# HALLIBURTON

## EXTENDED-RANGE MICRO IMAGER

***FIELD COPY***

COMPANY **KINDER MORGAN CO2 Co. L.P.**

WELL **COW CANYON CS #1**

FIELD/BLOCK **MCELMO DOME**

COUNTY **MONTEZUMA** STATE **CO**

API No. 05-083-06709-0000

Location SURFACE HOLE LOCATION:
1350' FNL & 210' FWL

LATITUDE: 37.52617
LONGITUDE: -108.93944

Sect. 27 Twp. 38N Rge. 19W

Other Services:
RWCH
ACRT
WSTT
SDLT
DLLT
DSNT
ACRT

| | | | |
|---|---|---|---|
| Permanent Datum | GL | Elev. 6459.0 ft | Elev.: K.B. 6482.0 ft |
| Log measured from | KB | , 23.0 ft above perm. Datum | D.F. 6482.0 ft |
| Drilling measured from | KB | | G.L. 6459.0 ft |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Date | | 06-Mar-14 | | | | | |
| Run No. | | ONE | | | | | |
| Depth - Driller | | 8660.00 ft | | | | | |
| Depth - Logger | | 8659.0 ft | | | | | |
| Bottom - Logged Interval | | 8657.0 ft | | | | | |
| Top - Logged Interval | | 8303.0 ft | | | | | |
| Casing - Driller | | 7.000 in @ 8305.0 ft | | @ | | @ | |
| Casing - Logger | | 8303.0 ft | | | | | |
| Bit Size | | 6.000 in | | @ | | @ | |
| Type Fluid in Hole | | WATER-BASED MUD | | | | | |
| Density | Viscosity | 8.6 ppg | 29.00 s/qt | | | | |
| PH | Fluid Loss | 8.70 pH | | | | | |
| Source of Sample | | MUD TANK | | | | | |
| Rm @ Meas. Temperature | | 0.163 ohmm @ 62.50 degF | | @ | | @ | |
| Rmf @ Meas. Temperature | | 0.17 ohmm @ 65.20 degF | | @ | | @ | |
| Rmc @ Meas. Temperature | | N/A @ N/A | | @ | | @ | |
| Source Rmf | Rmc | MEASURED | MEASURED | | | | |
| Rm @ BHT | | 0.08 ohmm @ 140.0 degF | | @ | | @ | |
| Time Since Circulation | | 8.4 hr | | | | | |
| Time on Bottom | | 06-Mar-14 12:53 | | | | | |
| Max. Rec. Temperature | | 140.0 degF @ 8660.0 ft | | @ | | @ | |
| Equipment | Location | 11871076 | GJ, CO | | | | |
| Recorded By | | P. DIMPFL | | | | | |
| Witnessed By | | C. SLAUGH | | | | | |

Fold here

Service Ticket No.: 901171182 API Serial No.: 05-083-06709-0000 PGM Version: WL INSITE R3.8.4 (Build 5)

CHANGE IN MUD TYPE OR ADDITIONAL SAMPLE

| | | | | | |
|---|---|---|---|---|---|
| Date | Sample No. | | | | |
| Depth-Driller | | | | | |
| Type Fluid in Hole | | | | | |
| Density | Viscosity | | | | |
| Ph | Fluid Loss | | | | |
| Source of Sample | | | | | |
| Rm @ Meas. Temp | | @ | @ | @ | @ |
| Rmf @ Meas. Temp. | | @ | @ | @ | @ |
| Rmc @ Meas. Temp. | | @ | @ | @ | @ |
| Source Rmf | Rmc | | | | |
| Rm @ BHT | | @ | @ | @ | @ |
| Rmf @ BHT | | @ | @ | @ | @ |
| Rmc @ BHT | | @ | @ | @ | @ |

RESISTIVITY SCALE CHANGES

| Type Log | Depth | Scale Up Hole | Scale Down Hole |
|---|---|---|---|
| | | | |
| | | | |
| | | | |

RESISTIVITY EQUIPMENT DATA

| Run No. | Tool Type & No. | Pad Type | Tool Pos. | Other |
|---|---|---|---|---|
| ONE | ACRt | N/A | ECCENT | N/A |
| | I - 11585787 | | | |
| | S - 11585797 | | | |

EQUIPMENT DATA

| GAMMA | | ACOUSTIC | | DENSITY | | NEUTRON | |
|---|---|---|---|---|---|---|---|
| Run No. | ONE | Run No. | ONE | Run No. | ONE | Run No. | ONE |
| Serial No. | 11005602 | Serial No. | U67T68R71L70 | Serial No. | 10951300 | Serial No. | 10993888 |
| Model No. | GTET | Model No. | WSTT-I | Model No. | SDLT-I | Model No. | DSNT-I |
| Diameter | 3.625" | No. of Cent. | 0 | Diameter | 4.5" | Diameter | 3.625" |
| Detector Model No. | GTET | Spacing | 0.5' | Log Type | GAMMA-GAMMA | Log Type | NEU-THERM |
| Type | SCINT | | | Source Type | Cs137 | Source Type | Am241Be |
| Length | 8" | LSA [Y/N] | Y | Serial No. | 5153GW | Serial No. | DSN-388 |
| Distance to Source | 18' | FWDA [Y/N ] | Y | Strength | 1.5 Ci | Strength | 15 Ci |

LOGGING DATA

| GENERAL | | | GAMMA | | ACOUSTIC | | | DENSITY | | | NEUTRON | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Run | Depth | | Speed | Scale | | Scale | | Matrix | Scale | | Matrix | Scale | | Matrix |
| No. | From | To | ft/min | L | R | L | R | | L | R | | L | R | |
| ONE | 8659 | 8303 | REC | 0 API | 150 API | 0.3 | -0.1 | 47.5 us/ft | 0.3 | -0.1 | 2.71 g/cc | 0.3 | -0.1 | LIME |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |

DIRECTIONAL INFORMATION

Maximum Deviation @ KOP @

Remarks: RUN ONE: RWCH-GTET-CSNG--DSNT-SDLT--ACRT-BN RAN IN COMBINATION

RUN TWO: RWCH-GTET-WSTT-XRMI-BN RAN IN COMBINATION

RUN:THREE: RWCH-BRIDLE-CR-SP-BRIDLE-BS-GTET-CSNG-DLLT-MSFL-BN RAN IN COMBINATION

ANNULAR HOLE VOLUME CALCULATED USING 4.5 INCH CASING

BORHOLE RUGOSITY, TENSION PULLS, AND WASHOUTS MAY EFFECT LOG QUALITY AND REPEATABILITY

DSN DENCENTRALIZER NOT RUN DUE TO BIT SIZE

MUD PRESS WAS PERFORMED, HOWEVER, THE MUDCAKE RETRIEVED WAS NOT PLENTIFUL ENOUGH TO MEASURE ACCURATELY DUE TO LIGHTWEIGHT MUD

TENSION PULL OCCURRED AT TD. PULLED 9000LBS OFF OF BOTTOM. DATA WAS SKEWED DUE TO ACCELERATION. CUSTOMER NOTIFIED

YOU CREW TODAY: T. RAFF B. CALDWELL RIG: NABORS M13

THANK YOU FOR CHOOSING HALLIBURTON ENERGY SERVICES, GRAND JUNCTION, CO (970) 523-3600



HALLIBURTON

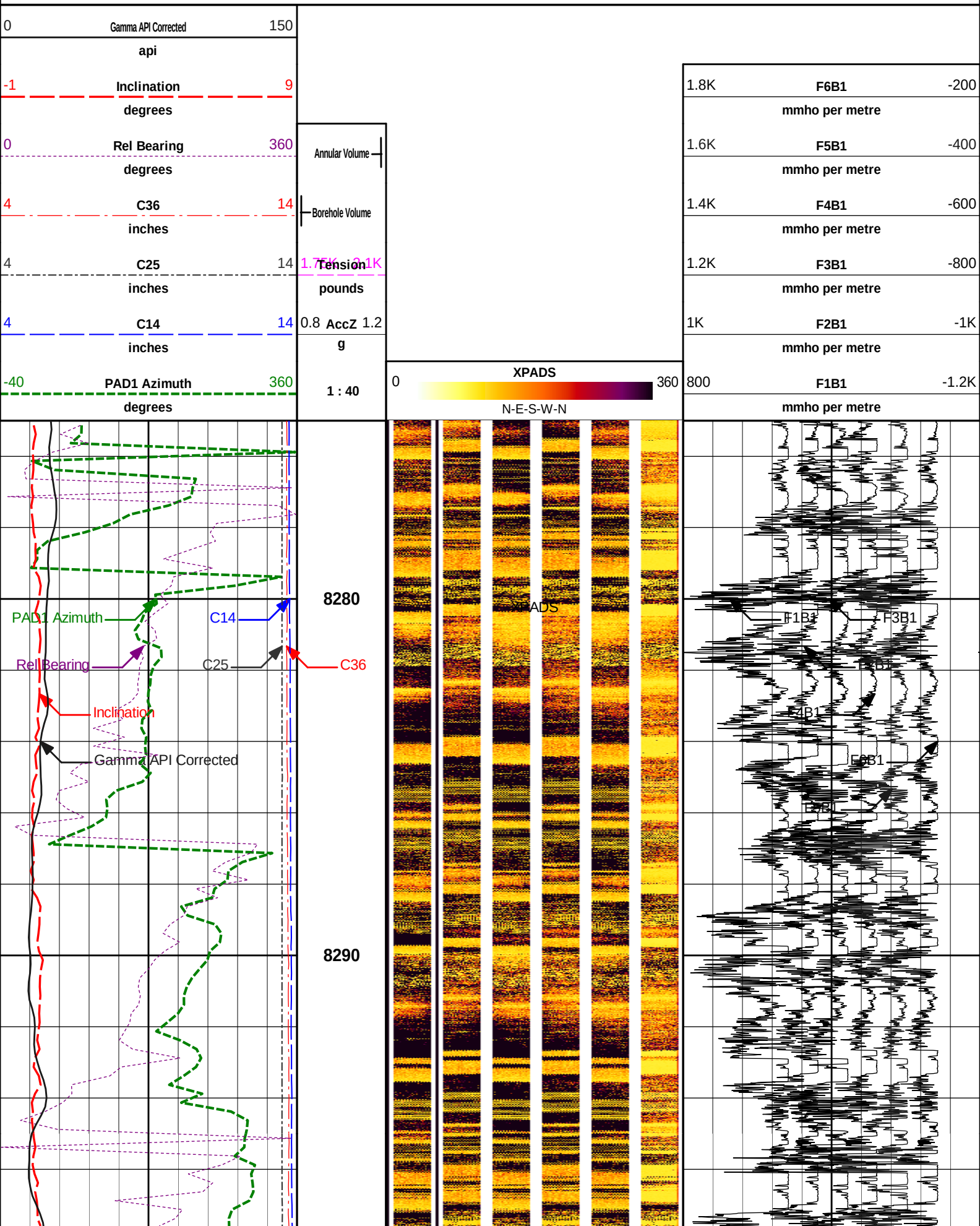
# PARAMETERS REPORT

| Depth (ft) | Tool Name | Mnemonic | Description | Value | Units |
|---|---|---|---|---|---|
| TOP | | | | | |
| | SHARED | BS | Bit Size | 6.000 | in |
| | SHARED | UBS | Use Bit Size instead of Caliper for all applications. | No | |
| | SHARED | MDBS | Mud Base | Water | |
| | SHARED | MDWT | Borehole Fluid Weight | 8.600 | ppg |
| | SHARED | WAGT | Weighting Agent | Natural | |
| | SHARED | BSAL | Borehole salinity | 25000.00 | ppm |
| | SHARED | FSAL | Formation Salinity NaCl | 0.00 | ppm |
| | SHARED | KPCT | Percent K in Mud by Weight? | 0.00 | % |
| | SHARED | RMUD | Mud Resistivity | 0.163 | ohmm |
| | SHARED | TRM | Temperature of Mud | 62.5 | degF |
| | SHARED | CSD | Logging Interval is Cased? | No | |
| | SHARED | ICOD | AHV Casing OD | 4.500 | in |
| | SHARED | ST | Surface Temperature | 65.0 | degF |
| | SHARED | TD | Total Well Depth | 8660.00 | ft |
| | SHARED | BHT | Bottom Hole Temperature | 200.0 | degF |
| | SHARED | SVTM | Navigation and Survey Master Tool | XRMI-I Instrument | |
| | SHARED | AZTM | High Res Z Accelerometer Master Tool | XRMI-I Instrument | |
| | SHARED | TEMM | Temperature Master Tool | NONE | |
| | SHARED | BHSM | Borehole Size Master Tool | NONE | |
| | Rwa / CrossPlot | XPOK | Process Crossplot? | Yes | |
| | Rwa / CrossPlot | FCHO | Select Source of F | Automatic | |
| | Rwa / | AFAC | Archie A factor | 0.6200 | |

| | | | | |
|---|---|---|---|---|
| CrossPlot | AFAC | Archie A factor | 0.6200 | |
| Rwa / CrossPlot | MFAC | Archie M factor | 2.1500 | |
| Rwa / CrossPlot | RMFR | Rmf Reference | 0.10 | ohmm |
| Rwa / CrossPlot | TMFR | Rmf Ref Temp | 75.00 | degF |
| Rwa / CrossPlot | RWA | Resistivity of Formation Water | 0.05 | ohmm |
| Rwa / CrossPlot | ADP | Use Air Porosity to calculate CrossplotPhi | No | |
| GTET | GROK | Process Gamma Ray? | Yes | |
| GTET | GRSO | Gamma Tool Standoff | 0.250 | in |
| GTET | GEOK | Process Gamma Ray EVR? | No | |
| GTET | TPOS | Tool Position for Gamma Ray Tools. | Eccentered | |
| Wavesonic-I | WSOK | Process WSTT? | Yes | |
| Wavesonic-I | AFIL | Adaptive Filtering? | No | |
| Wavesonic-I | PINT | Process 1 Sample and Skip | 0 | |
| Wavesonic-I | PROM | Process Mode: M=1,MX=2,MY=3,MXY=4 | 4 | |
| Wavesonic-I | DTSH | Delta -T Shale | 100.00 | uspf |
| Wavesonic-I | DTMT | Delta -T Matrix Type | Limestone 47.5 | |
| Wavesonic-I | DTMA | Delta -T Matrix | 47.50 | uspf |
| Wavesonic-I | DTFL | Delta -T Fluid | 189.00 | uspf |
| Wavesonic-I | RHOM | Matrix Density | 2.7100 | g/cc |
| Wavesonic-I | RHOF | Fluid Density | 1.0000 | g/cc |
| Wavesonic-I | SMTH | Semblance Threshold | 0.25 | |
| Wavesonic-I | VPVS | VPVS Ratio for Porosity | 1.40 | |
| Wavesonic-I | APEQ | Acoustic Porosity Equation | Wylie | |
| Wavesonic-I | NAVS | Navigation Source Tool | XRMI-I Instrument | |
| XRMI-I Instrument | WRTI | Survey Writing Interval | 30 | ft |
| XRMI-I Instrument | SOPT | Smoothing Option | None | |
| XRMI-I Mandrel | DIMG | Process XRMI? | Yes | |
| XRMI-I Mandrel | ROTI | Rotate Image (N-E-S-W-N)? | No | |
| XRMI-I Mandrel | AGN | Use Button Auto Gain? | Yes | |
| XRMI-I Mandrel | BCLR | Button Auto Gain Color | 127 | |
| XRMI-I Mandrel | BFIL | Button Auto Gain Filter | 0.020 | |
| XRMI-I Mandrel | BGAN | Button Gain Value | 0.001 | |
| XRMI-I Mandrel | BOFF | Button Offset | 0 | |
| XRMI-I Mandrel | DIPE | Process Dipmeter Calculations? | Yes | |
| XRMI-I Mandrel | BHCS | Process Borehole Corrections? | Yes | |
| XRMI-I Mandrel | CLOK | Process Caliper Outputs? | Yes | |
| XRMI-I Mandrel | CMAX | Caliper Maximum Limit | 100.0 | in |
| XRMI-I Mandrel | CMIN | Caliper Mimimum Limit | 3.5 | in |



