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Evaluation of hydraulic interference tests, pumping borehole KLX27A

Subarea Laxemar

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Keywords: Site/project, Hydrogeology, Hydraulic tests, Pump tests, Interference tests, Hydraulic parameters, Transmissivity.

Abstract

Hydraulic interference tests have been performed at the Laxemar area in the active pumping borehole KLX27A in two different sections. During the pumping phase the pressure response in 16 observation boreholes was monitored in up to ten different sections per borehole, which were separated with packers. The tests are part of the general program for site investigations and specifically for the Laxemar subarea. The hydraulic testing programme has the aim to characterise the rock with respect to its hydraulic properties and the interference tests have the purpose to resolve hydraulic connectivity in the fracture network, especially to the selected lineament NW042. Data is subsequently delivered for the site descriptive model.

This report describes the results and primary data evaluation of the interference tests in borehole KLX27A performed between 10th of October and 23rd of November 2007. The tests were executed by SKB during drilling of KLX27A through a wireline tool.

The main objective of the interference testing was to characterize the rock around the borehole with special respect to connectivity of lineaments. Transient evaluation of the flow and recovery period of the constant rate interference pump tests provided additional information such as transmissivities, flow regimes and hydraulic boundaries.

Sammanfattning

Hydrauliska interferenstester har utförts i Laxemarområdet med pumpning i borrhål KLX27A i två sektioner. Under pumpningen har tryckresponsen uppmätts i 16 observationshål i upp till tio sektioner per borrhål med enskild manschett. Hydraultestprogrammet har som mål att karakterisera berget utifrån dess hydrauliska egenskaper och interferenstesterna har som syfte att undersöka konnektiviteten mellan sprickzoner, särskilt till lineament NW042. Erhållna data utgör sedan indata för den platsspecifika modellen.

Följande rapport redovisar resultaten och primärdata från utvärderingen av interferenstesterna i borrhål KLX27A utförda mellan den 10 october till den 23 november 2007. Testerna utfördes av SKB under borrning av KLX27A med en wireline sond.

Huvudsyftet med interferenstesterna var att karakterisera berget i anslutning till borrhålet med avseende på konnektivitet mellan olika lineament. Transient utvärdering av flödes- och återhämtningsfasen för pumptesterna utförda med konstant flöde vid interferenstesten har givit ytterligare information med avseende på transmissivitet, flödesregim och hydrauliska gränser.

Contents

1 Introduction

A general program for site investigations presenting survey methods has been prepared /SKB 2001a/ as well as a site specific program for the investigations in the Laxemar area /SKB 2006/. The hydraulic interference tests form part of the site characterization program in the work breakdown structure of the execution program /SKB 2002/. The execution of the investigations is basically controlled through a general program /SKB 2001a/ and a program specifically for the Oskarshamn location /SKB 2001b/.

This document reports the results and evaluation gained by the hydraulic interference tests (pumping tests) performed in borehole KLX27A, which is one of the activities performed within the site investigation at Oskarshamn. The evaluation was carried out in accordance with activity plan AP PS 400-07-72. A fuller account of the execution of these tests is given in the KLX27A drilling report /Ask et al. 2008/. In Table 1-1 controlling documents for performing this activity are listed. Both activity plan and method descriptions are SKB's internal controlling documents.

Hydraulic interference tests (pumping tests) have been performed by SKB in borehole KLX27A in two different sections with section lengths of 37 m and 11 m. Both sections were separated with packers above and below. Monitoring of pressure response was carried out by SKB in 16 additional boreholes (see Figure 1-1). Monitoring data were delivered by SKB for further analyses.

Measurements were carried out between 10th of October and 23rd of November 2007 in the framework of the drilling of KLX27A according to AP PS 400-07-58) following the methodologies described in SKB MD 321.002 (wireline testing), SKB MD 321.003 (pump tests), SKB MD 330.003 (interference tests), the activity plan AP PS 400-07-72 (SKB internal controlling documents) specifying in detail the interference tests campaign. Data and results were delivered to the SKB site characterization database SICADA where they are traceable by the activity plan number.

Table 1-1. Controlling documents for the performance of the activity.

Activity plan	**Number**	**Version**
Utvärdering och rapporting av interferenstester I KLX27A och KLX19A.	AP PS 400-07-72 (evaluation)	1.0
Kärnborrning KLX27A.	AP PS 400-07-58 (execution)	1.0
Method descriptions	**Number**	**Version**
Analysis of injection and single-hole pumping tests.	SKB MD 320.004e	1.0
Hydraulic injection tests.	SKB MD 323.001	1.0
Metodbeskrivning för Interferenstester.	SKB MD 330.003	1.0
Metodbeskrivning för vattenprovtagning, pumptests och tryckmätning i samband med wireline-borrning.	SKB MD 321.002	1.0
Metodbeskrivning för hydrauliska enhålspumptester.	SKB MD 321.003	1.0
Instruktion för rengöring av borrhålsutrustning och viss markbaserad utrustning.	SKB MD 600.004	1.0
Instruktion för längdkalibrering vid undersökningar I kärnborrhål.	SKB MD 620.010	1.0
Allmänna ordnings-, skydds- och miljöregler för platsundersökningar Oskarshamn.	SKB SDPO-003	1.0
Miljökontrollprogram Platsundersökningar.	SKB SDP-301	1.0
Hantering av primärdata vid platsundersökningar.	SKB SDP-508	1.0

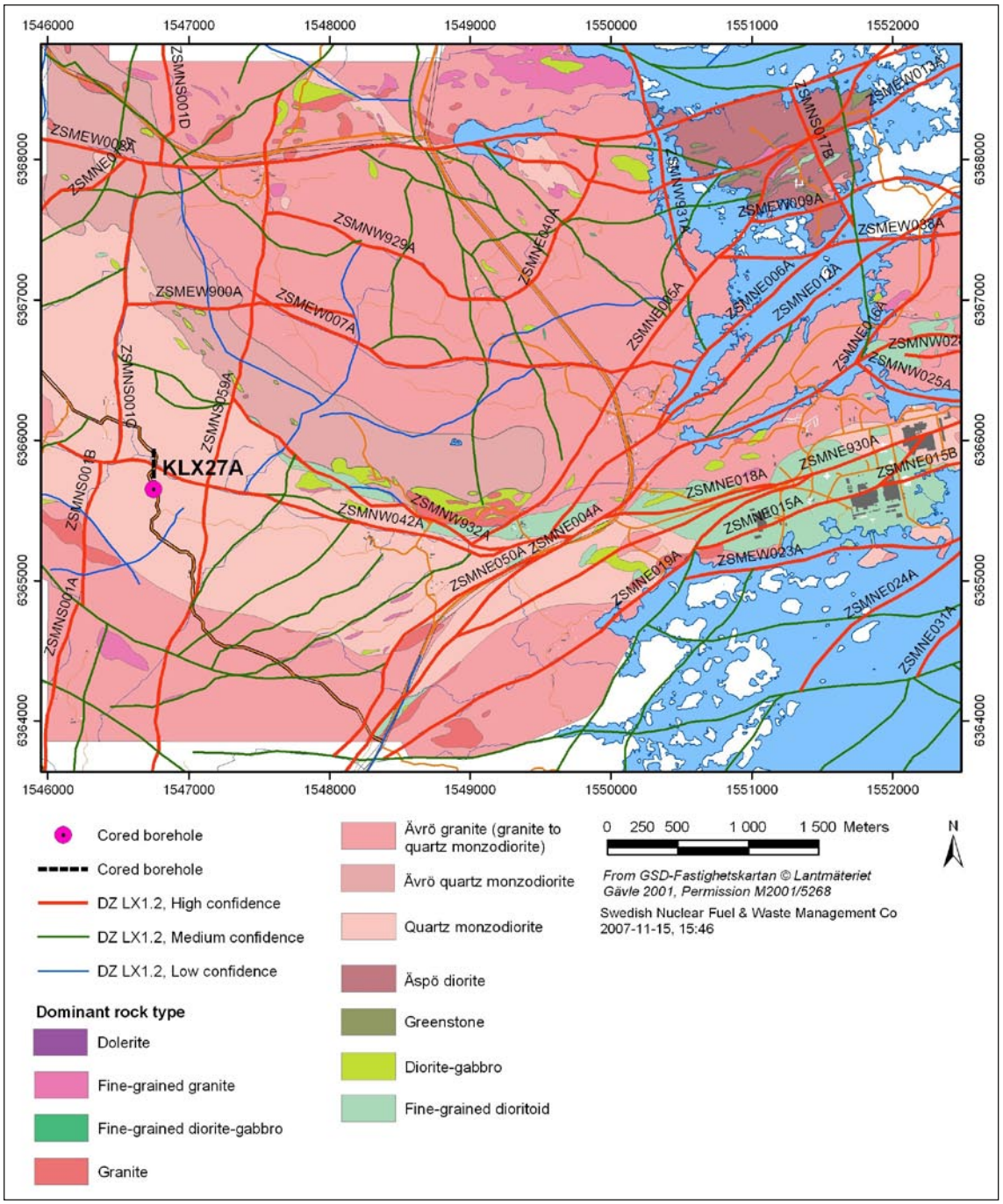

Figure 1-1. *The investigation area Laxemar, Oskarshamn with location of KLX27A.*

The hydraulic testing programme has the aim to characterise the rock with respect to its hydraulic properties of the fractured zones and rock mass between them. This report describes the results and primary data evaluation of the interference tests in borehole KLX27A. The commission was conducted by Golder Associates AB and Golder Associates GmbH.

Borehole KLX27A is situated in the Laxemar area approximately 6 km west of the nuclear power plant of Simpevarp, Figure 1-1. The borehole was drilled from August 2007 to November 2007 at 650.56 m length with an inner diameter of 76 mm and an inclination of –65.37°. The upper 14.76 m is cased with large diameter telescopic casing ranging from diameter (outer diameter) 208–323 mm. The upper 75.60 m of the borehole is percussion drilled with a diameter from 157 mm to 197 mm.

2 Objective and scope

The major objective of the performed testing program was the interference testing in order to resolve the hydraulic connectivity of the fracture network. A special additional objective of the interference tests was to resolve the hydraulic properties of the lineament NW042 and of a diorite dyke which is connected to the lineament NS001. Previous investigations indicated that this diorite dyke may work as hydraulic barrier /Enachescu et al. 2007/.

Both phases of each pump test (perturbation and recovery) were analysed to provide more information to characterize the rock around the borehole (with special consideration of the mentioned lineament NW042) and the hydraulic properties of the Diorite dyke connected to the lineament NS001.

The scope of work consisted of preparation and analysis of data of pumping tests in two different sections (37 m and 11 m section length). The analysis and reporting for this report contains the measurements in KLX27A, as well as the data of the observation boreholes, both recorded, collected and delivered by SKB.

The following pump tests were performed between 10th of October and 23rd of November 2007.

2.1 Conditions that possibly affect the observed responses besides responses due to the source intended to study

Besides the response due to the pumping in KLX27A (source) the observed responses were influenced by following effects:

- all observation holes were influenced by earth-tidal effects,
- all sections of the observation hole HLX32 were influenced by an unknown effect during pumping in KLX27A in section 210–247 m.

2.2 Pumped borehole

Technical data of the borehole KLX27A is shown in Table 2-2. The reference point in the borehole is the centre of top of casing (ToC), given as Elevation in the table below. The Swedish National coordinate system (RT90) is used in the x-y direction and RHB70 in the z-direction. Northing and Easting refer to the top of the boreholes at the ground surface. Information to the observed boreholes was not presented.

Table 2-1. Performed test programme.

Borehole	Priority	Secup [mbToC]	Seclow [mbToC]	Seclen [m]	Duration pumping [h]	Duration recovery [h]
KLX27A		210.00	247.00	37.00	64.0	49.0
KLX27A		639.20	650.56	11.00	15.0	42.5
				Total:	79.0	91.5

Table 2-2. Information about KLX27A (from SICADA 2007-12-12).

Title	Value				
Old idcode name(s):	KLX27A				
Comment:	No comment exists				
Borehole length (m):	650.56				
Reference level:	TOC				
Drilling period(s):	From date	To date	Secup (m)	Seclow (m)	Drilling type
	2007-08-15	2007-08-27	0.16	75.60	Percussion drilling
	2007-10-08	2007-11-21	75.60	650.56	Core drilling
Starting point coordinate:	Length (m)	Northing (m)	Easting (m)	Elevation (masl)	Coord system
(centerpoint of TOC)	0.000	6365608.29	1546742.63	16.98	RT90-RHB70
	3.00	6365609.54	1546742.65	14.25	RT90-RHB70
Angles:	Length (m)	Bearing	Inclination (– = down)		
	0.00	0.73	–65.37	RT90-RHB70	
Borehole diameter:	Secup (m)	Seclow (m)	Hole diam (m)		
	0.16	9.20	0.341		
	9.20	14.76	0.254		
	14.76	73.50	0.197		
	73.50	75.60	0.157		
	75.60	77.02	0.086		
	77.02	650.56	0.076		
Core diameter:	Secup (m)	Seclow (m)	Core diam (m)		
	75.60	76.12	0.072		
	76.12	650.56	0.050		
Casing diameter:	Secup (m)	Seclow (m)	Case in (m)	Case out (m)	
	0.00	14.76	0.200	0.208	
	0.16	9.20	0.310	0.323	
Cone dimensions:	Secup (m)	Seclow (m)	Cone in (m)	Cone out (m)	
	72.28	75.28	0.100	0.104	
	75.28	77.02	0.080	0.084	
Grove milling:	Length (m)	Trace detectable			
	100.00	Yes			
	150.00	Yes			
	200.00	Yes			
	250.00	Yes			
	300.00	Yes			
	350.00	Yes			
	400.00	Yes			
	450.00	Yes			
	500.00	Yes			
	550.00	Yes			
	600.00	Yes			
	630.00	Yes			

2.3 Tests

The tests performed in KLX27A are listed in Table 2-4. They were conducted according to the Activity Plan AP PS 400-07-58 (SKB internal document). All tests were conducted as constant rate pump tests. Interference tests were carried out with additional installation of pressure transducers in selected monitoring boreholes. Groundwater data of further monitoring boreholes were provided by SKB.

Observations were made in the following boreholes (Table 2-3).

2.4 Control of equipment

As the pump tests were not performed by Golder it is just assumed that control of equipment was performed according to a Quality plan. The basis for equipment handling is described in the "Mätssystembeskrivning" SKB MD 345.101–123 which is composed of two parts 1) management description, 2) drawings and technical documents of the modified PSS2 tool.

Table 2-3. Observation boreholes – see Tables 5-2 and 5-3 for distances and responses.

Bh ID	No of Intervals monitored	Log time [s]	Bh ID	No of Intervals monitored	Log time [s]	Bh ID	No of Intervals monitored	Log time [s]
HLX27	3	600	HLX42	2	600	KLX19A	8	600
HLX28	3	600	KLX11A	10	600	KLX20A	6	600
HLX32	3	600	KLX11E	1	7200	KLX23A	2	600
HLX36	2	600	KLX14A	3	600	KLX24A	3	600
HLX37	4	600	KLX15A	9	600			
HLX38	1	600	KLX16A	3	600			

Table 2-4. Tests performed.

Bh ID	Test section (mbToC)	Test type*	Test no	Pump start Date, time (yyyy-mm-dd hh:mm)	Pump stop Date, time (yyyy-mm-dd hh:mm)
KLX27A	210.00–247.00	1B	1	2007-10-18 20:03	2007-10-21 12:01
KLX27A	639.20–650.56	1B	1	2007-11-22 14:30	2007-11-23 05:22

* 1B: pumping test-submersible pump.

3 Equipment

3.1 Description of equipment

The pumping test was performed during drilling through the drillstem, utilising a wireline probe developed by SKB. With this equipment water sampling, pump tests and measurements of absolute pressure in a borehole section can be made without having to lift the drill stem.

The principal components are:

- an inflatable packer,
- pressure gauges for the test section and for the packer,
- a water sampler,
- a submersible pump (placed in the upper part of the drill stem) and
- a flow meter (placed at the ground surface).

The probe is lowered through the drill stem into position at the drill bit. The test section is between the lower end of the packer and the bottom of the borehole, see Figure 3-1.

Before the pumping tests are made leakage tests of the drill string are done.

Hydraulic tests performed during drilling are generally affected to some degree by disturbances caused by the drilling operations. Transients from changes in pressure, temperature and salinity might affect the hydraulic response curves.

Pumping tests

The wireline probe is emplaced at the bottom of the drill stem. A submersible pump is lowered into the upper part of the drill stem at a length of about 40 m. The test section is hydraulically connected to the drill stem by opening a valve at a predetermined pressure. This creates a passage between the test section and the water column in the drill stem. The packer remains expanded during the entire test. Water is pumped from the drill stem and the pressure in the test section and packer are recorded in a data logger. The pumped surface flow rate is recorded in a data logger on the ground surface. The pressure gauge (or pressure transducer) is situated 1.10 m below the lower end of the packer. The test consists of a pressure drawdown phase and a recovery phase.

3.2 Sensors

The following equipment and sensors were utilised in the pumped borehole,

- submersible pump: Grundfoss MP1, range 0.1–35 L/min,
- data logger and absolute pressure transducer RBR DR-1050 with 0–20MPa range and ± 0.05% accuracy of full scale, resolution < 0.001% full scale,
- water level dipper,
- inflatable packer,
- flow gauge: range is 0–83 L/min and an accuracy of ± 0.5% of actual flow value and also ± 0.062% of full scale current (4–20 mA),
- Data logger Campbell CR23X,

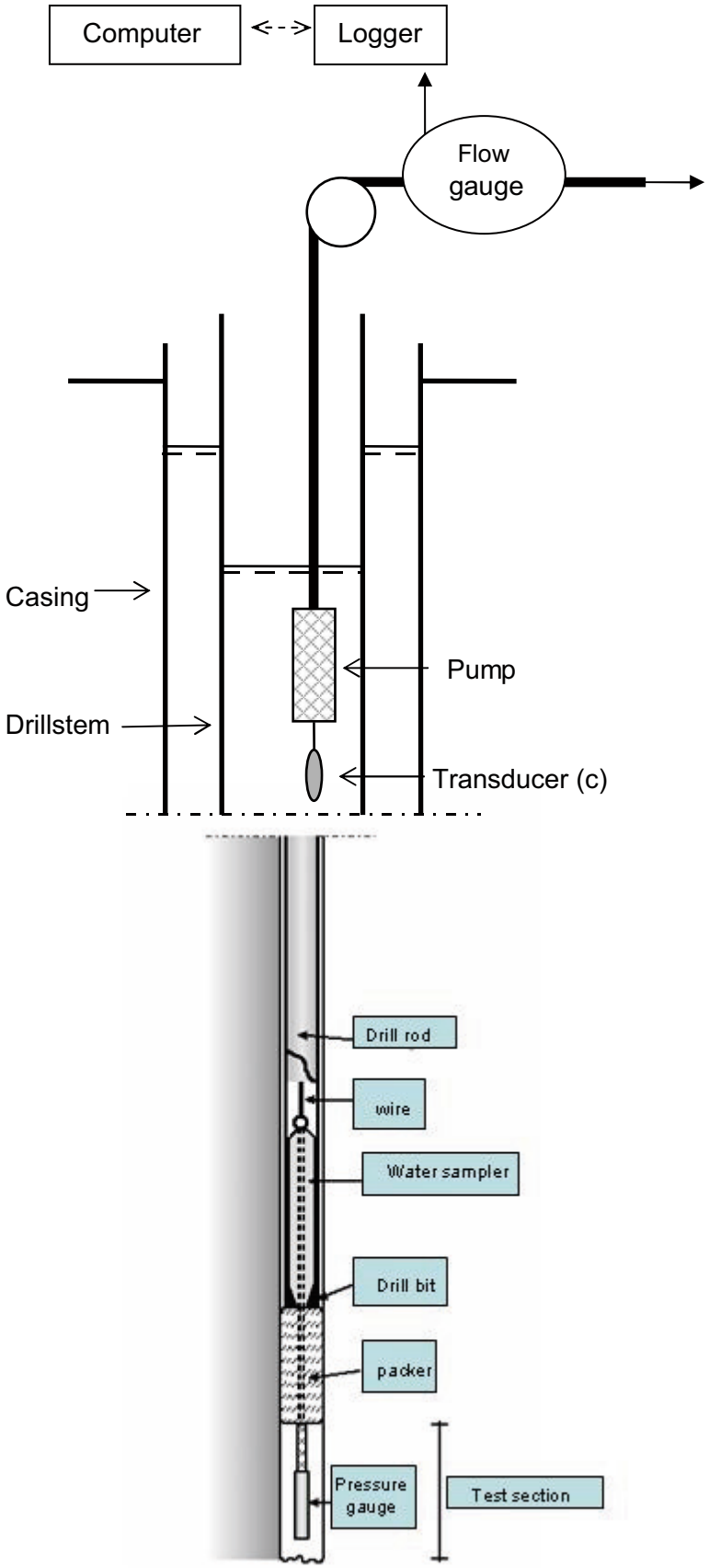

Figure 3-1. *The wireline probe and its emplacement in the borehole.*

Observation boreholes all form part of the SKB Hydro Monitoring System (HMS) and comprise.

- Druck PTX 1830 transducers – with an accuracy of ± 0.1% of FS BSL maximum.
- Datataker data acquisition system.
- Inflatable packers.

3.3 Data acquisition system

Pressure and flow data are logged in a SKB logger system (DMS) consisting of a central computer with data acquisition programme and database with logged data. Connected to this central computer are Campbell loggers CR10and CR23 for the borehole head equipment and RBR logger/transducer for the bottom hole equipment. The central computer is located at the drill site and connected through Ethernet to the SKB's main computer, Figure 3-2.

The stand-alone RBR-loggern is serialy connected to the computer when initialising a measurement and when retrieving the data.

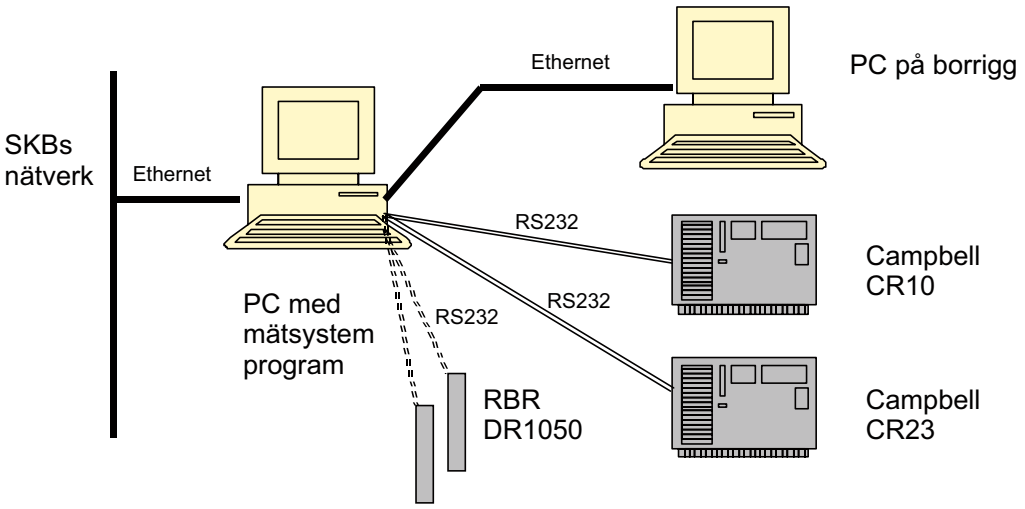

Figure 3-2. *Overview of data acquisition system.*

4 Execution

4.1 General

As the pump tests were not performed by Golder, they were performed by SKB in the frawork of the drilling of borehole KLX27A /Ask et al. 2008/. Testing, analyses and reporting were carried out according to SKB's methodology as outlined in the internal SKB document SKB MD 321.002. The activity has to involve the following components:

- Preparations
- Function control of transmitters and data system
- Pumping/interference testing
- Analyses of hydraulic tests
- Reporting

The basic testing sequence for the pumping tests was to perform a constant rate withdrawal followed by a pressure recovery.

4.2 Preparations

As the pump tests were not performed by Golder, no description about performed testing preparations can be given for the pump tests in KLX27A.

4.3 Execution of field work

4.3.1 Test principle

Pump tests

The pump tests were conducted as constant flow rate tests (CRw phase) followed by a pressure recovery period (CRwr phase). The intention was to achieve a drawdown as high as possible, which is limited by several factors like flow capacity of the valves at the regulation unit, maximum flow rate and depth of the pump, head loss due to friction inside the tubing, etc. The pump phase lasted about 2.5days and 15hour respectively for the ttested sections. The actual durations are shown in Table 2-1.

Observation wells

For evaluation as interference tests, 16 boreholes were used to monitor the pressure change in different intervals. Recording and data collection was done by SKB. SKB delivered the data as ASCII files (mio-format). An overview of the monitored boreholes and their intervals is given in Table 2-3.

4.3.2 Test procedure

A test cycle includes the following phases: 1) Transfer of down-hole equipment to the section. 2) Packer inflation. 3) Pressure stabilisation. 4) Constant rate withdrawal. 5) Pressure recovery. 6) Packer deflation. The pump tests in KLX27A have been carried out by applying a constant rate withdrawal with a drawdown as high as possible. The flow rates and resulting drawdown are summarised in Table 4-1.

Table 4-1. Flow rate and drawdown of pumping tests.

Bh ID	Section [mbToC]	Flow rate [L/min]	Drawdown* [kPa]
KLX27A	210.00–247.00	3.96	435
KLX27A	639.20–650.56	4.45	201

* Difference between pressure just before start and immediately before stop of pumping.

Before start of the pumping tests, approximately stable pressure conditions prevailed in the test section. After the perturbation period, the pressure recovery in the section was measured. Tidal effects were observed as disturbances of the pressure responses, no major rainfall happened during performance of the pump tests which may have disturbed the measurements.

The extracted water was collected in tanks, which were removed by SKB and discharged into the sea.

4.4 Data handling/post processing

Pump tests

SKB was responsible for recording and collecting the data of the pumping boreholes. SKB delivered the ASCII data in mio-format. These files were imported and processed to Excel for further evaluation and analysis. Finally, the test data were exported from Excel in *.txt format. These files were also used for the subsequent test analysis.

Observation wells

SKB was responsible for recording and collecting the data of the observation boreholes. The sample rate in those boreholes was between 5 minutes and 2 hours. SKB delivered the ASCII data in mio-format. These files were imported and processed to Excel for further evaluation and analysis. In addition, barometric data were delivered by SKB to eliminate barometric fluctuations from the observation data. Even by consideration of barometric pressure changes, the observation data showed still major disturbance by natural fluctuation.

4.5 Analyses and interpretations

4.5.1 Analysis software

The pump tests were analysed using a type curve matching method. The analysis was performed using Paradigm's test analysis program Interpret 2006. Interpret 2006 is an interactive analysis environment allowing the user to interpret constant pressure, constant rate and slug/pulse tests in source as well as observation boreholes. The program allows the calculation of type-curves for homogeneous, dual porosity and composite flow models in variable flow geometries from linear to spherical.

4.5.2 Analysis approach

Constant rate and pressure recovery tests are analysed using the method described by /Gringarten 1986/ and /Bourdet et al. 1989/ by using type curve derivatives calculated for different flow models.

4.5.3 Analysis methodology

Each of the relevant test phases is subsequently analyzed using the following steps:

- Identification of the flow model by evaluation of the derivative on the log-log diagnostic plot. Initial estimates of the model parameters are obtained by conventional straight-line analysis.
- Superposition type curve matching in log-log coordinates. A non-linear regression algorithm is used to provide optimized model parameters in the latter stages.
- Non-linear regression in semi-log coordinates (superposition HORNER plot; /Horner 1951/. In this stage of the analysis, the static formation pressure is selected for regression.

The test analysis methodology is best explained in /Horne 1990/.

4.5.4 Correlation between storativity and skin factor

For the analysis of the conducted hydraulic tests below 100 m depth a storativity of $1 \cdot 10^{-6}$ is assumed (SKB MD 320.004e). Based on this assumption the skin will be calculated. In the following the correlation between storativity and skin for the relevant test phases will be explained in greater detail.

Pump and recovery phase (CRw and CRwr)

The wellbore storage coefficient (C) is determined by matching the early time data with the corresponding type curve. The derived C-value is introduced in the equation of the type curve parameter:

$$(C_D e^{2s})_M = \frac{C \rho g}{2\pi r_w^2 S} e^{2s}$$

The equation above has two unknowns, the storativity (S) and the skin factor (s) which expresses the fact that for the case of constant rate and pressure recovery tests the storativity and the skin factor are 100% correlated. Therefore, the equation can only be either solved for skin by assuming that the storativity is known or solved for storativity by assuming the skin as known.

4.5.5 Steady state analysis

In addition to the type curve analysis, an interpretation based on the assumption of stationary conditions was performed as described by /Moye 1967/.

4.5.6 Flow models used for analysis

The flow models used in analysis were derived from the shape of the pressure derivative calculated with respect to log time and plotted in log-log coordinates.

If there were different flow models matching the data in comparable quality, the simplest model was preferred.

The flow dimension displayed by the test can be diagnosed from the slope of the pressure derivative. A slope of 0.5 indicates linear flow, a slope of 0 (horizontal derivative) indicates radial flow and a slope of –0.5 indicates spherical flow. The flow dimension diagnosis was commented for each of the tests. All tests were analysed using a flow dimension of two (radial flow).

4.5.7 Calculation of the static formation pressure and equivalent freshwater head

The static formation pressure (p*) measured at transducer depth, was derived from the pressure recovery (CRwr) following the constant pressure injection phase by using:

(1) straight line extrapolation in cases infinite acting radial flow (IARF) occurred,

(2) type curve extrapolation in cases infinite acting radial flow (IARF) is unclear or was not reached.

The equivalent freshwater head (expressed in meters above sea level) was calculated from the extrapolated static formation pressure (p*), corrected for atmospheric pressure measured by the surface gauge and corrected for the vertical depth considering the inclination of the borehole, by assuming a water density of 1,000 kg/m^3 (freshwater). The equivalent freshwater head is the static water level an individual test interval would show if isolated and connected to the surface by tubing full of freshwater. Figure 4-1 shows the methodology schematically.

The freshwater head in meters above sea level is calculated as following:

$$head = \frac{(p^* - p_{atm})}{\rho \cdot g}$$

which is the p* value expressed in a water column of freshwater.

With consideration of the elevation of the reference point (RP) and the gauge depth (Gd), the freshwater head h_{iwf} is:

$$h_{iwf} = RP_{elev} - Gd + \frac{(p^* - p_{atm})}{\rho \cdot g}.$$

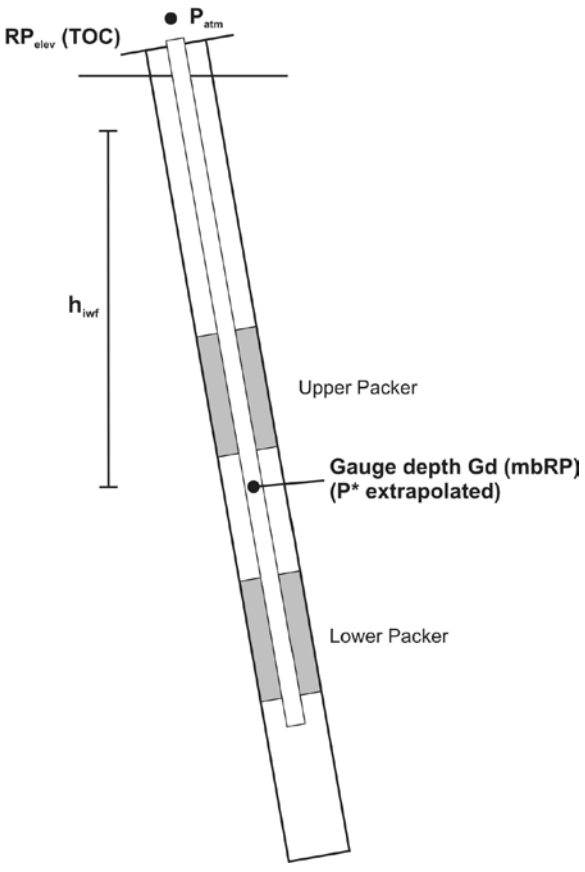

Figure 4-1. *Schematic methodologies for calculation of the freshwater head.*

4.5.8 Calculation of the radius of the inner zone

The radius of influence was calculated as follows:

$$ri = 1.89 * \sqrt{\frac{T_{s1}}{S_T} * t_2} \text{ [m]}$$

T_{s1} recommended inner zone transmissivity of the recovery phase [m²/s]

t_2 time when hydraulic formation properties changes [s]

S_T for the calculation of the ri the storage coefficient (S) is estimated from the transmissivity /Rhen et al. 2006/:

$S_T = 0.0007 * T_T^{0.5}$ [–]

4.5.9 Derivation of the recommended transmissivity and the confidence range

In all cases both test phases were analysed (CRw and CRwr). The parameter sets (i.e. transmissivities) derived from the individual analyses of a specific test usually differ. In the case when the differences are small the recommended transmissivity value is chosen from the test phase that shows the best data and derivative quality, which is most of the cases at the CRwr phase. In cases when a composite flow model was deemed to be most representative for the hydraulic behaviour of the specific test section, than the most representative zone transmissivity was selected as recommended value.

The confidence range of the transmissivity was derived using expert judgement. Factors considered were the range of transmissivities derived from the individual analyses of the test as well as additional sources of uncertainty such as noise in the flow rate measurement, numeric effects in the calculation of the derivative or possible errors in the measurement of the wellbore storage coefficient. No statistical calculations were performed to derive the confidence range of transmissivity.

4.6 Analysis and interpretation of the reponse in the observation holes

In 16 boreholes with a total of 63 sections (Table 2-3) the responses were monitored during the pumping tests in KLX27A. Those data were analysed according to the methodology description (SKB MD 330.003) to derive hydraulic connectivity parameters. Furthermore the data of the responding observation holes were analysed using a type curve matching method with Paradigm's Interpret 2006 software package.

4.6.1 Hydraulic connectivity parameters

Calculation of the indices

For the interference test analysis, the data of the pumping hole and the observation holes were compared. Therefore both data sets were plotted in one graph to decide if the observation borehole shows a response, which is related to the pumping. In case of a response in the observation sections due to pumping in KLX27A, the response time (dt_L) and the maximum drawdown (s_p) in these sections were calculated. The 3D distance between the point of application in the pumping borehole and the observation borehole (r_s) was provided by SKB. These parameters combined with the pumping flow rate (Q_p) are the variables used to calculate the indices, which characterize the hydraulic connectivity between the pumping and the observed section. The parameters and the calculated hydraulic connectivity parameters are shown in the tables in section 5 and appendix 6. The indices are calculated as follows:

Index 1:
r_s^2/dt_L = normalised distance r_s with respect to the response time [m²/s],

Index 2:
s_p/Q_p = normalised drawdown with respect to the pumping rate [s/m²].

Additionally, a third index was calculated including drawdown and distance. This index is calculated as follows:

Index 2 new:
$(s_p/Q_p)\cdot\ln(r_s/r_0)$ $r_0 = 1$ and for the pumped borehole $r_s = e^1$ (fictive borehole radius of 2.718).

The classification based on the indices is given as follows:

Index 1 (r_s^2/dt_L)		**Index 2 (s_p/Q_p)**		**Colour code**
$r_s^2/dt_L > 100$ m²/s	Excellent	$s_p/Q_p > 1\cdot10^5$ s/m²	Excellent	
$10 < r_s^2/dt_L \leq 100$ m²/s	High	$3\cdot10^4 < s_p/Q_p \leq 1\cdot10^5$ s/m²	High	
$1 < r_s^2/dt_L \leq 10$ m²/s	Medium	$1\cdot10^4 < s_p/Q_p \leq 3\cdot10^4$ s/m²	Medium	
$0.1 < r_s^2/dt_L \leq 1$ m²/s	Low	$s_p/Q_p \leq 1\cdot10^4$ s/m²	Low	
		$s_p < 0.1$ m	No response	

Index 2 new $(s_p/Q_p)\cdot\ln(r_s/r_0)$		**Colour code**
$(s_p/Q_p)\cdot\ln(r_s/r_0) > 5\cdot10^5$ s/m²	Excellent	
$5\cdot10^4 < (s_p/Q_p)\cdot\ln(r_s/r_0) \leq 5\cdot10^5$ s/m²	High	
$5\cdot10^3 < (s_p/Q_p)\cdot\ln(r_s/r_0) \leq 5\cdot10^4$ s/m²	Medium	
$5\cdot10^2 < (s_p/Q_p)\cdot\ln(r_s/r_0) \leq 5\cdot10^3$ s/m²	Low	
$s_p < 0.1$ m	No response	

Calculated response indexes are given in Tables 5-2, 5-3 and 6-3.

Derivation of the indices and limitations

To evaluate the hydraulic connectivity between the active and the observed section, the drawdown in the observation section (s_p) caused by pumping in the active section and the response time after start of pumping (dt_L) is needed.

To get these two values the data of both sections are plotted in one graph. The time, the observation hole needed to react to the pumping in KLX27A with a drawdown of at least 0.1 m and the amount of drawdown at the end of the pumping were taken out of the graph. Often it is not really clear if the section responds to the pumping or if the drawdown is based on natural processes exclusively. In unclear cases, the data sets were regarded in total to better differentiate between those effects. By looking at the pressure response of the days before and after the pumping phase, it is easier to distinguish between natural fluctuations and those induced by pumping. Furthermore it should be pointed out, that some of the responses could be caused by the drawdown in the section above or below of the same observation borehole.

All observation data are influenced by natural fluctuations of the groundwater level such as tidal effects and long term trends. The pressure changes due to tidal effects are different for the observation boreholes but in case of these performed tests relative large and of major importance for the data evaluation.

The pressure changes in the observation sections generated by the pumping are often very marginal. In general, it is a combination of natural processes and the pumping in KLX27A producing the pressure changes in the monitored sections. If there is a reaction, it shows – in most of the cases – not a sharp but a smooth transition from undisturbed to disturbed (by

pumping) behaviour, which makes it more difficult to determine the response time exactly. If neither start time nor stop time of pumping can provide reliable data for the response time index 1 was not calculated.

In six observation sections (HLX37_3, HLX37_4, KLX20A_5, KLX20A_6, KLX24A_1 and KLX24A_2) the drawdown was below of 0.1 m and therefore these sections were classified as no response according to the document SKB 330.003 (Bilagor B). Nevertheless, the indices 2 and 2 new were calculated as there was observed a slight but noisy response which was obviously due to pumping in source.

4.6.2 Approximate calculation of hydraulic diffusivity

The distance r_s between different borehole sections has been calculated as the spherical distance using co-ordinates for the mid-chainage of each section. The calculation of the hydraulic diffusivity is based on radial flow:

$$\eta = T / S = r_s^2 / [4 \cdot dt_L \cdot (1 + dt_L / tp) \cdot \ln(1 + tp / dt_L)]$$

The time lag dt_L is defined as the time when the pressure response in an observation section is greater than ca 0.1 metres (The time difference between a certain first observable response in the observation section and the stop of the pumping). The pumping time is included as tp. /Streltsova 1988/.

The estimates of the hydraulic diffusivity according to above should be seen as indicative values of the hydraulic diffusivity. Observation sections straddling a planar, major conductive feature that also intersects the pumping section should provide reliable estimates of the hydraulic diffusivity, but these cases have to be judged based on the geological model of the site.

For the calculation of the hydraulic diffusivity the recommended transmissivity T_T and Storativity S derived from the transient type curve analysis were used. No calculation based on dt_L was done, because of the often poor quality of dt_L and to ensure the consistency between the calculated diffusivity values.

Values of the hydraulic diffusivity are shown in Tables 5-2, 5-3 and 6-3.

4.6.3 Response analysis

To derive transmissivities and storativities from the sections of the observation boreholes Paradigm's analysis software Interpret 2006 was used. Interpret 2006 is an interactive program that uses a constant rate solution to provide optimized hydraulic parameters for a wide range of potential reservoir models. Some of the features of Interpret 2006 include extensive superposition of constant rate events, non-linear regression and multi-event rate normalized plots. Multi-event plots allow the relevant phases to be presented on a single plot to evaluate for consistency of the formation response throughout the test. Additionally, it can accommodate changing wellbore storage and skin between the test periods.

Analysis approach

The interference tests are analysed using line source type curves calculated for different flow models as identified from the log-log derivative of the pressure response.

Assumptions

To understand the assumption used in the analysis of observation zone data it is useful to imagine in a first instance a source zone connected with the observation zones through fractures of equal transmissivity (T_1 to T_4). In Figure 4-2 the case of a source zone connected with 4 observation zones is presented.

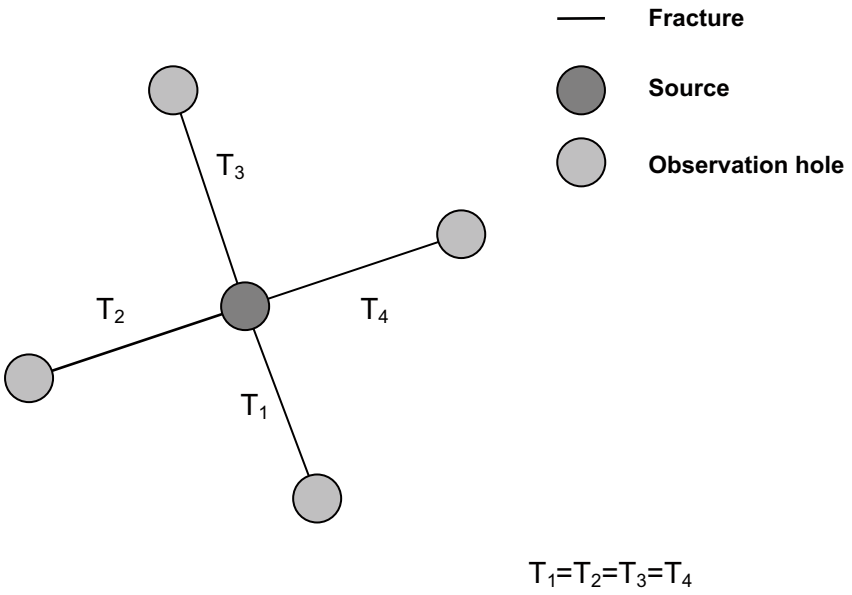

Figure 4-2. *Schematic sketch of a pumping hole (source) and observation holes.*

If we note the flow rate at the source as q, each of the response in each of the observation zones will be influenced by a flow rate of q/4 because the transmissivities of the 4 fractures are equal, so the rate will be evenly distributed between the fractures as well.

We complicate now the system by adding a new fracture of much higher transmissivity (T_5) to the system (see Figure 4-3).

Because of the larger transmissivity, most of the flow rate of the source will be captured by this fracture, so the other 4 fractures will receive less flow. Because of this, the magnitude of the response at the 4 observation zones will be higher than in the first case. The pathway transmissivity derived from the analysis of the observation zones will be in the second case

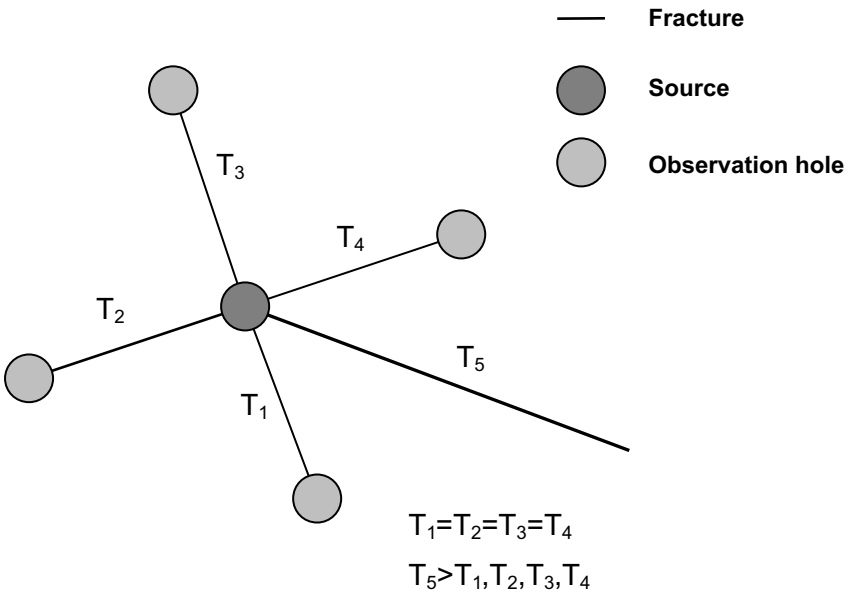

Figure 4-3. *Schematic sketch of a pumping hole (source) and observation holes with an added fracture.*

much higher than in the first case. However, the pathway transmissivity between source and any of the observation zones did not change. The transmissivity derived in the second case is false because the analysis is conducted under the assumption that the flow rate of the source is evenly distributed in space. This assumption is clearly not valid in the second case. In reality, the flow rate around the source will be distributed inversely proportional to the transmissivity of the individual pathways:

$q = q_1 + q_2 + \ldots + q_n$

$$\frac{T_1}{q_1} = \frac{T_2}{q_2} = \ldots = \frac{T_n}{q_n}$$

The analysis of observation zones (i.e. interference test analysis) assumes that:

$q_1 = q_2 = \ldots = q_n$.

This assumption will typically result in similar transmissivities:

$T_1 = T_2 = \ldots = T_n$.

The distance used for the analysis is the shortest way between the source and the observation hole and no pathway tortuosity was considered. This assumption influences the storativity derived from the transient analysis.

Methodology

Each of the relevant test phases is subsequently analyzed using the following steps:

- Identification of the flow model by evaluation of the derivative on the log-log diagnostic plot. Initial estimates of the model parameters are obtained by conventional straight-line analysis.
- Superposition type curve matching in log-log coordinates. The type curves are based on /Theis 1935/ calculated for a line source (i.e. finite wellbore radius).

Flow models used for analysis

The flow models used in analysis were derived from the shape of the pressure derivative calculated with respect to log time and plotted in log-log coordinates.

In the most cases a homogenous flow model was used, otherwise a two shell composite flow model was chosen for the analysis.

If there were different flow models matching the data in comparable quality, the simplest model was preferred.

The flow dimension displayed by the test can be diagnosed from the slope of the pressure derivative. A slope of 0.5 indicates linear flow, a slope of 0 (horizontal derivative) indicates radial flow and a slope of –0.5 indicates spherical flow. The flow dimension diagnosis was commented for each of the tests. All tests were analysed using a flow dimension of two (radial flow).

4.7 Nonconformities

No information about nonconformities happened during performance of the pump tests in KLX27A were delivered by SKB.

5 Results

In the following, results of the pump tests conducted in KLX27A are presented and analysed. The results are given as general comments to test performance, the identified flow regimes and calculated parameters and finally the parameters which are considered as most representative are chosen and justification is given. All results are also summarized in the Tables 6-1 to 6-3 of the synthesis chapter and in the summary sheets (Appendix 3). No disturbing activities like heavy rainfall were observed during the pump tests in borehole KLX27A. The only disturbing effects observed were caused by tidal influence. As at both performed pump tests the derivative is flat at late times, both pump tests were evaluated using a flow dimension of 2. In section 639.20–650.56 m, there was a very steep downward trend at the skin dominated flow phase. In this case, a composite model was chosen with a change of transmissivity in some distance from the borehole to match the flat part of the derivative and the connecting slope.

5.1 Results pump tests

5.1.1 Section 210.00–247.00 m, test no. 1, pumping

Comments to test

The test was conducted as a constant rate pump test phase with a flow rate of 3.96 L/min, followed by a pressure recovery phase. The maximum drawdown just before stop of flowing was about 435 kPa. The flow rate during the pumping phase of about 3.96 L/min and the resulting drawdown of about 435 kPa indicate a relatively moderate interval transmissivity. Around 14 hours after pump start, a short interruption in pumping caused a partly pressure recovery followed by an immediate restart of the pump. After approximate 64 hours of pumping, the shut in-tool was closed and the pump was stopped. The CRw phase is stable and of good quality and analysable. The CRwr phase shows a change in recovery slope relatively short after start of this phase. It is assumed that this effect is caused by a change in wellbore storage due to a change in volume, probably induced by a tool problem. However, the recovery is of good quality and amenable for quantitative analysis.

Flow regime and calculated parameters

The flow dimension is interpreted from the slope of the semi-log derivative plotted in log-log coordinates. In case of the present test the CRw phase shows a very noisy but still flat derivative at middle and late times. The CRwr phase shows a very steep downward trend at the skin dominated which could not be matched, even by using a relative high skin factor. However, the data quality is beside of this of very good quality and good to match with a flat derivative at late times. At middle times and late times the derivative of both phases is flat, which is indicative for radial flow (flow dimension of 2). A homogeneous radial flow model was chosen for the analysis of the CRw and CRwr phases. The analysis is presented in Appendix 1-1.

Selected representative parameters

The recommended transmissivity of $8.0 \cdot 10^{-6}$ m^2/s was derived from the analysis of the CRwr phase. The confidence range for the interval transmissivity is estimated to be $4.0 \cdot 10^{-6}$ to $2.0 \cdot 10^{-5}$ m^2/s. The flow dimension displayed during the test is 2. The static pressure measured at transducer depth, was derived from the CRwr phase using type curve extrapolation in the Horner plot to a value of 1,833.8 kPa.

The analyses of both phases are of good quality and consistent. No further analysis recommended.

5.1.2 Section 639.20–650.56 m, test no. 1, pumping

Comments to test

The test was conducted as a constant rate pump test phase with a flow rate of 4.45 L/min, followed by a pressure recovery phase. The maximum drawdown just before stop of flowing was about 201 kPa. The flow rate during the pumping phase and the resulting drawdown indicate a relatively moderate to high interval transmissivity. After approximate 15 hours of pumping, the shut in-tool was closed and the pump was stopped. The CRw phase is stable and of good quality and analysable. The CRwr phase shows a change in recovery slope relatively short after start of this phase. It is assumed that this effect is caused by a change in wellbore storage due to a change in volume, probably induced by a tool problem. In addition, the recovery phase was interrupted by a sudden pressure drop of approximately 50 kPa, followed by a further recovery. However, the recovery is of good quality and amenable for quantitative analysis.

Flow regime and calculated parameters

The flow dimension is interpreted from the slope of the semi-log derivative plotted in log-log coordinates. In case of the present test the CRw phase shows a noisy but still flat derivative at middle and late times. The steep downward trend at middle times during the skin dominated flow period was matched by using a composite flow model. The analysis of the CRwr phase stops at the skin dominated part due to the interrupted pressure recovery. Therefore the analysis of the CRwr phase is of relative high uncertainty. However, the data quality is beside of this of good quality and a composite model with radial flow was used to match the downward slope of the skin dominated part. At middle times and late times the derivative of the CRw phase is flat, which is indicative for radial flow (flow dimension of 2). An infinite acting composite radial flow model was chosen for the analysis of the CRw and CRwr phases. The analysis is presented in Appendix 1-2.

Selected representative parameters

The recommended transmissivity of $8.7 \cdot 10^{-5}$ m^2/s was derived from the analysis of the CRw phase (outer zone). The confidence range for the interval transmissivity is estimated to be $4.0 \cdot 10^{-5}$ to $2.0 \cdot 10^{-4}$ m^2/s. The flow dimension displayed during the test is 2. The static pressure measured at transducer depth, was derived from the CRwr phase using type curve extrapolation in the Horner plot to a value of 5,635.8 kPa.

The analyses of both phases are of good quality and consistent. No further analysis recommended.

5.2 Results response analysis

In the following, the data of the observation zones which responded to pumping are presented and analysed. The results of the analysis are also summarized in the Table 6-3 of the summary chapter and in the summary sheets (Appendices 6 and 8).

Table 5-1 summarises all the tests and the observed boreholes. Furthermore it shows the response matrix based on the calculated indices 1 (r_s^2/dt_L), 2 (s_p/Q_p) and 2 new $(s_p/Q_p) \cdot \ln(r_s/r_0)$ (see Section 4.6.1).

Table 5-1. Response matrix with index 1, index 2 and index 2 new.

		Pumping hole	KLX27A			KLX27A		
		Section (mbToC)	210.00–247.00			639.20–650.56		
		Flow rate (l/min)	3.96			4.45		
		Drawdown (kPa)	438			201		
Observation borehole	**Sec no.**	**Section (m)**	**Response indices**					
			1	**2**	**2 new**	**1**	**2**	**2 new**
HLX27	1	153.00–165.00						
	2	100.00–152.00						
	3	0.00–99.00						
HLX28	1	91.00–154.00	L					
	2	70.00–90.00	L					
	3	7.50–69.00	L					
	4	0.00–6.50	n.o.	n.o.	n.o.	n.o.	n.o.	n.o.
HLX32	1	31.00–163.00						
	2	20.00–30.00						
	3	0.00–19.00						
HLX36	1	50.00–199.50						
	2	0.00–49.00						
HLX37	1	150.00–200.00	M					
	2	111.00–149.00	M					
	3	94.00–110.00	n.c.					
	4	0.00–93.00	n.c.					
HLX38	1	0.00–199.50						
HLX42	1	30.00–152.60						
	2	0.00–29.00						
KLX11A	1	703.00–992.00						
	2	587.00–702.00						
	3	573.00–586.00						
	4	495.00–572.00						
	5	315.00–494.00						
	6	273.00–314.00						
	7	256.00–272.00						
KLX11A	8	180.00–255.00						
	9	103.00–179.00						
	10	0.00–102.00						
KLX11E	1	2.00–121.00						
KLX14A	1	123.00–176.27						
	2	77.00–122.00						
	3	0.00–76.00						
KLX15A	1	902.00–1,000.00						
	2	641.00–901.00						
	3	623.00–640.00						
	4	481.00–622.00						
	5	273.00–480.00						
	6	260.00–272.00						
	7	191.00–259.00						
	8	79.00–190.00						
	9	0.00–78.00						

	Pumping hole	KLX27A			KLX27A		
	Section (mbToC)	210.00–247.00			639.20–650.56		
	Flow rate (l/min)	3.96			4.45		
	Drawdown (kPa)	438			201		
Observation borehole	**Sec no.**	**Section (m)**	**Response indices**					
			1	**2**	**2 new**	**1**	**2**	**2 new**
KLX16A	1	327.00–433.55						
	2	86.00–326.00						
	3	0.00–85.00						
KLX19A	1	661.00–800.00						
	2	518.00–660.00						
	3	509.00–517.00	M					
	4	481.50–508.00	M					
	5	311.00–480.50	M					
	6	291.00–310.00	M					
	7	136.00–290.00	L					
	8	0.00–135.00	L					
KLX20A	1	294.00–457.00						
	2	260.00–296.00						
	3	181.00–259.00						
	4	145.00–180.00						
	5	103.00–144.00	n.c.					
	6	0.00–102.00	n.c.					
KLX23A	1	49.00–100.00	M					
	2	0.00–48.00						
KLX24A	1	69.00–100.00	n.c.					
	2	41.00–68.00	n.c.					
	3	0.00–40.00						

Index 1 (r^2/t_L)

$r_s^2/dt_L > 100$ m²/s	Excellent	E
$10 < r_s^2/dt_L \leq 100$ m²/s	High	H
$1 < r_s^2/dt_L \leq 10$ m²/s	Medium	M
$0.1 < r_s^2/dt_L \leq 1$ m²/s	Low	L
Not calculated due to strong natural fluctuations		n.c.

Index 2 (s_p/Q_p)

$s_p/Q_p > 1 \cdot 10^5$ s/m²	Excellent
$3 \cdot 10^4 < s_p/Q_p \leq 1 \cdot 10^5$ s/m²	High
$1 \cdot 10^4 < s_p/Q_p \leq 3 \cdot 10^4$ s/m²	Medium
$s_p/Q_p \leq 1 \cdot 10^4$ s/m²	Low
$s_p < 0.1$ m	No response indices but analysed

Index 2 new $(s_p/Q_p) \cdot \ln(r_s/r_0)$

$(s_p/Q_p) \cdot \ln(r_s/r_0) > 5 \cdot 10^5$ s/m²	Excellent
$5 \cdot 10^4 < (s_p/Q_p) \cdot \ln(r_s/r_0) \leq 5 \cdot 10^5$ s/m²	High
$5 \cdot 10^3 < (s_p/Q_p) \cdot \ln(r_s/r_0) \leq 5 \cdot 10^4$ s/m²	Medium
$5 \cdot 10^2 < (s_p/Q_p) \cdot \ln(r_s/r_0) \leq 5 \cdot 10^3$ s/m²	Low
$s_p < 0.1$ m	No response indices but analysed

blank = observed but no response at all

n.o. = not observed

n.c. = no clear response due to pumping in source

5.3 KLX27A test section 210.00–247.00 m pumped

This interference test was conducted as constant rate pump test phase followed by a recovery pressure phase in the source section. The mean flow rate was 3.96 l/min with a drawdown of 438 kPa. In sum 12 observation sections responded due to the pumping. Table 5-2 summarizes the responding test sections and selected parameters. Figure 5-1 shows the drawdown of the observed sections related to the distance. The pumped borehole KLX27A is shown with consideration of the effective borehole radius $r_{wf,}$, calculation based on the skin factor.

$$r_{wf} = r_w \cdot e^{-\xi}$$

In the following sections the response analysis of each responded section is presented.

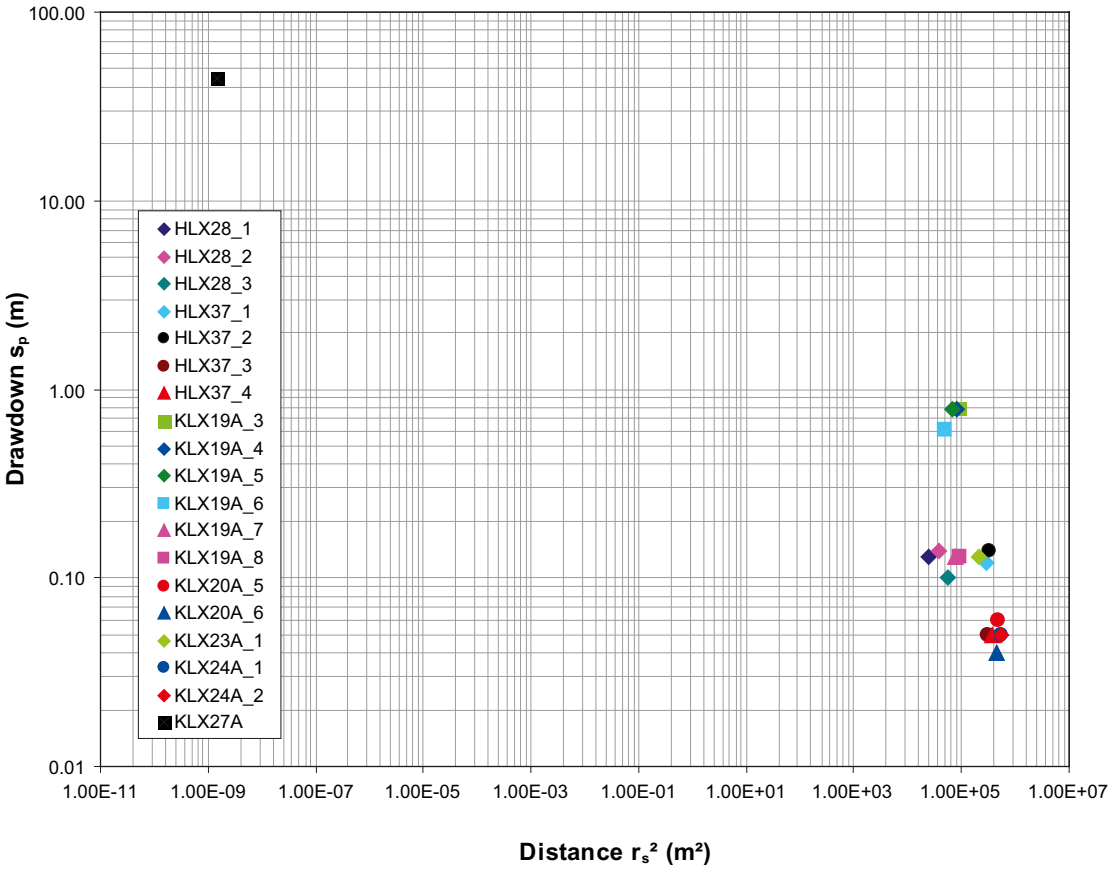

Figure 5-1. *Distance vs. Drawdown for the responding test sections, KLX27A Section 210.00–247.00 m pumped.*

Table 5-2. Responded test sections and selected parameters (section 210.00–247.00 m pumped).

Source borehole		Section (m)	Flow rate Qm (l/min)	Drawdown (m)	r_{wf} (m)				
KLX27A	1	210.00–247.00	3.96	44.65	3.8E–5				
Observation borehole	**Sec no.**	**Section (m)**	**Distance r_s (m)**	**Drawdown s_p (m)**	**dt_L (s)**	**Index 1 r_s^2/dt_L (m^2/s)**	**Index 2 s_p/Q_p (s/m^2)**	**Index 2 new $(s_p/Q_p)\cdot\ln(r_s/r_0)$ (s/m^2)**	**Diffusivity η (m^2/s)**
HLX27	1	153.00–165.00	1,137.0	n.r.	–	–	–	–	–
	2	100.00–152.00	1,141.0	n.r.	–	–	–	–	–
	3	0.00–99.00	1,151.0	n.r.	–	–	–	–	–
HLX28	1	91.00–154.00	155.0	0.13	111,420	0.22 **L**	2,007.9	10,126.4	0.57
	2	70.00–90.00	195.0	0.14	109,620	0.35 **L**	2,162.3	11,401.8	0.77
	3	7.50–69.00	234.0	0.10	218,820	0.25 **L**	1,544.5	8,425.7	1.43
	4	0.00–6.50	n.o.	n.o.	–	–	–	–	–
HLX32	1	31.00–163.00	136.0	n.r.	–	–	–	–	–
	2	20.00–30.00	177.0	n.r.	–	–	–	–	–
	3	0.00–19.00	188.0	n.r.	–	–	–	–	–
HLX36	1	50.00–199.50	544.0	n.r.	–	–	–	–	–
	2	0.00–49.00	543.0	n.r.	–	–	–	–	–
HLX37	1	150.00–200.00	546.0	0.12	118,620	2.51 **M**	1,853.4	11,681.3	7.69
	2	111.00–149.00	566.0	0.14	114,420	2.80 **M**	2,162.3	13,705.9	7.91
	3	94.00–110.00	574.0	0.05)*	–	–	772.3	4,905.8	–
	4	0.00–93.00	614.0	0.05)*	–	–	772.3	4,961.6	–
HLX38	1	0.00–199.50	488.0	n.r.	–	–	–	–	–
HLX42	1	30.00–152.60	1,071.0	n.r.	–	–	–	–	–
	2	0.00–29.00	1,127.0	n.r.	–	–	–	–	–
KLX11A	1	703.00–992.00	891.0	n.r.	–	–	–	–	–
	2	587.00–702.00	741.0	n.r.	–	–	–	–	–
	3	573.00–586.00	724.0	n.r.	–	–	–	–	–
	4	495.00–572.00	706.0	n.r.	–	–	–	–	–
	5	315.00–494.00	681.0	n.r.	–	–	–	–	–
	6	273.00–314.00	651.0	n.r.	–	–	–	–	–
	7	256.00–272.00	647.0	n.r.	–	–	–	–	–
	8	180.00–255.00	647.0	n.r.	–	–	–	–	–
	9	103.00–179.00	650.0	n.r.	–	–	–	–	–
	10	0.00–102.00	671.0	n.r.	–	–	–	–	–
KLX11E	1	2.00–121.00	662.0	n.r.	–	–	–	–	–
KLX14A	1	123.00–176.27	547.0	n.r.	–	–	–	–	–
	2	77.00–122.00	529.0	n.r.	–	–	–	–	–
	3	0.00–76.00	524.0	n.r.	–	–	–	–	–
KLX15A	1	902.00–1,000.00	1,388.0	n.r.	–	–	–	–	–
	2	641.00–901.00	1,339.0	n.r.	–	–	–	–	–
	3	623.00–640.00	1,264.0	n.r.	–	–	–	–	–
	4	481.00–622.00	1,235.0	n.r.	–	–	–	–	–
	5	273.00–480.00	1,222.0	n.r.	–	–	–	–	–
	6	260.00–272.00	1,220.0	n.r.	–	–	–	–	–
	7	191.00–259.00	1,225.0	n.r.	–	–	–	–	–
	8	79.00–190.00	1,234.0	n.r.	–	–	–	–	–
	9	0.00–78.00	1,253.0	n.r.	–	–	–	–	–

Source borehole		Section (m)	Flow rate Qm (l/min)	Drawdown (m)	r_{wf} (m)				
KLX27A	1	210.00–247.00	3.96	44.65	3.8E–5				
Observation borehole	**Sec no.**	**Section (m)**	**Distance r_s (m)**	**Drawdown s_p (m)**	**dt_L (s)**	**Index 1 r_s^2/dt_L (m^2/s)**	**Index 2 s_p/Q_p (s/m^2)**	**Index 2 new $(s_p/Q_p)\cdot\ln(r_s/r_0)$ (s/m^2)**	**Diffusivity η (m^2/s)**
KLX16A	1	327.00–433.55	1,093.0	n.r.	–	–	–	–	–
	2	86.00–326.00	1,153.0	n.r.	–	–	–	–	–
	3	0.00–85.00	1,238.0	n.r.	–	–	–	–	–
KLX19A	1	661.00–800.00	497.0	n.r.	–	–	–	–	–
	2	518.00–660.00	347.0	n.r.	–	–	–	–	–
	3	509.00–517.00	307.0	0.80	15,420	6.11 **M**	12,047.1	68,991.8	1.72
	4	481.50–508.00	290.0	0.78	15,420	5.45 **M**	11,892.6	67,429.8	1.47
	5	311.00–480.50	261.0	0.78	16,020	4.25 **M**	11,892.6	66,176.8	1.19
	6	291.00–310.00	224.0	0.61	15,420	3.25 **M**	9,267.0	50,149.6	2.40
	7	136.00–290.00	275.0	0.13	175,020	0.43 **L**	2,007.9	11,277.6	1.30
	8	0.00–135.00	303.0	0.13	108,420	0.85 **L**	2,007.9	11,472.3	2.94
KLX20A	1	294.00–457.00	759.0	n.r.	–	–	–	–	–
	2	260.00–293.00	712.0	n.r.	–	–	–	–	–
	3	181.00–259.00	694.0	n.r.	–	–	–	–	–
	4	145.00–180.00	689.0	n.r.	–	–	–	–	–
	5	103.00–144.00	683.0	0.06)*	–	–	926.7	6,048.1	–
	6	0.00–102.00	681.0	0.04)*	–	–	617.8	4,030.3	–
KLX23A	1	49.00–100.00	462.0	0.13	113,820	1.88 **M**	2,007.9	12,319.3	4.30
	2	0.00–48.00	456.0	n.r.	–	–	–	–	–
KLX24A	1	69.00–100.00	744.0	0.05)*	–	–	772.3	5,106.1	–
	2	41.00–68.00	748.0	0.05)*	–	–	772.3	5,110.3	–
	3	0.00–40.00	754.0	n.r.	–	–	–	–	–

)* no response according to SKB 330.003 (Bilagor B); see Section 4.6.1 for greater detail n.r. no response due to pumping in source Key for index 1, 2 and 2 new, see Table 5-1.

5.3.1 Response HLX28, section 1 (91.00–154.00 m)

Comments to test

A total drawdown during the flow period of 1.3 kPa (0.13 m) was observed in this section. A drawdown of 0.01 m was reached after appr. 1,857 min. (111,420 s) after pump start in KLX27A (210.00–247.00). The calculated index 1 (r_s^2/dt_L) is rated as “low response time”, index 2 (s_p/Q_p) as “low response” and the new index 2 $(s_p/Q_p)\cdot\ln(r_s/r_0)$ as “medium response”.

Despite of a poor data quality, mainly affected by tidal influence, the CRw phase was analysable but shows a relative high range of uncertainty. The CRwr phase was not analysable due to the fact that no recovery was observed during an observation period of 36 hours.

Flow regime and calculated parameters

The flow dimension is interpreted from the slope of the semi-log derivative plotted in log-log coordinates. For the analysis of the CRw phase a homogeneous radial flow model was chosen. The analysis is presented in Appendix 5-1.

Selected representative parameters

The recommended transmissivity of $1.1 \cdot 10^{-4}$ m²/s was derived from the analysis of the CRw phase. The confidence range for the borehole transmissivity is estimated to be $3.0 \cdot 10^{-5}$ m²/s to $3.0 \cdot 10^{-4}$ m²/s. The flow dimension during the test is 2. A static pressure measured at transducer depth was not possible to derive from the CRwr phase due to a missing response after pump stop.

The analysis of the CRw phase shows major influence of tidal fluctuations but is still representative for the observed section. No further analysis recommended.

5.3.2 Response HLX28, section 2 (70.00–90.00 m)

Comments to test

A total drawdown during the flow period of 1.4 kPa (0.14 m) was observed in this section. A drawdown of 0.01 m was reached after appr. 1,827 min. (109,620 s) after pump start in KLX27A (210.00–247.00). The calculated index 1 (r_s^2/dt_L) is rated as "low response time", index 2 (s_p/Q_p) as "low response" and the new index 2 $(s_p/Q_p)\cdot\ln(r_s/r_0)$ as "medium response".

Despite of a poor data quality, mainly affected by tidal influence, the CRw phase was analysable but shows a relative high range of uncertainty. The CRwr phase was not analysable due to the fact that no recovery was observed during an observation period of 36 hours.

Flow regime and calculated parameters

The flow dimension is interpreted from the slope of the semi-log derivative plotted in log-log coordinates. For the analysis of the CRw phase, a homogeneous radial flow model was chosen. The analysis is presented in Appendix 5-2.

Selected representative parameters

The recommended transmissivity of $1.0 \cdot 10^{-4}$ m²/s was derived from the analysis of the CRw phase. The confidence range for the borehole transmissivity is estimated to be $3.0 \cdot 10^{-5}$ m²/s to $3.0 \cdot 10^{-4}$ m²/s. The flow dimension during the test is 2. A static pressure measured at transducer depth was not possible to derive from the CRwr phase due to a missing response after pump stop.

The analysis of the CRw phase shows major influence of tidal fluctuations but is still representative for the observed section. No further analysis recommended.

5.3.3 Response HLX28, section 3 (7.50–69.00 m)

Comments to test

A total drawdown during the flow period of 1.0 kPa (0.10 m) was observed in this section. A drawdown of 0.01 m was reached after appr. 3,647 min. (218,820 s) after pump start in KLX27A (210.00–247.00). The calculated index 1 (r_s^2/dt_L) is rated as "low response time", index 2 (s_p/Q_p) as "low response" and the new index 2 $(s_p/Q_p)\cdot\ln(r_s/r_0)$ as "medium response".

Despite of a poor data quality, mainly affected by tidal influence, the CRw phase was analysable but shows a relative high range of uncertainty. The CRwr phase was not analysable due to the fact that no recovery was observed during an observation period of 36 hours.

Flow regime and calculated parameters

The flow dimension is interpreted from the slope of the semi-log derivative plotted in log-log coordinates. For the analysis of the CRw phase, a homogeneous radial flow model was chosen. The analysis is presented in Appendix 5-3.

Selected representative parameters

The recommended transmissivity of $1.3 \cdot 10^{-4}$ m²/s was derived from the analysis of the CRw phase. The confidence range for the borehole transmissivity is estimated to be $4.0 \cdot 10^{-5}$ m²/s to $4.0 \cdot 10^{-4}$ m²/s. The flow dimension during the test is 2. A static pressure measured at transducer depth was not possible to derive from the CRwr phase due to a missing response after pump stop.

The analysis of the CRw phase shows major influence of tidal fluctuations but is still representative for the observed section. No further analysis recommended.

5.3.4 Response HLX37, section 1 (150.00–200.00 m)

Comments to test

A total drawdown during the flow period of 1.2 kPa (0.12 m) was observed in this section. A drawdown of 0.01 m was reached after appr. 1,977 min. (118,620 s) after pump start in KLX27A (210.00–247.00). The calculated index 1 (r_s^2/dt_L) is rated as "medium response time", index 2 (s_p/Q_p) as "low response" and the new index 2 (s_p/Q_p)·ln(r_s/r_0) as "medium response".

Despite of a poor data quality, mainly affected by tidal influence, the CRw phase was analysable but shows a relative high range of uncertainty. The CRwr phase was not analysable due to the fact that no recovery was observed during an observation period of 36 hours.

Flow regime and calculated parameters

The flow dimension is interpreted from the slope of the semi-log derivative plotted in log-log coordinates. For the analysis of the CRw phase, a homogeneous radial flow model was chosen. The analysis is presented in Appendix 5-4.

Selected representative parameters

The recommended transmissivity of $1.1 \cdot 10^{-4}$ m²/s was derived from the analysis of the CRw phase. The confidence range for the borehole transmissivity is estimated to be $3.0 \cdot 10^{-5}$ m²/s to $3.0 \cdot 10^{-4}$ m²/s. The flow dimension during the test is 2. A static pressure measured at transducer depth was not possible to derive from the CRwr phase due to a missing response after pump stop.

The analysis of the CRw phase shows major influence of tidal fluctuations but is still representative for the observed section. No further analysis recommended.

5.3.5 Response HLX37, section 2 (111.00–149.00 m)

Comments to test

A total drawdown during the flow period of 1.4 kPa (0.14 m) was observed in this section. A drawdown of 0.01 m was reached after appr. 1,907 min. (114,420 s) after pump start in KLX27A (210.00–247.00). The calculated index 1 (r_s^2/dt_L) is rated as "medium response time", index 2 (s_p/Q_p) as "low response" and the new index 2 (s_p/Q_p)·ln(r_s/r_0) as "medium response".

Despite of a poor data quality, mainly affected by tidal influence, the CRw phase was analysable but shows a relative high range of uncertainty. The CRwr phase was not analysable due to the fact that no recovery was observed during an observation period of 36 hours.

Flow regime and calculated parameters

The flow dimension is interpreted from the slope of the semi-log derivative plotted in log-log coordinates. For the analysis of the CRw phase, a homogeneous radial flow model was chosen. The analysis is presented in Appendix 5-5.

Selected representative parameters

The recommended transmissivity of $1.1 \cdot 10^{-4}$ m^2/s was derived from the analysis of the CRw phase. The confidence range for the borehole transmissivity is estimated to be $3.0 \cdot 10^{-5}$ m²/s to $3.0 \cdot 10^{-4}$ m²/s. The flow dimension during the test is 2. A static pressure measured at transducer depth was not possible to derive from the CRwr phase due to a missing response after pump stop.

The analysis of the CRw phase shows major influence of tidal fluctuations but is still representative for the observed section. No further analysis recommended.

5.3.6 Response HLX37, section 3 (94.00–110.00 m)

Comments to test

A total drawdown during the flow period of 0.5 kPa (0.05 m) was observed in this section. This is no response according to SKB 330.003 but anyway considered as reaction due to pumping in source. As the slight reaction includes a relative high grade of uncertainty at what response time a drawdown of 0.01 m was reached, no index 1 was calculated. The calculated index 2 (s_p/Q_p) is rated as as “low response” and the new index 2 $(s_p/Q_p) \cdot \ln(r_s/r_0)$ as “low response”.

Due to the slight response and therefore very high disturbing effects from background noise and natural fluctuation, no analysis of the CRw phase was performed. The CRwr phase was not analysable due to the fact that no recovery was observed during an observation period of 36 hours.

5.3.7 Response HLX37, section 4 (0.00–93.00 m)

Comments to test

A total drawdown during the flow period of 0.5 kPa (0.05 m) was observed in this section. This is no response according to SKB 330.003 but anyway considered as reaction due to pumping in source. As the slight reaction includes a relative high grade of uncertainty at what response time a drawdown of 0.01 m was reached, no index 1 was calculated. The calculated index 2 (s_p/Q_p) is rated as as “low response” and the new index 2 $(s_p/Q_p) \cdot \ln(r_s/r_0)$ as “low response”.

Due to the slight response and therefore very high disturbing effects from background noise and natural fluctuation, no analysis of the CRw phase was performed. The CRwr phase was not analysable due to the fact that no recovery was observed during an observation period of 36 hours.

5.3.8 Response KLX19A, section 3 (509.00–517.00 m)

Comments to test

A total drawdown during the flow period of 7.8 kPa (0.80 m) was observed in this section. A recovery of 0.01 m was reached after appr. 257 min. (15,420 s) after pump stop in KLX27A (210.00–247.00). The calculated index 1 (r_s^2/dt_L) is rated as "medium response time", index 2 (s_p/Q_p) as "medium response" and the new index 2 $(s_p/Q_p)\cdot\ln(r_s/r_0)$ as "high response".

Both phases show some minor influence of natural fluctuation but are still adequate for quantitative analysis.

Flow regime and calculated parameters

The flow dimension is interpreted from the slope of the semi-log derivative plotted in log-log coordinates. For the analysis of both phases a homogeneous radial flow model was chosen. The analysis is presented in Appendix 5-6.

Selected representative parameters

The recommended transmissivity of $1.6\cdot10^{-5}$ m²/s was derived from the analysis of the CRw phase, which shows the best data and derivative quality. The confidence range for the borehole transmissivity is estimated to be $8.0\cdot10^{-6}$ m²/s to $3.0\cdot10^{-5}$ m²/s. The flow dimension during the test is 2. A static pressure measured at transducer depth was not possible to derive from the CRwr phase due to poor data quality.

The analyses of the CRw and CRwr phases show some minor influence of natural fluctuation. No further analysis recommended.

5.3.9 Response KLX19A, section 4 (481.50–508.00 m)

Comments to test

A total drawdown during the flow period of 7.7 kPa (0.78 m) was observed in this section. A recovery of 0.01 m was reached after appr. 257 min. (15,420 s) after pump stop in KLX27A (210.00–247.00). The calculated index 1 (r_s^2/dt_L) is rated as "medium response time", index 2 (s_p/Q_p) as "medium response" and the new index 2 $(s_p/Q_p)\cdot\ln(r_s/r_0)$ as "high response".

Both phases show some minor influence of natural fluctuation but are still adequate for quantitative analysis.

Flow regime and calculated parameters

The flow dimension is interpreted from the slope of the semi-log derivative plotted in log-log coordinates. For the analysis of both phases a homogeneous radial flow model was chosen. The analysis is presented in Appendix 5-7.

Selected representative parameters

The recommended transmissivity of $1.5\cdot10^{-5}$ m²/s was derived from the analysis of the CRw phase, which shows the best data and derivative quality. The confidence range for the borehole transmissivity is estimated to be $8.0\cdot10^{-6}$ m²/s to $3.0\cdot10^{-5}$ m²/s. The flow dimension during the test is 2. A static pressure measured at transducer depth was not possible to derive from the CRwr phase due to poor data quality.

The analyses of the CRw and CRwr phases show some minor influence of natural fluctuation. No further analysis recommended.

5.3.10 Response KLX19A, section 5 (311.00–480.50 m)

Comments to test

A total drawdown during the flow period of 7.7 kPa (0.78 m) was observed in this section. A recovery of 0.01 m was reached after appr. 267 min. (16,020 s) after pump stop in KLX27A (210.00–247.00). The calculated index 1 (r_s^2/dt_L) is rated as "medium response time", index 2 (s_p/Q_p) as "medium response" and the new index 2 $(s_p/Q_p)\cdot\ln(r_s/r_0)$ as "high response".

Both phases show some minor influence of natural fluctuation but are still adequate for quantitative analysis.

Flow regime and calculated parameters

The flow dimension is interpreted from the slope of the semi-log derivative plotted in log-log coordinates. For the analysis of both phases a homogeneous radial flow model was chosen. The analysis is presented in Appendix 5-8.

Selected representative parameters

The recommended transmissivity of $1.5\cdot10^{-5}$ m²/s was derived from the analysis of the CRw phase, which shows the best data and derivative quality. The confidence range for the borehole transmissivity is estimated to be $8.0\cdot10^{-6}$ m²/s to $3.0\cdot10^{-5}$ m²/s. The flow dimension during the test is 2. A static pressure measured at transducer depth was not possible to derive from the CRwr phase due to poor data quality.

The analyses of the CRw and CRwr phases show some minor influence of natural fluctuation. No further analysis recommended.

5.3.11 Response KLX19A, section 6 (291.00–310.00 m)

Comments to test

A total drawdown during the flow period of 6.0 kPa (0.61 m) was observed in this section. A recovery of 0.01 m was reached after appr. 257 min. (15,420 s) after pump stop in KLX27A (210.00–247.00). The calculated index 1 (r_s^2/dt_L) is rated as "medium response time", index 2 (s_p/Q_p) as "low response" and the new index 2 $(s_p/Q_p)\cdot\ln(r_s/r_0)$ as "high response".

Both phases show some minor influence of natural fluctuation but are still adequate for quantitative analysis.

Flow regime and calculated parameters

The flow dimension is interpreted from the slope of the semi-log derivative plotted in log-log coordinates. For the analysis of both phases a homogeneous radial flow model was chosen. The analysis is presented in Appendix 5-9.

Selected representative parameters

The recommended transmissivity of $4.3\cdot10^{-5}$ m²/s was derived from the analysis of the CRw phase, which shows the best data and derivative quality. The confidence range for the borehole transmissivity is estimated to be $2.0\cdot10^{-5}$ m²/s to $9.0\cdot10^{-5}$ m²/s. The flow dimension during the test is 2. A static pressure measured at transducer depth was not possible to derive from the CRwr phase due to poor data quality.

The analyses of the CRw and CRwr phases show some minor influence of natural fluctuation. No further analysis recommended.

5.3.12 Response KLX19A, section 7 (136.00–290.00 m)

Comments to test

A total drawdown during the flow period of 1.3 kPa (0.13 m) was observed in this section. A drawdown of 0.01 m was reached after appr. 2,917 min. (175,020 s) after pump start in KLX27A (210.00–247.00). The calculated index 1 (r_s^2/dt_L) is rated as "low response time", index 2 (s_p/Q_p) as "low response" and the new index 2 (s_p/Q_p)·ln(r_s/r_0) as "medium response".

Despite of a poor data quality, mainly affected by tidal influence, the CRw phase was analysable but shows a relative high range of uncertainty. The CRwr phase was not analysable due to the fact that no recovery was observed during an observation period of 36 hours.

Flow regime and calculated parameters

The flow dimension is interpreted from the slope of the semi-log derivative plotted in log-log coordinates. For the analysis of the CRw phase a homogeneous radial flow model was chosen. The analysis is presented in Appendix 5-10.

Selected representative parameters

The recommended transmissivity of $9.0 \cdot 10^{-5}$ m²/s was derived from the analysis of the CRw phase. The confidence range for the borehole transmissivity is estimated to be $3.0 \cdot 10^{-5}$ m²/s to $3.0 \cdot 10^{-4}$ m²/s. The flow dimension during the test is 2. A static pressure measured at transducer depth was not possible to derive from the CRwr phase due to poor data quality.

The analysis of the CRw phase shows major influence of tidal fluctuations but is still representative for the observed section. No further analysis recommended.

5.3.13 Response KLX19A, section 8 (0.00–135.00 m)

Comments to test

A total drawdown during the flow period of 1.3 kPa (0.13 m) was observed in this section. A drawdown of 0.01 m was reached after appr. 1,807 min. (108,420 s) after pump start in KLX27A (210.00–247.00). The calculated index 1 (r_s^2/dt_L) is rated as "low response time", index 2 (s_p/Q_p) as "low response" and the new index 2 (s_p/Q_p)·ln(r_s/r_0) as "medium response".

Despite of a poor data quality, mainly affected by tidal influence, the CRw phase was analysable but shows a relative high range of uncertainty. The CRwr phase was not analysable due to the fact that no recovery was observed during an observation period of 36 hours.

Flow regime and calculated parameters

The flow dimension is interpreted from the slope of the semi-log derivative plotted in log-log coordinates. For the analysis of the CRw phase a homogeneous radial flow model was chosen. The analysis is presented in Appendix 5-11.

Selected representative parameters

The recommended transmissivity of $1.2 \cdot 10^{-4}$ m²/s was derived from the analysis of the CRw phase. The confidence range for the borehole transmissivity is estimated to be $4.0 \cdot 10^{-5}$ m²/s to $4.0 \cdot 10^{-4}$ m²/s. The flow dimension during the test is 2. A static pressure measured at transducer depth was not possible to derive from the CRwr phase due to poor data quality.

The analysis of the CRw phase shows major influence of tidal fluctuations but is still representative for the observed section. No further analysis recommended.

5.3.14 Response KLX20A, section 5 (103.00–144.00 m)

Comments to test

A total drawdown during the flow period of 0.6 kPa (0.06 m) was observed in this section. This is no response according to SKB 330.003 but anyway considered as reaction due to pumping in source. As the slight reaction includes a relative high grade of uncertainty at what response time a drawdown of 0.01 m was reached, no index 1 was calculated. The calculated index 2 (s_p/Q_p) is rated as as "low response" and the new index 2 ($s_p/Q_p)\cdot\ln(r_s/r_0$) as "medium response".

Due to the slight response and therefore very high disturbing effects from background noise and natural fluctuation, no analysis of the CRw phase was performed. The CRwr phase was not analysable due to the fact that no recovery was observed during an observation period of 36 hours.

5.3.15 Response KLX20A, section 6 (0.00–102.00 m)

Comments to test

A total drawdown during the flow period of 0.4 kPa (0.04 m) was observed in this section. This is no response according to SKB 330.003 but anyway considered as reaction due to pumping in source. As the slight reaction includes a relative high grade of uncertainty at what response time a drawdown of 0.01 m was reached, no index 1 was calculated. The calculated index 2 (s_p/Q_p) is rated as as "low response" and the new index 2 ($s_p/Q_p)\cdot\ln(r_s/r_0$) as "medium response".

Due to the slight response and therefore very high disturbing effects from background noise and natural fluctuation, no analysis of the CRw phase was performed. The CRwr phase was not analysable due to the fact that no recovery was observed during an observation period of 36 hours.

5.3.16 Response KLX23A, section 1 (49.00–100.00 m)

Comments to test

A total drawdown during the flow period of 1.3 kPa (0.13 m) was observed in this section. A drawdown of 0.01 m was reached after appr. 1,897 min. (113,820 s) after pump start in KLX27A (210.00–247.00). The calculated index 1 (r_s^2/dt_L) is rated as "medium response time", index 2 (s_p/Q_p) as "low response" and the new index 2 ($s_p/Q_p)\cdot\ln(r_s/r_0$) as "medium response".

Despite of a poor data quality, mainly affected by tidal influence, the CRw phase was analysable but shows a relative high range of uncertainty. The CRwr phase was not analysable due to the fact that no recovery was observed during an observation period of 36 hours.

Flow regime and calculated parameters

The flow dimension is interpreted from the slope of the semi-log derivative plotted in log-log coordinates. For the analysis of the CRw phase a homogeneous radial flow model was chosen. The analysis is presented in Appendix 5-12.

Selected representative parameters

The recommended transmissivity of $1.1\cdot10^{-4}$ m²/s was derived from the analysis of the CRw phase. The confidence range for the borehole transmissivity is estimated to be $4.0\cdot10^{-5}$ m²/s to $3.0\cdot10^{-4}$ m²/s. The flow dimension during the test is 2. A static pressure measured at transducer depth was not possible to derive from the CRwr phase due to poor data quality.

The analysis of the CRw phase shows major influence of tidal fluctuations but is still representative for the observed section. No further analysis recommended.

5.3.17 Response KLX24A, section 1 (69.00–100.00 m)

Comments to test

A total drawdown during the flow period of 0.5 kPa (0.05 m) was observed in this section. This is no response according to SKB 330.003 but anyway considered as reaction due to pumping in source. As the slight reaction includes a relative high grade of uncertainty at what response time a drawdown of 0.01 m was reached, no index 1 was calculated. The calculated index 2 (s_p/Q_p) is rated as as "low response" and the new index 2 (s_p/Q_p)·ln(r_s/r_0) as "medium response".

Due to the slight response and therefore very high disturbing effects from background noise and natural fluctuation, no analysis of the CRw phase was performed. The CRwr phase was not analysable due to the fact that no recovery was observed during an observation period of 36 hours.

5.3.18 Response KLX24A, section 2 (41.00–68.00 m)

Comments to test

A total drawdown during the flow period of 0.5 kPa (0.05 m) was observed in this section. This is no response according to SKB 330.003 but anyway considered as reaction due to pumping in source. As the slight reaction includes a relative high grade of uncertainty at what response time a drawdown of 0.01 m was reached, no index 1 was calculated. The calculated index 2 (s_p/Q_p) is rated as as "low response" and the new index 2 (s_p/Q_p)·ln(r_s/r_0) as "medium response".

Due to the slight response and therefore very high disturbing effects from background noise and natural fluctuation, no analysis of the CRw phase was performed. The CRwr phase was not analysable due to the fact that no recovery was observed during an observation period of 36 hours.

5.4 KLX27A test section 639.20–650.56 m pumped

This interference test was conducted as constant rate pump test phase followed by a recovery pressure phase in the source section. The mean flow rate was 4.5 l/min with a drawdown of 201 kPa. In sum, none of the 62 observation sections responded due to the pumping. Table 5-3 summarizes the test sections and selected parameters.

Table 5-3. Responded test sections and selected parameters (section 639.20–650.56 m pumped).

Source borehole		Section (m)	Flow rate Qm (l/min)	Drawdown (m)	r_{wf} (m)				
KLX27A	1	639.20–650.56	4.45	20.49	3.8E–2				
Observation borehole	**Sec no.**	**Section (m)**	**Distance r_s (m)**	**Drawdown s_p (m)**	**dt_L (s)**	**Index 1 r_s^2/dt_L (m^2/s)**	**Index 2 s_p/Q_p (s/m^2)**	**Index 2 new $(s_p/Q_p)\cdot\ln(r_s/r_0)$ (s/m^2)**	**Diffusivity η (m^2/s)**
HLX27	1	153.00–165.00	1,258.1	n.r.	–	–	–	–	–
	2	100.00–152.00	1,268.2	n.r.	–	–	–	–	–
	3	0.00–99.00	1,285.1	n.r.	–	–	–	–	–
HLX28	1	91.00–154.00	491.6	n.r.	–	–	–	–	–
	2	70.00–90.00	523.2	n.r.	–	–	–	–	–
	3	7.50–69.00	553.8	n.r.	–	–	–	–	–
	4	0.00–6.50	n.o.	n.o.	–	–	–	–	–
HLX32	1	31.00–163.00	510.7	n.r.	–	–	–	–	–
	2	20.00–30.00	574.2	n.r.	–	–	–	–	–
	3	0.00–19.00	588.3	n.r.	–	–	–	–	–
HLX36	1	50.00–199.50	629.7	n.r.	–	–	–	–	–
	2	0.00–49.00	666.3	n.r.	–	–	–	–	–

Source borehole		Section (m)	Flow rate Qm (l/min)	Drawdown (m)	r_{wf} (m)				
KLX27A	1	639.20–650.56	4.45	20.49	3.8E–2				
Observation borehole	**Sec no.**	**Section (m)**	**Distance r_s (m)**	**Drawdown s_p (m)**	**dt_L (s)**	**Index 1 r_s^2/dt_L (m^2/s)**	**Index 2 s_p/Q_p (s/m^2)**	**Index 2 new $(s_p/Q_p)\cdot\ln(r_s/r_0)$ (s/m^2)**	**Diffusivity ŋ (m^2/s)**
HLX37	1	150.00–200.00	587.3	n.r.	–	–	–	–	–
	2	111.00–149.00	633.1	n.r.	–	–	–	–	–
	3	94.00–110.00	648.2	n.r.	–	–	–	–	
	4	0.00–93.00	732.4	n.r.	–	–	–	–	
HLX38	1	0.00–199.50	669.8	n.r.	–	–	–	–	–
HLX42	1	30.00–152.60	1,305.9	n.r.	–	–	–	–	–
	2	0.00–29.00	1,380.3	n.r.	–	–	–	–	–
KLX11A	1	703.00–992.00	524.3	n.r.	–	–	–	–	–
	2	587.00–702.00	468.8	n.r.	–	–	–	–	–
	3	573.00–586.00	469.9	n.r.	–	–	–	–	–
	4	495.00–572.00	476.9	n.r.	–	–	–	–	–
	5	315.00–494.00	494.4	n.r.	–	–	–	–	–
	6	273.00–314.00	553.2	n.r.	–	–	–	–	–
	7	256.00–272.00	583.1	n.r.	–	–	–	–	–
	8	180.00–255.00	620.5	n.r.	–	–	–	–	–
	9	103.00–179.00	643.8	n.r.	–	–	–	–	–
	10	0.00–102.00	727.3	n.r.	–	–	–	–	–
KLX11E	1	2.00–121.00	711.2	n.r.	–	–	–	–	–
KLX14A	1	123.00–176.27	684.4	n.r.	–	–	–	–	–
	2	77.00–122.00	692.0	n.r.	–	–	–	–	–
	3	0.00–76.00	696.9	n.r.	–	–	–	–	–
KLX15A	1	902.00–1,000.00	1,396.2	n.r.	–	–	–	–	–
	2	641.00–901.00	1,359.6	n.r.	–	–	–	–	–
	3	623.00–640.00	1,312.8	n.r.	–	–	–	–	–
	4	481.00–622.00	1,301.9	n.r.	–	–	–	–	–
	5	273.00–480.00	1,304.4	n.r.	–	–	–	–	–
	6	260.00–272.00	1,320.0	n.r.	–	–	–	–	–
	7	191.00–259.00	1,333.2	n.r.	–	–	–	–	–
	8	79.00–190.00	1,351.4	n.r.	–	–	–	–	–
	9	0.00–78.00	1,380.5	n.r.	–	–	–	–	–
KLX16A	1	327.00–433.55	1,249.8	n.r.	–	–	–	–	–
	2	86.00–326.00	1,345.5	n.r.	–	–	–	–	–
	3	0.00–85.00	1,465.4	n.r.	–	–	–	–	–
KLX19A	1	661.00–800.00	404.8	n.r.	–	–	–	–	–
	2	518.00–660.00	340.1	n.r.	–	–	–	–	–
	3	509.00–517.00	338.5	n.r.	–	–	–	–	–
	4	481.50–508.00	339.9	n.r.	–	–	–	–	–
	5	311.00–480.50	346.9	n.r.	–	–	–	–	–
	6	291.00–310.00	414.9	n.r.	–	–	–	–	–
	7	136.00–290.00	509.7	n.r.	–	–	–	–	–
	8	0.00–135.00	548.5	n.r.	–	–	–	–	–
KLX20A	1	294.00–457.00	687.4	n.r.	–	–	–	–	–
	2	260.00–293.00	683.7	n.r.	–	–	–	–	–
	3	181.00–259.00	691.8	n.r.	–	–	–	–	–
	4	145.00–180.00	699.0	n.r.	–	–	–	–	–
	5	103.00–144.00	709.9	n.r.	–	–	–	–	–
	6	0.00–102.00	721.5	n.r.	–	–	–	–	–
KLX23A	1	49.00–100.00	581.0	n.r.	–	–	–	–	–
	2	0.00–48.00	611.1	n.r.	–	–	–	–	–
KLX24A	1	69.00–100.00	768.1	n.r.	–	–	–	–	–
	2	41.00–68.00	773.5	n.r.	–	–	–	–	–
	3	0.00–40.00	790.3	n.r.	–	–	–	–	–

)* no response according to SKB 330.003 (Bilagor B); see Section 4.6.1 for greater detail
n.r. no response due to pumping in source Key for index 1, 2 and 2 new, see Table 5-1.

