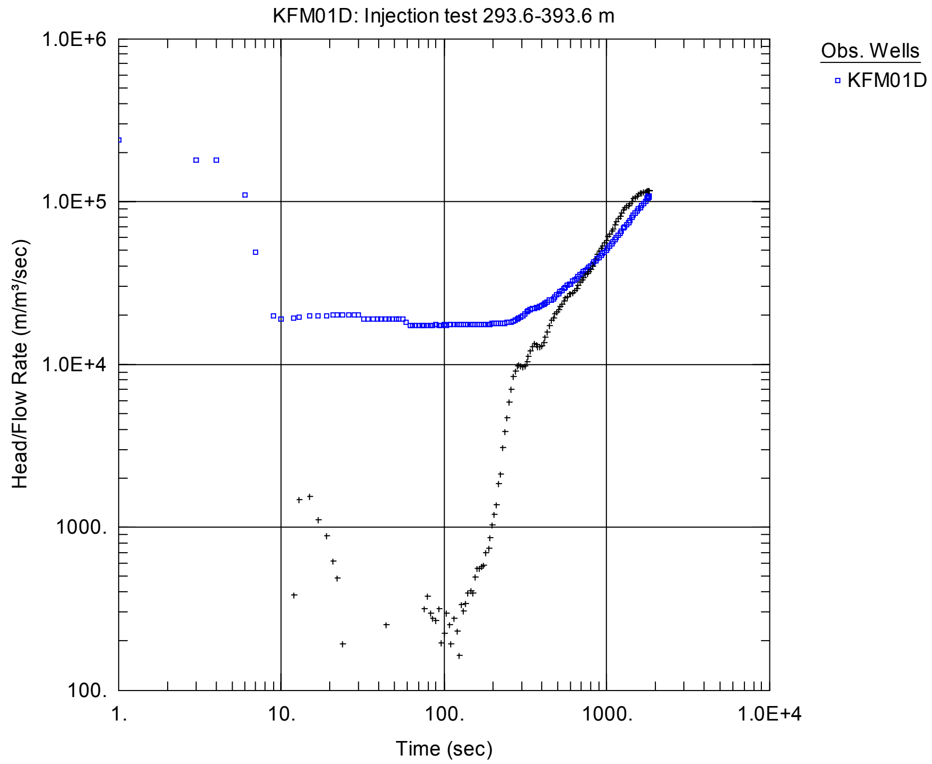


Figure A3-12. *Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 293.6-393.6 m in KFM01D. . No type curve fit is shown since no unambiguous transient evaluation is possible.*

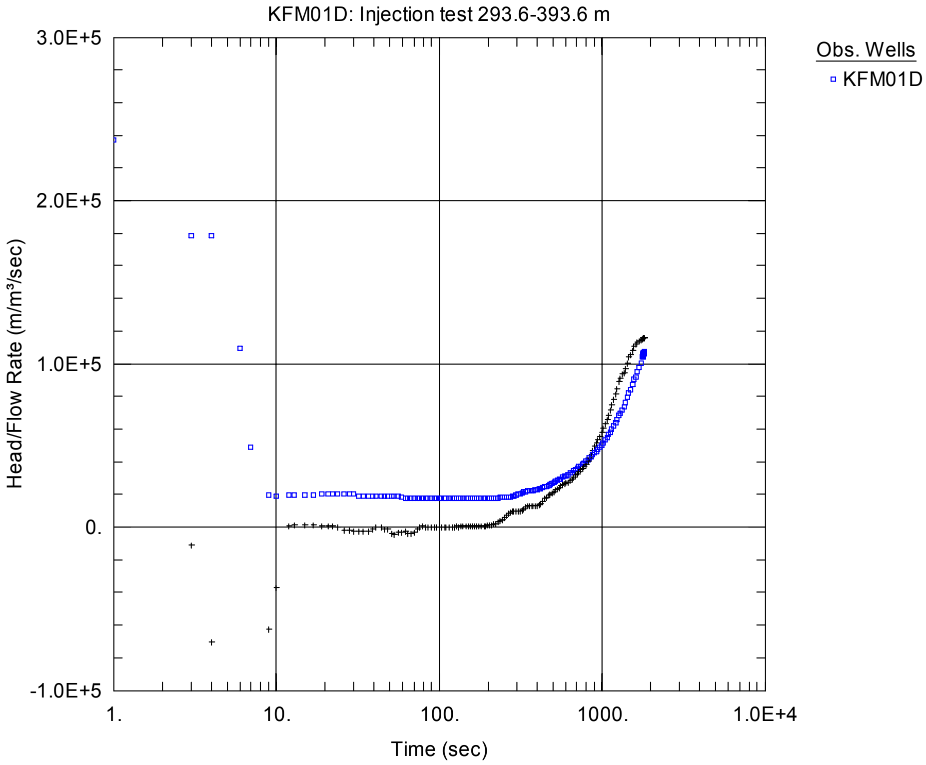


Figure A3-13. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 293.6-393.6 m in KFM01D. No type curve fit is shown since no unambiguous transient evaluation is possible.*

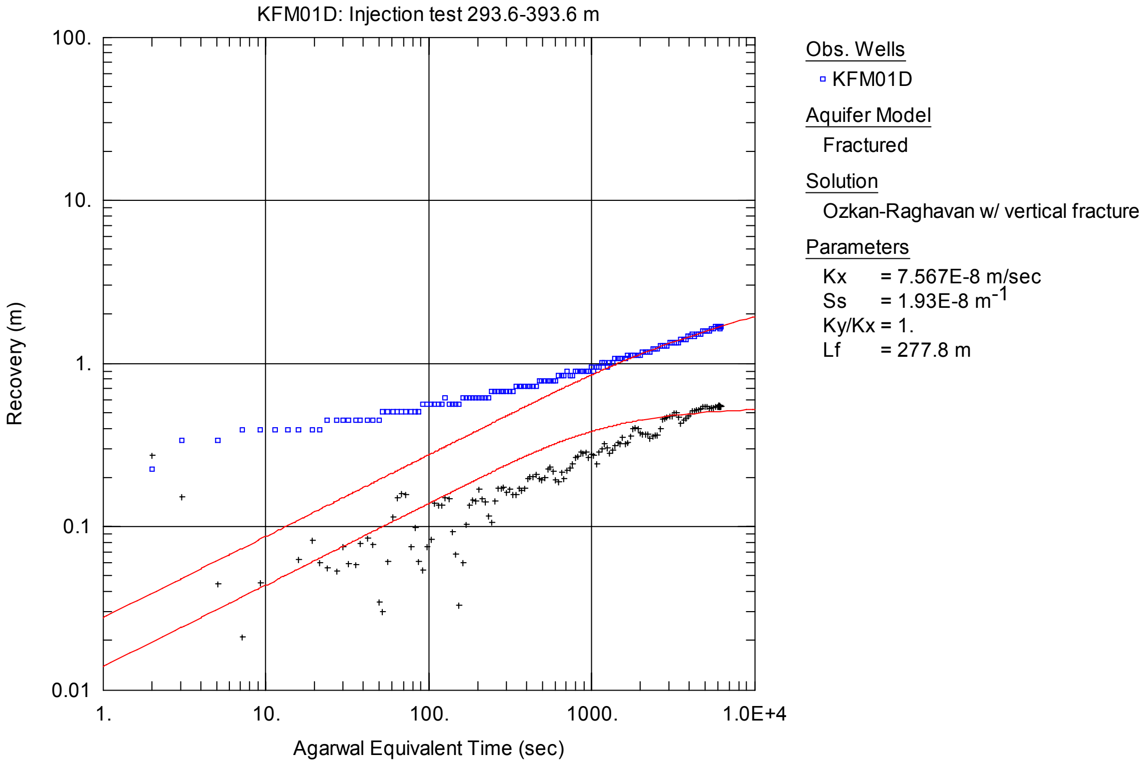


Figure A3-14. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 293.6-393.6 m in KFM01D.*

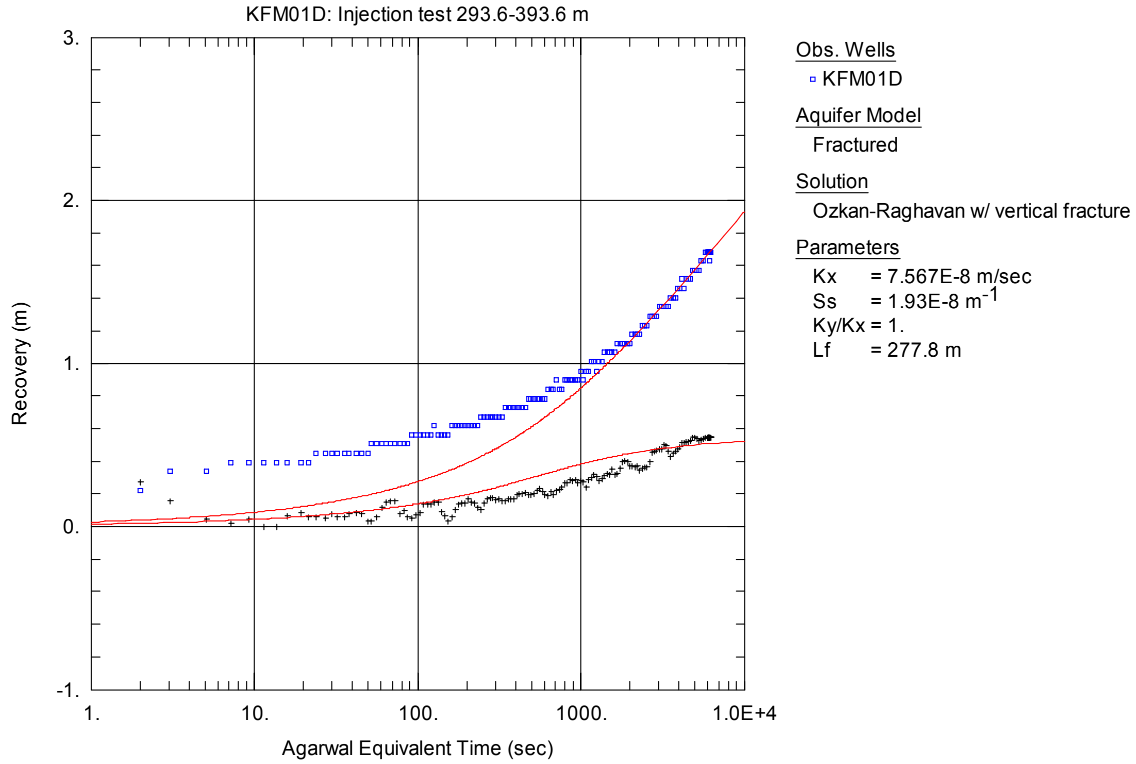


Figure A3-15. *Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 293.6-393.6 m in KFM01D.*

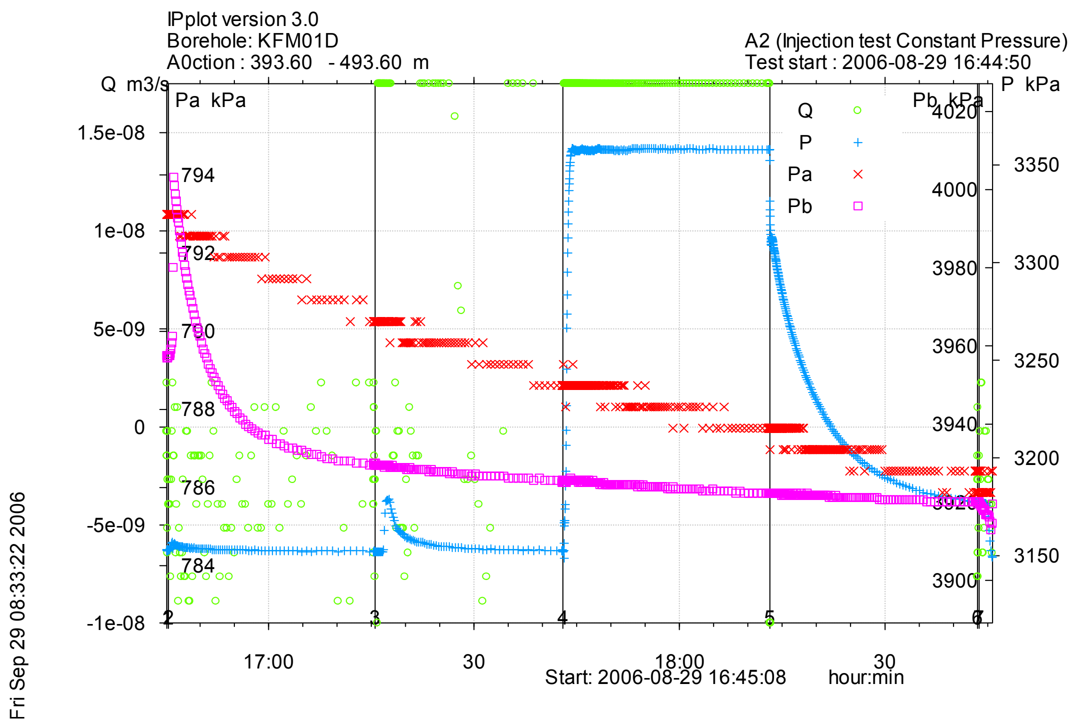


Figure A3-16. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 393.6-493.6 m in borehole KFM01D.*

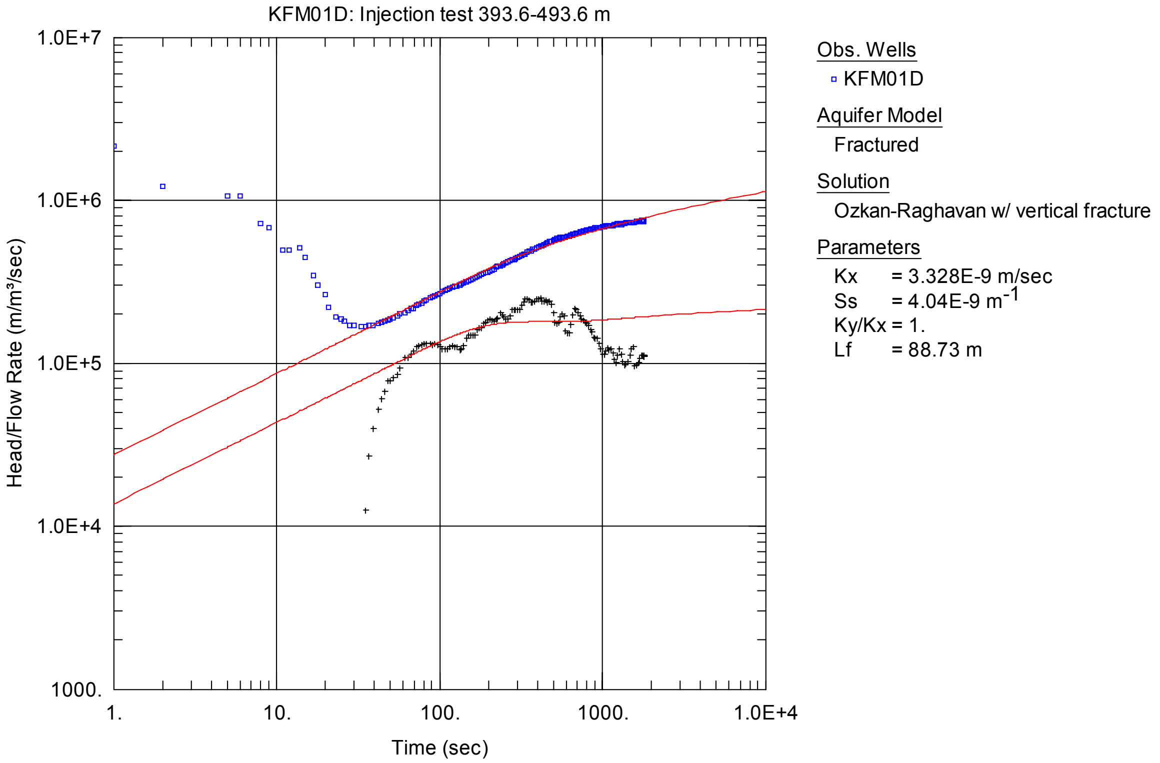


Figure A3-17. *Log-log plot of head/flow rate (□) and derivative (+) versus time, showing fit to the PLF solution, from the injection test in section 393.6-493.6 m in KFM01D.*

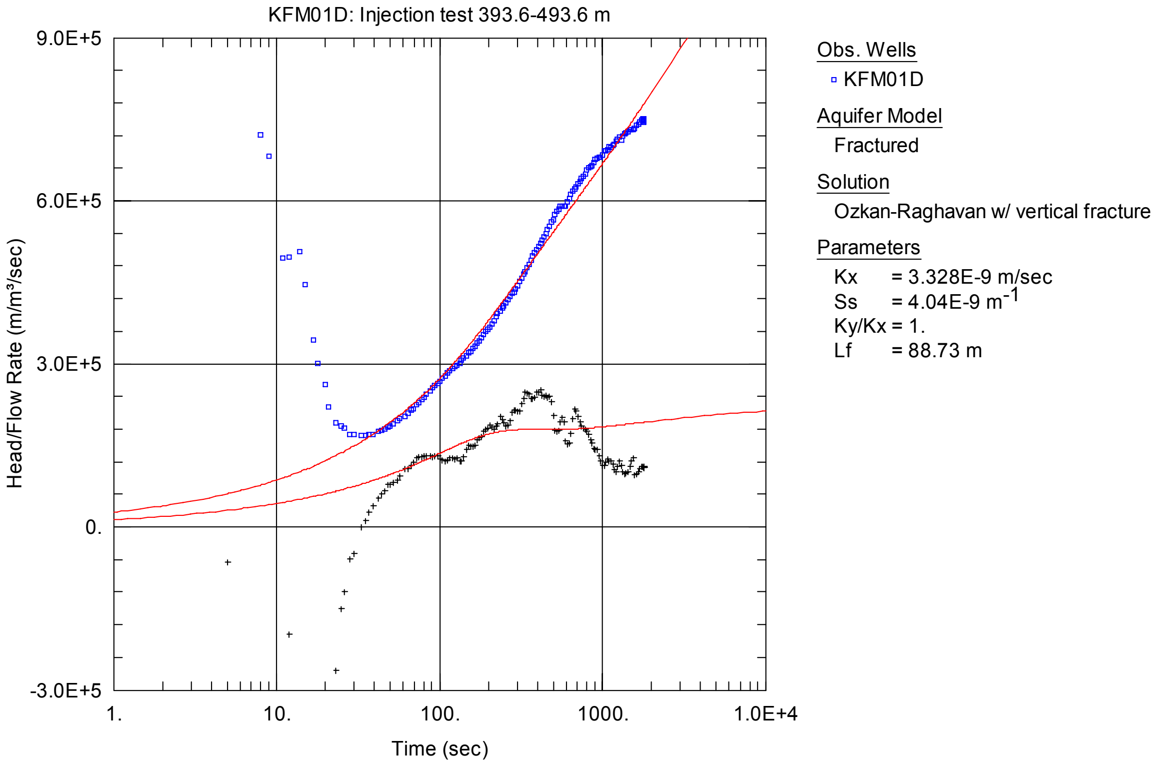


Figure A3-18. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, showing fit to the PLF solution, from the injection test in section 393.6-493.6 m in KFM01D.*

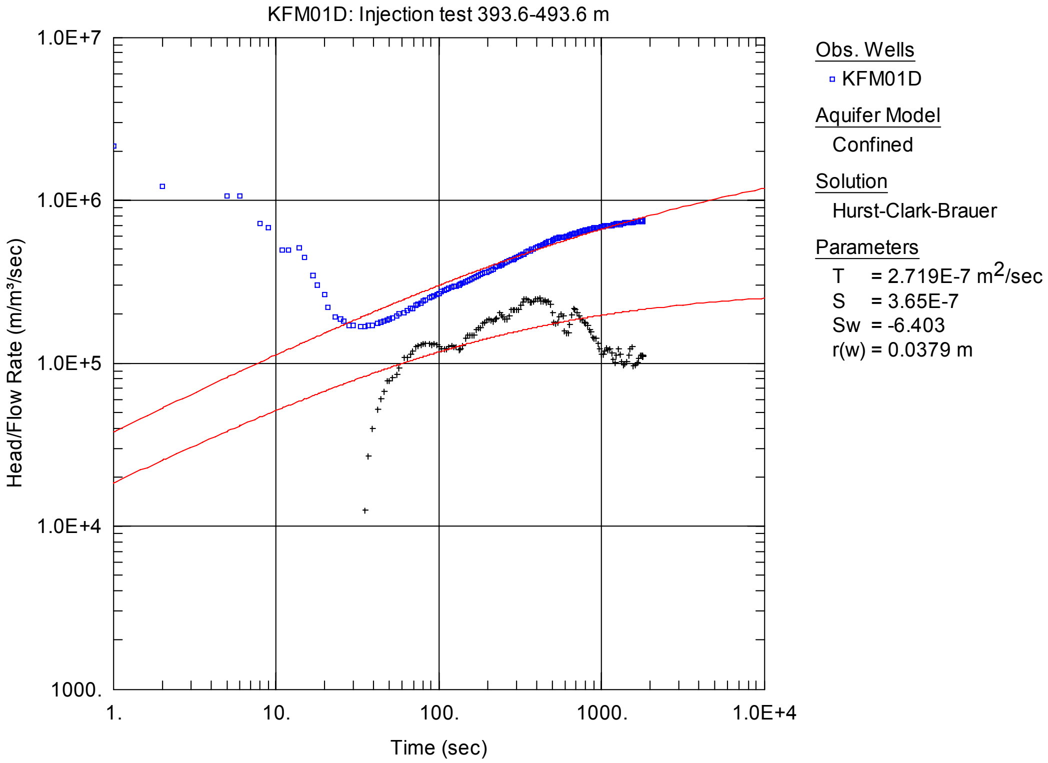


Figure A3-19. *Log-log plot of head/flow rate (□) and derivative (+) versus time, showing fit to the PRF solution, from the injection test in section 393.6-493.6 m in KFM01D.*

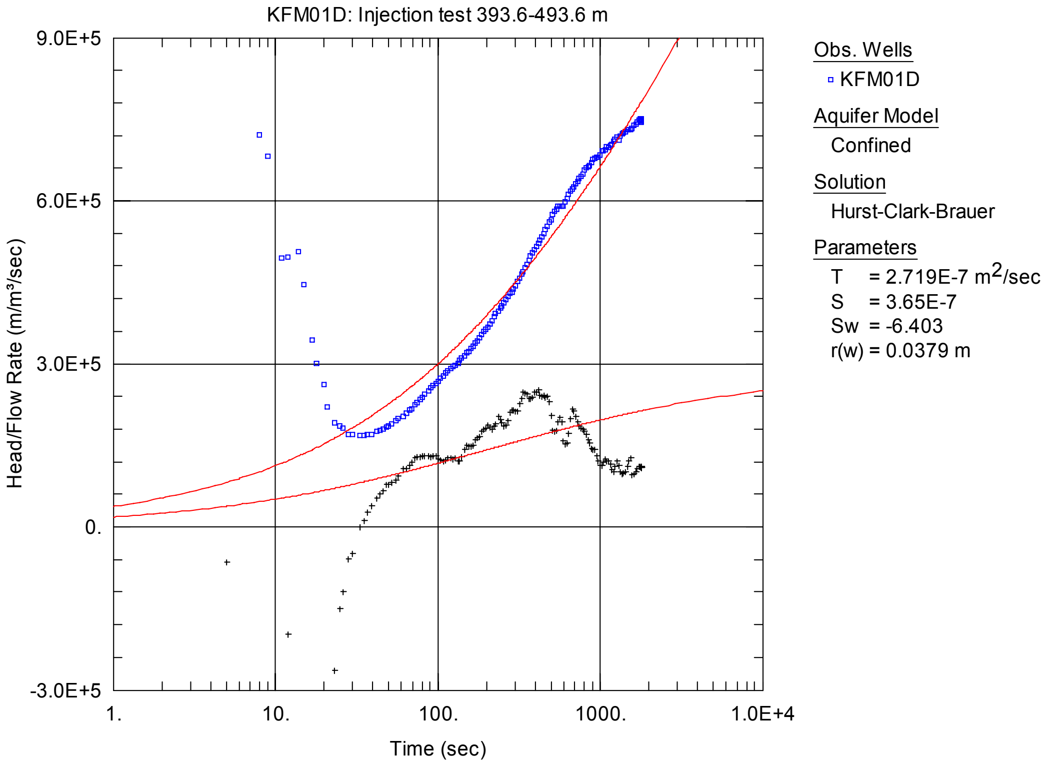


Figure A3-20. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, showing fit to the PRF solution, from the injection test in section 393.6-493.6 m in KFM01D.*

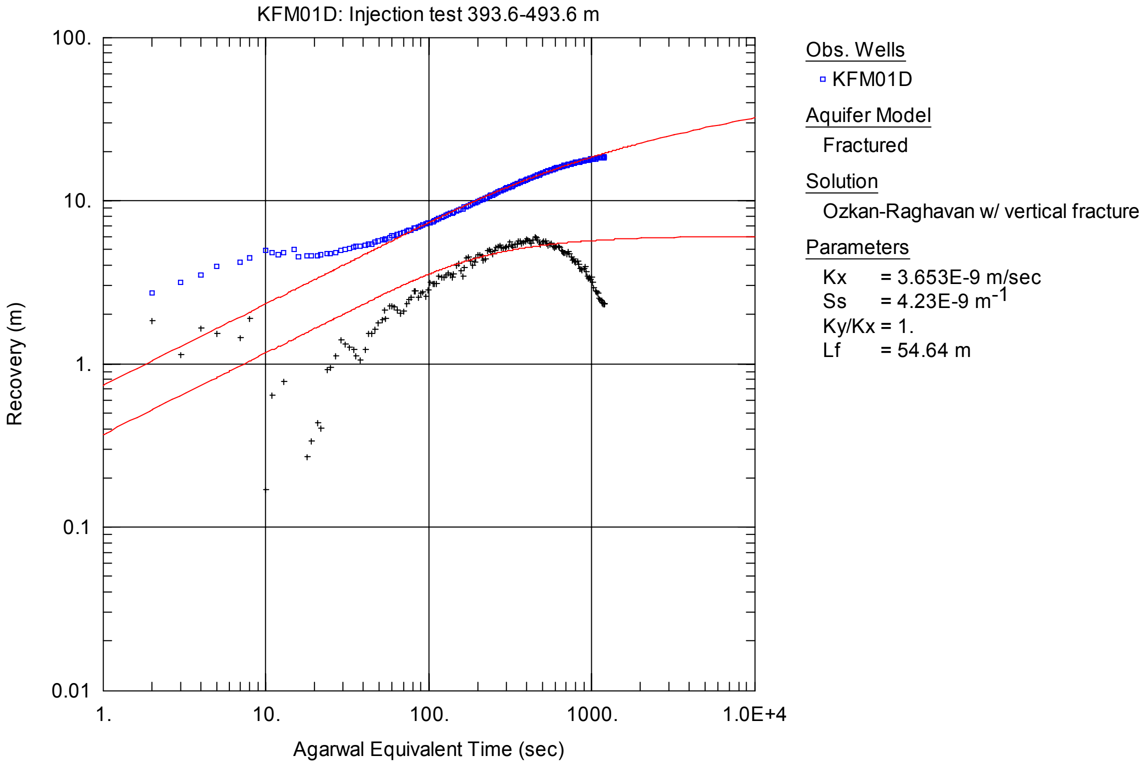


Figure A3-21. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 393.6-493.6 m in KFM01D.*

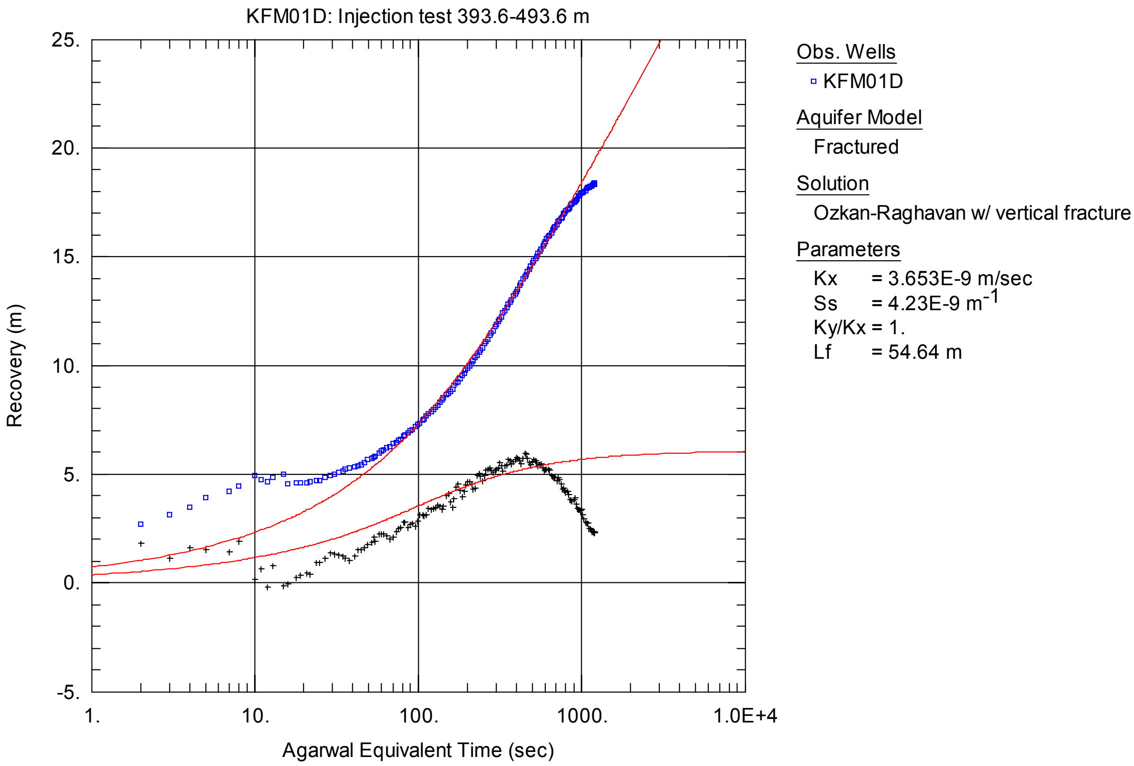


Figure A3-22. *Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 393.6-493.6 m in KFM01D.*

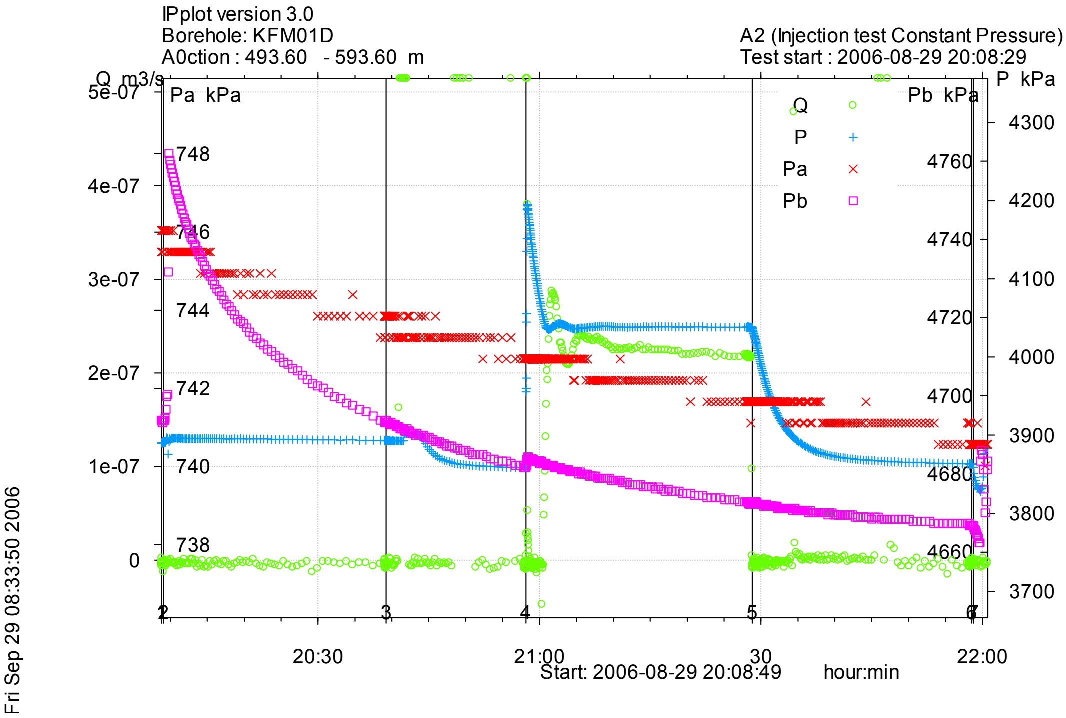


Figure A3-23. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 493.6-593.6 m in borehole KFM01D.*

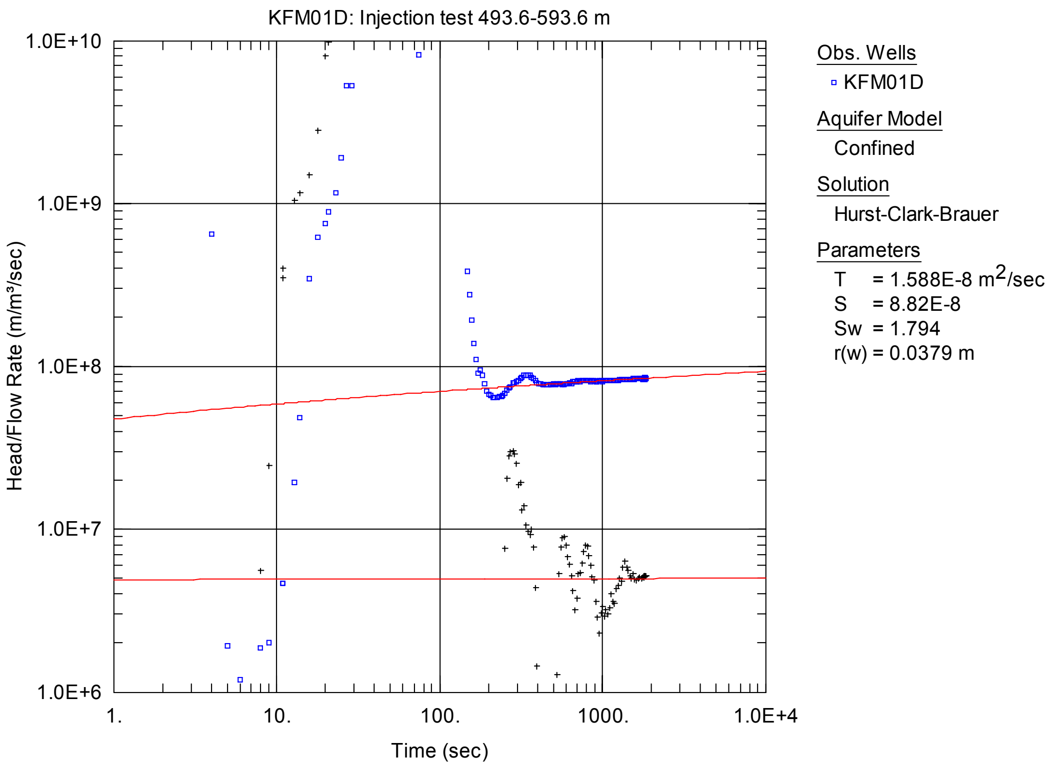


Figure A3-24. *Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 493.6-593.6 m in KFM01D.*

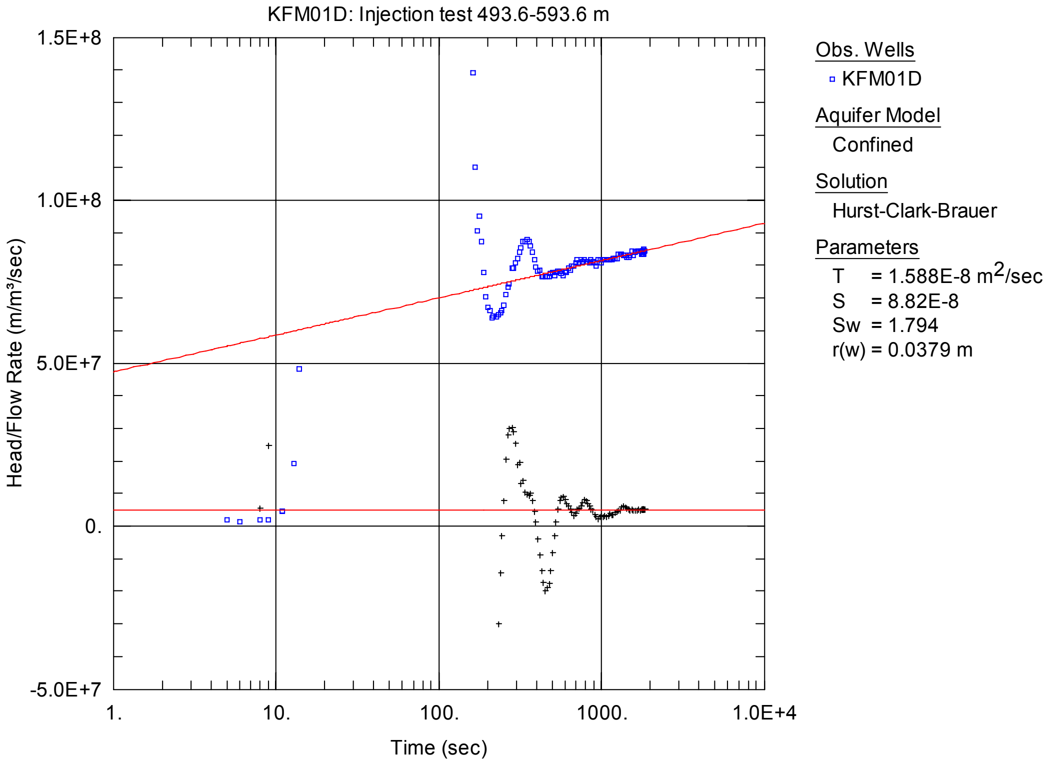


Figure A3-25. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 493.6-593.6 m in KFM01D.*

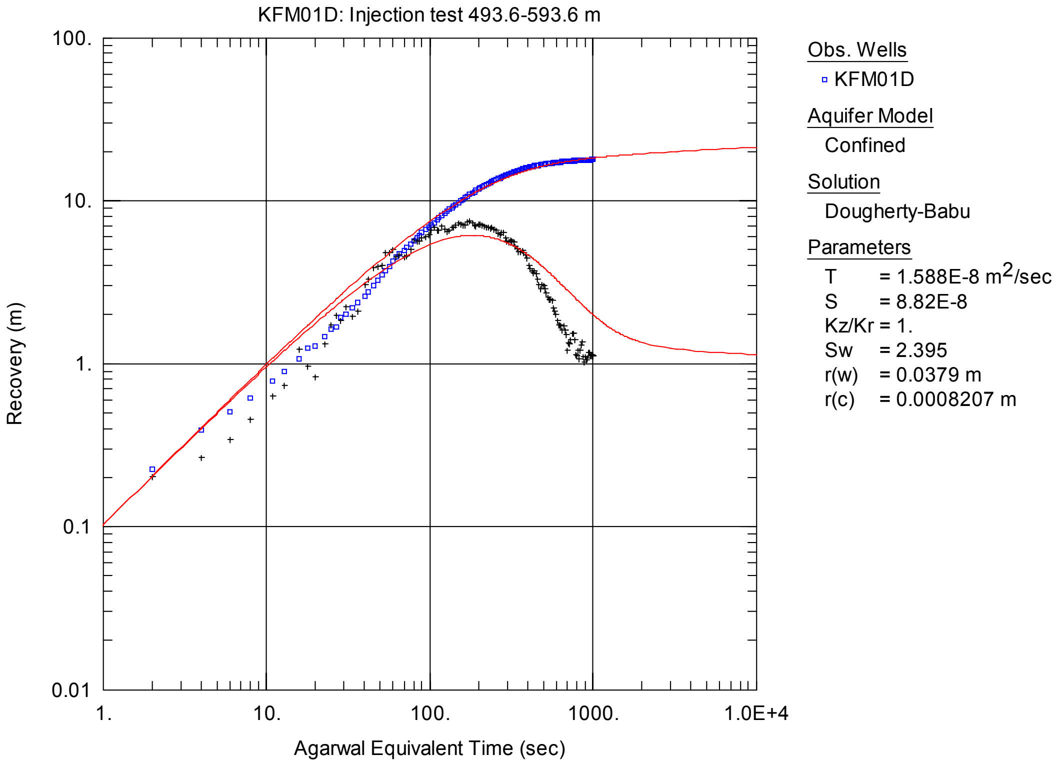


Figure A3-26. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 493.6-593.6 m in KFM01D. The type curve fit is showing a possible, however not unambiguous, evaluation.*

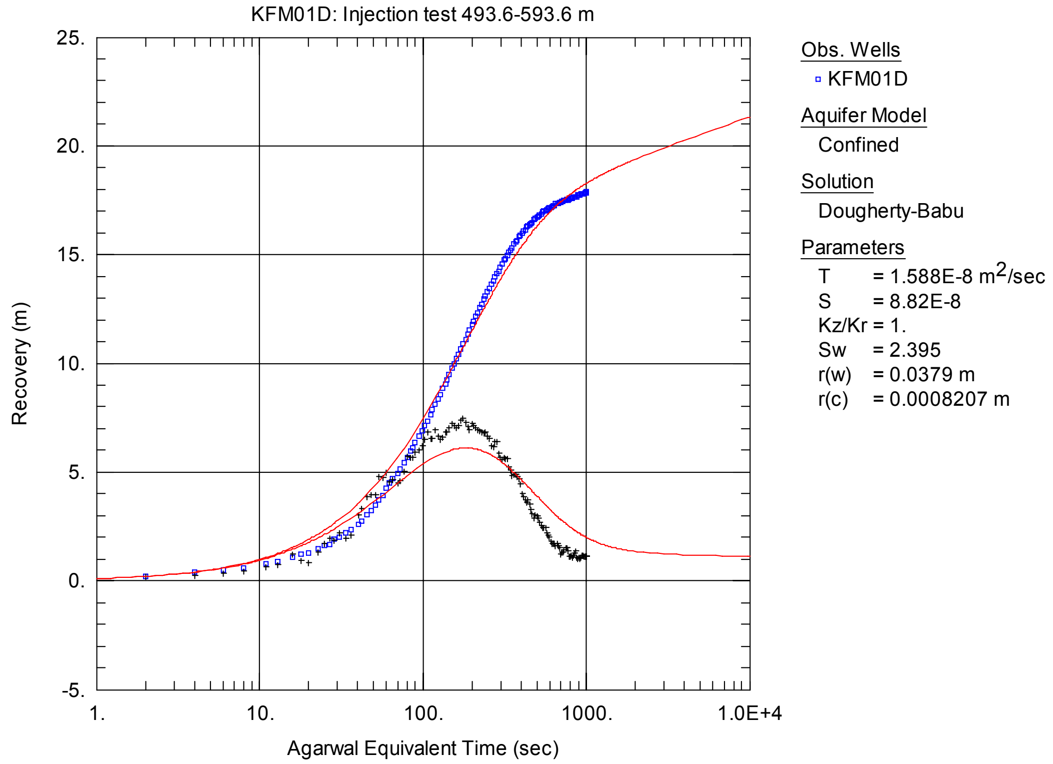


Figure A3-27. Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 493.6-593.6 m in KFM01D. The type curve fit is showing a possible, however not unambiguous, evaluation.

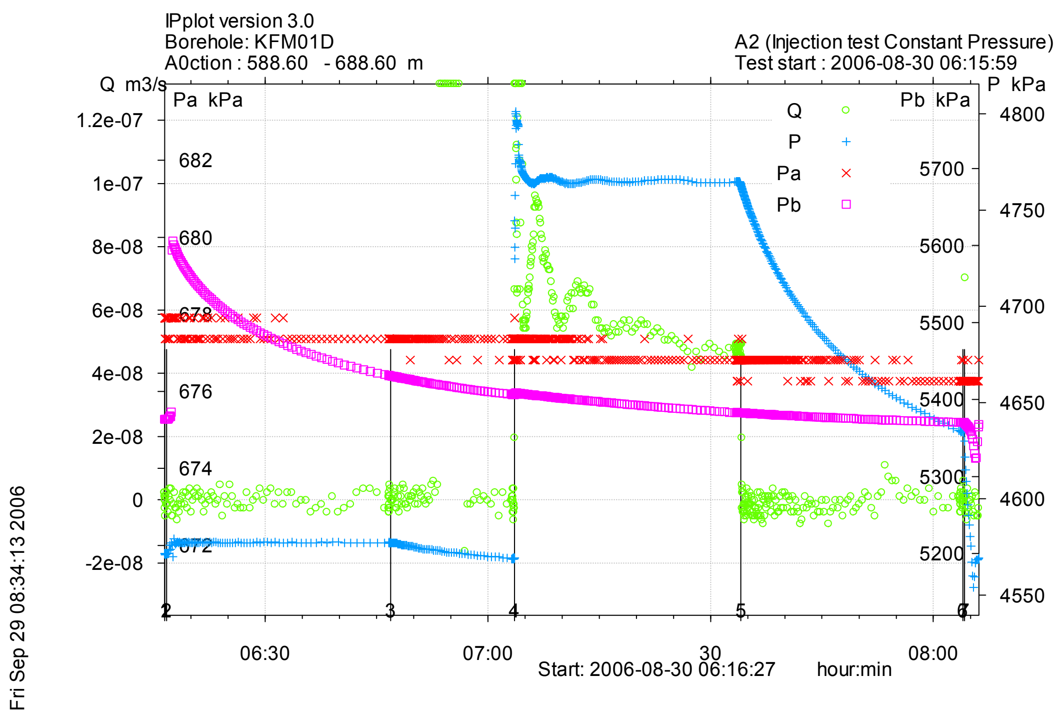


Figure A3-28. Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 588.6-688.6 m in borehole KFM01D.

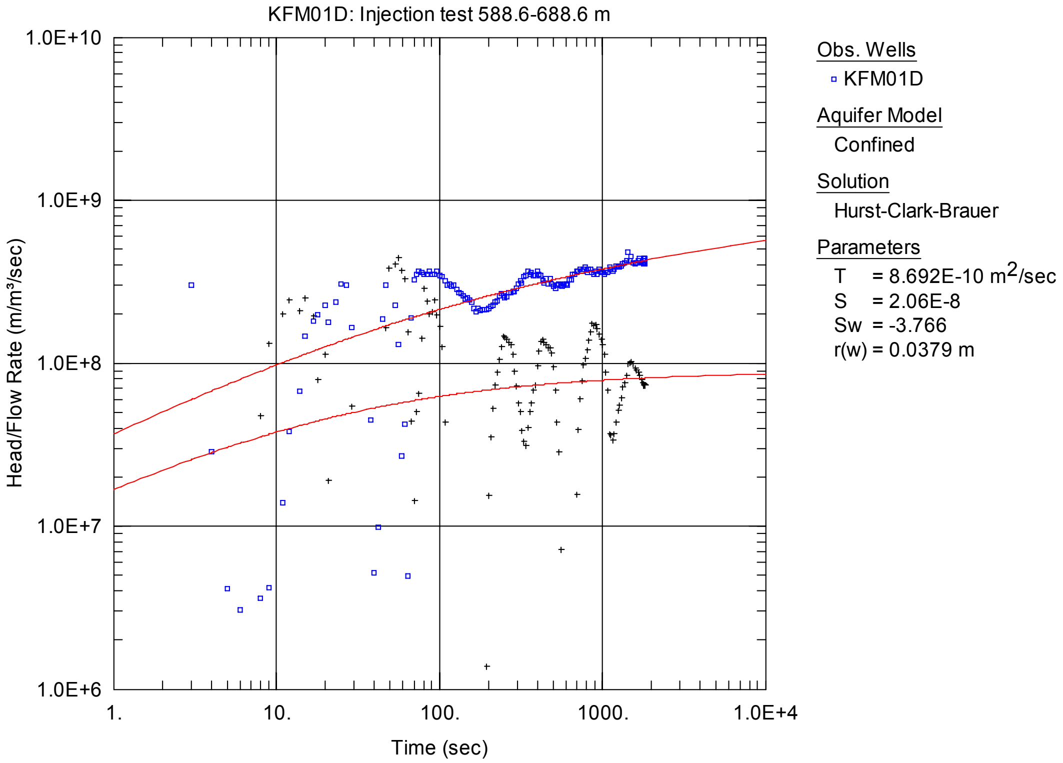


__Figure A3-29.__ Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 588.6-688.6 m in KFM01D.

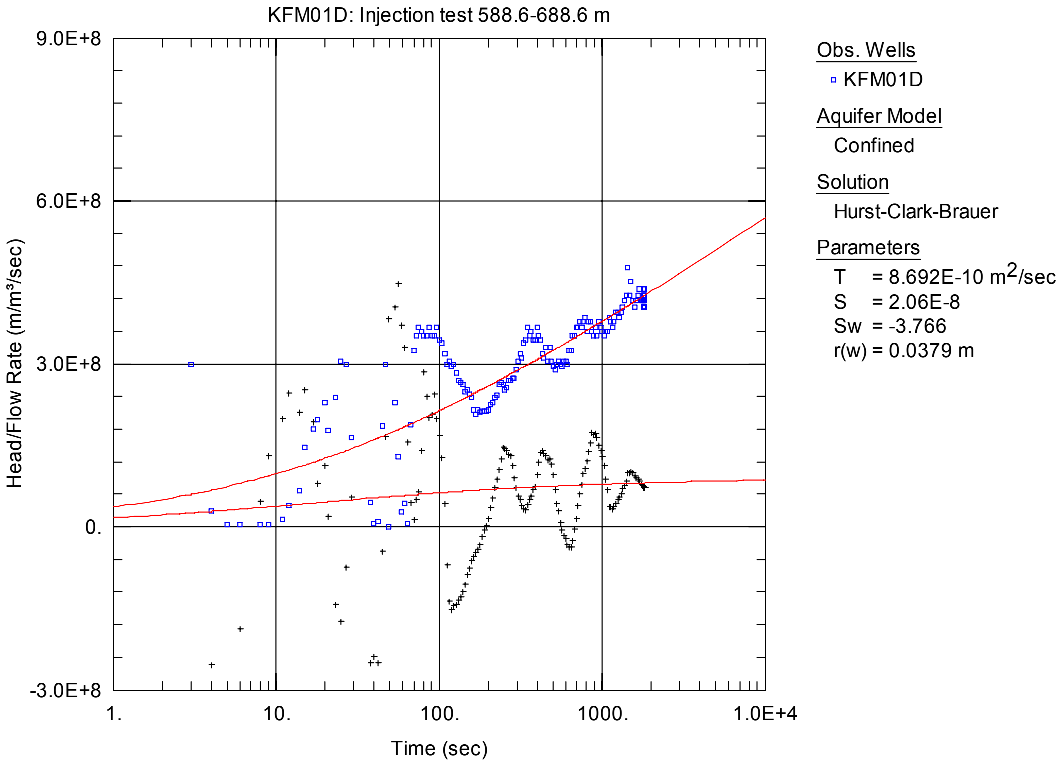


__Figure A3-30.__ Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 588.6-688.6 m in KFM01D.

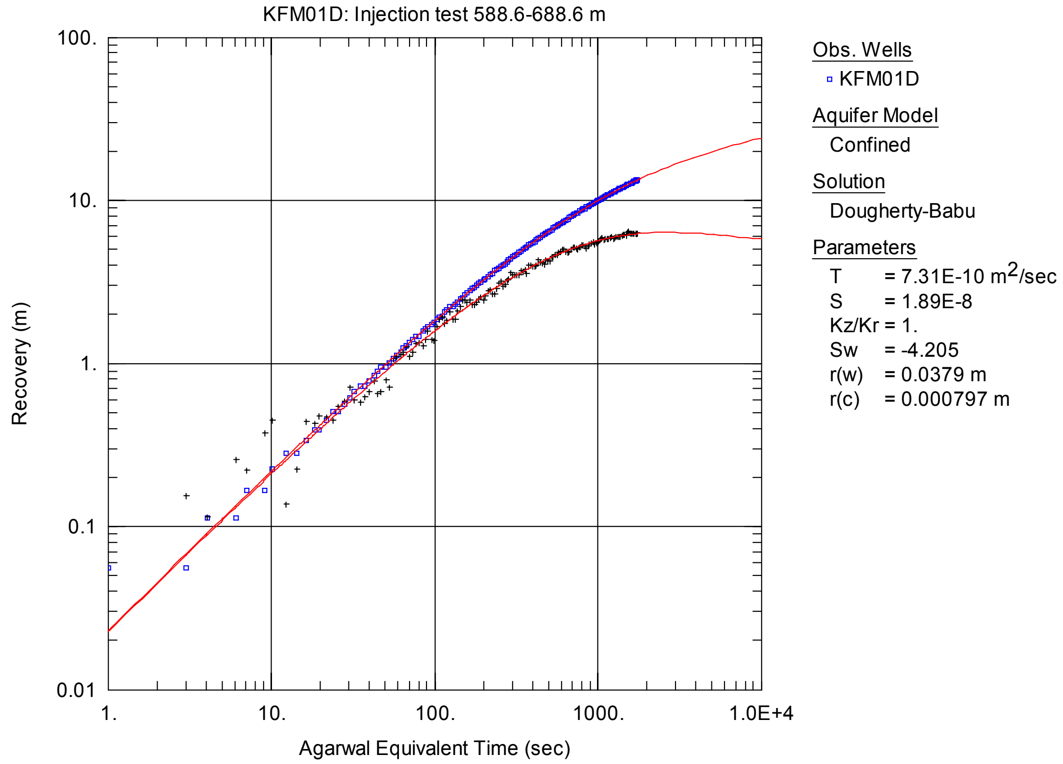


Figure A3-31. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 588.6-688.6 m in KFM01D.*

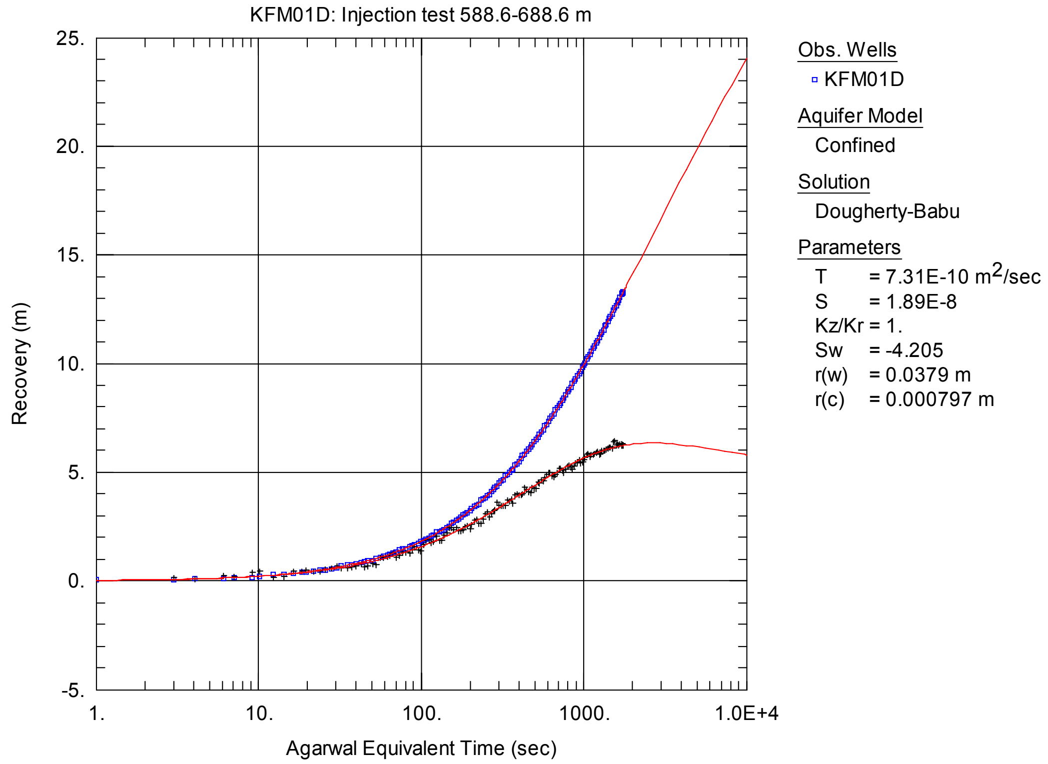


Figure A3-32. *Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 588.6-688.6 m in KFM01D.*

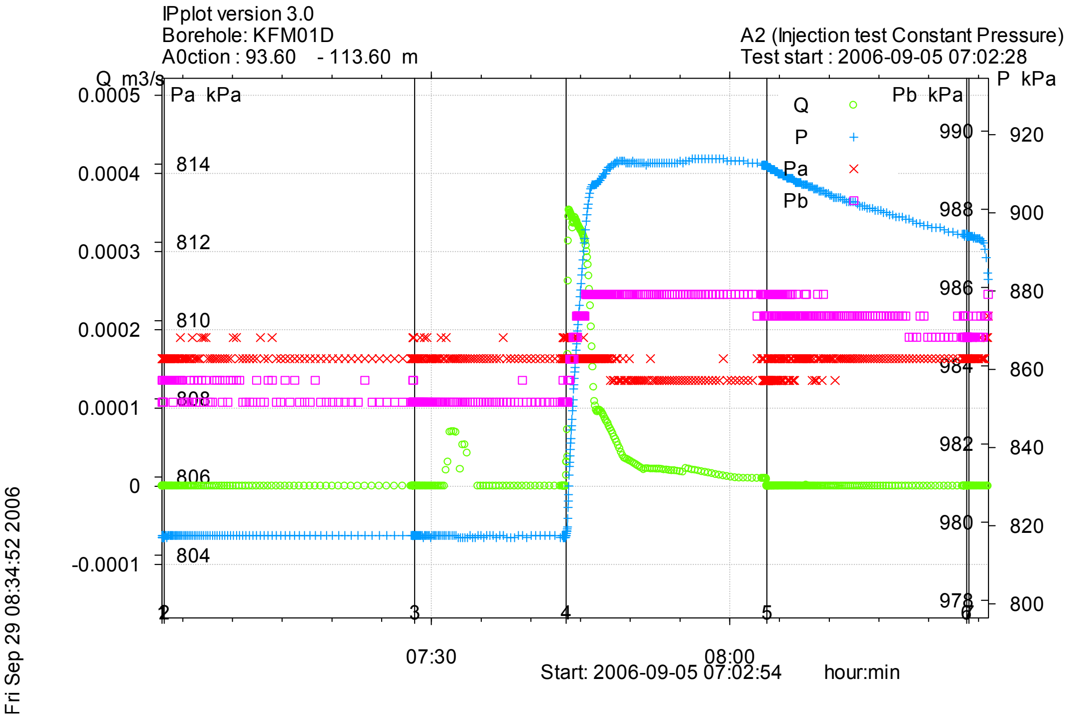


Figure A3-33. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 93.6-113.6 m in borehole KFM01D.*

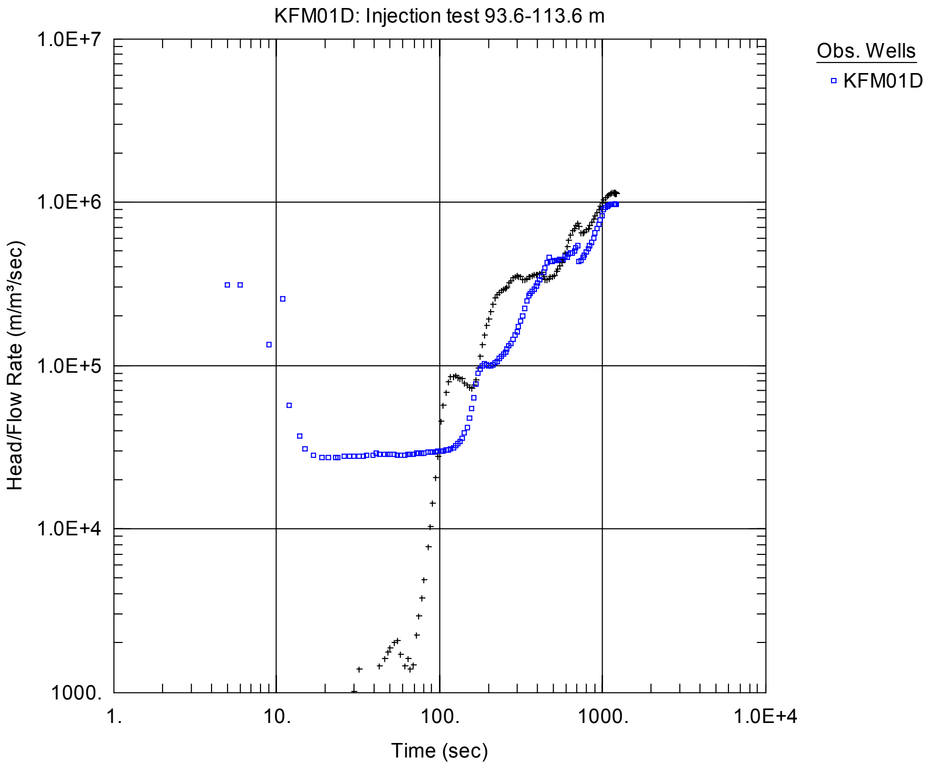


Figure A3-34. *Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 93.6-113.6 m in KFM01D. No type curve fit is shown since no unambiguous transient evaluation is possible.*

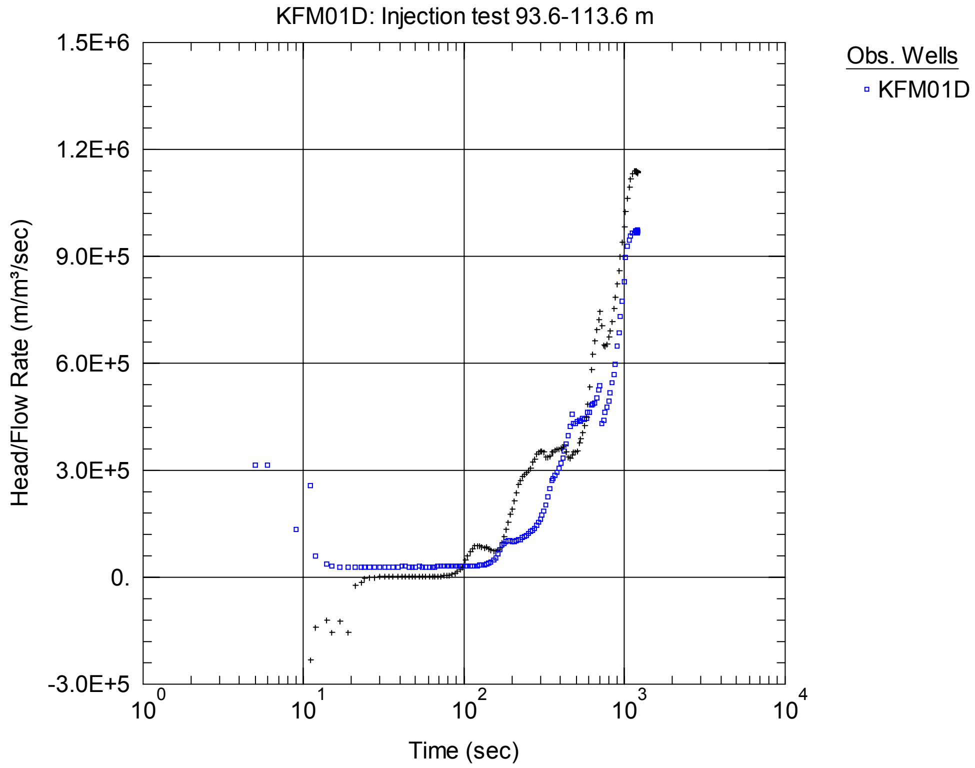


Figure A3-35. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 93.6-113.6 m in KFM01D. No type curve fit is shown since no unambiguous transient evaluation is possible.*

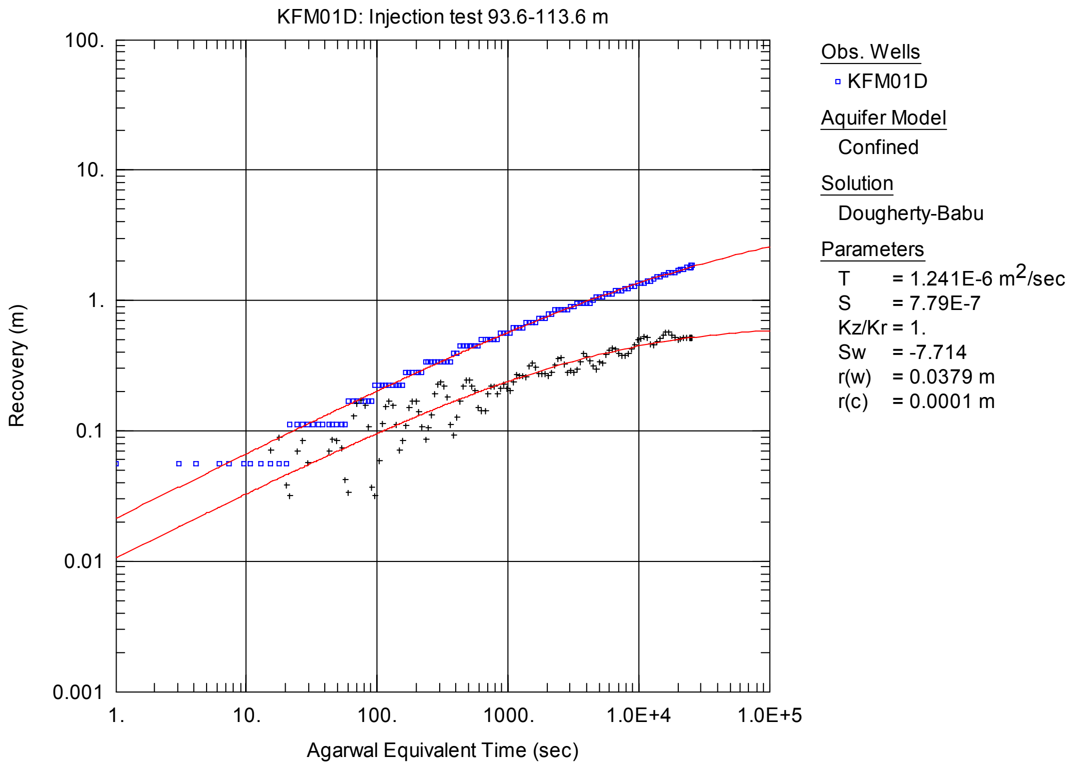


Figure A3-36. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 93.6-113.6 m in KFM01D.*

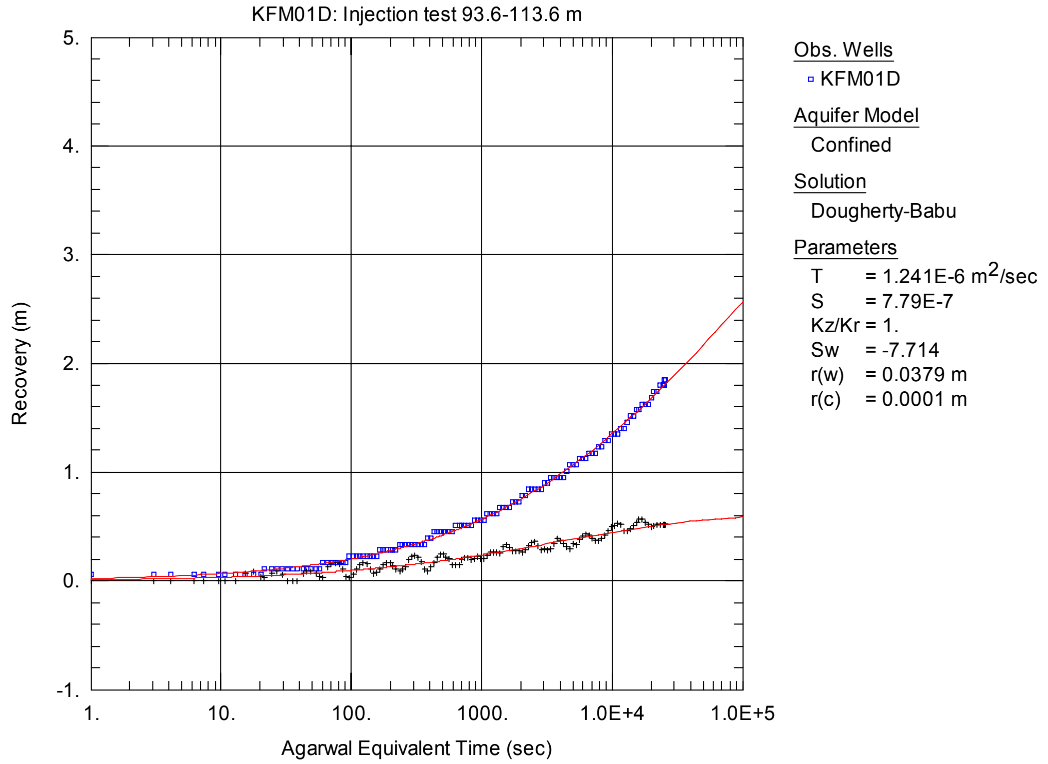


Figure A3-37. *Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 93.6-113.6 m in KFM01D.*

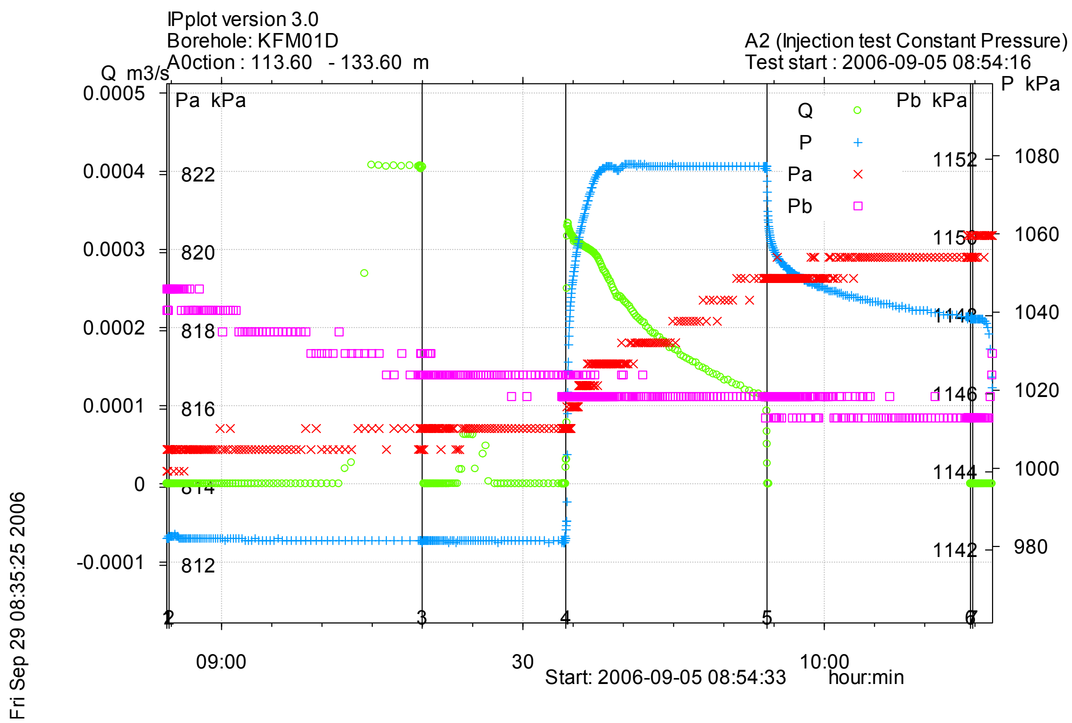


Figure A3-38. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 113.6-133.6 m in borehole KFM01D.*

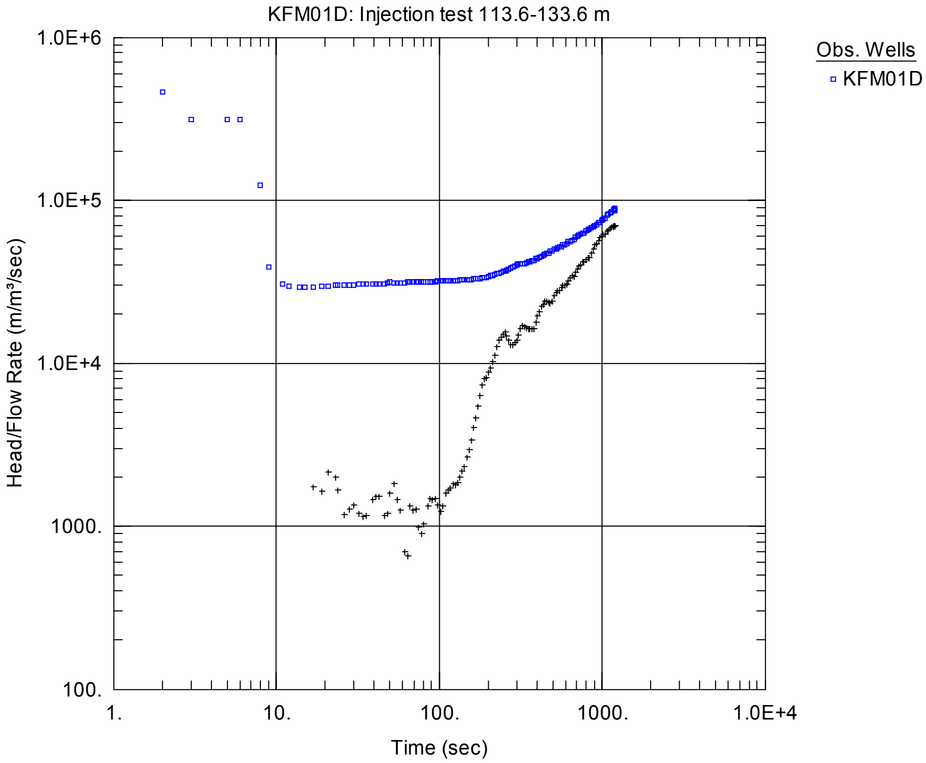


Figure A3-39. *Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 113.6-133.6 m in KFM01D. No type curve fit is shown since no unambiguous transient evaluation is possible.*

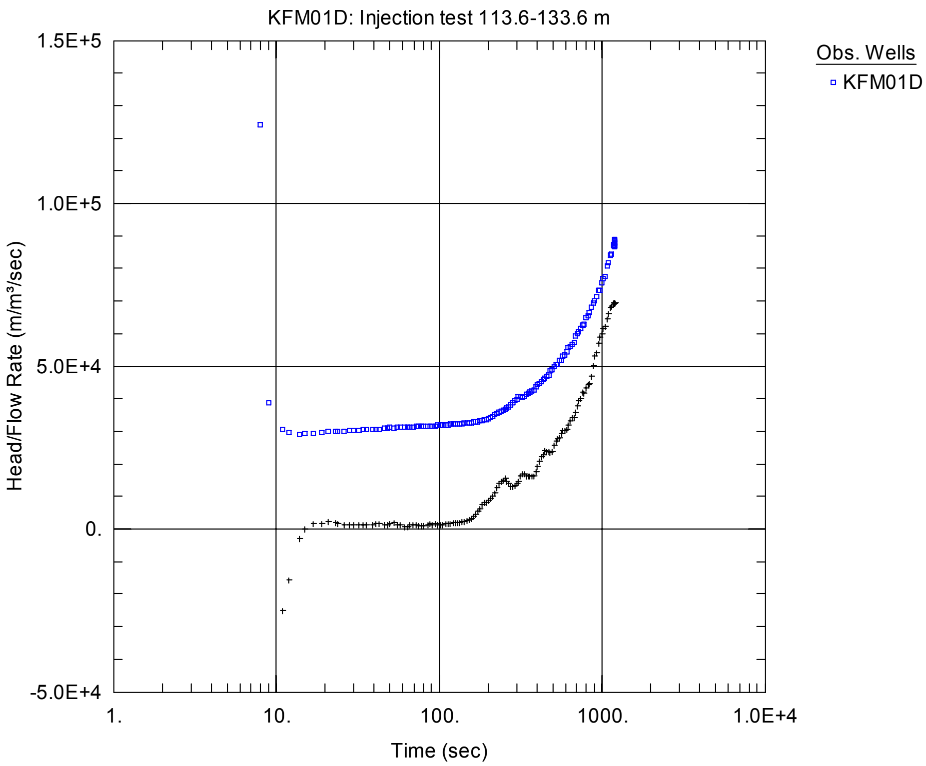


Figure A3-40. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 113.6-133.6 m in KFM01D. No type curve fit is shown since no unambiguous transient evaluation is possible.*

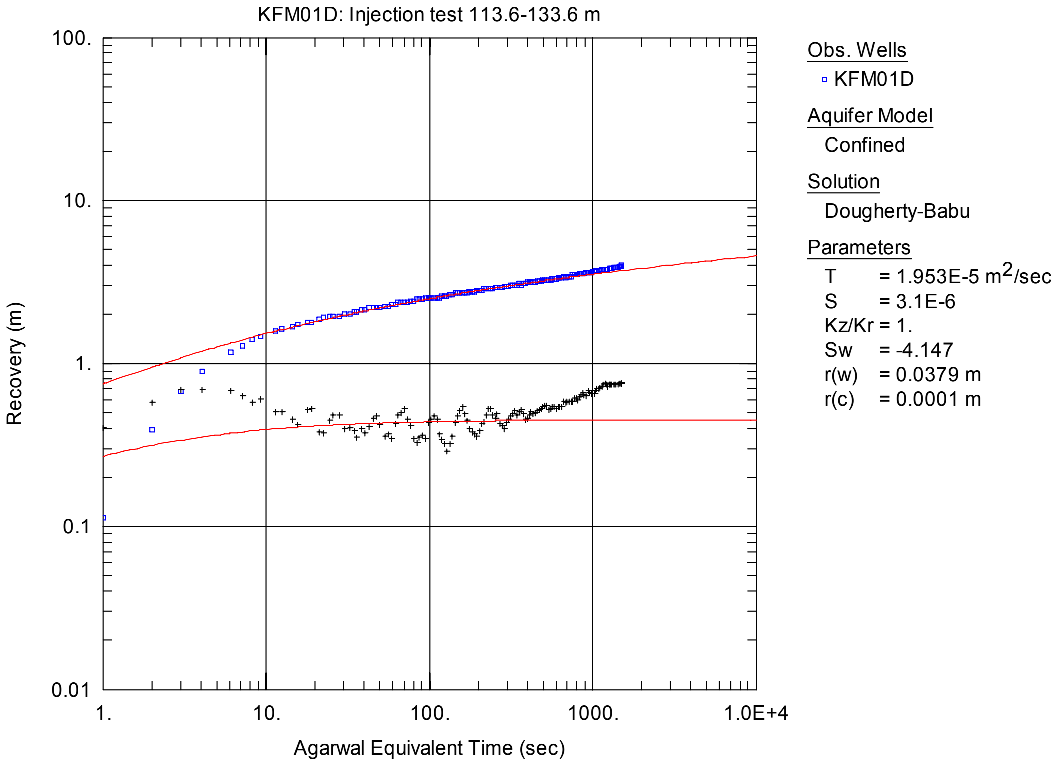


Figure A3-41. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 113.6-133.6 m in KFM01D.*

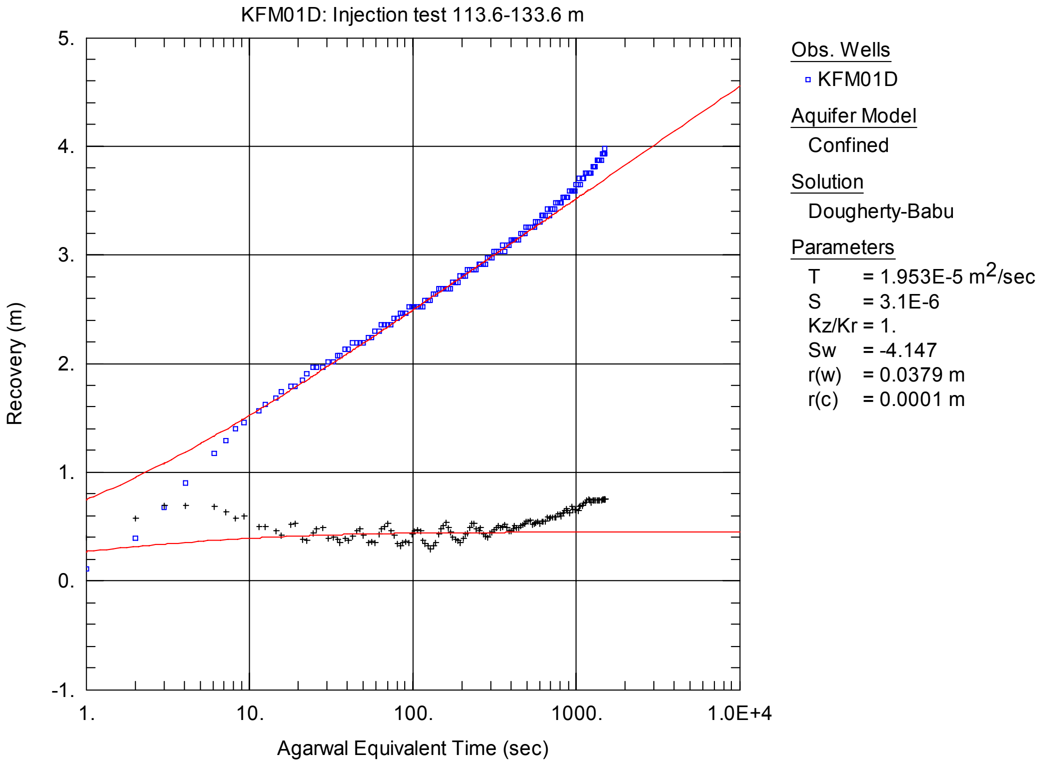


Figure A3-42. *Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 113.6-133.6 m in KFM01D.*

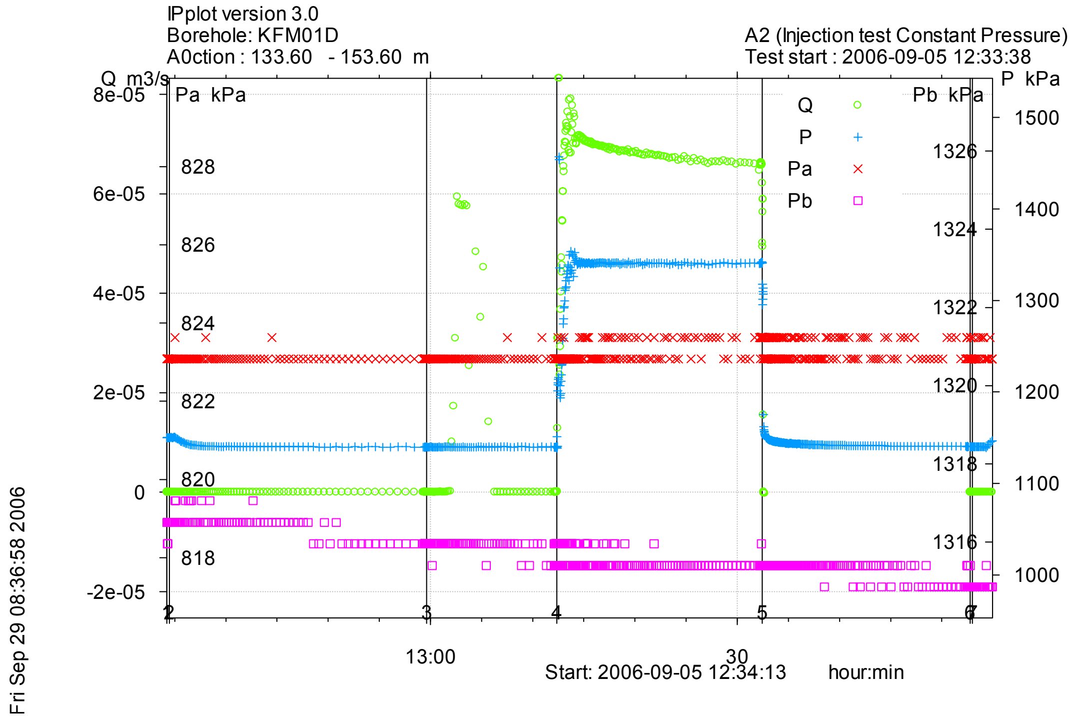


Figure A3-43. Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 133.6-153.6 m in borehole KFM01D.

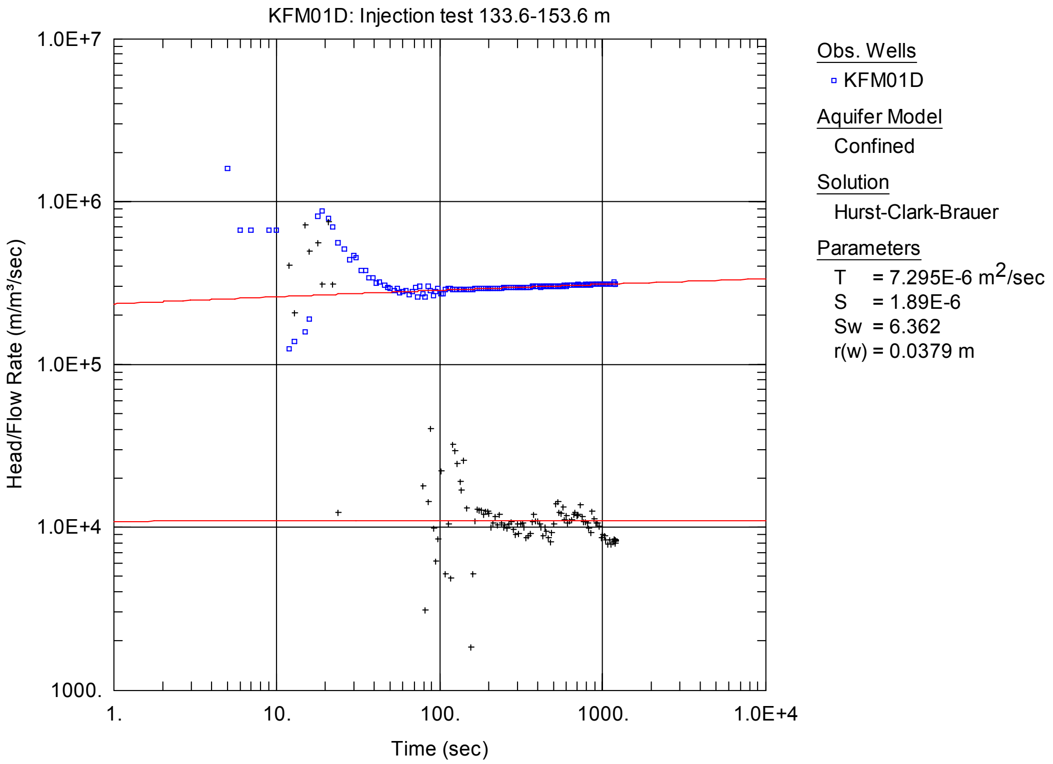


Figure A3-44. Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 133.6-153.6 m in KFM01D.

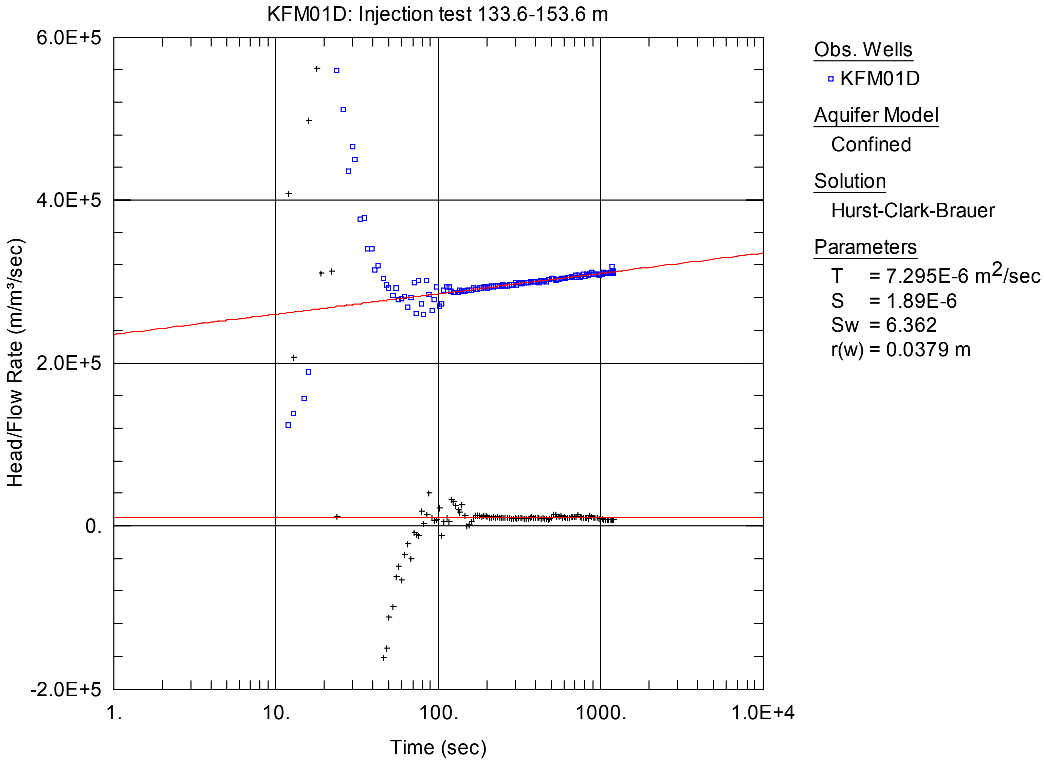


Figure A3-45. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 133.6-153.6 m in KFM01D.*

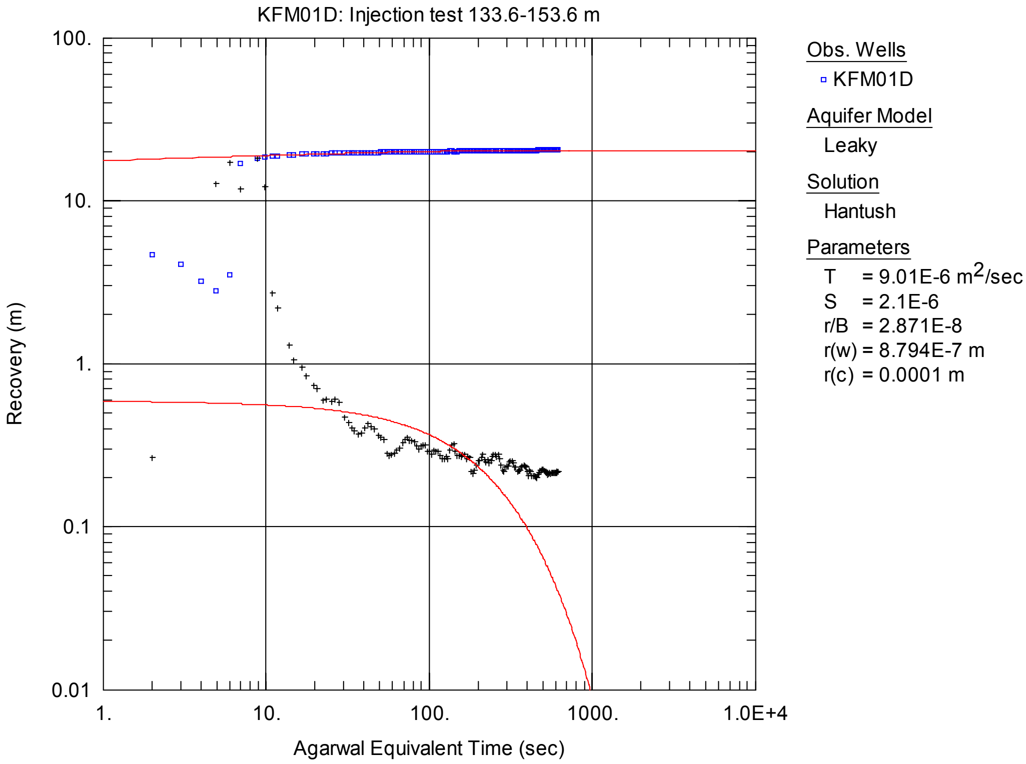


Figure A3-46. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 133.6-153.6 m in KFM01D.*

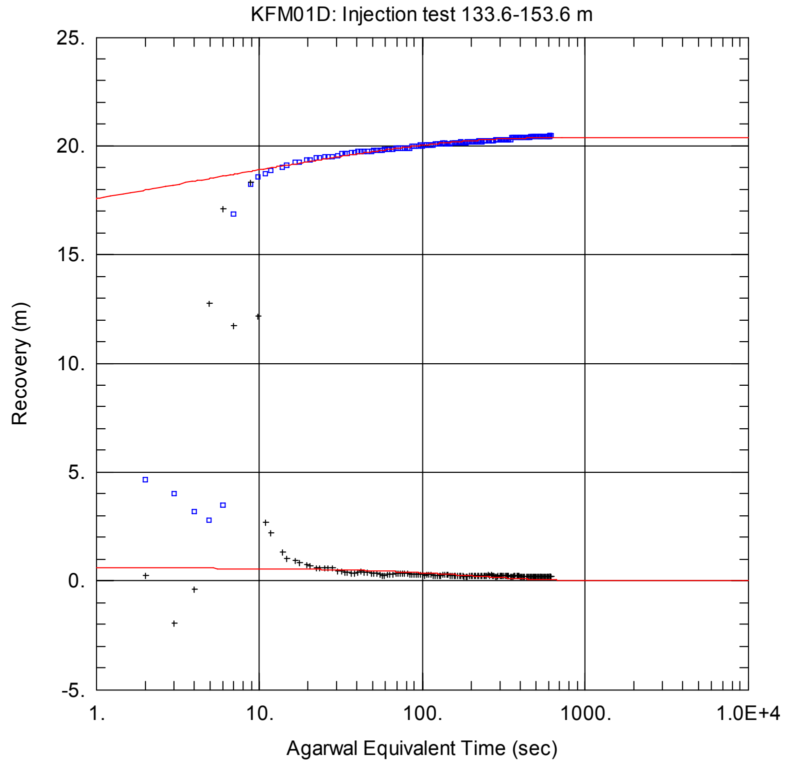


Figure A3-47. *Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 133.6-153.6 m in KFM01D.*

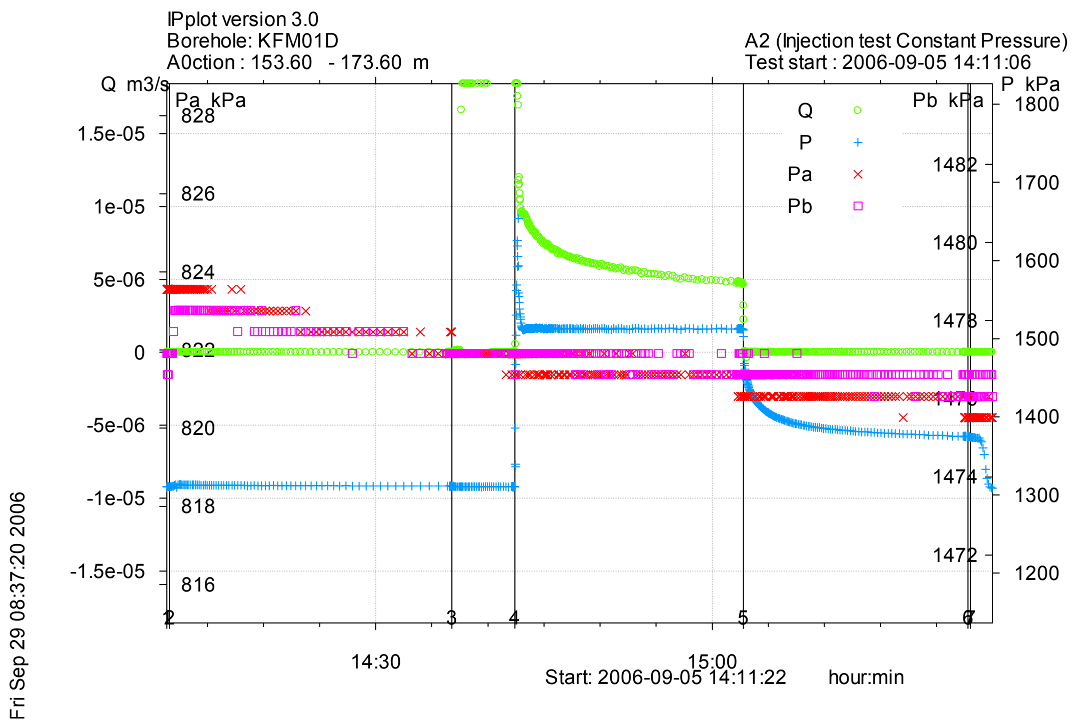


Figure A3-48. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 153.6-173.6 m in borehole KFM01D.*

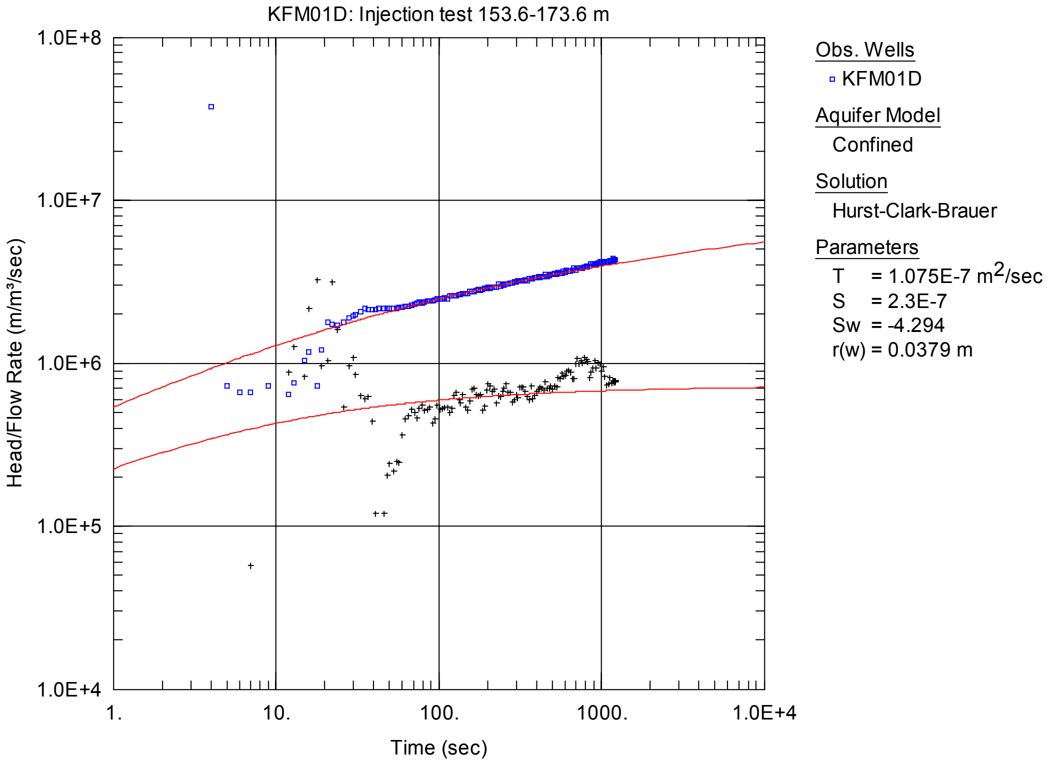


Figure A3-49. *Log-log plot of head/flow rate (□) and derivative (+) versus time, showing fit to the PRF1 solution, from the injection test in section 153.6-173.6 m in KFM01D.*

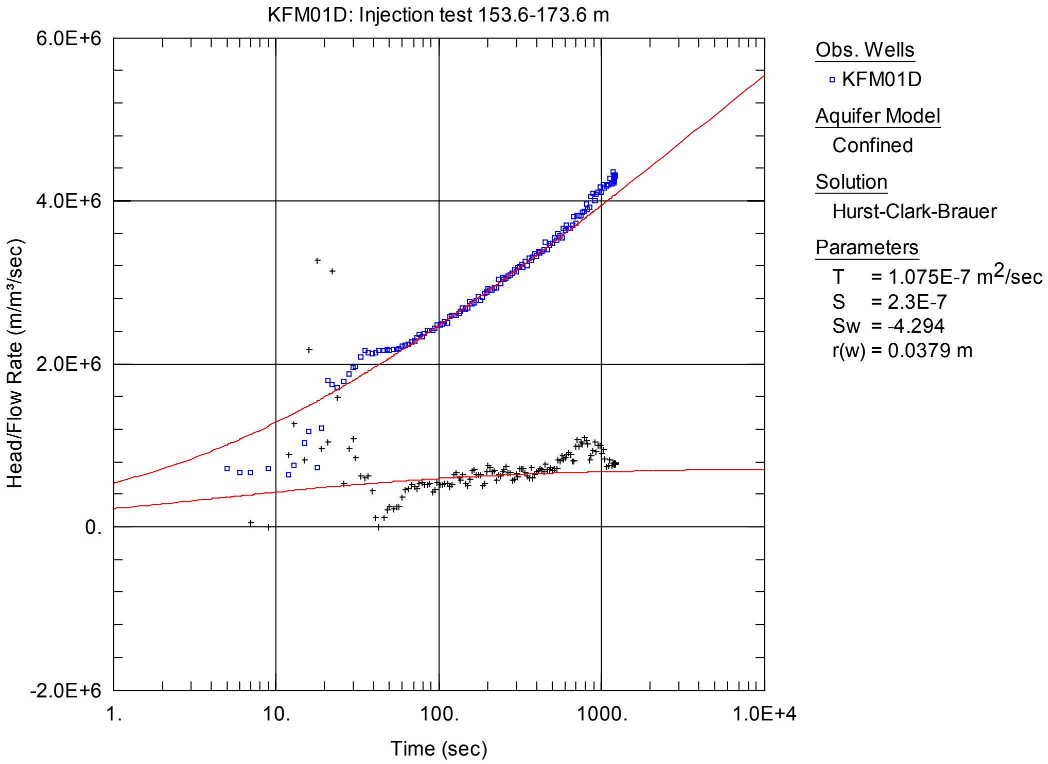


Figure A3-50. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, showing fit to the PRF1 solution, from the injection test in section 153.6-173.6 m in KFM01D.*

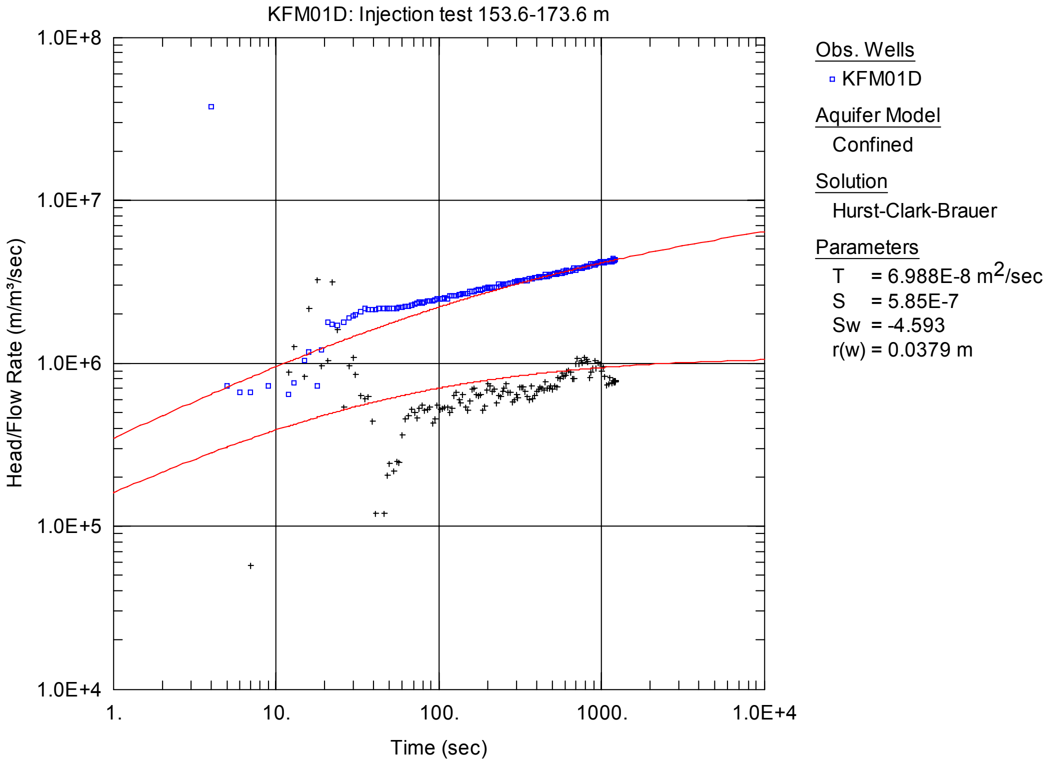


Figure A3-51. *Log-log plot of head/flow rate (□) and derivative (+) versus time, showing fit to the PRF2 solution,from the injection test in section 153.6-173.6 m in KFM01D*

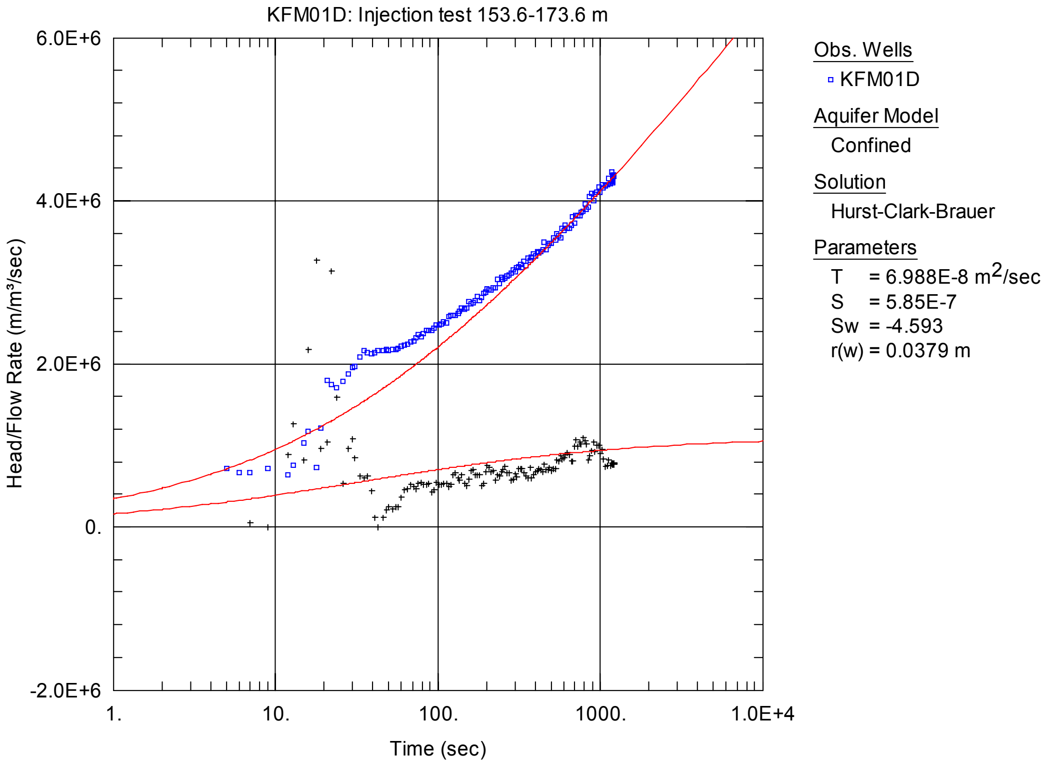


Figure A3-52. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, showing fit to the PRF2 solution,from the injection test in section 153.6-173.6 m in KFM01D.*

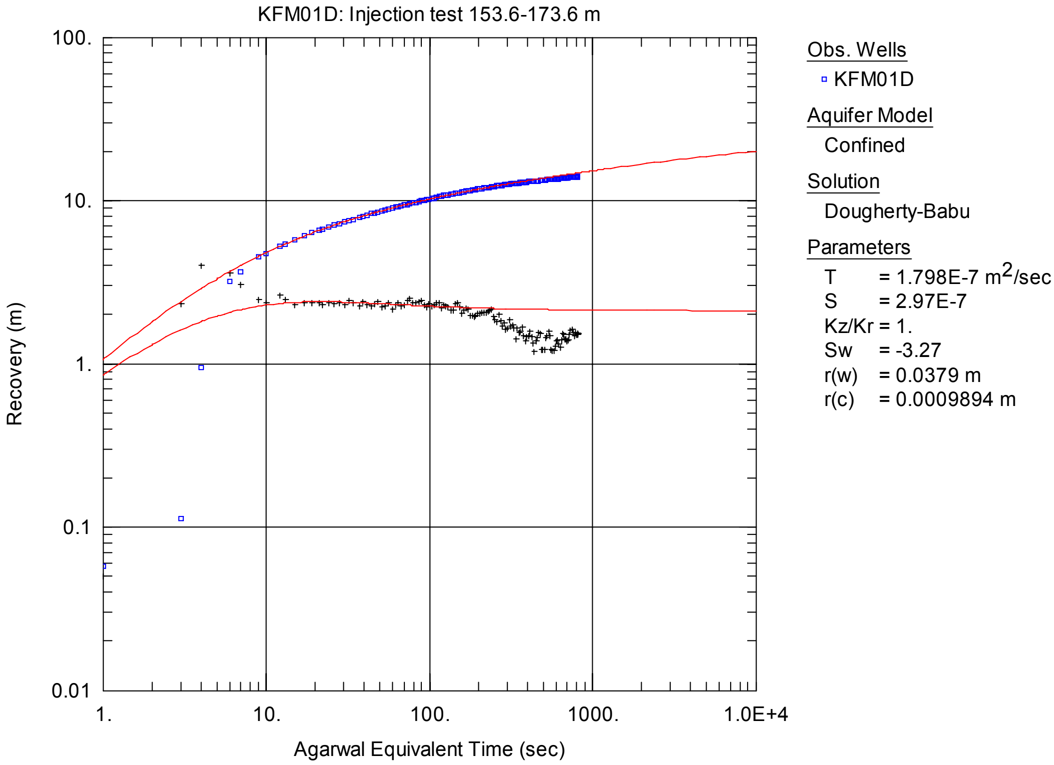


Figure A3-53. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, showing fit to the PRF1 solution, from the injection test in section 153.6-173.6 m in KFM01D.*

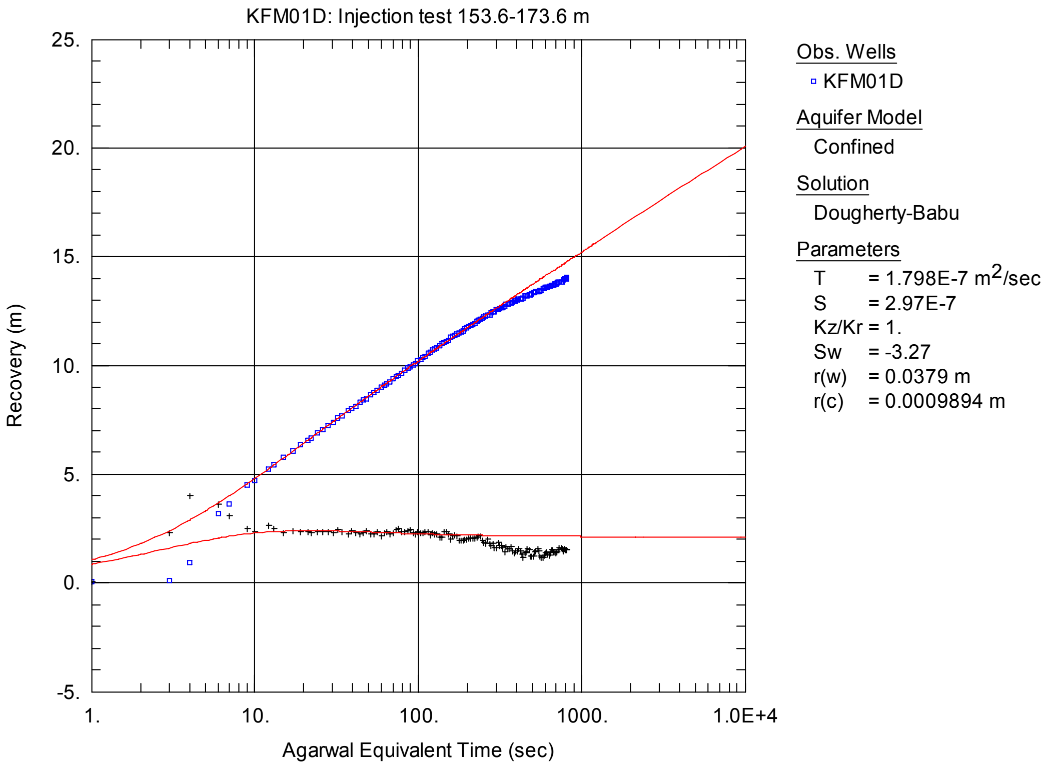


Figure A3-54. *Lin-log plot of recovery (□) and derivative (+) versus equivalent time, showing fit to the PRF1 solution, from the injection test in section 153.6-173.6 m in KFM01D.*

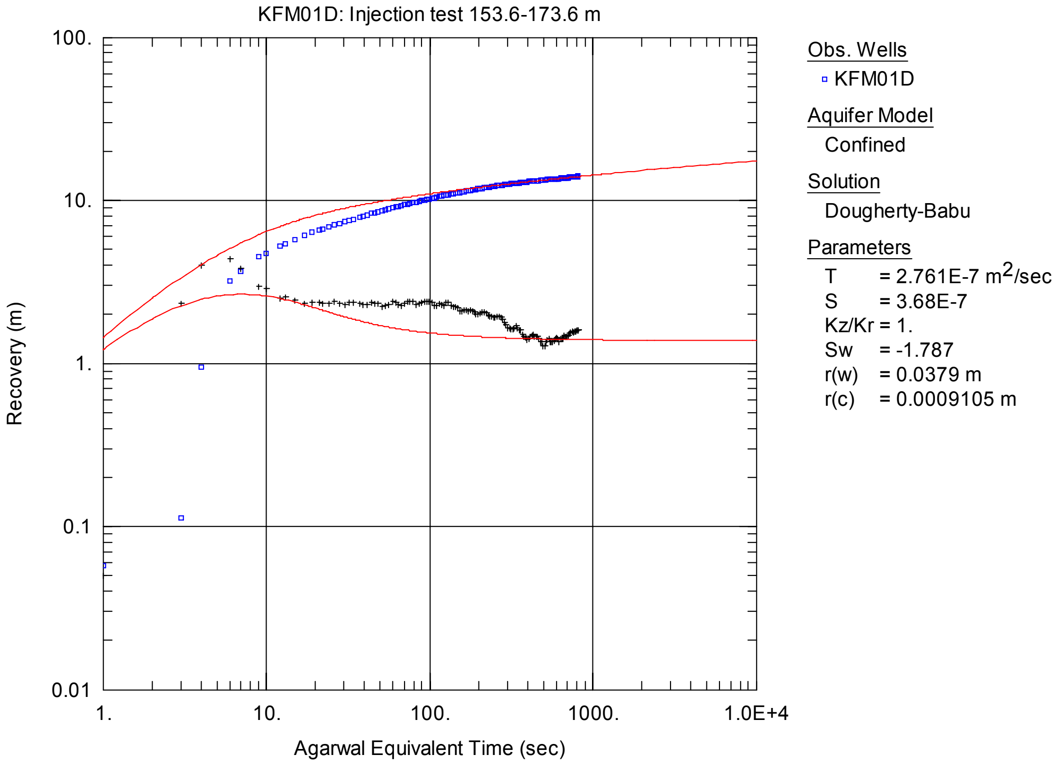


Figure A3-55. *Log-log plot of head/flow rate (□) and derivative (+) versus time, showing fit to the PRF2 solution, from the injection test in section 153.6-173.6 m in KFM01D.*

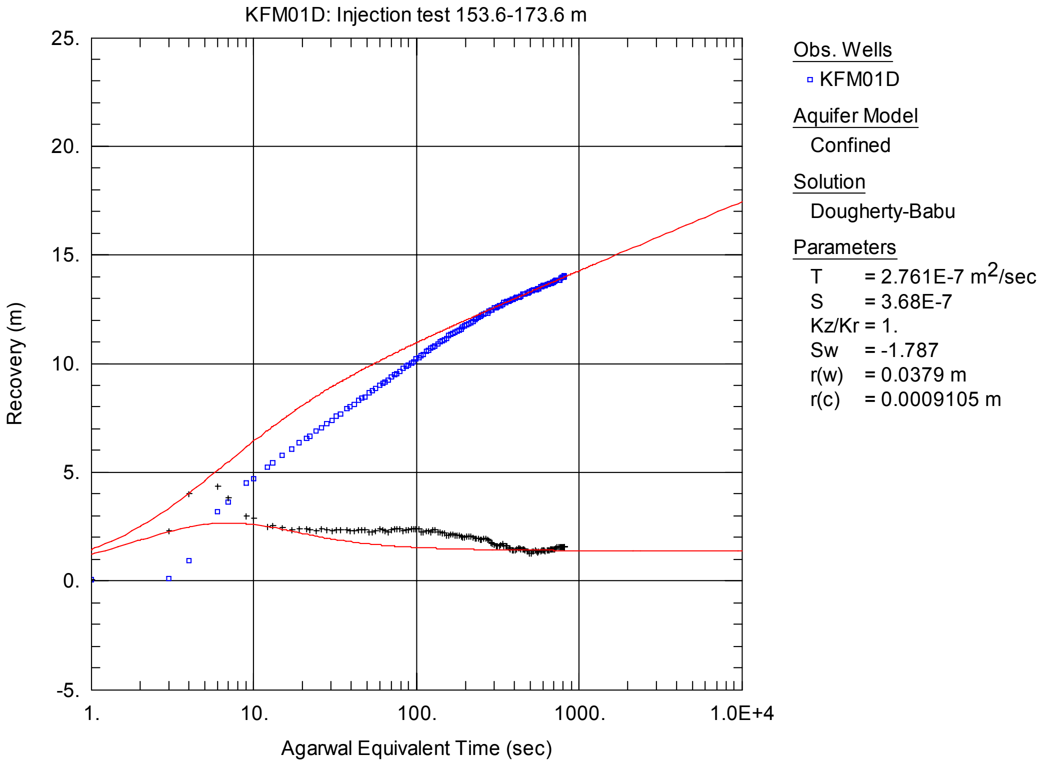


Figure A3-56. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, showing fit to the PRF2 solution, from the injection test in section 153.6-173.6 m in KFM01D.*

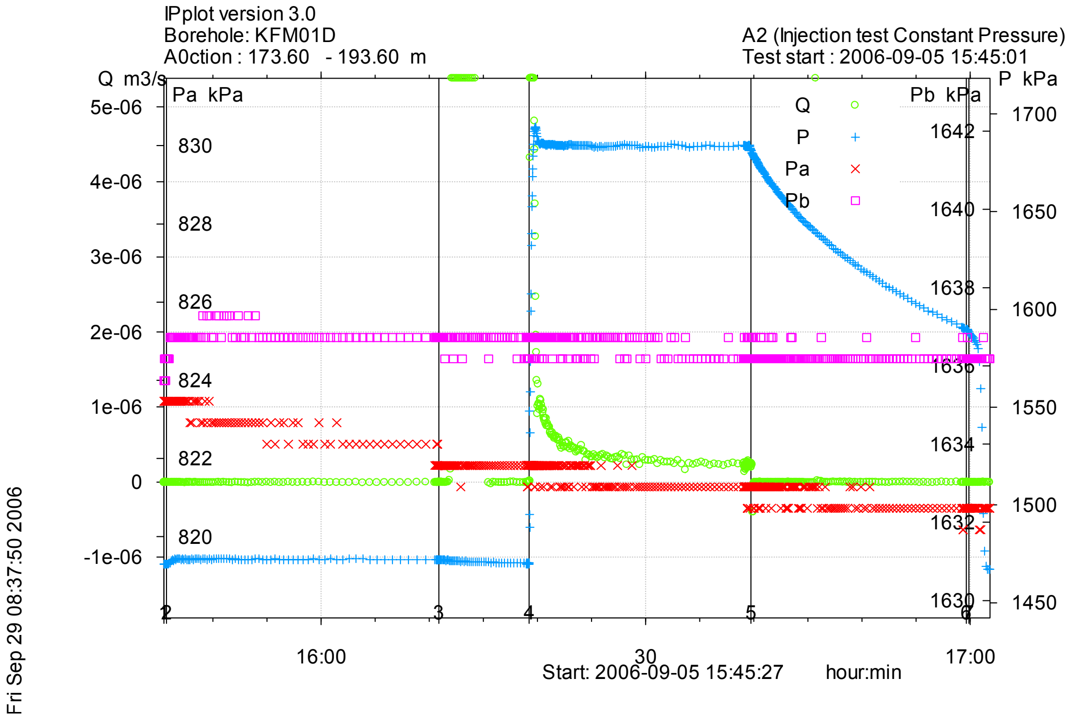


Figure A3-57. Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 173.6-193.6 m in borehole KFM01D.

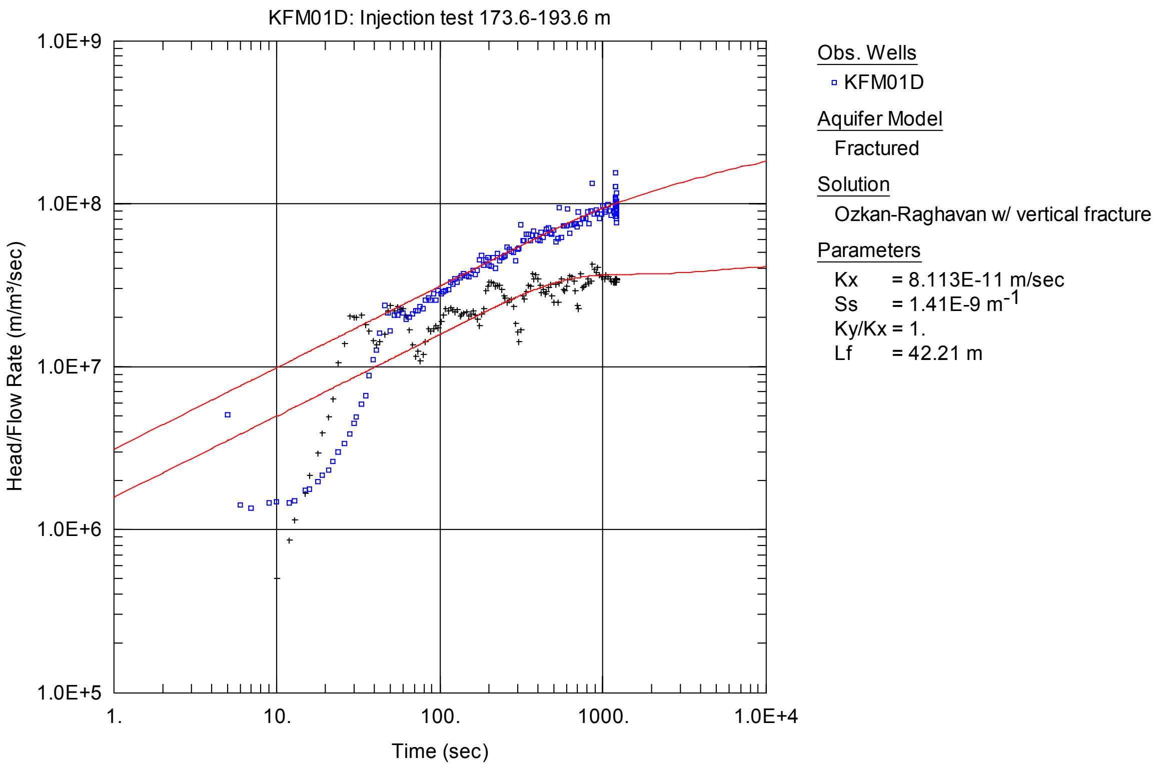


Figure A3-58. Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 173.6-193.6 m in KFM01D.

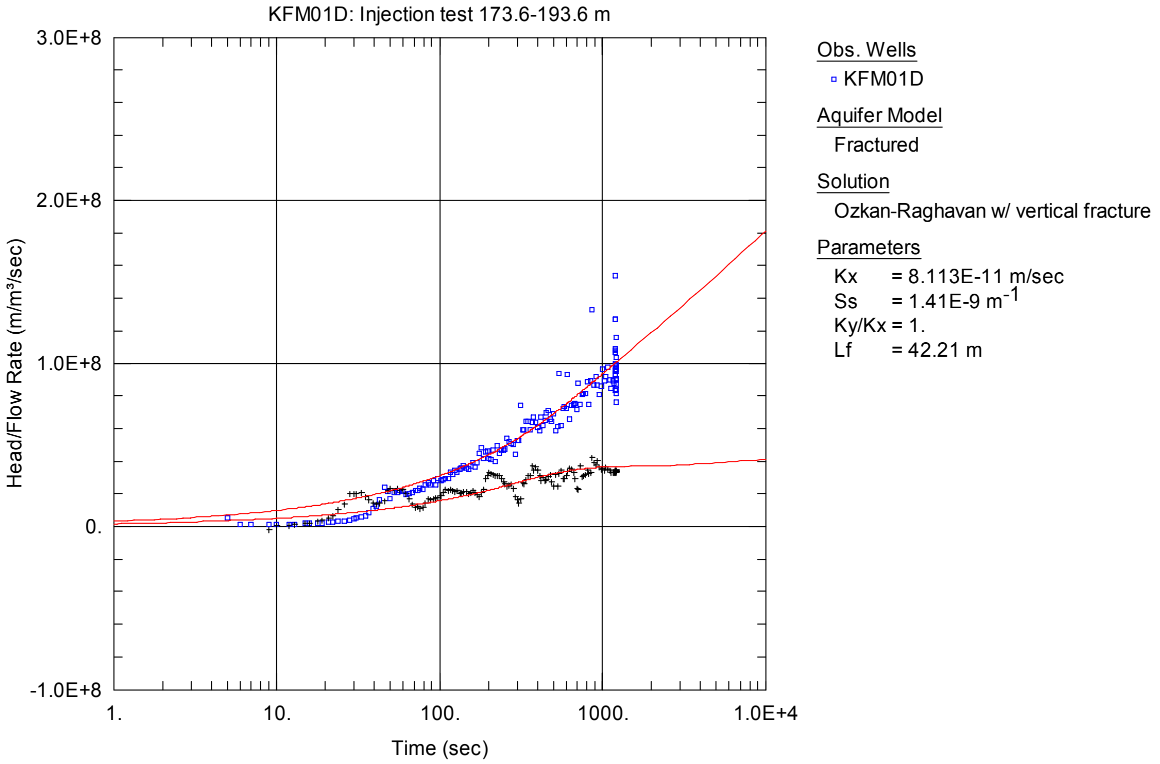


Figure A3-59. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 173.6-193.6 m in KFM01D.*

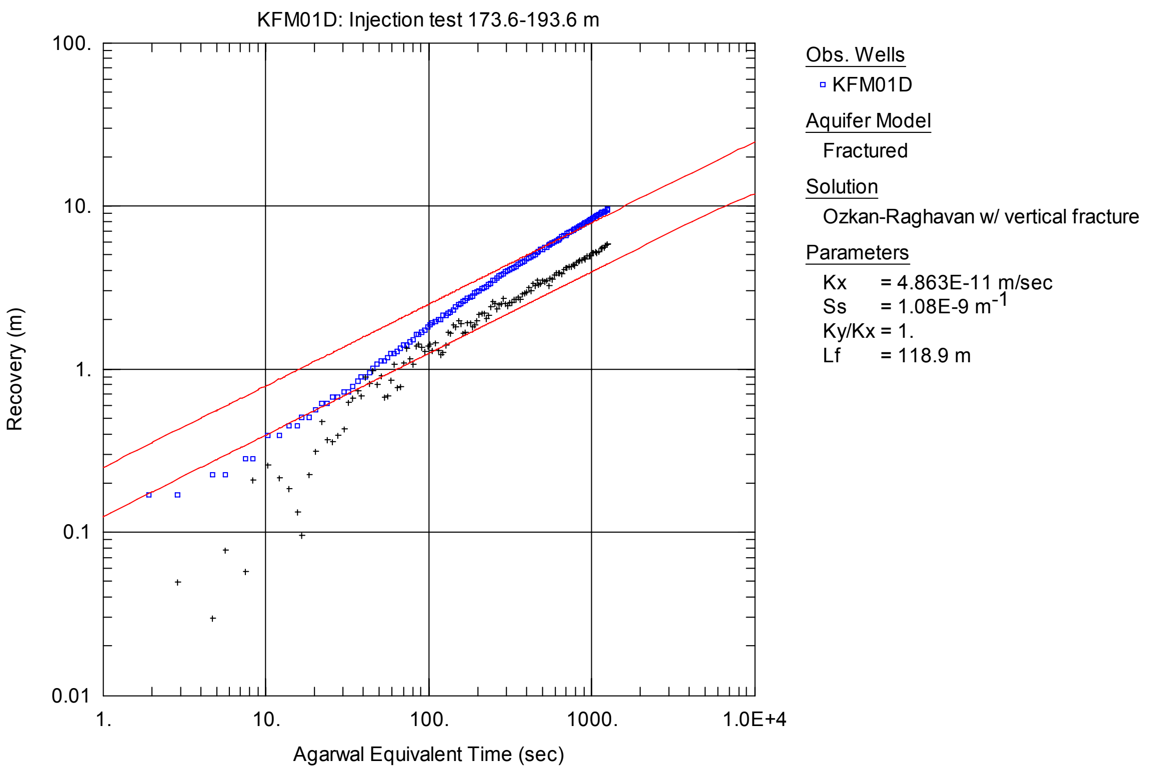


Figure A3-60. Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 173.6-193.6 m in KFM01D. The type curve fit is showing a possible, however not unambiguous, evaluation.

