

Utah FORGE

Monitored Well: 16B(78)-32



16B Cement Pumping Fiber Optics Monitoring Evolution 0 Neubrex Fiber Optic Field Operations: Jul 2023

Neubrex Energy Services (US), LLC

Dana Jurick | Executive VP, Neubrex Energy Services (US), LLC

Dr. Artur Guzik | Software Engineering and Services, Neubrex Infra AG

Dr. Kinzo Kishida | CEO, Neubrex LTD and Neubrex Energy Services (US), LLC

Wayne Fishback | Field Acquisition Coordinator, Neubrex Energy Services (US), LLC

Mitsunori Yokoyama | Neubrex LTD

Gang Qi | Neubrex LTD

Last update: Aug 30, 2023

Timeline – this report is Evolution 0



Project timeline and acquisition settings



Name	Target	Neubrex acquisition	
		start	end
Evolution 0	Cementing	Jul 13, 2023, 04:39	Jul 14, 2023, 11:14
Evolution 1	Post-cementing monitoring	Jul 15, 2023, 12:18	Jul 20, 2023, 15:40

Monitored wells



Monitored well and wells on the pad are listed in Table 1.

Table 1. Wells info

Well Name	API/UWI	MD, ft
16B(78)-32	NA	10,208.40

Reference elevation

- Kelly Bushing (KB) is the reference elevation in this project and report
- KB is 31 feet above the casing bowl
- Test heat performed
 - See reference and red arrow

Fiber Optic Information – “Shell Cable”



End of Fiber Cable:

Fiber termination info and depth received from Operator.

Table 2. Fiber termination depths

Name	KB, ft	Termination, ft BF	Fibers
16B(78)-32	31	10,108.46	SM/MM

There are 2 separate sensing cables installed on this well (names are after casing tally)

- Shell cable (starts at 10,108.46 MD ft KB)
- Silixa cable (starts at 10,001.22 MD ft KB)

All measurements presented in this Report were made on “Shell cable”

Casing tally – basic well and casing info from Tally



Table 3. Casing tally header

As Ran FORGE 16B(78)-32 Audited to KB				Instrumentation Casing Running Tally									
				Torque (ft-lbs)									
	Casing			Min	Max	Opt			Fibre Start	10,108.46	ft		
	7" 38# P110EC VAM TOP HT			20,850	25,450	23,150			Toe Gauge	N/A	ft		
	7" 38# P110MS VAM TOP HT			20,850	25,450	23,150			Heel Gauge	7,056.67	ft		
	Average Joint Length 4.5"	12.68					Open Hole	9.500"	Stick-Up	7.56	ft	2.86	
	Average Joint Length 5.5"	12.58					7" 38# P110EC VAM TOP HT	Drift: 5.795"	KOP#1	5500.00	ft		
	TD:	10208.40					7" 38# P110MS VAM TOP HT	Drift: 5.795"	Landing Point	7,000.00	ft		
	Ground Level	10177.40					11.75" 65 lb/ft P110/125, BTC	Drift: 10.526"	Int Csg	4,837.00	ft		
	Rat hole:	0.00					Cross-over from MS to EC	~ 8100'	KB (To Csg Bowl)	31	ft		
If you have any questions regarding instrumentation and CCP installation on this tally please contact the originator - Alan Reynolds - 757 304 1977													
Item	JT #	Mud Fill	Comments	Threads off length	Cumm Length	Bottom Depth	Top Depth	Centralizers	CCP	Jt #	Protectors	Comments	
David Lynch Float Shoe	A			2.67	2.67	10,208.40	10,205.73	David Lynch Float Shoe		A			
7" 38# P110EC VAM TOP HT	A			47.10	49.77	10,205.73	10,158.63	One 9.125" Centralizer		A		31 0700 0913 S5V8S - pre-installed	
7" 38# P110EC VAM TOP HT	1		Test Shoe?	46.96	96.73	10,158.63	10,111.67	None		1	7000-35-01SRN20.3		
Termination Sub	B		Shell Fibre Start	6.43	103.16	10,111.67	10,105.24	None		B	None		
7" 38# P110EC VAM TOP HT	2			46.99	150.15	10,105.24	10,058.25	One 9.125" Centralizer		2	7000-35-01SRN20.3	31 0700 0913 S5V8S	
7" 38# P110EC VAM TOP HT	3			47.02	197.17	10,058.25	10,011.23	None		3	7000-35-01SRN20.3		
7" 38# P110EC VAM TOP HT Pup	Pup D			10.01	207.18	10,011.23	10,001.22	One Eccentralizer		Pup D	7000-35-01SRN20.3	30 0700 0900 S5V8S 0403	
7" 38# P110EC VAM TOP HT Pup	Pup A		Silixa Fibre Start	20.09	227.27	10,001.22	9,981.13	One Eccentralizer		Pup A	7000-35-01SRN20.3	31 0700 0900 S5V8S 0403	
7" 38# P110EC VAM TOP HT	4			46.02	273.29	9,981.13	9,935.11	One 9.125" Centralizer		4	7000-98-01-76-01P-4C	31 0700 0913 S5V8S	
7" 38# P110EC VAM TOP HT Pup	C		Full Optical Suite	10.38	283.67	9,935.11	9,924.73	One 9.125" Centralizer		C	7000-35-01SRN20.3	31 0700 0913 S5V8S	

Measurement Units

The time zone and unit system

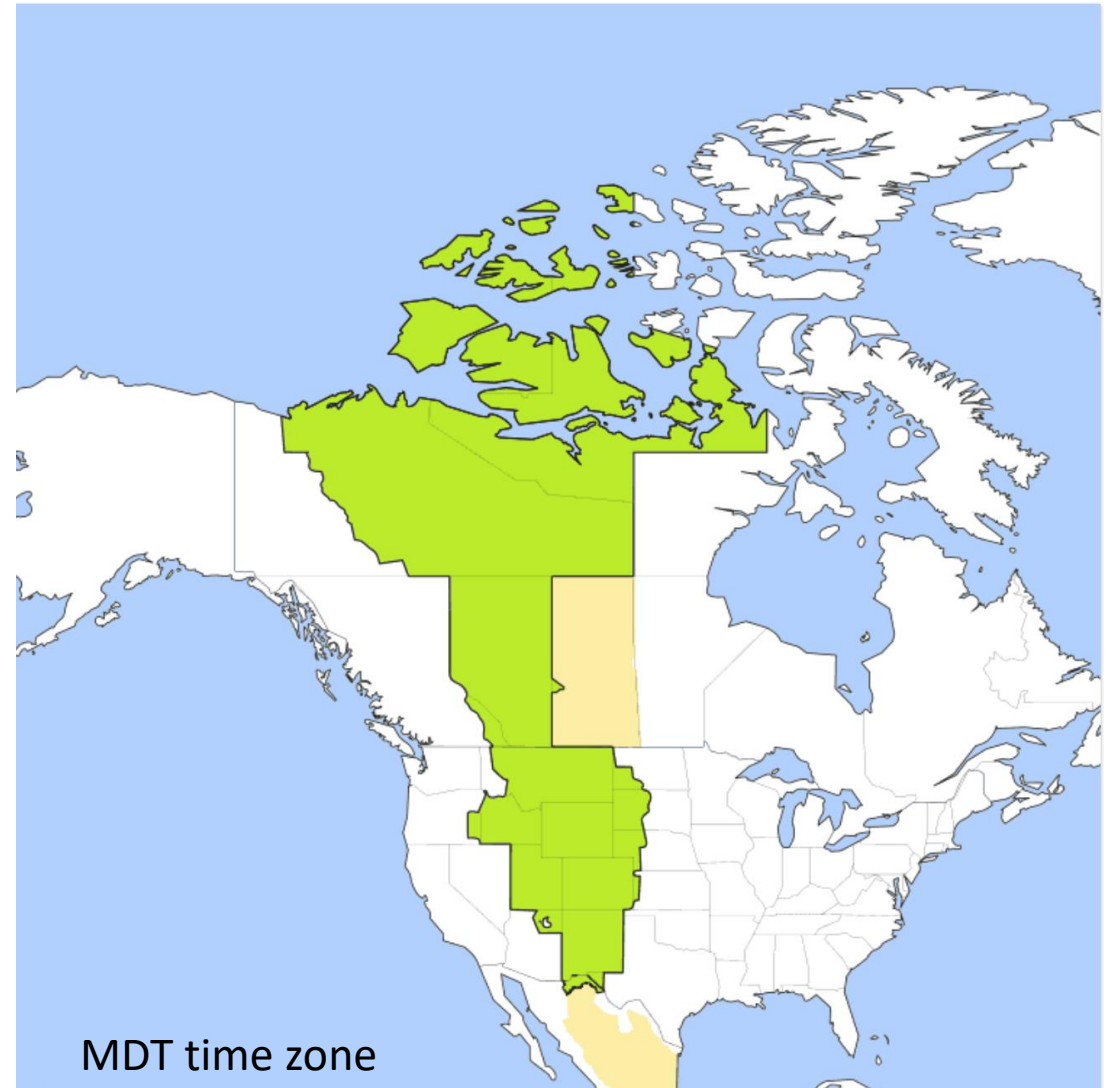
Measurement units

- Imperial (US) units are used in the report
 - Distance – foot, ft
 - Temperature – Fahrenheit degree, °F
 - Pressure – pound per square inch, psi

- Values of strain reported as micro-strain, $\mu\epsilon$
 - Unless stated otherwise

Time zone

- Results reported in this document are in ***Mountain Daylight Time (MDT)***
- Local time zone was ***Mountain Daylight Time (MDT)***
 - UTC Offset: UTC -6

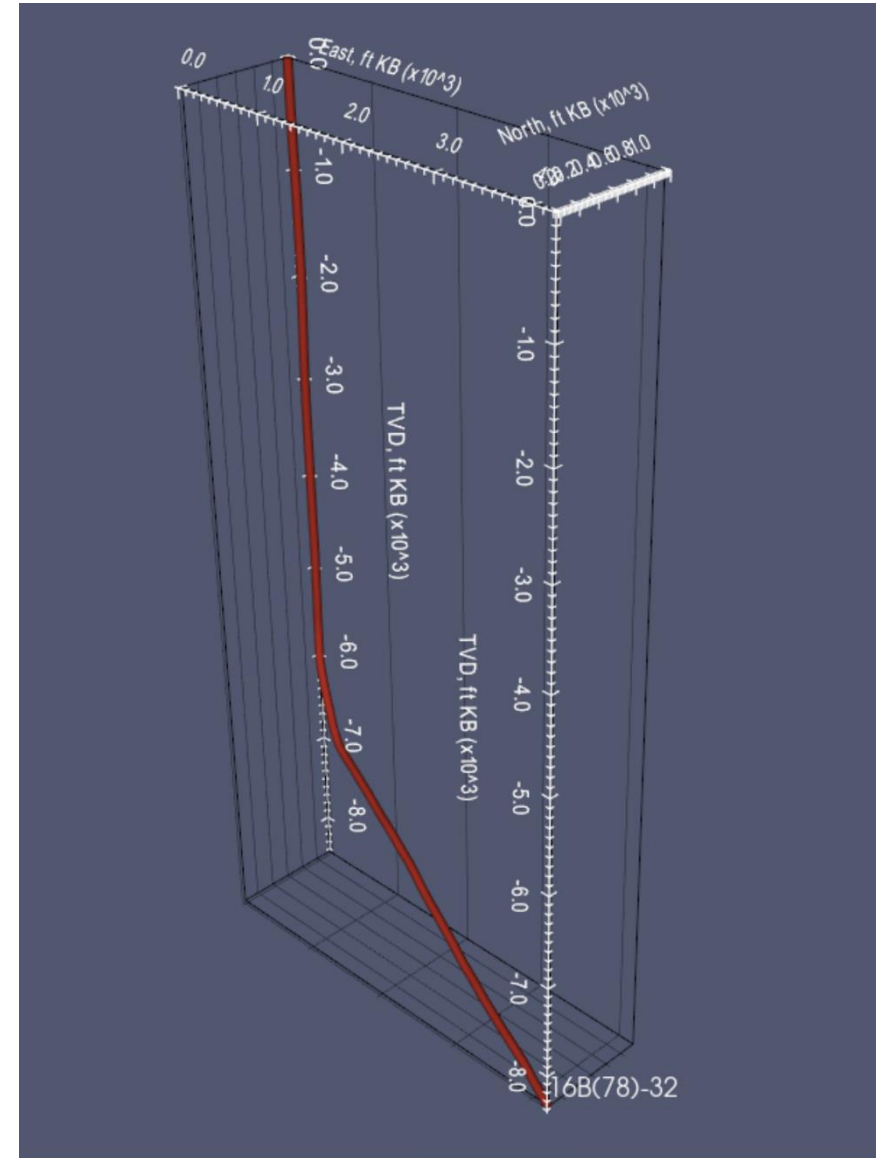
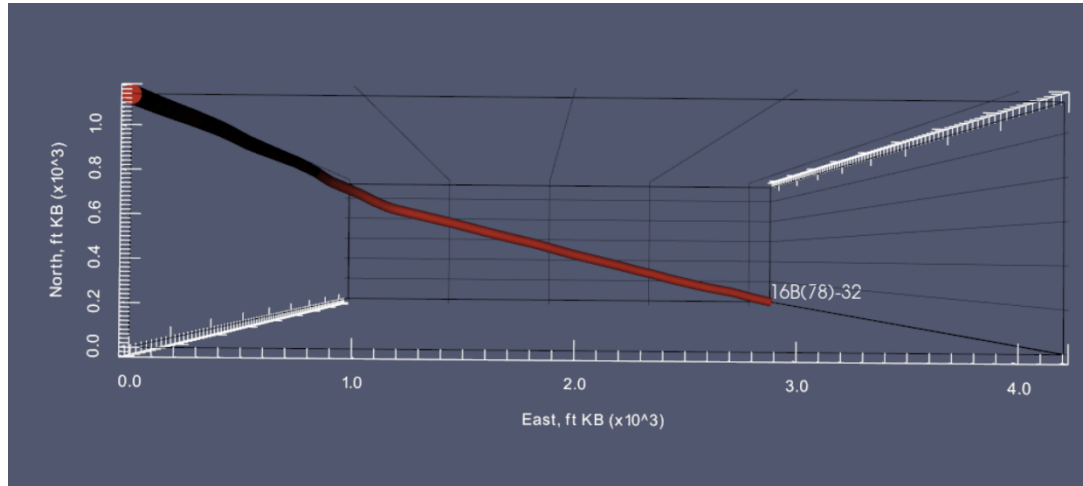




