REPORT OF MECHANICAL INTEGRITY
OF INJECTION WELL #1-12

ENVIRONMENTAL GEO-TECHNOLOGIES, LLC
Romulus, Michigan

Subsurface Project No. 60D6957

JULY 2013

Prepared By:
SUBSURFACE TECHNOLOGY, INC.
54520 Northern Avenue, Unit A
South Bend, Indiana 46635

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1.0 INTRODUCTION

In accordance with the United States Environmental Protection Agency's (U.S. EPA), requirements for the Class I UIC permit number MI-163-1W-CO10 granted to Environmental Geo-Technologies, LLC (EGT) and with the State of Michigan permit number M-452, an annulus pressure test, temperature survey and radioactive tracer was needed to be run on Well #1-12 to demonstrate the mechanical integrity of the well.

The mechanical integrity tests (MITs) are designed to demonstrate that (1) "there is no significant leak in the casing, tubing or packer" and (2) "the cement at the top of the injection interval has integrity." The test procedures to perform mechanical integrity tests were reviewed and approved by the U.S. EPA and the Michigan Department of Environmental Quality (MDEQ) prior to initiating the fieldwork.

In addition to the mechanical integrity tests, a temperature survey was run on Well #1-12 to assist in evaluating the injection zone.

2.0 SUMMARY OF RESULTS

An amplified annulus pressure test (APT) was performed on June 26, 2013 to demonstrate that there is no significant leak in the tubing, casing or packer. The fluid-filled annulus was pressurized to 917-psi for one (1) hour. There was a 2 psi drop in pressure for the duration of the test. This constitutes a successful pressure test with a 0.3% change in pressure.

The annulus was then pressurized to 1073-psi for one (1) hour. There was a 4-psi drop in pressure for the duration of the test. This constitutes a successful pressure test with a 0.4% change in pressure.

A temperature survey (TS) was run on June 26, 2013 from surface to 4246 feet. The survey displayed no indication of a loss of external mechanical integrity and did not display any signs of upward fluid movement into unpermitted formations.

A Radioactive Tracer Survey (RTS) was run on June 26, 2013 to test the bottom hole cement. The RTS survey confirmed the leak-free condition of the tubing within the test interval as well as depicting that all injected fluids exited the injection tubing below the packer and moved out into the injection zone. The RTS further verified that the cement at the top of the injection interval has integrity and there is no upward migration of injection fluids around the casing shoe.

Mr. Steve Roy and Mr. Jeff Wawczak with the U. S. EPA, John Frost with EGT, and Richard Schildhouse with Subsurface Technology, Inc., witnessed the amplified APT, temperature log and tracer log.

3.0 ANNULUS PRESSURE TESTING

The APT was performed on Well #1-12 on June 26, 2013. This test was amplified based on a discussion with Region 5 and explained in the procedures contained in Appendix A. The annulus would be pressurized twice for a one (1) hour period rather than the normal once for a one (1) hour period. The second period was tested at a higher pressure. The purpose of this test would further confirm the integrity of the injection string, the long string casing, the wellhead and the packer. The test was monitored by a digital test gauge with proper certification found in Appendix C.

3.1 Annulus Pressure Test Procedures

The procedure for testing the integrity of the annulus was performed in two (2) steps. Copies of these procedures, as sent to the EPA, are provided in Appendix A. Step one (1) involved the annulus pressure to be raised to 917-psi and was monitored for a one (1) hour period and recorded at 10-minute intervals. The second step had the annulus pressure to be raised to 1073-psi for a one (1) hour period with recorded readings at 10-minute intervals.

3.2 Amplified Annulus Pressure Test Results

The amplified annulus pressure test on Well 1-12 was run on June 26, 2013. The gauge that was used was APG Digital Model PG 3000; SN Z3339, 0-2000 psi capacity, calibrated March 11, 2013. During the step 1 test, the annulus had 917-psi

applied pressure and lost 2-psi during the one (1) hour period. Based on the applied pressure of 917, an allowed loss of 27.5 psi (3% of applied), and since the 2 psi loss is only 0.3% of the applied, the well successfully passed the first step of the amplified APT.

During the step 2 test, the annulus had 1073-psi applied with an allowable loss of 32.2-psi. The well annulus lost a total of 4-psi during the one (1) hour period resulting in a loss of 0.4% of the applied. Based on these loss calculations, it is demonstrated that wellhead, packer, injection string and long casing show integrity and thus fulfill all regulatory demands. Forms showing actual data can be found in Appendix C.

4.0 TEMPERATURE SURVEY

In response to a regulatory requirement, a temperature survey was run on June 26, 2013 on Well #1-12. The purpose of the requirement is to insure that there is no evidence of any upward movement of fluid that may travel toward the Underground Source of Drinking Water (USDW).

4.1 Temperature Survey Procedures

The procedures for the temperature survey are discussed in Appendix A of this report which was submitted and approved by the U.S. EPA before any fieldwork was started. The temperature tool calibration was confirmed by using a bucket test incorporating the use of both cold and hot water as well as a plant-supplied, calibrated lab thermometer. This test is displayed at the beginning of the temperature log which can be found in Appendix D. The base temperature was run from surface down to 4246 feet.

4.2 Temperature Survey Results

The last two times that temperature surveys were run on Well #1-12 were January 3, 2007 and December 4, 2012. The data that was collected at that time was compared to the June 26, 2013 data and is displayed in Table 1 below.

WELL #1-12
TABLE 1

Depth	January 3, 2007	Gradient/ 1000'	December 4, 2012	Gradient/ 1000'	June 26, 2013	Gradient/ 1000'
100	55.5		51.0		53.5	
500	53.8	1.25	52.6	4.0	52.0	3.8
1000	56.4	5.2	55.3	5.4	54.7	5.4
1500	59.2	5.6	58.1	5.6	57.5	5.6
2000	61.6	4.8	60.6	5.0	60.0	5.0
2500	65.9	8.6	65.0	8.8	64.4	8.8
3000	74.7	17.6	74.1	18.2	73.5	18.2
3500	79.6	9.8	79.2	10.2	78.6	10.2
4000	83.6	8	83.2	8.0	82.8	8.4
4250	88.2	18.4	85.2	8.0	85.2	9.6
4500	93	19.2				

As can be seen in the table above, both the actual temperatures and calculated gradients obtained June 26, 2013 are near mirror images from the January 2007 and December 2012 logs. The only minor difference is at approximately 4250 feet near the top of the injection zone; the 2007 temperature was slightly higher due in part that active injection was more recent. The results that were produced by the 2013 survey did not show any indication of upward fluid movement at the casing shoe or into the confining zone, thus satisfying all regulatory requirements for mechanical integrity.

5.0 RADIOACTIVE TRACER SURVEY

In order to verify that no fluid is moving upward around the casing shoe, a radioactive tracer log is run. Interpretation of the RTS indicates whether or not there is migration of injection fluids through channels in the cement sheath surrounding the protection casing.

This RTS is run by first recording a base gamma ray log over the interval of interest. Fluid is injected and a radioactive slug of Iodine 131 is released above the area to be tested. Fluid is injected and the progress of the slug monitored by repeatedly lowering the logging tool below the moving slug and logging upward through the slug. A second verification of the absence of upward fluid movement is obtained by releasing a slug of Iodine 131 above the area to be tested. The logging tool is set at the depth of interest and gamma radiation is recorded for approximately 30 minutes with the logging tool stationary. A final gamma ray survey is run to complete the logging procedure.

5.1 Radioactive Tracer Survey Procedure

An RTS was run between 4240 feet and 3090 feet in injection Well #1-12 on June 26, 2013.

A. First Base Log: 4238 feet to 3090 feet

B. Five (5) minute statistical check at 3955 feet
Five (5) minute statistical check at 3802 feet

C. First radioactive slug ejected at 3100 feet. The following table contains the depth of the top and bottom of each pass and the depth of the peak.

	START	STOP	PEAK DEPTH	FLOW GPM
1	3250	3100	3149	22
2	3300	3150	3221	22
3	3400	3216	3327	22
4	3600	3450	3550	22
5	3800	3645	3741	22
6	4000	3813	3930	22
7	4100	3950	4062	22
8	4150	4012	4097	22
9	4200	4016	4122	22

D. Second radioactive slug ejection at 3750 feet
Stationary time drive sequence
Fluid pump rate – 22 GPM
Bottom detector set at 4080 feet
Top detector set at 4071.5 feet
Monitored for 30 minutes

E. Final Base Log 4238 feet to 3090 feet

5.2 Results of the Radioactive Tracer Survey

The radioactive tracer run in Well #1-12 on June 26, 2013 confirmed the leak-free condition of the tubing within the test interval as well as depicting that all injection fluids exited the injection tubing below the packer and moved out into the injection zone. The RTS verified that the cement at the top of the injection interval has integrity and there is no upward migration of injection fluids around the casing shoe.

6.0 CONCLUSIONS

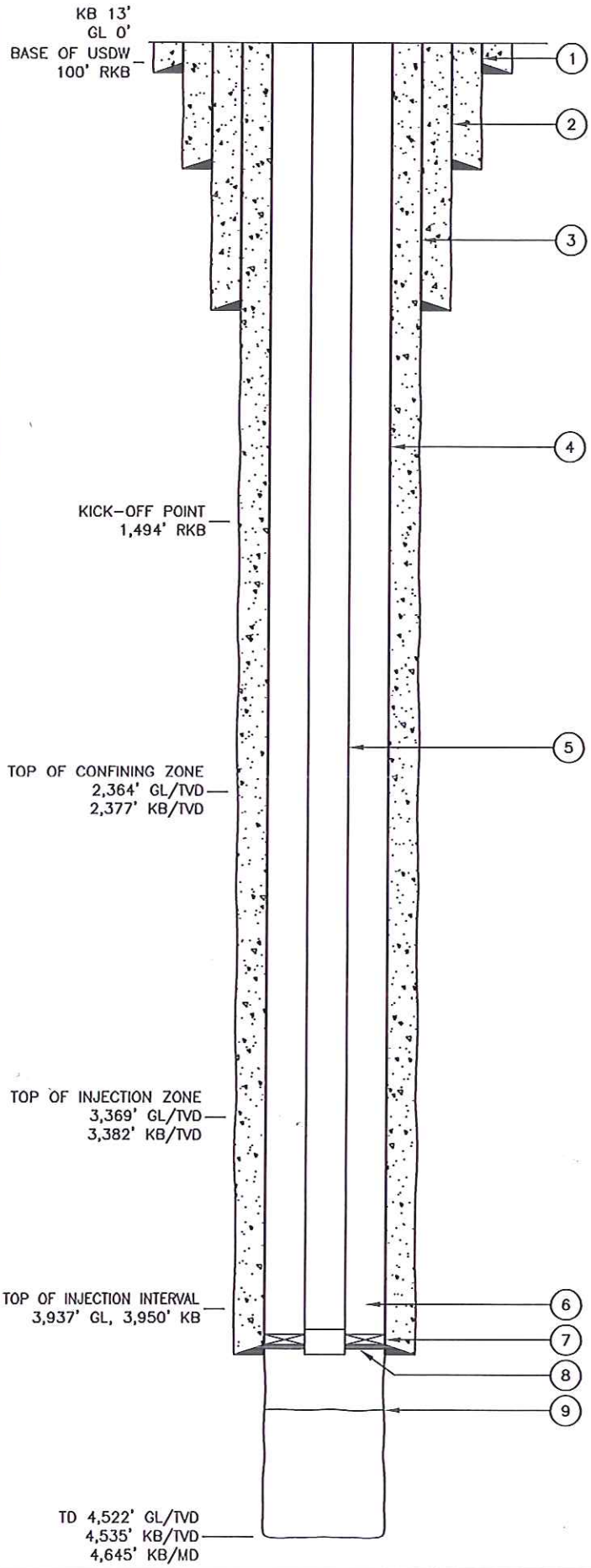
In conclusion, the Environmental Geo-Technologies, LLC Well #1-12 has displayed internal and external mechanical integrity. All procedures and evaluations have been done in accordance with state and federal requirements mandated in regard to U.S. EPA Permit MI-163-1W-C010 and Michigan Permit M-452.

- There is no significant leak in the casing, tubing or packer as evidenced by an amplified annulus pressure test conducted on June 26, 2013.

- The temperature survey that was run on June 26, 2013 was comparable to the previous surveys conducted on January 3, 2007 and December 4, 2012. The 2013 survey displayed no indication of any fluid having an upward movement, thus confirming external integrity.

- The cement at the top of the injection interval and around the casing shoe has integrity. The survey that was run on June 26, 2013 indicated that all fluids left the injection string and entered into the formation and showed no indication of upward movements.

FIGURE



BELOW GROUND DETAILS

1. CONDUCTOR CASING: 20" O.D., 94 lb/ft, SET AT 119' KB IN 24" HOLE AND CEMENTED TO SURFACE
2. SURFACE CASING: 13⅜" O.D., 48 lb/ft, H-40 SET AT 396' KB IN 17½" HOLE AND CEMENTED TO SURFACE
3. INTERMEDIATE CASING: 9⅝" O.D., 36 lb/ft, J-55 SET AT 824' KB IN 12¼" HOLE AND CEMENTED TO SURFACE
4. LONG STRING CASING: 7" O.D., 26 lb/ft, J-55 SET AT 4,080' KB/MD IN 8¾" HOLE AND CEMENTED TO SURFACE
5. INJECTION TUBING: 4-1/2" O.D. FIBERGLASS TO 4,050' KB/MD
6. ANNULUS FLUID: OIL BASED FLUID
7. PACKER AND SEAL ASSEMBLY: 4-1/2" X 7" GPS PACKER, TOP AT 4,050' KB/MD. BOTTOM AT 4,055' KB/MD
8. DIESEL PAD UNDER PACKER
9. TOP OF FILL AT 4,246' KB/MD

NOTE: TRUE BOTTOM OF WELL IS 211' SOUTH AND 754' WEST OF SURFACE LOCATIONS

SUBSURFACE

HOUSTON, TX.
SOUTH BEND, IN.
BATON ROUGE, LA.

FIGURE 1

ENVIRONMENTAL GEO-TECHNOLOGIES, LLC

ROMULUS, MICHIGAN

EGT #1-12 WELL SCHEMATIC

DATE: 7/12/13	CHECKED BY: RJS	JOB NO: 60D6957
DRAWN BY: CRB	APPROVED BY: RJS	DWG. NO:

APPENDICES

ATTACHMENT A

REGULATORY CORRESPONDENCE

SUBSURFACE

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

NOV 2 8 2012

REPLY TO THE ATTENTION OF:
WU-16J

Mr. Tom Athans
Helicon Holdings
1001 Woodward Ave., Suite 400
Detroit, Michigan 48226

Subject: Approval of Proposed Procedures for a radioactive tracer survey, temperature log, and amplified annulus pressure test scheduled for December 3, 4, and 5, 2012 in Environmental GeoTechnologies (EGT) well #s 1-12 and 2-12, United States Environmental Protection Agency Underground Injection Control (UIC) Permit #MI-163-1W-C010 and #MI-163-1W-C011

Dear Mr. Athans:

I have reviewed the procedures attached to Jeffrey Woolstrum's letter of October 31, 2012, for the testing referenced above. The test procedures are approved with the addition of the following requirements for each well:

- The annulus fluid returned at the conclusion of the Amplified Annulus Pressure Test must be recorded and reported with the test results.
- Prior to running the temperature log, the temperature logging tool must be compared with a calibrated thermometer in ice water and water of ambient temperature. These temperature readings must be recorded and reported with the test results.
- A gamma ray log must be run in conjunction with the temperature logs.
- Injection of fresh water at a flow rate between 20 and 50 gallons per minute is approved for conducting the radioactive tracer surveys.

Please remember to submit the digital data either on diskette, CD or by email when the report is submitted.

Our policies require that testing be witnessed by our contract field inspectors. Please contact Jeff McDonald at (312) 353-6288 to schedule the witnessing of these tests. Unwitnessed tests are only acceptable if it is impossible for the field inspectors to be present. If tests do not provide definitive information concerning the conditions which they are designed to ascertain, EGT will be required to rerun them.

If you have any questions or comments about the contents of this letter, please contact me by phone at (312) 353-7316 or by email to batka.allan@epa.gov.

Sincerely yours,

Allan Batka, Engineer
Underground Injection Control Branch

cc: MDEQ, Raymond Vugrinovich

AMPLIFIED
ANNULUS PRESSURE TEST PROCEDURES
FOR
EGT WELL #1-12 AND EGT WELL #2-12

- Record last date of injection
- Well must be shut in a minimum of 48-hours prior to annulus testing
- Install digital test gauge at test port that has been certified within the last 12 months (certificates to be at hand)
- Pressure up annulus to approximately 900 psi for one (1) hour prior to test to allow for annulus to equilibrate
- Record current annulus pressure
- Record current injection pressure
- Record current annulus fluid in storage tank
- Pressure up annulus to 900 +25/-0 psi and allow annulus to equilibrate
- Record data at 10-minute intervals for a one (1) hour period. (Pressure change limited to 3% of applied pressure for a one (1) hour period)
- Raise annulus pressure to 1050 +25/-0 psi and allow annulus to equilibrate
- Record data at 10-minute intervals for a one (1) hour period. (Pressure change limited to 3% of applied pressure for a one (1) hour period

AMPLIFIED
ANNULUS PRESSURE TEST PROCEDURES
FOR
EGT WELL #1-12 AND EGT WELL #2-12
(CONTINUED FROM PAGE 1)

- The testing is considered acceptable if pressure fluctuation is less than 3% from original applied pressure for each of the one (1) hour periods

- Return annulus to normal stand-by pressure

- Put WAMS system back on line

- Return well to operator control

PROCEDURES FOR RUNNING STATIC TEMPERATURE LOG ON EGT WELL #1-12

- Rig-up wireline unit on hole
- Verify temperature sonde has been calibrated and has certification
- Run tool well and record temperature from surface to K.D. (4649')or top of fill
- Tool to be run at a consistent speed and not to exceed 30 feet per minute
- Once tool reaches bottom, stabilized temperature readings (3 minutes) should be made at 500' intervals while coming out of well
- After completion of temperature survey, wireline rig should be made ready to perform radioactive tracer survey (RTS)

PROCEDURES FOR RUNNING RADIOACTIVE TRACER SURVEY ON EGT WELL #1-12

- Radioactive tracer material to be iodine 131
- Rig-up surface read out wireline unit on hole
- Run into hole with casing collar locator and radioactive tracer tool
- Run bottom up base run survey from 4649' (or deepest attainable) to 3093' (sensitivity at 40 counts per second per inch (CPSPI)
- Run first 5-minute stat with bottom detector at 3955'
- Run second 5-minute stat with bottom detector at 3802'
- Start injection at a rate of 15 gpm
- Release first slug at 3100'
- Chase slug approximately 14 chases with a minimum of two (2) chasers in tubing
- Release second slug at 3750'
- Run 30-minute time drive with bottom detector at 4080'
- Run final base bottom-up from 4649' to 3093'
- Rig down wireline
- Turn over to operator

After Procedures Have Been Submitted
Prior to Performing Mechanical Integrity Testing

- Verify that regulating agencies have received procedures a minimum of 30 days prior to performing MIT
- Provide agencies with a proposed date for running MIT in order to allow a witness to be present, if required
- Verify that all personnel and services have satisfied safety requirements of operator
- Provide JSA and/or review procedures with all on site
- Insure that all individuals are fitted with required safety attire

ATTACHMENT B

CHRONOLOGY OF FIELD ACTIVITIES

SUBSURFACE

CHRONOLOGY OF FIELD ATIVITIES

ENVIRONMENTAL-GEO TECHNOLOGIES, LLC

WEDNESDAY, JUNE 26, 2013

- Rig-up and perform amplified annulus pressure test on Well #1-12
- Set-up and run cold and hot bucket test for Well #1-12
- Rig-up and perform amplified annulus pressure test on Well #2-12
- Rig-up and run temperature for Well #1-12
- Rig up and run radioactive tracer survey on Well #1-12

THURSDAY, JUNE 27, 2013

- Set-up and run cold and hot bucket test for Well #2-12
- Rig-up and run temperature for Well #2-12
- Rig up and run radioactive tracer survey on Well #2-12

SUBSURFACE

ATTACHMENT C

ANNULUS PRESSURE TEST DATA AND CALIBRATION

SUBSURFACE

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
STANDARD ANNULAR PRESSURE TEST

Operator Environmental Geotechnologies
Address 1216 Beaubien Street
Detroit Michigan 48226
Well Name Well 1-12 (Test 1)

State Permit No. MI5M453
USEPA Permit No. MI-163-IW-C011
Date of Test 6/26/13
Well Type Class I- Hazardous Comm.

LOCATION INFORMATION ____ Quarter of the ____ Quarter of the ____ Quarter
of Section 12 ; Range 9e ; Township 3S ; County Wayne ;
Company Representative R. Schildhouse ; Field Inspector J. Wawrzak ;
Type of Pressure Gauge Digital ~~inch~~ face; 2000 psi full scale; 1 psi increments;

New Gauge? Yes ☐ No ☑ If no, date of calibration 12/6/12 Calibration certification submitted? Yes ☑ No ☐

TEST RESULTS	
Readings must be taken at least every 10 minutes for a minimum of 30 minutes for Class II, III and V wells and 60 minutes for Class I wells. For Class II wells, annulus pressure should be at least 300 psig. For Class I wells, annulus pressure should be the greater of 300 psig or 100 psi above maximum permitted injection pressure. Original chart recordings must be submitted with this form.	5-year or annual test on time? Yes ☐ No ☐ 2-year test for TA'd wells on time? Yes ☐ No ☐ After rework? Yes ☐ No ☐ Newly permitted well? Yes ☑ No ☐

Time	Pressure (in psig) Annulus	Tubing
9:20	917	1
9:30	916	1
9:40	916	2
9:50	916	2
10:00	915	2
10:10	915	2
10:20	916	3

Casing size 7" (Steel)
Tubing size 4.5 (fiberglass)
Packer type GPS Model 12
Packer set @ 4050' - 4055' KB/MD
Top of Permitted Injection Zone 3937
Is packer 100 ft or less above top of Injection Zone ? Yes ☐ No ☐
If not, please submit a justification.
Fluid return (gal.) 12.19
Comments:

Test Pressures: Max. Allowable Pressure Change: Initial test pressure x 0.03 28 psi
Test Period Pressure change x 2 psi

Test Passed ☑ Test Failed ☐

If failed test, well must be shut in, no injection can occur, and USEPA must be contacted within 24 hours. Corrective action needs to occur, the well retested, and written authorization received before injection can recommence.

I certify under penalty of law that this document and all attachments are, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. (See 40 CFR 144.32(d))

Richard W. Schildhouse — 7-12-13
Printed Name of Company Representative — Signature of Company Representative — Date

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
STANDARD ANNULAR PRESSURE TEST

Operator Environmental Geo-Technologies
Address 1216 Beaubien Street
Detroit Michigan 48226
Well Name Well 1-12 (Test 2)

State Permit No. MI SM453
USEPA Permit No. MI-163-IW-C011
Date of Test 6/26/13
Well Type Class I - Hazardous Comm.

LOCATION INFORMATION ____ Quarter of the ____ Quarter of the ____ Quarter
of Section 12 ; Range 9e ; Township 3S ; County Wayne ;
Company Representative R. Schildhouse ; Field Inspector J. Wawczak ;
Type of Pressure Gauge Digital ~~inch~~ face; 2000 psi full scale; 1 psi increments;
New Gauge? Yes ☐ No ☑ If no, date of calibration 12/6/12 Calibration certification submitted? Yes ☑ No ☐

TEST RESULTS	
Readings must be taken at least every 10 minutes for a minimum of 30 minutes for Class II, III and V wells and 60 minutes for Class I wells. For Class II wells, annulus pressure should be at least 300 psig. For Class I wells, annulus pressure should be the greater of 300 psig or 100 psi above maximum permitted injection pressure. Original chart recordings must be submitted with this form.	5-year or annual test on time? Yes ☐ No ☐ 2-year test for TA'd wells on time? Yes ☐ No ☐ After rework? Yes ☐ No ☐ Newly permitted well? Yes ☑ No ☐

	Pressure (in psig)	
Time	Annulus	Tubing
10:25	1075	3
10:35	1073	3
10:45	1069	3
10:55	1069	3
11:05	1069	3
11:15	1070	3
11:25	1069	2

Casing size 7" (Steel)
Tubing size 4.5" (Fiber Glass)
Packer type GPS Model 12
Packer set @ 4050' - 4055' KB/MD
Top of Permitted Injection Zone 3937
Is packer 100 ft or less above top of Injection Zone ? Yes ☐ No ☐
If not, please submit a justification.
Fluid return (gal.) 15.09
Comments:

Test Pressures: Max. Allowable Pressure Change: Initial test pressure x 0.03 32.2 psi
Test Period Pressure change 0 psi

Test Passed ☑ Test Failed ☐

If failed test, well must be shut in, no injection can occur, and USEPA must be contacted within 24 hours. Corrective action needs to occur, the well retested, and written authorization received before injection can recommence.

I certify under penalty of law that this document and all attachments are, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. (See 40 CFR 144.32(d))

Richard W Schildhouse — Printed Name of Company Representative
Richard W Schildhouse — Signature of Company Representative
7-12-13 — Date

Automation Products Group, Inc.
1025 West 1700 North
Logan, UT 84321
Tel: 435-753-7300
Fax: 435-753-7490
www.apgsensors.com

NIST CALIBRATION DATA

Certificate Number: 419323	RANGE 2000 PSI G	RATED ACCURACY +/- 0.25 % FS BFSL	OUTPUT

MODEL NUMBER:	PART NUMBER	SERIAL NUMBER	ACTUAL LINEARITY	ACTUAL HYST.
PG-3000	548010-0722	Z3339	0.03 % FS	0.05 % FS

WORK PERFORMED:

- ☑ CALIBRATE TO MFG. SPEC. IN ACCORDANCE WITH 9001749
- ☑ CALIBRATE IN COMPLIANCE WITH ANSI / NCSL Z540.1
- ☐ REPAIR
- ☐ MODIFY
- ☐ NEW ITEM

REMARKS:

CALIBRATION RESULTS		
DISPLAY	PRESSURE	OUTPUT
0	0	N / A
400	400	N / A
801	800	N / A
1201	1200	N / A
1600	1600	N / A
1999	1999	N / A
1601	1600	N / A
1201	1200	N / A
800	800	N / A
400	400	N / A
0	0	N / A

P.O. NUMBER	SALES ORDER NUMBER	CUSTOMER I.D.	DATE OF TEST	DUE DATE
70-15881	211656		3/11/2013	

The calibration 'Due Date' has purposely been left blank, as APG will not dictate to our customers when they should re-calibrate their instruments.

STANDARD USED

MFG.	MODEL	INSTRUMENT	SERIAL #	ACCURACY	CAL.DATE	RECAL DATE	CERT NUMBER	SOURCE
AMETEK	T-150-1/C	Dead Weight	98097	+/-0.025%	12/6/2012	12/6/2013	581162	Simco

ENVIRONMENT	TEMP. 68 DEG.F	HUMIDITY 20 %

PERFORMED BY: Daniel Bardwell DB

Technician Name and Initials

CALIBRATION REPORT - STATEMENT OF TRACEABILITY

This instrument has been checked for accuracy, recalibrated to manufacturer's specifications using Best Fit Straight Line (BFSL), and found to be within the specified tolerance (unless otherwise not
The instruments used in this calibration are traceable to the National Institute of Standards and Technology (NIST) through certification documents on file at APG.
APG is in compliancewith ANSI/NCSL Z540.1

Baker Atlas

January 28, 2013

Baker Atlas
930 S. West Street
Olney, Illinois 62450
Tel (618) 393 - 2919
Fax (618) 395 - 7872

Jeff Uhlmann
District Manager
Northeast District

To whom it may concern:

On this date I preformed the in house tool calibrations on the following series 2120 Temperature tools, below are my findings. Tools were checked using our standard calibration procedures. Performed by Mike Bailey Electronic tech.

80 Degrees = 800 Hz. + or – 5%
300 Degrees = 3000 Hz. = or – 5%

Tool Serial Number 50033 (2120)

Low end 800 Hz. Frequency Which equals 80 Degrees F. check = 806.5Hz.

High end 3000 Hz. Frequency Which equals 300 degrees F. check = 3012.0 Hz.

Tool Serial Number 361252 (2120)

Low end 800 Hz. Frequency Which equals 80 Degrees F. check = 799.6 Hz.

High end 3000 Hz. Frequency Which equals 300 degrees F. check = 3004.3 Hz.

Tool Serial Number 68732 (2142)

Low end 800 Hz Frequency Which equals 80 Degrees F. check = 800.0 Hz. .

High end 3000 Hz Frequency Which equals 300 degrees F. check = 3003.2 Hz

Jeff Uhlmann

ATTACHMENT D

TEMPERATURE LOG

SUBSURFACE

BAKER HUGHES

Baker Atlas

Nuclear Tracer Log

File No:	**Company**	ENVIROMENTAL GEOTECH TECHNOLOGIES	
	Well	EGT #1-12	
API No:	**Field**	ROMULUS STORAGE	
	County	WAYNE	**State** MICHIGAN

THANK YOU!	**Location** 1670'FSL & 2372'FEL SEC 12 TWP 3S RGE 9E	**Other Services** TEMP

Permanent Datum	G.L	Elevation	626 ft	**Elevations**
Log Measured From	K.B.	13 ft	Above P. D.	KB 639 ft
Drill Measured From	KELLY BUSHING			DF 638 ft
				GL 626 ft

Date	26-JUNE-2013		
Run	SUB		
Service Order	625735		
Depth Driller	4645 ft		
Depth Logger	4240 ft		
Bottom Logged Interval	4240 ft		
Top Logged Interval	3090 ft		
Time Started	15:00		
Time Finished	20:30		
Operator Rig Time	PRODUCTION LOGGER		
Type of Fluid in Hole	WATER		
Fluid Density	N/A		
Salinity	N/A		
Fluid Level	INJECTION		
Logged Cement Top	N/A		
Wellhead Pressure	N/A		
Maximum Hole Deviation	N/A		
Nominal Logging Speed	30 fpm		
Maximum Recorded Temperature	N/A		
Reference Log	TRACER		
Reference Log Date	5-DEC-2012		
Equipment No. / Location	9747	OLNEY, IL	
Recorded By	JERRY GINDER		
Witnessed By	MR. SCHILDHOUSE		MR. STEVEN ROY (RPA)

BAKER HUGHES

Baker Atlas

Differential Temperature Gamma Ray

CASE

File No:	Company	ENVIRONMENTAL GEOTECH TECHNOLOGIES	
	Well	EGT #1-12	
API No:	Field	ROMULUS STORAGE	
	County	WAYNE	State MICHIGAN

THANK YOU!

Location
1670'FSL & 2372'FEL

SEC 12 TWP 3S RGE 9E

Other Services
TRACER

Permanent Datum	G.L	Elevation	626 ft
Log Measured From	K.B.	13 ft	Above P. D.
Drill Measured From	KELLY BUSHING		

Elevations
KB 639 ft
DF 638 ft
GL 626 ft

Date	26-JUNE-2013		
Run	SUB		
Service Order	625735		
Depth Driller	4645 ft		
Depth Logger	4246 ft		
Bottom Logged Interval	4246 ft		
Top Logged Interval	0 ft		
Time Started	12:00		
Time Finished	15:30		
Operator Rig Time	PRODUCTION LOGGER		
Type of Fluid in Hole	WATER		
Fluid Density	N/A		
Salinity	N/A		
Fluid Level	INJECTION		
Logged Cement Top	N/A		
Wellhead Pressure	0 psi		
Maximum Hole Deviation	N/A		
Nominal Logging Speed	30 fpm		
Maximum Recorded Temperature	85.2 degF		
Reference Log	TEMP		
Reference Log Date	04-DEC-2012		
Equipment No. / Location	9747	OLNEY, IL	
Recorded By	JERRY GINDER		
Witnessed By	MR. SCHILDHOUSE	MR. STEVEN ROY (EPA)	

FOLD HERE

In making interpretations of logs, our employees will give the customer the benefit of their best judgement. But since all interpretations are opinions based on inferences from electrical or other measurements, we cannot, and we do not guarantee the accuracy or correctness of any interpretation. We shall not be liable or responsible for any loss, cost, damages, or expenses whatsoever incurred or sustained by the customer resulting from any interpretation made by any of our employees.

Casing Record

Size	Weight	Grade	From	To
20 in	94 lbm/ft		0 ft	119 ft
13.375 in	48 lbm/ft	H-40	0 ft	396 ft
9.625 in	36 lbm/ft		0 ft	824 ft
7 in	26 lbm/ft		0 ft	4080 ft
4.5 in		FGL	0 ft	4050 ft

Borehole Record

Bit Size	From	To

Remarks

BAKER HUGHES CREW: C.BREWER

Equipment Data

Equipment Data

Run	Trip	Tool	Series Number	Serial Number	Position
1	1	GR	1311XA	52665	FREE
1	1	TEMP	2120XA	50033	FREE
1	1	CCL	2324XA	361077	FREE

BUCKET TEST (ICE WATER)

TOOL= 40.5 DEG

THERM= 41.0 DEG

DEPTH OFFSETS

(for Acquired Curves)

SERIES	DEPTH OFFSET	ACQUIRED CURVES		
2321NA	-8.000	CCL	ACCL	
1311XA	-2.000	GR	GRBU	
2121XA	0.000	TEMP	DTEM	COMPOSIT
2421XA	0.000	NEU		
SYSTEM	0.000	TEN	TTEN	

Created by : CNT, v4.07.00

Plotted by : PlotMgr, v5.4.504

Company : EGT

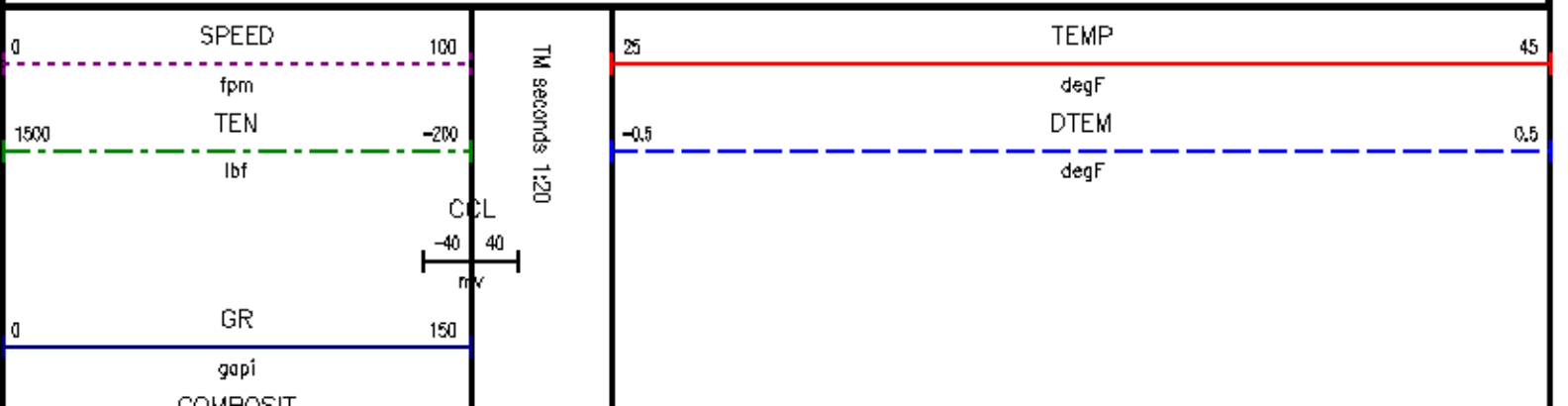
Well : 2-12

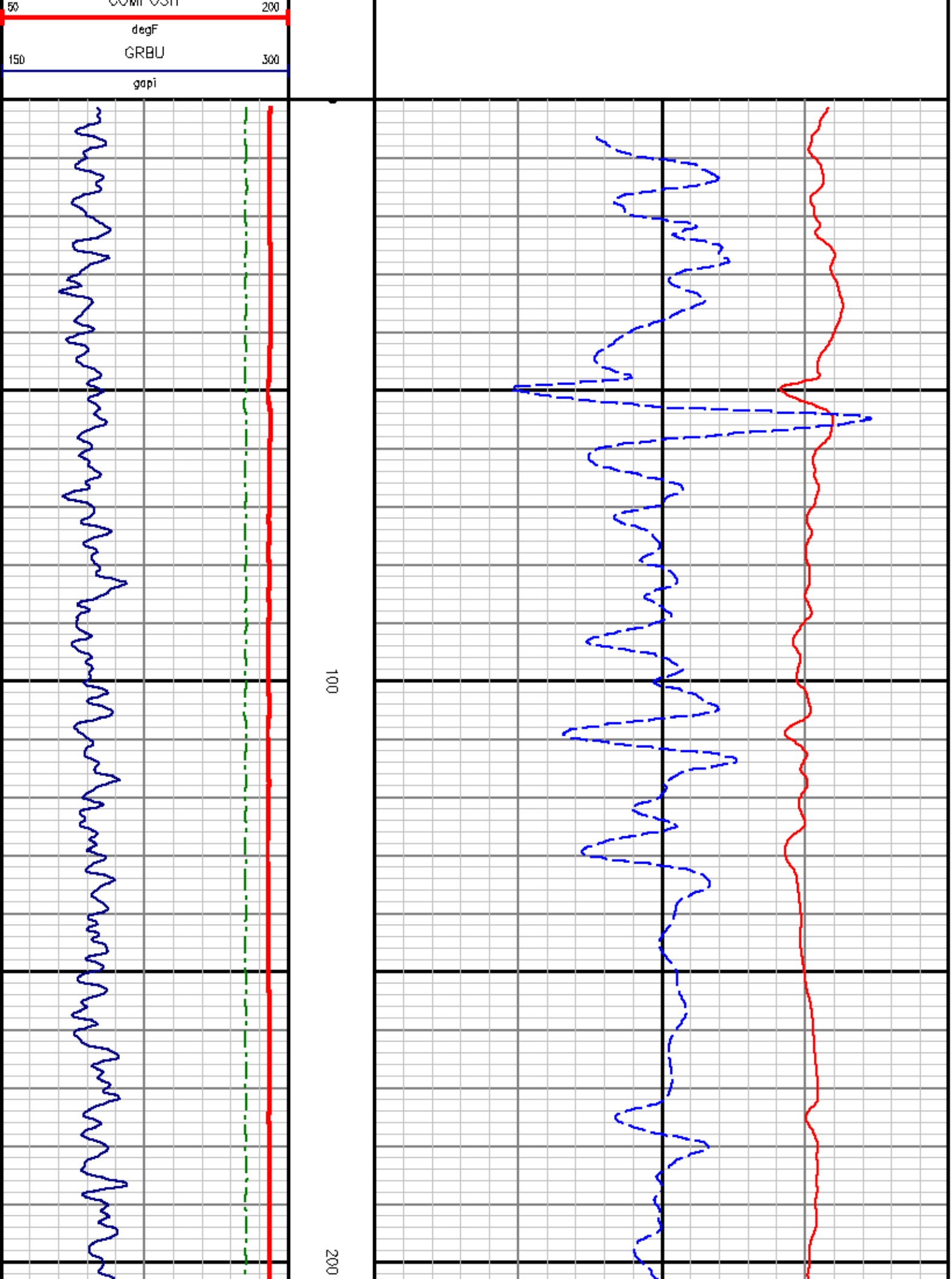
File Name : d:\welldata\625735\temp00.xtf

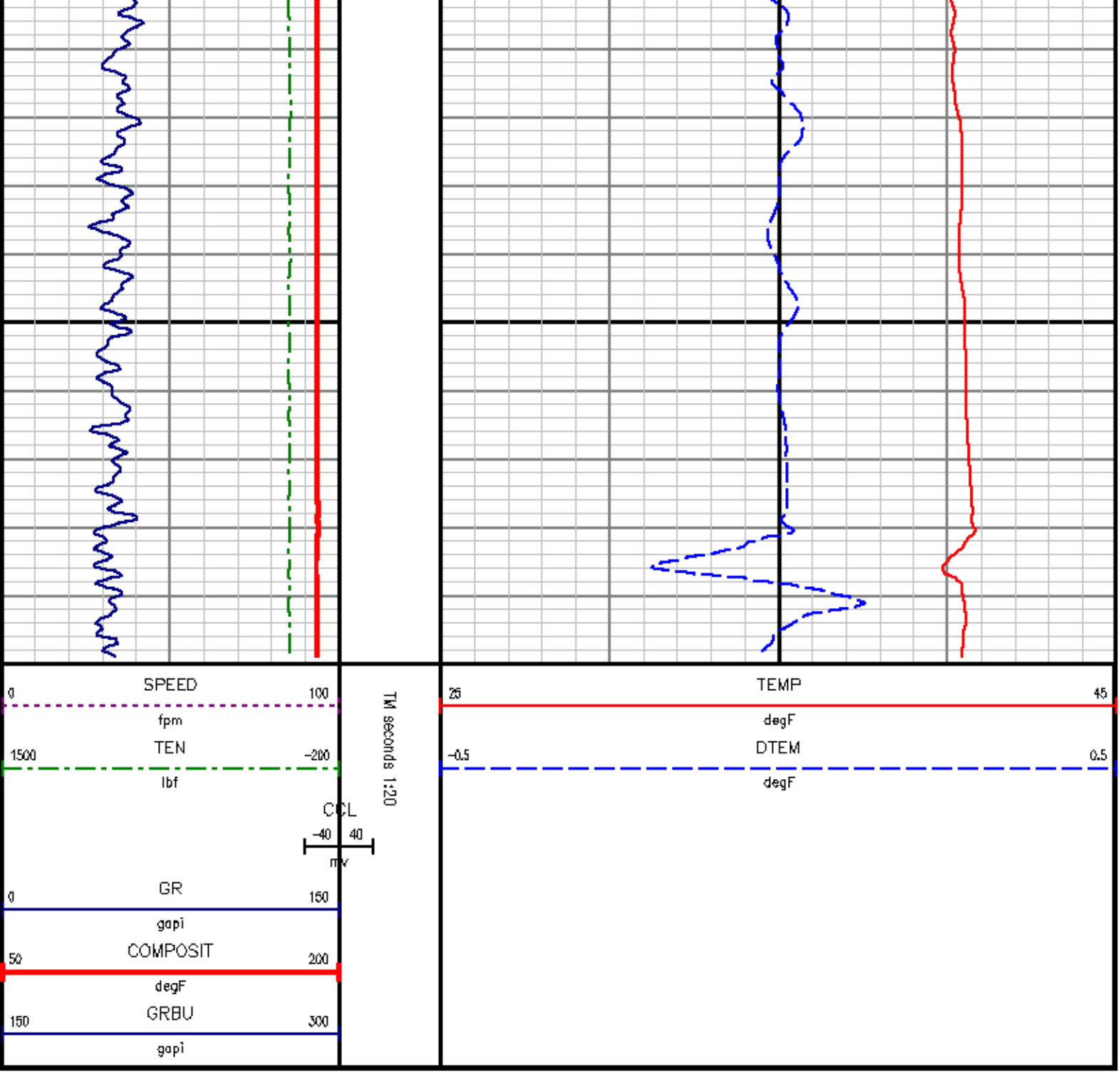
Mode : PlotMgr 5.4.504

Interval : 0 to 300

Created : 6/26/2013 9:57:49 AM




50
COMPOSH
200
degF
GRBU
150
300
gapi
100
200



BUCKET TEST (HOT WATER)