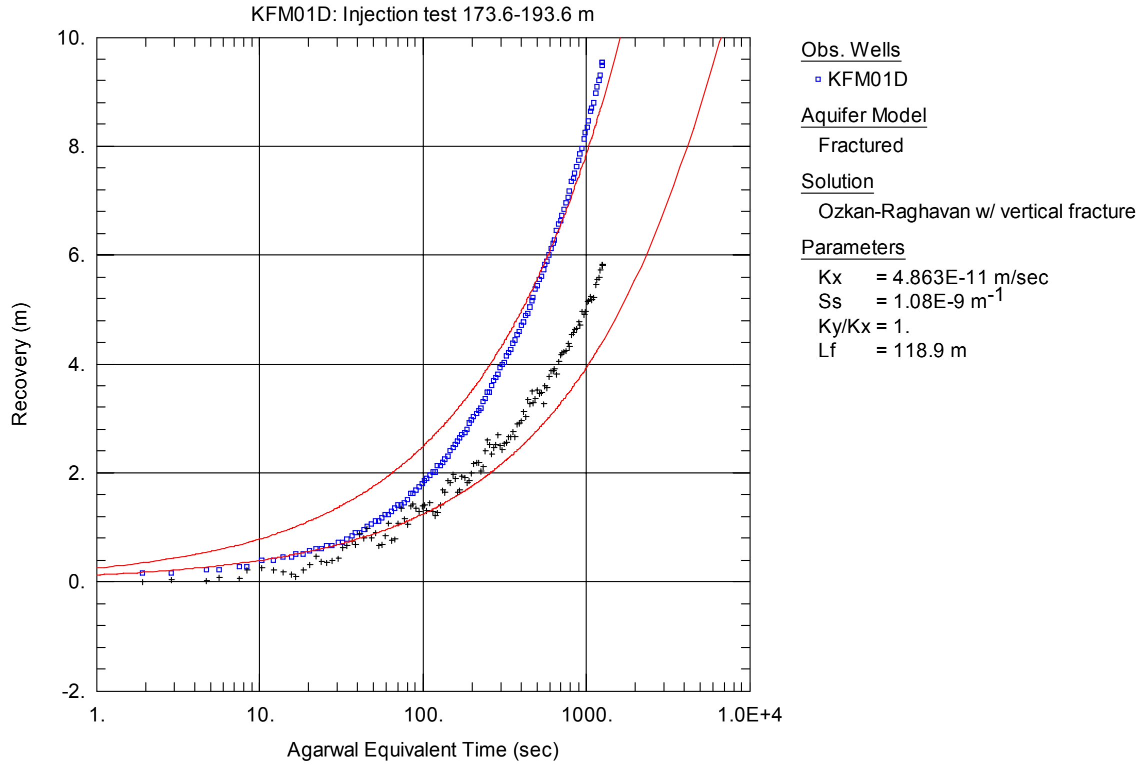


Figure A3-61. *Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 173.6-193.6 m in KFM01D. The type curve fit is showing a possible, however not unambiguous, evaluation.*

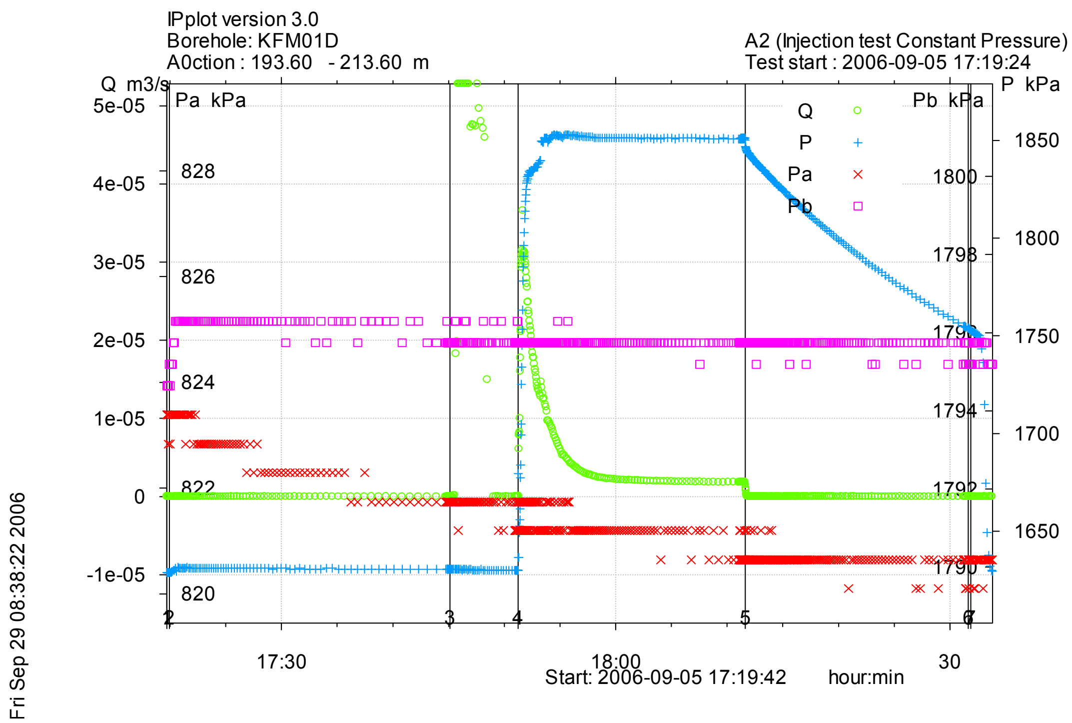


Figure A3-62. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 193.6-213.6 m in borehole KFM01D.*

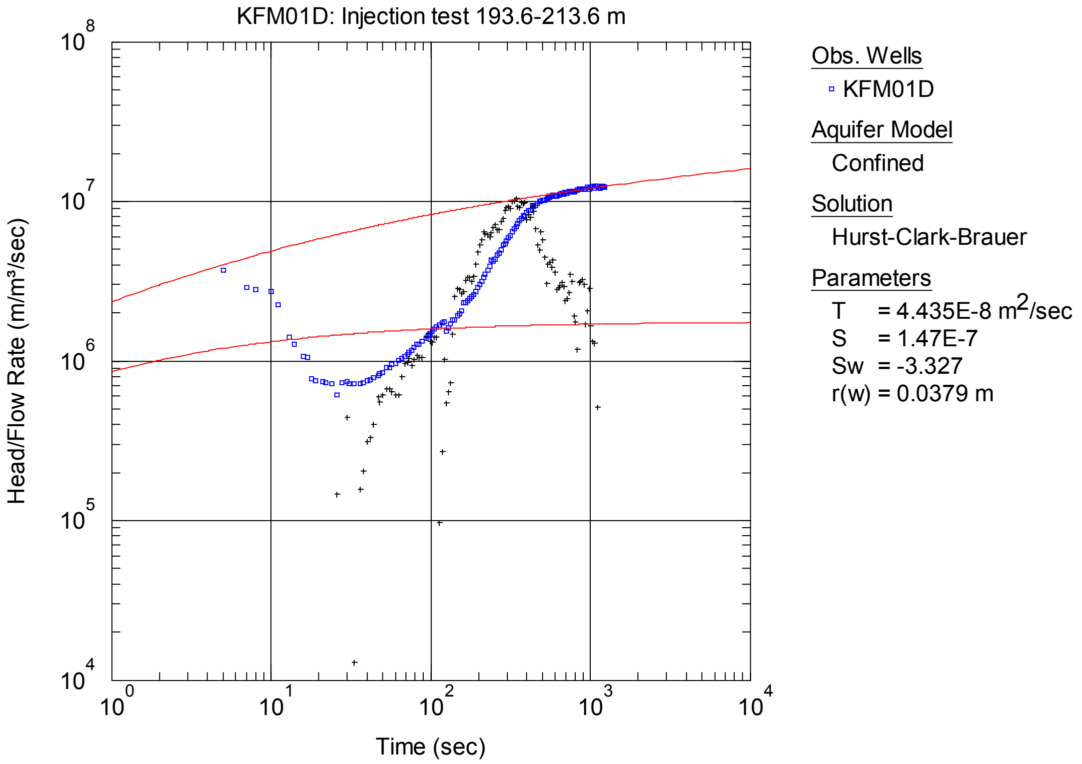


Figure A3-63. *Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 193.6-213.6 m in KFM01D.*

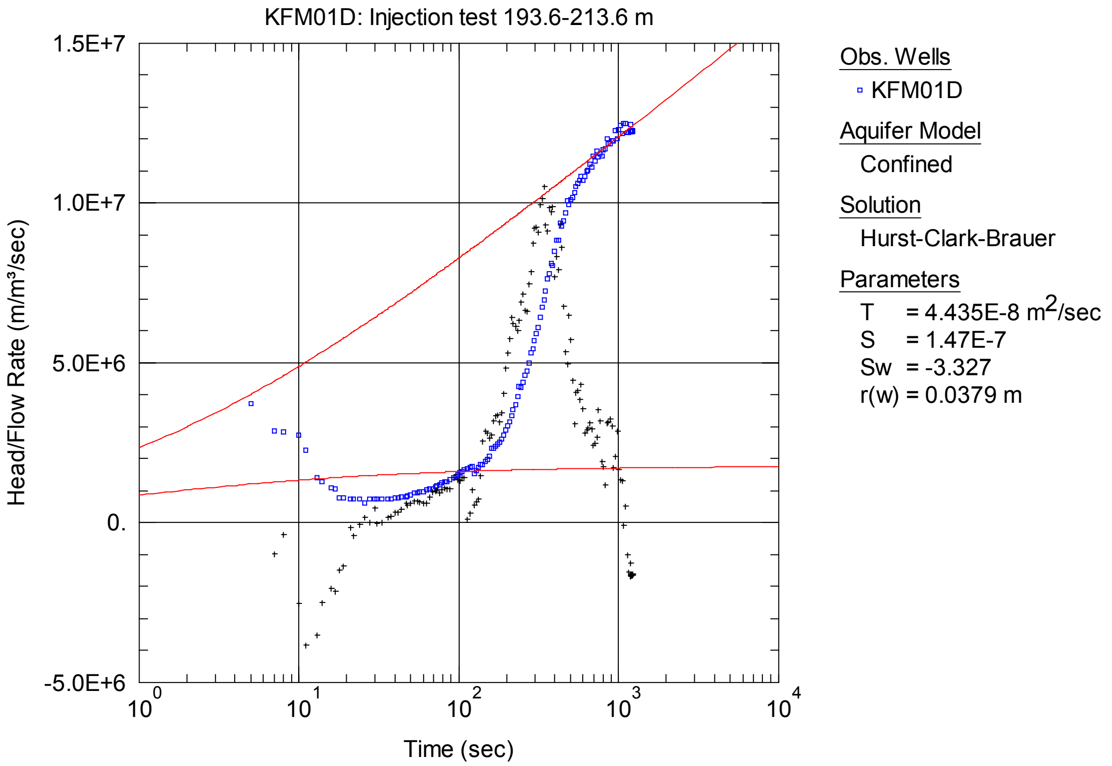


Figure A3-64. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 193.6-213.6 m in KFM01D.*

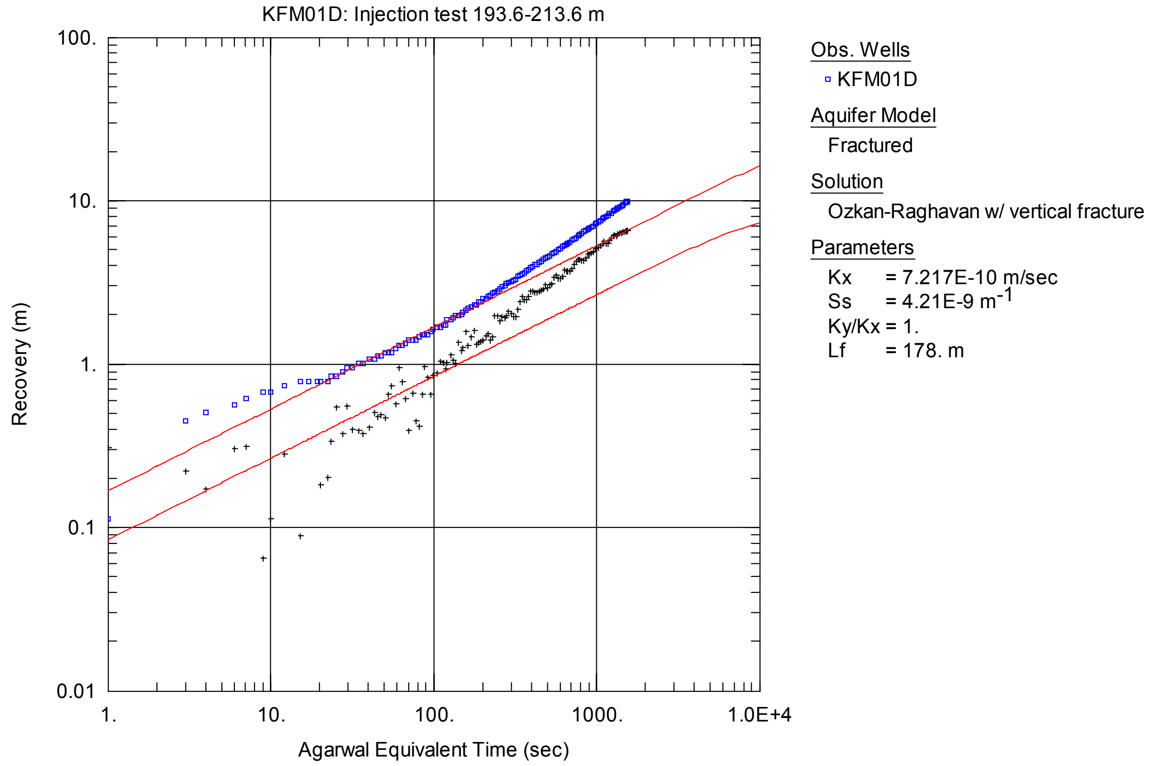


Figure A3-65. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 193.6-213.6 m in KFM01D. The type curve fit is only to show that an assumption of PLF is not valid.*

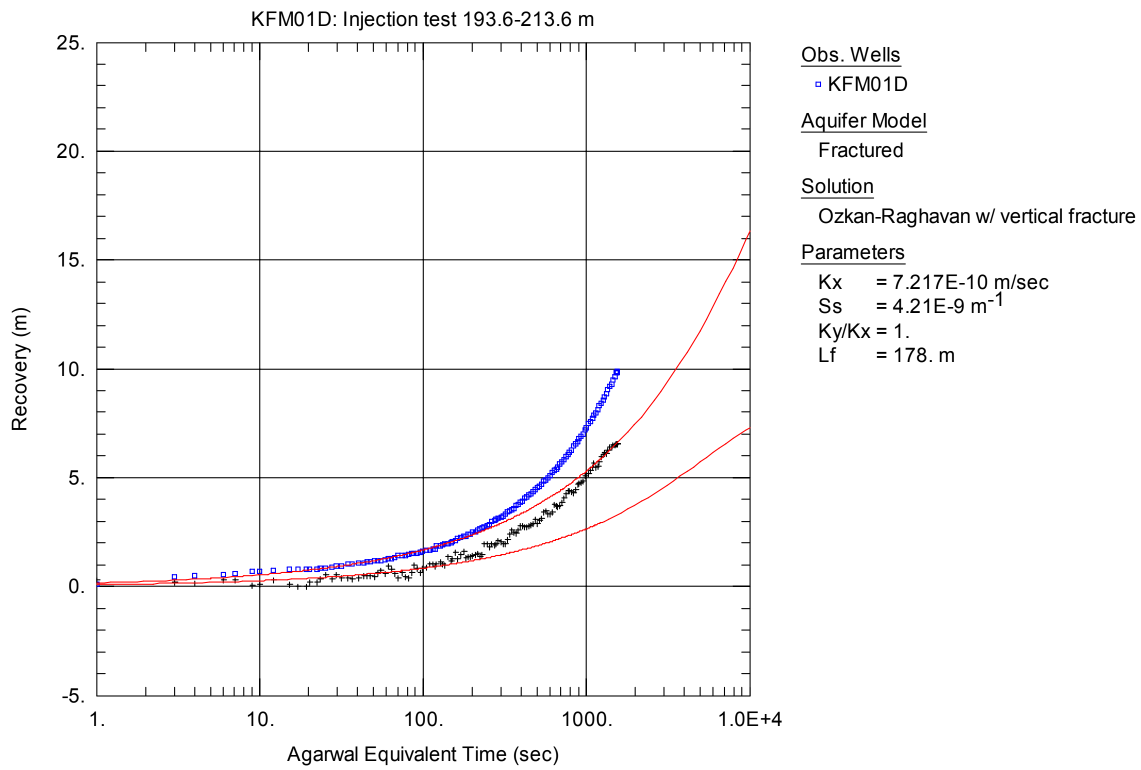


Figure A3-66. *Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 193.6-213.6 m in KFM01D. The type curve fit is only to show that an assumption of PLF is not valid.*

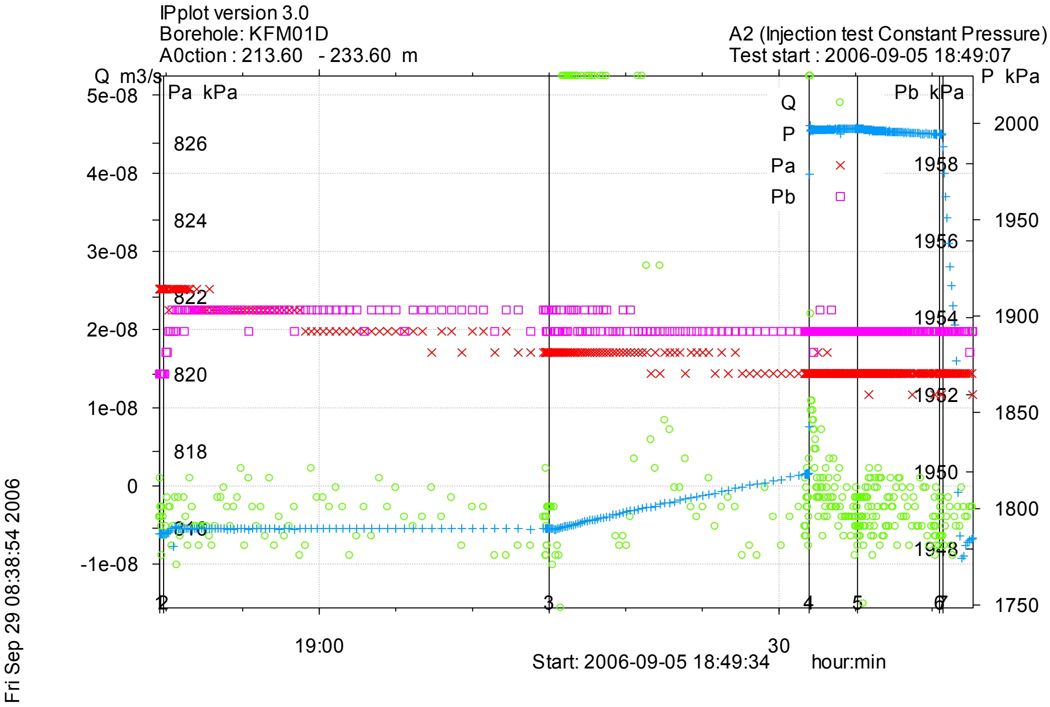


Figure A3-67. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 213.6-233.6 m in borehole KFM01D.*

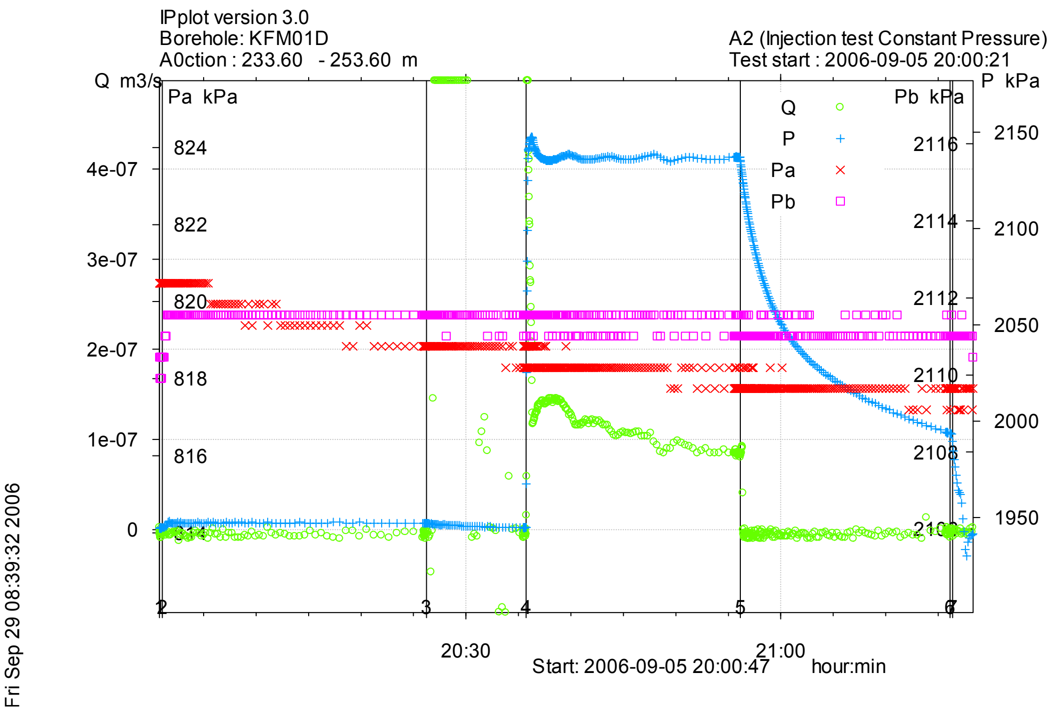


Figure A3-68. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 233.6-253.6 m in borehole KFM01D.*

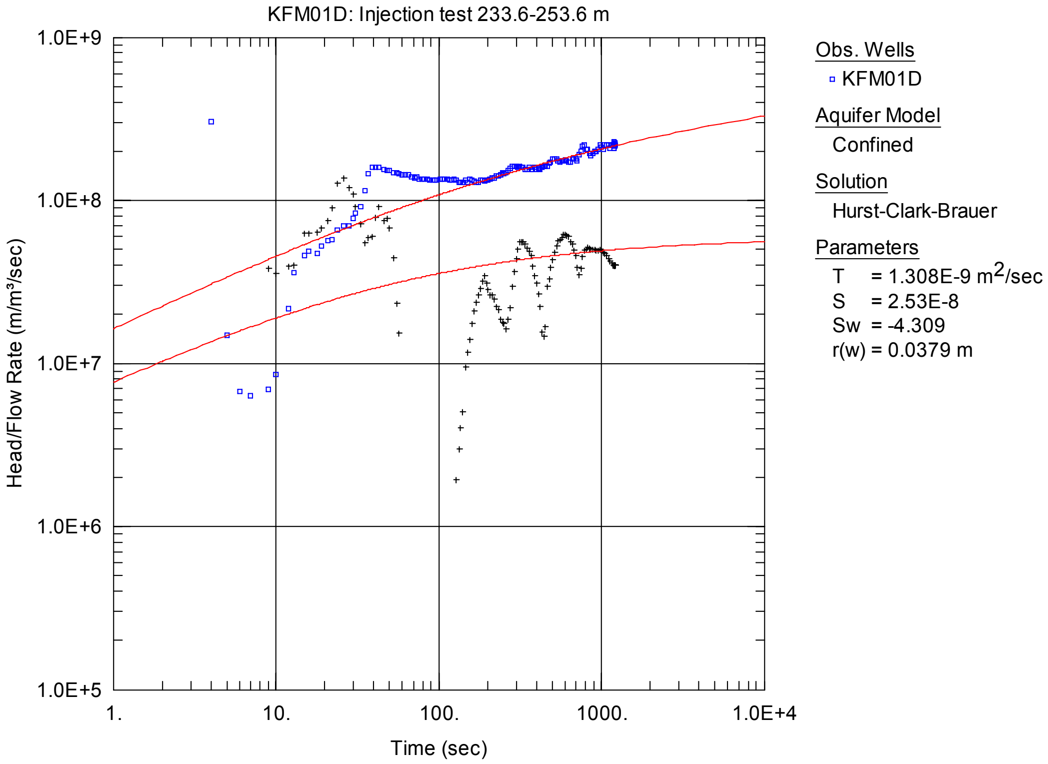


Figure A3-69. *Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 233.6-253.6 m in KFM01D.*

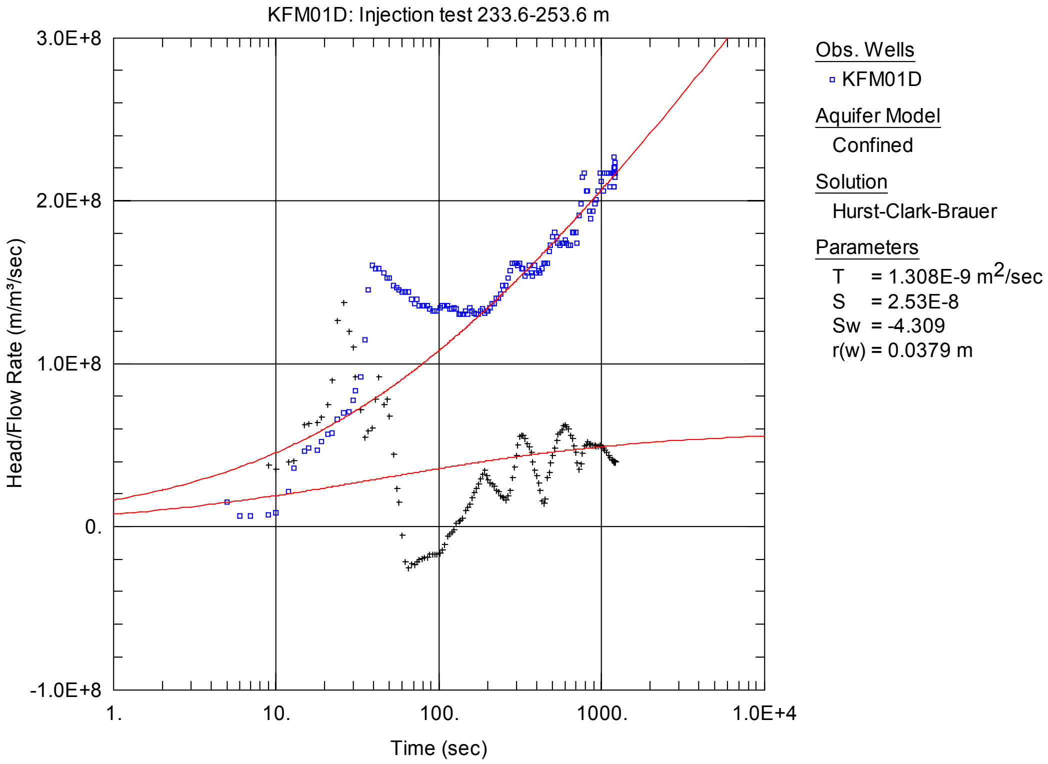


Figure A3-70. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 233.6-253.6 m in KFM01D.*

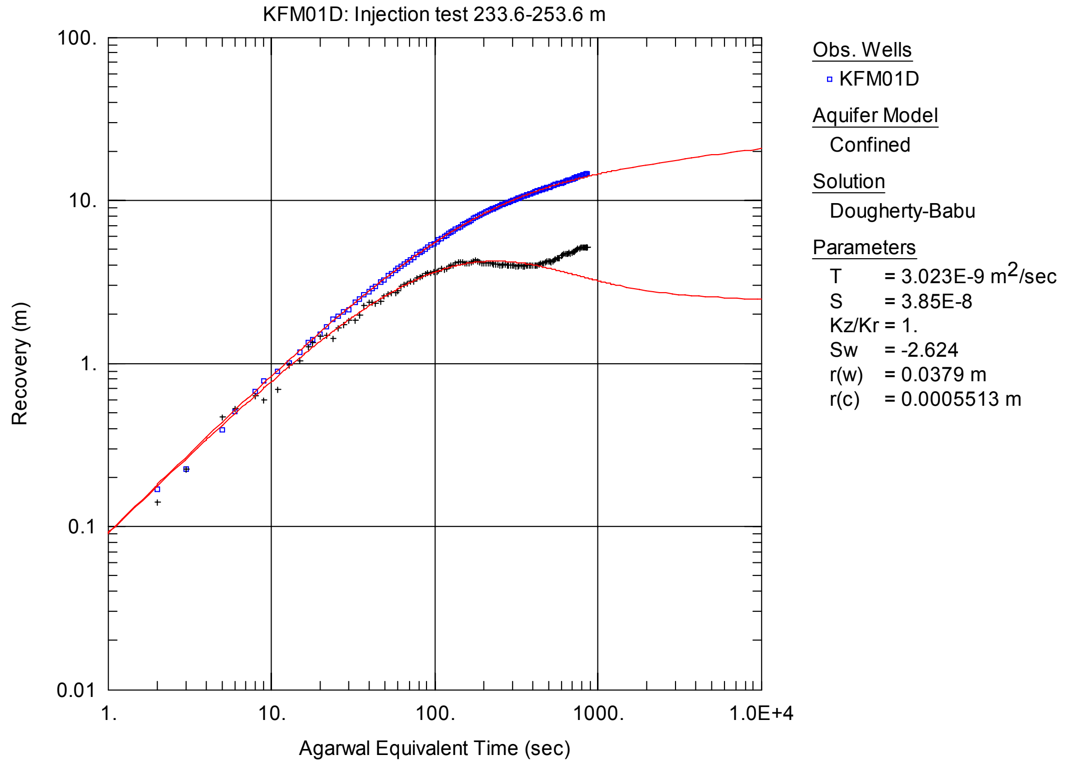


Figure A3-71. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 233.6-253.6 m in KFM01D.*

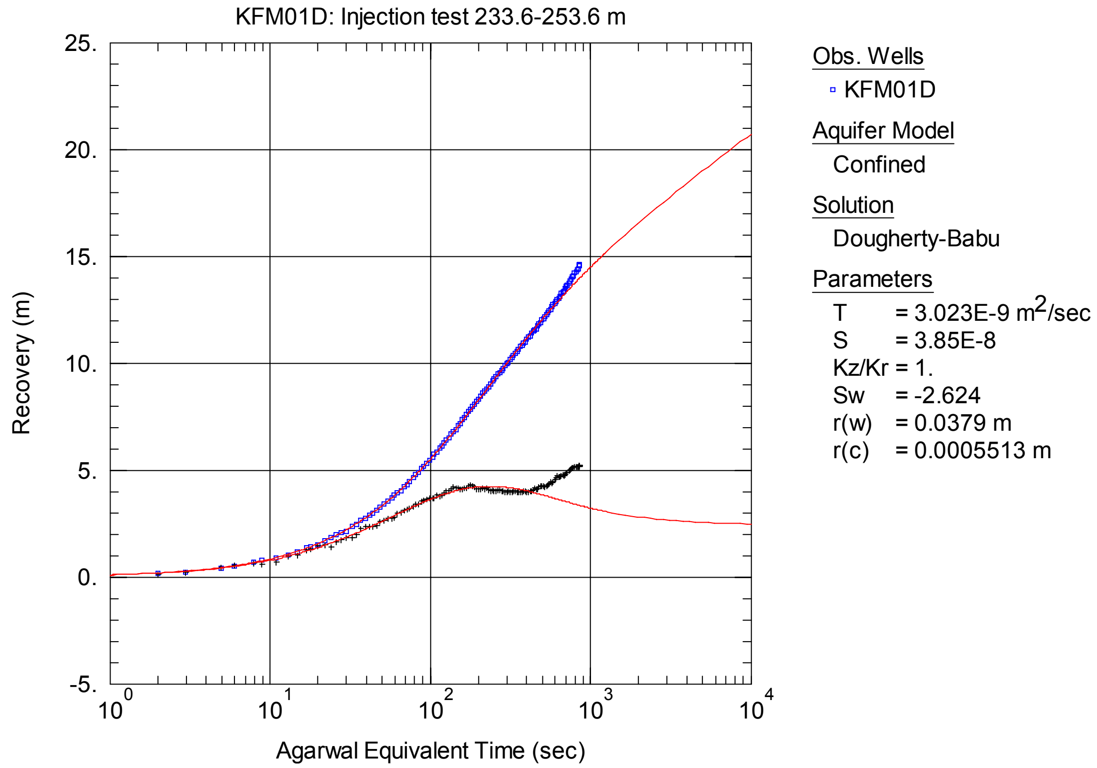


Figure A3-72. *Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 233.6-253.6 m in KFM01D.*

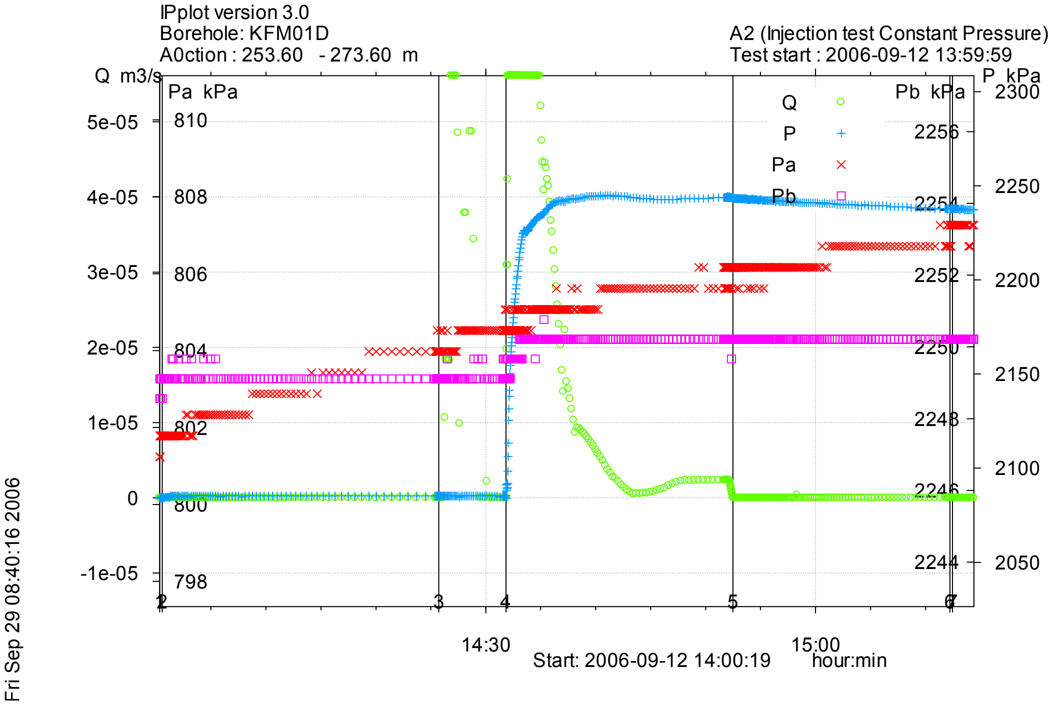


Figure A3-73. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 253.6-273.6 m in borehole KFM01D.*

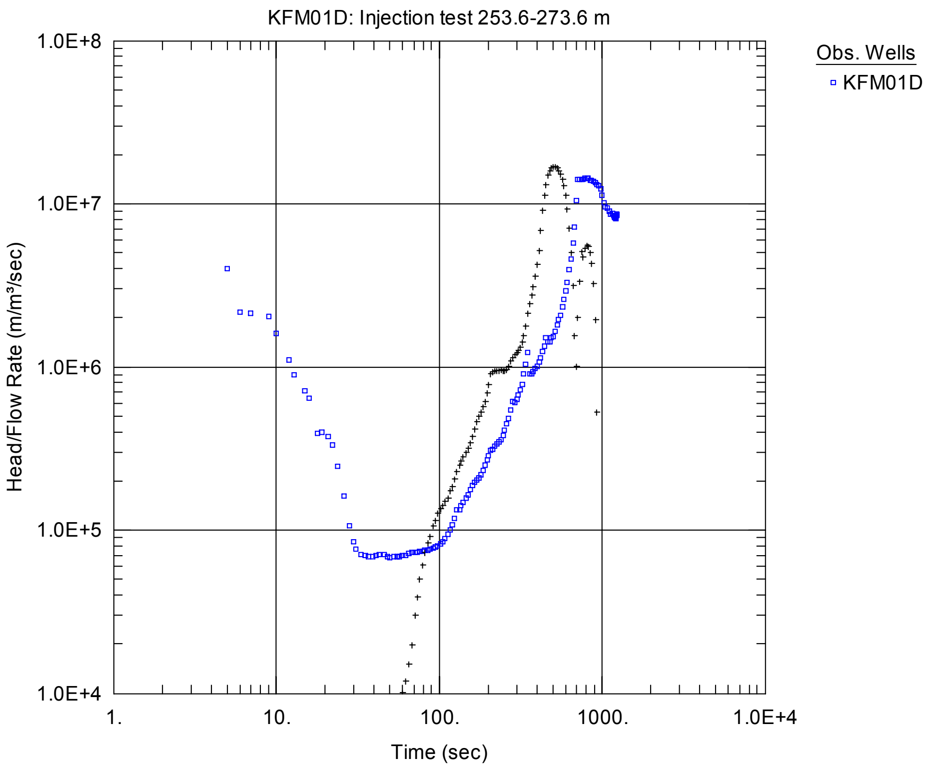


Figure A3-74. *Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 253.6-273.6 m in KFM01D. No type curve fit is shown since no unambiguous transient evaluation is possible*

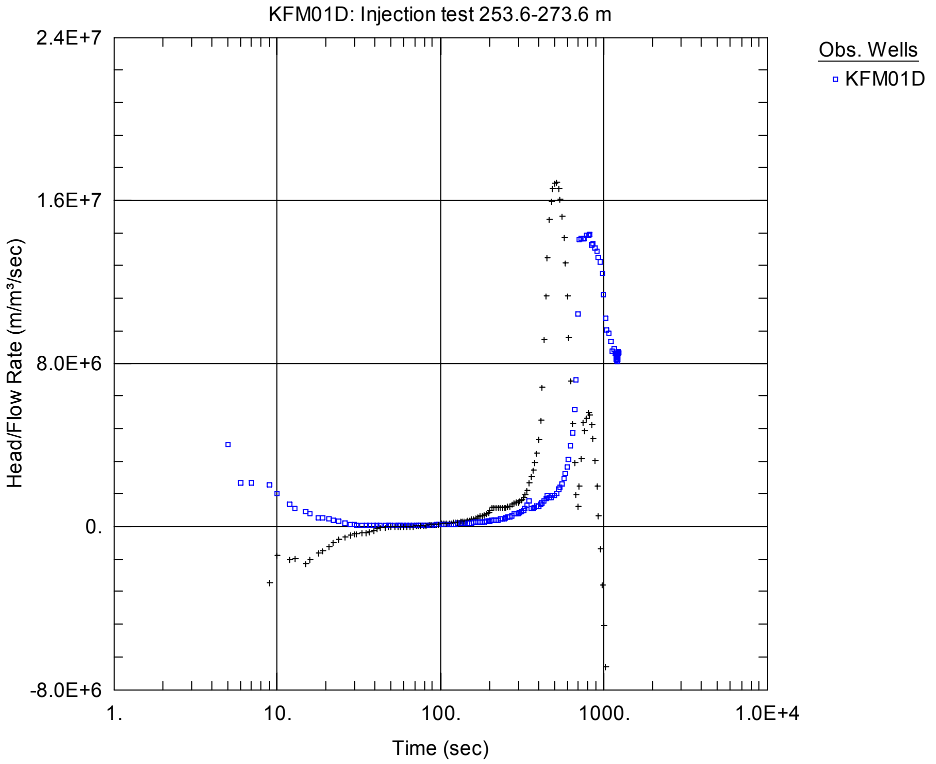


Figure A3-75. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 253.6-273.6 m in KFM01D. No type curve fit is shown since no unambiguous transient evaluation is possible*

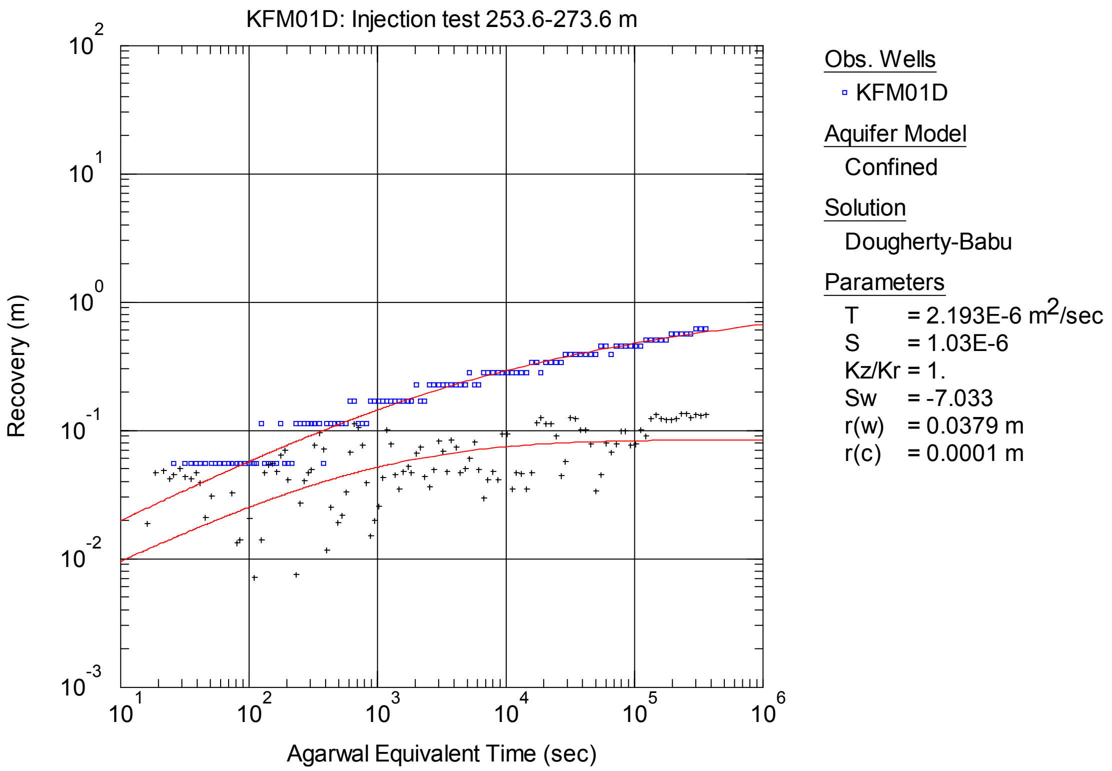


Figure A3-76. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 253.6-273.6 m in KFM01D. The type curve fit is showing a possible, however not unambiguous, evaluation.*

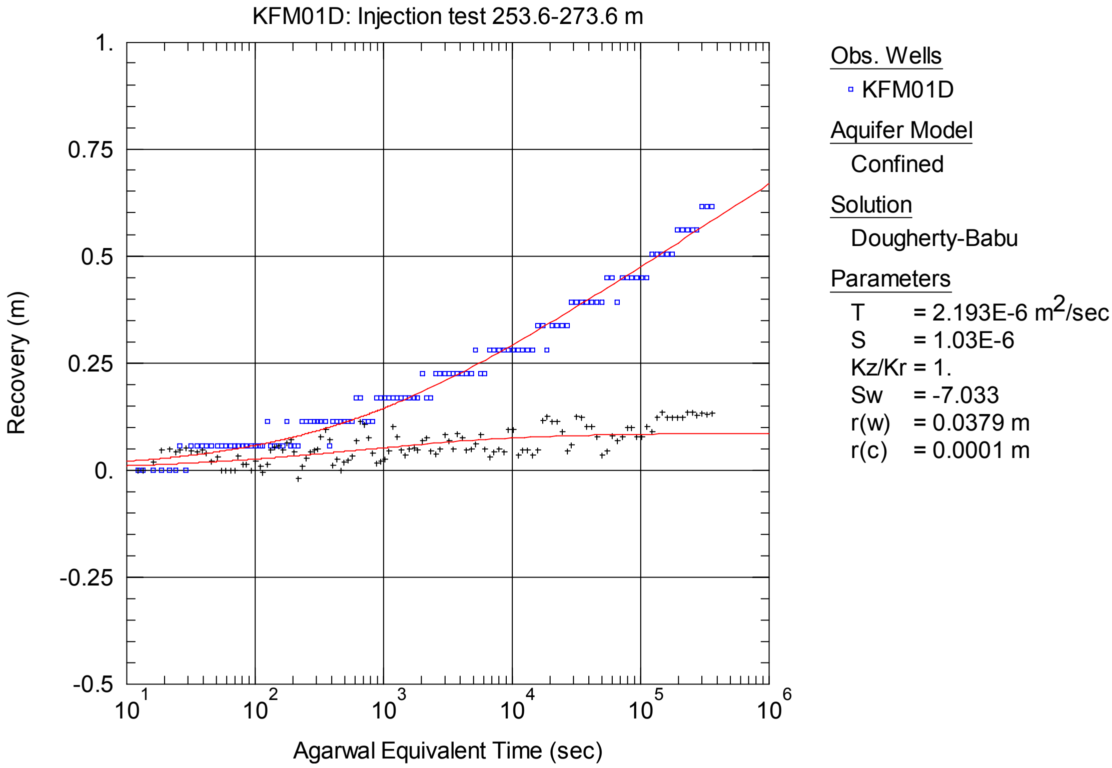


Figure A3-77. *Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 253.6-273.6 m in KFM01D. The type curve fit is showing a possible, however not unambiguous, evaluation.*

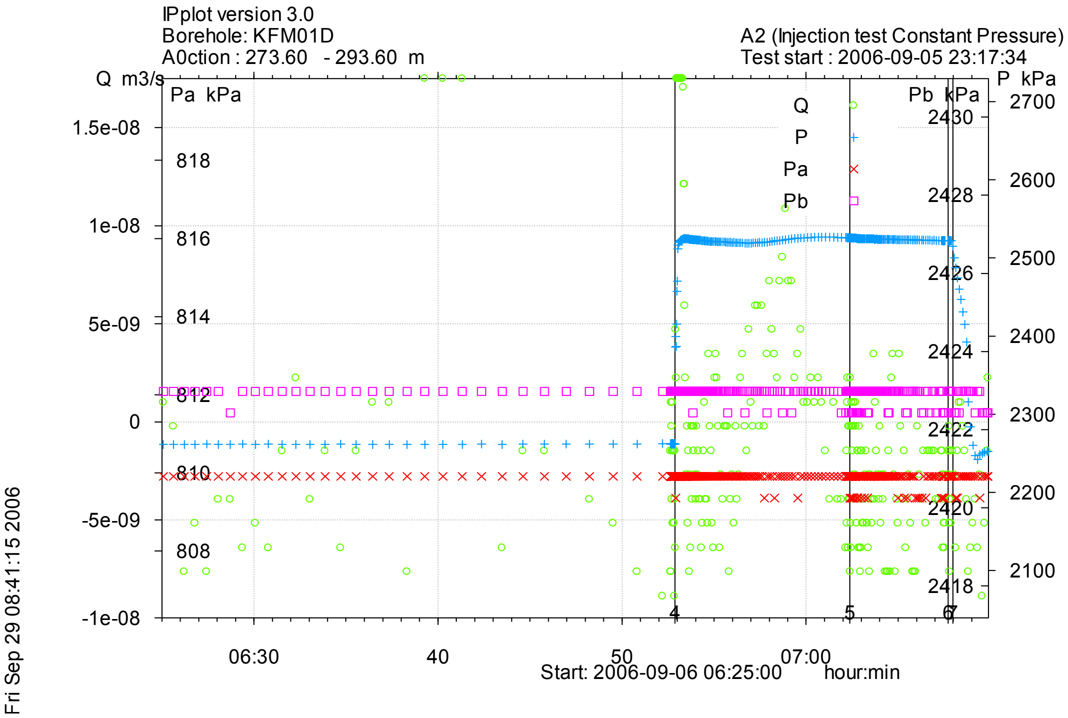


Figure A3-78. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 273.6-293.6 m in borehole KFM01D.*

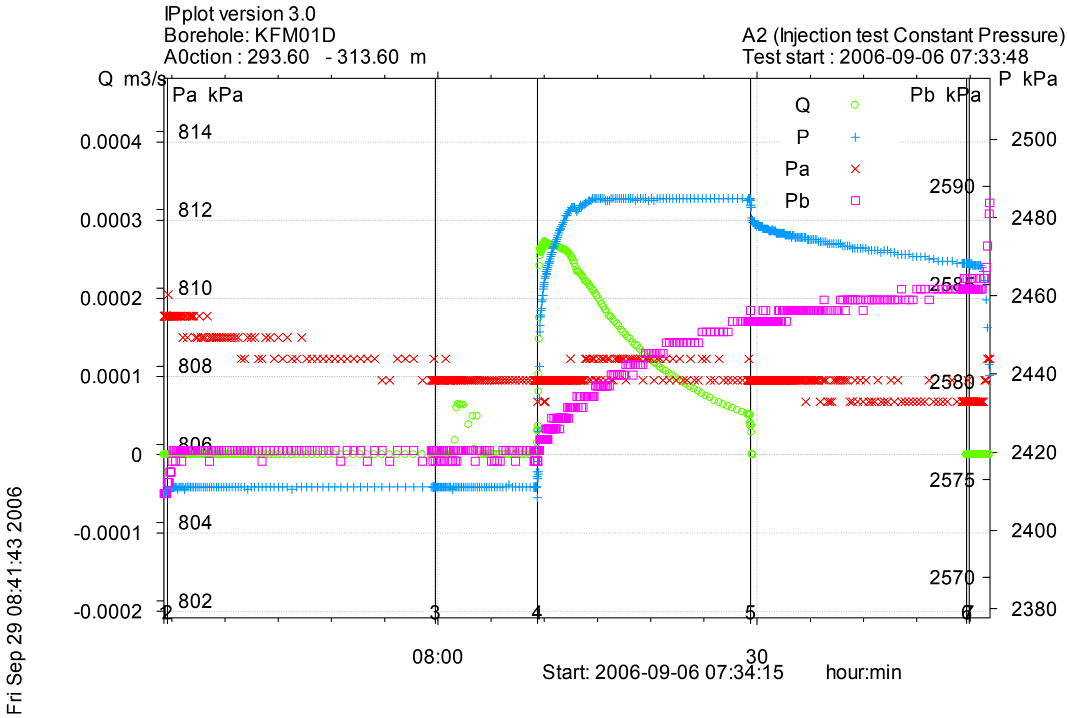


Figure A3-79. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 293.6-313.6 m in borehole KFM01D.*

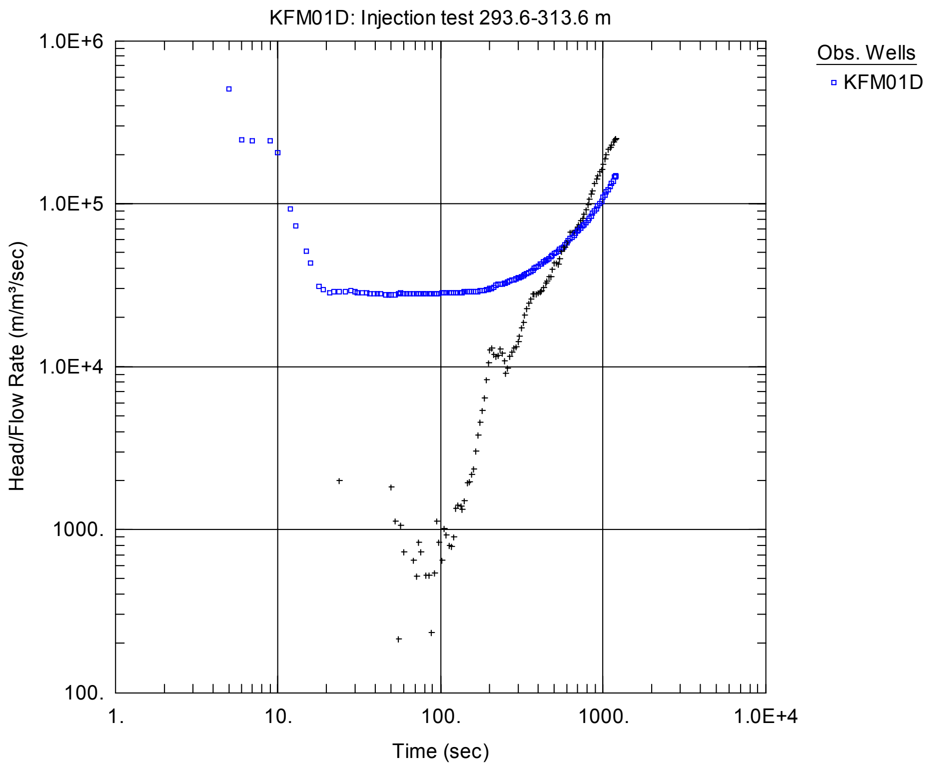


Figure A3-80. *Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 293.6-313.6 m in KFM01D. No type curve fit is shown since no unambiguous transient evaluation is possible*

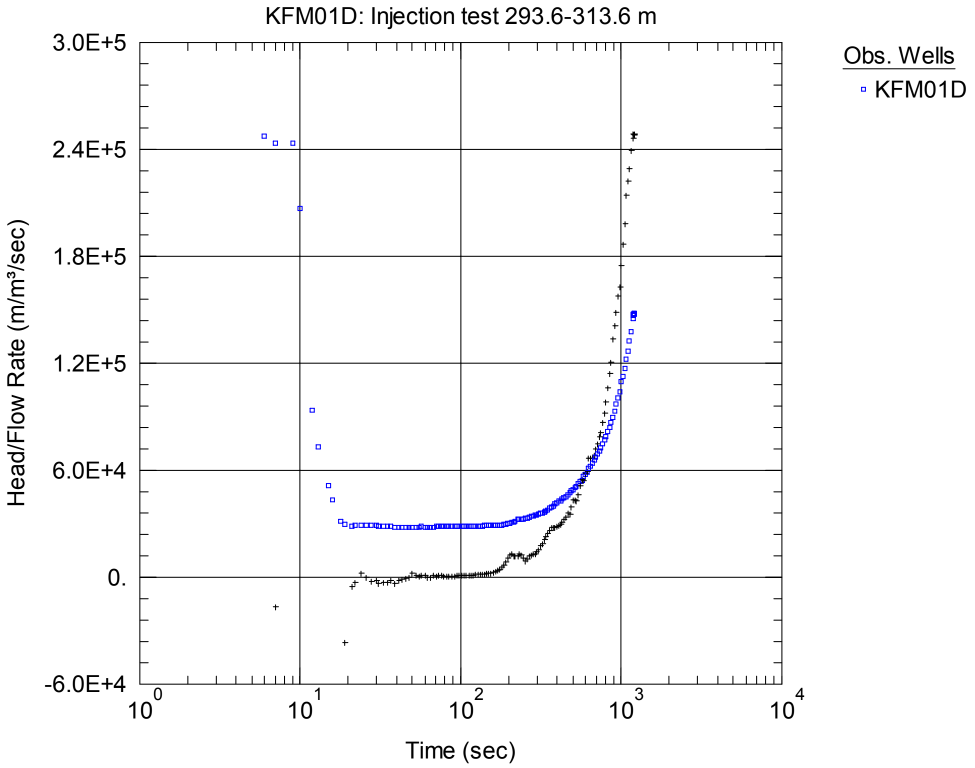


Figure A3-81. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 293.6-313.6 m in KFM01D. No type curve fit is shown since no unambiguous transient evaluation is possible*

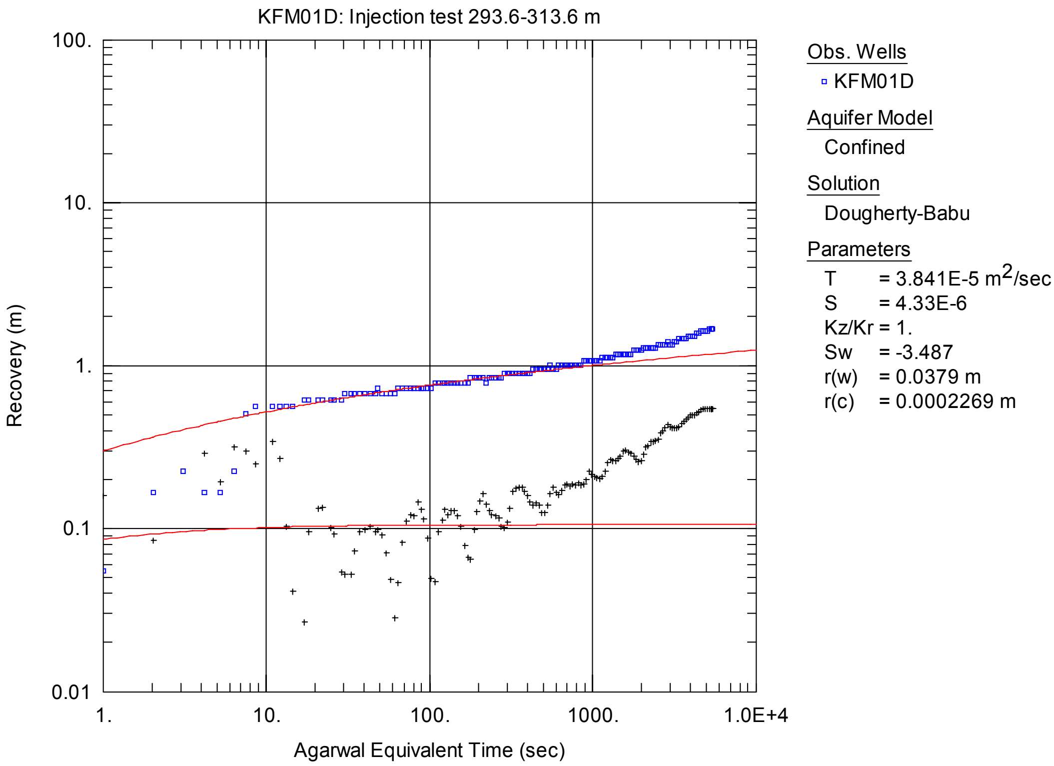


Figure A3-82. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 293.6-313.6 m in KFM01D. The type curve fit is only to show that an assumption of PRF is not valid.*

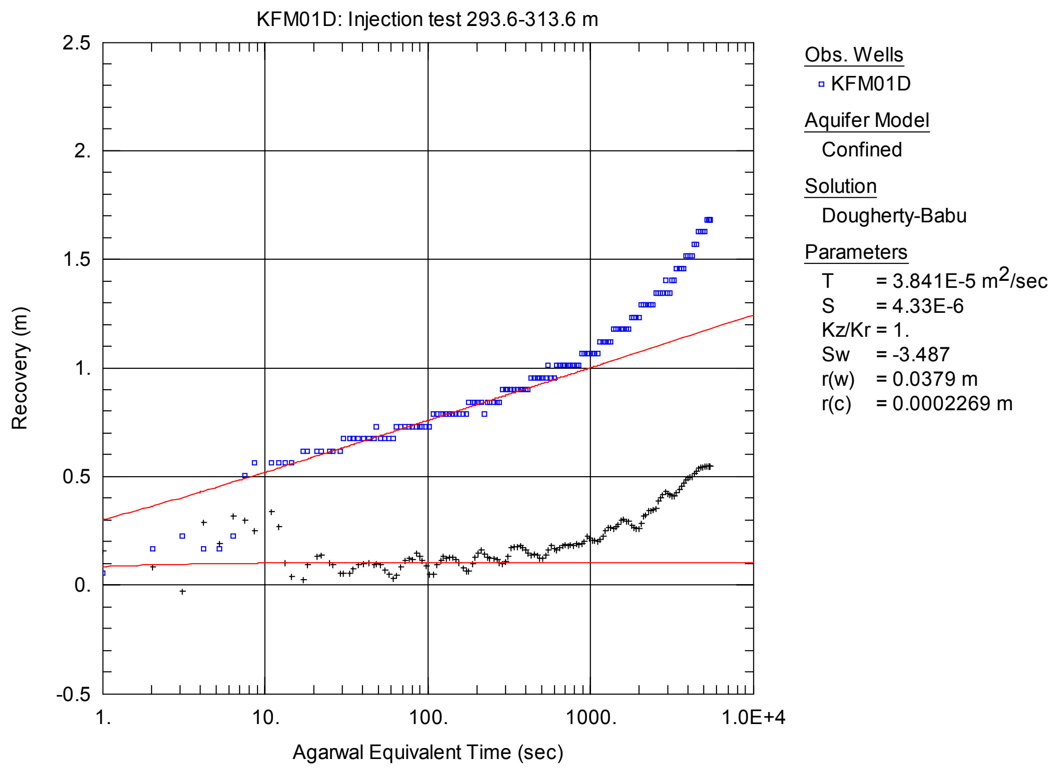


__Figure A3-83.__ Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 293.6-313.6 m in KFM01D. The type curve fit is only to show that an assumption of PRF is not valid.

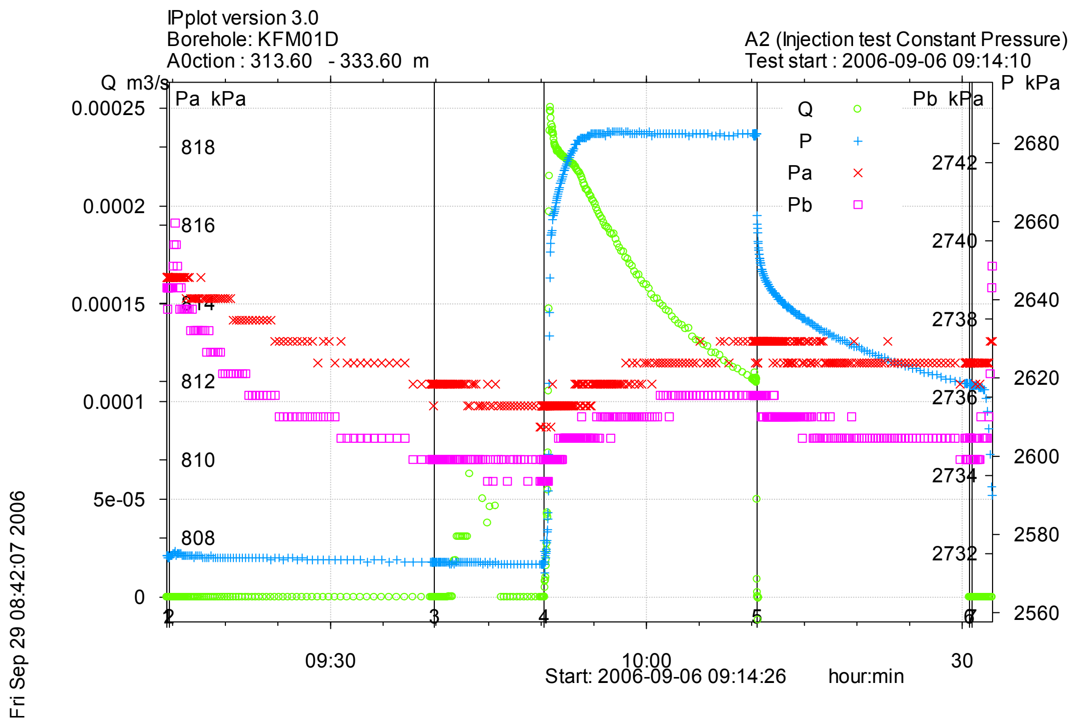


__Figure A3-84.__ Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 313.6-333.6 m in borehole KFM01D.

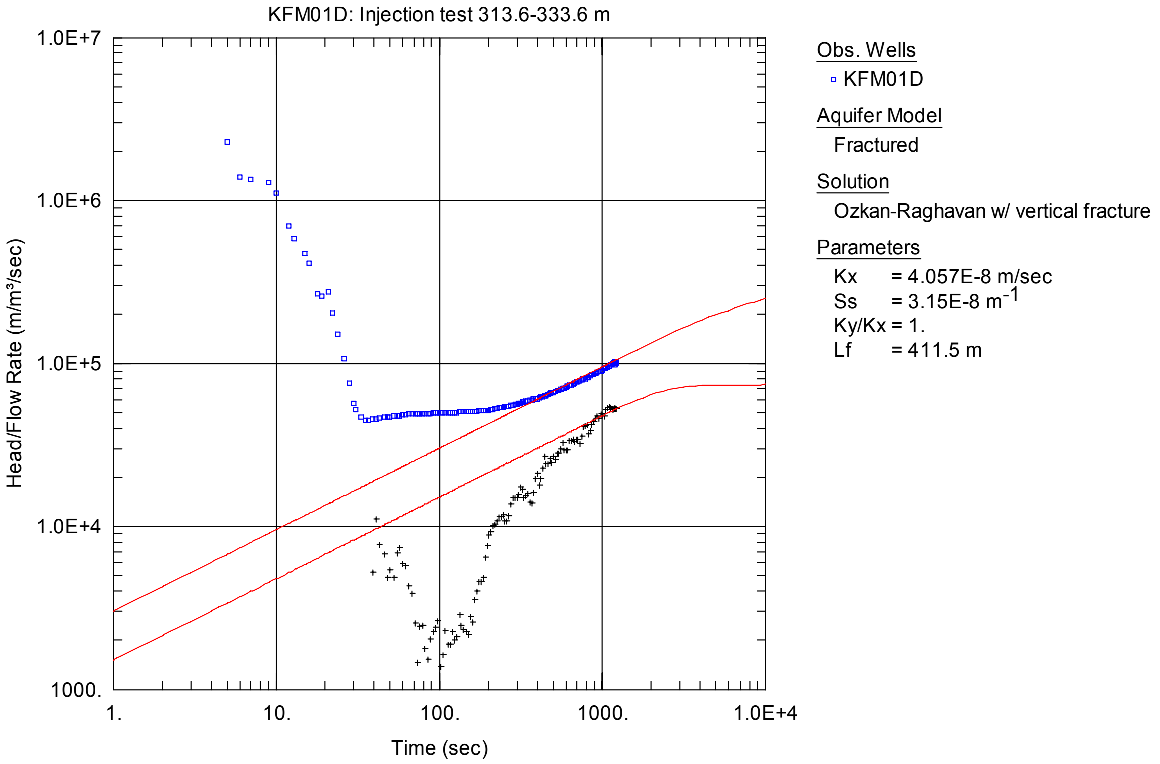


Figure A3-85. *Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 313.6-333.6 m in borehole KFM01D. The type curve fit is only to show that an assumption of PLF is not valid.*

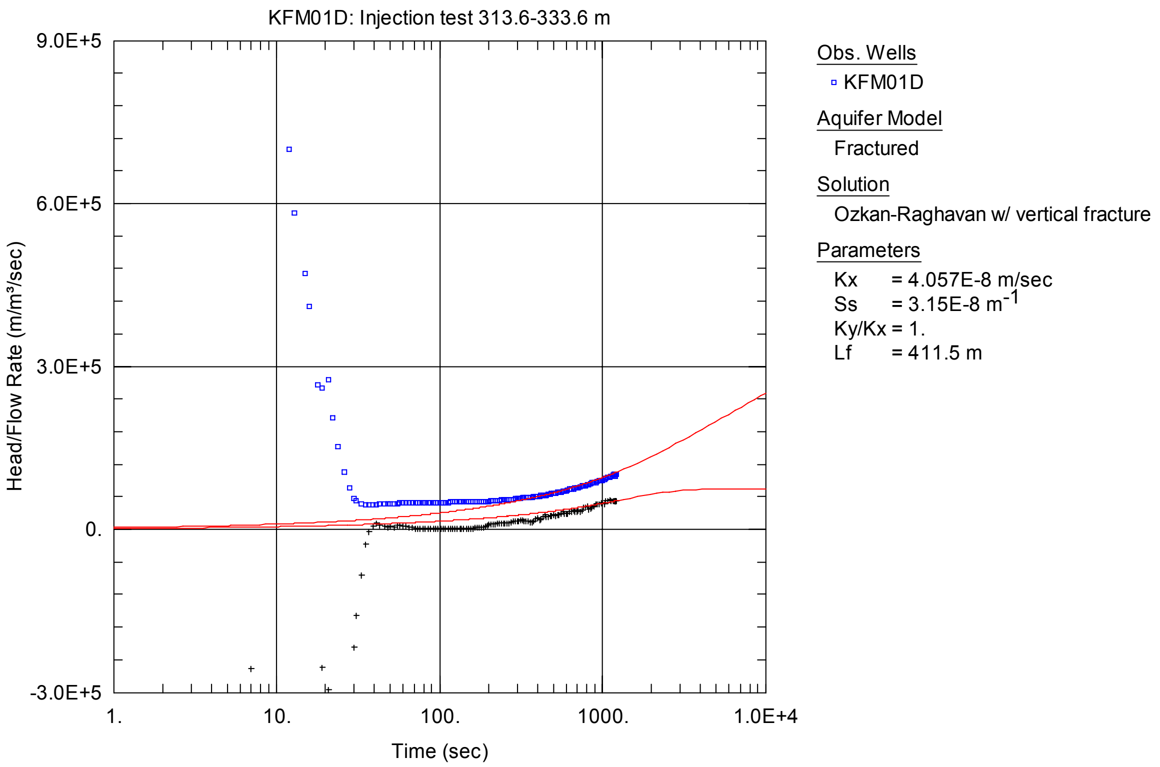


Figure A3-86. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 313.6-333.6 m in borehole KFM01D. The type curve fit is only to show that an assumption of PLF is not valid.*

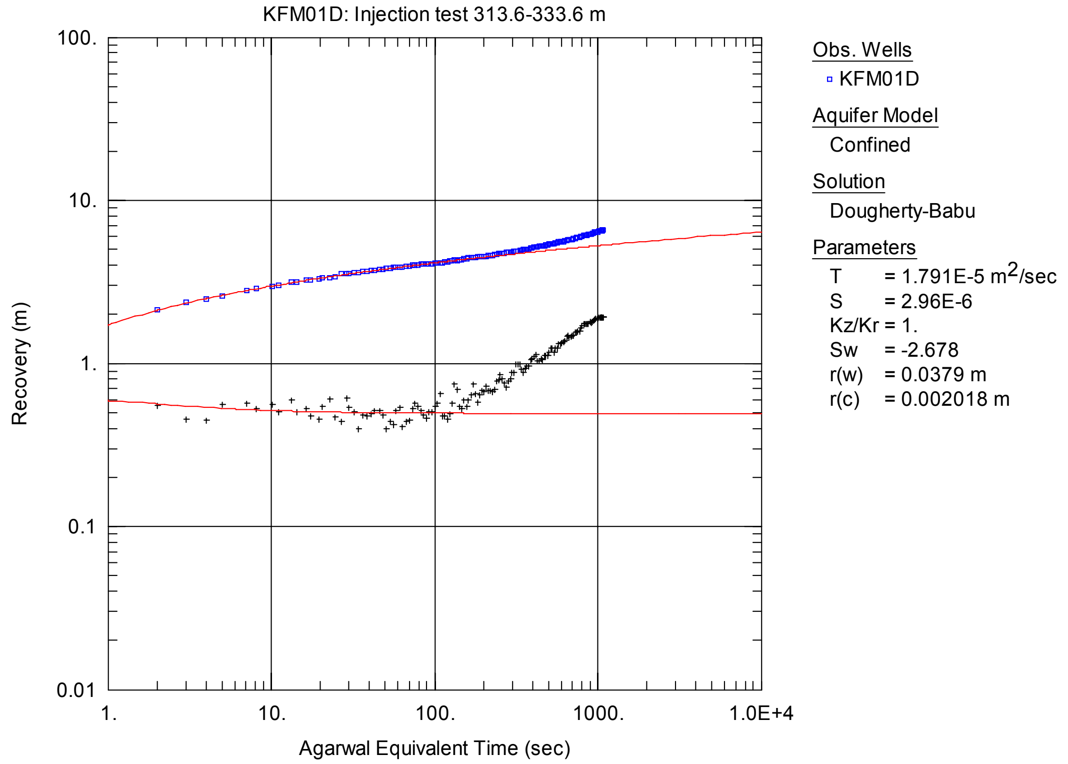


Figure A3-87. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 313.6-333.6 m in KFM01D.*

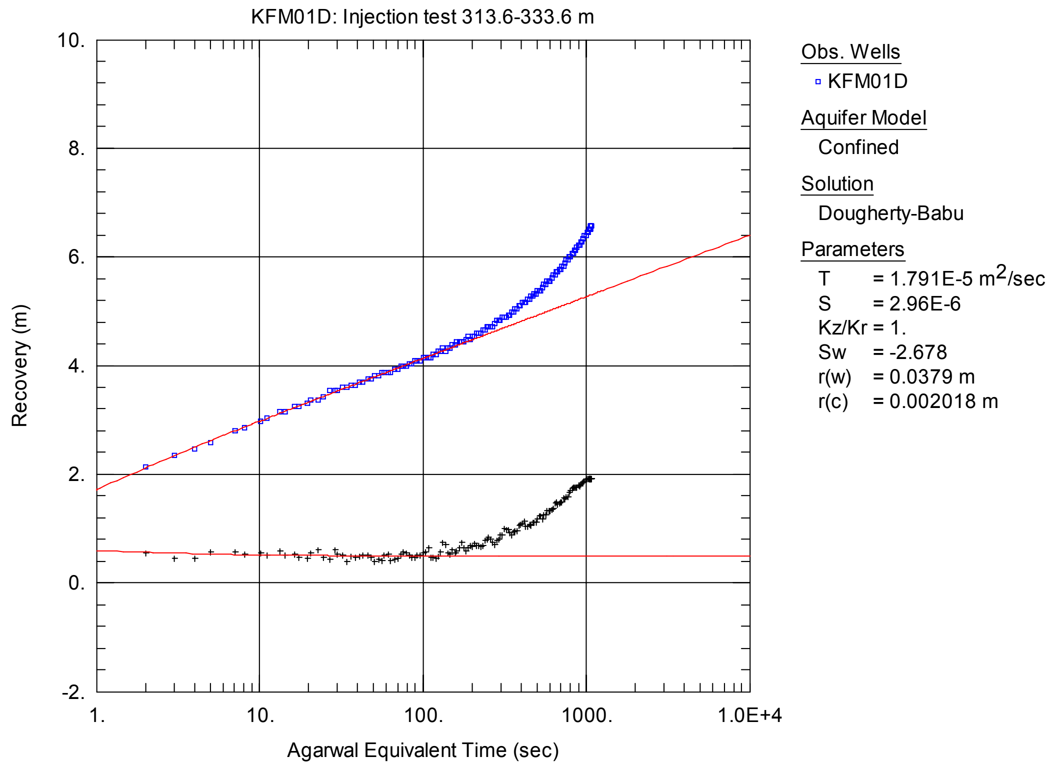


Figure A3-88. *Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 313.6-333.6 m in KFM01D.*

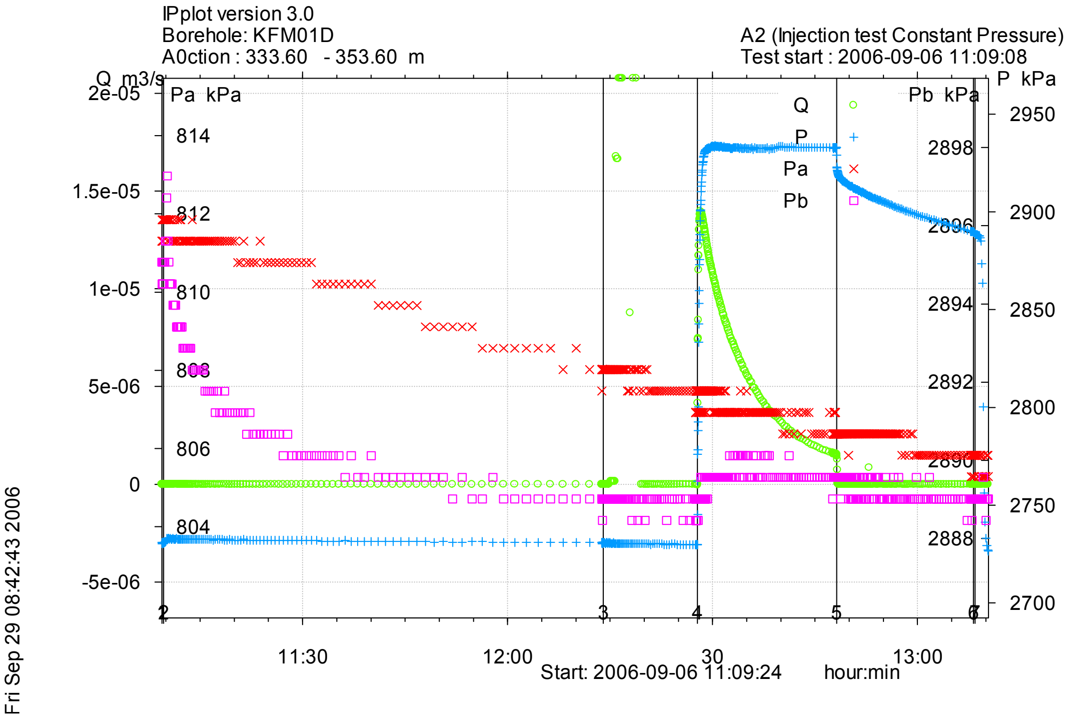


Figure A3-89. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 333.6-353.6 m in borehole KFM01D.*

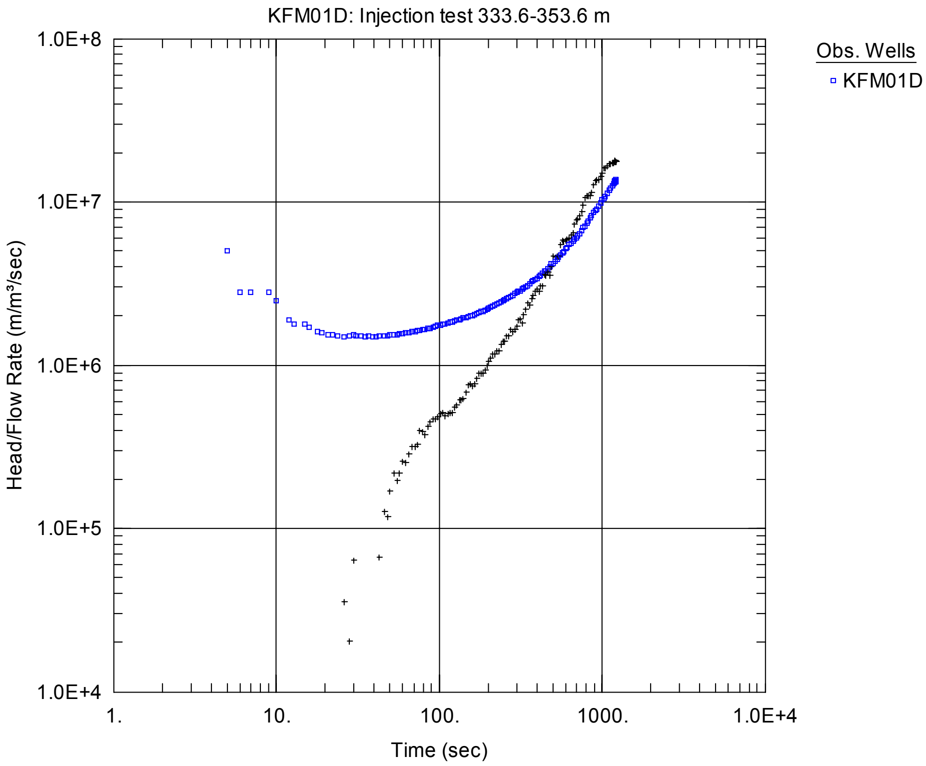


Figure A3-90. *Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 333.6-353.6 m in KFM01D. No type curve fit is shown since no unambiguous transient evaluation is possible*

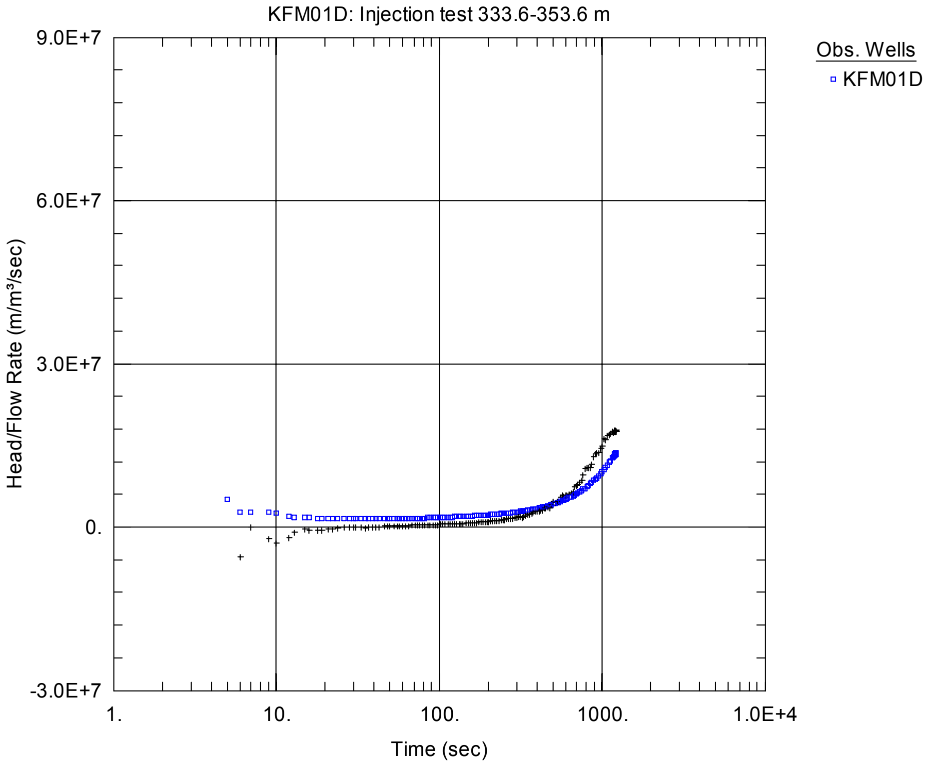


Figure A3-91. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 333.6-353.6 m in KFM01D. No type curve fit is shown since no unambiguous transient evaluation is possible*

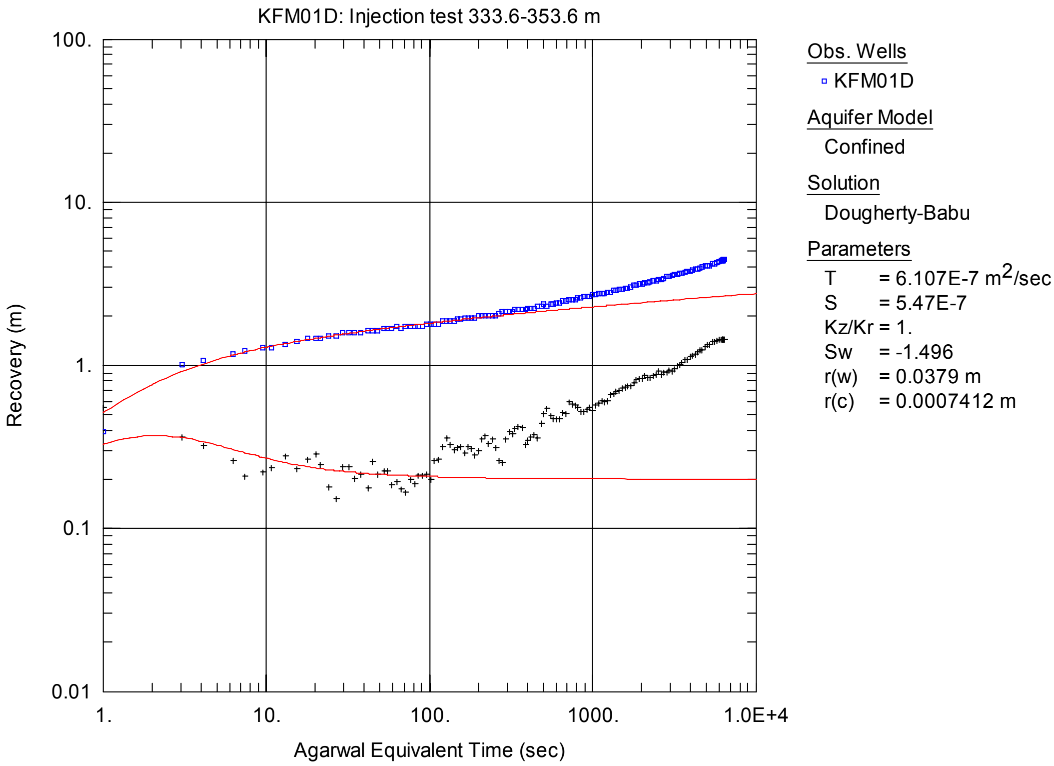


Figure A3-92. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 333.6-353.6 m in KFM01D.*

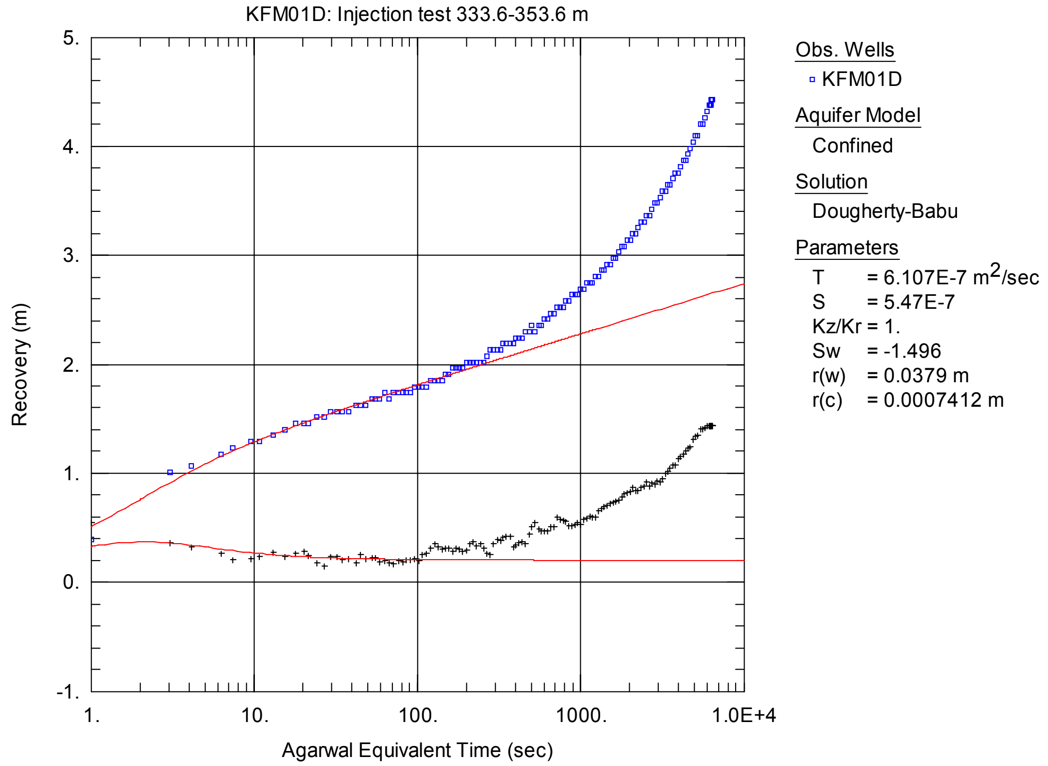


__Figure A3-93.__ Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 333.6-353.6 m in KFM01D.

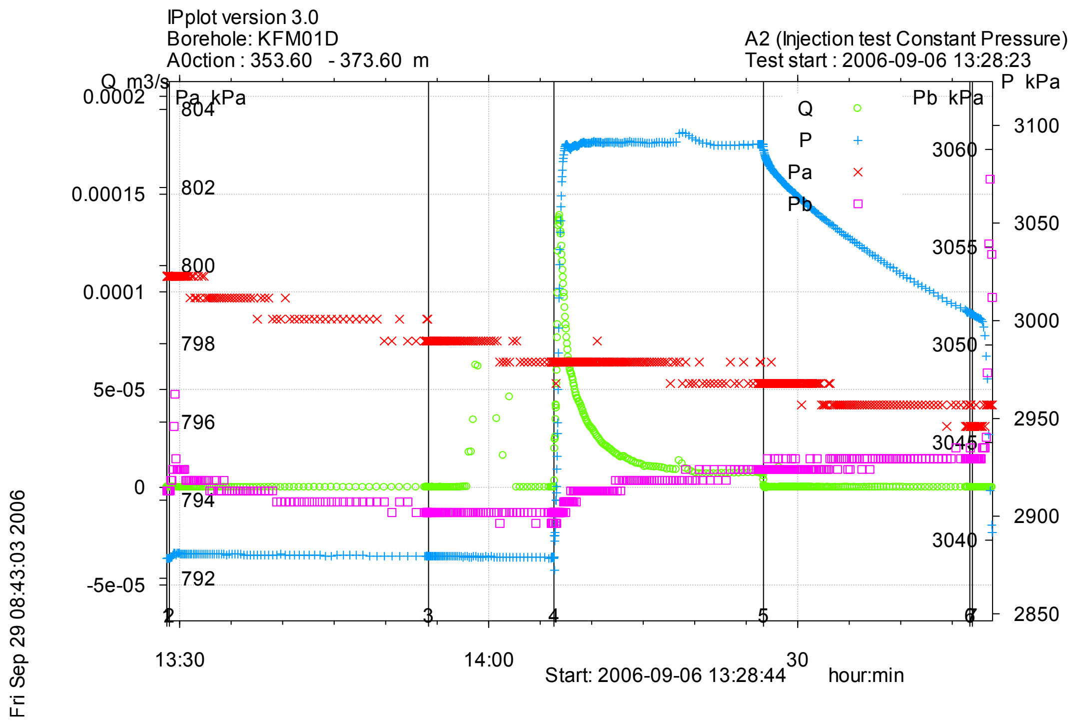


__Figure A3-94.__ Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 353.6-373.6 m in borehole KFM01D.

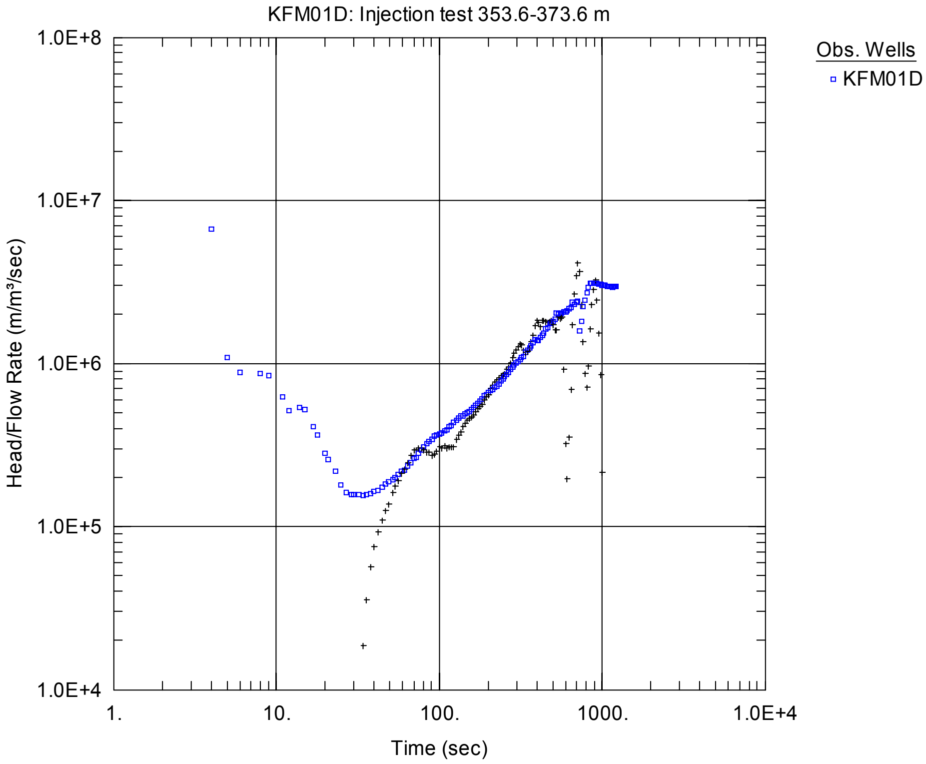


Figure A3-95. *Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 353.6-373.6 m in KFM01D. No type curve fit is shown since no unambiguous transient evaluation is possible*

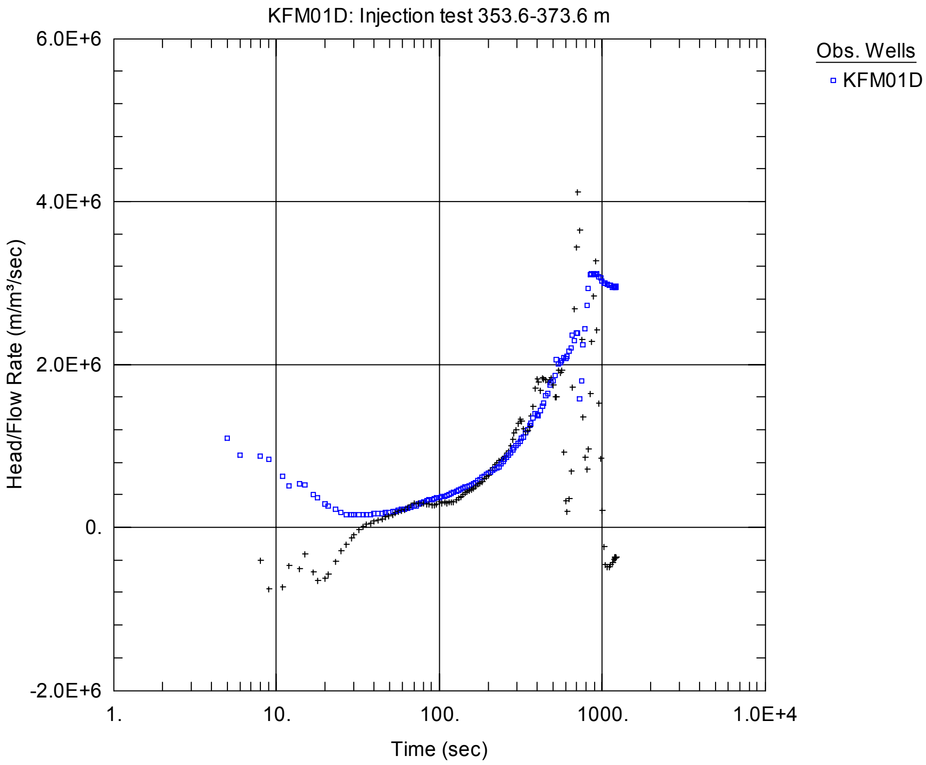


Figure A3-96. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 353.6-373.6 m in KFM01D. No type curve fit is shown since no unambiguous transient evaluation is possible*

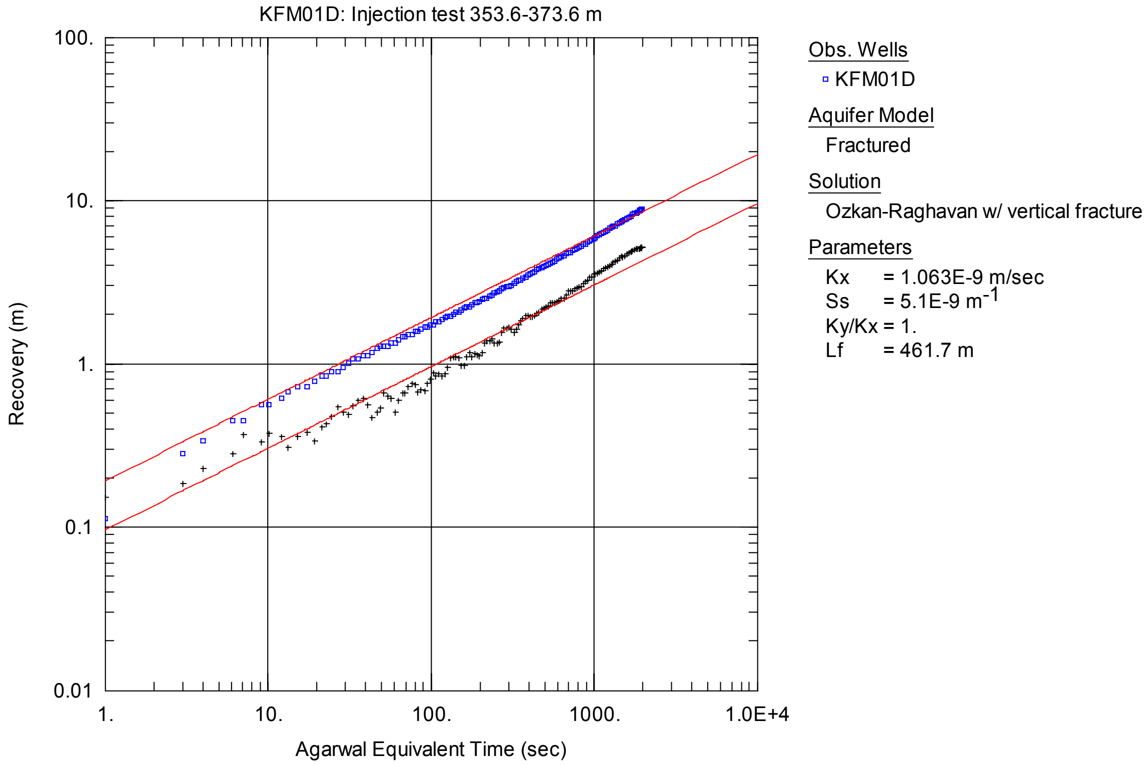


Figure A3-97. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 353.6-373.6 m in KFM01D. The type curve fit is only to show that an assumption of PLF is not valid.*

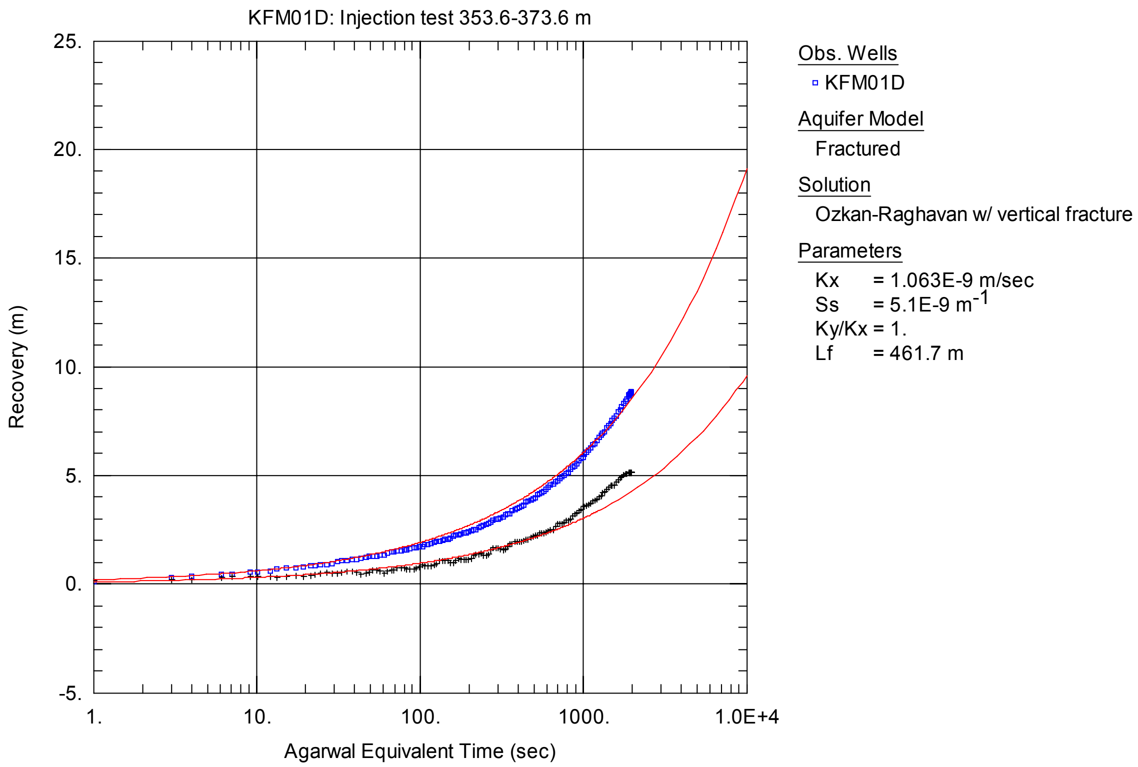


Figure A3-98. *Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 353.6-373.6 m in KFM01D. The type curve fit is only to show that an assumption of PLF is not valid.*

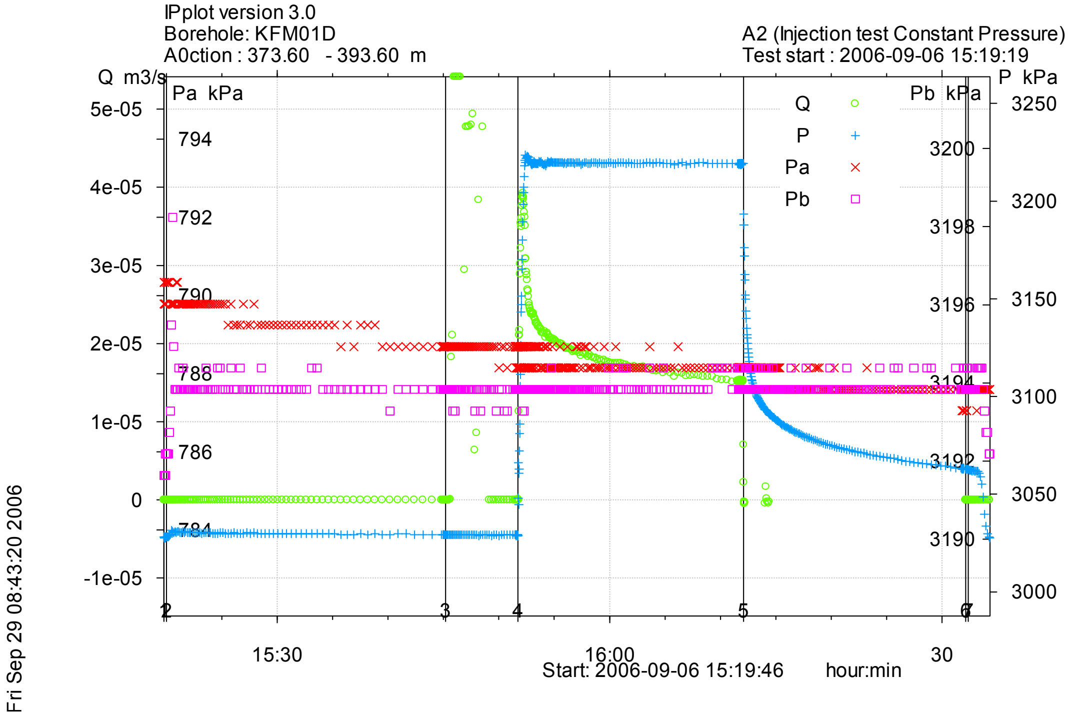


Figure A3-99. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 373.6-393.6 m in borehole KFM01D.*

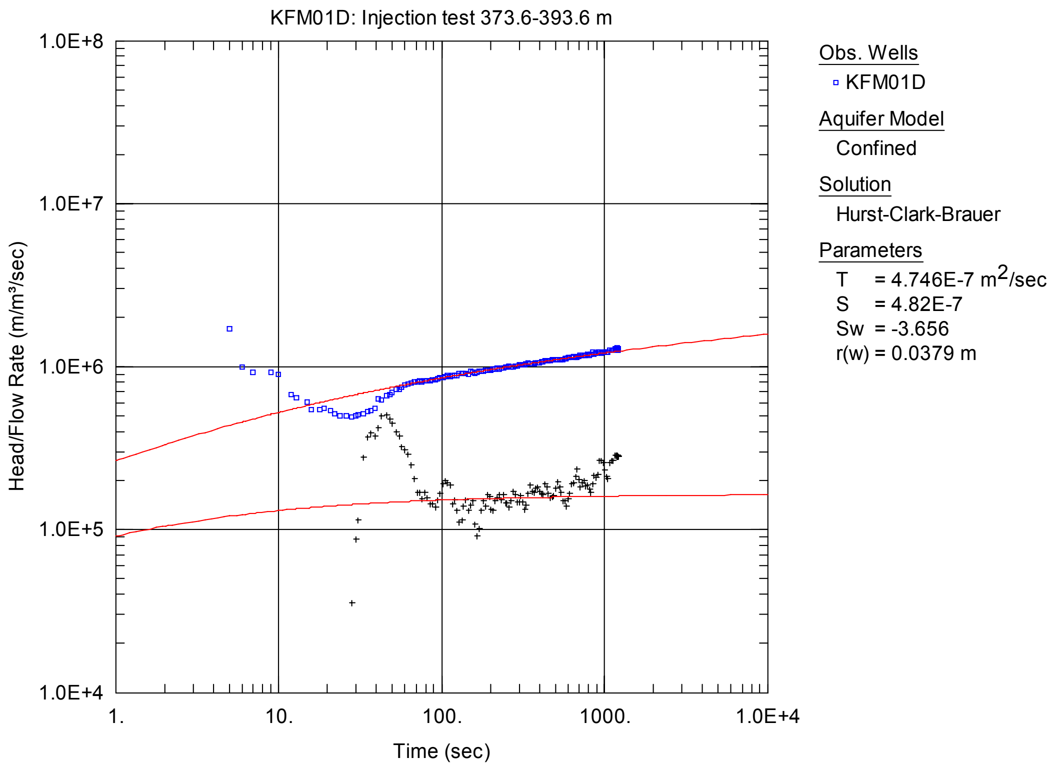


Figure A3-100. *Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 373.6-393.6 m in KFM01D.*

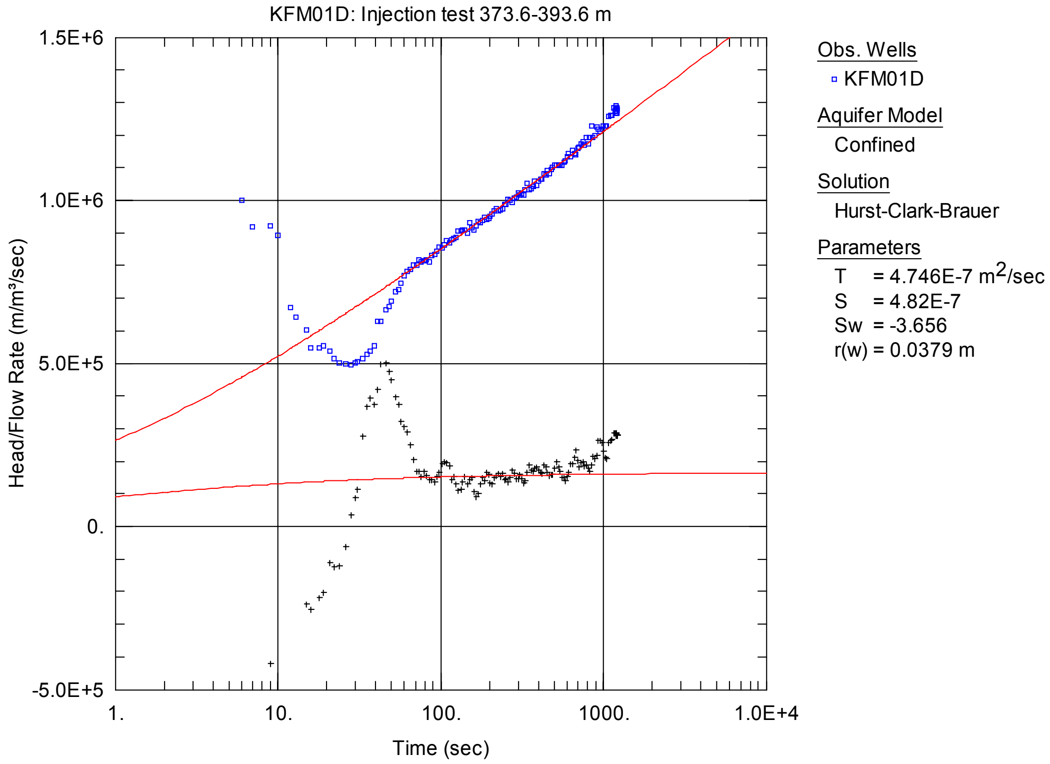


Figure A3-101. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 373.6-393.6 m in KFM01D.*

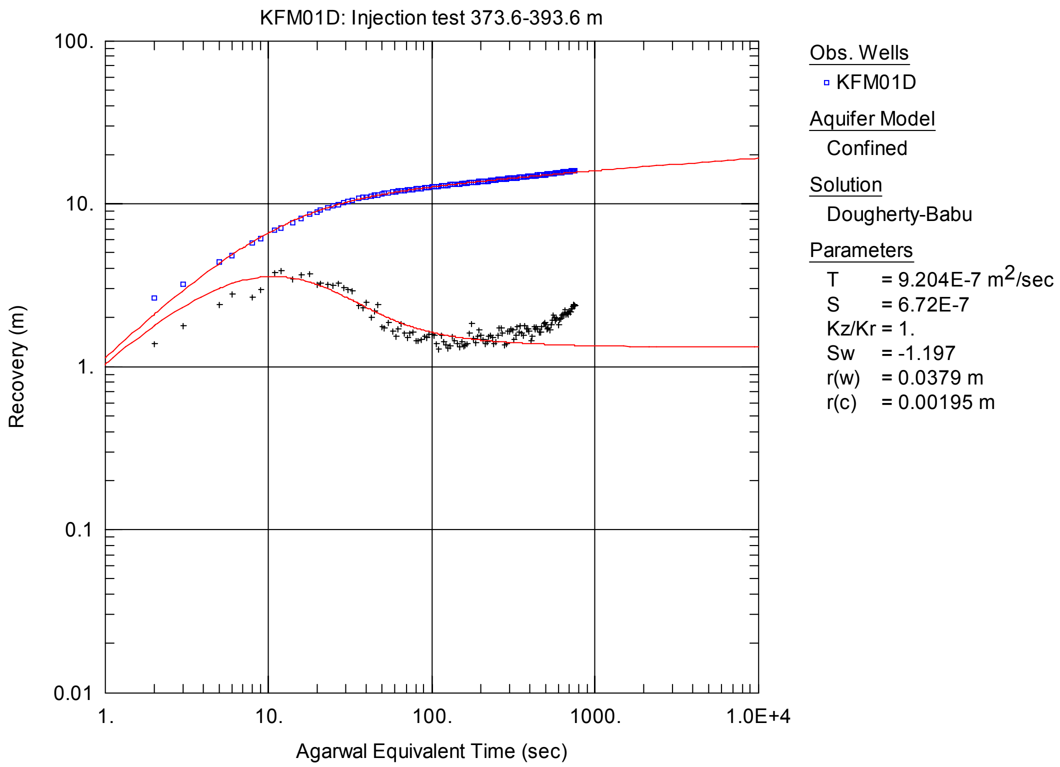


Figure A3-102. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 373.6-393.6 m in KFM01D.*

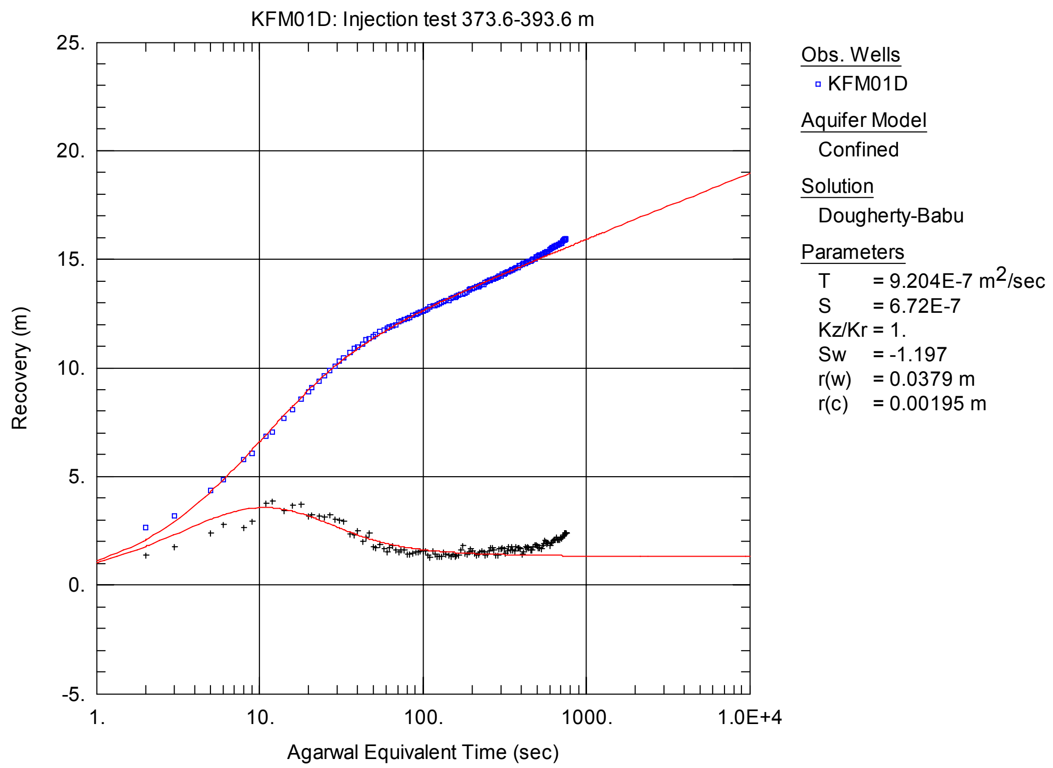


Figure A3-103. *Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 373.6-393.6 m in KFM01D.*

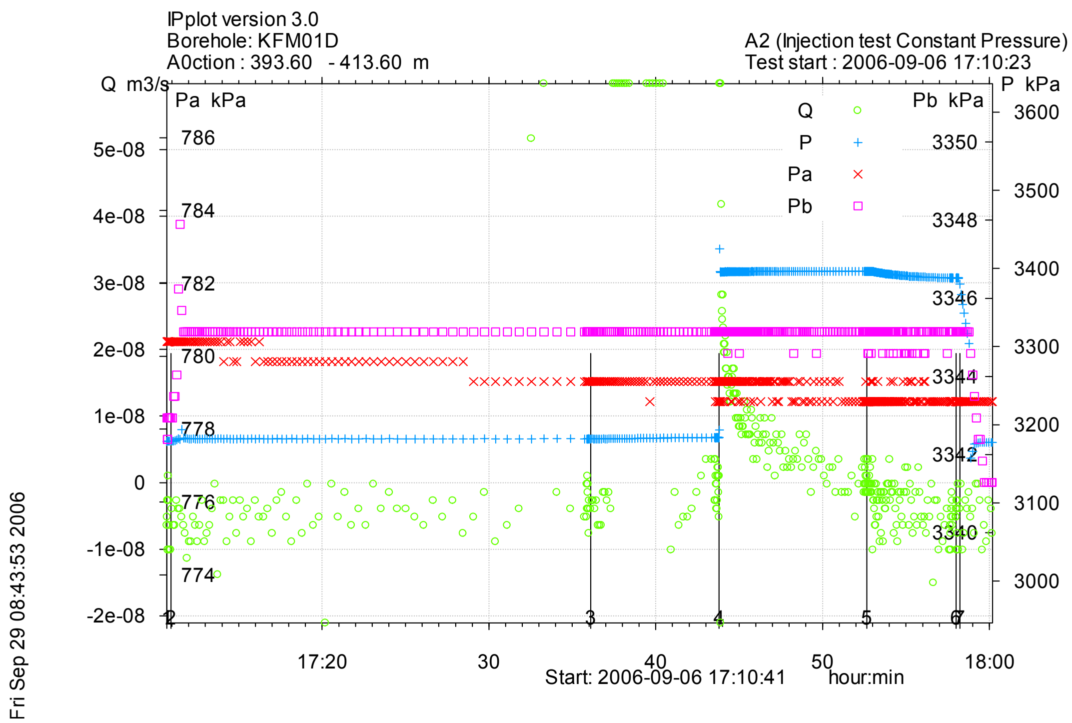


Figure A3-104. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 393.6-413.6 m in borehole KFM01D.*

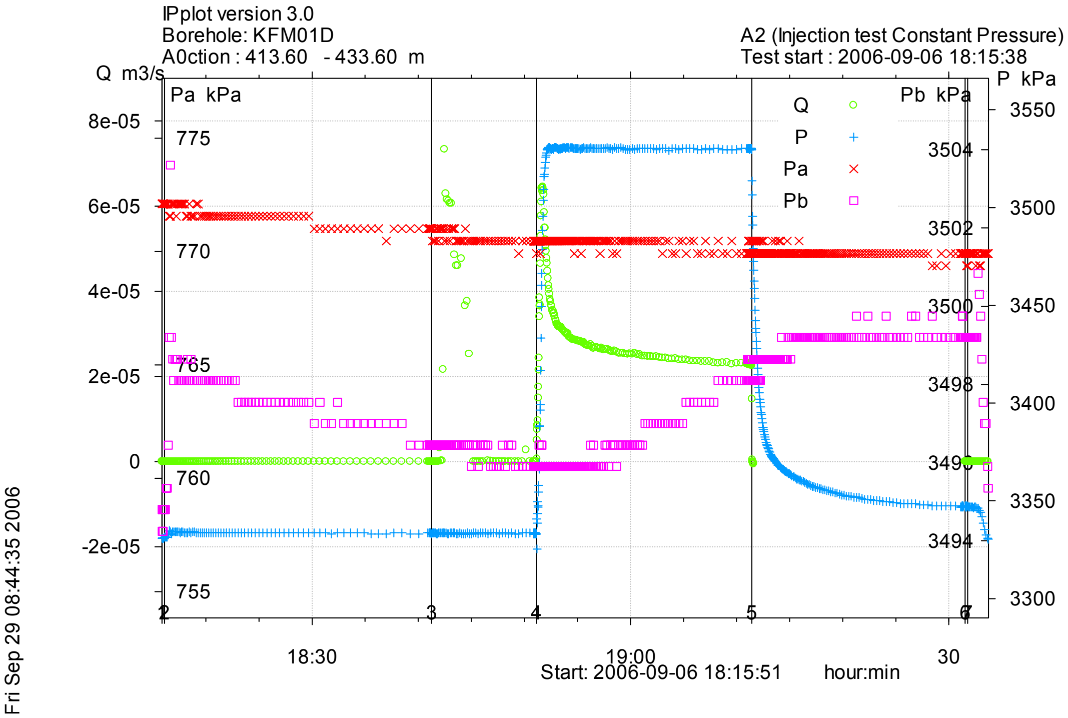


***Figure A3-105.** Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 413.6-433.6 m in borehole KFM01D.*

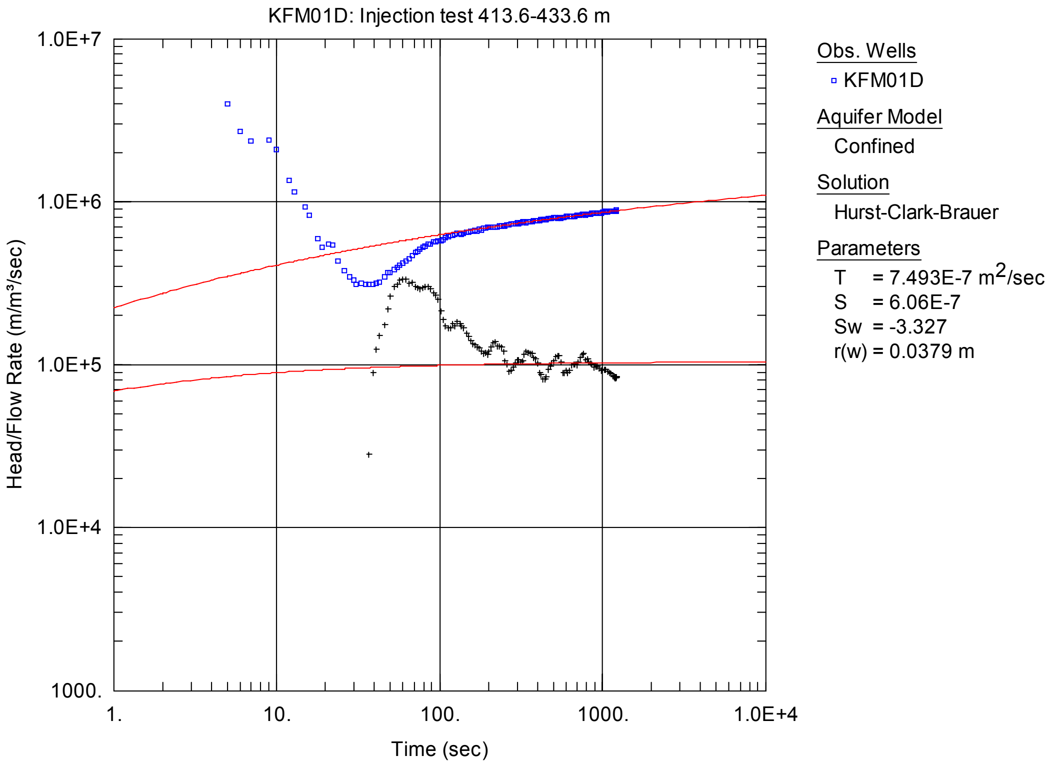


***Figure A3-106.** Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 413.6-433.6 m in KFM01D.*

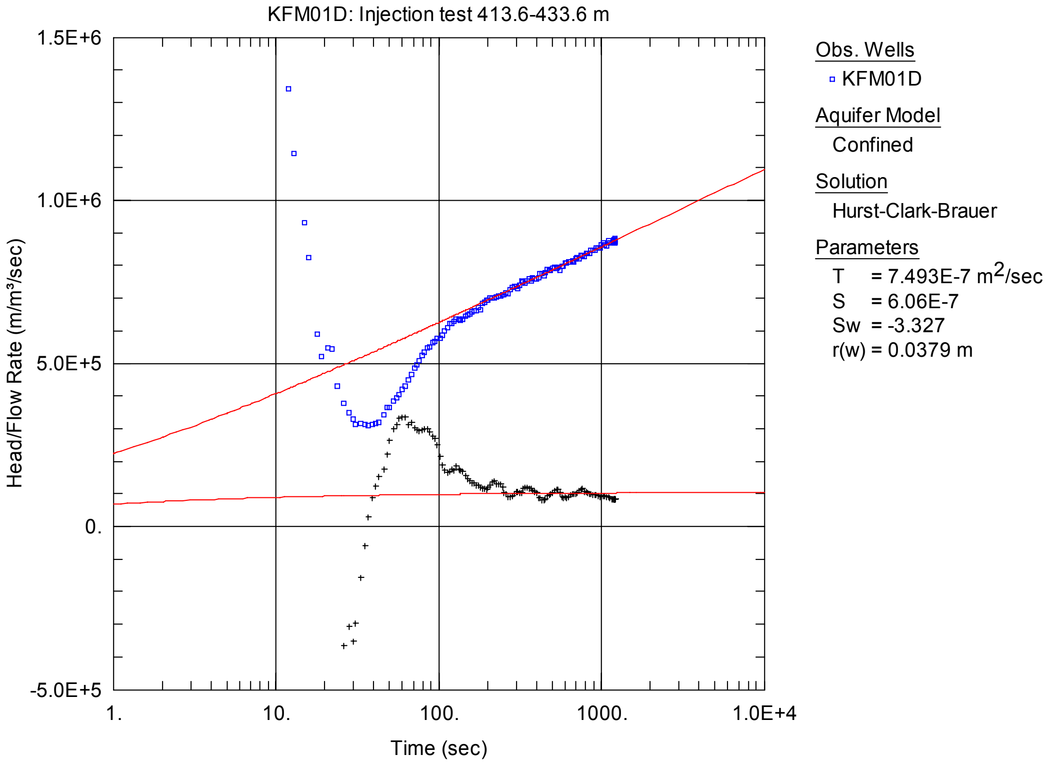


Figure A3-107. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 413.6-433.6 m in KFM01D.*

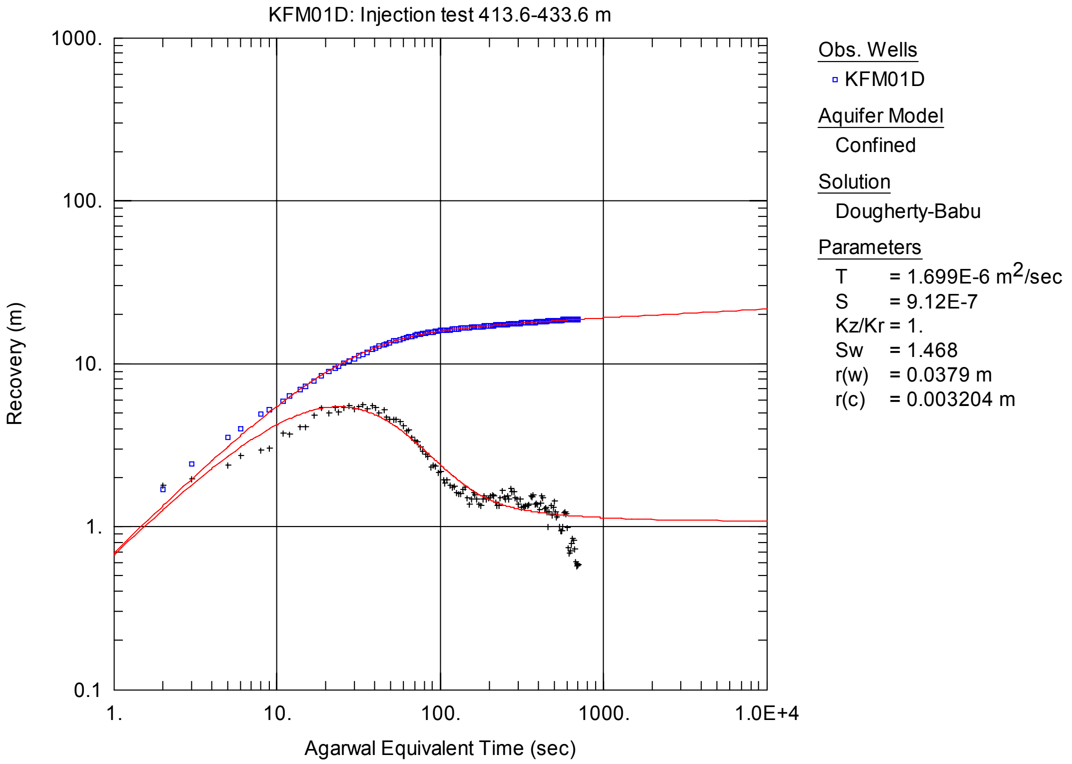


Figure A3-108. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 413.6-433.6 m in KFM01D.*

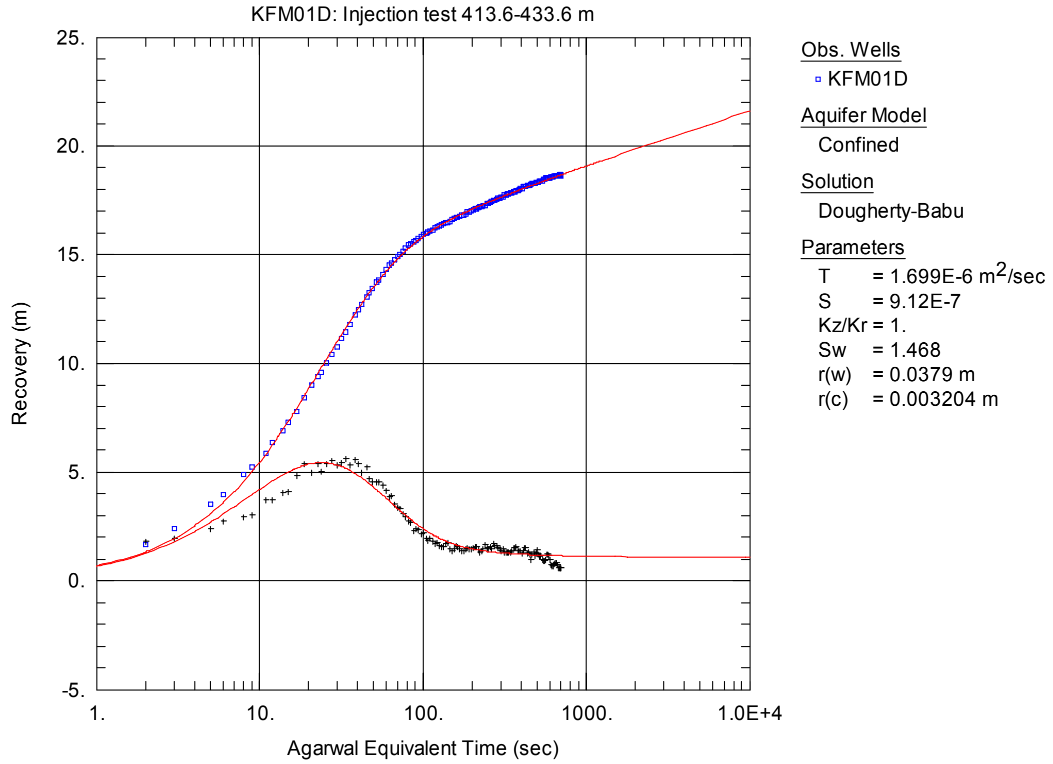


Figure A3-109. *Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 413.6-433.6 m in KFM01D.*

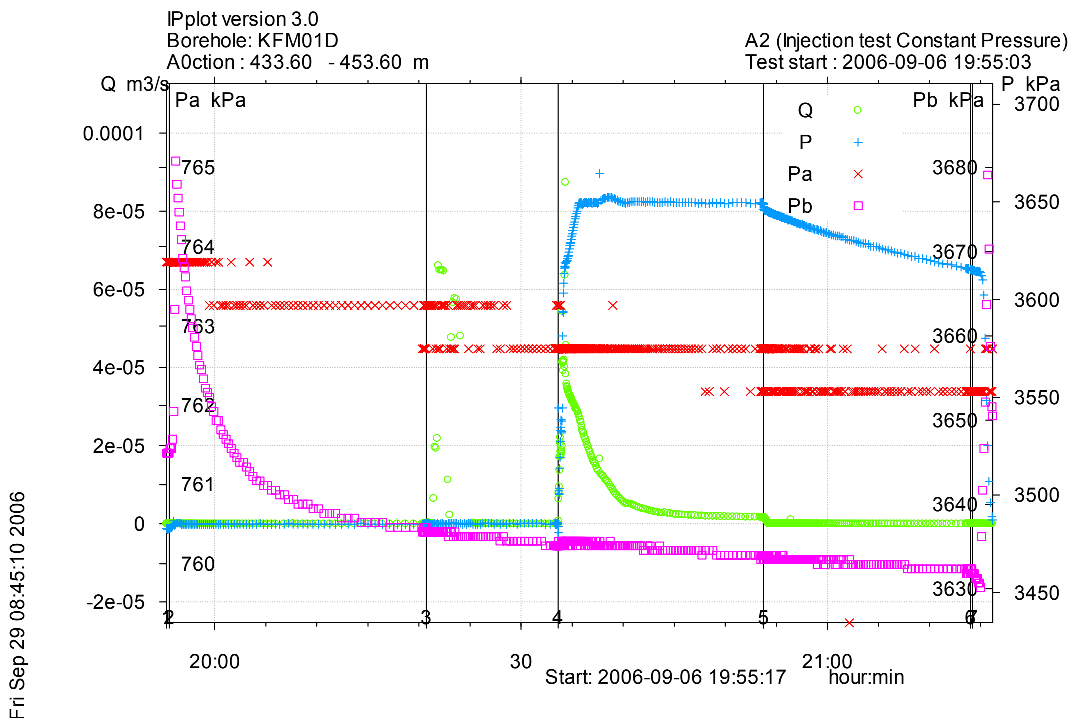


Figure A3-110. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 433.6-453.6 m in borehole KFM01D.*

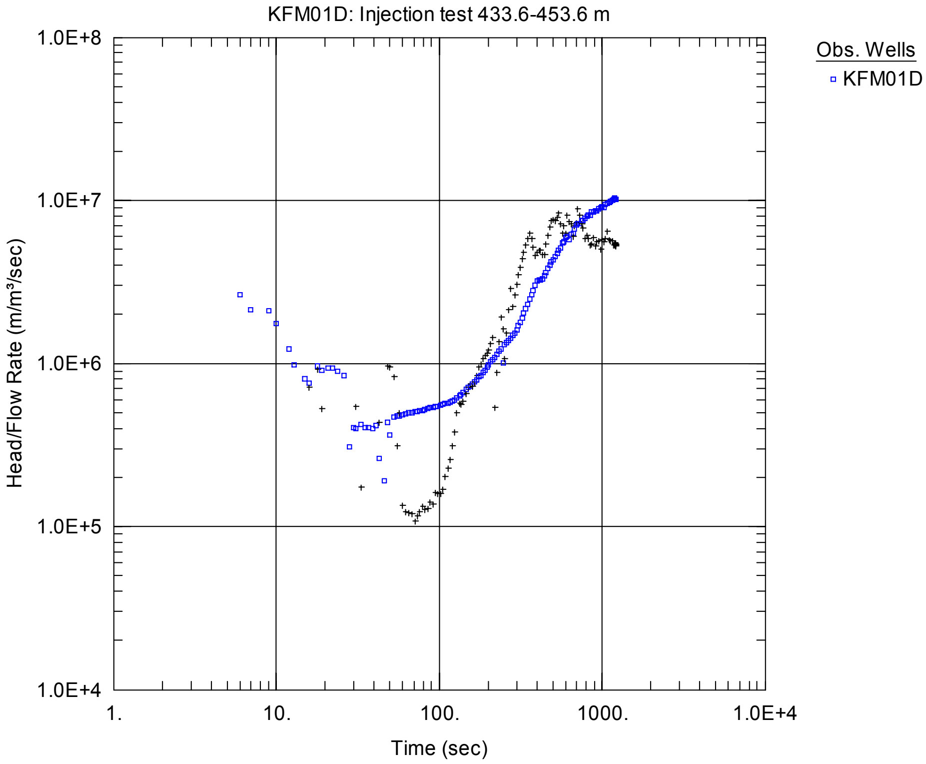


Figure A3-111. *Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 433.6-453.6 m in KFM01D. No type curve fit is shown since no unambiguous transient evaluation is possible*

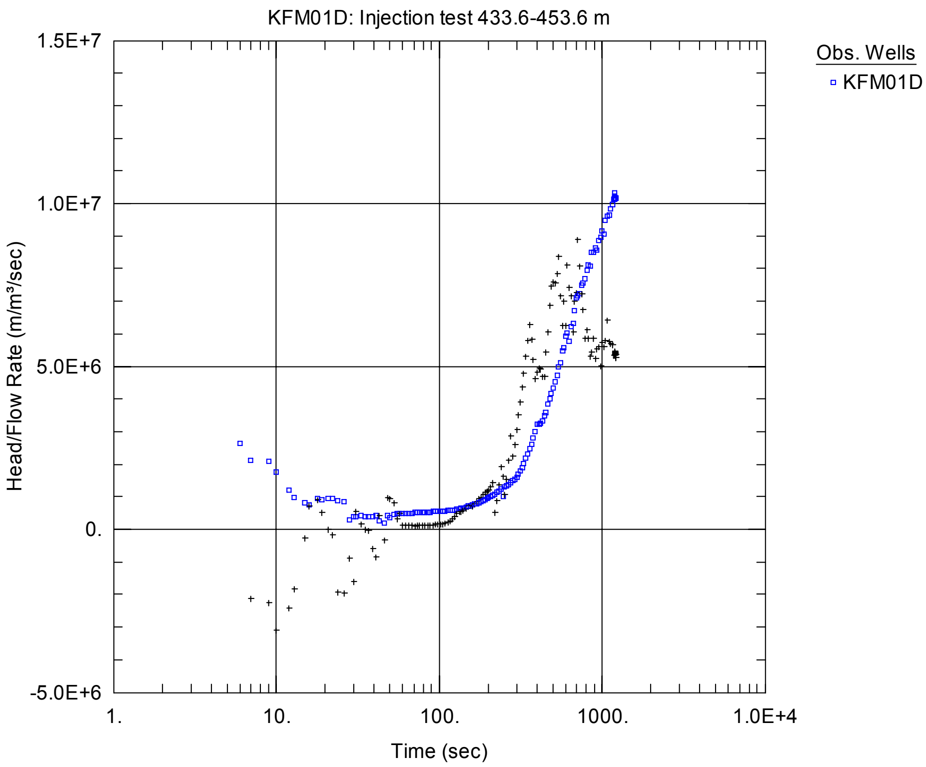


Figure A3-112. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 433.6-453.6 m in KFM01D. No type curve fit is shown since no unambiguous transient evaluation is possible*

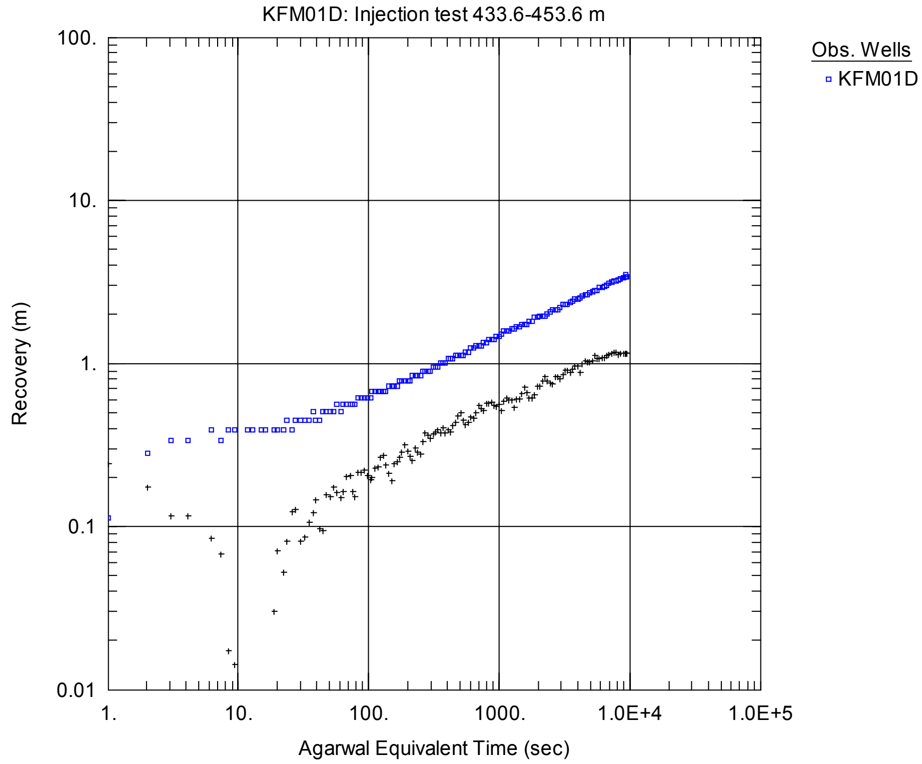


Figure A3-113. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 433.6-453.6 m in KFM01D. No type curve fit is shown since no unambiguous transient evaluation is possible*

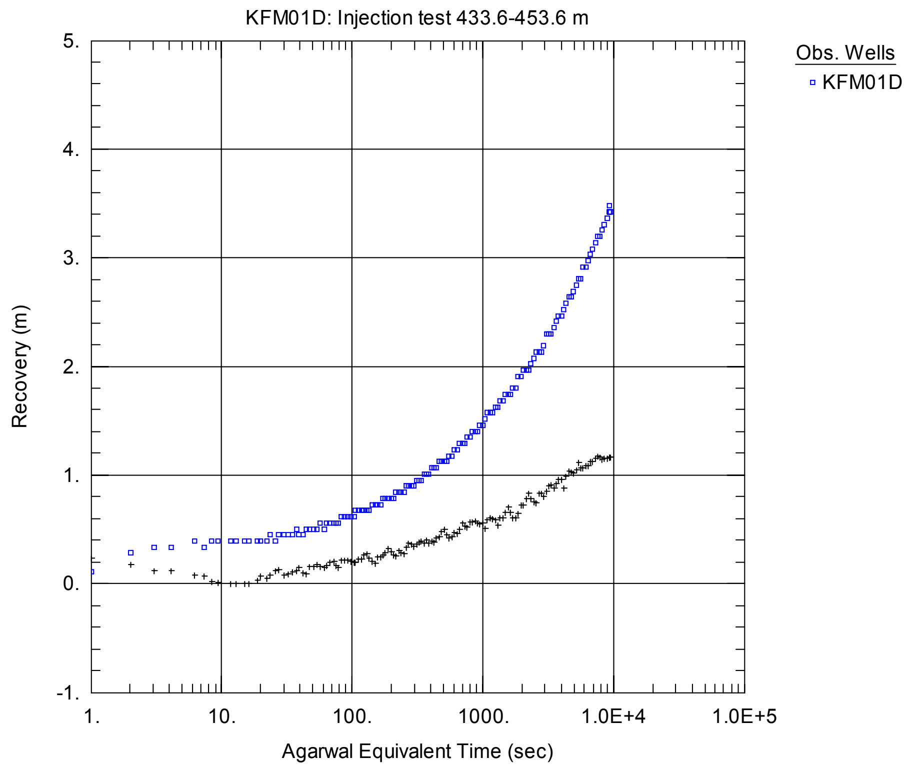


Figure A3-114. *Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 433.6-453.6 m in KFM01D. No type curve fit is shown since no unambiguous transient evaluation is possible*

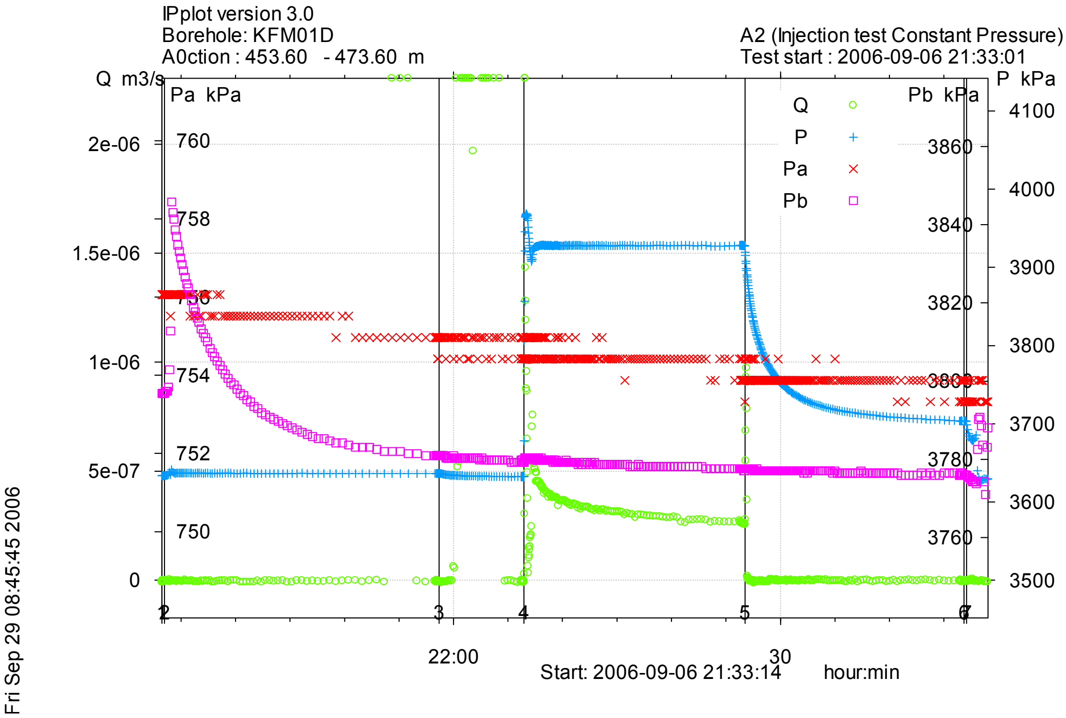


Figure A3-115. Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 453.6-473.6 m in borehole KFM01D.

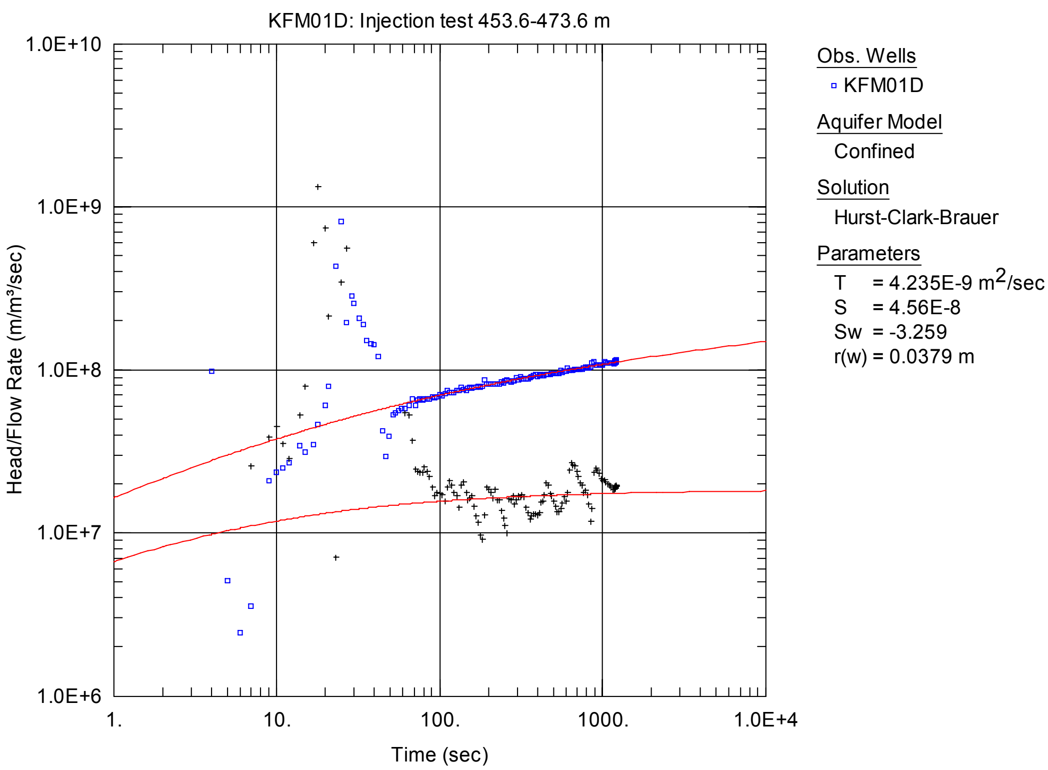


Figure A3-116. Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 453.6-473.6 m in KFM01D.

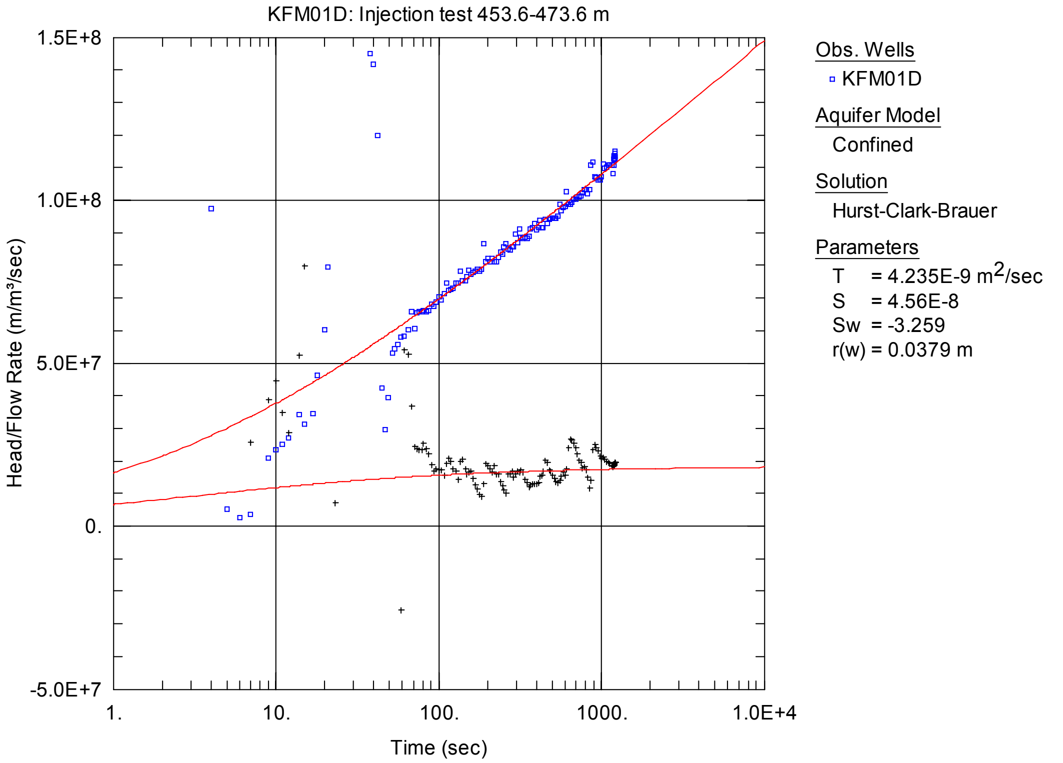


Figure A3-117. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 453.6-473.6 m in KFM01D.*

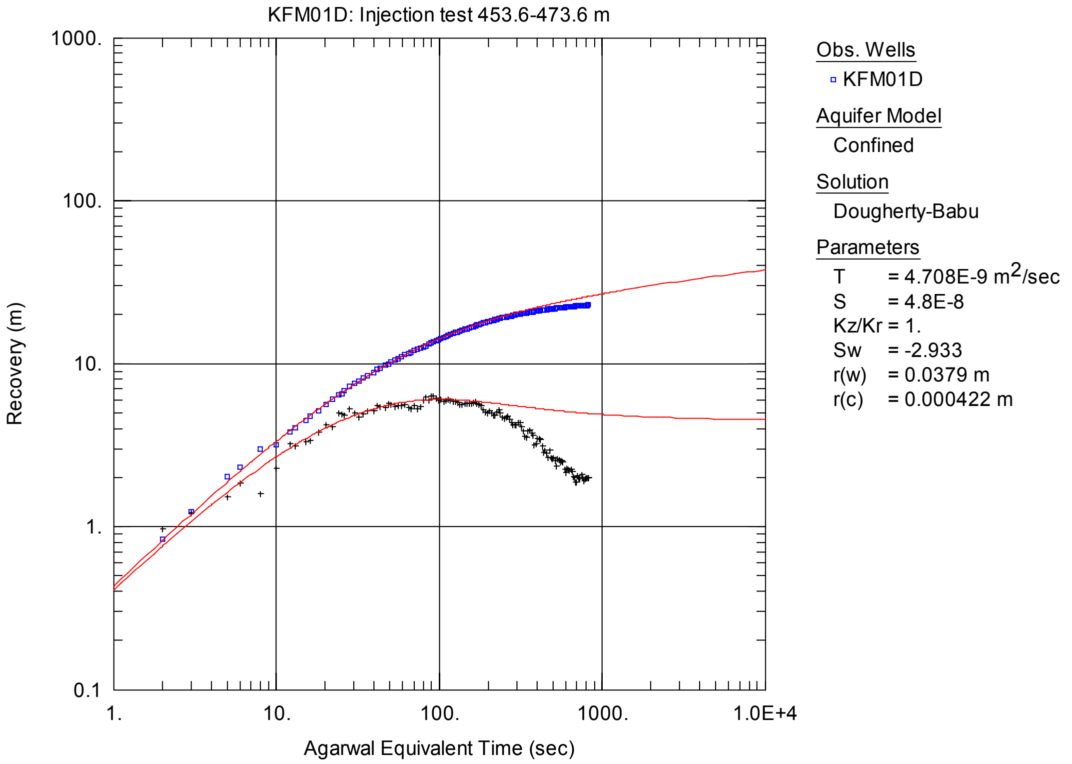


Figure A3-118. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, showing fit to the PRF solution, from the injection test in section 453.6-473.6 m in KFM01D.*

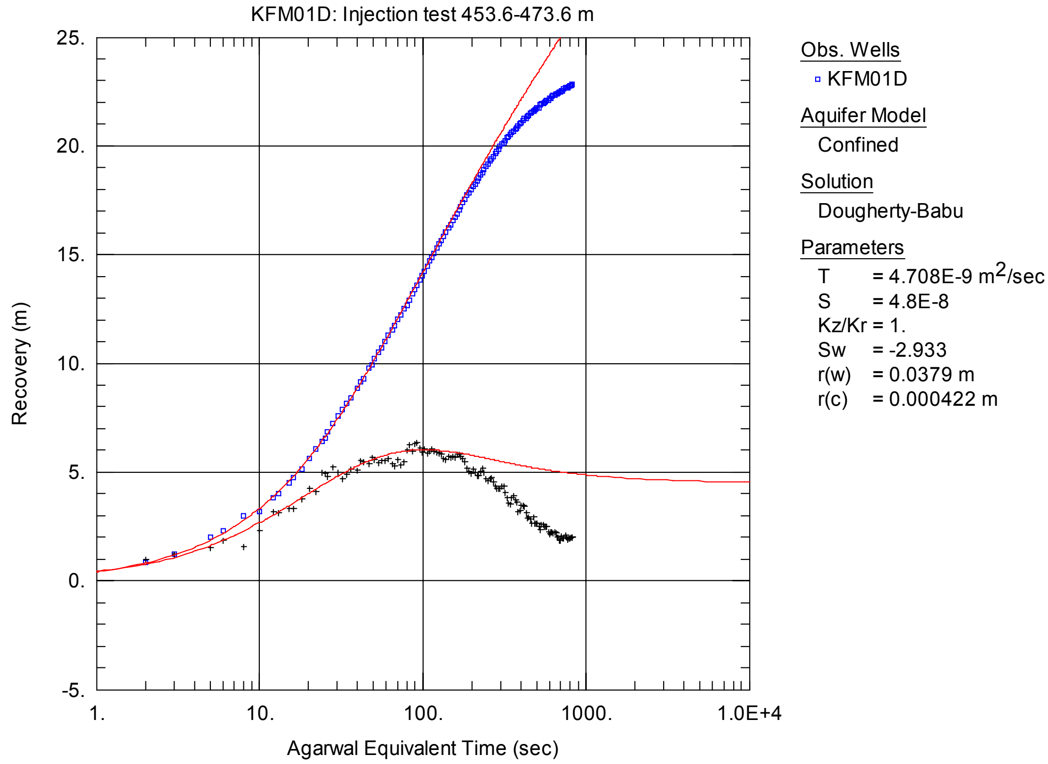


Figure A3-119. *Lin-log plot of recovery (□) and derivative (+) versus equivalent time, showing fit to the PRF solution, from the injection test in section 453.6-473.6 m in KFM01D.*

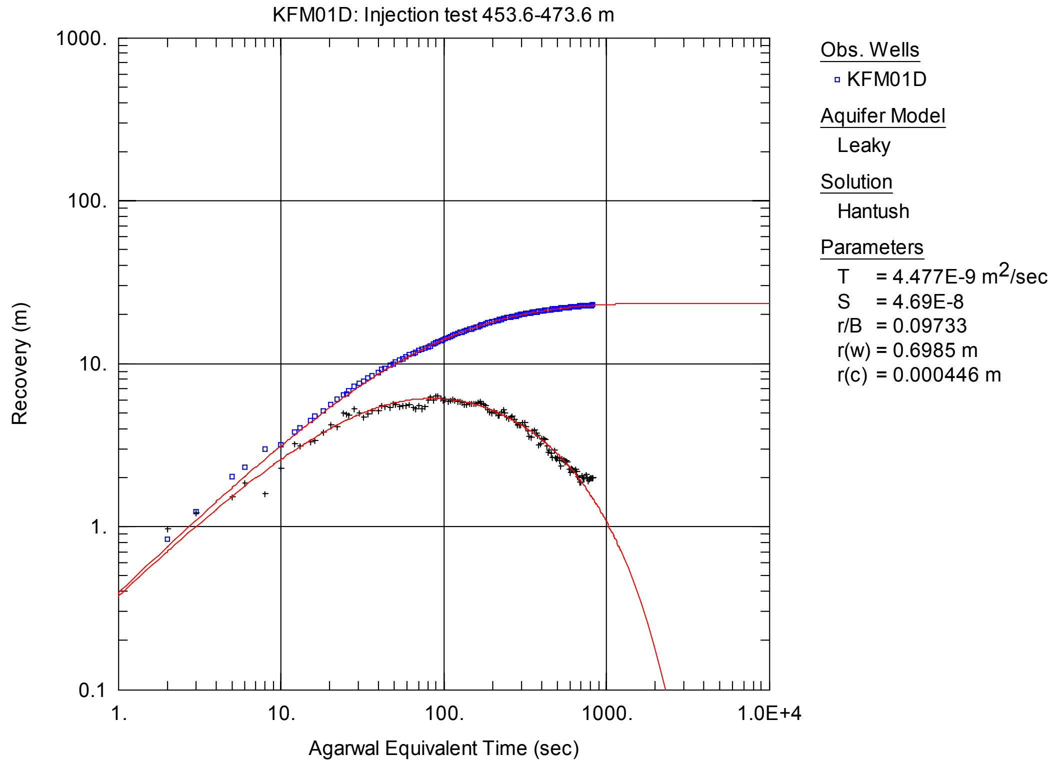


Figure A3-120. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, showing fit to the PSF solution, from the injection test in section 453.6-473.6 m in KFM01D.*

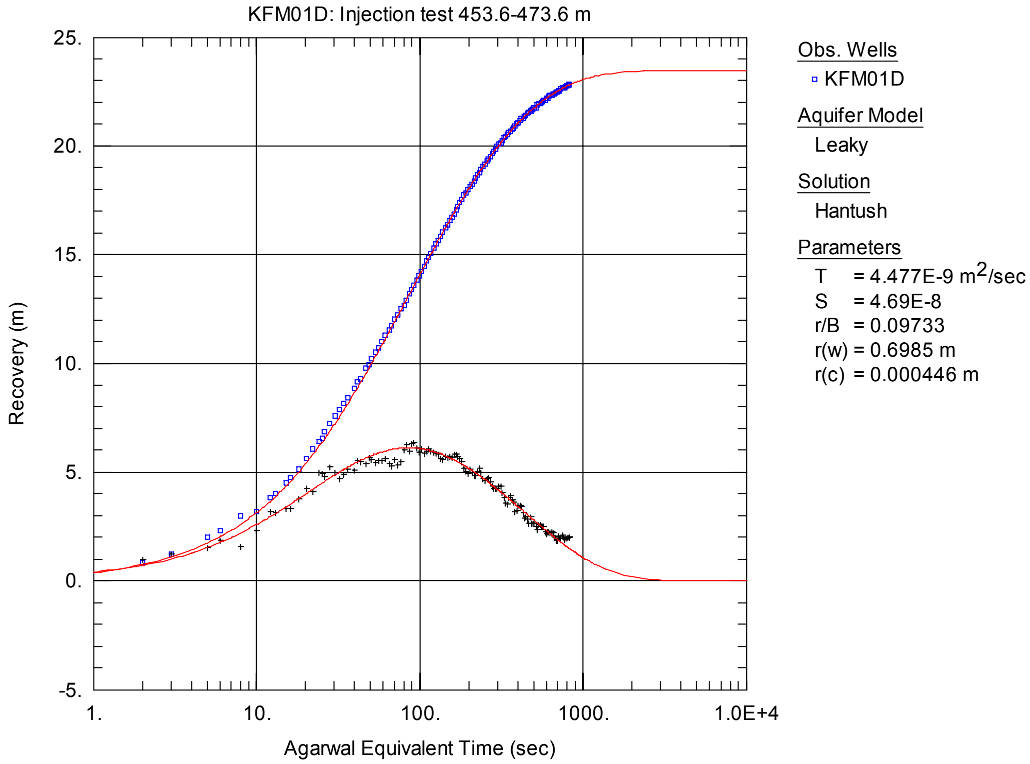


Figure A3-121. Lin-log plot of recovery (□) and derivative (+) versus equivalent time, showing fit to the PSF solution, from the injection test in section 453.6-473.6 m in KFM01D.

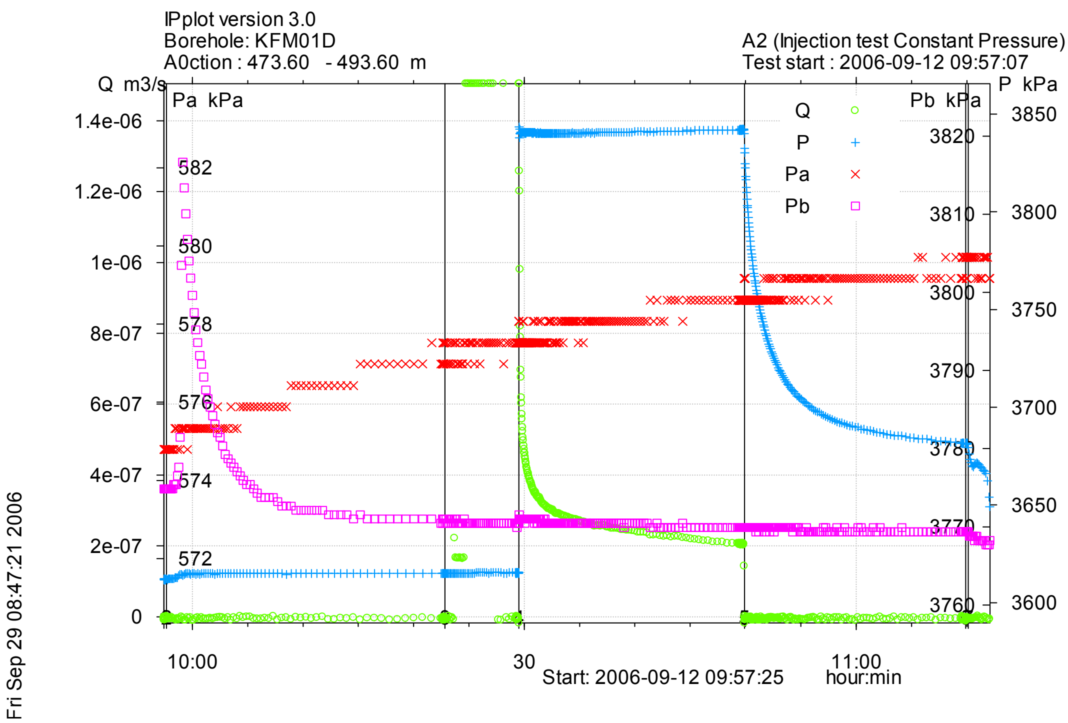


Figure A3-122. Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 473.6-493.6 m in borehole KFM01D.

