

# **Bridgeton Landfill, LLC**

## **Weekly Data Submittal**

**Week of May 13, 2018 – May 19, 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**

**May 25, 2018**

## **Commentary on Data**

May 25, 2018

### **Attachment A – Leachate Levels in Leachate Collection Sumps**

Downhole discharge piping and the pump for LCS-1D was replaced the week of 2/5/18. Pump was non-operational after startup activities. Pump replacement was attempted the week of 4/30/18 and was unsuccessful. Further options are being evaluated.

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

The QED AP-4 pneumatic pump in LCS-3D was non-operational during the weekly reporting period. 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, -26R, -27, -28R, -29, -33, -34, -35, -36, -37, -38, -39, -40, -41, -42, -43, -44, -45, -46, -47, -48, and -49.

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 prepared 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. This conceptual design was discussed in correspondence to St. Louis County Department of Public Health-Air Pollution Control Program (SLCDPH/APCP) dated February 9, 2018. The February 9, 2018 letter requested that SLCDPH/APCP consider the extension of the North Quarry EVOH cap system and additional gas collection controls as a replacement to GEW-1A. If the approach was approved by SLCDPH/APCP, Bridgeton would provide a project schedule, monitoring frequency, and design detail within ninety (90) days of obtaining concurrence. Further, the February 9, 2018 letter requested an additional ninety (90) days for the area in the vicinity of GEW-1A to be addressed for adequate monitoring requirements to allow time to complete design, procurement, and construction schedules. SLCDPH/APCP responded to the February 9, 2018 request letter in correspondence dated February 13, 2018. SLCDPH/APCP indicated that they consider the EVOH liner extension to be a replacement for GEW-1A or best available alternative to a gas extraction well. The February 13, 2018 SLCDPH/APCP letter approved the 90-day extension for correcting the oxygen parameter exceedance at GEW-1A (due May 13, 2018).

On May 4, 2018, Bridgeton Landfill, LLC submitted construction plans for the GEW-1A EVOH cap, including design details, project schedule, and monitoring frequency, to the SLCDPH-APCP. The construction plans were prepared by Cornerstone Environmental. In correspondence dated May 8, 2018, SLCDPH-APCP approved the May 4, 2018 EVOH cap construction plans.

It is anticipated that the construction event will take approximately 10 weeks to complete, weather permitting.

On May 11, 2018, Weaver Consultants Group, on behalf of Bridgeton Landfill, LLC, submitted a ninety (90)-day extension request letter to SLCDPH-APCP to complete the construction of the EVOH expansion in the vicinity of GEW-1A. SLCDPH-APCP approved the 90-day extension request in an email dated May 11, 2018. Therefore, the new deadline for achieving regulatory compliance near GEW-1A is August 11, 2018.

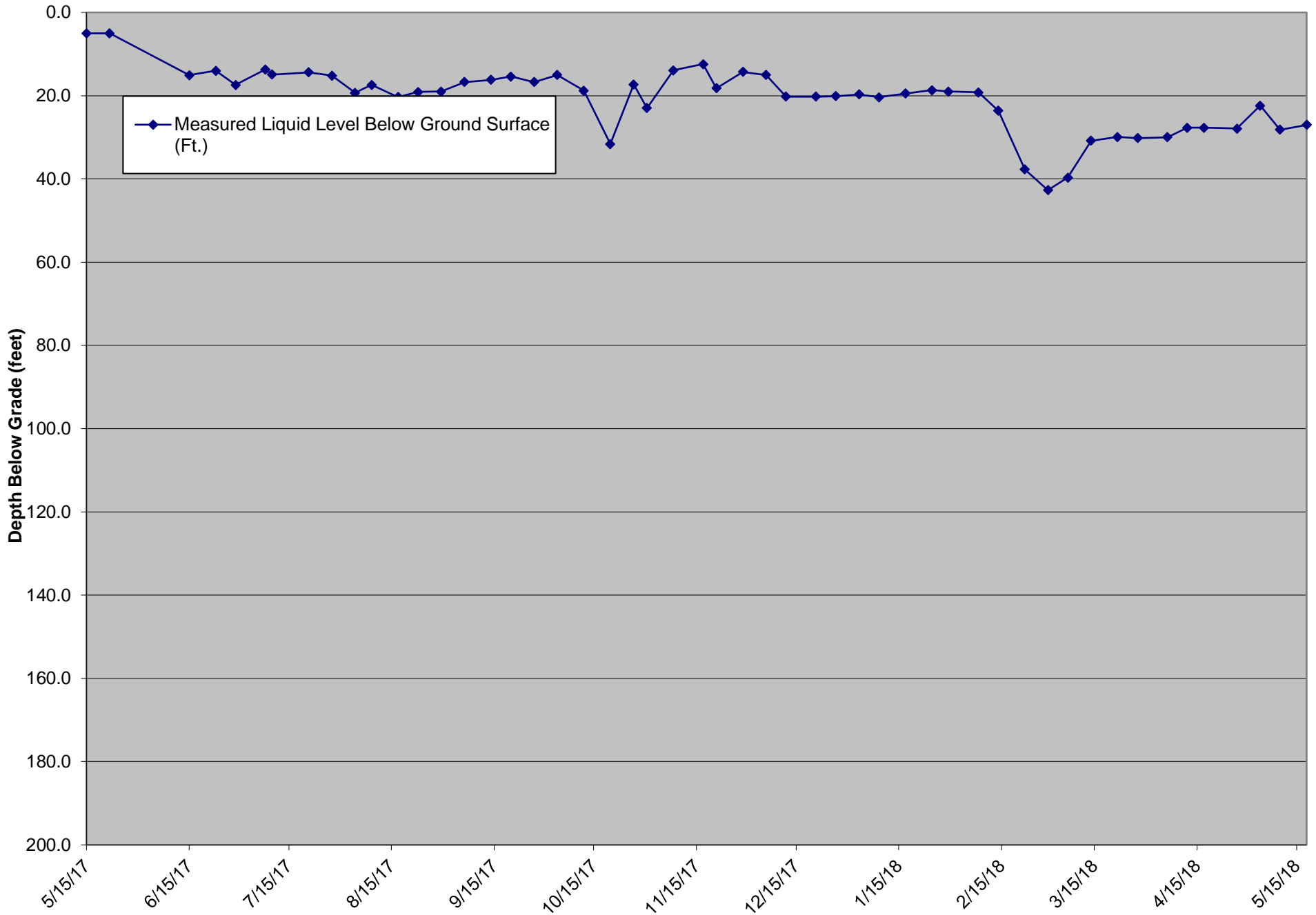
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**ATTACHMENT A**

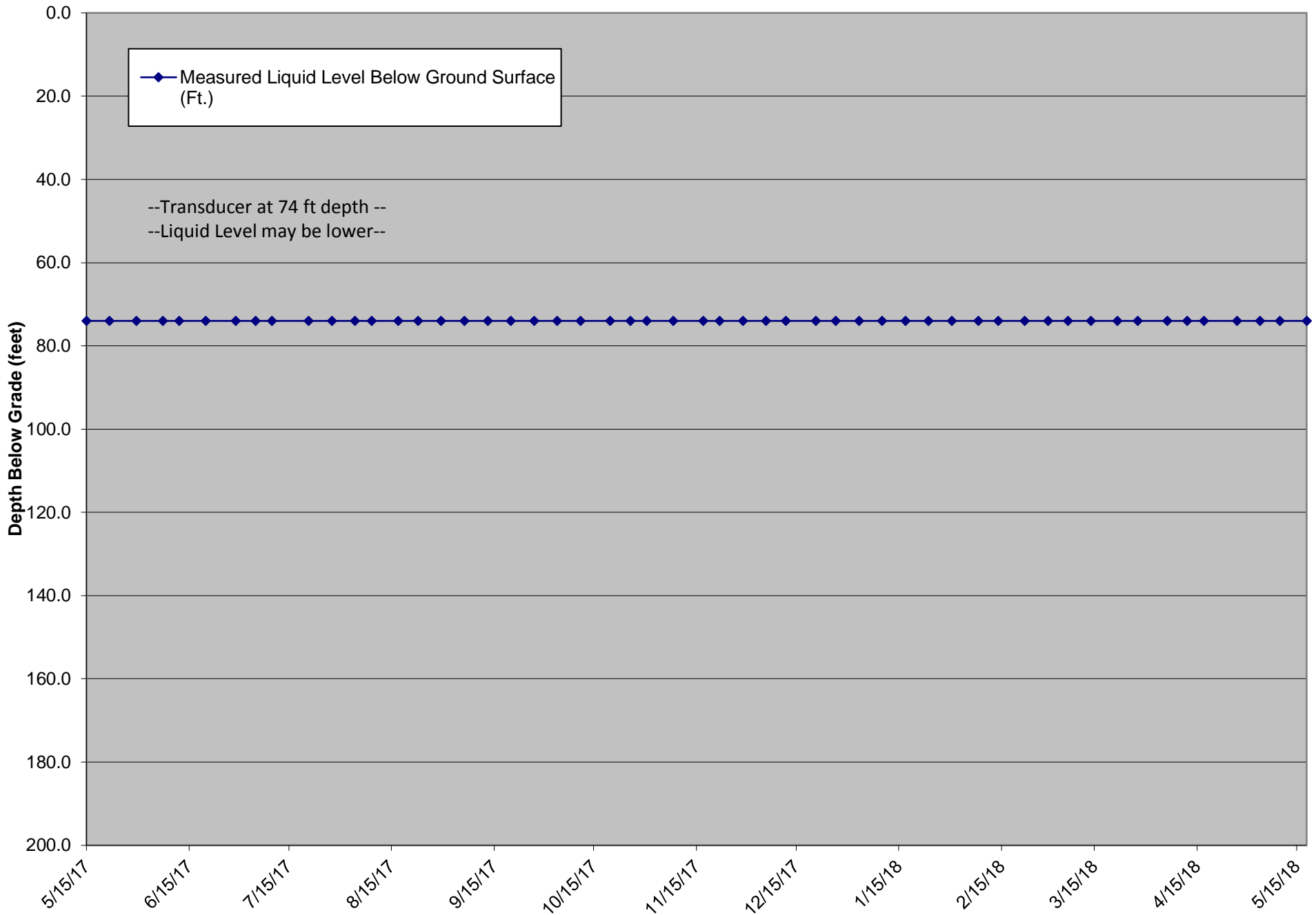
**LEACHATE LEVELS IN LEACHATE COLLECTION SUMPS**

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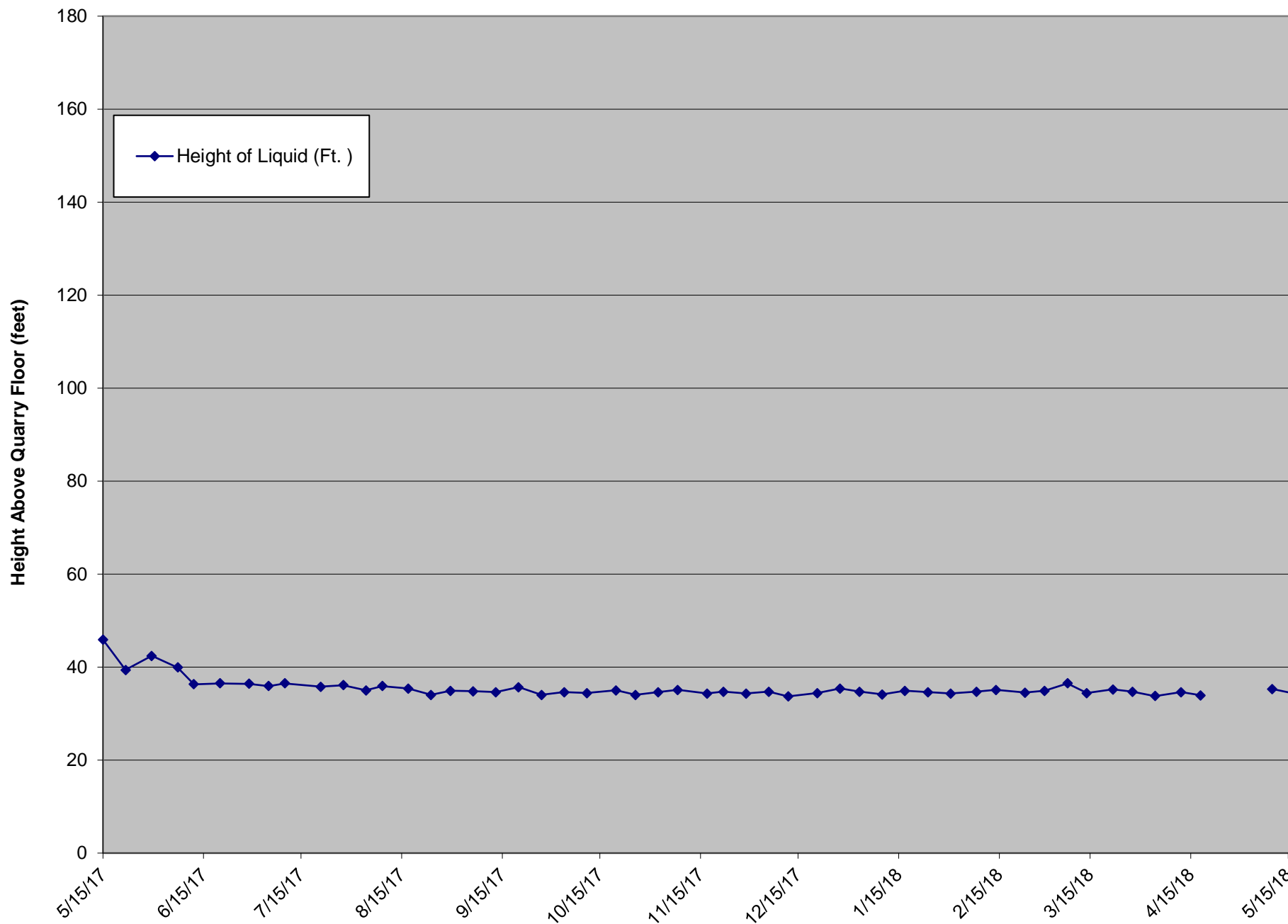
### LCS-3D Liquid Level Below Ground Surface



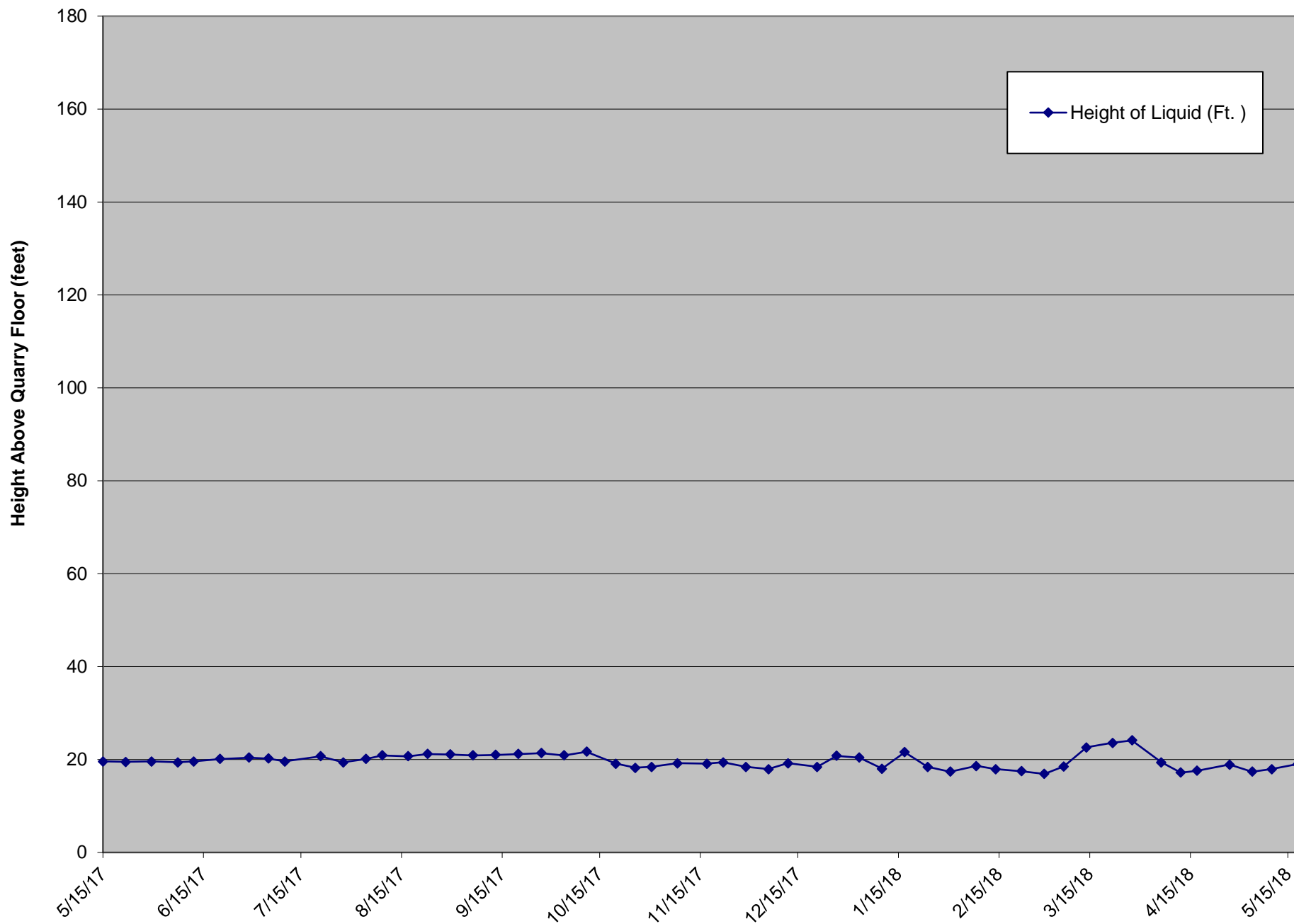
# LCS-4B Liquid Level Below Ground Surface



### LCS-5B Liquid Level Above Quarry Floor



### LCS-6B Liquid Level Above Quarry Floor



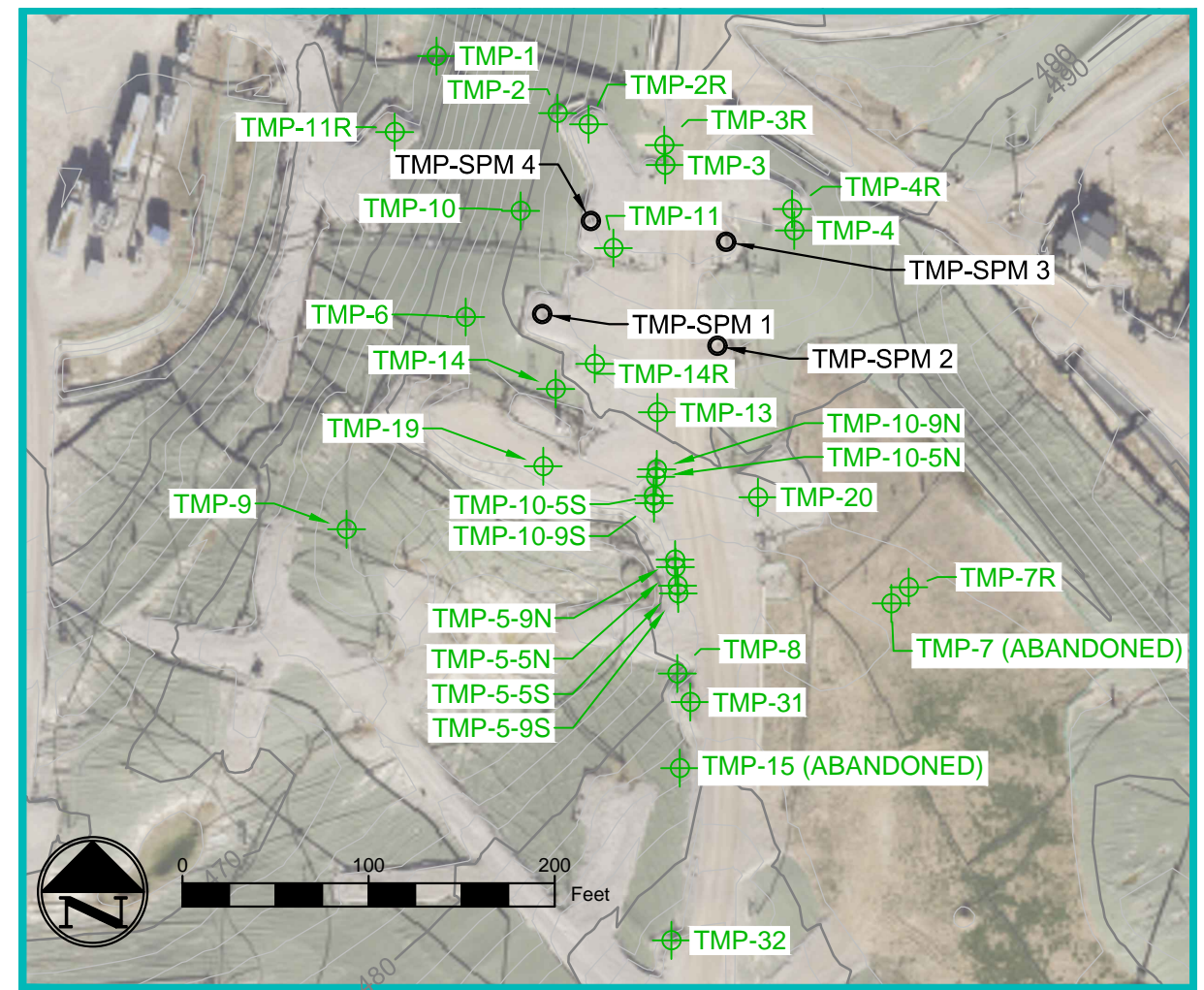
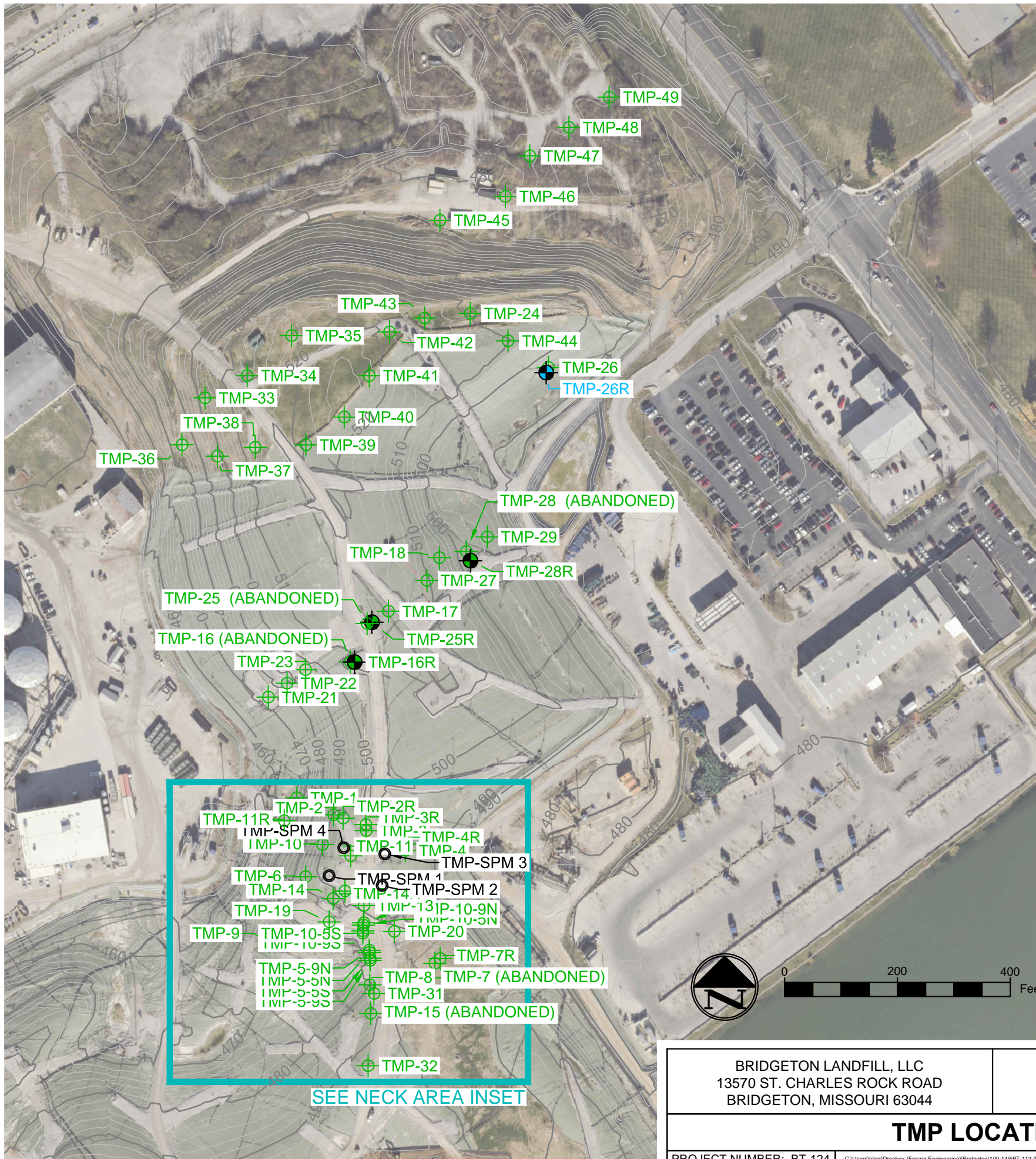


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**ATTACHMENT B**

**TEMPERATURE MONITORING PROBE ANALYTICAL CHARTS**

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NECK AREA INSET

**LEGEND**

- 500 — 12-1-2017 AERIAL TOPOGRAPHY (2' CONTOUR)
- 500 — 12-1-2017 AERIAL TOPOGRAPHY (10' CONTOUR)
- ⊕ TMP-13 INSTALLED TMP LOCATION
- TMP-SPM 1 TMP-SPM (ASBUILT OCTOBER 13, 2016)
- TMP-26R REPLACEMENT TMP INSTALLED IN APRIL 2018