TOOL= 135.6 DEG

THERM = 137.0 DEG

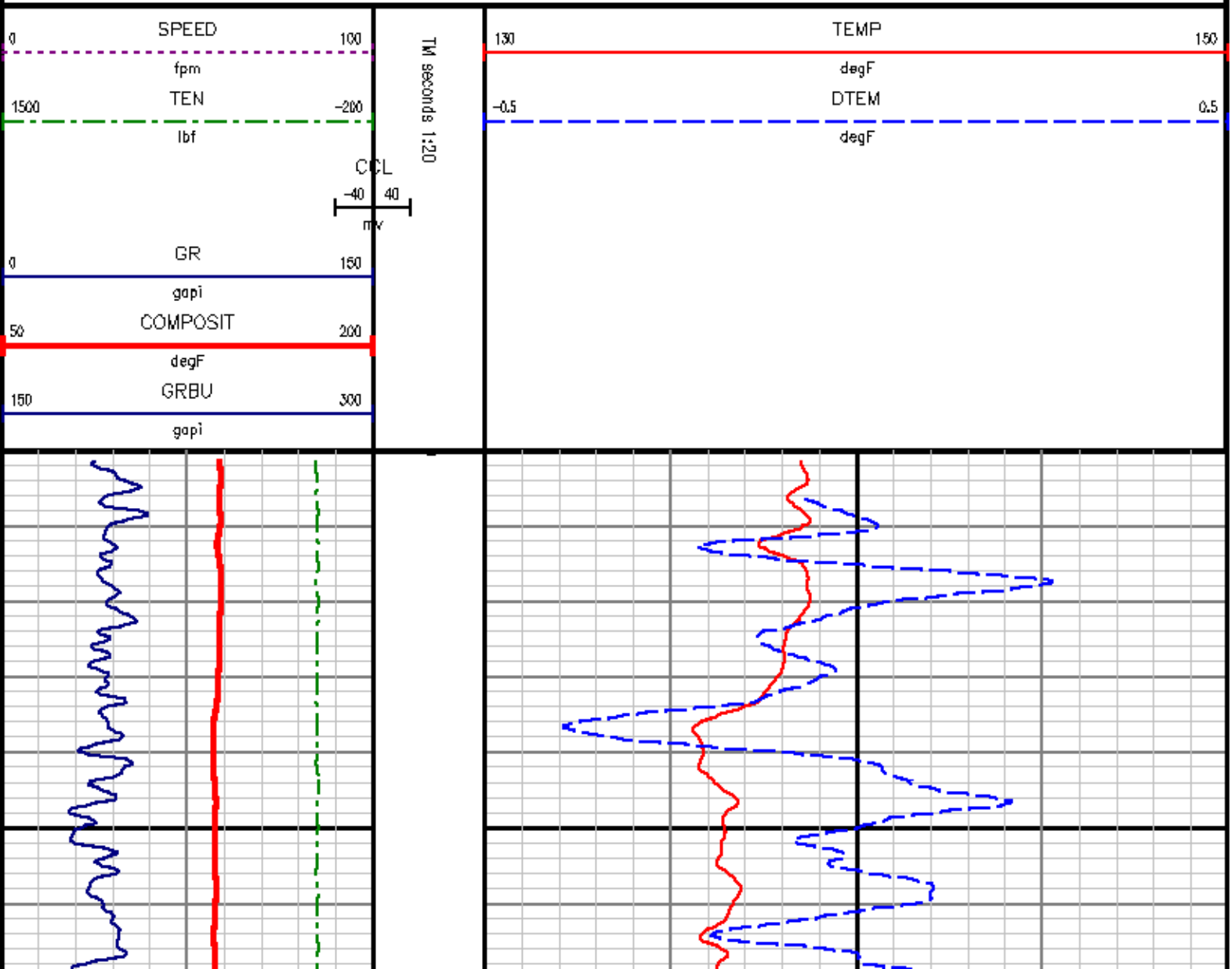
DEPTH OFFSETS

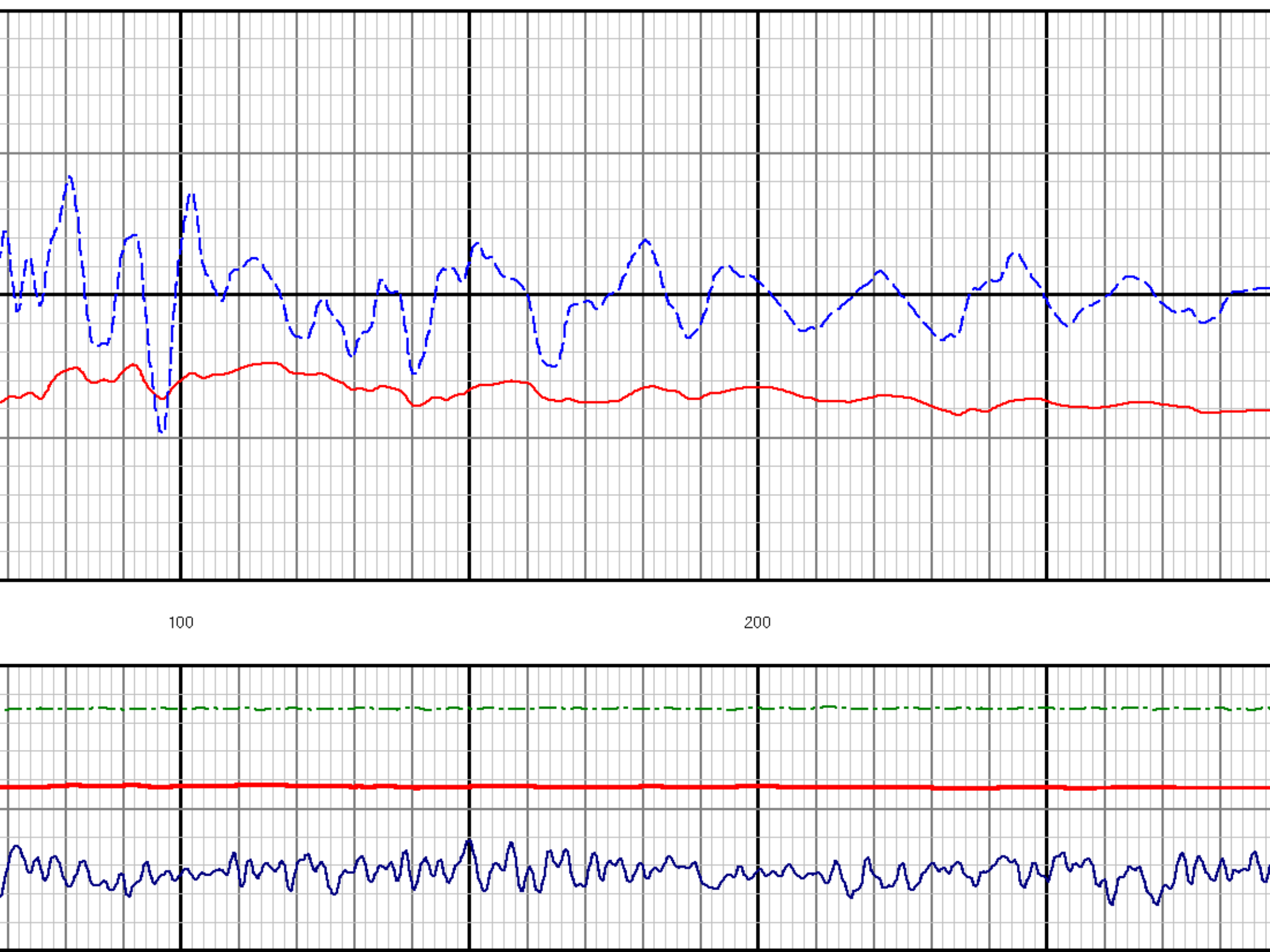
(for Acquired Curves)

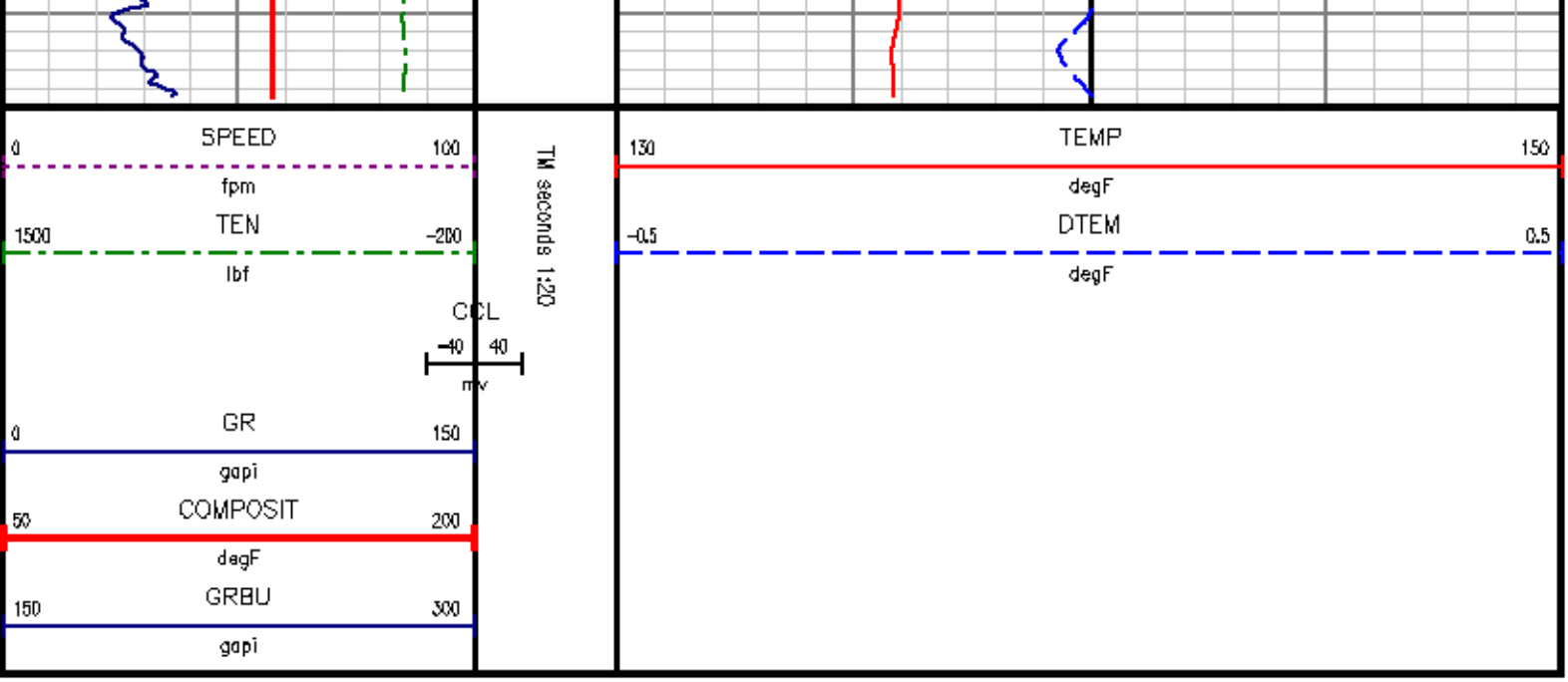
SERIES	DEPTH OFFSET	ACQUIRED CURVES		
2321NA	-8.000	CCL	ACCL	
1311XA	-2.000	GR	GRBU	
2121XA	0.000	TEMP	DTEM	COMPOSIT
2421XA	0.000	NEU		
SYSTEM	0.000	TEN	TTEN	

Created by : CNT, v4.07.00
Plotted by : PlotMgr, v5.4.504

Company : EGT
Well : 2-12
File Name : d:\welldata\625735\temp01.xtf
Mode : PlotMgr 5.4.504
Interval : 0 to 300
Created : 6/26/2013 10:05:47 AM




100
200



BASE TEMP PASS

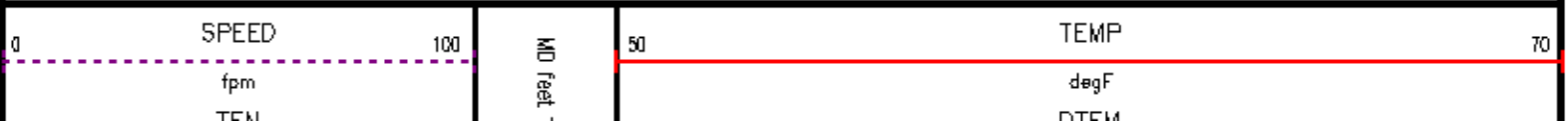
DEPTH OFFSETS

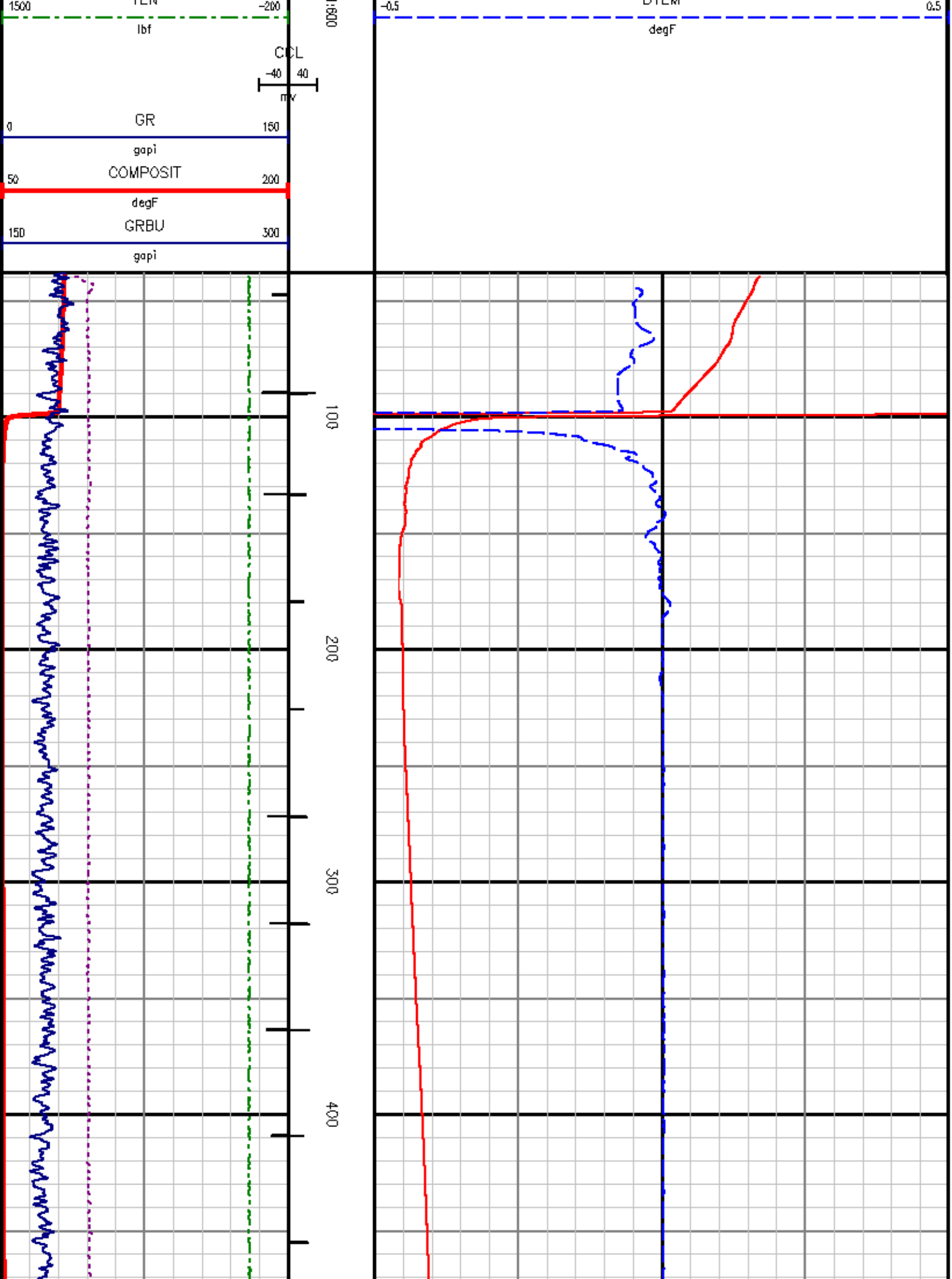
(for Acquired Curves)

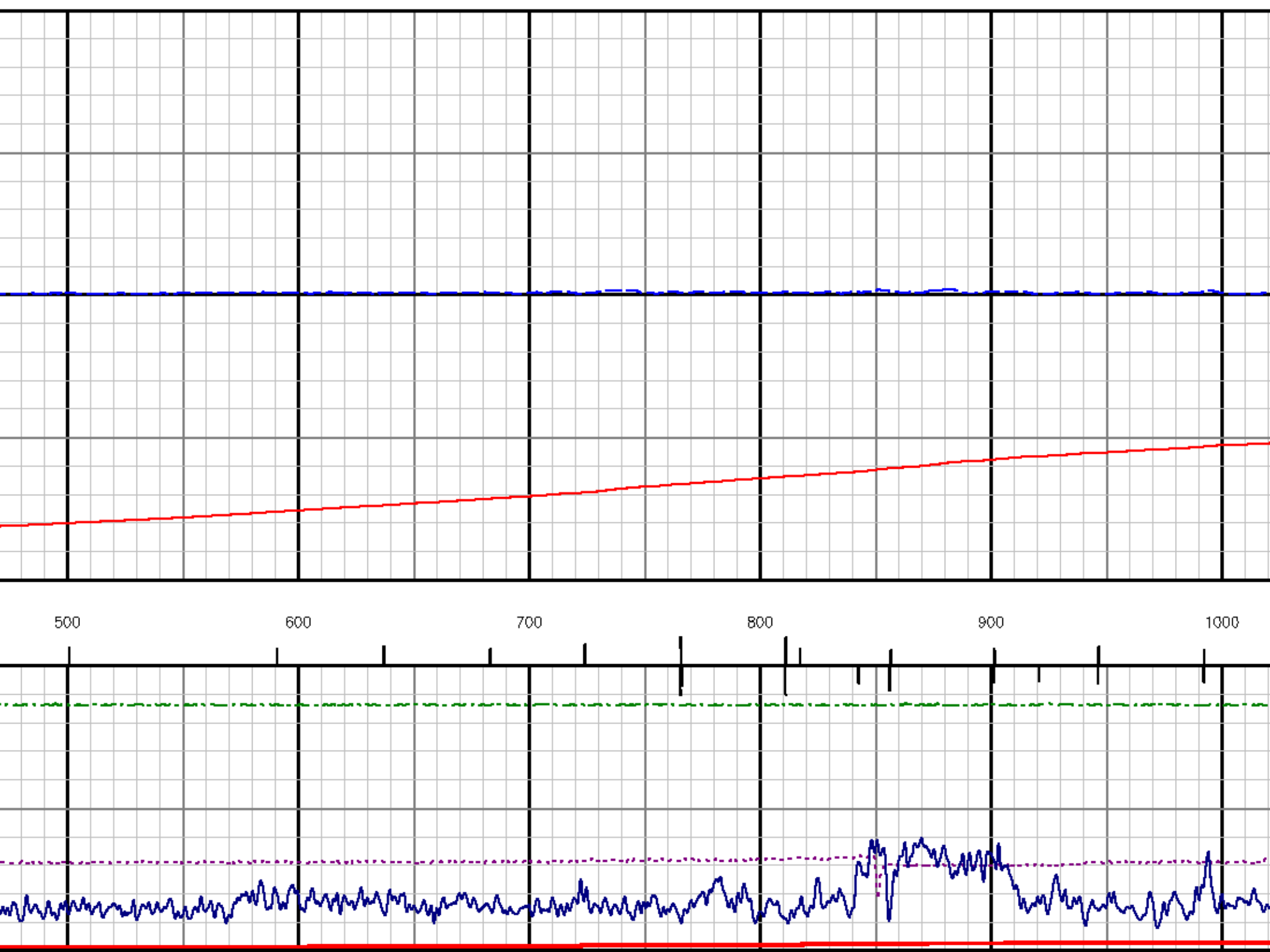
SERIES	DEPTH OFFSET	ACQUIRED CURVES		
2321NA	-8.000	CCL	ACCL	
1311XA	-2.000	GR	GRBU	
2121XA	0.000	TEMP	DTEM	COMPOSIT
2421XA	0.000	NEU		
SYSTEM	0.000	TEN	TTEN	

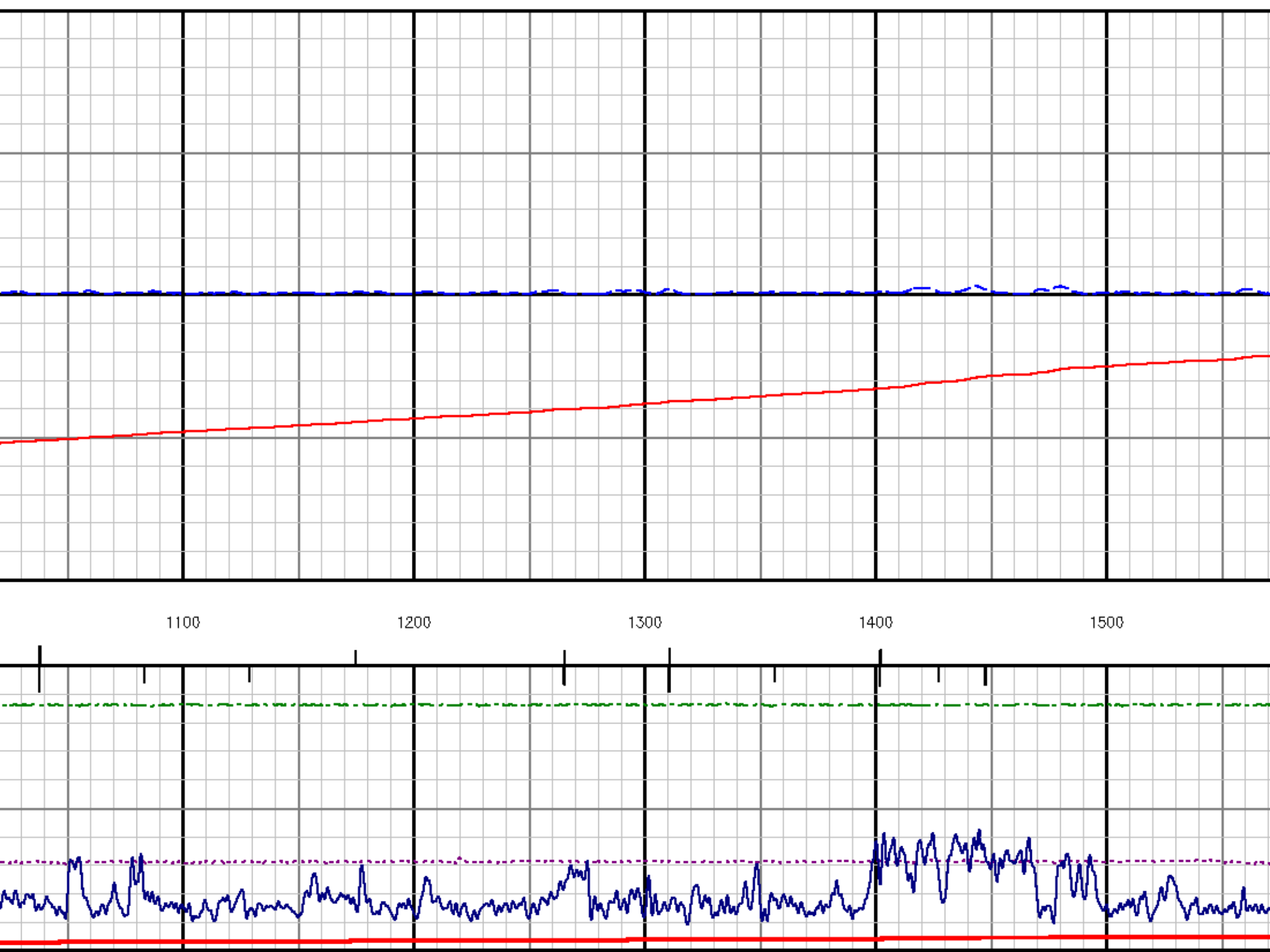
Created by : CNT. v4.07.00
Plotted by : PlotMgr. v5.4.504

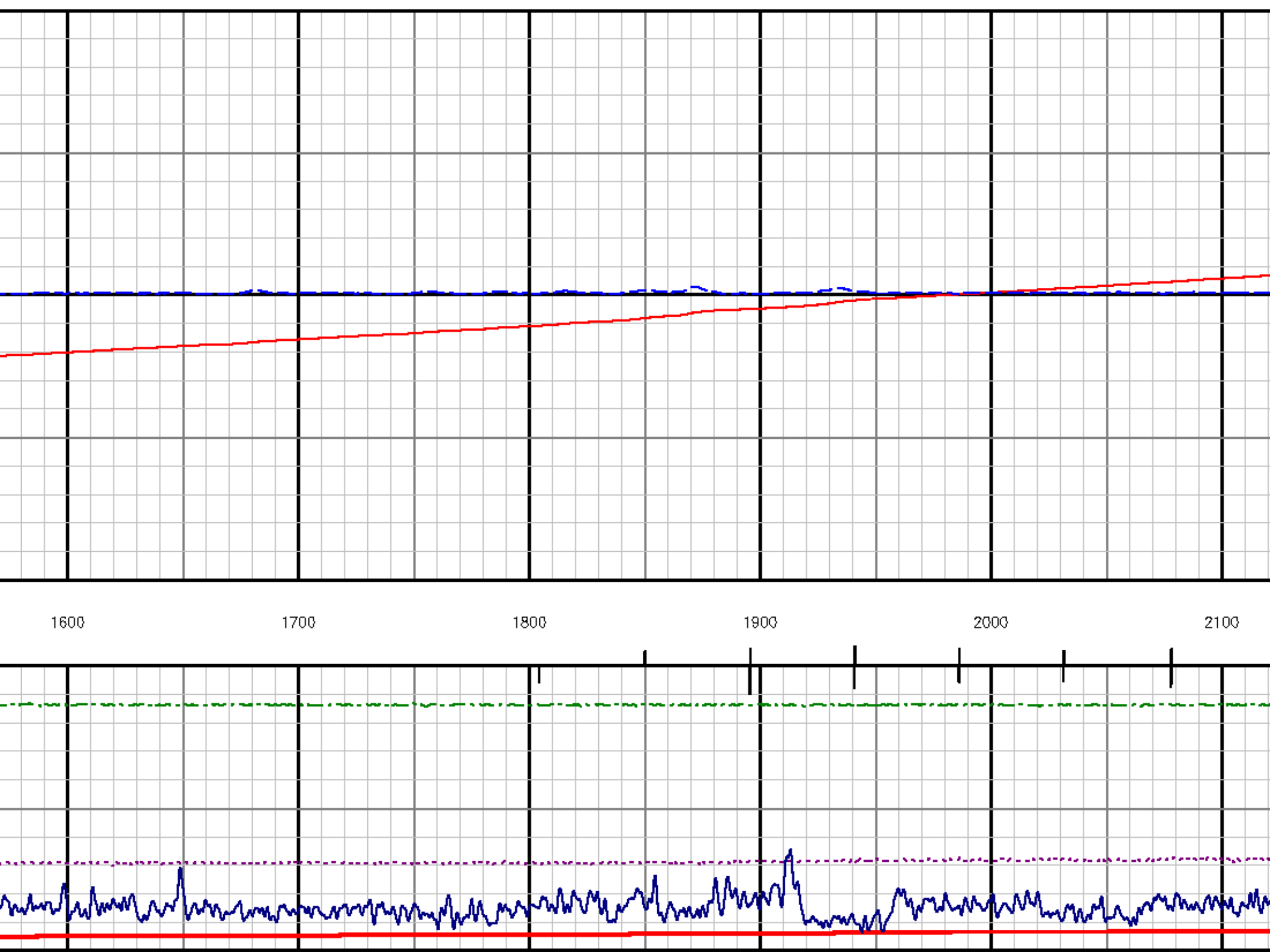
Company : EGT
Well : 2-12
File Name : D:\WELLDATA\625735\TEMP02.XTF
Mode : PlotMgr 5.4.504
Interval : 38.00 - 4268.00 feet DOWN
Created : 6/26/2013 11:51:15 AM

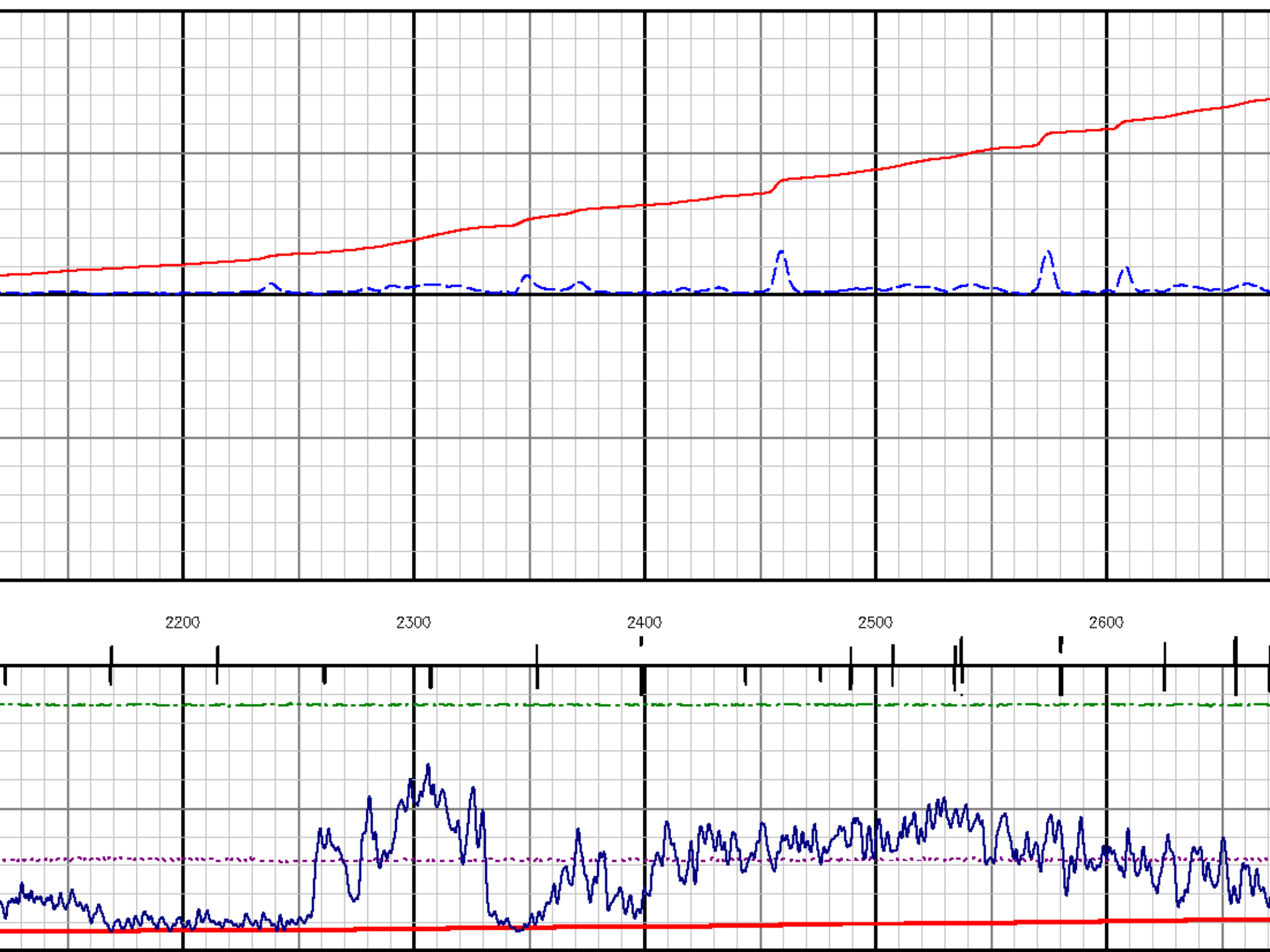



1500
TEN
-200
lbf
CCL
-40
40
mv
0
GR
150
gapi
50
COMPOSIT
200
degF
150
GRBU
300
gapi
1600
-0.5
DTEM
0.5
degF
100
200
300
400

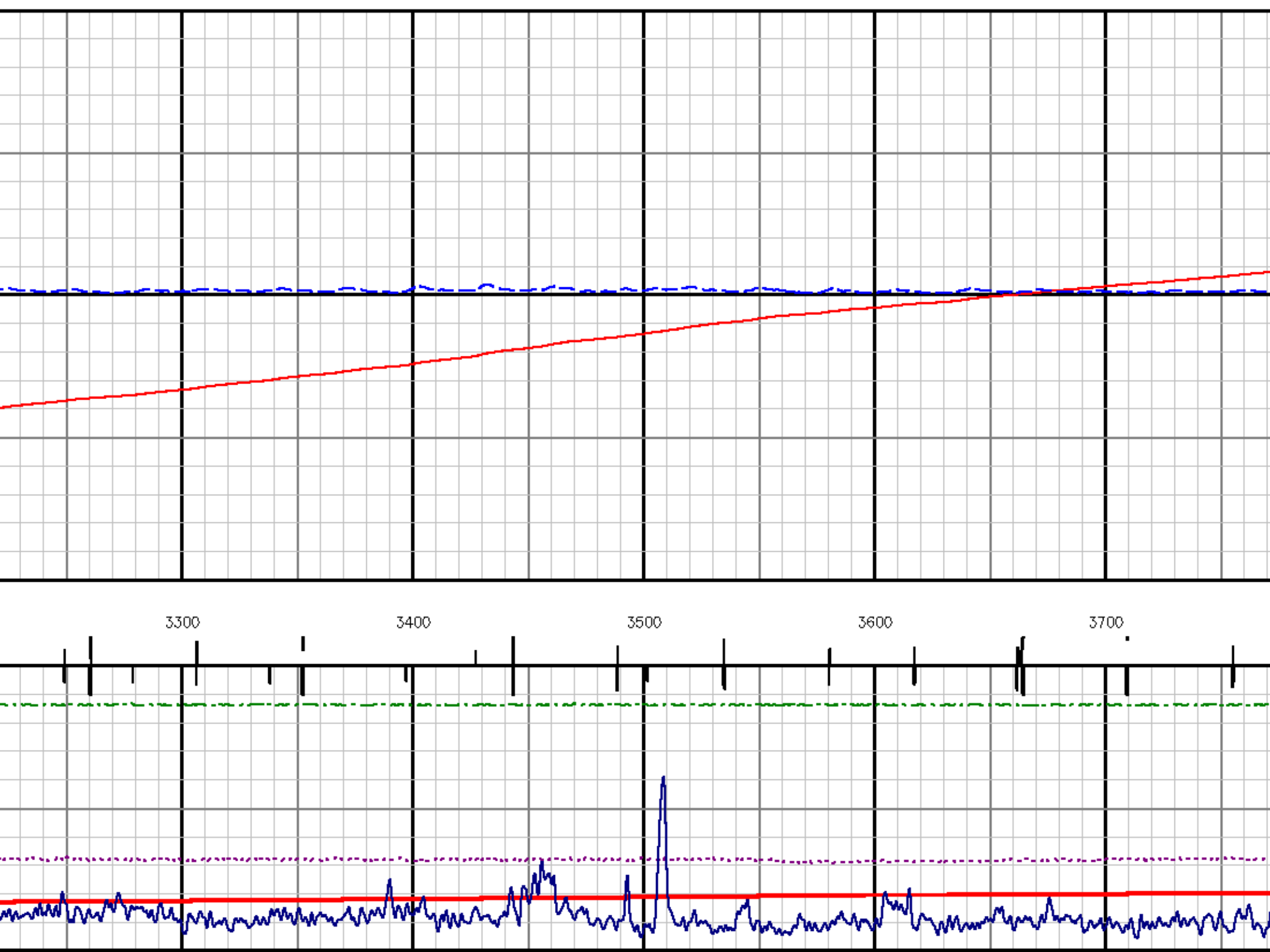

500
600
700
800
900
1000

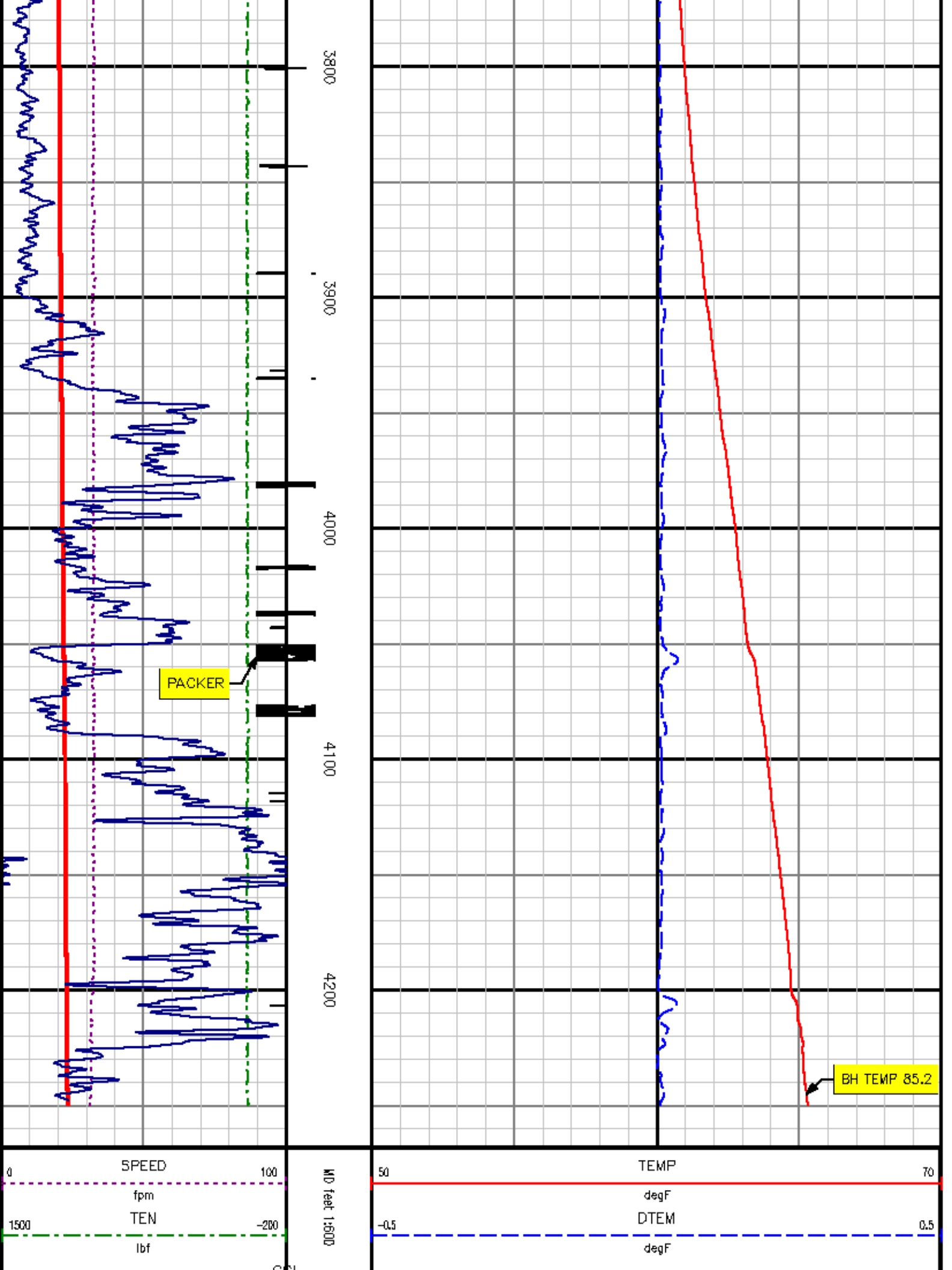

1100
1200
1300
1400
1500

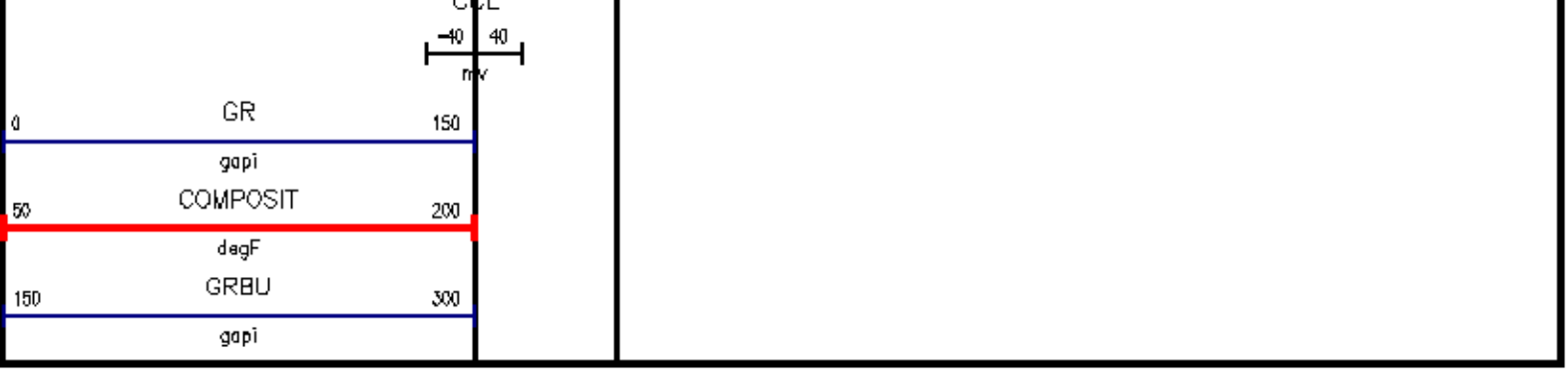

1600
1700
1800
1900
2000
2100


2200
2300
2400
2500
2600


90
70
2700
2800
2900
3000
3100
3200


3300
3400
3500
3600
3700


3800
3900
4000
4100
4200
PACKER
BH TEMP 85.2
0
SPEED
100
fpm
1500
TEN
-200
lbf
MD feet 1:600
50
TEMP
70
degF
-0.5
DTEM
0.5
degF



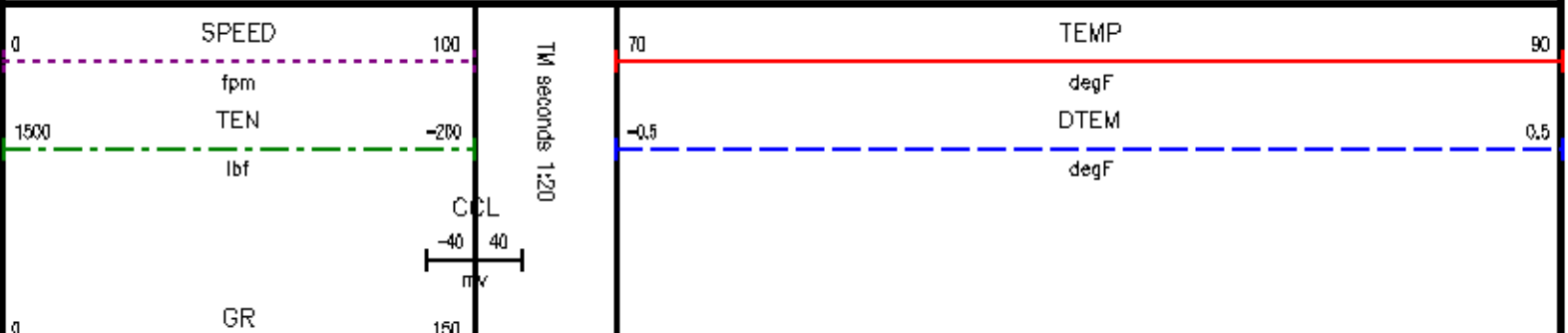
3 MIN STAT
3700'