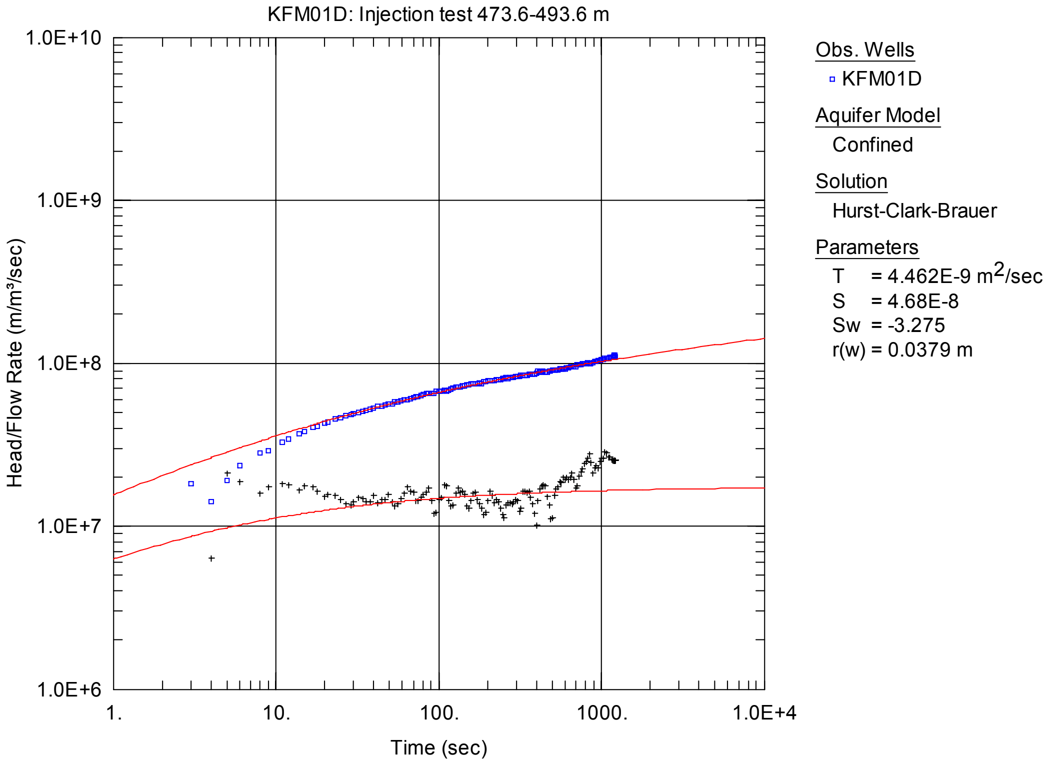


Figure A3-123. *Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 473.6-493.6 m in KFM01D.*

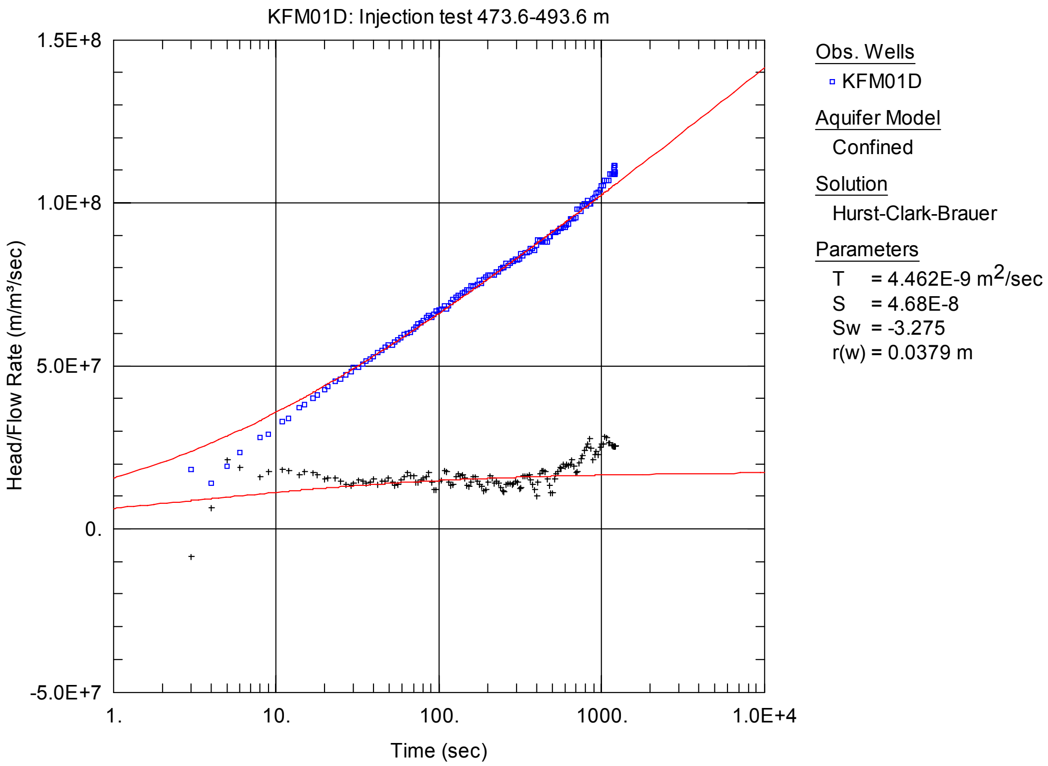


Figure A3-124. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 473.6-493.6 m in KFM01D.*

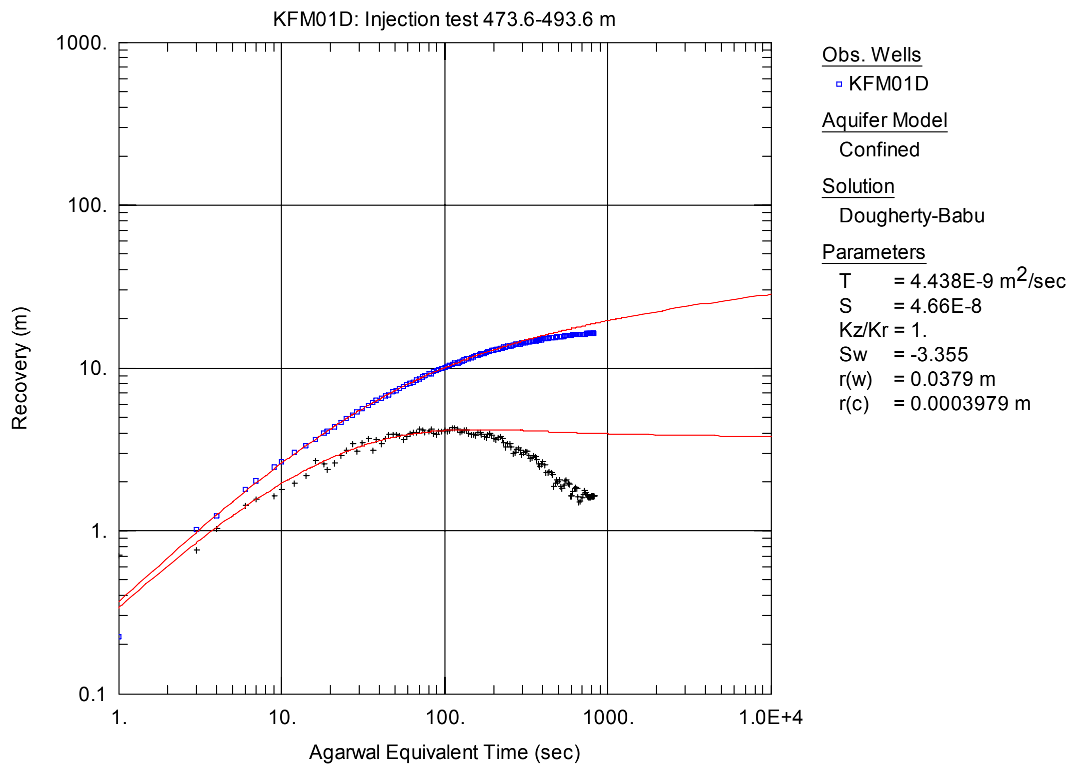


Figure A3-125. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, showing fit to the PRF solution, from the injection test in section 473.6-493.6 m in KFM01D.*

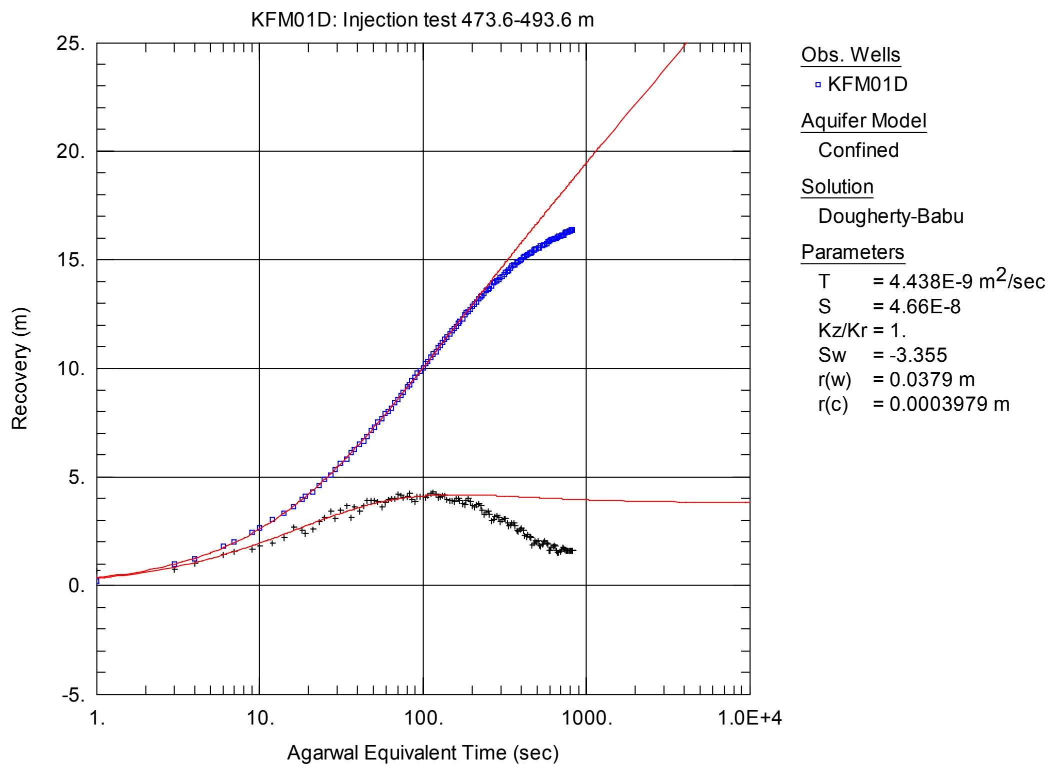


Figure A3-126. *Lin-log plot of recovery (□) and derivative (+) versus equivalent time, showing fit to the PRF solution, from the injection test in section 473.6-493.6 m in KFM01D.*

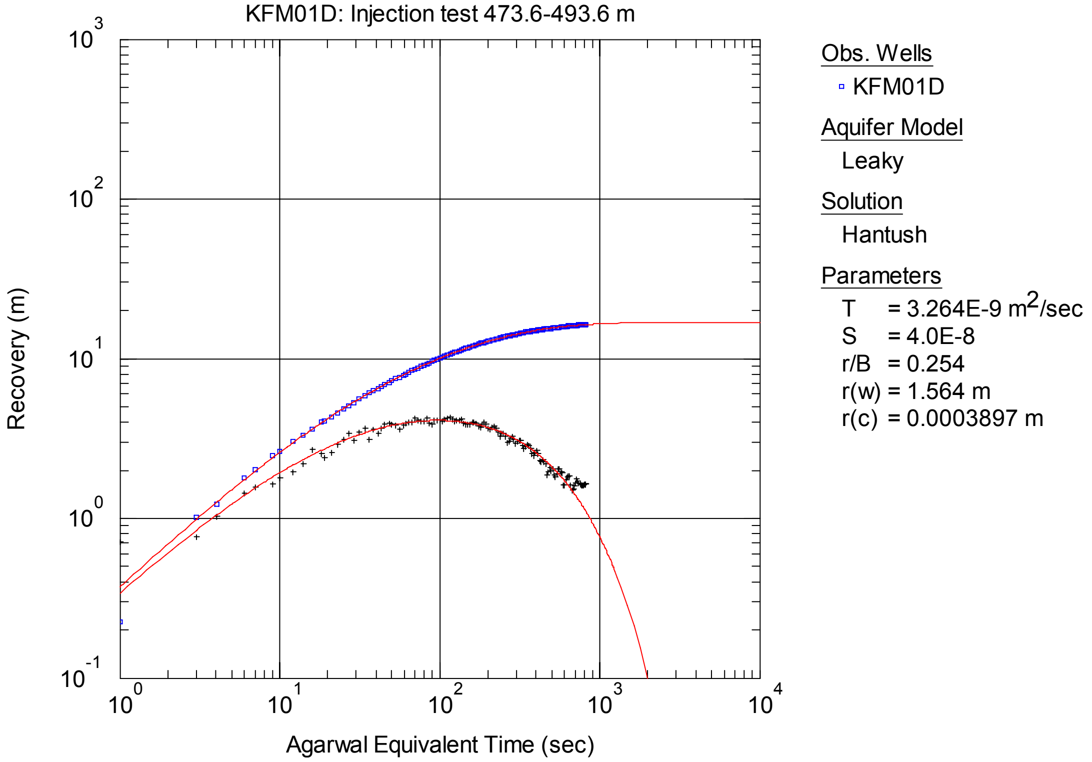


Figure A3-127. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, showing fit to the PSF solution, from the injection test in section 473.6-493.6 m in KFM01D.*

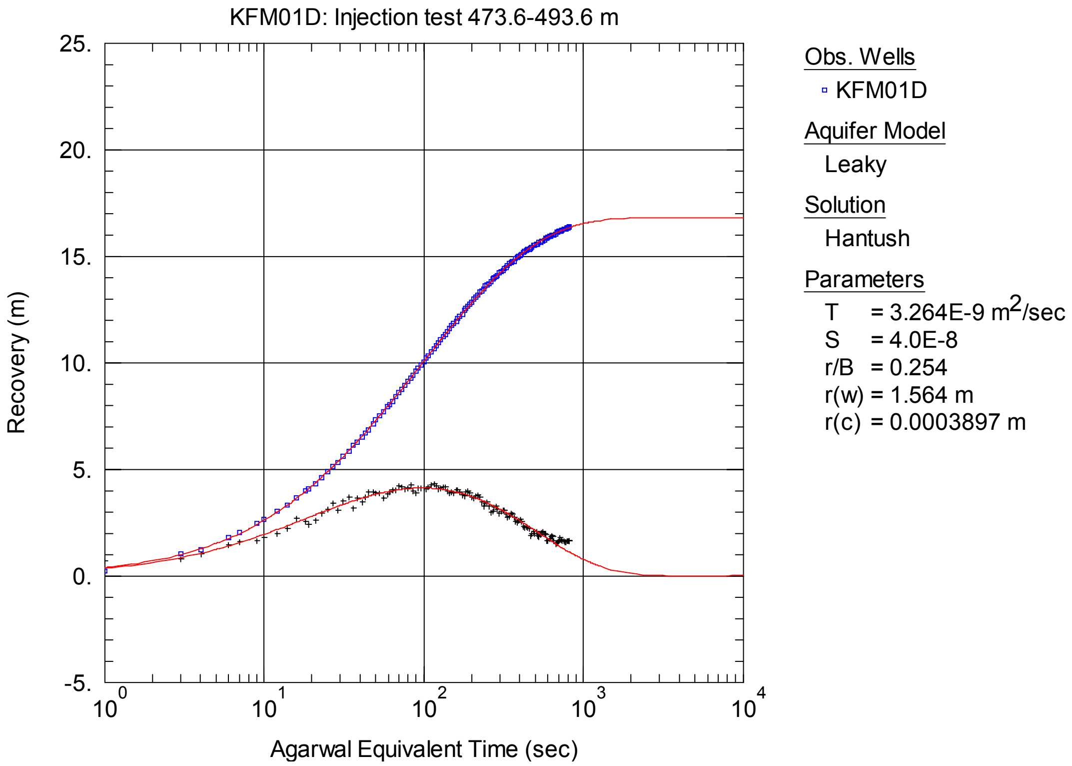


Figure A3-128. *Lin-log plot of recovery (□) and derivative (+) versus equivalent time, showing fit to the PSF solution, from the injection test in section 473.6-493.6 m in KFM01D.*

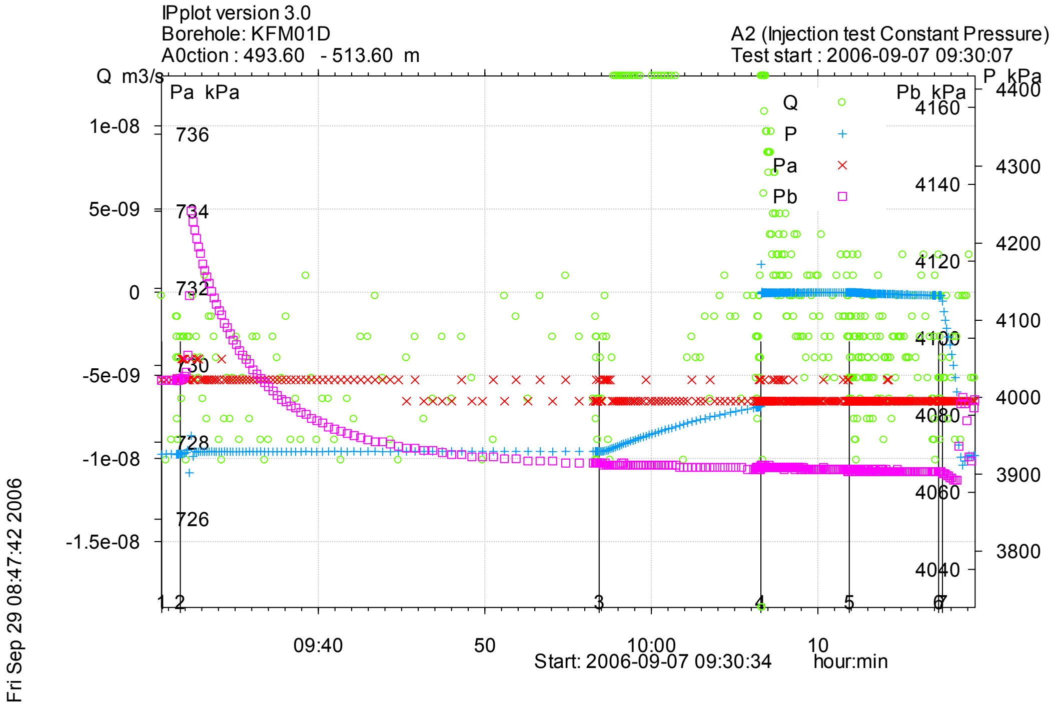


Figure A3-129. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 493.6-513.6 m in borehole KFM01D.*

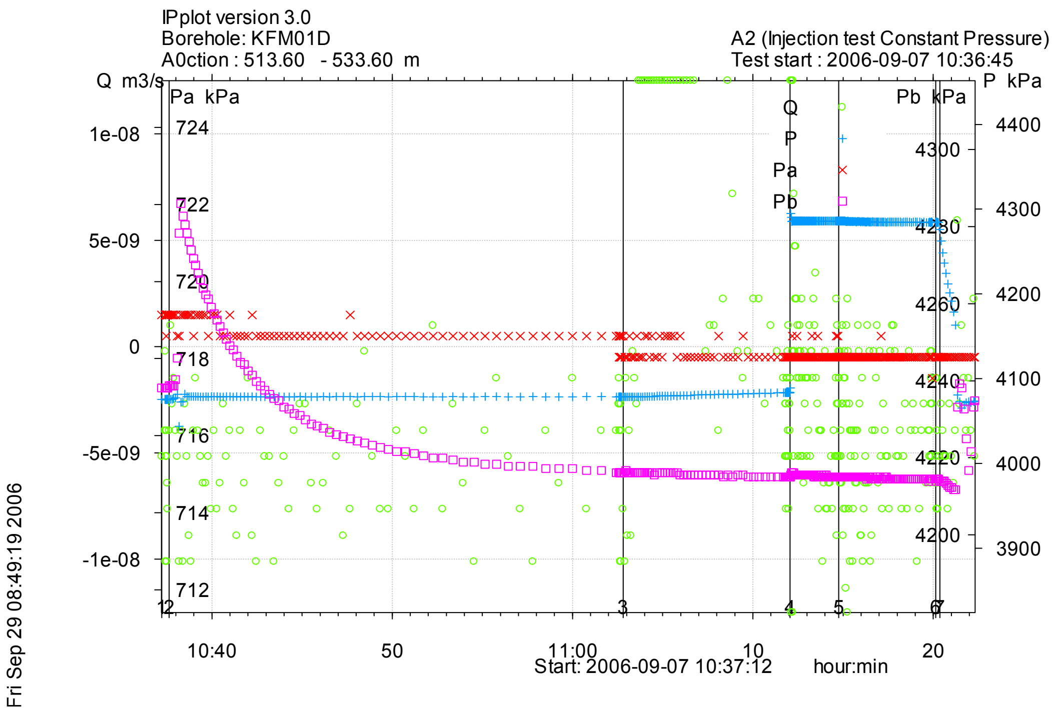


Figure A3-130. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 513.6-533.6 m in borehole KFM01D.*

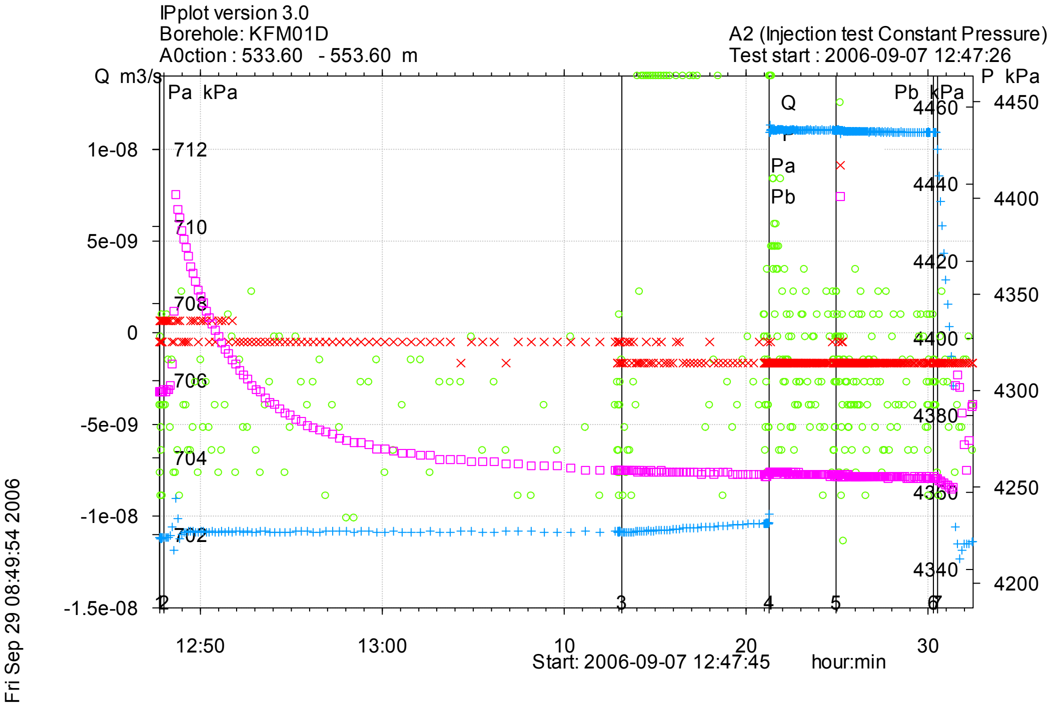


Figure A3-131. Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 533.6-553.6 m in borehole KFM01D.

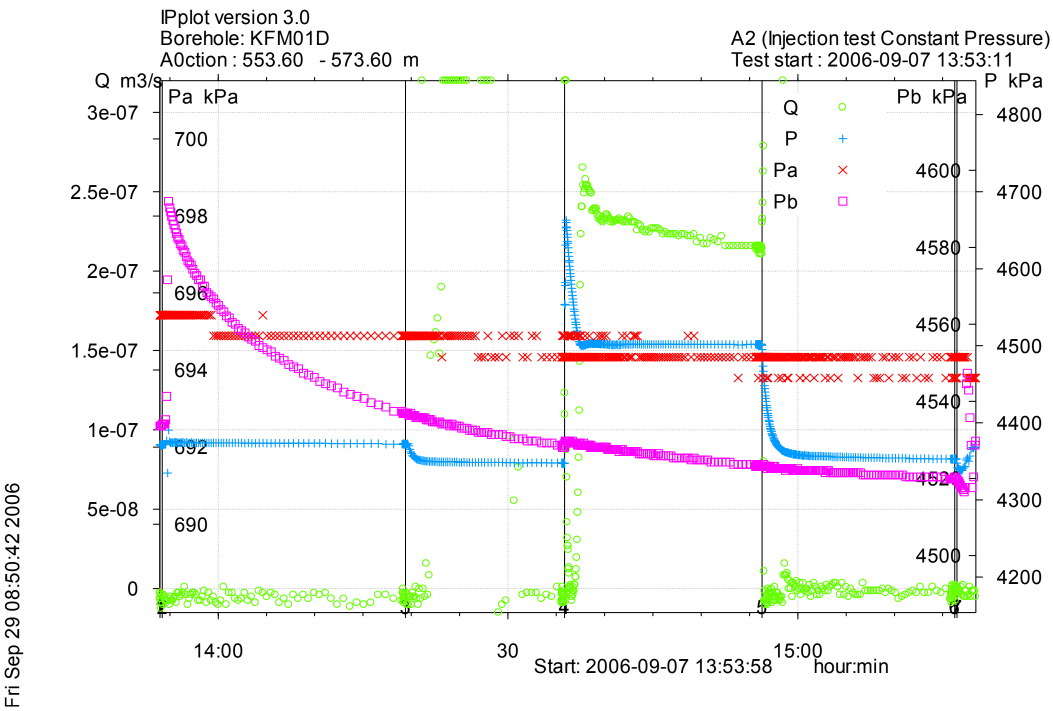


Figure A3-132. Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 553.6-573.6 m in borehole KFM01D.

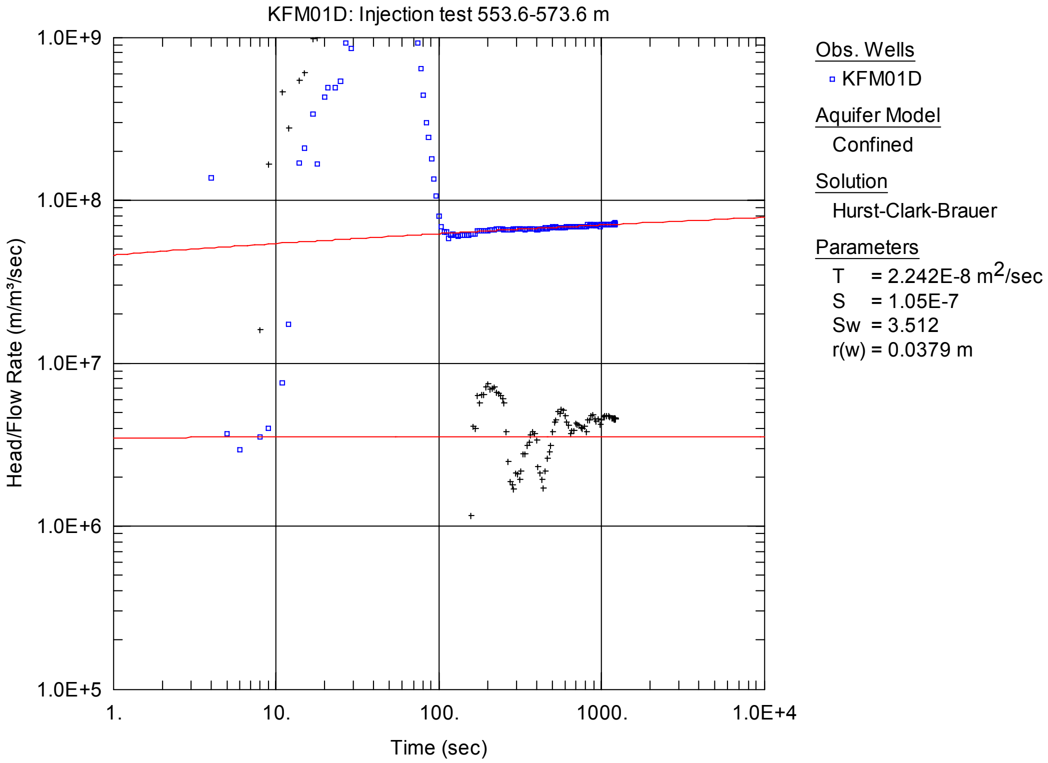


Figure A3-133. *Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 553.6-573.6 m in KFM01D.*

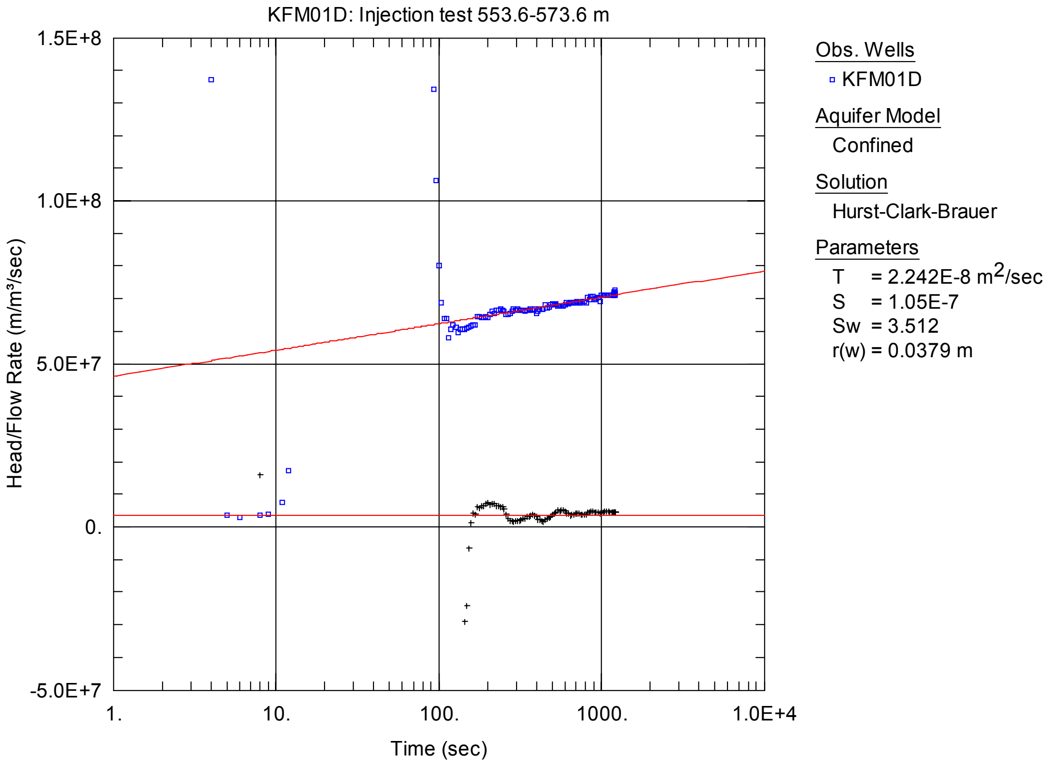


Figure A3-134. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 553.6-573.6 m in KFM01D.*

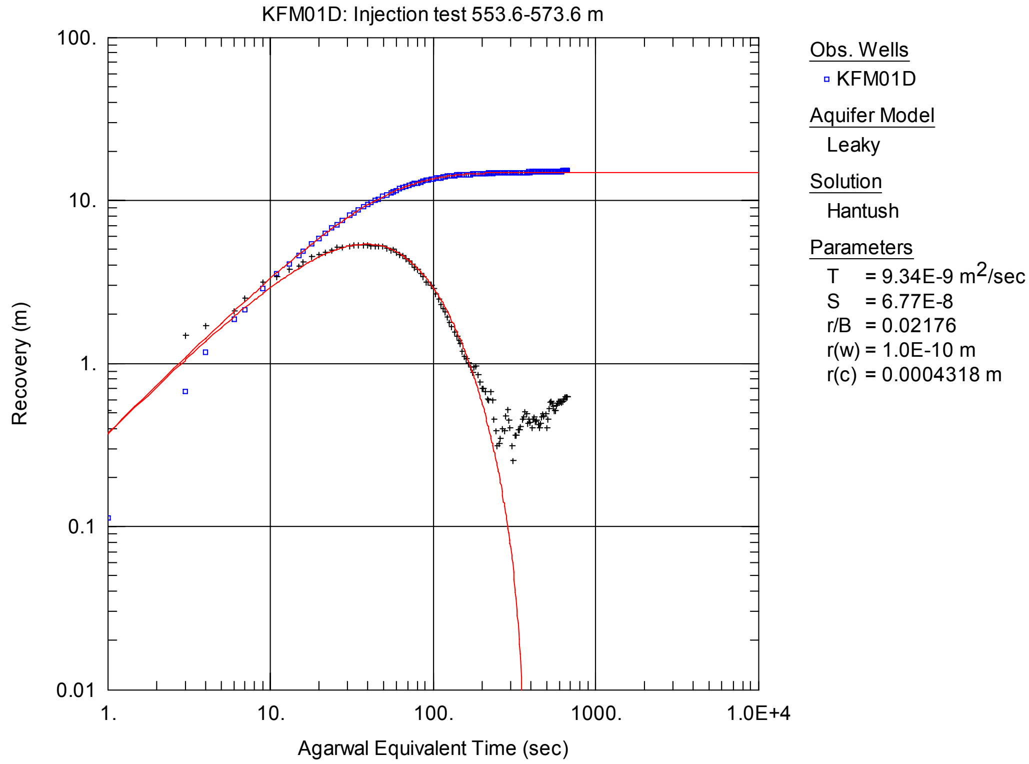


Figure A3-135. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 553.6-573.6 m in KFM01D. The type curve fit is only to show that an assumption of PSF is not valid.*

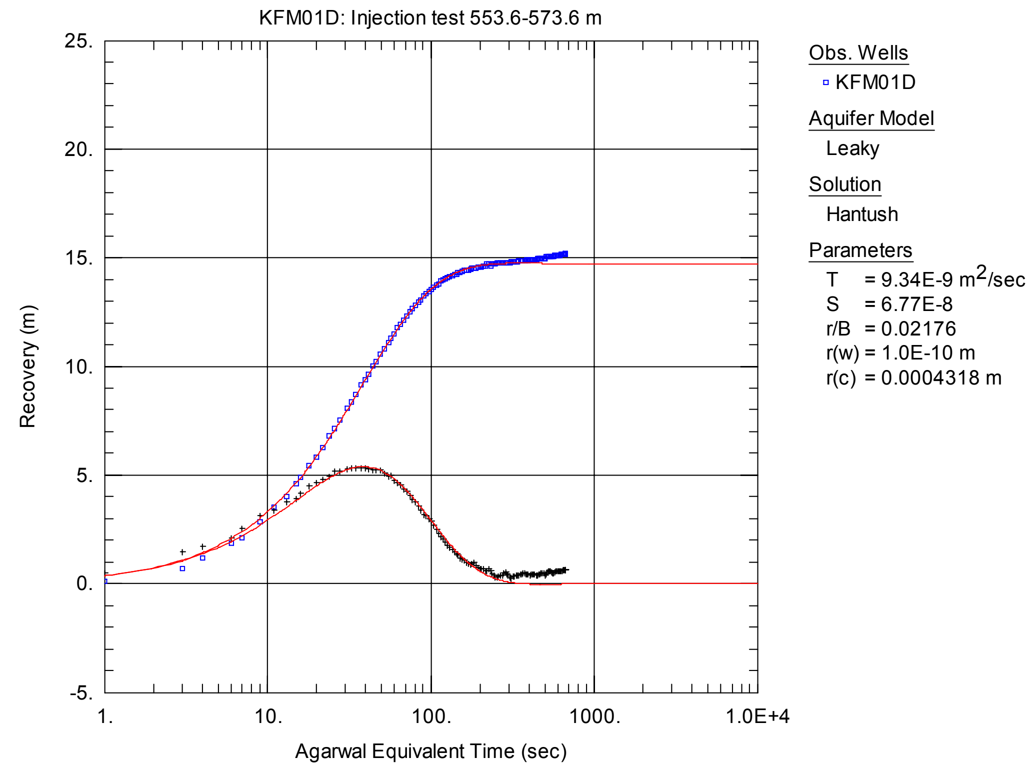


Figure A3-136. *Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 553.6-573.6 m in KFM01D. The type curve fit is only to show that an assumption of PSF is not valid.*

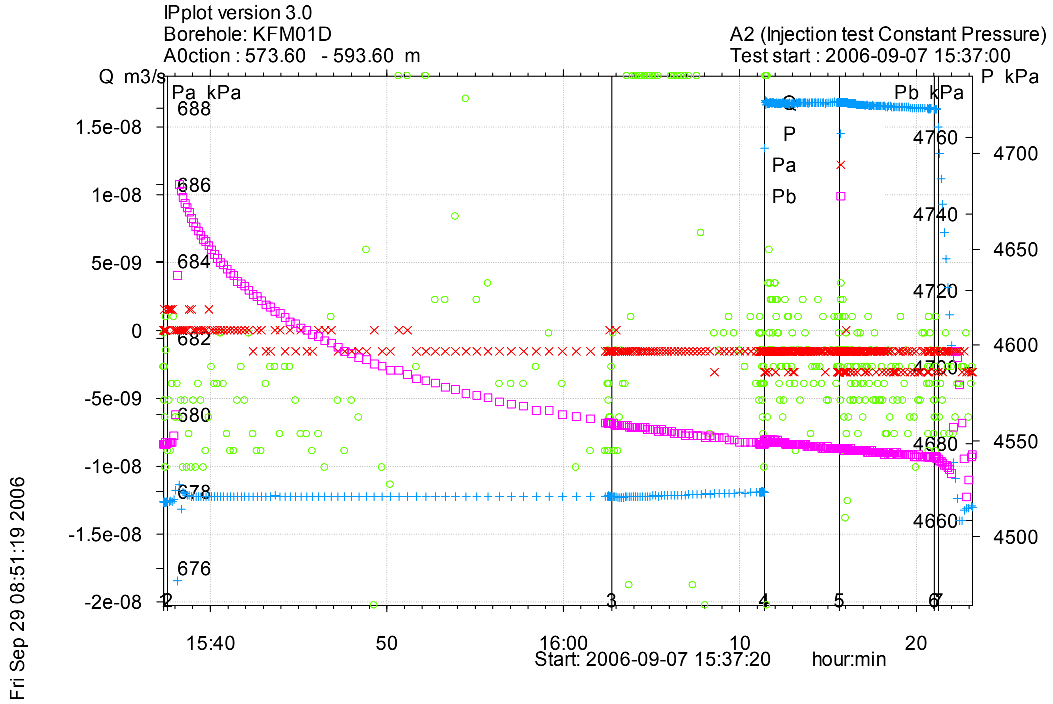


Figure A3-137. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 573.6-593.6 m in borehole KFM01D.*

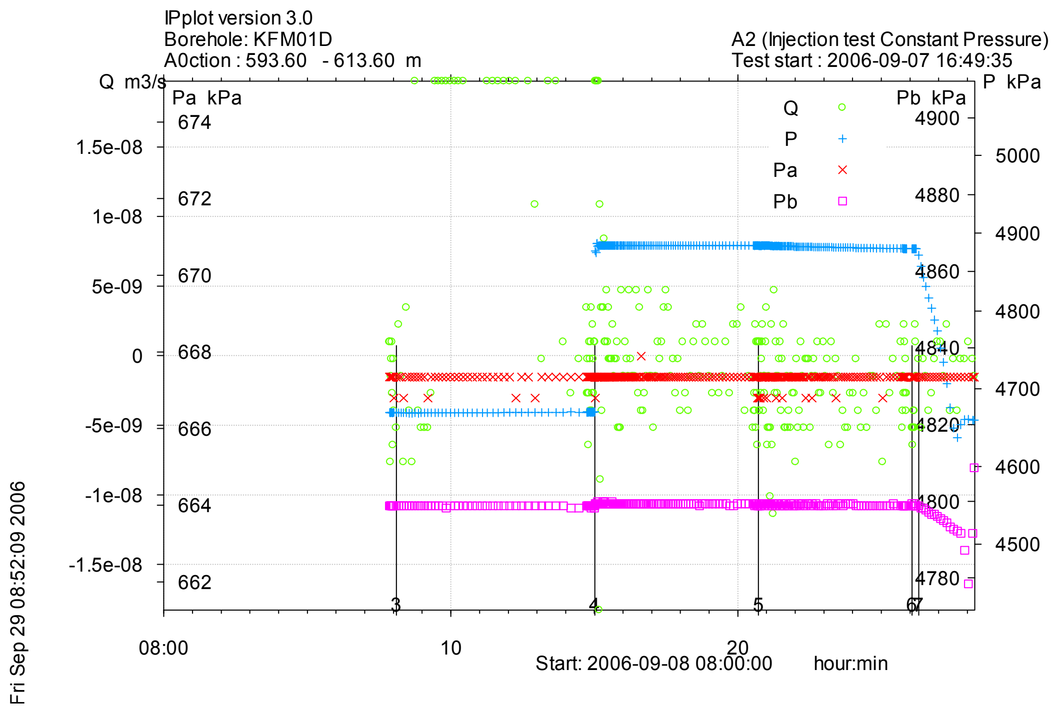


Figure A3-138. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 593.6-613.6 m in borehole KFM01D.*

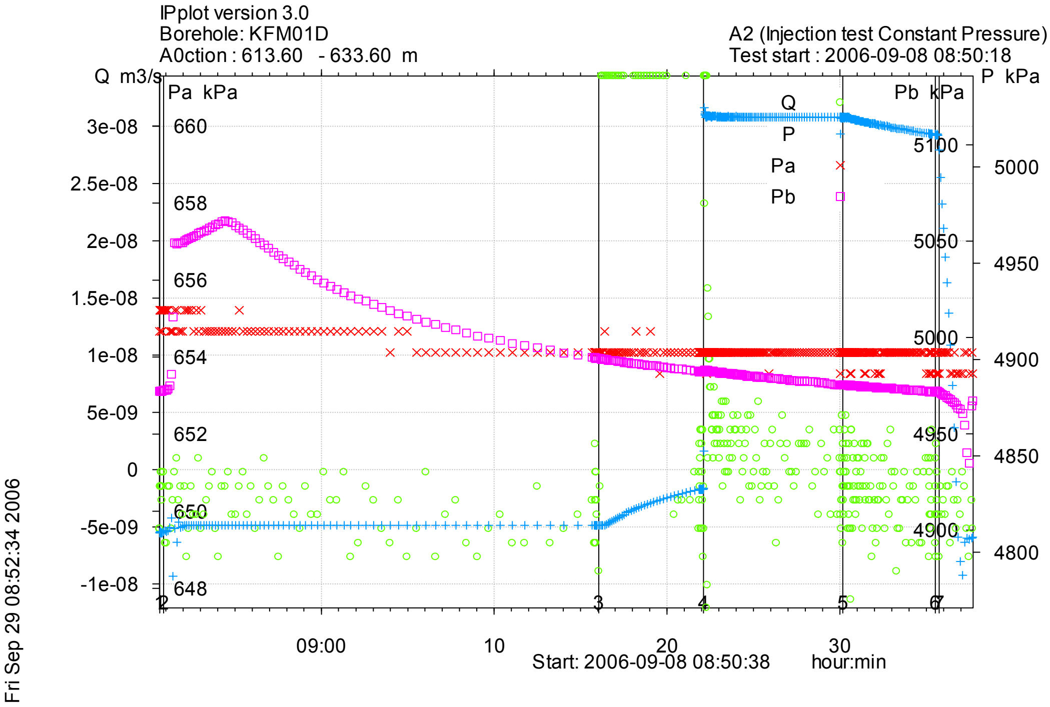


***Figure A3-139.** Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 613.6-633.6 m in borehole KFM01D.*

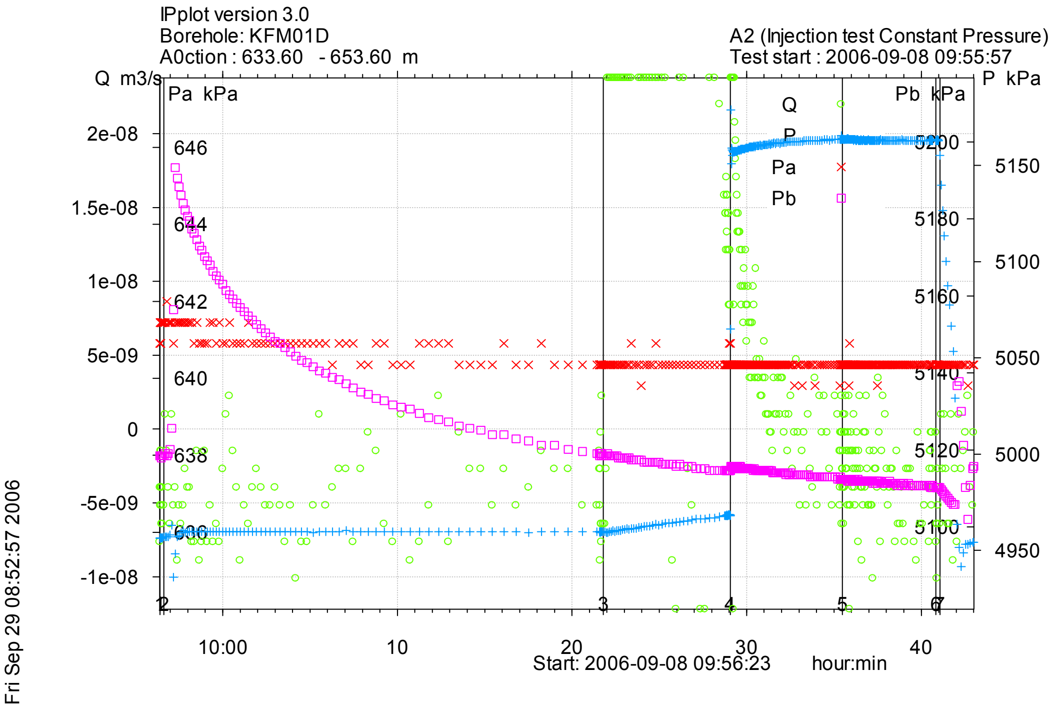


***Figure A3-140.** Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 633.6-653.6 m in borehole KFM01D.*

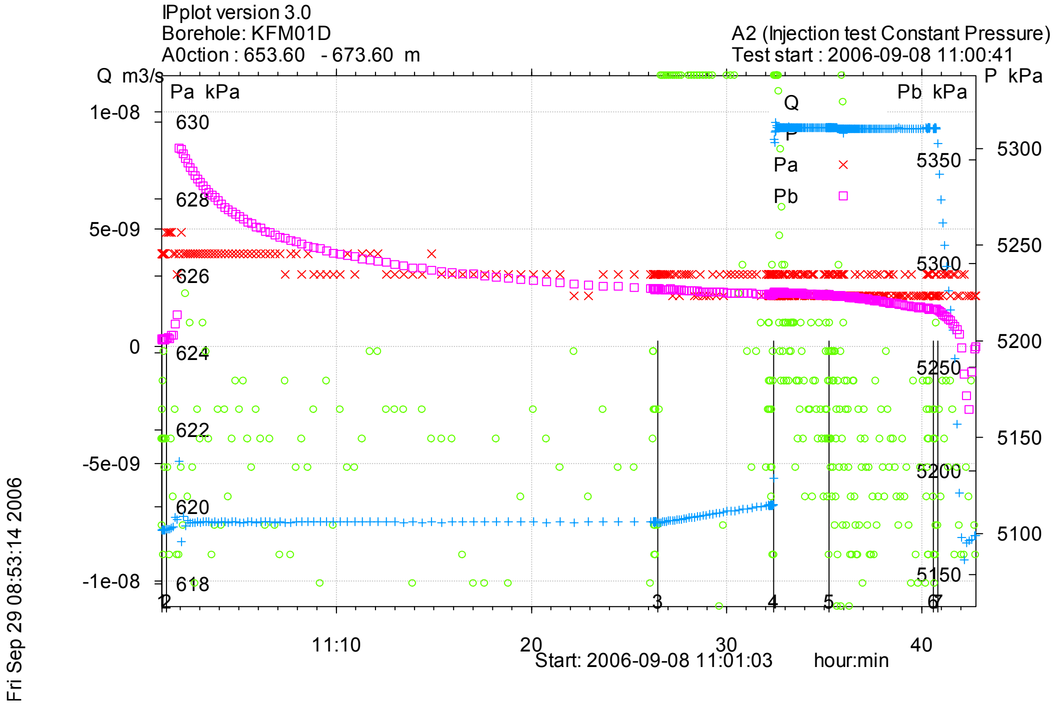


Figure A3-141. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 653.6-673.6 m in borehole KFM01D.*

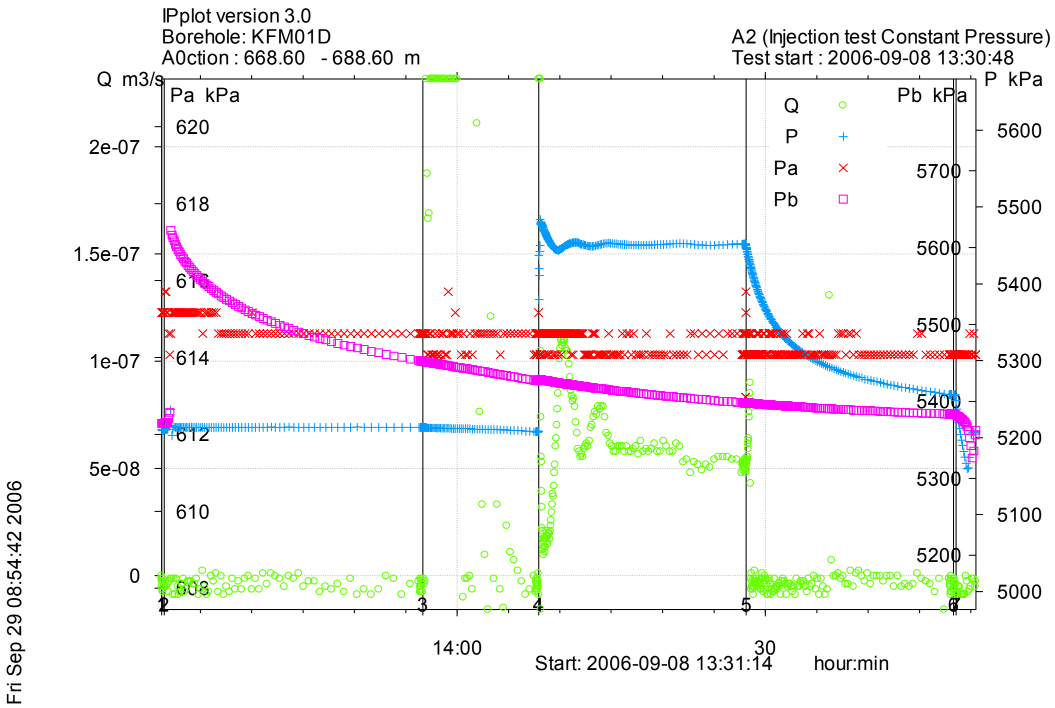


Figure A3-142. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 668.6-688.6 m in borehole KFM01D.*

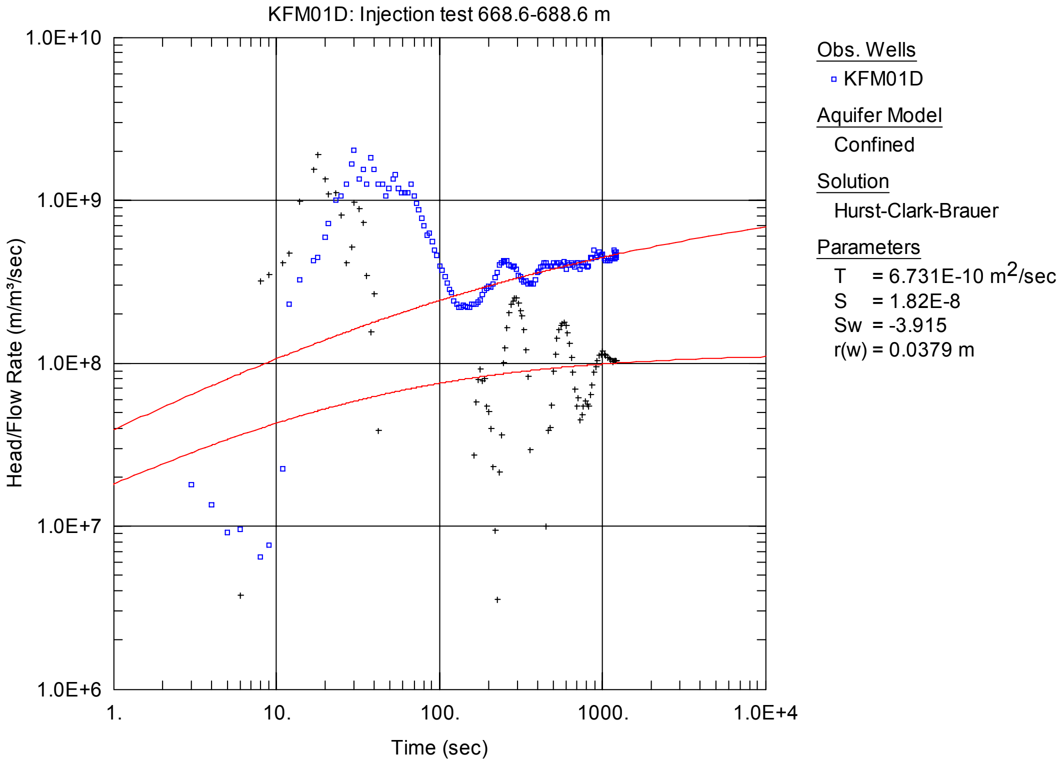


Figure A3-143. *Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 668.6-688.6 m in KFM01D.*

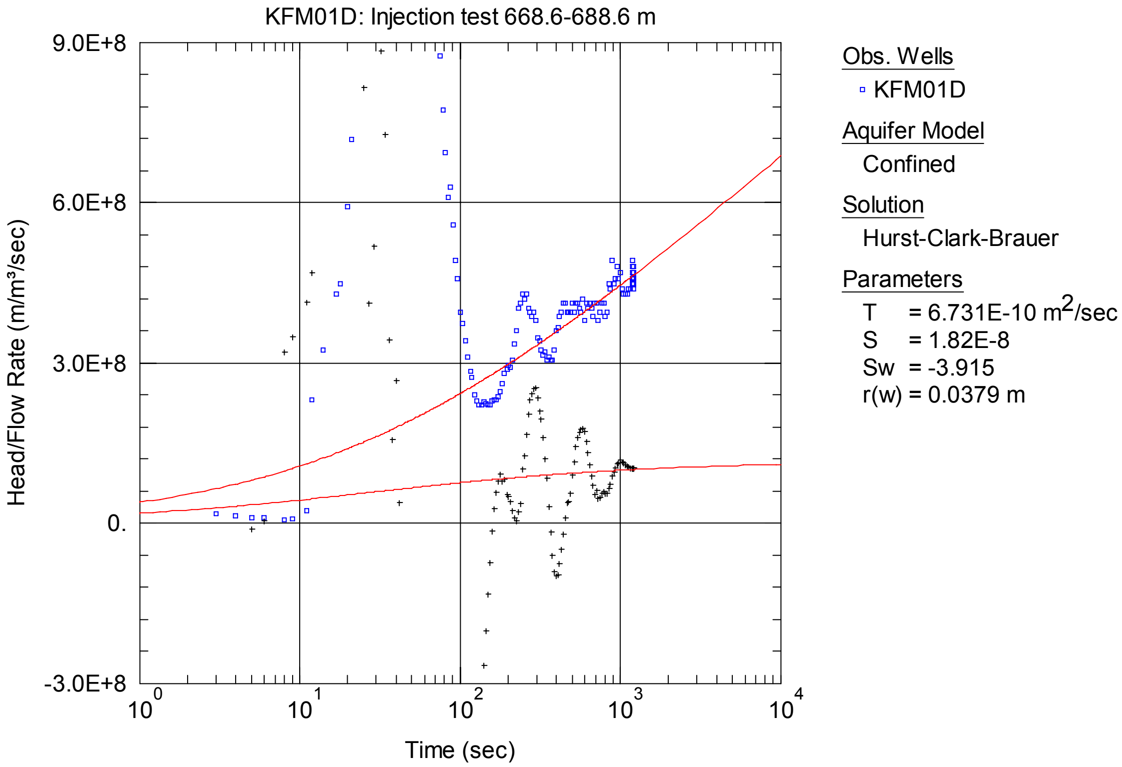


Figure A3-144. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 668.6-688.6 m in KFM01D.*

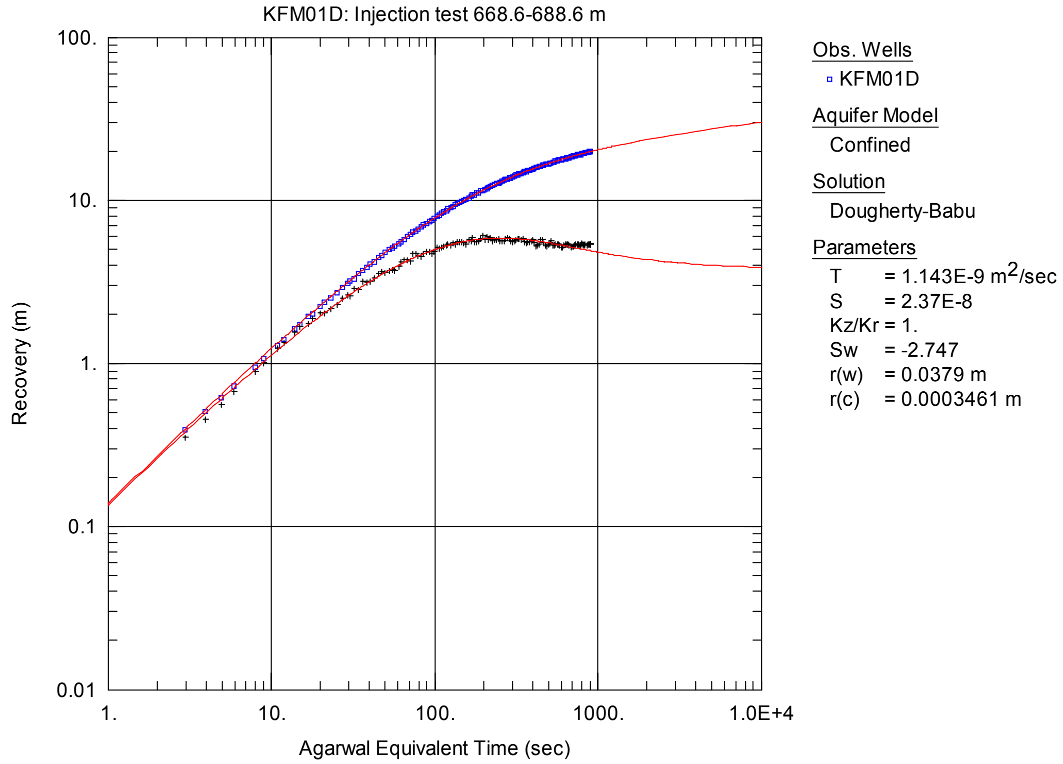


Figure A3-145. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 668.6-688.6 m in KFM01D.*

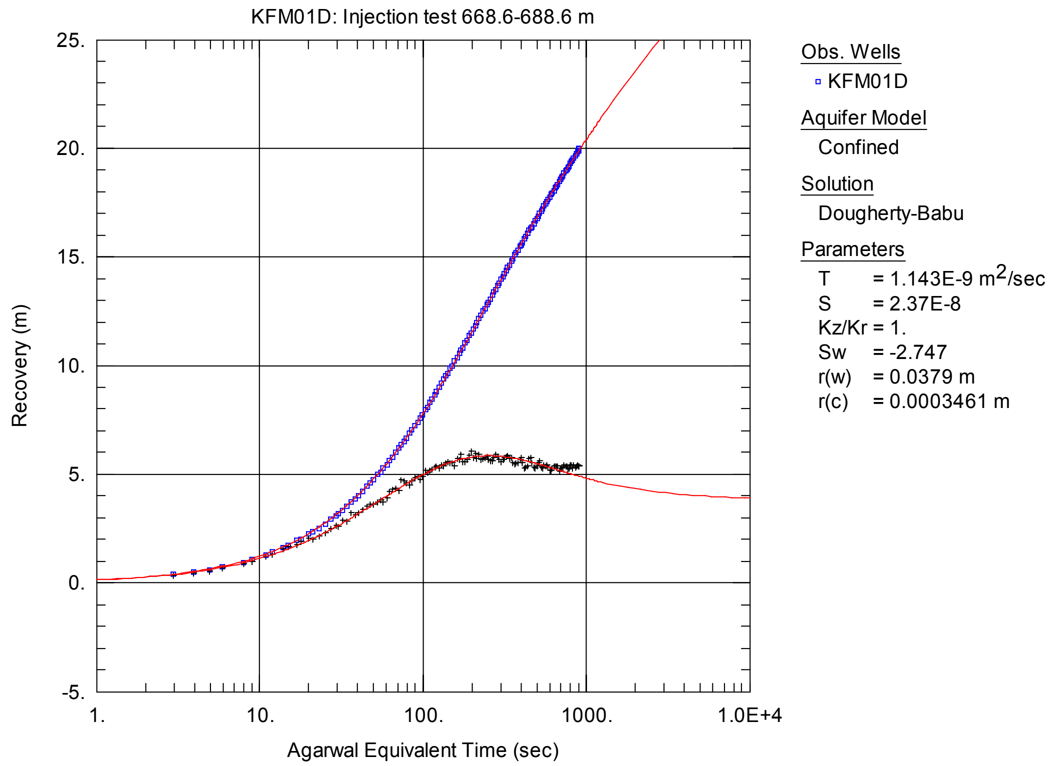


Figure A3-146. *Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 668.6-688.6 m in KFM01D.*

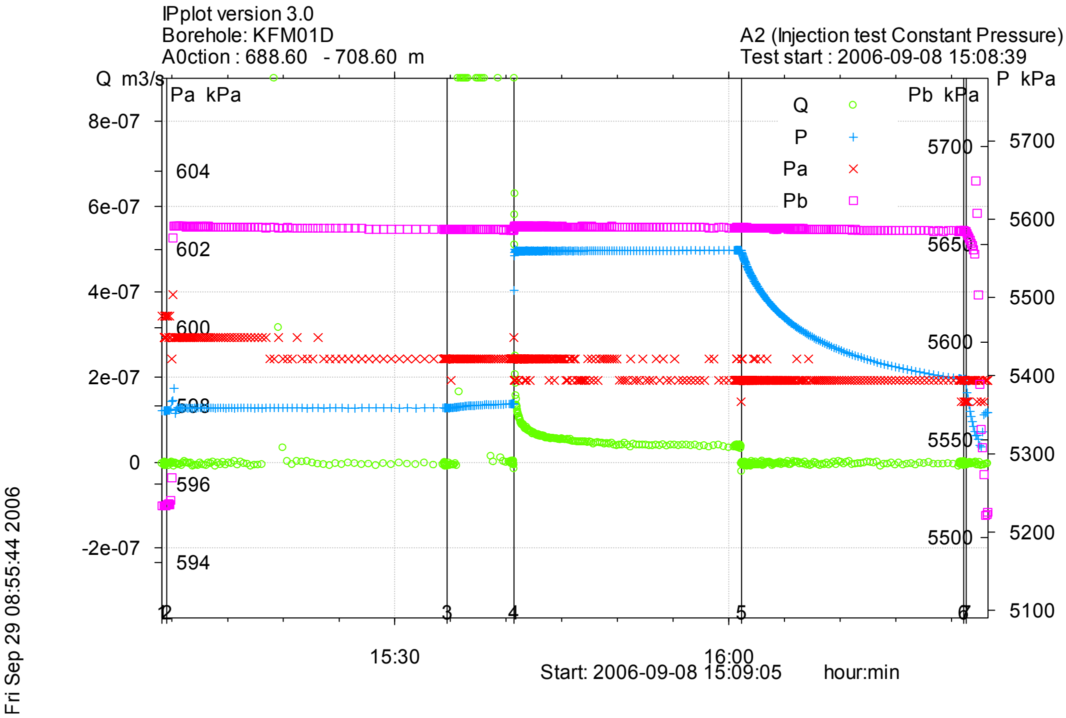


Figure A3-147. Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 688.6-708.6 m in borehole KFM01D.

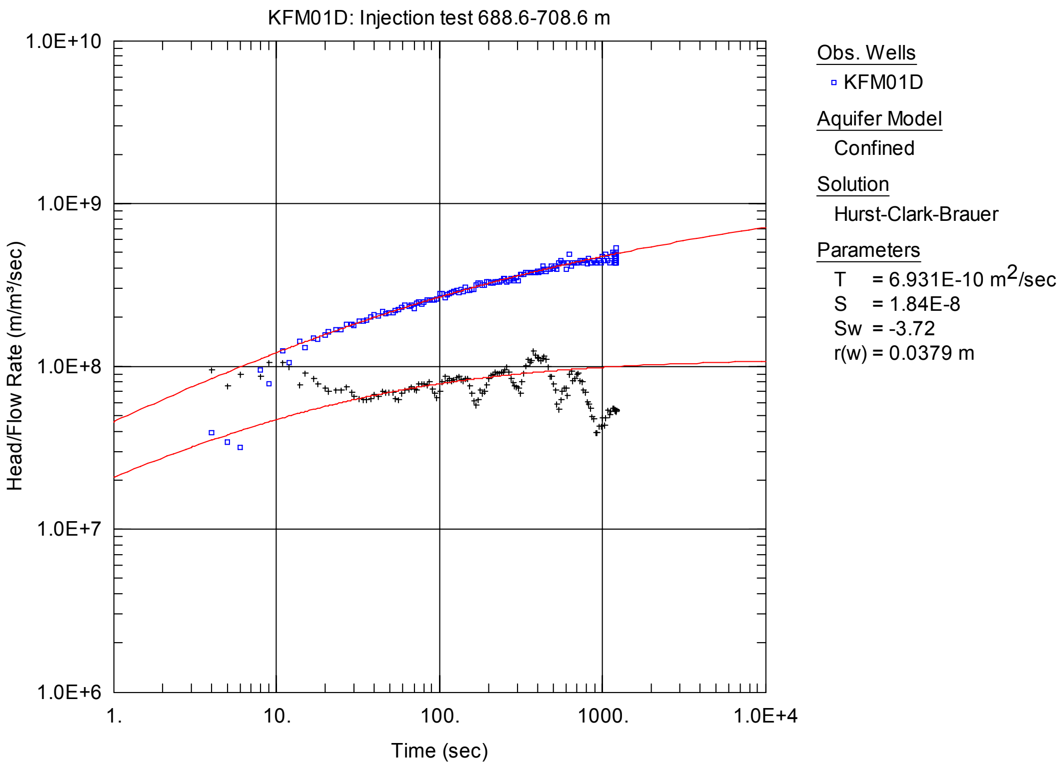


Figure A3-148. Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 688.6-708.6 m in KFM01D.

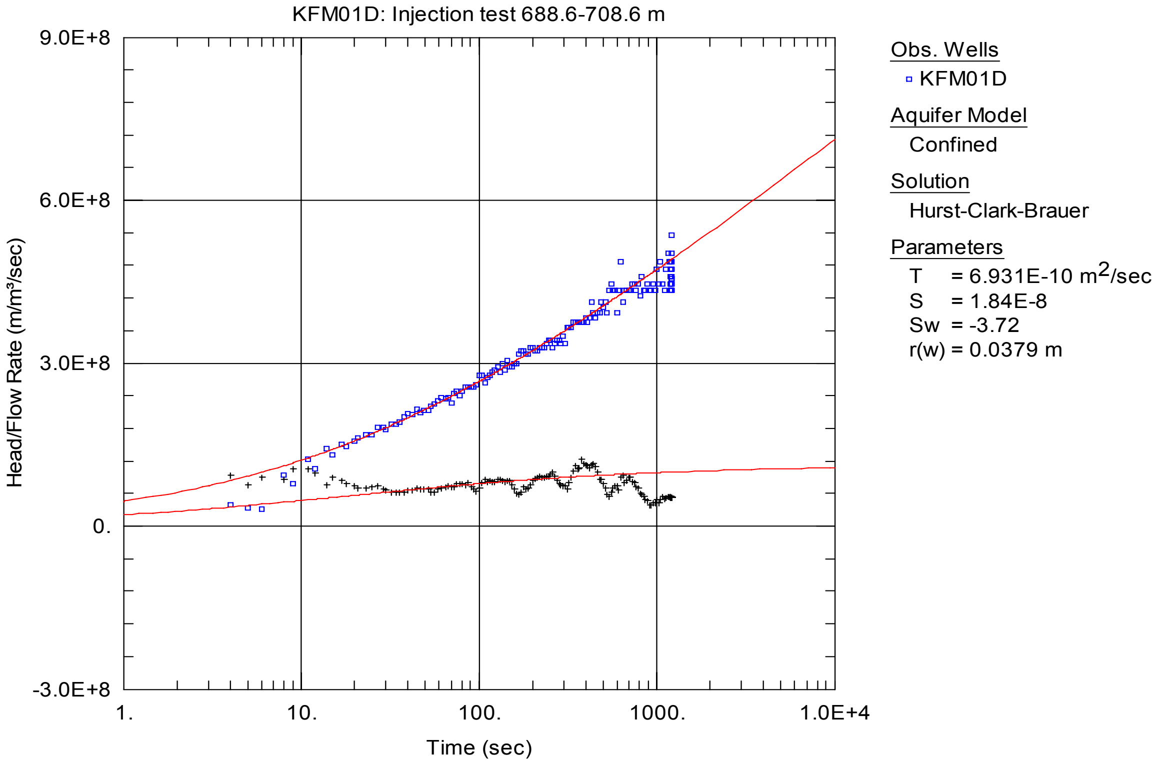


Figure A3-149. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 688.6-708.6 m in KFM01D.*

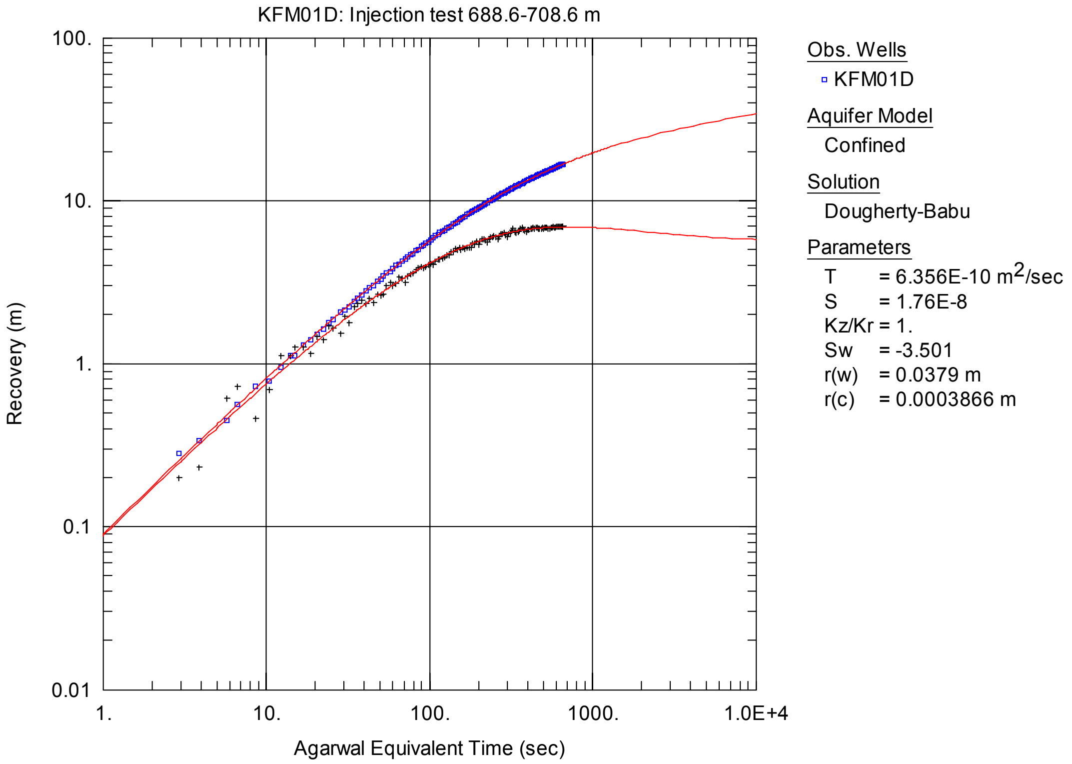


Figure A3-150. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 688.6-708.6 m in KFM01D.*

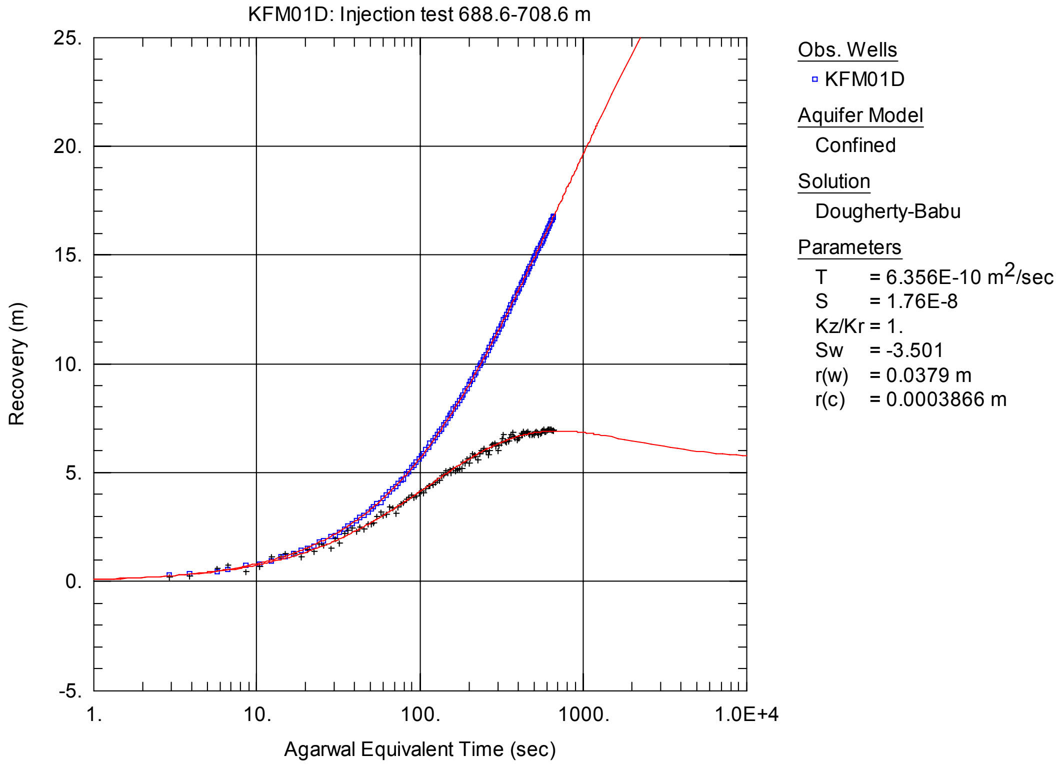


***Figure A3-151.** Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 688.6-708.6 m in KFM01D.*

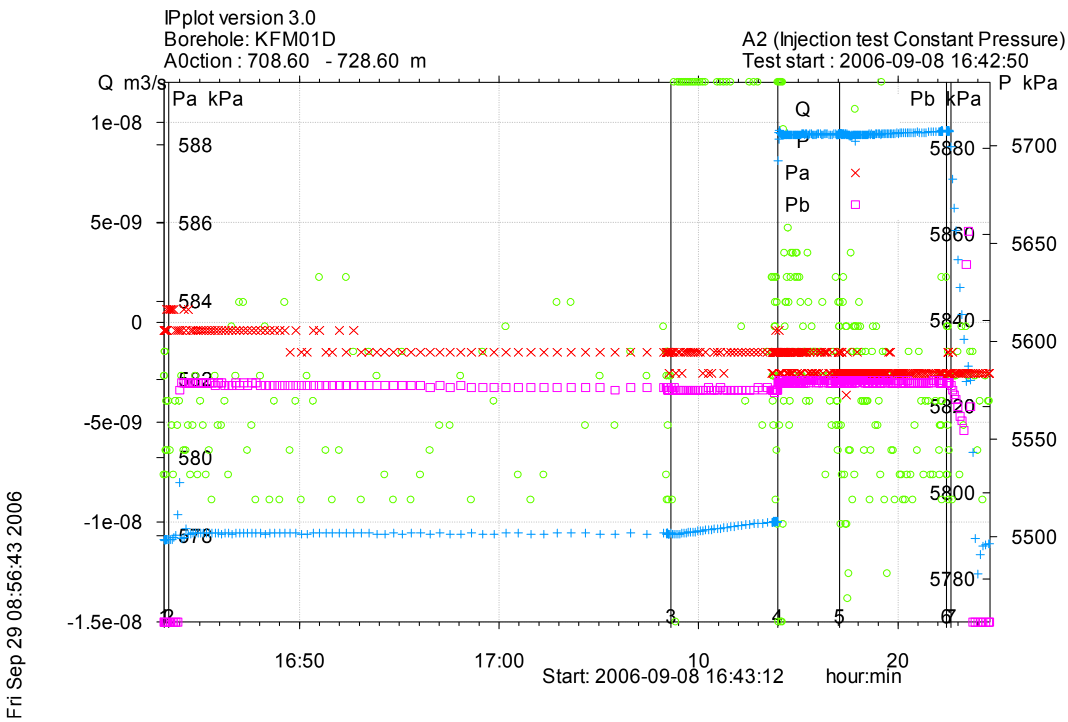


***Figure A3-152.** Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 708.6-728.6 m in borehole KFM01D.*

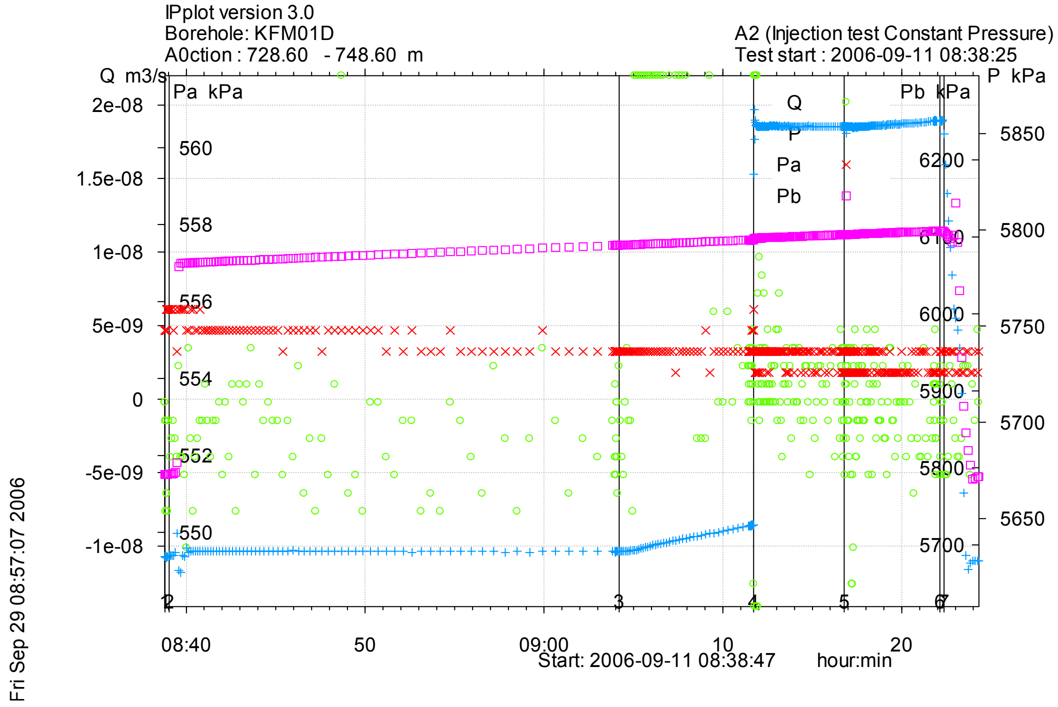


Figure A3-153. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 728.6-748.6 m in borehole KFM01D.*

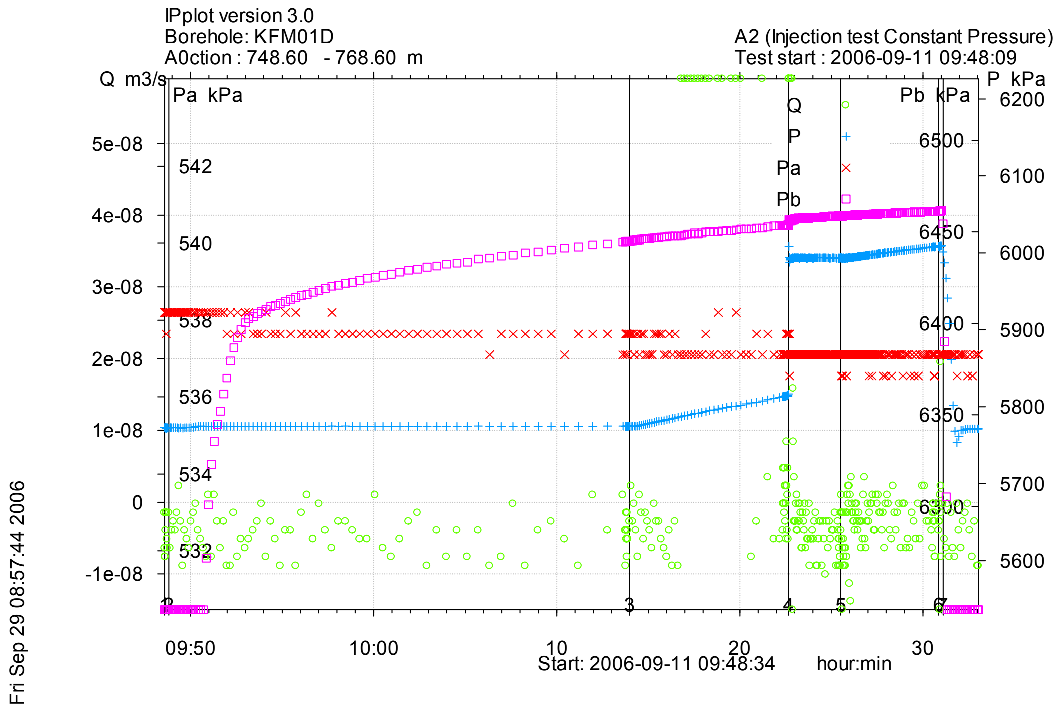


Figure A3-154. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 748.6-768.6 m in borehole KFM01D.*

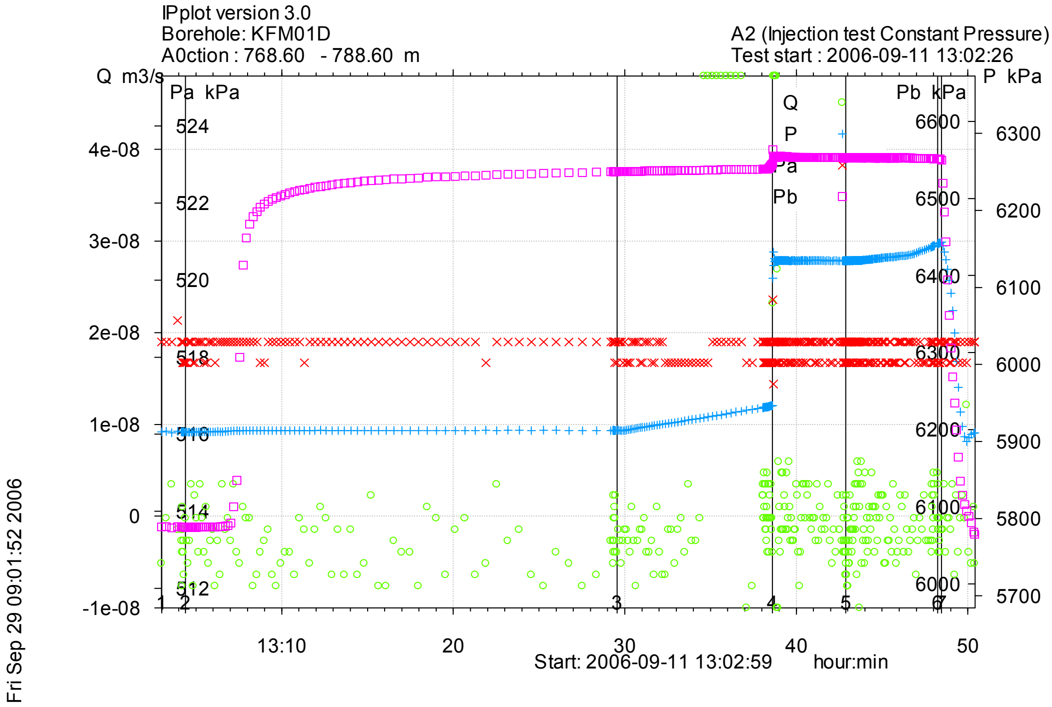


Figure A3-155. Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 768.6-788.6 m in borehole KFM01D.

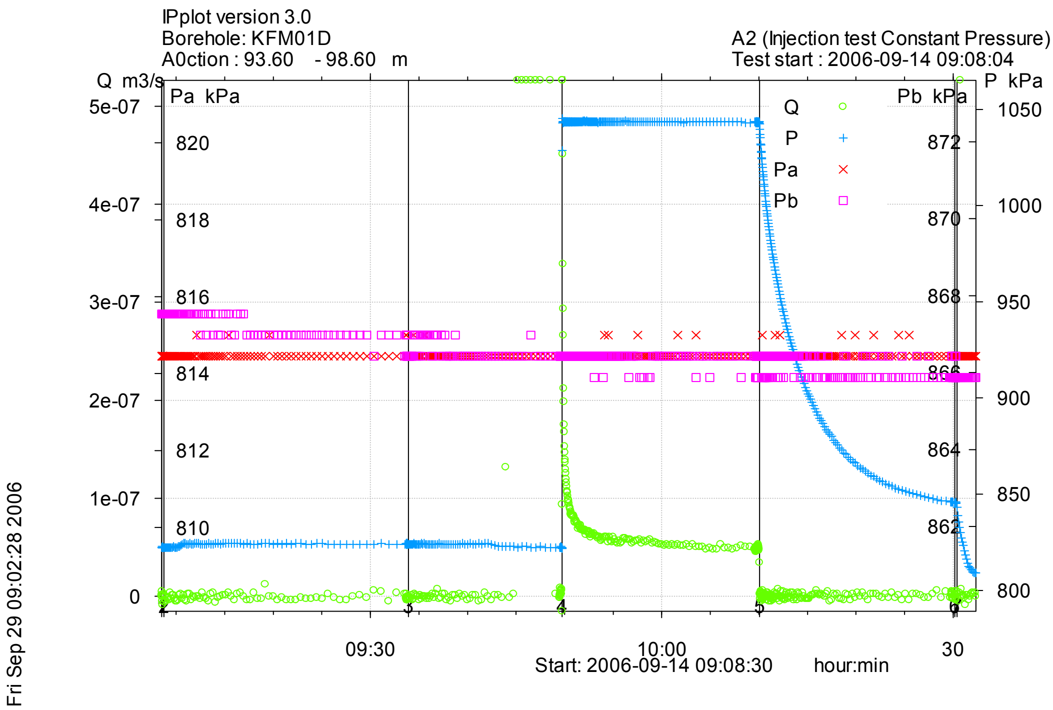


Figure A3-156. Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 93.6-98.6 m in borehole KFM01D.

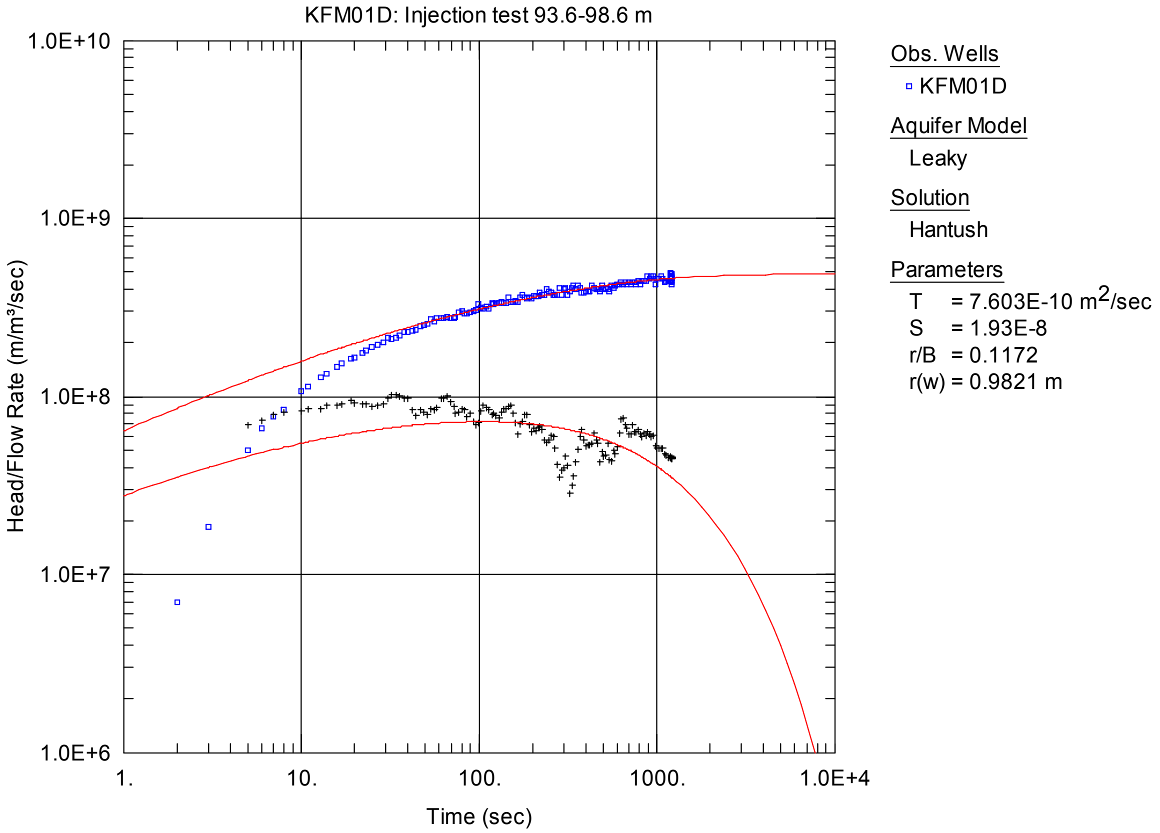


Figure A3-157. *Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 93.6-98.6 m in KFM01D.*

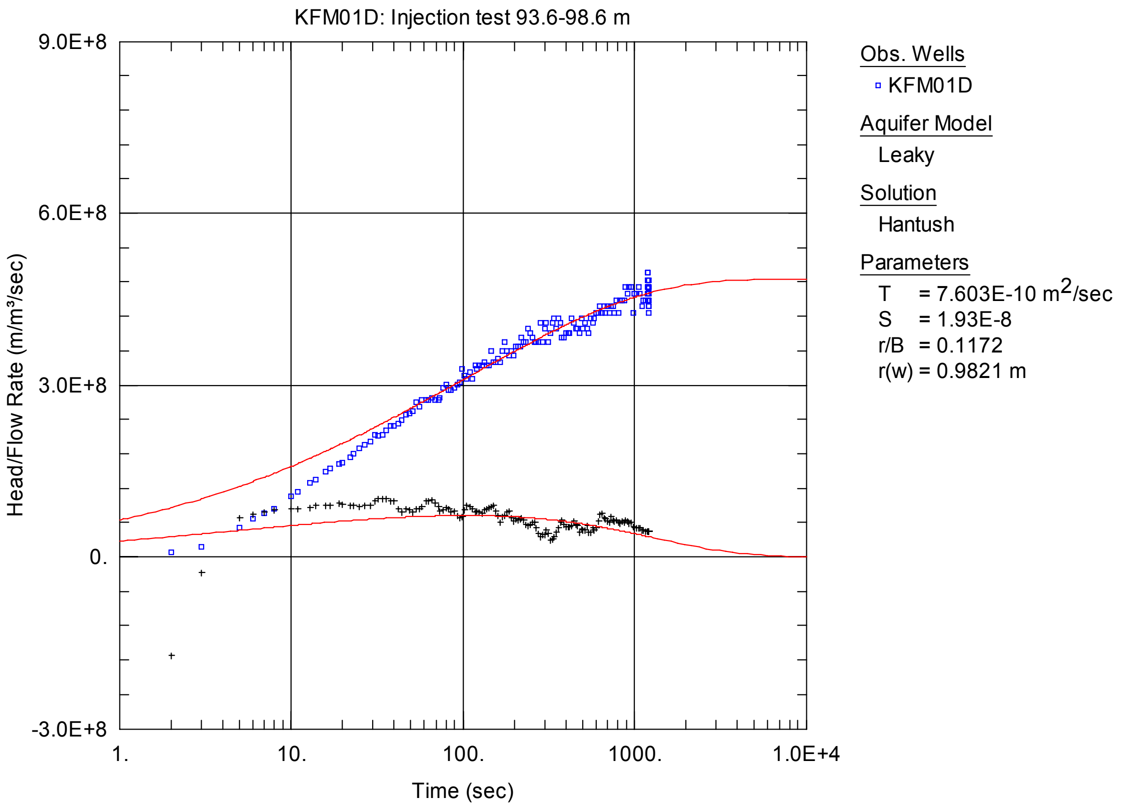


Figure A3-158. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 93.6-98.6 m in KFM01D.*

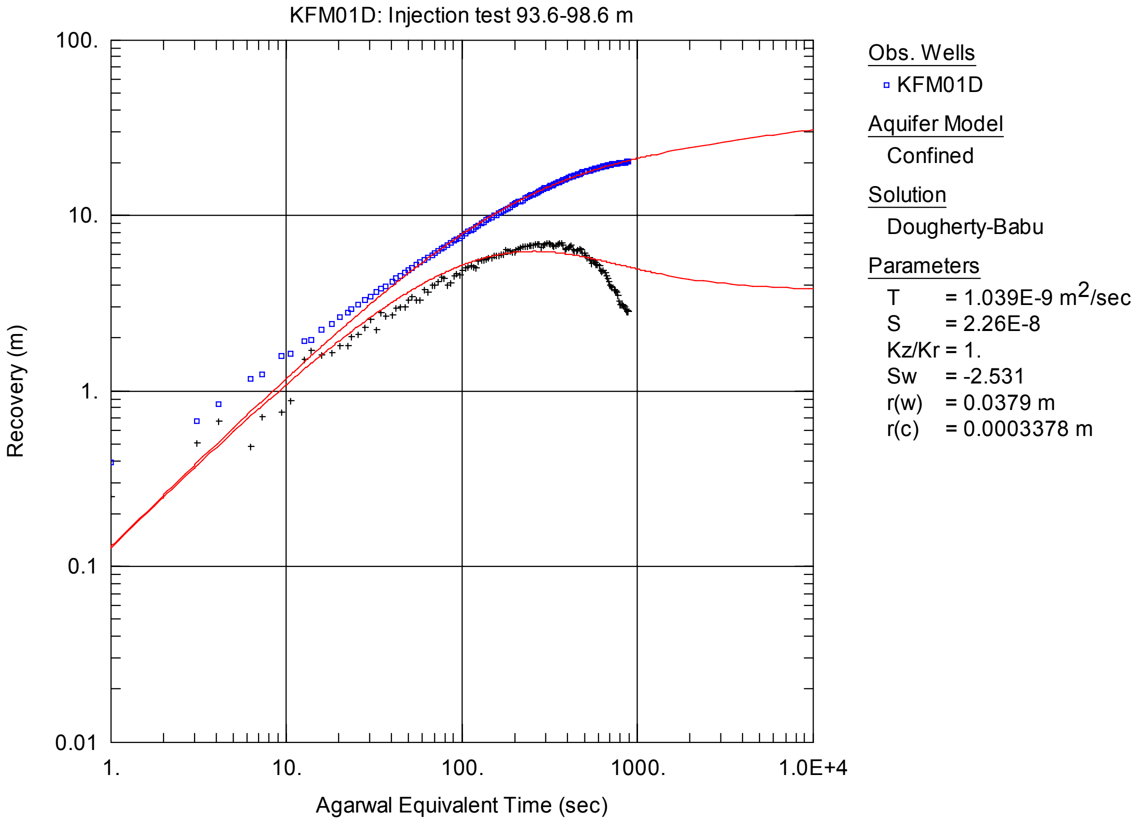


Figure A3-159. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 93.6-98.6 m in KFM01D.*

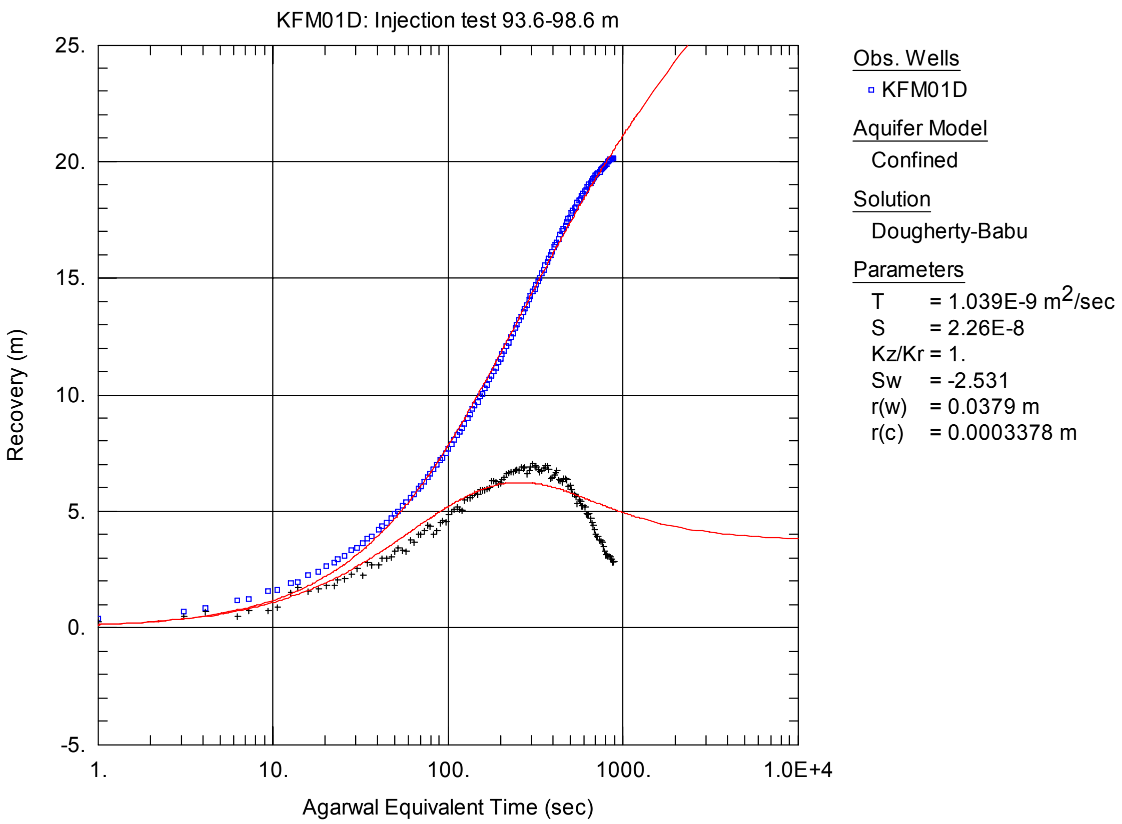


Figure A3-160. *Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 93.6-98.6 m in KFM01D.*

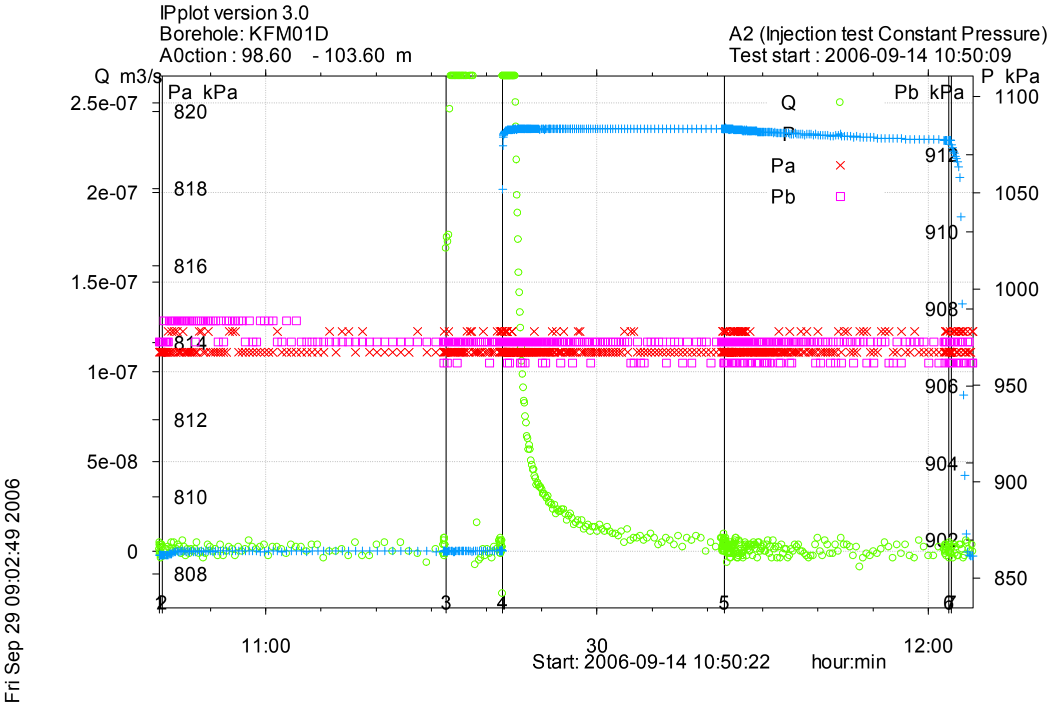


Figure A3-161. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 98.6-103.6 m in borehole KFM01D.*

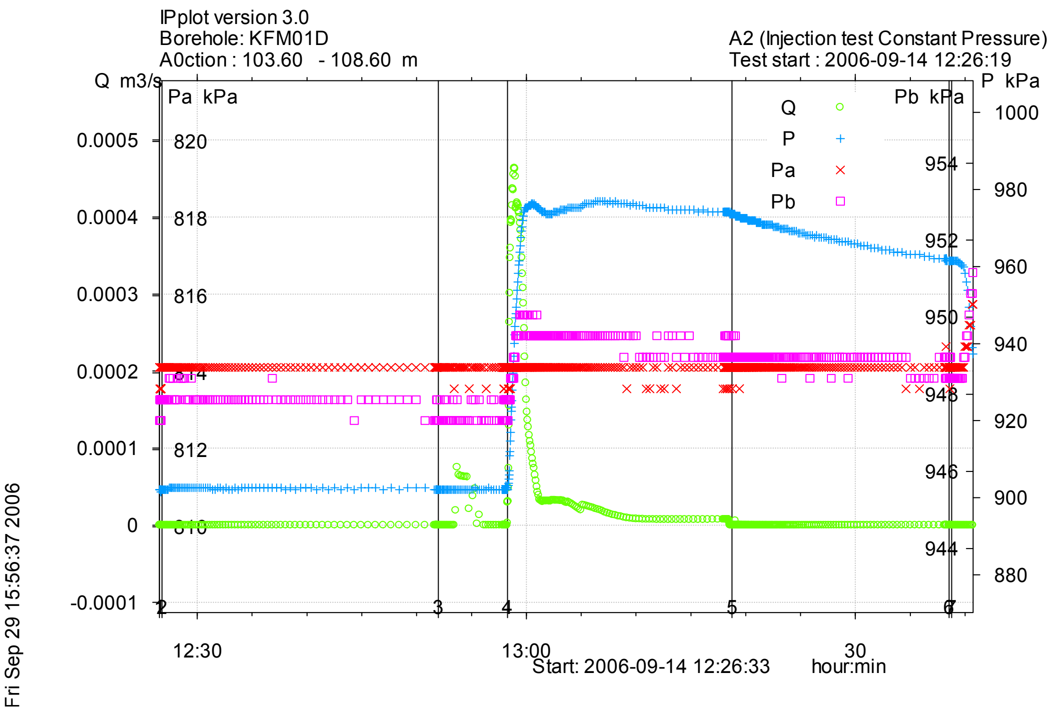


Figure A3-162. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 103.6-108.6 m in borehole KFM01D. Test number one.*

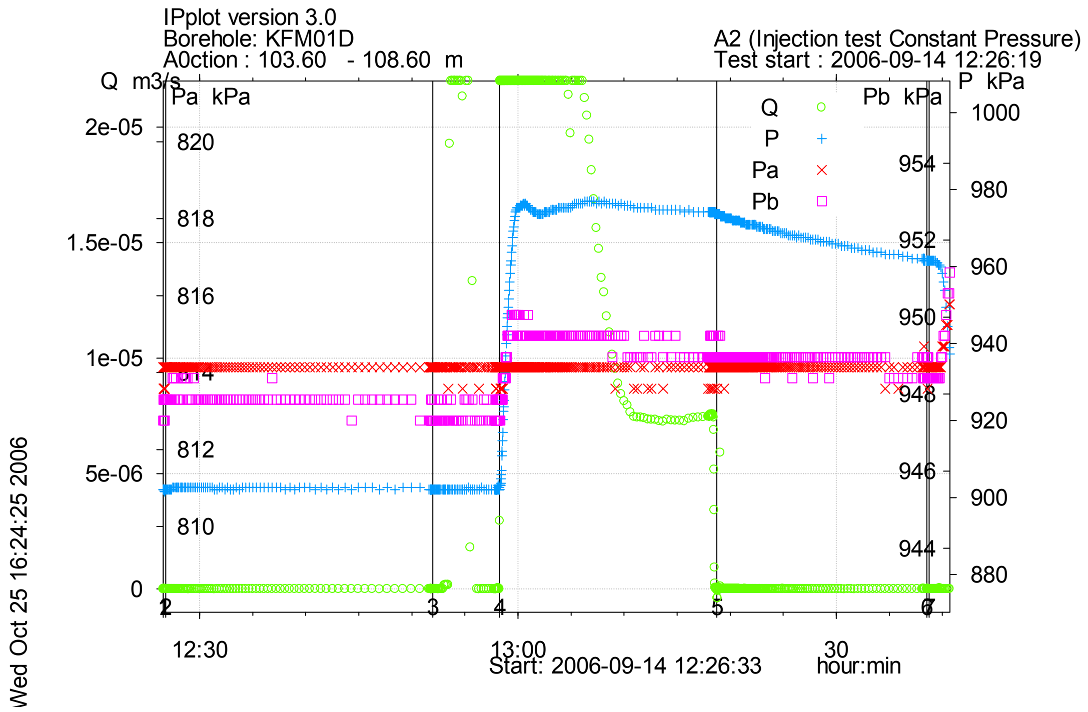


Figure A3-163. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 103.6-108.6 m in borehole KFM01D. Test number one*

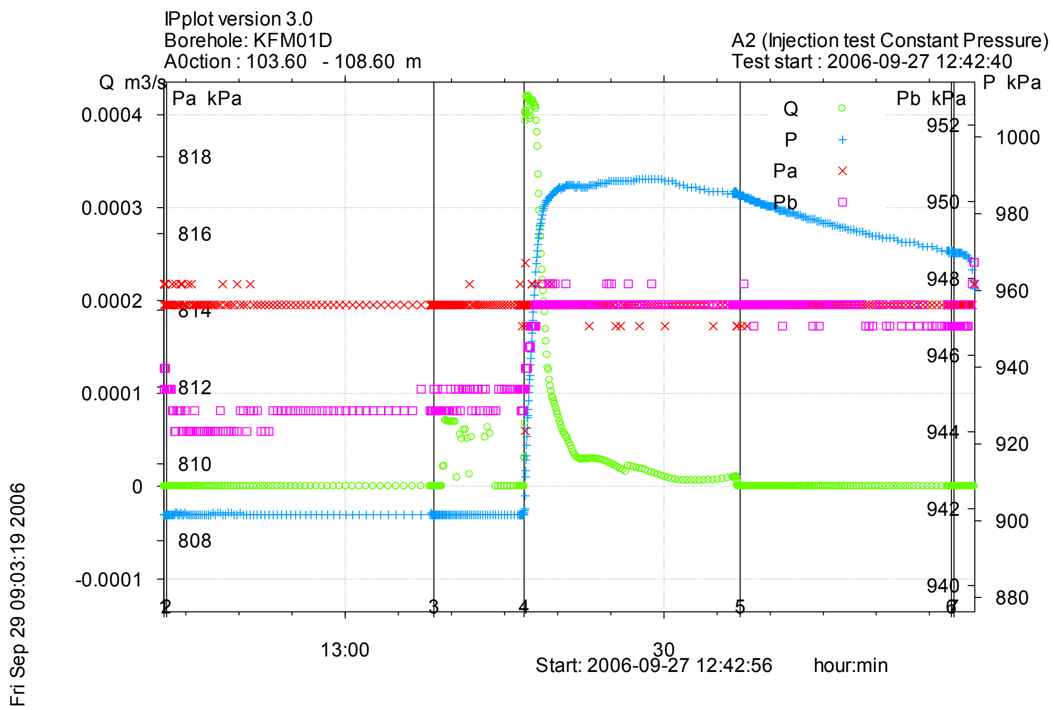


Figure A3-164. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 103.6-108.6 m in borehole KFM01D. Test number two.*

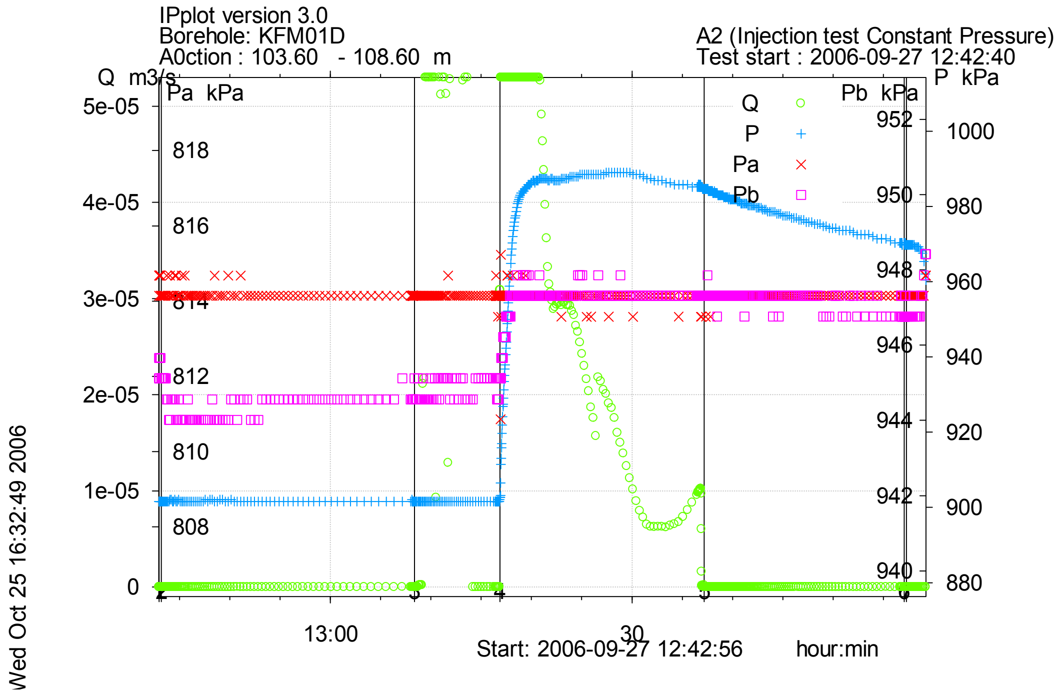


Figure A3-165. Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 103.6-108.6 m in borehole KFM01D. Test number two.

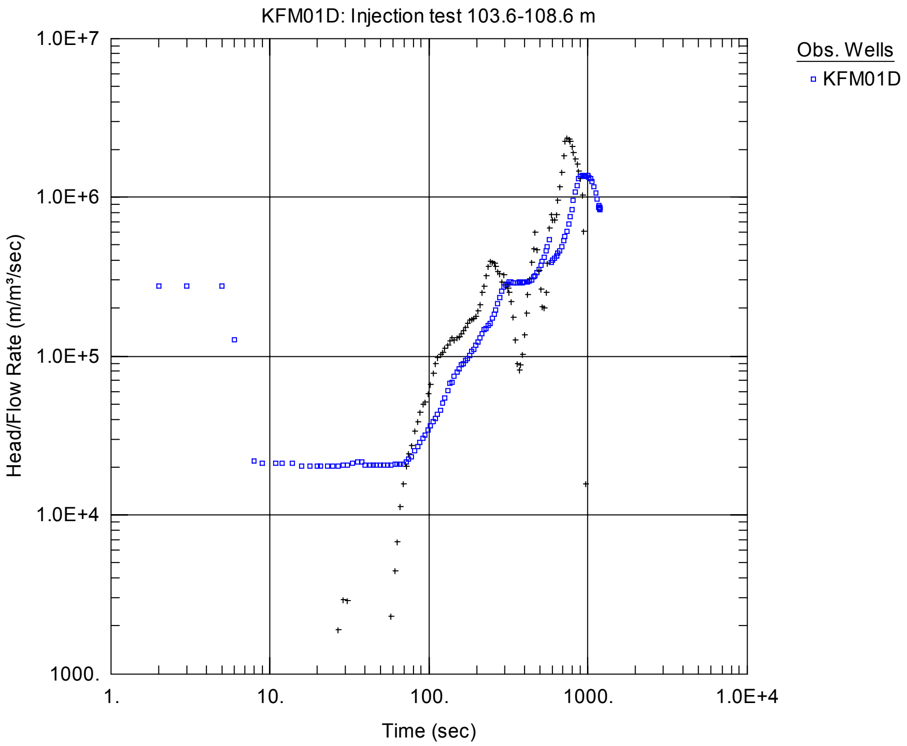


Figure A3-166. Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 103.6-108.6 m in KFM01D. No type curve fit is shown since no unambiguous transient evaluation is possible. Test number two.

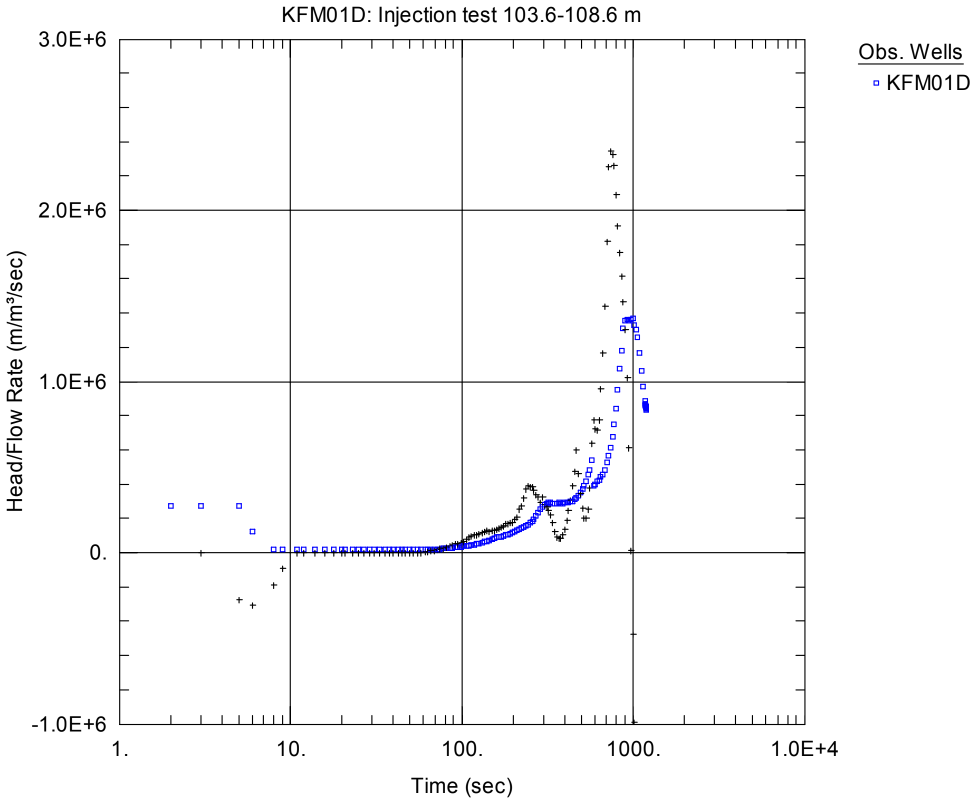


Figure A3-167. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 103.6-108.6 m in KFM01D. No type curve fit is shown since no unambiguous transient evaluation is possible. Test number two.*

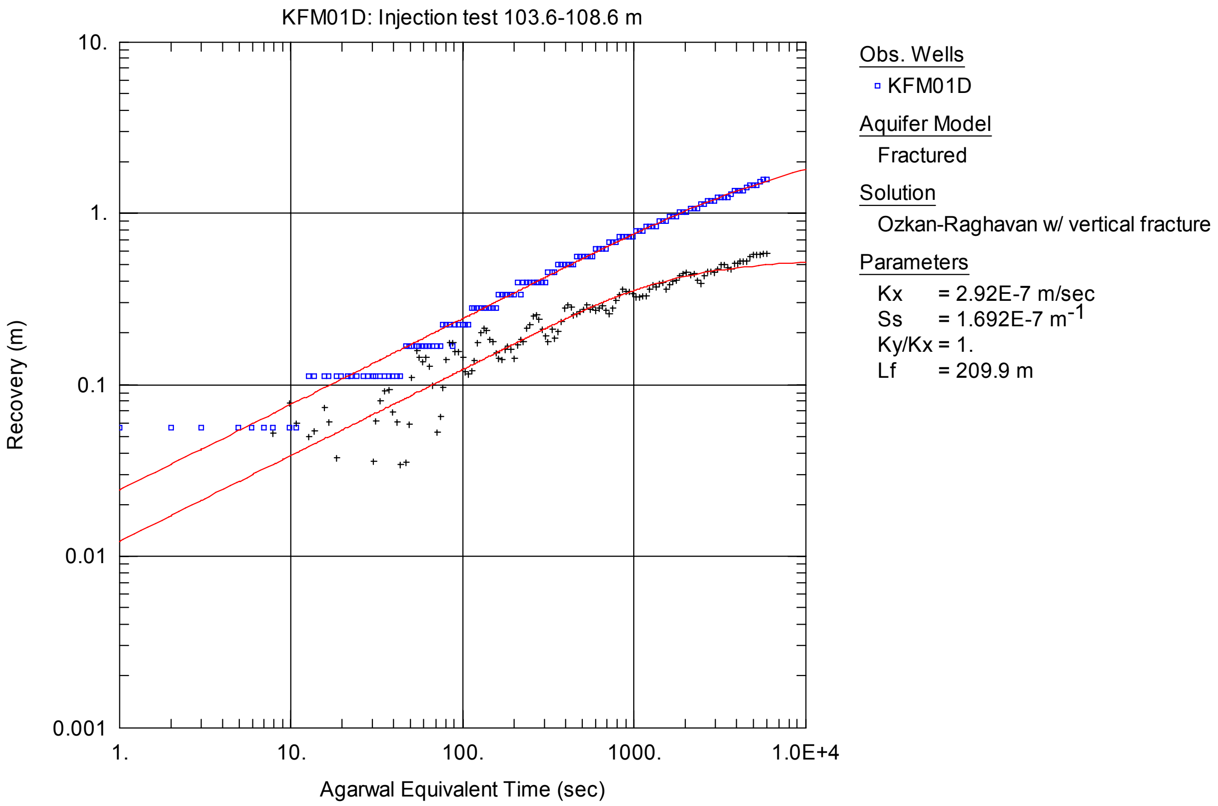


Figure A3-168. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 103.6-108.6 m in KFM01D. Test number two.*

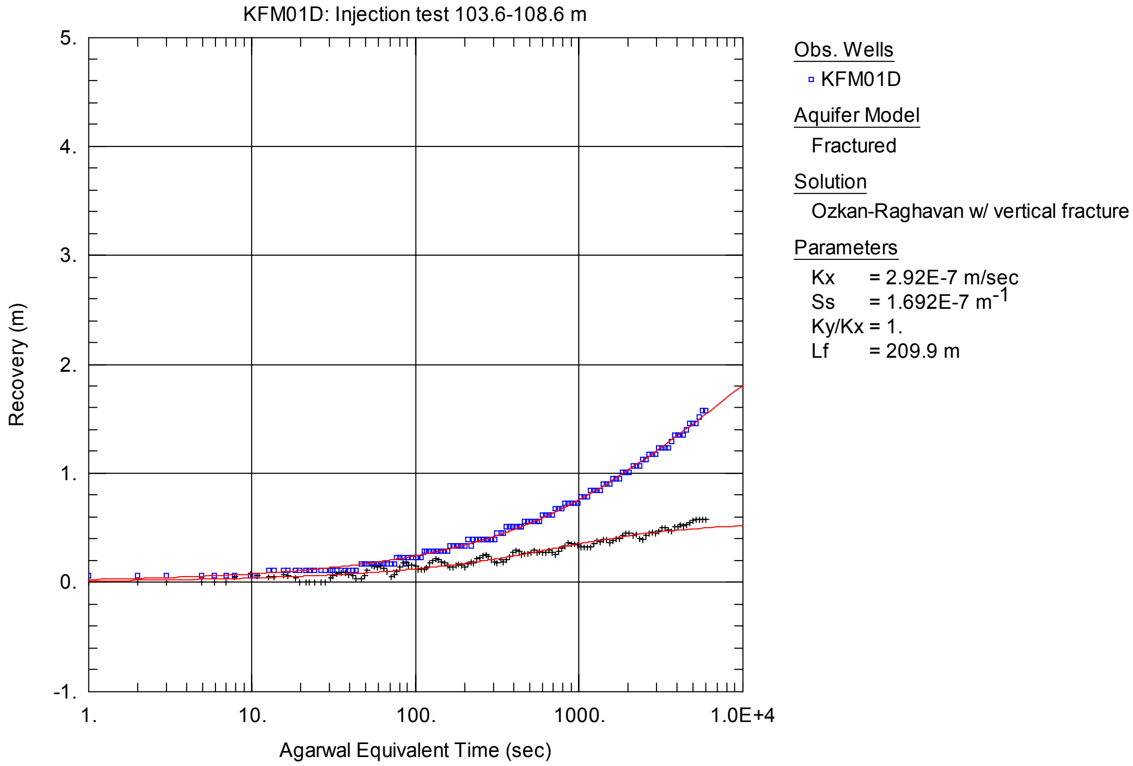


Figure A3-169. *Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 103.6-108.6 m in KFM01D. Test number two.*

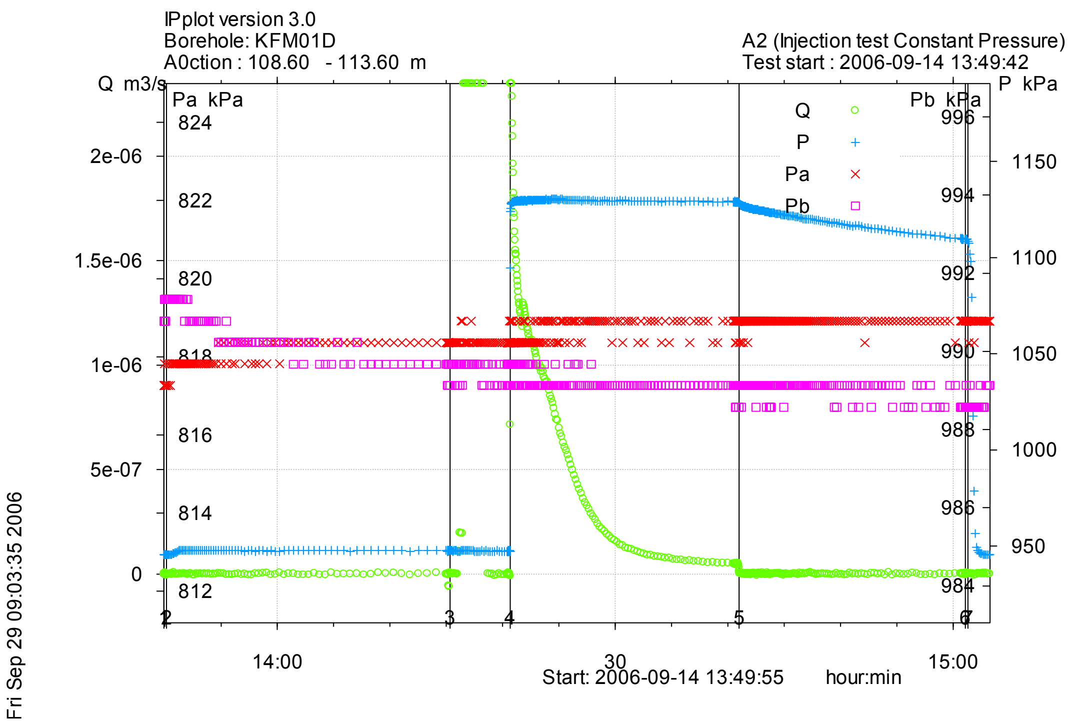


Figure A3-170. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 108.6-113.6 m in borehole KFM01D.*

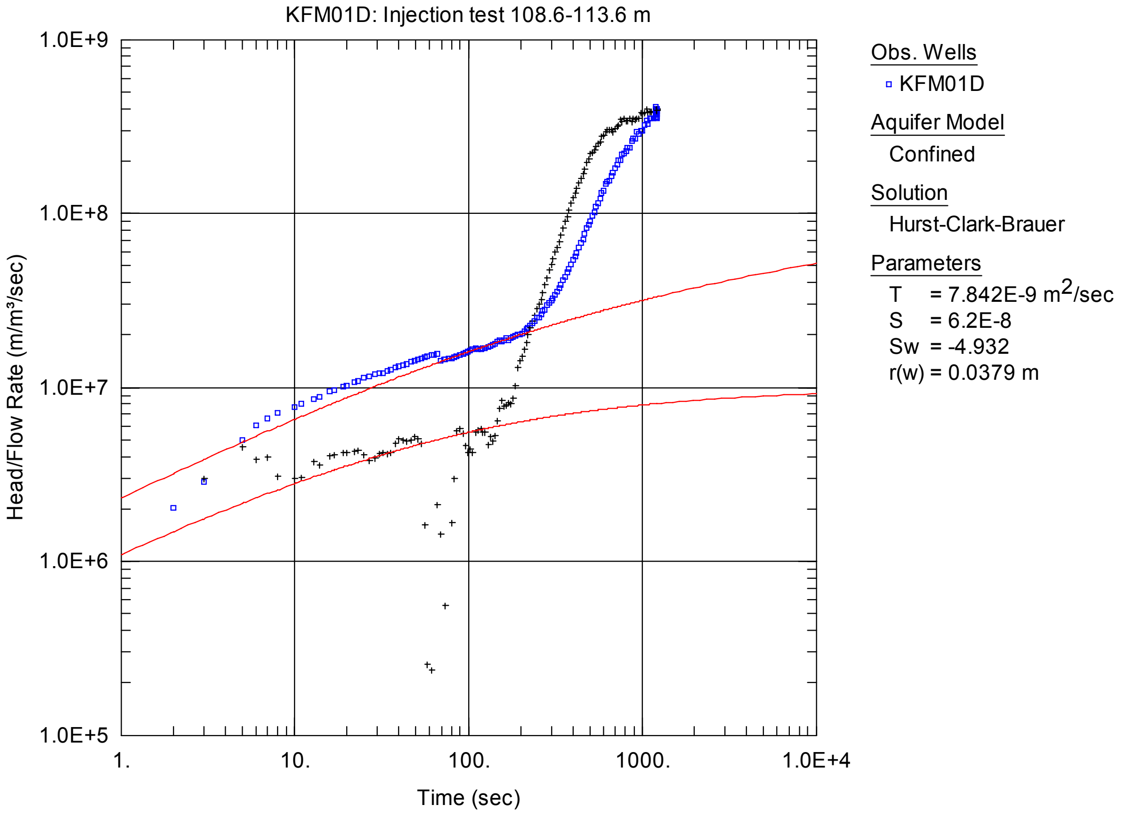


Figure A3-171. *Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 108.6-113.6 m in KFM01D.*

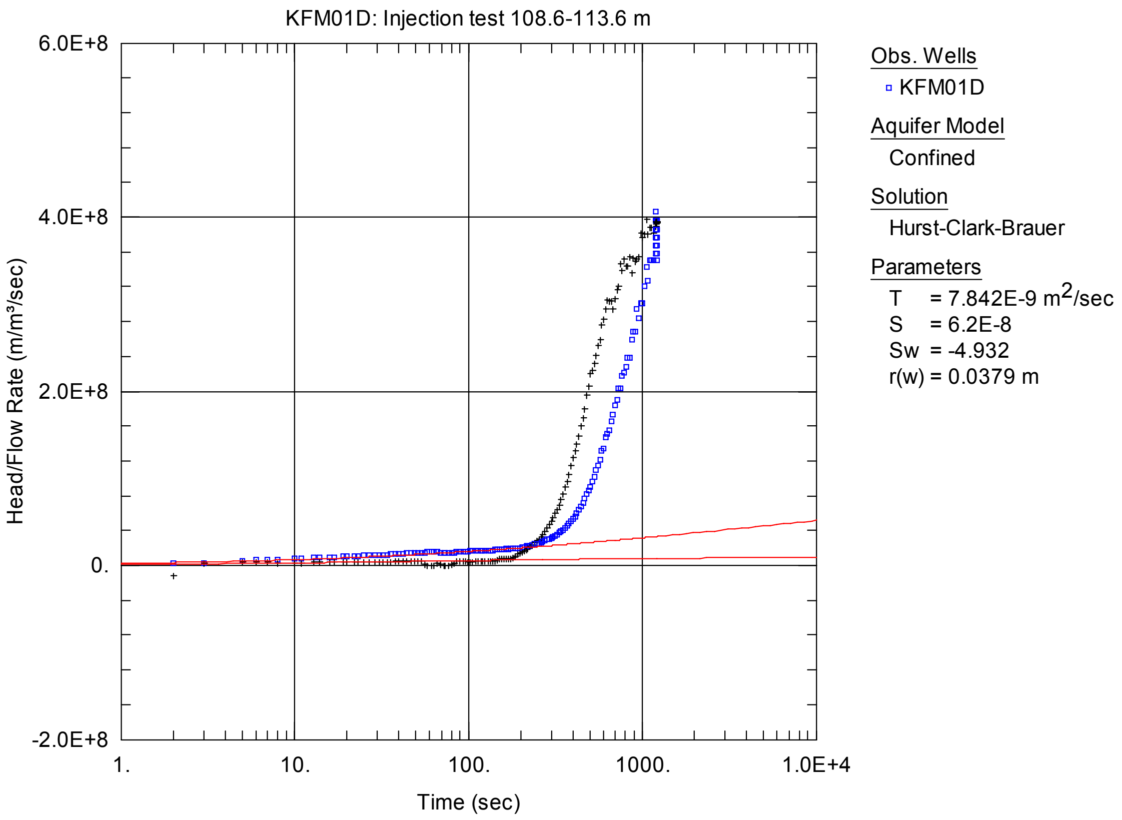


Figure A3-172. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 108.6-113.6 m in KFM01D.*

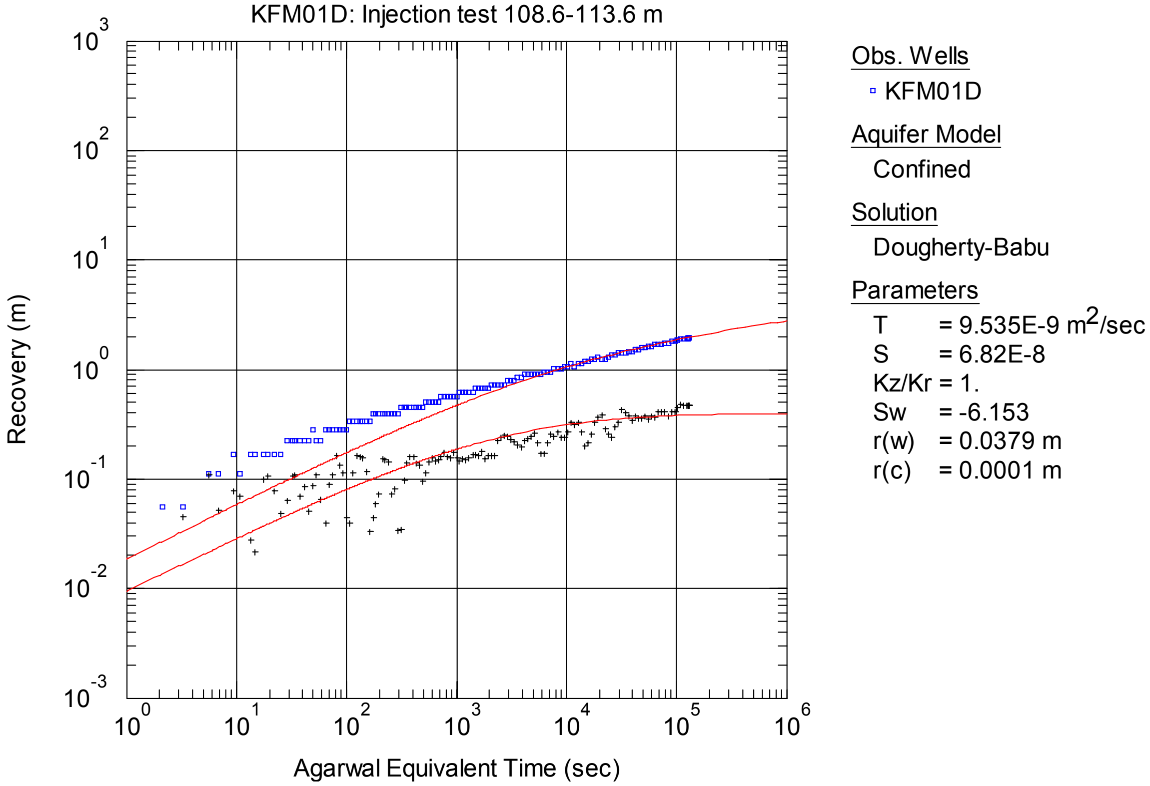


Figure A3-173. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 108.6-113.6 m in KFM01D.*

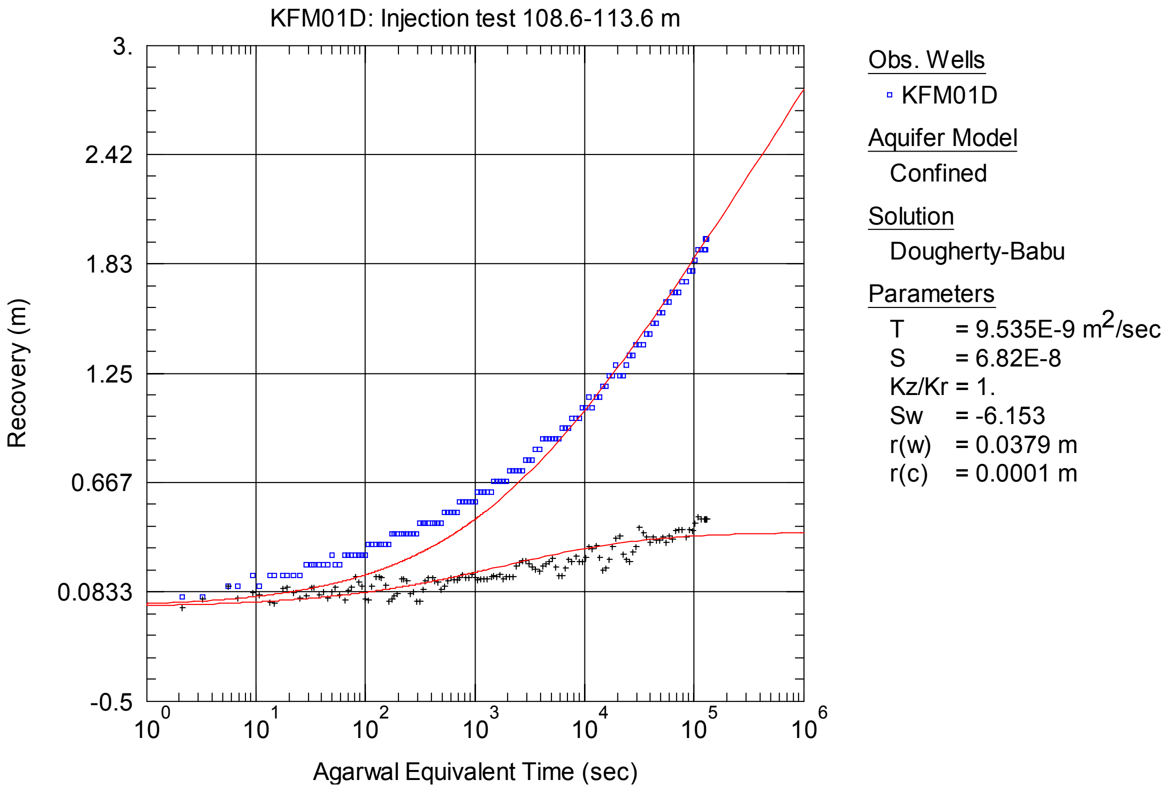


Figure A3-174. *Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 108.6-113.6 m in KFM01D.*

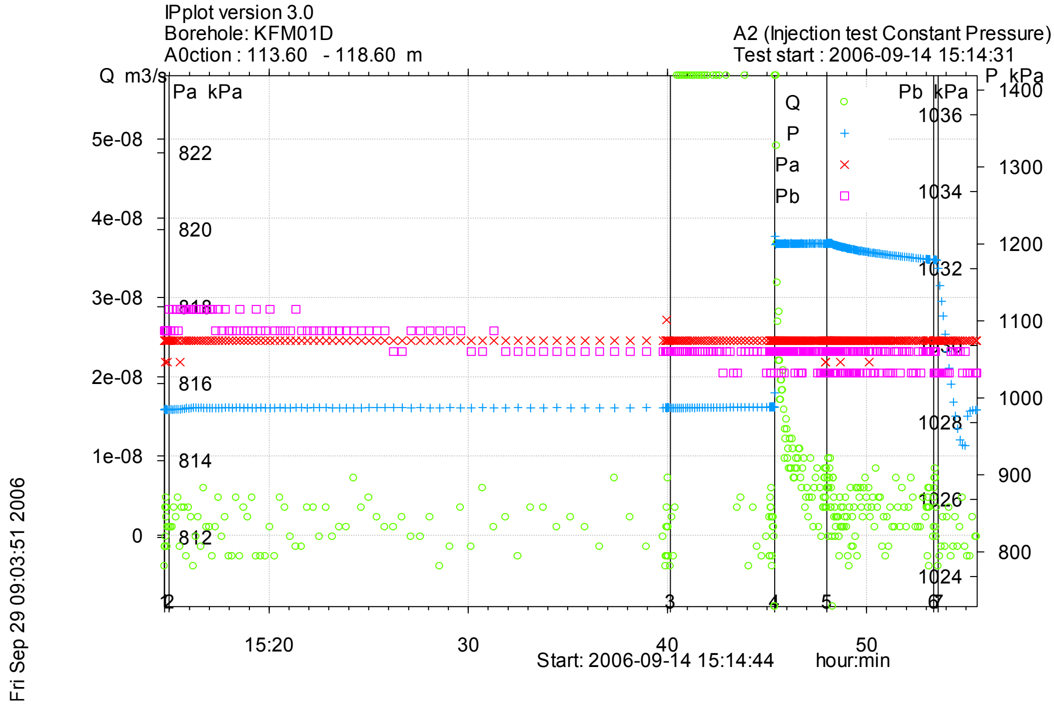


Figure A3-175. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 113.6-118.6 m in borehole KFM01D.*

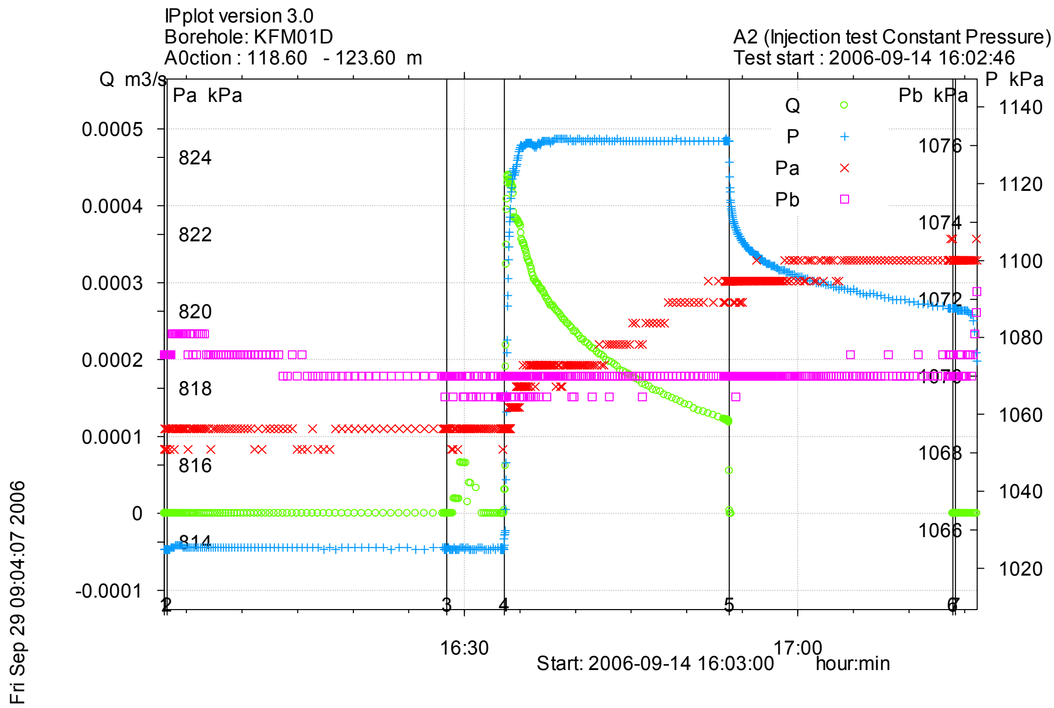


Figure A3-176. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 118.6-123.6 m in borehole KFM01D.*

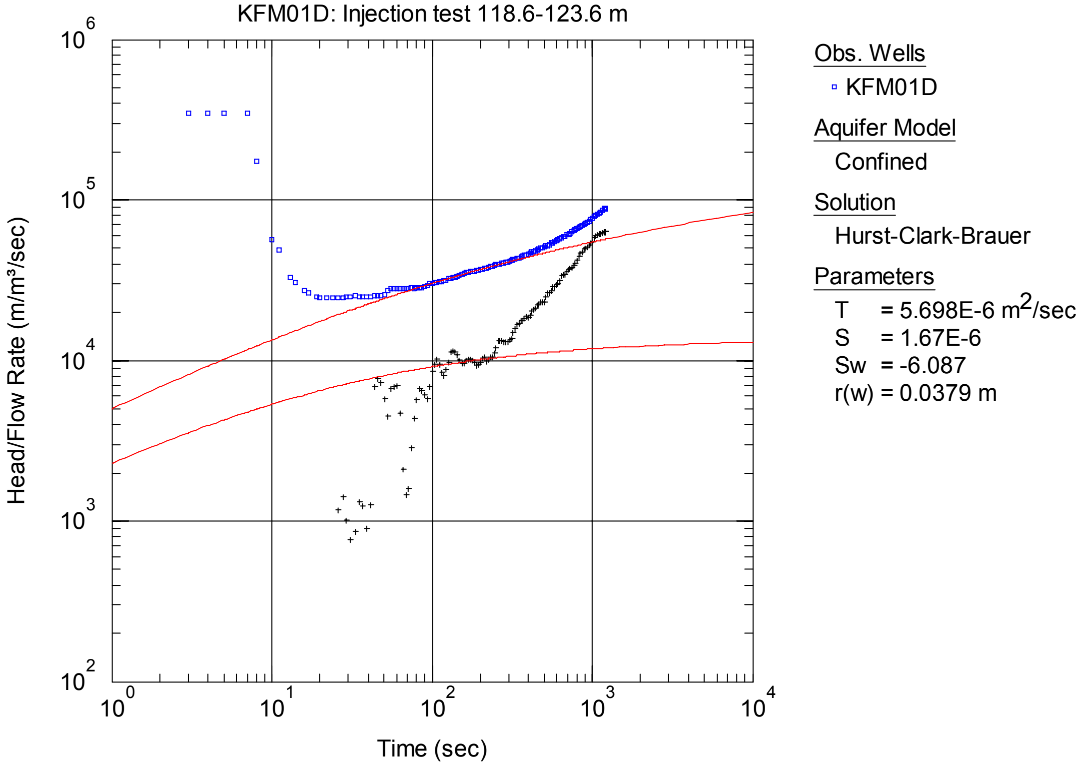


Figure A3-177. *Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 118.6-123.6 m in KFM01D.*

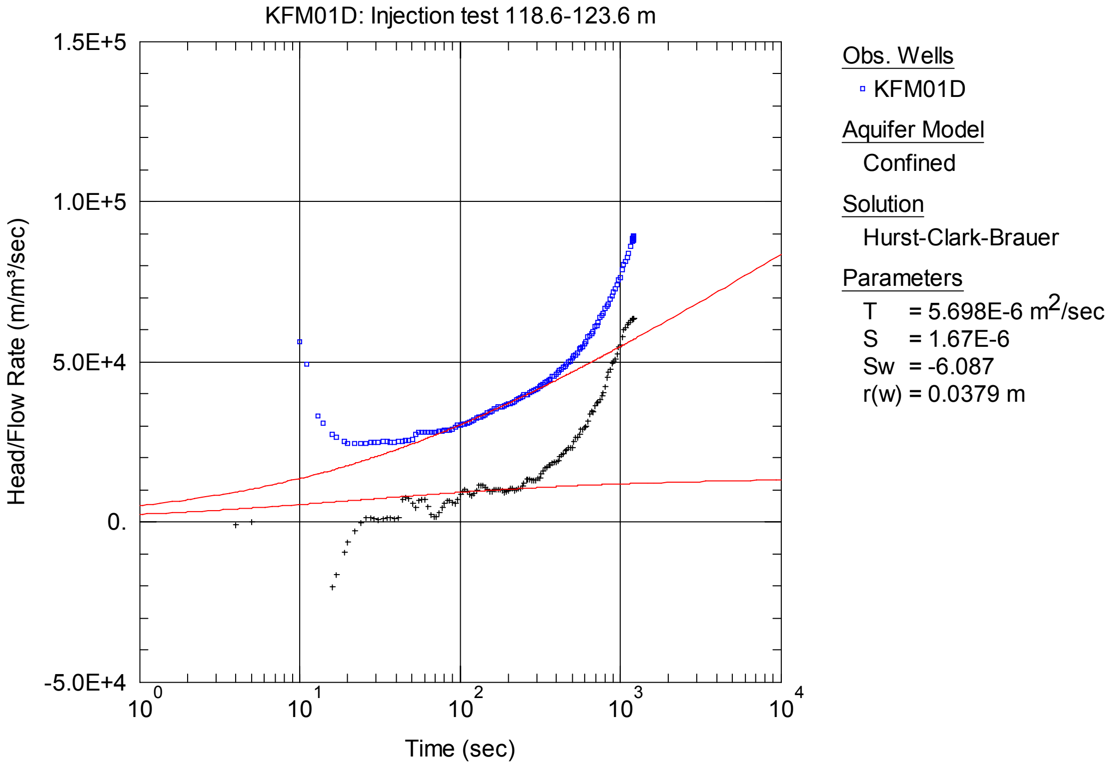


Figure A3-178. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 118.6-123.6 m in KFM01D.*

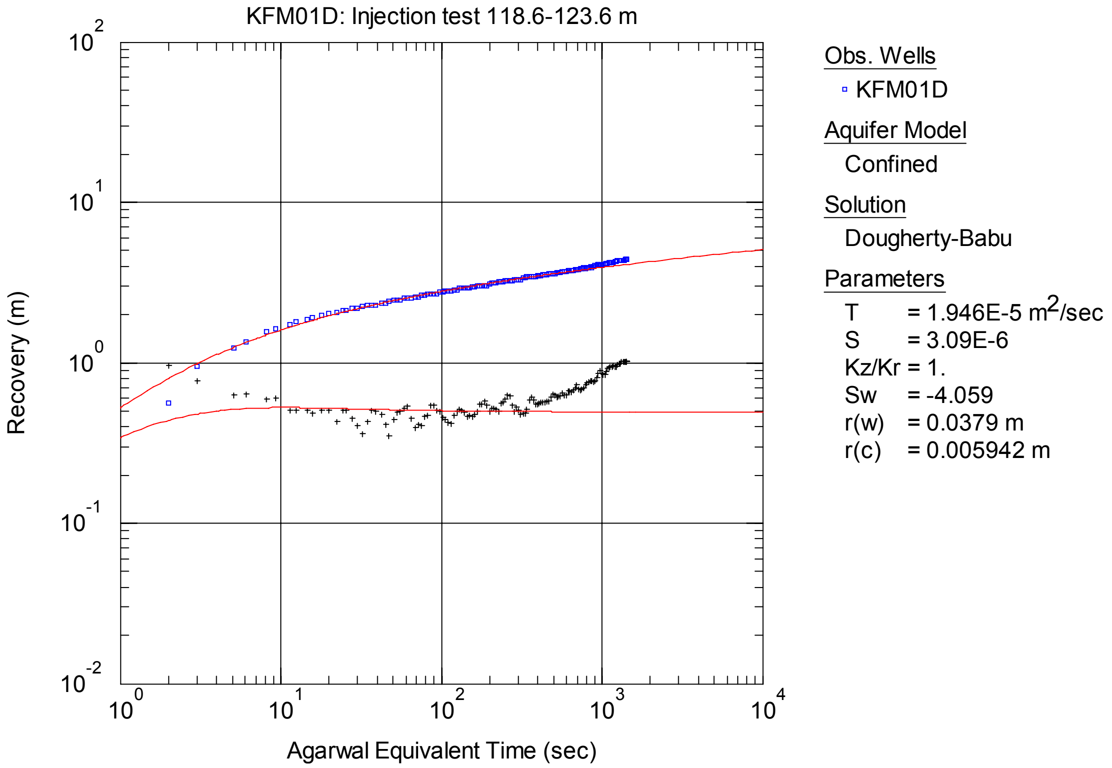


Figure A3-179. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 118.6-123.6 m in KFM01D.*

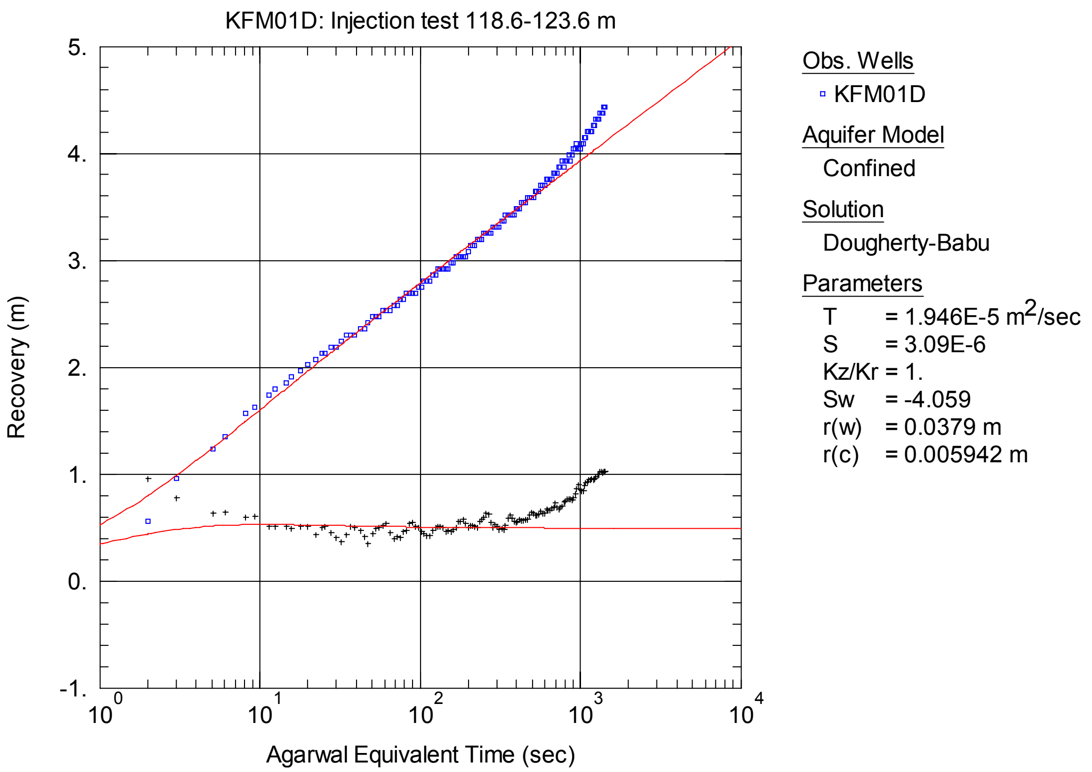


Figure A3-180. *Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 118.6-123.6 m in KFM01D.*

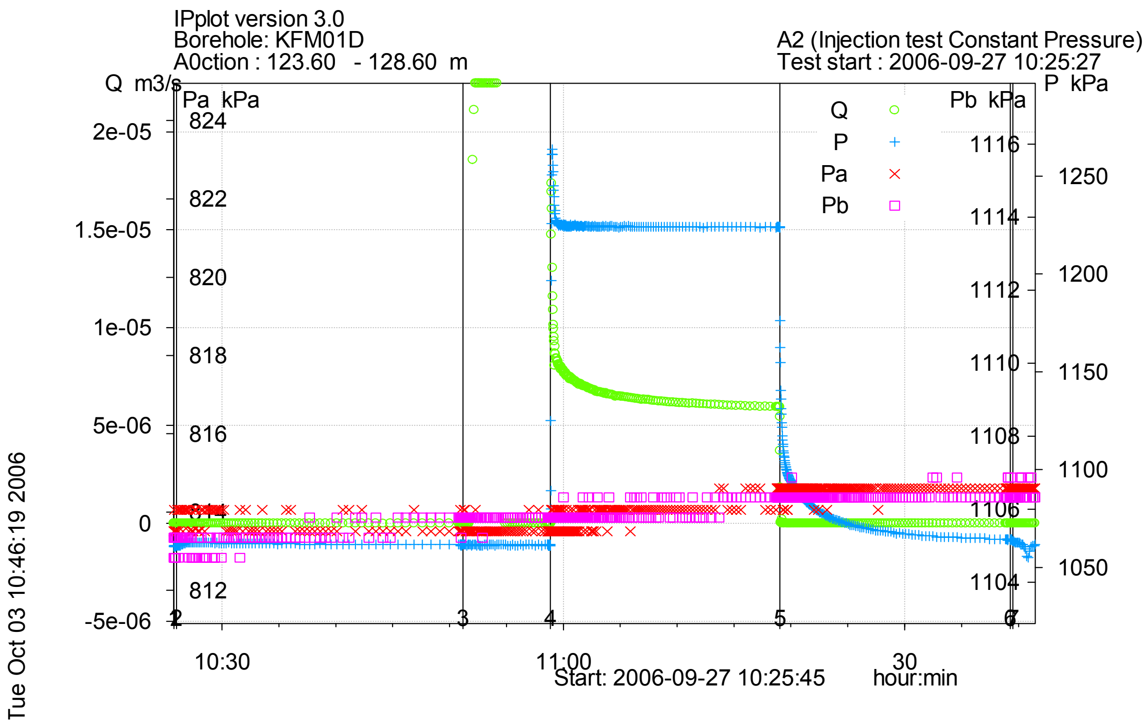


__Figure A3-181.__ Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 123.6-128.6 m in borehole KFM01D.

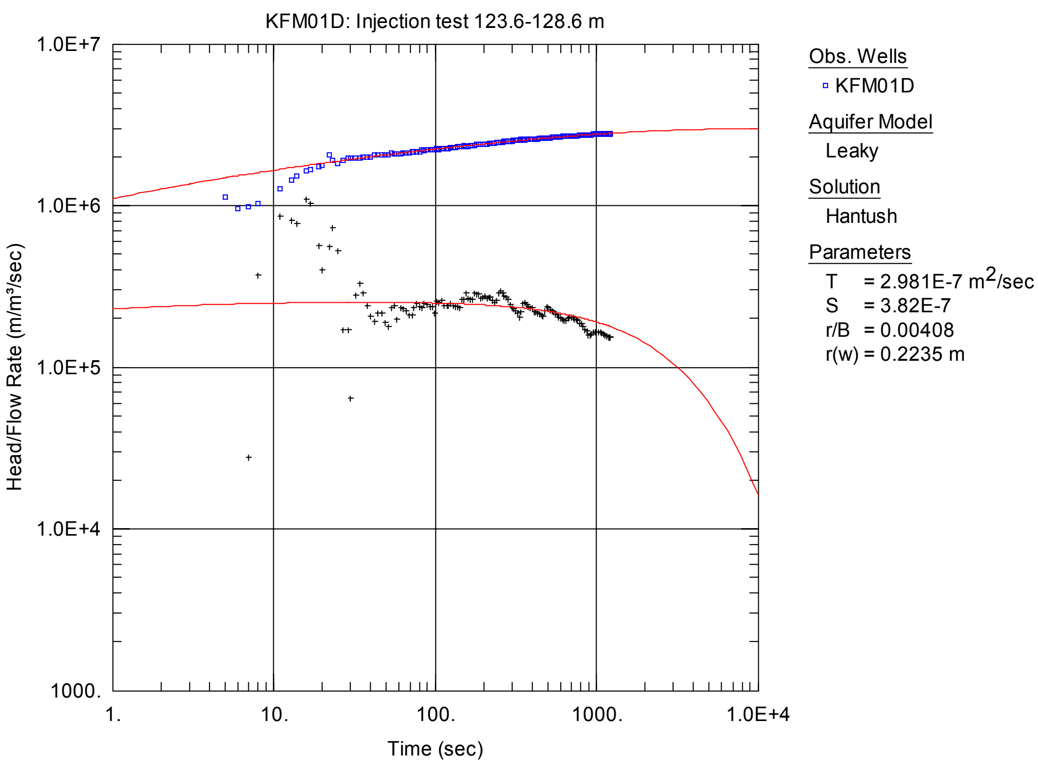


__Figure A3-182.__ Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 123.6-128.6 m in KFM01D.

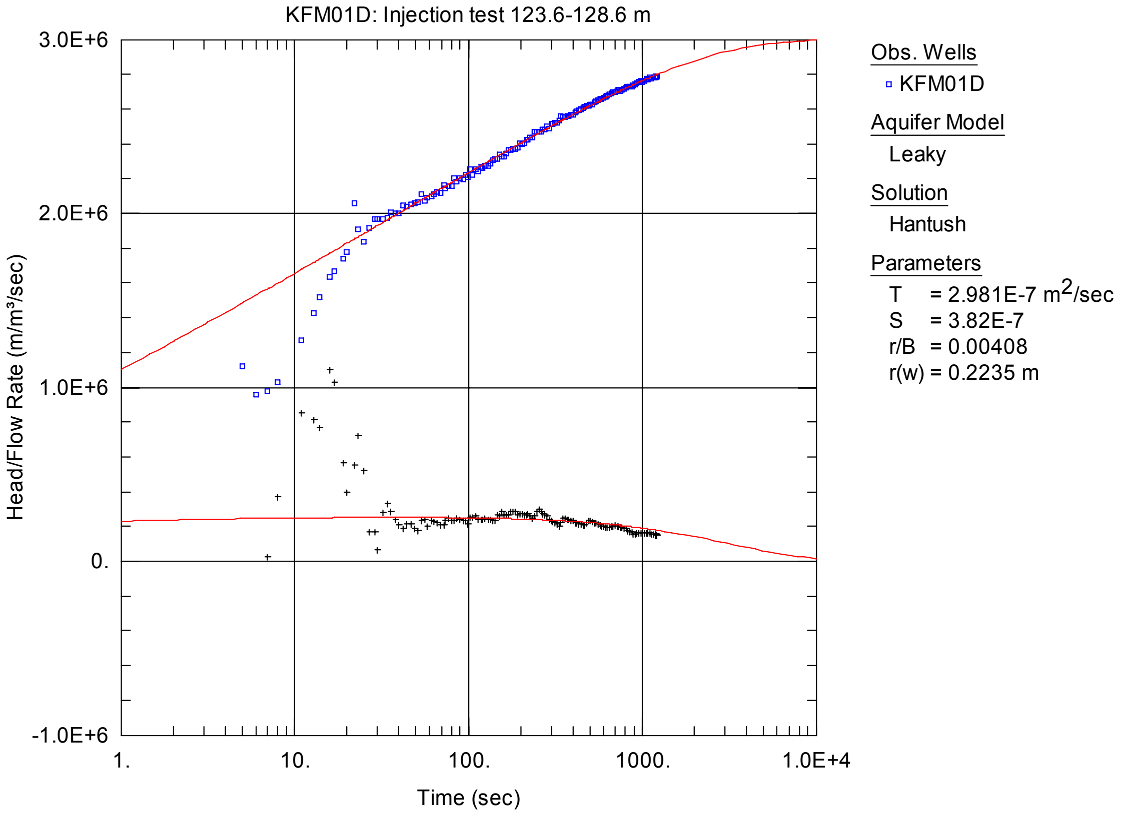


Figure A3-183. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 123.6-128.6 m in KFM01D.*

