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December 21, 2016

David Lastovka, P.E.
ODOT District 12 Transportation Engineer
Ohio Department of Transportation
5500 Transportation Boulevard
Garfield Heights, Ohio 44125-5396

E-mail to: Dave.Lastovka@dot.state.oh.us

Re: December 1 and 2, 2016 Bi-Weekly Readings
CUY-90-15.24 Slope Monitoring
PID 96504
SME Project No. 069032.00

Dear Mr. Lastovka:

Bi-weekly instrument readings for the I-90 west slope taken on December 1 and 2, 2016, are presented in this report. Bi-weekly readings currently include instruments at I/P-001-13, I/P-002-13, I/P-003-10, I/P-004-13, I/P-009-13, B-101, B-102, B-105A, B-05-02, B-05-A-03, B-05-04, B-05-A-11, P-1, P-9N, and TGR I-4. Changes reported for the individual instruments are for the previous two-week period unless noted otherwise.

Piezometer Readings

P-001-13 – Pore pressures in all piezometers at this location decreased by about 0.7 feet during the last few days of this reading cycle.

P-002-13 – Pore pressures in all piezometers at this location decreased by 0.4 to 1.1 feet. The largest decrease occurred in the piezometer at elevation 458 feet.

P-003-10 – At this location, pore pressures in the 6 shallowest piezometers decreased by 0.6 feet. Pore pressure in the deepest piezometer decreased by 0.4 feet. Pore pressures have been decreasing since early October 2016 in the five shallowest piezometers and since early September 2016 in the two deepest piezometers.

P-004-13 – Pore pressure in the shallow piezometer at this location decreased by 0.6 feet during this reading cycle. Pore pressure in the deep piezometer show virtually no change.

P-009-13 – Pore pressure readings in both piezometers at this location show virtually no change.

B-105A – Total head in the shallow piezometer at this location continued to decrease during this recording cycle. From August 13 to December 1, 2016, the total head decreased by about 3 feet. Pore pressures in the deep piezometer continue to decrease at a very slow rate.

B-05-02 – Pore pressures in both piezometers at this location decreased rapidly during this reading period by 2.4 feet in the shallow piezometer and by 0.9 feet in the deep piezometer. These changes are likely due to earthwork operations in the area of these instruments.

B-05-A-03 – Pore pressure in both piezometers at this location decreased by 0.6 feet during this recording cycle.

B-05-04 – The most recent pore pressure readings for the shallow piezometer at this location are not shown on the attached plot because they flat-lined at an unrealistically high value. We think this is due to a connection issue within the data logger since the temperature readings for this piezometer look good. We repaired the connection and will check the status again prior to the next readings. Pore pressure readings in the deep piezometer show virtually no change.

B-05-A-11 – Pore pressure in the deep piezometer at this location continued to decrease. Since September 23, 2016, the pore pressure has decreased by 1.5 feet. The data logger for the shallow piezometer stopped working about halfway through this reading cycle. Prior to that, the pore pressure readings showed virtually no change. We are working with the manufacturer to determine why this and other data loggers are failing.

Inclinometer Readings

Inclinometer readings at I-001-13, I-002-13, I-003-10, I-009-13, B-101, B-102, B-105A, B-05-02, B-05-04, B-05-A-11, P-1, P-9N, and TGR I-4 showed virtually no movement this period. In some cases, the plots indicated displacement at the top of the casing. This is due to disturbance of the area around the casing that occurred during construction. Protective covers have not yet been permanently concreted in place because of the ongoing construction near these instruments.

I-004-13 – Inclinometer readings on November 22, 2016 at this location showed up to 0.2 inches of displacement in the positive A-axis and positive B-axis directions from about 67 to 75 feet. The December 1, 2016 readings, align with readings prior to November 22 and do not show any movement at this depth. It appears that the November 22 reading was erroneous.

B-05-A-03 – Inclinometer readings at this location are nearly the same as the last set of readings, and show no additional movement.

This concludes our report of bi-weekly instrument readings. Please call or email with any questions.

Very truly yours,

SME

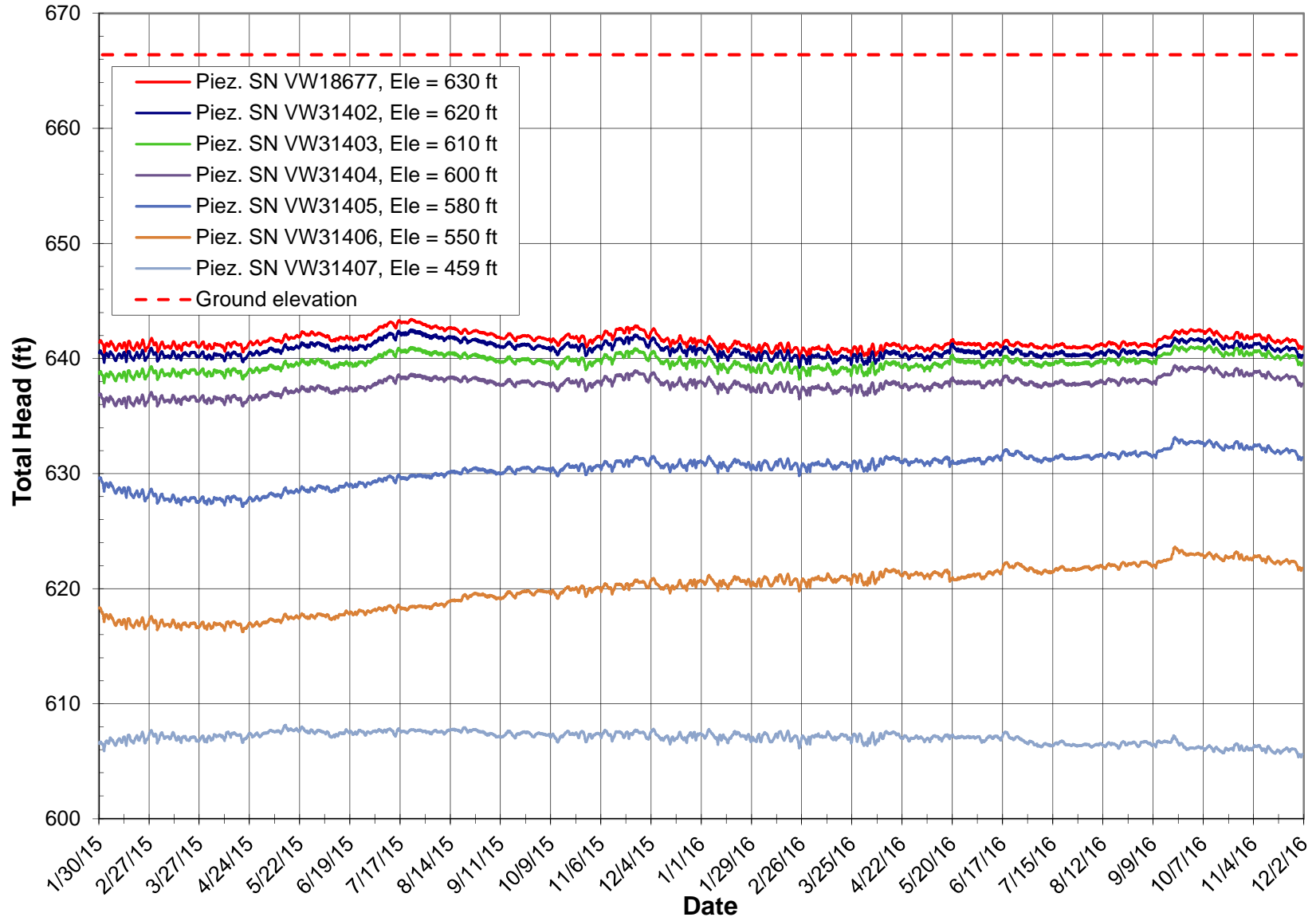
Brendan P. Lieske, P.E.
Senior Staff Engineer

Alan J. Esser, P.E., D.GE
Chief Consultant

Copies sent to distribution list.