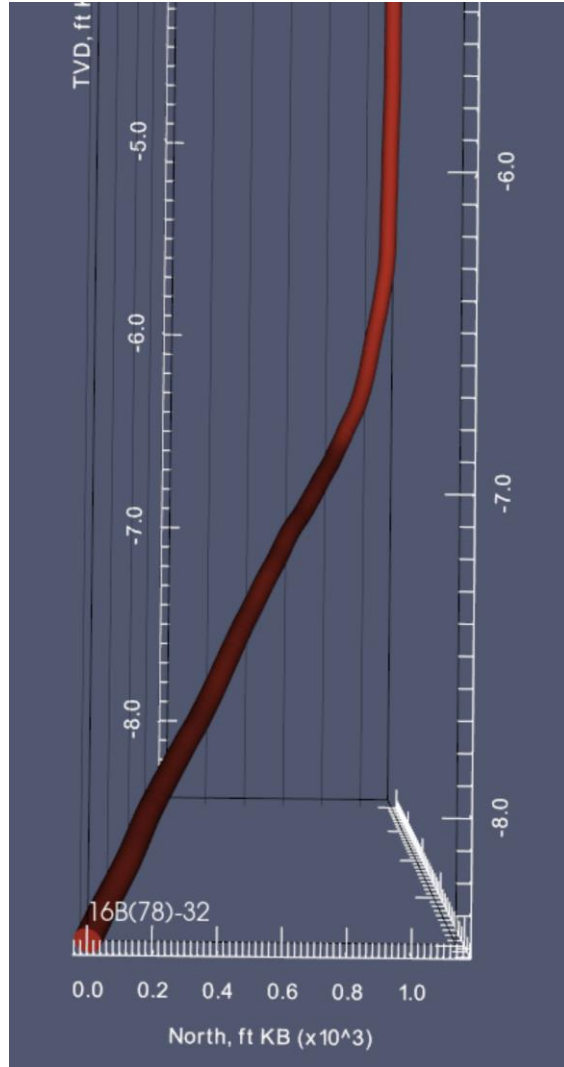
Well Survey Renderings

Based on schematics and deviation survey data provided by Operator

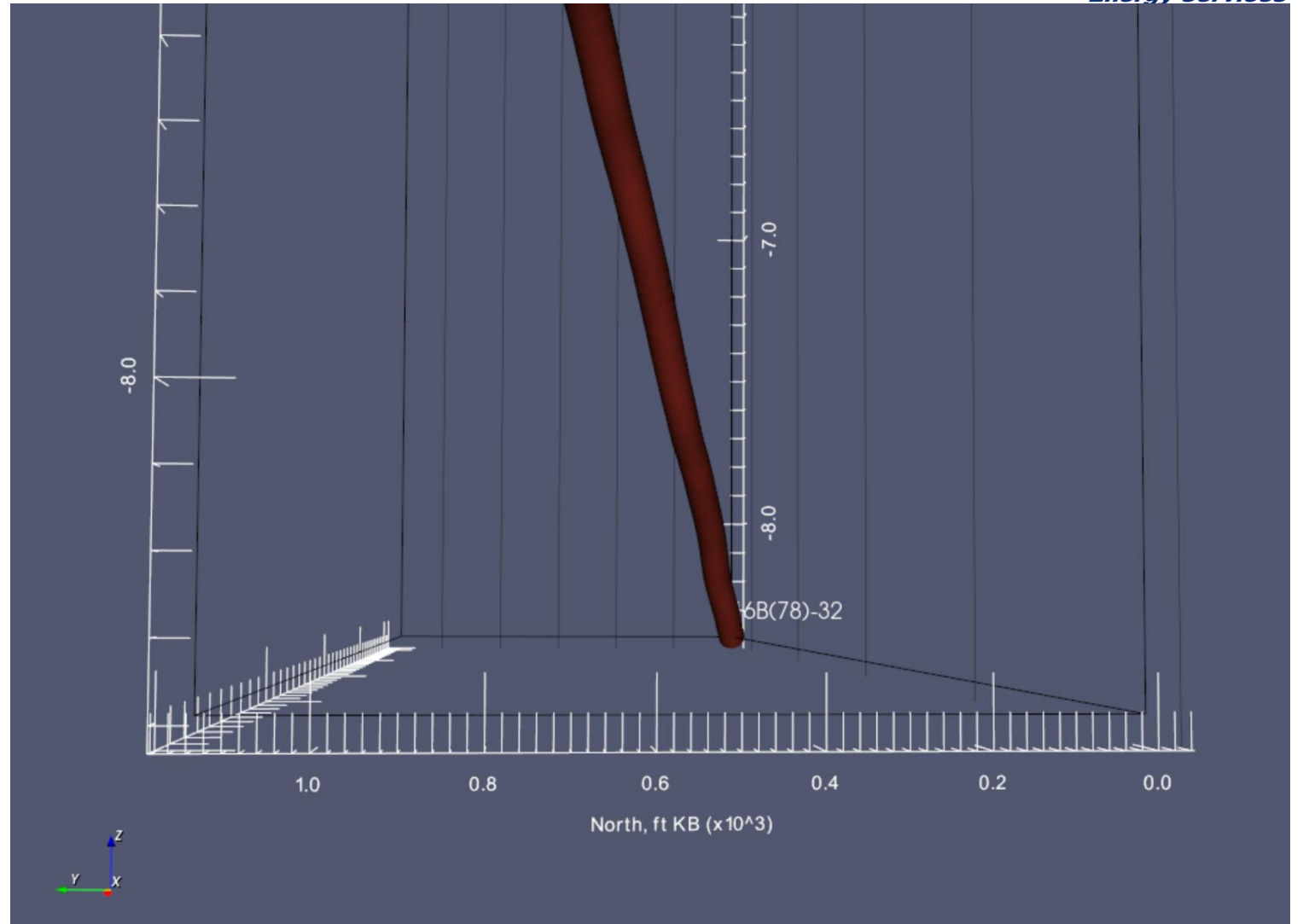
Monitored well



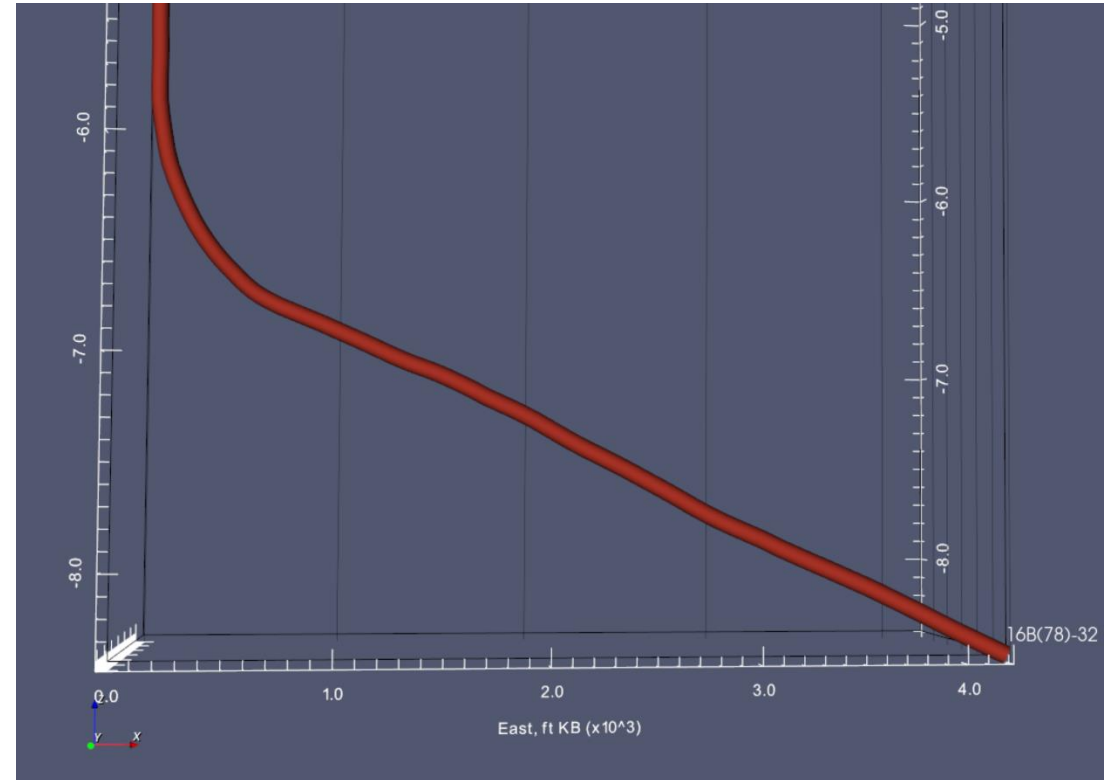
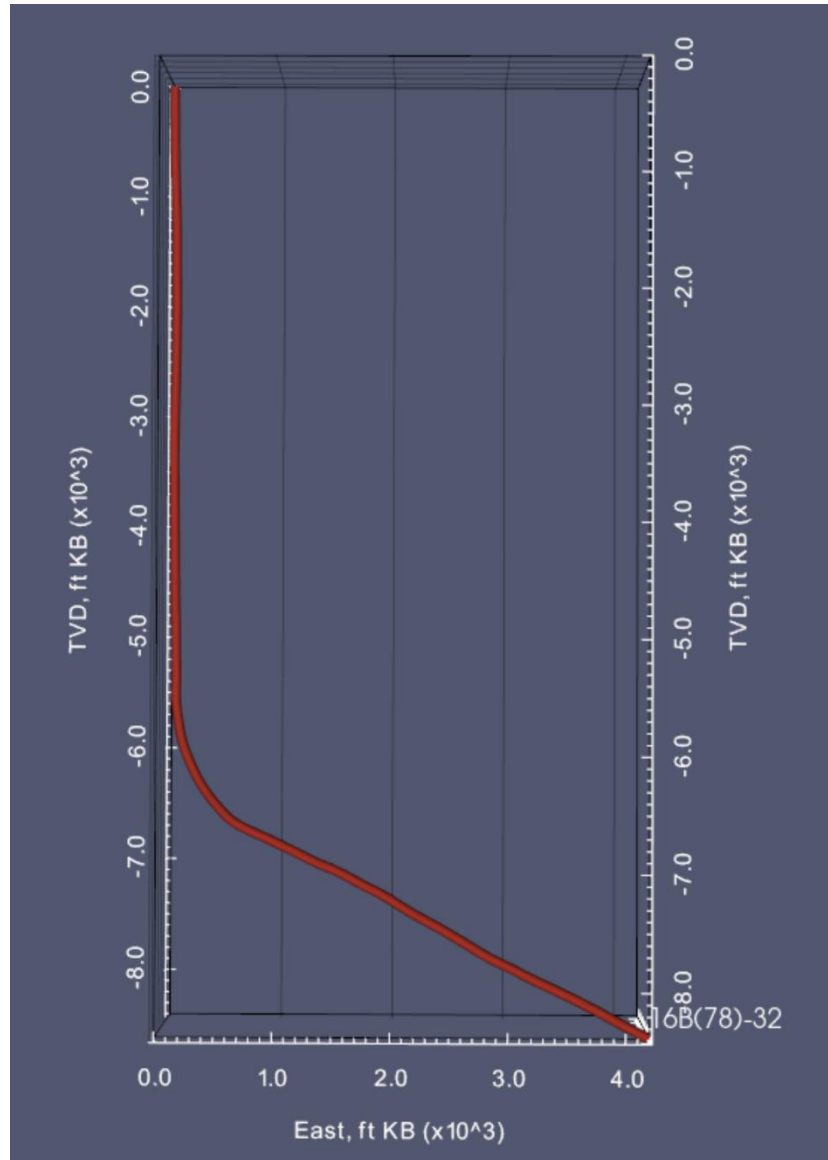
Monitored well



Gun barrel view



Monitored well



Measurements type and target

Information on measurements type and acquired signals

- Monitoring target:
 - Strain and temperature changes on the monitored well

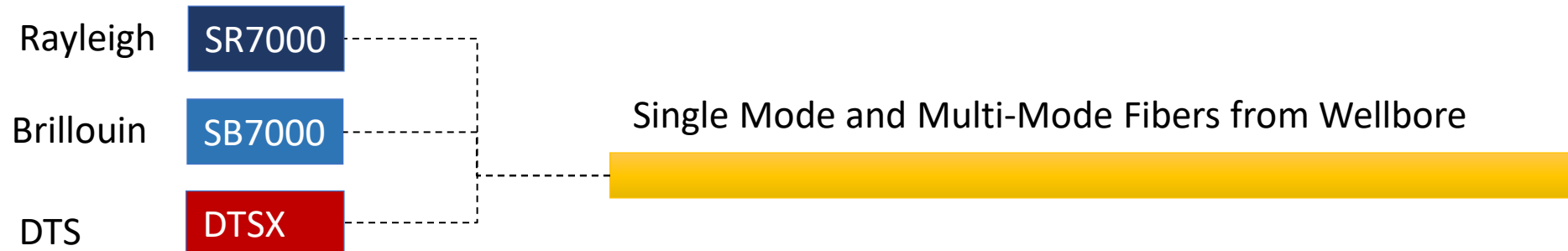
- Measurements:
 - Rayleigh Frequency Shift
 - (from reference time and depths) strain change
 - Rayleigh frequency shift, profile time to profile time, strain change rate (dRFS/dt)
 - Brillouin absolute strain
 - Brillouin center frequency converted to strain
 - DTS
 - Raman based temperature measurements

Fiber connection scheme and pics

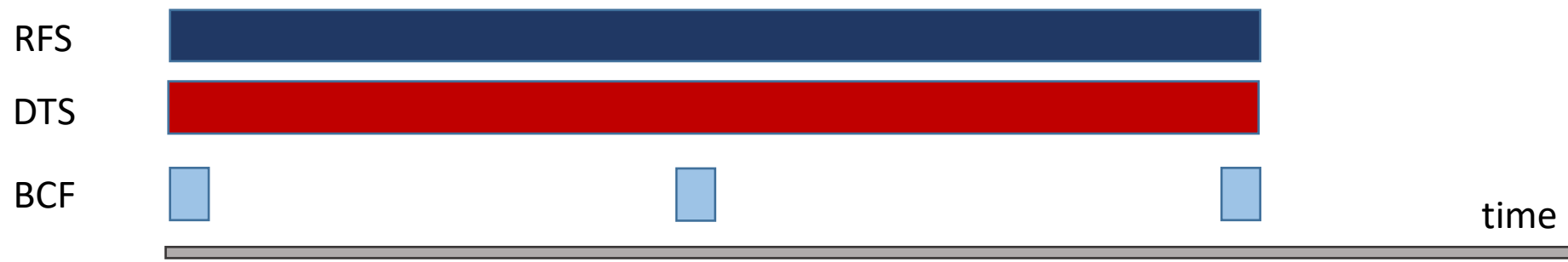
Connection of NBX instruments to permanent wellbore fibers

Connection scheme

- Instruments are connected to the different SM and/or MM fibers
 - Continuous acquisition of DTS, RFS was achieved during the survey time



Measurements types and sensing pattern over time



- The following fibers were used during data acquisition:

Table 3. Fibers used during acquisition

Name	Type	IOR	Length
SMF 1	SM	1.4782	10,108.46
SMF 2	SM	1.4782	10,108.46
MM 2	MM	1.4790	10,108.46

Fiber connections and measurements sequence



RFS/BCF measurements

Jul 13, 2023 04:39:21	Jul 14, 2023 11:14:57
SMF 2	

Not used during Evo 0 acquisition

SMF 1

DTS measurements

Jul 13, 2023 01:13:57	Jul 14, 2023 11:13:55
MMF 2	



Depth calibration

This Section contains the depth mapping of the fiber optics on monitored wells.

Depth calibration between fiber optic measurements and well measured depth features is an essential and critical component of fiber optic data processing.

Depth calibration marking – ice test

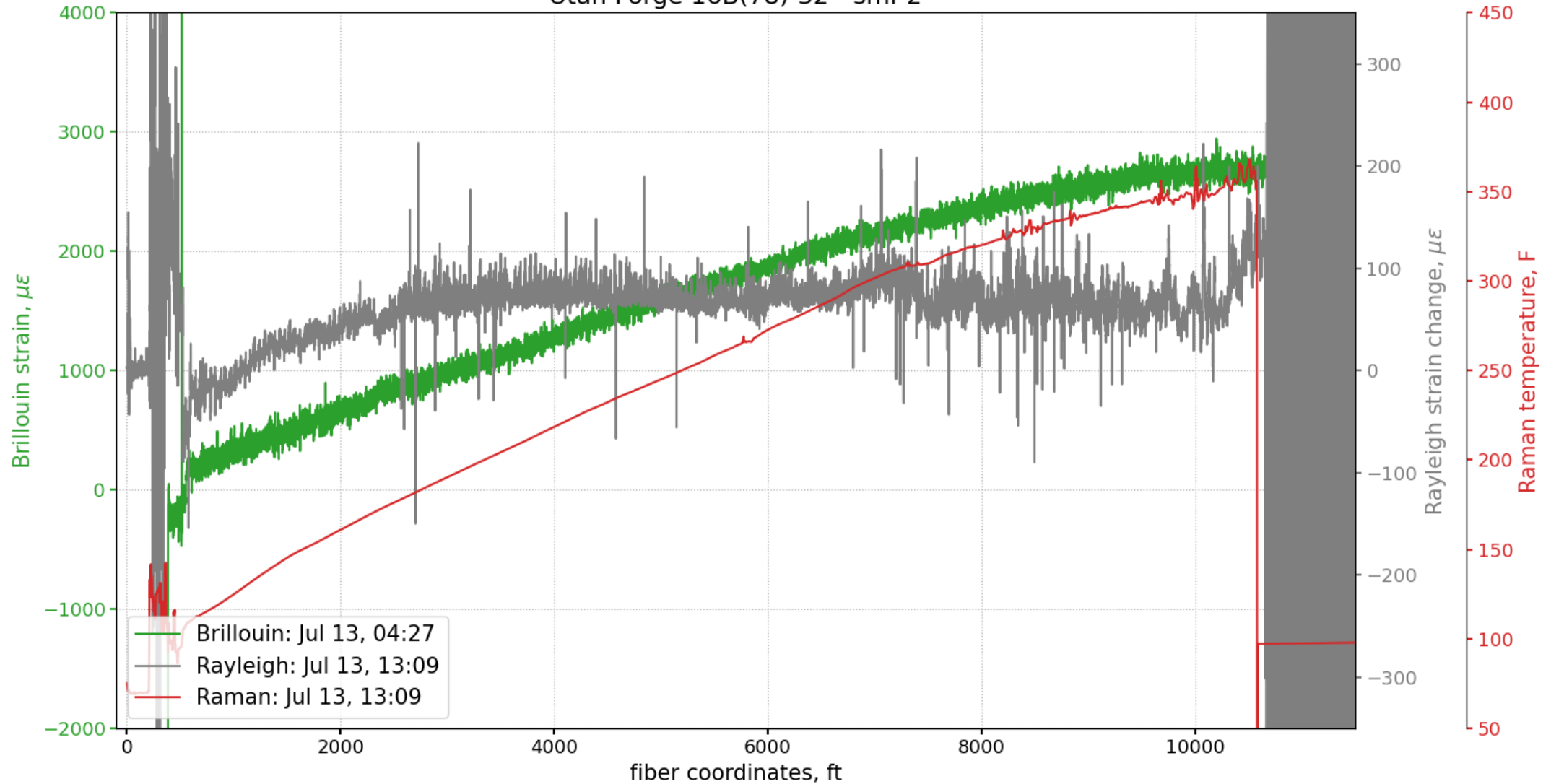


- Ice test was used to detect the location of KB
- The location of the ice is 31 ft above the GL
- Ice test done July 14, 1042 AM
- KB is the elevation reference for this project and report

SMF 2 – fiber coordinates (Original Lengths, no calibration)



Singe Mode Fiber #2 designated for use
Utah Forge 16B(78)-32 - smf 2

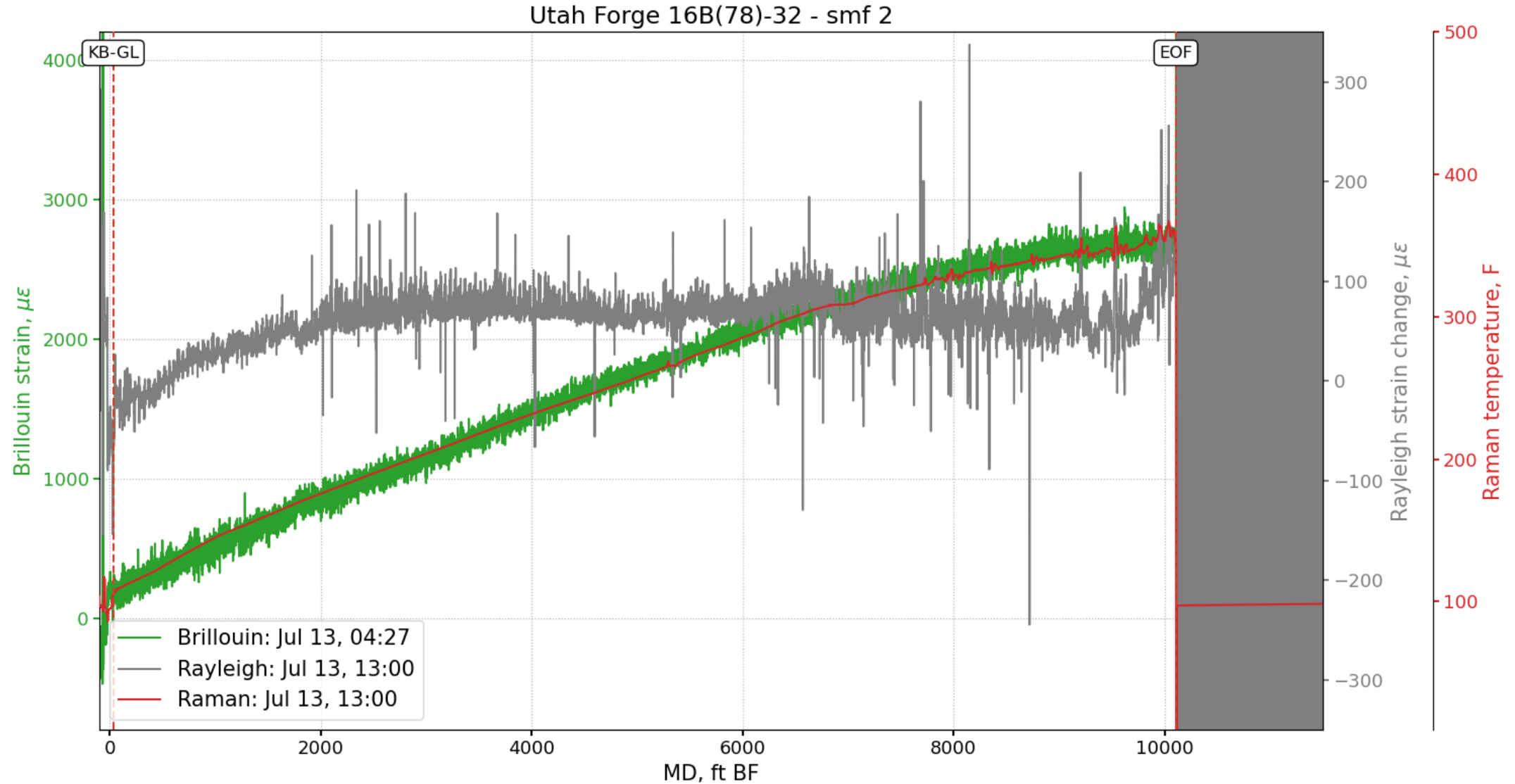


Depth calibration findings from Neubrex workflow and data



- Final measured depth of the fiber termination = **10,108.46 MD, ft KB**
 - KB = **31.0 ft MD**
 - Casing tally report
 - Reference location: GL
 - **Depth Contraction coefficient (SMF 2/MMF 2):**
 - RFS = 1.0000
 - BCF = 1.0000
 - DTS = 1.0027
 - **Offset Correction Distances (SMF 2/MMF 2) IU to Reference Point**
 - RFS: 548.97 ft
 - BCF: 577.66 ft
 - DTS: 496.9 ft
-

SMF 2 – depth calibrations applied to BCF, RFS, and DTS

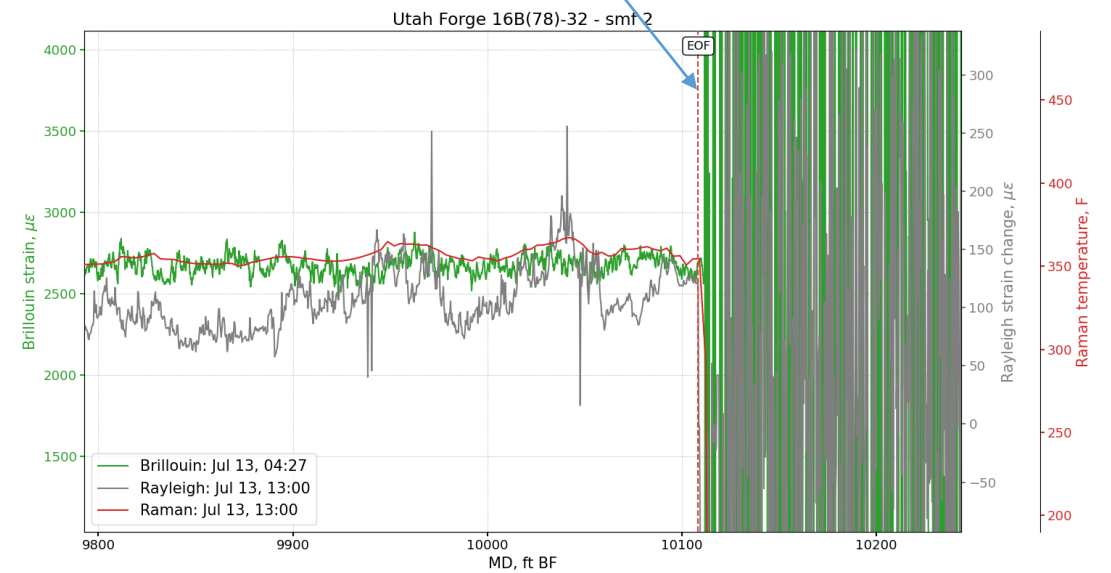
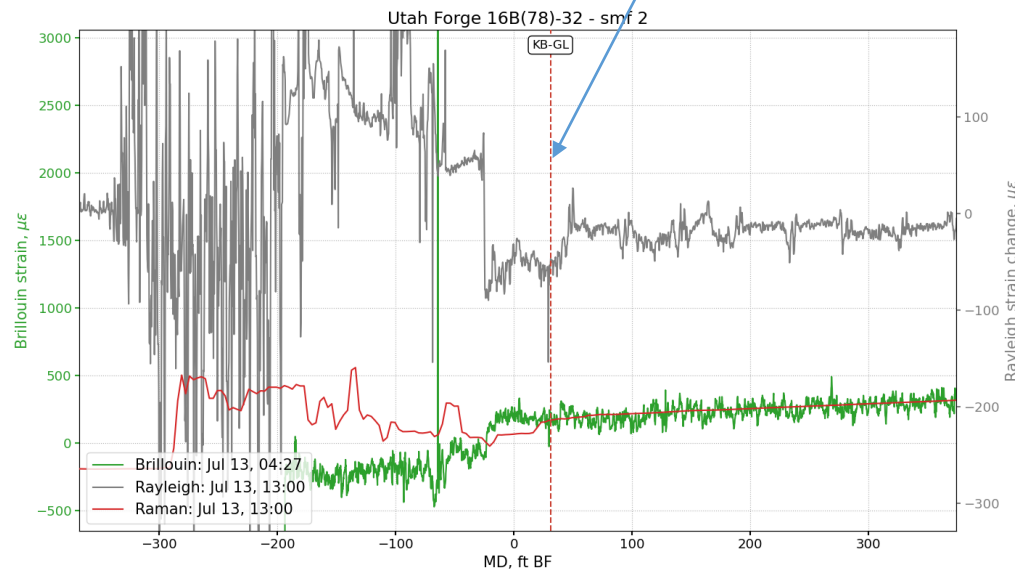


SMF 2 – Depth calibration at Wellhead and Termination



wellhead and GL

termination



Brillouin, Rayleigh, and Raman signals distributions

Summary of Depth Calibration – Fiber to Well MD Results



- The following offsets were determined and are used in all subsequent plots to convert fiber coordinates to Well MD coordinates
- Conversion method:
 - scaling factor is applied first, then offset applied

Well 16B – SMF 2/MMF 2

Data type	Offset, ft	Scaling factor
Brillouin	577.66	1.0000
Rayleigh	548.97	1.0000
DTS	496.90	1.0027



Measurements

Summary of measurements using RFS, DTS, and BCF

RFS = Rayleigh Frequency Shift fiber optic measurement

DTS = Distributed Temperature Sensing fiber optic measurement

BCF = Brillouin Center Frequency fiber optic measurement

Interrogator Unit acquired data parameters



- RFS acquired over entire period of survey
 - RFS is Rayleigh Frequency Shift measured using NBX SR7100 unit
 - Time step between full well interrogation: 30 seconds per profile
 - BCF acquired at specific periods of time during survey period
 - BCF is Brillouin Center Frequency acquired using NBX SB 8200 unit
 - Time duration of full well interrogation: 18 minutes per profile
 - Ensures control of total strain and helps to validate temp distribution of DTS
 - DTS acquired over entire period of survey
 - DTS is distributed temperature sensing using Yokogawa DTSX3000 Interrogator unit.
 - Time step between full well interrogation of DTS: 5 min per profile
 - Measurements are done **on separate SM and MM** fibers during entire survey period (SR7100 and SB8200 use SMF and DTS uses MMF)
 - Depth registration performed on each individual fiber to ensure registration
-

Well 16B(78)-32 – data gaps



- The following data gaps are registered

Table 1. DTS data gaps on well 16B(78)-32

No.	Start	End	Duration
1	Jul 13, 2023, 18:05:05	Jul 13, 2023, 19:31:19	1:26:14

- No data gaps in RFS data sets

Events – annotations

Table 3. Events prior to cementing job

Date	Description
July 12, 2023, 22:03	Start pumping into the 7" casing with the rig pumps, 400 gal/min to circulate for cooldown
July 13, 2023, 05:05	Stop circulation with rig pump and rig-up SLB cement head and connect treating lines.
July 13, 2023, 05:26:59	SLB circulate lines full of water
July 13, 2023, 05:27:28	SLB stop circulation
July 13, 2023, 05:28:30	SLB prime-up cement pump
July 13, 2023, 05:30:48	SLB shut down pump
July 13, 2023, 05:31:22	SLB start pressure test treating lines to 5,000 psi
July 13, 2023, 05:34:41	End of pressure test, bleed pressure off of treating lines, fix leak
July 13, 2023, 05:35:43	SLB start pressure test treating lines to 5,000 psi
July 13, 2023, 05:38:40	End of pressure test, test good, bleed pressure off of treating lines
July 13, 2023, 05:41:40	Start cement job, SLB start pumping Spacer
July 13, 2023, 05:55:46	End of Spacer, SLB start mixing and pumping cement slurry



Engineers Observer (OB) Logs

Observation Notes of Neubrex Field Engineers in the field during operation.