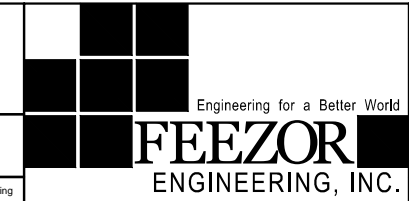
**NOTE:**

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

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

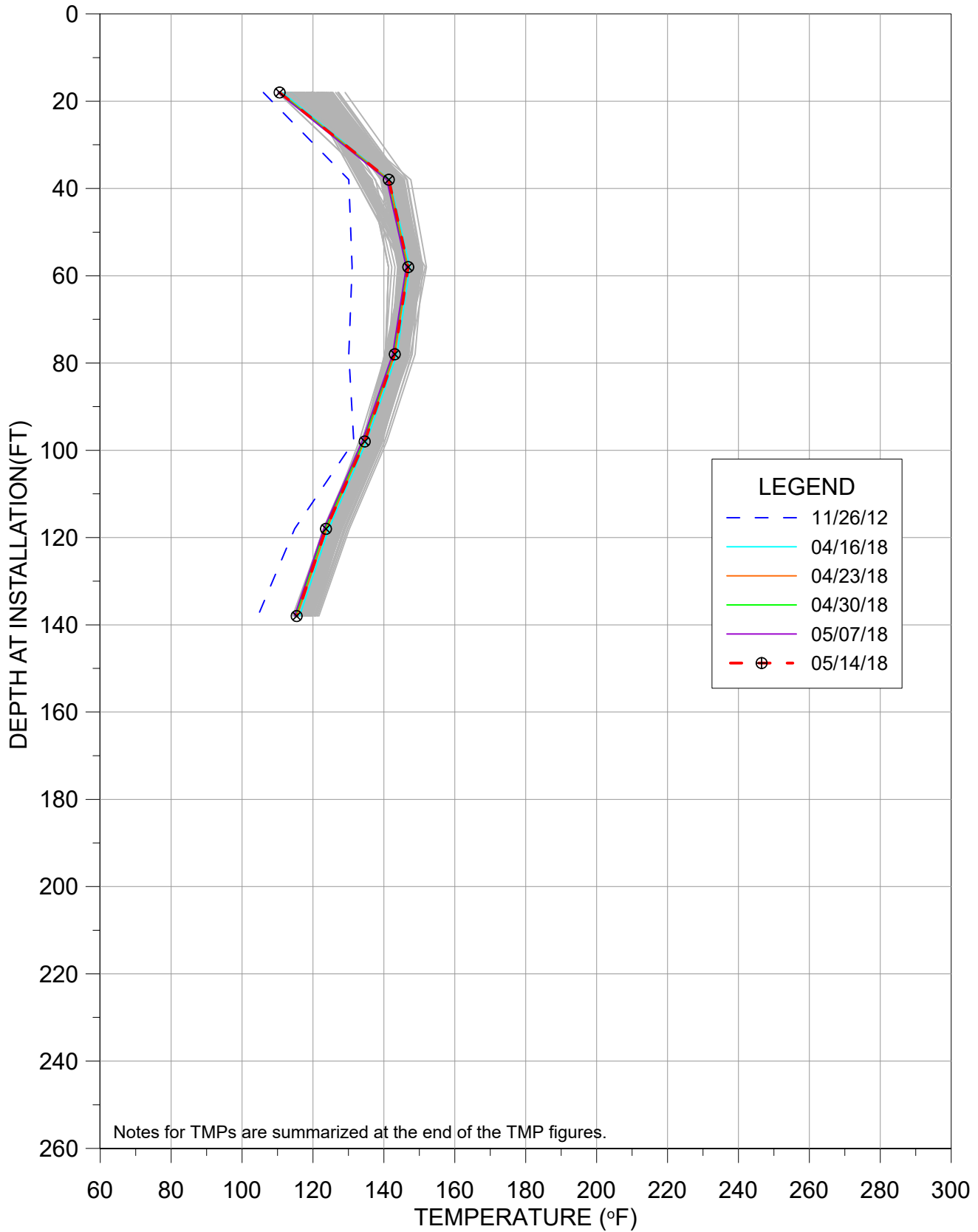
BRIDGETON LANDFILL

**TMP LOCATIONS**

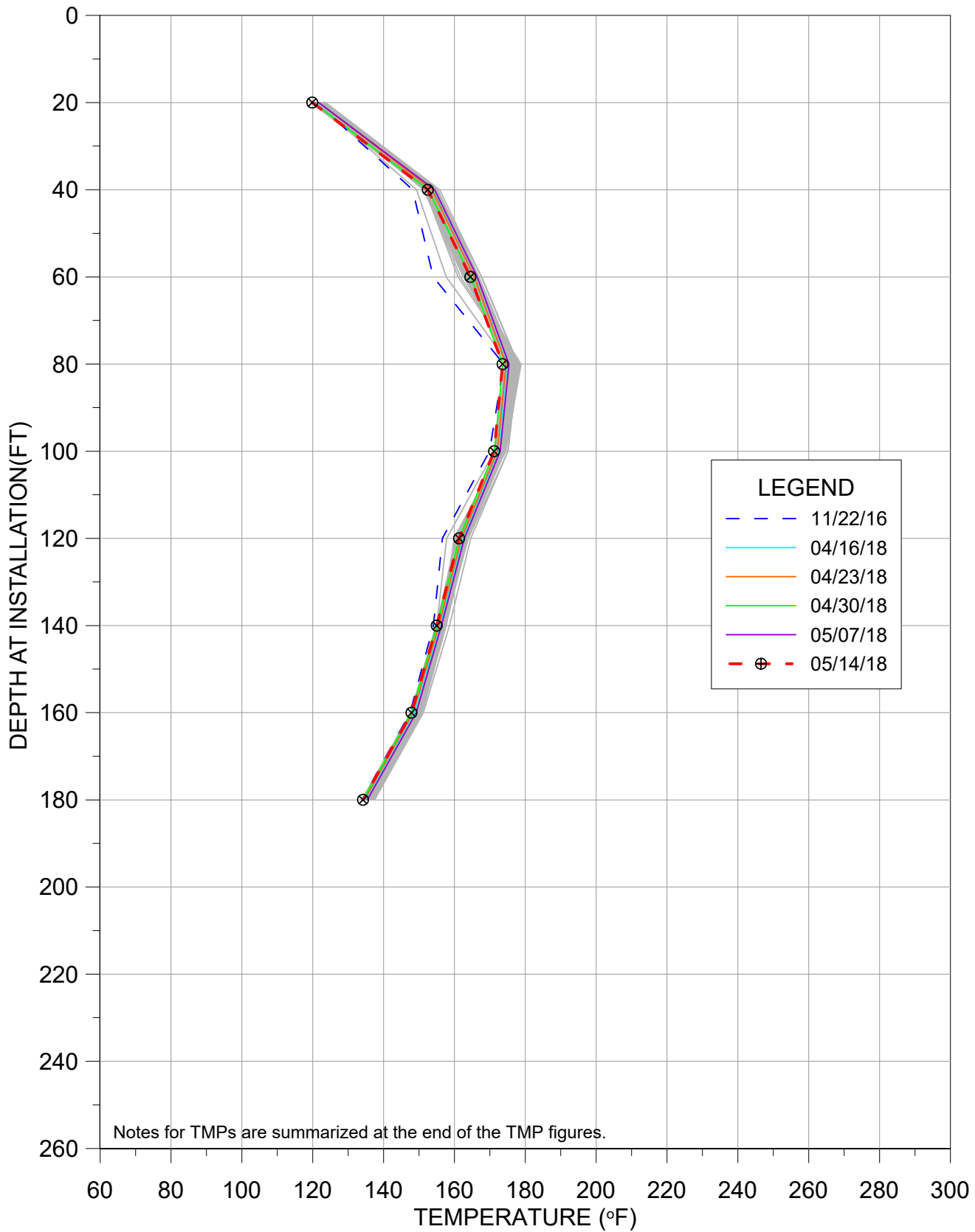


FEBRUARY 2018	DRAWING NO.:
DESIGNED BY: PML	
APPROVED BY: ---	
REVISION	DATE

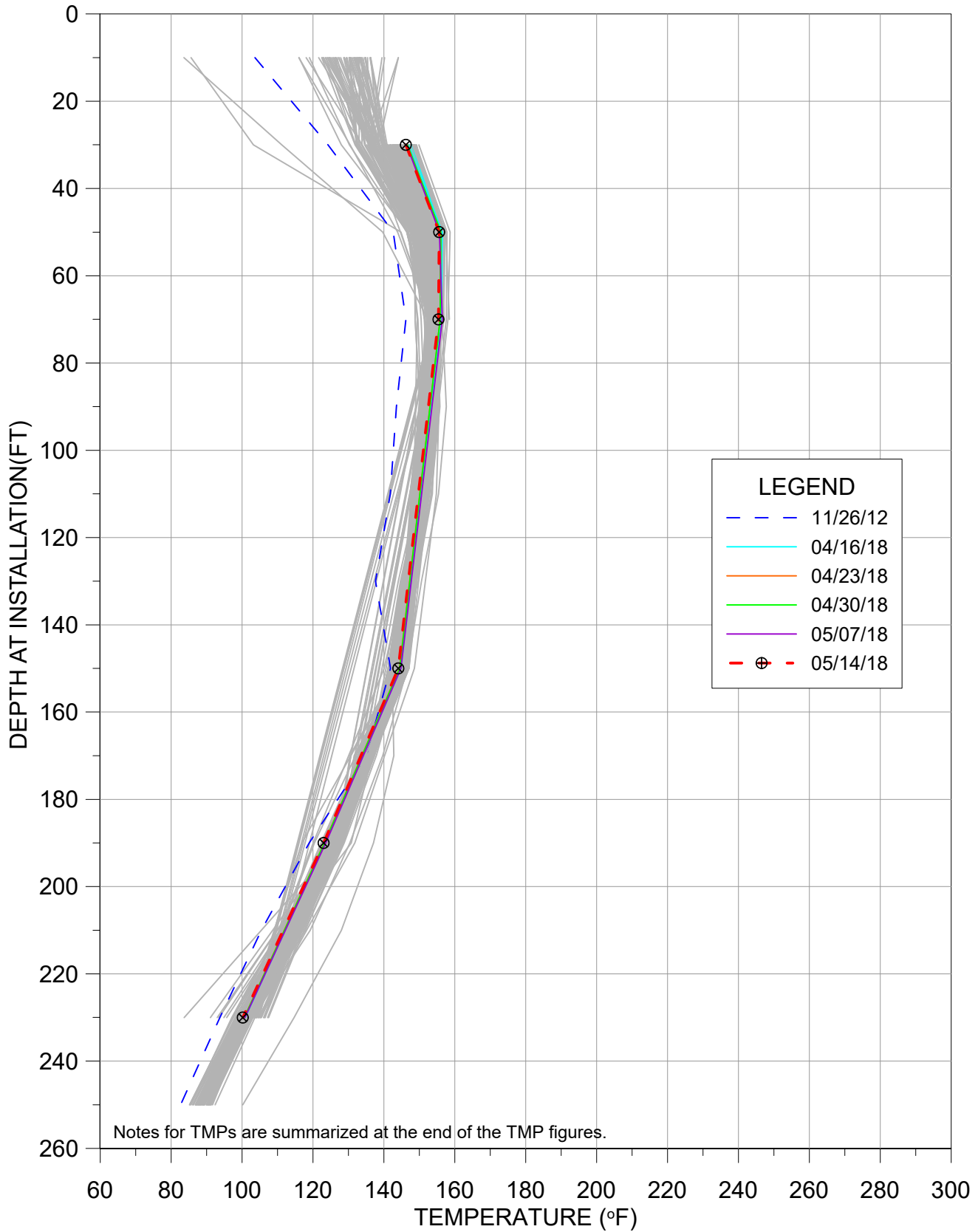
# TMP-1



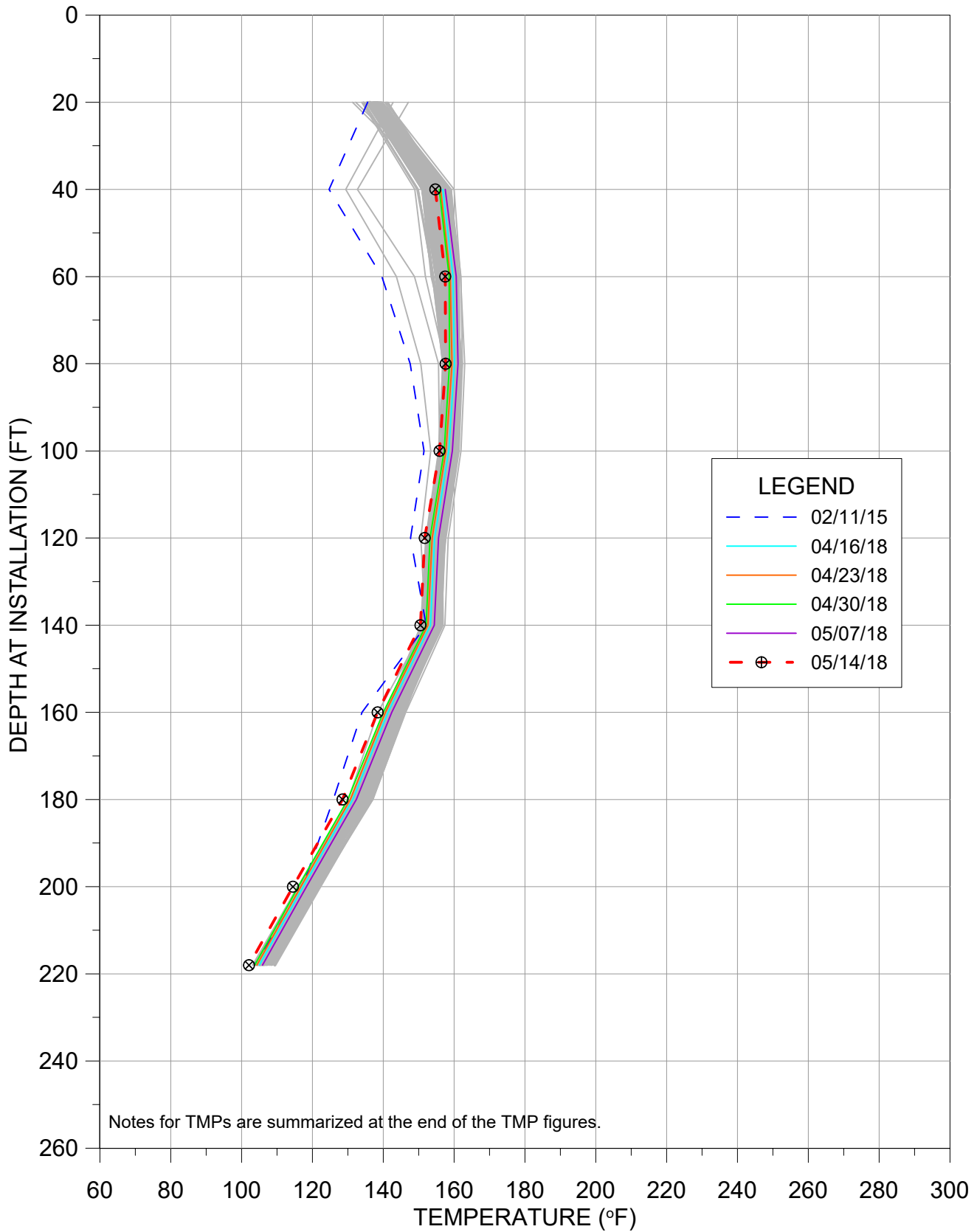
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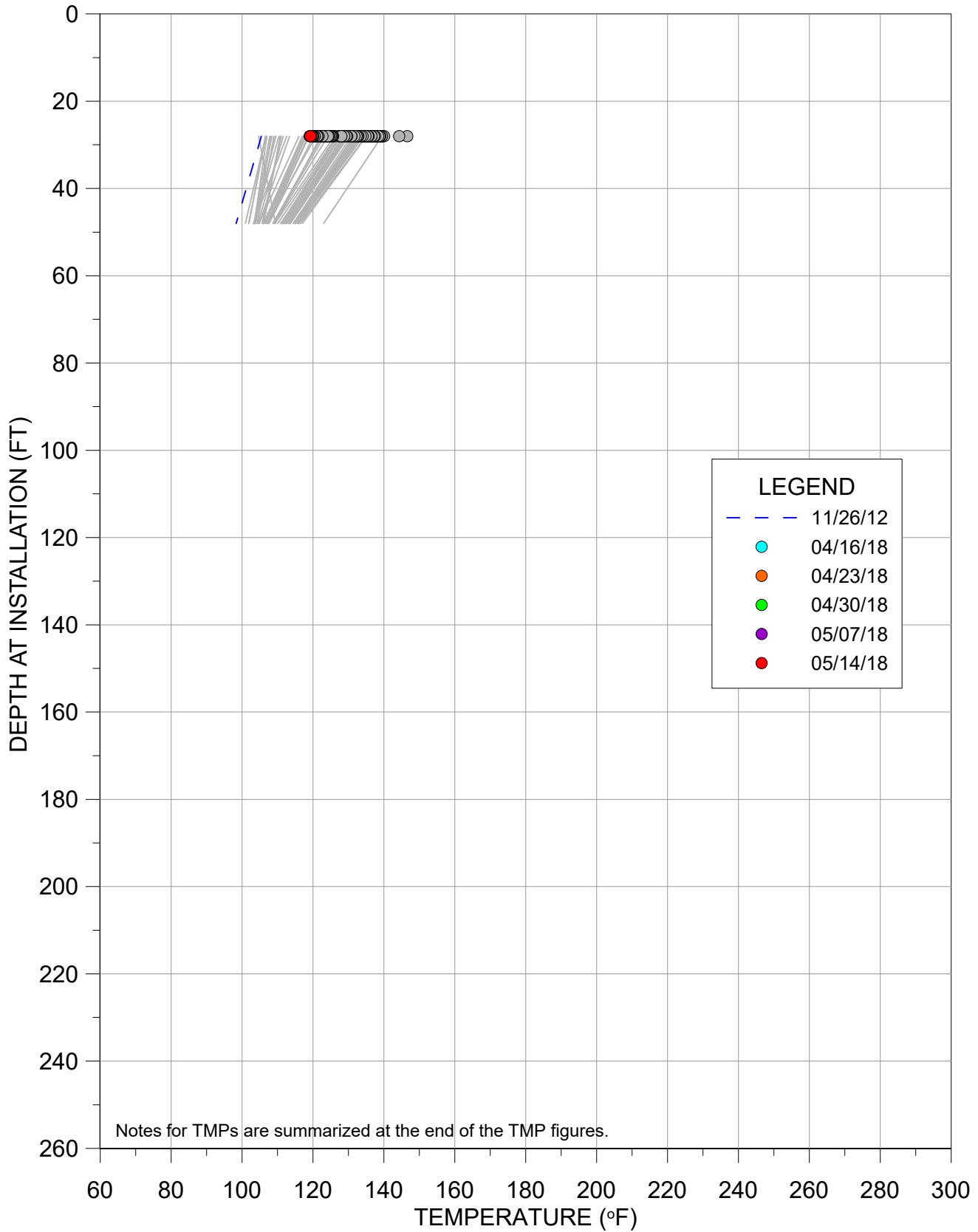
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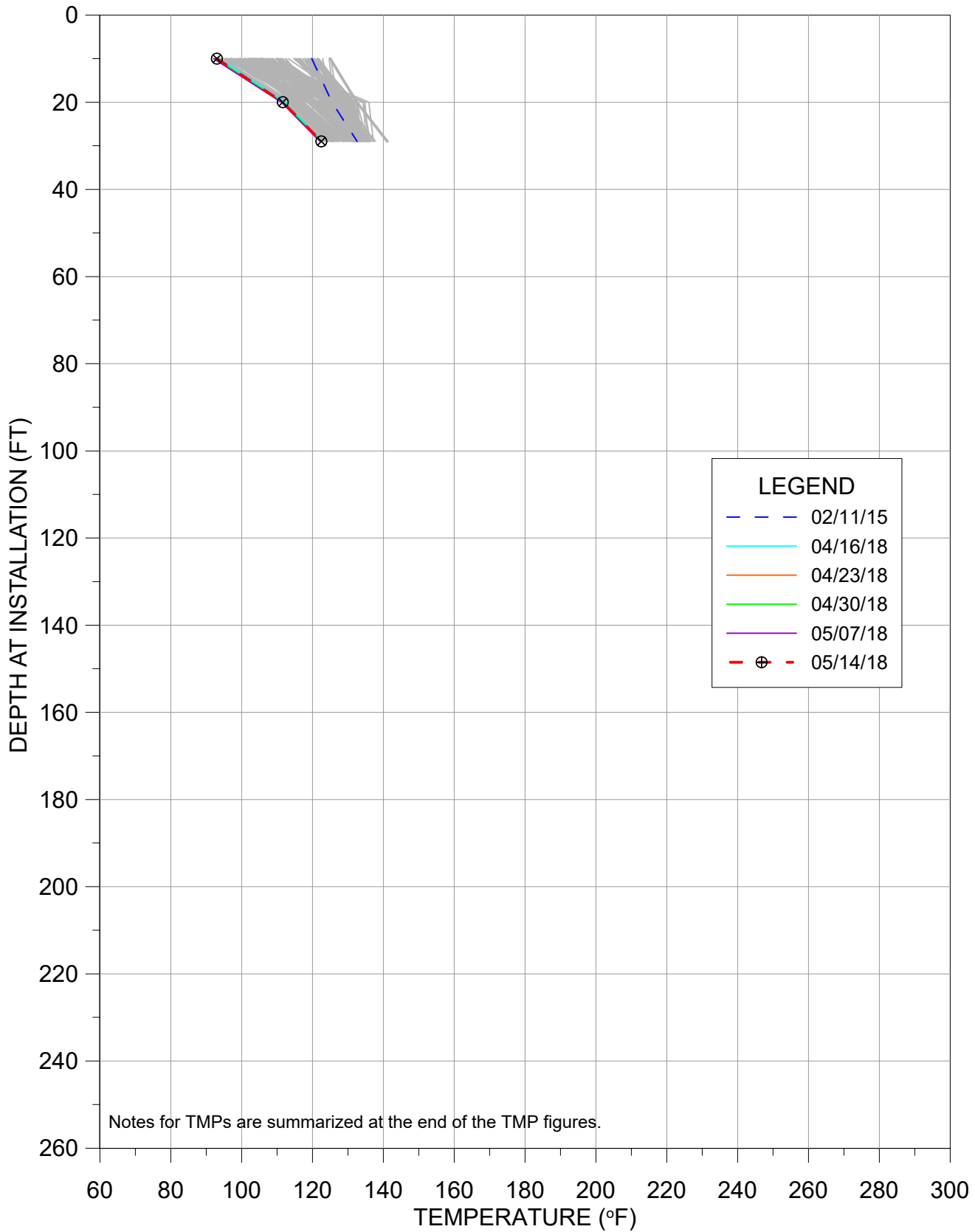
# TMP-3R



# TMP-4

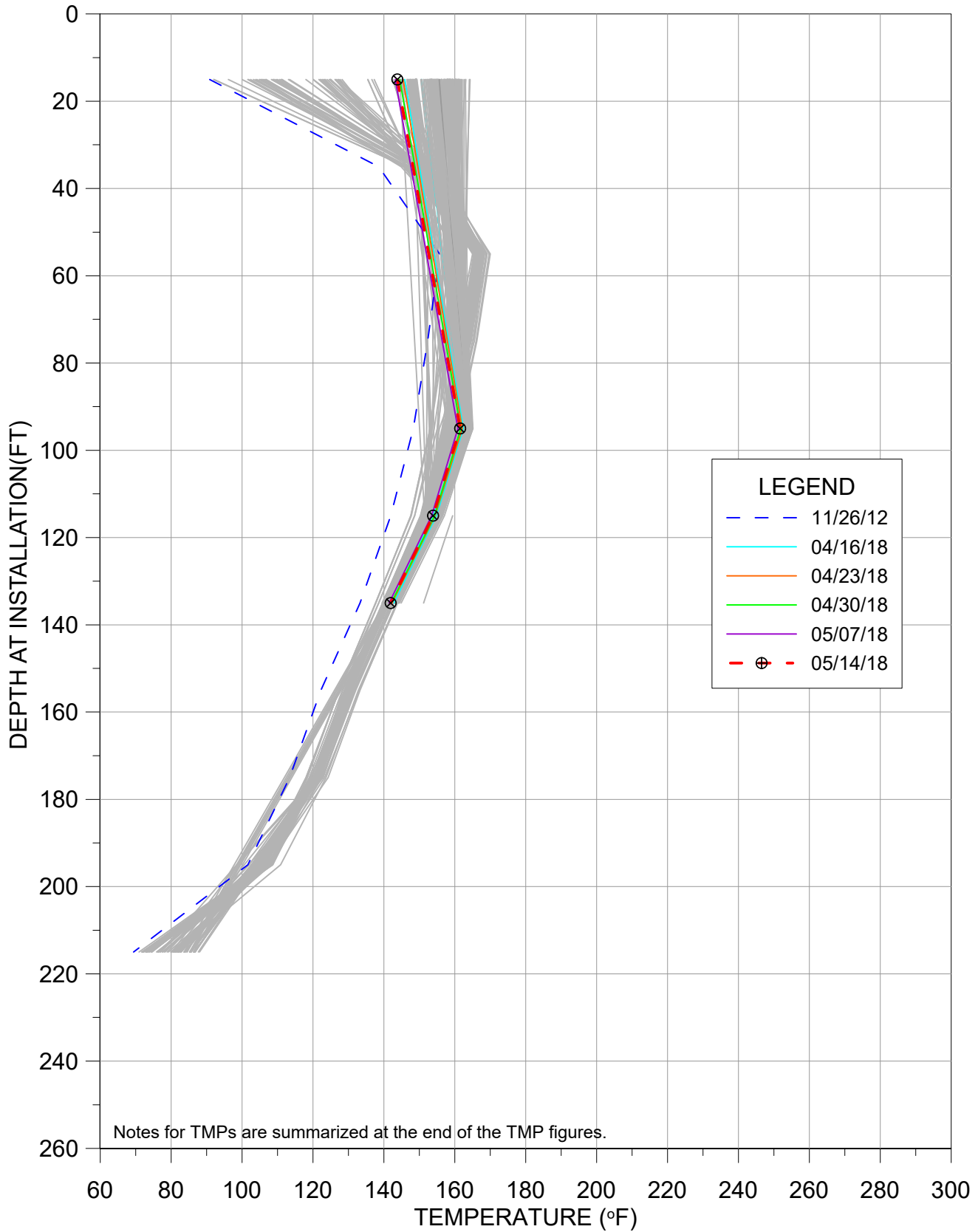


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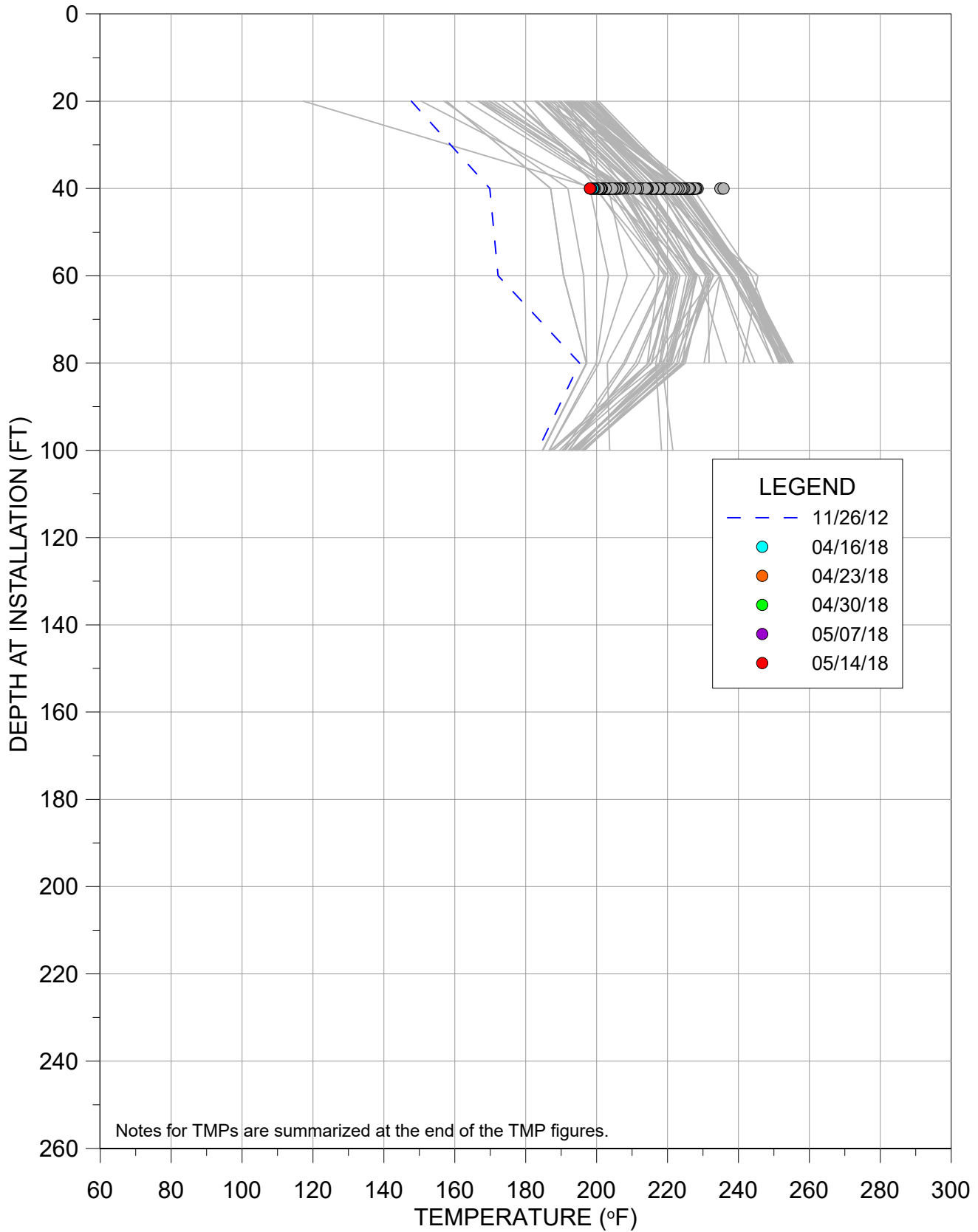




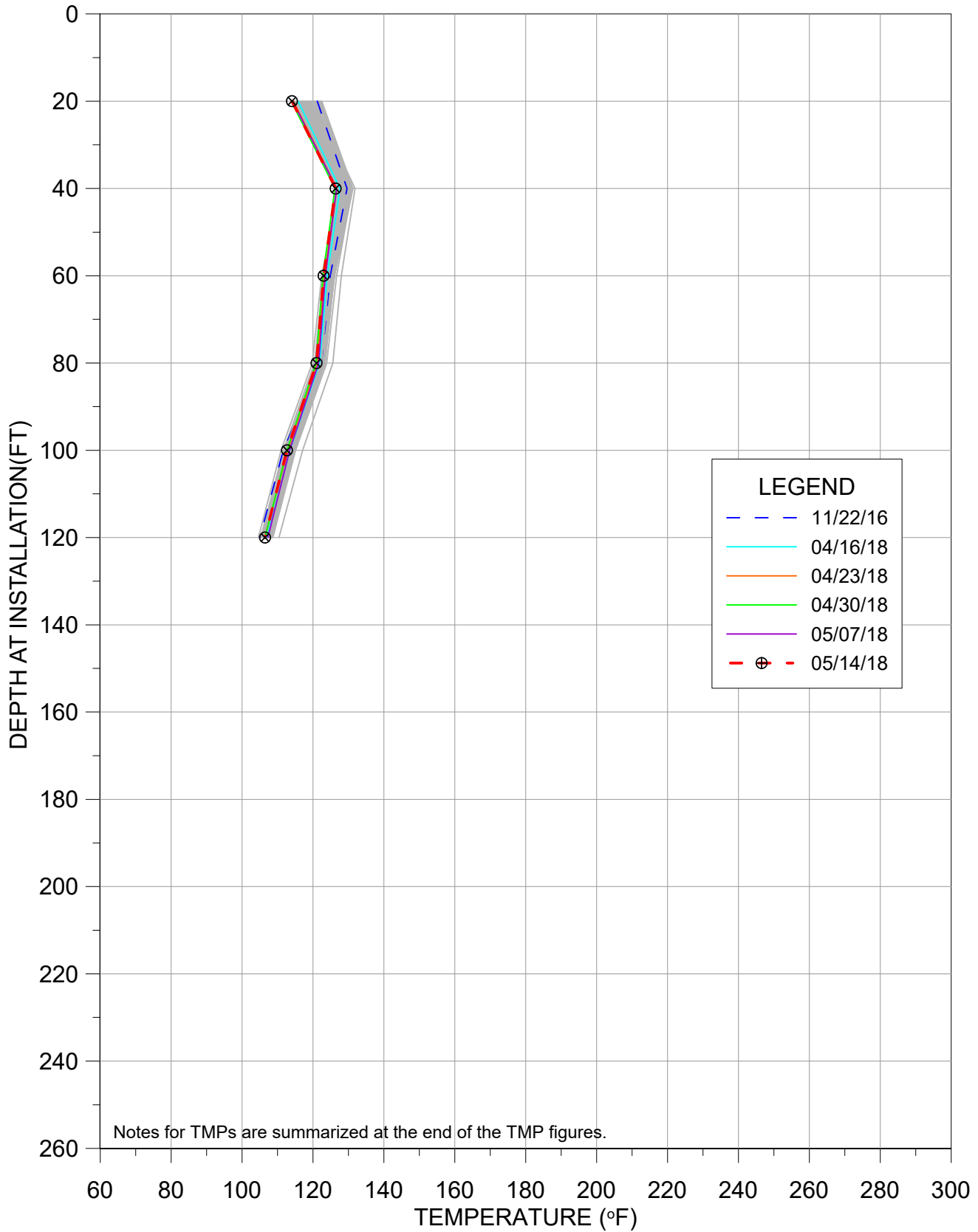
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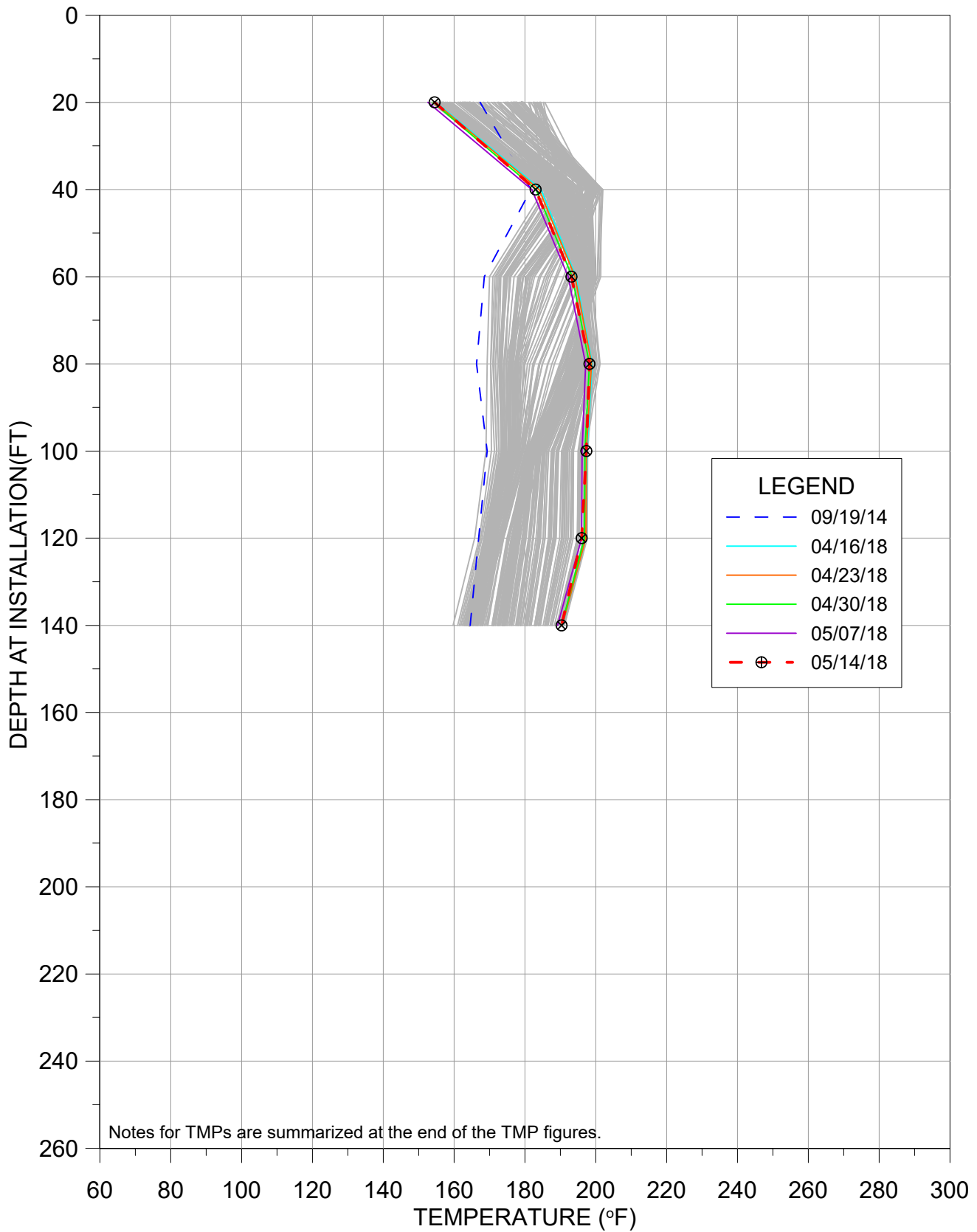
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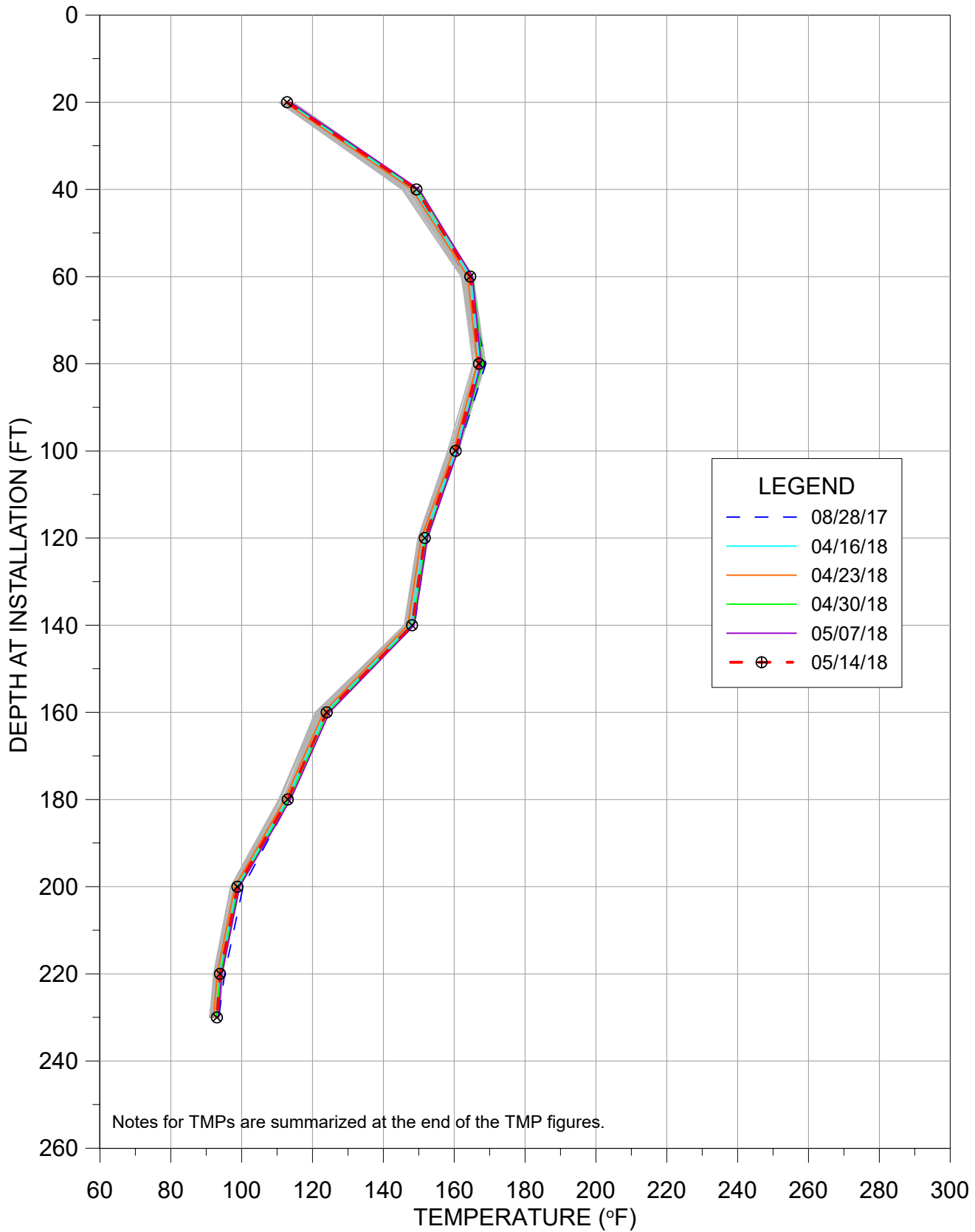
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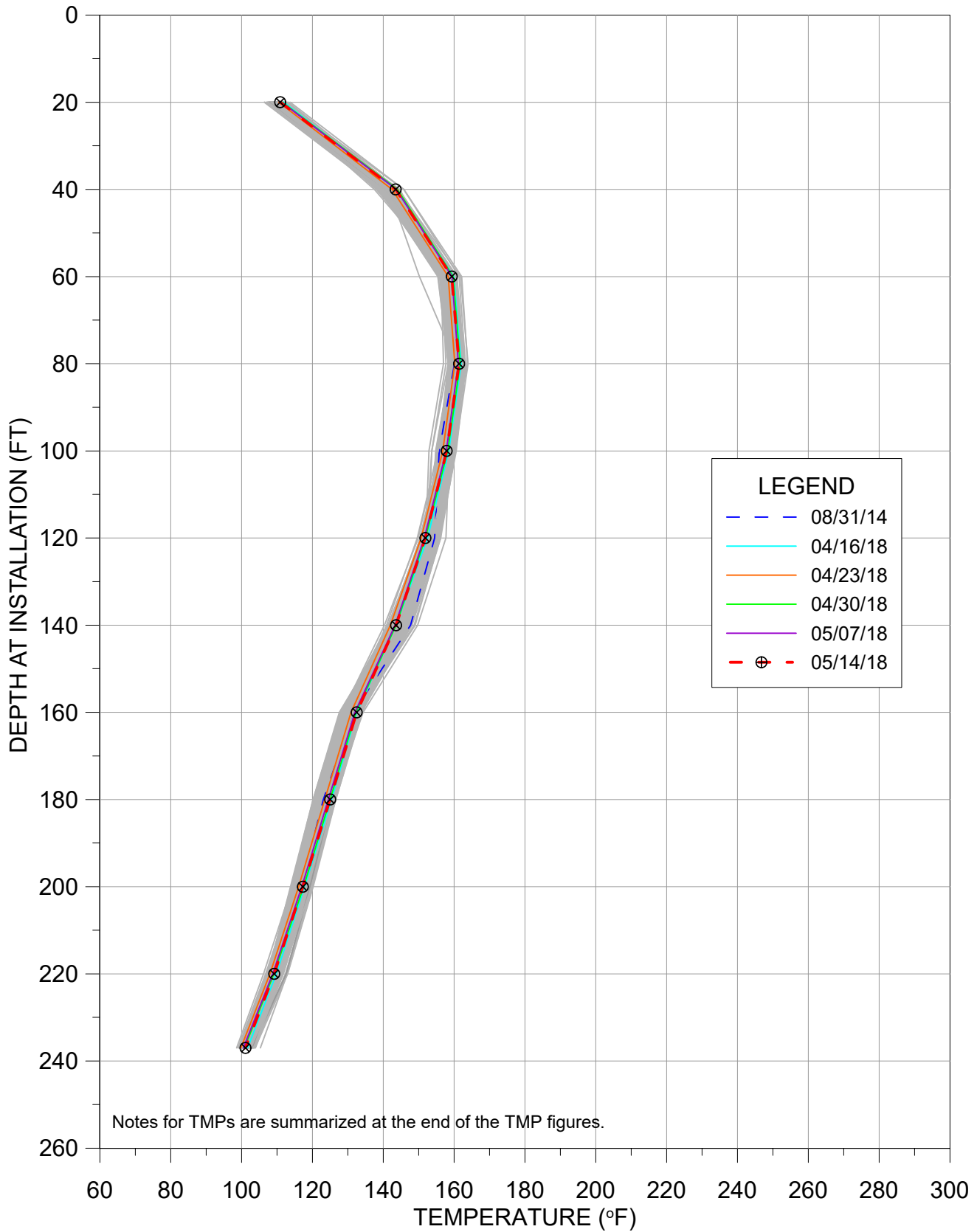
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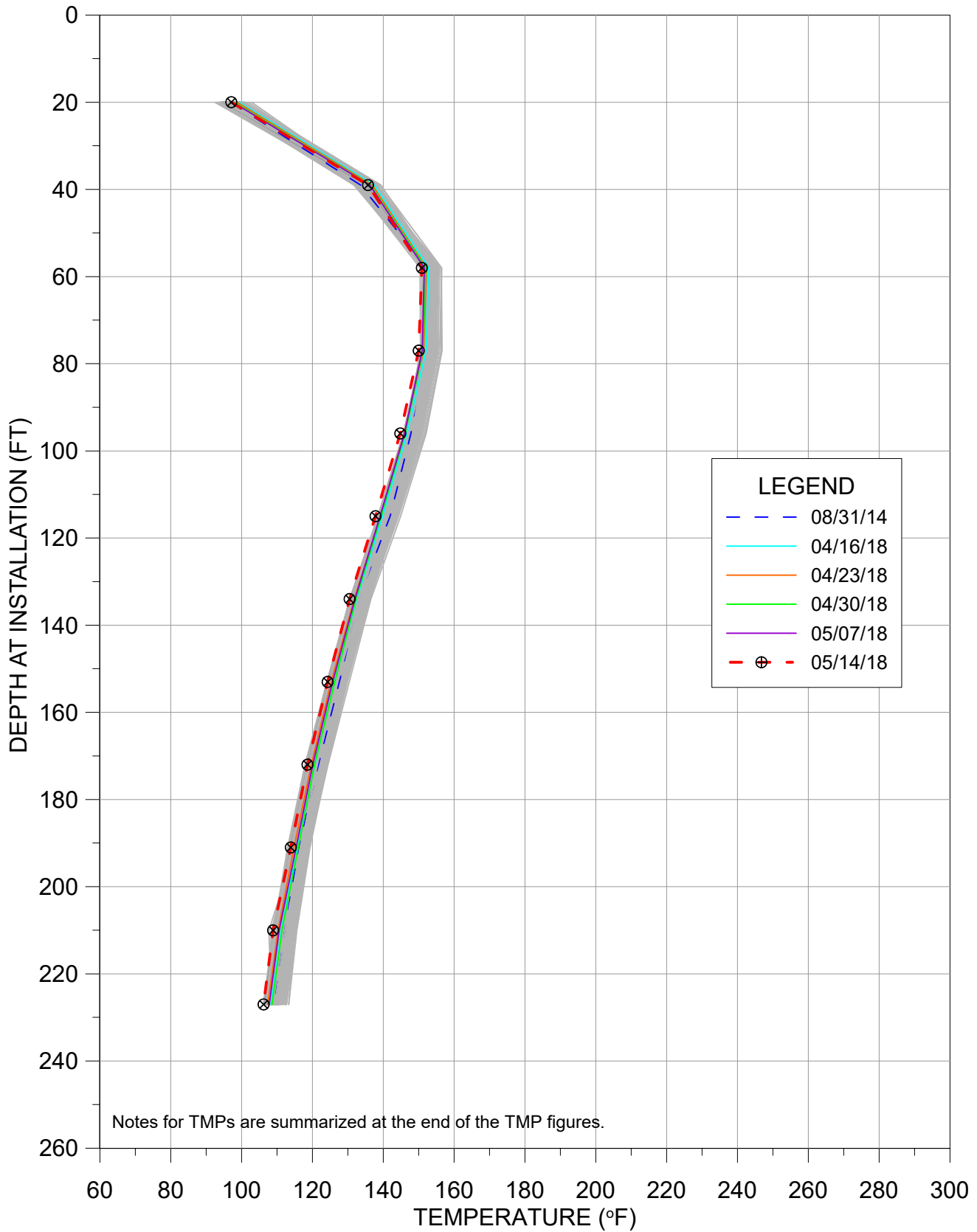
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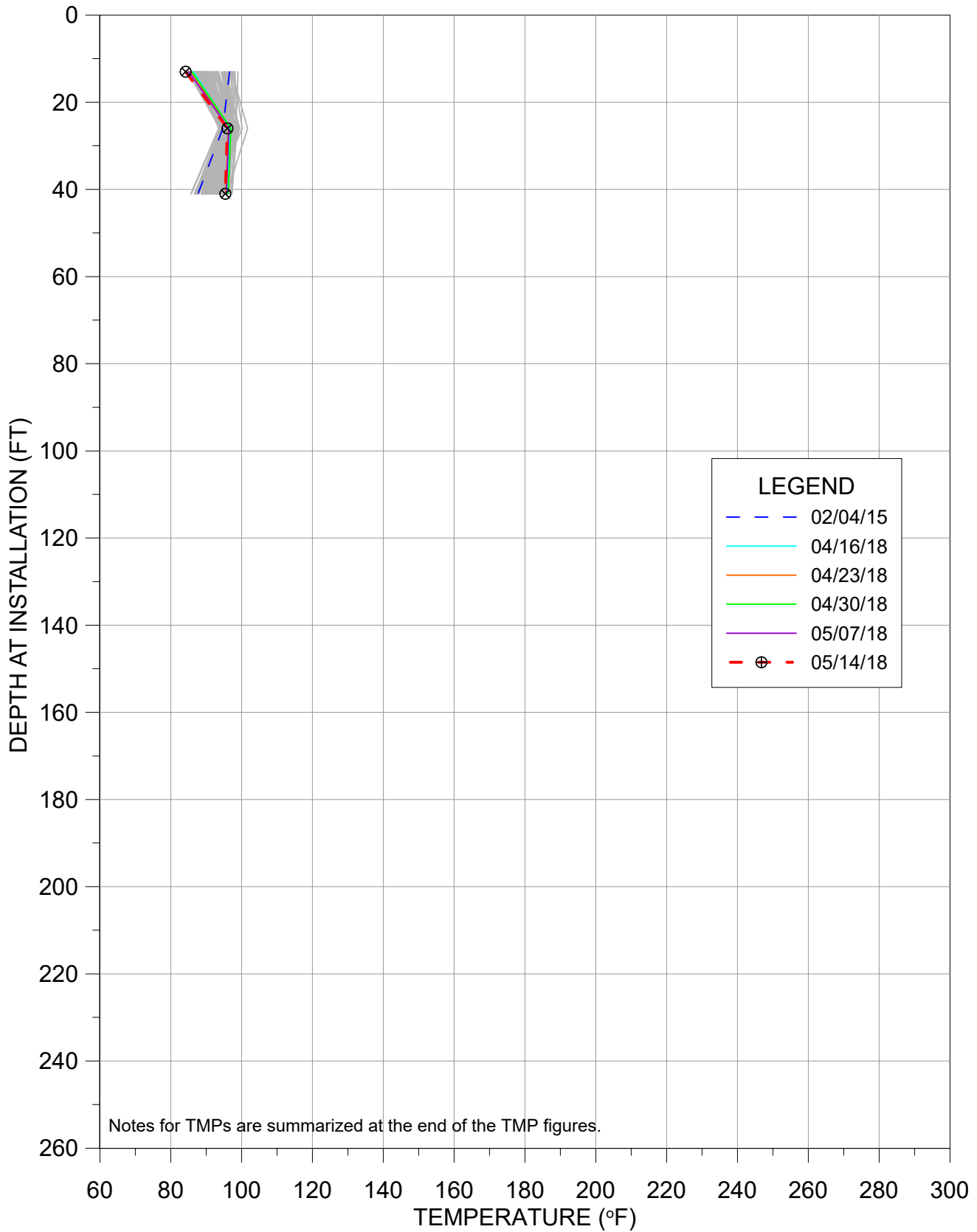
# TMP-17