## MAIN PASS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inches
4
C25
14
inches
4
C14
14
inches
-40
PAD1 Azimuth
360
degrees
Annular Volume
Borehole Volume
1.7K
Tension
2.1K
pounds
0.8
AccZ
1.2
g
1 : 40
0
XPADS
360
N-E-S-W-N
1.8K
F6B1
-200
mmho per metre
1.6K
F5B1
-400
mmho per metre
1.4K
F4B1
-600
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F3B1
-800
mmho per metre
1K
F2B1
-1K
mmho per metre
800
F1B1
-1.2K
mmho per metre
8280
8290
PAD1 Azimuth
C14
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C25
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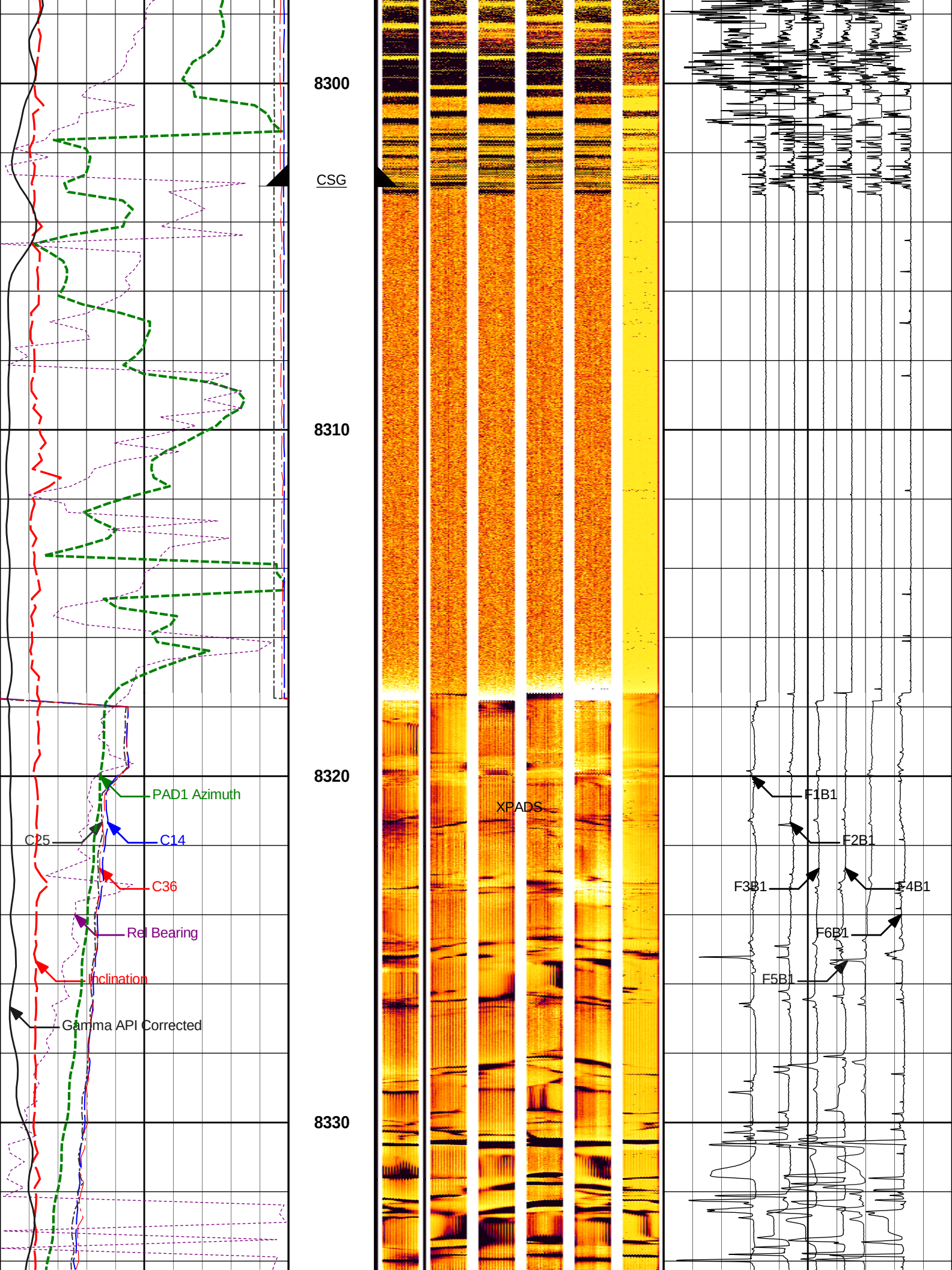
F6B1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C36
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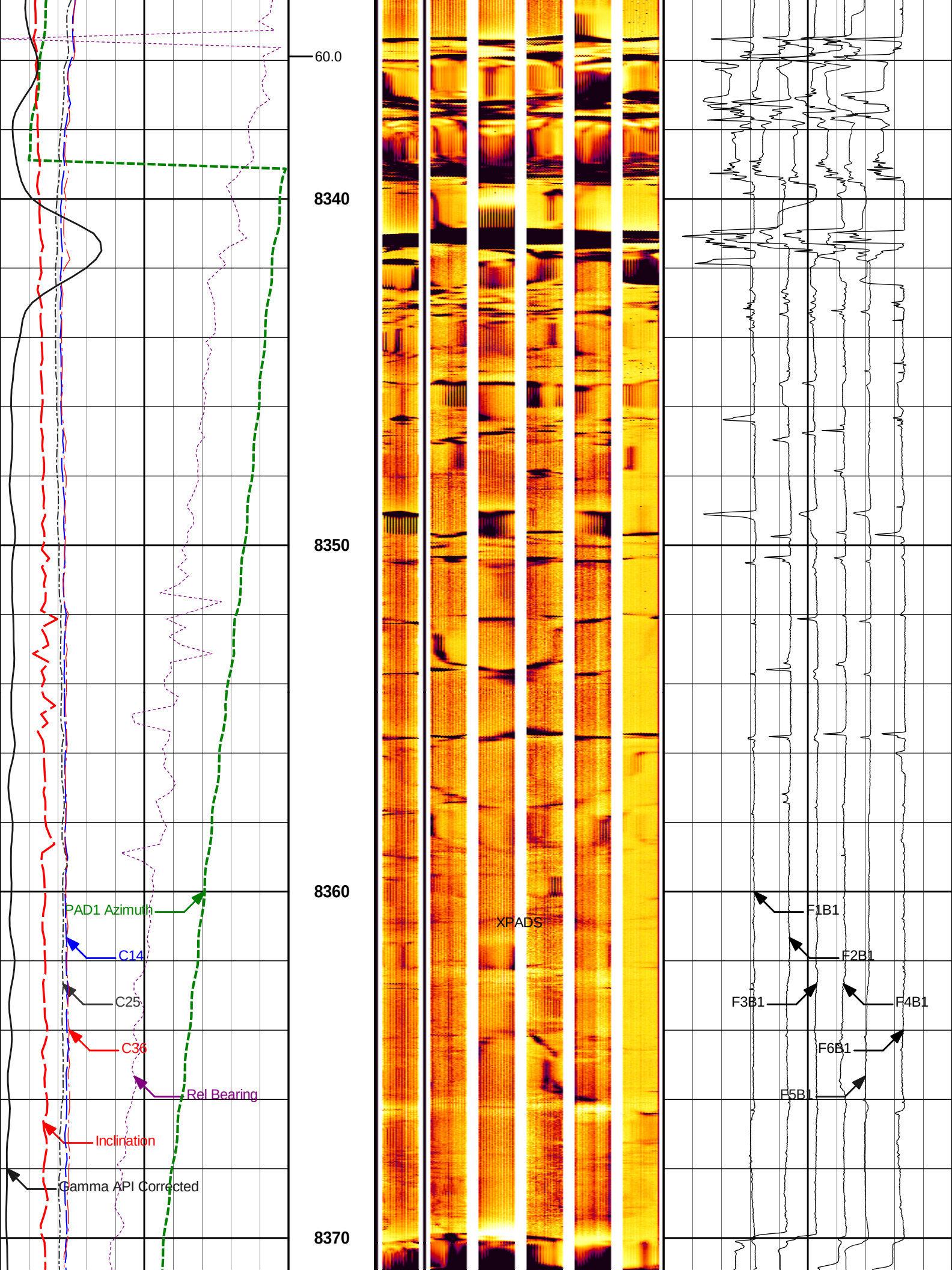
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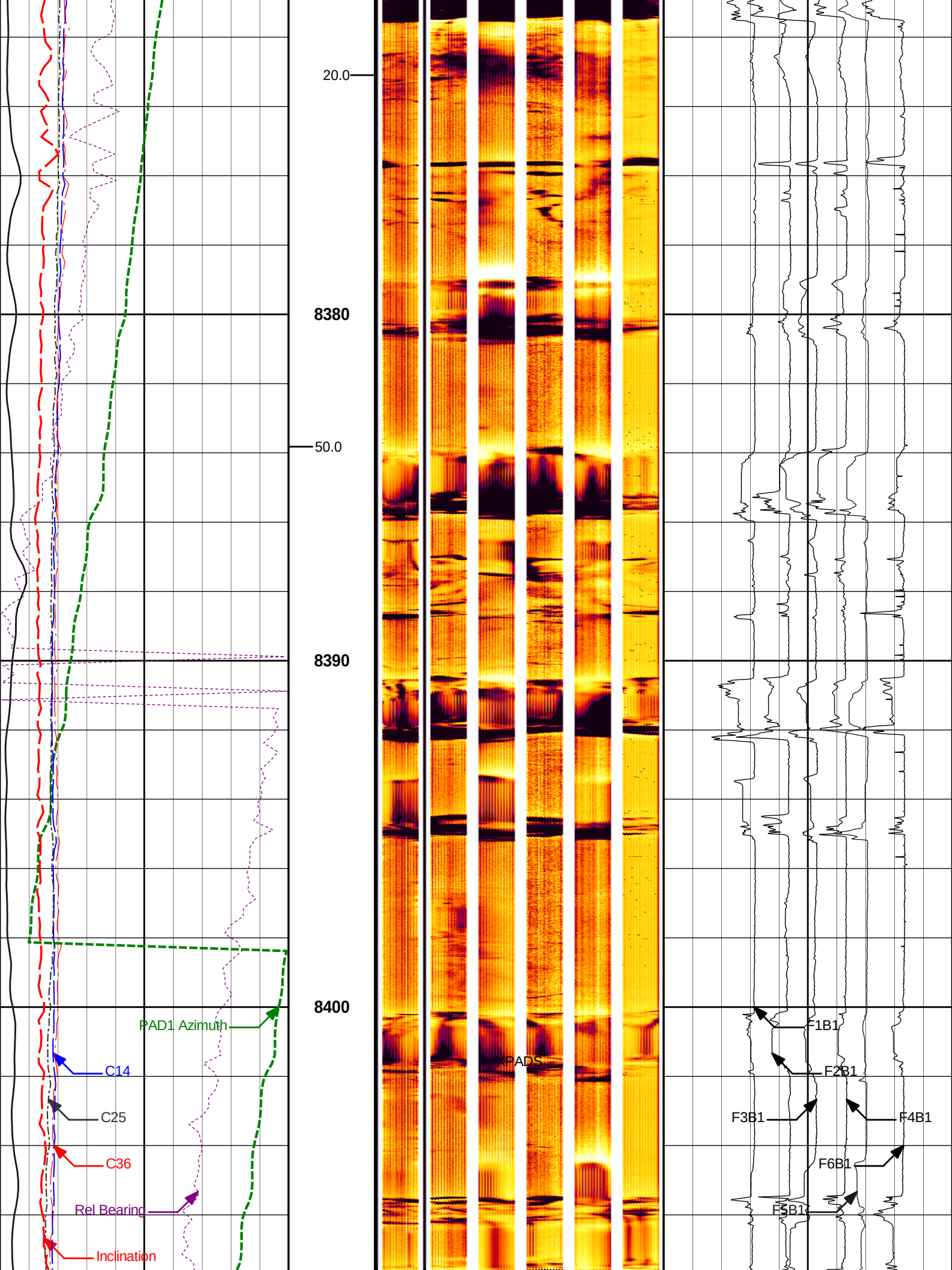
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Rel Bearing
Inclination
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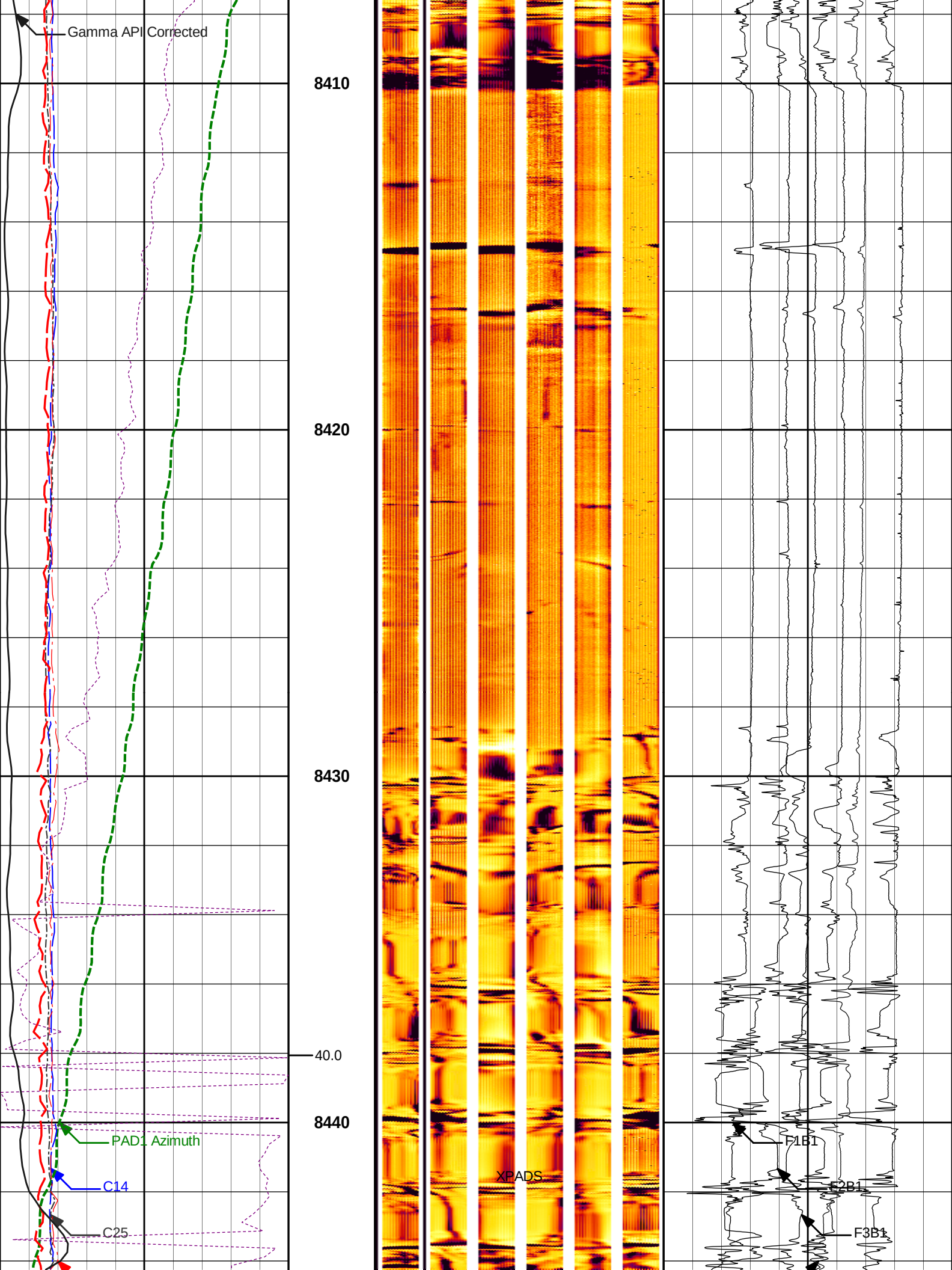
