

**Saltstone Disposal Facility**  
**Saltstone Disposal Unit (SDU) 4 and SDU Cell 2B**  
**Thermocouple Data**

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## 1.0 PURPOSE

The purpose of this document is to provide a summary of thermocouple temperature data recorded for Saltstone Disposal Unit (SDU) 4 and SDU Cell 2B. This information closes an Action Item from the December 6, 2012 U.S. Nuclear Regulatory Commission monitoring visit.

## 2.0 THERMOCOUPLE DATA

Data presented in this report was obtained from the Process Information (PI) system installed in the Saltstone Production Facility control room. The PI system captures relevant data associated with processing of material through the production facility as well as the disposal facilities. This report documents the thermocouple data obtained from SDU 4 and SDU Cell 2B. Microsoft Excel files containing all the presented data for each cell are provided separately from this document.

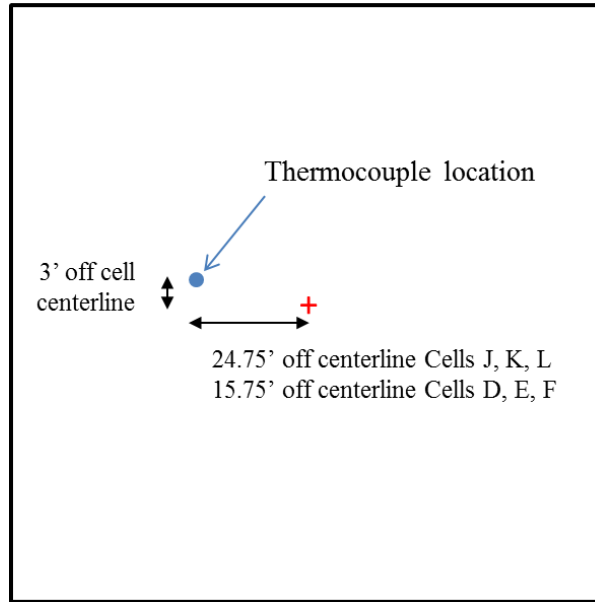
## 3.0 DATA PRESENTATION

Thermocouple data obtained from the PI system is presented graphically in this section. The data tables used to produce these depictions were generated from PI system data and that is provided separately from this document.

Since SDU 4 and SDU Cell 2B are physically different designs, a representative sketch of the thermocouple locations is presented for each cell design. After the sketch, a plot of cell thermocouple data and approximate saltstone fill height versus time is provided. Any data qualifiers for each data set are provided as notes below the applicable figure. The figures for SDU 4 contain data from a single thermocouple tree in each cell located as depicted in Figure 1. Figures 2-7 contain the available thermocouple data for SDU 4. The figures contain thermocouple data for the peak temperature profile for the cell. The data for Cells F and K also include three different heights. The figures for SDU Cell 2B are from three thermocouple trees at different locations within the cell as depicted in Figure 8. Figures 9-11 for SDU Cell 2B depict thermocouple data from representative depths (i.e., 2.5 feet, 10.5 feet, and 15.5 feet) for each location. Figure 12 depicts thermocouple data for all depths recorded from the third location (Train C) in Cell 2B.

Each temperature plot contains a black line indicating the approximate grout level (taken from the right vertical axis) as a function of time. Caution should be used when assessing the accuracy of this approximation since the fill height data is not taken from a calibrated field device rather it is visually determined via Closed Circuit Television observation of a marked gauge. The recorded value is rounded up for conservatism by the facility. The amount of uncertainty in this value is partly dependent on the level of grout.

**Figure 1: SDU 4 Individual Cell Thermocouple Location Sketch**



Note: Thermocouples located every 3 feet vertically from 3 feet to 24 feet off the cell floor.