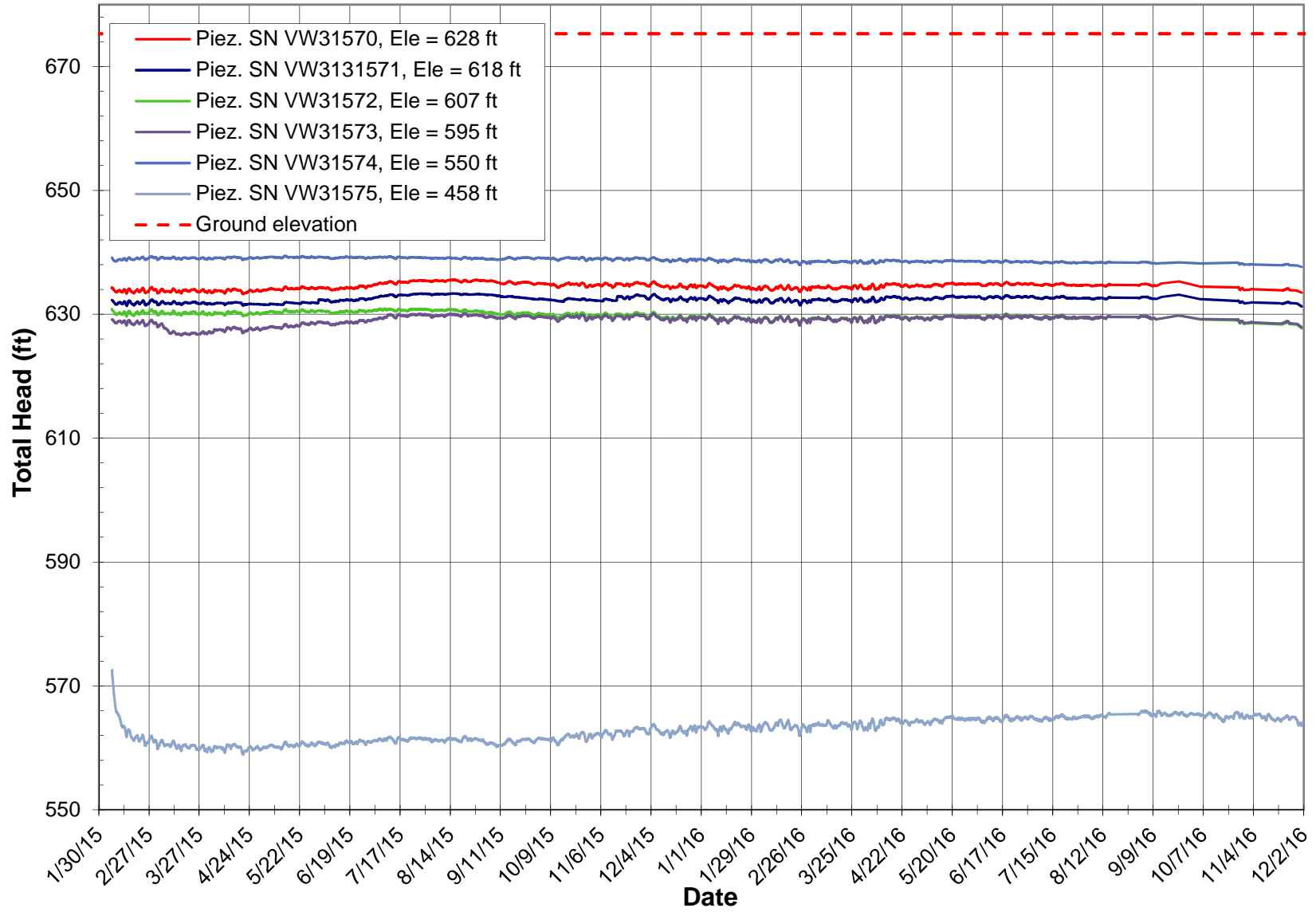
P-001-13 VW Piezometer Readings

Ground surface elevation = 666.4 ft



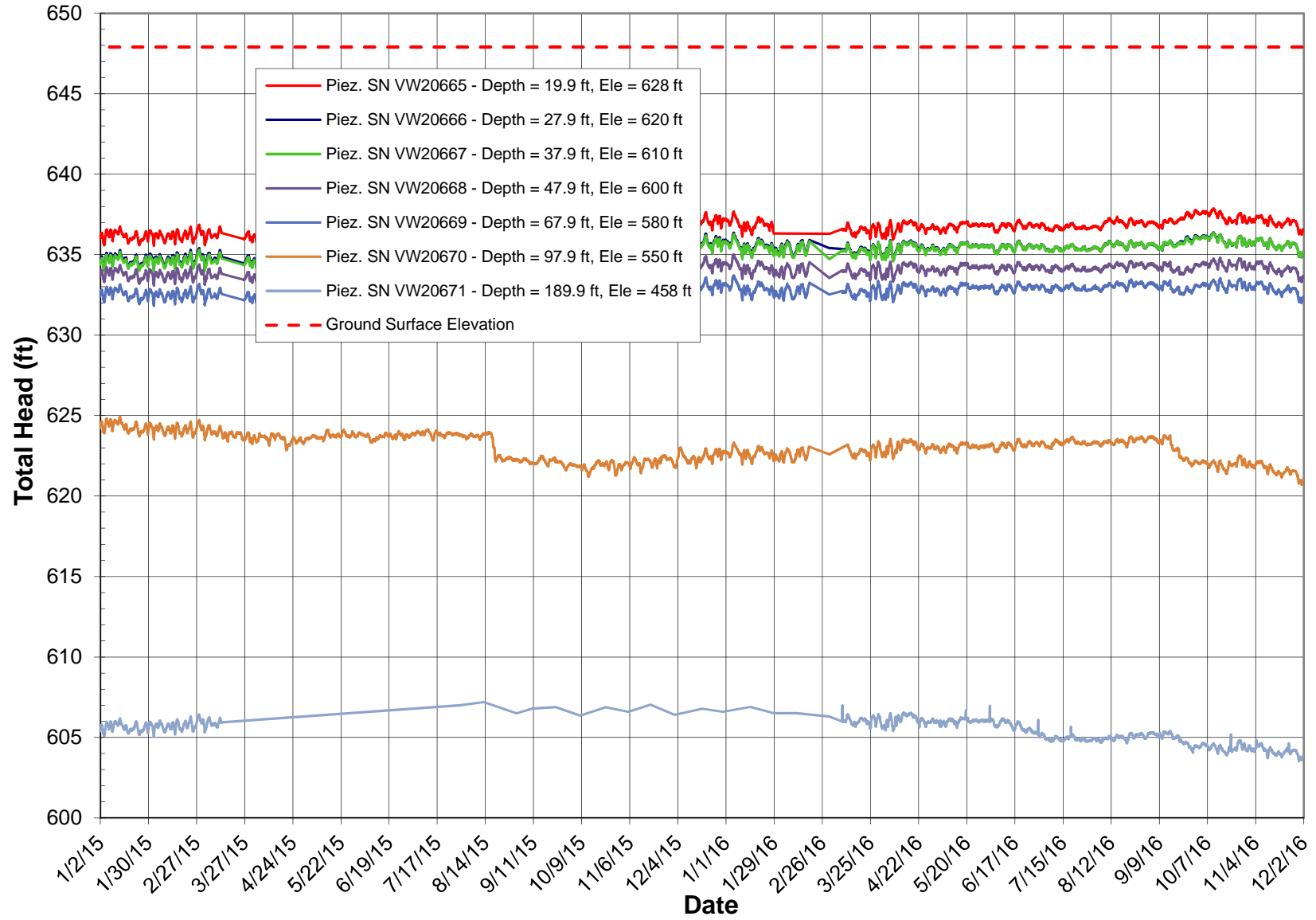
P-002-13 VW Piezometer Readings

Ground surface elevation = 675.29 ft



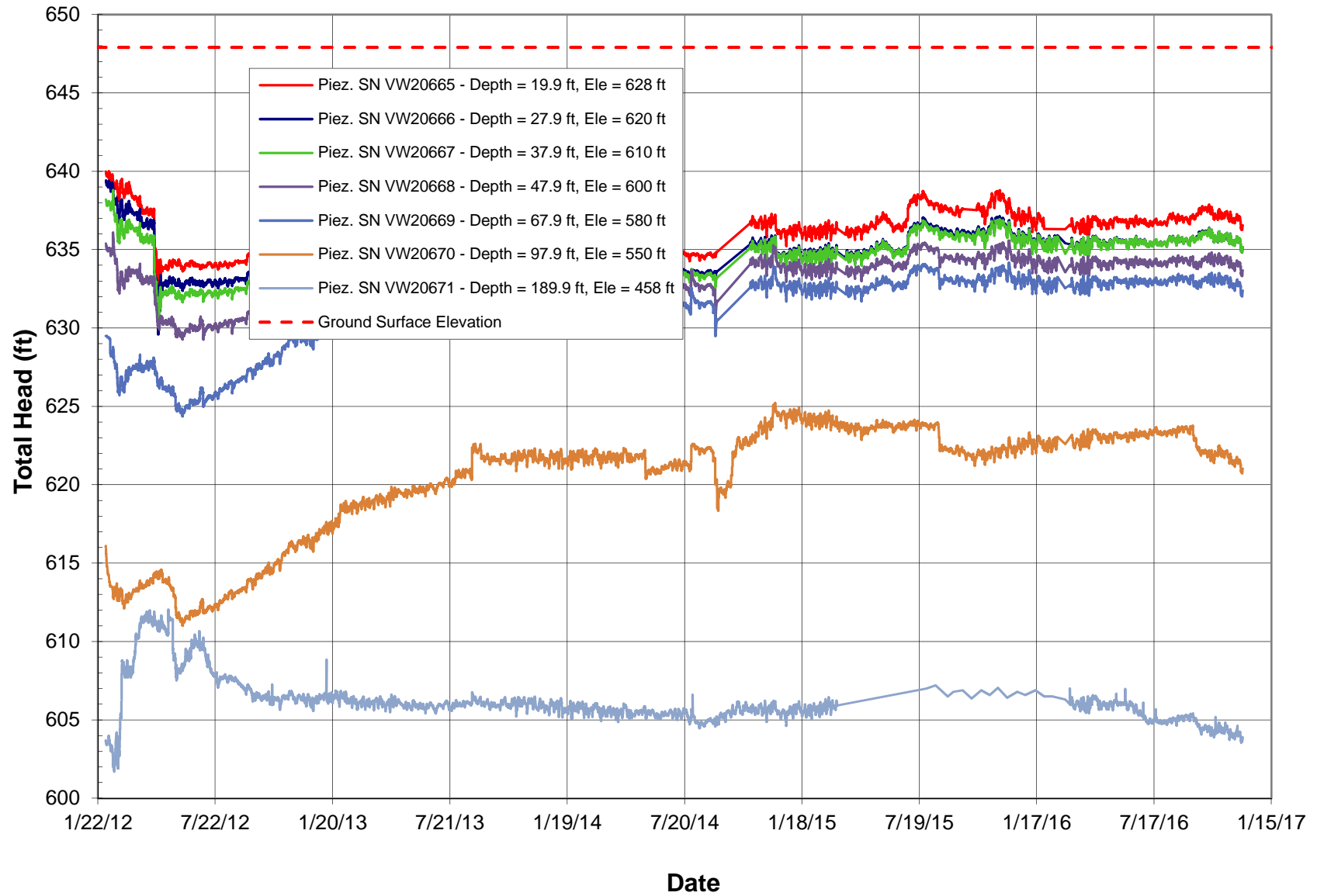
P-003-10 VW Piezometer Readings

Ground surface elevation = 647.9 ft



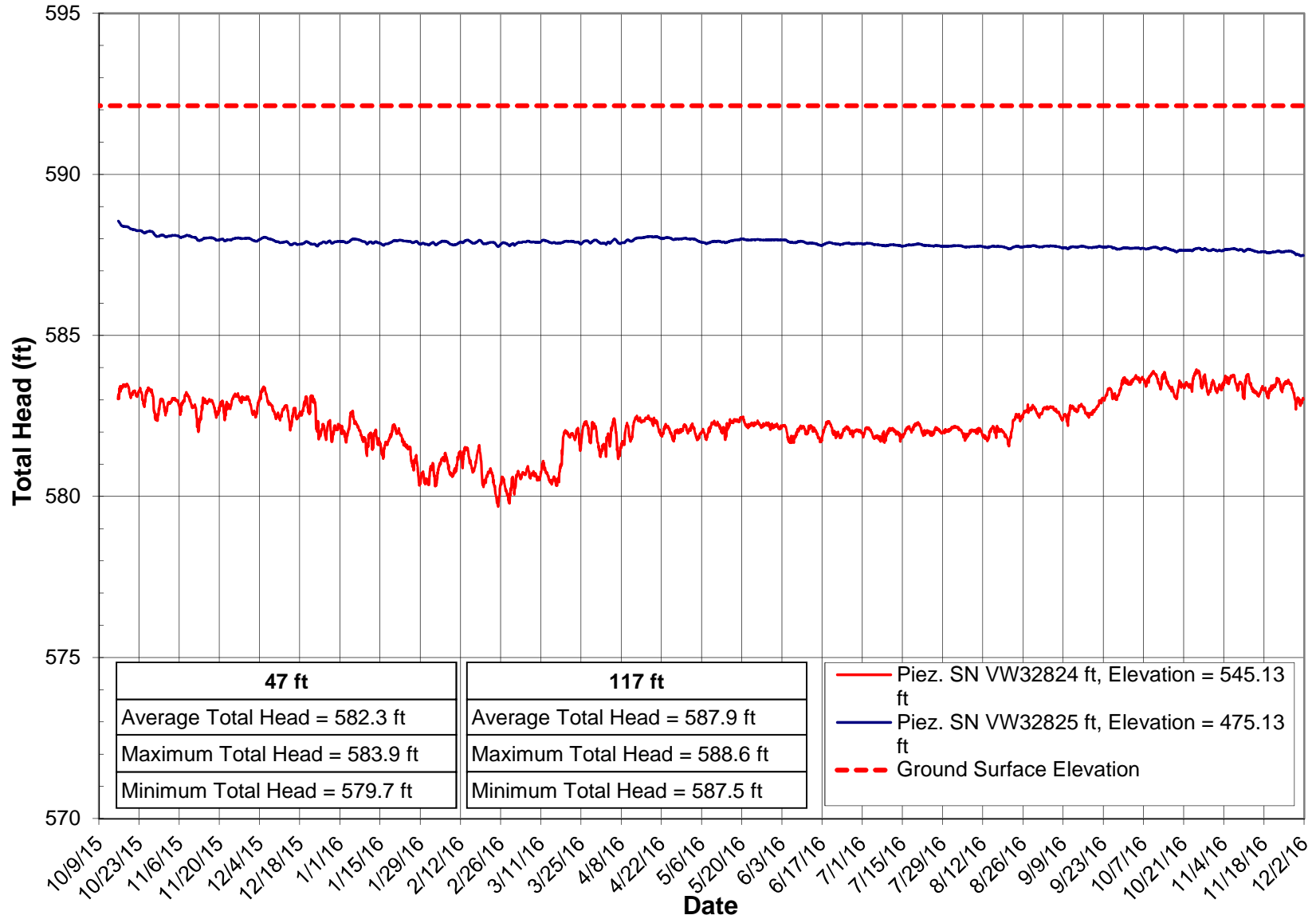
P-003-10 VW Piezometer Readings

Ground surface elevation = 647.9 ft



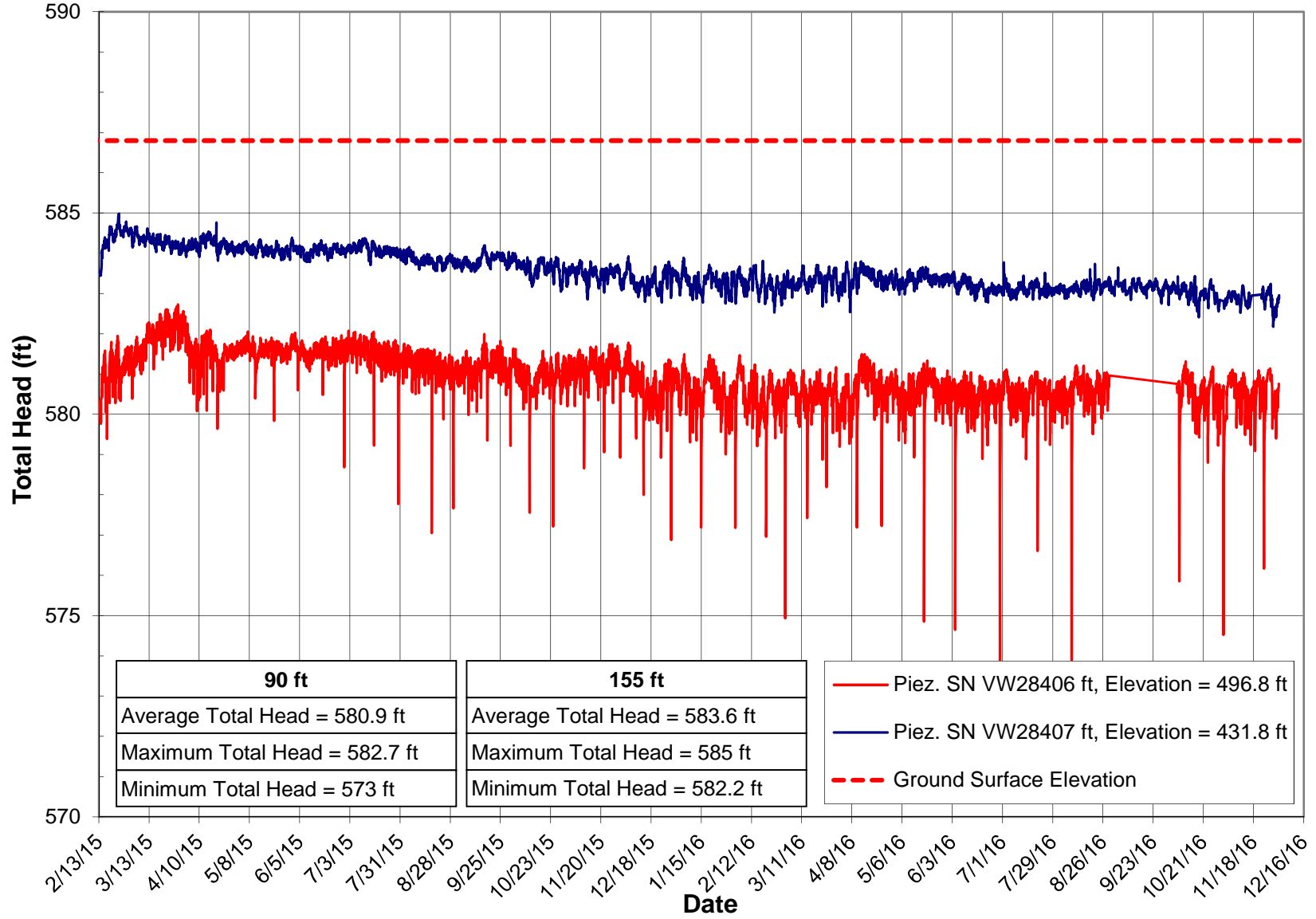
P-004-13 VW Piezometer Readings

Ground surface elevation = 592.13 ft



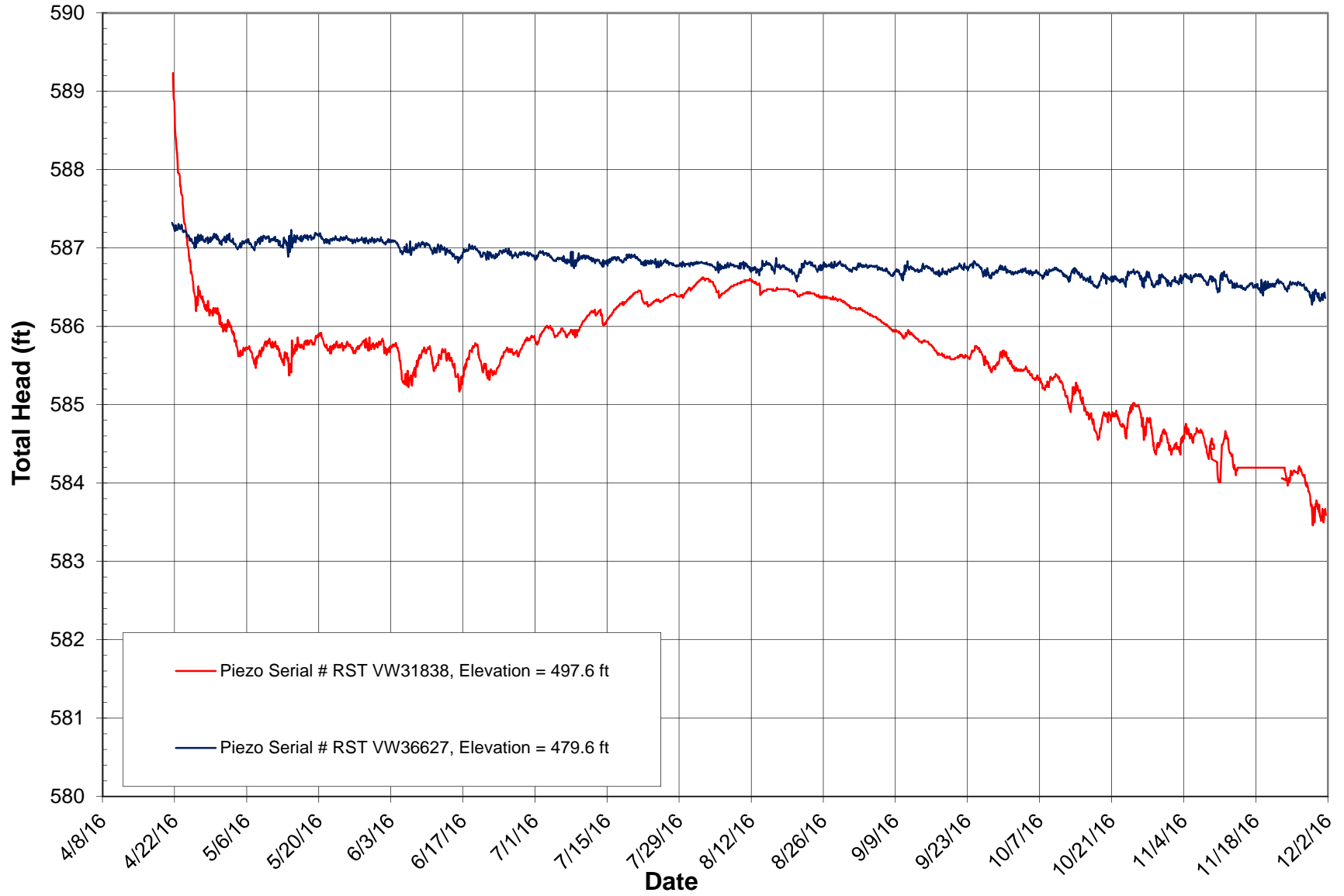
P-009-13 VW Piezometer Readings

Ground surface elevation = 586.6 ft



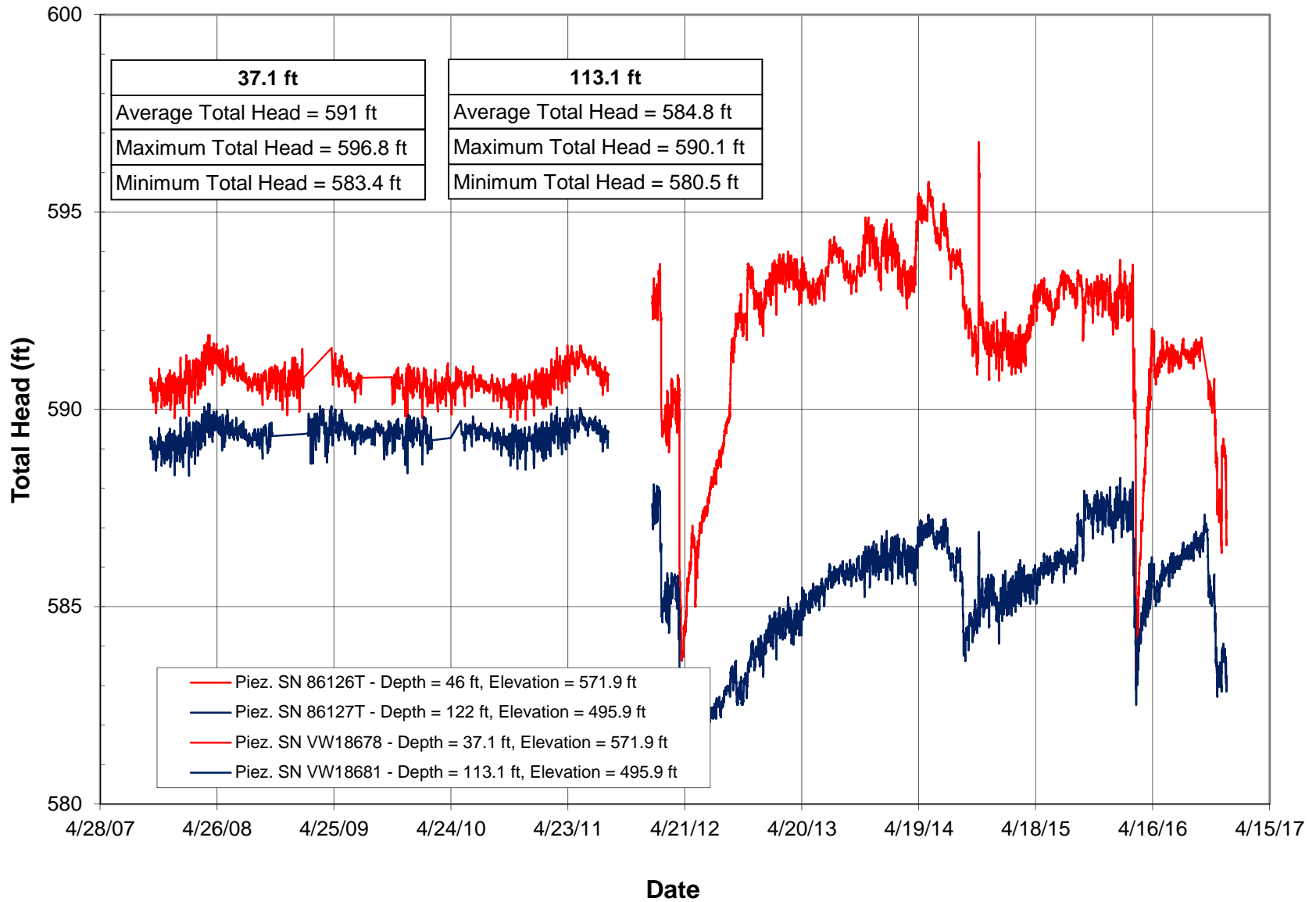
B-105A VW Piezometer Readings

Ground surface elevation = 585.6 ft



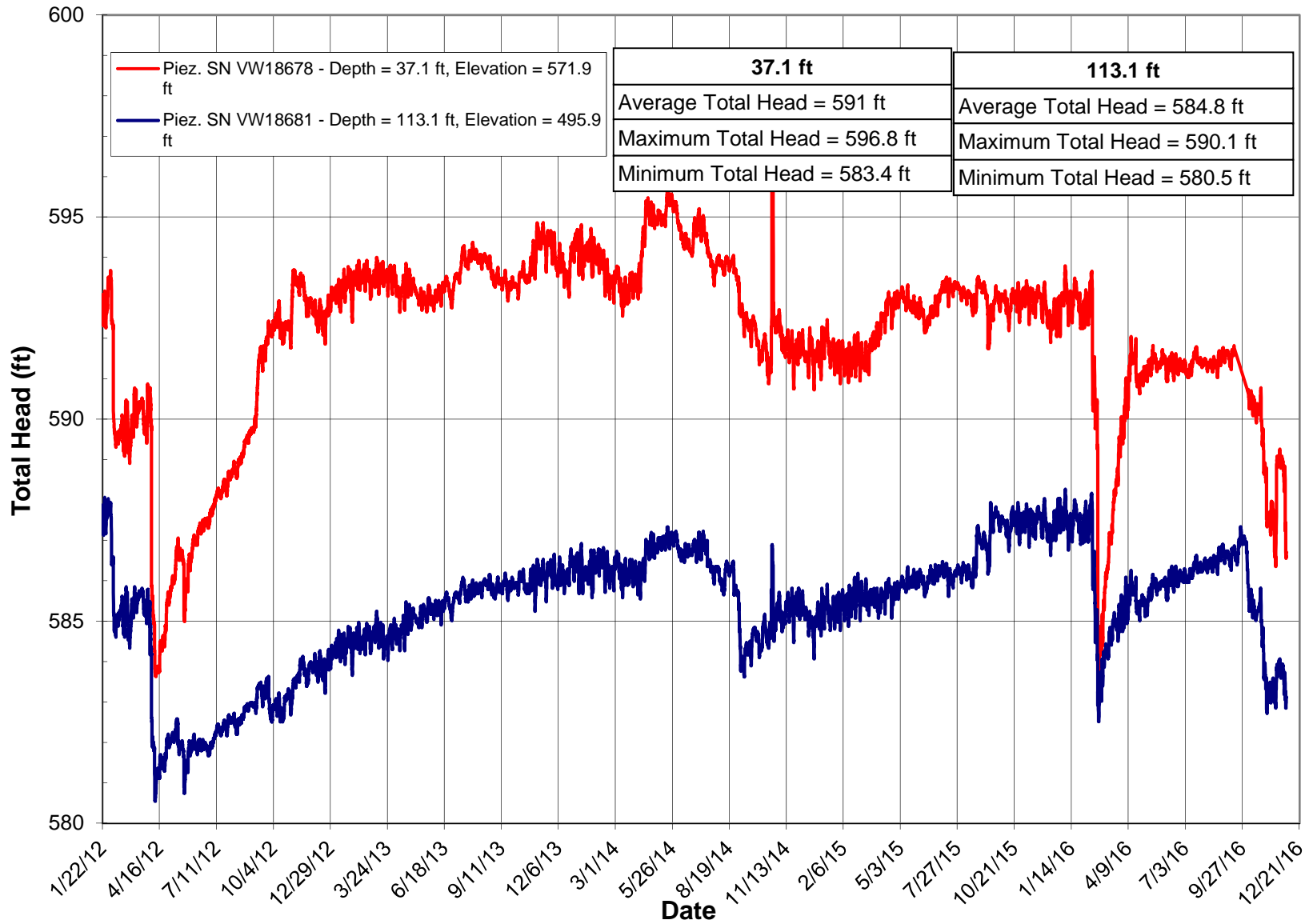
B-05-02 VW Piezometer Readings

Ground surface elevation = approx 609.0 ft



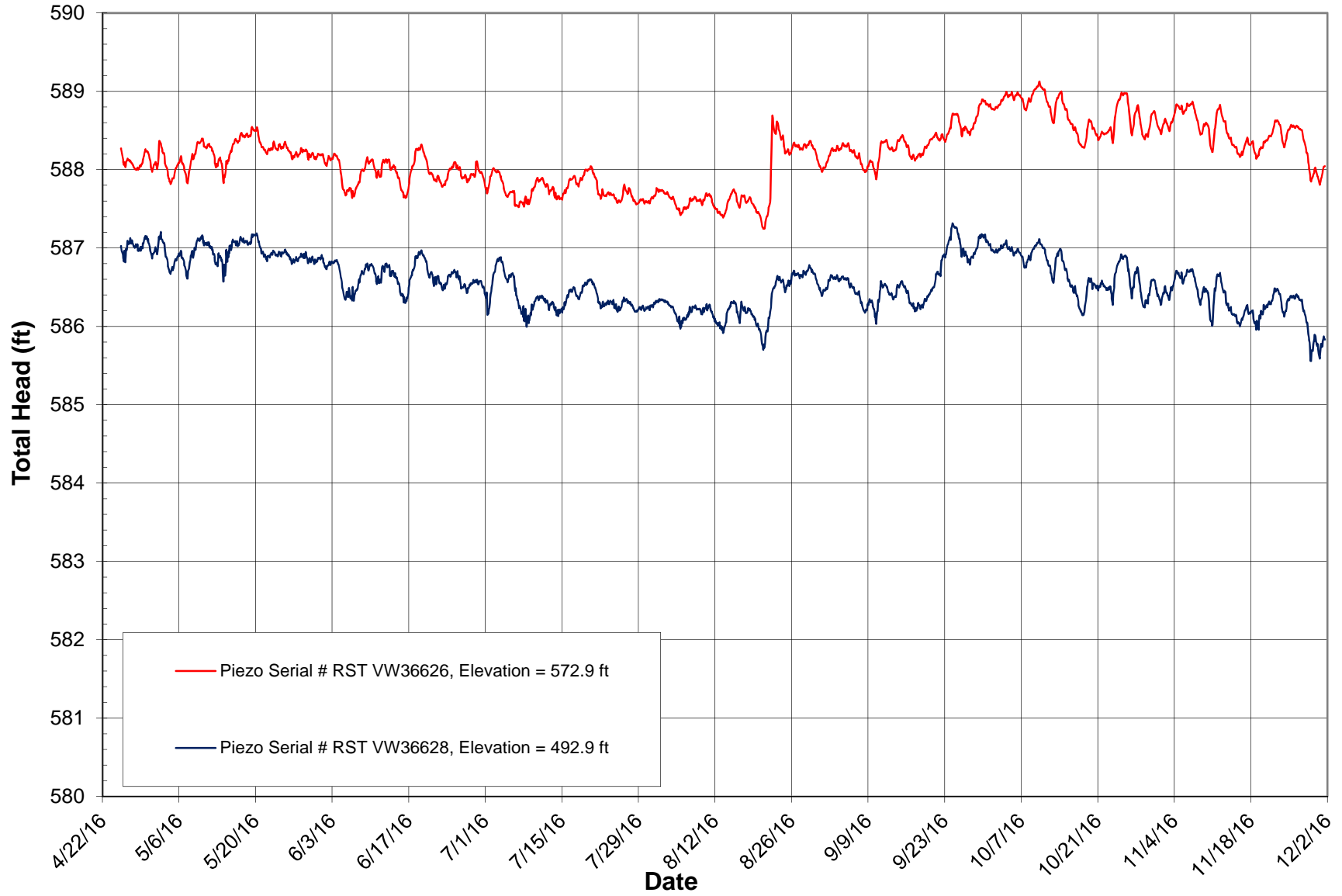