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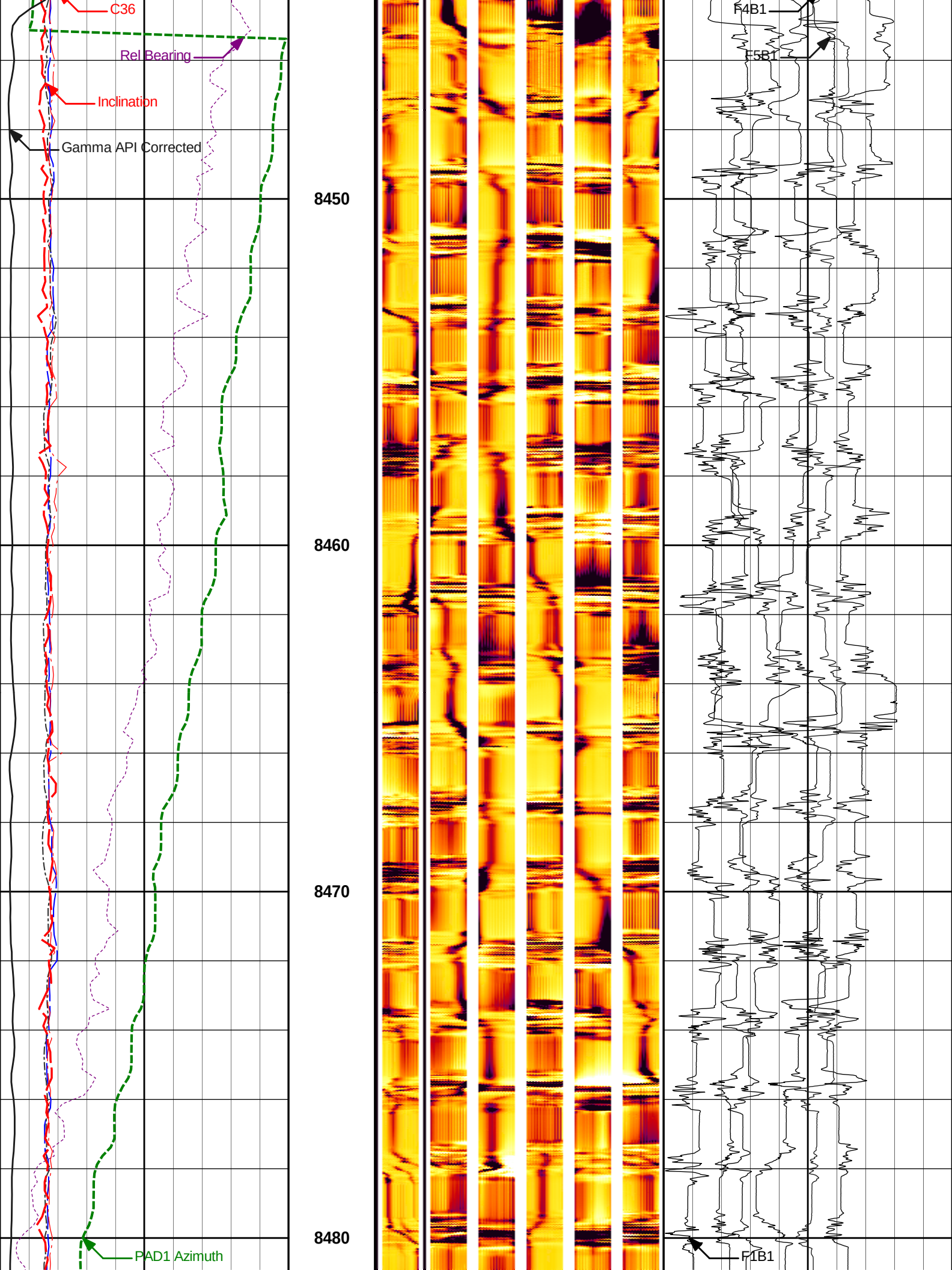
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Inclination
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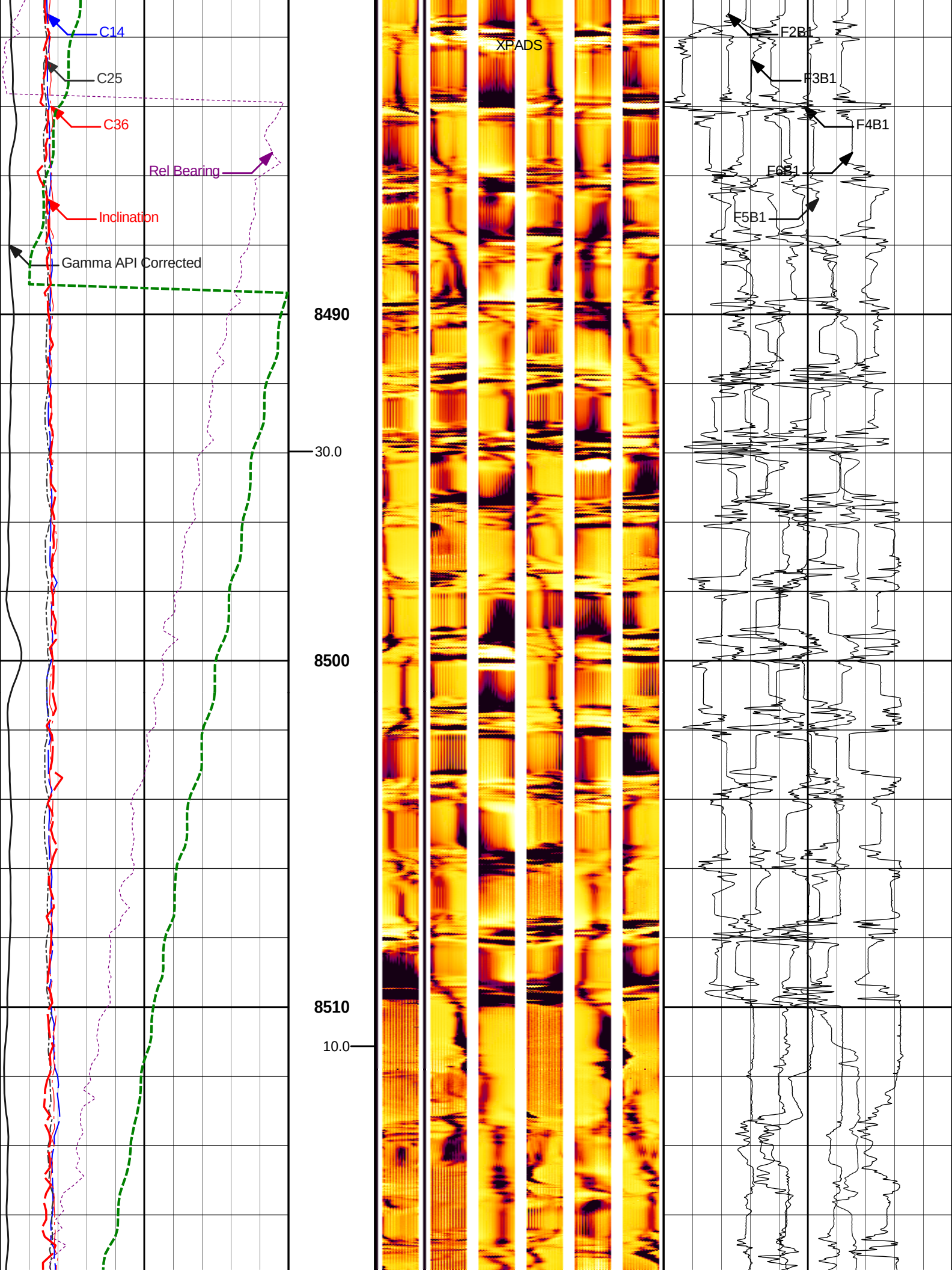
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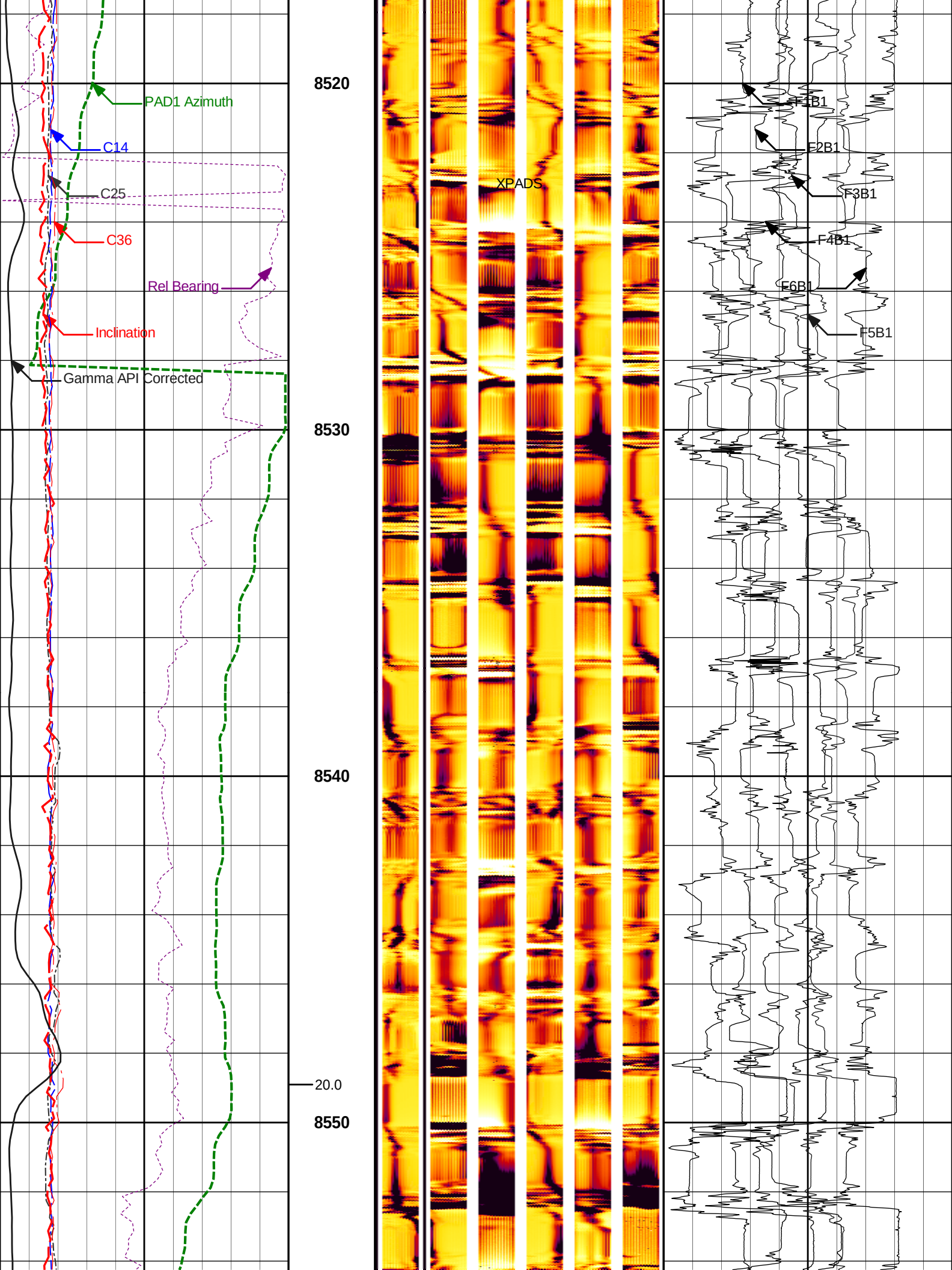
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C36
Rel Bearing
Inclination
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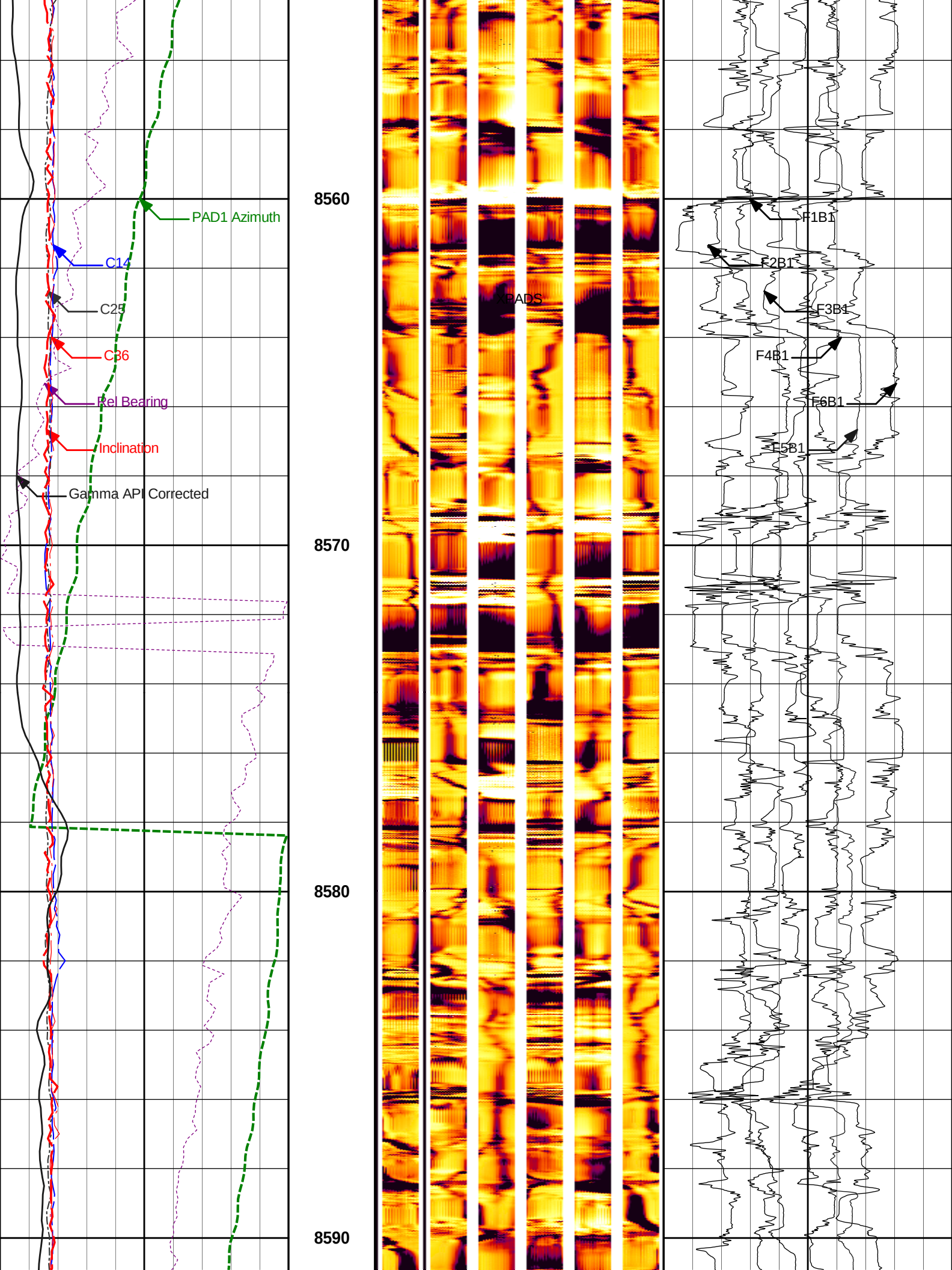
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Rel Bearing
Inclination
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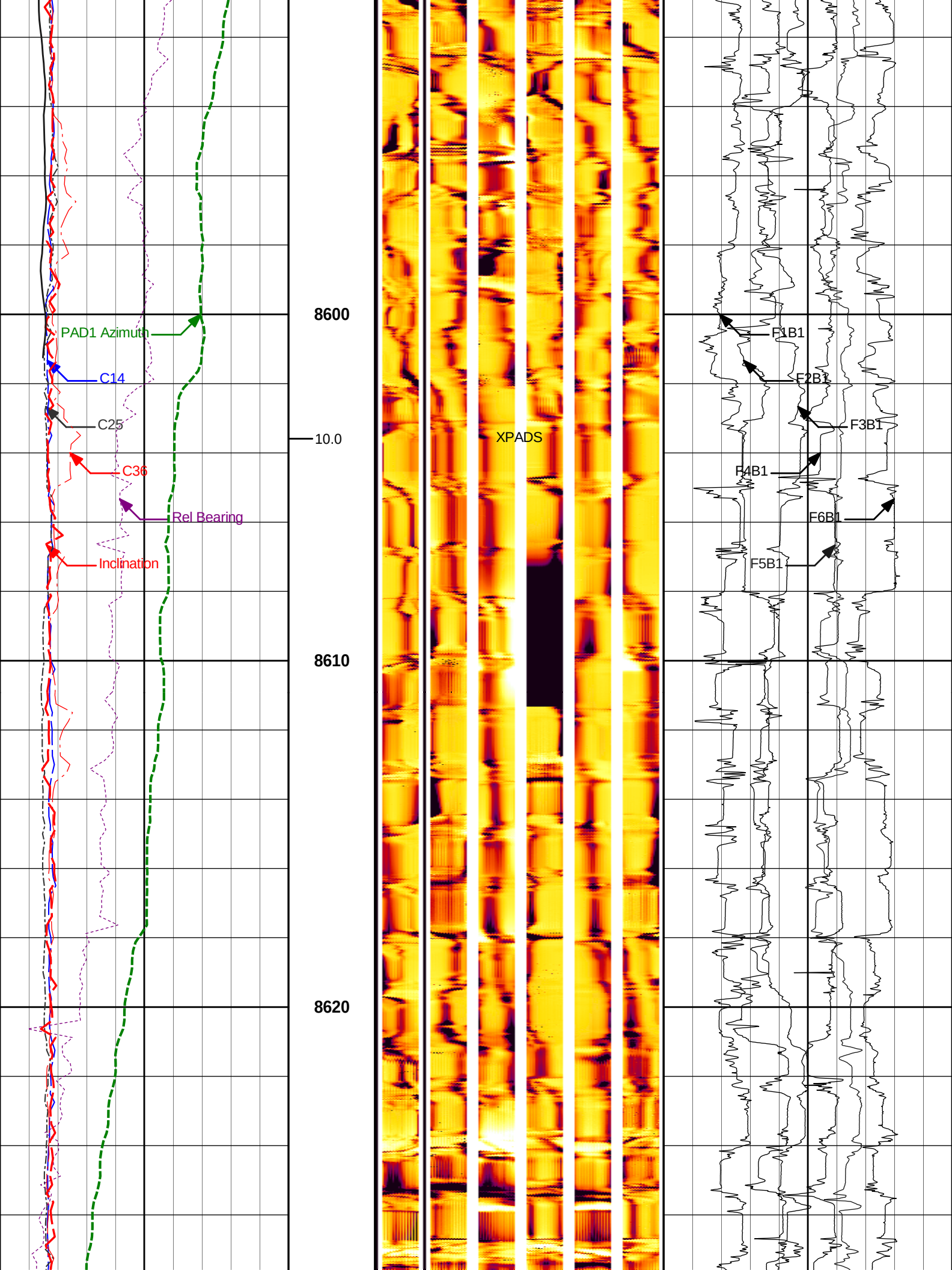
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Rel Bearing
Inclination
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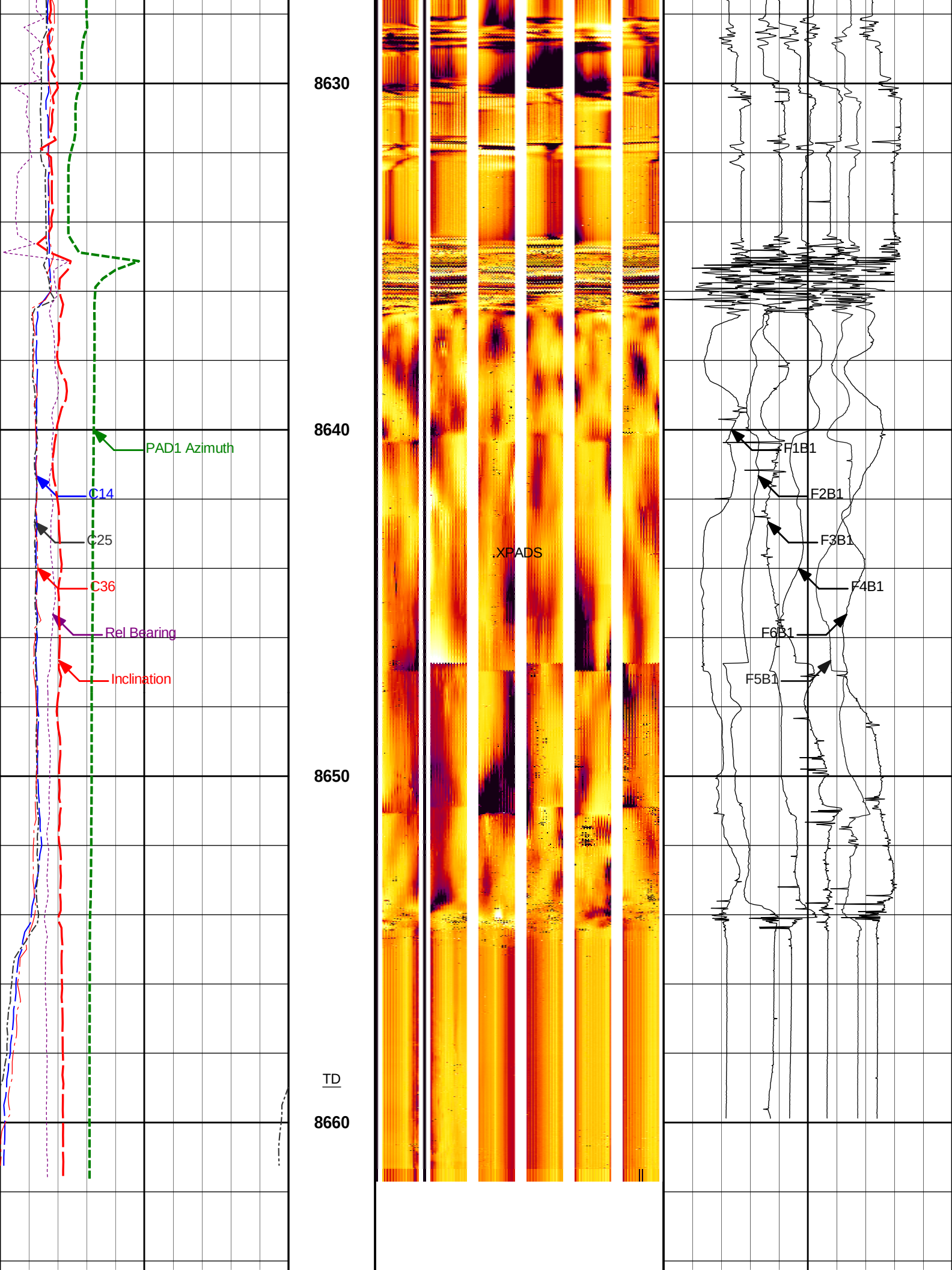
F5B1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8650
TD
8660
PAD1 Azimuth
C14
C25
C36
Rel Bearing
Inclination
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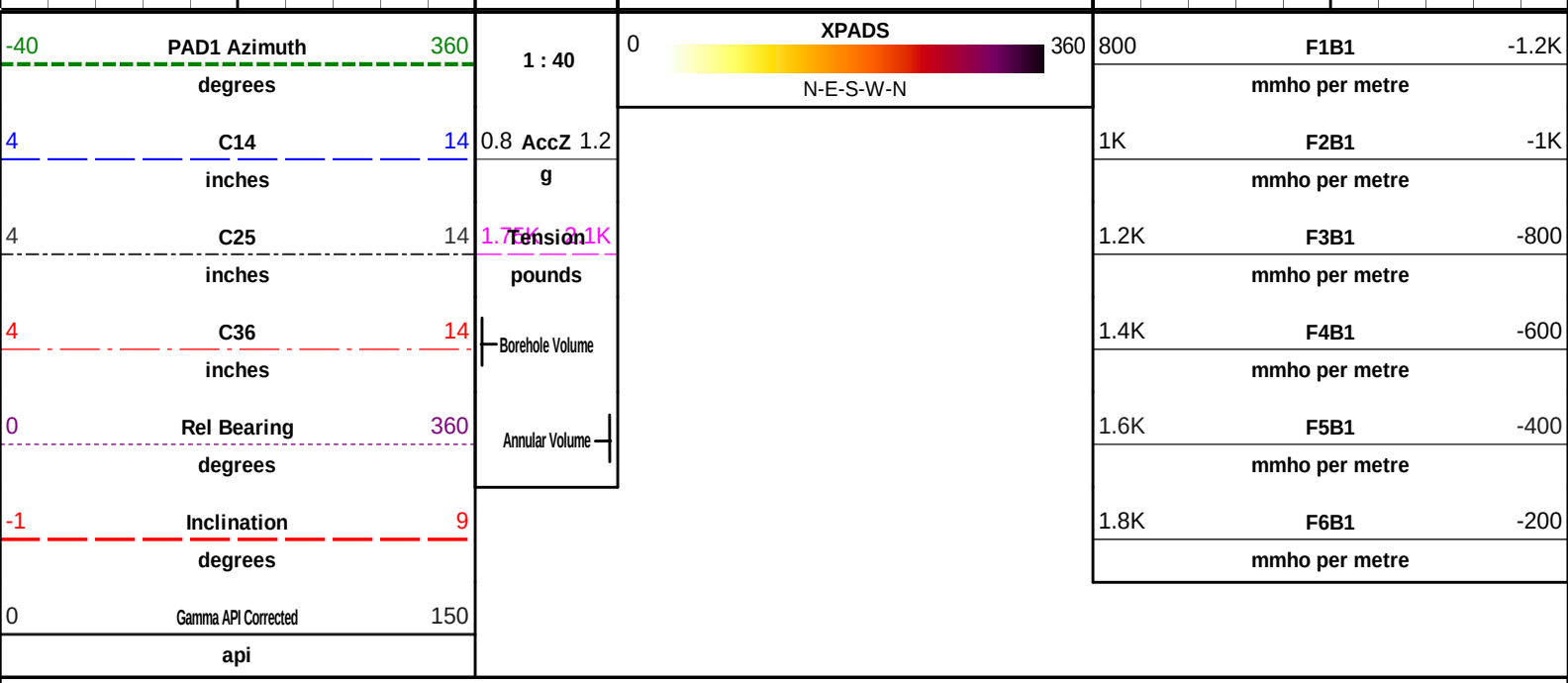
F5B1