Figure 2: SDU 4 Cell D Profiles

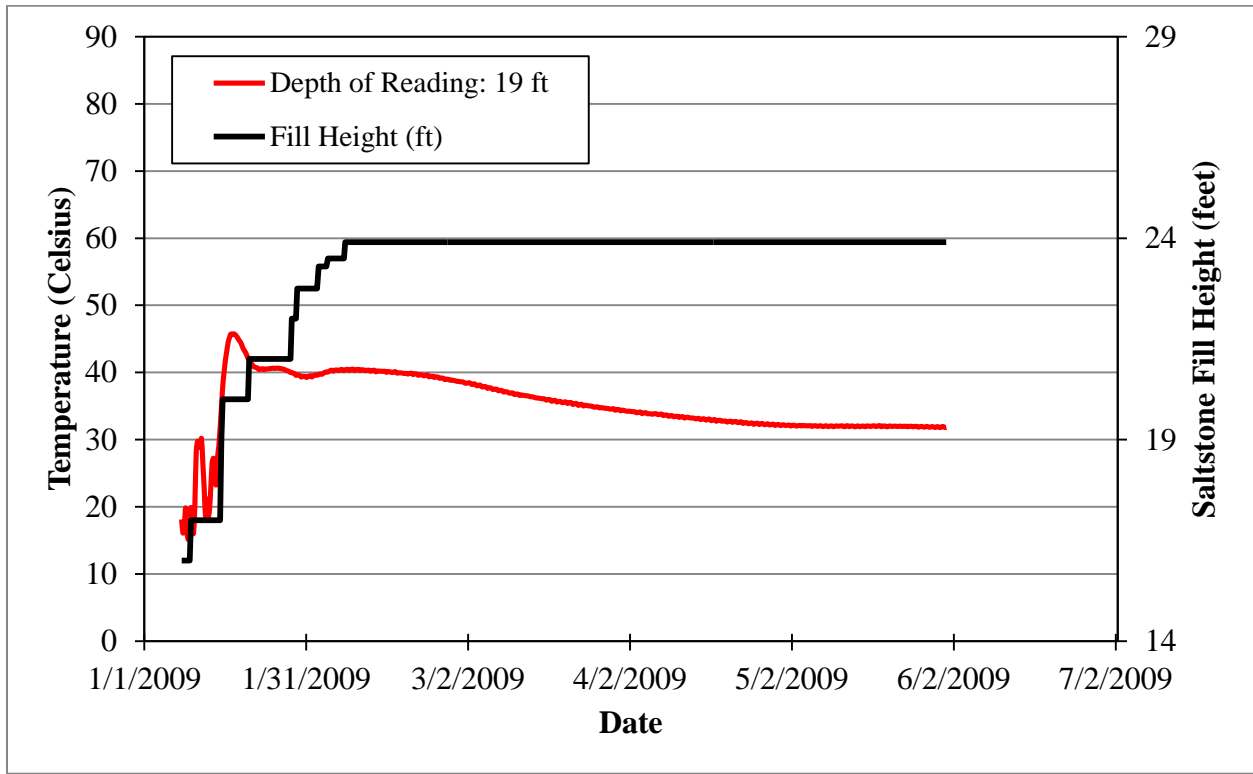
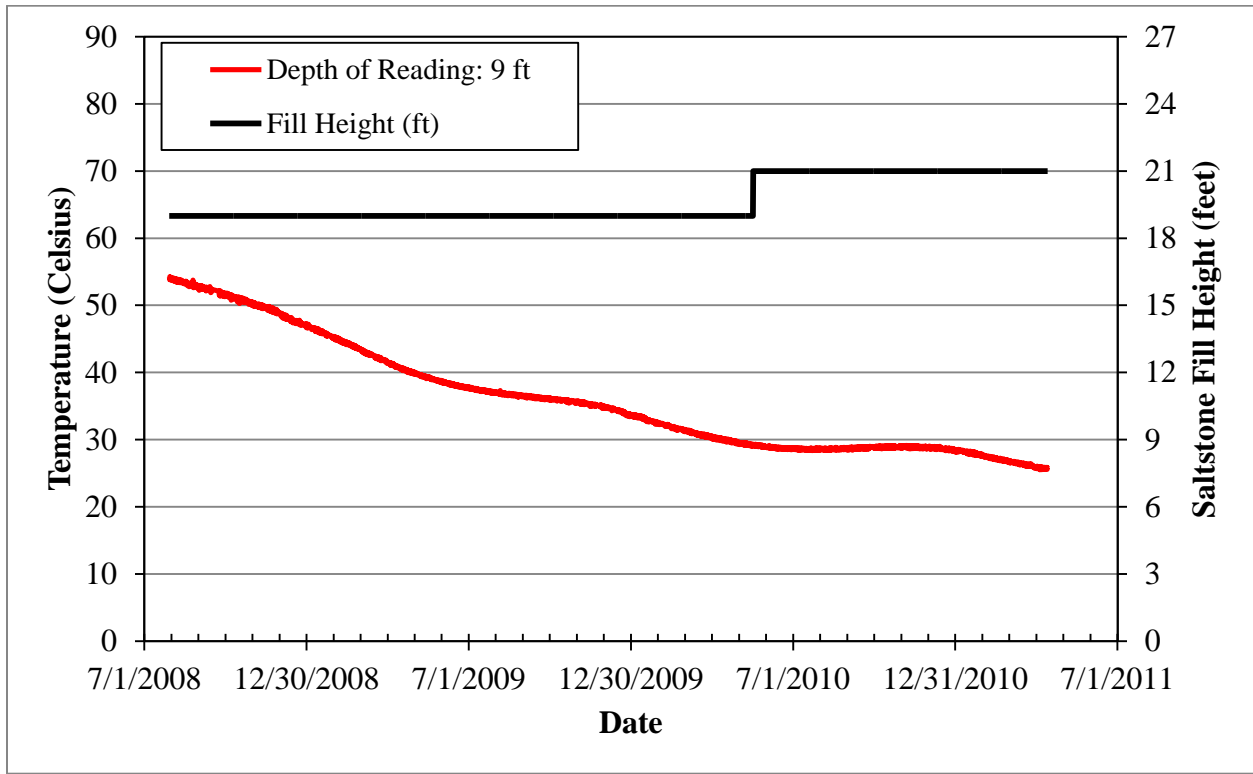


Figure 3: SDU 4 Cell E Profiles



Note: For SDU 4 Cell E online monitoring of temperature was not available until after pouring had completed.