6 Summary and conclusions

The summary and conclusions chapter summarizes the basic test parameters and analysis results.

6.1 Summary of results

Table 6-1. General test data from constant rate pump tests.

Borehole ID	Borehole secup (m)	Borehole Seclow (m)	Date and time Test start YYYYMMDD hh:mm	Date and time Test stop YYYYMMDD hh:mm	Q_p (m^3/s)	Q_m (m^3/s)	tp (s)	t_F (s)	p_0 (kPa)	p_i (kPa)	p_p (kPa)	p_F (kPa)	Te_w (°C)	Test phases measured Analysed test phases *marked **bold***	
KLX27A	210.00	247.00	20071010 00:00	20071023 12:00	6.33E–05	6.60E–05	230,340	176,400	1,846	1,847	1,412	1,823	#NV	**CRw**	**CRwr**
KLX27A	639.20	650.56	20071119 00:00	20071125 00:00	7.00E–05	7.42E–05	53,580	153,180	5,016	5,638	5,437	5,630	#NV	**CRw**	**CRwr**

Nomenclature

Qp	Flow in test section immediately before stop of flow [m^3/s].
Qm	Arithmetical mean flow during perturbation phase [m^3/s].
tp	Duration of perturbation phase [s].
tf	Duration of recovery phase [s].
p0	Pressure in borehole before packer inflation [kPa].
pi	Pressure in test section before start of flowing [kPa].
pp	Pressure in test section before stop of flowing [kPa].
pF	Pressure in test section at the end of the recovery [kPa].
Tew	Temperature in test section.
Test phases	CRw: constant rate pump (withdrawal) phase. CRwr: recovery phase following the constant rate pump (withdrawal) phase.

Table 6-2. Results from analysis of constant rate pump tests.

Interval position			Stationary flow parameters		Transient analysis Flow regime		Formation parameters													Static conditions	
Borehole ID	up m btoc	low m btoc	Q/s m^2/s	T_M m^2/s	Perturb. Phase	Recovery Phase	T_{f1} m^2/s	T_{f2} m^2/s	T_{s1} m^2/s	T_{s2} m^2/s	T_T m^2/s	T_{TMIN} m^2/s	T_{TMAX} m^2/s	C m^3/Pa	ξ –	dt_1 min	dt_2 min	r_{inner} m	p* kPa	h_{wif} masl
KLX27A	210.00	247.00	1.4E–06	1.6E–06	2	WBS2	8.4E–06	#NV	8.0E–06	#NV	8.0E–06	4.0E–06	2.0E–05	1.4E–07	21.2	378	1,266	#NV	1,833.8	1.83
KLX27A	639.20	650.56	3.4E–06	3.3E–06	22	WBS22	2.6E–06	8.7E–05	2.6E–06	8.5E–05	8.7E–05	4.0E–05	2.0E–04	1.0E–07	–1.0	52	502	8.0	5,635.8	–0.76

Nomenclature

Q/s	Specific capacity.
T_M	Transmissivity according to /Moye 1967/.
Flow regime	The flow regime description refers to the recommended model used in the transient analysis. WBS denotes wellbore storage and skin and is followed by a set of numbers describing the flow dimension used in the analysis (1 = linear flow, 2 = radial flow, 3 = spherical flow). If only one number is used (e.g. WBS2 or 2) a homogeneous flow model (1 composite zone) was used in the analysis, if two numbers are given (WBS22 or 22) a 2 zones composite model was used.
T_f	Transmissivity derived from the analysis of the perturbation phase (CRw). In case a homogeneous flow model was used only one T_f value is reported, in case a two zone composite flow model was used both T_{f1} (inner zone) and T_{f2} (outer zone) are given.
T_s	Transmissivity derived from the analysis of the recovery phase (CRwr). In case a homogeneous flow model was used only one T_s value is reported, in case a two zone composite flow model was used both T_{s1} (inner zone) and T_{s2} (outer zone) are given.
T_T	Recommended transmissivity.
T_{TMIN} / T_{TMAX}	Confidence range lower/upper limit.
C	Wellbore storage coefficient.
ξ	Skin factor (calculated based on a Storativity of $1 \cdot 10^{-6}$).
dt_1 / dt_2	Estimated start/stop time of evaluation for the recommended transmissivity (T_T).
r_{inner}	Radius of the inner zone (see Section 4.5.8).
p*	The parameter p* denoted the static formation pressure (measured at transducer depth) and was derived from the HORNER plot of the CHir phase using straight line or type-curve extrapolation.
h_{wif}	Fresh-water head (based on transducer depth and p*).
#NV	Not analysed/no values.

Table 6-3. Results from analysis of the interference tests.

Pumped section		Observation borehole		Transient analysis												Index calculation			
				Flow regime		Formation parameter													
Borehole ID	Section m btoc	Borehole ID_Sec	Section m btoc	Pertub. phase	Rec. phase	T_{f1} m^2/s	T_{f2} m^2/s	T_{s1} m^2/s	T_{s2} m^2/s	T_T m^2/s	T_{TMIN} m^2/s	T_{TMAX} m^2/s	S	dt_1 s	dt_2 s	Index 1 r_s^2/dt_L	Index 2 s_p/Q_p	Index 2 new (sp/Qp)· ln(rs/,0)	Diffusivity η (T/S)
KLX27A	210.00–247.00	HLX27_1	153.00–165.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		HLX27_2	100.00–152.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		HLX27_3	0.00–99.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		HLX28_1	91.00–154.00	2	n.a.	1.1E–04	–	–	–	1.1E–04	3.0E–05	3.0E–04	1.9E–04	35,418	177,372	0.22	2,007.85	10,126.42	5.7E–01
		HLX28_2	70.00–90.00	2	n.a.	1.0E–04	–	–	–	1.0E–04	3.0E–05	3.0E–04	1.3E–04	70,152	164,844	0.35	2,162.30	11,401.78	7.7E–01
		HLX28_3	7.50–69.00	2	n.a.	1.3E–04	–	–	–	1.3E–04	4.0E–05	4.0E–04	9.3E–05	62,094	164,844	0.25	1,544.50	8,425.73	1.4E+00
		HLX28_4	0.00–6.50	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		HLX32_1	31.00–163.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		HLX32_2	20.00–30.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		HLX32_3	0.00–19.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		HLX36_1	50.00–199.50	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		HLX36_2	0.00–49.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		HLX37_1	150.00–200.00	2	n.a.	1.1E–04	–	–	–	1.1E–04	3.0E–05	3.0E–04	1.4E–05	102,528	181,752	2.51	1,853.40	11,681.25	7.7E+00
		HLX37_2	111.00–149.00	2	n.a.	1.1E–04	–	–	–	1.1E–04	3.0E–05	3.0E–04	1.4E–05	103,674	178,692	2.80	2,162.30	13,705.91	7.9E+00
		HLX37_3	94.00–110.00	n.a.	n.a.	–	–	–	–	–	–	–	–	–	–	n.c.	772.25	4,905.81	–
		HLX37_4	0.00–93.00	n.a.	n.a.	–	–	–	–	–	–	–	–	–	–	n.c.	772.25	4,961.60	–
		HLX38_1	0.00–199.50	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		HLX42_1	30.00–152.60	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		HLX42_2	0.00–29.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX11A_1	703.00–992.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX11A_2	587.00–702.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX11A_3	573.00–586.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX11A_4	495.00–572.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX11A_5	315.00–494.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX11A_6	273.00–314.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX11A_7	256.00–272.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX11A_8	180.00–255.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX11A_9	103.00–179.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX11A_10	0.00–102.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX11E_1	2.00–121.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX14A_1	123.00–176.27	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–

Pumped section		Observation borehole		Transient analysis															
				Flow regime		Formation parameter									Index calculation				
Borehole ID	Section m btoc	Borehole ID_Sec	Section m btoc	Pertub. phase	Rec. phase	T_{f1} m^2/s	T_{f2} m^2/s	T_{s1} m^2/s	T_{s2} m^2/s	T_T m^2/s	T_{TMIN} m^2/s	T_{TMAX} m^2/s	S	dt_1 s	dt_2 s	Index 1 r_s^2/dt_L	Index 2 s_p/Q_p	Index 2 new (sp/Qp)· ln(rs/,0)	Diffusivity η (T/S)
		KLX14A_2	77.00–122.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX14A_3	0.00–76.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX15A_1	902.00–1,000.0	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX15A_2	641.00–901.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX15A_3	623.00–640.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX15A_4	481.00–622.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX15A_5	273.00–480.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX15A_6	260.00–272.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX15A_7	191.00–259.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX15A_8	79.00–190.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX15A_9	0.00–78.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX16A_1	327.00–433.55	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX16A_2	86.00–326.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX16A_3	0.00–85.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX19A_1	661.00–800.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX19A_2	518.00–660.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX19A_3	509.00–517.00	2	2	1.6E–05	–	1.3E–05	–	1.6E–05	8.0E–06	3.0E–05	9.0E–06	n.a.	n.a.	6.11	12,047.08	68,991.77	1.7E+00
		KLX19A_4	481.50–508.00	2	2	1.5E–05	–	1.3E–05	–	1.5E–05	8.0E–06	3.0E–05	1.1E–05	103,674	210,420	5.45	11,892.63	67,429.78	1.5E+00
		KLS19A_5	311.00–480.50	2	2	1.5E–05	–	1.6E–05	–	1.5E–05	8.0E–06	3.0E–05	1.3E–05	71,886	205,344	4.25	11,892.63	66,176.76	1.2E+00
		KLX19A_6	291.00–310.00	2	2	4.3E–05	–	3.2E–05	–	4.3E–05	2.0E–05	9.0E–05	1.8E–05	73,116	178,692	3.25	9,266.98	50,149.63	2.4E+00
		KLX19A_7	136.00–290.00	2	n.a.	9.0E–05	–	–	–	9.0E–05	3.0E–05	3.0E–04	6.9E–05	108,858	181,752	0.43	2,007.85	11,277.61	1.3E+00
		KLX19A_8	0.00–135.00	2	n.a.	1.2E–04	–	–	–	1.2E–04	4.0E–05	4.0E–04	4.0E–05	n.a.	n.a.	0.85	2,007.85	11,472.30	2.9E+00
		KLX20A_1	294.00–457.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX20A_2	260.00–296.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX20A_3	181.00–259.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX20A_4	145.00–180.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX20A_5	103.00–144.00	n.a.	n.a.	–	–	–	–	–	–	–	–	–	–	n.c.	926.70	6,048.09	–
		KLX20A_6	0.00–103.00	n.a.	n.a.	–	–	–	–	–	–	–	–	–	–	n.c	617.80	4,030.25	–
		KLX23A_1	49.00–100.00	2	n.a.	1.1E–04	–	–	–	1.1E–04	4.0E–05	3.0E–04	2.5E–05	120,024	173,094	1.88	2,007.85	12,319.27	4.3E+00
		KLX23A_2	0.00–48.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX24A_1	69.00–100.00	n.a.	n.a.	–	–	–	–	–	–	–	–	–	–	n.c.	772.25	5,106.14	–
		KLX24A_2	41.00–68.00	n.a.	n.a.	–	–	–	–	–	–	–	–	–	–	n.c.	772.25	5,110.28	–
		KLX24A_3	0.00–40.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–

Pumped section		Observation borehole		Transient analysis												Index calculation			
				Flow regime		Formation parameter													
Borehole ID	Section m btoc	Borehole ID_Sec	Section m btoc	Pertub. phase	Rec. phase	T_{f1} m^2/s	T_{f2} m^2/s	T_{s1} m^2/s	T_{s2} m^2/s	T_T m^2/s	T_{TMIN} m^2/s	T_{TMAX} m^2/s	S	dt_1 s	dt_2 s	Index 1 r_s^2/dt_L	Index 2 s_p/Q_p	Index 2 new (sp/Qp)· ln(rs/,0)	Diffusivity η (T/S)
KLX27A	639.20–650.56	HLX27_1	153.00–165.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		HLX27_2	100.00–152.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		HLX27_3	0.00–99.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		HLX28_1	91.00–154.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		HLX28_2	70.00–90.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		HLX28_3	7.50–69.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		HLX28_4	0.00–6.50	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		HLX32_1	31.00–163.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		HLX32_2	20.00–30.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		HLX32_3	0.00–19.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		HLX36_1	50.00–199.50	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		HLX36_2	0.00–49.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		HLX37_1	150.00–200.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		HLX37_2	111.00–149.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		HLX37_3	94.00–110.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		HLX37_4	0.00–93.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		HLX38_1	0.00–199.50	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		HLX42_1	30.00–152.60	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		HLX42_2	0.00–29.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX11A_1	703.00–992.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX11A_2	587.00–702.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX11A_3	573.00–586.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX11A_4	495.00–572.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX11A_5	315.00–494.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX11A_6	273.00–314.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX11A_7	256.00–272.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX11A_8	180.00–255.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX11A_9	103.00–179.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX11A_10	0.00–102.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX11E_1	2.00–121.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX14A_1	123.00–176.27	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX14A_2	77.00–122.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–

Pumped section		Observation borehole		Transient analysis												Index calculation			
				Flow regime		Formation parameter													
Borehole ID	Section m btoc	Borehole ID_Sec	Section m btoc	Pertub. phase	Rec. phase	T_{f1} m^2/s	T_{f2} m^2/s	T_{s1} m^2/s	T_{s2} m^2/s	T_T m^2/s	T_{TMIN} m^2/s	T_{TMAX} m^2/s	S	dt_1 s	dt_2 s	Index 1 r_s^2/dt_L	Index 2 s_p/Q_p	Index 2 new (sp/Qp)· ln(rs/,0)	Diffusivity η (T/S)
		KLX14A_3	0.00–76.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX15A_1	902.00–1,000.0	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX15A_2	641.00–901.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX15A_3	623.00–640.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX15A_4	481.00–622.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX15A_5	273.00–480.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX15A_6	260.00–272.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX15A_7	191.00–259.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX15A_8	79.00–190.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX15A_9	0.00–78.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX16A_1	327.00–433.55	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX16A_2	86.00–326.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX16A_3	0.00–85.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX19A_1	661.00–800.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX19A_2	518.00–660.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX19A_3	509.00–517.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX19A_4	481.50–508.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLS19A_5	311.00–480.50	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX19A_6	291.00–310.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX19A_7	136.00–290.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX19A_8	0.00–135.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX20A_1	294.00–457.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX20A_2	260.00–296.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX20A_3	181.00–259.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX20A_4	145.00–180.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX20A_5	103.00–144.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX20A_6	0.00–102.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX23A_1	49.00–100.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX23A_2	0.00–48.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX24A_1	69.00–100.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX24A_2	41.00–68.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–
		KLX24A_3	0.00–40.00	–	–	–	–	–	–	–	–	–	–	–	–	No response due to pumping			–

Nomenclature

Flow regime	The flow regime description refers to the recommended model used in the transient analysis. WBS denotes wellbore storage and skin and is followed by a set of numbers describing the flow dimension used in the analysis (1 = linear flow, 2 = radial flow, 3 = spherical flow). If only one number is used (e.g. WBS2 or 2) a homogeneous flow model (1 composite zone) was used in the analysis, if two numbers are given (WBS22 or 22) a 2 zones composite model was used.
T_f	Transmissivity derived from the analysis of the perturbation phase (CRw). In case a homogeneous flow model was used only one T_f value is reported, in case a two zone composite flow model was used both T_{f1} (inner zone) and T_{f2} (outer zone) are given.
T_s	Transmissivity derived from the analysis of the recovery phase (CRwr). In case a homogeneous flow model was used only one T_s value is reported, in case a two zone composite flow model was used both T_{s1} (inner zone) and T_{s2} (outer zone) are given.
T_T	Recommended transmissivity.
T_{TMIN} / T_{TMAX}	Confidence range lower/upper limit.
S	Storativity.
dt_1 / dt_2	Estimated start/stop time of evaluation of the recommended transmissivity (T_T).
Index 1	r_s^2/dt_L (m^2/s) normalised distance r_s with respect to the response time.
Index 2	sp/Qp (s/m^2) normalised drawdown with respect to the pumping rate.
Index 2 new	$(sp/Qp)\cdot ln(r_s/r_0)$ (s/m^2) ormalised drawdown with respect to the pumping rate and distance.
Diffusivity ŋ	T_T/S (m^2/s).
n.a.	Not analysed due to strong natural fluctuations.
n.c.	Not calculated.

The Figures 6-1 to 6-2 present the transmissivity and conductivity profiles.

6.2 Correlation analysis

A correlation analysis was used with the aim of examining the consistency of results and deriving general condlusion regarding the testing and analysis methods used.

6.2.1 Comparison of steady state and transient analysis results

The steady state derived transmissivities (T_M and Q/s) were compared in a cross-plot with the recommended transmissivity values derived from the transient analysis for the pump tests (see following Figure 6-3).

The correlation analysis shows that one of the steady state derived transmissivities differs by less than one order of magnitude from the transmissivities derived from the transient analysis. The test with the higher transmissivity shows a difference of around 1.5 orders of magnitude.

6.3 Conclusions

6.3.1 Transmissivity derived from the pump tests

Figure 6-1 presents a profile of transmissivities, including the confidence range derived from the transient analysis. The method used for deriving the recommended transmissivity and its confidence range is described in Section 4.5.9.

Whenever possible, the transmissivities derived are representative for the “undisturbed formation” further away from the borehole. The borehole vicinity was typically described using a skin effect. A composite model was chosen for the pump and recovery phase of the pump test performed in section 639.20–650.56 m. Depending on the quality of the data, the outer zone transmissivity of the pump phase was recommended for this test.

The transmissivity profile in Figure 6-1 shows transmissivities of $8.0\cdot10^{-6}$ m^2/s and $8.7\cdot10^{-5}$ m^2/s.

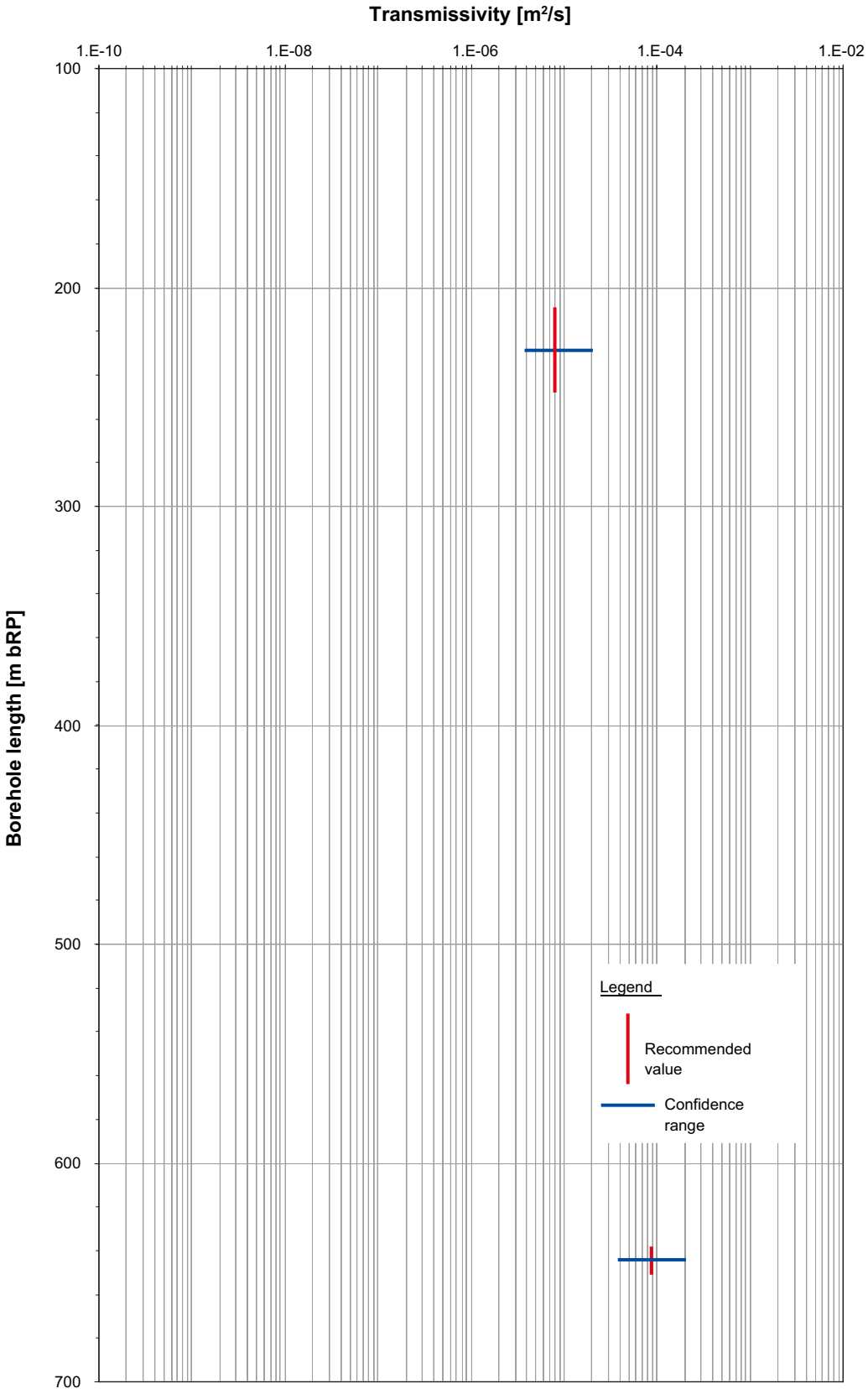

Figure 6-1. *Results summary of KLX27A – profile of transmissivity, transmissivities derived from the pump tests.*

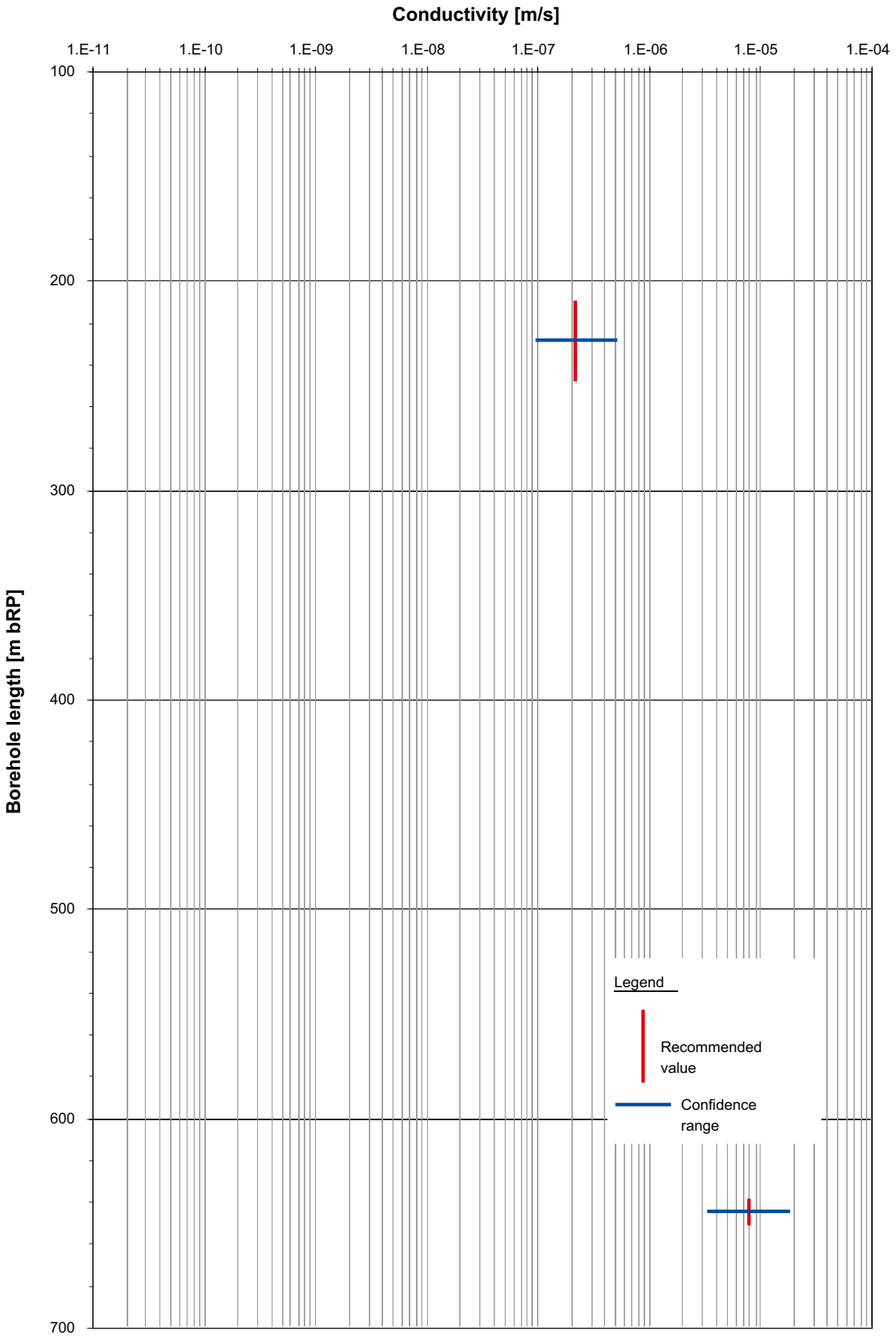

Figure 6-2. *Results summary of KLX27A – profile of hydraulic conductivity, conductivity derived from the pump tests.*

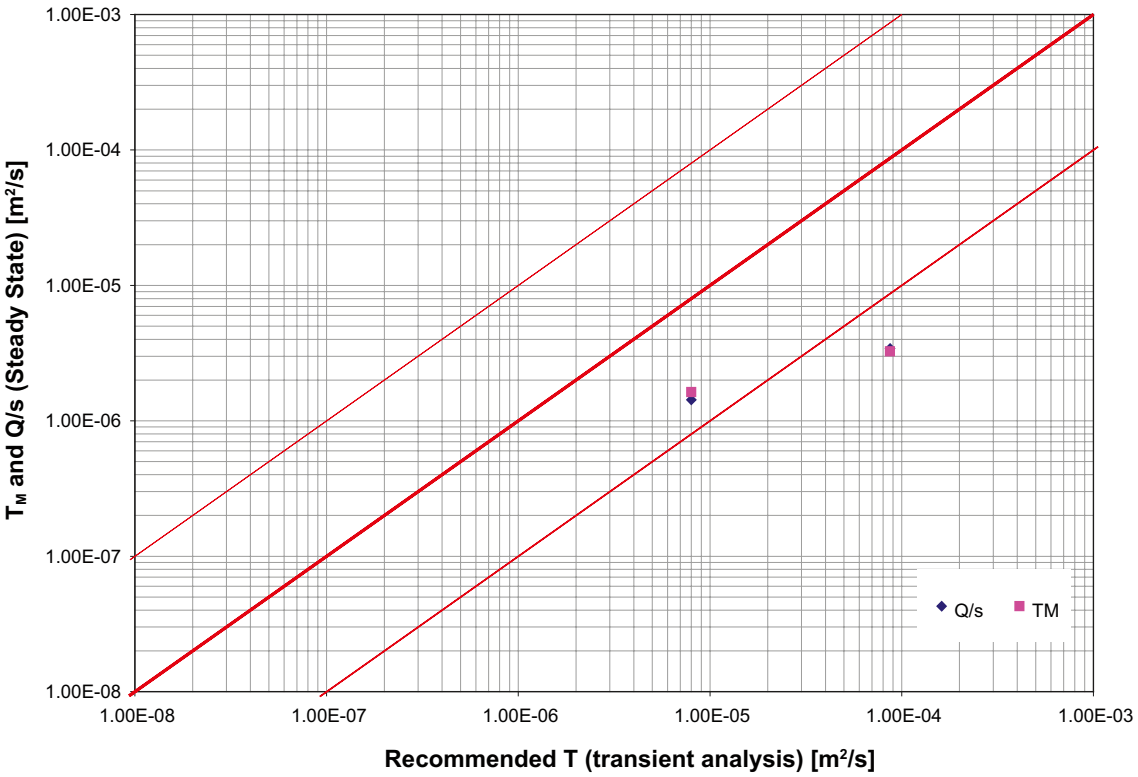

Figure 6-3. *Correlation analysis of transmissivities derived by steady state and transient methods for the pump tests.*

6.3.2 Flow regimes encountered

The flow models used in the analysis were derived from the shape of the pressure derivative calculated with respect to log time and plotted in log-log coordinates.

In the pump tests performed in section 639.20–650.56 m, the pressure derivative suggests a change of transmissivity with increased distance from the borehole. In this case a composite flow model was used in the analysis.

The flow dimension displayed by the tests can be diagnosed from the slope of the pressure derivative. A slope of 0.5 indicates linear flow, a slope of 0 (horizontal derivative) indicates radial flow and a slope of –0.5 indicates spherical flow. The flow dimension diagnosis was commented for each of the tests. However, in all cases it was possible to achieve to acceptable analysis results (good match quality) by using radial flow geometry (flow dimension of 2).

6.3.3 Interference tests and hydraulic connectivity

For the interference tests two constant rate pump tests were performed in KLX27A. Altogether 63 sections in 16 boreholes mainly along the lineaments NW042, NS001 and NS059 were monitored. 18 sections in six observation holes responded during the pump test in test section 210.00–247.00 m. Six of the observed sections responded with less than 0.1 m during the pump phase. According to SKB document 330.003 this slight reaction is not considered as a response. However, a calculation of the indices 2 and 2 new was performed also for these responses. During the pump test in test section 639.20–650.56 m, no section of the observation holes responded at all.

The responding observation sections are located in boreholes along the lineament NW042 and NS001 up to approximately 750 m away from KLX27A.

The recommended transmissivities derived from the transient analysis range from $1.5 \cdot 10^{-5}$ m^2/s to $1.3 \cdot 10^{-4}$ m^2/s. Transmissivities of 1.5 10^{-5} m^2/s were measured in the deeper responding sections of observation borehole KLX19A, most of the other responding sections were analysed with transmissivities in the range of $1.0 \cdot 10^{-4}$ m^2/s.

6.3.4 Interpretation of the responses

Preliminary evaluations indicated that the dolerite dyke in NS001 acts as a hydraulic barrier. Pumping in KLX27A in NW042 on the east side of the dolerite dyke in NS001 generates responses in boreholes HLX28, KLX19A and KLX23A east of the dolerite dyke in NS001. A clear response in HLX37 was observed in the two deep sections which are connected to the formation east of the dolerite dyke in NS001 whereas the two upper sections west of the dolerite dyke showed only a very slight response. In KLX20A, only the upper two sections which are located east of the lineament NS001 showed a slight reaction. The deeper sections west of this lineament showed no reaction at all. No response was observed in HLX32 which is close to the pumped borehole but previous flow logging investigations /Rohs et al. 2007/ performed in HLX32 showed that major hydraulic connections are limited to the near surface part of this borehole and that there is no hydraulic connection to the lineament NW042 in the deeper parts of HLX32.

The tests also show that some hydraulic connection is not necessarily limited to major lineaments. The deeper section of KLX23A showed a clear response to pumping in KLX27A without being connected to any major lineament. A very slight response was observed in the deeper sections of KLX24A which are also not connected to any major lineament but more far away from the pumped borehole than KLX23A.

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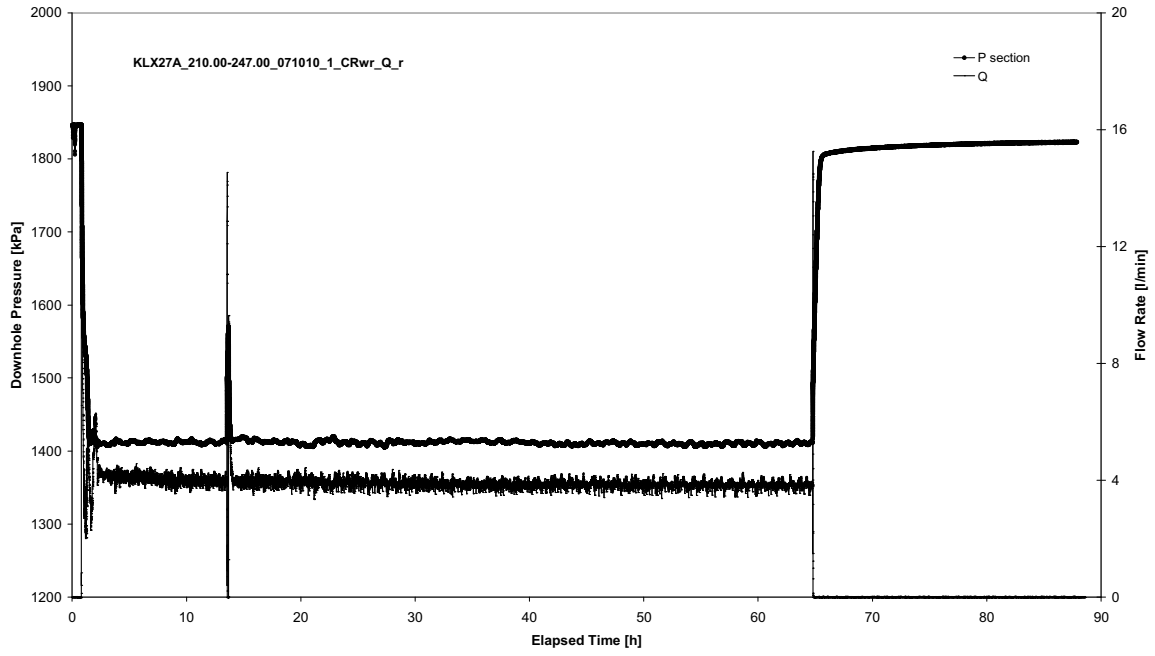
APPENDIX 1

Pump Test Analysis Diagrams

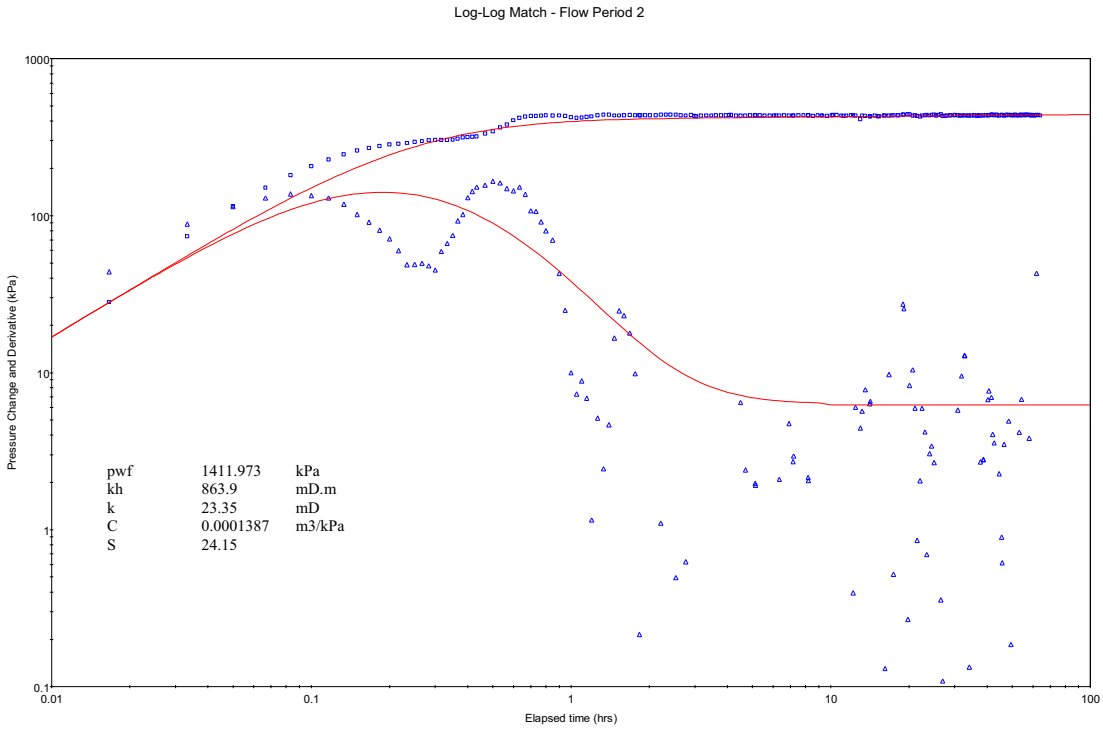
APPENDIX 1-1

Test 210.00 – 247.00 m

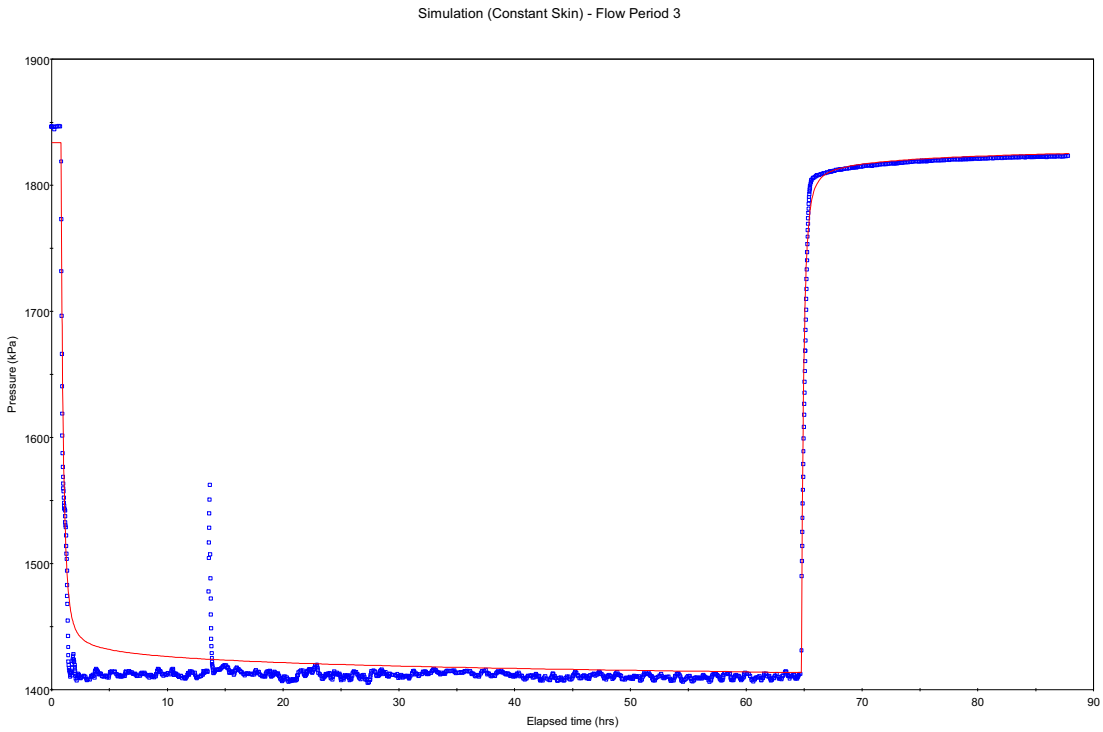
Pump Test Analysis diagrams



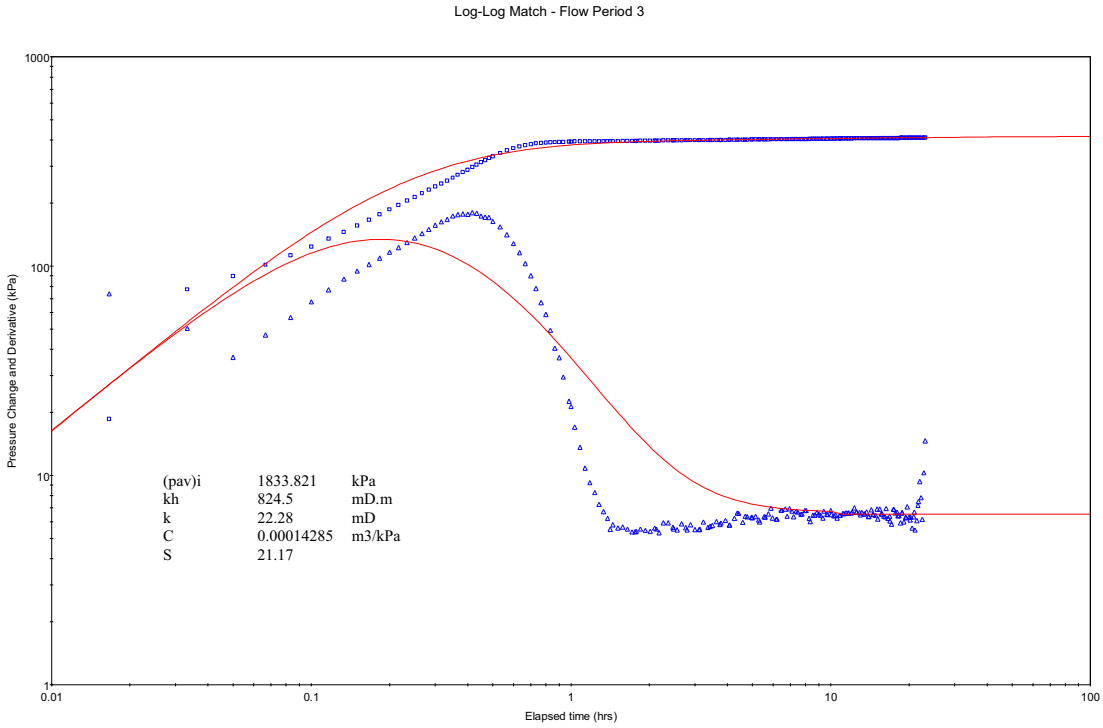
Pressure and flow rate vs. time; cartesian plot



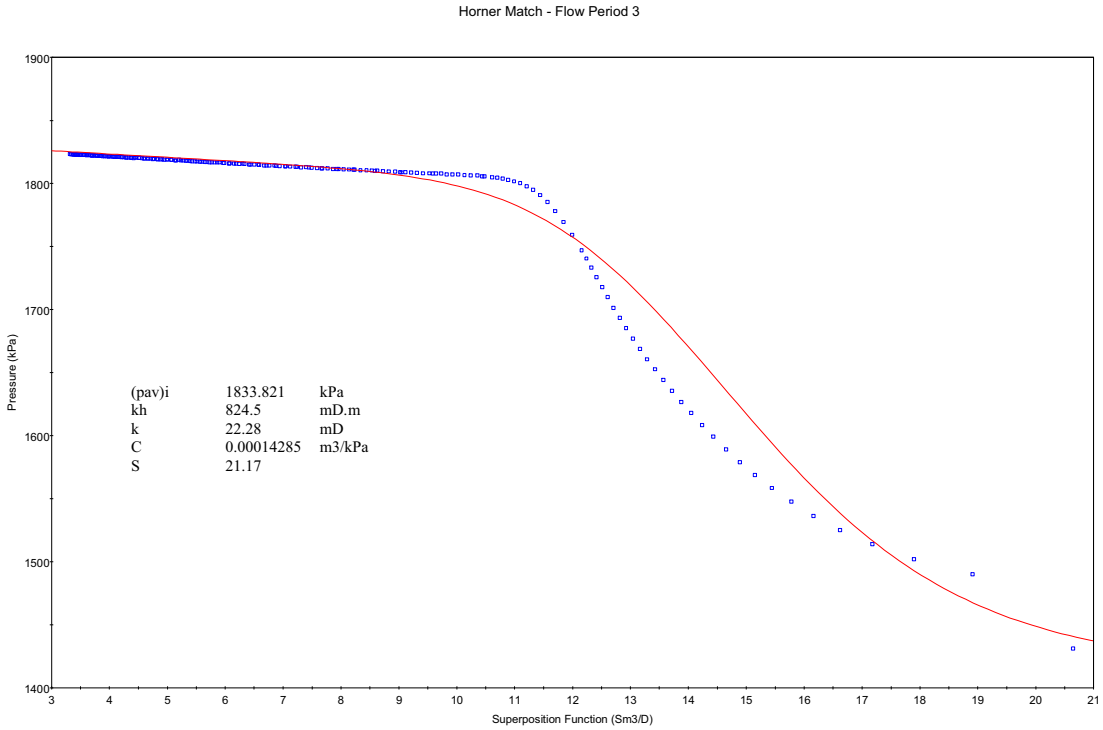
CRw phase; log-log match



CRwr phase; test simulation



CRwr phase; log-log match

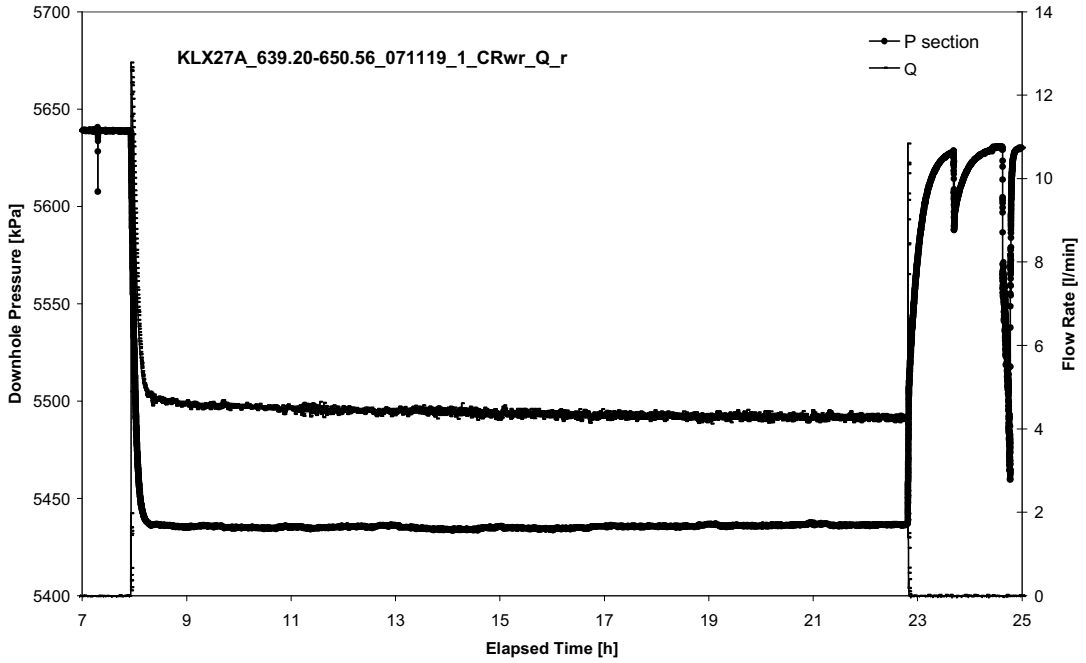


CRwr phase; HORNER match

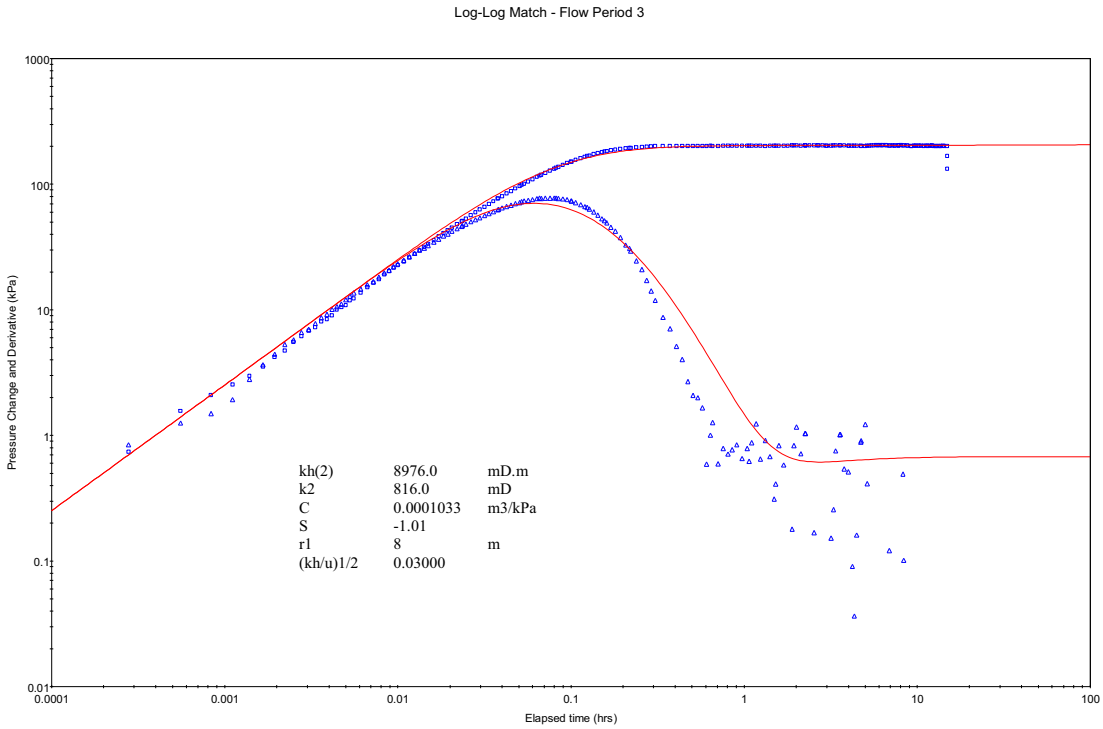
APPENDIX 1-2

Test 639.20 – 650.56 m

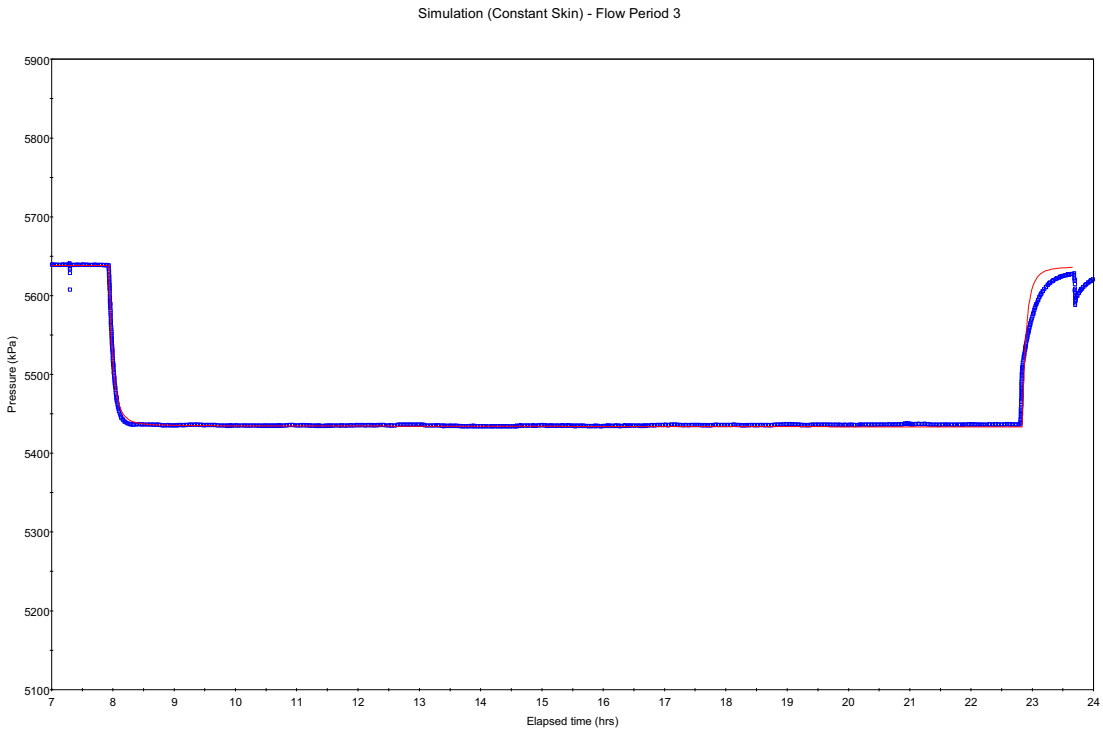
Pump Test Analysis diagrams



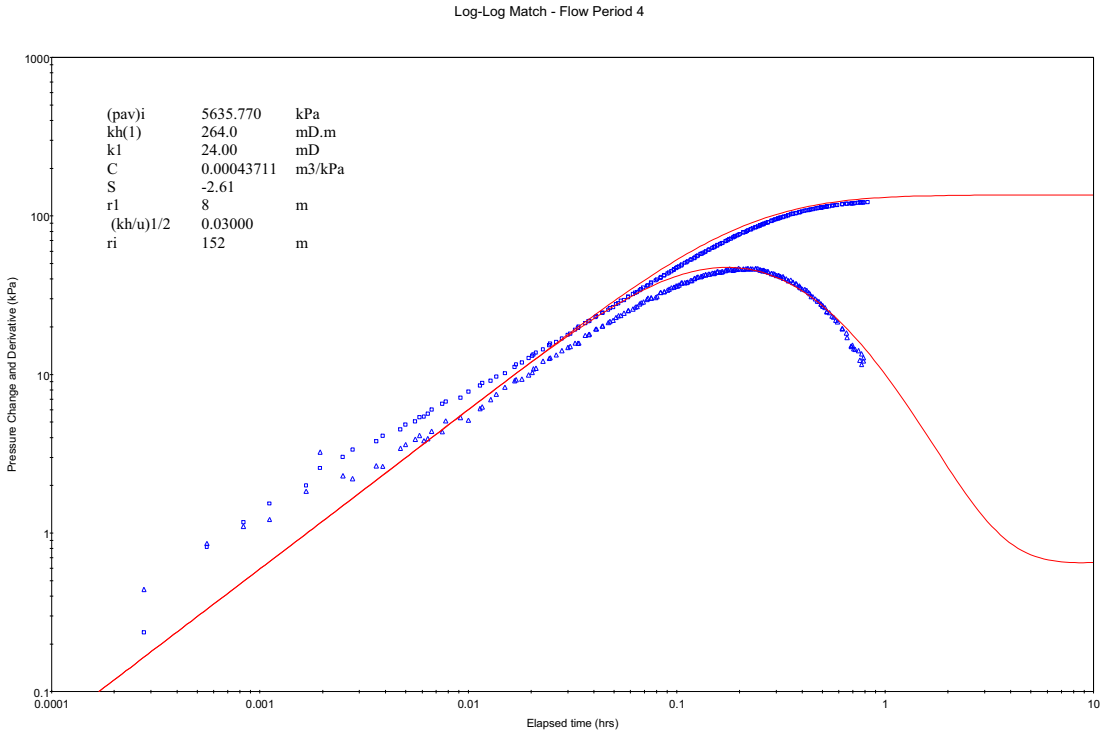
Pressure and flow rate vs. time; cartesian plot



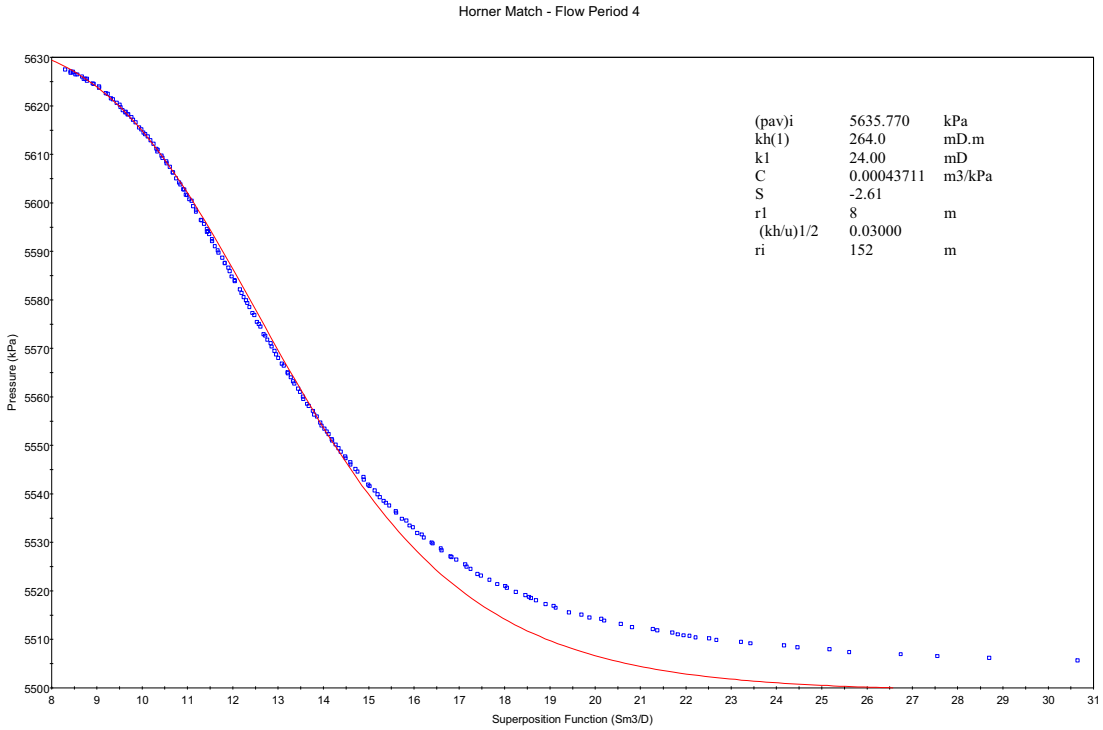
CRw phase; log-log match



CRw phase; test simulation



CRwr phase; log-log match



CRwr phase; HORNER match

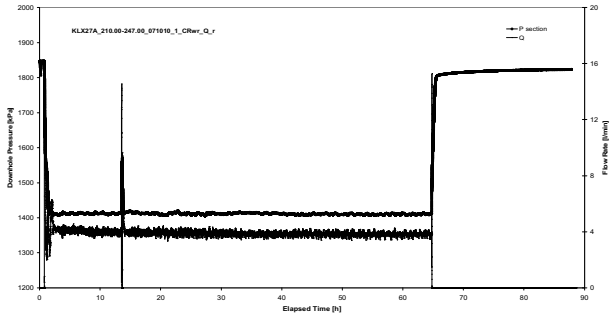
APPENDIX 2

Pump Test Summary Sheets

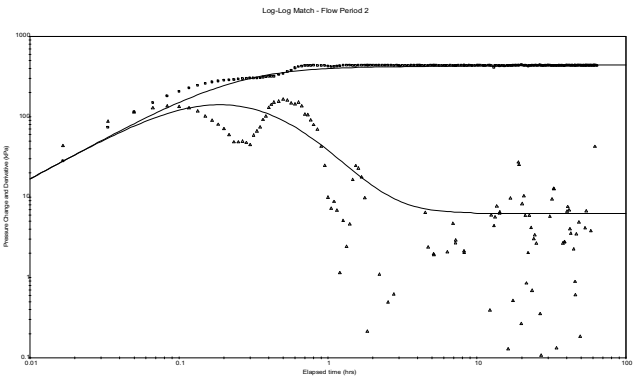
Test Summary Sheet

Project:	Oskarshamn site investigation	Test type:[1]	CRwr
Area:	Laxemar	Test no:	1
Borehole ID:	KLX27A	Test start:	071010 00:00
Test section from - to (m):	210.00-247.00 m	Responsible for test execution:	n.n.
Section diameter, $2 \cdot r_w$ (m):	0.076	Responsible for test evaluation:	Cristian Enachescu

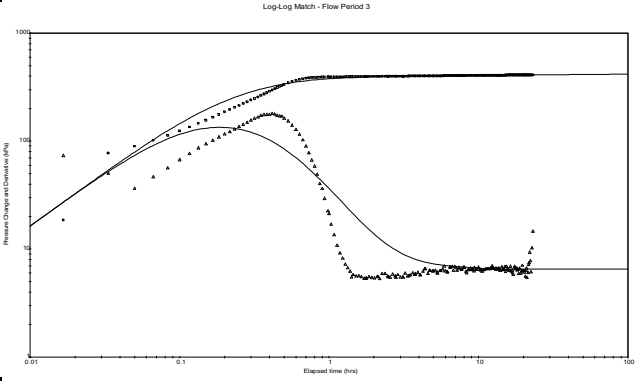
Linear plot Q and p



Log-Log plot incl. derivates- flow period



Log-Log plot incl. derivatives- recovery period



Flow period		**Recovery period**	
Indata		**Indata**	
p_0 (kPa) =	1846		
p_i (kPa) =	1847		
p_p(kPa) =	1412	p_F (kPa) =	1823
Q_p (m^3/s)=	6.33E-05		
tp (s) =	230340	t_F (s) =	176400
S el S* (-)=	1.00E-06	S el S* (-)=	1.00E-06
EC_w (mS/m)=			
$Temp_w$(gr C)=	#NV		
Derivative fact.=	0	Derivative fact.=	0
Results		**Results**	
Q/s (m^2/s)=	1.4E-06		
T_M (m^2/s)=	1.6E-06		
Flow regime:	transient	Flow regime:	transient
dt_1 (min) =	273.96	dt_1 (min) =	377.64
dt_2 (min) =	3157.44	dt_2 (min) =	1266.36
T (m^2/s) =	8.4E-06	T (m^2/s) =	8.0E-06
S (-) =	1.0E-06	S (-) =	1.0E-06
K_s (m/s) =	2.3E-07	K_s (m/s) =	2.2E-07
S_s (1/m) =	1.0E-06	S_s (1/m) =	1.00E-06
C (m^3/Pa) =	NA	C (m^3/Pa) =	1.4E-07
C_D (-) =	NA	C_D (-) =	1.6E+01
ξ (-) =	24.15	ξ (-) =	21.17
T_{GRF}(m^2/s) =	NA	T_{GRF}(m^2/s) =	NA
S_{GRF}(-) =	NA	S_{GRF}(-) =	NA
D_{GRF} (-) =	NA	D_{GRF} (-) =	NA

Selected representative parameters.

dt_1 (min) =	377.64	C (m^3/Pa) =	1.4E-07
dt_2 (min) =	1266.36	C_D (-) =	1.6E+01
T_T (m^2/s) =	8.0E-06	ξ (-) =	21.17
S (-) =	1.0E-06		
K_s (m/s) =	2.2E-07		
S_s (1/m) =	1.0E-06		

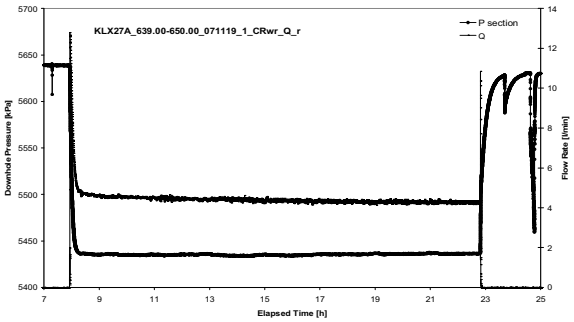
Comments:

The recommended transmissivity of 8.0•10-6 m2/s was derived from the analysis of the CRwr phase. The confidence range for the interval transmissivity is estimated to be 4.0•10-6 to 2.0•10-5 m2/s. The flow dimension displayed during the test is 2. The static pressure measured at transducer depth, was derived from the CRwr phase using type curve extrapolation in the Horner plot to a value of 1,833.8 kPa.

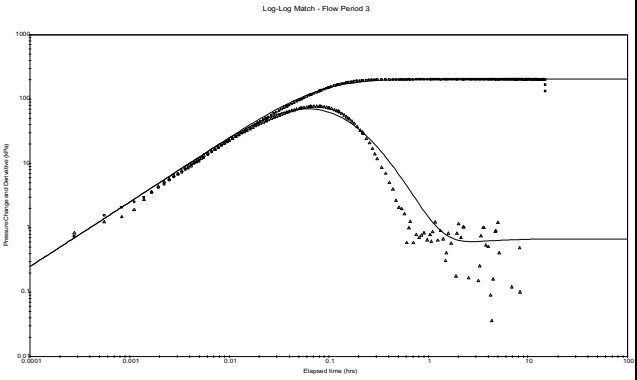
Test Summary Sheet

Project:	Oskarshamn site investigation	Test type:[1]	CRwr
Area:	Laxemar	Test no:	1
Borehole ID:	KLX27A	Test start:	071119 00:00
Test section from - to (m):	639.20-650.56 m	Responsible for test execution:	n.n.
Section diameter, $2 \cdot r_w$ (m):	0.076	Responsible for test evaluation:	Cristian Enachescu

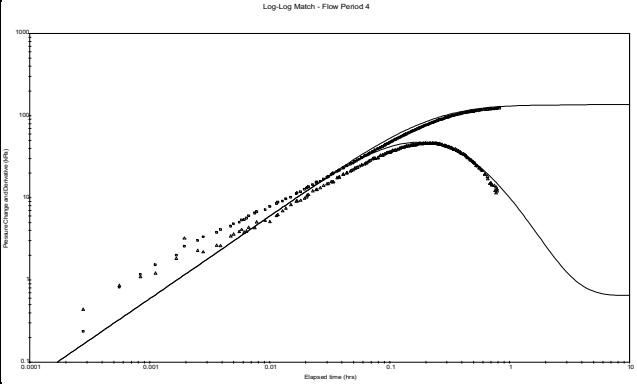
Linear plot Q and p



Log-Log plot incl. derivates- flow period



Log-Log plot incl. derivatives- recovery period



Flow period		**Recovery period**	
Indata		**Indata**	
p_0 (kPa) =	5016		
p_i (kPa) =	5638		
p_p(kPa) =	5437	p_F (kPa) =	5630
Q_p (m^3/s)=	7.00E-05		
tp (s) =	53580	t_F (s) =	153180
S el S^* (-)=	1.00E-06	S el S^* (-)=	1.00E-06
EC_w (mS/m)=			
$Temp_w$(gr C)=	#NV		
Derivative fact.=	0	Derivative fact.=	0
Results		**Results**	
Q/s (m^2/s)=	3.4E-06		
T_M (m^2/s)=	3.2E-06		
Flow regime:	transient	Flow regime:	transient
dt_1 (min) =	52.38	dt_1 (min) =	#NV
dt_2 (min) =	501.66	dt_2 (min) =	#NV
T (m^2/s) =	8.7E-05	T (m^2/s) =	8.5E-05
S (-) =	1.0E-06	S (-) =	1.0E-06
K_s (m/s) =	7.9E-06	K_s (m/s) =	7.7E-06
S_s (1/m) =	9.1E-08	S_s (1/m) =	9.1E-08
C (m^3/Pa) =	NA	C (m^3/Pa) =	1.0E-07
C_D (-) =	NA	C_D (-) =	1.1E+01
ξ (-) =	-1.01	ξ (-) =	-2.61
T_{GRF}(m^2/s) =	NA	T_{GRF}(m^2/s) =	NA
S_{GRF}(-) =	NA	S_{GRF}(-) =	NA
D_{GRF} (-) =	NA	D_{GRF} (-) =	NA

Selected representative parameters.			
dt_1 (min) =	52.38	C (m^3/Pa) =	1.0E-07
dt_2 (min) =	501.66	C_D (-) =	1.1E+01
T_T (m^2/s) =	8.7E-05	ξ (-) =	-1.01
S (-) =	1.0E-06		
K_s (m/s) =	7.9E-06		
S_s (1/m) =	9.1E-08		

Comments:

The recommended transmissivity of 8.7•10-5 m2/s was derived from the analysis of the CRw phase (outer zone). The confidence range for the interval transmissivity is estimated to be 4.0•10-5 to 2.0•10-4 m2/s. The flow dimension displayed during the test is 2. The static pressure measured at transducer depth, was derived from the CRwr phase using type curve extrapolation in the Horner plot to a value of 5,635.8 kPa.

APPENDIX 3

SICADA data tables

(Pump tests)

(Simplified version v1.7)

SICADA/Data Import Template

File Identity	
Created By	
Created	

File Time Zone

Compiled By	
Quality Check For Delivery	
Delivery Approval	

Activity Type	KLX27A KLX27A - Interference test

Project	AP PS 400-07-72

Activity Information

Additional Activity Data

						C10	I160	ID80	P20	P200	P220	R240	R25
Idcode	**Start Date**	**Stop Date**	**Secup (m)**	**Seclow (m)**	**Section No**	**Company**	**Instrument**	**Observation borehole**	**Field crew manager**	**Field crew**	**Person evaluating data**	**calibration type**	**Report**
KLX27A	2007-10-10 00:00:00	2007-10-23 12:00:00	210,00	247,00		Golder		HLX27, HLX28, HLX32, HLX36, HLX37, HLX38, HLX42, KLX11A, KLX11E, KLX14A, KLX15A, KLX16A, KLX19A, KLX20A, KLX23A, KLX24A			S. Rohs, J. Böhner, R. van der Wall, P. Wolf		
KLX27A	2007-11-19 00:00:00	2007-11-25 00:00:00	639,20	650,56		Golder		HLX27, HLX28, HLX32, HLX36, HLX37, HLX38, HLX42, KLX11A, KLX11E, KLX14A, KLX15A, KLX16A, KLX19A, KLX20A, KLX23A, KLX24A			S. Rohs, J. Böhner, R. van der Wall, P. Wolf		

Table	plu_s_hole_test_d
	PLU Injection and pumping, General information

Column	Datatype	Unit	Column Description
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__u	FLOAT	m**3/s	Estimated upper measurement limit of flow rate
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_h	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_p	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		Activity QA signature
lp	FLOAT	m	Hydraulic point of application

			(m)	(m)				(yyyymmdd)	(yyyymmdd)	(m**3/s)		(m**3/s)	(m**3/s)	(m**3/s)	(m**3)
idcode	start_date	stop_date	secup	seclow	section_no	test_type	formation_type	start_flow_period	stop_flow_period	flow_rate_end_qp	value_type_qp	mean_flow_rate_qm	q_measl_l	q_measl__u	tot_volume_vp
KLX27A	2007-10-10 00:00:00	2007-10-23 10:00:00	210,00	247,00		1B	1	2007-10-18 19:03:00	2007-10-21 10:02:00	6,60E-05	0	6,60E-05	1,67E-08	8,33E-04	1,5E+01
KLX27A	2007-11-19 00:00:00	2007-11-25 00:00:00	639,20	650,56		1B	1	2007-11-22 14:34:00	2007-11-23 05:27:00	7,42E-05	0	7,42E-05	1,67E-08	8,33E-04	4,0E+00

	(m)	(m)	(s)	(s)	(m)	(m)	(m)	(kPa)	(kPa)	(kPa)	(oC)	(mS/m)	(mg/l)	(mg/l)			(m)
idcode	secup	seclow	dur_flow_phase_tp	dur_rec_phase_tf	initial_head_hi	head_at_flow_end_hp	final_head_hf	initial_press_pi	press_at_flow_end_pp	final_press_pf	fluid_temp_tew	fluid_elcond_ecw	fluid_salinity_tdsw	fluid_salinity_tdswm	reference	comments	lp
KLX27A	210,00	247,00	230400	176400			1,83	1847	1409	1823	#NV						228,50
KLX27A	639,20	650,56	54000	153000			-0,76	5638	5437	5630	#NV						644,88

Table	plu_s_hole_test_ed1
	PLU Single hole tests, pumping/injection. Basic evaluation

Column	Datatype	Unit	Column Description
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		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.
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)
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)
formation_width_b	FLOAT	m	b:Aquifer thickness repr. for T(generally b=Lw) ,see descr.
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...
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
u_measl_q_s	FLOAT	m**2/s	Estimated upper meas. limit for evaluated TT,see description
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.
s_bc	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
cd	FLOAT		CD: Dimensionless wellbore storage coefficient
skin	FLOAT		Skin factor;best estimate of flow/recovery period,see descr.
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
t2	FLOAT	s	Stop time for evaluated parameter from start of flow period
dte1	FLOAT	s	Start time for evaluated parameter from start of recovery
dte2	FLOAT	s	Stop time for evaluated parameter from start of recovery
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
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		Activity QA signature

			(m)	(m)				(m)	(m)	(m**2/s)		(m**2/s)			(m**2/s)			(m/s)	(m)	(m)
idcode	start_date	stop_date	secup	seclow	section_no	test_type	formation_type	lp	seclen_class	spec_capacity_q_s	value_type_q_s	transmissivity_tq	value_type_tq	bc_tq	transmissivity_moye	bc_tm	value_type_tm	hydr_cond_moye	formation_width_b	width_of_channel_b
KLX27A	2007-10-10 00:00:00	2007-10-23 10:00:00	210,00	247,00		1B	1	288,50	37,00	1,43E-06	0				1,63E-06	0		4,41E-08		
KLX27A	2007-11-19 00:00:00	2007-11-25 00:00:00	639,20	650,56		1B	1	644,88	11,36	3,42E-06	0				3,25E-06	0		2,86E-07		

	(m)	(m)	(m**3/s)	(m**3/s)	(m**3/s)	(m)	(m)	(m)	(m**2/s)			(m**2/s)	(m**2/s)				(m)		(1/s)	(m/s)		(m/s)	(m/s)	(1/m)	(1/m)
idcode	secup	seclow	tb	l_measl_tb	u_measl_tb	sb	assumed_sb	leakage_factor_lf	transmissivity_tt	value_type_tt	bc_tt	l_measl_q_s	u_measl_q_s	storativity_s	assumed_s	s_bc	ri	ri_index	leakage_coeff	hydr_cond_ksf	value_type_ksf	l_measl_ksf	u_measl_ksf	spec_storage_ssf	assumed_ssf
KLX27A	210,00	247,00							7,98E-06	0	1	4,00E-06	2,00E-05	1,00E-06	1,00E-06		1594,64	0							
KLX27A	639,20	650,56							8,69E-05	0	1	4,00E-05	2,00E-04	1,00E-06	1,00E-06		1196,60	0							

	(m)	(m)	(m**3/pa)			(s)	(s)	(s)	(s)	(s)	(s)	(kPa)	(m**2/s)				(m**3/pa)			(m**2/s)					(no_unit)
idcode	secup	seclow	c	cd	skin	dt1	dt2	t1	t2	dte1	dte2	p_horner	transmissivity_t_nlr	storativity_s_nlr	value_type_t_nlr	bc_t_nlr	c_nlr	cd_nlr	skin_nlr	transmissivity_t_grf	value_type_t_grf	bc_t_grf	storativity_s_grf	flow_dim_grf	comment
KLX27A	210,00	247,00	1,42E-07	1,57E+01	21,2	22658	75982					1833,8													
KLX27A	639,20	650,56	1,03E-07	1,14E+01	-1,0	3143	30100					5635,8													

APPENDIX 4

Index calculation

APPENDIX 4-1

Index calculation

KL27A Section 210.00-247.00 m pumped

Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**HLX27**	**Section no.:**	**HLX27_1**
Distance r_s [m]:	1137.00	Section length:	153.00-165.00
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	60.5
Pressure in test section before stop of flowing:	p_p	kPa	60.0
Maximum pressure change during flowing period:*	dp_p	kPa	0.5

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

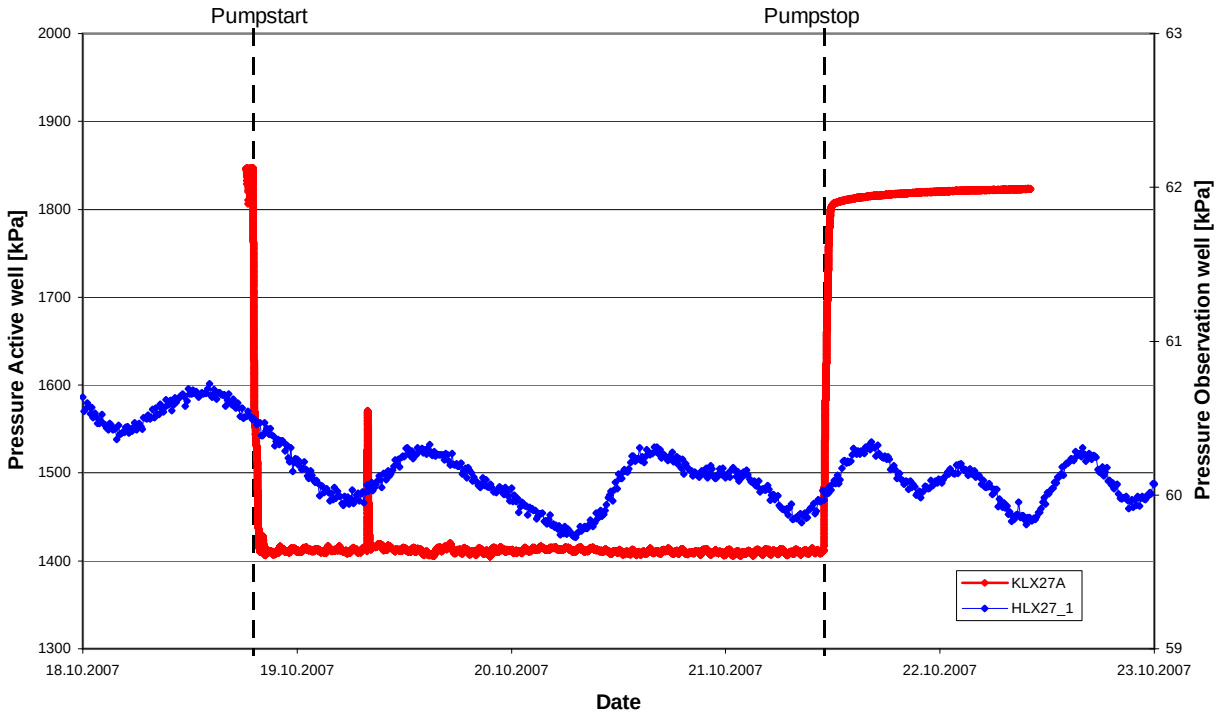
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**HLX27**	**Section no.:**	**HLX27_2**
Distance r_s [m]:	1141.00	Section length:	100.00-152.00
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	62.6
Pressure in test section before stop of flowing:	p_p	kPa	62.1
Maximum pressure change during flowing period:*	dp_p	kPa	0.5

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

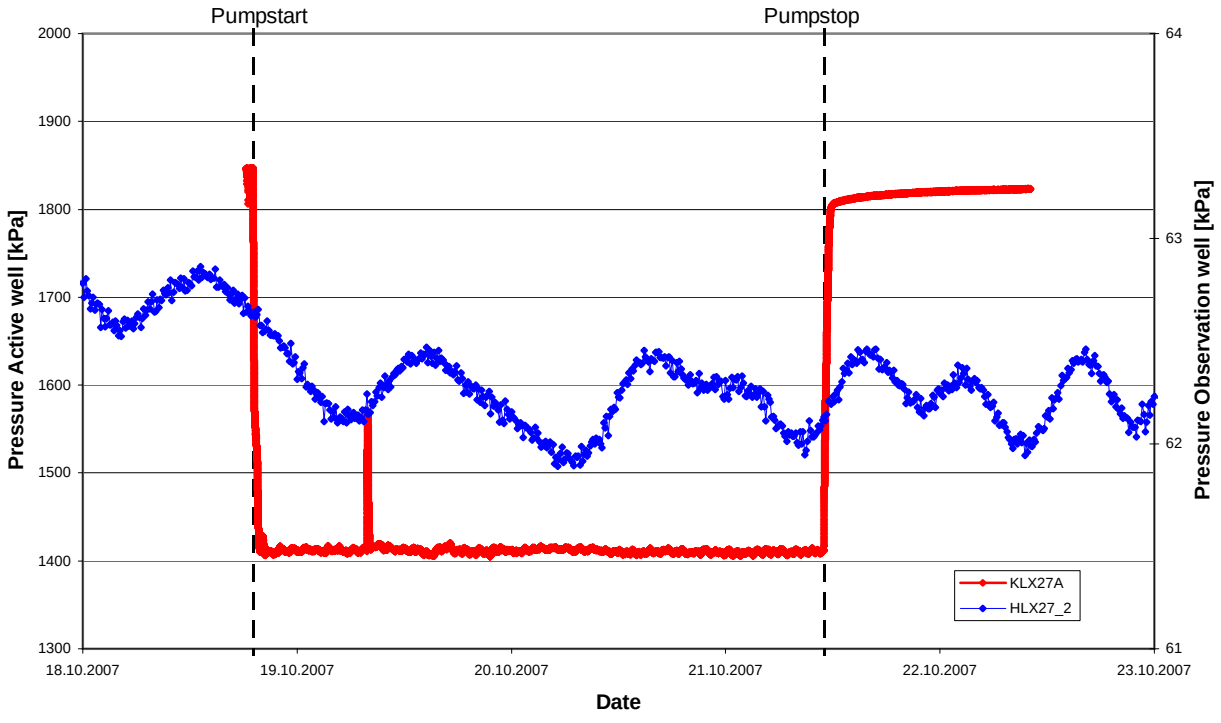
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**HLX27**	**Section no.:**	**HLX27_3**
Distance r_s [m]:	1151.00	Section length:	0.00-99.00
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	63.3
Pressure in test section before stop of flowing:	p_p	kPa	62.8
Maximum pressure change during flowing period:*	dp_p	kPa	0.5

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

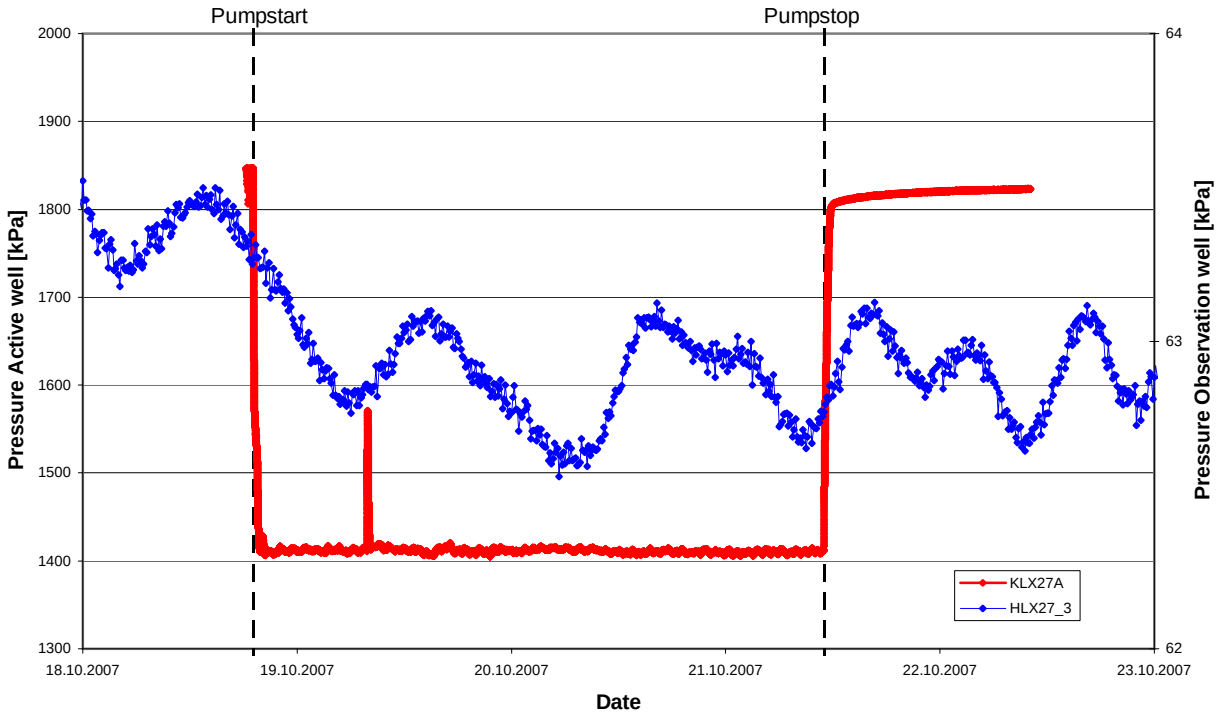
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**HLX28**	**Section no.:**	**HLX28_1**
Distance r_s [m]:	155.00	Section length:	91.00-154.00
Response time dt_L [s]:	111420	max. Drawdown s_p [m]:*	0.13

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	129.7
Pressure in test section before stop of flowing:	p_p	kPa	128.4
Maximum pressure change during flowing period:*	dp_p	kPa	1.3

Normalized distance with respect to the response time

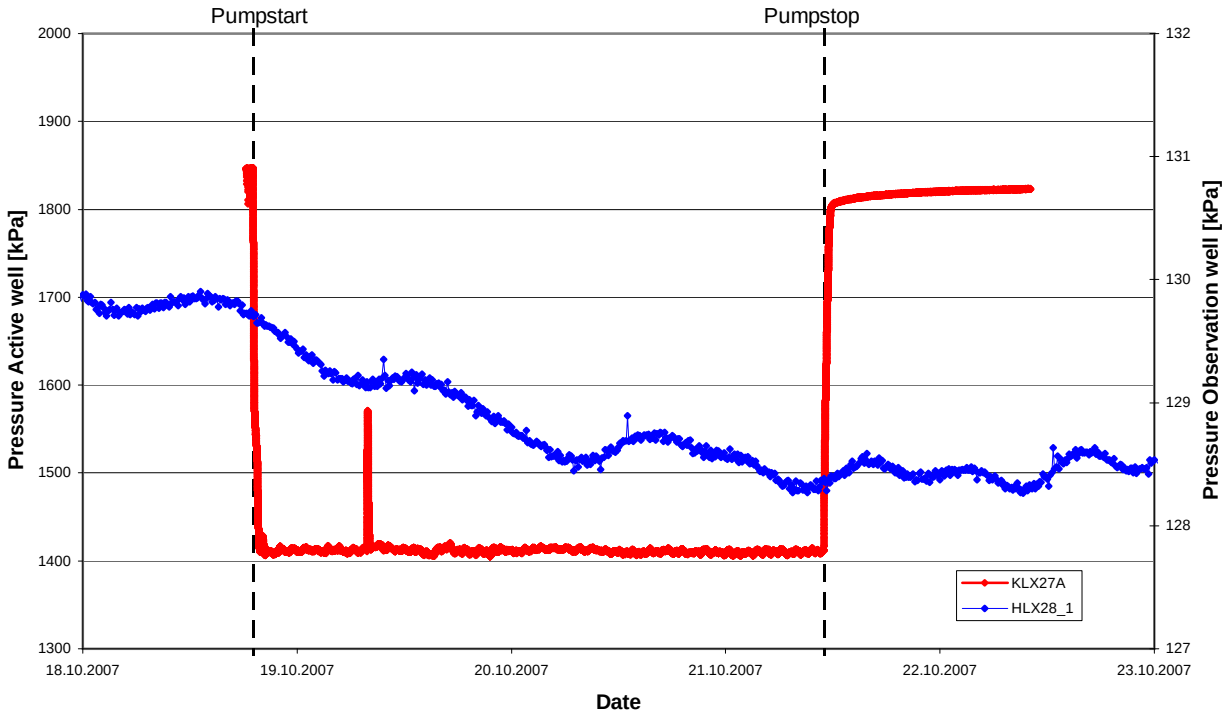
Index 1	**r_s^2/dt_L [m^2/s]:**	**0.22**	**Low**

Normalized drawdown with respect to pumping flow rate

Index 2	**s_p/Q_p [s/m^2]:**	**2007.85**	**Low**
Index 2 New	**$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:**	**10126.42**	**Medium**

* see comment

Comment:	no clear response due to pumping in source pressure recovery probably influenced by natural fluctuations



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**HLX28**	**Section no.:**	**HLX28_2**
Distance r_s [m]:	195.00	Section length:	70.00-90.00
Response time dt_L [s]:	109620	max. Drawdown s_p [m]:*	0.14

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	129.8
Pressure in test section before stop of flowing:	p_p	kPa	128.4
Maximum pressure change during flowing period:*	dp_p	kPa	1.4

Normalized distance with respect to the response time

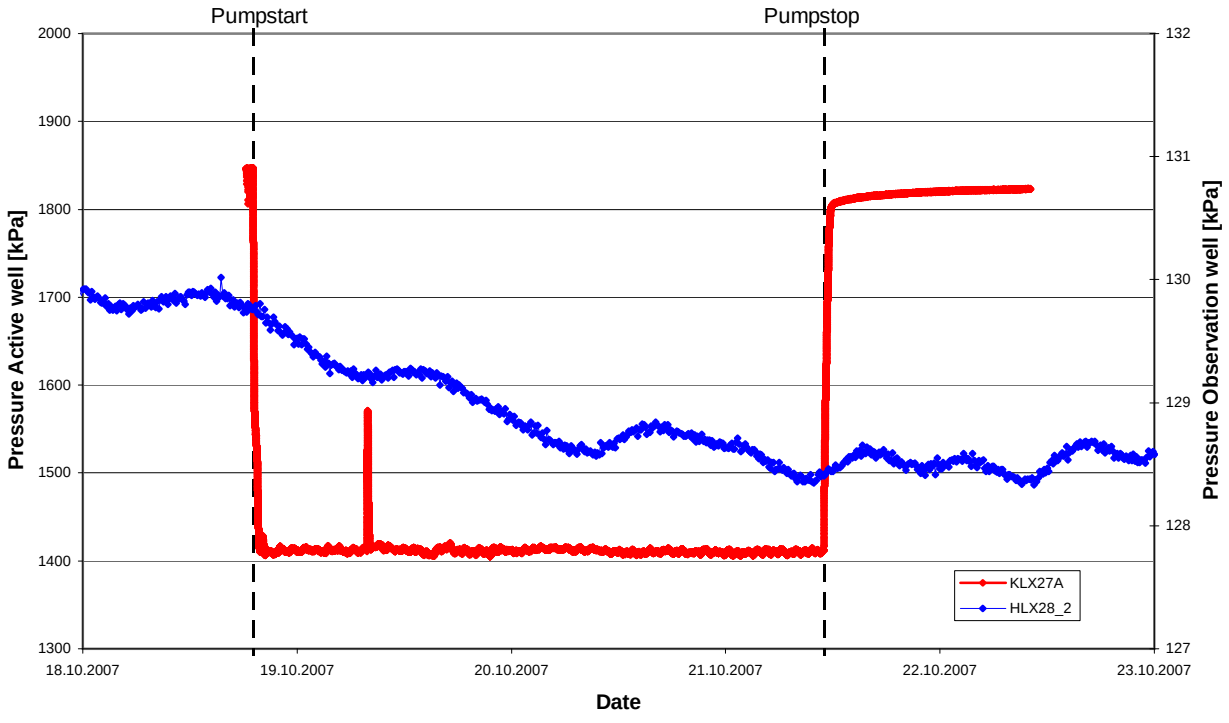
Index 1	**r_s^2/dt_L [m^2/s]:**	**0.35**	**Low**

Normalized drawdown with respect to pumping flow rate

Index 2	**s_p/Q_p [s/m^2]:**	**2162.30**	**Low**
Index 2 New	**$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:**	**11401.78**	**Medium**

* see comment

Comment:	no clear response due to pumping in source pressure recovery probably influenced by natural fluctuations



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**HLX28**	**Section no.:**	**HLX28_3**
Distance r_s [m]:	234.00	Section length:	7.50-69.00
Response time dt_L [s]:	218820	max. Drawdown s_p [m]:*	0.10

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	123.9
Pressure in test section before stop of flowing:	p_p	kPa	122.9
Maximum pressure change during flowing period:*	dp_p	kPa	1.0