HALLIBURTON

Plot Time: 06-Mar-14 20:35:44
Plot Range: 8275 ft to 8664.42 ft
Data: KIND_MOR_CS_1\Well Based\XRMI\
Plot File: \\XRMI\XRMI 1_40

## MAIN PASS

HALLIBURTON

Plot Time: 06-Mar-14 20:35:44
Plot Range: 8275 ft to 8654.67 ft
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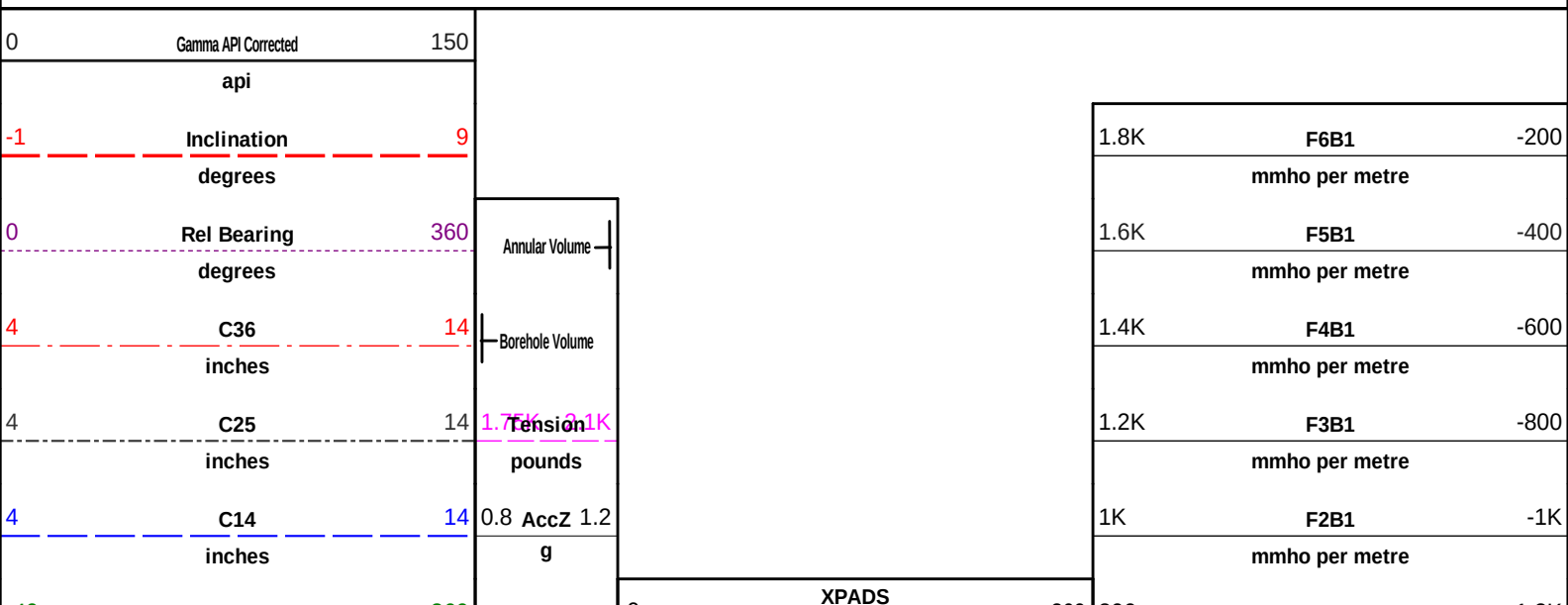
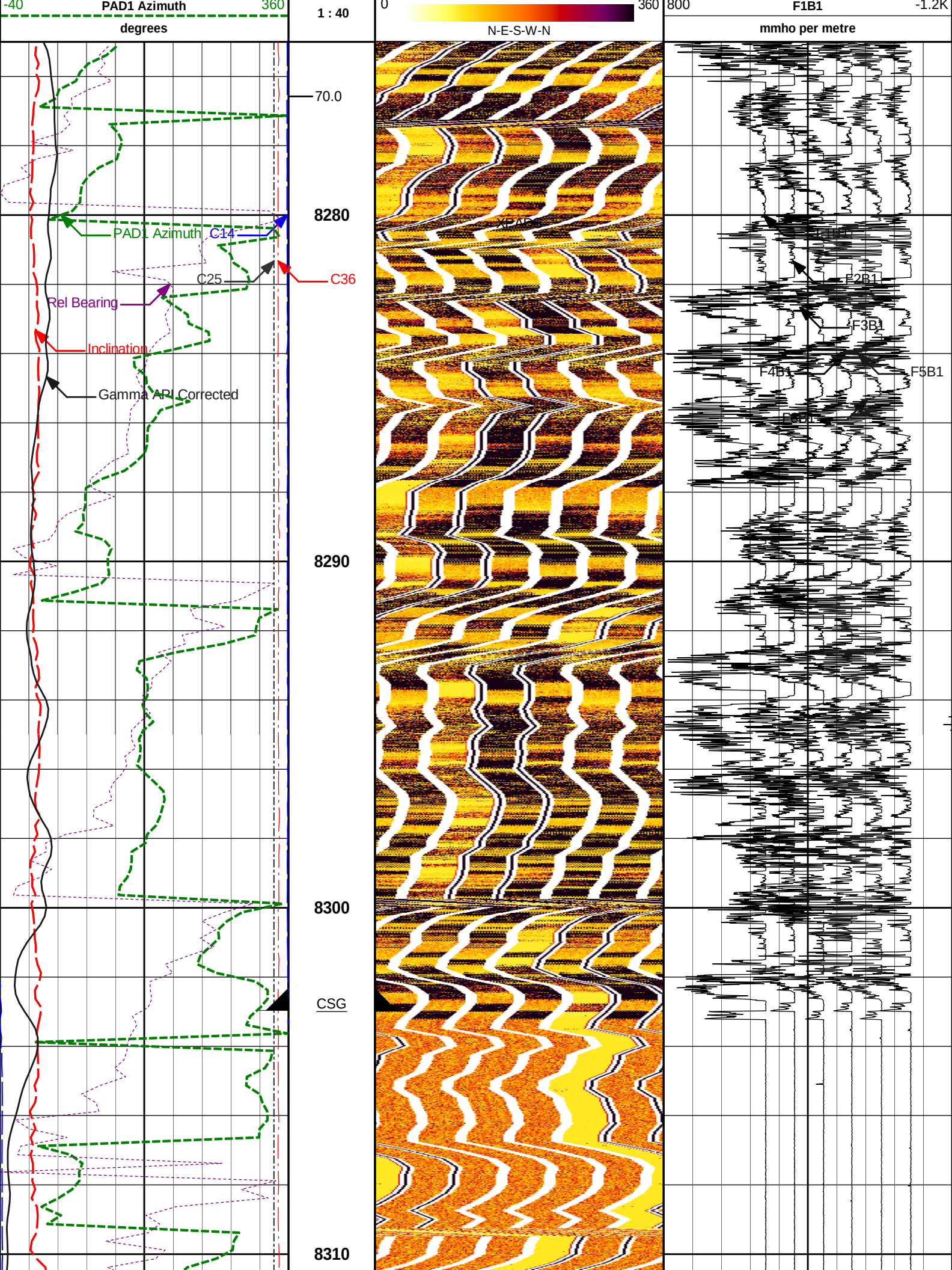
## REPEAT PASS