B-05-02 VW Piezometer Readings

Ground surface elevation = approx 609.0 ft



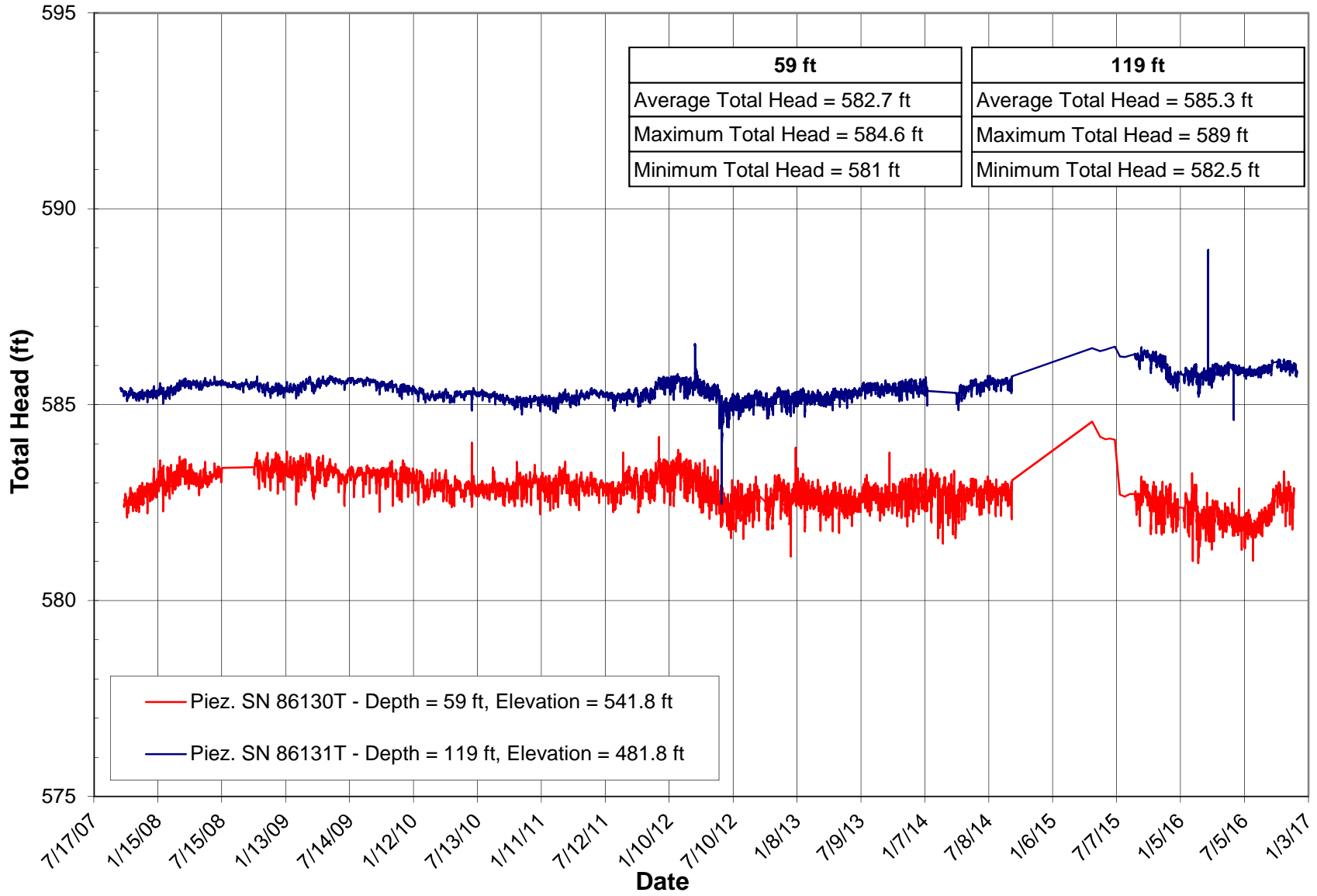
B-05-A-03 VW Piezometer Readings

Ground surface elevation = 599.9 ft



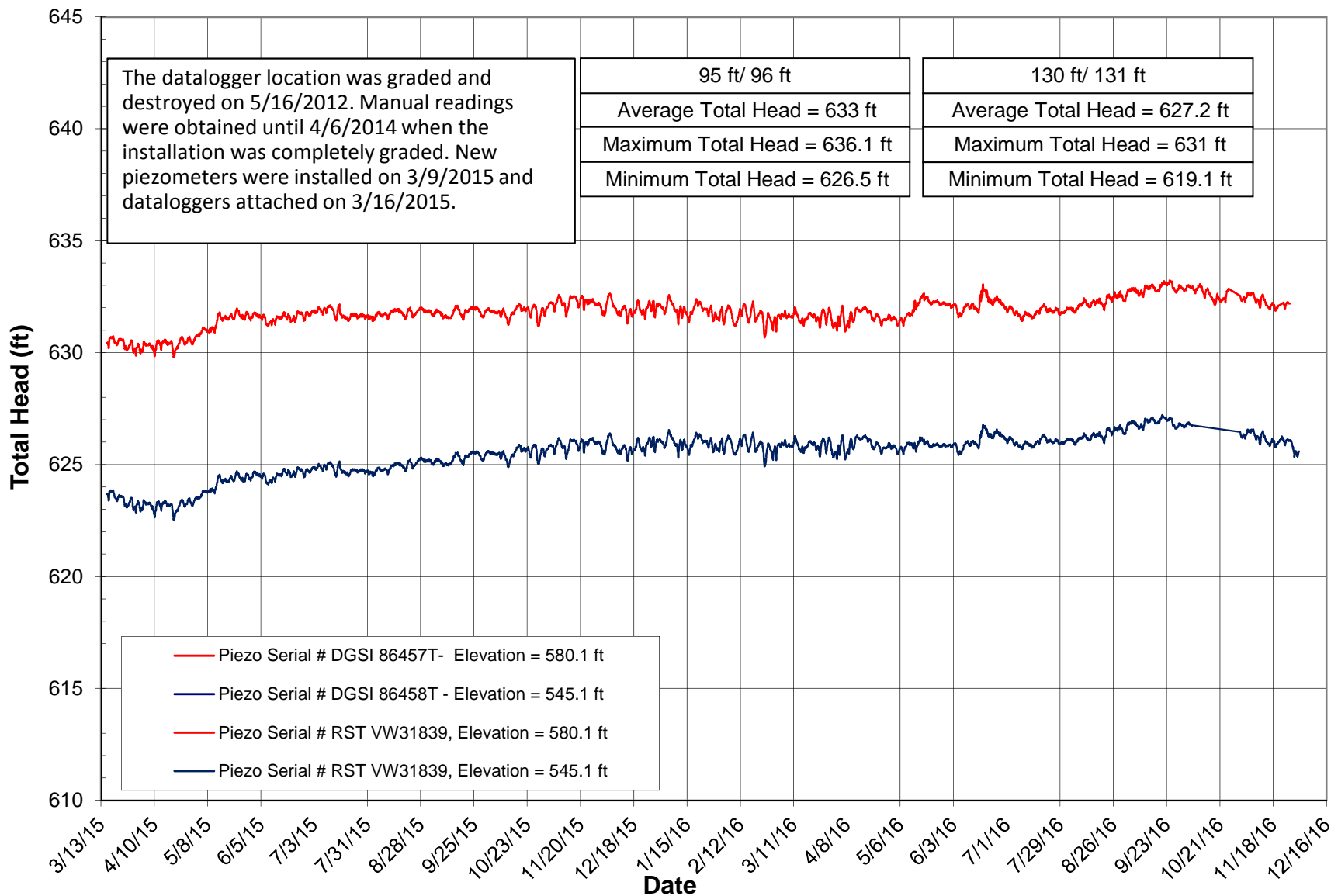
B-05-04 VW Piezometer Readings

Ground surface elevation = 600.8 ft



B-05-11/B-05-A-11 VW Piezometer Readings

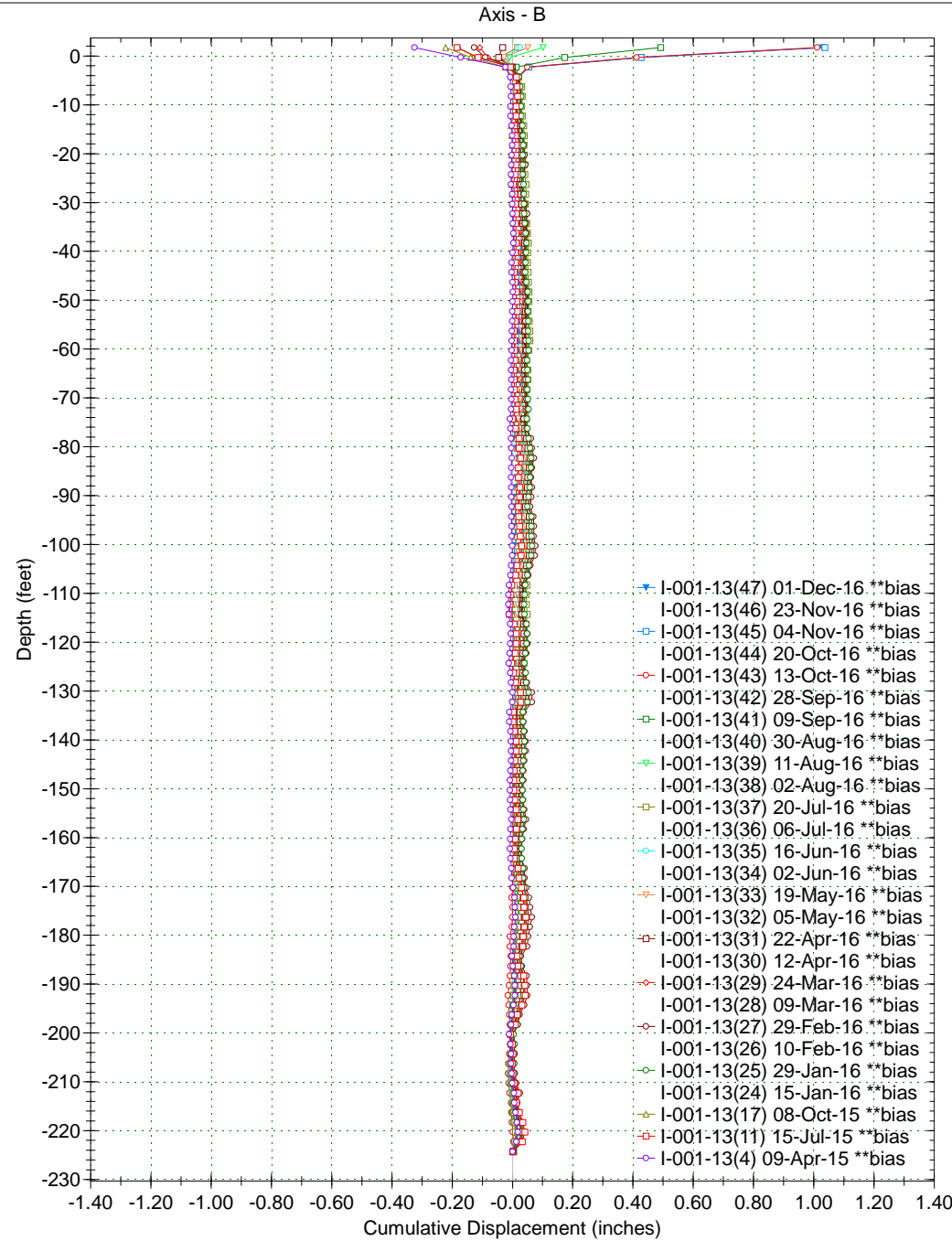
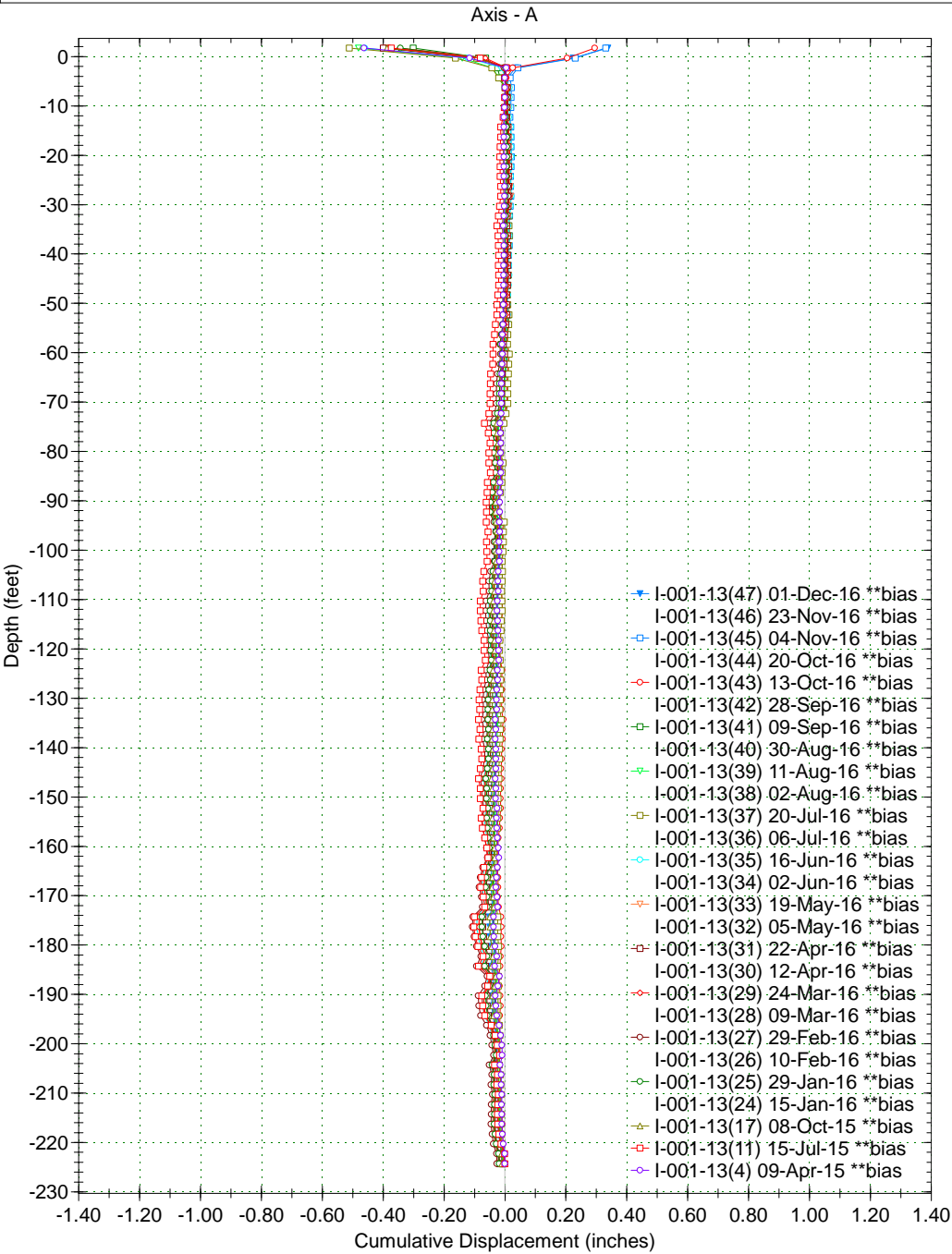
Ground surface elevation = 675.1 ft (B-05-11) / 676.1 ft (B-05-A-11)



Borehole : I-001-13
Project : CUY-90-15-24
Location : Cleveland, Ohio
Northing :
Easting :
Collar :



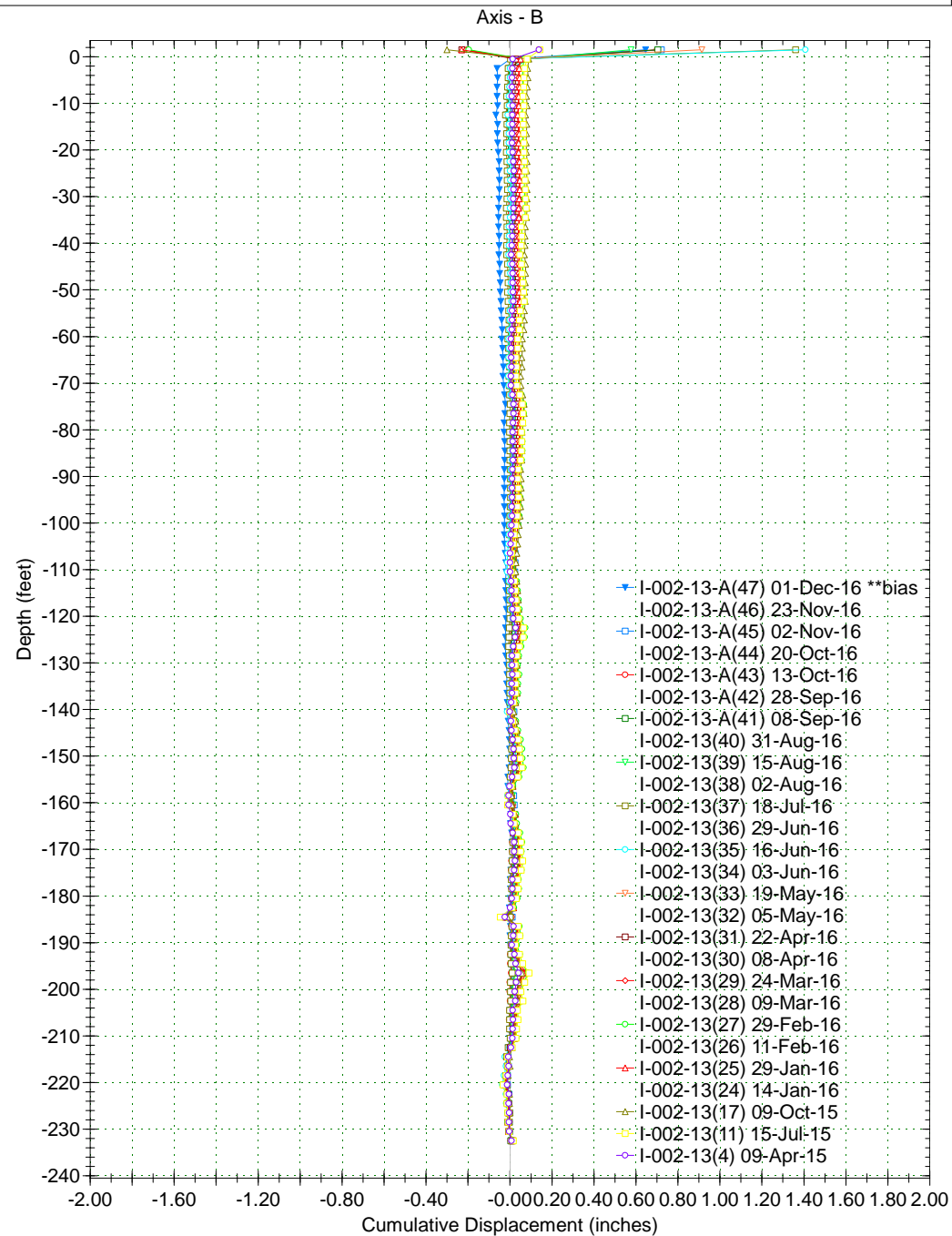
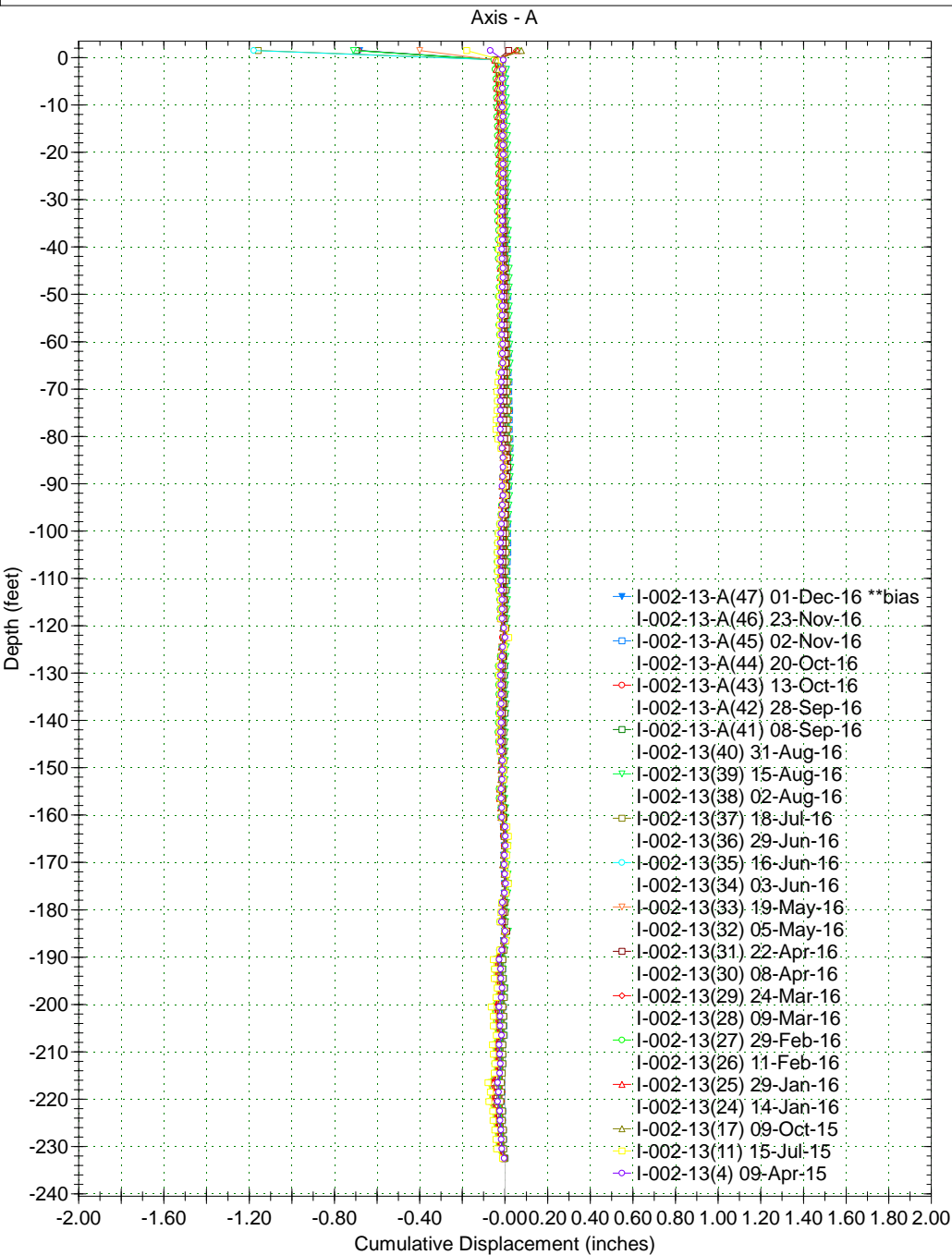
Spiral Correction : N/A
Collar Elevation : 3.7 feet
Borehole Total Depth : 228.0 feet
A+ Groove Azimuth :
Base Reading : 2015 Mar 03 11:14
Applied Azimuth : 0.0 degrees



Borehole : I-002-13
Project : CUY-90-15-24
Location : Cleveland, Ohio
Northing :
Easting :
Collar :