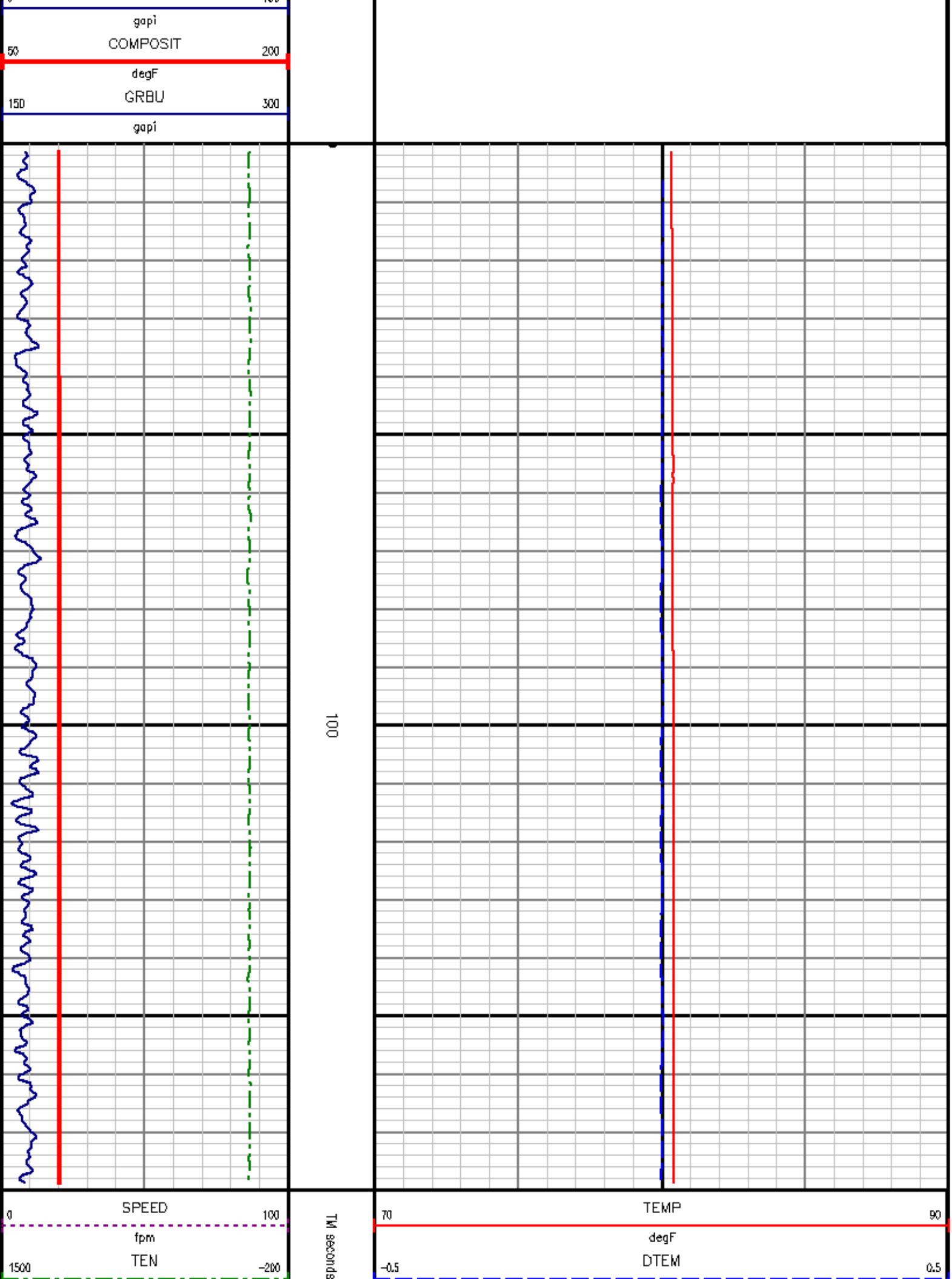
DEPTH OFFSETS
(for Acquired Curves)

SERIES	DEPTH OFFSET	ACQUIRED CURVES		
2321NA	-8.000	CCL	ACCL	
1311XA	-2.000	GR	GRBU	
2121XA	0.000	TEMP	DTEM	COMPOSIT
2421XA	0.000	NEU		
SYSTEM	0.000	TEN	TTEN	

Created by : CNT, v4.07.00
Plotted by : PlotMgr, v5.4.504

Company : EGT
Well : 2-12
File Name : D:\WELLDATA\625735\TEMP04.XTF
Mode : PlotMgr 5.4.504
Interval : 0 to 180
Created : 6/26/2013 2:24:05 PM




gapi
COMPOSIT
50
200
degF
GRBU
150
300
gapi
100
SPEED
0
100
fpm
TEN
1500
-200
TM seconds
TEMP
70
90
degF
DTEM
-0.5
0.5

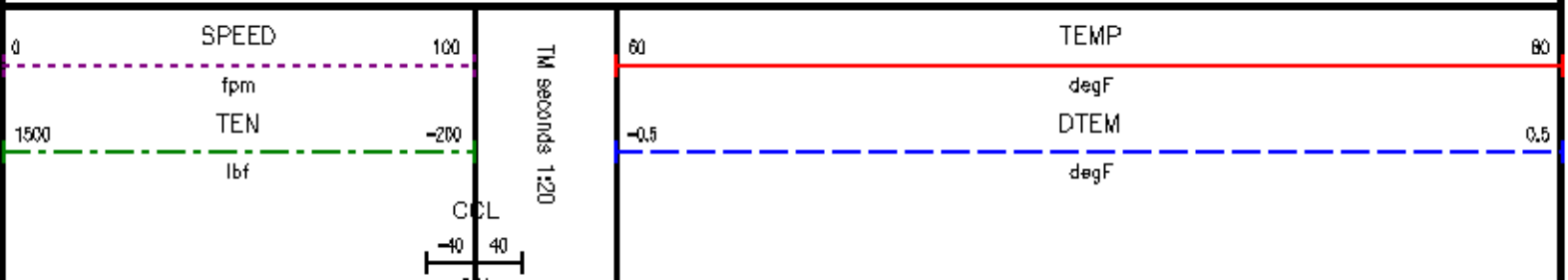
3 MIN STAT
3200'

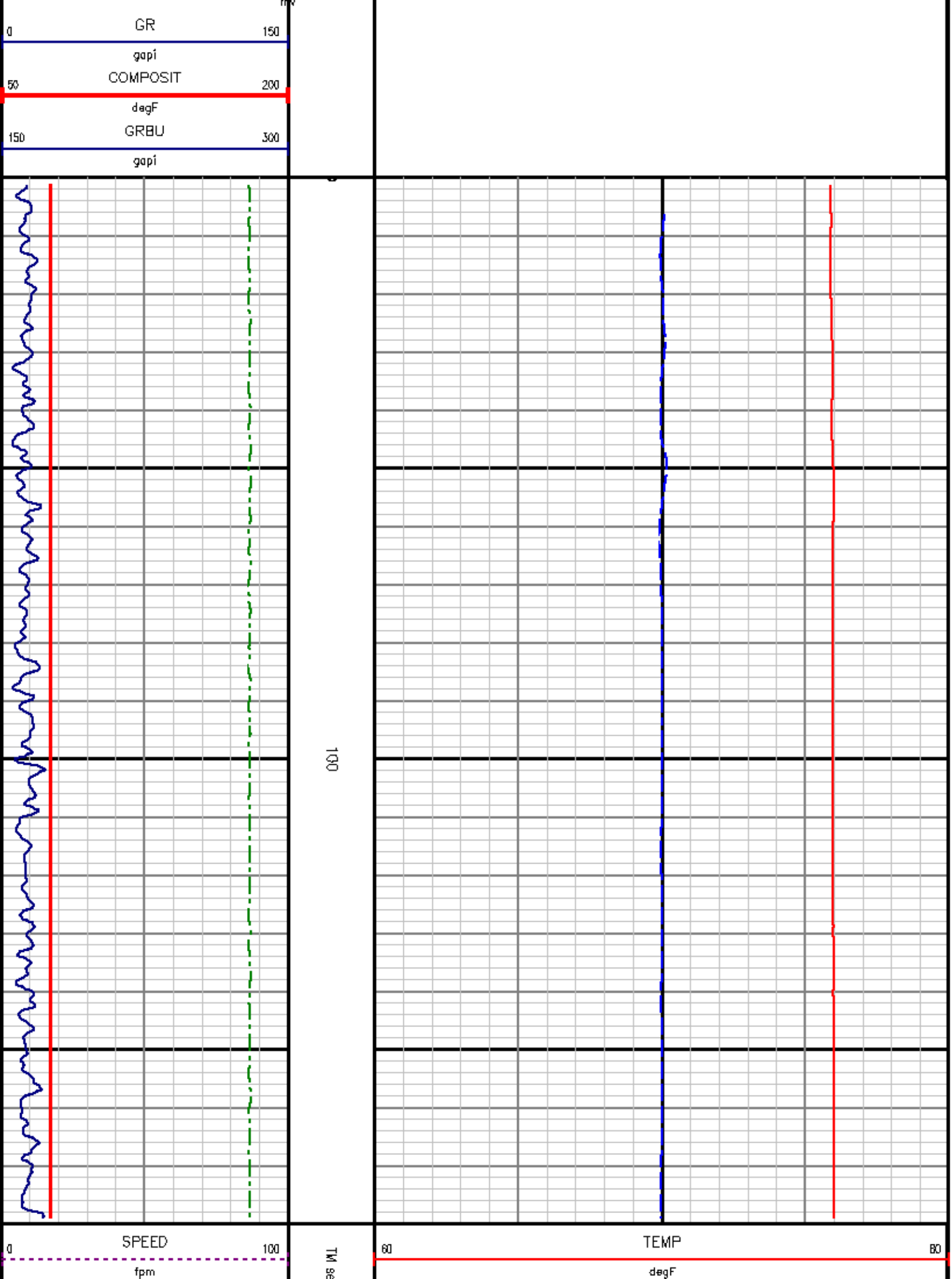
DEPTH OFFSETS
(for Acquired Curves)

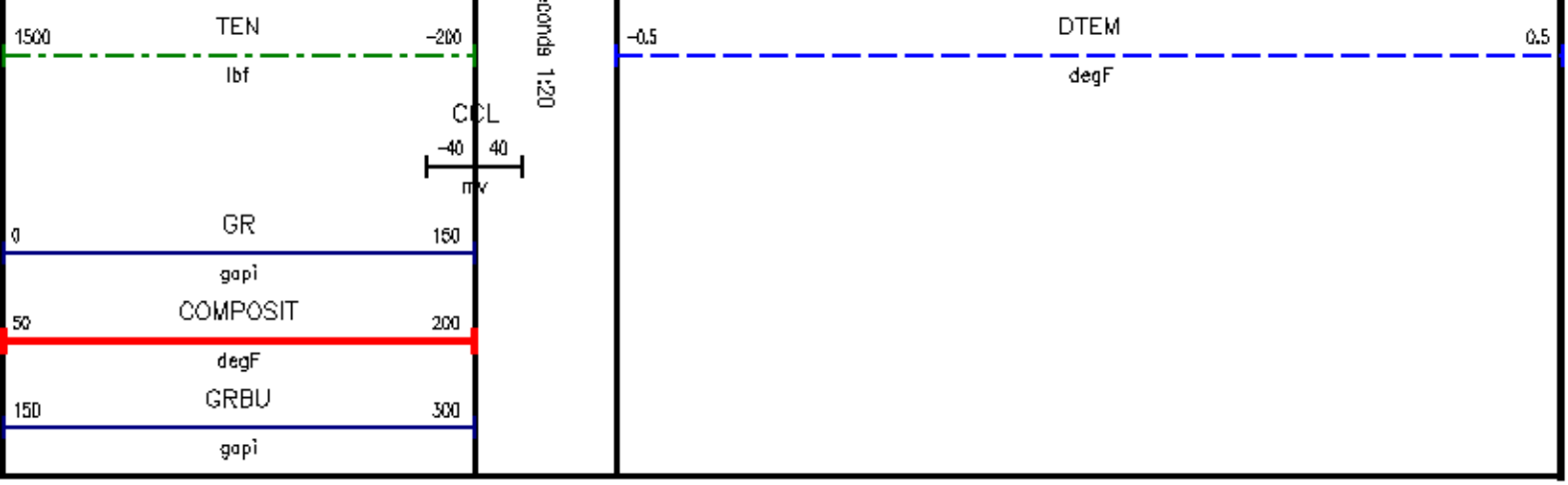
SERIES	DEPTH OFFSET	ACQUIRED CURVES		
2321NA	-8.000	CCL	ACCL	
1311XA	-2.000	GR	GRBU	
2121XA	0.000	TEMP	DTEM	COMPOSIT
2421XA	0.000	NEU		
SYSTEM	0.000	TEN	TTEN	

Created by : CNT, v4.07.00
Plotted by : PlotMgr, v5.4.504

Company : EGT
Well : 2-12
File Name : D:\WELLDATA\625735\TEMP05.XTF
Mode : PlotMgr 5.4.504
Interval : 0 to 180
Created : 6/26/2013 2:30:01 PM




GR
0
150
gapi
COMPOSIT
50
200
degF
GRBU
150
300
gapi
100
SPEED
0
100
fpm
TEMP
60
80
degF



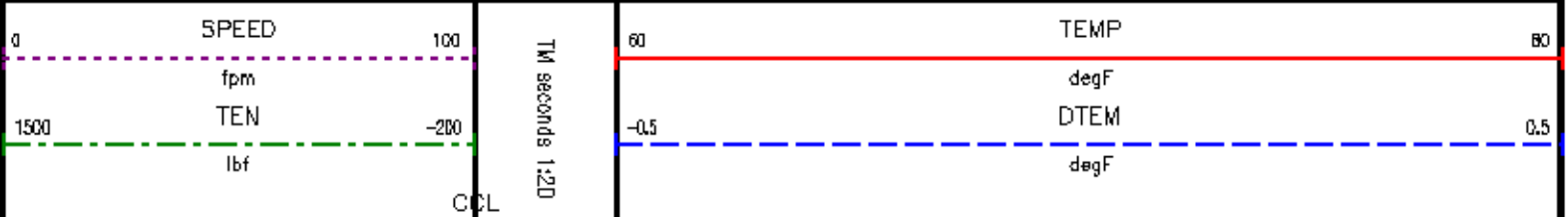
3 MIN STAT
2700'

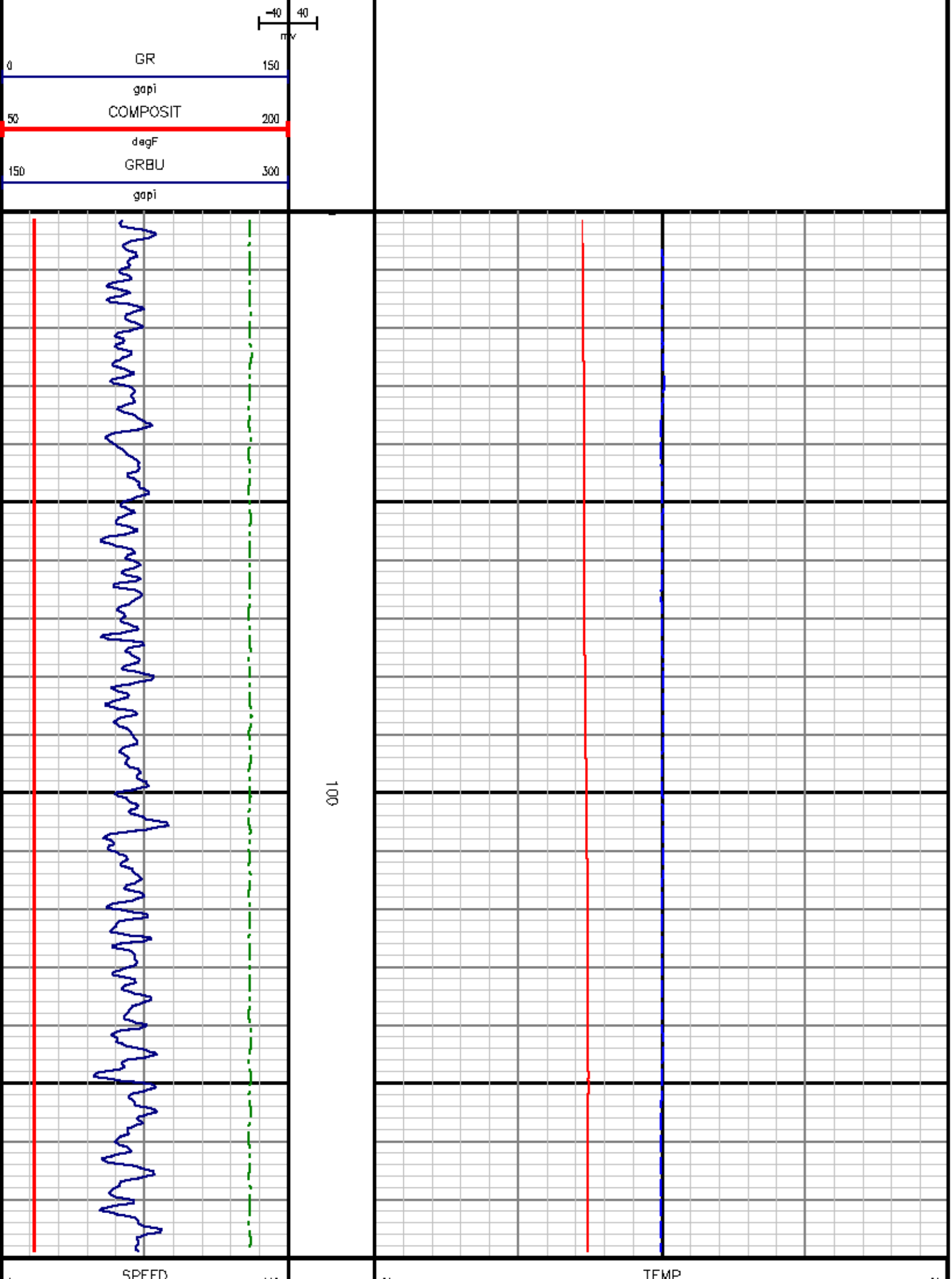
DEPTH OFFSETS
(for Acquired Curves)

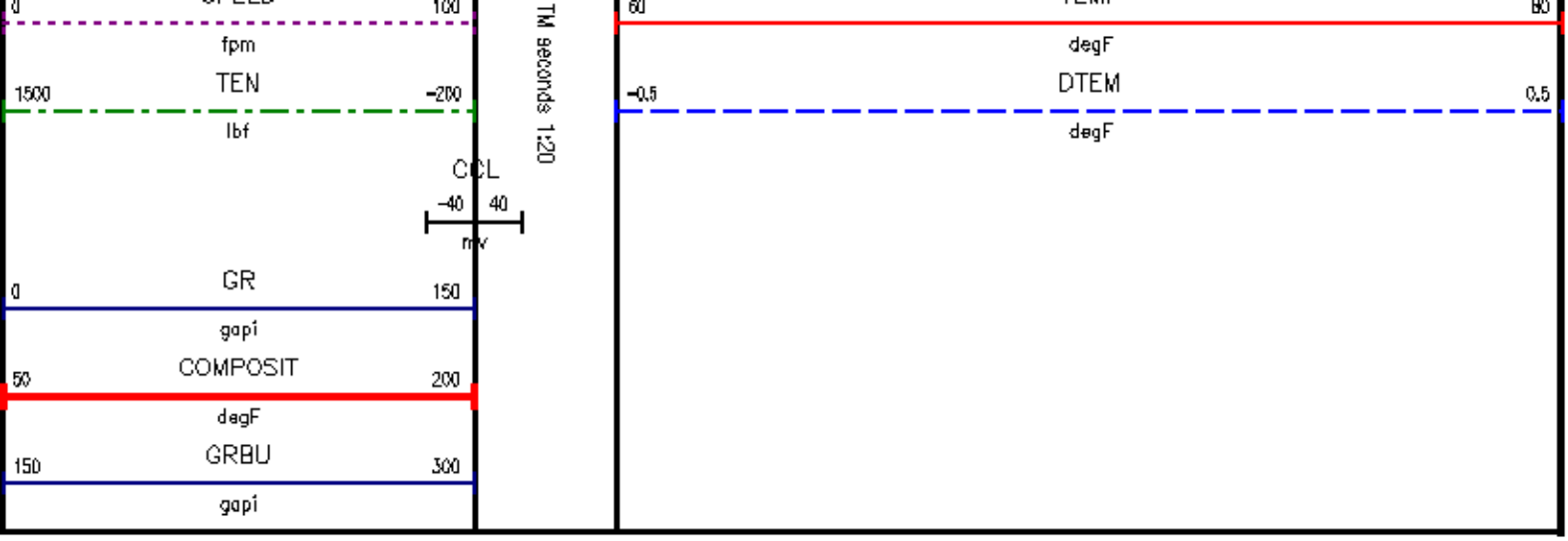
SERIES	DEPTH OFFSET	ACQUIRED CURVES		
2321NA	-8.000	CCL	ACCL	
1311XA	-2.000	GR	GRBU	
2121XA	0.000	TEMP	DTEM	COMPOSIT
2421XA	0.000	NEU		
SYSTEM	0.000	TEN	TTEN	

Created by : CNT, v4.07.00
Plotted by : PlotMgr, v5.4.504

Company : EGT
Well : 2-12
File Name : D:\WELLDATA\625735\TEMP06.XTF
Mode : PlotMgr 5.4.504
Interval : 0 to 180
Created : 6/26/2013 2:35:12 PM




-40
40
mv
GR
0
150
gapi
COMPOSIT
50
200
degF
GRBU
150
300
gapi
100
SPEED
TEMP



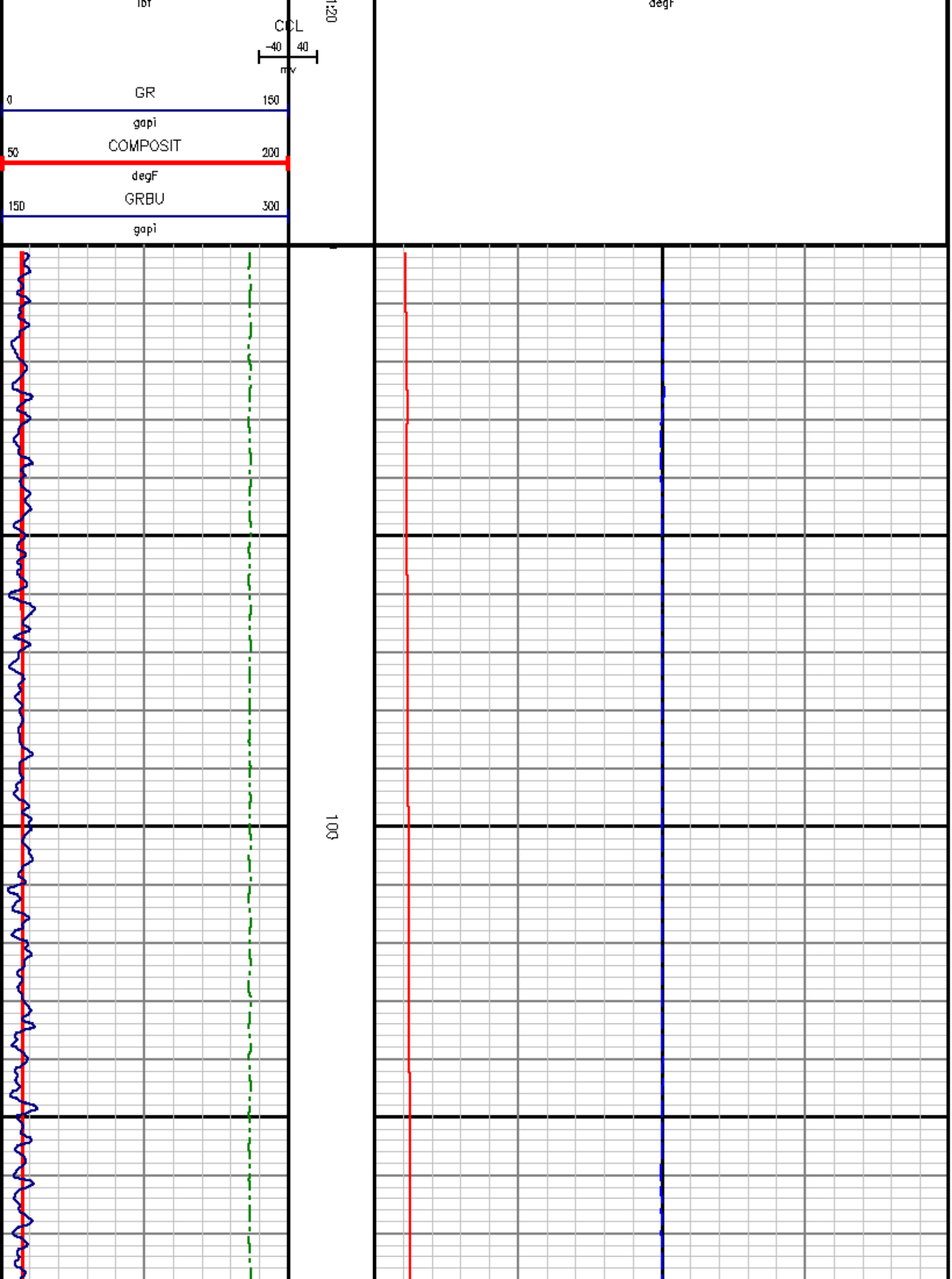
3 MIN STAT
2200'

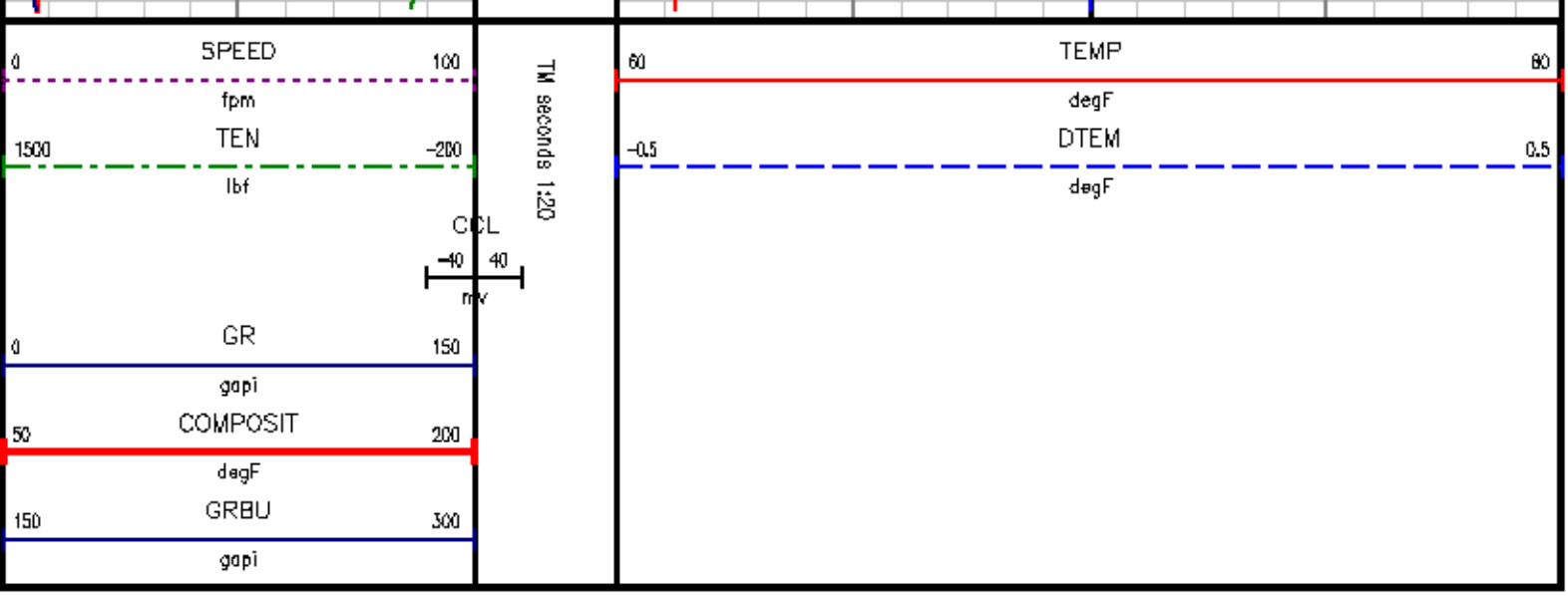
DEPTH OFFSETS
(for Acquired Curves)

SERIES	DEPTH OFFSET	ACQUIRED CURVES		
2321NA	-8.000	CCL	ACCL	
1311XA	-2.000	GR	GRBU	
2121XA	0.000	TEMP	DTEM	COMPOSIT
2421XA	0.000	NEU		
SYSTEM	0.000	TEN	TTEN	

Created by : CNT, v4.07.00
Plotted by : PlotMgr, v5.4.504

Company : EGT
Well : 2-12
File Name : D:\WELLDATA\625735\TEMP07.XTF
Mode : PlotMgr 5.4.504
Interval : 0 to 180
Created : 6/26/2013 2:40:42 PM


lbf
CCL
-40
40
mv
1:20
GR
0
150
gapi
COMPOSIT
50
200
degF
GRBU
150
300
gapi
degF
100



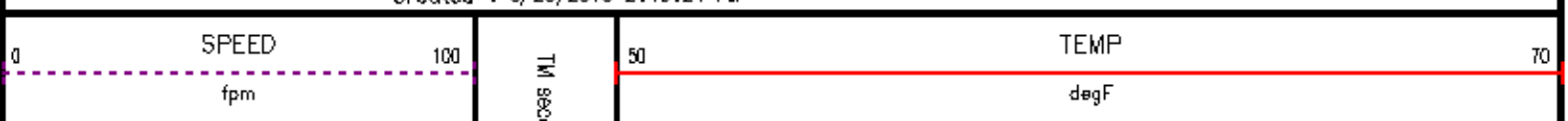
3 MIN STAT
1700'

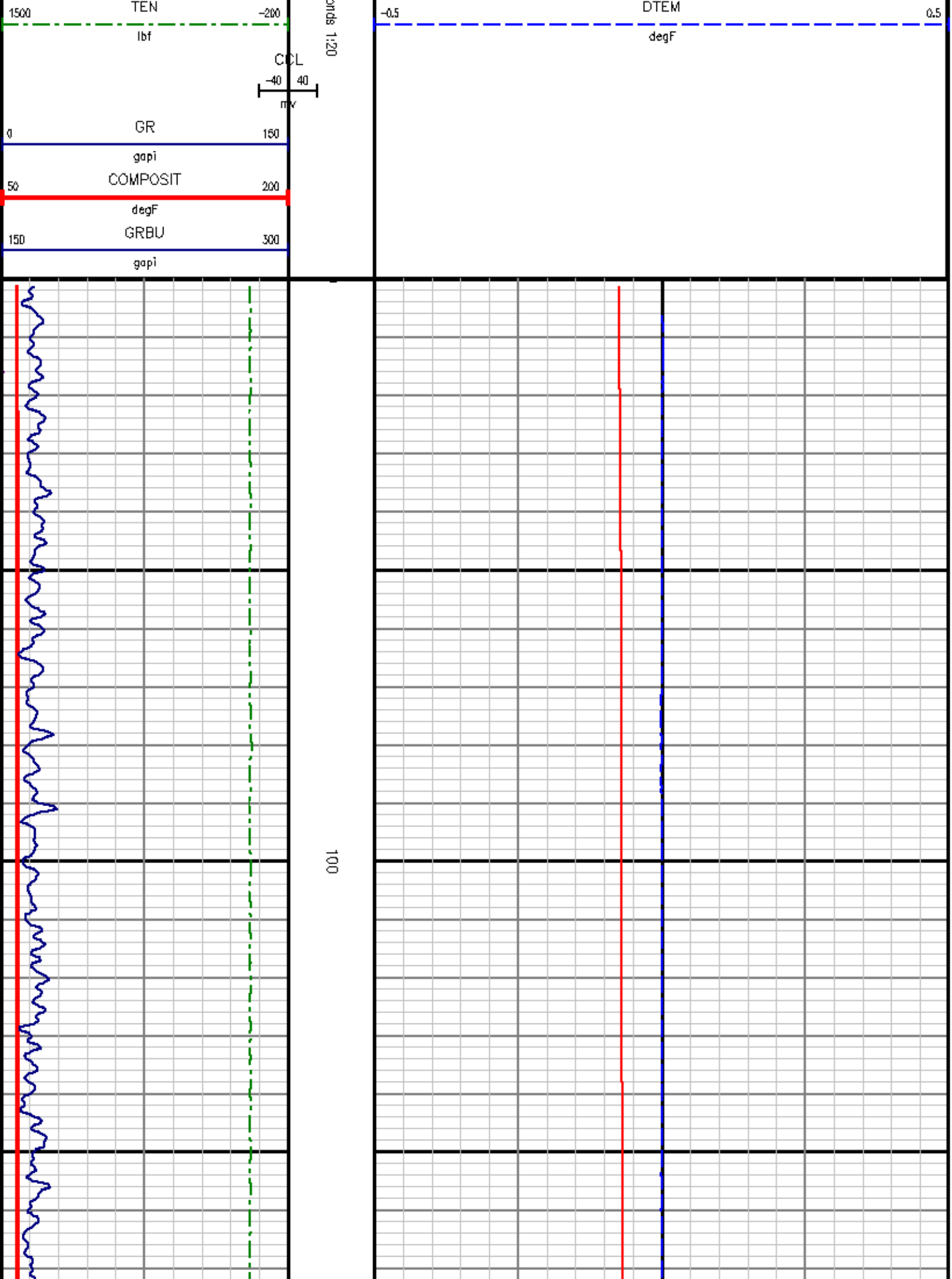
DEPTH OFFSETS
(for Acquired Curves)

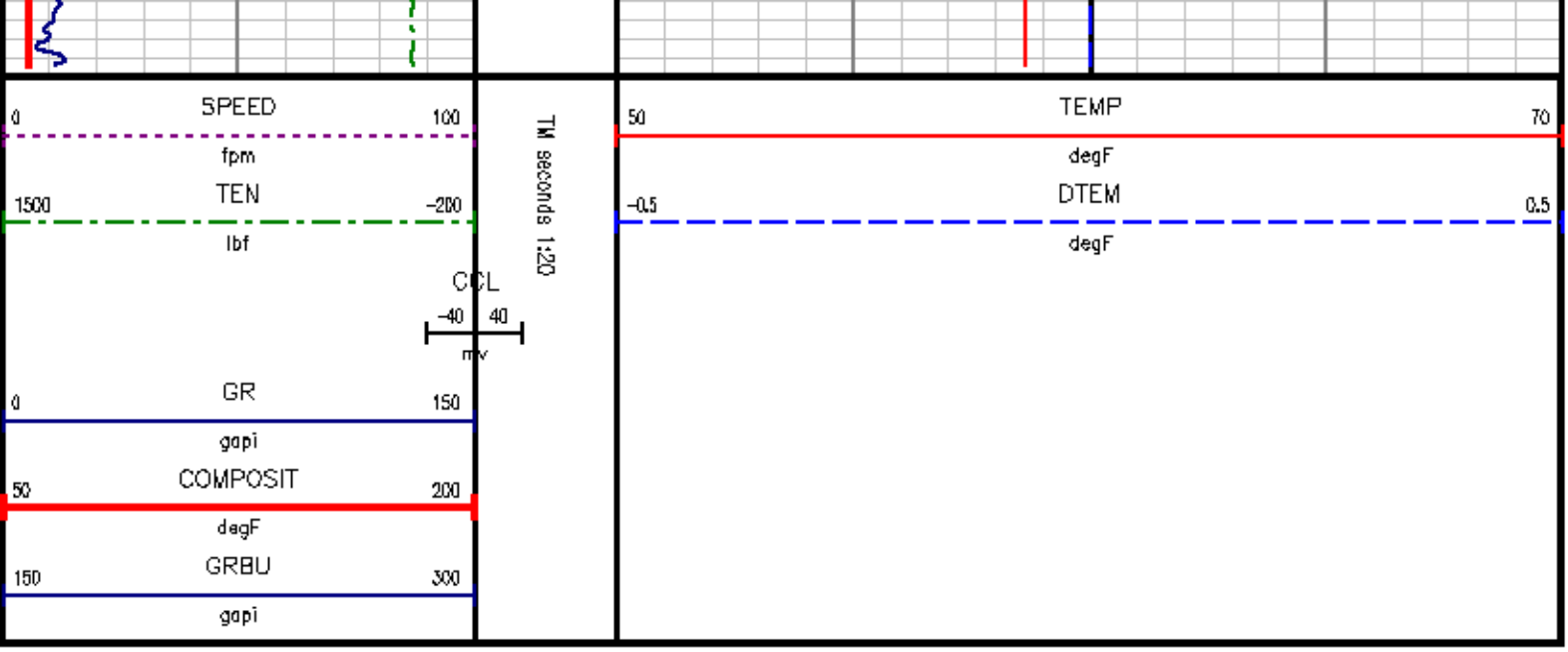
SERIES	DEPTH OFFSET	ACQUIRED CURVES		
2321NA	-8.000	CCL	ACCL	
1311XA	-2.000	GR	GRBU	
2121XA	0.000	TEMP	DTEM	COMPOSIT
2421XA	0.000	NEU		
SYSTEM	0.000	TEN	TTEN	

Created by : CNT, v4.07.00
Plotted by : PlotMgr, v5.4.504

Company : EGT
Well : 2-12
File Name : D:\WELLDATA\625735\TEMP08.XTF
Mode : PlotMgr 5.4.504
Interval : 0 to 180
Created : 6/26/2013 2:46:24 PM




1500
TEN
-200
lbf
CCL
-40
40
mv
0
GR
150
gapi
50
COMPOSIT
200
degF
150
GRBU
300
gapi
-0.5
DTEM
0.5
degF
onds 1:20
100



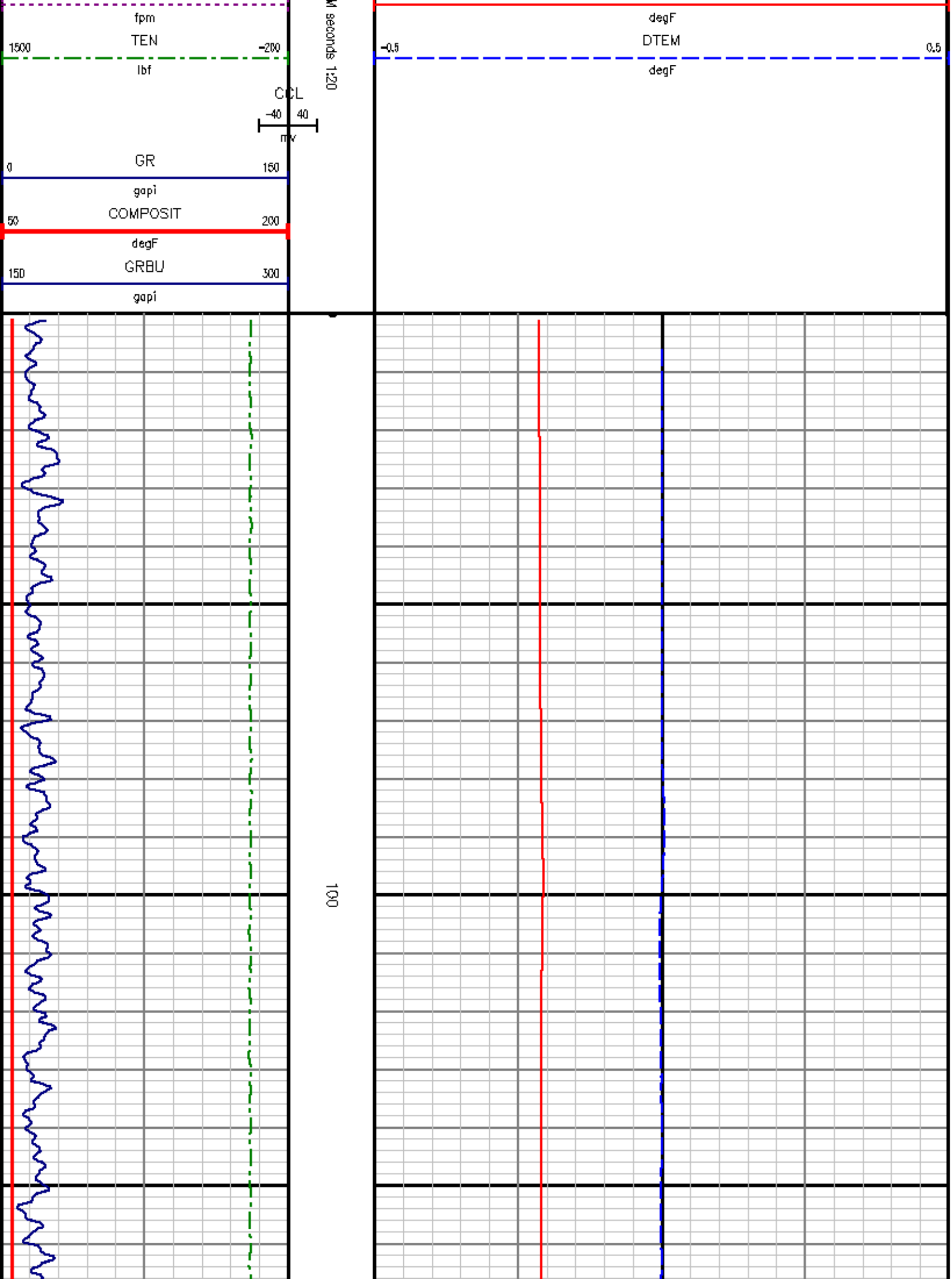
3 MIN STAT
1200'

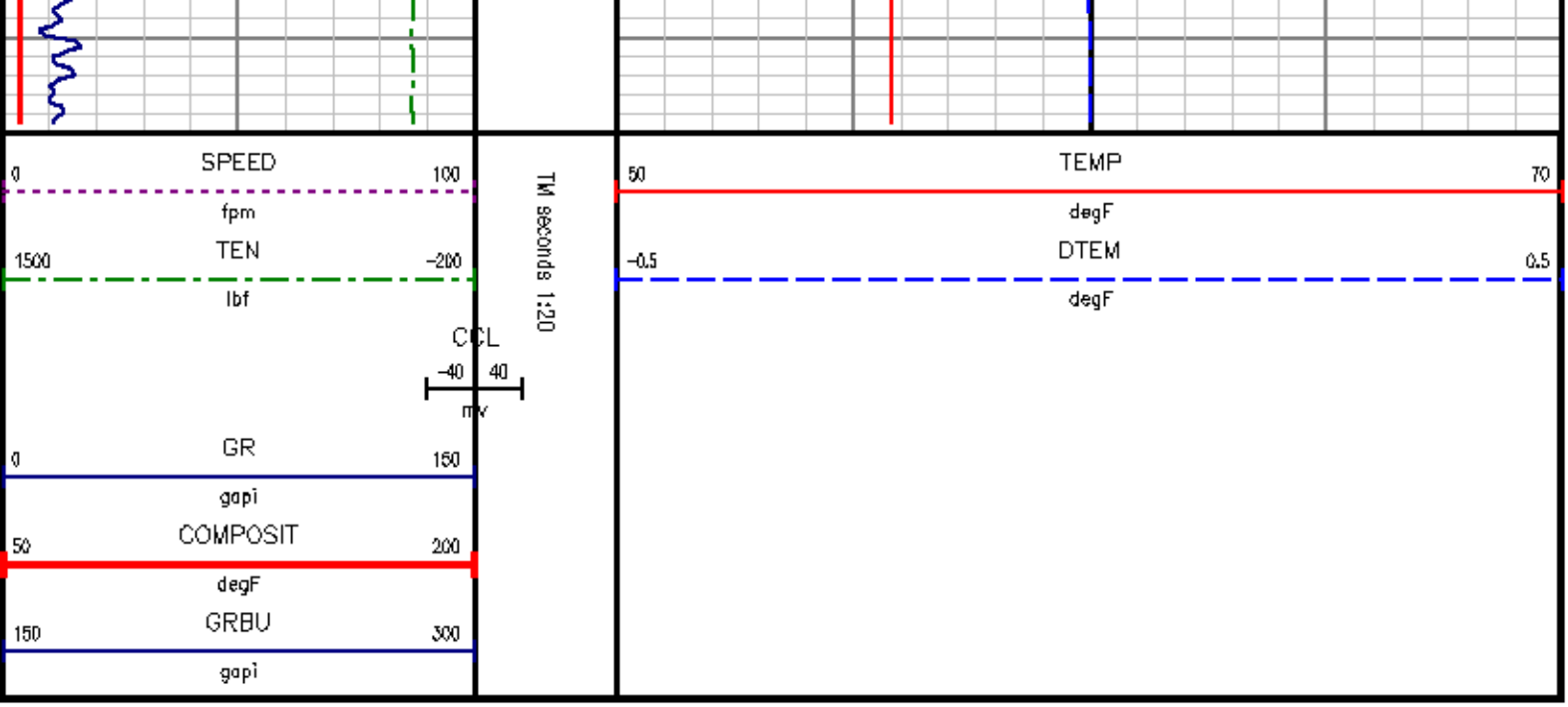
DEPTH OFFSETS
(for Acquired Curves)