Figure 4: SDU 4 Cell F Profiles

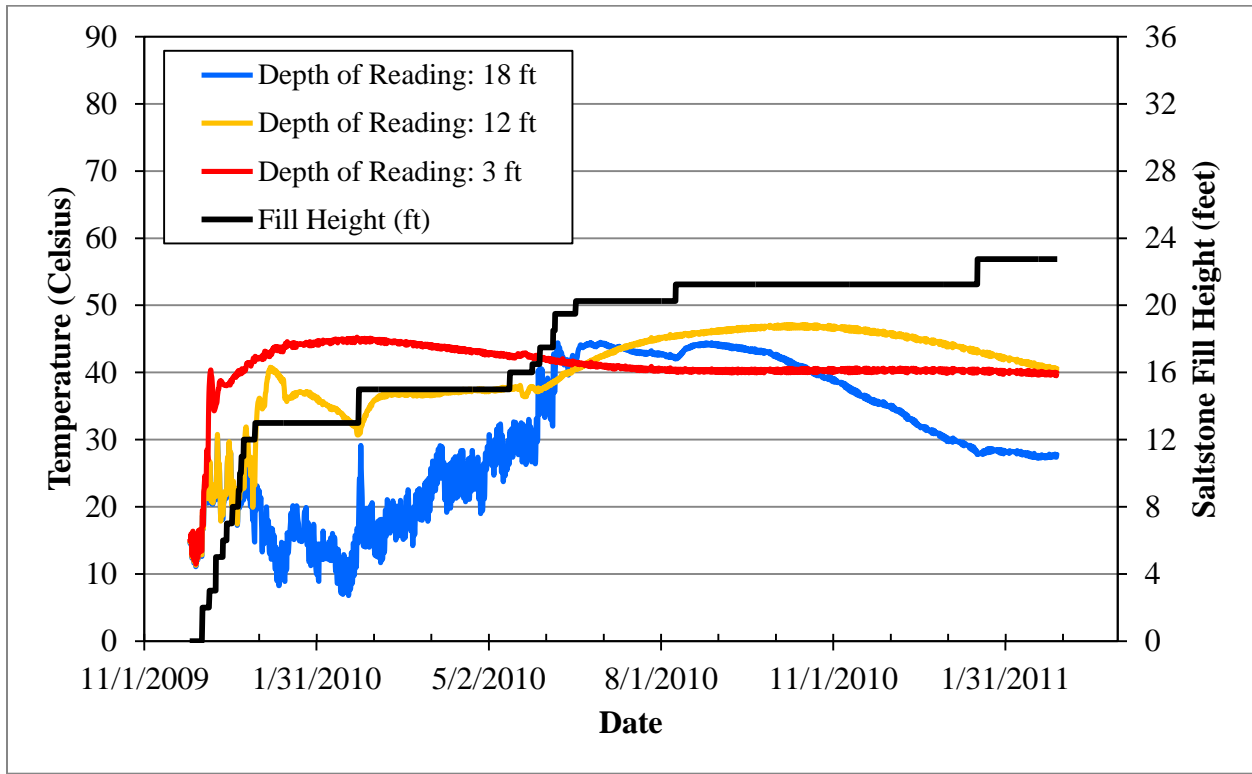
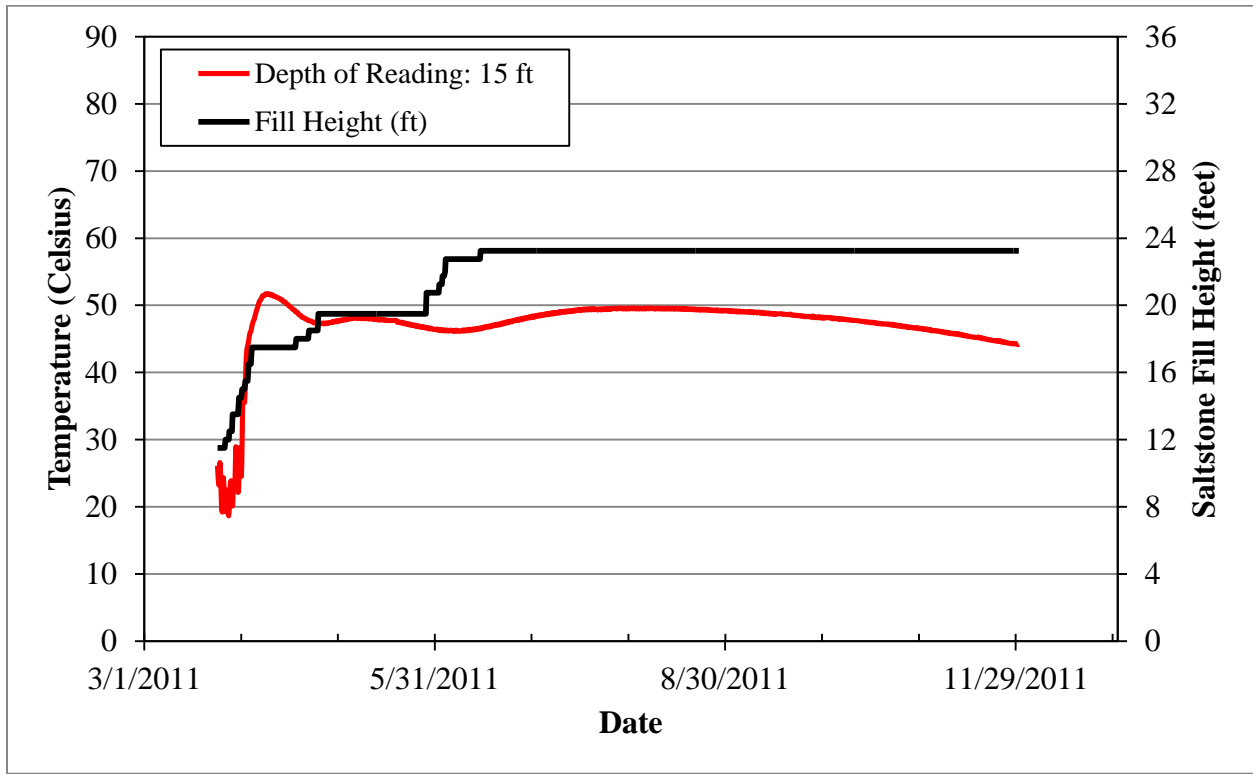