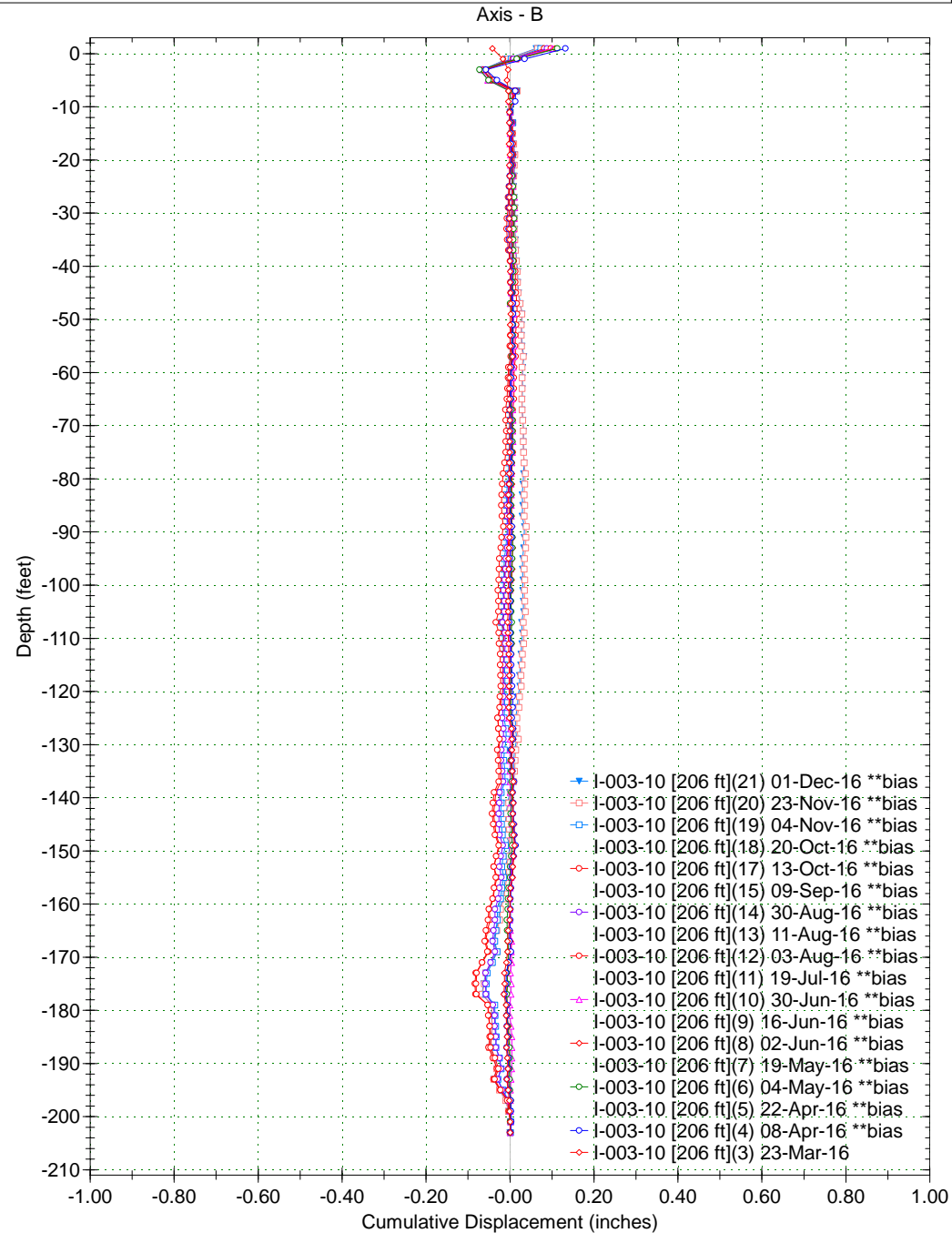
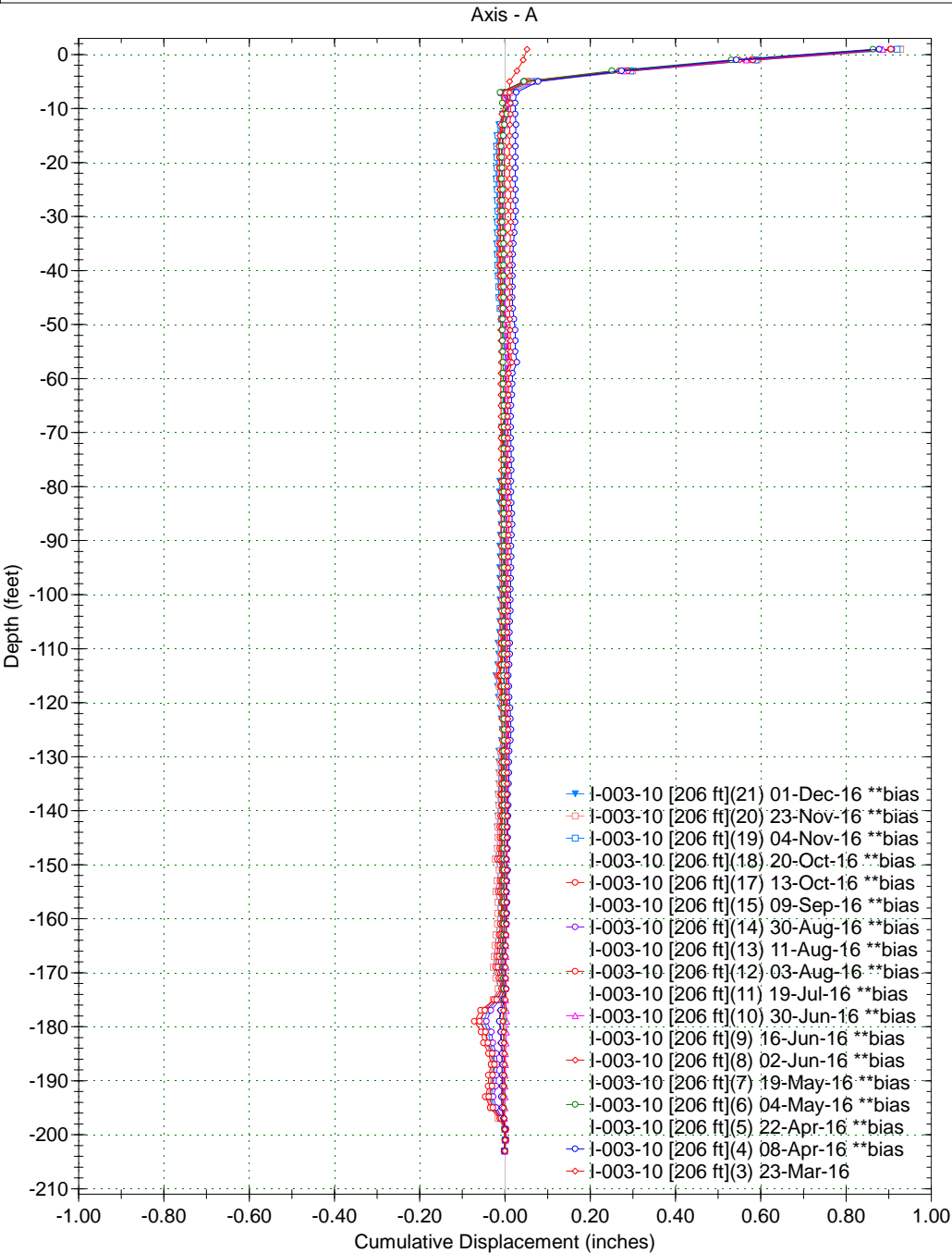
Spiral Correction : N/A
Collar Elevation : 3.5 feet
Borehole Total Depth : 236.0 feet
A+ Groove Azimuth :
Base Reading : 2015 Mar 03 10:04
Applied Azimuth : 0.0 degrees



Borehole : I-003-10 [206 ft]
Project : CUY-90-15-24
Location :
Northing :
Easting :
Collar :



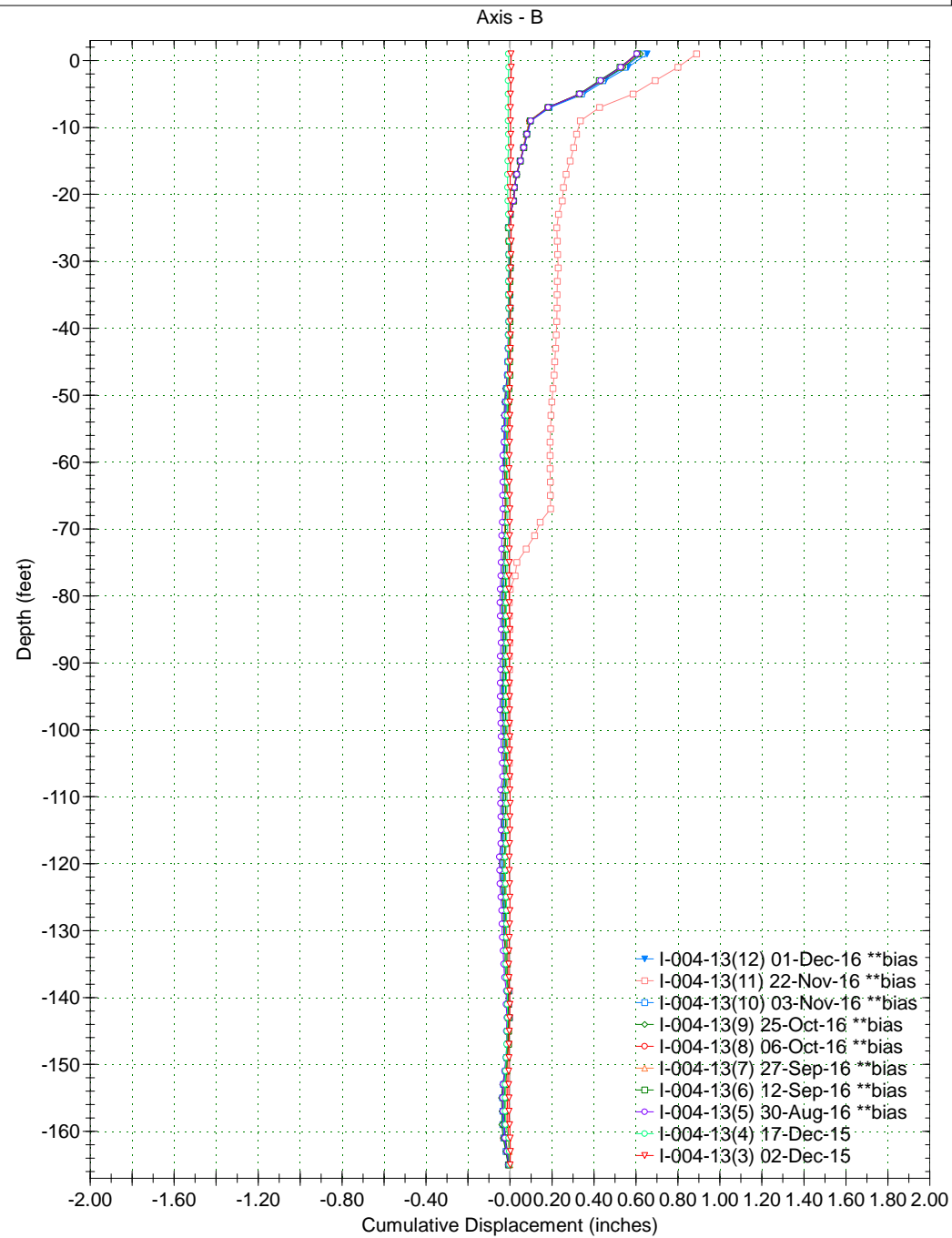
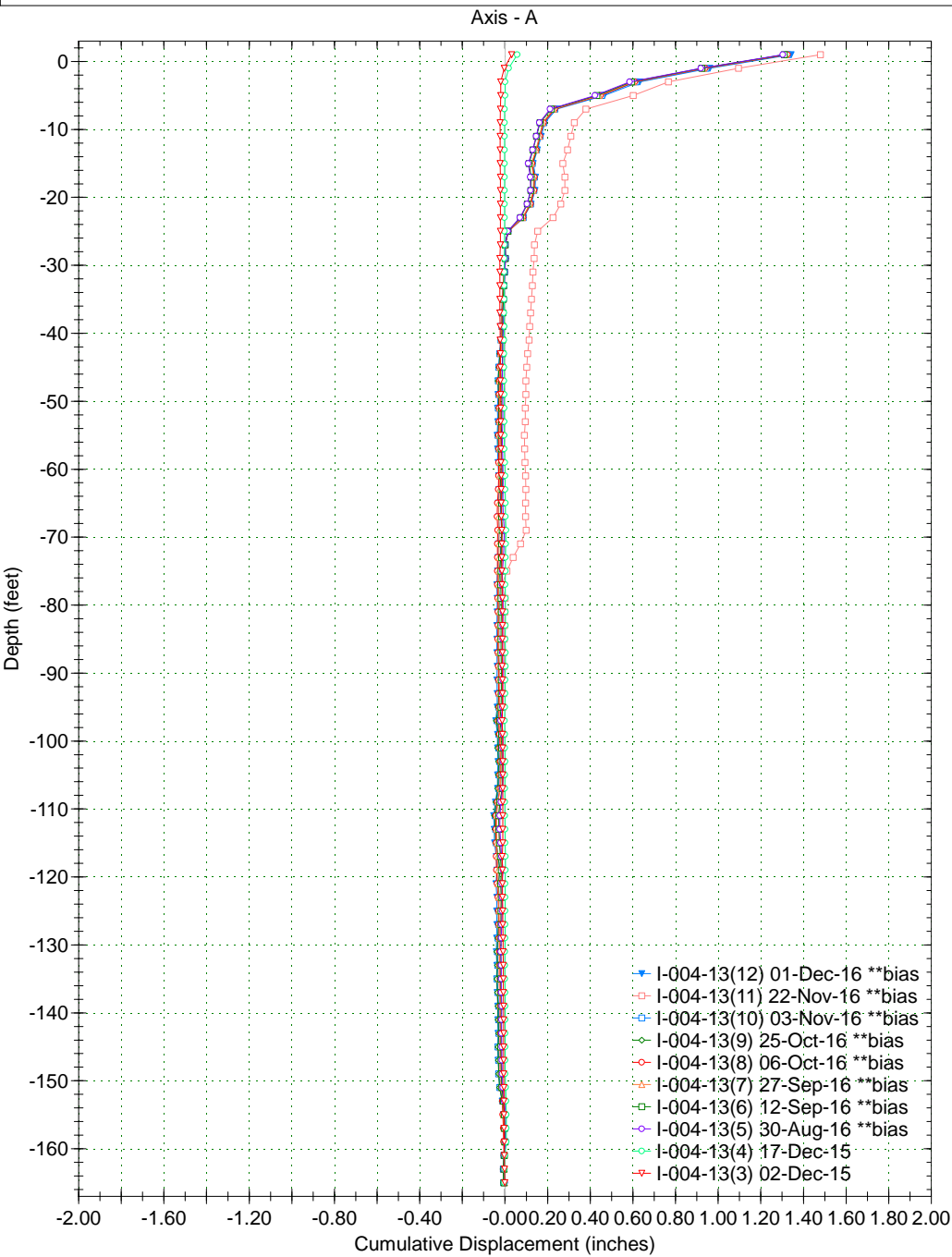
Spiral Correction : N/A
Collar Elevation : 3.0 feet
Borehole Total Depth : 206.0 feet
A+ Groove Azimuth :
Base Reading : 2016 Mar 08 15:42
Applied Azimuth : 0.0 degrees



Borehole : I-004-13
Project : CUY-90-15-24
Location :
Northing :
Easting :
Collar :



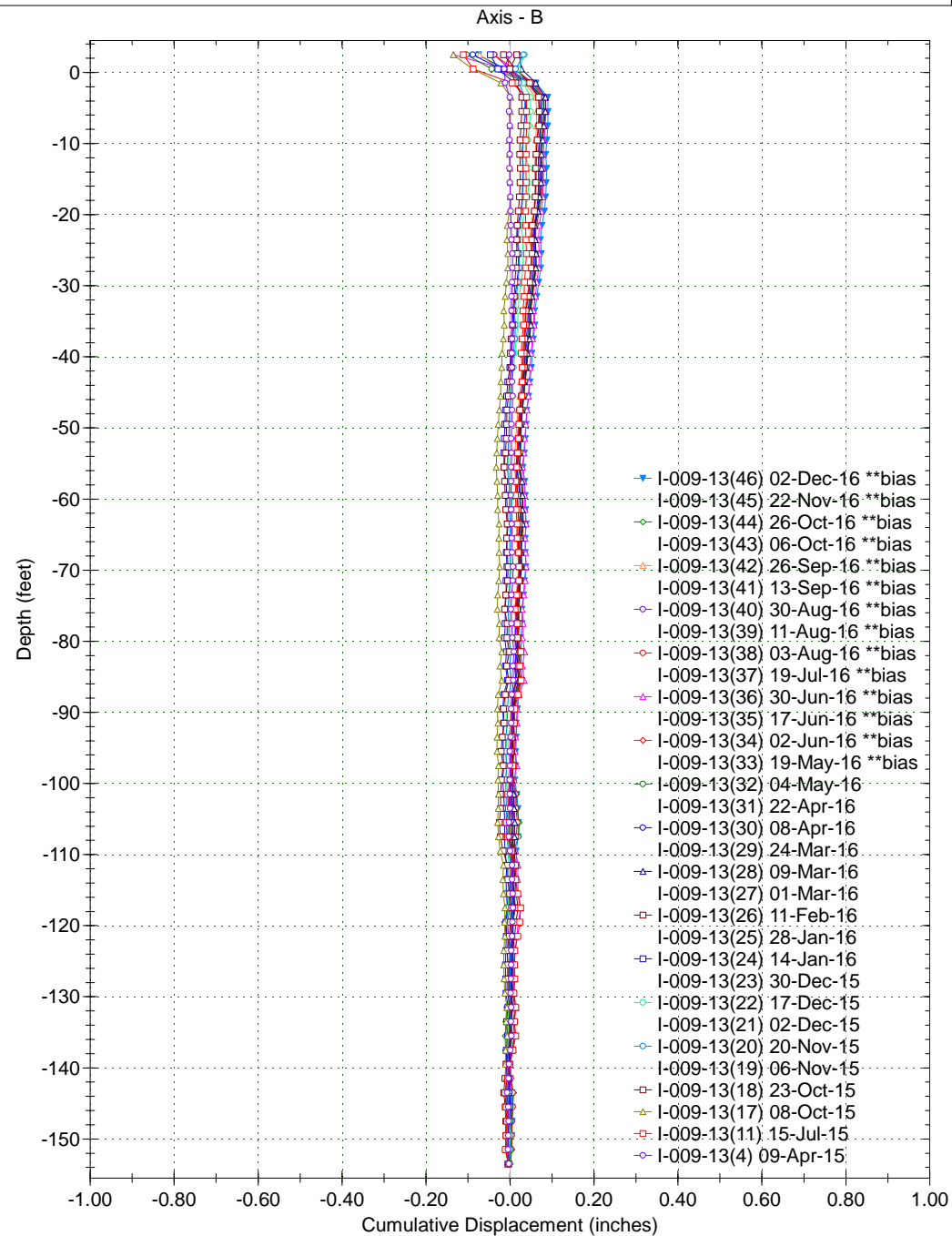
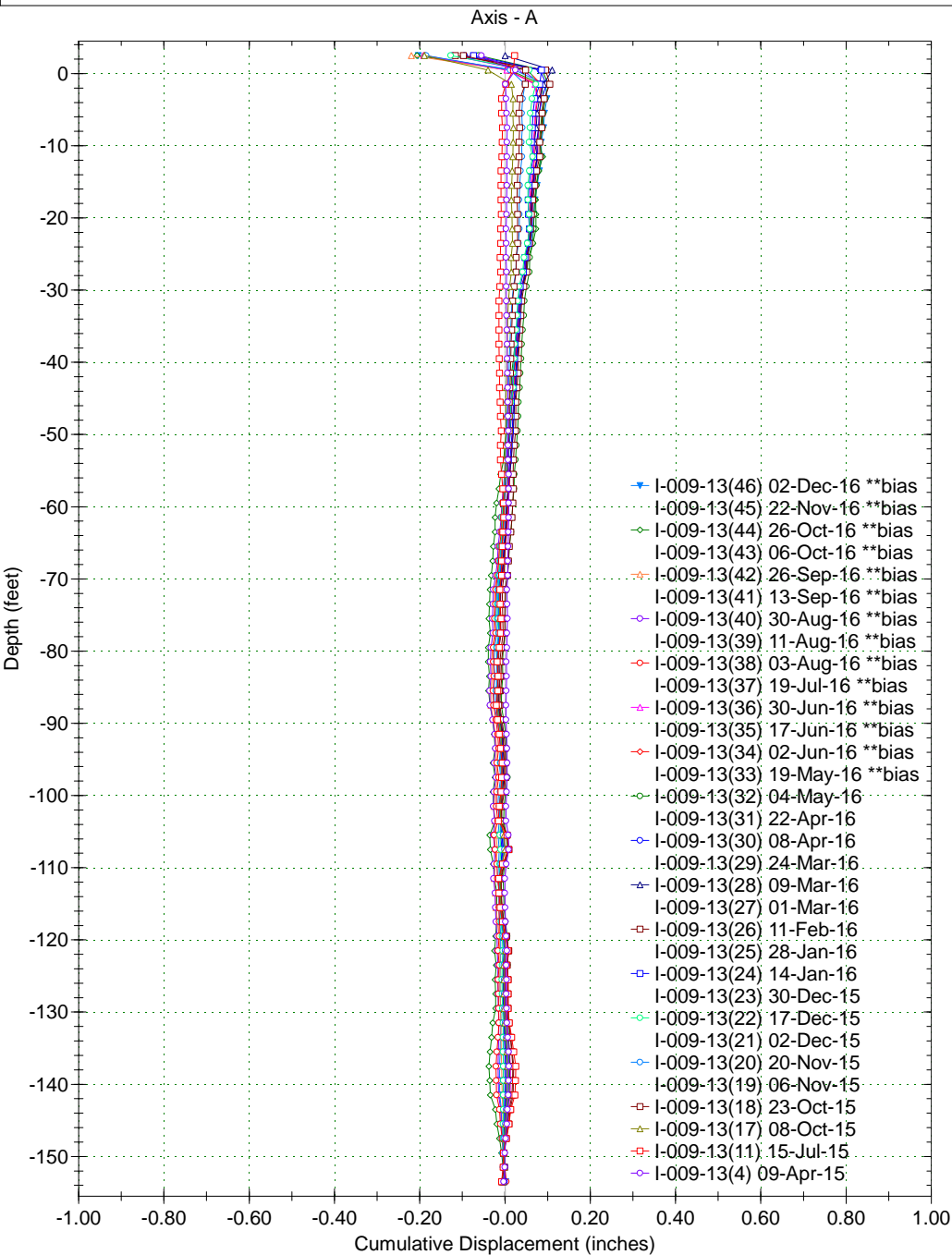
Spiral Correction : N/A
Collar Elevation : 3.0 feet
Borehole Total Depth : 168.0 feet
A+ Groove Azimuth :
Base Reading : 2015 Nov 20 09:09
Applied Azimuth : 0.0 degrees



Borehole : I-009-13
Project : CUY-90-15-24
Location : Cleveland, Ohio
Northing :
Easting :
Collar :