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PAD1 Azimuth
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Rel Bearing
Inclination
Gamma API Corrected
XPAD
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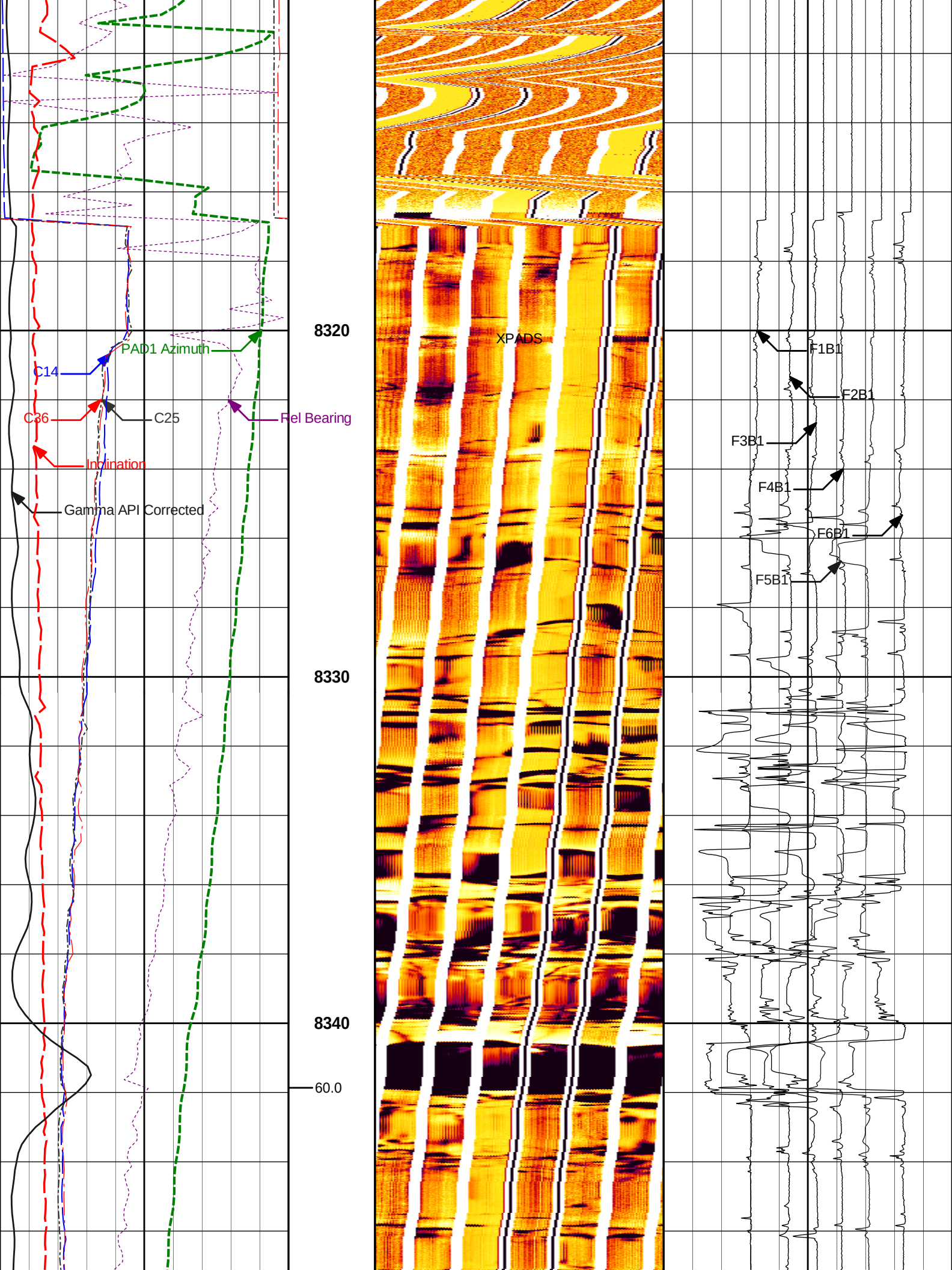
F3B1
F4B1
F5B1
CSG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Inclination
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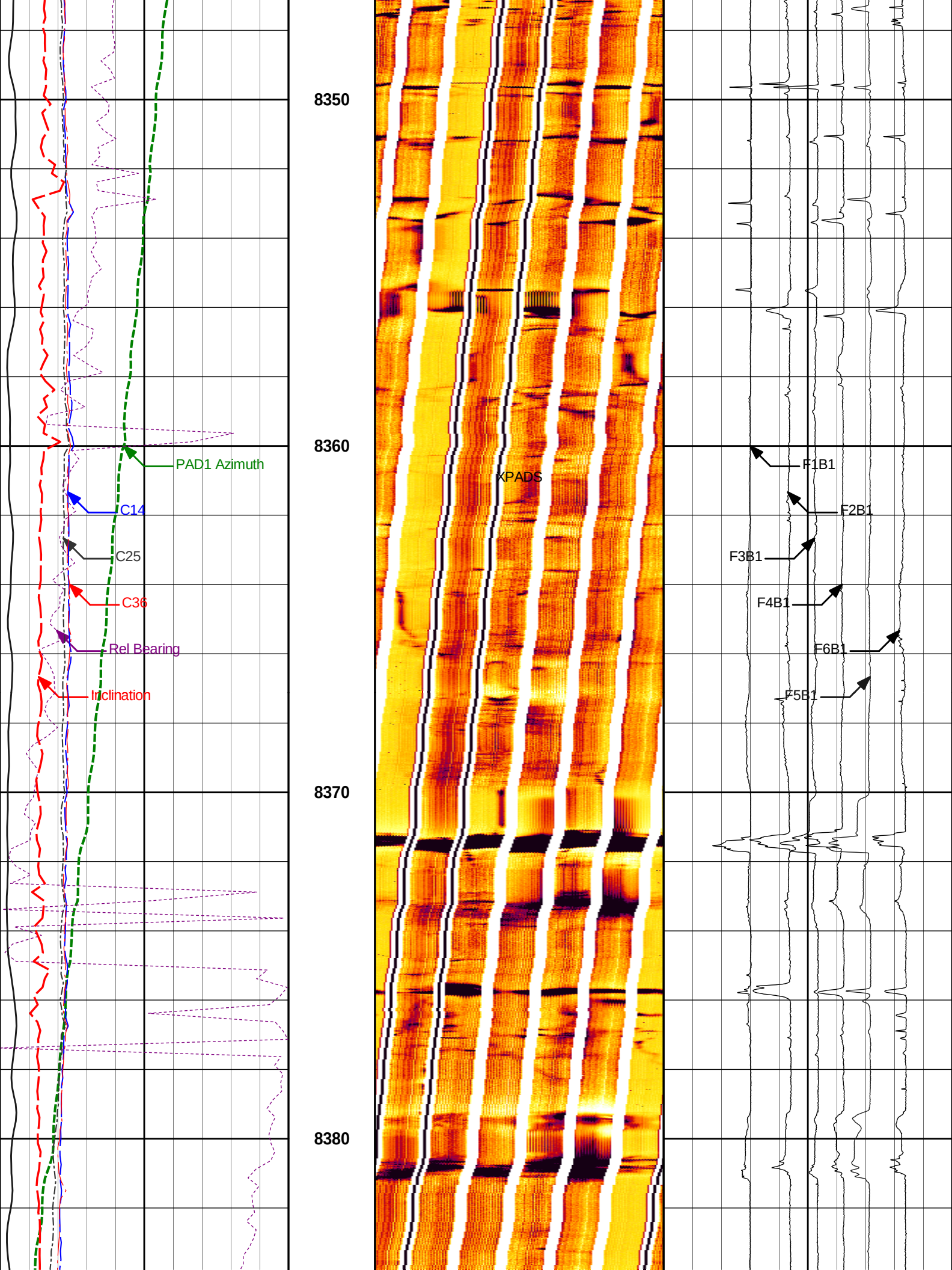
F5B1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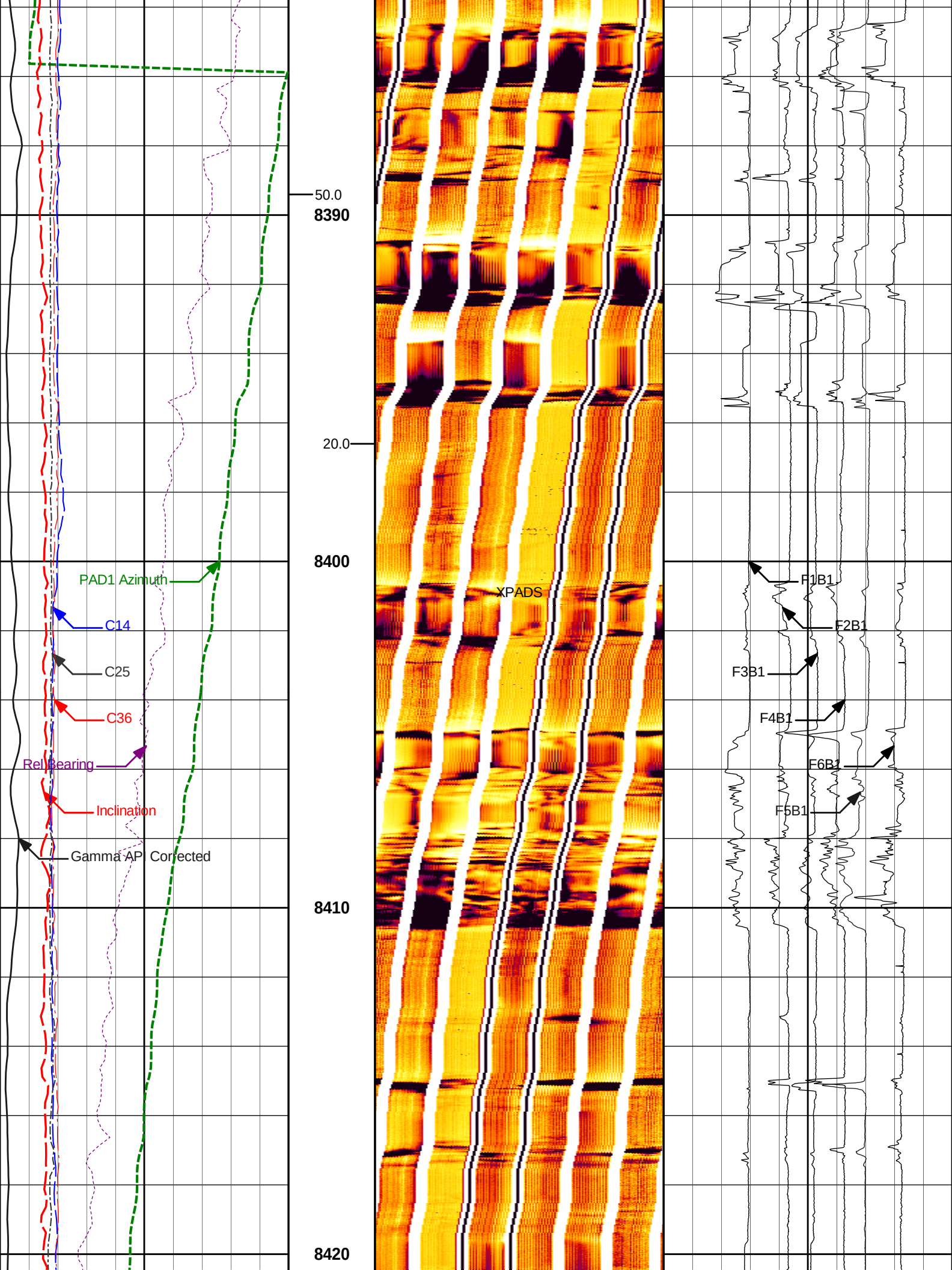
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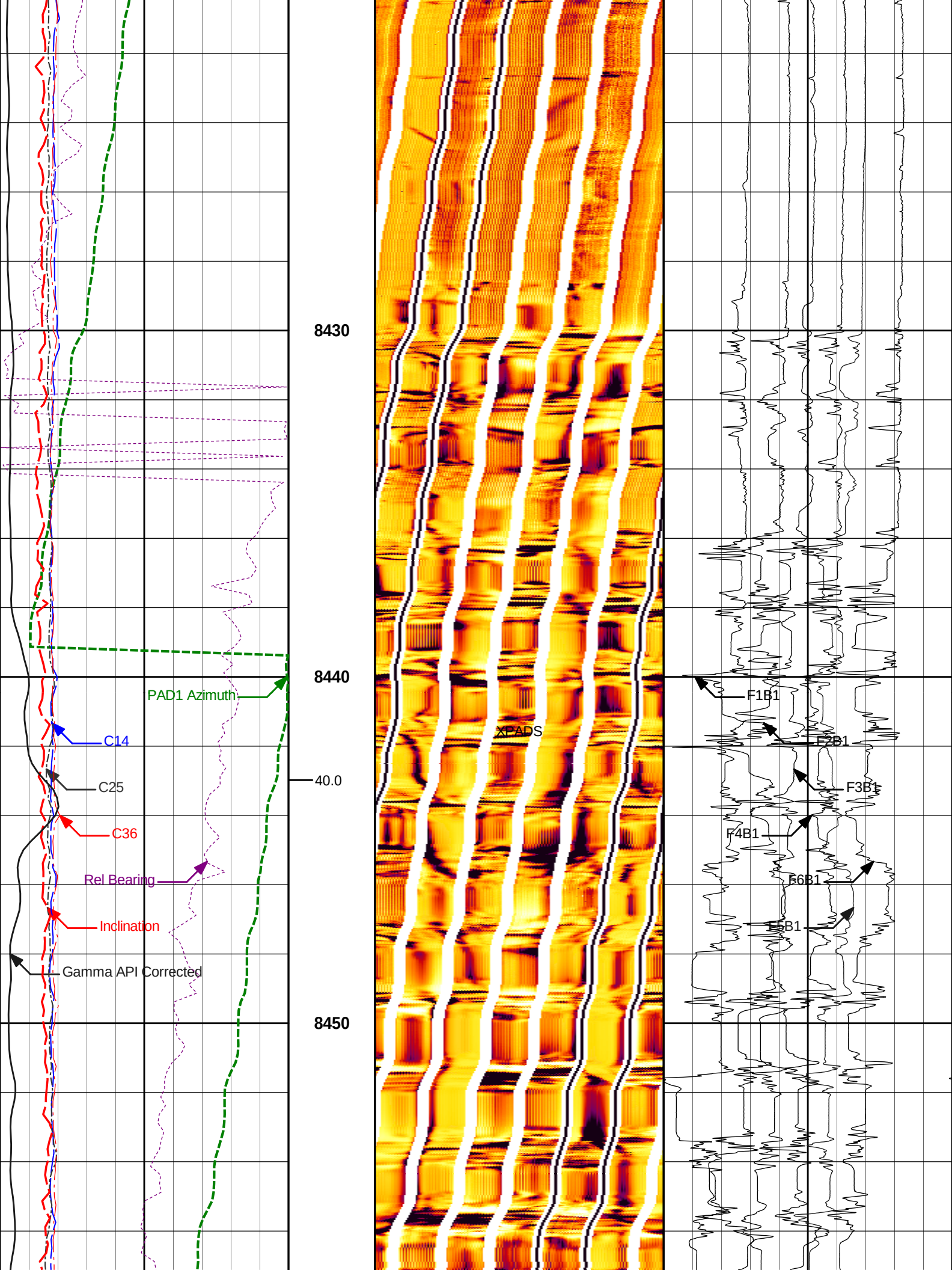