# TMP-18

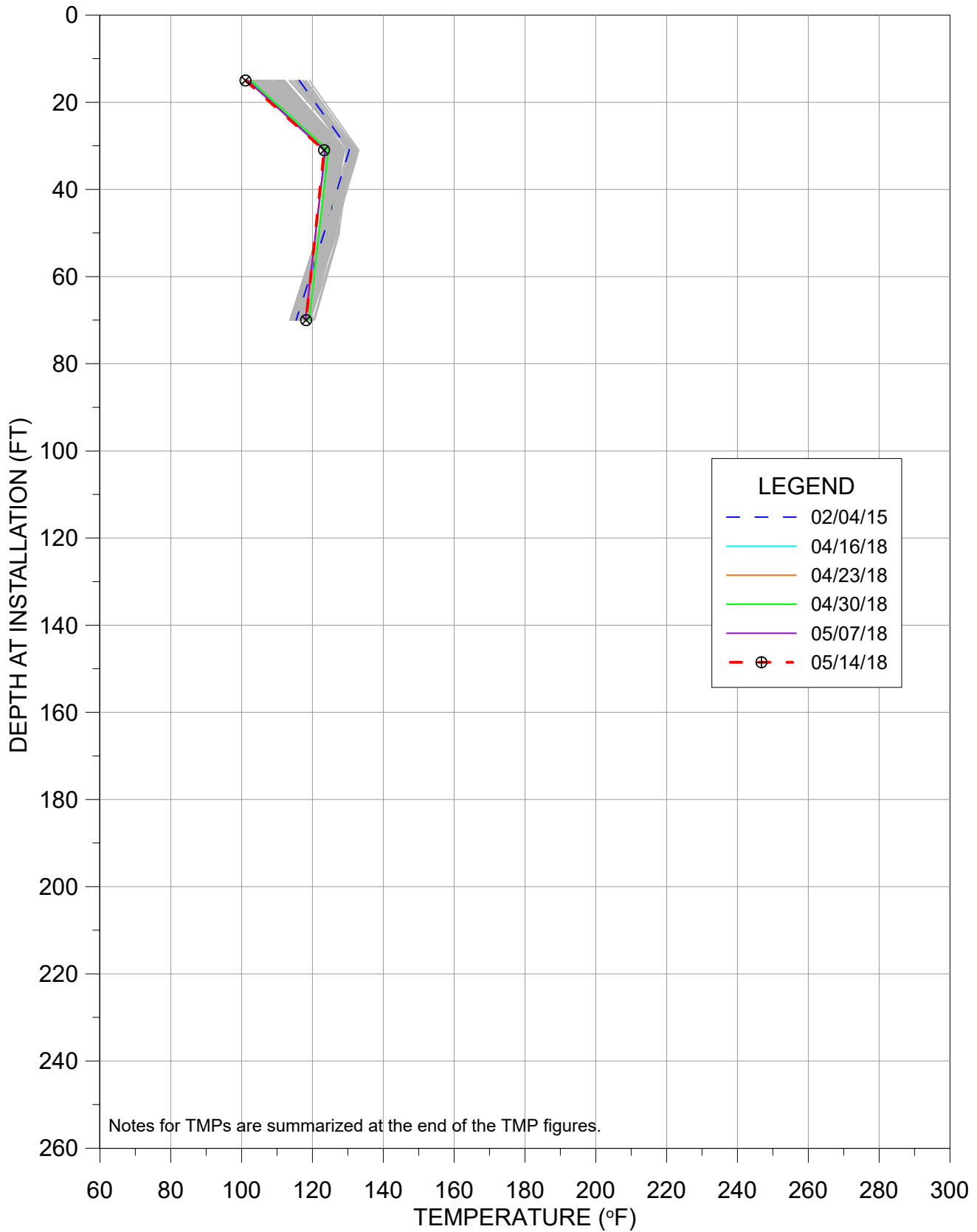


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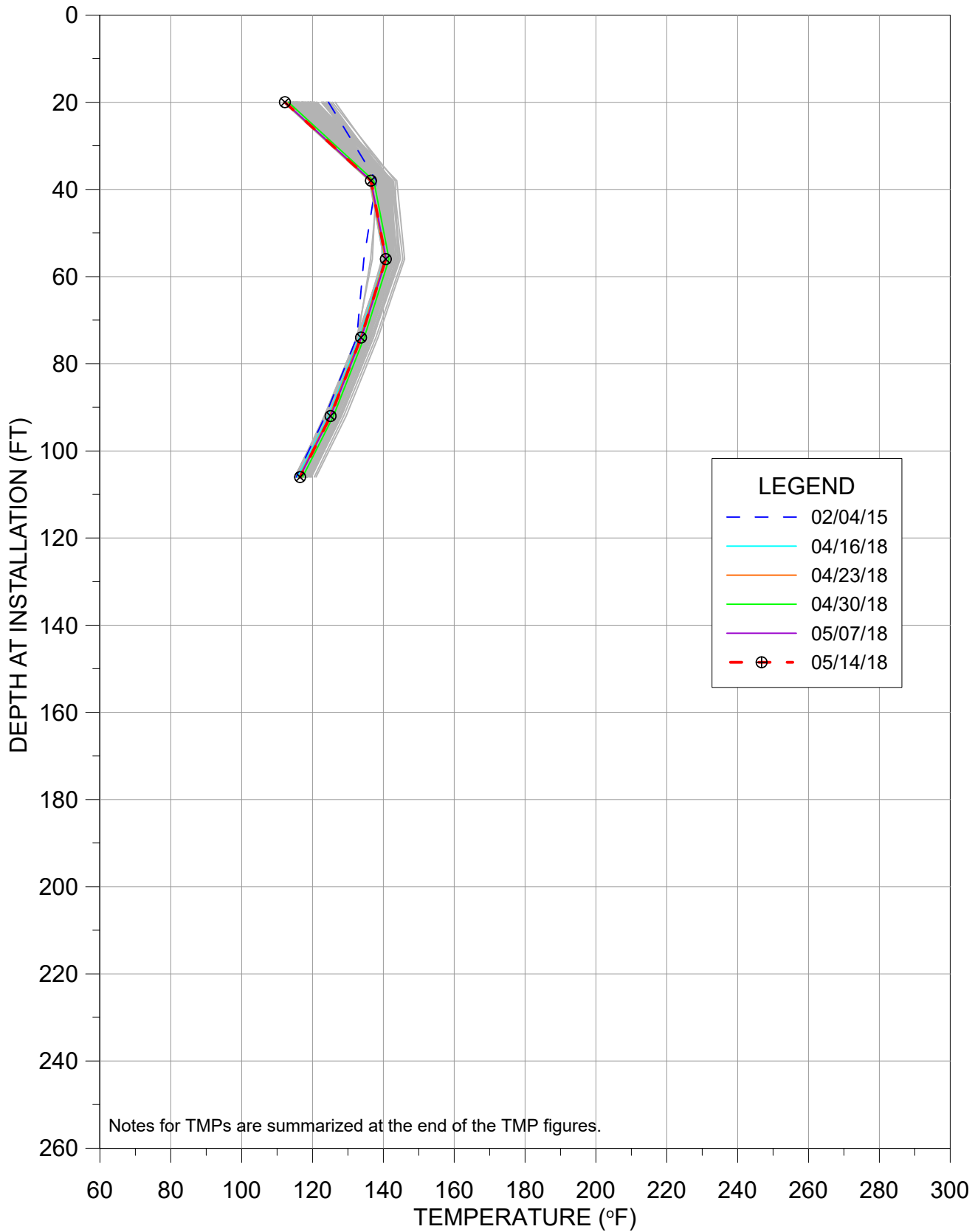




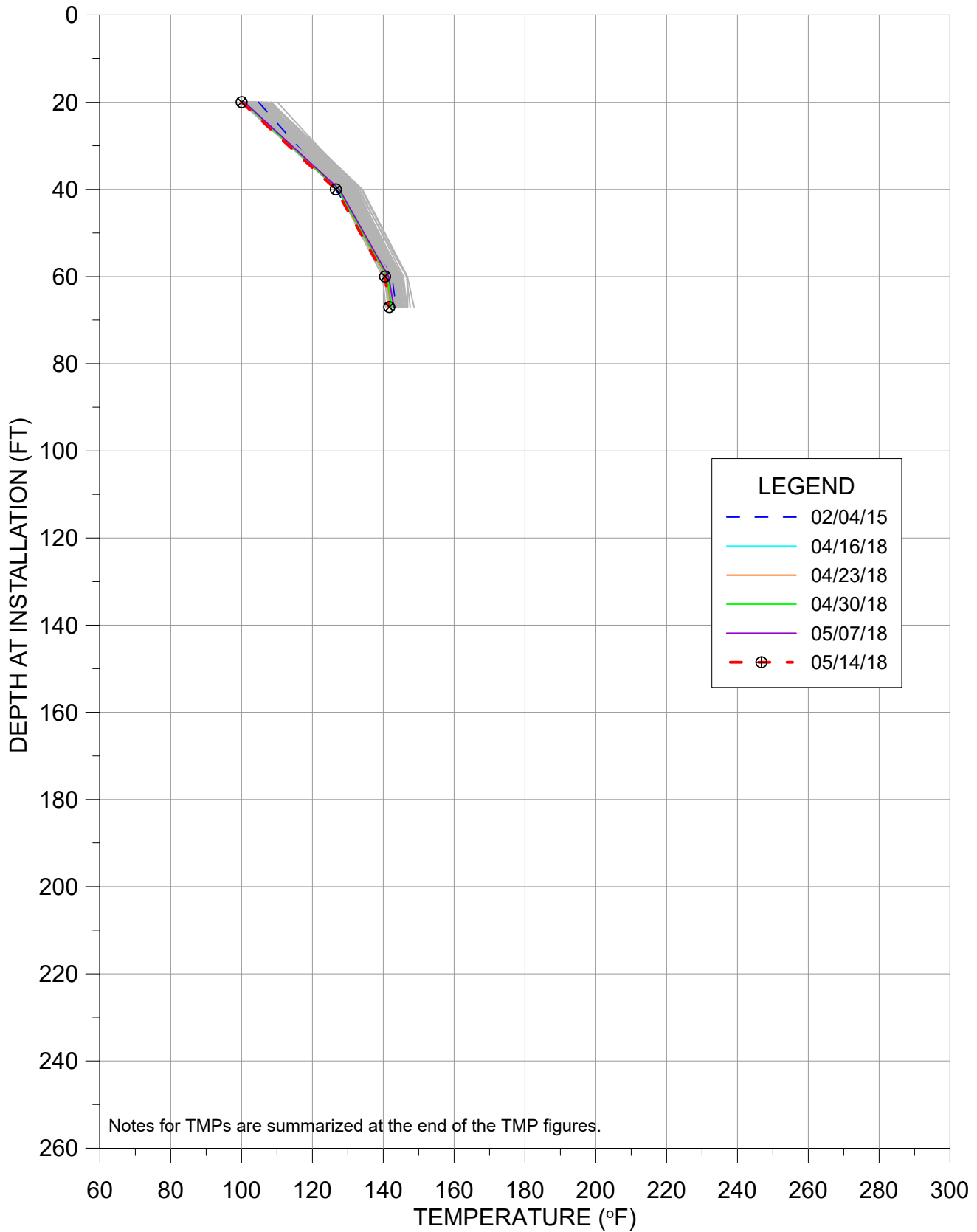
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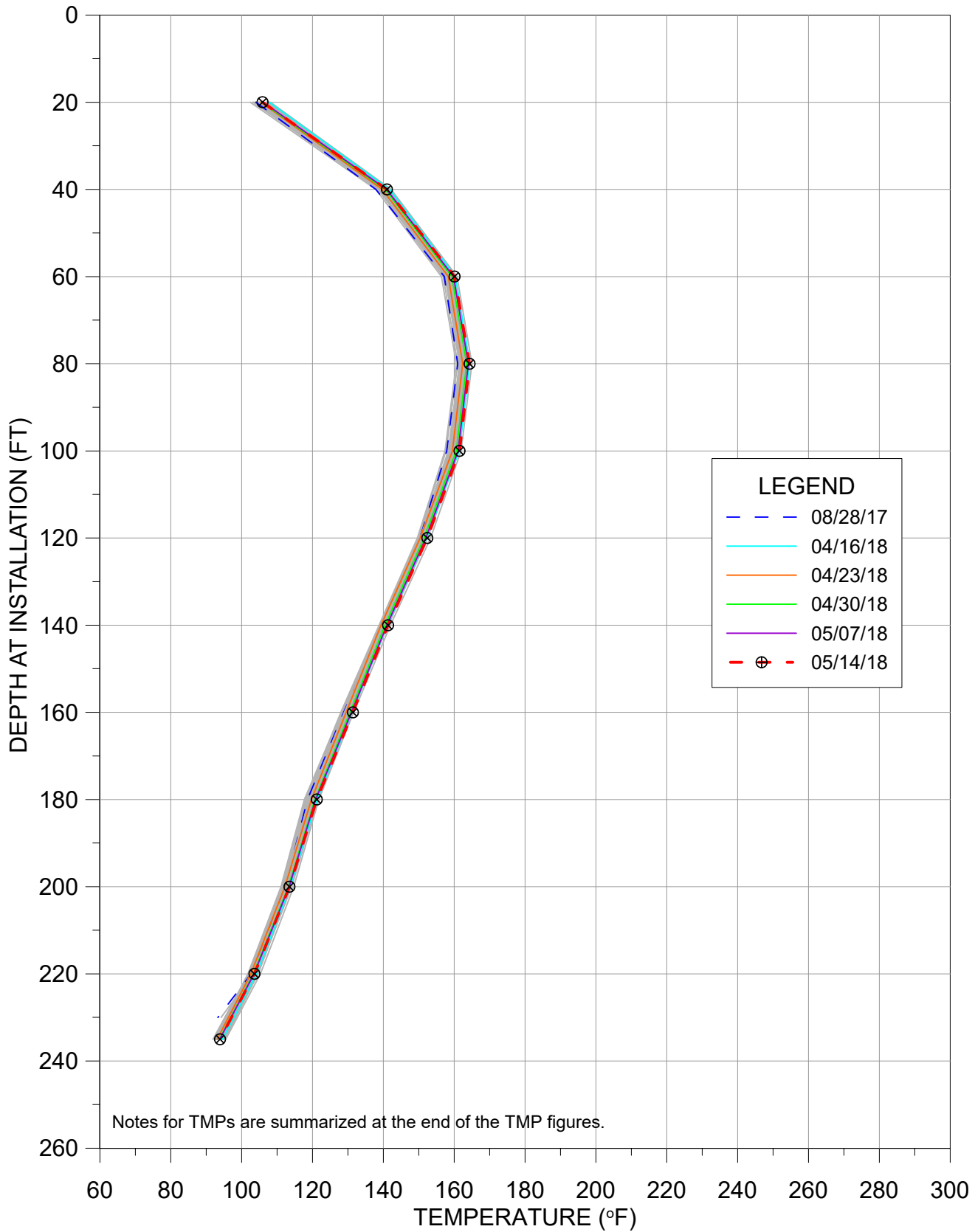
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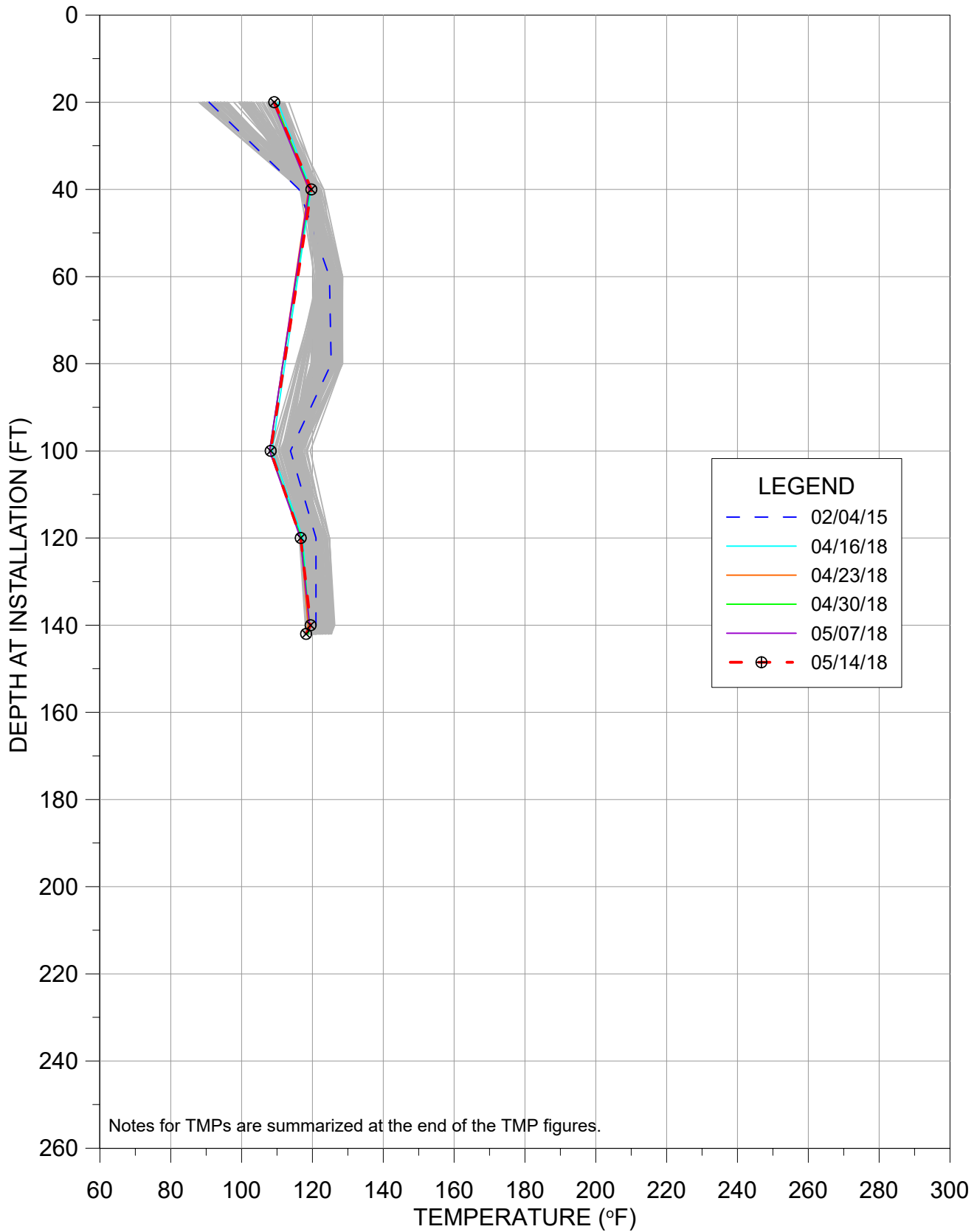
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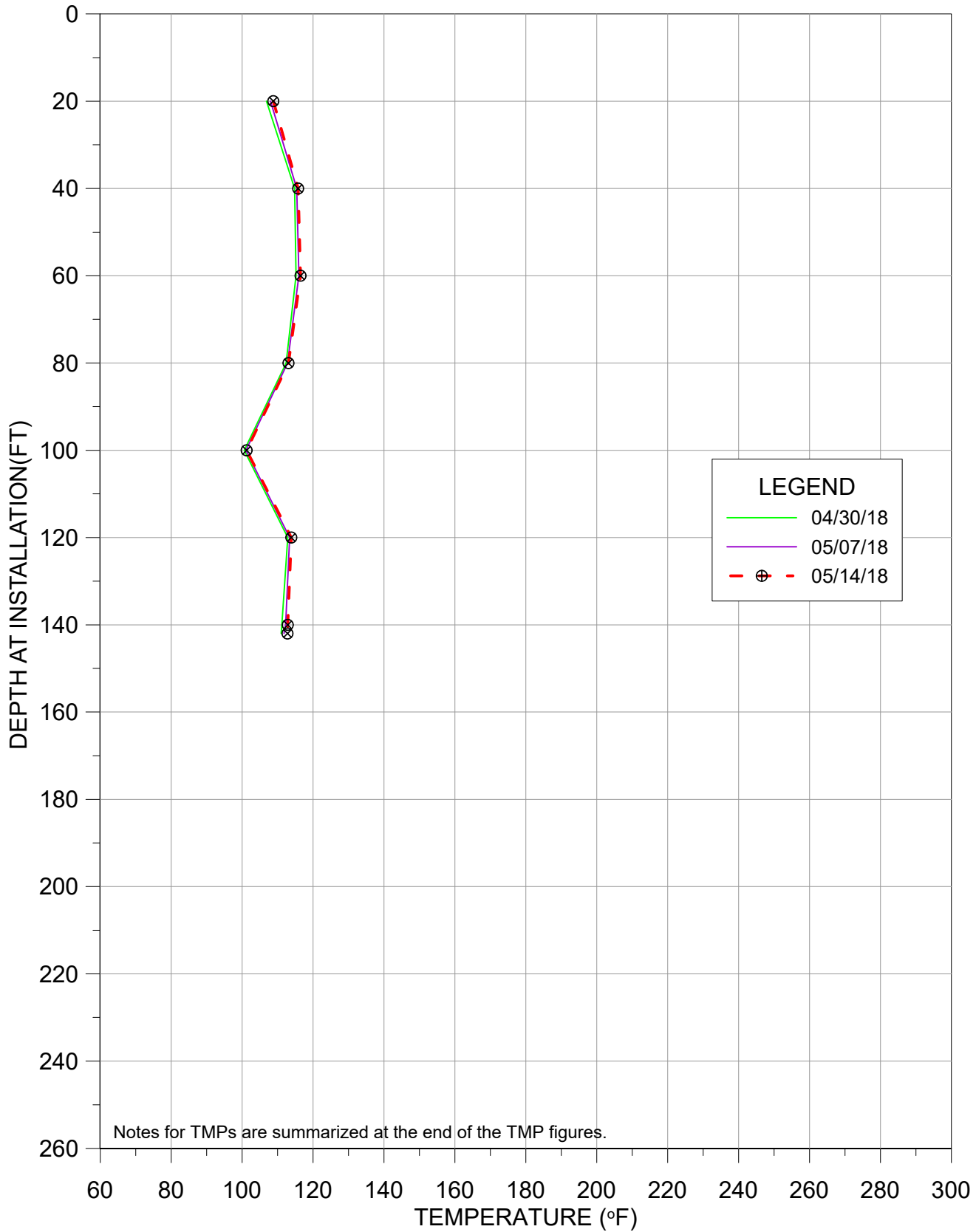
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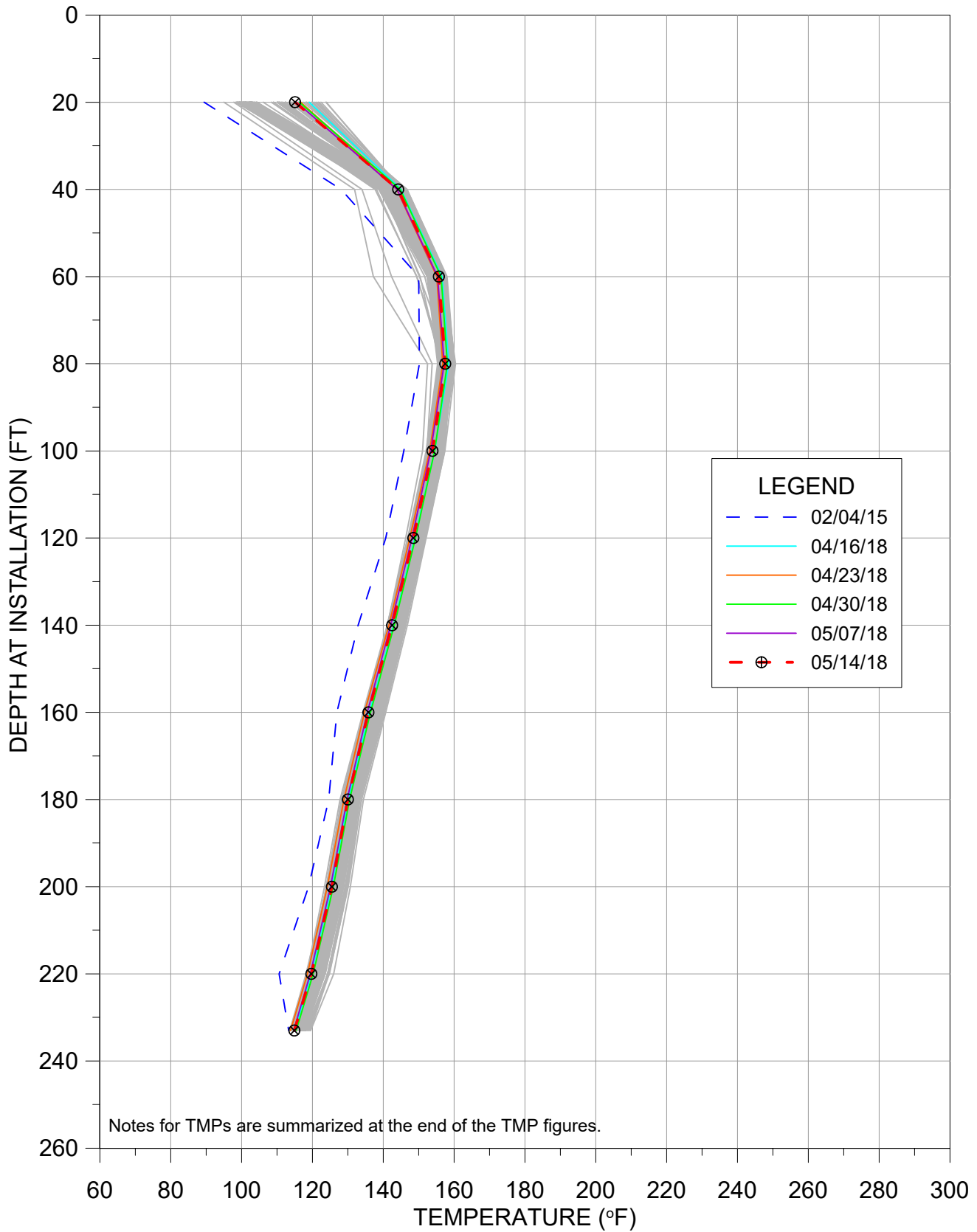
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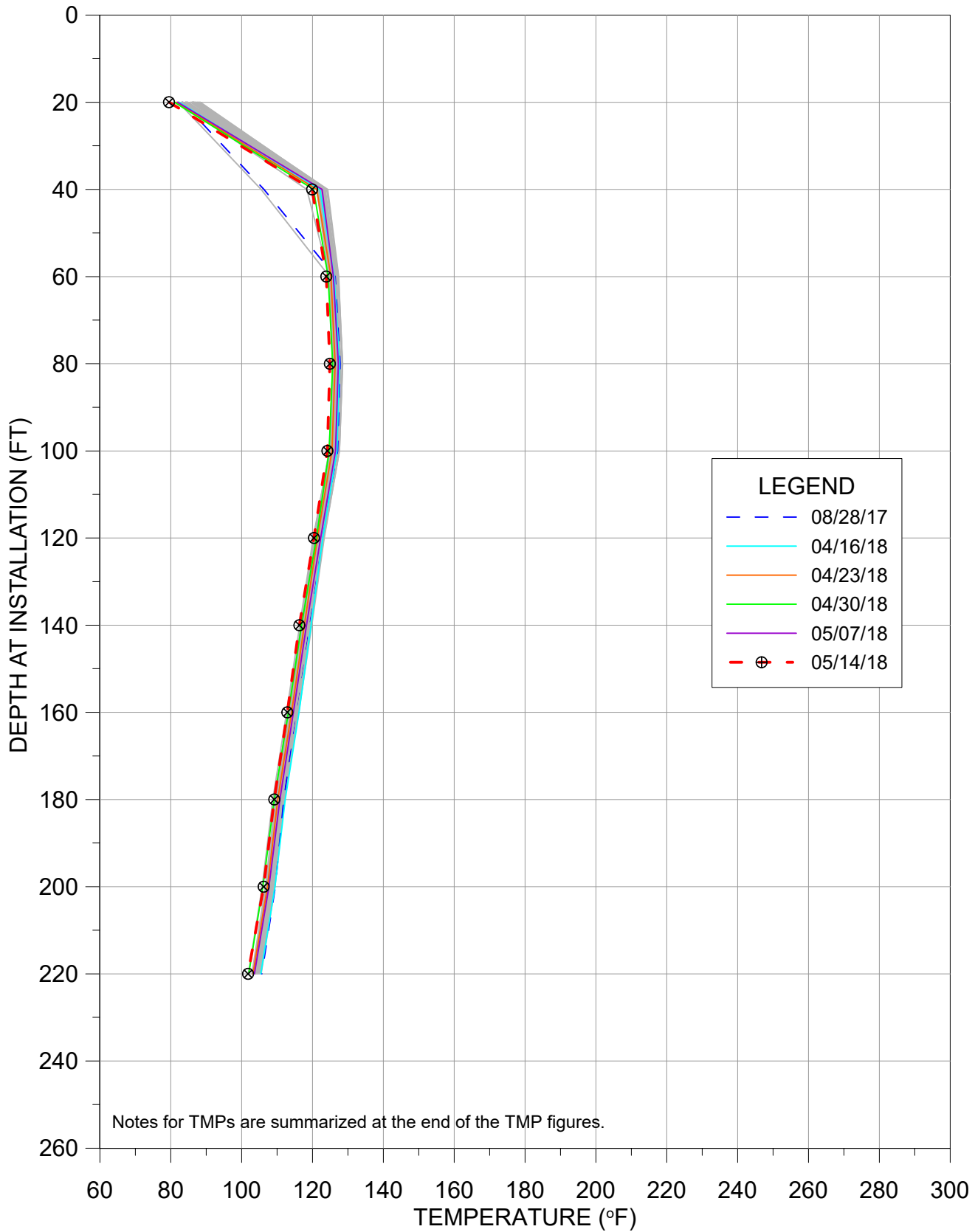
# TMP-26R