These notes contain details of fiber monitoring ops and our understanding and

Documentation of well operations as reported or seen by Engineers on location.

OB Log (1/3)



Date	Time	Event	Event Details
10-Jul-23	7:51	Mobilize / Travel	Depart shop
	21:15	Mobilize / Travel	Arrive Moriarty NM
11-Jul-23	10:05	Mobilize / Travel	Depart Moriarty NM
	20:39	Mobilize / Travel	Arrive Las Vegas NV
12-Jul-23	7:22	Mobilize / Travel	Pick up Dana at airport. Depart for location
	13:30	Mobilize / Travel	Arrive at location. Meet with Alan Reynolds to discuss spotting of equipment and rig up.
	14:20	Rig up	100 amp plug purchased for job will not be used. Heading to Milford UT to source plug for generator power.
	14:56	Rig up	Plug sourced. Heading back to location
	15:26	Rig up	Arrived at location. Wire up pig tail.
	15:50	Rig up	Pig tail wire up. Spot equipment and start rig up.
	18:16	Rig up	All equipment rigged up. Cooling down IU's . Waiting on fiber connection from Baker.
	18:30	Depart	Depart location for Milford UT.
	18:55	Arrive	Arrive at hotel. Check in.
	20:48	Note	Hanger landed. On standby at hotel.
	22:42	Note	Start circulation to cool wellbore prior to pumping cement
	13-Jul-23	0:00	Rig up
0:30		Acquisition	SB will not pass calibration. Will start collecting SR data. Start troubleshooting with Japan Engineering.
1:10		Acquisition	Start acquisition SR checks.
2:14		Acquisition	Start acquisition DTS
2:28		Acquisition	Start SR readings on SM2
3:58		Acquisition	Stop SR. Swap SM2 to SB and start acquisition.
5:58		Acquisition	Stop SB. Swap SM2 to SR and start acquisition.
6:09		Safety Meeting	Dana attends safety meeting for cement job.
6:32		Cement	Circulation of fluids stopped at 0505am to rig up cement iron
6:38		Cement	0538 about to start pressure testing iron
6:51		Cement	0551 pumping 50 bbl spacer
6:53		Cement	Now starting lead cement at 0553
6:57		Cement	Start 630 bbls lead @13.8 ppg
7:10		Note	Note for feature identification. They noticed a lot of 'loss' on the intermediate casing cement so they will be extremely interested in the cement top and any dynamics around it. The mechanism of the loss is unknown.
7:17		Note	Intermediate casing at 4837 / KOP 5500 / Landing point 7000 / KB 31 / TD 10213 / Hanger 2.86 above ground level
7:57	Cement	Cement leading edge almost to bottom	

OB Log (2/3)



Date	Time	Event	Event Details
	8:07	Cement	Cement is now making the turn at bottom and starting up the annulus
	8:40	Cement	1/2 way up annulus to intermediate shoe and all looks good. No indication of losses yet
	8:52	Cement	Stopped pumping momentarily to switch tanks
	9:03	Cement	0803 opening valves on new tank for cement
	9:05	Cement	0805 spinning pumps
	9:09	Cement	Mixing cement and water.
	9:14	Cement	0813 pumping restarted
	10:57	Cement	ToC at 2100 MD now
	11:25	Cement	Cement is to surface. Still pumping plug down
	12:00	Depart	Wayne and Dana depart for Milford UT. Will remote monitor.
		Note	On going discussion about where ToC is. Current evaluation is ToC 535'. May top off casing in the morning.
14-Jul-23	6:35	Note	At the toe as well comes back into the 435 degree F range as cement cures and we go back toward normal geothermal gradient in the slant well already. Curing evolution looks good to me
	10:42	Offset Data	Ice on fiber cable RKB at 10:42
	12:14	Offset Data	458 feet offset
	12:15	Acquisition	Stop acquisition. Cut cable on rig floor. Partial rig down to move DAQ
	13:34	Depart	Leaving location. Evo Zero in the books. Back Tomorrow to reconnect.
	15:37	Processing	Server3 online with Lyve Drive NES.S.0039 from hotel. Data ready for processing
15-Jul-23	6:30	Depart	Depart hotel for location.
	6:50	Arrive	Arrive at location.
	7:35	Rig up	Arrived on location.... trailer is spotted.... sourcing a generator now
	8:01	Rig up	Generator moved. Connected to trailer. Powered up and cooling IU's
	9:01	Rig up	Status update....we are rigged up waiting to make fiber connection at wellhead. They are pressure testing the Stack at the moment
	10:08	Rig up	Setup DAS
	11:37	Acquisition	Start SB readings on SM2/ Start DTS
	12:00	Acquisition	Start SR readings on SM2
	12:16	Acquisition	Start DAS readings on SM1
	13:54	Acquisition	Baker gauge operational
	14:10	Depart	Wayne and Dana depart for Milford UT. Will remote monitor.
	14:30	Arrive	Arrive at hotel.
	14:45	Depart	Depart for Las Vegas NV.

OB Log (3/3)

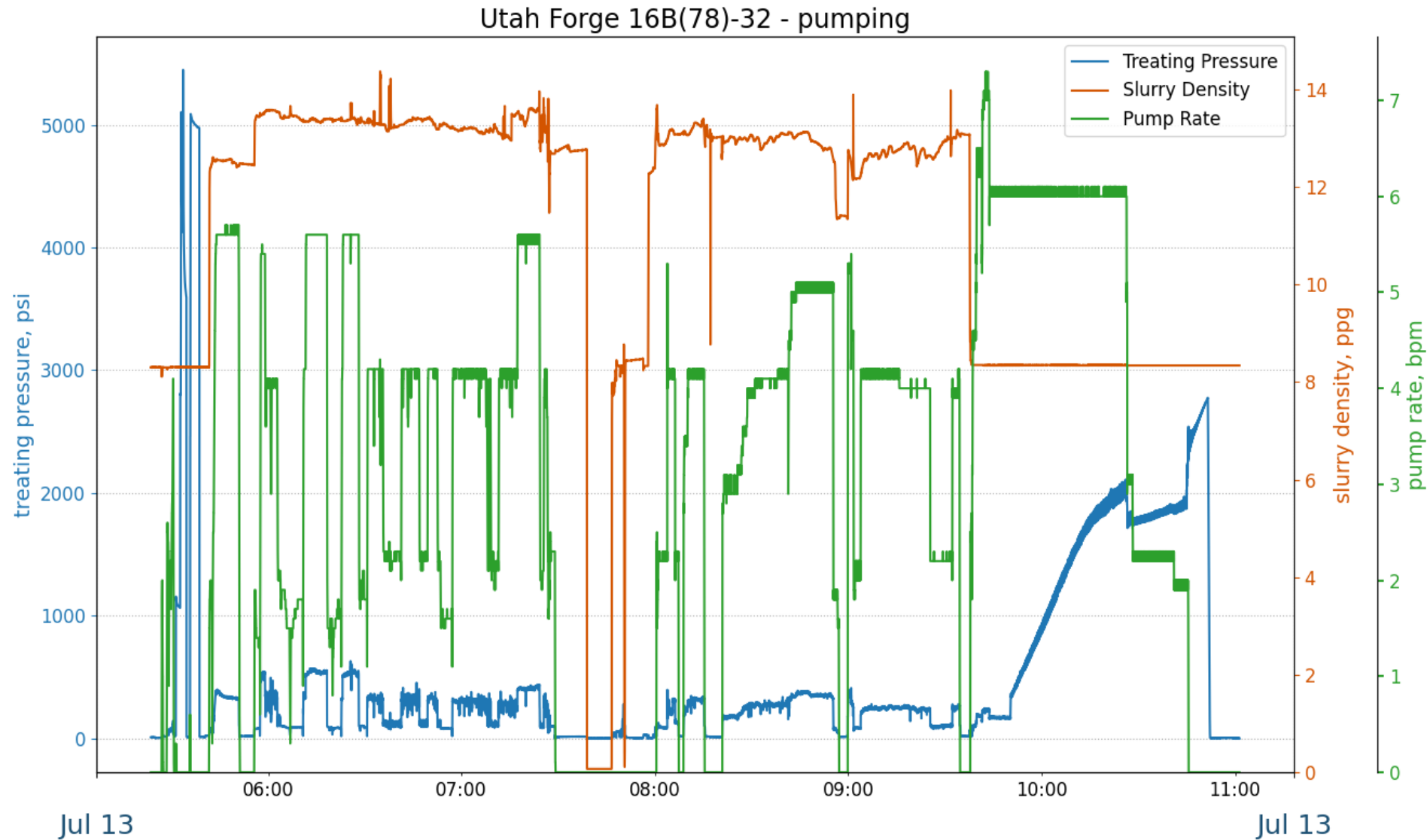


Date	Time	Event	Event Details
	18:15	Arrive	Arrive Las Vegas NV. Drop Dana off for flight on Sunday 7/16/23
	18:20	Depart	Depart for Pahrumph NV.
	19:30	Arrive	Arrive Pahrumph NV.
16-Jul-23	18:11	Depart	Departing Parumph NV for Milford UT
	22:54	Arrive	Arrive Milford UT
18-Jul-23	6:31	Depart	Depart for locatiom
	6:59	Arrive	Arive at location. Meet with Alan Reynolds on troubleshooting Baker downhole gauge.
	8:01	Troubleshoot	Gauge fiber broken about 15' from wellhead connection. @Alan Reynolds has provided Baker armoured cable. Cable is in place... I have to splice connectors on each end
	10:00	Troubleshoot	Gauge is operational
	10:29	Note	Current offset from IU to JB at 400 feet. JB is at GL. So need to take that out then add (I think) 31 feet to any depth on fiber we see.to get MD RKB type depth from fiber.
	11:41	Depart	Depart location for Milford UT.
	12:23	Arrive	Arrive at hotel.
	18:45	Depart	Depart hotel for location. DAS data storage lagging
	19:20	Arrive	Arrive at location
	20:00	Acquisition	Stop acquisition . Moving Lyve drive for Server 3 to Power PC.
	20:49	Acquisition	All data being logged to Power PC on Lyve Drive now. Made connection to Baker SIU and logging P/T data to power PC
	21:02	Depart	Depart location for Milford UT.
	21:27	Arrive	Arrived at hotel
18-Jul-23	8:22	Depart	Depart for locatiom
	8:44	Arrive	Arrive at location
	9:00	Acquisition	Start DAS recording 08:00
	12:01	Safety Meeting	Safety meeting on operation
	12:21	Safety Meeting	Safety meeting finished
	13:51	Acquisition	Pumping started @ 12:09 2.5 BPM
	14:21	Acquisition	Rate increase at 13:09 to 6BPM for the next 6 hours
	16:46	Acquisition	No returns to pit as of now
	17:57	Acquisition	Getting returns to the pit now
	20:30	Acquisition	We are producing at 8 to 10 barrels per hour and the displacement is 350 bbl
	22:53	Acquisition	Pumps shut down

Pumping data

As received from Operator.

Well 16B(78)-32 – pumping data



Jul 13

Jul 13

SMF Optical loss analysis using SR7000 Rayleigh Instrument

Optical loss on SM fiber based on Rayleigh measurements/data.

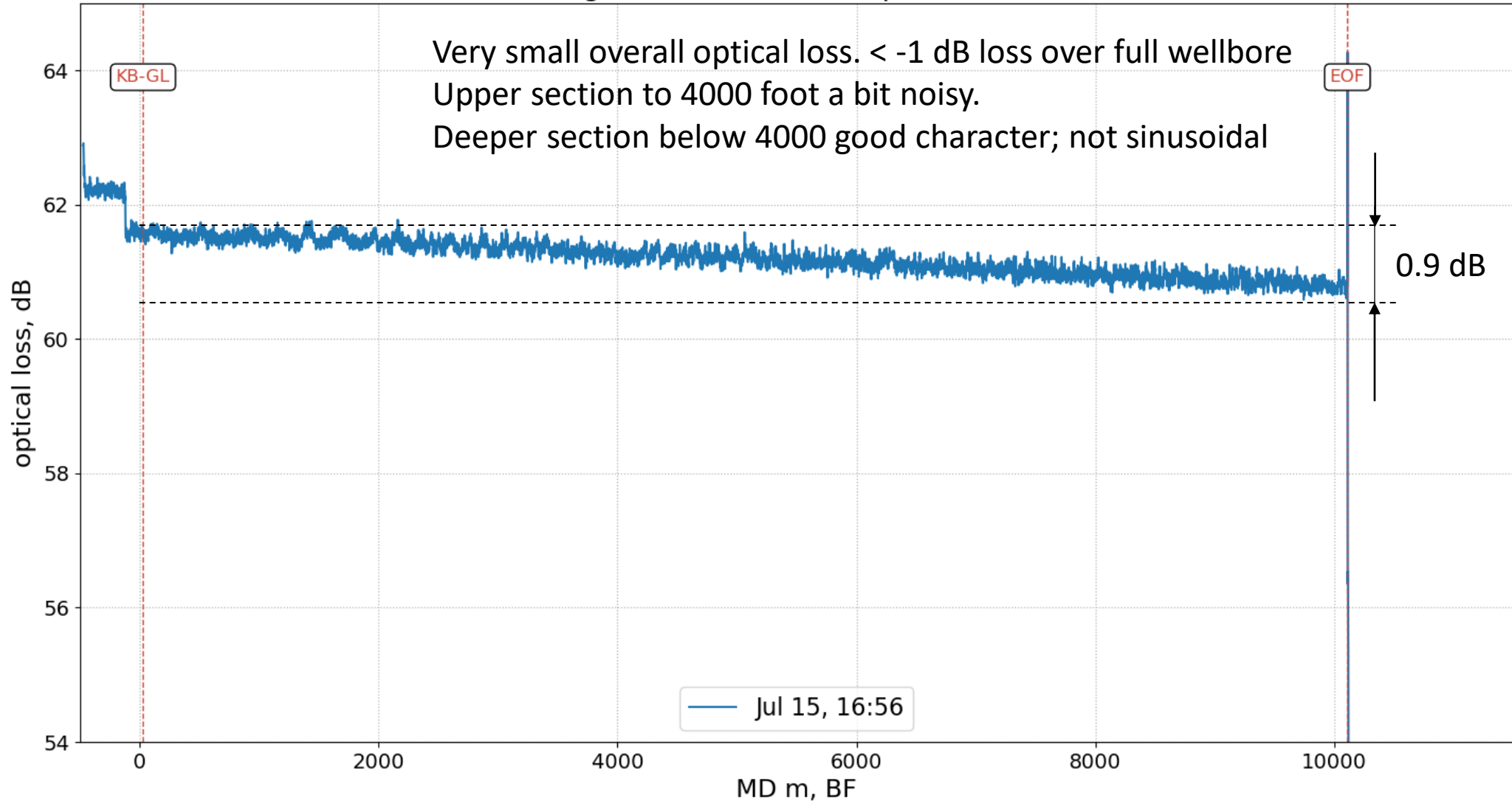
Much better optical loss resolution than hand-held OTDR

Resolution 0.67 ft per depth sample

Well 16B(78)-32 - SMF 2 – optical loss distribution



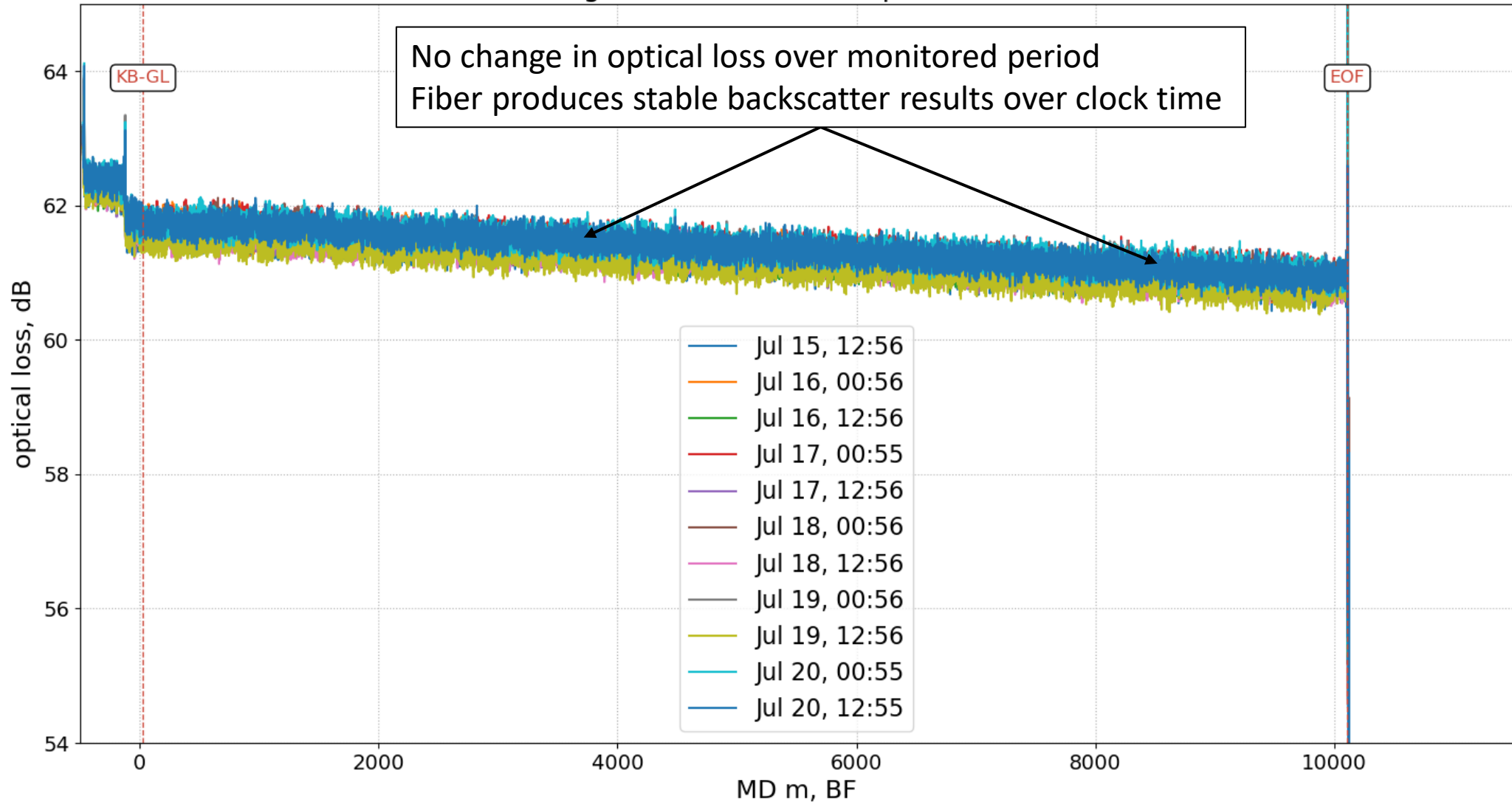
Utah Forge 16B(78)-32: RFS optical loss - smf 2



Well 16B(78)-32 - SMF 2 – optical loss distribution (step 4 h)