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C14
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C36
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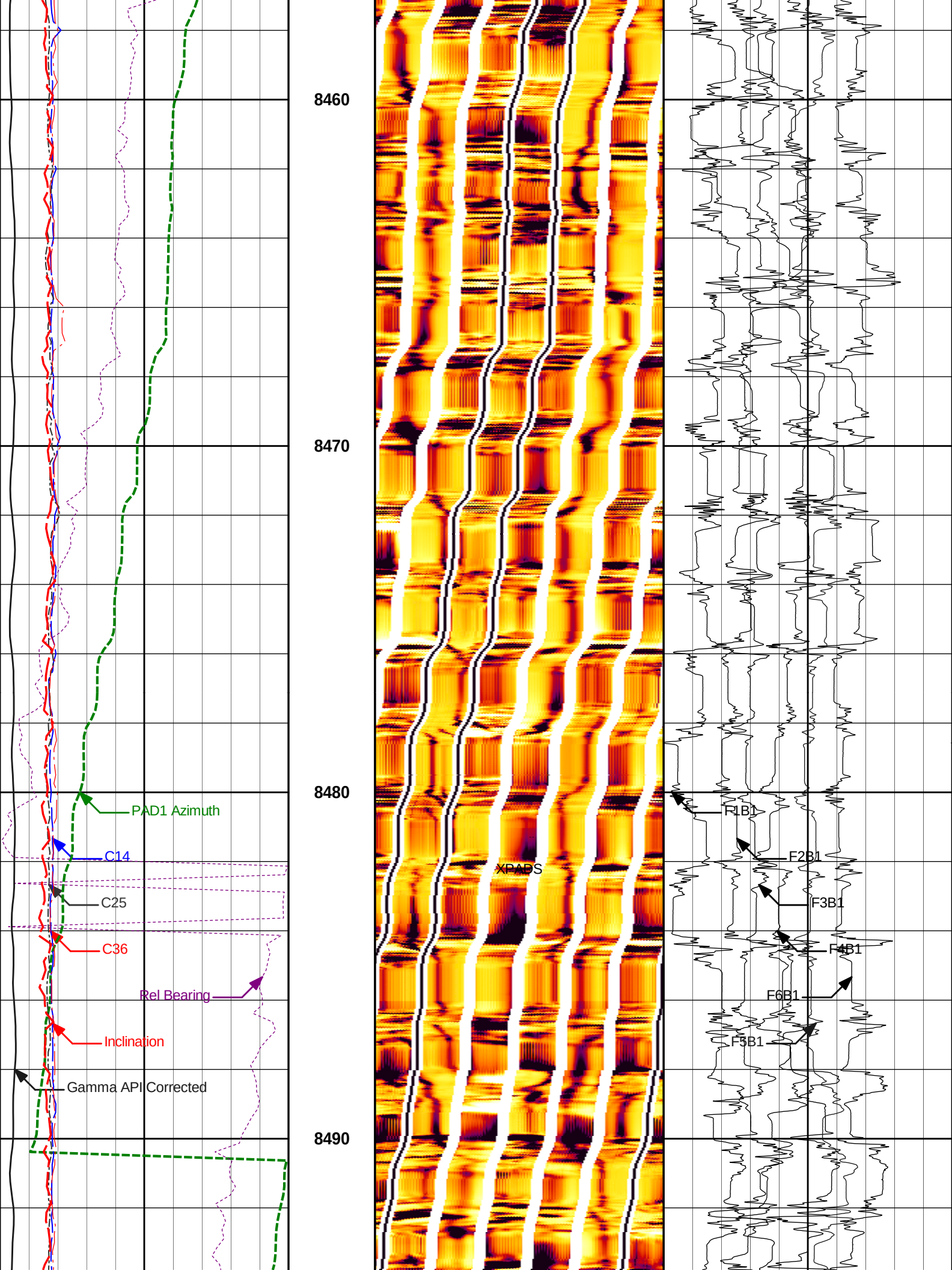
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PAD1 Azimuth
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Rel Bearing
Inclination
Gamma API Corrected
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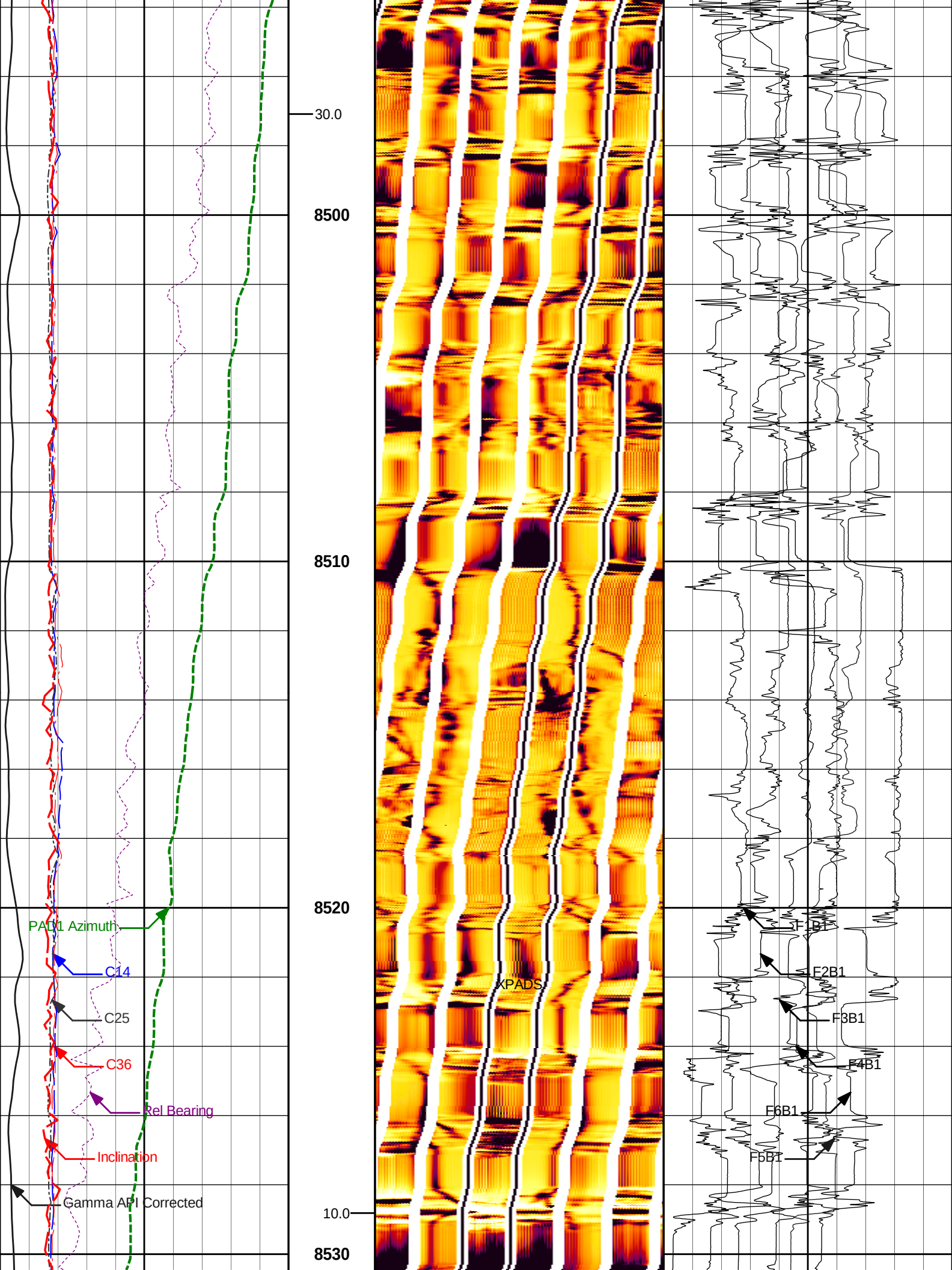
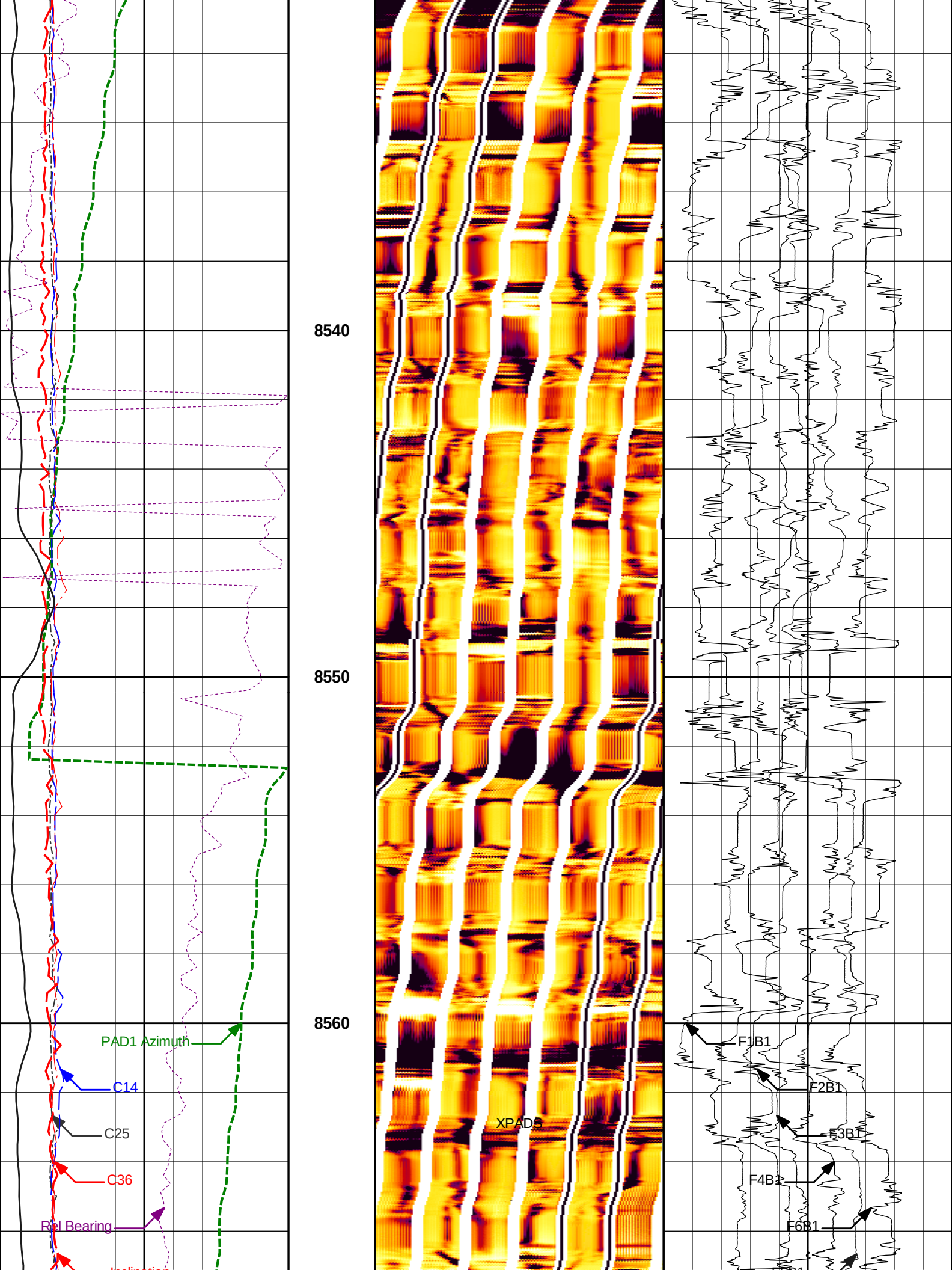
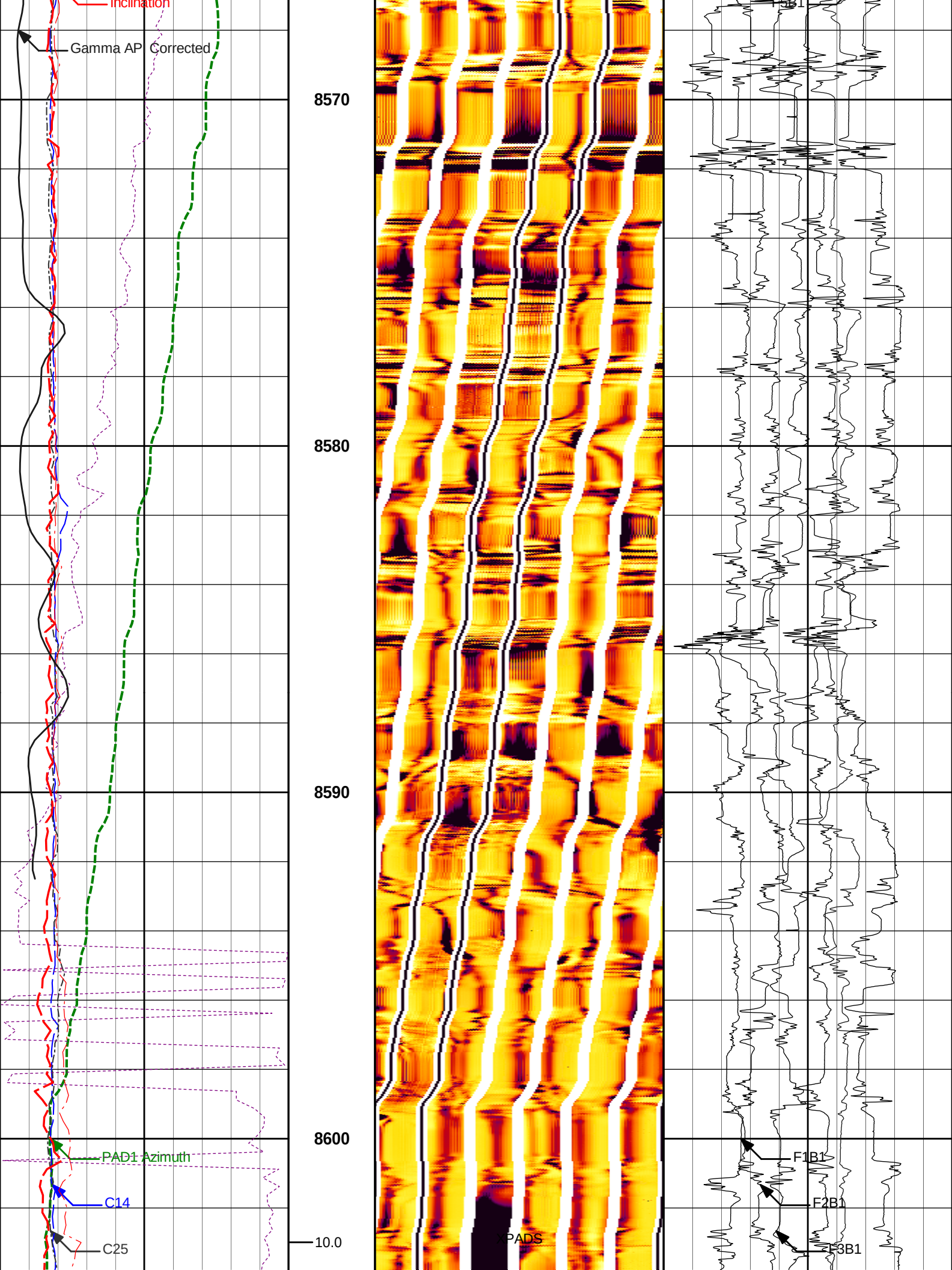
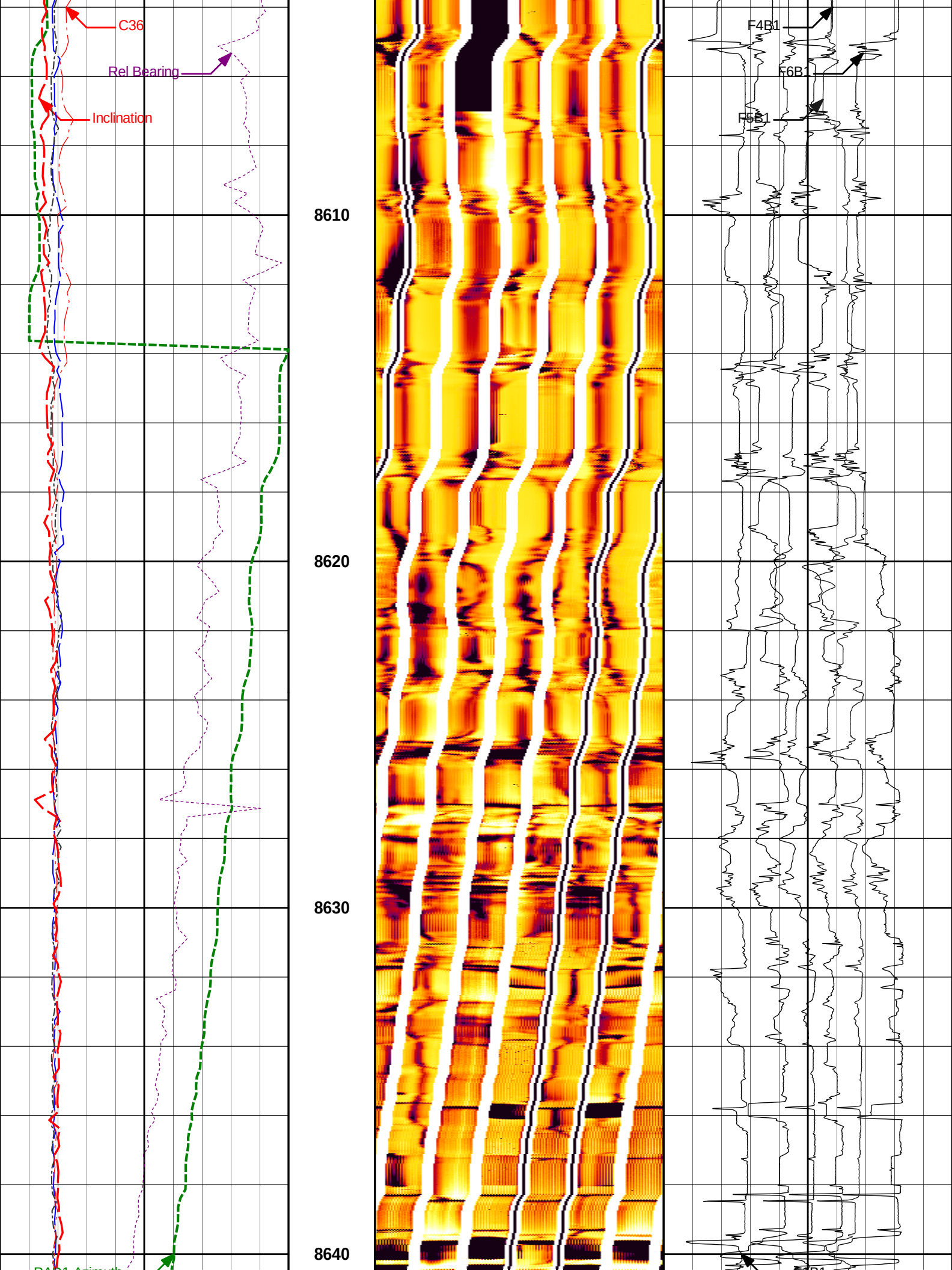
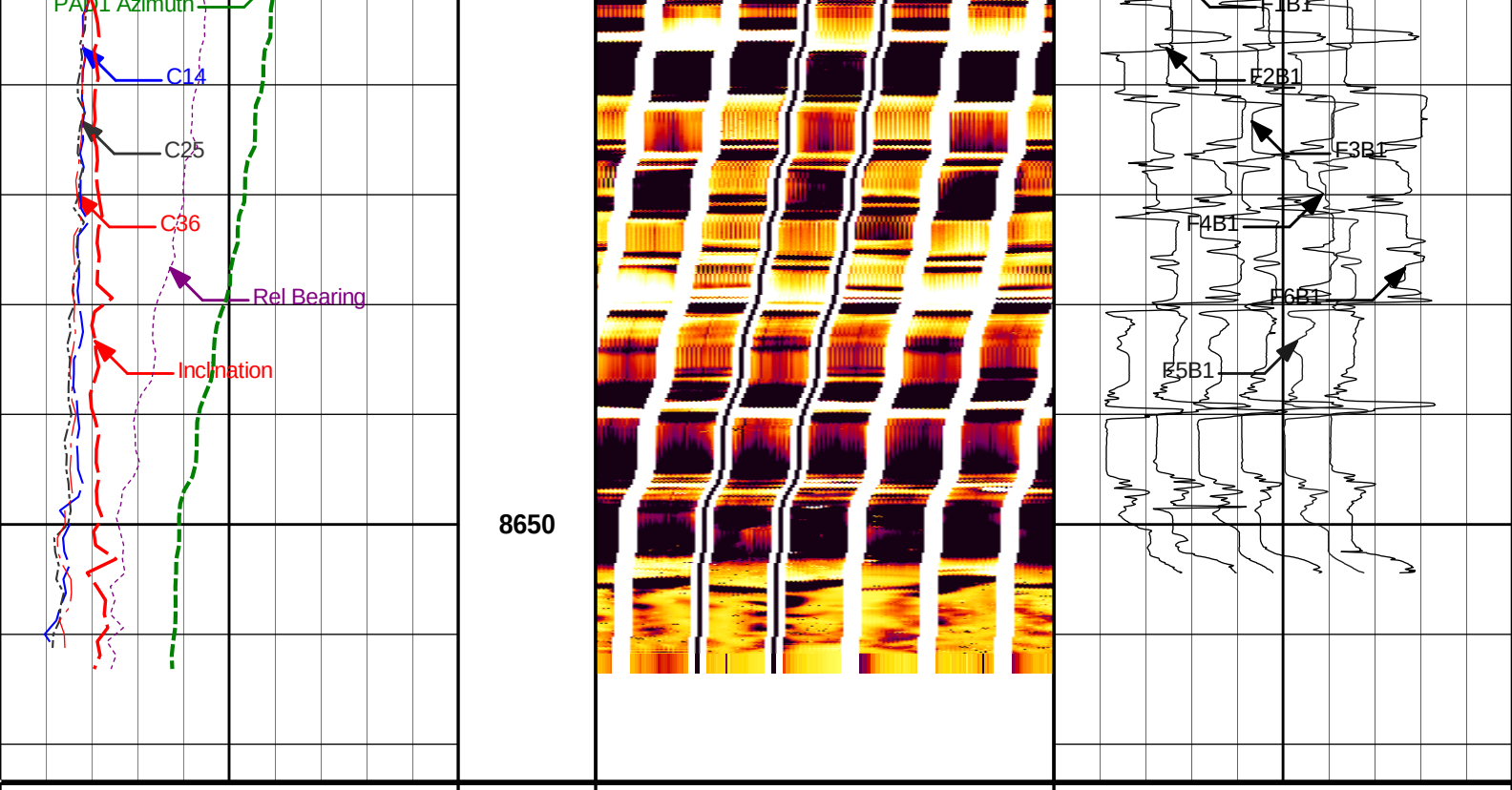
F4B1
F6B1
F5B1