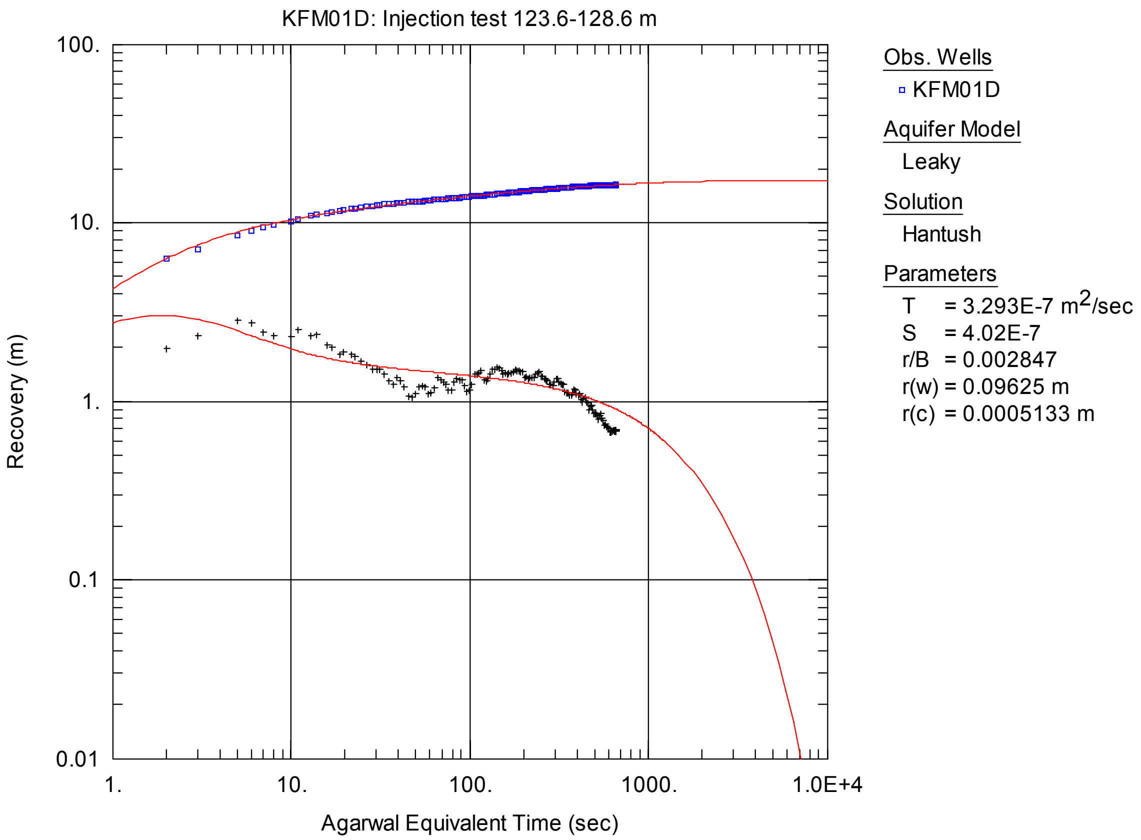


Figure A3-184. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 123.6-128.6 m in KFM01D.*

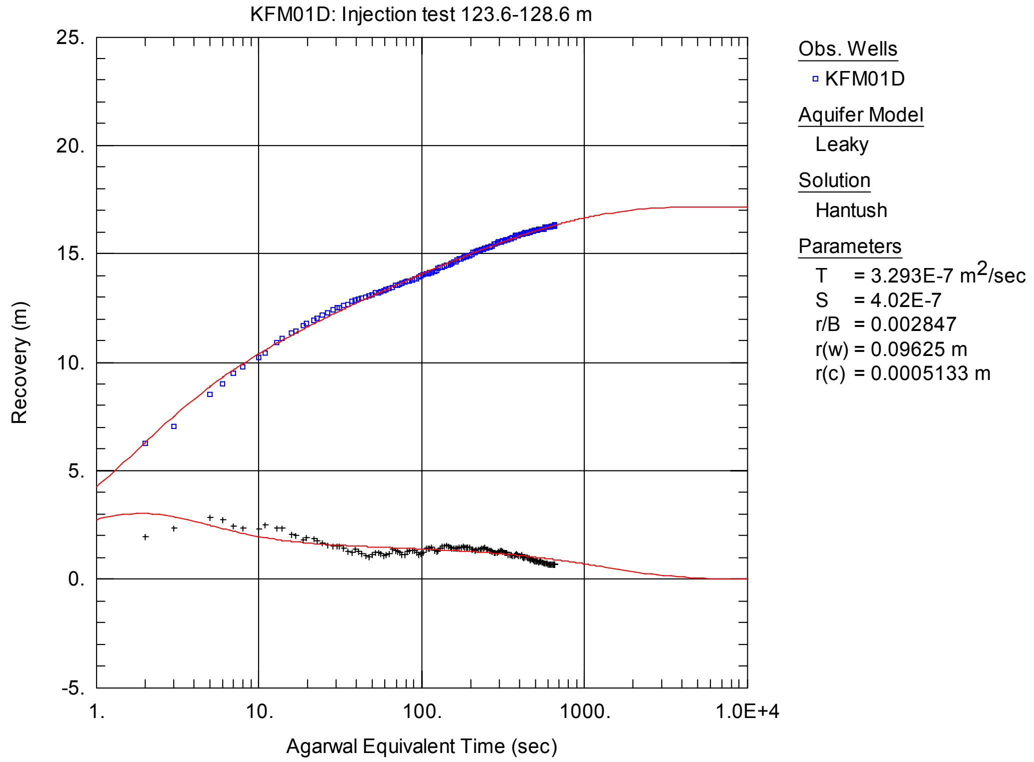


Figure A3-185. *Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 123.6-128.6 m in KFM01D.*

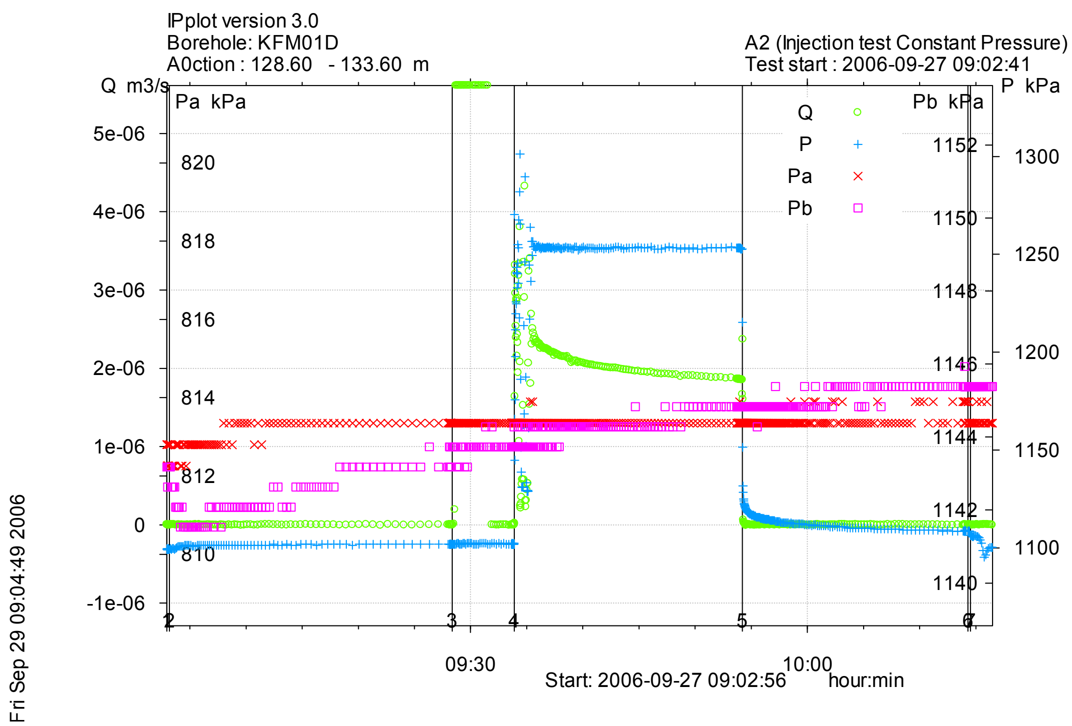


Figure A3-186. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 128.6-133.6 m in borehole KFM01D.*

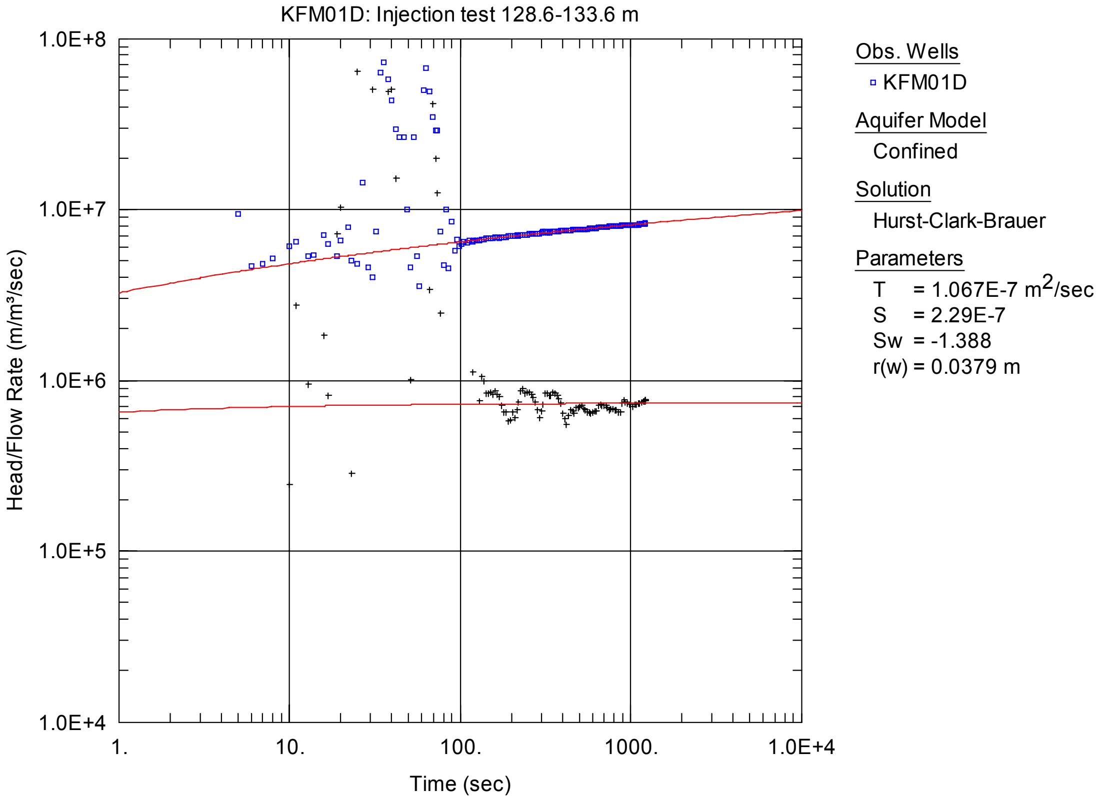


Figure A3-187. *Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 128.6-133.6 m in KFM01D.*

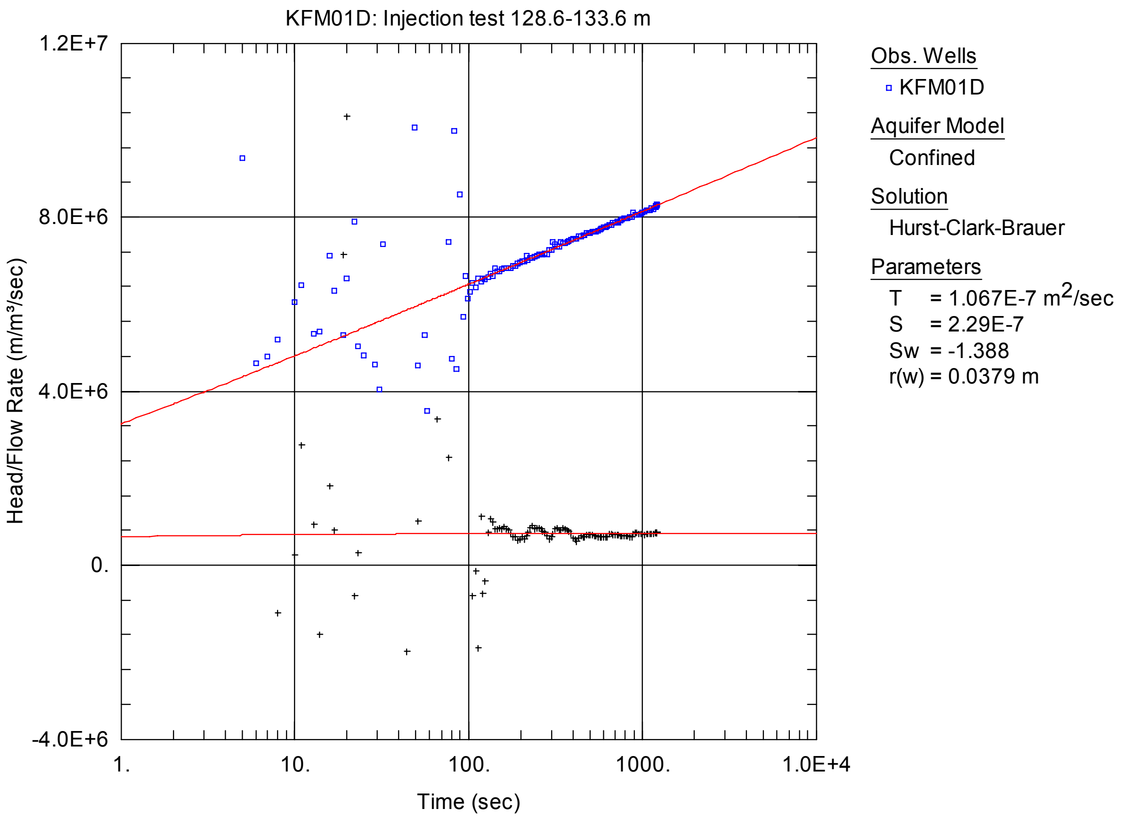


Figure A3-188. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 128.6-133.6 m in KFM01D.*

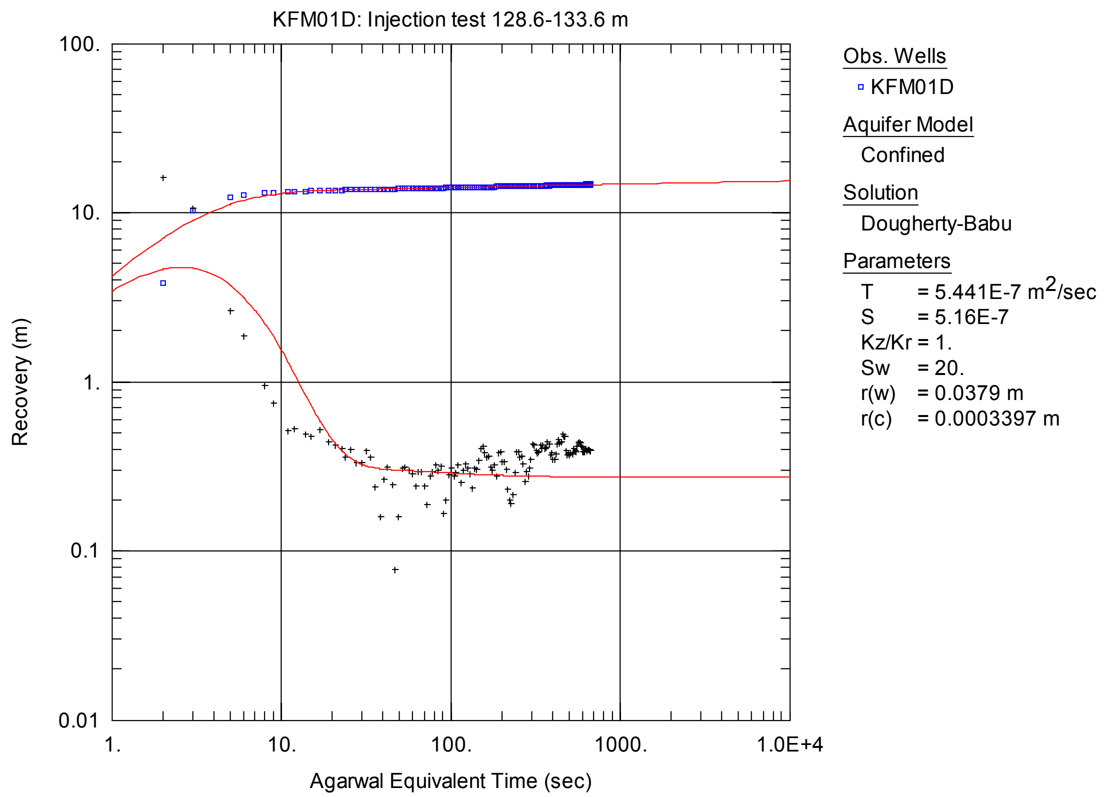


Figure A3-189. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 128.6-133.6 m in KFM01D. The type curve fit is only to show that an assumption of PRF is not valid.*

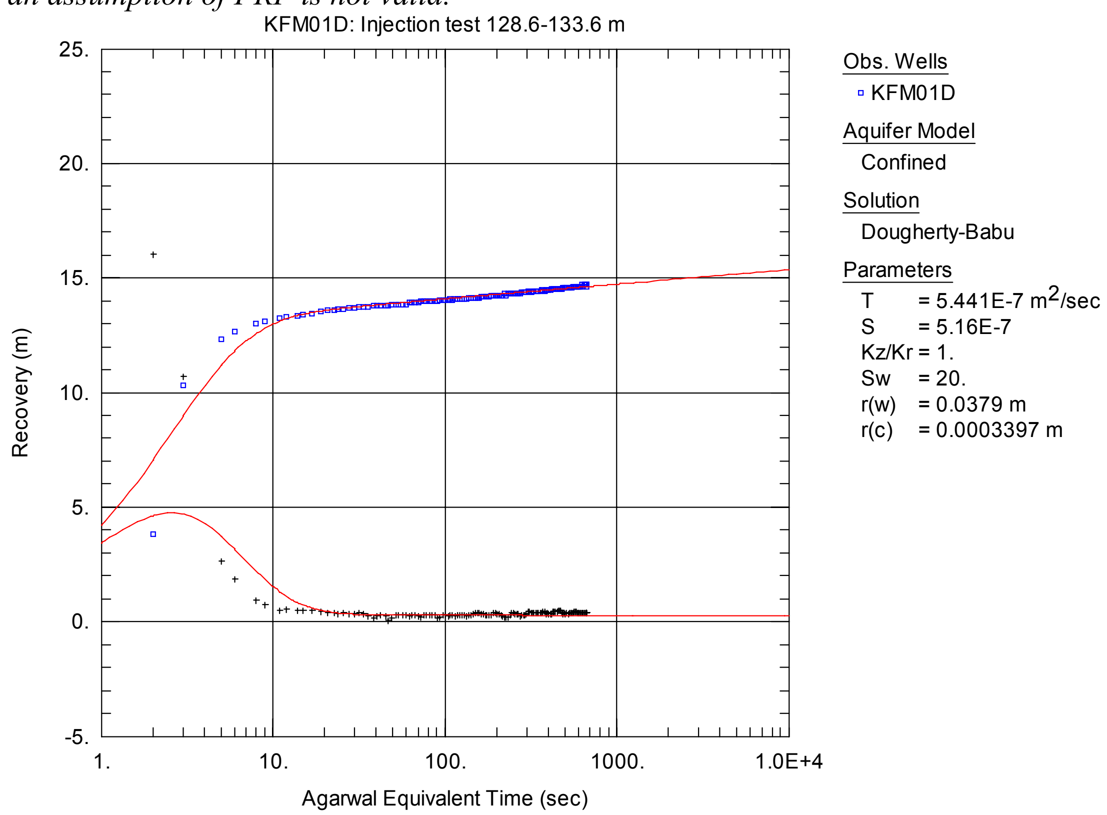


Figure A3-190. *Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 128.6-133.6 m in KFM01D. The type curve fit is only to show that an assumption of PRF is not valid.*

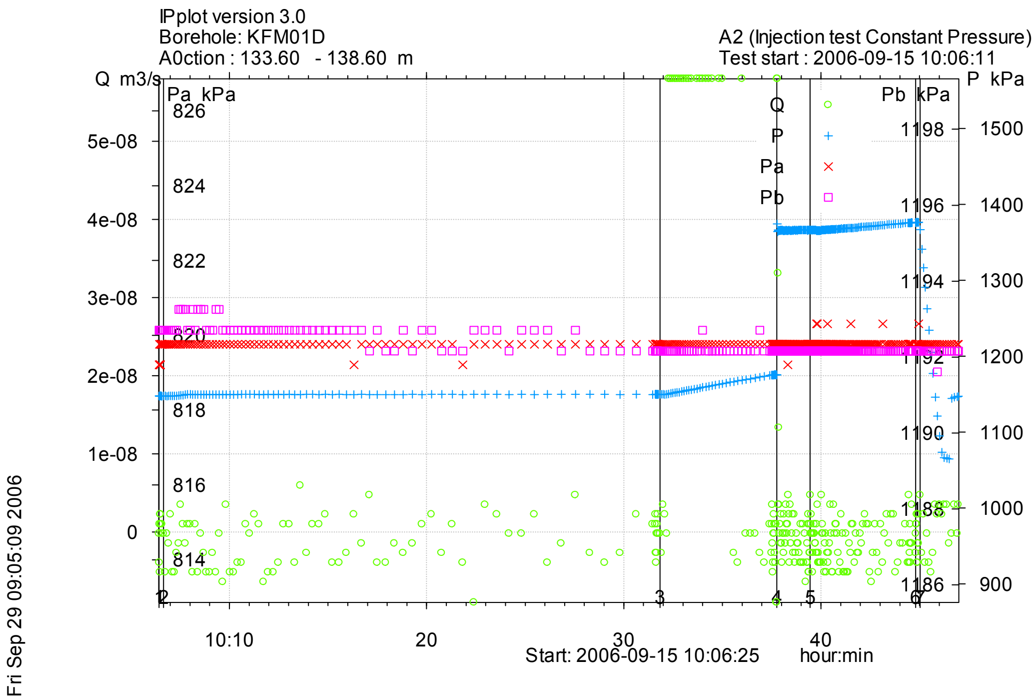


__Figure A3-191.__ Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 133.6-138.6 m in borehole KFM01D.

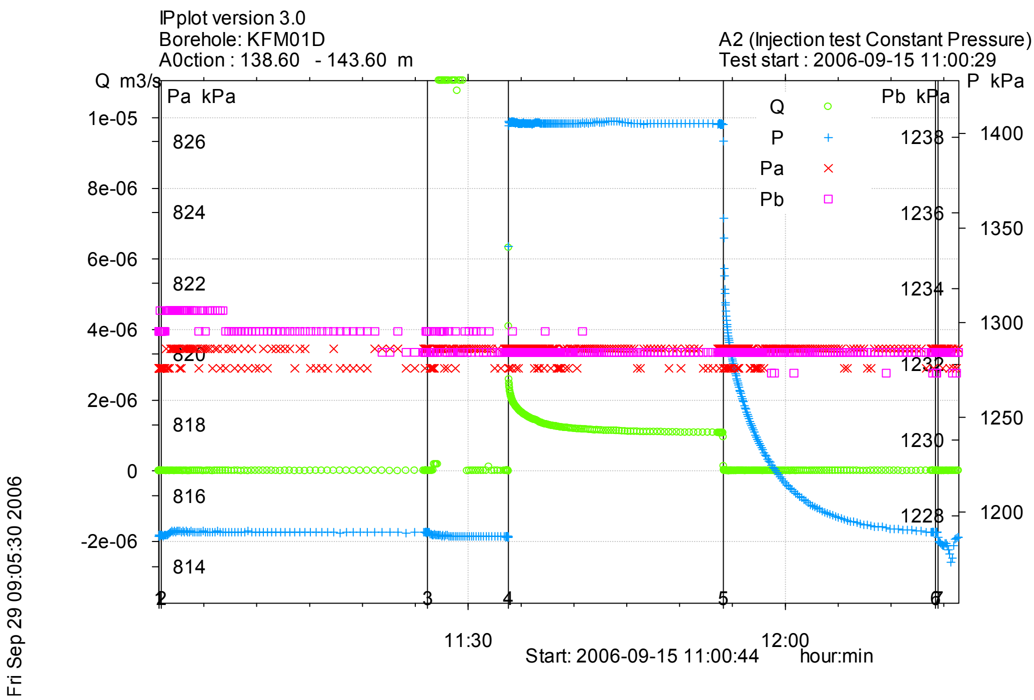


__Figure A3-192.__ Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 138.6-143.6 m in borehole KFM01D.

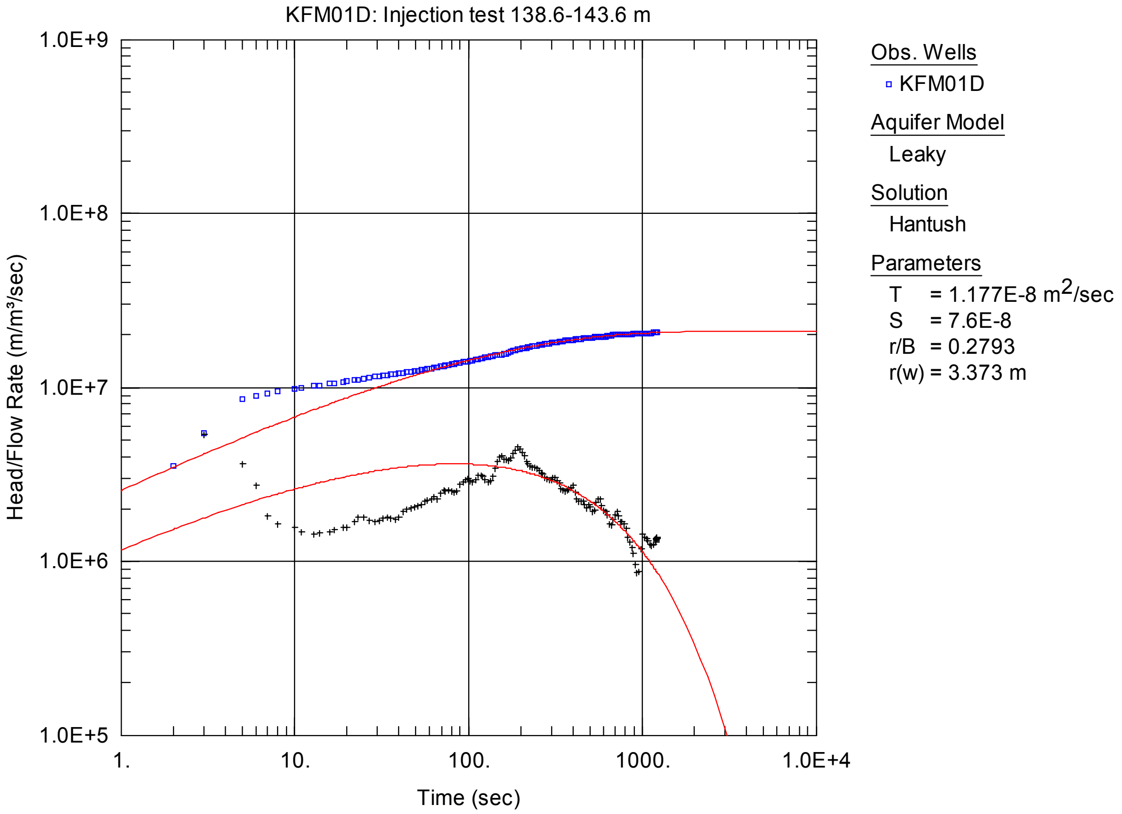


***Figure A3-193.** Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 138.6-143.6 m in KFM01D.*

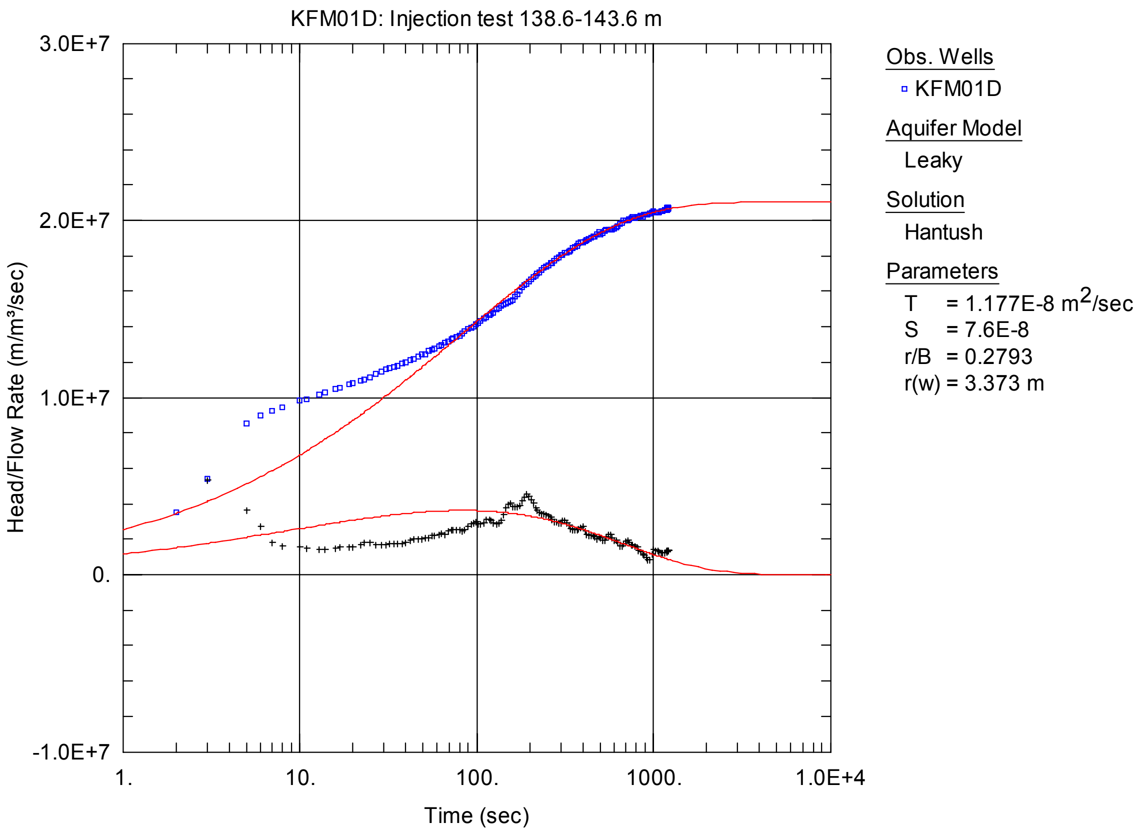


***Figure A3-194.** Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 138.6-143.6 m in KFM01D.*

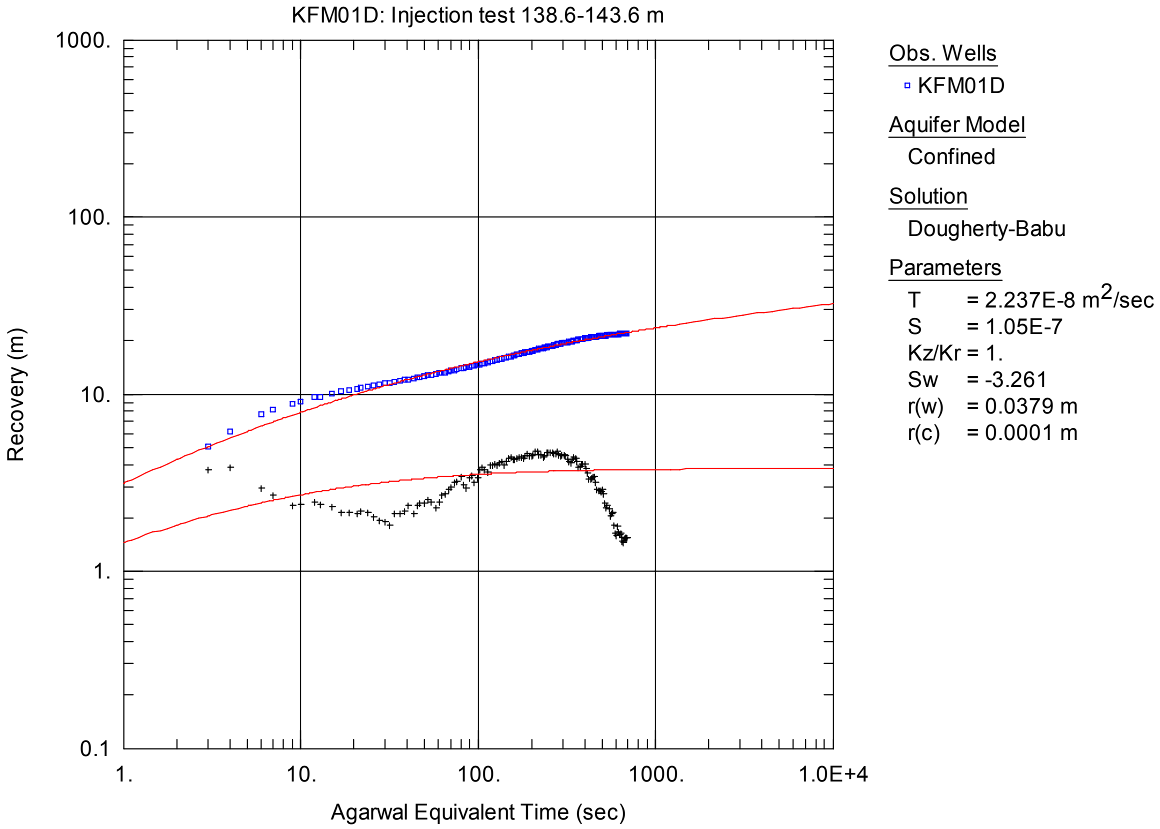


Figure A3-195. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 138.6-143.6 m in KFM01D.*

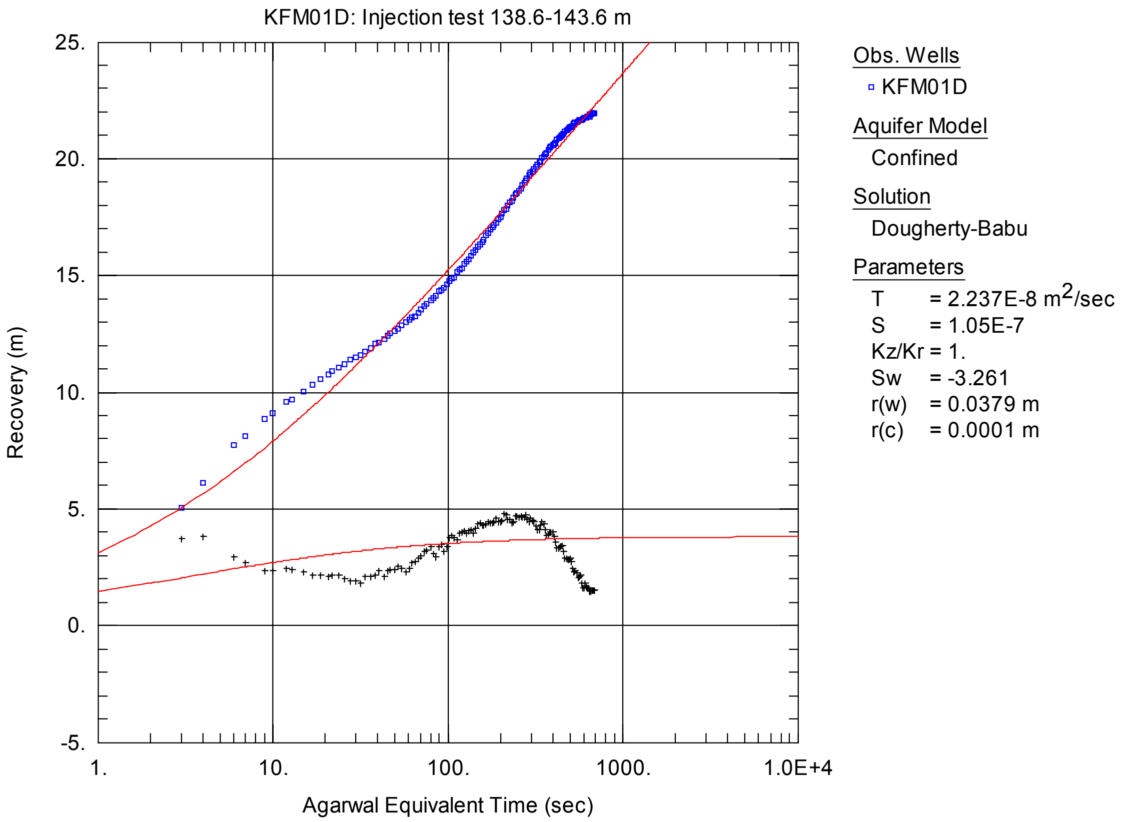


Figure A3-196. *Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 138.6-143.6 m in KFM01D.*

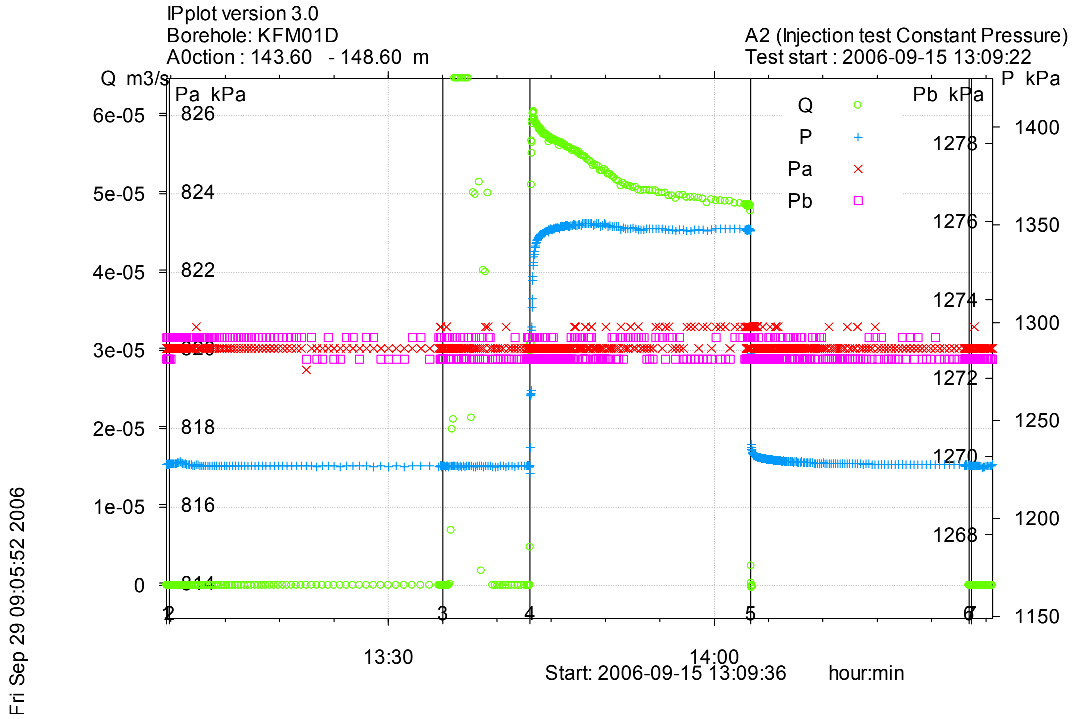


Figure A3-197. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 143.6-148.6 m in borehole KFM01D.*

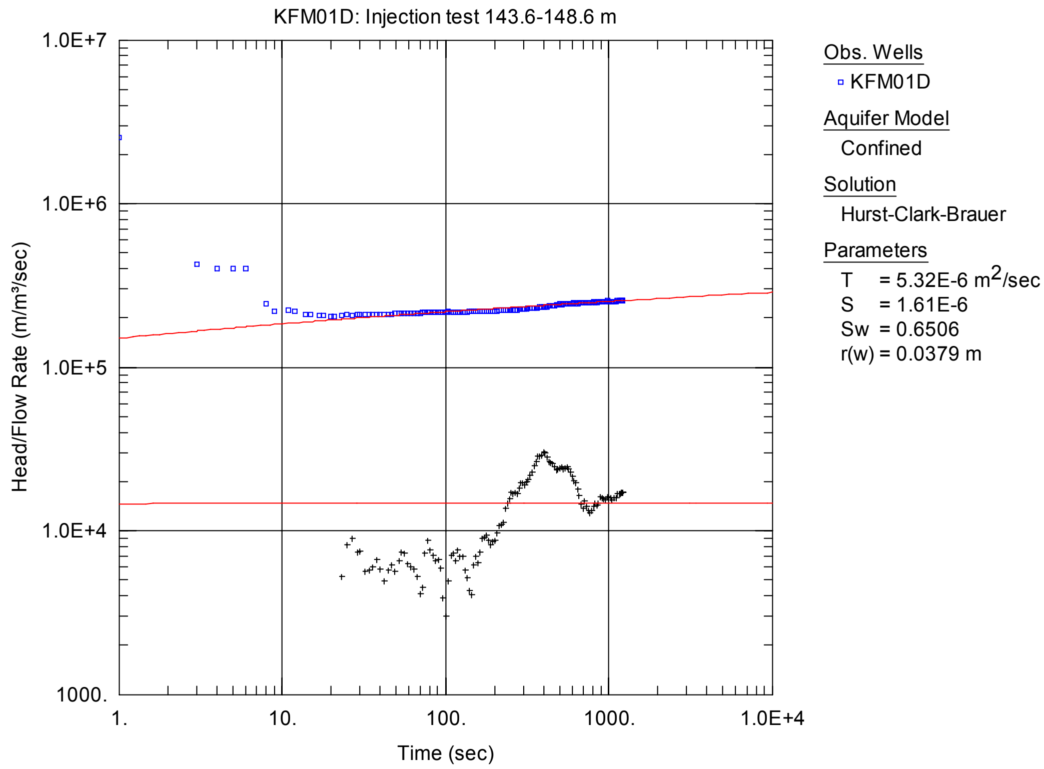


Figure A3-198. *Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 143.6-148.6 m in KFM01D.*

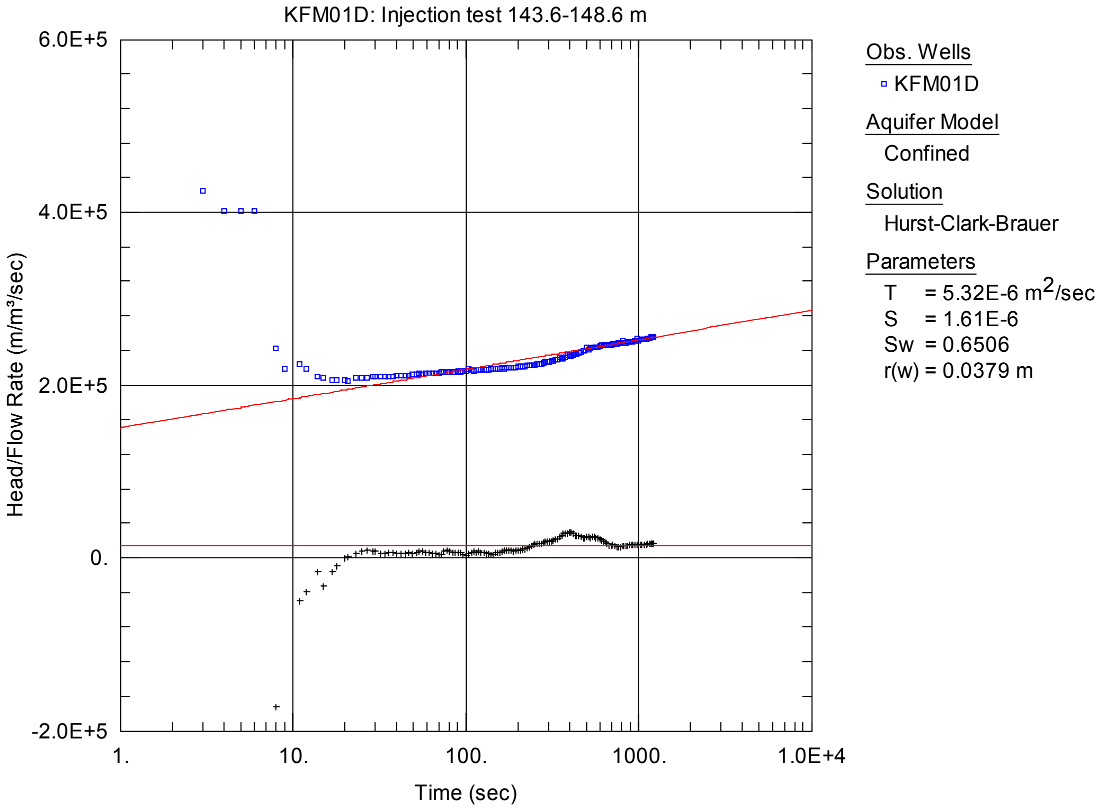


Figure A3-199. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 143.6-148.6 m in KFM01D.*

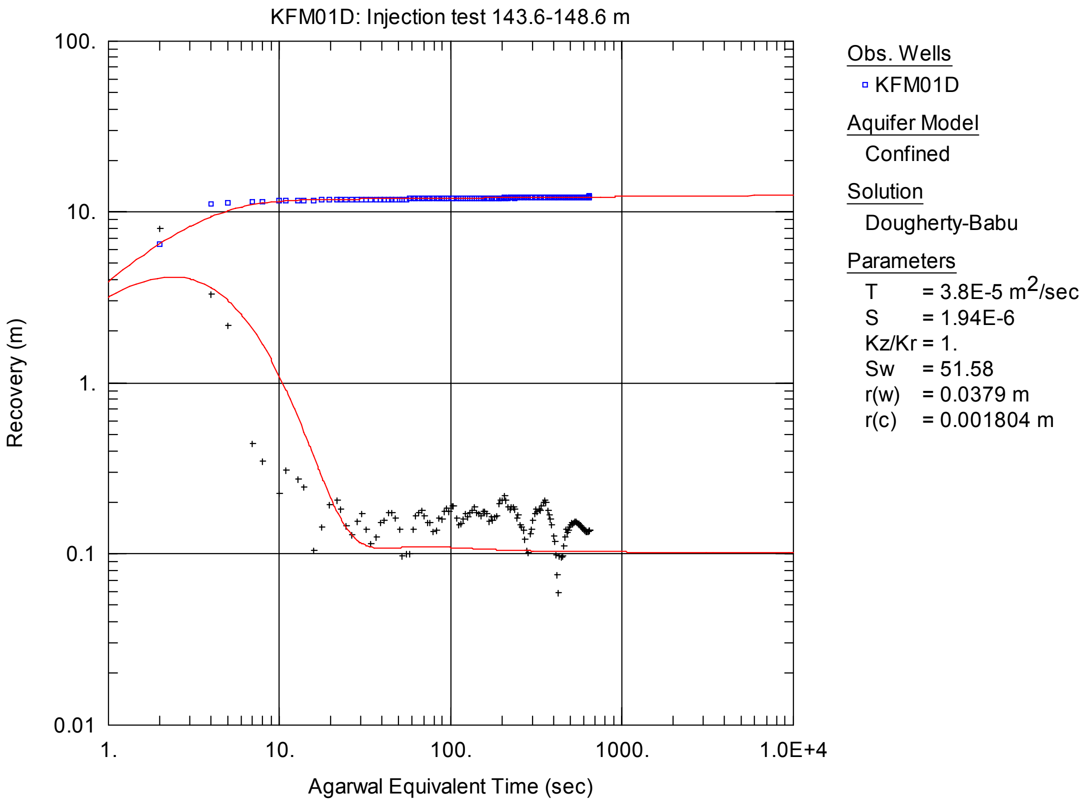


Figure A3-200. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 143.6-148.6 m in KFM01D. The type curve fit is only to show that an assumption of PRF is not valid.*

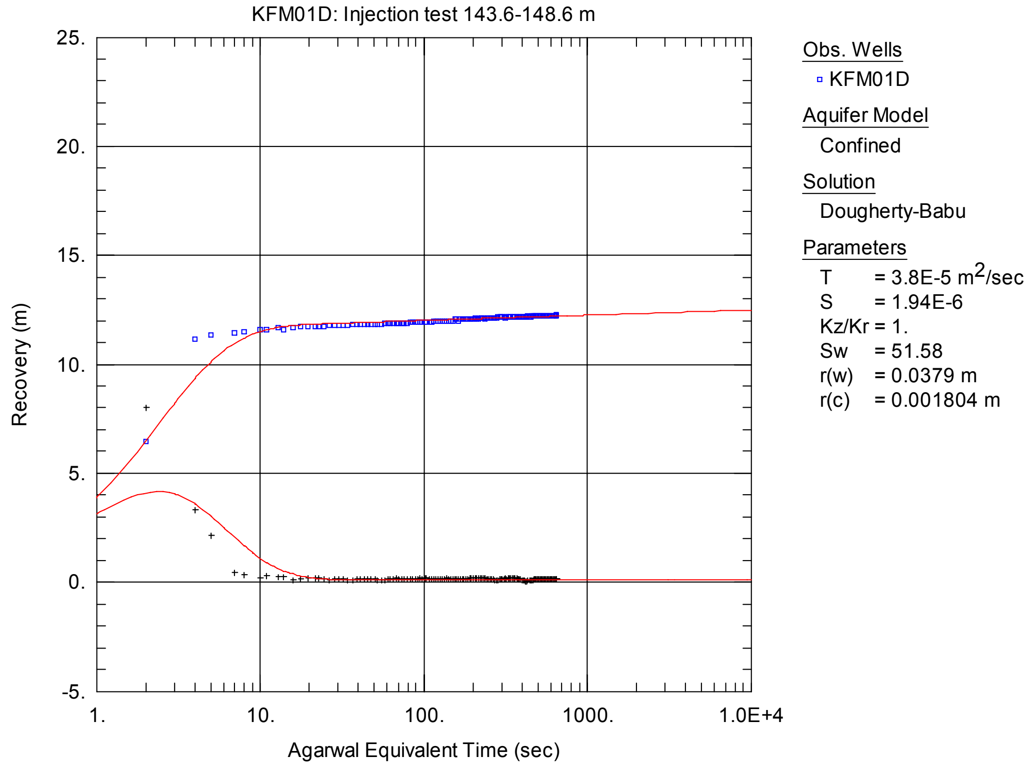


Figure A3-201. *Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 143.6-148.6 m in KFM01D. The type curve fit is only to show that an assumption of PRF is not valid.*

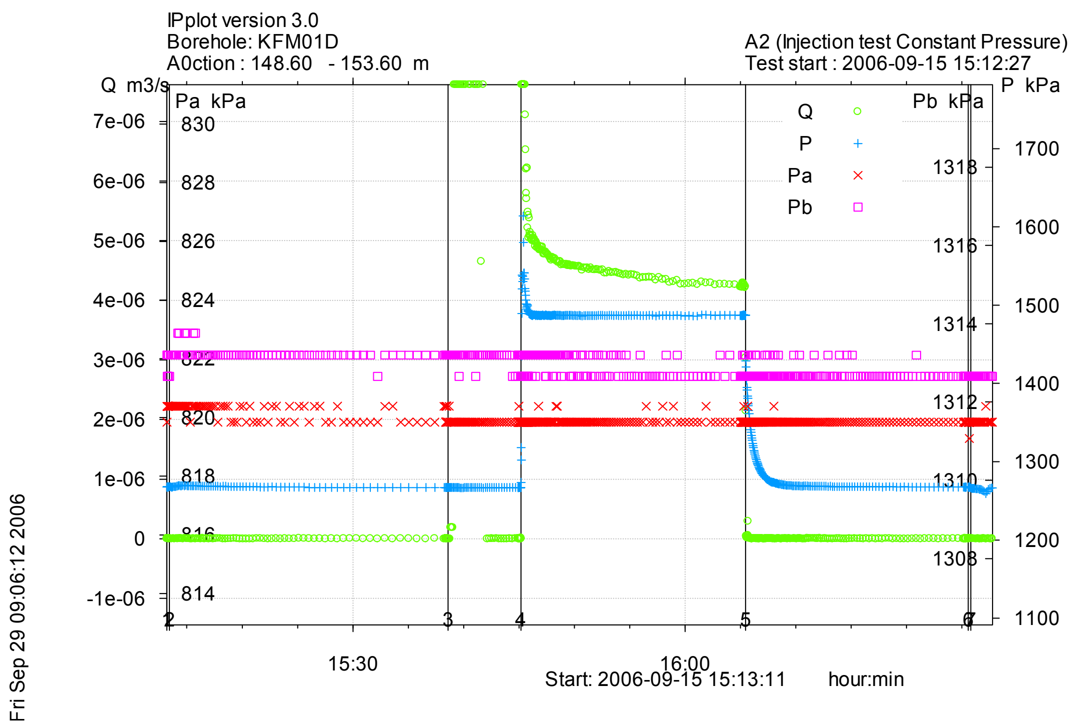


Figure A3-202. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 148.6-153.6 m in borehole KFM01D.*

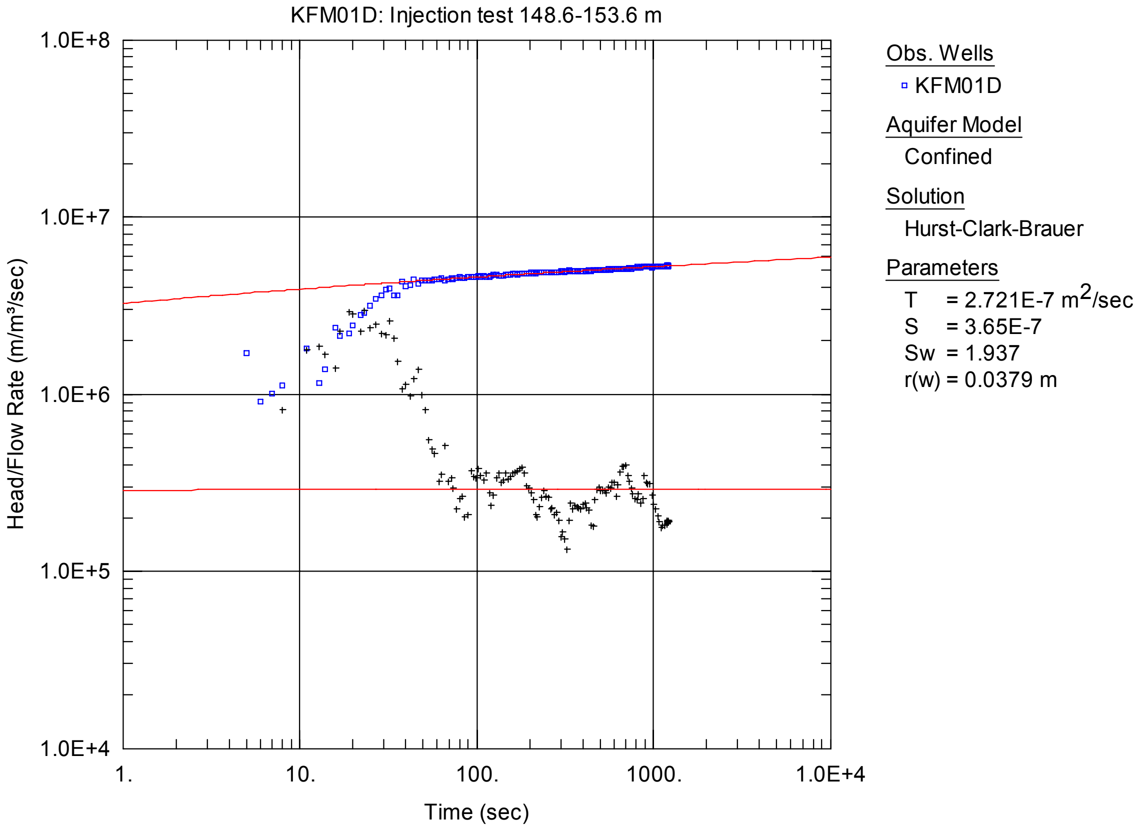


Figure A3-203. *Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 148.6-153.6 m in KFM01D.*

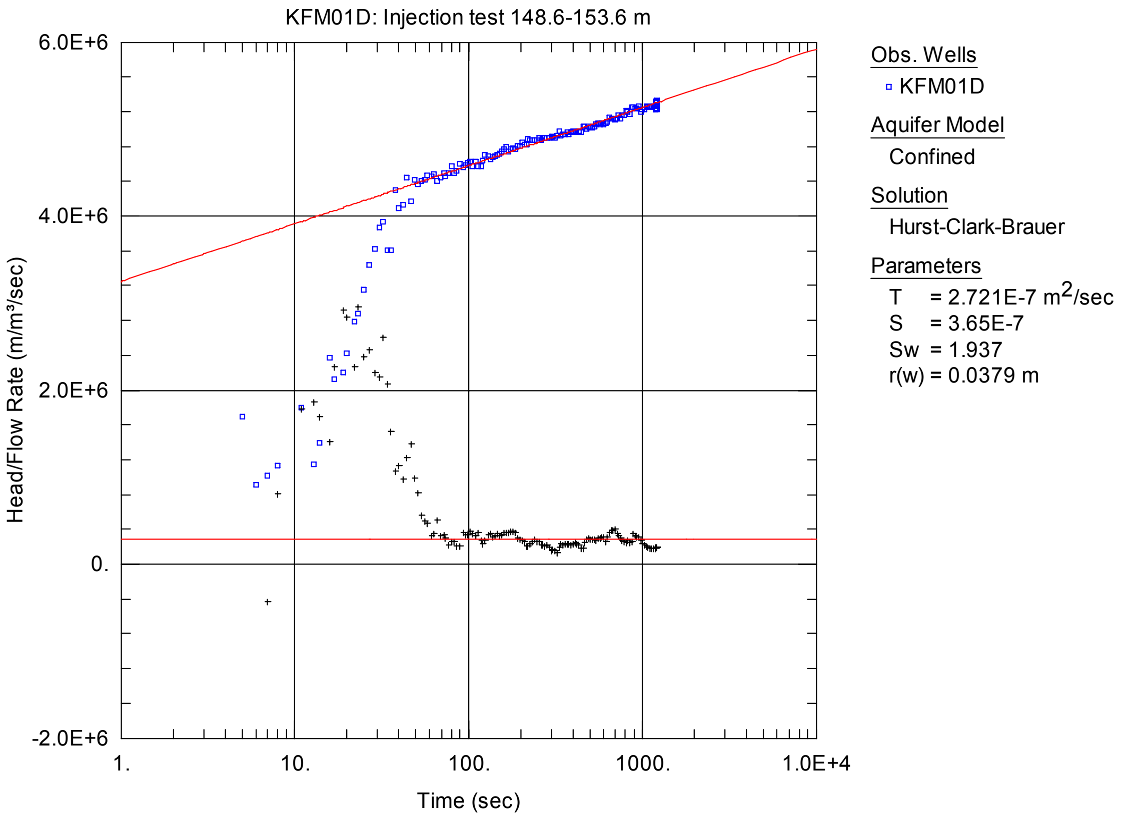


Figure A3-204. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 148.6-153.6 m in KFM01D.*

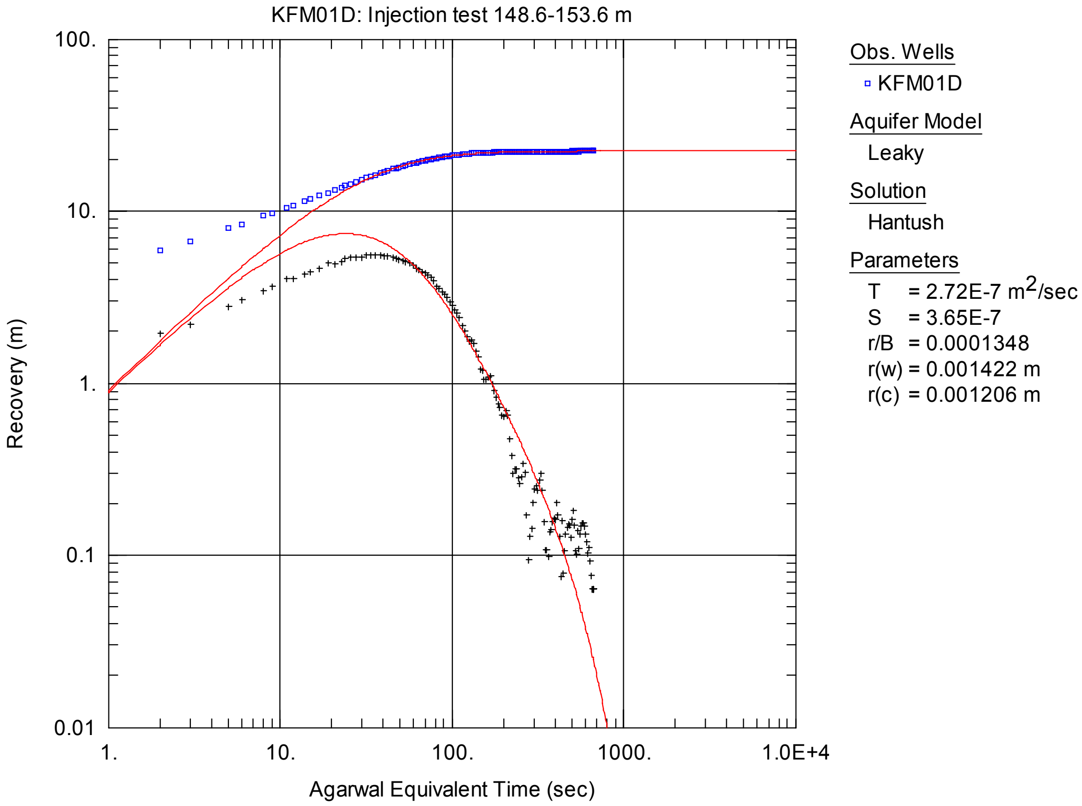


Figure A3-205. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 148.6-153.6 m in KFM01D. The type curve fit is showing a possible, however not unambiguous, evaluation.*

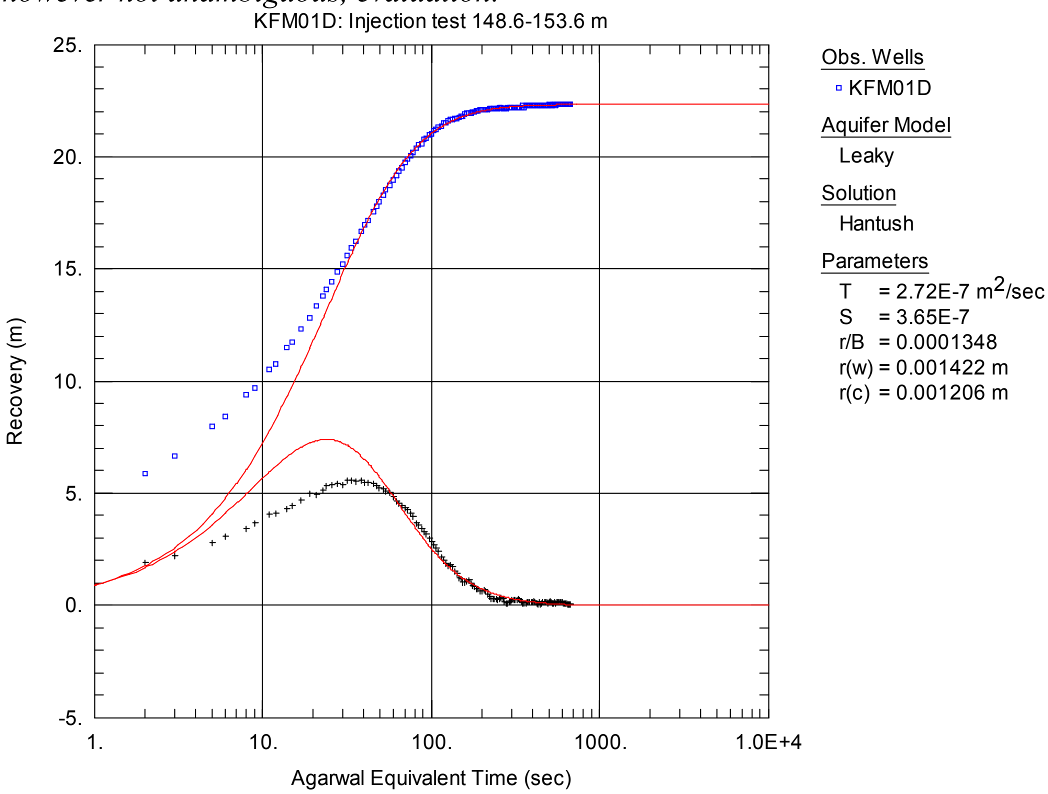


Figure A3-206. *Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 148.6-153.6 m in KFM01D. The type curve fit is showing a possible, however not unambiguous, evaluation.*

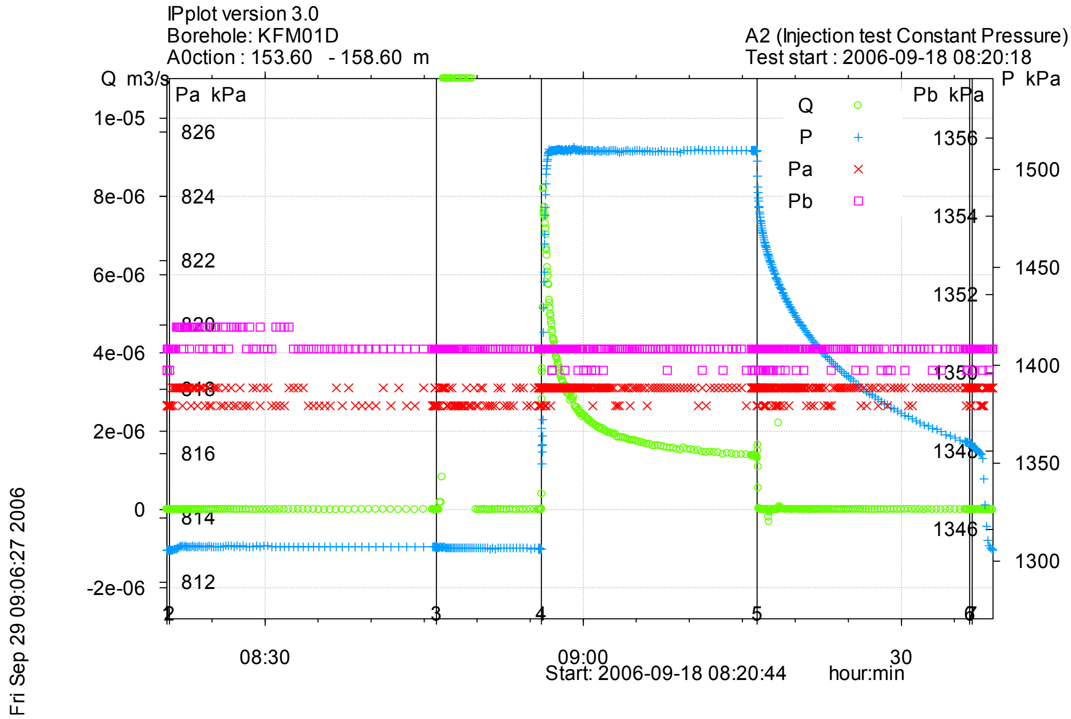


Figure A3-207. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 153.6-158.6 m in borehole KFM01D.*

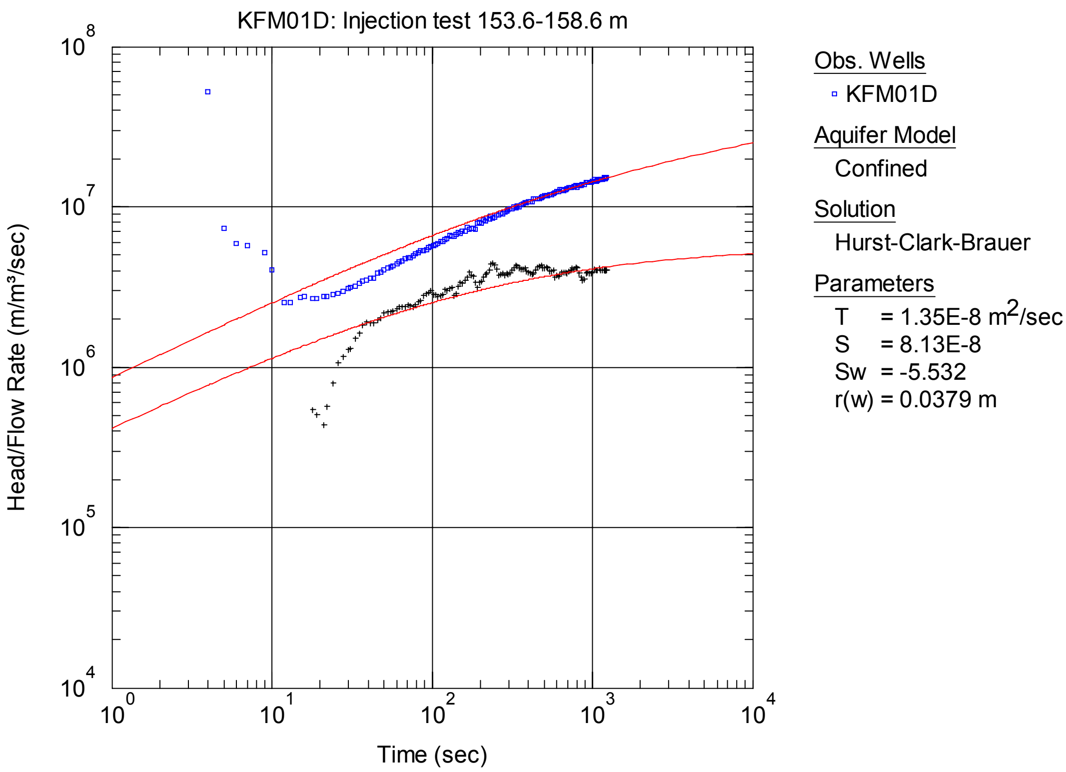


Figure A3-208. *Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 153.6-158.6 m in KFM01D.*

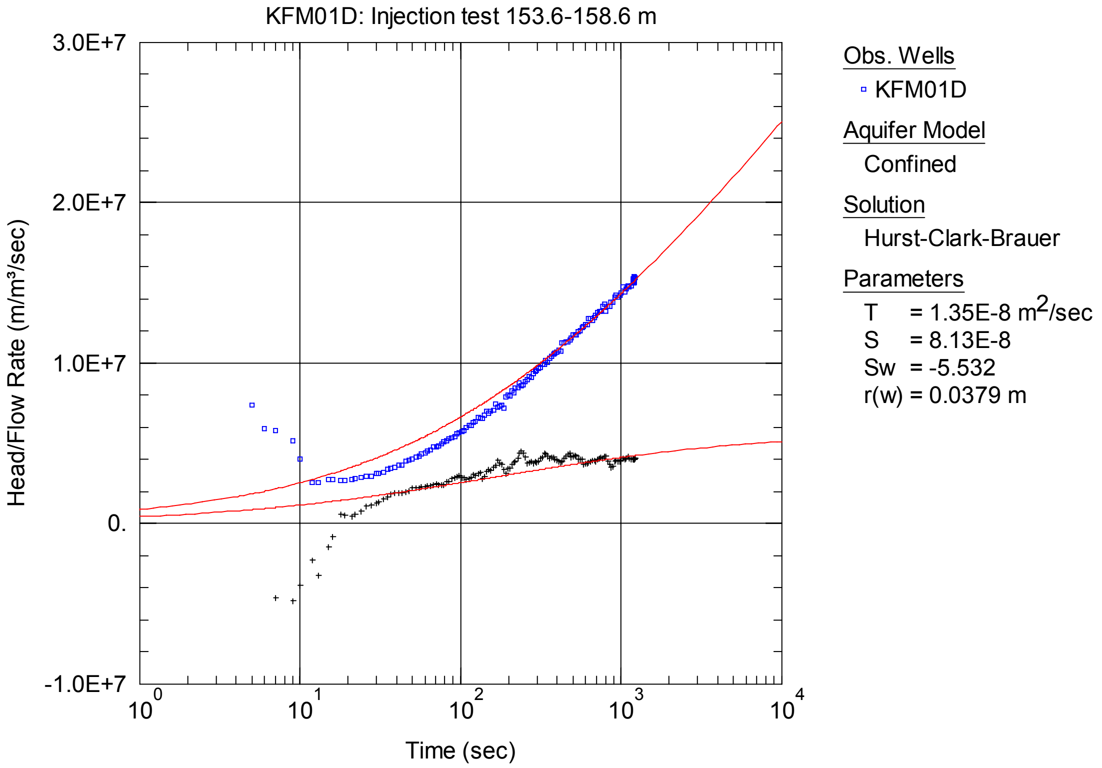


Figure A3-209. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 153.6-158.6 m in KFM01D.*

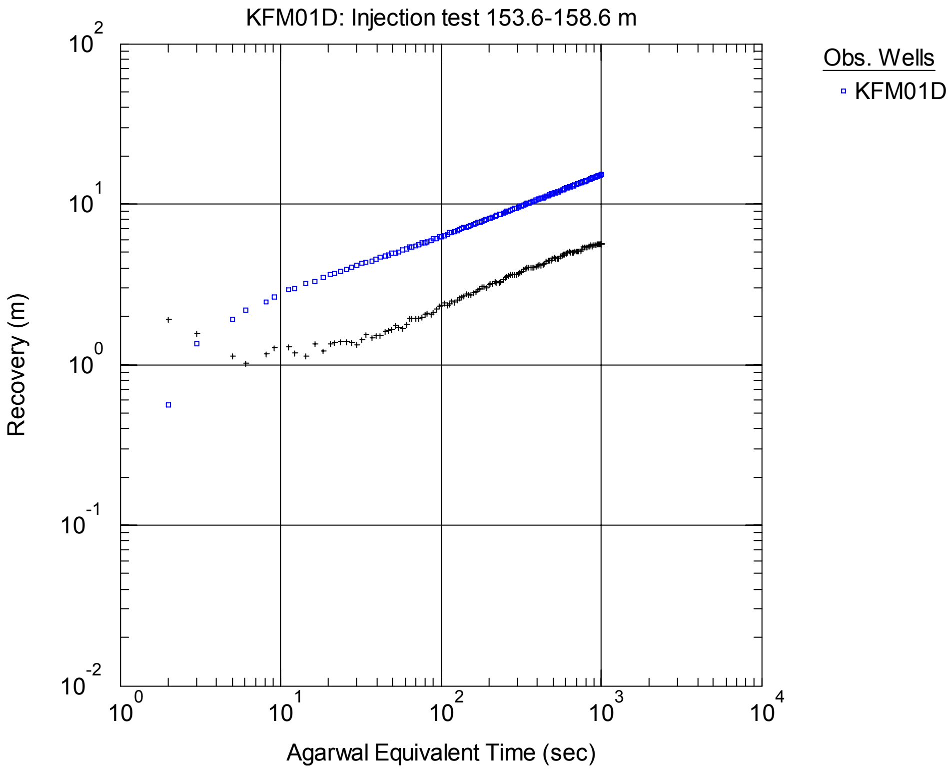


Figure A3-210. *Lin-log plot of recovery (□) and derivative (+) versus time, from the injection test in section 153.6-158.6 m in borehole KFM01D. No type curve fit is shown since no unambiguous transient evaluation is possible.*

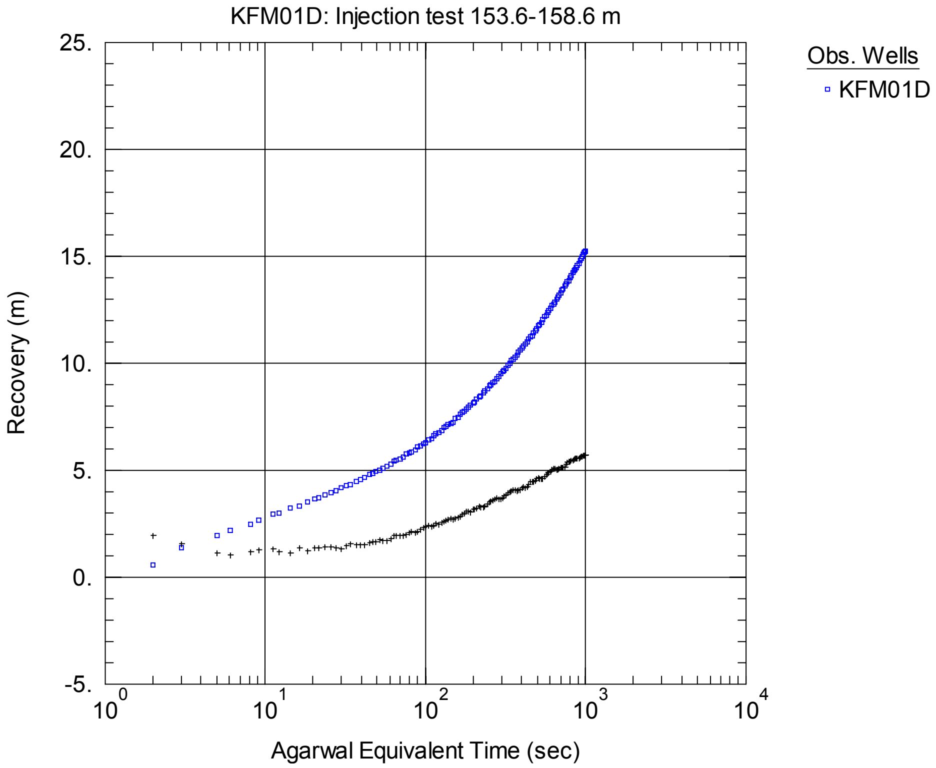


Figure A3-211. *Lin-log plot of recovery (□) and derivative (+) versus time, from the injection test in section 153.6-158.6 m in borehole KFM01D. No type curve fit is shown since no unambiguous transient evaluation is possible.*

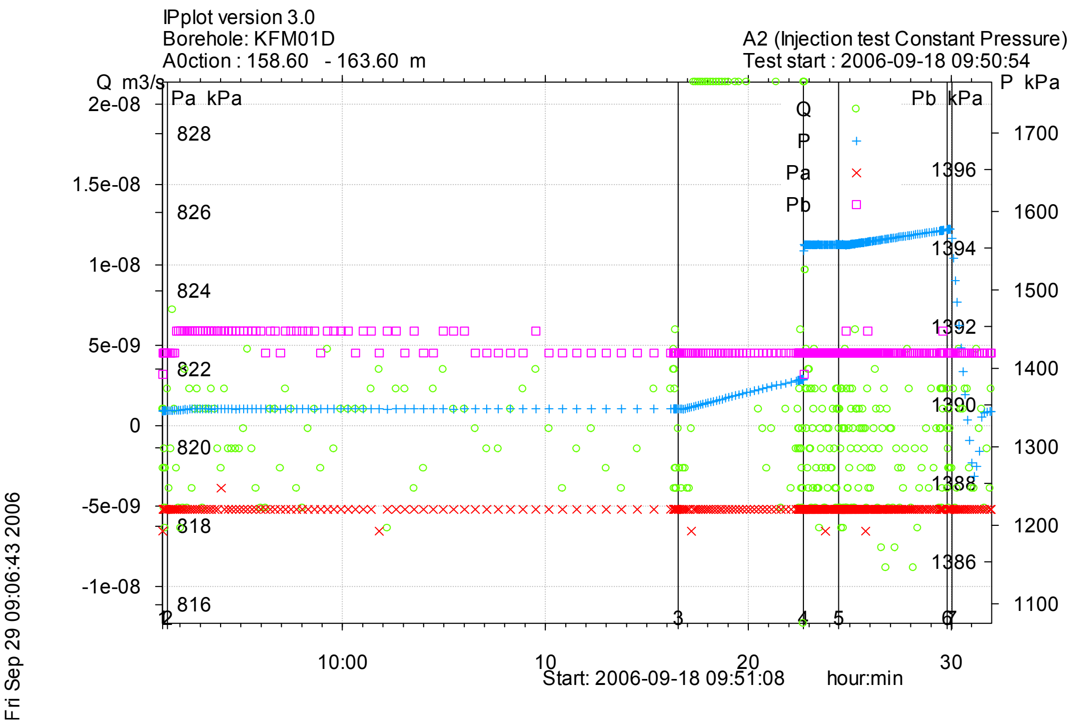


Figure A3-212. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 158.6-163.6 m in borehole KFM01D.*

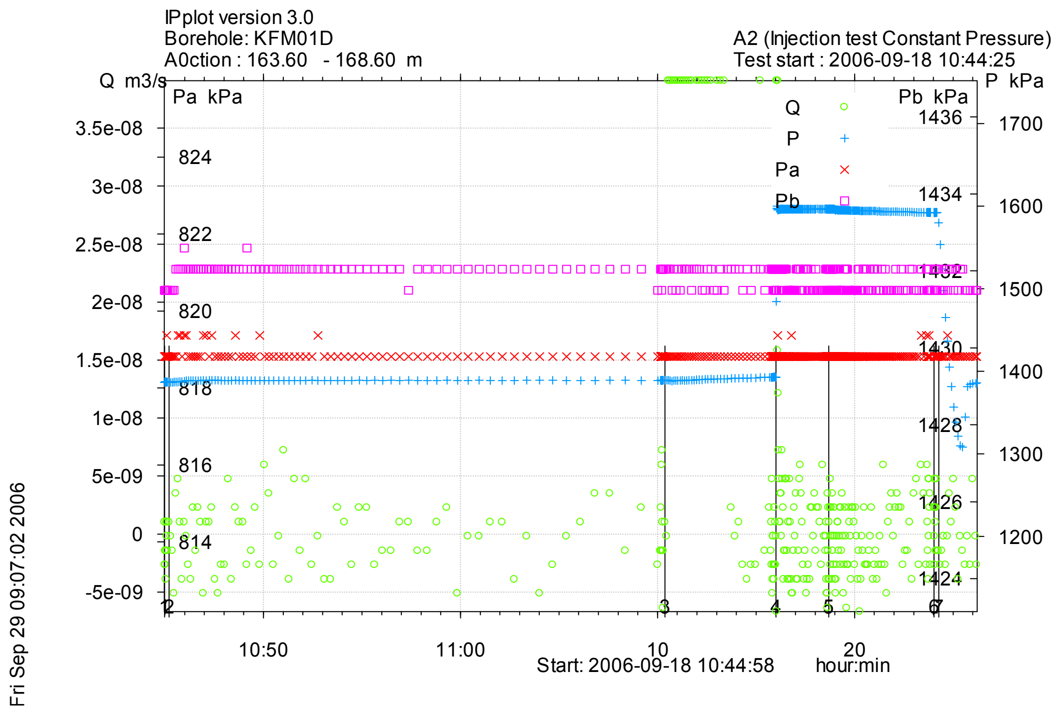


Figure A3-213. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 163.6-168.6 m in borehole KFM01D.*

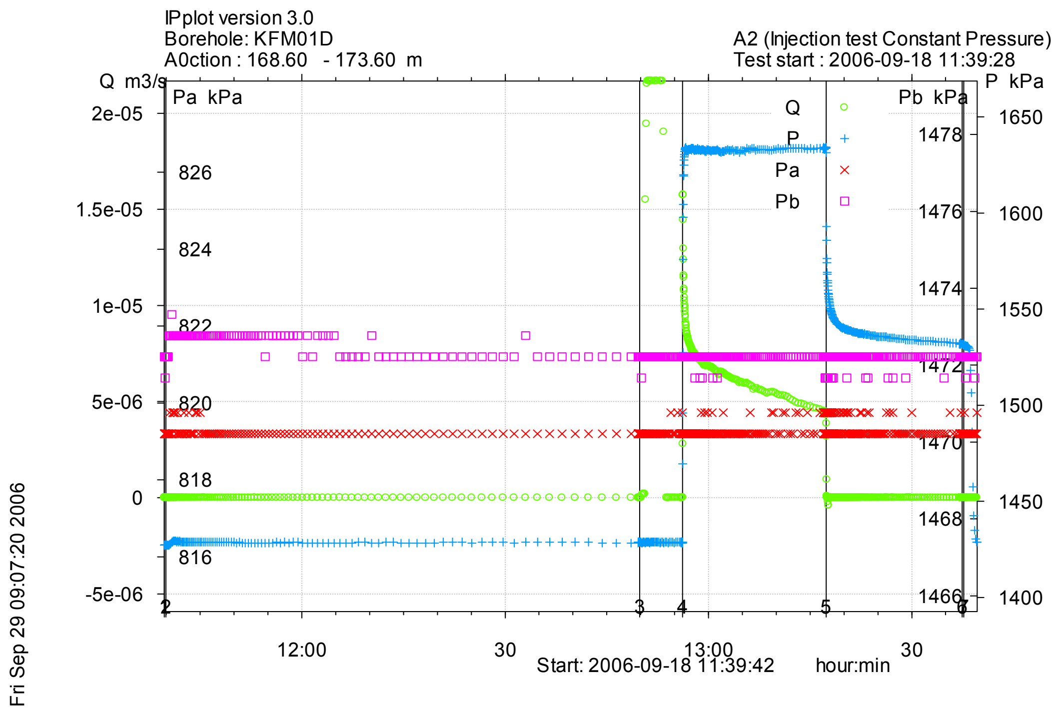


Figure A3-214. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 168.6-173.6 m in borehole KFM01D.*

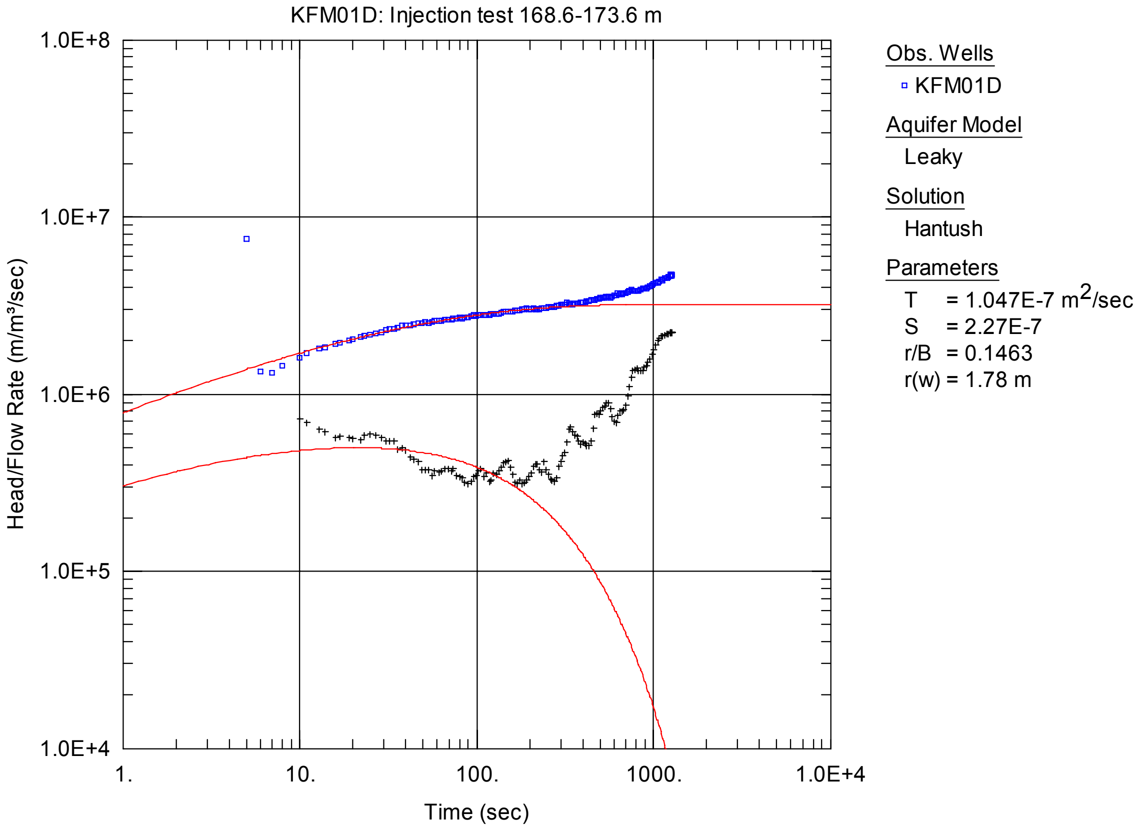


Figure A3-215. *Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 168.6-173.6 m in KFM01D.*

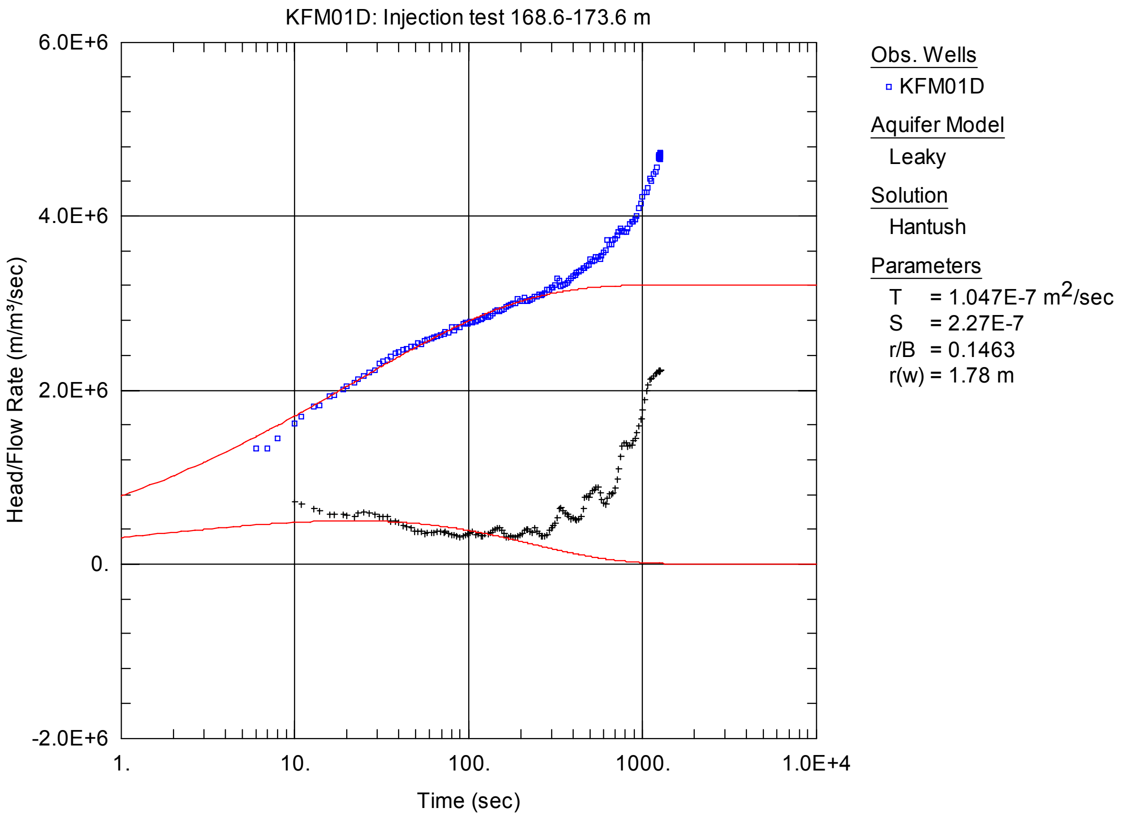


Figure A3-216. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 168.6-173.6 m in KFM01D.*

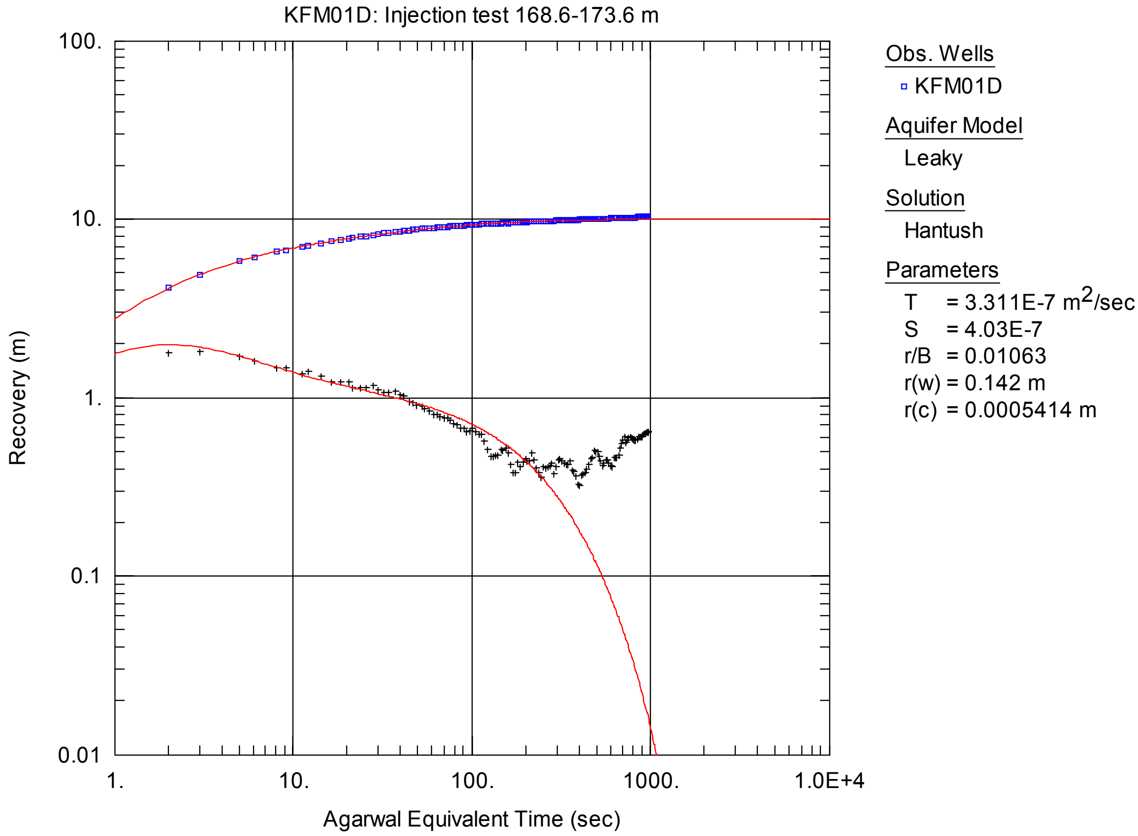


Figure A3-217. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 168.6-173.6 m in KFM01D.*

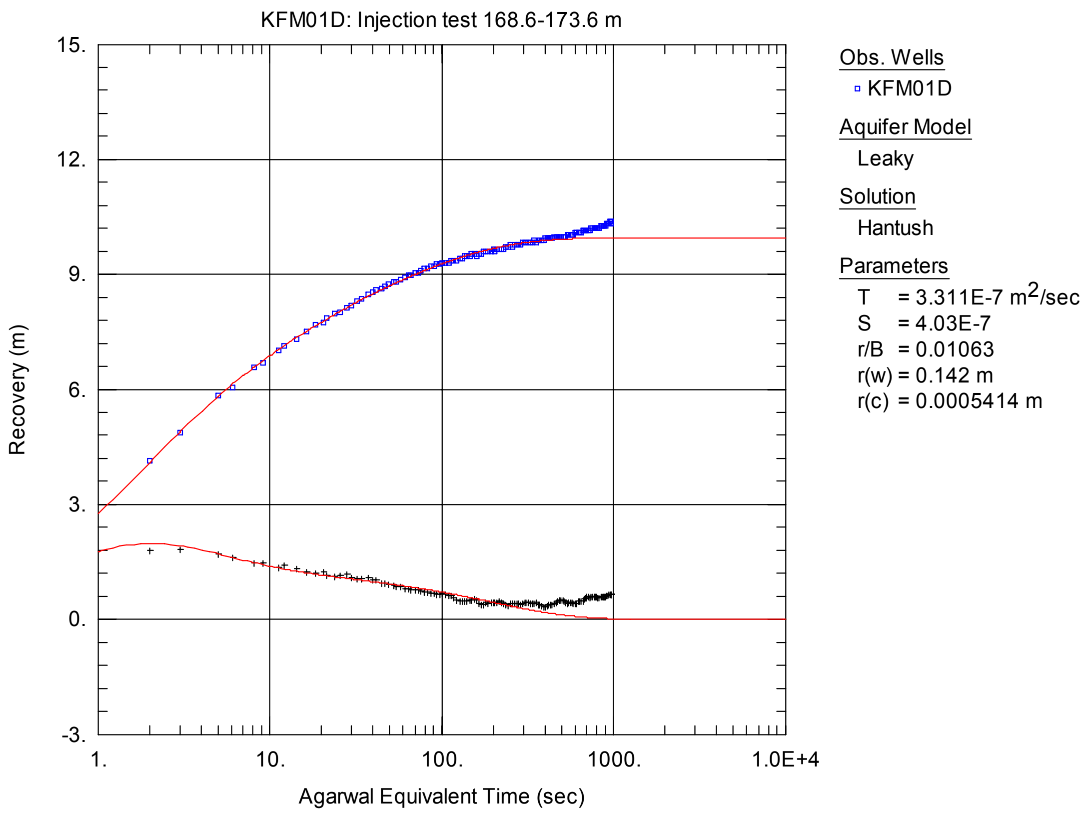


Figure A3-218. *Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 168.6-173.6 m in KFM01D.*

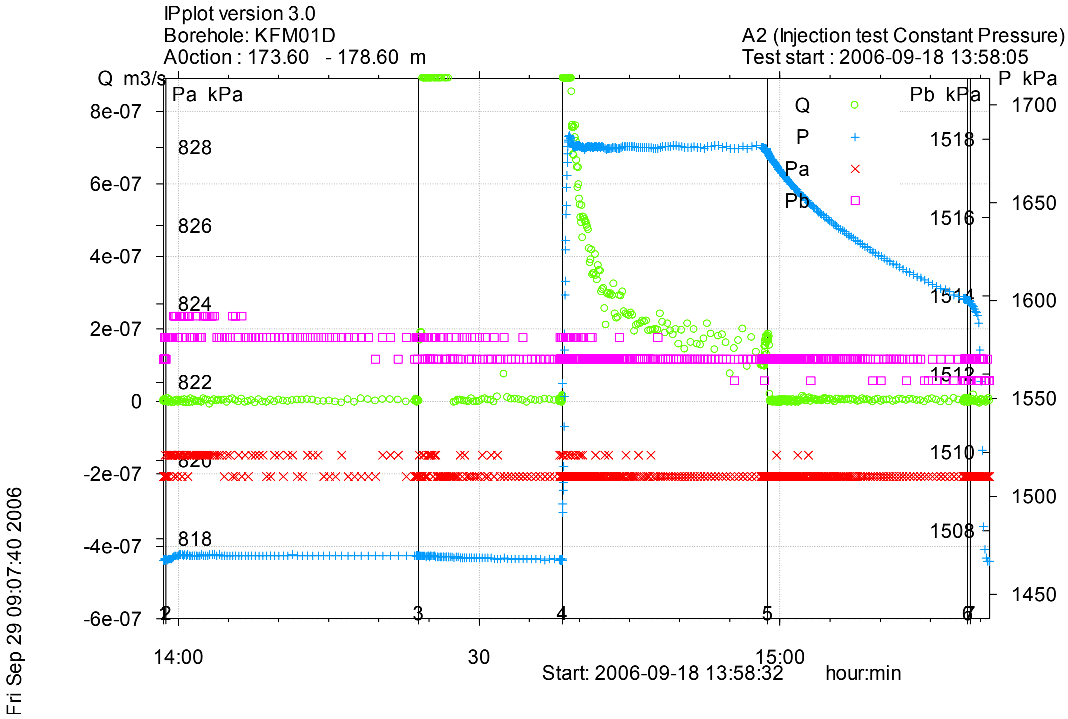


Figure A3-219. Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 173.6-178.6 m in borehole KFM01D.

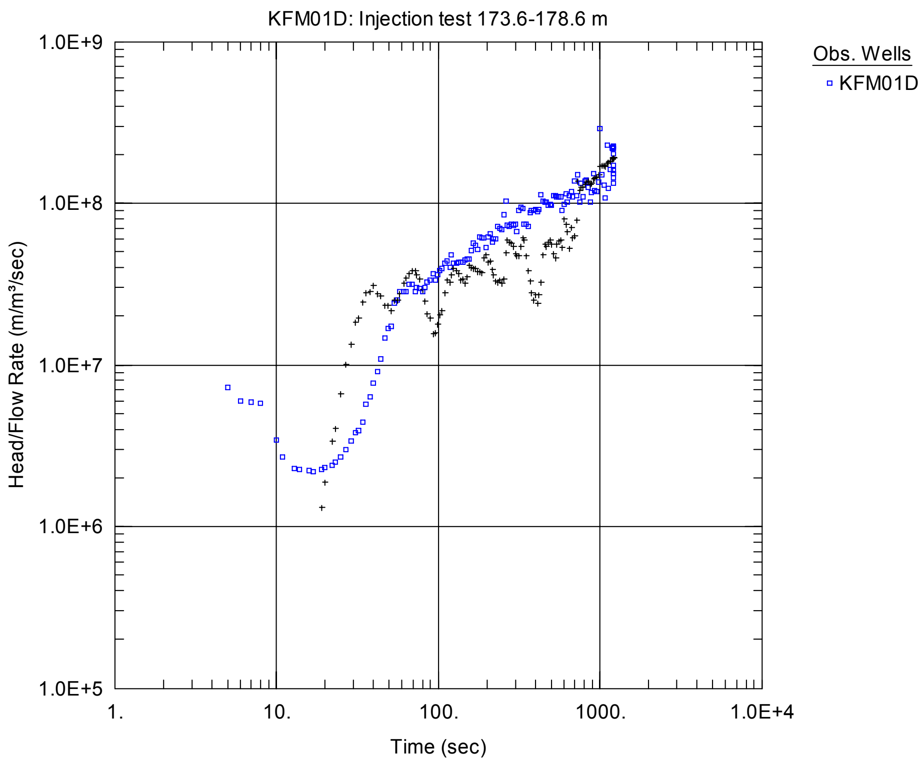


Figure A3-220. Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 173.6-178.6 m in KFM01D. No type curve fit is shown since no unambiguous transient evaluation is possible.

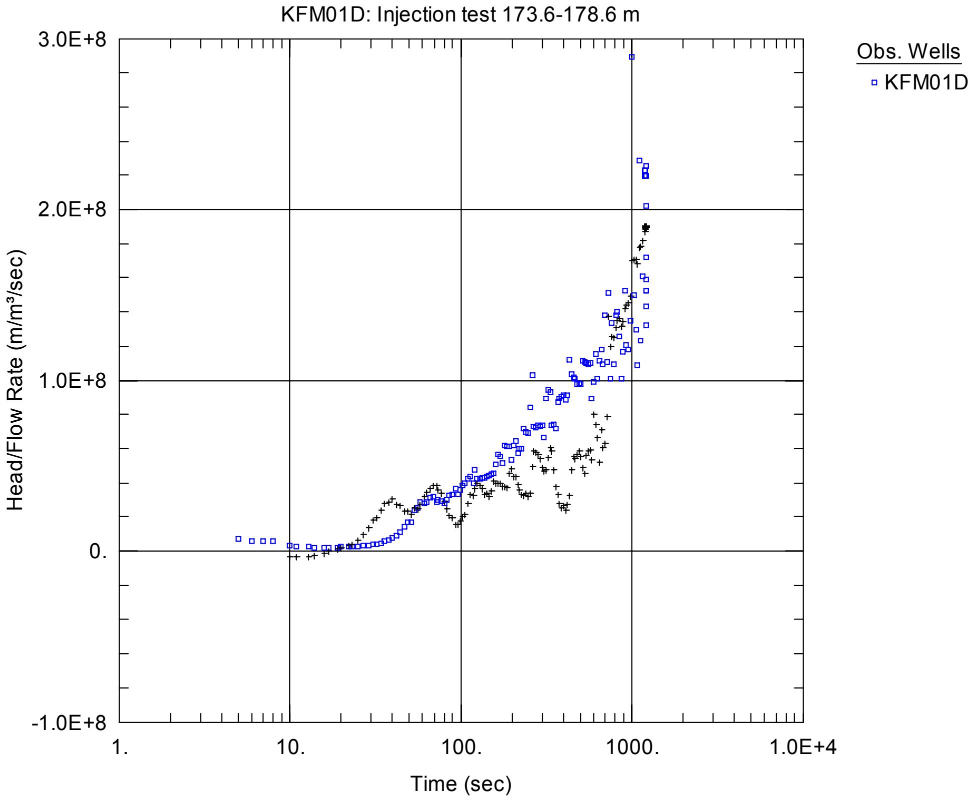


***Figure A3-221.** Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 173.6-178.6 m in KFM01D. No type curve fit is shown since no unambiguous transient evaluation is possible.*

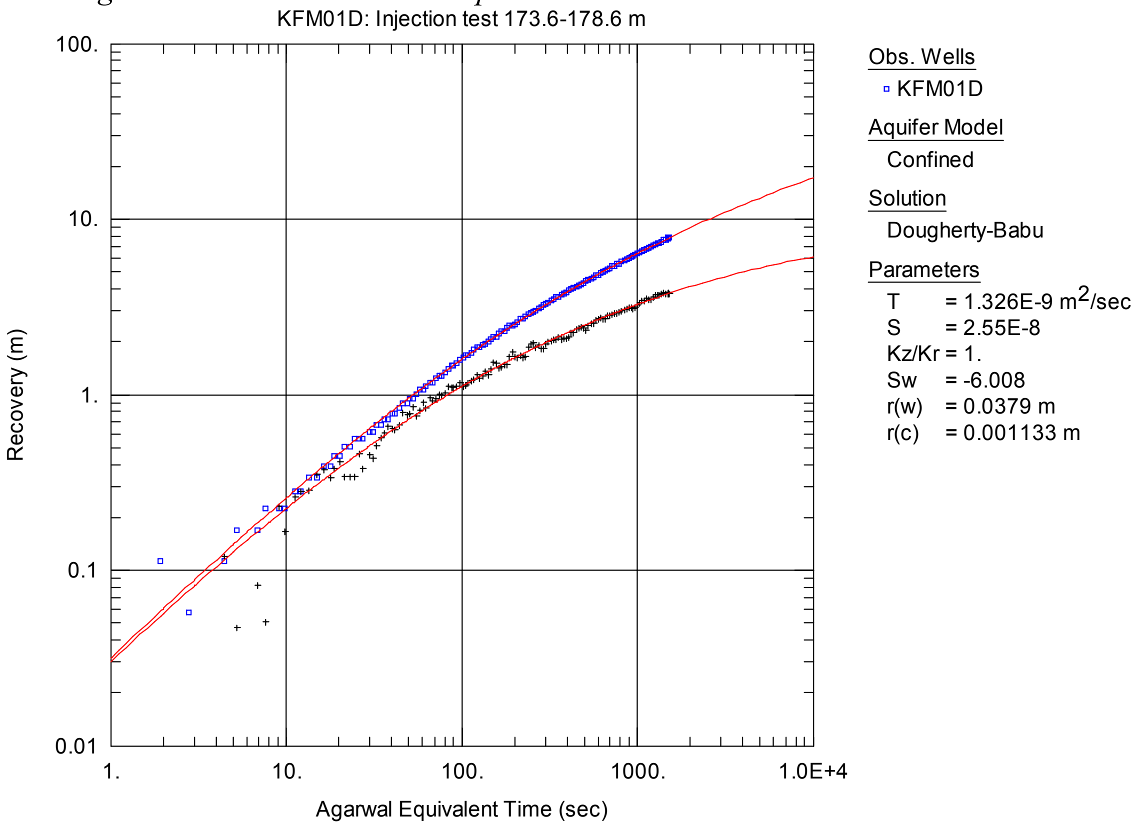


***Figure A3-222.** Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 173.6-178.6 m in KFM01D.*

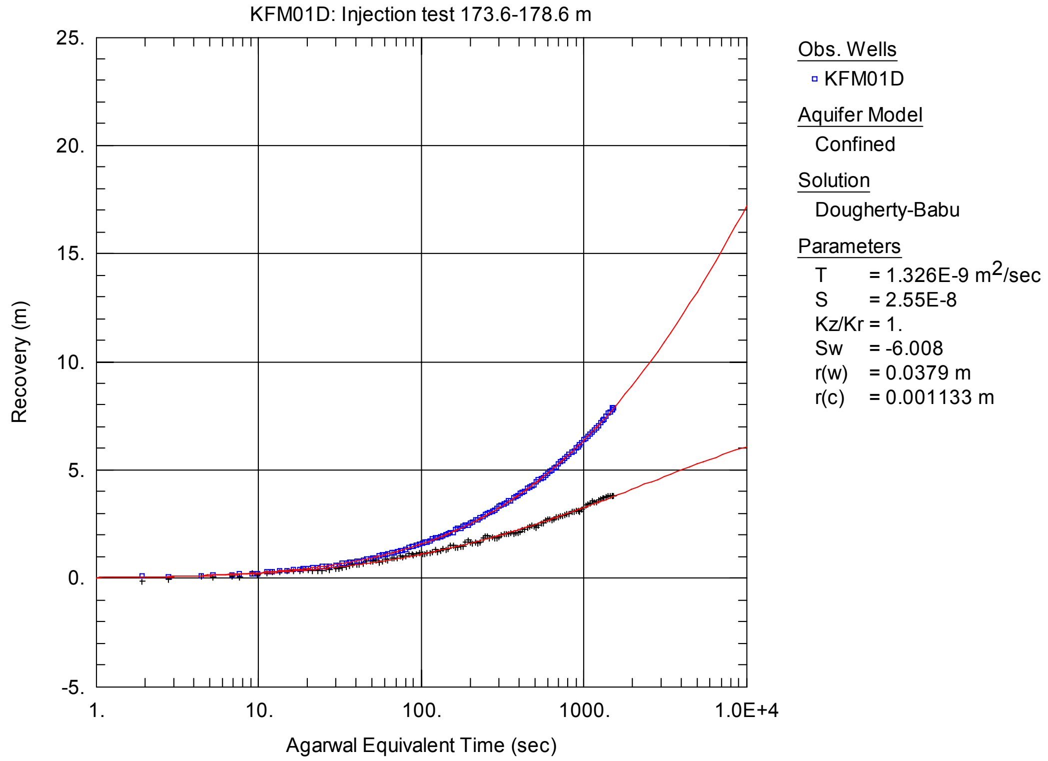


Figure A3-223. *Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 173.6-178.6 m in KFM01D.*

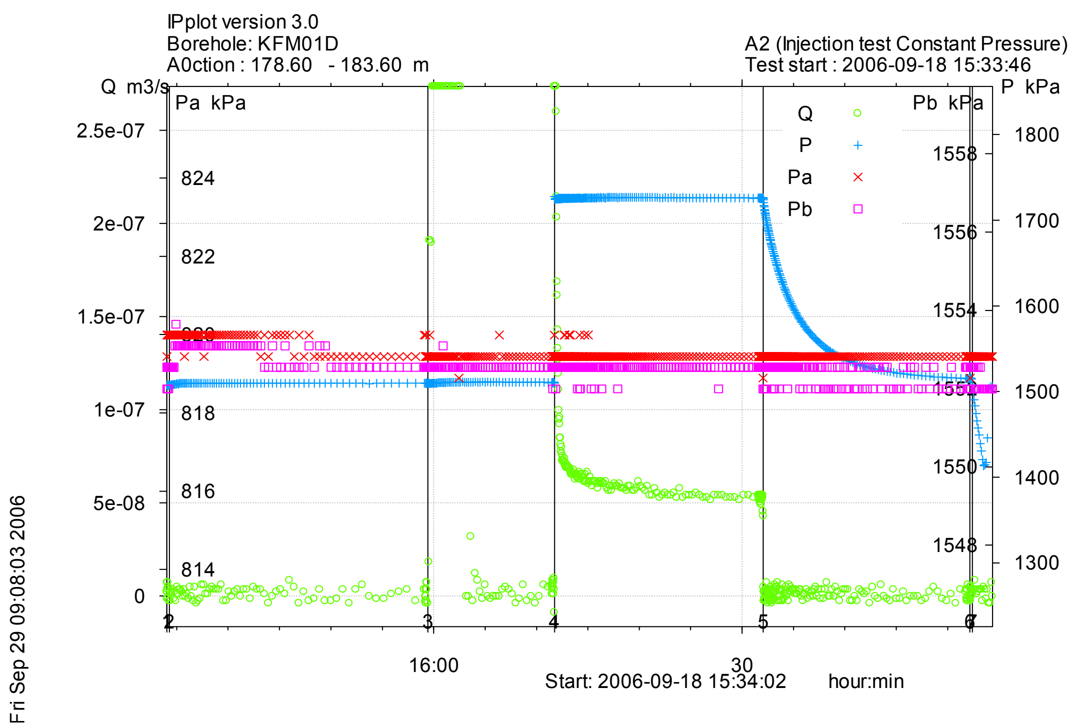


Figure A3-224. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 178.6-183.6 m in borehole KFM01D.*

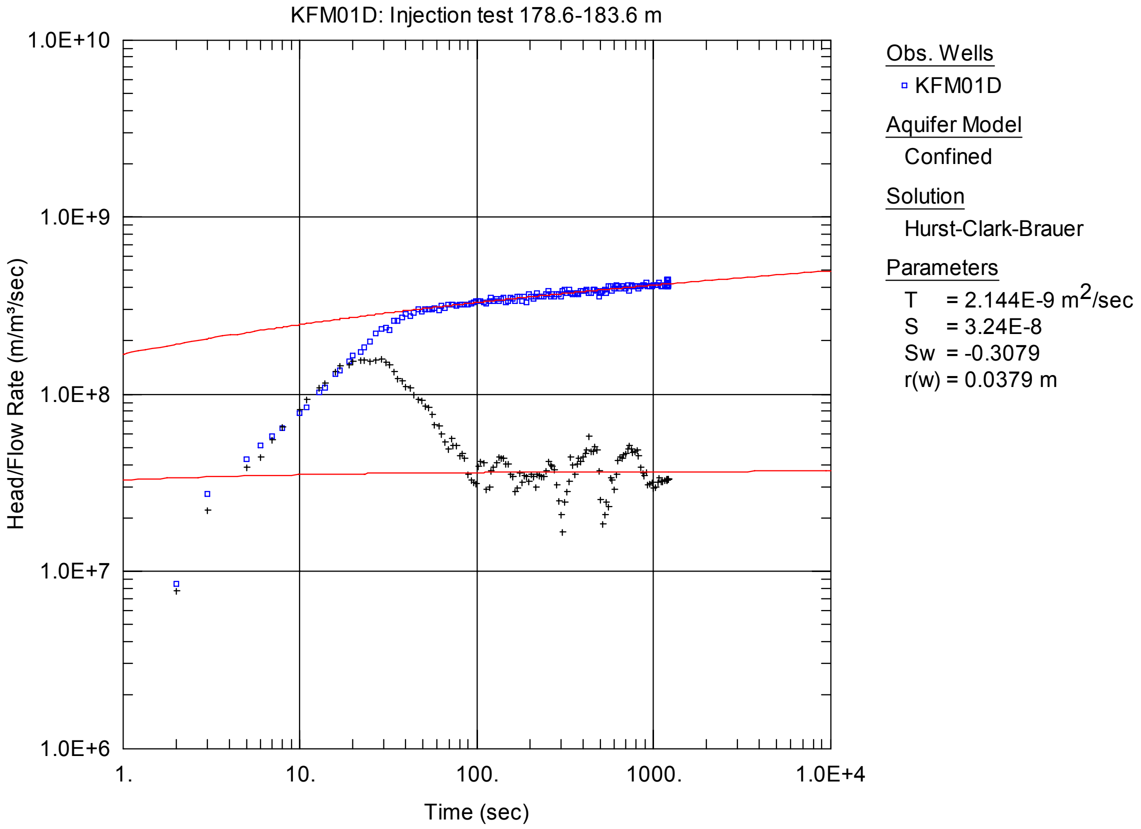


Figure A3-225. *Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 178.6-183.6 m in KFM01D.*

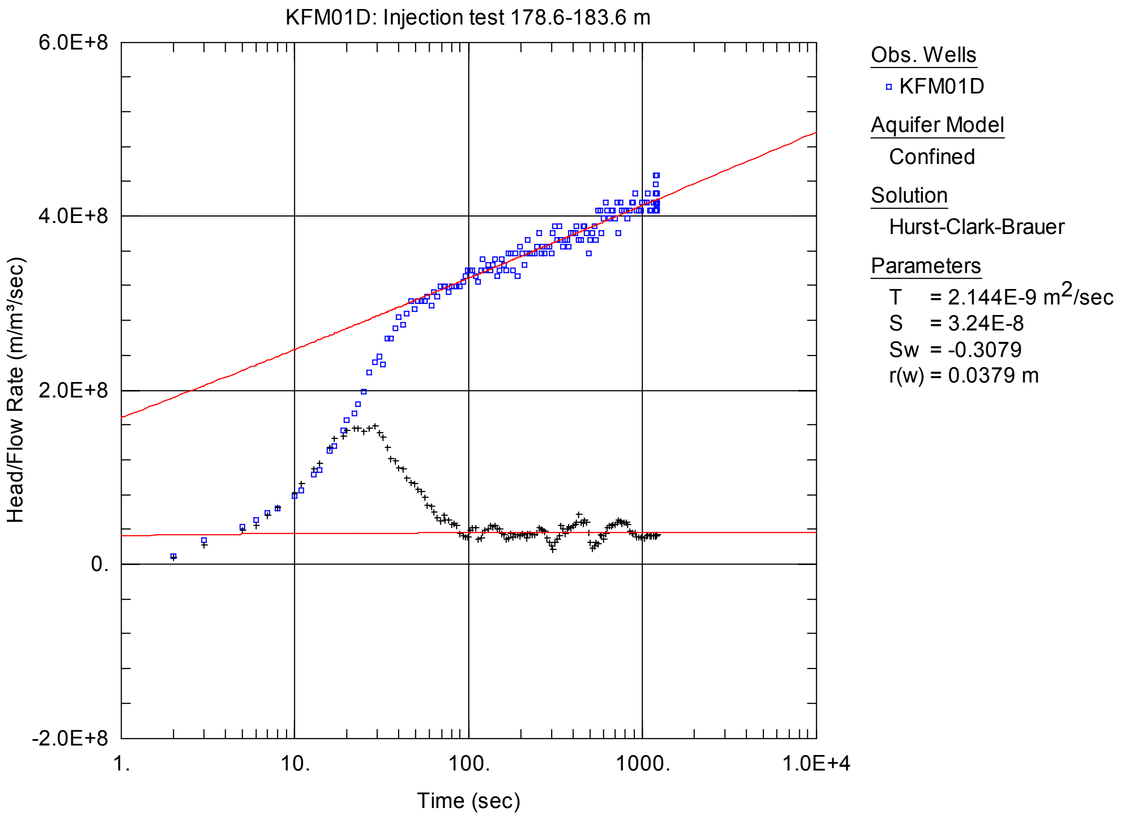


Figure A3-226. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 178.6-183.6 m in KFM01D.*

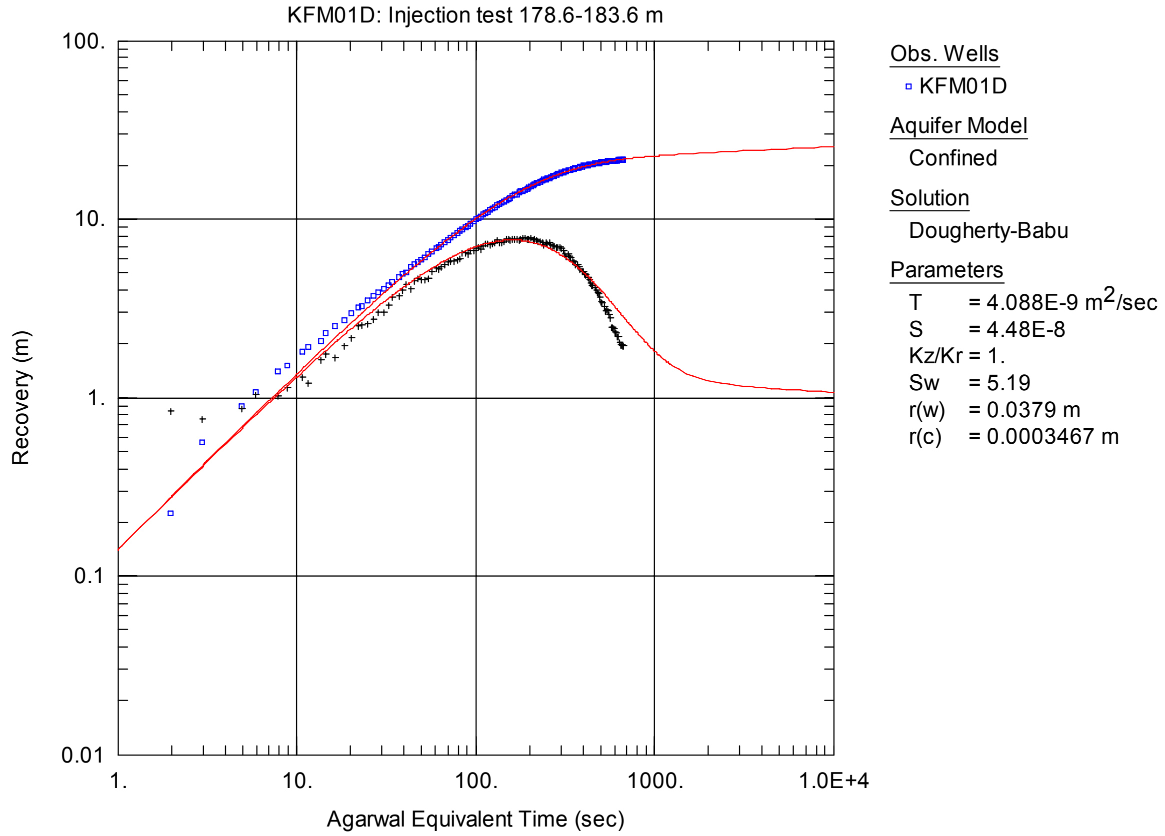


Figure A3-227. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 178.6-183.6 m in KFM01D.*

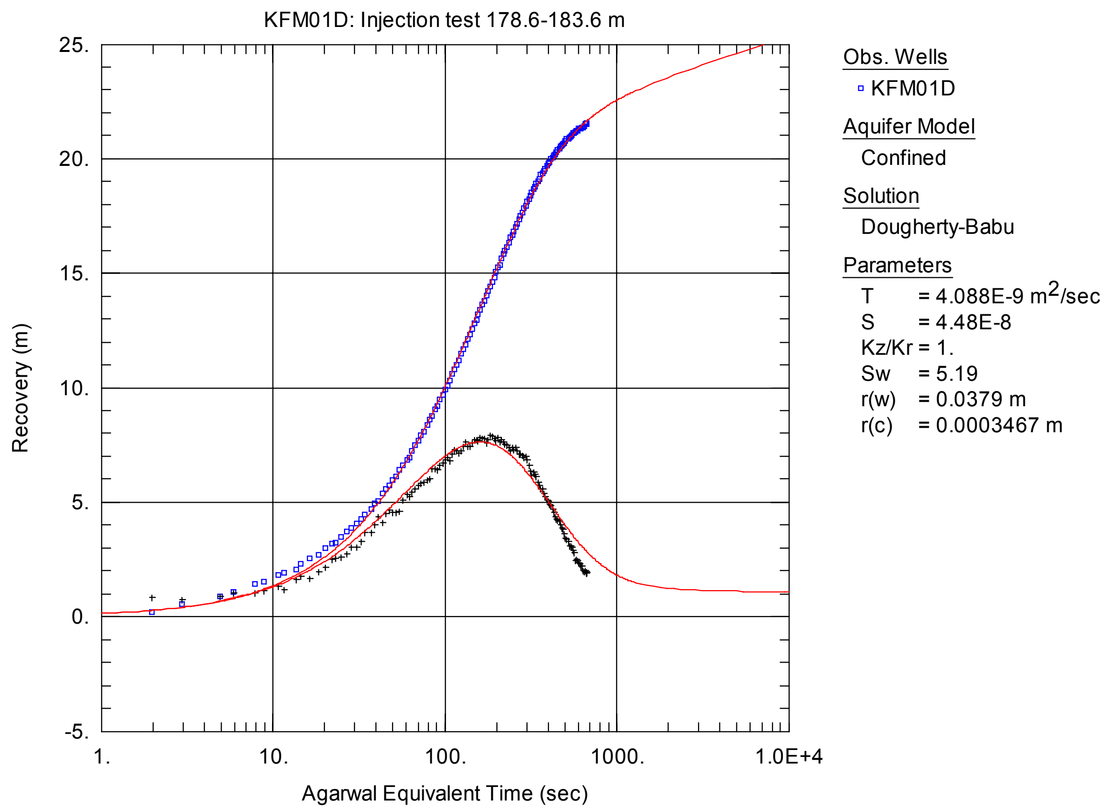


Figure A3-228. *Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 178.6-183.6 m in KFM01D.*

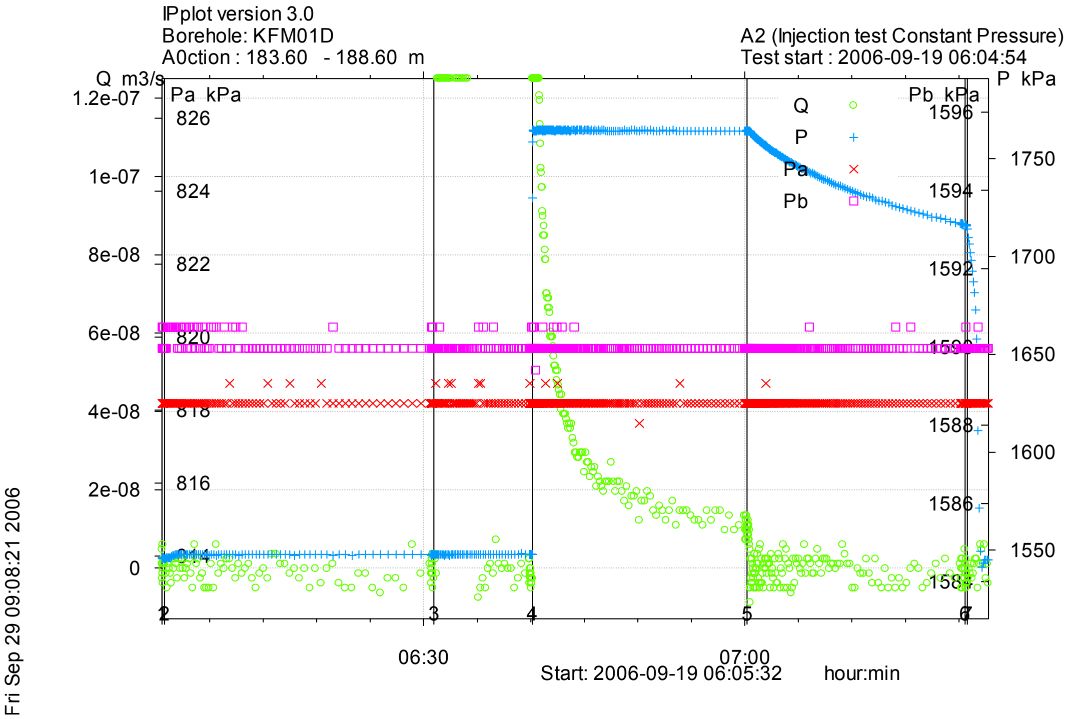


Figure A3-229. Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 183.6-188.6 m in borehole KFM01D.

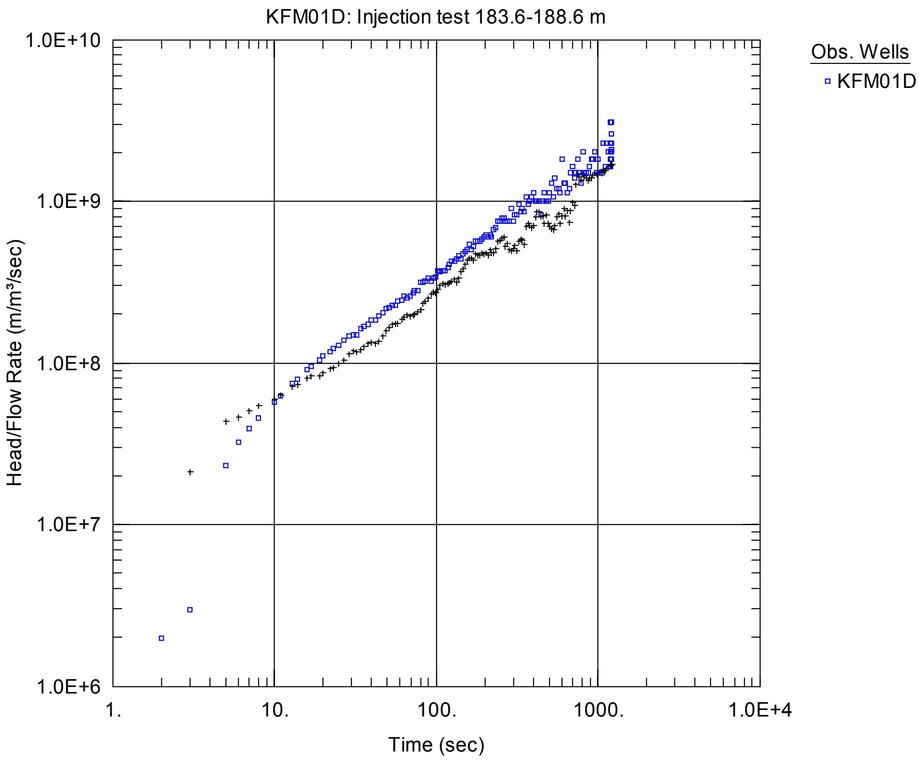


Figure A3-230. Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 183.6-188.6 m in KFM01D No type curve fit is shown since no unambiguous transient evaluation is possible..

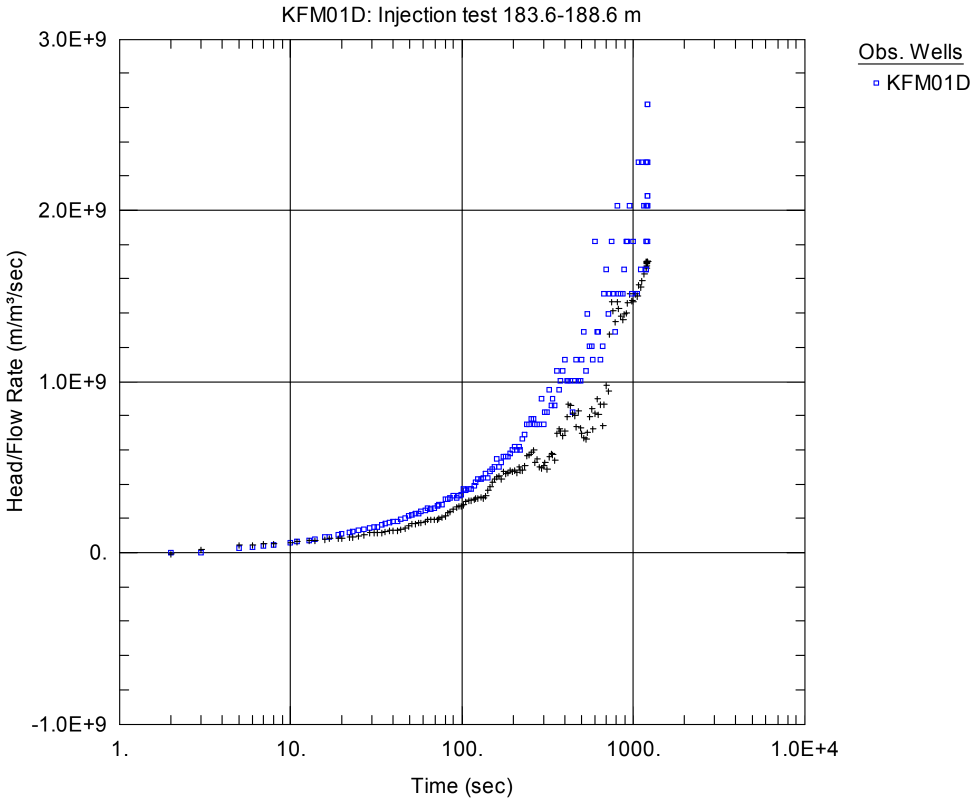


Figure A3-231. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 183.6-188.6 m in KFM01D. No type curve fit is shown since no unambiguous transient evaluation is possible.*

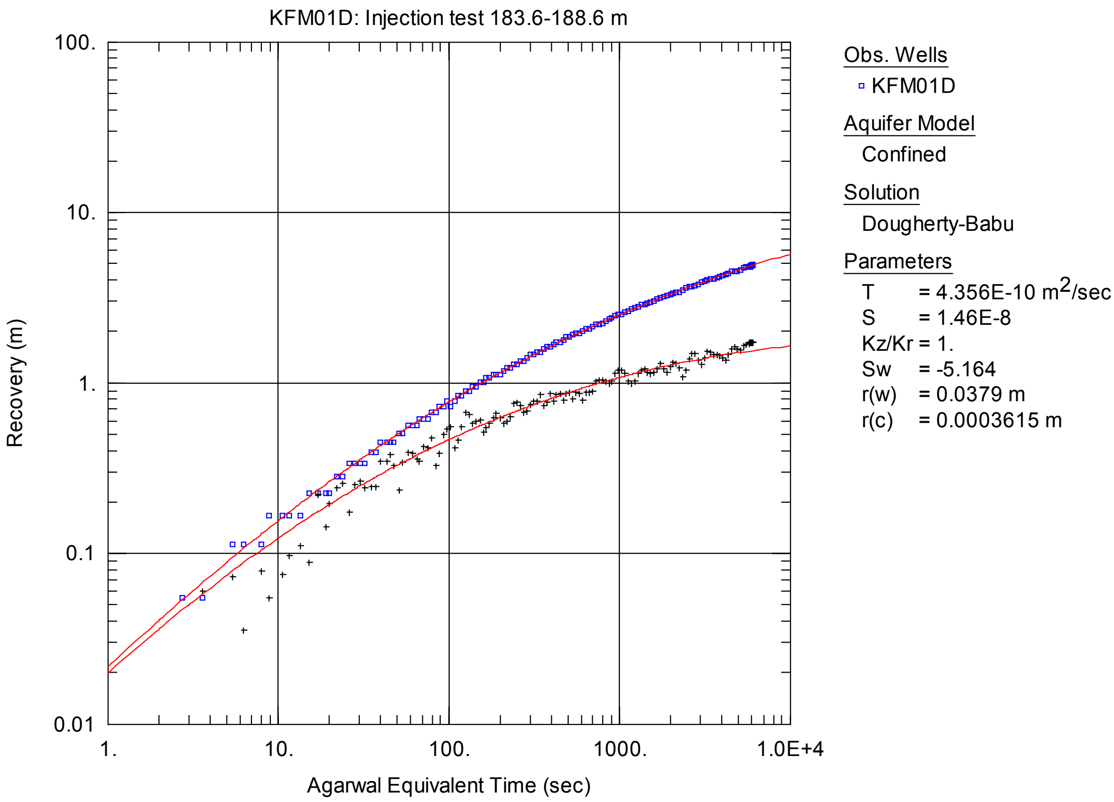


Figure A3-232. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 183.6-188.6 m in KFM01D.*

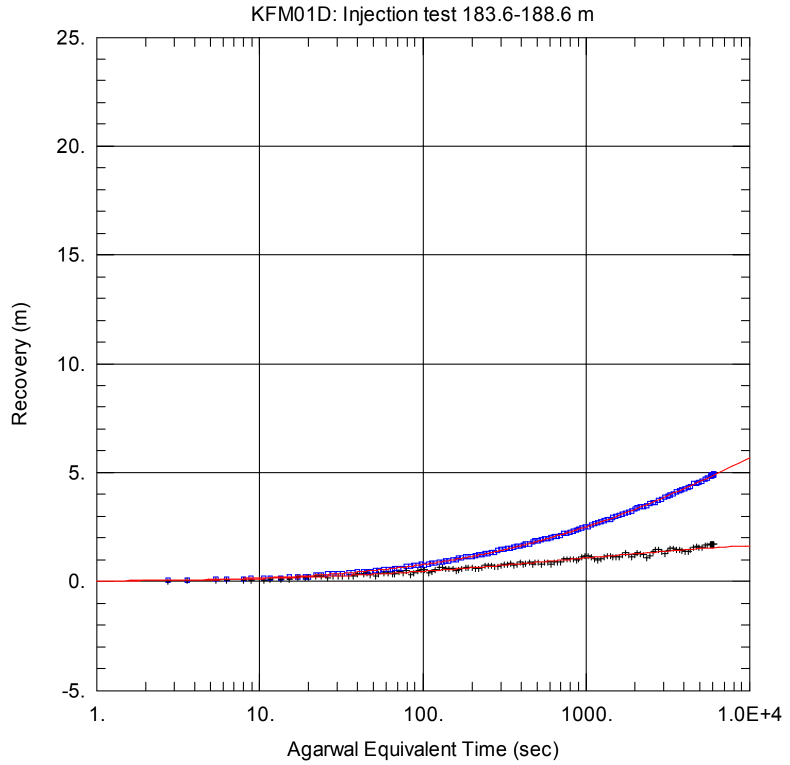


Figure A3-233. *Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 183.6-188.6 m in KFM01D.*

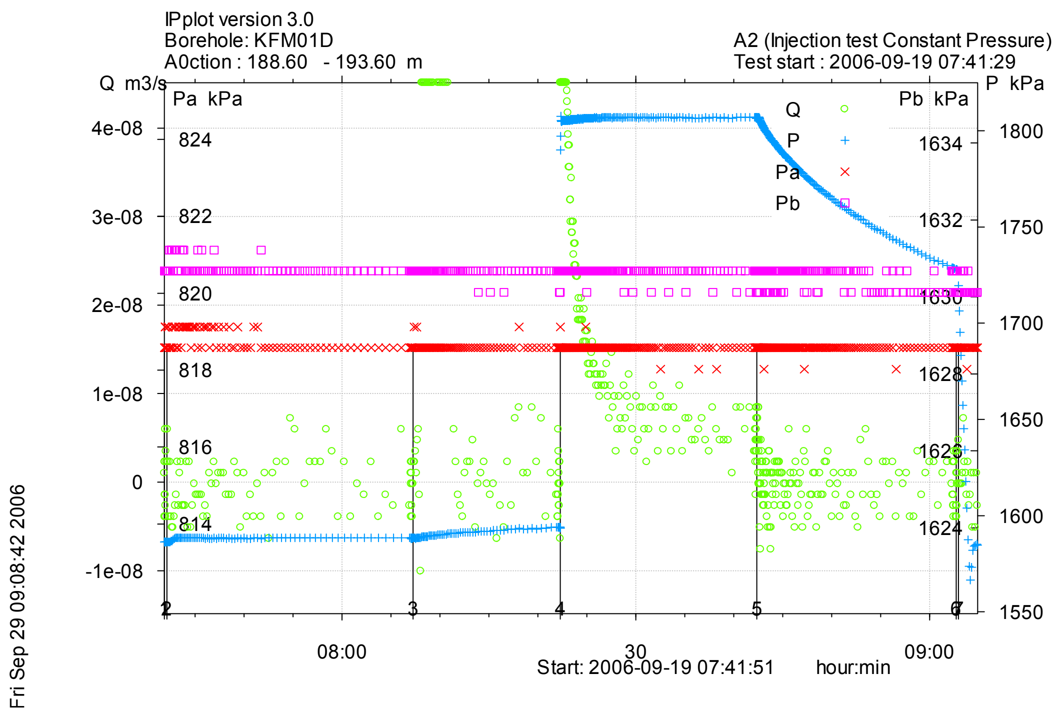


Figure A3-234. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 188.6-193.6 m in borehole KFM01D.*

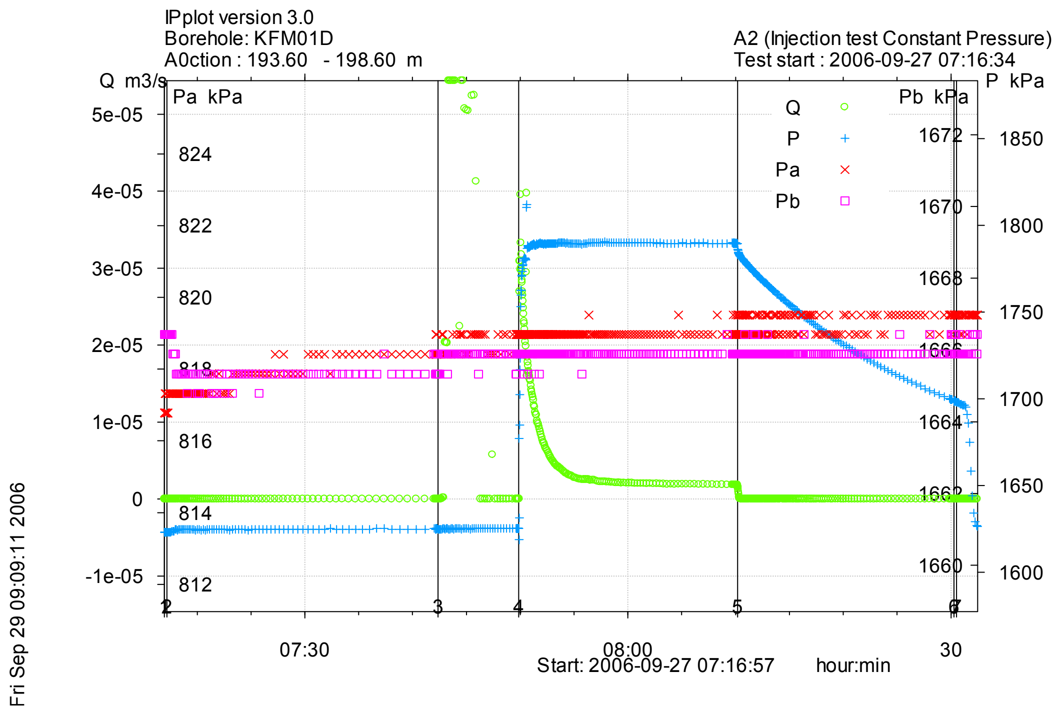


Figure A3-235. Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 193.6-198.6 m in borehole KFM01D.

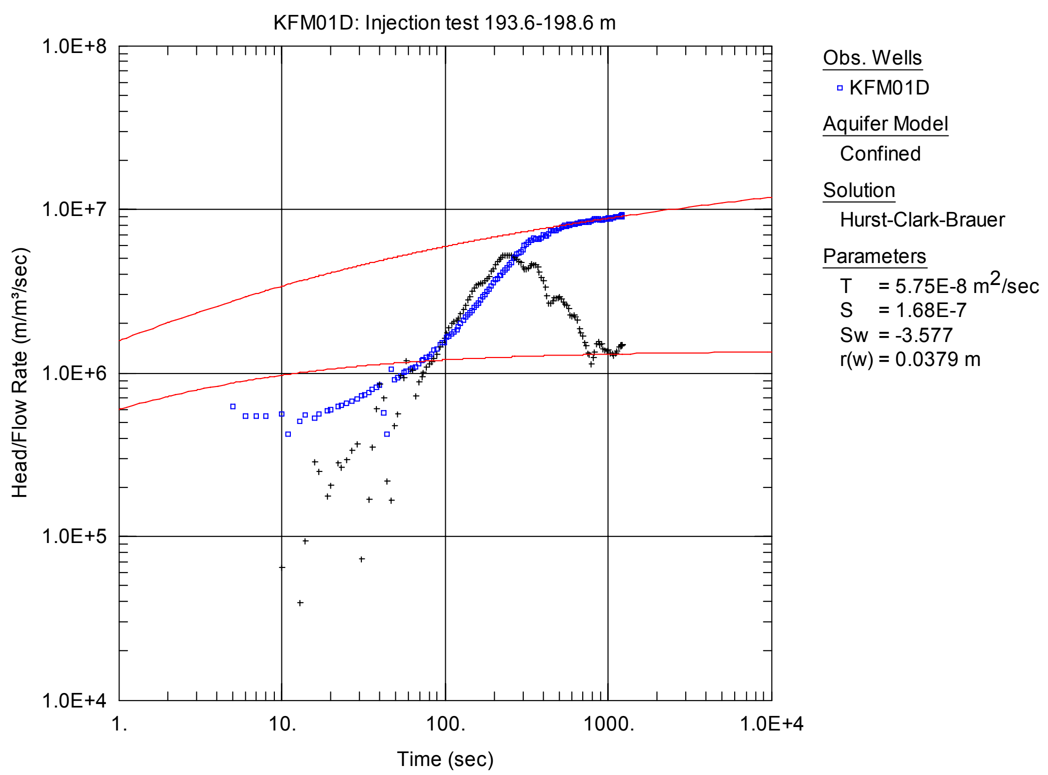


Figure A3-236. Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 193.6-198.6 m in KFM01D. The type curve fit is only to show that an assumption of PRF is not valid.