Figure 5: SDU 4 Cell J Profiles



Note: Online monitoring was out of service after November 2011 during the enhanced low-activity waste disposal outage.



Figure 6: SDU 4 Cell K Profiles

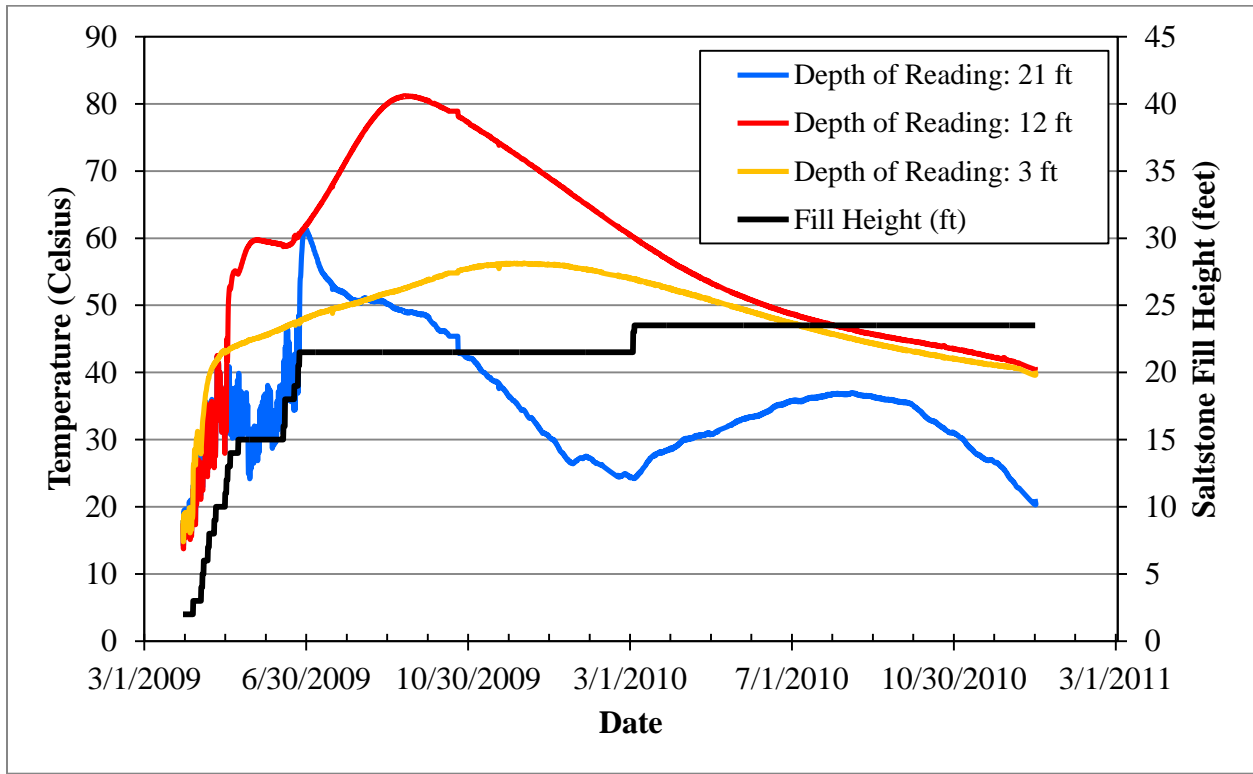
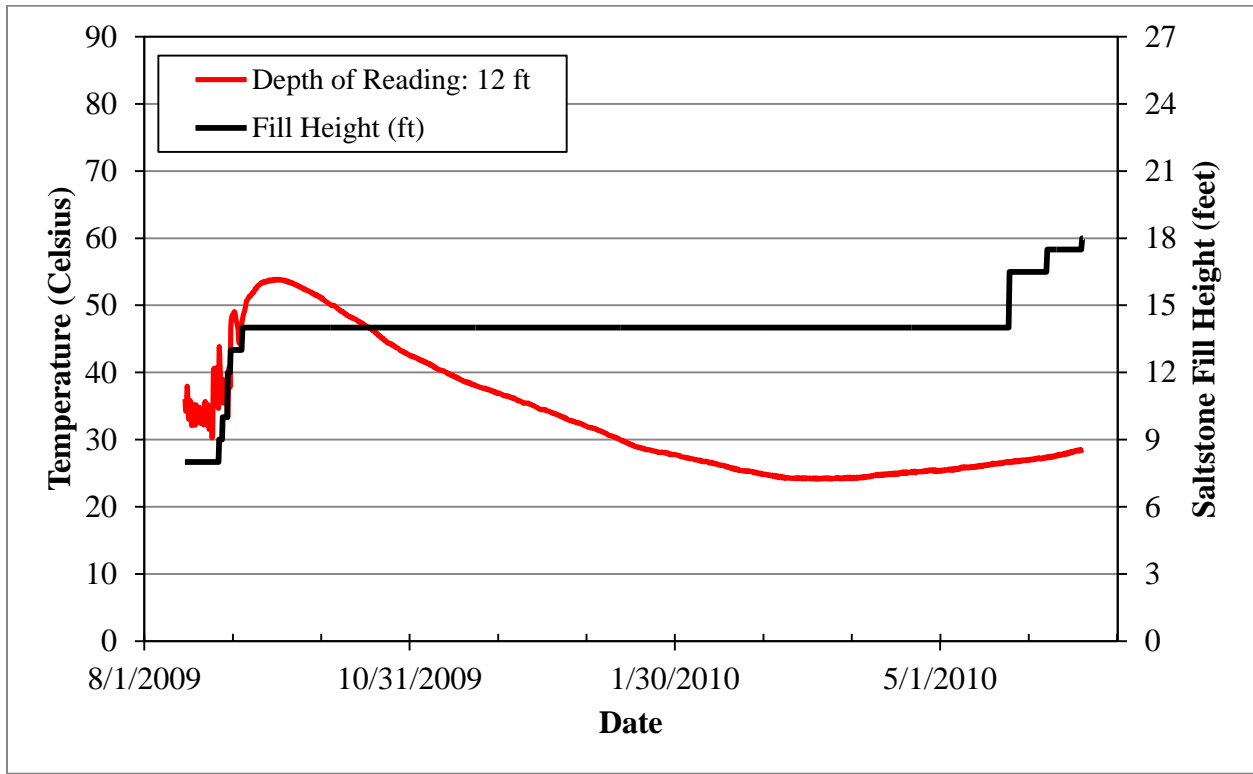
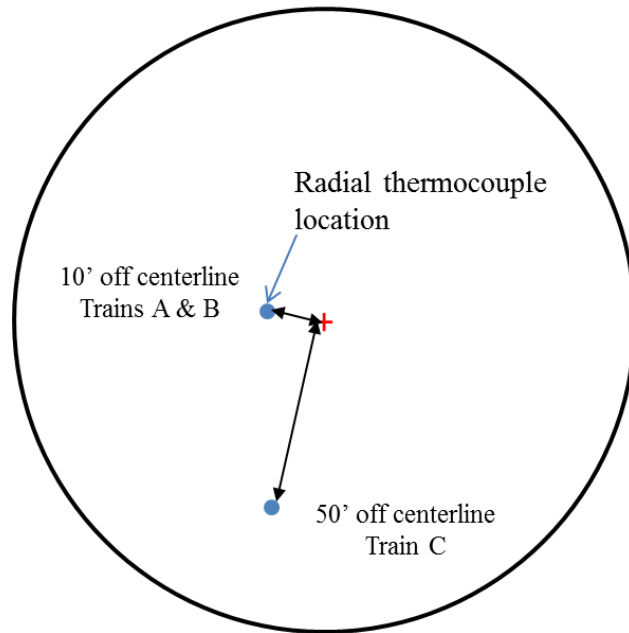