SERIES	DEPTH OFFSET	ACQUIRED CURVES		
2321NA	-8.000	CCL	ACCL	
1311XA	-2.000	GR	GRBU	
2121XA	0.000	TEMP	DTEM	COMPOSIT
2421XA	0.000	NEU		
SYSTEM	0.000	TEN	TTEN	

Created by : CNT, v4.07.00
Plotted by : PlotMgr, v5.4.504

Company : EGT
Well : 2-12
File Name : D:\WELLDATA\625735\TEMP09.XTF
Mode : PlotMgr 5.4.504
Interval : 0 to 180
Created : 6/26/2013 2:51:45 PM


fpm
TEN
1500
-200
lbf
CCL
-40
40
mv
GR
0
150
gapi
COMPOSIT
50
200
degF
GRBU
150
300
gapi
M seconds 1:20
degF
DTEM
-0.5
0.5
degF
100



3 MIN STAT
700'

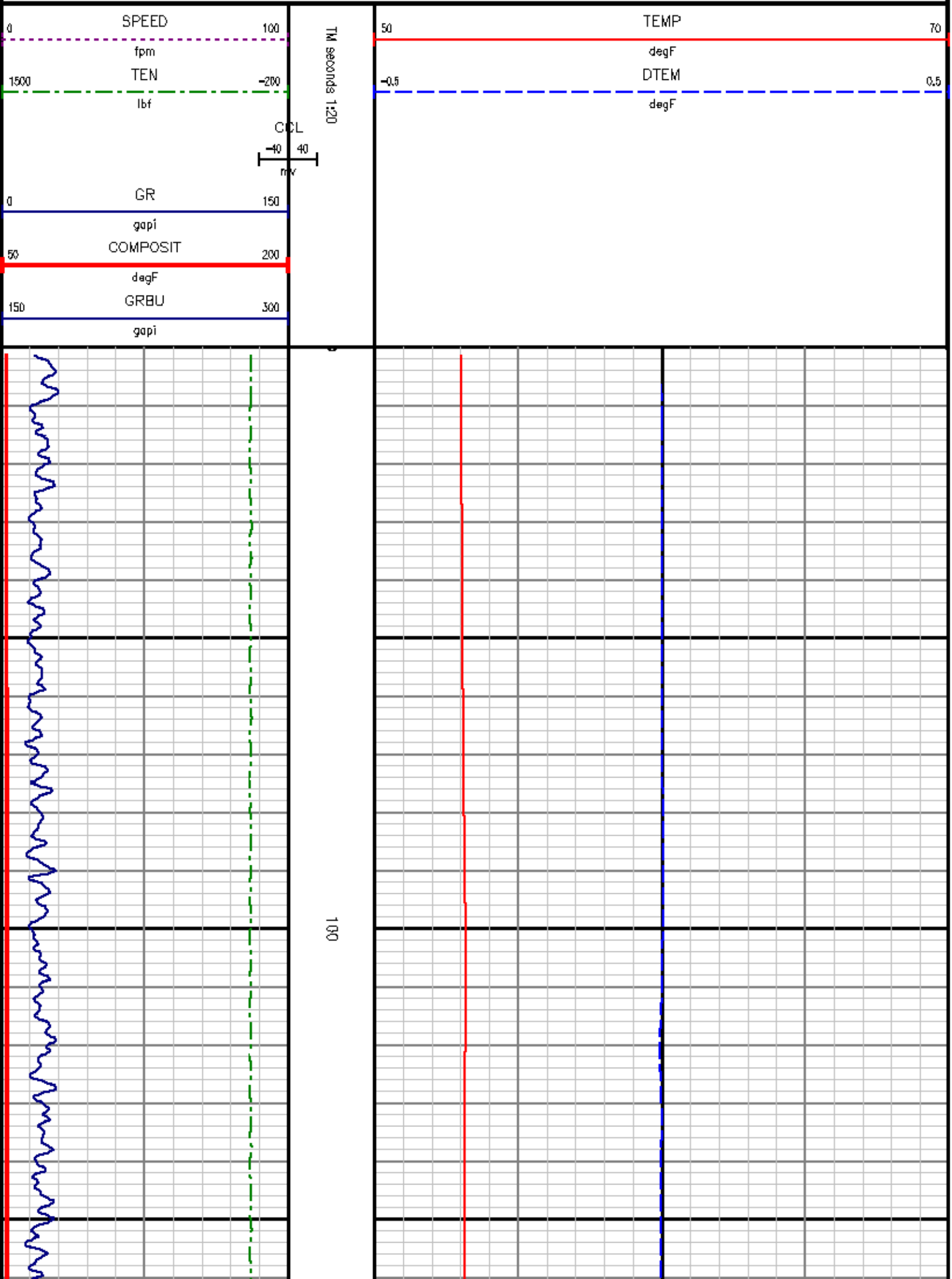
DEPTH OFFSETS

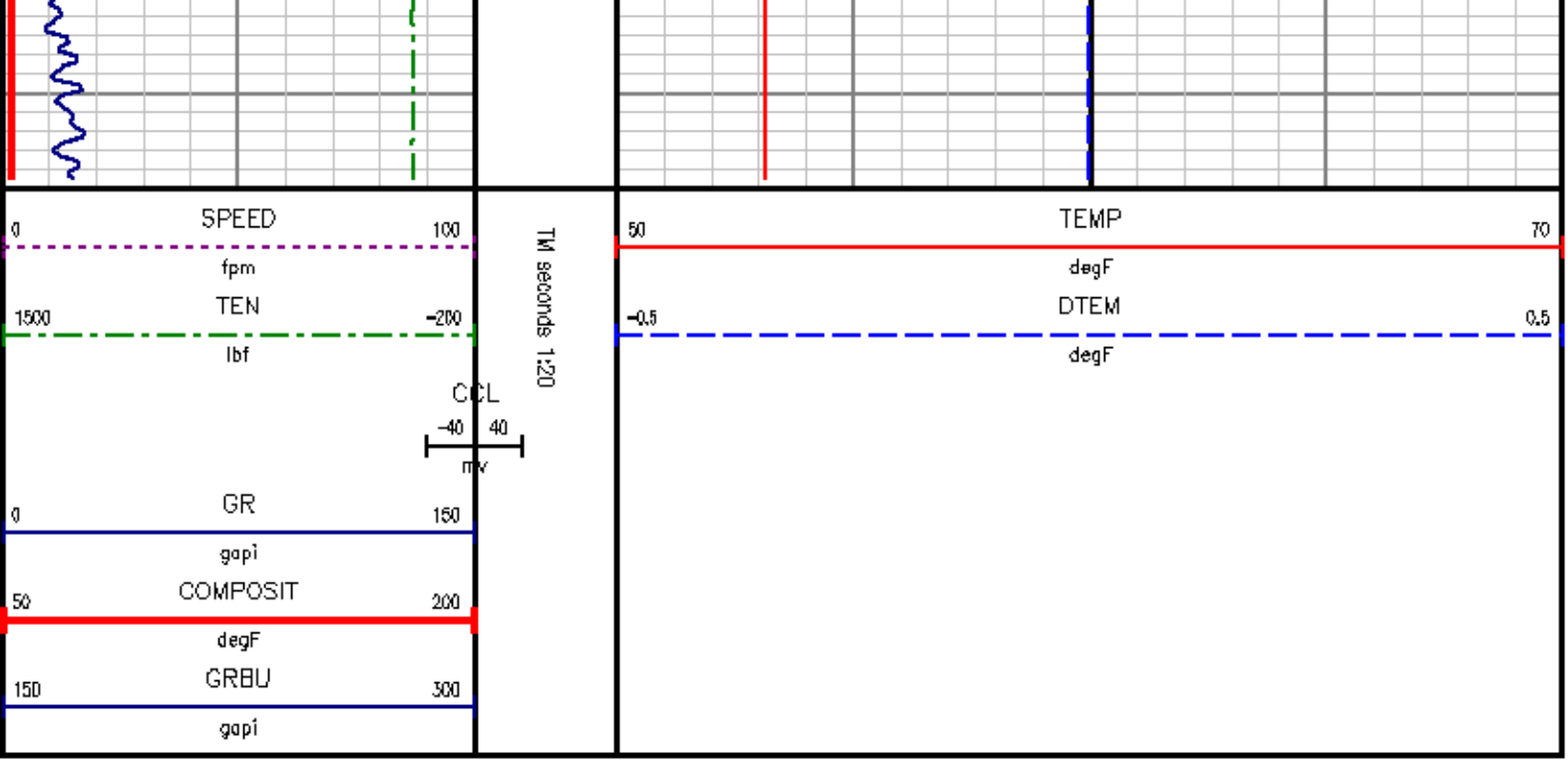
(for Acquired Curves)

SERIES	DEPTH OFFSET	ACQUIRED CURVES		
2321NA	-8.000	CCL	ACCL	
1311XA	-2.000	GR	GRBU	
2121XA	0.000	TEMP	DTEM	COMPOSIT
2421XA	0.000	NEU		
SYSTEM	0.000	TEN	TTEN	

Created by : CNT, v4.07.00
Plotted by : PlotMgr, v5.4.504

Company : EGT
Well : 2-12
File Name : D:\WELLDATA\625735\TEMP10.XTF
Mode : PlotMgr 5.4.504
Interval : 0 to 180
Created : 6/26/2013 2:56:52 PM


SPEED
0
100
fpm
TEN
1500
-200
lbf
CCL
-40
40
mv
GR
0
150
gapi
COMPOSIT
50
200
degF
GRBU
150
300
gapi
TM seconds 1:20
TEMP
50
70
degF
DTEM
-0.5
0.5
degF
100



3 MIN STAT
200'

DEPTH OFFSETS
(for Acquired Curves)

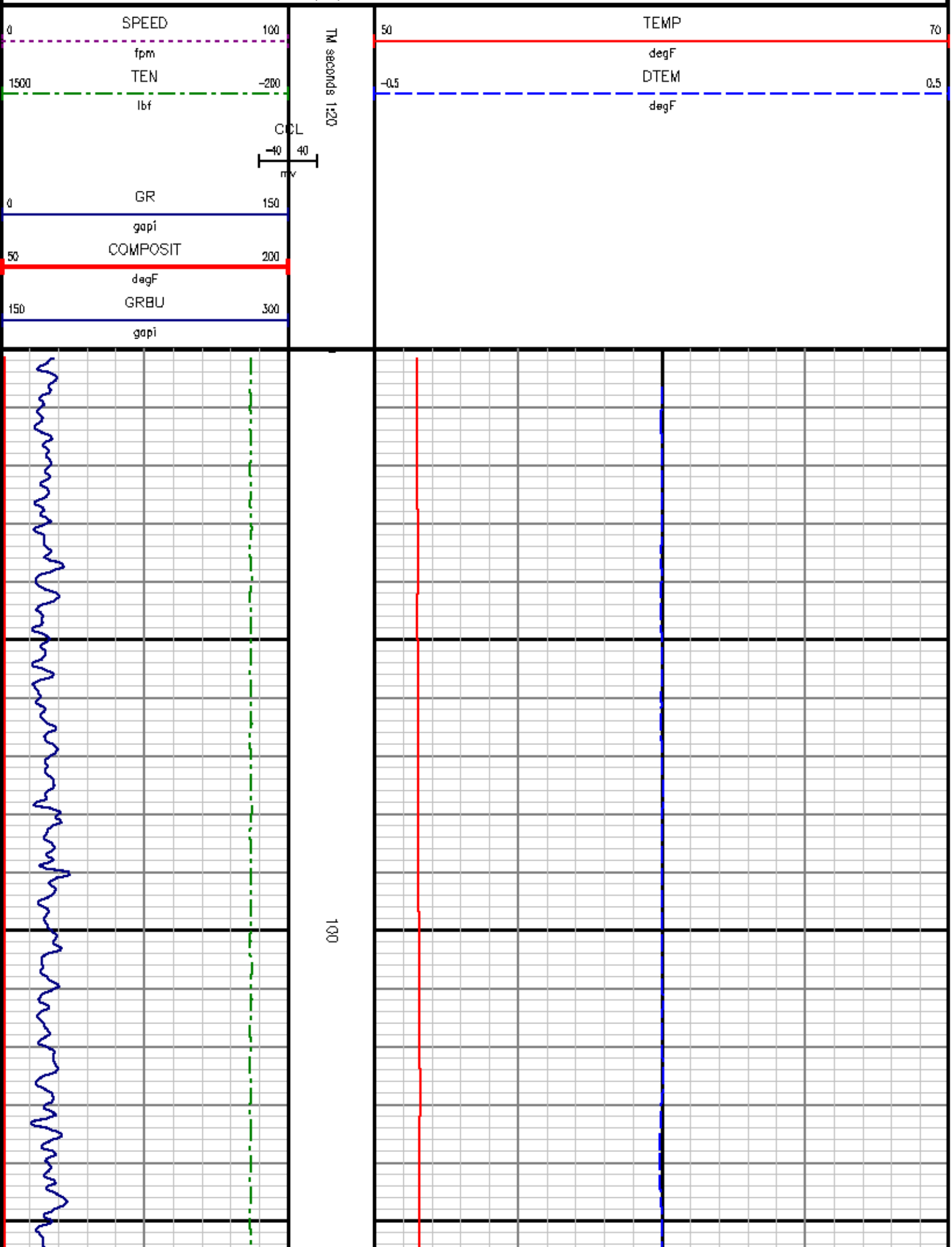
SERIES	DEPTH OFFSET	ACQUIRED CURVES		
2321NA	-8.000	CCL	ACCL	
1311XA	-2.000	GR	GRBU	
2121XA	0.000	TEMP	DTEM	COMPOSIT
2421XA	0.000	NEU		
SYSTEM	0.000	TEN	TTEN	

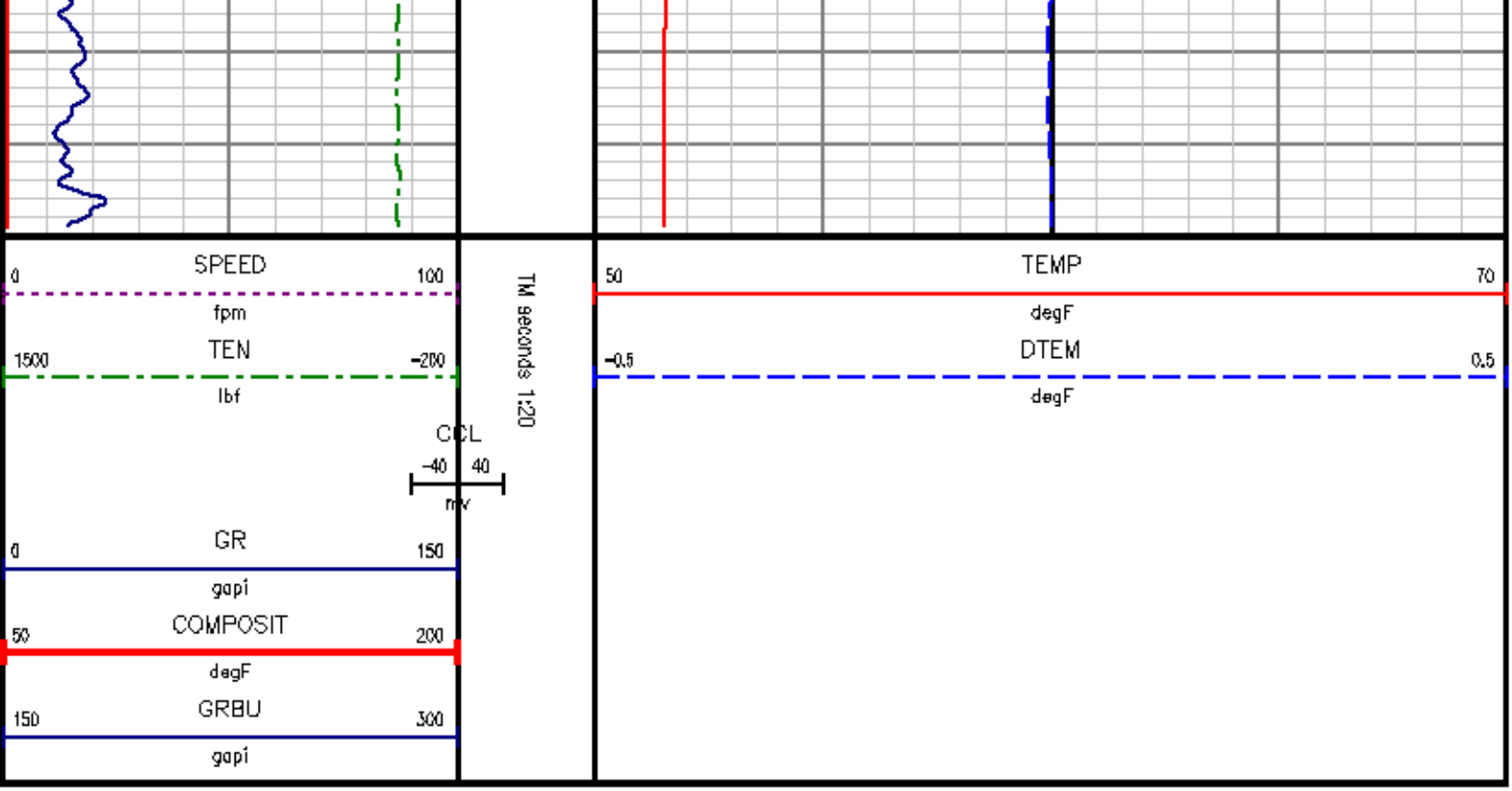
Created by : CNT, v4.07.00
Plotted by : PlotMgr, v5.4.504

Company : EGT
Well : 2-12
File Name : D:\WELLDATA\625735\TEMP11.XTF
Mode : PlotMgr 5.4.504

Interval : 0 to 180

Created : 6/26/2013 3:02:17 PM





BAKER HUGHES

Baker Atlas

CASE

Company	ENVIRONMENTAL GEOTECH TECHNOLOGIES
Well	EGT #1-12
Field	ROMULUS STORAGE
County	WAYNE
State	MICHIGAN

File No:

API No:

Location

1670'FSL & 2372'FEL

SEC 12 TWP 3S RGE 9E

Elevations

KB 639 ft

DF 638 ft

GL 626 ft

THANK YOU!

ATTACHMENT E

RADIOACTIVE TRACER SURVEY

SUBSURFACE

BAKER HUGHES

Baker Atlas

Nuclear Tracer Log

File No:	**Company**	ENVIROMENTAL GEOTECH TECHNOLOGIES	
	Well	EGT #1-12	
API No:	**Field**	ROMULUS STORAGE	
	County	WAYNE	**State** MICHIGAN

THANK YOU!	**Location** 1670'FSL & 2372'FEL SEC 12 TWP 3S RGE 9E	**Other Services** TEMP

Permanent Datum	G.L	Elevation	626 ft	**Elevations**
Log Measured From	K.B.	13 ft	Above P. D.	KB 639 ft
Drill Measured From	KELLY BUSHING			DF 638 ft
				GL 626 ft

Date	26-JUNE-2013		
Run	SUB		
Service Order	625735		
Depth Driller	4645 ft		
Depth Logger	4240 ft		
Bottom Logged Interval	4240 ft		
Top Logged Interval	3090 ft		
Time Started	15:00		
Time Finished	20:30		
Operator Rig Time	PRODUCTION LOGGER		
Type of Fluid in Hole	WATER		
Fluid Density	N/A		
Salinity	N/A		
Fluid Level	INJECTION		
Logged Cement Top	N/A		
Wellhead Pressure	N/A		
Maximum Hole Deviation	N/A		
Nominal Logging Speed	30 fpm		
Maximum Recorded Temperature	N/A		
Reference Log	TRACER		
Reference Log Date	5-DEC-2012		
Equipment No. / Location	9747	OLNEY, IL	
Recorded By	JERRY GINDER		
Witnessed By	MR. SCHILDHOUSE		MR. STEVEN ROY (RPA)

BAKER HUGHES

Baker Atlas

Nuclear Tracer Log

CASE

File No:	Company	ENVIROMENTAL GEOTECH TECHNOLOGIES	
API No:	Well	EGT #1-12	
	Field	ROMULUS STORAGE	
	County	WAYNE	State MICHIGAN

THANK YOU!

Location
1670'FSL & 2372'FEL

SEC 12 TWP 3S RGE 9E

Other Services
TEMP

Permanent Datum	G.L	Elevation	626 ft
Log Measured From	K.B.	13 ft	Above P.D.
Drill Measured From	KELLY BUSHING		

Elevations
KB 639 ft
DF 638 ft
GL 626 ft

Date	26-JUNE-2013		
Run	SUB		
Service Order	625735		
Depth Driller	4645 ft		
Depth Logger	4240 ft		
Bottom Logged Interval	4240 ft		
Top Logged Interval	3090 ft		
Time Started	15:00		
Time Finished	20:30		
Operator Rig Time	PRODUCTION LOGGER		
Type of Fluid in Hole	WATER		
Fluid Density	N/A		
Salinity	N/A		
Fluid Level	INJECTION		
Logged Cement Top	N/A		
Wellhead Pressure	N/A		
Maximum Hole Deviation	N/A		
Nominal Logging Speed	30 fpm		
Maximum Recorded Temperature	N/A		
Reference Log	TRACER		
Reference Log Date	5-DEC-2012		
Equipment No. / Location	9747	OLNEY, IL	
Recorded By	JERRY GINDER		
Witnessed By	MR. SCHILDHOUSE	MR. STEVEN ROY (EPA)	

FOLD HERE

In making interpretations of logs, our employees will give the customer the benefit of their best judgement. But since all interpretations are opinions based on inferences from electrical or other measurements, we cannot, and we do not guarantee the accuracy or correctness of any interpretation. We shall not be liable or responsible for any loss, cost, damages, or expenses whatsoever incurred or sustained by the customer resulting from any interpretation made by any of our employees.

Casing Record

Size	Weight	Grade	From	To
20 in	94 lbm/ft		0 ft	119 ft
13.375 in	48 lbm/ft	H-40	0 ft	396 ft
9.625 in	36 lbm/ft		0 ft	824 ft
7 in	26 lbm/ft		0 ft	4080 ft
4.5 in		FGL	0 ft	4050 ft

Borehole Record

Bit Size	From	To

Remarks

BAKER HUGHES CREW: C.BREWER
PACKER @ 4050'

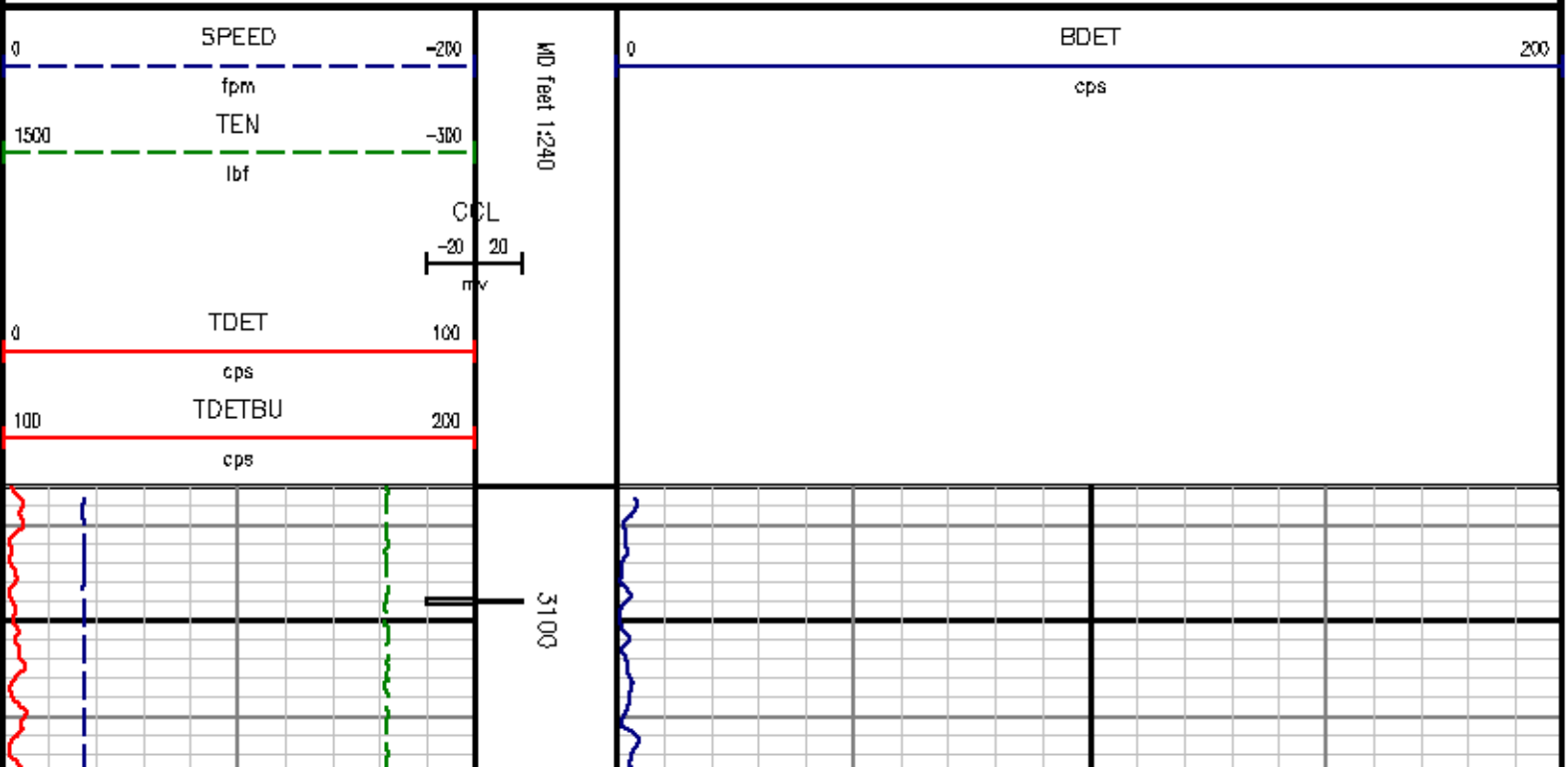
BASE GAMMA RAY PASS
NO FLOW

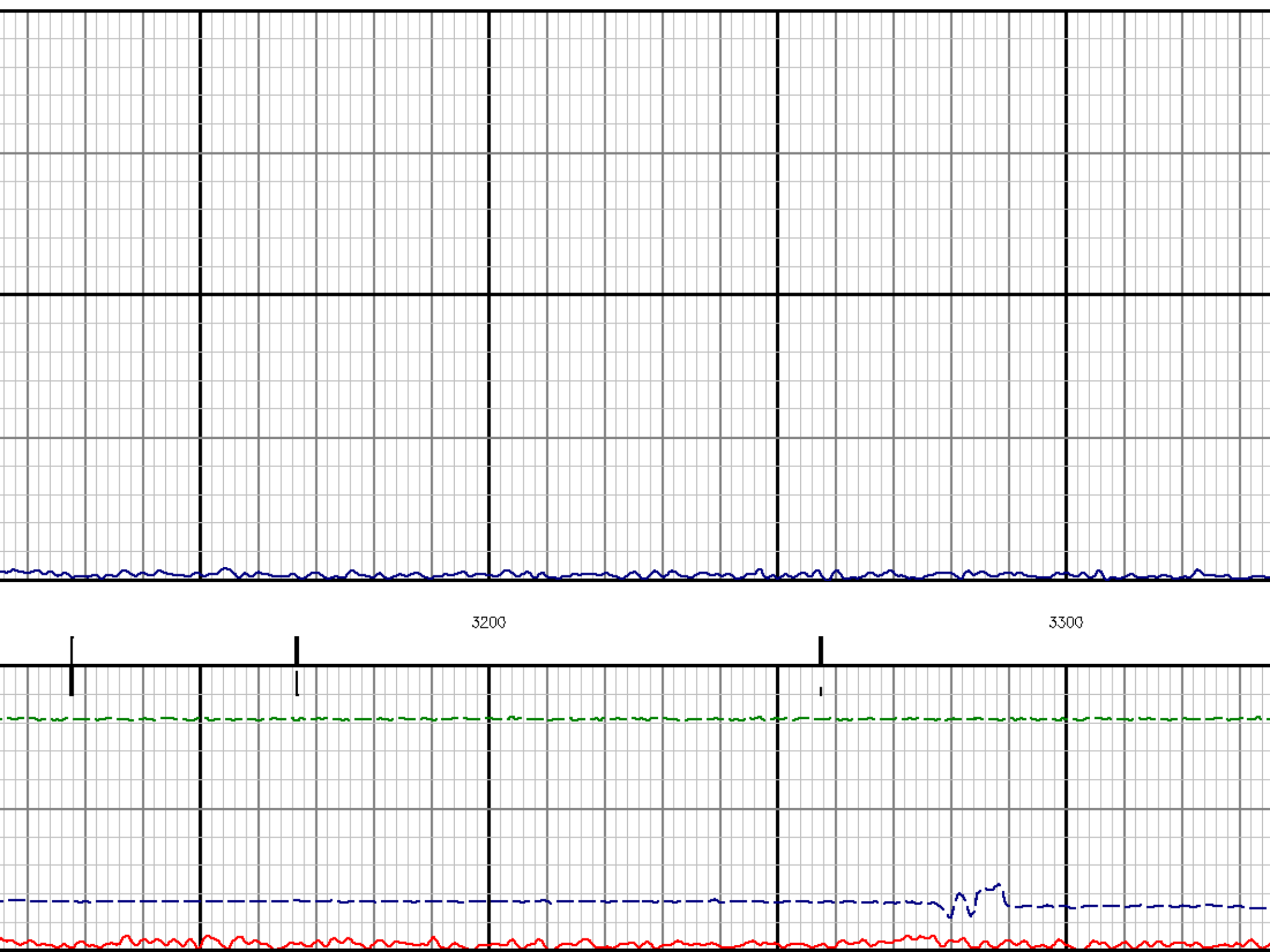
DEPTH OFFSETS
(for Acquired Curves)

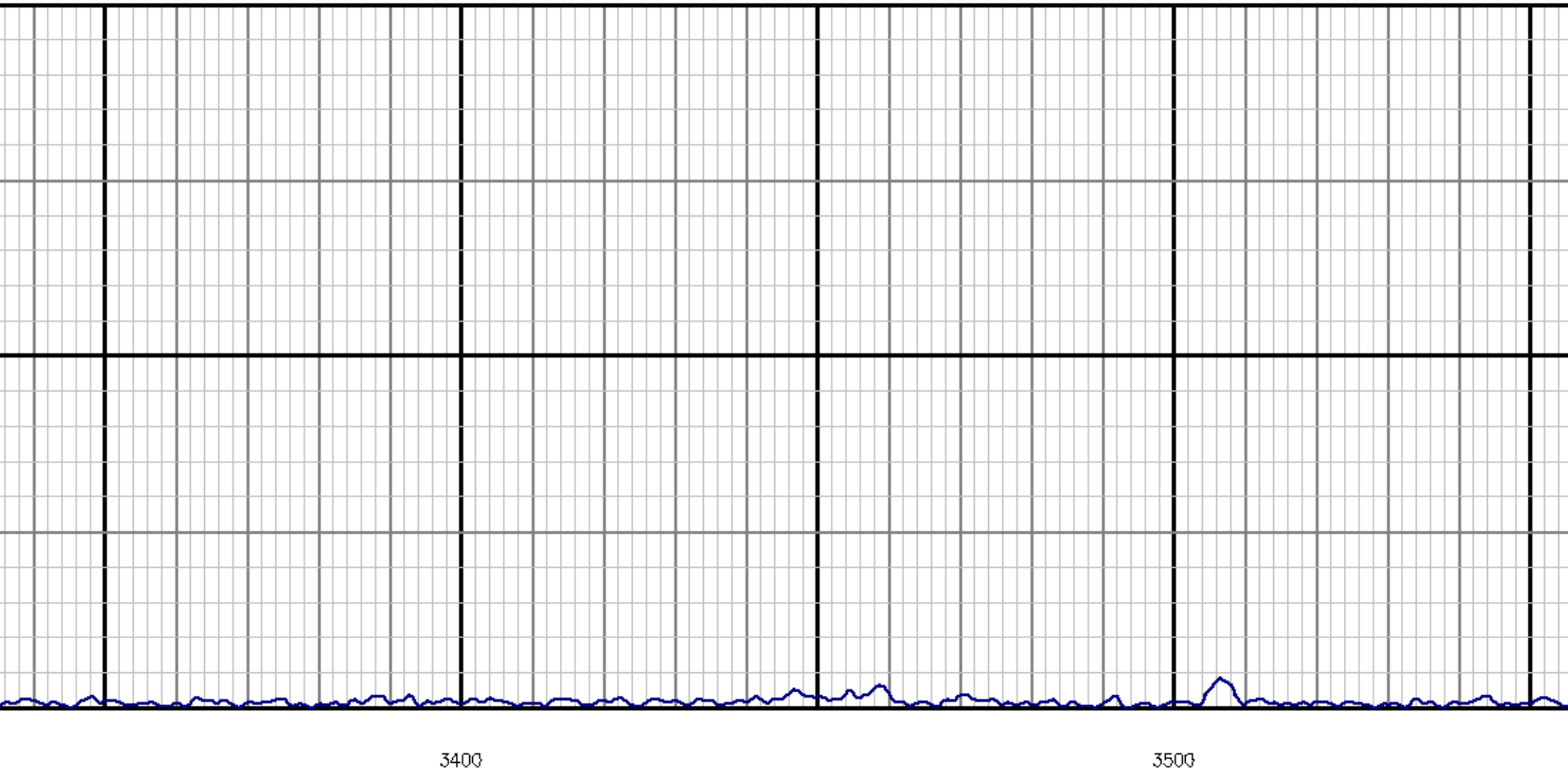
SERIES	DEPTH OFFSET	ACQUIRED CURVES	
2324NA	-10.500	CCL	ACCL
8219XA	-8.500	TDET	TDETBU
8219XA	0.000	BDET	BDETBU
SYSTEM	0.000	TEN	TTEN

Created by : CNT, v4.07.00
Plotted by : PlotMgr, v5.4.504

Company : EGT
Well : 1-12
File Name : d:\welldata\trl735\trl00.xtf
Mode : PlotMgr 5.4.504
Interval : 3086.00 - 4238.00 feet UP
Created : 6/26/2013 5:00:25 PM

