

Bridgeton Landfill, LLC

Weekly Data Submittal

Week of January 21, 2018 – January 27, 2018

**Required by Section 52.F of Agreed Order, Case No. 13SL-CC01088
Effective May 13, 2013**

Contents:

- Attachment A – Leachate Levels in Leachate Collection Sumps**
- Attachment B – Temperature Monitoring Probe Analytical Charts**
- Attachment C – Gas Interceptor Wellhead Temperature Graphs**
- Attachment D – Neck-Area Gas Extraction Wellhead Temperature Graphs**

Provided Separately:

- Leachate Level in Leachate Collection Sump Raw Data Excel Spreadsheet**
- Temperature Monitoring Probe Raw Data Excel Spreadsheet**
- Heat Extraction System TMP Raw Data Excel Spreadsheet**
- Gas Interceptor Well Reading Raw Data Excel Spreadsheet**
- Neck-Area Gas Extraction Well Data Excel Spreadsheet**

February 02, 2018

Commentary on Data

February 02, 2018

Attachment A – Leachate Levels in Leachate Collection Sumps

The downhole discharge piping for LCS-1D requires replacement. Pump and level sensor replacement is scheduled for February 2018 pending suitable weather conditions.

The pump in LCS-2D was non-operational during the weekly reporting period.

The Blackhawk pneumatic pumps in LCS-3D were non-operational during the weekly reporting period. The casing on LCS-3D will be extended and the line sets for the Blackhawk pumps will be replaced as part of the east fill project. Liquid level was measured manually.

The level sensor in LCS-4B is currently operational and responsive. Liquid level was not recorded by the level sensor during the weekly reporting period. LCS-4B is equipped with a flow meter that displayed no flow during the weekly reporting period. Therefore, it can be concluded that the liquid level was below the bottom of the pump and level sensor in LCS-4B.

LCS-5B and LCS-6B were fully operational during the weekly reporting period.

Attachment B - Temperature Monitoring Probe Analytical Charts

The following Temperature Monitoring Probes (TMPs) indicated generally consistent profiles to previous observations: TMP-1, -2R, -3, -3R, -4, -4R, -6, -9, -11R, -14R, -16R, -17, -18, -21, -22, -23, -24, -25R, -26, -27, -28R, -29, -33, -34, -35, -36, -37, -38, -39, -40, -41, -42, -43, -44, -45, -46, -47, -48, and -49.

Starting last week, the analytical charts for TMP-16, TMP-25, and TMP-28 have been replaced with TMP-16R, TMP-25R, and TMP-28R. Individual graphs for the original TMPs (TMP-16, TMP-25, and TMP-28) will no longer be provided in the Weekly Data Submittals. However, temperature readings will still be measured at these original TMPs.

TMP readings for evaluation of the Heat Extraction System (HES) are provided as attachment “Heat Extraction System TMP Raw Data Excel Spreadsheet,” but are not discussed in this report.

Attachment C - Gas Interceptor Wellhead Temperature Graphs

As part of the HES, there are currently cooling water circulation loops installed in twelve Gas Interceptor Wells (GIWs) (GIW-02 through GIW-13). The remaining well (GIW-01) had a measured gas temperature within its historical operating limits.

Attachment D – Neck Area Gas Extraction Well Data

Weekly gas temperature data is collected for select Gas Extraction Wells (GEWs) located in the neck area of the landfill. These wells include GEW-008, -009, -010, -038, -039, -040, 041R, -043R, -053, -054, -055, -056R, -109, and -110.

North Quarry Oxygen Levels

GEW-1A is noted as having an oxygen concentration greater than 2.0% since its installation in December 2015.

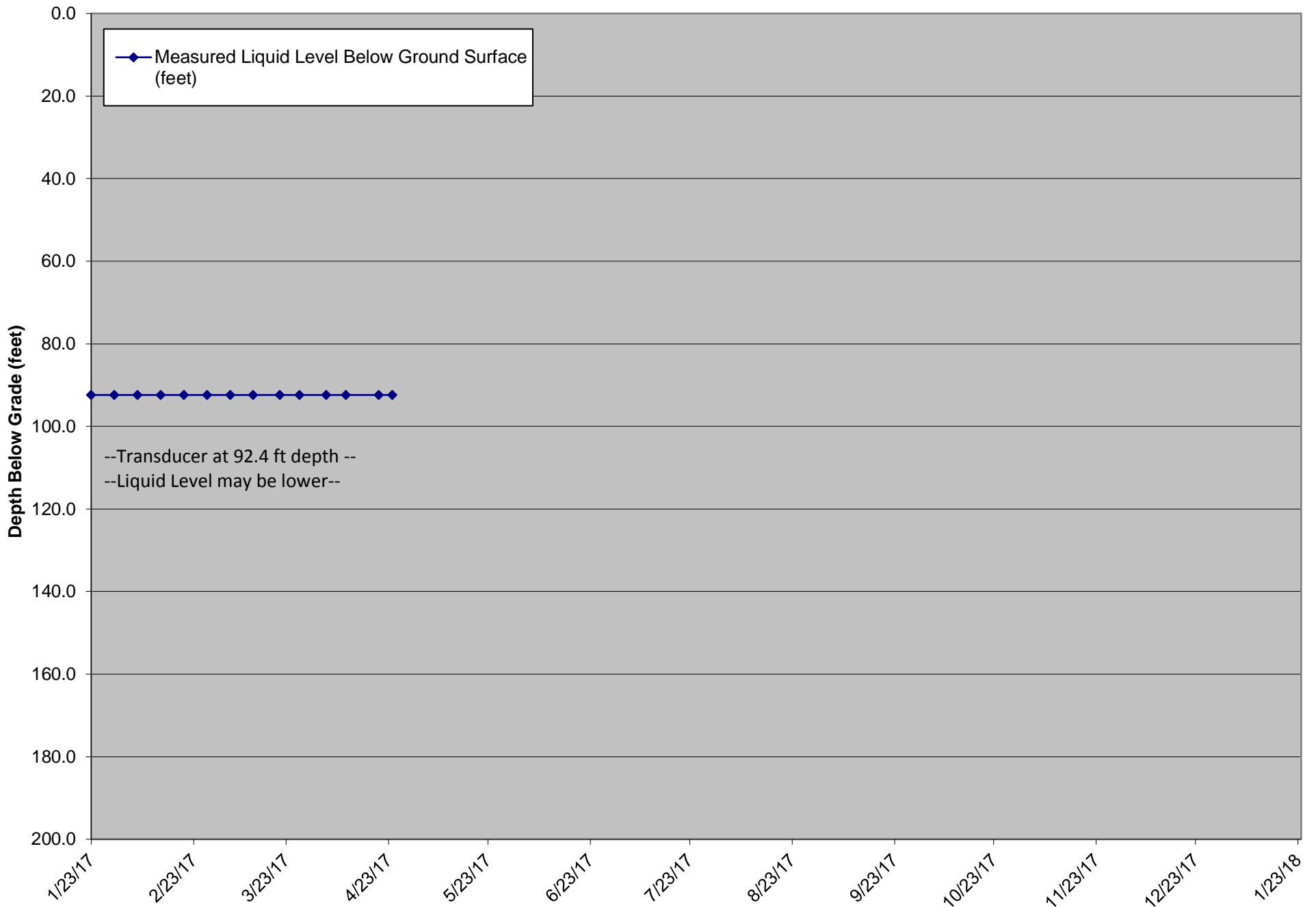
The area in which GEW-1A is installed is very saturated. Bridgeton has installed a sump near GEW-1A and increased the force main capacity during the North Quarry capping projects in an effort to lower the potentiometric surface in the area to improve gas quality and reduce ambient air intrusion at the well. In addition, Bridgeton tested a 5 hp electric pump in GEW-1A to provide increased capacity in an effort to sufficiently dewater the well and expose perforations. However, rapid recharge prevented exposure of perforations.

As an alternative measure, Bridgeton is preparing a design to extend the EVOH to the north in the vicinity of GEW-1A to control surface exceedances of methane and to collect landfill gas through additional landfill gas controls associated with the EVOH cap.

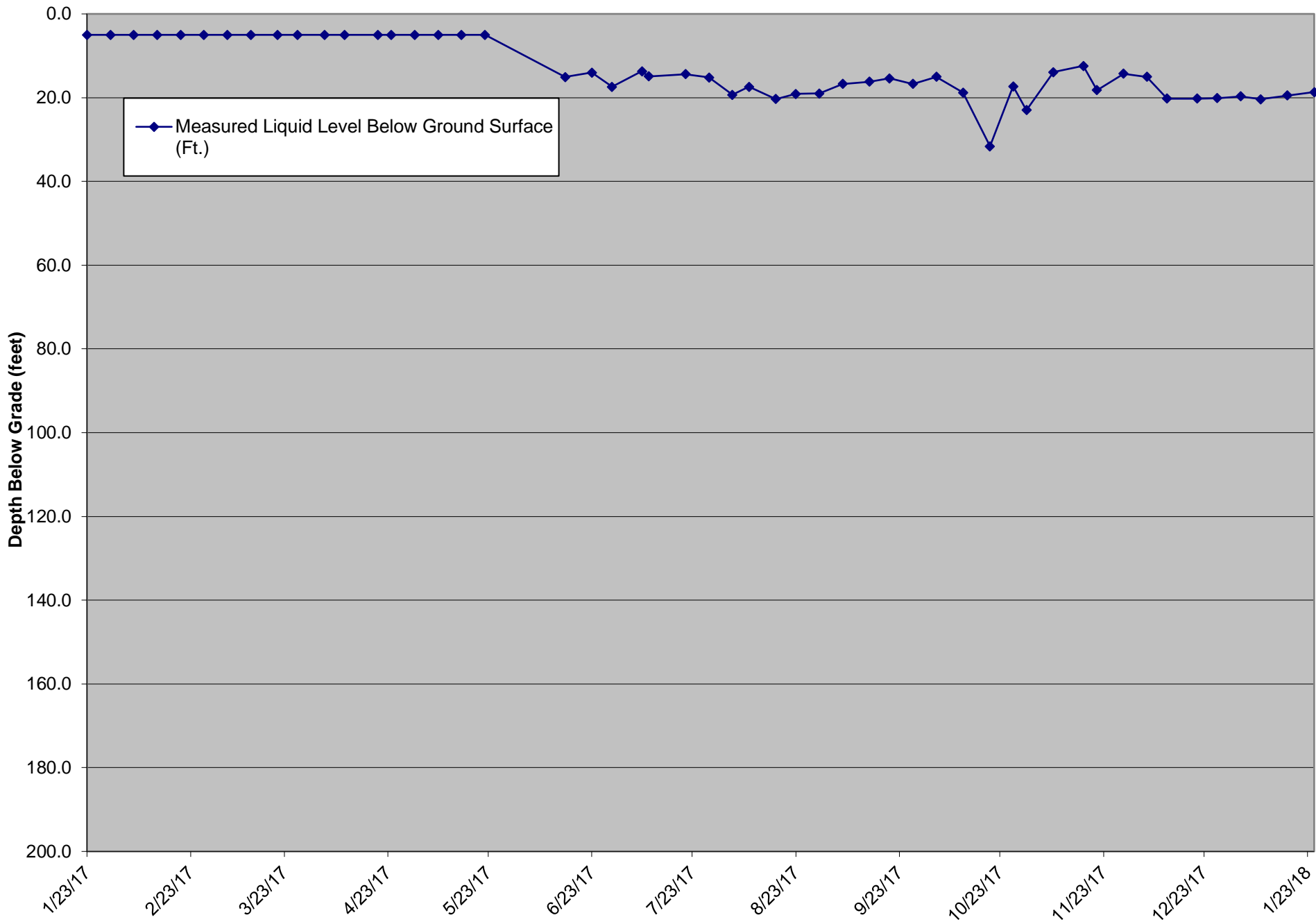
ATTACHMENT A

LEACHATE LEVELS IN LEACHATE COLLECTION SUMPS

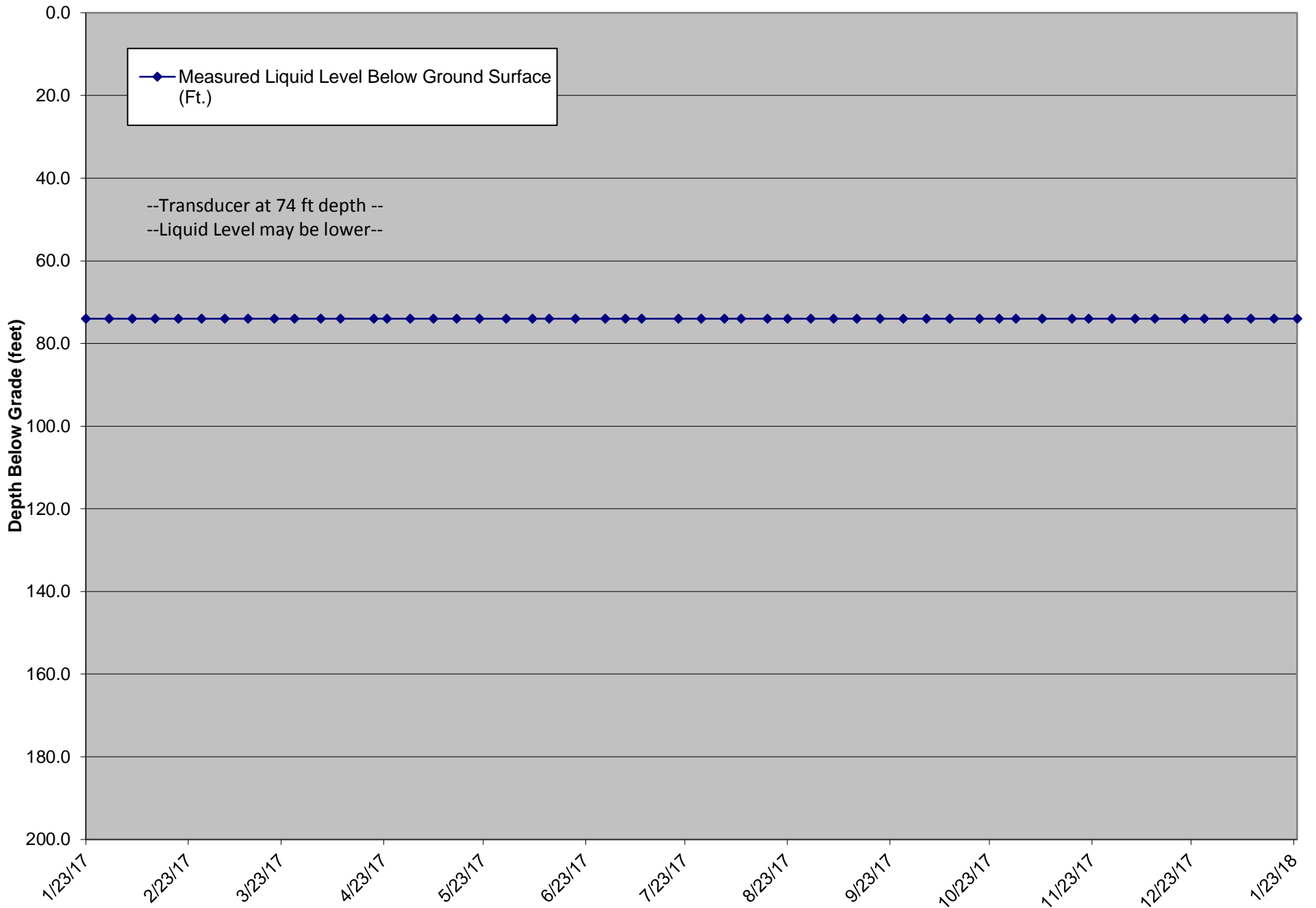
LCS-1D Liquid Level Below Ground Surface



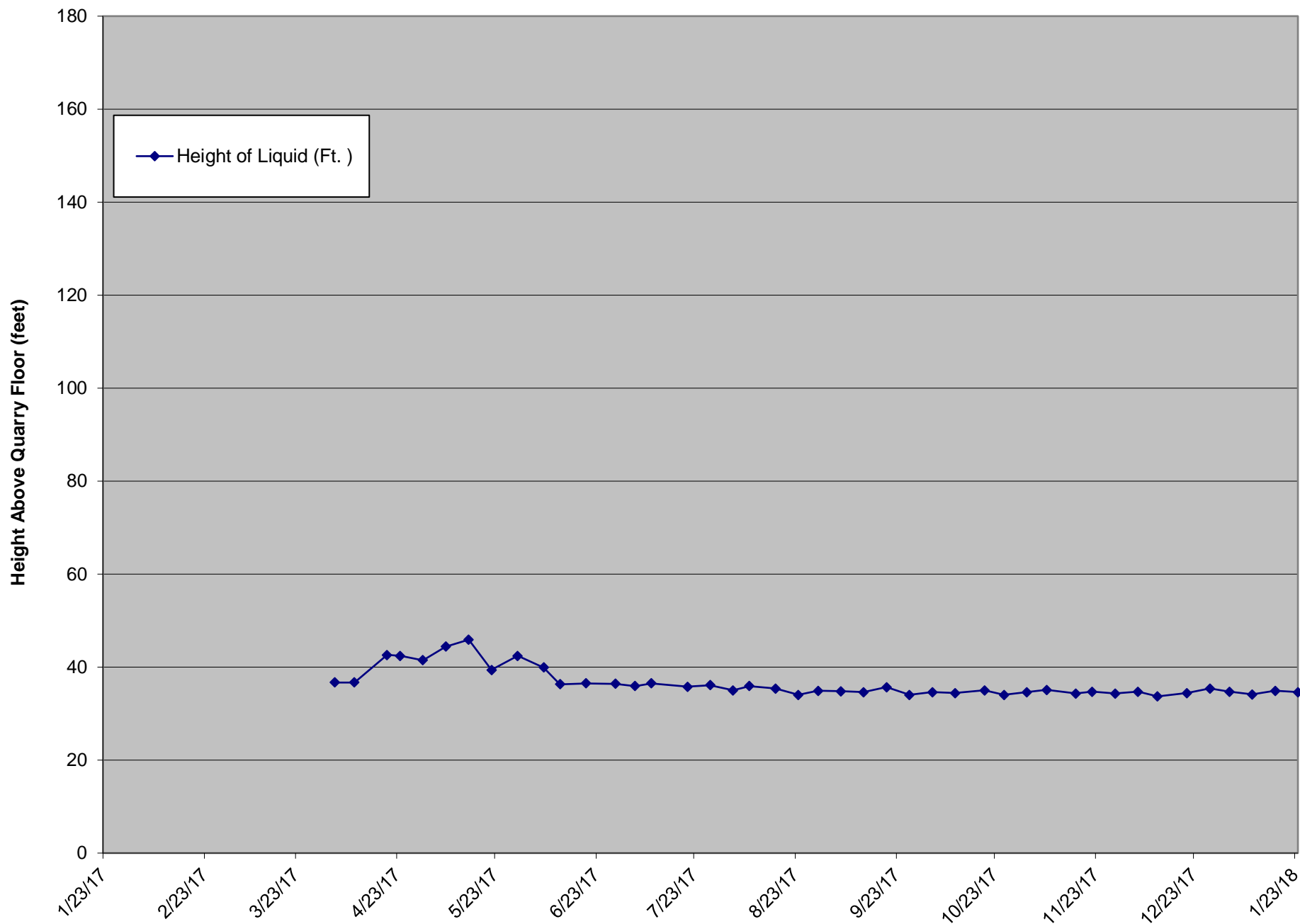
LCS-3D Liquid Level Below Ground Surface



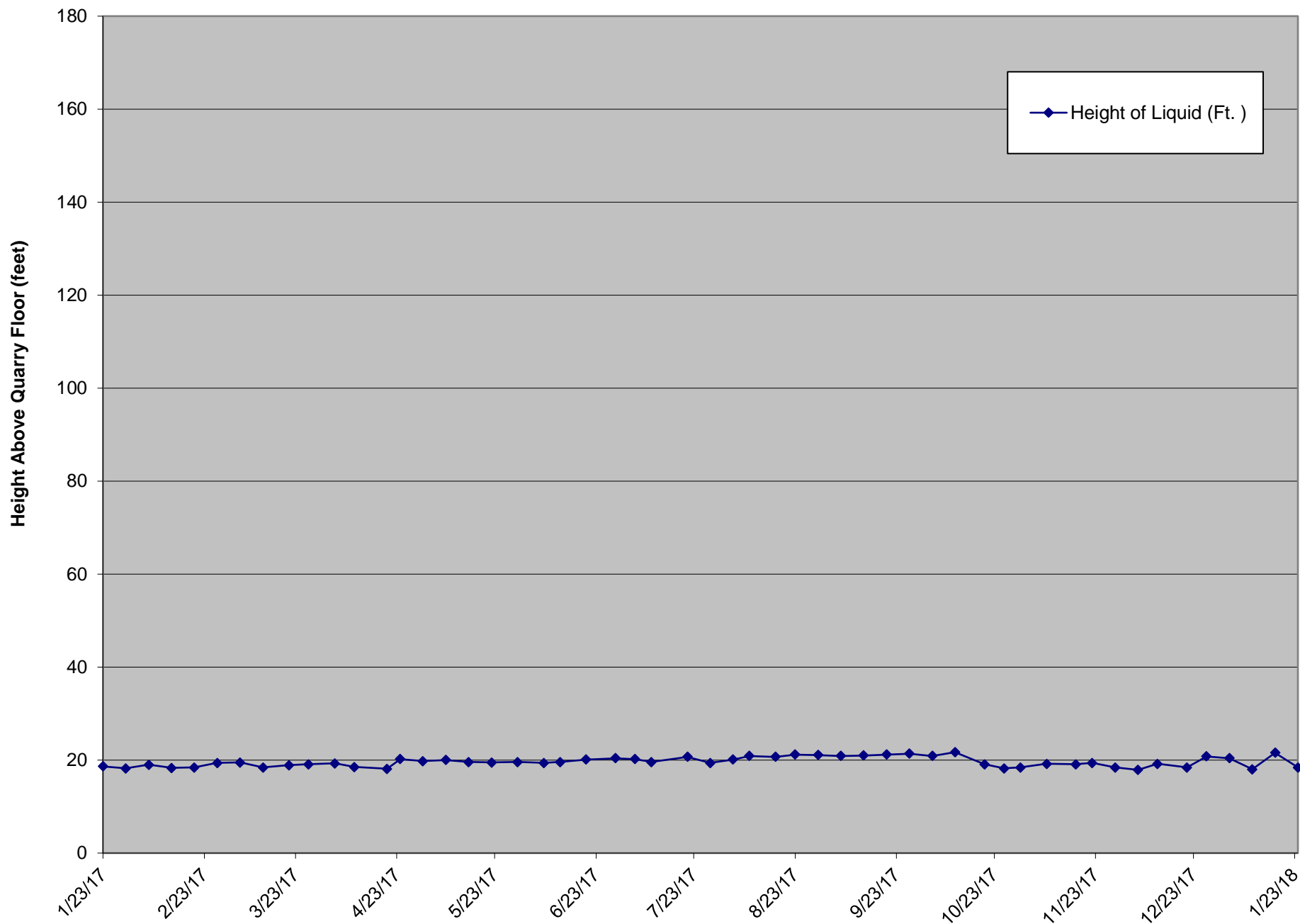
LCS-4B Liquid Level Below Ground Surface



LCS-5B Liquid Level Above Quarry Floor

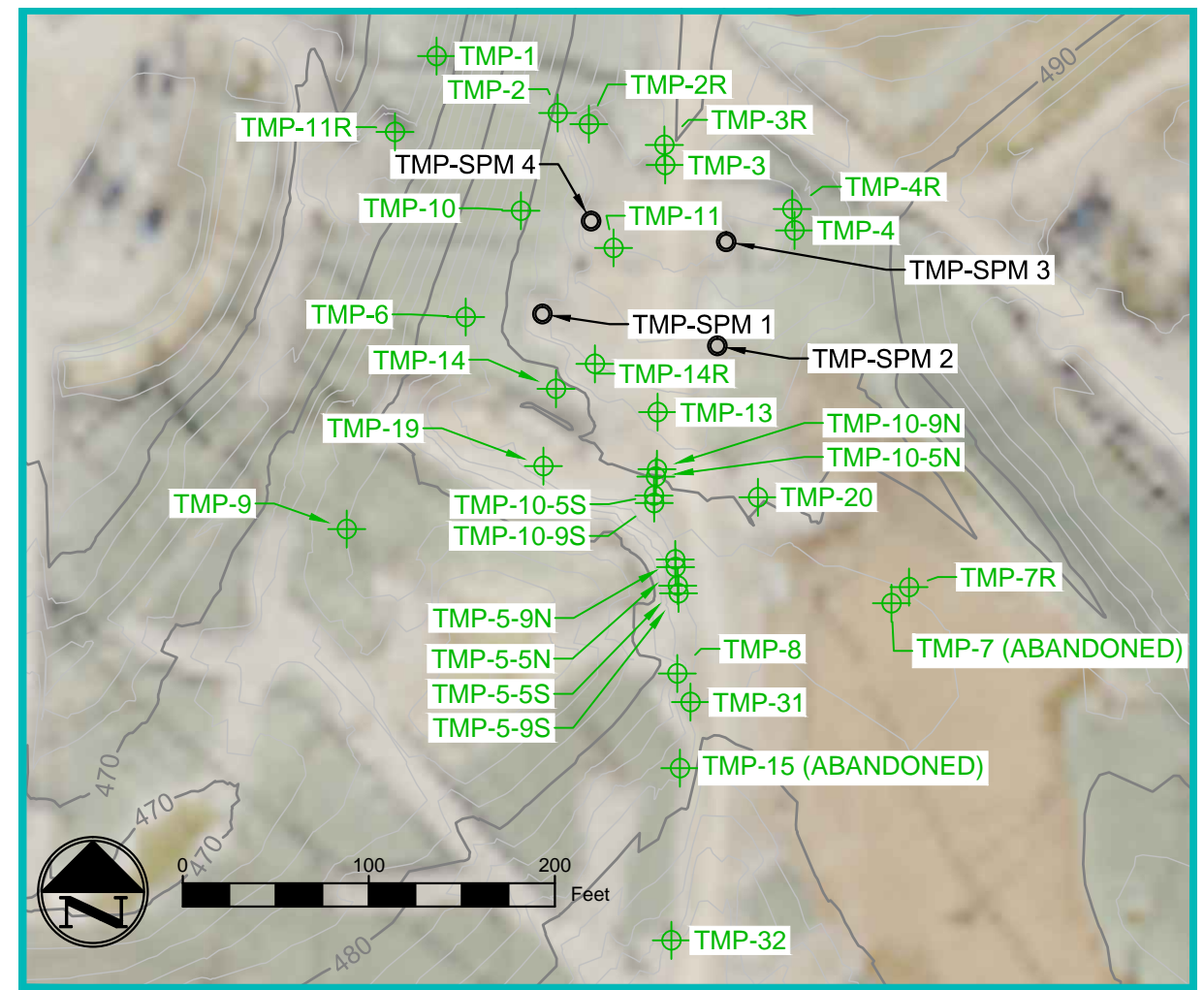
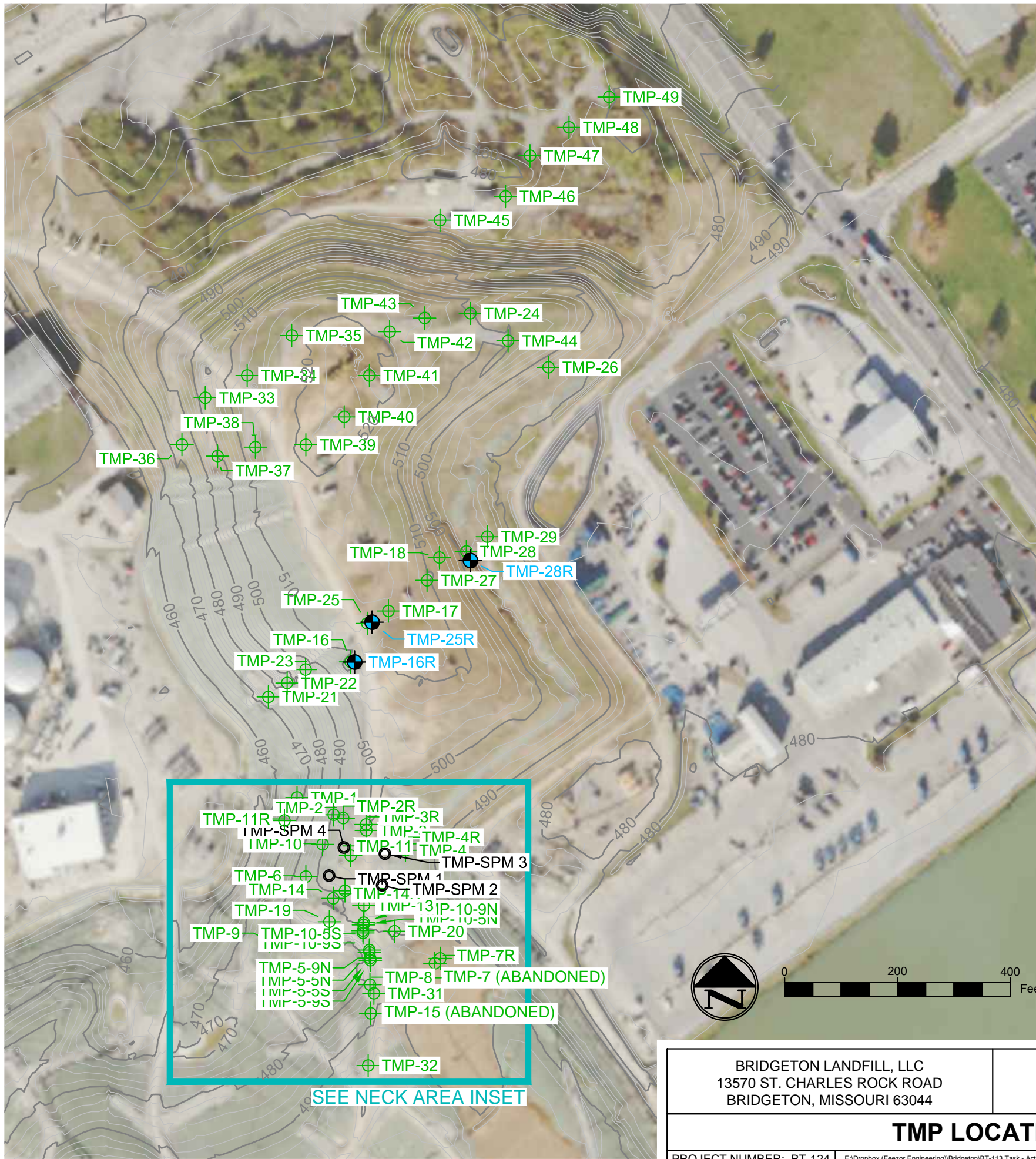


LCS-6B Liquid Level Above Quarry Floor



ATTACHMENT B

TEMPERATURE MONITORING PROBE ANALYTICAL CHARTS



NECK AREA INSET

LEGEND

- 2' CONTOUR — 2017 AERIAL TOPOGRAPHY (2' CONTOUR)
- 10' CONTOUR — 2017 AERIAL TOPOGRAPHY (10' CONTOUR)
- ⊕ TMP-13 INSTALLED TMP LOCATION
- TMP-SPM 1 TMP-SPM (ASBUILT OCTOBER 13, 2016)
- TMP-16R REPLACEMENT TMP INSTALLED IN 2017

NOTE:

1.) 2017 AERIAL TOPOGRAPHY PROVIDED BY COOPER AERIAL SURVEYS, INC. AND IS DATED DECEMBER 2, 2016

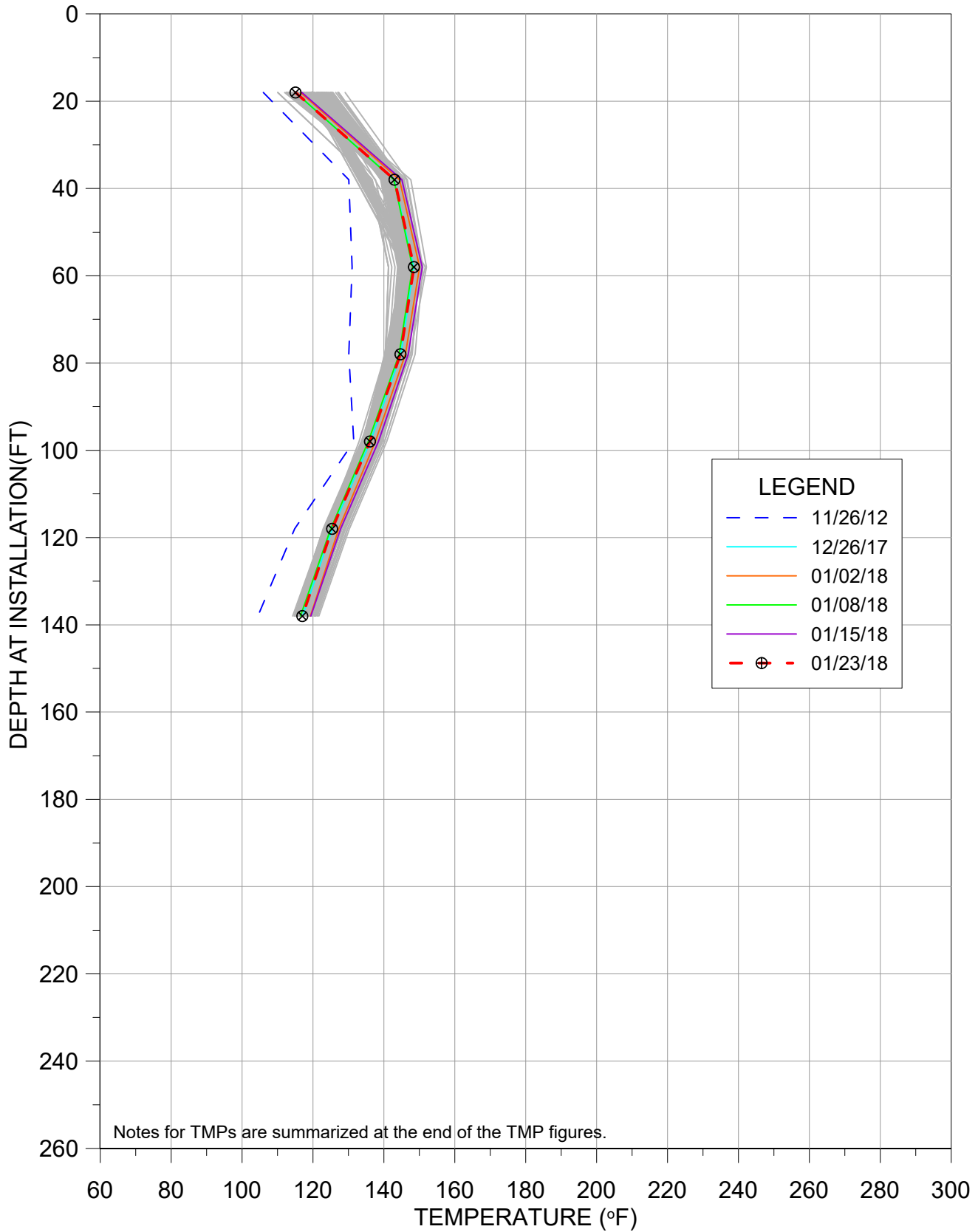
BRIDGETON LANDFILL, LLC
 13570 ST. CHARLES ROCK ROAD
 BRIDGETON, MISSOURI 63044

BRIDGETON LANDFILL

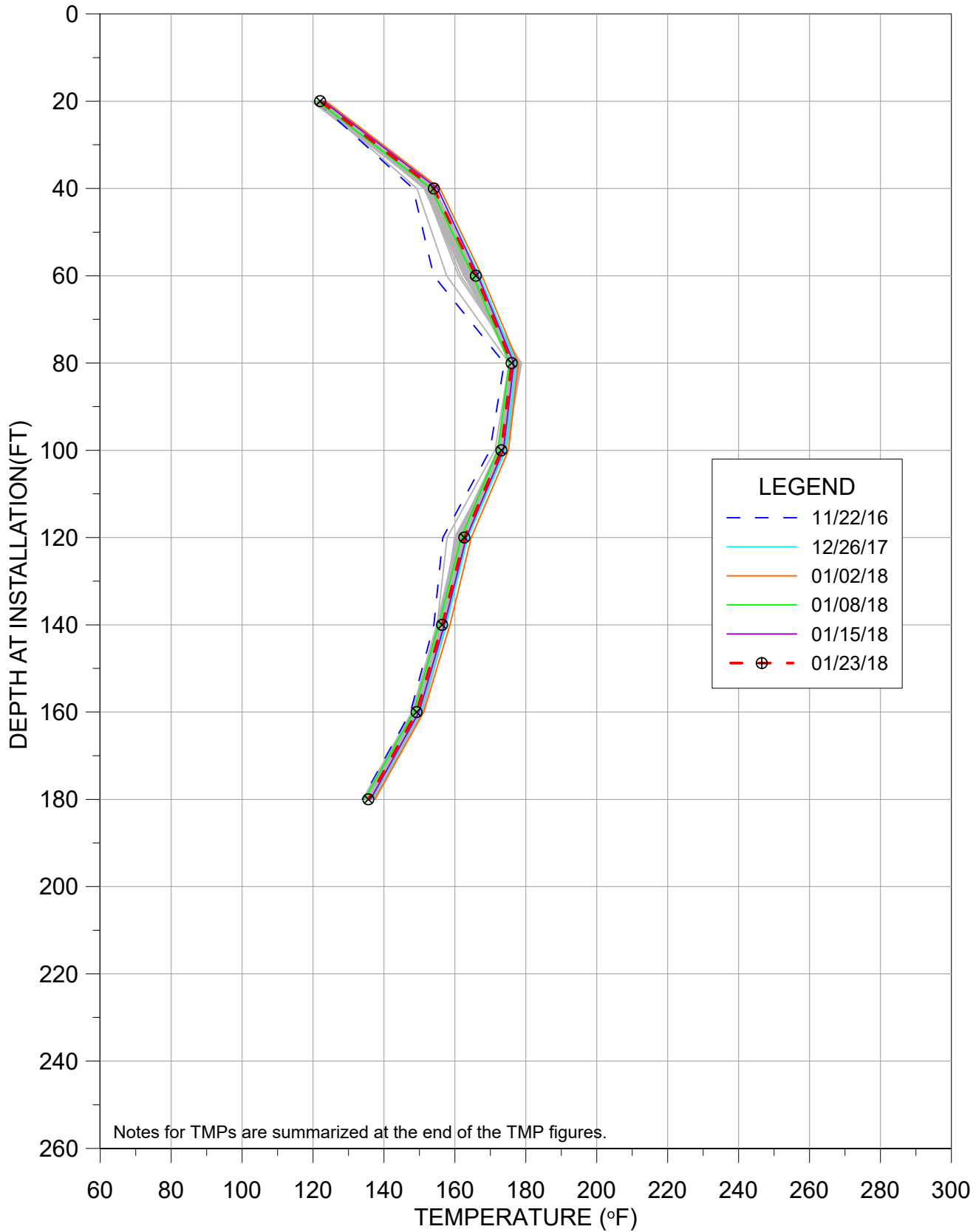
TMP LOCATIONS

AUGUST 2017	DRAWING NO.:
DESIGNED BY: PML	
APPROVED BY: ---	
REVISION	DATE

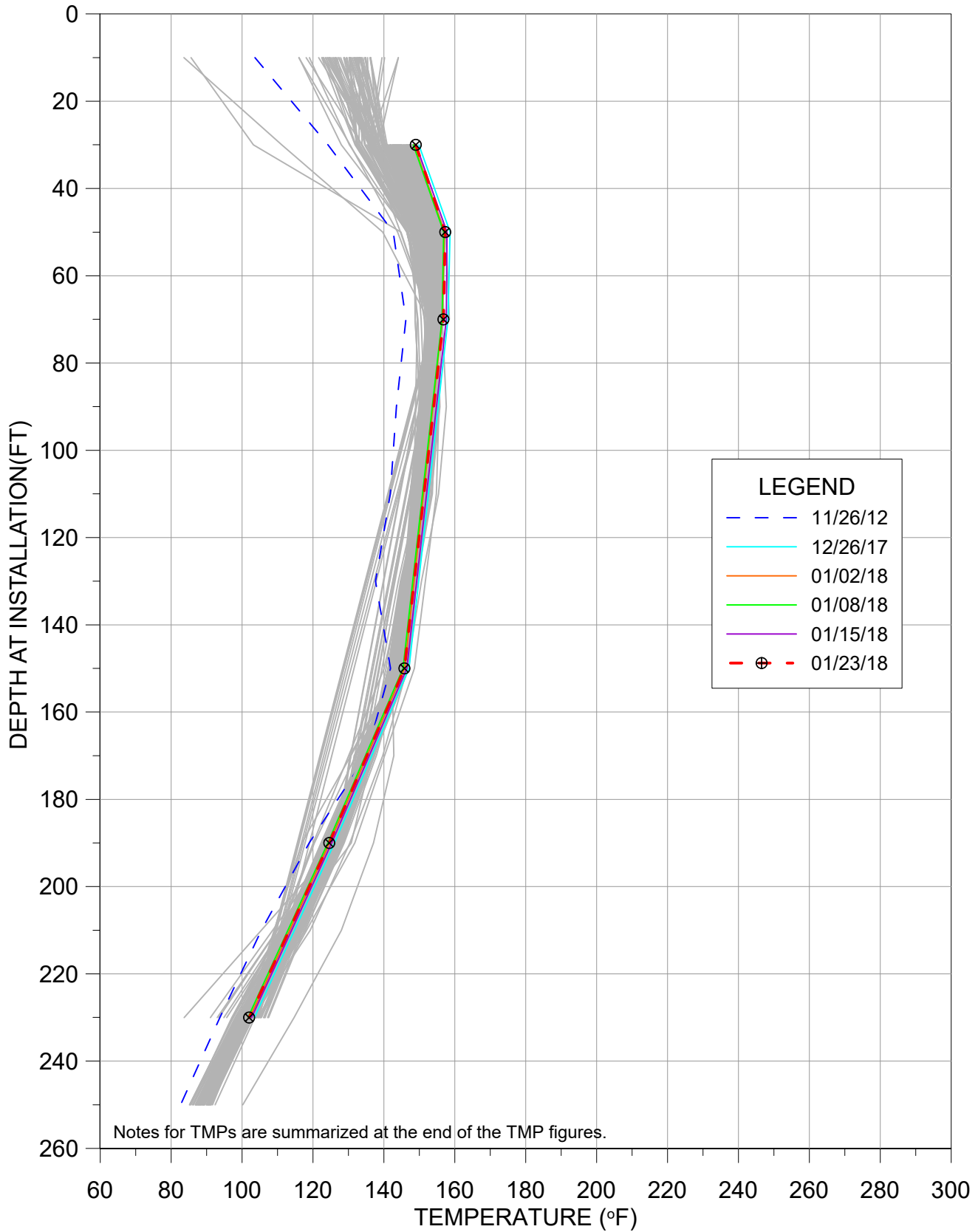
TMP-1



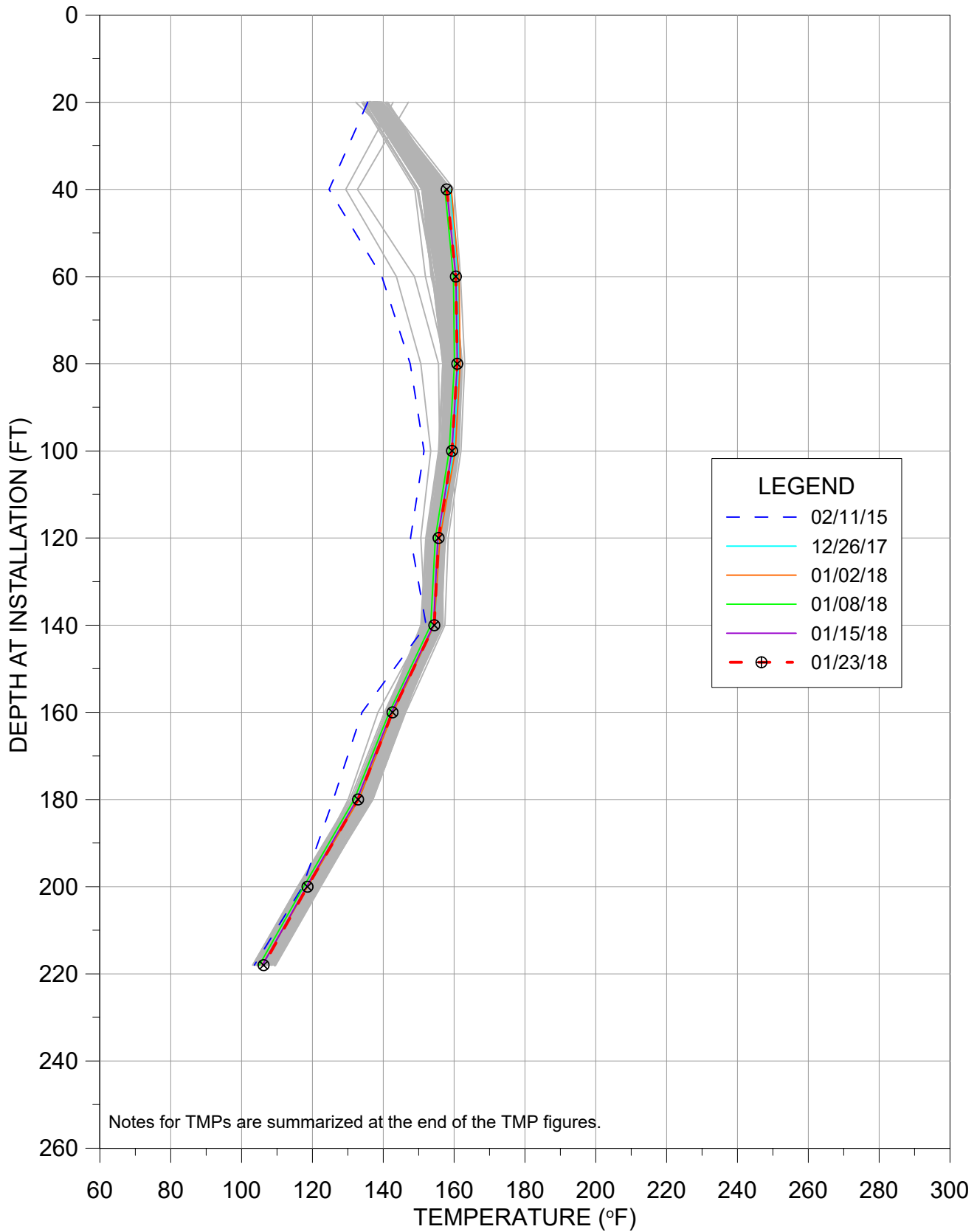
TMP-2R



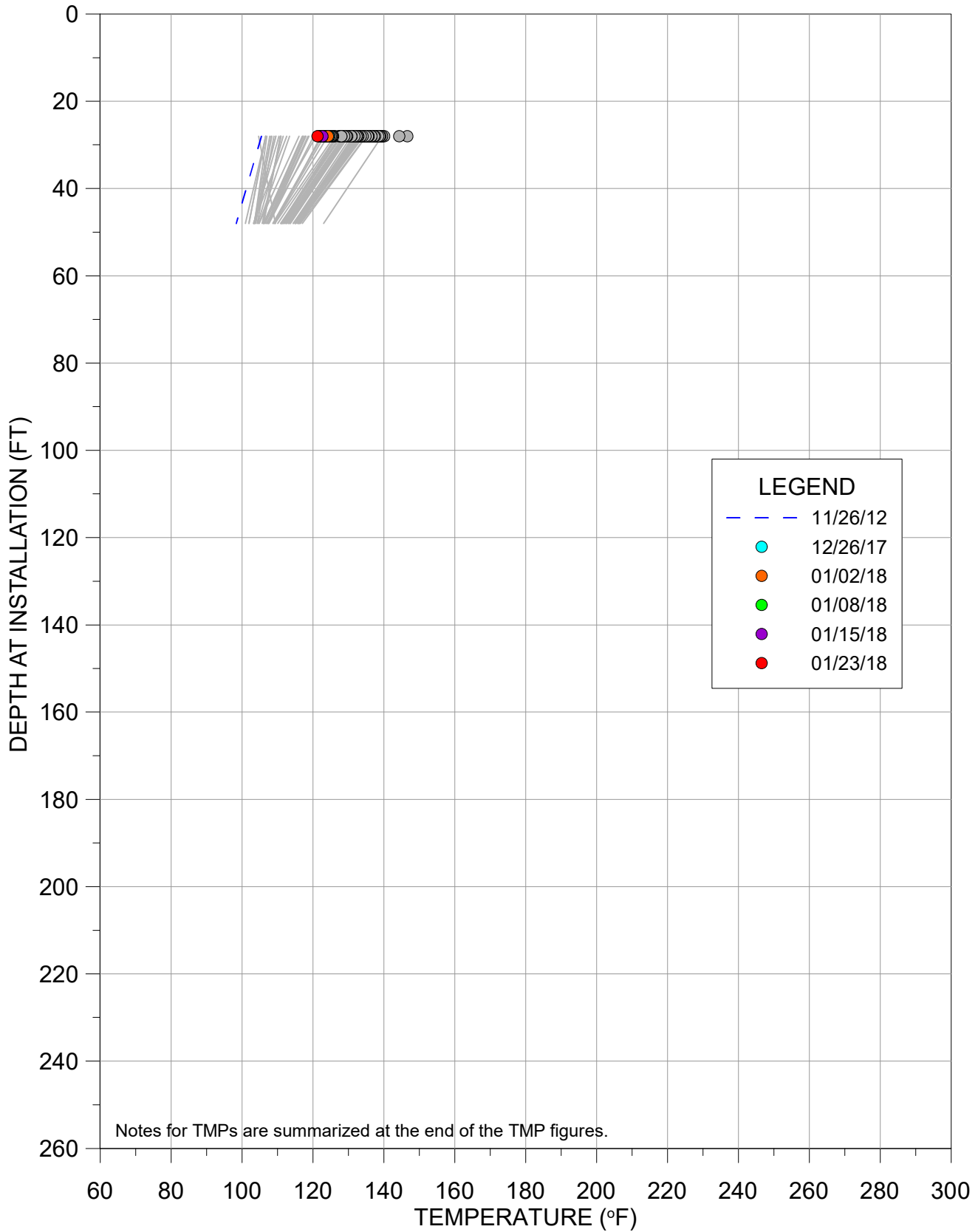
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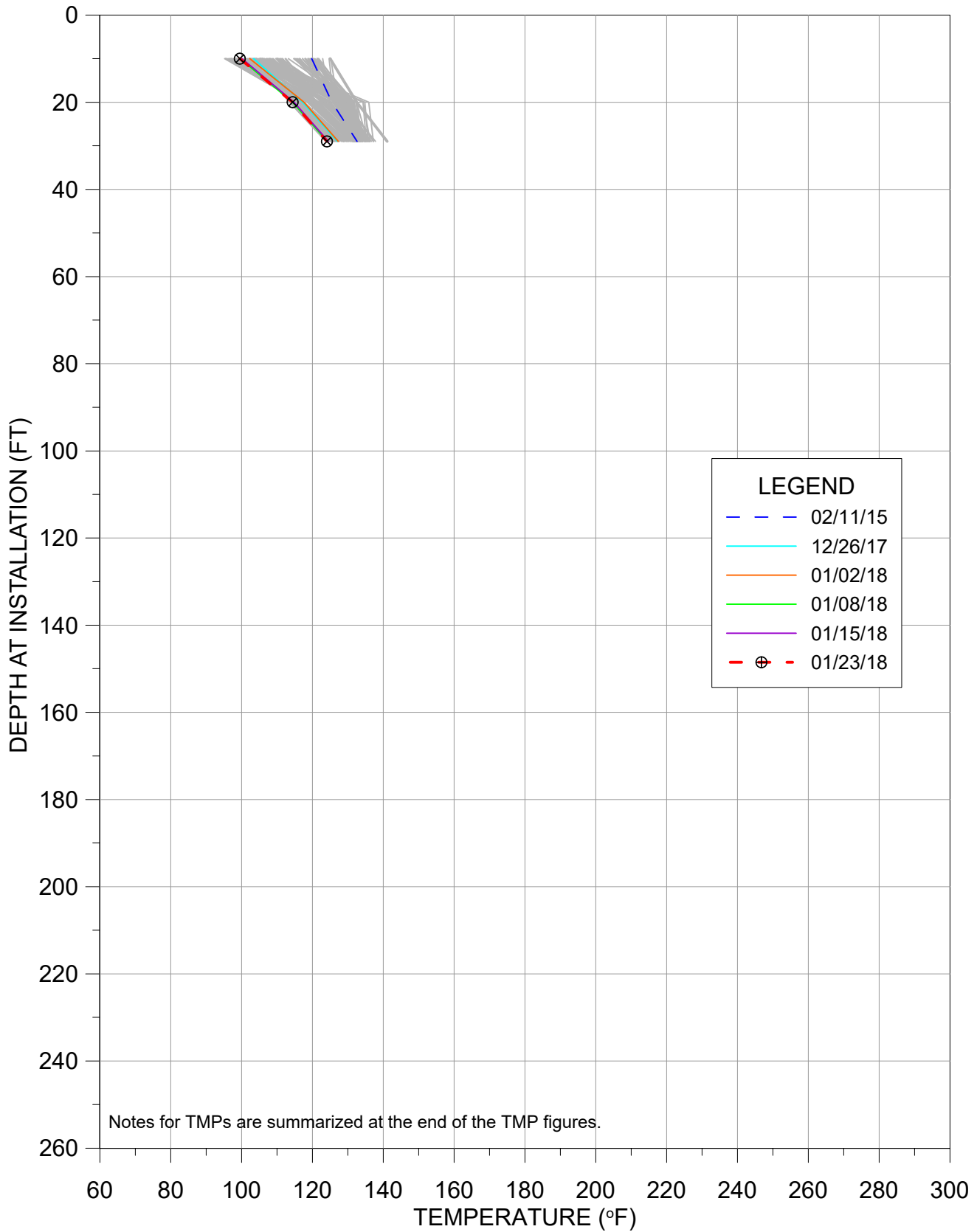
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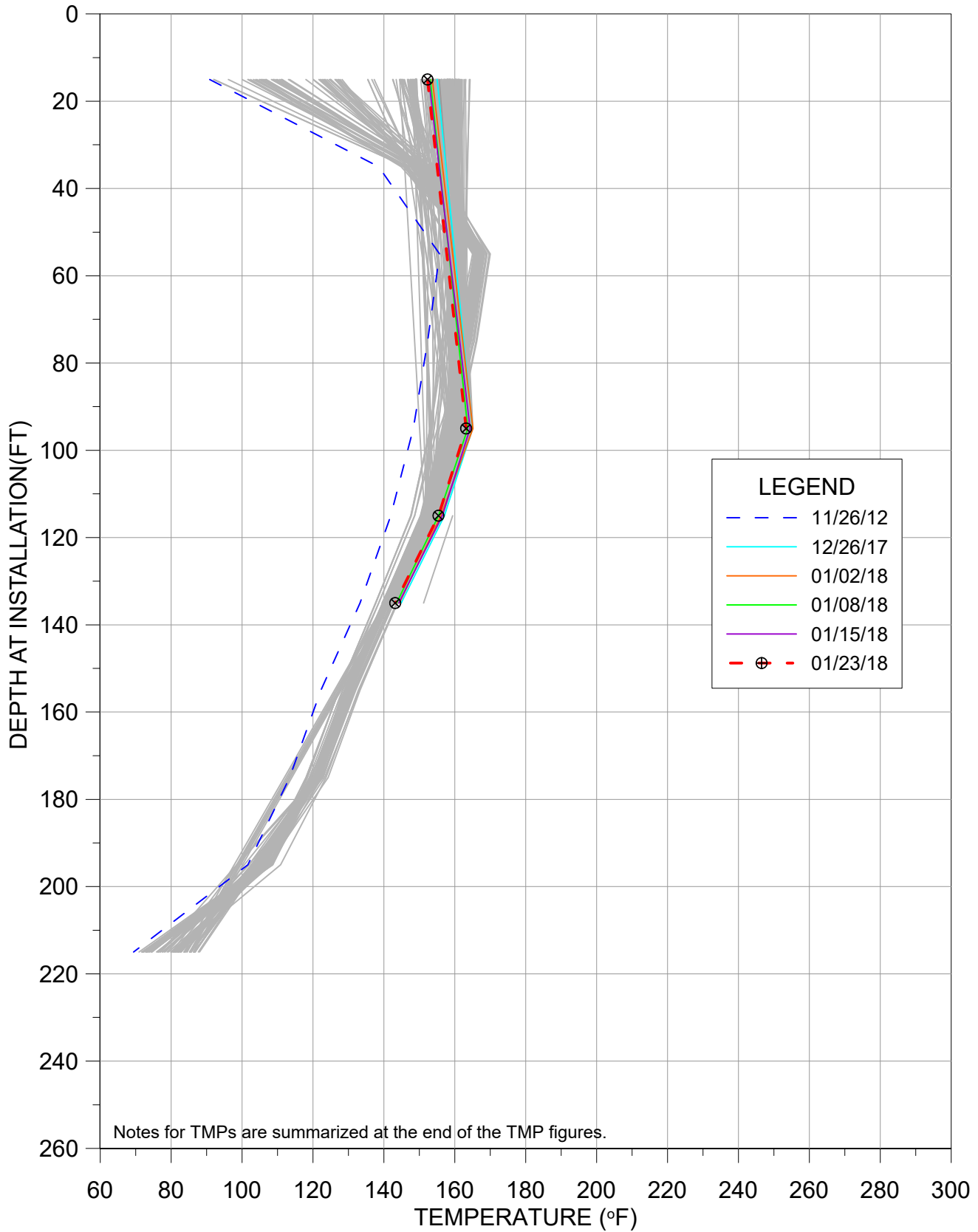
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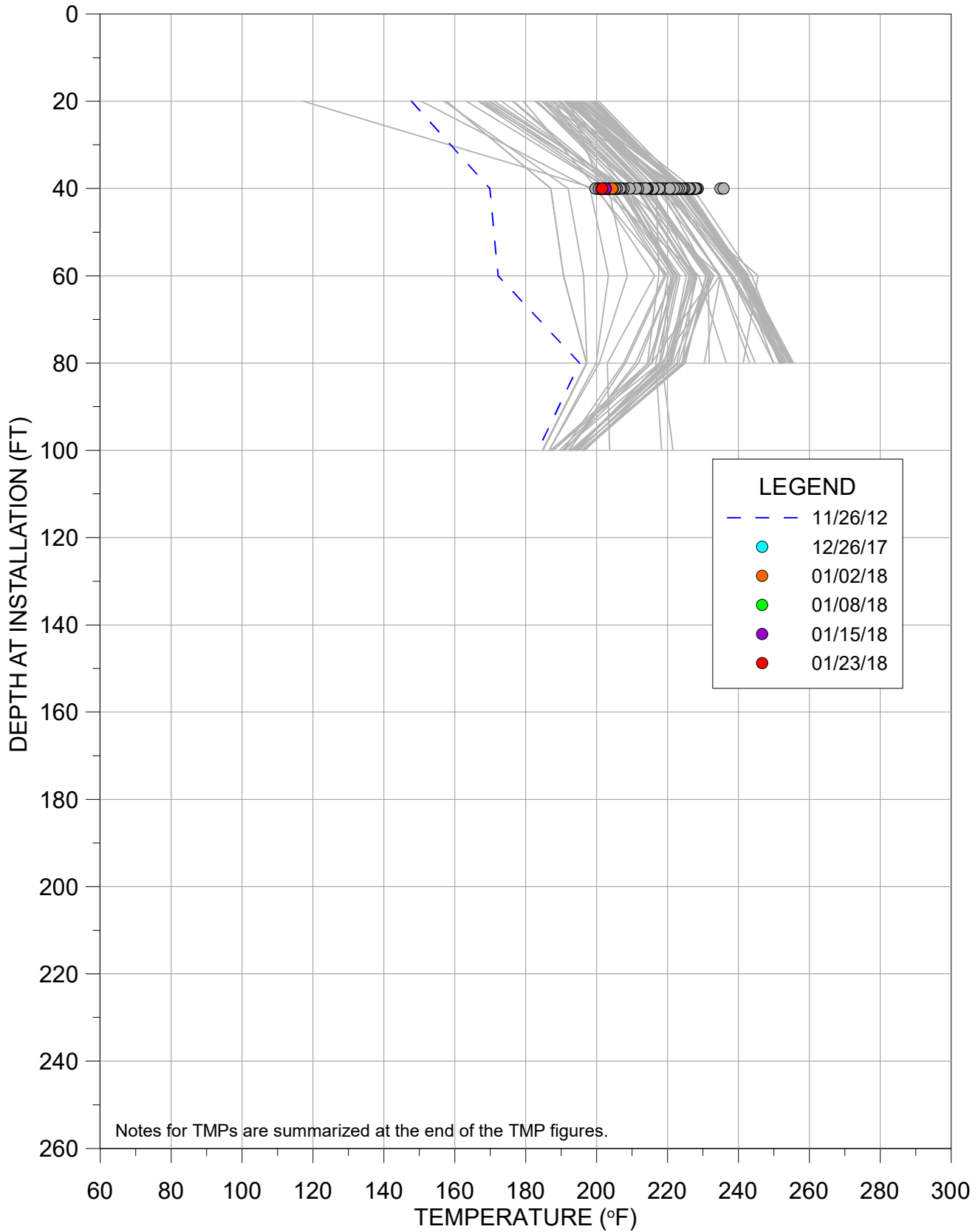
TMP-4R