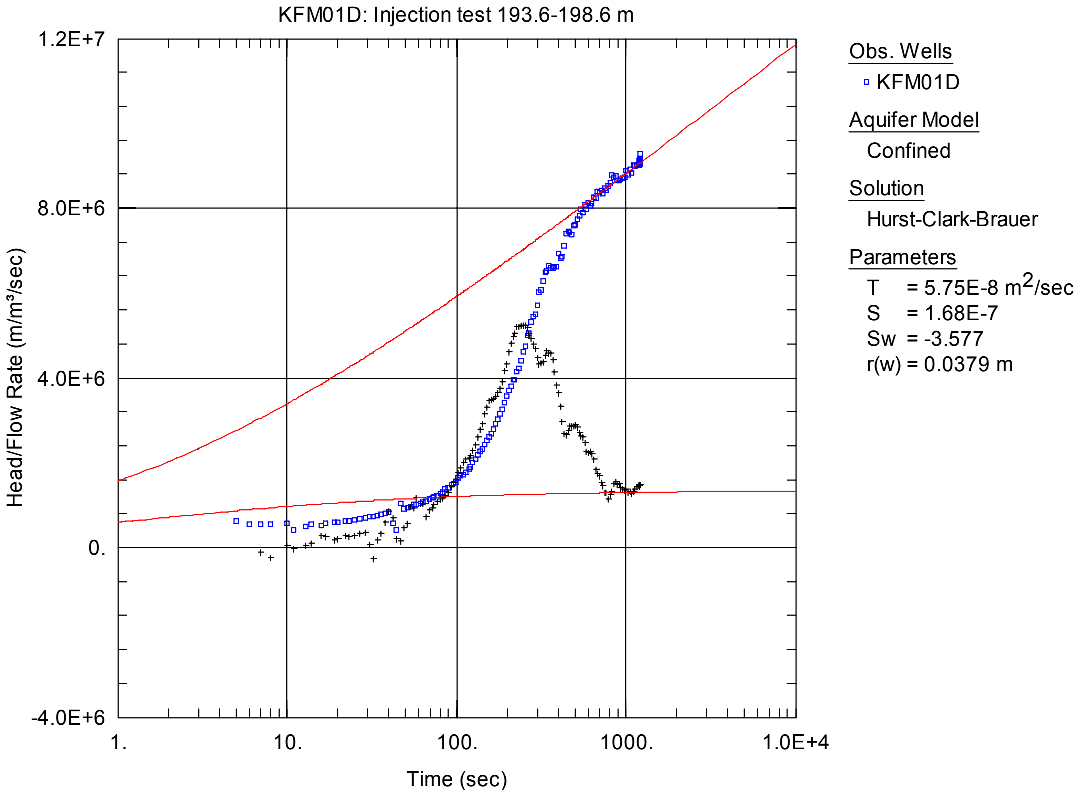


Figure A3-237. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 193.6-198.6 m in KFM01D. The type curve fit is only to show that an assumption of PRF is not valid.*

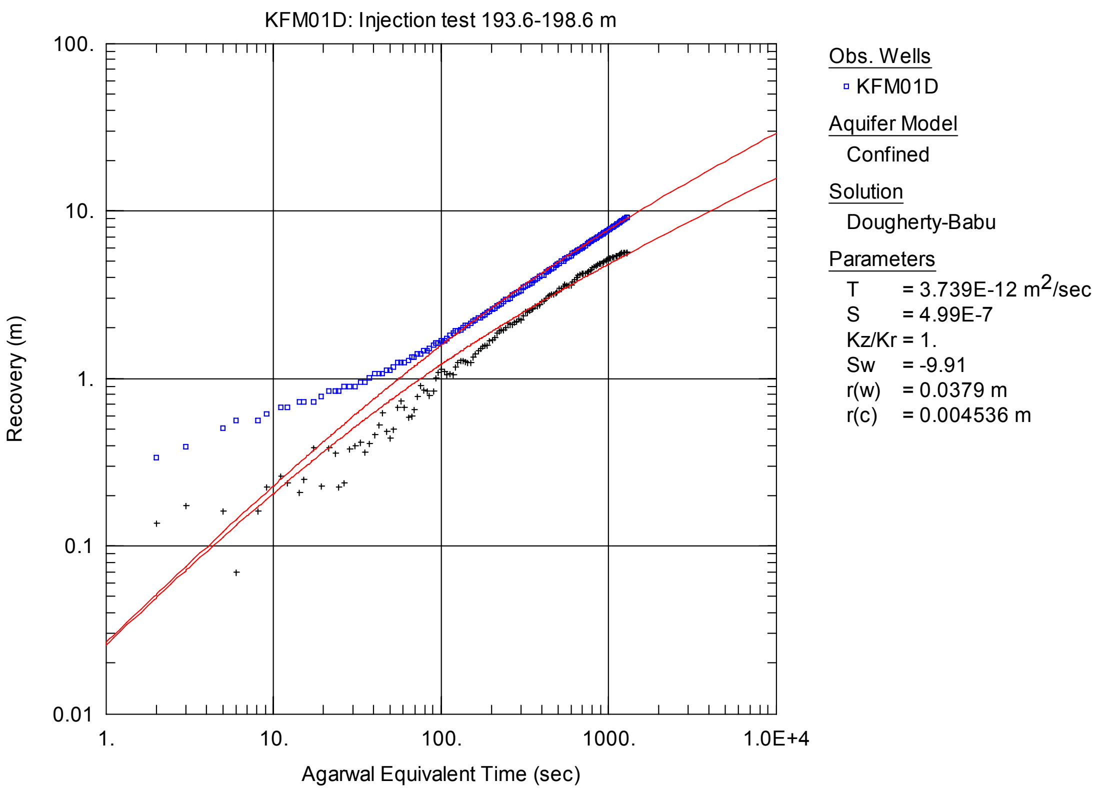


Figure A3-238. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 193.6-198.6 m in KFM01D. The type curve fit is only to show that an assumption of PRF is not valid.*

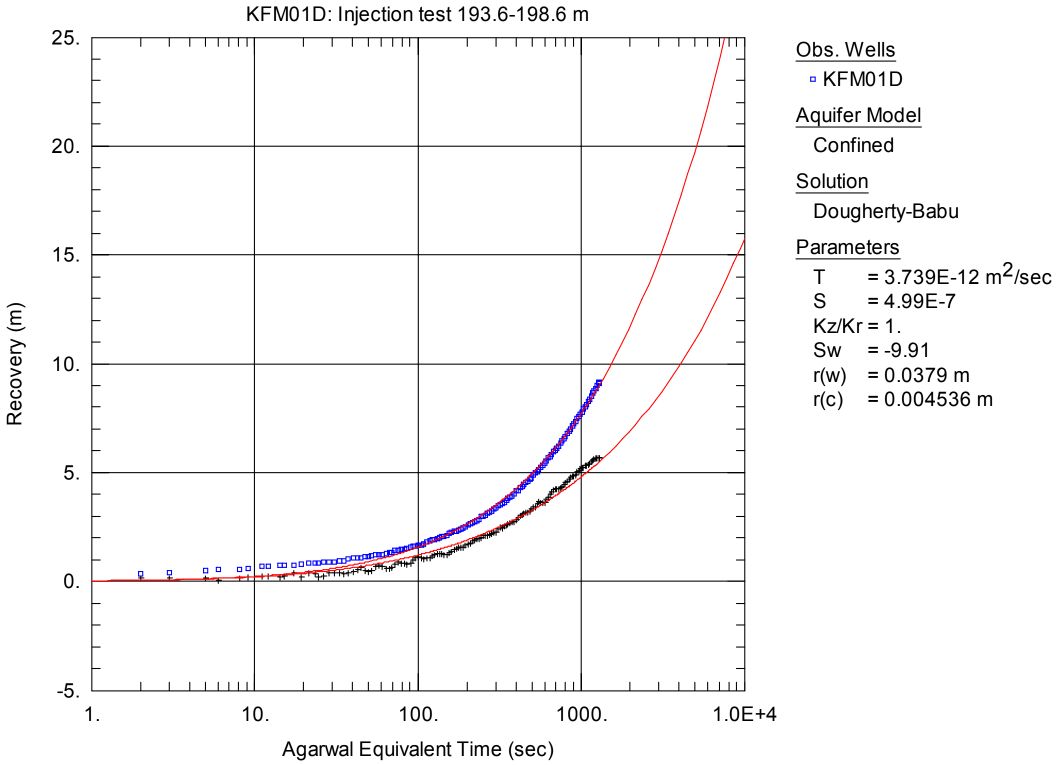


Figure A3-239. *Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 193.6-198.6 m in KFM01D. The type curve fit is only to show that an assumption of PRF is not valid.*

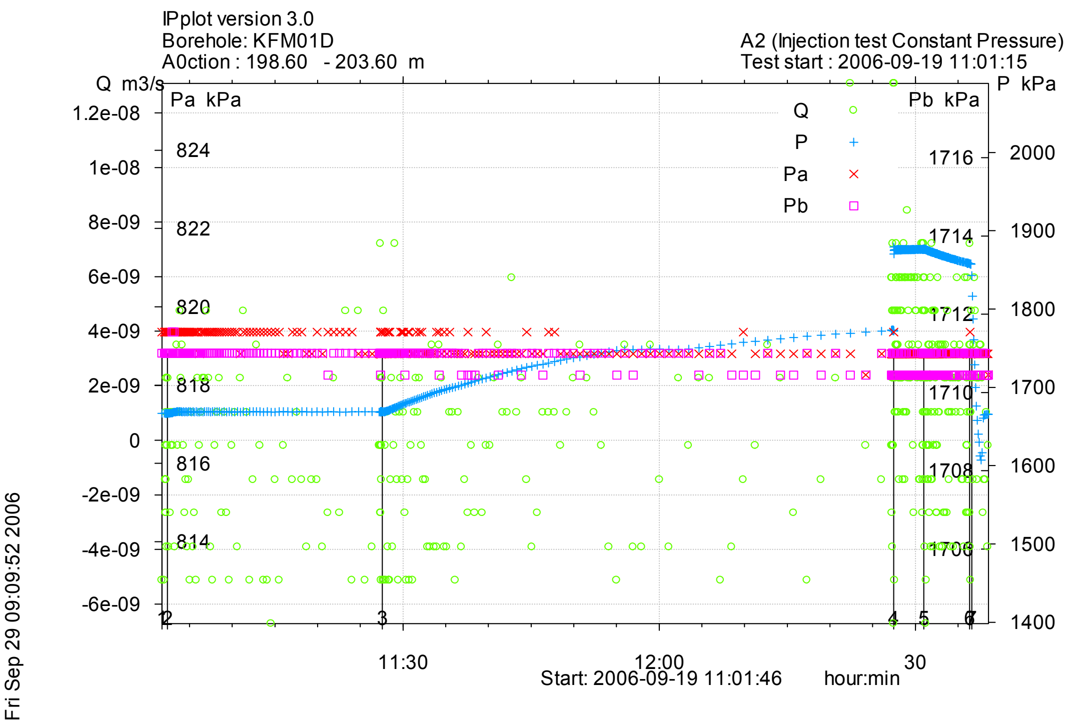


Figure A3-240. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 198.6-203.6 m in borehole KFM01D.*

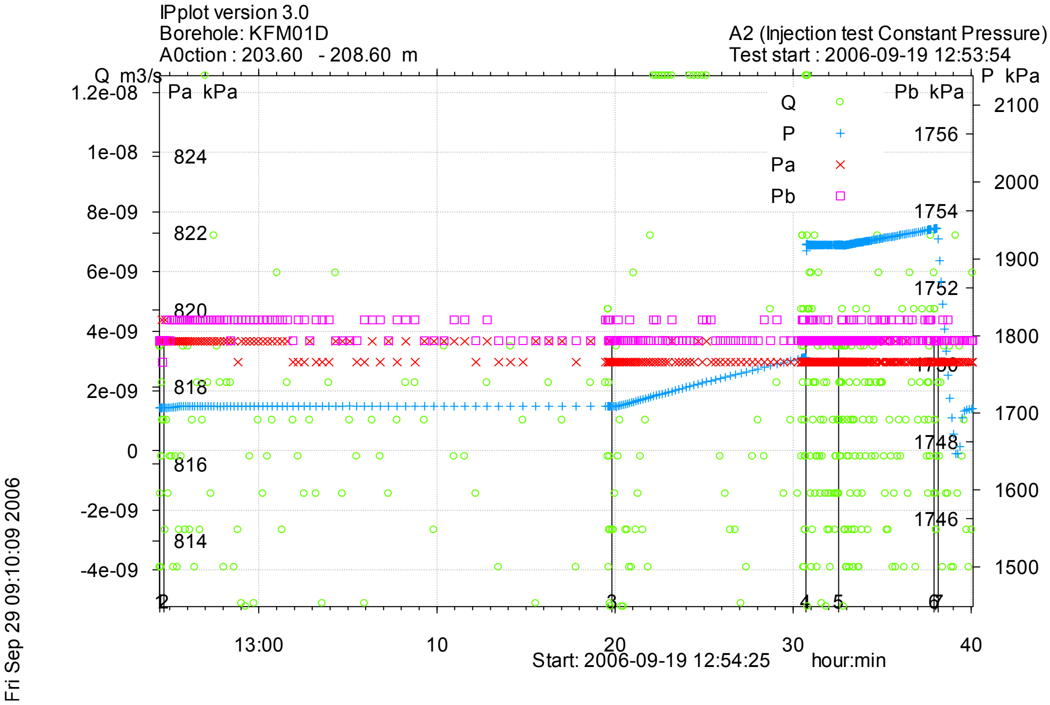


Figure A3-241. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 203.6-208.6 m in borehole KFM01D.*

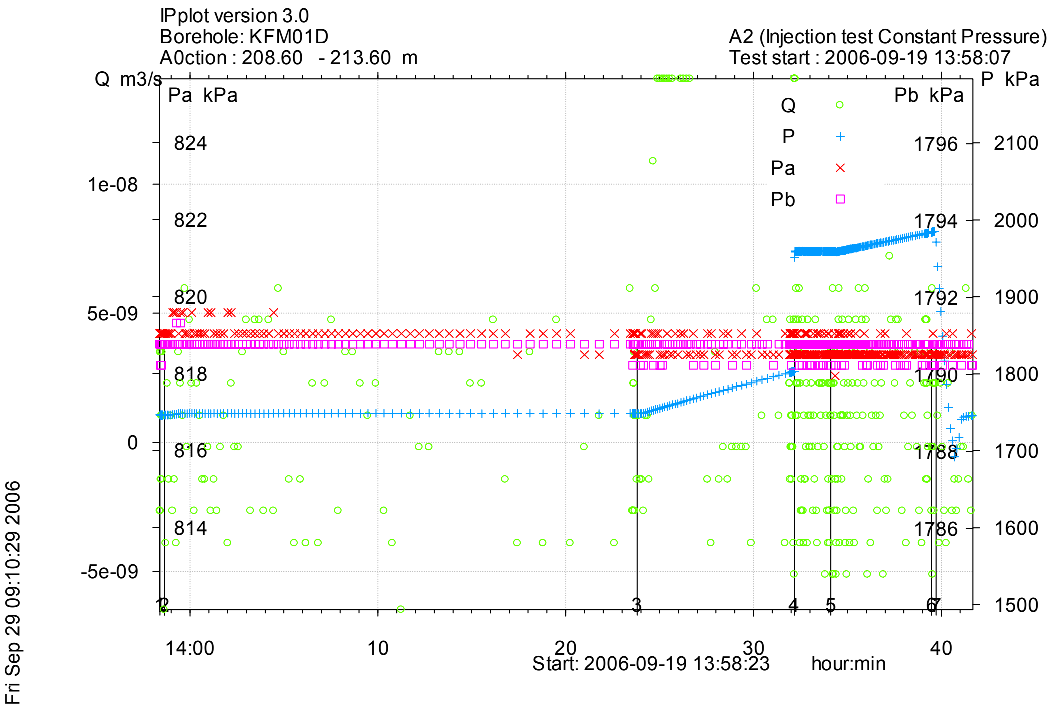


Figure A3-242. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 208.6-213.6 m in borehole KFM01D.*

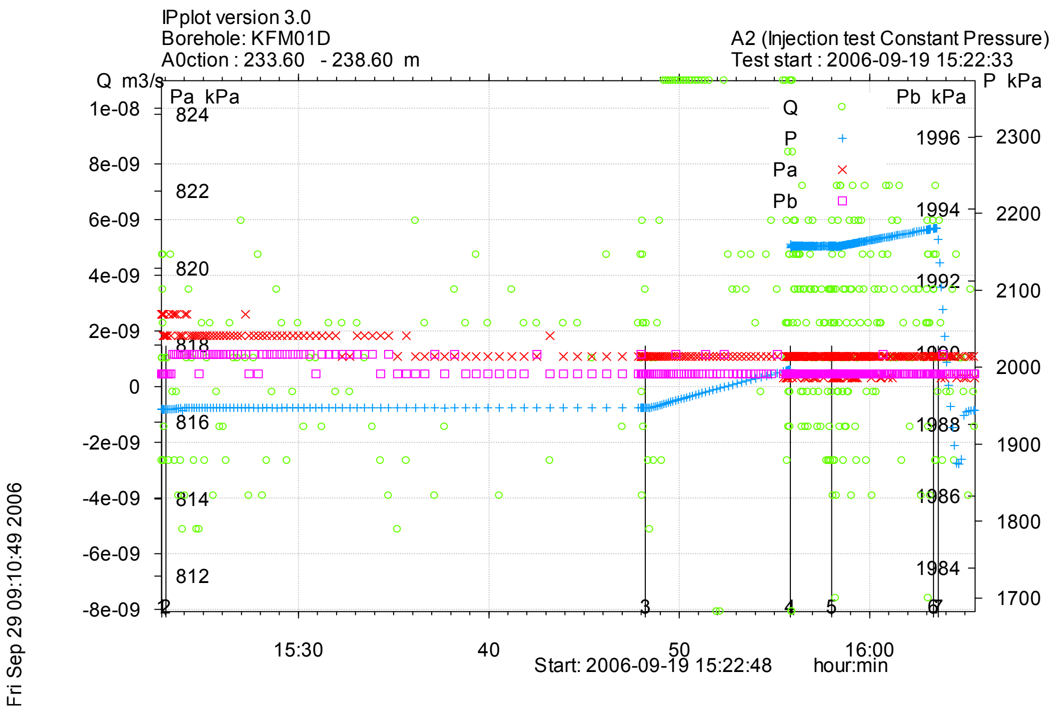


Figure A3-243. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 233.6-238.6 m in borehole KFM01D.*

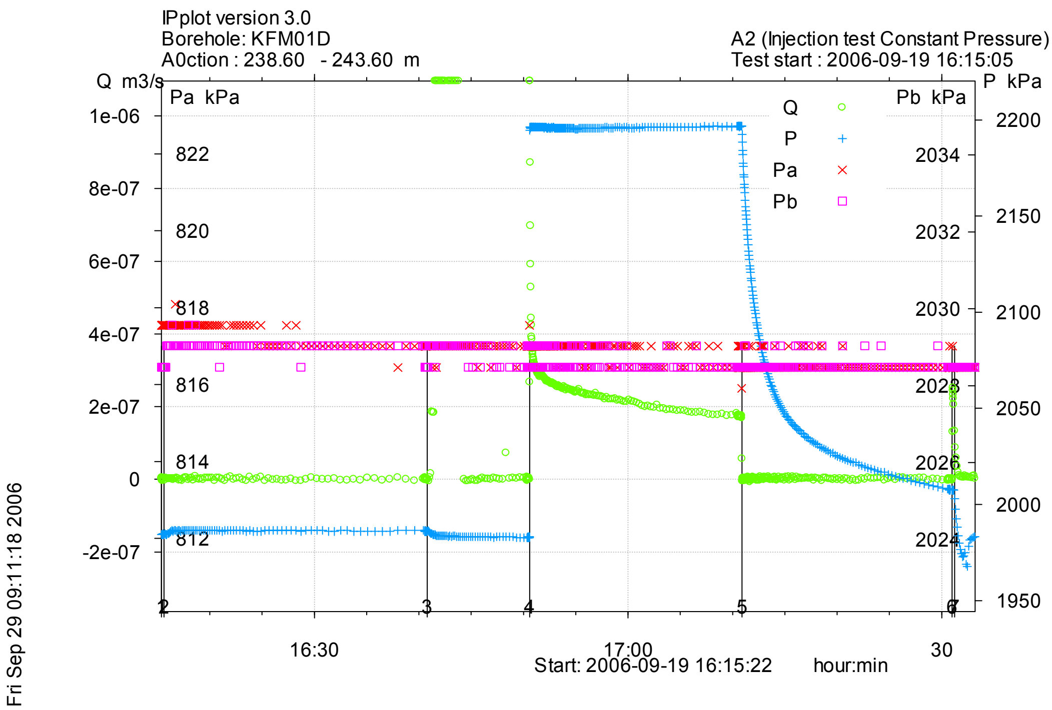


Figure A3-244. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 238.6-243.6 m in borehole KFM01D.*

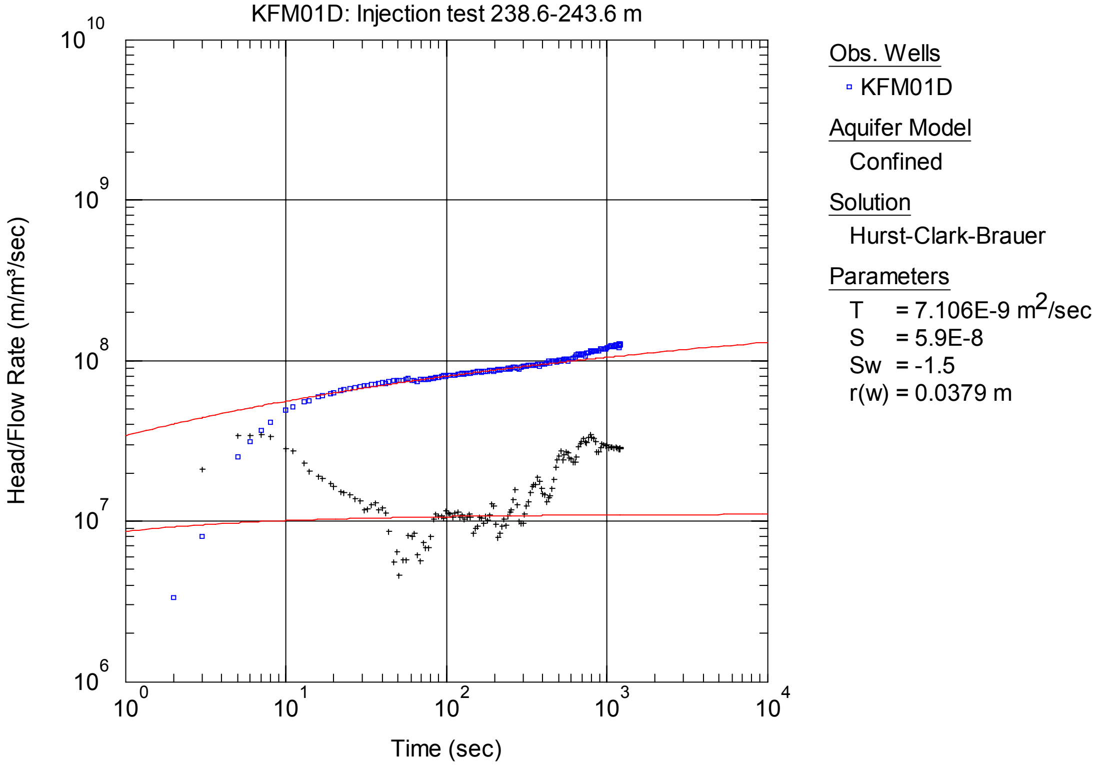


***Figure A3-245.** Log-log plot of head/flow rate (□) and derivative (+) versus time, showing fit to the PRF1 solution, from the injection test in section 238.6-243.6 m in KFM01D.*

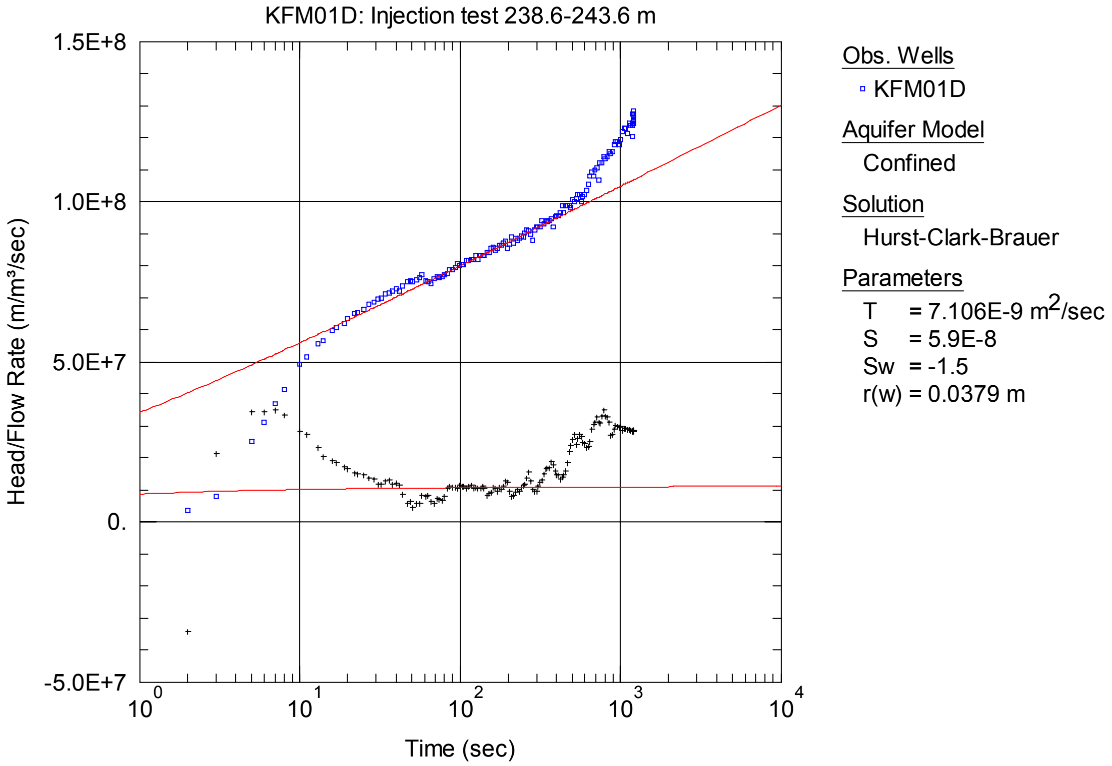


***Figure A3-246.** Lin-log plot of head/flow rate (□) and derivative (+) versus time, showing fit to the PRF1 solution, from the injection test in section 238.6-243.6 m in KFM01D.*

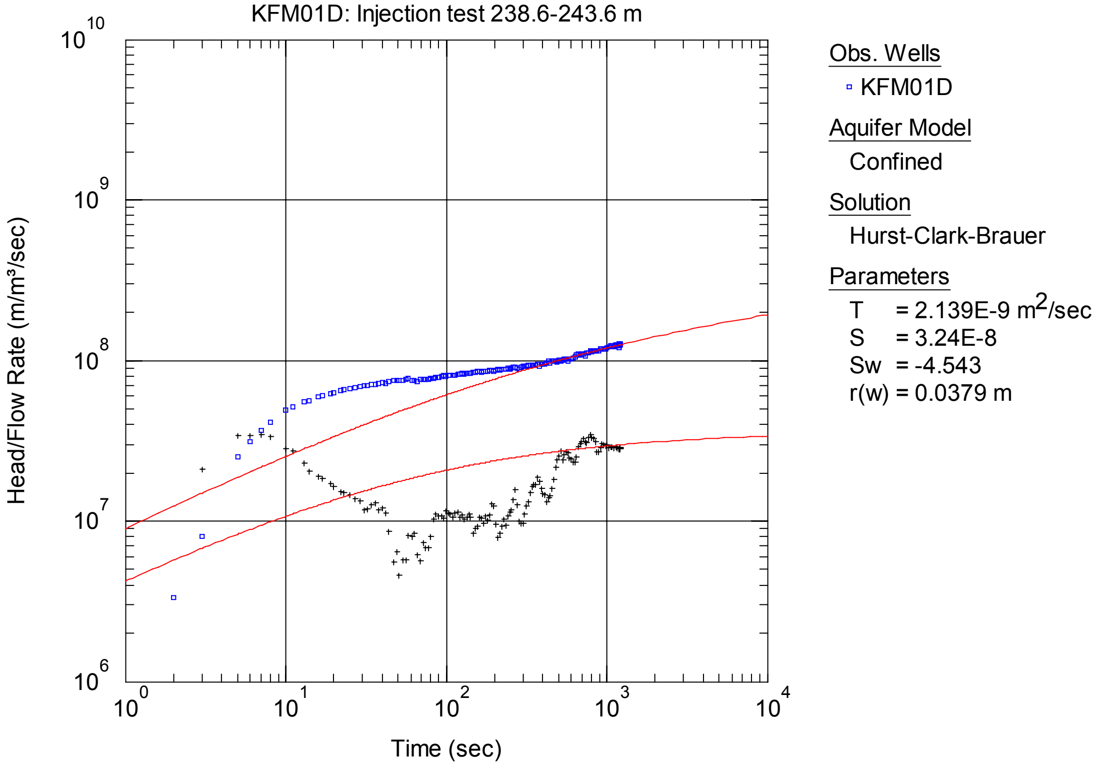


Figure A3-247. *Log-log plot of head/flow rate (□) and derivative (+) versus time, showing fit to the PRF2 solution, from the injection test in section 238.6-243.6 m in KFM01D.*

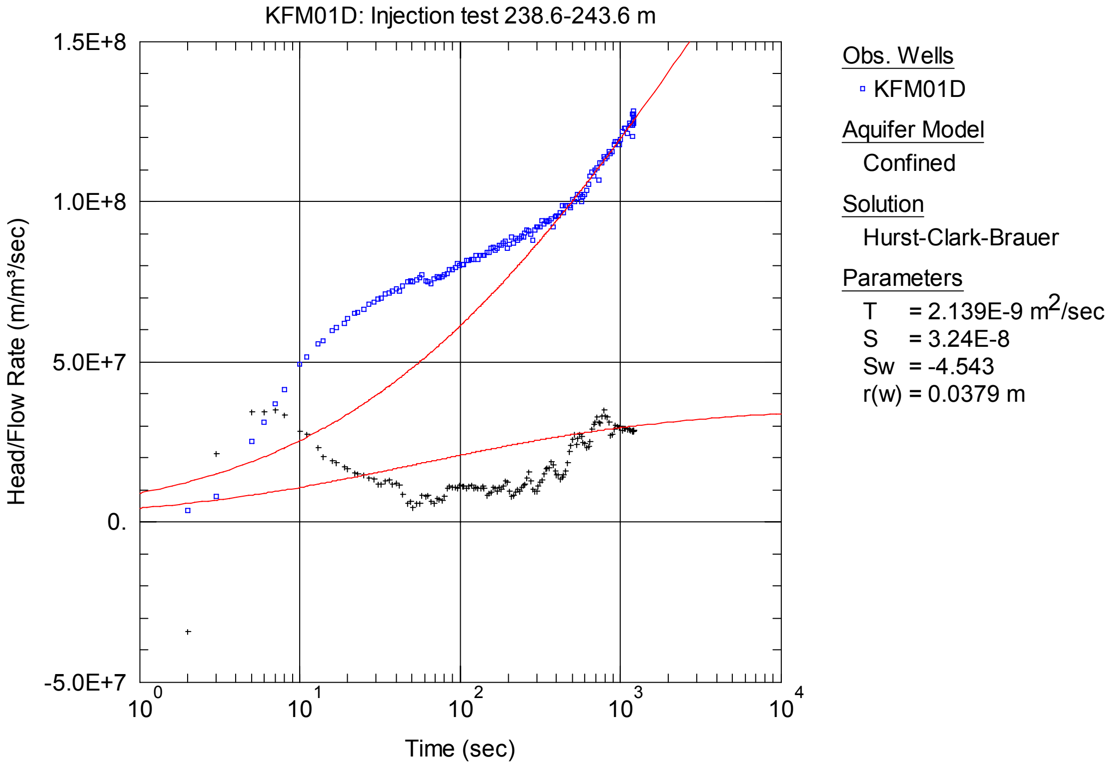


Figure A3-248. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, showing fit to the PRF2 solution, from the injection test in section 238.6-243.6 m in KFM01D.*

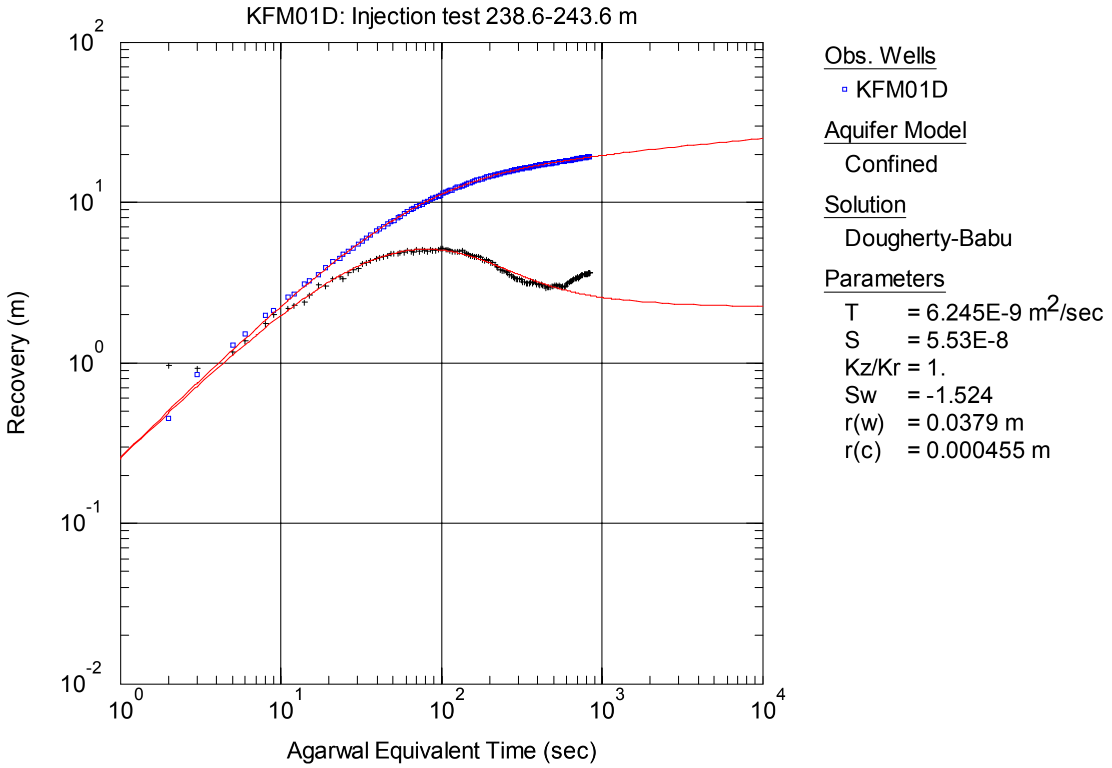


Figure A3-249. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 238.6-243.6 m in KFM01D.*

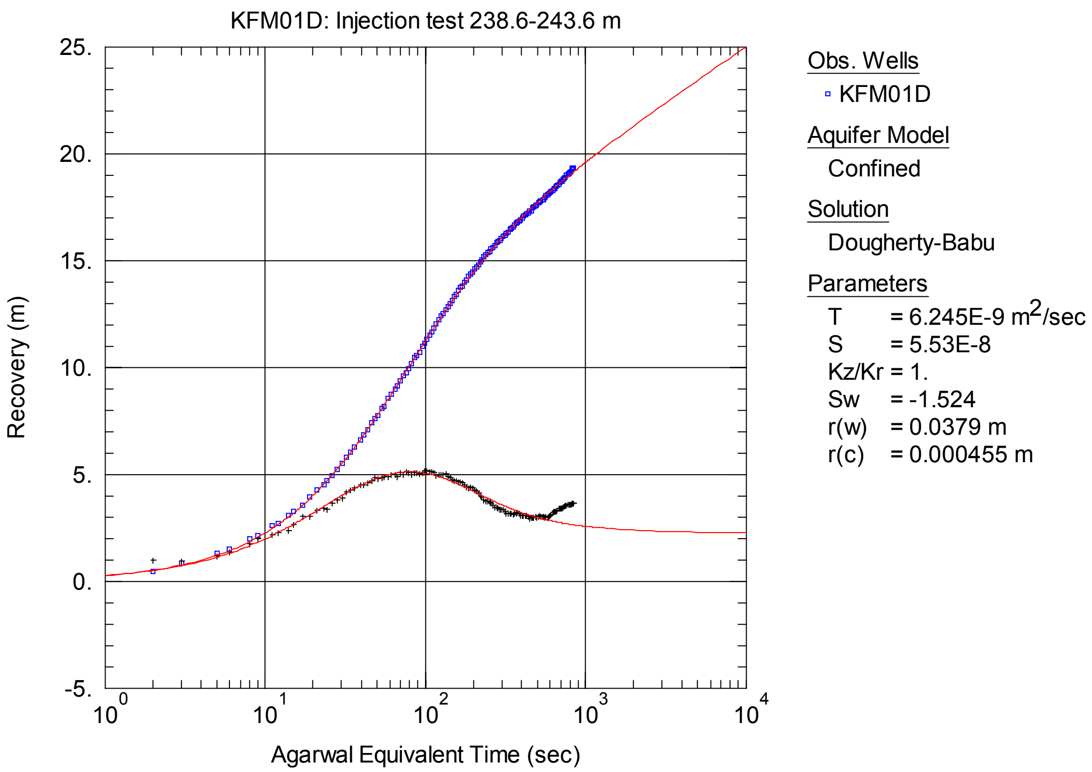


Figure A3-250. *Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 238.6-243.6 m in KFM01D.*

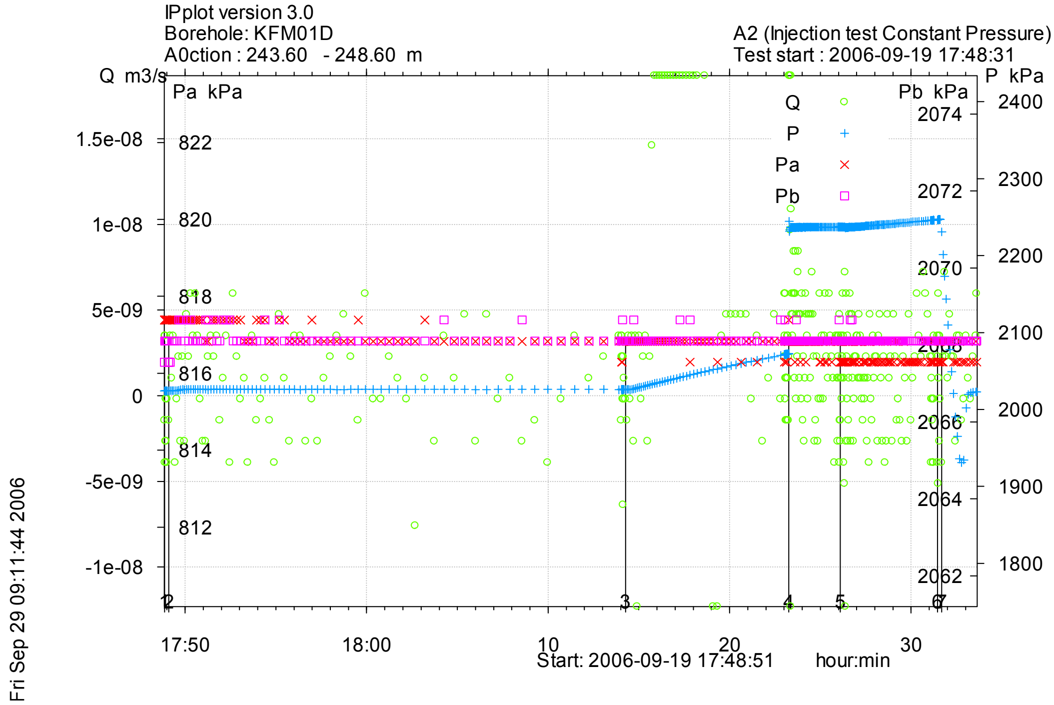


Figure A3-251. Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 243.6-248.6 m in borehole KFM01D.

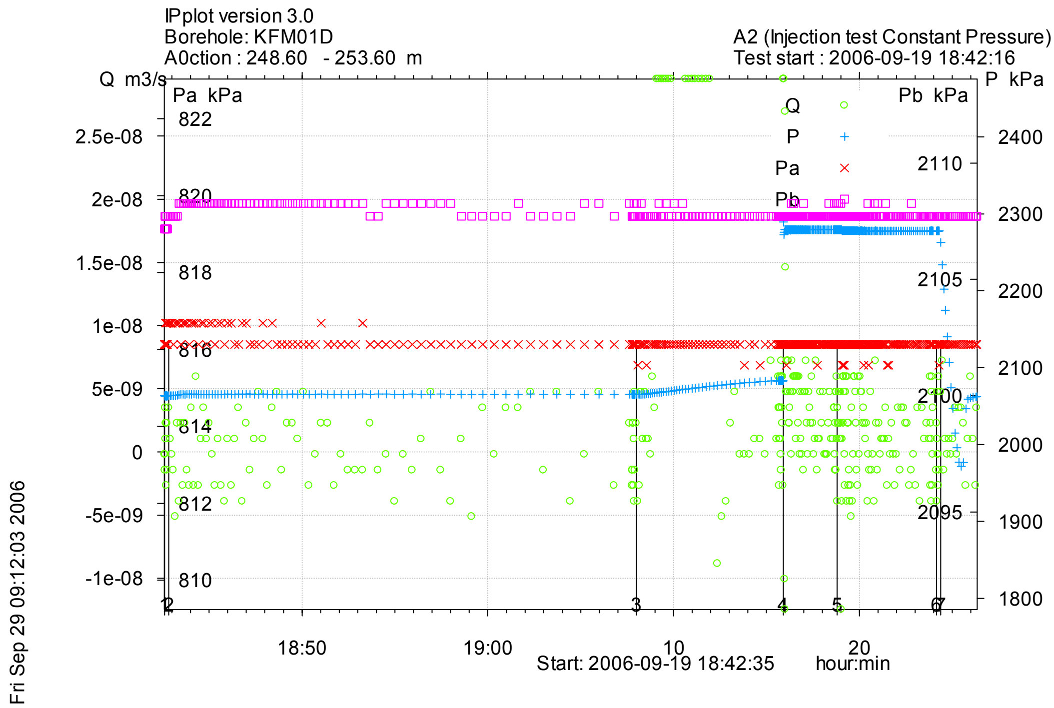


Figure A3-252. Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 248.6-253.6 m in borehole KFM01D.

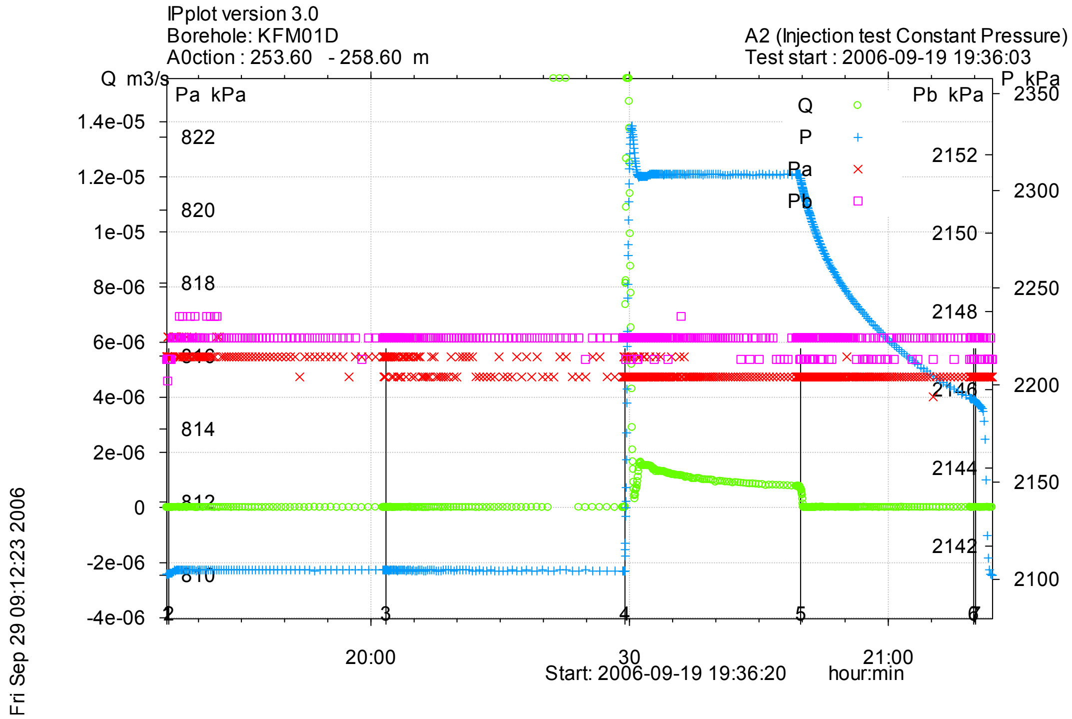


Figure A3-253. Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 253.6-258.6 m in borehole KFM01D.

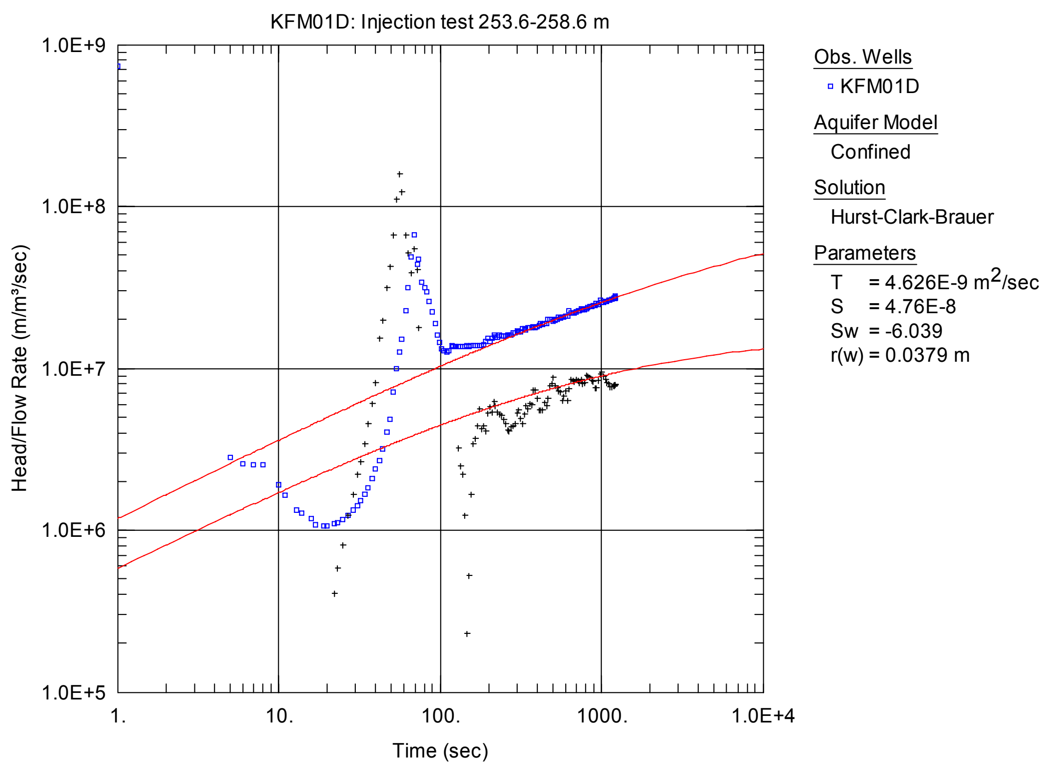


Figure A3-254. Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 253.6-258.6 m in KFM01D.

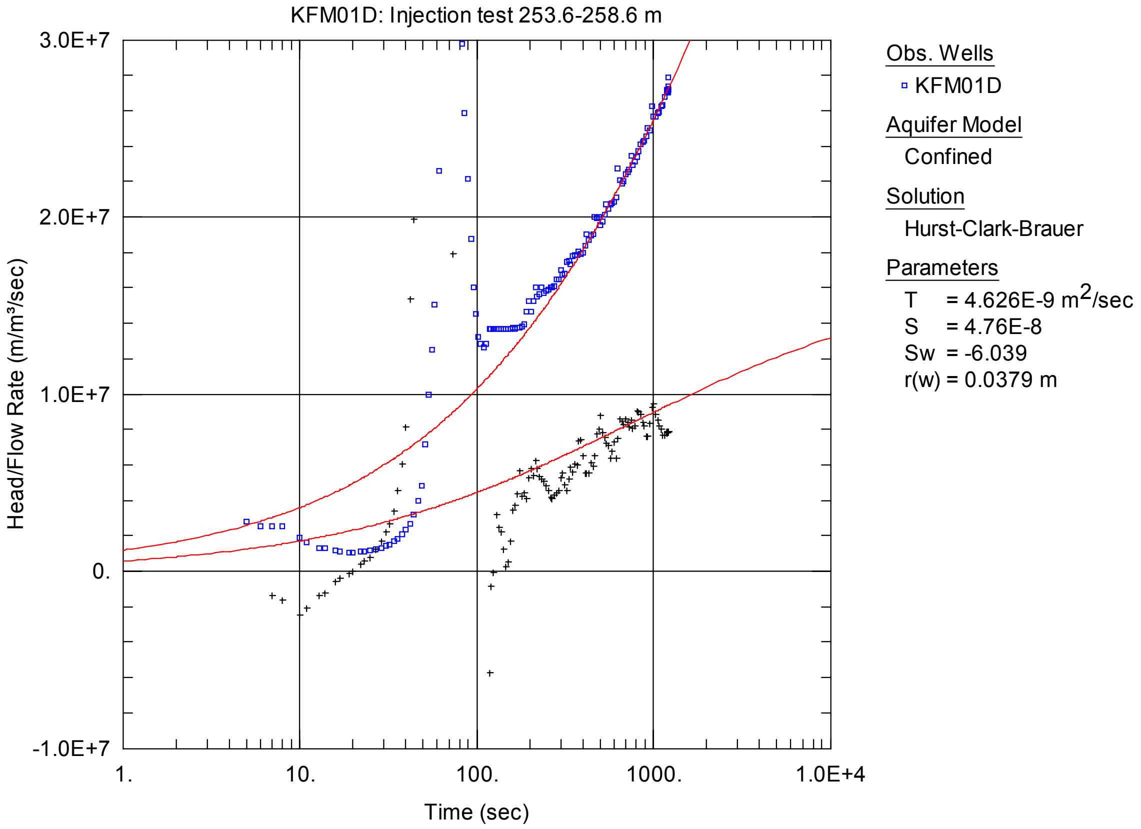


Figure A3-255. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 253.6-258.6 m in KFM01D.*

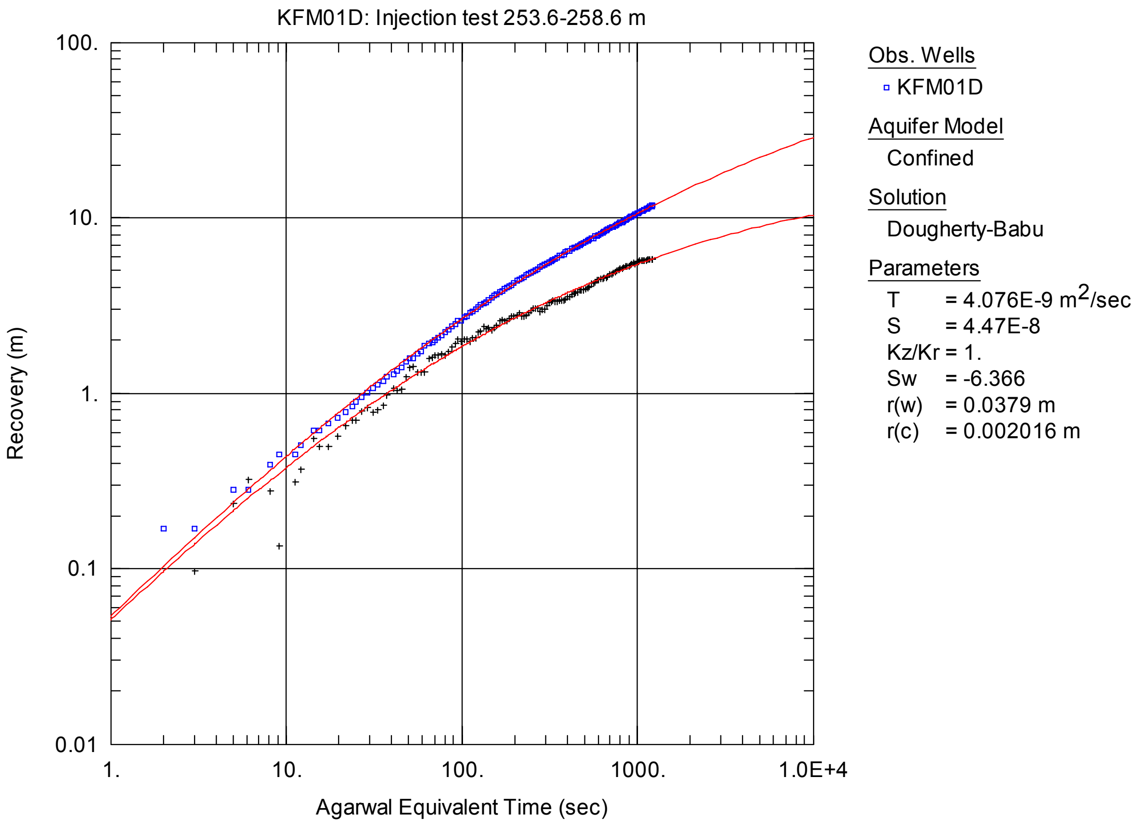


Figure A3-256. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 253.6-258.6 m in KFM01D.*

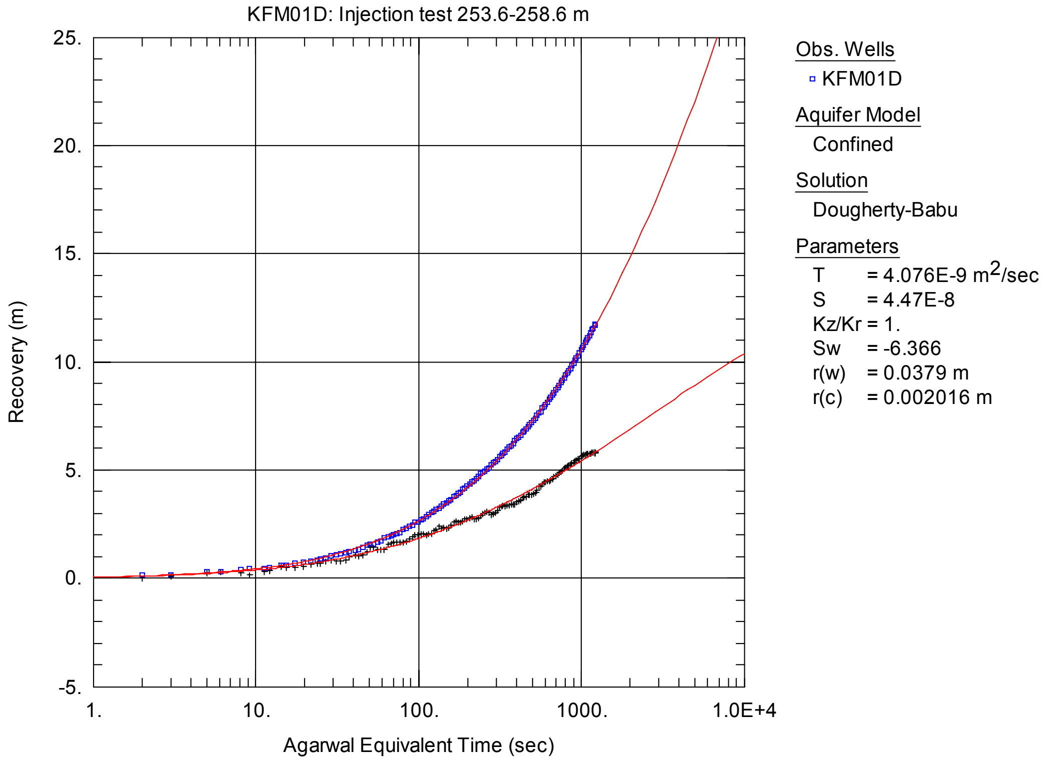


Figure A3-257. Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 253.6-258.6 m in KFM01D.

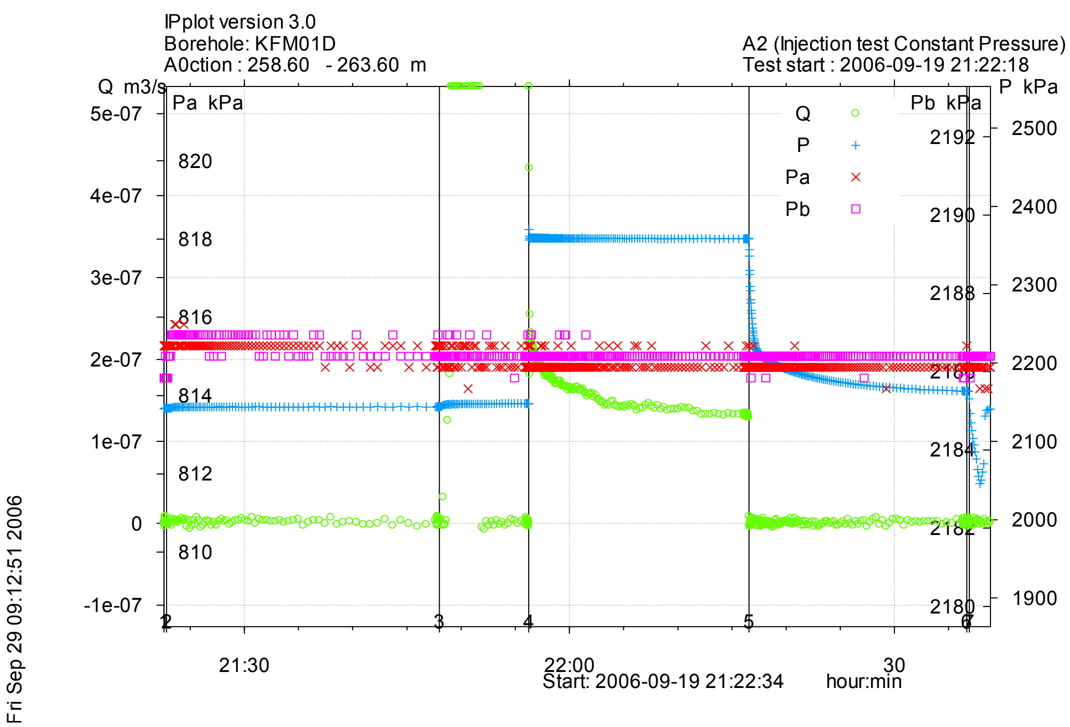


Figure A3-258. Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 258.6-263.6 m in borehole KFM01D.

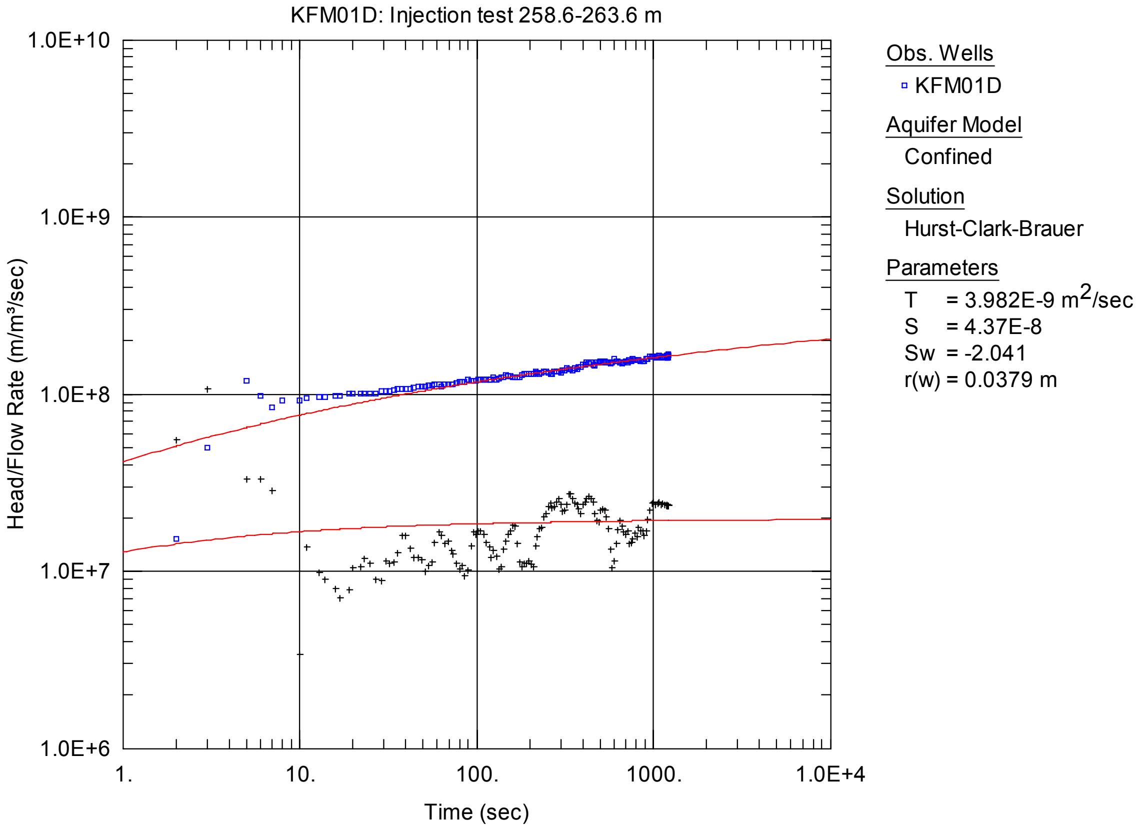


Figure A3-259. *Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 258.6-263.6 m in KFM01D.*

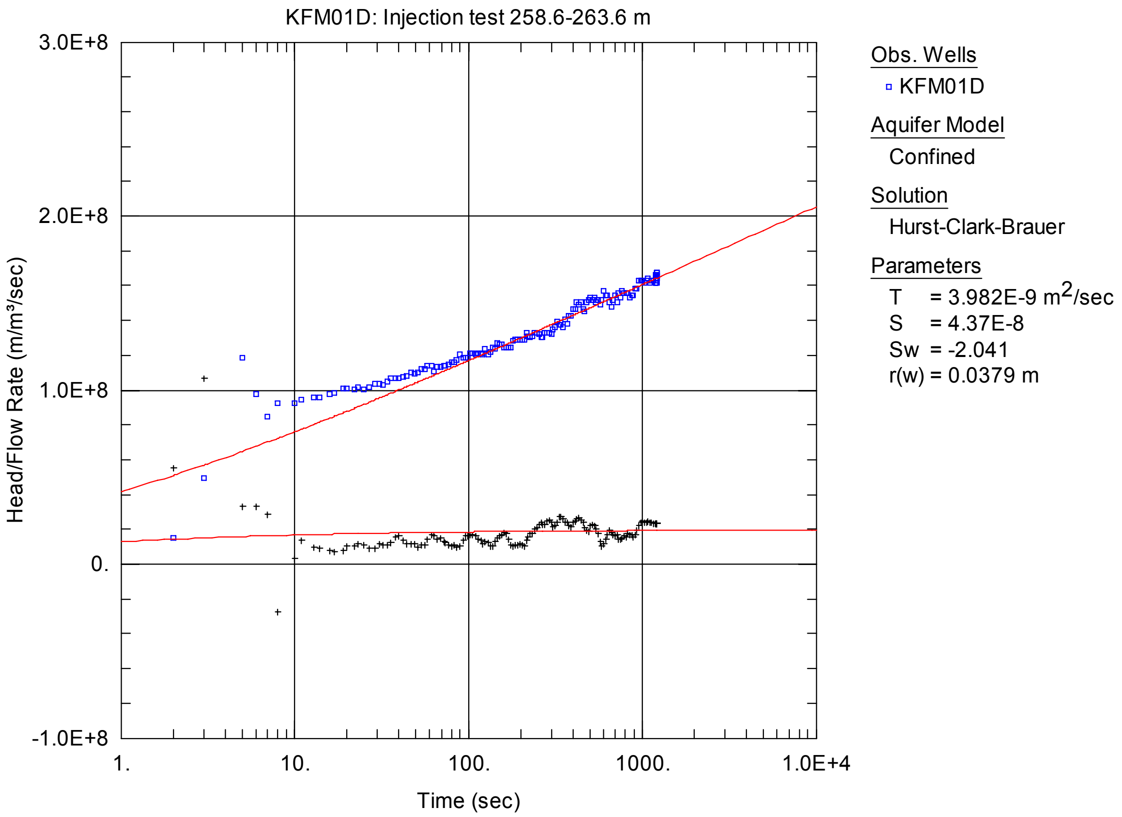


Figure A3-260. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 258.6-263.6 m in KFM01D.*

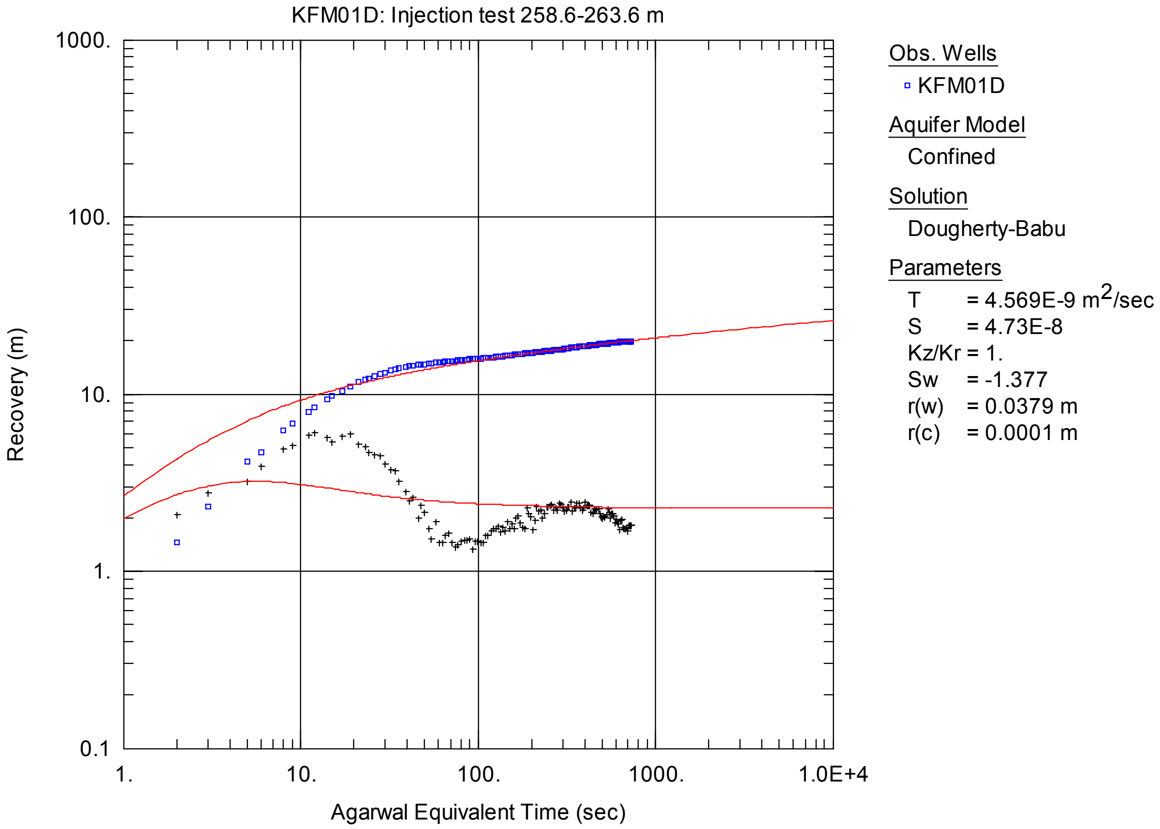


Figure A3-261. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 258.6-263.6 m in KFM01D.*

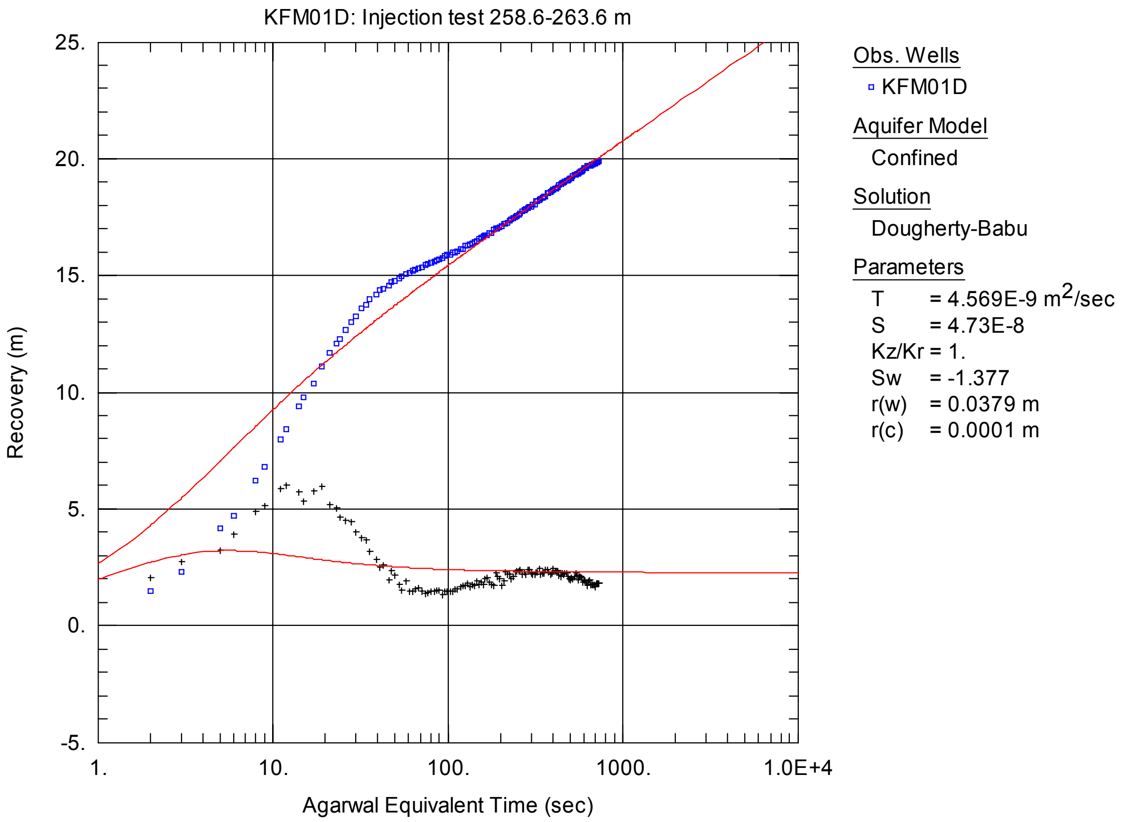


Figure A3-262. *Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 258.6-263.6 m in KFM01D.*

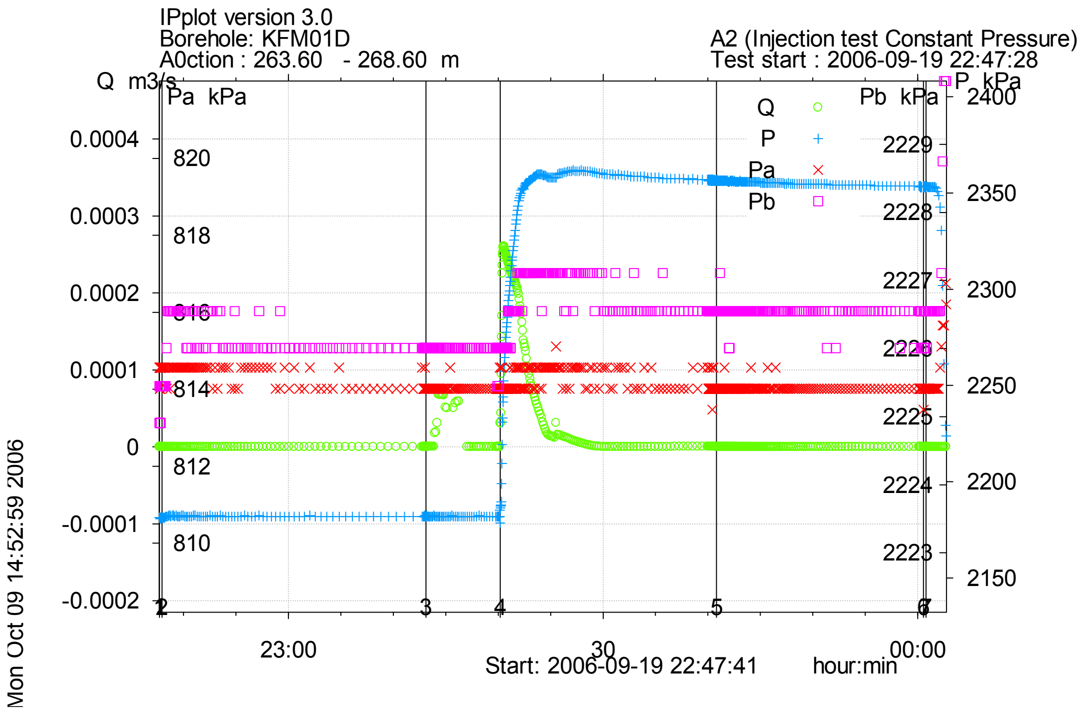


Figure A3-263. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 263.6-268.6 m in borehole KFM01D. Test number one.*

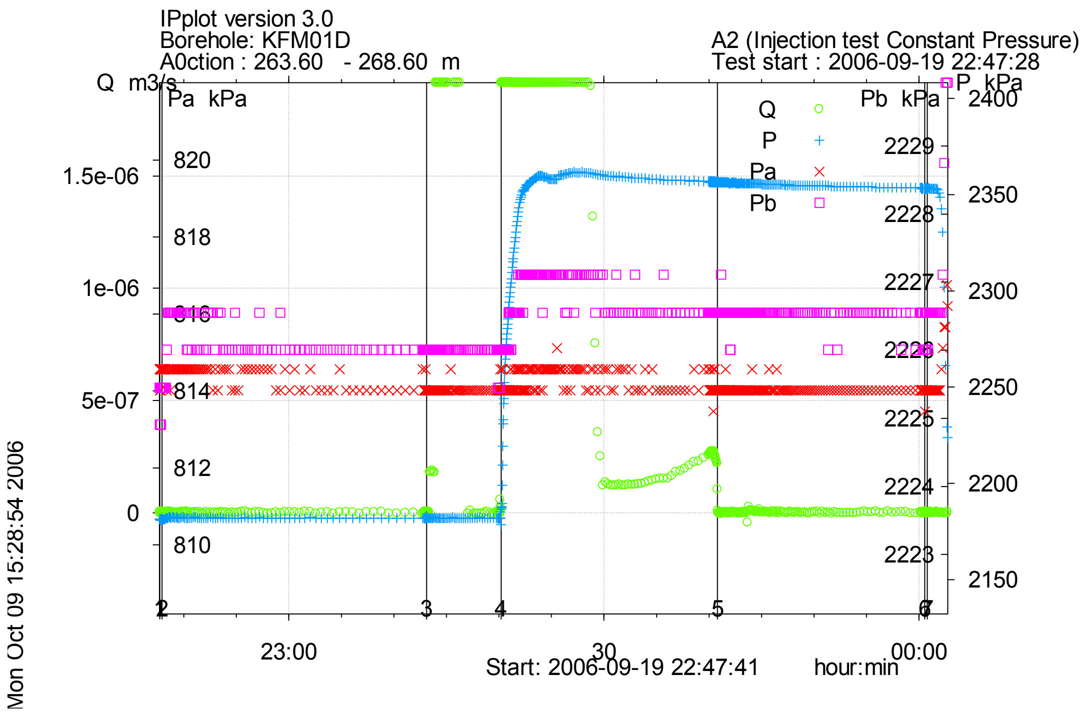


Figure A3-264. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 263.6-268.6 m in borehole KFM01D. Test number one.*

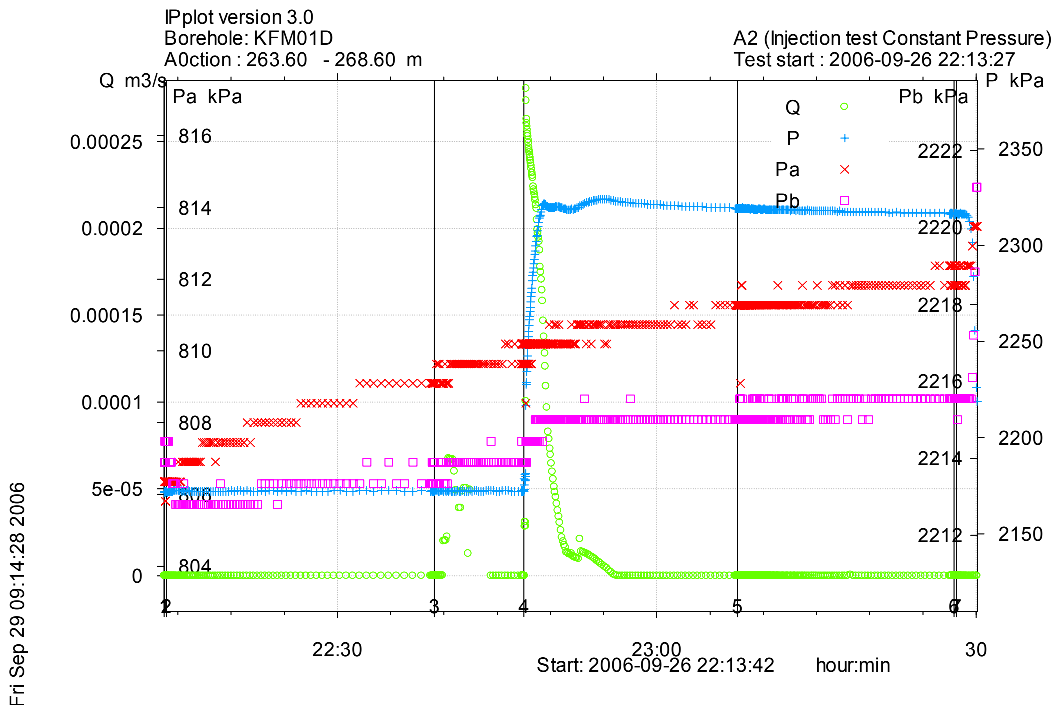


Figure A3-265. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 263.6-268.6 m in borehole KFM01D. Test number two.*

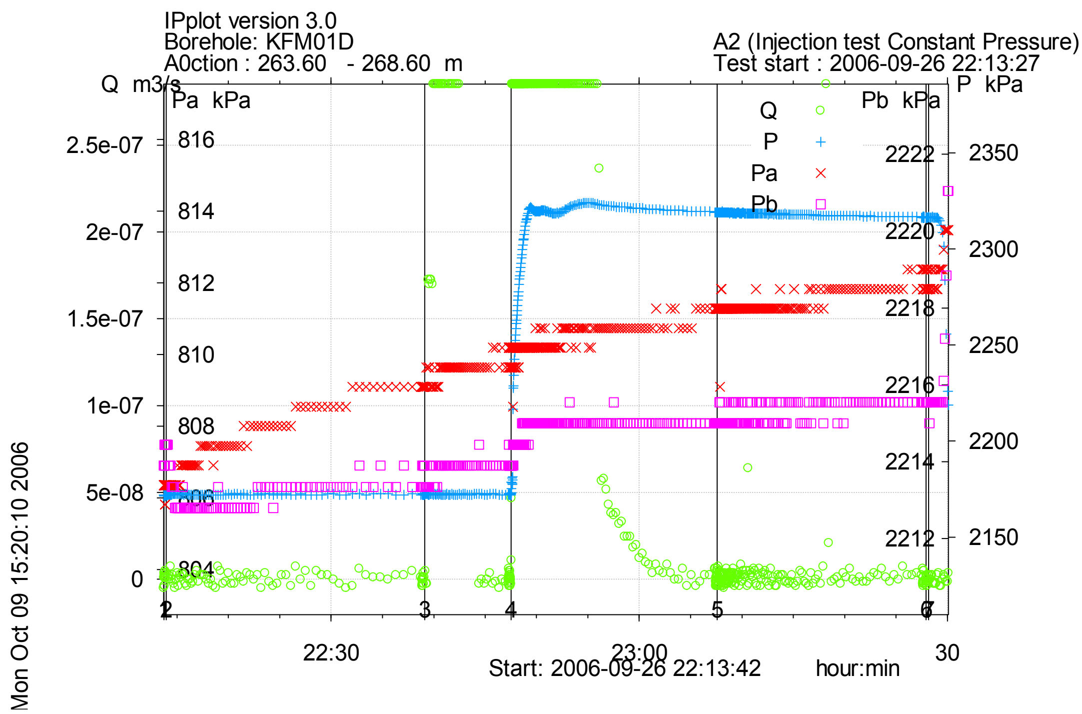


Figure A3-266. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 263.6-268.6 m in borehole KFM01D. Test number two.*

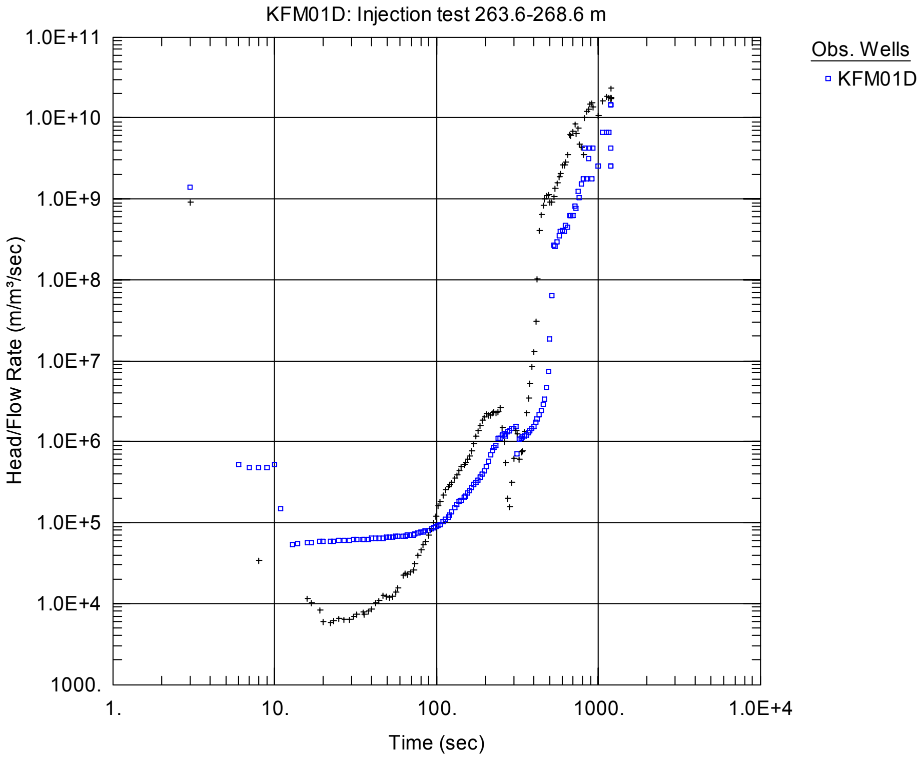


Figure A3-267. *Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 263.6-268.6 m in KFM01D. No type curve fit is shown since no unambiguous transient evaluation is possible. Test number two.*

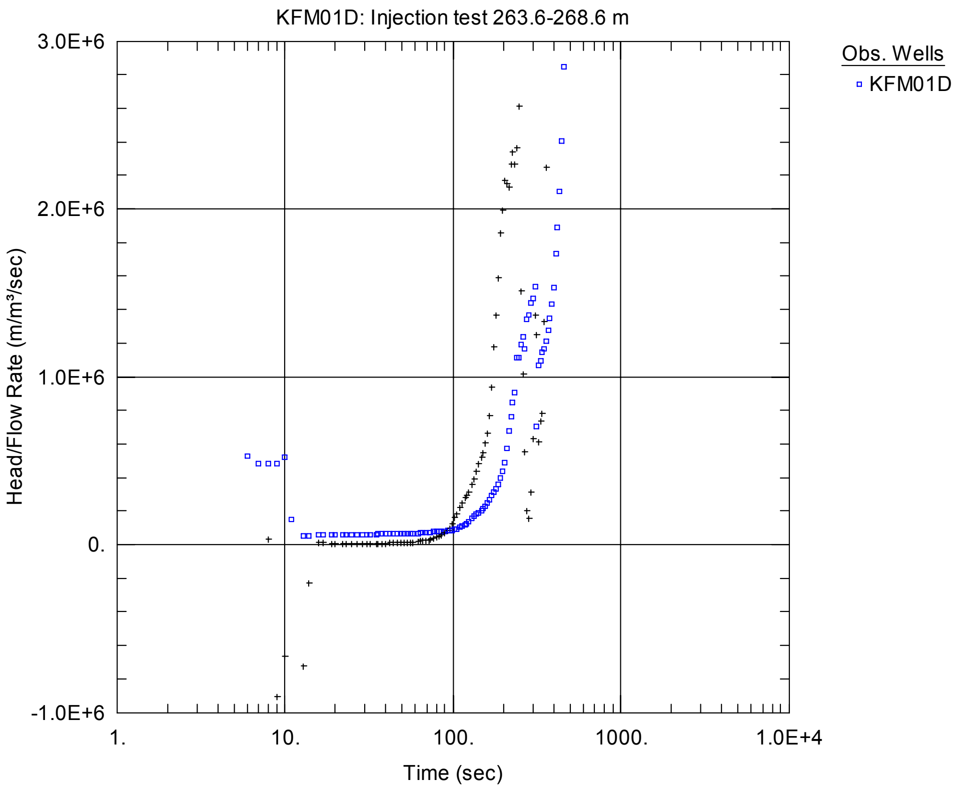


Figure A3-268. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 263.6-268.6 m in KFM01D. No type curve fit is shown since no unambiguous transient evaluation is possible. Test number two.*

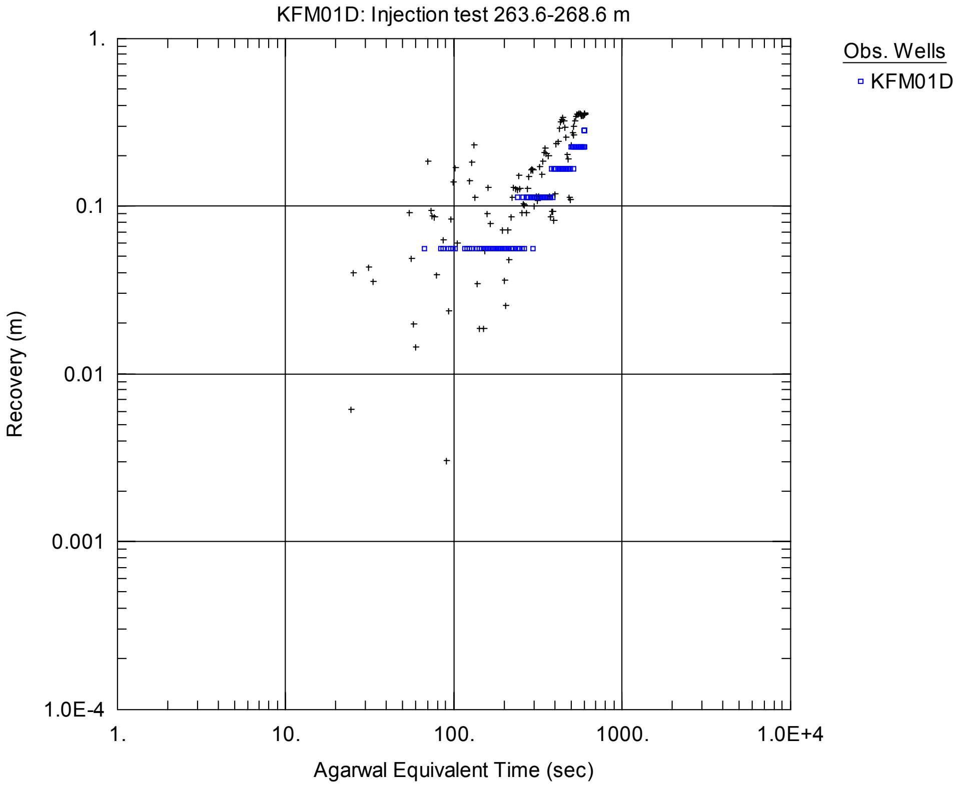


Figure A3-269. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 263.6-268.6 m in KFM01D. No type curve fit is shown since no unambiguous transient evaluation is possible. Test number two.*

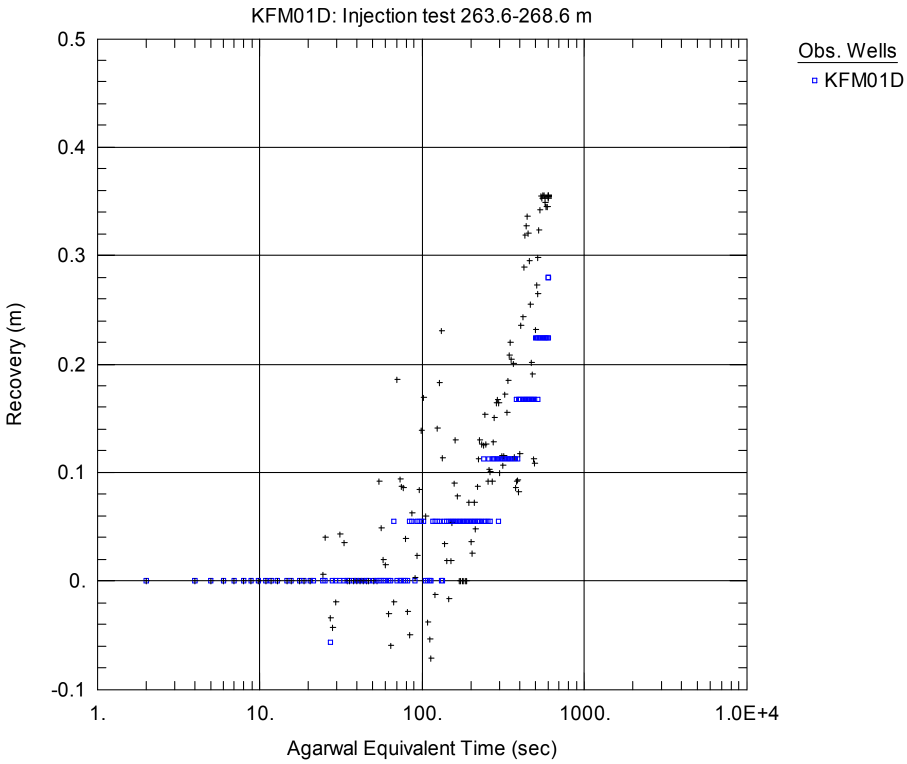


Figure A3-270. *Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 263.6-268.6 m in KFM01D. No type curve fit is shown since no unambiguous transient evaluation is possible. Test number two.*

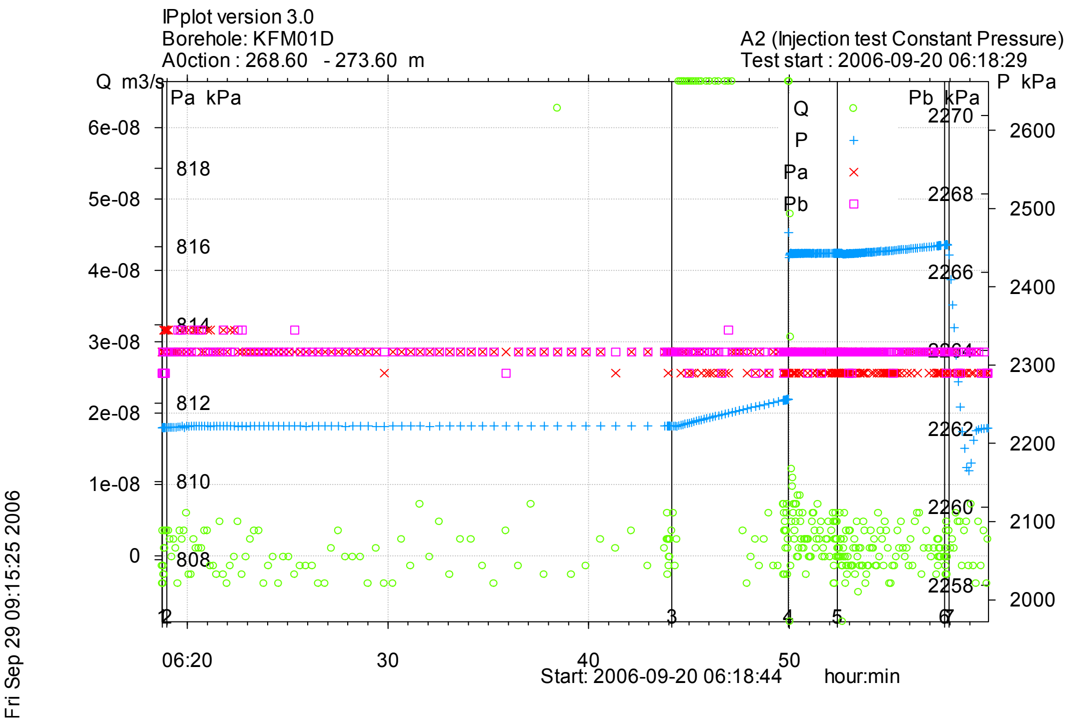


Figure A3-271. Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 268.6-273.6 m in borehole KFM01D.

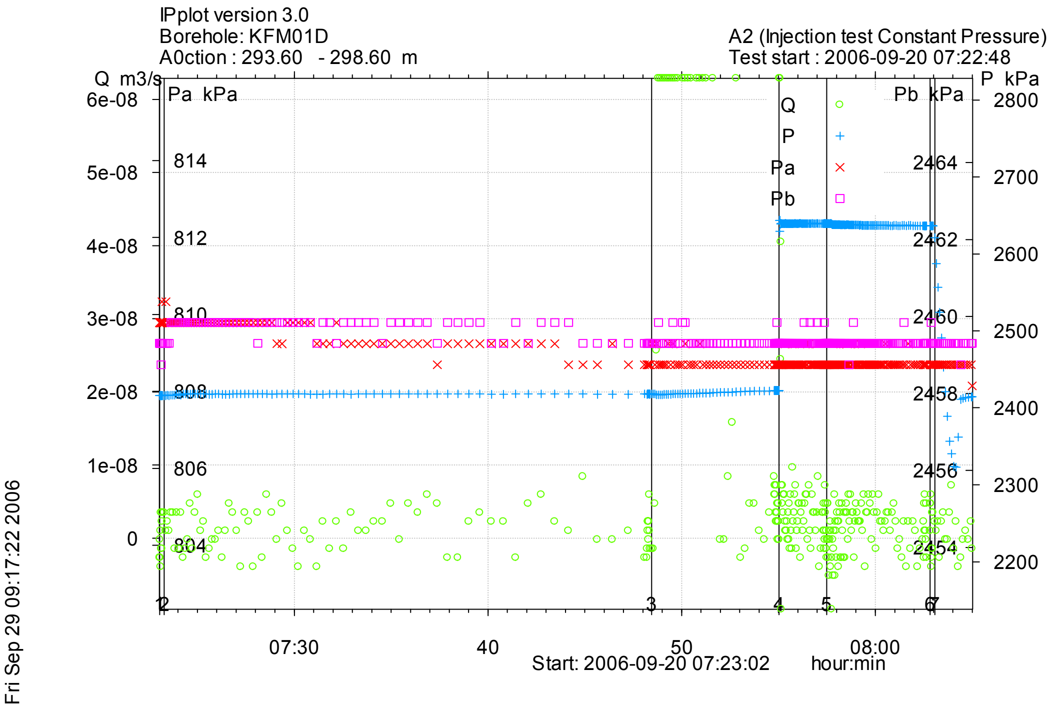


***Figure A3-272.** Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 293.6-298.6 m in borehole KFM01D.*

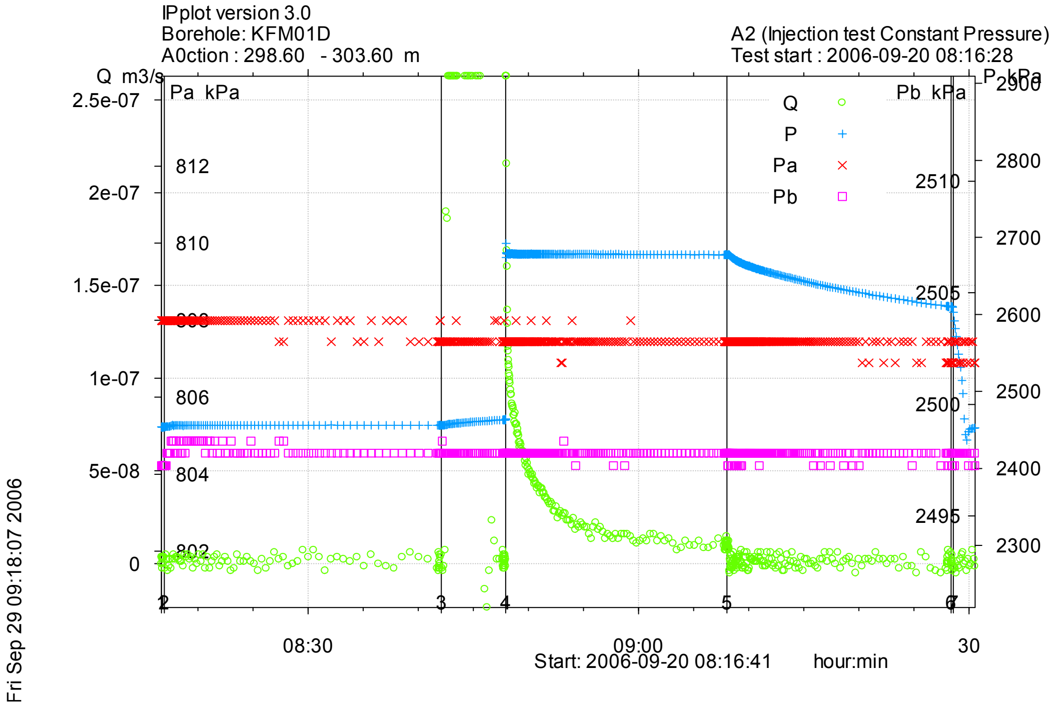


***Figure A3-273.** Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 298.6-303.6 m in borehole KFM01D.*

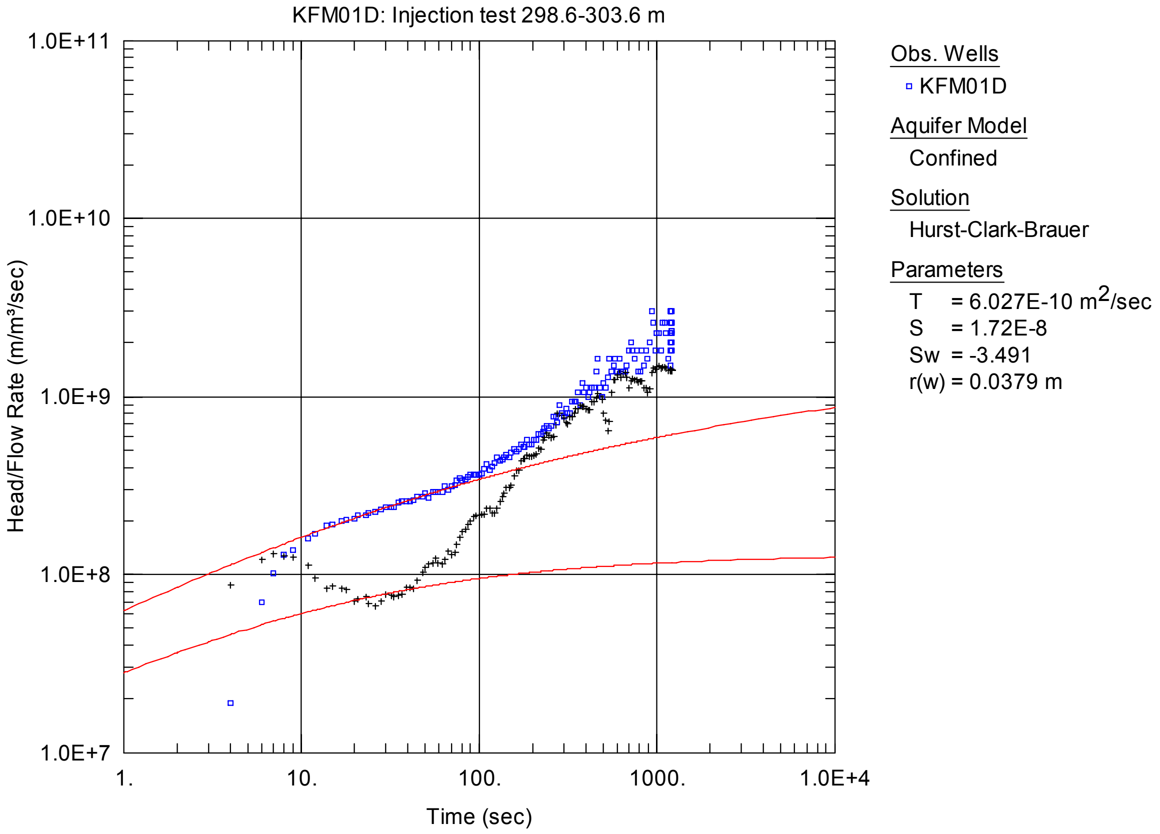


Figure A3-274. *Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 298.6-303.6 m in KFM01D.*

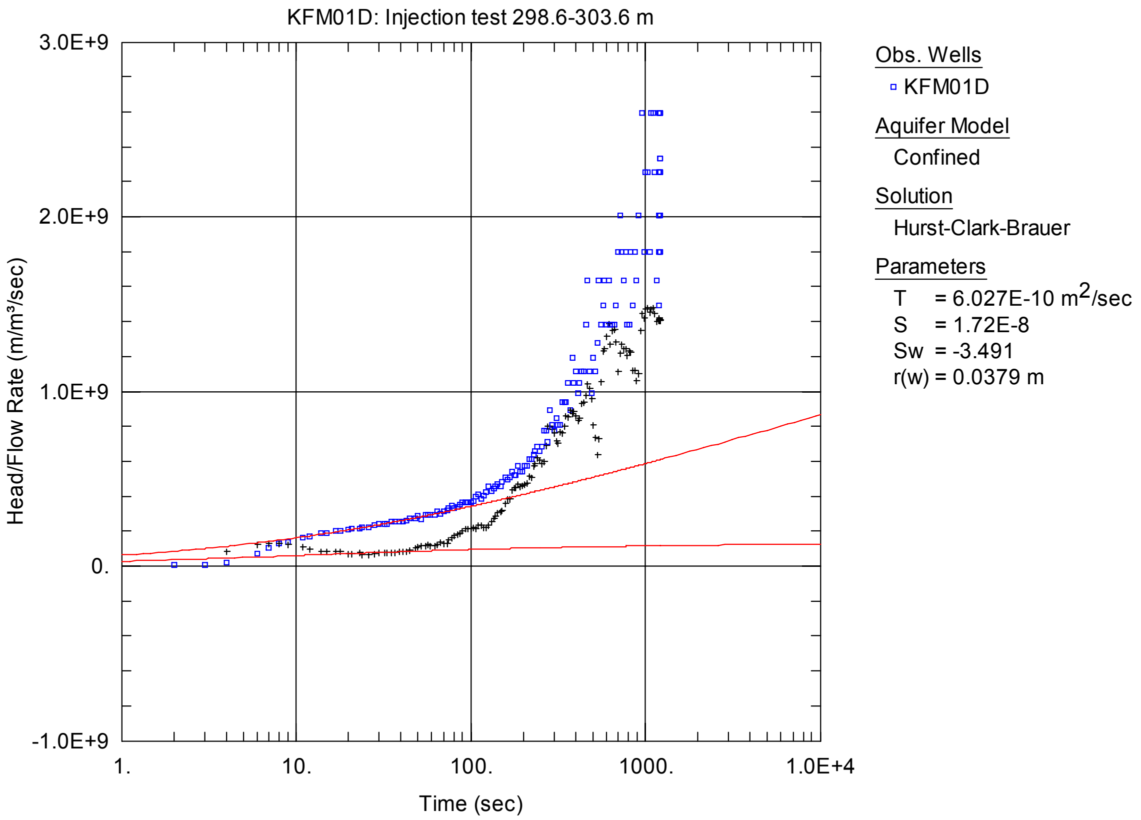


Figure A3-275. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 298.6-303.6 m in KFM01D.*

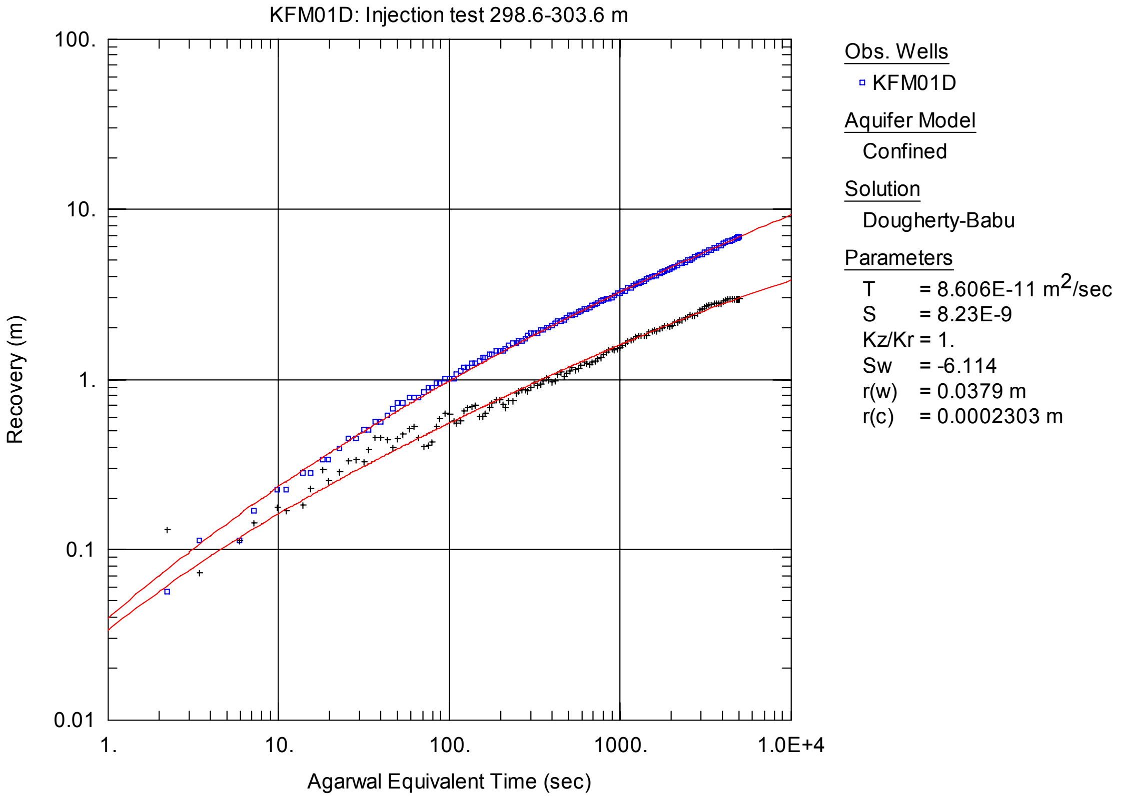


Figure A3-276. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 298.6-303.6 m in KFM01D. The type curve fit is only to show that an assumption of PRF is not valid.*

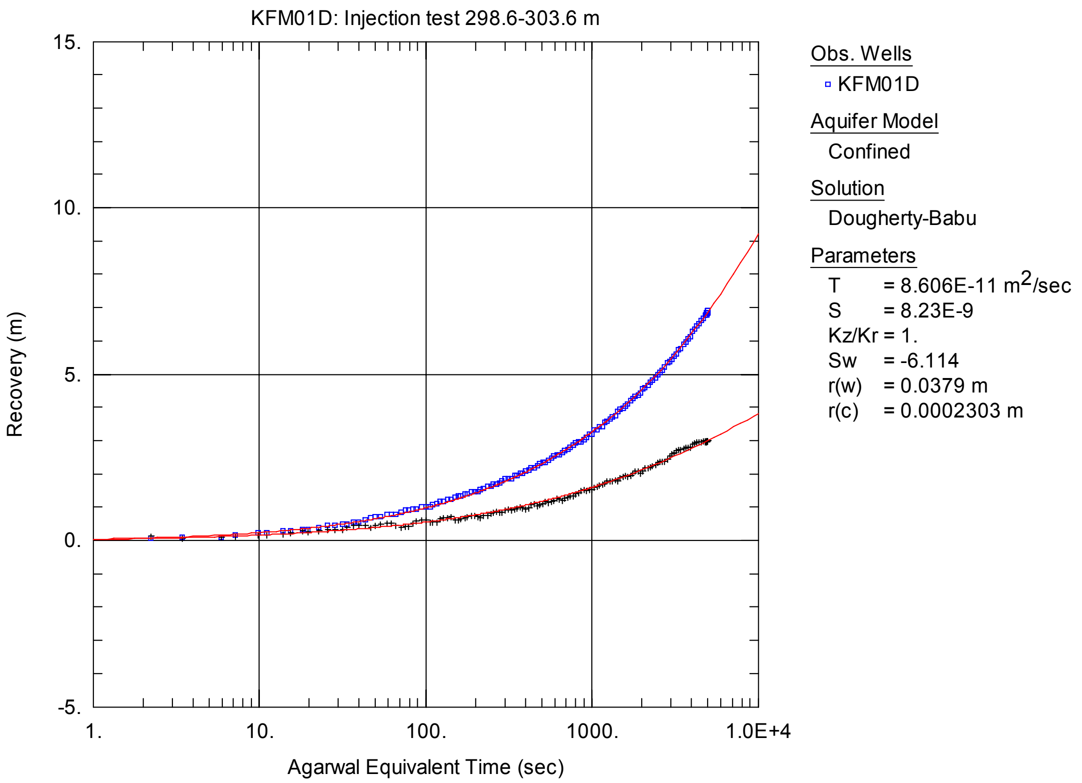


Figure A3-277. *Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 298.6-303.6 m in KFM01D. The type curve fit is only to show that an assumption of PRF is not valid.*

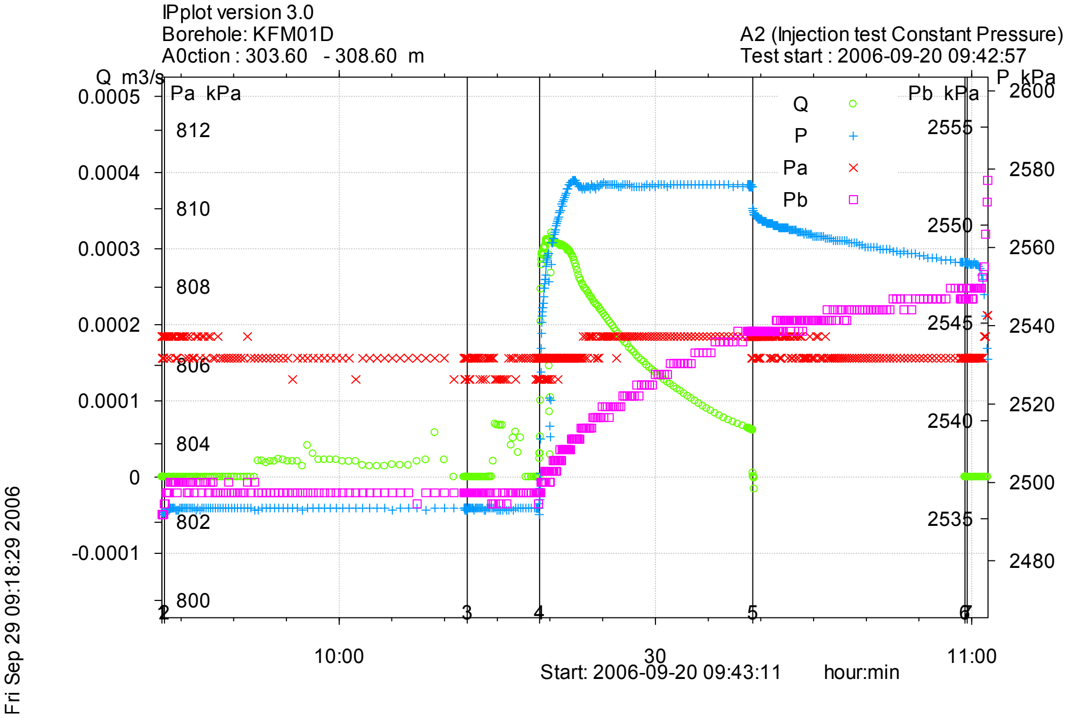


__Figure A3-278.__ Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 303.6-308.6 m in borehole KFM01D.

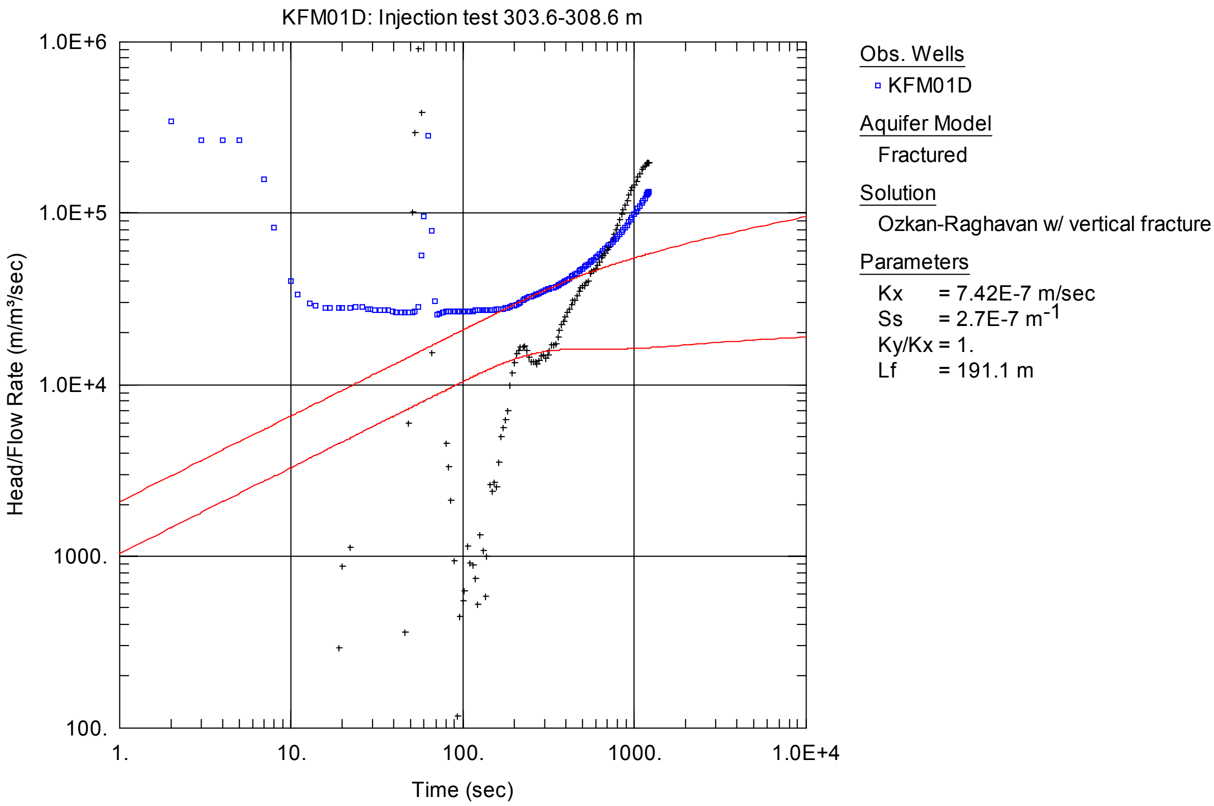


__Figure A3-279.__ Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 303.6-308.6 m in KFM01D.

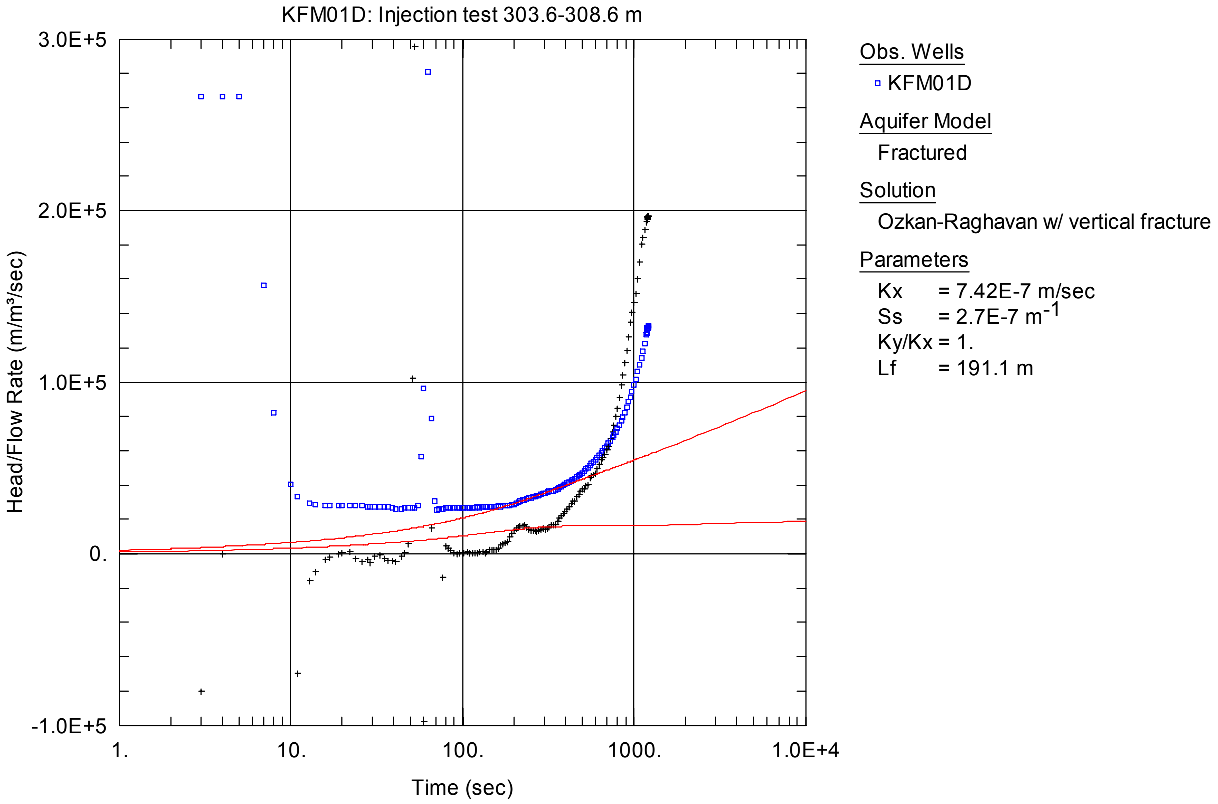


***Figure A3-280.** Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 303.6-308.6 m in KFM01D.*

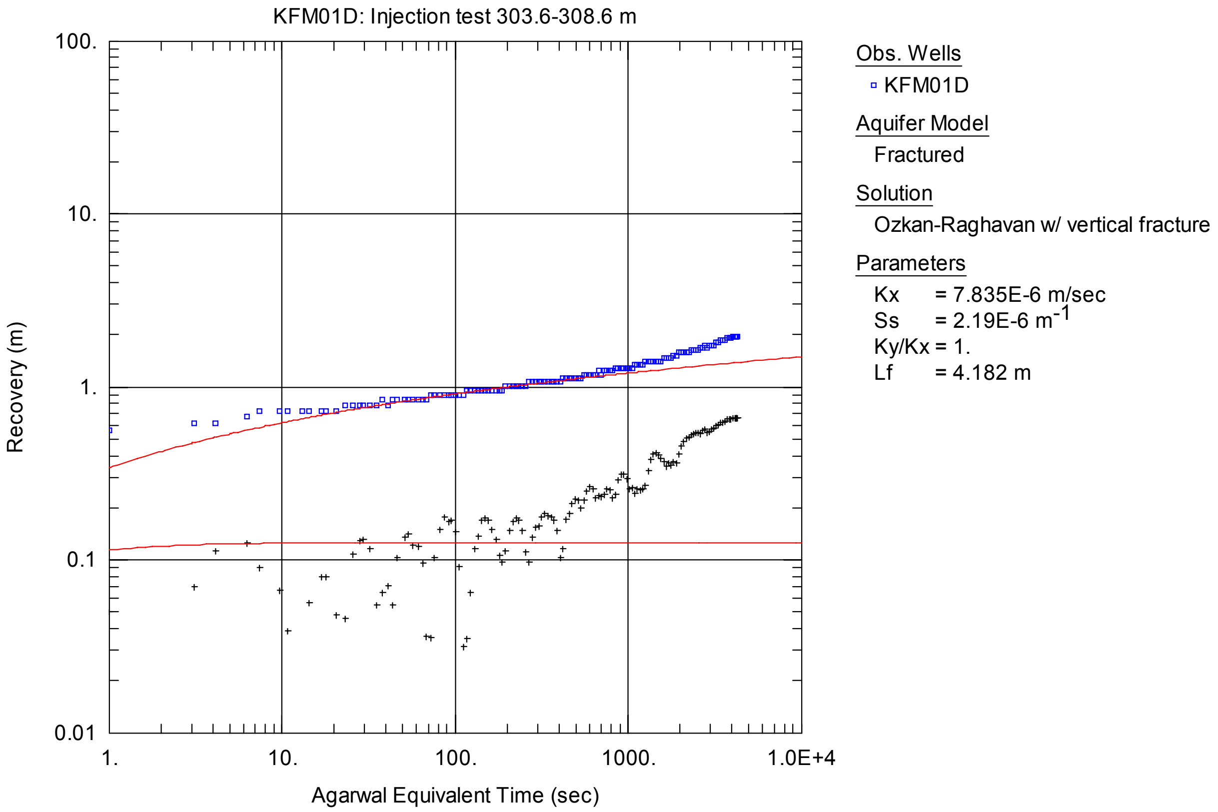


***Figure A3-281.** Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 303.6-308.6 m in KFM01D. The type curve fit is only to show that an assumption of PLF is not valid.*

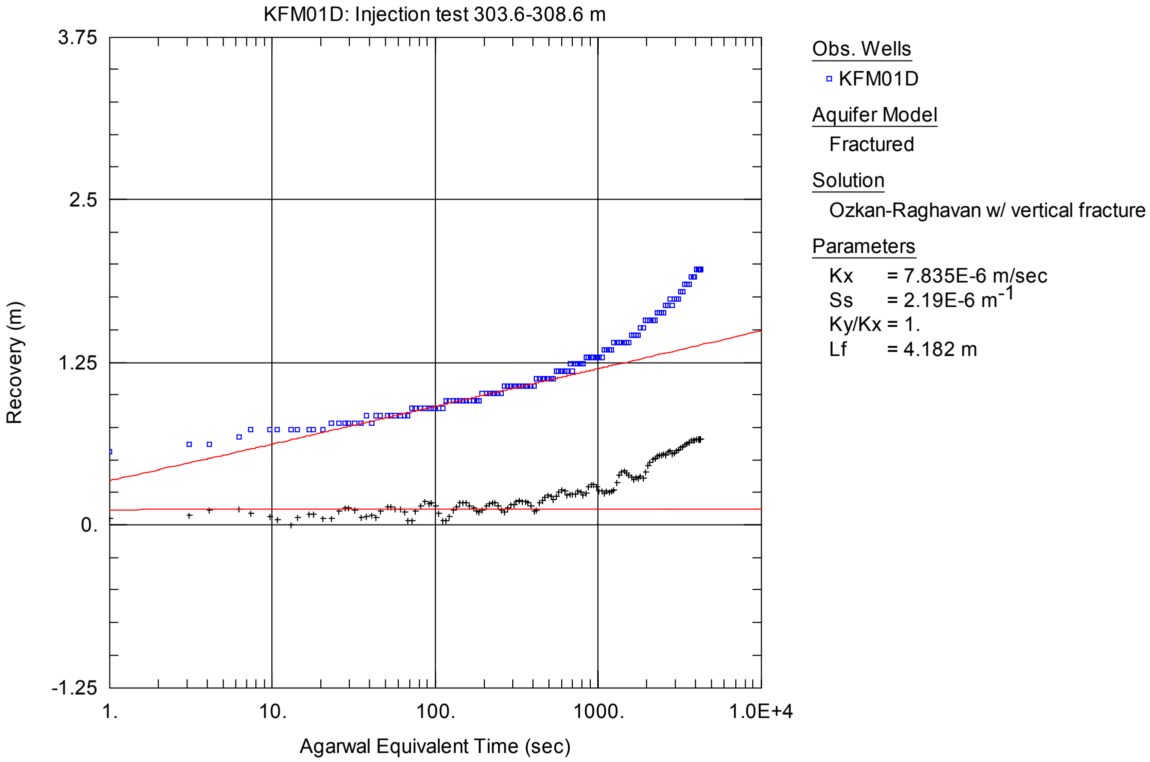


__Figure A3-282.__ Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 303.6-308.6 m in KFM01D. The type curve fit is only to show that an assumption of PLF is not valid.

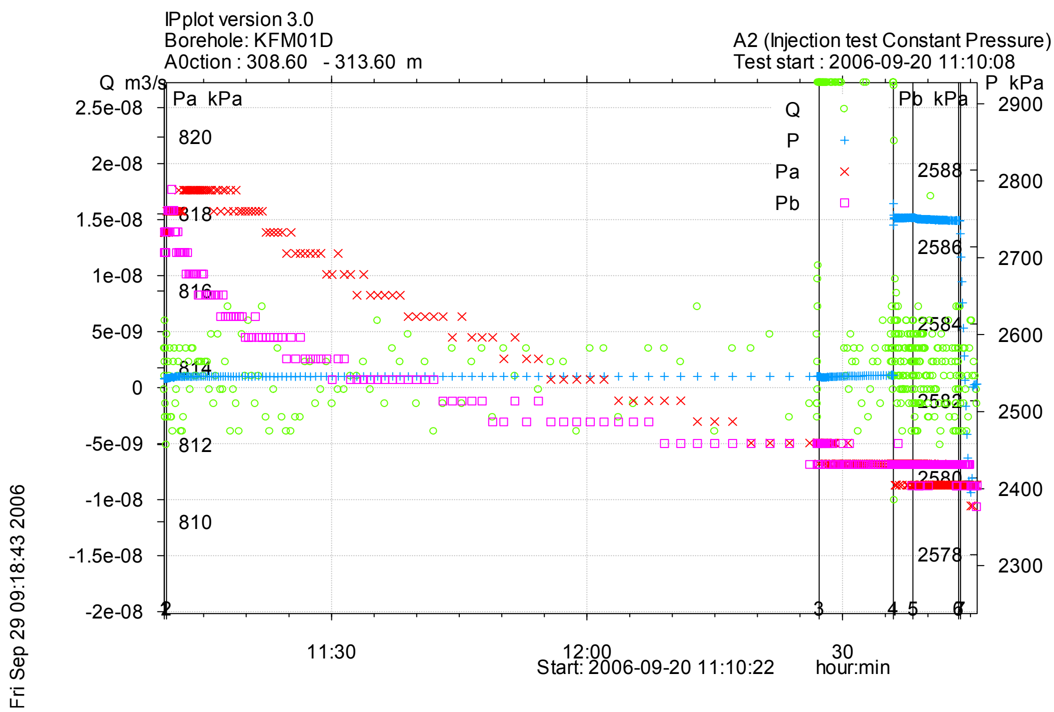


__Figure A3-283.__ Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 308.6-313.6 m in borehole KFM01D.

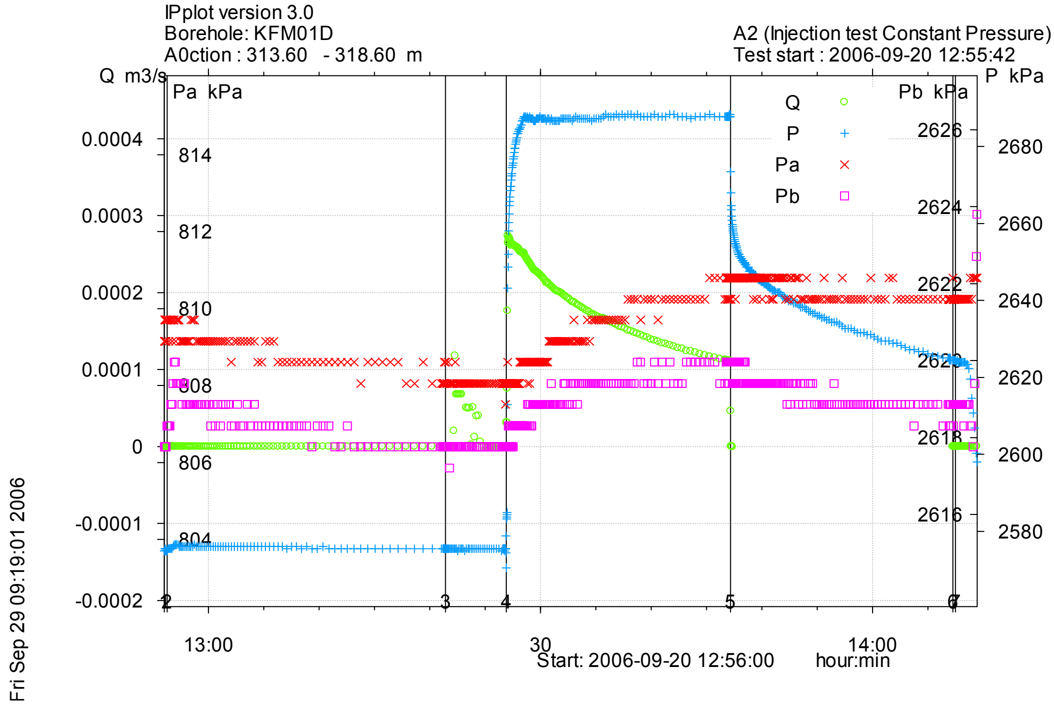


Figure A3-284. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 313.6-318.6 m in borehole KFM01D.*

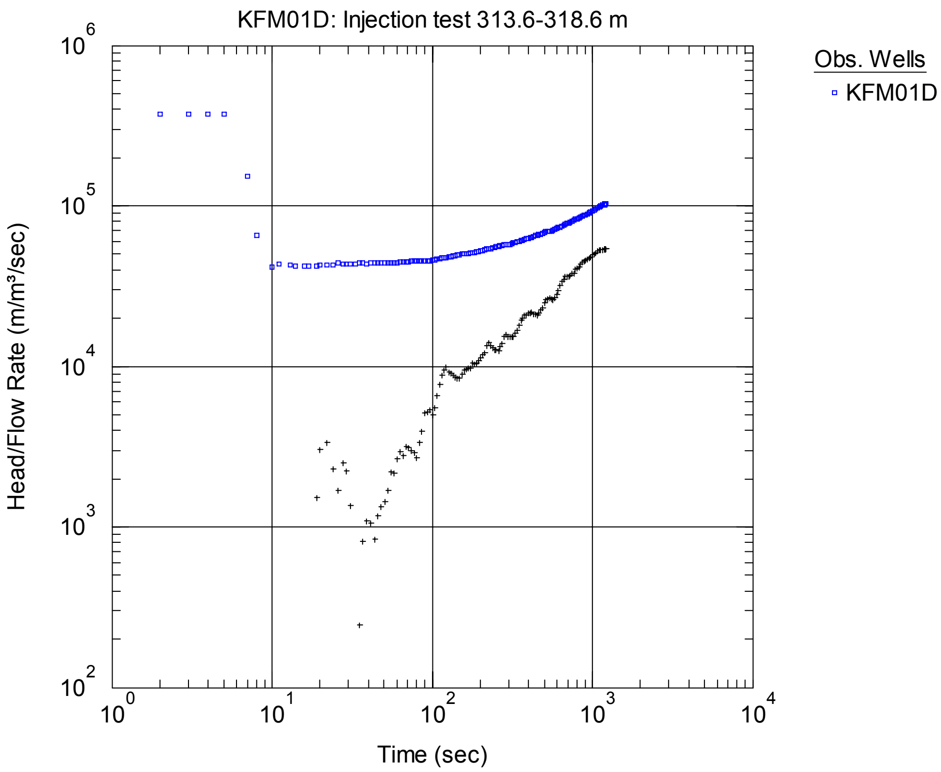


Figure A3-285. *Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 313.6-318.6 m in KFM01D. No type curve fit is shown since no unambiguous transient evaluation is possible.*

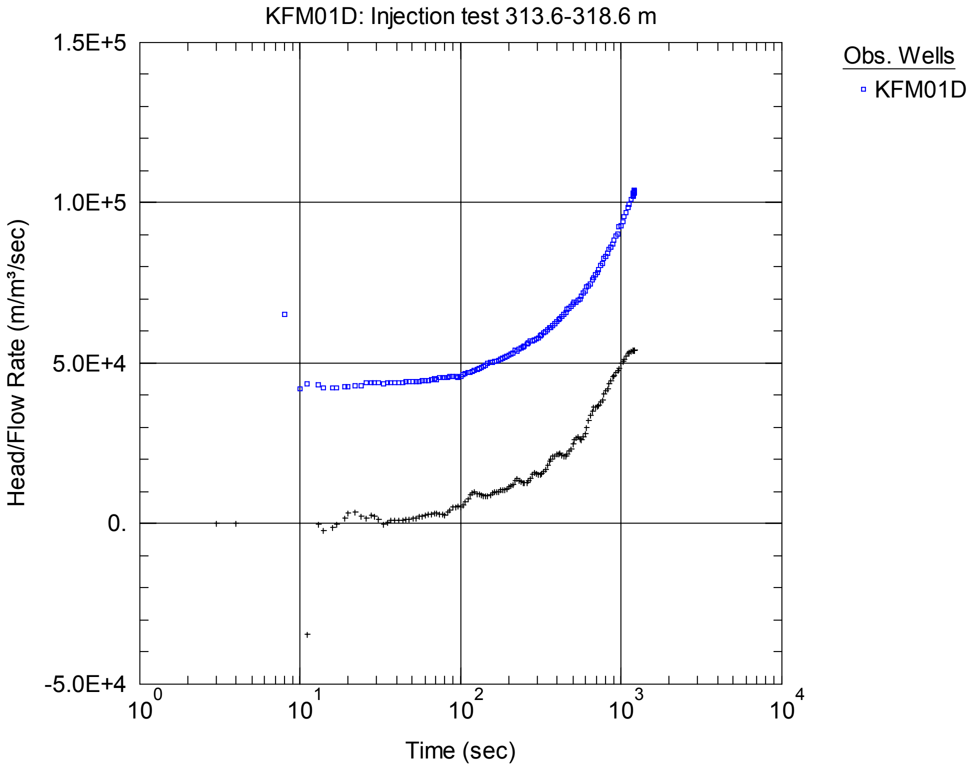


Figure A3-286. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 313.6-318.6 m in KFM01D. No type curve fit is shown since no unambiguous transient evaluation is possible.*

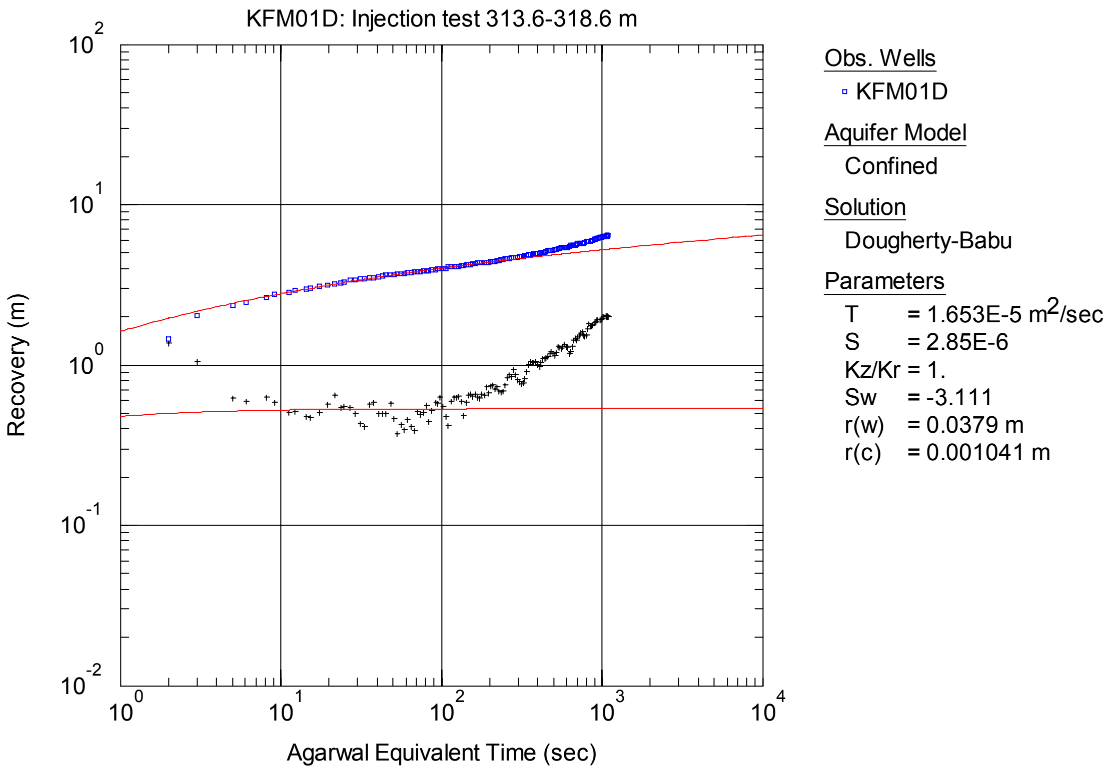


Figure A3-287. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 313.6-318.6 m in KFM01D.*

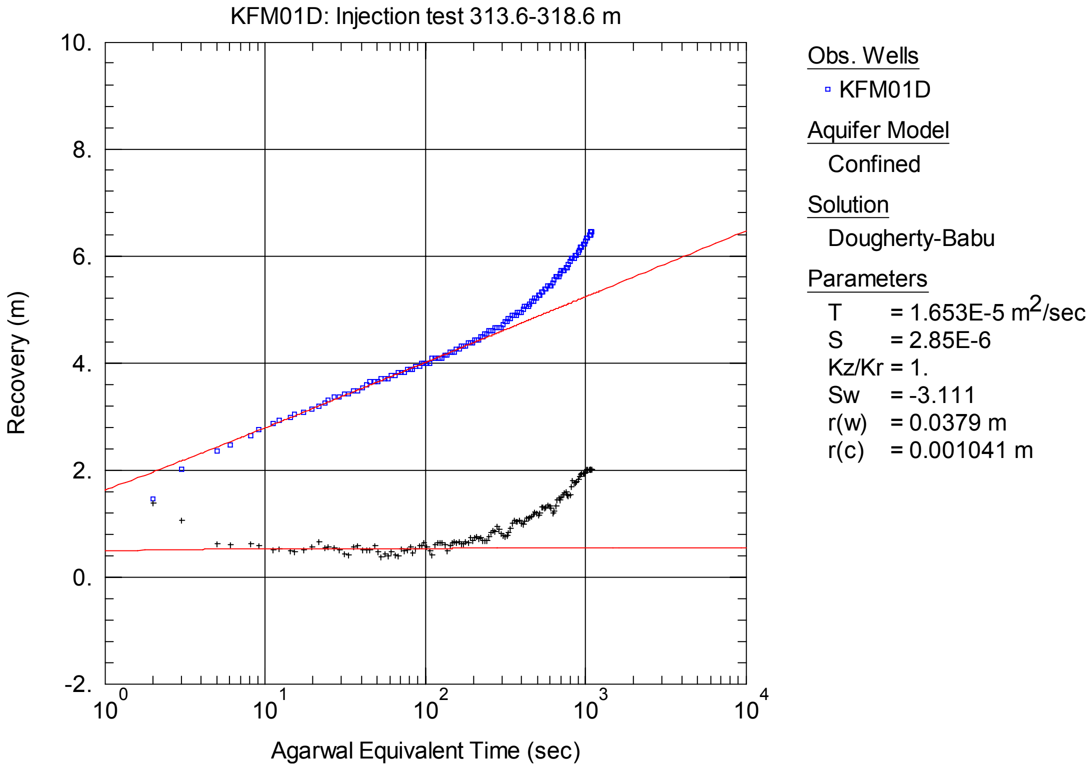


Figure A3-288. *Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 313.6-318.6 m in KFM01D.*

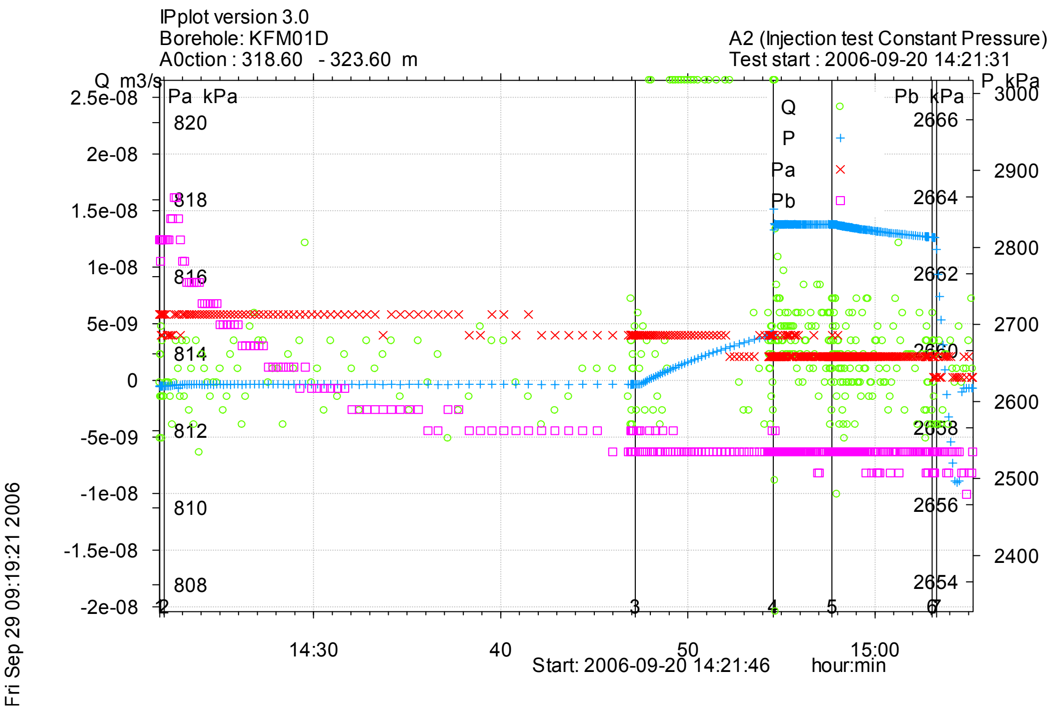


Figure A3-289. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 318.6-323.6 m in borehole KFM01D.*

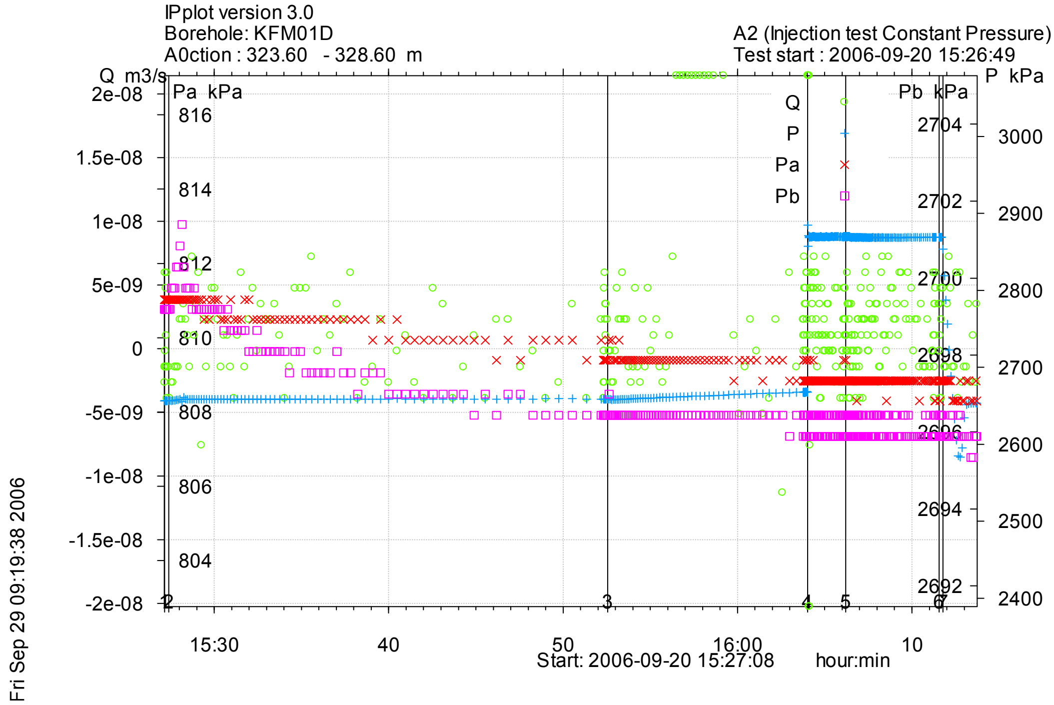


Figure A3-290. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 323.6-328.6 m in borehole KFM01D.*

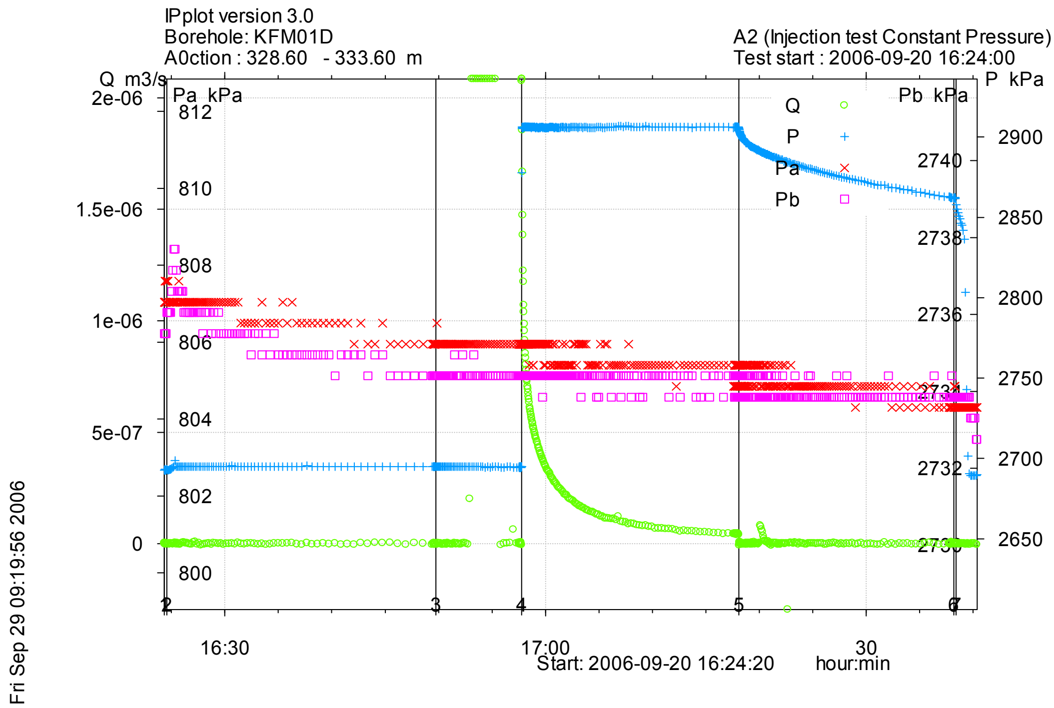


Figure A3-291. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 328.6-333.6 m in borehole KFM01D.*

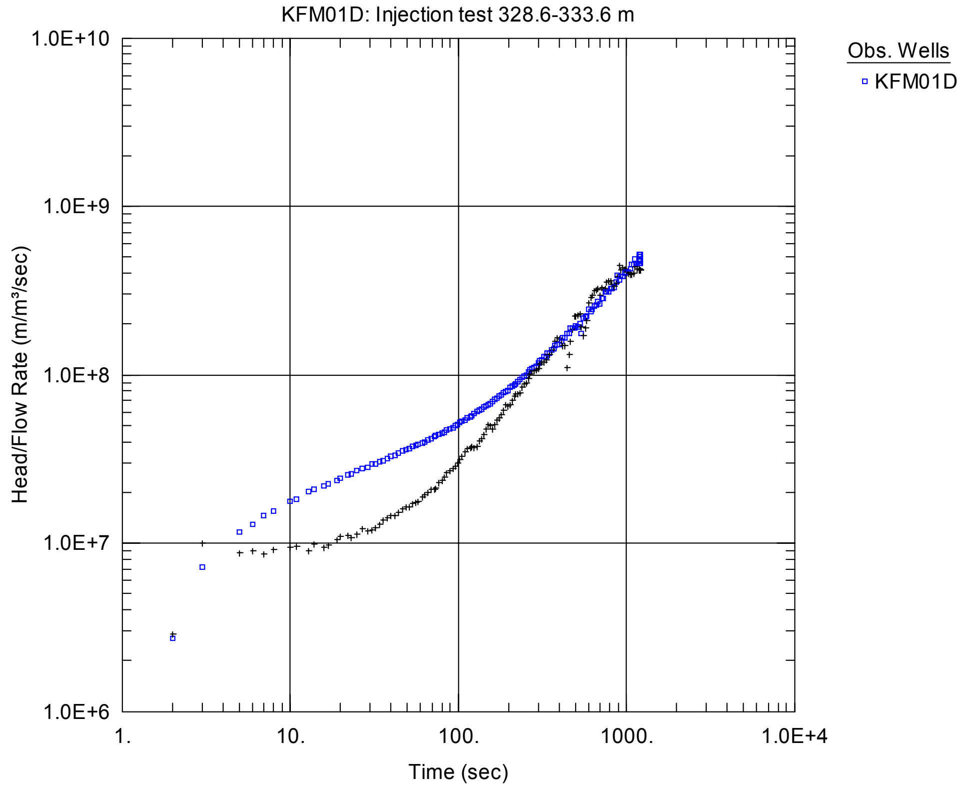


Figure A3-292. *Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 328.6-333.6 m in KFM01D. No type curve fit is shown since no unambiguous transient evaluation is possible.*

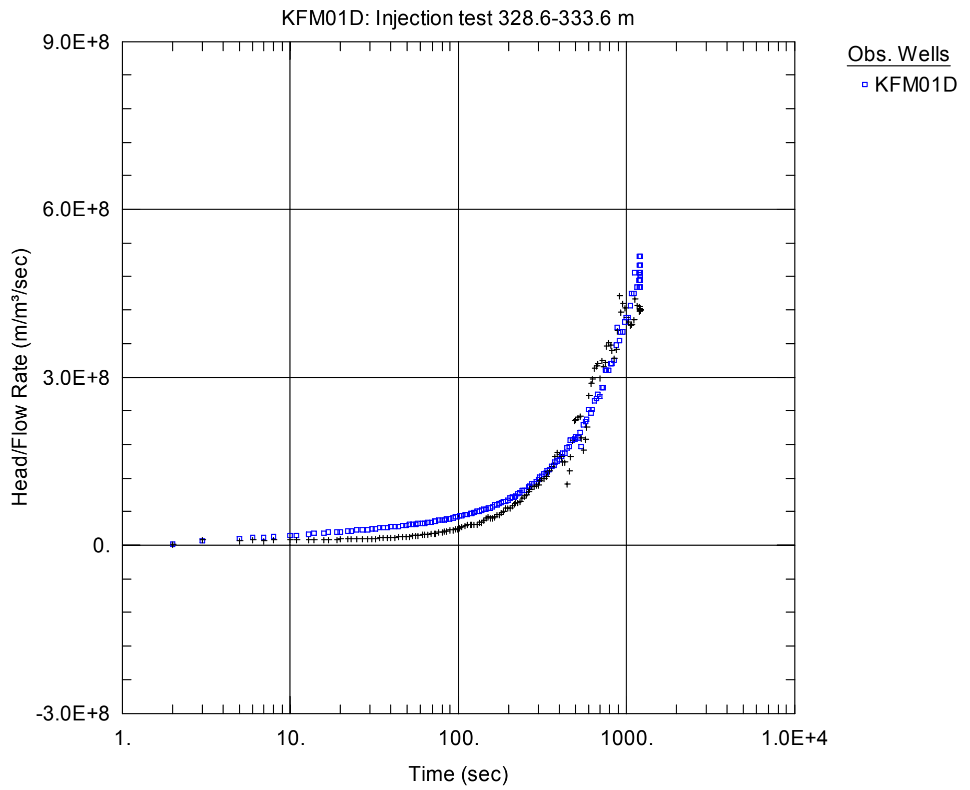


Figure A3-293. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 328.6-333.6 m in KFM01D. No type curve fit is shown since no unambiguous transient evaluation is possible.*

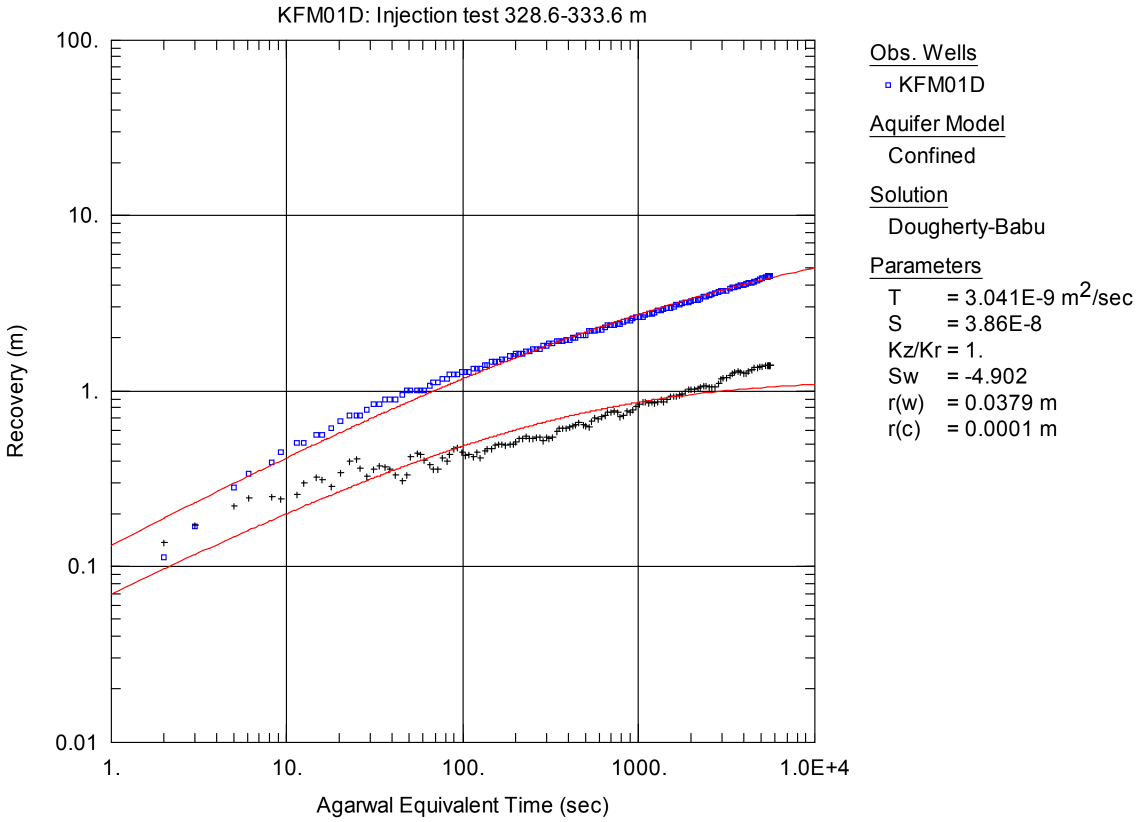


***Figure A3-294.** Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 328.6-333.6 m in KFM01D.*

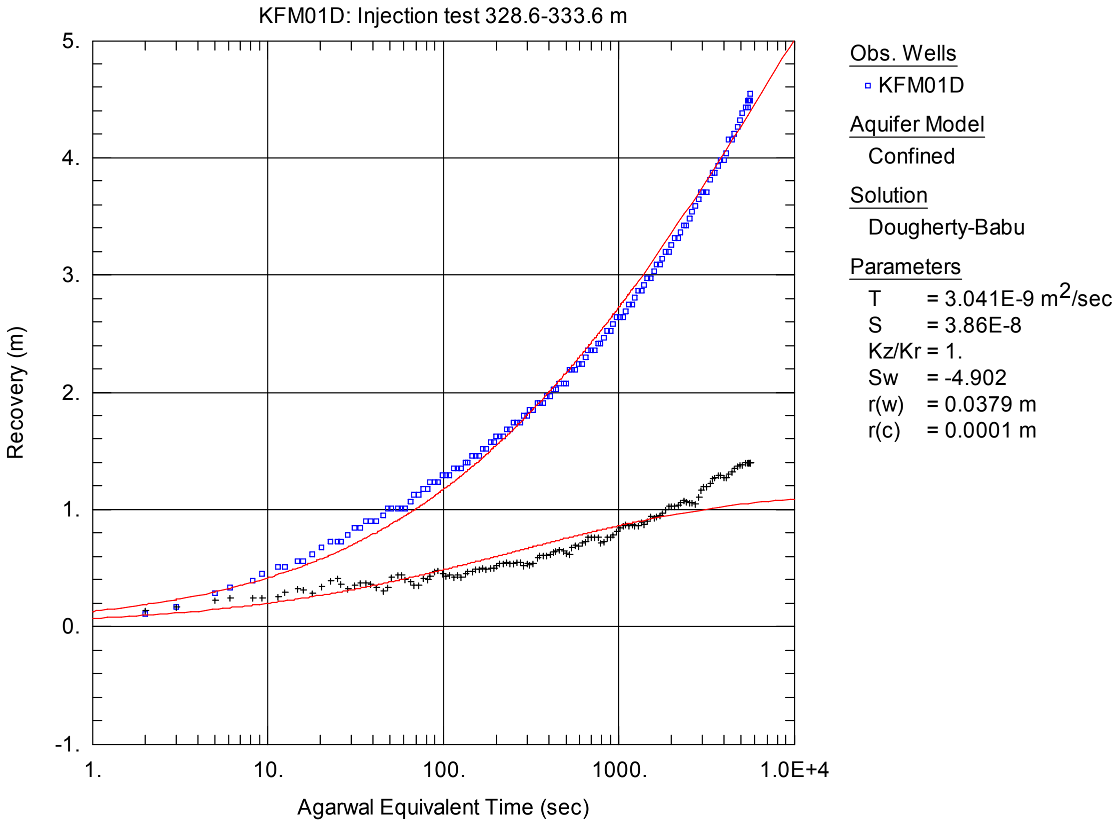


***Figure A3-295.** Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 328.6-333.6 m in KFM01D.*

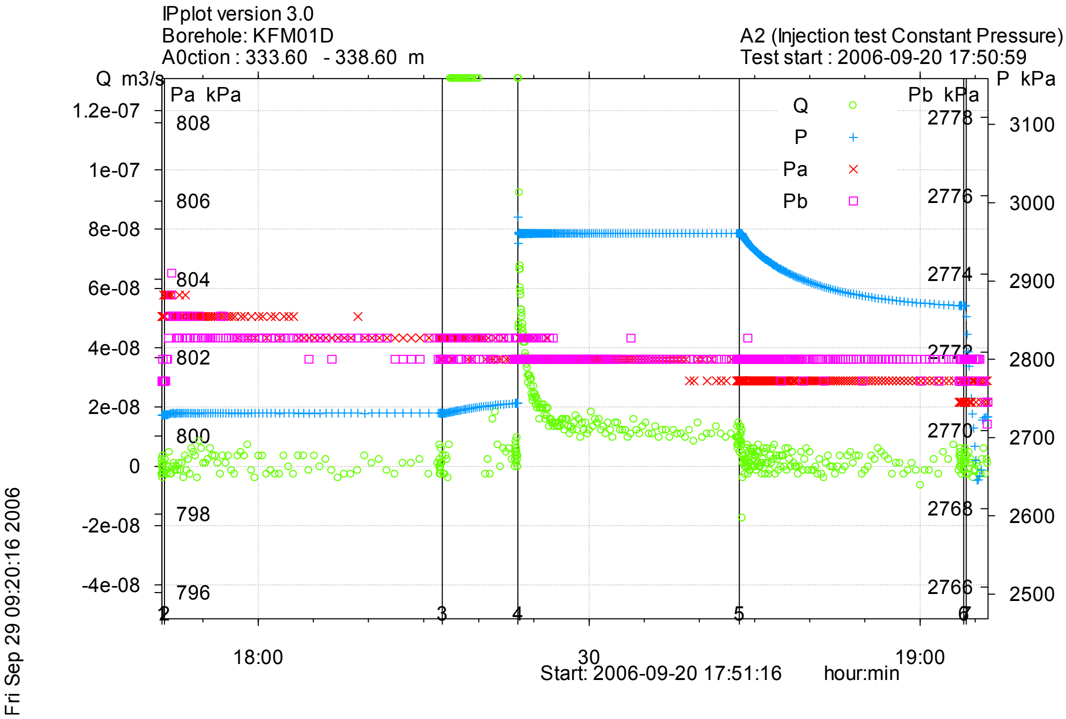


Figure A3-296. Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 333.6-338.6 m in borehole KFM01D.