Utah Forge 16B(78)-32: RFS optical loss - smf 2

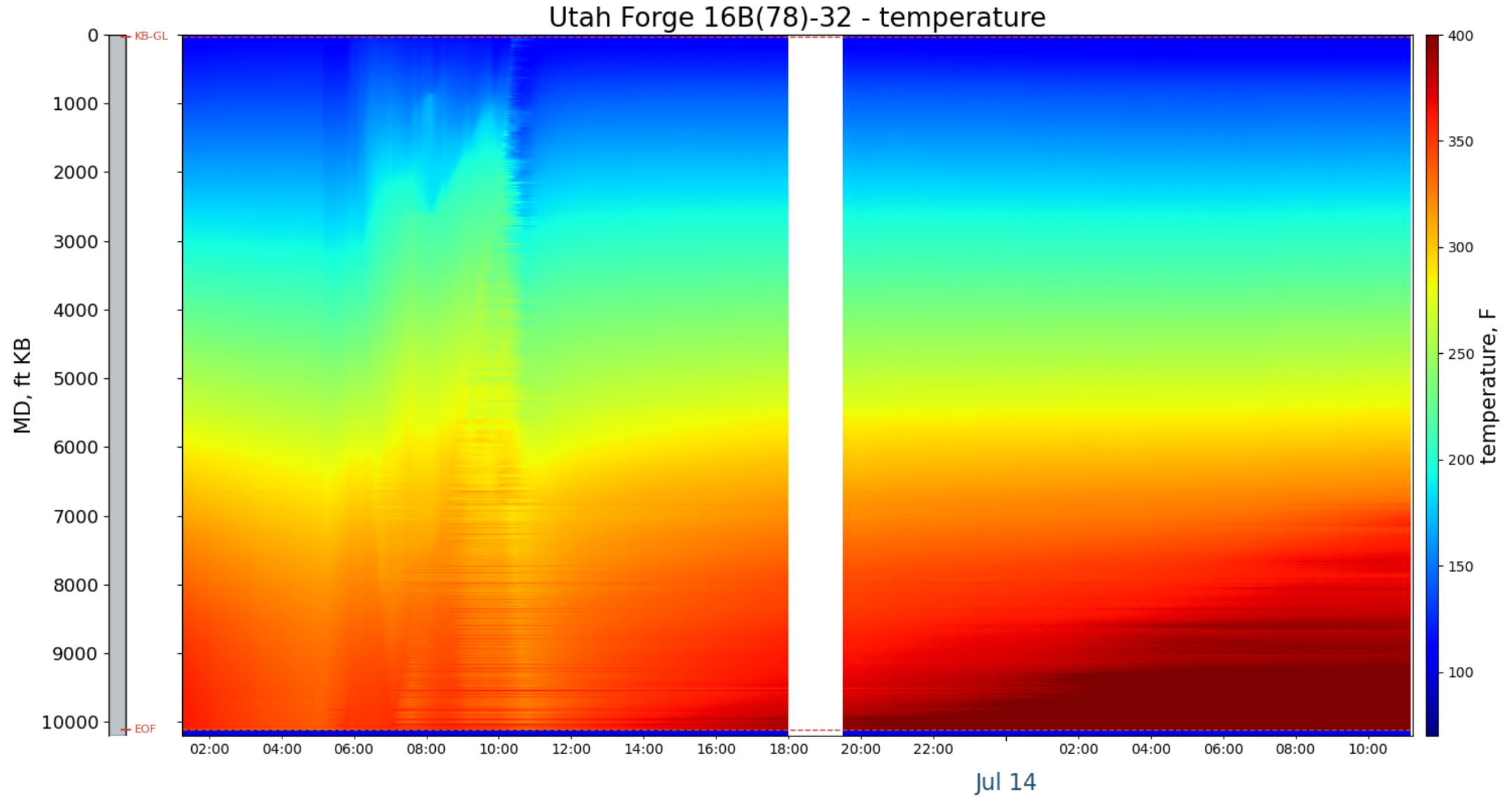




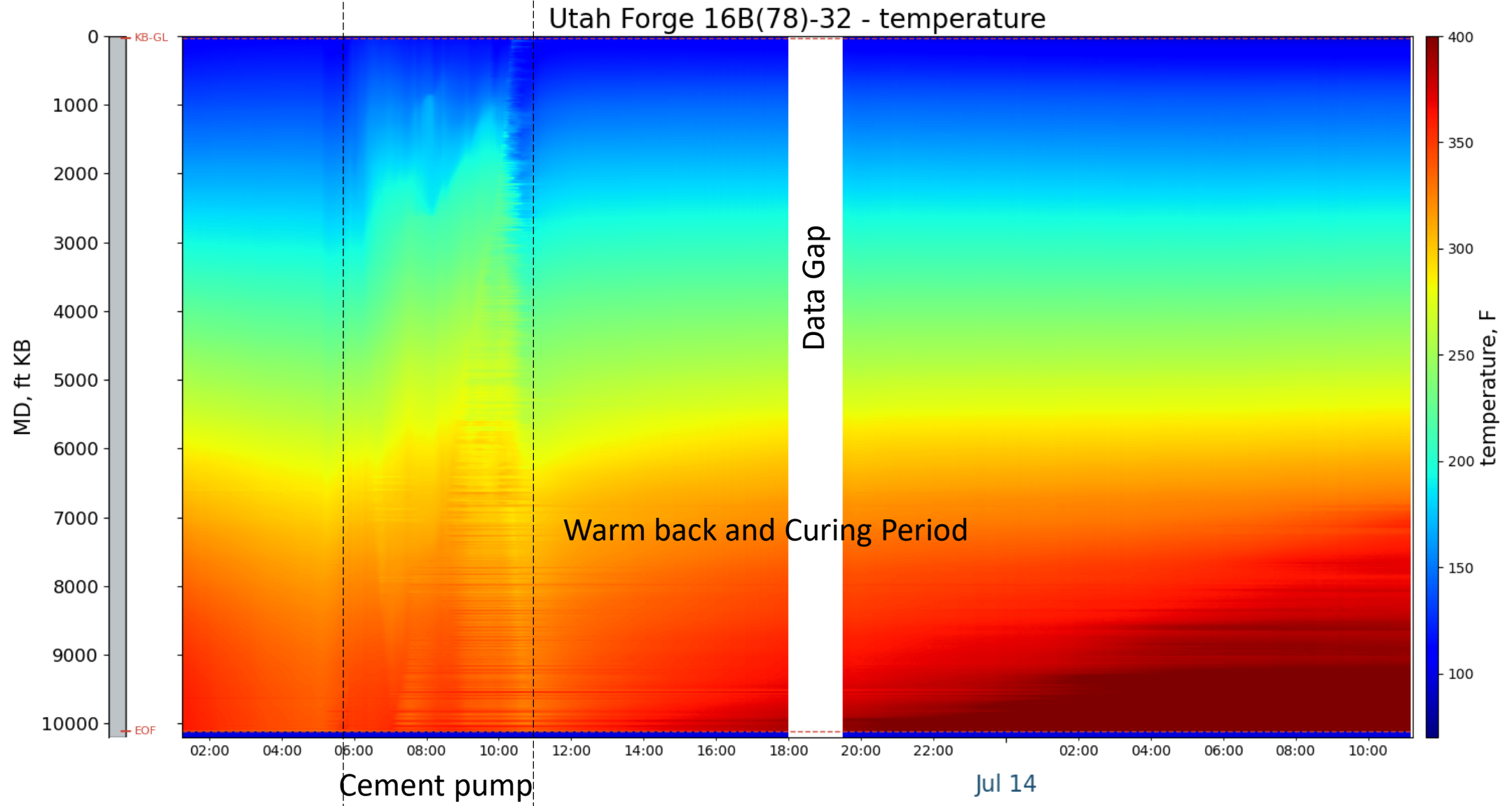
Distributed Temperature Sensing

DTS on Multimode Fiber using Yokogawa DTSX3000 Interrogator Unit

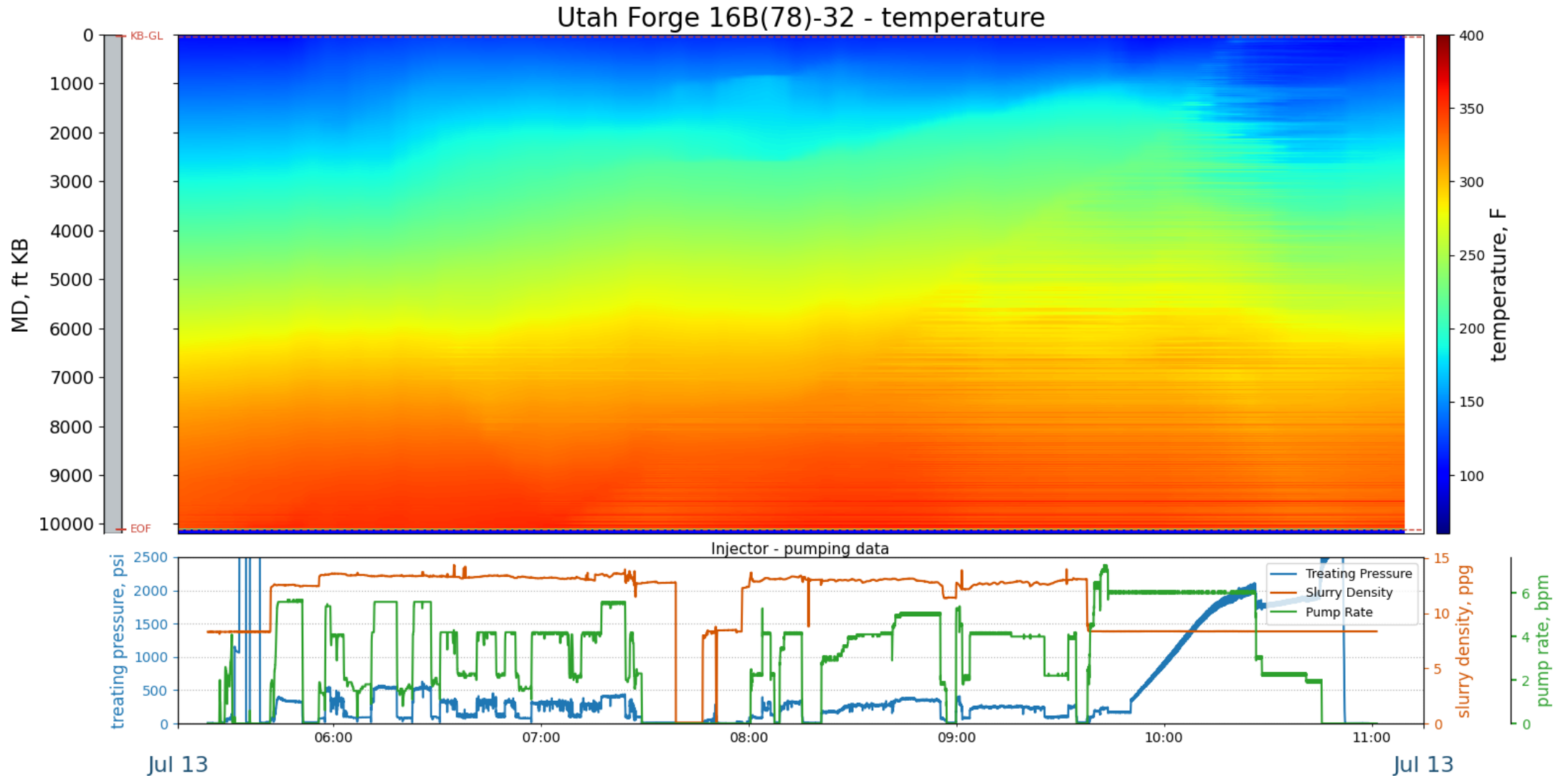
Well 16B(78)-32 – DTS – waterfall plot Temperature overview



Well 16B(78)-32 – DTS waterfall – Non Gauge Calibrated DTS



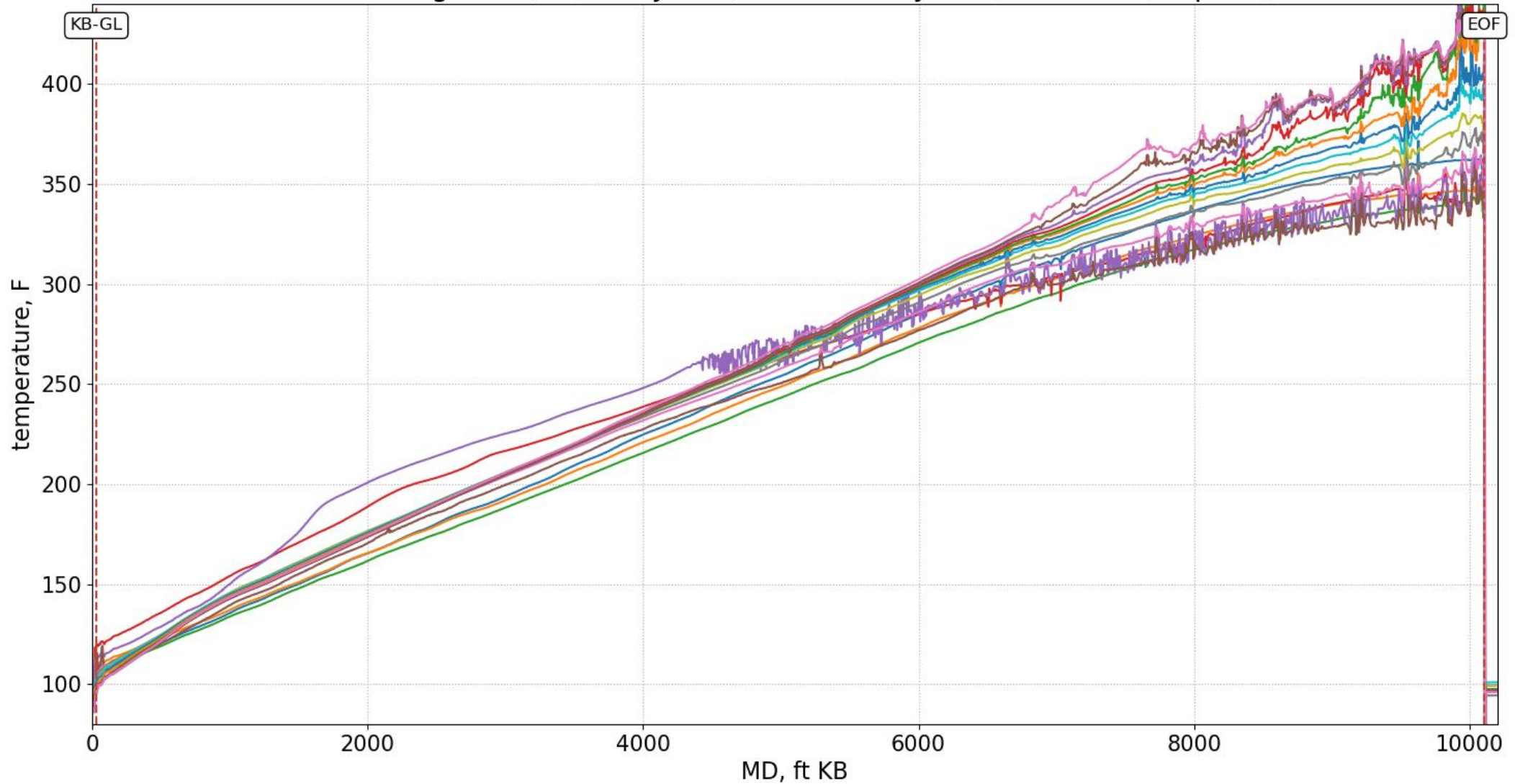
Well 16B(78)-32 – DTS – waterfall – temperature



Well 16B(78)-32 – DTS – selected traces (2 h step)



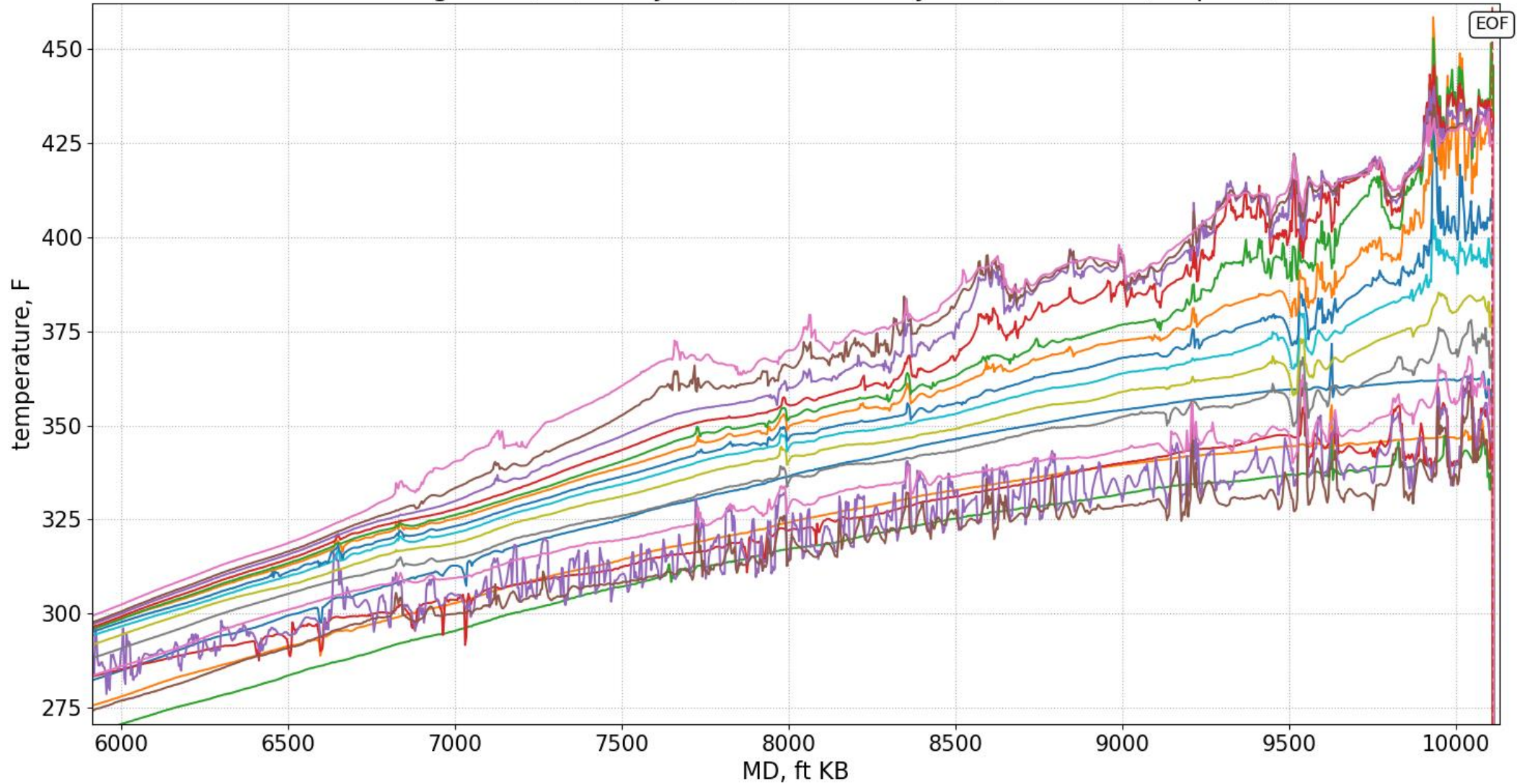
Utah Forge 16B(78)-32 - Jul 13, 01:15:00 to Jul 14, 09:15:00 (step 2 h)



Well 16B(78)-32 – selected traces (step 2 h) – zoomed in



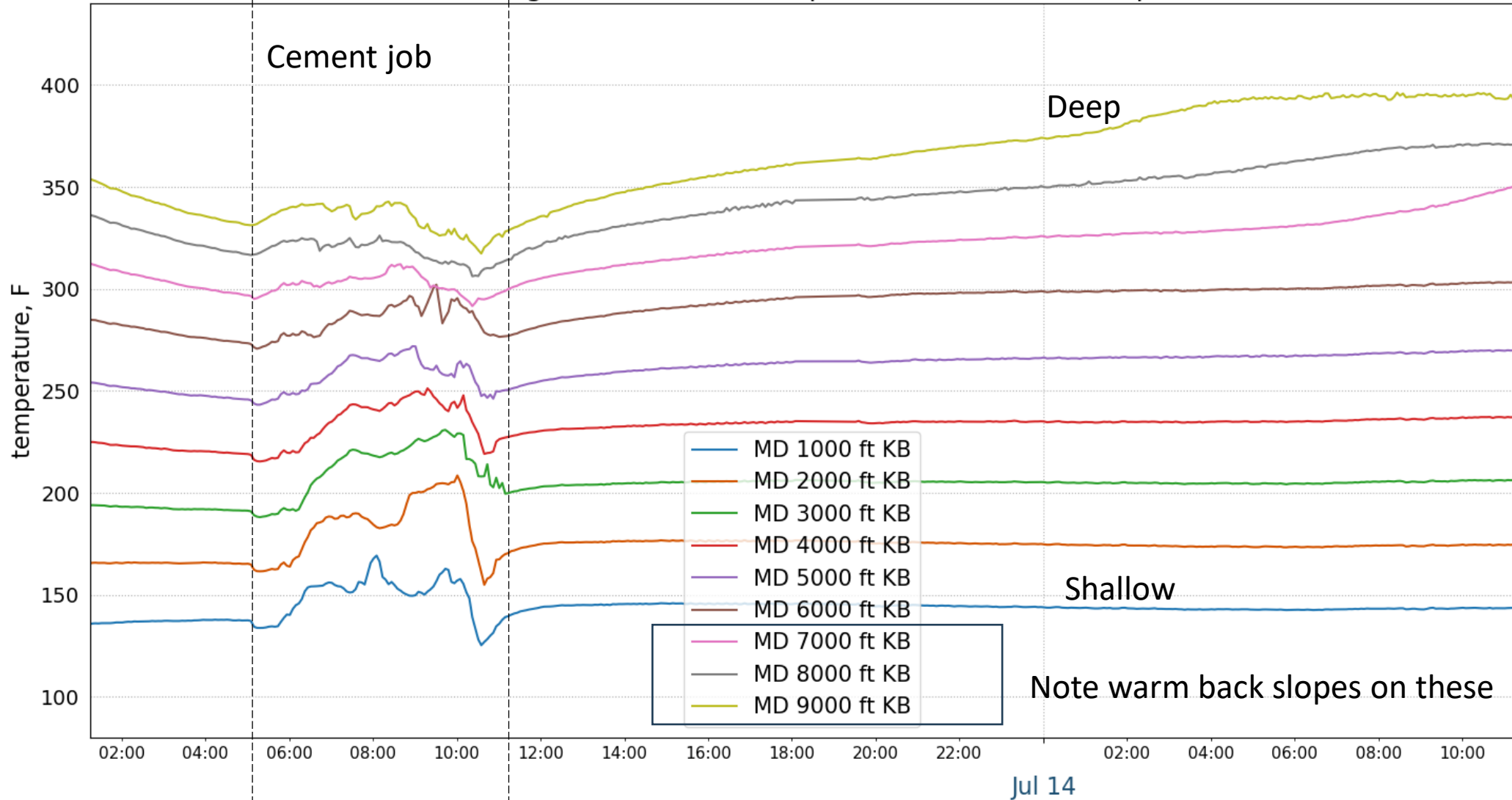
Utah Forge 16B(78)-32 - Jul 13, 01:15:00 to Jul 14, 09:15:00 (step 2 h)