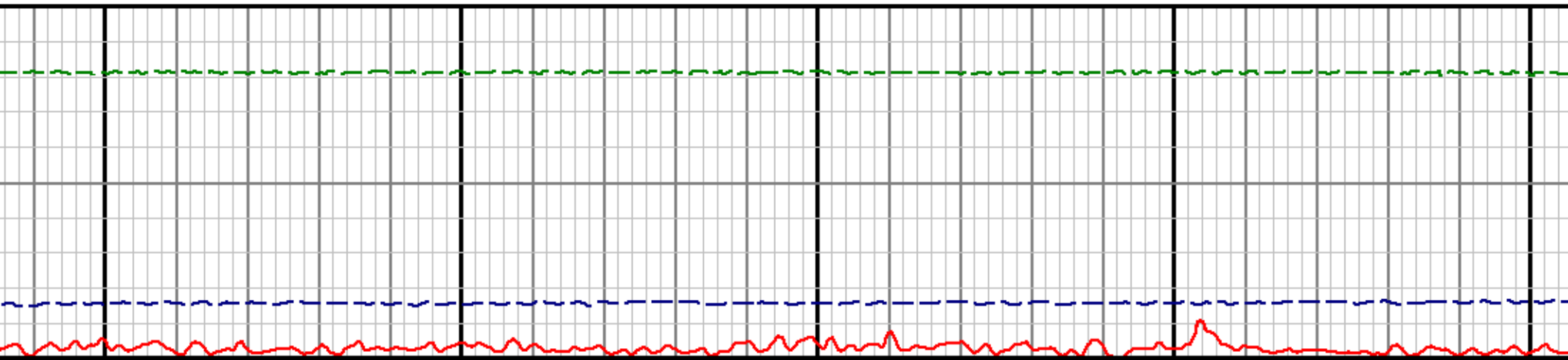


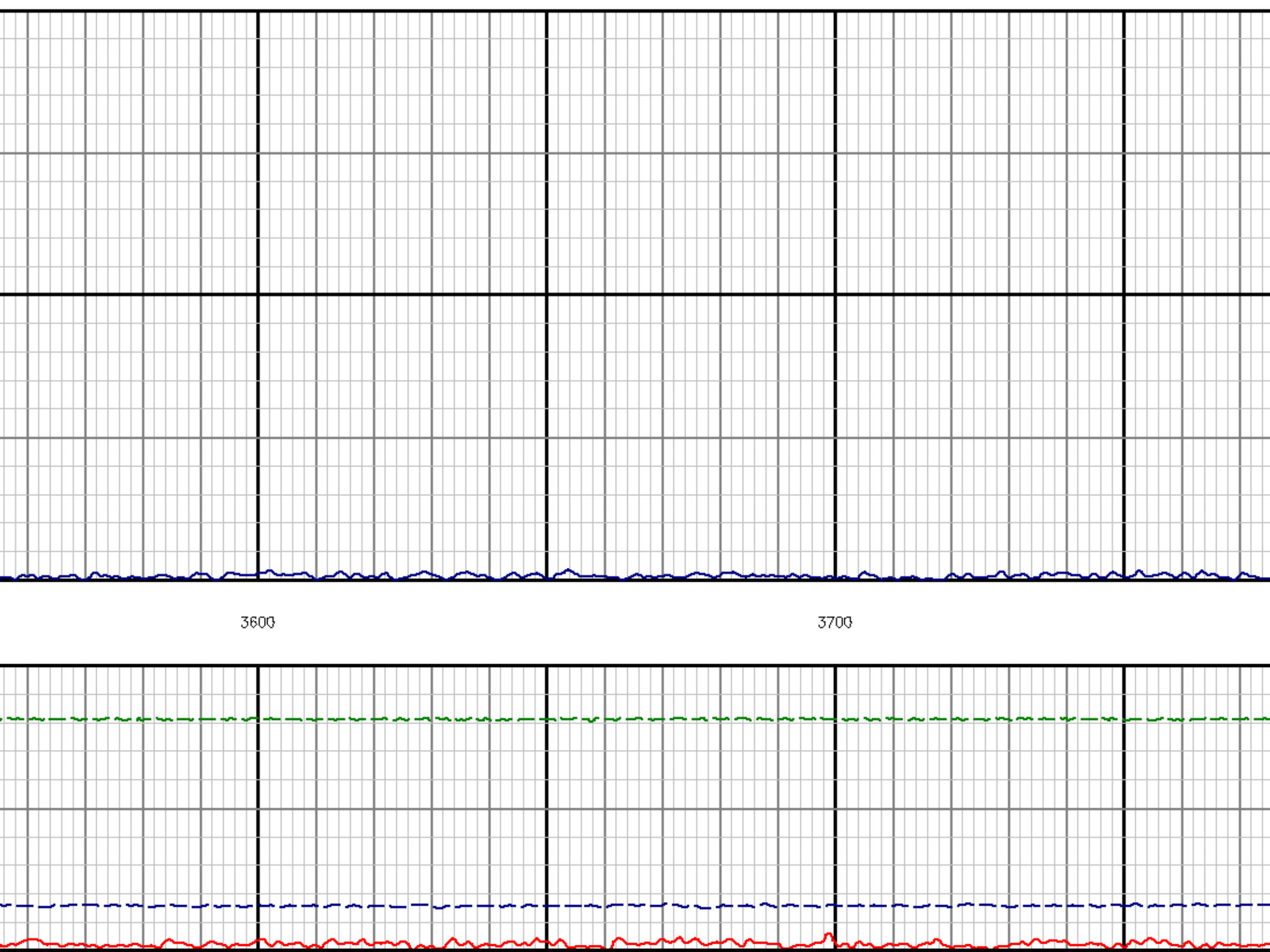

3200
3300

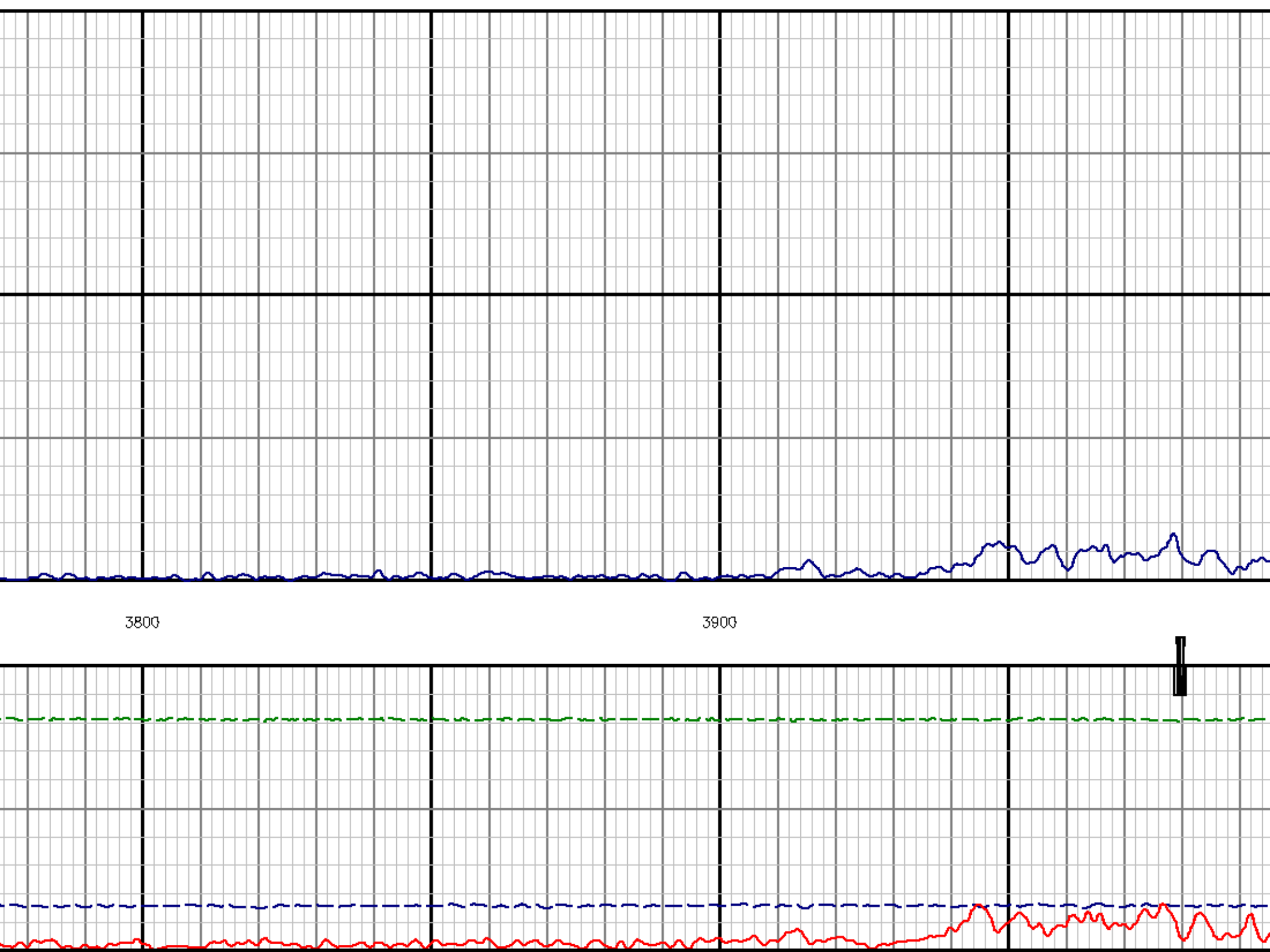


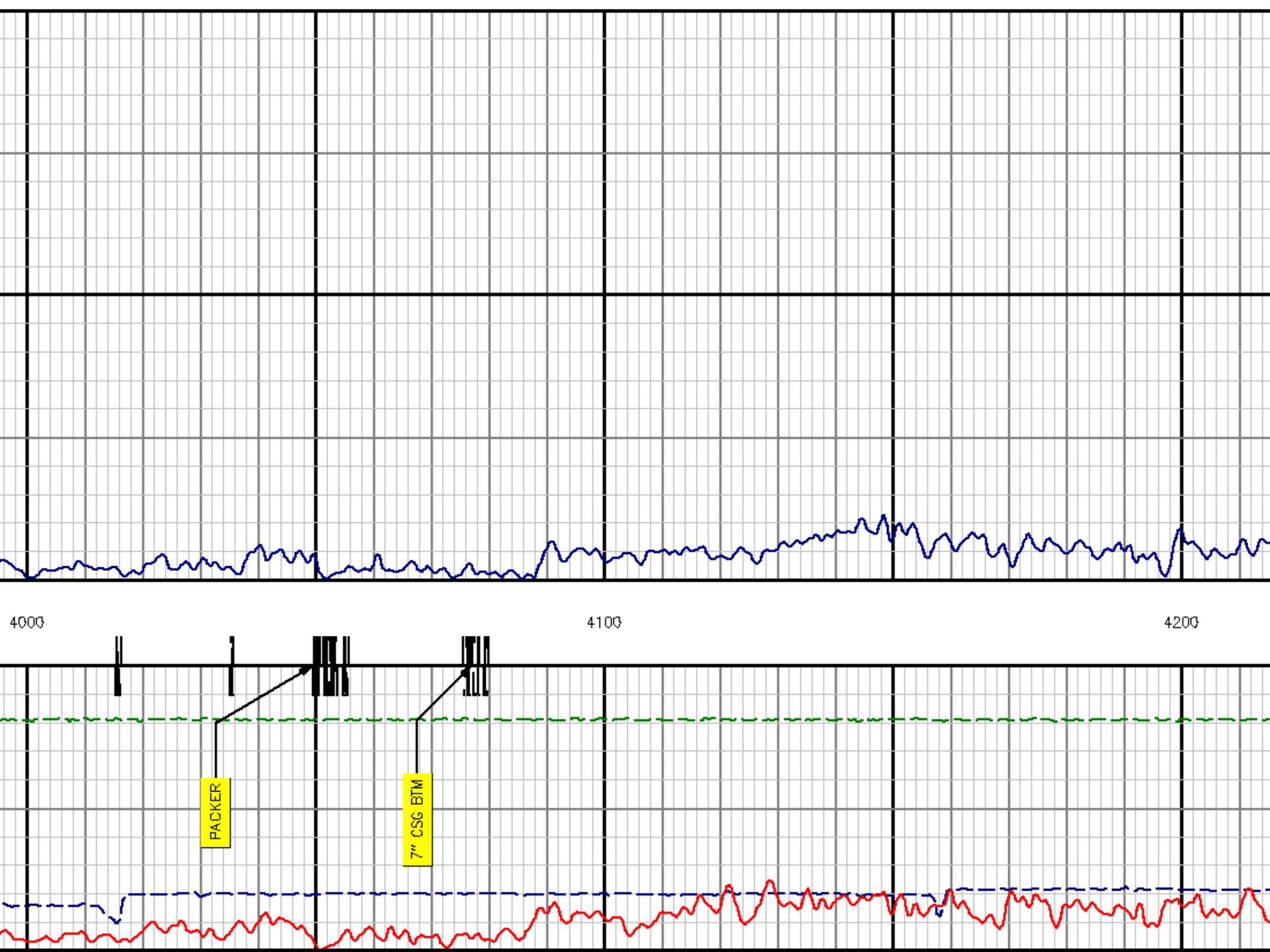
3400

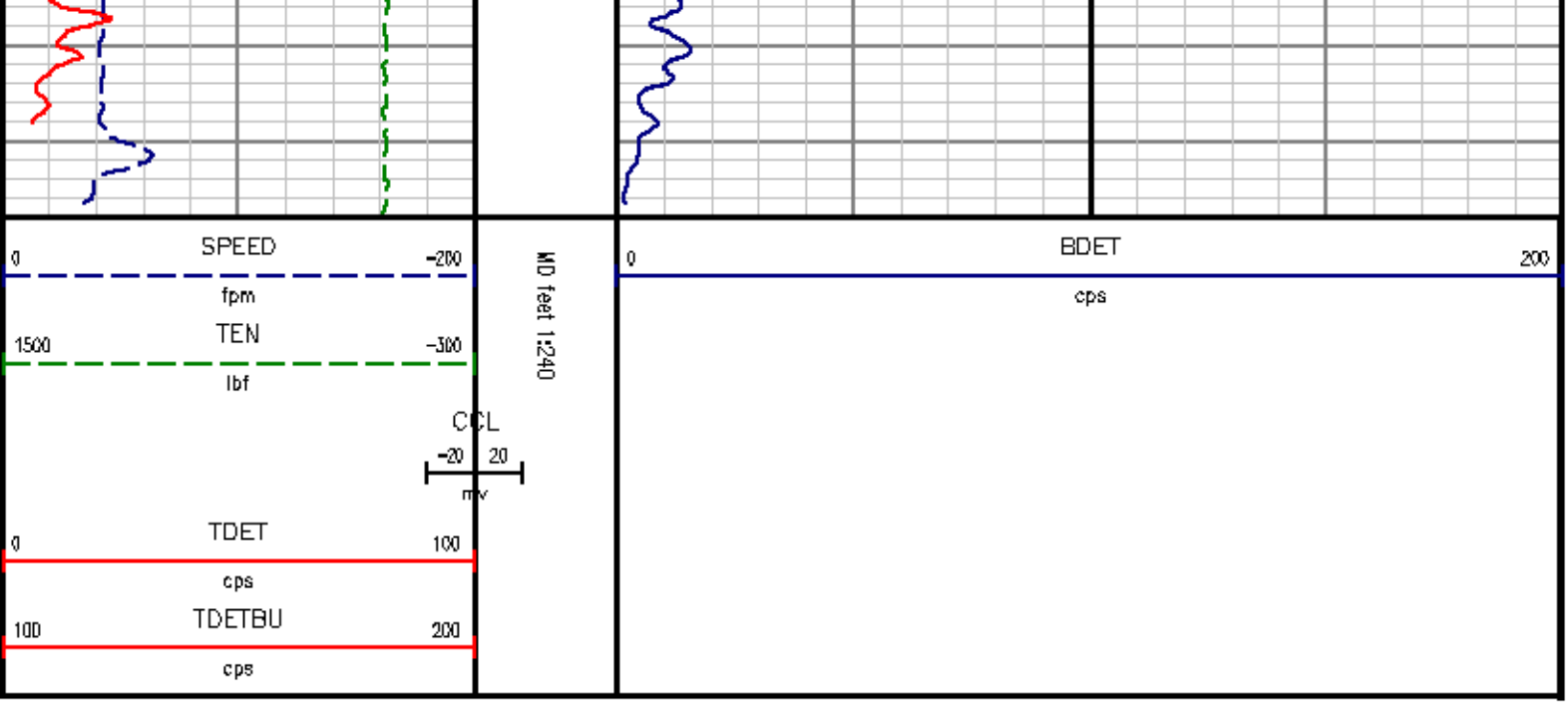
3500




3600
3700


3800
3900


4000
4100
4200
PACKER
7" CSG BTM



STAT CHECK @ 3955'

5MIN

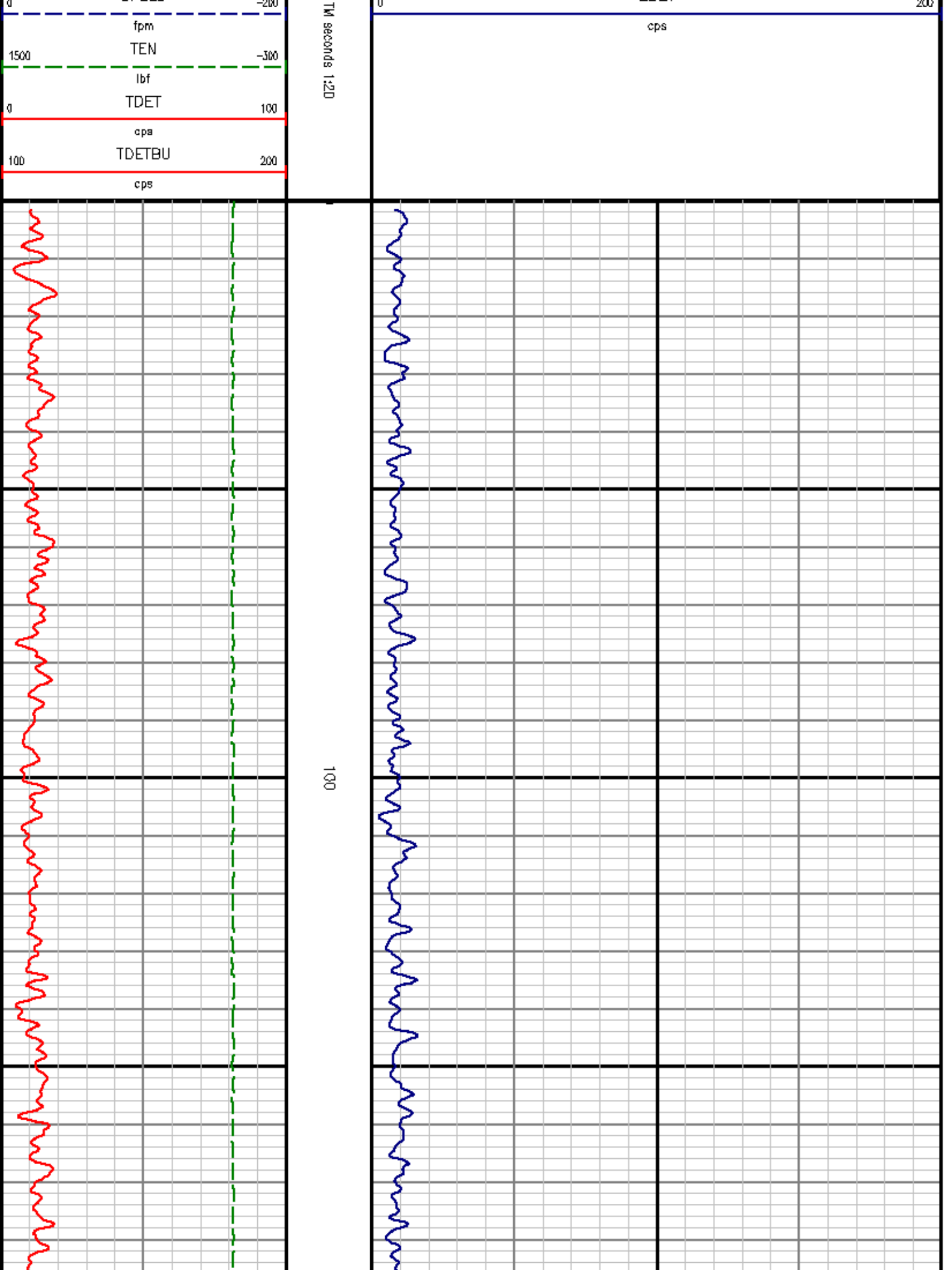
DEPTH OFFSETS

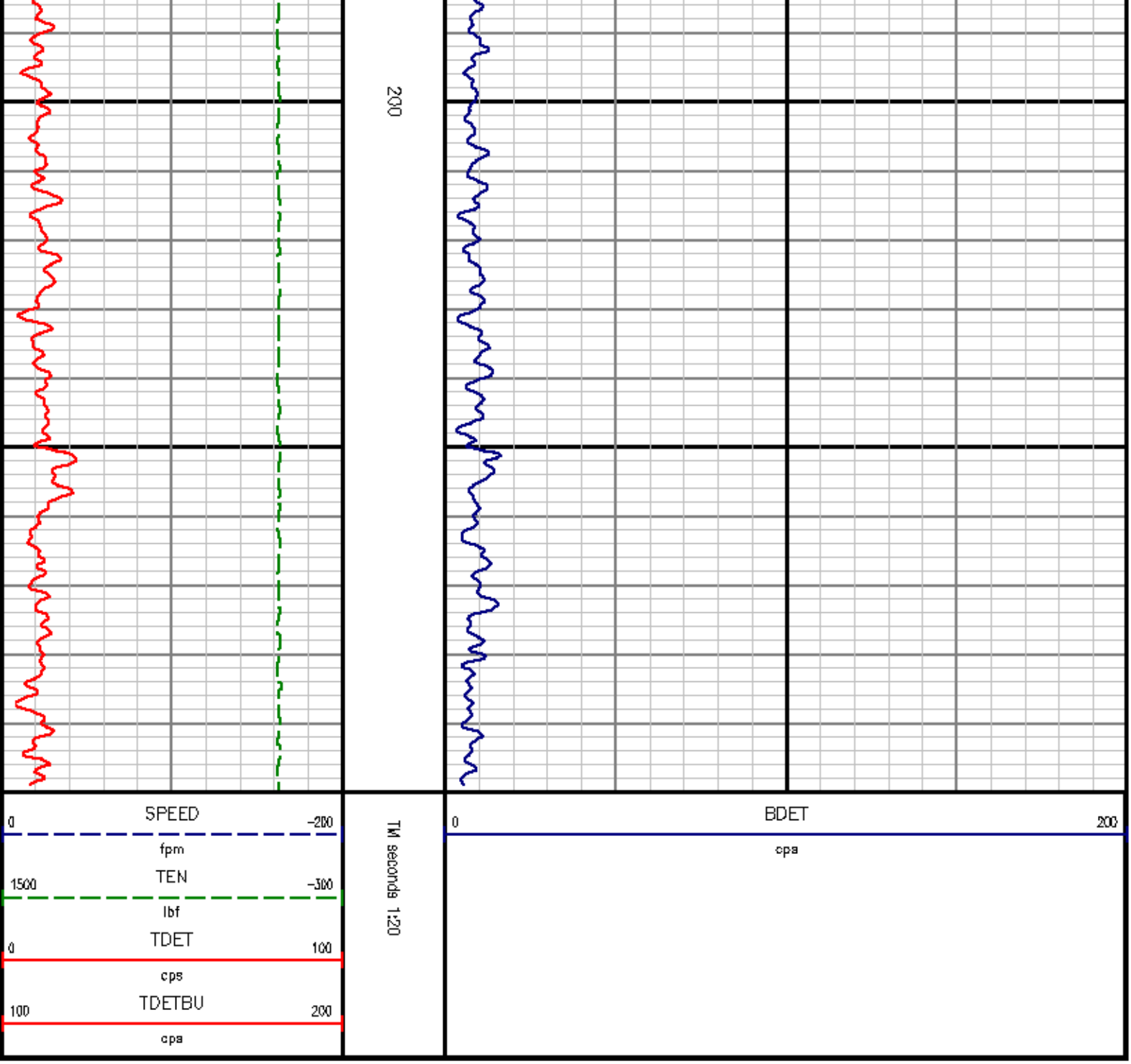
(for Acquired Curves)

SERIES	DEPTH OFFSET	ACQUIRED CURVES	
2324NA	-10.500	CCL	ACCL
8219XA	-8.500	TDET	TDETBU
8219XA	0.000	BDET	BDETBU
SYSTEM	0.000	TEN	TTEN

Created by : CNT, v4.07.00
Plotted by : PlotMgr, v5.4.504

Company : EGT
Well : 1-12
File Name : D:\WELLDATA\TRL735\TRL01.XTF
Mode : PlotMgr 5.4.504
Interval : 0 to 300
Created : 6/26/2013 5:39:29 PM


0
-200
fpm
TEN
1500
-300
lbf
TDET
0
100
cps
TDETBU
100
200
cps
TM seconds 1:20
0
200
cps
100



STAT CHECK @ 3802'
5 MIN

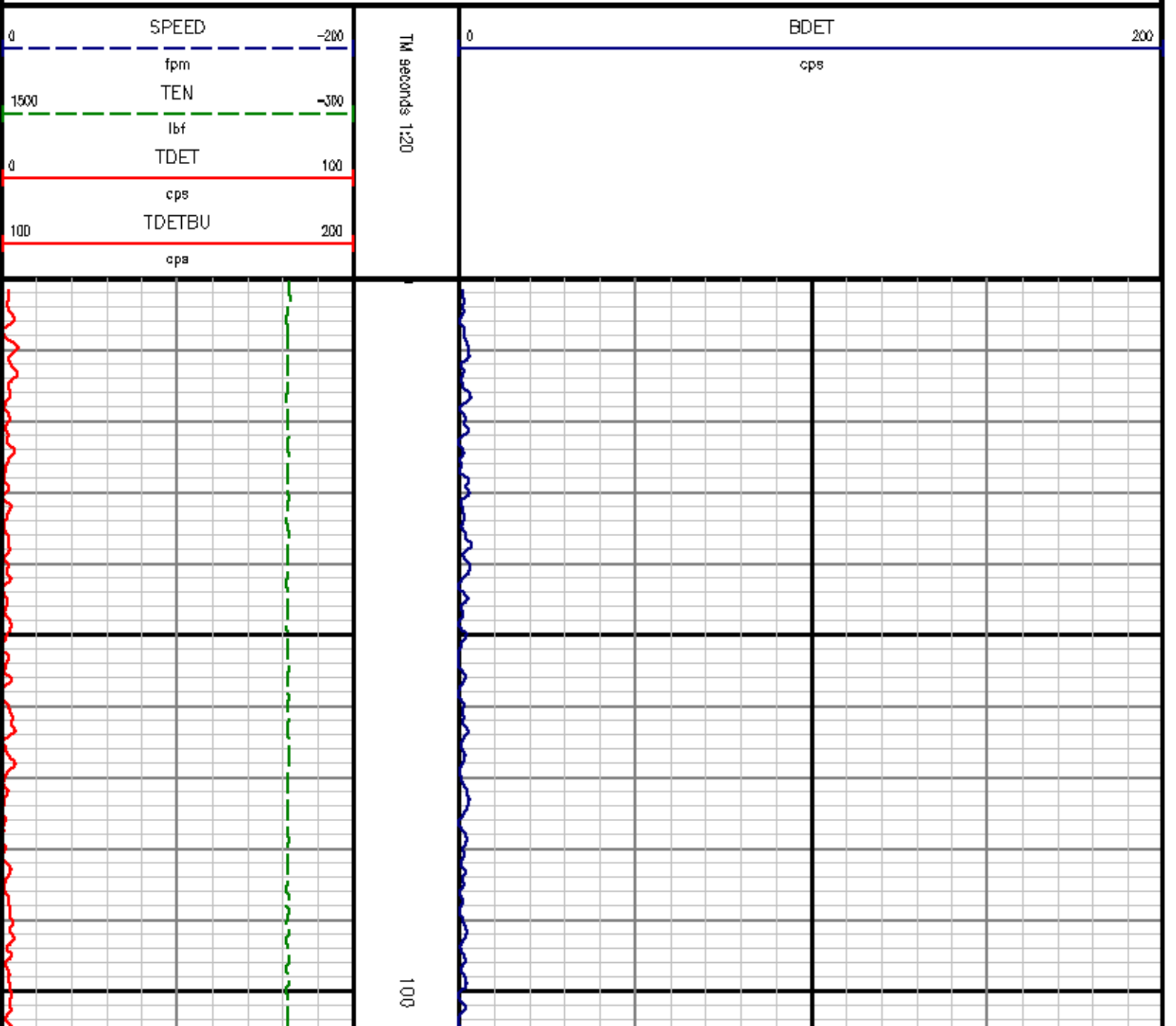
DEPTH OFFSETS

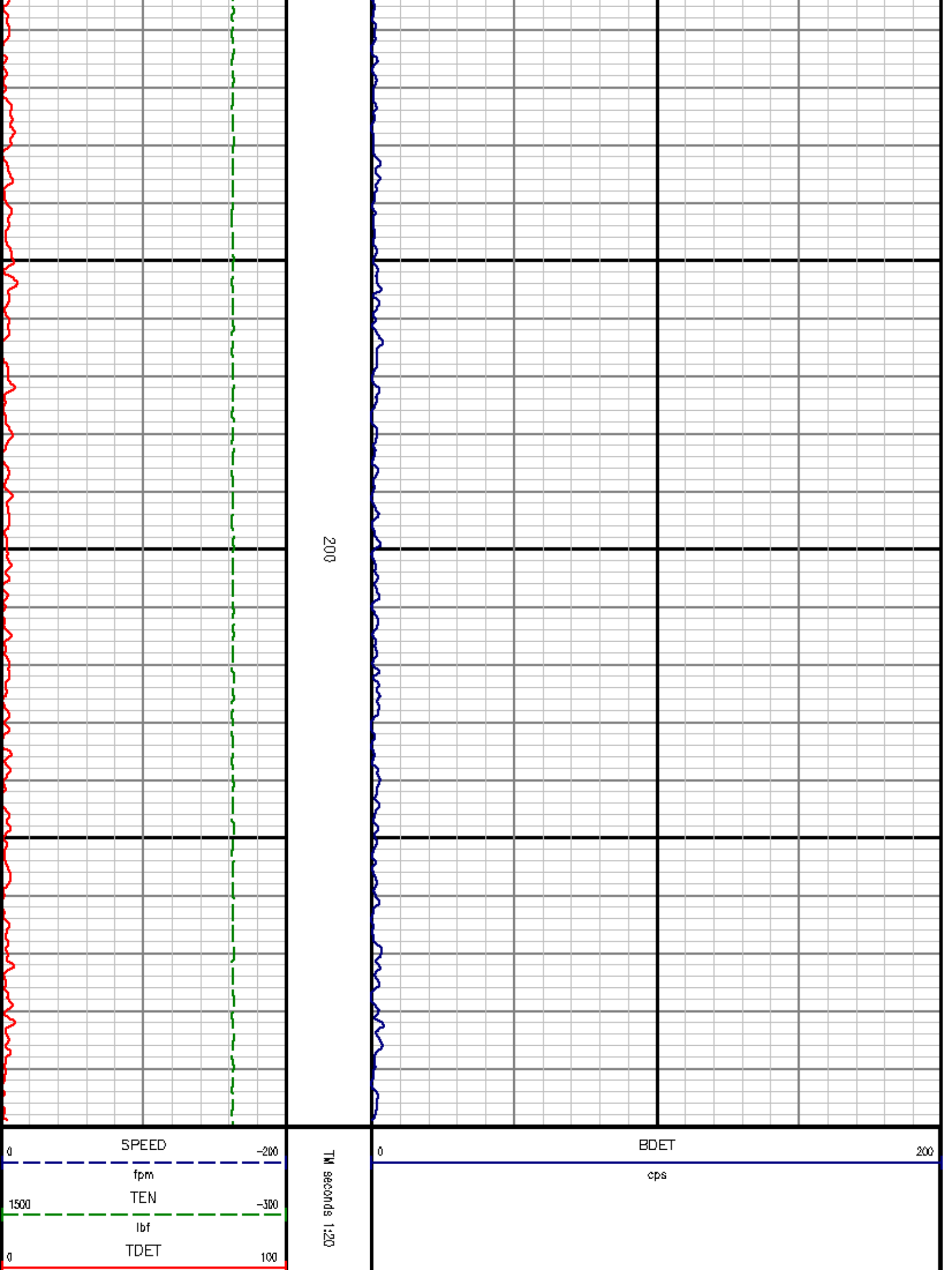
(for Acquired Curves)

SERIES	DEPTH OFFSET	ACQUIRED CURVES	
2324NA	-10.500	CCL	ACCL
8219XA	-8.500	TDET	TDETBU
8219XA	0.000	BDET	BDETBU
SYSTEM	0.000	TEN	TTEN

Created by : CNT. v4.07.00
Plotted by : PlotMgr. v5.4.504

Company : EGT
Well : 1-12
File Name : D:\WELLDATA\TRL735\TRL02.XTF
Mode : PlotMgr 5.4.504
Interval : 0 to 300
Created : 6/26/2013 5:46:00 PM




200
0
SPEED
-200
fpm
1500
TEN
-300
lbf
0
TDET
100
TM seconds 1:20
0
BDET
200
cps

cps

100 TDETBU 200

cps

RELEASE SLUG @ 3100'
FILES 3-11

DEPTH OFFSETS
(for Acquired Curves)

SERIES	DEPTH OFFSET	ACQUIRED CURVES	
2324NA	-10.500	CCL	ACCL
8219XA	-8.500	TDET	TDETBU
8219XA	0.000	BDET	BDETBU
SYSTEM	0.000	TEN	TTEN

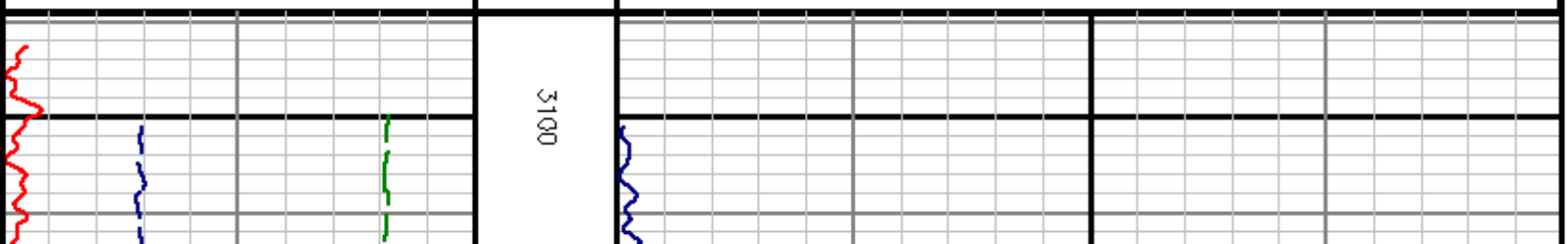
Created by : CNT, v4.07.00
Plotted by : PlotMgr, v5.4.504

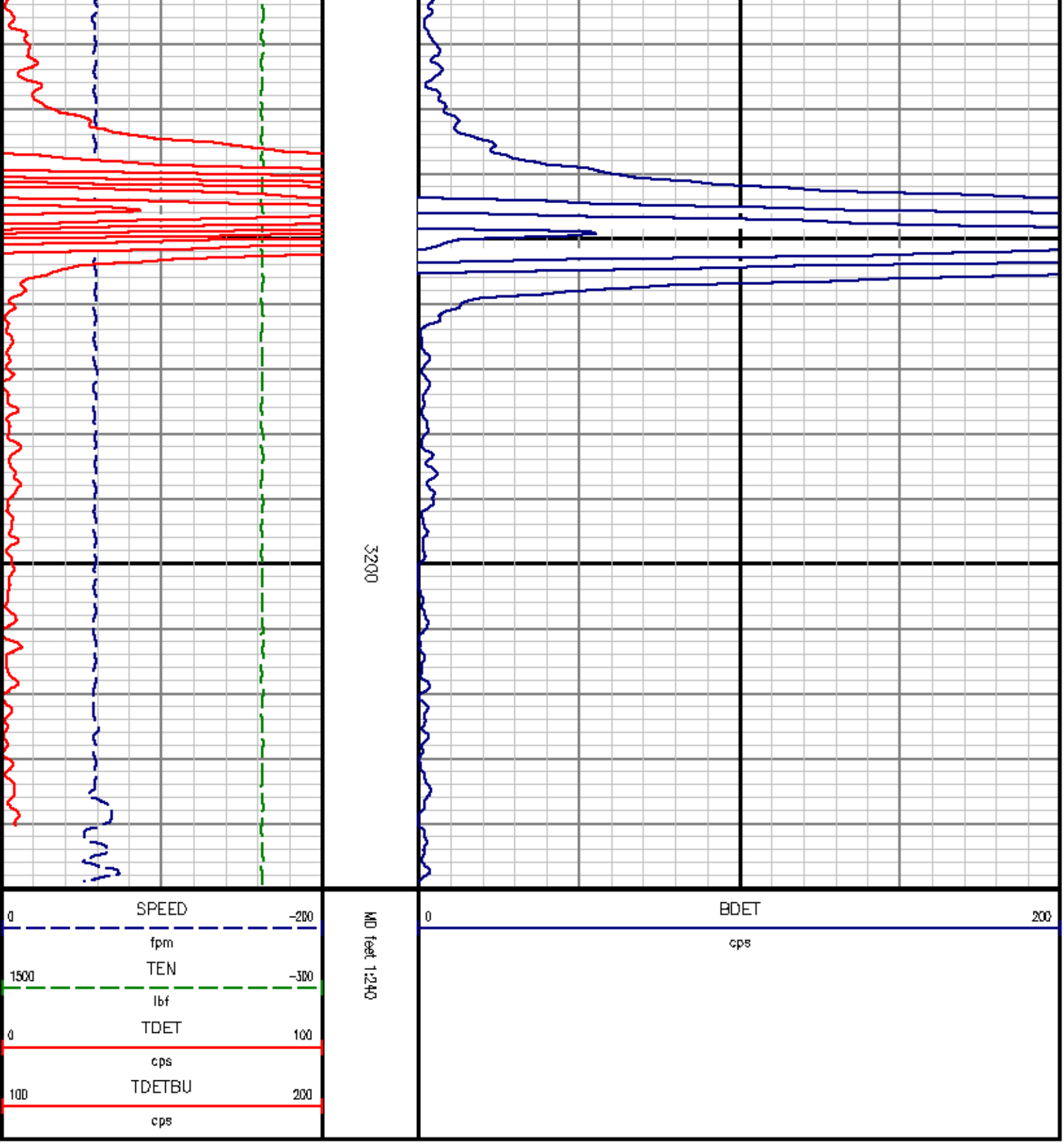
Company : EGT
Well : 1-12
File Name : D:\WELLDATA\TRL735\TRL03.XTF
Mode : PlotMgr 5.4.504
Interval : 3089.00 - 3250.00 feet UP
Created : 6/26/2013 6:12:09 PM

0 SPEED -200
fpm
1500 TEN -300
lbf
0 TDET 100
cps
100 TDETBU 200
cps

MD feet 1:240

0 BDET 200
cps





DEPTH OFFSETS

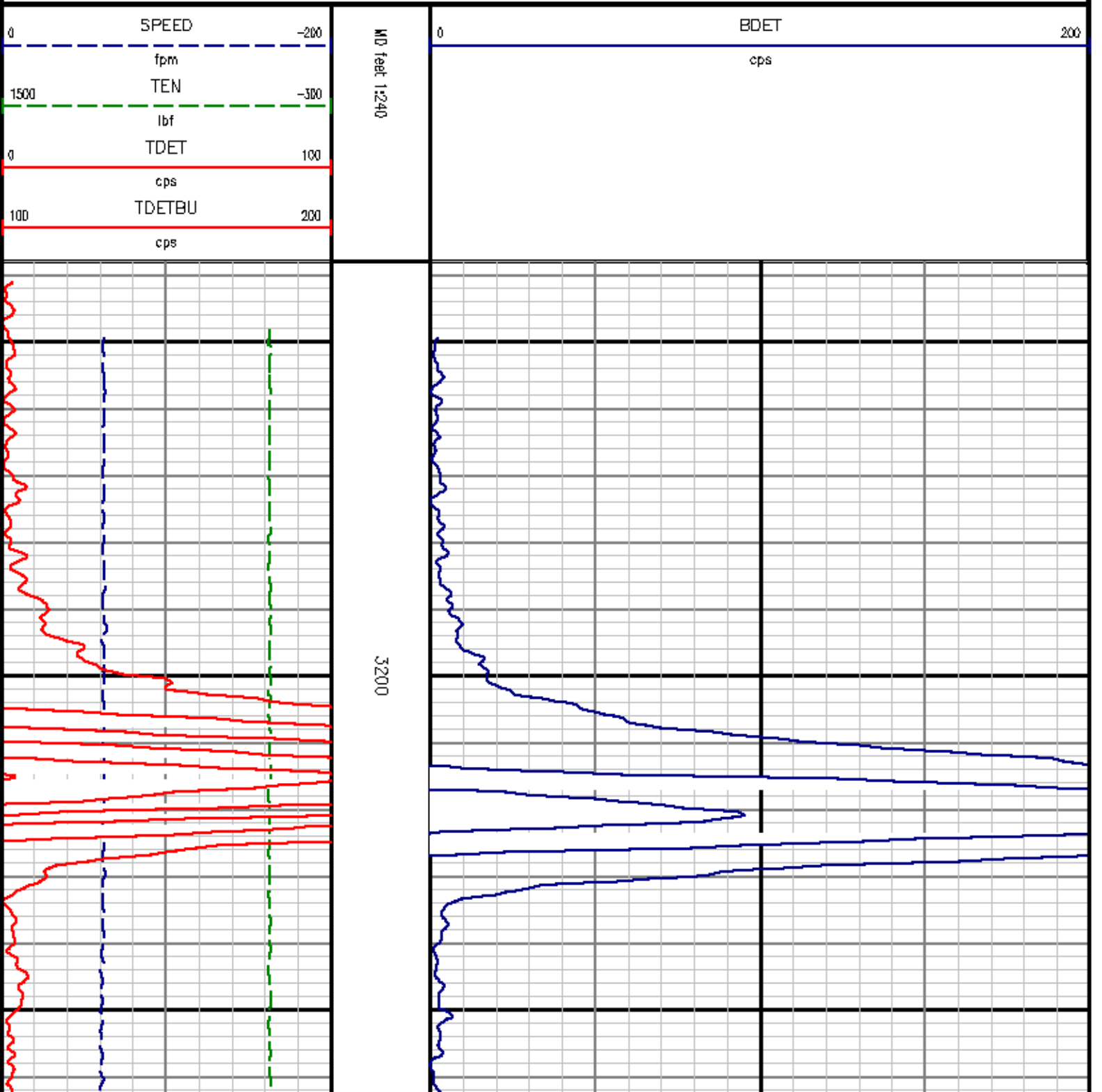
(for Acquired Curves)

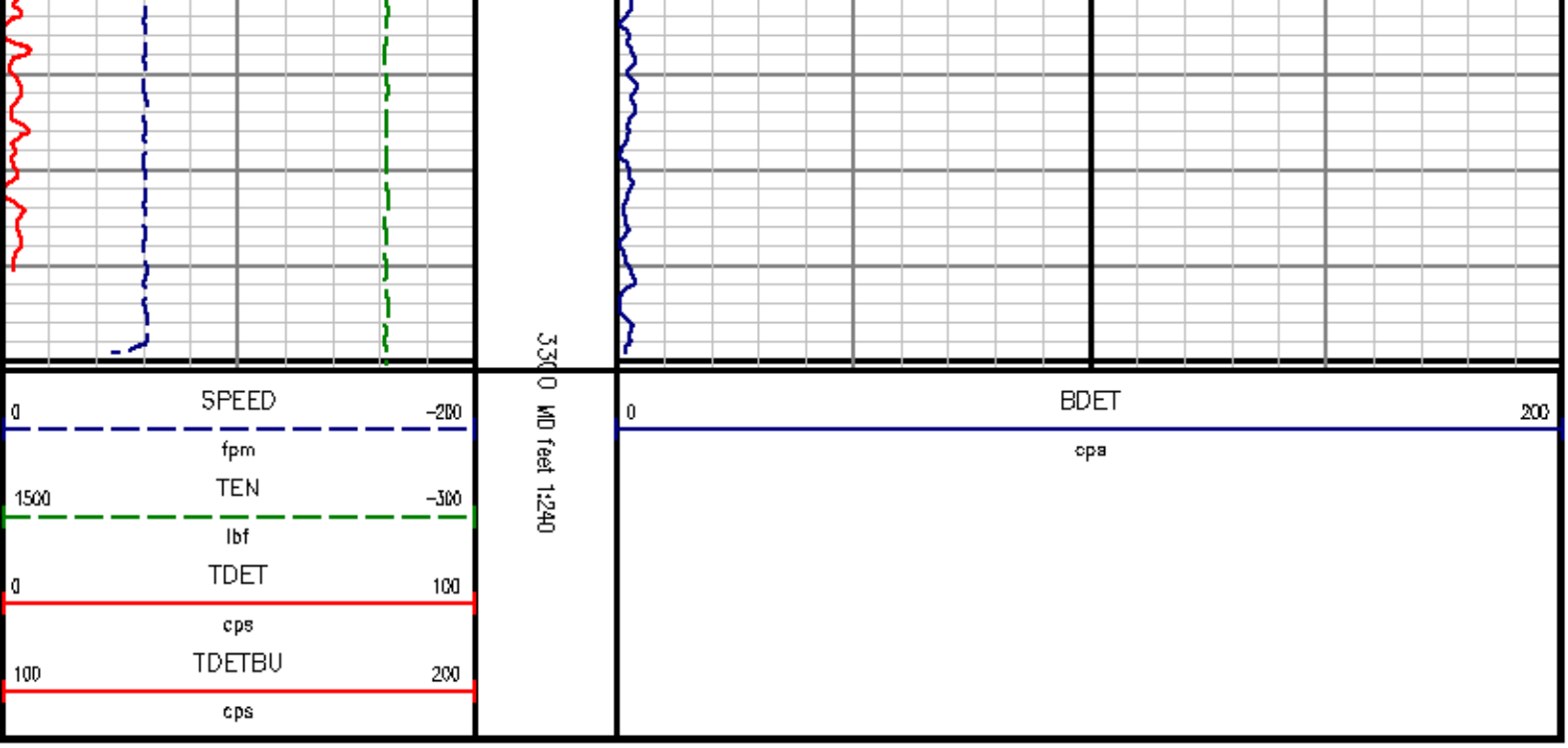
SERIES	DEPTH OFFSET	ACQUIRED CURVES	
2324NA	-10.500	CCL	ACCL

8219XA	-8.500	TDET	TDETBU
8219XA	0.000	BDET	BDETBU
SYSTEM	0.000	TEN	TTEN

Created by : CNT, v4.07.00
Plotted by : PlotMgr, v5.4.504

Company : EGT
Well : 1-12
File Name : D:\WELLDATA\TRL735\TRL04.XTF
Mode : PlotMgr 5.4.504
Interval : 3138.00 - 3301.00 feet UP
Created : 6/26/2013 6:15:35 PM





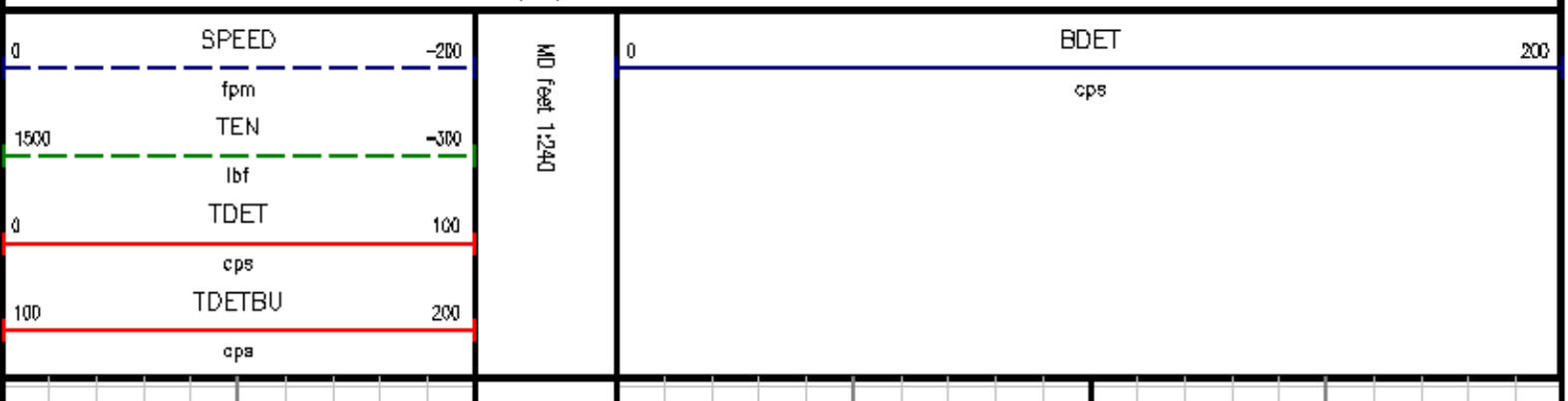
DEPTH OFFSETS

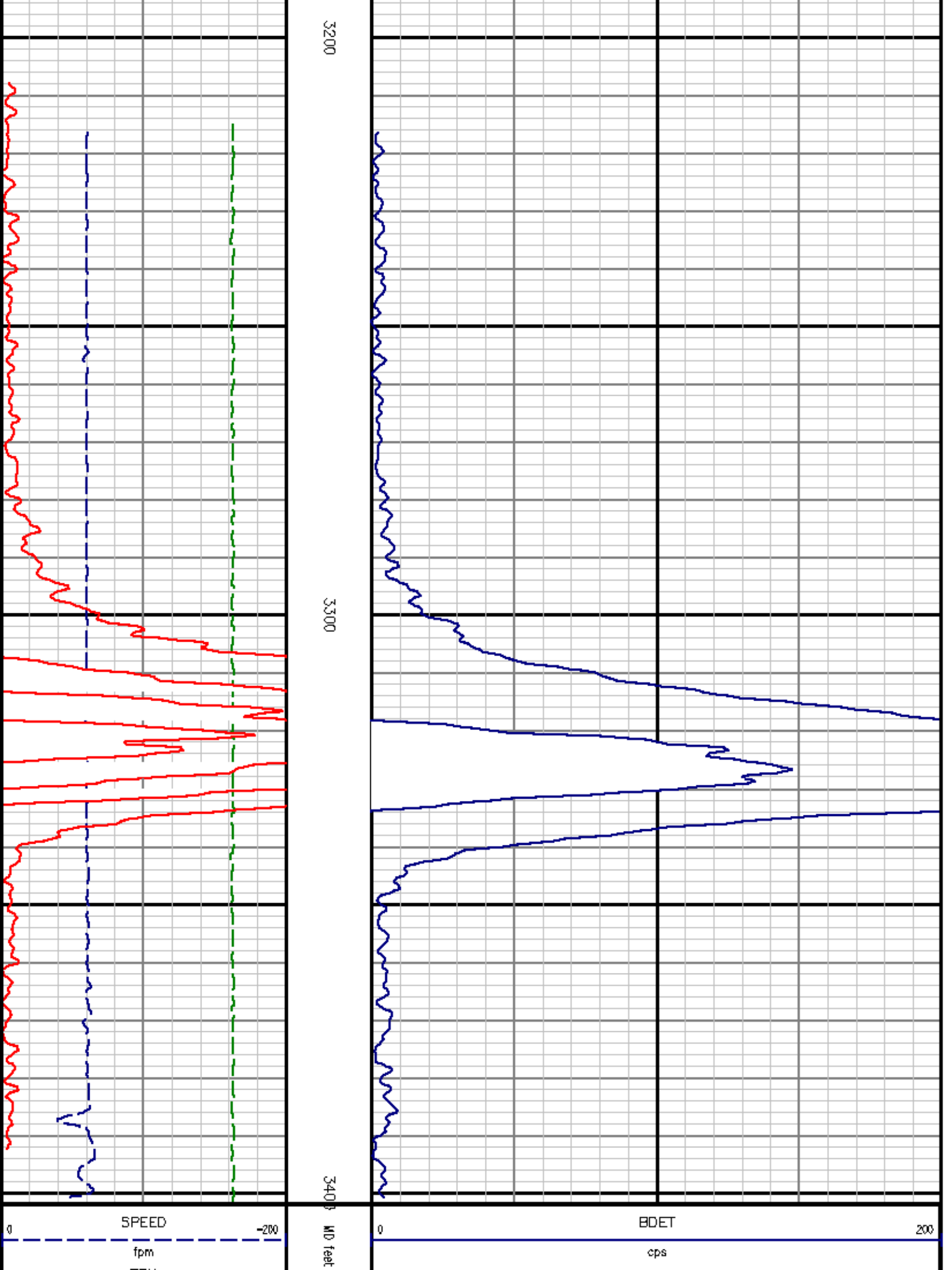
(for Acquired Curves)

SERIES	DEPTH OFFSET	ACQUIRED CURVES	
2324NA	-10.500	CCL	ACCL
8219XA	-8.500	TDET	TDETBU
8219XA	0.000	BDET	BDETBU
SYSTEM	0.000	TEN	TTEN