Figure 7: SDU 4 Cell L Profiles

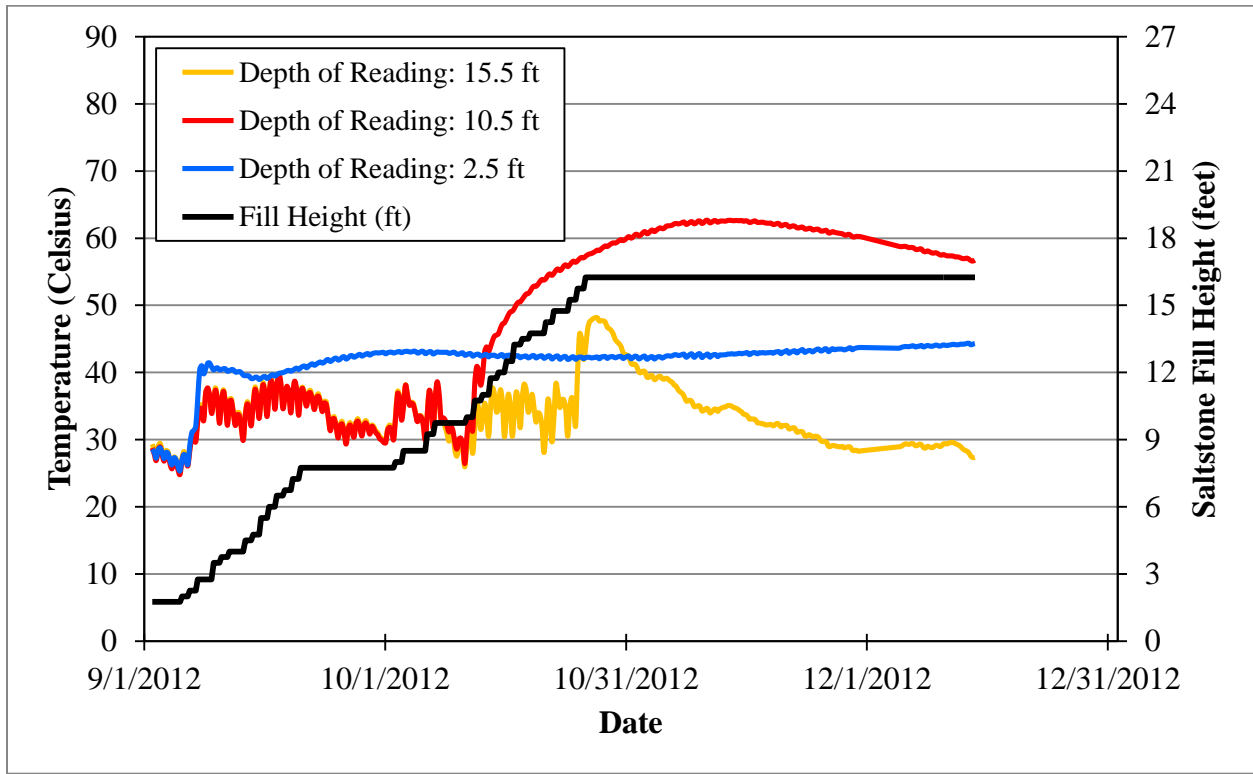


**Figure 8: SDU 2 Individual Cell Thermocouple Location Sketch**



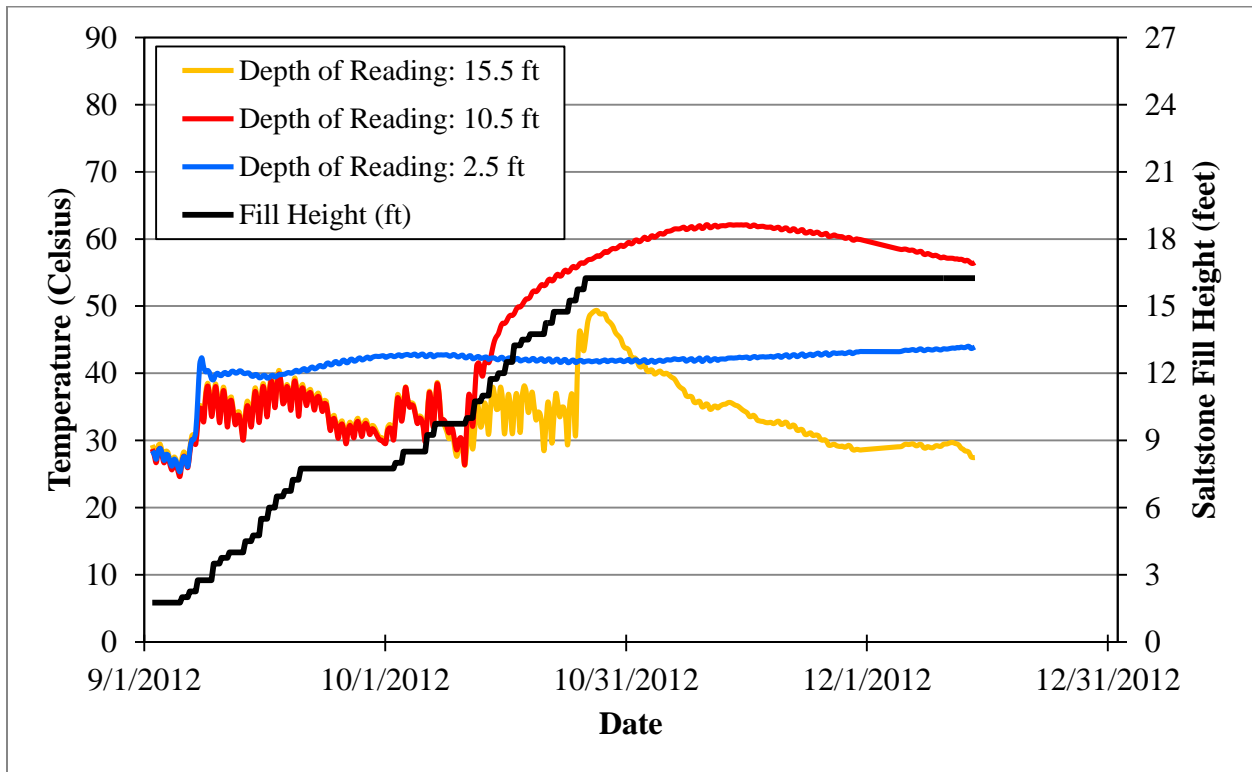
Note: Thermocouples located every foot vertically from 0.5 