Normalized distance with respect to the response time

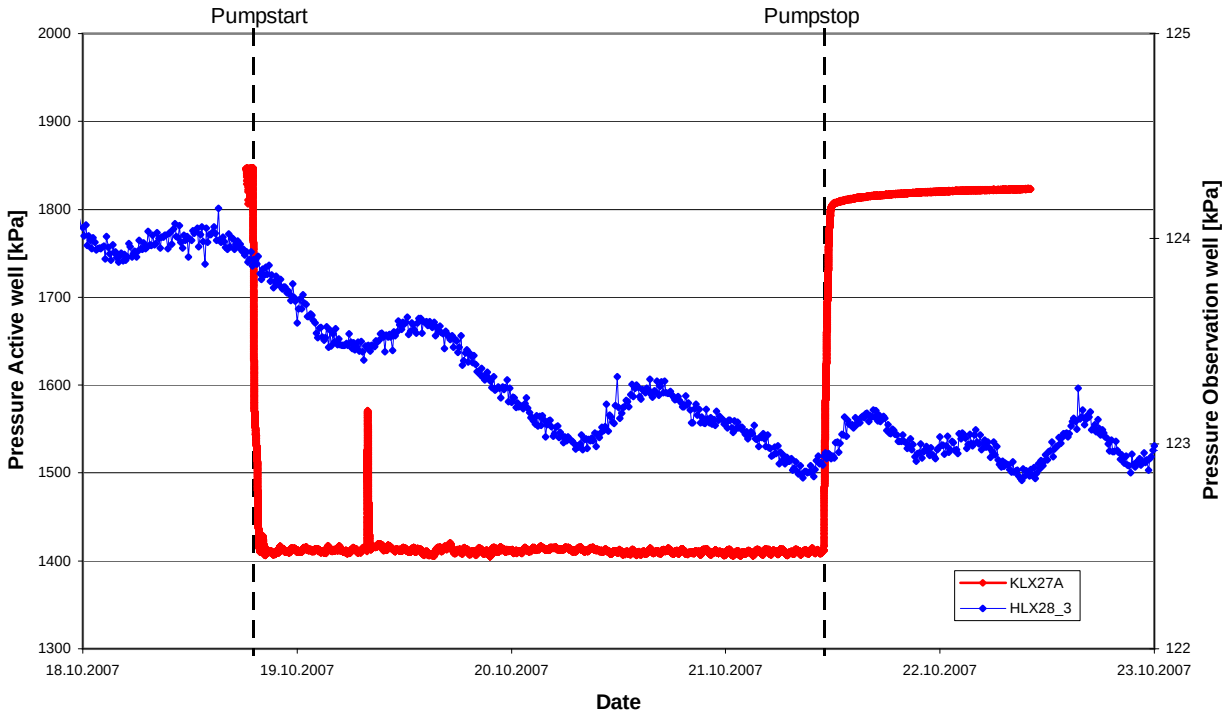
Index 1	**r_s^2/dt_L [m^2/s]:**	**0.25**	**Low**

Normalized drawdown with respect to pumping flow rate

Index 2	**s_p/Q_p [s/m^2]:**	**1544.50**	**Low**
Index 2 New	**$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:**	**8425.73**	**Medium**

* see comment

Comment:	no clear response due to pumping in source pressure recovery probably influenced by natural fluctuations



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**HLX32**	**Section no.:**	**HLX32_1**
Distance r_s [m]:	136.00	Section length:	31.00-163.00
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	64.3
Pressure in test section before stop of flowing:	p_p	kPa	68.7
Maximum pressure change during flowing period:*	dp_p	kPa	4.4

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

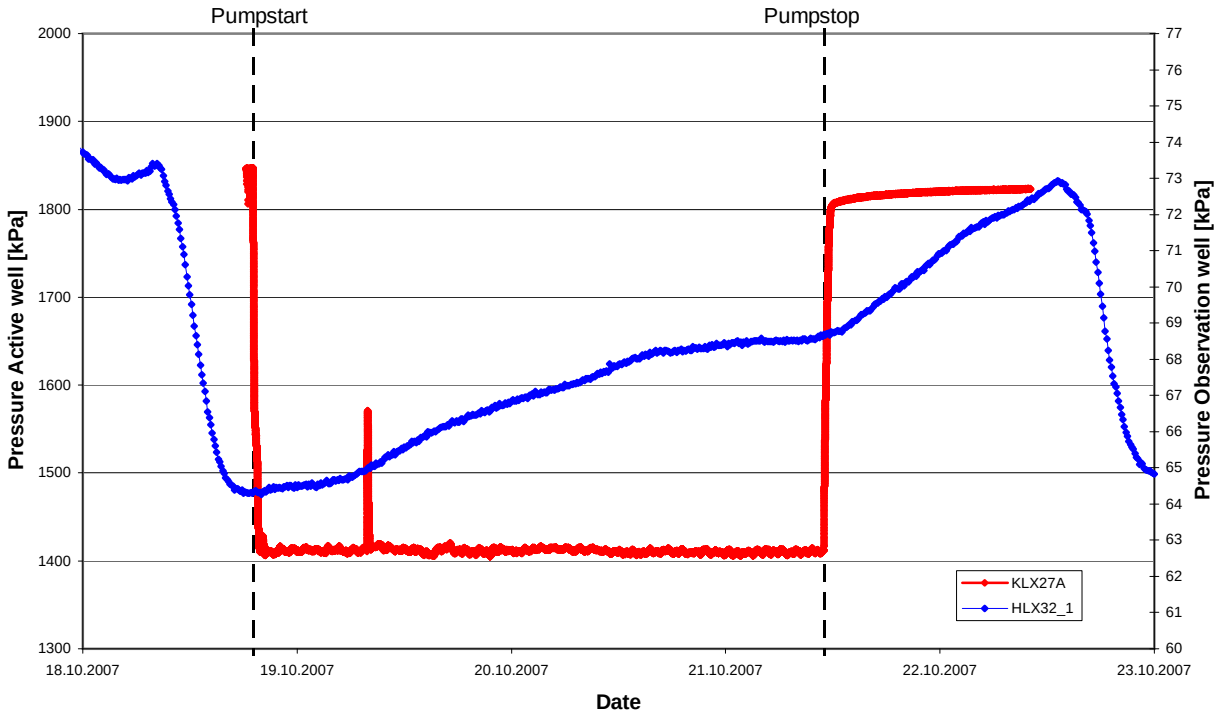
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**HLX32**	**Section no.:**	**HLX32_2**
Distance r_s [m]:	177.00	Section length:	20.00-30.00
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	61.6
Pressure in test section before stop of flowing:	p_p	kPa	65.9
Maximum pressure change during flowing period:*	dp_p	kPa	4.3

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

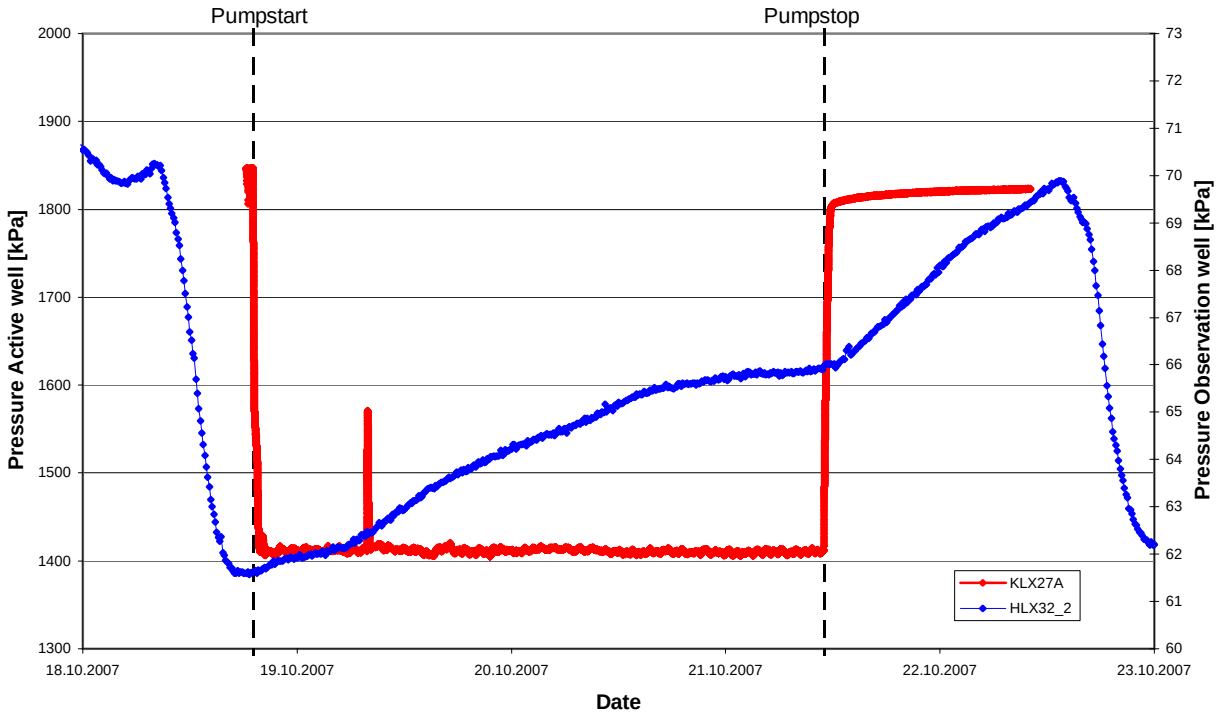
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**HLX32**	**Section no.:**	**HLX32_3**
Distance r_s [m]:	188.00	Section length:	0.00-19.00
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	53.4
Pressure in test section before stop of flowing:	p_p	kPa	53.6
Maximum pressure change during flowing period:*	dp_p	kPa	0.2

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

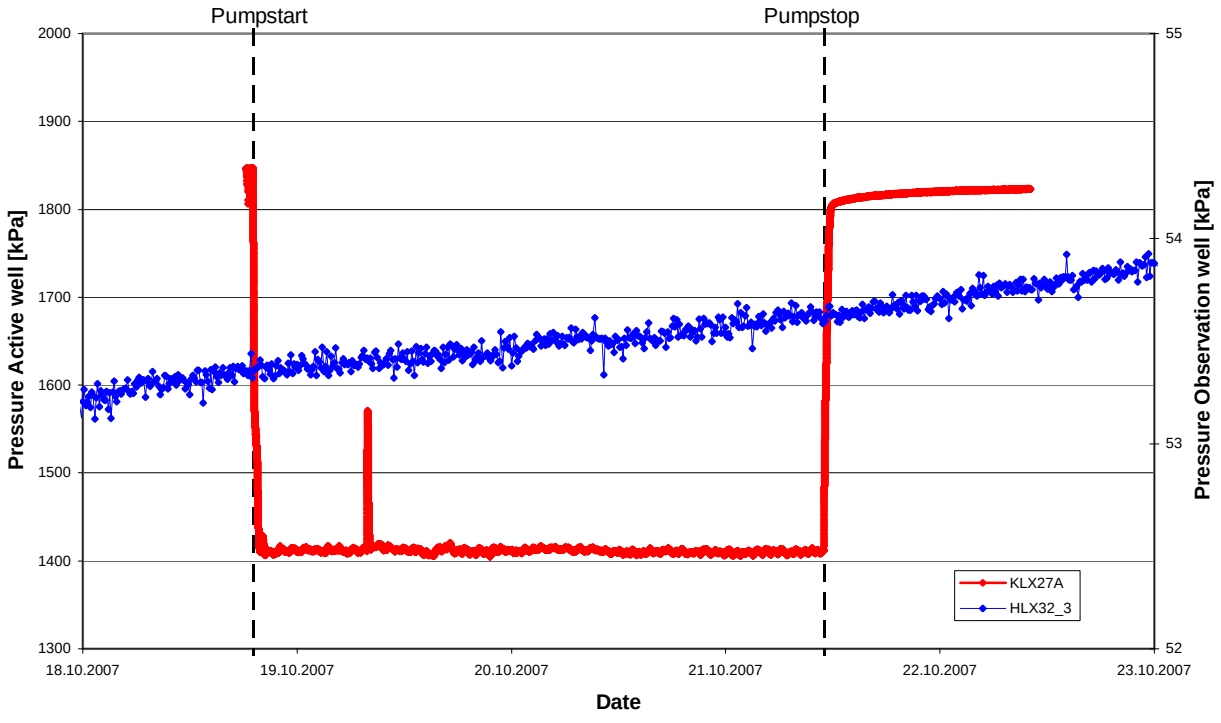
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**HLX36**	**Section no.:**	**HLX36_1**
Distance r_s [m]:	544.00	Section length:	50.00-199.50
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	136.8
Pressure in test section before stop of flowing:	p_p	kPa	136.3
Maximum pressure change during flowing period:*	dp_p	kPa	0.5

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

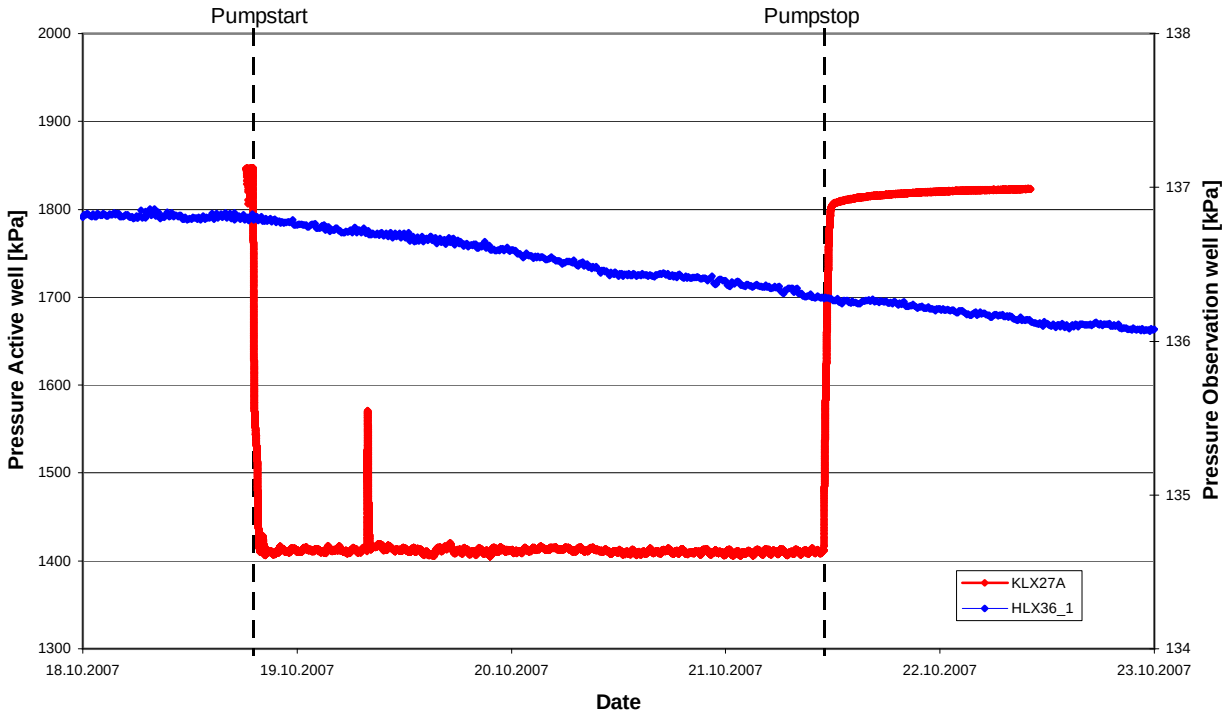
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**HLX36**	**Section no.:**	**HLX36_2**
Distance r_s [m]:	543.00	Section length:	0.00-49.00
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	102.4
Pressure in test section before stop of flowing:	p_p	kPa	102.3
Maximum pressure change during flowing period:*	dp_p	kPa	0.1

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

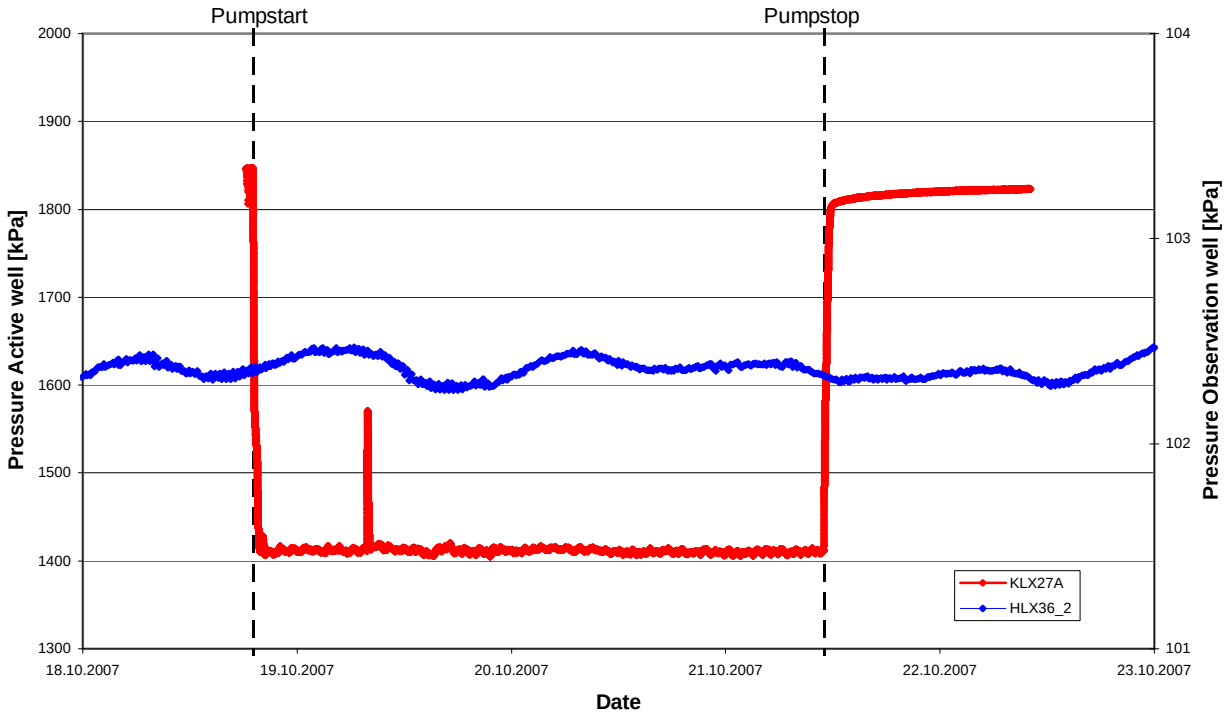
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**HLX37**	**Section no.:**	**HLX37_1**
Distance r_s [m]:	546.00	Section length:	150.00-200.00
Response time dt_L [s]:	118620	max. Drawdown s_p [m]:*	0.12

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	131.2
Pressure in test section before stop of flowing:	p_p	kPa	130.0
Maximum pressure change during flowing period:*	dp_p	kPa	1.2

Normalized distance with respect to the response time

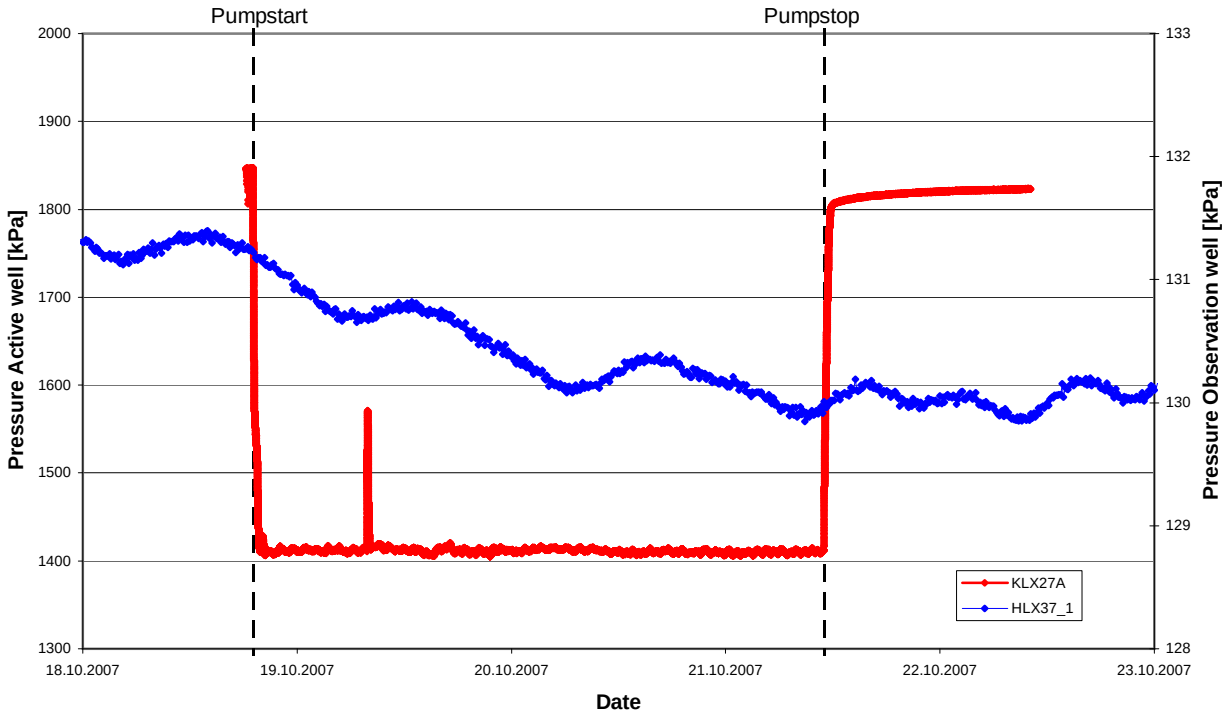
Index 1	**r_s^2/dt_L [m^2/s]:**	**2.51**	**Medium**

Normalized drawdown with respect to pumping flow rate

Index 2	**s_p/Q_p [s/m^2]:**	**1853.40**	**Low**
Index 2 New	**$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:**	**11681.25**	**Medium**

* see comment

Comment: no clear response due to pumping in source
pressure recovery probably influenced by natural fluctuations



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**HLX37**	**Section no.:**	**HLX37_2**
Distance r_s [m]:	566.00	Section length:	111.00-149.00
Response time dt_L [s]:	114420	max. Drawdown s_p [m]:*	0.14

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	146.2
Pressure in test section before stop of flowing:	p_p	kPa	144.8
Maximum pressure change during flowing period:*	dp_p	kPa	1.4

Normalized distance with respect to the response time

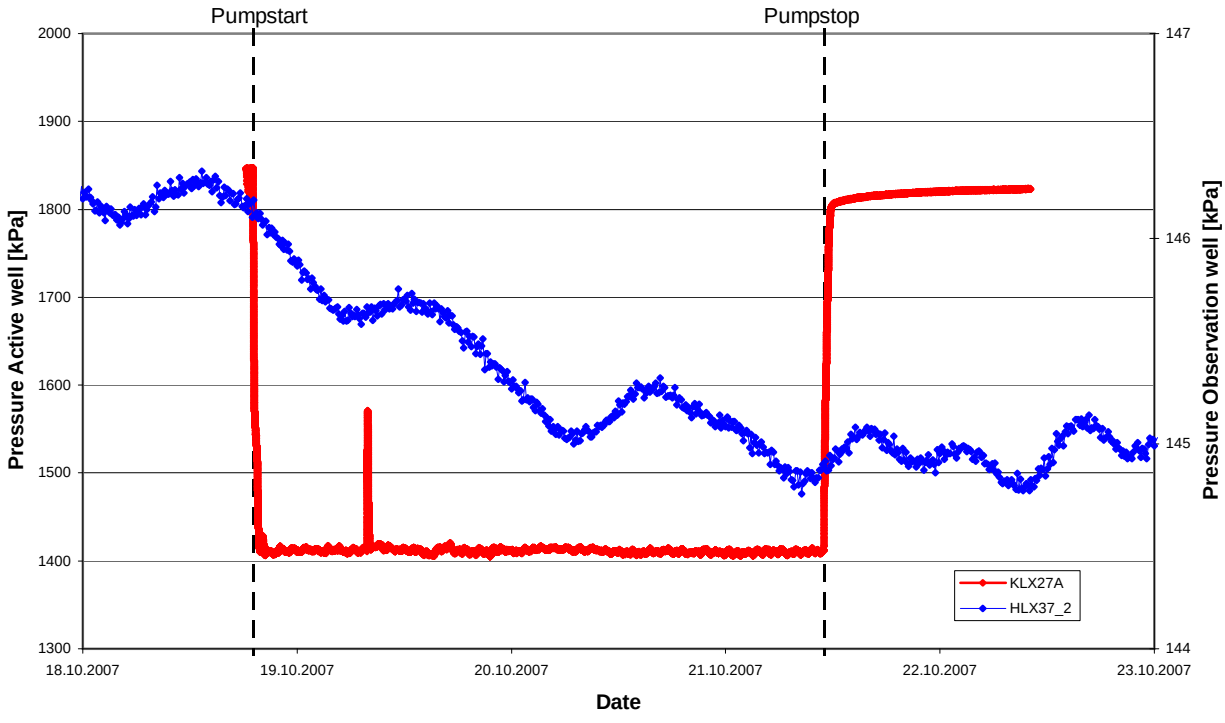
Index 1	**r_s^2/dt_L [m^2/s]:**	**2.80**	**Medium**

Normalized drawdown with respect to pumping flow rate

Index 2	**s_p/Q_p [s/m^2]:**	**2162.30**	**Low**
Index 2 New	**$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:**	**13705.91**	**Medium**

* see comment

Comment:	no clear response due to pumping in source pressure recovery probably influenced by natural fluctuations



Activityplan No.	AP PS 400-07-72		
Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**HLX37**	**Section no.:**	**HLX37_3**
Distance r_s [m]:	574.00	Section length:	94.00-110.00
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	0.05

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	130.3
Pressure in test section before stop of flowing:	p_p	kPa	129.8
Maximum pressure change during flowing period:*	dp_p	kPa	0.5

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

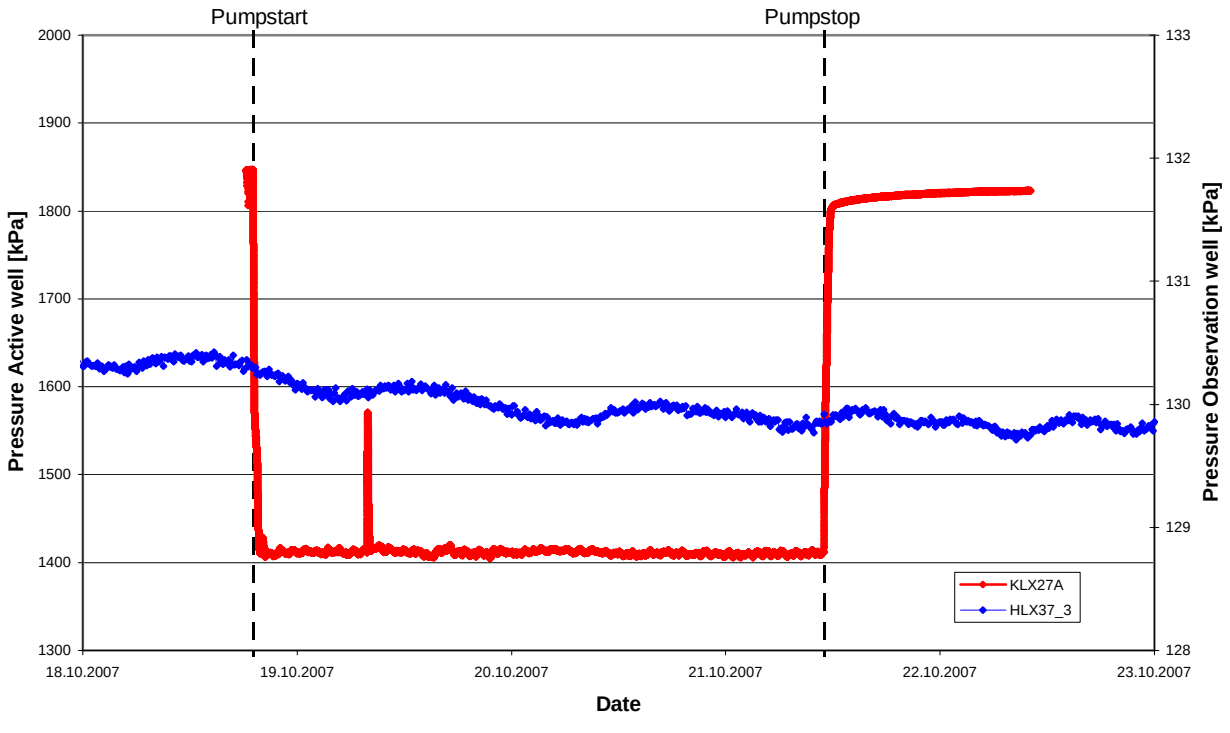
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **772.25** **Low****

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **4905.81** **Medium****

* see comment

Comment: no clear response due to pumping in source
response and recovery phase probably influenced by other effects
** no response according to SKB MD 330.003 (s_p < 0.1 m)



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**HLX37**	**Section no.:**	**HLX37_4**
Distance r_s [m]:	617.00	Section length:	0.00-93.00
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	0.05

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	145.3
Pressure in test section before stop of flowing:	p_p	kPa	144.8
Maximum pressure change during flowing period:*	dp_p	kPa	0.5

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

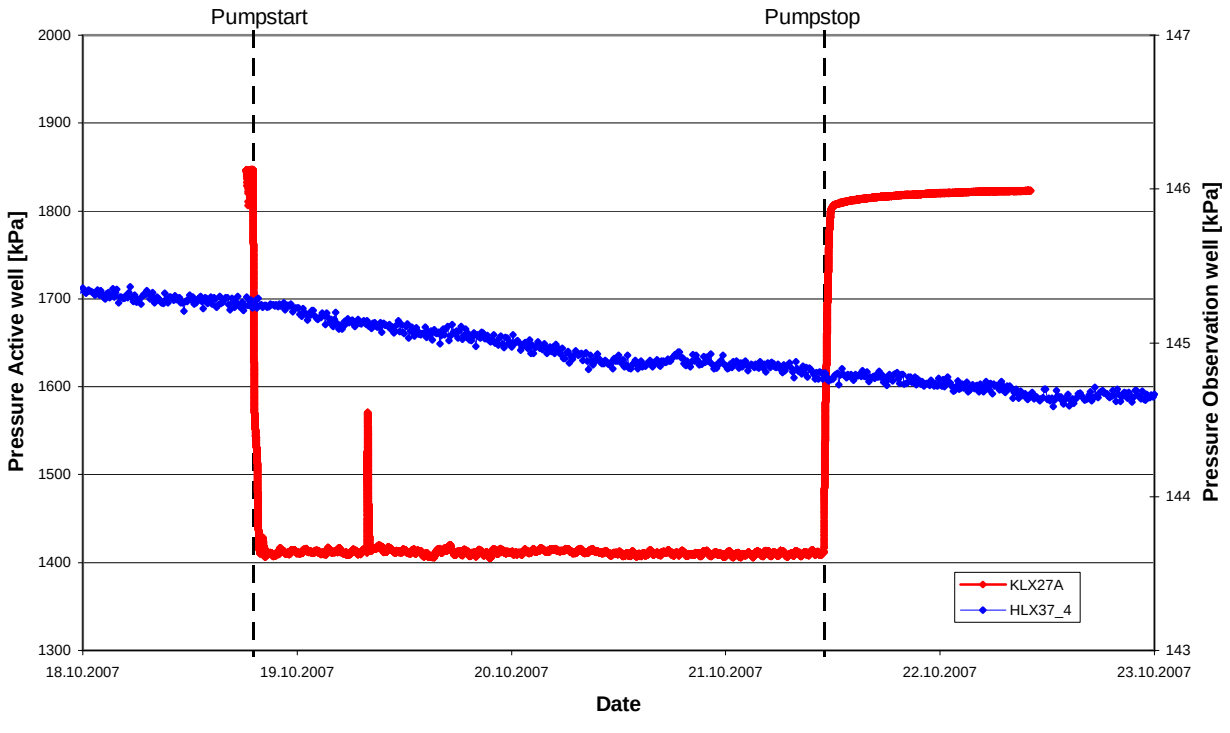
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **772.25** **Low****

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **4961.60** **Medium****

* see comment

Comment: no clear response due to pumping in source
response and recovery phase probably influenced by other effects
** no response according to SKB MD 330.003 (s_p < 0.1 m)



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**HLX38**	**Section no.:**	**HLX38_1**
Distance r_s [m]:	488.00	Section length:	0.00-199.50
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	52.3
Pressure in test section before stop of flowing:	p_p	kPa	52.0
Maximum pressure change during flowing period:*	dp_p	kPa	0.3

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

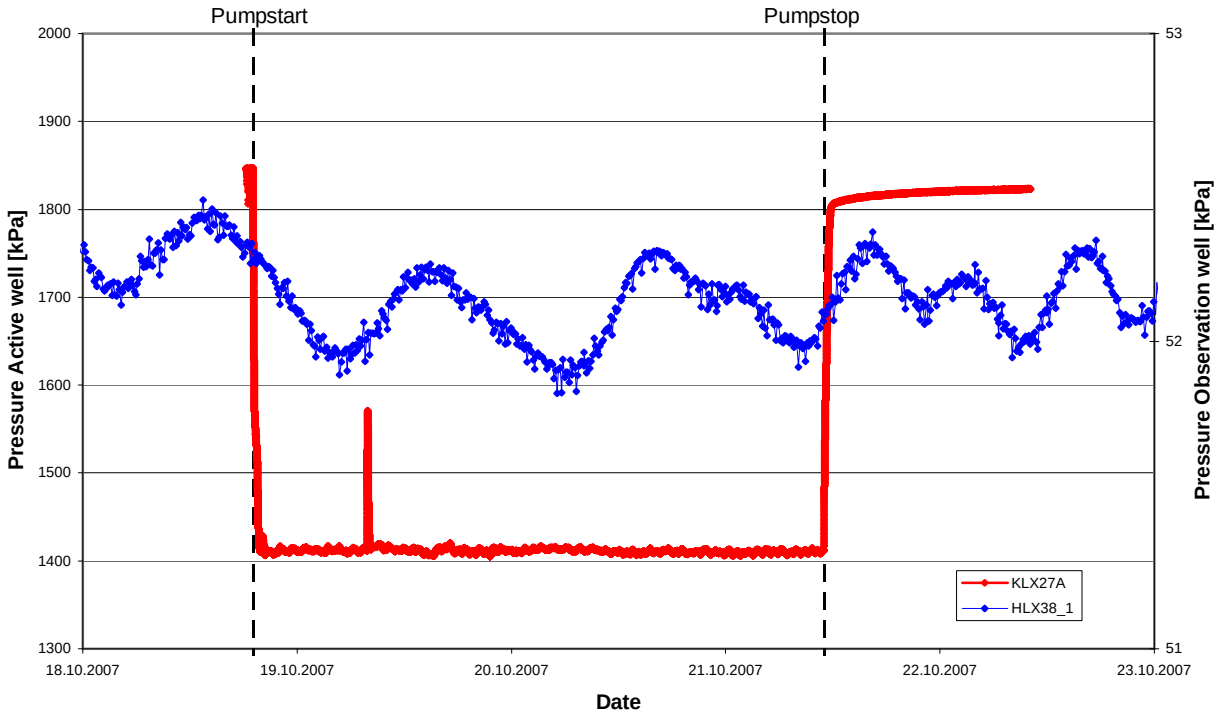
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**HLX42**	**Section no.:**	**HLX42_1**
Distance r_s [m]:	1071.00	Section length:	30.00-152.60
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	92.0
Pressure in test section before stop of flowing:	p_p	kPa	91.5
Maximum pressure change during flowing period:*	dp_p	kPa	0.5

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

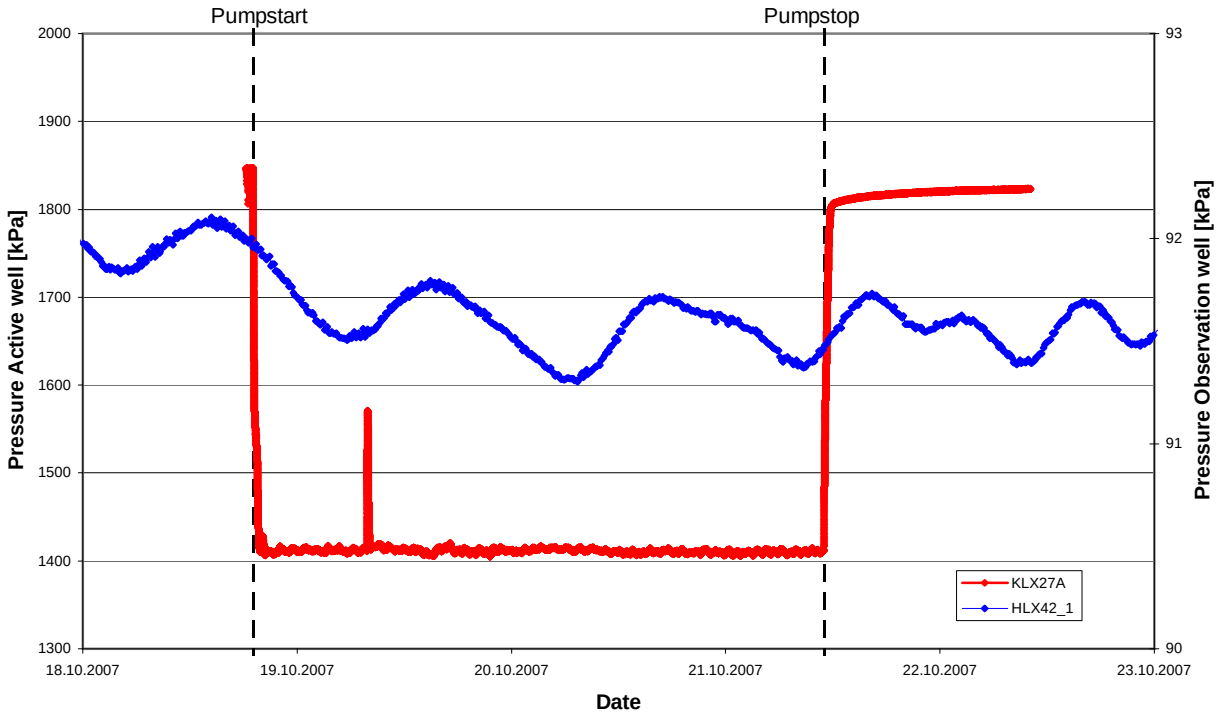
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**HLX42**	**Section no.:**	**HLX42_2**
Distance r_s [m]:	1127.00	Section length:	0.00-29.00
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	114.6
Pressure in test section before stop of flowing:	p_p	kPa	114.4
Maximum pressure change during flowing period:*	dp_p	kPa	0.2

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

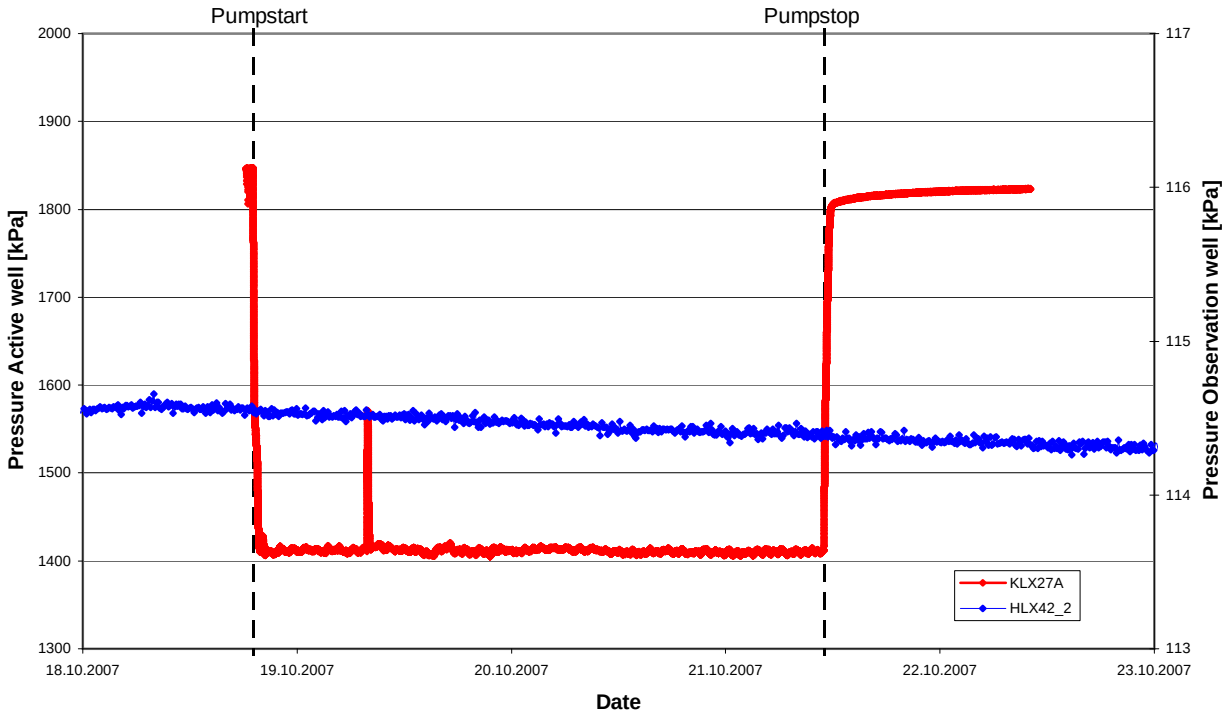
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**KLX11A**	**Section no.:**	**KLX11A_1**
Distance r_s [m]:	891.00	Section length:	703.00-992.00
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	136.3
Pressure in test section before stop of flowing:	p_p	kPa	134.9
Maximum pressure change during flowing period:*	dp_p	kPa	1.4

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

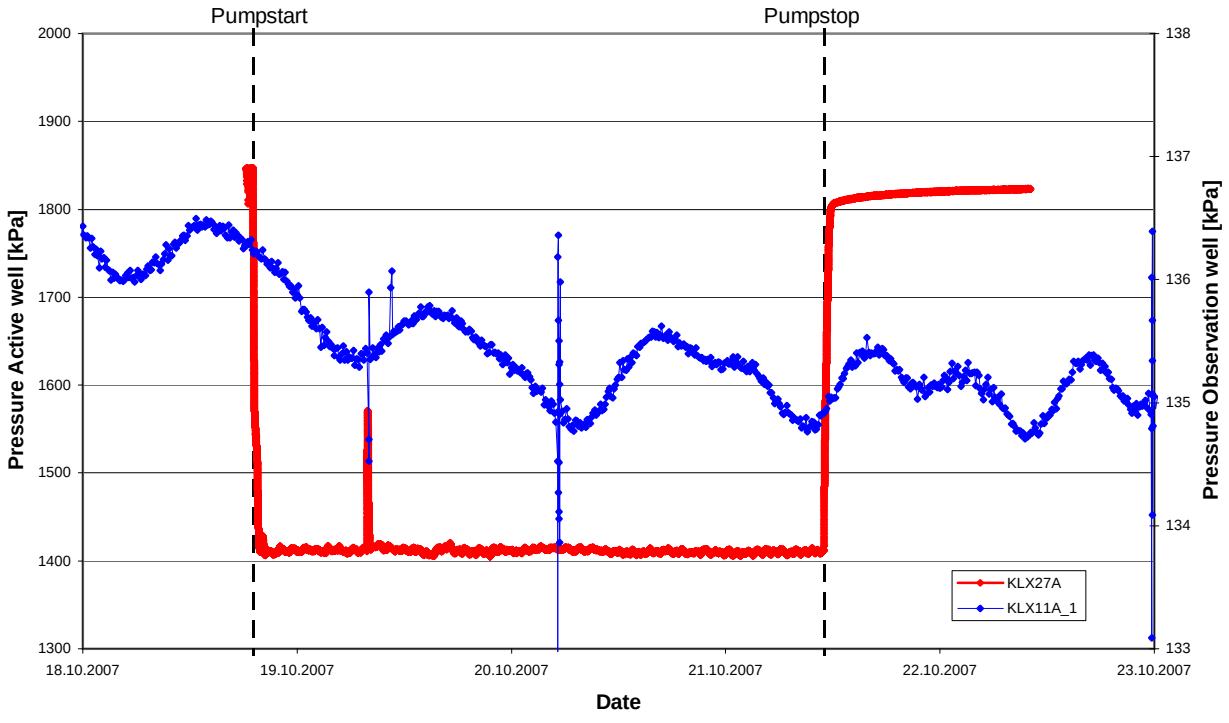
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**KLX11A**	**Section no.:**	**KLX11A_2**
Distance r_s [m]:	741.00	Section length:	587.00-702.00
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	137.0
Pressure in test section before stop of flowing:	p_p	kPa	135.7
Maximum pressure change during flowing period:*	dp_p	kPa	1.3

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

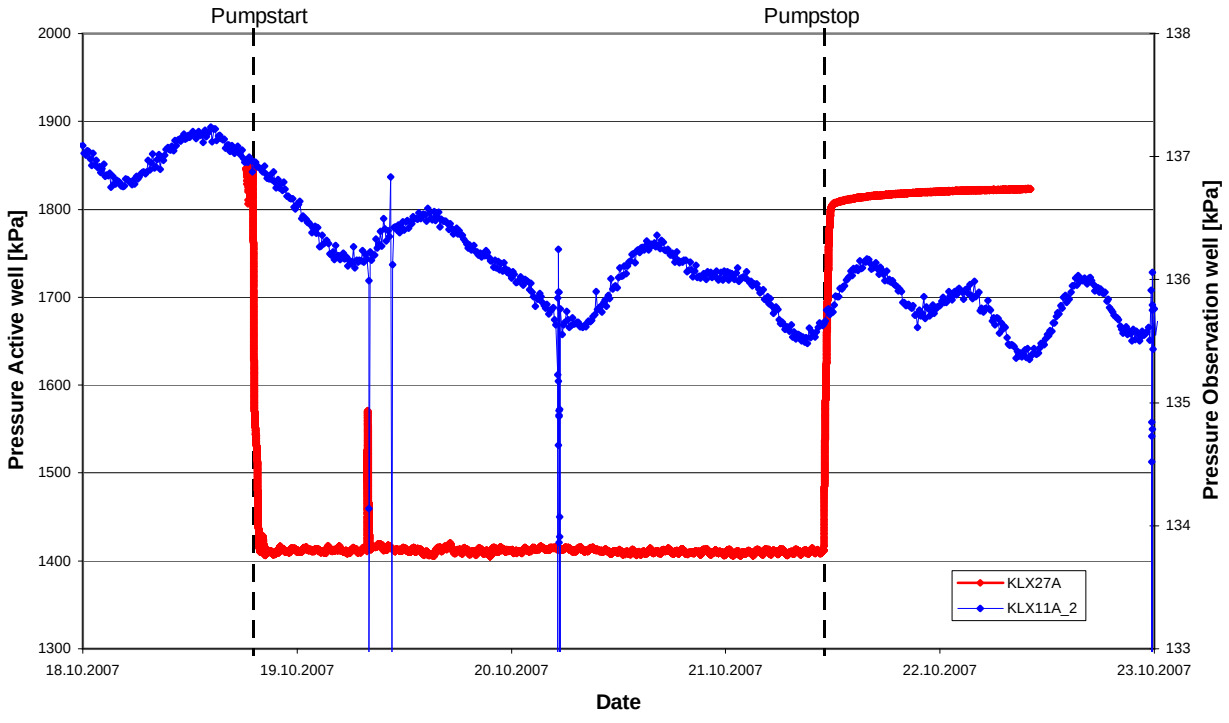
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**KLX11A**	**Section no.:**	**KLX11A_3**
Distance r_s [m]:	724.00	Section length:	573.00-586.00
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	136.7
Pressure in test section before stop of flowing:	p_p	kPa	135.3
Maximum pressure change during flowing period:*	dp_p	kPa	1.4

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

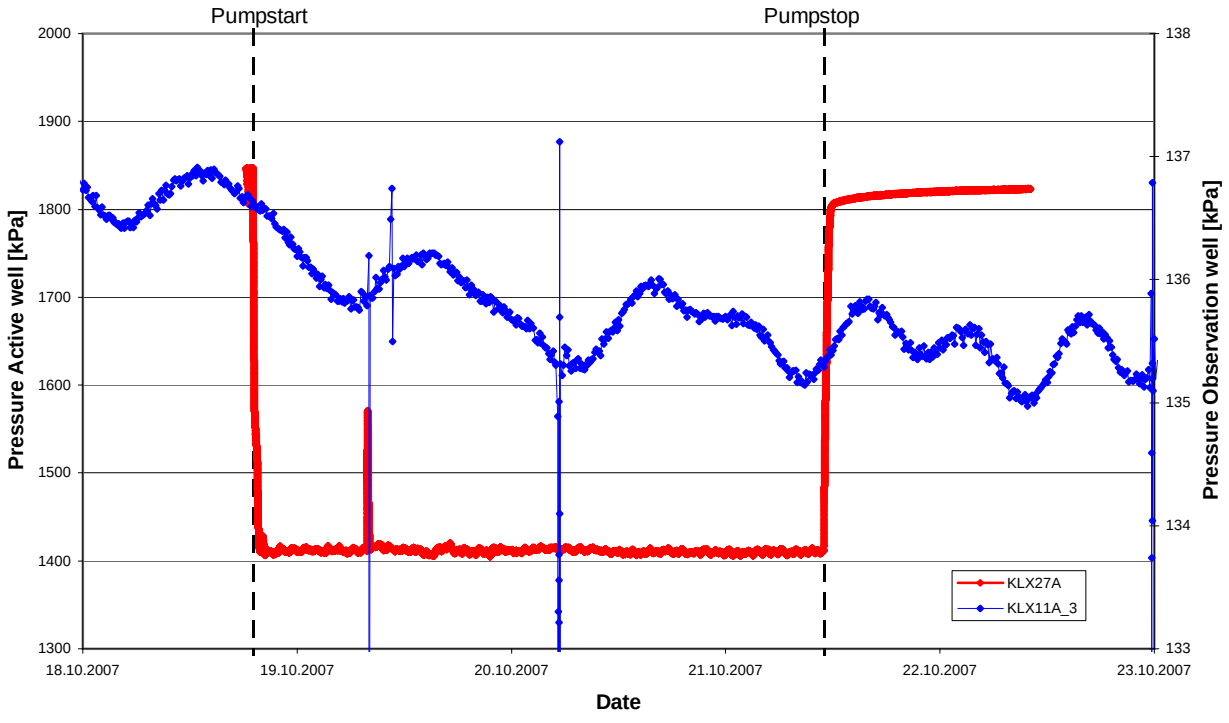
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**KLX11A**	**Section no.:**	**KLX11A_4**
Distance r_s [m]:	706.00	Section length:	495.00-572.00
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	136.0
Pressure in test section before stop of flowing:	p_p	kPa	134.7
Maximum pressure change during flowing period:*	dp_p	kPa	1.3

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

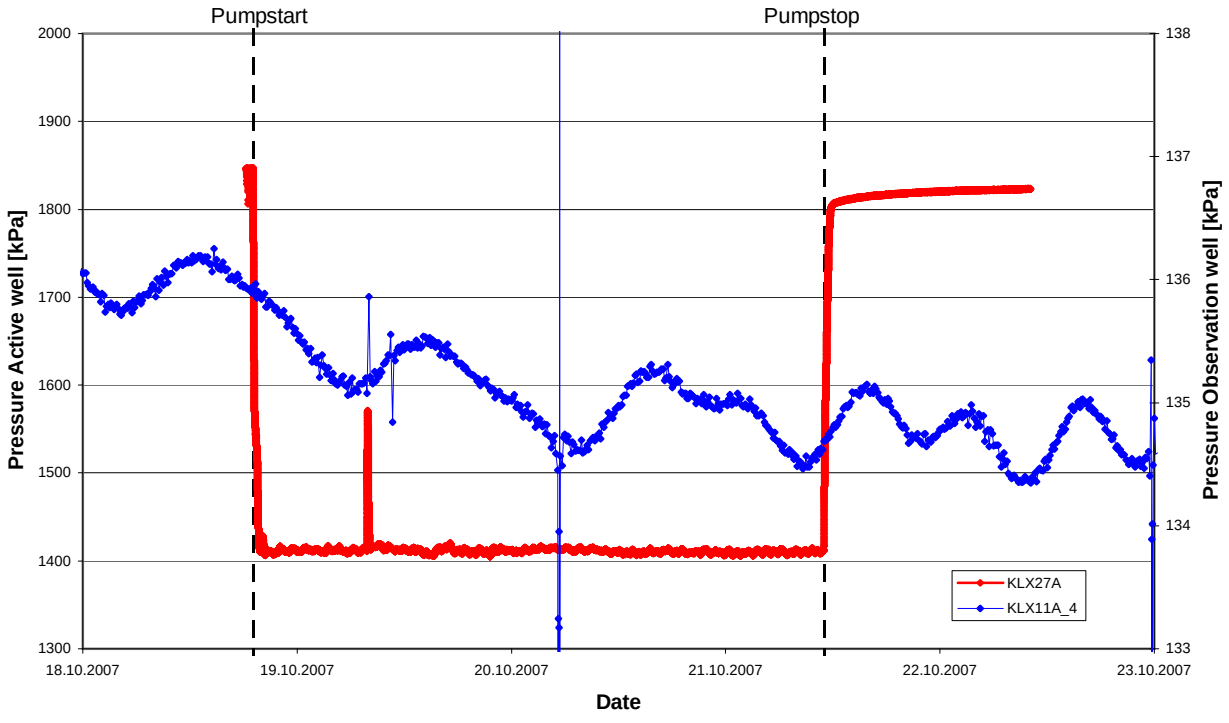
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**KLX11A**	**Section no.:**	**KLX11A_5**
Distance r_s [m]:	681.00	Section length:	315.00-494.00
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	134.6
Pressure in test section before stop of flowing:	p_p	kPa	133.4
Maximum pressure change during flowing period:*	dp_p	kPa	1.2

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

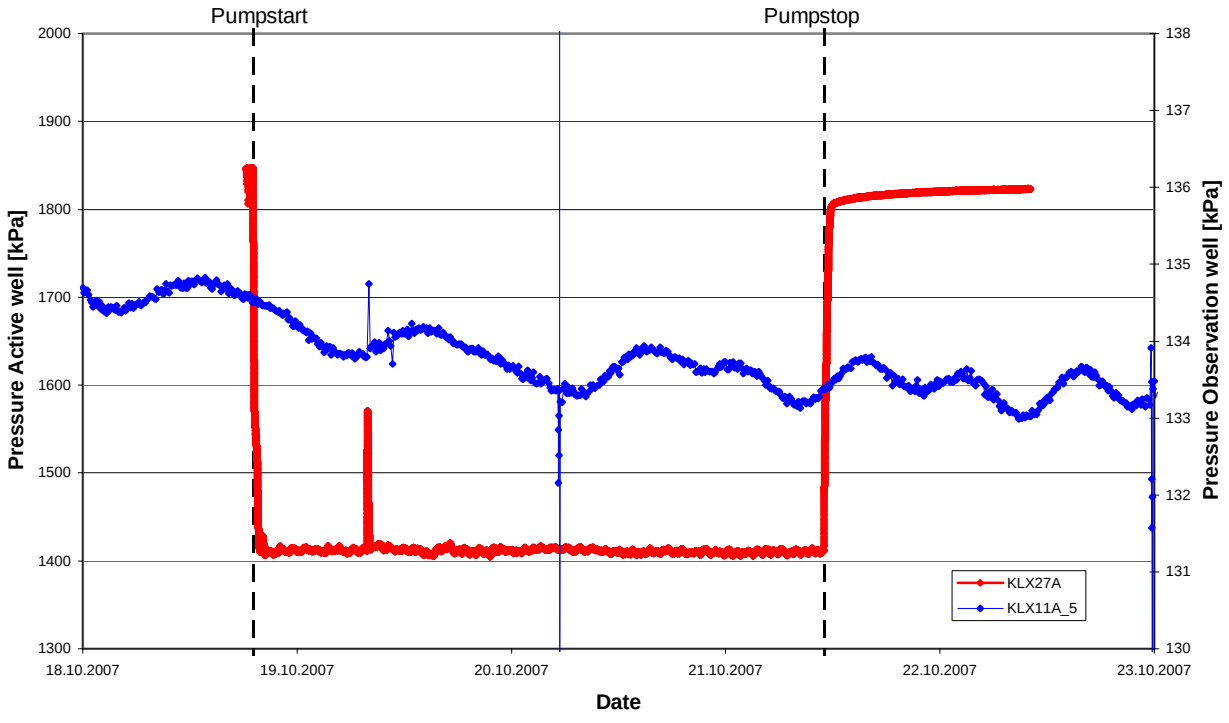
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**KLX11A**	**Section no.:**	**KLX11A_6**
Distance r_s [m]:	651.00	Section length:	273.00-314.00
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	133.9
Pressure in test section before stop of flowing:	p_p	kPa	132.6
Maximum pressure change during flowing period:*	dp_p	kPa	1.3

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

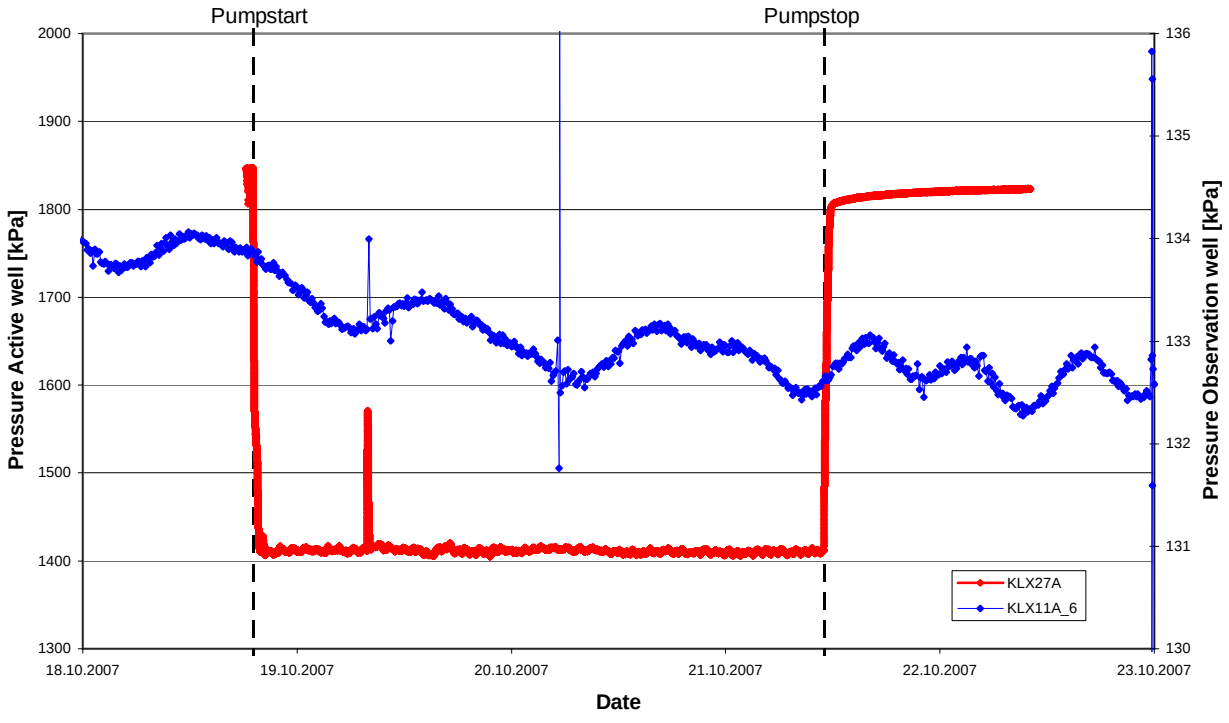
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**KLX11A**	**Section no.:**	**KLX11A_7**
Distance r_s [m]:	647.00	Section length:	256.00-272.00
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	129.3
Pressure in test section before stop of flowing:	p_p	kPa	128.0
Maximum pressure change during flowing period:*	dp_p	kPa	1.3

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

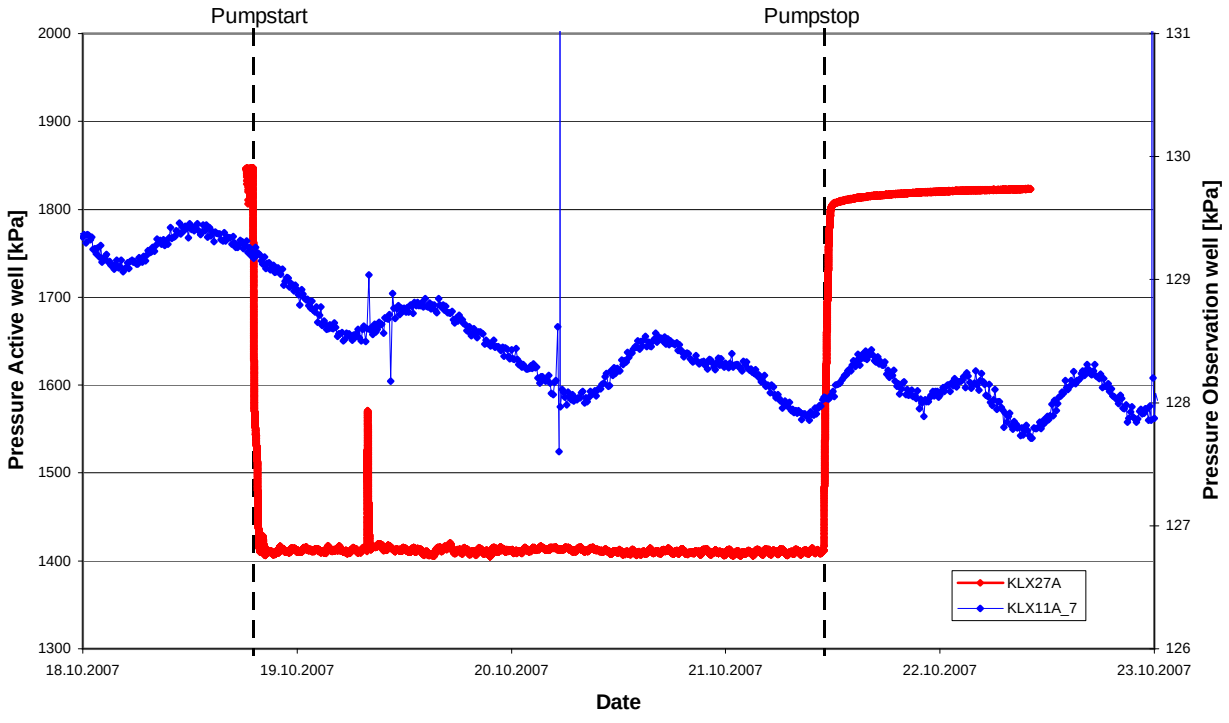
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**KLX11A**	**Section no.:**	**KLX11A_8**
Distance r_s [m]:	647.00	Section length:	180.00-255.00
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	133.2
Pressure in test section before stop of flowing:	p_p	kPa	132.1
Maximum pressure change during flowing period:*	dp_p	kPa	1.1

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

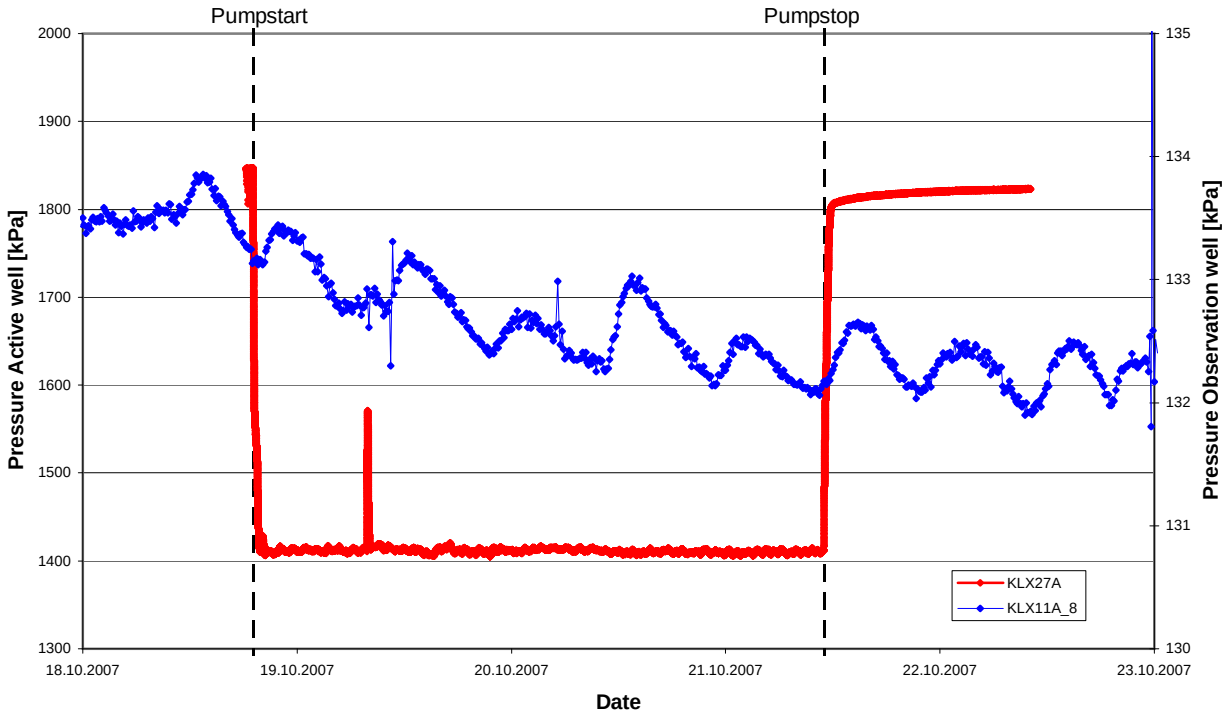
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**KLX11A**	**Section no.:**	**KLX11A_9**
Distance r_s [m]:	650.00	Section length:	103.00-179.00
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	137.1
Pressure in test section before stop of flowing:	p_p	kPa	136.1
Maximum pressure change during flowing period:*	dp_p	kPa	1.0

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

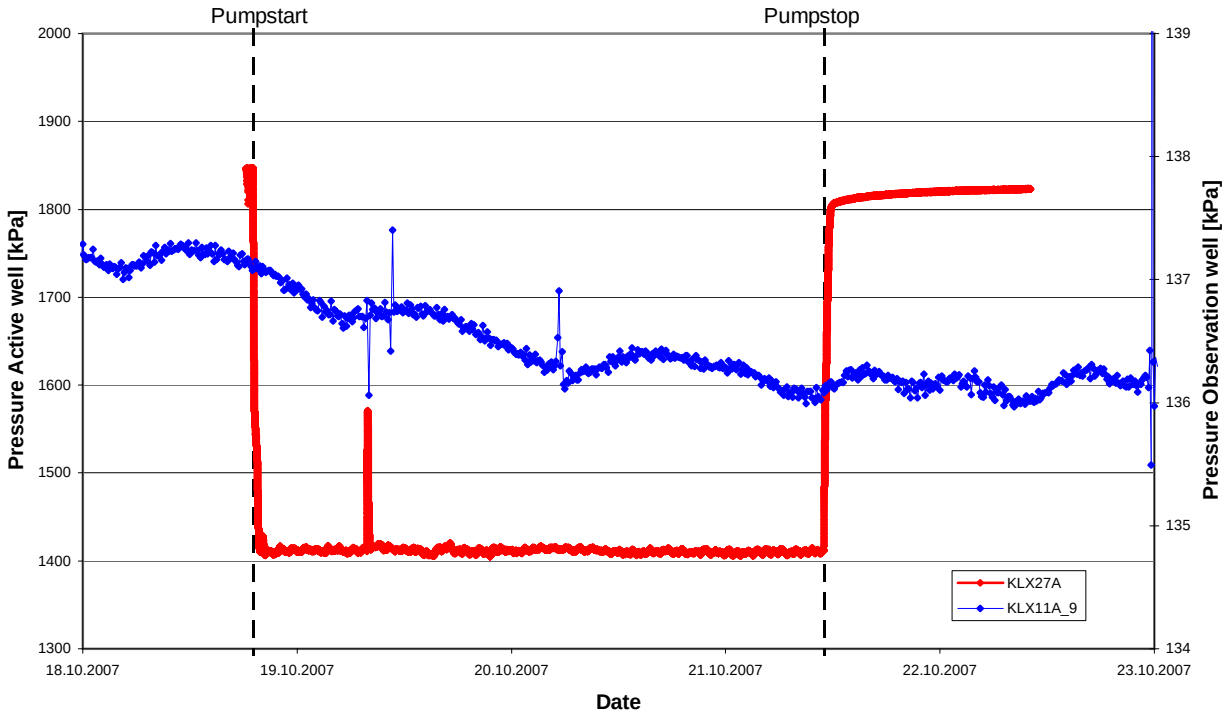
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**KLX11A**	**Section no.:**	**KLX11A_10**
Distance r_s [m]:	671.00	Section length:	0.00-102.00
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	151.3
Pressure in test section before stop of flowing:	p_p	kPa	150.7
Maximum pressure change during flowing period:*	dp_p	kPa	0.6

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

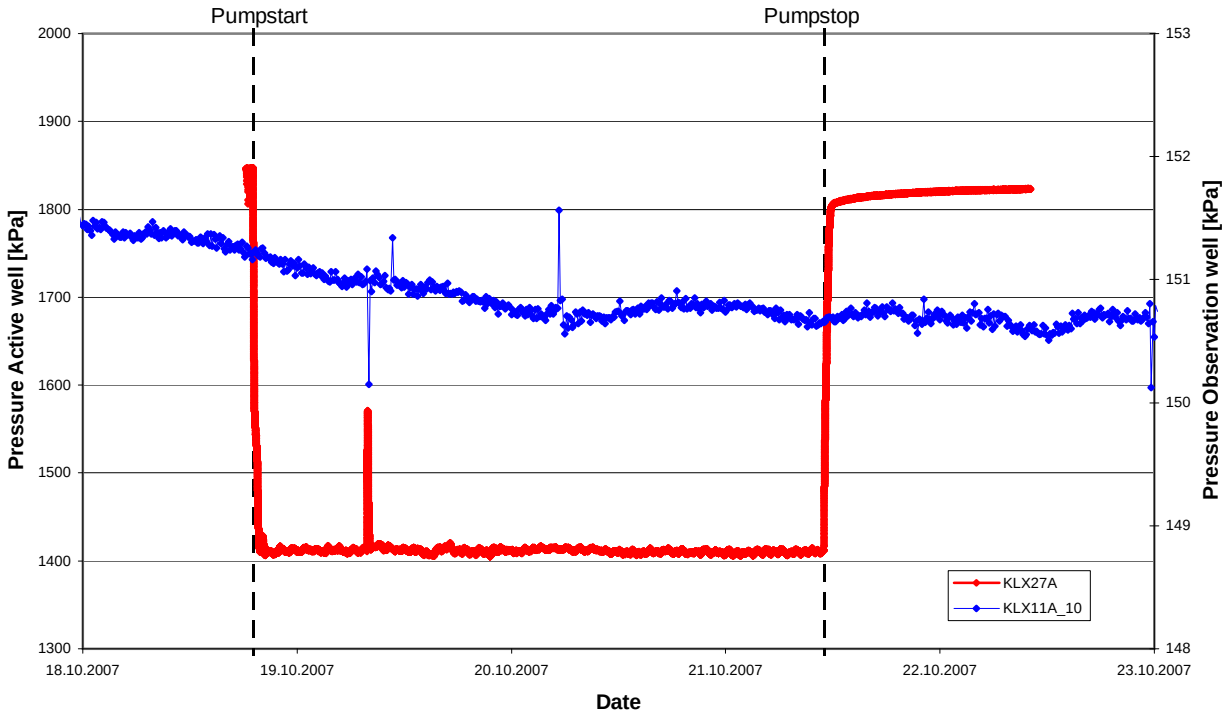
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**KLX11E**	**Section no.:**	**KLX11E_1**
Distance r_s [m]:	662.00	Section length:	2.00-121.00
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	152.0
Pressure in test section before stop of flowing:	p_p	kPa	151.5
Maximum pressure change during flowing period:*	dp_p	kPa	0.5

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

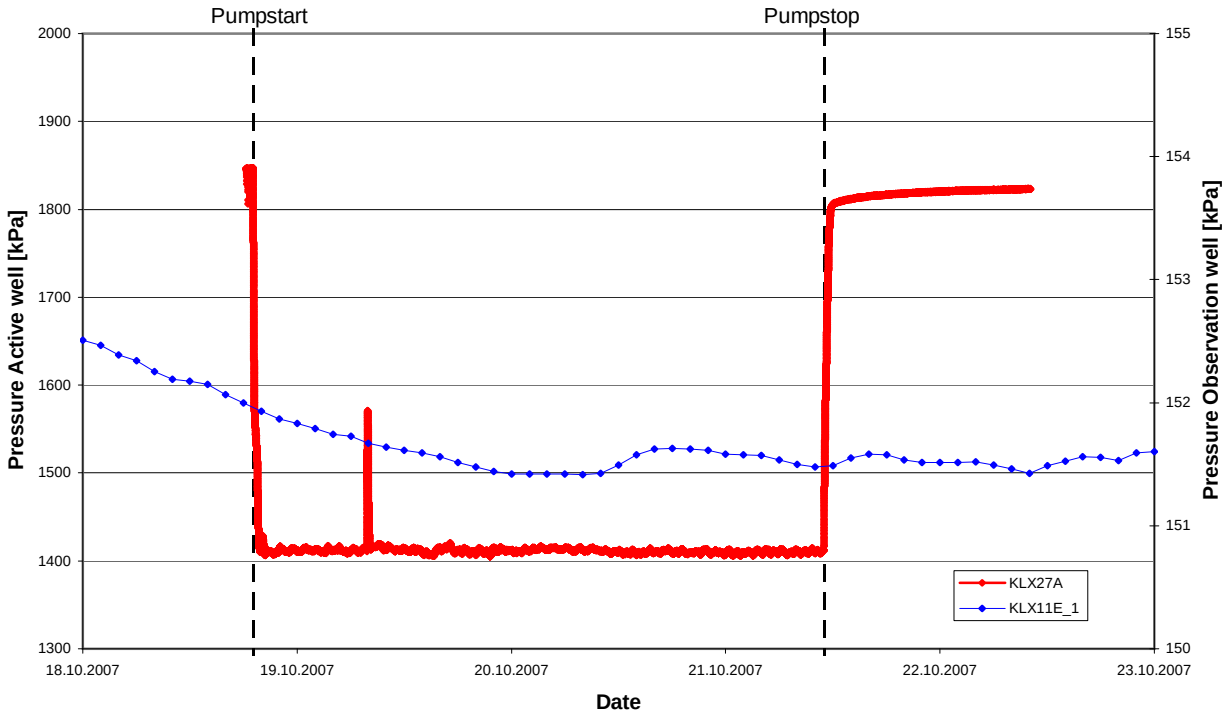
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**KLX14A**	**Section no.:**	**KLX14A_1**
Distance r_s [m]:	547.00	Section length:	123.00-176.30
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	55.9
Pressure in test section before stop of flowing:	p_p	kPa	55.6
Maximum pressure change during flowing period:*	dp_p	kPa	0.3

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

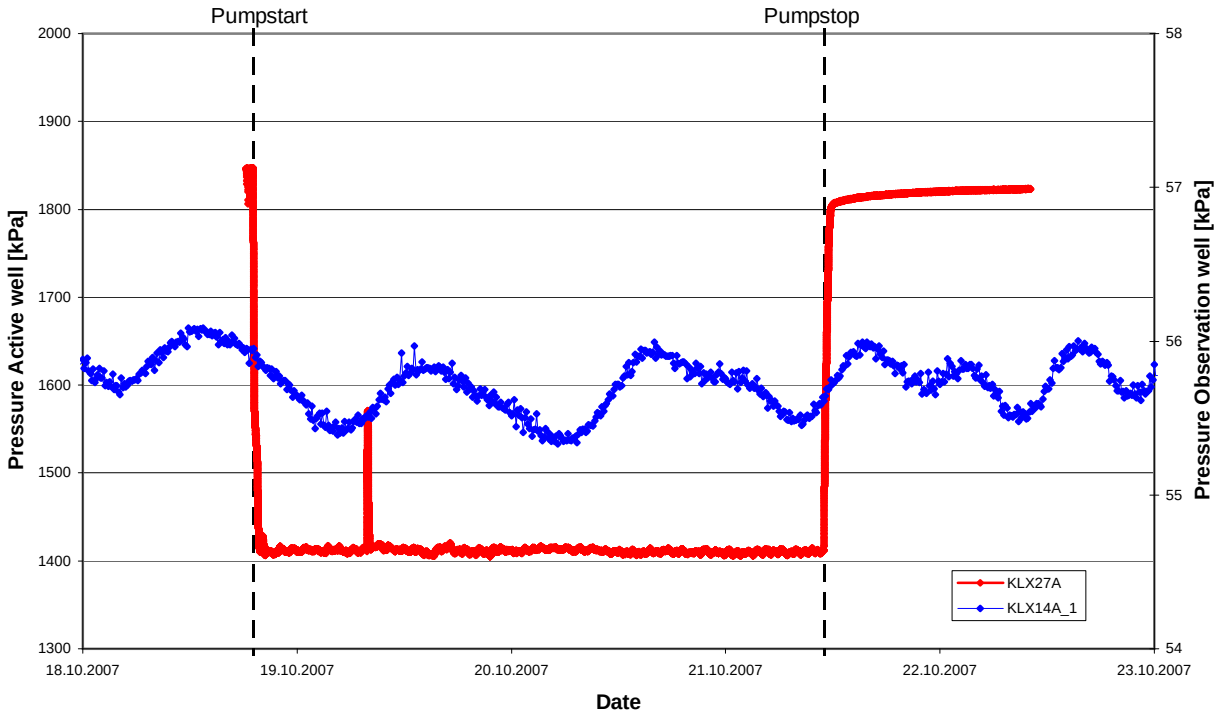
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**KLX14A**	**Section no.:**	**KLX14A_2**
Distance r_s [m]:	529.00	Section length:	77.00-122.00
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	54.5
Pressure in test section before stop of flowing:	p_p	kPa	54.2
Maximum pressure change during flowing period:*	dp_p	kPa	0.3

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

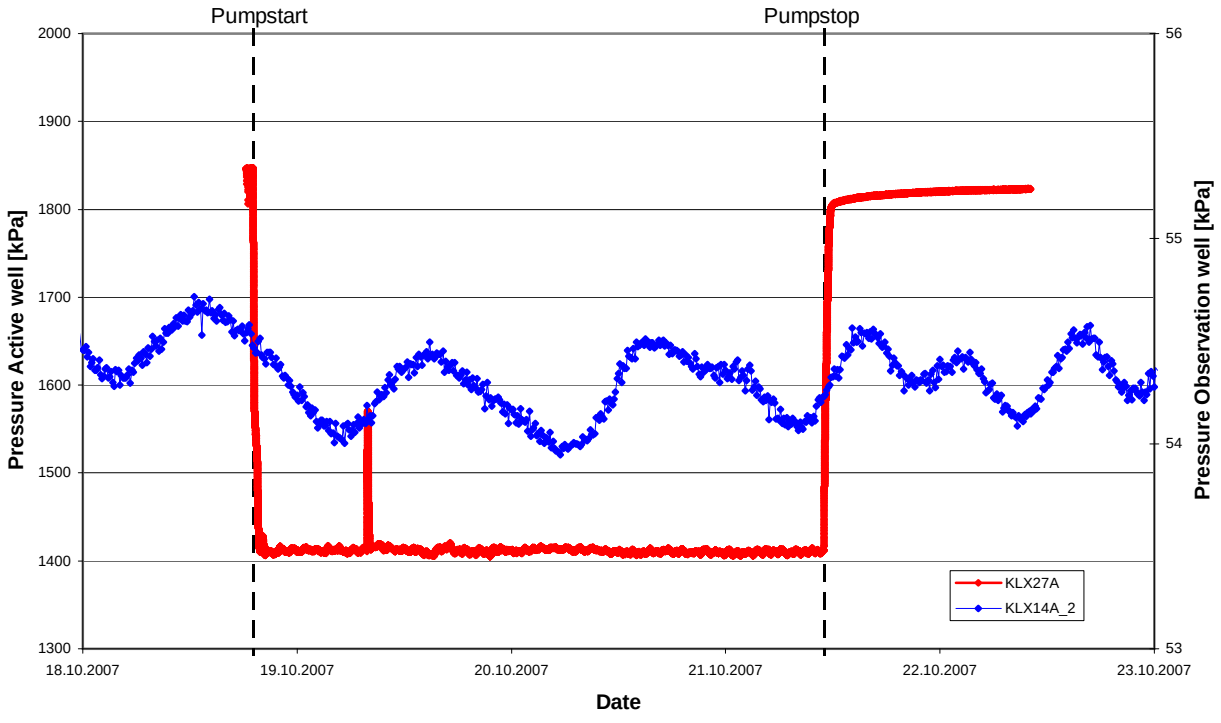
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**KLX14A**	**Section no.:**	**KLX14A_3**
Distance r_s [m]:	524.00	Section length:	0.00-76.00
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	104.5
Pressure in test section before stop of flowing:	p_p	kPa	103.7
Maximum pressure change during flowing period:*	dp_p	kPa	0.8

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

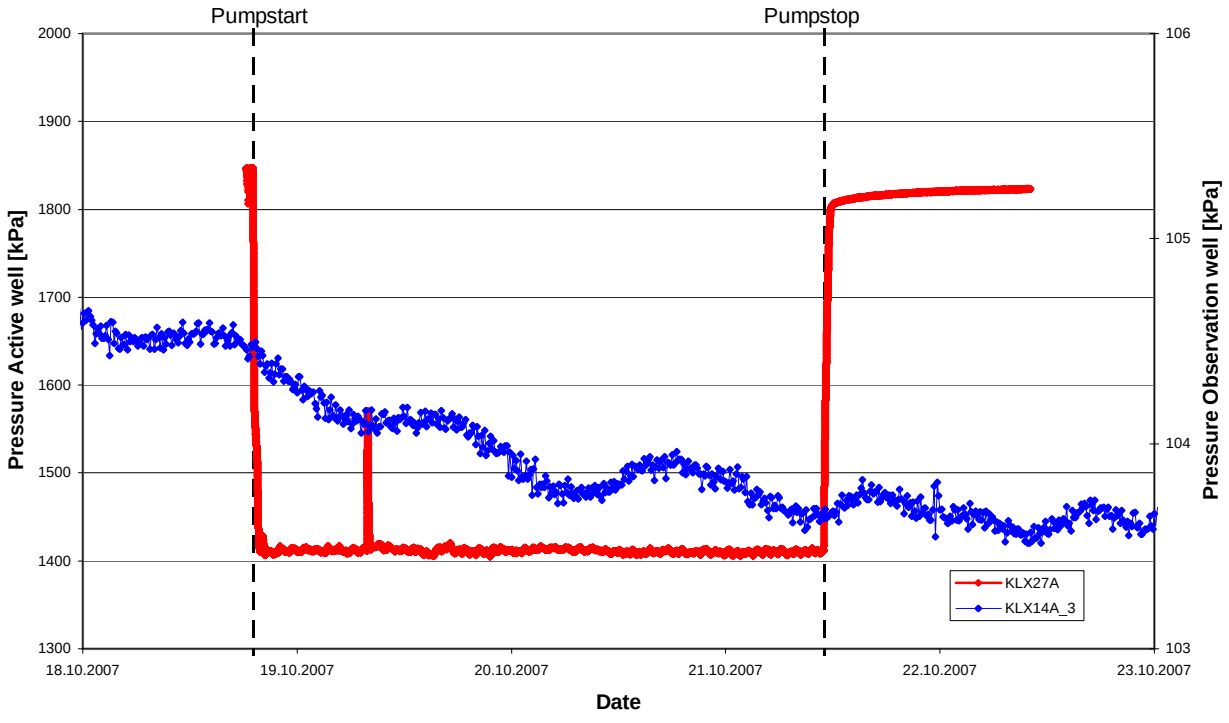
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**KLX15A**	**Section no.:**	**KLX15A_1**
Distance r_s [m]:	1388.00	Section length:	902.00-1000.00
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	30.9
Pressure in test section before stop of flowing:	p_p	kPa	29.9
Maximum pressure change during flowing period:*	dp_p	kPa	1.0

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

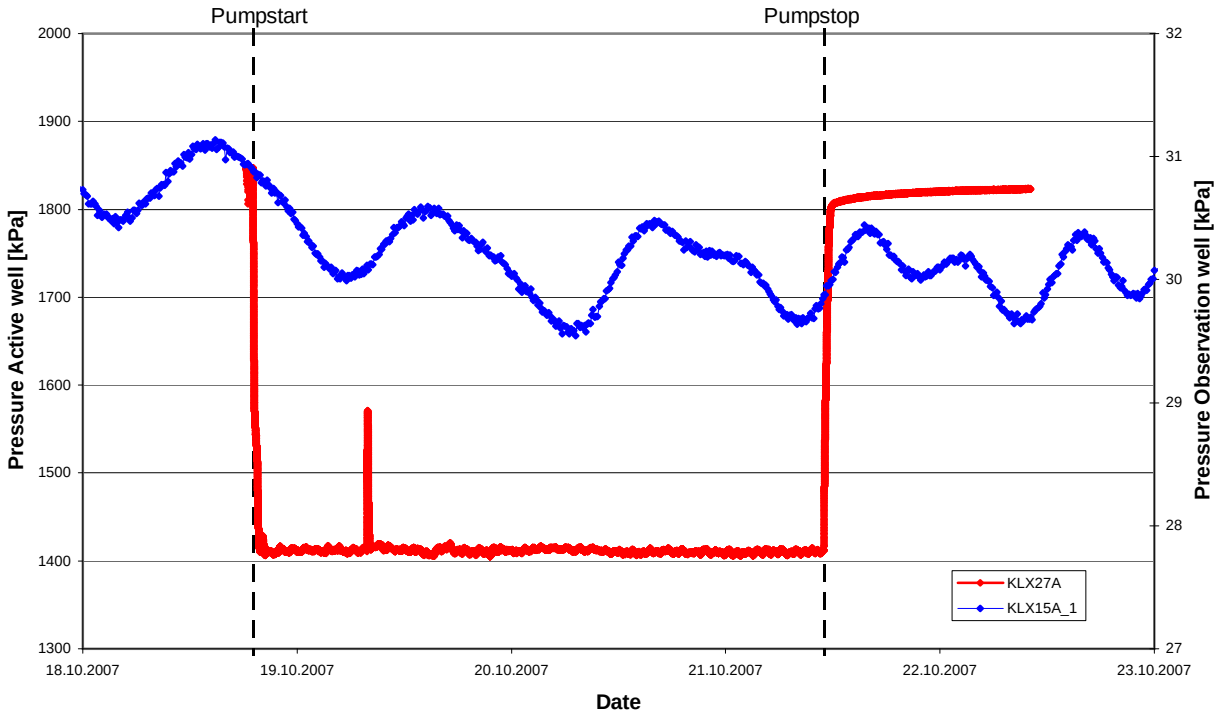
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**KLX15A**	**Section no.:**	**KLX15A_2**
Distance r_s [m]:	1339.00	Section length:	641.00-901.00
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	56.2
Pressure in test section before stop of flowing:	p_p	kPa	56.4
Maximum pressure change during flowing period:*	dp_p	kPa	0.2

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

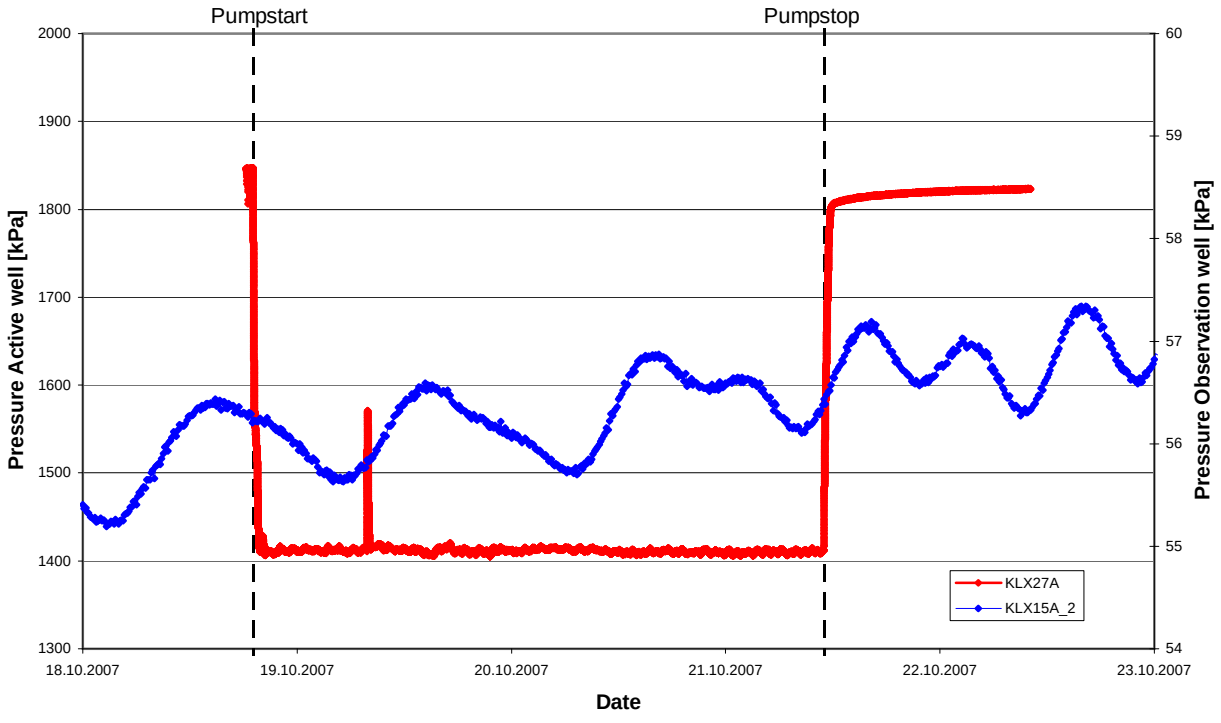
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**KLX15A**	**Section no.:**	**KLX15A_3**
Distance r_s [m]:	1264.00	Section length:	623.00-640.00
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	52.0
Pressure in test section before stop of flowing:	p_p	kPa	51.3
Maximum pressure change during flowing period:*	dp_p	kPa	0.7

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

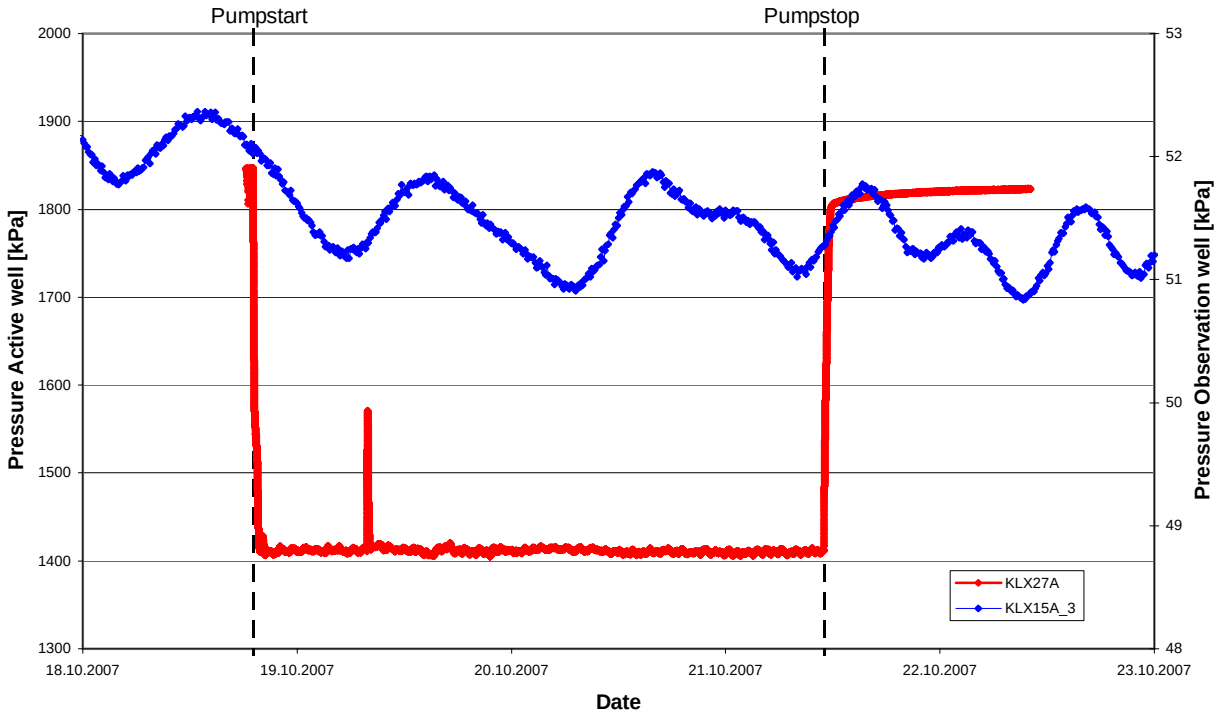
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**KLX15A**	**Section no.:**	**KLX15A_4**
Distance r_s [m]:	1235.00	Section length:	481.00-622.00
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	56.2
Pressure in test section before stop of flowing:	p_p	kPa	55.4
Maximum pressure change during flowing period:*	dp_p	kPa	0.8