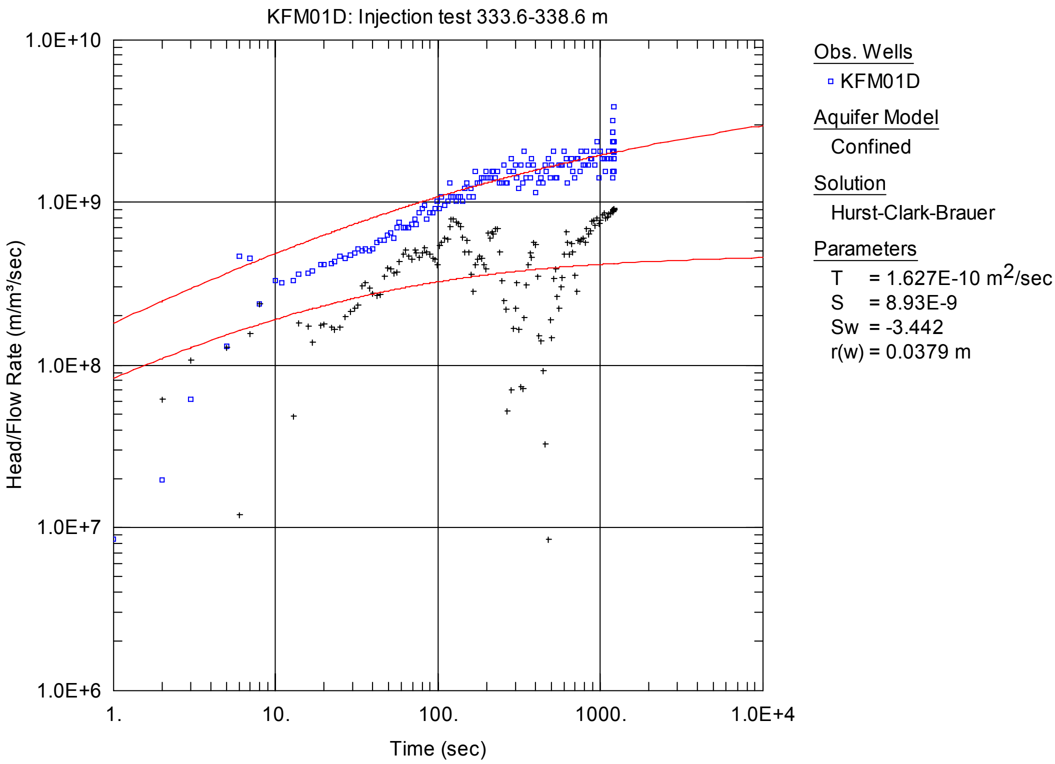


Figure A3-297. Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 333.6-338.6 m in KFM01D.

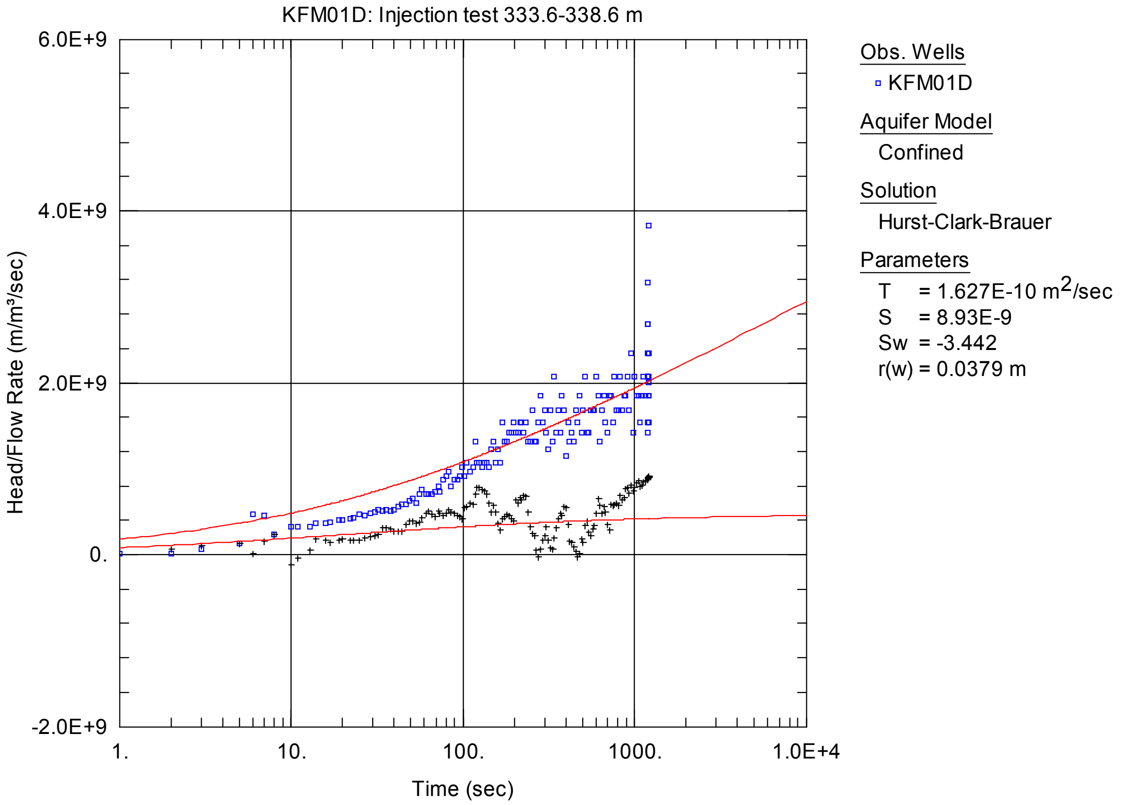


Figure A3-298. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 333.6-338.6 m in KFM01D.*

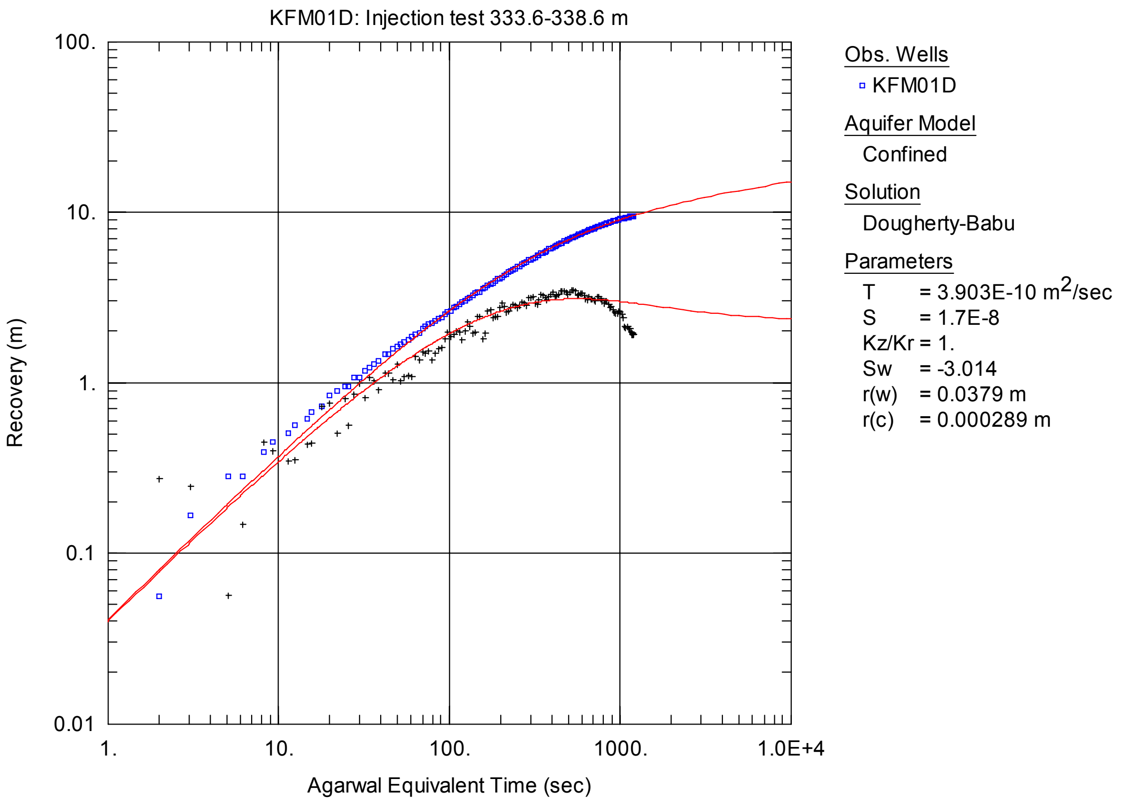


Figure A3-299. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 333.6-338.6 m in KFM01D. The type curve fit is only to show that an assumption of PRF is not valid.*

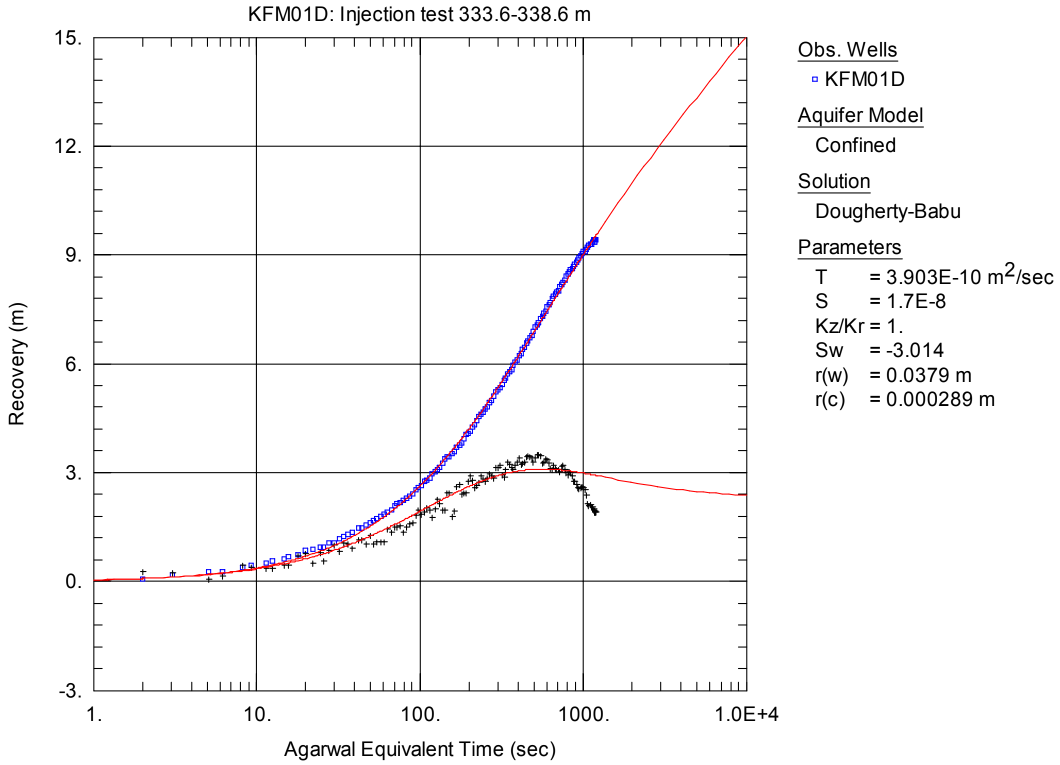


Figure A3-300. *Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 333.6-338.6 m in KFM01D. The type curve fit is only to show that an assumption of PRF is not valid.*

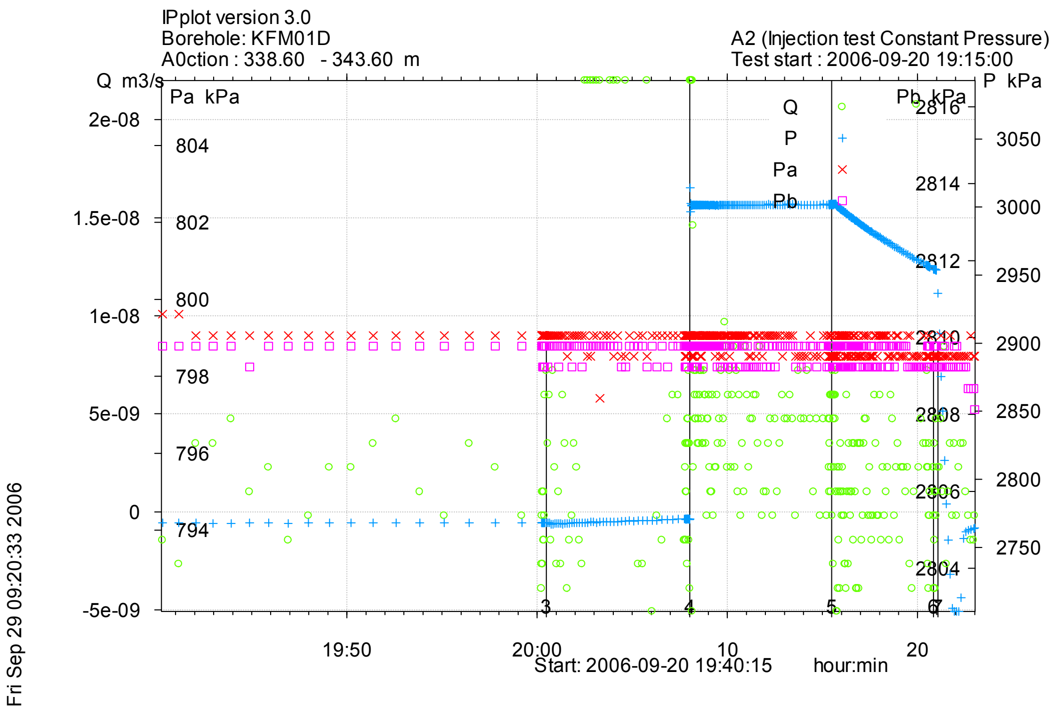


Figure A3-301. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 338.6-343.6 m in borehole KFM01D.*

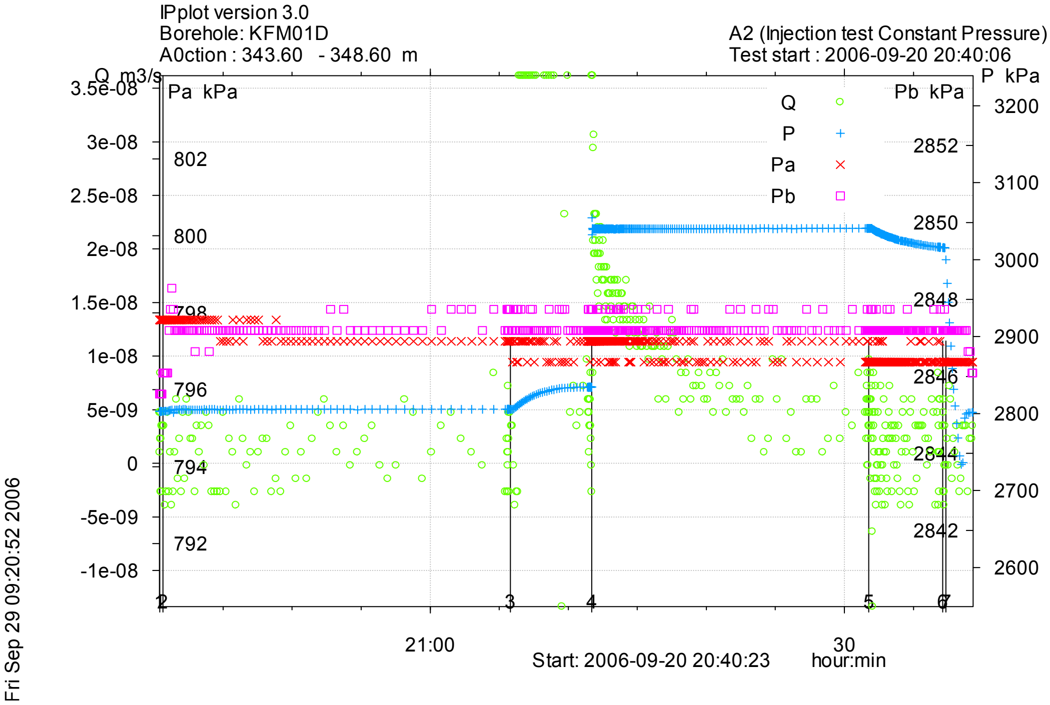


Figure A3-302. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 343.6-348.6 m in borehole KFM01D.*

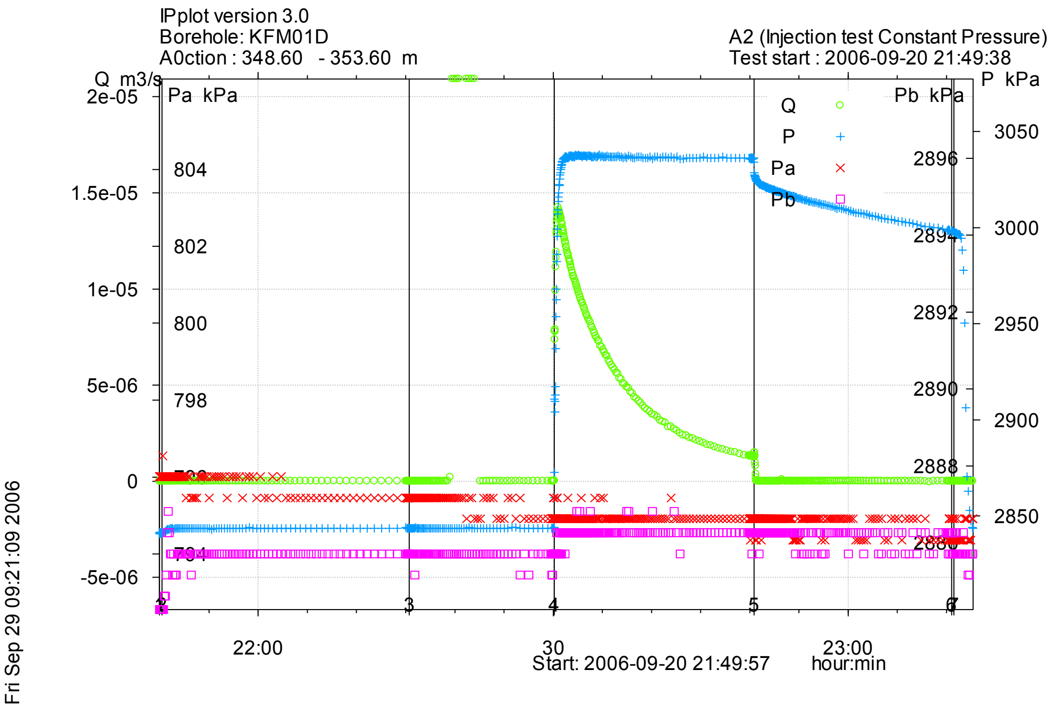


Figure A3-303. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 348.6-353.6 m in borehole KFM01D.*

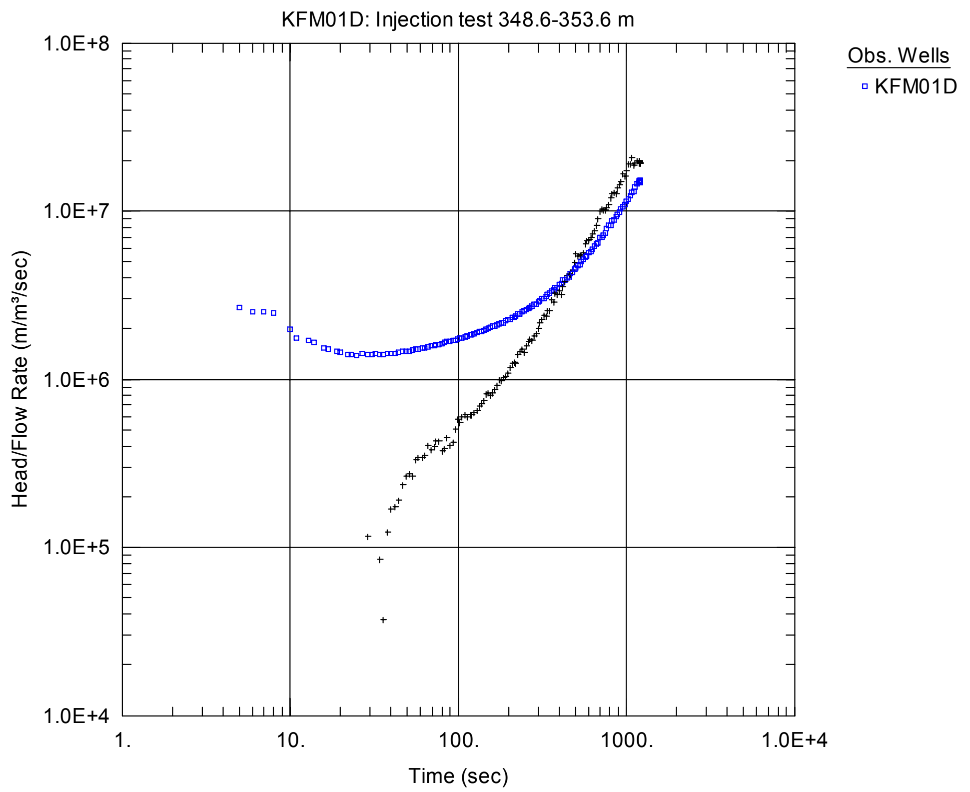


Figure A3-304. *Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 348.6-353.6 m in KFM01D. No type curve fit is shown since no unambiguous transient evaluation is possible.*

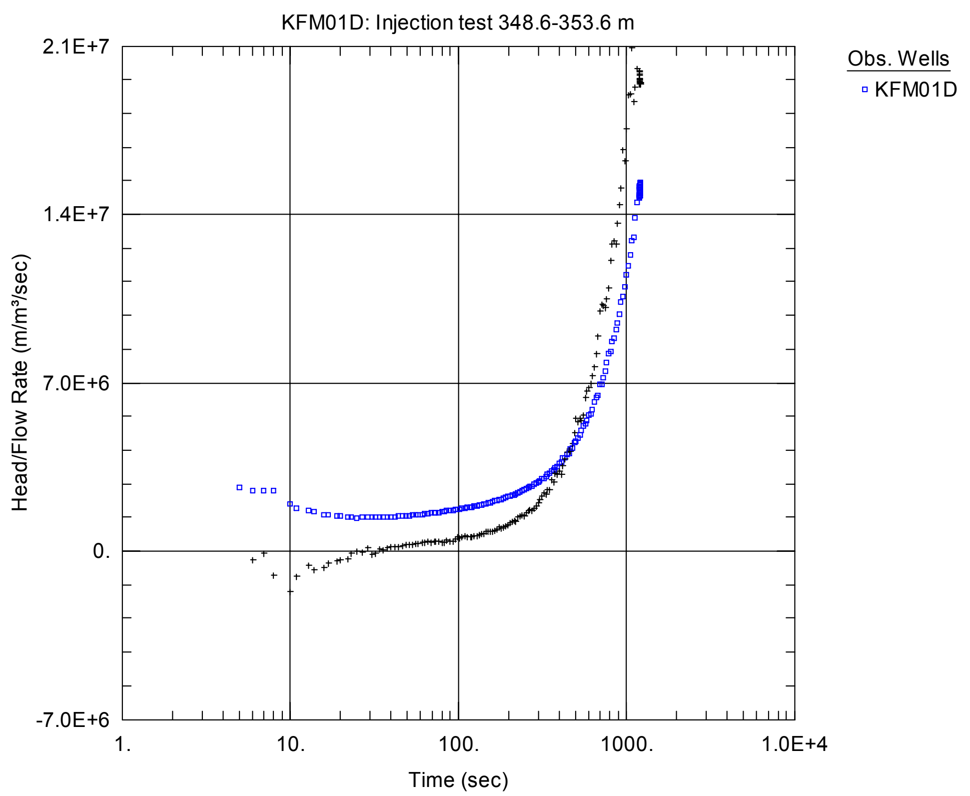


Figure A3-305. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 348.6-353.6 m in KFM01D. No type curve fit is shown since no unambiguous transient evaluation is possible.*

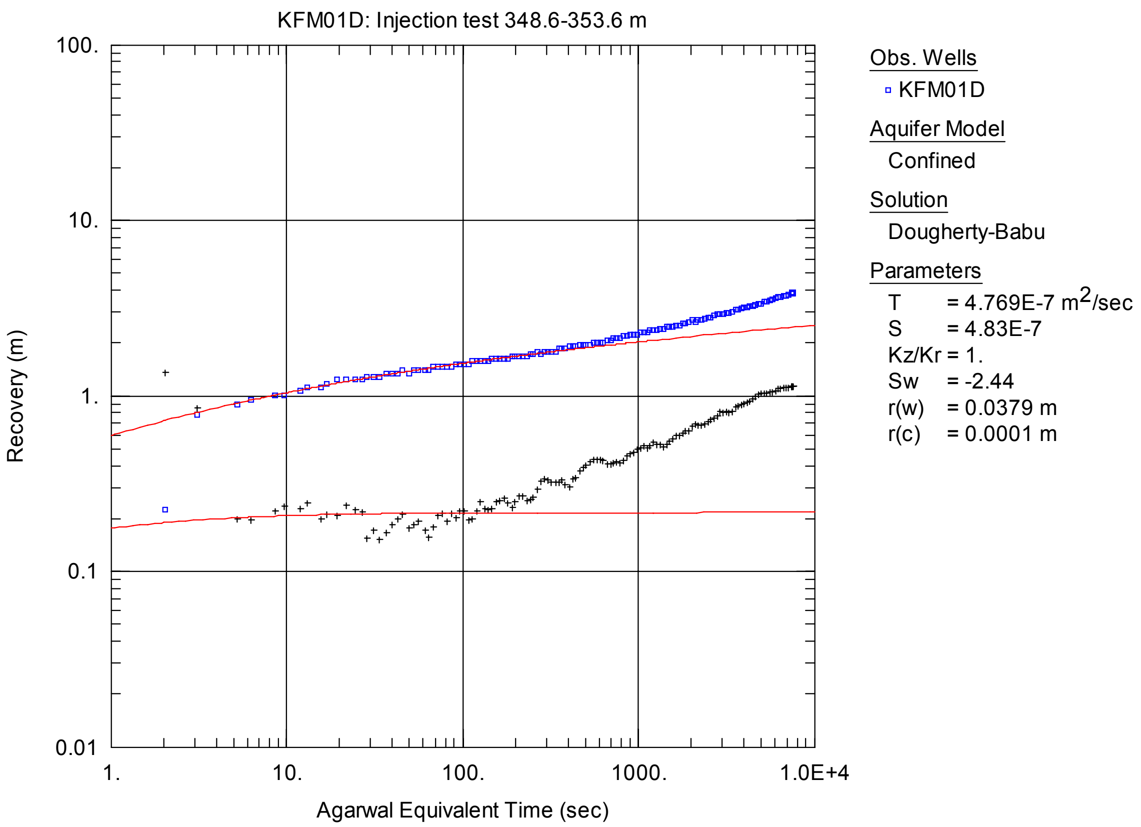


***Figure A3-306.** Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 348.6-353.6 m in KFM01D.*

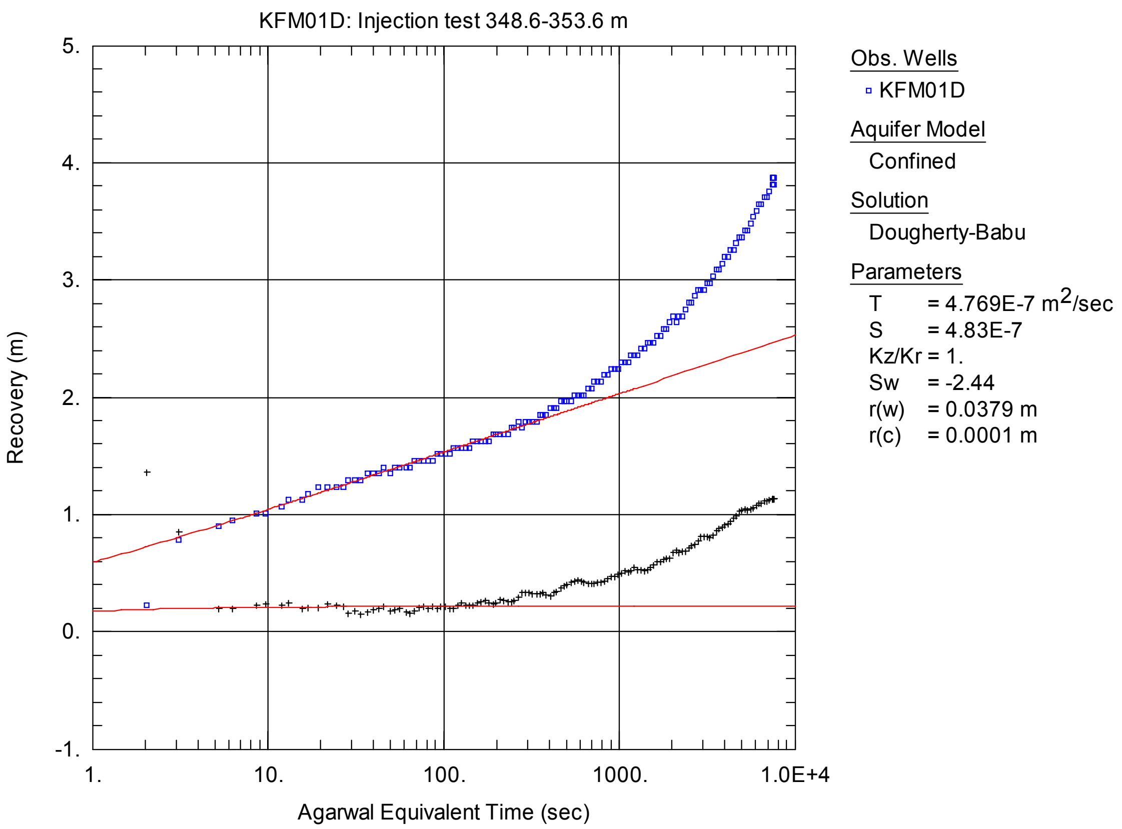


***Figure A3-307.** Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 348.6-353.6 m in KFM01D.*

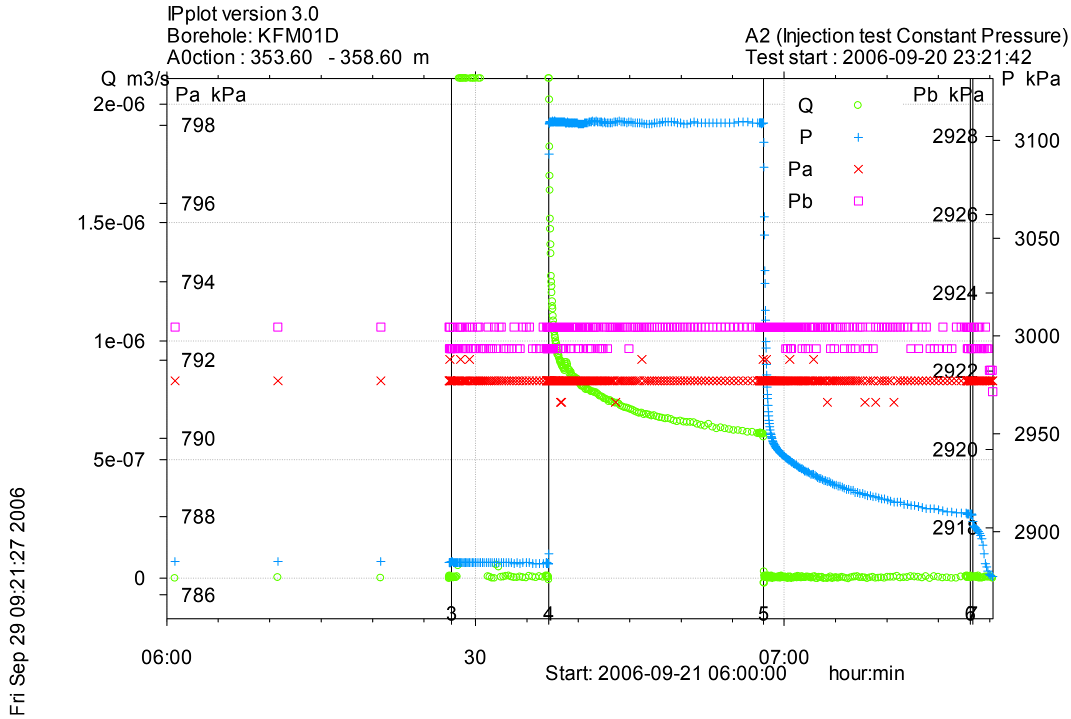


Figure A3-308. Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 353.6-358.6 m in borehole KFM01D.

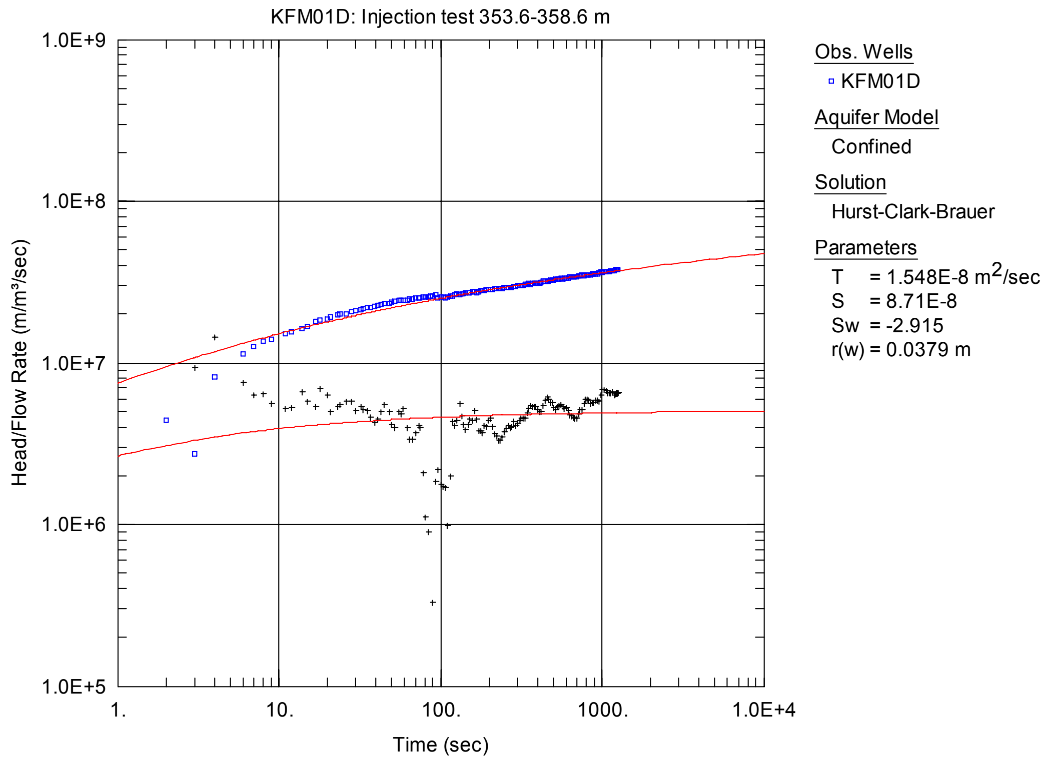


Figure A3-309. Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 353.6-358.6 m in KFM01D.

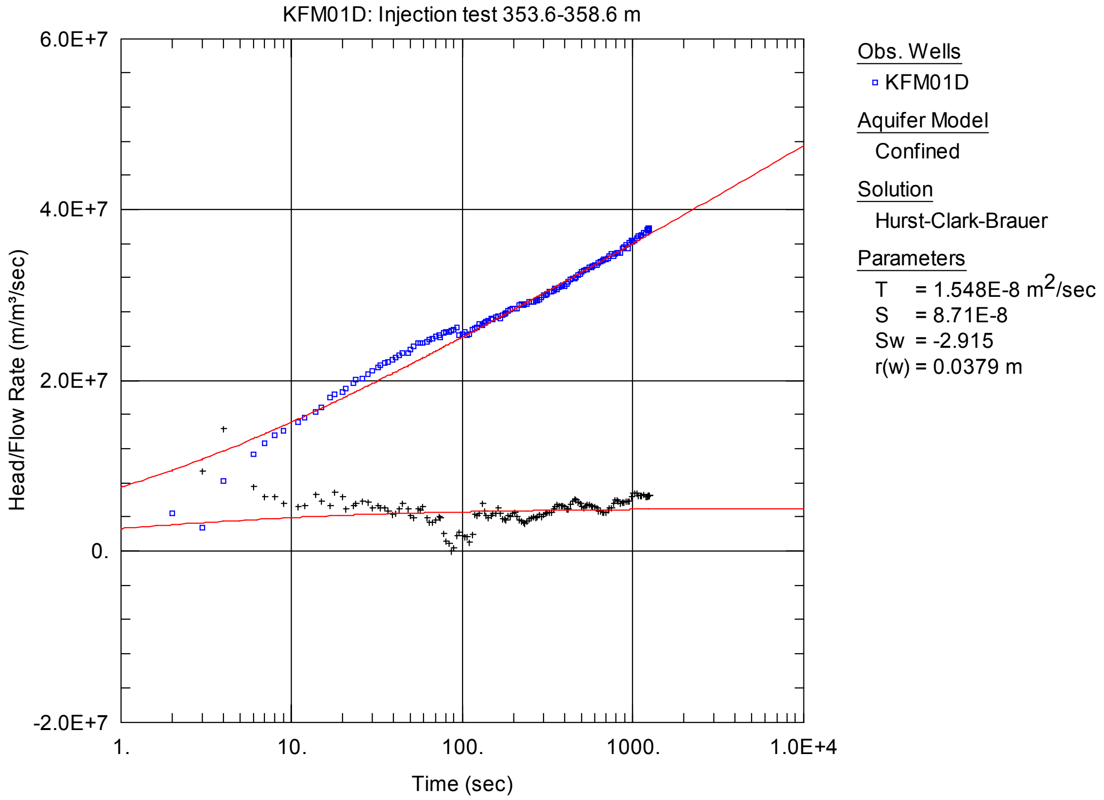


Figure A3-310. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 353.6-358.6 m in KFM01D.*

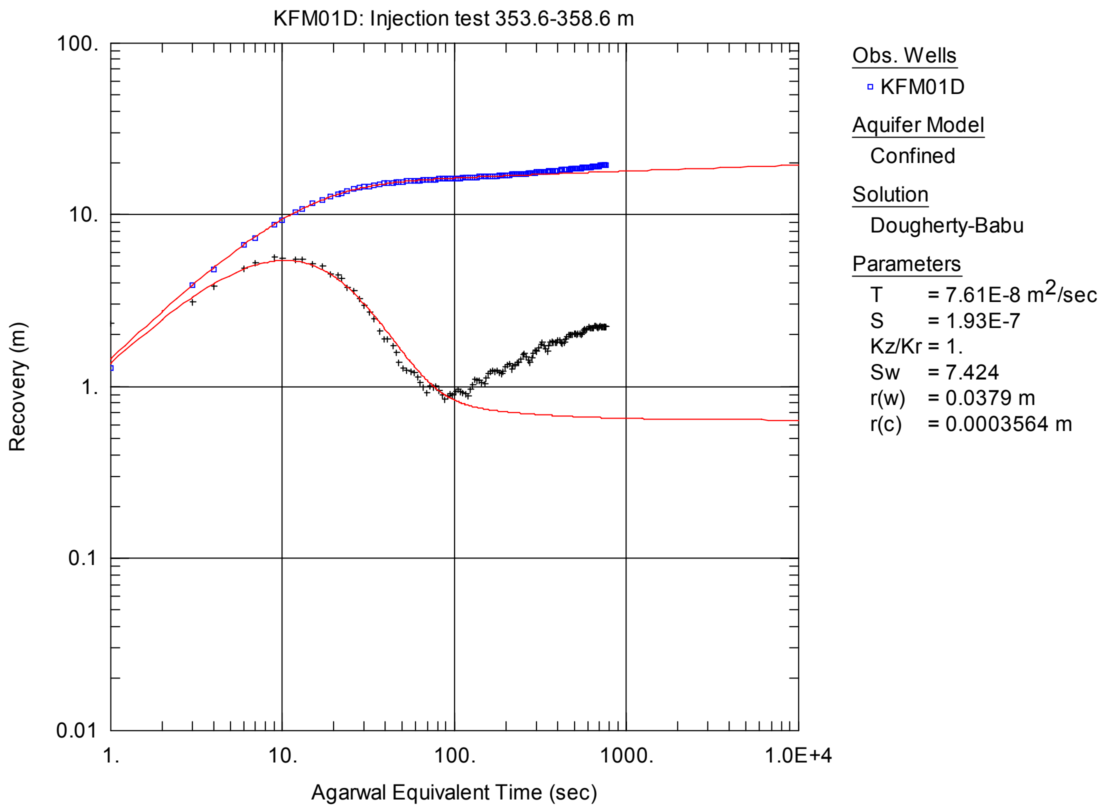


Figure A3-311. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 353.6-358.6 m in KFM01D. The type curve fit is only to show that an assumption of PRF is not valid.*

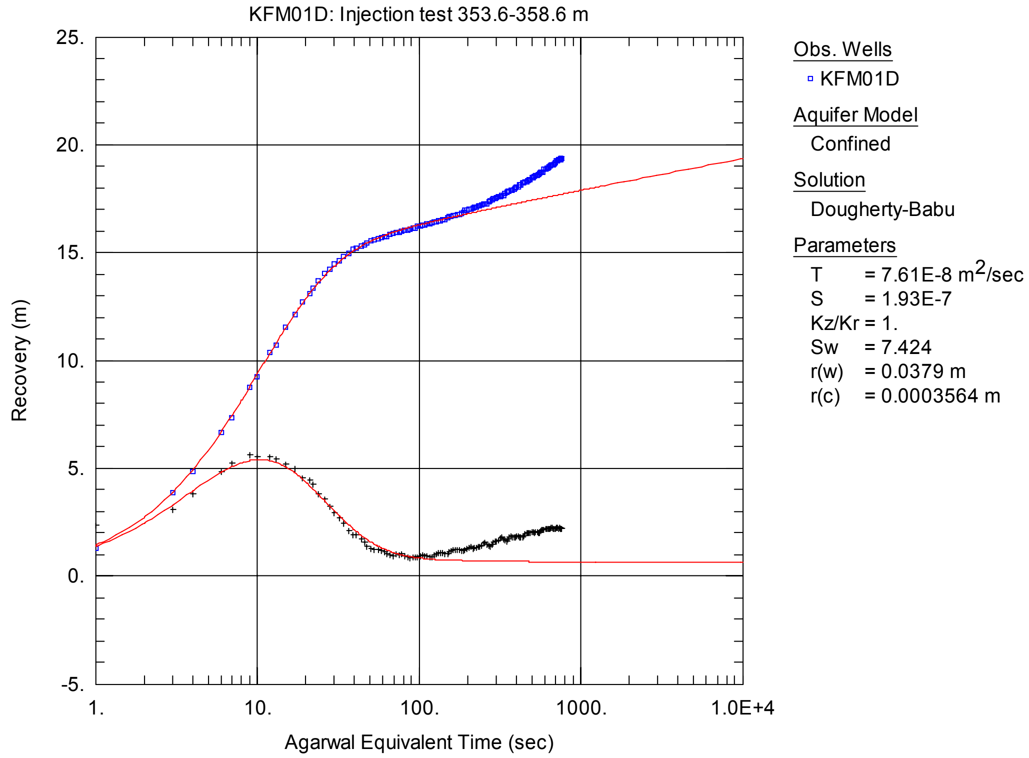


***Figure A3-312.** Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 353.6-358.6 m in KFM01D. The type curve fit is only to show that an assumption of PRF is not valid.*

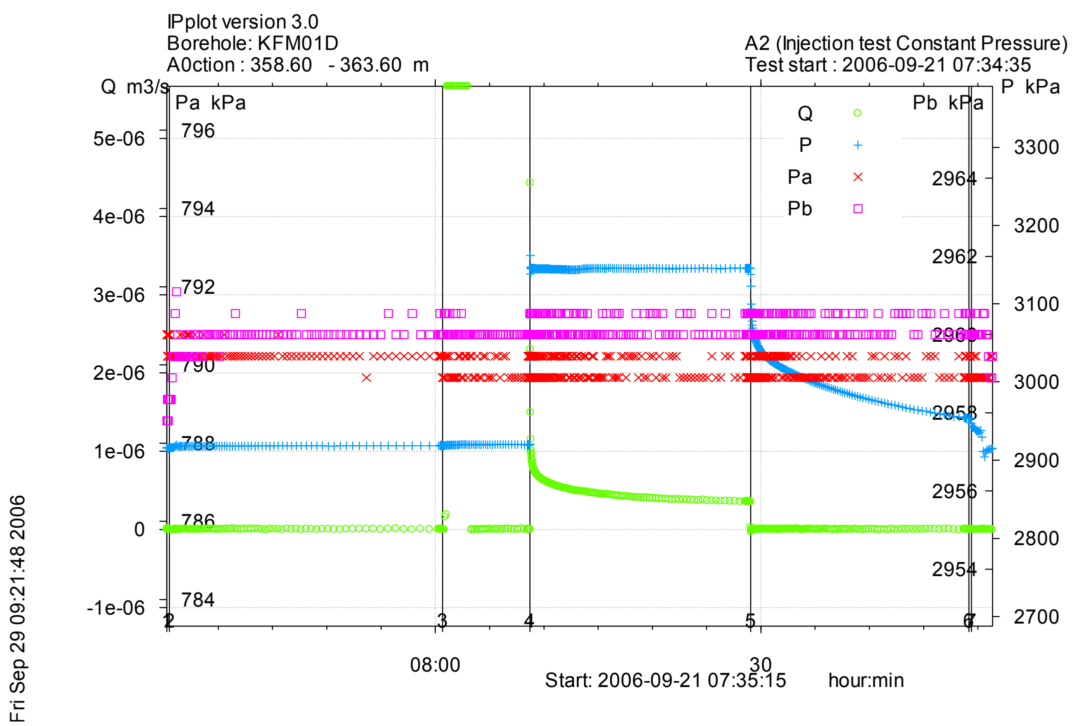


***Figure A3-313.** Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 358.6-363.6 m in borehole KFM01D.*

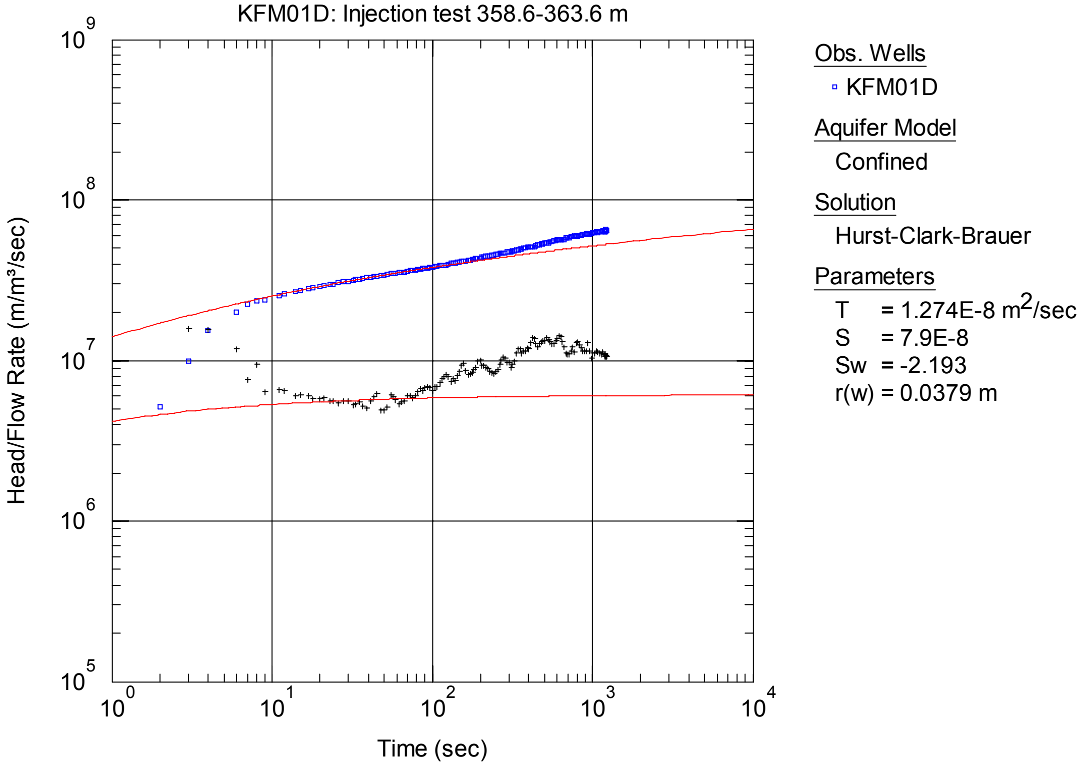


Figure A3-314. *Log-log plot of head/flow rate (□) and derivative (+) versus time, showing fit to the PRF1 solution, from the injection test in section 358.6-363.6 m in KFM01D.*

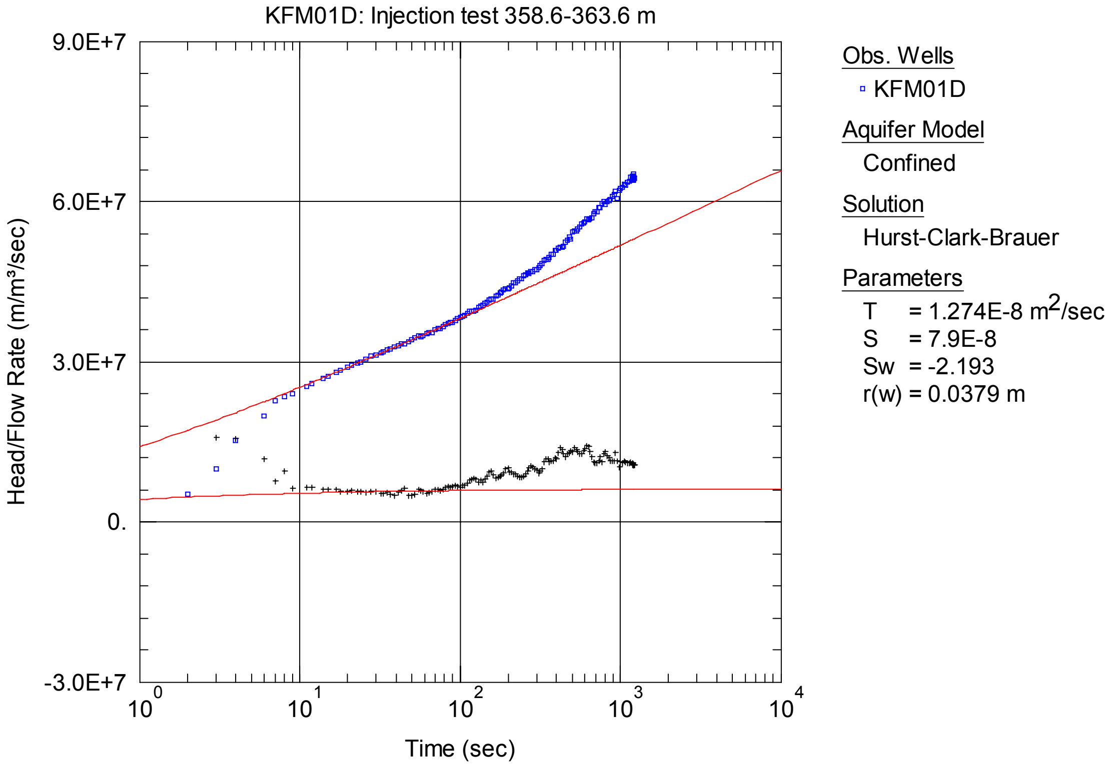


Figure A3-315. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, showing fit to the PRF1 solution, from the injection test in section 358.6-363.6 m in KFM01D.*

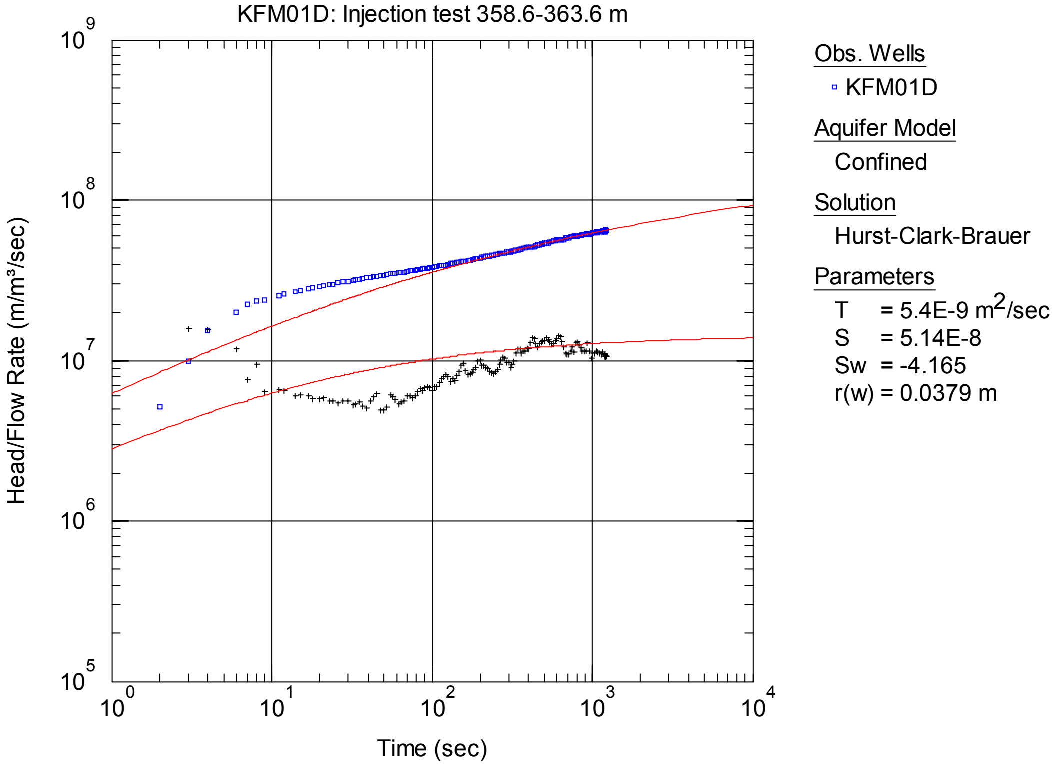


Figure A3-316. *Log-log plot of head/flow rate (□) and derivative (+) versus time, showing fit to the PRF2 solution, from the injection test in section 358.6-363.6 m in KFM01D.*

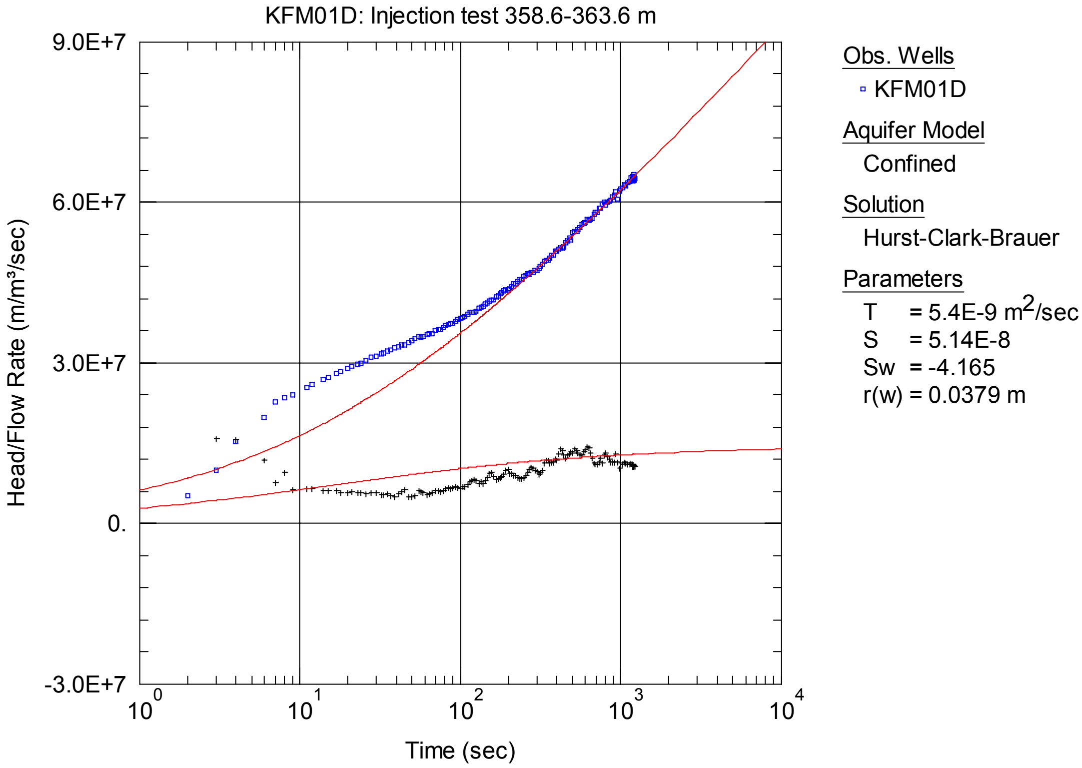


Figure A3-317. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, showing fit to the PRF2 solution, from the injection test in section 358.6-363.6 m in KFM01D.*

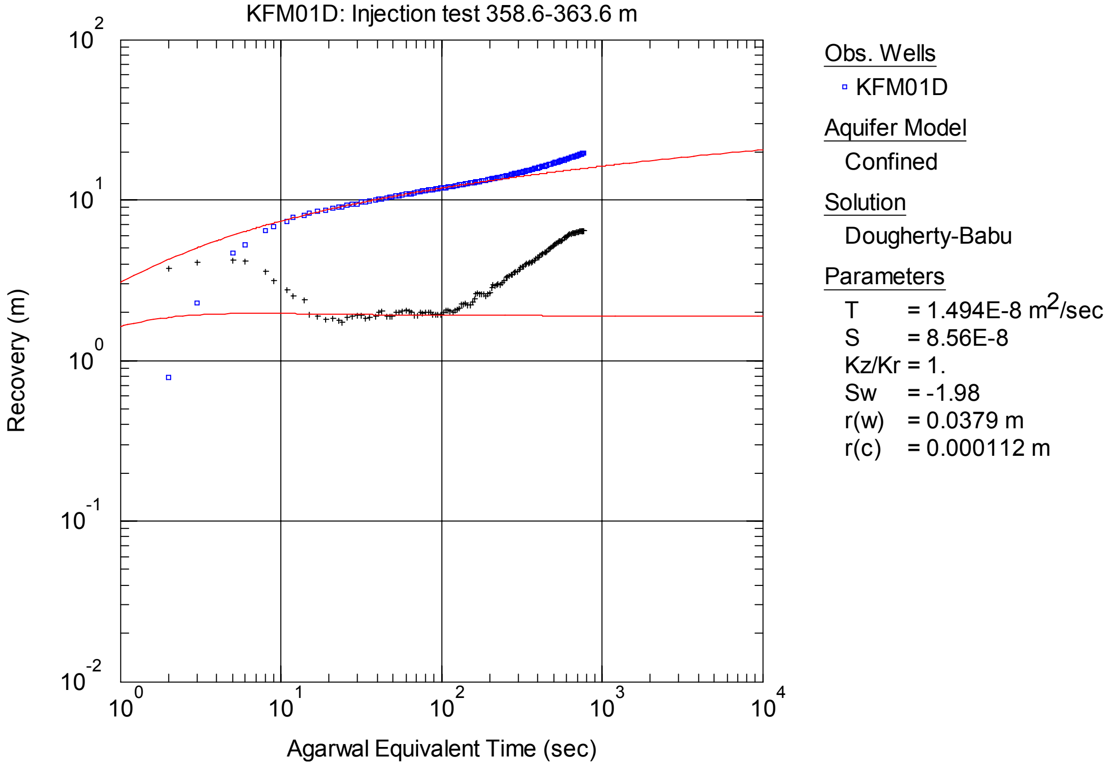


Figure A3-318. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 358.6-363.6 m in KFM01D.*

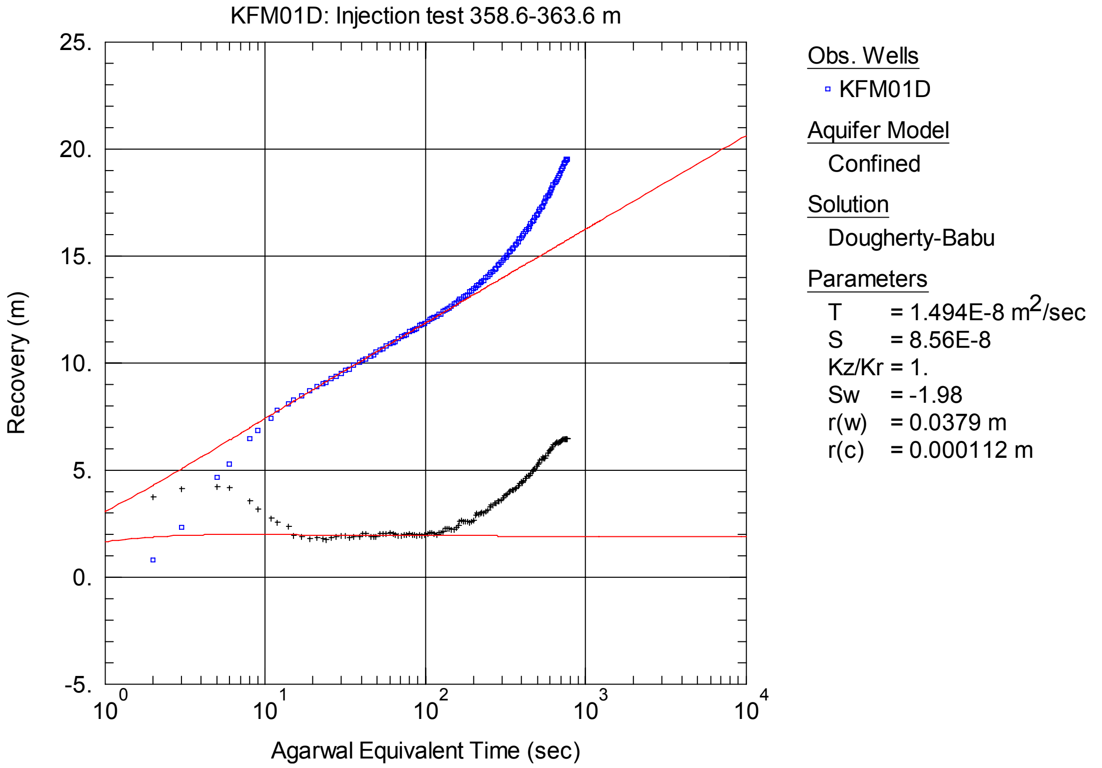


Figure A3-319. *Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 358.6-363.6 m in KFM01D.*

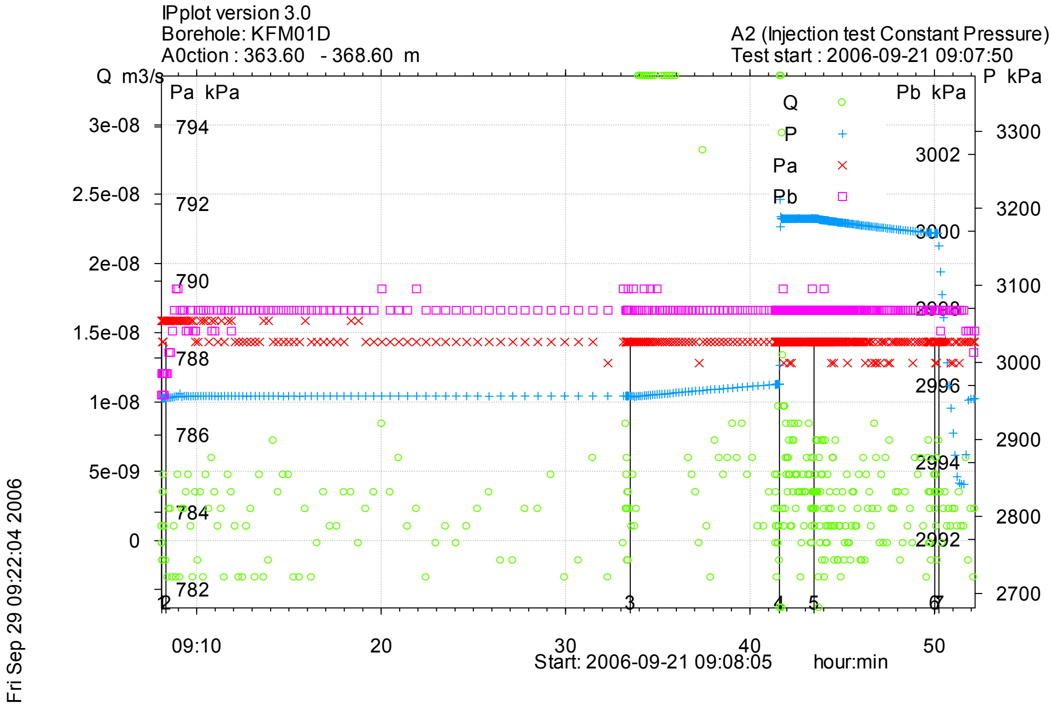


Figure A3-320. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 363.6-368.6 m in borehole KFM01D.*

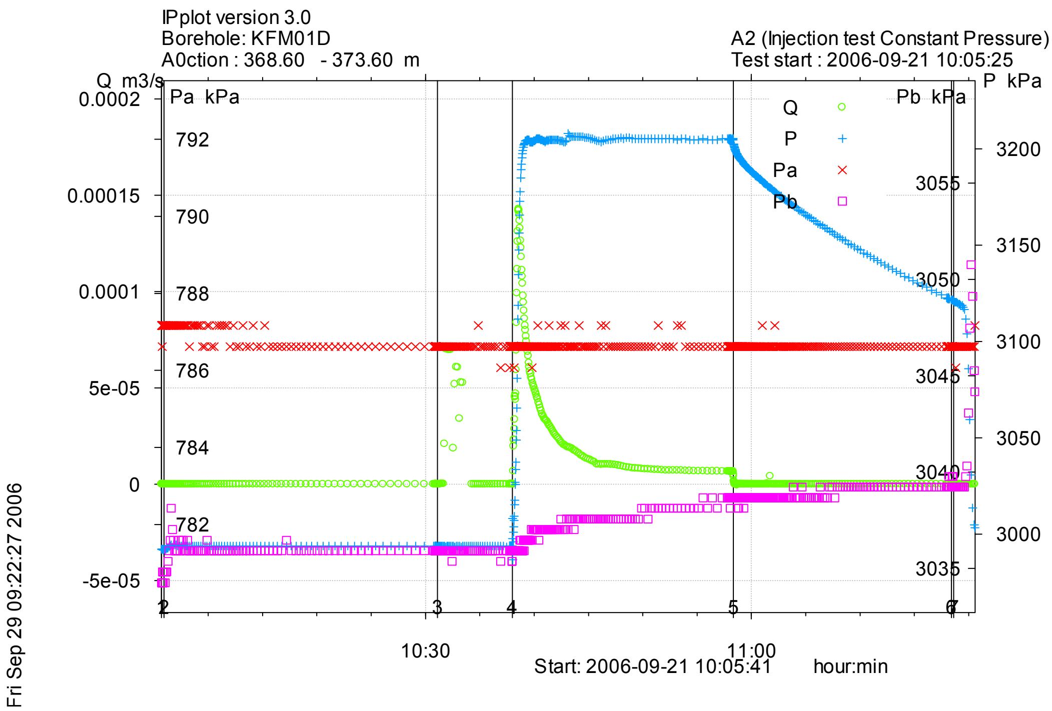


Figure A3-321. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 368.6-373.6 m in borehole KFM01D.*

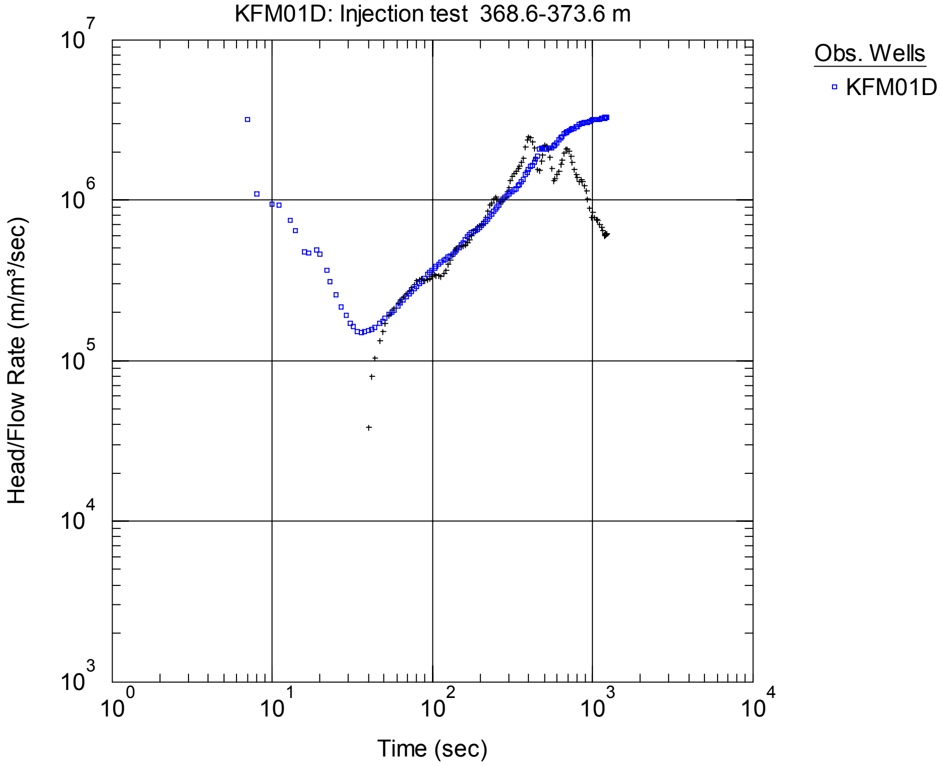


Figure A3-322. *Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 368.6-373.6 m in KFM01D. No type curve fit is shown since no unambiguous transient evaluation is possible.*

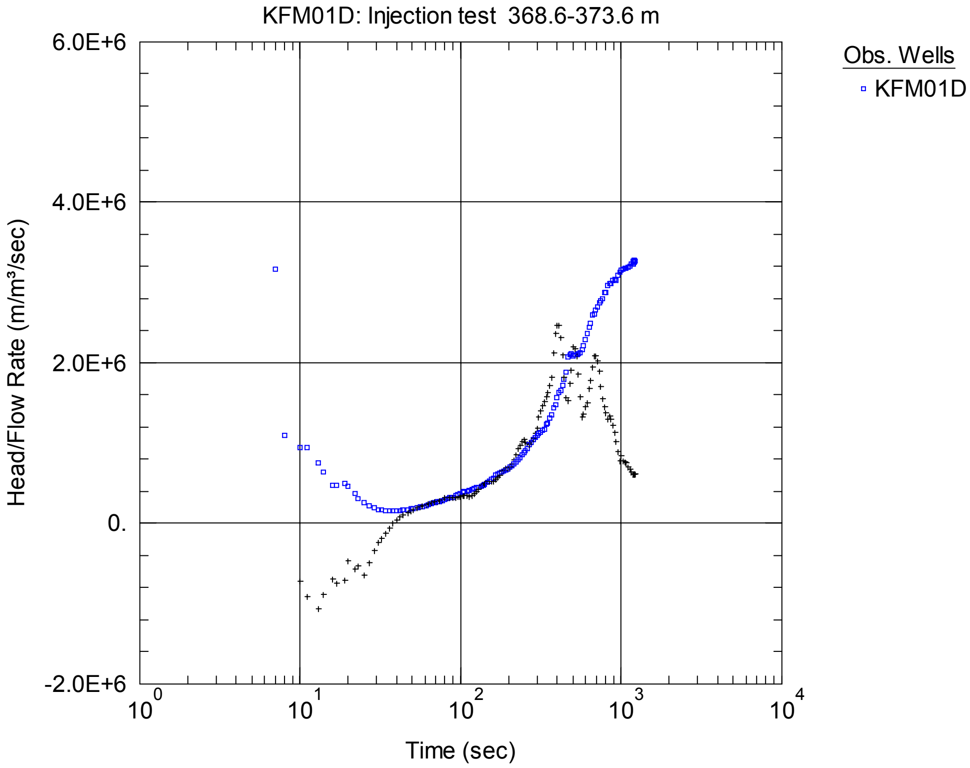


Figure A3-323. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 368.6-373.6 m in KFM01D. No type curve fit is shown since no unambiguous transient evaluation is possible.*

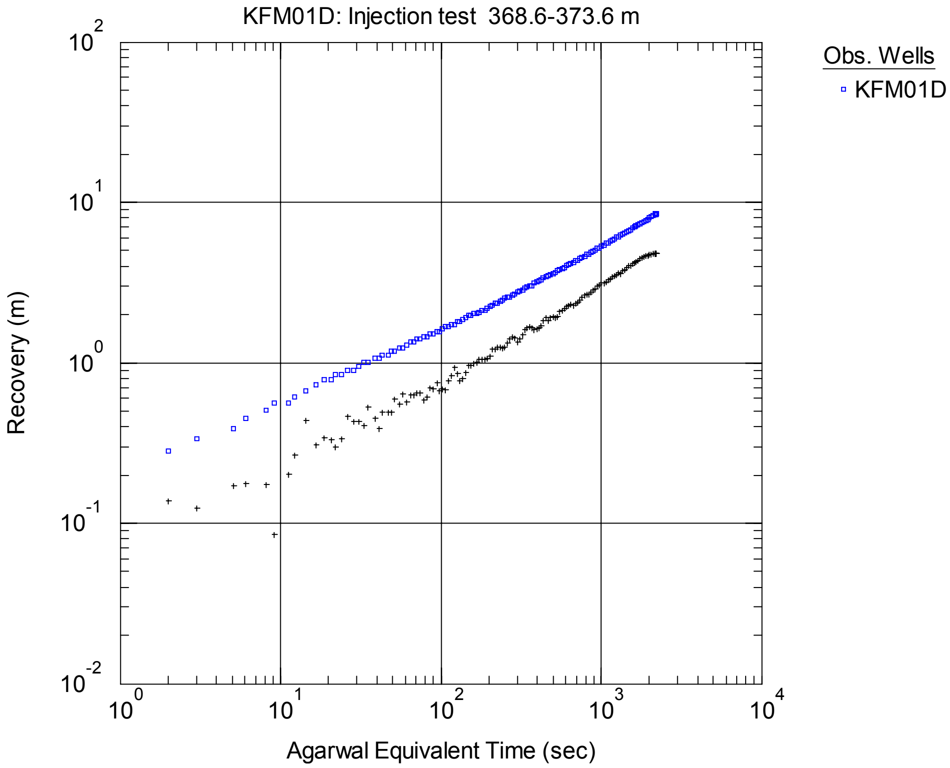


Figure A3-324. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 368.6-373.6 m in KFM01D. No type curve fit is shown since no unambiguous transient evaluation is possible.*

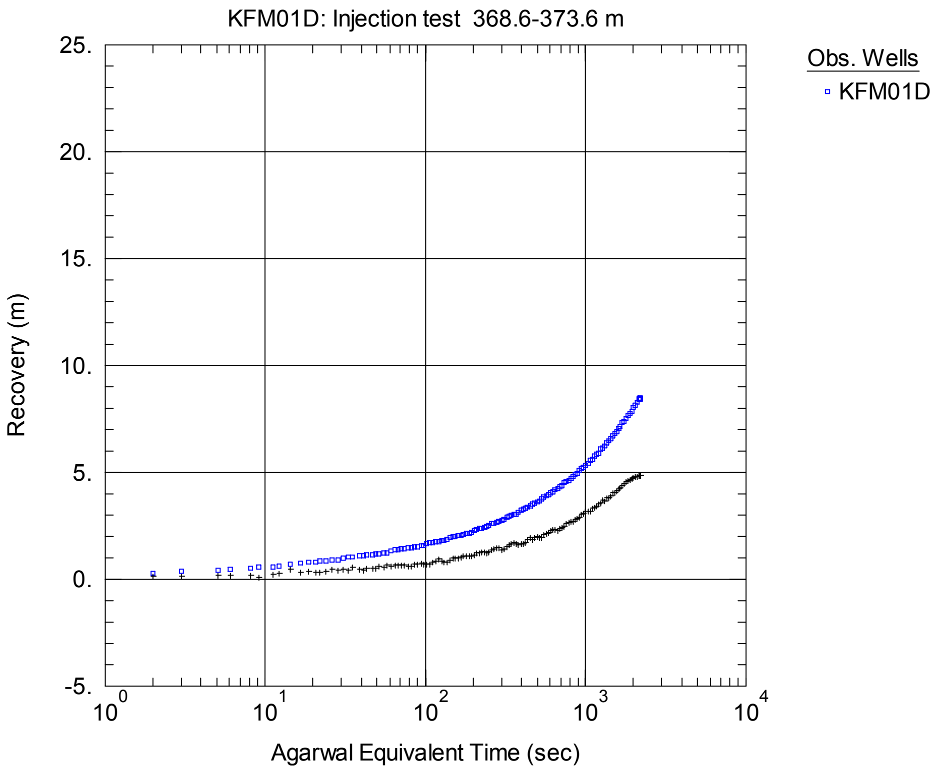


Figure A3-325. *Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 368.6-373.6 m in KFM01D. No type curve fit is shown since no unambiguous transient evaluation is possible.*

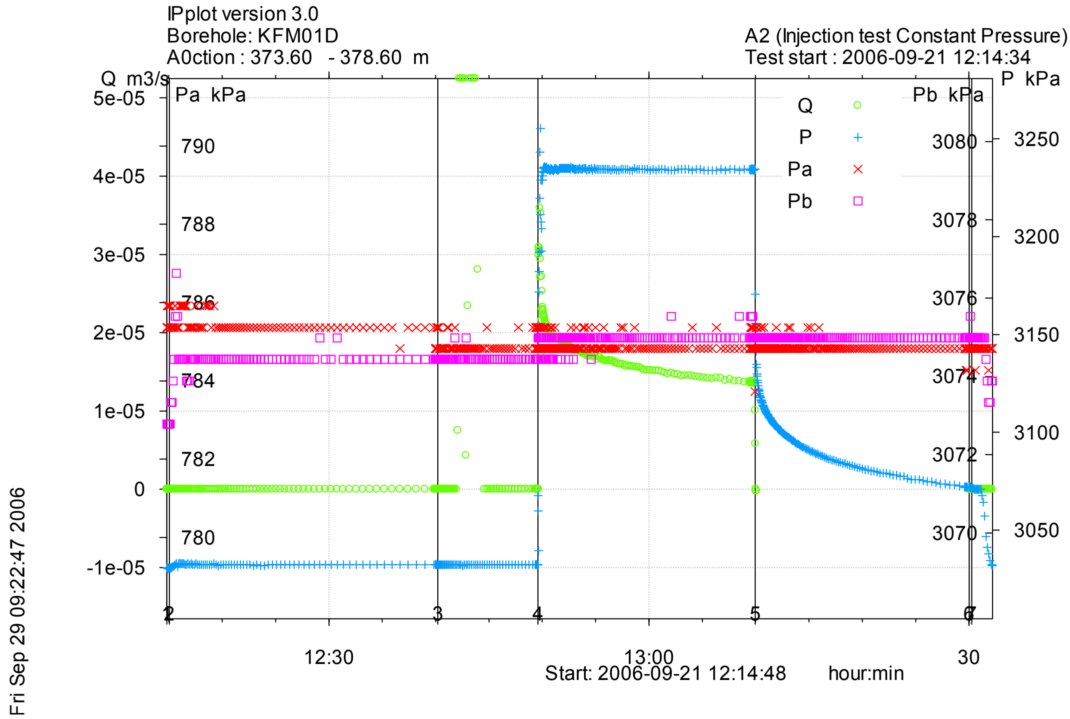


Figure A3-326. Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 373.6-378.6 m in borehole KFM01D.

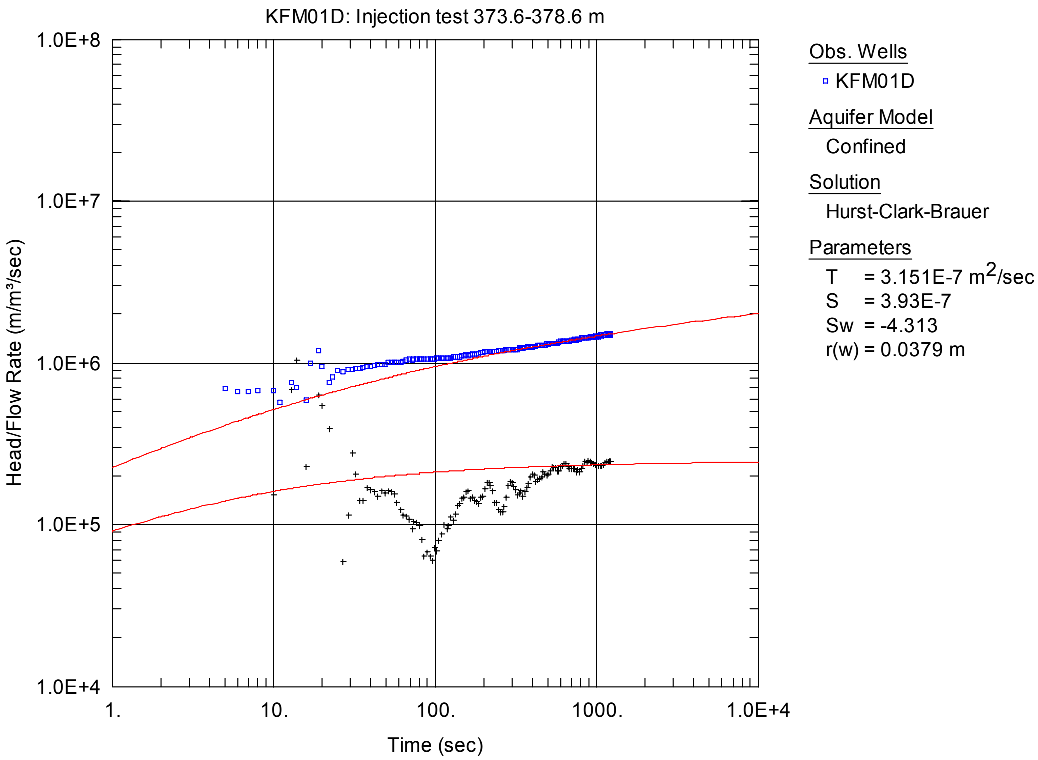


Figure A3-327. Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 373.6-378.6 m in KFM01D.

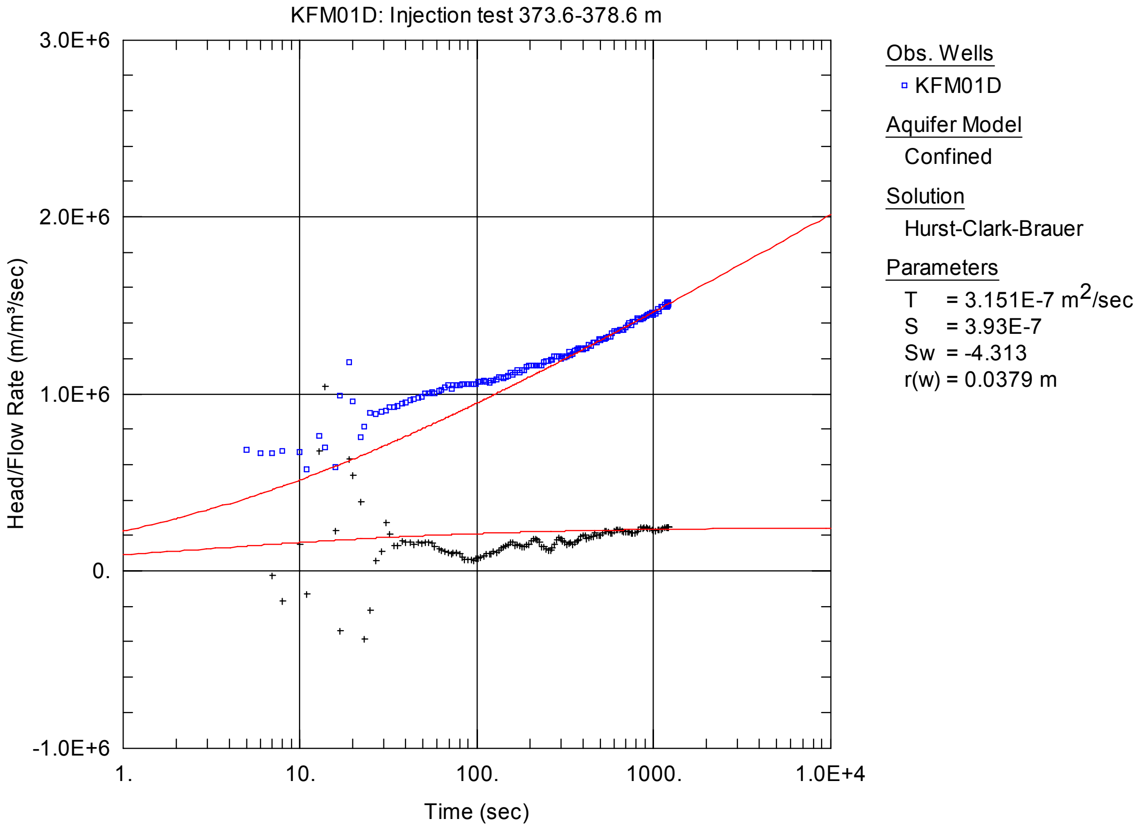


Figure A3-328. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 373.6-378.6 m in KFM01D.*

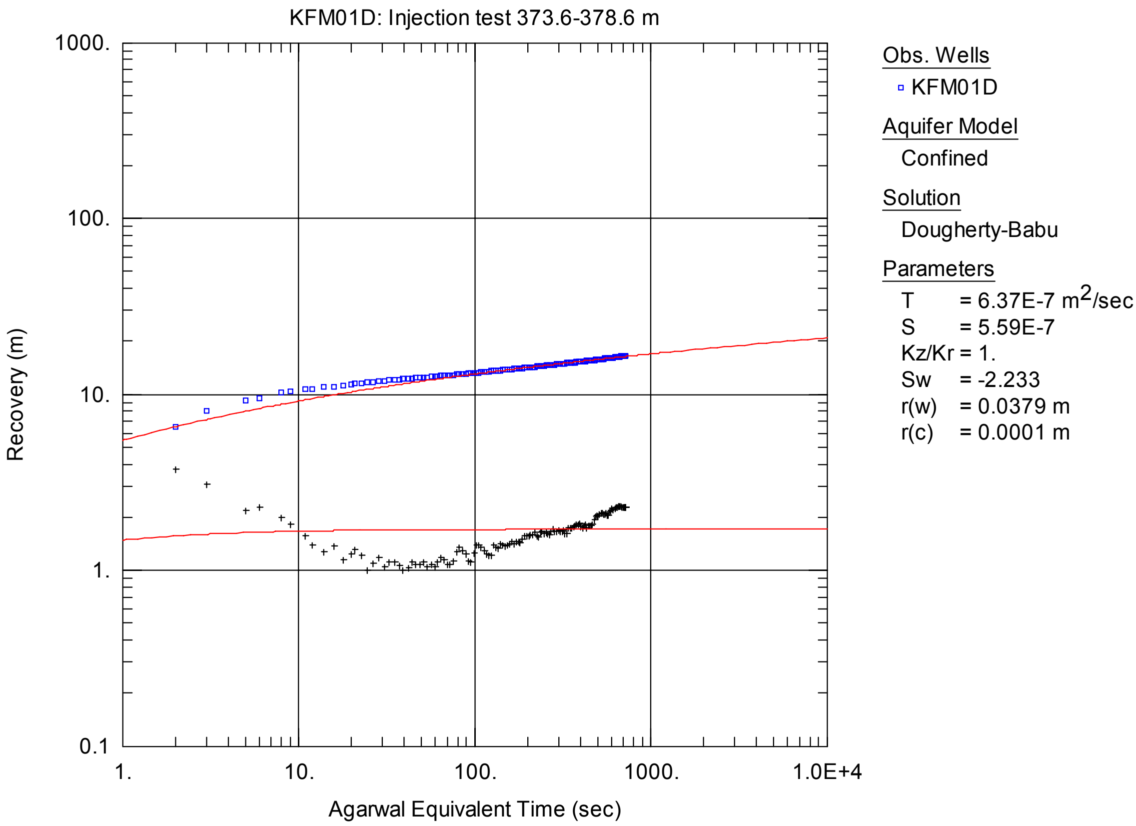


Figure A3-329. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 373.6-378.6 m in KFM01D.*

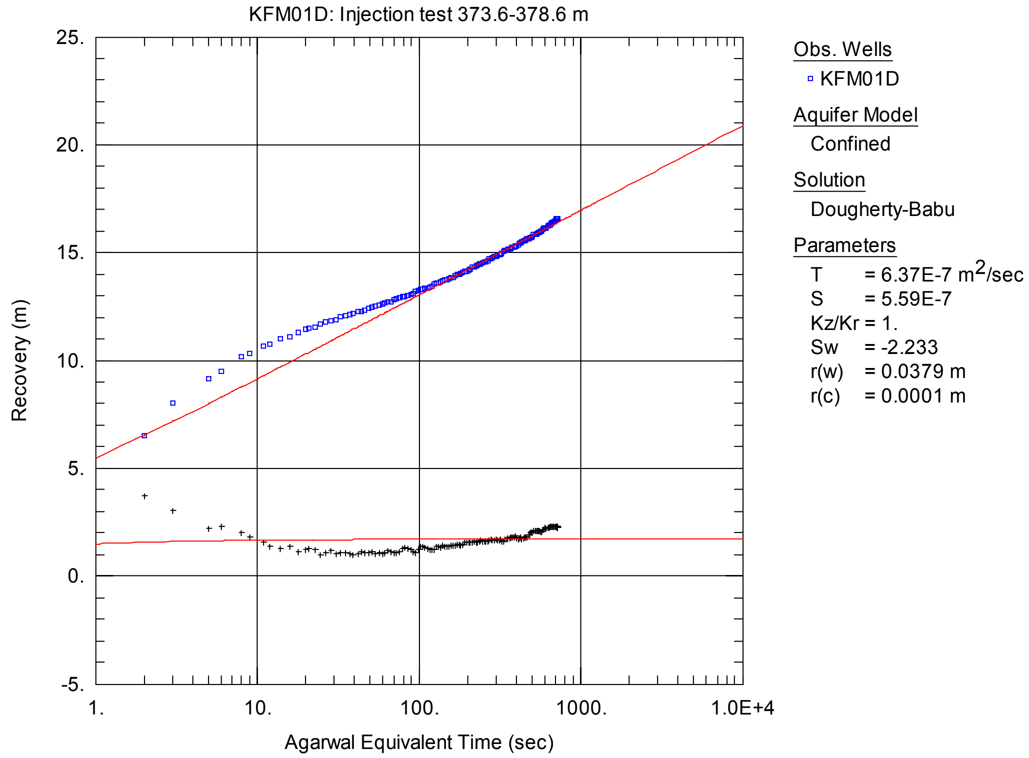


***Figure A3-330.** Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 373.6-378.6 m in KFM01D.*

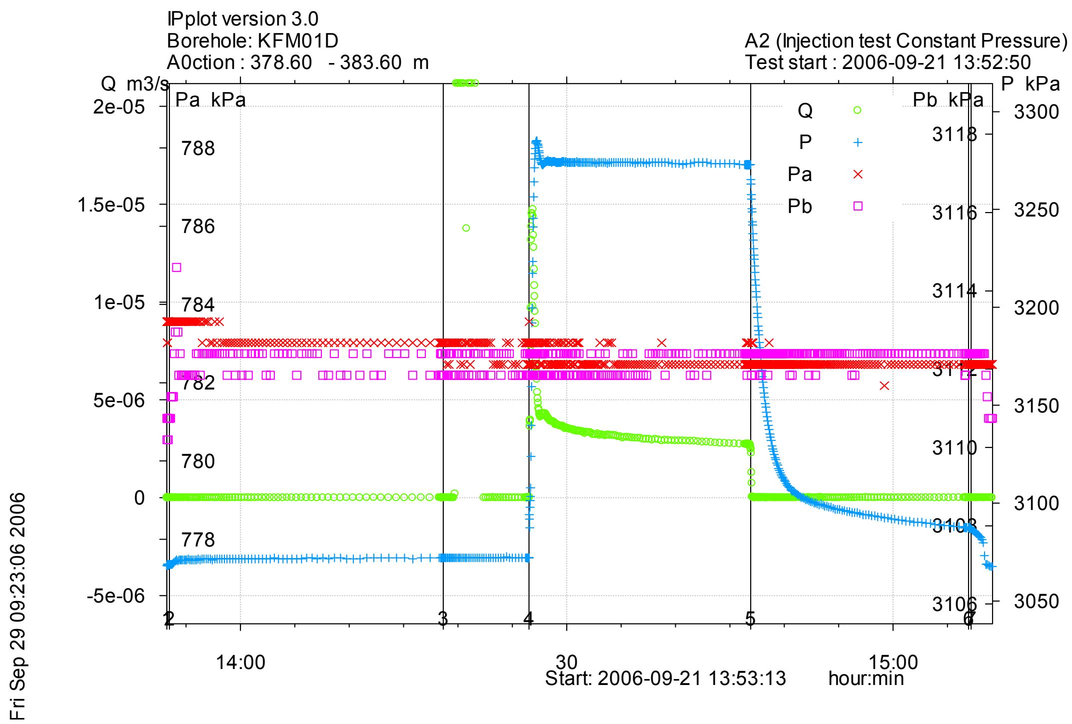


***Figure A3-331.** Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 378.6-383.6 m in borehole KFM01D.*

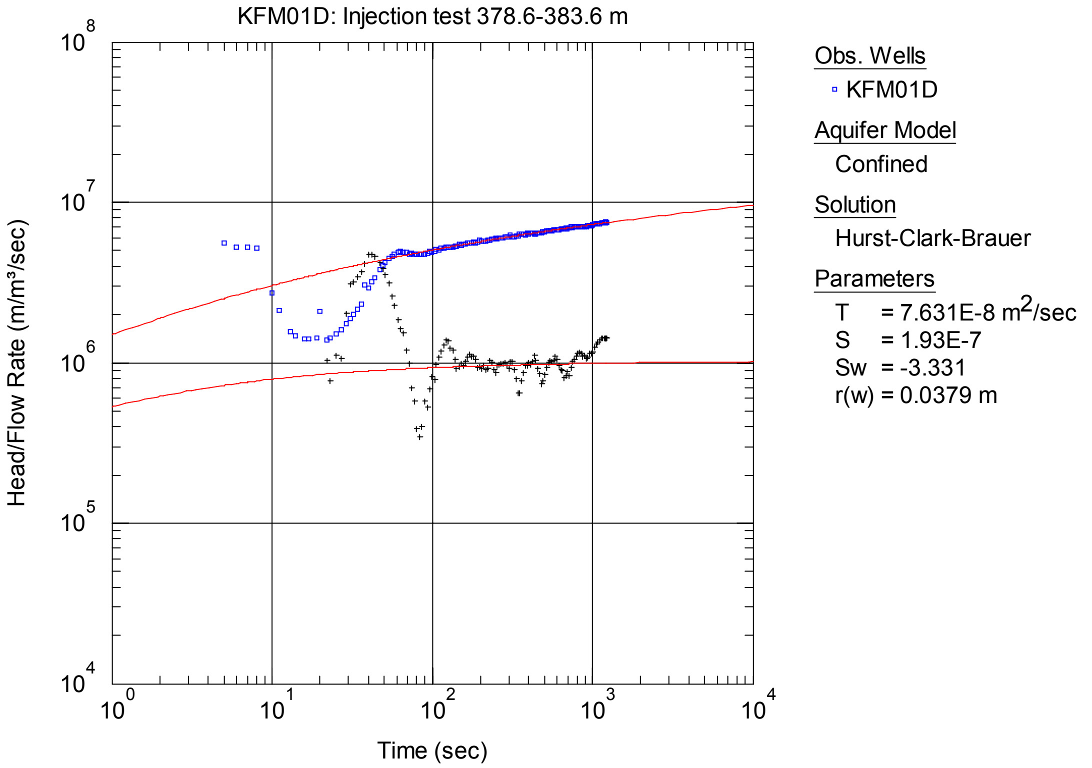


***Figure A3-332.** Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 378.6-383.6 m in KFM01D.*

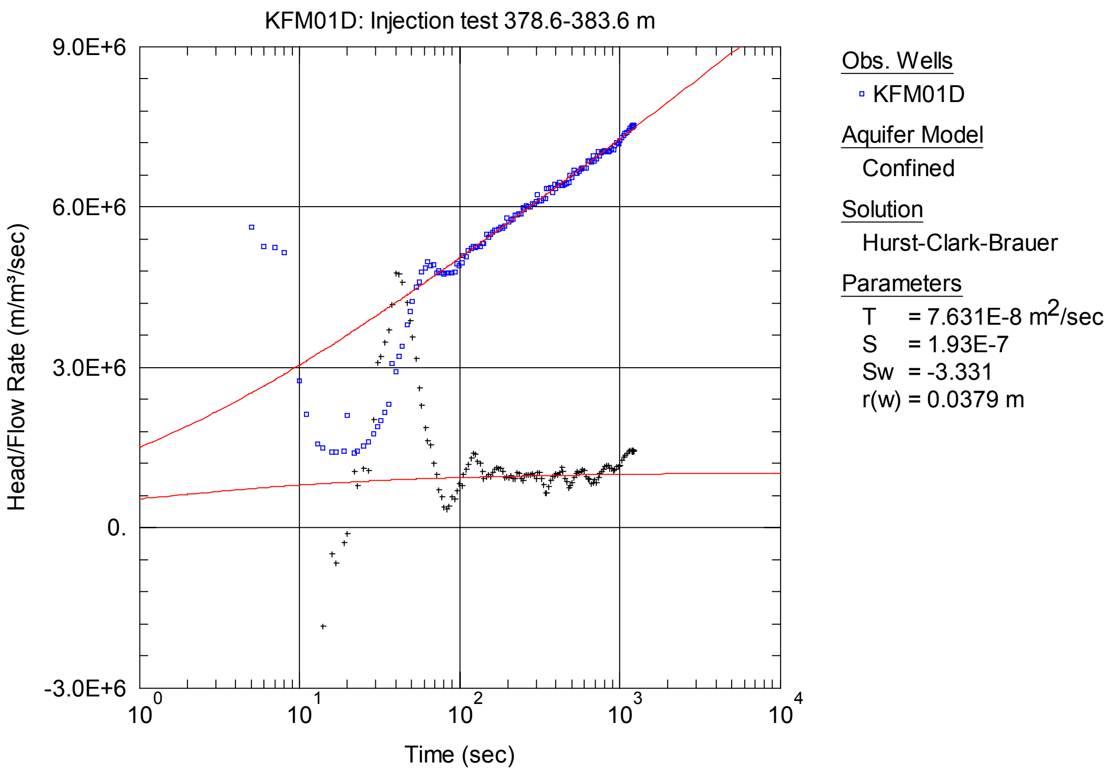


***Figure A3-333.** Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 378.6-383.6 m in KFM01D.*

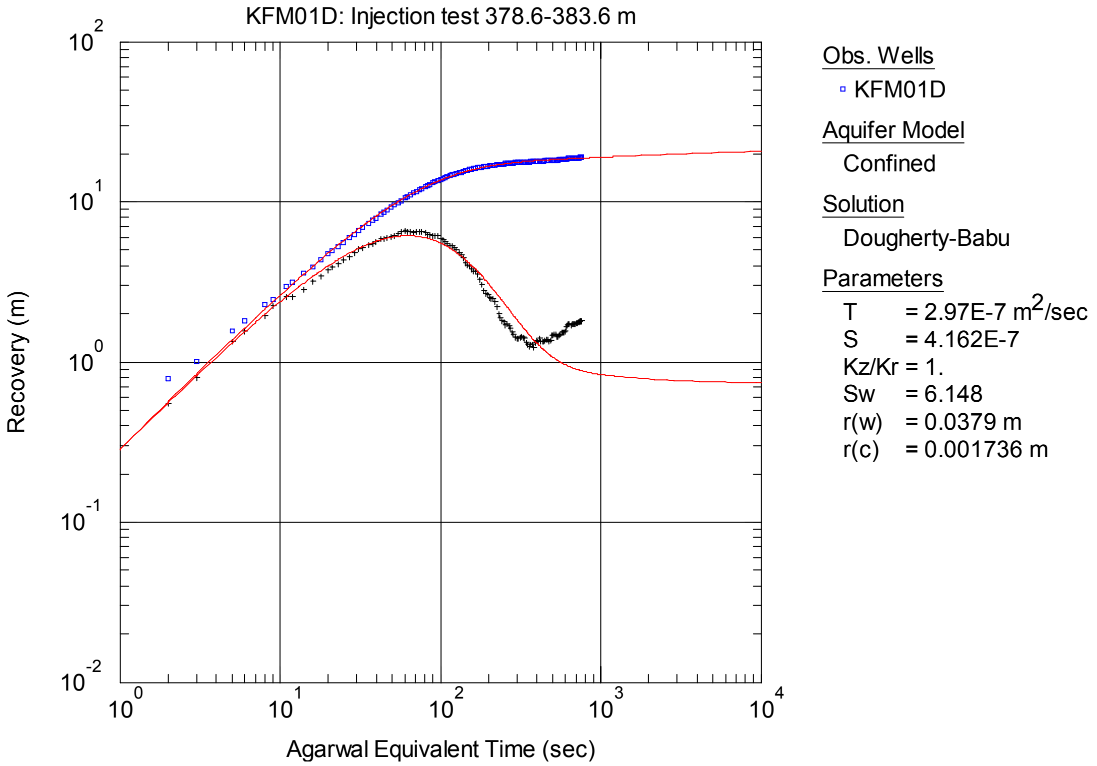


Figure A3-334. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 378.6-383.6 m in KFM01D. The type curve fit is only to show that an assumption of PRF is not valid.*

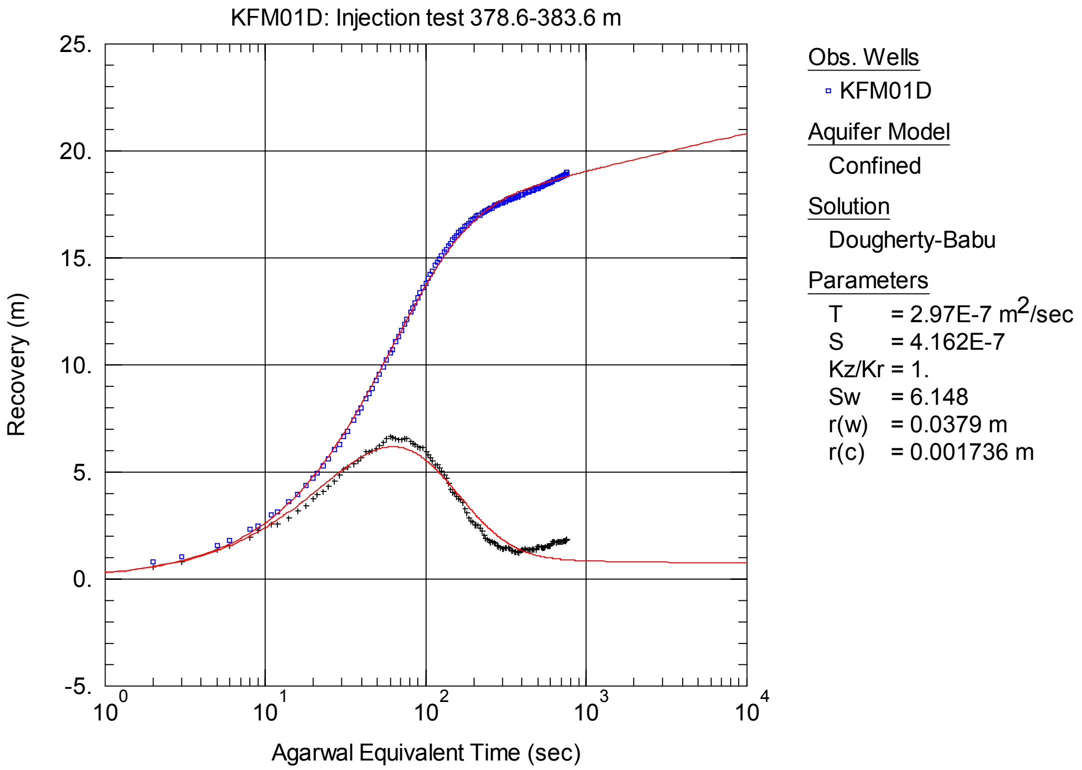


Figure A3-335. *Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 378.6-383.6 m in KFM01D. The type curve fit is only to show that an assumption of PRF is not valid.*

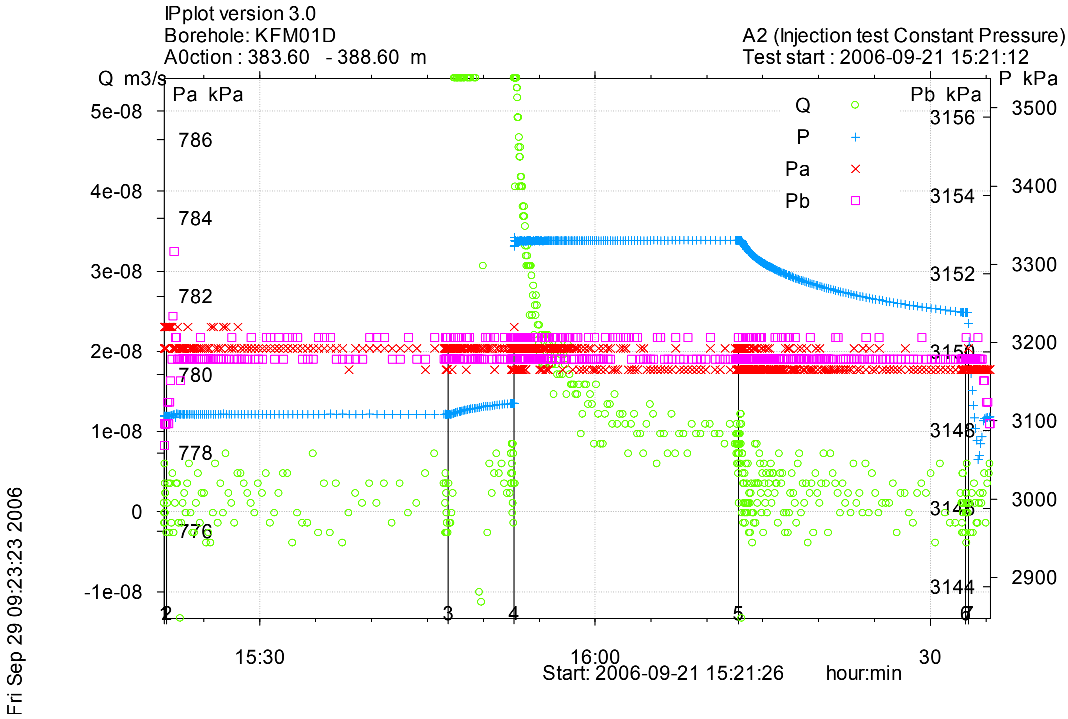


Figure A3-336. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 383.6-388.6 m in borehole KFM01D.*

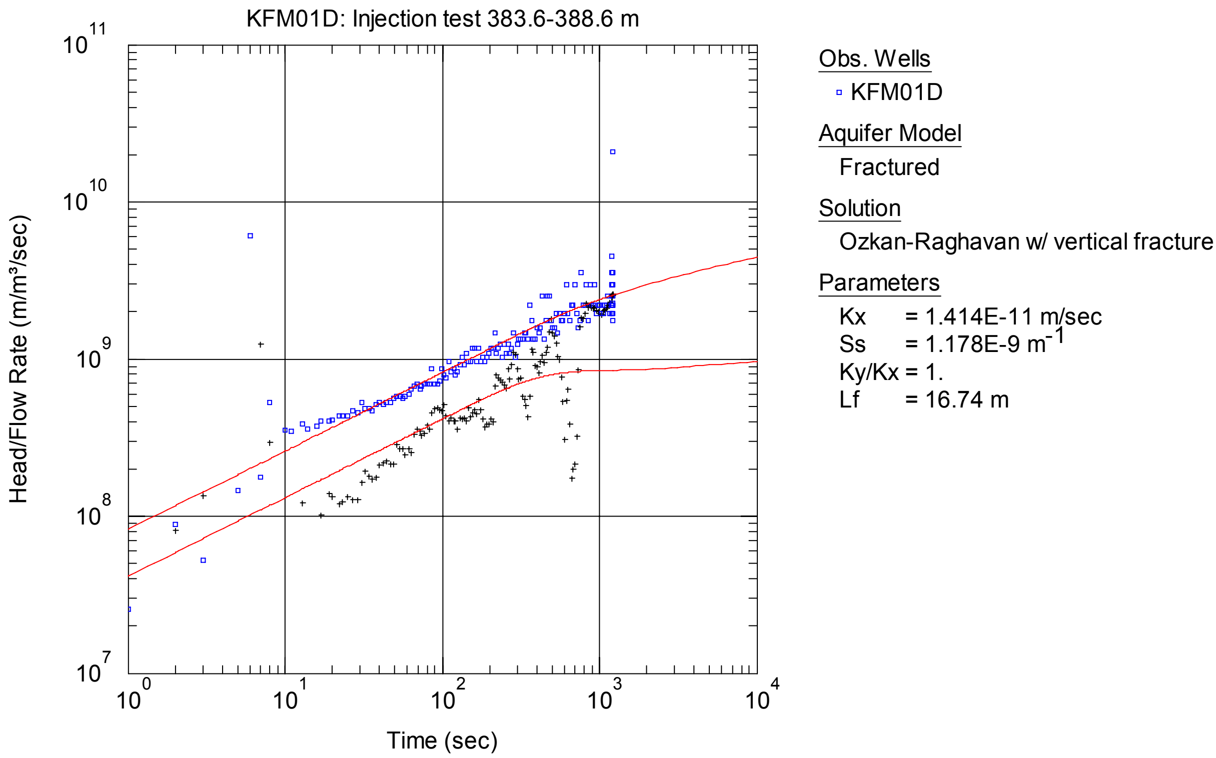


Figure A3-337. *Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 383.6-388.6 m in KFM01D.*

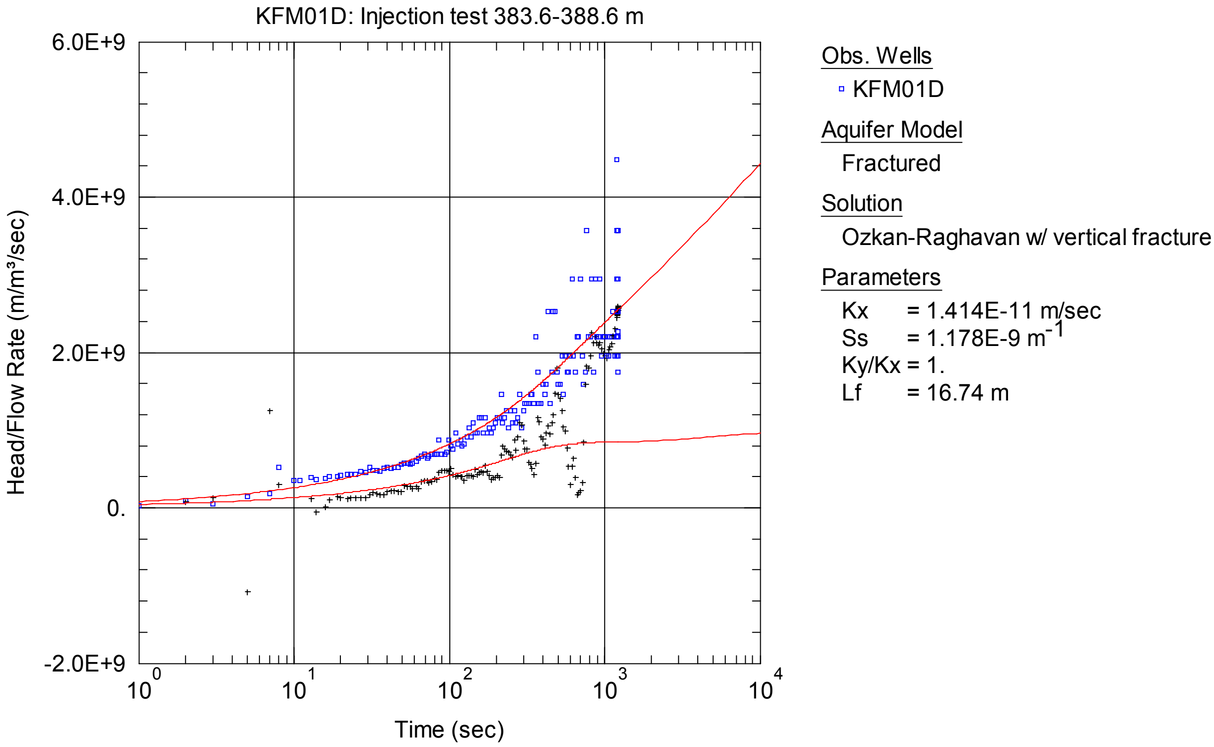


***Figure A3-338.** Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 383.6-388.6 m in KFM01D.*

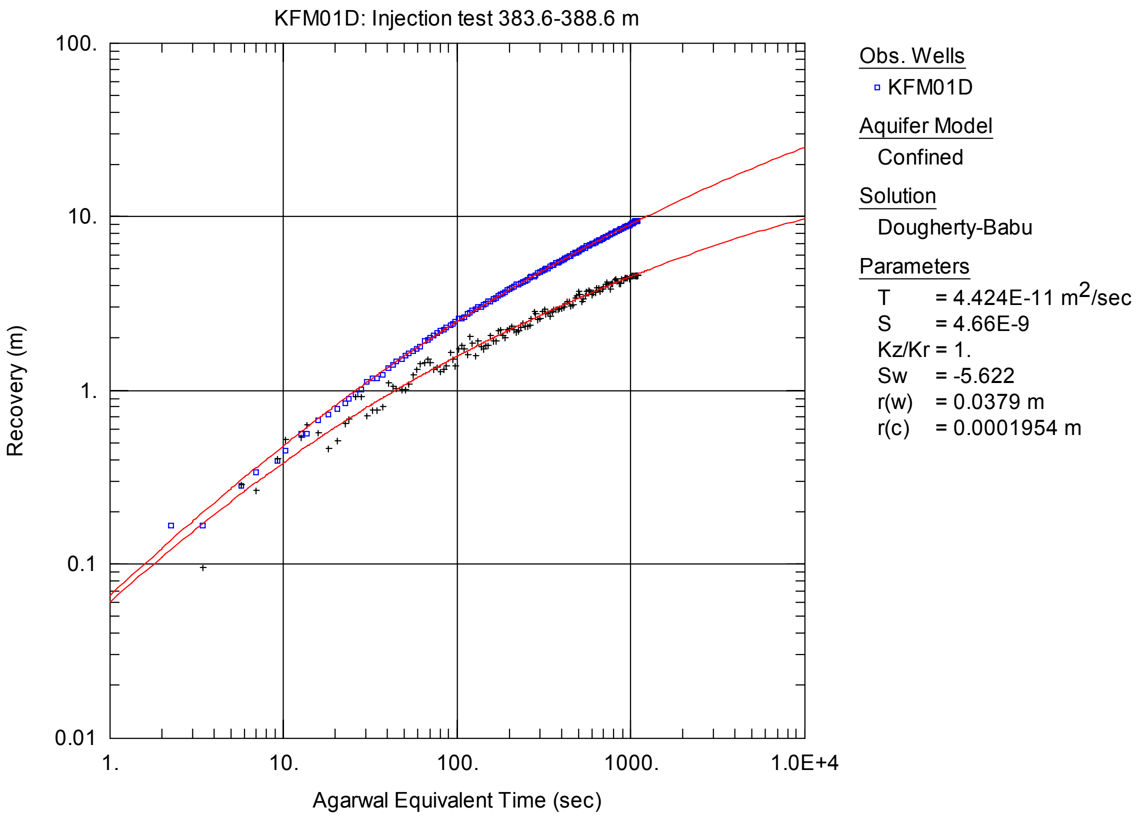


***Figure A3-339.** Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 383.6-388.6 m in KFM01D.*

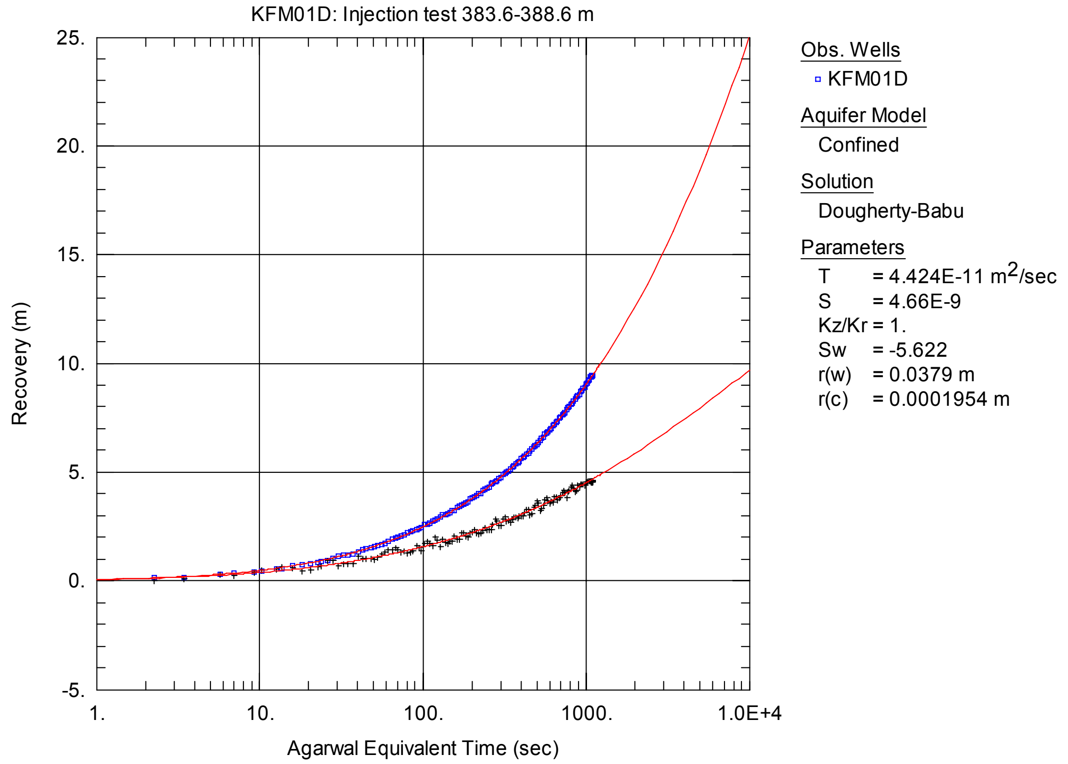


Figure A3-340. *Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 383.6-388.6 m in KFM01D.*

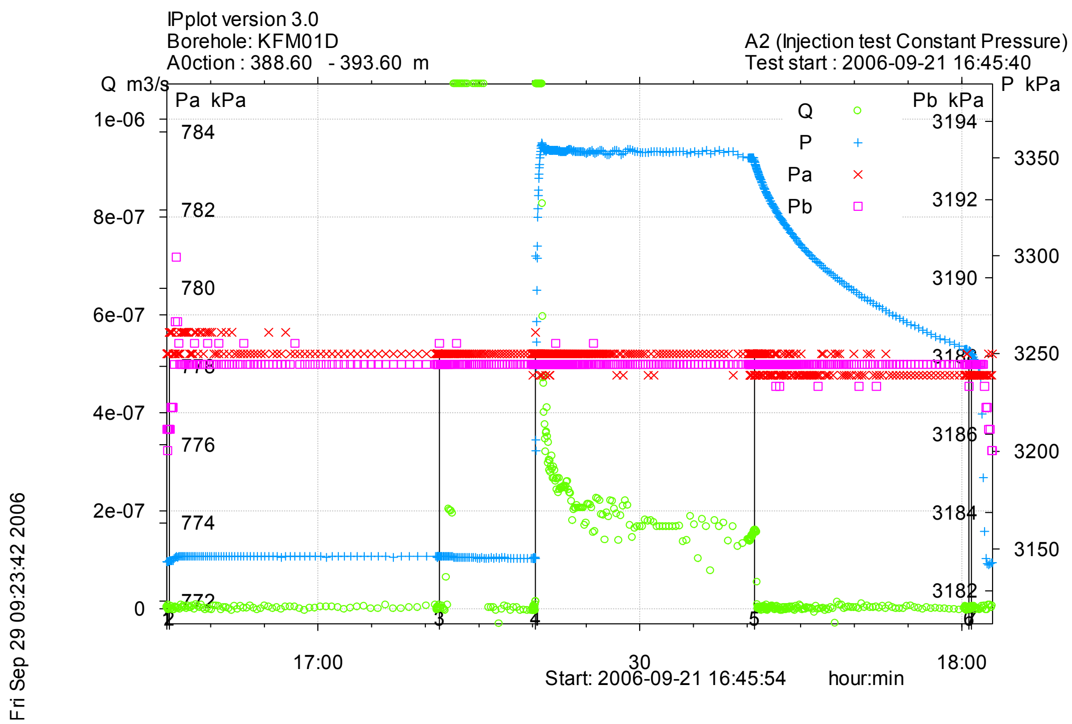


Figure A3-341. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 388.6-393.6 m in borehole KFM01D.*

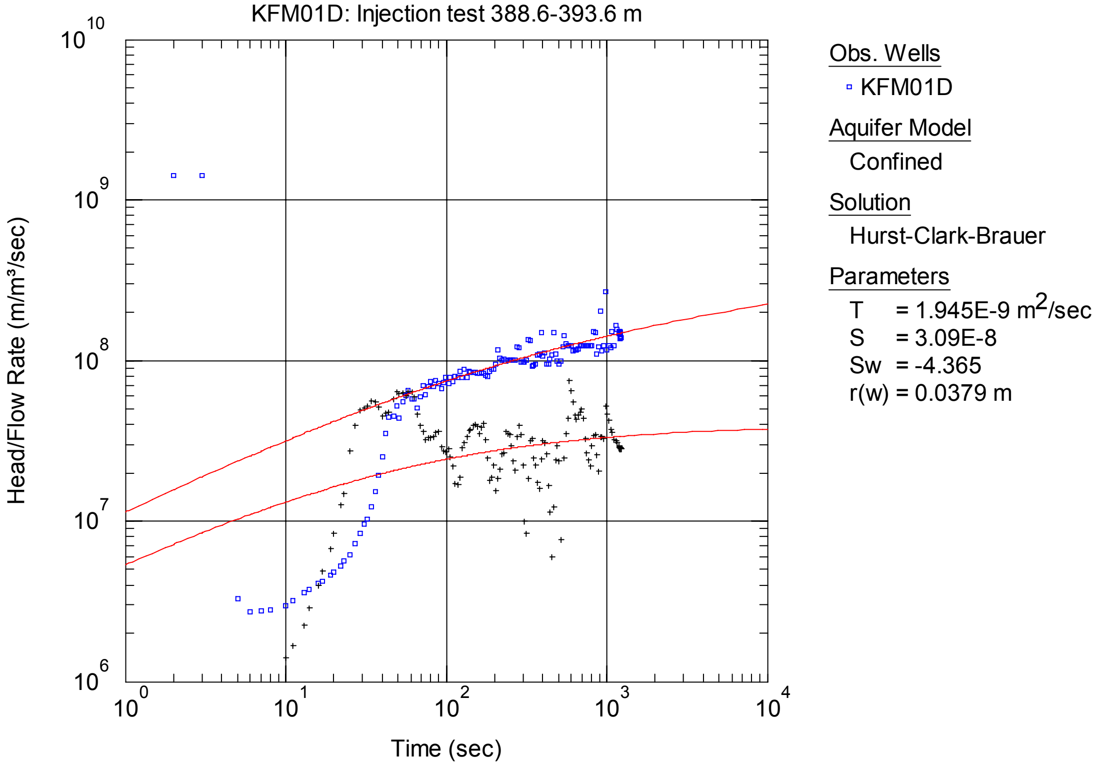


***Figure A3-342.** Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 388.6-393.6 m in KFM01D.*

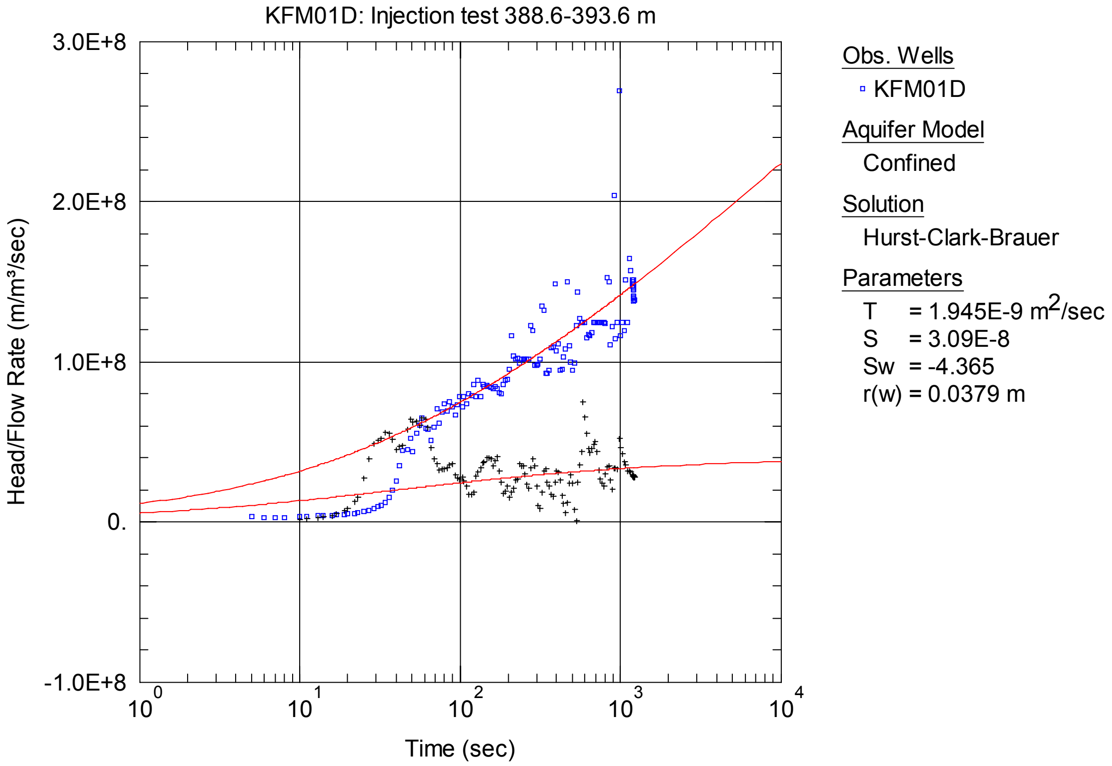


***Figure A3-343.** Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 388.6-393.6 m in KFM01D.*

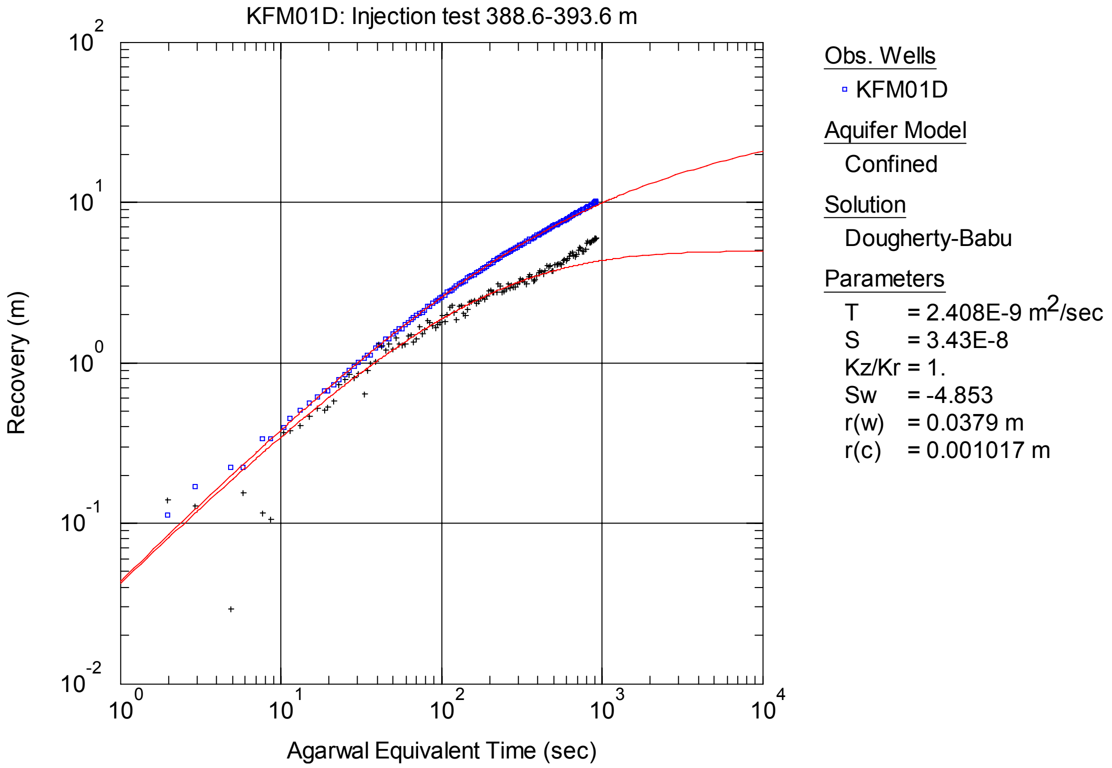


Figure A3-344. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 388.6-393.6 m in KFM01D. The type curve fit is showing a possible, however not unambiguous, evaluation.*

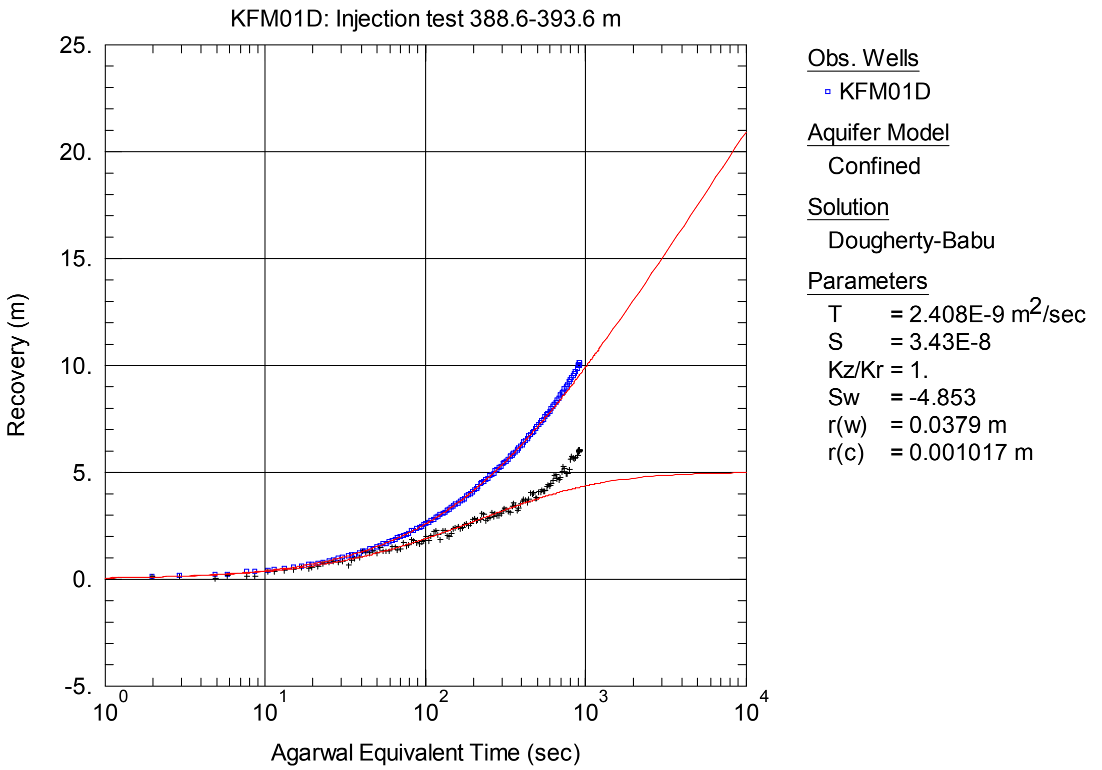


Figure A3-345. *Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 388.6-393.6 m in KFM01D. The type curve fit is showing a possible, however not unambiguous, evaluation.*

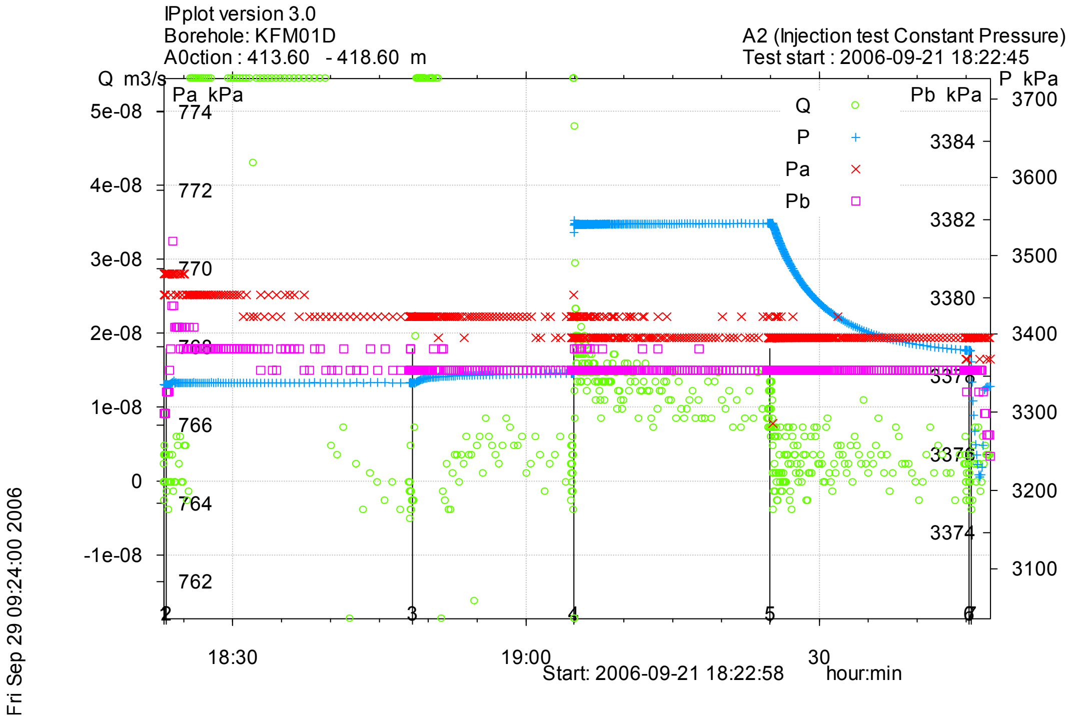


Figure A3-346. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 413.6-418.6 m in borehole KFM01D.*

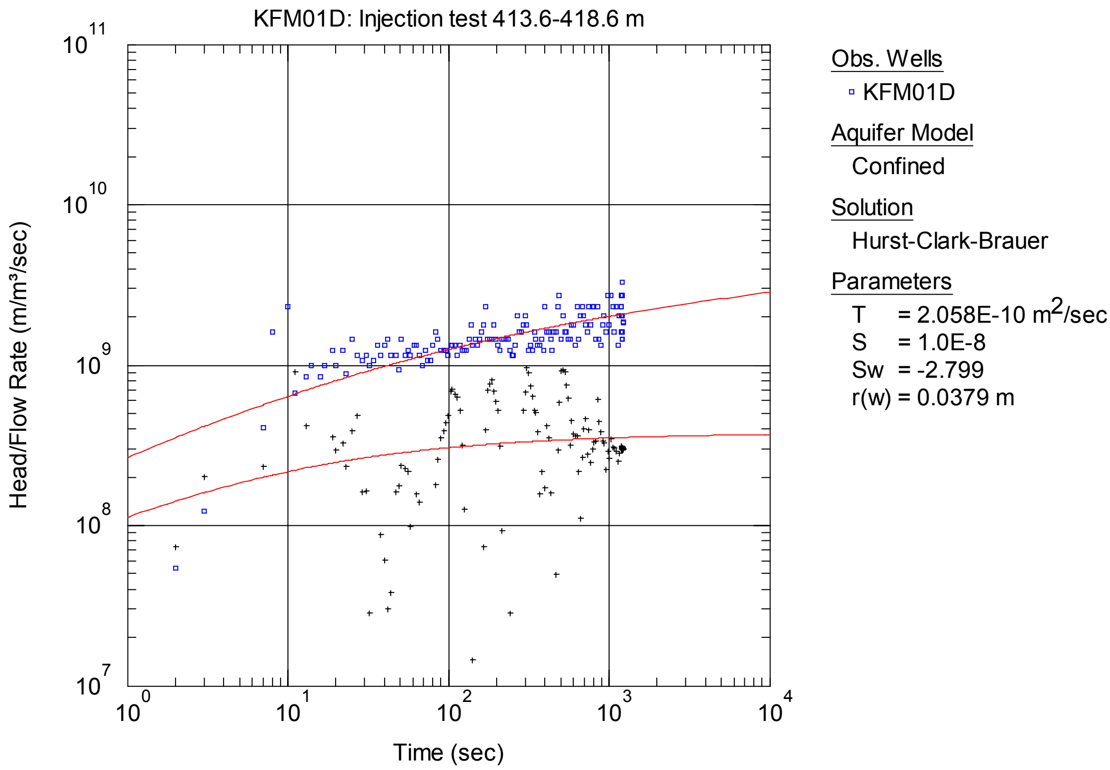


Figure A3-347. *Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 413.6-418.6 m in KFM01D.*

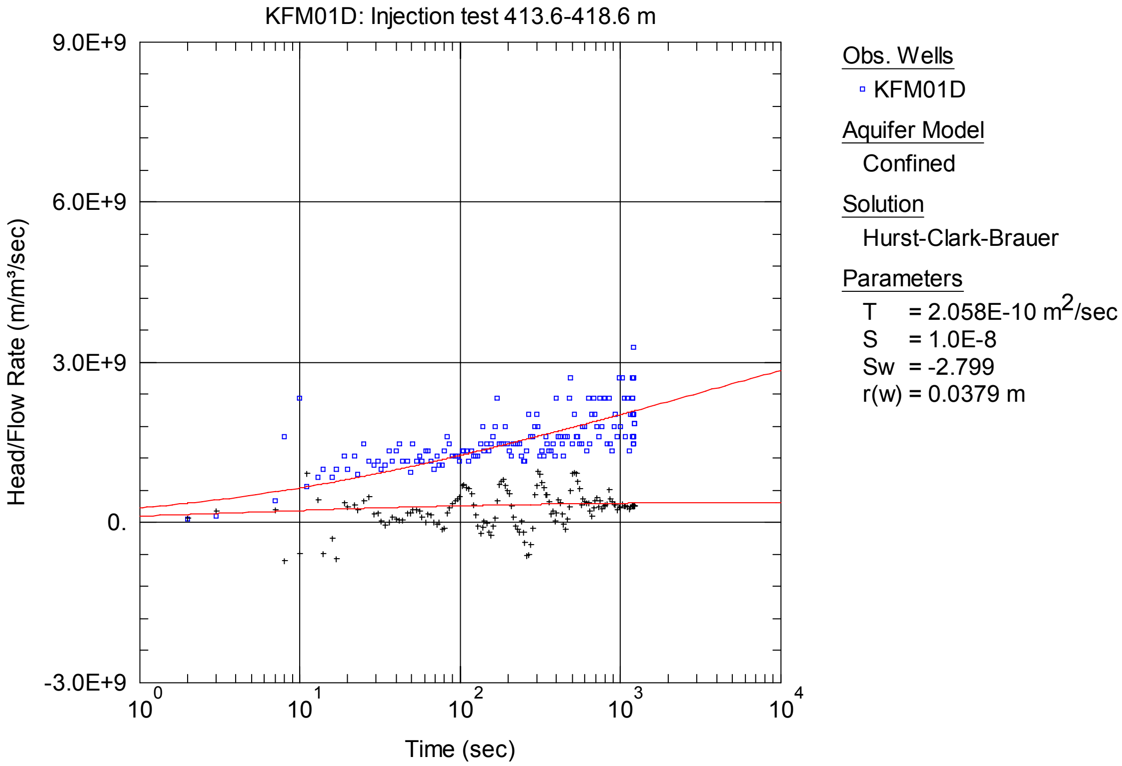


Figure A3-348. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 413.6-418.6 m in KFM01D.*

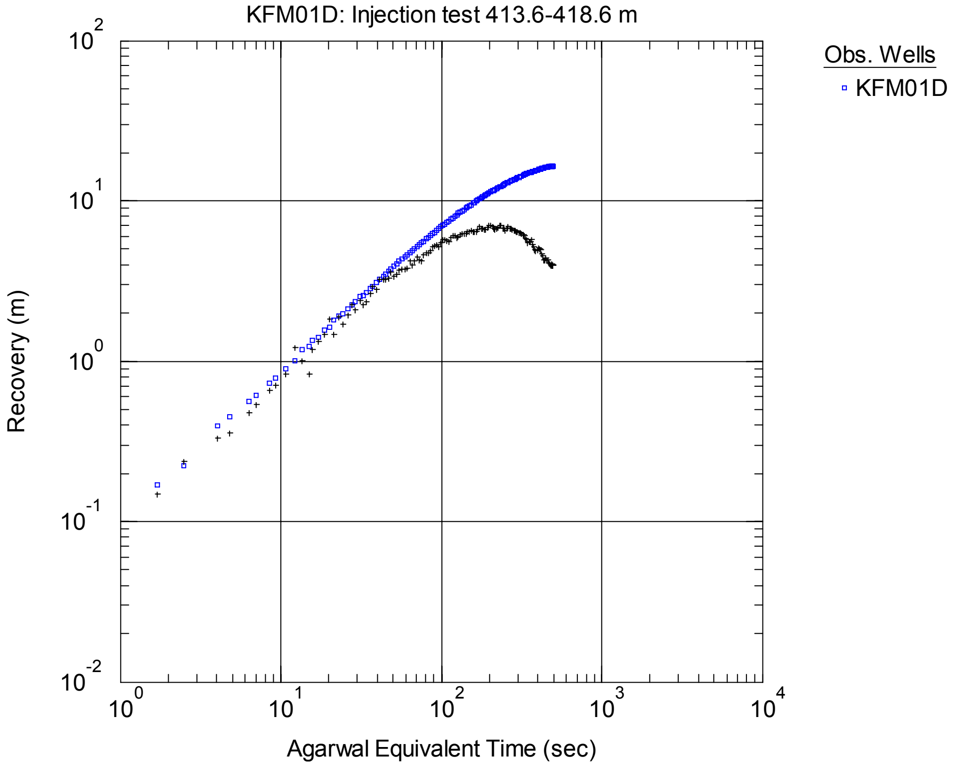


Figure A3-349. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 413.6-418.6 m in KFM01D. No type curve fit is shown since no unambiguous transient evaluation is possible.*

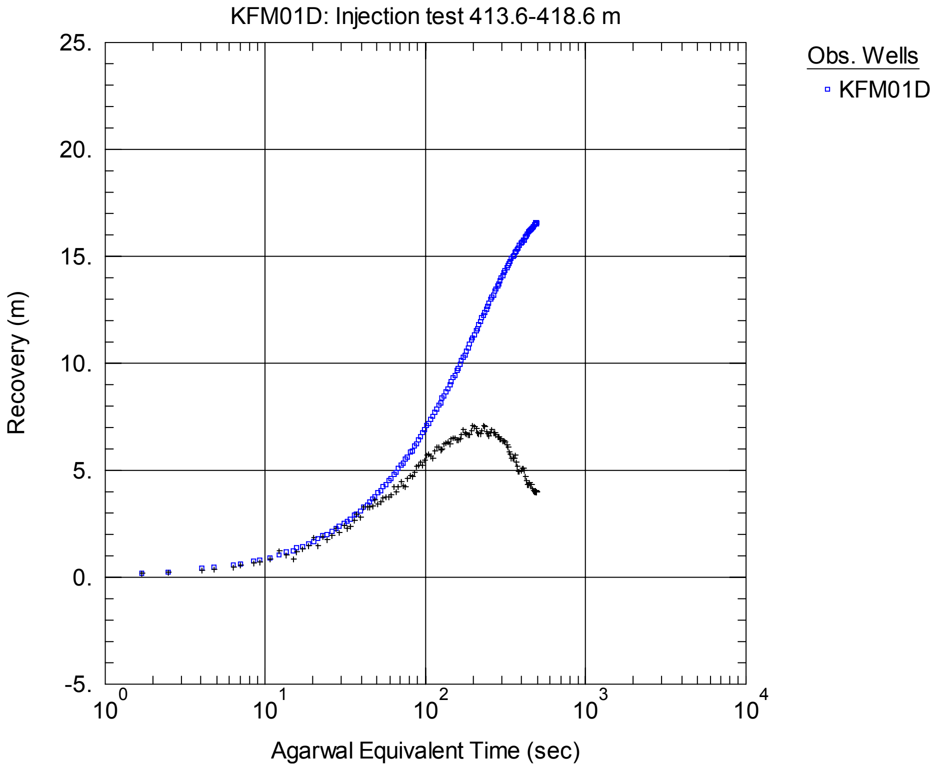


Figure A3-350. *Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 413.6-418.6 m in KFM01D. No type curve fit is shown since no unambiguous transient evaluation is possible.*

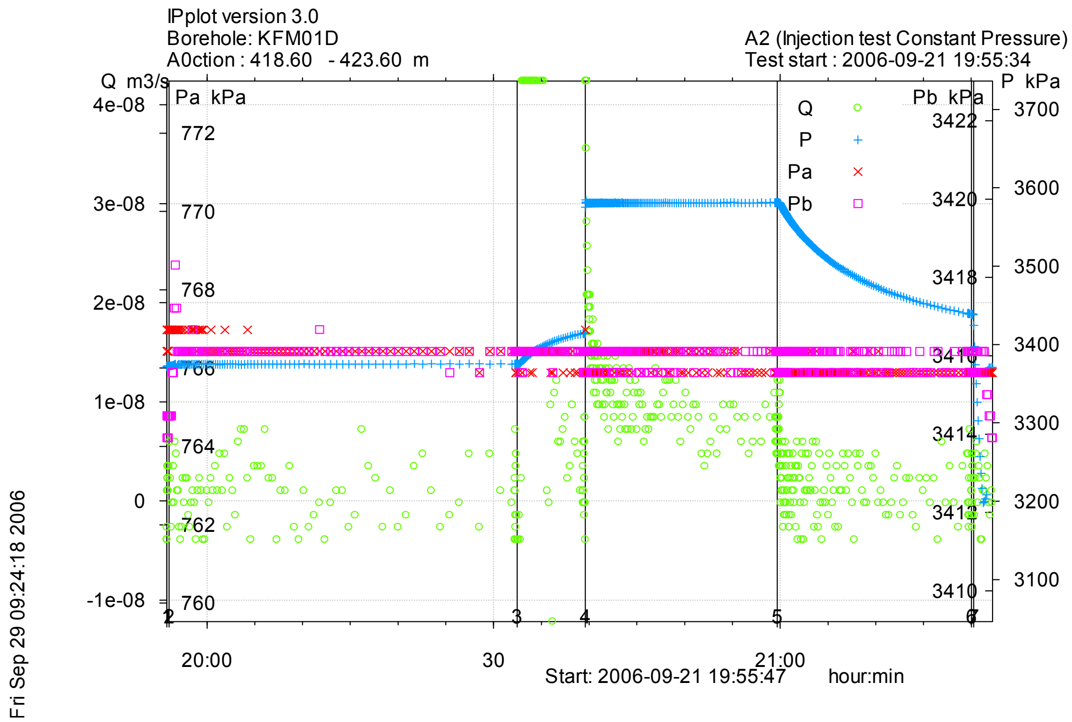


Figure A3-351. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 418.6-423.6 m in borehole KFM01D.*