foot to 23.5 feet off cell floor Trains A and B and 0.5 foot to 22.5 feet off cell floor Train C.

Figure 9: SDU Cell 2B Profiles, Train A



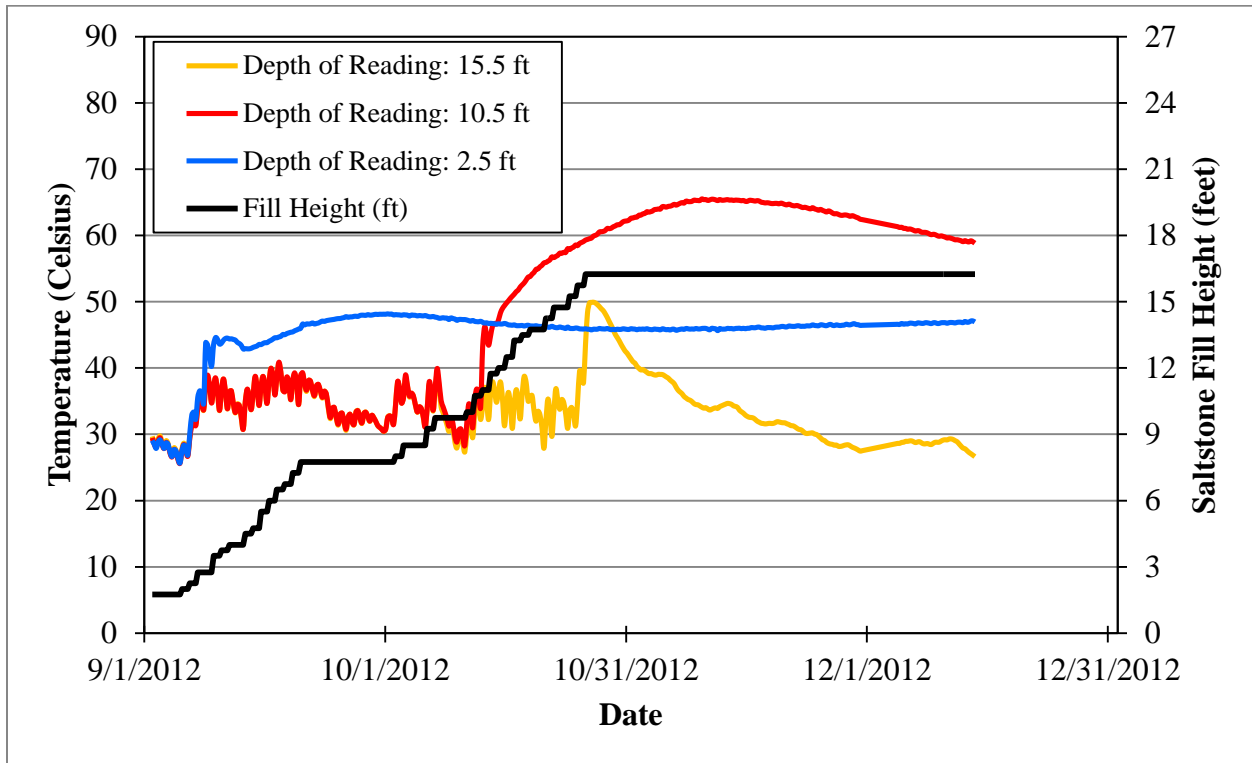
Note: SDU Cell 2B contains saltstone to a 16.25-foot elevation.