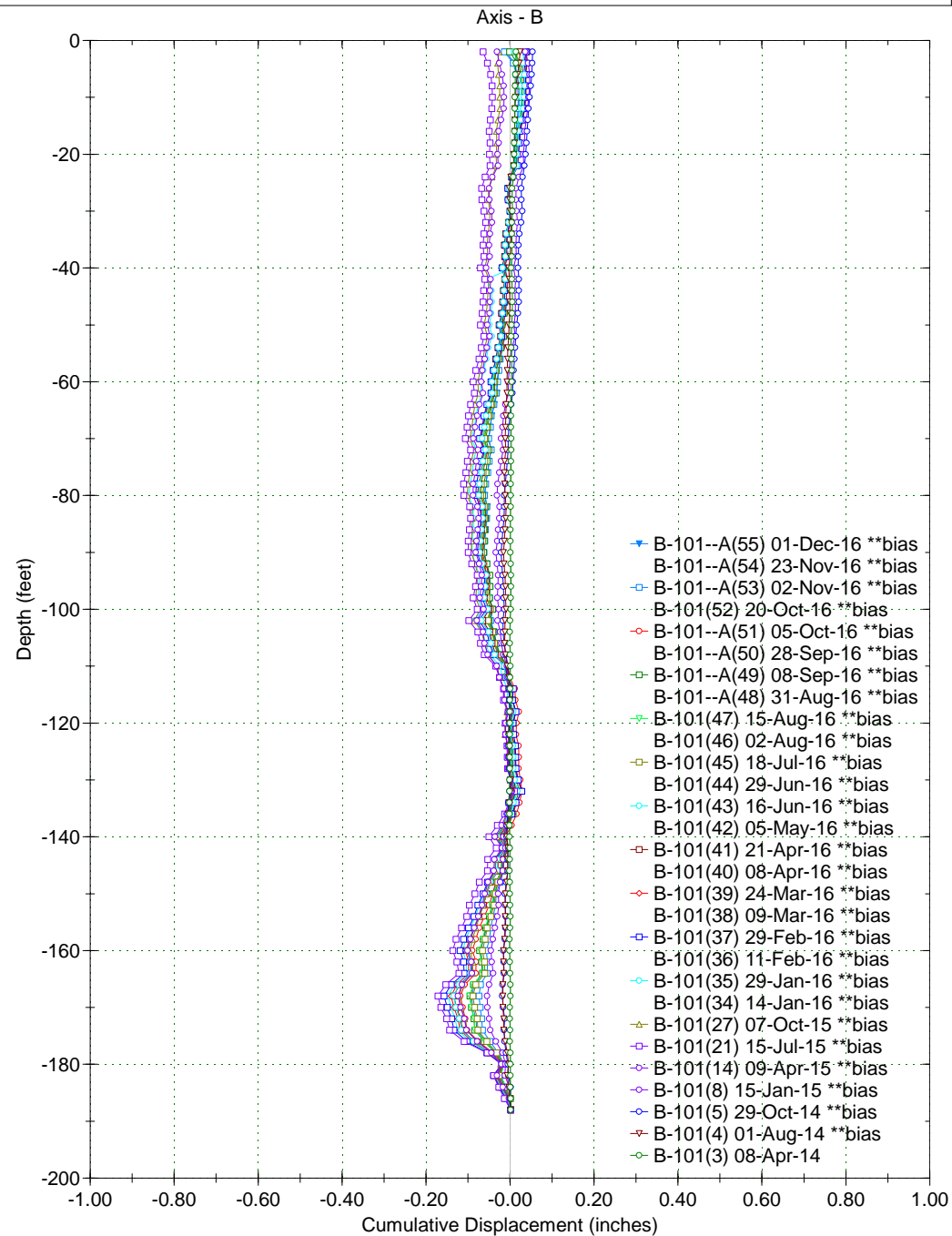
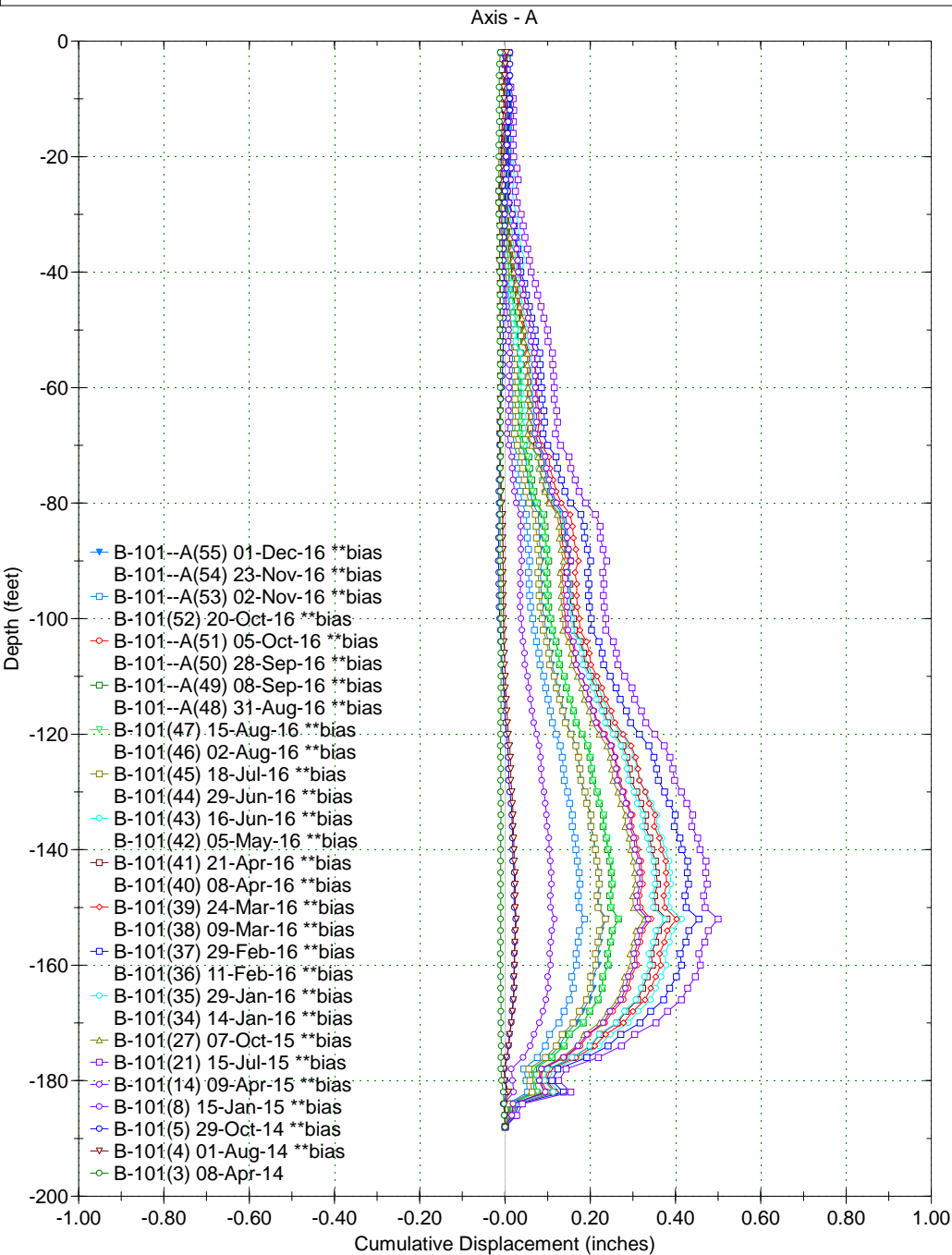
Spiral Correction : N/A
Collar Elevation : 4.5 feet
Borehole Total Depth : 158.0 feet
A+ Groove Azimuth :
Base Reading : 2015 Mar 18 15:56
Applied Azimuth : 0.0 degrees



Borehole : B-101
 Project : CUY-90-15-24
 Location : Cleveland, Ohio
 Northing : Sta. 15+06.50
 Easting : 120.7' Rt of CL
 Collar :



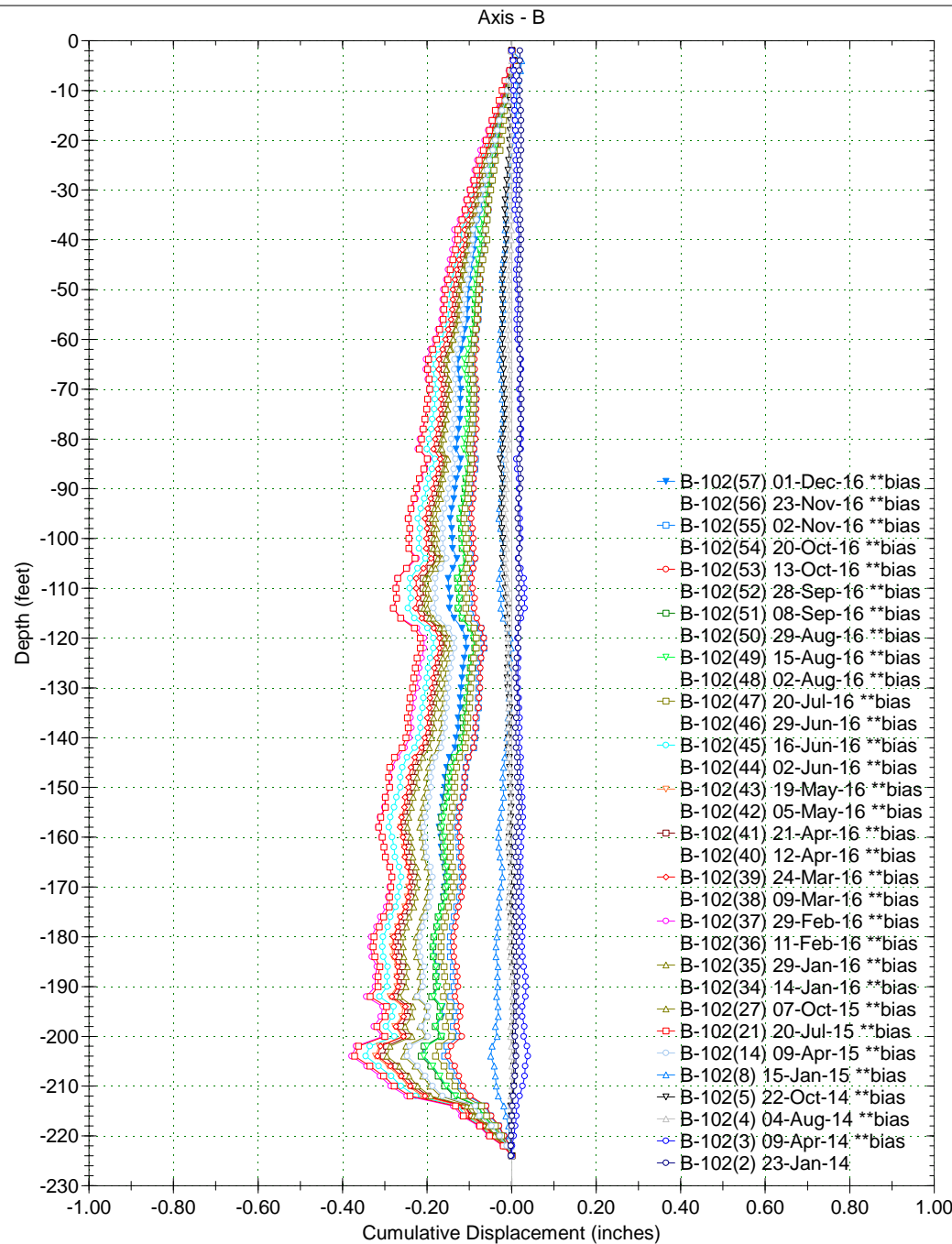
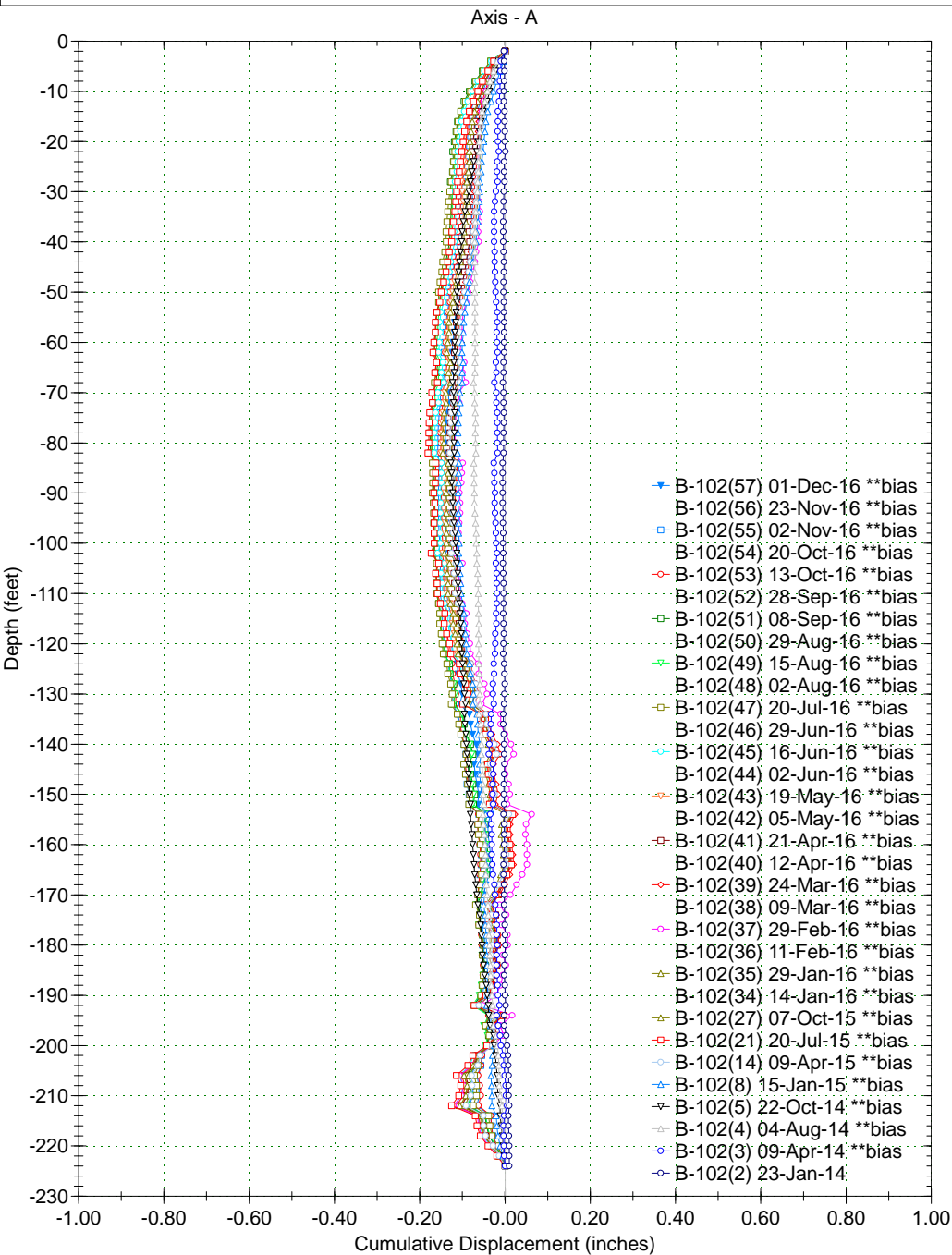
Spiral Correction : N/A
 Collar Elevation : 0.0 feet
 Borehole Total Depth : 188.0 feet
 A+ Groove Azimuth :
 Base Reading : 2014 Jan 22 09:01
 Applied Azimuth : 0.0 degrees



Borehole : B-102
Project : CUY-90-15-24
Location : Cleveland, Ohio
Northing : Sta. 15+95.34
Easting : 134.7' Rt of CL
Collar :



Spiral Correction : N/A
Collar Elevation : 0.0 feet
Borehole Total Depth : 224.0 feet
A+ Groove Azimuth :
Base Reading : 2014 Jan 23 08:21
Applied Azimuth : 0.0 degrees



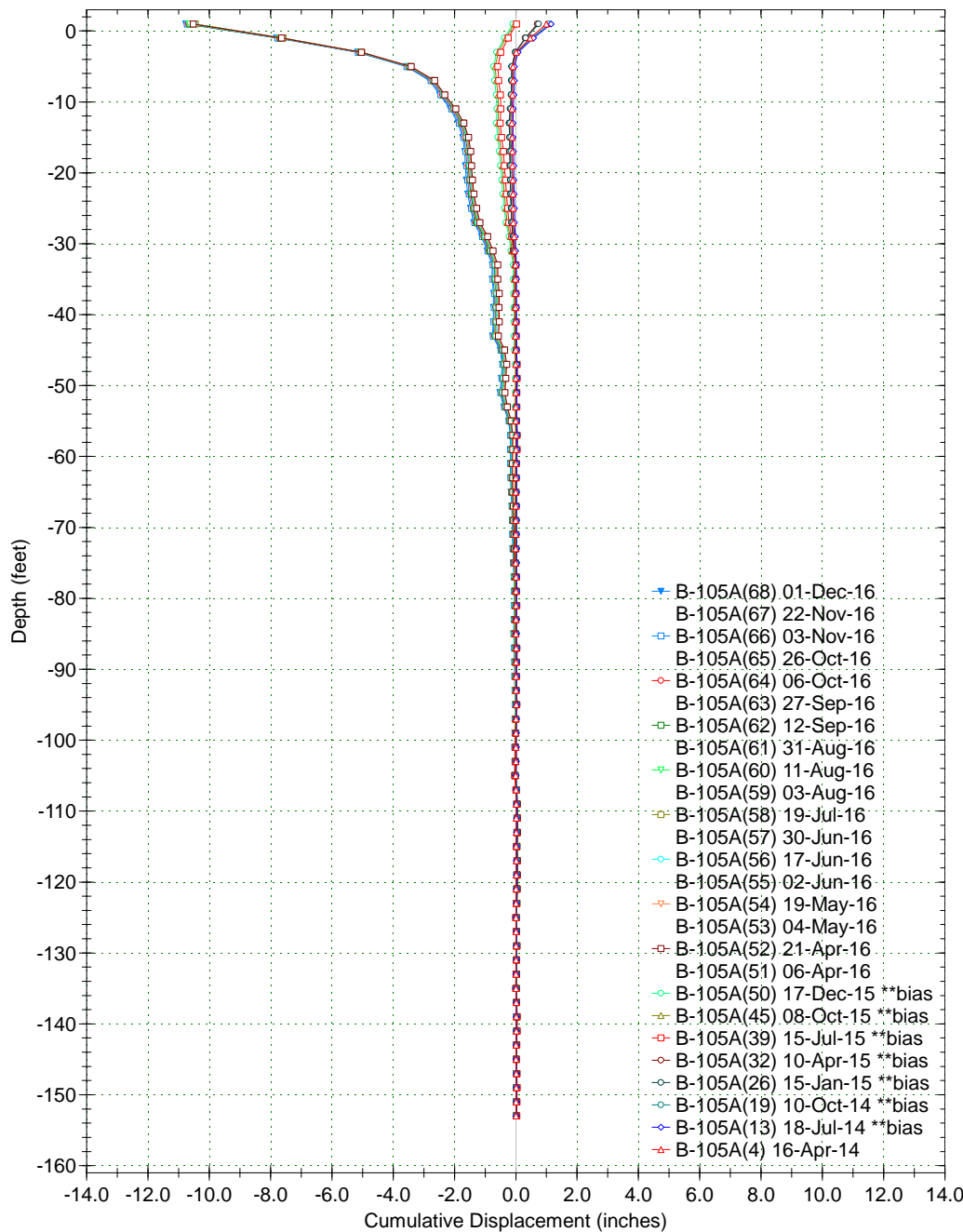
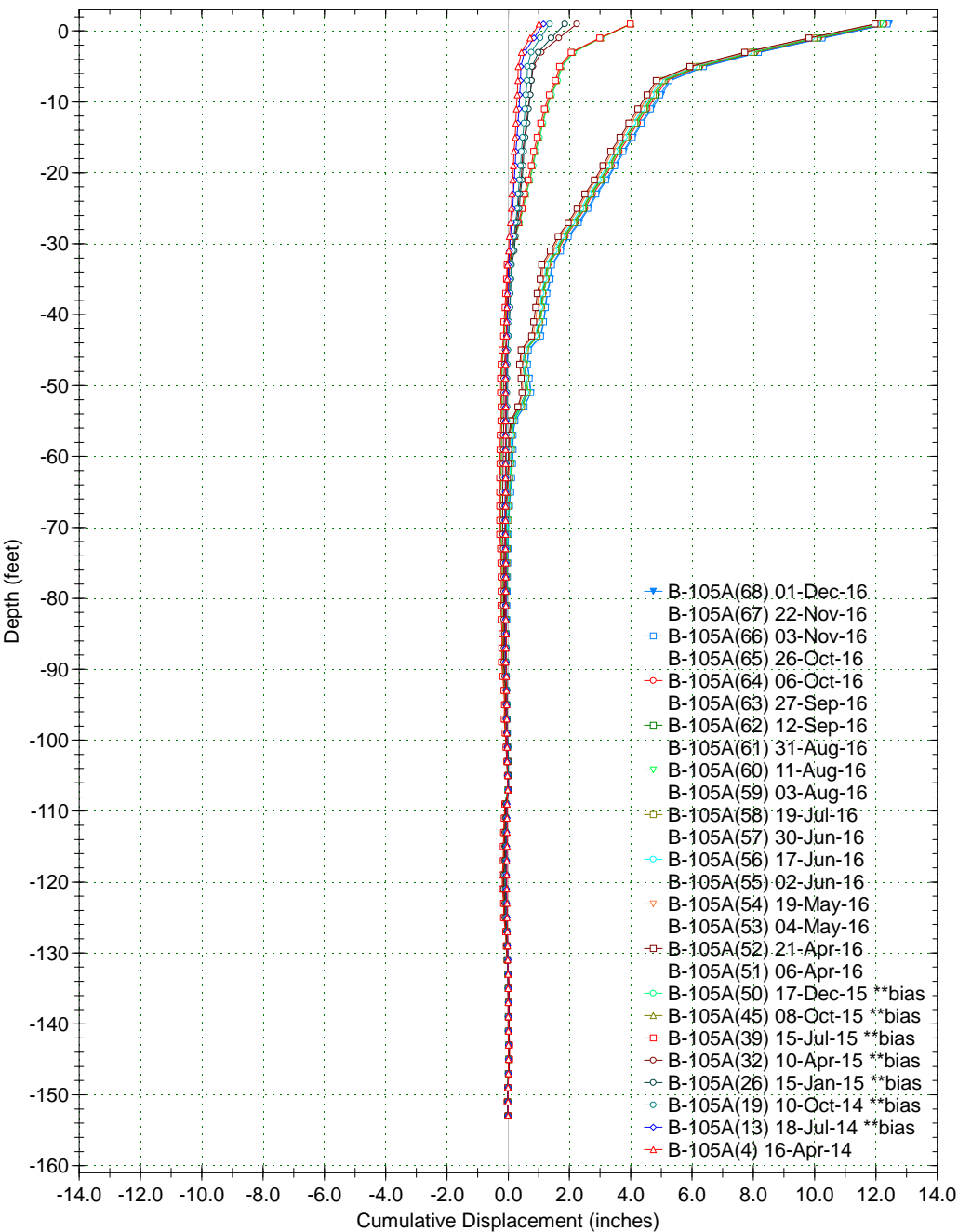
Borehole : B-105A
 Project : CUY-90-15-24
 Location : Cleveland, Ohio
 Northing : Sta. 19+11.38
 Easting : 90.9' Rt of CL
 Collar :



Spiral Correction : N/A
 Collar Elevation : 3.0 feet
 Borehole Total Depth : 156.0 feet
 A+ Groove Azimuth :
 Base Reading : 2014 Jan 15 09:19
 Applied Azimuth : 0.0 degrees