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

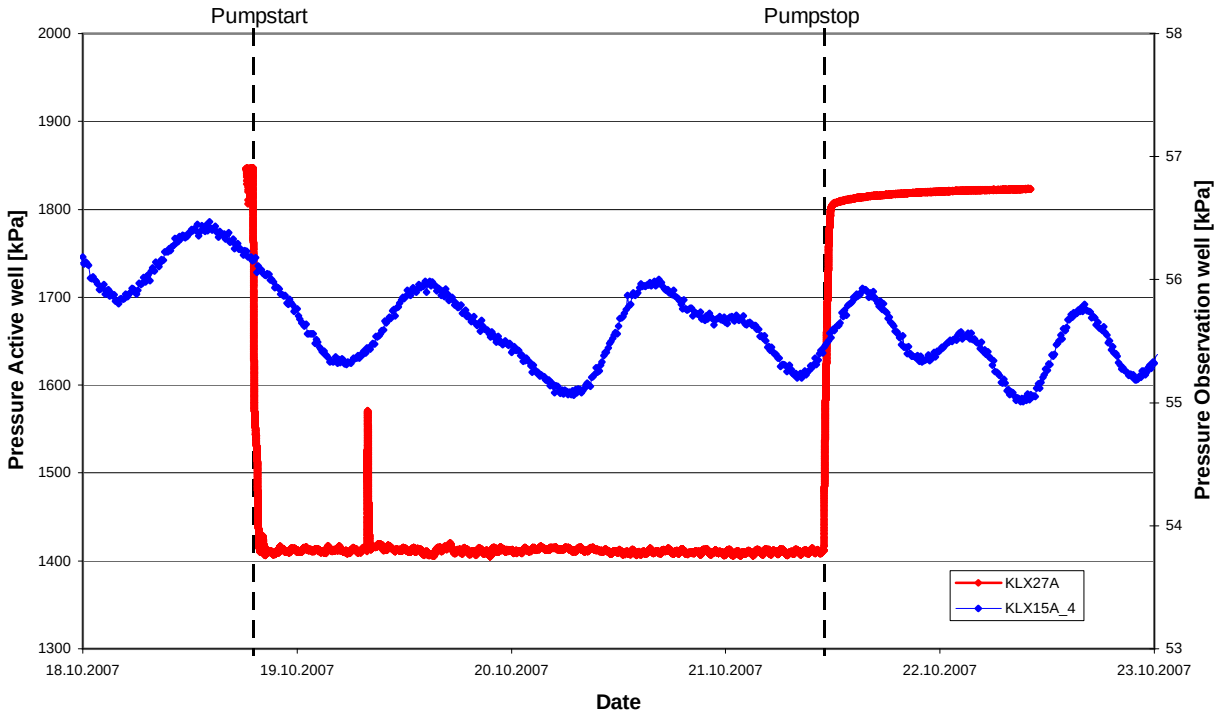
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**KLX15A**	**Section no.:**	**KLX15A_5**
Distance r_s [m]:	1222.00	Section length:	273.00-480.00
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	61.6
Pressure in test section before stop of flowing:	p_p	kPa	61.0
Maximum pressure change during flowing period:*	dp_p	kPa	0.6

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

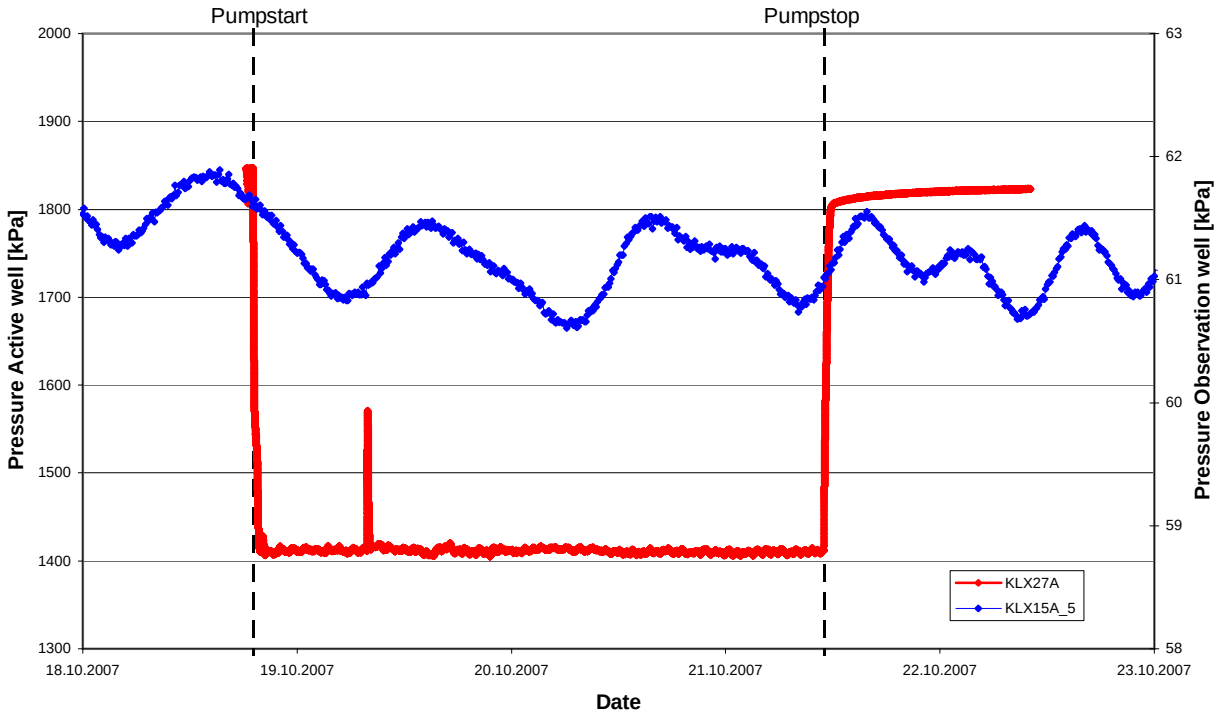
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**KLX15A**	**Section no.:**	**KLX15A_6**
Distance r_s [m]:	1220.00	Section length:	260.00-472.00
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	61.0
Pressure in test section before stop of flowing:	p_p	kPa	60.4
Maximum pressure change during flowing period:*	dp_p	kPa	0.6

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

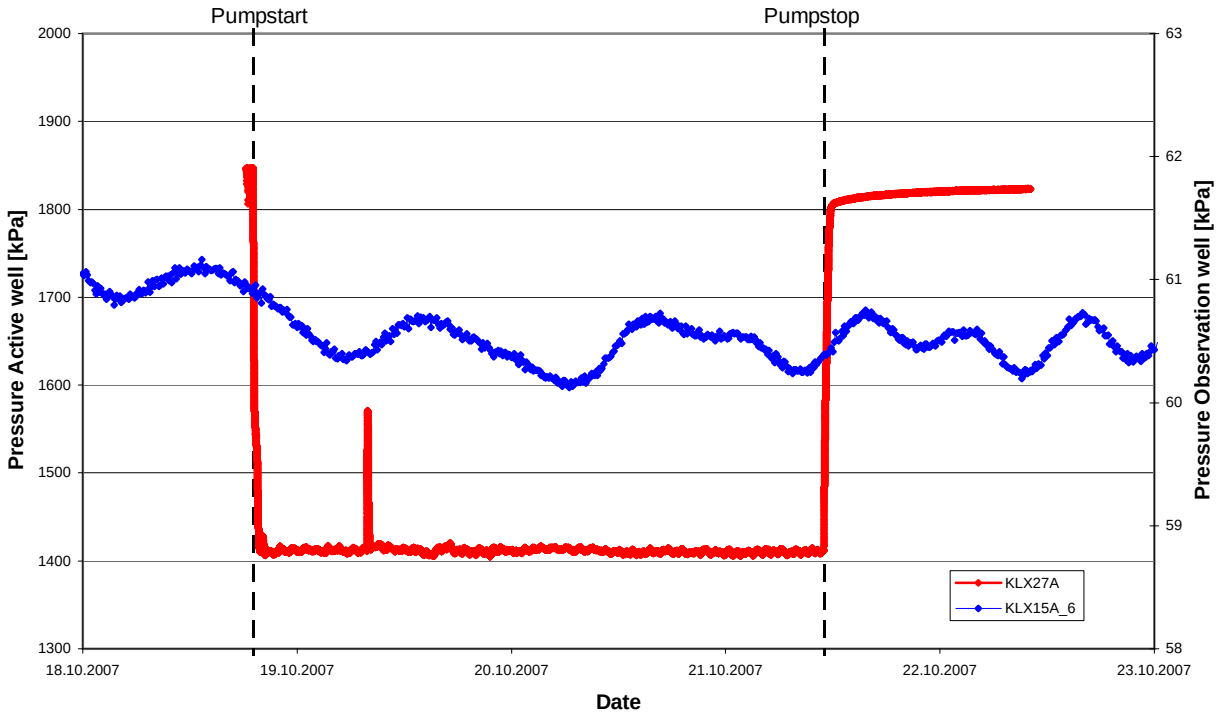
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**KLX15A**	**Section no.:**	**KLX15A_7**
Distance r_s [m]:	1225.00	Section length:	191.00-259.00
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	60.4
Pressure in test section before stop of flowing:	p_p	kPa	60.1
Maximum pressure change during flowing period:*	dp_p	kPa	0.3

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

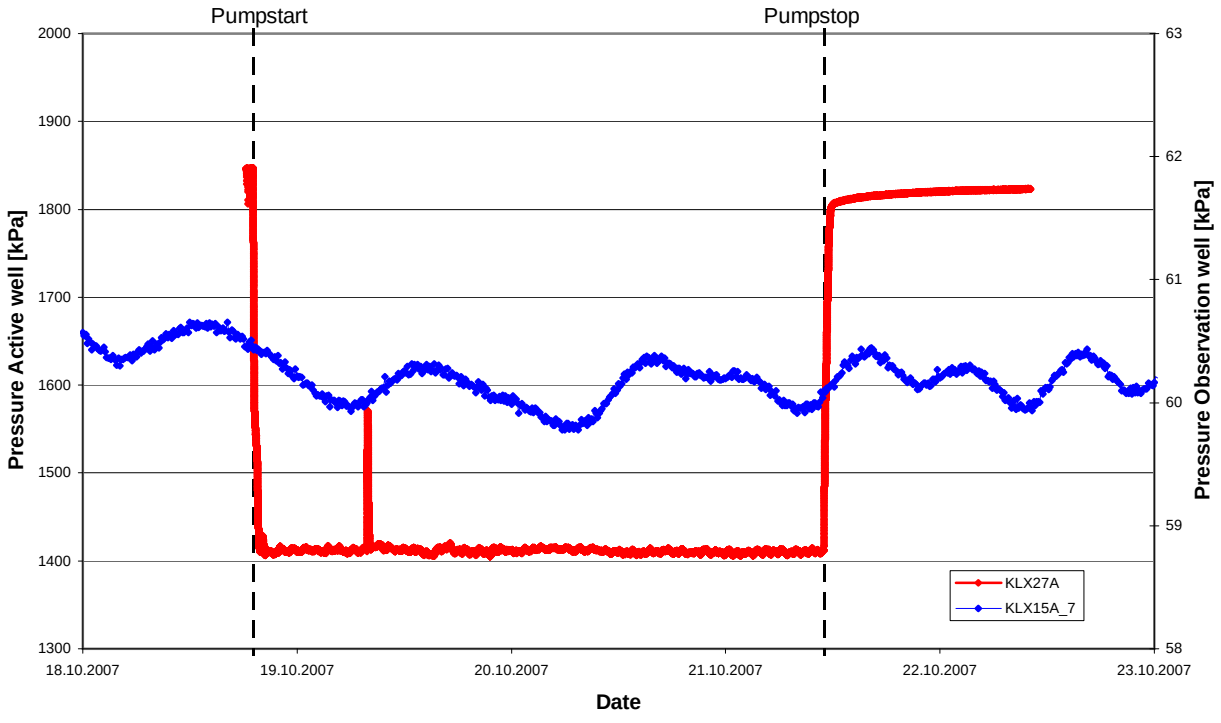
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**KLX15A**	**Section no.:**	**KLX15A_8**
Distance r_s [m]:	1234.00	Section length:	79.00-190.00
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	63.2
Pressure in test section before stop of flowing:	p_p	kPa	62.7
Maximum pressure change during flowing period:*	dp_p	kPa	0.5

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

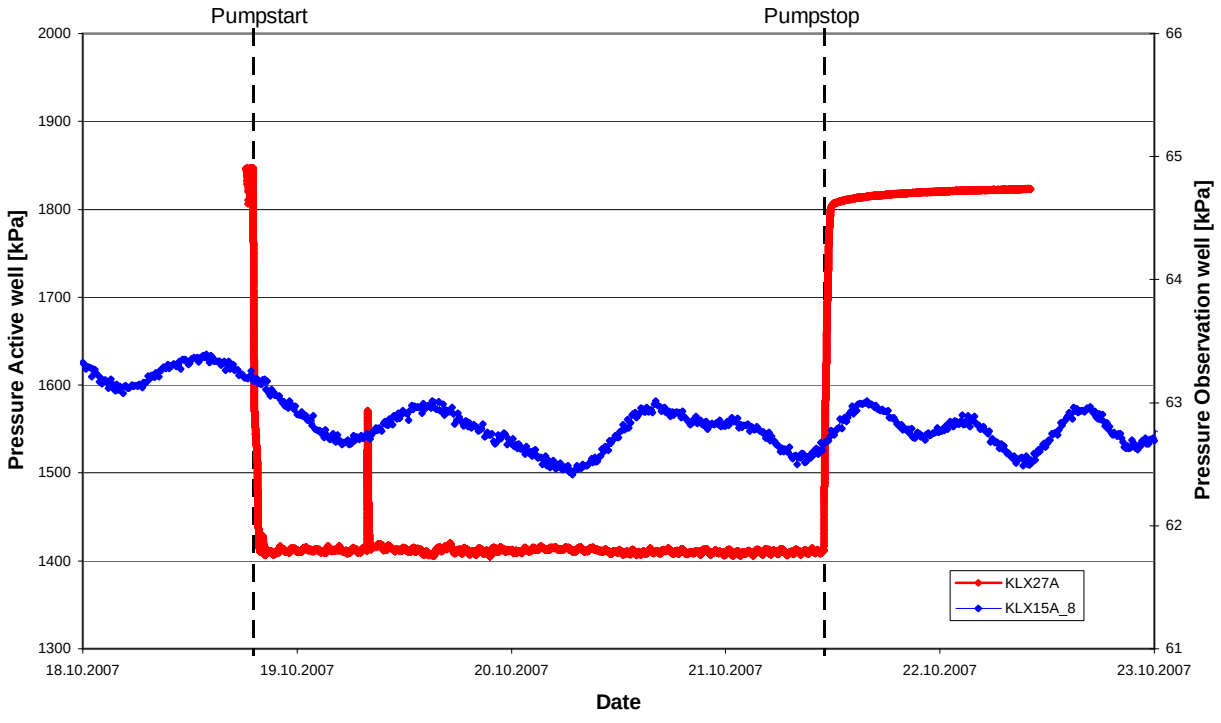
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**KLX15A**	**Section no.:**	**KLX15A_9**
Distance r_s [m]:	1253.00	Section length:	0.00-78.00
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	64.9
Pressure in test section before stop of flowing:	p_p	kPa	64.5
Maximum pressure change during flowing period:*	dp_p	kPa	0.4

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

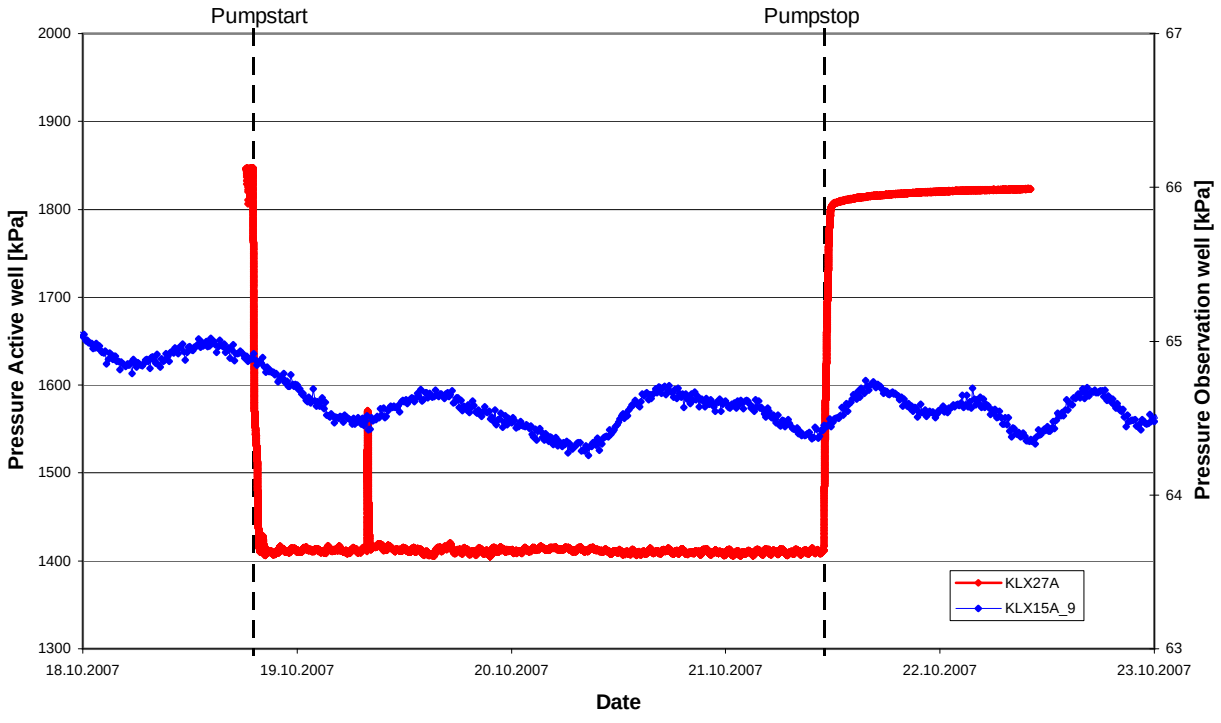
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**KLX16A**	**Section no.:**	**KLX16A_1**
Distance r_s [m]:	1093.00	Section length:	327.00-433.55
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	171.4
Pressure in test section before stop of flowing:	p_p	kPa	170.5
Maximum pressure change during flowing period:*	dp_p	kPa	0.9

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

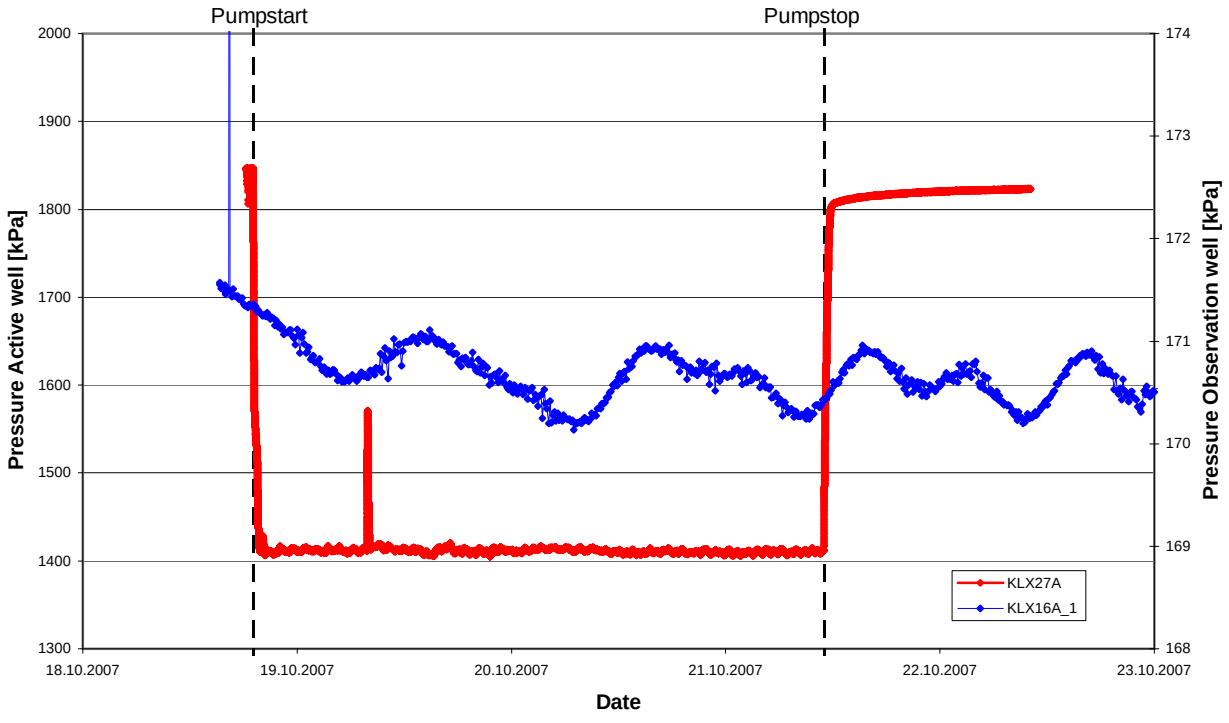
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**KLX16A**	**Section no.:**	**KLX16A_2**
Distance r_s [m]:	1153.00	Section length:	86.00-326.00
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	166.4
Pressure in test section before stop of flowing:	p_p	kPa	165.9
Maximum pressure change during flowing period:*	dp_p	kPa	0.5

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

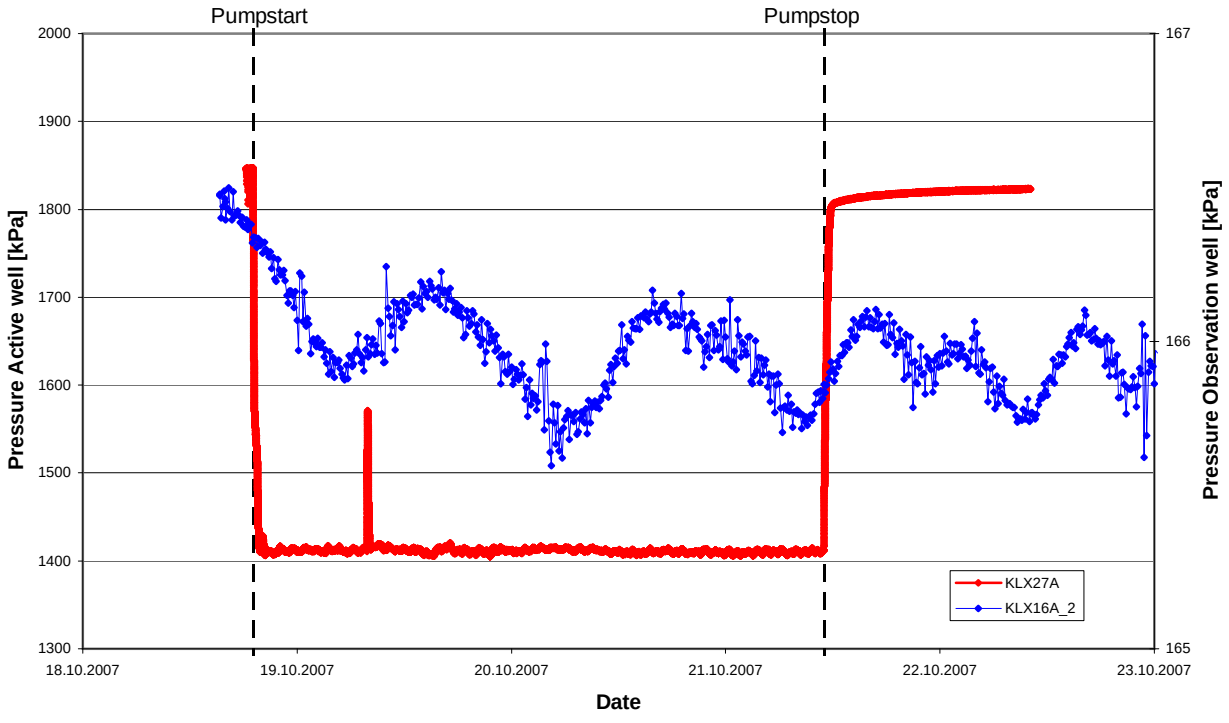
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**KLX16A**	**Section no.:**	**KLX16A_3**
Distance r_s [m]:	1238.00	Section length:	0.00-85.00
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	183.4
Pressure in test section before stop of flowing:	p_p	kPa	184.4
Maximum pressure change during flowing period:*	dp_p	kPa	1.0

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

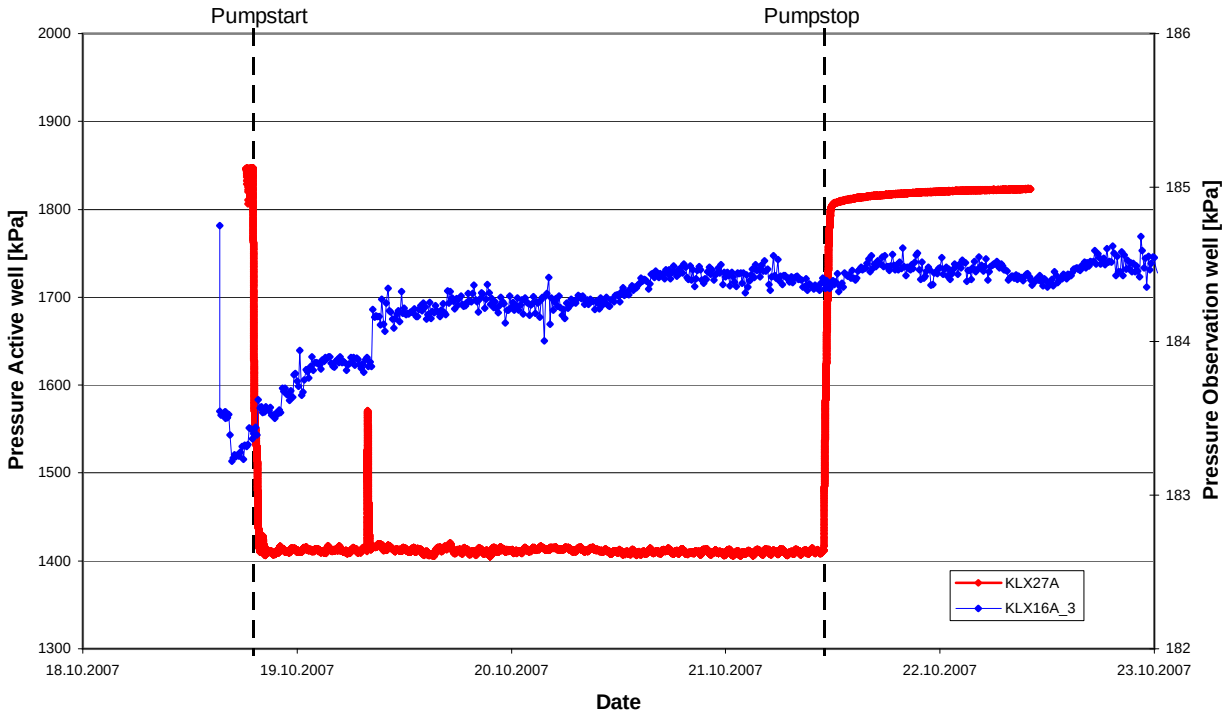
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**KLX19A**	**Section no.:**	**KLX19A_1**
Distance r_s [m]:	497.00	Section length:	661.00-800.00
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	93.3
Pressure in test section before stop of flowing:	p_p	kPa	92.3
Maximum pressure change during flowing period:*	dp_p	kPa	1.0

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

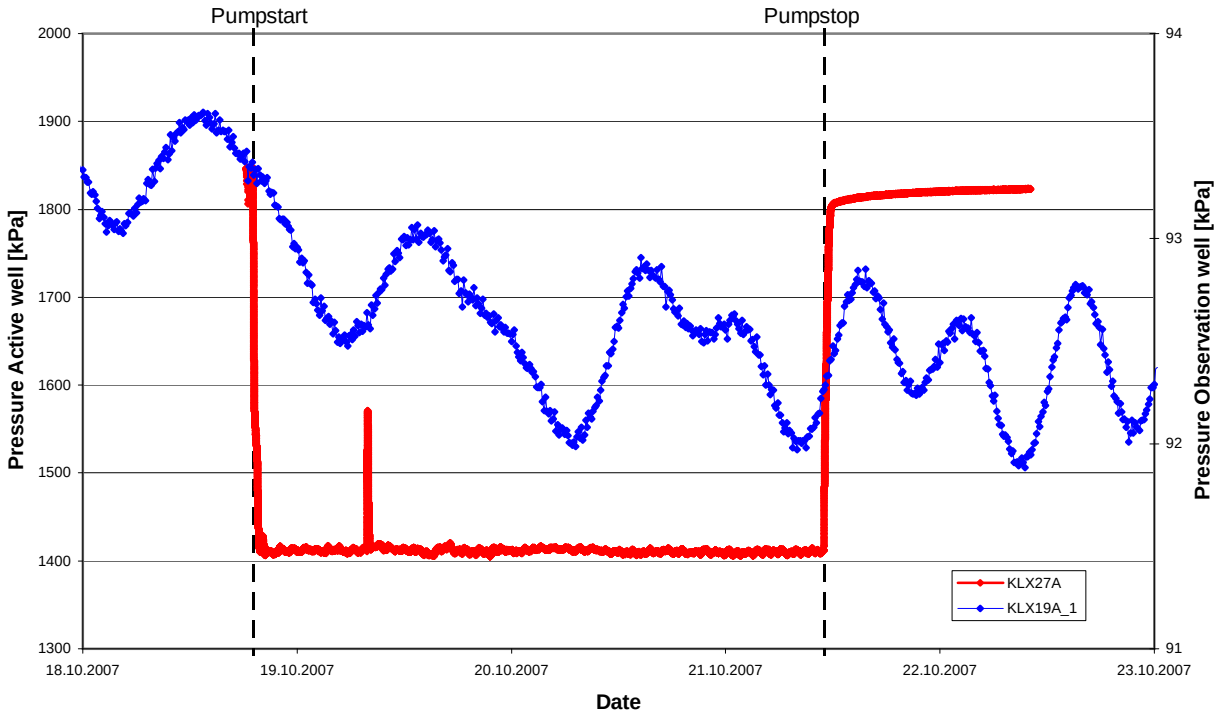
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**KLX19A**	**Section no.:**	**KLX19A_2**
Distance r_s [m]:	347.00	Section length:	518.00-660.00
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	88.8
Pressure in test section before stop of flowing:	p_p	kPa	87.9
Maximum pressure change during flowing period:*	dp_p	kPa	0.9

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

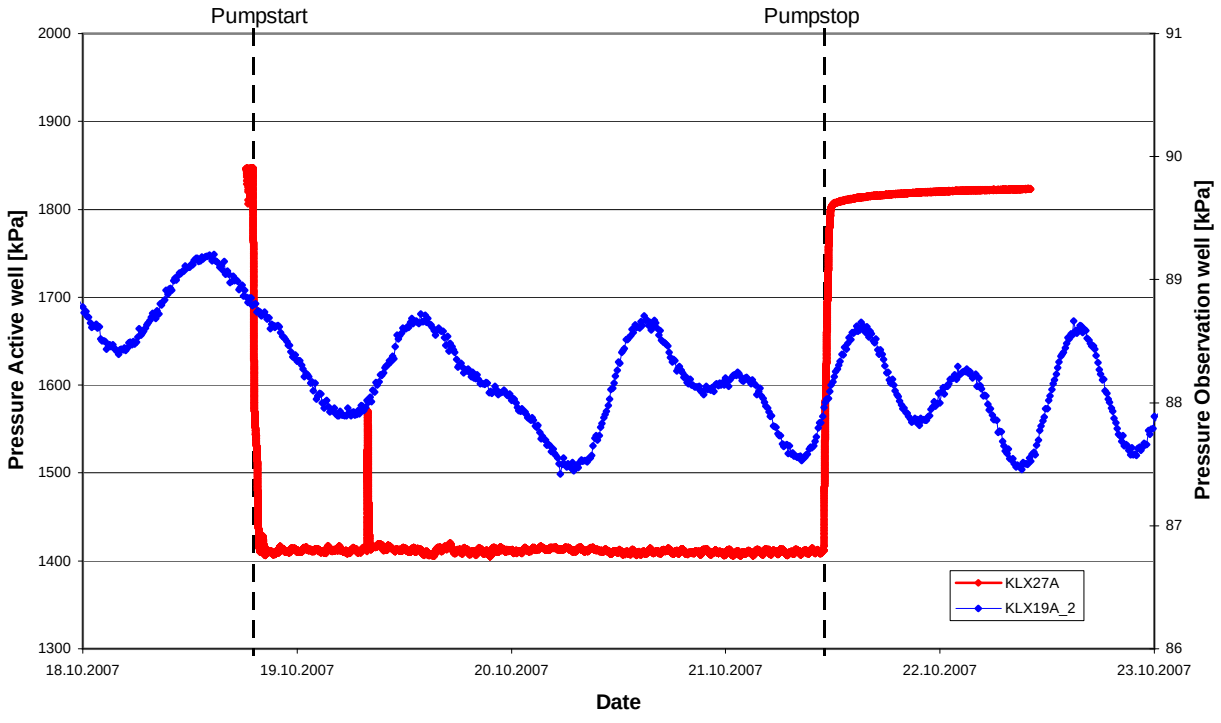
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**KLX19A**	**Section no.:**	**KLX19A_3**
Distance r_s [m]:	307.00	Section length:	509.00-517.00
Response time dt_L [s]:	15420	max. Drawdown s_p [m]:*	0.80

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	120.6
Pressure in test section before stop of flowing:	p_p	kPa	112.8
Maximum pressure change during flowing period:*	dp_p	kPa	7.8

Normalized distance with respect to the response time

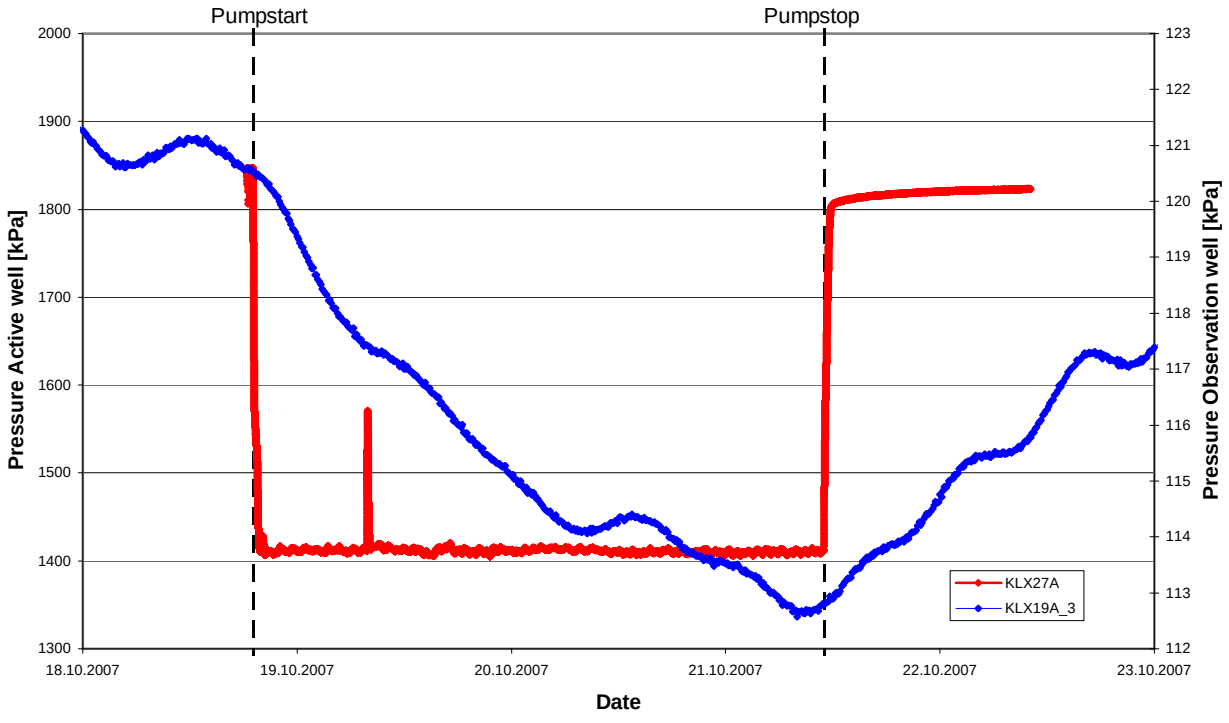
Index 1	**r_s^2/dt_L [m^2/s]:**	**6.11**	**Medium**

Normalized drawdown with respect to pumping flow rate

Index 2	**s_p/Q_p [s/m^2]:**	**12047.08**	**Medium**
Index 2 New	**$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:**	**68991.77**	**High**

* see comment

Comment: clear response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**KLX19A**	**Section no.:**	**KLX19A_4**
Distance r_s [m]:	290.00	Section length:	481.50-508.00
Response time dt_L [s]:	15420	max. Drawdown s_p [m]:*	0.78

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	120.8
Pressure in test section before stop of flowing:	p_p	kPa	113.1
Maximum pressure change during flowing period:*	dp_p	kPa	7.7

Normalized distance with respect to the response time

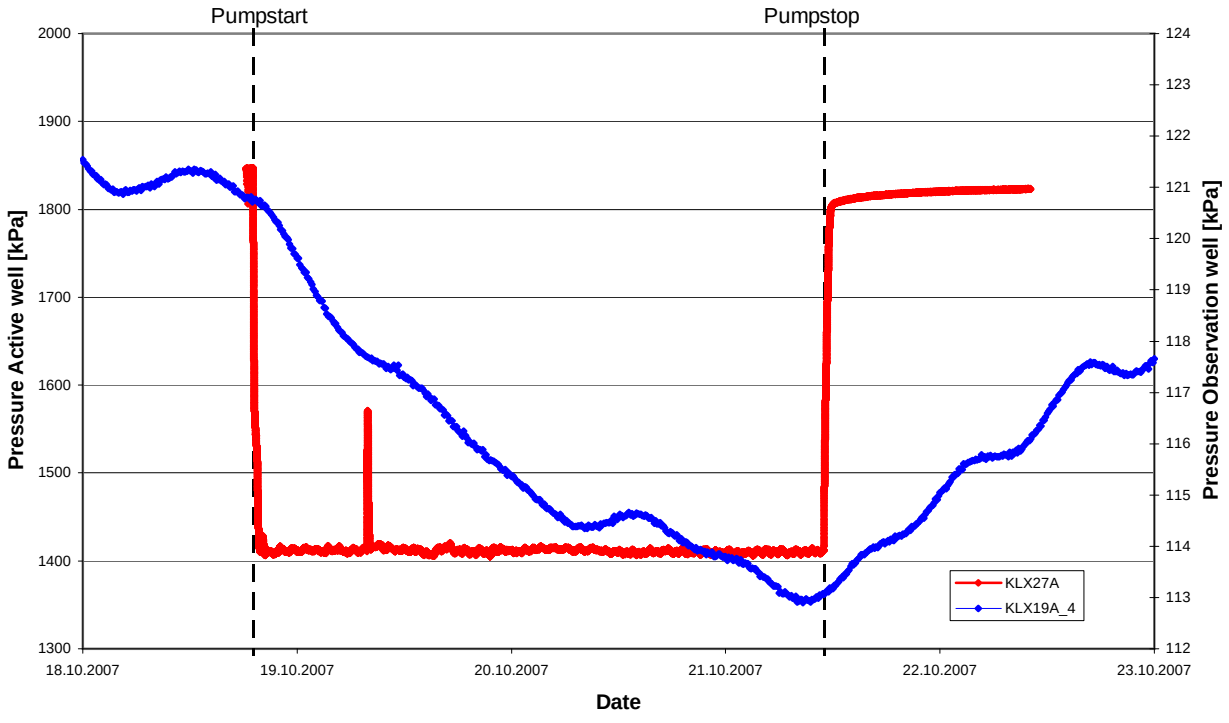
Index 1	**r_s^2/dt_L [m^2/s]:**	**5.45**	**Medium**

Normalized drawdown with respect to pumping flow rate

Index 2	**s_p/Q_p [s/m^2]:**	**11892.63**	**Medium**
Index 2 New	**$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:**	**67429.78**	**High**

* see comment

Comment: clear response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**KLX19A**	**Section no.:**	**KLX19A_5**
Distance r_s [m]:	261.00	Section length:	311.00-480.50
Response time dt_L [s]:	16020	max. Drawdown s_p [m]:*	0.78

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	120.8
Pressure in test section before stop of flowing:	p_p	kPa	113.1
Maximum pressure change during flowing period:*	dp_p	kPa	7.7

Normalized distance with respect to the response time

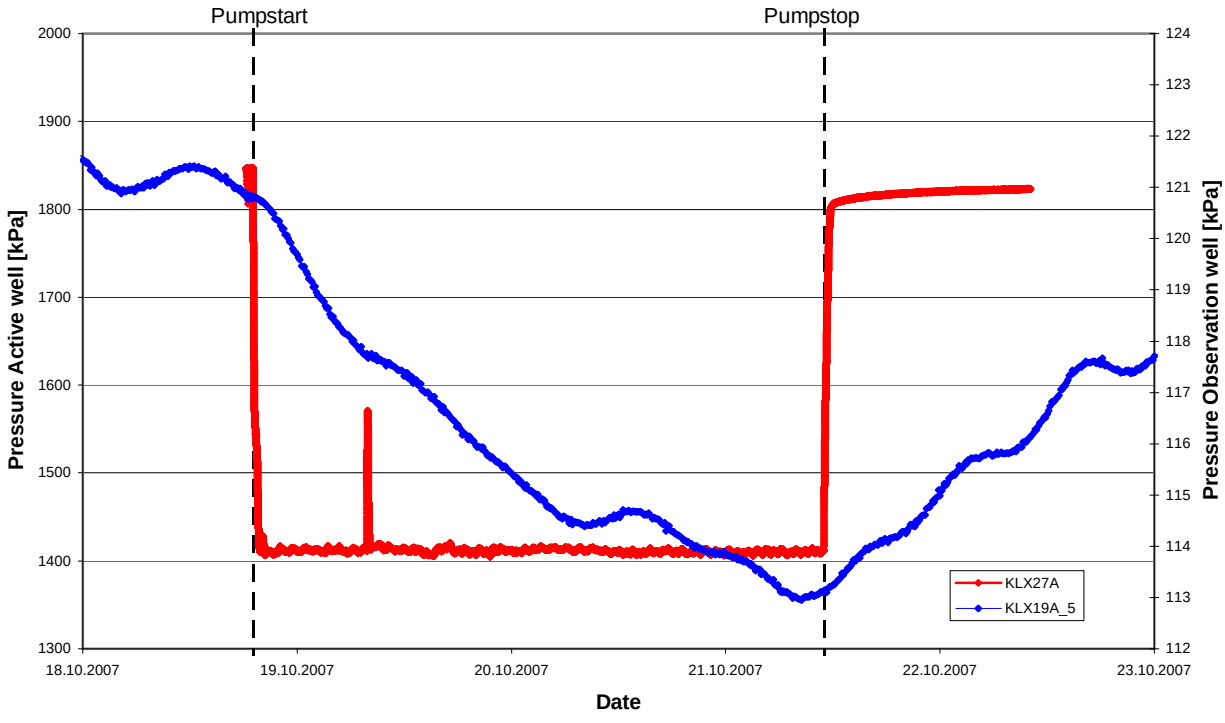
Index 1	**r_s^2/dt_L [m^2/s]:**	**4.25**	**Medium**

Normalized drawdown with respect to pumping flow rate

Index 2	**s_p/Q_p [s/m^2]:**	**11892.63**	**Medium**
Index 2 New	**$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:**	**66176.76**	**High**

* see comment

Comment: clear response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**KLX19A**	**Section no.:**	**KLX19A_6**
Distance r_s [m]:	224.00	Section length:	291.00-300.00
Response time dt_L [s]:	15420	max. Drawdown s_p [m]:*	0.61

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	123.1
Pressure in test section before stop of flowing:	p_p	kPa	117.1
Maximum pressure change during flowing period:*	dp_p	kPa	6.0

Normalized distance with respect to the response time

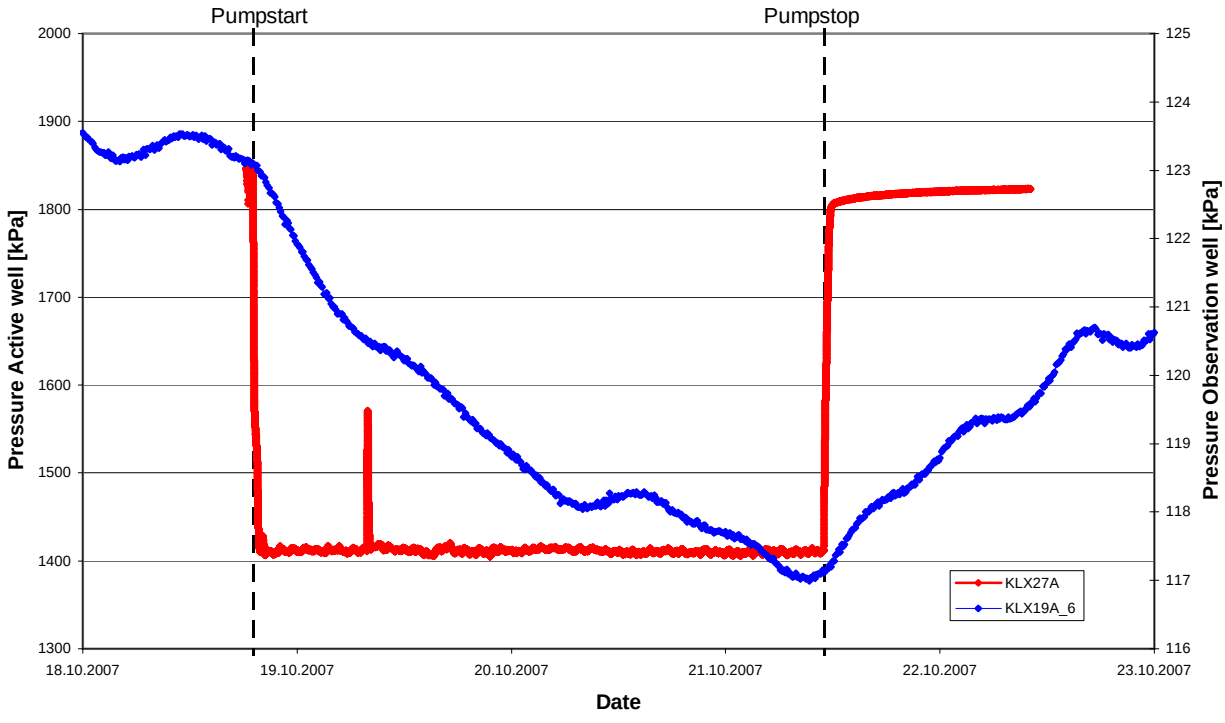
Index 1	**r_s^2/dt_L [m^2/s]:**	**3.25**	**Medium**

Normalized drawdown with respect to pumping flow rate

Index 2	**s_p/Q_p [s/m^2]:**	**9266.98**	**Low**
Index 2 New	**$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:**	**50149.63**	**High**

* see comment

Comment: clear response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**KLX19A**	**Section no.:**	**KLX19A_7**
Distance r_s [m]:	275.00	Section length:	136.00-290.00
Response time dt_L [s]:	175020	max. Drawdown s_p [m]:*	0.13

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	129.0
Pressure in test section before stop of flowing:	p_p	kPa	127.7
Maximum pressure change during flowing period:*	dp_p	kPa	1.3

Normalized distance with respect to the response time

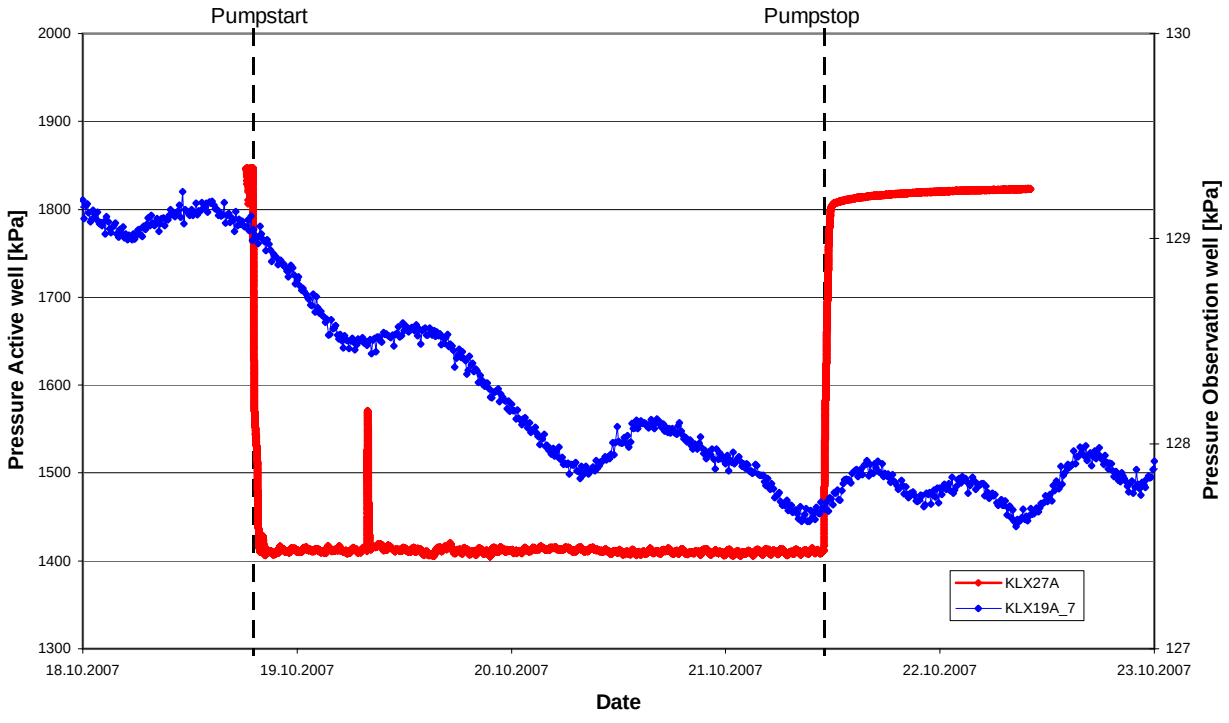
Index 1	**r_s^2/dt_L [m^2/s]:**	**0.43**	**Low**

Normalized drawdown with respect to pumping flow rate

Index 2	**s_p/Q_p [s/m^2]:**	**2007.85**	**Low**
Index 2 New	**$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:**	**11277.61**	**Medium**

* see comment

Comment: no clear response due to pumping in source
pressure recovery probably influenced by natural fluctuations



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**KLX19A**	**Section no.:**	**KLX19A_8**
Distance r_s [m]:	303.00	Section length:	0.00-135.00
Response time dt_L [s]:	108420	max. Drawdown s_p [m]:*	0.13

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	129.1
Pressure in test section before stop of flowing:	p_p	kPa	127.8
Maximum pressure change during flowing period:*	dp_p	kPa	1.3

Normalized distance with respect to the response time

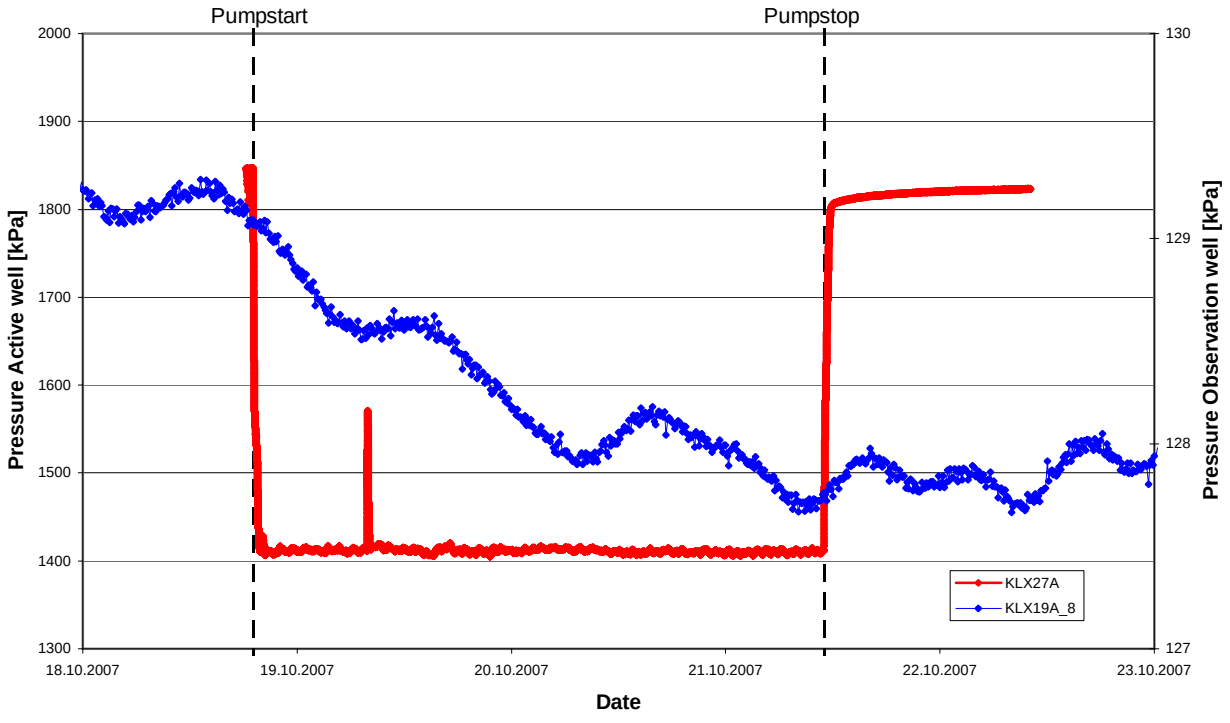
Index 1	**r_s^2/dt_L [m^2/s]:**	**0.85**	**Low**

Normalized drawdown with respect to pumping flow rate

Index 2	**s_p/Q_p [s/m^2]:**	**2007.85**	**Low**
Index 2 New	**$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:**	**11472.30**	**Medium**

* see comment

Comment:	no clear response due to pumping in source pressure recovery probably influenced by natural fluctuations



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**KLX20A**	**Section no.:**	**KLX20A_1**
Distance r_s [m]:	759.00	Section length:	294.00-457.00
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	142.1
Pressure in test section before stop of flowing:	p_p	kPa	141.0
Maximum pressure change during flowing period:*	dp_p	kPa	1.1

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

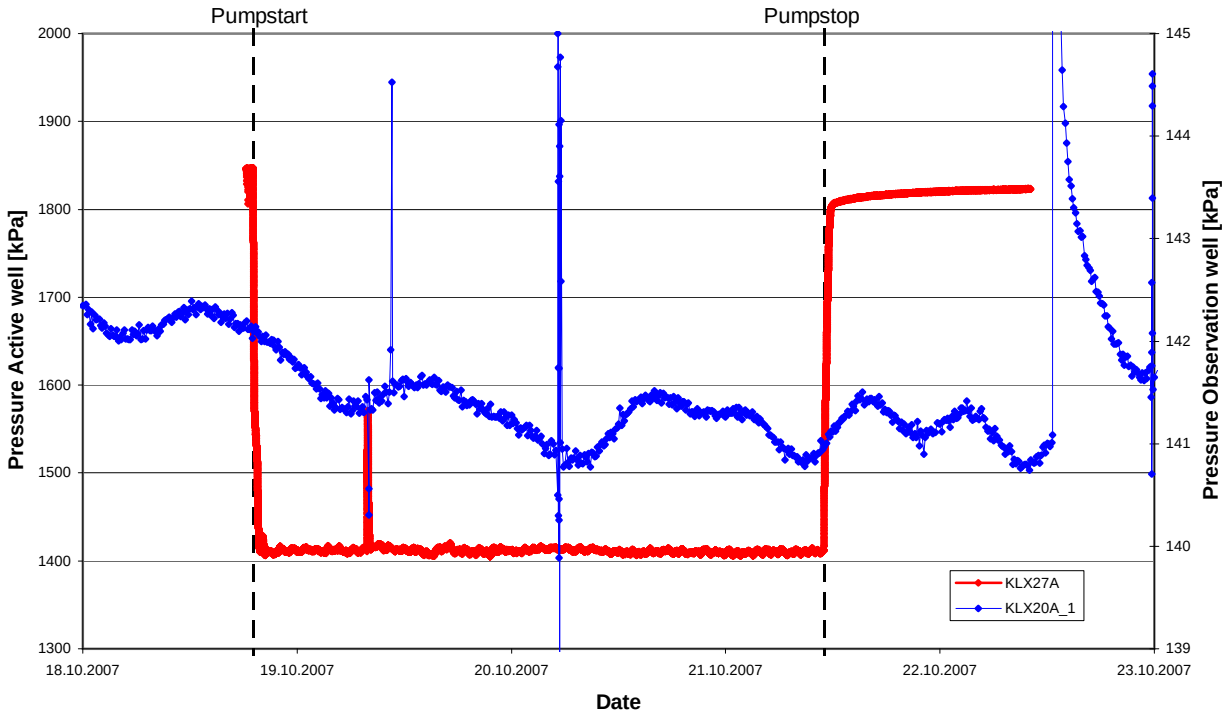
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**KLX20A**	**Section no.:**	**KLX20A_2**
Distance r_s [m]:	712.00	Section length:	260.00-296.00
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	145.3
Pressure in test section before stop of flowing:	p_p	kPa	144.5
Maximum pressure change during flowing period:*	dp_p	kPa	0.8

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

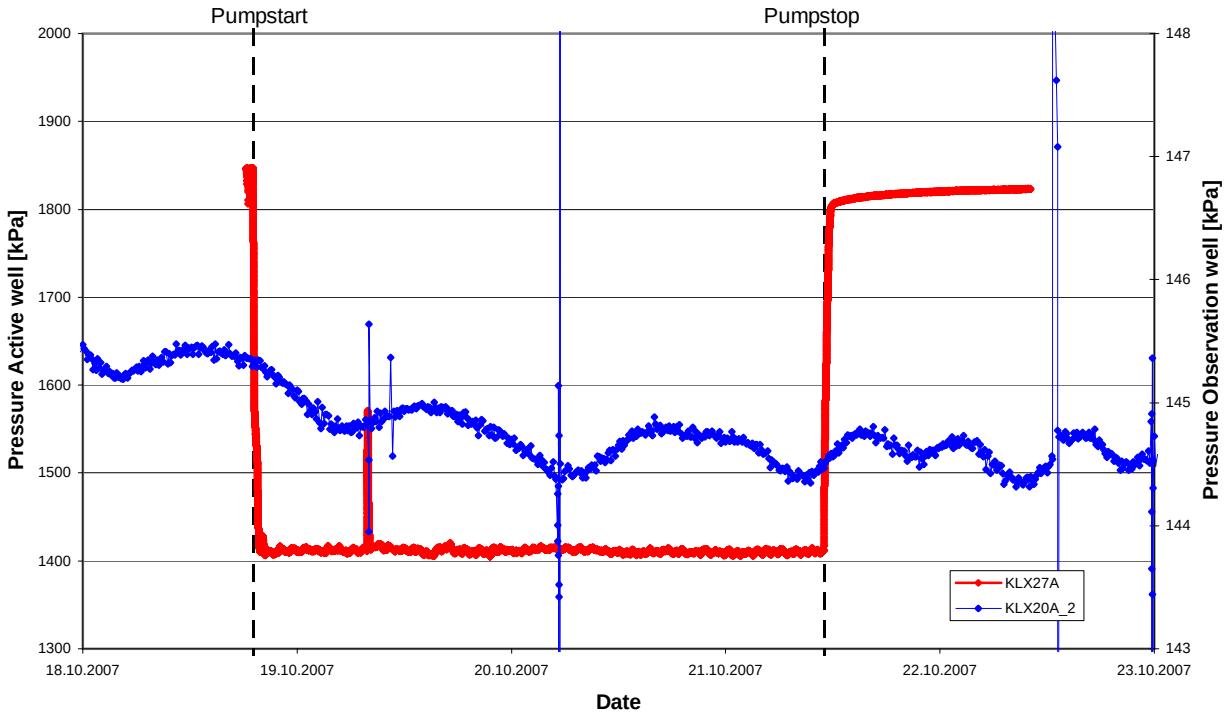
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**KLX20A**	**Section no.:**	**KLX20A_3**
Distance r_s [m]:	694.00	Section length:	181.00-259.00
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	145.2
Pressure in test section before stop of flowing:	p_p	kPa	143.9
Maximum pressure change during flowing period:*	dp_p	kPa	1.3

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

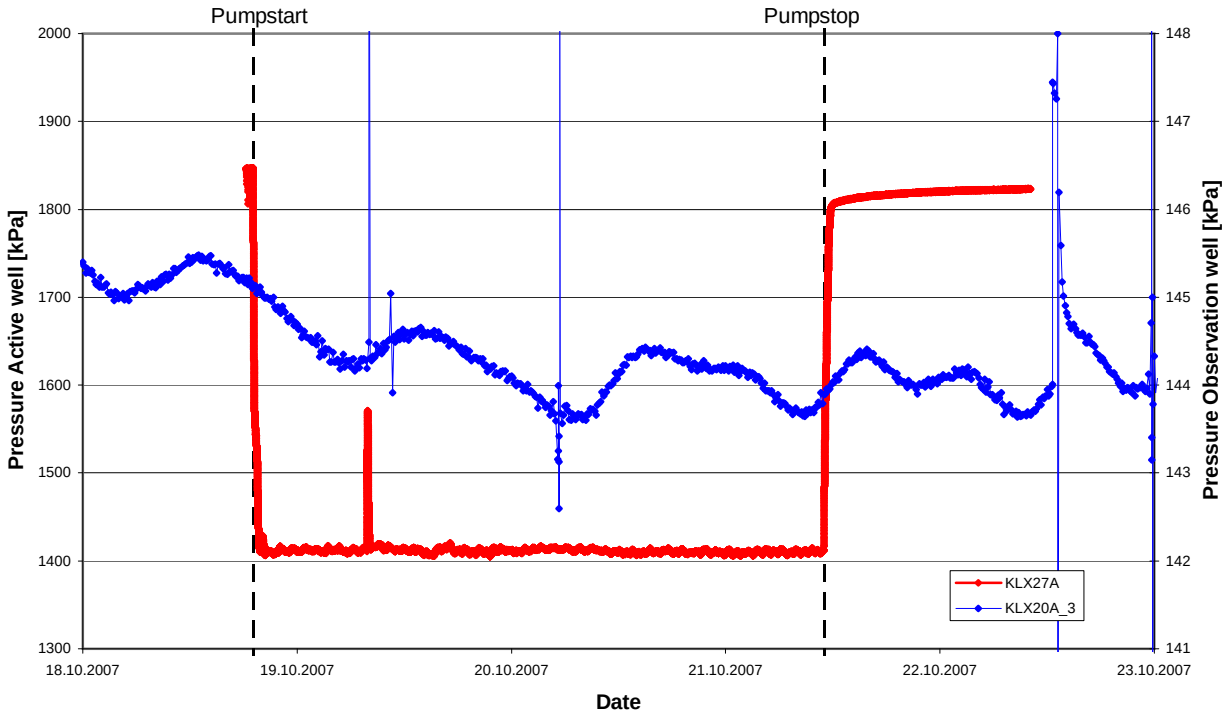
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**KLX20A**	**Section no.:**	**KLX20A_4**
Distance r_s [m]:	689.00	Section length:	145.00-180.00
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	134.2
Pressure in test section before stop of flowing:	p_p	kPa	133.2
Maximum pressure change during flowing period:*	dp_p	kPa	1.0

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

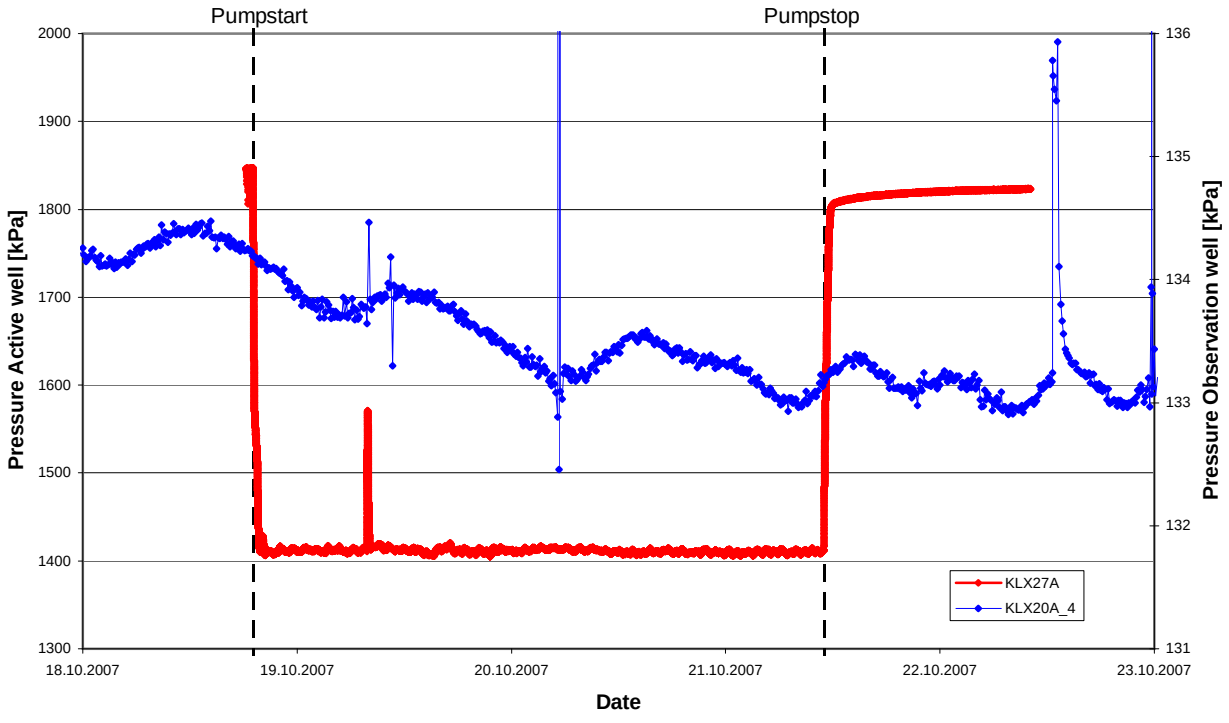
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**KLX20**	**Section no.:**	**KLX20A_5**
Distance r_s [m]:	683.00	Section length:	103.00-144.00
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	0.06

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	151.9
Pressure in test section before stop of flowing:	p_p	kPa	151.3
Maximum pressure change during flowing period:*	dp_p	kPa	0.6

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

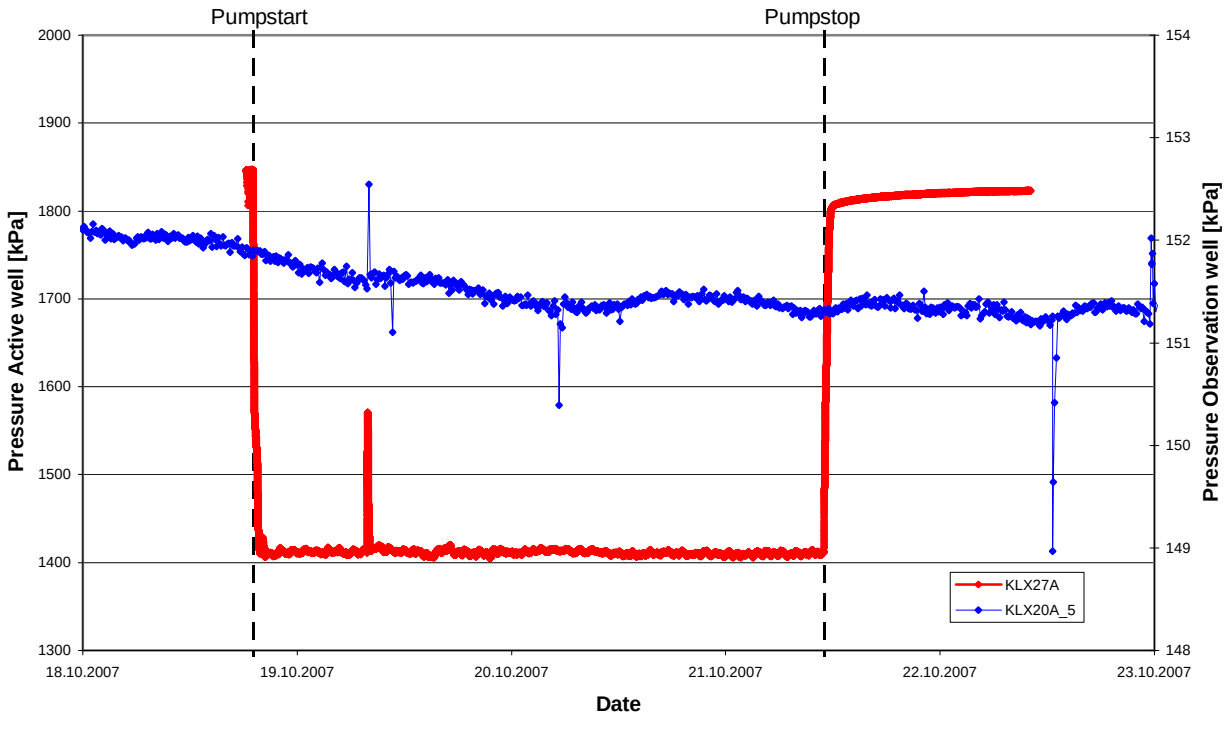
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **926.70** **Low****

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **6048.09** **Medium****

* see comment

Comment: no clear response due to pumping in source
response and recovery phase probably influenced by other effects
** no response according to SKB MD 330.003 (s_p < 0.1 m)



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**KLX20**	**Section no.:**	**KLX20A_6**
Distance r_s [m]:	681.00	Section length:	0.00-102.00
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	0.04

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	152.6
Pressure in test section before stop of flowing:	p_p	kPa	152.2
Maximum pressure change during flowing period:*	dp_p	kPa	0.4

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

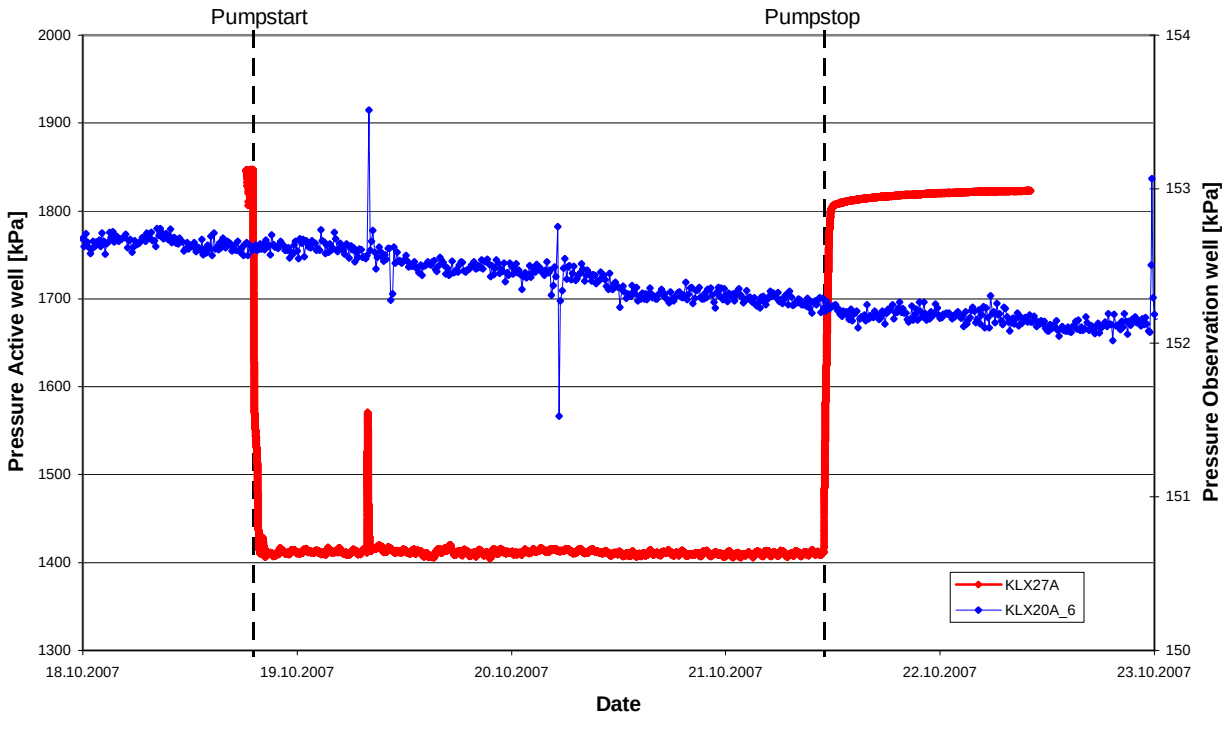
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **617.80** **Low****

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **4030.25** **Medium****

* see comment

Comment: no clear response due to pumping in source
response and recovery phase probably influenced by other effects
** no response according to SKB MD 330.003 (s_p < 0.1 m)



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**KLX23A**	**Section no.:**	**KLX23A_1**
Distance r_s [m]:	462.00	Section length:	49.00-100.00
Response time dt_L [s]:	113820	max. Drawdown s_p [m]:*	0.13

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	129.6
Pressure in test section before stop of flowing:	p_p	kPa	128.3
Maximum pressure change during flowing period:*	dp_p	kPa	1.3

Normalized distance with respect to the response time

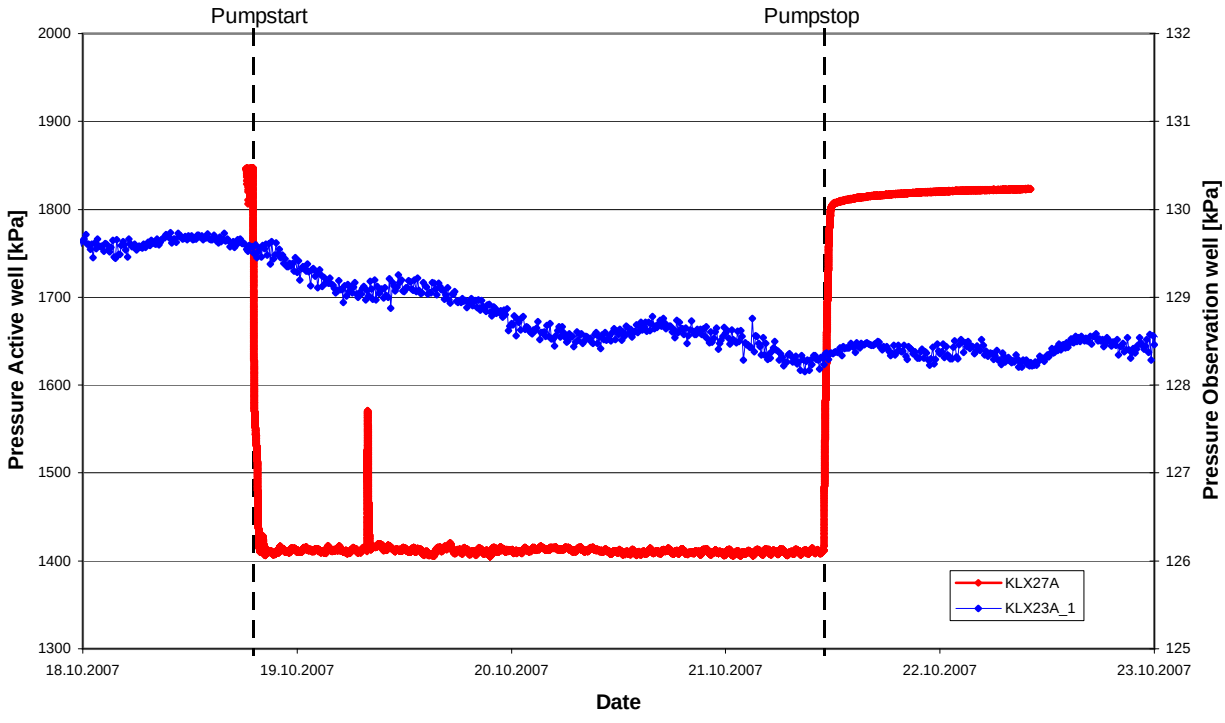
Index 1	**r_s^2/dt_L [m^2/s]:**	**1.88**	**Medium**

Normalized drawdown with respect to pumping flow rate

Index 2	**s_p/Q_p [s/m^2]:**	**2007.85**	**Low**
Index 2 New	**$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:**	**12319.27**	**Medium**

* see comment

Comment: no clear response due to pumping in source
pressure recovery probably influenced by natural fluctuations



Activityplan No.	AP PS 400-07-72		
Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**KLX23A**	**Section no.:**	**KLX23A_2**
Distance r_s [m]:	456.00	Section length:	0.00-48.00
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	143.0
Pressure in test section before stop of flowing:	p_p	kPa	142.8
Maximum pressure change during flowing period:*	dp_p	kPa	0.2

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

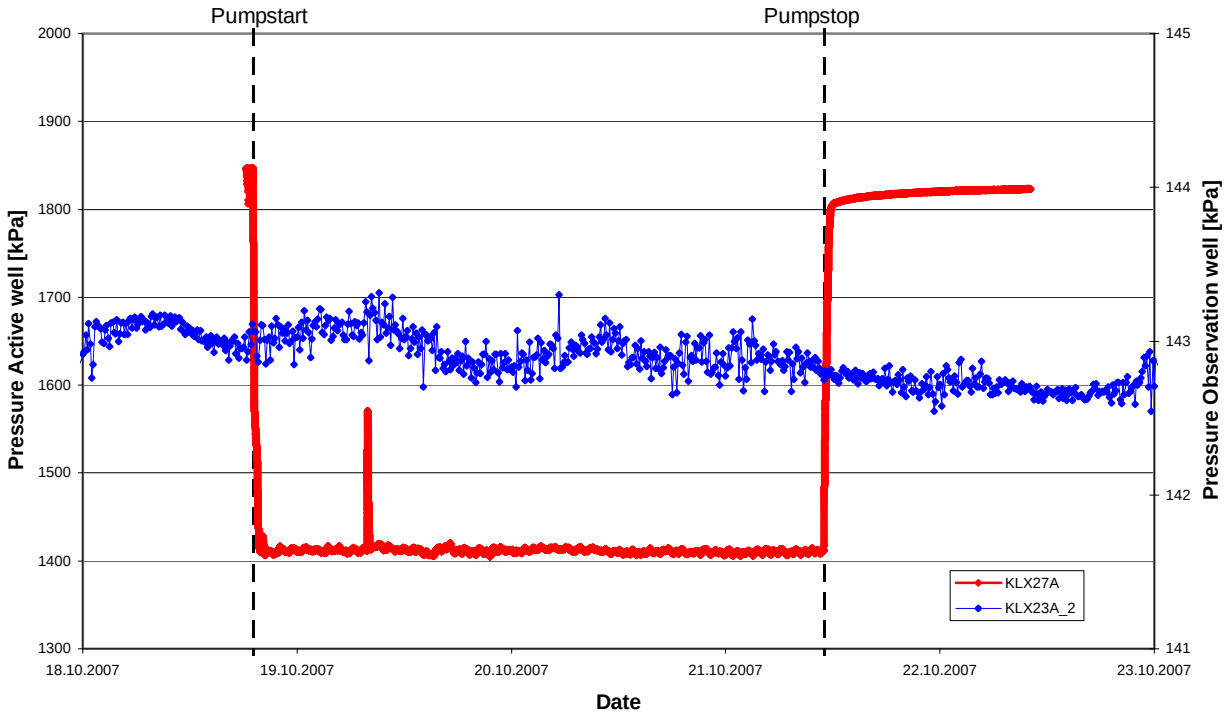
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no clear response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**KLX24**	**Section no.:**	**KLX24A_1**
Distance r_s [m]:	744.00	Section length:	69.00-100.00
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	0.05

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	140.3
Pressure in test section before stop of flowing:	p_p	kPa	139.8
Maximum pressure change during flowing period:*	dp_p	kPa	0.5

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

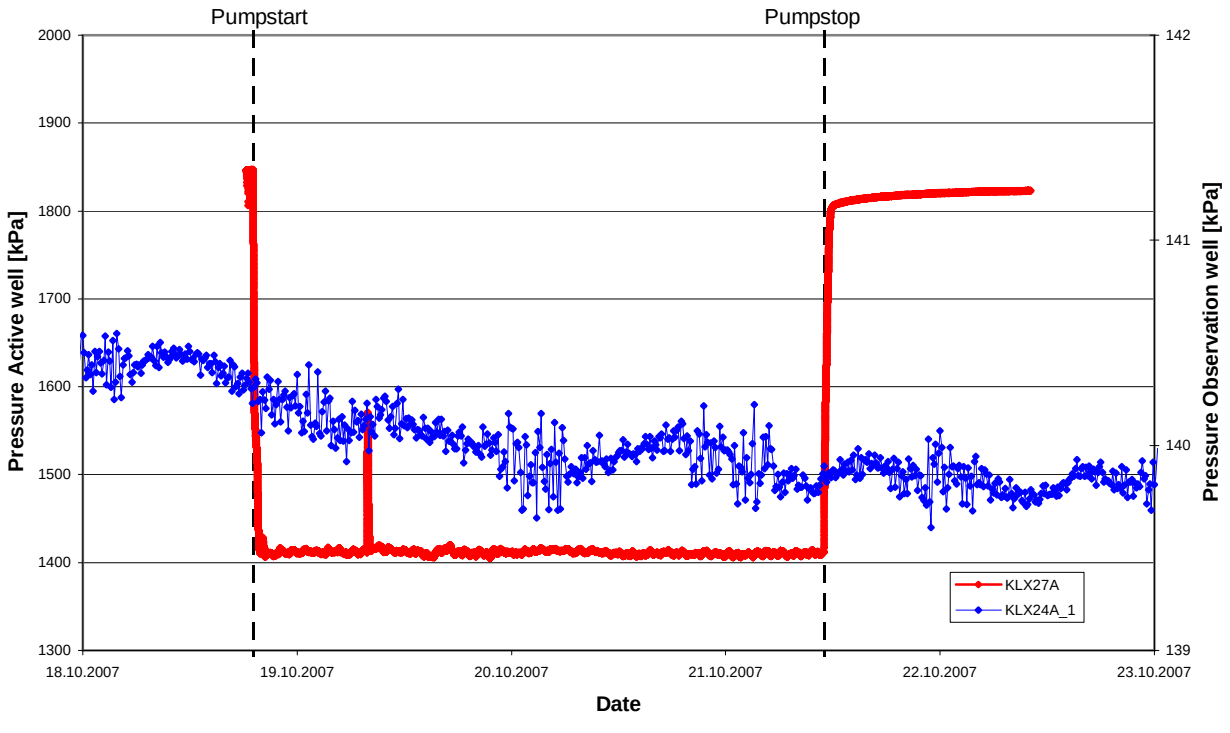
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **772.25** **Low****

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **5106.14** **Medium****

* see comment

Comment: no clear response due to pumping in source
response and recovery phase probably influenced by other effects
** no response according to SKB MD 330.003 (s_p < 0.1 m)



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**KLX24**	**Section no.:**	**KLX24A_2**
Distance r_s [m]:	748.00	Section length:	41.00-68.00
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	0.05

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	152.5
Pressure in test section before stop of flowing:	p_p	kPa	152.0
Maximum pressure change during flowing period:*	dp_p	kPa	0.5

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

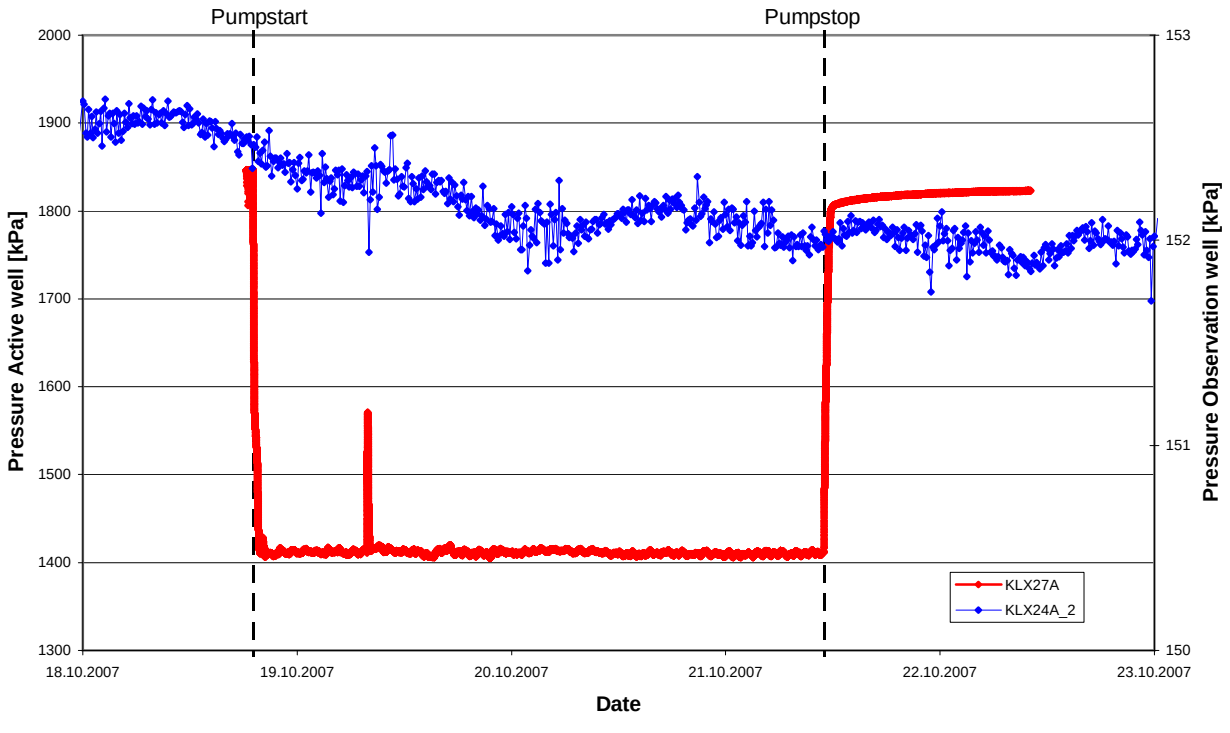
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **772.25** **Low****

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **5110.28** **Medium****

* see comment

Comment: no clear response due to pumping in source
response and recovery phase probably influenced by other effects
** no response according to SKB MD 330.003 (s_p < 0.1 m)



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**210.00-247.00**
Test Start:	10.10.2007 00:00	Test Stop:	23.10.2007 12:00
Pump Start:	18.10.2007 19:03	Pump Stop:	21.10.2007 11:02
Flow Rate Q_p [m^3/s]:	6.60E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	1847
Pressure in test section before stop of flowing:	p_p	kPa	1409
Maximum pressure change during flowing period:	dp_p	kPa	438

Observation Hole:	**KLX24A**	**Section no.:**	**KLX24A_3**
Distance r_s [m]:	754.00	Section length:	0.00-40.00
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	161.4
Pressure in test section before stop of flowing:	p_p	kPa	161.2
Maximum pressure change during flowing period:*	dp_p	kPa	0.2

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

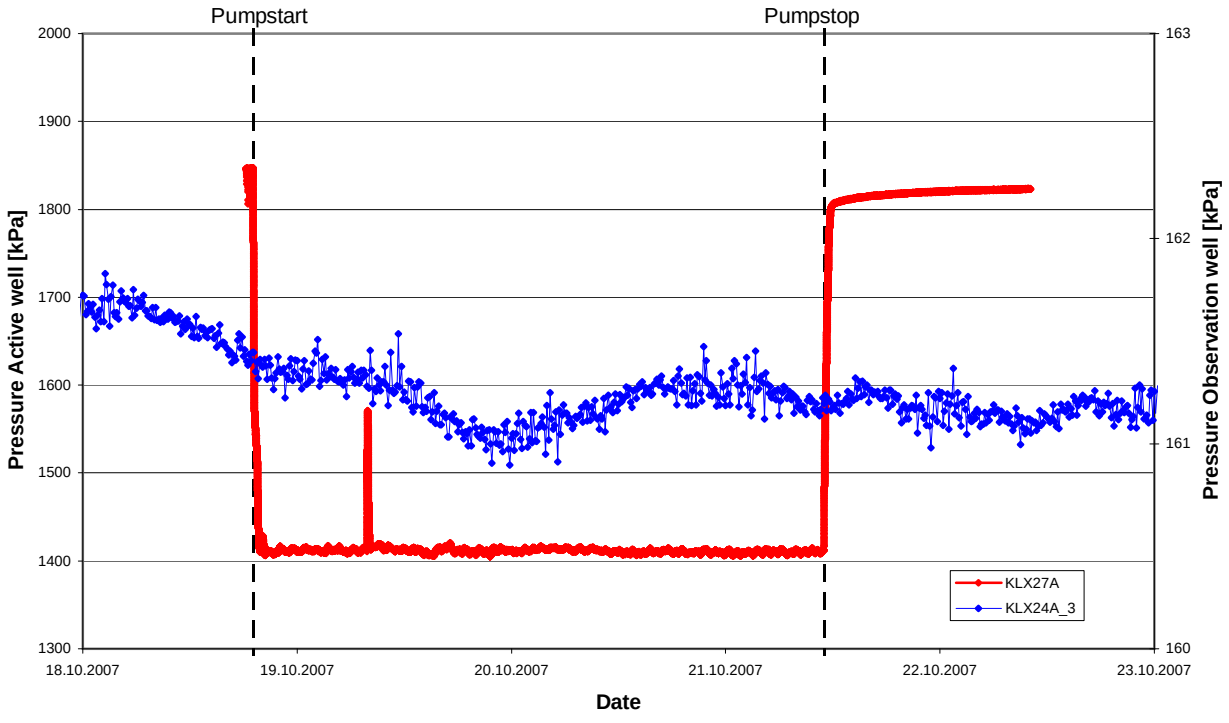
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



APPENDIX 4-2

Index calculation

KLX27A Section 639.20-650.56 m pumped

Activityplan No.	AP PS 400-07-72		
Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**HLX27**	**Section no.:**	**HLX27_1**
Distance r_s [m]:	1258.10	Section length:	153.0-165.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	64.4
Pressure in test section before stop of flowing:	p_p	kPa	64.7
Maximum pressure change during flowing period:*	dp_p	kPa	0.3

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

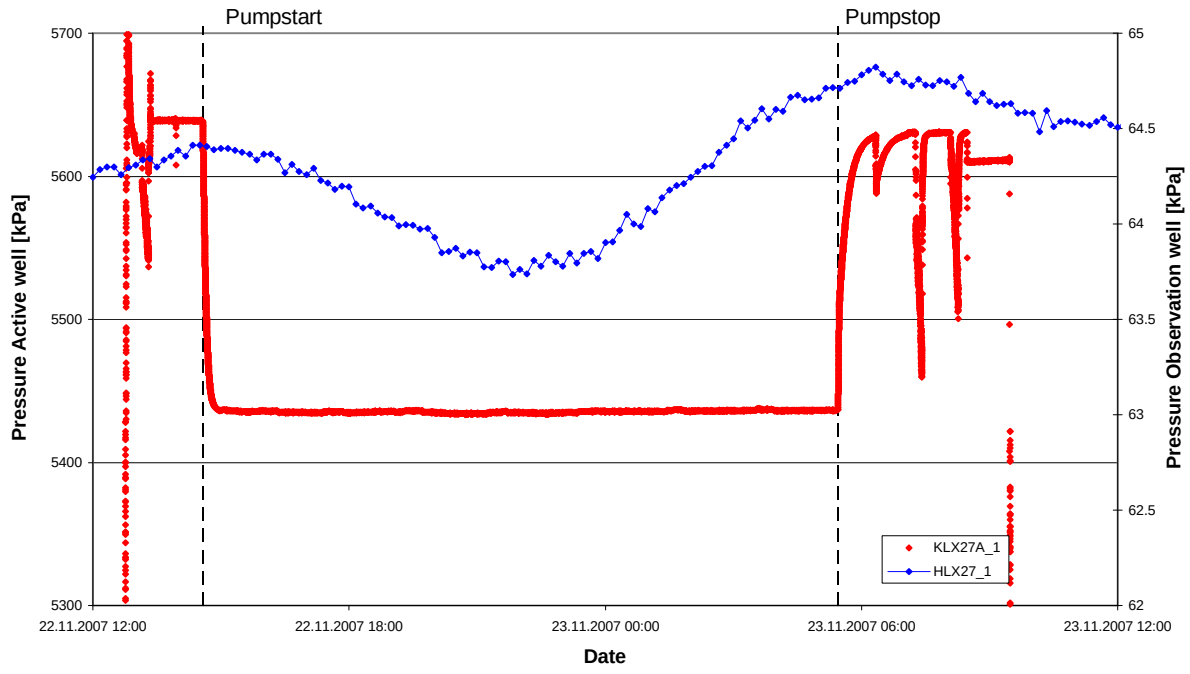
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**HLX27**	**Section no.:**	**HLX27_2**
Distance r_s [m]:	1268.20	Section length:	100.0-152.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	66.6
Pressure in test section before stop of flowing:	p_p	kPa	67.0
Maximum pressure change during flowing period:*	dp_p	kPa	0.4