Figure 10: SDU Cell 2B Profiles, Train B



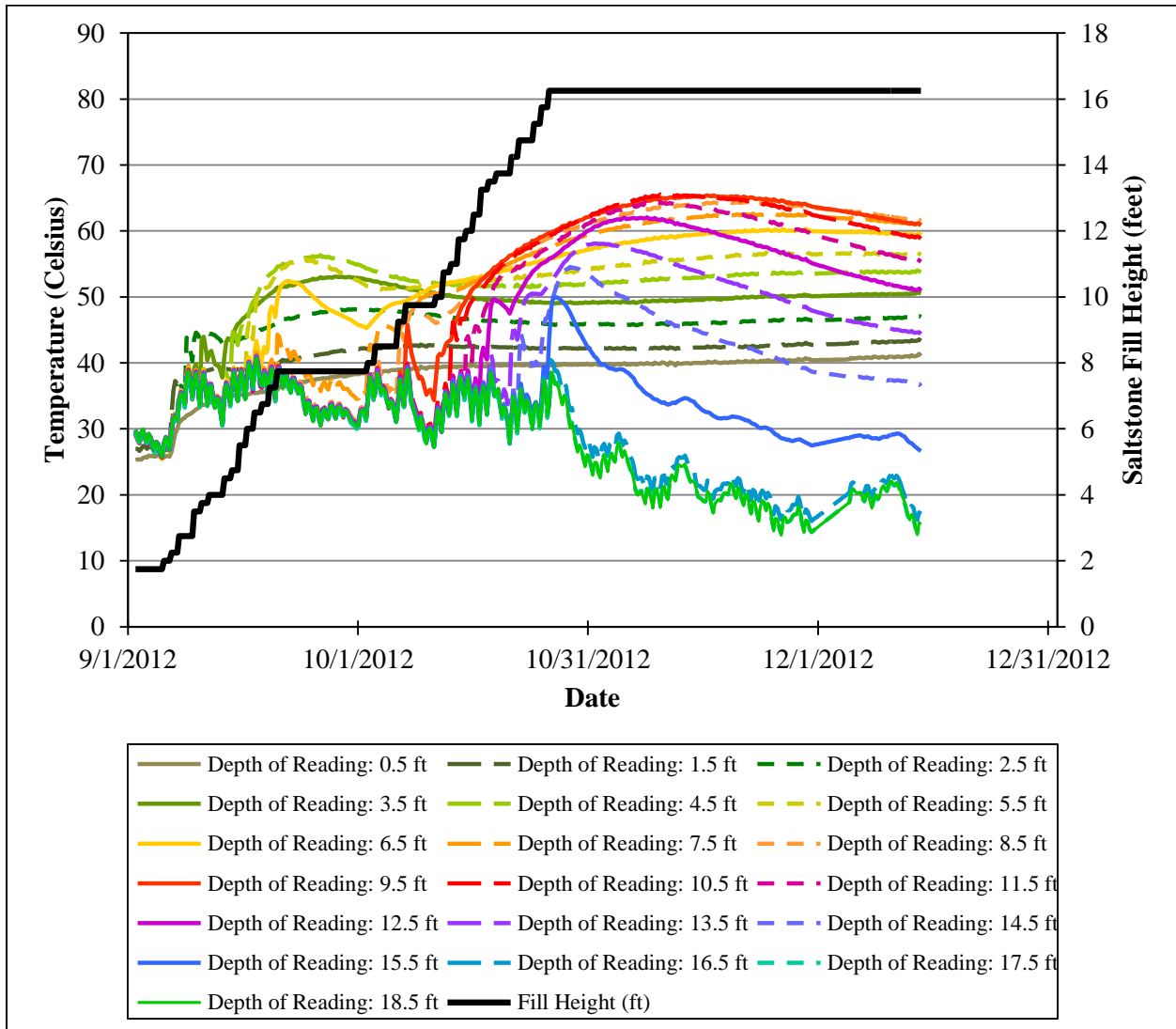
Note: SDU Cell 2B contains saltstone to a 16.25-foot elevation.

Figure 11: SDU Cell 2B Profiles, Train C, Selected Depths



Note: SDU Cell 2B contains saltstone to a 16.25-foot elevation.

Figure 12: SDU Cell 2B Profiles, Train C, All Recorded Depths



Note: SDU Cell 2B contains saltstone to a 16.25-foot elevation.