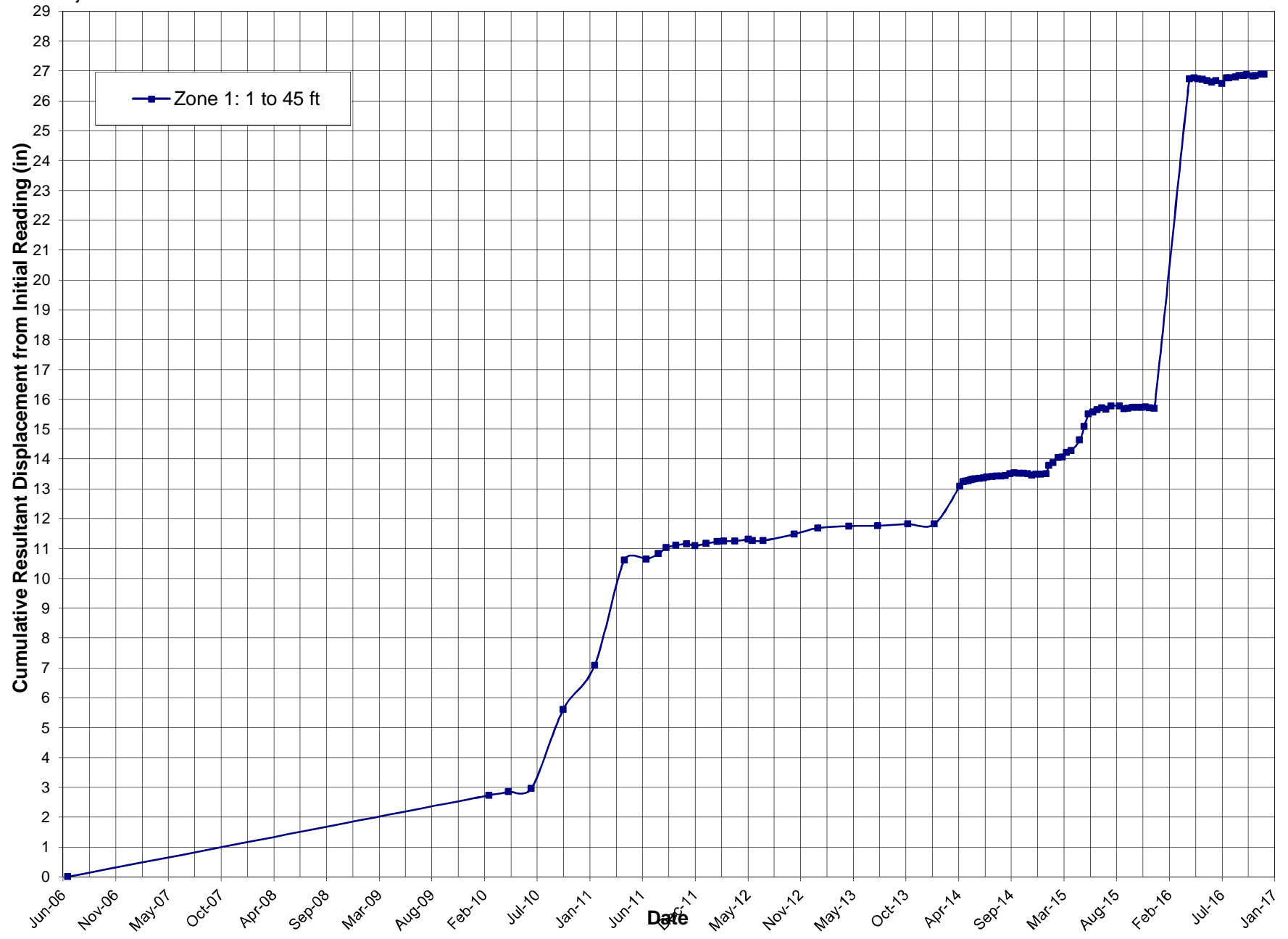
Axis - A

Axis - B



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B-105A

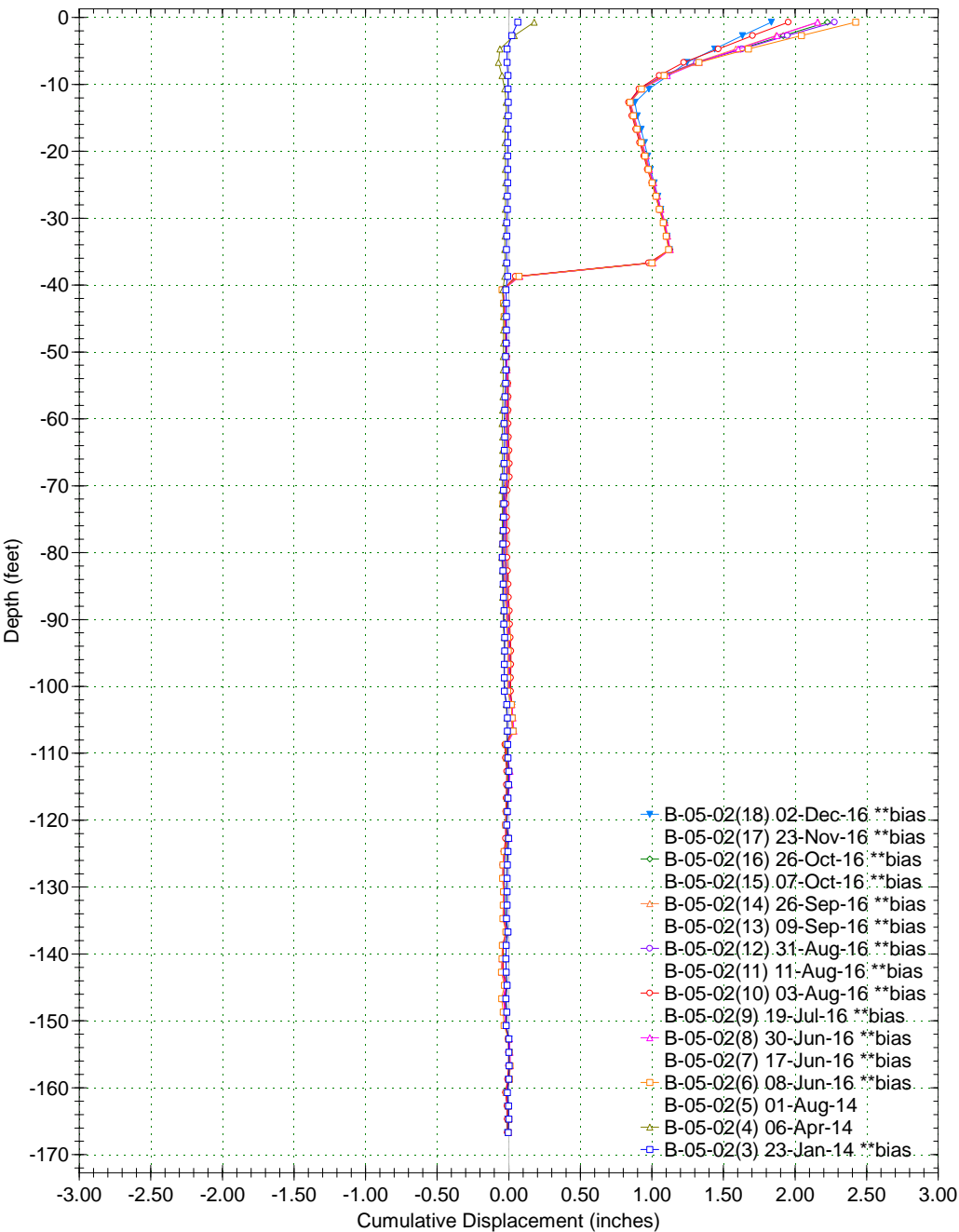


Borehole : B-05-02A
 Project : CUY-90-15-24
 Location : Cleveland, Ohio
 Northing : 663737.939
 Easting : 2190289.081
 Collar :

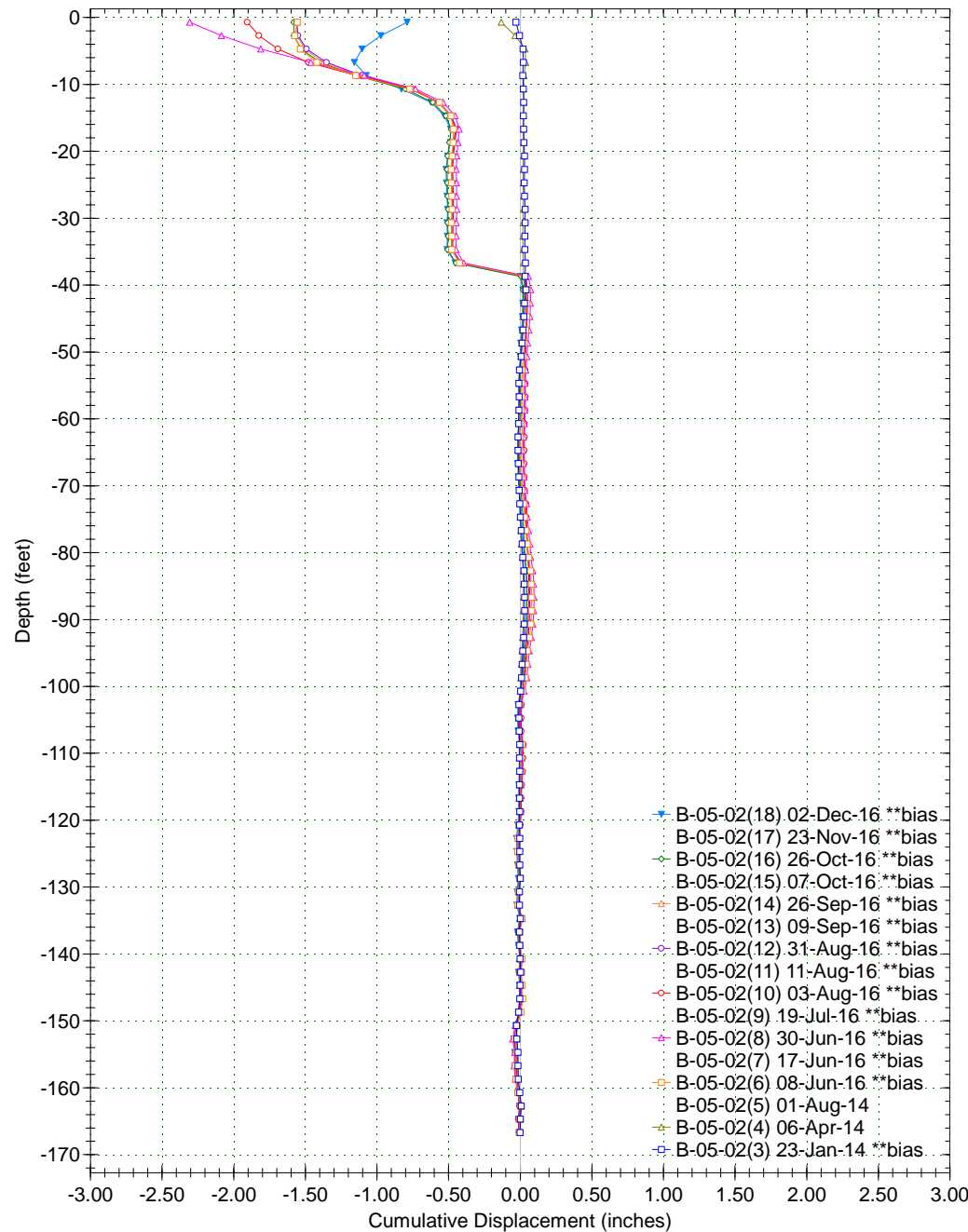


Spiral Correction : N/A
 Collar Elevation : 1.3 feet
 Borehole Total Depth : 168.0 feet
 A+ Groove Azimuth :
 Base Reading : 2013 Dec 24 11:12
 Applied Azimuth : 0.0 degrees

Axis - A

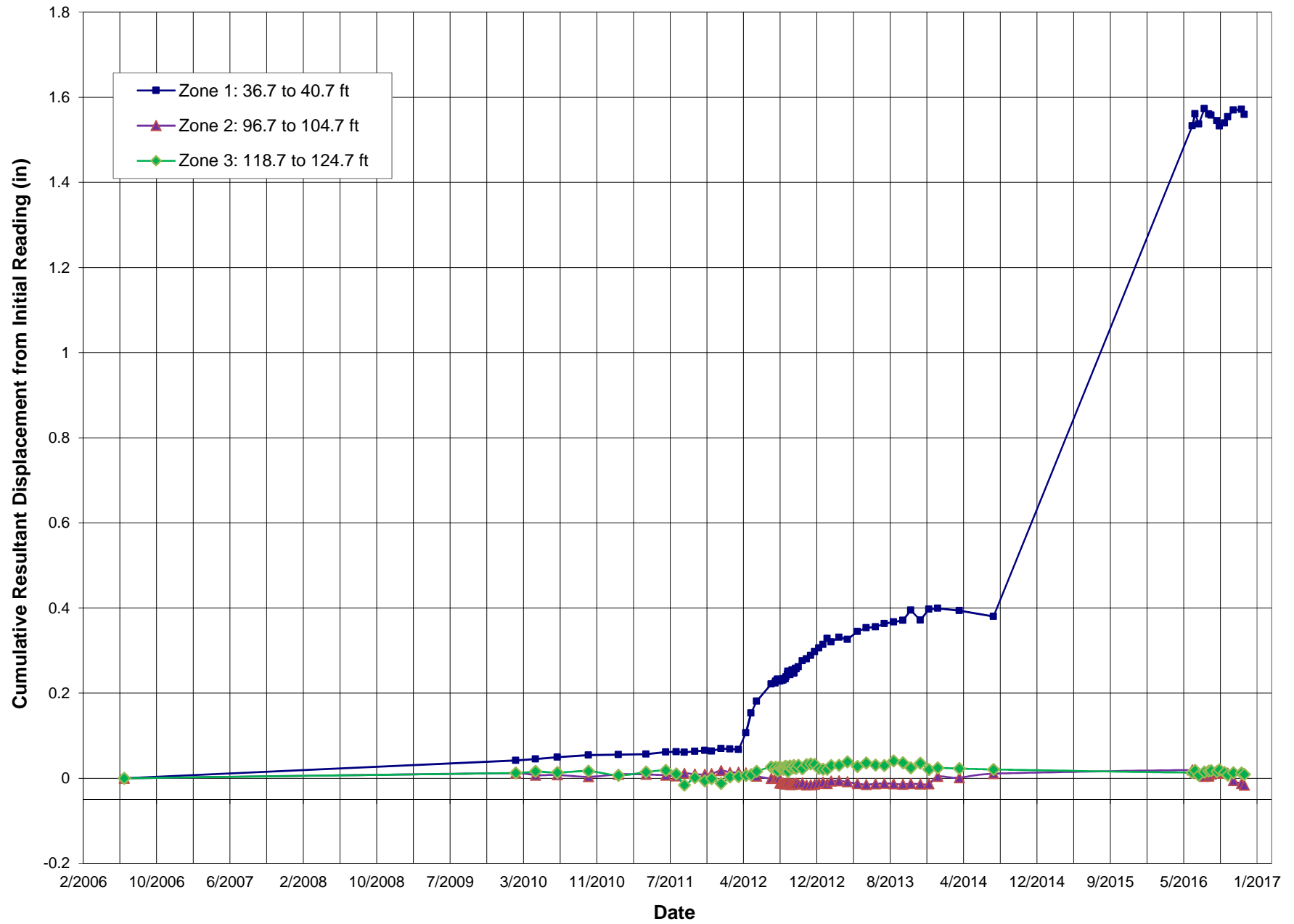


Axis - B



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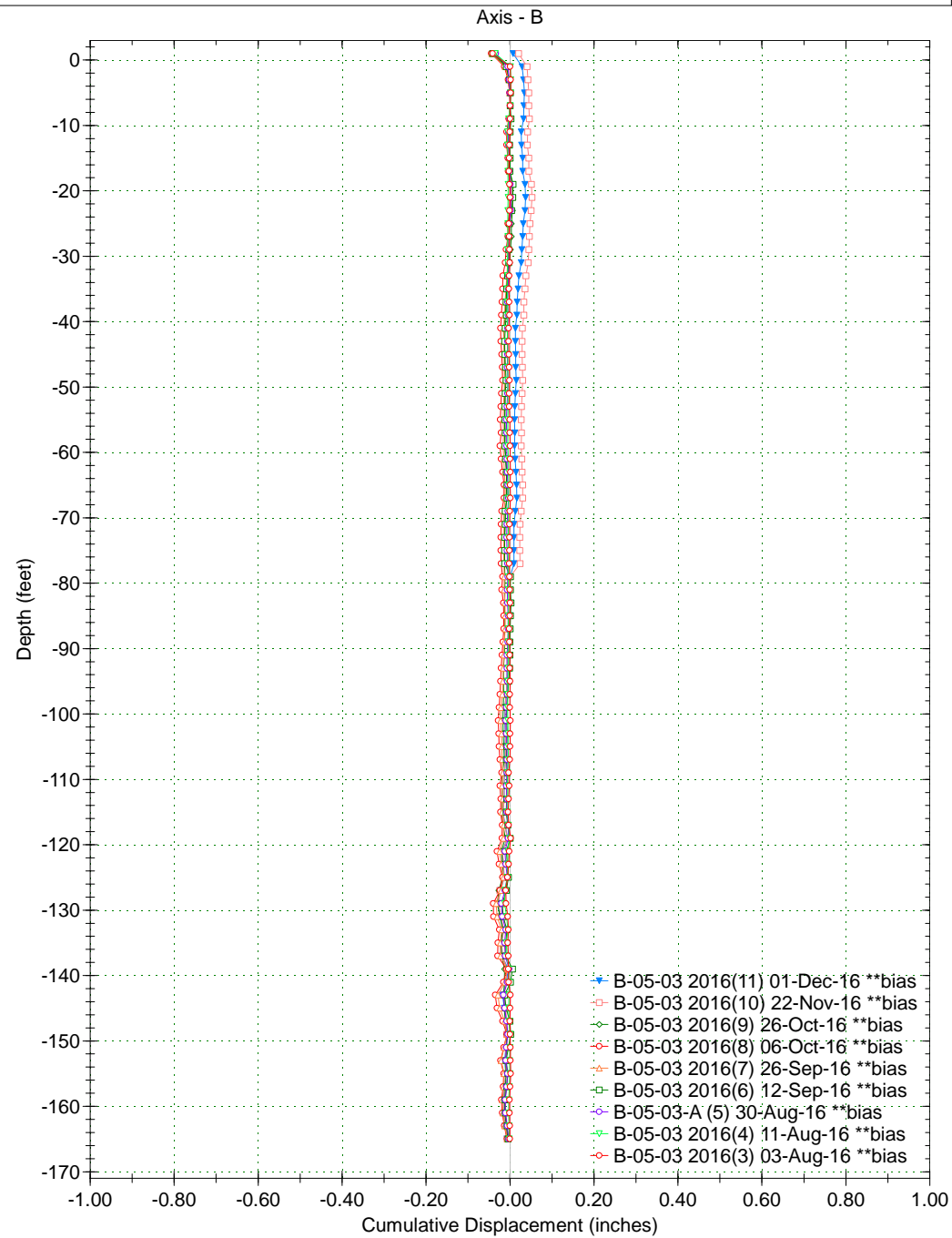
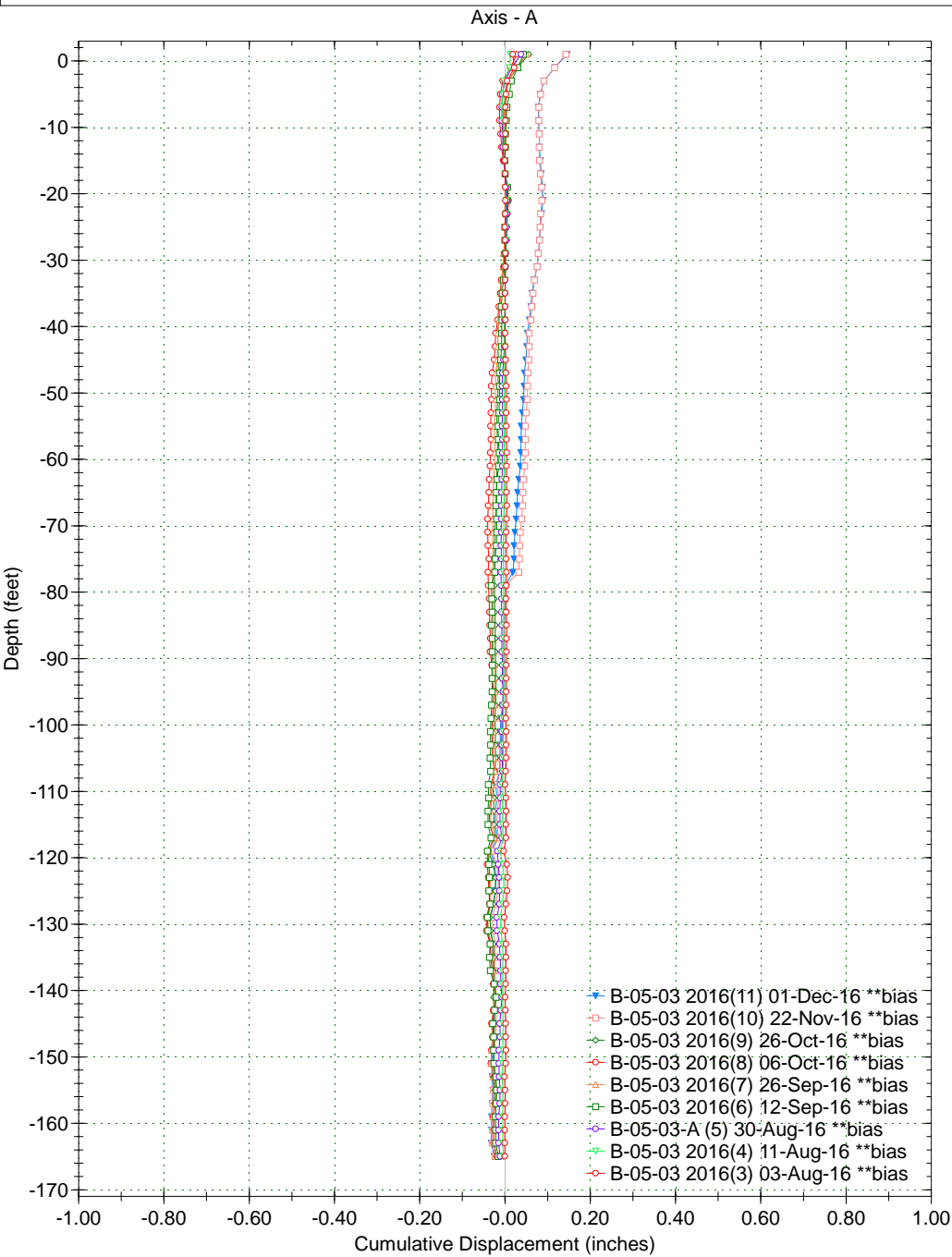
B-05-02



Borehole : B-05-03-A
Project : CUY-90-15-24
Location :
Northing :
Easting :
Collar :