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

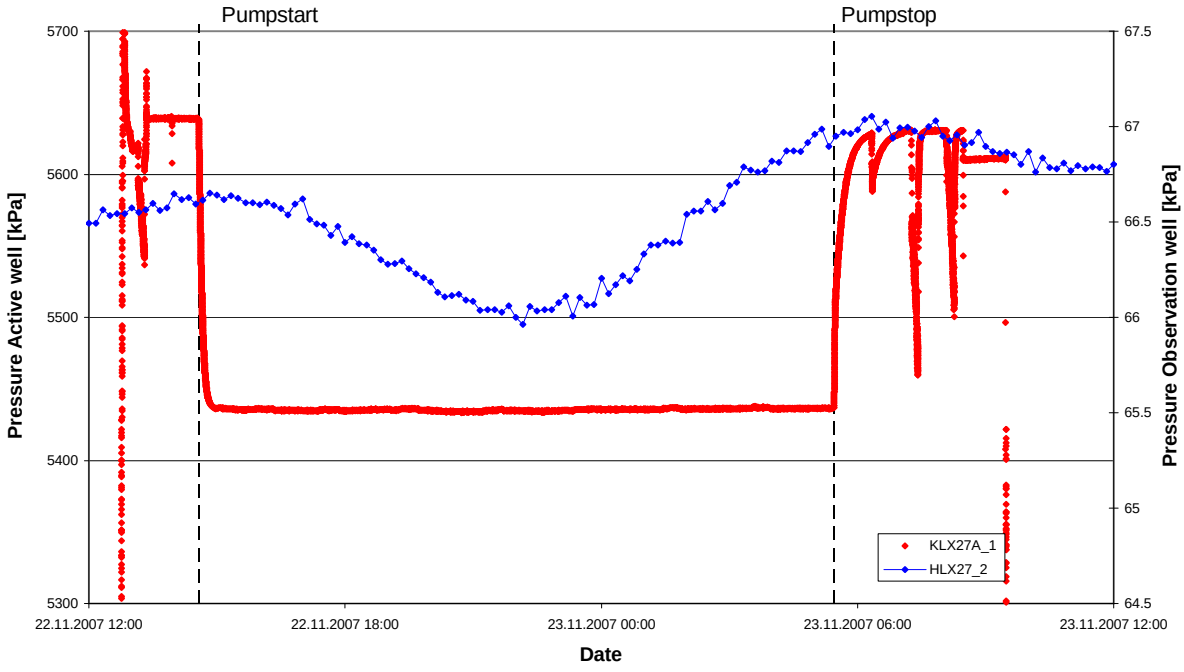
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72		
Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**HLX27**	**Section no.:**	**HLX27_3**
Distance r_s [m]:	1285.10	Section length:	0.0-99.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	67.4
Pressure in test section before stop of flowing:	p_p	kPa	67.7
Maximum pressure change during flowing period:*	dp_p	kPa	0.3

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

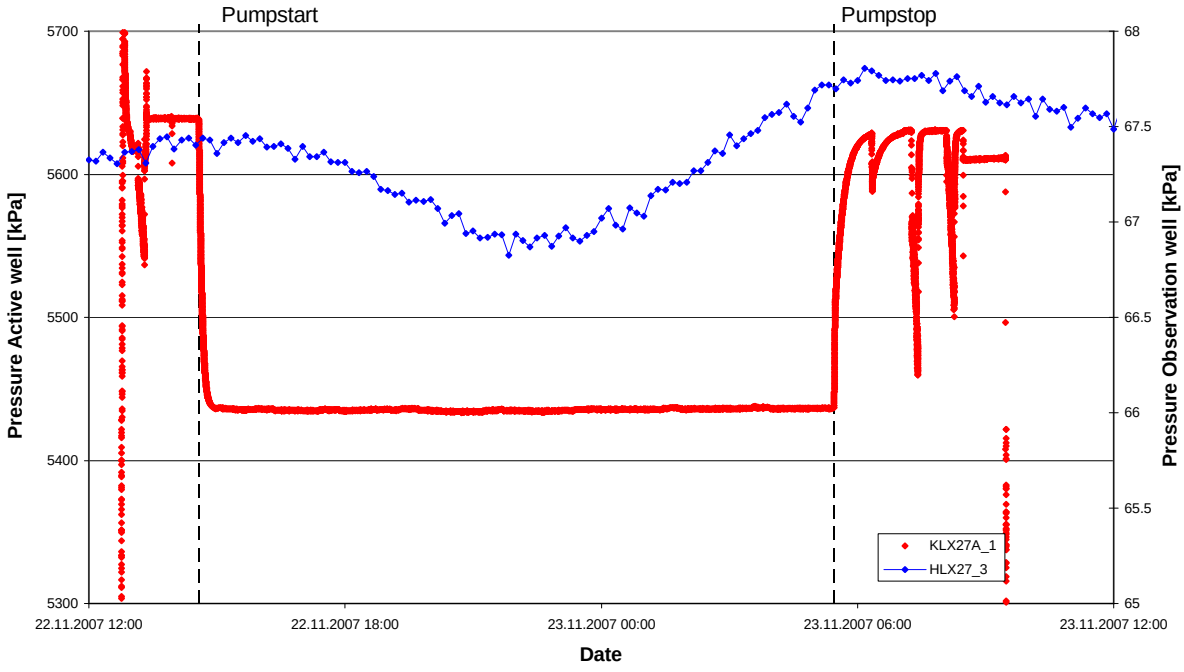
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**HLX28**	**Section no.:**	**HLX28_1**
Distance r_s [m]:	491.60	Section length:	91.0-154.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	133.7
Pressure in test section before stop of flowing:	p_p	kPa	133.9
Maximum pressure change during flowing period:*	dp_p	kPa	0.2

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

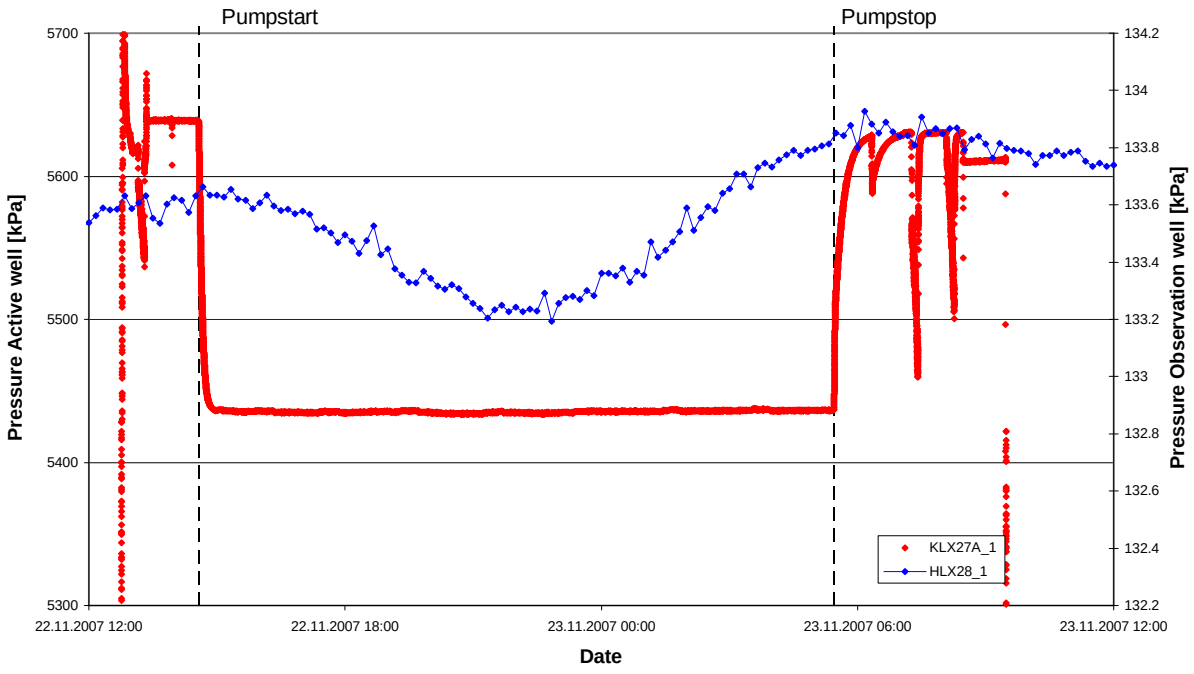
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72		
Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**HLX28**	**Section no.:**	**HLX28_2**
Distance r_s [m]:	523.20	Section length:	70.0-90.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	133.7
Pressure in test section before stop of flowing:	p_p	kPa	133.8
Maximum pressure change during flowing period:*	dp_p	kPa	0.1

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

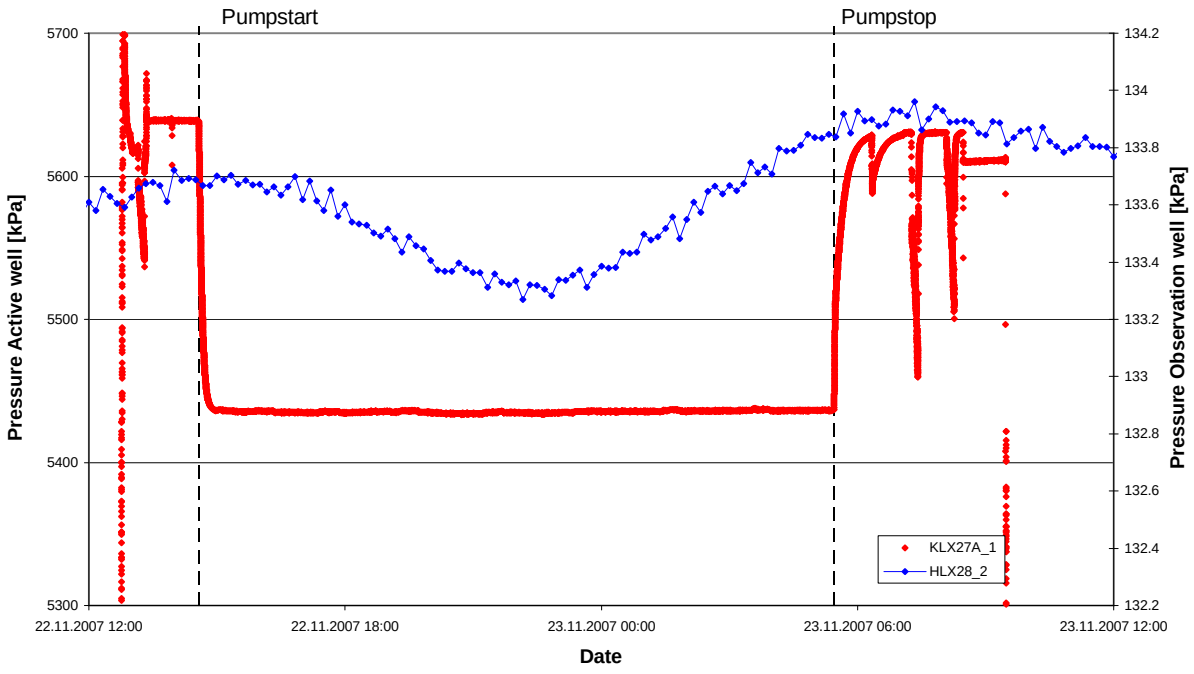
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72		
Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**HLX28**	**Section no.:**	**HLX28_3**
Distance r_s [m]:	553.80	Section length:	7.5-69.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	128.0
Pressure in test section before stop of flowing:	p_p	kPa	128.3
Maximum pressure change during flowing period:*	dp_p	kPa	0.3

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

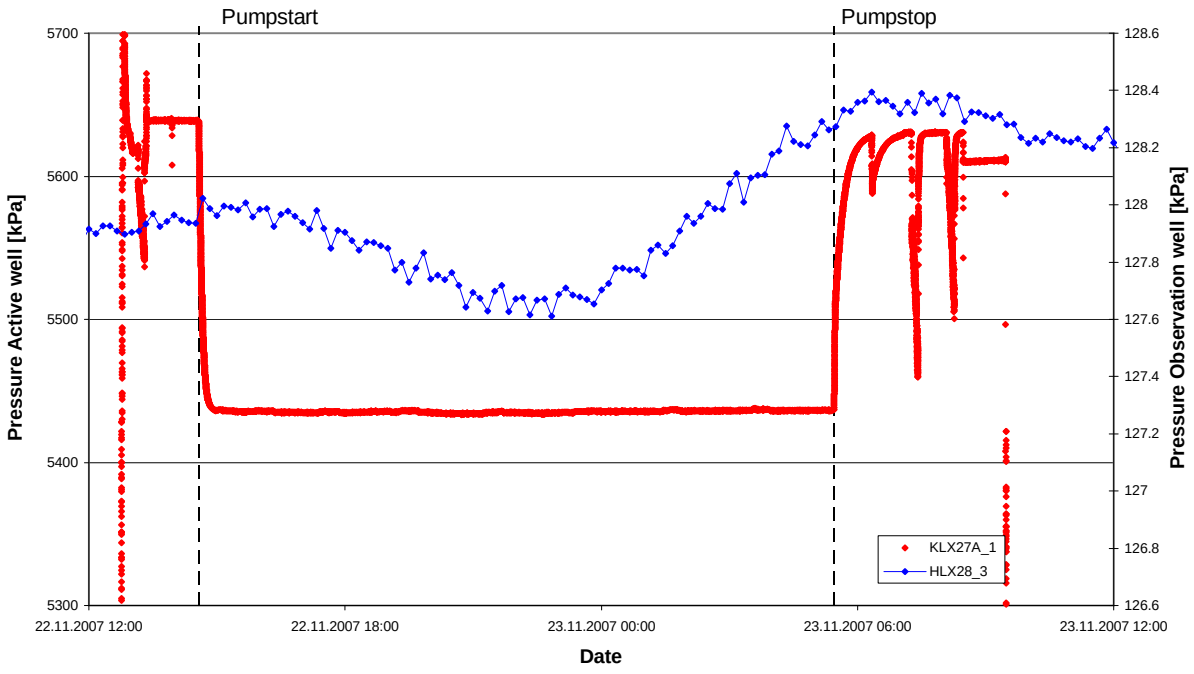
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**HLX32**	**Section no.:**	**HLX32_1**
Distance r_s [m]:	510.70	Section length:	31.0-163.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	78.2
Pressure in test section before stop of flowing:	p_p	kPa	79.8
Maximum pressure change during flowing period:*	dp_p	kPa	1.6

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

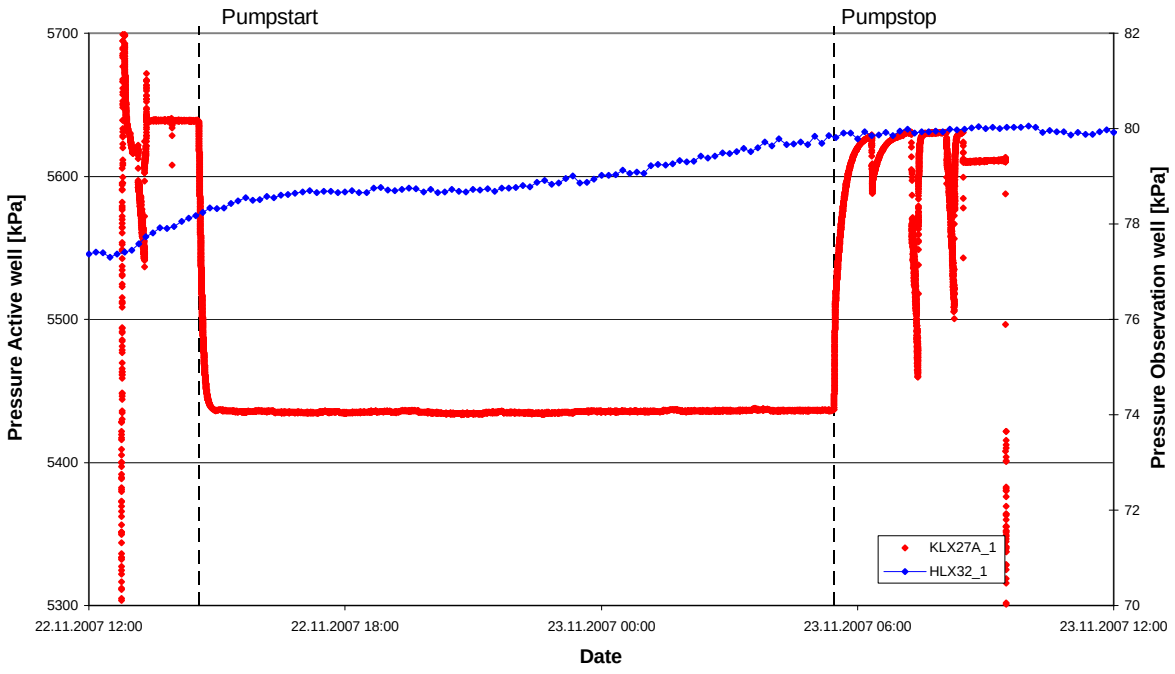
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72		
Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**HLX32**	**Section no.:**	**HLX32_2**
Distance r_s [m]:	574.20	Section length:	20.0-30.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	75.5
Pressure in test section before stop of flowing:	p_p	kPa	76.9
Maximum pressure change during flowing period:*	dp_p	kPa	1.4

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

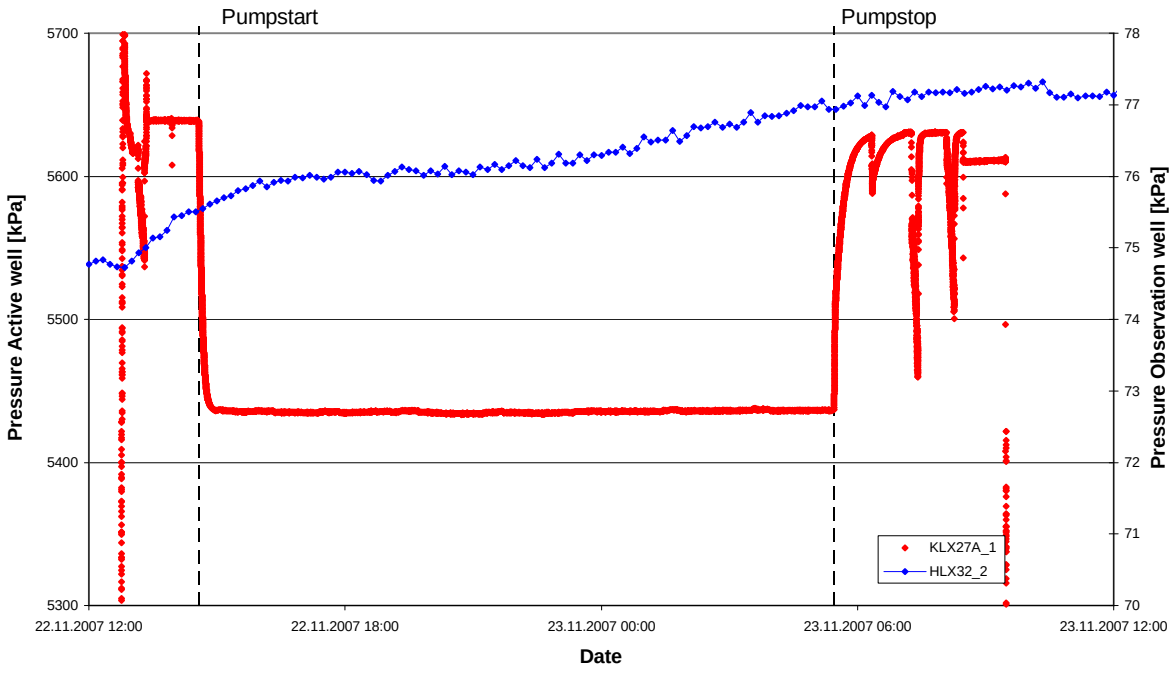
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72		
Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**HLX32**	**Section no.:**	**HLX32_3**
Distance r_s [m]:	588.30	Section length:	0.0-19.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	58.8
Pressure in test section before stop of flowing:	p_p	kPa	59.1
Maximum pressure change during flowing period:*	dp_p	kPa	0.3

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

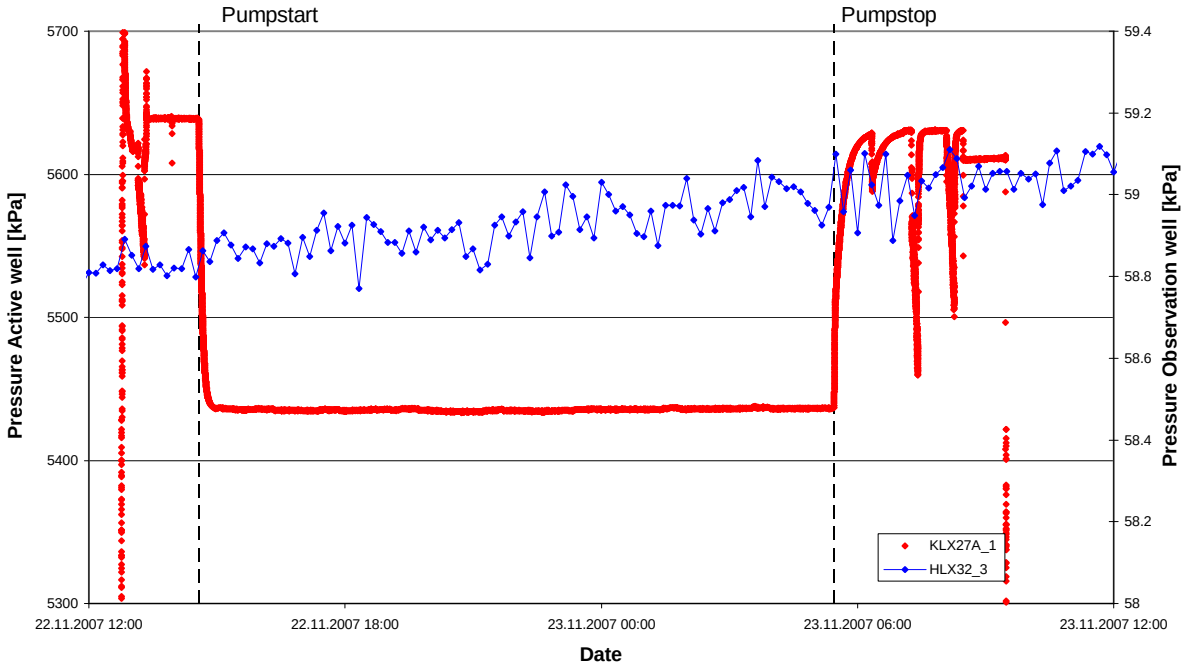
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72		
Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**HLX36**	**Section no.:**	**HLX36_1**
Distance r_s [m]:	629.70	Section length:	50.0-199.5
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	139.6
Pressure in test section before stop of flowing:	p_p	kPa	139.7
Maximum pressure change during flowing period:*	dp_p	kPa	0.1

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

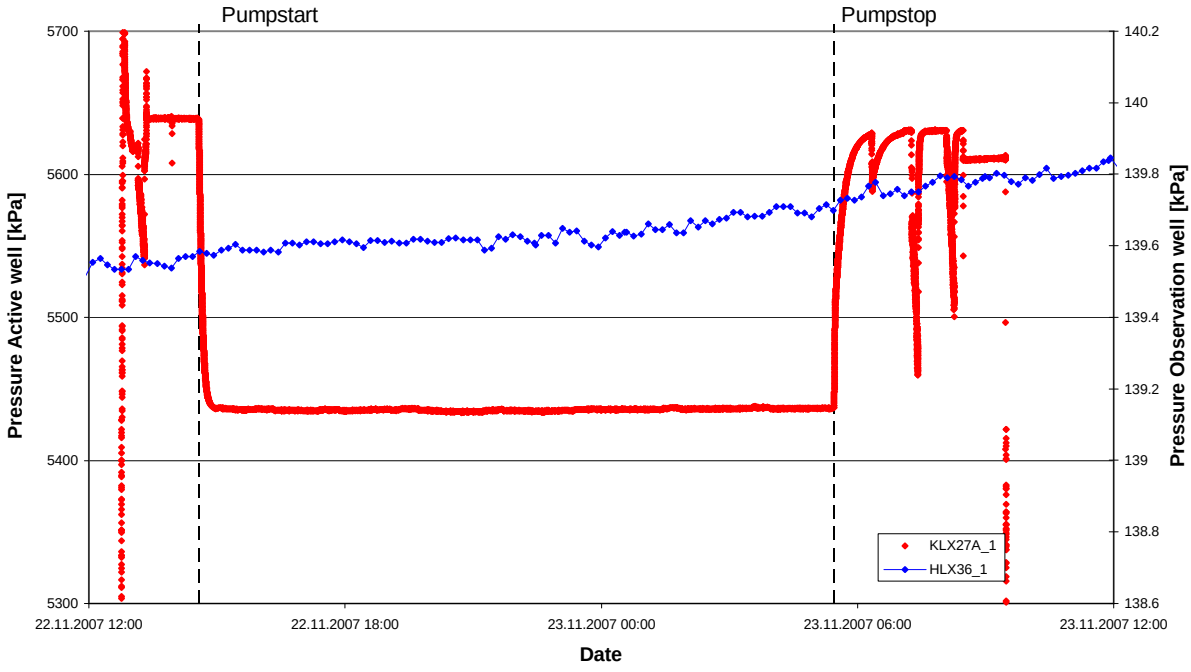
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72		
Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**HLX36**	**Section no.:**	**HLX36_2**
Distance r_s [m]:	666.30	Section length:	0.0-49.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	106.9
Pressure in test section before stop of flowing:	p_p	kPa	106.7
Maximum pressure change during flowing period:*	dp_p	kPa	0.2

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

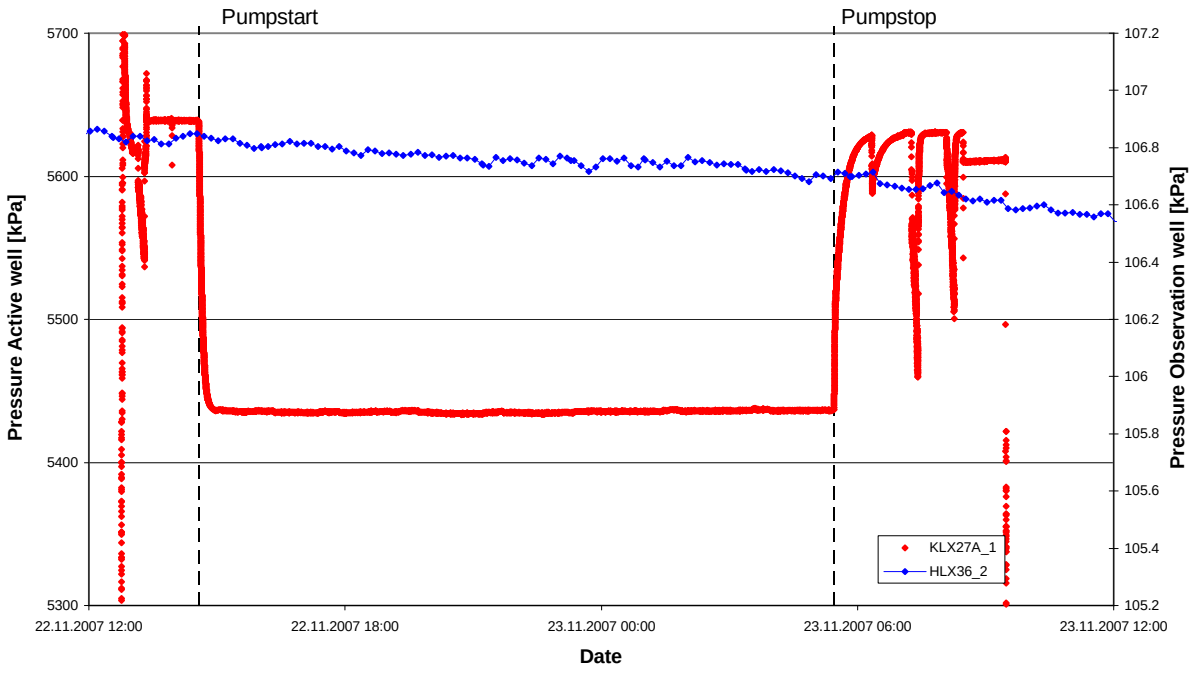
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**HLX37**	**Section no.:**	**HLX37_1**
Distance r_s [m]:	587.30	Section length:	150.0-200.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	135.3
Pressure in test section before stop of flowing:	p_p	kPa	135.5
Maximum pressure change during flowing period:*	dp_p	kPa	0.2

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

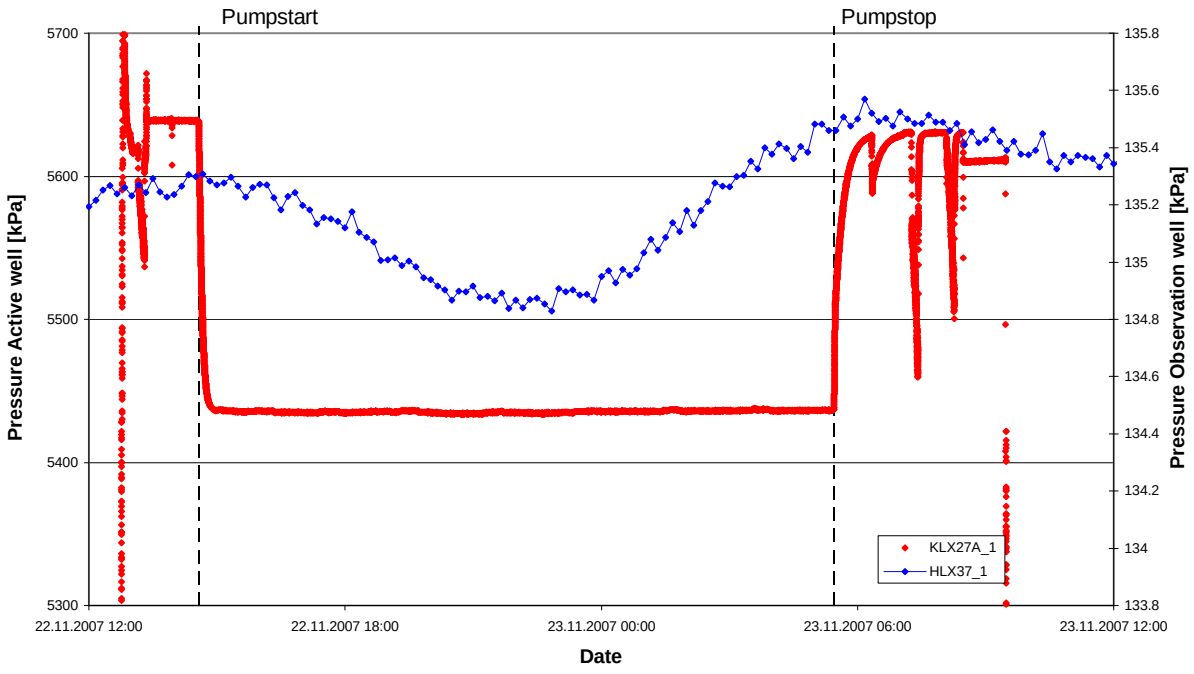
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72		
Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**HLX37**	**Section no.:**	**HLX37_2**
Distance r_s [m]:	633.10	Section length:	111.0-149.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	150.2
Pressure in test section before stop of flowing:	p_p	kPa	150.4
Maximum pressure change during flowing period:*	dp_p	kPa	0.2

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

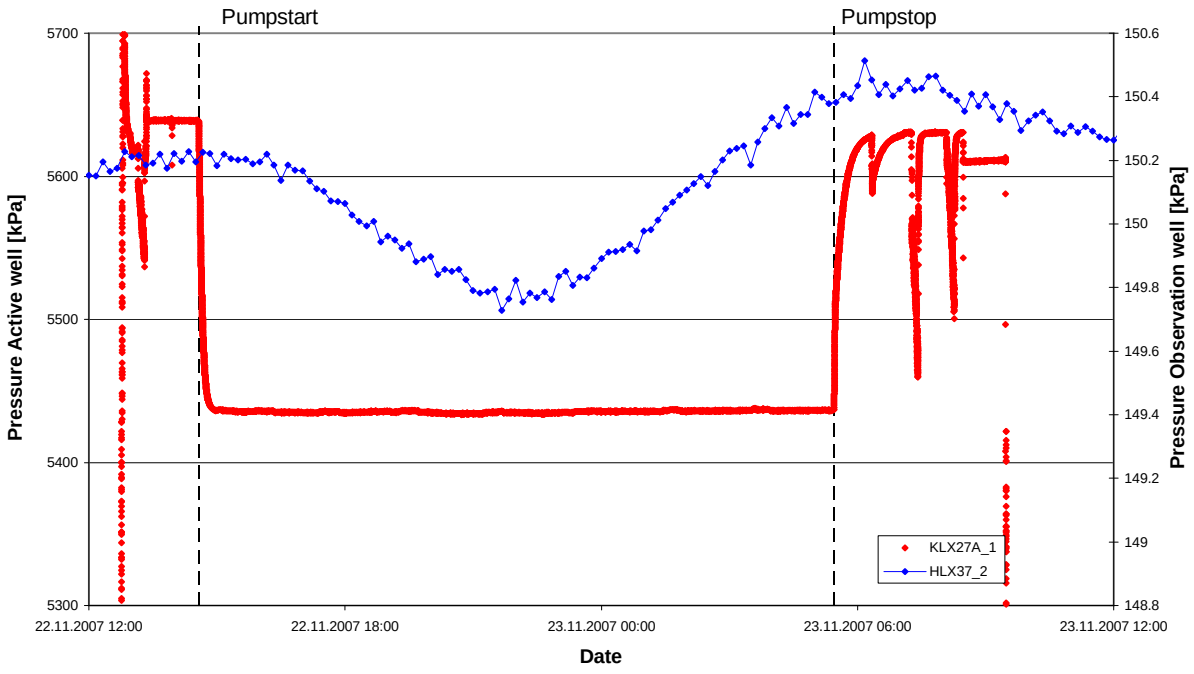
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**HLX37**	**Section no.:**	**HLX37_3**
Distance r_s [m]:	648.20	Section length:	94.0-110.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	137.5
Pressure in test section before stop of flowing:	p_p	kPa	137.9
Maximum pressure change during flowing period:*	dp_p	kPa	0.4

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

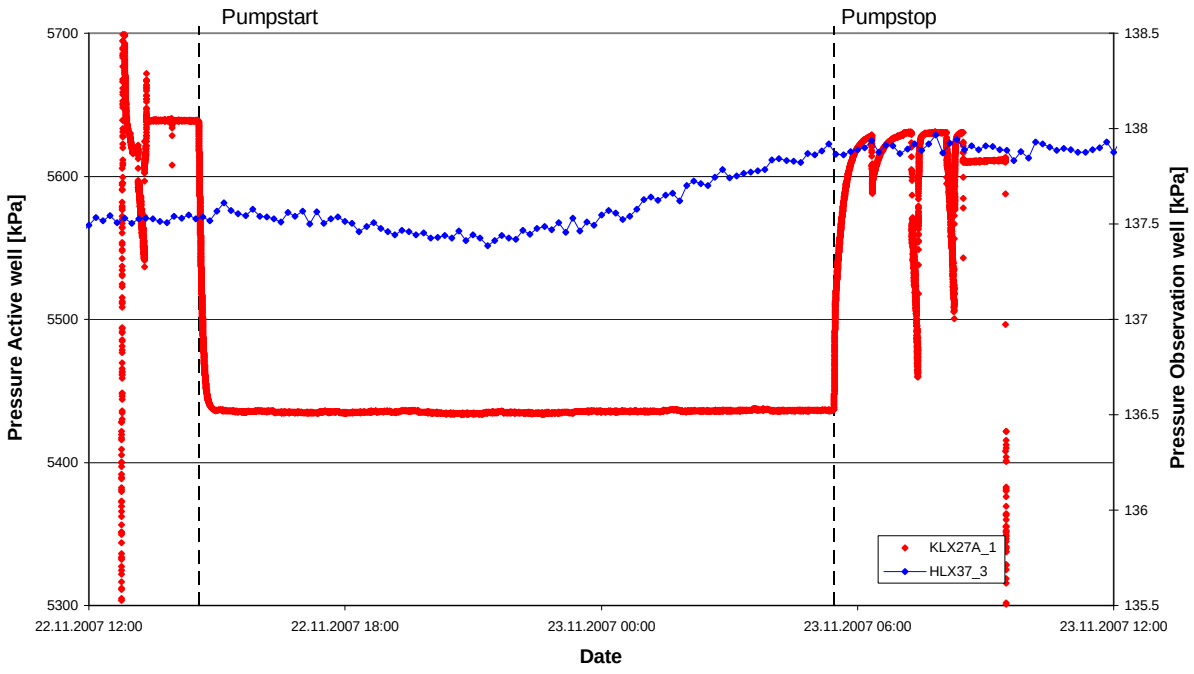
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72		
Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**HLX37**	**Section no.:**	**HLX37_4**
Distance r_s [m]:	732.40	Section length:	0.0-93.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	148.7
Pressure in test section before stop of flowing:	p_p	kPa	148.7
Maximum pressure change during flowing period:*	dp_p	kPa	0.0

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

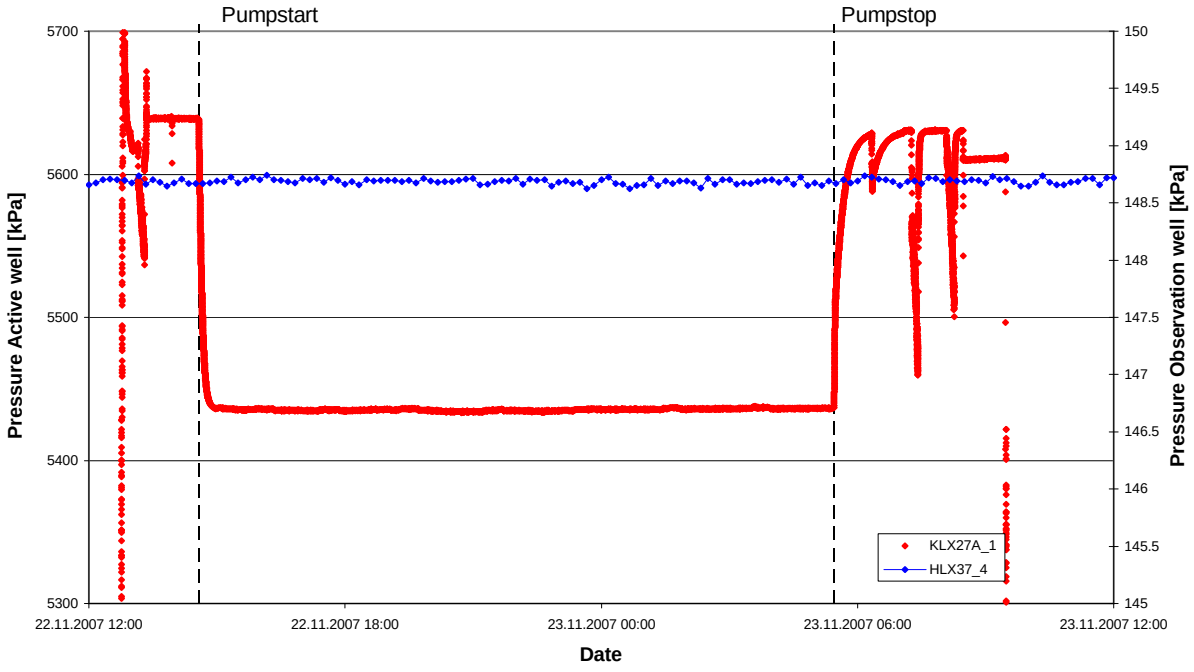
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**HLX38**	**Section no.:**	**HLX38_1**
Distance r_s [m]:	669.80	Section length:	0.0-199.5
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	55.0
Pressure in test section before stop of flowing:	p_p	kPa	55.3
Maximum pressure change during flowing period:*	dp_p	kPa	0.3

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

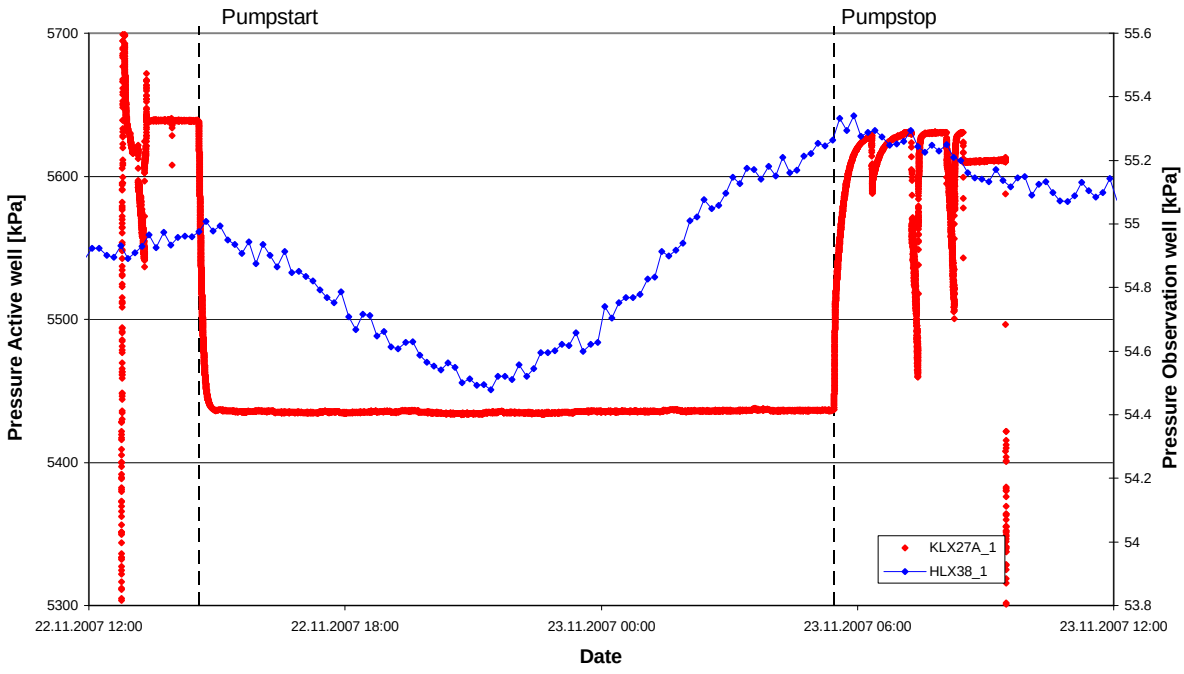
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72		
Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**HLX42**	**Section no.:**	**HLX42_1**
Distance r_s [m]:	1305.90	Section length:	30.0-152.6
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	95.1
Pressure in test section before stop of flowing:	p_p	kPa	95.3
Maximum pressure change during flowing period:*	dp_p	kPa	0.2

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

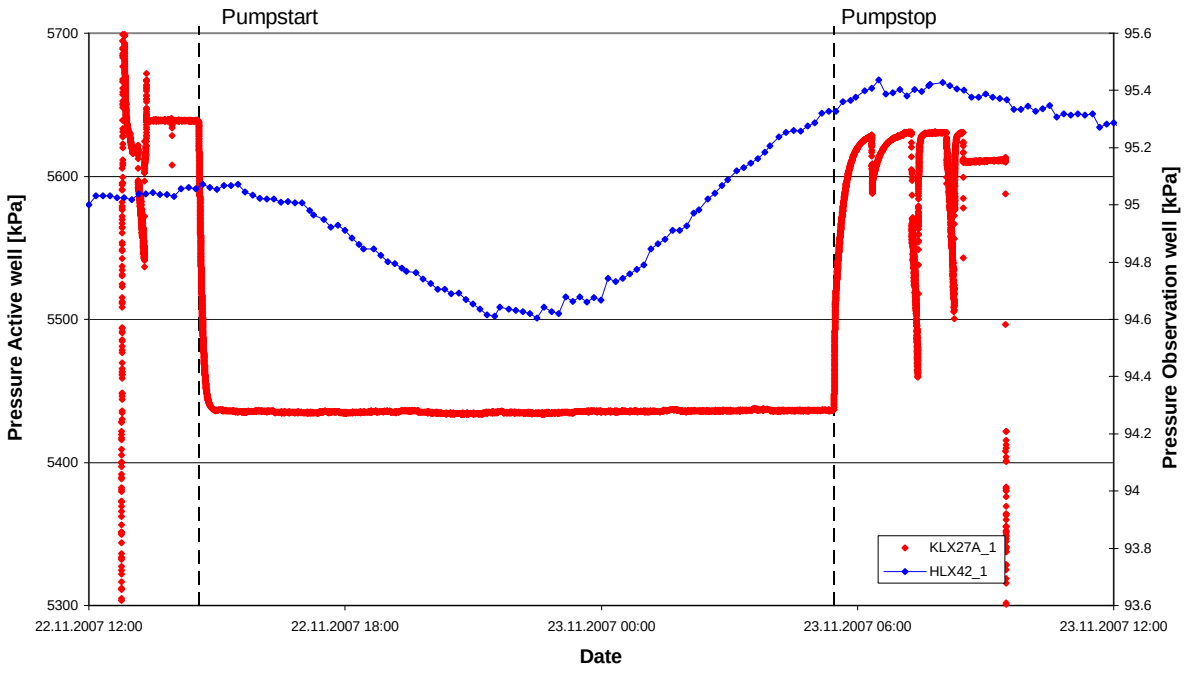
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**HLX42**	**Section no.:**	**HLX42_2**
Distance r_s [m]:	1380.30	Section length:	0.0-29.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	116.9
Pressure in test section before stop of flowing:	p_p	kPa	116.9
Maximum pressure change during flowing period:*	dp_p	kPa	0.0

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

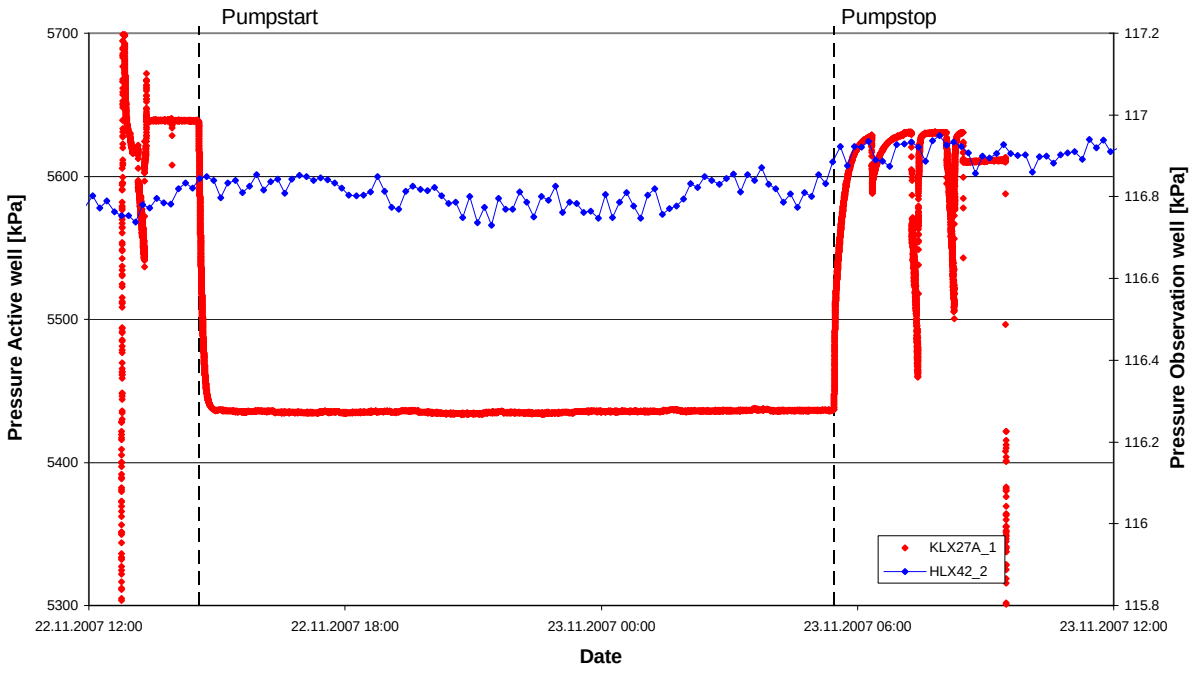
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72		
Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**KLX11A**	**Section no.:**	**KLX11A_1**
Distance r_s [m]:	524.30	Section length:	703.0-992.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	138.7
Pressure in test section before stop of flowing:	p_p	kPa	138.9
Maximum pressure change during flowing period:*	dp_p	kPa	0.2

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

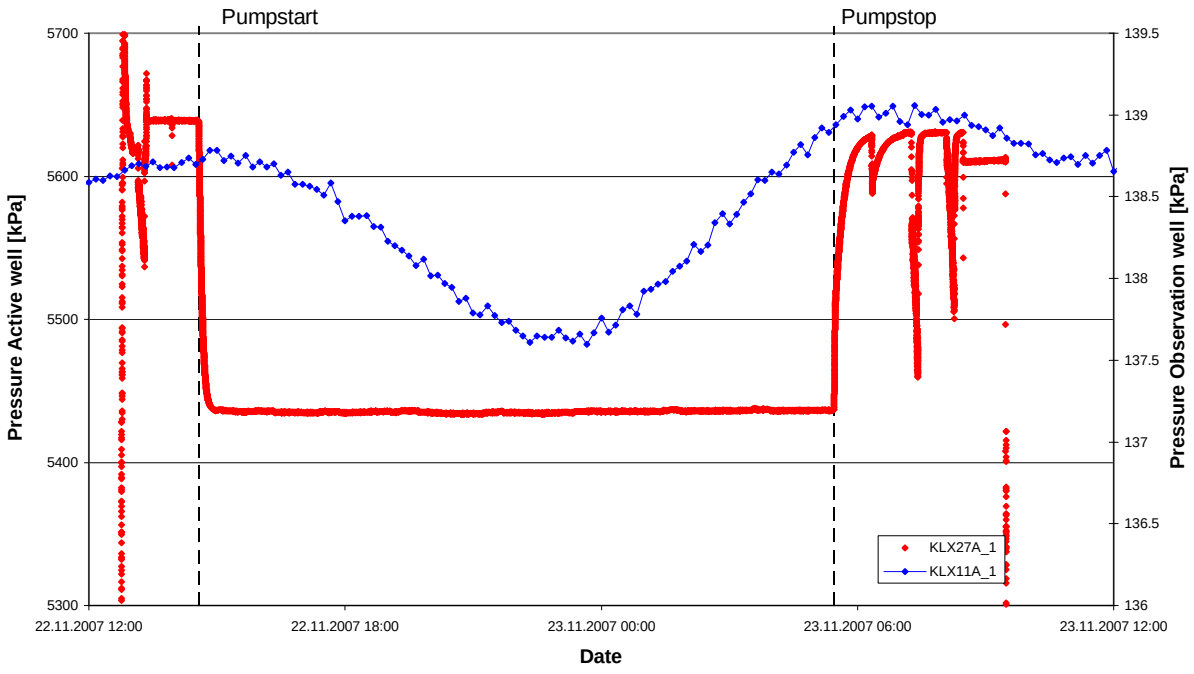
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72		
Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**KLX11A**	**Section no.:**	**KLX11A_2**
Distance r_s [m]:	468.80	Section length:	587.0-702.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	139.1
Pressure in test section before stop of flowing:	p_p	kPa	135.5
Maximum pressure change during flowing period:*	dp_p	kPa	3.6

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

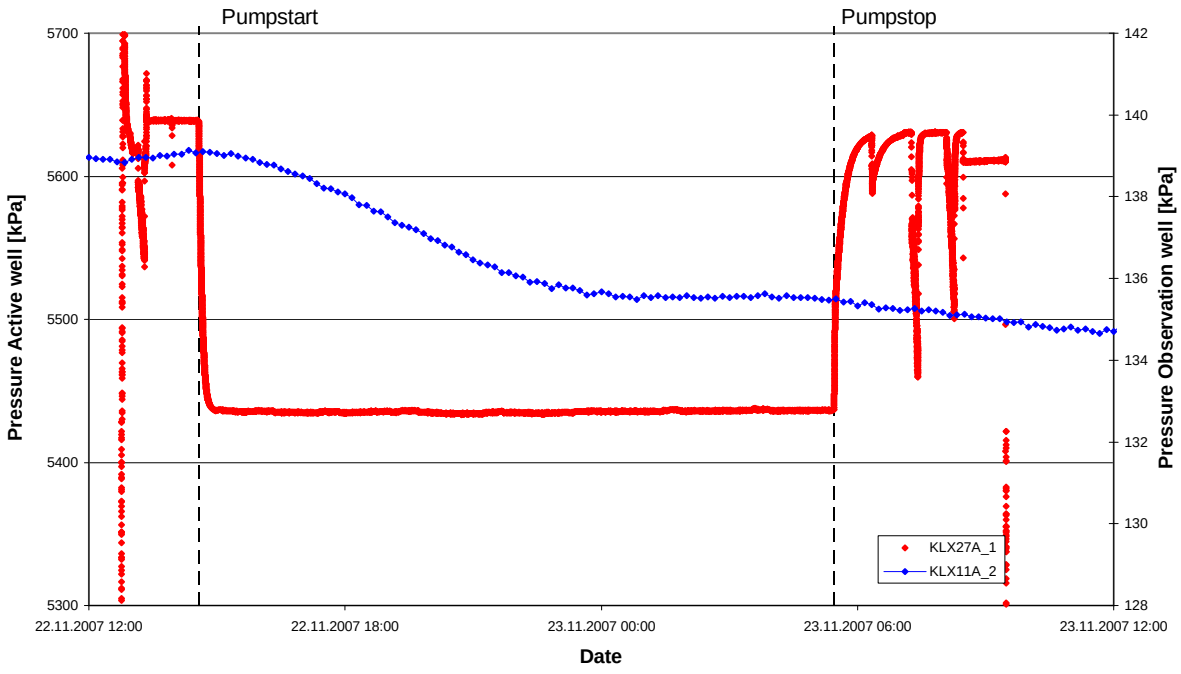
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72		
Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**KLX11A**	**Section no.:**	**KLX11A_3**
Distance r_s [m]:	469.90	Section length:	573.0-586.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	138.7
Pressure in test section before stop of flowing:	p_p	kPa	134.9
Maximum pressure change during flowing period:*	dp_p	kPa	3.8

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

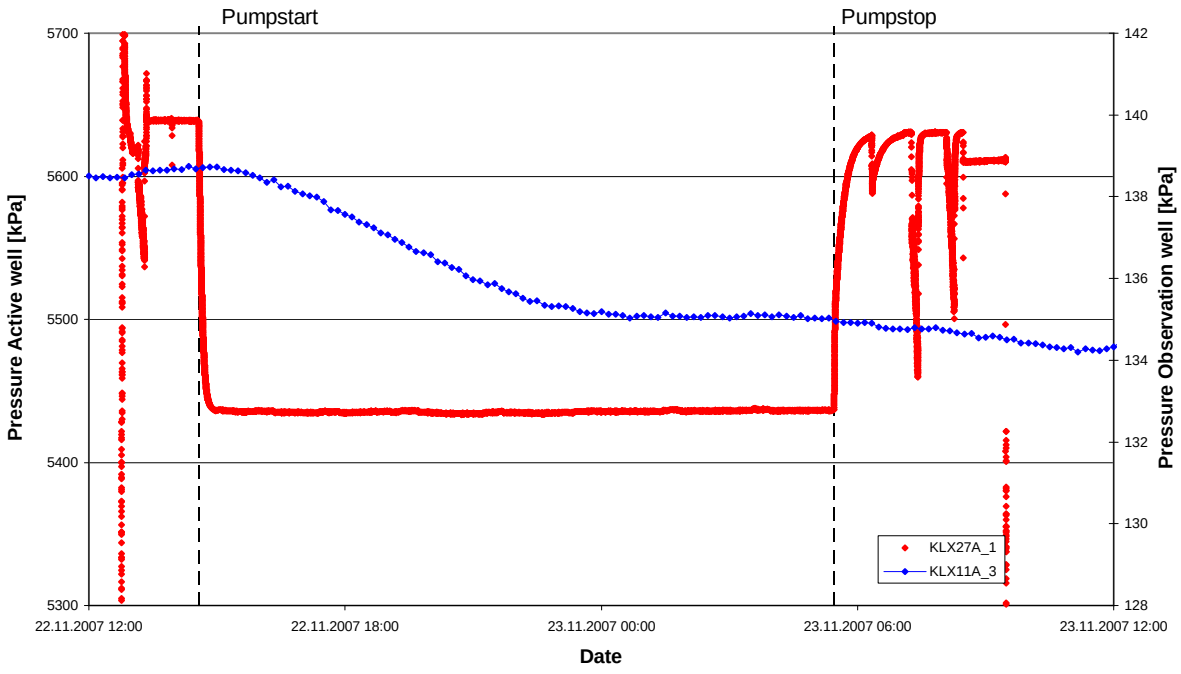
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72		
Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**KLX11A**	**Section no.:**	**KLX11A_4**
Distance r_s [m]:	476.90	Section length:	495.0-572.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	138.4
Pressure in test section before stop of flowing:	p_p	kPa	135.9
Maximum pressure change during flowing period:*	dp_p	kPa	2.5

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

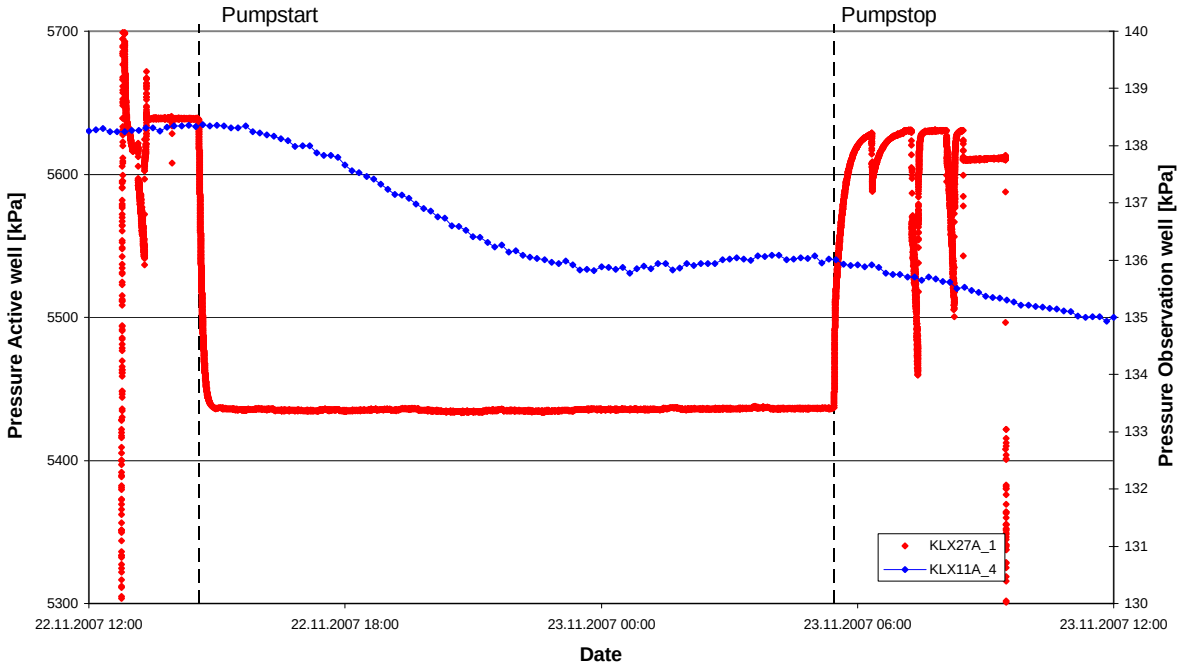
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72		
Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**KLX11A**	**Section no.:**	**KLX11A_5**
Distance r_s [m]:	494.40	Section length:	315.0-494.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	137.3
Pressure in test section before stop of flowing:	p_p	kPa	135.9
Maximum pressure change during flowing period:*	dp_p	kPa	1.4

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

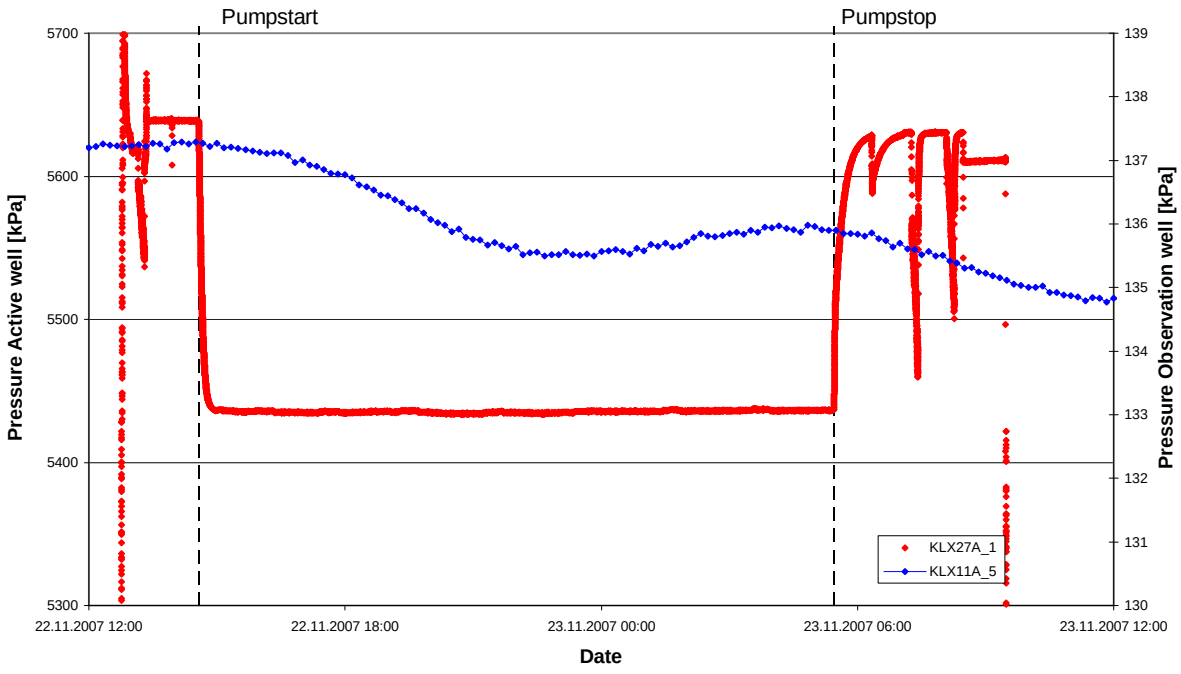
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72		
Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**KLX11A**	**Section no.:**	**KLX11A_6**
Distance r_s [m]:	553.20	Section length:	273.0-314.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	136.6
Pressure in test section before stop of flowing:	p_p	kPa	135.5
Maximum pressure change during flowing period:*	dp_p	kPa	1.1

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

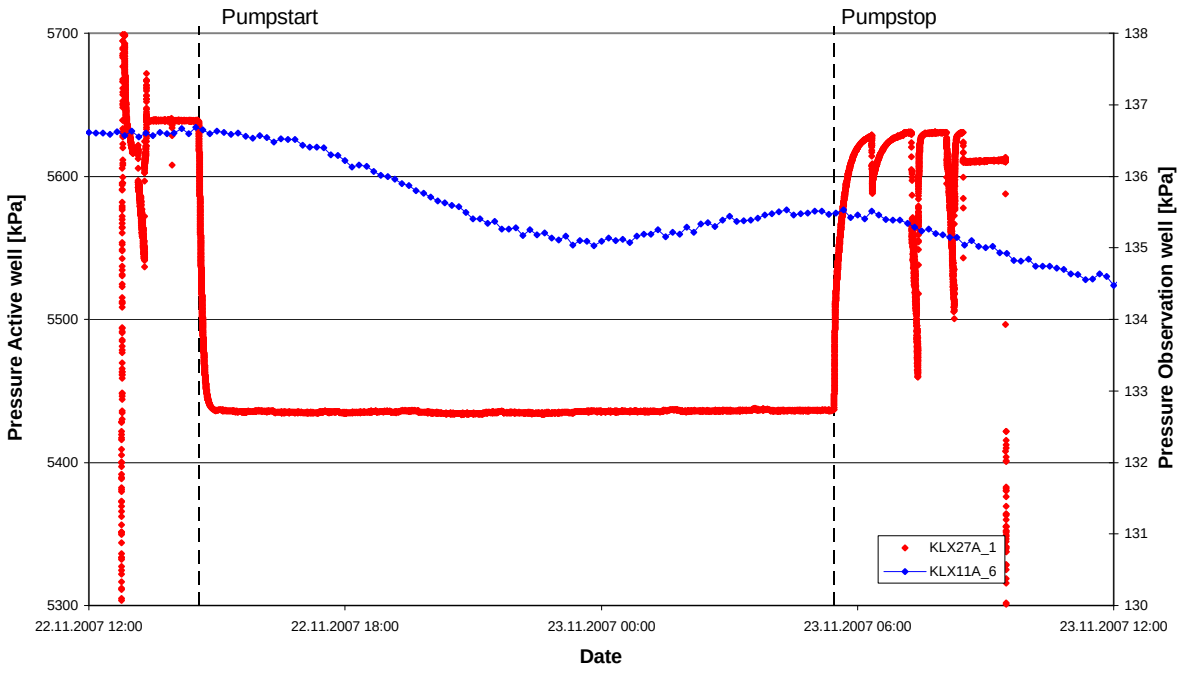
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72		
Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**KLX11A**	**Section no.:**	**KLX11A_7**
Distance r_s [m]:	583.10	Section length:	256.0-272.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	132.3
Pressure in test section before stop of flowing:	p_p	kPa	131.2
Maximum pressure change during flowing period:*	dp_p	kPa	1.1

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

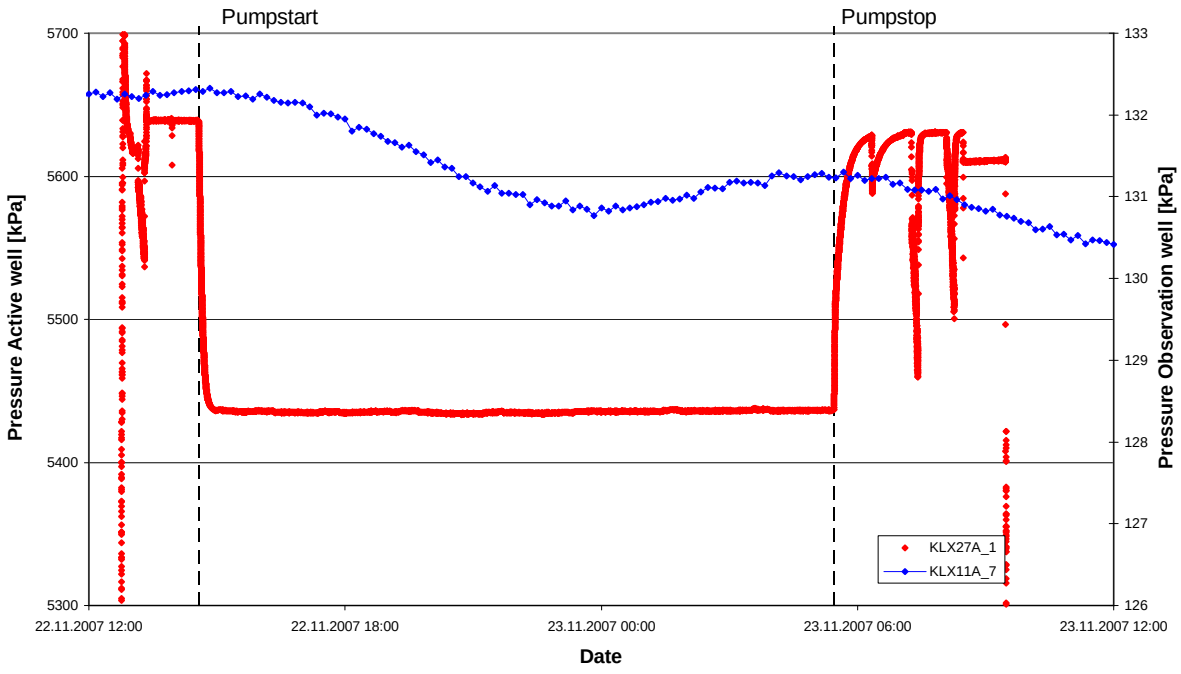
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**KLX11A**	**Section no.:**	**KLX11A_8**
Distance r_s [m]:	620.50	Section length:	180.0-255.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	136.4
Pressure in test section before stop of flowing:	p_p	kPa	135.5
Maximum pressure change during flowing period:*	dp_p	kPa	0.9

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

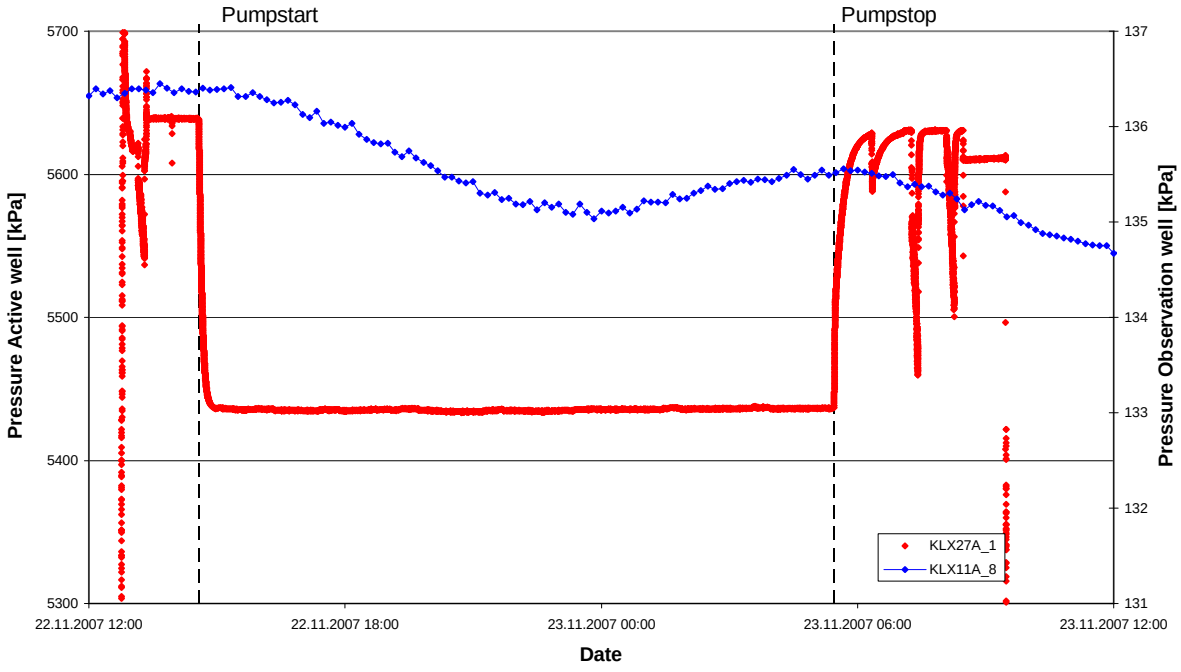
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**KLX11A**	**Section no.:**	**KLX11A_9**
Distance r_s [m]:	643.80	Section length:	103.0-179.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	141.3
Pressure in test section before stop of flowing:	p_p	kPa	141.6
Maximum pressure change during flowing period:*	dp_p	kPa	0.3

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

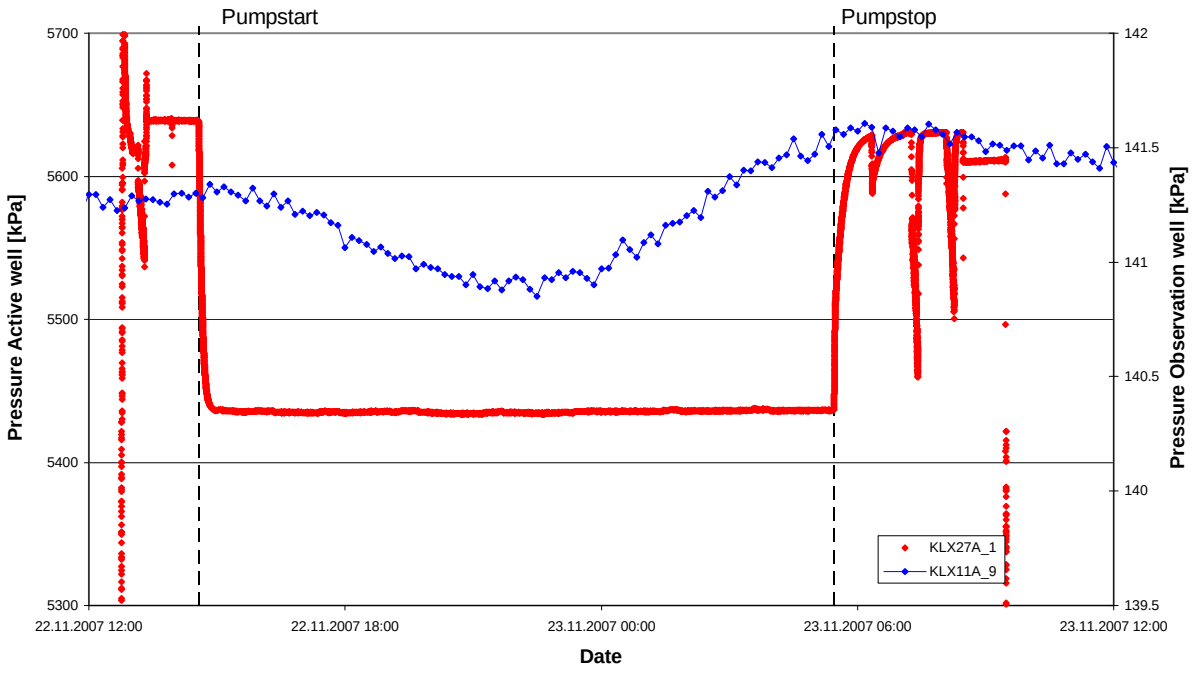
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**KLX11A**	**Section no.:**	**KLX11A_10**
Distance r_s [m]:	727.30	Section length:	0.0-102.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	156.4
Pressure in test section before stop of flowing:	p_p	kPa	156.7
Maximum pressure change during flowing period:*	dp_p	kPa	0.3

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

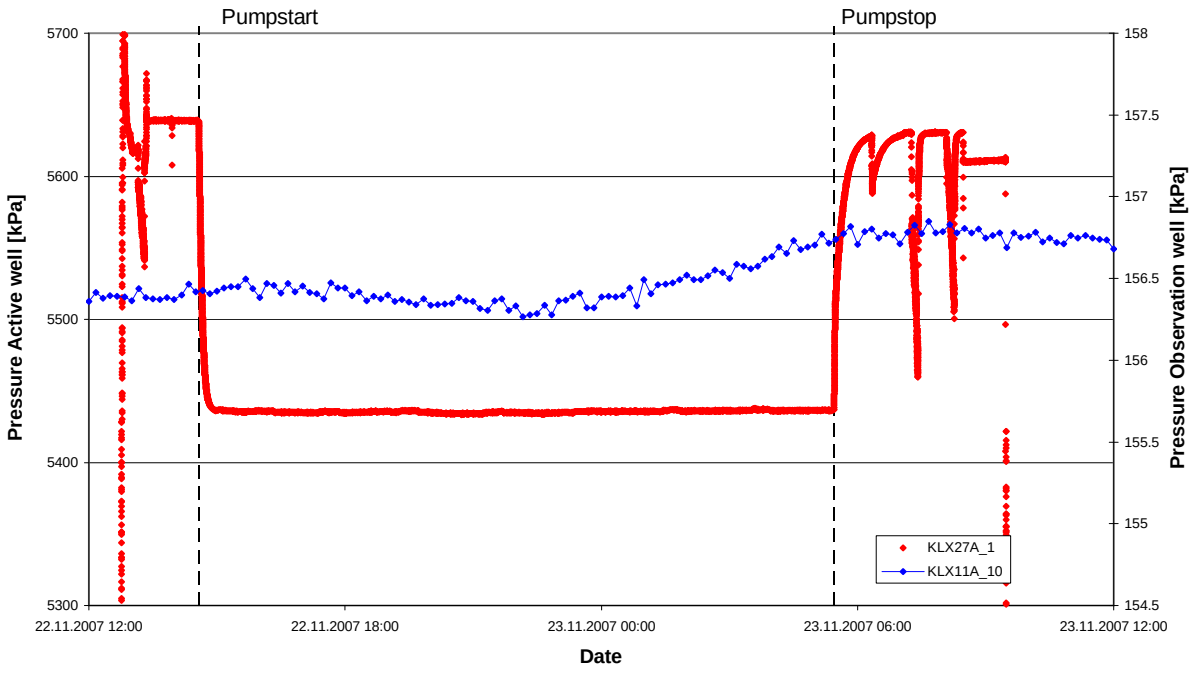
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72		
Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**KLX11E**	**Section no.:**	**KLX11E_1**
Distance r_s [m]:	711.20	Section length:	2.0-121.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	157.8
Pressure in test section before stop of flowing:	p_p	kPa	158.1
Maximum pressure change during flowing period:*	dp_p	kPa	0.3

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

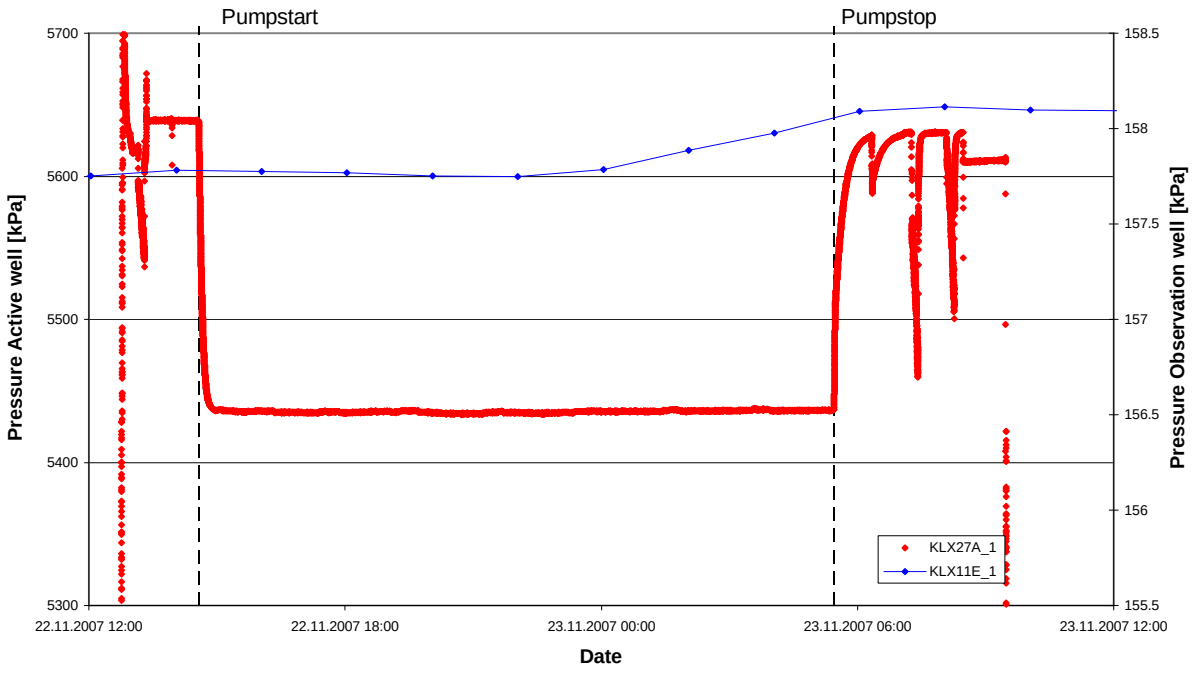
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**KLX14A**	**Section no.:**	**KLX14A_1**
Distance r_s [m]:	684.40	Section length:	123.00-176.27
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	58.7
Pressure in test section before stop of flowing:	p_p	kPa	58.9
Maximum pressure change during flowing period:*	dp_p	kPa	0.2

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

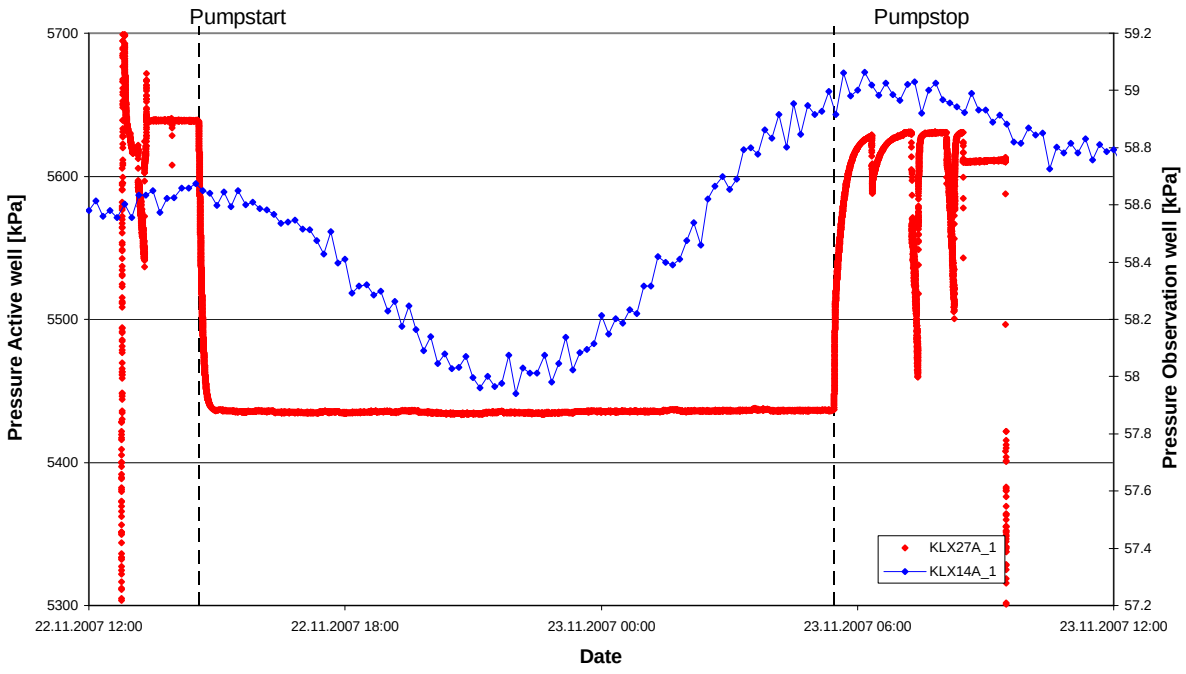
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**KLX14A**	**Section no.:**	**KLX14A_2**
Distance r_s [m]:	692.00	Section length:	77.0-122.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	57.1
Pressure in test section before stop of flowing:	p_p	kPa	57.5
Maximum pressure change during flowing period:*	dp_p	kPa	0.4

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

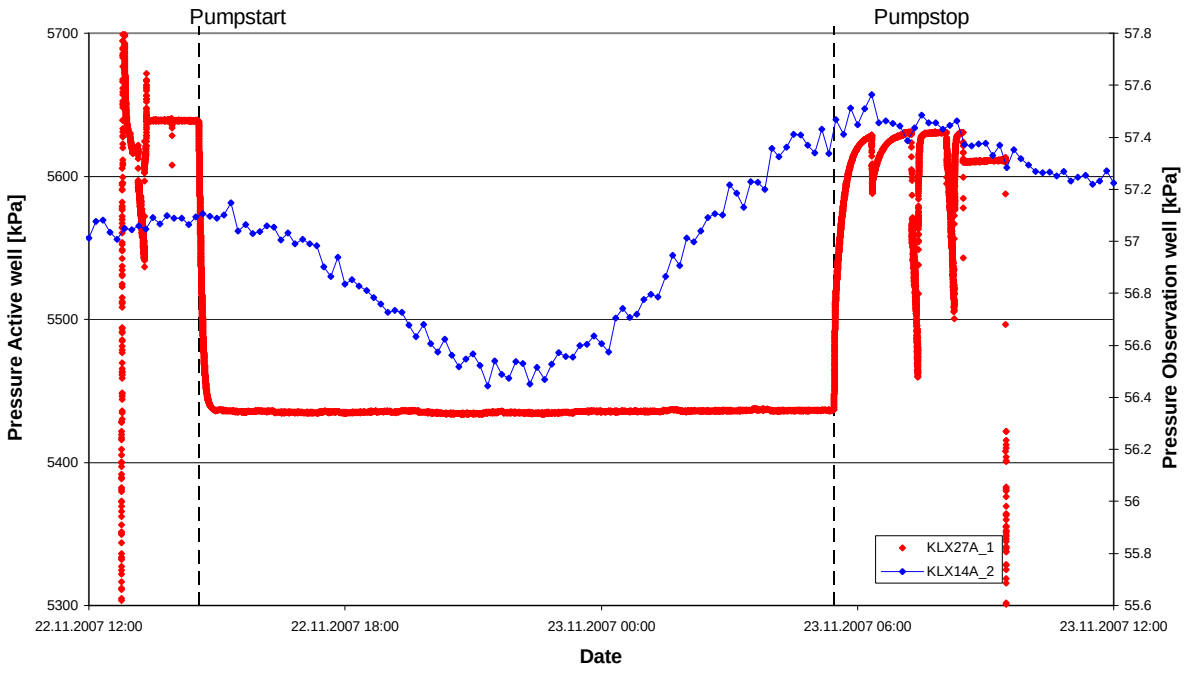
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**KLX14A**	**Section no.:**	**KLX14A_3**
Distance r_s [m]:	696.90	Section length:	0.0-76.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	106.8
Pressure in test section before stop of flowing:	p_p	kPa	106.9
Maximum pressure change during flowing period:*	dp_p	kPa	0.1

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

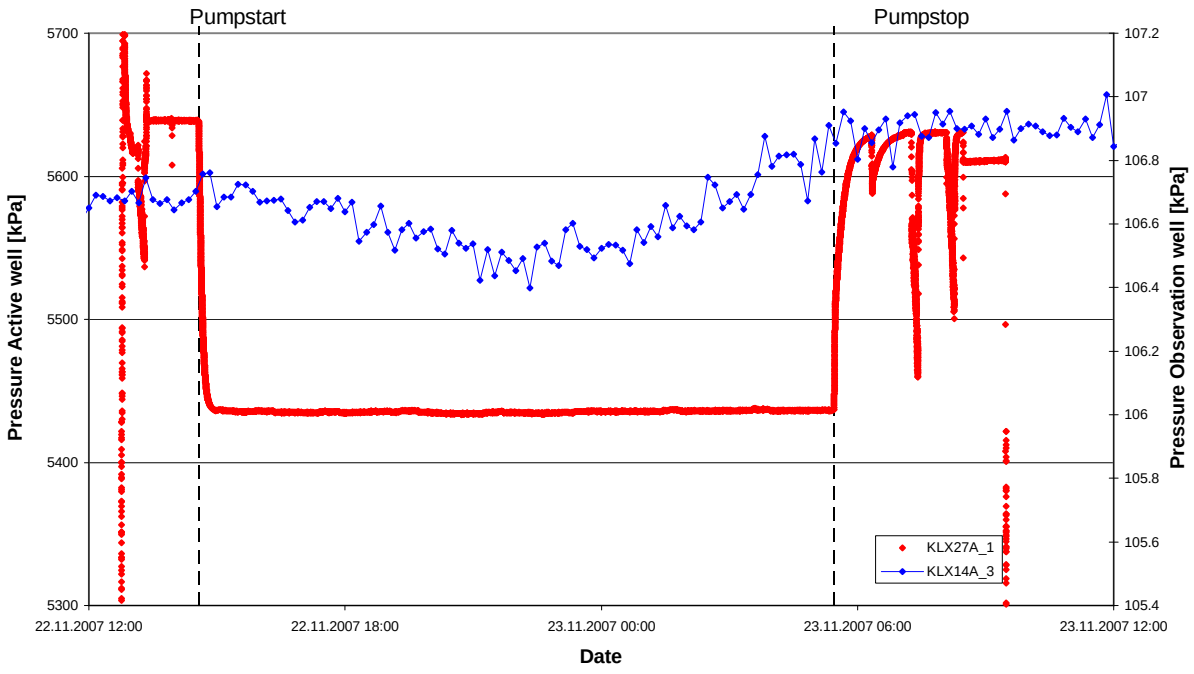
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72		
Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**KLX15A**	**Section no.:**	**KLX15A_1**
Distance r_s [m]:	1396.20	Section length:	902.0-1000.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	32.8
Pressure in test section before stop of flowing:	p_p	kPa	33.1
Maximum pressure change during flowing period:*	dp_p	kPa	0.3

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

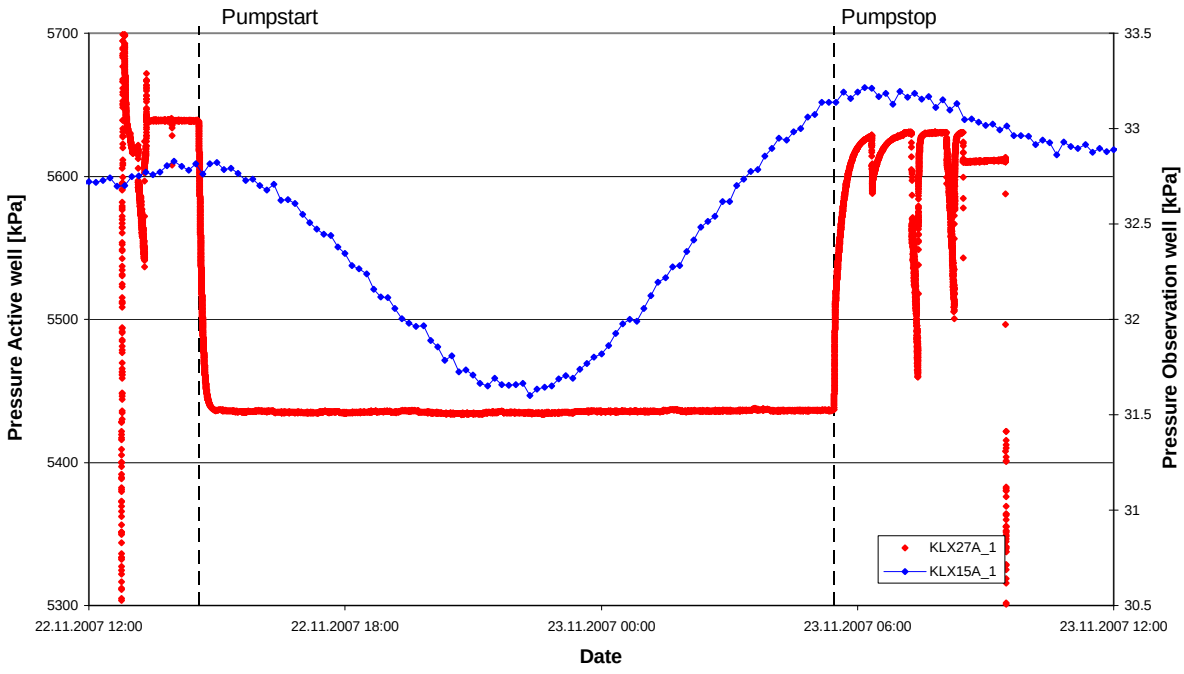
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72		
Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**KLX15A**	**Section no.:**	**KLX15A_2**
Distance r_s [m]:	1359.60	Section length:	641.0-901.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	60.9
Pressure in test section before stop of flowing:	p_p	kPa	61.4
Maximum pressure change during flowing period:*	dp_p	kPa	0.5

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

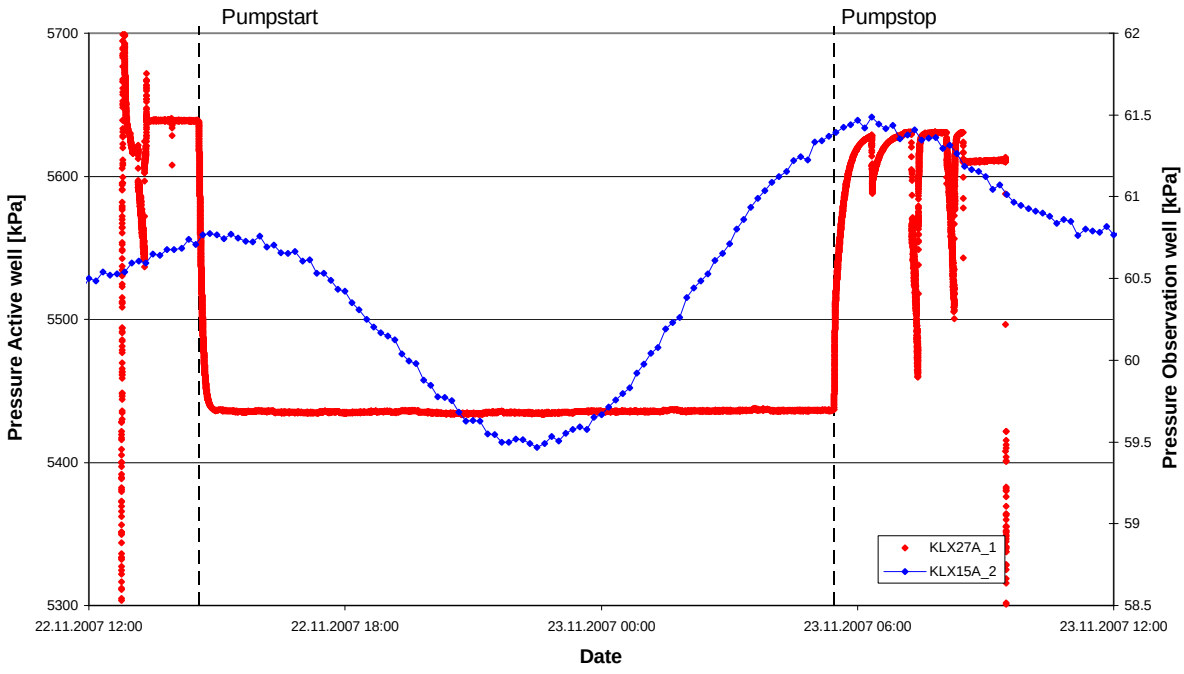
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**KLX15A**	**Section no.:**	**KLX15A_3**
Distance r_s [m]:	1312.80	Section length:	623.0-640.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	55.5
Pressure in test section before stop of flowing:	p_p	kPa	56.0
Maximum pressure change during flowing period:*	dp_p	kPa	0.5