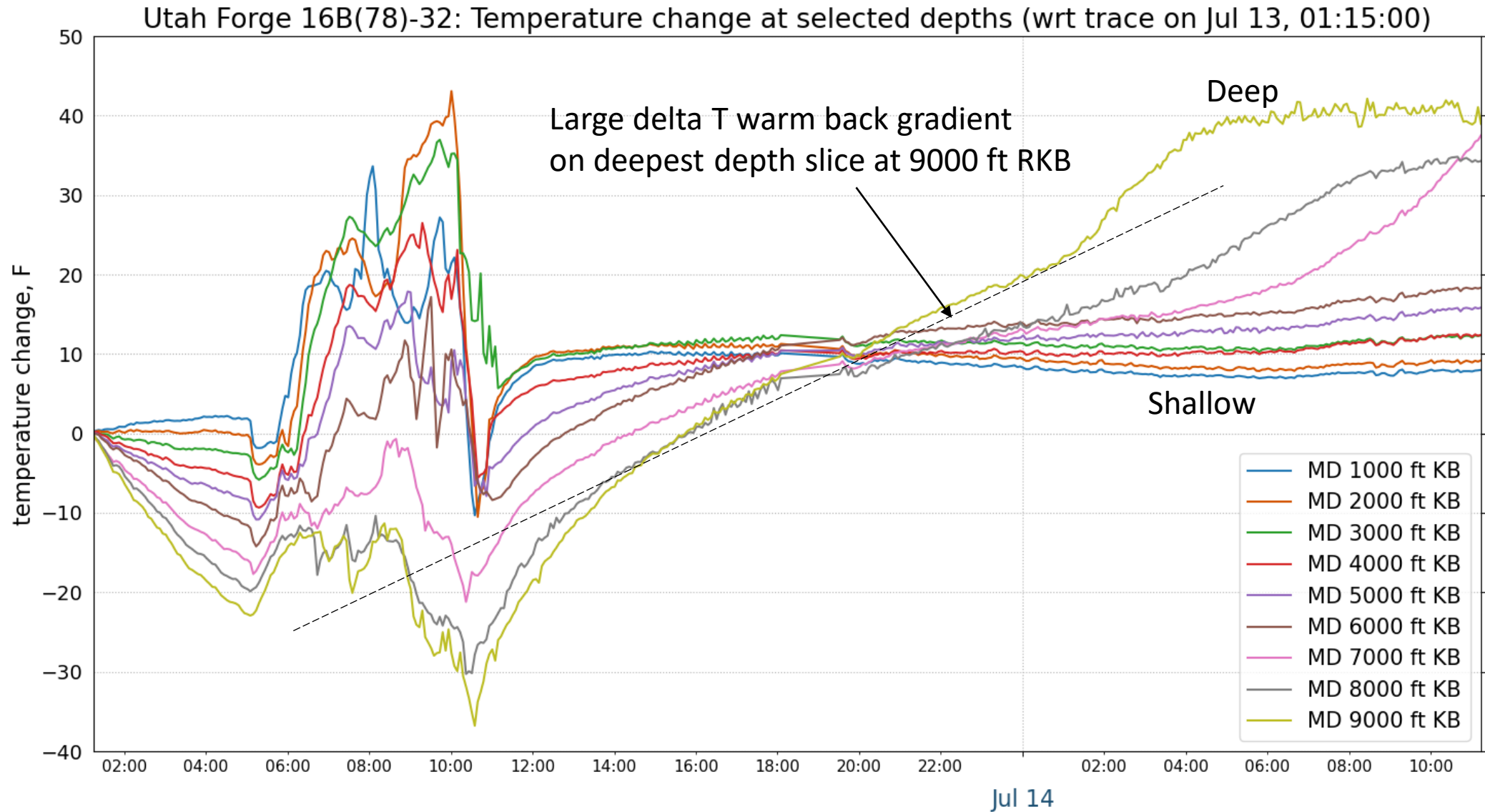
Well 16B(78)-32 – temperature at selected depth slices



Utah Forge 16B(78)-32 - temperature at selected depths



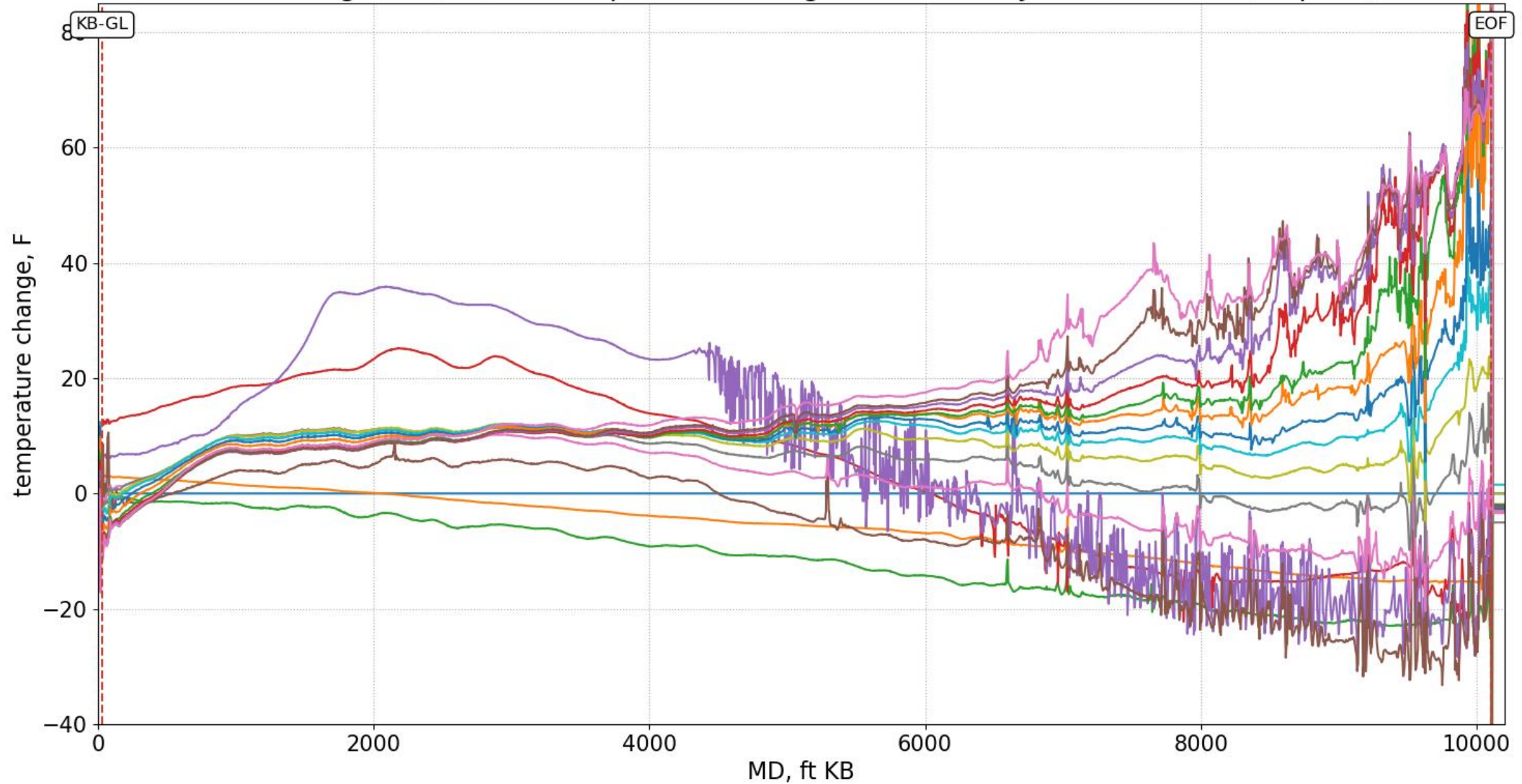
Well 16B(78)-32 – temperature change at selected depths



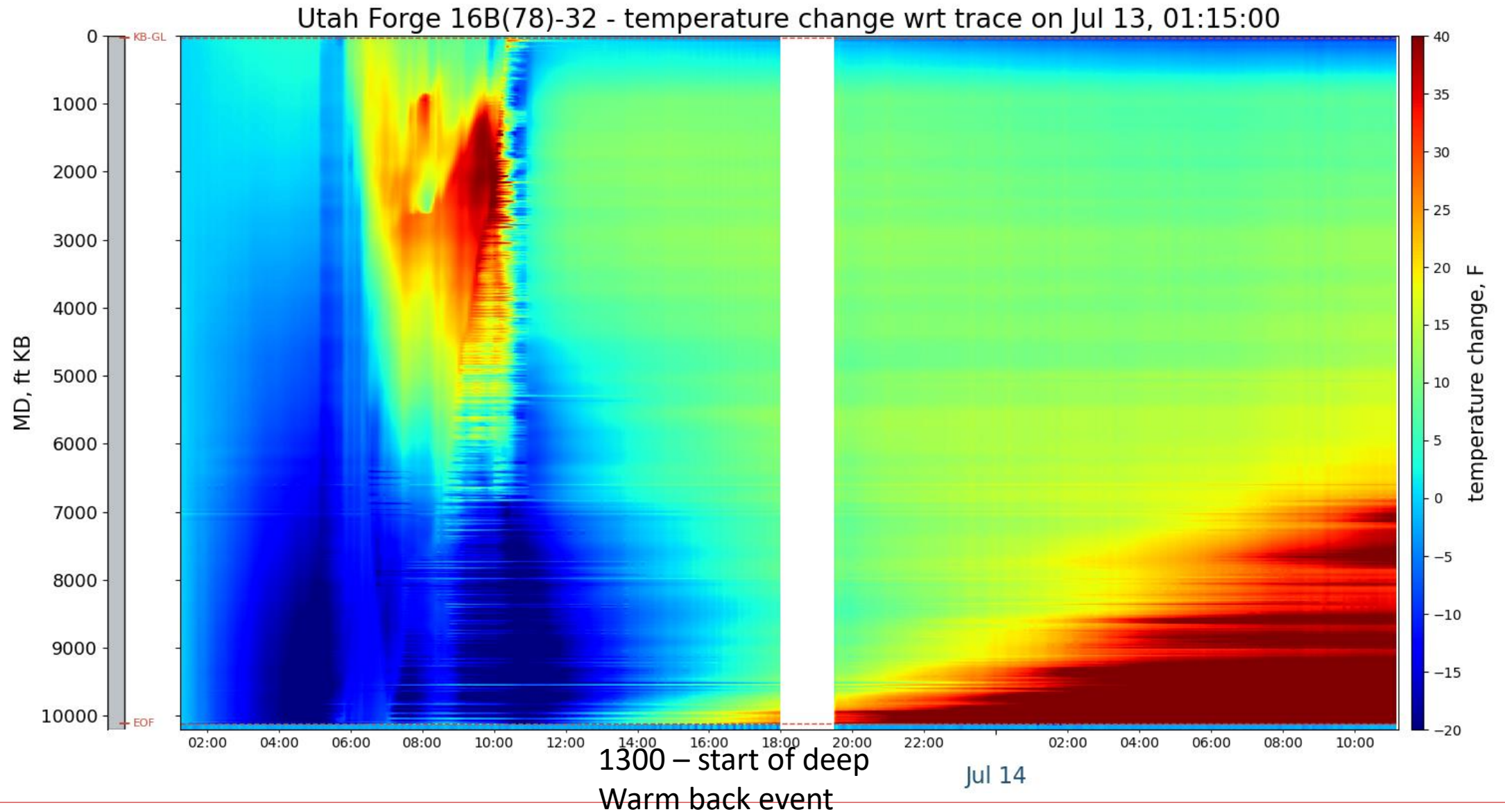
Well 16B(78)-32 – temperature change – selected traces (2 h step)



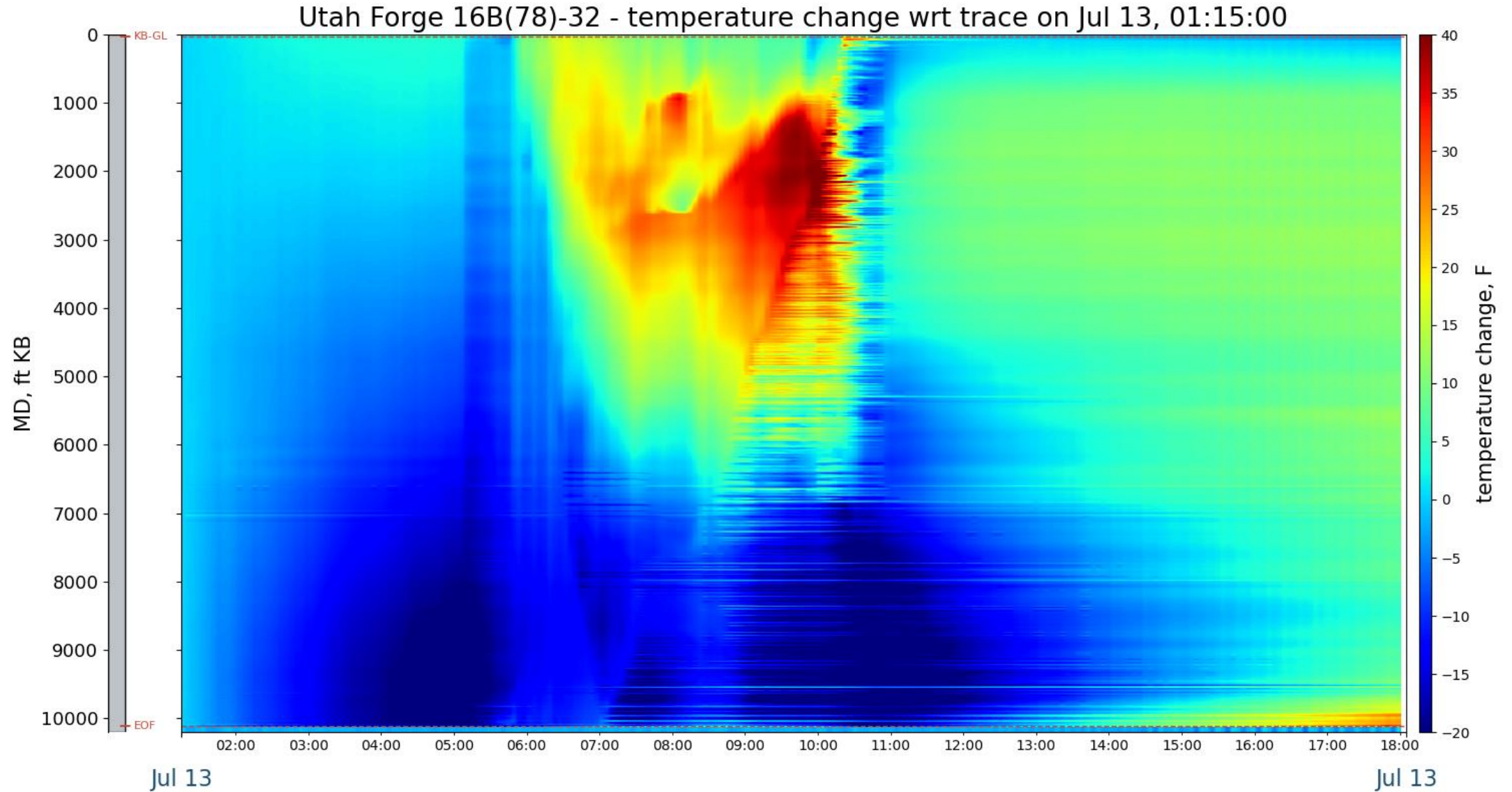
Utah Forge 16B(78)-32: Temperature change wrt trace on Jul 13, 01:15:00 (step 2 h)



Well 16B(78)-32 – temperature change waterfall plot



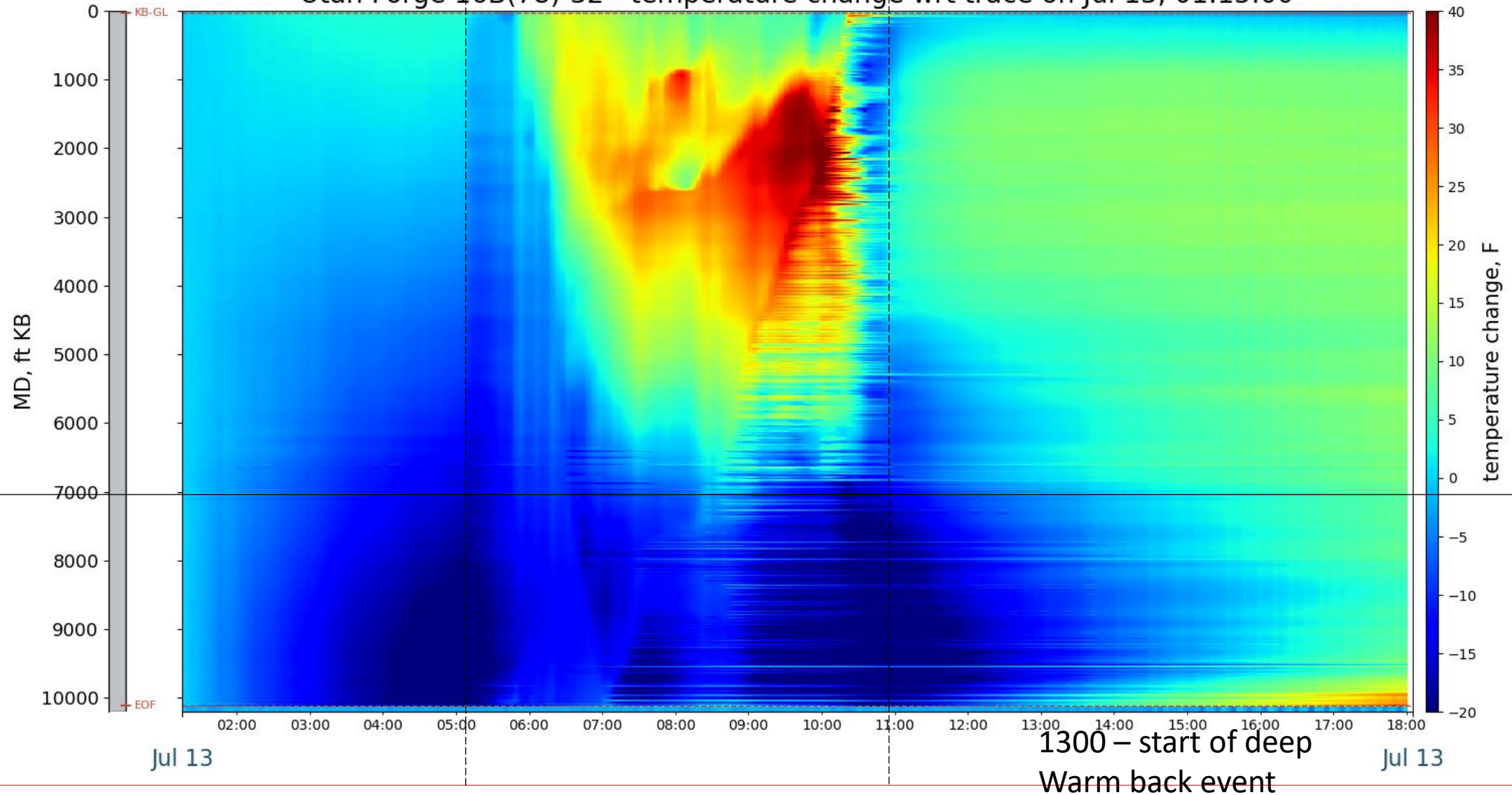
Well 16B(78)-32 – temperature change – zoomed in



Well 16B(78)-32 – dts temperature change – zoomed in



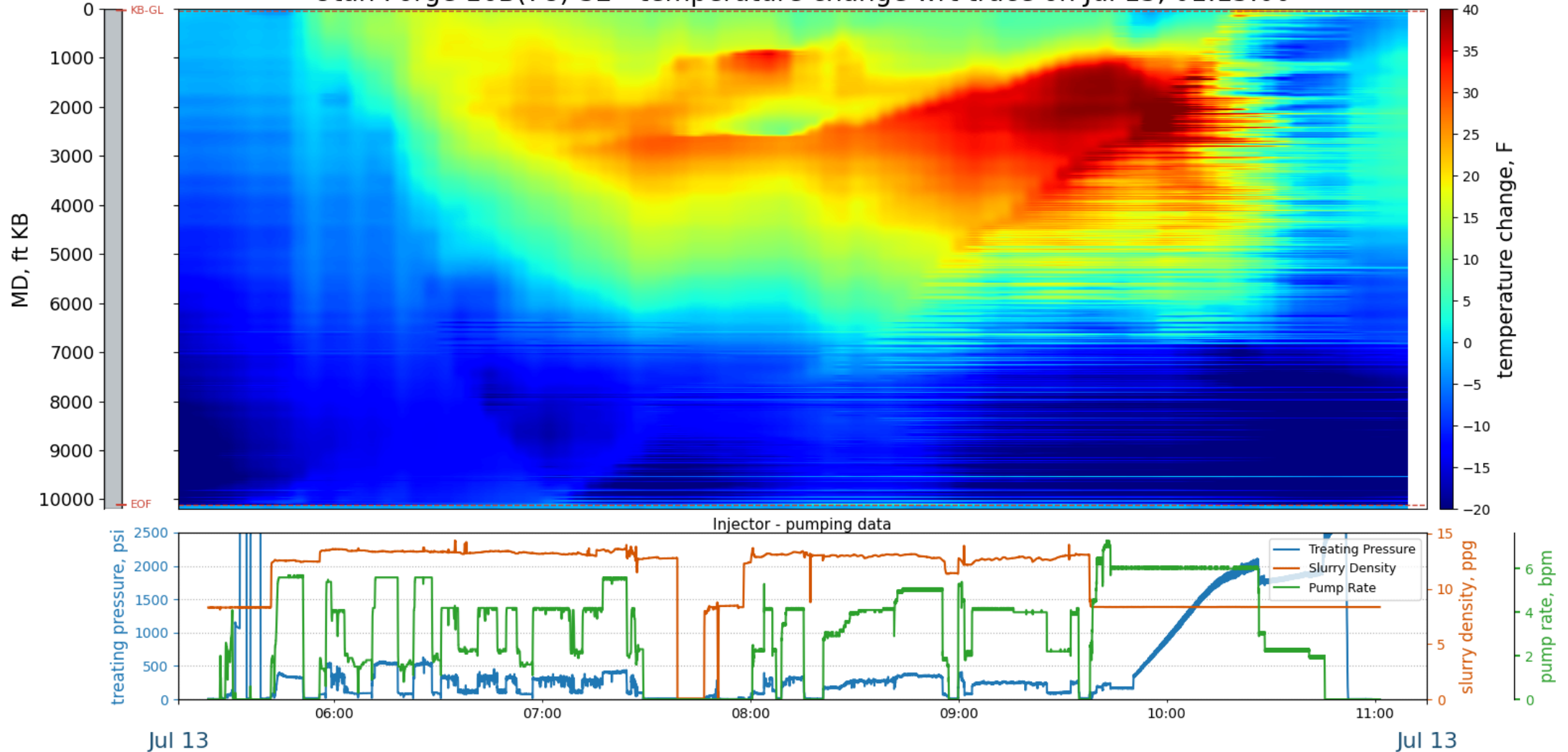
Utah Forge 16B(78)-32 - temperature change wrt trace on Jul 13, 01:15:00