30.0
8500
8510
8520
10.0
8530
PAD1 Azimuth
C14
C25
C36
Rel Bearing
Inclination
Gamma API Corrected
XPADS
F1B1
F2B1
F3B1
F4B1
F6B1
F5B1


8540
8550
8560
PAD1 Azimuth
C14
C25
C36
Rel Bearing
XPAD5
F1B1
F2B1
F3B1
F4B1
F6B1


Inclination
Gamma AP Corrected
8570
8580
8590
8600
PAD1 Azimuth
C14
C25
10.0
XPADS
F1B1
F2B1
F3B1


C36
Rel Bearing
Inclination
8610
8620
8630
8640
F4B1
F6B1
F5B1




| | | |
|---|---|---|
| -40 PAD1 Azimuth 360 | 1 : 40 | 0 XPADS 360 |
| degrees | | N-E-S-W-N |
| 4 C14 14 | 0.8 AccZ 1.2 | |
| inches | g | |
| 4 C25 14 | 1.7K Tension 2.1K | |
| inches | pounds | |
| 4 C36 14 | Borehole Volume | |
| inches | | |
| 0 Rel Bearing 360 | Annular Volume | |
| degrees | | |
| -1 Inclination 9 | | |
| degrees | | |
| 0 Gamma API Corrected 150 | | |
| api | | |

| | |
|---|---|
| 800 F1B1 -1.2K | |
| mmho per metre | |
| 1K F2B1 -1K | |
| mmho per metre | |
| 1.2K F3B1 -800 | |
| mmho per metre | |
| 1.4K F4B1 -600 | |
| mmho per metre | |
| 1.6K F5B1 -400 | |
| mmho per metre | |
| 1.8K F6B1 -200 | |
| mmho per metre | |

HALLIBURTON

Plot Time: 06-Mar-14 20:36:21
Plot Range: 8275 ft to 8654.67 ft
Data: KIND_MOR_CS_1\Well Based\REPEAT_XRMI\
Plot File: \\XRMI\XRMI 1_40

## REPEAT PASS

HALLIBURTON

## CALIBRATION REPORT

**NATURAL GAMMA RAY TOOL SHOP CALIBRATION**

| | | | |
|---|---|---|---|
| **Tool Name:** | **GTET - 11005602** | **Reference Calibration Date:** | **06-Mar-14 09:59:43** |
| **Engineer:** | **P. DIMPFL** | **Calibration Date:** | **06-Mar-14 10:04:33** |
| **Software Version:** | **WL INSITE R3.8.4 (Build 5)** | **Calibration Version:** | **1** |

Calibrator Source S/N: MP051807-04
Calibrator API Reference:239.00 api
Equivalent Calibrator API Reference:243.2 api

| Measurement | Measured | Calibrated | Units |
|---|---|---|---|
| Background | 21.3 | 21.2 | api |
| Background + Calibrator | 265.1 | 264.4 | api |
| Calibrator | 243.8 | 243.2 | api |

## NATURAL GAMMA RAY TOOL FIELD CALIBRATION

| | | | |
|---|---|---|---|
| **Tool Name:** | **GTET - 11005602** | **Reference Calibration Date:** | **06-Mar-14 10:04:33** |
| **Engineer:** | **P. DIMPFL** | **Calibration Date:** | **06-Mar-14 10:16:22** |
| **Software Version:** | **WL INSITE R3.8.4 (Build 5)** | **Calibration Version:** | **1** |

Calibrator Source S/N: MP051807-04
Calibrator API Reference:239.00 api
Equivalent Calibrator API Reference:243.2 api

| Field Verification | Shop | Field | Units |
|---|---|---|---|
| Background | 21.2 | 22.3 | api |
| Background + Calibrator | 264.4 | 261.4 | api |
| Calibrator | 243.2 | 239.1 | api |

| Shop | Field | Difference | Tolerance |
|---|---|---|---|
| 243.2 | 239.1 | 4.1 | +/- 9.00 |

## ACCELEROMETER AND MAGNETOMETER SHOP CALIBRATION

| | | | |
|---|---|---|---|
| **Tool Name:** | **XRMI-I Instrument - 11838465** | **Reference Calibration Date:** | **15-May-13 16:05:55** |
| **Engineer:** | **B. CRAWFORD** | **Calibration Date:** | **02-Jan-14 15:40:20** |
| **Software Version:** | **WL INSITE R3.8.10 (Build 5)** | **Calibration Version:** | **1** |

Reference Gravity Field: 1.0000 g
Reference Magnetic Field: 52673.0000 nT

* QF : value of 0 is shown for bad quality if | data - reference | > (2 * standard deviation) and > (0.5% of reference value)

**ACCELEROMETER CALIBRATION RAW DATA VALUE**

| Raw Acc X | Raw Acc Y | Raw Acc Z | Gravity | Quality % | QF |
|---|---|---|---|---|---|
| 7043.2500 | -17825.7500 | 123.7500 | 1.0014 | 99.8570 | 1 |
| -18113.2500 | -6042.7500 | 121.2500 | 1.0007 | 99.9298 | 1 |
| -2984.2500 | 19098.7500 | 131.2500 | 0.9990 | 99.9039 | 1 |
| 18898.5000 | 4298.5000 | 137.5000 | 0.9993 | 99.9308 | 1 |
| 2293.2500 | 19226.2500 | 129.5000 | 0.9989 | 99.8932 | 1 |
| 6230.5000 | 17073.0000 | 3520.0000 | 1.0036 | 99.6368 | 1 |
| 1745.0000 | 19283.0000 | 91.5000 | 0.9990 | 99.9044 | 1 |
| 19353.2500 | -72.2500 | 97.0000 | 0.9993 | 99.9335 | 1 |
| -367.2500 | -19109.2500 | 86.7500 | 1.0017 | 99.8302 | 1 |
| -18975.7500 | -2282.2500 | 90.7500 | 1.0004 | 99.9643 | 1 |
| -4129.7500 | -17159.0000 | 3558.5000 | 0.9964 | 99.6424 | 1 |
| -15815.5000 | -8029.5000 | -3396.5000 | 1.0000 | 99.9989 | 1 |

**ACCELEROMETER QUALITY SUMMARY**

| | | |
|---|---|---|
| Average Calculated Gravity Field | 1.0000 | g |
| Standard Deviation Calculated Gravity Field | 0.0018 | g |

| ACCELEROMETER GAIN AND OFFSET | | |
|---|---|---|
| | GAIN | OFFSET |
| ACC X | 0.0000519616 | -0.0063567073 |
| ACC Y | 0.0000520119 | -0.0074668438 |
| ACC Z | 0.0001051923 | -0.0080547389 |