# TMP-27

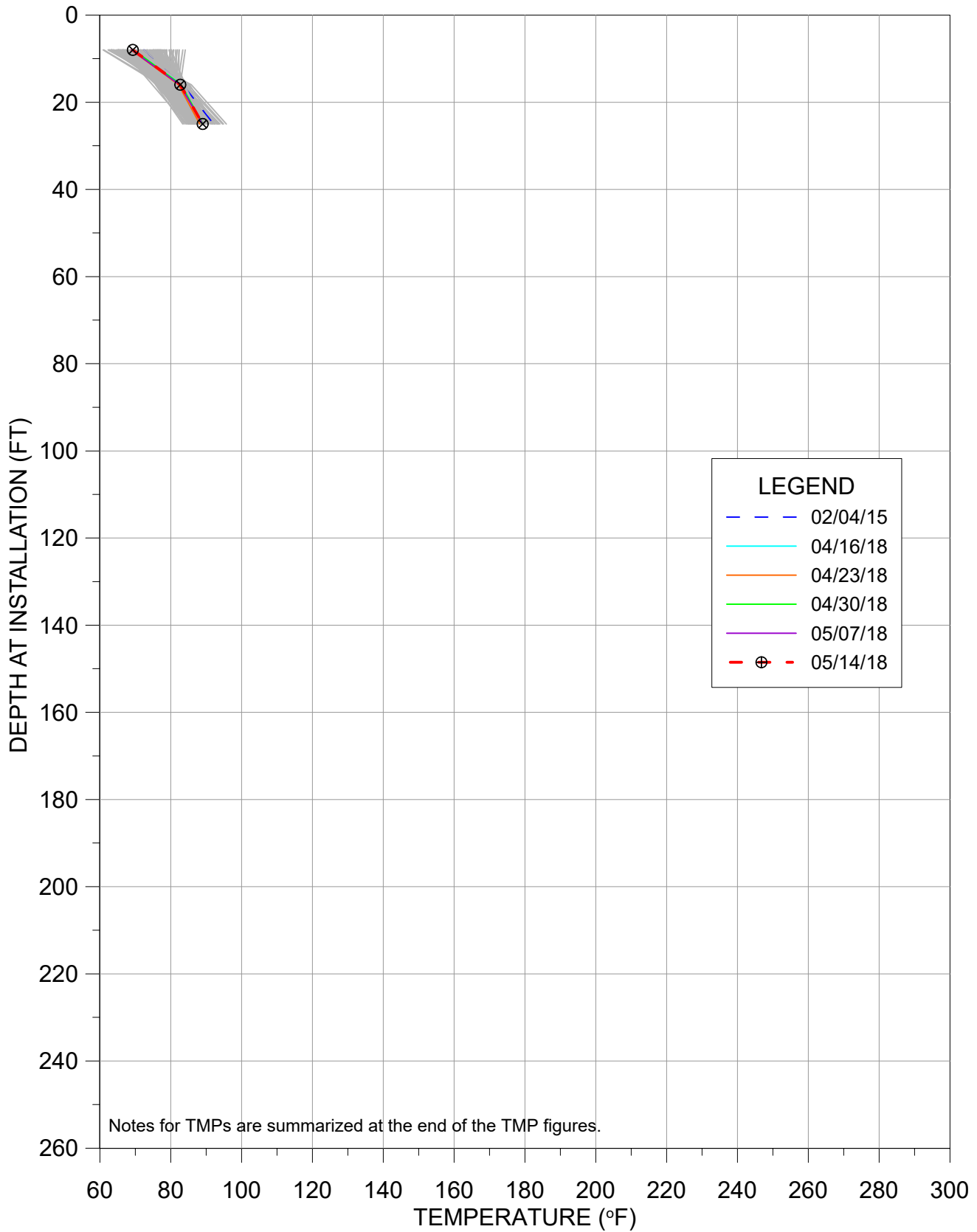


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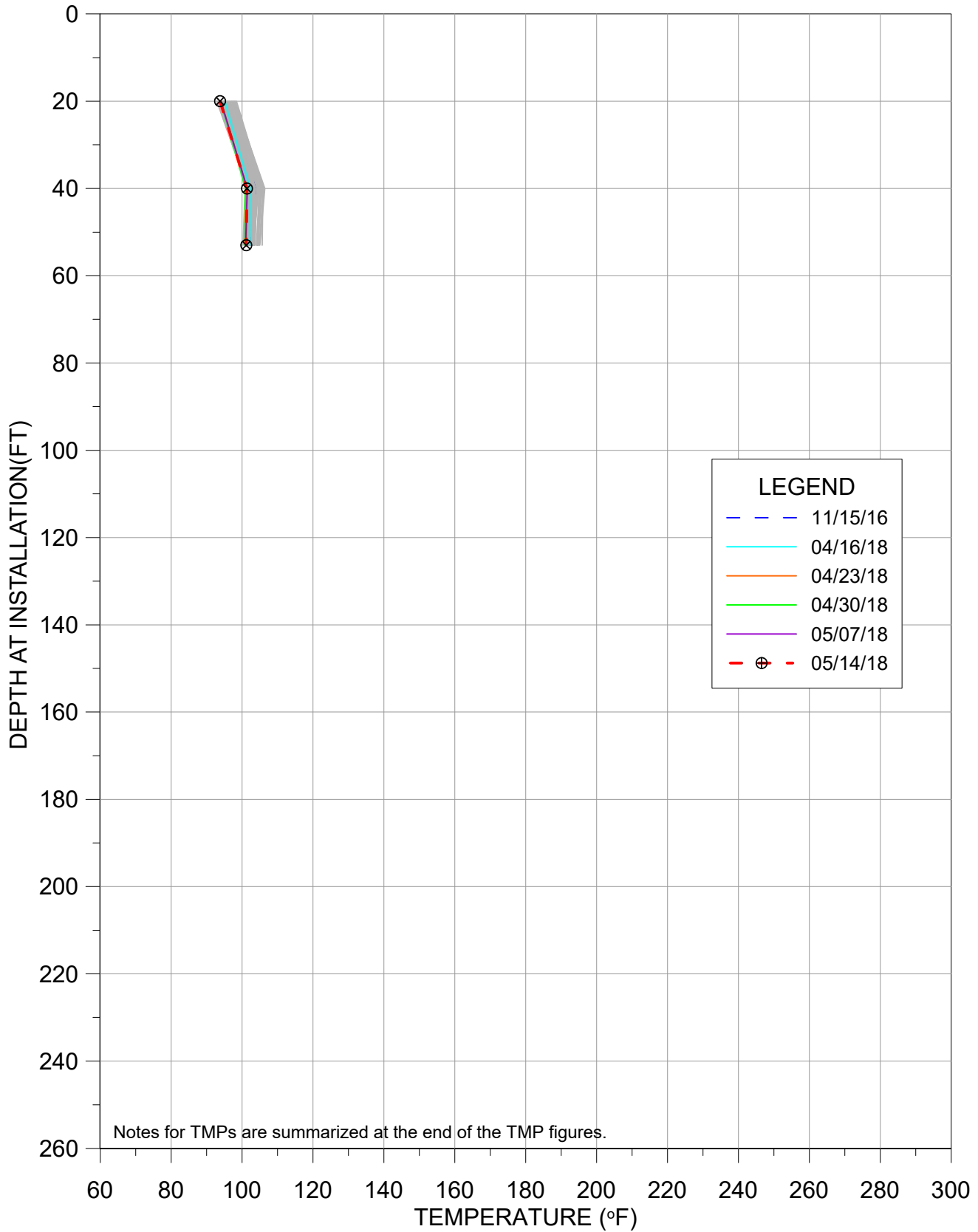




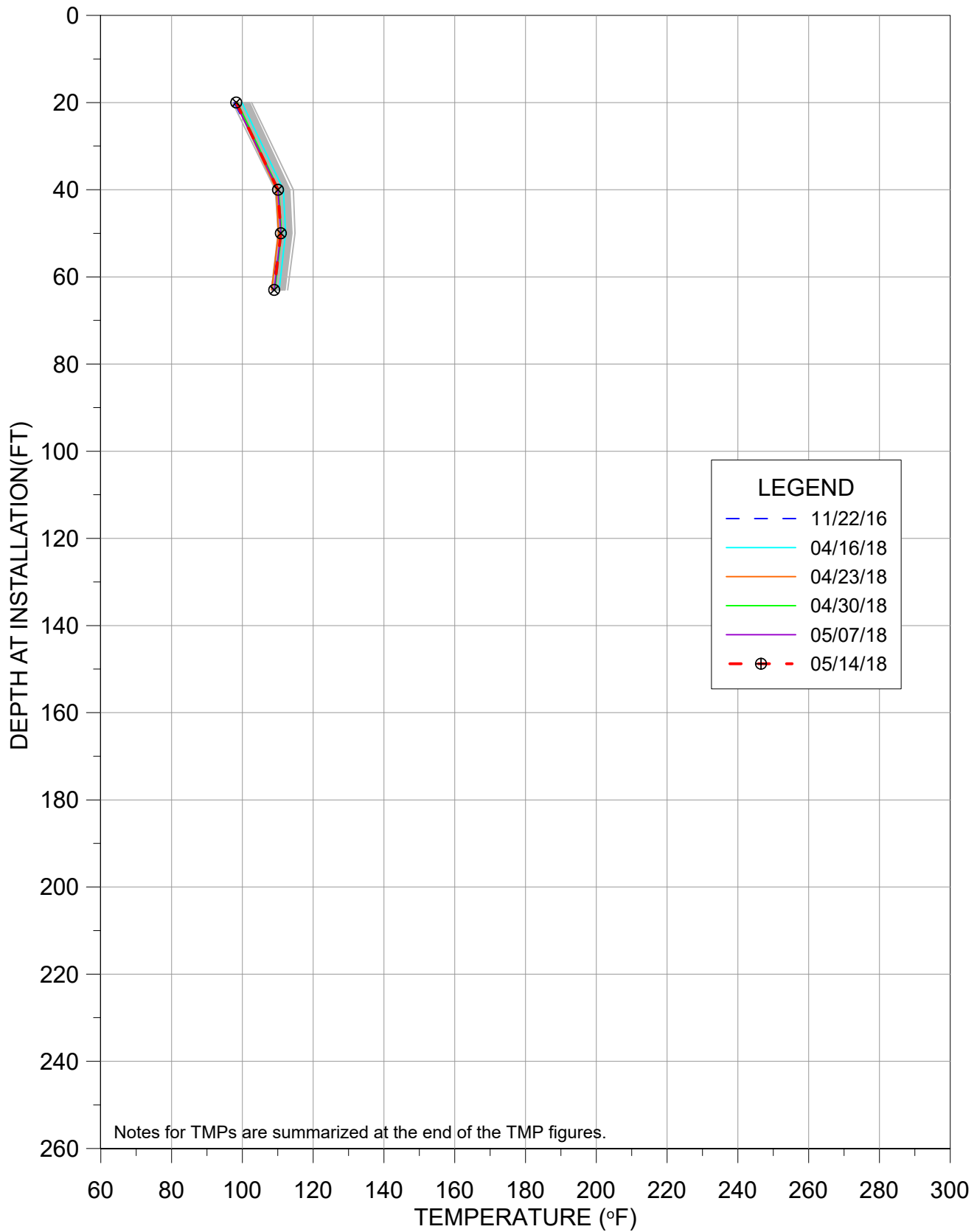
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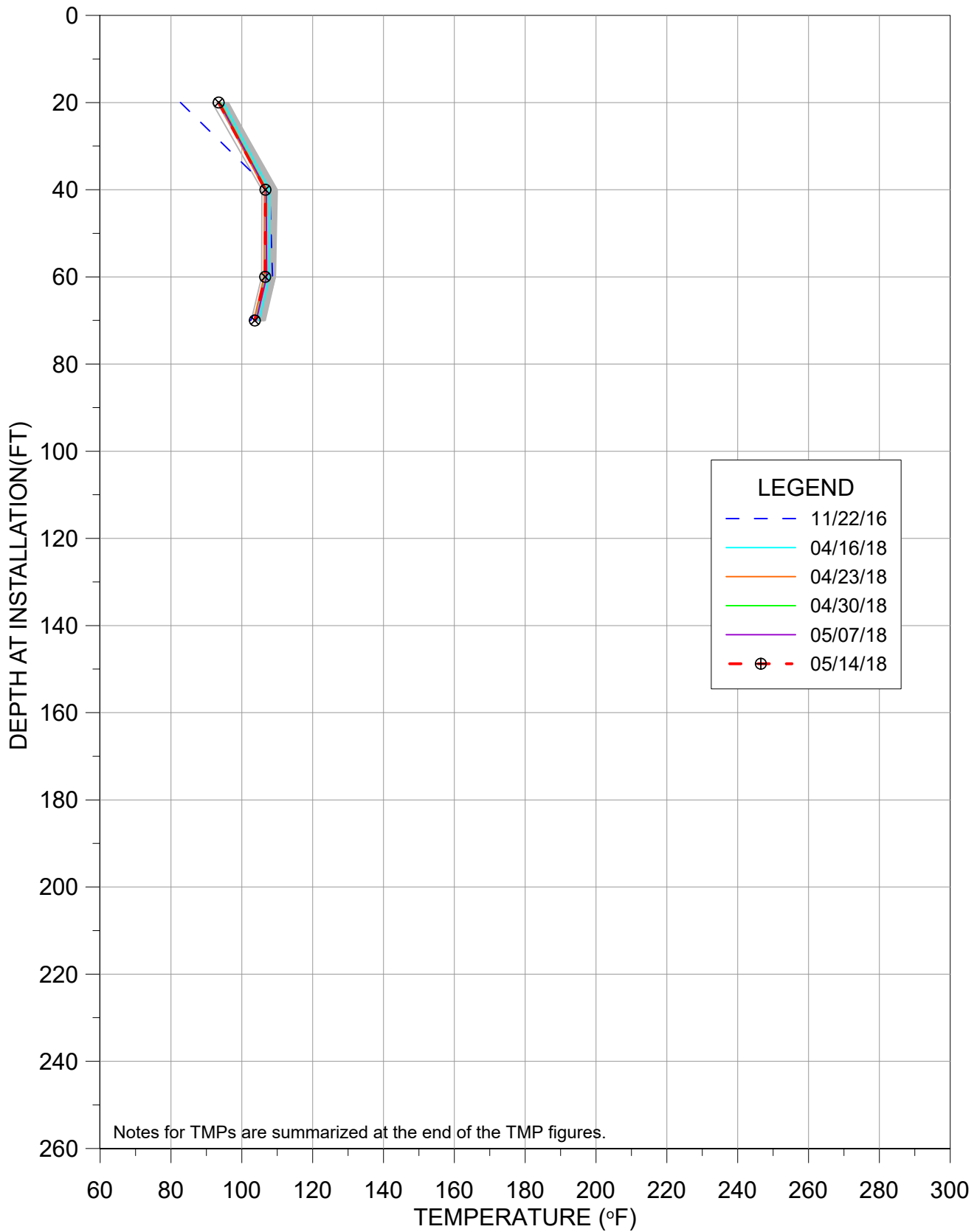
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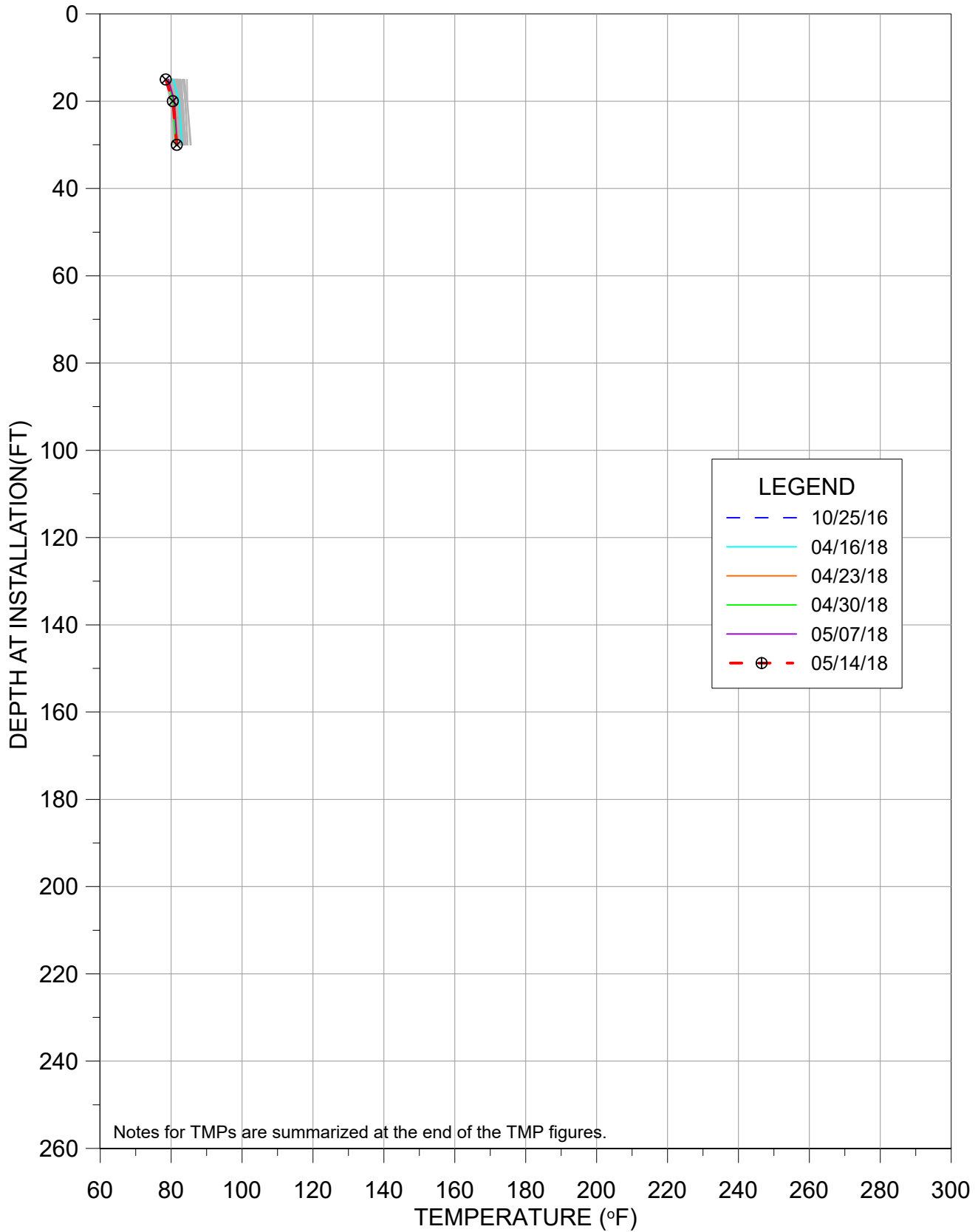
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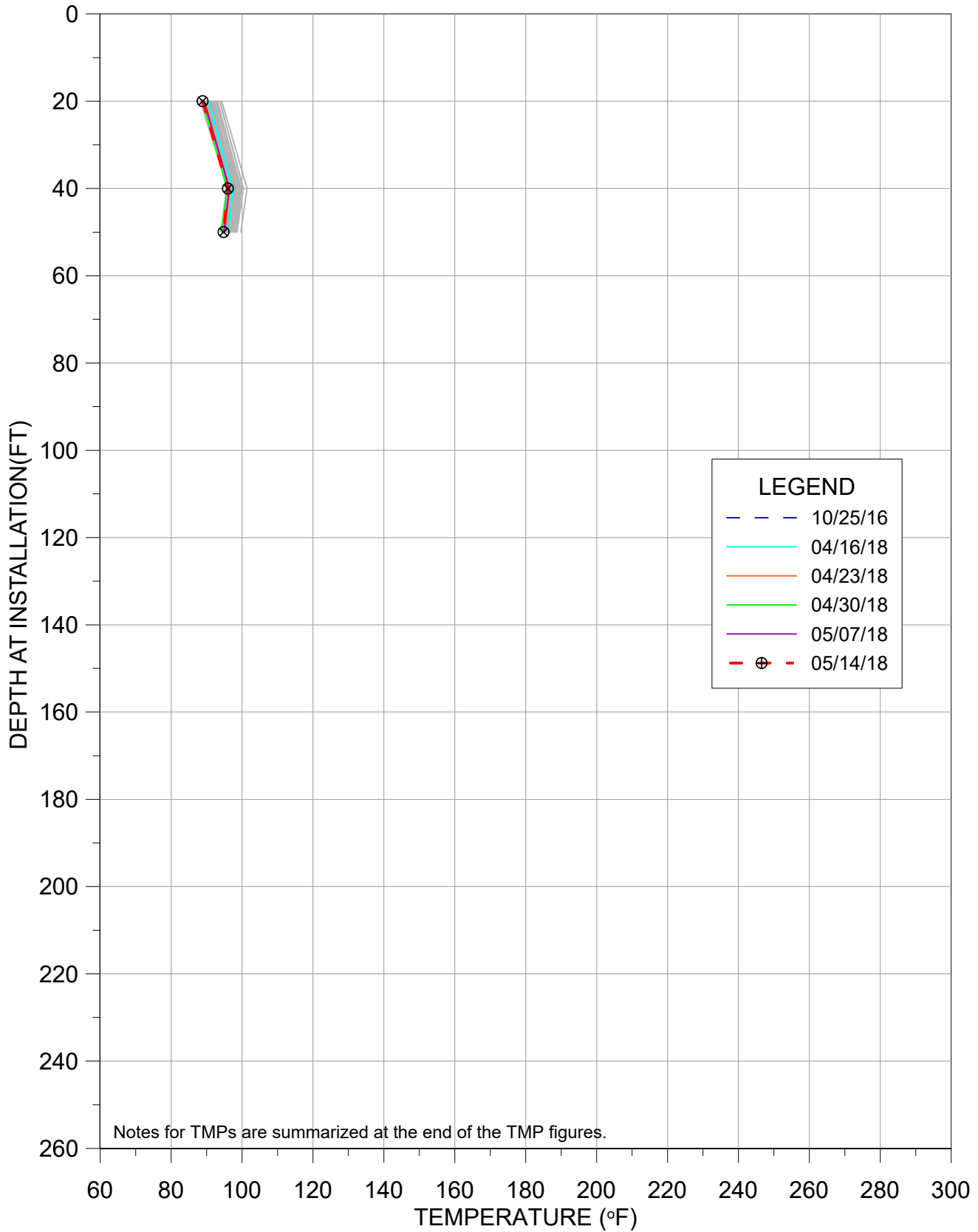
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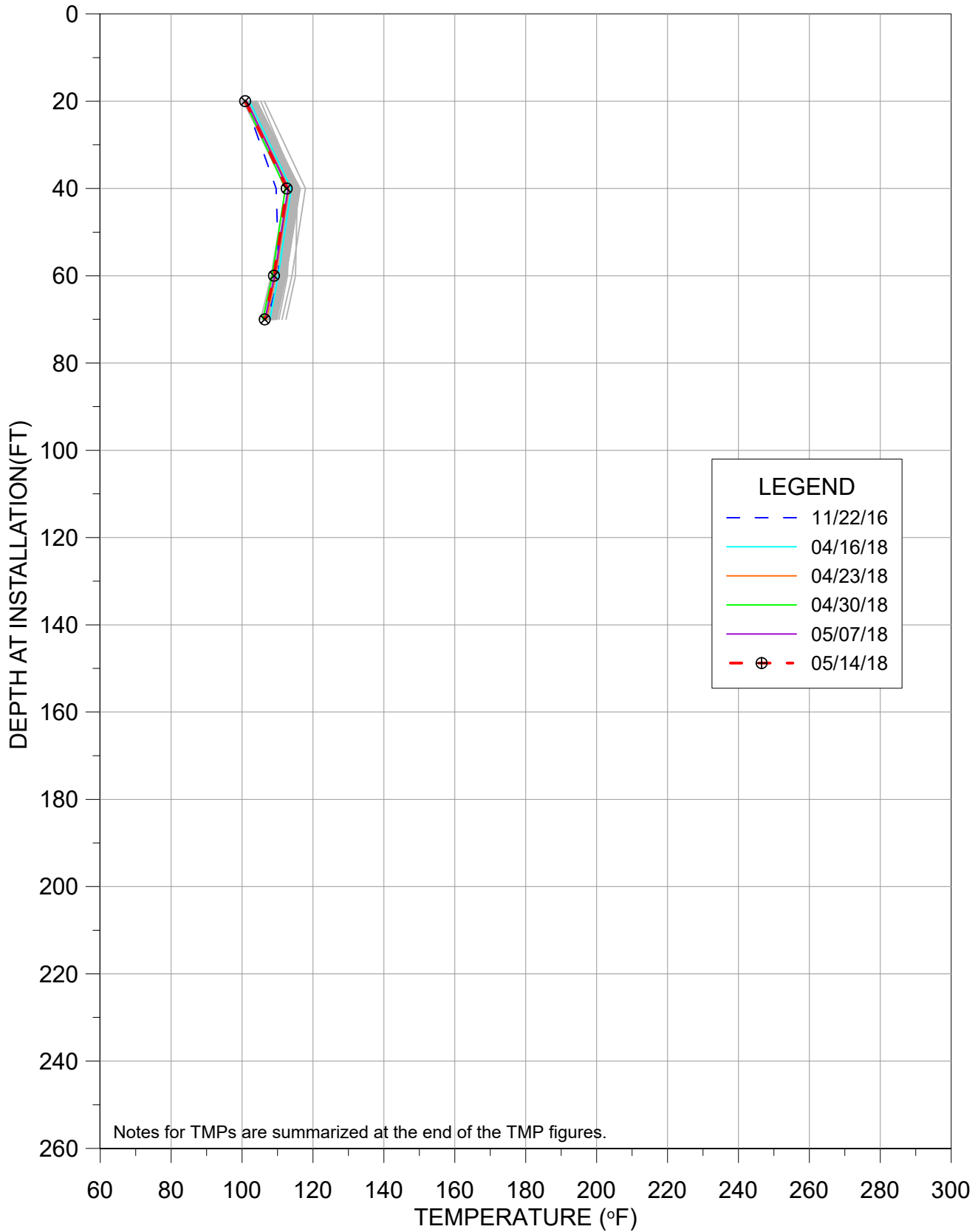
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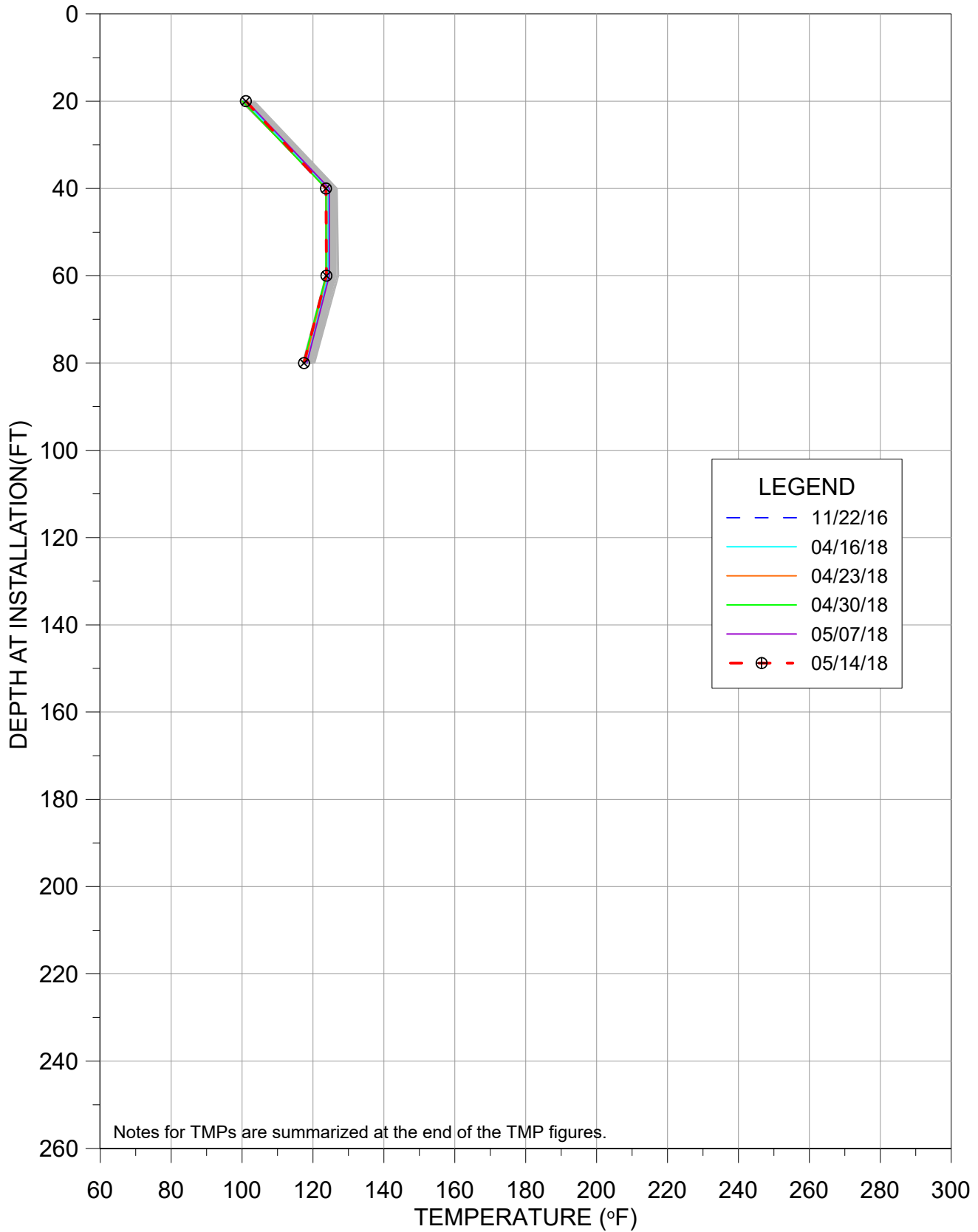
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# TMP-38

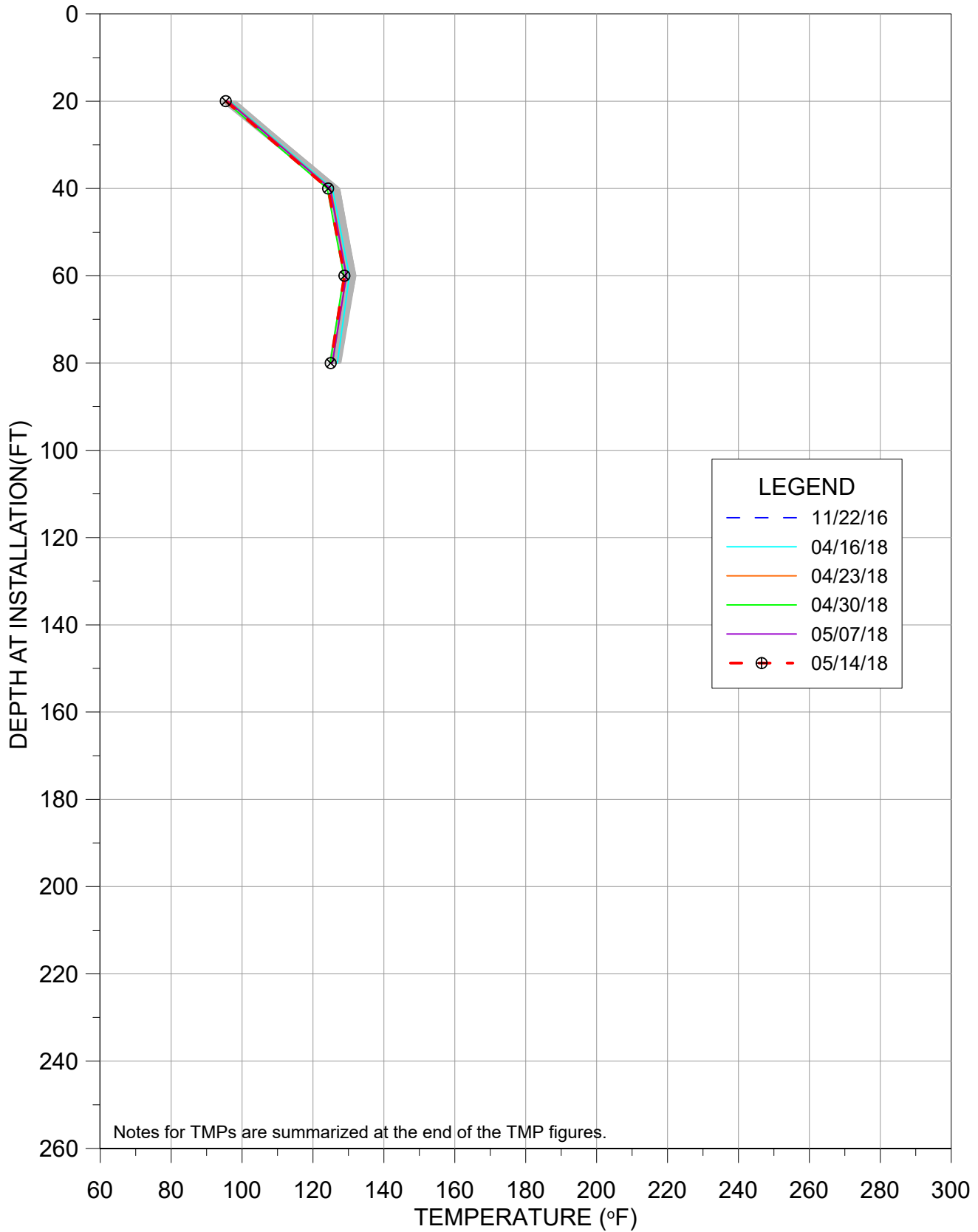


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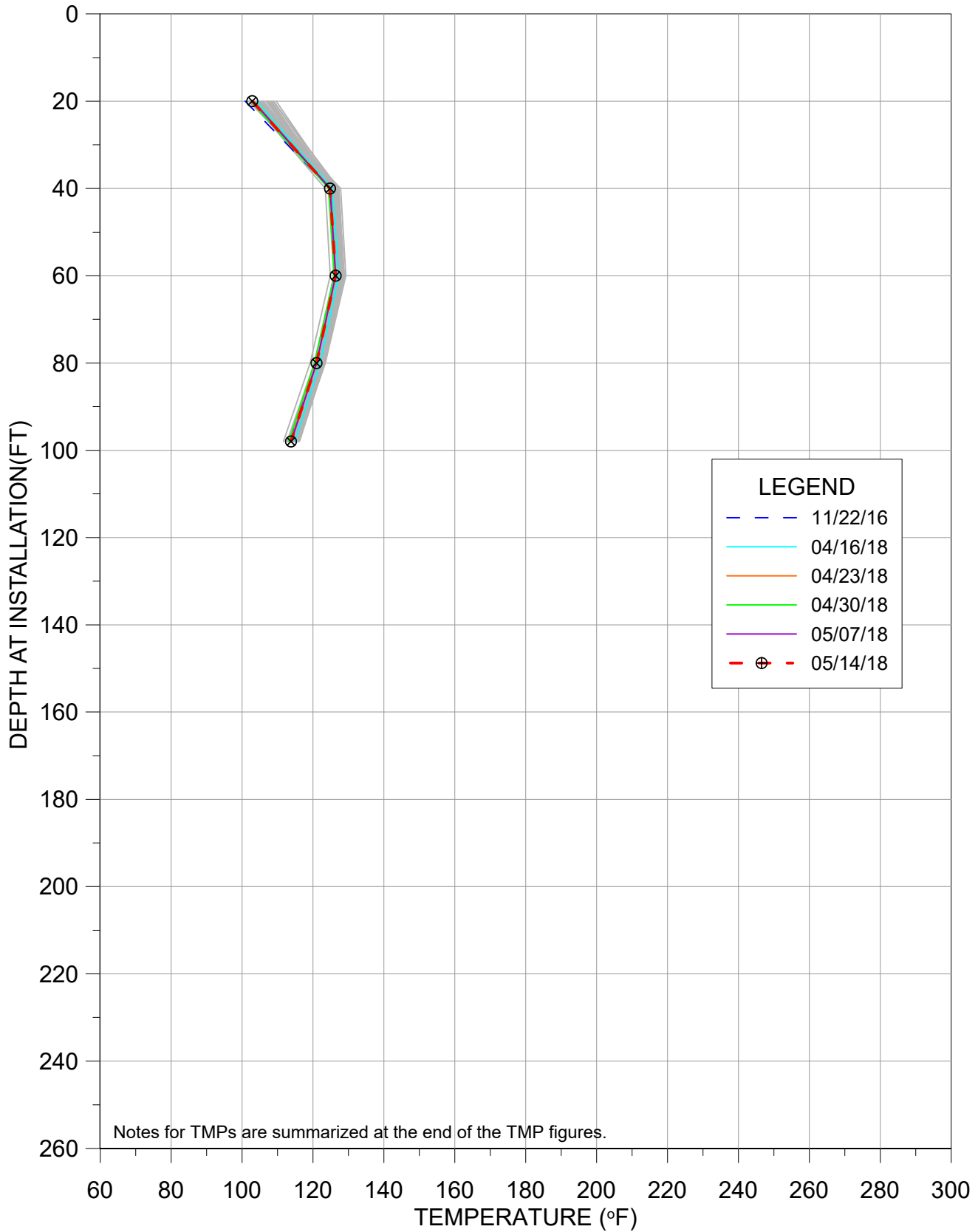