Well 16B(78)-32 – temperature change vs pumping



Utah Forge 16B(78)-32 - temperature change wrt trace on Jul 13, 01:15:00



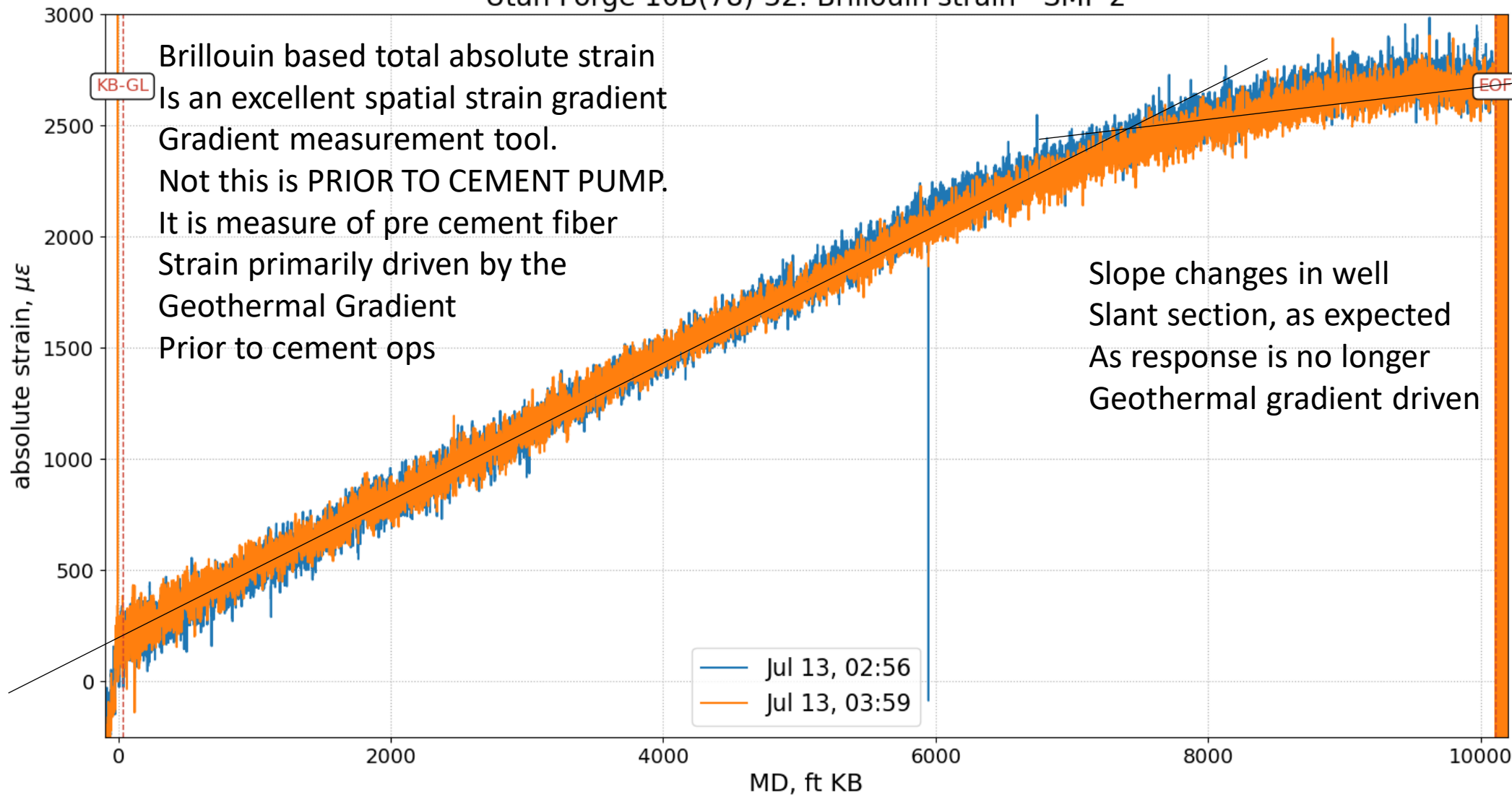
Brillouin absolute total strain

- first trace: Jun 24, 2023, 13:40:11
 - last trace: Jul 13, 2023, 04:27:25
 - number of traces: 56
 - number of samples per trace: 78,360
-

Well 16B(78)-32 – absolute strain – SMF 2 – selected traces



Utah Forge 16B(78)-32: Brillouin strain - SMF 2



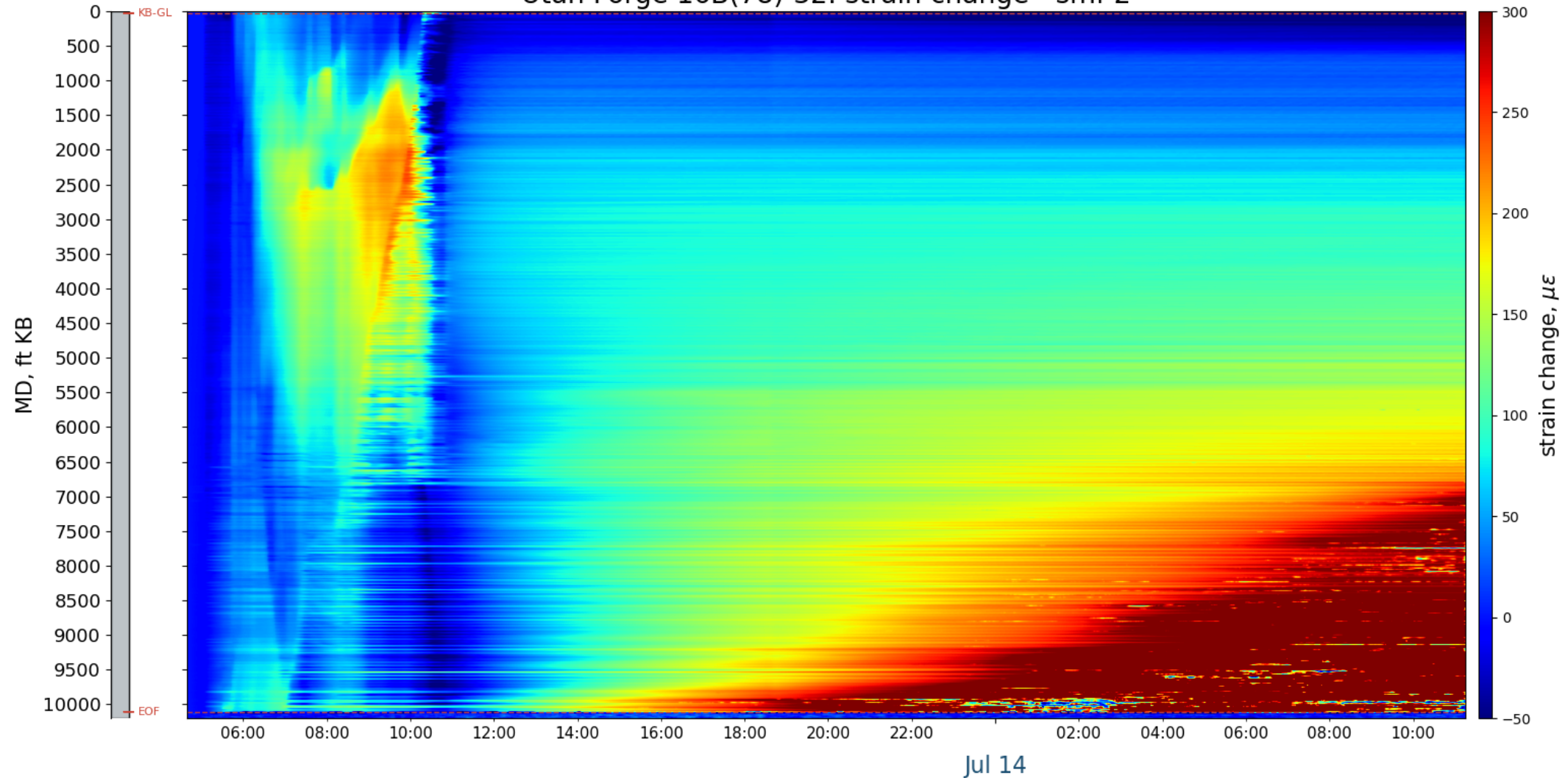
RFS DSS – Rayleigh Frequency Shift Distributed Strain Sensing

- first trace: Jul 13, 2023, 04:39:21
 - last trace: Jul 14, 2023, 11:14:57
 - number of traces: 2,069
 - number of samples per trace: 38,666
 - average temporal interval (sec): 53
-

Well 16B(78)-32 – RFS strain change – SMF 2 – overview



Utah Forge 16B(78)-32: strain change - smf 2

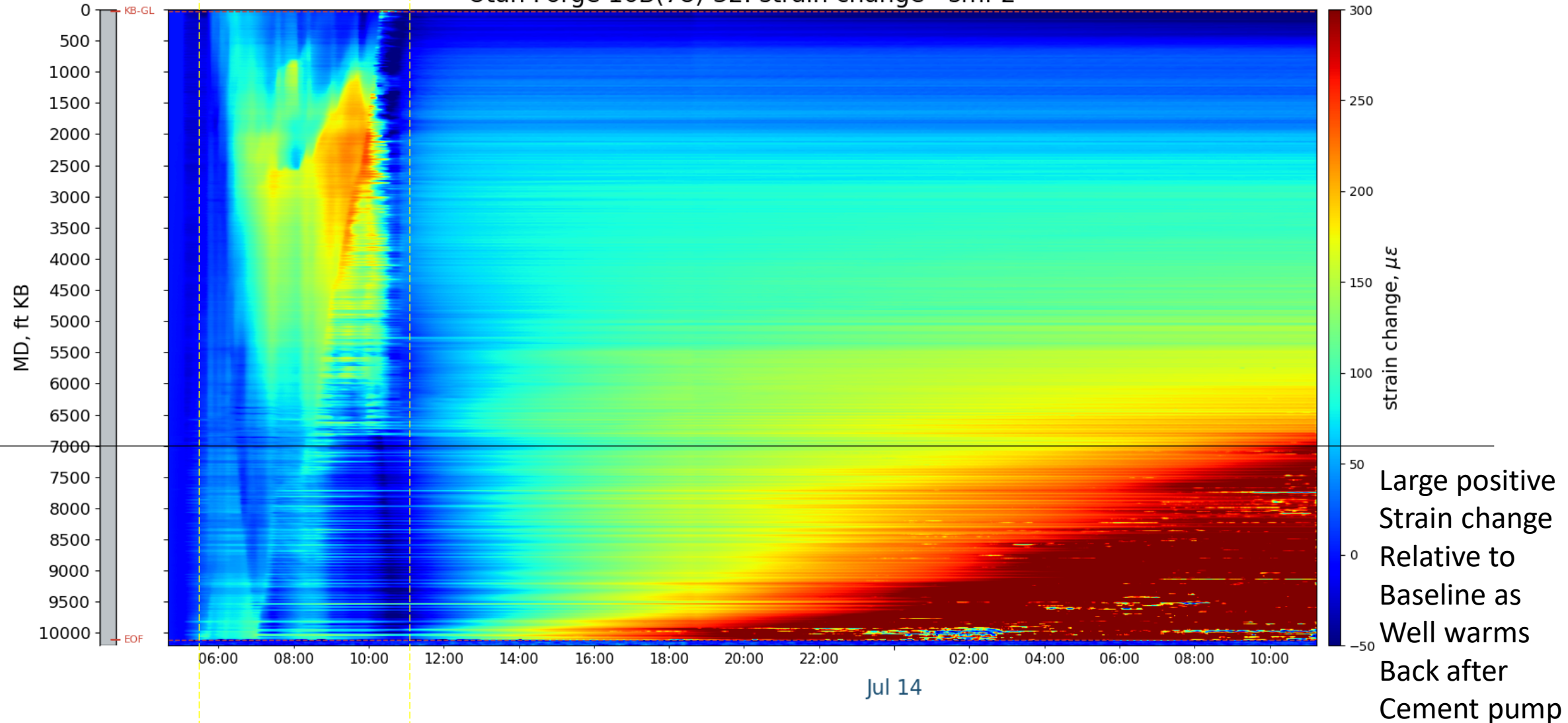


Well 16B(78)-32 – RFS strain change – SMF 2 – overview



20-centimeter spatial resolution down the entire wellbore across continuous time

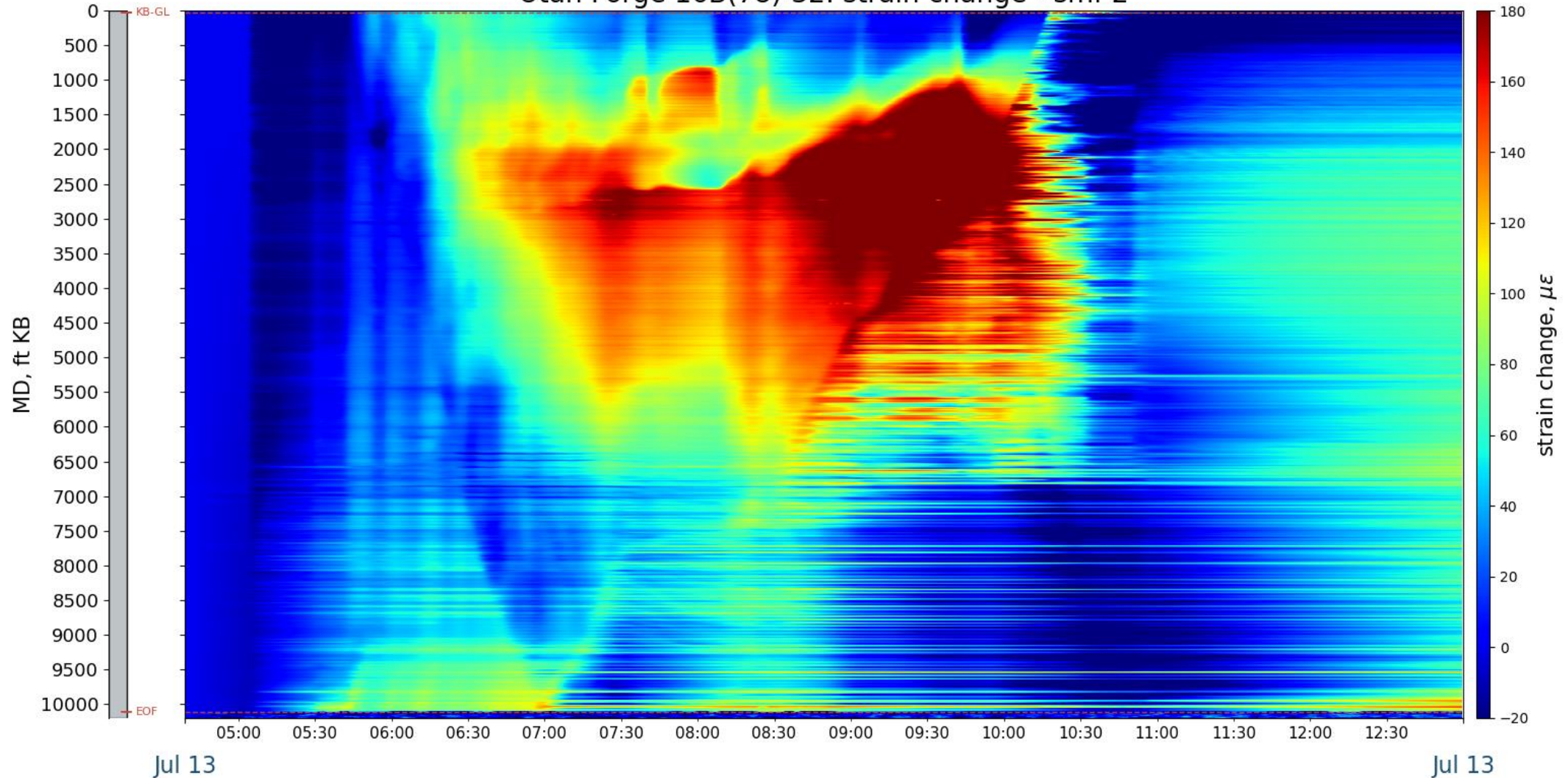
Utah Forge 16B(78)-32: strain change - smf 2



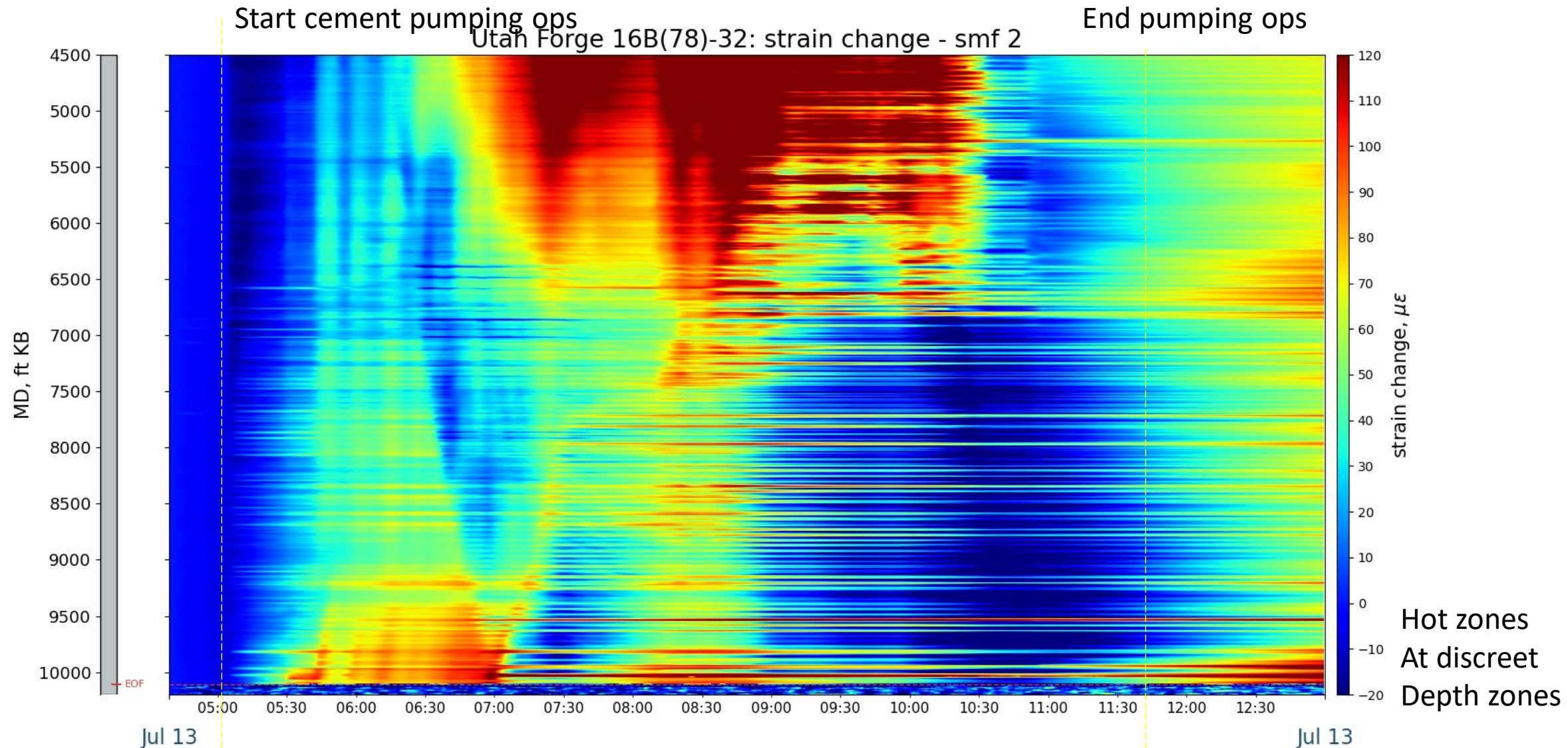
Well 16B(78)-32 – RFS strain change – SMF 2 – zoomed in (1)