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

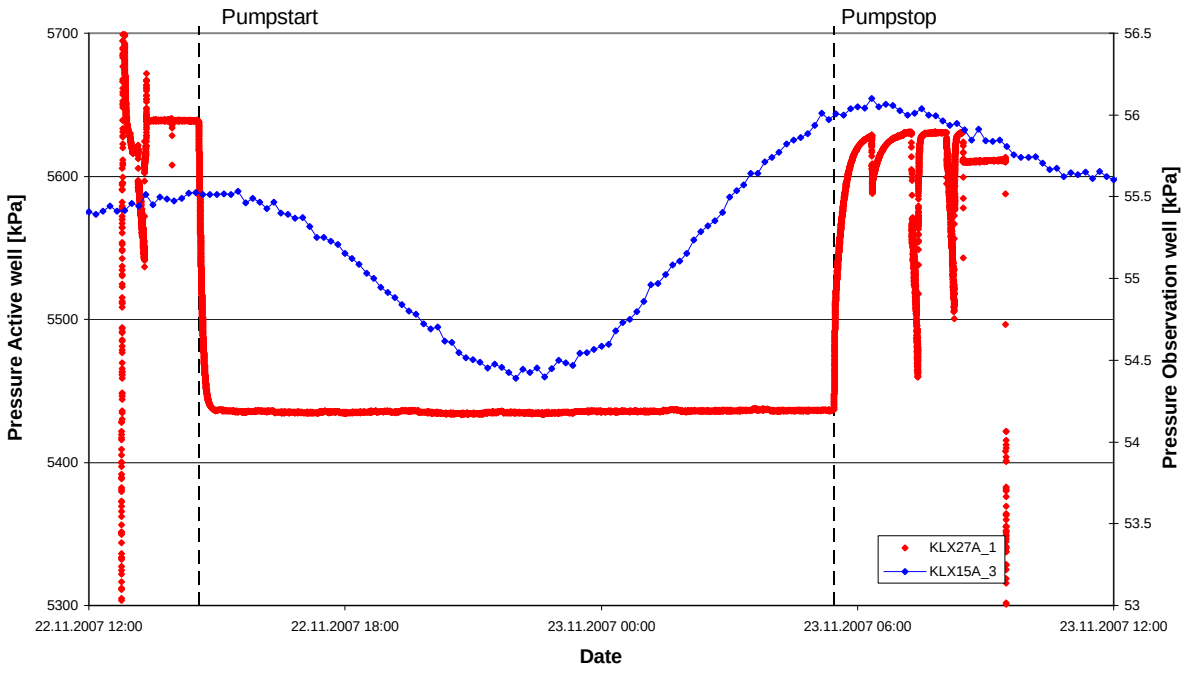
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72		
Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**KLX15A**	**Section no.:**	**KLX15A_4**
Distance r_s [m]:	1301.90	Section length:	481.0-622.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	59.6
Pressure in test section before stop of flowing:	p_p	kPa	60.1
Maximum pressure change during flowing period:*	dp_p	kPa	0.5

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

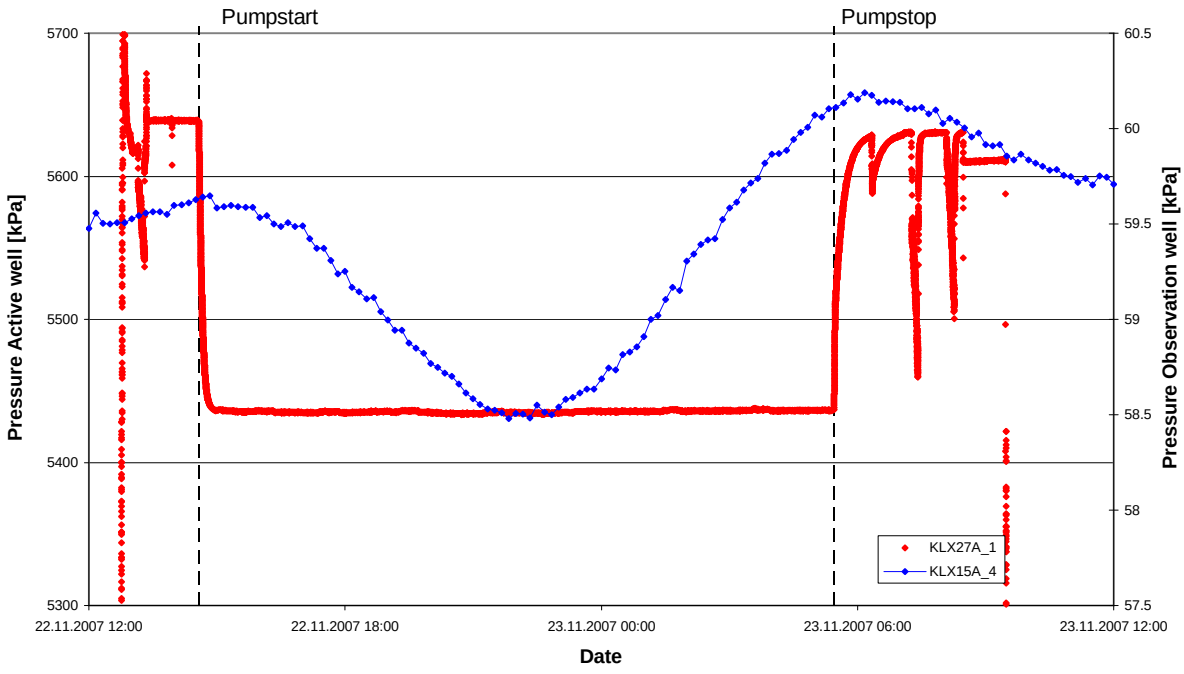
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72		
Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**KLX15A**	**Section no.:**	**KLX15A_5**
Distance r_s [m]:	1304.40	Section length:	273.0-480.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	65.7
Pressure in test section before stop of flowing:	p_p	kPa	66.1
Maximum pressure change during flowing period:*	dp_p	kPa	0.4

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

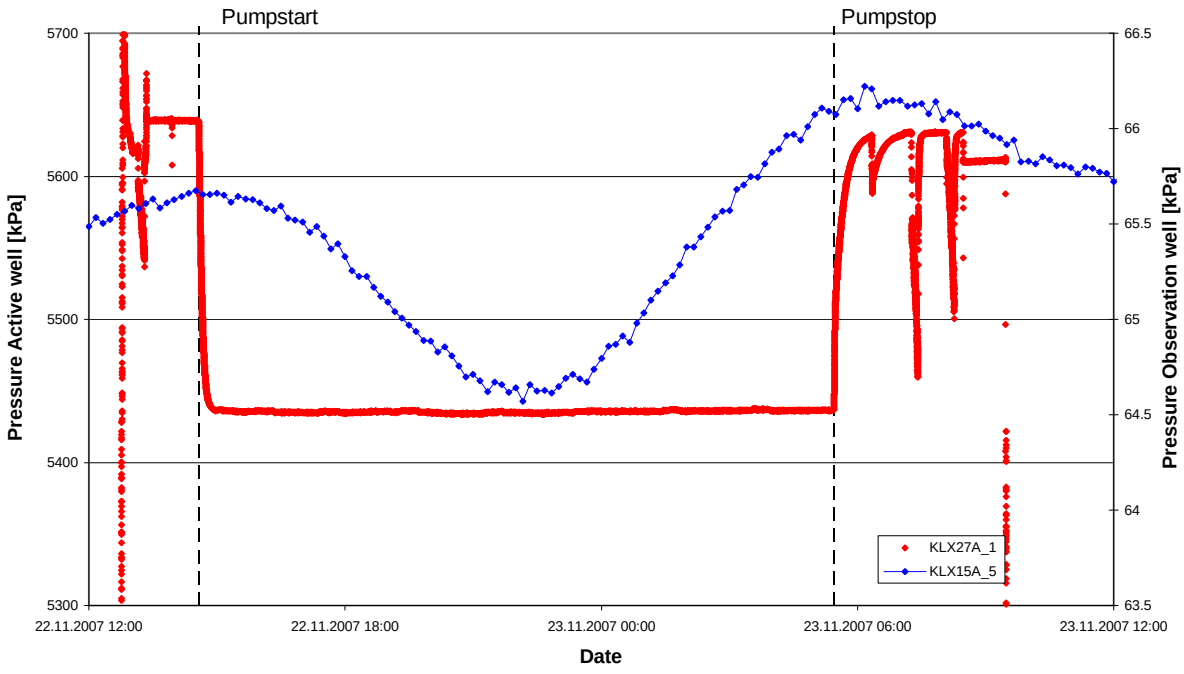
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72		
Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**KLX15A**	**Section no.:**	**KLX15A_6**
Distance r_s [m]:	1320.00	Section length:	260.0-272.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	64.8
Pressure in test section before stop of flowing:	p_p	kPa	65.2
Maximum pressure change during flowing period:*	dp_p	kPa	0.4

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

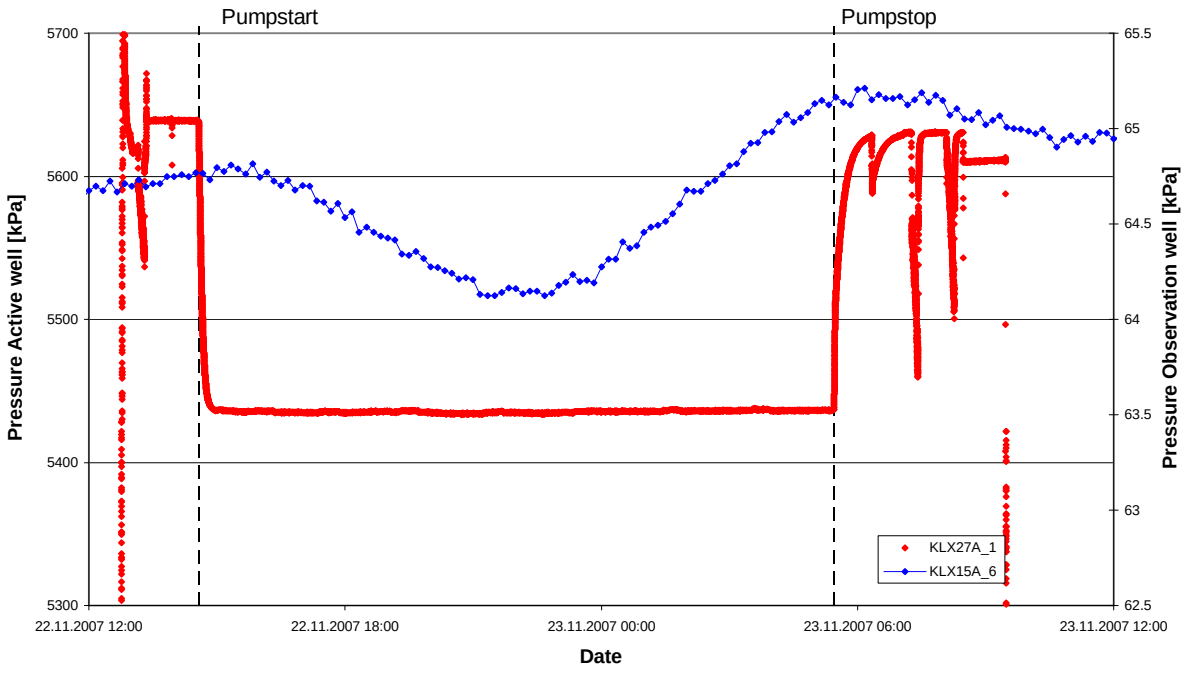
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**KLX15A**	**Section no.:**	**KLX15A_7**
Distance r_s [m]:	1333.20	Section length:	191.0-259.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	65.8
Pressure in test section before stop of flowing:	p_p	kPa	66.2
Maximum pressure change during flowing period:*	dp_p	kPa	0.4

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

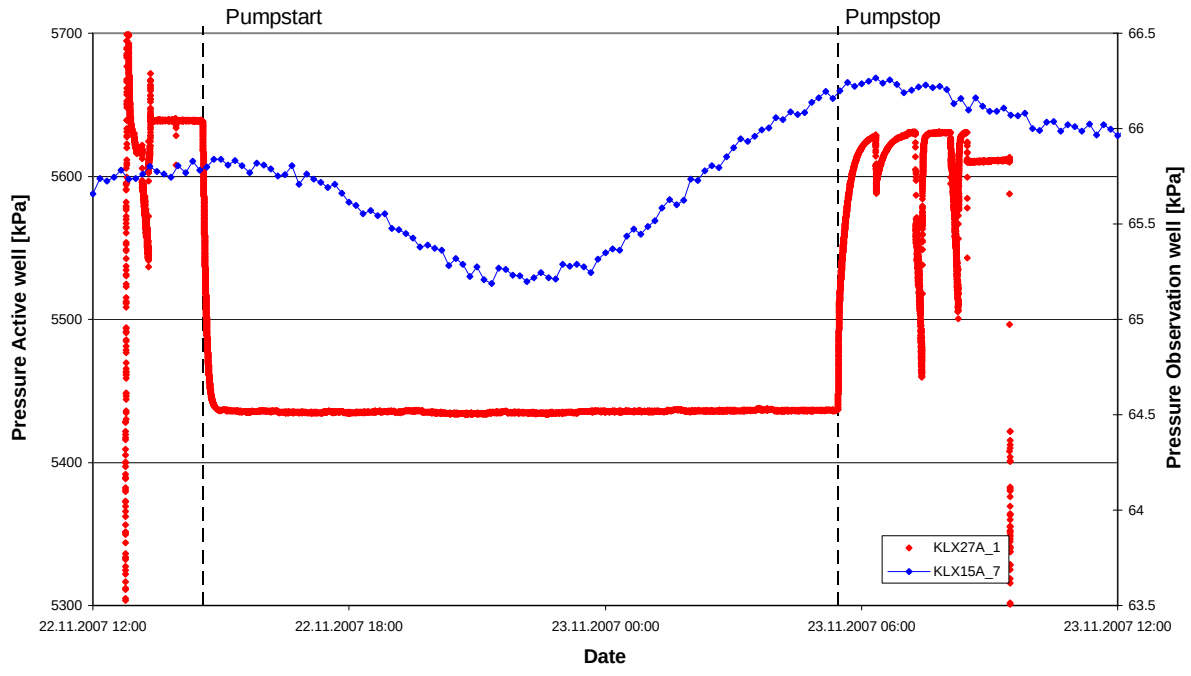
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72		
Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**KLX15A**	**Section no.:**	**KLX15A_8**
Distance r_s [m]:	1351.40	Section length:	79.0-190.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	67.2
Pressure in test section before stop of flowing:	p_p	kPa	67.5
Maximum pressure change during flowing period:*	dp_p	kPa	0.3

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

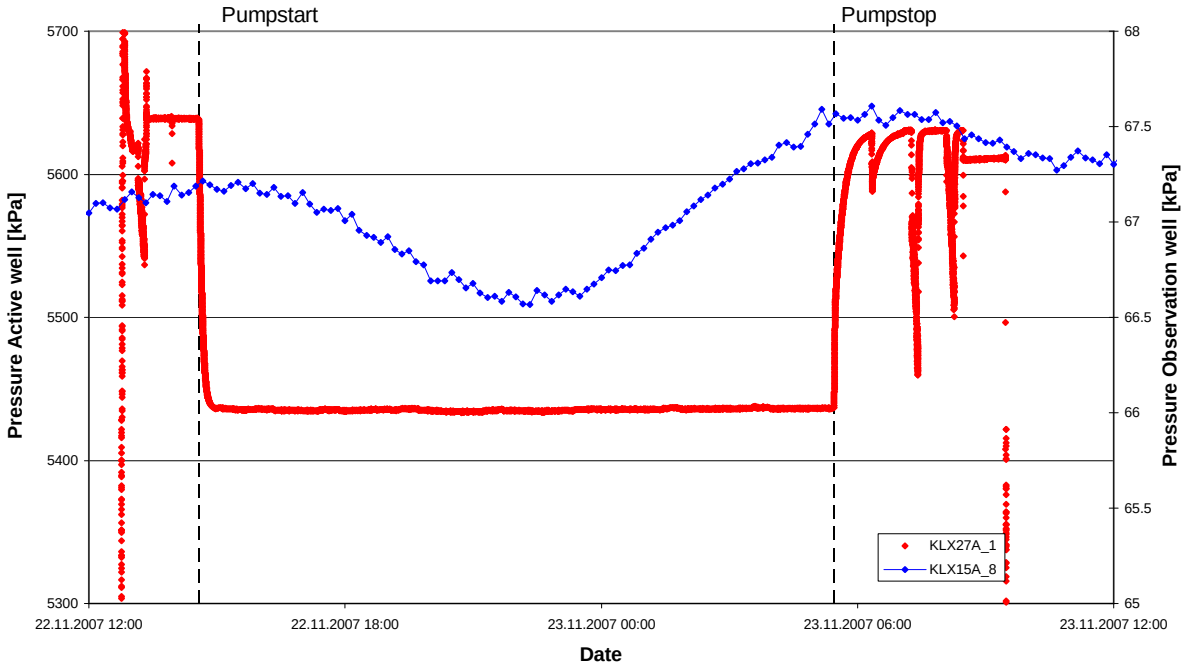
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**KLX15A**	**Section no.:**	**KLX15A_9**
Distance r_s [m]:	1380.50	Section length:	0.0-78.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	69.4
Pressure in test section before stop of flowing:	p_p	kPa	69.6
Maximum pressure change during flowing period:*	dp_p	kPa	0.2

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

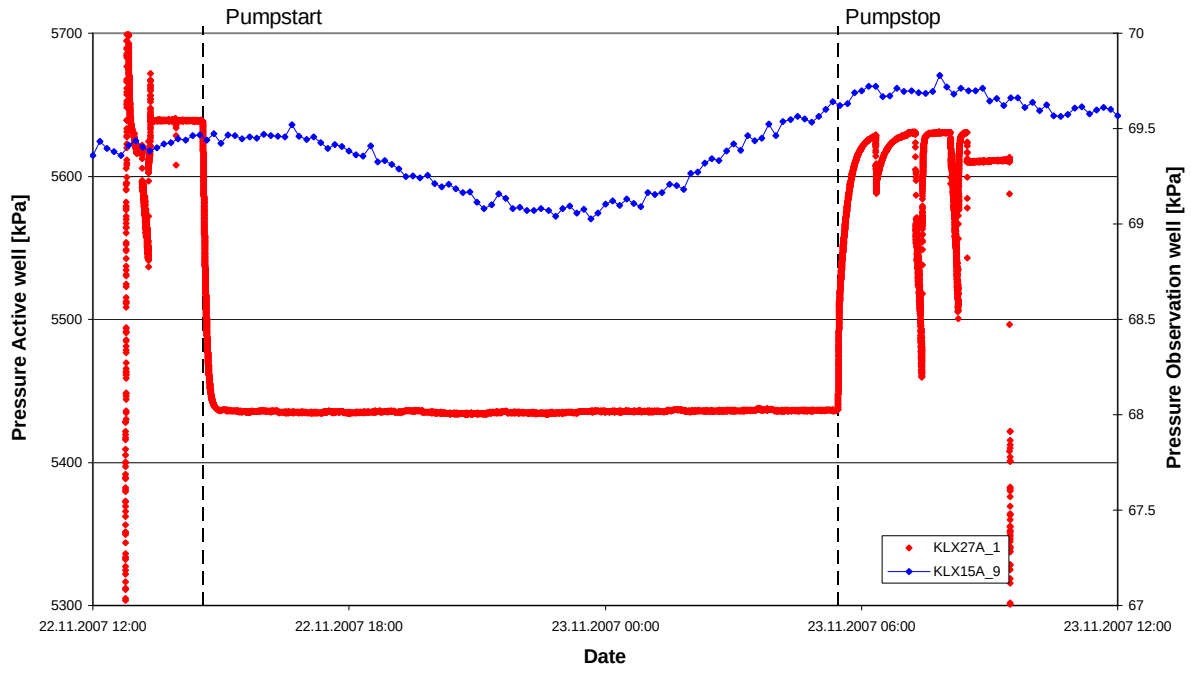
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72		
Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**KLX16A**	**Section no.:**	**KLX16A_1**
Distance r_s [m]:	1249.80	Section length:	327.00-433.55
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	172.3
Pressure in test section before stop of flowing:	p_p	kPa	172.7
Maximum pressure change during flowing period:*	dp_p	kPa	0.4

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

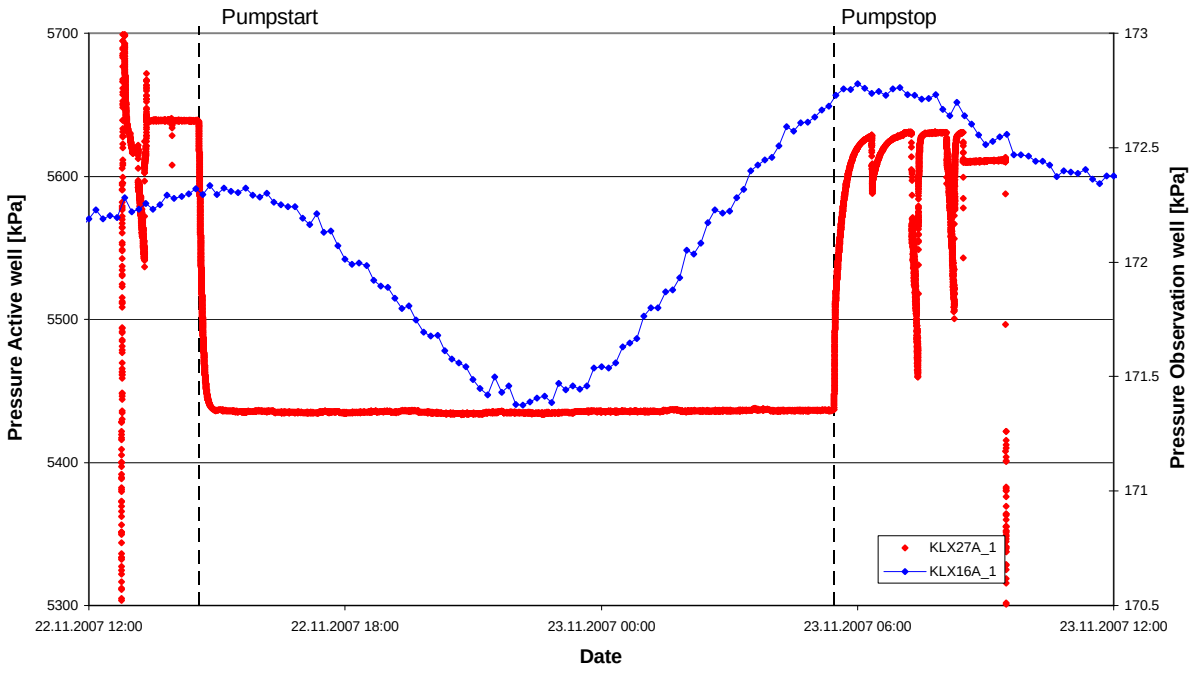
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72		
Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**KLX16A**	**Section no.:**	**KLX16A_2**
Distance r_s [m]:	1345.50	Section length:	86.0-326.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	169.4
Pressure in test section before stop of flowing:	p_p	kPa	169.7
Maximum pressure change during flowing period:*	dp_p	kPa	0.3

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

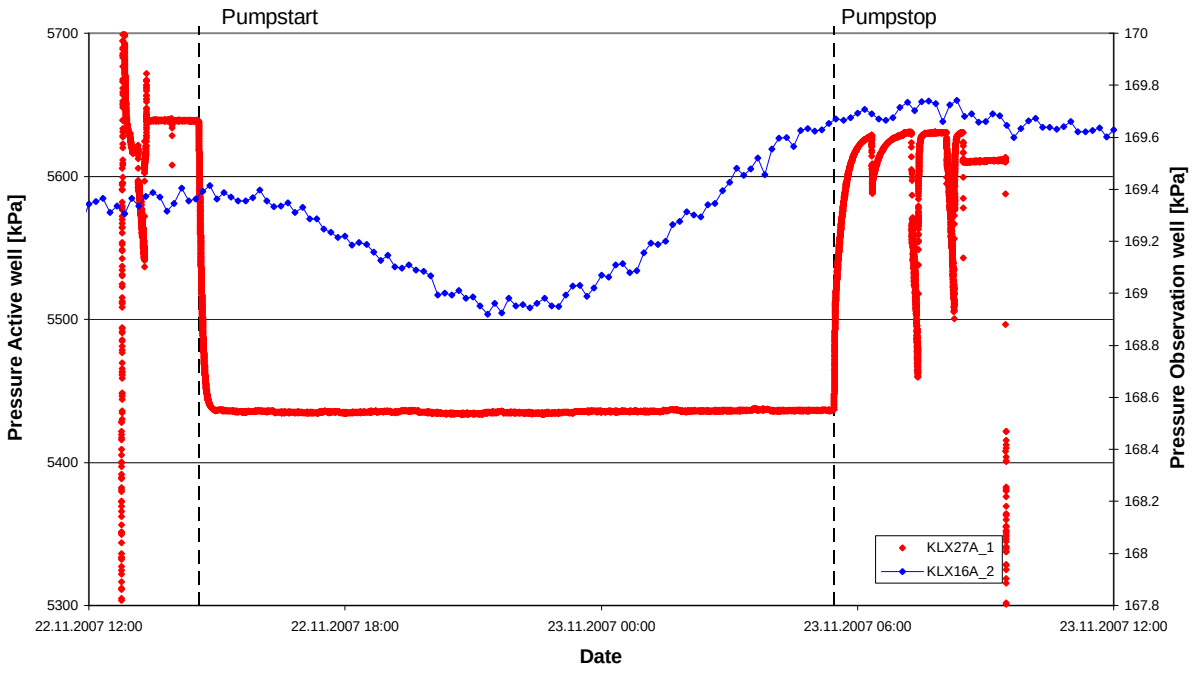
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72		
Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**KLX16A**	**Section no.:**	**KLX16A_3**
Distance r_s [m]:	1465.40	Section length:	0.0-85.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	190.8
Pressure in test section before stop of flowing:	p_p	kPa	191.0
Maximum pressure change during flowing period:*	dp_p	kPa	0.2

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

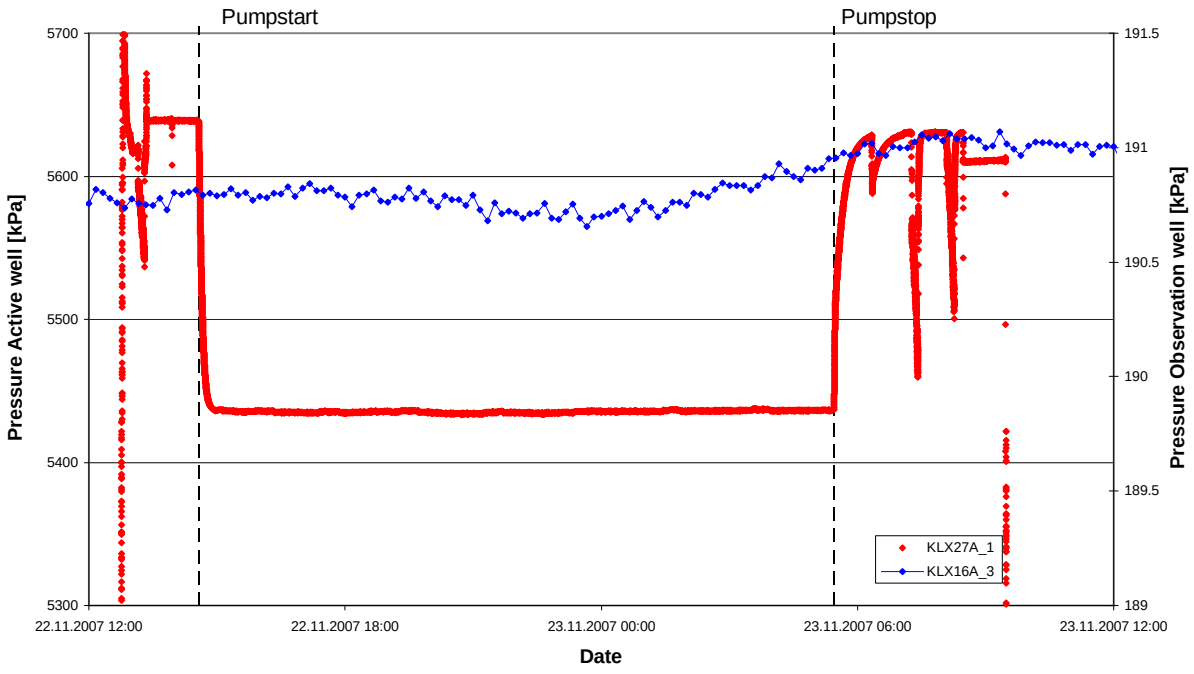
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**KLX19A**	**Section no.:**	**KLX19A_1**
Distance r_s [m]:	404.80	Section length:	661.0-800.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	93.9
Pressure in test section before stop of flowing:	p_p	kPa	94.3
Maximum pressure change during flowing period:*	dp_p	kPa	0.4

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

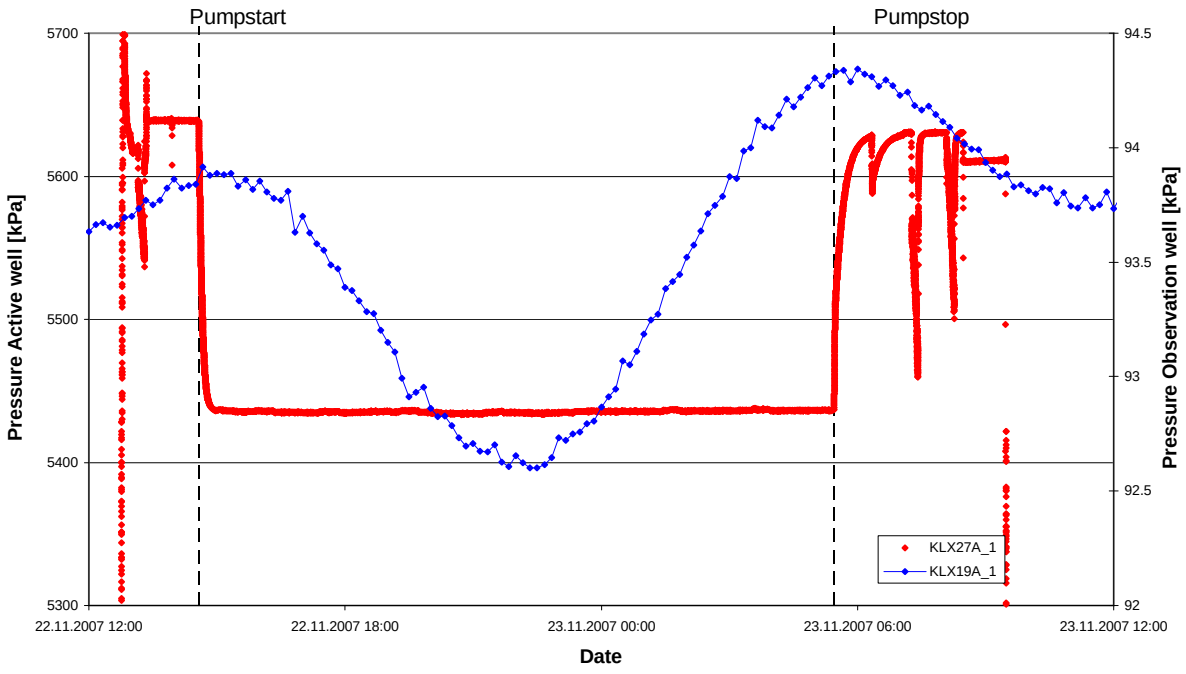
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72		
Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**KLX19A**	**Section no.:**	**KLX19A_2**
Distance r_s [m]:	340.10	Section length:	518.0-660.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	90.4
Pressure in test section before stop of flowing:	p_p	kPa	90.9
Maximum pressure change during flowing period:*	dp_p	kPa	0.5

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

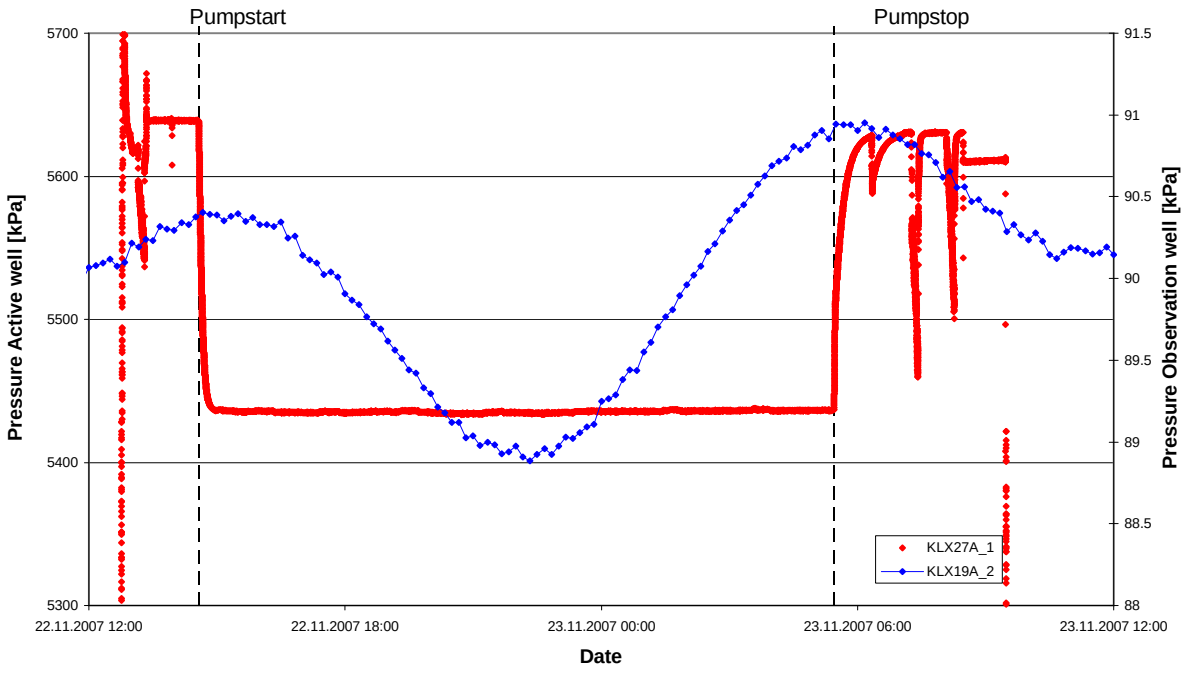
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72		
Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**KLX19A**	**Section no.:**	**KLX19A_3**
Distance r_s [m]:	338.50	Section length:	509.0-517.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	126.0
Pressure in test section before stop of flowing:	p_p	kPa	126.3
Maximum pressure change during flowing period:*	dp_p	kPa	0.3

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

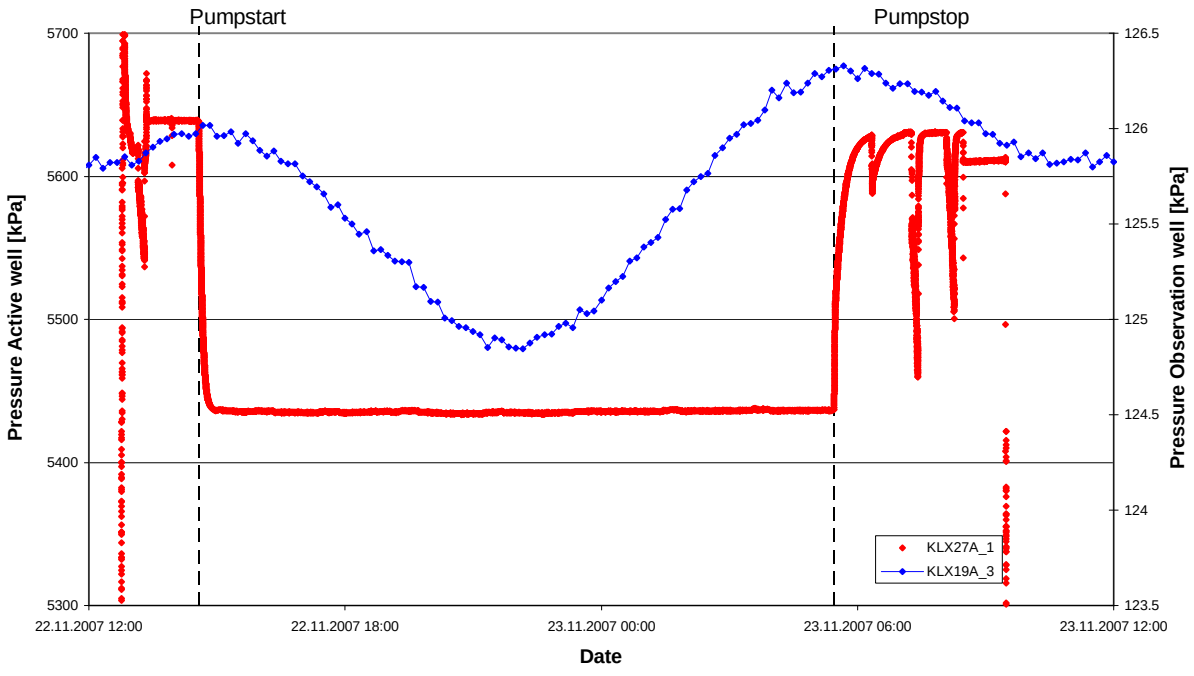
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**KLX19A**	**Section no.:**	**KLX19A_4**
Distance r_s [m]:	339.90	Section length:	481.5-508.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	126.2
Pressure in test section before stop of flowing:	p_p	kPa	126.6
Maximum pressure change during flowing period:*	dp_p	kPa	0.4

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

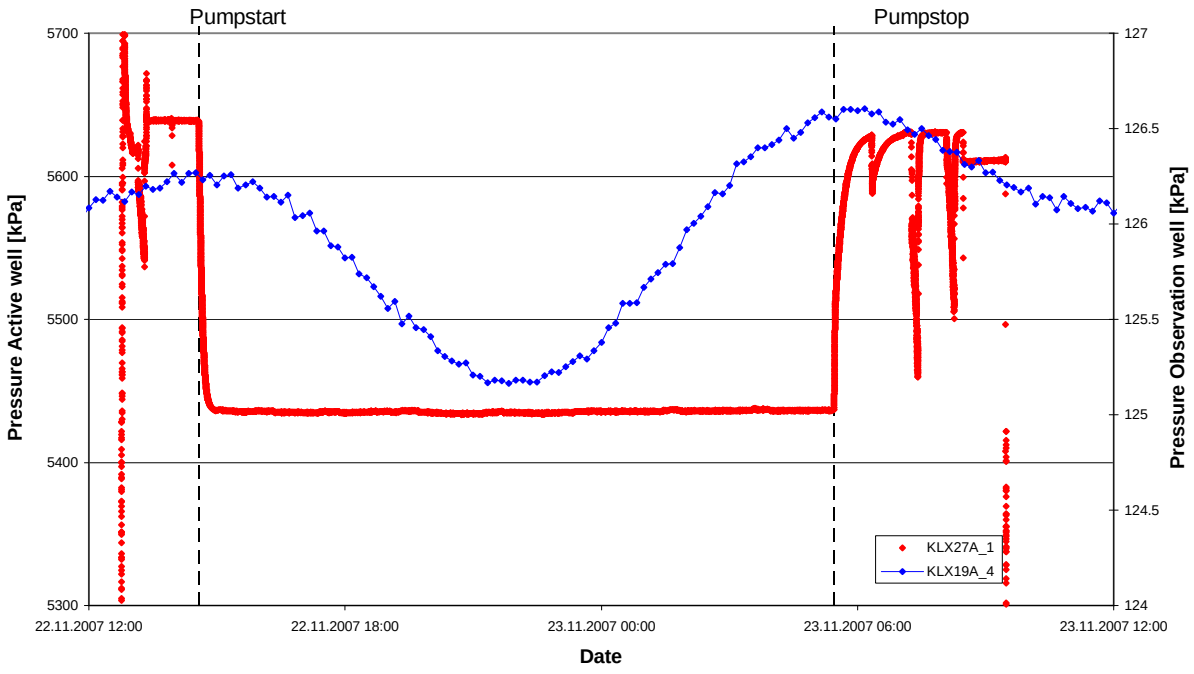
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72		
Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**KLX19A**	**Section no.:**	**KLX19A_5**
Distance r_s [m]:	346.90	Section length:	311.0-480.5
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	126.3
Pressure in test section before stop of flowing:	p_p	kPa	126.6
Maximum pressure change during flowing period:*	dp_p	kPa	0.3

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

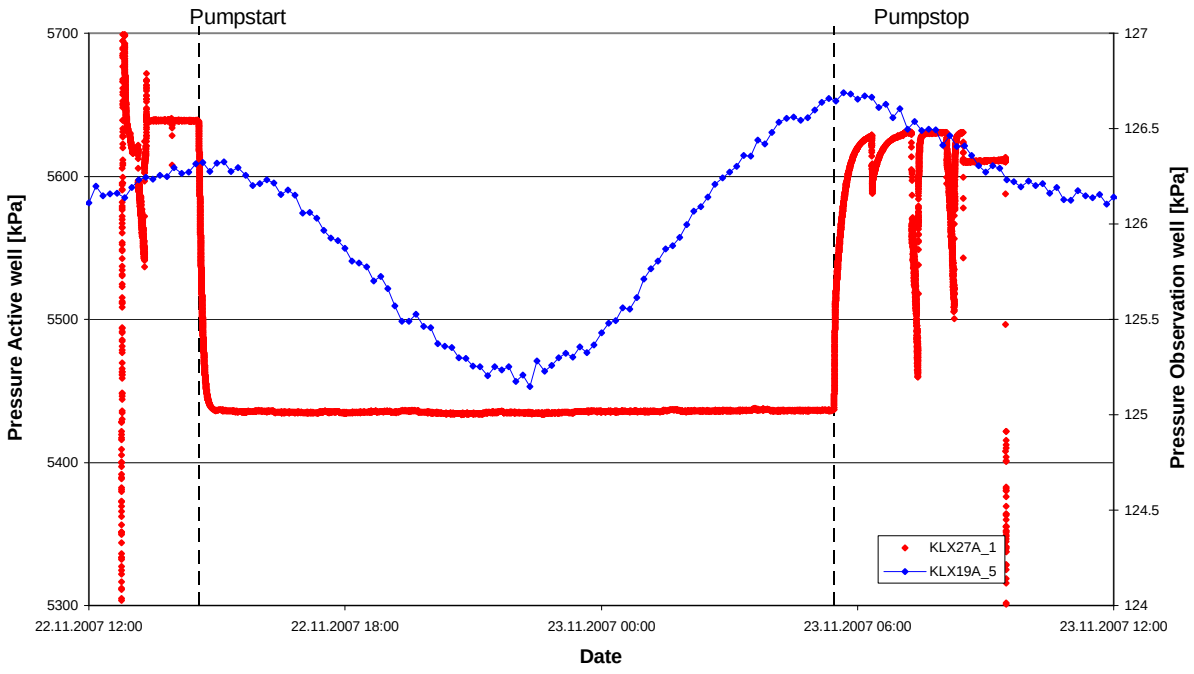
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**KLX19A**	**Section no.:**	**KLX19A_6**
Distance r_s [m]:	414.90	Section length:	291.0-310.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	128.2
Pressure in test section before stop of flowing:	p_p	kPa	128.5
Maximum pressure change during flowing period:*	dp_p	kPa	0.3

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

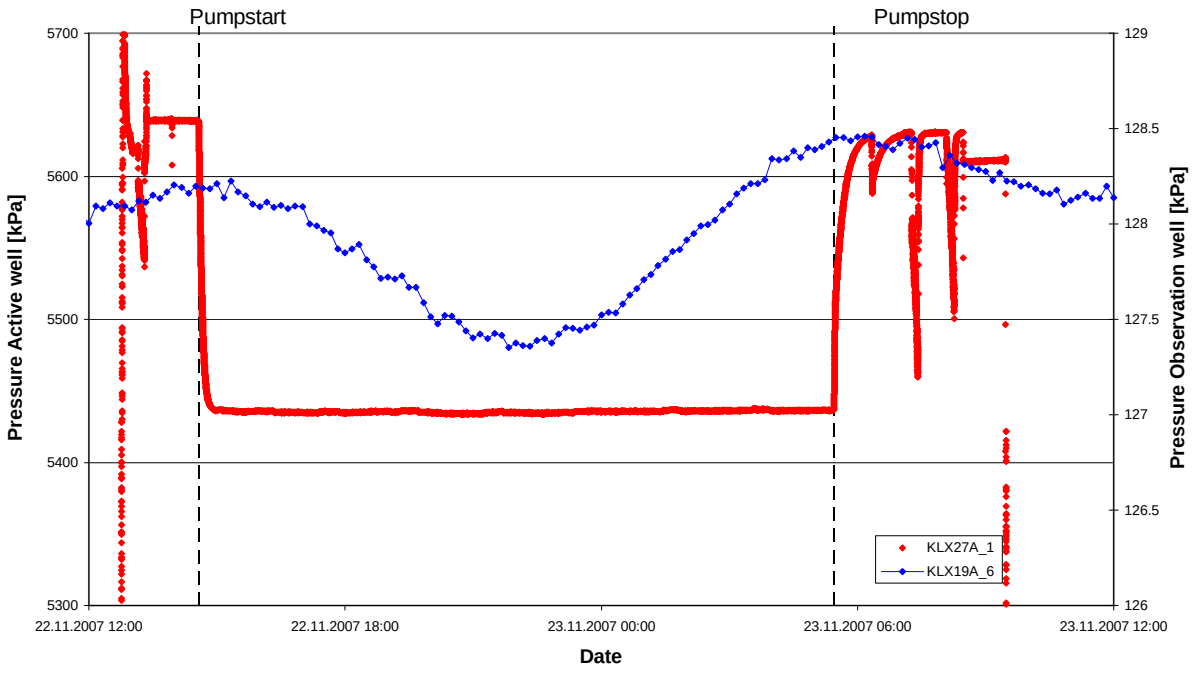
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72		
Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**KLX19A**	**Section no.:**	**KLX19A_7**
Distance r_s [m]:	509.70	Section length:	136.0-290.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	133.1
Pressure in test section before stop of flowing:	p_p	kPa	133.4
Maximum pressure change during flowing period:*	dp_p	kPa	0.3

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

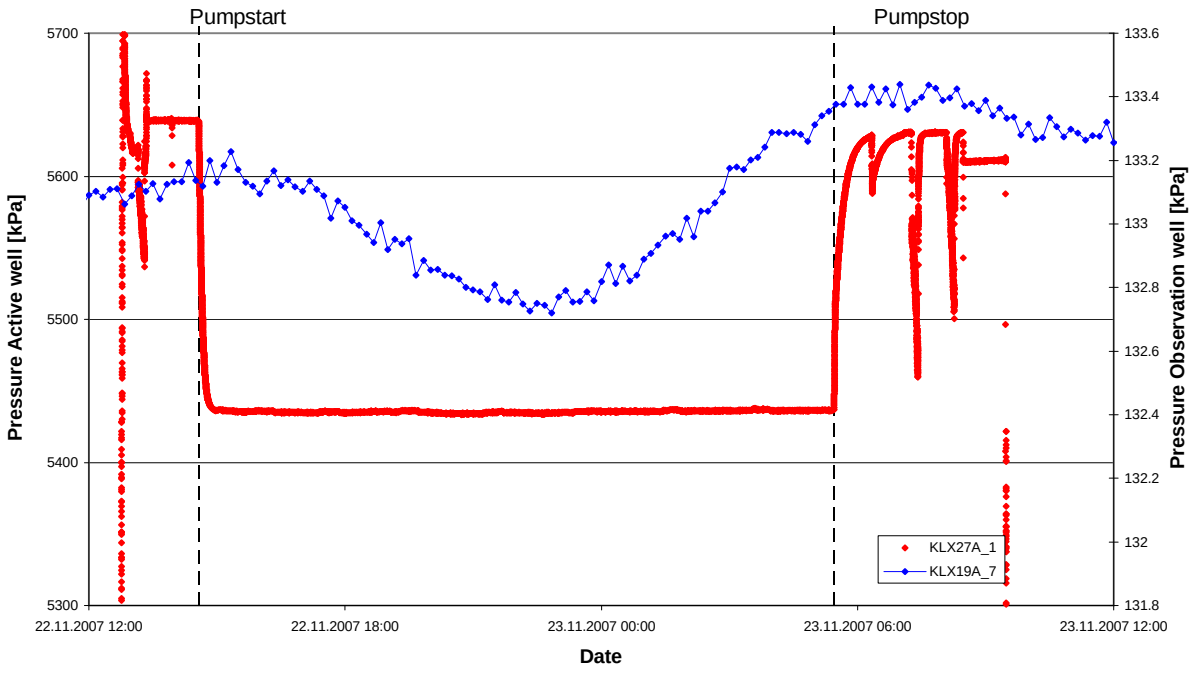
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**KLX19A**	**Section no.:**	**KLX19A_8**
Distance r_s [m]:	548.50	Section length:	0.0-135.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	133.1
Pressure in test section before stop of flowing:	p_p	kPa	133.4
Maximum pressure change during flowing period:*	dp_p	kPa	0.3

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

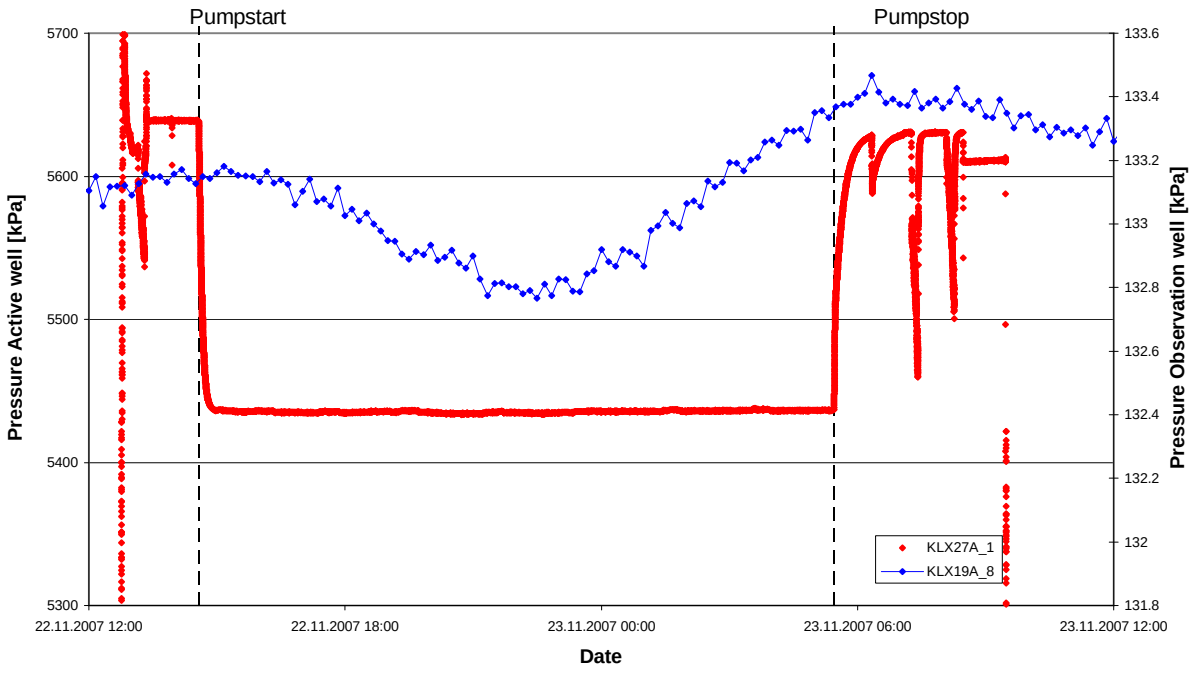
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72

Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**KLX20A**	**Section no.:**	**KLX20A_1**
Distance r_s [m]:	687.40	Section length:	294.0-457.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	143.6
Pressure in test section before stop of flowing:	p_p	kPa	143.9
Maximum pressure change during flowing period:*	dp_p	kPa	0.3

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

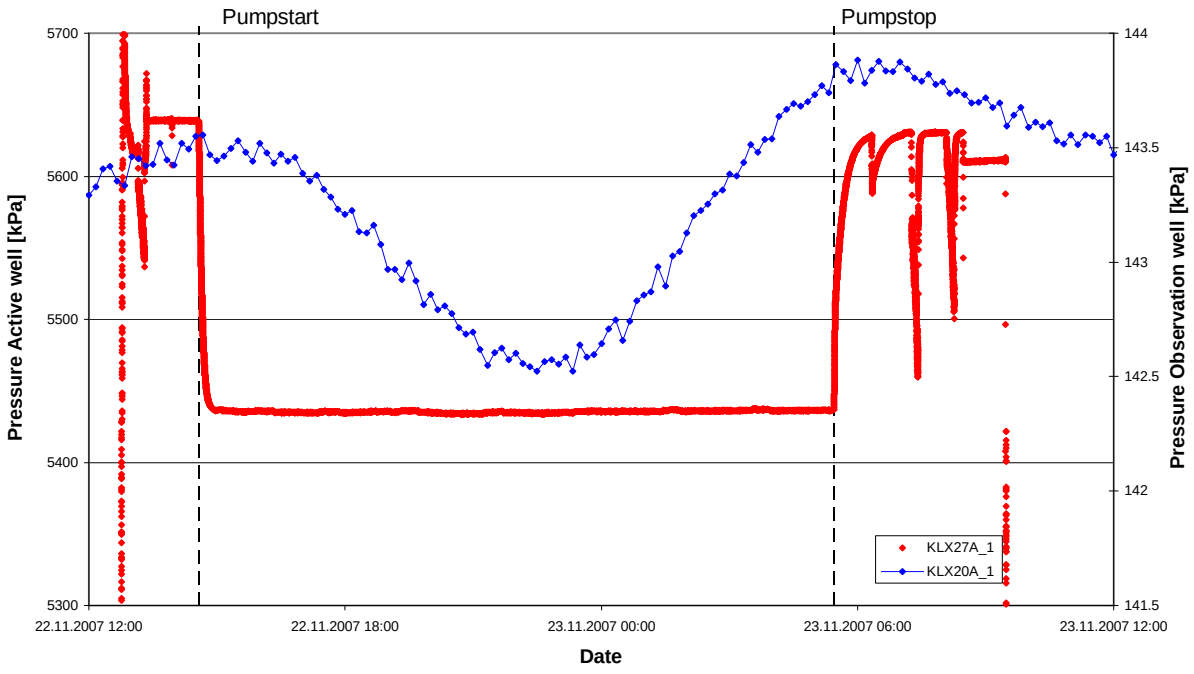
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72		
Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**KLX20A**	**Section no.:**	**KLX20A_2**
Distance r_s [m]:	683.70	Section length:	260.0-296.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	149.0
Pressure in test section before stop of flowing:	p_p	kPa	149.3
Maximum pressure change during flowing period:*	dp_p	kPa	0.3

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

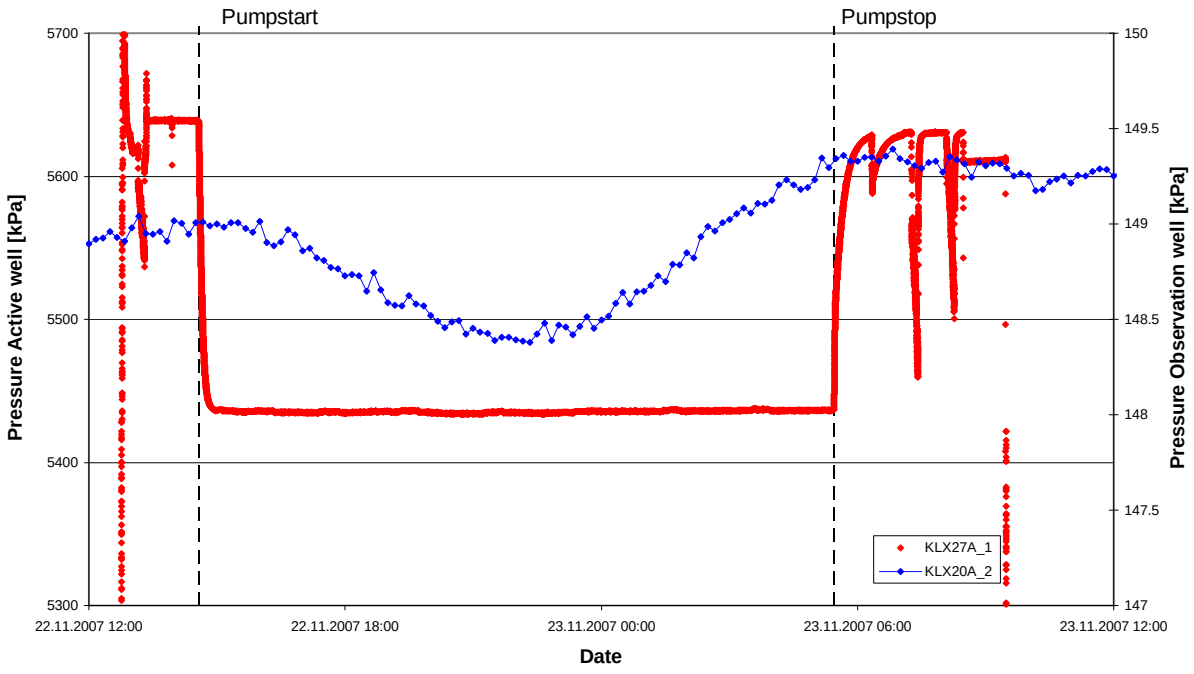
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72		
Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**KLX20A**	**Section no.:**	**KLX20A_3**
Distance r_s [m]:	691.80	Section length:	181.0-259.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	146.3
Pressure in test section before stop of flowing:	p_p	kPa	146.7
Maximum pressure change during flowing period:*	dp_p	kPa	0.4

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

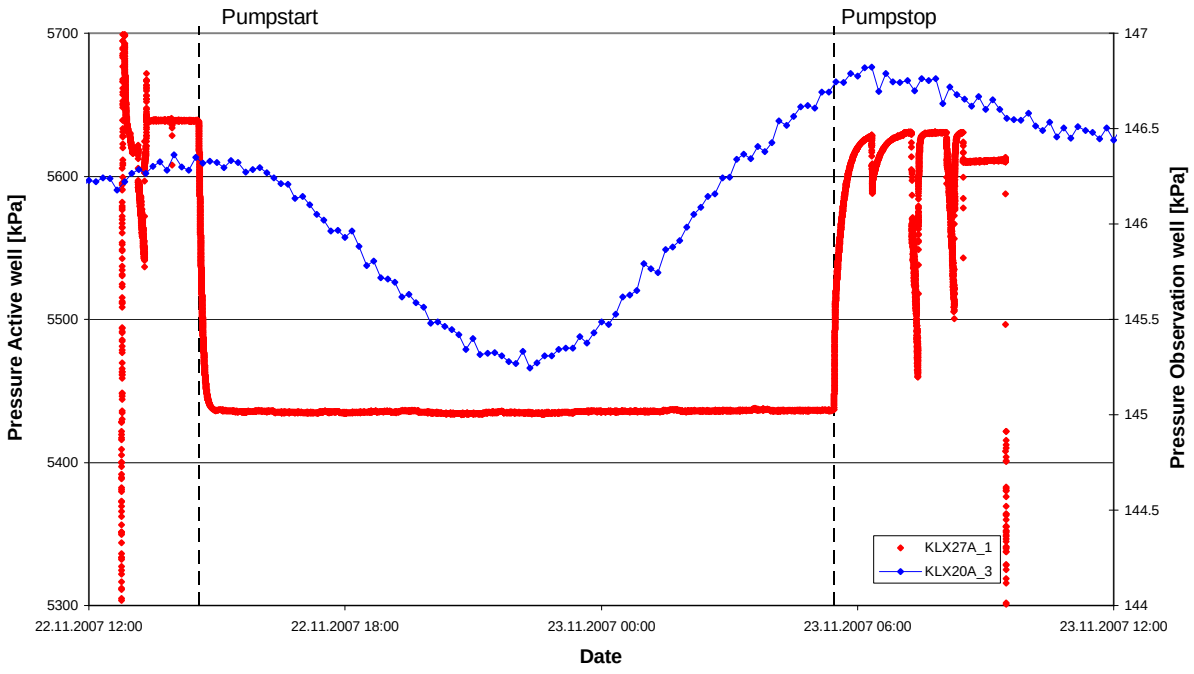
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72		
Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**KLX20A**	**Section no.:**	**KLX20A_4**
Distance r_s [m]:	699.00	Section length:	145.0-180.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	138.2
Pressure in test section before stop of flowing:	p_p	kPa	138.5
Maximum pressure change during flowing period:*	dp_p	kPa	0.3

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

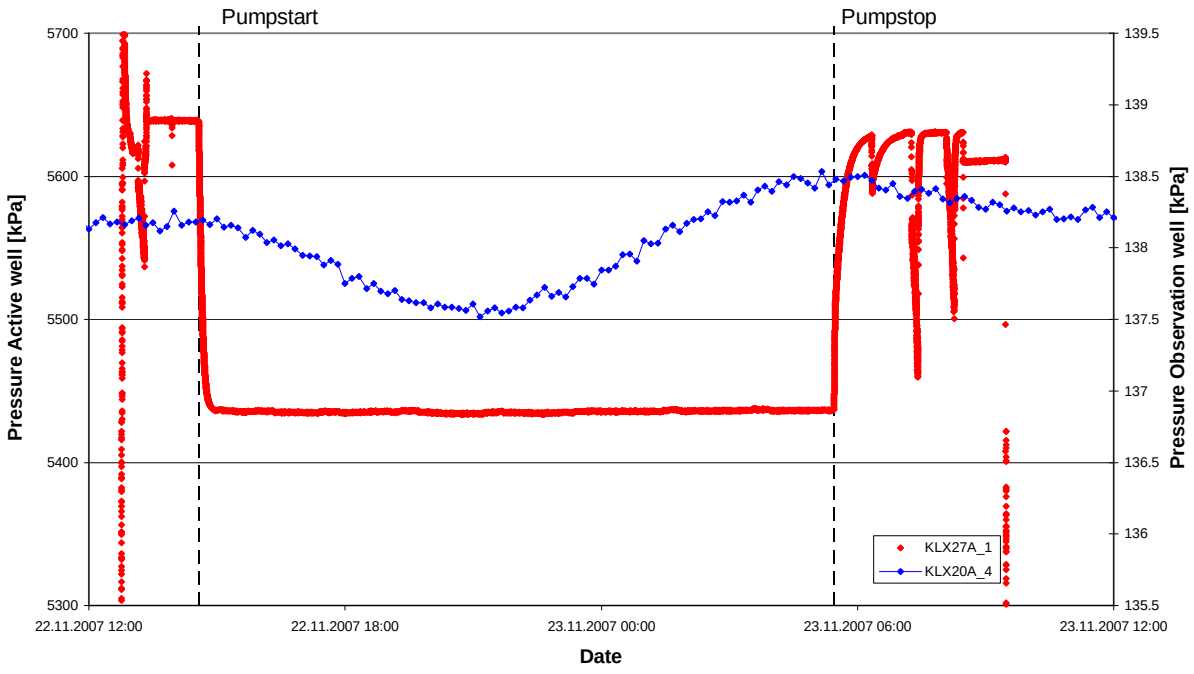
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72		
Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**KLX20A**	**Section no.:**	**KLX20A_5**
Distance r_s [m]:	709.90	Section length:	103.0-144.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	156.8
Pressure in test section before stop of flowing:	p_p	kPa	157.2
Maximum pressure change during flowing period:*	dp_p	kPa	0.4

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

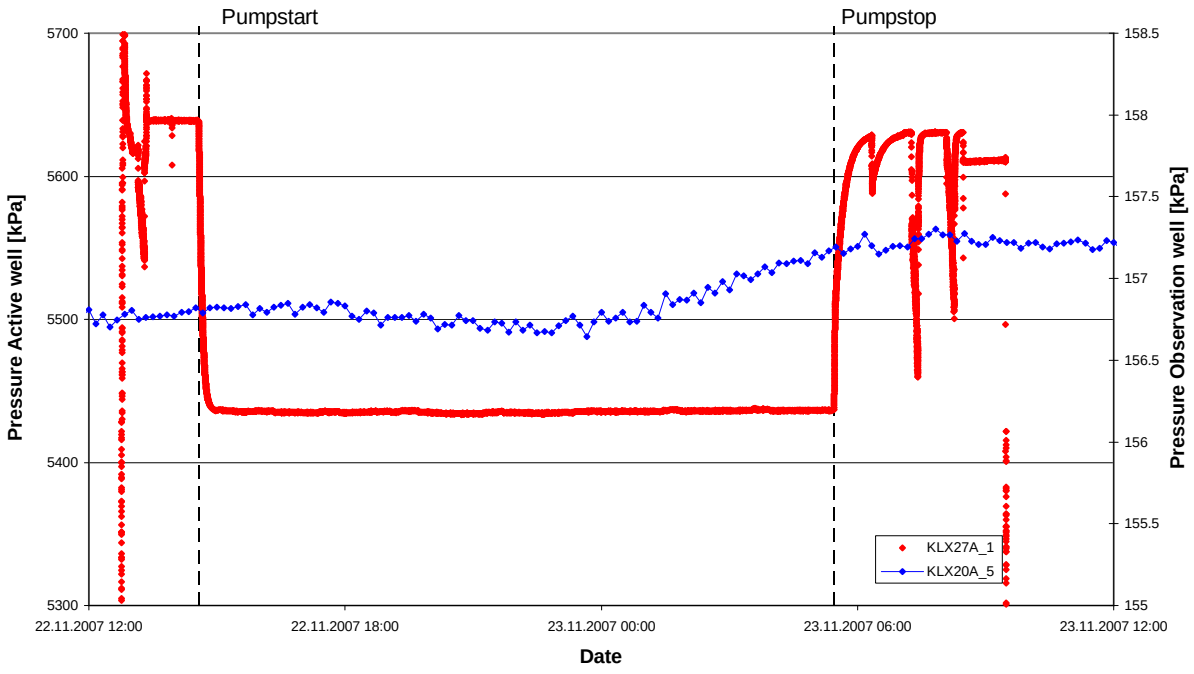
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72		
Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**KLX20A**	**Section no.:**	**KLX20A_6**
Distance r_s [m]:	721.50	Section length:	0.0-102.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	156.1
Pressure in test section before stop of flowing:	p_p	kPa	156.4
Maximum pressure change during flowing period:*	dp_p	kPa	0.3

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

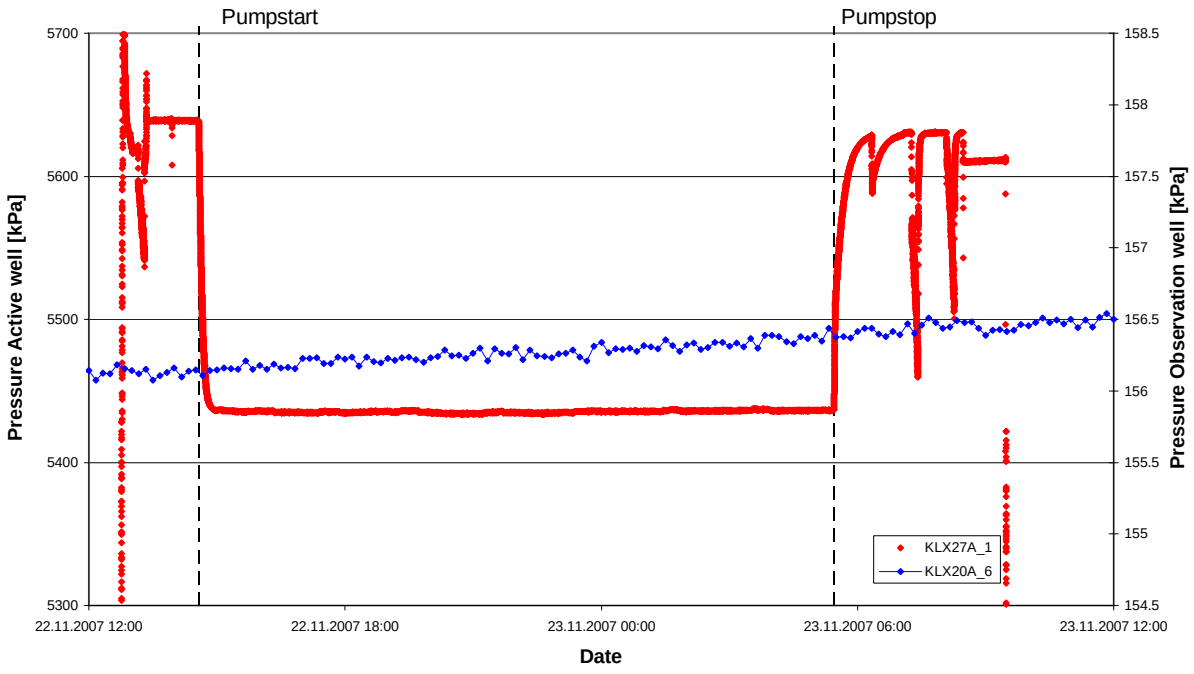
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72		
Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**KLX23A**	**Section no.:**	**KLX23A_1**
Distance r_s [m]:	581.00	Section length:	49.0-100.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	133.8
Pressure in test section before stop of flowing:	p_p	kPa	133.9
Maximum pressure change during flowing period:*	dp_p	kPa	0.1

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

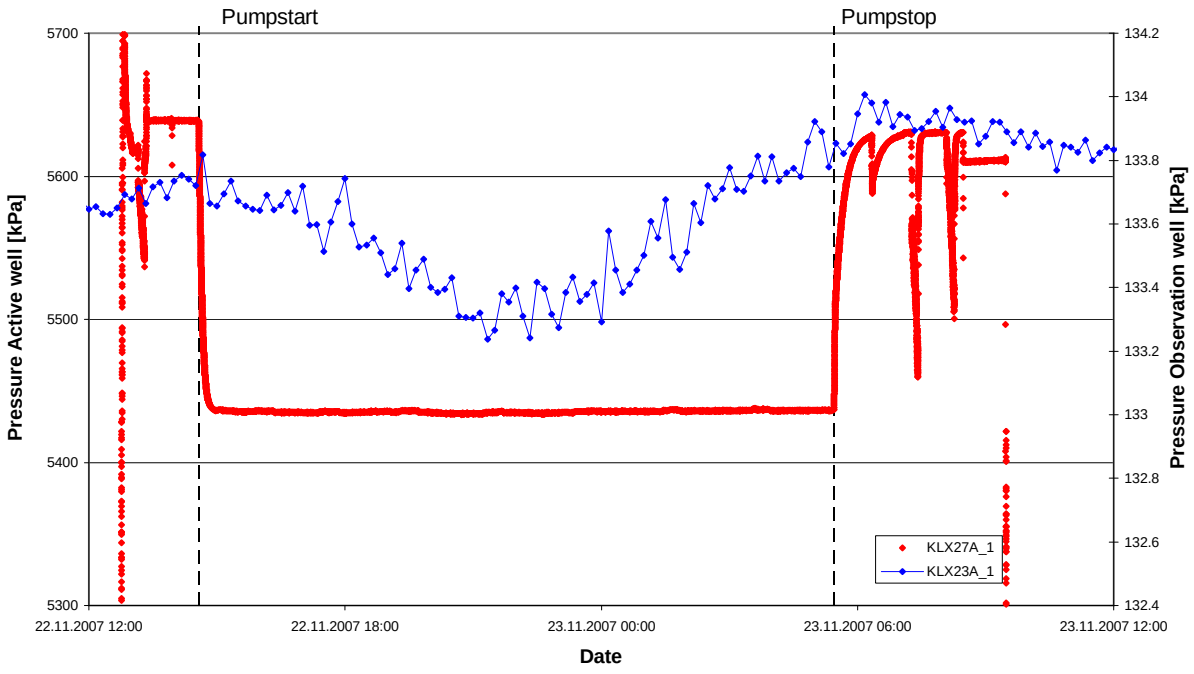
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72		
Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**KLX23A**	**Section no.:**	**KLX23A_2**
Distance r_s [m]:	611.10	Section length:	0.0-48.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	150.8
Pressure in test section before stop of flowing:	p_p	kPa	150.9
Maximum pressure change during flowing period:*	dp_p	kPa	0.1

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

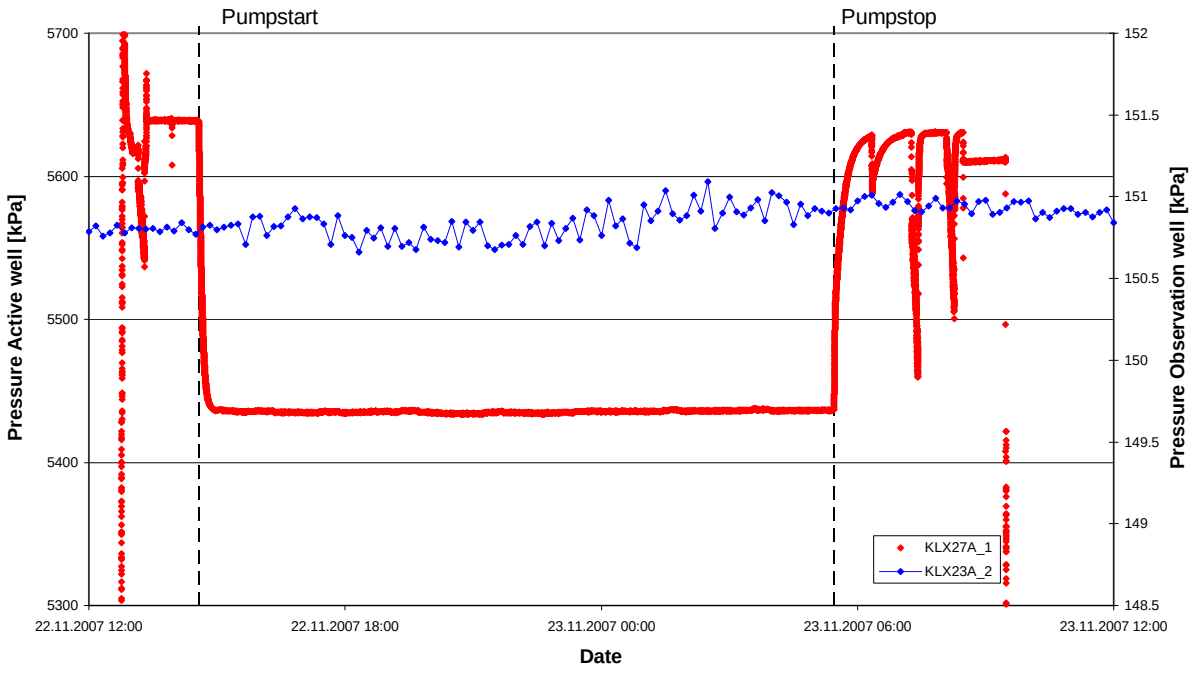
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72		
Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**KLX24A**	**Section no.:**	**KLX24A_1**
Distance r_s [m]:	768.10	Section length:	69.0-100.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	145.0
Pressure in test section before stop of flowing:	p_p	kPa	145.2
Maximum pressure change during flowing period:*	dp_p	kPa	0.2

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

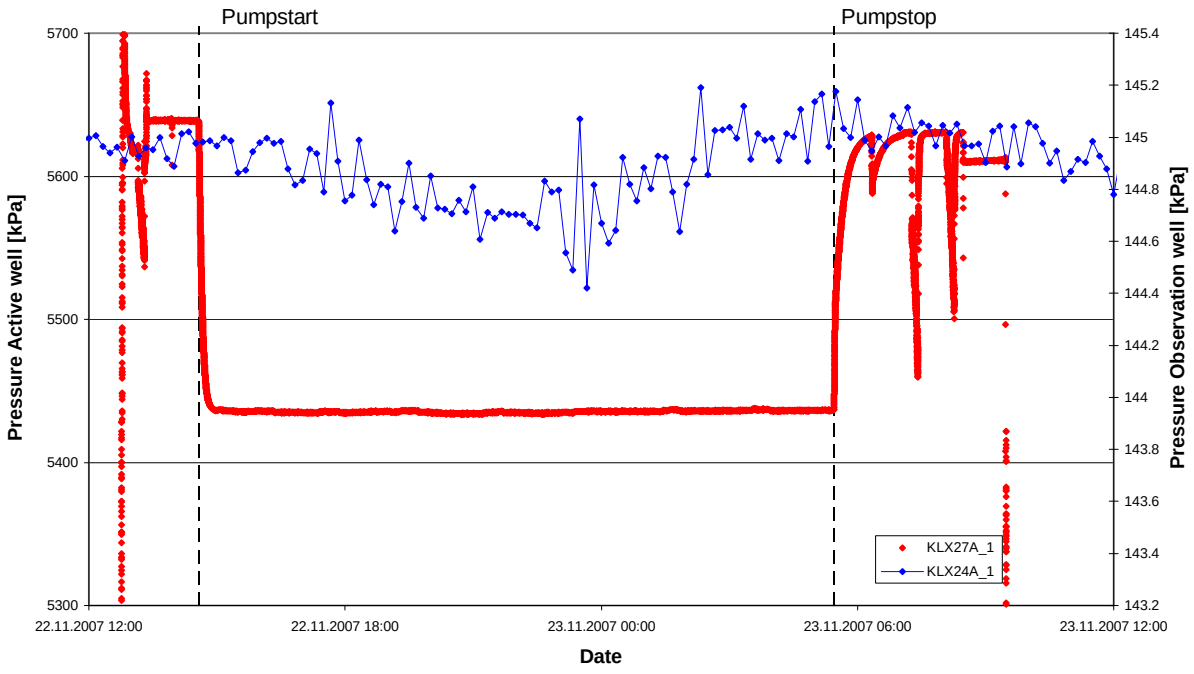
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72		
Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**KLX24A**	**Section no.:**	**KLX24A_2**
Distance r_s [m]:	773.50	Section length:	41.0-68.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	157.0
Pressure in test section before stop of flowing:	p_p	kPa	157.1
Maximum pressure change during flowing period:*	dp_p	kPa	0.1

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

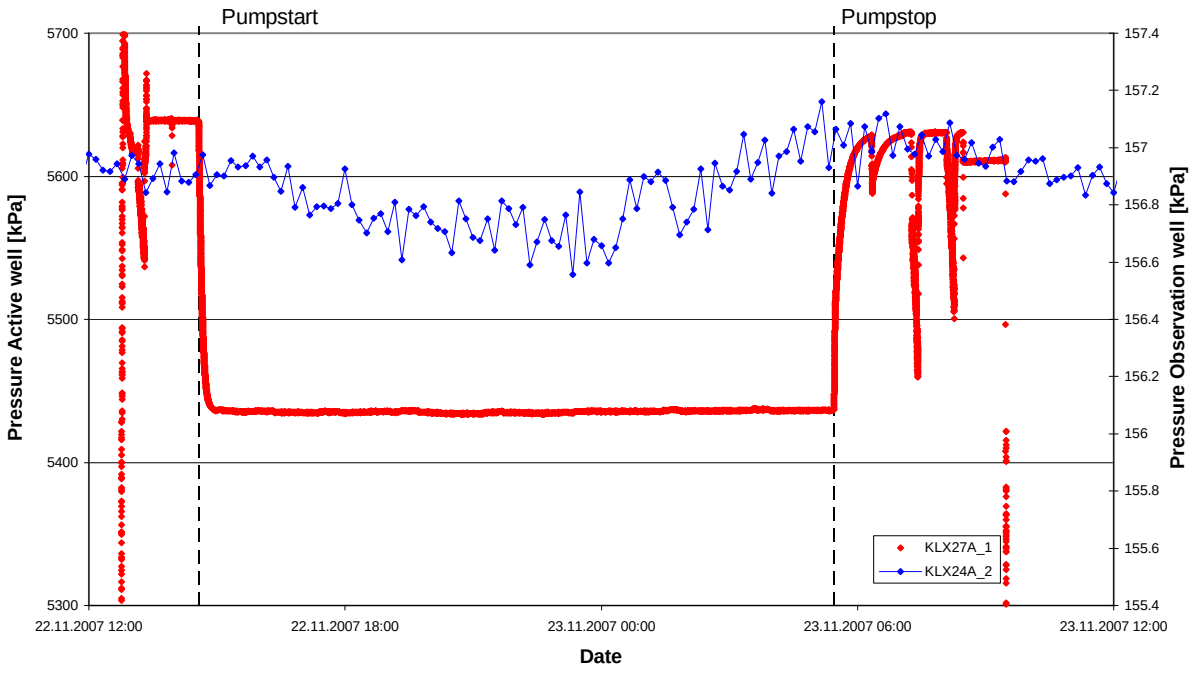
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



Activityplan No.	AP PS 400-07-72		
Pumping Hole:	**KLX27A**	**Pumping Section [m bToC]:**	**639.20-650.56**
Test Start:	19.11.2007 00:00	Test Stop:	25.11.2007 00:00
Pump Start:	22.11.2007 14:34	Pump Stop:	23.11.2007 05:27
Flow Rate Q_p [m^3/s]:	7.42E-05		

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	5638
Pressure in test section before stop of flowing:	p_p	kPa	5437
Maximum pressure change during flowing period:	dp_p	kPa	201

Observation Hole:	**KLX24A**	**Section no.:**	**KLX24A_3**
Distance r_s [m]:	790.30	Section length:	0.0-40.0
Response time dt_L [s]:	#NV	max. Drawdown s_p [m]:*	#NV

Pressure data	**Nomenclature**	**Unit**	**Value**
Pressure in test section before start of flowing:	p_i	kPa	167.7
Pressure in test section before stop of flowing:	p_p	kPa	167.7
Maximum pressure change during flowing period:*	dp_p	kPa	0.0

Normalized distance with respect to the response time

Index 1 **r_s^2/dt_L [m^2/s]:** **#NV**

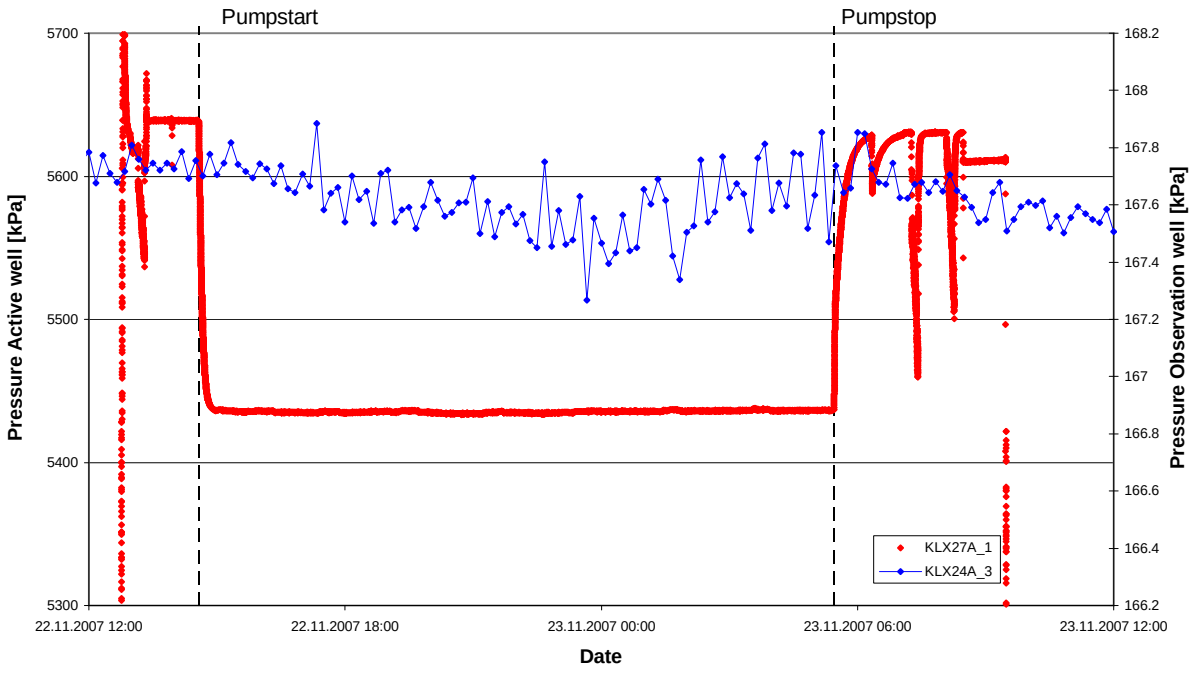
Normalized drawdown with respect to pumping flow rate

Index 2 **s_p/Q_p [s/m^2]:** **#NV**

Index 2 New **$(s_p/Q_p)*\ln(r_s/r_0)$ [s/m^2]:** **#NV**

* see comment

Comment: no response due to pumping in source



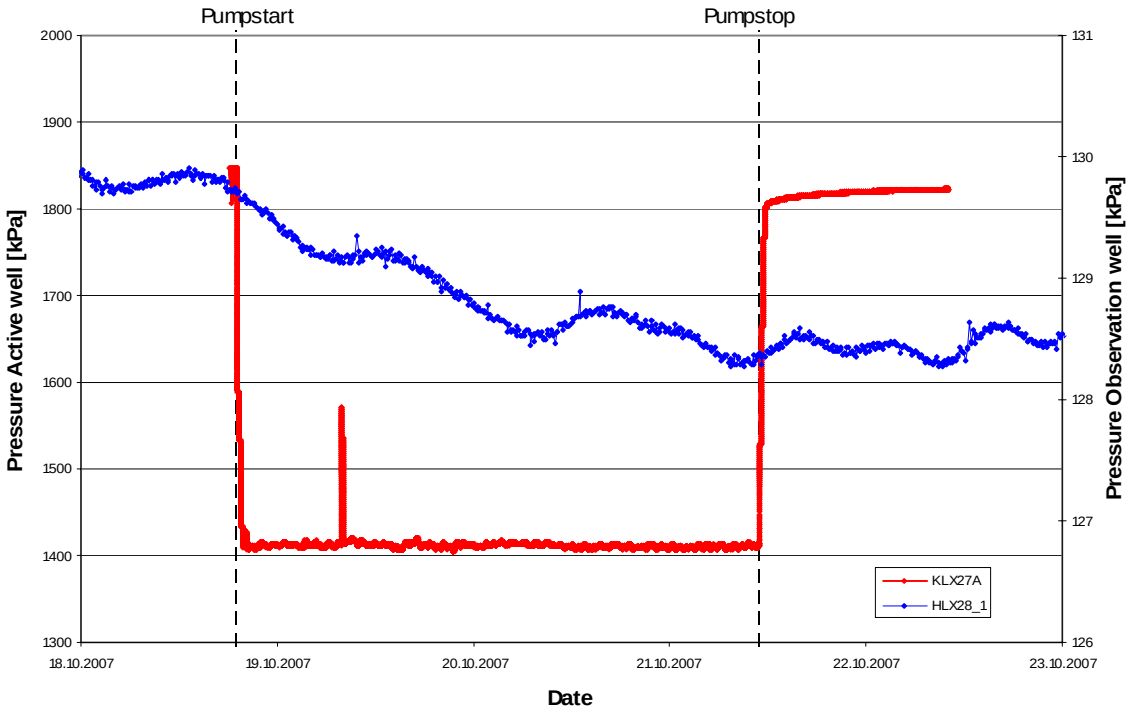
APPENDIX 5

Observation hole
Test analysis diagrams

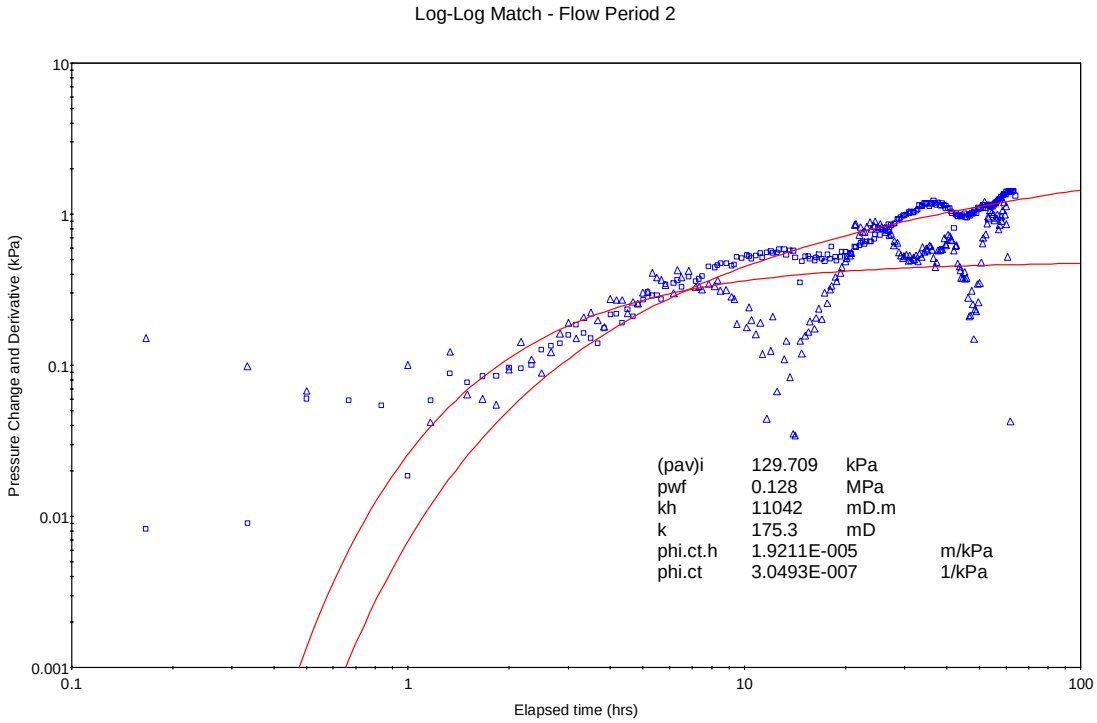
APPENDIX 5-1

KLX27A Section 210.00-247 m pumped
HLX28_1 91.00-154.00 observed

Observation hole
Test analysis diagrams



Pressure vs. time; log-log match; KLX27A 210.00-247.00 m pumped and HLX28_1 91.00-154.00 m observed



CRw phase; log-log match; KLX27A 210.00-247.00 m pumped and HLX28_1 91.00-154.00 m observed

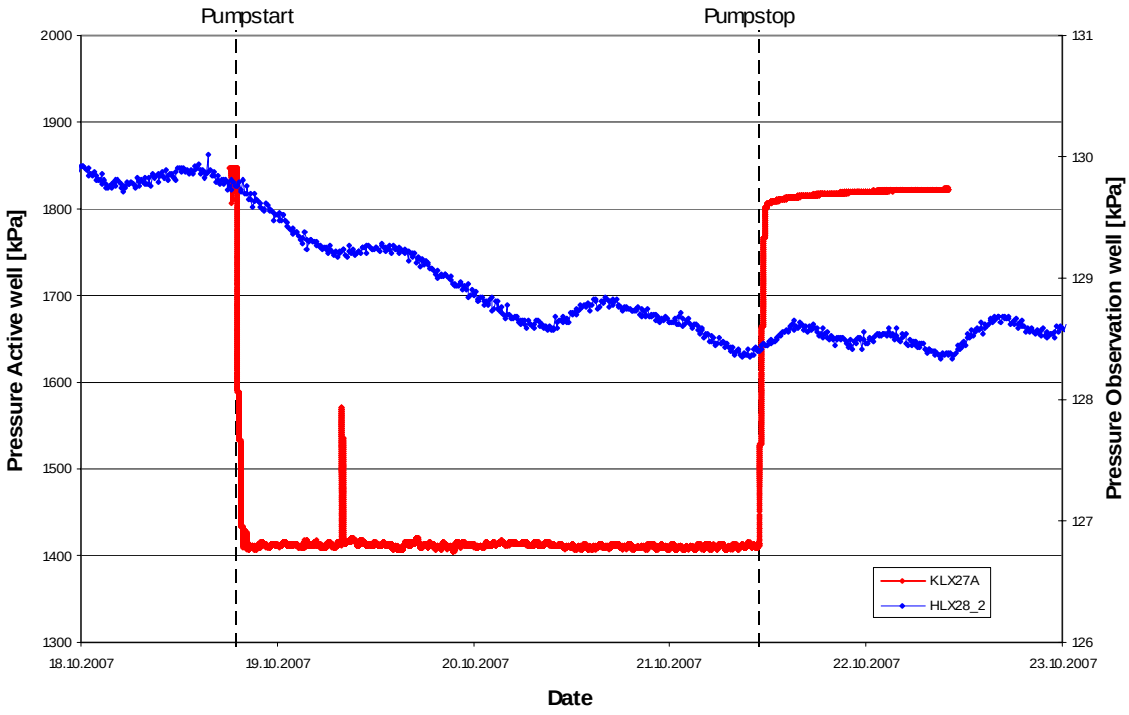
Not analysable

CRwr phase; log-log match; KLX27A 210.00-247.00 m pumped and HLX28_1 91.00-154.00 m observed