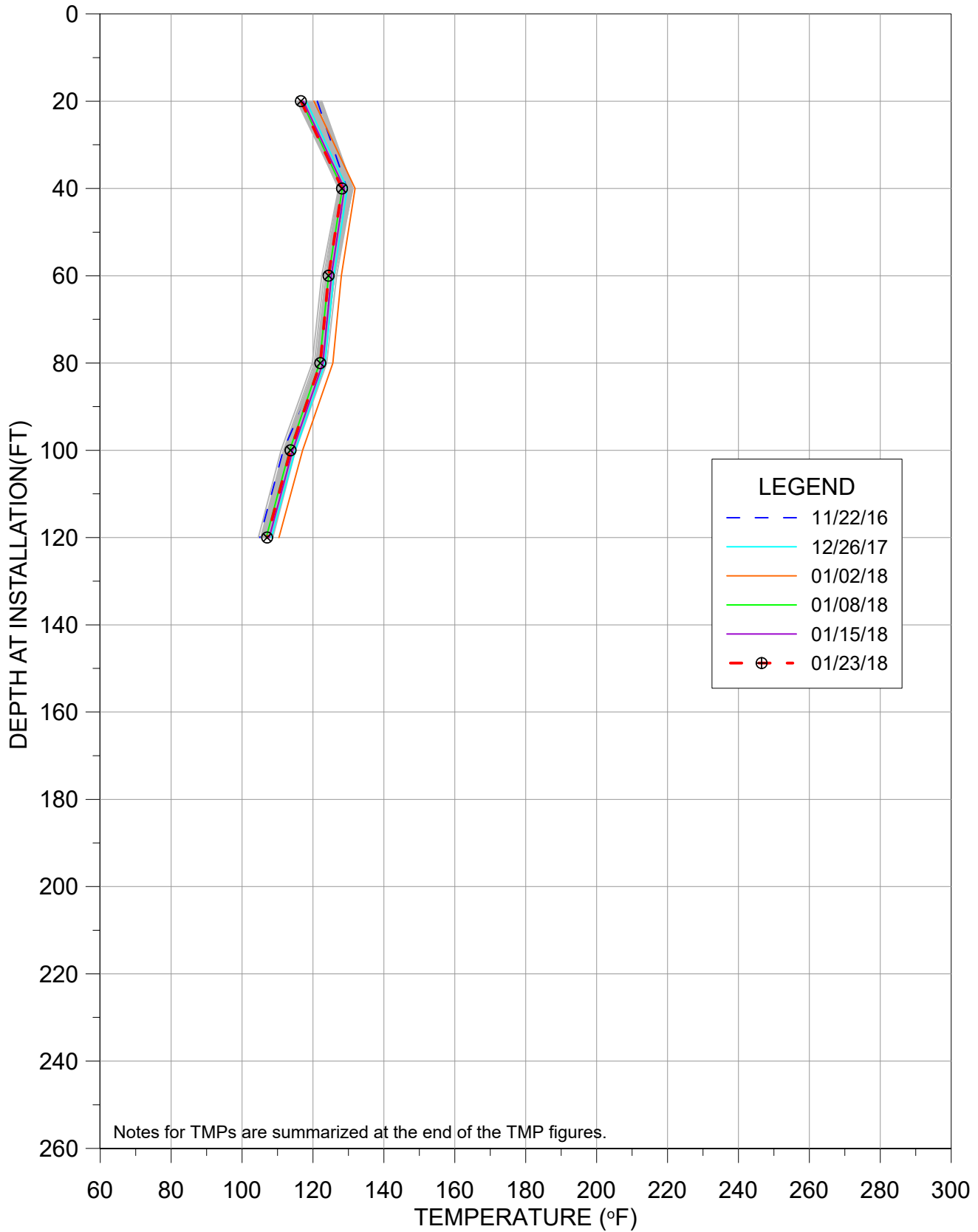
TMP-6



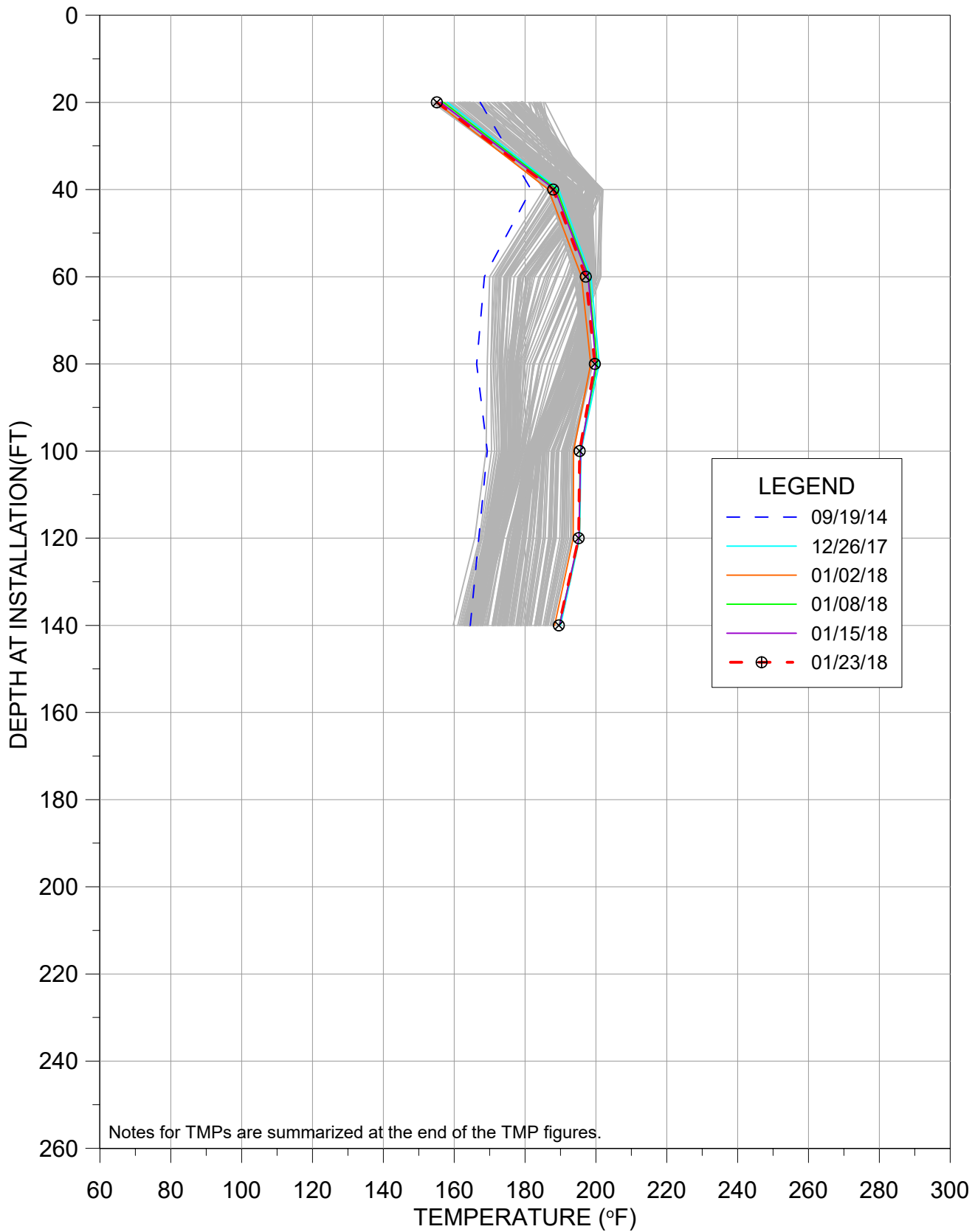
TMP-9



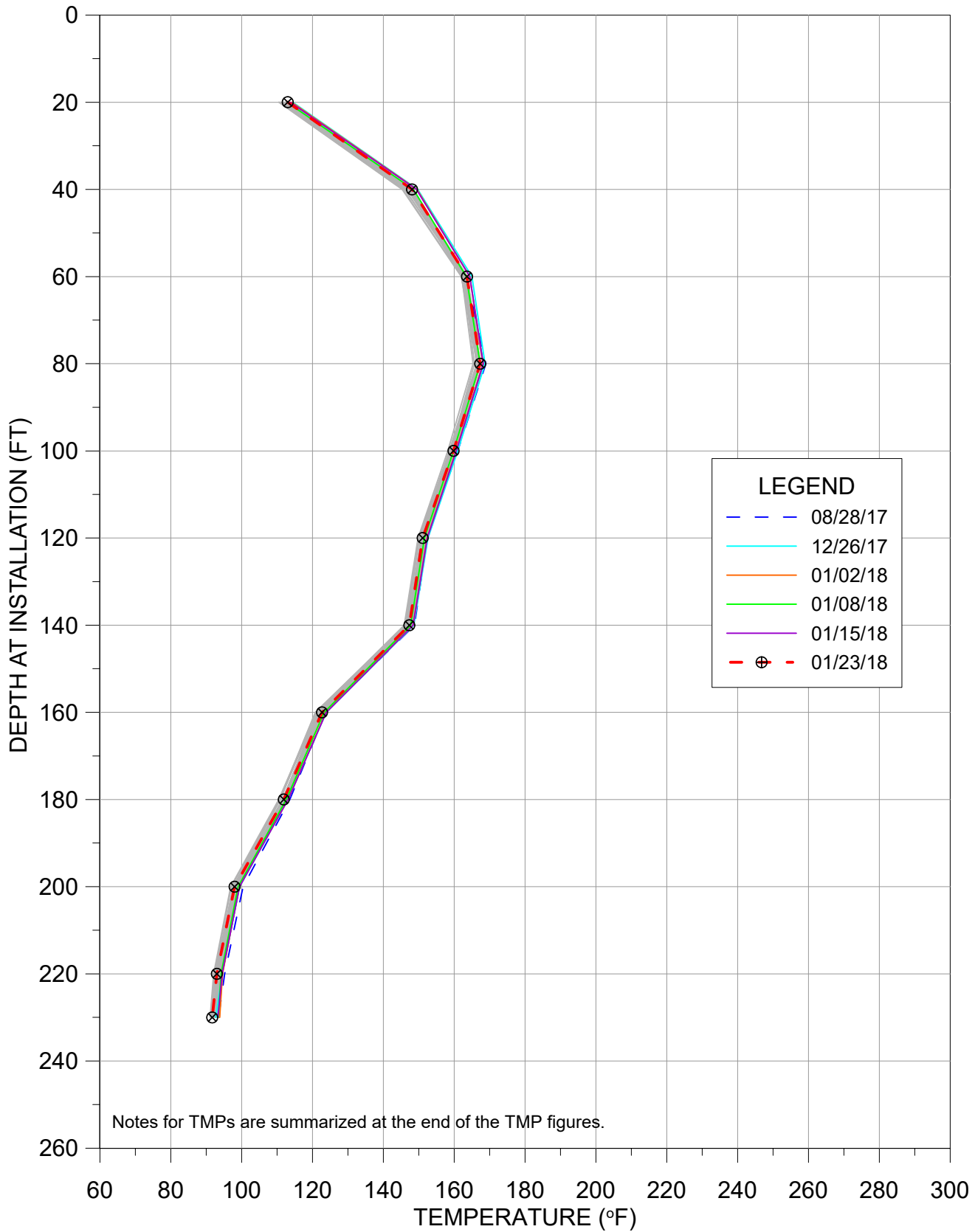
TMP-11R



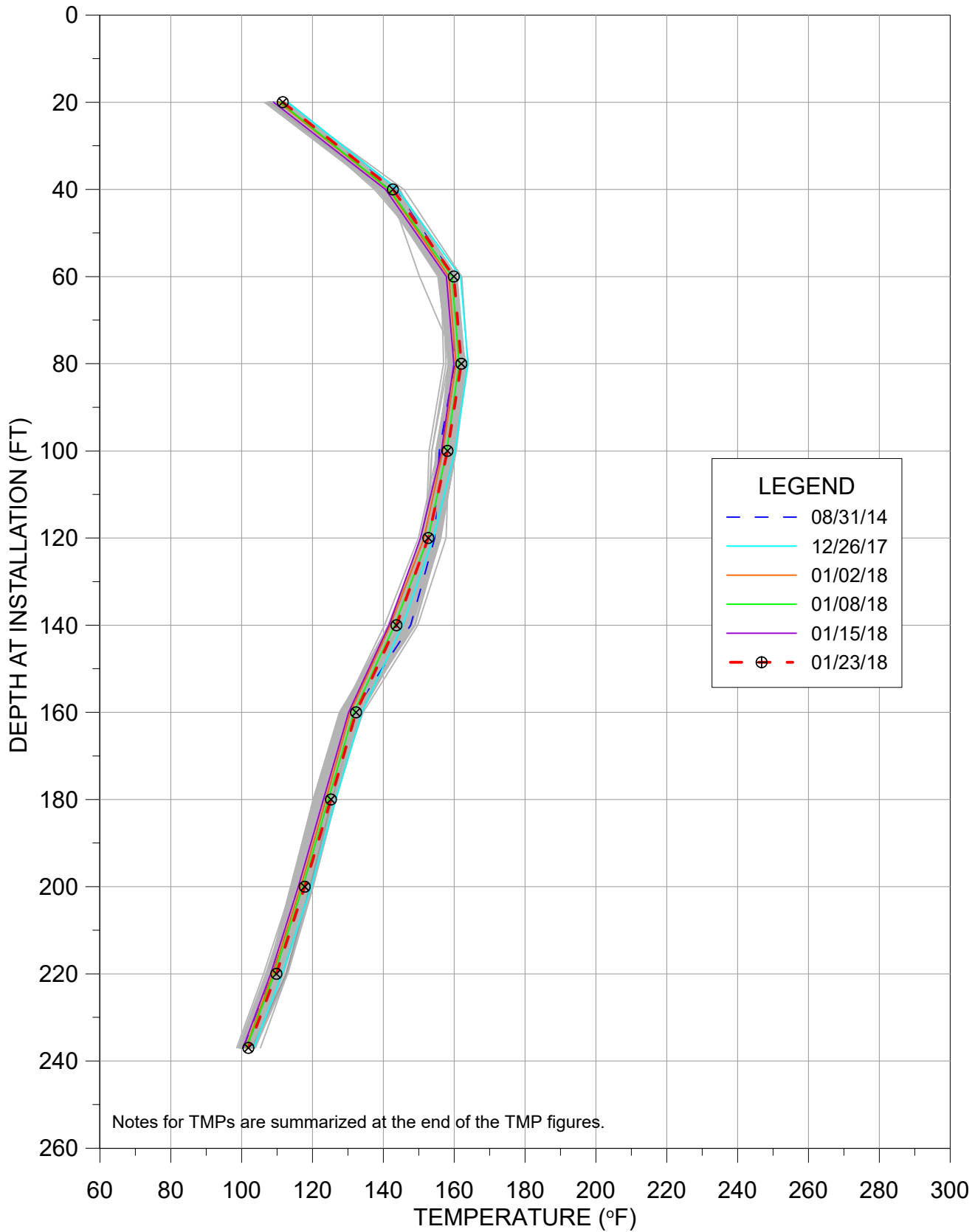
TMP-14R



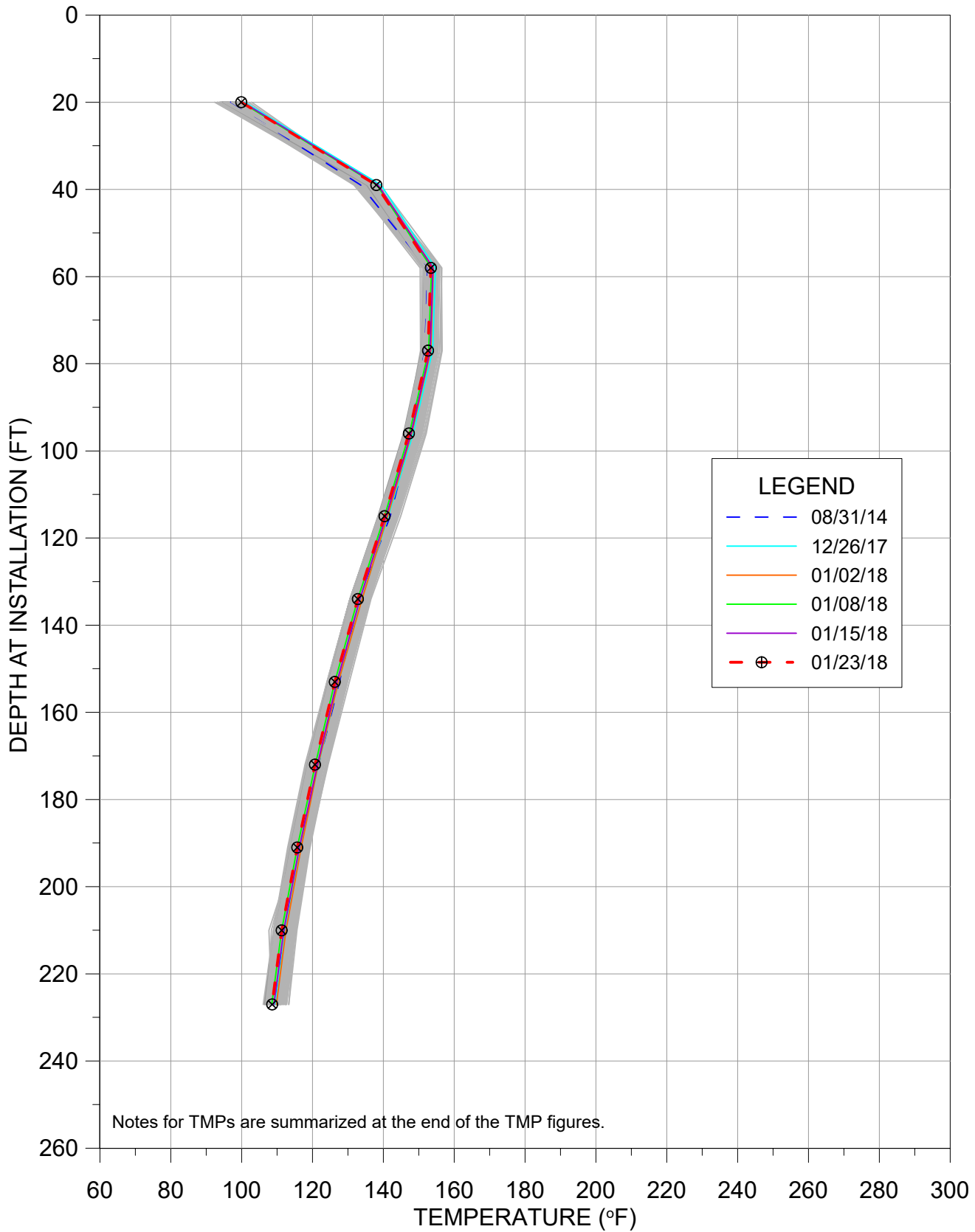
TMP-16R



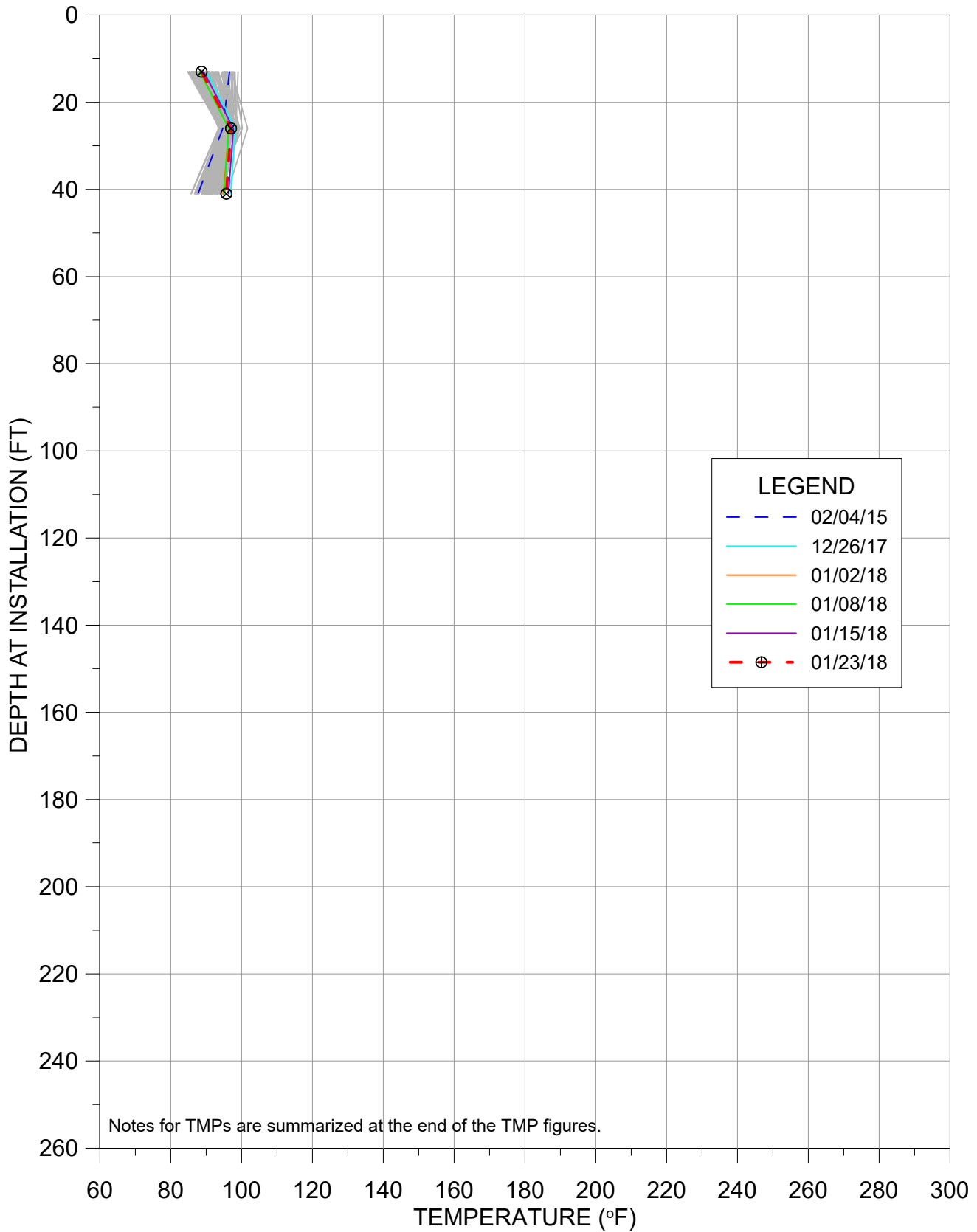
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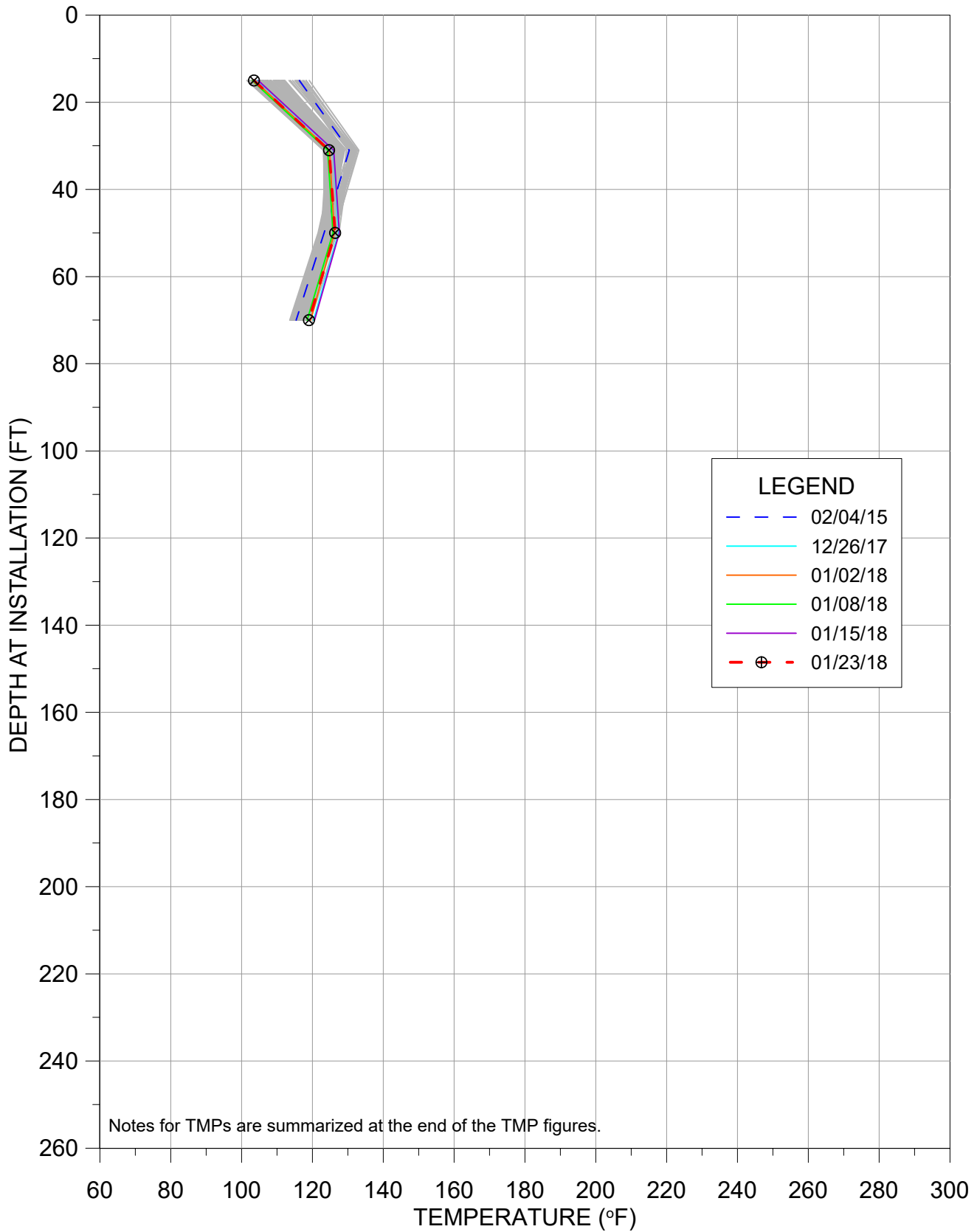
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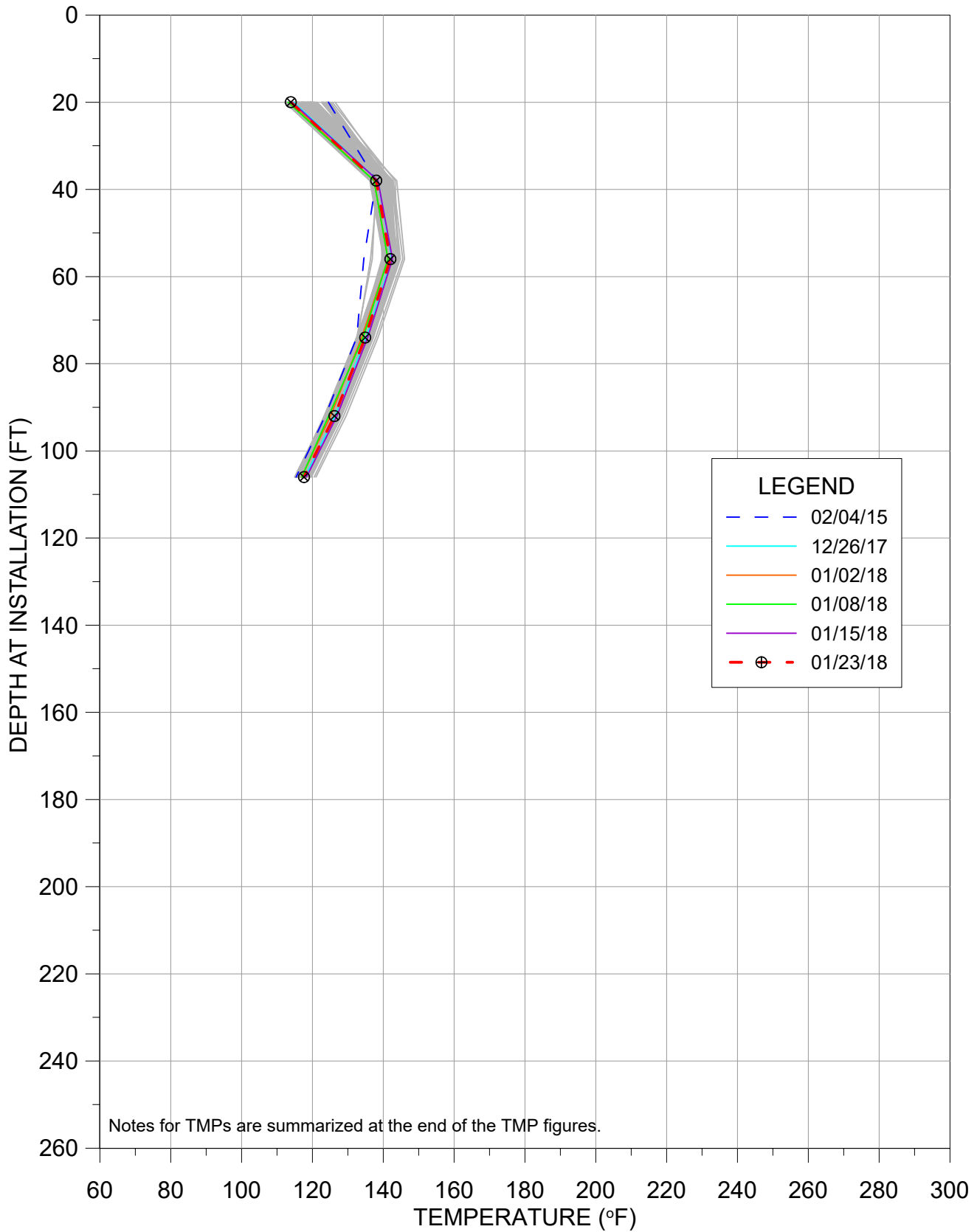
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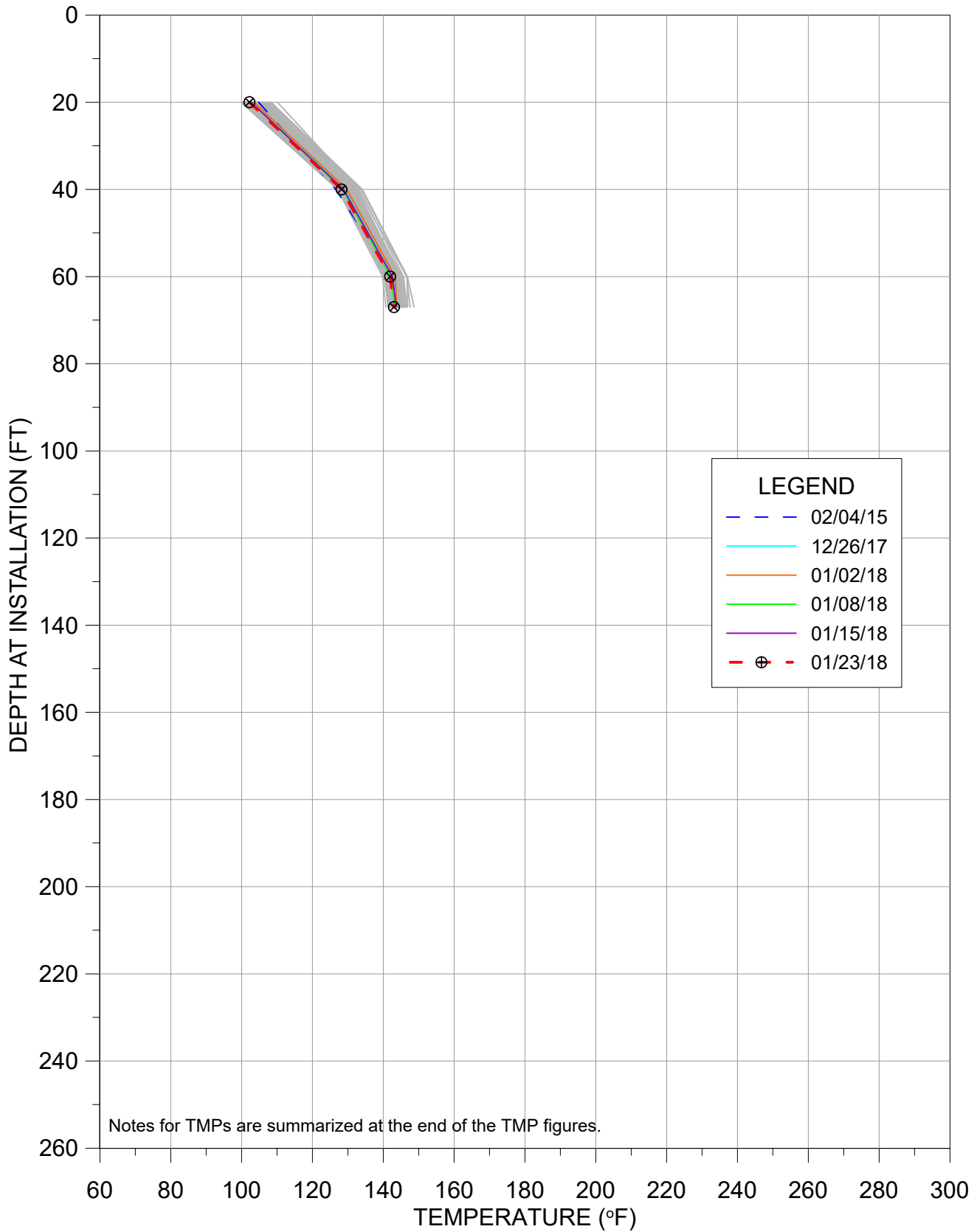
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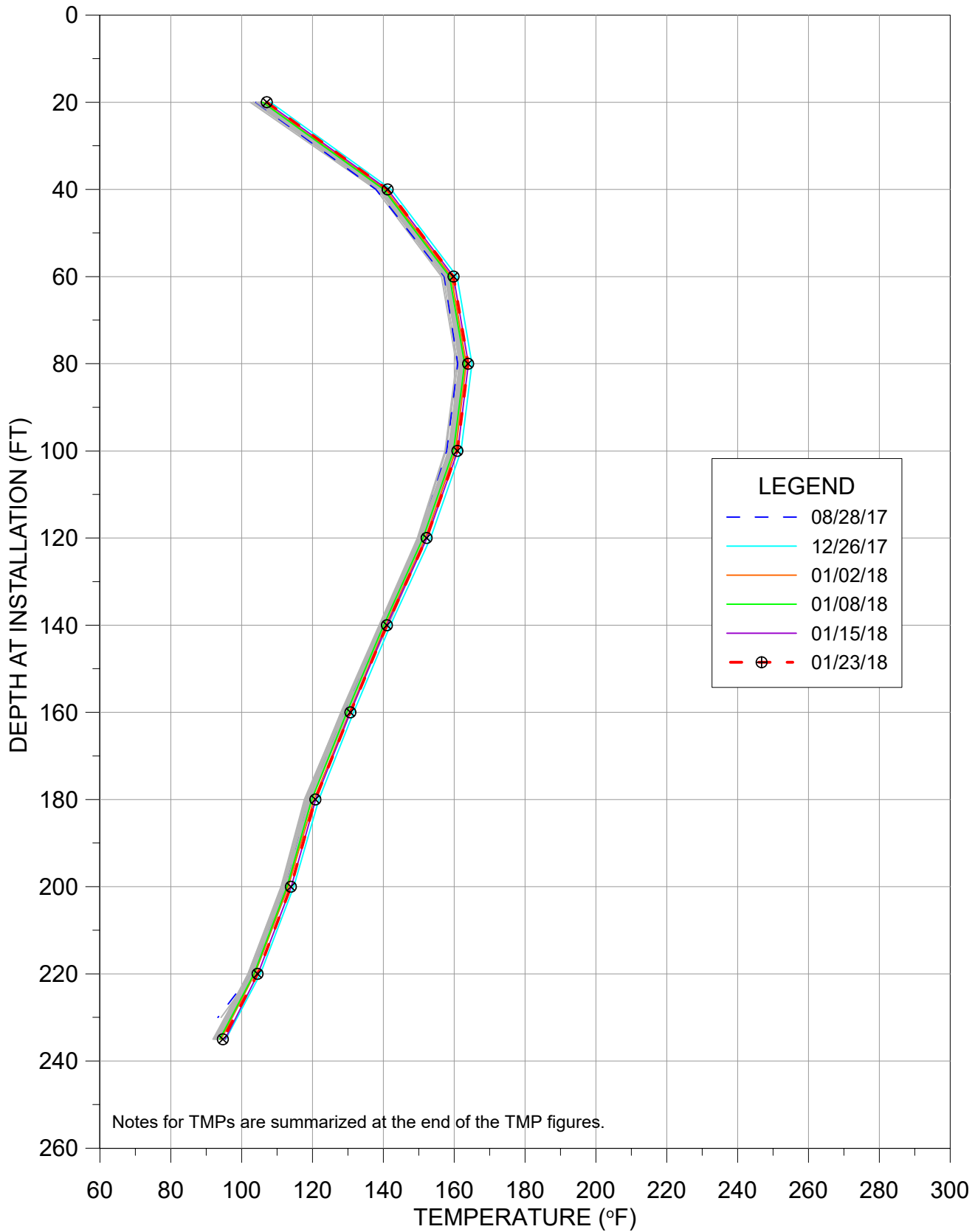
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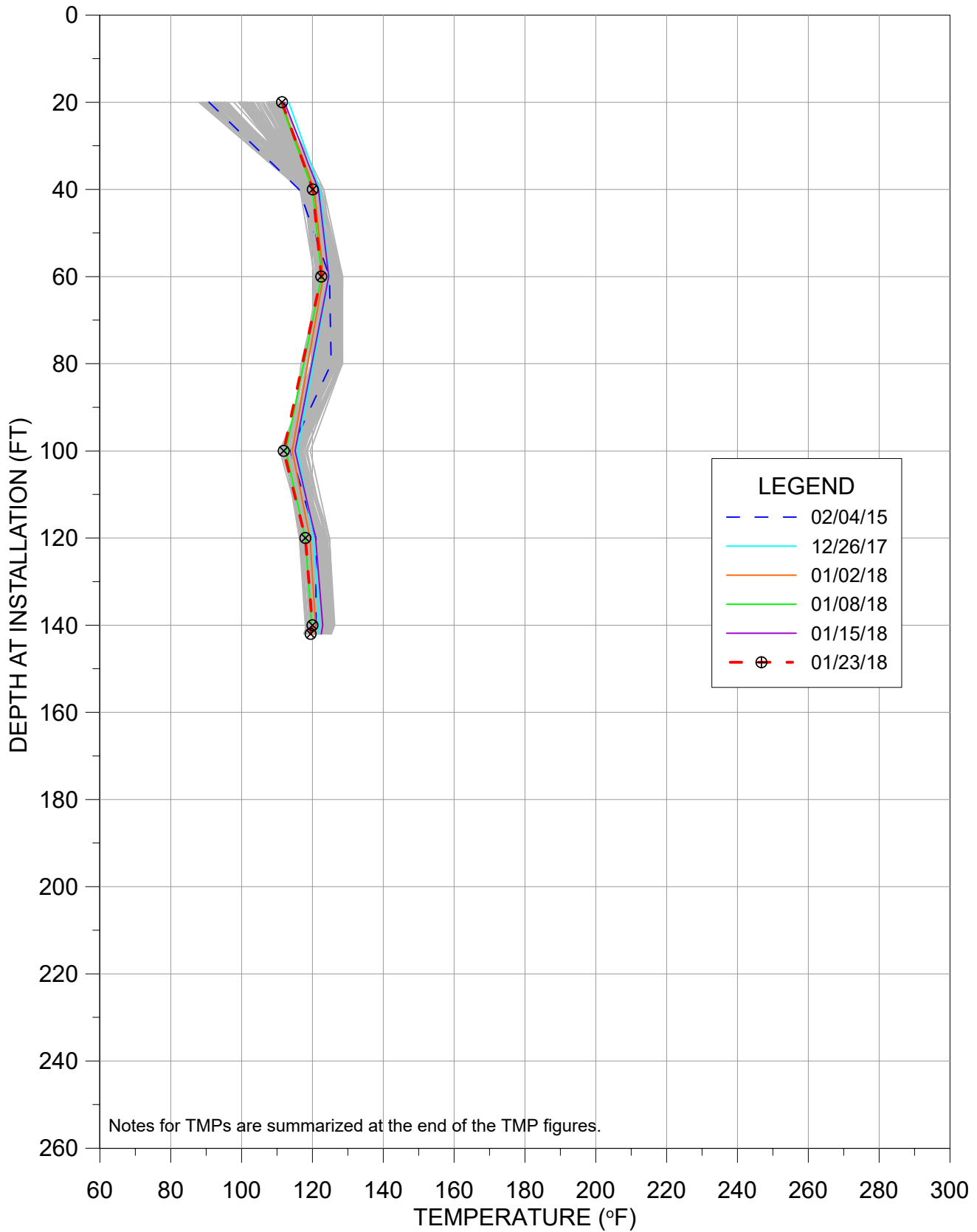
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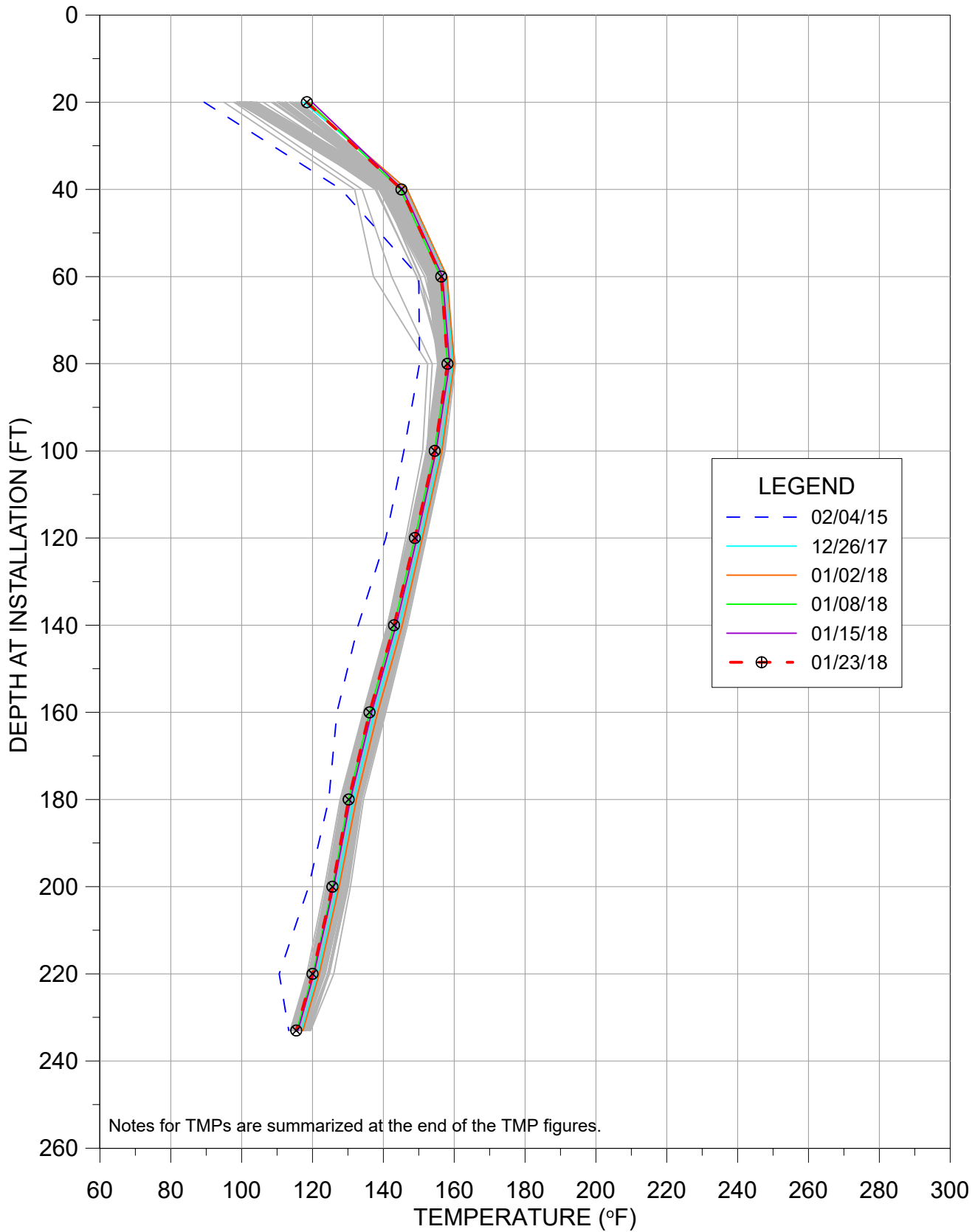
TMP-25R



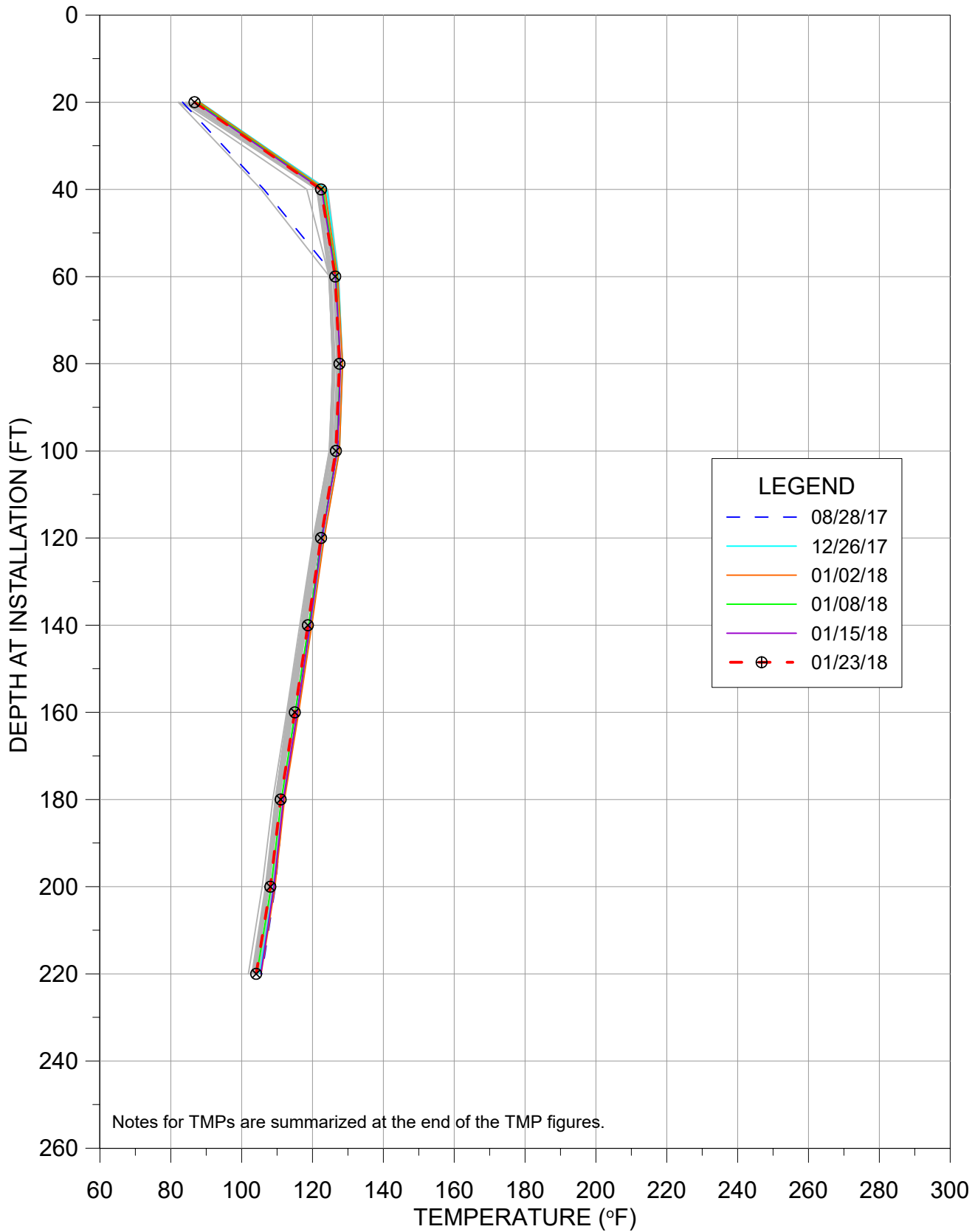
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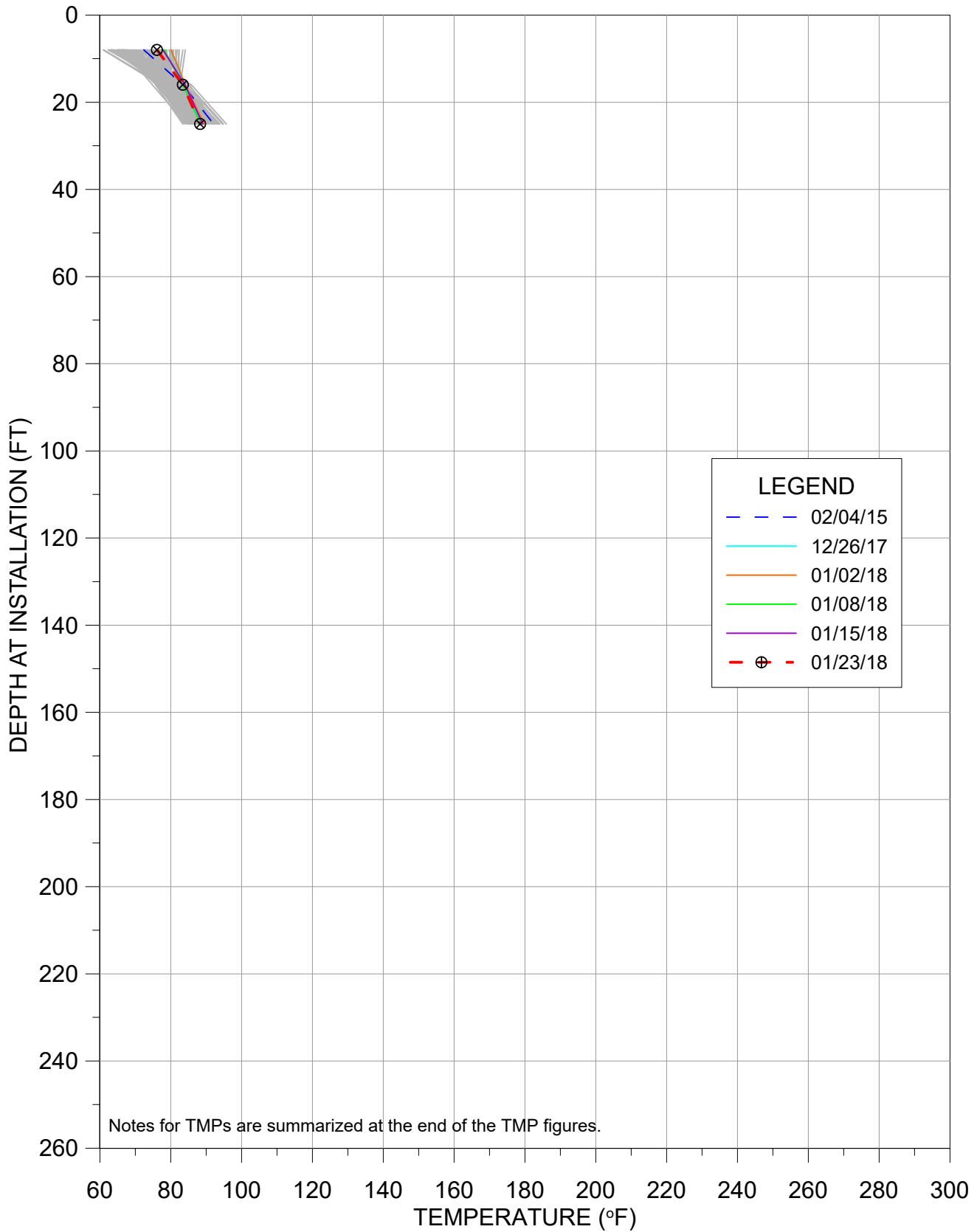
TMP-27