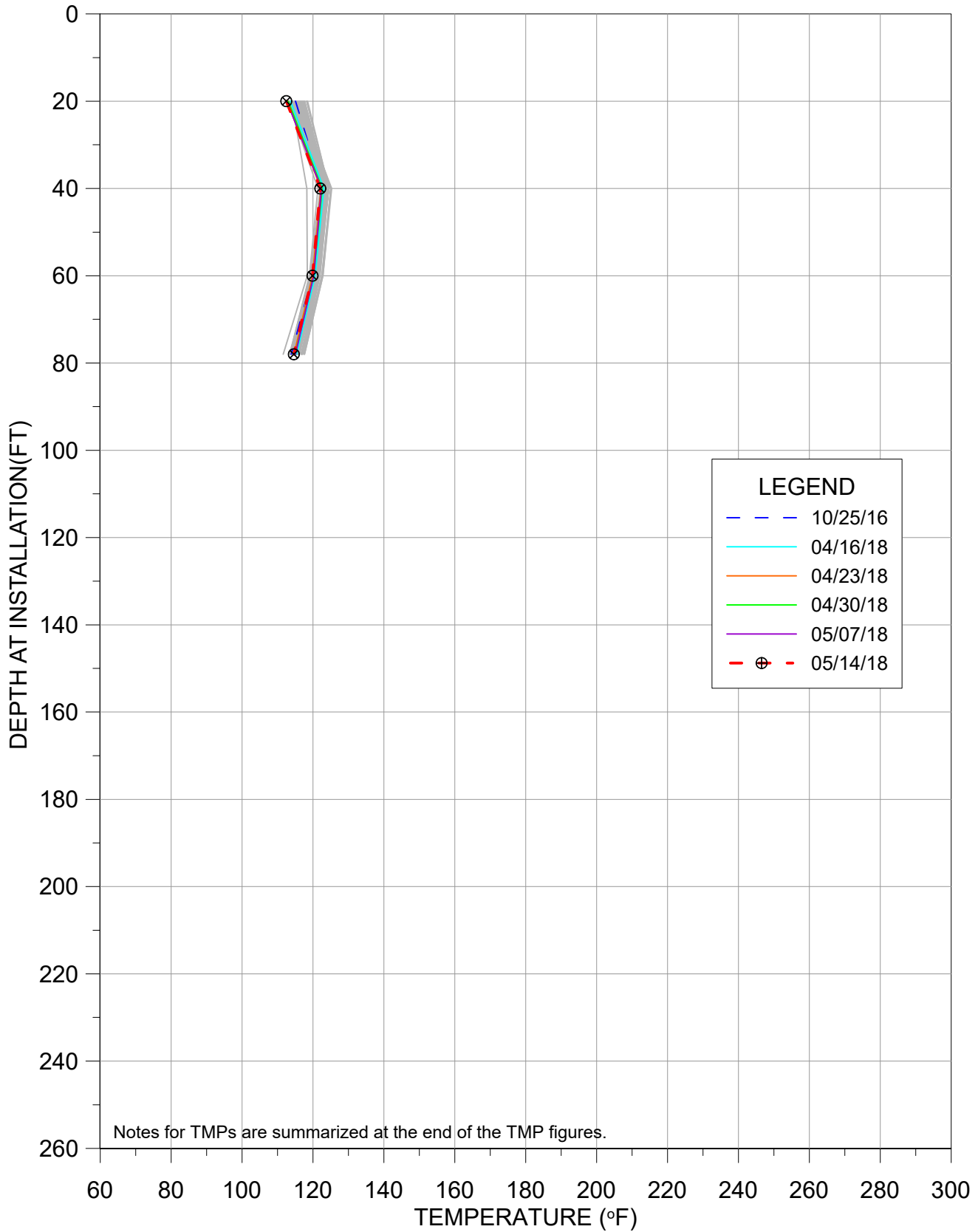
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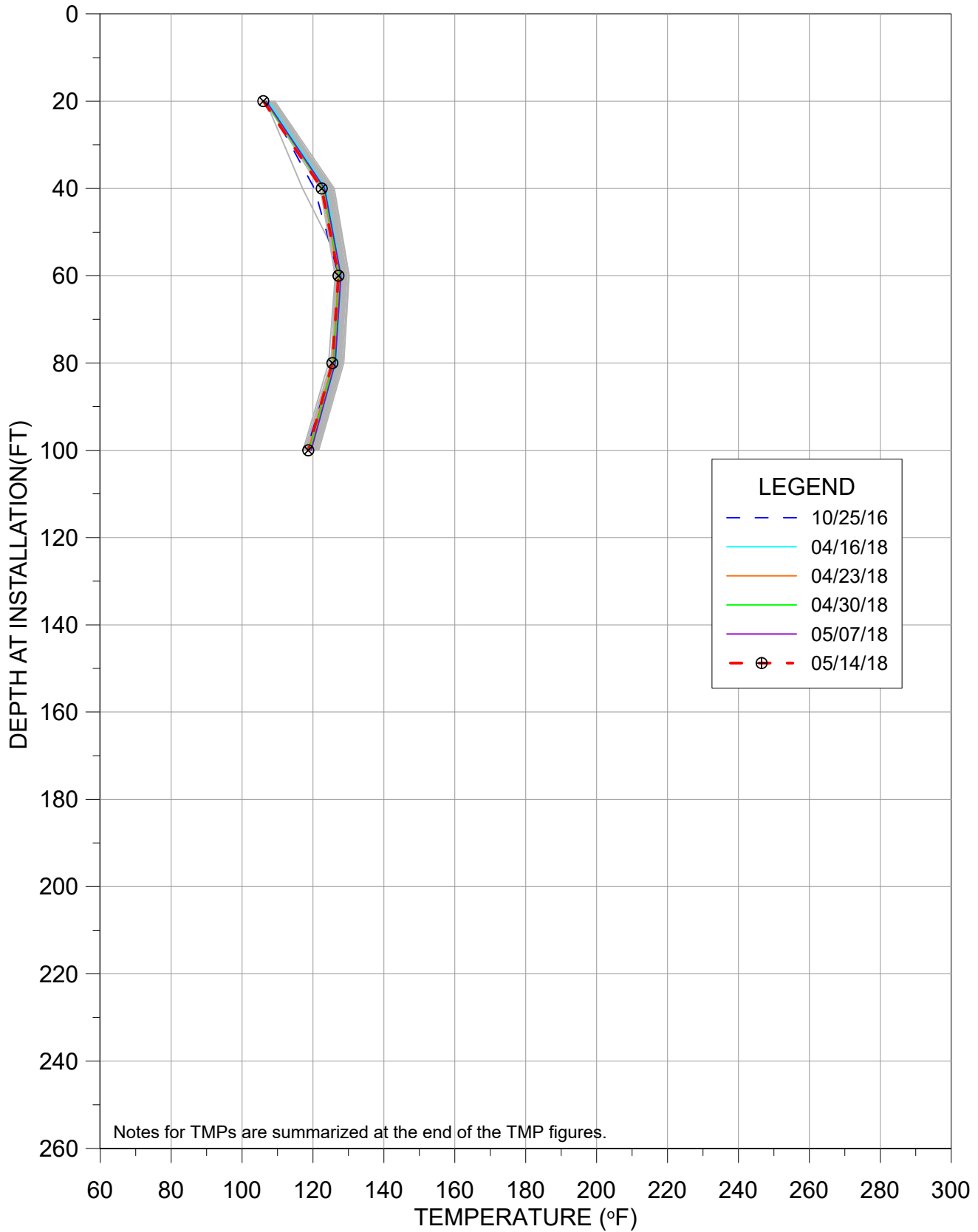
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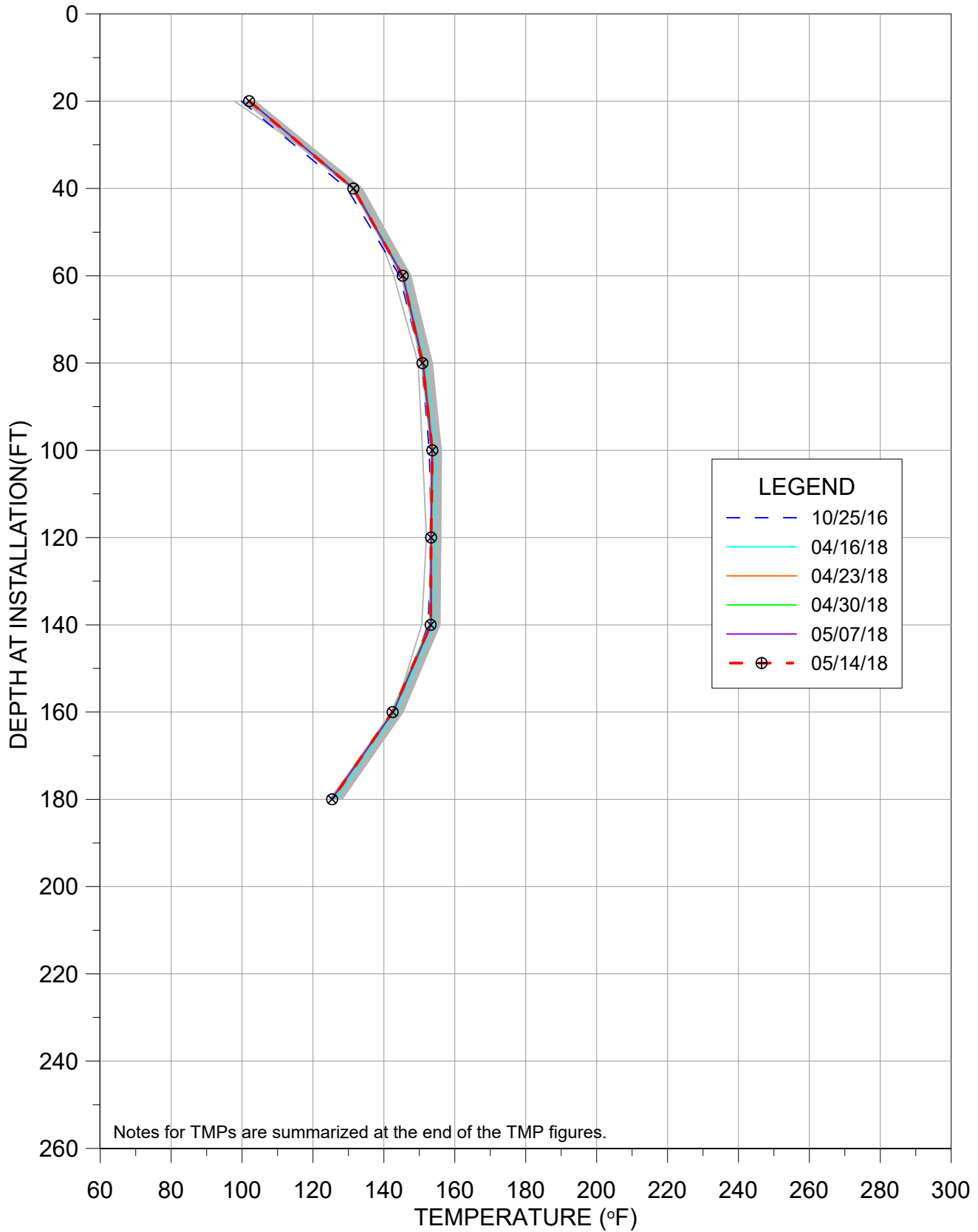
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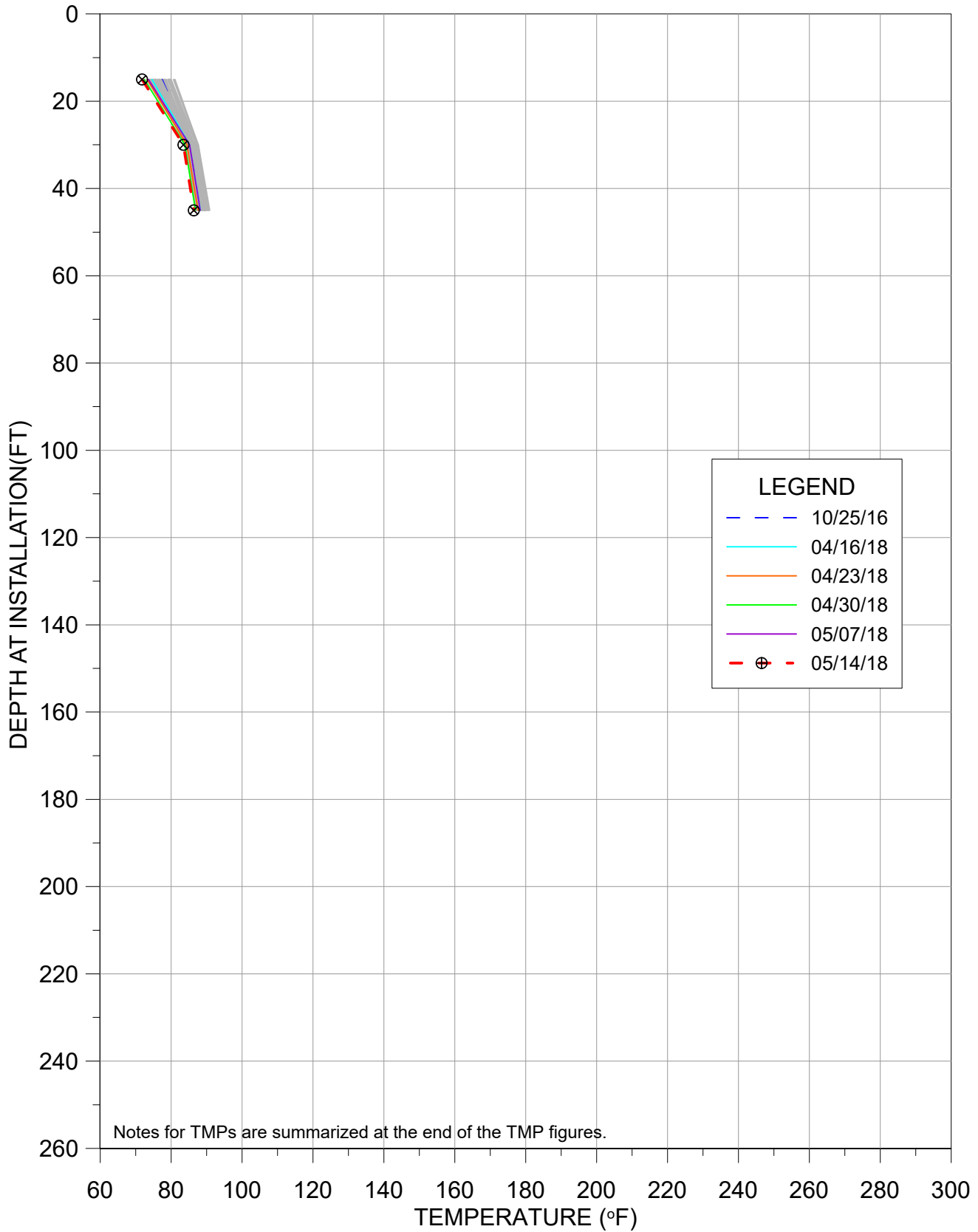
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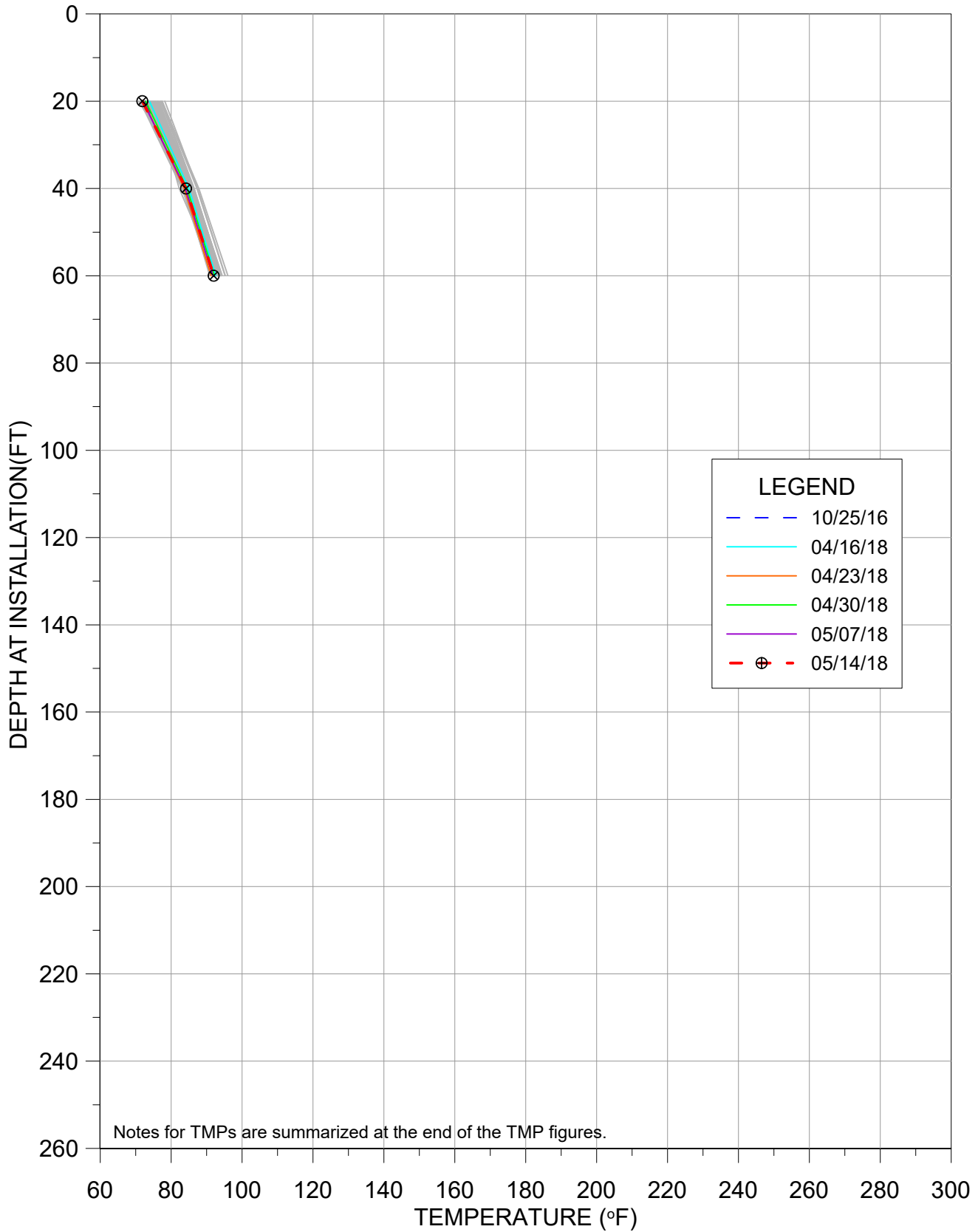
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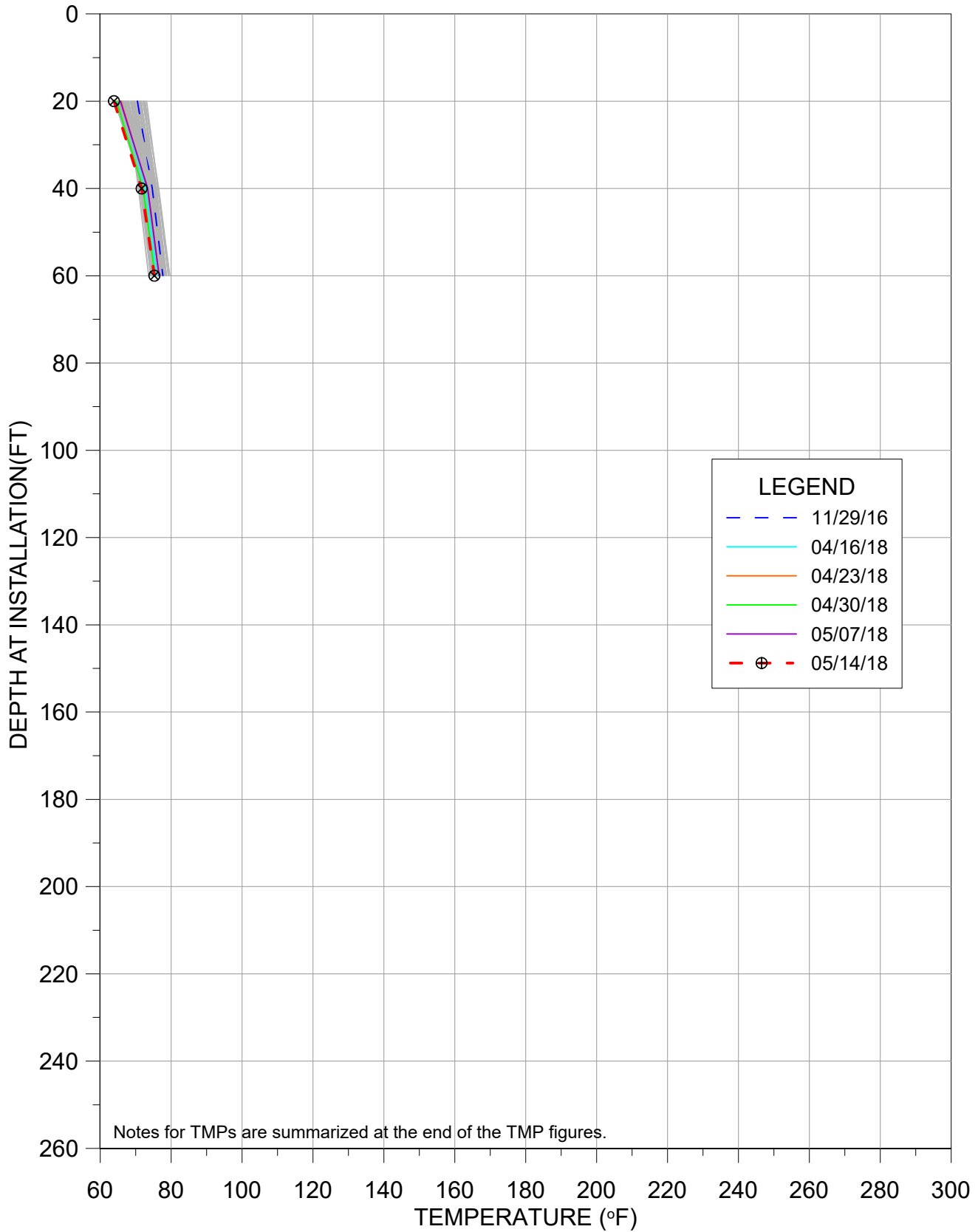
# TMP-45



# TMP-46

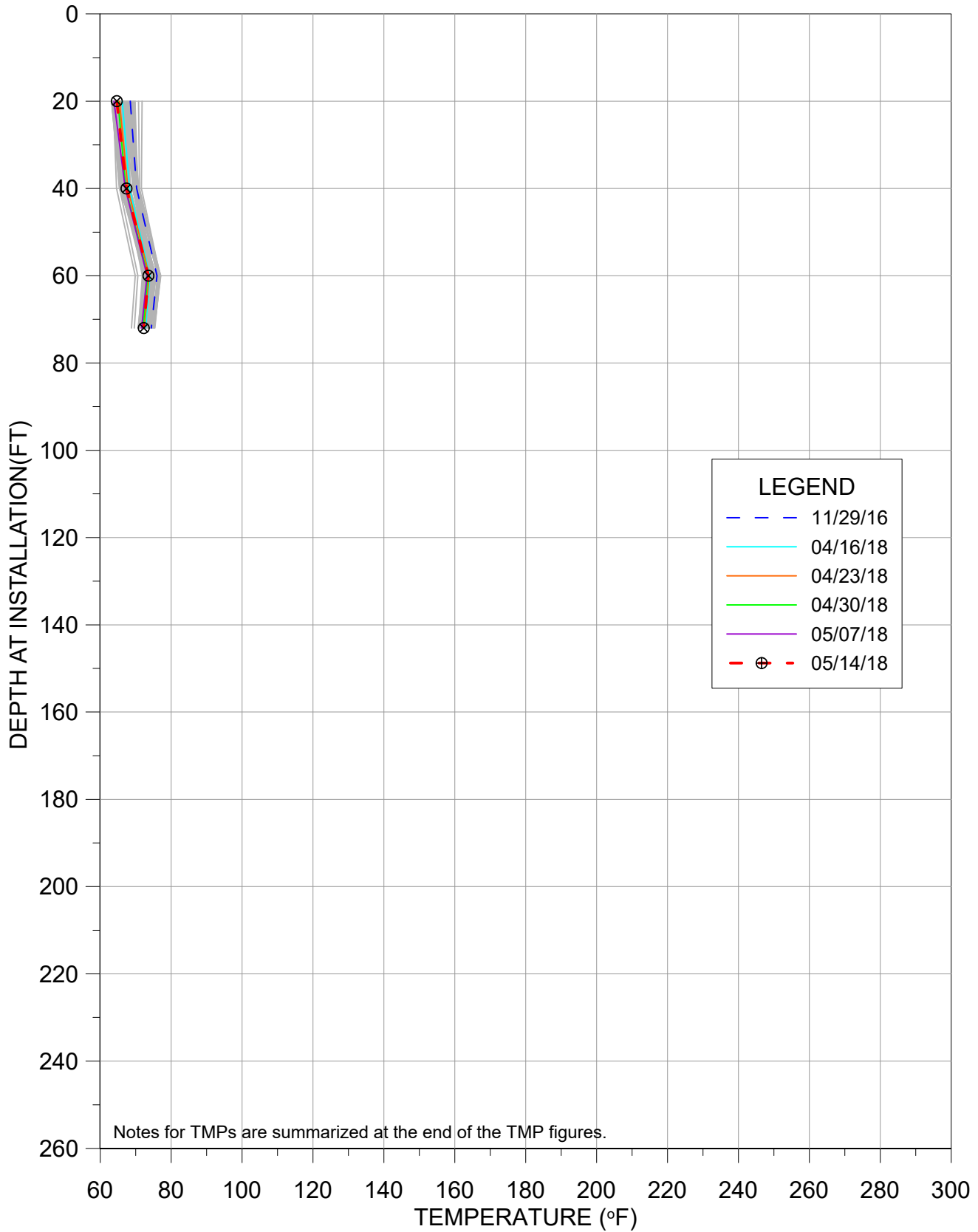


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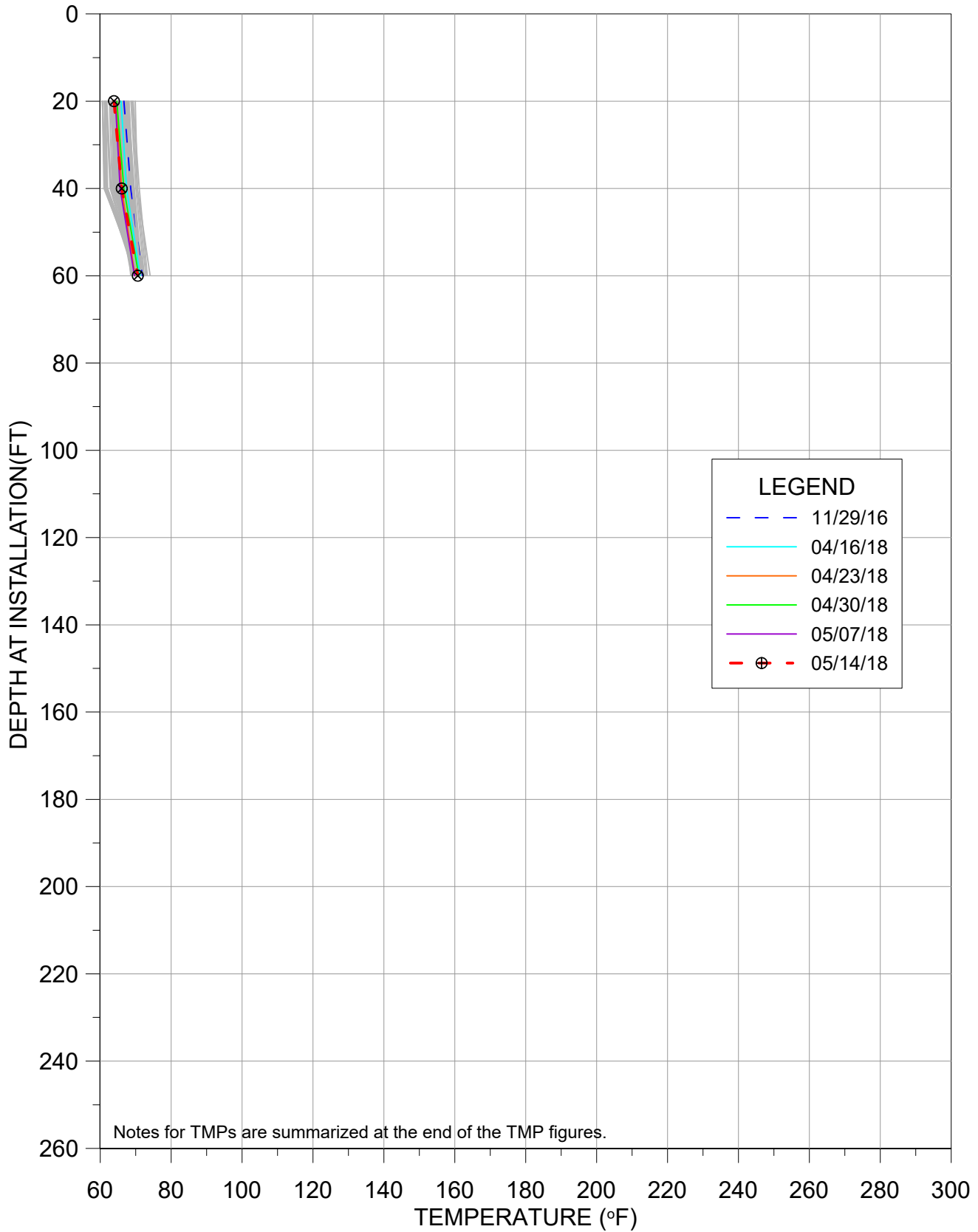




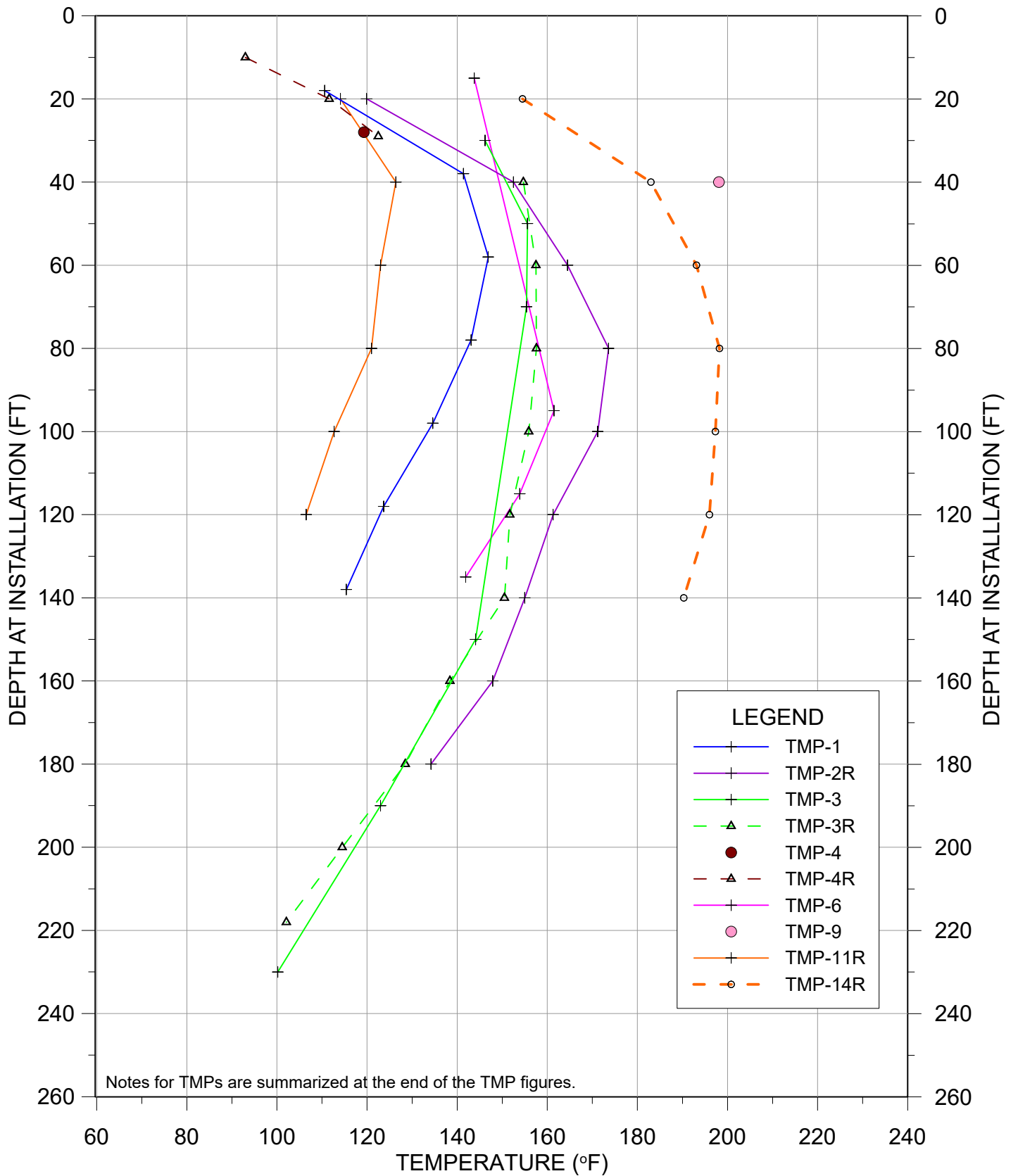
# TMP-48



# TMP-49



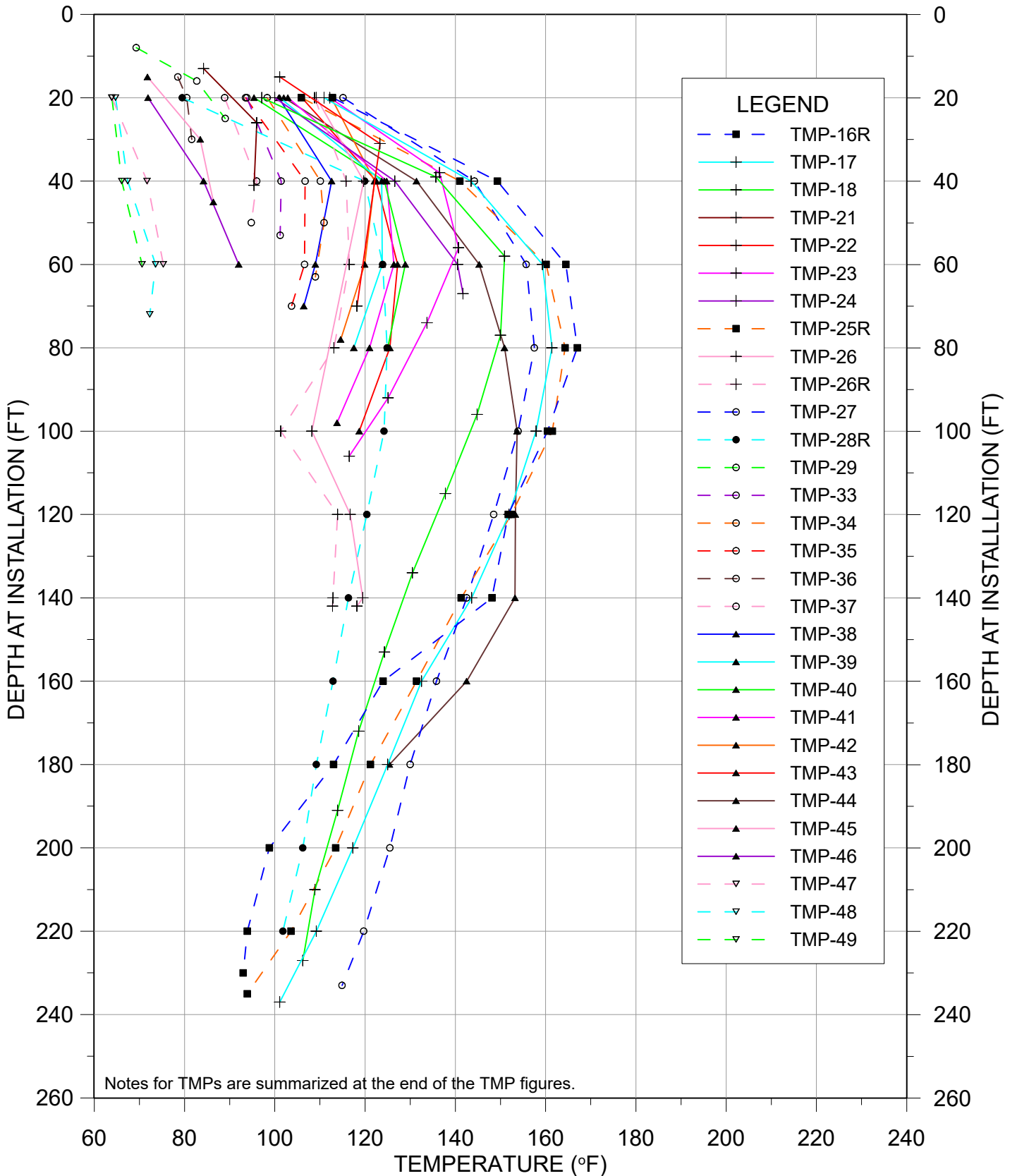
# 5/14/2018



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

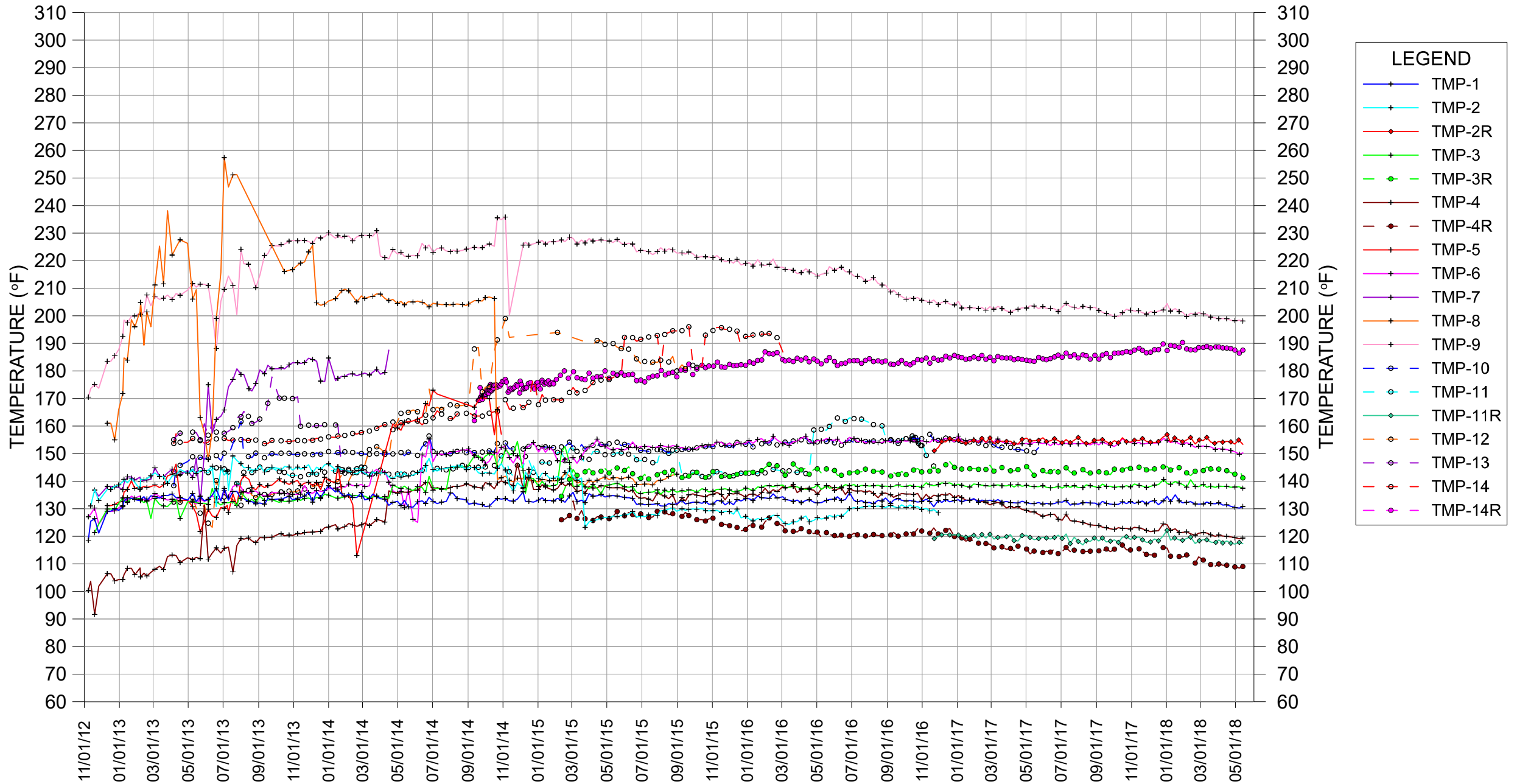
TEMPERATURE VS DEPTH  
BRIDGETON LANDFILL