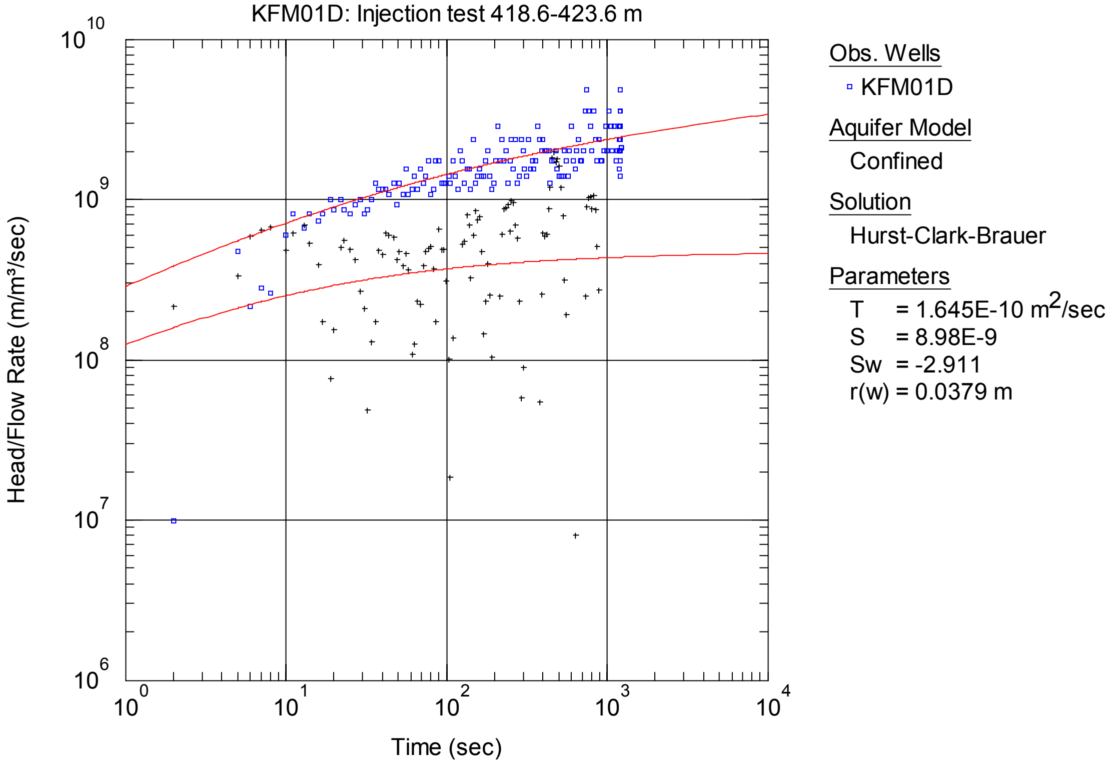


Figure A3-352. *Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 418.6-423.6 m in KFM01D.*

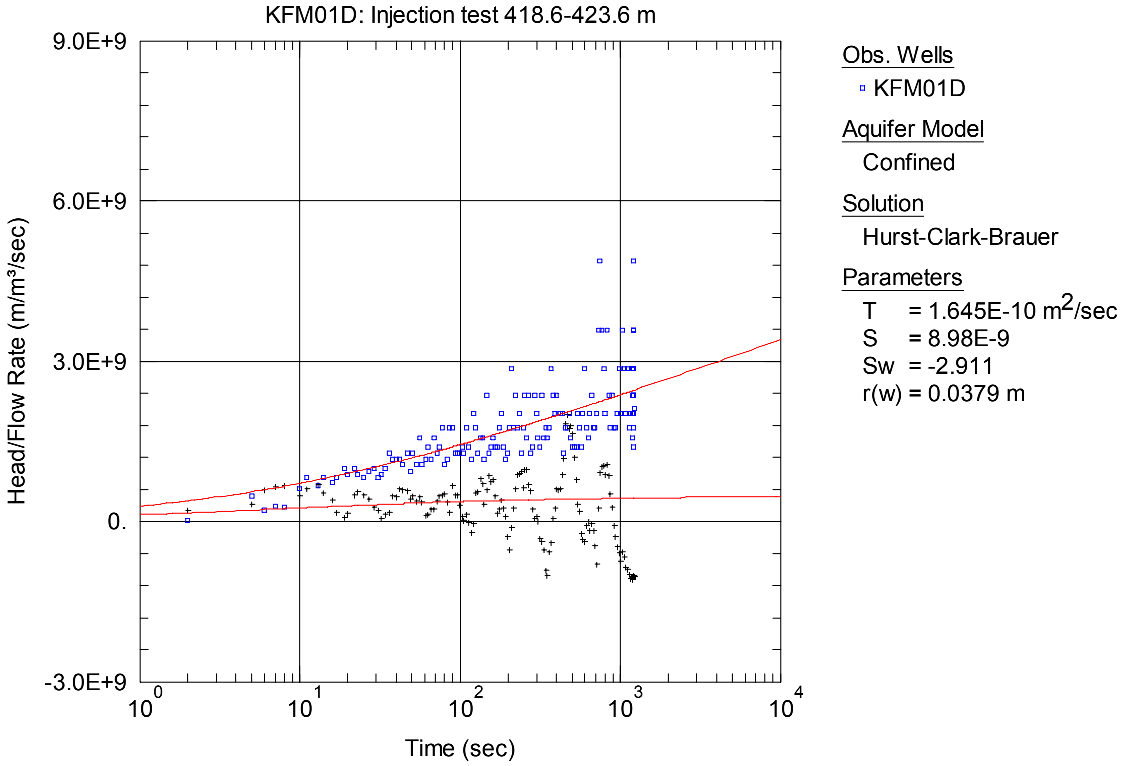


Figure A3-353. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 418.6-423.6 m in KFM01D.*

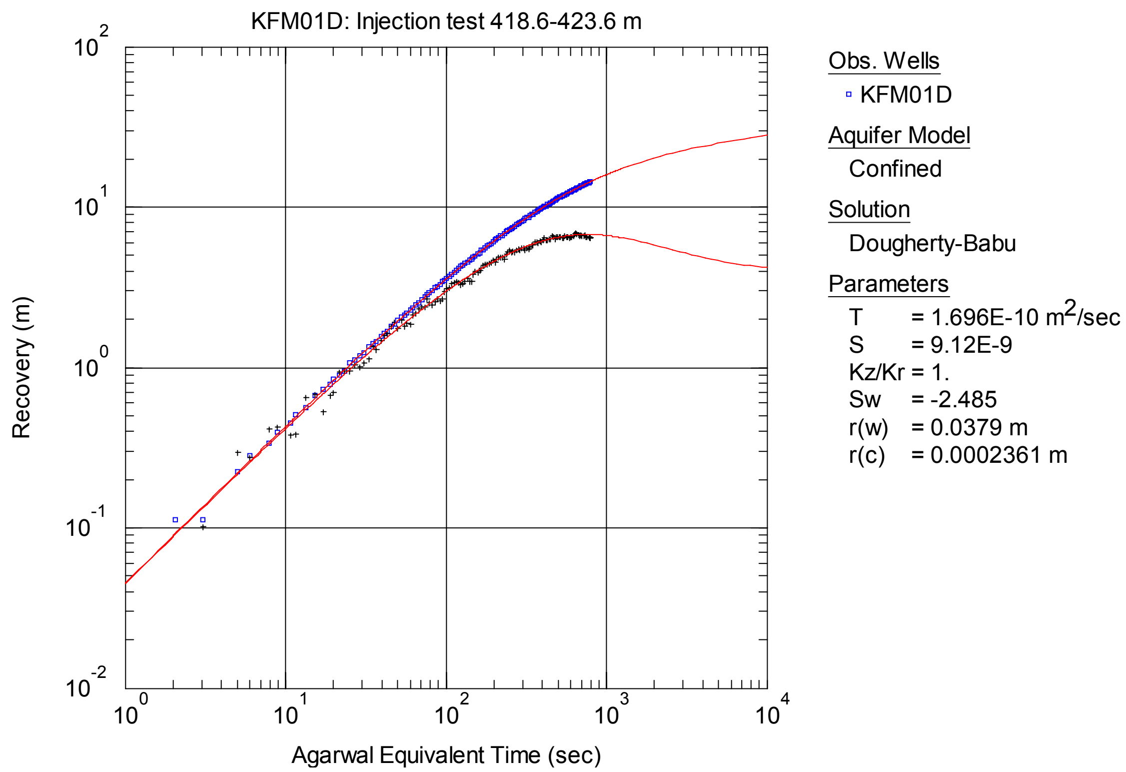


Figure A3-354. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 418.6-423.6 m in KFM01D.*

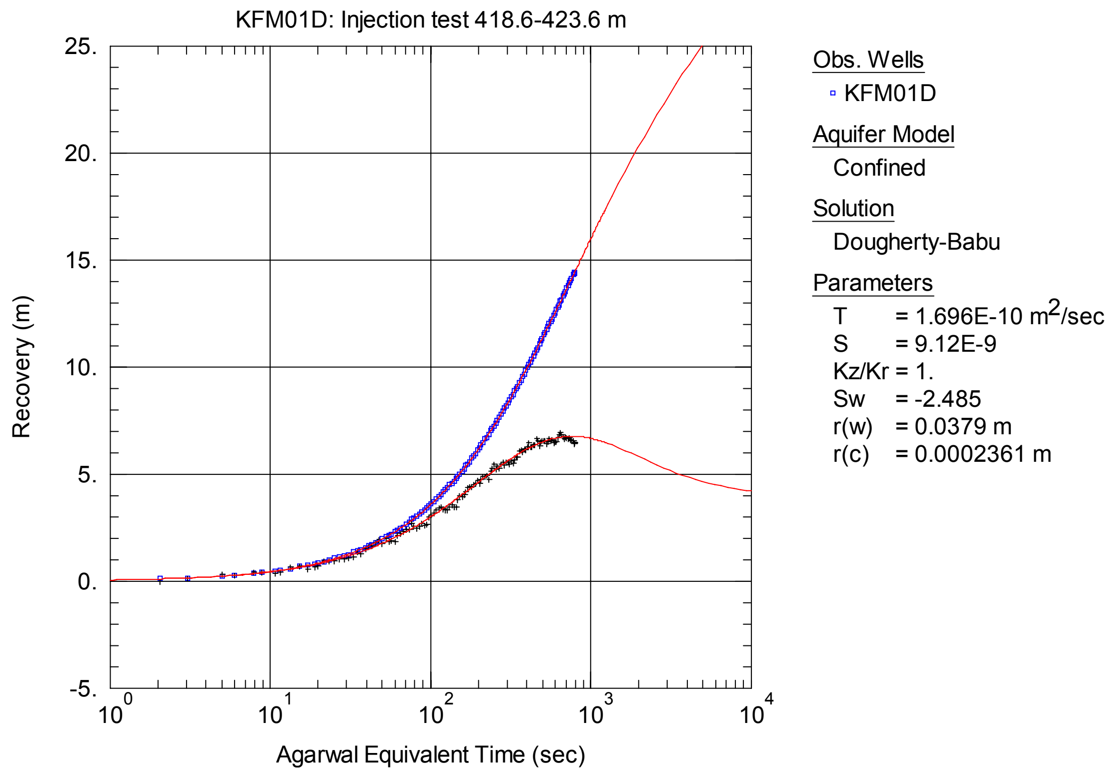


Figure A3-355. *Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 418.6-423.6 m in KFM01D.*

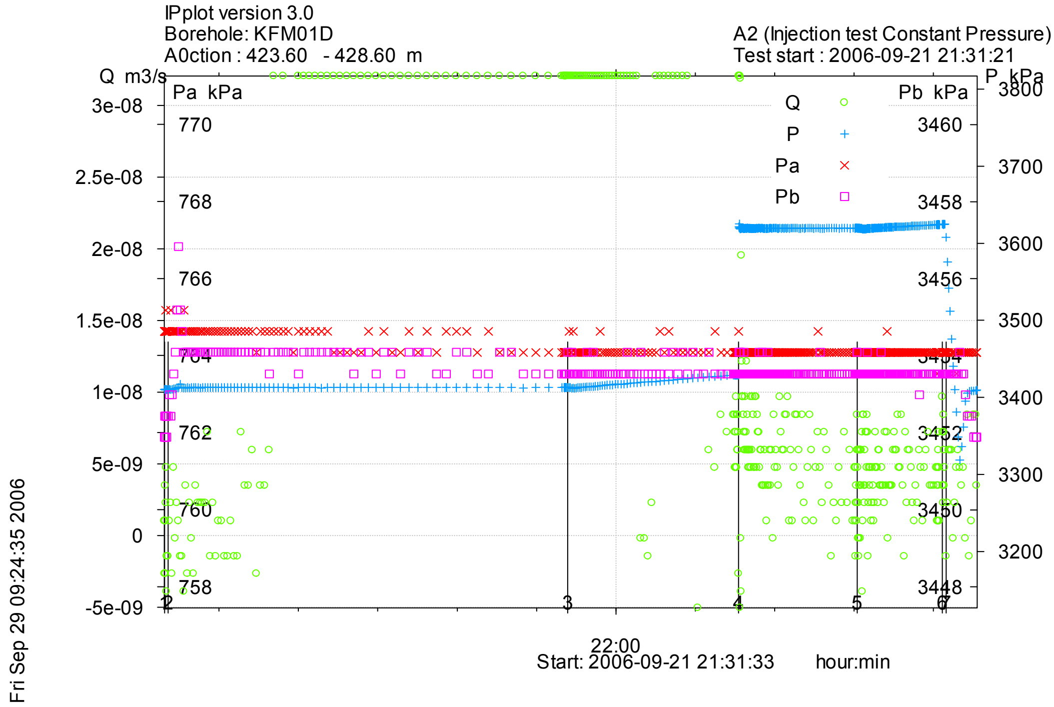


Figure A3-356. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 423.6-428.6 m in borehole KFM01D.*

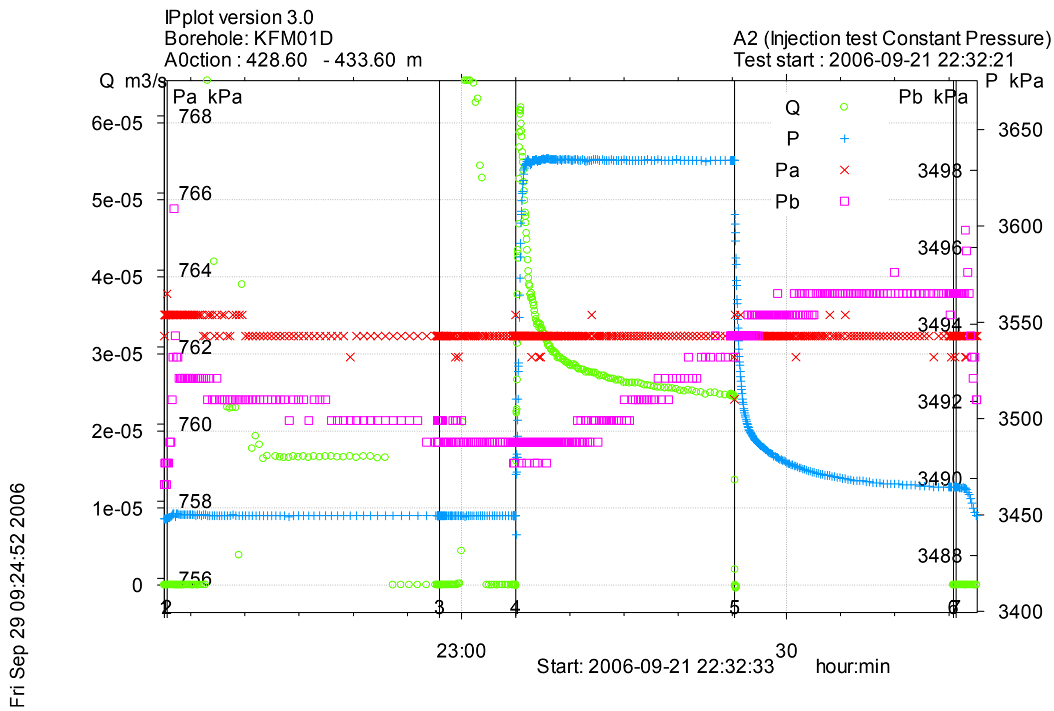


Figure A3-357. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 428.6-433.6 m in borehole KFM01D.*

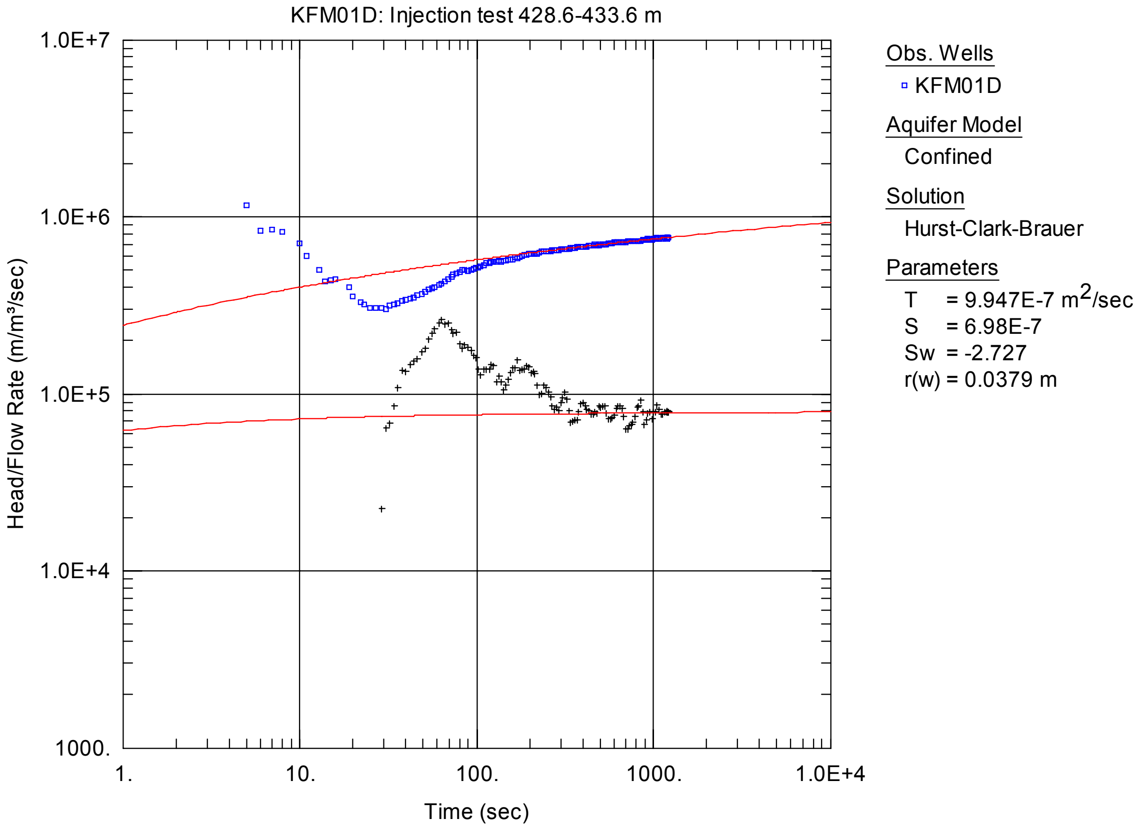


Figure A3-358. *Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 428.6-433.6 m in KFM01D.*

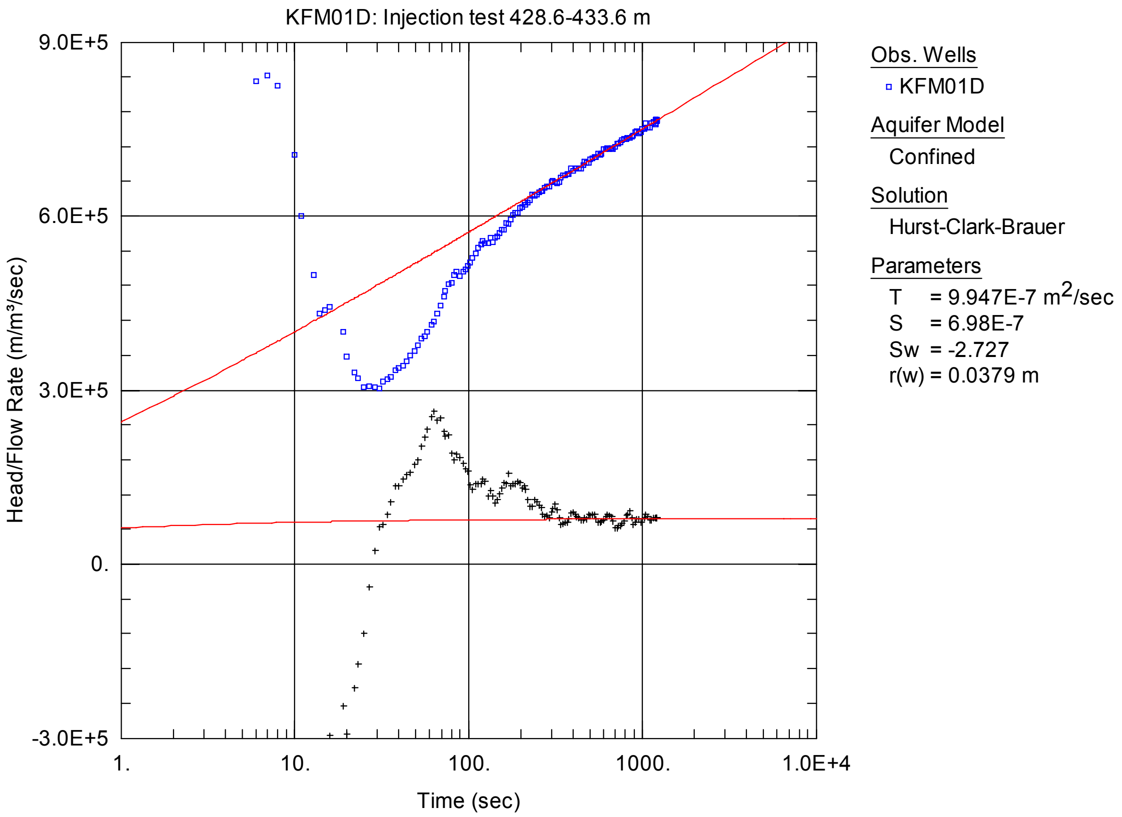


Figure A3-359. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 428.6-433.6 m in KFM01D.*

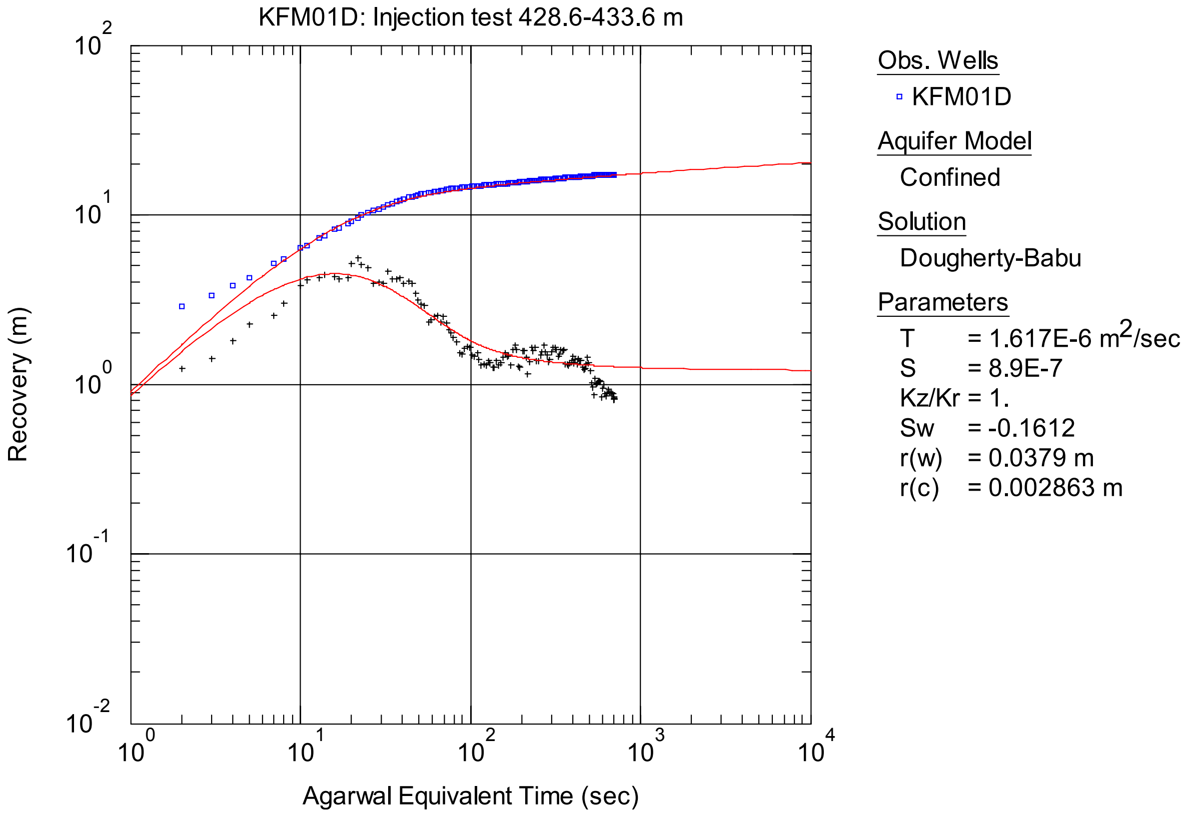


Figure A3-360. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 428.6-433.6 m in KFM01D.*

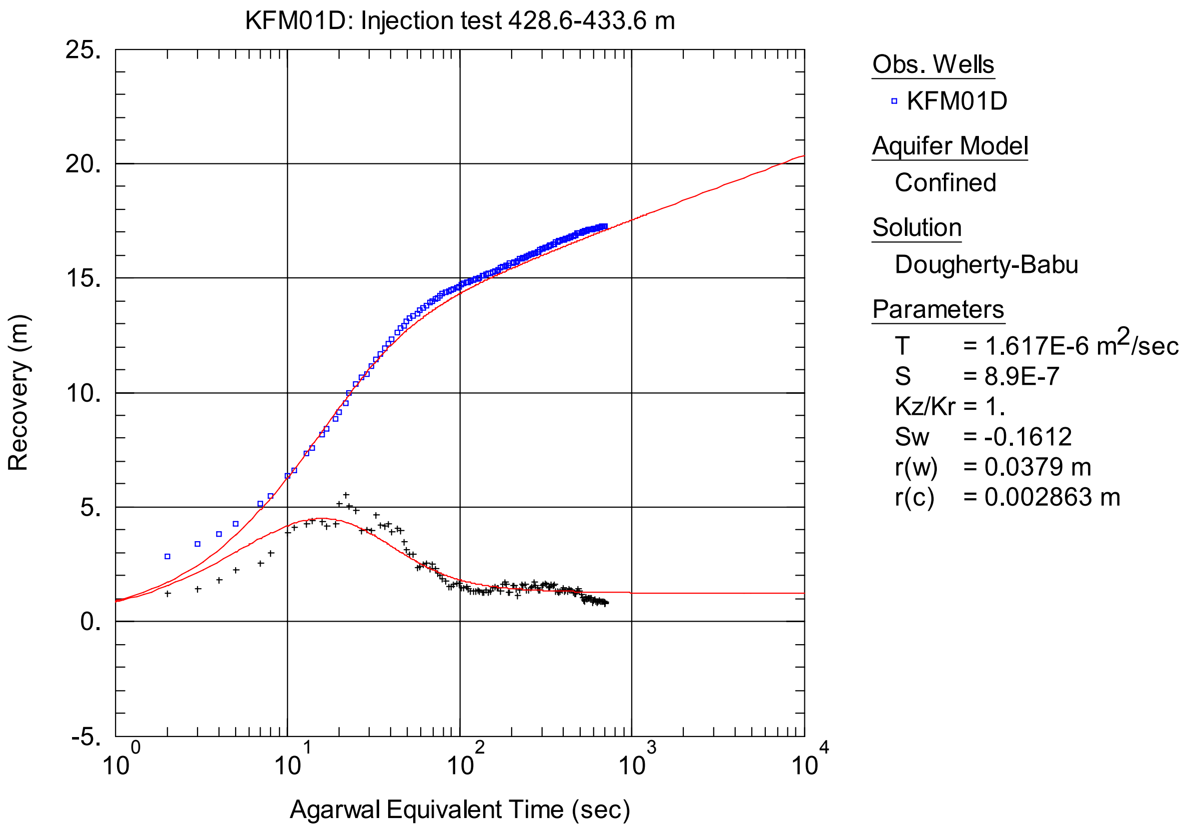


Figure A3-361. *Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 428.6-433.6 m in KFM01D.*

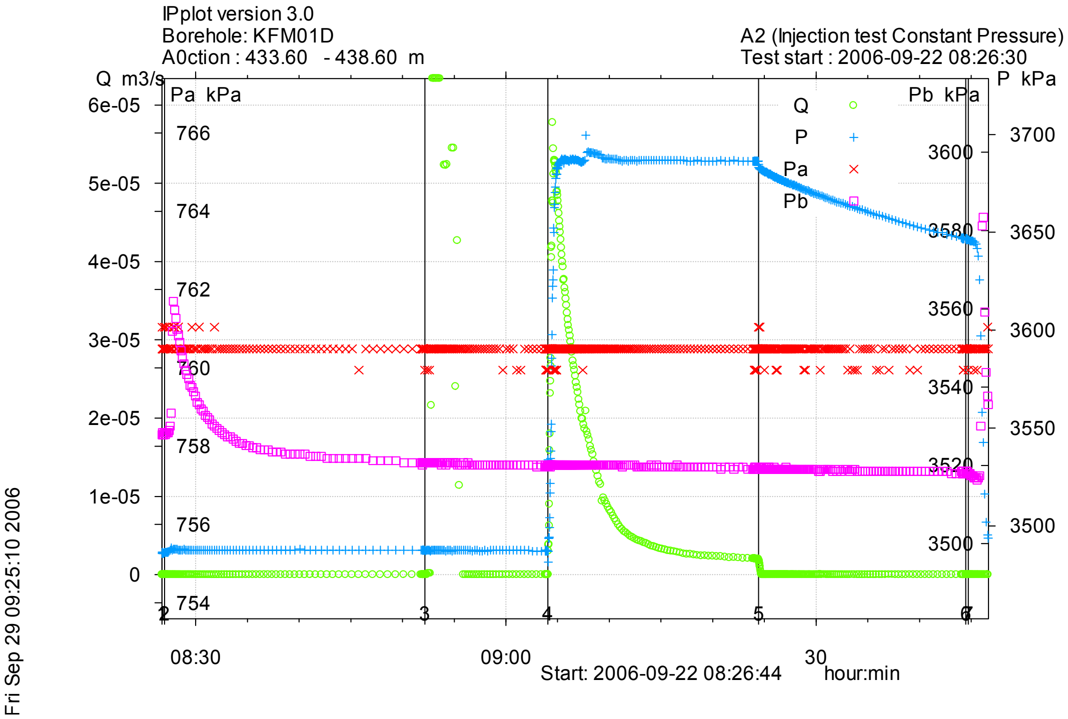


Figure A3-362. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 433.6-438.6 m in borehole KFM01D.*

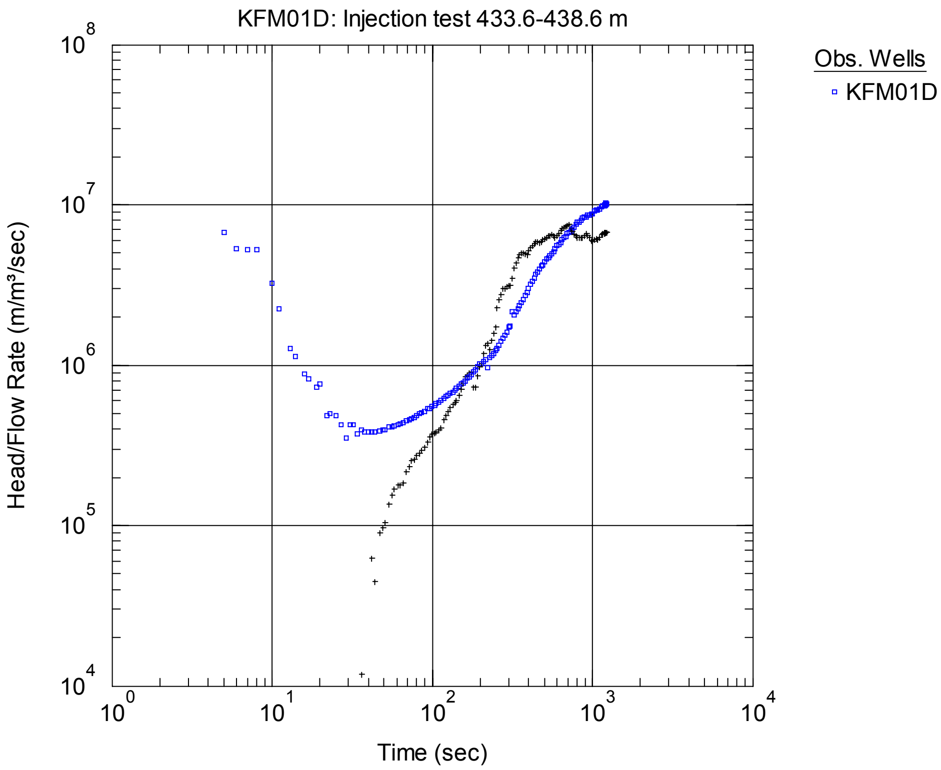


Figure A3-363. *Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 433.6-438.6 m in KFM01D. No type curve fit is shown since no unambiguous transient evaluation is possible.*

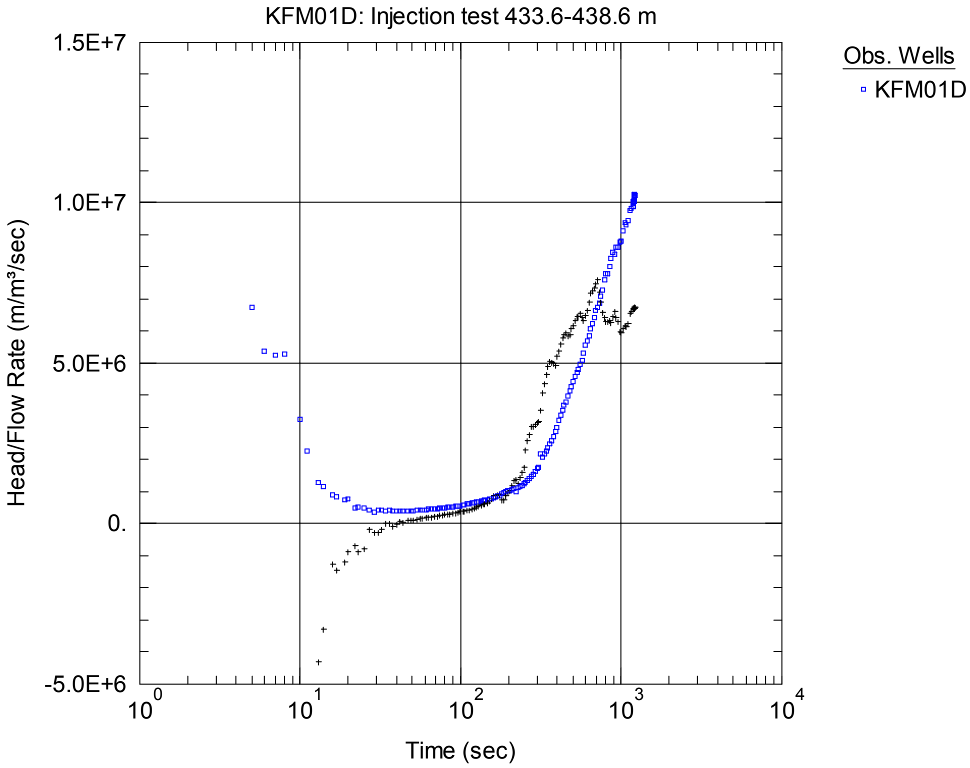


Figure A3-364. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 433.6-438.6 m in KFM01D. No type curve fit is shown since no unambiguous transient evaluation is possible.*

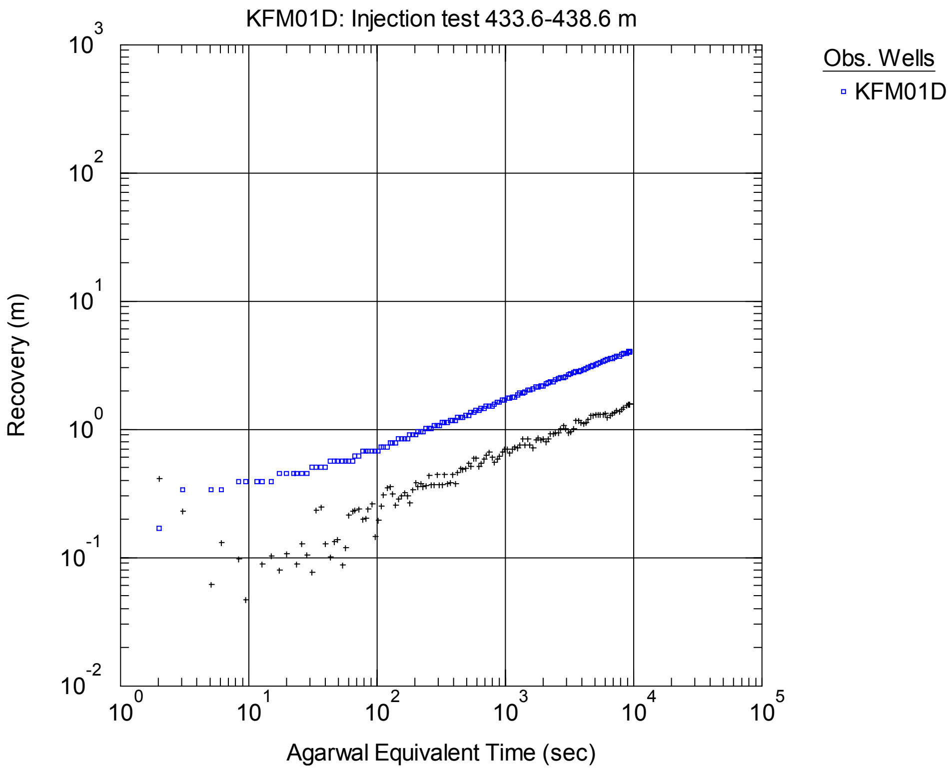


Figure A3-365. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 433.6-438.6 m in KFM01D. No type curve fit is shown since no unambiguous transient evaluation is possible.*

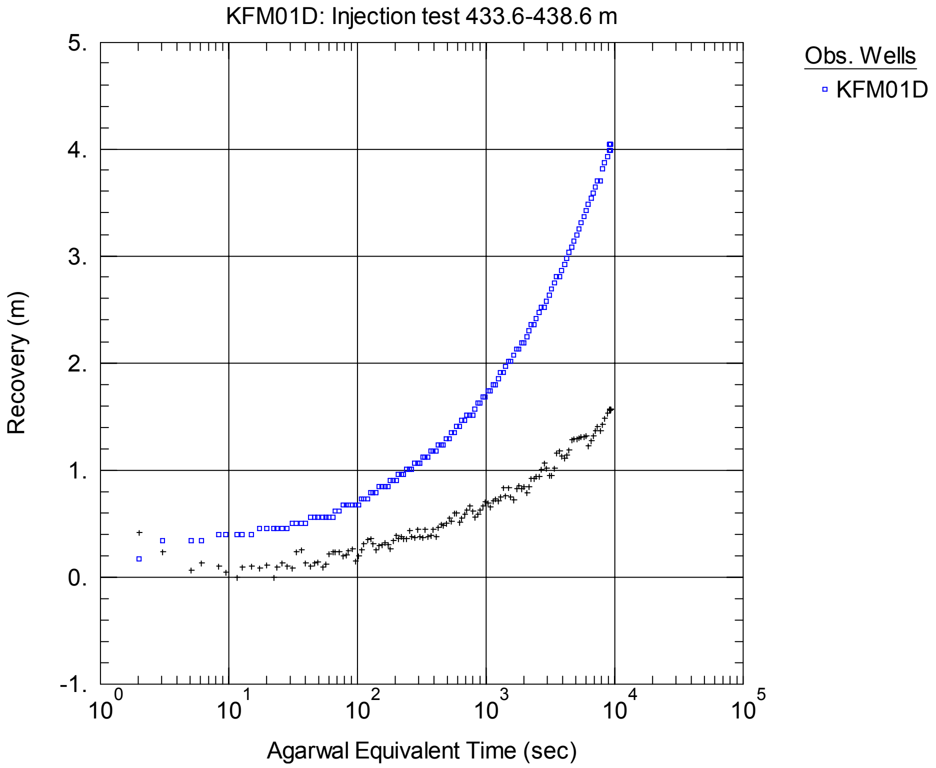


Figure A3-366. *Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 433.6-438.6 m in KFM01D. No type curve fit is shown since no unambiguous transient evaluation is possible.*

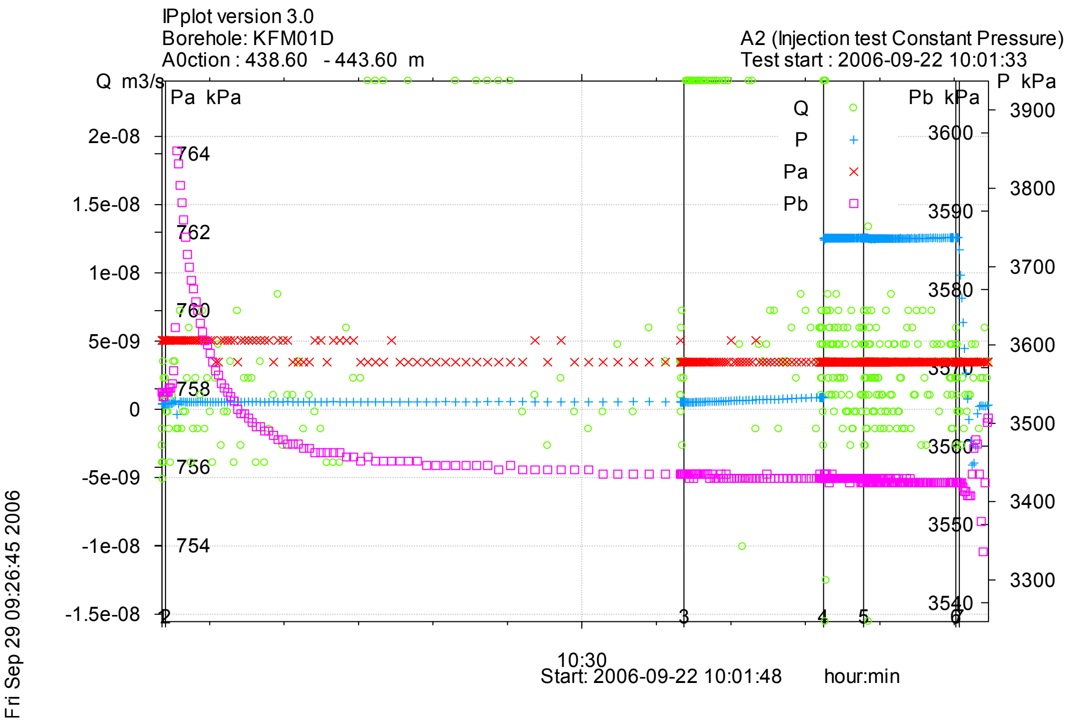


Figure A3-367. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 438.6-443.6 m in borehole KFM01D.*

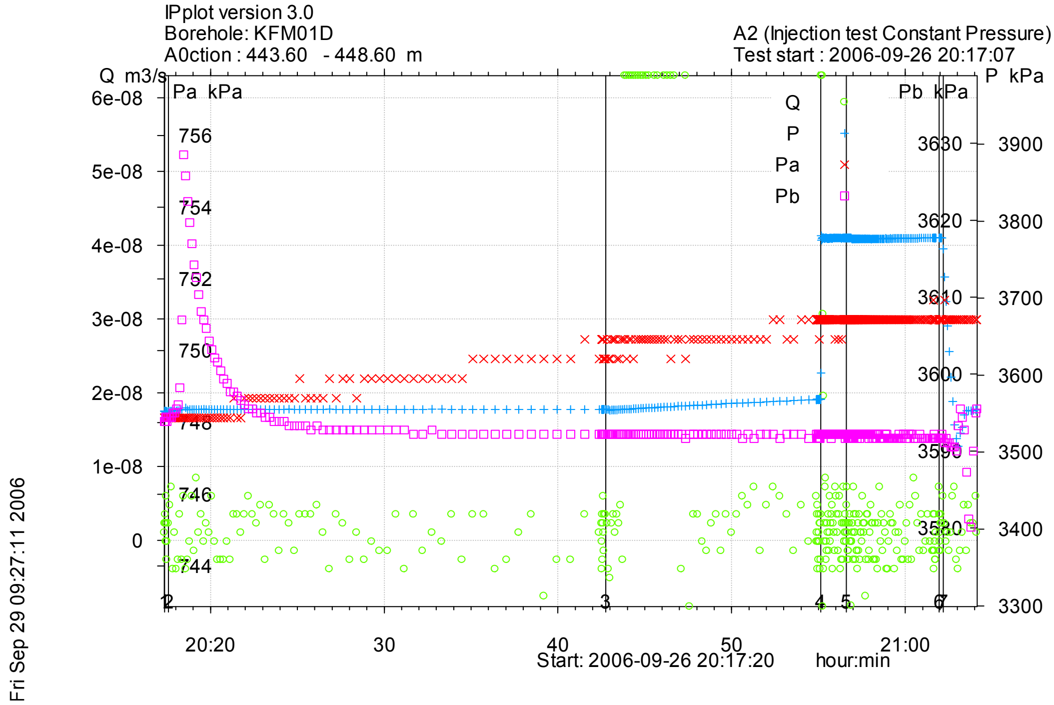


Figure A3-368. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 443.6-448.6 m in borehole KFM01D.*

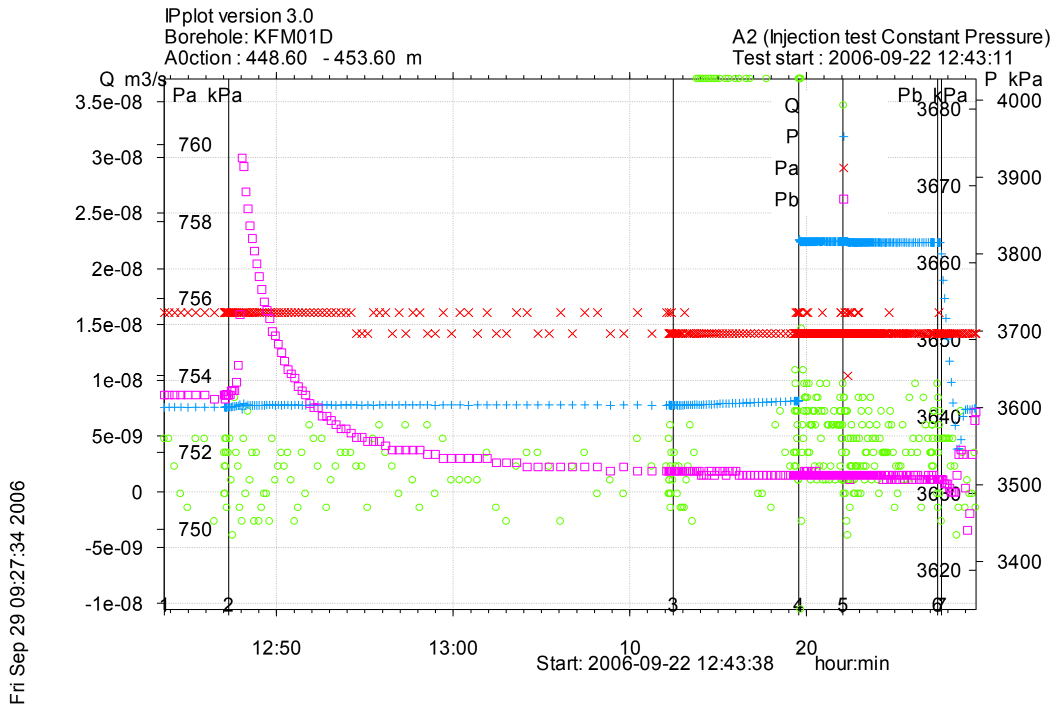


Figure A3-369. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 448.6-453.6 m in borehole KFM01D.*

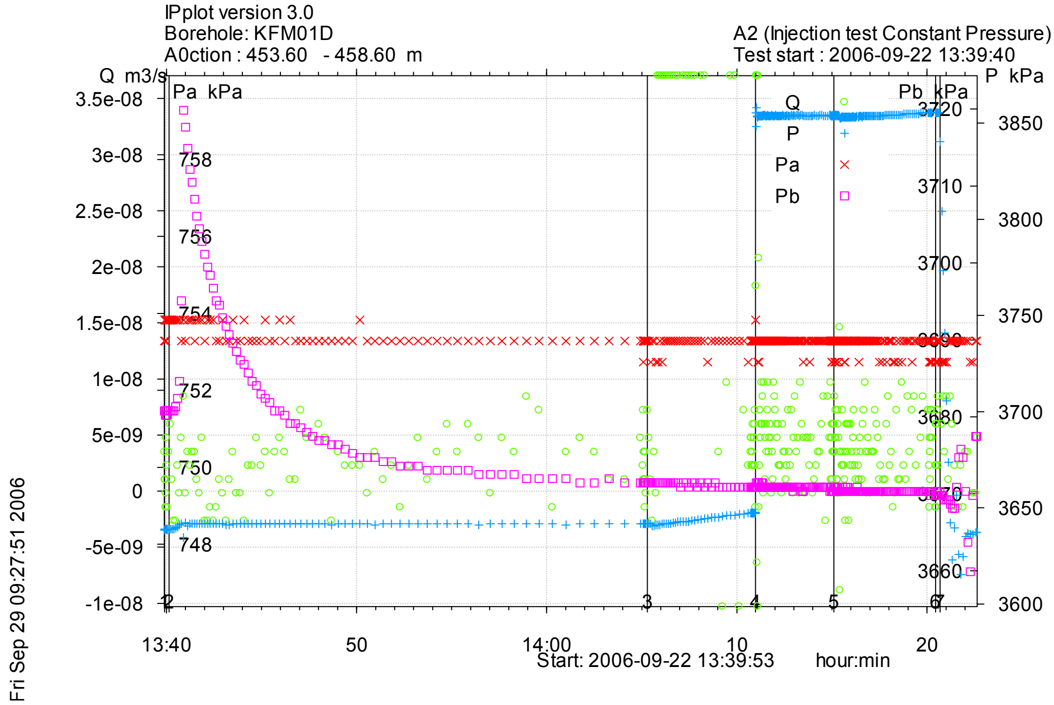


Figure A3-370. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 453.6-458.6 m in borehole KFM01D.*

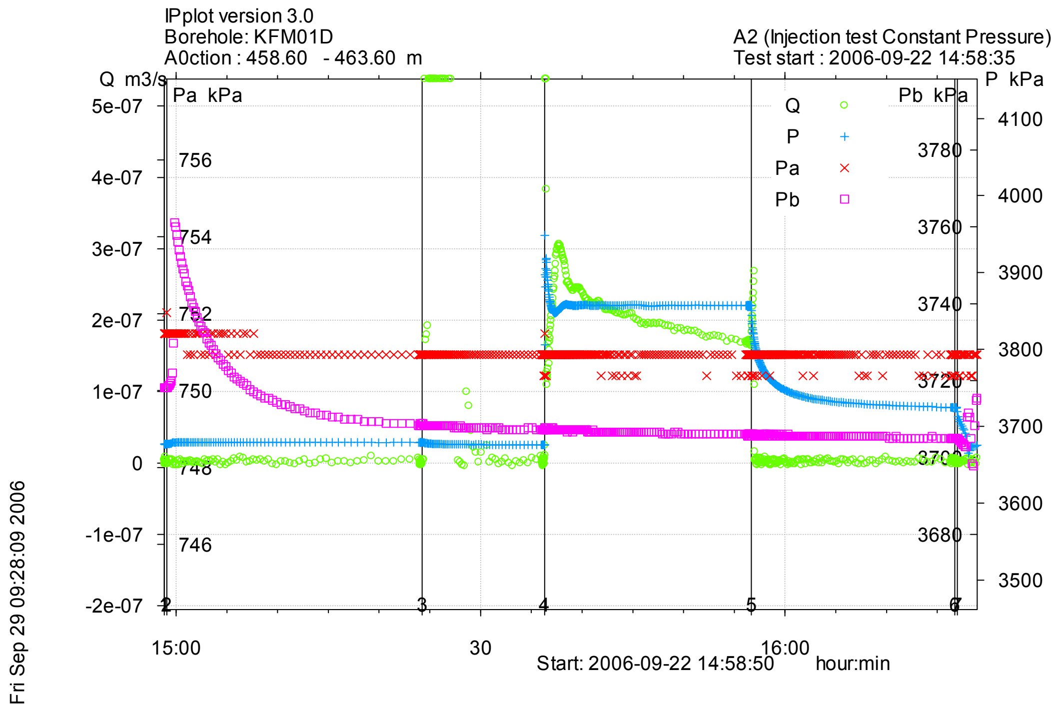


Figure A3-371. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 458.6-463.6 m in borehole KFM01D.*

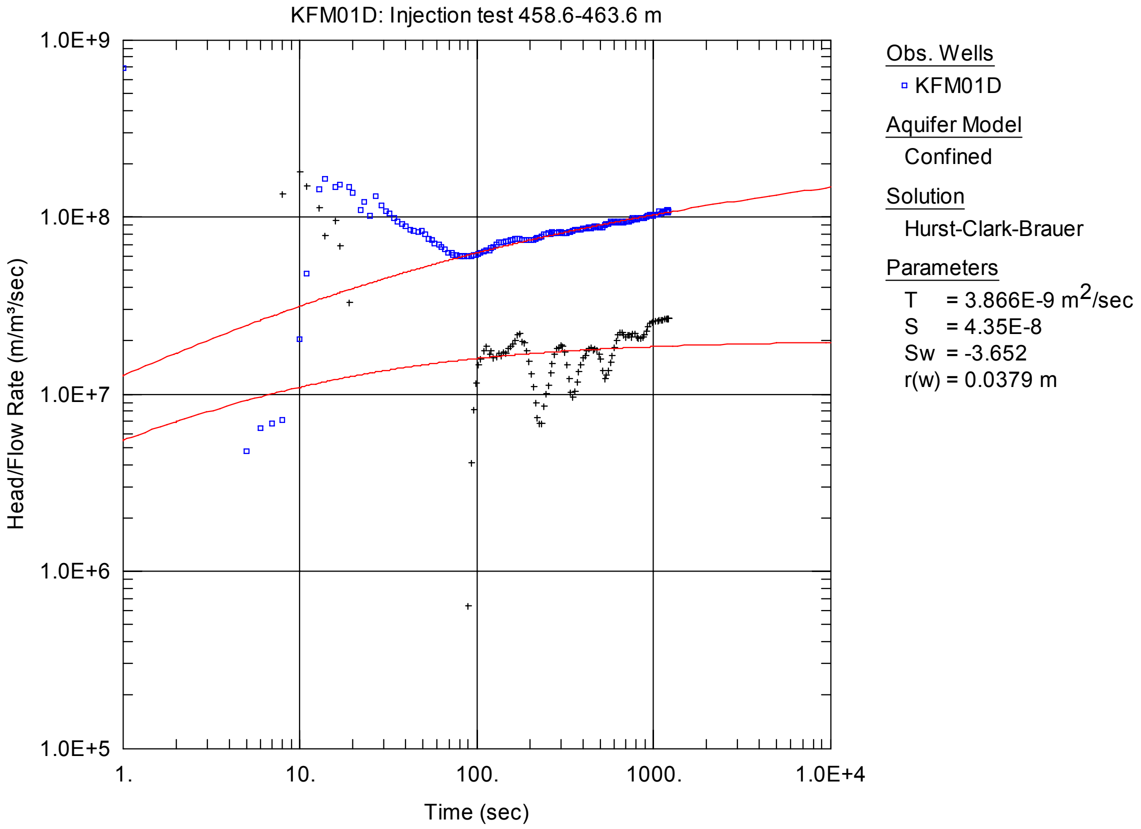


Figure A3-372. *Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 458.6-463.6 m in KFM01D.*

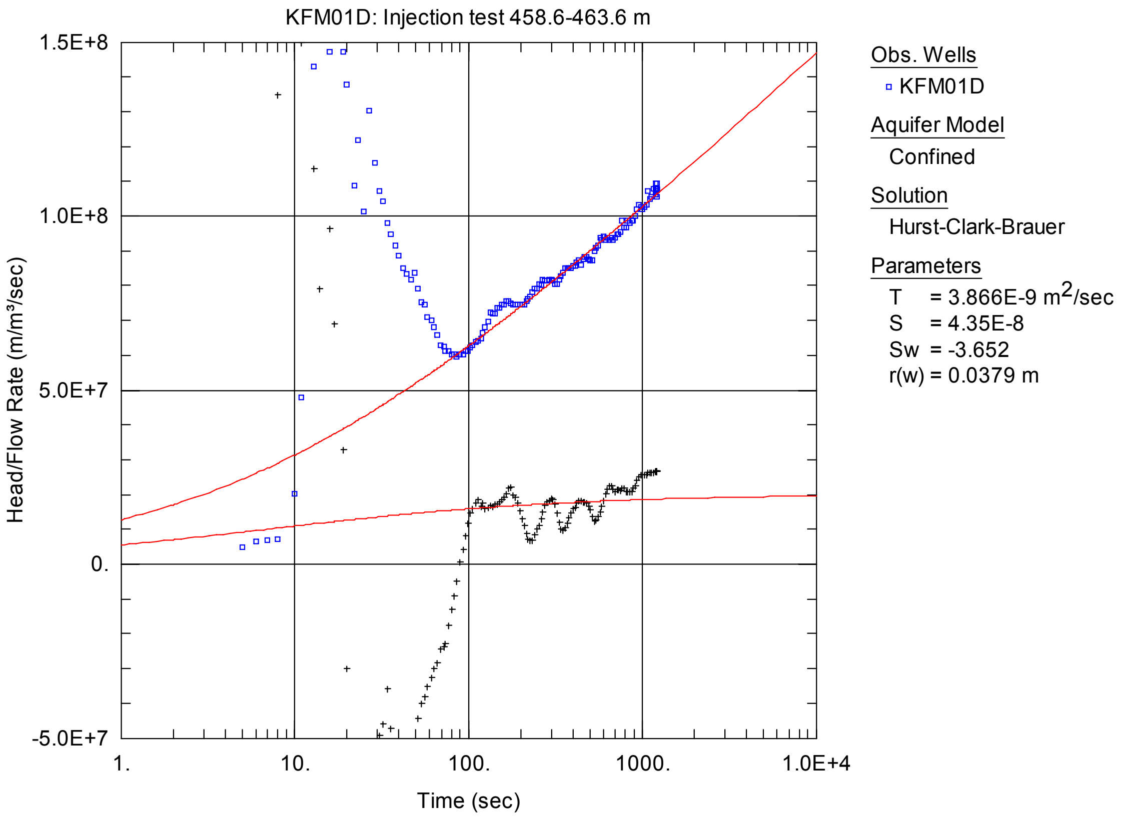


Figure A3-373. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 458.6-463.6 m in KFM01D.*

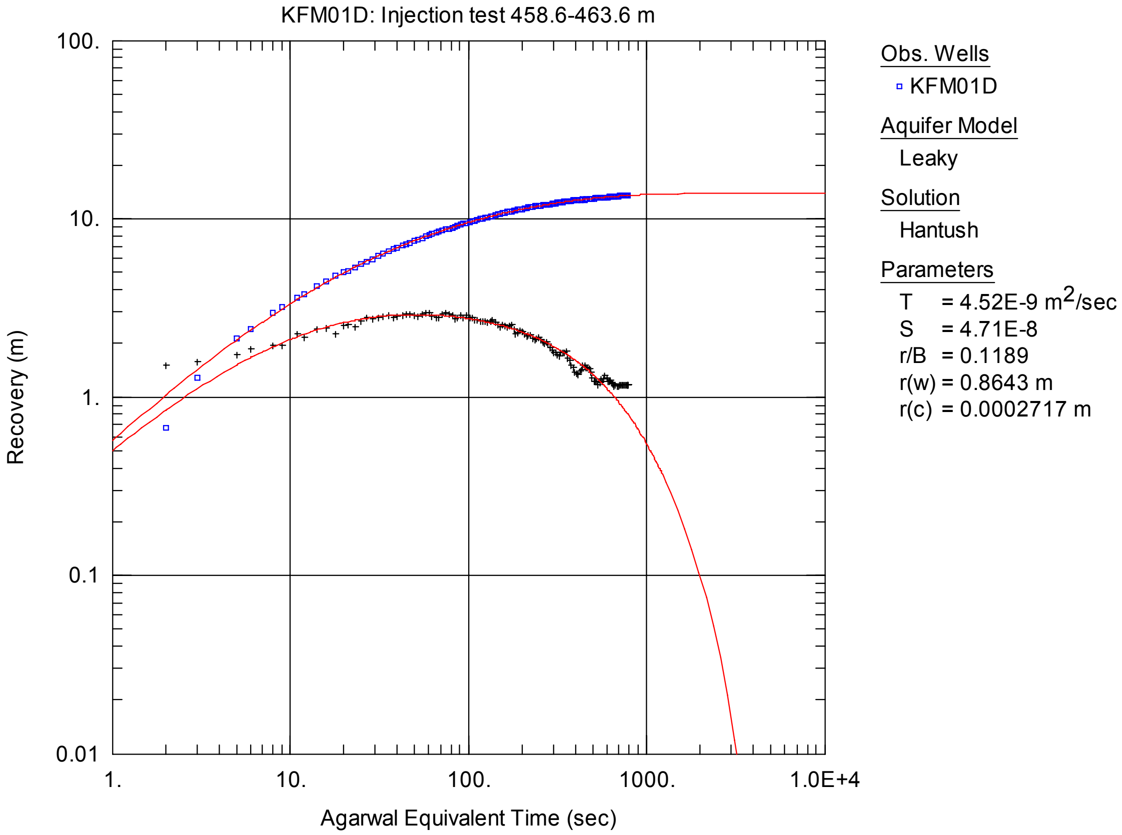


Figure A3-374. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 458.6-463.6 m in KFM01D.*

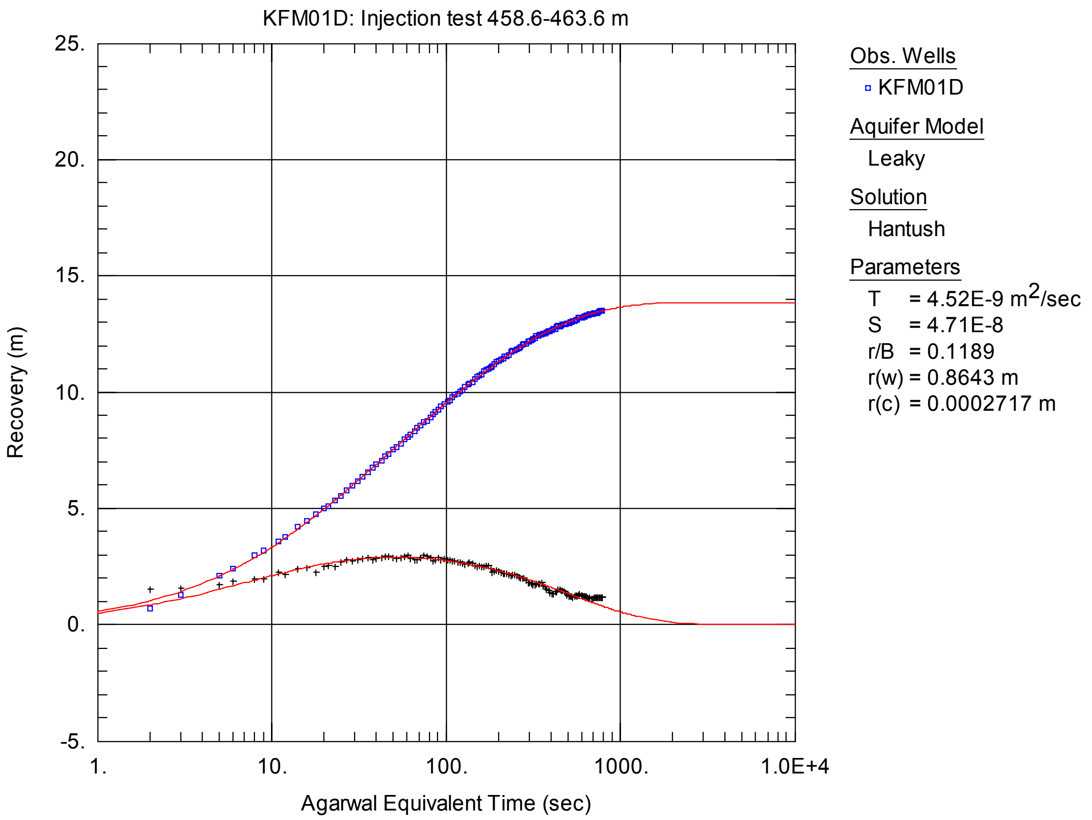


Figure A3-375. *Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 458.6-463.6 m in KFM01D.*

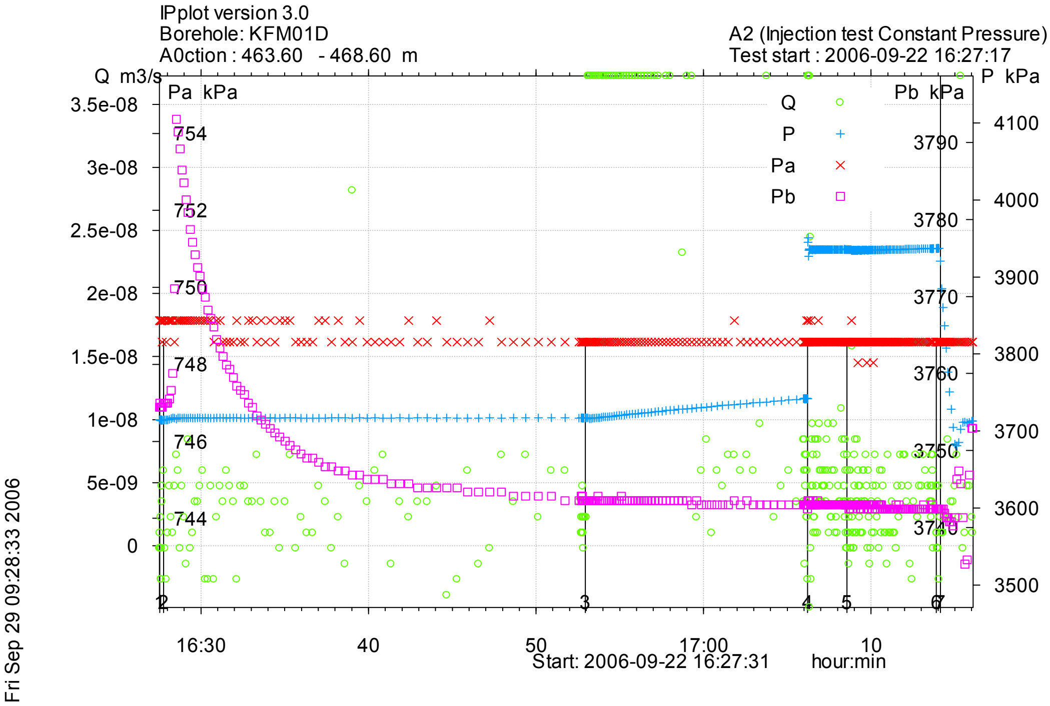


Figure A3-376. Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 463.6-468.6 m in borehole KFM01D.

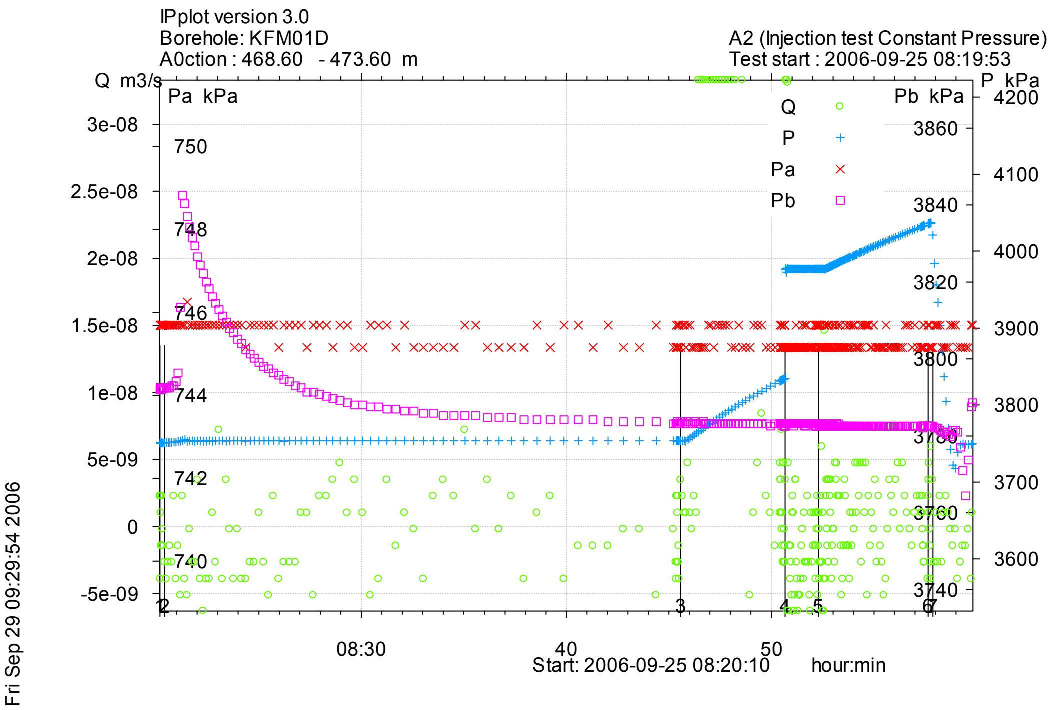


Figure A3-377. Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 468.6-473.6 m in borehole KFM01D.

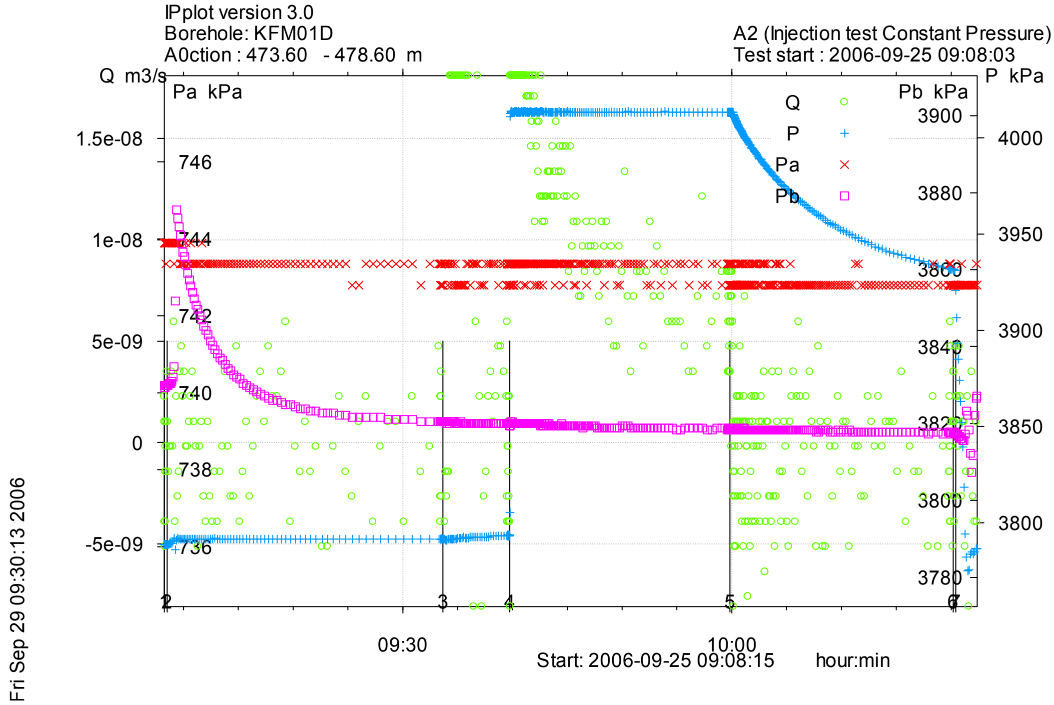


Figure A3-378. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 473.6-478.6 m in borehole KFM01D.*

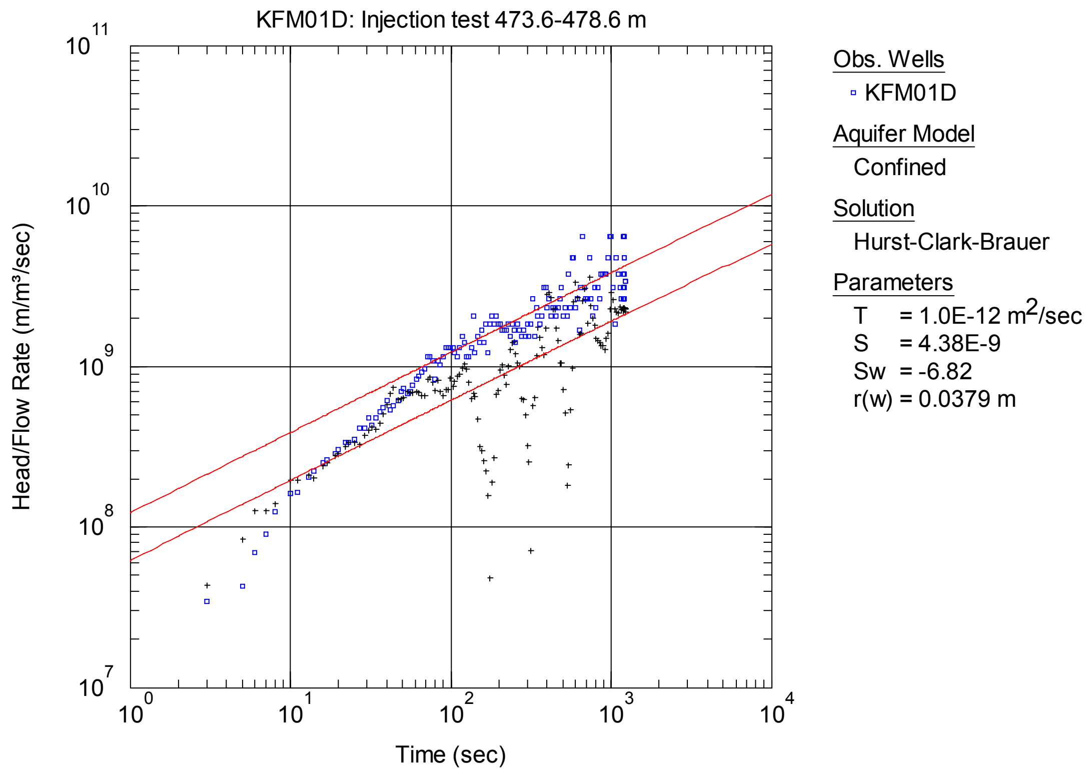


Figure A3-379. *Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 473.6-478.6 m in KFM01D. The type curve fit is only to show that an assumption of PRF is not valid.*

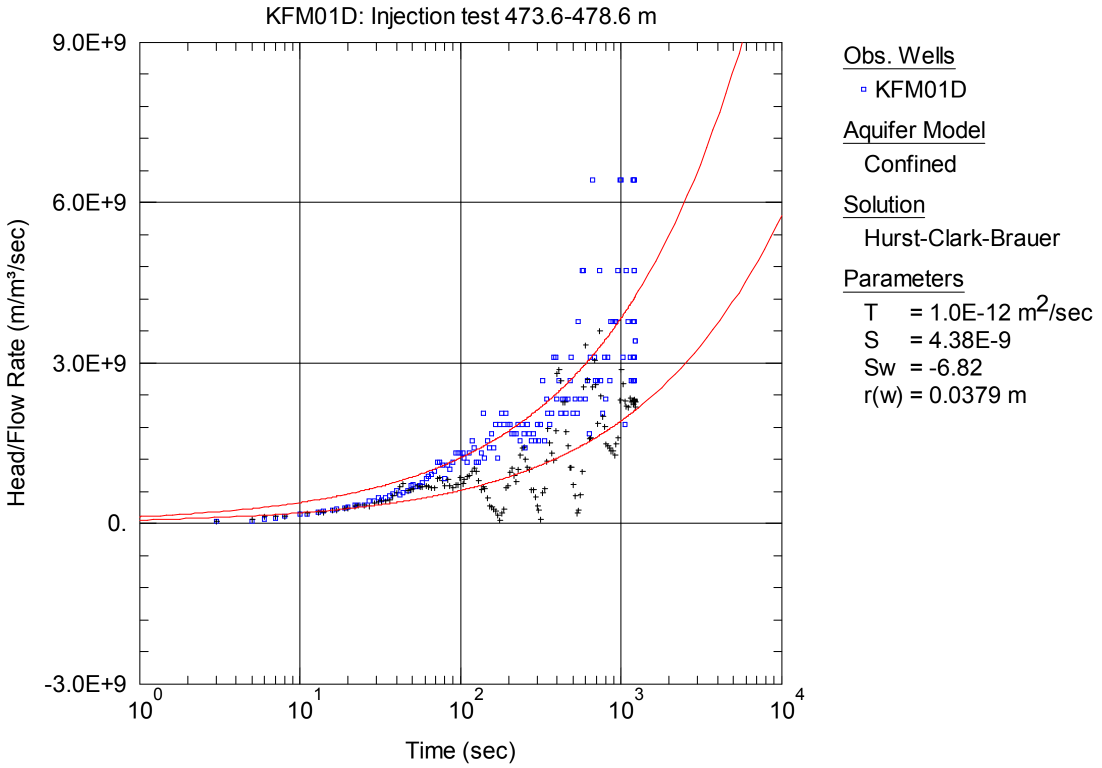


Figure A3-380. Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 473.6-478.6 m in KFM01D. The type curve fit is only to show that an assumption of PRF is not valid.

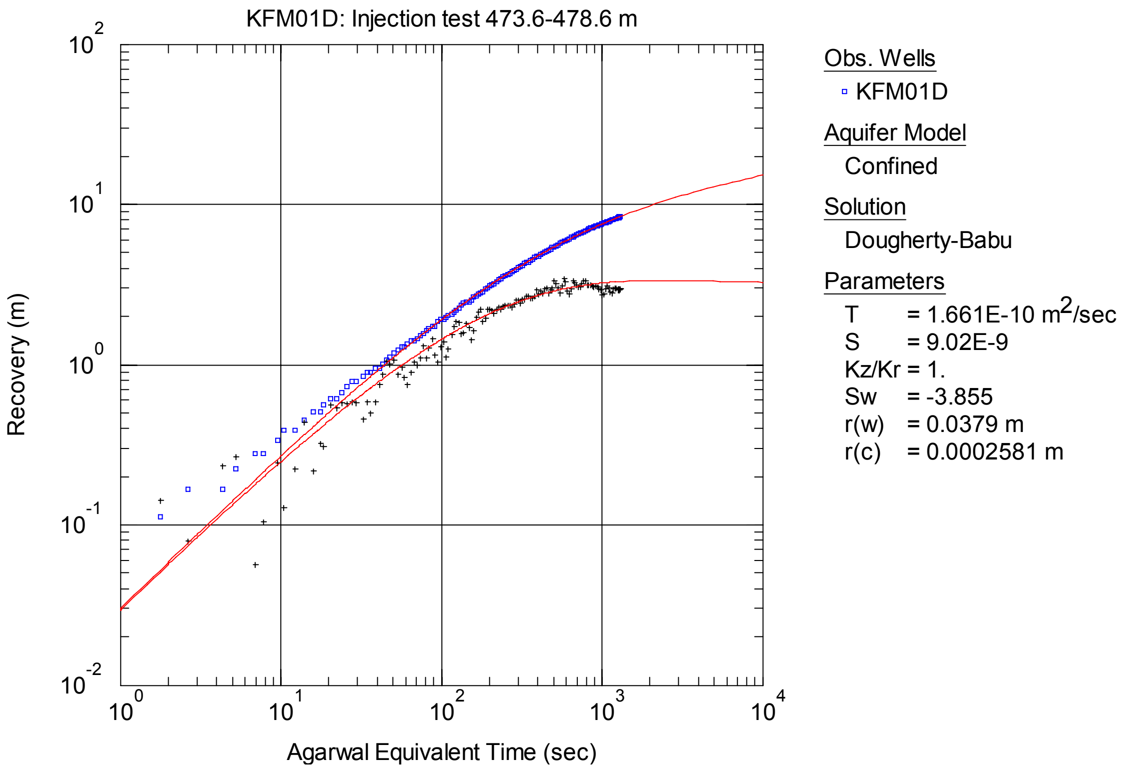


Figure A3-381. Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 473.6-478.6 m in KFM01D.

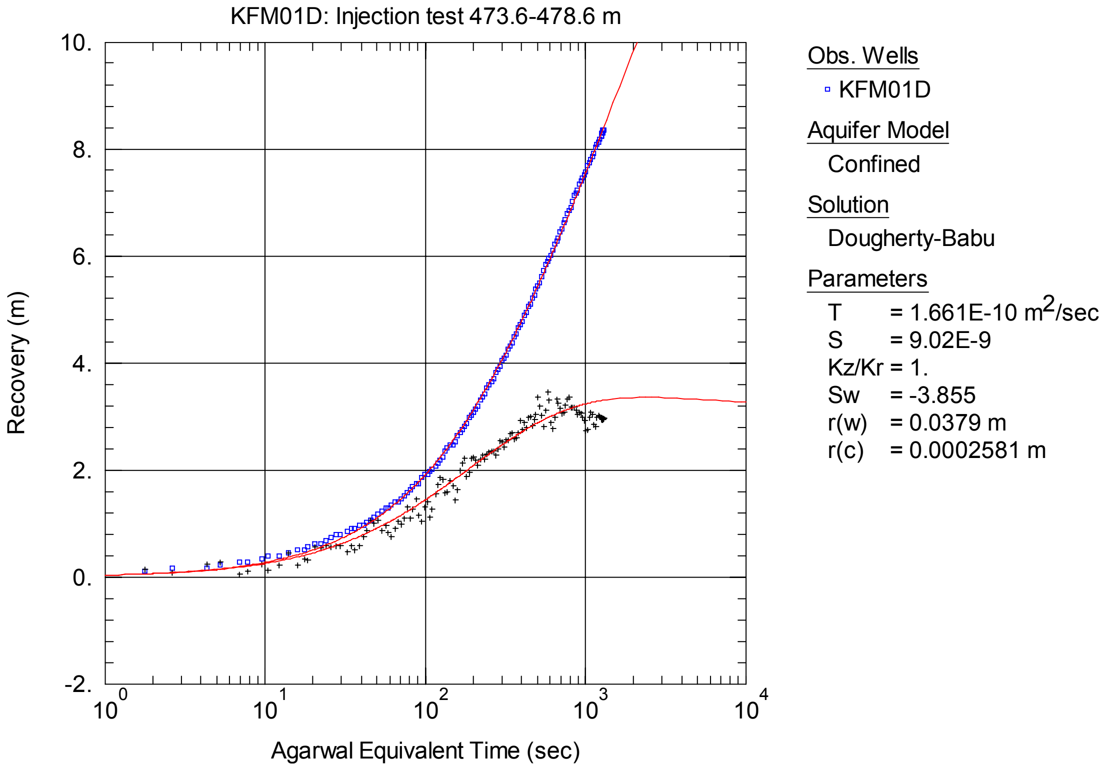


***Figure A3-382.** Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 473.6-478.6 m in KFM01D.*

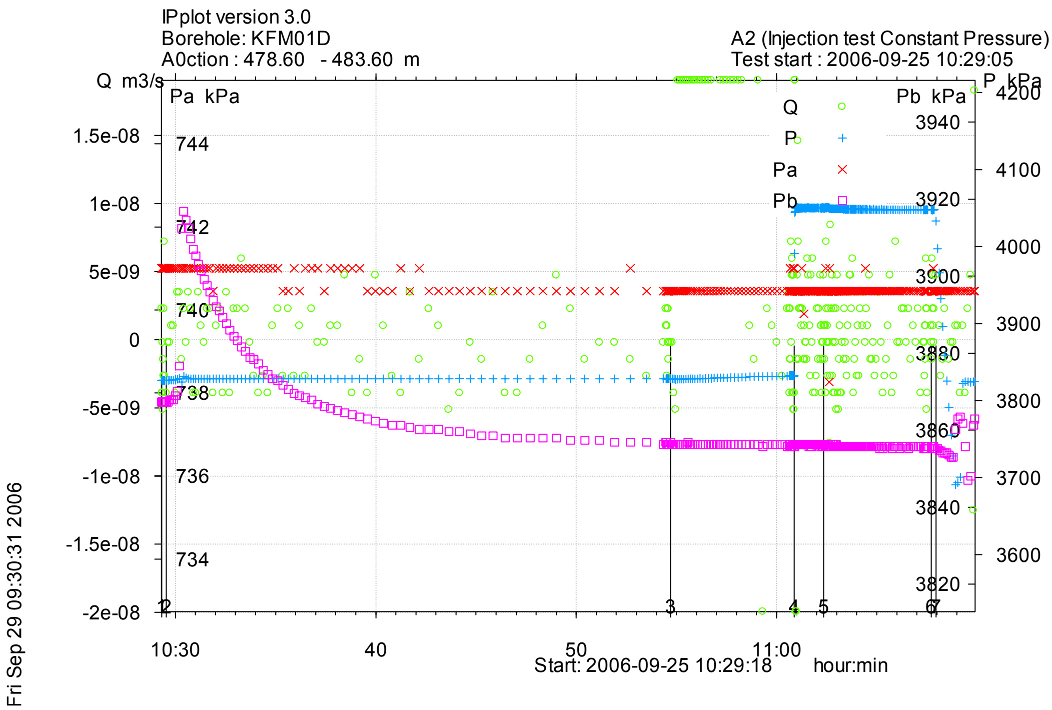


***Figure A3-383.** Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 478.6-483.6 m in borehole KFM01D.*

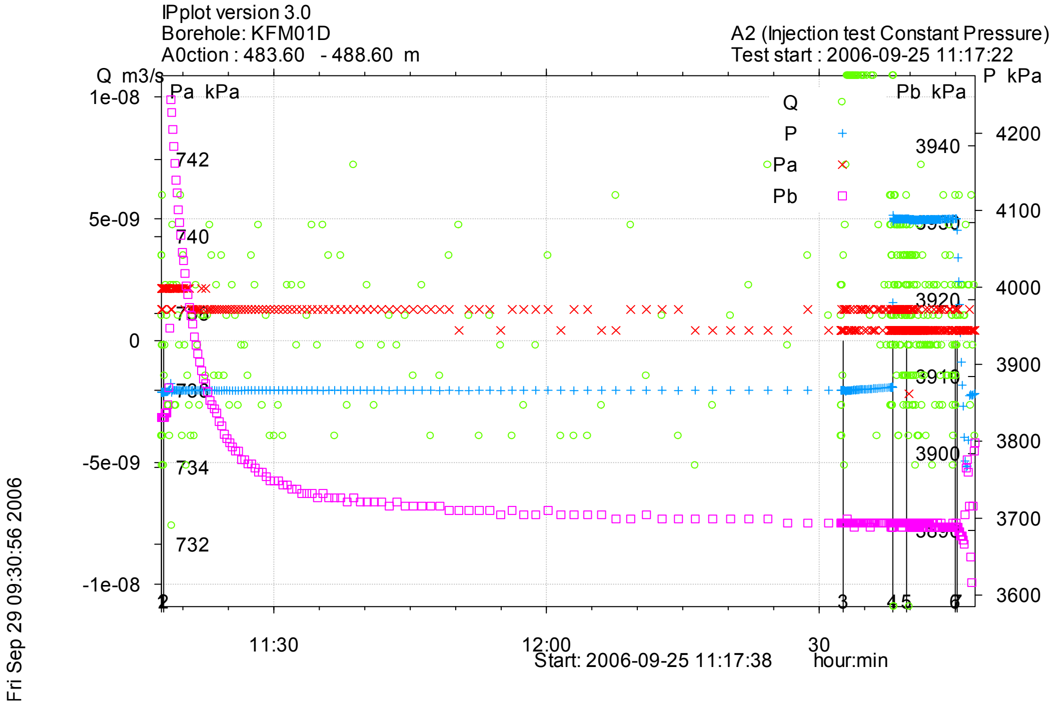


Figure A3-384. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 483.6-488.6 m in borehole KFM01D.*

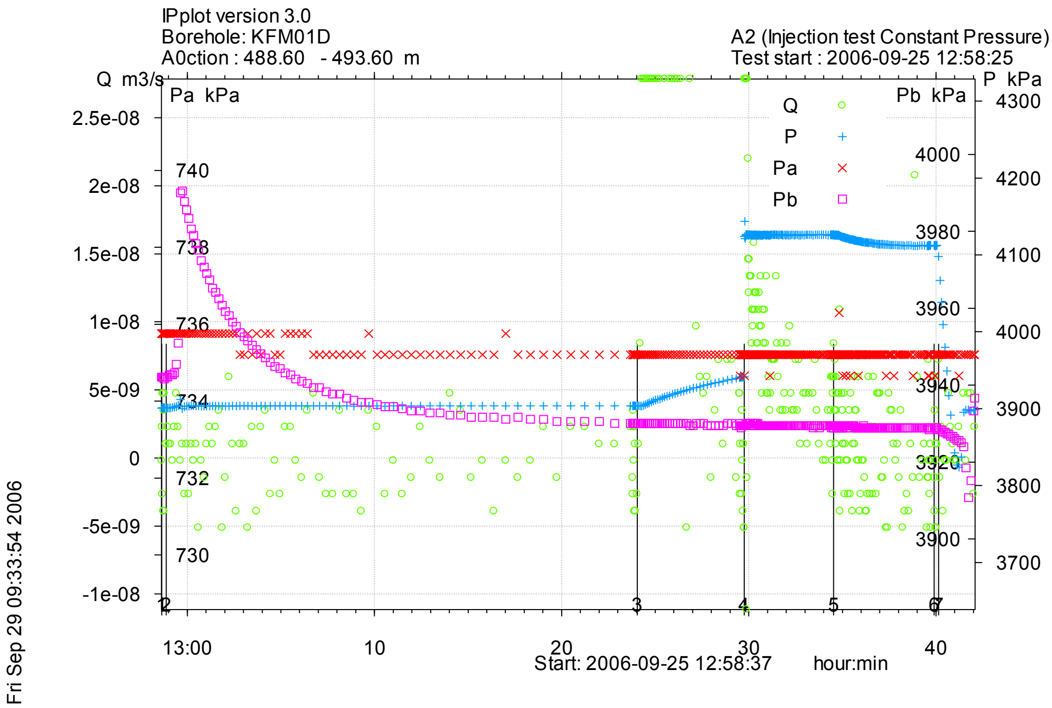


Figure A3-385. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 488.6-493.6 m in borehole KFM01D.*

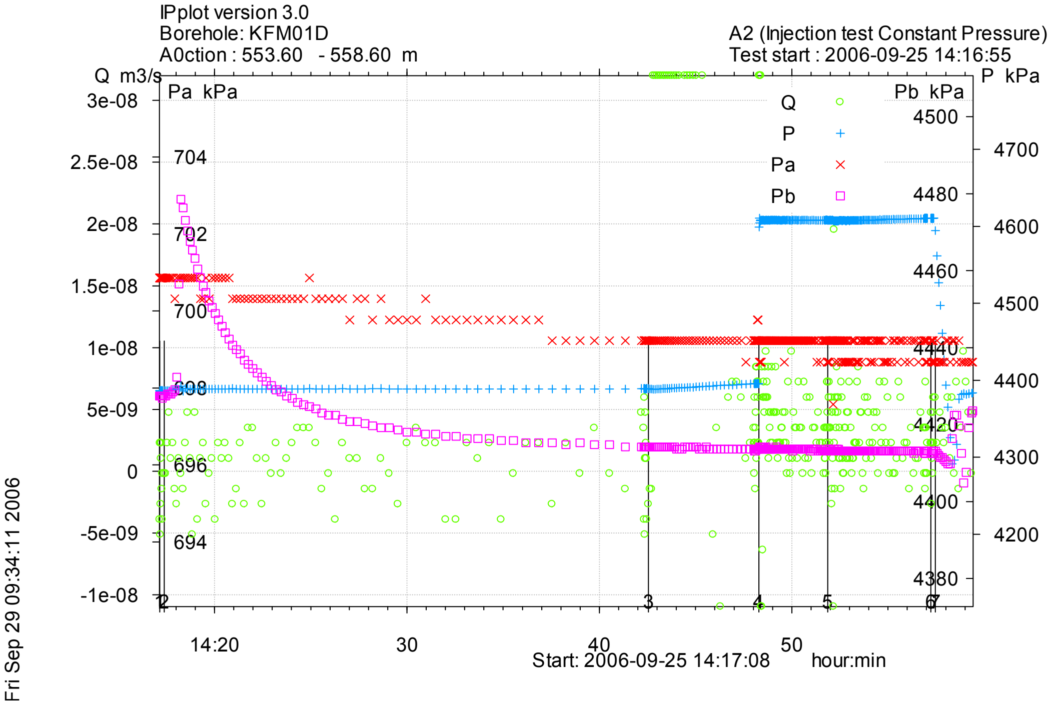


Figure A3-386. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 553.6-558.6 m in borehole KFM01D.*

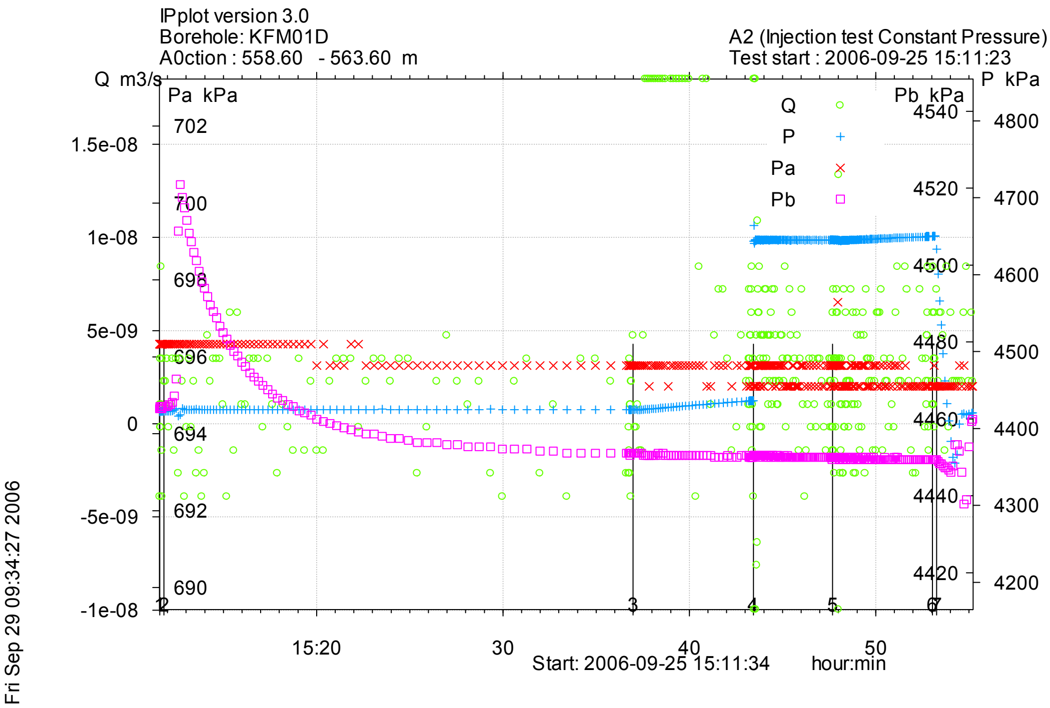


Figure A3-387. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 558.6-563.6 m in borehole KFM01D.*

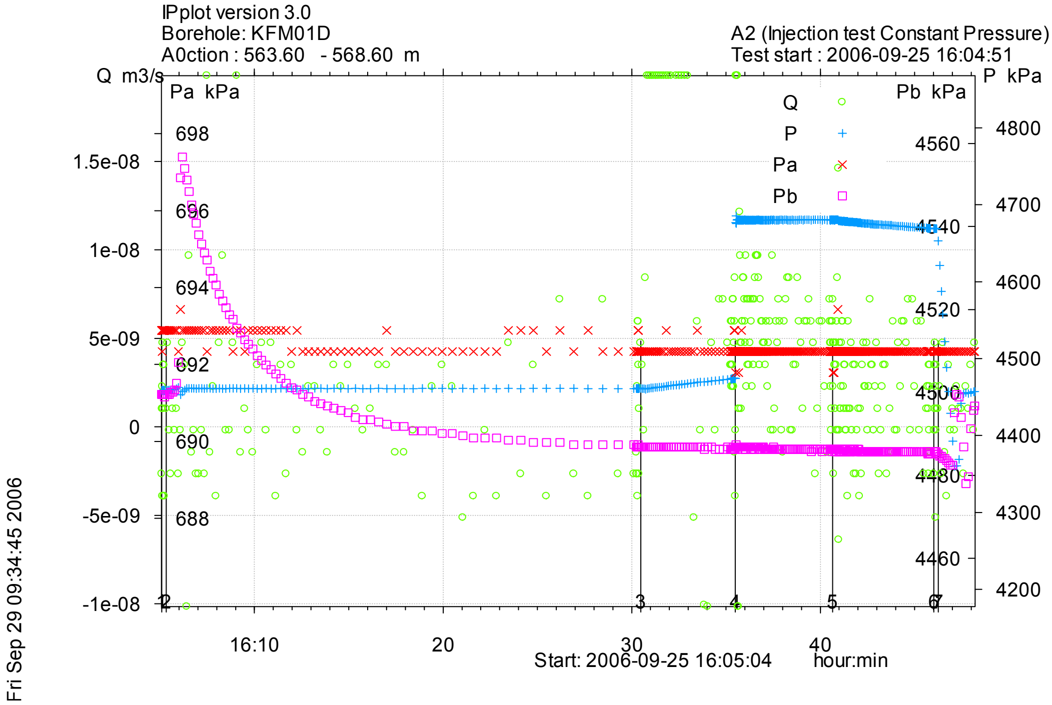


Figure A3-388. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 563.6-568.6 m in borehole KFM01D.*

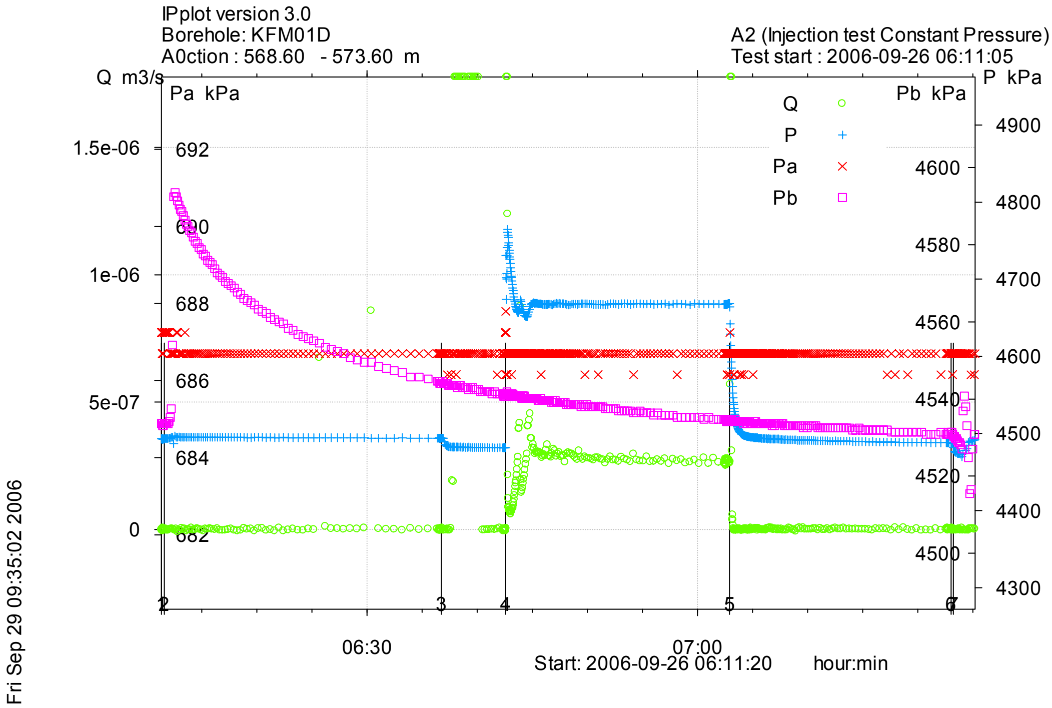


Figure A3-389. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 568.6-573.6 m in borehole KFM01D.*

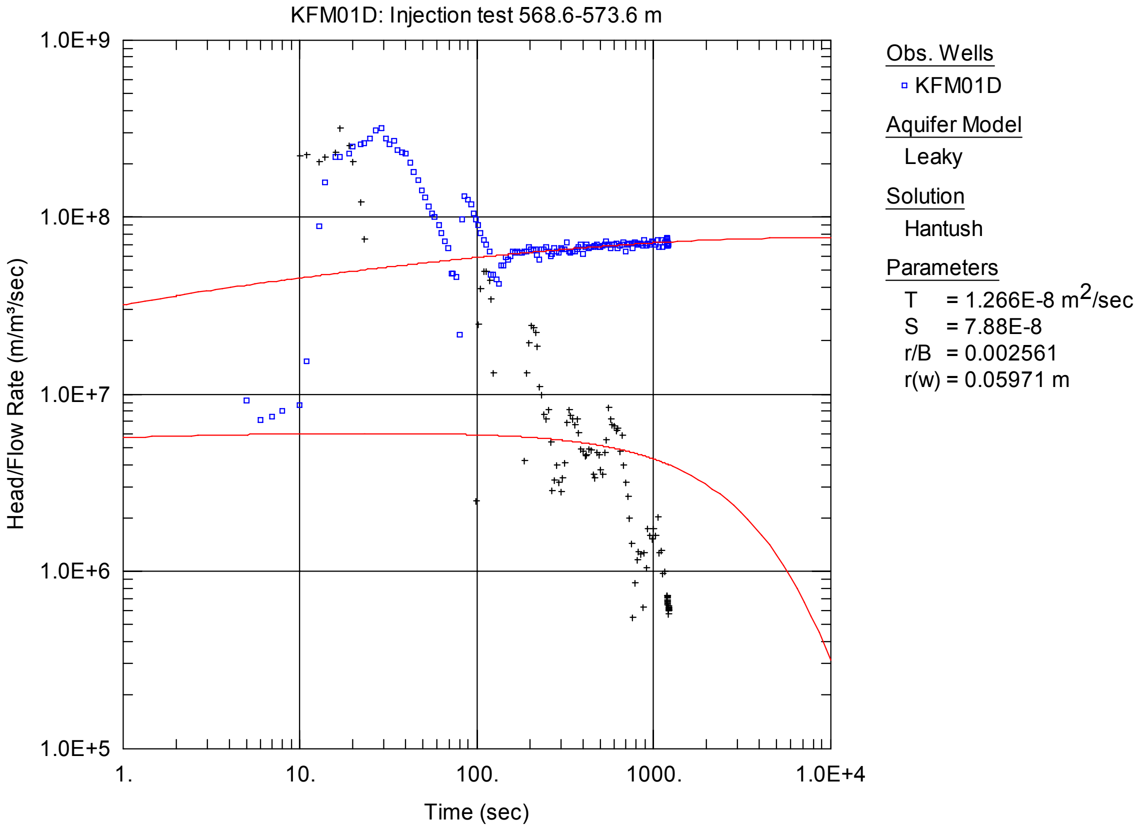


Figure A3-390. *Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 568.6-573.6 m in KFM01D.*

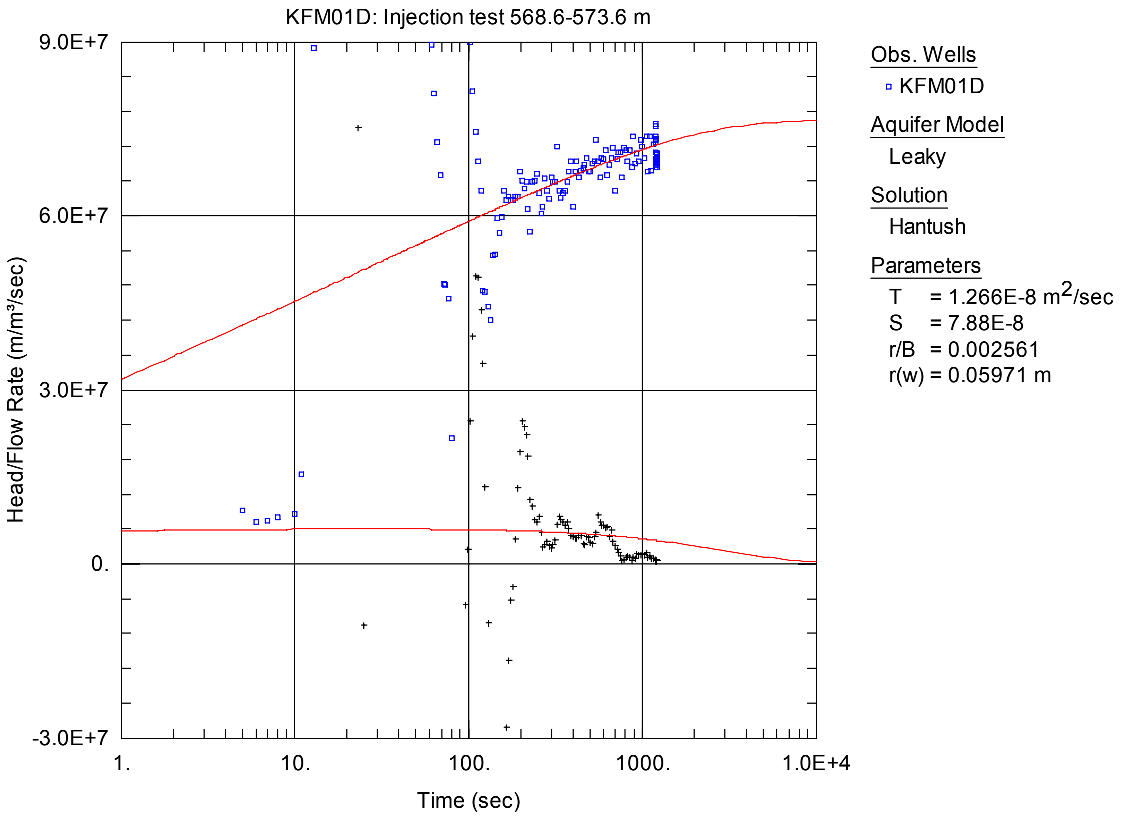


Figure A3-391. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 568.6-573.6 m in KFM01D.*

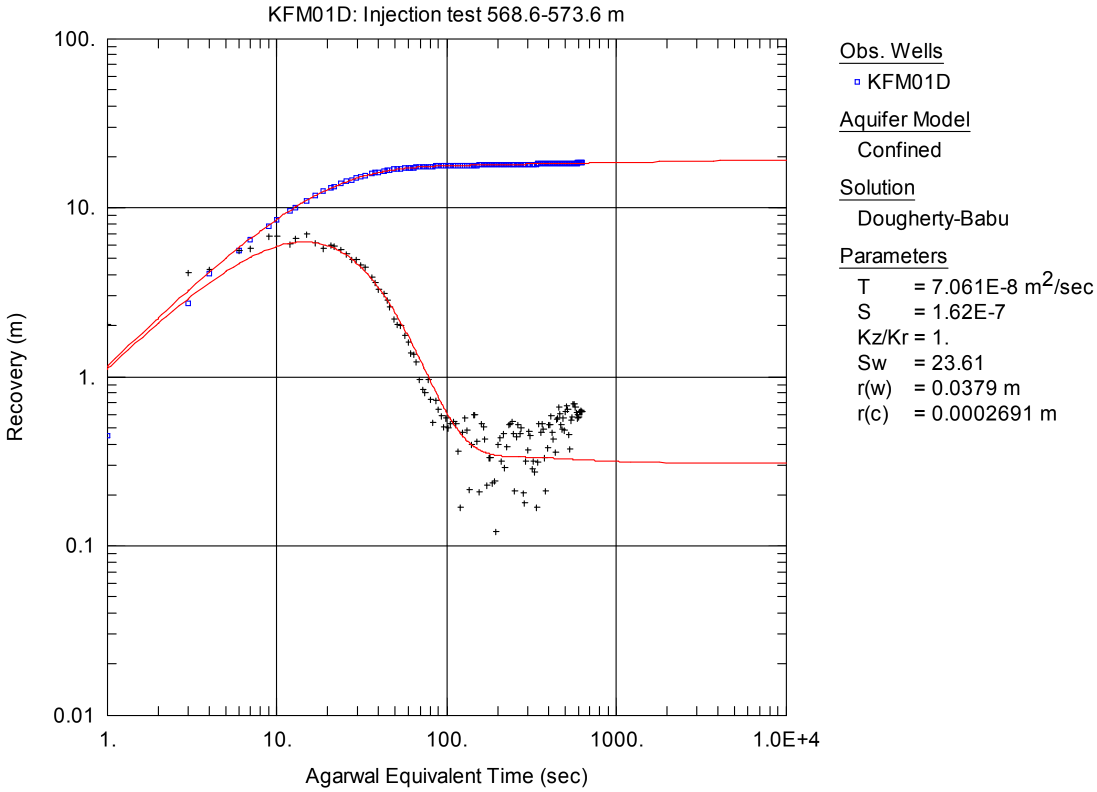


Figure A3-392. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 568.6-573.6 m in KFM01D. The type curve fit is only to show that an assumption of PRF is not valid.*

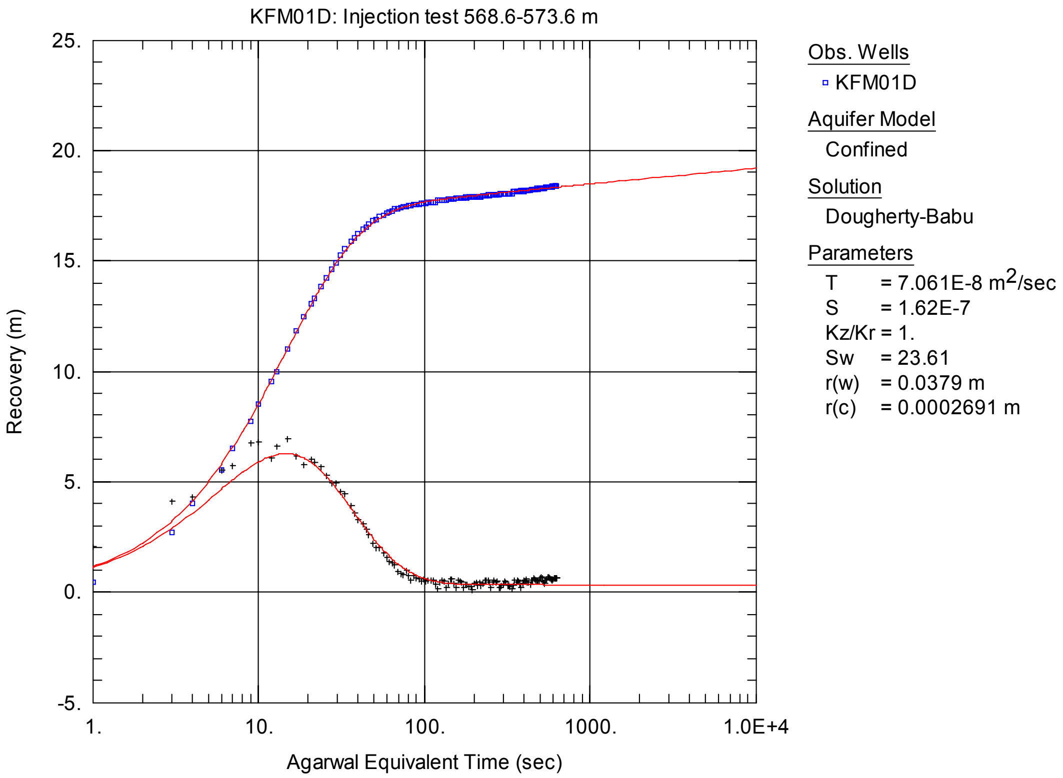


Figure A3-393. *Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 568.6-573.6 m in KFM01D. The type curve fit is only to show that an assumption of PRF is not valid.*

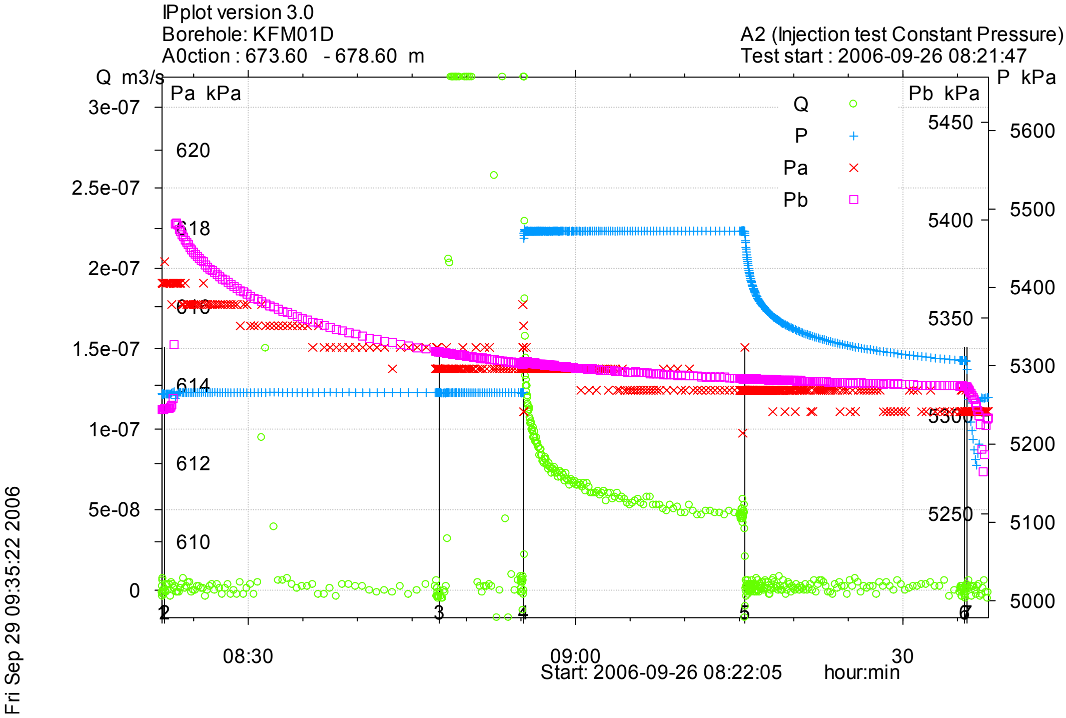


Figure A3-394. Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 673.6-678.6 m in borehole KFM01D.

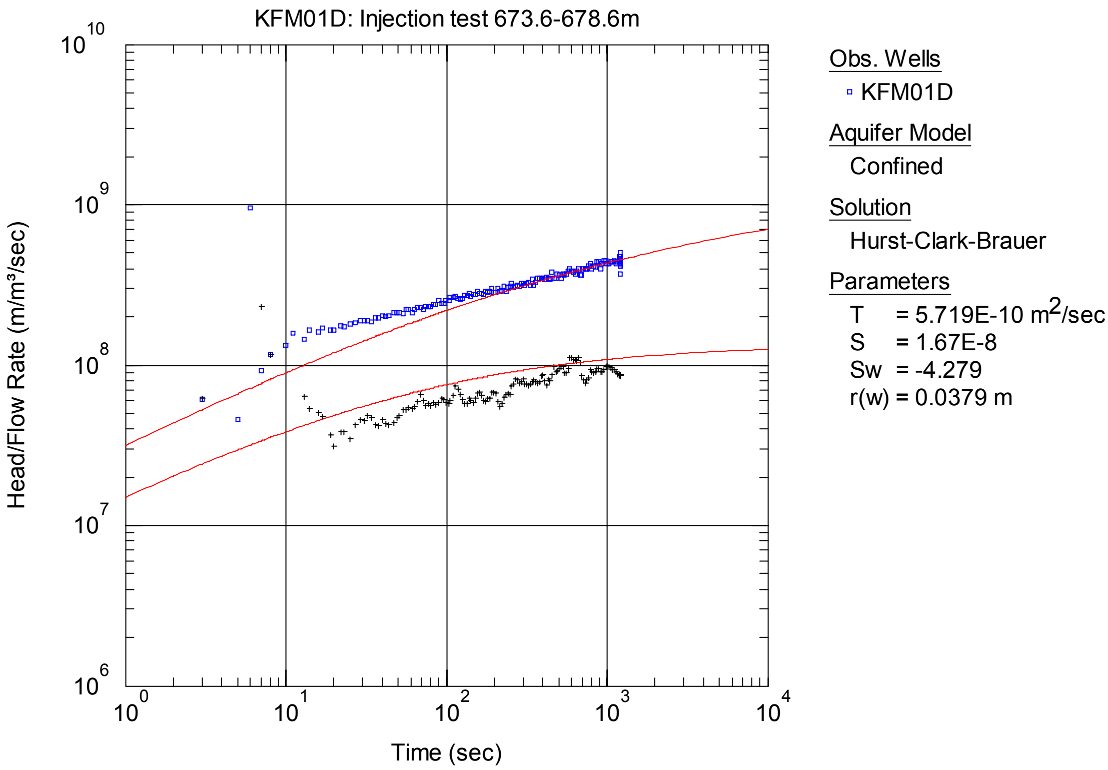


Figure A3-395. Log-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 673.6-678.6 m in KFM01D.

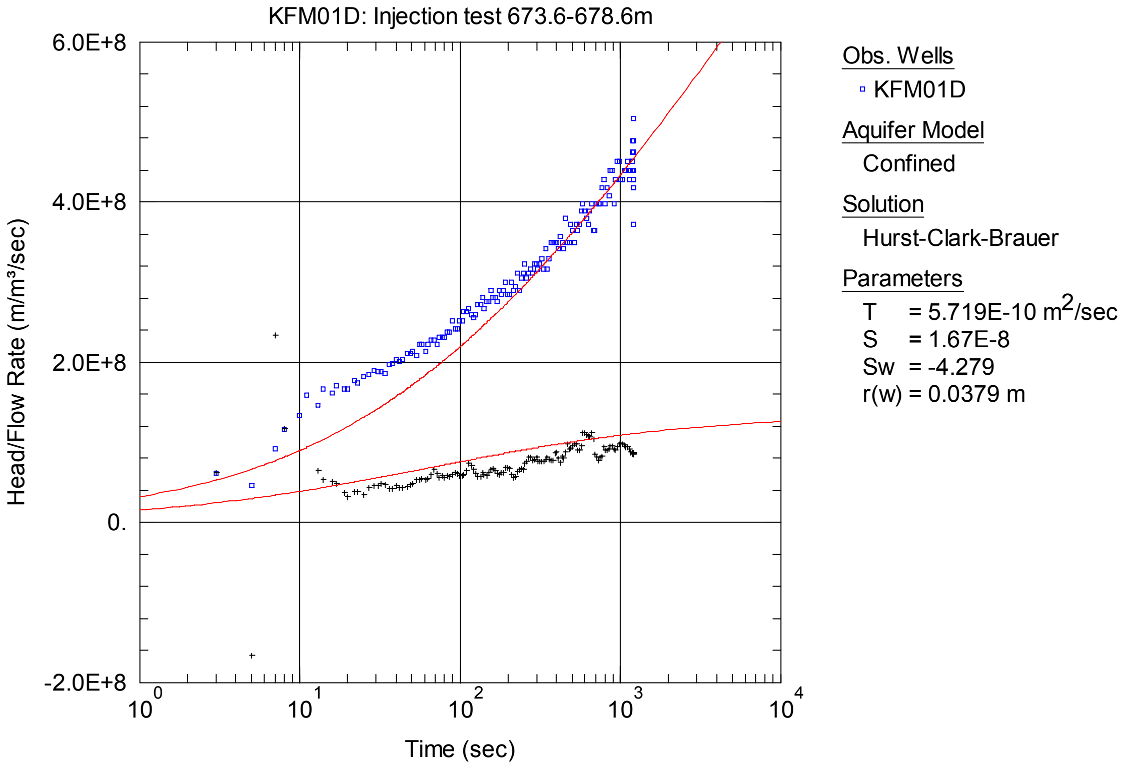


__Figure A3-396.__ Lin-log plot of head/flow rate (□) and derivative (+) versus time, from the injection test in section 673.6-678.6 m in KFM01D.

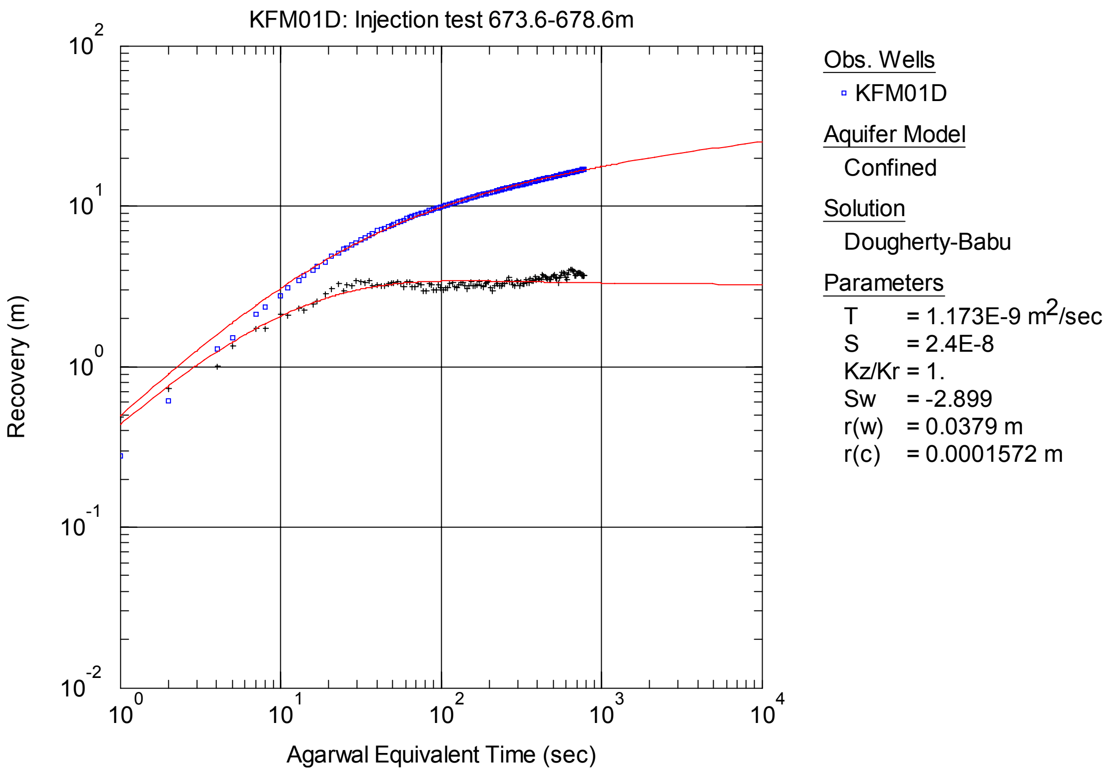


__Figure A3-397.__ Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 673.6-678.6 m in KFM01D.

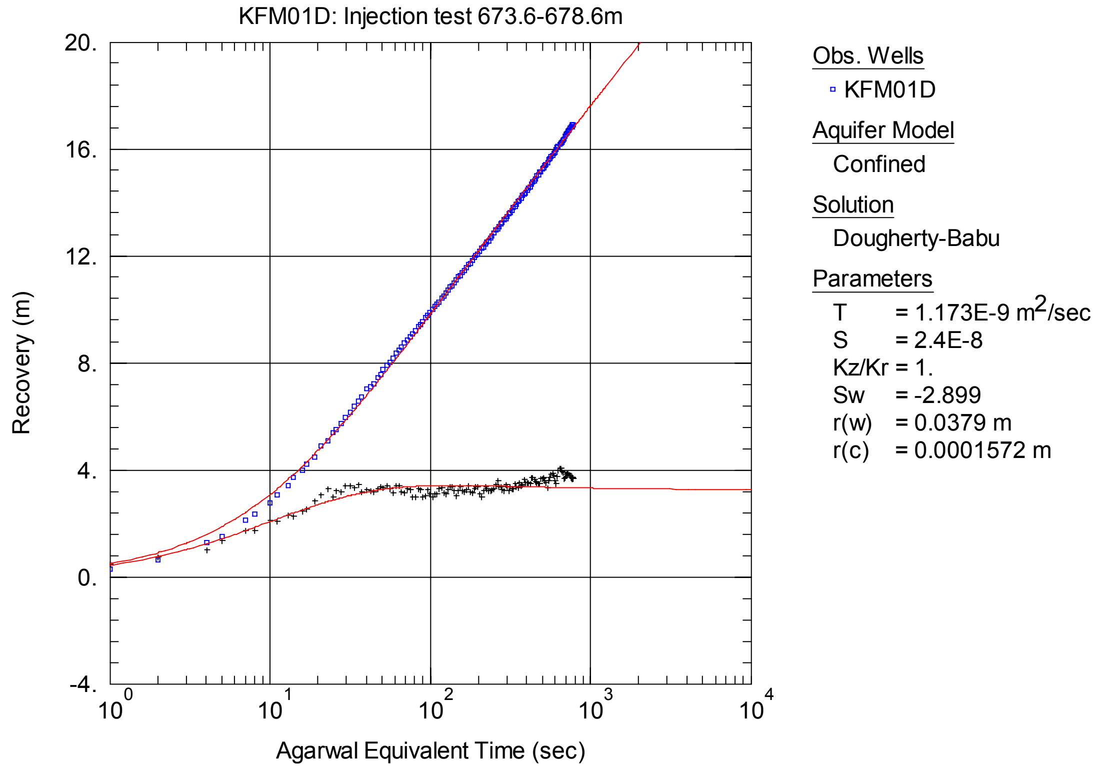


Figure A3-398. *Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 673.6-678.6 m in KFM01D.*

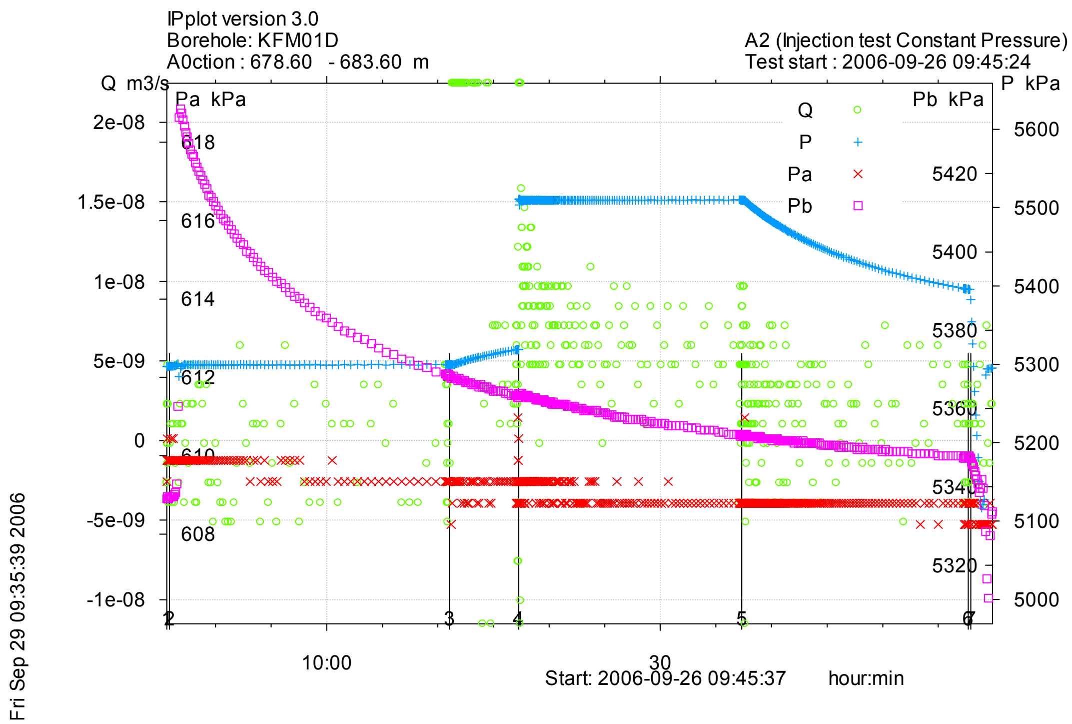


Figure A3-399. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 678.6-683.6 m in borehole KFM01D.*

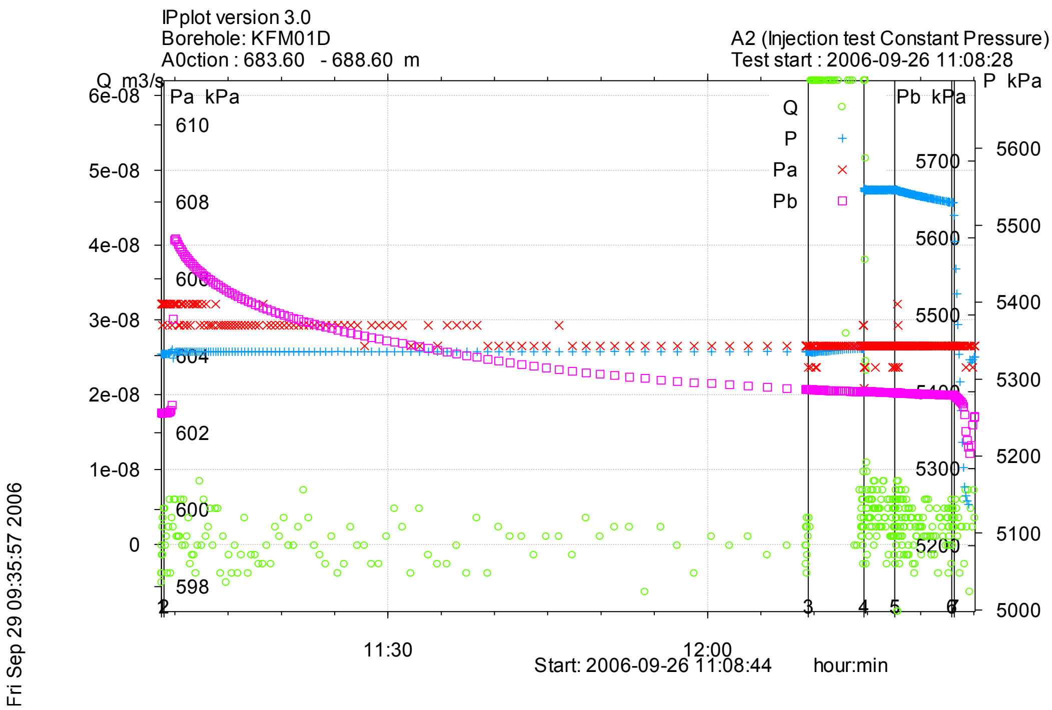


Figure A3-400. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 683.6-688.6 m in borehole KFM01D.*

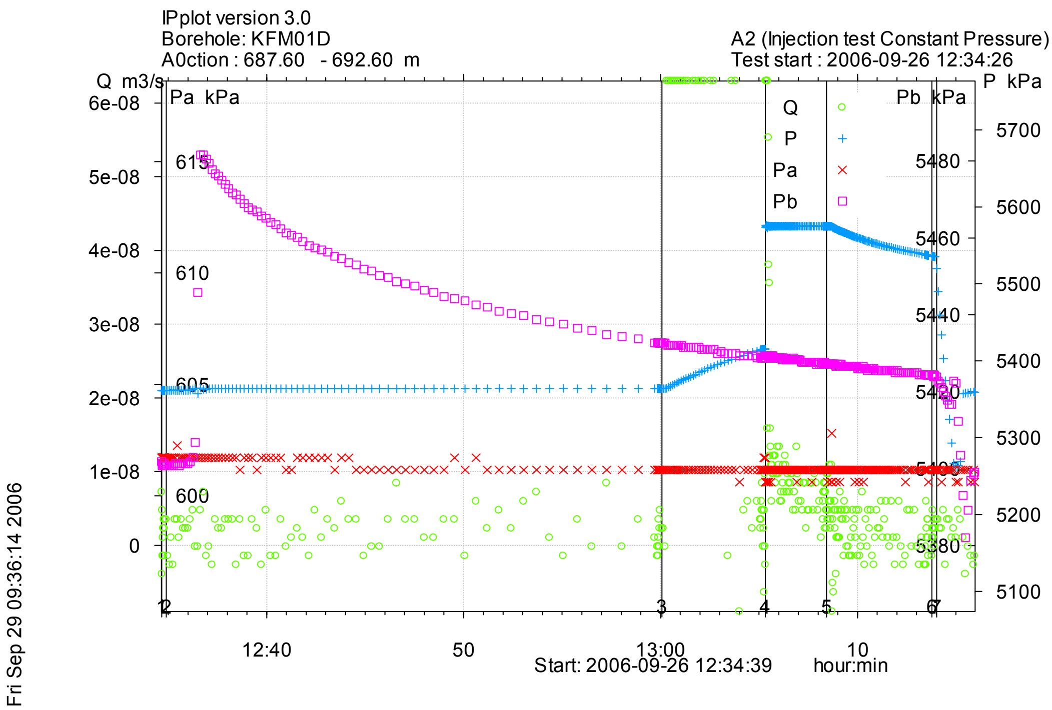


Figure A3-401. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 687.6-692.6 m in borehole KFM01D.*

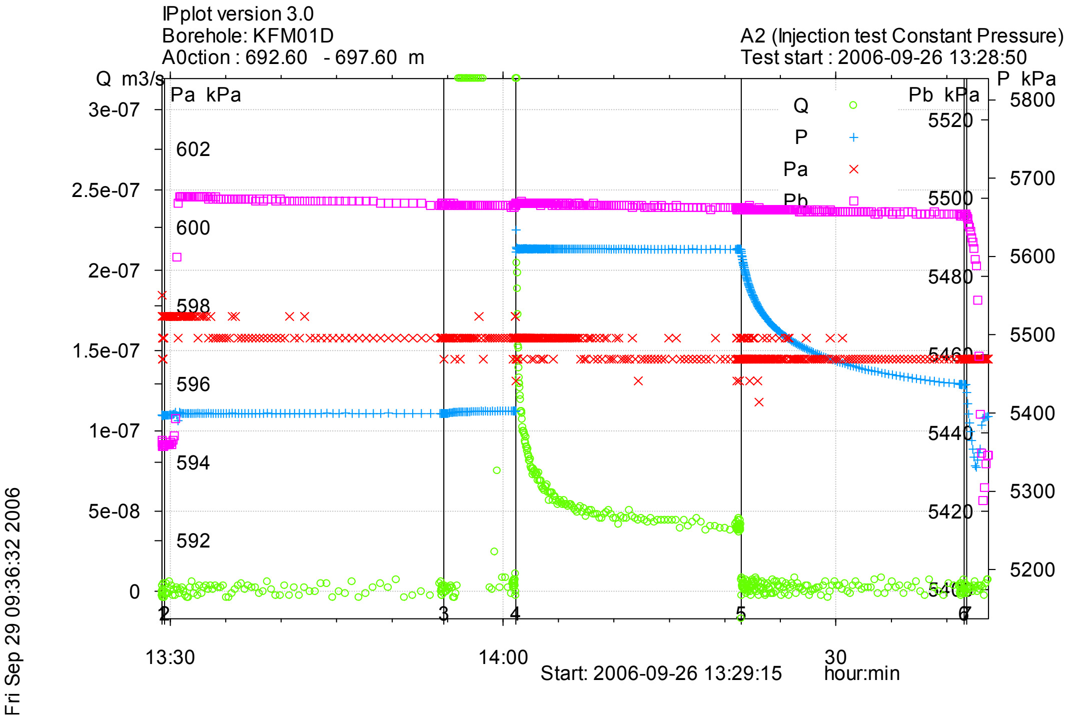


Figure A3-402. Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 692.6-697.6 m in borehole KFM01D.

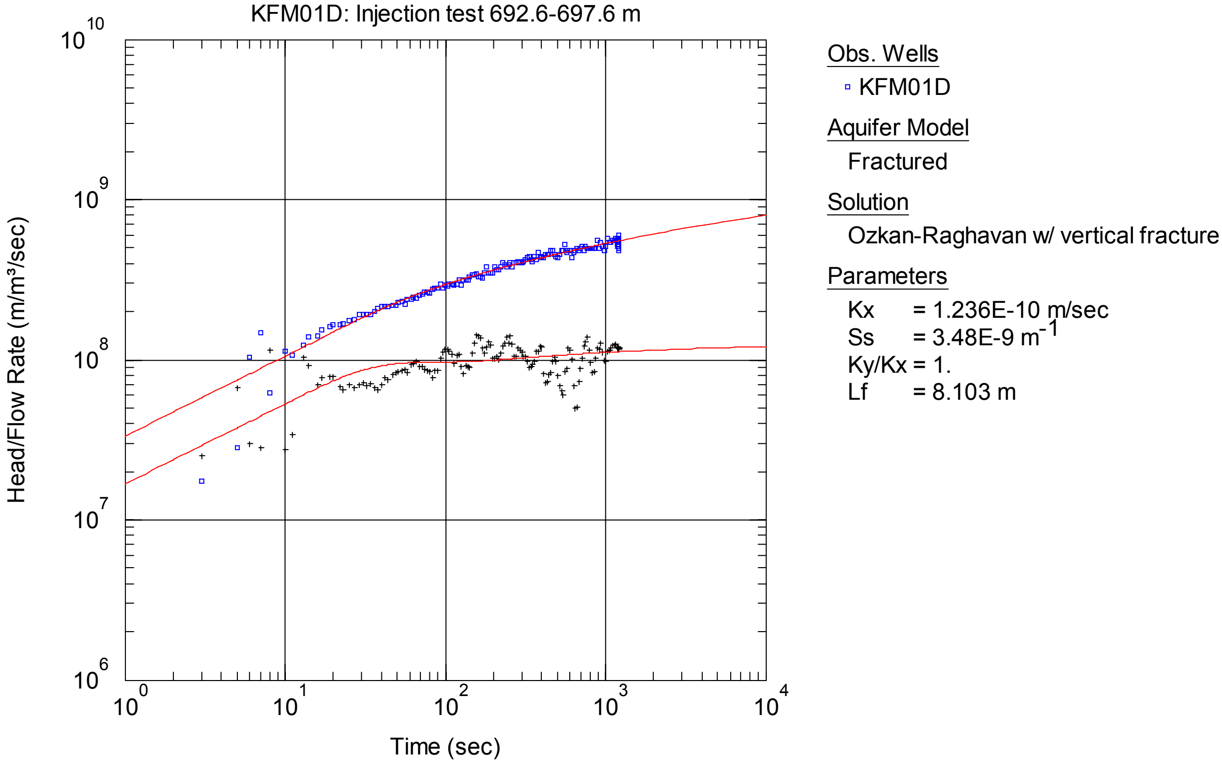


Figure A3-403. Log-log plot of head/flow rate (□) and derivative (+) versus time, showing fit to the PLF solution, from the injection test in section 692.6-697.6 m in KFM01D.

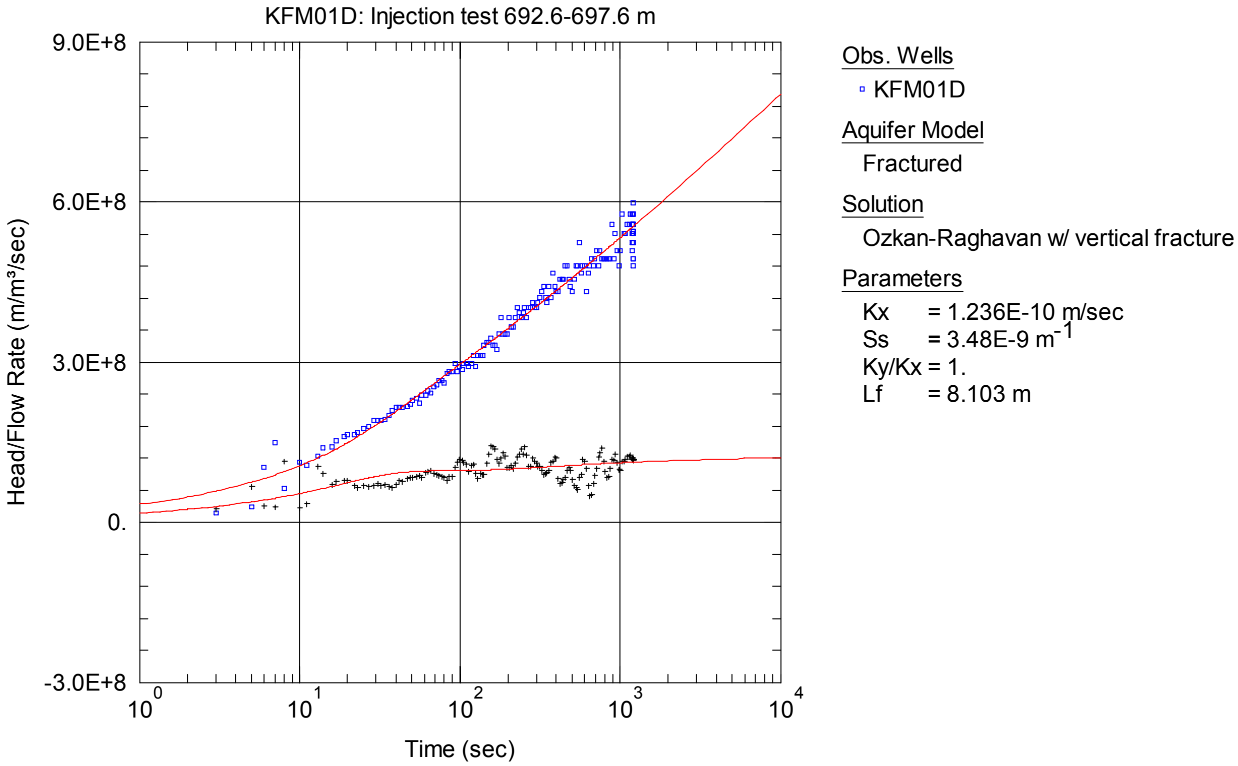


Figure A3-404. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, showing fit to the PLF solution, from the injection test in section 692.6-697.6 m in KFM01D.*

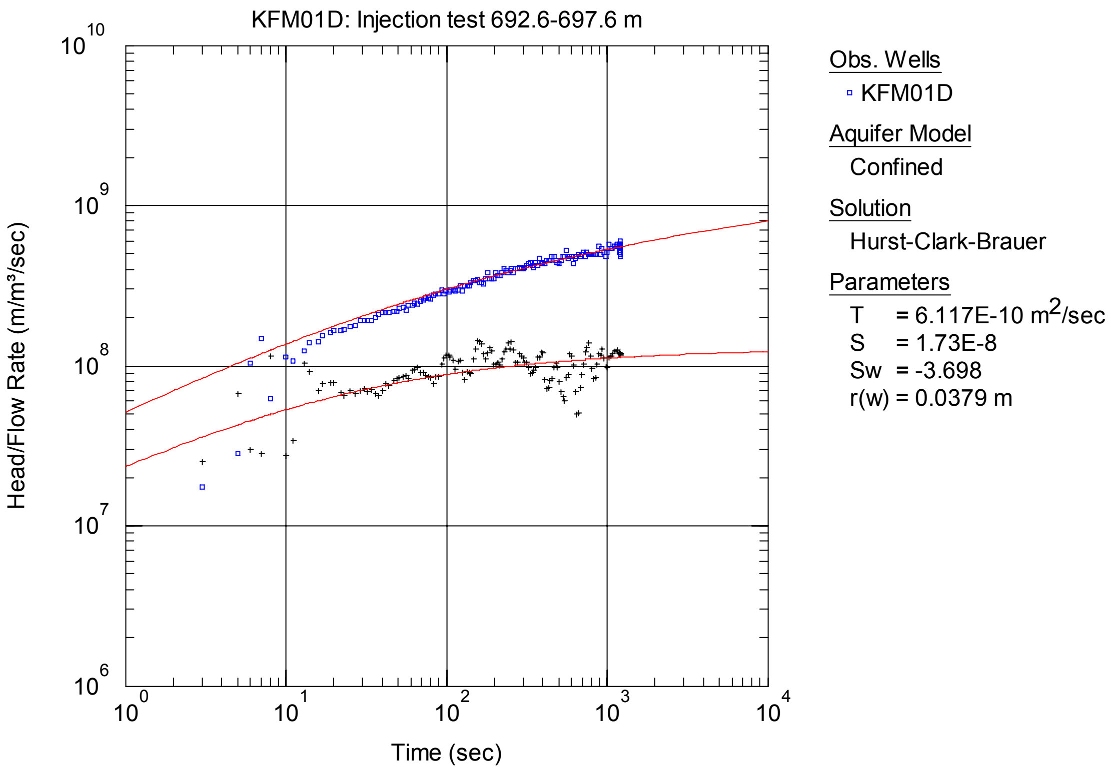


Figure A3-405. *Log-log plot of head/flow rate (□) and derivative (+) versus time, showing fit to the PRF solution, from the injection test in section 692.6-697.6 m in KFM01D.*

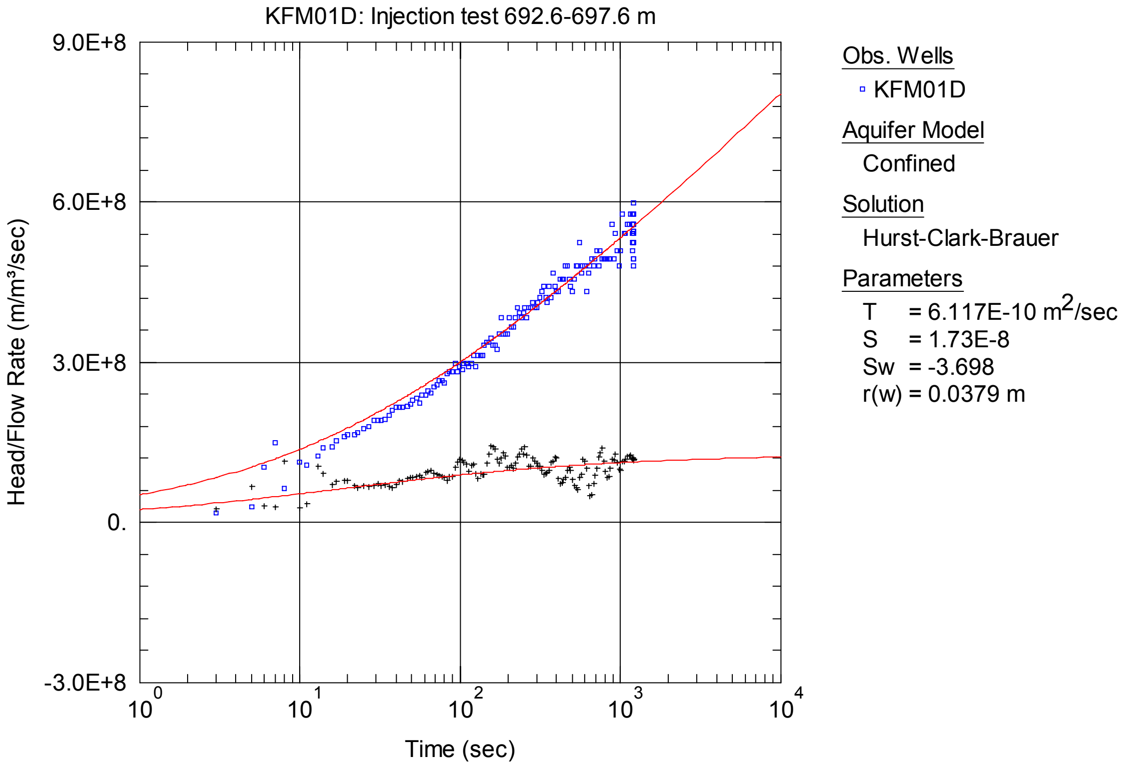


Figure A3-406. *Lin-log plot of head/flow rate (□) and derivative (+) versus time, showing fit to the PRF solution, from the injection test in section 692.6-697.6 m in KFM01D.*

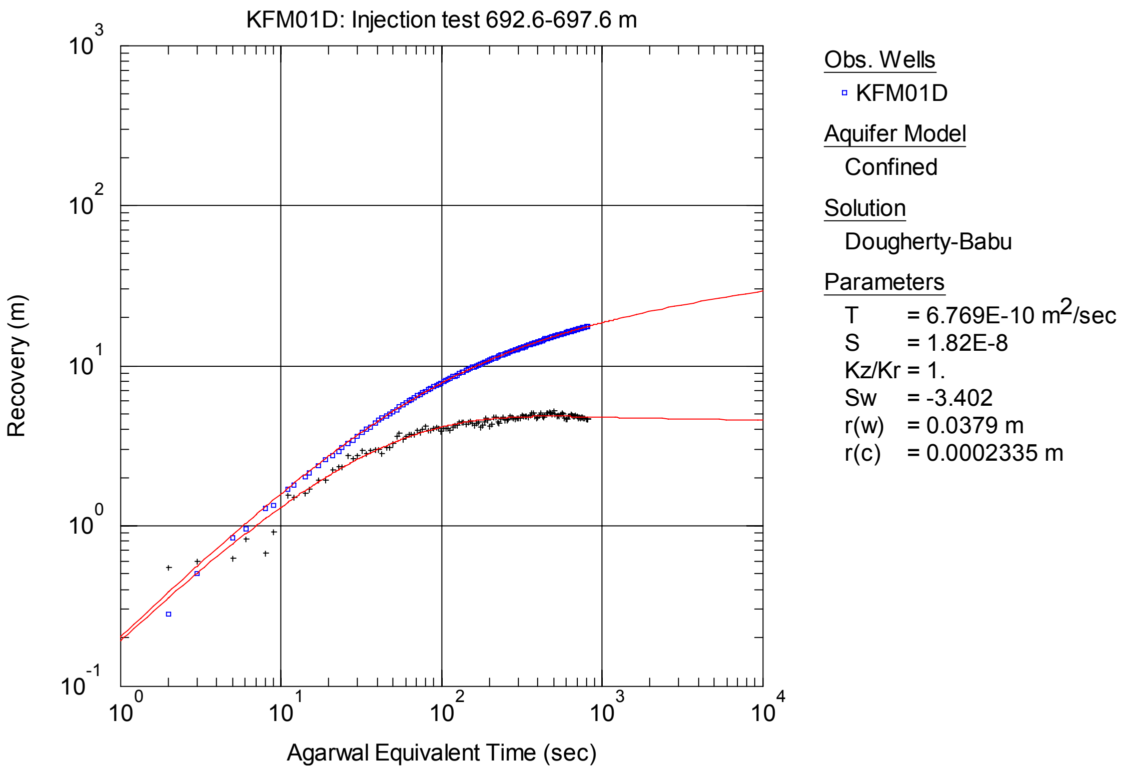


Figure A3-407. *Log-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 692.6-697.6 m in KFM01D.*

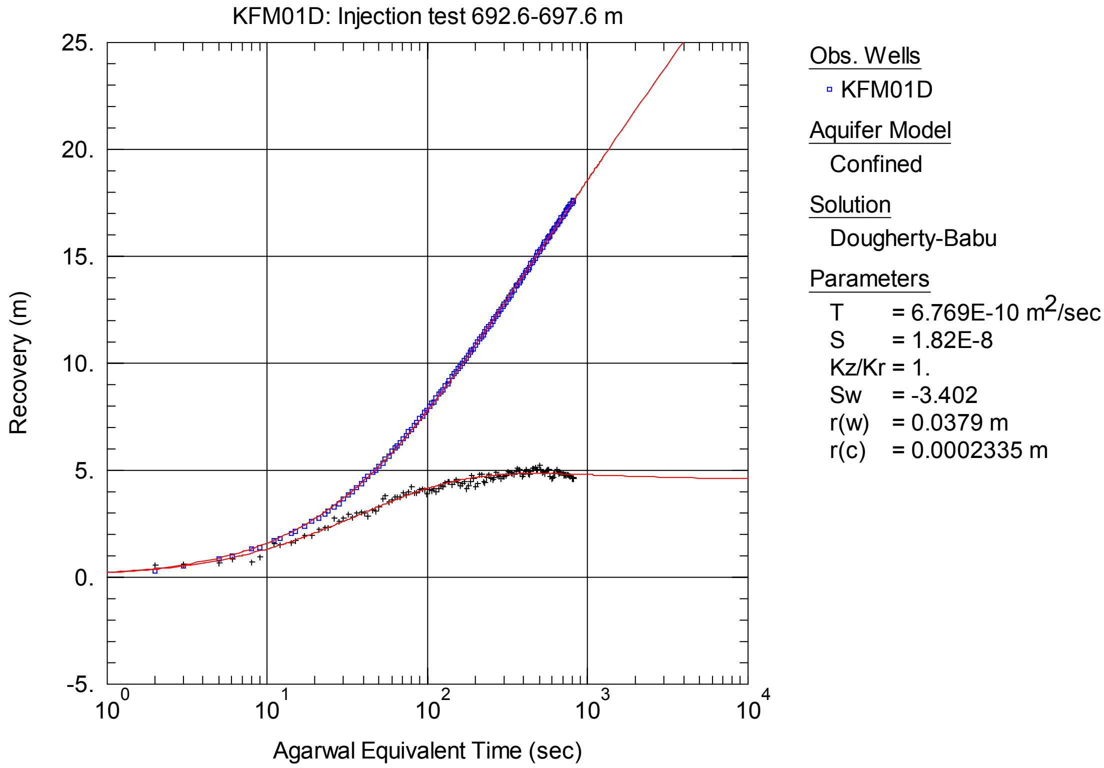


__Figure A3-408.__ Lin-log plot of recovery (□) and derivative (+) versus equivalent time, from the injection test in section 692.6-697.6 m in KFM01D.