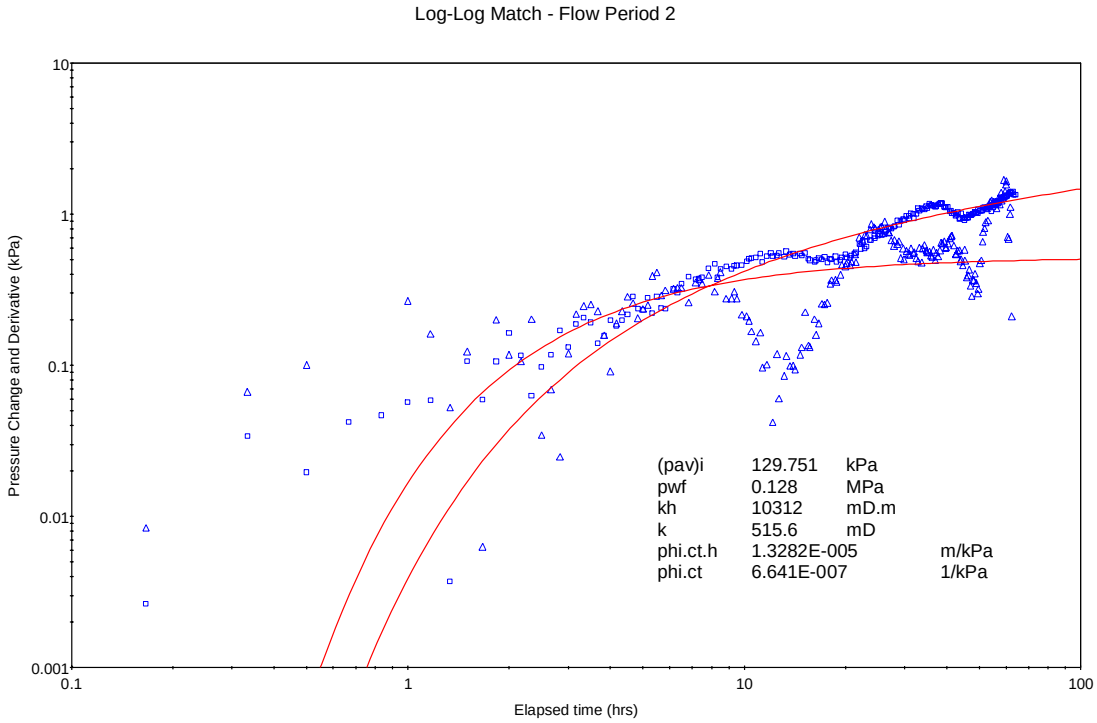
APPENDIX 5-2

KLX27A Section 210.00-247 m pumped
HLX28_2 70.00-90.00 observed

Observation hole
Test analysis diagrams



Pressure vs. time; log-log match; KLX27A 210.00-247.00 m pumped and HLX28_2 70.00-90.00 m observed



CRw phase; log-log match; KLX27A 210.00-247.00 m pumped and HLX28_2 70.00-90.00 m observed

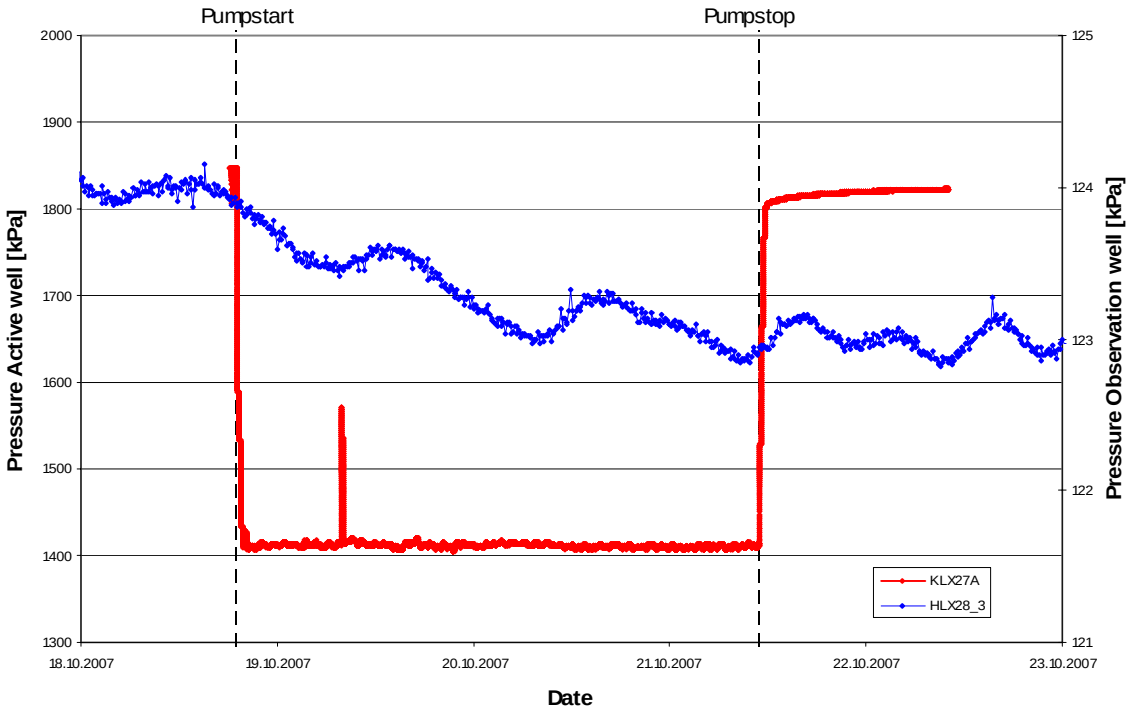
Not analysable

CRwr phase; log-log match; KLX27A 210.00-247.00 m pumped and HLX28_2 70.00-90.00 m observed

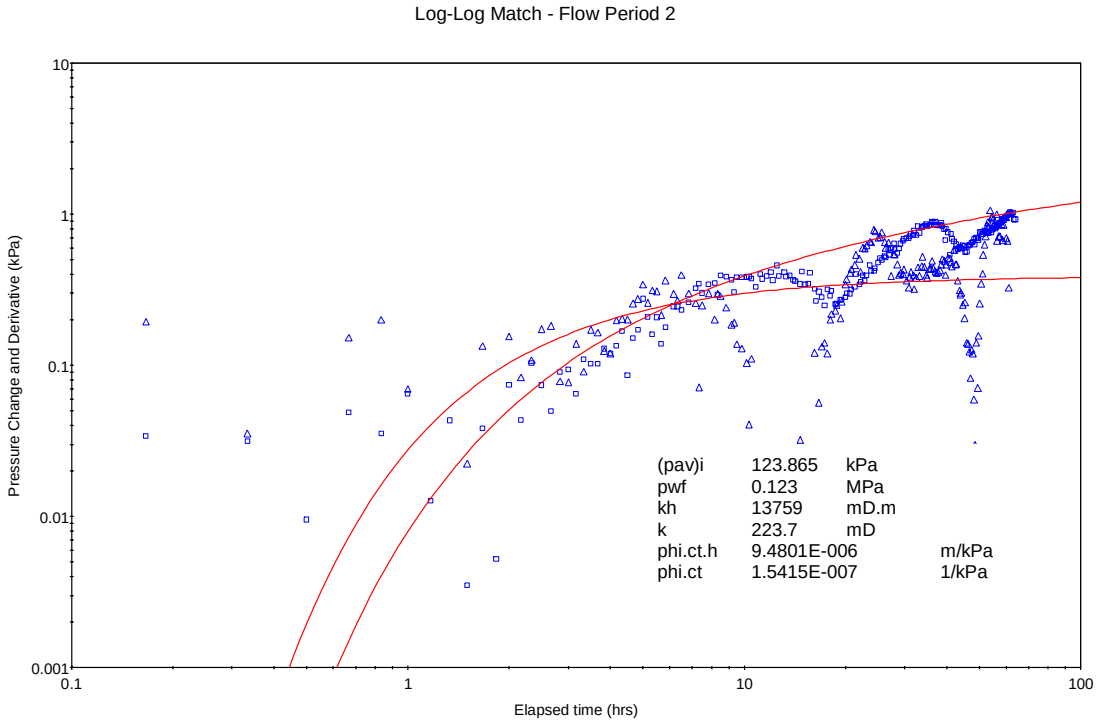
APPENDIX 5-3

KLX27A Section 210.00-247 m pumped
HLX28_3 7.50-69.00 observed

Observation hole
Test analysis diagrams



Pressure vs. time; log-log match; KLX27A 210.00-247.00 m pumped and HLX28_3 7.50-69.00 m observed



CRw phase; log-log match; KLX27A 210.00-247.00 m pumped and HLX28_3 7.50-69.00 m observed

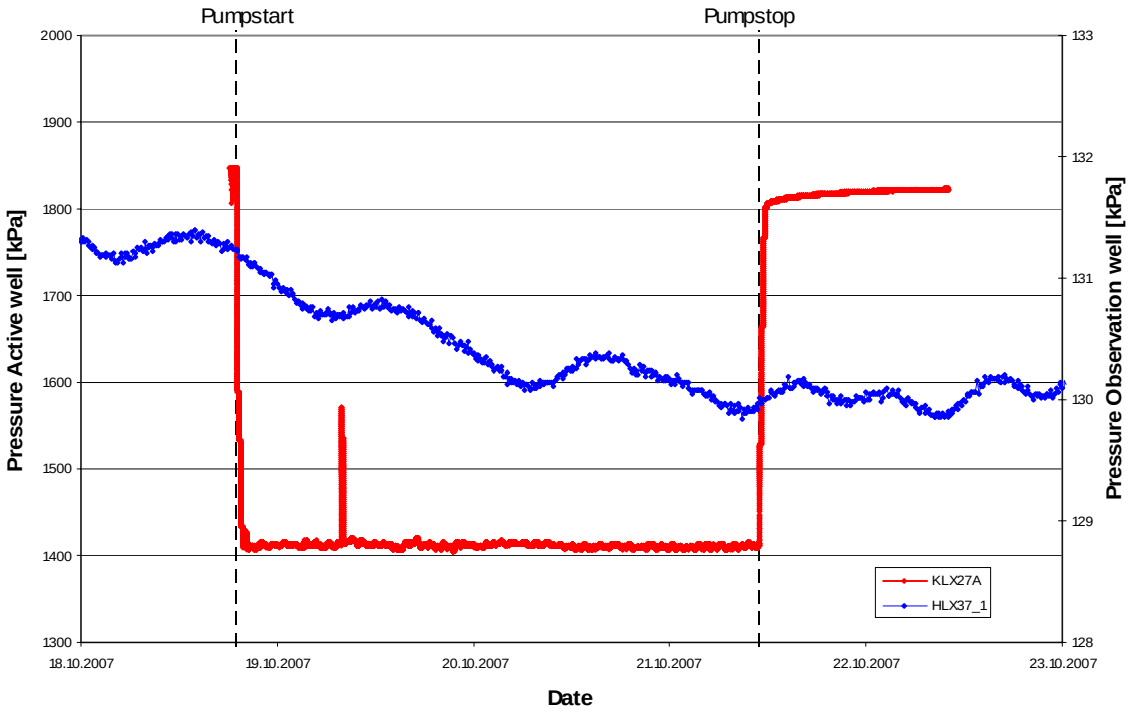
Not analysable

CRwr phase; log-log match; KLX27A 210.00-247.00 m pumped and HLX28_3 7.50-69.00 m observed

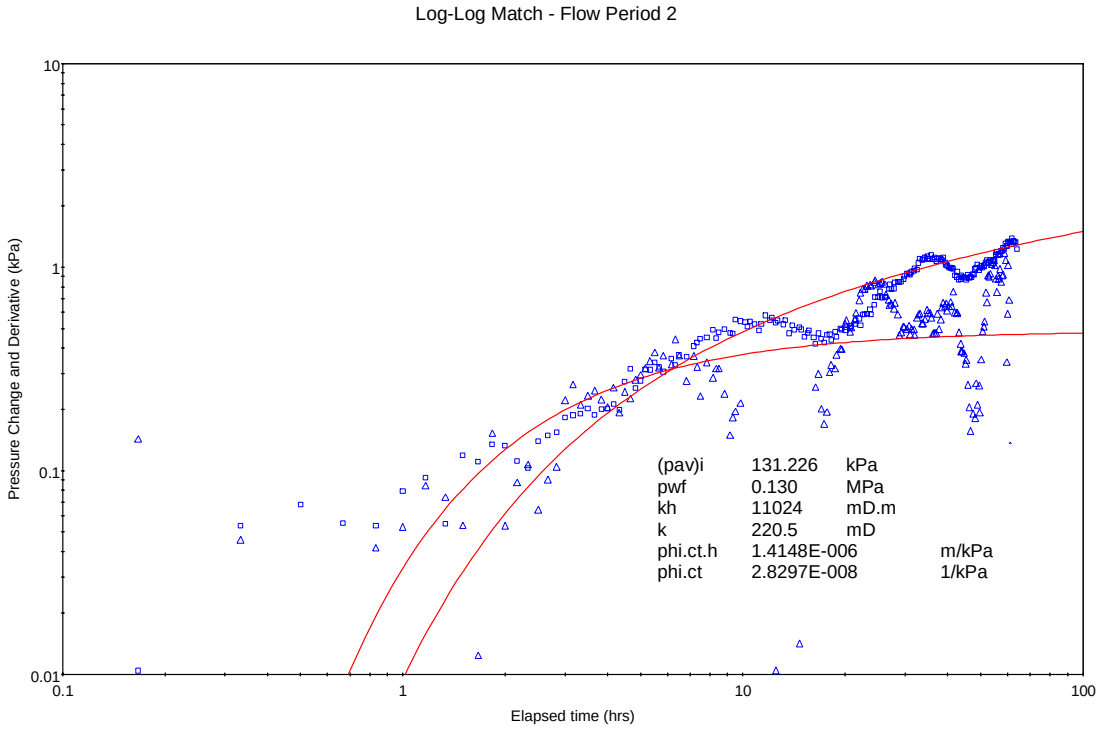
APPENDIX 5-4

KLX27A Section 210.00-247 m pumped
HLX37_1 150.00-200.00 observed

Observation hole
Test analysis diagrams



Pressure vs. time; log-log match; KLX27A 210.00-247.00 m pumped and HLX37_1 150.00-200.00 m observed



CRw phase; log-log match; KLX27A 210.00-247.00 m pumped and HLX37_1 150.00-200.00 m observed

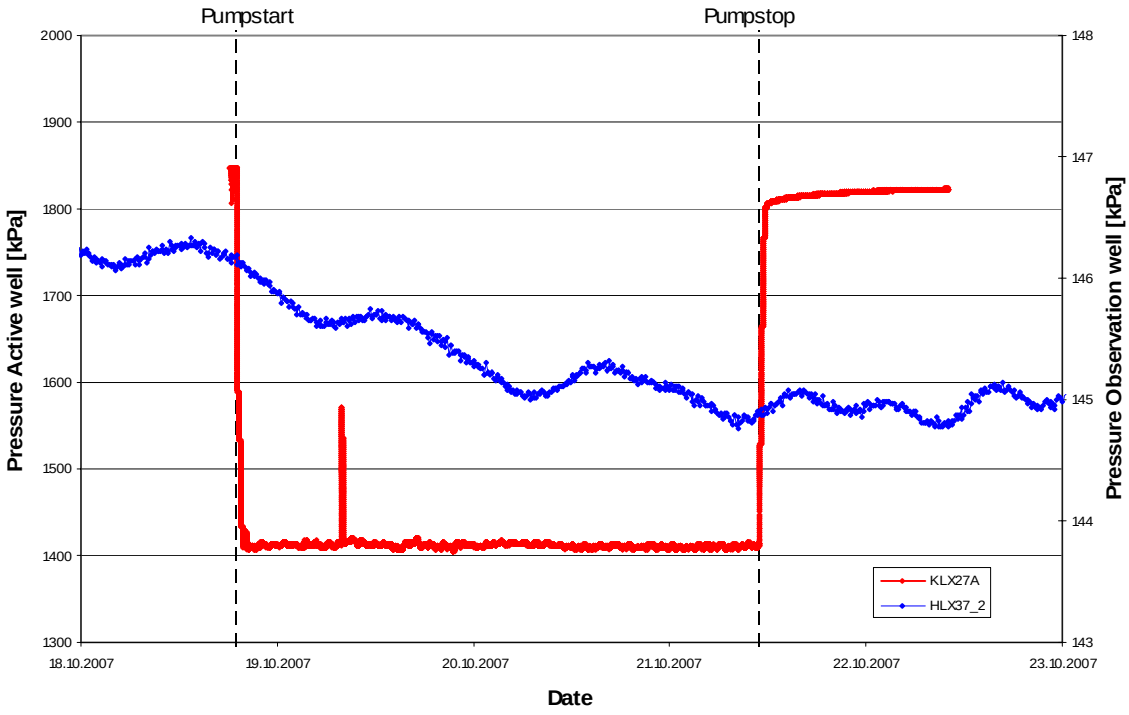
Not analysable

CRwr phase; log-log match; KLX27A 210.00-247.00 m pumped and HLX37_1 150.00-200.00 m observed

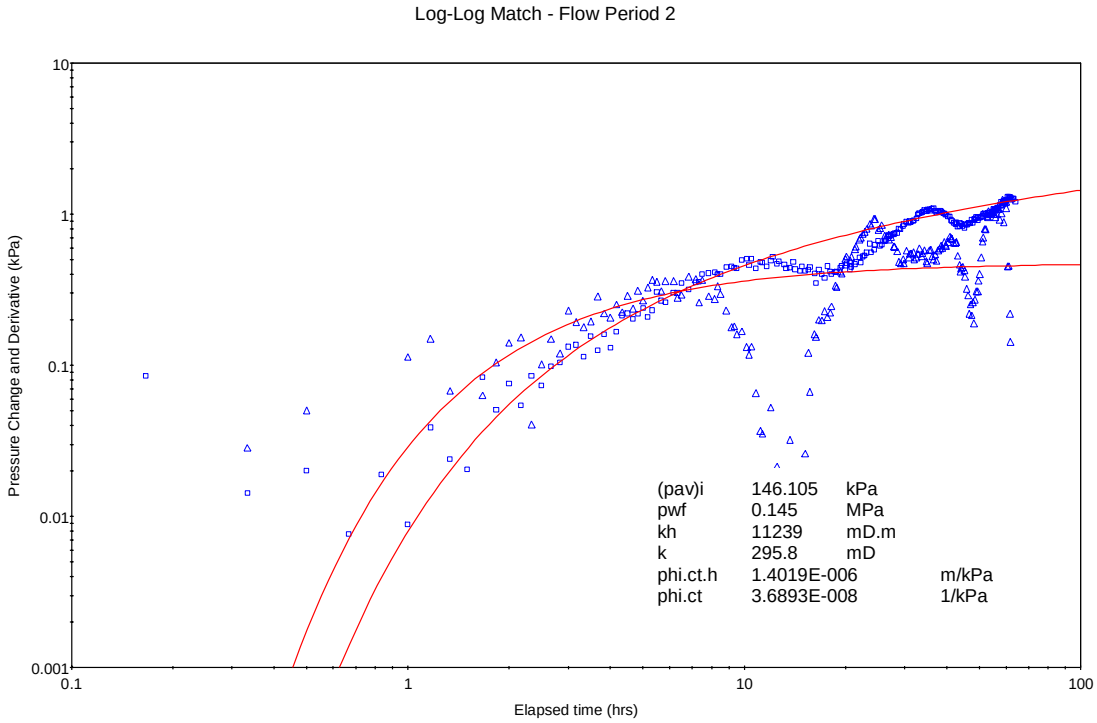
APPENDIX 5-5

KLX27A Section 210.00-247 m pumped
HLX37_2 111.00-149.00 observed

Observation hole
Test analysis diagrams



Pressure vs. time; log-log match; KLX27A 210.00-247.00 m pumped and HLX37_2 111.00-149.00 m observed



CRw phase; log-log match; KLX27A 210.00-247.00 m pumped and HLX37_2 111.00-149.00 m observed

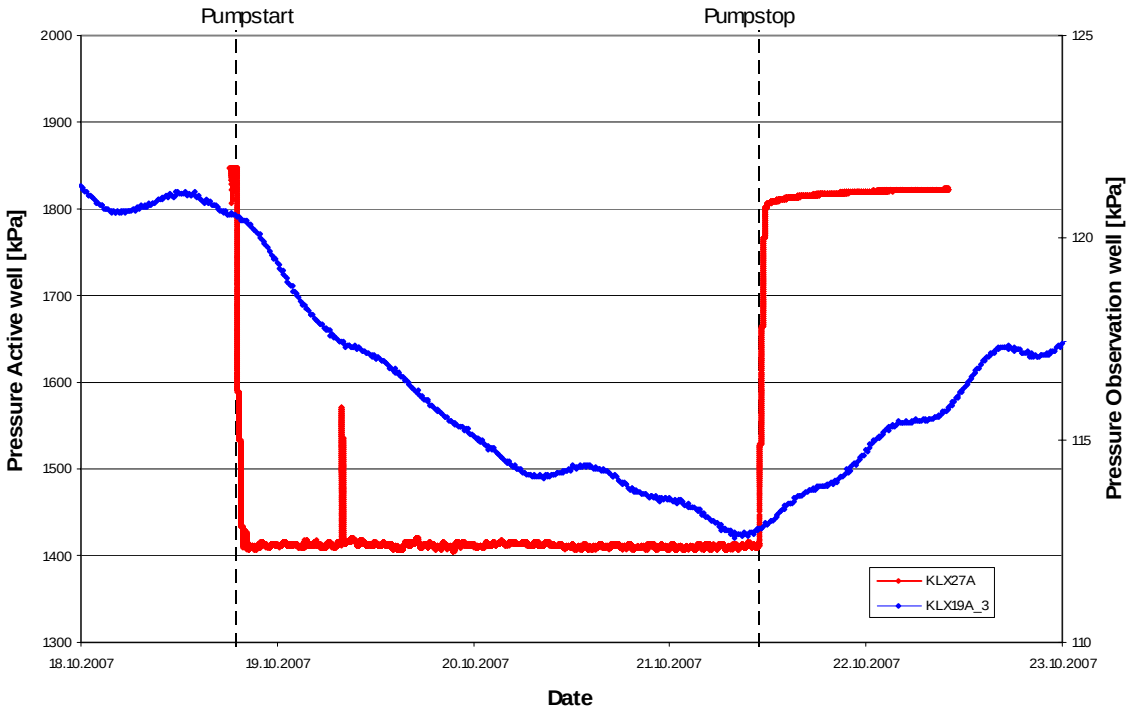
Not analysable

CRwr phase; log-log match; KLX27A 210.00-247.00 m pumped and HLX37_2 111.00-149.00 m observed

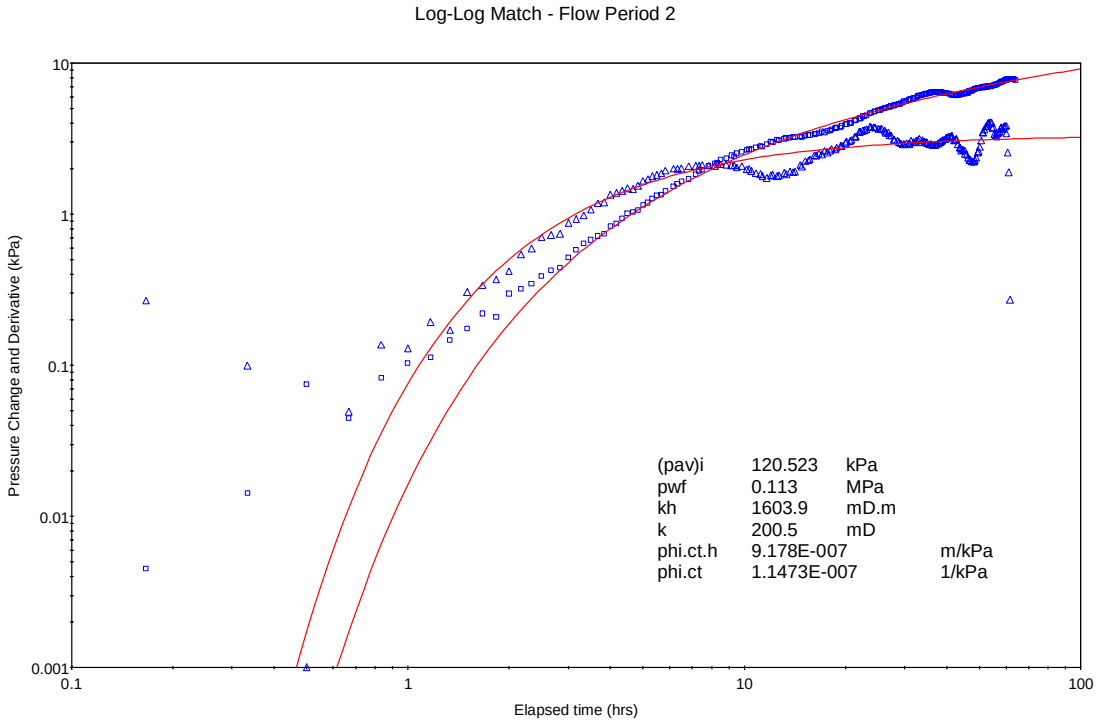
APPENDIX 5-6

KLX27A Section 210.00-247 m pumped
KLX19A_3 509.00-517.00 observed

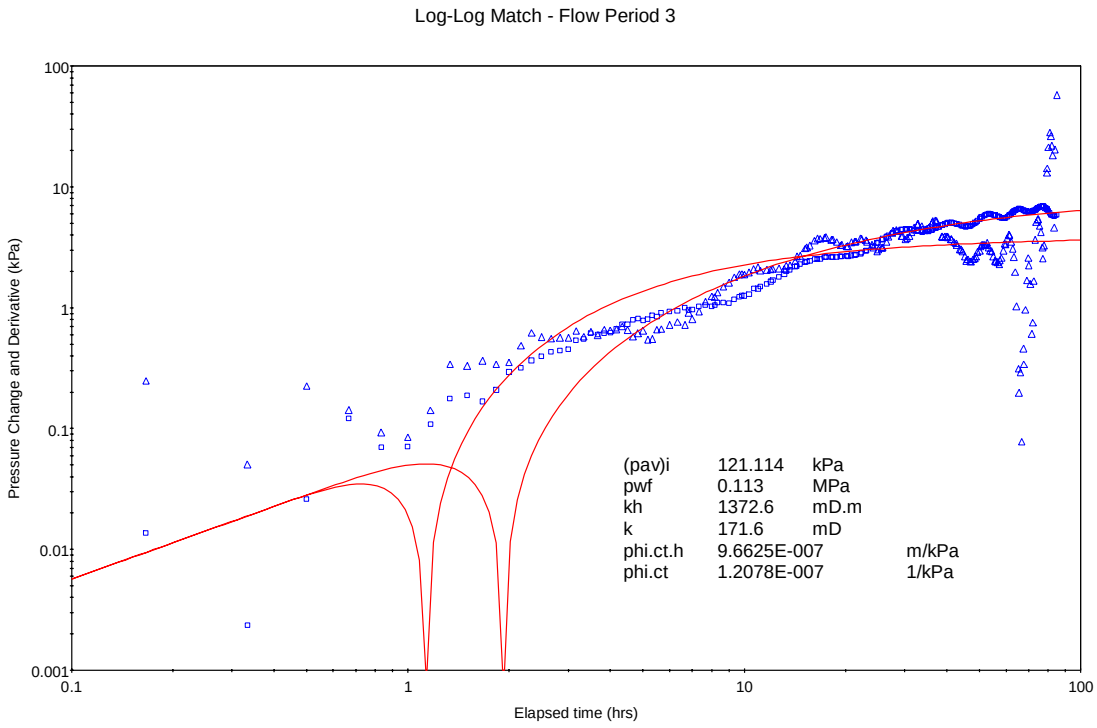
Observation hole
Test analysis diagrams



Pressure vs. time; log-log match; KLX27A 210.00-247.00 m pumped and KLX19A_3 509.00-517.00 m observed



CRw phase; log-log match; KLX27A 210.00-247.00 m pumped and KLX19A_3 509.00-517.00 m observed

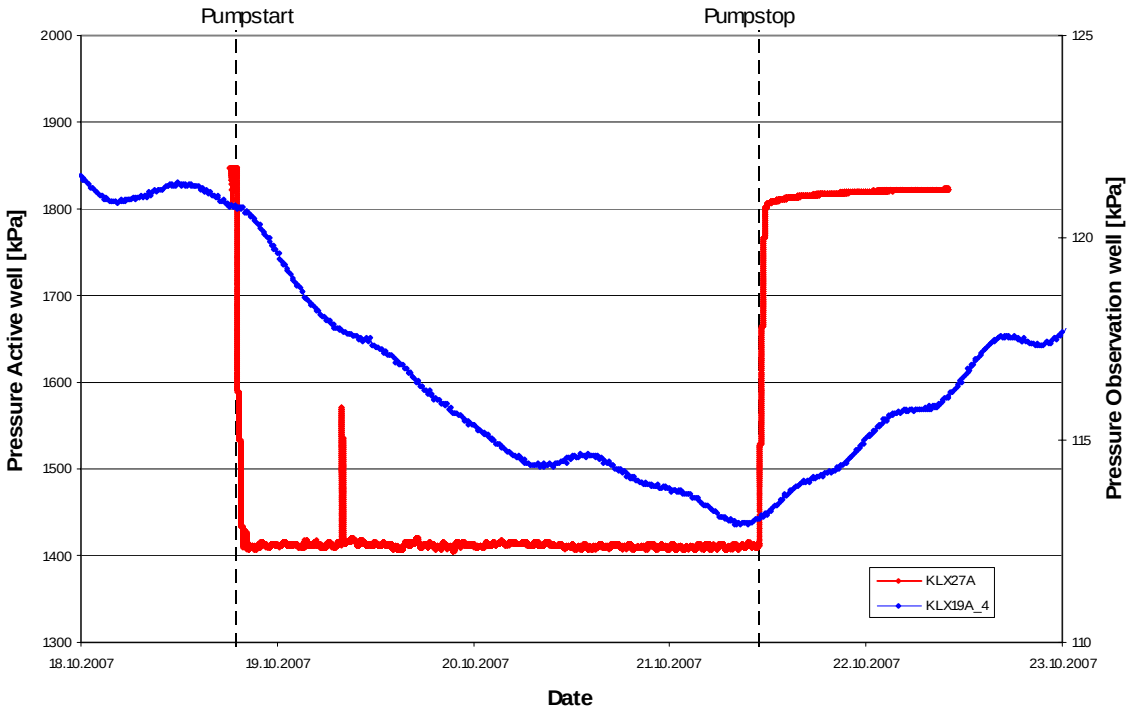


CRwr phase; log-log match; KLX27A 210.00-247.00 m pumped and KLX19A_3 509.00-517.00 m observed

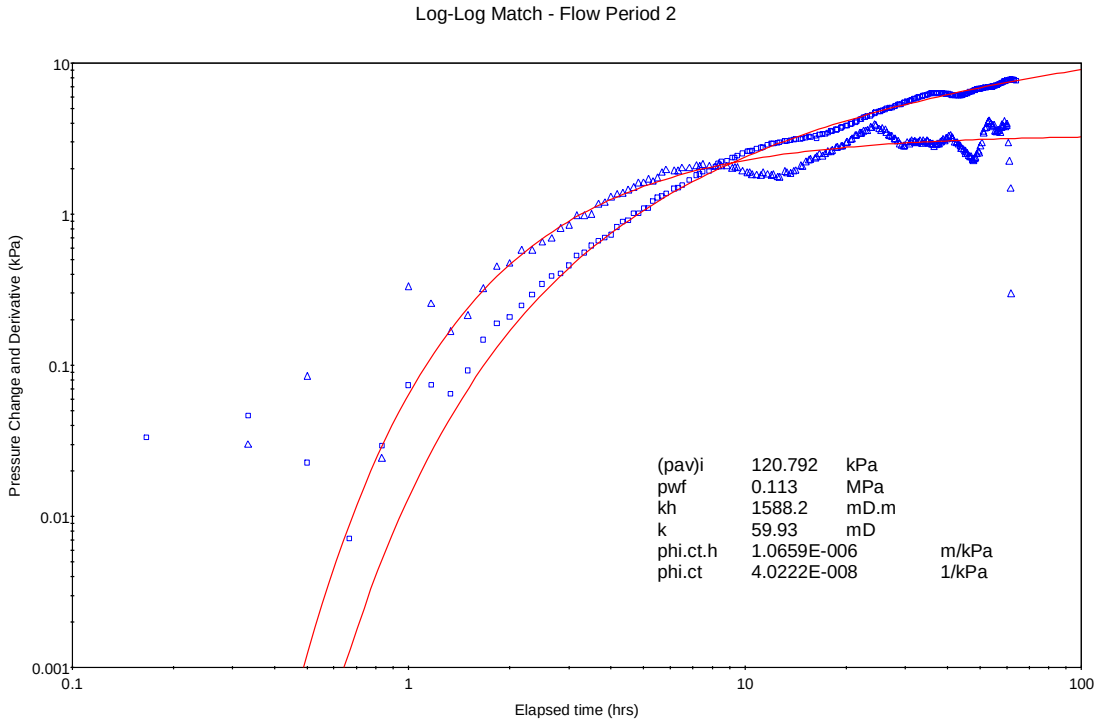
APPENDIX 5-7

KLX27A Section 210.00-247 m pumped
KLX19A_4 481.50-508.00 observed

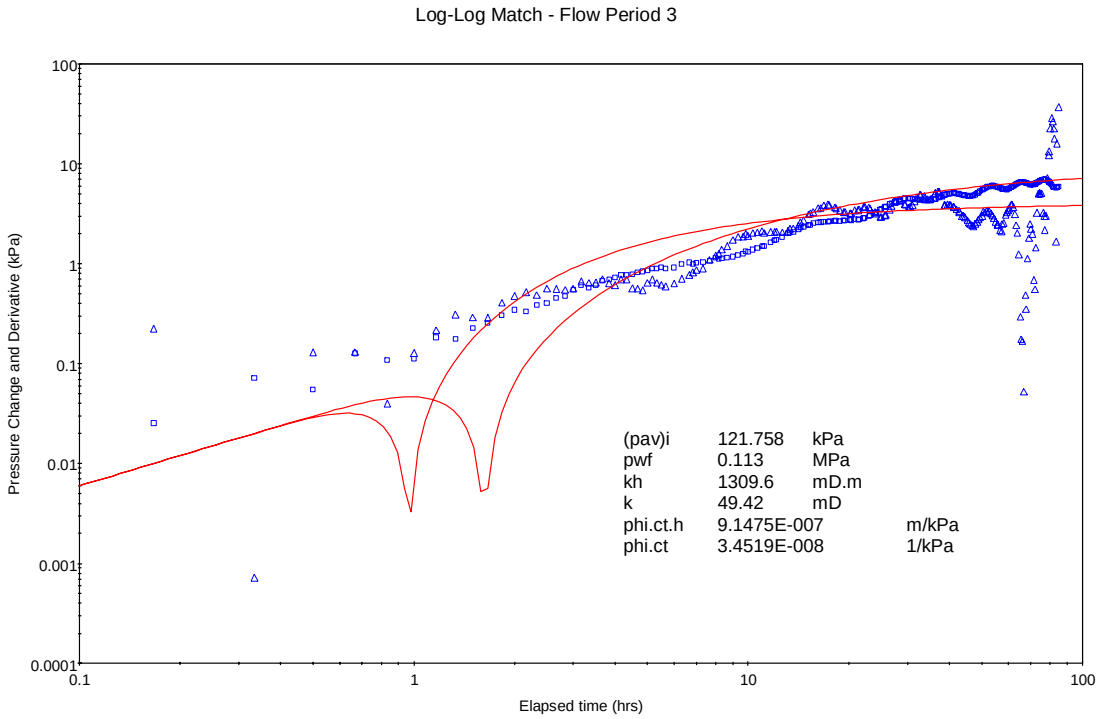
Observation hole
Test analysis diagrams



Pressure vs. time; log-log match; KLX27A 210.00-247.00 m pumped and KLX19A_4 481.50-508.00 m observed



CRw phase; log-log match; KLX27A 210.00-247.00 m pumped and KLX19A_4 481.50-508.00 m observed

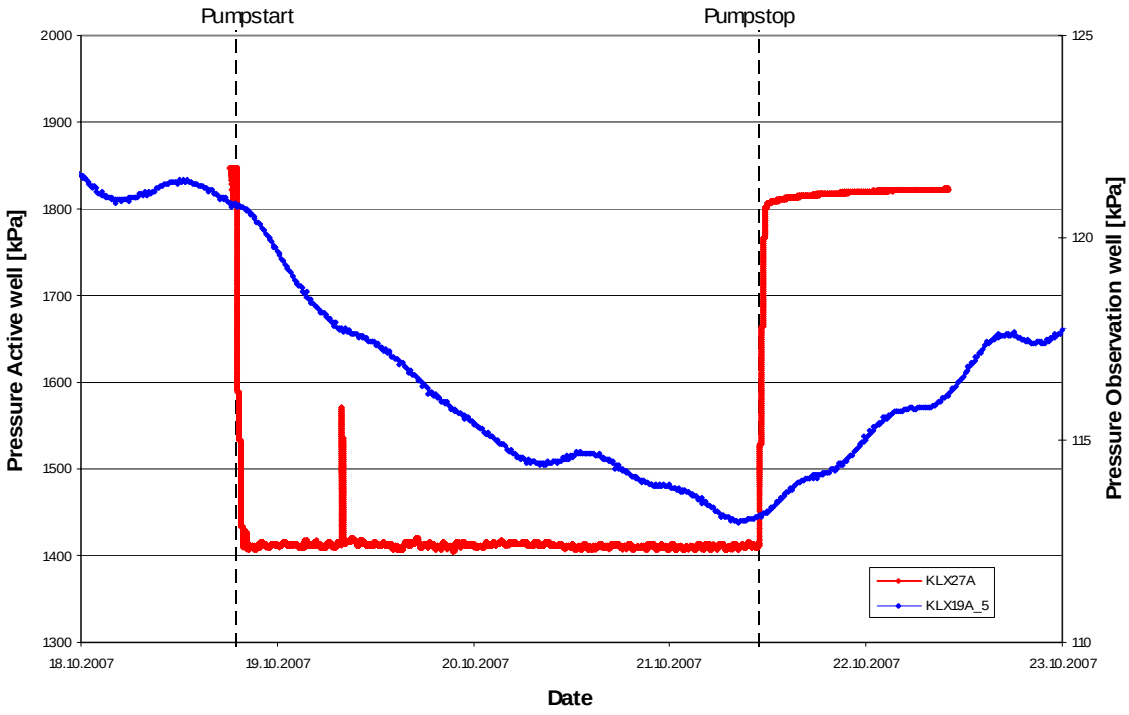


CRwr phase; log-log match; KLX27A 210.00-247.00 m pumped and KLX19A_4 481.50-508.00 m observed

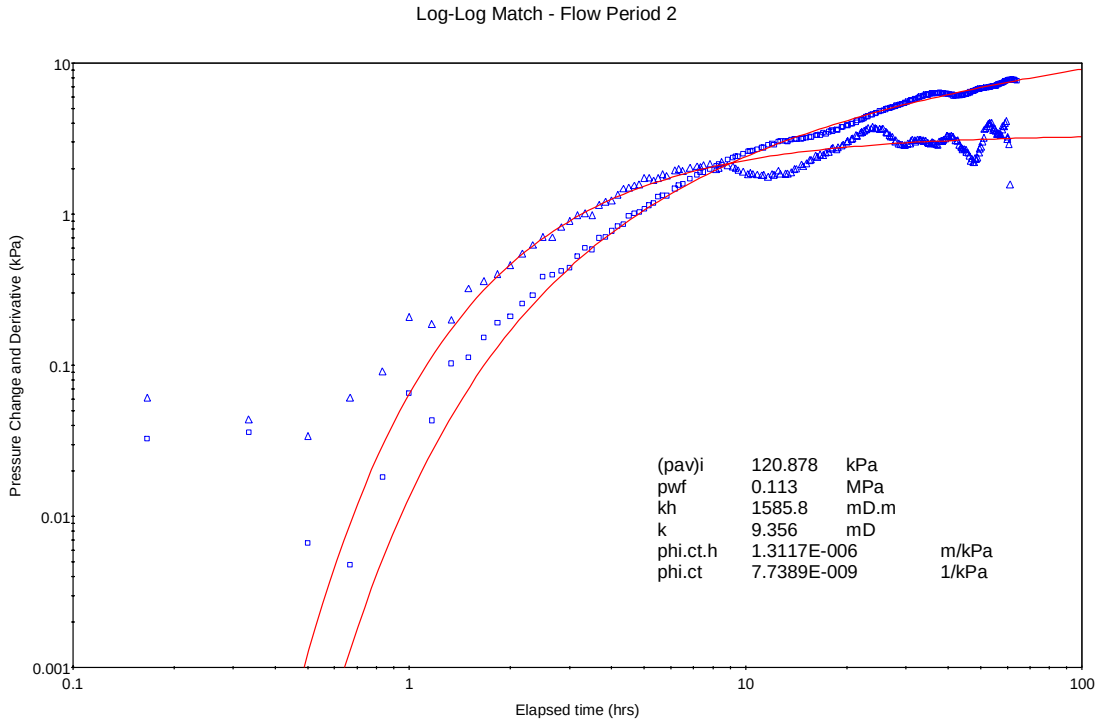
APPENDIX 5-8

KLX27A Section 210.00-247 m pumped
KLX19A_5 311.00-480.50 observed

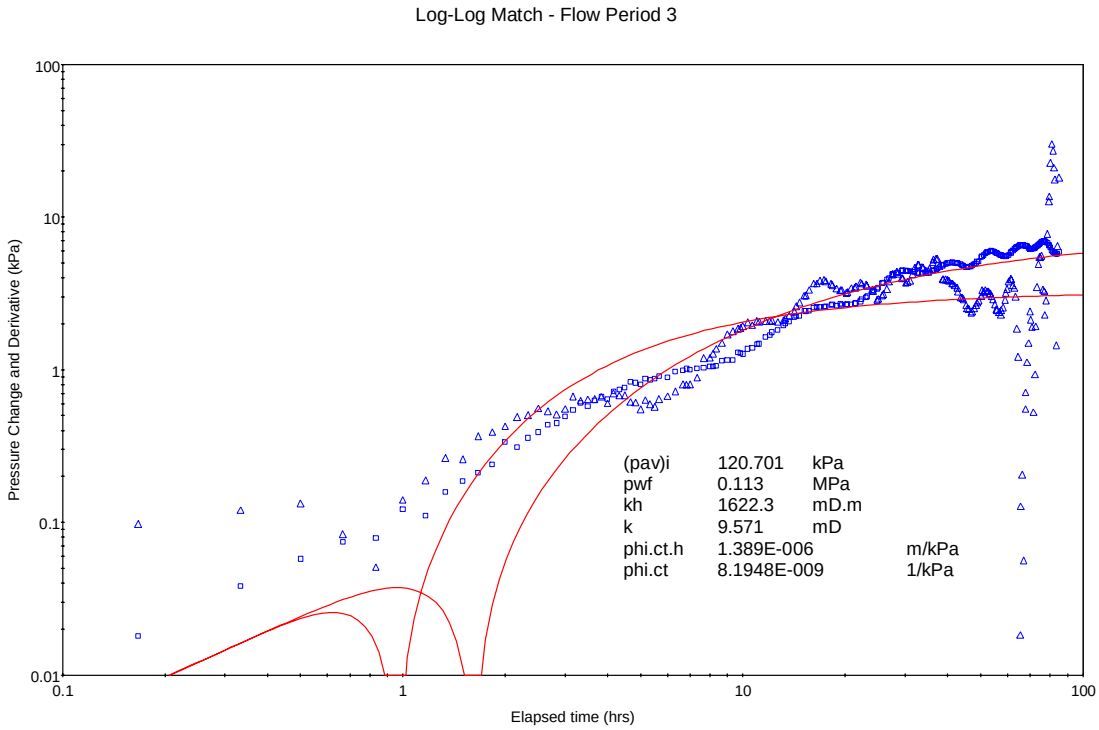
Observation hole
Test analysis diagrams



Pressure vs. time; log-log match; KLX27A 210.00-247.00 m pumped and KLX19A_5 311.00-480.50 m observed



CRw phase; log-log match; KLX27A 210.00-247.00 m pumped and KLX19A_5 311.00-480.50 m observed

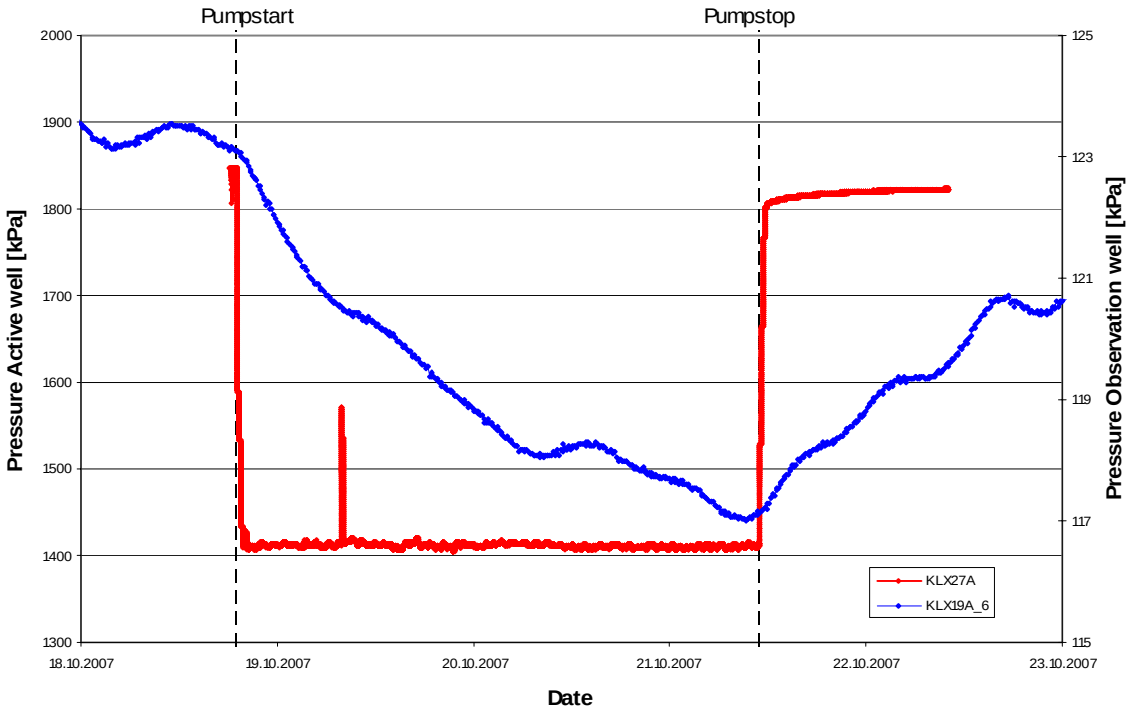


CRwr phase; log-log match; KLX27A 210.00-247.00 m pumped and KLX19A_5 311.00-480.50 m observed

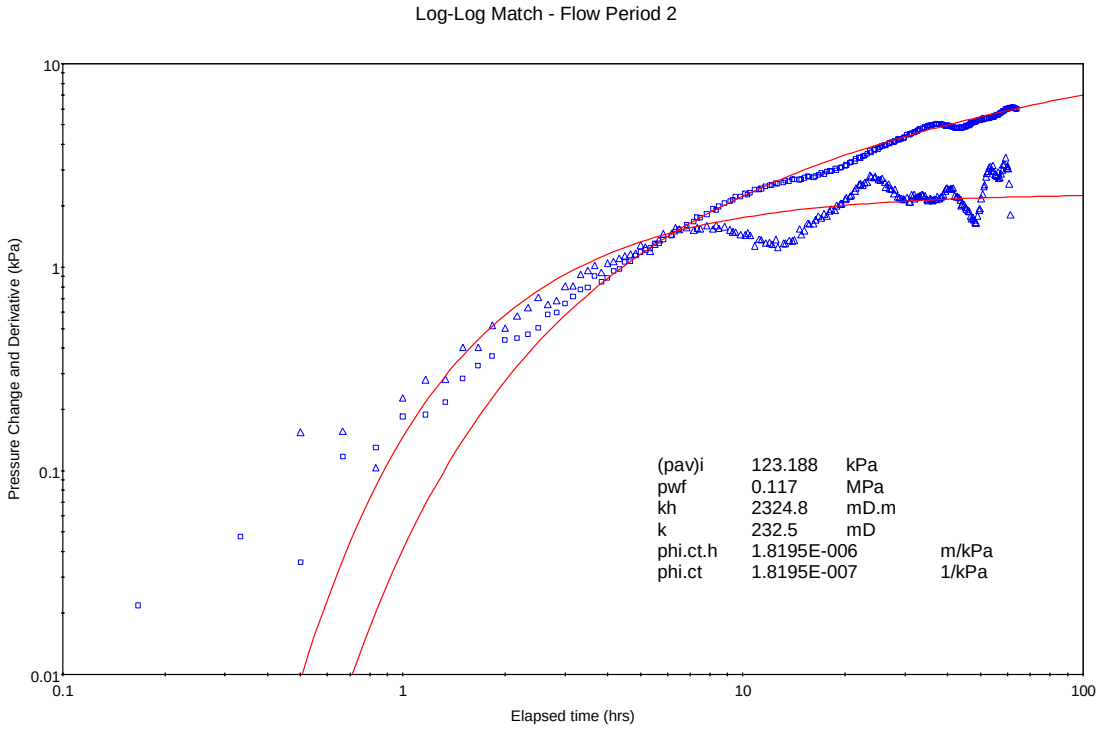
APPENDIX 5-9

KLX27A Section 210.00-247 m pumped
KLX19A_6 291.00-310.00 observed

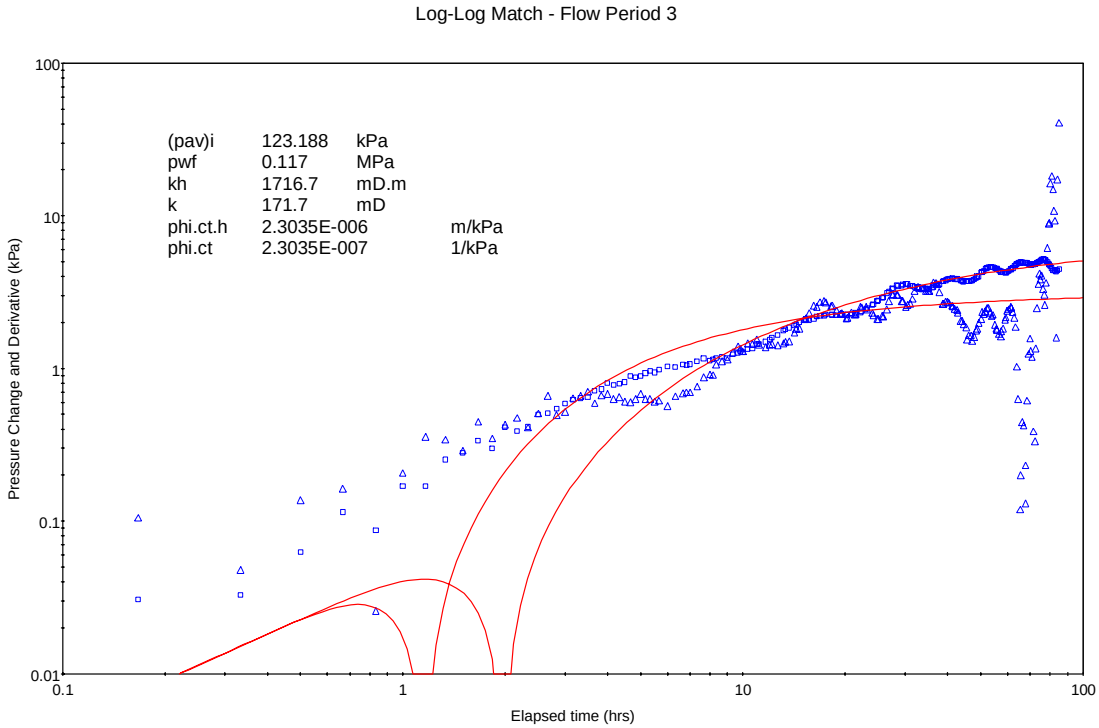
Observation hole
Test analysis diagrams



Pressure vs. time; log-log match; KLX27A 210.00-247.00 m pumped and KLX19A_6 291.00-310.00 m observed



CRw phase; log-log match; KLX27A 210.00-247.00 m pumped and KLX19A_6 291.00-310.00 m observed

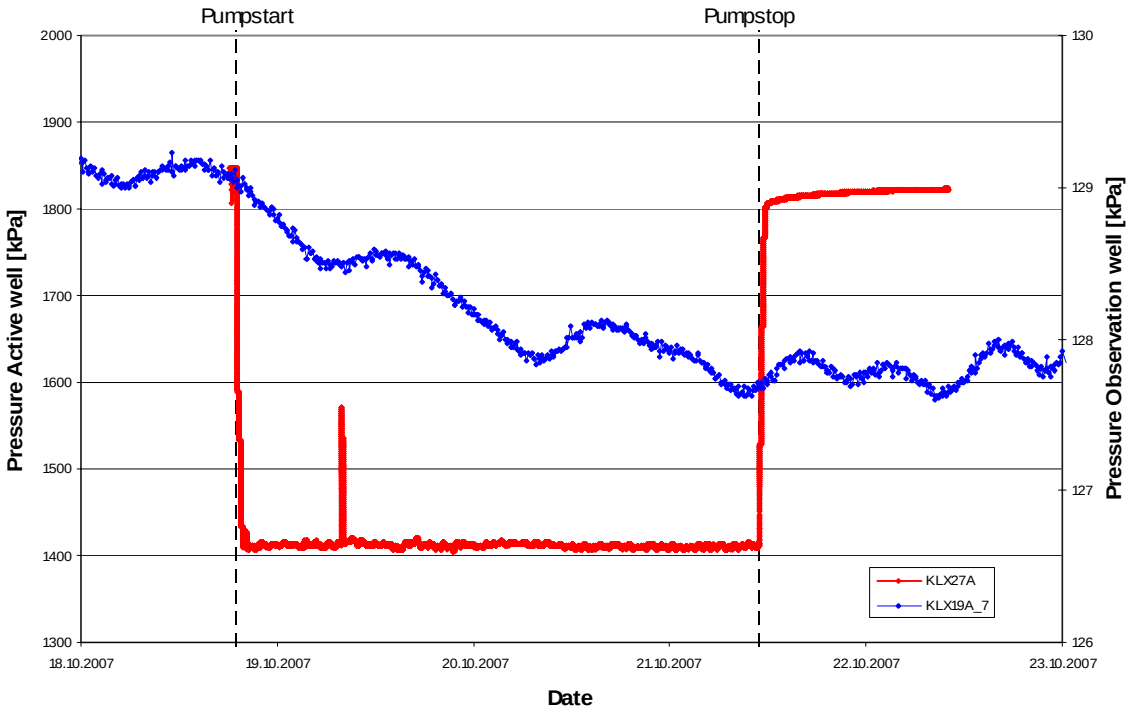


CRwr phase; log-log match; KLX27A 210.00-247.00 m pumped and KLX19A_6 291.00-310.00 m observed

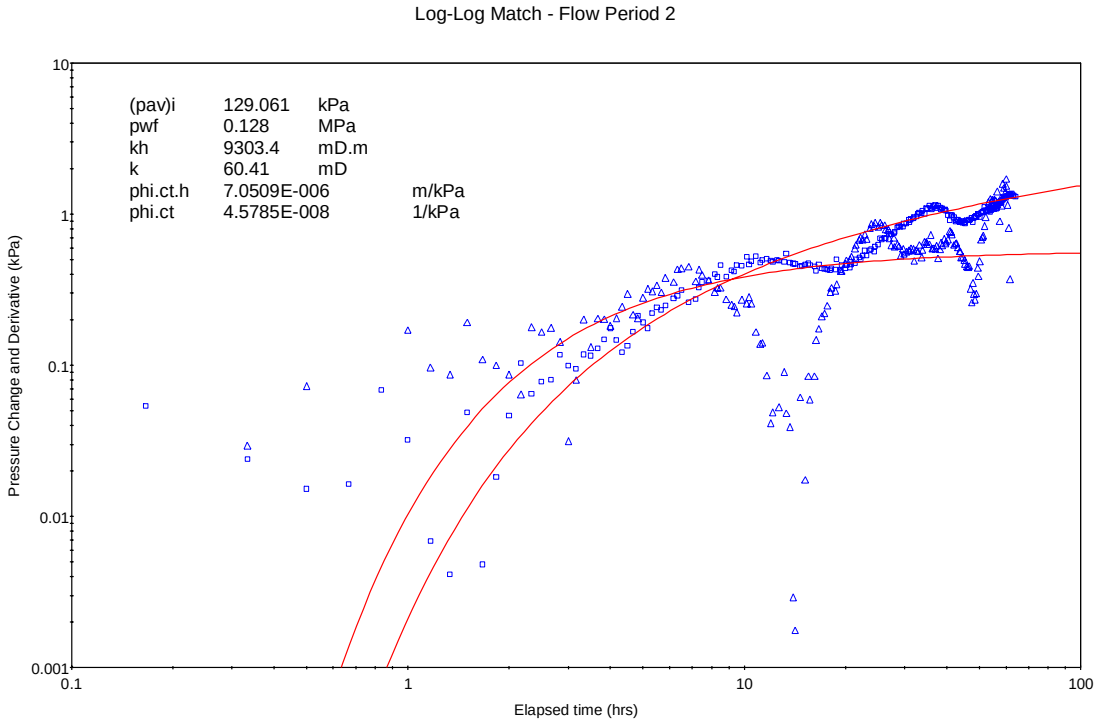
APPENDIX 5-10

KLX27A Section 210.00-247 m pumped
KLX19A_7 136.00-290.00 observed

Observation hole
Test analysis diagrams



Pressure vs. time; log-log match; KLX27A 210.00-247.00 m pumped and KLX19A_7 136.00-290.00 m observed



CRw phase; log-log match; KLX27A 210.00-247.00 m pumped and KLX19A_7 136.00-290.00 m observed

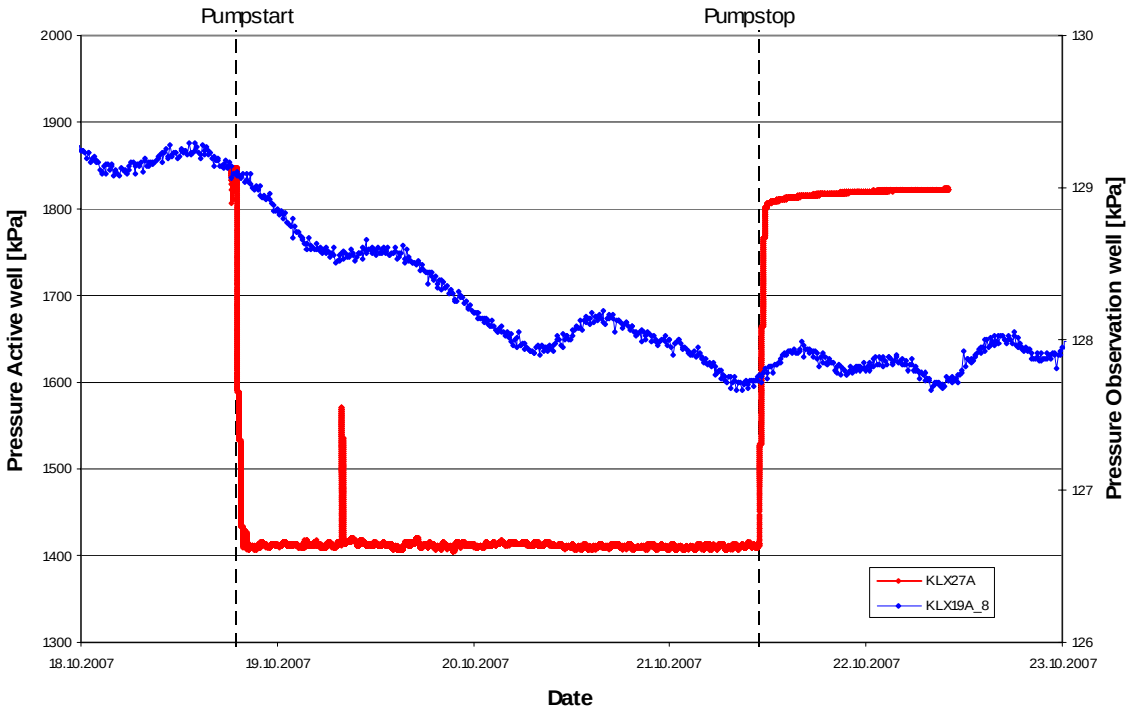
Not analysable

CRwr phase; log-log match; KLX27A 210.00-247.00 m pumped and KLX19A_7 136.00-290.00 m observed

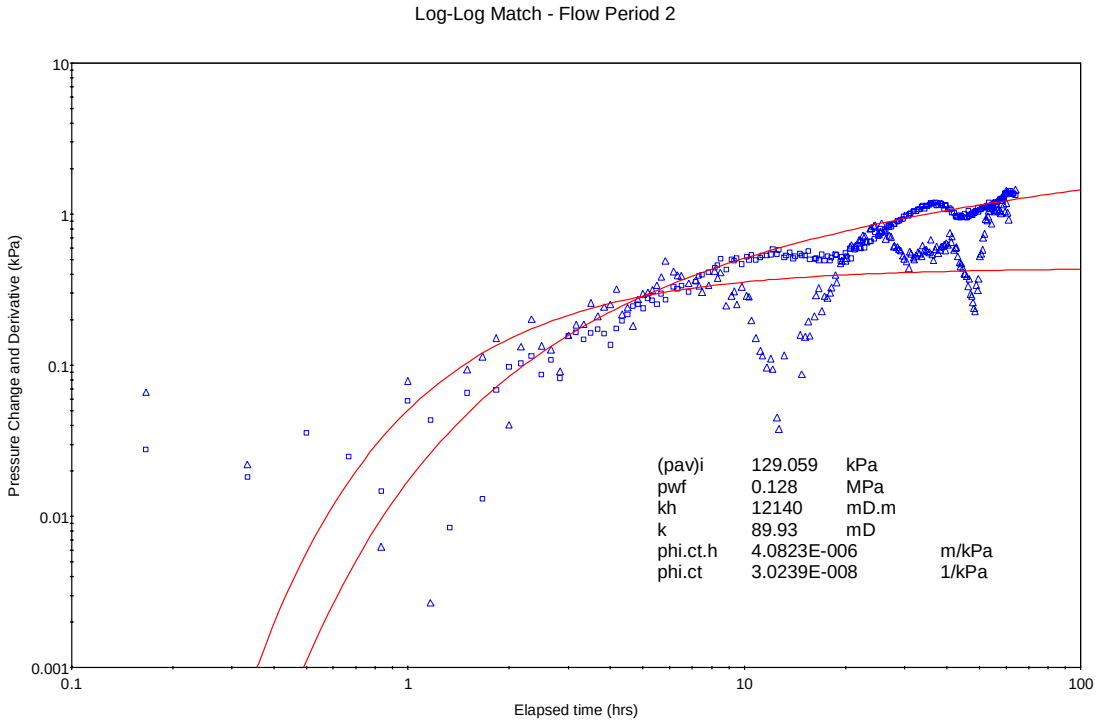
APPENDIX 5-11

KLX27A Section 210.00-247 m pumped
KLX19A_8 0.00-135.00 observed

Observation hole
Test analysis diagrams



Pressure vs. time; log-log match; KLX27A 210.00-247.00 m pumped and KLX19A_8 0.00-136.00 m observed



CRw phase; log-log match; KLX27A 210.00-247.00 m pumped and KLX19A_8 0.00-135.00 m observed

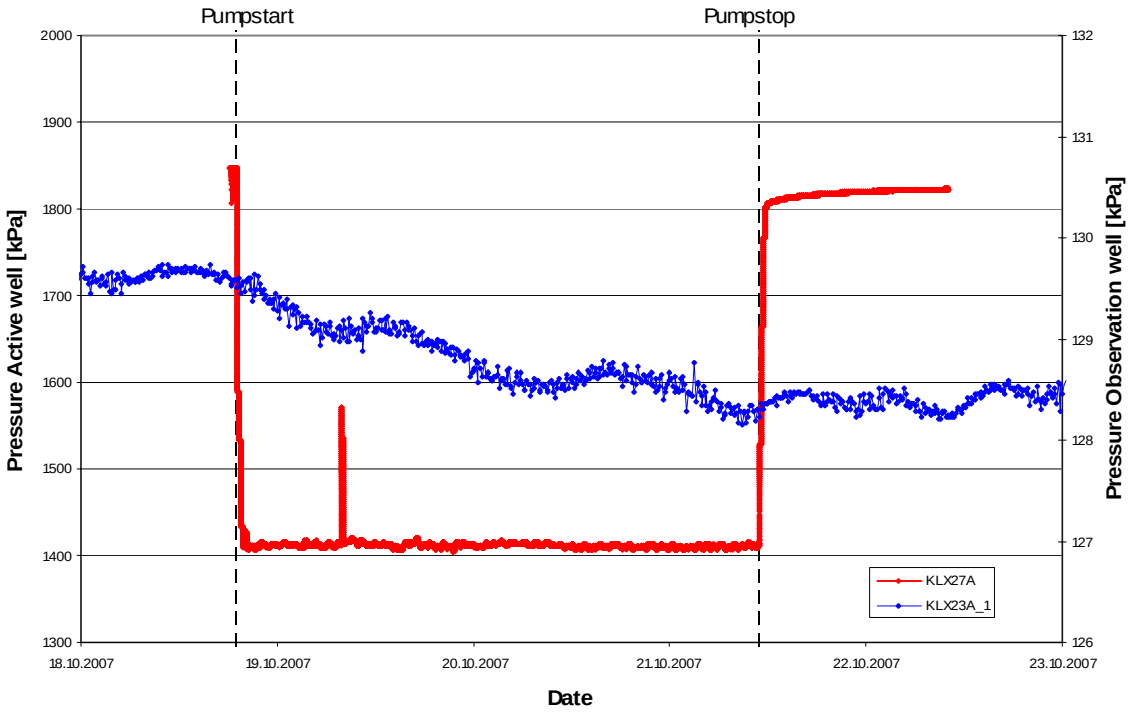
Not analysable

CRwr phase; log-log match; KLX27A 210.00-247.00 m pumped and KLX19A_8 0.00-135.00 m observed

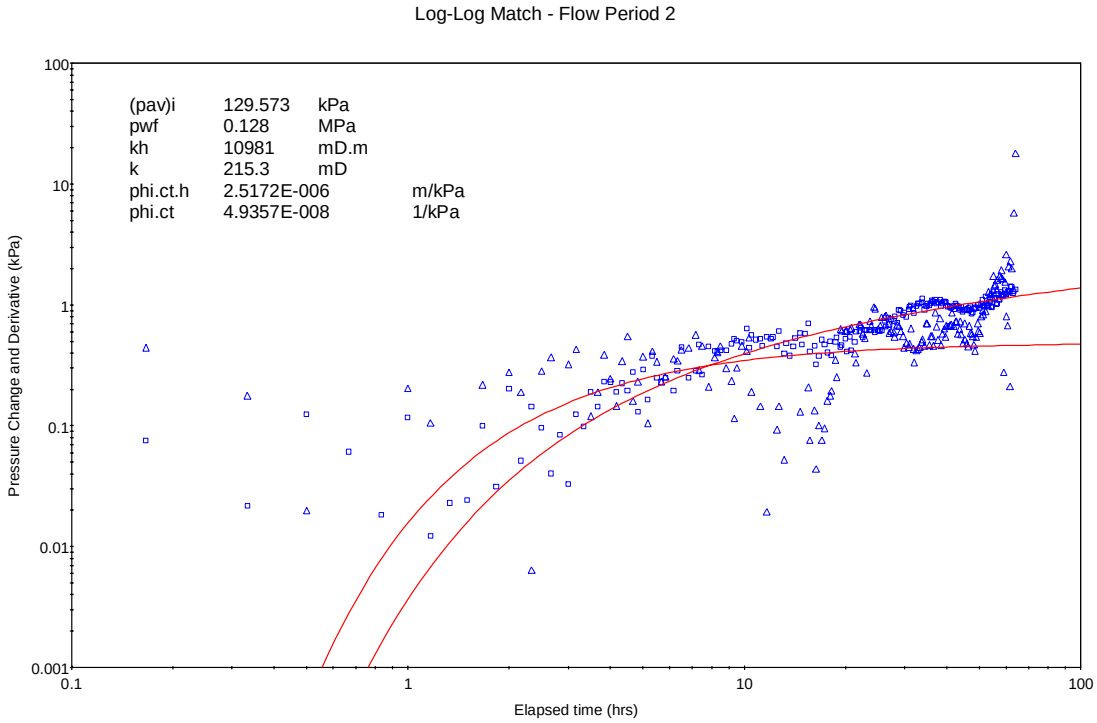
APPENDIX 5-12

KLX27A Section 210.00-247 m pumped
KLX23A_1 49.00-100.00 observed

Observation hole
Test analysis diagrams



Pressure vs. time; log-log match; KLX27A 210.00-247.00 m pumped and KLX23A_1 49.00-100.00 m observed



CRw phase; log-log match; KLX27A 210.00-247.00 m pumped and KLX23A_1 49.00-100.00 m observed

Not analysable

CRwr phase; log-log match; KLX27A 210.00-247.00 m pumped and KLX23A_1 49.00-100.00 m observed

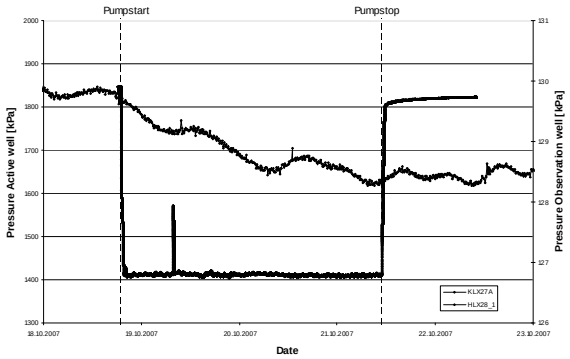
APPENDIX 6

Observation Test Summary Sheets

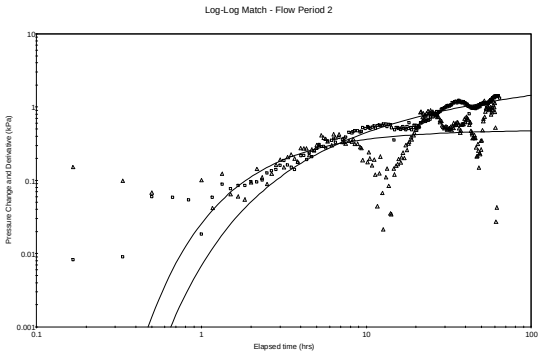
Test Summary Sheet

Project:	Oskarshamn site investigation	Test type:[1]	CRwr Observation hole
Area:	Laxemar	Test no:	1
Borehole ID:	HLX28_1 (KLX27A 210.00-247.00 pumped)	Test start:	071010 00:00
Test section from - to (m):	91.00-154.00	Responsible for test execution:	Stephan Rohs
Distance (m):	155.00	Responsible for test evaluation:	Cristian Enachescu

Linear plot Q and p



Log-Log plot incl. derivates- flow period



Log-Log plot incl. derivatives- recovery period

Not analysable

Flow period		**Recovery period**	
Indata		**Indata**	
p_0 (kPa) =			
p_i (kPa) =			
p_p(kPa) =		p_F (kPa) =	
Q_p (m^3/s)=	6.60E-05		
tp (s) =	230400	t_F (s) =	176400
S el S^* (-)=		S el S^* (-)=	
EC_w (mS/m)=			
$Temp_w$(gr C)=			
Derivative fact.=	NA	Derivative fact.=	NA
Results		**Results**	
Q/s (m^2/s)=	NA		
T_M (m^2/s)=	NA		
Flow regime:	transient	Flow regime:	transient
dt_1 (min) =	590.3	dt_1 (min) =	NA
dt_2 (min) =	2956.2	dt_2 (min) =	NA
T (m^2/s) =	1.1E-04	T (m^2/s) =	NA
S (-) =	1.9E-04	S (-) =	NA
K_s (m/s) =	1.7E-06	K_s (m/s) =	NA
S_s (1/m) =	3.0E-06	S_s (1/m) =	NA
C (m^3/Pa) =	NA	C (m^3/Pa) =	NA
C_D (-) =	NA	C_D (-) =	NA
H(-) =	NA	H(-) =	NA
T_{GRF}(m^2/s) =	NA	T_{GRF}(m^2/s) =	NA
S_{GRF}(-) =	NA	S_{GRF}(-) =	NA
D_{GRF} (-) =	NA	D_{GRF} (-) =	NA

Selected representative parameters.

dt_1 (min) =	590.3	C (m^3/Pa) =	NA
dt_2 (min) =	2956.2	C_D (-) =	NA
T_T (m^2/s) =	1.1E-04	H(-) =	NA
S (-) =	1.9E-04		
K_s (m/s) =	1.7E-06		
S_s (1/m) =	3.0E-06		

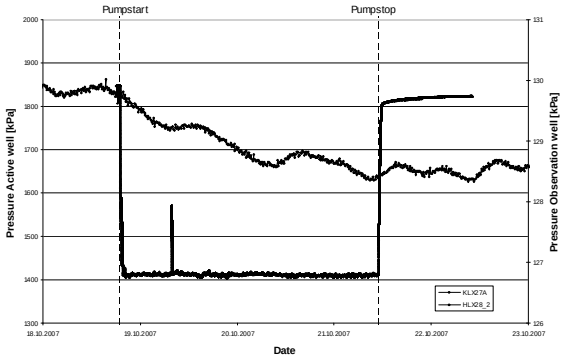
Comments:

The recommended transmissivity of 1.1•10-4 m2/s was derived from the analysis of the CRw phase. The confidence range for the borehole transmissivity is estimated to be 3.0•10-5 m²/s to 3.0•10-4 m²/s. The flow dimension during the test is 2. A static pressure measured at transducer depth was not possible to derive from the CRwr phase due to a missing response after pump stop.

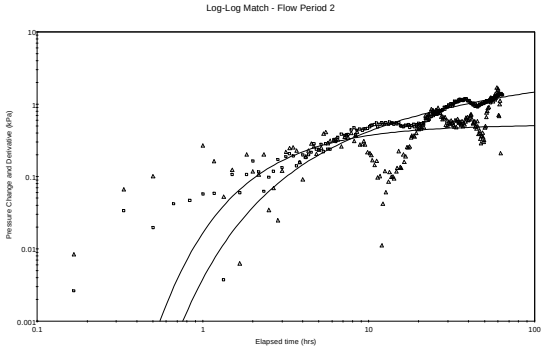
Test Summary Sheet

Project:	Oskarshamn site investigation	Test type:[1]	CRwr Observation hole
Area:	Laxemar	Test no:	1
Borehole ID:	HLX28_2 (KLX27A 210.00-247.00 pumped)	Test start:	071010 00:00
Test section from - to (m):	70.00-90.00	Responsible for test execution:	Stephan Rohs
Distance (m):	195.00	Responsible for test evaluation:	Cristian Enachescu

Linear plot Q and p



Log-Log plot incl. derivates- flow period



Log-Log plot incl. derivatives- recovery period

Not analysable

Flow period		**Recovery period**	
Indata		**Indata**	
p_0 (kPa) =			
p_i (kPa) =			
p_p(kPa) =		p_F (kPa) =	
Q_p (m^3/s)=	6.60E-05		
tp (s) =	230400	t_F (s) =	176400
S el S^* (-)=		S el S^* (-)=	
EC_w (mS/m)=			
$Temp_w$(gr C)=			
Derivative fact.=	NA	Derivative fact.=	NA
Results		**Results**	
Q/s (m^2/s)=	NA		
T_M (m^2/s)=	NA		
Flow regime:	transient	Flow regime:	transient
dt_1 (min) =	1169.2	dt_1 (min) =	NA
dt_2 (min) =	2747.4	dt_2 (min) =	NA
T (m^2/s) =	1.0E-04	T (m^2/s) =	NA
S (-) =	1.3E-04	S (-) =	NA
K_s (m/s) =	5.0E-06	K_s (m/s) =	NA
S_s (1/m) =	6.5E-06	S_s (1/m) =	NA
C (m^3/Pa) =	NA	C (m^3/Pa) =	NA
C_D (-) =	NA	C_D (-) =	NA
¬(-) =	NA	¬(-) =	NA
T_{GRF}(m^2/s) =	NA	T_{GRF}(m^2/s) =	NA
S_{GRF}(-) =	NA	S_{GRF}(-) =	NA
D_{GRF} (-) =	NA	D_{GRF} (-) =	NA

Selected representative parameters.			
dt_1 (min) =	1169.2	C (m^3/Pa) =	NA
dt_2 (min) =	2747.4	C_D (-) =	NA
T_T (m^2/s) =	1.0E-04	¬(-) =	NA
S (-) =	1.3E-04		
K_s (m/s) =	5.0E-06		
S_s (1/m) =	6.5E-06		

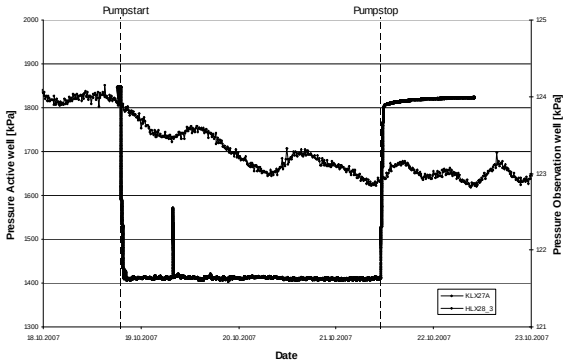
Comments:

The recommended transmissivity of 1.0•10-4 m2/s was derived from the analysis of the CRw phase. The confidence range for the borehole transmissivity is estimated to be 3.0•10-5 m²/s to 3.0•10-4 m²/s. The flow dimension during the test is 2. A static pressure measured at transducer depth was not possible to derive from the CRwr phase due to a missing response after pump stop.

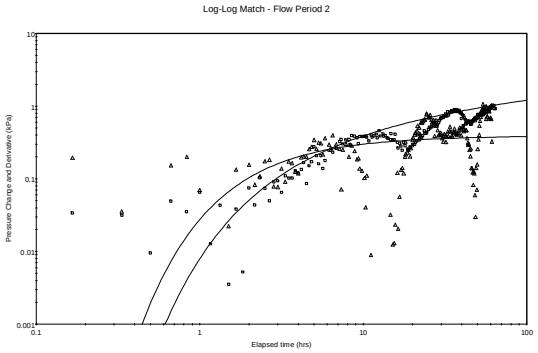
Test Summary Sheet

Project:	Oskarshamn site investigation	Test type:[1]	CRwr Observation hole
Area:	Laxemar	Test no:	1
Borehole ID:	HLX28_3 (KLX27A 210.00-247.00 pumped)	Test start:	071010 00:00
Test section from - to (m):	7.50-69.00	Responsible for test execution:	Stephan Rohs
Distance (m):	234.00	Responsible for test evaluation:	Cristian Enachescu

Linear plot Q and p



Log-Log plot incl. derivates- flow period



Log-Log plot incl. derivatives- recovery period

Not analysable

Flow period		**Recovery period**	
Indata		**Indata**	
p_0 (kPa) =			
p_i (kPa) =			
p_p(kPa) =		p_F (kPa) =	
Q_p (m^3/s)=	6.60E-05		
tp (s) =	230400	t_F (s) =	176400
S el S^* (-)=		S el S^* (-)=	
EC_w (mS/m)=			
$Temp_w$(gr C)=			
Derivative fact.=	NA	Derivative fact.=	NA
Results		**Results**	
Q/s (m^2/s)=	NA		
T_M (m^2/s)=	NA		
Flow regime:	transient	Flow regime:	transient
dt_1 (min) =	1034.9	dt_1 (min) =	NA
dt_2 (min) =	2747.4	dt_2 (min) =	NA
T (m^2/s) =	1.3E-04	T (m^2/s) =	NA
S (-) =	9.3E-05	S (-) =	NA
K_s (m/s) =	2.2E-06	K_s (m/s) =	NA
S_s (1/m) =	1.5E-06	S_s (1/m) =	NA
C (m^3/Pa) =	NA	C (m^3/Pa) =	NA
C_D (-) =	NA	C_D (-) =	NA
η (-) =	NA	η (-) =	NA
T_{GRF}(m^2/s) =	NA	T_{GRF}(m^2/s) =	NA
S_{GRF}(-) =	NA	S_{GRF}(-) =	NA
D_{GRF} (-) =	NA	D_{GRF} (-) =	NA

Selected representative parameters.

dt_1 (min) =	1034.9	C (m^3/Pa) =	NA
dt_2 (min) =	2747.4	C_D (-) =	NA
T_T (m^2/s) =	1.3E-04	η (-) =	NA
S (-) =	9.3E-05		
K_s (m/s) =	2.2E-06		
S_s (1/m) =	1.5E-06		

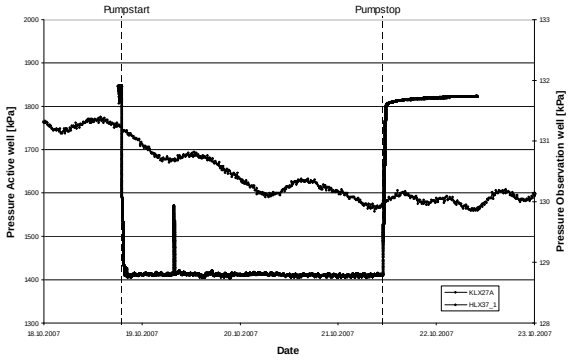
Comments:

The recommended transmissivity of 1.3•10-4 m2/s was derived from the analysis of the CRw phase. The confidence range for the borehole transmissivity is estimated to be 4.0•10-5 m²/s to 4.0•10-4 m²/s. The flow dimension during the test is 2. A static pressure measured at transducer depth was not possible to derive from the CRwr phase due to a missing response after pump stop.

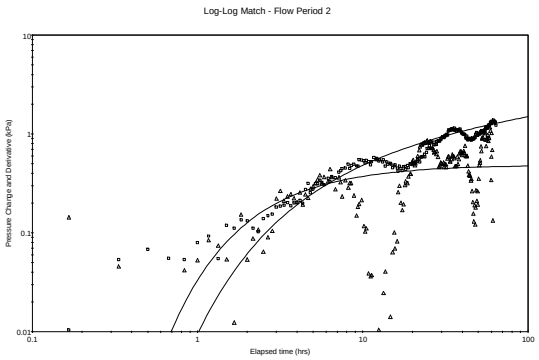
Test Summary Sheet

Project:	Oskarshamn site investigation	Test type:[1]	CRwr Observation hole
Area:	Laxemar	Test no:	1
Borehole ID:	HLX37_1 (KLX27A 210.00-247.00 pumped)	Test start:	071010 00:00
Test section from - to (m):	150.00-200.00	Responsible for test execution:	Stephan Rohs
Distance (m):	546.00	Responsible for test evaluation:	Cristian Enachescu

Linear plot Q and p



Log-Log plot incl. derivates- flow period



Log-Log plot incl. derivatives- recovery period

Not analysable

Flow period		**Recovery period**	
Indata		**Indata**	
p_0 (kPa) =			
p_i (kPa) =			
p_p(kPa) =		p_F (kPa) =	
Q_p (m^3/s)=	6.60E-05		
tp (s) =	230400	t_F (s) =	176400
S el S^* (-)=		S el S^* (-)=	
EC_w (mS/m)=			
$Temp_w$(gr C)=			
Derivative fact.=	NA	Derivative fact.=	NA
Results		**Results**	
Q/s (m^2/s)=	NA		
T_M (m^2/s)=	NA		
Flow regime:	transient	Flow regime:	transient
dt_1 (min) =	1708.8	dt_1 (min) =	NA
dt_2 (min) =	3029.2	dt_2 (min) =	NA
T (m^2/s) =	1.1E-04	T (m^2/s) =	NA
S (-) =	1.4E-05	S (-) =	NA
K_s (m/s) =	2.1E-06	K_s (m/s) =	NA
S_s (1/m) =	2.8E-07	S_s (1/m) =	NA
C (m^3/Pa) =	NA	C (m^3/Pa) =	NA
C_D (-) =	NA	C_D (-) =	NA
÷ (-) =	NA	÷ (-) =	NA
T_{GRF}(m^2/s) =	NA	T_{GRF}(m^2/s) =	NA
S_{GRF}(-) =	NA	S_{GRF}(-) =	NA
D_{GRF} (-) =	NA	D_{GRF} (-) =	NA

Selected representative parameters.

dt_1 (min) =	1708.8	C (m^3/Pa) =	NA
dt_2 (min) =	3029.2	C_D (-) =	NA
T_T (m^2/s) =	1.1E-04	÷ (-) =	NA
S (-) =	1.4E-05		
K_s (m/s) =	2.1E-06		
S_s (1/m) =	2.8E-07		

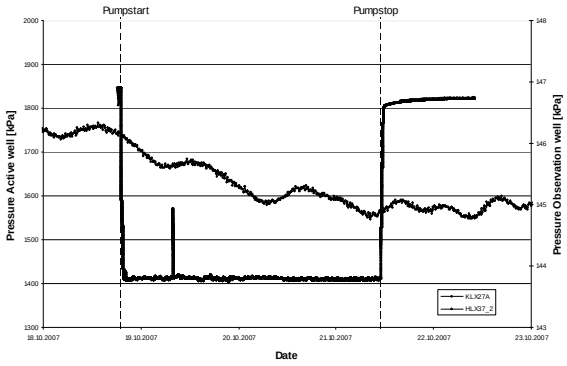
Comments:

The recommended transmissivity of 1.1•10-4 m2/s was derived from the analysis of the CRw phase. The confidence range for the borehole transmissivity is estimated to be 3.0•10-5 m²/s to 3.0•10-4 m²/s. The flow dimension during the test is 2. A static pressure measured at transducer depth was not possible to derive from the CRwr phase due to a missing response after pump stop.

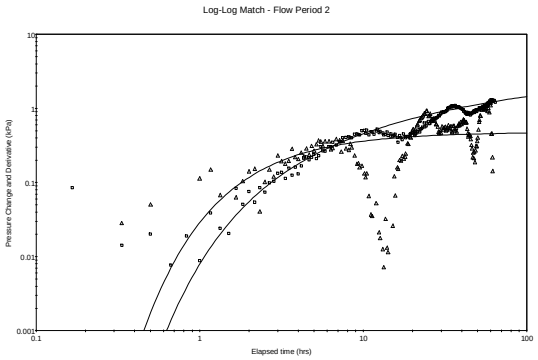
Test Summary Sheet

Project:	Oskarshamn site investigation	Test type:[1]	CRwr Observation hole
Area:	Laxemar	Test no:	1
Borehole ID:	HLX37_2 (KLX27A 210.00-247.00 pumped)	Test start:	071010 00:00
Test section from - to (m):	111.00-149.00	Responsible for test execution:	Stephan Rohs
Distance (m):	566.00	Responsible for test evaluation:	Cristian Enachescu

Linear plot Q and p



Log-Log plot incl. derivates- flow period



Log-Log plot incl. derivatives- recovery period

Not analysable

Flow period		**Recovery period**	
Indata		**Indata**	
p_0 (kPa) =			
p_i (kPa) =			
p_p(kPa) =		p_F (kPa) =	
Q_p (m^3/s)=	6.60E-05		
tp (s) =	230400	t_F (s) =	176400
S el S^* (-)=		S el S^* (-)=	
EC_w (mS/m)=			
$Temp_w$(gr C)=			
Derivative fact.=	NA	Derivative fact.=	NA
Results		**Results**	
Q/s (m^2/s)=	NA		
T_M (m^2/s)=	NA		
Flow regime:	transient	Flow regime:	transient
dt_1 (min) =	1727.9	dt_1 (min) =	NA
dt_2 (min) =	2978.2	dt_2 (min) =	NA
T (m^2/s) =	1.1E-04	T (m^2/s) =	NA
S (-) =	1.4E-05	S (-) =	NA
K_s (m/s) =	2.9E-06	K_s (m/s) =	NA
S_s (1/m) =	3.6E-07	S_s (1/m) =	NA
C (m^3/Pa) =	NA	C (m^3/Pa) =	NA
C_D (-) =	NA	C_D (-) =	NA
◊ (-) =	NA	◊ (-) =	NA
T_{GRF}(m^2/s) =	NA	T_{GRF}(m^2/s) =	NA
S_{GRF}(-) =	NA	S_{GRF}(-) =	NA
D_{GRF} (-) =	NA	D_{GRF} (-) =	NA

Selected representative parameters.

dt_1 (min) =	1727.9	C (m^3/Pa) =	NA
dt_2 (min) =	2978.2	C_D (-) =	NA
T_T (m^2/s) =	1.1E-04	◊ (-) =	NA
S (-) =	1.4E-05		
K_s (m/s) =	2.9E-06		
S_s (1/m) =	3.6E-07		

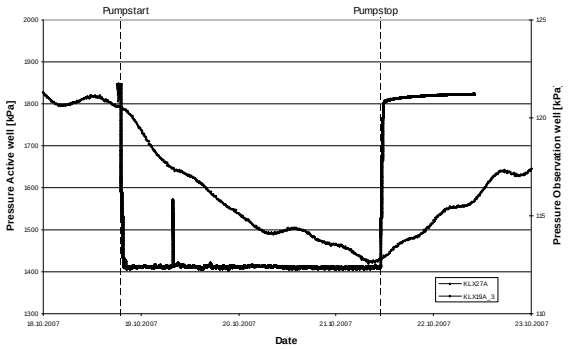
Comments:

The recommended transmissivity of 1.1•10-4 m2/s was derived from the analysis of the CRw phase. The confidence range for the borehole transmissivity is estimated to be 3.0•10-5 m²/s to 3.0•10-4 m²/s. The flow dimension during the test is 2. A static pressure measured at transducer depth was not possible to derive from the CRwr phase due to a missing response after pump stop.

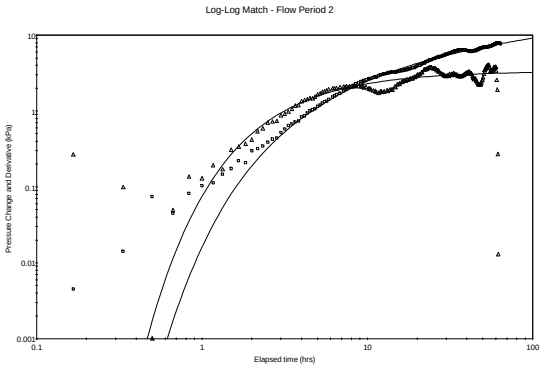
Test Summary Sheet

Project:	Oskarshamn site investigation	Test type:[1]	CRwr Observation hole
Area:	Laxemar	Test no:	1
Borehole ID:	KLX19A_3 (KLX27A 210.00-247.00 pumped)	Test start:	071010 00:00
Test section from - to (m):	509.00-517.00	Responsible for test execution:	Stephan Rohs
Distance (m):	307.00	Responsible for test evaluation:	Cristian Enachescu

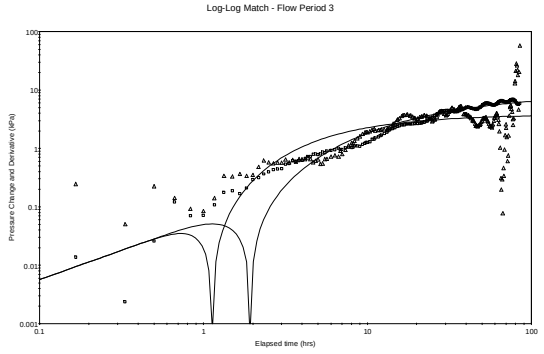
Linear plot Q and p



Log-Log plot incl. derivates- flow period



Log-Log plot incl. derivatives- recovery period



Flow period		**Recovery period**	
Indata		**Indata**	
p_0 (kPa) =			
p_i (kPa) =			
p_p(kPa) =		p_F (kPa) =	
Q_p (m^3/s)=	6.60E-05		
tp (s) =	230400	t_F (s) =	176400
S el S^* (-)=		S el S^* (-)=	
EC_w (mS/m)=			
$Temp_w$(gr C)=			
Derivative fact.=	NA	Derivative fact.=	NA
Results		**Results**	
Q/s (m^2/s)=	NA		
T_M (m^2/s)=	NA		
Flow regime:	transient	Flow regime:	transient
dt_1 (min) =	1009.9	dt_1 (min) =	2553
dt_2 (min) =	3339.9	dt_2 (min) =	4587
T (m^2/s) =	1.6E-05	T (m^2/s) =	1.3E-05
S (-) =	9.0E-06	S (-) =	9.5E-06
K_s (m/s) =	1.9E-06	K_s (m/s) =	1.7E-06
S_s (1/m) =	1.1E-06	S_s (1/m) =	1.2E-06
C (m^3/Pa) =	NA	C (m^3/Pa) =	NA
C_D (-) =	NA	C_D (-) =	NA
) (-) =	NA	) (-) =	NA
T_{GRF}(m^2/s) =	NA	T_{GRF}(m^2/s) =	NA
S_{GRF}(-) =	NA	S_{GRF}(-) =	NA
D_{GRF} (-) =	NA	D_{GRF} (-) =	NA

Selected representative parameters.			
dt_1 (min) =	NA	C (m^3/Pa) =	NA
dt_2 (min) =	NA	C_D (-) =	NA
T_T (m^2/s) =	1.6E-05	) (-) =	NA
S (-) =	9.0E-06		
K_s (m/s) =	1.9E-06		
S_s (1/m) =	1.1E-06		

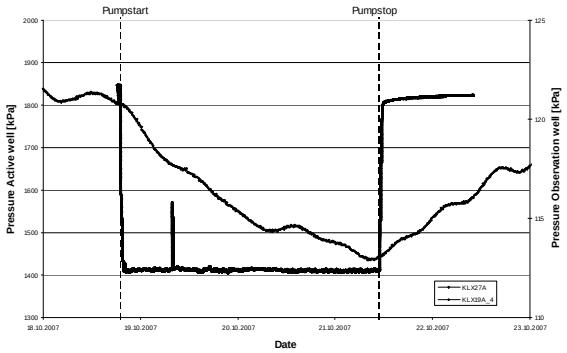
Comments:

The recommended transmissivity of 1.6•10-5 m2/s was derived from the analysis of the CRw phase, which shows the best data and derivative quality. The confidence range for the borehole transmissivity is estimated to be 8.0•10-6 m²/s to 3.0•10-5 m²/s. The flow dimension during the test is 2. A static pressure measured at transducer depth was not possible to derive from the CRwr phase due to poor data quality.