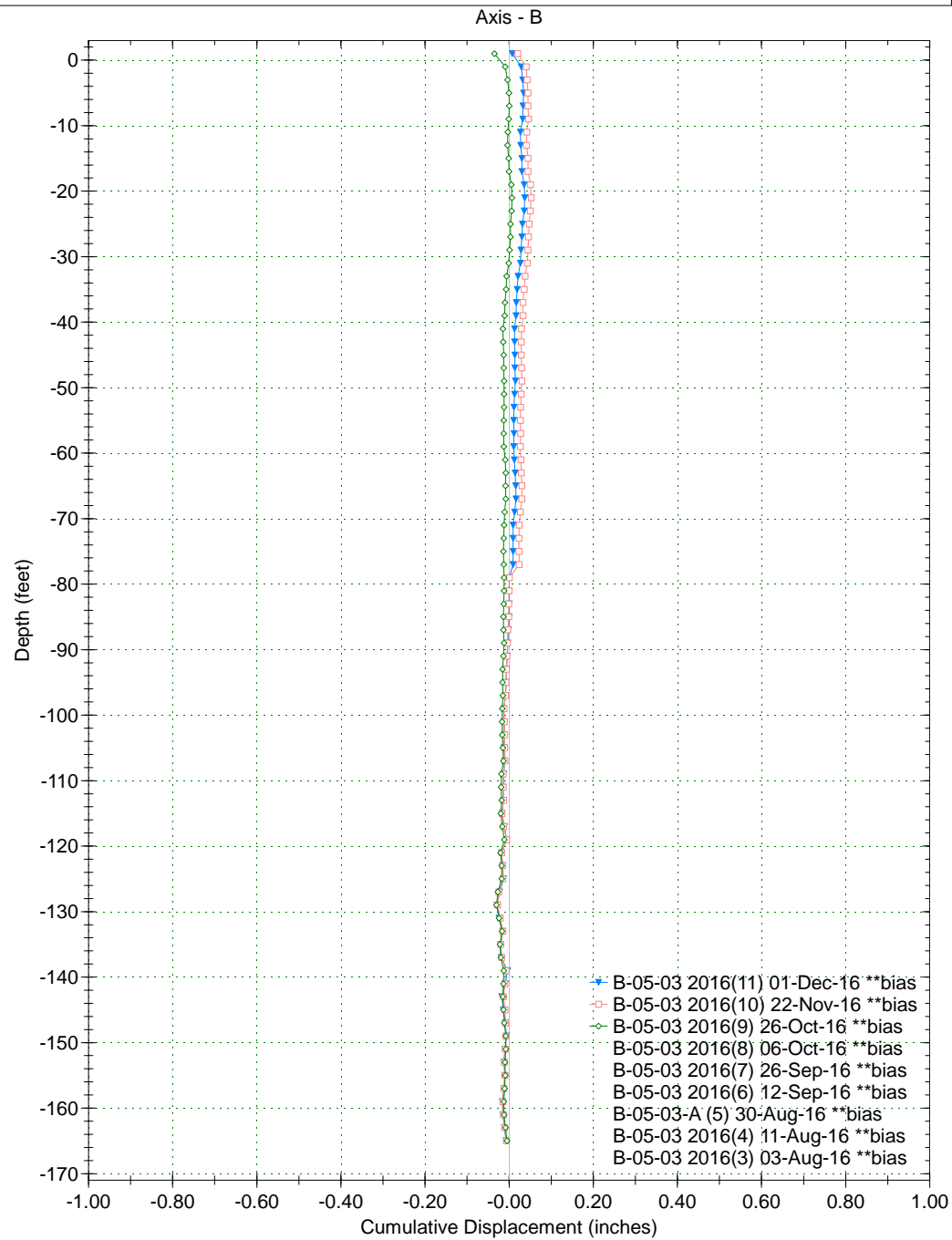
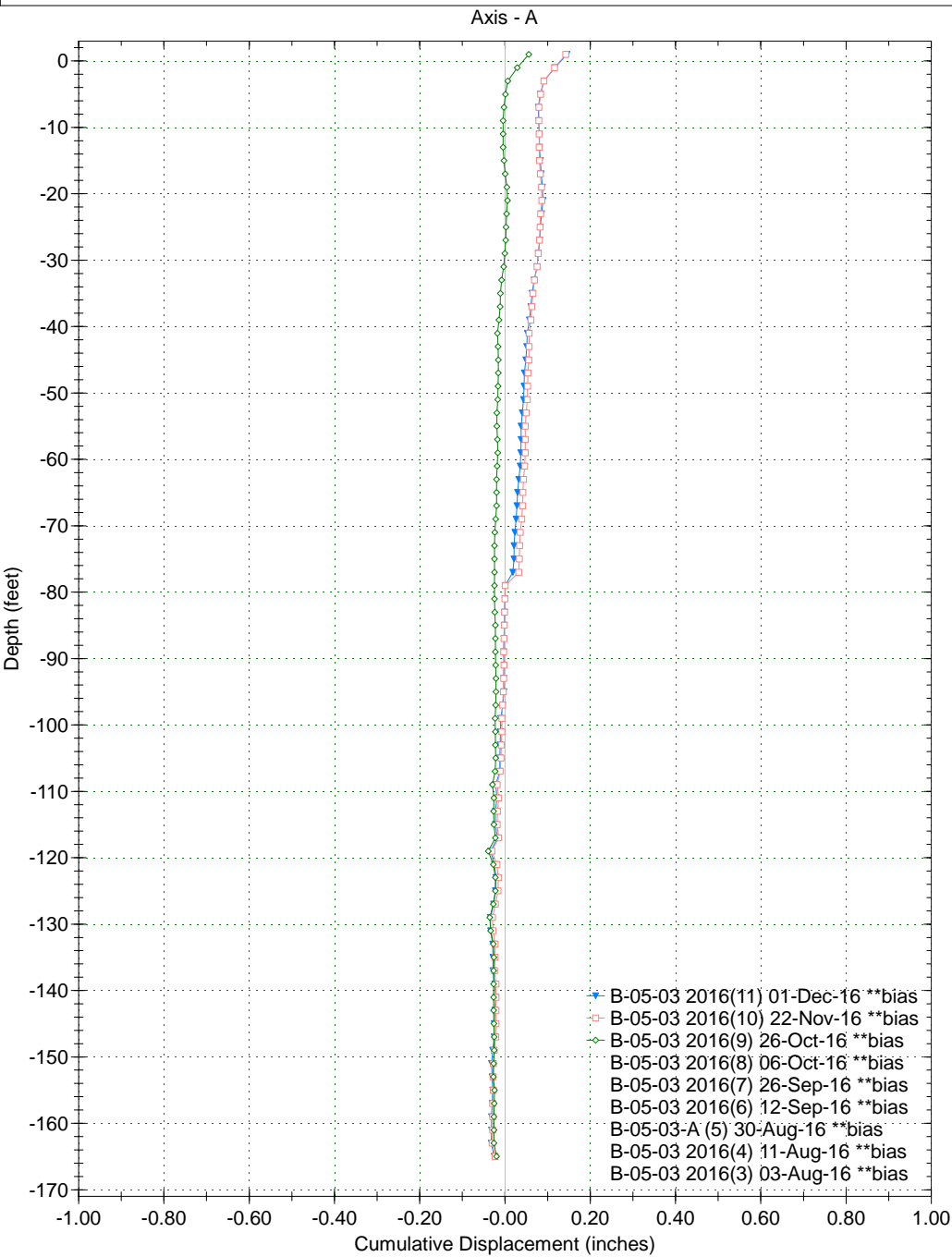
Spiral Correction : N/A
Collar Elevation : 3.0 feet
Borehole Total Depth : 168.0 feet
A+ Groove Azimuth :
Base Reading : 2016 Jul 19 09:08
Applied Azimuth : 0.0 degrees



Borehole : B-05-03-A
Project : CUY-90-15-24
Location :
Northing :
Easting :
Collar :



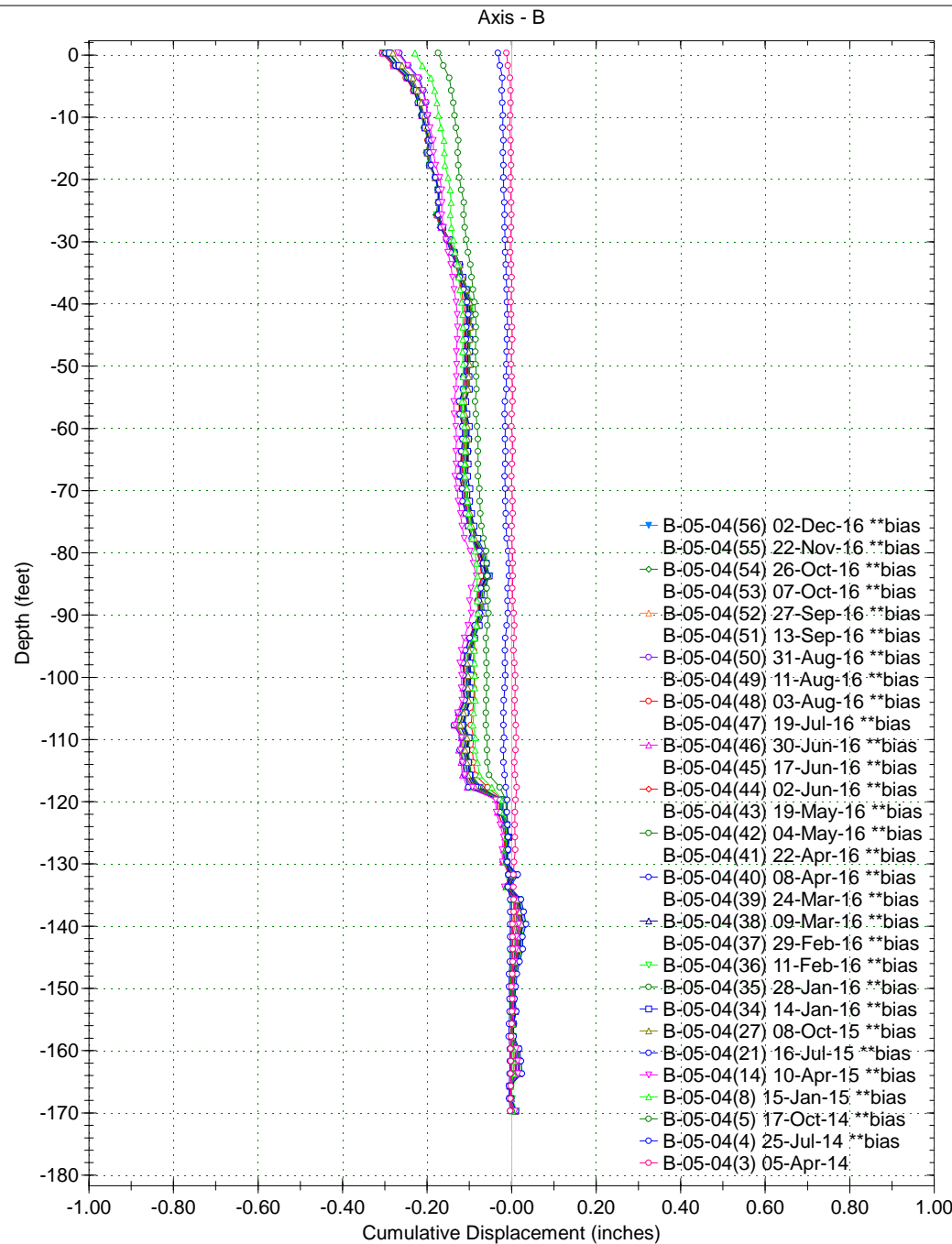
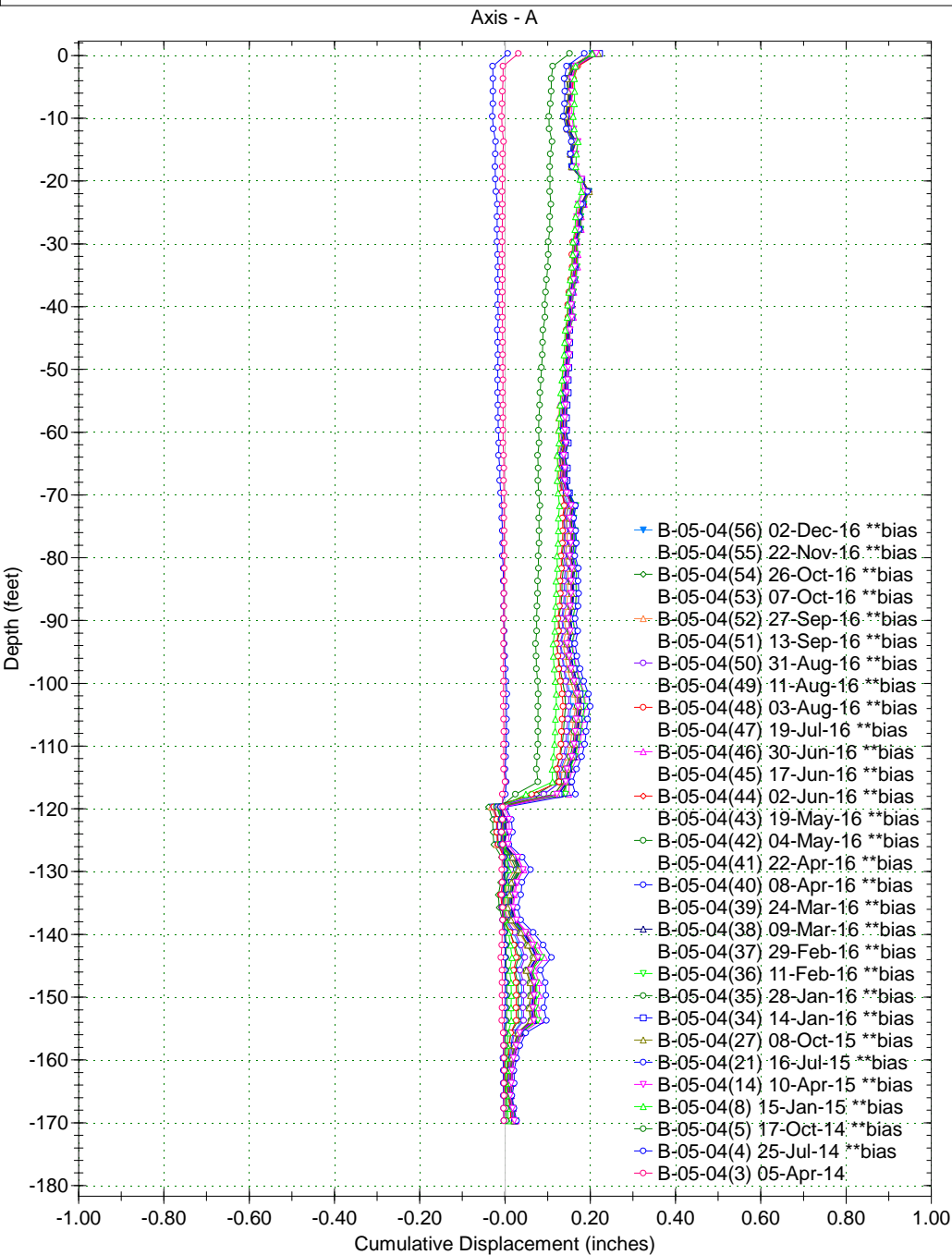
Spiral Correction : N/A
Collar Elevation : 3.0 feet
Borehole Total Depth : 168.0 feet
A+ Groove Azimuth :
Base Reading : 2016 Jul 19 09:08
Applied Azimuth : 0.0 degrees



Borehole : B-05-04
 Project : CUY-90-15-24
 Location : Cleveland, Ohio
 Northing : Sta. 133+51.67
 Easting : 242.09' Rt of CL
 Collar :

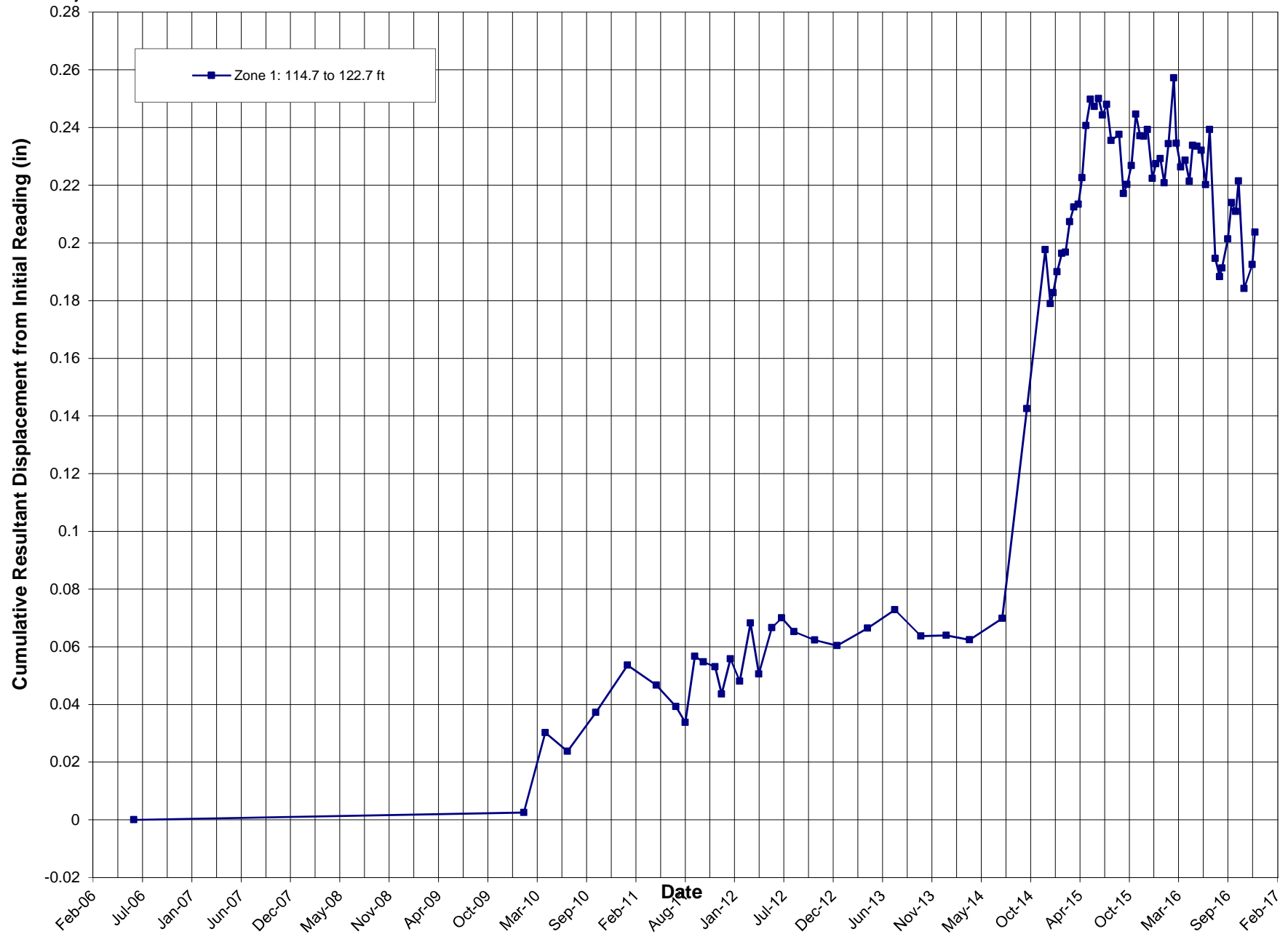


Spiral Correction : N/A
 Collar Elevation : 2.3 feet
 Borehole Total Depth : 172.0 feet
 A+ Groove Azimuth :
 Base Reading : 2014 Jan 22 12:30
 Applied Azimuth : 0.0 degrees



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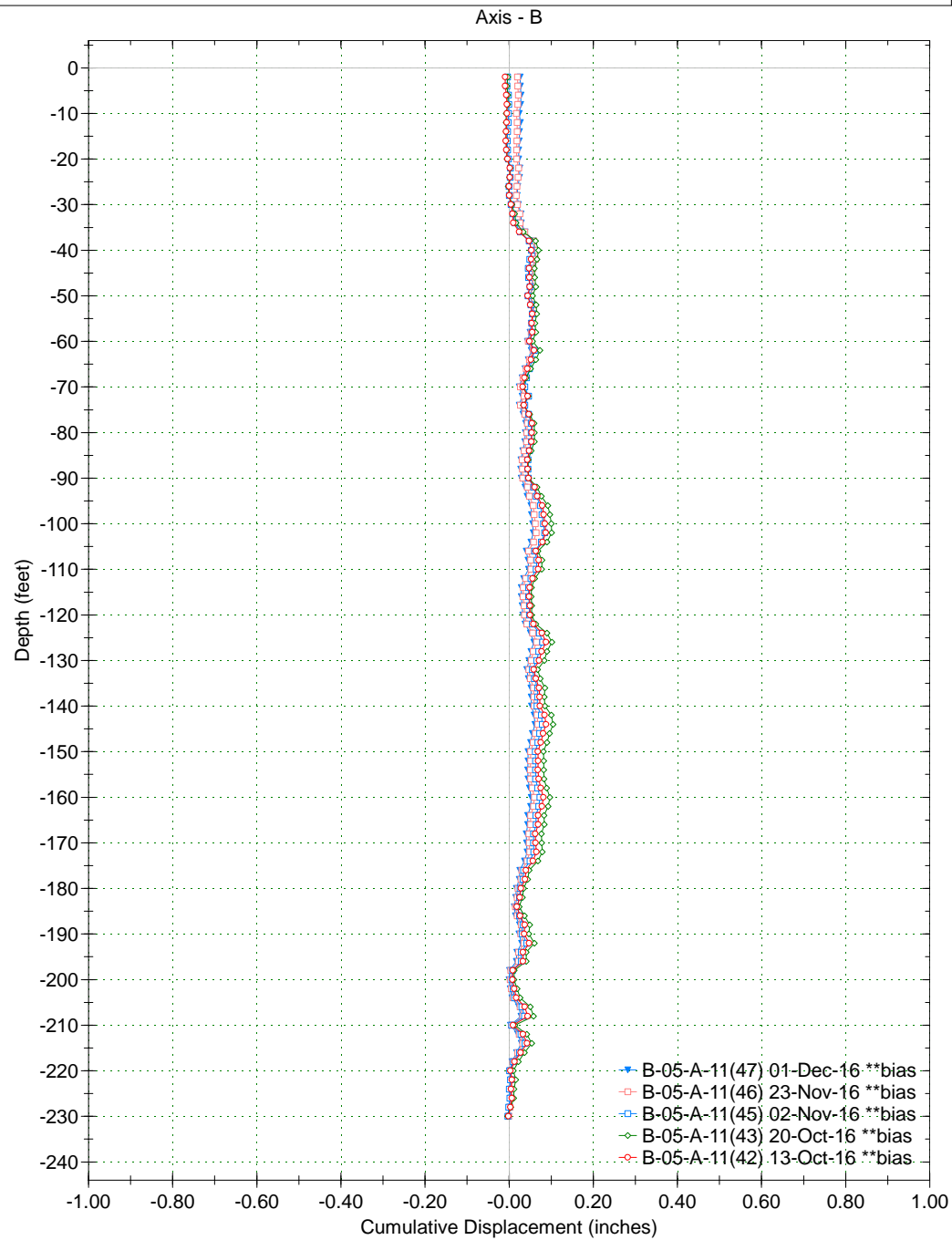
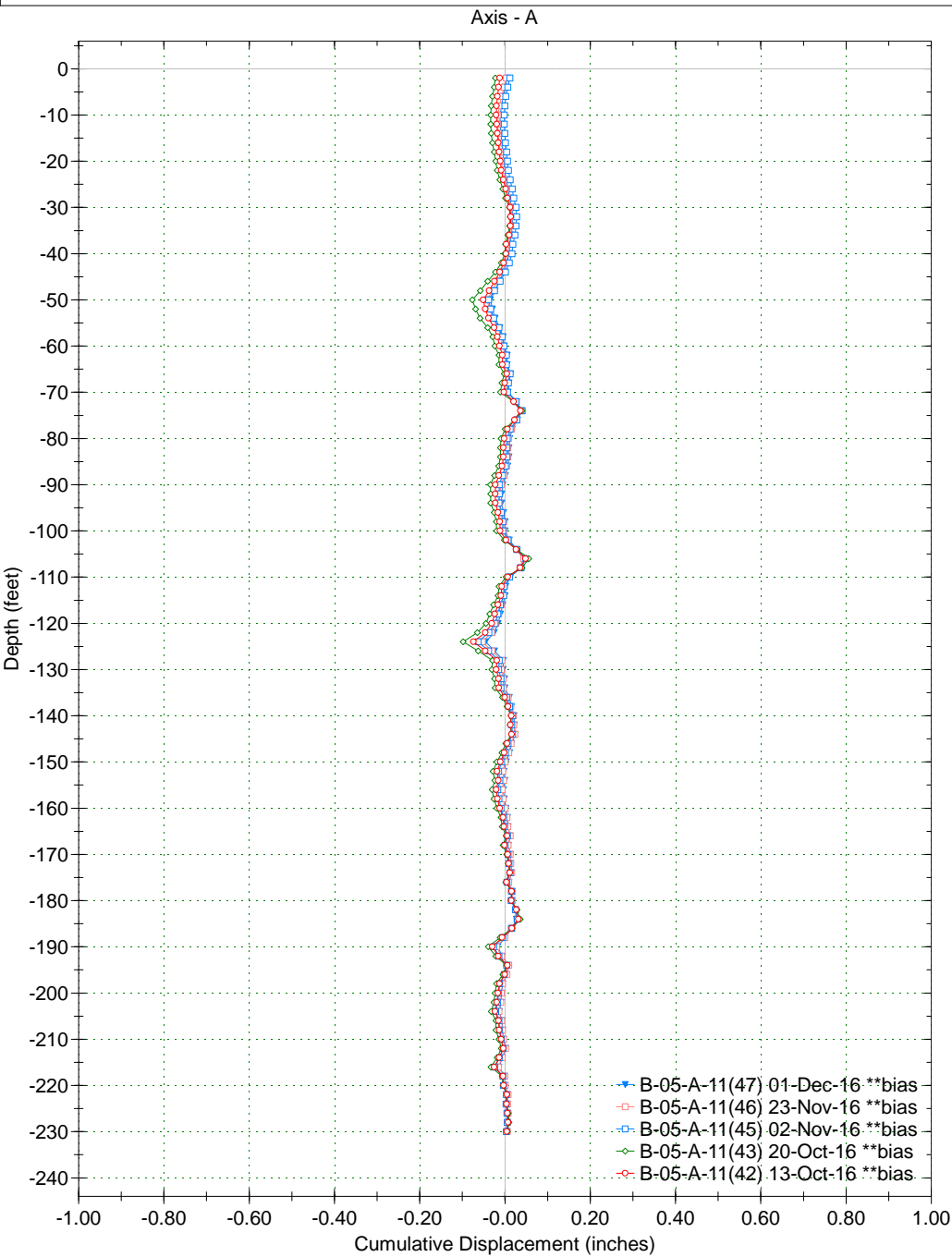
B-05-04