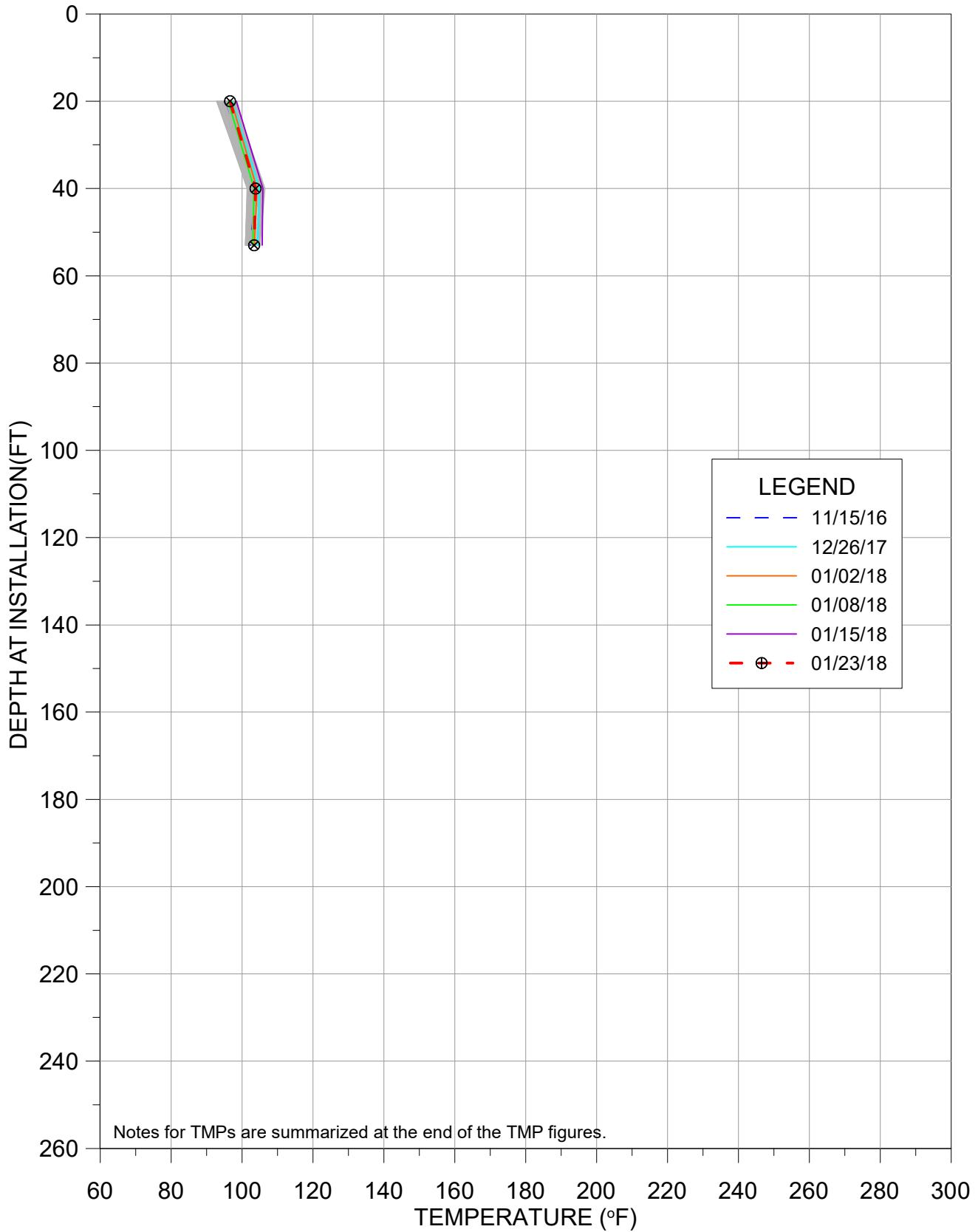
TMP-28R



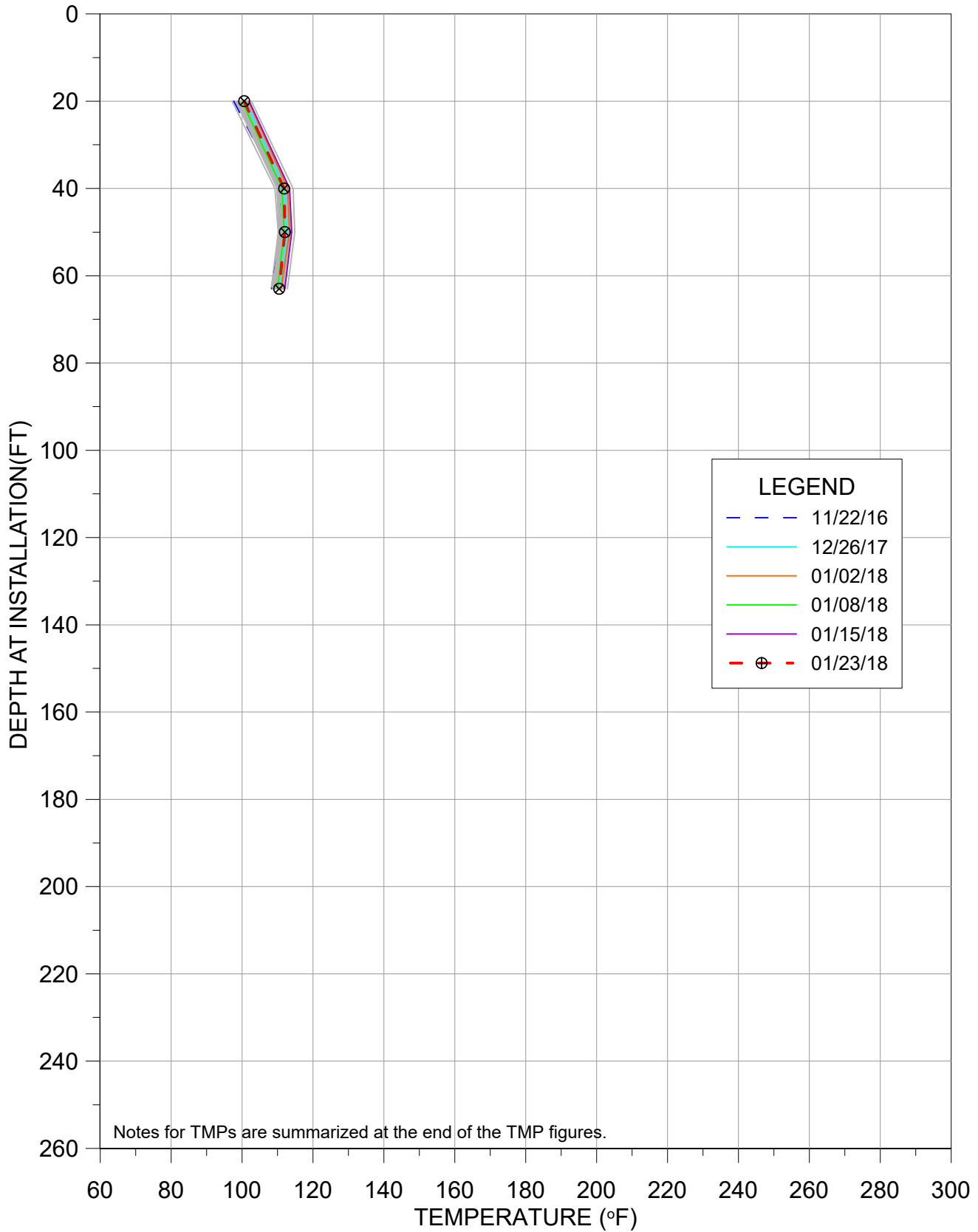
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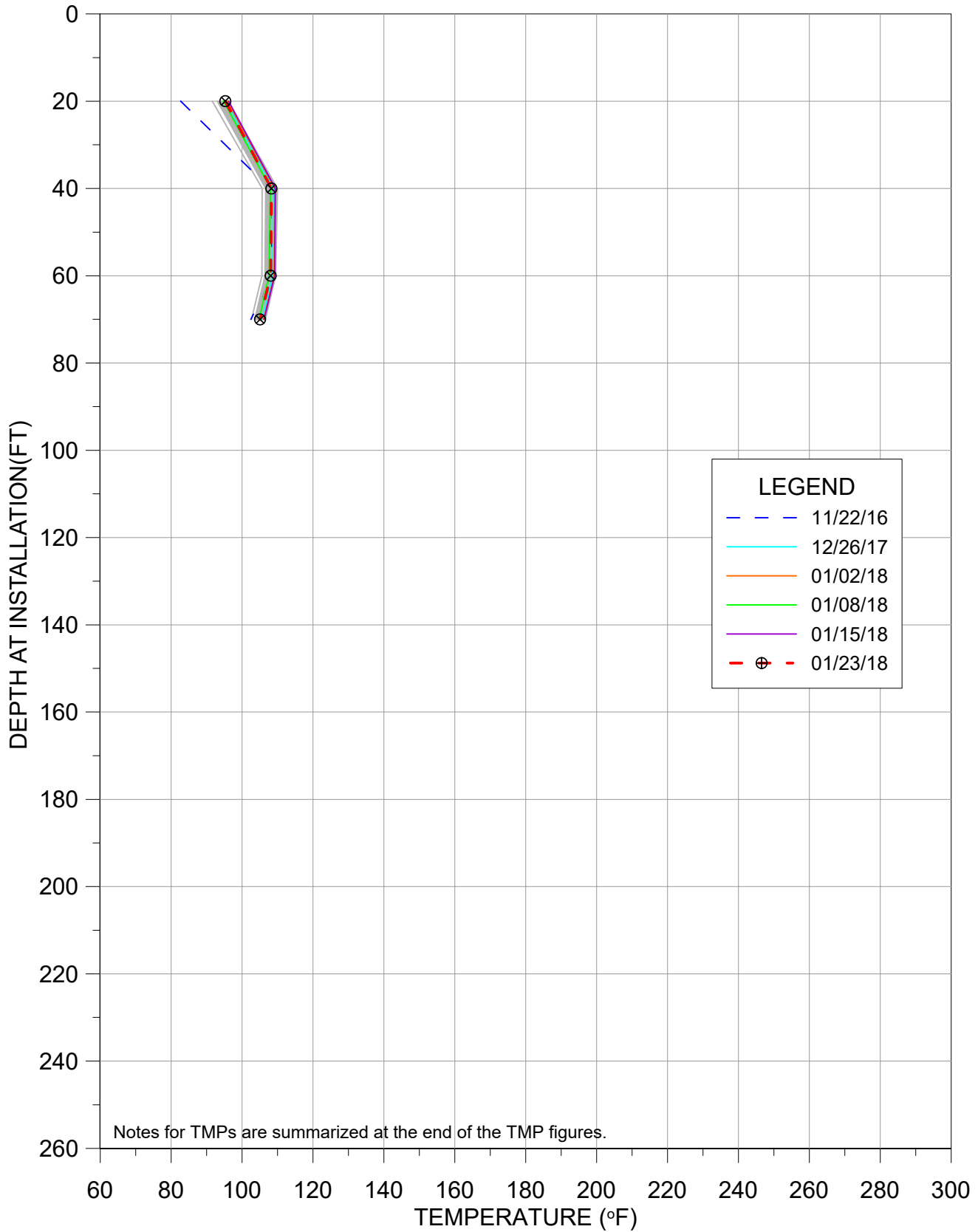
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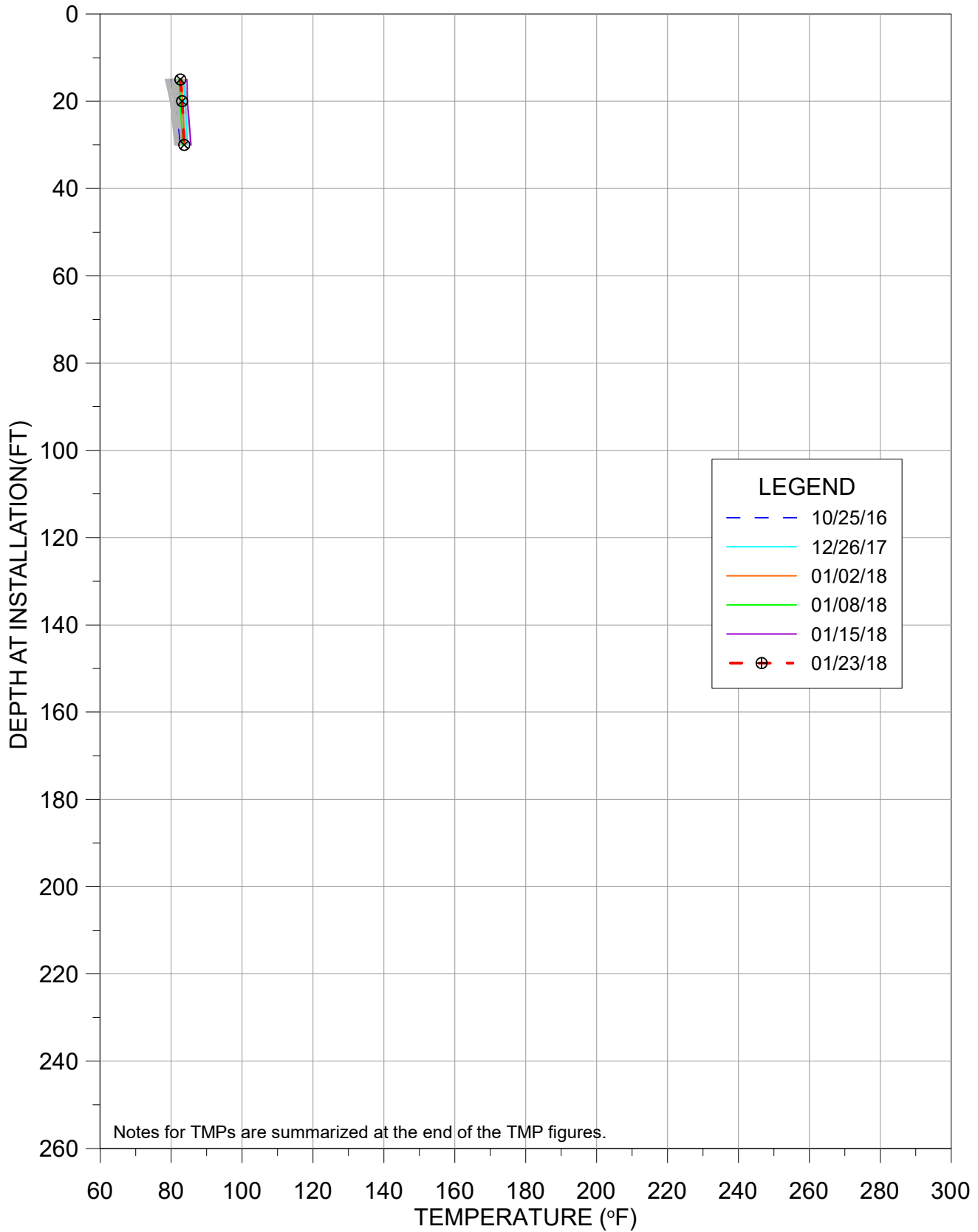
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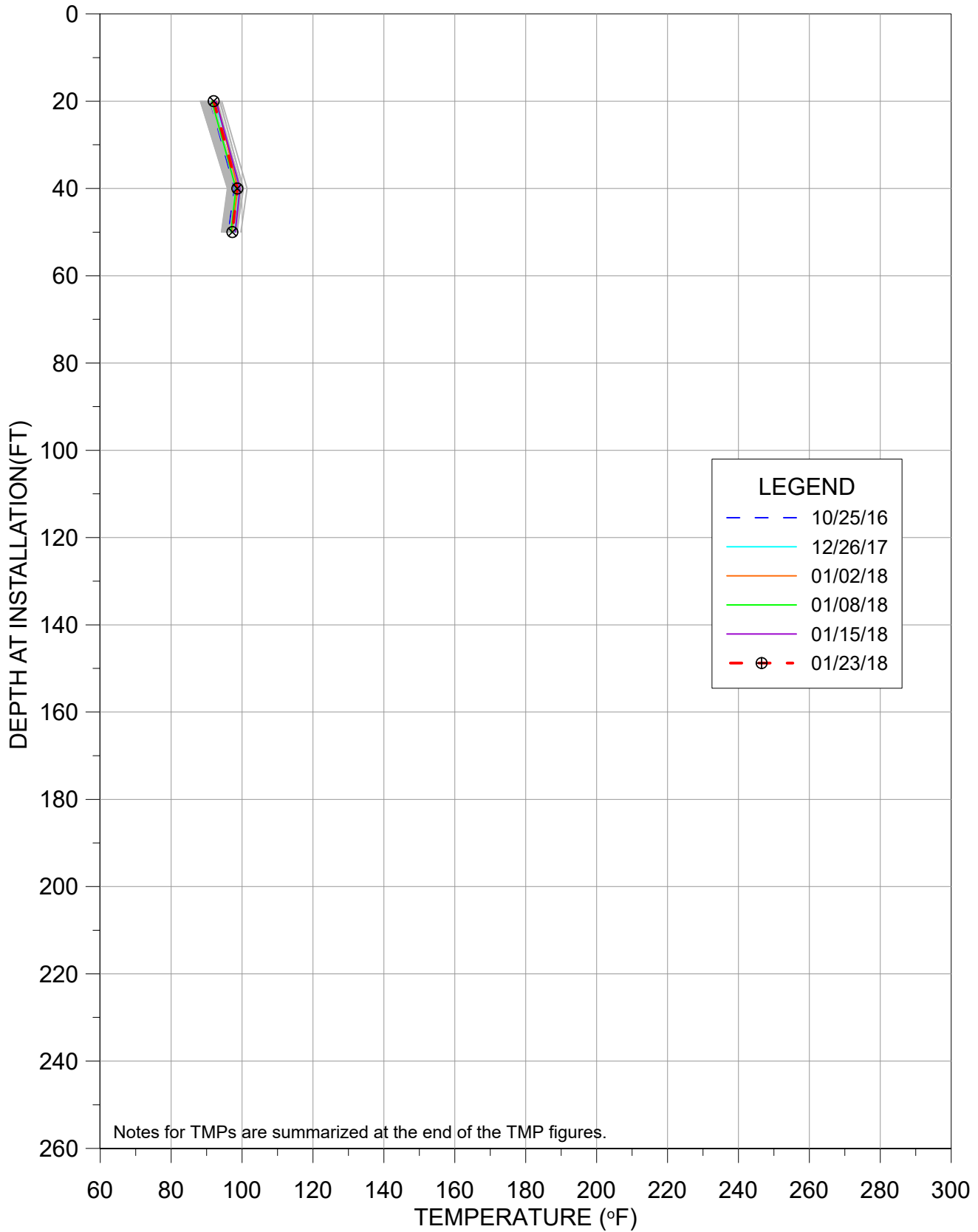
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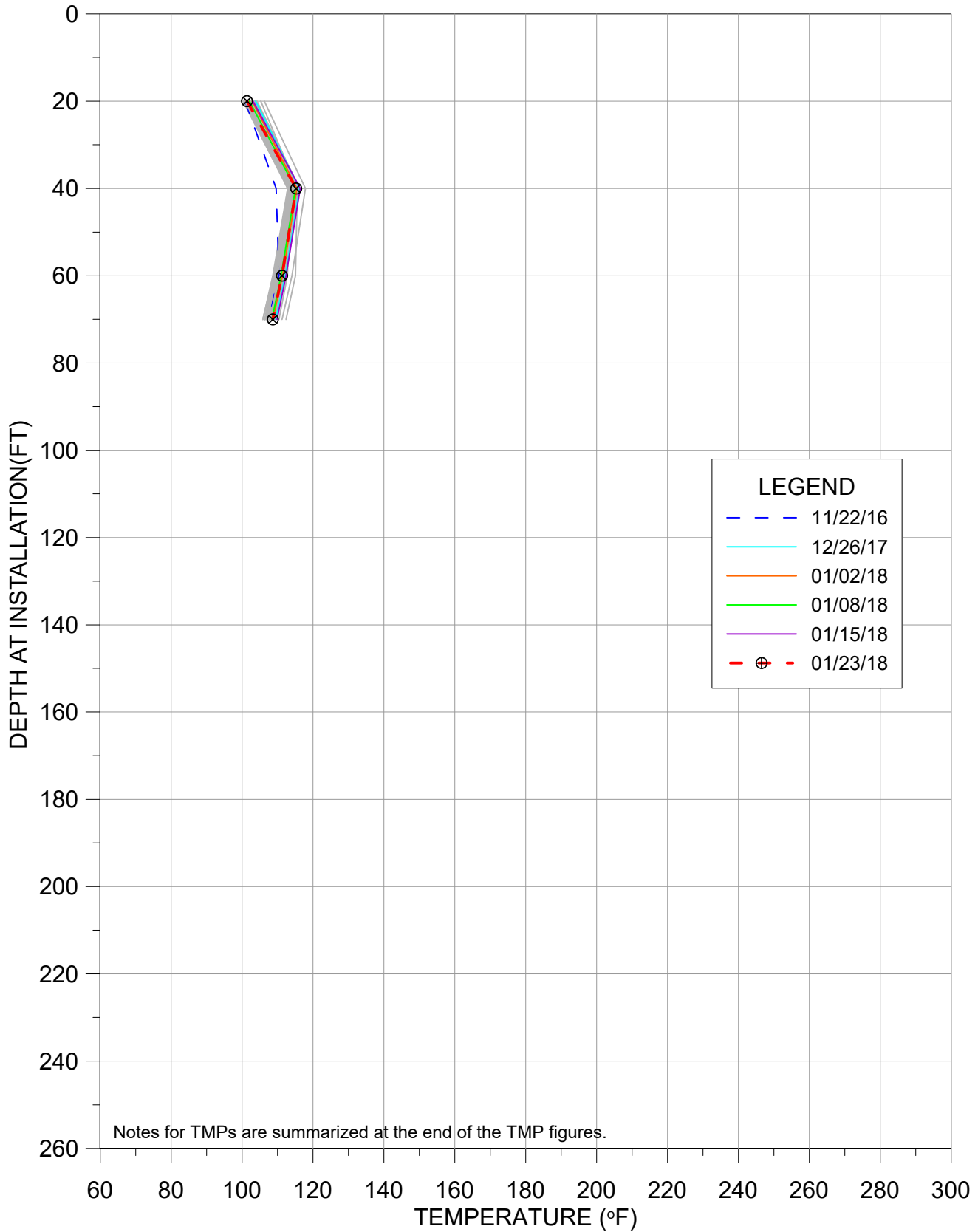
TMP-36



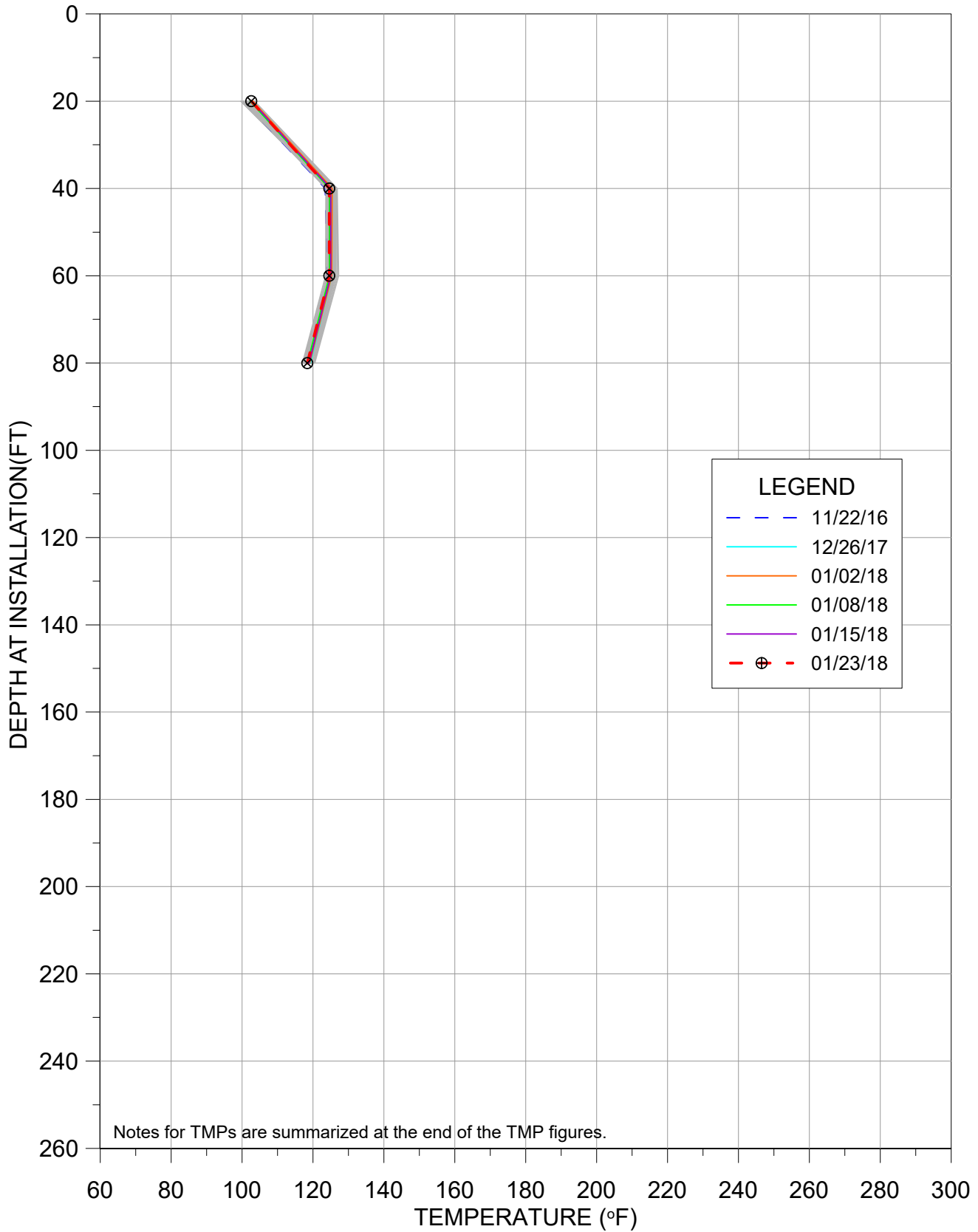
TMP-37



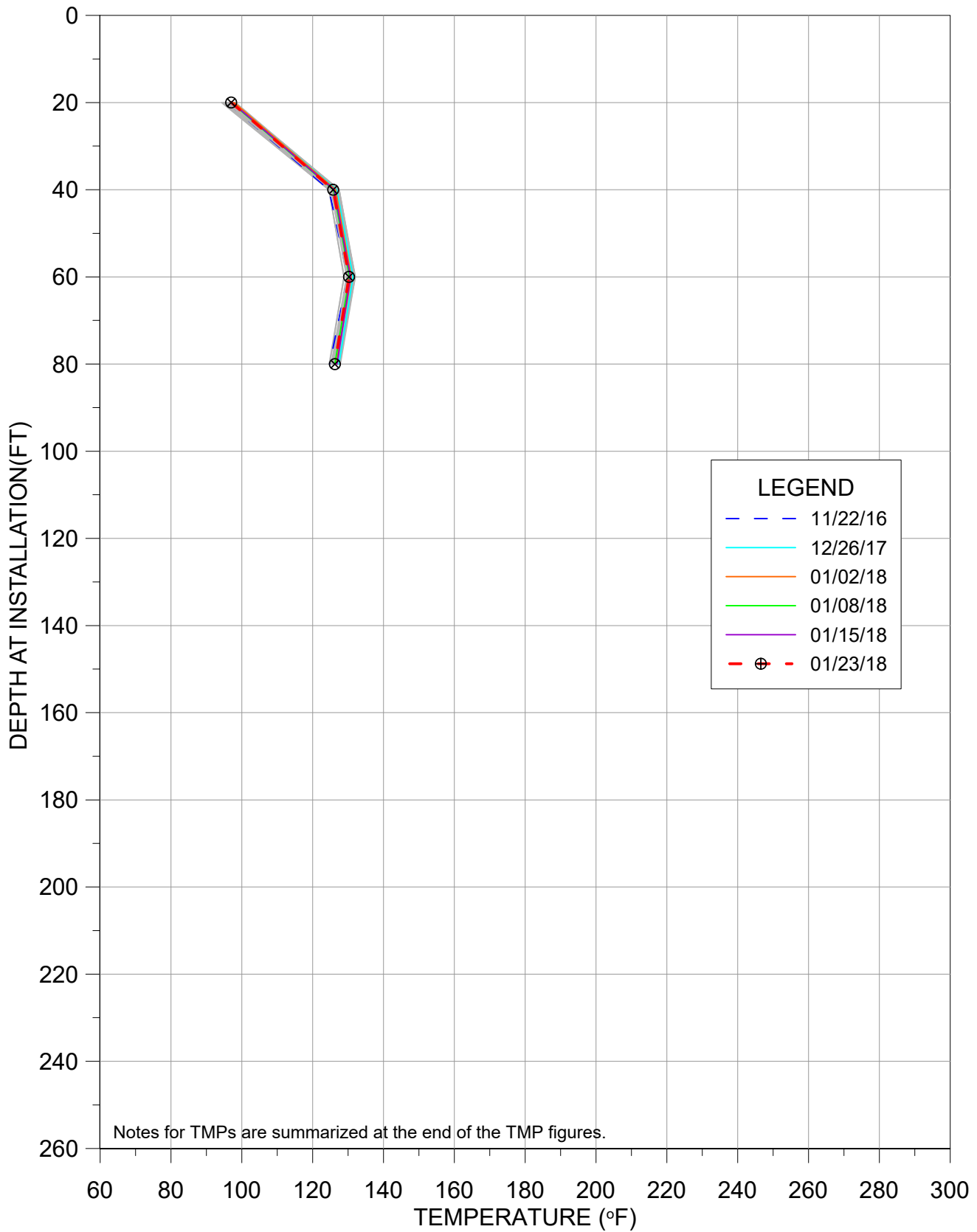
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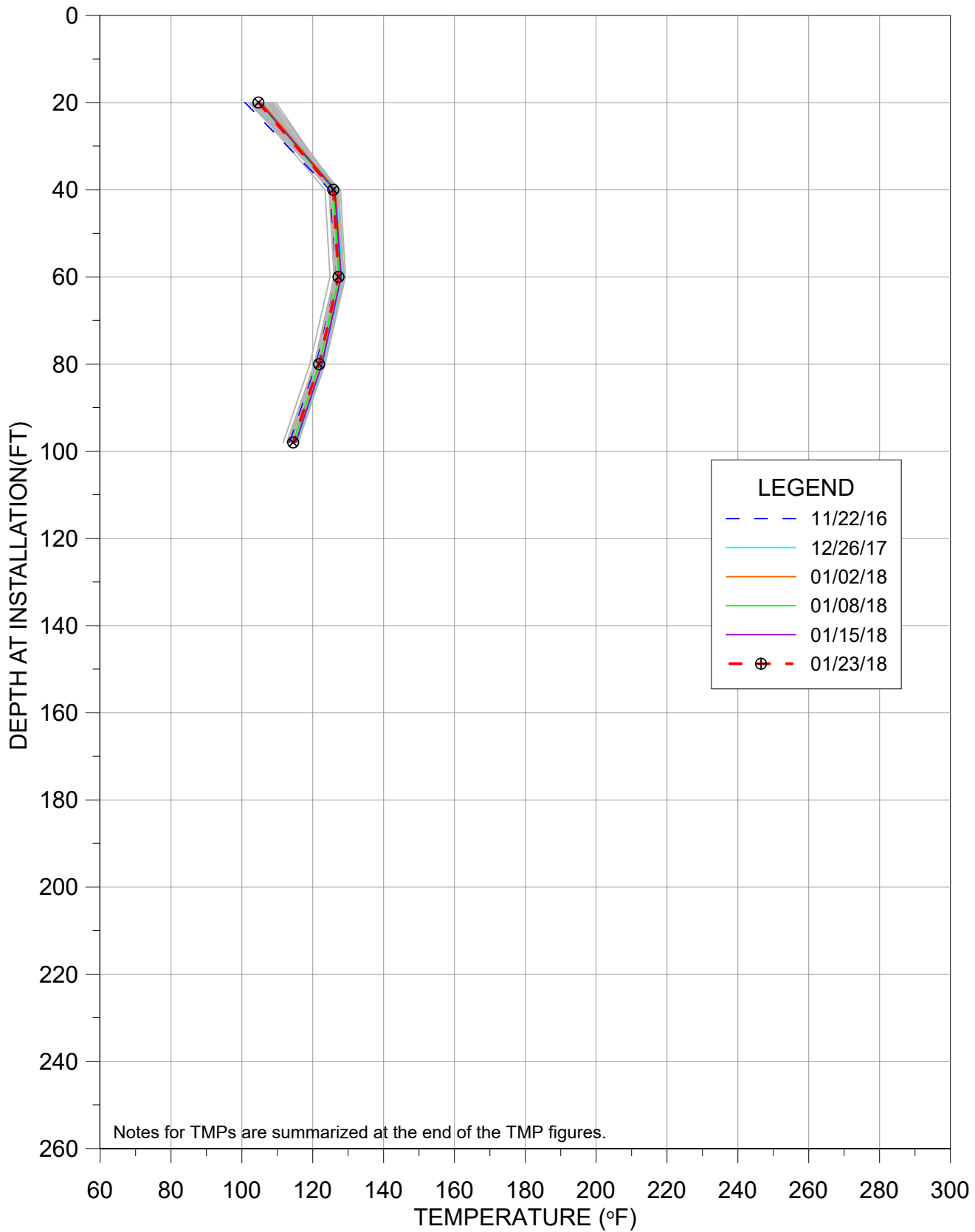
TMP-39



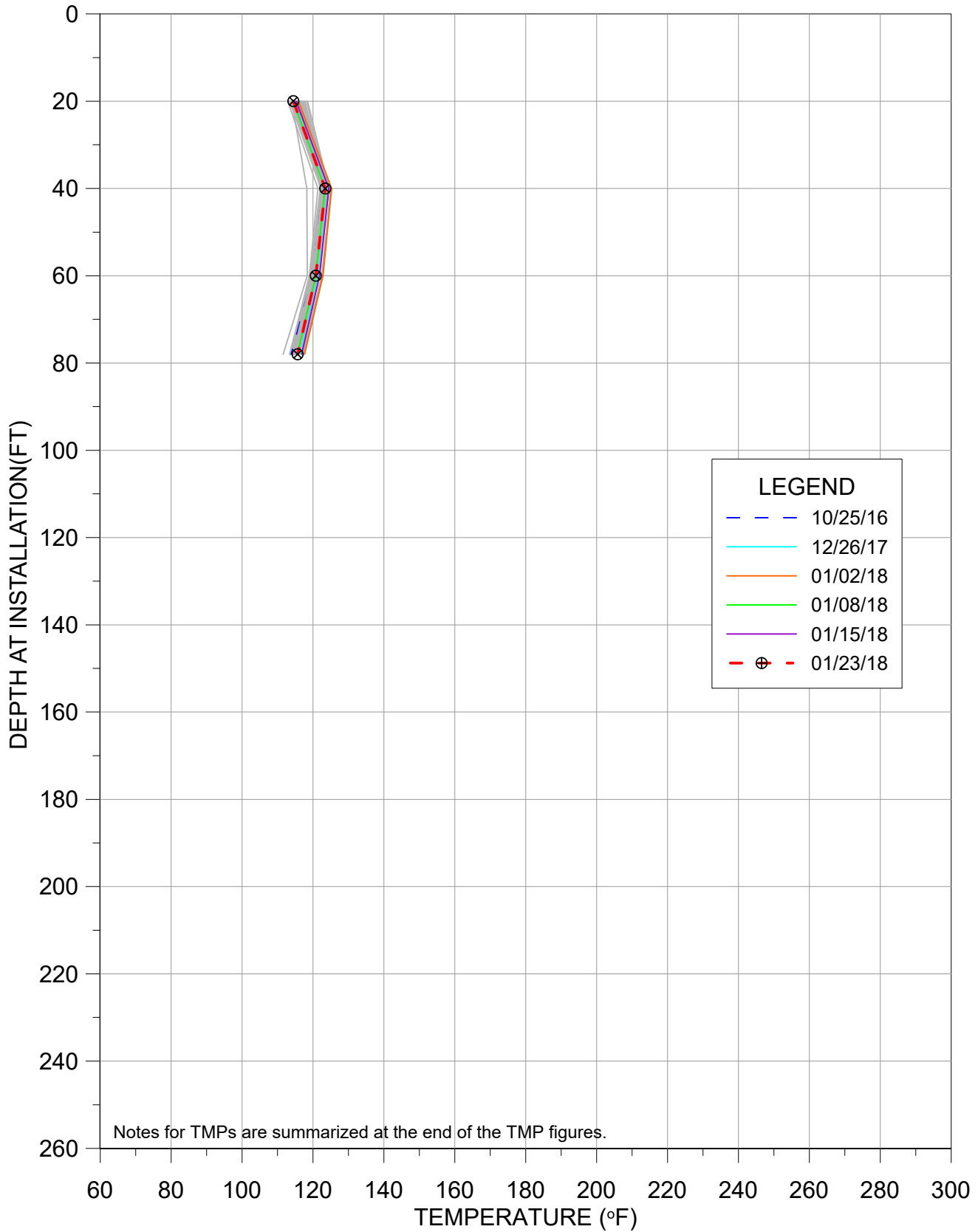
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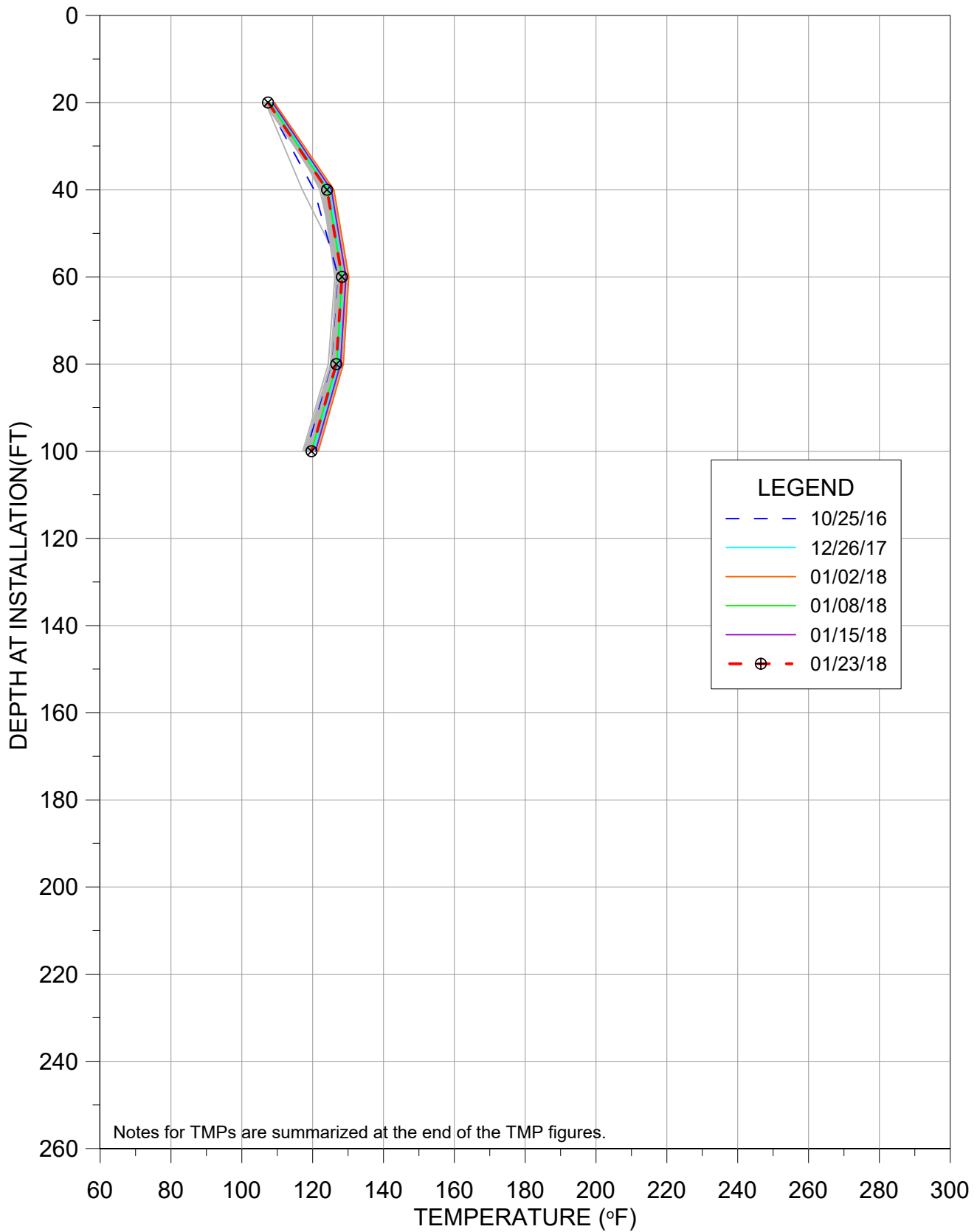
TMP-41