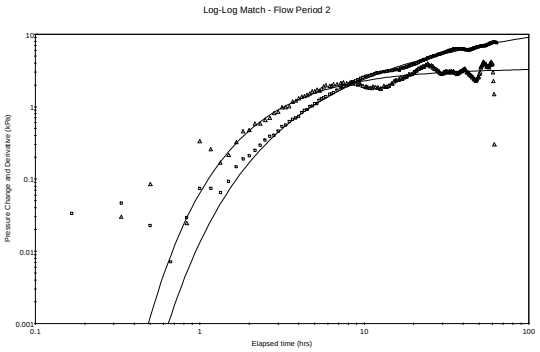
Test Summary Sheet

Project:	Oskarshamn site investigation	Test type:[1]	CRwr Observation hole
Area:	Laxemar	Test no:	1
Borehole ID:	KLX19A_4 (KLX27A 210.00-247.00 pumped)	Test start:	071010 00:00
Test section from - to (m):	481.5.00-508.00	Responsible for test execution:	Stephan Rohs
Distance (m):	290.00	Responsible for test evaluation:	Cristian Enachescu

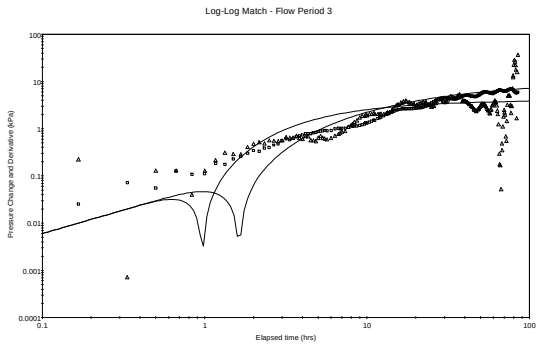
Linear plot Q and p



Log-Log plot incl. derivates- flow period



Log-Log plot incl. derivatives- recovery period



Flow period		Recovery period	
Indata		**Indata**	
p_0 (kPa) =			
p_i (kPa) =			
p_p(kPa) =		p_F (kPa) =	
Q_p (m^3/s)=	6.60E-05		
tp (s) =	230400	t_F (s) =	176400
S el S^* (-)=		S el S^* (-)=	
EC_w (mS/m)=			
$Temp_w$(gr C)=			
Derivative fact.=	NA	Derivative fact.=	NA
Results		**Results**	
Q/s (m^2/s)=	NA		
T_M (m^2/s)=	NA		
Flow regime:	transient	Flow regime:	transient
dt_1 (min) =	1727.9	dt_1 (min) =	990.9
dt_2 (min) =	3507.0	dt_2 (min) =	3401.9
T (m^2/s) =	1.5E-05	T (m^2/s) =	1.3E-05
S (-) =	1.1E-05	S (-) =	9.0E-06
K_s (m/s) =	5.8E-07	K_s (m/s) =	4.8E-07
S_s (1/m) =	4.0E-07	S_s (1/m) =	3.4E-07
C (m^3/Pa) =	NA	C (m^3/Pa) =	NA
C_D (-) =	NA	C_D (-) =	NA
((-) =	NA	((-) =	NA
T_{GRF}(m^2/s) =	NA	T_{GRF}(m^2/s) =	NA
S_{GRF}(-) =	NA	S_{GRF}(-) =	NA
D_{GRF} (-) =	NA	D_{GRF} (-) =	NA

Selected representative parameters.

dt_1 (min) =	1727.9	C (m^3/Pa) =	NA
dt_2 (min) =	3507.0	C_D (-) =	NA
T_T (m^2/s) =	1.5E-05	((-) =	NA
S (-) =	1.1E-05		
K_s (m/s) =	5.8E-07		
S_s (1/m) =	4.0E-07		

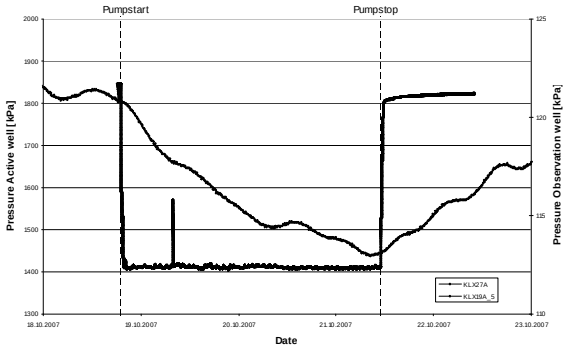
Comments:

The recommended transmissivity of 1.5•10-5 m2/s was derived from the analysis of the CRw phase, which shows the best data and derivative quality. The confidence range for the borehole transmissivity is estimated to be 8.0•10-6 m²/s to 3.0•10-5 m²/s. The flow dimension during the test is 2. A static pressure measured at transducer depth was not possible to derive from the CRwr phase due to poor data quality.

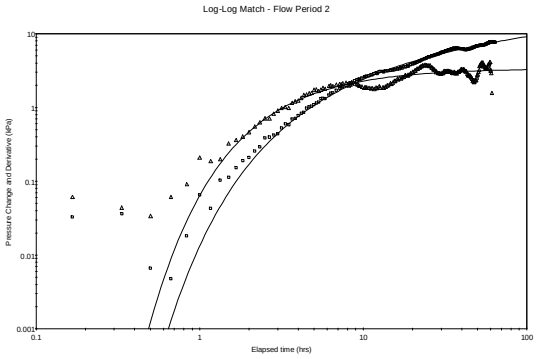
Test Summary Sheet

Project:	Oskarshamn site investigation	Test type:[1]	CRwr Observation hole
Area:	Laxemar	Test no:	1
Borehole ID:	KLX19A_5 (KLX27A 210.00-247.00 pumped)	Test start:	071010 00:00
Test section from - to (m):	311.00-480.50	Responsible for test execution:	Stephan Rohs
Distance (m):	261.00	Responsible for test evaluation:	Cristian Enachescu

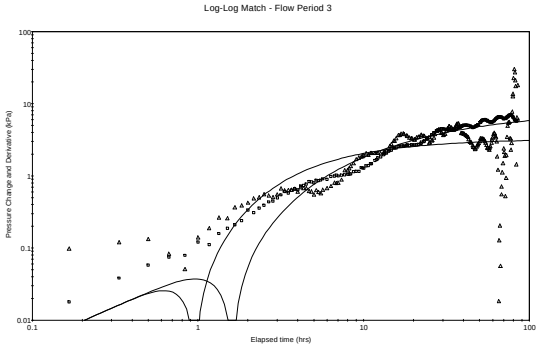
Linear plot Q and p



Log-Log plot incl. derivates- flow period



Log-Log plot incl. derivatives- recovery period



Flow period		**Recovery period**	
Indata		**Indata**	
p_0 (kPa) =			
p_i (kPa) =			
p_p(kPa) =		p_F (kPa) =	
Q_p (m^3/s)=	6.60E-05		
tp (s) =	230400	t_F (s) =	176400
S el S^* (-)=		S el S^* (-)=	
EC_w (mS/m)=			
$Temp_w$(gr C)=			
Derivative fact.=	NA	Derivative fact.=	NA
Results		**Results**	
Q/s (m^2/s)=	NA		
T_M (m^2/s)=	NA		
Flow regime:	transient	Flow regime:	transient
dt_1 (min) =	1198.1	dt_1 (min) =	2639.4
dt_2 (min) =	3422.4	dt_2 (min) =	4383.2
T (m^2/s) =	1.5E-05	T (m^2/s) =	1.6E-05
S (-) =	1.3E-05	S (-) =	1.4E-05
K_s (m/s) =	9.1E-08	K_s (m/s) =	9.3E-08
S_s (1/m) =	7.6E-08	S_s (1/m) =	8.0E-08
C (m^3/Pa) =	NA	C (m^3/Pa) =	NA
C_D (-) =	NA	C_D (-) =	NA
) (-) =	NA	) (-) =	NA
T_{GRF}(m^2/s) =	NA	T_{GRF}(m^2/s) =	NA
S_{GRF}(-) =	NA	S_{GRF}(-) =	NA
D_{GRF} (-) =	NA	D_{GRF} (-) =	NA

Selected representative parameters.

dt_1 (min) =	1198.1	C (m^3/Pa) =	NA
dt_2 (min) =	3422.4	C_D (-) =	NA
T_T (m^2/s) =	1.5E-05	) (-) =	NA
S (-) =	1.3E-05		
K_s (m/s) =	9.1E-08		
S_s (1/m) =	7.6E-08		

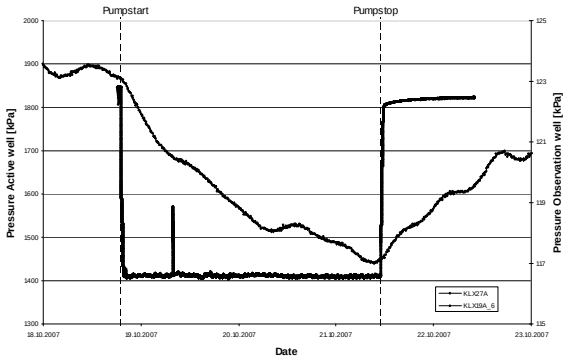
Comments:

The recommended transmissivity of 1.5•10-5 m2/s was derived from the analysis of the CRw phase, which shows the best data and derivative quality. The confidence range for the borehole transmissivity is estimated to be 8.0•10-6 m²/s to 3.0•10-5 m²/s. The flow dimension during the test is 2. A static pressure measured at transducer depth was not possible to derive from the CRwr phase due to poor data quality.

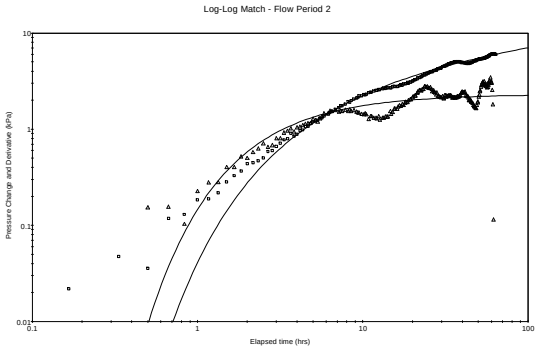
Test Summary Sheet

Project:	Oskarshamn site investigation	Test type:[1]	CRwr Observation hole
Area:	Laxemar	Test no:	1
Borehole ID:	KLX19A_6 (KLX27A 210.00-247.00 pumped)	Test start:	071010 00:00
Test section from - to (m):	291.00-310.00	Responsible for test execution:	Stephan Rohs
Distance (m):	224.00	Responsible for test evaluation:	Cristian Enachescu

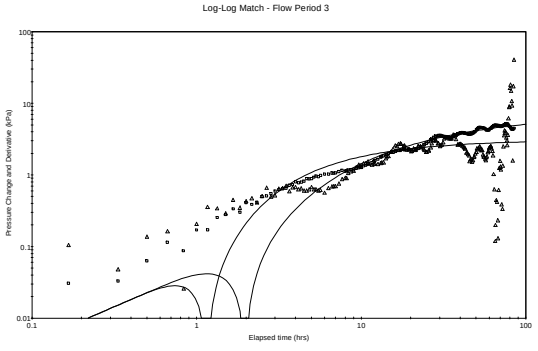
Linear plot Q and p



Log-Log plot incl. derivates- flow period



Log-Log plot incl. derivatives- recovery period



Flow period		**Recovery period**	
Indata		**Indata**	
p_0 (kPa) =			
p_i (kPa) =			
p_p(kPa) =		p_F (kPa) =	
Q_p (m^3/s)=	6.60E-05		
tp (s) =	230400	t_F (s) =	176400
S el S^* (-)=		S el S^* (-)=	
EC_w (mS/m)=			
$Temp_w$(gr C)=			
Derivative fact.=	NA	Derivative fact.=	NA
Results		**Results**	
Q/s (m^2/s)=	NA		
T_M (m^2/s)=	NA		
Flow regime:	transient	Flow regime:	transient
dt_1 (min) =	1218.6	dt_1 (min) =	1628.2
dt_2 (min) =	2978.2	dt_2 (min) =	3051.0
T (m^2/s) =	4.3E-05	T (m^2/s) =	3.2E-05
S (-) =	1.8E-05	S (-) =	2.3E-05
K_s (m/s) =	2.3E-06	K_s (m/s) =	1.7E-06
S_s (1/m) =	9.4E-07	S_s (1/m) =	1.2E-06
C (m^3/Pa) =	NA	C (m^3/Pa) =	NA
C_D (-) =	NA	C_D (-) =	NA
((-) =	NA	((-) =	NA
T_{GRF}(m^2/s) =	NA	T_{GRF}(m^2/s) =	NA
S_{GRF}(-) =	NA	S_{GRF}(-) =	NA
D_{GRF} (-) =	NA	D_{GRF} (-) =	NA

Selected representative parameters.

dt_1 (min) =	1218.6	C (m^3/Pa) =	NA
dt_2 (min) =	2978.2	C_D (-) =	NA
T_T (m^2/s) =	4.3E-05	((-) =	NA
S (-) =	1.8E-05		
K_s (m/s) =	2.3E-06		
S_s (1/m) =	9.4E-07		

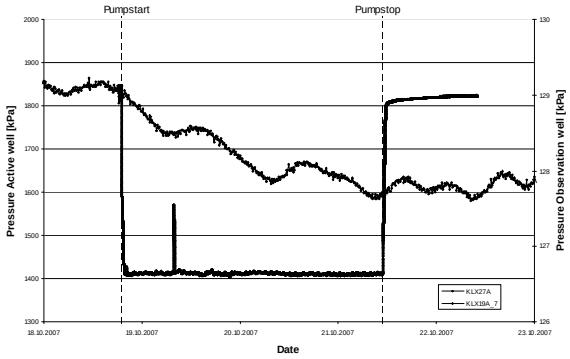
Comments:

The recommended transmissivity of 4.3•10-5 m2/s was derived from the analysis of the CRw phase, which shows the best data and derivative quality. The confidence range for the borehole transmissivity is estimated to be 2.0•10-5 m²/s to 9.0•10-5 m²/s. The flow dimension during the test is 2. A static pressure measured at transducer depth was not possible to derive from the CRwr phase due to poor data quality.

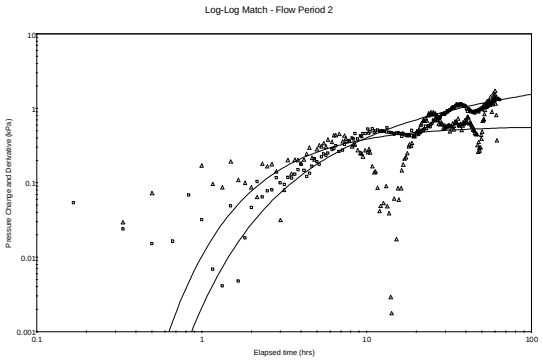
Test Summary Sheet

Project:	Oskarshamn site investigation	Test type:[1]	CRwr Observation hole
Area:	Laxemar	Test no:	1
Borehole ID:	KLX19A_7 (KLX27A 210.00-247.00 pumped)	Test start:	071010 00:00
Test section from - to (m):	136.00-290.00	Responsible for test execution:	Stephan Rohs
Distance (m):	275.00	Responsible for test evaluation:	Cristian Enachescu

Linear plot Q and p



Log-Log plot incl. derivates- flow period



Log-Log plot incl. derivatives- recovery period

Not analysable

Flow period		Recovery period	
Indata		**Indata**	
p_0 (kPa) =			
p_i (kPa) =			
p_p(kPa) =		p_F (kPa) =	
Q_p (m^3/s)=	6.60E-05		
tp (s) =	230400	t_F (s) =	176400
S el S^* (-)=		S el S^* (-)=	
EC_w (mS/m)=			
$Temp_w$(gr C)=			
Derivative fact.=	NA	Derivative fact.=	NA
Results		**Results**	
Q/s (m^2/s)=	NA		
T_M (m^2/s)=	NA		
Flow regime:	transient	Flow regime:	transient
dt_1 (min) =	1814.3	dt_1 (min) =	NA
dt_2 (min) =	3029.2	dt_2 (min) =	NA
T (m^2/s) =	9.0E-05	T (m^2/s) =	NA
S (-) =	6.9E-05	S (-) =	NA
K_s (m/s) =	5.9E-07	K_s (m/s) =	NA
S_s (1/m) =	4.5E-07	S_s (1/m) =	NA
C (m^3/Pa) =	NA	C (m^3/Pa) =	NA
C_D (-) =	NA	C_D (-) =	NA
♦(-) =	NA	♦(-) =	NA
T_{GRF}(m^2/s) =	NA	T_{GRF}(m^2/s) =	NA
S_{GRF}(-) =	NA	S_{GRF}(-) =	NA
D_{GRF} (-) =	NA	D_{GRF} (-) =	NA

Selected representative parameters.			
dt_1 (min) =	1814.3	C (m^3/Pa) =	NA
dt_2 (min) =	3029.2	C_D (-) =	NA
T_T (m^2/s) =	9.0E-05	♦(-) =	NA
S (-) =	6.9E-05		
K_s (m/s) =	5.9E-07		
S_s (1/m) =	4.5E-07		

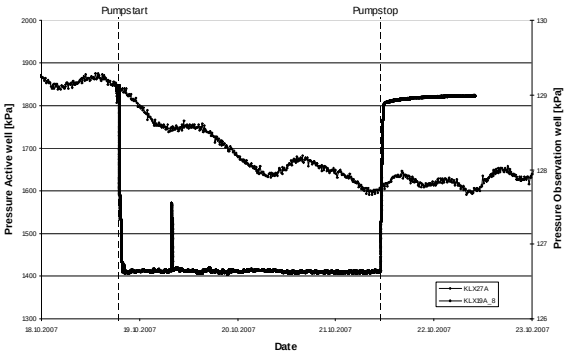
Comments:

The recommended transmissivity of 9.0•10-5 m2/s was derived from the analysis of the CRw phase. The confidence range for the borehole transmissivity is estimated to be 3.0•10-5 m²/s to 3.0•10-4 m²/s. The flow dimension during the test is 2. A static pressure measured at transducer depth was not possible to derive from the CRwr phase due to poor data quality.

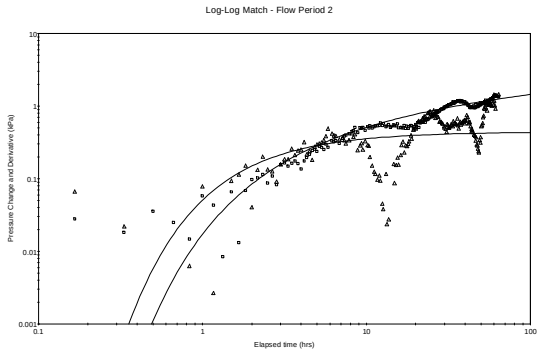
Test Summary Sheet

Project:	Oskarshamn site investigation	Test type:[1]	CRwr Observation hole
Area:	Laxemar	Test no:	1
Borehole ID:	KLX19A_8 (KLX27A 210.00-247.00 pumped)	Test start:	071010 00:00
Test section from - to (m):	0.00-135.00	Responsible for test execution:	Stephan Rohs
Distance (m):	303.00	Responsible for test evaluation:	Cristian Enachescu

Linear plot Q and p



Log-Log plot incl. derivates- flow period



Log-Log plot incl. derivatives- recovery period

Not analysable

Flow period		**Recovery period**	
Indata		**Indata**	
p_0 (kPa) =			
p_i (kPa) =			
p_p(kPa) =		p_F (kPa) =	
Q_p (m^3/s)=	6.60E-05		
tp (s) =	230400	t_F (s) =	176400
S el S^* (-)=		S el S^* (-)=	
EC_w (mS/m)=			
$Temp_w$(gr C)=			
Derivative fact.=	NA	Derivative fact.=	NA
Results		**Results**	
Q/s (m^2/s)=	NA		
T_M (m^2/s)=	NA		
Flow regime:	transient	Flow regime:	transient
dt_1 (min) =	NA	dt_1 (min) =	NA
dt_2 (min) =	NA	dt_2 (min) =	NA
T (m^2/s) =	1.2E-04	T (m^2/s) =	NA
S (-) =	4.0E-05	S (-) =	NA
K_s (m/s) =	8.7E-07	K_s (m/s) =	NA
S_s (1/m) =	3.0E-07	S_s (1/m) =	NA
C (m^3/Pa) =	NA	C (m^3/Pa) =	NA
C_D (-) =	NA	C_D (-) =	NA
) (-) =	NA	) (-) =	NA
T_{GRF}(m^2/s) =	NA	T_{GRF}(m^2/s) =	NA
S_{GRF}(-) =	NA	S_{GRF}(-) =	NA
D_{GRF} (-) =	NA	D_{GRF} (-) =	NA

Selected representative parameters.			
dt_1 (min) =	NA	C (m^3/Pa) =	NA
dt_2 (min) =	NA	C_D (-) =	NA
T_T (m^2/s) =	1.2E-04	) (-) =	NA
S (-) =	4.0E-05		
K_s (m/s) =	8.7E-07		
S_s (1/m) =	3.0E-07		

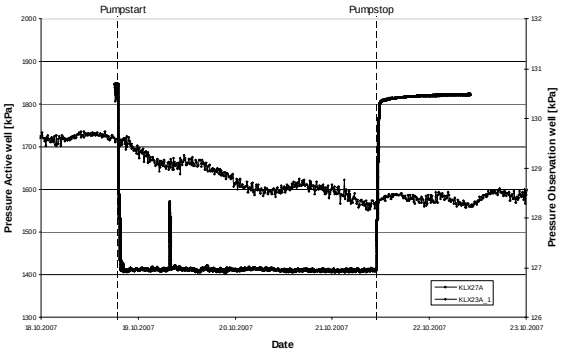
Comments:

The recommended transmissivity of 1.2•10-4 m2/s was derived from the analysis of the CRw phase. The confidence range for the borehole transmissivity is estimated to be 4.0•10-5 m²/s to 4.0•10-4 m²/s. The flow dimension during the test is 2. A static pressure measured at transducer depth was not possible to derive from the CRwr phase due to poor data quality.

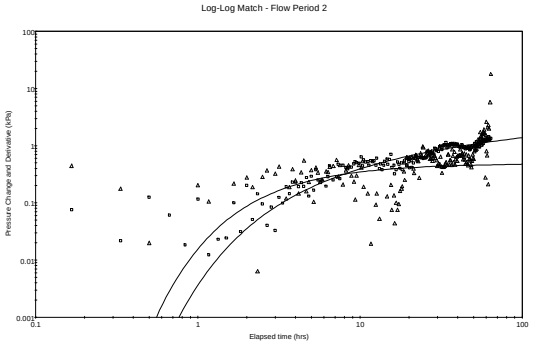
Test Summary Sheet

Project:	Oskarshamn site investigation	Test type:[1]	CRwr Observation hole
Area:	Laxemar	Test no:	1
Borehole ID:	KLX23A_1 (KLX27A 210.00-247.00 pumped)	Test start:	071010 00:00
Test section from - to (m):	49.00-100.00	Responsible for test execution:	Stephan Rohs
Distance (m):	462.00	Responsible for test evaluation:	Cristian Enachescu

Linear plot Q and p



Log-Log plot incl. derivates- flow period



Log-Log plot incl. derivatives- recovery period

Not analysable

Flow period		**Recovery period**	
Indata		**Indata**	
p_0 (kPa) =			
p_i (kPa) =			
p_p(kPa) =		p_F (kPa) =	
Q_p (m^3/s)=	6.60E-05		
tp (s) =	230400	t_F (s) =	176400
S el S^* (-)=		S el S^* (-)=	
EC_w (mS/m)=			
$Temp_w$(gr C)=			
Derivative fact.=	NA	Derivative fact.=	NA
Results		**Results**	
Q/s (m^2/s)=	NA		
T_M (m^2/s)=	NA		
Flow regime:	transient	Flow regime:	transient
dt_1 (min) =	2000.4	dt_1 (min) =	NA
dt_2 (min) =	2884.9	dt_2 (min) =	NA
T (m^2/s) =	1.1E-04	T (m^2/s) =	NA
S (-) =	2.5E-05	S (-) =	NA
K_s (m/s) =	2.1E-06	K_s (m/s) =	NA
S_s (1/m) =	4.8E-07	S_s (1/m) =	NA
C (m^3/Pa) =	NA	C (m^3/Pa) =	NA
C_D (-) =	NA	C_D (-) =	NA
(-) =	NA	(-) =	NA
T_{GRF}(m^2/s) =	NA	T_{GRF}(m^2/s) =	NA
S_{GRF}(-) =	NA	S_{GRF}(-) =	NA
D_{GRF} (-) =	NA	D_{GRF} (-) =	NA

Selected representative parameters.			
dt_1 (min) =	2000.4	C (m^3/Pa) =	NA
dt_2 (min) =	2884.9	C_D (-) =	NA
T_T (m^2/s) =	1.1E-04	(-) =	NA
S (-) =	2.5E-05		
K_s (m/s) =	2.1E-06		
S_s (1/m) =	4.8E-07		

Comments:

The recommended transmissivity of 1.1•10-4 m2/s was derived from the analysis of the CRw phase. The confidence range for the borehole transmissivity is estimated to be 4.0•10-5 m²/s to 3.0•10-4 m²/s. The flow dimension during the test is 2. A static pressure measured at transducer depth was not possible to derive from the CRwr phase due to poor data quality.

APPENDIX 7

SICADA data tables

(Observation boreholes)

(Simplified version v1.7)

SICADA/Data Import Template

File Identity	
Created By	Stephan Rohs
Created	

File Time Zone

Compiled By	
Quality Check For Delivery	
Delivery Approval	

Activity Type	KLX27A KLX27A Interference test-obs.holes

Project	AP PS 400-07-72

Activity Information | **Additional Activity Data**

						C30	C40	I160	P20	P200	P220	R240	R25	R85
Idcode	**Start Date**	**Stop Date**	**Secup (m)**	**Seclow (m)**	**Section No**	**evaluating data**	**performing field work**	**Instrument**	**Field crew manager**	**Field crew**	**evaluating data**	**calibration type**	**Report**	**njected borehole**
HLX27	2007-10-10 00:00:00	2007-11-25 00:00:00	153,00	165,00	1	Golder								
HLX27	2007-10-10 00:00:00	2007-11-25 00:00:00	100,00	152,00	2	Golder								
HLX27	2007-10-10 00:00:00	2007-11-25 00:00:00	0,00	99,00	3	Golder								
HLX28	2007-10-10 00:00:00	2007-11-25 00:00:00	91,00	154,00	1	Golder								
HLX28	2007-10-10 00:00:00	2007-11-25 00:00:00	70,00	90,00	2	Golder								
HLX28	2007-10-10 00:00:00	2007-11-25 00:00:00	7,50	69,00	3	Golder								
HLX28	2007-10-10 00:00:00	2007-11-25 00:00:00	0,00	6,50	4	Golder								
HLX32	2007-10-10 00:00:00	2007-11-25 00:00:00	31,00	163,00	1	Golder								
HLX32	2007-10-10 00:00:00	2007-11-25 00:00:00	20,00	30,00	2	Golder								
HLX32	2007-10-10 00:00:00	2007-11-25 00:00:00	0,00	19,00	3	Golder								
HLX36	2007-10-10 00:00:00	2007-11-25 00:00:00	50,00	199,50	1	Golder								
HLX36	2007-10-10 00:00:00	2007-11-25 00:00:00	0,00	49,00	2	Golder								
HLX37	2007-10-10 00:00:00	2007-11-25 00:00:00	150,00	200,00	1	Golder								
HLX37	2007-10-10 00:00:00	2007-11-25 00:00:00	111,00	149,00	2	Golder								
HLX37	2007-10-10 00:00:00	2007-11-25 00:00:00	94,00	110,00	3	Golder								
HLX37	2007-10-10 00:00:00	2007-11-25 00:00:00	0,00	93,00	4	Golder								
HLX38	2007-10-10 00:00:00	2007-11-25 00:00:00	0,00	199,50	1	Golder								
HLX42	2007-10-10 00:00:00	2007-11-25 00:00:00	30,00	152,60	1	Golder								
HLX42	2007-10-10 00:00:00	2007-11-25 00:00:00	0,00	29,00	2	Golder								
KLX11A	2007-10-10 00:00:00	2007-11-25 00:00:00	703,00	992,00	1	Golder								
KLX11A	2007-10-10 00:00:00	2007-11-25 00:00:00	587,00	702,00	2	Golder								
KLX11A	2007-10-10 00:00:00	2007-11-25 00:00:00	573,00	586,00	3	Golder								
KLX11A	2007-10-10 00:00:00	2007-11-25 00:00:00	495,00	572,00	4	Golder								
KLX11A	2007-10-10 00:00:00	2007-11-25 00:00:00	315,00	494,00	5	Golder								
KLX11A	2007-10-10 00:00:00	2007-11-25 00:00:00	273,00	314,00	6	Golder								
KLX11A	2007-10-10 00:00:00	2007-11-25 00:00:00	256,00	272,00	7	Golder								
KLX11A	2007-10-10 00:00:00	2007-11-25 00:00:00	180,00	255,00	8	Golder								
KLX11A	2007-10-10 00:00:00	2007-11-25 00:00:00	103,00	179,00	9	Golder								
KLX11A	2007-10-10 00:00:00	2007-11-25 00:00:00	0,00	102,00	10	Golder								
KLX11E	2007-10-10 00:00:00	2007-11-25 00:00:00	2,00	121,00	1	Golder								
KLX14A	2007-10-10 00:00:00	2007-11-25 00:00:00	123,00	176,27	1	Golder								
KLX14A	2007-10-10 00:00:00	2007-11-25 00:00:00	77,00	122,00	2	Golder								
KLX14A	2007-10-10 00:00:00	2007-11-25 00:00:00	0,00	76,00	3	Golder								
KLX15A	2007-10-10 00:00:00	2007-11-25 00:00:00	902,00	1000,00	1	Golder								
KLX15A	2007-10-10 00:00:00	2007-11-25 00:00:00	641,00	901,00	2	Golder								
KLX15A	2007-10-10 00:00:00	2007-11-25 00:00:00	623,00	640,00	3	Golder								
KLX15A	2007-10-10 00:00:00	2007-11-25 00:00:00	481,00	622,00	4	Golder								
KLX15A	2007-10-10 00:00:00	2007-11-25 00:00:00	273,00	480,00	5	Golder								
KLX15A	2007-10-10 00:00:00	2007-11-25 00:00:00	260,00	272,00	6	Golder								
KLX15A	2007-10-10 00:00:00	2007-11-25 00:00:00	191,00	259,00	7	Golder								
KLX15A	2007-10-10 00:00:00	2007-11-25 00:00:00	79,00	190,00	8	Golder								
KLX15A	2007-10-10 00:00:00	2007-11-25 00:00:00	0,00	78,00	9	Golder								
KLX16A	2007-10-10 00:00:00	2007-11-25 00:00:00	327,00	433,55	1	Golder								
KLX16A	2007-10-10 00:00:00	2007-11-25 00:00:00	86,00	326,00	2	Golder								
KLX16A	2007-10-10 00:00:00	2007-11-25 00:00:00	0,00	85,00	3	Golder								
KLX19A	2007-10-10 00:00:00	2007-11-25 00:00:00	661,00	800,00	1	Golder								
KLX19A	2007-10-10 00:00:00	2007-11-25 00:00:00	518,00	660,00	2	Golder								
KLX19A	2007-10-10 00:00:00	2007-11-25 00:00:00	509,00	517,00	3	Golder								
KLX19A	2007-10-10 00:00:00	2007-11-25 00:00:00	481,50	508,00	4	Golder								
KLX19A	2007-10-10 00:00:00	2007-11-25 00:00:00	311,00	480,50	5	Golder								
KLX19A	2007-10-10 00:00:00	2007-11-25 00:00:00	291,00	310,00	6	Golder								
KLX19A	2007-10-10 00:00:00	2007-11-25 00:00:00	136,00	290,00	7	Golder								
KLX19A	2007-10-10 00:00:00	2007-11-25 00:00:00	0,00	135,00	8	Golder								
KLX20A	2007-10-10 00:00:00	2007-11-25 00:00:00	294,00	457,00	1	Golder								
KLX20A	2007-10-10 00:00:00	2007-11-25 00:00:00	260,00	296,00	2	Golder								
KLX20A	2007-10-10 00:00:00	2007-11-25 00:00:00	181,00	259,00	3	Golder								
KLX20A	2007-10-10 00:00:00	2007-11-25 00:00:00	145,00	180,00	4	Golder								
KLX20A	2007-10-10 00:00:00	2007-11-25 00:00:00	103,00	144,00	5	Golder								
KLX20A	2007-10-10 00:00:00	2007-11-25 00:00:00	0,00	102,00	6	Golder								
KLX23A	2007-10-10 00:00:00	2007-11-25 00:00:00	49,00	100,00	1	Golder								
KLX23A	2007-10-10 00:00:00	2007-11-25 00:00:00	0,00	48,00	2	Golder								
KLX24A	2007-10-10 00:00:00	2007-11-25 00:00:00	69,00	100,00	1	Golder								
KLX24A	2007-10-10 00:00:00	2007-11-25 00:00:00	41,00	68,00	2	Golder								
KLX24A	2007-10-10 00:00:00	2007-11-25 00:00:00	0,00	40,00	3	Golder								

Table	plu_inf_test_obs_d
	PLU interference test, Observation section data

Column	Datatype	Unit	Column Description
site	CHAR		Investigation site name
activity_type	CHAR		
start_date	DATE		
stop_date	DATE		
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, one of 7, see table description
formation_type	CHAR		1: Rock, 2: Soil (superficial deposits)
start_flow_period	DATE	yyyymmdd	Date and time start of pumping/injection(YYMMDDhhmmss)
stop_flow_period	DATE	yyyymmdd	Date and time stop of pumping/injection(YYMMDDhhmmss)
test_borehole	CHAR		Idcode of pumped/injected borehole
test_secup	FLOAT	m	Upper limit of pumped/injected section
test_seclow	FLOAT	m	Lower limit of pumped/injected section
lp	FLOAT	m	Hydraulic point of application, see table description
radial_distance_rs	FLOAT	m	Radial distance:test sec.-obs.sec., see table description
shortest_distance_rt	FLOAT	m	Shortest distance: test sec.-obs.sec., see table description
time_lag_press_dtl	FLOAT	s	Time lag, pressure response obs. hole. See table description
initial_head_hi	FLOAT	m	Hydraulic head in observationsection,at start of flow period
head_at_flow_end_h	FLOAT	m	Hydraulic head in observation section at stop of flow period
final_head_hf	FLOAT	m	Hydraulic head in obs. section at end of recovery period.
initial_press_pi	FLOAT	kPa	Groundwater pressure in obs.section at start of flow period
press_at_flow_end_p	FLOAT	kPa	Groundwater pressure in obs. section at stop of flow period
final_press_pf	FLOAT	kPa	Groundwater pressure in obs.section at stop of the recovery
fluid_temp_teo	FLOAT	oC	Measured fluid temperature in obs.section,see descr.
fluid_elcond_eco	FLOAT	mS/m	Measured fluid el. conductivity in obs.section,see descr.
fluid_salinity_tdso	FLOAT	mg/l	Total dissolved solids of section fluid,based on EC see desc
fluid_salinity_tdsom	FLOAT	mg/l	Tot disolved solids of section fluid based on analysis,see..
drawdown_sp	FLOAT	m	Drawdown sp in observation section (m)
reference	CHAR		SKB report No for reports describing data and evaluation
comment	CHAR		Short comment to evaluated 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		Activity QA signature

idcode	start_date	stop_date	secup	seclow	section_no	test_type	formation_type	start_flow_period	stop_flow_period	test_borehole	test_secup	test_seclow	lp	radial_distance_rs	shortest_distance_rt
HLX27	2007.10.10 00:00	2007.10.23 12:00	153,00	165,00	1	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	160,00	1137,00	
HLX27	2007.10.10 00:00	2007.10.23 12:00	100,00	152,00	2	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	110,00	1141,00	
HLX27	2007.10.10 00:00	2007.10.23 12:00	0,00	99,00	3	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	50,00	1151,00	
HLX28	2007.10.10 00:00	2007.10.23 12:00	91,00	154,00	1	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	120,00	155,00	
HLX28	2007.10.10 00:00	2007.10.23 12:00	70,00	90,00	2	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	78,00	195,00	
HLX28	2007.10.10 00:00	2007.10.23 12:00	7,50	69,00	3	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	40,00	234,00	
HLX32	2007.10.10 00:00	2007.10.23 12:00	31,00	163,00	1	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	95,00	136,00	
HLX32	2007.10.10 00:00	2007.10.23 12:00	20,00	30,00	2	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	25,00	177,00	
HLX32	2007.10.10 00:00	2007.10.23 12:00	0,00	19,00	3	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	10,00	188,00	
HLX36	2007.10.10 00:00	2007.10.23 12:00	50,00	199,50	1	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	105,00	544,00	
HLX36	2007.10.10 00:00	2007.10.23 12:00	0,00	49,00	2	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	25,00	543,00	
HLX37	2007.10.10 00:00	2007.10.23 12:00	150,00	200,00	1	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	175,00	546,00	
HLX37	2007.10.10 00:00	2007.10.23 12:00	111,00	149,00	2	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	122,00	566,00	
HLX37	2007.10.10 00:00	2007.10.23 12:00	94,00	110,00	3	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	105,00	574,00	
HLX37	2007.10.10 00:00	2007.10.23 12:00	0,00	93,00	4	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	10,00	617,00	
HLX38	2007.10.10 00:00	2007.10.23 12:00	0,00	199,50	1	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	103,00	488,00	
HLX42	2007.10.10 00:00	2007.10.23 12:00	30,00	152,60	1	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	100,00	1071,00	
HLX42	2007.10.10 00:00	2007.10.23 12:00	0,00	29,00	2	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	10,00	1127,00	
KLX11A	2007.10.10 00:00	2007.10.23 12:00	703,00	992,00	1	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	850,00	891,00	
KLX11A	2007.10.10 00:00	2007.10.23 12:00	587,00	702,00	2	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	600,00	741,00	
KLX11A	2007.10.10 00:00	2007.10.23 12:00	573,00	586,00	3	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	575,00	724,00	
KLX11A	2007.10.10 00:00	2007.10.23 12:00	495,00	572,00	4	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	520,00	706,00	
KLX11A	2007.10.10 00:00	2007.10.23 12:00	315,00	494,00	5	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	450,00	681,00	
KLX11A	2007.10.10 00:00	2007.10.23 12:00	273,00	314,00	6	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	313,00	651,00	
KLX11A	2007.10.10 00:00	2007.10.23 12:00	256,00	272,00	7	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	260,00	647,00	
KLX11A	2007.10.10 00:00	2007.10.23 12:00	180,00	255,00	8	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	200,00	647,00	
KLX11A	2007.10.10 00:00	2007.10.23 12:00	103,00	179,00	9	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	165,00	650,00	
KLX11A	2007.10.10 00:00	2007.10.23 12:00	0,00	102,00	10	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	50,00	671,00	
KLX11E	2007.10.10 00:00	2007.10.23 12:00	2,00	121,00	1	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	70,00	662,00	
KLX14A	2007.10.10 00:00	2007.10.23 12:00	123,00	176,27	1	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	155,00	547,00	
KLX14A	2007.10.10 00:00	2007.10.23 12:00	77,00	122,00	2	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	85,00	529,00	
KLX14A	2007.10.10 00:00	2007.10.23 12:00	0,00	76,00	3	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	60,00	524,00	
KLX15A	2007.10.10 00:00	2007.10.23 12:00	902,00	1000,00	1	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	950,00	1388,00	
KLX15A	2007.10.10 00:00	2007.10.23 12:00	641,00	901,00	2	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	845,00	1339,00	
KLX15A	2007.10.10 00:00	2007.10.23 12:00	623,00	640,00	3	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	631,00	1264,00	
KLX15A	2007.10.10 00:00	2007.10.23 12:00	481,00	622,00	4	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	500,00	1235,00	
KLX15A	2007.10.10 00:00	2007.10.23 12:00	273,00	480,00	5	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	390,00	1222,00	
KLX15A	2007.10.10 00:00	2007.10.23 12:00	260,00	272,00	6	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	265,00	1220,00	
KLX15A	2007.10.10 00:00	2007.10.23 12:00	191,00	259,00	7	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	200,00	1225,00	
KLX15A	2007.10.10 00:00	2007.10.23 12:00	79,00	190,00	8	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	130,00	1234,00	
KLX15A	2007.10.10 00:00	2007.10.23 12:00	0,00	78,00	9	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	40,00	1253,00	
KLX16A	2007.10.10 00:00	2007.10.23 12:00	327,00	433,55	1	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	370,00	1093,00	
KLX16A	2007.10.10 00:00	2007.10.23 12:00	86,00	326,00	2	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	210,00	1153,00	
KLX16A	2007.10.10 00:00	2007.10.23 12:00	0,00	85,00	3	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	30,00	1238,00	
KLX19A	2007.10.10 00:00	2007.10.23 12:00	661,00	800,00	1	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	760,00	497,00	
KLX19A	2007.10.10 00:00	2007.10.23 12:00	518,00	660,00	2	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	580,00	347,00	
KLX19A	2007.10.10 00:00	2007.10.23 12:00	509,00	517,00	3	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	515,00	307,00	
KLX19A	2007.10.10 00:00	2007.10.23 12:00	481,50	508,00	4	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	500,00	290,00	
KLX19A	2007.10.10 00:00	2007.10.23 12:00	311,00	480,50	5	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	460,00	261,00	
KLX19A	2007.10.10 00:00	2007.10.23 12:00	291,00	310,00	6	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	300,00	224,00	
KLX19A	2007.10.10 00:00	2007.10.23 12:00	136,00	290,00	7	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	160,00	275,00	
KLX19A	2007.10.10 00:00	2007.10.23 12:00	0,00	135,00	8	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	110,00	303,00	
KLX20A	2007.10.10 00:00	2007.10.23 12:00	294,00	457,00	1	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	390,00	759,00	
KLX20A	2007.10.10 00:00	2007.10.23 12:00	260,00	296,00	2	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	265,00	712,00	
KLX20A	2007.10.10 00:00	2007.10.23 12:00	181,00	259,00	3	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	210,00	694,00	
KLX20A	2007.10.10 00:00	2007.10.23 12:00	145,00	180,00	4	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	175,00	689,00	
KLX20A	2007.10.10 00:00	2007.10.23 12:00	103,00	144,00	5	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	135,00	683,00	
KLX20A	2007.10.10 00:00	2007.10.23 12:00	0,00	102,00	6	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	101,00	681,00	
KLX23A	2007.10.10 00:00	2007.10.23 12:00	49,00	100,00	1	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	85,00	462,00	
KLX23A	2007.10.10 00:00	2007.10.23 12:00	0,00	48,00	2	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	35,00	456,00	
KLX24A	2007.10.10 00:00	2007.10.23 12:00	69,00	100,00	1	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	75,00	744,00	
KLX24A	2007.10.10 00:00	2007.10.23 12:00	41,00	68,00	2	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	65,00	748,00	
KLX24A	2007.10.10 00:00	2007.10.23 12:00	0,00	40,00	3	2	1	071018 19:03:00	071021 11:02:00	KLX27A	210,00	247,00	35,00	754,00	
HLX27	2007.11.19 00:00	2007.11.25 00:00	153,00	165,00	1	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	160,00	1258,10	
HLX27	2007.11.19 00:00	2007.11.25 00:00	100,00	152,00	2	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	110,00	1268,20	
HLX27	2007.11.19 00:00	2007.11.25 00:00	0,00	99,00	3	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	50,00	1285,10	
HLX28	2007.11.19 00:00	2007.11.25 00:00	91,00	154,00	1	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	120,00	491,60	
HLX28	2007.11.19 00:00	2007.11.25 00:00	70,00	90,00	2	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	78,00	523,20	
HLX28	2007.11.19 00:00	2007.11.25 00:00	7,50	69,00	3	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	40,00	553,80	
HLX28	2007.11.19 00:00	2007.11.25 00:00	0,00	6,50	4	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	3,00	585,20	
HLX32	2007.11.19 00:00	2007.11.25 00:00	31,00	163,00	1	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	95,00	510,70	
HLX32	2007.11.19 00:00	2007.11.25 00:00	20,00	30,00	2	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	25,00	574,20	
HLX32	2007.11.19 00:00	2007.11.25 00:00	0,00	19,00	3	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	10,00	588,30	
HLX36	2007.11.19 00:00	2007.11.25 00:00	50,00	199,50	1	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	105,00	629,70	
HLX36	2007.11.19 00:00	2007.11.25 00:00	0,00	49,00	2	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	25,00	666,30	
HLX37	2007.11.19 00:00	2007.11.25 00:00	150,00	200,00	1	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	175,00	587,30	
HLX37	2007.11.19 00:00	2007.11.25 00:00	111,00	149,00	2	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	122,00	633,10	
HLX37	2007.11.19 00:00	2007.11.25 00:00	94,00	110,00	3	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	105,00	648,20	
HLX37	2007.11.19 00:00	2007.11.25 00:00	0,00	93,00	4	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	10,00	732,40	
HLX38	2007.11.19 00:00	2007.11.25 00:00	0,00	199,50	1	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	103,00	669,80	
HLX42	2007.11.19 00:00	2007.11.25 00:00	30,00	152,60	1	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	100,00	1305,90	
HLX42	2007.11.19 00:00	2007.11.25 00:00	0,00	29,00	2	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	10,00	1380,30	
KLX11A	2007.11.19 00:00	2007.11.25 00:00	703,00	992,00	1	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	850,00	524,30	
KLX11A	2007.11.19 00:00	2007.11.25 00:00	587,00	702,00	2	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	600,00	468,80	
KLX11A	2007.11.19 00:00	2007.11.25 00:00	573,00	586,00	3	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	575,00	469,90	
KLX11A	2007.11.19 00:00	2007.11.25 00:00	495,00	572,00	4	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	520,00	476,90	
KLX11A	2007.11.19 00:00	2007.11.25 00:00	315,00	494,00	5	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	450,00	494,40	
KLX11A	2007.11.19 00:00	2007.11.25 00:00	273,00	314,00	6	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	313,00	553,20	
KLX11A	2007.11.19 00:00	2007.11.25 00:00	256,00	272,00	7	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	260,00	583,10	
KLX11A	2007.11.19 00:00	2007.11.25 00:00	180,00	255,00	8	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	200,00	620,50	
KLX11A	2007.11.19 00:00	2007.11.25 00:00	103,00	179,00	9	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	165,00	643,80	
KLX11A	2007.11.19 00:00	2007.11.25 00:00	0,00	102,00	10	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	50,00	727,30	
KLX11E	2007.11.19 00:00	2007.11.25 00:00	2,00	121,00	1	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	70,00	711,20	
KLX14A	2007.11.19 00:00	2007.11.25 00:00	123,00	176,27	1	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	155,00	684,40	
KLX14A	2007.11.19 00:00	2007.11.25 00:00	77,00	122,00	2	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	85,00	692,00	
KLX14A	2007.11.19 00:00	2007.11.25 00:00	0,00	76,00	3	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	60,00	696,90	
KLX15A	2007.11.19 00:00	2007.11.25 00:00	902,00	1000,00	1	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	950,00	1396,20	
KLX15A	2007.11.19 00:00	2007.11.25 00:00	641,00	901,00	2	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	845,00	1359,60	
KLX15A	2007.11.19 00:00	2007.11.25 00:00	623,00	640,00	3	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	631,00	1312,80	
KLX15A	2007.11.19 00:00	2007.11.25 00:00	481,00	622,00	4	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	500,00	1301,90	
KLX15A	2007.11.19 00:00	2007.11.25 00:00	273,00	480,00	5	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	390,00	1304,40	
KLX15A	2007.11.19 00:00	2007.11.25 00:00	260,00	272,00	6	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	265,00	1320,00	
KLX15A	2007.11.19 00:00	2007.11.25 00:00	191,00	259,00	7	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	200,00	1333,20	
KLX15A	2007.11.19 00:00	2007.11.25 00:00	79,00	190,00	8	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	130,00	1351,40	
KLX15A	2007.11.19 00:00	2007.11.25 00:00	0,00	78,00	9	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	40,00	1380,50	
KLX16A	2007.11.19 00:00	2007.11.25 00:00	327,00	433,55	1	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	370,00	1249,80	
KLX16A	2007.11.19 00:00	2007.11.25 00:00	86,00	326,00	2	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	210,00	1345,50	
KLX16A	2007.11.19 00:00	2007.11.25 00:00	0,00	85,00	3	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	30,00	1465,40	
KLX19A	2007.11.19 00:00	2007.11.25 00:00	661,00	800,00	1	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	760,00	404,80	
KLX19A	2007.11.19 00:00	2007.11.25 00:00	518,00	660,00	2	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	580,00	340,10	
KLX19A	2007.11.19 00:00	2007.11.25 00:00	509,00	517,00	3	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	515,00	338,50	
KLX19A	2007.11.19 00:00	2007.11.25 00:00	481,50	508,00	4	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	500,00	339,90	
KLX19A	2007.11.19 00:00	2007.11.25 00:00	311,00	480,50	5	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	460,00	346,90	
KLX19A	2007.11.19 00:00	2007.11.25 00:00	291,00	310,00	6	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	300,00	414,90	
KLX19A	2007.11.19 00:00	2007.11.25 00:00	136,00	290,00	7	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	160,00	509,70	
KLX19A	2007.11.19 00:00	2007.11.25 00:00	0,00	135,00	8	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	110,00	548,50	
KLX20A	2007.11.19 00:00	2007.11.25 00:00	294,00	457,00	1	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	390,00	687,40	
KLX20A	2007.11.19 00:00	2007.11.25 00:00	260,00	296,00	2	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	265,00	683,70	
KLX20A	2007.11.19 00:00	2007.11.25 00:00	181,00	259,00	3	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	210,00	691,80	
KLX20A	2007.11.19 00:00	2007.11.25 00:00	145,00	180,00	4	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	175,00	699,00	
KLX20A	2007.11.19 00:00	2007.11.25 00:00	103,00	144,00	5	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	135,00	709,90	
KLX20A	2007.11.19 00:00	2007.11.25 00:00	0,00	102,00	6	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	101,00	721,50	
KLX23A	2007.11.19 00:00	2007.11.25 00:00	49,00	100,00	1	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	85,00	581,00	
KLX23A	2007.11.19 00:00	2007.11.25 00:00	0,00	48,00	2	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	35,00	611,10	
KLX24A	2007.11.19 00:00	2007.11.25 00:00	69,00	100,00	1	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	75,00	768,10	
KLX24A	2007.11.19 00:00	2007.11.25 00:00	41,00	68,00	2	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	65,00	773,50	
KLX24A	2007.11.19 00:00	2007.11.25 00:00	0,00	40,00	3	2	1	071122 14:34:00	071123 05:27:00	KLX27A	639,20	650,56	35,00	790,30	

	(m)	(m)	(s)	(m)	(m)	(m)	(kPa)	(kPa)	(kPa)	(oC)	(mS/m)	(mg/l)	(mg/l)	(m)		
idcode	secup	seclow	time_lag_press_dtl	initial_head_hi	head_at_flow_end_hp	final_head_hf	initial_press_pi	press_at_flow_end_pp	final_press_pf	fluid_temp_teo	fluid_elcond_eco	fluid_salinity_tdso	fluid_salinity_tdsom	drawdown_sp	reference	comment
HLX27	153,00	165,00		6,17	6,12	6,11										no response due to pumping in source
HLX27	100,00	152,00		6,38	6,33	6,33										no response due to pumping in source
HLX27	0,00	99,00		6,45	6,40	6,40										no response due to pumping in source
HLX28	91,00	154,00		13,22	13,09	13,10								0,13		response due to pumping in source
HLX28	70,00	90,00		13,23	13,09	13,11								0,14		response due to pumping in source
HLX28	7,50	69,00		12,63	12,53	12,53								0,10		response due to pumping in source
HLX32	31,00	163,00		6,55	7,00	6,43										no response due to pumping in source
HLX32	20,00	30,00		6,28	6,72	6,17										no response due to pumping in source
HLX32	0,00	19,00		5,44	5,46	5,51										no response due to pumping in source
HLX36	50,00	199,50		13,94	13,89	13,86										no response due to pumping in source
HLX36	0,00	49,00		10,44	10,43	10,44										no response due to pumping in source
HLX37	150,00	200,00		13,37	13,27	13,26								0,12		response due to pumping in source
HLX37	111,00	149,00		14,90	14,76	14,78								0,14		response due to pumping in source
HLX37	94,00	110,00		13,28	13,23	13,22								0,05		probably influenced by pumping in source
HLX37	0,00	93,00		14,81	14,76	14,75								0,05		probably influenced by pumping in source
HLX38	0,00	199,50		5,33	5,30	5,31										no response due to pumping in source
HLX42	30,00	152,60		9,38	9,33	9,33										no response due to pumping in source
HLX42	0,00	29,00		11,68	11,66	11,65										no response due to pumping in source
KLX11A	703,00	992,00		13,89	13,75	13,96										no response due to pumping in source
KLX11A	587,00	702,00		13,97	13,83	13,90										no response due to pumping in source
KLX11A	573,00	586,00		13,93	13,79	13,83										no response due to pumping in source
KLX11A	495,00	572,00		13,86	13,73	13,75										no response due to pumping in source
KLX11A	315,00	494,00		13,72	13,60	13,61										no response due to pumping in source
KLX11A	273,00	314,00		13,65	13,52	13,50										no response due to pumping in source
KLX11A	256,00	272,00		13,18	13,05	13,04										no response due to pumping in source
KLX11A	180,00	255,00		13,58	13,47	13,51										no response due to pumping in source
KLX11A	103,00	179,00		13,98	13,87	13,89										no response due to pumping in source
KLX11A	0,00	102,00		15,42	15,36	15,35										no response due to pumping in source
KLX11E	2,00	121,00		15,49	15,44	15,45										no response due to pumping in source
KLX14A	123,00	176,27		5,70	5,67	5,68										no response due to pumping in source
KLX14A	77,00	122,00		5,56	5,53	5,53										no response due to pumping in source
KLX14A	0,00	76,00		10,65	10,57	10,55										no response due to pumping in source
KLX15A	902,00	1000,00		3,15	3,05	3,09										no response due to pumping in source
KLX15A	641,00	901,00		5,73	5,75	5,80										no response due to pumping in source
KLX15A	623,00	640,00		5,30	5,23	5,22										no response due to pumping in source
KLX15A	481,00	622,00		5,73	5,65	5,64										no response due to pumping in source
KLX15A	273,00	480,00		6,28	6,22	6,21										no response due to pumping in source
KLX15A	260,00	272,00		6,22	6,16	6,15										no response due to pumping in source
KLX15A	191,00	259,00		6,16	6,13	6,13										no response due to pumping in source
KLX15A	79,00	190,00		6,44	6,39	6,39										no response due to pumping in source
KLX15A	0,00	78,00		6,62	6,58	6,57										no response due to pumping in source
KLX16A	327,00	433,55		17,47	17,38	17,37										no response due to pumping in source
KLX16A	86,00	326,00		16,96	16,91	16,91										no response due to pumping in source
KLX16A	0,00	85,00		18,70	18,80	18,81										no response due to pumping in source
KLX19A	661,00	800,00		9,51	9,41	9,40										no response due to pumping in source
KLX19A	518,00	660,00		9,05	8,96	8,97										no response due to pumping in source
KLX19A	509,00	517,00		12,29	11,50	12,02								0,80		response due to pumping in source
KLX19A	481,50	508,00		12,31	11,53	12,05								0,78		response due to pumping in source
KLX19A	311,00	480,50		12,31	11,53	12,06								0,78		response due to pumping in source
KLX19A	291,00	310,00		12,55	11,94	12,35								0,61		response due to pumping in source
KLX19A	136,00	290,00		13,15	13,02	13,03								0,13		response due to pumping in source
KLX19A	0,00	135,00		13,16	13,03	13,04								0,13		response due to pumping in source
KLX20A	294,00	457,00		14,49	14,37	14,41										no response due to pumping in source
KLX20A	260,00	296,00		14,81	14,73	14,74										no response due to pumping in source
KLX20A	181,00	259,00		14,80	14,67	14,68										no response due to pumping in source
KLX20A	145,00	180,00		13,68	13,58	13,57										no response due to pumping in source
KLX20A	103,00	144,00		15,48	15,42	15,43								0,06		probably influenced by pumping in source
KLX20A	0,00	102,00		15,56	15,52	15,50								0,04		probably influenced by pumping in source
KLX23A	49,00	100,00		13,24	13,08	13,09								0,13		response due to pumping in source
KLX23A	0,00	48,00		14,58	14,57	14,57										no response due to pumping in source
KLX24A	69,00	100,00		14,30	14,25	14,26								0,05		probably influenced by pumping in source
KLX24A	41,00	68,00		15,54	15,49	15,49								0,05		probably influenced by pumping in source
KLX24A	0,00	40,00		16,45	16,43	16,43										no response due to pumping in source
HLX27	153,00	165,00		6,56	6,60	6,51										no response due to pumping in source
HLX27	100,00	152,00		6,79	6,83	6,74										no response due to pumping in source
HLX27	0,00	99,00		6,87	6,90	6,82										no response due to pumping in source
HLX28	91,00	154,00		13,63	13,65	13,55										no response due to pumping in source
HLX28	70,00	90,00		13,63	13,64	13,55										no response due to pumping in source
HLX28	7,50	69,00		13,05	13,08	12,98										no response due to pumping in source
HLX28	0,00	6,50		#NV	#NV	#NV										no response due to pumping in source
HLX32	31,00	163,00		7,97	8,13	6,90										no response due to pumping in source
HLX32	20,00	30,00		7,70	7,84	6,70										no response due to pumping in source
HLX32	0,00	19,00		5,99	6,02	6,03										no response due to pumping in source
HLX36	50,00	199,50		14,23	14,24	14,27										no response due to pumping in source
HLX36	0,00	49,00		10,90	10,88	10,89										no response due to pumping in source
HLX37	150,00	200,00		13,79	13,81	13,70										no response due to pumping in source
HLX37	111,00	149,00		15,31	15,33	15,23										no response due to pumping in source
HLX37	94,00	110,00		14,02	14,06	14,06										no response due to pumping in source
HLX37	0,00	93,00		15,16	15,16	15,16										no response due to pumping in source
HLX38	0,00	199,50		5,61	5,64	5,56										no response due to pumping in source
HLX42	30,00	152,60		9,69	9,71	9,66										no response due to pumping in source
HLX42	0,00	29,00		11,92	11,92	11,89										no response due to pumping in source
KLX11A	703,00	992,00		14,14	14,16	13,98										no response due to pumping in source
KLX11A	587,00	702,00		14,18	13,81	13,28										no response due to pumping in source
KLX11A	573,00	586,00		14,14	13,75	13,23										no response due to pumping in source
KLX11A	495,00	572,00		14,11	13,85	13,35										no response due to pumping in source
KLX11A	315,00	494,00		14,00	13,85	13,38										no response due to pumping in source
KLX11A	273,00	314,00		13,92	13,81	13,39										no response due to pumping in source
KLX11A	256,00	272,00		13,49	13,37	12,99										no response due to pumping in source
KLX11A	180,00	255,00		13,90	13,81	13,44										no response due to pumping in source
KLX11A	103,00	179,00		14,40	14,43	14,35										no response due to pumping in source
KLX11A	0,00	102,00		15,94	15,97	15,99										no response due to pumping in source
KLX11E	2,00	121,00		16,09	16,12	16,14										no response due to pumping in source
KLX14A	123,00	176,27		5,98	6,00	5,93										no response due to pumping in source
KLX14A	77,00	122,00		5,82	5,86	5,77										no response due to pumping in source
KLX14A	0,00	76,00		10,89	10,90	10,86										no response due to pumping in source
KLX15A	902,00	1000,00		3,34	3,37	3,21										no response due to pumping in source
KLX15A	641,00	901,00		6,21	6,26	6,07										no response due to pumping in source
KLX15A	623,00	640,00		5,66	5,71	5,55										no response due to pumping in source
KLX15A	481,00	622,00		6,08	6,13	5,97										no response due to pumping in source
KLX15A	273,00	480,00		6,70	6,74	6,59										no response due to pumping in source
KLX15A	260,00	272,00		6,61	6,65	6,56										no response due to pumping in source
KLX15A	191,00	259,00		6,71	6,75	6,67										no response due to pumping in source
KLX15A	79,00	190,00		6,85	6,88	6,80										no response due to pumping in source
KLX15A	0,00	78,00		7,07	7,09	7,04										no response due to pumping in source
KLX16A	327,00	433,55		17,56	17,60	17,45										no response due to pumping in source
KLX16A	86,00	326,00		17,27	17,30	17,25										no response due to pumping in source
KLX16A	0,00	85,00		19,45	19,47	19,47										no response due to pumping in source
KLX19A	661,00	800,00		9,57	9,61	9,42										no response due to pumping in source
KLX19A	518,00	660,00		9,22	9,27	9,06										no response due to pumping in source
KLX19A	509,00	517,00		12,84	12,87	12,64										no response due to pumping in source
KLX19A	481,50	508,00		12,86	12,91	12,67										no response due to pumping in source
KLX19A	311,00	480,50		12,87	12,91	12,68										no response due to pumping in source
KLX19A	291,00	310,00		13,07	13,10	12,91										no response due to pumping in source
KLX19A	136,00	290,00		13,57	13,60	13,49										no response due to pumping in source
KLX19A	0,00	135,00		13,57	13,60	13,49										no response due to pumping in source
KLX20A	294,00	457,00		14,64	14,67	14,56										no response due to pumping in source
KLX20A	260,00	296,00		15,19	15,22	15,11										no response due to pumping in source
KLX20A	181,00	259,00		14,91	14,95	14,79										no response due to pumping in source
KLX20A	145,00	180,00		14,09	14,12	13,99										no response due to pumping in source
KLX20A	103,00	144,00		15,98	16,02	16,02										no response due to pumping in source
KLX20A	0,00	102,00		15,91	15,94	15,99										no response due to pumping in source
KLX23A	49,00	100,00		13,64	13,65	13,55										no response due to pumping in source
KLX23A	0,00	48,00		15,37	15,38	15,42										no response due to pumping in source
KLX24A	69,00	100,00		14,78	14,80	14,72										no response due to pumping in source
KLX24A	41,00	68,00		16,00	16,01	15,95										no response due to pumping in source
KLX24A	0,00	40,00		17,09	17,09	17,07										no response due to pumping in source

Table	plu_inf_test_obs_ed
	PLU interference test,Observation section evaluation

Column	Datatype	Unit	Column Description
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_borehole	CHAR		Idcode of pumped/injected borehole
test_secup	FLOAT	m	Upper limit of pumped/injected section
test_seclow	FLOAT	m	Lower limit of pumped/injected section
formation_width_b	FLOAT	m	b:Aqifer thickness repr. for T(generally b=Lo),see descrip.
lp	FLOAT	m	Hydraulic point of application, see table descr.
width_of_channel_b	FLOAT	m	B:Inferred width of formation for evaluated TB
tbo	FLOAT	m**3/s	TBo,T=transmissivity,B= width of formation, see table descr.
l_measl_tbo	FLOAT	m**3/s	Estimated lower limit for evaluated TB, see table descript.
u_measl_tbo	FLOAT	m**3/s	Estimated upper limit for evaluated TB,see table descript.
sbo	FLOAT	m	Storage capacity of 1D formation(flow or recovery),see descr
leakage_factor_lof	FLOAT	m	Lof: 1D model for evaluation of leakage factor,see descr.
transmissivity_to	FLOAT	m**2/s	To=transmissivity,2D radial flow model, see table descr.
value_type_to	CHAR		0:true value (To),-1:<lower meas.limit,1:>upper meaus.limit
l_measl_to	FLOAT	m**2/s	Estimated lower limit for evaluated To,see table descript.
u_measl_to	FLOAT	m**2/s	Estimated upper limit of evaluated To,see table description
storativity_so	FLOAT		So:Storativity, 2D rad flow model, see table descr.
leakage_coeff_o	FLOAT	1/s	K´/b´:Leakage coefficient,2D rad flow model,see descr.
hydr_cond_kosf	FLOAT	m/s	3D model evaluation of hydraulic conductivity,see table des.
l_measl_kosf	FLOAT	m/s	Estimated lowermeas. limit of Ks,see table description
u_measl_kosf	FLOAT	m/s	Estimated upper meas. limit of Ks,see table description
spec_storage_sosf	FLOAT	1/m	3D model for evaluation of specific storage,se table descr.
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 of flow period
t2	FLOAT	s	Stop time for evaluated parameter from start of flow period
dte1	FLOAT	s	Start time for evaluated parameter from start of recovery
dte2	FLOAT	s	Stop time for evaluated parameter from start of recovery
index_1	FLOAT	m**2/s	Normalised distance rs with resp to response time(rs)''2/dtL
index_2	FLOAT	s/m**2	Normalised drawdown with respect to pumping rate (sp/Qp)
index_2_new	FLOAT	s/m**2	Norm. drawdown with resp. to pump rate & rs(sp/Qp)*ln(rs/ro)
diffusivity	FLOAT	m**2/s	Diffusivity (T/S)
transmissivity_to_nlr	FLOAT	m**2/s	ToNLR:Transmissivity,based on Non Linear Regression,see desc
value_type_to_nlr	CHAR		0:true value (ToNLR),-1:<lower meas.limit,1:>uppermeas.limit
storativity_so_nlr	FLOAT		So_NLR:Storativity based on None Linear Regression, see des.
transmissivity_to_grf	FLOAT	m**2/s	ToGRF=transmissivity based on Generalized Radial Flow,see...
value_type_to_grf	CHAR		0:true value (ToGRF),-1:<lower meas.limit,1:>upp meaus.limit
storativity_so_grf	FLOAT		So_GRF:Storativity based on Generalized Rad. Flow, see des.
flow_dim_grf_o	FLOAT		Inferred flow dimension based on Generalized Rad. Flow model
comments	CHAR		short comment to the evaluated parameters(0ptional)
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		Activity QA signature

			(m)	(m)				(m)	(m)	(m)	(m)	(m)	(m**3/s)	(m**3/s)	(m**3/s)	(m)	(m)	(m**2/s)	
idcode	start_date	stop_date	secup	seclow	section_no	test_borehole	test_secup	test_seclow	formation_width_b	lp	width_of_channel_b	tbo	l_measl_tbo	u_measl_tbo	sbo	leakage_factor_lof	transmissivity_to	value_type_to
HLX28	2007.10.10 00:00	2007.10.23 12:00	91,00	154,00	1	KLX27A	210,00	247,00		120,00							1,07E-04	0
HLX28	2007.10.10 00:00	2007.10.23 12:00	70,00	90,00	2	KLX27A	210,00	247,00		78,00							9,98E-05	0
HLX28	2007.10.10 00:00	2007.10.23 12:00	7,50	69,00	3	KLX27A	210,00	247,00		40,00							1,33E-04	0
HLX37	2007.10.10 00:00	2007.10.23 12:00	150,00	200,00	1	KLX27A	210,00	247,00		175,00							1,07E-04	0
HLX37	2007.10.10 00:00	2007.10.23 12:00	111,00	149,00	2	KLX27A	210,00	247,00		122,00							1,09E-04	0
HLX37	2007.10.10 00:00	2007.10.23 12:00	94,00	110,00	3	KLX27A	210,00	247,00		105,00							#NV	
HLX37	2007.10.10 00:00	2007.10.23 12:00	0,00	93,00	4	KLX27A	210,00	247,00		10,00							#NV	
KLX19A	2007.10.10 00:00	2007.10.23 12:00	509,00	517,00	3	KLX27A	210,00	247,00		515,00							1,55E-05	0
KLX19A	2007.10.10 00:00	2007.10.23 12:00	481,50	508,00	4	KLX27A	210,00	247,00		500,00							1,54E-05	0
KLX19A	2007.10.10 00:00	2007.10.23 12:00	311,00	480,50	5	KLX27A	210,00	247,00		460,00							1,54E-05	0
KLX19A	2007.10.10 00:00	2007.10.23 12:00	291,00	310,00	6	KLX27A	210,00	247,00		300,00							4,28E-05	0
KLX19A	2007.10.10 00:00	2007.10.23 12:00	136,00	290,00	7	KLX27A	210,00	247,00		160,00							9,01E-05	0
KLX19A	2007.10.10 00:00	2007.10.23 12:00	0,00	135,00	8	KLX27A	210,00	247,00		110,00							1,18E-04	0
KLX20A	2007.10.10 00:00	2007.10.23 12:00	103,00	144,00	5	KLX27A	210,00	247,00		135,00							#NV	
KLX20A	2007.10.10 00:00	2007.10.23 12:00	0,00	102,00	6	KLX27A	210,00	247,00		101,00							#NV	
KLX23A	2007.10.10 00:00	2007.10.23 12:00	49,00	100,00	1	KLX27A	210,00	247,00		85,00							1,06E-04	0
KLX24A	2007.10.10 00:00	2007.10.23 12:00	69,00	100,00	1	KLX27A	210,00	247,00		75,00							#NV	
KLX24A	2007.10.10 00:00	2007.10.23 12:00	41,00	68,00	2	KLX27A	210,00	247,00		65,00							#NV	

	(m)	(m)	(m**2/s)	(m**2/s)		(1/s)	(m/s)	(m/s)	(m/s)	(1/m)	(s)	(s)	(s)	(s)	(s)	(s)	(m**2/s)	(s/m**2)	(s/m**2)	(m**2/s)	(m**2/s)				(m**2/s)				
idcode	secup	seclow	l_measl_to	u_measl_to	storativity_so	leakage_coeff_o	hydr_cond_kosf	l_measl_kosf	u_measl_kosf	spec_storage_sosf	dt1	dt2	t1	t2	dte1	dte2	index_1	index_2	index_2_new	diffusivity	transmissivity_to_nlr	value_type_to_nlr	storativity_so_nlr	transmissivity_to_grf	value_type_to_grf	storativity_so_grf	flow_dim_grf_o	comments
HLX28	91,00	154,00	3,00E-05	3,00E-04	1,88E-04						35418	177372					0,2	2007,9	10126,4	5,69E-01								
HLX28	70,00	90,00	3,00E-05	3,00E-04	1,30E-04						70152	164844					0,4	2162,3	11401,8	7,68E-01								
HLX28	7,50	69,00	4,00E-05	4,00E-04	9,30E-05						62094	164844					0,3	1544,5	8425,7	1,43E+00								
HLX37	150,00	200,00	3,00E-05	3,00E-04	1,39E-05						102528	181752					2,5	1853,4	11681,3	7,69E+00								
HLX37	111,00	149,00	3,00E-05	3,00E-04	1,38E-05						103674	178692					2,8	2162,3	13705,9	7,91E+00								
HLX37	94,00	110,00	#NV	#NV	#NV						#NV	#NV					#NV	772,3	4905,8	#NV								
HLX37	0,00	93,00	#NV	#NV	#NV						#NV	#NV					#NV	772,3	4961,6	#NV								
KLX19A	509,00	517,00	8,00E-06	3,00E-05	9,00E-06						#NV	#NV					6,1	12047,1	68991,8	1,72E+00								
KLX19A	481,50	508,00	8,00E-06	3,00E-05	1,05E-05						103674	210420					5,5	11892,6	67429,8	1,47E+00								
KLX19A	311,00	480,50	8,00E-06	3,00E-05	1,29E-05						71886	205344					4,3	11892,6	66176,8	1,19E+00								
KLX19A	291,00	310,00	2,00E-05	9,00E-05	1,78E-05						73116	178692					3,3	9267,0	50149,6	2,40E+00								
KLX19A	136,00	290,00	3,00E-05	3,00E-04	6,92E-05						108858	181752					0,4	2007,9	11277,6	1,30E+00								
KLX19A	0,00	135,00	4,00E-05	4,00E-04	4,00E-05						#NV	#NV					0,9	2007,9	11472,3	2,94E+00								
KLX20A	103,00	144,00	#NV	#NV	#NV						#NV	#NV					#NV	926,7	6048,1	#NV								
KLX20A	0,00	102,00	#NV	#NV	#NV						#NV	#NV					#NV	617,8	4030,3	#NV								
KLX23A	49,00	100,00	4,00E-05	3,00E-04	2,47E-05						120024	173094					1,9	2007,9	12319,3	4,30E+00								
KLX24A	69,00	100,00	#NV	#NV	#NV						#NV	#NV					#NV	772,3	5106,1	#NV								
KLX24A	41,00	68,00	#NV	#NV	#NV						#NV	#NV					#NV	772,3	5110,3	#NV								

APPENDIX 8

Nomenclature

Character	SICADA designation	Explanation	Dimension	Unit
Variables, constants				
A_w		Horizontal area of water surface in open borehole, not including area of signal cables, etc.	$[L^2]$	m^2
b		Aquifer thickness (Thickness of 2D formation)	[L]	m
B		Width of channel	[L]	m
L		Corrected borehole length	[L]	m
L_0		Uncorrected borehole length	[L]	m
L_p		Point of application for a measuring section based on its centre point or centre of gravity for distribution of transmissivity in the measuring section.	[L]	m
L_w		Test section length.	[L]	m
dL		Step length, Positive Flow Log - overlapping flow logging. (step length, PFL)	[L]	m
r		Radius	[L]	m
r_w		Borehole, well or soil pipe radius in test section.	[L]	m
r_{we}		Effective borehole, well or soil pipe radius in test section. (Consideration taken to skin factor)	[L]	m
r_s		Distance from test section to observation section, the shortest distance.	[L]	m
r_t		Distance from test section to observation section, the **interpreted** shortest distance via conductive structures.	[L]	m
r_D		Dimensionless radius, $r_D=r/r_w$	-	-
z		Level above reference point	[L]	m
z_r		Level for reference point on borehole	[L]	m
z_{wu}		Level for test section (section that is being flowed), upper limitation	[L]	m
z_{wl}		Level for test section (section that is being flowed), lower limitation	[L]	m
z_{ws}		Level for sensor that measures response in test section (section that is flowed)	[L]	m
z_{ou}		Level for observation section, upper limitation	[L]	m
z_{ol}		Level for observation section, lower limitation	[L]	m
z_{os}		Level for sensor that measures response in observation section	[L]	m
E		Evaporation: hydrological budget:	$[L^3/(T\ L^2)]$ $[L^3/T]$	mm/y, mm/d, m^3/s
ET		Evapotranspiration hydrological budget:	$[L^3/(T\ L^2)]$ $[L^3/T]$	mm/y, mm/d, m^3/s
P		Precipitation hydrological budget:	$[L^3/(T\ L^2)]$ $[L^3/T]$	mm/y, mm/d, m^3/s
R		Groundwater recharge hydrological budget:	$[L^3/(T\ L^2)]$ $[L^3/T]$	mm/y, mm/d, m^3/s
D		Groundwater discharge hydrological budget:	$[L^3/(T\ L^2)]$ $[L^3/T]$	mm/y, mm/d, m^3/s
Q_R		Run-off rate	$[L^3/T]$	m^3/s
Q_p		Pumping rate	$[L^3/T]$	m^3/s
Q_I		Infiltration rate	$[L^3/T]$	m^3/s
Q		Volumetric flow. Corrected flow in flow logging ($Q_1 – Q_0$) (Flow rate)	$[L^3/T]$	m^3/s
Q_0		Flow in test section during undisturbed conditions (flow logging).	$[L^3/T]$	m^3/s
Q_p		Flow in test section immediately before stop of flow. Stabilised pump flow in flow logging.	$[L^3/T]$	m^3/s

Character	SICADA designation	Explanation	Dimension	Unit
Q_m		Arithmetical mean flow during perturbation phase.	$[L^3/T]$	m^3/s
Q_1		Flow in test section during pumping with pump flow Q_{p1}, (flow logging).	$[L^3/T]$	m^3/s
Q_2		Flow in test section during pumping with pump flow Q_{p1}, (flow logging).	$[L^3/T]$	m^3/s
ΣQ	SumQ	Cumulative volumetric flow along borehole	$[L^3/T]$	m^3/s
ΣQ_0	SumQ0	Cumulative volumetric flow along borehole, undisturbed conditions (ie, not pumped)	$[L^3/T]$	m^3/s
ΣQ_1	SumQ1	Cumulative volumetric flow along borehole, with pump flow Q_{p1}	$[L^3/T]$	m^3/s
ΣQ_2	SumQ2	Cumulative volumetric flow along borehole, with pump flow Q_{p2}	$[L^3/T]$	m^3/s
ΣQ_{C1}	SumQC1	Corrected cumulative volumetric flow along borehole, ΣQ_1-ΣQ_0	$[L^3/T]$	m^3/s
ΣQ_{C2}	SumQC2	Corrected cumulative volumetric flow along borehole, ΣQ_2-ΣQ_0	$[L^3/T]$	m^3/s
q		Volumetric flow per flow passage area (Specific discharge (Darcy velocity, Darcy flux, Filtration velocity)).	$([L^3/T*L^2]$	m/s
V		Volume	$[L^3]$	m^3
V_w		Water volume in test section.	$[L^3]$	m^3
V_p		Total water volume injected/pumped during perturbation phase.	$[L^3]$	m^3
v		Velocity	$([L^3/T*L^2]$	m/s
v_a		Mean transport velocity (Average linear velocity (Average linear groundwater velocity, Mean microscopic velocity));. $v_a=q/n_e$	$([L^3/T*L^2]$	m/s
t		Time	[T]	hour,min,s
t_0		Duration of rest phase before perturbation phase.	[T]	s
t_p		Duration of perturbation phase. (from flow start as far as p_p).	[T]	s
t_F		Duration of recovery phase (from p_p to p_F).	[T]	s
t_1, t_2 etc		Times for various phases during a hydro test.	[T]	hour,min,s
dt		Running time from start of flow phase and recovery phase respectively.	[T]	s
dt_e		$dt_e = (dt \cdot tp) / (dt + tp)$ Agarwal equivalent time with dt as running time for recovery phase.	[T]	s
t_D		$t_D = T \cdot t / (S \cdot r_w^2)$. Dimensionless time	-	-
p		Static pressure; including non-dynamic pressure which depends on water velocity. Dynamic pressure is normally ignored in estimating the potential in groundwater flow relations.	$[M/(LT)^2]$	kPa
p_a		Atmospheric pressure	$[M/(LT)^2]$	kPa
p_t		Absolute pressure; $p_t=p_a+p_g$	$[M/(LT)^2]$	kPa
p_g		Gauge pressure; Difference between absolute pressure and atmospheric pressure.	$[M/(LT)^2]$	kPa
p_0		Initial pressure before test begins, prior to packer expansion.	$[M/(LT)^2]$	kPa
p_i		Pressure in measuring section before start of flow.	$[M/(LT)^2]$	kPa
p_f		Pressure during perturbation phase.	$[M/(LT)^2]$	kPa
p_s		Pressure during recovery.	$[M/(LT)^2]$	kPa
p_p		Pressure in measuring section before flow stop.	$[M/(LT)^2]$	kPa
p_F		Pressure in measuring section at end of recovery.	$[M/(LT)^2]$	kPa
p_D		$p_D=2\pi \cdot T \cdot p/(Q \cdot \rho_w g)$, Dimensionless pressure	-	-
dp		Pressure difference, drawdown of pressure surface between two points of time.	$[M/(LT)^2]$	kPa

Character	SICADA designation	Explanation	Dimension	Unit
dp_f		$dp_f = p_i - p_f$ or $= p_f - p_i$, drawdown/pressure increase of pressure surface between two points of time during perturbation phase. dp_f usually expressed positive.	$[M/(LT)^2]$	kPa
dp_s		$dp_s = p_s - p_p$ or $= p_p - p_s$, pressure increase/drawdown of pressure surface between two points of time during recovery phase. dp_s usually expressed positive.	$[M/(LT)^2]$	kPa
dp_p		$dp_p = p_i - p_p$ or $= p_p - p_i$, **maximal** pressure increase/drawdown of pressure surface between two points of time during perturbation phase. dp_p expressed positive.	$[M/(LT)^2]$	kPa
dp_F		$dp_F = p_p - p_F$ or $= p_F - p_p$, **maximal** pressure increase/drawdown of pressure surface between two points of time during recovery phase. dp_F expressed positive.	$[M/(LT)^2]$	kPa
H		Total head; (potential relative a reference level) (indication of h for phase as for p). $H=h_e+h_p+h_v$	[L]	m
h		Groundwater pressure level (hydraulic head (piezometric head; possible to use for level observations in boreholes, static head)); (indication of h for phase as for p). $h=h_e+h_p$	[L]	m
h_e		Height of measuring point (Elevation head); Level above reference level for measuring point.	[L]	m
h_p		Pressure head; Level above reference level for height of measuring point of stationary column of water giving corresponding static pressure at measuring point	[L]	m
h_v		Velocity head; height corresponding to the lifting for which the kinetic energy is capable (usually neglected in hydrogeology)	[L]	m
s		Drawdown; Drawdown from undisturbed level (same as dh_p, positive)	[L]	m
s_p		Drawdown in measuring section before flow stop.	[L]	m
			[L]	
h_0		Initial above reference level before test begins, prior to packer expansion.	[L]	m
h_i		Level above reference level in measuring section before start of flow.	[L]	m
h_f		Level above reference level during perturbation phase.	[L]	m
h_s		Level above reference level during recovery phase.	[L]	m
h_p		Level above reference level in measuring section before flow stop.	[L]	m
h_F		Level above reference level in measuring section at end of recovery.	[L]	m
dh		Level difference, drawdown of water level between two points of time.	[L]	m
dh_f		$dh_f = h_i - h_f$ or $= h_f - h_i$, drawdown/pressure increase of pressure surface between two points of time during perturbation phase. dh_f usually expressed positive.	[L]	m
dh_s		$dh_s = h_s - h_p$ or $= h_p - h_s$, pressure increase/drawdown of pressure surface between two points of time during recovery phase. dh_s usually expressed positive.	[L]	m
dh_p		$dh_p = h_i - h_p$ or $= h_p - h_i$, maximal pressure increase/drawdown of pressure surface between two points of time during perturbation phase. dh_p expressed positive.	[L]	m
dh_F		$dh_F = h_p - h_F$ or $= h_F - h_p$, maximal pressure increase/drawdown of pressure surface between two points of time during perturbation phase. dh_F expressed positive.	[L]	m
Te_w		Temperature in the test section (taken from temperature logging). Temperature		^oC
Te_{w0}		Temperature in the test section during undisturbed conditions (taken from temperature logging).		^oC

Character	SICADA designation	Explanation	Dimension	Unit
Te_o		Temperature in the observation section (taken from temperature logging). Temperature		^oC
EC_w		Electrical conductivity of water in test section.		mS/m
EC_{w0}		Electrical conductivity of water in test section during undisturbed conditions.		mS/m
EC_o		Electrical conductivity of water in observation section		mS/m
TDS_w		Total salinity of water in the test section.	$[M/L^3]$	mg/L
TDS_{w0}		Total salinity of water in the test section during undisturbed conditions.	$[M/L^3]$	mg/L
TDS_o		Total salinity of water in the observation section.	$[M/L^3]$	mg/L
g		Constant of gravitation (9.81 $m*s^{-2}$) (Acceleration due to gravity)	$[L/T^2]$	m/s^2
π	pi	Constant (approx 3.1416).	[-]	
r		Residual. $r= p_c-p_m$, $r= h_c-h_m$, etc. Difference between measured data (p_m, h_m, etc) and estimated data (p_c, h_c, etc)		
ME		Mean error in residuals. $ME = \frac{1}{n}\sum_{i=1}^{n} r_i$		
NME		Normalized ME. NME=ME/(x_{MAX}-x_{MIN}), x: measured variable considered.		
MAE		Mean absolute error. $MAE = \frac{1}{n}\sum_{i=1}^{n} \lvert r_i \rvert$		
NMAE		Normalized MAE. NMAE=MAE/(x_{MAX}-x_{MIN}), x: measured variable considered.		
RMS		Root mean squared error. $RMS = \left(\frac{1}{n}\sum_{i=1}^{n} r_i^2\right)^{0.5}$		
NRMS		Normalized RMR. NRMR=RMR/(x_{MAX}-x_{MIN}), x: measured variable considered.		
SDR		Standard deviation of residual. $SDR = \left(\frac{1}{n-1}\sum_{i=1}^{n} (r_i - ME)^2\right)^{0.5}$		
SEMR		Standard error of mean residual. $SEMR = \left(\frac{1}{n(n-1)}\sum_{i=1}^{n} (r_i - ME)^2\right)^{0.5}$		
Parameters				
Q/s		Specific capacity $s=dp_p$ or $s=s_p=h_0-h_p$ (open borehole)	$[L^2/T]$	m^2/s
D		Interpreted flow dimension according to Barker, 1988.	[-]	-
dt_1		Time of starting for semi-log or log-log evaluated characteristic counted from start of flow phase and recovery phase respectively.	[T]	s
dt_2		End of time for semi-log or log-log evaluated characteristic counted from start of flow phase and recovery phase respectively.	[T]	s
dt_L		Response time to obtain 0.1 m (or 1 kPa) drawdown in observation section counted from start of recovery phase.	[T]	s
TB		Flow capacity in a one-dimensional structure of width B and transmissivity T. Transient evaluation of one-dimensional structure	$[L^3/T]$	m^3/s
T		Transmissivity	$[L^2/T]$	m^2/s
T_M		Transmissivity according to Moye (1967)	$[L^2/T]$	m^2/s
T_Q		Evaluation based on Q/s and regression curve between Q/s and T, as example see Rhén et al (1997) p. 190.	$[L^2/T]$	m^2/s
T_S		Transmissivity evaluated from slug test	$[L^2/T]$	m^2/s

Character	SICADA designation	Explanation	Dimension	Unit
T_D		Transmissivity evaluated from PFL-Difference Flow Meter	$[L^2/T]$	m^2/s
T_I		Transmissivity evaluated from Impeller flow log	$[L^2/T]$	m^2/s
T_{Sf}, T_{Lf}		Transient evaluation based on semi-log or log-log diagram for perturbation phase in injection or pumping.	$[L^2/T]$	m^2/s
T_{Ss}, T_{Ls}		Transient evaluation based on semi-log or log-log diagram for recovery phase in injection or pumping.	$[L^2/T]$	m^2/s
T_T		Transient evaluation (log-log or lin-log). Judged best evaluation of T_{Sf}, T_{Lf}, T_{Ss}, T_{Ls}	$[L^2/T]$	m^2/s
T_{NLR}		Evaluation based on non-linear regression.	$[L^2/T]$	m^2/s
T_{Tot}		Judged most representative transmissivity for particular test section and (in certain cases) evaluation time with respect to available data (made by SKB at a later stage).	$[L^2/T]$	m^2/s
K		Hydraulic conductivity	[L/T]	m/s
K_s		Hydraulic conductivity based on spherical flow model	[L/T]	m/s
K_m		Hydraulic conductivity matrix, intact rock	[L/T]	m/s
k		Intrinsic permeability	$[L^2]$	m^2
kb		Permeability-thickness product: kb=k·b	$[L^3]$	m^3
SB		Storage capacity in a one-dimensional structure of width B and storage coefficient S. Transient evaluation of one-dimensional structure	[L]	m
SB*		Assumed storage capacity in a one-dimensional structure of width B and storage coefficient S. Transient evaluation of one-dimensional structure	[L]	m
S		Storage coefficient, (Storativity)	[-]	-
S*		Assumed storage coefficient	[-]	-
S_y		Theoretical specific yield of water (Specific yield; unconfined storage. Defined as total porosity (n) minus retention capacity (S_r)	[-]	-
S_{ya}		Specific yield of water (Apparent specific yield); unconfined storage, field measuring. Corresponds to volume of water achieved on draining saturated soil or rock in free draining of a volumetric unit. S_{ya}= S_y (often called S_y in literature)	[-]	-
S_r		Specific retention capacity, (specific retention of water, field capacity) (Specific retention); unconfined storage. Corresponds to water volume that the soil or rock has left after free draining of saturated soil or rock.	[-]	-
S_f		Fracture storage coefficient	[-]	-
S_m		Matrix storage coefficient	[-]	-
S_{NLR}		Storage coefficient, evaluation based on non-linear regression	[-]	-
S_{Tot}		Judged most representative storage coefficient for particular test section and (in certain cases) evaluation time with respect to available data (made by SKB at a later stage).	[-]	-
S_s		Specific storage coefficient; confined storage.	[1/L]	1/m
S_s*		Assumed specific storage coefficient; confined storage.	[1/L]	1/m
c_f		Hydraulic resistance: The hydraulic resistance is an aquitard with a flow vertical to a two-dimensional formation. The inverse of c is also called Leakage coefficient. c_f=b´/K´ where b´ is thickness of the aquitard and K´ its hydraulic conductivity across the aquitard.	[T]	s
L_f		Leakage factor: $L_f = (K \cdot b \cdot c_f)^{0.5}$ where K represents characteristics of the aquifer.	[L]	m
ξ	Skin	Skin factor	[-]	-

Character	SICADA designation	Explanation	Dimension	Unit
ξ^*	Skin	Assumed skin factor	[-]	-
C		Wellbore storage coefficient	$[(LT^2)\cdot M^2]$	m^3/Pa
C_D		$C_D = C\cdot\rho_w g /(2\pi\cdot S\cdot r_w^2)$, Dimensionless wellbore storage coefficient	[-]	-
ω	Stor-ratio	$\omega = S_f /(S_f + S_m)$, storage ratio (Storativity ratio); the ratio of storage coefficient between that of the fracture and total storage.	[-]	-
λ	Interflow-coeff	$\lambda = \alpha\cdot (K_m / K_f)\cdot r_w^2$ interporosity flow coefficient.	[-]	-
T_{GRF}		Transmissivity interpreted using the GRF method	$[L^2/T]$	m^2/s
S_{GRF}		Storage coefficient interpreted using the GRF method	[1/L]	1/m
D_{GRF}		Flow dimension interpreted using the GRF method	[-]	-
c_w		Water compressibility; corresponding to β in hydrogeological literature.	$[(LT^2)/M]$	1/Pa
c_r		Pore-volume compressibility, (rock compressibility); Corresponding to α/n in hydrogeological literature.	$[(LT^2)/M]$	1/Pa
c_t		$c_t = c_r + c_w$, total compressibility; compressibility per volumetric unit of rock obtained through multiplying by the total porosity, n. (Presence of gas or other fluids can be included in c_t if the degree of saturation (volume of respective fluid divided by n) of the pore system of respective fluid is also included)	$[(LT^2)/M]$	1/Pa
nc_t		Porosity-compressibility factor: $nc_t = n\cdot c_t$	$[(LT^2)/M]$	1/Pa
nc_tb		Porosity-compressibility-thickness product: $nc_tb = n\cdot c_t.b$	$[(L^2T^2)/M]$	m/Pa
n		Total porosity	-	-
n_e		Kinematic porosity, (Effective porosity)	-	-
e		Transport aperture. $e = n_e\cdot b$	[L]	m
ρ	Density	Density	$[M/L^3]$	$kg/(m^3)$
ρ_w	Density-w	Fluid density in measurement section during pumping/injection	$[M/L^3]$	$kg/(m^3)$
ρ_o	Density-o	Fluid density in observation section	$[M/L^3]$	$kg/(m^3)$
ρ_{sp}	Density-sp	Fluid density in standpipes from measurement section	$[M/L^3]$	$kg/(m^3)$
μ	my	Dynamic viscosity	[M/LT]	Pa s
μ_w	my	Dynamic viscosity (Fluid density in measurement section during pumping/injection)	[M/LT]	Pa s
FC_T		Fluid coefficient for intrinsic permeability, transference of k to K; $K=FC_T\cdot k$; $FC_T=\rho_w\cdot g/\mu_w$	[1/LT]	1/(ms)
FC_S		Fluid coefficient for porosity-compressibility, transference of c_t to S_s ; $S_s=FC_S\cdot n\cdot c_t$; $FC_S=\rho_w\cdot g$	$[M/T^2L^2]$	Pa/m
Index on K, T and S				
S		S: semi-log		
L		L: log-log		
f		Pump phase or injection phase, designation following S or L (withdrawal)		
s		Recovery phase, designation following S or L (recovery)		
NLR		NLR: Non-linear regression. Performed on the entire test sequence, perturbation and recovery		
M		Moye		
GRF		Generalised Radial Flow according to Barker (1988)		
m		Matrix		
f		Fracture		
T		Judged best evaluation based on transient evaluation.		

Character	SICADA designation	Explanation	Dimension	Unit
Tot		Judged most representative parameter for particular test section and (in certain cases) evaluation time with respect to available data (made by SKB at a later stage).		
b		Bloch property in a numerical groundwater flow model		
e		Effective property (constant) within a domain in a numerical groundwater flow model.		
Index on p and Q				
0		Initial condition, undisturbed condition in open holes		
i		Natural, "undisturbed" condition of formation parameter		
f		Pump phase or injection phase (withdrawal, flowing phase)		
s		Recovery, shut-in phase		
p		Pressure or flow in measuring section at end of perturbation period		
F		Pressure in measuring section at end of recovery period.		
m		Arithmetical mean value		
c		Estimated value. The index is placed last if index for “where” and “what” are used. Simulated value		
m		Measured value. The index is placed last if index for “where” and “what” are used. Measured value		
Some miscellaneous indexes on p and h				
w		Test section (final difference pressure during flow phase in test section can be expressed dp_{wp}; First index shows “where” and second index shows “what”)		
o		Observation section (final difference pressure during flow phase in observation section can be expressed dp_{op}; First index shows “where” and second index shows “what”)		
f		Fresh-water head. Water is normally pumped up from section to measuring hoses where pressure and level are observed. Density of the water is therefore approximately the same as that of the measuring section. Measured groundwater level is therefore normally represented by what is defined as point-water head. If pressure at the measuring level is recalculated to a level for a column of water with density of fresh water above the measuring point it is referred to as fresh-water head and h is indicated last by an f. Observation section (final level during flow phase in observation section can be expressed h_{opf}; the first index shows “where” and the second index shows “what” and the last one “recalculation”)		