# 5/14/2018 - NORTH QUARRY



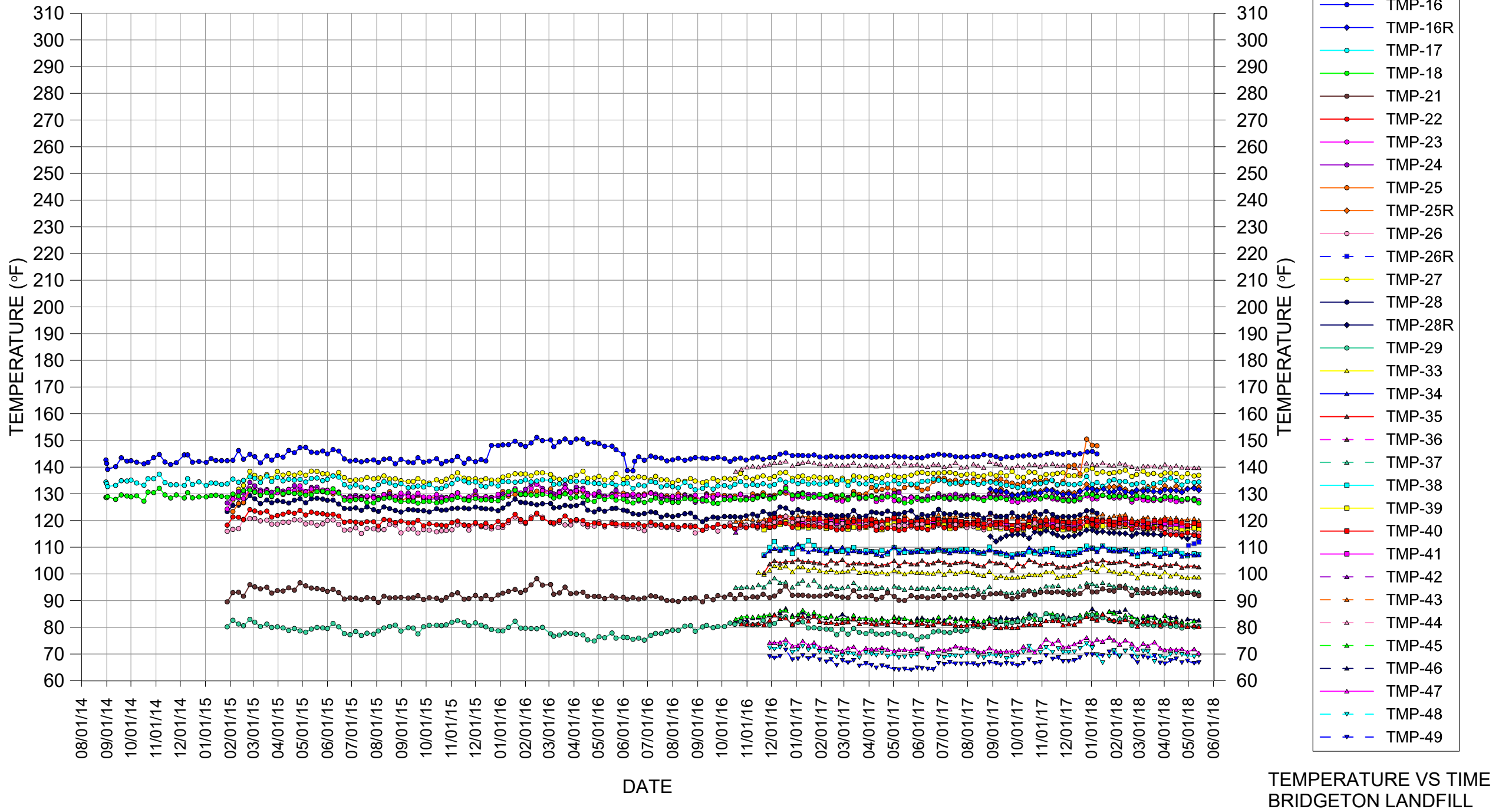
TEMPERATURE VS DEPTH  
BRIDGETON LANDFILL

# AVERAGE TEMPERATURES

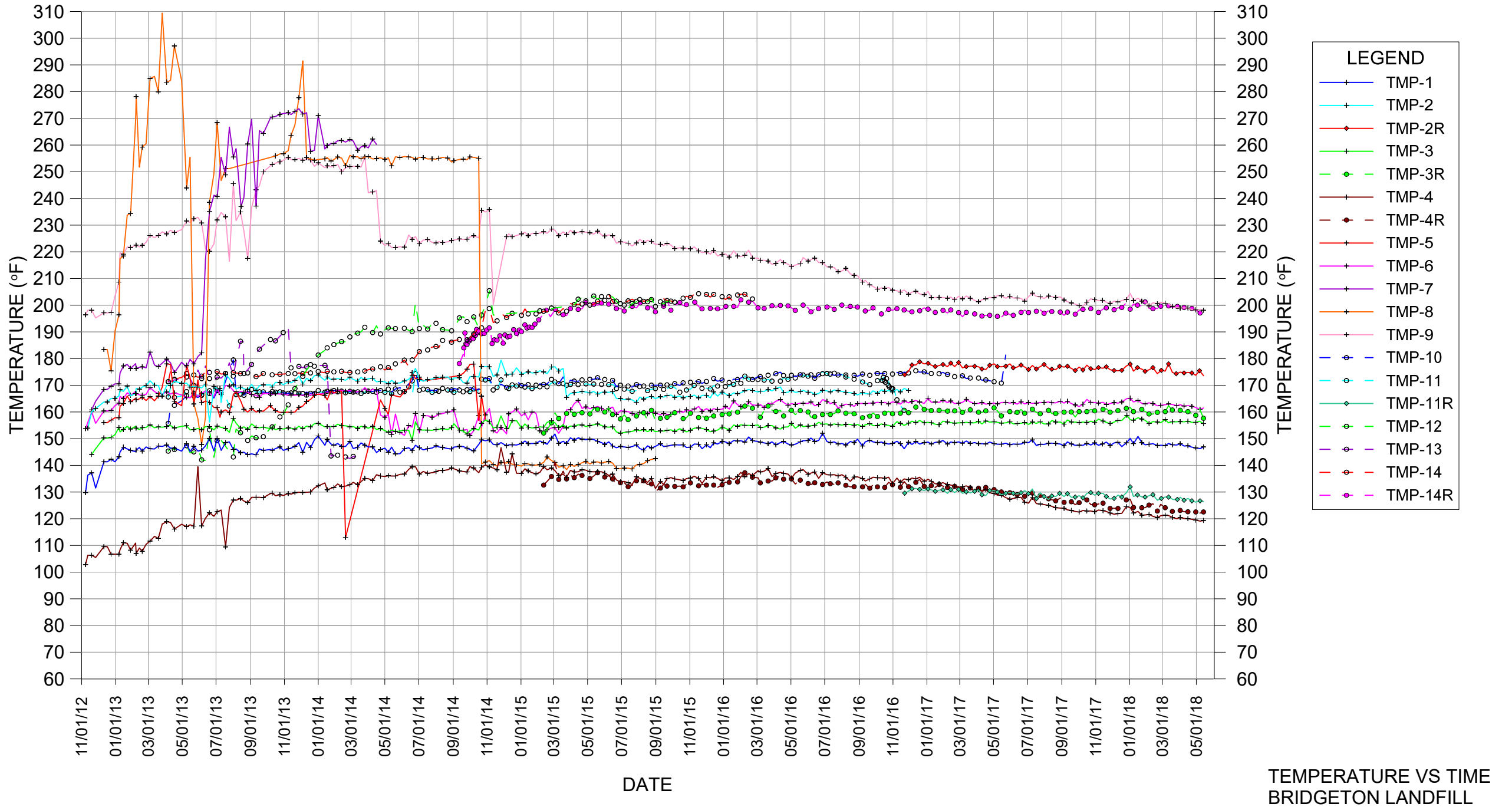


TEMPERATURE VS TIME  
BRIDGETON LANDFILL

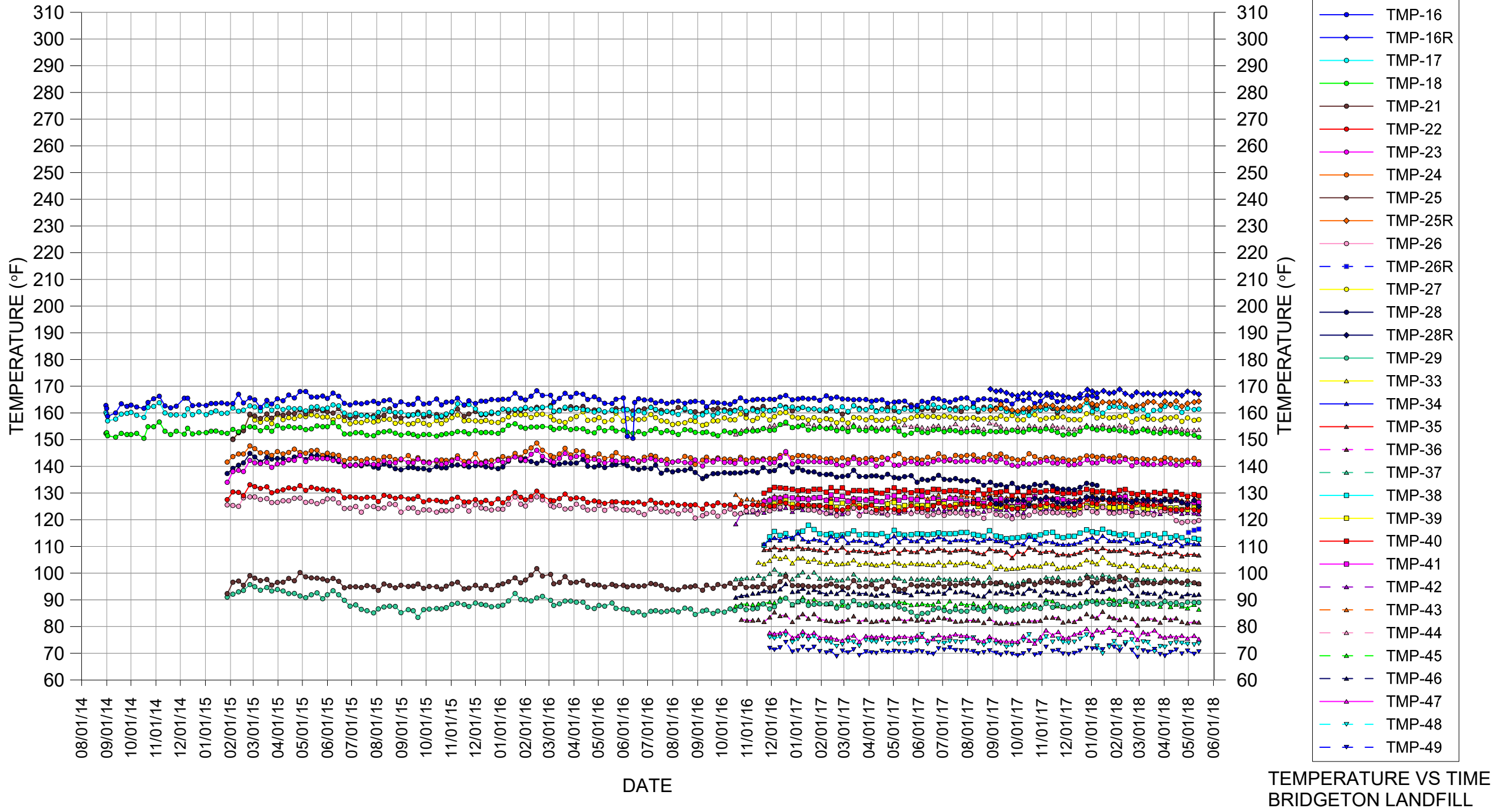
# AVERAGE TEMPERATURES - NORTH QUARRY



# MAXIMUM TEMPERATURES



# MAXIMUM TEMPERATURES - NORTH QUARRY





## 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:

1. No temperature reading could be obtained and resistivity was fluctuating at the unit at 50 ft depth since 4/2/2018.

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.
2. No temperature reading could be obtained and resistivity was fluctuating at the unit at 60 ft depth since 4/16/2018.

TMP-26R:

1. TMP-26R may still be equilibrating.

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 **5/14/18**):

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.

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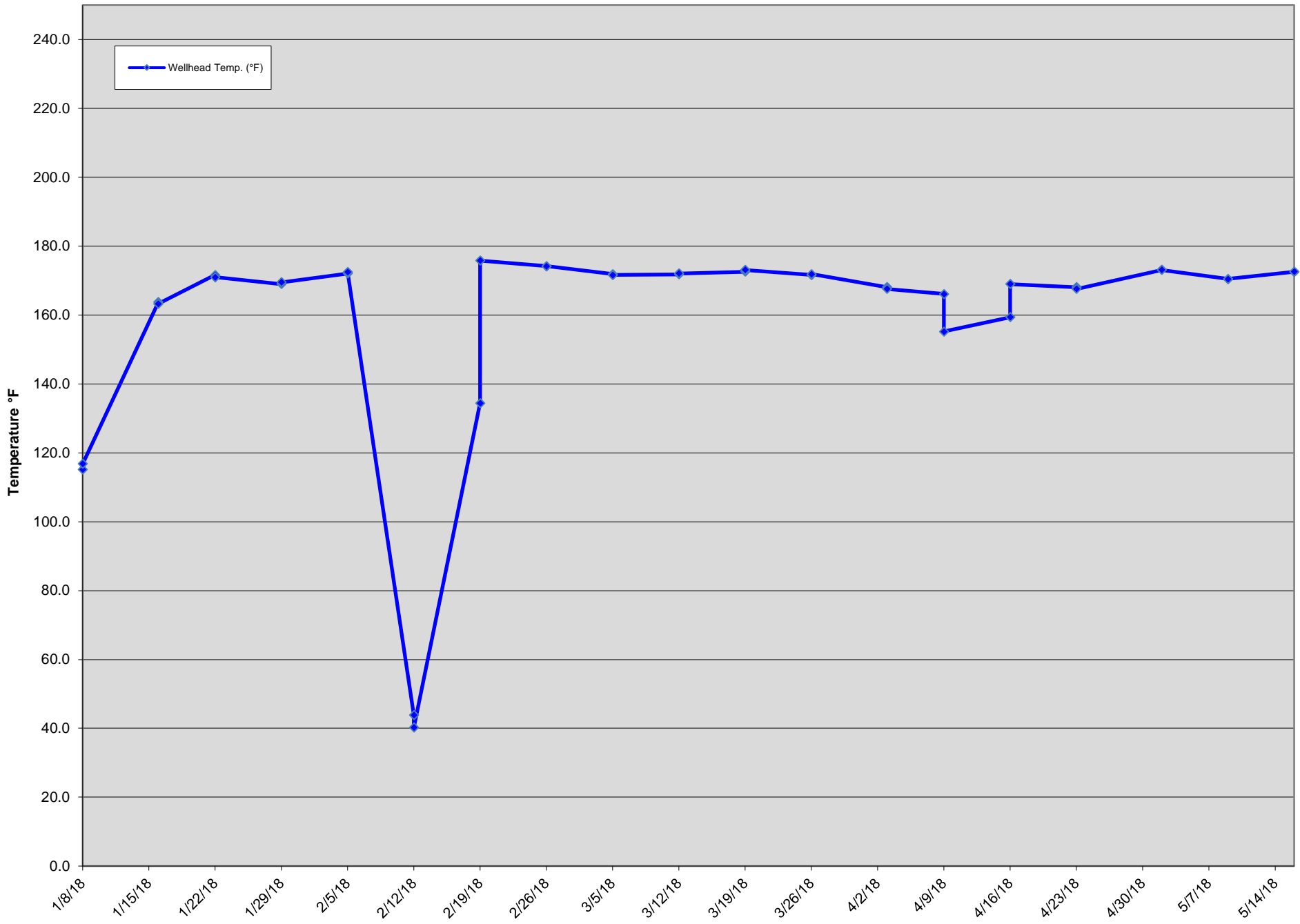
**ATTACHMENT C**

**GAS INTERCEPTOR WELLHEAD TEMPERATURE GRAPHS**

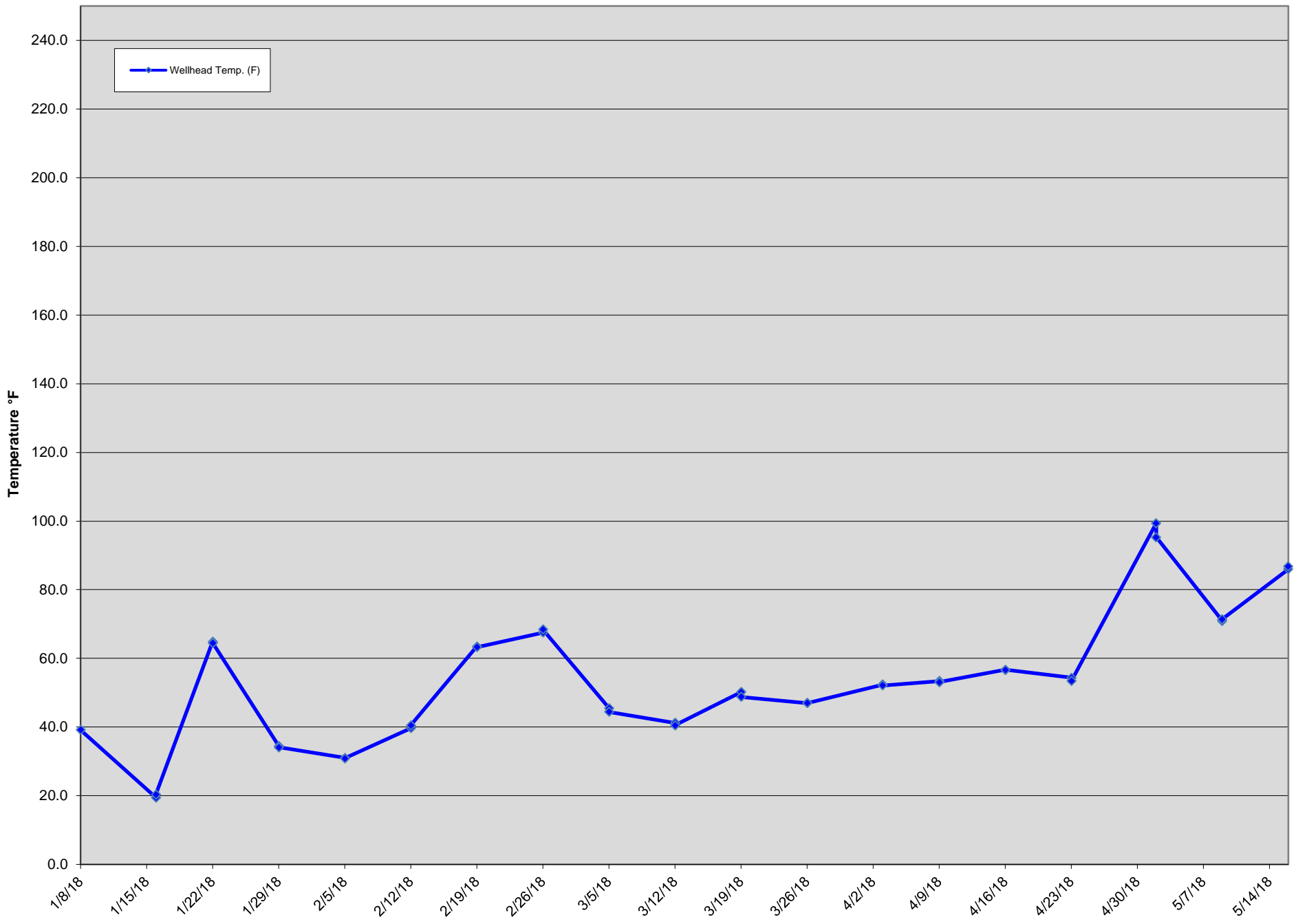
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# GIW-1 Wellhead Temperatures