Borehole : B-05-A-11 230 ft
Project : CUY-90-15-24
Location :
Northing :
Easting :
Collar :



Spiral Correction : N/A
Collar Elevation : 0.0 feet
Borehole Total Depth : 230.0 feet
A+ Groove Azimuth :
Base Reading : 2016 Sep 28 08:37
Applied Azimuth : 0.0 degrees

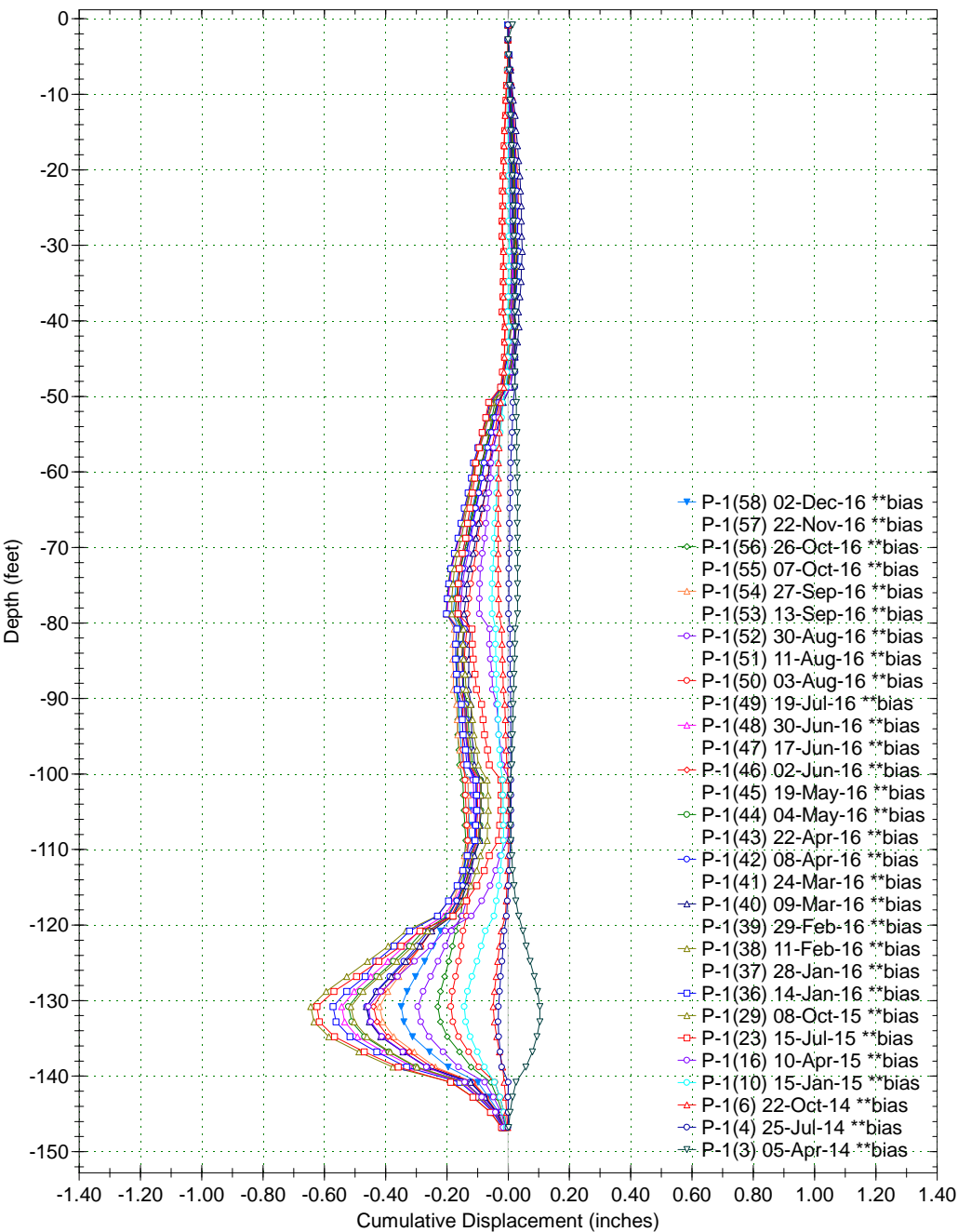


Borehole : P-1
Project : CUY-90-15-24
Location : Cleveland, Ohio
Northing :
Easting :
Collar :

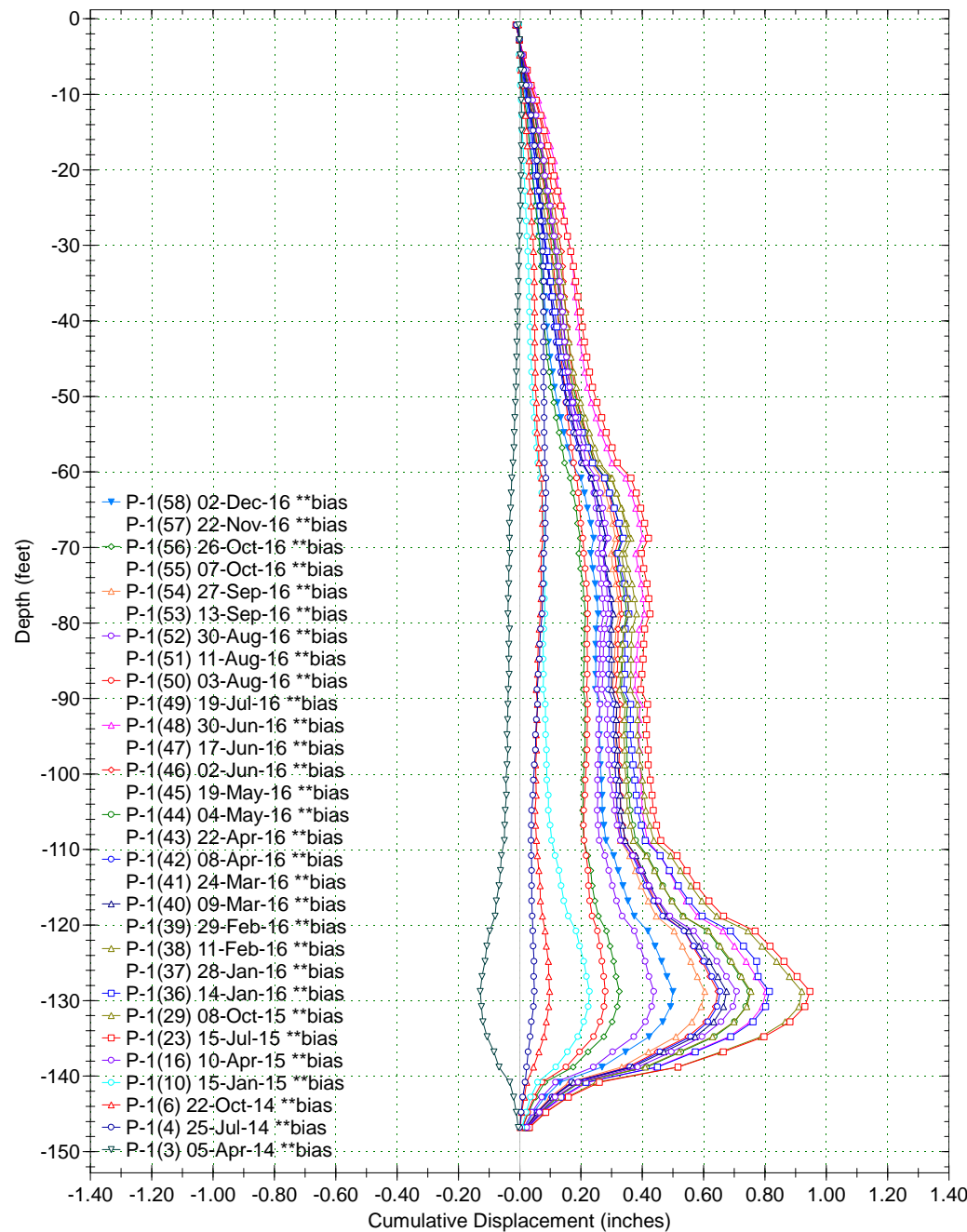


Spiral Correction : N/A
Collar Elevation : 1.2 feet
Borehole Total Depth : 148.0 feet
A+ Groove Azimuth :
Base Reading : 2014 Jan 22 10:47
Applied Azimuth : 0.0 degrees

Axis - A

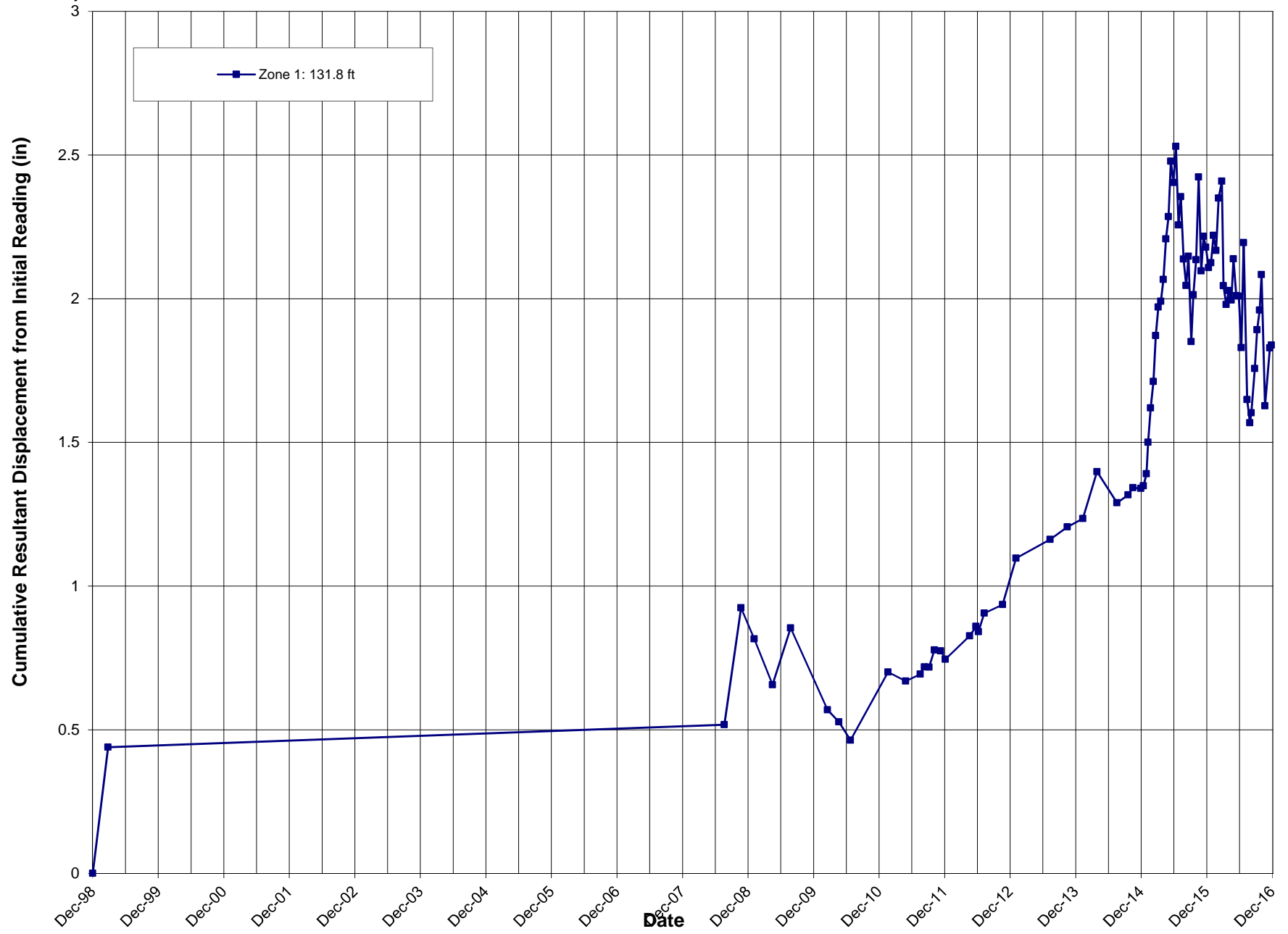


Axis - B



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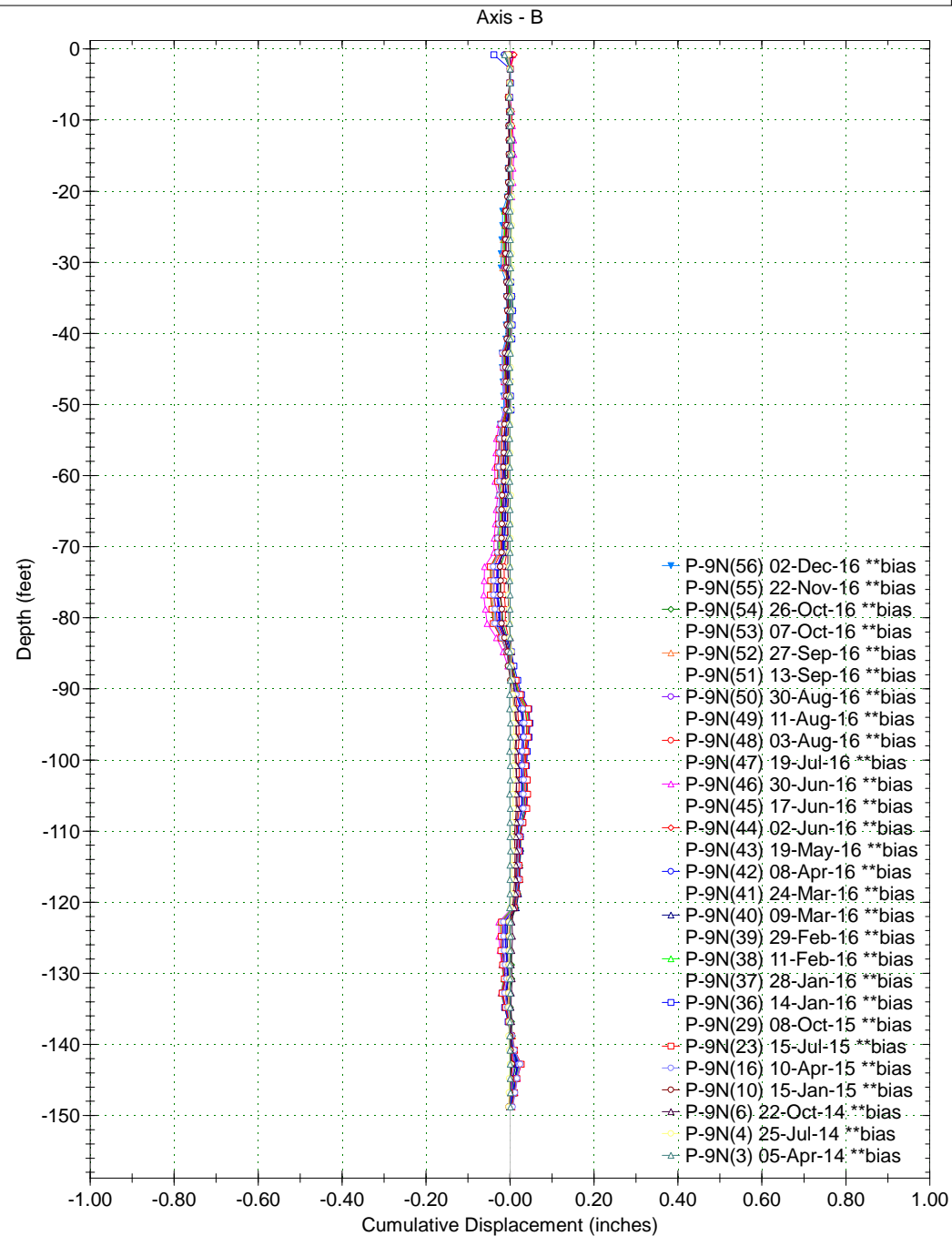
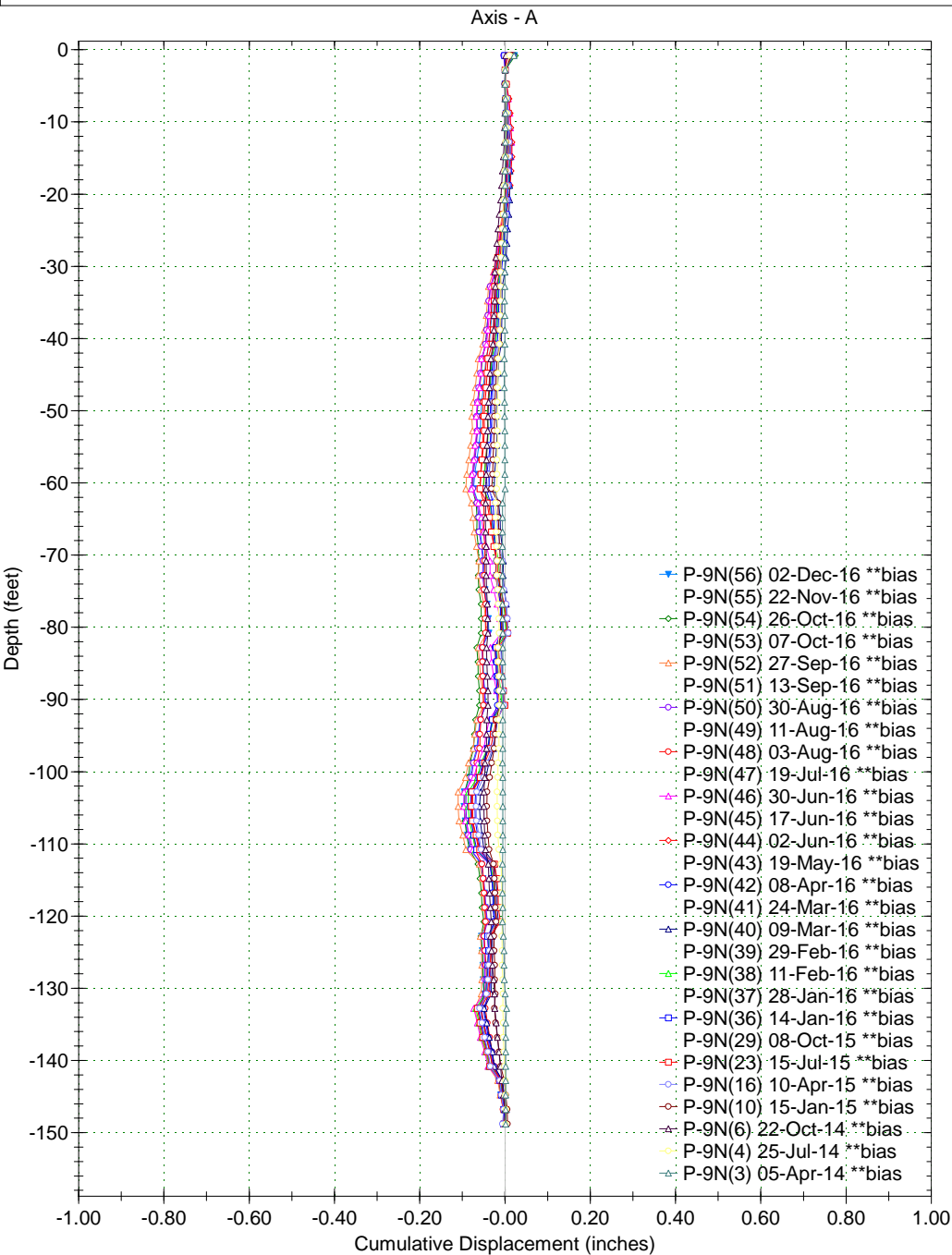
P-1



Borehole : P-9N
Project : CUY-90-15-24
Location : Cleveland, Ohio
Northing :
Easting :
Collar :



Spiral Correction : N/A
Collar Elevation : 1.2 feet
Borehole Total Depth : 150.0 feet
A+ Groove Azimuth :
Base Reading : 2014 Jan 16 09:28
Applied Azimuth : 0.0 degrees



Borehole : TGR I-4
Project : CUY-90-15-24
Location :
Northing :
Easting :
Collar :



Spiral Correction : N/A
Collar Elevation : 3.0 feet
Borehole Total Depth : 58.0 feet
A+ Groove Azimuth :
Base Reading : 2015 Sep 23 10:39
Applied Azimuth : 0.0 degrees