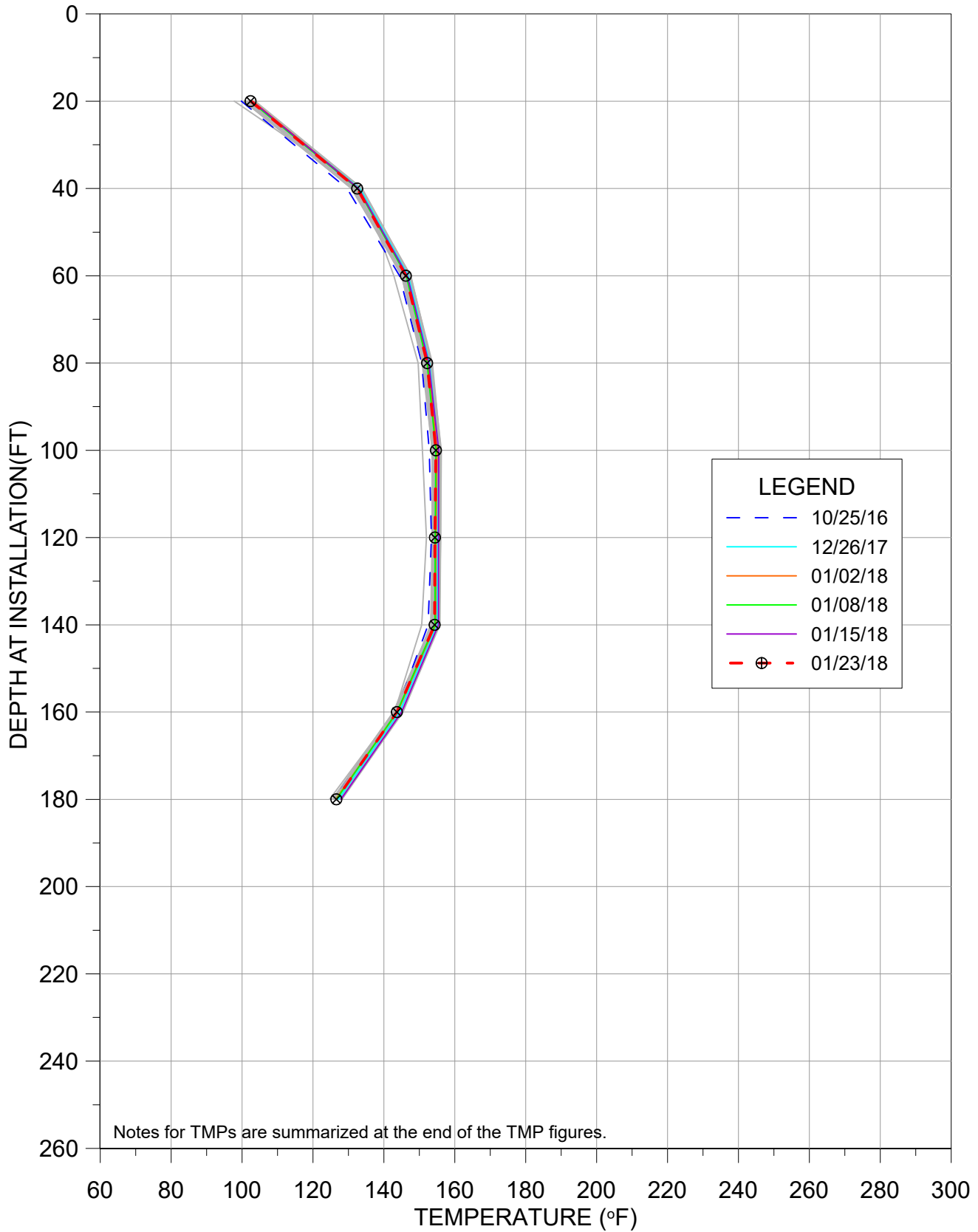
TMP-42



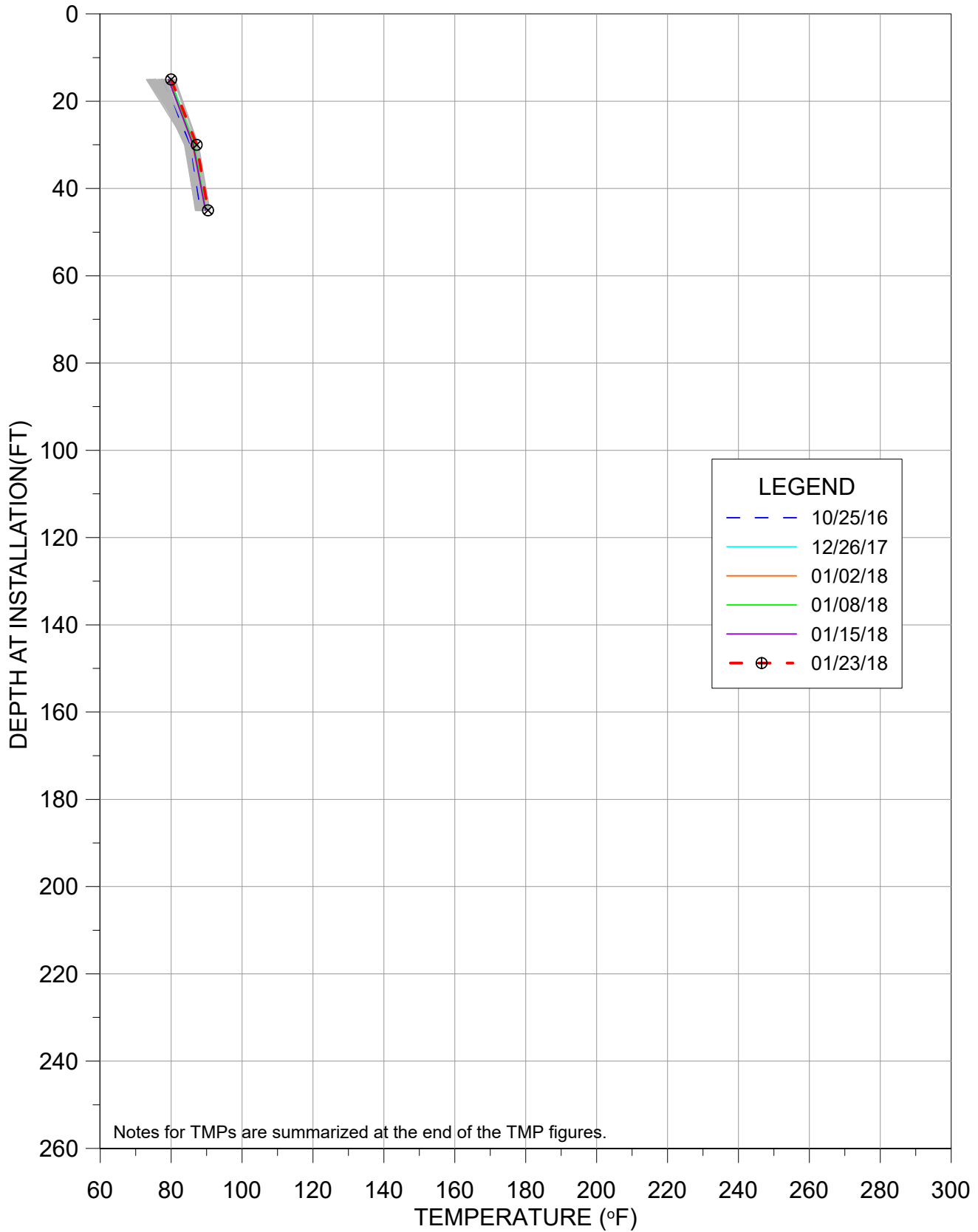
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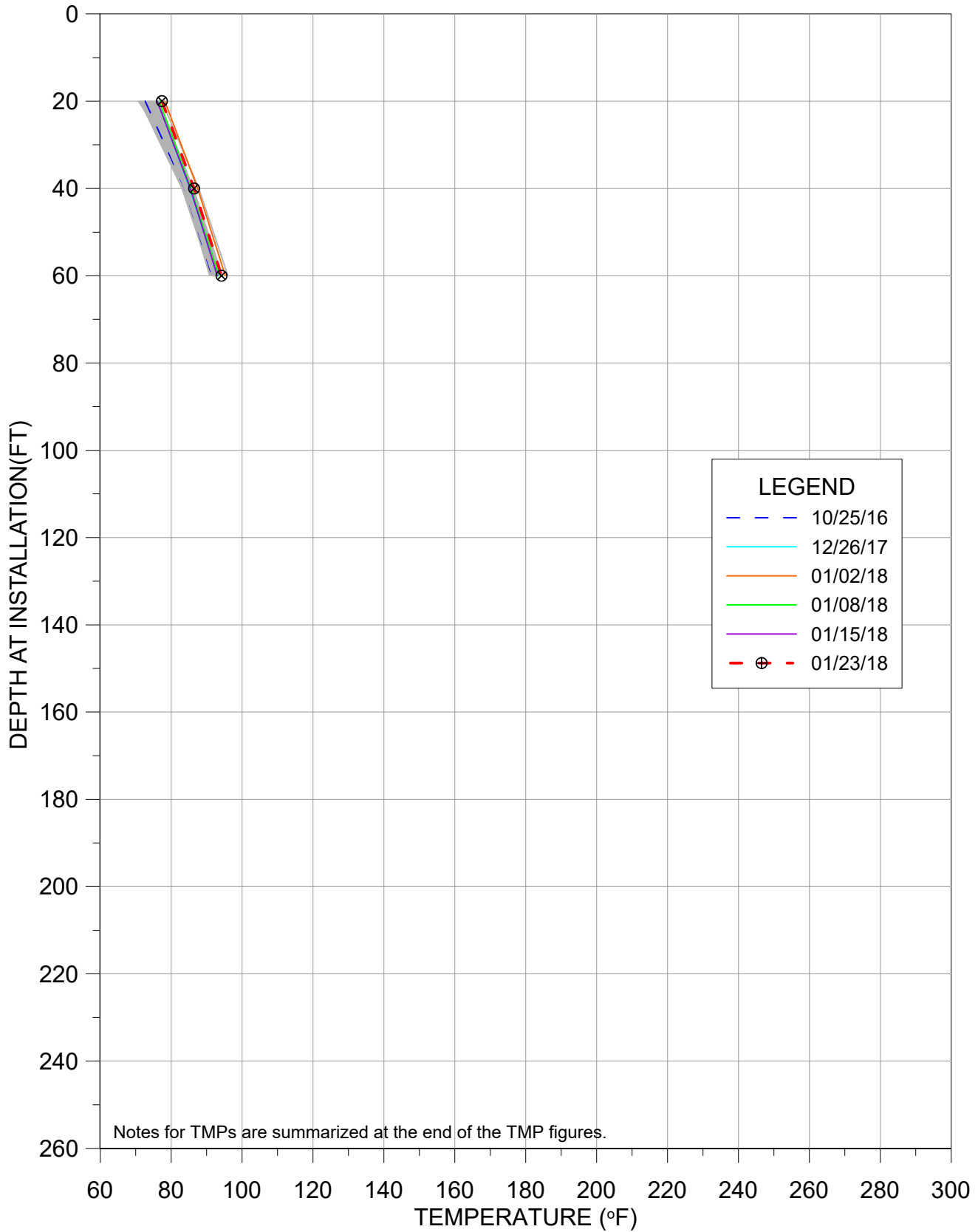
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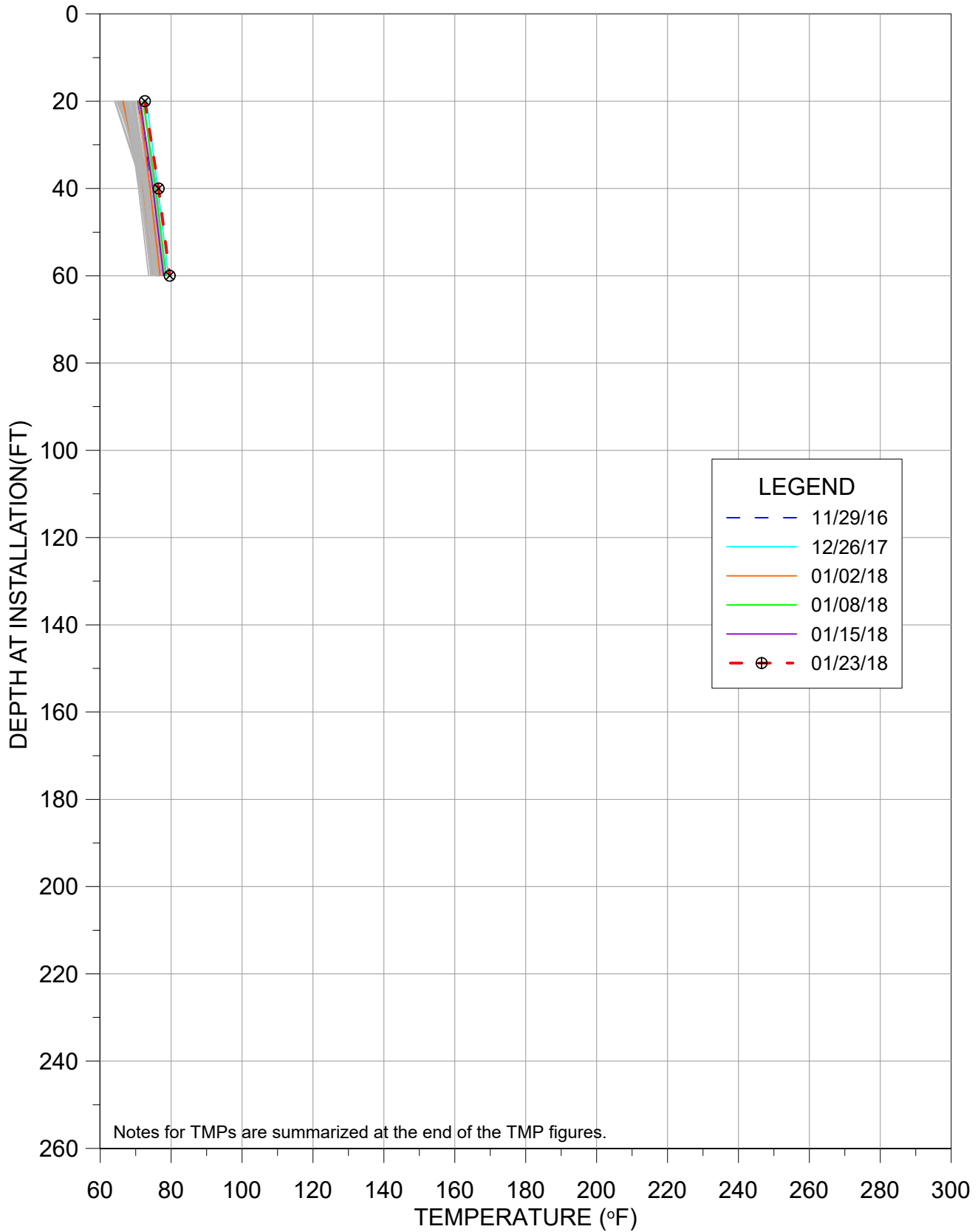
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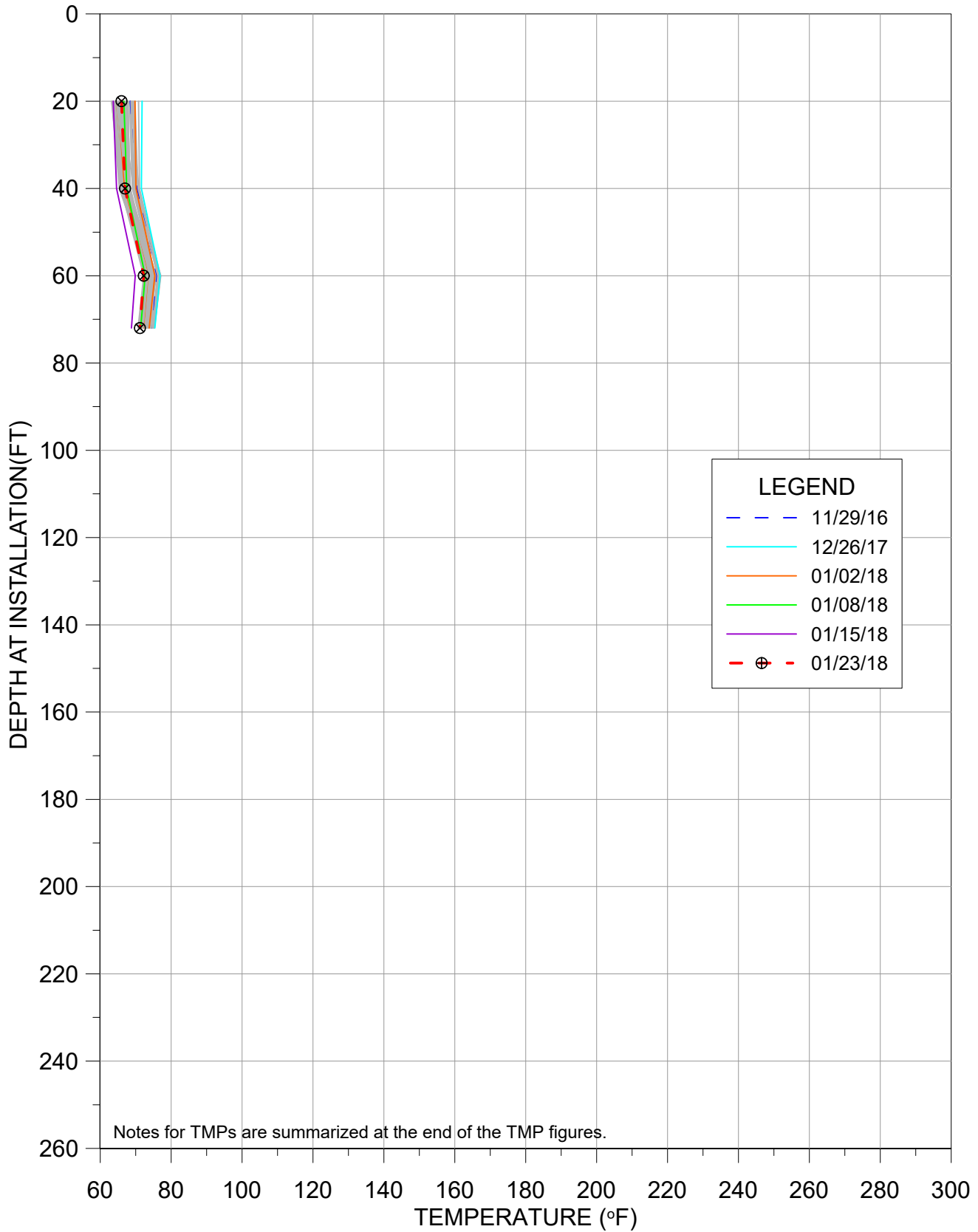
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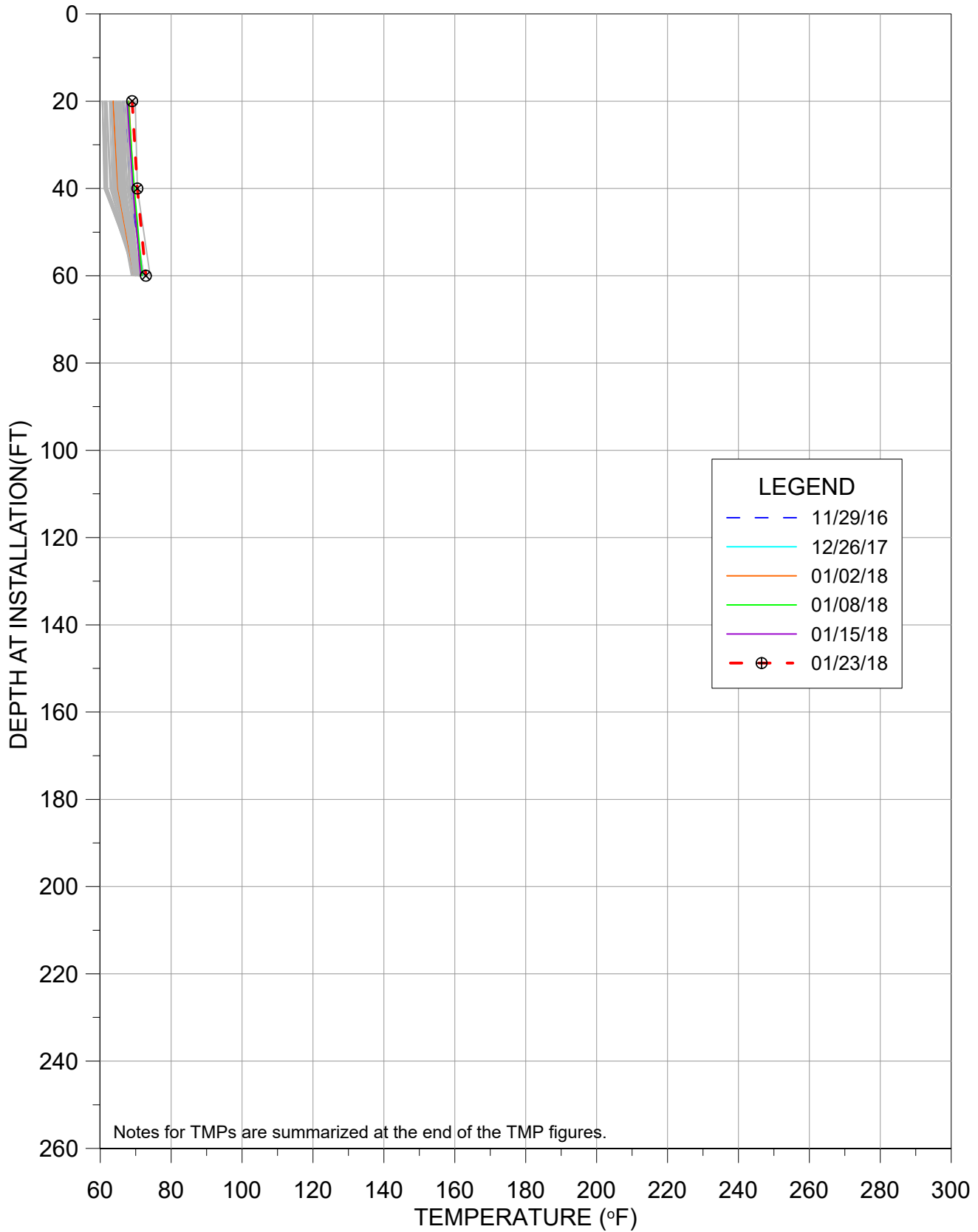
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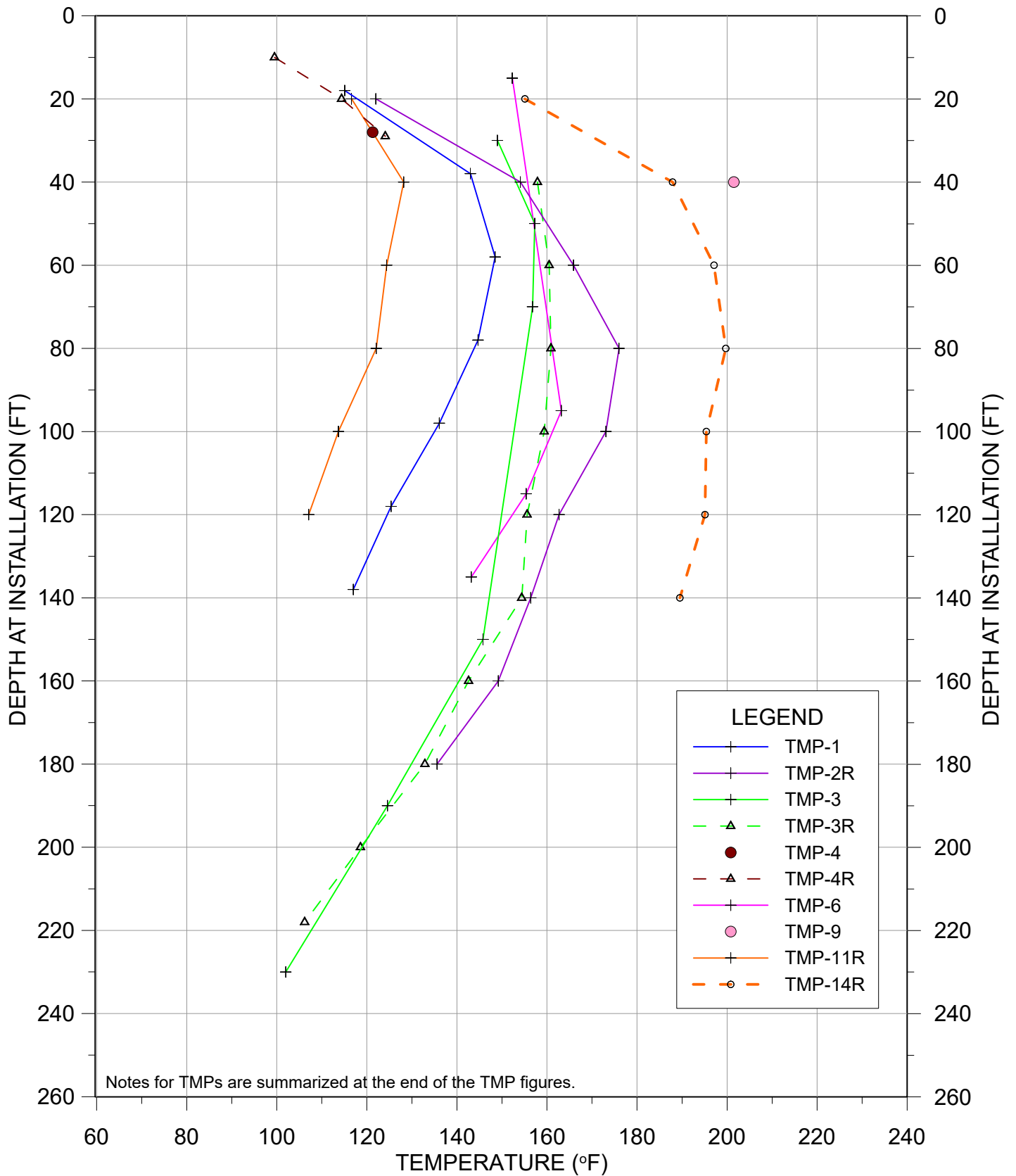
TMP-48



TMP-49



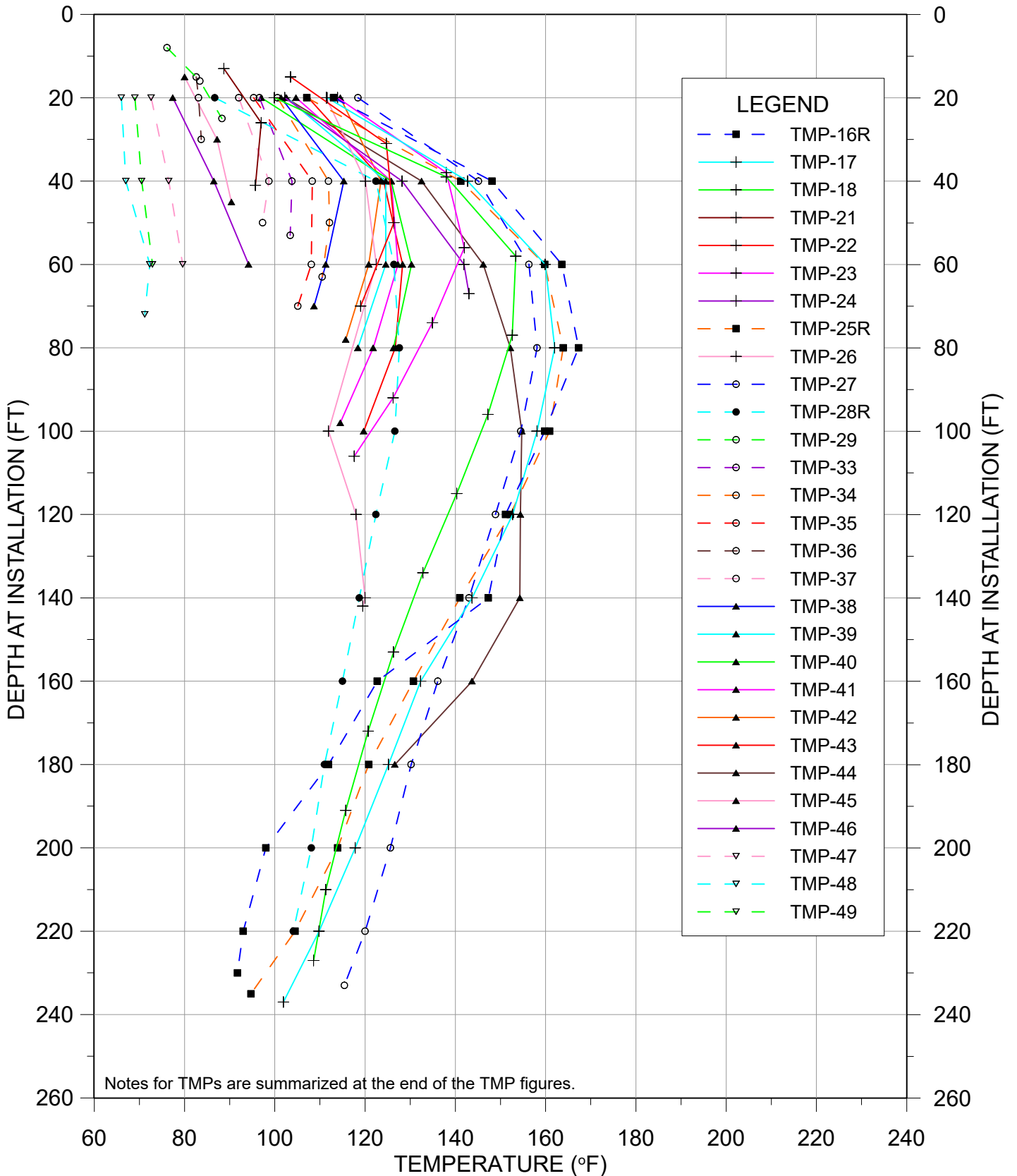
1/23/2018



Notes for TMPs are summarized at the end of the TMP figures.