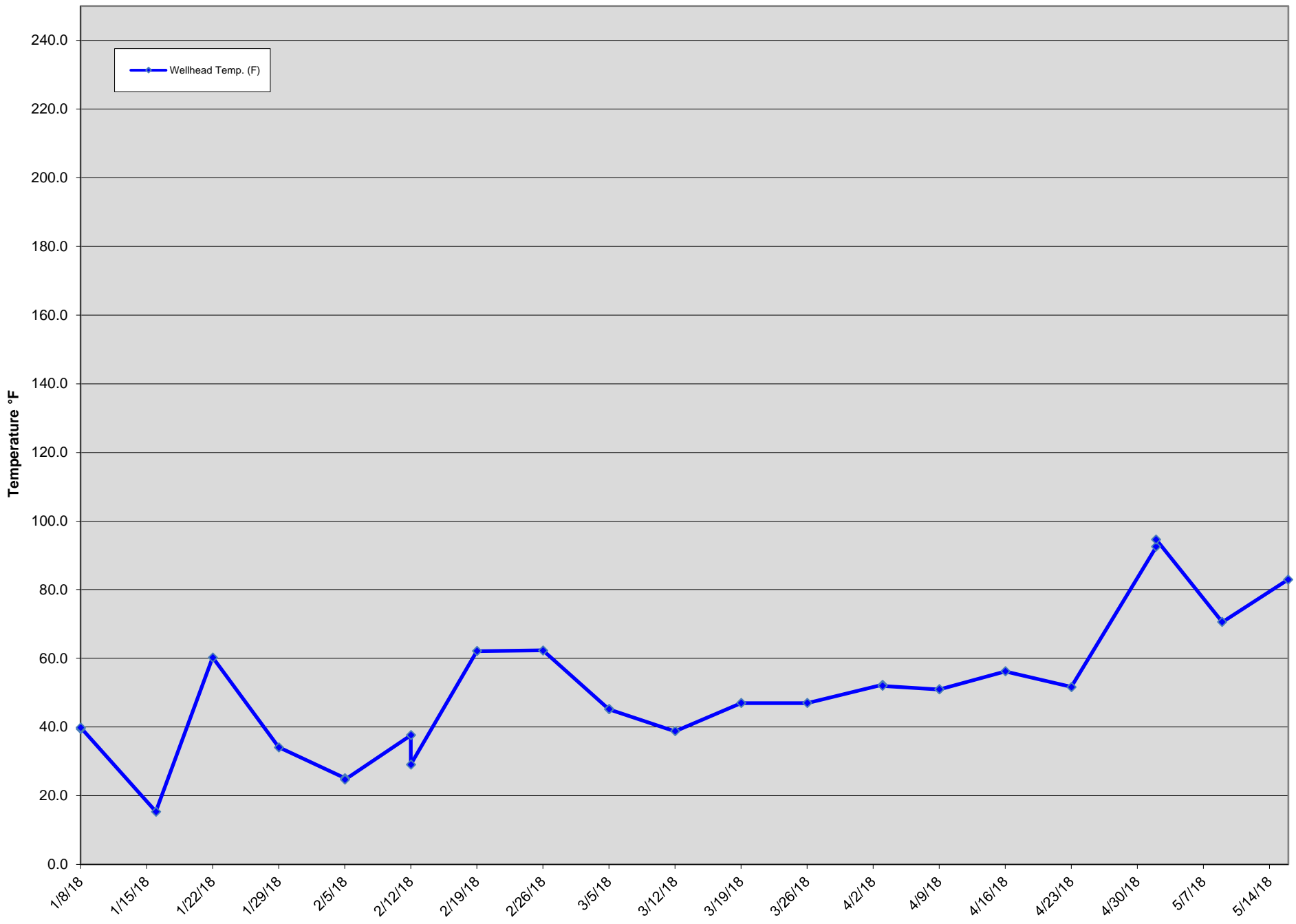


# GIW-2 Wellhead Temperatures

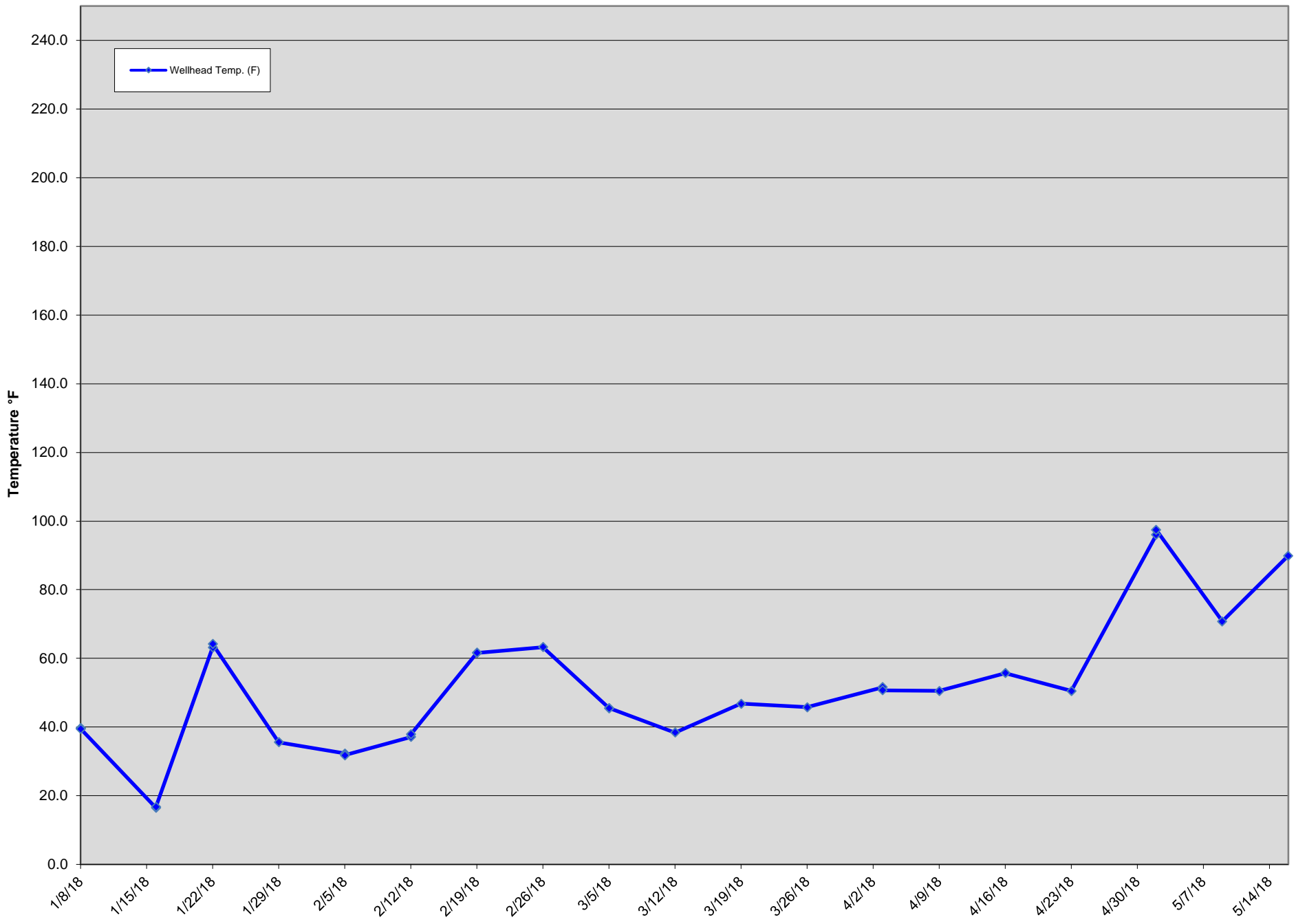




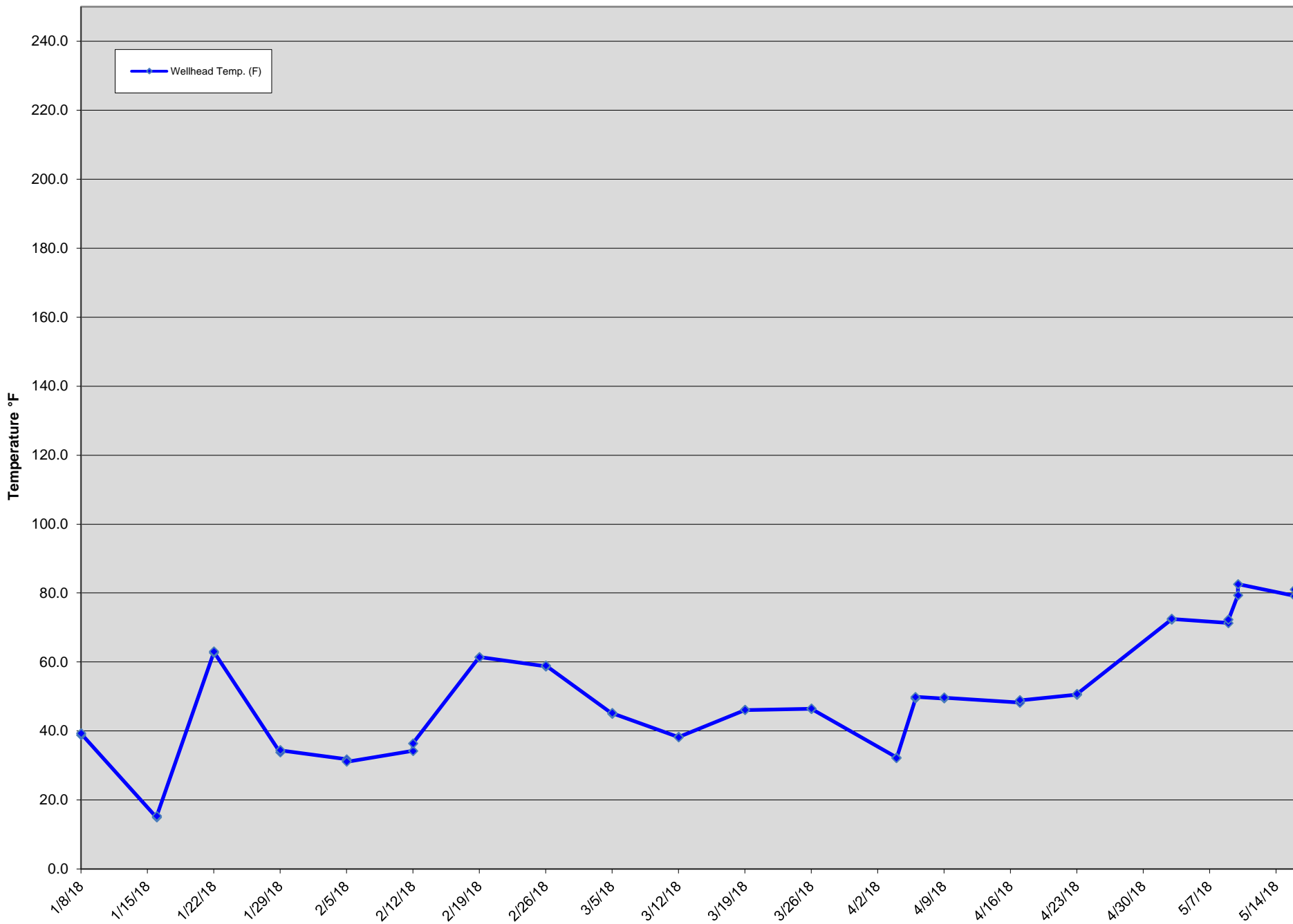
# GIW-3 Wellhead Temperatures



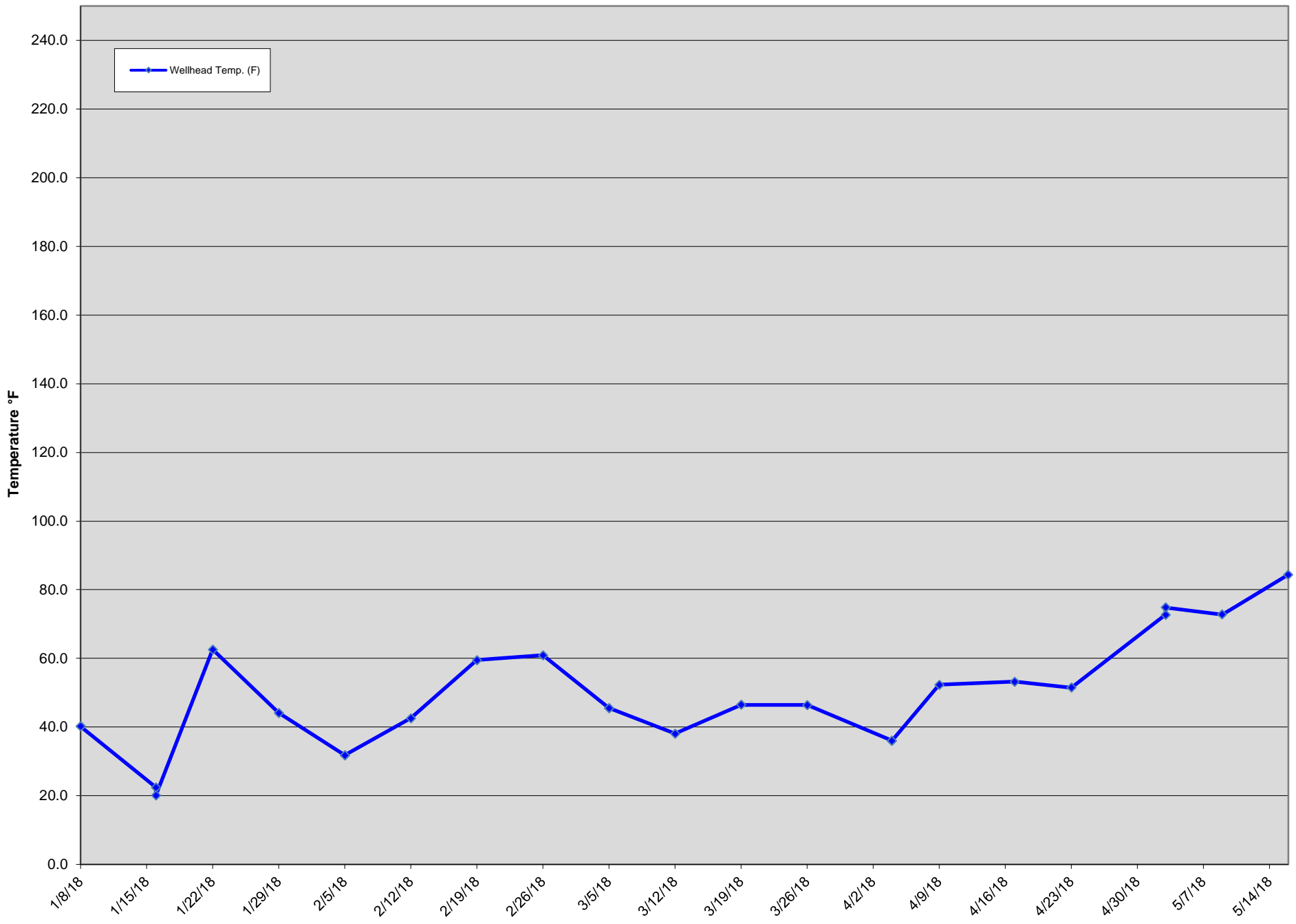
# GIW-4 Wellhead Temperatures



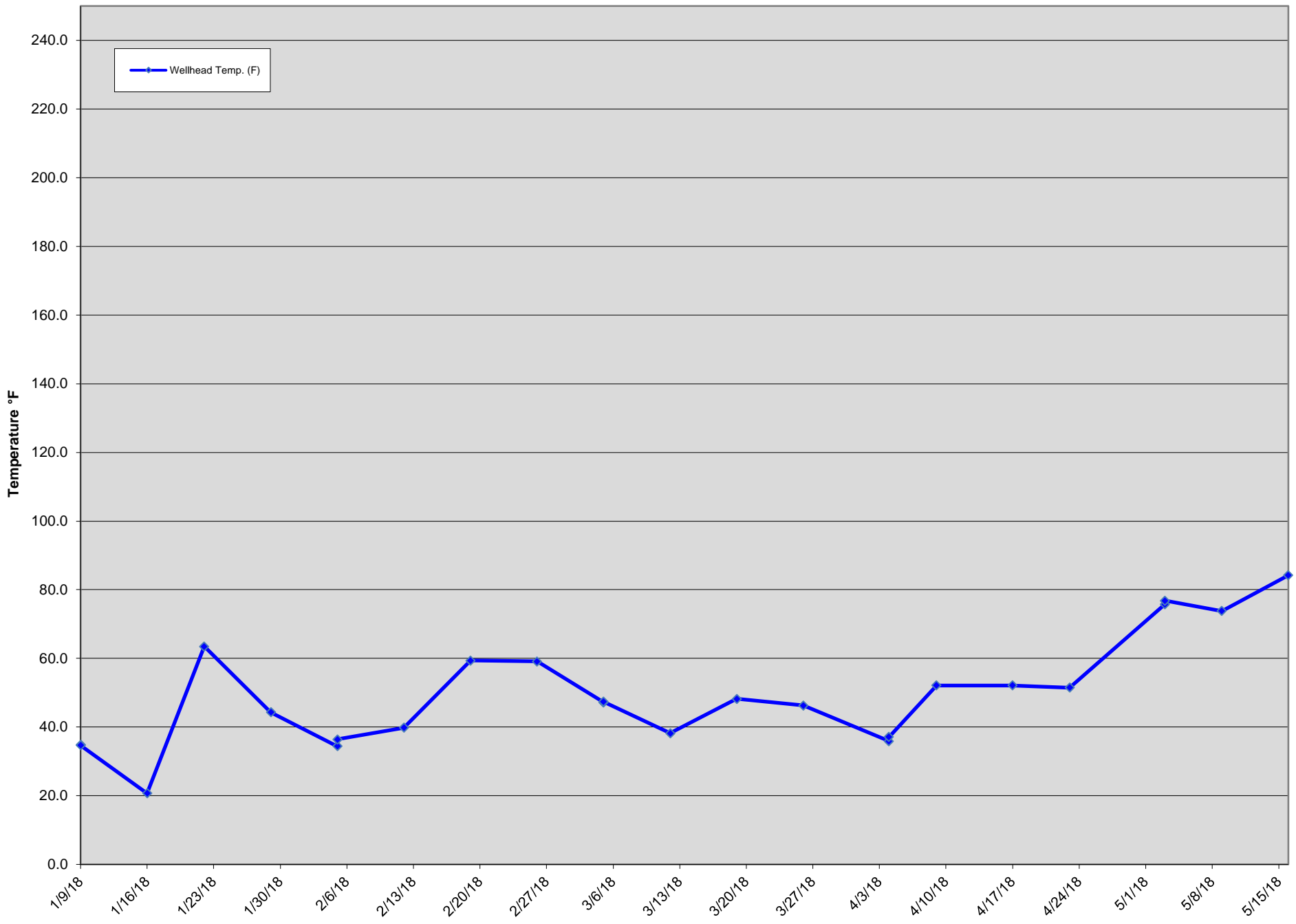
# GIW-5 Wellhead Temperatures



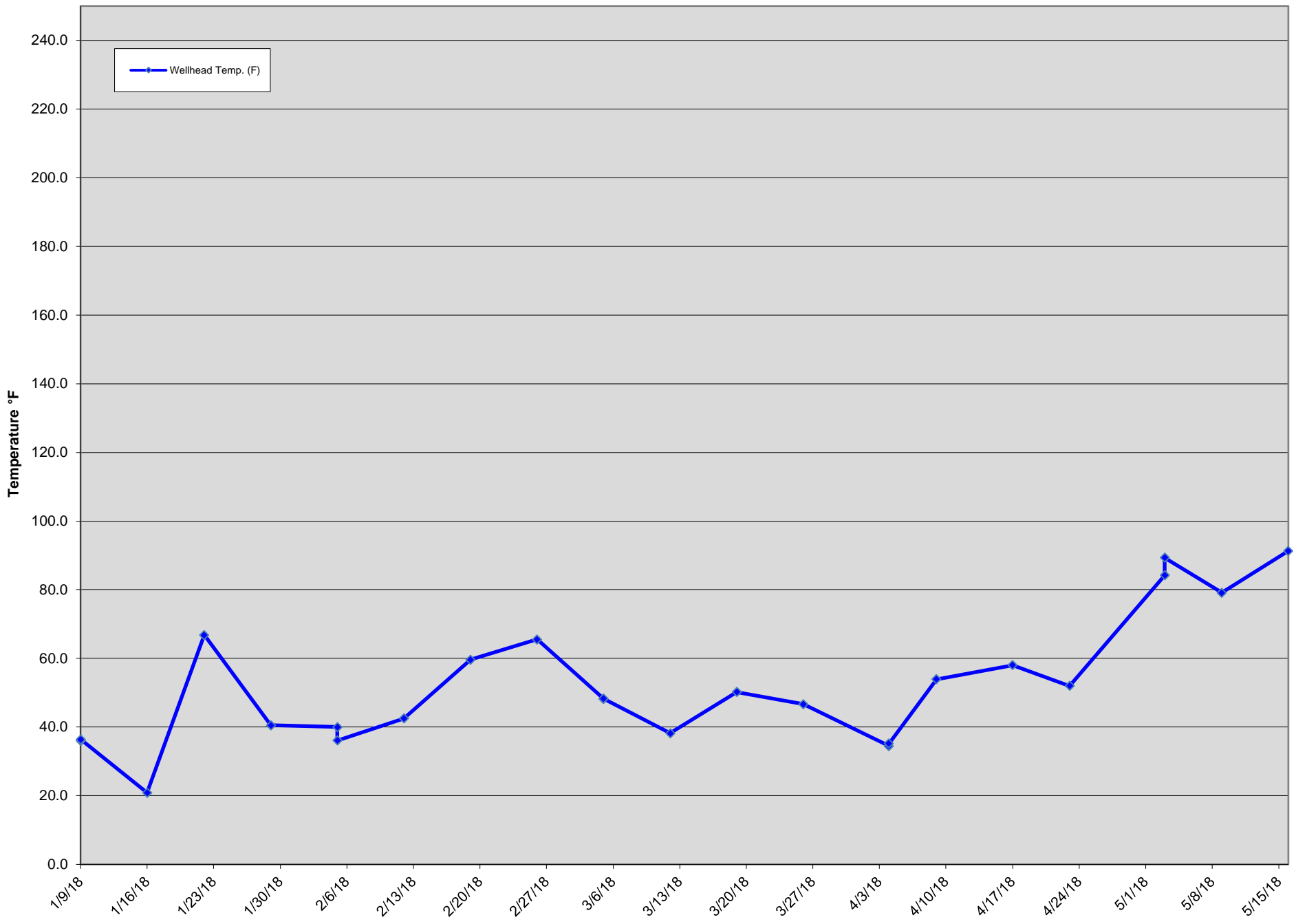
# GIW-6 Wellhead Temperatures



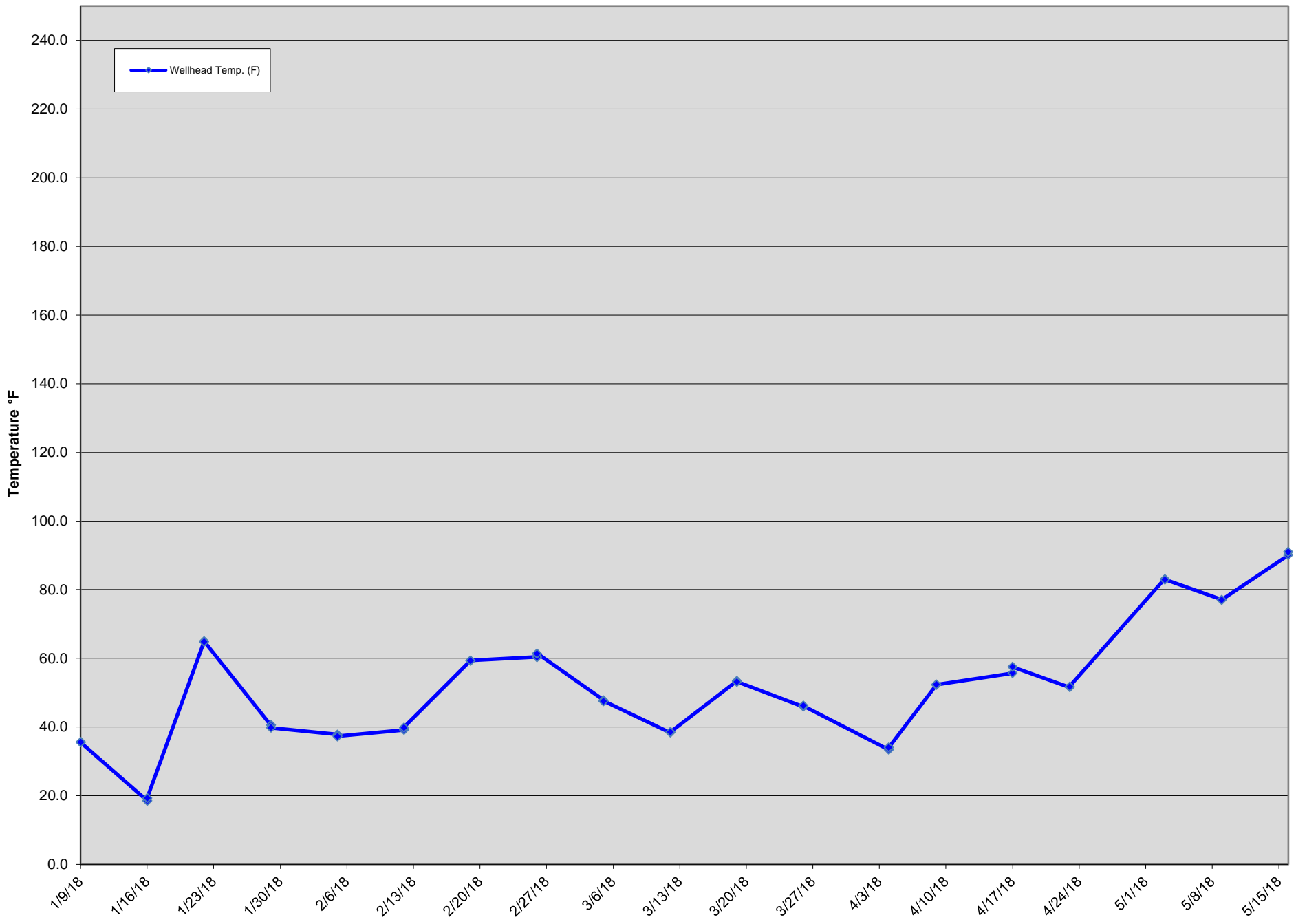
# GIW-7 Wellhead Temperatures



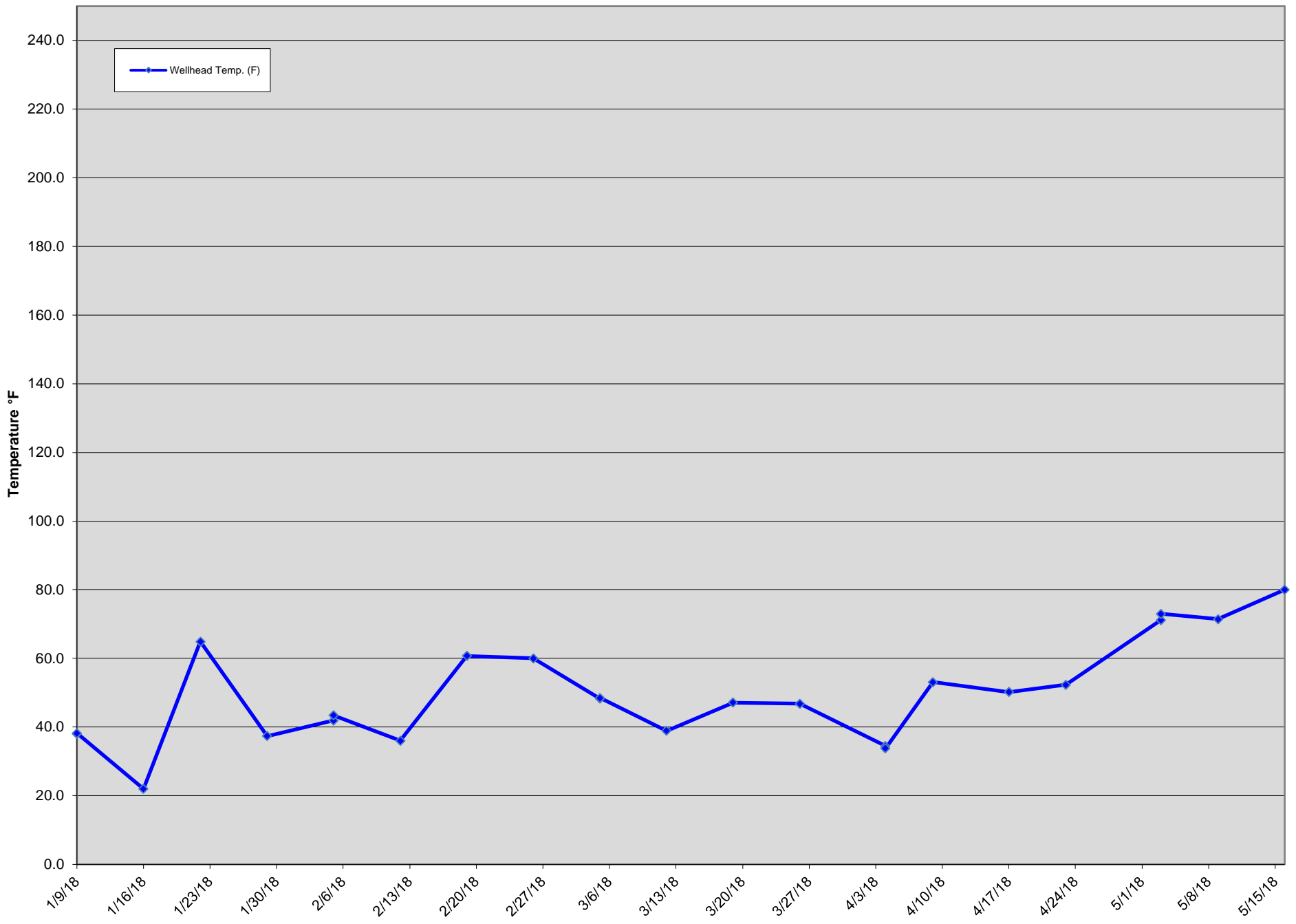
# GIW-8 Wellhead Temperatures



# GIW-9 Wellhead Temperatures

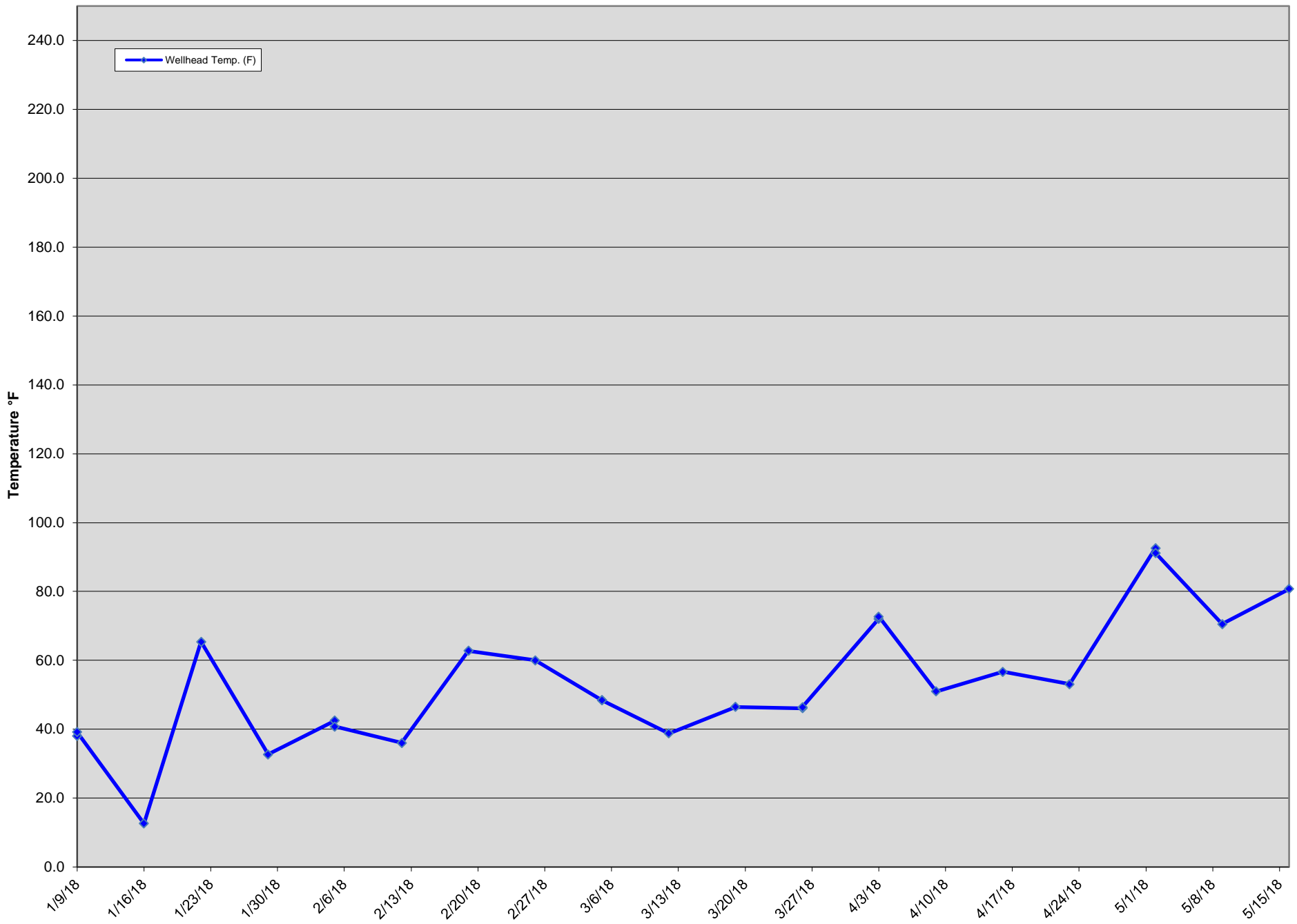


# GIW-10 Wellhead Temperatures

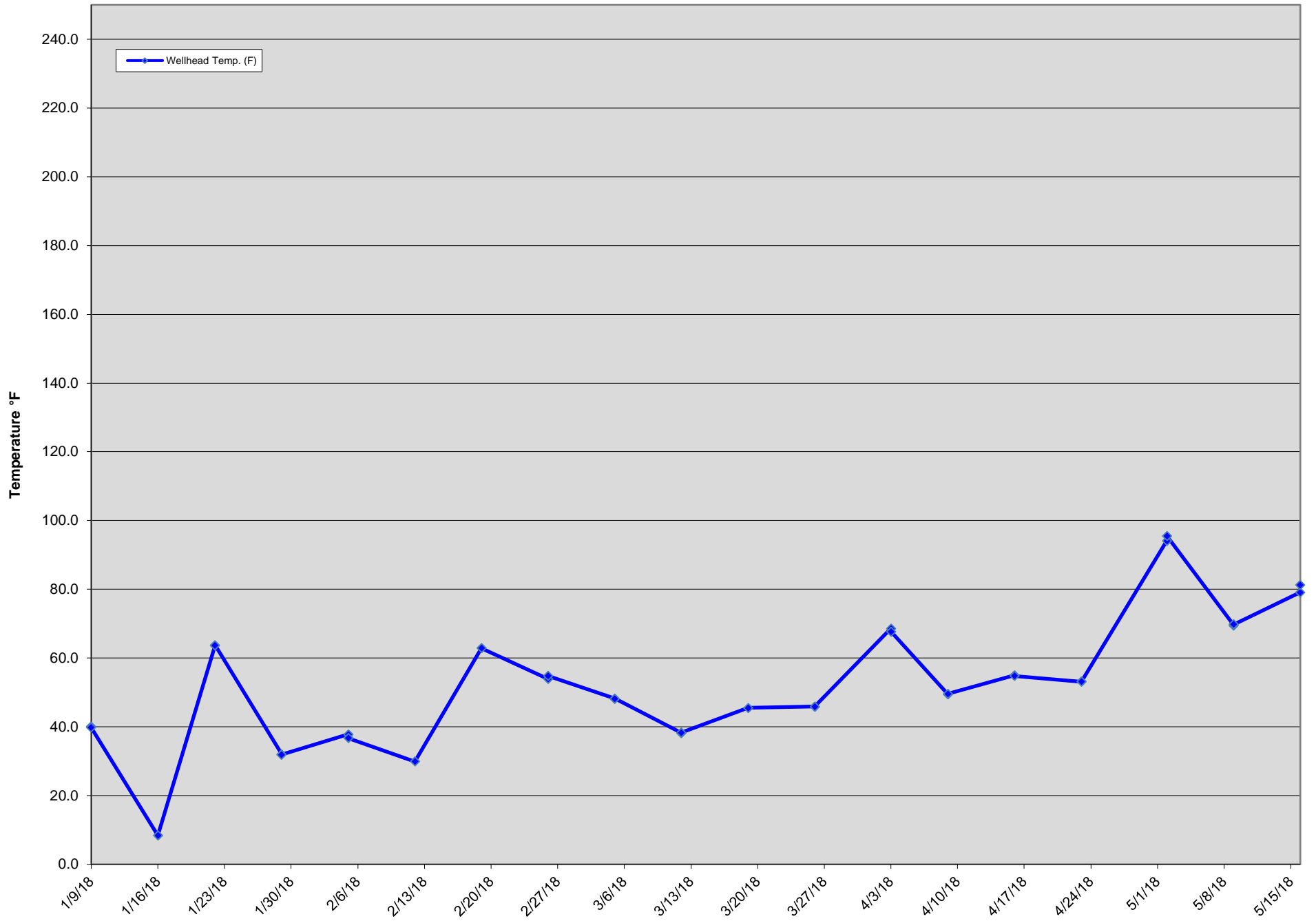




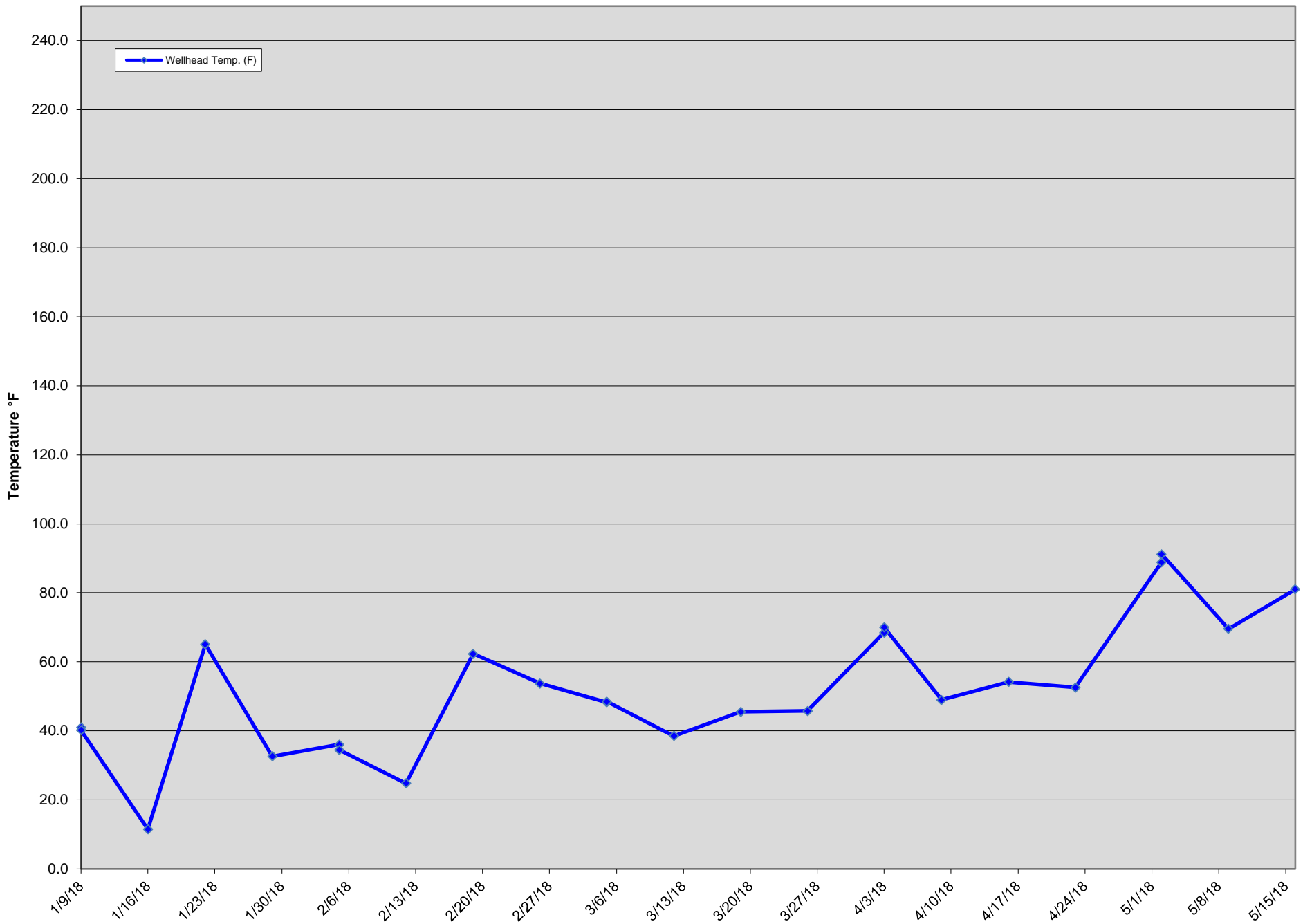
# GIW-11 Wellhead Temperatures



# GIW-12 Wellhead Temperatures



# GIW-13 Wellhead Temperatures



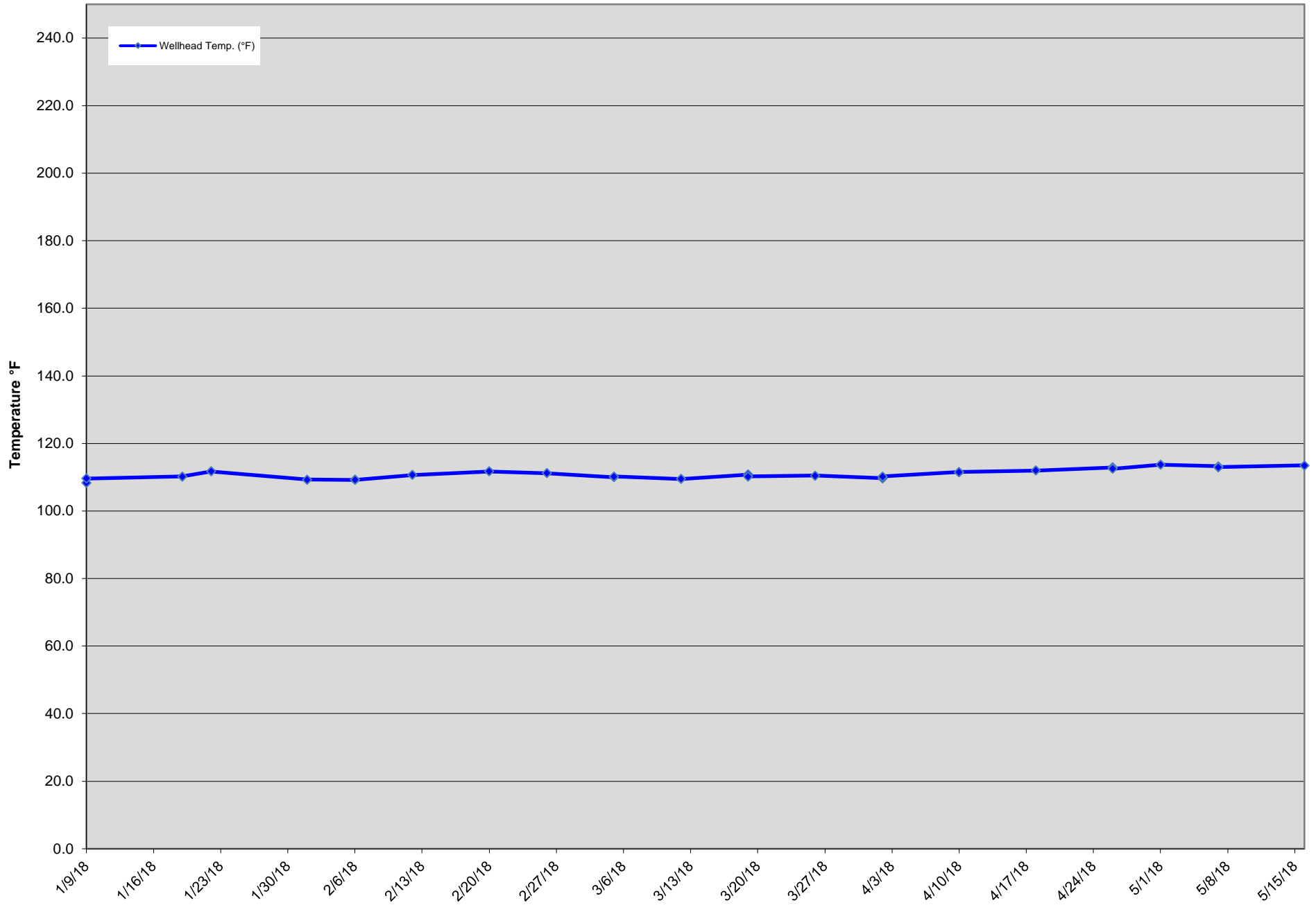
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**ATTACHMENT D**

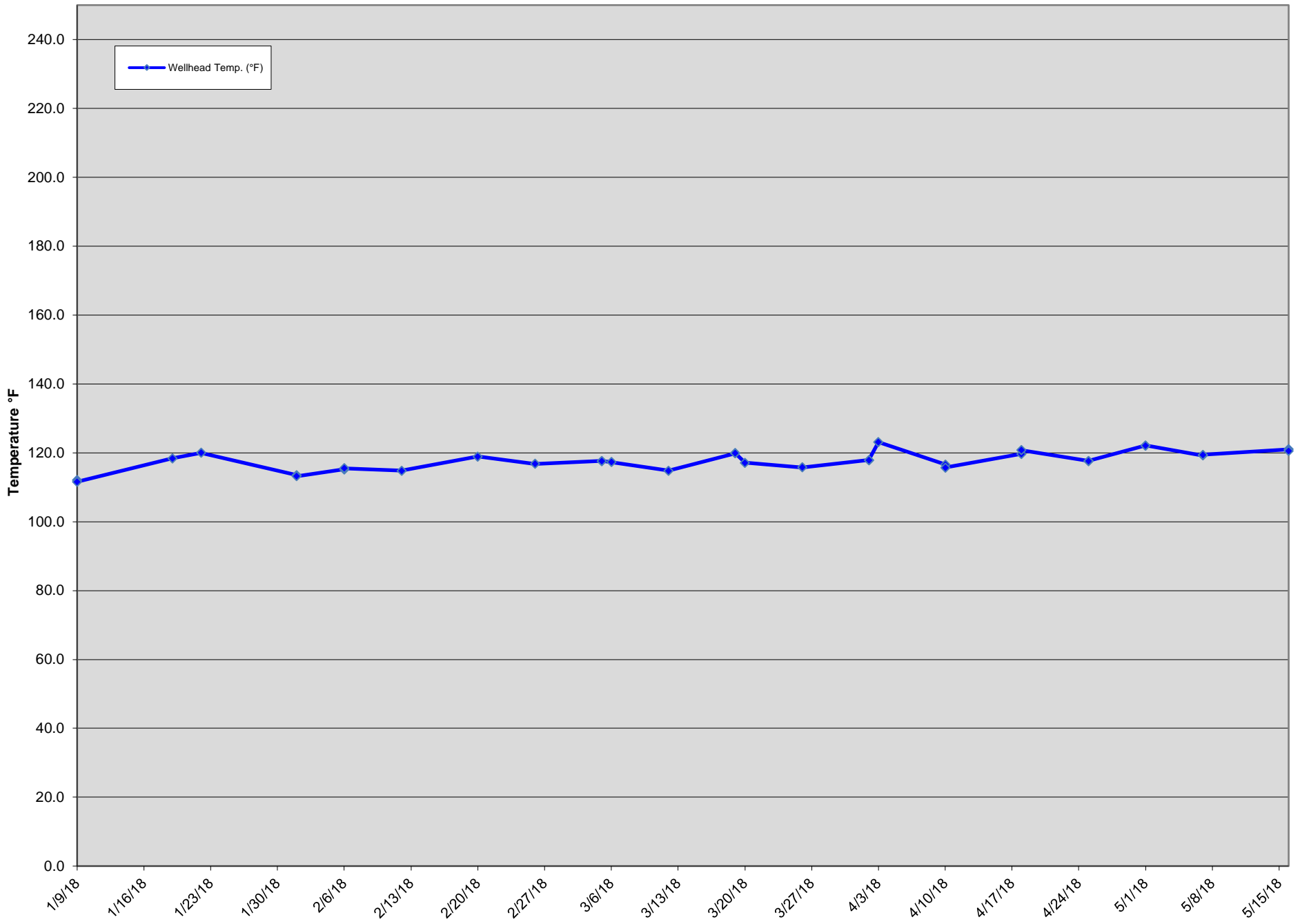
**NECK-AREA GAS EXTRACTION WELL DATA**

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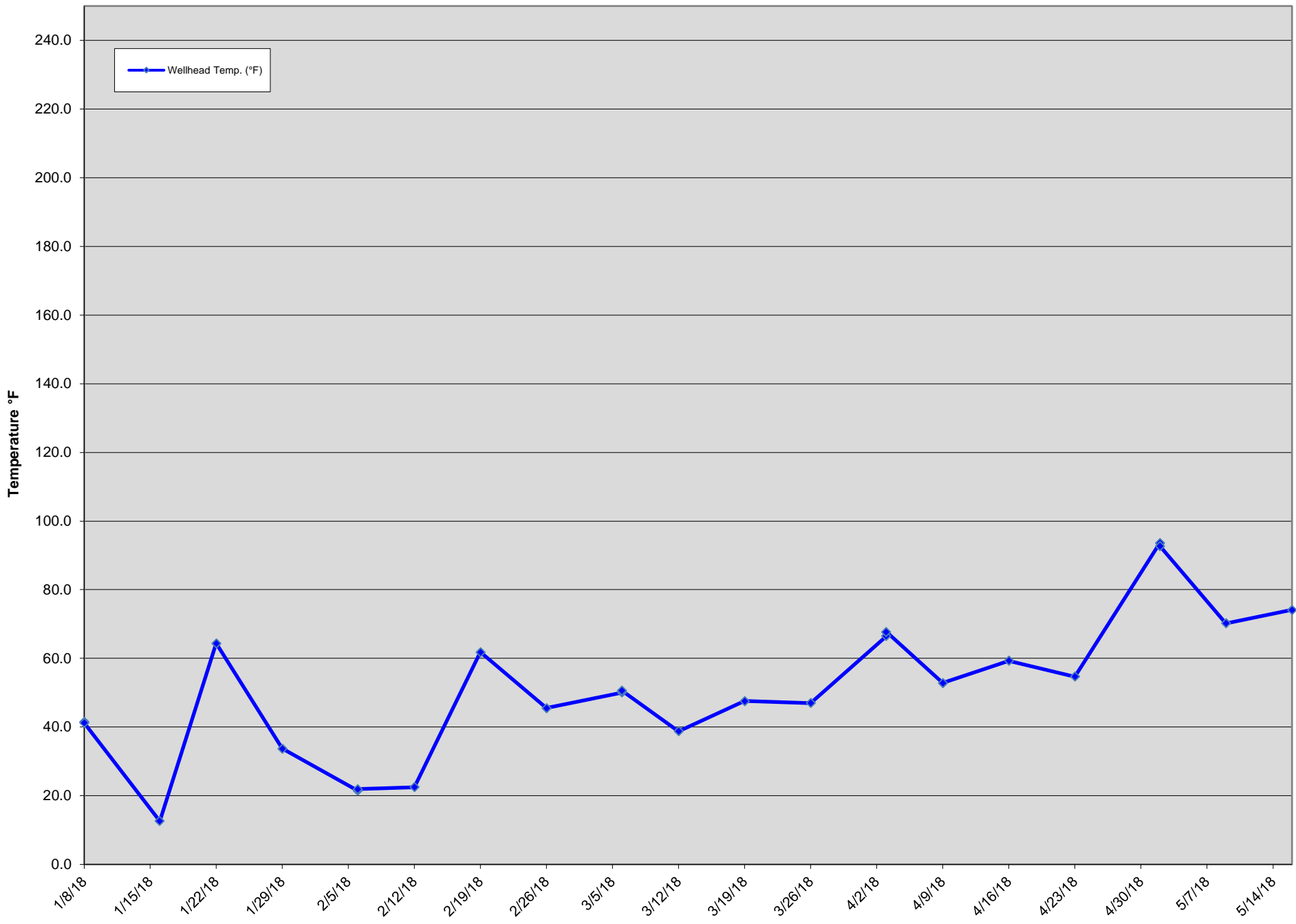
# GEW-008 Wellhead Temperatures