Created by : CNT, v4.07.00
Plotted by : PlotMgr, v5.4.504

Company : EGT
Well : 1-12
File Name : D:\WELLDATA\TRL735\TRL05.XTF
Mode : PlotMgr 5.4.504
Interval : 3191.00 - 3402.00 feet UP
Created : 6/26/2013 6:19:56 PM




3200
3300
3400
MD feet
0
SPEED
-200
fpm
0
BDET
200
cps

1500 TEN -300
lbf
0 TDET 100
cps
100 TDETBU 200
cps

MD feet 1:240

DEPTH OFFSETS

(for Acquired Curves)

SERIES	DEPTH OFFSET	ACQUIRED CURVES	
2324NA	-10.500	CCL	ACCL
8219XA	-8.500	TDET	TDETBU
8219XA	0.000	BDET	BDETBU
SYSTEM	0.000	TEN	TTEN

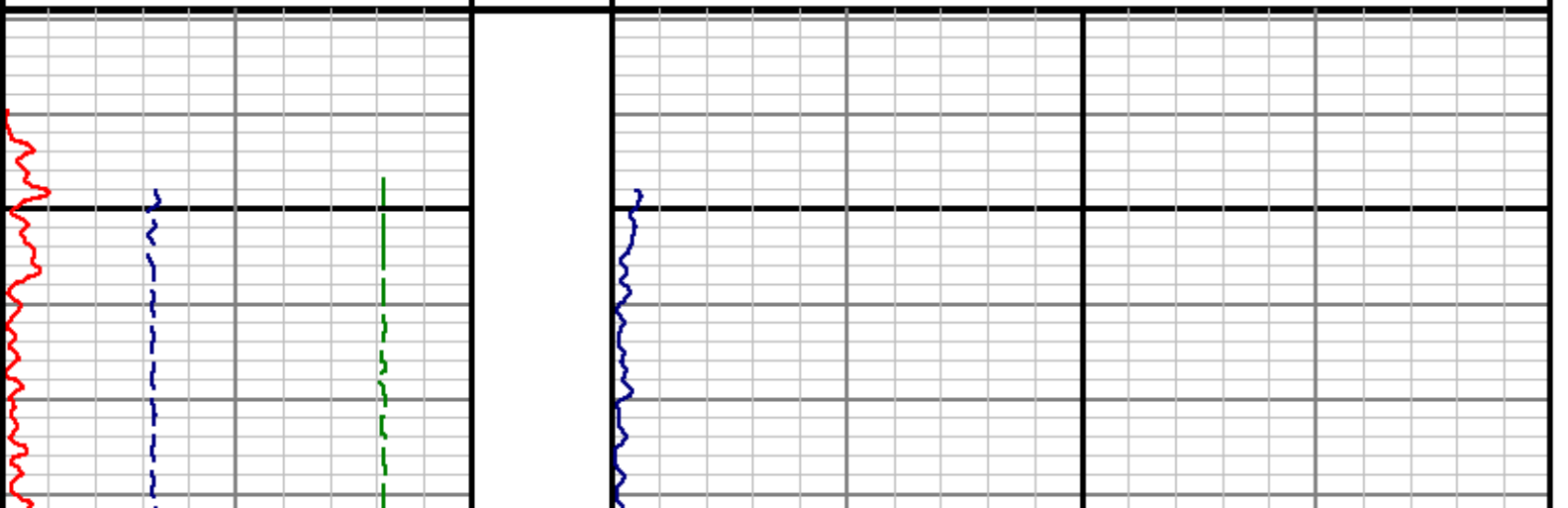
Created by : CNT, v4.07.00
Plotted by : PlotMgr, v5.4.504

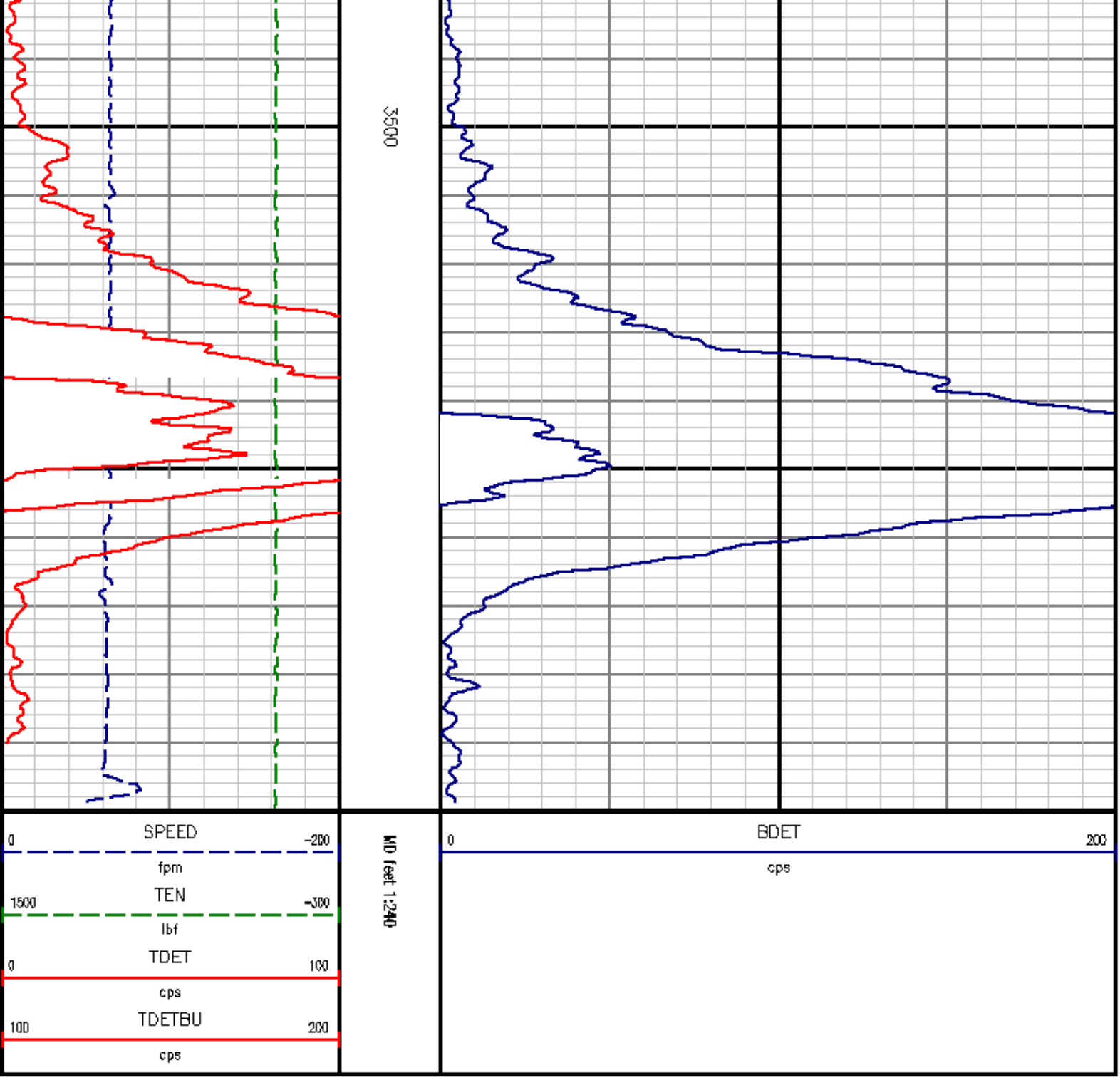
Company : EGT
Well : 1-12
File Name : D:\WELLDATA\TRL735\TRL06.XTF
Mode : PlotMgr 5.4.504
Interval : 3429.00 - 3600.00 feet UP
Created : 6/26/2013 6:28:19 PM

0 SPEED -200
fpm
1500 TEN -300
lbf
0 TDET 100
cps
100 TDETBU 200
cps

MD feet 1:240

0 BDET 200
cps





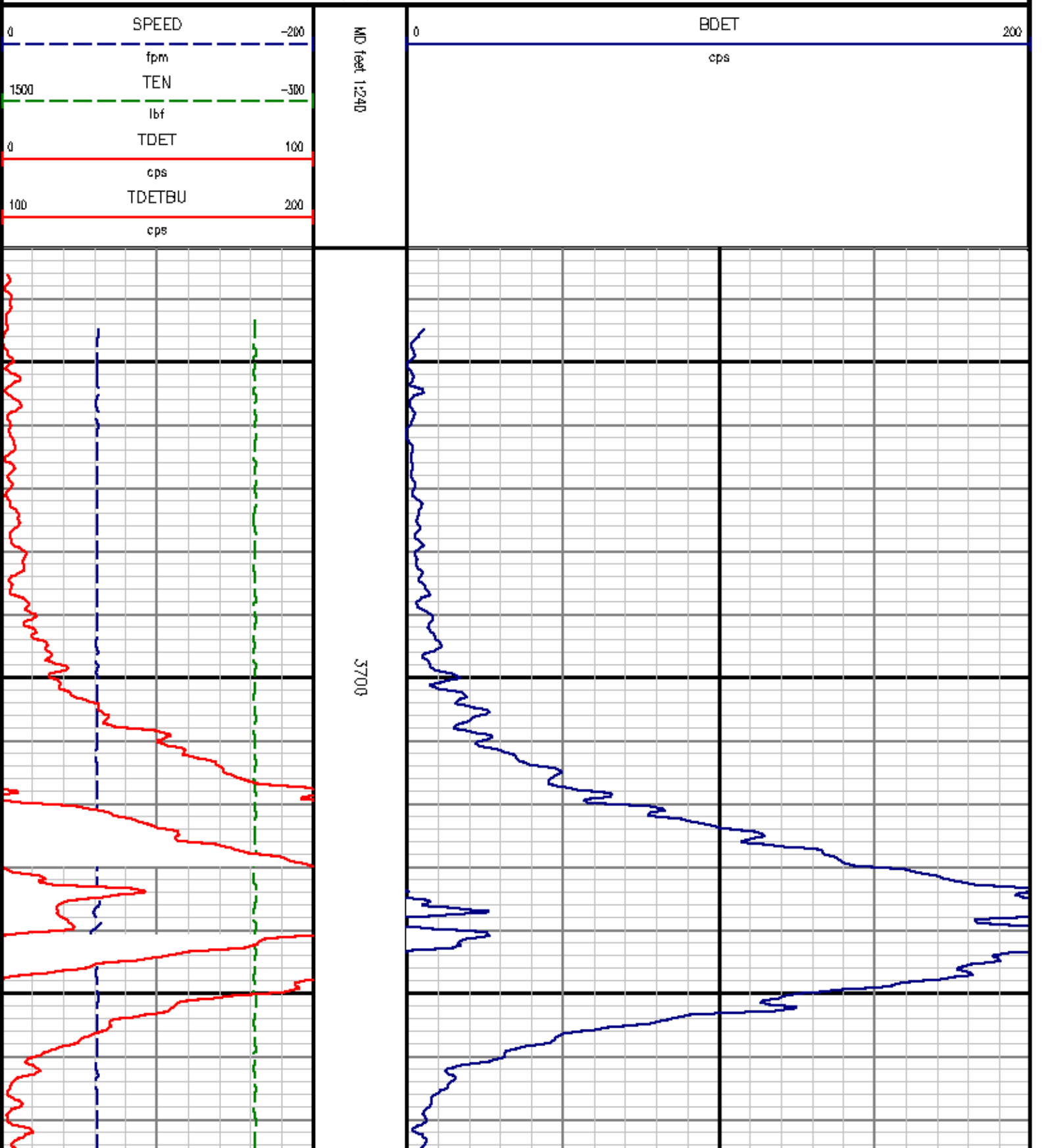
DEPTH OFFSETS

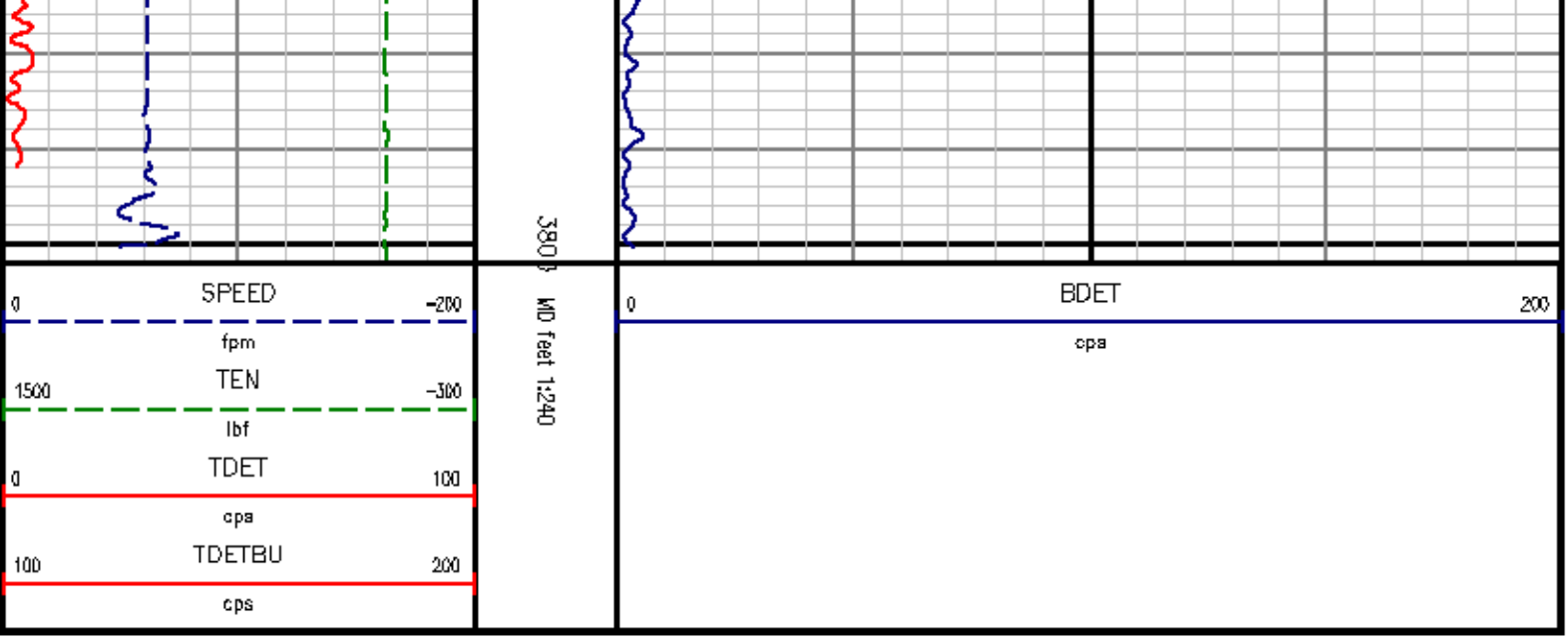
(for Acquired Curves)

SERIES	DEPTH OFFSET	ACQUIRED CURVES	
2324NA	-10.500	CCL	ACCL
8219XA	-8.500	TDET	TDETBU
8219XA	0.000	BDET	BDETBU
SYSTEM	0.000	TEN	TTEN

Created by : CNT, v4.07.00
Plotted by : PlotMgr, v5.4.504

Company : EGT
Well : 1-12
File Name : D:\WELLDATA\TRL735\TRL07.XTF
Mode : PlotMgr 5.4.504
Interval : 3632.00 - 3802.00 feet UP
Created : 6/26/2013 6:33:56 PM





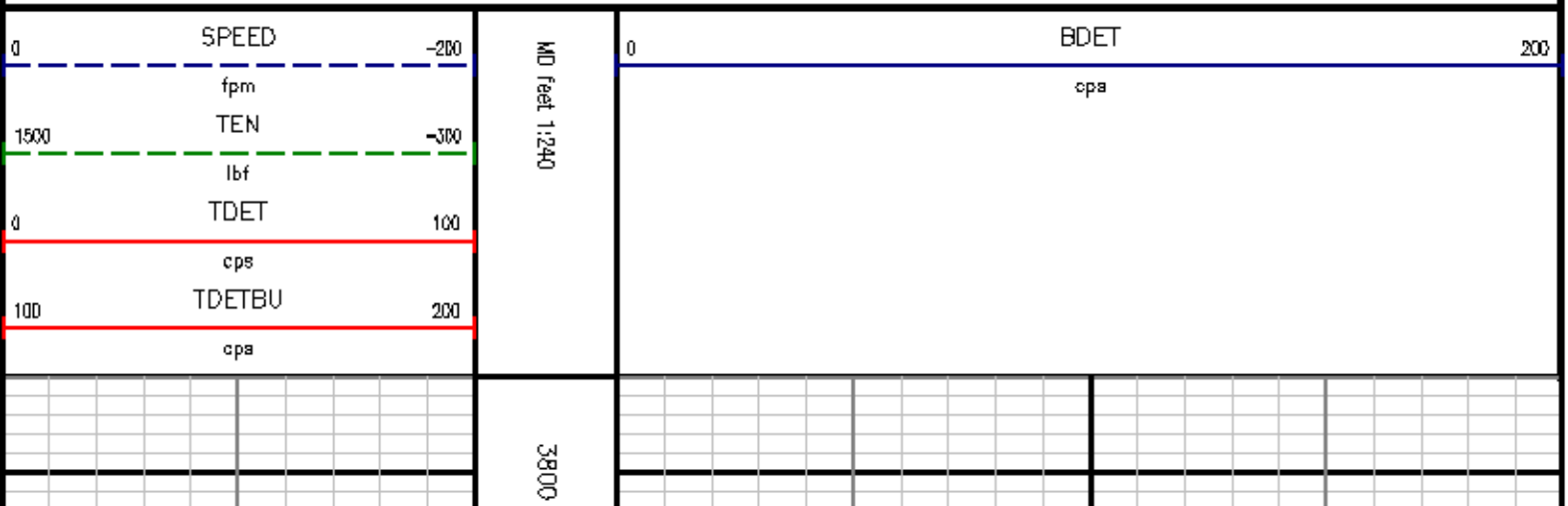
DEPTH OFFSETS

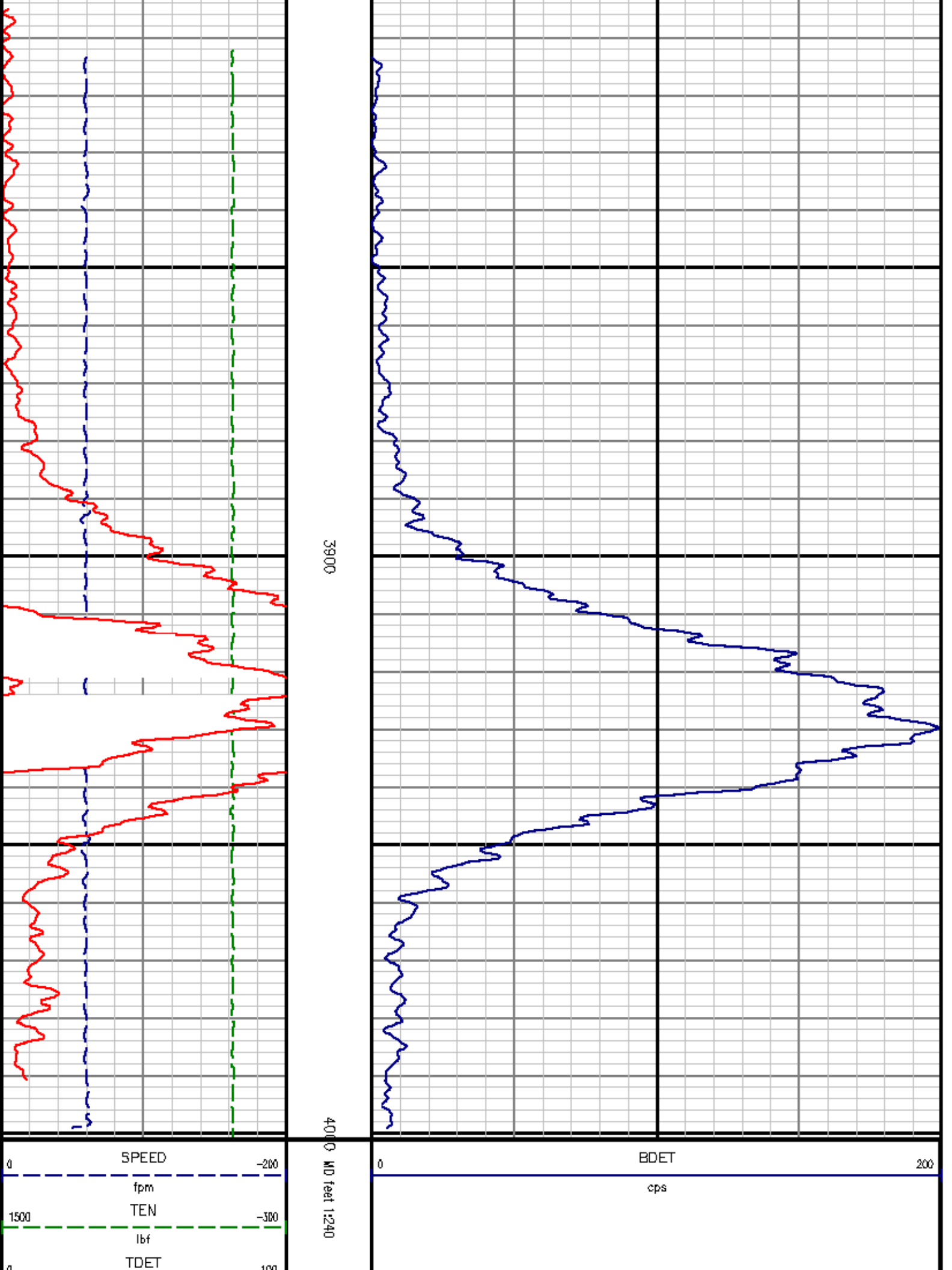
(for Acquired Curves)

SERIES	DEPTH OFFSET	ACQUIRED CURVES	
2324NA	-10.500	CCL	ACCL
8219XA	-8.500	TDET	TDETBU
8219XA	0.000	BDET	BDETBU
SYSTEM	0.000	TEN	TTEN

Created by : CNT. v4.07.00
Plotted by : PlotMgr. v5.4.504

Company : EGT
Well : 1-12
File Name : D:\WELLDATA\TRL735\TRL08.XTF
Mode : PlotMgr 5.4.504
Interval : 3790.00 - 4001.00 feet UP
Created : 6/26/2013 6:39:39 PM




3900
4000
MD feet 1:240
0
SPEED
-200
fpm
1500
TEN
-300
lbf
TDET
0
BDET
200
cps

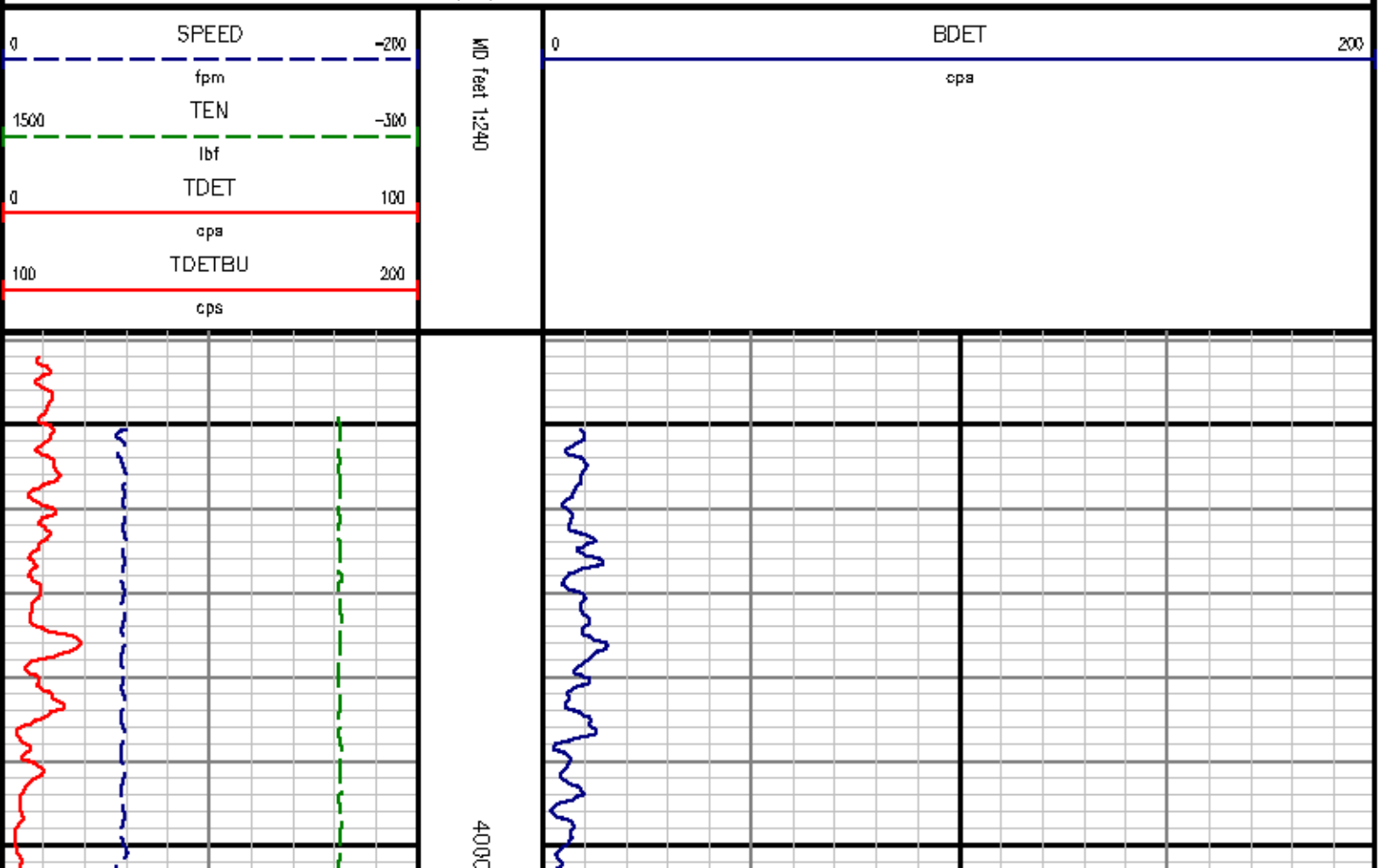
DEPTH OFFSETS

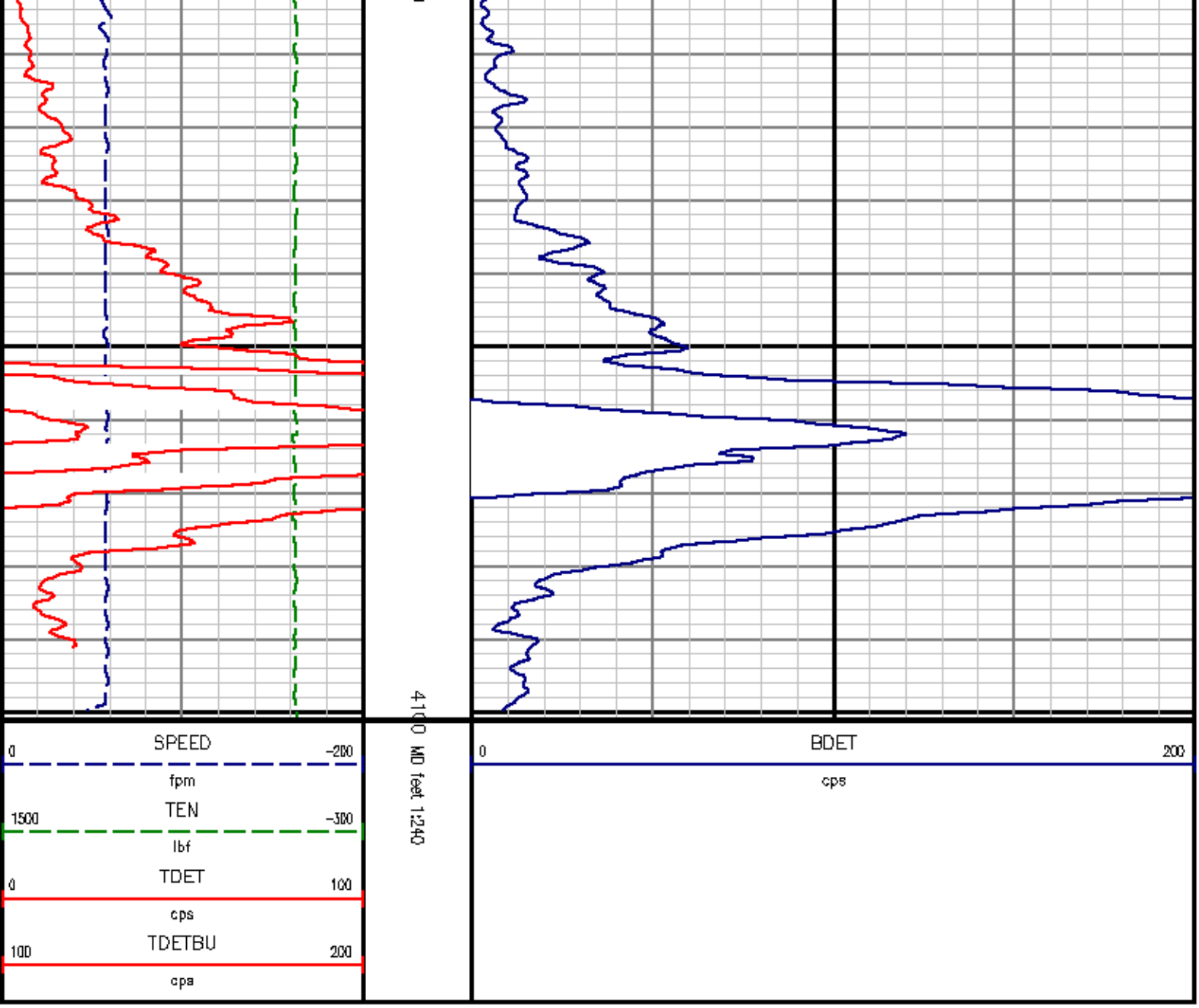
(for Acquired Curves)

SERIES	DEPTH OFFSET	ACQUIRED CURVES	
2324NA	-10.500	CCL	ACCL
8219XA	-8.500	TDET	TDETBU
8219XA	0.000	BDET	BDETBU
SYSTEM	0.000	TEN	TTEN

Created by : CNT, v4.07.00
Plotted by : PlotMgr, v5.4.504

Company : EGT
Well : 1-12
File Name : D:\WELLDATA\TRL735\TRL09.XTF
Mode : PlotMgr 5.4.504
Interval : 3939.00 - 4101.00 feet UP
Created : 6/26/2013 6:45:07 PM





DEPTH OFFSETS

(for Acquired Curves)

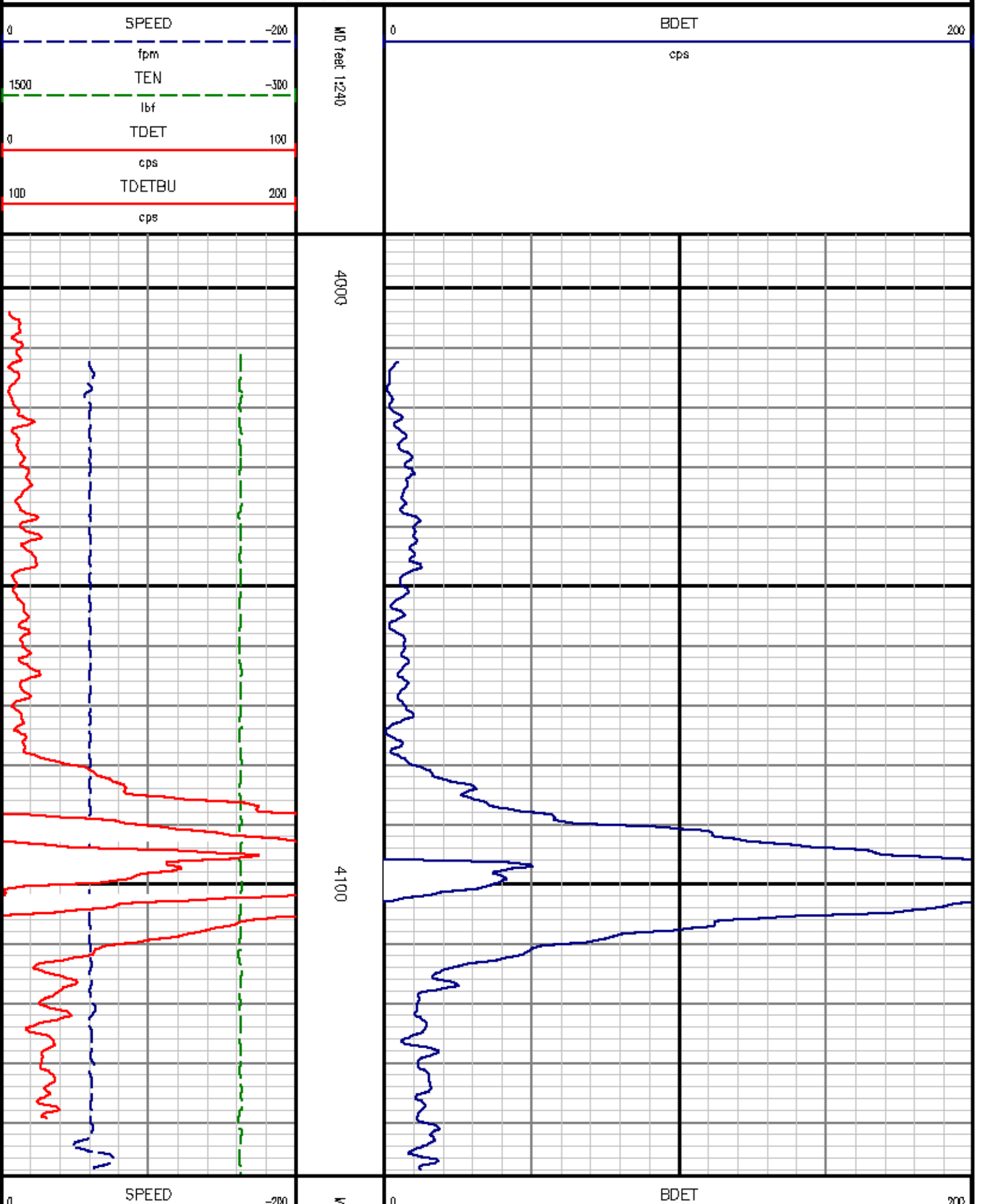
SERIES	DEPTH OFFSET	ACQUIRED CURVES	
2324NA	-10.500	CCL	ACCL
8219XA	-8.500	TDET	TDETBU
8219XA	0.000	BDET	BDETBU
SYSTEM	0.000	TEN	TTEN

Created by : CNT, v4.07.00

Plotted by : PlotMgr, v5.4.504

Company : EGT

Well : 1-12
File Name : D:\WELLDATA\TRL735\TRL10.XTF
Mode : PlotMgr 5.4.504
Interval : 3991.00 - 4149.00 feet UP
Created : 6/26/2013 6:49:26 PM



fpm

TEN

1500 -300

lbf

TDET

0 100

cps

TDETBU

100 200

cps

MD feet 1:240

cps

DEPTH OFFSETS

(for Acquired Curves)

SERIES	DEPTH OFFSET	ACQUIRED CURVES	
2324NA	-10.500	CCL	ACCL
8219XA	-8.500	TDET	TDETBU
8219XA	0.000	BDET	BDETBU
SYSTEM	0.000	TEN	TTEN

Created by : CNT, v4.07.00

Plotted by : PlotMgr, v5.4.504

Company : EGT

Well : 1-12

File Name : D:\WELLDATA\TRL735\TRL11.XTF

Mode : PlotMgr 5.4.504

Interval : 3995.00 - 4201.00 feet UP

Created : 6/26/2013 6:53:43 PM

0 SPEED -200

fpm

1500 TEN -300

lbf

0 TDET 100

cps

100 TDETBU 200

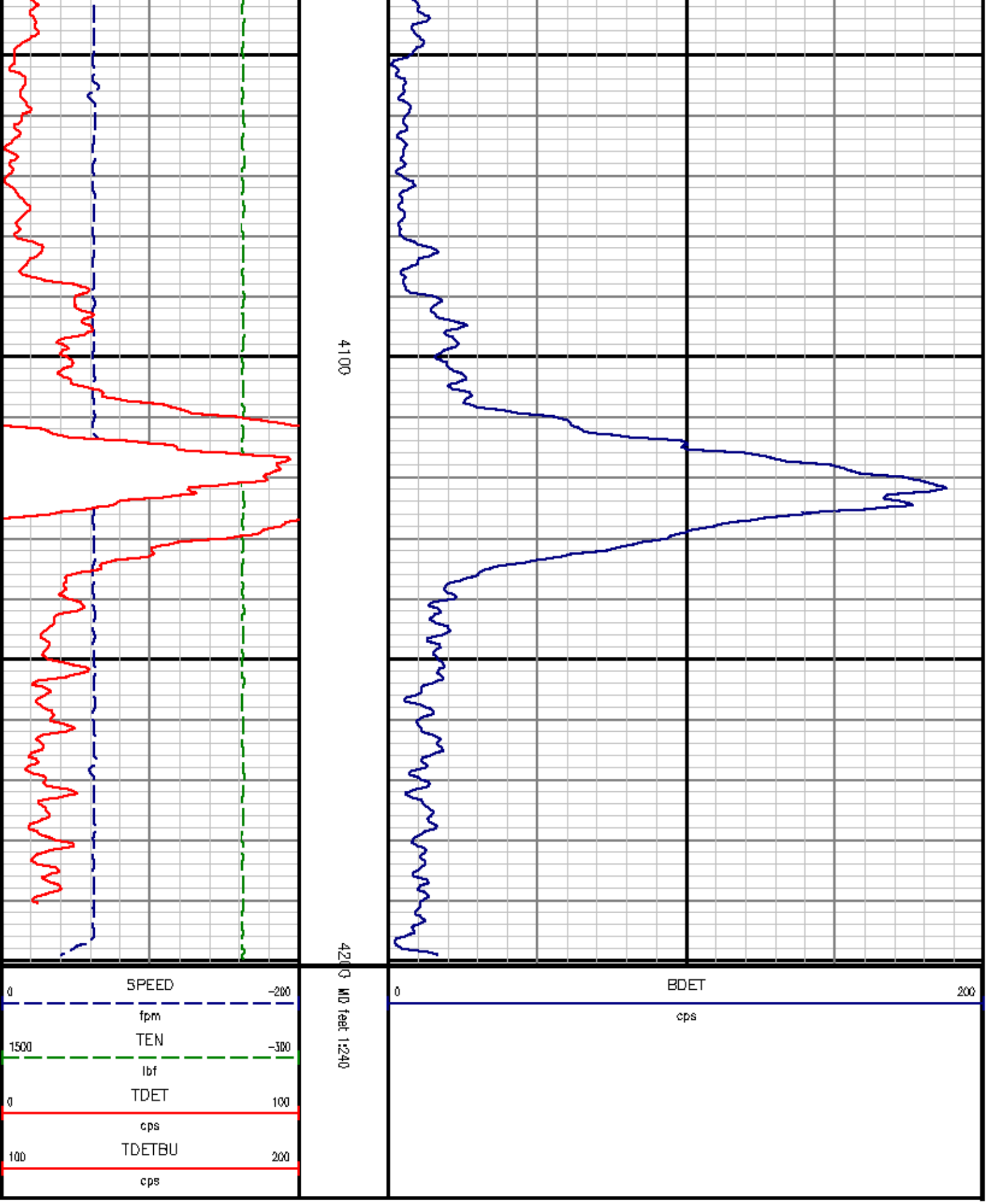
cps

MD feet 1:240

0 BDET 200

cps

4000



CHASE 1 MERGED DATA

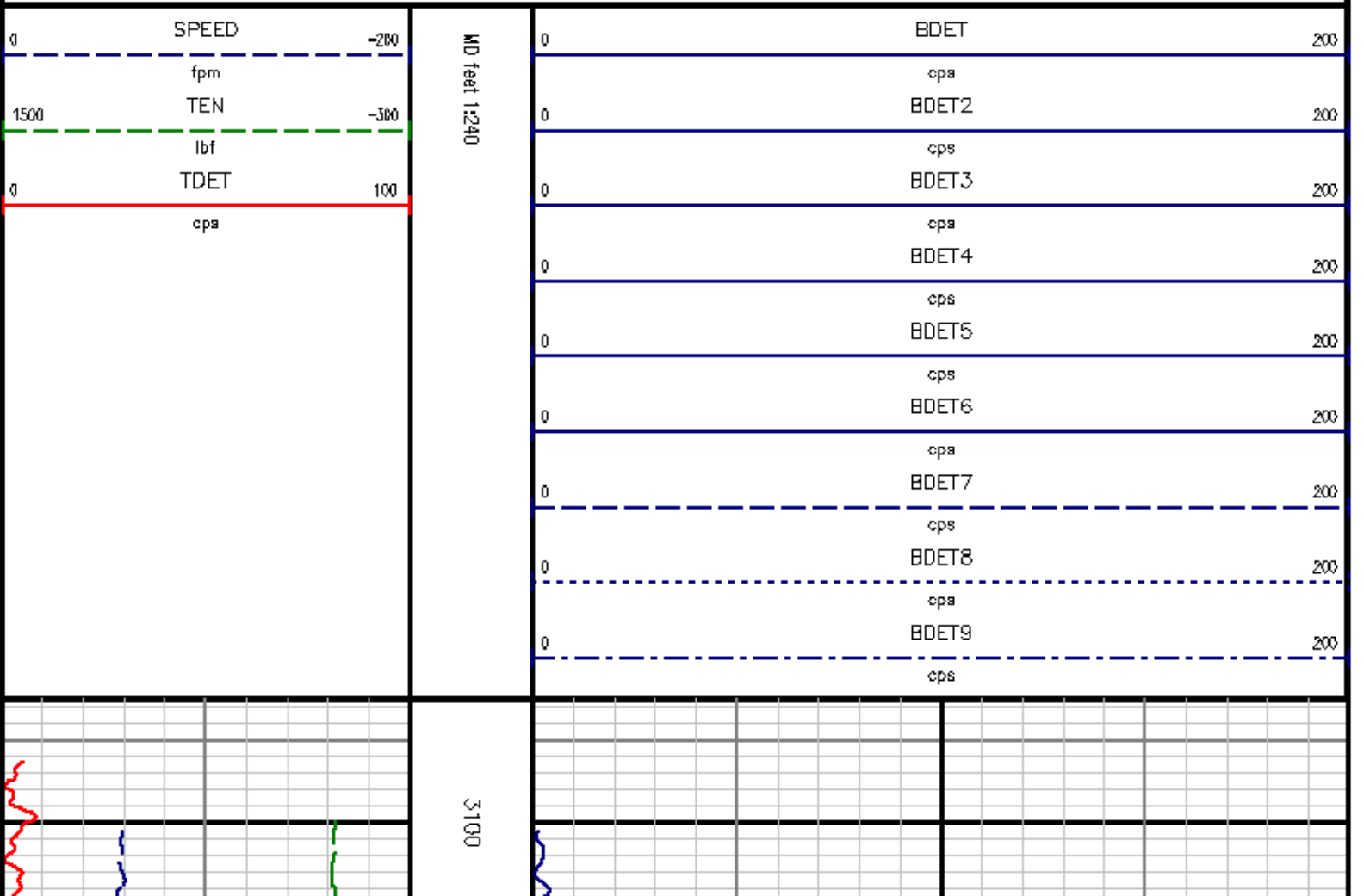
CHASE 1 MERGED DATA

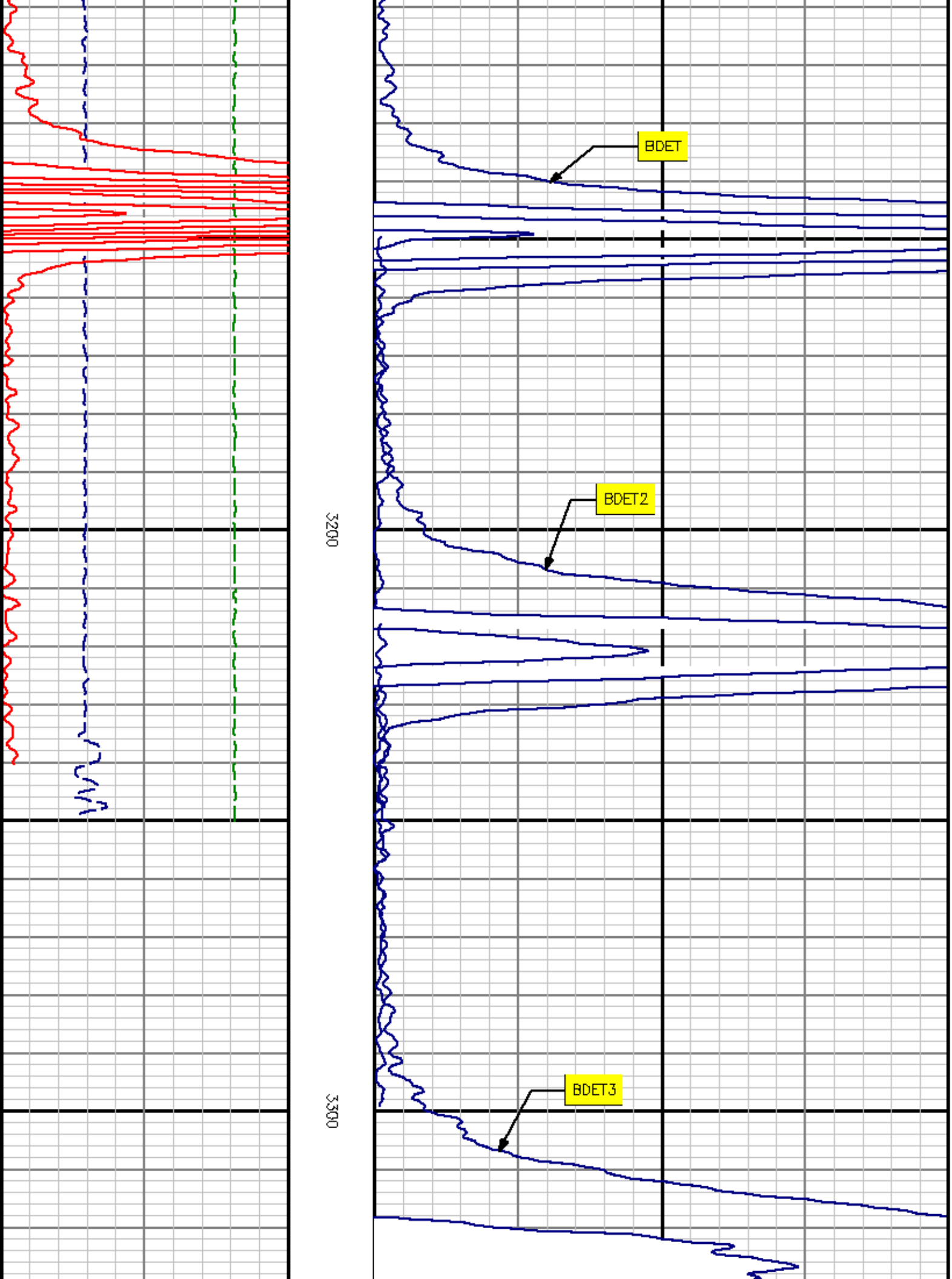
DEPTH OFFSETS
(for Acquired Curves)