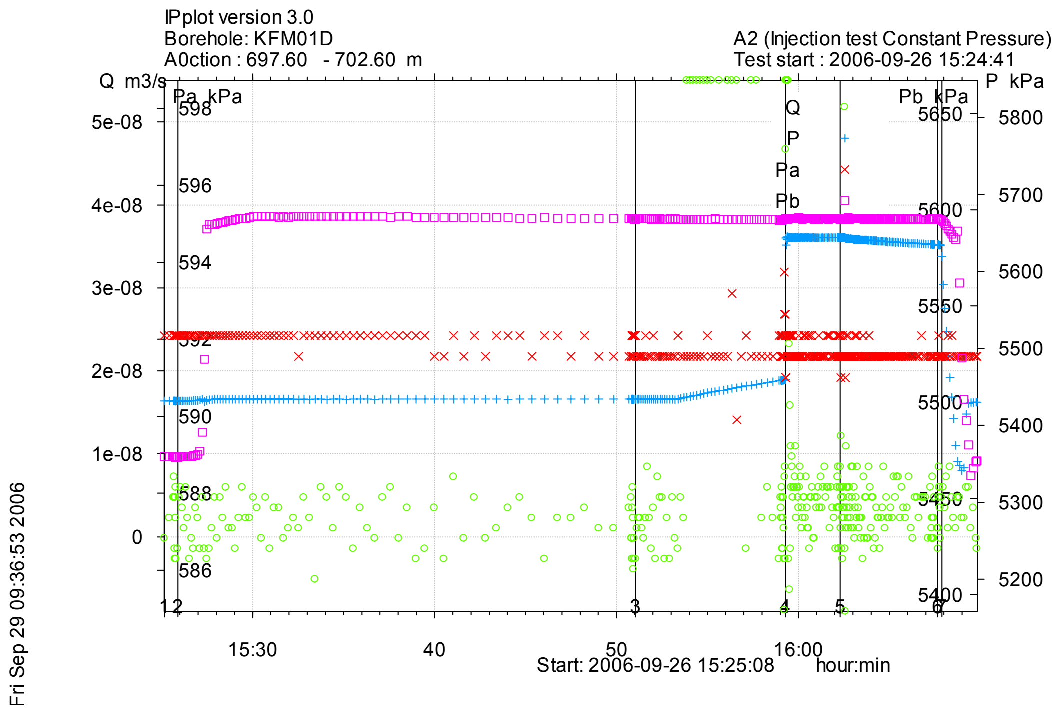


__Figure A3-409.__ Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 697.6-702.6 m in borehole KFM01D.

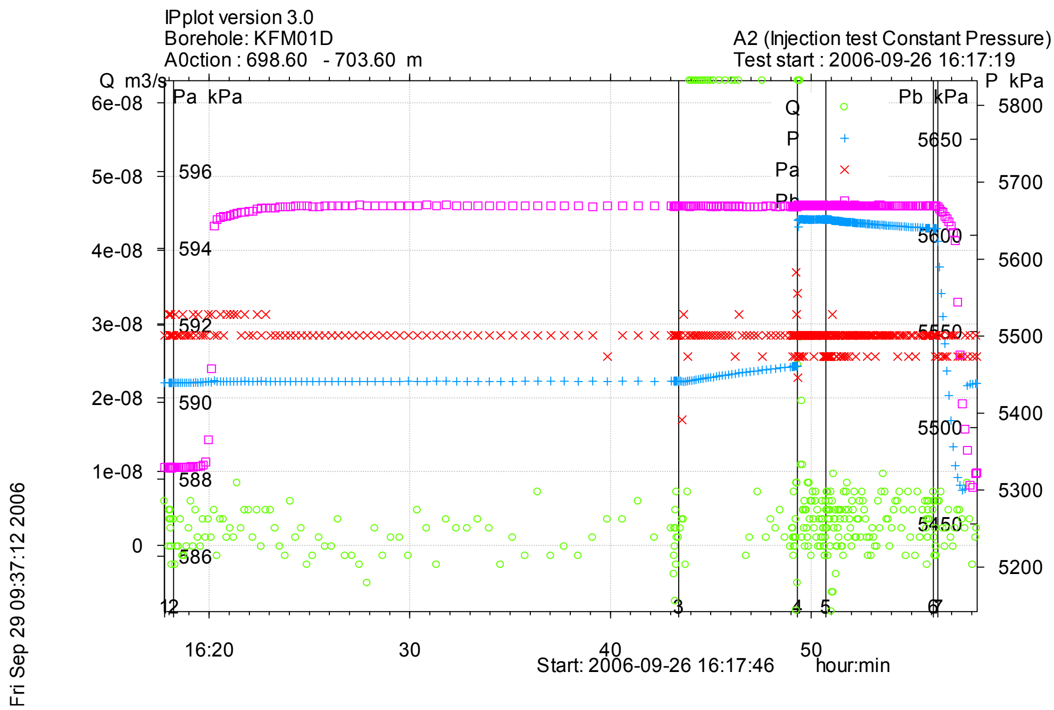


Figure A3-410. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 698.6-703.6 m in borehole KFM01D.*

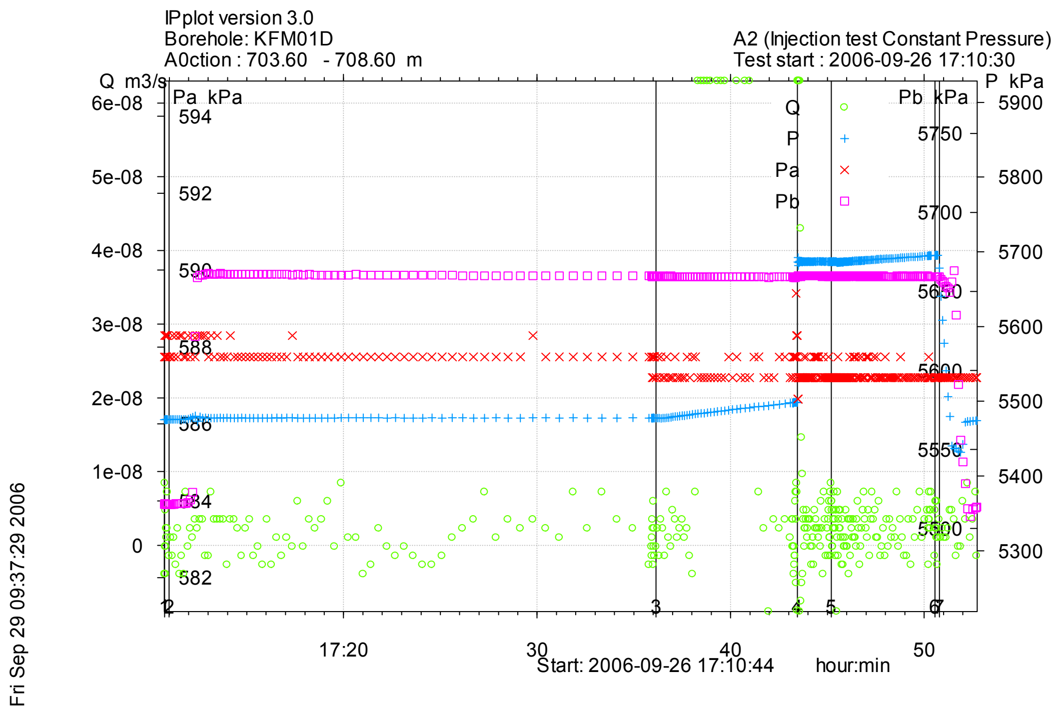
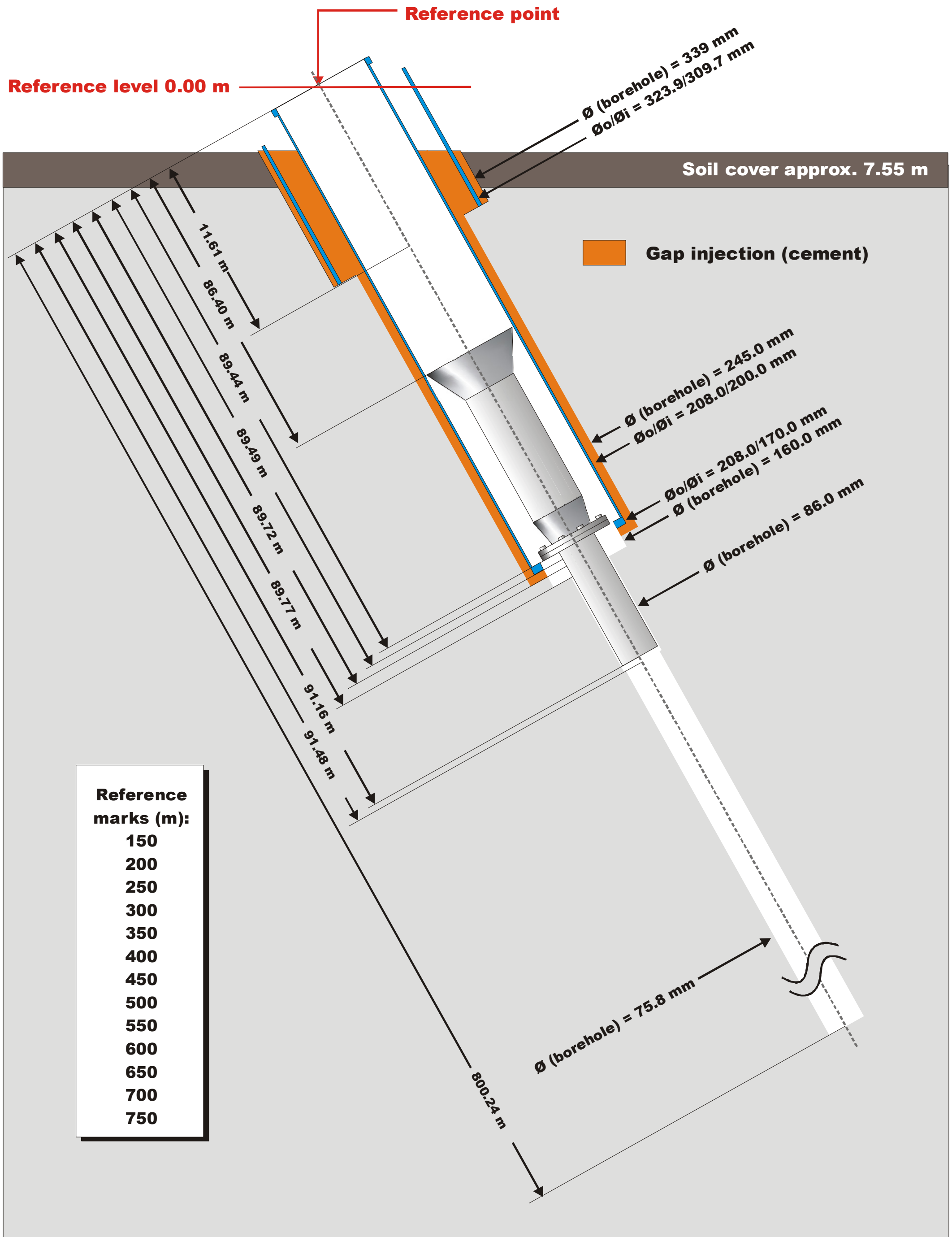


Figure A3-411. *Linear plot of flow rate (Q), pressure (P), pressure above section (Pa) and pressure below section (Pb) versus time from the injection test in section 703.6-708.6 m in borehole KFM01D.*

Appendix 4. Borehole technical data

Technical data
Borehole KFM01D



Drilling reference point

Northing:	6699542.07 (m), RT90 2,5 gon V 0:-15
Easting:	1631404.52 (m), RT90 2,5 gon V 0:-15
Elevation:	2.95 (m), RHB 70

Orientation

Bearing (degrees):	35.04°
Inclination (degrees):	-54.90°

Borehole

Length:	800.24 m

Percussion drilling period

Drilling start date:	2005-11-21
Drilling stop date:	2005-12-05

Core drilling period

Drilling start date:	2006-02-04
Drilling stop date:	2006-02-18

Rev 2006-03-01

Appendix 5. Sicada tables

Nomenclature plu_s_hole_test_d

Column	Datatype	Unit	Column Description	Alt. Symbol
site	CHAR		Investigation site name	
activity_type	CHAR		Activity type code	
start_date	DATE		Date (yymmdd hh:mm:ss)	
stop_date	DATE		Date (yymmdd hh:mm:ss)	
project	CHAR		project code	
idcode	CHAR		Object or borehole identification code	
secup	FLOAT	m	Upper section limit (m)	
seclow	FLOAT	m	Lower section limit (m)	
section_no	INTEGER	number	Section number	
test_type	CHAR		Test type code (1-7), see table description	
formation_type	CHAR		1: Rock, 2: Soil (superficial deposits)	
start_flow_period	DATE	yyyymmdd	Date & time of pumping/injection start (YYYY-MM-DD hh:mm:ss)	
stop_flow_period	DATE	yyyymmdd	Date & time of pumping/injection stop (YYYY-MM-DD hh:mm:ss)	
flow_rate_end_qp	FLOAT	m**3/s	Flow rate at the end of the flowing period	
value_type_qp	CHAR		0:true value,-1<lower meas.limit1:>upper meas.limit	
mean_flow_rate_qm	FLOAT	m**3/s	Arithmetic mean flow rate during flow period	
Q_measl__l	FLOAT	m**3/s	Estimated lower measurement limit of flow rate	**Q-measl-L**
Q_measl__u	FLOAT	m**3/s	Estimated upper measurement limit of flow rate	Q-measl-U
tot_volume_vp	FLOAT	m**3	Total volume of pumped or injected water	
dur_flow_phase_tp	FLOAT	s	Duration of the flowing period of the test	
dur_rec_phase_tf	FLOAT	s	Duration of the recovery period of the test	
initial_head_hi	FLOAT	m	Hydraulic head in test section at start of the flow period	
head_at_flow_end_hp	FLOAT	m	Hydraulic head in test section at stop of the flow period.	
final_head_hf	FLOAT	m	Hydraulic head in test section at stop of recovery period.	
initial_press_pi	FLOAT	kPa	Groundwater pressure in test section at start of flow period	
press_at_flow_end_pp	FLOAT	kPa	Groundwater pressure in test section at stop of flow period.	
final_press_pf	FLOAT	kPa	Ground water pressure at the end of the recovery period.	
fluid_temp_tew	FLOAT	oC	Measured section fluid temperature, see table description	
fluid_elcond_ecw	FLOAT	mS/m	Measured section fluid el. conductivity,see table descr.	
fluid_salinity_tdsw	FLOAT	mg/l	Total salinity of section fluid based on EC,see table descr.	
fluid_salinity_tdswm	FLOAT	mg/l	Tot. section fluid salinity based on water sampling,see...	
reference	CHAR		SKB report No for reports describing data and evaluation	
comments	VARCHAR		Short comment to data	
error_flag	CHAR		If error_flag = "*" then an error occured and an error	
In_use	CHAR		If in_use = "*" then the activity has been selected as	
sign	CHAR		Signature for QA data accknowledge (QA - OK)	
Lp	FLOAT	m	Hydraulic point of application	

Nomenclature plu_s_hole_test_ed1

Column	Datatype	Unit	Column Description	Alt. Symbol
site	CHAR		Investigation site name	
activity_type	CHAR		Activity type code	
start_date	DATE		Date (yymmdd hh:mm:ss)	
stop_date	DATE		Date (yymmdd hh:mm:ss)	
project	CHAR		project code	
idcode	CHAR		Object or borehole identification code	
secup	FLOAT	m	Upper section limit (m)	

Column	Datatype	Unit	Column Description	Alt. Symbol
seclow	FLOAT	m	Lower section limit (m)	
section_no	INTEGER	number	Section number	
test_type	CHAR		Test type code (1-7), see table description!	
formation_type	CHAR		Formation type code. 1: Rock, 2: Soil (superficial deposits)	
Lp	FLOAT	m	Hydraulic point of application for test section, see descr.	
seclen_class	FLOAT	m	Planned ordinary test interval during test campaign.	
spec_capacity_q_s	FLOAT	m**2/s	Specific capacity (Q/s) of test section, see table descript.	Q/s
value_type_q_s	CHAR		0:true value,-1:Q/s<lower meas.limit,1:Q/s>upper meas.limit	
transmissivity_tq	FLOAT	m**2/s	Tranmissivity based on Q/s, see table description	
value_type_tq	CHAR		0:true value,-1:TQ<lower meas.limit,1:TQ>upper meas.limit.	
bc_tq	CHAR		Best choice code. 1 means TQ is best choice of T, else 0	
transmissivity_moye	FLOAT	m**2/s	Transmissivity,TM, based on Moye (1967)	T_M
bc_tm	CHAR		Best choice code. 1 means Tmoye is best choice of T, else 0	
value_type_tm	CHAR		0:true value,-1:TM<lower meas.limit,1:TM>upper meas.limit.	
hydr_cond_moye	FLOAT	m/s	K_M: Hydraulic conductivity based on Moye (1967)	K_M
formation_width_b	FLOAT	m	b:Aquifer thickness repr. for T(generally b=Lw) ,see descr.	b
width_of_channel_b	FLOAT	m	B:Inferred width of formation for evaluated TB	
Tb	FLOAT	m**3/s	TB:Flow capacity in 1D formation of T & width B, see descr.	
l_measl_tb	FLOAT	m**3/s	Estimated lower meas. limit for evaluated TB,see description	
U_measl_tb	FLOAT	m**3/s	Estimated upper meas. limit of evaluated TB,see description	
sb	FLOAT	m	SB:S=storativity,B=width of formation,1D model,see descript.	
assumed_sb	FLOAT	m	SB* : Assumed SB,S=storativity,B=width of formation,see...	
leakage_factor_lf	FLOAT	m	Lf:1D model for evaluation of Leakage factor	
transmissivity_tt	FLOAT	m**2/s	TT:Transmissivity of formation, 2D radial flow model,see...	T_T
value_type_tt	CHAR		0:true value,-1:TT<lower meas.limit,1:TT>upper meas.limit,	
bc_tt	CHAR		Best choice code. 1 means TT is best choice of T, else 0	
l_measl_q_s	FLOAT	m**2/s	Estimated lower meas. limit for evaluated TT,see table descr	Q/s-measl-L
U_measl_q_s	FLOAT	m**2/s	Estimated upper meas. limit for evaluated TT,see description	Q/s-measl-U
storativity_s	FLOAT		S:Storativity of formation based on 2D rad flow,see descr.	
assumed_s	FLOAT		Assumed Storativity,2D model evaluation,see table descr.	
bc_s	FLOAT		Best choice of S (Storativity) ,see descr.	
Ri	FLOAT	m	Radius of influence	
Ri_index	CHAR		ri index=index of radius of influence :-1,0 or 1, see descr.	
leakage_coeff	FLOAT	1/s	K'/b':2D rad flow model evaluation of leakage coeff,see desc	
hydr_cond_ksf	FLOAT	m/s	Ksf:3D model evaluation of hydraulic conductivity,see desc.	
value_type_ksf	CHAR		0:true value,-1:Ksf<lower meas.limit,1:Ksf>upper meas.limit,	
l_measl_ksf	FLOAT	m/s	Estimated lower meas.limit for evaluated Ksf,see table desc.	
U_measl_ksf	FLOAT	m/s	Estimated upper meas.limit for evaluated Ksf,see table descr	
spec_storage_ssf	FLOAT	1/m	Ssf:Specific storage,3D model evaluation,see table descr.	
assumed_ssf	FLOAT	1/m	Ssf*:Assumed Spec.storage,3D model evaluation,see table des.	
C	FLOAT	m**3/pa	C: Wellbore storage coefficient; flow or recovery period	C
cd	FLOAT		CD: Dimensionless wellbore storage coefficient	
skin	FLOAT		Skin factor;best estimate of flow/recovery period,see descr.	ξ
dt1	FLOAT	s	Estimated start time of evaluation, see table description	
dt2	FLOAT	s	Estimated stop time of evaluation. see table description	
t1	FLOAT	s	Start time for evaluated parameter from start flow period	t_1
t2	FLOAT	s	Stop time for evaluated parameter from start of flow period	t_2
dte1	FLOAT	s	Start time for evaluated parameter from start of recovery	dte_1
dte2	FLOAT	s	Stop time for evaluated parameter from start of recovery	dte_2
P_horner	FLOAT	kPa	p*:Horner extrapolated pressure, see table description	
transmissivity_t_nlr	FLOAT	m**2/s	T_NLR Transmissivity based on None Linear Regression...	
storativity_s_nlr	FLOAT		S_NLR=storativity based on None Linear Regression,see..	
value_type_t_nlr	CHAR		0:true value,-1:T_NLR<lower meas.limit,1:>upper meas.limit	

Column	Datatype	Unit	Column Description	Alt. Symbol
bc_t_nlr	CHAR		Best choice code. 1 means T_NLR is best choice of T, else 0	
C_nlr	FLOAT	m**3/pa	Wellbore storage coefficient, based on NLR, see descr.	
cd_nlr	FLOAT		Dimensionless wellbore storage constant, see table descrip.	
skin_nlr	FLOAT		Skin factor based on Non Linear Regression,see desc.	
transmissivity_t_grf	FLOAT	m**2/s	T_GRF:Transmissivity based on Genelized Radial Flow,see...	
value_type_t_grf	CHAR		0:true value,-1:T_GRF<lower meas.limit,1:>upper meas.limit	
bc_t_grf	CHAR		Best choice code. 1 means T_GRF is best choice of T, else 0	
storativity_s_grf	FLOAT		S_GRF:Storativity based on Generalized Radial Flow, see des.	
flow_dim_grf	FLOAT		Inferred flow dimesion based on Generalized Rad. Flow model	
comment	VARCHAR	no_unit	Short comment to the evaluated parameters	
error_flag	CHAR		If error_flag = "*" then an error occured and an error	
In_use	CHAR		If in_use = "*" then the activity has been selected as	
sign	CHAR		Signature for QA data accknowledge (QA - OK)	

Nomenclature plu_s_hole_test_obs

Column	Datatype	Unit	Column Description
site	CHAR		Investigation site name
activity_type	CHAR		Activity type code
idcode	CHAR		Object or borehole identification code
start_date	DATE		Date (yymmdd hh:mm:ss)
secup	FLOAT	m	Upper section limit (m)
seclow	FLOAT	m	Lower section limit (m)
obs_secup	FLOAT	m	Upper limit of observation section
obs_seclow	FLOAT	m	Lower limit of observation section
pi_above	FLOAT	kPa	Groundwater pressure above test section,start of flow period
pp_above	FLOAT	kPa	Groundwater pressure above test section,at stop flow period
pf_above	FLOAT	kPa	Groundwater pressure above test section at stop recovery per
pi_below	FLOAT	kPa	Groundwater pressure below test section at start flow period
pp_below	FLOAT	kPa	Groundwater pressure below test section at stop flow period
pf_below	FLOAT	kPa	Groundwater pressure below test section at stop recovery per
comments	VARCHAR		Comment text row (unformatted text)

KFM01C plu_s_hole_test_d. Left (This result table to SICADA includes more columns which are empty, these columns are not presented here.)

idcode	start_date	stop_date	secup	seclow	test_type	Formation_type	start_flow_period	stop_flow_period	flow_rate_end_qp	Value_type_qp	mean_flow_rate_qm
KFM01D	2006-08-28 22:56	2006-08-29 07:44	93.60	193.60	3	1	2006-08-29 06:41:48	2006-08-29 07:12:01	9.2300E-05	0	1.7050E-04
KFM01D	2006-08-29 08:40	2006-08-29 10:30	193.60	293.60	3	1	2006-08-29 09:27:55	2006-08-29 09:57:56	2.7580E-06	0	3.1460E-05
KFM01D	2006-08-29 11:21	2006-08-29 13:47	293.60	393.60	3	1	2006-08-29 12:44:46	2006-08-29 13:15:15	5.1620E-05	0	1.4920E-04
KFM01D	2006-08-29 16:44	2006-08-29 18:45	393.60	493.60	3	1	2006-08-29 17:43:07	2006-08-29 18:13:11	2.7935E-05	0	3.7880E-05
KFM01D	2006-08-29 20:08	2006-08-29 22:00	493.60	593.60	3	1	2006-08-29 20:58:09	2006-08-29 21:28:48	2.1710E-07	0	2.4640E-07
KFM01D	2006-08-30 06:15	2006-08-30 08:06	588.60	688.60	3	1	2006-08-30 07:03:35	2006-08-30 07:33:56	4.6700E-08	0	9.1530E-08
KFM01D	2006-09-05 07:02	2006-09-05 08:25	93.60	113.60	3	1	2006-09-05 07:43:34	2006-09-05 08:03:47	9.9695E-06	0	6.3480E-05
KFM01D	2006-09-05 08:54	2006-09-05 10:16	113.60	133.60	3	1	2006-09-05 09:34:16	2006-09-05 09:54:17	1.1043E-04	0	1.9390E-04
KFM01D	2006-09-05 12:33	2006-09-05 13:54	133.60	153.60	3	1	2006-09-05 13:12:22	2006-09-05 13:32:27	6.6020E-05	0	6.7330E-05
KFM01D	2006-09-05 14:11	2006-09-05 15:24	153.60	173.60	3	1	2006-09-05 14:42:24	2006-09-05 15:02:43	4.7673E-06	0	6.2070E-06
KFM01D	2006-09-05 15:45	2006-09-05 17:01	173.60	193.60	3	1	2006-09-05 16:19:14	2006-09-05 16:39:37	2.4000E-07	0	5.8900E-07
KFM01D	2006-09-05 17:19	2006-09-05 18:33	193.60	213.60	3	1	2006-09-05 17:51:14	2006-09-05 18:11:39	1.8410E-06	0	4.7150E-06
KFM01D	2006-09-05 18:49	2006-09-05 19:42	213.60	233.60	3	1	2006-09-05 19:31:58	2006-09-05 19:35:09		-1	
KFM01D	2006-09-05 20:00	2006-09-05 21:18	233.60	253.60	3	1	2006-09-05 20:35:44	2006-09-05 20:56:07	9.0135E-08	0	1.2460E-07
KFM01D	2006-09-12 13:59	2006-09-12 15:14	253.60	273.60	3	1	2006-09-12 14:31:50	2006-09-12 14:52:10	2.3400E-06	0	2.8280E-05
KFM01D	2006-09-05 23:17	2006-09-06 07:09	273.60	293.60	3	1	2006-09-06 06:52:53	2006-09-06 07:02:24		-1	
KFM01D	2006-09-06 07:33	2006-09-06 08:51	293.60	313.60	3	1	2006-09-06 08:09:17	2006-09-06 08:29:21	5.0960E-05	0	1.4510E-04
KFM01D	2006-09-06 09:14	2006-09-06 10:32	313.60	333.60	3	1	2006-09-06 09:50:17	2006-09-06 10:10:29	1.1070E-04	0	1.5960E-04
KFM01D	2006-09-06 11:09	2006-09-06 13:10	333.60	353.60	3	1	2006-09-06 12:27:47	2006-09-06 12:48:09	1.5370E-06	0	5.1550E-06
KFM01D	2006-09-06 13:28	2006-09-06 14:48	353.60	373.60	3	1	2006-09-06 14:06:21	2006-09-06 14:26:39	7.2880E-06	0	2.0200E-05
KFM01D	2006-09-06 15:19	2006-09-06 16:34	373.60	393.60	3	1	2006-09-06 15:51:44	2006-09-06 16:12:04	1.5140E-05	0	1.8110E-05
KFM01D	2006-09-06 17:10	2006-09-06 18:00	393.60	413.60	3	1	2006-09-06 17:43:48	2006-09-06 17:52:40		-1	
KFM01D	2006-09-06 18:15	2006-09-06 19:33	413.60	433.60	3	1	2006-09-06 18:51:08	2006-09-06 19:11:25	2.2920E-05	0	2.6540E-05
KFM01D	2006-09-06 19:55	2006-09-06 21:16	433.60	453.60	3	1	2006-09-06 20:33:36	2006-09-06 20:53:44	1.6408E-06	0	7.9800E-06
KFM01D	2006-09-06 21:33	2006-09-06 22:49	453.60	473.60	3	1	2006-09-06 22:06:28	2006-09-06 22:26:44	2.6517E-07	0	3.4280E-07
KFM01D	2006-09-12 09:57	2006-09-12 11:12	473.60	493.60	3	1	2006-09-12 10:29:31	2006-09-12 10:49:52	2.1085E-07	0	2.7080E-07
KFM01D	2006-09-07 09:30	2006-09-07 10:19	493.60	513.60	3	1	2006-09-07 10:06:34	2006-09-07 10:11:54		-1	
KFM01D	2006-09-07 10:36	2006-09-07 11:22	513.60	533.60	3	1	2006-09-07 11:12:04	2006-09-07 11:14:47		-1	

idcode	start_date	stop_date	secup	seclow	test_type	Formation_type	start_flow_period	stop_flow_period	flow_rate_end_qp	Value_type_qp	mean_flow_rate_qm
KFM01D	2006-09-07 12:47	2006-09-07 13:32	533.60	553.60	3	1	2006-09-07 13:21:16	2006-09-07 13:24:57		-1	
KFM01D	2006-09-07 13:53	2006-09-07 15:18	553.60	573.60	3	1	2006-09-07 14:35:51	2006-09-07 14:56:15	2.1895E-07	0	2.3300E-07
KFM01D	2006-09-07 15:37	2006-09-07 16:23	573.60	593.60	3	1	2006-09-07 16:11:24	2006-09-07 16:15:40		-1	
KFM01D	2006-09-07 16:49	2006-09-08 08:28	593.60	613.60	3	1	2006-09-08 08:15:01	2006-09-08 08:20:44		-1	
KFM01D	2006-09-08 08:50	2006-09-08 09:37	613.60	633.60	3	1	2006-09-08 09:22:07	2006-09-08 09:30:11		-1	
KFM01D	2006-09-08 09:55	2006-09-08 10:43	633.60	653.60	3	1	2006-09-08 10:29:04	2006-09-08 10:35:30		-1	
KFM01D	2006-09-08 11:00	2006-09-08 11:42	653.60	673.60	3	1	2006-09-08 11:32:24	2006-09-08 11:35:15		-1	
KFM01D	2006-09-08 13:30	2006-09-08 14:50	668.60	688.60	3	1	2006-09-08 14:07:56	2006-09-08 14:28:06	5.4030E-08	0	7.7670E-08
KFM01D	2006-09-08 15:08	2006-09-08 16:23	688.60	708.60	3	1	2006-09-08 15:40:42	2006-09-08 16:01:06	4.3920E-08	0	5.1940E-08
KFM01D	2006-09-08 16:42	2006-09-08 17:24	708.60	728.60	3	1	2006-09-08 17:13:58	2006-09-08 17:17:05		-1	
KFM01D	2006-09-11 08:38	2006-09-11 09:24	728.60	748.60	3	1	2006-09-11 09:11:43	2006-09-11 09:16:48		-1	
KFM01D	2006-09-11 09:48	2006-09-11 10:33	748.60	768.60	3	1	2006-09-11 10:22:40	2006-09-11 10:25:32		-1	
KFM01D	2006-09-11 13:02	2006-09-11 13:50	768.60	788.60	3	1	2006-09-11 13:38:37	2006-09-11 13:42:54		-1	
KFM01D	2006-09-14 09:08	2006-09-14 10:32	93.60	98.60	3	1	2006-09-14 09:49:45	2006-09-14 10:10:05	4.9140E-08	0	6.2640E-08
KFM01D	2006-09-14 10:50	2006-09-14 12:04	98.60	103.60	3	1	2006-09-14 11:21:27	2006-09-14 11:41:32		-1	
KFM01D	2006-09-27 12:42	2006-09-27 13:59	103.60	108.60	3	1	2006-09-27 13:16:50	2006-09-27 13:36:46	1.0000E-05	0	5.5110E-05
KFM01D	2006-09-14 13:49	2006-09-14 15:03	108.60	113.60	3	1	2006-09-14 14:20:40	2006-09-14 14:40:58	4.9449E-08	0	3.8970E-07
KFM01D	2006-09-14 15:14	2006-09-14 15:55	113.60	118.60	3	1	2006-09-14 15:45:23	2006-09-14 15:48:01		-1	
KFM01D	2006-09-14 16:02	2006-09-14 17:16	118.60	123.60	3	1	2006-09-14 16:33:34	2006-09-14 16:53:49	1.2050E-04	0	2.1010E-04
KFM01D	2006-09-27 10:25	2006-09-27 11:41	123.60	128.60	3	1	2006-09-27 10:58:52	2006-09-27 11:19:02	5.9450E-06	0	6.4750E-06
KFM01D	2006-09-27 09:02	2006-09-27 10:16	128.60	133.60	3	1	2006-09-27 09:33:53	2006-09-27 09:54:11	1.8540E-06	0	1.9790E-06
KFM01D	2006-09-15 10:06	2006-09-15 10:46	133.60	138.60	3	1	2006-09-15 10:37:46	2006-09-15 10:39:28		-1	
KFM01D	2006-09-15 11:00	2006-09-15 12:16	138.60	143.60	3	1	2006-09-15 11:33:48	2006-09-15 11:54:08	1.0708E-06	0	1.2200E-06
KFM01D	2006-09-15 13:09	2006-09-15 14:25	143.60	148.60	3	1	2006-09-15 13:43:03	2006-09-15 14:03:19	4.8596E-05	0	5.1760E-05
KFM01D	2006-09-15 15:12	2006-09-15 16:27	148.60	153.60	3	1	2006-09-15 15:45:10	2006-09-15 16:05:28	4.2260E-06	0	4.6060E-06
KFM01D	2006-09-18 08:20	2006-09-18 09:38	153.60	158.60	3	1	2006-09-18 08:56:03	2006-09-18 09:16:23	1.3540E-06	0	2.0710E-06
KFM01D	2006-09-18 09:50	2006-09-18 10:31	158.60	163.60	3	1	2006-09-18 10:22:43	2006-09-18 10:24:28		-1	
KFM01D	2006-09-18 10:44	2006-09-18 11:26	163.60	168.60	3	1	2006-09-18 11:16:01	2006-09-18 11:18:42		-1	
KFM01D	2006-09-18 11:39	2006-09-18 13:45	168.60	173.60	3	1	2006-09-18 12:56:11	2006-09-18 13:17:22	4.4410E-06	0	5.9460E-06
KFM01D	2006-09-18 13:58	2006-09-18 15:20	173.60	178.60	3	1	2006-09-18 14:38:19	2006-09-18 14:58:37	1.4034E-07	0	4.4040E-07
KFM01D	2006-09-18 15:33	2006-09-18 16:54	178.60	183.60	3	1	2006-09-18 16:11:45	2006-09-18 16:32:03	5.3150E-08	0	6.3840E-08

idcode	start_date	stop_date	secup	seclow	test_type	Formation_type	start_flow_period	stop_flow_period	flow_rate_end_qp	Value_type_qp	mean_flow_rate_qm
KFM01D	2006-09-19 06:04	2006-09-19 07:22	183.60	188.60	3	1	2006-09-19 06:40:09	2006-09-19 07:00:29	1.0590E-08	0	4.9730E-08
KFM01D	2006-09-19 07:41	2006-09-19 09:04	188.60	193.60	3	1	2006-09-19 08:22:18	2006-09-19 08:42:36		-1	
KFM01D	2006-09-27 07:16	2006-09-27 08:32	193.60	198.60	3	1	2006-09-27 07:49:52	2006-09-27 08:10:10	1.8350E-06	0	4.0060E-06
KFM01D	2006-09-19 11:01	2006-09-19 12:38	198.60	203.60	3	1	2006-09-19 12:27:28	2006-09-19 12:31:01		-1	
KFM01D	2006-09-19 12:53	2006-09-19 13:40	203.60	208.60	3	1	2006-09-19 13:30:43	2006-09-19 13:32:34		-1	
KFM01D	2006-09-19 13:58	2006-09-19 14:41	208.60	213.60	3	1	2006-09-19 14:32:10	2006-09-19 14:34:08		-1	
KFM01D	2006-09-19 15:22	2006-09-19 16:05	233.60	238.60	3	1	2006-09-19 15:55:50	2006-09-19 15:58:01		-1	
KFM01D	2006-09-19 16:15	2006-09-19 17:33	238.60	243.60	3	1	2006-09-19 16:50:35	2006-09-19 17:10:53	1.7320E-07	0	2.2580E-07
KFM01D	2006-09-19 17:48	2006-09-19 18:33	243.60	248.60	3	1	2006-09-19 18:23:16	2006-09-19 18:26:07		-1	
KFM01D	2006-09-19 18:42	2006-09-19 19:26	248.60	253.60	3	1	2006-09-19 19:15:54	2006-09-19 19:18:49		-1	
KFM01D	2006-09-19 19:36	2006-09-19 21:12	253.60	258.60	3	1	2006-09-19 20:29:28	2006-09-19 20:49:46	7.5944E-07	0	1.4440E-06
KFM01D	2006-09-19 21:22	2006-09-19 22:38	258.60	263.60	3	1	2006-09-19 21:56:15	2006-09-19 22:16:33	1.3008E-07	0	1.5180E-07
KFM01D	2006-09-26 22:13	2006-09-26 23:30	263.60	268.60	3	1	2006-09-26 22:47:31	2006-09-26 23:07:36		-1	
KFM01D	2006-09-20 06:18	2006-09-20 06:59	268.60	273.60	3	1	2006-09-20 06:49:57	2006-09-20 06:52:24		-1	
KFM01D	2006-09-20 07:22	2006-09-20 08:05	293.60	298.60	3	1	2006-09-20 07:55:02	2006-09-20 07:57:30		-1	
KFM01D	2006-09-20 08:16	2006-09-20 09:30	298.60	303.60	3	1	2006-09-20 08:47:56	2006-09-20 09:08:15	9.3606E-09	0	3.0030E-08
KFM01D	2006-09-20 09:42	2006-09-20 11:01	303.60	308.60	3	1	2006-09-20 10:18:59	2006-09-20 10:39:13	6.2050E-05	0	1.6390E-04
KFM01D	2006-09-20 11:10	2006-09-20 12:45	308.60	313.60	3	1	2006-09-20 12:35:57	2006-09-20 12:38:16		-1	
KFM01D	2006-09-20 12:55	2006-09-20 14:09	313.60	318.60	3	1	2006-09-20 13:26:54	2006-09-20 13:47:09	1.1100E-04	0	1.6590E-04
KFM01D	2006-09-20 14:21	2006-09-20 15:05	318.60	323.60	3	1	2006-09-20 14:54:34	2006-09-20 14:57:43		-1	
KFM01D	2006-09-20 15:26	2006-09-20 16:13	323.60	328.60	3	1	2006-09-20 16:04:01	2006-09-20 16:06:13		-1	
KFM01D	2006-09-20 16:24	2006-09-20 17:40	328.60	333.60	3	1	2006-09-20 16:57:46	2006-09-20 17:18:04	4.4520E-08	0	1.7290E-07
KFM01D	2006-09-20 17:50	2006-09-20 19:06	333.60	338.60	3	1	2006-09-20 18:23:33	2006-09-20 18:43:51	1.1000E-08	0	1.7250E-08
KFM01D	2006-09-20 19:15	2006-09-20 20:23	338.60	343.60	3	1	2006-09-20 20:08:02	2006-09-20 20:15:30		-1	
KFM01D	2006-09-20 20:40	2006-09-20 21:39	343.60	348.60	3	1	2006-09-20 21:11:42	2006-09-20 21:31:47		-1	
KFM01D	2006-09-20 21:49	2006-09-20 23:12	348.60	353.60	3	1	2006-09-20 22:30:06	2006-09-20 22:50:24	1.2980E-06	0	4.7080E-06
KFM01D	2006-09-20 23:21	2006-09-21 07:20	353.60	358.60	3	1	2006-09-21 06:37:07	2006-09-21 06:58:01	6.0740E-07	0	7.3020E-07
KFM01D	2006-09-21 07:34	2006-09-21 08:51	358.60	363.60	3	1	2006-09-21 08:08:43	2006-09-21 08:29:02	3.5620E-07	0	4.4830E-07
KFM01D	2006-09-21 09:07	2006-09-21 09:52	363.60	368.60	3	1	2006-09-21 09:41:36	2006-09-21 09:43:29		-1	
KFM01D	2006-09-21 10:05	2006-09-21 11:20	368.60	373.60	3	1	2006-09-21 10:37:59	2006-09-21 10:58:20	6.5900E-06	0	1.8970E-05
KFM01D	2006-09-21 12:14	2006-09-21 13:32	373.60	378.60	3	1	2006-09-21 12:49:36	2006-09-21 13:09:57	1.3670E-05	0	1.5940E-05
KFM01D	2006-09-21 13:52	2006-09-21 15:09	378.60	383.60	3	1	2006-09-21 14:26:32	2006-09-21 14:46:53	2.7230E-06	0	3.3560E-06

idcode	start_date	stop_date	secup	seclow	test_type	Formation_type	start_flow_period	stop_flow_period	flow_rate_end_qp	Value_type_qp	mean_flow_rate_qm
KFM01D	2006-09-21 15:21	2006-09-21 16:35	383.60	388.60	3	1	2006-09-21 15:52:45	2006-09-21 16:13:06	9.3510E-09	0	1.5710E-08
KFM01D	2006-09-21 16:45	2006-09-21 18:02	388.60	393.60	3	1	2006-09-21 17:20:16	2006-09-21 17:40:37	1.5057E-07	0	2.9930E-07
KFM01D	2006-09-21 18:22	2006-09-21 19:47	413.60	418.60	3	1	2006-09-21 19:04:53	2006-09-21 19:25:14	1.0585E-08	0	1.2390E-08
KFM01D	2006-09-21 19:55	2006-09-21 21:22	418.60	423.60	3	1	2006-09-21 20:39:37	2006-09-21 20:59:42	8.0000E-09	0	1.2720E-08
KFM01D	2006-09-21 21:31	2006-09-21 22:22	423.60	428.60	3	1	2006-09-21 22:07:44	2006-09-21 22:15:13		-1	
KFM01D	2006-09-21 22:32	2006-09-21 23:47	428.60	433.60	3	1	2006-09-21 23:05:00	2006-09-21 23:25:13	2.4560E-05	0	2.8260E-05
KFM01D	2006-09-22 08:26	2006-09-22 09:46	433.60	438.60	3	1	2006-09-22 09:04:03	2006-09-22 09:24:24	1.9880E-06	0	9.5340E-06
KFM01D	2006-09-22 10:01	2006-09-22 10:57	438.60	443.60	3	1	2006-09-22 10:46:13	2006-09-22 10:48:56		-1	
KFM01D	2006-09-26 20:17	2006-09-26 21:04	443.60	448.60	3	1	2006-09-26 20:55:08	2006-09-26 20:56:37		-1	
KFM01D	2006-09-22 12:43	2006-09-22 13:29	448.60	453.60	3	1	2006-09-22 13:19:34	2006-09-22 13:22:05		-1	
KFM01D	2006-09-22 13:39	2006-09-22 14:22	453.60	458.60	3	1	2006-09-22 14:10:59	2006-09-22 14:15:07		-1	
KFM01D	2006-09-22 14:58	2006-09-22 16:18	458.60	463.60	3	1	2006-09-22 15:36:19	2006-09-22 15:56:40	1.7100E-07	0	2.1660E-07
KFM01D	2006-09-22 16:27	2006-09-22 17:16	463.60	468.60	3	1	2006-09-22 17:06:13	2006-09-22 17:08:34		-1	
KFM01D	2006-09-25 08:19	2006-09-25 08:59	468.60	473.60	3	1	2006-09-25 08:50:40	2006-09-25 08:52:18		-1	
KFM01D	2006-09-25 09:08	2006-09-25 10:22	473.60	478.60	3	1	2006-09-25 09:39:46	2006-09-25 10:00:07	6.5810E-09	0	1.5790E-08
KFM01D	2006-09-25 10:29	2006-09-25 11:09	478.60	483.60	3	1	2006-09-25 11:00:53	2006-09-25 11:02:22		-1	
KFM01D	2006-09-25 11:17	2006-09-25 12:47	483.60	488.60	3	1	2006-09-25 12:38:06	2006-09-25 12:39:38		-1	
KFM01D	2006-09-25 12:58	2006-09-25 13:42	488.60	493.60	3	1	2006-09-25 13:29:45	2006-09-25 13:34:33		-1	
KFM01D	2006-09-25 14:16	2006-09-25 14:59	553.60	558.60	3	1	2006-09-25 14:48:17	2006-09-25 14:51:53		-1	
KFM01D	2006-09-25 15:11	2006-09-25 15:55	558.60	563.60	3	1	2006-09-25 15:43:26	2006-09-25 15:47:42		-1	
KFM01D	2006-09-25 16:04	2006-09-25 16:48	563.60	568.60	3	1	2006-09-25 16:35:30	2006-09-25 16:40:40		-1	
KFM01D	2006-09-26 06:11	2006-09-26 07:25	568.60	573.60	3	1	2006-09-26 06:42:35	2006-09-26 07:02:55	2.7050E-07	0	2.8520E-07
KFM01D	2006-09-26 08:21	2006-09-26 09:37	673.60	678.60	3	1	2006-09-26 08:55:14	2006-09-26 09:15:30	4.7910E-08	0	6.4020E-08
KFM01D	2006-09-26 09:45	2006-09-26 10:59	678.60	683.60	3	1	2006-09-26 10:17:16	2006-09-26 10:37:36		-1	
KFM01D	2006-09-26 11:08	2006-09-26 12:25	683.60	688.60	3	1	2006-09-26 12:14:41	2006-09-26 12:17:35		-1	
KFM01D	2006-09-26 12:34	2006-09-26 13:15	687.60	692.60	3	1	2006-09-26 13:05:19	2006-09-26 13:08:27		-1	
KFM01D	2006-09-26 13:28	2006-09-26 14:43	692.60	697.60	3	1	2006-09-26 14:01:09	2006-09-26 14:21:27	3.8551E-08	0	5.6900E-08
KFM01D	2006-09-26 15:24	2006-09-26 16:09	697.60	702.60	3	1	2006-09-26 15:59:17	2006-09-26 16:02:19		-1	
KFM01D	2006-09-26 16:17	2006-09-26 16:58	698.60	703.60	3	1	2006-09-26 16:49:19	2006-09-26 16:50:45		-1	
KFM01D	2006-09-26 17:10	2006-09-26 17:52	703.60	708.60	3	1	2006-09-26 17:43:27	2006-09-26 17:45:13		-1	
KFM01D[1)]	2006-08-28 14:47	2006-08-28 16:40	93.60	193.60	3	1	2006-08-28 15:50:11	2006-08-28 16:07:34			

idcode	start_date	stop_date	secup	seclow	test_type	Formation_type	start_flow_period	stop_flow_period	flow_rate_end_qp	Value_type_qp	mean_flow_rate_qm
KFM01D[1)]	2006-09-05 21:36	2006-09-05 22:54	253.60	273.60	3	1	2006-09-05 22:12:04	2006-09-05 22:32:47			3.3370E-05
KFM01D[2)]	2006-09-06 23:03	2006-09-07 08:35	473.60	493.60	3	1	2006-09-07 08:28:36	2006-09-07 08:31:43			2.3520E-07
KFM01D[1)]	2006-09-14 12:26	2006-09-14 13:40	103.60	108.60	3	1	2006-09-14 12:58:17	2006-09-14 13:18:46			4.5810E-05
KFM01D[2)]	2006-09-15 07:51	2006-09-15 08:40	123.60	128.60	3	1	2006-09-15 08:24:56	2006-09-15 08:36:04			1.1870E-05
KFM01D[1)]	2006-09-15 08:54	2006-09-15 09:50	128.60	133.60	3	1	2006-09-15 09:28:44	2006-09-15 09:38:34			3.3830E-06
KFM01D[3)]	2006-09-19 09:23	2006-09-19 10:41	196.60	201.60	3	1	2006-09-19 09:59:14	2006-09-19 10:19:56			2.7400E-06
KFM01D[2)]	2006-09-19 22:47	2006-09-20 00:02	263.60	268.60	3	1	2006-09-19 23:20:12	2006-09-19 23:40:50			3.1800E-05

[1)] Incomplete test, interrupted and re-performed later.
[2)] Complete test, re-performed later.
[3)] The test was performed at an incorrect position and therefore not evaluated.

KFM01C plu_s_hole_test_d. Right (This result table to SICADA includes more columns which are empty, these columns are not presented here.)

idcode	secup	seclow	q_measl__l	q_measl__u	tot_volume_vp	dur_flow_phase_tp	dur_rec_phase_tf	initial_press_pi	press_at_flow_end_pp	final_press_pf	fluid_temp_tew
KFM01D	93.60	193.60	1.6667E-08	1.0000E-03	3.0960E-01	1813.00	1798.00	822.78	888.98	852.64	8.49
KFM01D	193.60	293.60	4.9399E-09	1.0000E-03	5.6570E-02	1801.00	1816.00	1623.29	1822.01	1806.60	7.56
KFM01D	293.60	393.60	1.6667E-08	1.0000E-03	2.7320E-01	1829.00	1785.00	2391.19	2445.40	2429.18	8.17
KFM01D	393.60	493.60	1.6667E-08	1.0000E-03	6.8630E-02	1804.00	1819.00	3152.48	3357.80	3177.25	9.10
KFM01D	493.60	593.60	1.6667E-08	1.0000E-03	4.5330E-04	1839.00	1784.00	3858.31	4038.17	3863.13	10.13
KFM01D	588.60	688.60	1.6667E-08	1.0000E-03	1.6760E-04	1821.00	1793.00	4569.23	4764.80	4634.88	10.91
KFM01D	93.60	113.60	1.6667E-08	1.0000E-03	7.6940E-02	1213.00	1205.00	817.51	912.18	894.57	7.64
KFM01D	113.60	133.60	1.6667E-08	1.0000E-03	2.3310E-01	1201.00	1215.00	981.95	1077.32	1038.79	7.64
KFM01D	133.60	153.60	1.6667E-08	1.0000E-03	8.1200E-02	1205.00	1219.00	1139.66	1341.27	1140.08	6.97
KFM01D	153.60	173.60	1.6667E-08	1.0000E-03	7.5920E-03	1219.00	1202.00	1310.72	1512.05	1374.58	7.30
KFM01D	173.60	193.60	5.0000E-09	1.0000E-03	7.2500E-04	1223.00	1194.00	1470.21	1683.40	1590.36	7.57
KFM01D	193.60	213.60	1.6667E-08	1.0000E-03	5.7760E-03	1225.00	1201.00	1629.99	1851.14	1754.40	7.73
KFM01D	213.60	233.60	3.9855E-09	1.0000E-03		191.00	321.00	1818.24	1997.28	1994.39	7.92
KFM01D	233.60	253.60	4.9399E-09	1.0000E-03	1.5280E-04	1223.00	1199.00	1944.85	2136.97	1993.84	8.10
KFM01D	253.60	273.60	1.6667E-08	1.0000E-03	3.5090E-02	1220.00	1184.00	2085.22	2243.75	2237.70	8.08
KFM01D	273.60	293.60	5.4554E-09	1.0000E-03		571.00	320.00	2262.19	2525.73	2522.28	8.44
KFM01D	293.60	313.60	1.6667E-08	1.0000E-03	1.7450E-01	1204.00	1218.00	2411.09	2484.86	2468.34	8.06
KFM01D	313.60	333.60	1.6667E-08	1.0000E-03	1.9370E-01	1212.00	1211.00	2572.38	2682.47	2618.62	8.18
KFM01D	333.60	353.60	1.6667E-08	1.0000E-03	6.3050E-03	1222.00	1202.00	2729.81	2932.92	2889.99	8.91
KFM01D	353.60	373.60	1.6667E-08	1.0000E-03	2.4660E-02	1218.00	1203.00	2878.84	3090.37	3004.50	8.96
KFM01D	373.60	393.60	1.6667E-08	1.0000E-03	2.2130E-02	1220.00	1203.00	3028.99	3219.27	3063.40	9.11
KFM01D	393.60	413.60	8.3954E-09	1.0000E-03		532.00	321.00	3183.53	3396.42	3388.17	9.39
KFM01D	413.60	433.60	1.6667E-08	1.0000E-03	3.2360E-02	1217.00	1206.00	3333.12	3529.62	3347.44	9.36
KFM01D	433.60	453.60	1.6667E-08	1.0000E-03	9.6480E-03	1208.00	1215.00	3485.59	3649.09	3615.50	9.66
KFM01D	453.60	473.60	5.1700E-09	1.0000E-03	4.1760E-04	1216.00	1206.00	3632.57	3927.62	3703.57	9.86
KFM01D	473.60	493.60	5.1710E-09	1.0000E-03	3.3150E-04	1221.00	1200.00	3615.37	3842.16	3681.56	9.82
KFM01D	493.60	513.60	4.9399E-09	1.0000E-03		320.00	322.00	3987.62	4136.25	4132.39	10.17
KFM01D	513.60	533.60	4.9399E-09	1.0000E-03		163.00	322.00	4083.67	4285.97	4284.32	10.33

idcode	secup	seclow	q_measl__l	q_measl__u	tot_volume_vp	dur_flow_phase_tp	dur_rec_phase_tf	initial_press_pi	press_at_flow_end_pp	final_press_pf	fluid_temp_tew
KFM01D	533.60	553.60	3.6865E-09	1.0000E-03		221.00	321.00	4232.30	4435.15	4434.05	10.48
KFM01D	553.60	573.60	4.9399E-09	1.0000E-03	2.8590E-04	1224.00	1197.00	4347.61	4501.75	4353.12	10.64
KFM01D	573.60	593.60	4.9399E-09	1.0000E-03		256.00	322.00	4523.22	4726.34	4723.60	10.81
KFM01D	593.60	613.60	4.9399E-09	1.0000E-03		343.00	321.00	4670.18	4884.32	4879.92	10.95
KFM01D	613.60	633.60	4.9399E-09	1.0000E-03		484.00	321.00	4832.72	5025.52	5016.99	11.14
KFM01D	633.60	653.60	4.9399E-09	1.0000E-03		386.00	321.00	4968.27	5163.41	5162.86	11.32
KFM01D	653.60	673.60	4.9399E-09	1.0000E-03		171.00	321.00	5114.97	5310.93	5310.93	11.49
KFM01D	668.60	688.60	4.9399E-09	1.0000E-03	9.4220E-05	1210.00	1211.00	5208.13	5451.98	5255.88	11.60
KFM01D	688.60	708.60	5.5666E-09	1.0000E-03	6.3730E-05	1224.00	1197.00	5363.77	5560.29	5395.15	11.78
KFM01D	708.60	728.60	3.6865E-09	1.0000E-03		187.00	321.00	5507.86	5706.03	5707.27	11.95
KFM01D	728.60	748.60	5.5482E-09	1.0000E-03		305.00	321.00	5646.71	5853.69	5856.45	12.13
KFM01D	748.60	768.60	3.7234E-09	1.0000E-03		172.00	321.00	5814.74	5993.09	6007.81	12.30
KFM01D	768.60	788.60	5.5482E-09	1.0000E-03		257.00	321.00	5946.72	6134.56	6154.24	12.47
KFM01D	93.60	98.60	4.9334E-09	1.0000E-03	7.6480E-05	1220.00	1205.00	822.12	1043.41	845.93	6.82
KFM01D	98.60	103.60	5.9550E-09	1.0000E-03		1205.00	1221.00	864.10	1083.18	1077.12	6.87
KFM01D	103.60	108.60	1.6667E-08	1.0000E-03	6.7290E-02	1196.00	1193.00	901.67	985.20	969.78	7.31
KFM01D	108.60	113.60	5.9550E-09	1.0000E-03	4.7580E-04	1218.00	1205.00	947.35	1128.87	1109.60	6.99
KFM01D	113.60	118.60	7.2068E-09	1.0000E-03		158.00	322.00	988.22	1200.43	1180.07	6.99
KFM01D	118.60	123.60	1.6667E-08	1.0000E-03	2.5520E-01	1215.00	1206.00	1025.66	1131.07	1087.58	8.04
KFM01D	123.60	128.60	1.6667E-08	1.0000E-03	7.8410E-03	1210.00	1215.00	1061.30	1223.96	1064.46	7.07
KFM01D	128.60	133.60	1.6667E-08	1.0000E-03	2.4140E-03	1218.00	1206.00	1102.03	1252.72	1108.50	7.17
KFM01D	133.60	138.60	4.1142E-09	1.0000E-03		102.00	321.00	1175.52	1366.12	1376.03	7.19
KFM01D	138.60	143.60	1.6667E-08	1.0000E-03	1.4900E-03	1220.00	1205.00	1186.95	1404.65	1189.42	7.22
KFM01D	143.60	148.60	1.6667E-08	1.0000E-03	6.3090E-02	1216.00	1205.00	1225.75	1347.40	1226.85	6.99
KFM01D	148.60	153.60	1.6667E-08	1.0000E-03	5.6200E-03	1218.00	1206.00	1266.90	1486.95	1267.58	7.29
KFM01D	153.60	158.60	1.6667E-08	1.0000E-03	2.5300E-03	1220.00	1203.00	1306.12	1509.52	1360.61	7.42
KFM01D	158.60	163.60	3.7185E-09	1.0000E-03		105.00	321.00	1385.79	1557.96	1576.39	7.40
KFM01D	163.60	168.60	5.9550E-09	1.0000E-03		161.00	321.00	1392.95	1596.21	1592.35	7.45
KFM01D	168.60	173.60	1.6667E-08	1.0000E-03	7.5640E-03	1271.00	1205.00	1428.46	1633.91	1532.36	7.47
KFM01D	173.60	178.60	1.6667E-08	1.0000E-03	5.4030E-04	1218.00	1199.00	1467.54	1677.60	1600.62	7.56
KFM01D	178.60	183.60	1.6667E-08	1.0000E-03	7.7880E-05	1218.00	1206.00	1510.34	1725.85	1515.29	7.59

idcode	secup	seclow	q_measl__l	q_measl__u	tot_volume_vp	dur_flow_phase_tp	dur_rec_phase_tf	initial_press_pi	press_at_flow_end_pp	final_press_pf	fluid_temp_tew
KFM01D	183.60	188.60	5.9550E-09	1.0000E-03	5.9920E-05	1220.00	1221.00	1547.77	1764.24	1716.22	7.64
KFM01D	188.60	193.60	5.9550E-09	1.0000E-03		1218.00	1221.00	1594.01	1806.83	1728.33	7.69
KFM01D	193.60	198.60	1.6667E-08	1.0000E-03	4.8870E-03	1218.00	1206.00	1625.38	1789.42	1699.70	7.77
KFM01D	198.60	203.60	5.9550E-09	1.0000E-03		213.00	322.00	1772.63	1876.39	1858.77	7.78
KFM01D	203.60	208.60	5.9550E-09	1.0000E-03		111.00	322.00	1771.53	1918.51	1938.60	7.82
KFM01D	208.60	213.60	5.9550E-09	1.0000E-03		118.00	322.00	1802.77	1958.96	1983.19	7.87
KFM01D	233.60	238.60	7.2068E-09	1.0000E-03		131.00	321.00	1996.54	2157.41	2179.70	8.08
KFM01D	238.60	243.60	1.6667E-08	1.0000E-03	2.7550E-04	1218.00	1206.00	1982.92	2196.76	2007.41	8.12
KFM01D	243.60	248.60	5.9550E-09	1.0000E-03		171.00	321.00	2072.36	2236.95	2245.76	8.17
KFM01D	248.60	253.60	5.9550E-09	1.0000E-03		175.00	321.00	2082.96	2279.33	2277.69	8.21
KFM01D	253.60	258.60	1.6667E-08	1.0000E-03	1.7660E-03	1218.00	1203.00	2104.29	2308.23	2192.92	8.25
KFM01D	258.60	263.60	4.3076E-09	1.0000E-03	1.8510E-04	1218.00	1206.00	2147.78	2358.74	2163.74	8.29
KFM01D	263.60	268.60	5.9550E-09	1.0000E-03		1205.00	1221.00	2172.41	2318.97	2316.76	8.34
KFM01D	268.60	273.60	5.9550E-09	1.0000E-03		147.00	321.00	2256.08	2442.82	2452.73	8.38
KFM01D	293.60	298.60	5.9550E-09	1.0000E-03		148.00	321.00	2422.45	2639.33	2636.59	8.57
KFM01D	298.60	303.60	4.9334E-09	1.0000E-03	3.6190E-05	1219.00	1221.00	2463.18	2677.32	2610.16	8.61
KFM01D	303.60	308.60	1.6667E-08	1.0000E-03	1.9900E-01	1214.00	1208.00	2494.68	2575.49	2556.23	8.11
KFM01D	308.60	313.60	5.9550E-09	1.0000E-03		139.00	321.00	2547.28	2752.18	2748.33	8.73
KFM01D	313.60	318.60	1.6667E-08	1.0000E-03	2.0180E-01	1215.00	1206.00	2575.50	2688.05	2624.48	8.17
KFM01D	318.60	323.60	7.2068E-09	1.0000E-03		189.00	321.00	2686.81	2829.80	2813.83	8.79
KFM01D	323.60	328.60	5.9550E-09	1.0000E-03		132.00	321.00	2667.82	2869.85	2868.89	8.81
KFM01D	328.60	333.60	4.7401E-09	1.0000E-03	2.1110E-04	1218.00	1205.00	2694.80	2906.00	2862.28	8.85
KFM01D	333.60	338.60	5.0000E-09	1.0000E-03	2.0790E-05	1218.00	1221.00	2743.92	2960.80	2868.33	8.89
KFM01D	338.60	343.60	5.9550E-09	1.0000E-03		448.00	321.00	2770.76	3001.81	2955.86	8.93
KFM01D	343.60	348.60	5.9550E-09	1.0000E-03		1205.00	322.00	2834.34	3040.63	3016.41	8.97
KFM01D	348.60	353.60	1.6667E-08	1.0000E-03	5.7490E-03	1218.00	1205.00	2843.70	3036.22	2998.24	9.04
KFM01D	353.60	358.60	1.6667E-08	1.0000E-03	9.1570E-04	1254.00	1206.00	2883.74	3108.88	2909.06	9.07
KFM01D	358.60	363.60	1.6667E-08	1.0000E-03	5.4730E-04	1219.00	1206.00	2920.07	3145.22	2953.65	9.10
KFM01D	363.60	368.60	4.7401E-09	1.0000E-03		113.00	393.00	2971.81	3186.63	3168.34	9.12
KFM01D	368.60	373.60	1.6667E-08	1.0000E-03	2.3200E-02	1221.00	1203.00	2993.84	3204.94	3122.10	9.18
KFM01D	373.60	378.60	1.6667E-08	1.0000E-03	1.9490E-02	1221.00	1203.00	3032.37	3234.39	3072.00	9.13
KFM01D	378.60	383.60	1.6667E-08	1.0000E-03	4.1050E-03	1221.00	1203.00	3072.00	3272.92	3087.41	9.27

idcode	secup	seclow	q_measl__l	q_measl__u	tot_volume_vp	dur_flow_phase_tp	dur_rec_phase_tf	initial_press_pi	press_at_flow_end_pp	final_press_pf	fluid_temp_tew
KFM01D	383.60	388.60	7.2068E-09	1.0000E-03	1.8930E-05	1221.00	1221.00	3122.10	3330.71	3238.80	9.28
KFM01D	388.60	393.60	1.6667E-08	1.0000E-03	3.6690E-04	1221.00	1200.00	3145.36	3350.01	3252.00	9.32
KFM01D	413.60	418.60	7.2068E-09	1.0000E-03	1.4930E-05	1221.00	1221.00	3349.43	3541.13	3378.61	9.51
KFM01D	418.60	423.60	5.9550E-09	1.0000E-03	1.5320E-05	1205.00	1221.00	3414.39	3581.00	3439.16	9.55
KFM01D	423.60	428.60	4.7401E-09	1.0000E-03		449.00	322.00	3429.25	3619.71	3624.11	9.59
KFM01D	428.60	433.60	1.6667E-08	1.0000E-03	3.4340E-02	1213.00	1211.00	3449.62	3634.02	3464.49	9.47
KFM01D	433.60	438.60	1.6667E-08	1.0000E-03	1.1670E-02	1221.00	1202.00	3487.05	3686.32	3646.68	9.64
KFM01D	438.60	443.60	4.7401E-09	1.0000E-03		163.00	371.00	3533.01	3736.42	3736.96	9.70
KFM01D	443.60	448.60	4.7401E-09	1.0000E-03		89.00	321.00	3568.52	3778.25	3778.25	9.75
KFM01D	448.60	453.60	5.9550E-09	1.0000E-03		151.00	321.00	3608.98	3816.37	3815.13	9.79
KFM01D	453.60	458.60	5.9550E-09	1.0000E-03		248.00	321.00	3647.37	3853.80	3855.31	9.83
KFM01D	458.60	463.60	4.7401E-09	1.0000E-03	2.6490E-04	1221.00	1203.00	3675.86	3856.96	3724.30	9.87
KFM01D	463.60	468.60	4.7401E-09	1.0000E-03		141.00	321.00	3741.92	3935.68	3936.78	9.90
KFM01D	468.60	473.60	4.7401E-09	1.0000E-03		98.00	321.00	3834.26	3976.96	4033.11	9.94
KFM01D	473.60	478.60	4.7401E-09	1.0000E-03	1.9020E-05	1221.00	1221.00	3793.25	4013.29	3931.82	9.97
KFM01D	478.60	483.60	5.9550E-09	1.0000E-03		89.00	322.00	3832.20	4050.45	4047.98	10.01
KFM01D	483.60	488.60	5.9550E-09	1.0000E-03		92.00	321.00	3870.31	4088.71	4088.71	10.06
KFM01D	488.60	493.60	5.9550E-09	1.0000E-03		288.00	322.00	3941.73	4126.00	4112.37	10.09
KFM01D	553.60	558.60	4.7401E-09	1.0000E-03		216.00	322.00	4395.73	4608.35	4610.55	10.60
KFM01D	558.60	563.60	5.9550E-09	1.0000E-03		256.00	321.00	4436.05	4645.22	4649.62	10.65
KFM01D	563.60	568.60	5.9550E-09	1.0000E-03		310.00	322.00	4474.03	4680.32	4669.44	10.70
KFM01D	568.60	573.60	1.6667E-08	1.0000E-03	3.4830E-04	1220.00	1205.00	4481.18	4668.34	4487.79	10.75
KFM01D	673.60	678.60	1.6667E-08	1.0000E-03	7.7910E-05	1216.00	1209.00	5265.59	5471.97	5306.88	11.62
KFM01D	678.60	683.60	5.9550E-09	1.0000E-03		1220.00	1221.00	5318.99	5509.49	5396.06	11.66
KFM01D	683.60	688.60	5.9550E-09	1.0000E-03		174.00	321.00	5339.77	5545.78	5529.82	11.72
KFM01D	687.60	692.60	4.3100E-09	1.0000E-03		188.00	321.00	5415.33	5574.96	5536.97	11.74
KFM01D	692.60	697.60	5.5593E-09	1.0000E-03	6.9420E-05	1218.00	1206.00	5402.66	5609.08	5436.25	11.79
KFM01D	697.60	702.60	6.4850E-09	1.0000E-03		182.00	321.00	5459.36	5644.04	5634.95	11.84
KFM01D	698.60	703.60	4.9300E-09	1.0000E-03		86.00	321.00	5461.01	5651.61	5640.47	11.83
KFM01D	703.60	708.60	4.7401E-09	1.0000E-03		106.00	321.00	5498.44	5686.84	5694.96	11.88
KFM01D[1)]	93.60	193.60	1.6667E-08	1.0000E-03		1043.00	1821.00	823.46	823.06	822.92	6.83

idcode	secup	seclow	q_measl__l	q_measl__u	tot_volume_vp	dur_flow_phase_tp	dur_rec_phase_tf	initial_press_pi	press_at_flow_end_pp	final_press_pf	fluid_temp_tew
KFM01D[1)]	253.60	273.60	1.6667E-08	1.0000E-03	4.1480E-02	1243.00	1182.00	2102.28	2281.19	2274.58	8.04
KFM01D[2)]	473.60	493.60	1.6667E-08	1.0000E-03	4.3980E-05	187.00	121.00	3785.32	4159.09	4111.48	9.98
KFM01D[1)]	103.60	108.60	1.6667E-08	1.0000E-03	5.6300E-02	1229.00	1187.00	902.21	973.77	961.52	7.02
KFM01D[2)]	123.60	128.60	1.6667E-08	1.0000E-03	7.9310E-03	668.00	136.00	1065.56	1355.93	1104.09	7.04
KFM01D[1)]	128.60	133.60	1.6667E-08	1.0000E-03	1.9960E-03	590.00	611.00	1106.84	1375.48	1114.55	7.18
KFM01D[3)]	196.60	201.60	1.6667E-08	1.0000E-03	3.4030E-03	1242.00	1184.00	1652.35	1862.08	1856.57	7.76
KFM01D[2)]	263.60	268.60	1.6667E-08	1.0000E-03	3.9370E-02	1238.00	1184.00	2181.90	2356.40	2353.10	8.32

[1)] Incomplete test, interrupted and re-performed later.
[2)] Complete test, re-performed later.
[3)] The test was performed at an incorrect position and therefore not evaluated.

KFM01C plu_s_hole_test_ed1. Left (This result table to SICADA includes more columns which are empty, these columns are not presented here.)

idcode	start_date	stop_date	secup	seclow	test_type	formation_type	spec_capacity_q_s	value_type_q_s	transmissivity_moye	value_type_tm	bc_tm	hydr_cond_moye	formation_width_b
KFM01D	2006-08-28 22:56	2006-08-29 07:44	93.60	193.60	3	1	1.37E-05	0	1.78E-05	1.78E-05	0	0	1.78E-07
KFM01D	2006-08-29 08:40	2006-08-29 10:30	193.60	293.60	3	1	1.36E-07	0	1.77E-07	1.77E-07	0	1	1.77E-09
KFM01D	2006-08-29 11:21	2006-08-29 13:47	293.60	393.60	3	1	9.34E-06	0	1.22E-05	1.22E-05	0	0	1.22E-07
KFM01D	2006-08-29 16:44	2006-08-29 18:45	393.60	493.60	3	1	1.34E-06	0	1.74E-06	1.74E-06	0	0	1.74E-08
KFM01D	2006-08-29 20:08	2006-08-29 22:00	493.60	593.60	3	1	1.18E-08	0	1.54E-08	1.54E-08	0	0	1.54E-10
KFM01D	2006-08-30 06:15	2006-08-30 08:06	588.60	688.60	3	1	2.34E-09	0	3.05E-09	3.05E-09	0	0	3.05E-11
KFM01D	2006-09-05 07:02	2006-09-05 08:25	93.60	113.60	3	1	1.03E-06	0	1.08E-06	1.08E-06	0	0	5.41E-08
KFM01D	2006-09-05 08:54	2006-09-05 10:16	113.60	133.60	3	1	1.14E-05	0	1.19E-05	1.19E-05	0	0	5.95E-07
KFM01D	2006-09-05 12:33	2006-09-05 13:54	133.60	153.60	3	1	3.21E-06	0	3.36E-06	3.36E-06	0	0	1.68E-07
KFM01D	2006-09-05 14:11	2006-09-05 15:24	153.60	173.60	3	1	2.32E-07	0	2.43E-07	2.43E-07	0	0	1.22E-08
KFM01D	2006-09-05 15:45	2006-09-05 17:01	173.60	193.60	3	1	1.10E-08	0	1.16E-08	1.16E-08	0	0	5.78E-10
KFM01D	2006-09-05 17:19	2006-09-05 18:33	193.60	213.60	3	1	8.17E-08	0	8.55E-08	8.55E-08	0	0	4.27E-09
KFM01D	2006-09-05 18:49	2006-09-05 19:42	213.60	233.60	3	1	1.99E-10	-1	2.09E-10	2.09E-10	-1	0	1.04E-11
KFM01D	2006-09-05 20:00	2006-09-05 21:18	233.60	253.60	3	1	4.60E-09	0	4.82E-09	4.82E-09	0	0	2.41E-10
KFM01D	2006-09-12 13:59	2006-09-12 15:14	253.60	273.60	3	1	1.45E-07	0	1.52E-07	1.52E-07	0	1	7.58E-09
KFM01D	2006-09-05 23:17	2006-09-06 07:09	273.60	293.60	3	1	2.73E-10	-1	2.85E-10	2.85E-10	-1	0	1.43E-11
KFM01D	2006-09-06 07:33	2006-09-06 08:51	293.60	313.60	3	1	6.78E-06	0	7.09E-06	7.09E-06	0	1	3.55E-07
KFM01D	2006-09-06 09:14	2006-09-06 10:32	313.60	333.60	3	1	9.87E-06	0	1.03E-05	1.03E-05	0	0	5.16E-07
KFM01D	2006-09-06 11:09	2006-09-06 13:10	333.60	353.60	3	1	7.43E-08	0	7.77E-08	7.77E-08	0	0	3.89E-09
KFM01D	2006-09-06 13:28	2006-09-06 14:48	353.60	373.60	3	1	3.38E-07	0	3.54E-07	3.54E-07	0	1	1.77E-08
KFM01D	2006-09-06 15:19	2006-09-06 16:34	373.60	393.60	3	1	7.81E-07	0	8.17E-07	8.17E-07	0	0	4.09E-08
KFM01D	2006-09-06 17:10	2006-09-06 18:00	393.60	413.60	3	1	4.20E-10	-1	4.39E-10	4.39E-10	-1	0	2.20E-11
KFM01D	2006-09-06 18:15	2006-09-06 19:33	413.60	433.60	3	1	1.14E-06	0	1.20E-06	1.20E-06	0	0	5.99E-08
KFM01D	2006-09-06 19:55	2006-09-06 21:16	433.60	453.60	3	1	9.85E-08	0	1.03E-07	1.03E-07	0	1	5.15E-09
KFM01D	2006-09-06 21:33	2006-09-06 22:49	453.60	473.60	3	1	8.82E-09	0	9.23E-09	9.23E-09	0	0	4.61E-10
KFM01D	2006-09-12 09:57	2006-09-12 11:12	473.60	493.60	3	1	9.12E-09	0	9.55E-09	9.55E-09	0	0	4.77E-10
KFM01D	2006-09-07 09:30	2006-09-07 10:19	493.60	513.60	3	1	2.47E-10	-1	2.58E-10	2.58E-10	-1	0	1.29E-11
KFM01D	2006-09-07 10:36	2006-09-07 11:22	513.60	533.60	3	1	2.47E-10	-1	2.58E-10	2.58E-10	-1	0	1.29E-11
KFM01D	2006-09-07 12:47	2006-09-07 13:32	533.60	553.60	3	1	1.84E-10	-1	1.93E-10	1.93E-10	-1	0	9.64E-12
KFM01D	2006-09-07 13:53	2006-09-07 15:18	553.60	573.60	3	1	1.39E-08	0	1.46E-08	1.46E-08	0	0	7.29E-10

idcode	start_date	stop_date	secup	seclow	test_type	formation_type	spec_capacity_q_s	value_type_q_s	transmissivity_moye	value_type_tm	bc_tm	hydr_cond_moye	formation_width_b
KFM01D	2006-09-07 15:37	2006-09-07 16:23	573.60	593.60	3	1	2.47E-10	-1	2.58E-10	2.58E-10	-1	0	1.29E-11
KFM01D	2006-09-07 16:49	2006-09-08 08:28	593.60	613.60	3	1	2.47E-10	-1	2.58E-10	2.58E-10	-1	0	1.29E-11
KFM01D	2006-09-08 08:50	2006-09-08 09:37	613.60	633.60	3	1	2.47E-10	-1	2.58E-10	2.58E-10	-1	0	1.29E-11
KFM01D	2006-09-08 09:55	2006-09-08 10:43	633.60	653.60	3	1	2.47E-10	-1	2.58E-10	2.58E-10	-1	0	1.29E-11
KFM01D	2006-09-08 11:00	2006-09-08 11:42	653.60	673.60	3	1	2.47E-10	-1	2.58E-10	2.58E-10	-1	0	1.29E-11
KFM01D	2006-09-08 13:30	2006-09-08 14:50	668.60	688.60	3	1	2.17E-09	0	2.28E-09	2.28E-09	0	0	1.14E-10
KFM01D	2006-09-08 15:08	2006-09-08 16:23	688.60	708.60	3	1	2.19E-09	0	2.30E-09	2.30E-09	0	0	1.15E-10
KFM01D	2006-09-08 16:42	2006-09-08 17:24	708.60	728.60	3	1	1.84E-10	-1	1.93E-10	1.93E-10	-1	0	9.64E-12
KFM01D	2006-09-11 08:38	2006-09-11 09:24	728.60	748.60	3	1	2.77E-10	-1	2.90E-10	2.90E-10	-1	0	1.45E-11
KFM01D	2006-09-11 09:48	2006-09-11 10:33	748.60	768.60	3	1	1.86E-10	-1	1.95E-10	1.95E-10	-1	0	9.74E-12
KFM01D	2006-09-11 13:02	2006-09-11 13:50	768.60	788.60	3	1	2.77E-10	-1	2.90E-10	2.90E-10	-1	0	1.45E-11
KFM01D	2006-09-14 09:08	2006-09-14 10:32	93.60	98.60	3	1	2.18E-09	0	1.80E-09	1.80E-09	0	0	3.60E-10
KFM01D	2006-09-14 10:50	2006-09-14 12:04	98.60	103.60	3	1	2.98E-10	-1	2.46E-10	2.46E-10	-1	0	4.92E-11
KFM01D	2006-09-27 12:42	2006-09-27 13:59	103.60	108.60	3	1	1.17E-06	0	9.70E-07	9.70E-07	0	1	1.94E-07
KFM01D	2006-09-14 13:49	2006-09-14 15:03	108.60	113.60	3	1	2.67E-09	0	2.21E-09	2.21E-09	0	0	4.42E-10
KFM01D	2006-09-14 15:14	2006-09-14 15:55	113.60	118.60	3	1	3.60E-10	-1	2.98E-10	2.98E-10	-1	0	5.95E-11
KFM01D	2006-09-14 16:02	2006-09-14 17:16	118.60	123.60	3	1	1.12E-05	0	9.26E-06	9.26E-06	0	0	1.85E-06
KFM01D	2006-09-27 10:25	2006-09-27 11:41	123.60	128.60	3	1	3.59E-07	0	2.96E-07	2.96E-07	0	0	5.92E-08
KFM01D	2006-09-27 09:02	2006-09-27 10:16	128.60	133.60	3	1	1.21E-07	0	9.97E-08	9.97E-08	0	0	1.99E-08
KFM01D	2006-09-15 10:06	2006-09-15 10:46	133.60	138.60	3	1	2.06E-10	-1	1.70E-10	1.70E-10	-1	0	3.40E-11
KFM01D	2006-09-15 11:00	2006-09-15 12:16	138.60	143.60	3	1	4.83E-08	0	3.99E-08	3.99E-08	0	0	7.97E-09
KFM01D	2006-09-15 13:09	2006-09-15 14:25	143.60	148.60	3	1	3.92E-06	0	3.24E-06	3.24E-06	0	0	6.48E-07
KFM01D	2006-09-15 15:12	2006-09-15 16:27	148.60	153.60	3	1	1.88E-07	0	1.56E-07	1.56E-07	0	0	3.11E-08
KFM01D	2006-09-18 08:20	2006-09-18 09:38	153.60	158.60	3	1	6.53E-08	0	5.40E-08	5.40E-08	0	0	1.08E-08
KFM01D	2006-09-18 09:50	2006-09-18 10:31	158.60	163.60	3	1	1.86E-10	-1	1.54E-10	1.54E-10	-1	0	3.07E-11
KFM01D	2006-09-18 10:44	2006-09-18 11:26	163.60	168.60	3	1	2.98E-10	-1	2.46E-10	2.46E-10	-1	0	4.92E-11
KFM01D	2006-09-18 11:39	2006-09-18 13:45	168.60	173.60	3	1	2.12E-07	0	1.75E-07	1.75E-07	0	0	3.50E-08
KFM01D	2006-09-18 13:58	2006-09-18 15:20	173.60	178.60	3	1	6.56E-09	0	5.41E-09	5.41E-09	0	0	1.08E-09
KFM01D	2006-09-18 15:33	2006-09-18 16:54	178.60	183.60	3	1	2.42E-09	0	2.00E-09	2.00E-09	0	0	4.00E-10
KFM01D	2006-09-19 06:04	2006-09-19 07:22	183.60	188.60	3	1	4.80E-10	0	3.96E-10	3.96E-10	0	0	7.93E-11
KFM01D	2006-09-19 07:41	2006-09-19 09:04	188.60	193.60	3	1	2.98E-10	-1	2.46E-10	2.46E-10	-1	0	4.92E-11
KFM01D	2006-09-27 07:16	2006-09-27 08:32	193.60	198.60	3	1	1.10E-07	0	9.07E-08	9.07E-08	0	1	1.81E-08
KFM01D	2006-09-19 11:01	2006-09-19 12:38	198.60	203.60	3	1	2.98E-10	-1	2.46E-10	2.46E-10	-1	0	4.92E-11

idcode	start_date	stop_date	secup	seclow	test_type	formation_type	spec_capacity_q_s	value_type_q_s	transmissivity_moye	value_type_tm	bc_tm	hydr_cond_moye	formation_width_b
KFM01D	2006-09-19 12:53	2006-09-19 13:40	203.60	208.60	3	1	2.98E-10	-1	2.46E-10	2.46E-10	-1	0	4.92E-11
KFM01D	2006-09-19 13:58	2006-09-19 14:41	208.60	213.60	3	1	2.98E-10	-1	2.46E-10	2.46E-10	-1	0	4.92E-11
KFM01D	2006-09-19 15:22	2006-09-19 16:05	233.60	238.60	3	1	3.60E-10	-1	2.98E-10	2.98E-10	-1	0	5.95E-11
KFM01D	2006-09-19 16:15	2006-09-19 17:33	238.60	243.60	3	1	7.95E-09	0	6.56E-09	6.56E-09	0	0	1.31E-09
KFM01D	2006-09-19 17:48	2006-09-19 18:33	243.60	248.60	3	1	2.98E-10	-1	2.46E-10	2.46E-10	-1	0	4.92E-11
KFM01D	2006-09-19 18:42	2006-09-19 19:26	248.60	253.60	3	1	2.98E-10	-1	2.46E-10	2.46E-10	-1	0	4.92E-11
KFM01D	2006-09-19 19:36	2006-09-19 21:12	253.60	258.60	3	1	3.65E-08	0	3.02E-08	3.02E-08	0	0	6.04E-09
KFM01D	2006-09-19 21:22	2006-09-19 22:38	258.60	263.60	3	1	6.05E-09	0	5.00E-09	5.00E-09	0	0	9.99E-10
KFM01D	2006-09-26 22:13	2006-09-26 23:30	263.60	268.60	3	1	2.98E-10	-1	2.46E-10	2.46E-10	-1	0	4.92E-11
KFM01D	2006-09-20 06:18	2006-09-20 06:59	268.60	273.60	3	1	2.98E-10	-1	2.46E-10	2.46E-10	-1	0	4.92E-11
KFM01D	2006-09-20 07:22	2006-09-20 08:05	293.60	298.60	3	1	2.98E-10	-1	2.46E-10	2.46E-10	-1	0	4.92E-11
KFM01D	2006-09-20 08:16	2006-09-20 09:30	298.60	303.60	3	1	4.29E-10	0	3.54E-10	3.54E-10	0	0	7.09E-11
KFM01D	2006-09-20 09:42	2006-09-20 11:01	303.60	308.60	3	1	7.54E-06	0	6.22E-06	6.22E-06	0	0	1.24E-06
KFM01D	2006-09-20 11:10	2006-09-20 12:45	308.60	313.60	3	1	2.98E-10	-1	2.46E-10	2.46E-10	-1	0	4.92E-11
KFM01D	2006-09-20 12:55	2006-09-20 14:09	313.60	318.60	3	1	9.68E-06	0	7.99E-06	7.99E-06	0	0	1.60E-06
KFM01D	2006-09-20 14:21	2006-09-20 15:05	318.60	323.60	3	1	3.60E-10	-1	2.98E-10	2.98E-10	-1	0	5.95E-11
KFM01D	2006-09-20 15:26	2006-09-20 16:13	323.60	328.60	3	1	2.98E-10	-1	2.46E-10	2.46E-10	-1	0	4.92E-11
KFM01D	2006-09-20 16:24	2006-09-20 17:40	328.60	333.60	3	1	2.07E-09	0	1.71E-09	1.71E-09	0	0	3.42E-10
KFM01D	2006-09-20 17:50	2006-09-20 19:06	333.60	338.60	3	1	4.98E-10	0	4.11E-10	4.11E-10	0	0	8.22E-11
KFM01D	2006-09-20 19:15	2006-09-20 20:23	338.60	343.60	3	1	2.98E-10	-1	2.46E-10	2.46E-10	-1	0	4.92E-11
KFM01D	2006-09-20 20:40	2006-09-20 21:39	343.60	348.60	3	1	2.98E-10	-1	2.46E-10	2.46E-10	-1	0	4.92E-11
KFM01D	2006-09-20 21:49	2006-09-20 23:12	348.60	353.60	3	1	6.62E-08	0	5.46E-08	5.46E-08	0	1	1.09E-08
KFM01D	2006-09-20 23:21	2006-09-21 07:20	353.60	358.60	3	1	2.65E-08	0	2.19E-08	2.19E-08	0	0	4.37E-09
KFM01D	2006-09-21 07:34	2006-09-21 08:51	358.60	363.60	3	1	1.55E-08	0	1.28E-08	1.28E-08	0	0	2.56E-09
KFM01D	2006-09-21 09:07	2006-09-21 09:52	363.60	368.60	3	1	2.37E-10	-1	1.96E-10	1.96E-10	-1	0	3.91E-11
KFM01D	2006-09-21 10:05	2006-09-21 11:20	368.60	373.60	3	1	3.06E-07	0	2.53E-07	2.53E-07	0	1	5.06E-08
KFM01D	2006-09-21 12:14	2006-09-21 13:32	373.60	378.60	3	1	6.64E-07	0	5.48E-07	5.48E-07	0	0	1.10E-07
KFM01D	2006-09-21 13:52	2006-09-21 15:09	378.60	383.60	3	1	1.33E-07	0	1.10E-07	1.10E-07	0	0	2.20E-08
KFM01D	2006-09-21 15:21	2006-09-21 16:35	383.60	388.60	3	1	4.40E-10	0	3.63E-10	3.63E-10	0	1	7.27E-11
KFM01D	2006-09-21 16:45	2006-09-21 18:02	388.60	393.60	3	1	7.22E-09	0	5.96E-09	5.96E-09	0	0	1.19E-09
KFM01D	2006-09-21 18:22	2006-09-21 19:47	413.60	418.60	3	1	5.42E-10	0	4.48E-10	4.48E-10	0	0	8.95E-11
KFM01D	2006-09-21 19:55	2006-09-21 21:22	418.60	423.60	3	1	4.71E-10	0	3.89E-10	3.89E-10	0	0	7.78E-11
KFM01D	2006-09-21 21:31	2006-09-21 22:22	423.60	428.60	3	1	2.37E-10	-1	1.96E-10	1.96E-10	-1	0	3.91E-11
KFM01D	2006-09-21 22:32	2006-09-21 23:47	428.60	433.60	3	1	1.31E-06	0	1.08E-06	1.08E-06	0	0	2.16E-07

idcode	start_date	stop_date	secup	seclow	test_type	formation_type	spec_capacity_q_s	value_type_q_s	transmissivity_moye	value_type_tm	bc_tm	hydr_cond_moye	formation_width_b
KFM01D	2006-09-22 08:26	2006-09-22 09:46	433.60	438.60	3	1	9.79E-08	0	8.09E-08	8.09E-08	0	1	1.62E-08
KFM01D	2006-09-22 10:01	2006-09-22 10:57	438.60	443.60	3	1	2.37E-10	-1	1.96E-10	1.96E-10	-1	0	3.91E-11
KFM01D	2006-09-26 20:17	2006-09-26 21:04	443.60	448.60	3	1	2.37E-10	-1	1.96E-10	1.96E-10	-1	0	3.91E-11
KFM01D	2006-09-22 12:43	2006-09-22 13:29	448.60	453.60	3	1	2.98E-10	-1	2.46E-10	2.46E-10	-1	0	4.92E-11
KFM01D	2006-09-22 13:39	2006-09-22 14:22	453.60	458.60	3	1	2.98E-10	-1	2.46E-10	2.46E-10	-1	0	4.92E-11
KFM01D	2006-09-22 14:58	2006-09-22 16:18	458.60	463.60	3	1	9.27E-09	0	7.65E-09	7.65E-09	0	0	1.53E-09
KFM01D	2006-09-22 16:27	2006-09-22 17:16	463.60	468.60	3	1	2.37E-10	-1	1.96E-10	1.96E-10	-1	0	3.91E-11
KFM01D	2006-09-25 08:19	2006-09-25 08:59	468.60	473.60	3	1	2.37E-10	-1	1.96E-10	1.96E-10	-1	0	3.91E-11
KFM01D	2006-09-25 09:08	2006-09-25 10:22	473.60	478.60	3	1	2.94E-10	0	2.42E-10	2.42E-10	0	0	4.85E-11
KFM01D	2006-09-25 10:29	2006-09-25 11:09	478.60	483.60	3	1	2.98E-10	-1	2.46E-10	2.46E-10	-1	0	4.92E-11
KFM01D	2006-09-25 11:17	2006-09-25 12:47	483.60	488.60	3	1	2.98E-10	-1	2.46E-10	2.46E-10	-1	0	4.92E-11
KFM01D	2006-09-25 12:58	2006-09-25 13:42	488.60	493.60	3	1	2.98E-10	-1	2.46E-10	2.46E-10	-1	0	4.92E-11
KFM01D	2006-09-25 14:16	2006-09-25 14:59	553.60	558.60	3	1	2.37E-10	-1	1.96E-10	1.96E-10	-1	0	3.91E-11
KFM01D	2006-09-25 15:11	2006-09-25 15:55	558.60	563.60	3	1	2.98E-10	-1	2.46E-10	2.46E-10	-1	0	4.92E-11
KFM01D	2006-09-25 16:04	2006-09-25 16:48	563.60	568.60	3	1	2.98E-10	-1	2.46E-10	2.46E-10	-1	0	4.92E-11
KFM01D	2006-09-26 06:11	2006-09-26 07:25	568.60	573.60	3	1	1.42E-08	0	1.17E-08	1.17E-08	0	0	2.34E-09
KFM01D	2006-09-26 08:21	2006-09-26 09:37	673.60	678.60	3	1	2.28E-09	0	1.88E-09	1.88E-09	0	0	3.76E-10
KFM01D	2006-09-26 09:45	2006-09-26 10:59	678.60	683.60	3	1	2.98E-10	-1	2.46E-10	2.46E-10	-1	0	4.92E-11
KFM01D	2006-09-26 11:08	2006-09-26 12:25	683.60	688.60	3	1	2.98E-10	-1	2.46E-10	2.46E-10	-1	0	4.92E-11
KFM01D	2006-09-26 12:34	2006-09-26 13:15	687.60	692.60	3	1	2.16E-10	-1	1.78E-10	1.78E-10	-1	0	3.56E-11
KFM01D	2006-09-26 13:28	2006-09-26 14:43	692.60	697.60	3	1	1.83E-09	0	1.51E-09	1.51E-09	0	0	3.03E-10
KFM01D	2006-09-26 15:24	2006-09-26 16:09	697.60	702.60	3	1	3.24E-10	-1	2.68E-10	2.68E-10	-1	0	5.36E-11
KFM01D	2006-09-26 16:17	2006-09-26 16:58	698.60	703.60	3	1	2.47E-10	-1	2.04E-10	2.04E-10	-1	0	4.07E-11
KFM01D	2006-09-26 17:10	2006-09-26 17:52	703.60	708.60	3	1	2.37E-10	-1	1.96E-10	1.96E-10	-1	0	3.91E-11
KFM01D[1)]	2006-08-28 14:47	2006-08-28 16:40	93.60	193.60	3	1							
KFM01D[1)]	2006-09-05 21:36	2006-09-05 22:54	253.60	273.60	3	1							
KFM01D[2)]	2006-09-06 23:03	2006-09-07 08:35	473.60	493.60	3	1							
KFM01D[1)]	2006-09-14 12:26	2006-09-14 13:40	103.60	108.60	3	1							
KFM01D[2)]	2006-09-15 07:51	2006-09-15 08:40	123.60	128.60	3	1							
KFM01D[1)]	2006-09-15 08:54	2006-09-15 09:50	128.60	133.60	3	1							
KFM01D[3)]	2006-09-19 09:23	2006-09-19 10:41	196.60	201.60	3	1							
KFM01D[2)]	2006-09-19 22:47	2006-09-20 00:02	263.60	268.60	3	1							

[1)] Incomplete test, interrupted and re-performed later.
[2)] Complete test, re-performed later.
[3)] The test was performed at an incorrect position and therefore not evaluated.

KFM01C plu_s_hole_test_ed1. Right (This result table to SICADA includes more columns which are empty, these columns are not presented here.)

idcode	secup	seclow	transmissivity_tt	value_type_tt	bc_tt	l_measl_q_s	u_measl_q_s	assumed_s	bc_s	ri	ri_index	c	skin	t1	t2	dte1	dte2
KFM01D	93.60	193.60	8.48E-06	0	1	2.47E-09	5.00E-04	2.04E-06	2.04E-06	129.71	1						
KFM01D	193.60	293.60		0	0	2.44E-10	5.00E-04	2.95E-07	2.95E-07	49.38							
KFM01D	293.60	393.60	7.57E-06	0	1	3.02E-09	5.00E-04	1.93E-06	1.93E-06	125.63	1						
KFM01D	393.60	493.60	3.33E-07	0	1	7.97E-10	5.00E-04	4.04E-07	4.04E-07	57.85	-1						
KFM01D	493.60	593.60	1.59E-08	0	1	9.09E-10	5.00E-04	8.82E-08	8.82E-08	27.00	0	3.47E-10		1.79E+00			400.00
KFM01D	588.60	688.60	8.69E-10	0	1	8.36E-10	5.00E-04	2.06E-08	2.06E-08	13.06	0	3.33E-10		-3.77E+00			200.00
KFM01D	93.60	113.60	1.24E-06	0	1	1.73E-09	5.00E-04	7.79E-07	7.79E-07	65.67	1			-7.71E+00			
KFM01D	113.60	133.60	1.95E-05	0	1	1.71E-09	5.00E-04	3.09E-06	3.09E-06	75.38	1			-4.15E+00			
KFM01D	133.60	153.60	7.30E-06	0	1	8.11E-10	5.00E-04	1.89E-06	1.89E-06	102.07	0			6.36E+00			200.00
KFM01D	153.60	173.60	1.08E-07	0	1	8.12E-10	5.00E-04	2.30E-07	2.30E-07	22.96	1			-4.29E+00			100.00
KFM01D	173.60	193.60	1.62E-09	0	1	2.30E-10	5.00E-04	2.82E-08	2.82E-08	12.58	1						
KFM01D	193.60	213.60	4.44E-08	0	1	7.40E-10	5.00E-04	1.47E-07	1.47E-07	28.50	0			-3.33E+00			700.00
KFM01D	213.60	233.60		-1	0	1.99E-10	5.00E-04										
KFM01D	233.60	253.60	1.31E-09	0	1	2.52E-10	5.00E-04	2.53E-08	2.53E-08	11.81	0	1.28E-10		-4.31E+00			200.00
KFM01D	253.60	273.60		0	0	1.03E-09	5.00E-04	2.73E-07	2.73E-07	39.07							
KFM01D	273.60	293.60		-1	0	2.73E-10	5.00E-04										
KFM01D	293.60	313.60		0	0	2.22E-09	5.00E-04	1.86E-06	1.86E-06	101.53							
KFM01D	313.60	333.60	1.79E-05	0	1	1.49E-09	5.00E-04	2.96E-06	2.96E-06	36.88	1			-2.68E+00			
KFM01D	333.60	353.60	6.11E-07	0	1	8.05E-10	5.00E-04	5.47E-07	5.47E-07	15.85	1			-1.50E+00			
KFM01D	353.60	373.60		0	0	7.73E-10	5.00E-04	4.16E-07	4.16E-07	48.26							
KFM01D	373.60	393.60	4.75E-07	0	1	8.60E-10	5.00E-04	4.82E-07	4.82E-07	42.09	1			-3.66E+00			70.00
KFM01D	393.60	413.60		-1	0	4.20E-10	5.00E-04										
KFM01D	413.60	433.60	7.49E-07	0	1	8.32E-10	5.00E-04	6.06E-07	6.06E-07	57.78	0			-3.33E+00			200.00
KFM01D	433.60	453.60		0	0	1.00E-09	5.00E-04	2.25E-07	2.25E-07	35.31							
KFM01D	453.60	473.60	4.24E-09	0	1	1.72E-10	5.00E-04	4.56E-08	4.56E-08	15.84	0			-3.26E+00			80.00

idcode	secup	seclow	transmissivity_tt	value_type_tt	bc_tt	l_measl_q_s	u_measl_q_s	assumed_s	bc_s	ri	ri_index	c	skin	t1	t2	dte1	dte2
KFM01D	473.60	493.60	4.46E-09	0	1	2.24E-10	5.00E-04	4.68E-08	4.68E-08	11.35	1			-3.28E+00			10.00
KFM01D	493.60	513.60		-1	0	2.47E-10	5.00E-04										
KFM01D	513.60	533.60		-1	0	2.47E-10	5.00E-04										
KFM01D	533.60	553.60		-1	0	1.84E-10	5.00E-04										
KFM01D	553.60	573.60	2.24E-08	0	1	3.15E-10	5.00E-04	1.05E-07	1.05E-07	24.03	0	6.97E-11		3.51E+00			200.00
KFM01D	573.60	593.60		-1	0	2.47E-10	5.00E-04										
KFM01D	593.60	613.60		-1	0	2.47E-10	5.00E-04										
KFM01D	613.60	633.60		-1	0	2.47E-10	5.00E-04										
KFM01D	633.60	653.60		-1	0	2.47E-10	5.00E-04										
KFM01D	653.60	673.60		-1	0	2.47E-10	5.00E-04										
KFM01D	668.60	688.60	6.73E-10	0	1	1.99E-10	5.00E-04	1.82E-08	1.82E-08	10.00	0	5.34E-11		-3.92E+00			300.00
KFM01D	688.60	708.60	6.93E-10	0	1	2.78E-10	5.00E-04	1.84E-08	1.84E-08	8.23	-1	6.10E-11		-3.72E+00			20.00
KFM01D	708.60	728.60		-1	0	1.84E-10	5.00E-04										
KFM01D	728.60	748.60		-1	0	2.77E-10	5.00E-04										
KFM01D	748.60	768.60		-1	0	1.86E-10	5.00E-04										
KFM01D	768.60	788.60		-1	0	2.77E-10	5.00E-04										
KFM01D	93.60	98.60	7.60E-10	0	1	2.19E-10	5.00E-04	1.93E-08	1.93E-08	2.98	-1			-3.25E+00			20.00
KFM01D	98.60	103.60		-1	0	2.98E-10	5.00E-04										
KFM01D	103.60	108.60	1.46E-06	0	0	1.96E-09	5.00E-04	6.90E-07	6.90E-07	61.54	1						
KFM01D	108.60	113.60	9.49E-09	0	1	3.22E-10	5.00E-04	6.82E-08	6.82E-08	63.80	0			-5.03E+00			
KFM01D	113.60	118.60		-1	0	3.60E-10	5.00E-04										
KFM01D	118.60	123.60	5.70E-06	0	1	1.55E-09	5.00E-04	1.67E-06	1.67E-06	47.98	1			-6.09E+00			70.00
KFM01D	123.60	128.60	2.98E-07	0	1	1.01E-09	5.00E-04	3.82E-07	3.82E-07	22.95	-1			-1.77E+00			30.00
KFM01D	128.60	133.60	1.07E-07	0	1	1.09E-09	5.00E-04	2.29E-07	2.29E-07	35.50	0			-1.39E+00			100.00
KFM01D	133.60	138.60		-1	0	2.06E-10	5.00E-04										
KFM01D	138.60	143.60	1.18E-08	0	1	7.51E-10	5.00E-04	7.60E-08	7.60E-08	20.63	-1			-4.49E+00			
KFM01D	143.60	148.60	5.32E-06	0	1	1.34E-09	5.00E-04	1.61E-06	1.61E-06	94.32	0			6.51E-01			500.00
KFM01D	148.60	153.60	2.72E-07	0	1	7.43E-10	5.00E-04	3.65E-07	3.65E-07	44.86	0			1.94E+00			40.00
KFM01D	153.60	158.60	1.35E-08	0	1	8.04E-10	5.00E-04	8.13E-08	8.13E-08	21.17	0			-5.53E+00			200.00
KFM01D	158.60	163.60		-1	0	1.86E-10	5.00E-04										
KFM01D	163.60	168.60		-1	0	2.98E-10	5.00E-04										

idcode	secup	seclow	transmissivity_tt	value_type_tt	bc_tt	l_measl_q_s	u_measl_q_s	assumed_s	bc_s	ri	ri_index	c	skin	t1	t2	dte1	dte2
KFM01D	168.60	173.60	1.05E-07	0	1	7.96E-10	5.00E-04	2.27E-07	2.27E-07	36.38	1			-3.85E+00			
KFM01D	173.60	178.60	1.33E-09	0	1	7.79E-10	5.00E-04	2.55E-08	2.55E-08	11.85	1	7.80E-10		-6.01E+00			
KFM01D	178.60	183.60	2.14E-09	0	1	7.59E-10	5.00E-04	3.24E-08	3.24E-08	13.36	0			-3.08E-01			60.00
KFM01D	183.60	188.60	4.36E-10	0	1	2.70E-10	5.00E-04	1.46E-08	1.46E-08	9.05	1			-5.16E+00			
KFM01D	188.60	193.60		-1	0	2.98E-10	5.00E-04										
KFM01D	193.60	198.60		0	0	9.97E-10	5.00E-04	2.11E-07	2.11E-07	34.33							
KFM01D	198.60	203.60		-1	0	2.98E-10	5.00E-04										
KFM01D	203.60	208.60		-1	0	2.98E-10	5.00E-04										
KFM01D	208.60	213.60		-1	0	2.98E-10	5.00E-04										
KFM01D	233.60	238.60		-1	0	3.60E-10	5.00E-04										
KFM01D	238.60	243.60	7.11E-09	0	1	7.65E-10	5.00E-04	5.90E-08	5.90E-08	10.41	1	1.18E-10		-1.50E+00			60.00
KFM01D	243.60	248.60		-1	0	2.98E-10	5.00E-04										
KFM01D	248.60	253.60		-1	0	2.98E-10	5.00E-04										
KFM01D	253.60	258.60	4.63E-09	0	1	8.02E-10	5.00E-04	4.76E-08	4.76E-08	16.20	0			-6.04E+00			500.00
KFM01D	258.60	263.60	3.89E-09	0	1	2.00E-10	5.00E-04	4.37E-08	4.37E-08	15.51	0	1.89E-11		-2.04E+00			100.00
KFM01D	263.60	268.60		-1	0	2.98E-10	5.00E-04										
KFM01D	268.60	273.60		-1	0	2.98E-10	5.00E-04										
KFM01D	293.60	298.60		-1	0	2.98E-10	5.00E-04										
KFM01D	298.60	303.60	6.03E-10	0	1	2.26E-10	5.00E-04	1.72E-08	1.72E-08	1.99	1			-3.49E+00			20.00
KFM01D	303.60	308.60	3.71E-06	0	1	2.02E-09	5.00E-04	1.35E-06	1.35E-06	86.70							
KFM01D	308.60	313.60		-1	0	2.98E-10	5.00E-04										
KFM01D	313.60	318.60	1.65E-05	0	1	1.45E-09	5.00E-04	2.85E-06	2.85E-06	36.15	1			-3.11E+00			
KFM01D	318.60	323.60		-1	0	3.60E-10	5.00E-04										
KFM01D	323.60	328.60		-1	0	2.98E-10	5.00E-04										
KFM01D	328.60	333.60	3.04E-09	0	1	2.20E-10	5.00E-04	3.86E-08	3.86E-08	14.61	1			-4.90E+00			
KFM01D	333.60	338.60	1.63E-10	0	1	2.26E-10	5.00E-04	8.93E-09	8.93E-09	7.01	0	2.73E-11		-3.44E+00			100.00
KFM01D	338.60	343.60		-1	0	2.98E-10	5.00E-04										
KFM01D	343.60	348.60		-1	0	2.98E-10	5.00E-04										
KFM01D	348.60	353.60	4.77E-07	0	0	8.50E-10	5.00E-04	1.64E-07	1.64E-07	30.25	1			-2.44E+00			
KFM01D	353.60	358.60	1.55E-08	0	1	7.26E-10	5.00E-04	8.71E-08	8.71E-08	21.91	0			-2.92E+00			100.00
KFM01D	358.60	363.60	1.27E-08	0	1	7.26E-10	5.00E-04	7.90E-08	7.90E-08	6.02	1			-2.19E+00			10.00
KFM01D	363.60	368.60		-1	0	2.37E-10	5.00E-04										

idcode	secup	seclow	transmissivity_tt	value_type_tt	bc_tt	l_measl_q_s	u_measl_q_s	assumed_s	bc_s	ri	ri_index	c	skin	t1	t2	dte1	dte2
KFM01D	368.60	373.60		0	0	7.75E-10	5.00E-04	3.52E-07	3.52E-07	44.43							
KFM01D	373.60	378.60	3.15E-07	0	1	8.10E-10	5.00E-04	3.93E-07	3.93E-07	46.53	0			-4.31E+00			400.00
KFM01D	378.60	383.60	7.63E-08	0	1	8.14E-10	5.00E-04	1.93E-07	1.93E-07	32.64	0			-3.33E+00			100.00
KFM01D	383.60	388.60		0	0	3.39E-10	5.00E-04	1.33E-08	1.33E-08	8.65							
KFM01D	388.60	393.60	1.95E-09	0	1	7.99E-10	5.00E-04	3.09E-08	3.09E-08	13.04	0			-4.37E+00			80.00
KFM01D	413.60	418.60	2.06E-10	0	1	3.69E-10	5.00E-04	1.00E-08	1.00E-08	7.44	0			-2.80E+00			100.00
KFM01D	418.60	423.60	1.65E-10	0	1	3.51E-10	5.00E-04	8.98E-09	8.98E-09	7.03	0	2.26E-11		-4.06E+00			50.00
KFM01D	423.60	428.60		-1	0	2.37E-10	5.00E-04										
KFM01D	428.60	433.60	9.95E-07	0	1	8.87E-10	5.00E-04	6.98E-07	6.98E-07	62.02	0			-2.73E+00			300.00
KFM01D	433.60	438.60		0	0	8.21E-10	5.00E-04	1.99E-07	1.99E-07	33.41							
KFM01D	438.60	443.60		-1	0	2.37E-10	5.00E-04										
KFM01D	443.60	448.60		-1	0	2.37E-10	5.00E-04										
KFM01D	448.60	453.60		-1	0	2.98E-10	5.00E-04										
KFM01D	453.60	458.60		-1	0	2.98E-10	5.00E-04										
KFM01D	458.60	463.60	3.87E-09	0	1	2.57E-10	5.00E-04	4.35E-08	4.35E-08	15.49	0			-3.65E+00			200.00
KFM01D	463.60	468.60		-1	0	2.37E-10	5.00E-04										
KFM01D	468.60	473.60		-1	0	2.37E-10	5.00E-04										
KFM01D	473.60	478.60	1.66E-10	0	1	2.11E-10	5.00E-04	9.02E-09	9.02E-09	7.05	0			-3.86E+00			
KFM01D	478.60	483.60		-1	0	2.98E-10	5.00E-04										
KFM01D	483.60	488.60		-1	0	2.98E-10	5.00E-04										
KFM01D	488.60	493.60		-1	0	2.98E-10	5.00E-04										
KFM01D	553.60	558.60		-1	0	2.37E-10	5.00E-04										
KFM01D	558.60	563.60		-1	0	2.98E-10	5.00E-04										
KFM01D	563.60	568.60		-1	0	2.98E-10	5.00E-04										
KFM01D	568.60	573.60	1.27E-08	0	1	8.74E-10	5.00E-04	7.88E-08	7.88E-08	21.01	-1			-4.55E-01			
KFM01D	673.60	678.60	5.72E-10	0	1	7.93E-10	5.00E-04	1.67E-08	1.67E-08	9.60	0			-4.28E+00			500.00
KFM01D	678.60	683.60		-1	0	2.98E-10	5.00E-04										
KFM01D	683.60	688.60		-1	0	2.98E-10	5.00E-04										
KFM01D	687.60	692.60		-1	0	2.16E-10	5.00E-04										
KFM01D	692.60	697.60	6.12E-10	0	1	2.64E-10	5.00E-04	1.73E-08	1.73E-08	9.77	0	2.62E-11		-3.70E+00			100.00
KFM01D	697.60	702.60		-1	0	3.24E-10	5.00E-04										
KFM01D	698.60	703.60		-1	0	2.47E-10	5.00E-04										

idcode	secup	seclow	transmissivity_tt	value_type_tt	bc_tt	l_measl_q_s	u_measl_q_s	assumed_s	bc_s	ri	ri_index	c	skin	t1	t2	dte1	dte2
KFM01D	703.60	708.60		-1	0	2.37E-10	5.00E-04										
KFM01D[1)]	93.60	193.60															
KFM01D[1)]	253.60	273.60															
KFM01D[2)]	473.60	493.60															
KFM01D[1)]	103.60	108.60															
KFM01D[2)]	123.60	128.60															
KFM01D[1)]	128.60	133.60															
KFM01D[3)]	196.60	201.60															
KFM01D[2)]	263.60	268.60															

[1)] Incomplete test, interrupted and re-performed later.
[2)] Complete test, re-performed later.
[3)] The test was performed at an incorrect position and therefore not evaluated.

KFM01C plu_s_hole_test_obs. Injection tests (This result table to SICADA includes more columns which are empty, these columns are not presented here.)

idcode	start_date	stop_date	secup	seclow	obs_secup	obs_seclow	pi_above	pp_above	pf_above	pi_below	pp_below	pf_below	comments
KFM01D	2006-08-28 22:56	2006-08-29 07:44	93.60	193.60	89.72	92.60	814.76	812.85	813.94				
KFM01D	2006-08-28 22:56	2006-08-29 07:44	93.60	193.60	194.60	800.24				1627.78	1627.92	1627.92	
KFM01D	2006-08-29 08:40	2006-08-29 10:30	193.60	293.60	89.72	192.60	826.81	825.58	824.48				
KFM01D	2006-08-29 08:40	2006-08-29 10:30	193.60	293.60	294.60	800.24				2426.83	2426.83	2425.73	
KFM01D	2006-08-29 11:21	2006-08-29 13:47	293.60	393.60	89.72	292.60	816.12	815.58	814.75				
KFM01D	2006-08-29 11:21	2006-08-29 13:47	293.60	393.60	394.60	800.24				3192.87	3194.93	3194.93	
KFM01D	2006-08-29 16:44	2006-08-29 18:45	393.60	493.60	89.72	392.60	788.61	787.52	785.87				
KFM01D	2006-08-29 16:44	2006-08-29 18:45	393.60	493.60	494.60	800.24				3925.61	3922.31	3920.11	
KFM01D	2006-08-29 20:08	2006-08-29 22:00	493.60	593.60	89.72	492.60	742.75	741.66	741.11				
KFM01D	2006-08-29 20:08	2006-08-29 22:00	493.60	593.60	594.60	800.24				4681.60	4672.26	4666.75	
KFM01D	2006-08-30 06:15	2006-08-30 08:06	588.60	688.60	89.72	587.60	677.36	676.67	676.81				
KFM01D	2006-08-30 06:15	2006-08-30 08:06	588.60	688.60	689.60	800.24				5406.24	5382.57	5370.47	
KFM01D	2006-09-05 07:02	2006-09-05 08:25	93.60	113.60	89.72	92.60	809.02	808.47	809.02				
KFM01D	2006-09-05 07:02	2006-09-05 08:25	93.60	113.60	114.60	800.24				983.07	985.69	984.73	
KFM01D	2006-09-05 08:54	2006-09-05 10:16	113.60	133.60	89.72	112.60	815.50	819.34	819.88				
KFM01D	2006-09-05 08:54	2006-09-05 10:16	113.60	133.60	134.60	800.24				1146.07	1145.93	1145.38	
KFM01D	2006-09-05 12:33	2006-09-05 13:54	133.60	153.60	89.72	132.60	823.08	823.63	823.08				
KFM01D	2006-09-05 12:33	2006-09-05 13:54	133.60	153.60	154.60	800.24				1315.54	1315.40	1314.86	
KFM01D	2006-09-05 14:11	2006-09-05 15:24	153.60	173.60	89.72	152.60	821.90	821.09	820.27				
KFM01D	2006-09-05 14:11	2006-09-05 15:24	153.60	173.60	174.60	800.24				1477.16	1476.89	1476.62	
KFM01D	2006-09-05 15:45	2006-09-05 17:01	173.60	193.60	89.72	172.60	821.82	821.14	820.73				
KFM01D	2006-09-05 15:45	2006-09-05 17:01	173.60	193.60	194.60	800.24				1636.45	1636.18	1636.18	
KFM01D	2006-09-05 17:19	2006-09-05 18:33	193.60	213.60	89.72	192.60	821.60	820.78	820.10				
KFM01D	2006-09-05 17:19	2006-09-05 18:33	193.60	213.60	214.60	800.24				1795.88	1795.74	1795.19	
KFM01D	2006-09-05 18:49	2006-09-05 19:42	213.60	233.60	89.72	212.60	820.02	820.02	820.02				
KFM01D	2006-09-05 18:49	2006-09-05 19:42	213.60	233.60	234.60	800.24				1953.64	1953.64	1953.64	
KFM01D	2006-09-05 20:00	2006-09-05 21:18	233.60	253.60	89.72	232.60	818.70	817.88	817.74				

idcode	start_date	stop_date	secup	seclow	obs_secup	obs_seclow	pi_above	pp_above	pf_above	pi_below	pp_below	pf_below	comments
KFM01D	2006-09-05 20:00	2006-09-05 21:18	233.60	253.60	254.60	800.24				2111.56	2111.15	2111.01	
KFM01D	2006-09-12 13:59	2006-09-12 15:14	253.60	273.60	89.72	252.60	804.66	806.03	807.26				
KFM01D	2006-09-12 13:59	2006-09-12 15:14	253.60	273.60	274.60	800.24				2249.25	2250.08	2250.21	
KFM01D	2006-09-05 23:17	2006-09-06 07:09	273.60	293.60	89.72	272.60	809.91	809.91	809.91				
KFM01D	2006-09-05 23:17	2006-09-06 07:09	273.60	293.60	294.60	800.24				2422.98	2422.84	2422.43	
KFM01D	2006-09-06 07:33	2006-09-06 08:51	293.60	313.60	89.72	292.60	807.64	807.64	807.09				
KFM01D	2006-09-06 07:33	2006-09-06 08:51	293.60	313.60	314.60	800.24				2576.35	2583.23	2585.29	
KFM01D	2006-09-06 09:14	2006-09-06 10:32	313.60	333.60	89.72	312.60	811.38	813.03	812.47				
KFM01D	2006-09-06 09:14	2006-09-06 10:32	313.60	333.60	334.60	800.24				2734.13	2736.05	2734.95	
KFM01D	2006-09-06 11:09	2006-09-06 13:10	333.60	353.60	89.72	332.60	807.47	806.38	805.83				
KFM01D	2006-09-06 11:09	2006-09-06 13:10	333.60	353.60	354.60	800.24				2889.02	2889.57	2889.02	
KFM01D	2006-09-06 13:28	2006-09-06 14:48	353.60	373.60	89.72	352.60	797.53	796.98	795.89				
KFM01D	2006-09-06 13:28	2006-09-06 14:48	353.60	373.60	374.60	800.24				3041.14	3043.62	3044.17	
KFM01D	2006-09-06 15:19	2006-09-06 16:34	373.60	393.60	89.72	372.60	788.55	788.15	787.05				
KFM01D	2006-09-06 15:19	2006-09-06 16:34	373.60	393.60	394.60	800.24				3193.83	3193.97	3193.83	
KFM01D	2006-09-06 17:10	2006-09-06 18:00	393.60	413.60	89.72	392.60	779.17	778.89	778.76				
KFM01D	2006-09-06 17:10	2006-09-06 18:00	393.60	413.60	414.60	800.24				3345.14	3345.14	3345.14	
KFM01D	2006-09-06 18:15	2006-09-06 19:33	413.60	433.60	89.72	412.60	770.46	769.91	769.91				
KFM01D	2006-09-06 18:15	2006-09-06 19:33	413.60	433.60	434.60	800.24				3495.90	3498.65	3499.20	
KFM01D	2006-09-06 19:55	2006-09-06 21:16	433.60	453.60	89.72	432.60	762.85	762.58	762.17				
KFM01D	2006-09-06 19:55	2006-09-06 21:16	433.60	453.60	454.60	800.24				3635.10	3633.72	3632.35	
KFM01D	2006-09-06 21:33	2006-09-06 22:49	453.60	473.60	89.72	452.60	754.42	753.87	753.87				
KFM01D	2006-09-06 21:33	2006-09-06 22:49	453.60	473.60	474.60	800.24				3779.26	3777.33	3775.95	
KFM01D	2006-09-12 09:57	2006-09-12 11:12	473.60	493.60	89.72	472.60	577.80	578.75	579.71				
KFM01D	2006-09-12 09:57	2006-09-12 11:12	473.60	493.60	494.60	800.24				3770.59	3769.91	3769.35	
KFM01D	2006-09-07 09:30	2006-09-07 10:19	493.60	513.60	89.72	492.60	729.20	729.20	729.07				
KFM01D	2006-09-07 09:30	2006-09-07 10:19	493.60	513.60	514.60	800.24				4066.33	4065.51	4065.37	
KFM01D	2006-09-07 10:36	2006-09-07 11:22	513.60	533.60	89.72	512.60	718.04	718.18	717.49				
KFM01D	2006-09-07 10:36	2006-09-07 11:22	513.60	533.60	534.60	800.24				4215.03	4215.03	4214.47	
KFM01D	2006-09-07 12:47	2006-09-07 13:32	533.60	553.60	89.72	532.60	706.46	706.46	706.46				
KFM01D	2006-09-07 12:47	2006-09-07 13:32	533.60	553.60	554.60	800.24				4364.68	4364.41	4363.58	
KFM01D	2006-09-07 13:53	2006-09-07 15:18	553.60	573.60	89.72	552.60	694.75	694.33	693.79				

idcode	start_date	stop_date	secup	seclow	obs_secup	obs_seclow	pi_above	pp_above	pf_above	pi_below	pp_below	pf_below	comments
KFM01D	2006-09-07 13:53	2006-09-07 15:18	553.60	573.60	574.60	800.24				4528.37	4523.14	4519.84	
KFM01D	2006-09-07 15:37	2006-09-07 16:23	573.60	593.60	89.72	572.60	681.65	681.38	681.65				
KFM01D	2006-09-07 15:37	2006-09-07 16:23	573.60	593.60	594.60	800.24				4680.10	4678.86	4676.66	
KFM01D	2006-09-07 16:49	2006-09-08 08:28	593.60	613.60	89.72	592.60	667.34	667.21	667.34				
KFM01D	2006-09-07 16:49	2006-09-08 08:28	593.60	613.60	614.60	800.24				4798.66	4798.94	4798.80	
KFM01D	2006-09-08 08:50	2006-09-08 09:37	613.60	633.60	89.72	612.60	654.12	654.12	654.12				
KFM01D	2006-09-08 08:50	2006-09-08 09:37	613.60	633.60	634.60	800.24				4982.02	4975.42	4972.12	
KFM01D	2006-09-08 09:55	2006-09-08 10:43	633.60	653.60	89.72	632.60	640.49	640.35	640.35				
KFM01D	2006-09-08 09:55	2006-09-08 10:43	633.60	653.60	654.60	800.24				5114.63	5112.43	5110.78	
KFM01D	2006-09-08 11:00	2006-09-08 11:42	653.60	673.60	89.72	652.60	625.90	625.62	626.04				
KFM01D	2006-09-08 11:00	2006-09-08 11:42	653.60	673.60	674.60	800.24				5285.20	5284.64	5278.03	
KFM01D	2006-09-08 13:30	2006-09-08 14:50	668.60	688.60	89.72	667.60	614.75	613.93	614.07				
KFM01D	2006-09-08 13:30	2006-09-08 14:50	668.60	688.60	689.60	800.24				5426.74	5397.99	5383.13	
KFM01D	2006-09-08 11:00	2006-09-08 11:42	653.60	673.60	89.72	652.60	625.90	625.62	626.04				
KFM01D	2006-09-08 11:00	2006-09-08 11:42	653.60	673.60	674.60	800.24				5285.20	5284.64	5278.03	
KFM01D	2006-09-08 13:30	2006-09-08 14:50	668.60	688.60	89.72	667.60	614.75	613.93	614.07				
KFM01D	2006-09-08 13:30	2006-09-08 14:50	668.60	688.60	689.60	800.24				5426.74	5397.99	5383.13	
KFM01D	2006-09-08 15:08	2006-09-08 16:23	688.60	708.60	89.72	687.60	599.34	598.52	598.66				
KFM01D	2006-09-08 15:08	2006-09-08 16:23	688.60	708.60	709.60	800.24				5657.41	5658.24	5656.58	
KFM01D	2006-09-08 16:42	2006-09-08 17:24	708.60	728.60	89.72	707.60	582.70	582.70	582.16				
KFM01D	2006-09-08 16:42	2006-09-08 17:24	708.60	728.60	729.60	800.24				5823.84	5825.64	5825.50	
KFM01D	2006-09-11 08:38	2006-09-11 09:24	728.60	748.60	89.72	727.60	554.84	554.56	554.15				
KFM01D	2006-09-11 08:38	2006-09-11 09:24	728.60	748.60	749.60	800.24				6096.21	6102.95	6107.76	
KFM01D	2006-09-11 09:48	2006-09-11 10:33	748.60	768.60	89.72	747.60	537.24	537.10	537.10				
KFM01D	2006-09-11 09:48	2006-09-11 10:33	748.60	768.60	769.60	800.24				6453.57	6458.80	6460.99	
KFM01D	2006-09-11 13:02	2006-09-11 13:50	768.60	788.60	89.72	767.60	517.99	518.26	517.86				
KFM01D	2006-09-11 13:02	2006-09-11 13:50	768.60	788.60	789.60	800.24				6543.81	6552.75	6551.23	
KFM01D	2006-09-14 09:08	2006-09-14 10:32	93.60	98.60	89.72	92.60	814.45	814.45	814.45				
KFM01D	2006-09-14 09:08	2006-09-14 10:32	93.60	98.60	99.60	800.24				866.42	866.42	865.87	
KFM01D	2006-09-14 10:50	2006-09-14 12:04	98.60	103.60	89.72	97.60	813.89	813.75	814.29				

idcode	start_date	stop_date	secup	seclow	obs_secup	obs_seclow	pi_above	pp_above	pf_above	pi_below	pp_below	pf_below	comments
KFM01D	2006-09-14 10:50	2006-09-14 12:04	98.60	103.60	104.60	800.24				907.14	907.01	907.14	
KFM01D	2006-09-27 12:42	2006-09-27 13:59	103.60	108.60	89.72	102.60	814.14	814.14	814.14				
KFM01D	2006-09-27 12:42	2006-09-27 13:59	103.60	108.60	109.60	800.24				945.12	947.32	946.76	
KFM01D	2006-09-14 13:49	2006-09-14 15:03	108.60	113.60	89.72	107.60	818.36	818.91	818.91				
KFM01D	2006-09-14 13:49	2006-09-14 15:03	108.60	113.60	114.60	800.24				989.13	988.99	988.57	
KFM01D	2006-09-14 15:14	2006-09-14 15:55	113.60	118.60	89.72	112.60	817.11	816.84	817.11				
KFM01D	2006-09-14 15:14	2006-09-14 15:55	113.60	118.60	119.60	800.24				1029.84	1029.70	1029.84	
KFM01D	2006-09-14 16:02	2006-09-14 17:16	118.60	123.60	89.72	117.60	816.95	820.78	821.88				
KFM01D	2006-09-14 16:02	2006-09-14 17:16	118.60	123.60	124.60	800.24				1069.59	1070.00	1070.00	
KFM01D	2006-09-27 10:25	2006-09-27 11:41	123.60	128.60	89.72	122.60	813.51	814.60	814.60				
KFM01D	2006-09-27 10:25	2006-09-27 11:41	123.60	128.60	129.60	800.24				1105.77	1106.32	1106.87	
KFM01D	2006-09-27 09:02	2006-09-27 10:16	128.60	133.60	89.72	127.60	813.35	813.35	813.90				
KFM01D	2006-09-27 09:02	2006-09-27 10:16	128.60	133.60	134.60	800.24				1143.87	1144.83	1145.38	
KFM01D	2006-09-15 10:06	2006-09-15 10:46	133.60	138.60	89.72	132.60	819.76	819.76	819.76				
KFM01D	2006-09-15 10:06	2006-09-15 10:46	133.60	138.60	139.60	800.24				1192.16	1192.16	1192.16	
KFM01D	2006-09-15 11:00	2006-09-15 12:16	138.60	143.60	89.72	137.60	820.15	820.15	820.15				
KFM01D	2006-09-15 11:00	2006-09-15 12:16	138.60	143.60	144.60	800.24				1232.32	1232.32	1232.32	
KFM01D	2006-09-15 13:09	2006-09-15 14:25	143.60	148.60	89.72	142.60	819.99	820.54	819.99				
KFM01D	2006-09-15 13:09	2006-09-15 14:25	143.60	148.60	149.60	800.24				1272.48	1273.03	1272.48	
KFM01D	2006-09-15 15:12	2006-09-15 16:27	148.60	153.60	89.72	147.60	819.84	819.84	819.84				
KFM01D	2006-09-15 15:12	2006-09-15 16:27	148.60	153.60	154.60	800.24				1313.20	1312.93	1312.66	
KFM01D	2006-09-18 08:20	2006-09-18 09:38	153.60	158.60	89.72	152.60	818.04	818.04	818.04				
KFM01D	2006-09-18 08:20	2006-09-18 09:38	153.60	158.60	159.60	800.24				1350.61	1350.61	1350.07	
KFM01D	2006-09-18 09:50	2006-09-18 10:31	158.60	163.60	89.72	157.60	818.43	818.43	818.43				
KFM01D	2006-09-18 09:50	2006-09-18 10:31	158.60	163.60	164.60	800.24				1391.32	1391.32	1391.32	
KFM01D	2006-09-18 10:44	2006-09-18 11:26	163.60	168.60	89.72	162.60	818.82	818.82	818.82				
KFM01D	2006-09-18 10:44	2006-09-18 11:26	163.60	168.60	169.60	800.24				1431.63	1431.77	1431.49	
KFM01D	2006-09-18 11:39	2006-09-18 13:45	168.60	173.60	89.72	167.60	819.34	819.48	819.20				
KFM01D	2006-09-18 11:39	2006-09-18 13:45	168.60	173.60	174.60	800.24				1472.22	1471.80	1472.22	
KFM01D	2006-09-18 13:58	2006-09-18 15:20	173.60	178.60	89.72	172.60	819.59	819.59	819.59				
KFM01D	2006-09-18 13:58	2006-09-18 15:20	173.60	178.60	179.60	800.24				1512.52	1512.38	1512.38	
KFM01D	2006-09-18 15:33	2006-09-18 16:54	178.60	183.60	89.72	177.60	819.58	819.30	819.44				

idcode	start_date	stop_date	secup	seclow	obs_secup	obs_seclow	pi_above	pp_above	pf_above	pi_below	pp_below	pf_below	comments
KFM01D	2006-09-18 15:33	2006-09-18 16:54	178.60	183.60	184.60	800.24				1552.54	1552.54	1551.99	
KFM01D	2006-09-19 06:04	2006-09-19 07:22	183.60	188.60	89.72	182.60	818.18	818.18	818.18				
KFM01D	2006-09-19 06:04	2006-09-19 07:22	183.60	188.60	189.60	800.24				1589.96	1589.96	1589.96	
KFM01D	2006-09-19 07:41	2006-09-19 09:04	188.60	193.60	89.72	187.60	818.71	818.58	818.58				
KFM01D	2006-09-19 07:41	2006-09-19 09:04	188.60	193.60	194.60	800.24				1630.54	1630.40	1630.68	
KFM01D	2006-09-27 07:16	2006-09-27 08:32	193.60	198.60	89.72	192.60	818.97	818.97	819.51				
KFM01D	2006-09-27 07:16	2006-09-27 08:32	193.60	198.60	199.60	800.24				1665.89	1665.89	1666.43	
KFM01D	2006-09-19 11:01	2006-09-19 12:38	198.60	203.60	89.72	197.60	818.94	818.80	818.80				
KFM01D	2006-09-19 11:01	2006-09-19 12:38	198.60	203.60	204.60	800.24				1710.72	1710.86	1711.00	
KFM01D	2006-09-19 12:53	2006-09-19 13:40	203.60	208.60	89.72	202.60	818.78	818.78	818.65				
KFM01D	2006-09-19 12:53	2006-09-19 13:40	203.60	208.60	209.60	800.24				1750.62	1750.62	1751.17	
KFM01D	2006-09-19 13:58	2006-09-19 14:41	208.60	213.60	89.72	207.60	818.76	818.49	818.49				
KFM01D	2006-09-19 13:58	2006-09-19 14:41	208.60	213.60	214.60	800.24				1790.79	1790.79	1790.79	
KFM01D	2006-09-19 15:22	2006-09-19 16:05	233.60	238.60	89.72	232.60	817.70	817.70	817.70				
KFM01D	2006-09-19 15:22	2006-09-19 16:05	233.60	238.60	239.60	800.24				1989.41	1989.41	1989.41	
KFM01D	2006-09-19 16:15	2006-09-19 17:33	238.60	243.60	89.72	237.60	817.13	816.45	816.44				
KFM01D	2006-09-19 16:15	2006-09-19 17:33	238.60	243.60	244.60	800.24				2028.62	2028.48	2028.48	
KFM01D	2006-09-19 17:48	2006-09-19 18:33	243.60	248.60	89.72	242.60	816.97	816.69	816.29				
KFM01D	2006-09-19 17:48	2006-09-19 18:33	243.60	248.60	249.60	800.24				2068.10	2068.24	2068.10	
KFM01D	2006-09-19 18:42	2006-09-19 19:26	248.60	253.60	89.72	247.60	816.13	816.13	816.13				
KFM01D	2006-09-19 18:42	2006-09-19 19:26	248.60	253.60	254.60	800.24				2107.71	2107.85	2107.71	
KFM01D	2006-09-19 19:36	2006-09-19 21:12	253.60	258.60	89.72	252.60	815.57	815.43	815.43				
KFM01D	2006-09-19 19:36	2006-09-19 21:12	253.60	258.60	259.60	800.24				2147.32	2147.19	2147.32	
KFM01D	2006-09-19 21:22	2006-09-19 22:38	258.60	263.60	89.72	257.60	814.86	814.72	814.72				
KFM01D	2006-09-19 21:22	2006-09-19 22:38	258.60	263.60	264.60	800.24				2186.40	2186.40	2186.40	
KFM01D	2006-09-26 22:13	2006-09-26 23:30	263.60	268.60	89.72	262.60	809.91	811.28	811.83				
KFM01D	2006-09-26 22:13	2006-09-26 23:30	263.60	268.60	269.60	800.24				2213.90	2215.00	2215.54	
KFM01D	2006-09-20 06:18	2006-09-20 06:59	268.60	273.60	89.72	267.60	813.17	813.04	812.77				
KFM01D	2006-09-20 06:18	2006-09-20 06:59	268.60	273.60	274.60	800.24				2263.96	2263.96	2263.96	
KFM01D	2006-09-20 07:22	2006-09-20 08:05	293.60	298.60	89.72	292.60	808.69	808.69	808.69				
KFM01D	2006-09-20 07:22	2006-09-20 08:05	293.60	298.60	299.60	800.24				2459.30	2459.30	2459.30	
KFM01D	2006-09-20 08:16	2006-09-20 09:30	298.60	303.60	89.72	297.60	807.44	807.44	807.44				

idcode	start_date	stop_date	secup	seclow	obs_secup	obs_seclow	pi_above	pp_above	pf_above	pi_below	pp_below	pf_below	comments
KFM01D	2006-09-20 08:16	2006-09-20 09:30	298.60	303.60	304.60	800.24				2497.81	2497.81	2497.81	
KFM01D	2006-09-20 09:42	2006-09-20 11:01	303.60	308.60	89.72	302.60	805.91	806.74	806.18				
KFM01D	2006-09-20 09:42	2006-09-20 11:01	303.60	308.60	309.60	800.24				2536.33	2544.57	2546.23	
KFM01D	2006-09-20 11:10	2006-09-20 12:45	308.60	313.60	89.72	307.60	811.51	811.37	810.95				
KFM01D	2006-09-20 11:10	2006-09-20 12:45	308.60	313.60	314.60	800.24				2580.35	2580.35	2579.79	
KFM01D	2006-09-20 12:55	2006-09-20 14:09	313.60	318.60	89.72	312.60	808.05	810.66	810.24				
KFM01D	2006-09-20 12:55	2006-09-20 14:09	313.60	318.60	319.60	800.24				2617.76	2619.96	2618.30	
KFM01D	2006-09-20 14:21	2006-09-20 15:05	318.60	323.60	89.72	317.60	814.34	813.92	813.92				
KFM01D	2006-09-20 14:21	2006-09-20 15:05	318.60	323.60	324.60	800.24				2657.37	2657.37	2657.37	
KFM01D	2006-09-20 15:26	2006-09-20 16:13	323.60	328.60	89.72	322.60	809.12	808.84	808.84				
KFM01D	2006-09-20 15:26	2006-09-20 16:13	323.60	328.60	329.60	800.24				2696.16	2695.89	2696.44	
KFM01D	2006-09-20 16:24	2006-09-20 17:40	328.60	333.60	89.72	327.60	805.95	805.13	804.30				
KFM01D	2006-09-20 16:24	2006-09-20 17:40	328.60	333.60	334.60	800.24				2734.41	2734.13	2734.41	
KFM01D	2006-09-20 17:50	2006-09-20 19:06	333.60	338.60	89.72	332.60	801.96	801.54	800.86				
KFM01D	2006-09-20 17:50	2006-09-20 19:06	333.60	338.60	339.60	800.24				2771.82	2771.82	2771.82	
KFM01D	2006-09-20 19:15	2006-09-20 20:23	338.60	343.60	89.72	337.60	799.06	798.79	798.52				
KFM01D	2006-09-20 19:15	2006-09-20 20:23	338.60	343.60	344.60	800.24				2809.77	2809.77	2809.77	
KFM01D	2006-09-20 20:40	2006-09-20 21:39	343.60	348.60	89.72	342.60	797.26	796.85	796.72				
KFM01D	2006-09-20 20:40	2006-09-20 21:39	343.60	348.60	349.60	800.24				2847.33	2847.19	2847.74	
KFM01D	2006-09-20 21:49	2006-09-20 23:12	348.60	353.60	89.72	347.60	795.05	794.91	794.91				
KFM01D	2006-09-20 21:49	2006-09-20 23:12	348.60	353.60	354.60	800.24				2885.71	2886.26	2885.71	
KFM01D	2006-09-20 23:21	2006-09-21 07:20	353.60	358.60	89.72	352.60	791.47	791.61	791.47				
KFM01D	2006-09-20 23:21	2006-09-21 07:20	353.60	358.60	359.60	800.24				2923.13	2923.13	2922.58	
KFM01D	2006-09-21 07:34	2006-09-21 08:51	358.60	363.60	89.72	357.60	790.22	789.81	790.22				
KFM01D	2006-09-21 07:34	2006-09-21 08:51	358.60	363.60	364.60	800.24				2960.13	2960.27	2960.00	
KFM01D	2006-09-21 09:07	2006-09-21 09:52	363.60	368.60	89.72	362.60	788.42	788.42	788.42				
KFM01D	2006-09-21 09:07	2006-09-21 09:52	363.60	368.60	369.60	800.24				2997.95	2997.95	2997.95	
KFM01D	2006-09-21 10:05	2006-09-21 11:20	368.60	373.60	89.72	367.60	786.62	786.62	786.62				
KFM01D	2006-09-21 10:05	2006-09-21 11:20	368.60	373.60	374.60	800.24				3035.64	3038.66	3039.22	
KFM01D	2006-09-21 12:14	2006-09-21 13:32	373.60	378.60	89.72	372.60	785.09	784.82	784.27				
KFM01D	2006-09-21 12:14	2006-09-21 13:32	373.60	378.60	379.60	800.24				3074.43	3074.98	3074.98	
KFM01D	2006-09-21 13:52	2006-09-21 15:09	378.60	383.60	89.72	377.60	783.02	782.47	782.47				

idcode	start_date	stop_date	secup	seclow	obs_secup	obs_seclow	pi_above	pp_above	pf_above	pi_below	pp_below	pf_below	comments
KFM01D	2006-09-21 13:52	2006-09-21 15:09	378.60	383.60	384.60	800.24				3111.84	3112.40	3112.40	
KFM01D	2006-09-21 15:21	2006-09-21 16:35	383.60	388.60	89.72	382.60	780.81	780.26	780.12				
KFM01D	2006-09-21 15:21	2006-09-21 16:35	383.60	388.60	389.60	800.24				3149.82	3149.95	3149.82	
KFM01D	2006-09-21 16:45	2006-09-21 18:02	388.60	393.60	89.72	387.60	778.46	778.32	778.32				
KFM01D	2006-09-21 16:45	2006-09-21 18:02	388.60	393.60	394.60	800.24				3187.79	3187.79	3187.79	
KFM01D	2006-09-21 18:22	2006-09-21 19:47	413.60	418.60	89.72	412.60	768.91	768.37	768.23				
KFM01D	2006-09-21 18:22	2006-09-21 19:47	413.60	418.60	419.60	800.24				3378.15	3378.15	3378.15	
KFM01D	2006-09-21 19:55	2006-09-21 21:22	418.60	423.60	89.72	417.60	766.43	766.16	765.88				
KFM01D	2006-09-21 19:55	2006-09-21 21:22	418.60	423.60	424.60	800.24				3416.11	3416.11	3415.57	
KFM01D	2006-09-21 21:31	2006-09-21 22:22	423.60	428.60	89.72	422.60	764.22	764.08	764.08				
KFM01D	2006-09-21 21:31	2006-09-21 22:22	423.60	428.60	429.60	800.24				3453.53	3453.67	3453.53	
KFM01D	2006-09-21 22:32	2006-09-21 23:47	428.60	433.60	89.72	427.60	762.42	762.15	762.28				
KFM01D	2006-09-21 22:32	2006-09-21 23:47	428.60	433.60	434.60	800.24				3490.94	3493.70	3494.80	
KFM01D	2006-09-22 08:26	2006-09-22 09:46	433.60	438.60	89.72	432.60	760.48	760.48	760.48				
KFM01D	2006-09-22 08:26	2006-09-22 09:46	433.60	438.60	439.60	800.24				3519.83	3519.01	3517.91	
KFM01D	2006-09-22 10:01	2006-09-22 10:57	438.60	443.60	89.72	437.60	758.68	758.68	758.68				
KFM01D	2006-09-22 10:01	2006-09-22 10:57	438.60	443.60	444.60	800.24				3555.87	3555.60	3555.33	
KFM01D	2006-09-26 20:17	2006-09-26 21:04	443.60	448.60	89.72	442.60	750.86	750.86	750.86				
KFM01D	2006-09-26 20:17	2006-09-26 21:04	443.60	448.60	449.60	800.24				3592.04	3592.04	3591.64	
KFM01D	2006-09-22 12:43	2006-09-22 13:29	448.60	453.60	89.72	447.60	755.22	755.08	755.08				
KFM01D	2006-09-22 12:43	2006-09-22 13:29	448.60	453.60	454.60	800.24				3632.35	3632.35	3631.79	
KFM01D	2006-09-22 13:39	2006-09-22 14:22	453.60	458.60	89.72	452.60	753.42	753.28	752.73				
KFM01D	2006-09-22 13:39	2006-09-22 14:22	453.60	458.60	459.60	800.24				3670.86	3670.45	3670.31	
KFM01D	2006-09-22 14:58	2006-09-22 16:18	458.60	463.60	89.72	457.60	751.07	750.93	750.93				
KFM01D	2006-09-22 14:58	2006-09-22 16:18	458.60	463.60	464.60	800.24				3707.32	3706.08	3704.98	
KFM01D	2006-09-22 16:27	2006-09-22 17:16	463.60	468.60	89.72	462.60	748.72	748.58	748.58				
KFM01D	2006-09-22 16:27	2006-09-22 17:16	463.60	468.60	469.60	800.24				3742.81	3742.94	3742.39	
KFM01D	2006-09-25 08:19	2006-09-25 08:59	468.60	473.60	89.72	467.60	745.56	745.56	745.15				
KFM01D	2006-09-25 08:19	2006-09-25 08:59	468.60	473.60	474.60	800.24				3782.69	3783.11	3782.56	
KFM01D	2006-09-25 09:08	2006-09-25 10:22	473.60	478.60	89.72	472.60	743.35	742.93	742.80				
KFM01D	2006-09-25 09:08	2006-09-25 10:22	473.60	478.60	479.60	800.24				3819.70	3818.60	3817.77	
KFM01D	2006-09-25 10:29	2006-09-25 11:09	478.60	483.60	89.72	477.60	740.86	740.45	740.45				

idcode	start_date	stop_date	secup	seclow	obs_secup	obs_seclow	pi_above	pp_above	pf_above	pi_below	pp_below	pf_below	comments
KFM01D	2006-09-25 10:29	2006-09-25 11:09	478.60	483.60	484.60	800.24				3856.01	3856.15	3855.74	
KFM01D	2006-09-25 11:17	2006-09-25 12:47	483.60	488.60	89.72	482.60	737.97	737.69	737.56				
KFM01D	2006-09-25 11:17	2006-09-25 12:47	483.60	488.60	489.60	800.24				3890.68	3890.95	3890.40	
KFM01D	2006-09-25 12:58	2006-09-25 13:42	488.60	493.60	89.72	487.60	735.21	735.21	735.21				
KFM01D	2006-09-25 12:58	2006-09-25 13:42	488.60	493.60	494.60	800.24				3929.46	3929.19	3928.91	
KFM01D	2006-09-25 14:16	2006-09-25 14:59	553.60	558.60	89.72	552.60	699.36	698.95	698.67				
KFM01D	2006-09-25 14:16	2006-09-25 14:59	553.60	558.60	559.60	800.24				4413.66	4413.10	4413.10	
KFM01D	2006-09-25 15:11	2006-09-25 15:55	558.60	563.60	89.72	557.60	695.77	695.77	695.23				
KFM01D	2006-09-25 15:11	2006-09-25 15:55	558.60	563.60	564.60	800.24				4449.97	4449.83	4449.41	
KFM01D	2006-09-25 16:04	2006-09-25 16:48	563.60	568.60	89.72	562.60	692.47	692.34	692.34				
KFM01D	2006-09-25 16:04	2006-09-25 16:48	563.60	568.60	569.60	800.24				4486.42	4486.14	4485.18	
KFM01D	2006-09-26 06:11	2006-09-26 07:25	568.60	573.60	89.72	567.60	687.38	686.70	686.70				
KFM01D	2006-09-26 06:11	2006-09-26 07:25	568.60	573.60	574.60	800.24				4540.75	4534.42	4530.85	
KFM01D	2006-09-26 08:21	2006-09-26 09:37	673.60	678.60	89.72	672.60	614.97	613.87	613.32				
KFM01D	2006-09-26 08:21	2006-09-26 09:37	673.60	678.60	679.60	800.24				5326.59	5319.31	5315.45	
KFM01D	2006-09-26 09:45	2006-09-26 10:59	678.60	683.60	89.72	677.60	609.88	608.78	608.24				
KFM01D	2006-09-26 09:45	2006-09-26 10:59	678.60	683.60	684.60	800.24				5363.05	5353.42	5347.36	
KFM01D	2006-09-26 11:08	2006-09-26 12:25	683.60	688.60	89.72	682.60	604.52	604.25	604.25				
KFM01D	2006-09-26 11:08	2006-09-26 12:25	683.60	688.60	689.60	800.24				5399.64	5398.54	5395.79	
KFM01D	2006-09-26 12:34	2006-09-26 13:15	687.60	692.60	89.72	686.60	601.44	601.16	600.62				
KFM01D	2006-09-26 12:34	2006-09-26 13:15	687.60	692.60	693.60	800.24				5428.80	5427.15	5424.40	
KFM01D	2006-09-26 13:28	2006-09-26 14:43	692.60	697.60	89.72	691.60	597.45	596.77	596.63				
KFM01D	2006-09-26 13:28	2006-09-26 14:43	692.60	697.60	698.60	800.24				5498.12	5497.30	5495.93	
KFM01D	2006-09-26 15:24	2006-09-26 16:09	697.60	702.60	89.72	696.60	592.51	591.69	591.55				
KFM01D	2006-09-26 15:24	2006-09-26 16:09	697.60	702.60	703.60	800.24				5594.96	5595.37	5595.51	
KFM01D	2006-09-26 16:17	2006-09-26 16:58	698.60	703.60	89.72	697.60	592.15	591.33	591.74				
KFM01D	2006-09-26 16:17	2006-09-26 16:58	698.60	703.60	704.60	800.24				5614.77	5615.32	5615.32	
KFM01D	2006-09-26 17:10	2006-09-26 17:52	703.60	708.60	89.72	702.60	588.02	587.20	587.20				
KFM01D	2006-09-26 17:10	2006-09-26 17:52	703.60	708.60	709.60	800.24				5659.34	5659.75	5659.34	
KFM01D	2006-08-28 14:47	2006-08-28 16:40	93.60	193.60	91.72	92.60	817.64	817.78	817.23				Incomplete test, interrupted and re-performed later.

idcode	start_date	stop_date	secup	seclow	obs_secup	obs_seclow	pi_above	pp_above	pf_above	pi_below	pp_below	pf_below	comments
KFM01D	2006-08-28 14:47	2006-08-28 16:40	93.60	193.60	194.60	802.24				1631.78	1631.50	1630.68	Incomplete test, interrupted and re-performed later.
KFM01D	2006-09-05 21:36	2006-09-05 22:54	253.60	273.60	92.72	252.60	816.15	815.47	814.92				Complete test, re-performed later .
KFM01D	2006-09-05 21:36	2006-09-05 22:54	253.60	273.60	274.60	803.24				2268.36	2268.92	2268.92	Complete test, re-performed later .
KFM01D	2006-09-06 23:03	2006-09-07 08:35	473.60	493.60	93.72	472.60	739.01	739.01	739.01				Incomplete test, interrupted and re-performed later.
KFM01D	2006-09-06 23:03	2006-09-07 08:35	473.60	493.60	494.60	804.24				3912.40	3912.68	3912.96	Incomplete test, interrupted and re-performed later.
KFM01D	2006-09-14 12:26	2006-09-14 13:40	103.60	108.60	94.72	102.60	814.14	814.14	814.14				Complete test, re-performed later.
KFM01D	2006-09-14 12:26	2006-09-14 13:40	103.60	108.60	109.60	805.24				947.86	949.10	948.42	Complete test, re-performed later.
KFM01D	2006-09-15 07:51	2006-09-15 08:40	123.60	128.60	95.72	122.60	817.75	818.43	817.89				Incomplete test, interrupted and re-performed later.
KFM01D	2006-09-15 07:51	2006-09-15 08:40	123.60	128.60	129.60	806.24				1110.72	1110.72	1110.72	Incomplete test, interrupted and re-performed later.
KFM01D	2006-09-15 08:54	2006-09-15 09:50	128.60	133.60	96.72	127.60	818.82	818.96	818.82				Incomplete test, interrupted and re-performed later.
KFM01D	2006-09-15 08:54	2006-09-15 09:50	128.60	133.60	134.60	807.24				1151.30	1150.88	1150.88	Incomplete test, interrupted and re-performed later.
KFM01D	2006-09-19 09:23	2006-09-19 10:41	196.60	201.60	97.72	195.60	818.98	818.98	818.98				The test was performed at an incorrect position and therefore not evaluated.
KFM01D	2006-09-19 09:23	2006-09-19 10:41	196.60	201.60	202.60	808.24				1695.05	1695.05	1695.05	The test was performed at an incorrect position and therefore not evaluated.
KFM01D	2006-09-19 22:47	2006-09-20 00:02	263.60	268.60	98.72	262.60	814.15	814.02	814.02				Complete test but not used for analysis
KFM01D	2006-09-19 22:47	2006-09-20 00:02	263.60	268.60	269.60	809.24				2226.01	2226.55	2226.01	Complete test but not used for analysis