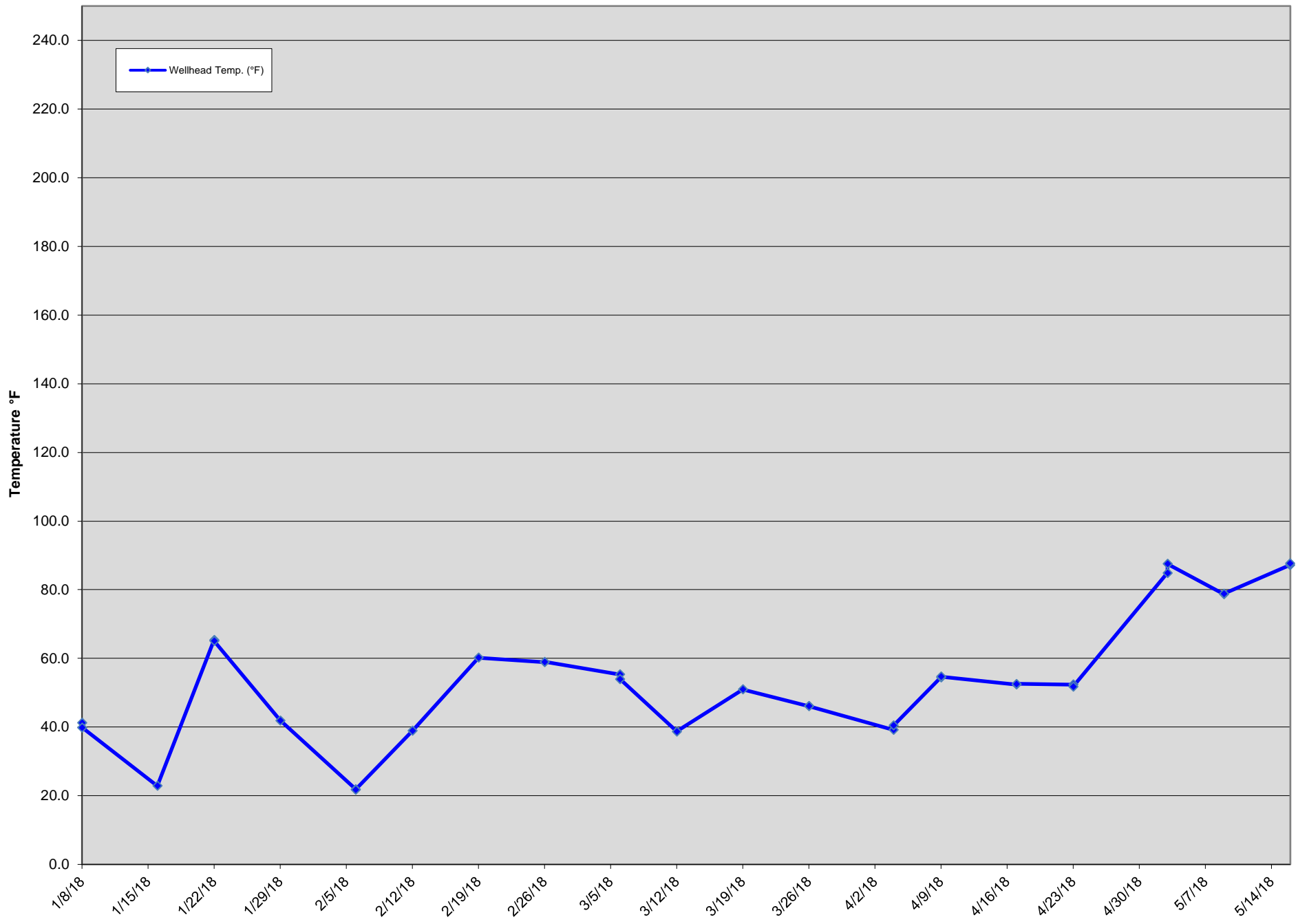
# GEW-009 Wellhead Temperatures



# GEW-010 Wellhead Temperatures

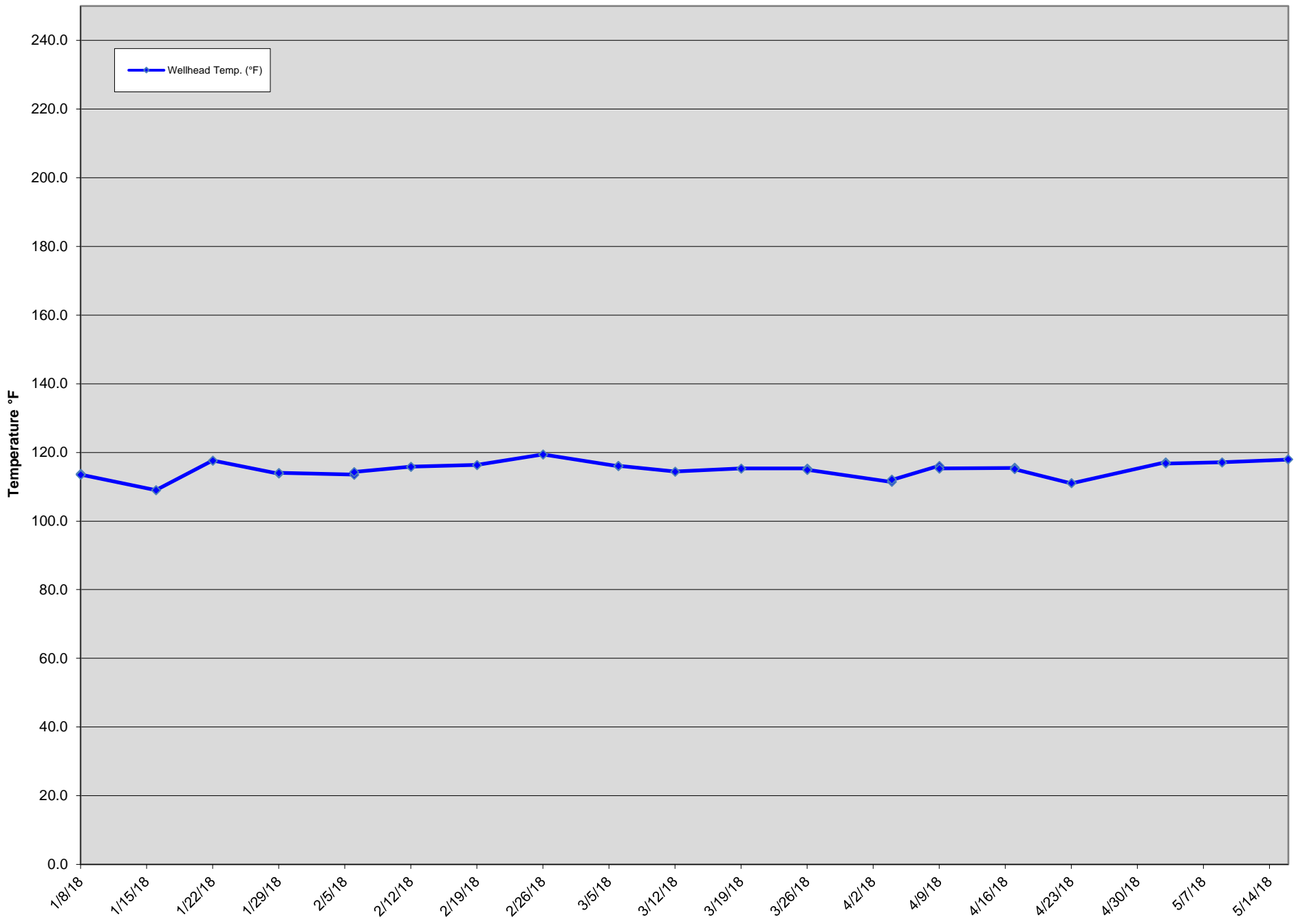


# GEW-038 Wellhead Temperatures

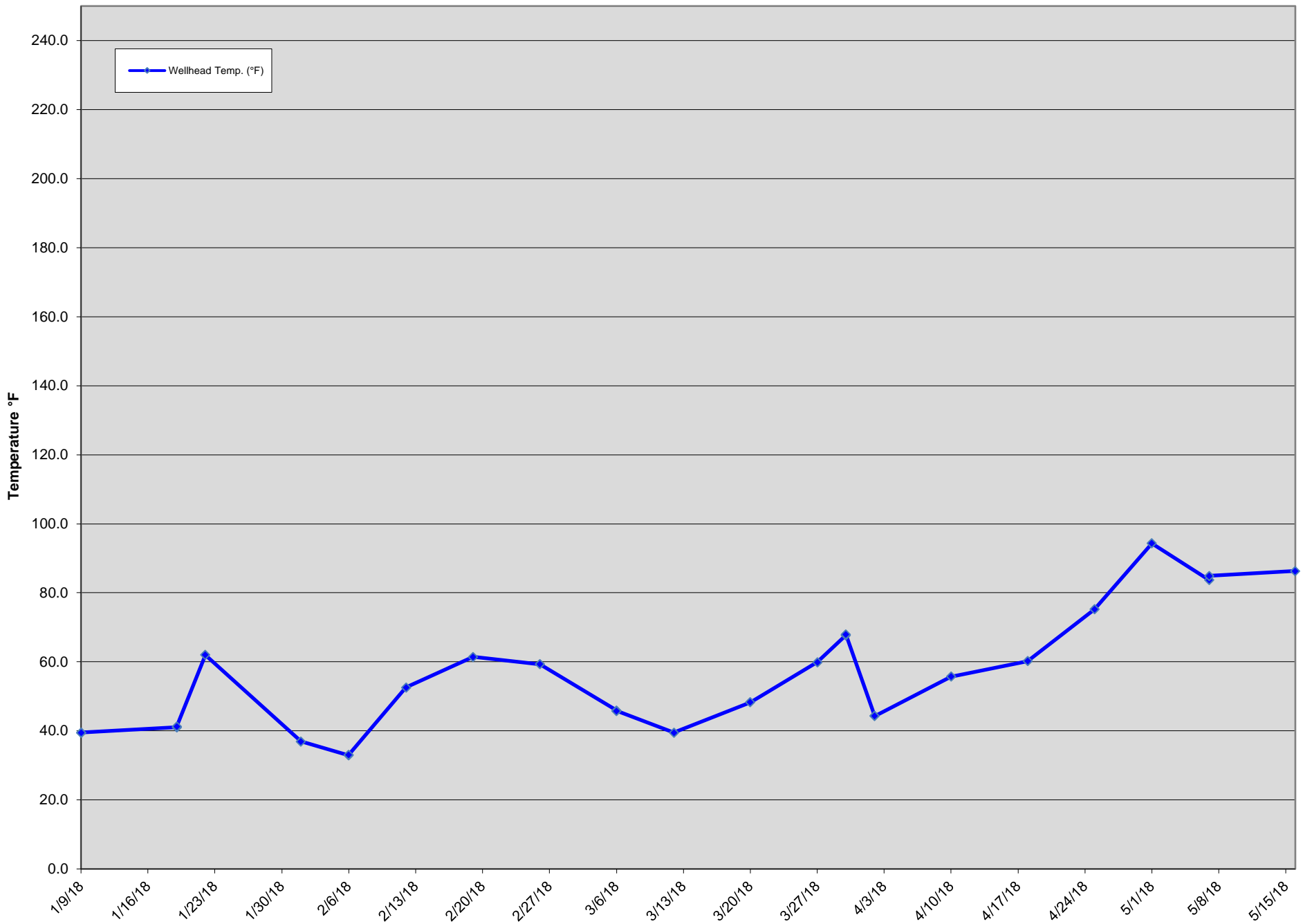




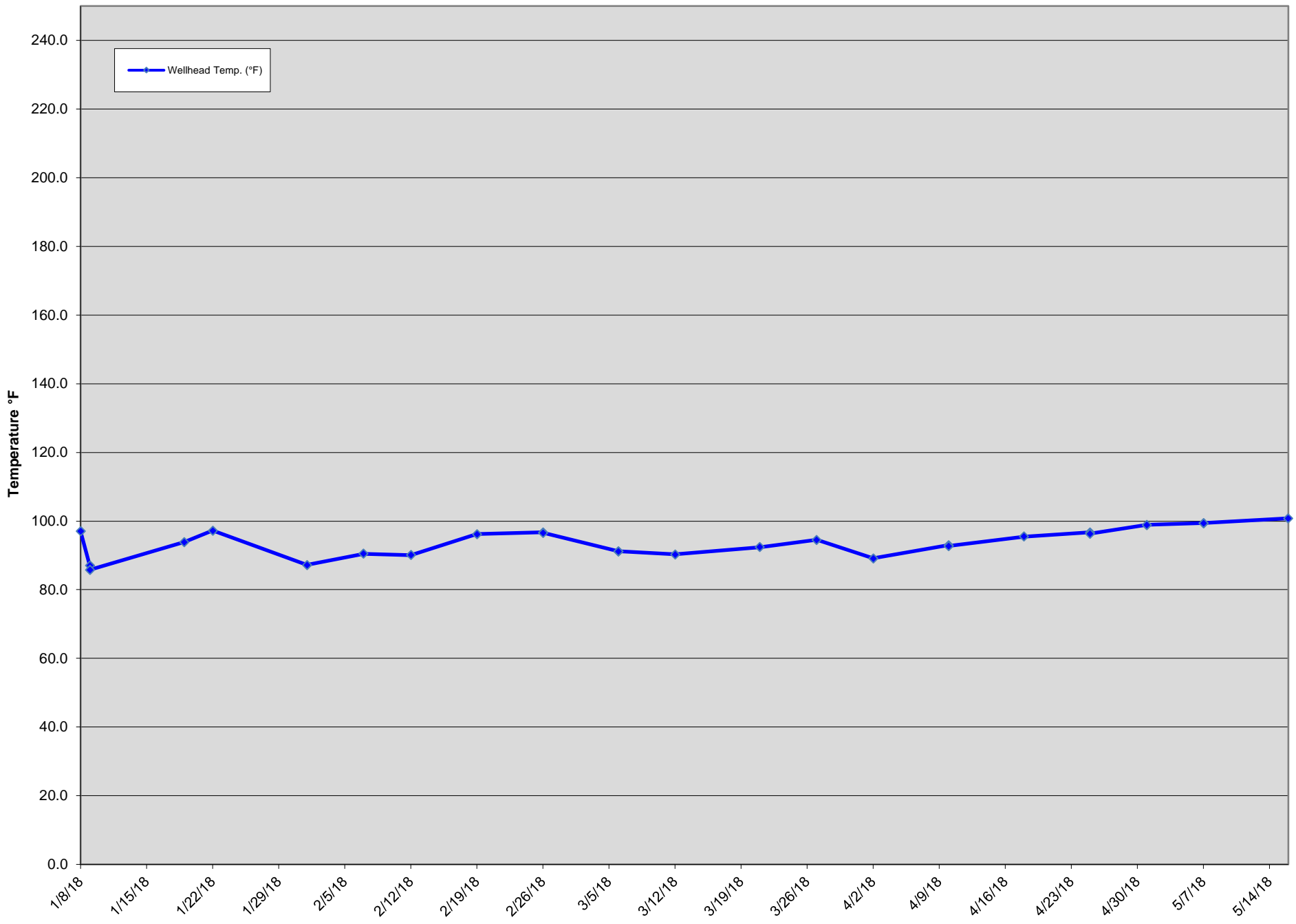
# GEW-039 Wellhead Temperatures



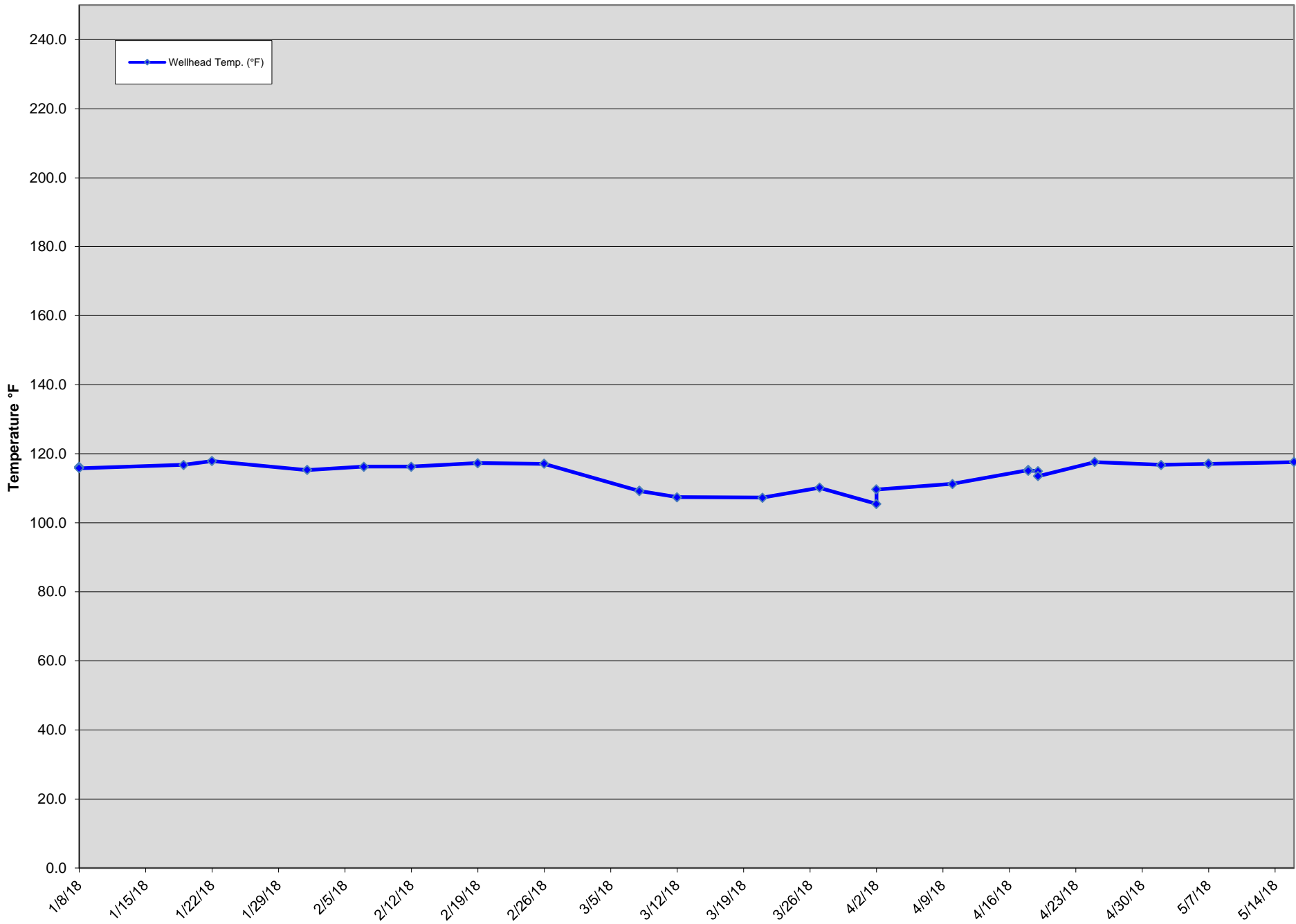
# GEW-040 Wellhead Temperatures



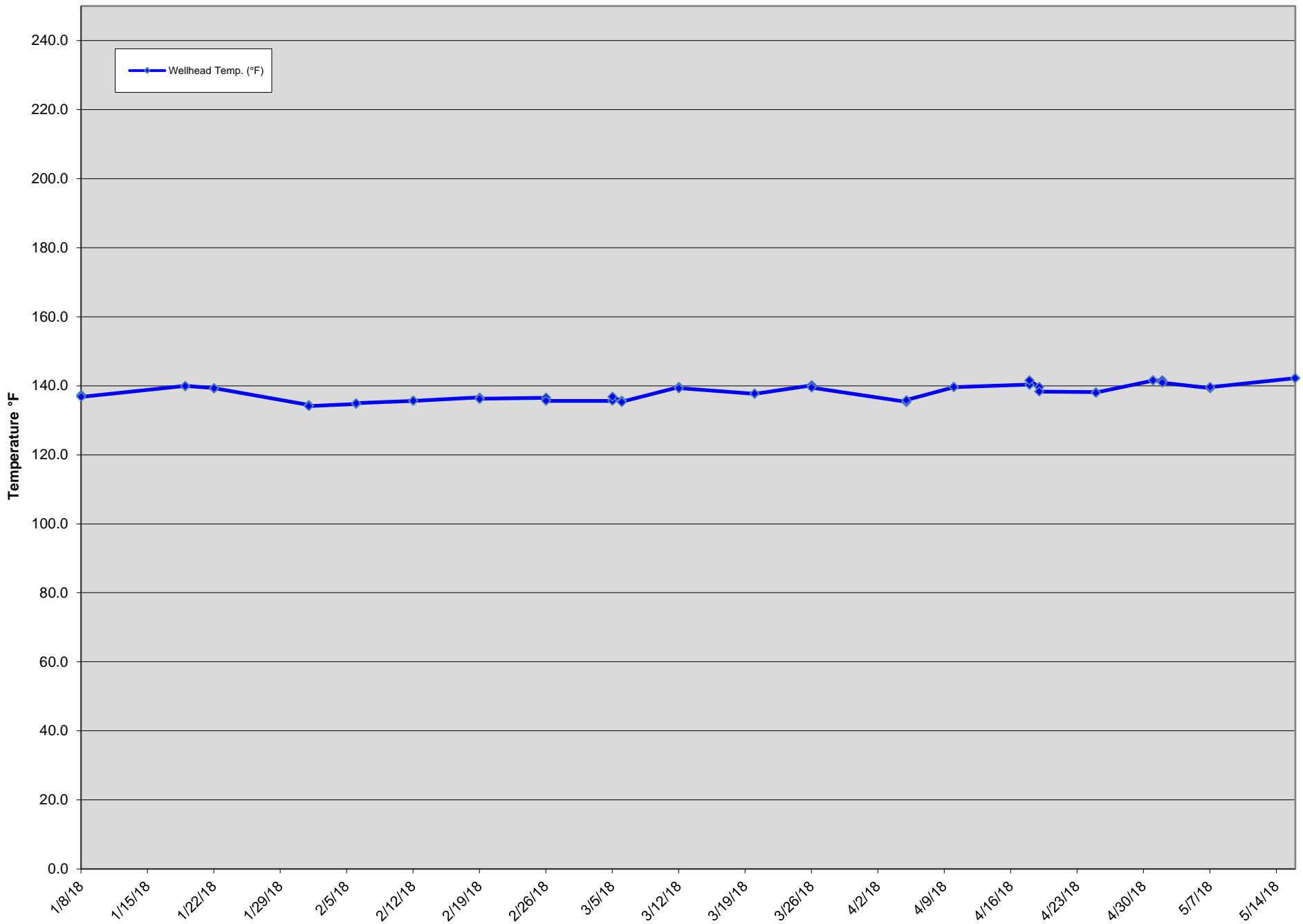
# GEW-041R Wellhead Temperatures



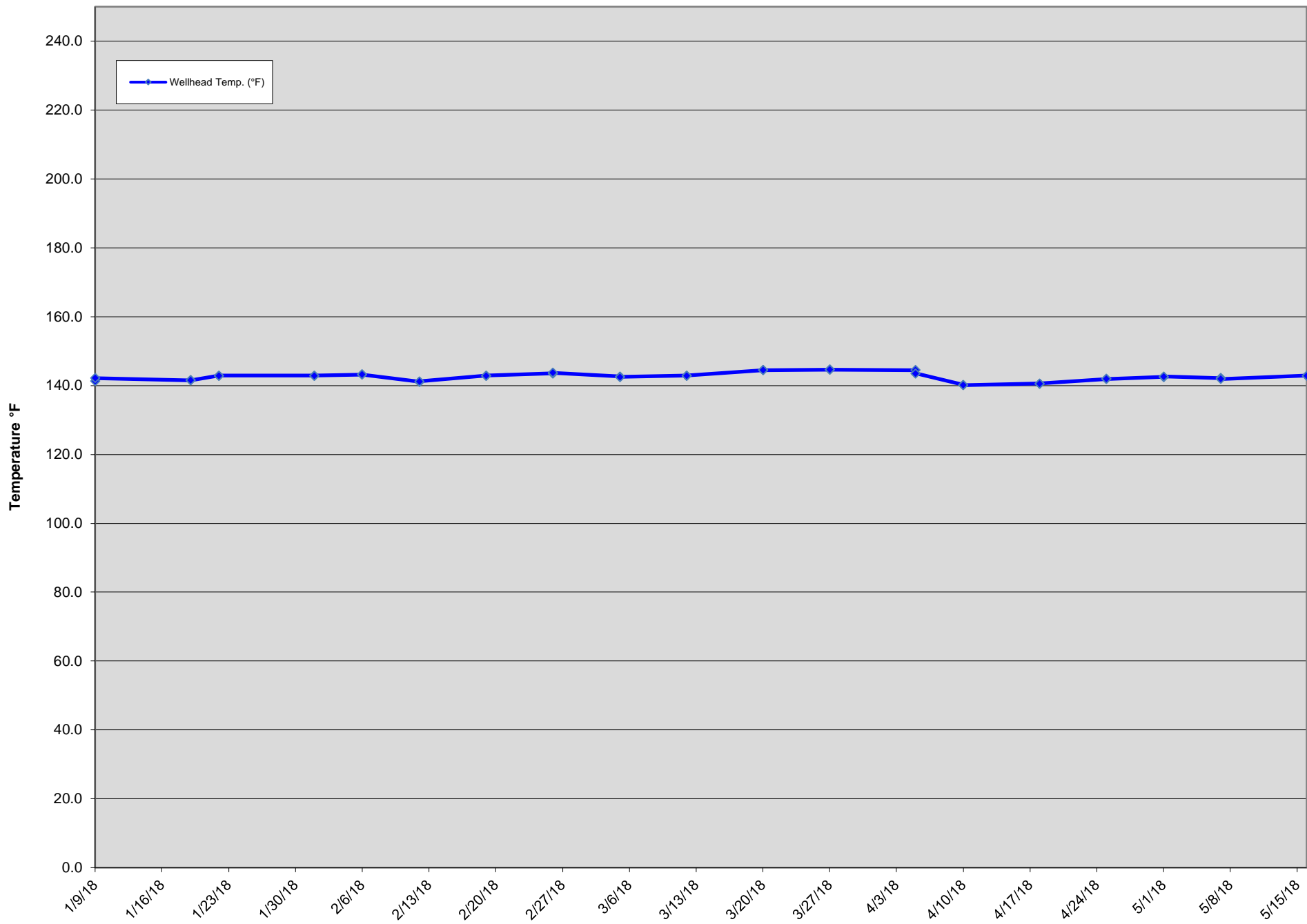
# GEW-043R Wellhead Temperatures



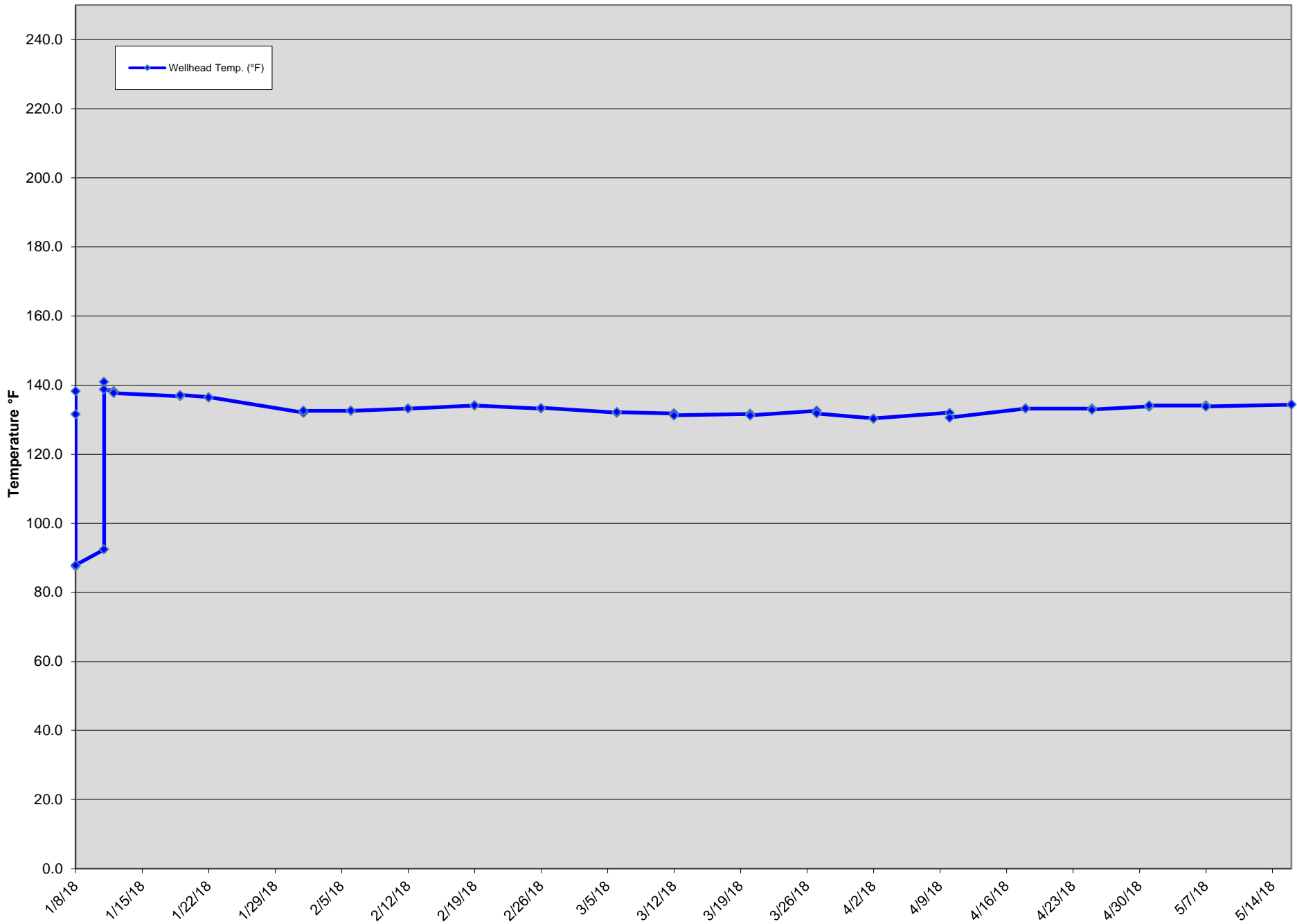
# GEW-053 Wellhead Temperatures



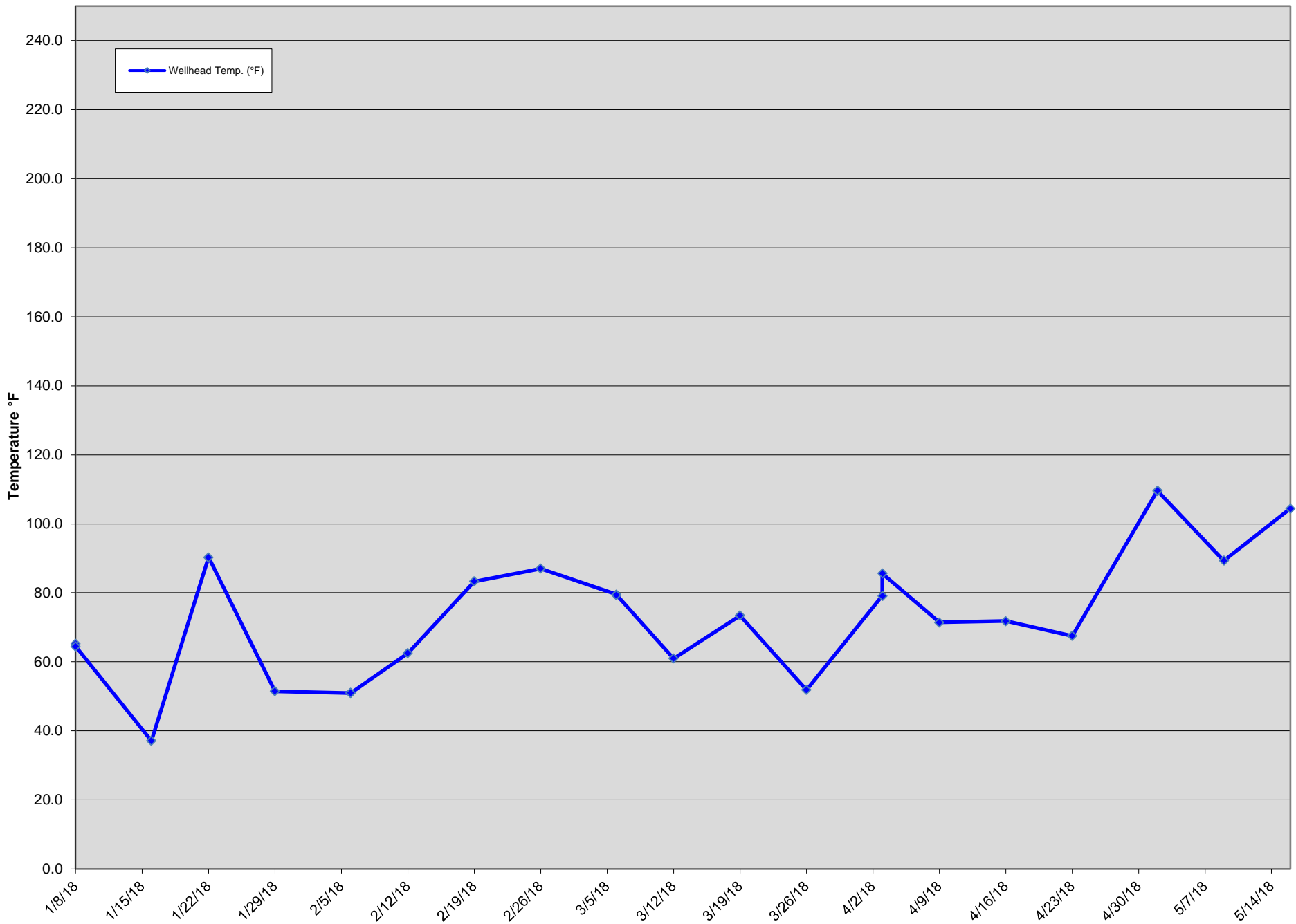
# GEW-054 Wellhead Temperatures



# GEW-055 Wellhead Temperatures

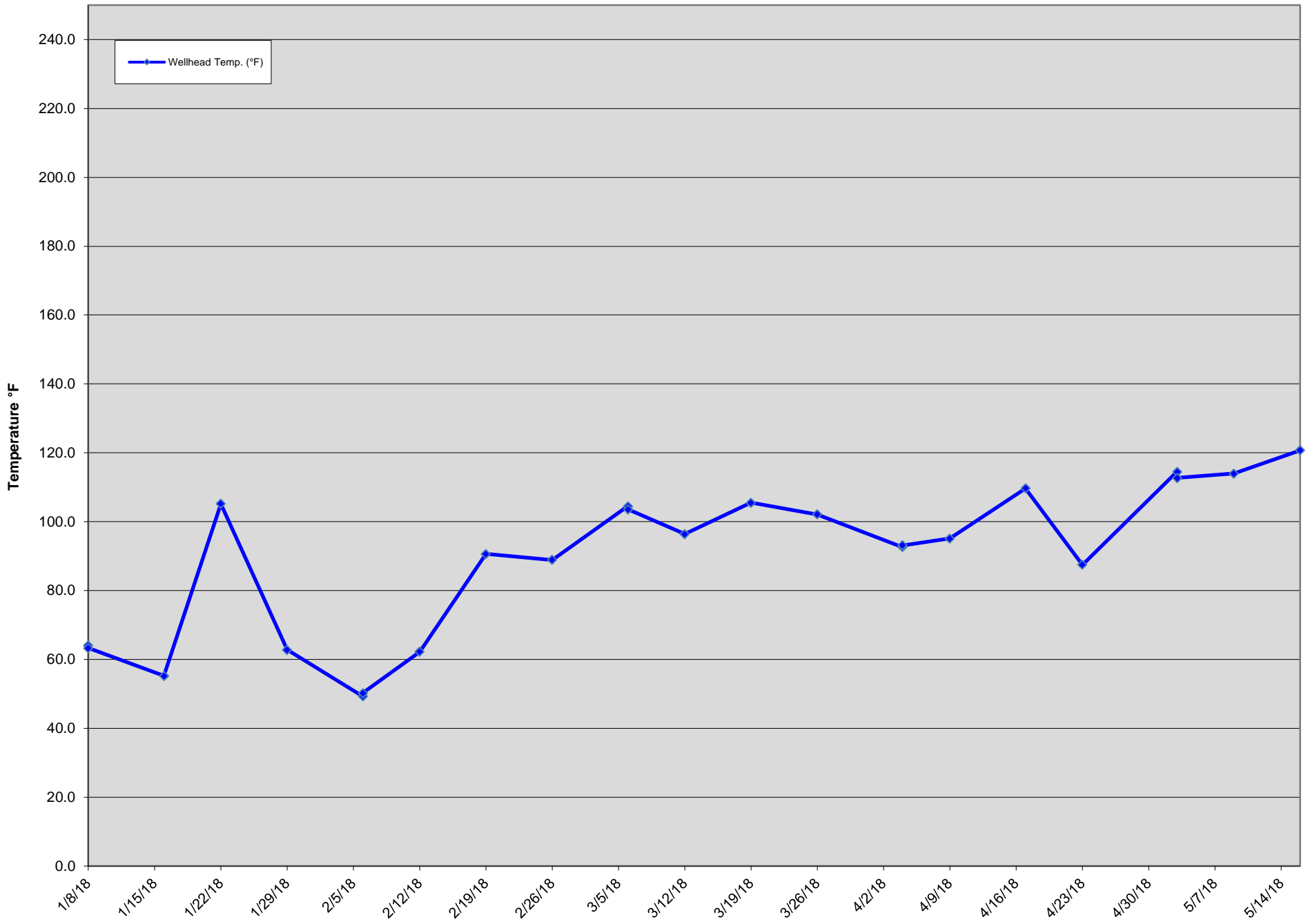


# GEW-056R Wellhead Temperatures





# GEW-109 Wellhead Temperatures



# GEW-110 Wellhead Temperatures