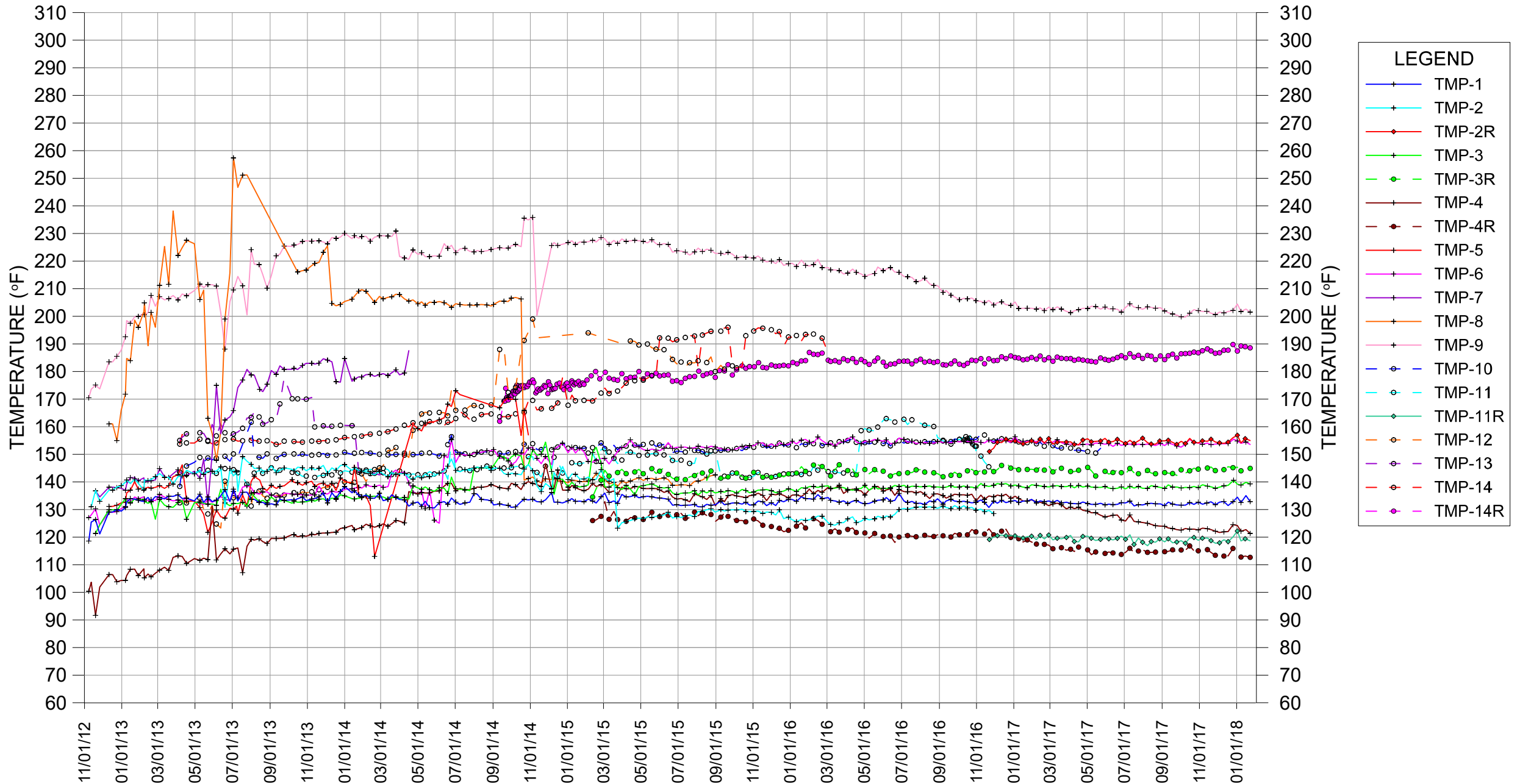
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

1/23/2018 - NORTH QUARRY



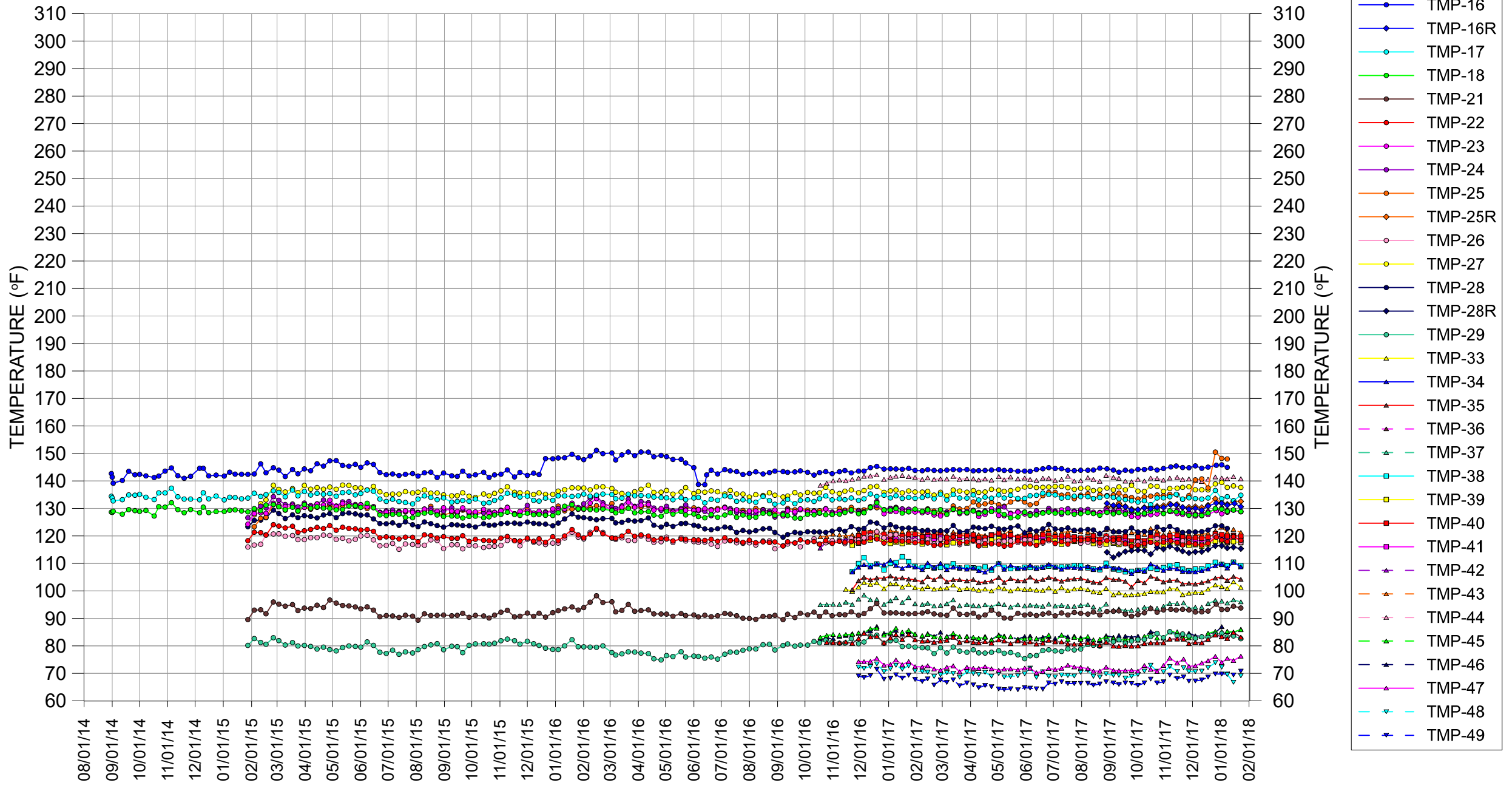
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

AVERAGE TEMPERATURES



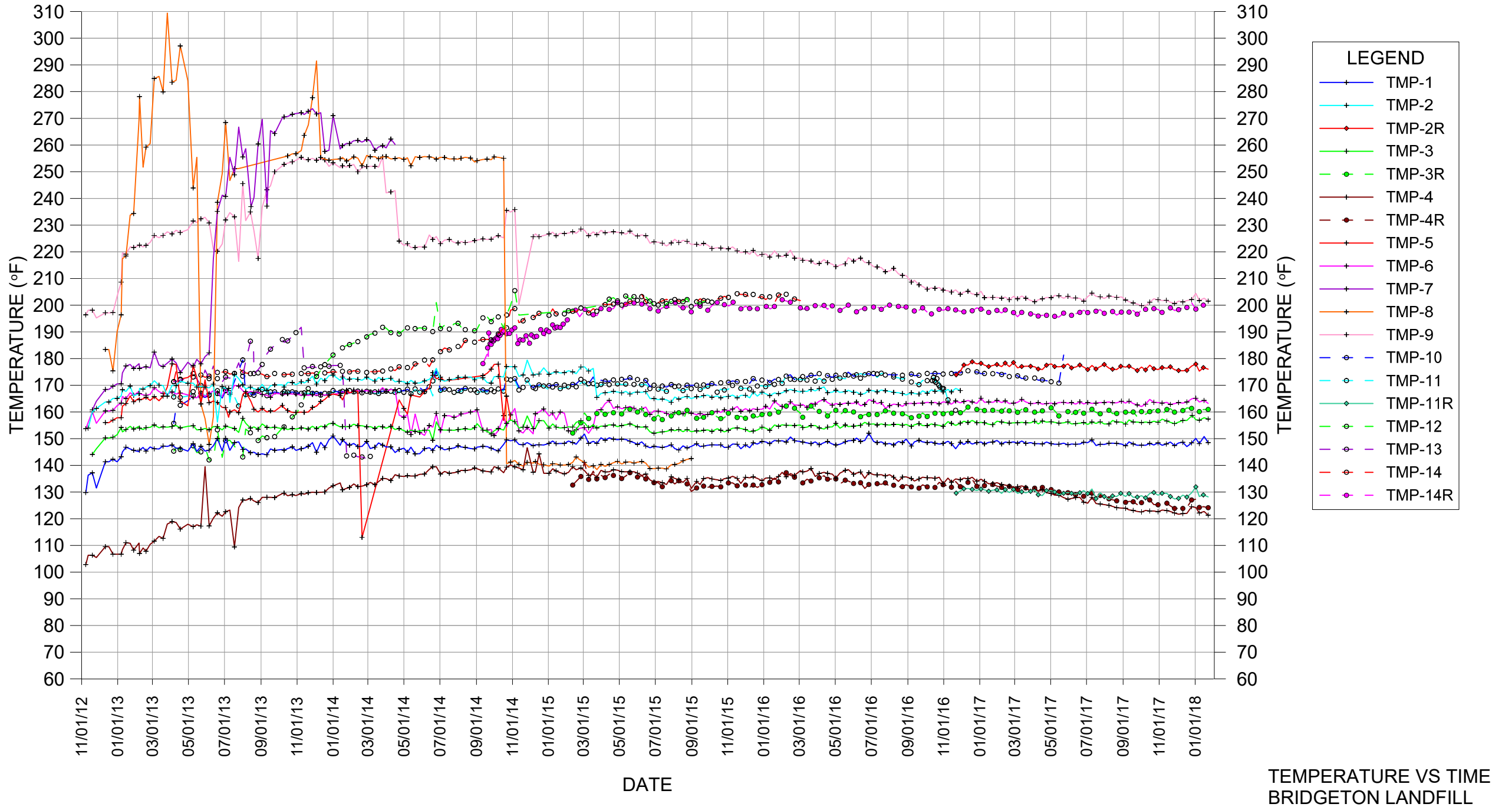
TEMPERATURE VS TIME
BRIDGETON LANDFILL

AVERAGE TEMPERATURES - NORTH QUARRY

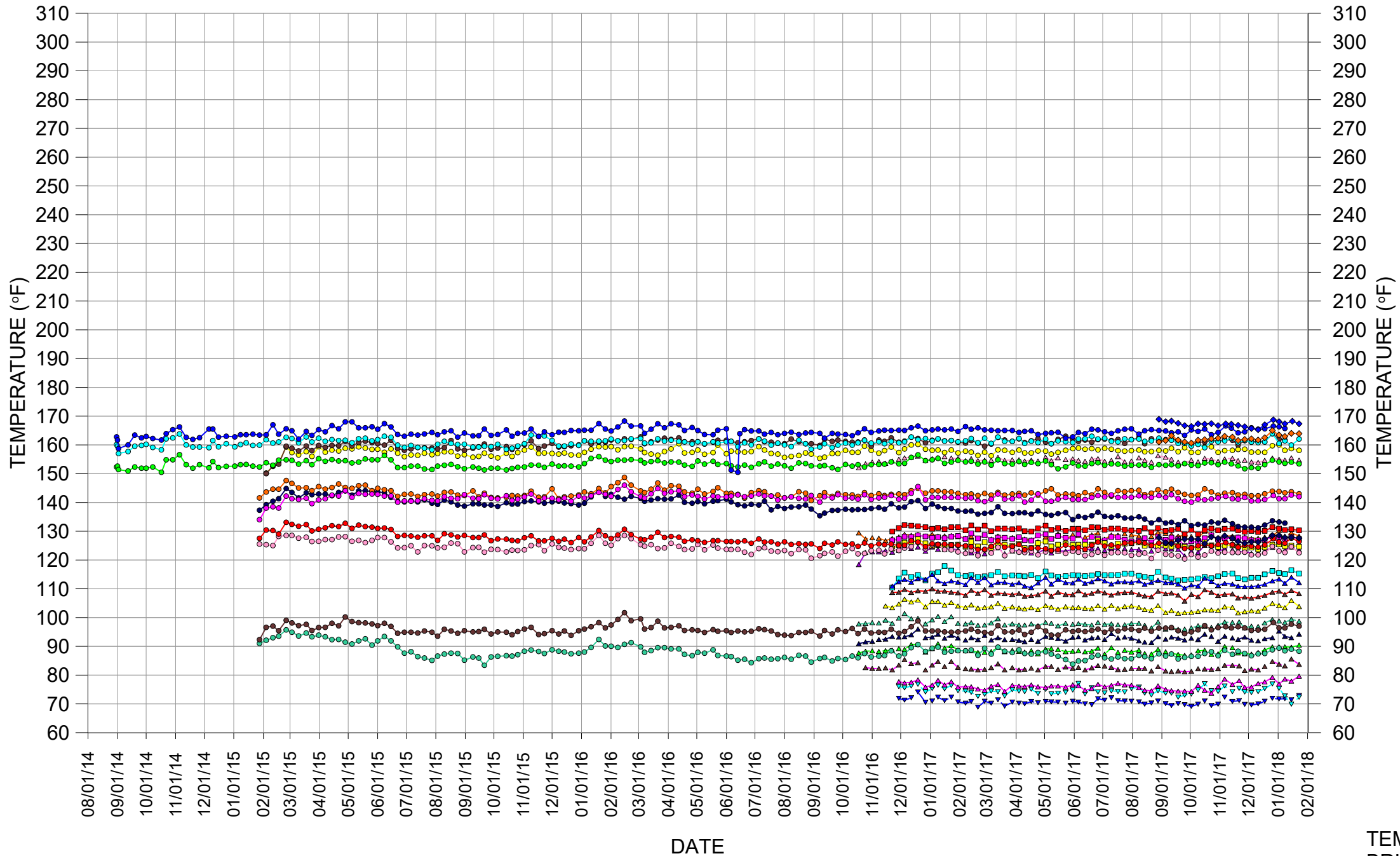


TEMPERATURE VS TIME
BRIDGETON LANDFILL

MAXIMUM TEMPERATURES



MAXIMUM TEMPERATURES - NORTH QUARRY



- LEGEND
- TMP-16
 - TMP-16R
 - TMP-17
 - TMP-18
 - TMP-21
 - TMP-22
 - TMP-23
 - TMP-24
 - TMP-25
 - TMP-25R
 - TMP-26
 - TMP-27
 - TMP-28
 - TMP-28R
 - TMP-29
 - TMP-33
 - TMP-34
 - TMP-35
 - TMP-36
 - TMP-37
 - TMP-38
 - TMP-39
 - TMP-40
 - TMP-41
 - TMP-42
 - TMP-43
 - TMP-44
 - TMP-45
 - TMP-46
 - TMP-47
 - TMP-48
 - TMP-49

TEMPERATURE VS TIME
BRIDGETON LANDFILL

TMP BRIDGETON LANDFILL NOTES

TMP notes that are new for the reporting week are in **bold**.

TMP-1: NONE

TMP-2:

1. TMP-2 has been replaced by TMP-2R and will no longer be monitored or included in the presentation.

TMP-2R:

1. Data reported on 11/29/2016 was inadvertently left as the 11/22/2016 data. This was corrected on 12/5/2016 reading submittal.

TMP-3:

1. No reliable temperature readings have been obtained at 170 ft depth since 1/29/2014, except on 3/13/2014.
2. The connectivity tests on 4/11/2014 conducted by CEC showed that units at 10, 90, 130, 210 and 250 ft depths are no longer reliable.
3. The connectivity tests on 10/28/2014 conducted by Feezor Engineering showed that units at 10, 90, 110, 130, 210 and 250 ft depths are not reliable.

TMP-3R:

1. The unit at 20 ft depth had a fluctuating resistance since 9/25/2017. Therefore the temperature is determined to be unreliable.

TMP-4:

1. The connectivity tests on 4/11/2014 conducted by CEC showed that the unit at 48 ft depth is no longer reliable.

TMP-4R: NONE

TMP-5: TMP NO LONGER IN SERVICE– Verified by Connectivity testing by Feezor Engineering in March 2015.

TMP-6:

1. The connectivity tests on 4/11/2014 conducted by CEC showed that units at 35, 55, 75, 155, 175, and 195 ft depths are no longer reliable.
2. No reliable temperature readings have been obtained at the unit at 215 ft depth since 6/13/2014.

TMP-7R: TMP NO LONGER IN SERVICE

TMP-8: TMP NO LONGER IN SERVICE

TMP-9:

1. Unit at 100 ft depth had an inaccurate temperature reading on 8/1/2013 and no reading since 8/6/2013.
2. The connectivity tests on 4/11/2014 conducted by CEC showed that units at 20, 60, 80, and 100 ft depths are no longer reliable.

TMP-10:

1. All units were verified by connectivity testing by Feezor Engineering on 6/1/2017 to be unreliable.

TMP-11:

1. All units were verified by connectivity testing by Feezor Engineering on 11/23/2016 to be unreliable.
2. TMP-11 is no longer in service and will not be included in the presentation.

TMP-11R: NONE

TMP-12:

2. All units were verified by connectivity testing by Feezor Engineering in October 2015 to be unreliable.

TMP-13: TMP NO LONGER IN SERVICE

TMP-14:

1. All units were verified by connectivity testing by Feezor Engineering in March 2016 to be unreliable.

TMP-14R:

1. Due to the connectivity test results by Feezor Engineering on TMP-14 (see note above), TMP-14R is added to this reporting data set as of 3/7/2016.

TMP-15: TMP WAS NEVER IN SERVICE

TMP-16:

1. TMP-16 has been replaced by TMP-16R and will no longer be included in the presentation.

TMP-16R: NONE

TMP-17: NONE

TMP-18: NONE

TMP-19: NOT PART OF THIS SUBMITTAL (HEAT EXTRACTION TMP)

TMP-20: NOT PART OF THIS SUBMITTAL (HEAT EXTRACTION TMP)

TMP-21: NONE

TMP-22: NONE

TMP-23: NONE

TMP-24: NONE

TMP-25:

1. TMP-25 has been replaced by TMP-25R and will no longer be included in the presentation.

TMP-25R: NONE

TMP-26:

1. Resistance on unit at 80 ft dropped 12.9 ohms (11/06/2017) and subsequent resistance reading continue to be low. Upon further investigation by Feezor Engineering, this unit is determined to be unreliable.

TMP-27: NONE

TMP-28:

1. TMP-28 has been replaced by TMP-28R and will no longer be included in the presentation.

TMP-28R: NONE

TMP-29: NONE

TMP-33: NONE

TMP-34: NONE

TMP-35: NONE

TMP-36: NONE

TMP-37: NONE

TMP-38: NONE

TMP-39: NONE

TMP-40: NONE

TMP-41: NONE

TMP-42: NONE

TMP-43: NONE

TMP-44: NONE

TMP-45: NONE

TMP-46: NONE

TMP-47: NONE

TMP-48: NONE

TMP-49: NONE

TMP vs DEPTH and TMP vs ELEVATION (for **01/23/18**):

1. There were no reliable temperature readings for TMP-13 since 3/19/2014.
2. There were no reliable temperature readings for TMP-7R, as determined by the connectivity test on 4/11/2014.
3. There were no reliable temperature readings for TMP-5 since 11/5/2014.
4. There were no reliable temperature readings for TMP-12 since 9/28/2015.
5. There were no reliable temperature readings for TMP-8 since 9/9/2015.
6. There were no reliable temperature readings for TMP-14, confirmed since 3/7/2016.
7. There were no reliable temperature readings for TMP-11 as determined by the connectivity test on 11/23/2016.
8. TMP-2 has been replaced by TMP-2R and will no longer be monitored.
9. TMP-11 is no longer in service and will not be included in the presentation.
10. There were no reliable temperature readings for TMP-10 since 5/30/2017.
11. TMP-16, 25, and 28 have been replaced by TMP-16R, 25R, and 28R and will be no longer reported since 1/15/2018.