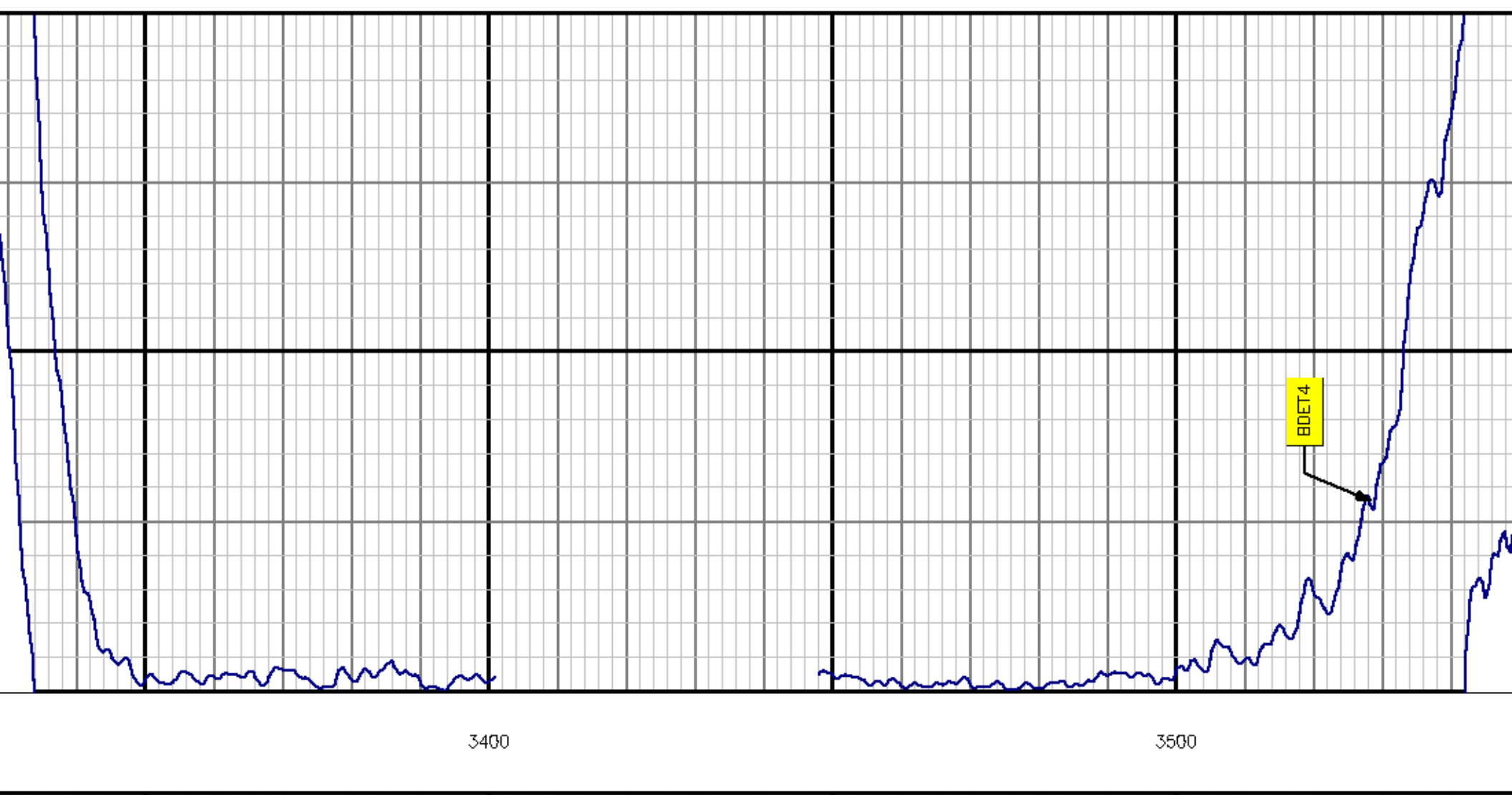
SERIES	DEPTH OFFSET	ACQUIRED CURVES	
2324NA	-10.500	CCL	ACCL
8219XA	-8.500	TDET	TDETBU
8219XA	0.000	BDET	BDETBU
SYSTEM	0.000	TEN	TTEN

Created by : CNT, v4.07.00
Plotted by : PlotMgr, v5.4.504

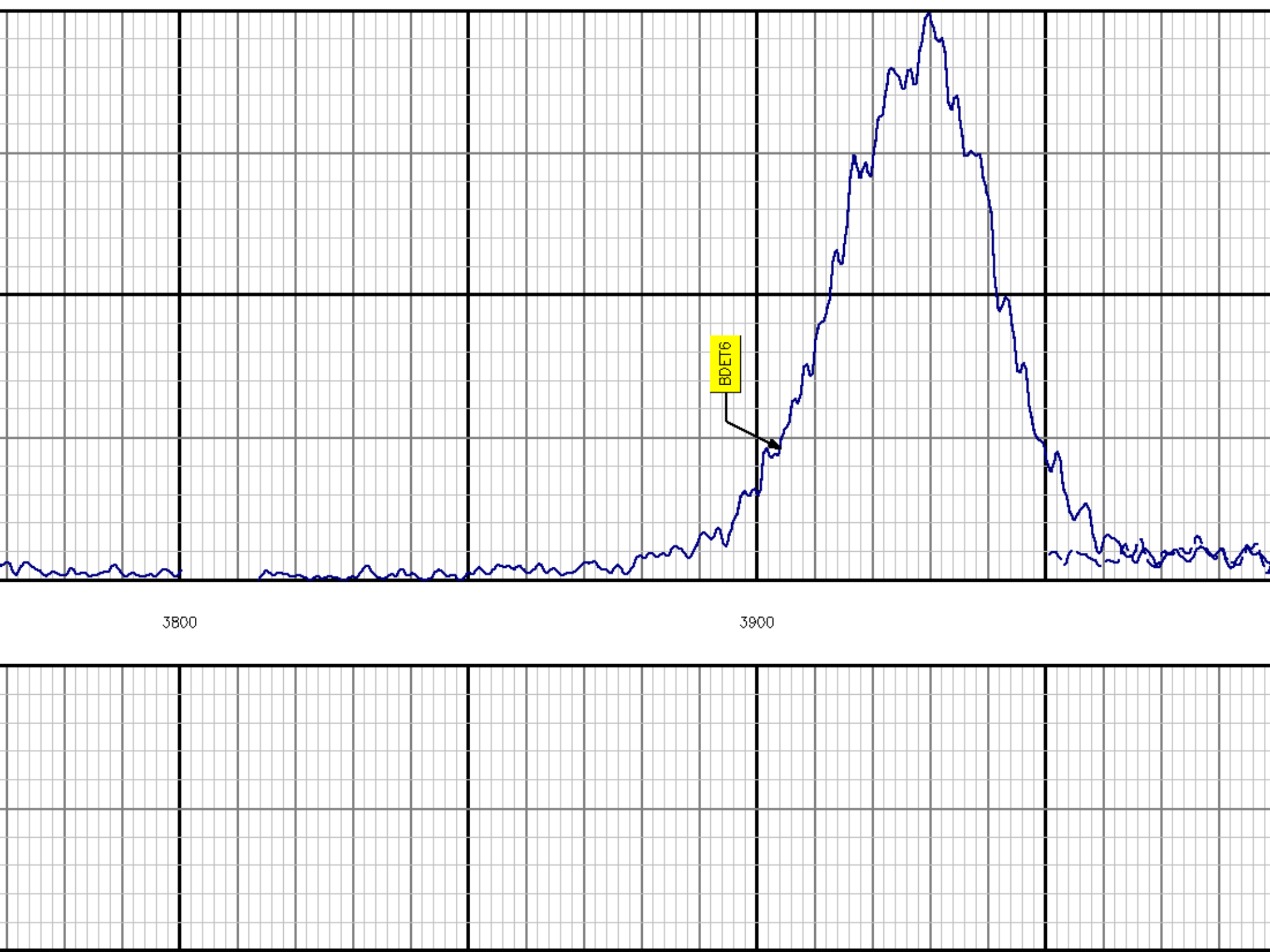
Company : EGT
Well : 1-12
File Name : D:\WELLDATA\TRL735\CHASE 1 MERGE.xtf
Mode : PlotMgr 5.4.504
Interval : 3085.00 - 4201.00 feet UP
Created : 6/26/2013 6:12:09 PM

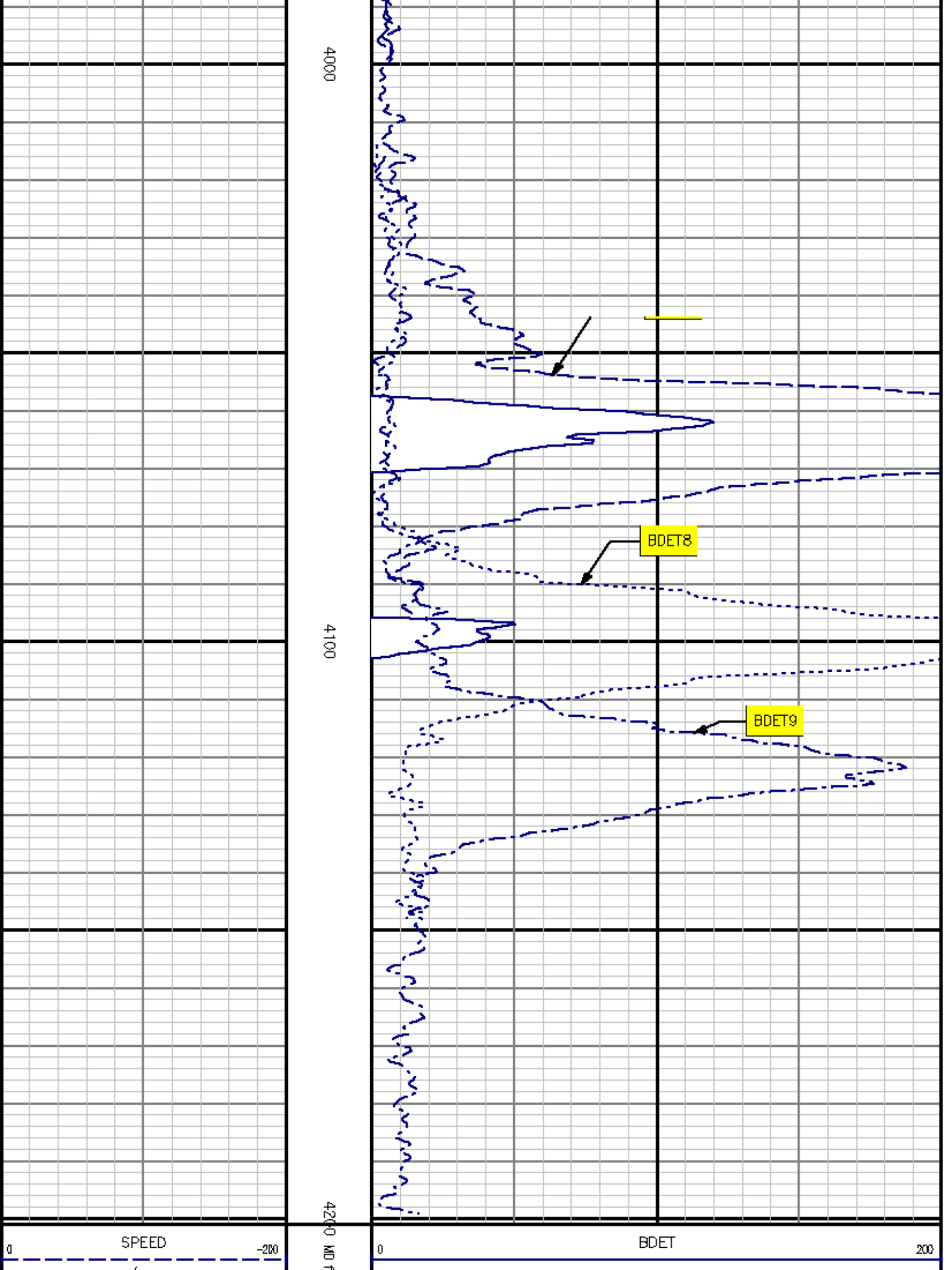


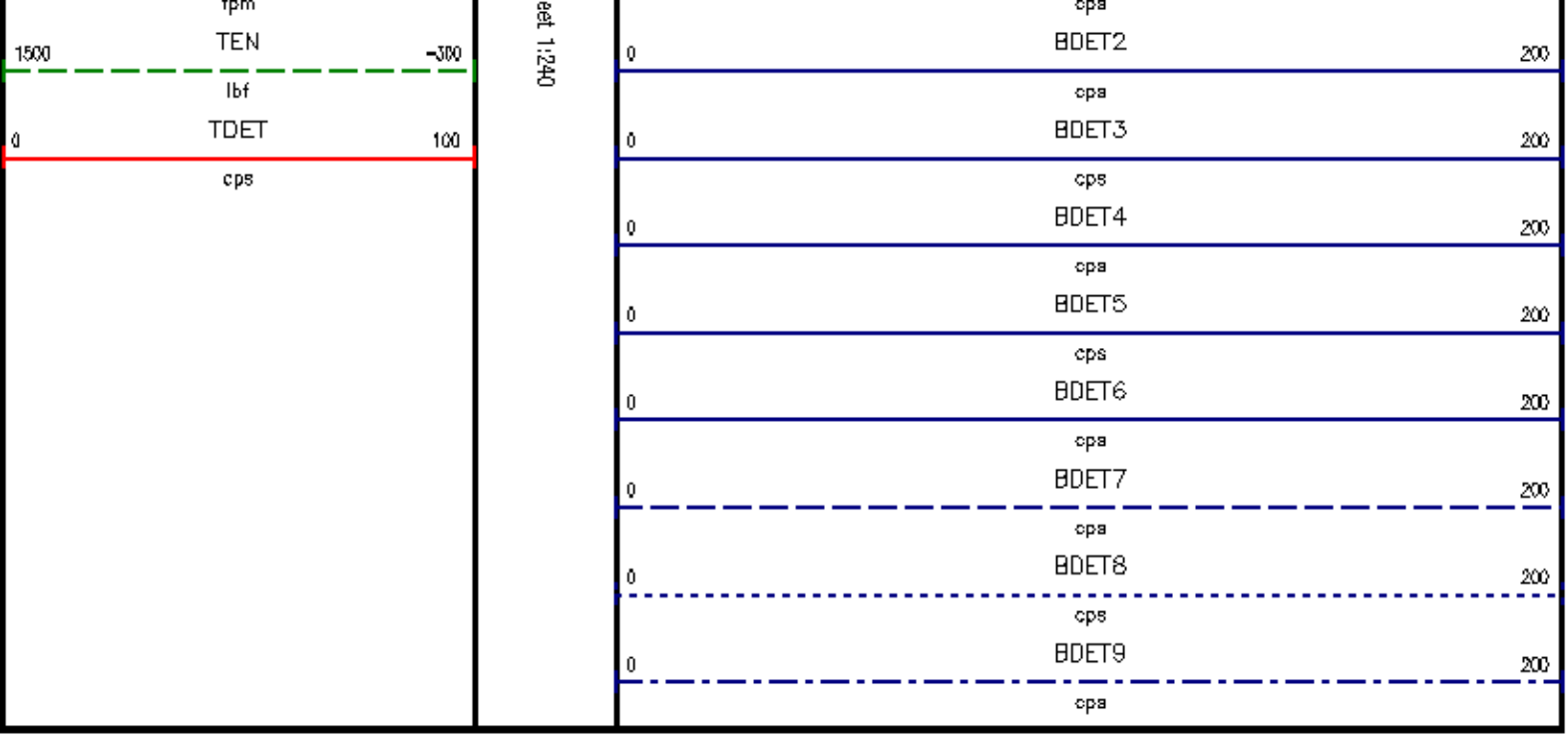

BDET
BDET2
BDET3
3200
3300


BDET4
3400
3500

3600
3700
BDET5


BDET6
3800
3900


4000
4100
4200
MD ft
BDET8
BDET9
0
SPEED
-200
0
BDET
200



TIME DRIVE

RELEASE SLUG @ 3750'

SET BDET @ 4080'

30 MIN

DEPTH OFFSETS

(for Acquired Curves)

SERIES	DEPTH OFFSET	ACQUIRED CURVES	
2324NA	-10.500	CCL	ACCL
8219XA	-8.500	TDET	TDETBU
8219XA	0.000	BDET	BDETBU
SYSTEM	0.000	TEN	TTEN

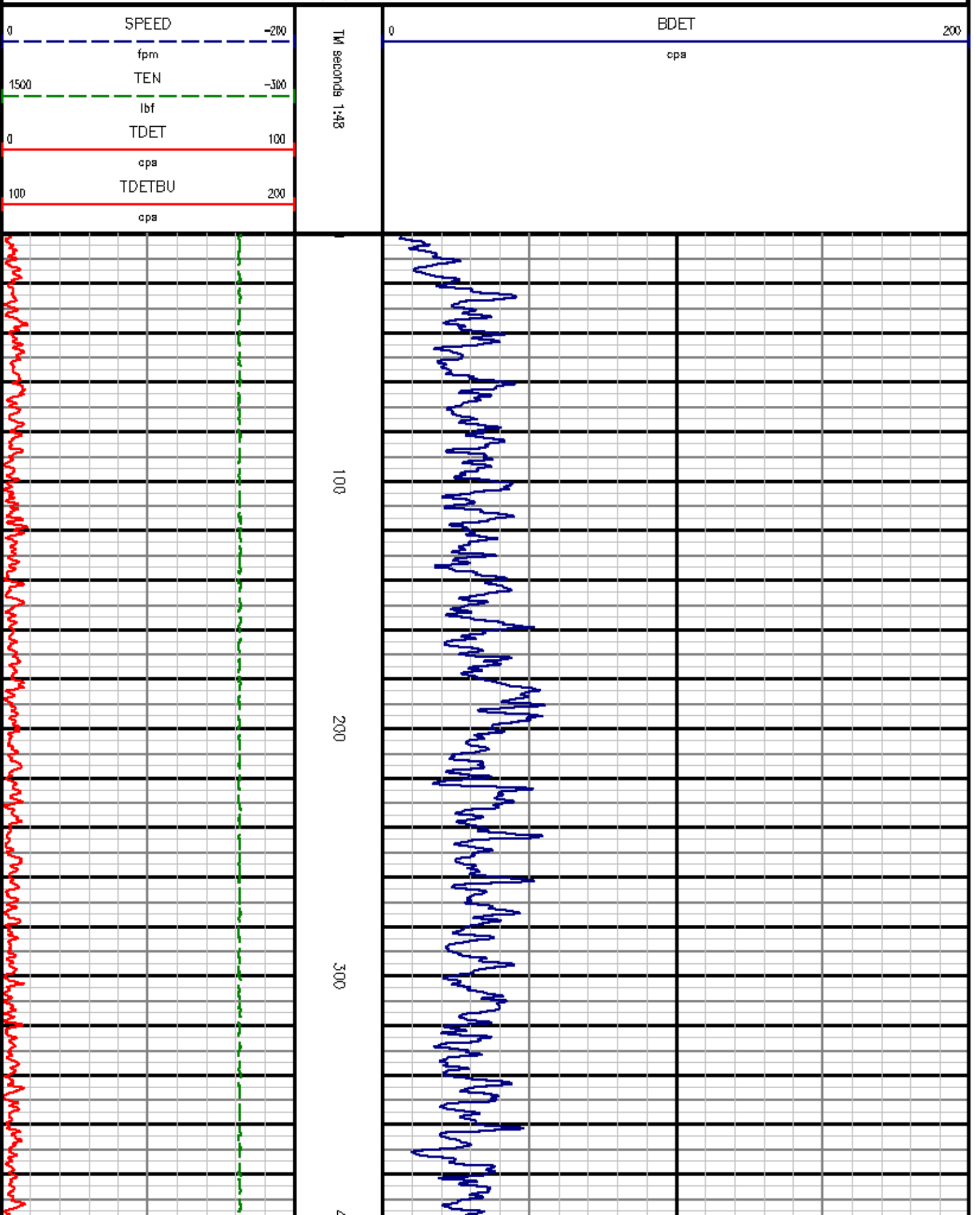
Created by : CNT, v4.07.00

Plotted by : PlotMgr, v5.4.504

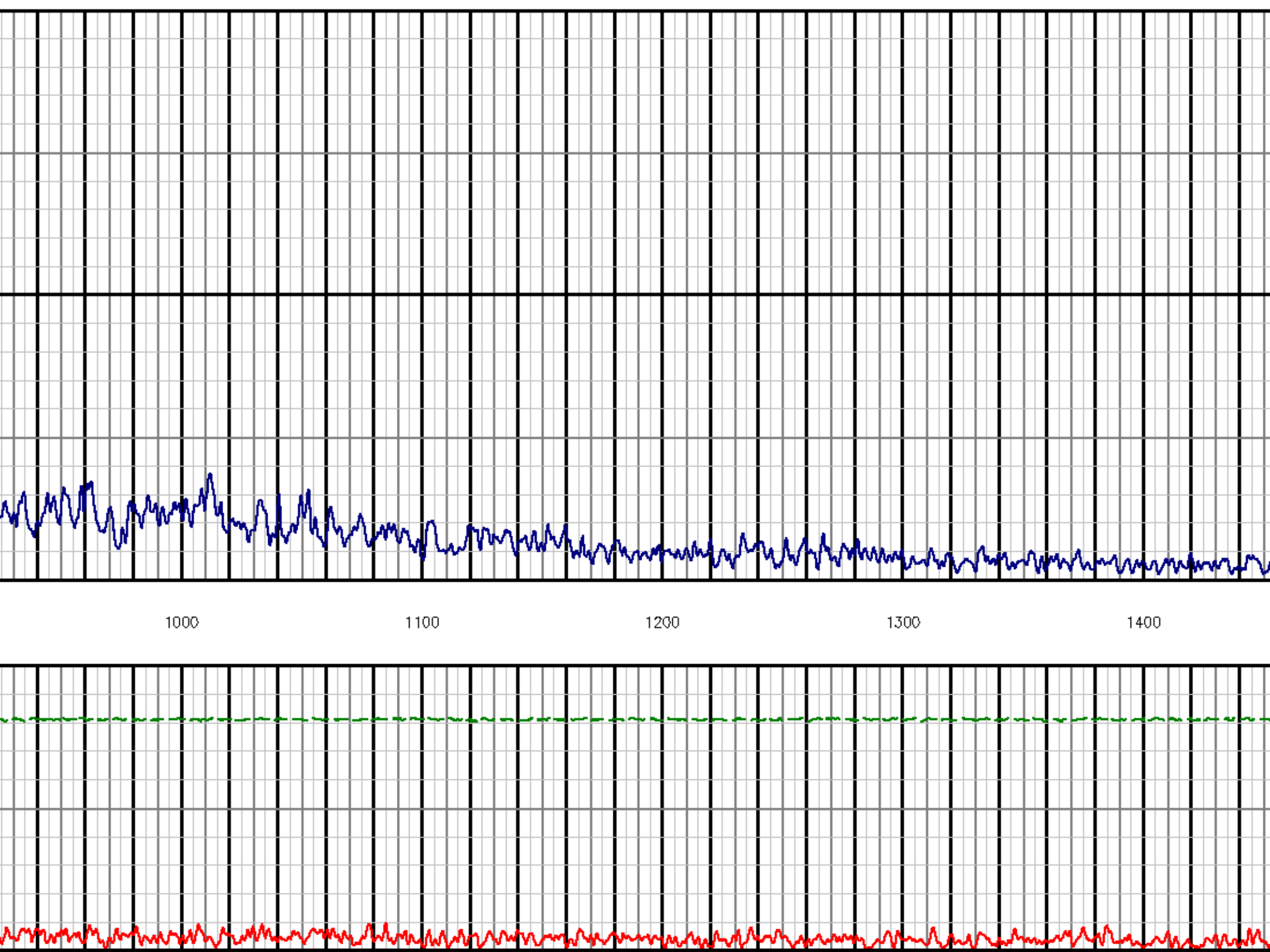
Company : EGT

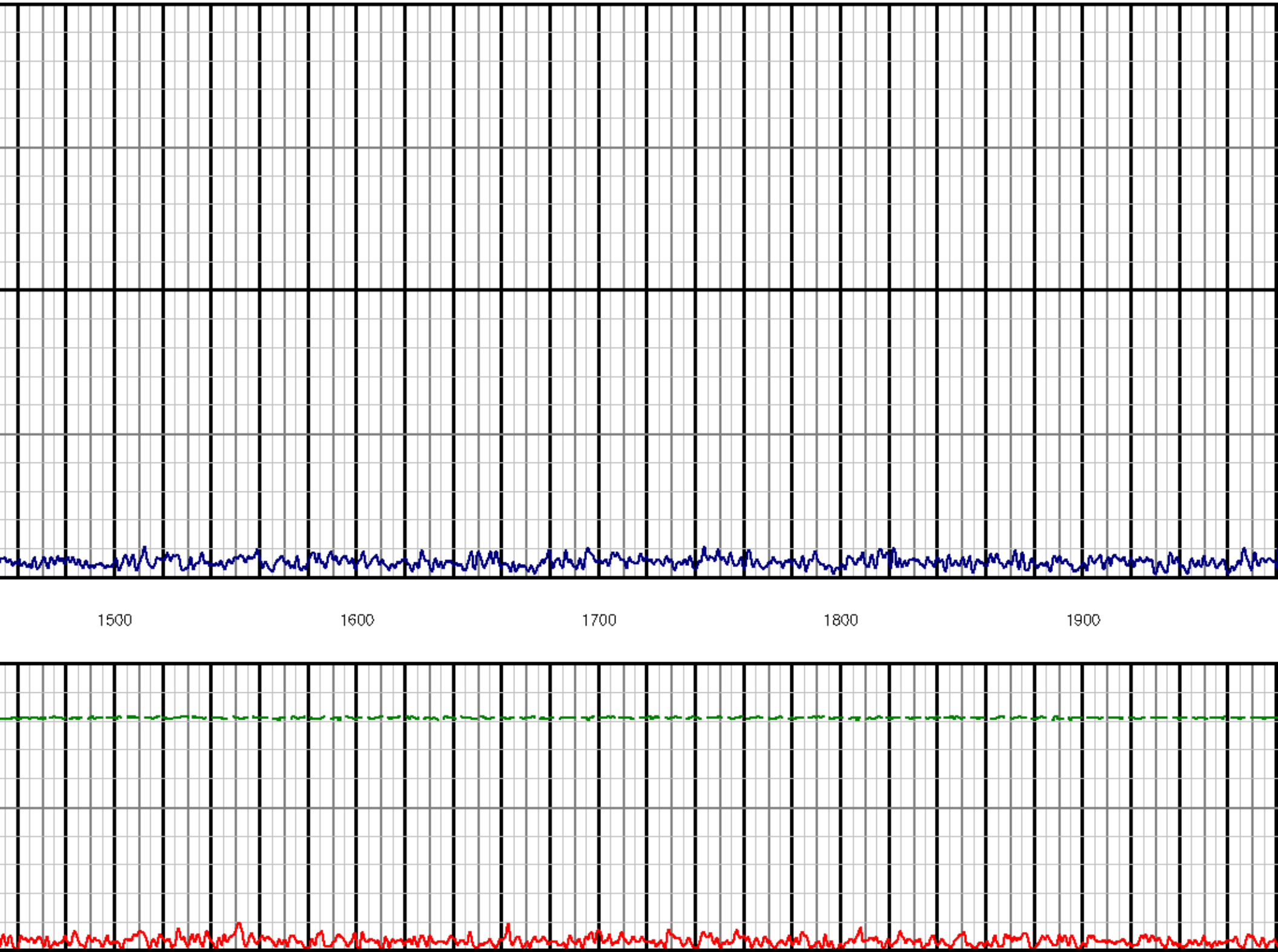
Well : 1-12

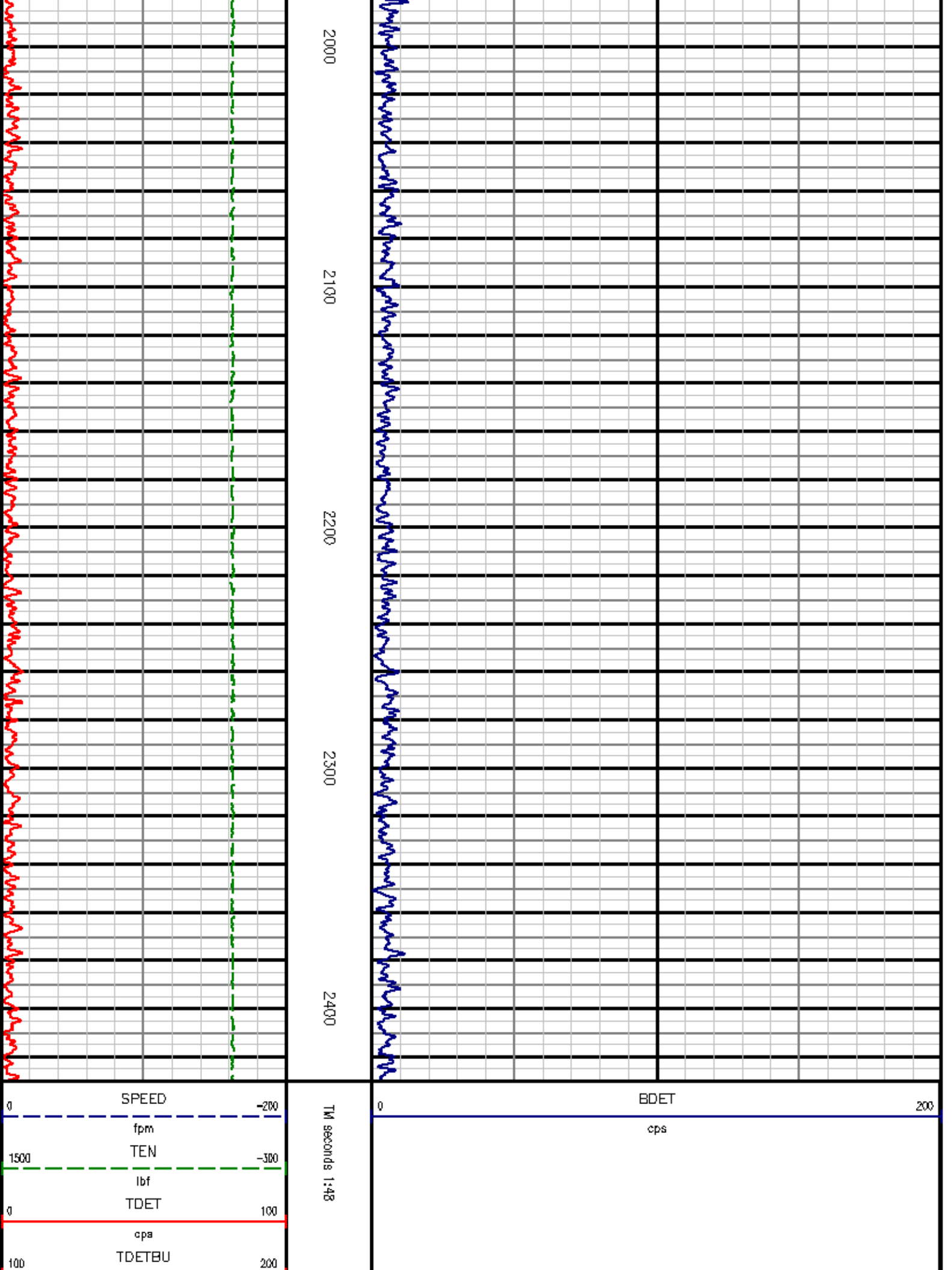
File Name : D:\WELLDATA\TRL735\TRL12.XTF
Mode : PlotMgr 5.4.504
Interval : 0 to 2430
Created : 6/26/2013 7:01:02 PM



400
500
600
700
800
900


1000
1100
1200
1300
1400


1500
1600
1700
1800
1900


2000
2100
2200
2300
2400
0
SPEED
-200
fpm
1500
TEN
-300
lbf
0
TDET
100
cps
100
TDETBU
200
TM seconds 1:48
0
BDET
200
cps

cps

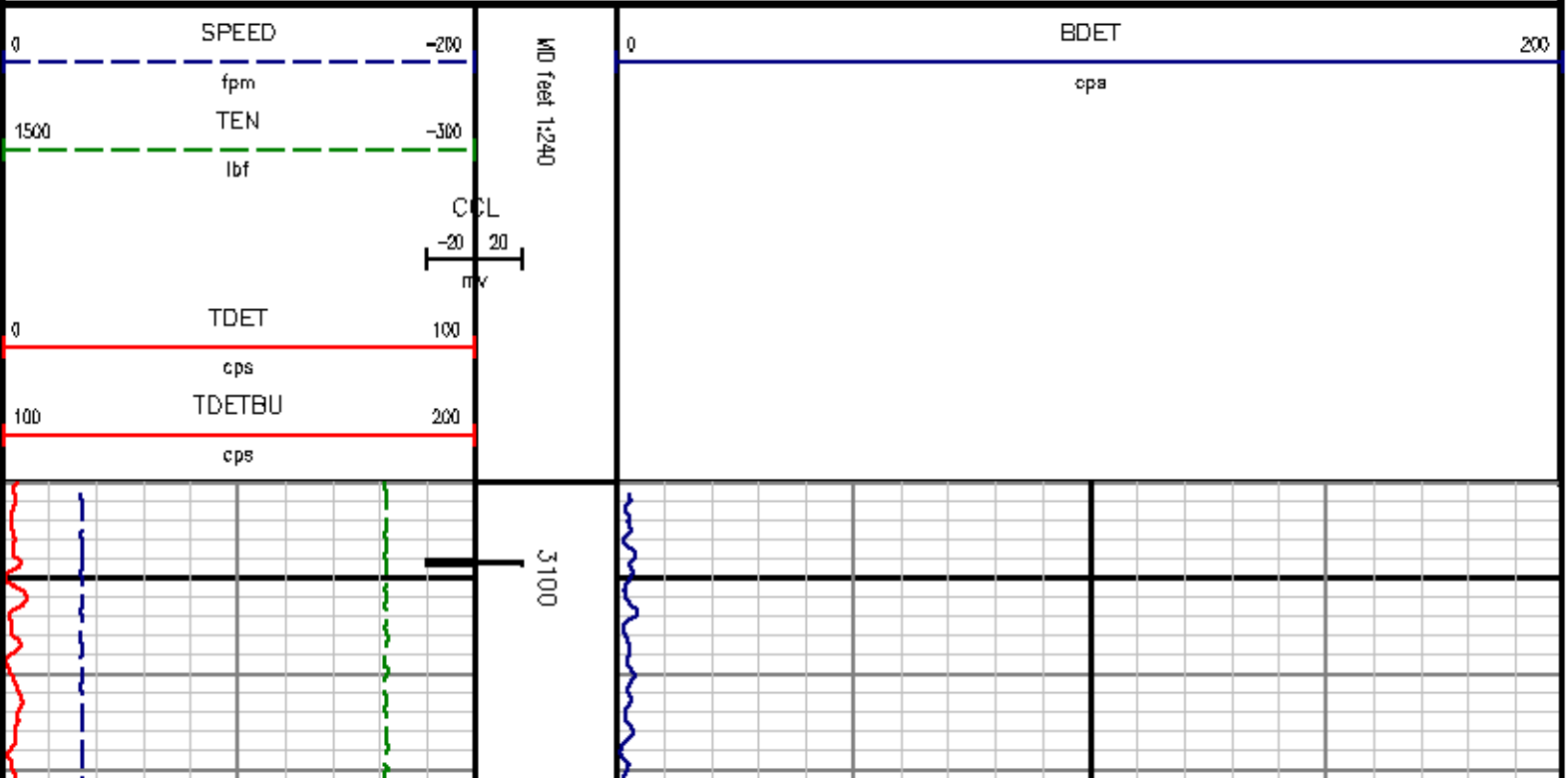
AFTER BASE GAMMA RAY PASS

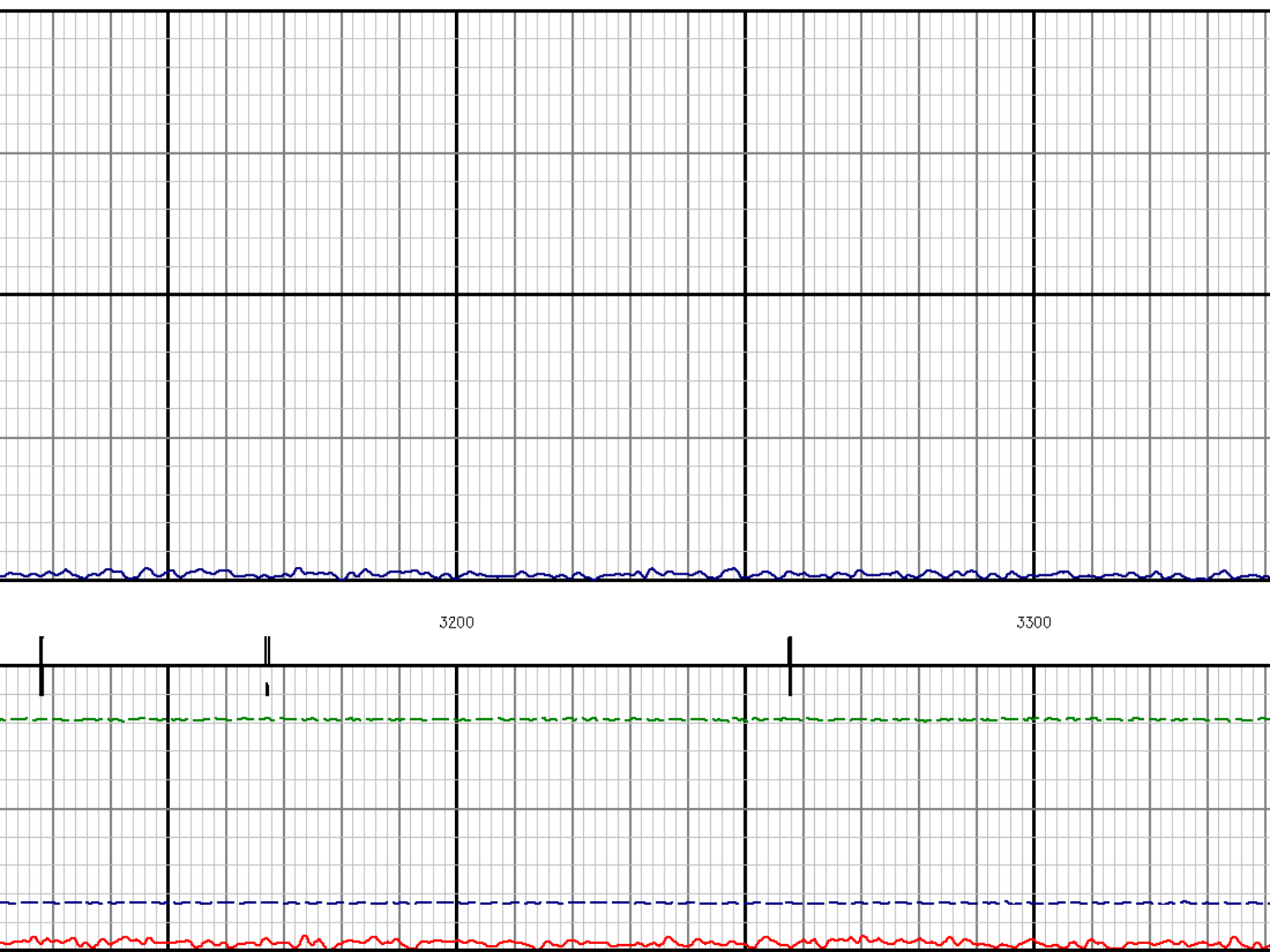
DEPTH OFFSETS

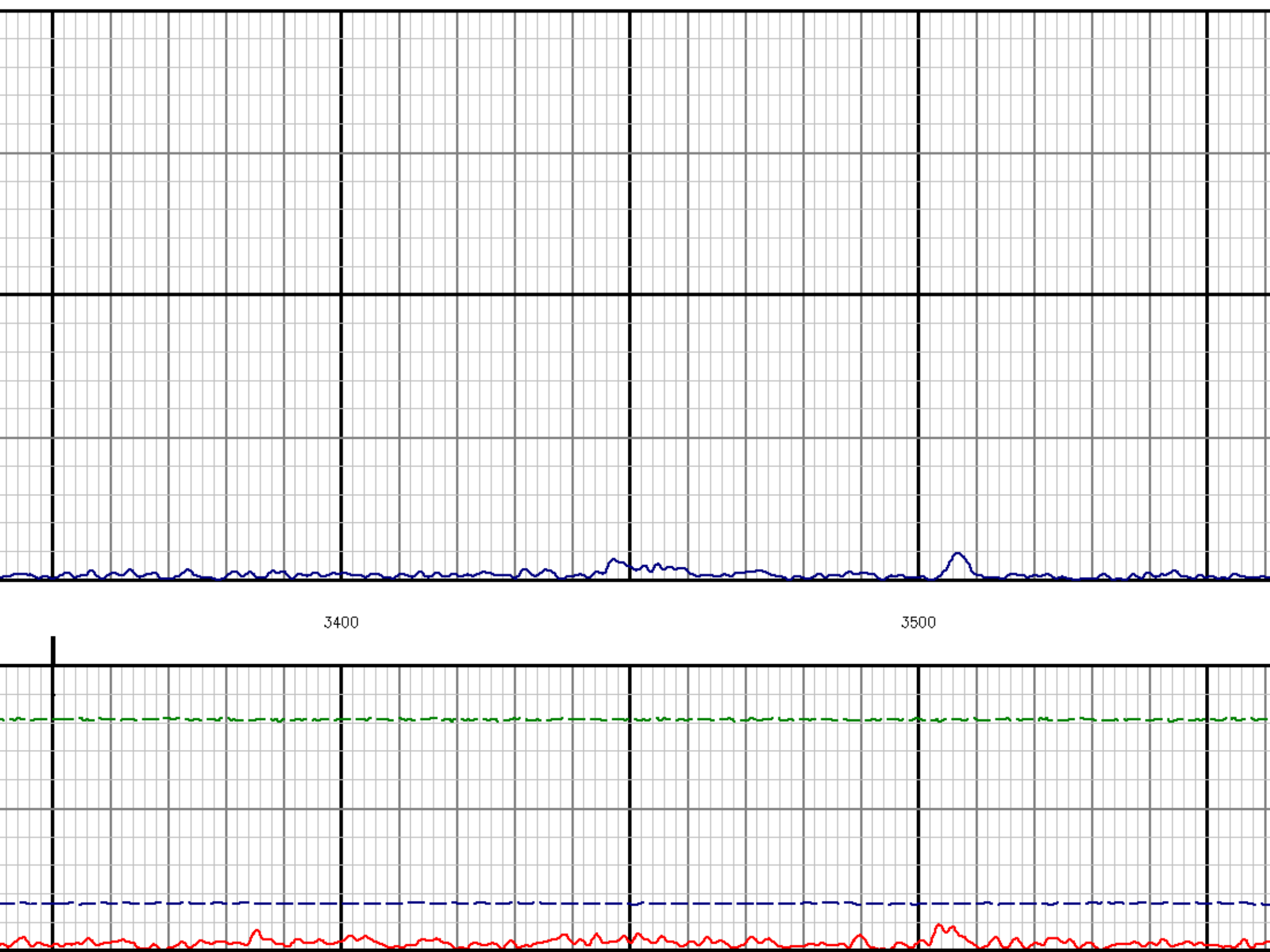
(for Acquired Curves)