* QF : value of 0 is shown for bad quality if | data - reference | > (3 * standard deviation) and > (1% of reference value)

| MAGNETOMETER CALIBRATION RAW DATA VALUE | | | | | |
|---|---|---|---|---|---|
| Raw Mag X | Raw Mag Y | Raw Mag Z | Magnetic | Quality % | QF |
| 659.0000 | 11191.5000 | -1446.0000 | 52689.3867 | 99.9689 | 1 |
| 11448.2500 | -1044.7500 | -1360.2500 | 52732.4492 | 99.8871 | 1 |
| -2601.5000 | -10961.2500 | -1531.0000 | 52683.7578 | 99.9796 | 1 |
| -10919.7500 | 2114.5000 | -1418.7500 | 52674.8086 | 99.9966 | 1 |
| -1692.2500 | -10209.0000 | 3855.5000 | 52675.8047 | 99.9947 | 1 |
| -2965.2500 | -10860.0000 | -1325.2500 | 52608.5703 | 99.8777 | 1 |
| 26.7500 | -10373.5000 | -5290.7500 | 52718.1563 | 99.9143 | 1 |
| -10148.2500 | -660.2500 | -5325.0000 | 52677.1836 | 99.9921 | 1 |
| -296.5000 | 10252.0000 | -5282.0000 | 52696.2070 | 99.9559 | 1 |
| 10289.0000 | 2270.5000 | -5181.2500 | 52598.4805 | 99.8585 | 1 |
| 169.0000 | 11214.7500 | -446.0000 | 52649.1211 | 99.9547 | 1 |
| 6868.7500 | 4430.0000 | -8637.5000 | 52671.2773 | 99.9967 | 1 |

| MAGNETOMETER QUALITY SUMMARY | | |
|---|---|---|
| Average Calculated Magnetic Field | 52672.9336 | nT |
| Standard Deviation Calculated Magnetic Field | 39.0829 | nT |

| MAGNETOMETER GAIN AND OFFSET | | |
|---|---|---|
| | GAIN | OFFSET |
| MAG X | 4.6505560875 | -800.3454589844 |
| MAG Y | 4.6703696251 | 258.4656677246 |
| MAG Z | 4.6573987007 | 3275.0739746094 |

Noise Level Value: 1.043656 cnts

Noise Level Cal Value: 0.0001 g

## DIPMETER SHOP CALIBRATION

**Tool Name:** XRMI-I Mandrel - 11838466 **Reference Calibration Date:** 02-Jan-14 19:41:36

**Engineer:** Z. TAYLOR **Calibration Date:** 25-Jan-14 10:54:30

**Software Version:** WL INSITE R3.8.12 (Build 3) **Calibration Version:** 1

Tool Temperature: 71.77 degF

| PAD RESISTIVITIES | | | | | | | |
|---|---|---|---|---|---|---|---|
| Measurement | Measured | Calibrated | Measured | Calibrated | Measured | Calibrated | Units |
| Pads #1-3: | 0.448 | 0.450 | 0.448 | 0.450 | 0.448 | 0.450 | ohmm |
| Pads #4-6: | 0.448 | 0.450 | 0.447 | 0.450 | 0.448 | 0.450 | ohmm |
| Cal0 #1-3: | 0.043 | ----- | 0.044 | ----- | 0.044 | ----- | ohmm |
| Cal0 #4-6: | 0.043 | ----- | 0.045 | ----- | 0.044 | ----- | ohmm |

| RELATIVE PAD VOLTS | | |
|---|---|---|
| Measurement | Measured | Calibrated |
| Air: | 1.000 | 1.000 |
| Zero: | 0.000 | 0.000 |
| Calibrate: | 0.000 | 0.000 |

## DIPMETER FIELD CALIBRATION

| | | | |
|---|---|---|---|
| **Tool Name:** | **XRMI-I Mandrel - 11838466** | **Reference Calibration Date:** | **25-Jan-14 10:54:30** |
| **Engineer:** | **Z. TAYLOR** | **Calibration Date:** | **25-Jan-14 10:59:06** |
| **Software Version:** | **WL INSITE R3.8.12 (Build 3)** | **Calibration Version:** | **1** |

### PAD RESISTIVITIES

| Measurement | Shop | Field | Units |
|---|---|---|---|
| Reflvl Pad 1: | 20.245 | 20.248 | ohmm |
| Reflvl Pad 2: | 21.079 | 21.122 | ohmm |
| Reflvl Pad 3: | 21.015 | 21.061 | ohmm |
| Reflvl Pad 4: | 20.493 | 20.551 | ohmm |
| Reflvl Pad 5: | 21.299 | 21.256 | ohmm |
| Reflvl Pad 6: | 21.037 | 20.988 | ohmm |

## SIX ARM CALIPER SHOP CALIBRATION

| | | | |
|---|---|---|---|
| **Tool Name:** | **XRMI-I Mandrel - 11838466** | **Reference Calibration Date:** | **02-Jan-14 17:46:49** |
| **Engineer:** | **Z. TAYLOR** | **Calibration Date:** | **25-Jan-14 10:41:15** |
| **Software Version:** | **WL INSITE R3.8.12 (Build 3)** | **Calibration Version:** | **3** |

### CALIPERS AND RINGS

| Caliper | Large 15.00 in | Small 7.000 in | Units |
|---|---|---|---|
| CALIPER 1-4: | | | |
| Measured | 14.985 | 6.987 | in |
| Calibrated | 15.000 | 7.000 | in |
| CALIPER 2-5: | | | |
| Measured | 15.043 | 7.136 | in |
| Calibrated | 15.000 | 7.000 | in |
| CALIPER 3-6: | | | |
| Measured | 15.010 | 7.072 | in |
| Calibrated | 15.000 | 7.000 | in |

### TOLERANCE CHECK

| Measurment | Difference | Tolerance | Pass/Fail | Units |
|---|---|---|---|---|
| Caliper 1-4 Large | 0.010 | 0.250 | Passed | in |
| Caliper 1-4 Small | 0.010 | 0.250 | Passed | in |
| Caliper 2-5 Large | -0.040 | 0.250 | Passed | in |
| Caliper 2-5 Small | -0.140 | 0.250 | Passed | in |
| Caliper 3-6 Large | -0.010 | 0.250 | Passed | in |
| Caliper 3-6 Small | -0.070 | 0.250 | Passed | in |

### PRESSURE PAD

| | Measured | Calibrated |
|---|---|---|
| Closed | 0.001 | 0.000 |
| Opened | 0.999 | 1.000 |

## SIX ARM CALIPER FIELD CALIBRATION

| | | | |
|---|---|---|---|
| **Tool Name:** | **XRMI-I Mandrel - 11838466** | **Reference Calibration Date:** | **25-Jan-14 10:41:15** |
| **Engineer:** | **Z. TAYLOR** | **Calibration Date:** | **25-Jan-14 10:41:43** |
| **Software Version:** | **WL INSITE R3.8.12 (Build 3)** | **Calibration Version:** | **2** |

### CALIPERS AND RINGS

| Caliper | Shop | Field | Difference | Tolerance | Units |
|---|---|---|---|---|---|
| Caliper 1-4 | 7.000 | 6.998 | 0.002 | 0.250 | in |
| Caliper 2-5 | 7.000 | 6.988 | 0.012 | 0.250 | in |
| Caliper 3-6 | 7.000 | 6.969 | 0.031 | 0.250 | in |

**PASS/FAIL SUMMARY**

Ring Check: Passed

## CALIBRATION SUMMARY

| Sensor | Shop | Field | Post | Difference | Tolerance | Units |
|---|---|---|---|---|---|---|
| **GTET-11005602** | | | | | | |
| Gamma Ray Calibrator | 243.2 | 239.1 | ---------- | 4.1 | +/- 9.00 | api |
| **XRMI-I Mandrel-11838466** | | | | | | |
| Reflvl Pad 1 | 20.245 | 20.248 | ---------- | -0.003 | N/A | ohmm |
| Reflvl Pad 2 | 21.079 | 21.122 | ---------- | -0.043 | N/A | ohmm |
| Reflvl Pad 3 | 21.015 | 21.061 | ---------- | -0.046 | N/A | ohmm |
| Reflvl Pad 4 | 20.493 | 20.551 | ---------- | -0.058 | N/A | ohmm |
| Reflvl Pad 5 | 21.299 | 21.256 | ---------- | 0.043 | N/A | ohmm |
| Reflvl Pad 6 | 21.037 | 20.988 | ---------- | 0.049 | N/A | ohmm |
| CAL 1-4 | 7.000 | 6.998 | ---------- | 0.002 | +/- 0.250 | in |
| CAL 2-5 | 7.000 | 6.988 | ---------- | 0.012 | +/- 0.250 | in |
| CAL 3-6 | 7.000 | 6.969 | ---------- | 0.031 | +/- 0.250 | in |

**Data: KIND_MOR_CS_1\0002 WSTT_XRMI\003 06-Mar-14 17:07 Up @8664.8f** **Date: 06-Mar-14 17:16:59**

HALLIBURTON

## CUSTOMER EVENT LOG

| Event Type | Time & Date | Depth (ft) | Event Description |
|---|---|---|---|
| | 06-Mar-14 16:15:46 | 7119.50 | Logging 001 06-Mar-14 16:15 Dn @7119.5f |
| | 06-Mar-14 16:33:03 | 7845.58 | Halting 001 06-Mar-14 16:15 Dn @7119.5f |
| | 06-Mar-14 16:42:26 | 8656.00 | Logging 002 06-Mar-14 16:42 Up @8656.0f |
| | 06-Mar-14 17:01:44 | 8245.02 | Halting 002 06-Mar-14 16:42 Up @8656.0f |
| | 06-Mar-14 17:07:04 | 8664.75 | Logging 003 06-Mar-14 17:07 Up @8664.8f |
| | 06-Mar-14 17:51:31 | 6702.36 | Halting 003 06-Mar-14 17:07 Up @8664.8f |

**Data: KIND_MOR_CS_1\0002 WSTT_XRMI\HW11574** **Date: 06-Mar-14 20:19:53**

HALLIBURTON

## TOOL STRING DIAGRAM REPORT

| Description | Overbody Description | O.D. | Diagram | Sensors @ Delays | Length | Accumulated Length |
|---|---|---|---|---|---|---|
| RWCH-A032<br>135.00 lbs | | Ø 3.625 in |  | Load Cell @ 70.95 ft<br>BH Temperature @ 70.39 ft | 6.25 ft | 74.64 ft<br>68.39 ft |

GTET-11005602
165.00 lbs

Ø 3.625 in

8.52 ft

GammaRay @ 62.32 ft

59.87 ft

Regal Standoff 6_75-00000001
20.00 lbs

Ø 5.875 in*

Wavesonic-I-U67T68R71L70
520.00 lbs

Ø 3.625 in

34.07 ft

Wavesonic Delay @ 37.30 ft

25.80 ft

XRMI Isolator-00000070
32.50 lbs

Ø 4.500 in

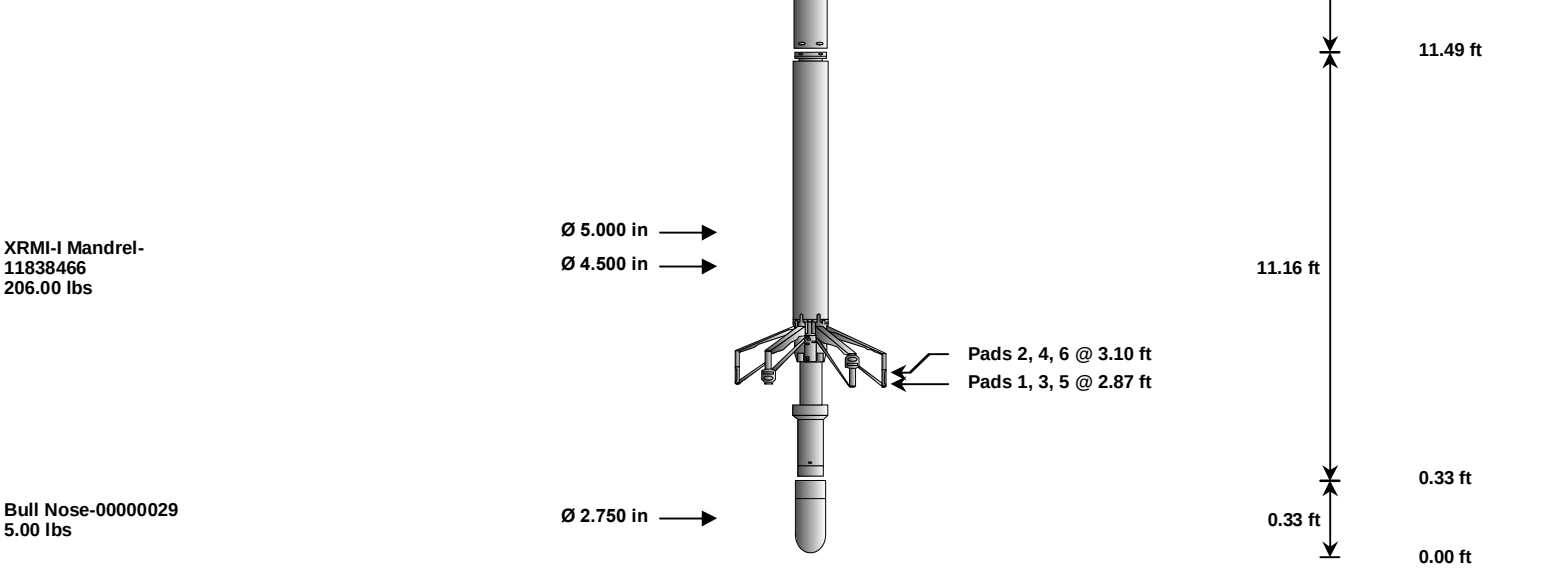
1.30 ft

24.49 ft

XRMI-I Instrument-11838465
290.00 lbs

Ø 4.500 in

13.00 ft




| Mnemonic | Tool Name | Serial Number | Weight (lbs) | Length (ft) | | Accumulated Length (ft) | Max.Log. Speed (fpm) |
|---|---|---|---|---|---|---|---|
| RWCH | Releasable Wireline Cable Head | A032 | 135.00 | 6.25 | | 68.39 | 300.00 |
| GTET | Gamma Telemetry Tool | 11005602 | 165.00 | 8.52 | | 59.87 | 60.00 |
| WSTT | WaveSonic Insite | U67T68R71L70 | 520.00 | 34.07 | | 25.80 | 30.00 |
| RSOF | Regal Standoff 6.75in | 00000001 | 20.00 | 0.52 | * | 53.83 | 300.00 |
| | Isolator for the XRMI tool | 00000070 | 32.50 | 1.30 | | 24.49 | 300.00 |
| XRMI | XRMI Navigation - Insite | 11838465 | 290.00 | 13.00 | | 11.49 | 30.00 |
| XRMI-I | XRMI Imager - Insite | 11838466 | 206.00 | 11.16 | | 0.33 | 30.00 |
| BLNS | Bull Nose | 00000029 | 5.00 | 0.33 | | 0.00 | 300.00 |
| **Total** | | | **1,373.50** | **74.64** | | | |

* Not included in Total Length and Length Accumulation.

**Data: KIND_MOR_CS_1\0002 WSTT_XRMI\IDLE** **Date: 06-Mar-14 15:33:36**

| | | | |
|---|---|---|---|
| COMPANY | **KINDER MORGAN CO2 Co. L.P.** | | |
| WELL | **COW CANYON CS #1** | | |
| FIELD | **MCELMO DOME** | | |
| COUNTY | **MONTEZUMA** | STATE | **CO** |

HALLIBURTON

**EXTENDED-RANGE MICRO IMAGER**

***FIELD COPY***