ATTACHMENT C

GAS INTERCEPTOR WELLHEAD TEMPERATURE GRAPHS

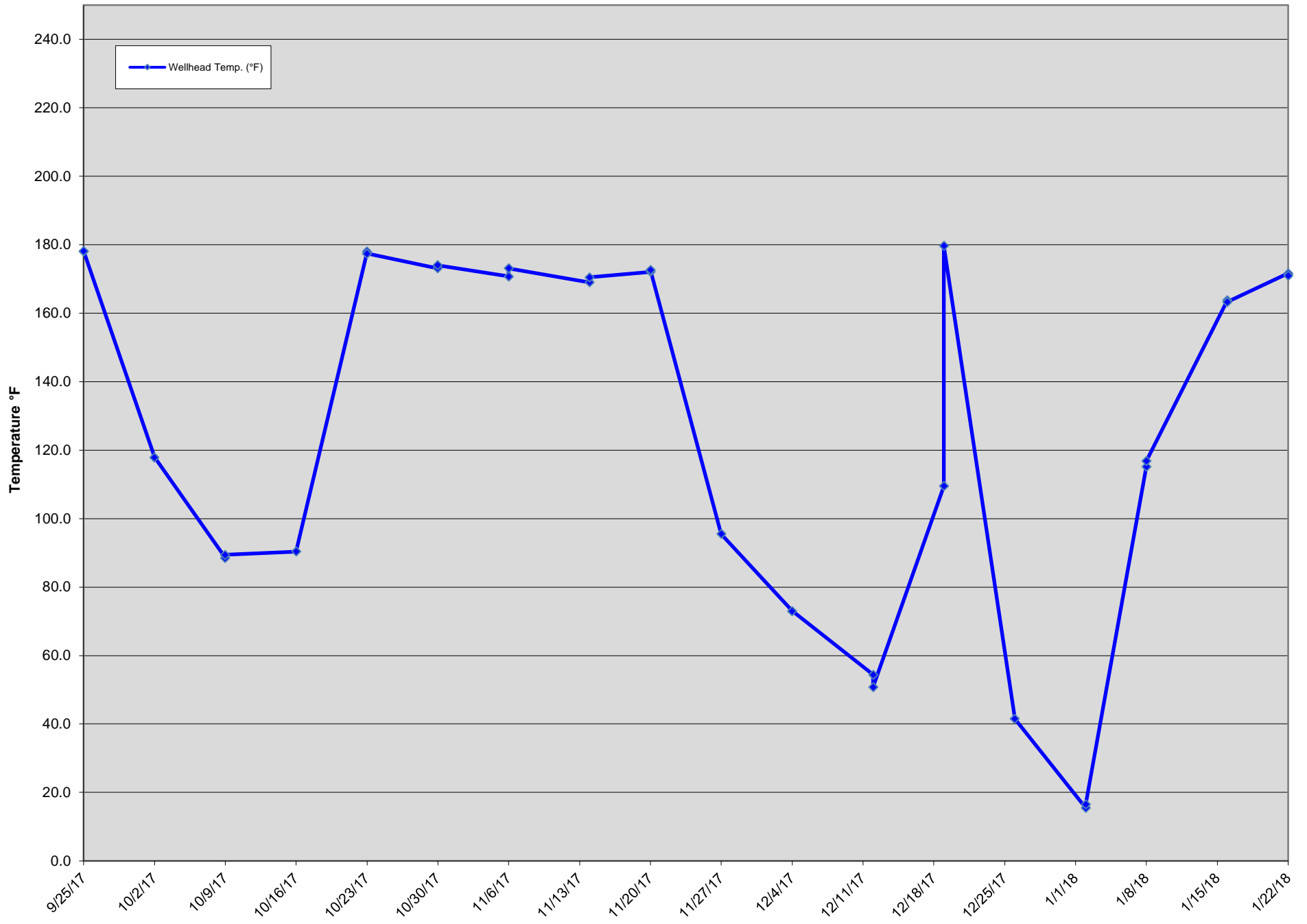
LEGEND

⊕ = Well Location

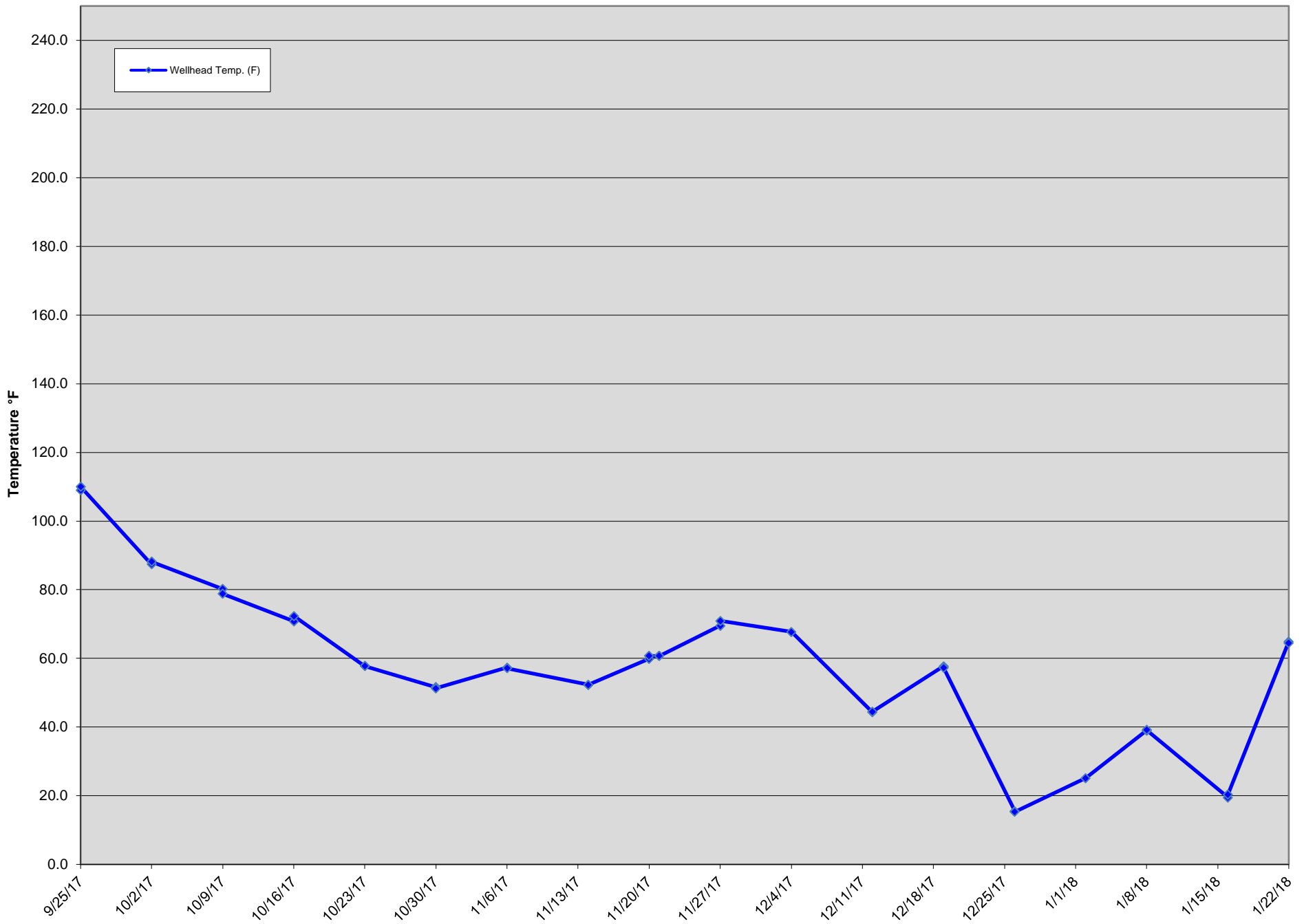


Gas Extraction Wells - Bridgeton Landfill

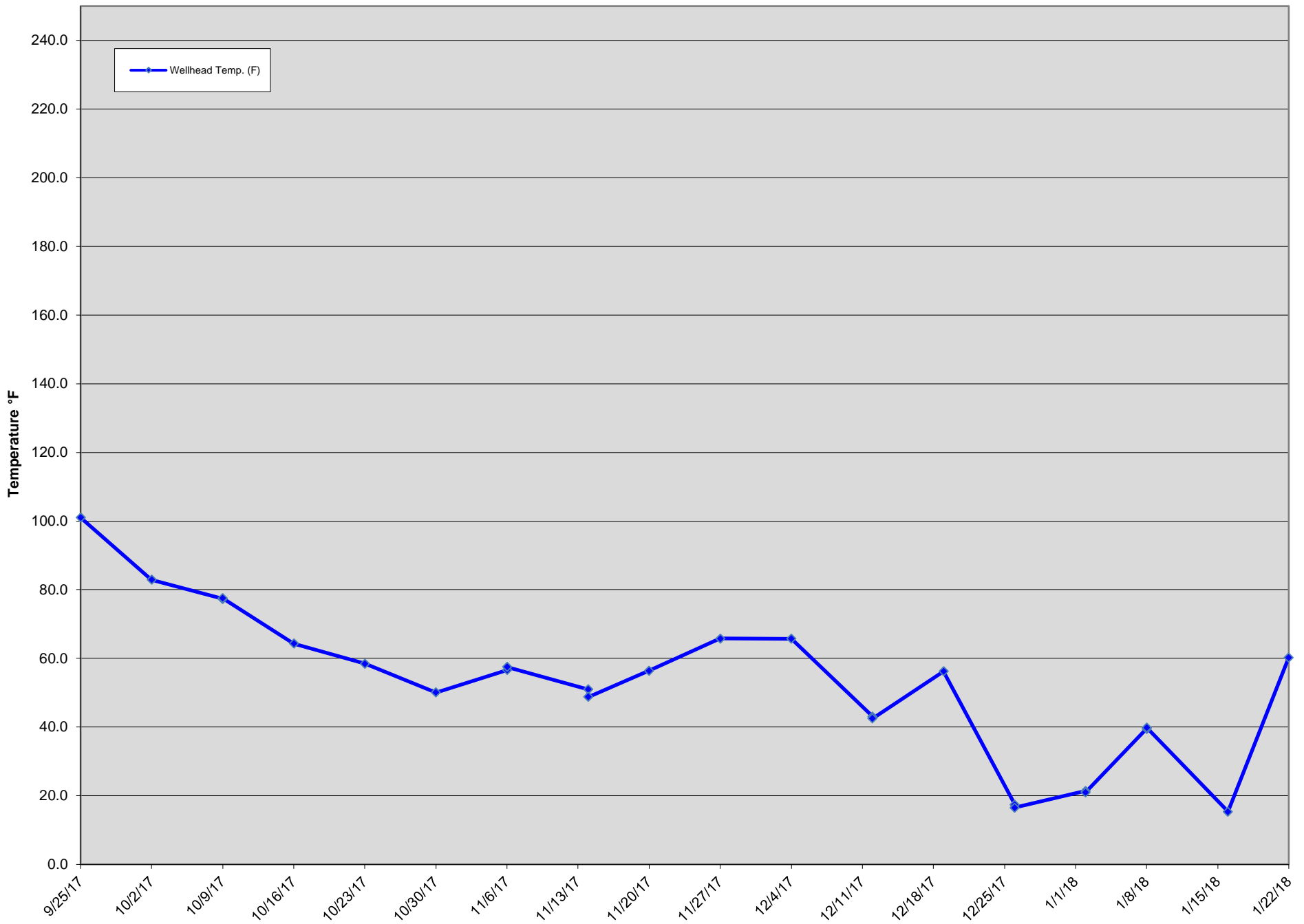
GIW-1 Wellhead Temperatures



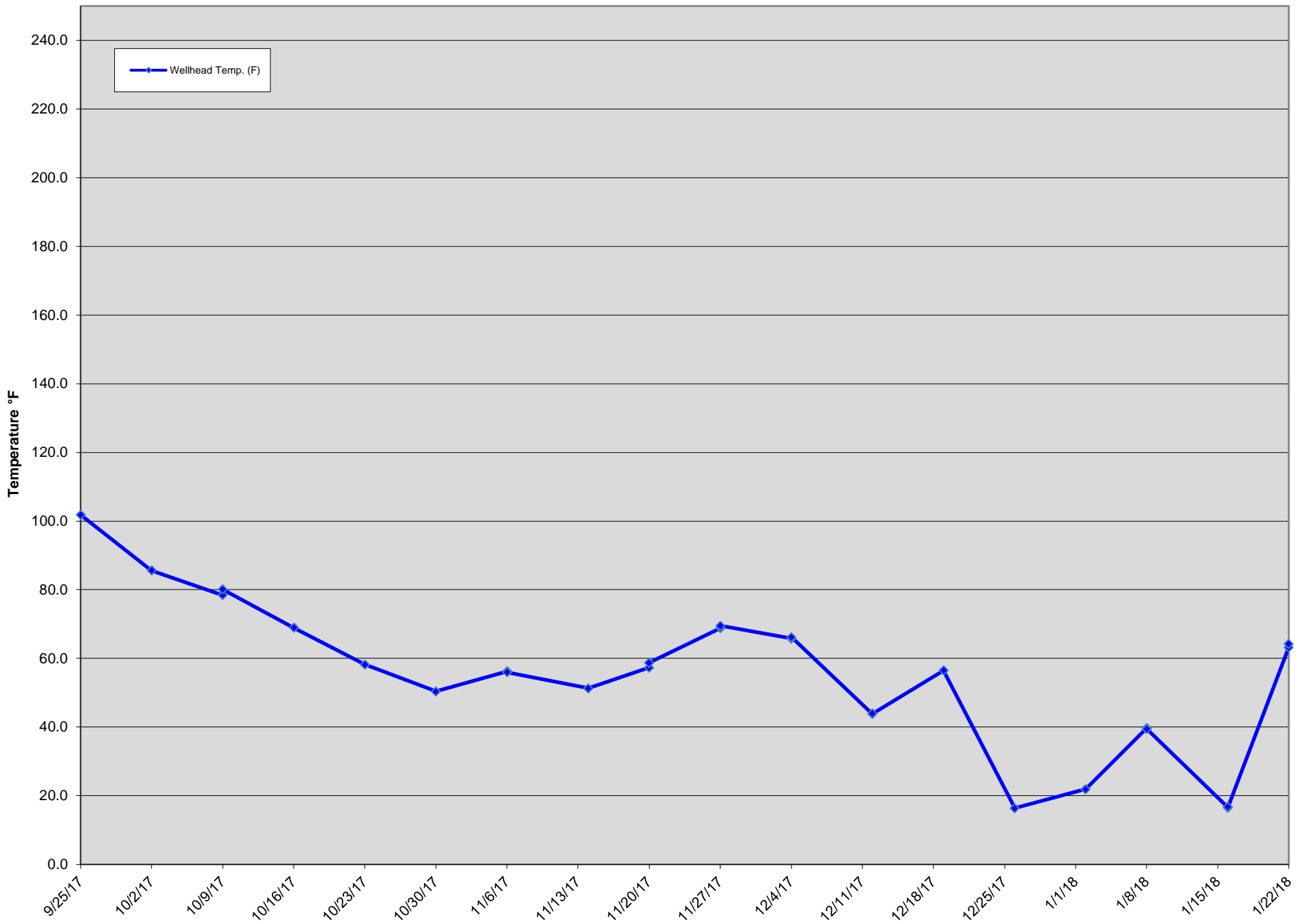
GIW-2 Wellhead Temperatures



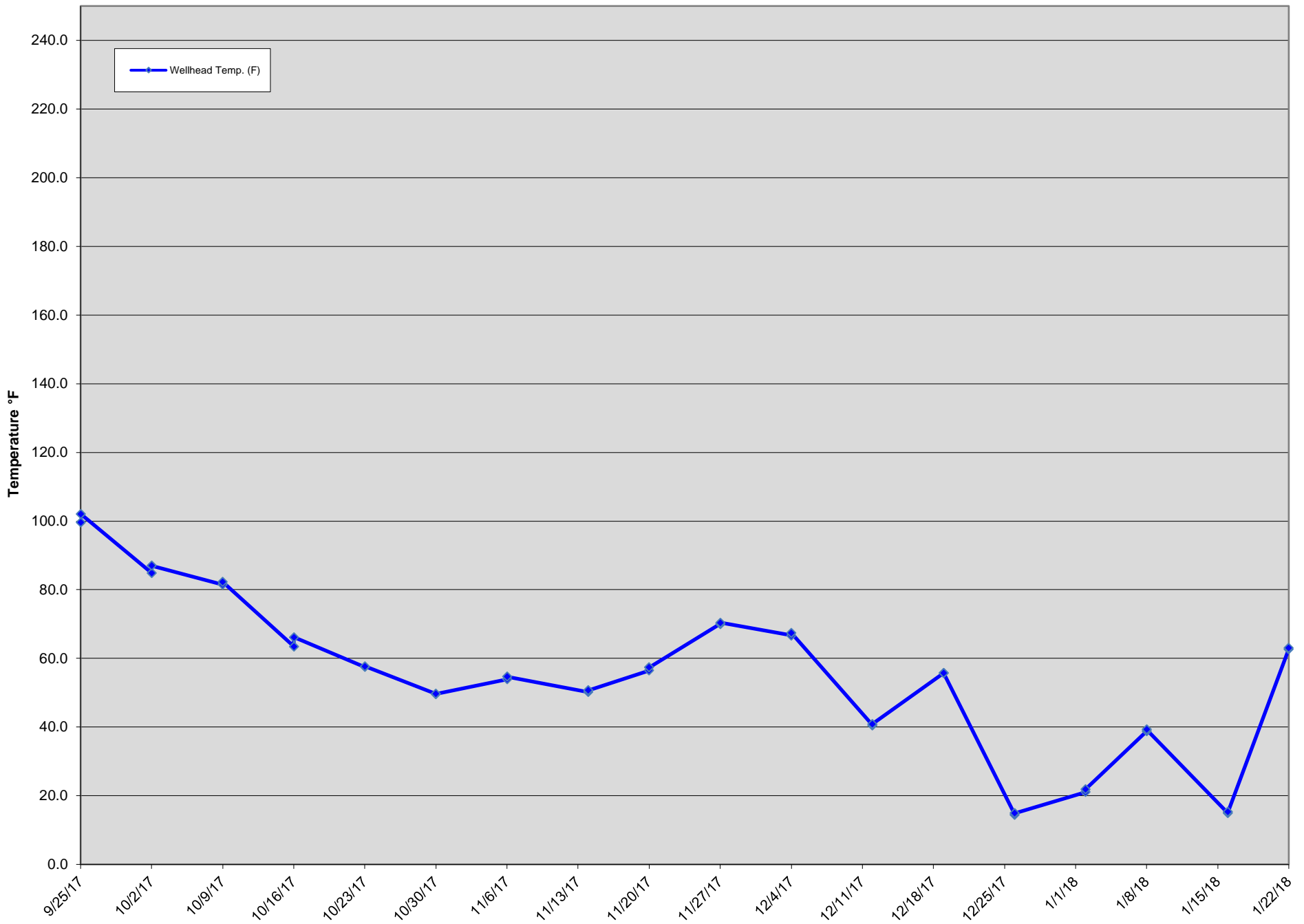
GIW-3 Wellhead Temperatures



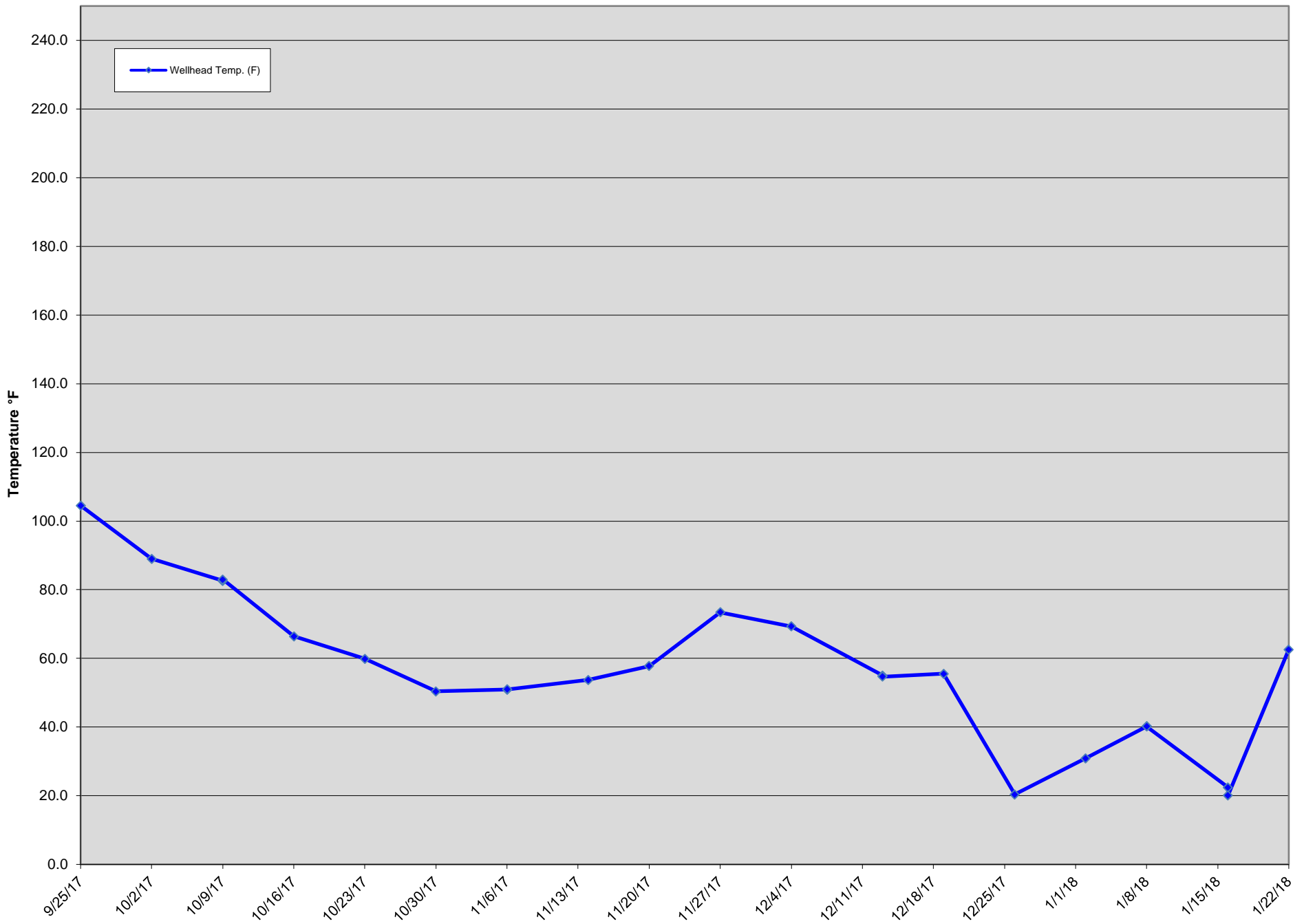
GIW-4 Wellhead Temperatures



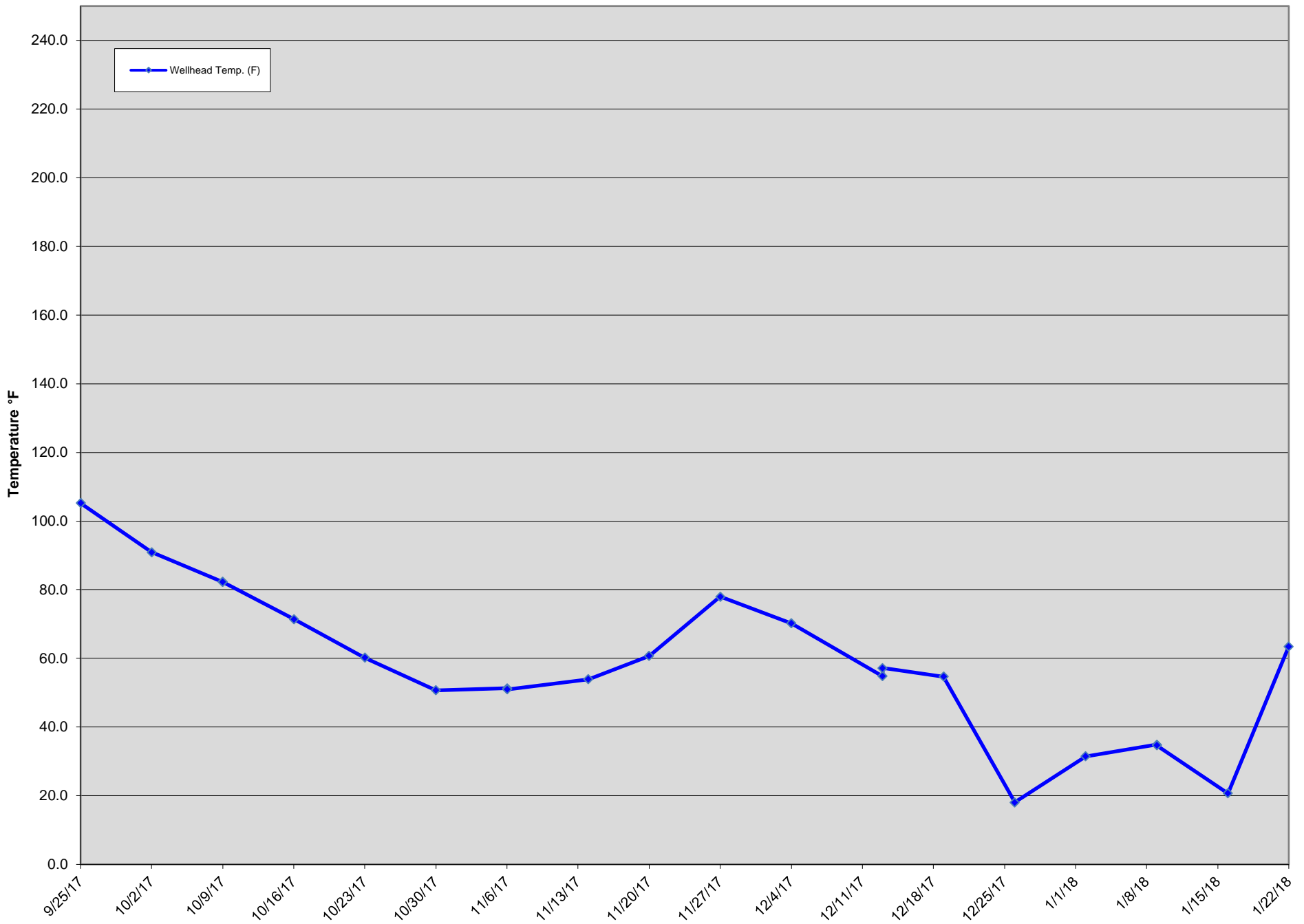
GIW-5 Wellhead Temperatures



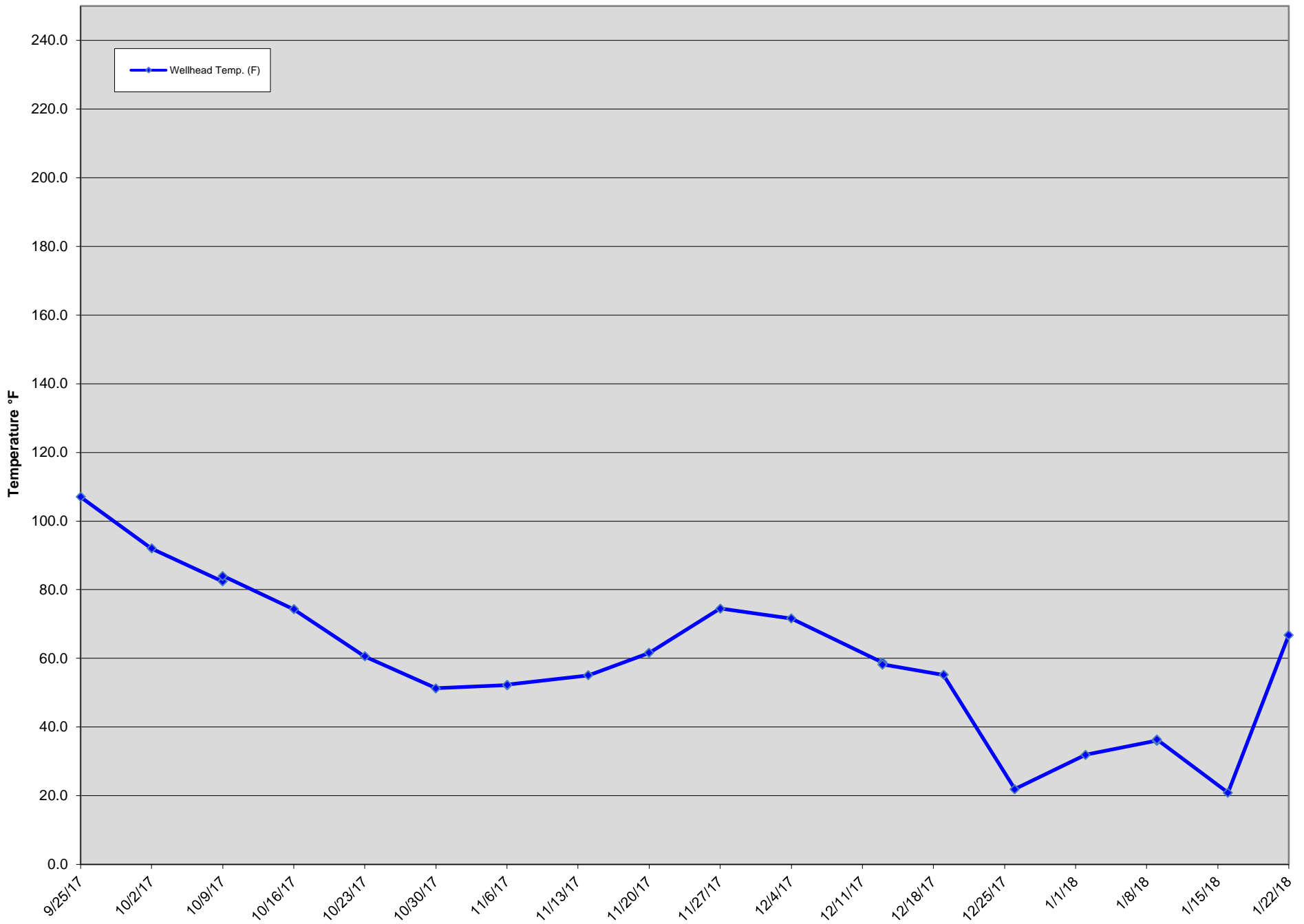
GIW-6 Wellhead Temperatures



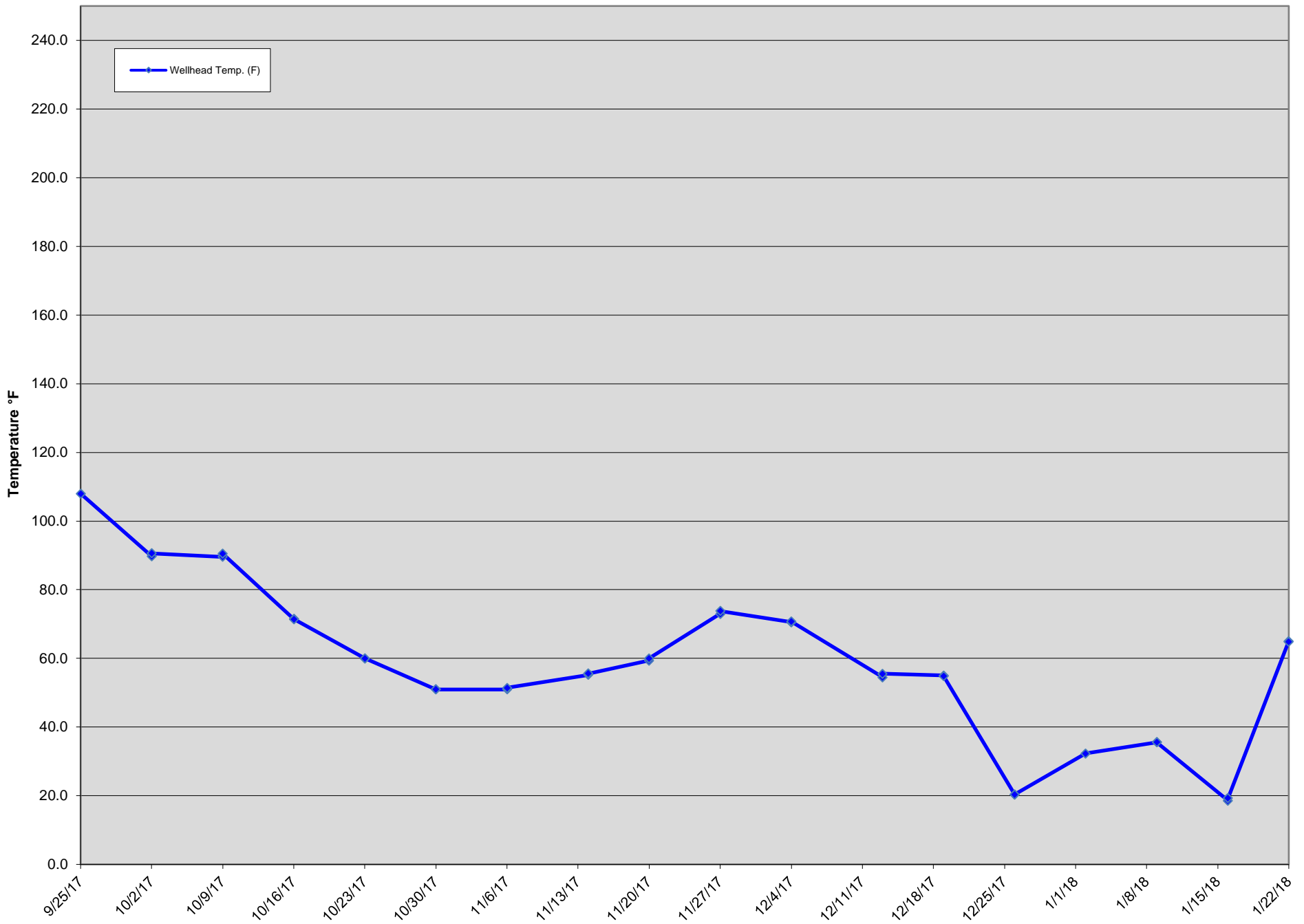
GIW-7 Wellhead Temperatures



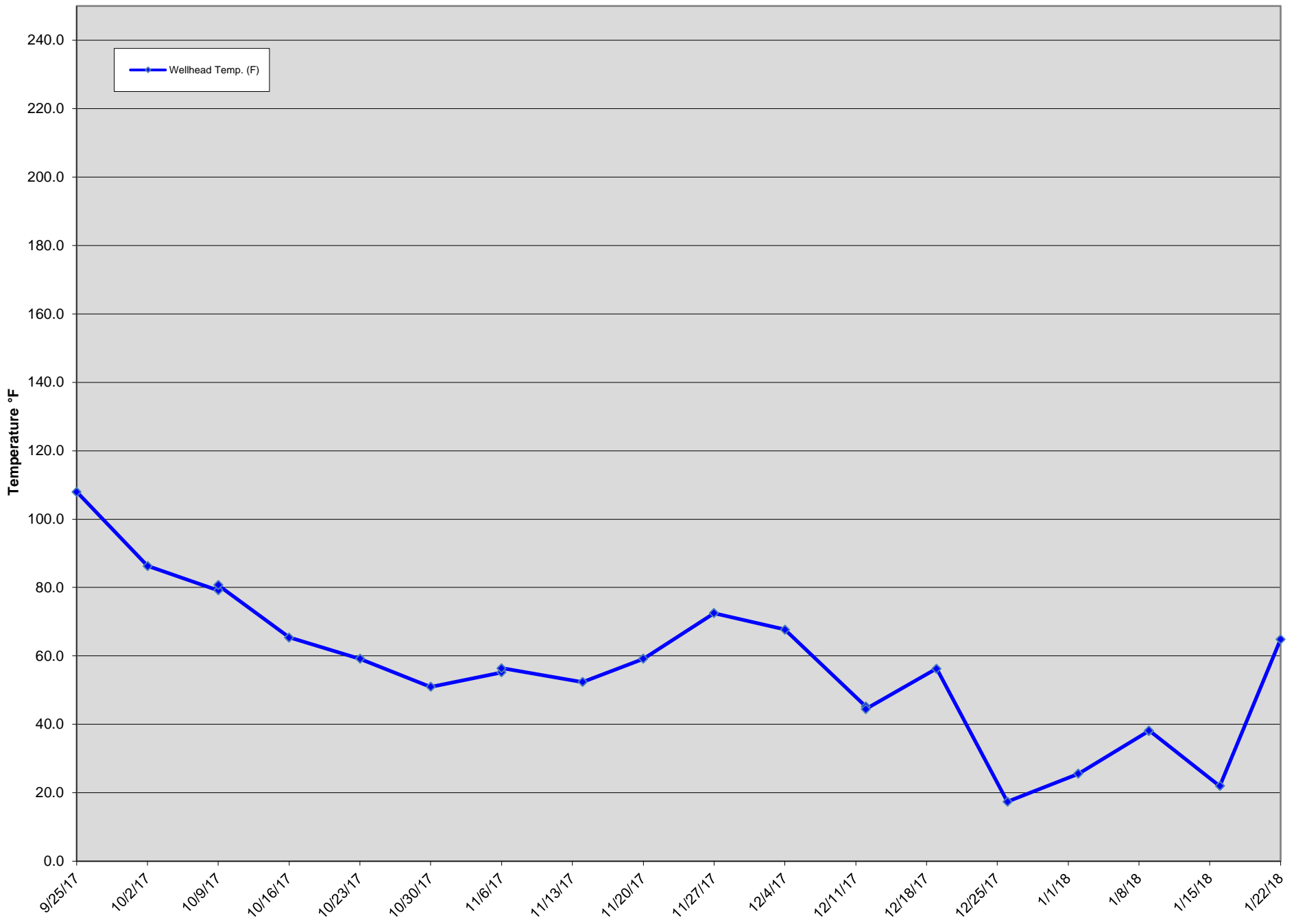
GIW-8 Wellhead Temperatures



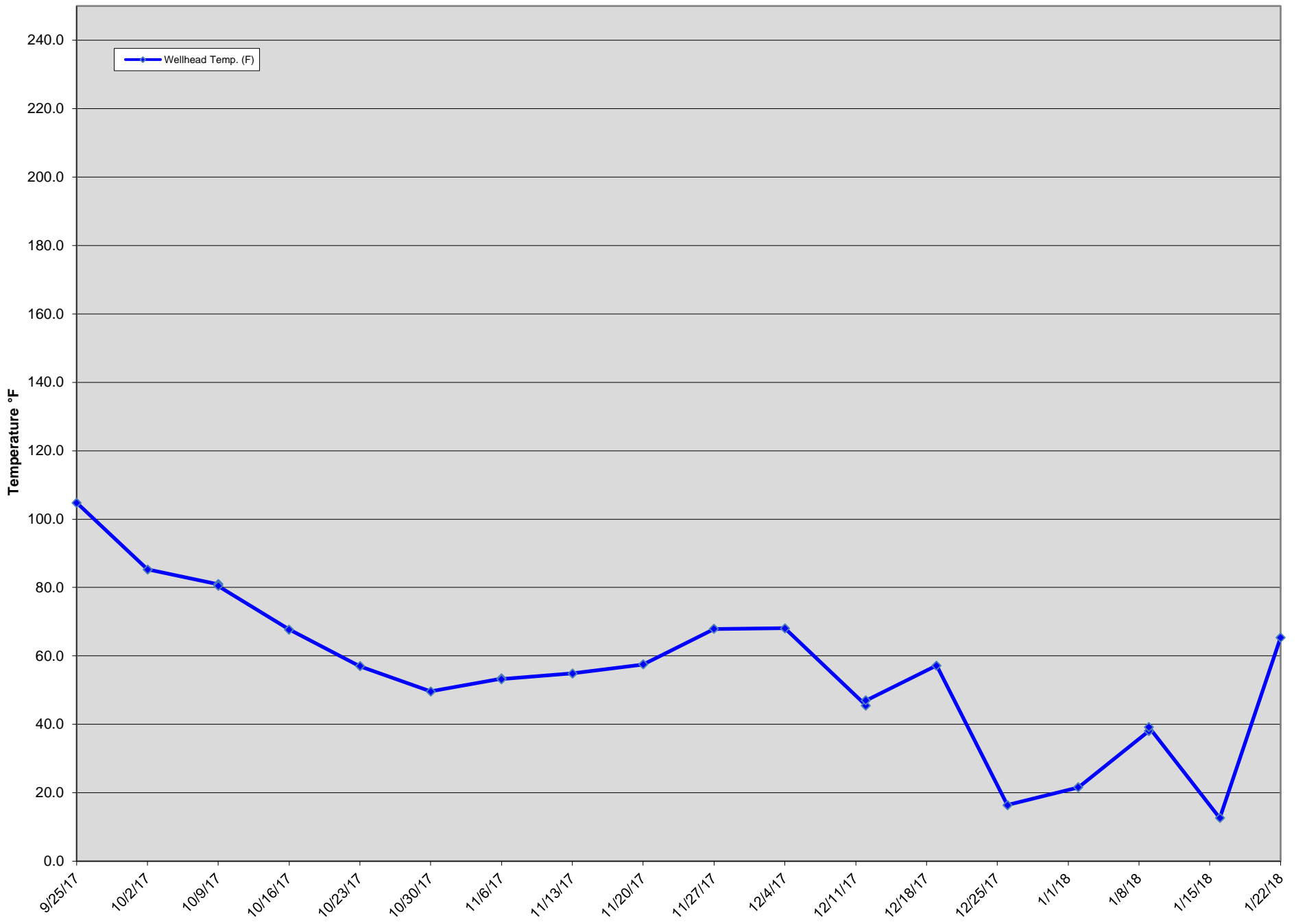
GIW-9 Wellhead Temperatures



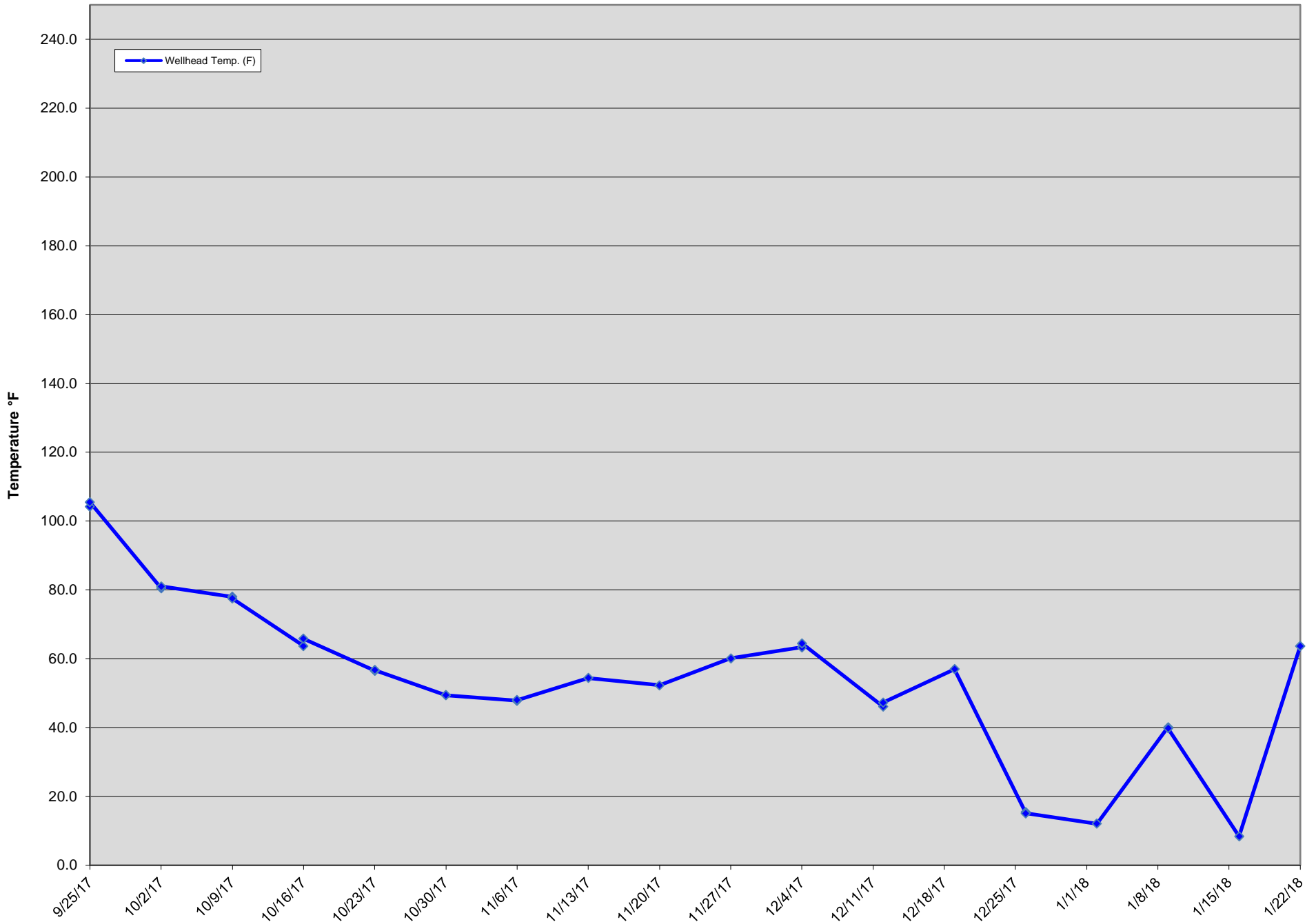
GIW-10 Wellhead Temperatures



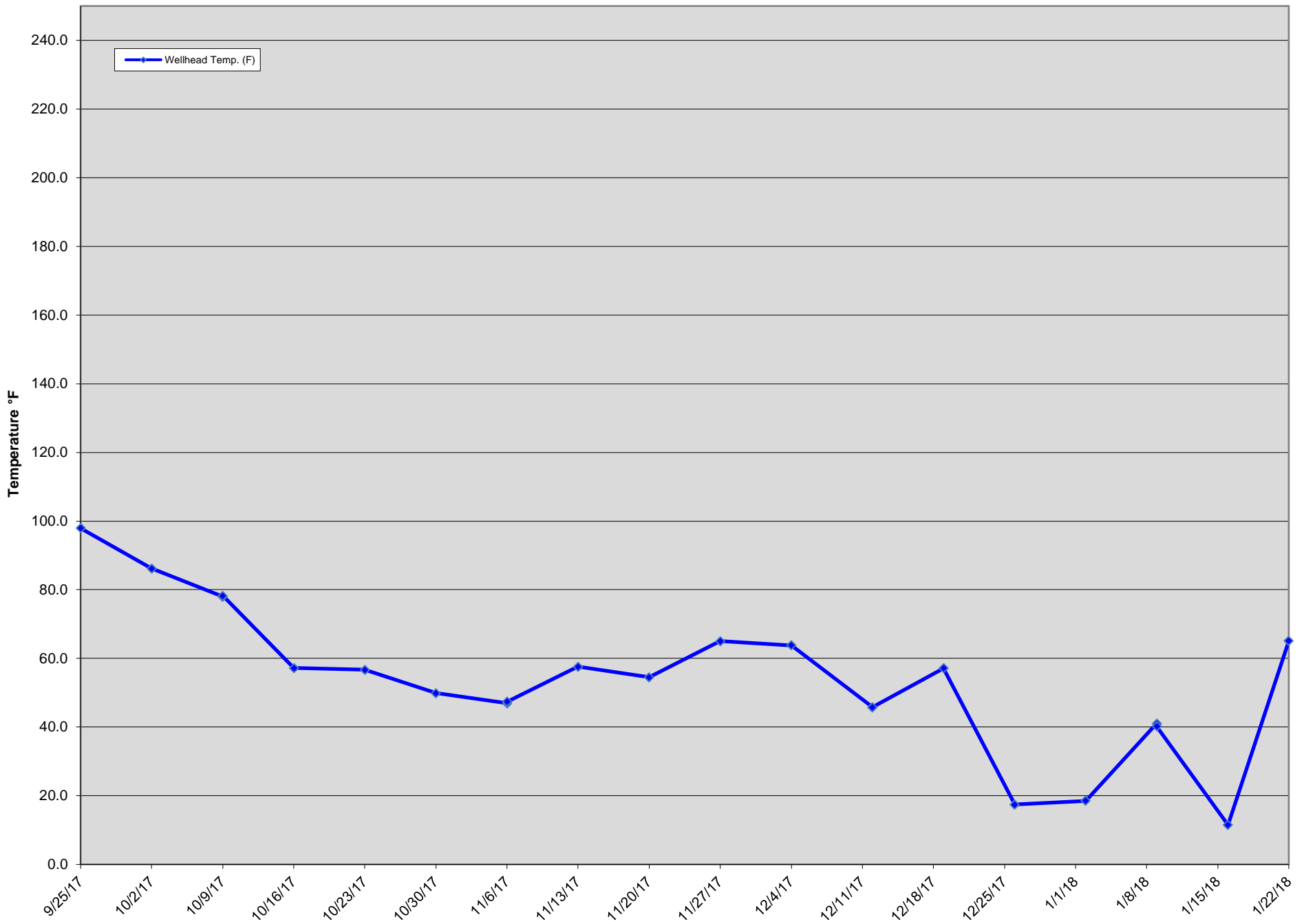
GIW-11 Wellhead Temperatures



GIW-12 Wellhead Temperatures