Utah Forge 16B(78)-32: strain change - smf 2



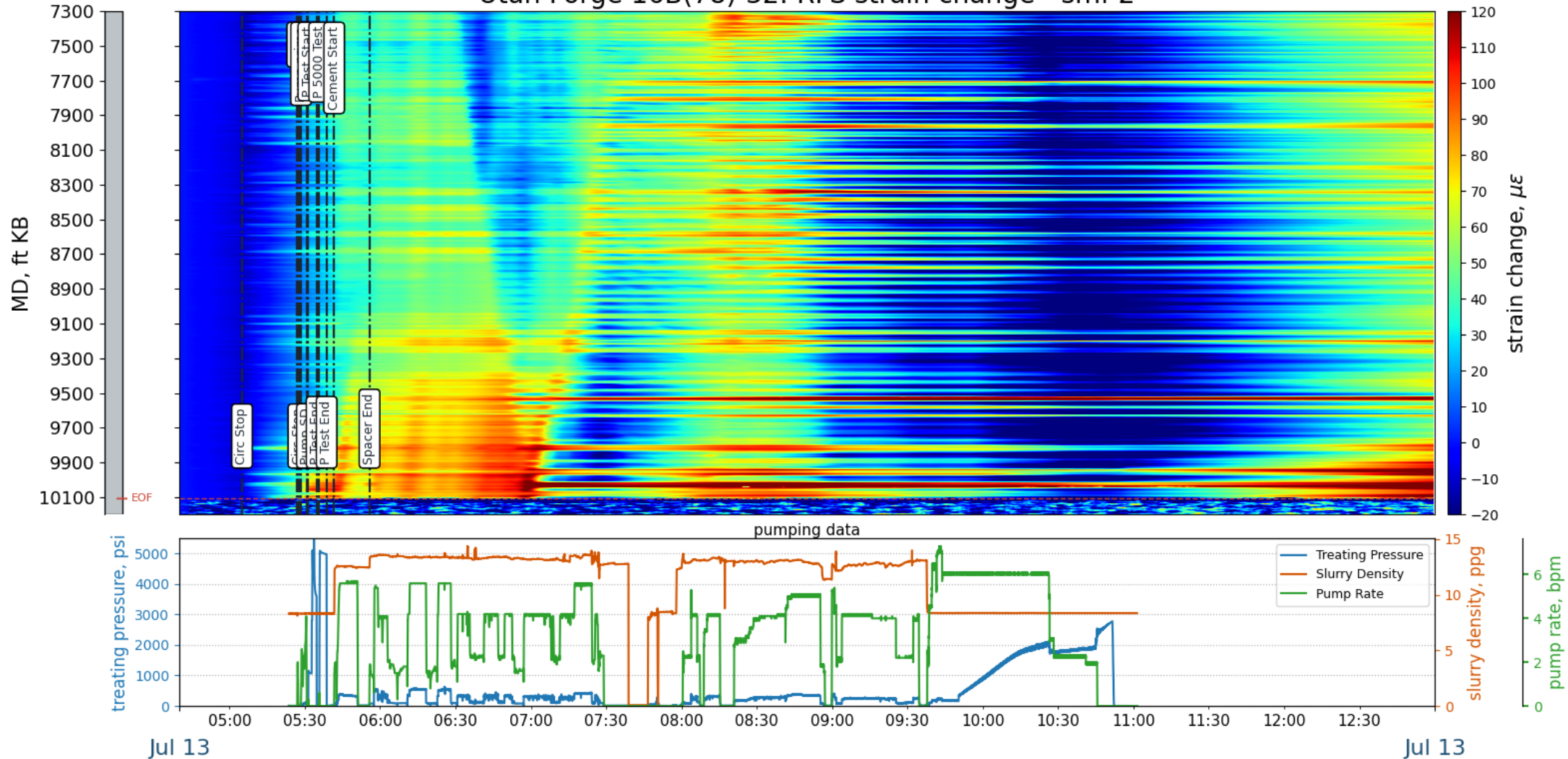
Well 16B(78)-32 – RFS strain change – SMF 2 – zoomed in (2)



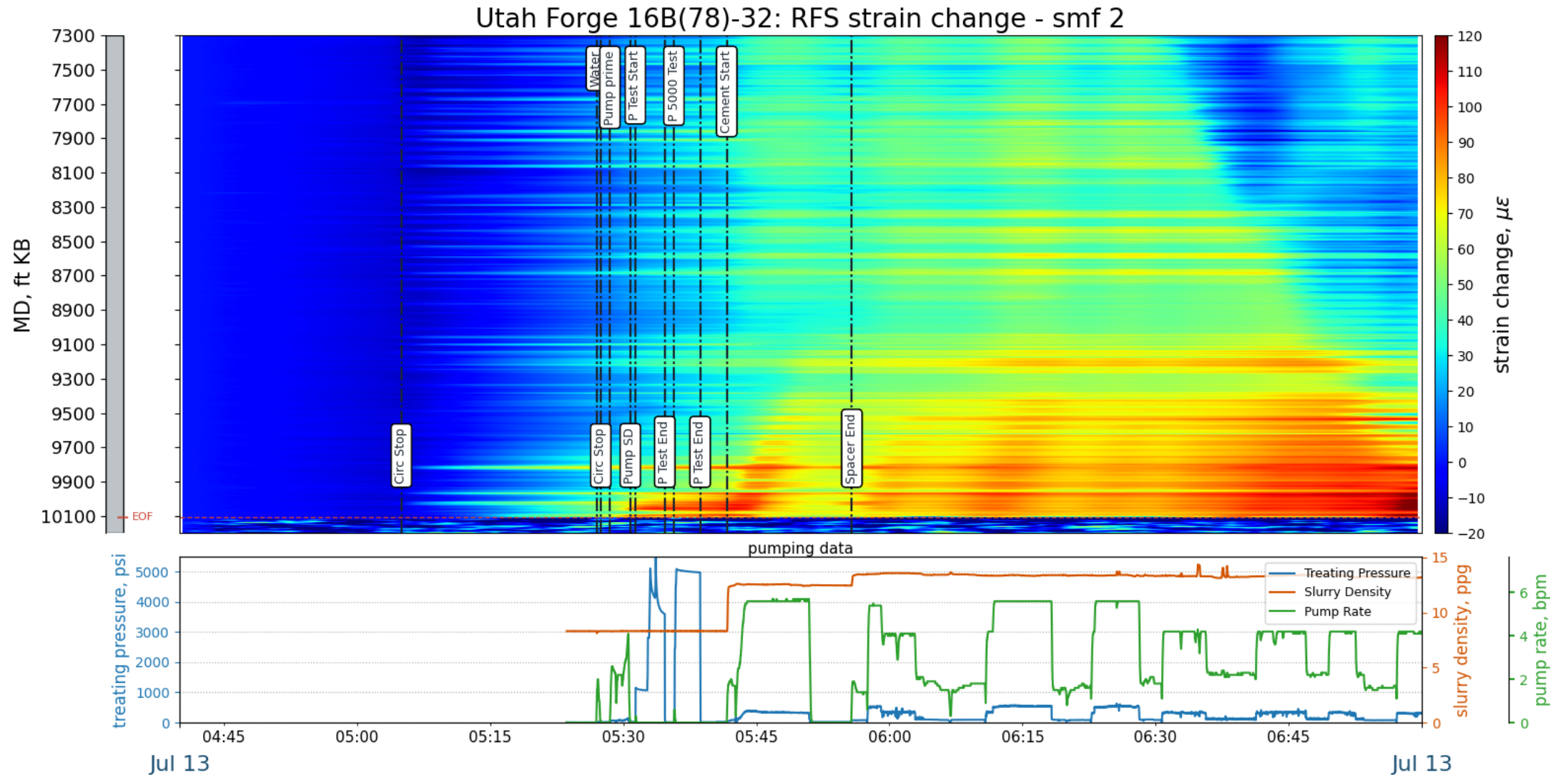
Well 16B(78)-32 – RFS strain change – SMF 2 – zoomed in (3)



Utah Forge 16B(78)-32: RFS strain change - smf 2



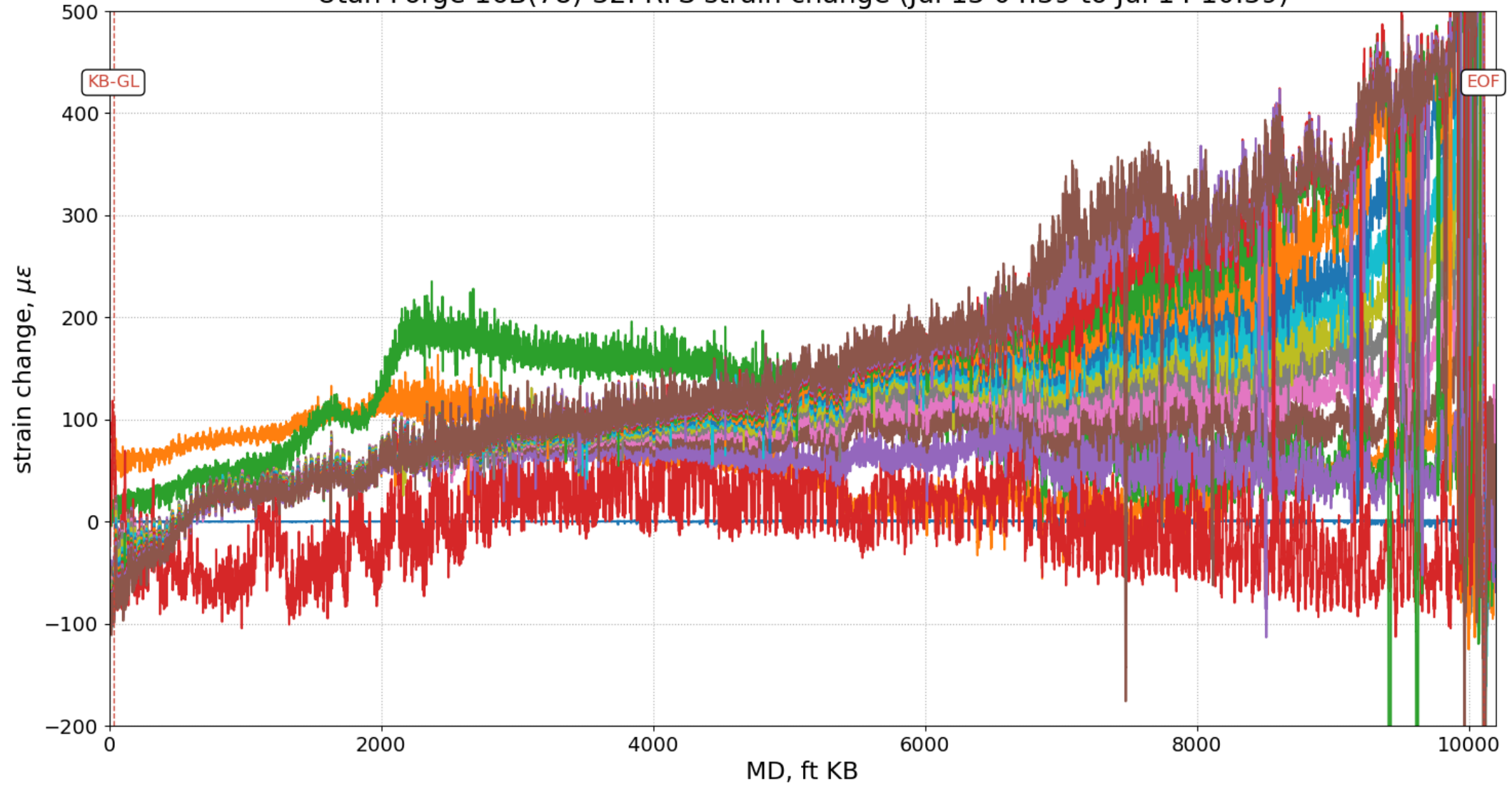
Well 16B(78)-32 – RFS strain change – SMF 2 – zoomed in (4)



Well 16B(78)-32 – RFS strain change – SMF 2 – selected traces



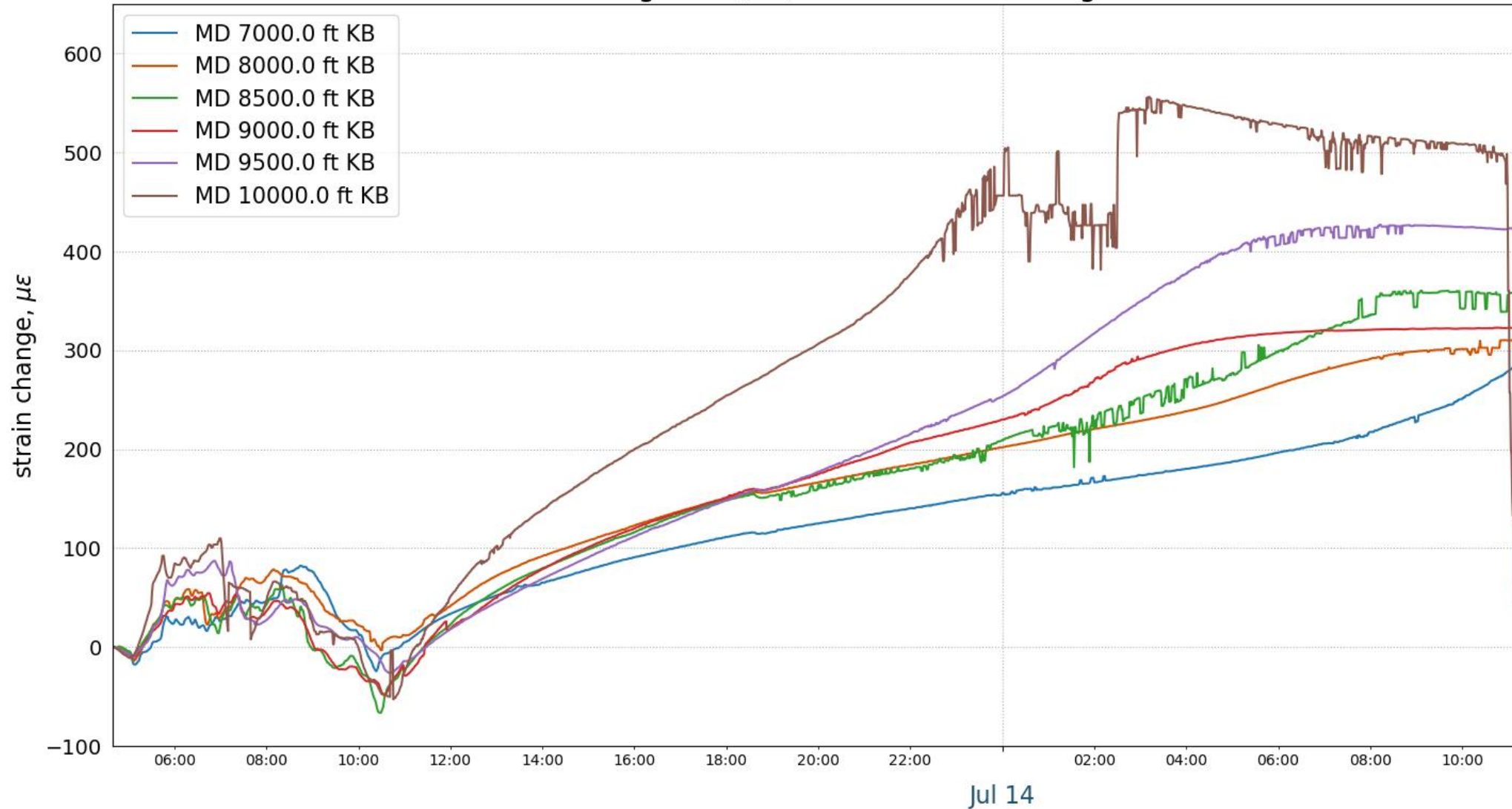
Utah Forge 16B(78)-32: RFS strain change (Jul 13 04:39 to Jul 14 10:39)



Well 16B(78)-32 – RFS strain change – selected depths



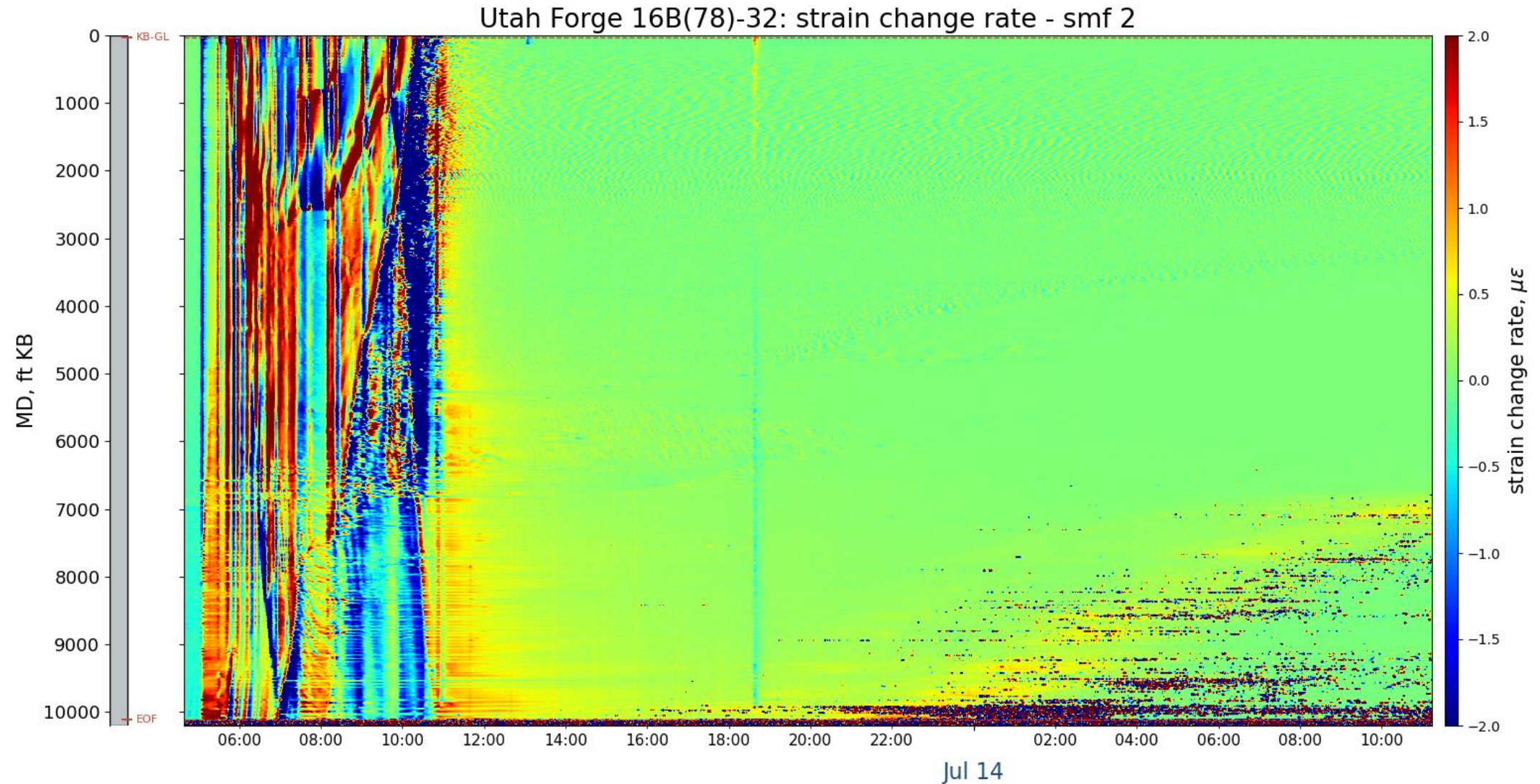
Utah Forge 16B(78)-32: RFS strain change



RFS DSS strain change rate. This is time differential of RFS DSS at 53 sec average Delta T between profiles

- first trace: Jul 13, 2023, 04:39:21
 - last trace: Jul 14, 2023, 11:14:57
 - number of traces: 2,069
 - number of samples per trace: 38,666
 - average temporal interval (sec): 53
-

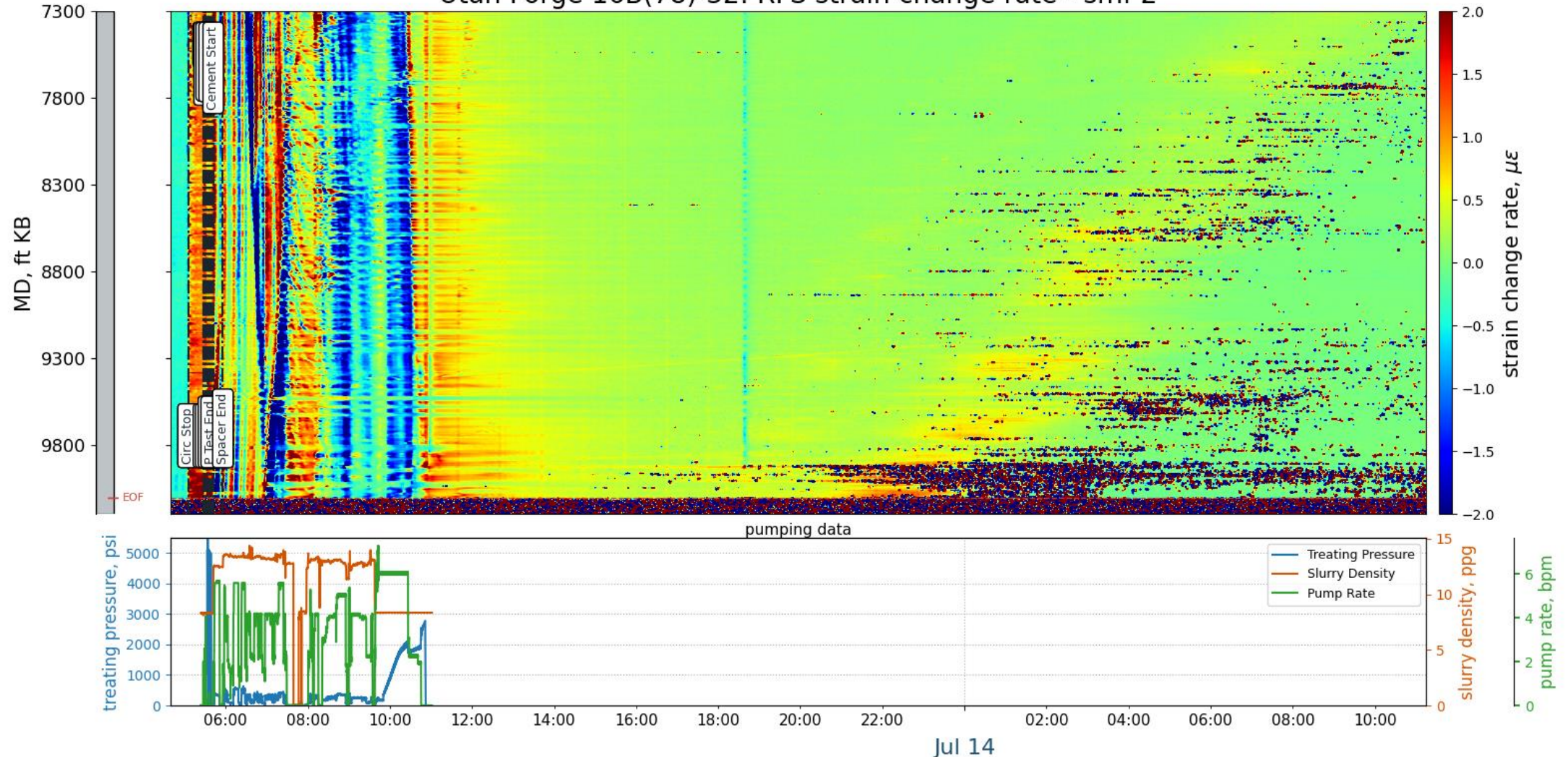
Well 16B(78)-32 – RFS strain change rate – SMF 2 – overview