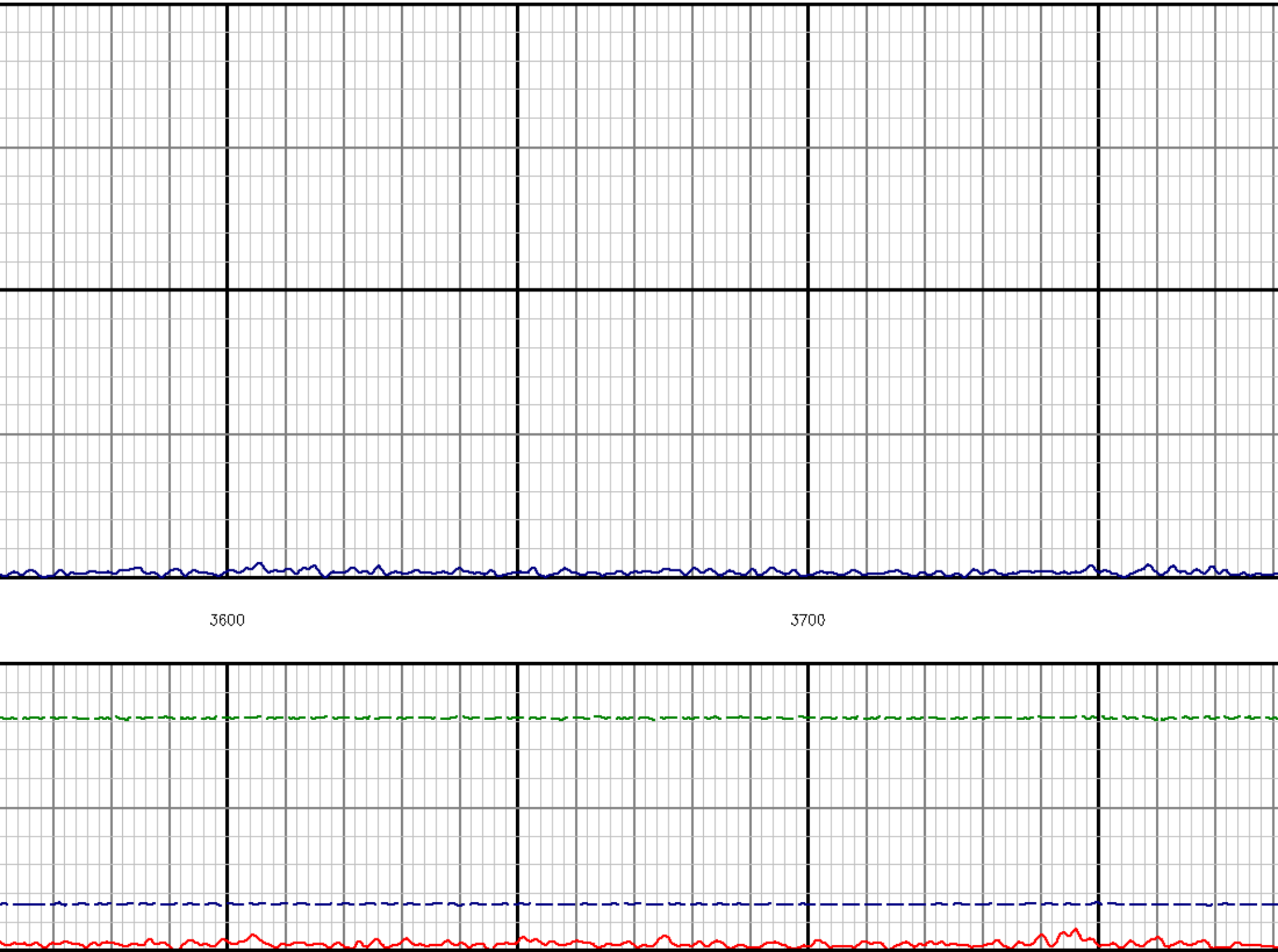
SERIES	DEPTH OFFSET	ACQUIRED CURVES	
2324NA	-10.500	CCL	ACCL
8219XA	-8.500	TDET	TDETBU
8219XA	0.000	BDET	BDETBU
SYSTEM	0.000	TEN	TTEN

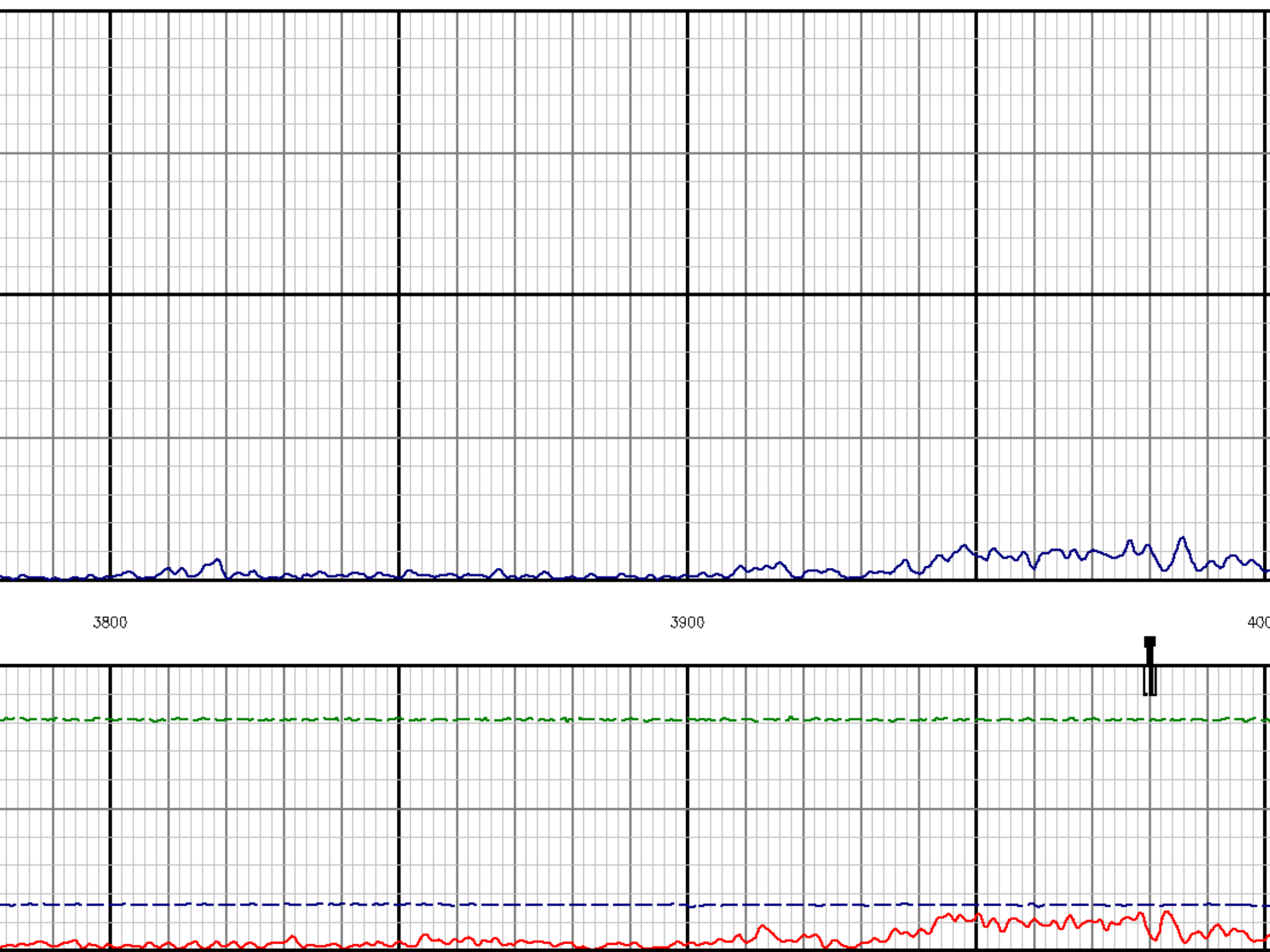
Created by : CNT, v4.07.00
Plotted by : PlotMgr, v5.4.504
Company : EGT
Well : 1-12
File Name : D:\WELLDATA\TRL735\TRL13.XTF
Mode : PlotMgr 5.4.504
Interval : 3090.00 - 4244.00 feet UP
Created : 6/26/2013 7:47:27 PM

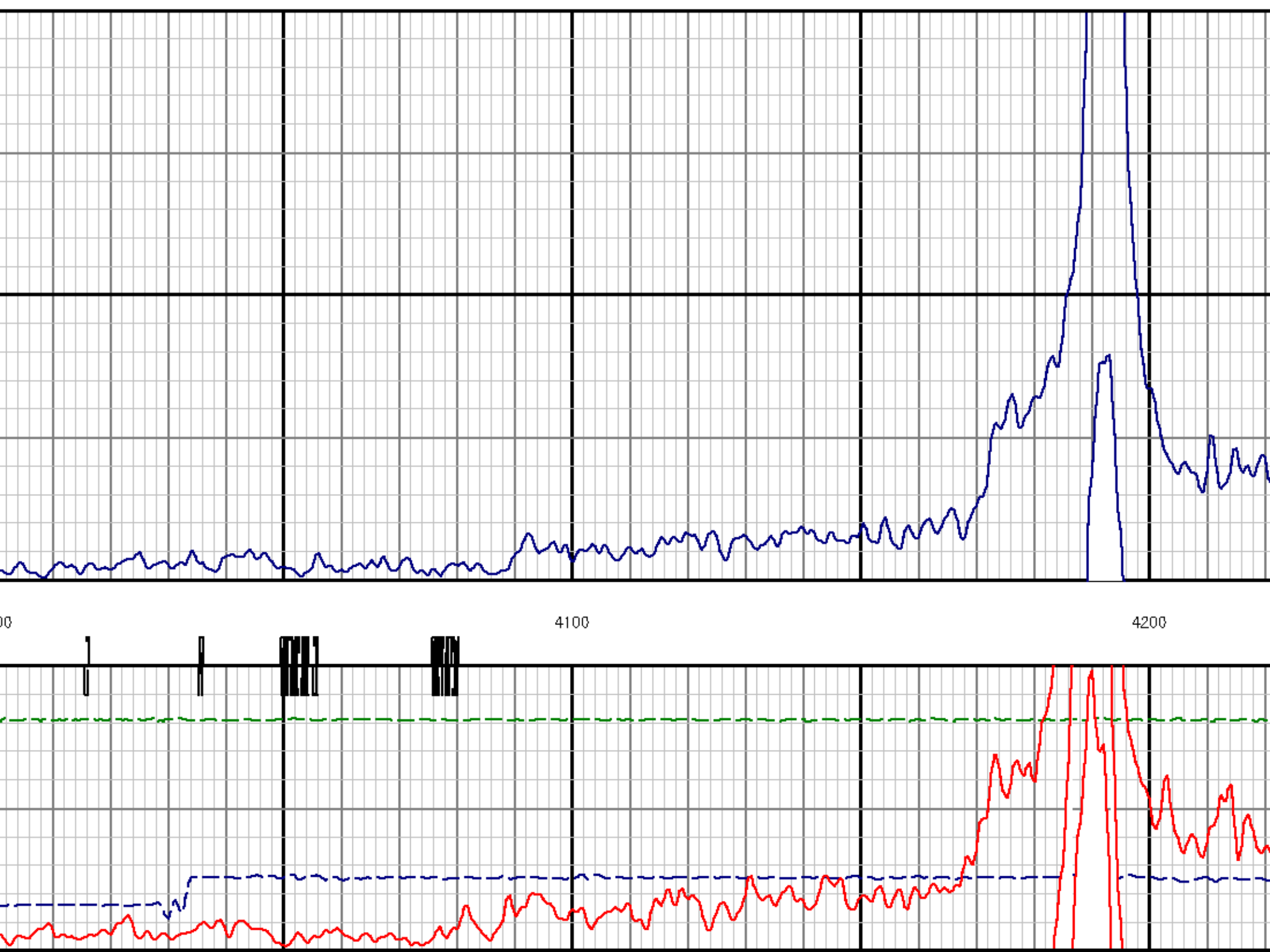


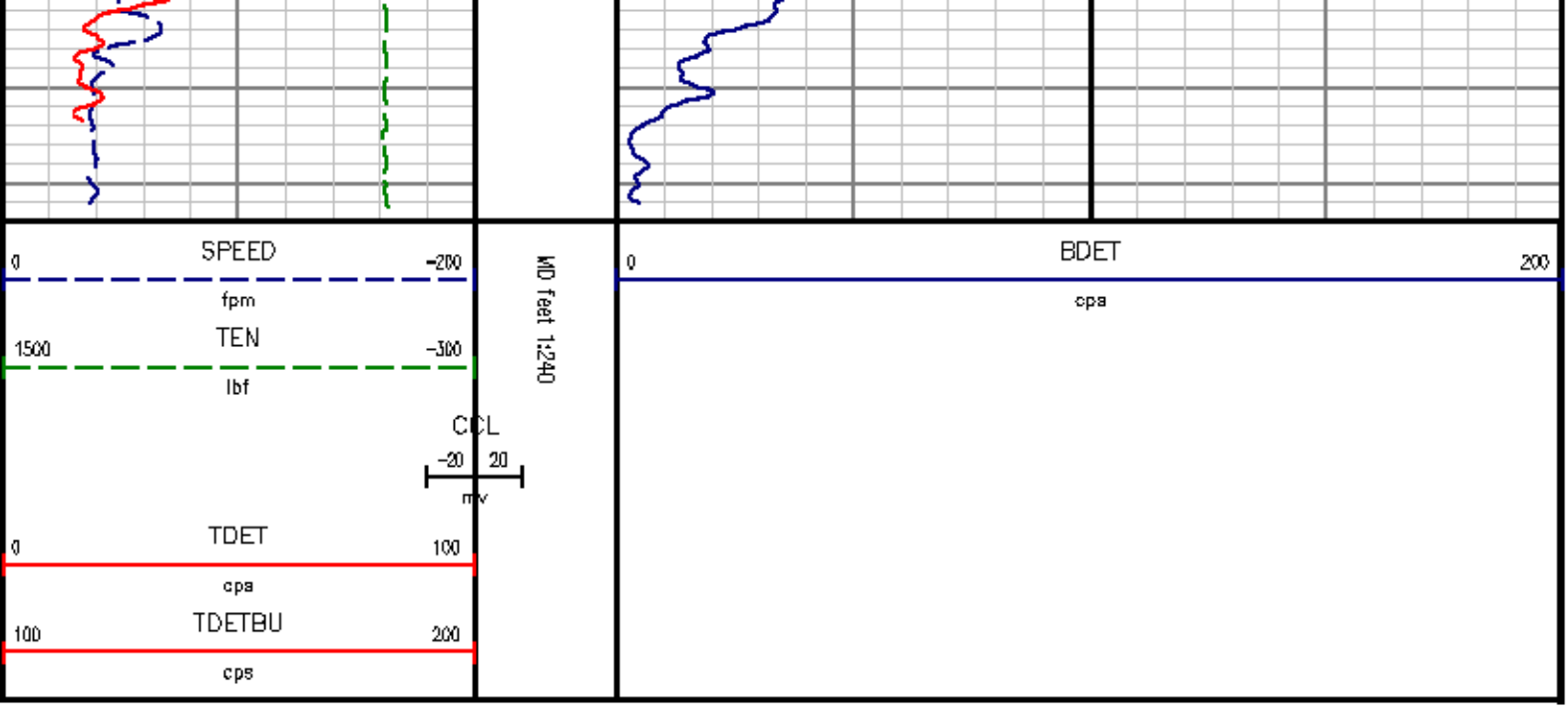

3200
3300


3400
3500


3600
3700


3800
3900
400


00
4100
4200



BEFORE & AFTER GAMMA RAY MERGE

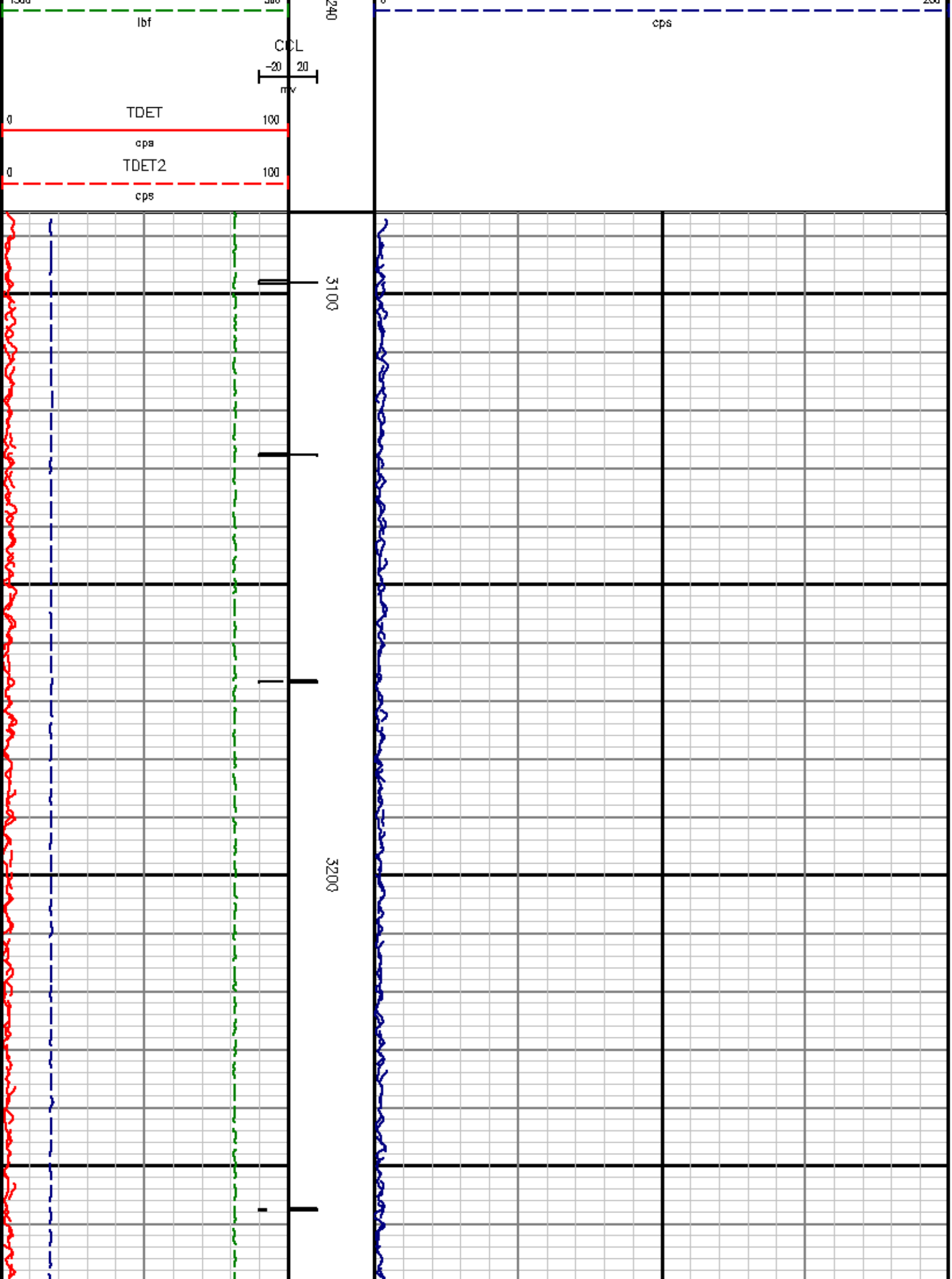
DEPTH OFFSETS

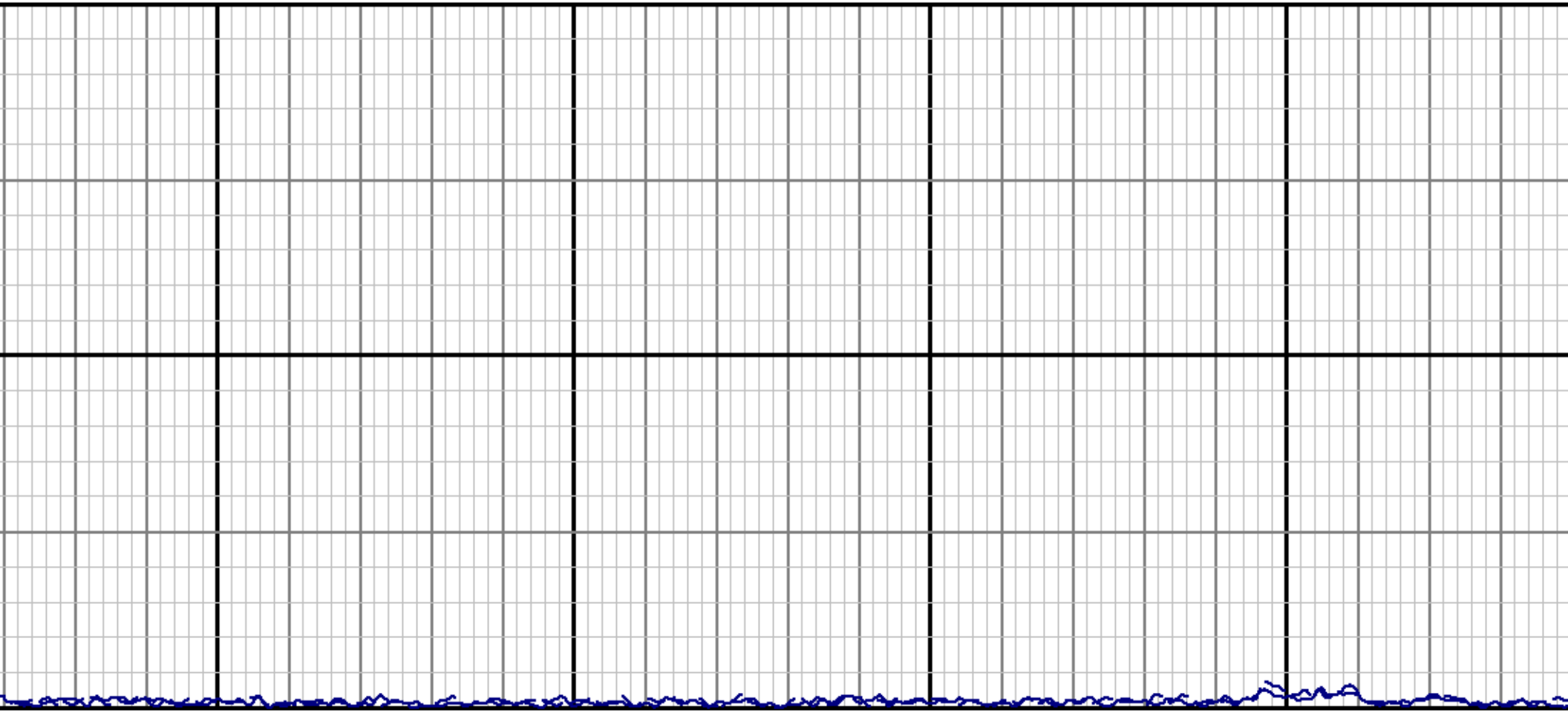
(for Acquired Curves)

SERIES	DEPTH OFFSET	ACQUIRED CURVES	
2324NA	-10.500	CCL	ACCL
8219XA	-8.500	TDET	TDETBU
8219XA	0.000	BDET	BDETBU
SYSTEM	0.000	TEN	TTEN

Created by : CNT, v4.07.00
Plotted by : PlotMgr, v5.4.504

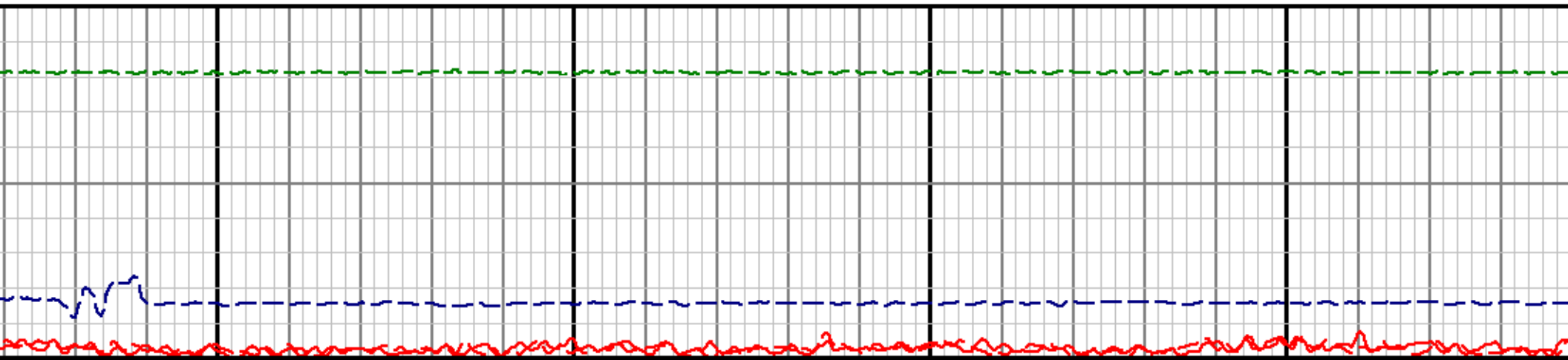
Company : EGT
Well : 1-12
File Name : D:\WELLDATA\TRL735\GR MERGE.xtf
Mode : PlotMgr 5.4.504
Interval : 3086.00 - 4244.00 feet UP
Created : 6/26/2013 5:00:25 PM

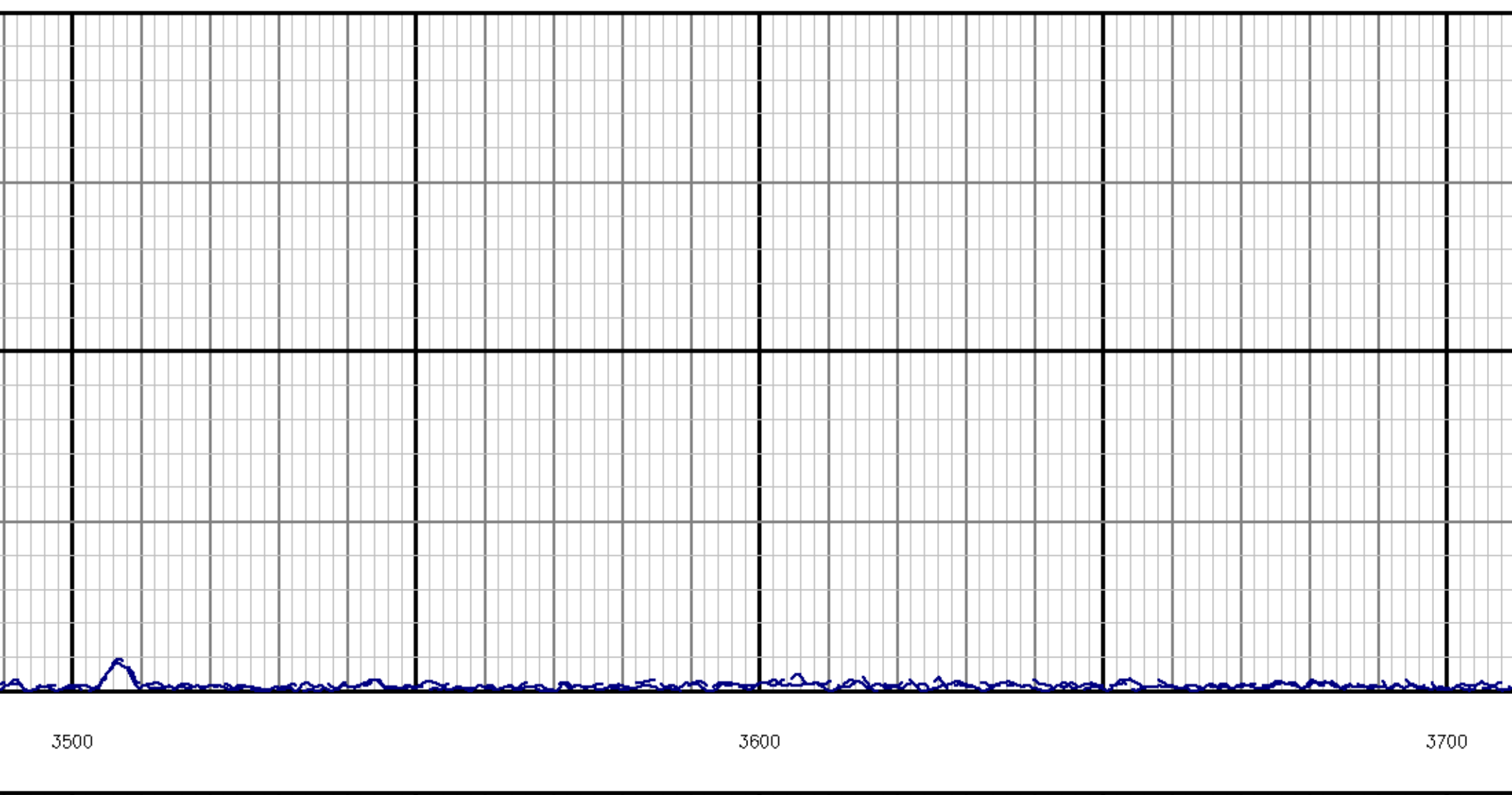

lbf
CCL
-20
20
mv
TDET
0
100
cps
TDET2
0
100
cps
240
cps
3100
3200

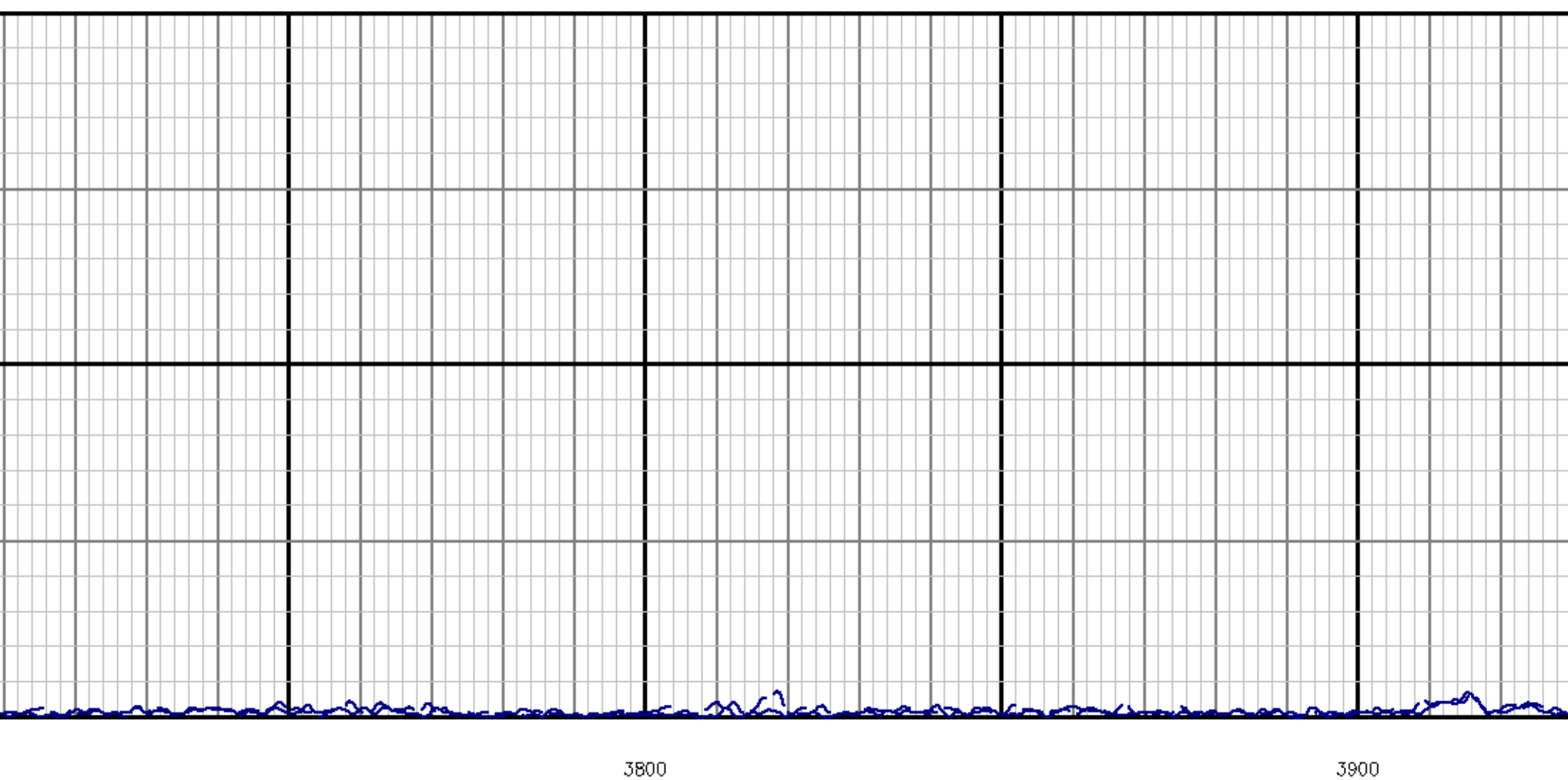


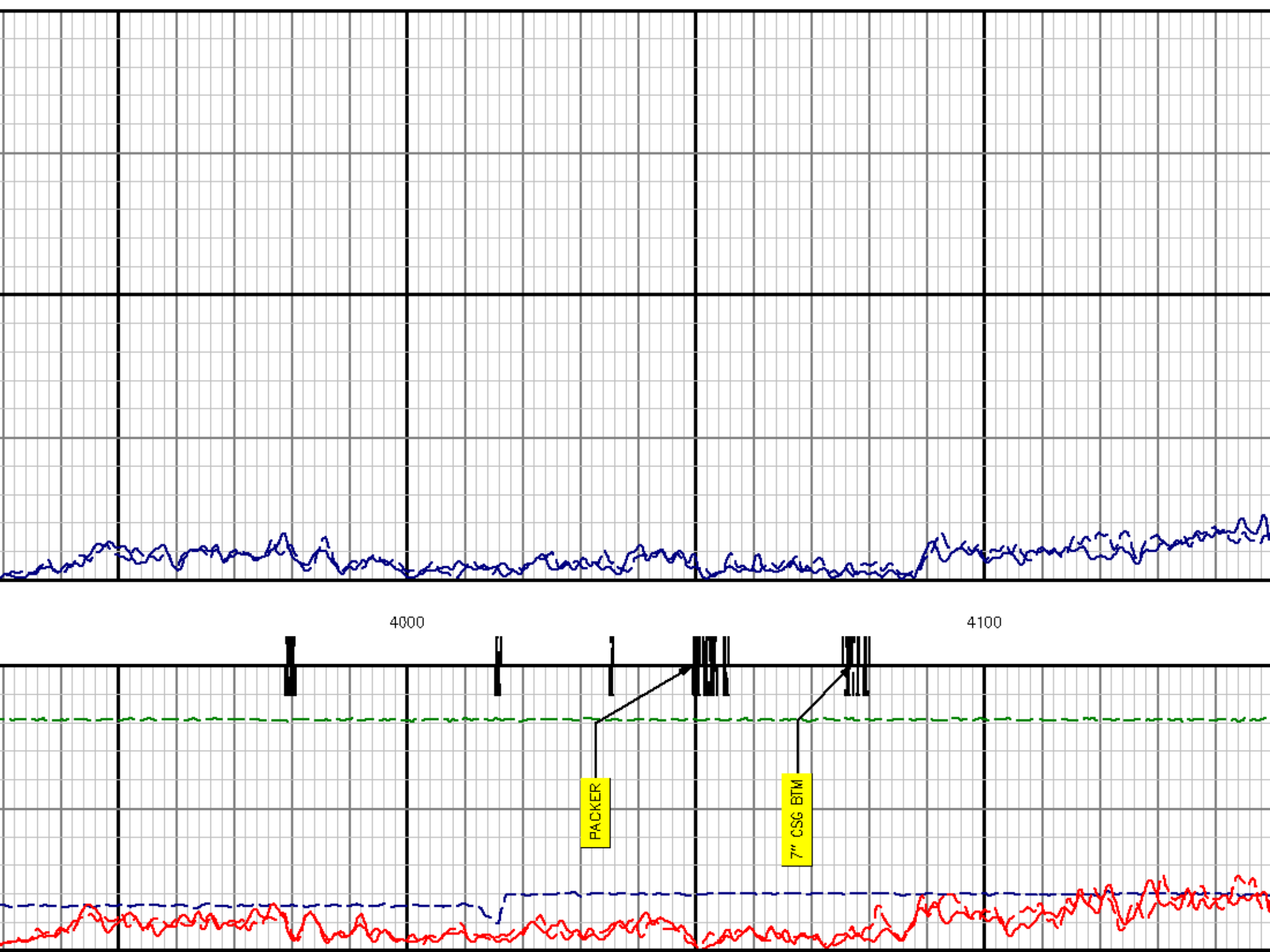
3300

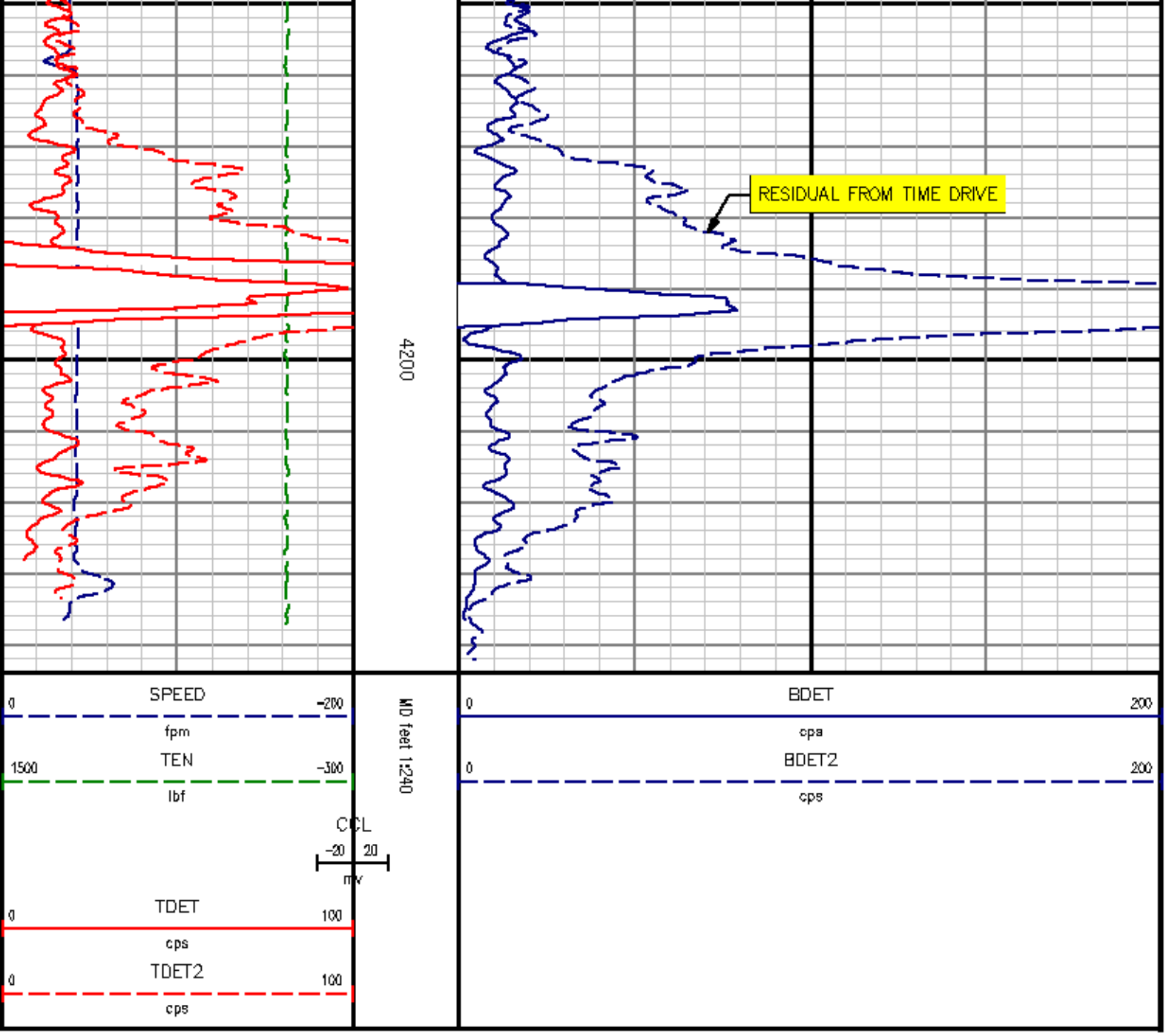
3400




3500
3600
3700


3800
3900


4000
4100
PACKER
7" CSG BTM



BAKER HUGHES

Baker Atlas

CASE

Company	ENVIROMENTAL GEOTECH TECHNOLOGIES		File No:
Well	EGT #1-12		
Field	ROMULUS STORAGE		API No:
County	WAYNE	State MICHIGAN	

Location

1670'FSL & 2372'FEL

SEC 12 TWP 3S RGE 9E

Elevations

KB 639 ft

DF 638 ft

GL 626 ft

THANK YOU!

ATTACHMENT F

ELECTRONIC DATA OF TEMPERATURE AND TRACER SURVEY

SUBSURFACE


EGT 60D6957
SUBSURFACE
54520 Northern Ave., Unit A
South Bend, Indiana 46635
574-287-2282
574-233-0026 Fax
60D6957
SUBSURFACE
APPENDIX F
ENVIRONMENTAL GEO TECHNOLOGIES
WELL #1-12
ELECTRONIC DATA
TEMPERATURE AND TRACER SURVEY