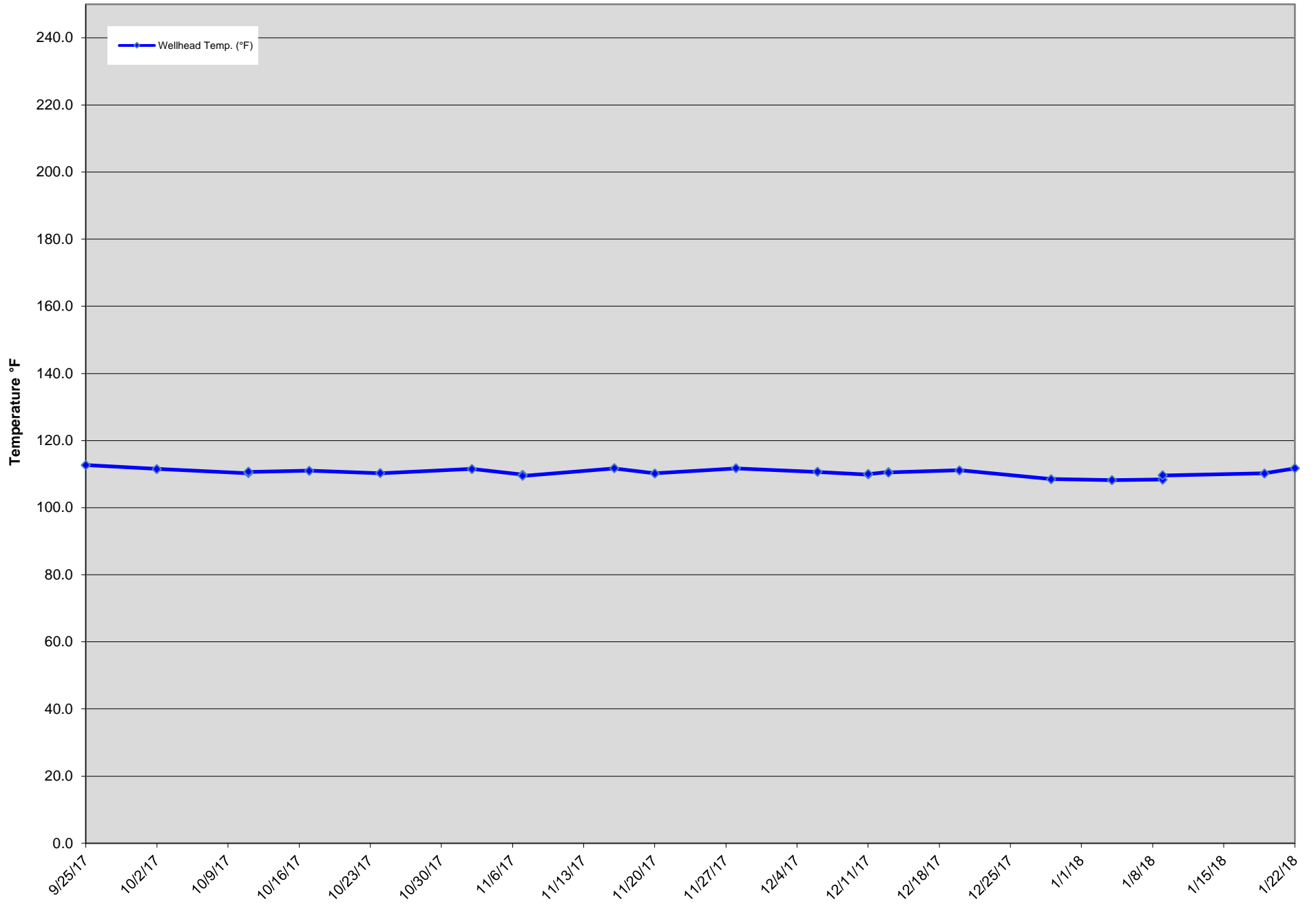
GIW-13 Wellhead Temperatures



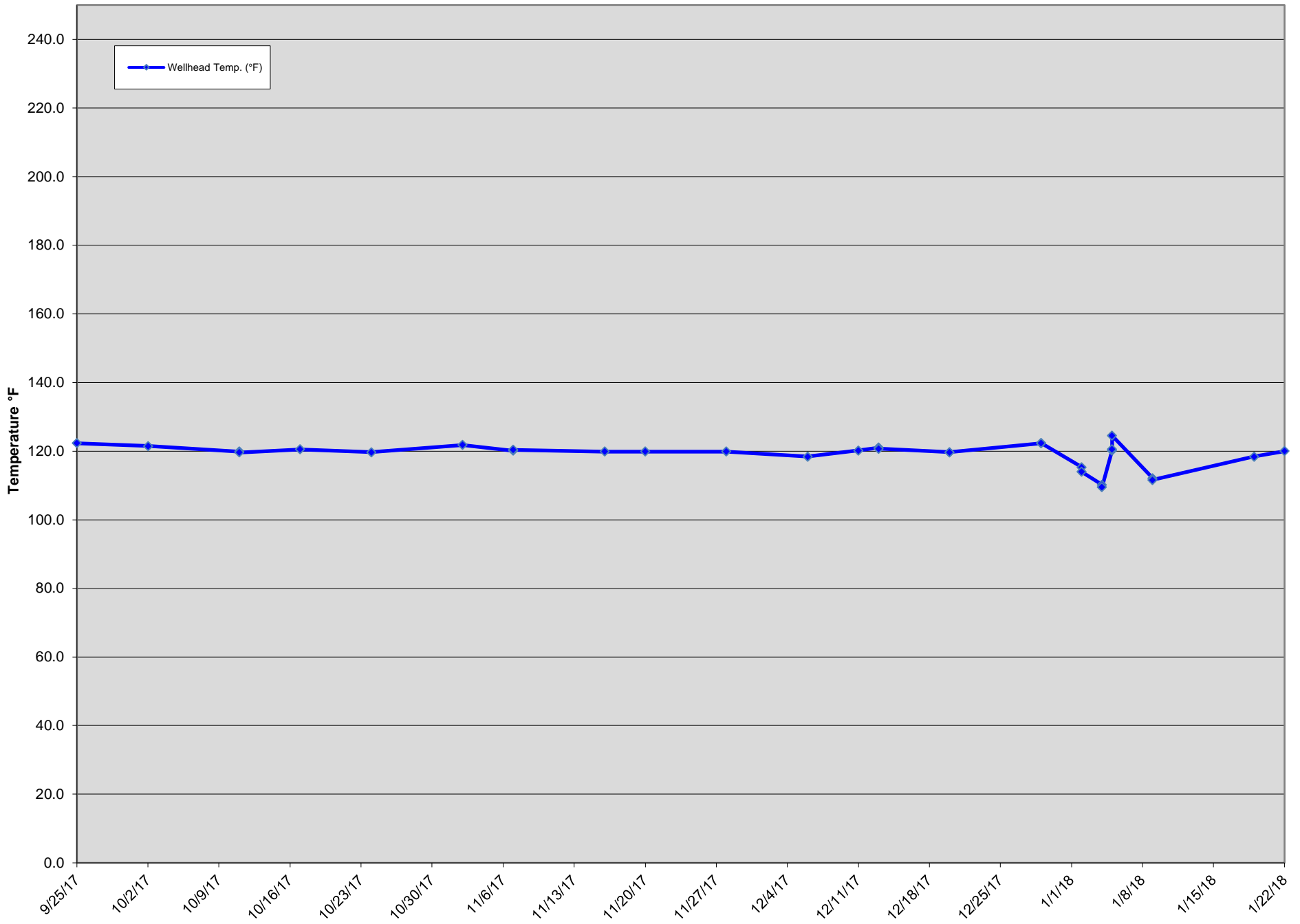
ATTACHMENT D

NECK-AREA GAS EXTRACTION WELL DATA

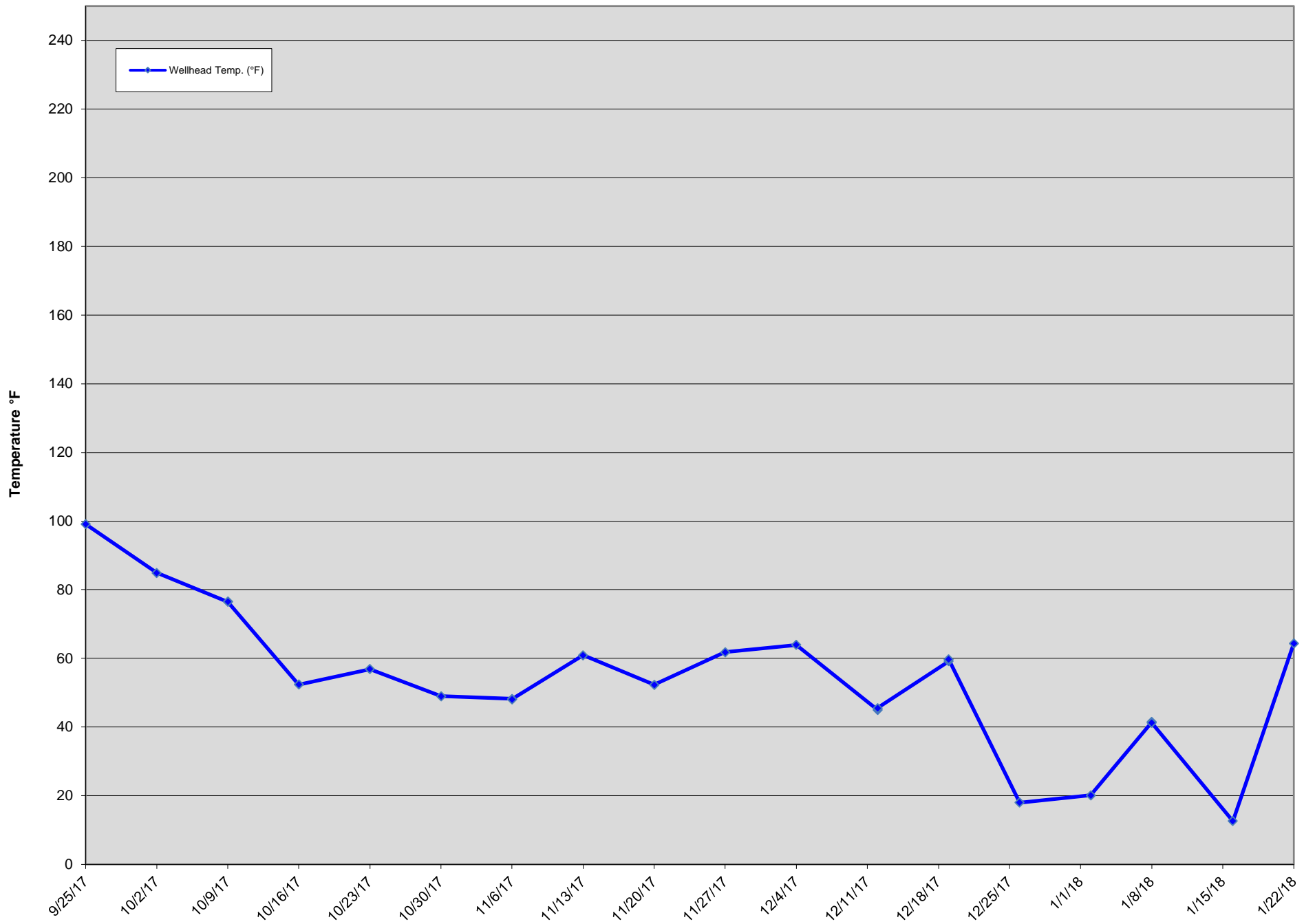
GEW-008 Wellhead Temperatures



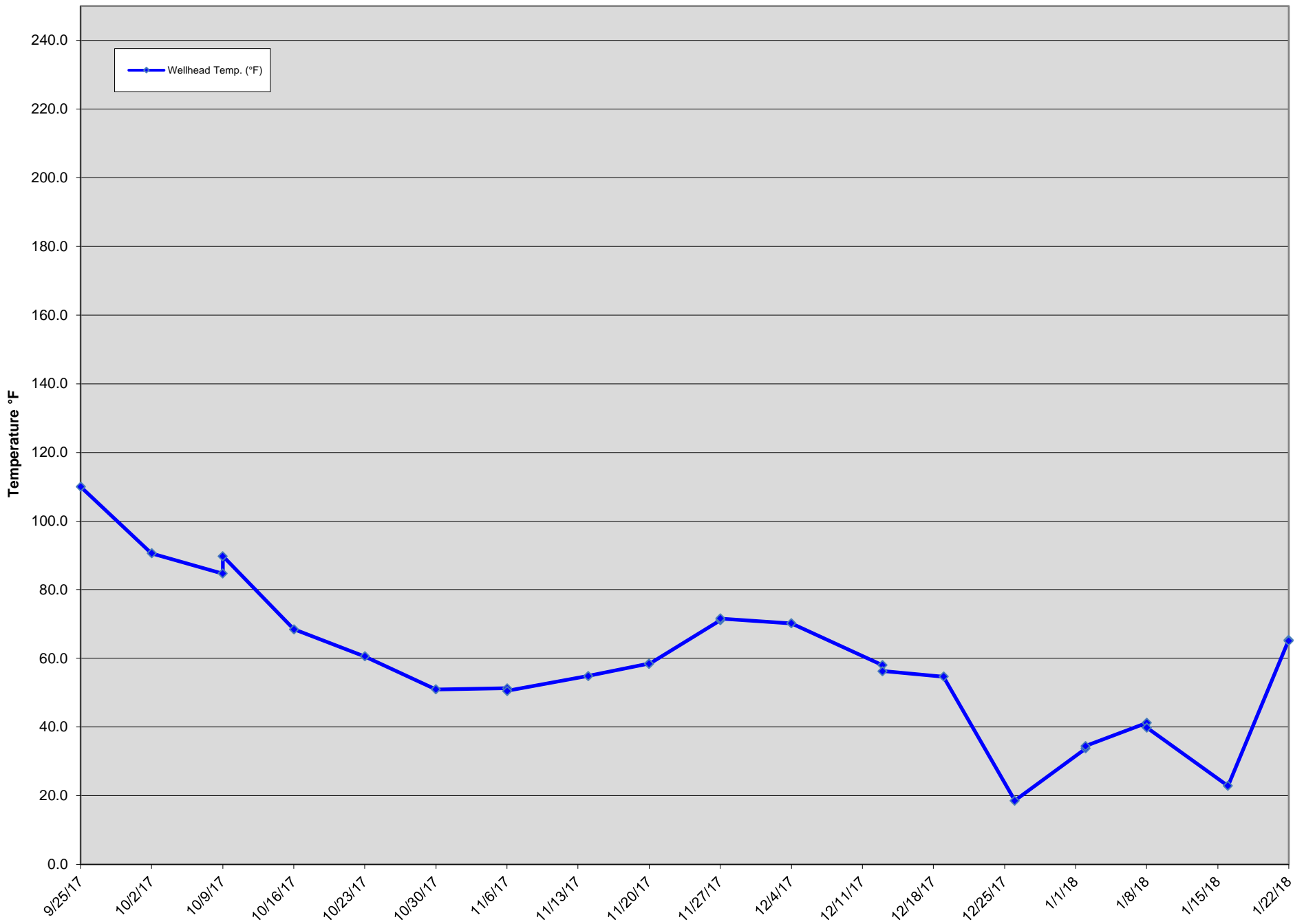
GEW-009 Wellhead Temperatures



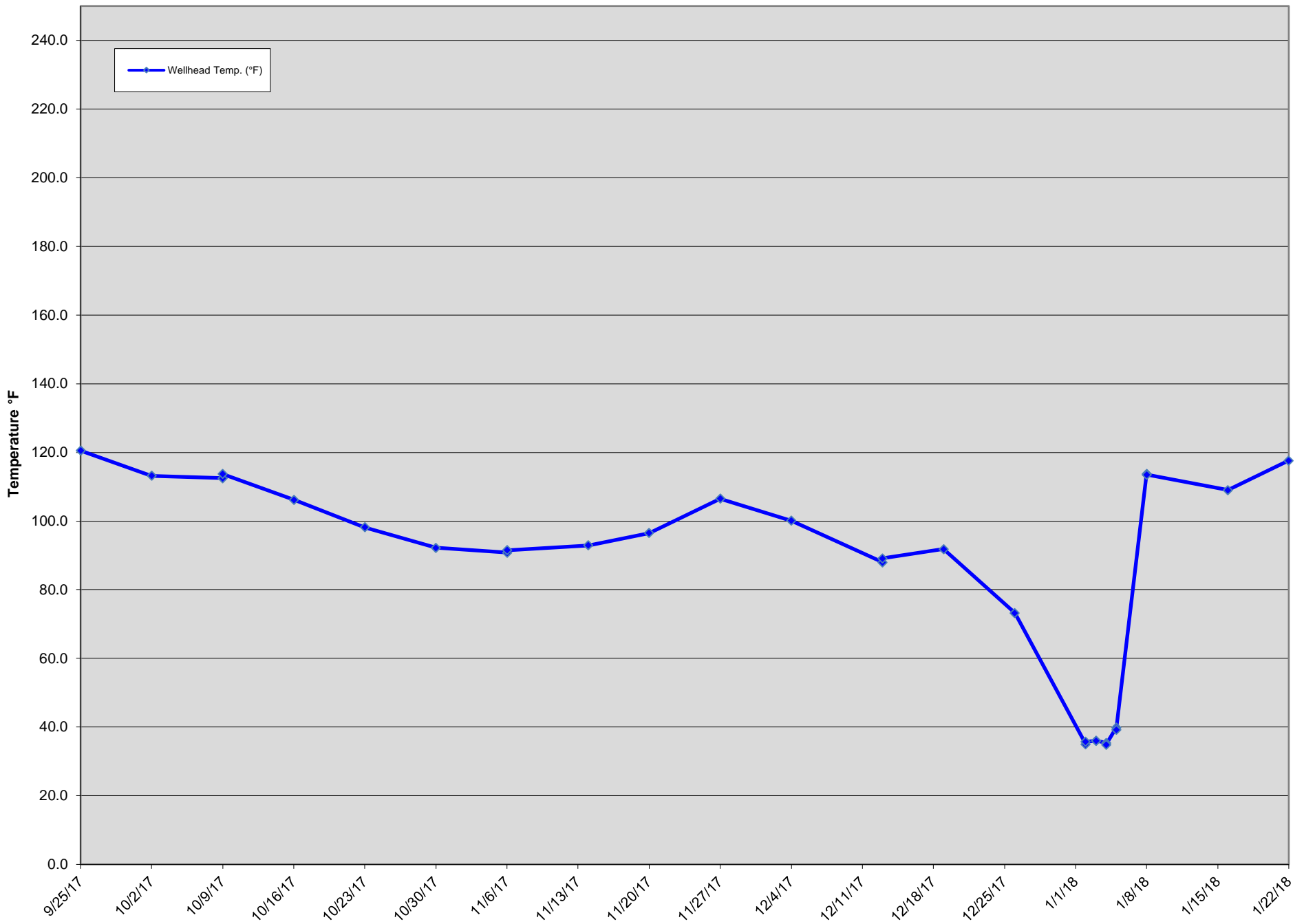
GEW-010 Wellhead Temperatures



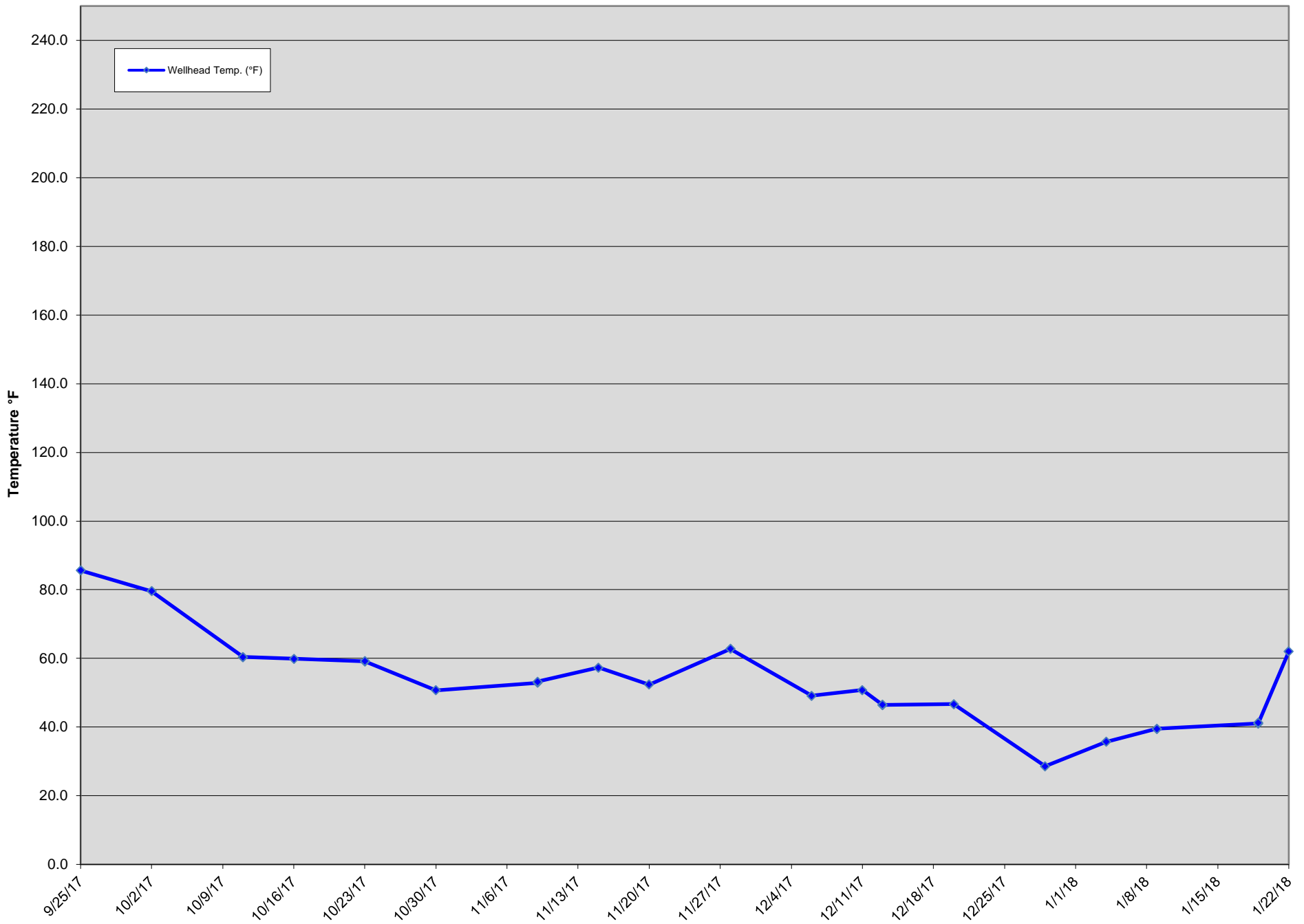
GEW-038 Wellhead Temperatures



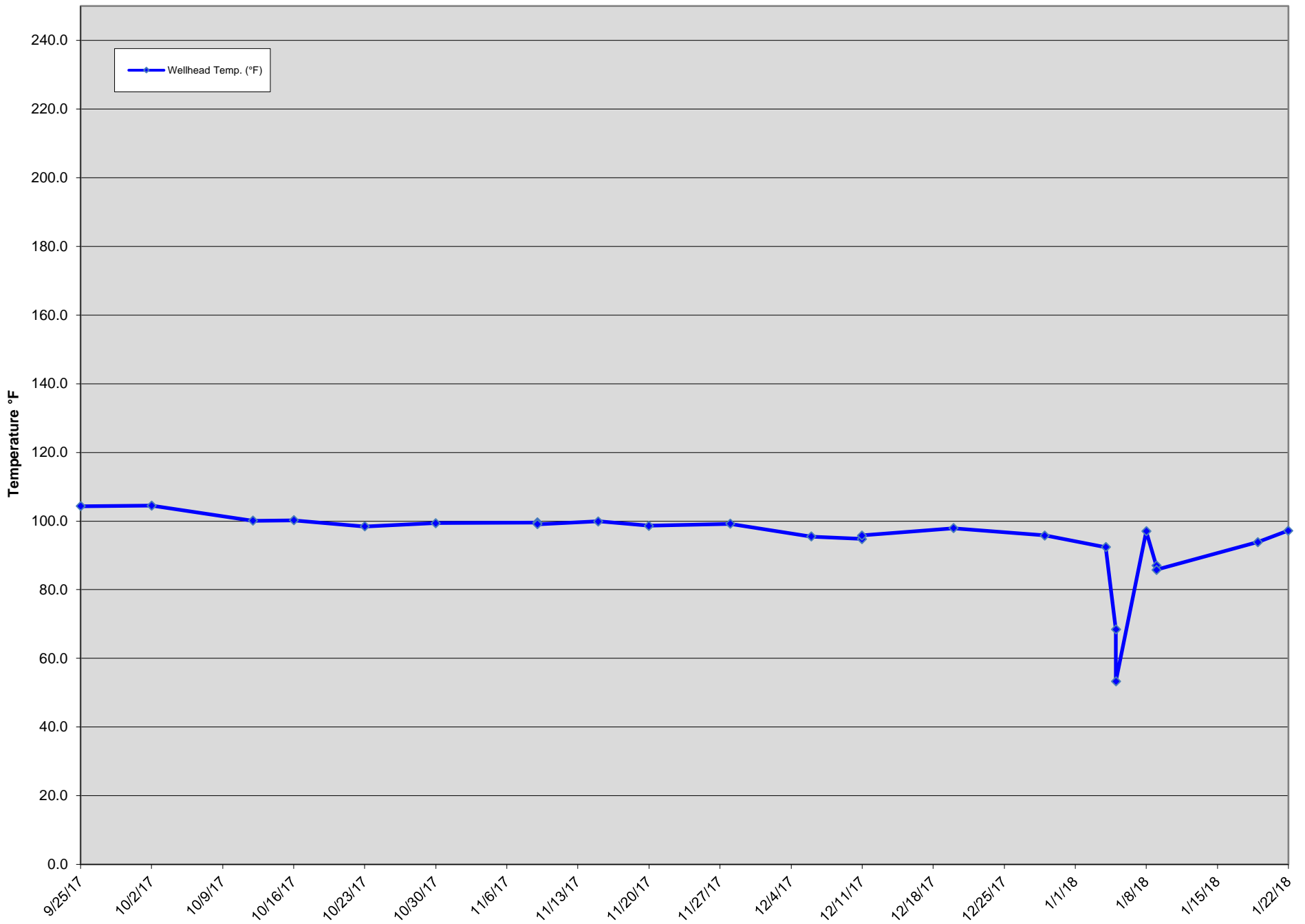
GEW-039 Wellhead Temperatures



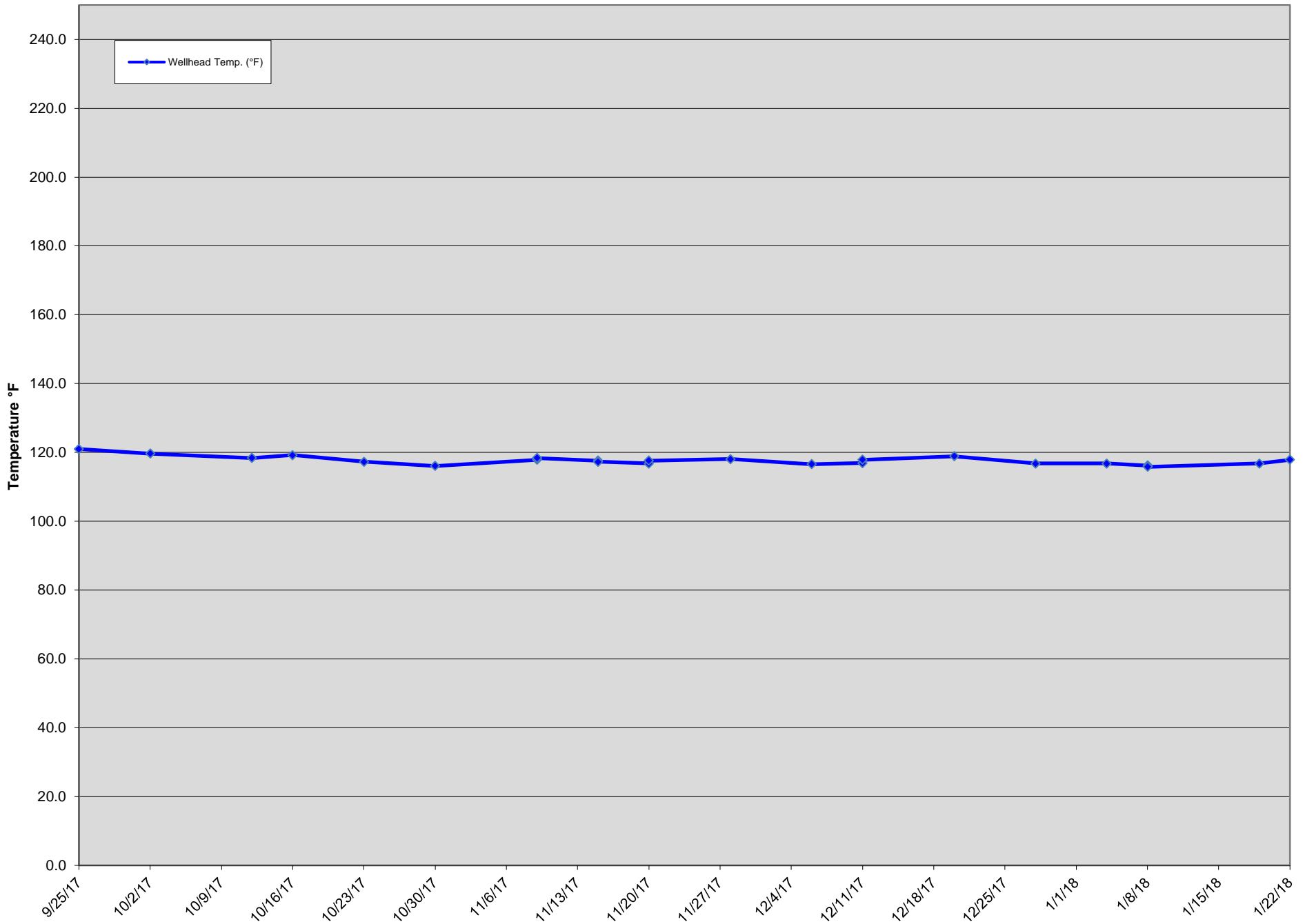
GEW-040 Wellhead Temperatures



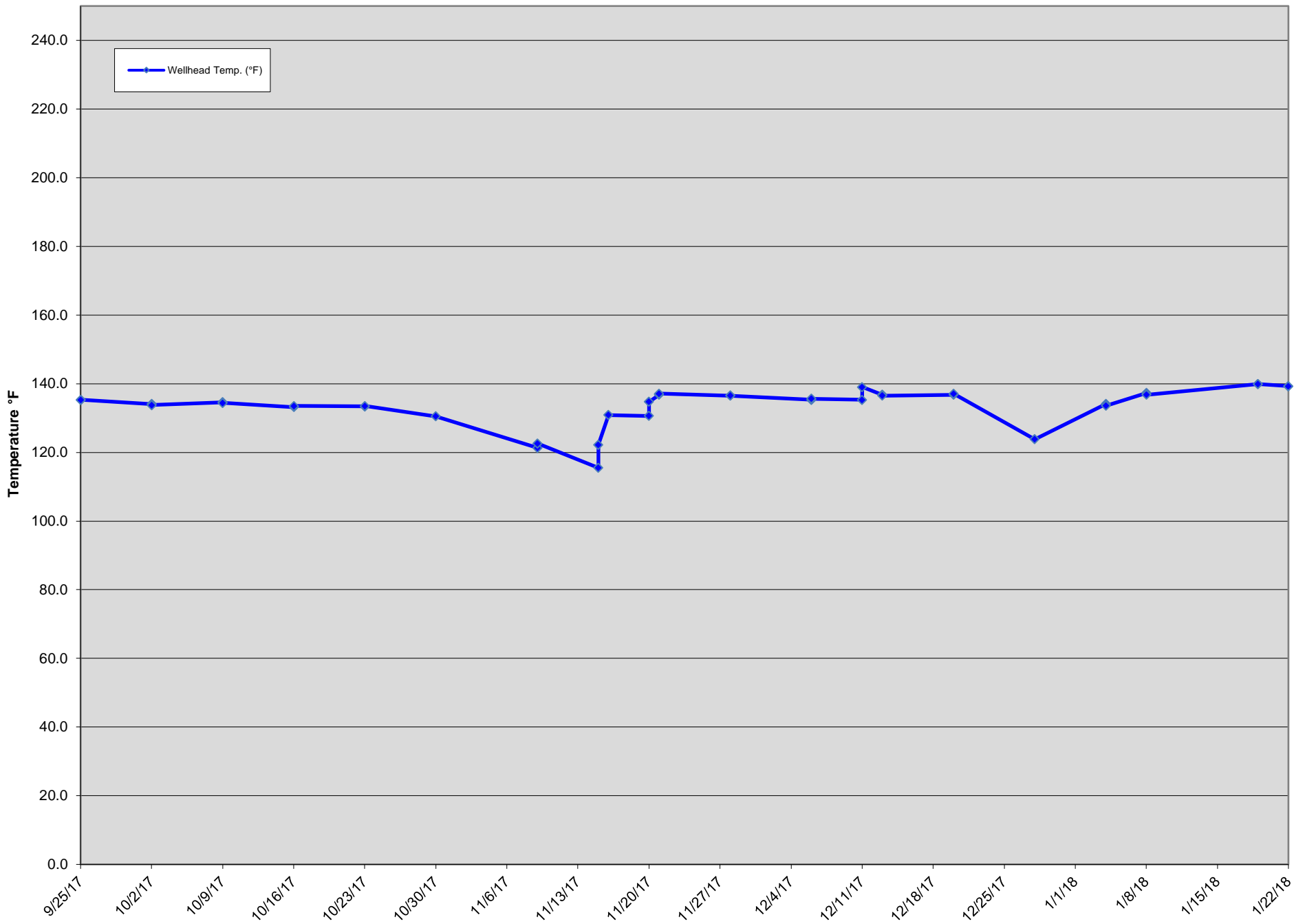
GEW-041R Wellhead Temperatures



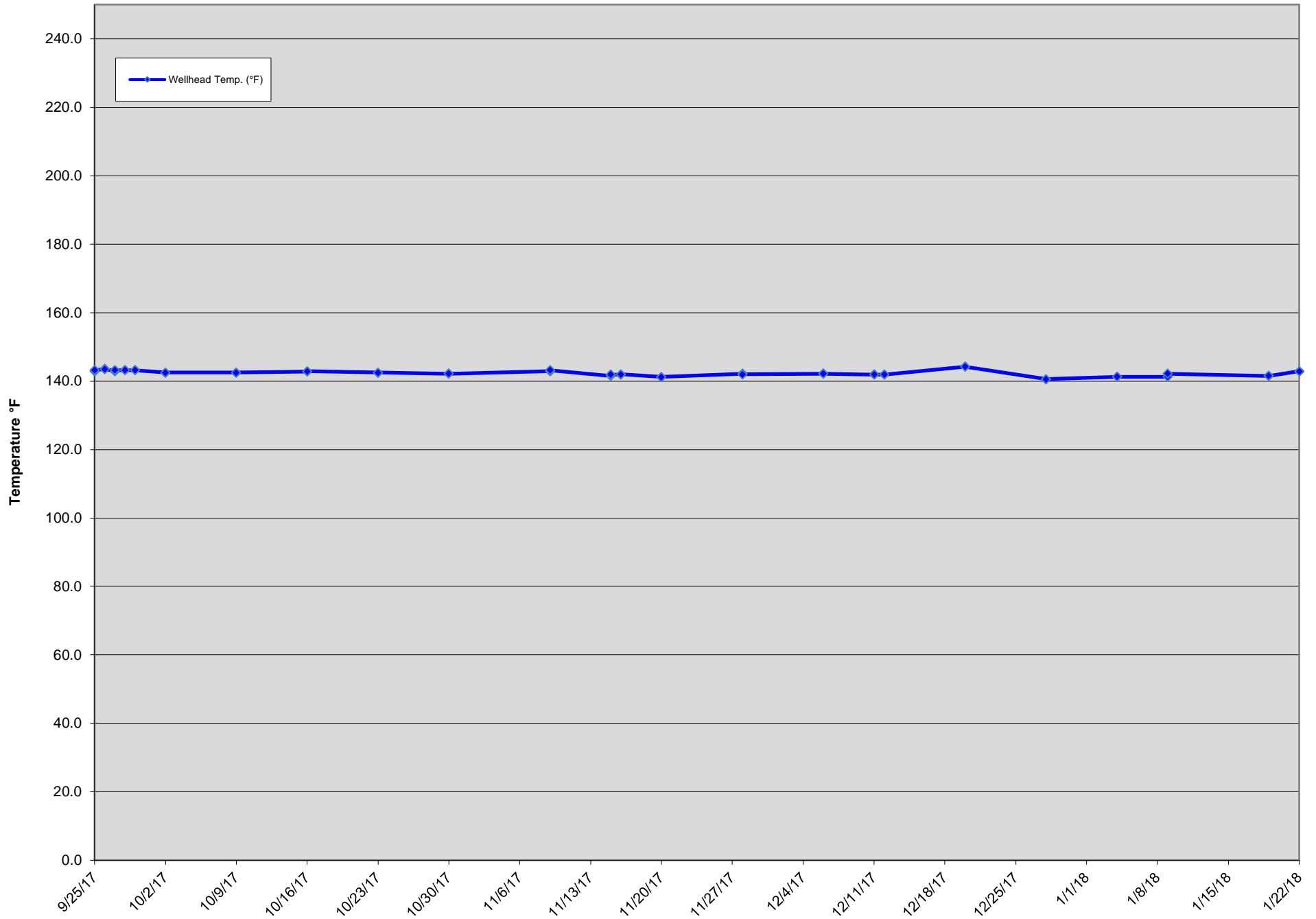
GEW-043R Wellhead Temperatures



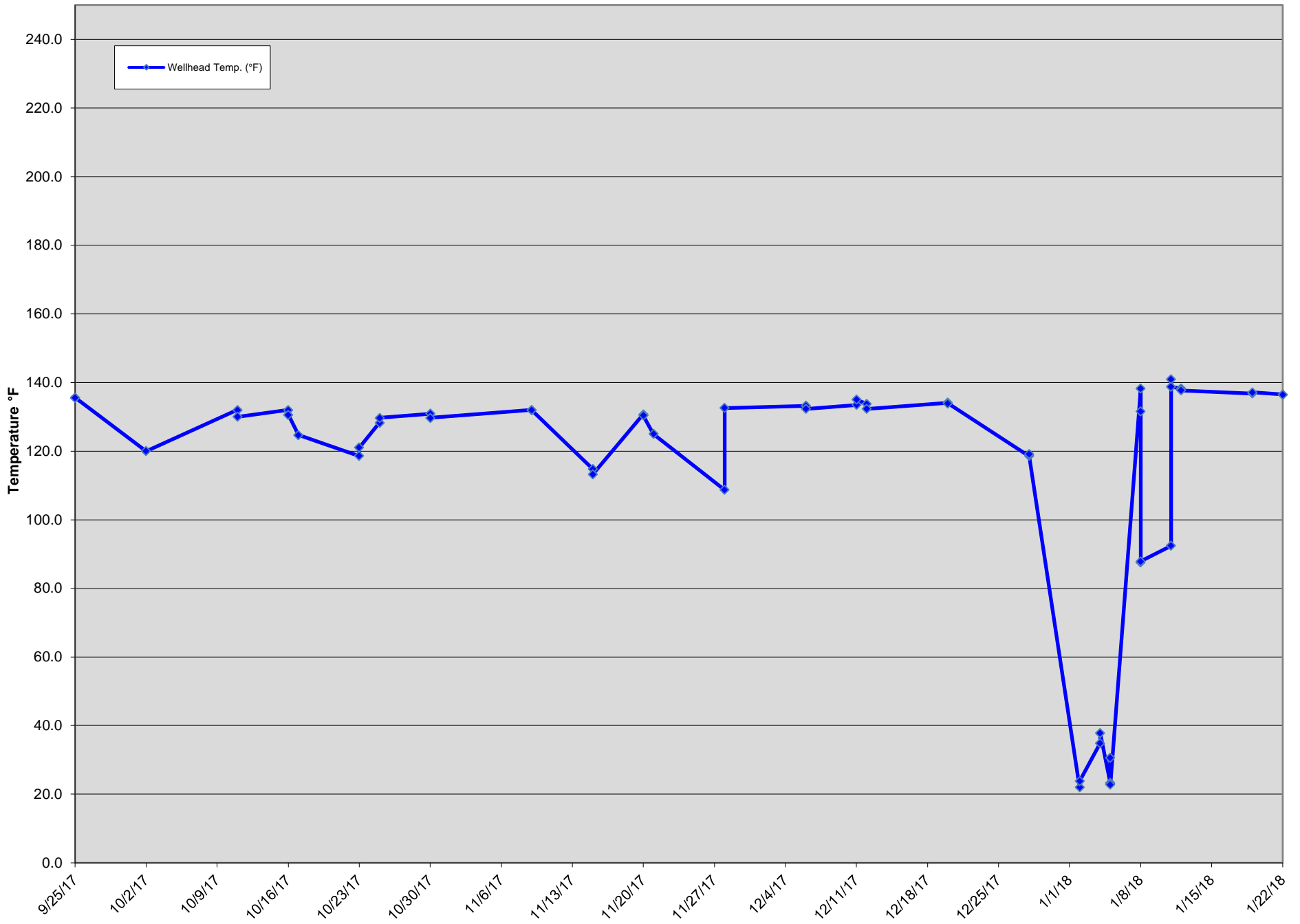
GEW-053 Wellhead Temperatures



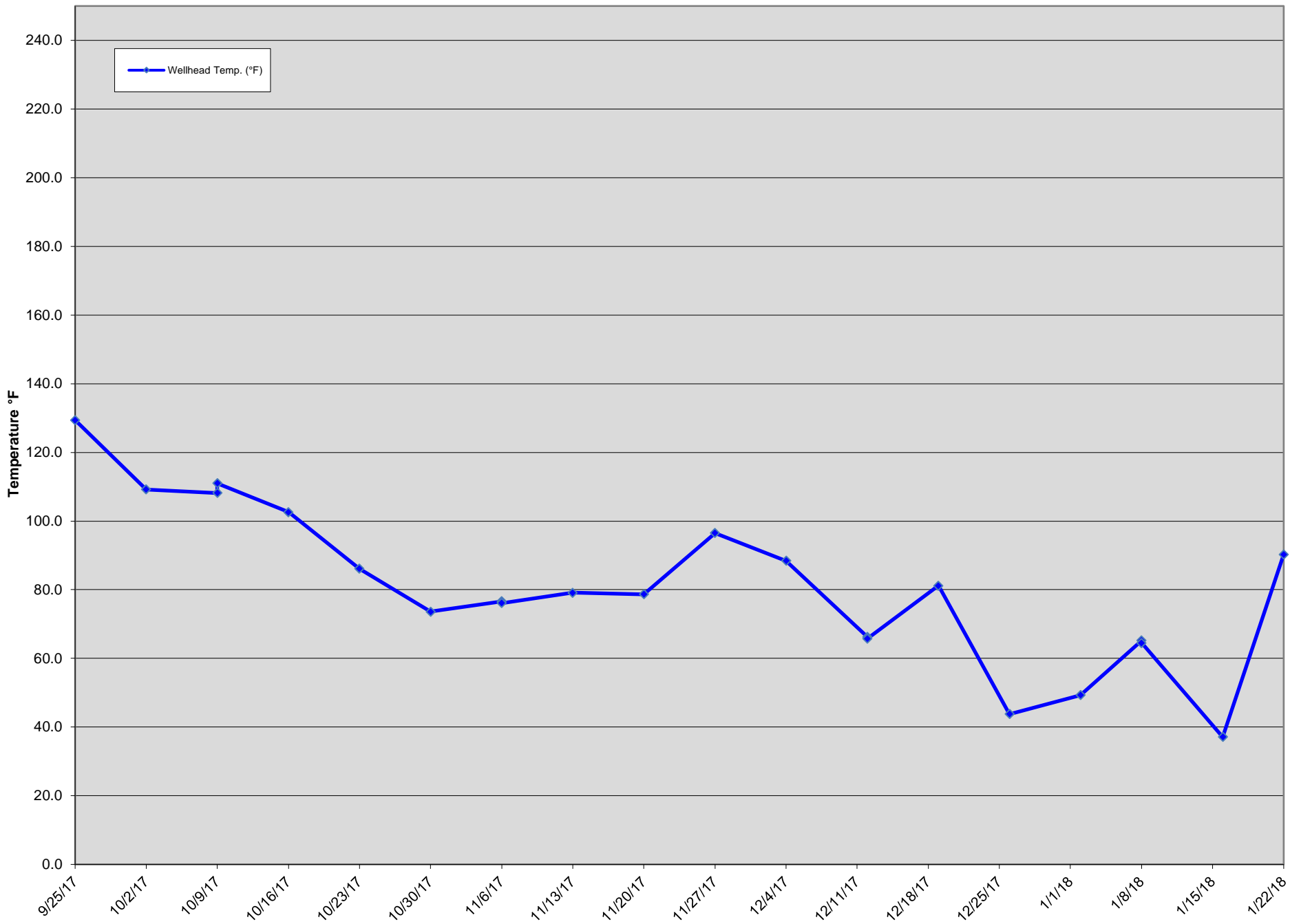
GEW-054 Wellhead Temperatures



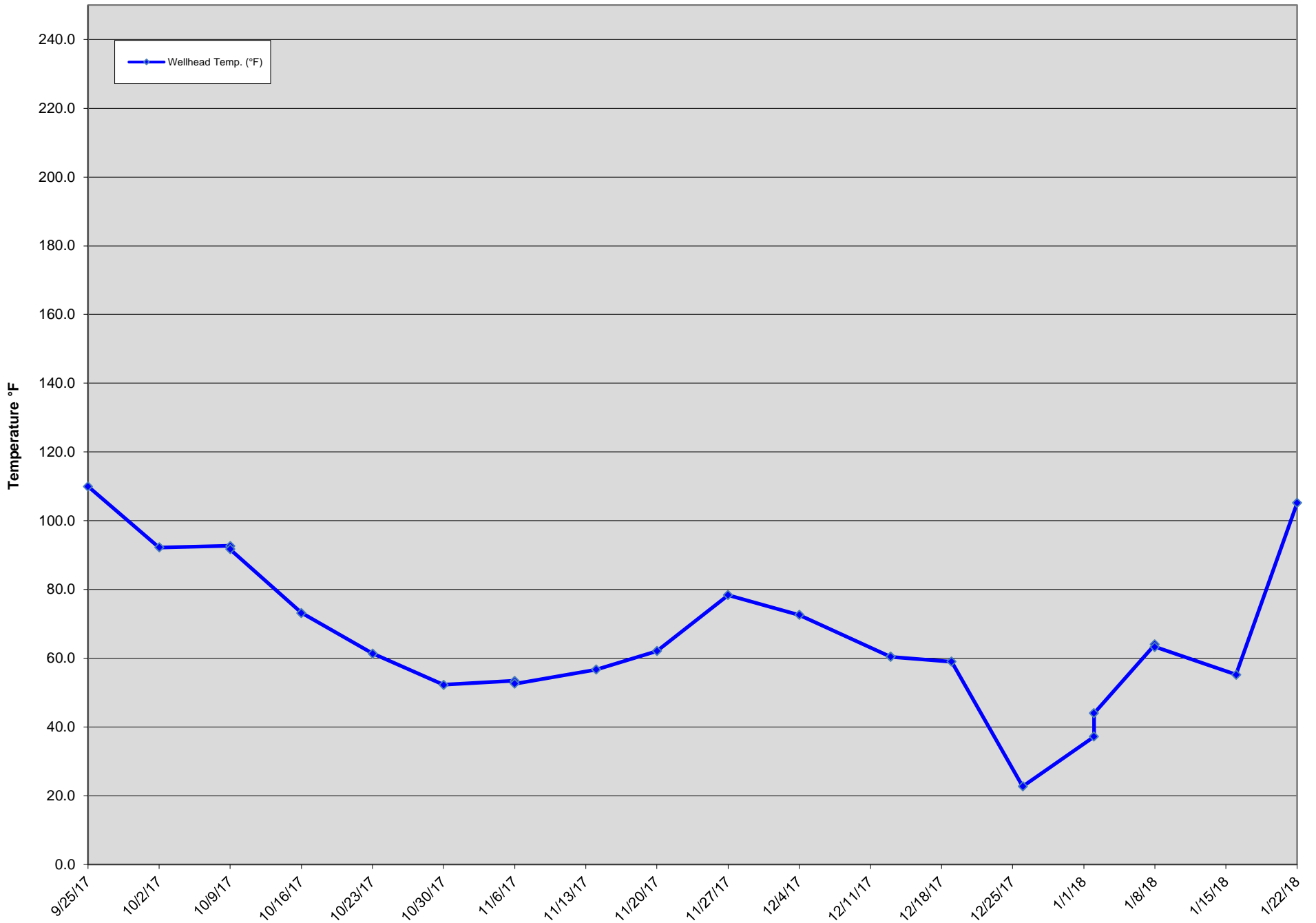
GEW-055 Wellhead Temperatures



GEW-056R Wellhead Temperatures



GEW-109 Wellhead Temperatures



GEW-110 Wellhead Temperatures