Well 16B(78)-32 – RFS strain change rate – SMF 2 – overview



Utah Forge 16B(78)-32: RFS strain change rate - smf 2

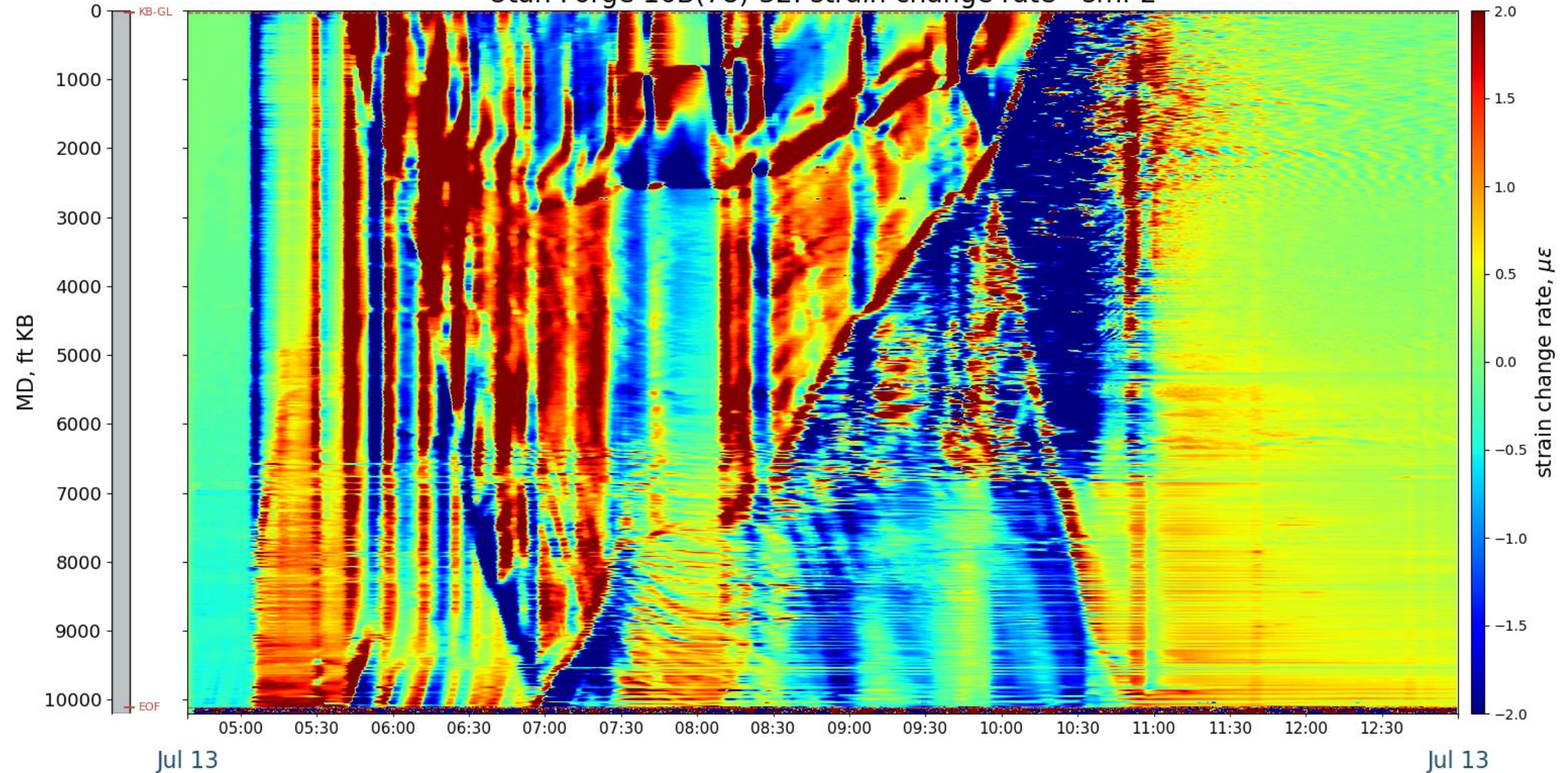


Well 16B(78)-32 – RFS strain change rate – SMF 2



Complex RFS DSS strain response during cement pumping operations. Note shallow section at 0730-1000. Strange.

Utah Forge 16B(78)-32: strain change rate - smf 2

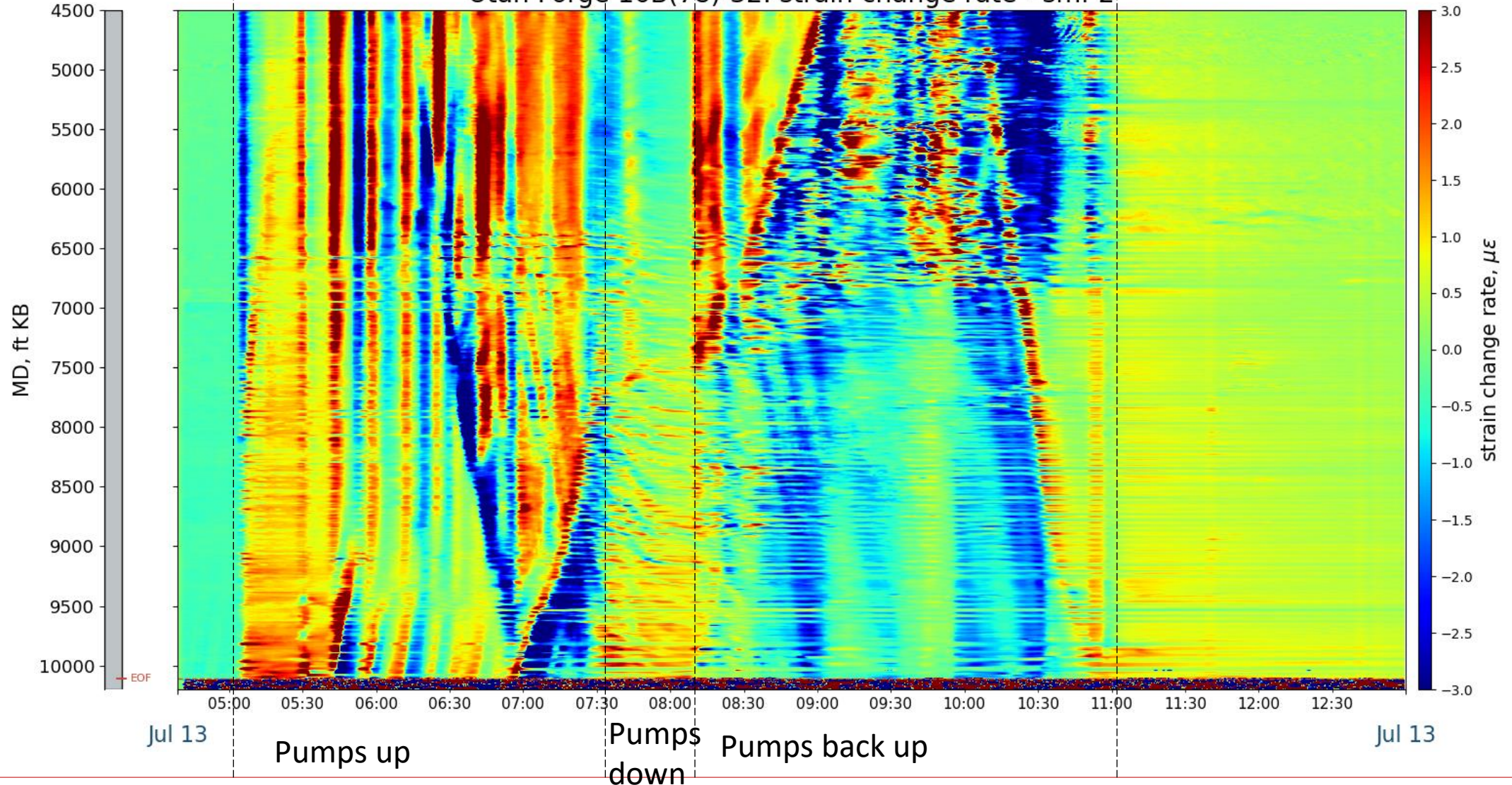


Well 16B(78)-32 – RFS strain change rate – SMF 2 – zoomed in (2)

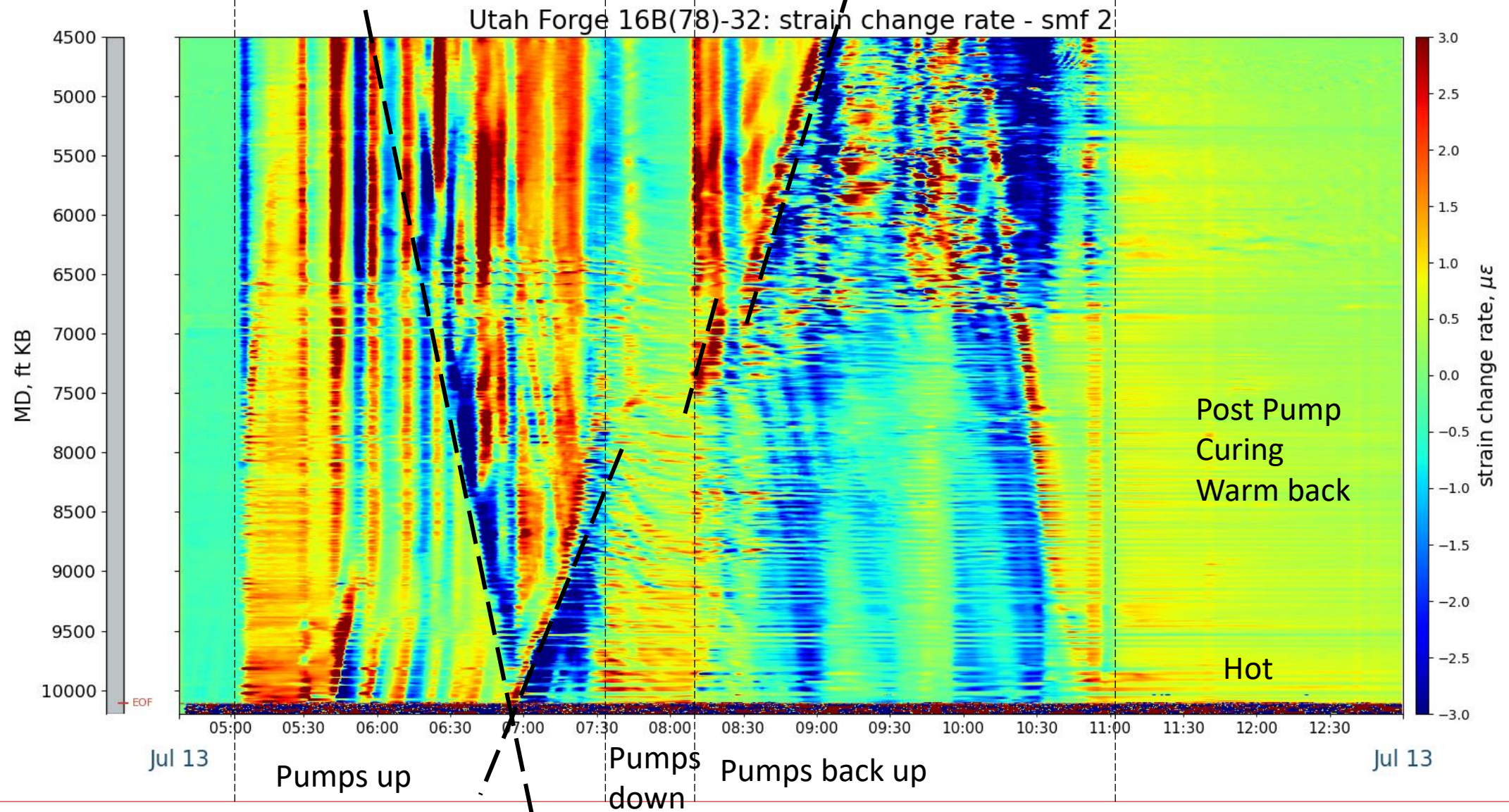


These details should be integrated with cement pumping curves, which Contractor is waiting on.

Utah Forge 16B(78)-32: strain change rate - smf 2



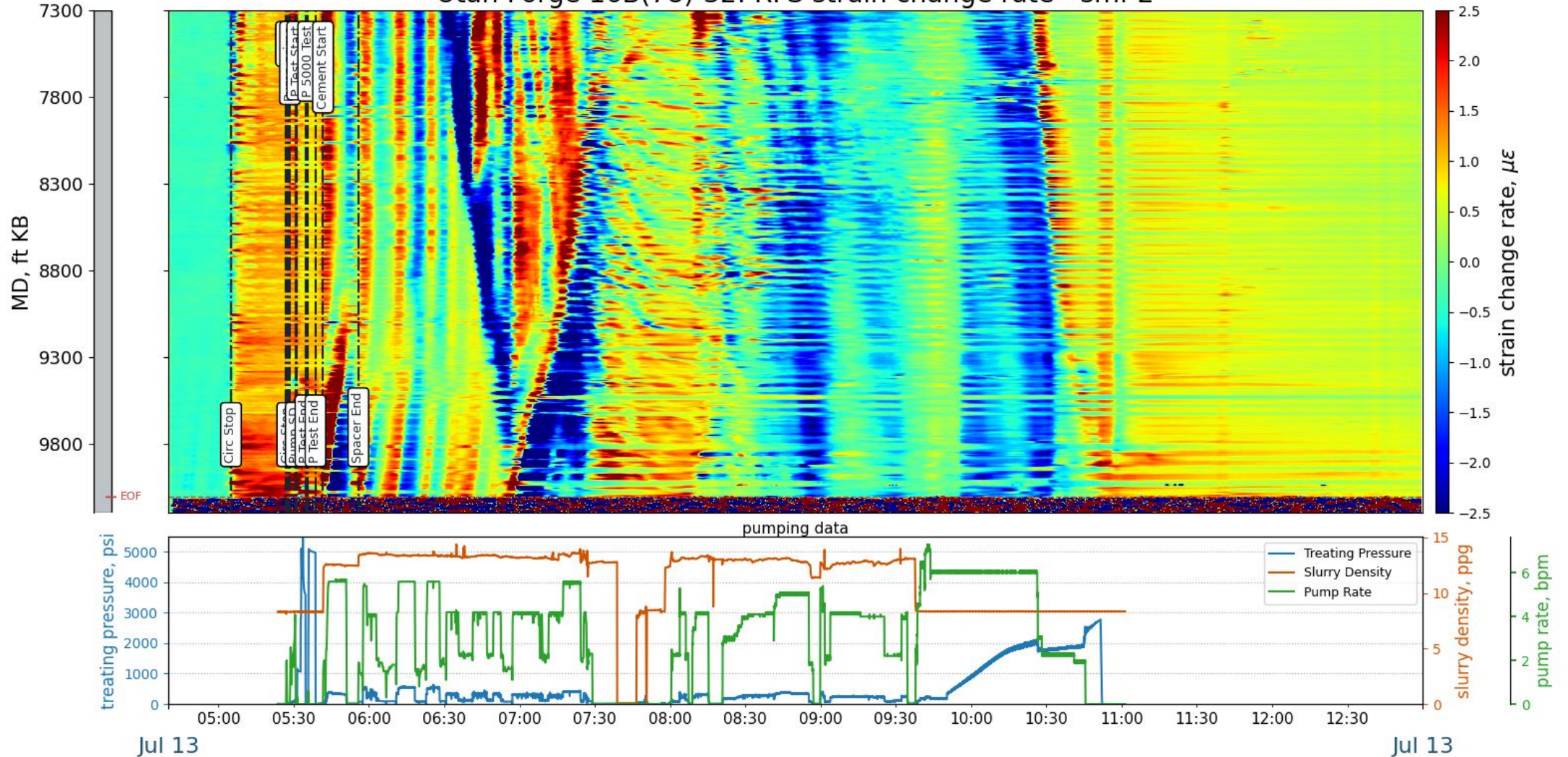
Well 16B(78)-32 – RFS strain change rate – SMF 2 – zoomed in (2)



Well 16B(78)-32 – RFS strain change rate – SMF 2 – zoomed in (3)



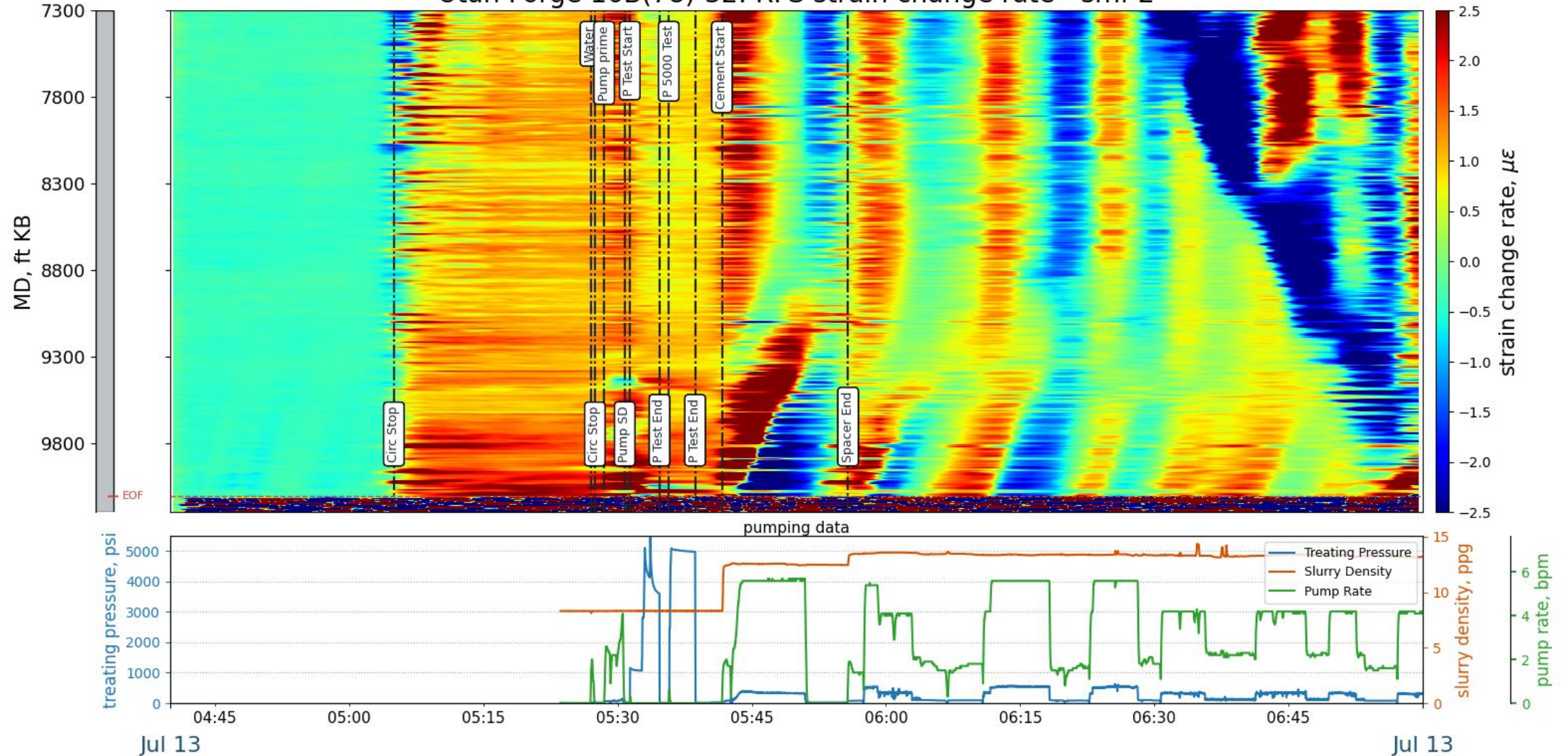
Utah Forge 16B(78)-32: RFS strain change rate - smf 2



Well 16B(78)-32 – RFS strain change rate – SMF 2 – zoomed in (4)



Utah Forge 16B(78)-32: RFS strain change rate - smf 2



End of Technical Report and Contact Information



- Dana.Jurick@neubrex.com

- Dana Jurick
- Neubrex Energy Service (US), LLC
- Executive Vice President and GM
- 713-899-1545

- guzik@neubrex.com

- +41 76 376 98 90