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Reconstruction of the Room D, B, G, and Q Closure Histories at the Waste Isolation Pilot Plant

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ABSTRACT

Experimental measurements of room closure in salt repositories are valuable for understanding the evolution of the underground and for validating geomechanical models. Room closure was measured during a number of experiments at the Waste Isolation Pilot Plant (WIPP) during the 1980's and 1990's. Most rooms were excavated using a multi-pass mining sequence, where each pass necessarily destroyed some of the mining sequence closure measurement points. These destroyed points were promptly reinstalled to capture the closure after the mining pass. After the room was complete, the mining sequence closure measurement stations were supplemented with remotely read closure measurement stations. Although many aspects of these experiments were thoroughly documented, the digital copies of the closure data were inadvertently destroyed, the non-trivial process of zeroing and shifting the raw closure measurements after each mining pass was not precisely described, the various closure measurements within a given room were not directly compared on the same plot, and the measurements were collected for several years longer than previously reported. Consequently, the hand-written mining sequence closure measurements for Rooms D, B, G, and Q were located in the WIPP archives, digitized, and reanalyzed for this report. The process of reconstructing the mining sequence closure histories was documented in detail and the raw data can be found in the appendices. Within the mid-section of a given room, the reconstructed closure histories were largely consistent with other mining sequence and remotely read closure histories, which builds confidence in the experiments and suggests that plane strain is an appropriate modeling assumption. The reconstructed closure histories were also reasonably consistent with previously published results, except in one notable case: the reconstructed Room Q closure histories 30 days after excavation were about 45 % less than the corresponding closures reported in Munson's 1997 capstone paper.

ACKNOWLEDGMENT

We gratefully acknowledge the assistance of Grace Duran, Courtney Herrick, and Wesley DeYonge who took the time to find the hand-written Mining Sequence Closure Gage Installation Data Sheets and Mining Sequence Closure Gage Reading Data Sheets in the WIPP archives. This study would not have been possible without their efforts. In addition, Wesley DeYonge reviewed a draft of this report and helpfully alerted us to the existence of the Mining Sequence Closure Gage Installation Data Sheets, which documented when the miner excavated a given closure station and each gage's critical first reading after being installed. Finally, we acknowledge the WIPP Thermal/Structural Interactions team who designed, implemented, operated, and documented the unique set of experiments analyzed herein.

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1. INTRODUCTION

Rooms D, B, G, and Q were four experiments at the Waste Isolation Pilot Plant (WIPP), which is a repository for defense-related transuranic nuclear waste in southeast New Mexico, USA. The repository is roughly 660 m underground in a geologic bedded rock salt formation known as the Salado. The mining of a room, combined with the weight of the overburden, causes a substantial deviatoric stress around the room after it is excavated. Rock salt flows in a viscoplastic manner in the presence of deviatoric stress, which causes rooms to close over time. This closure impacts day-to-day operations in the repository and eventually helps isolate the nuclear waste from the biosphere. Accordingly, geomechanicians develop models to predict this closure, and the closure of Rooms D, B, G, and Q were carefully measured over several years in order to validate such models.

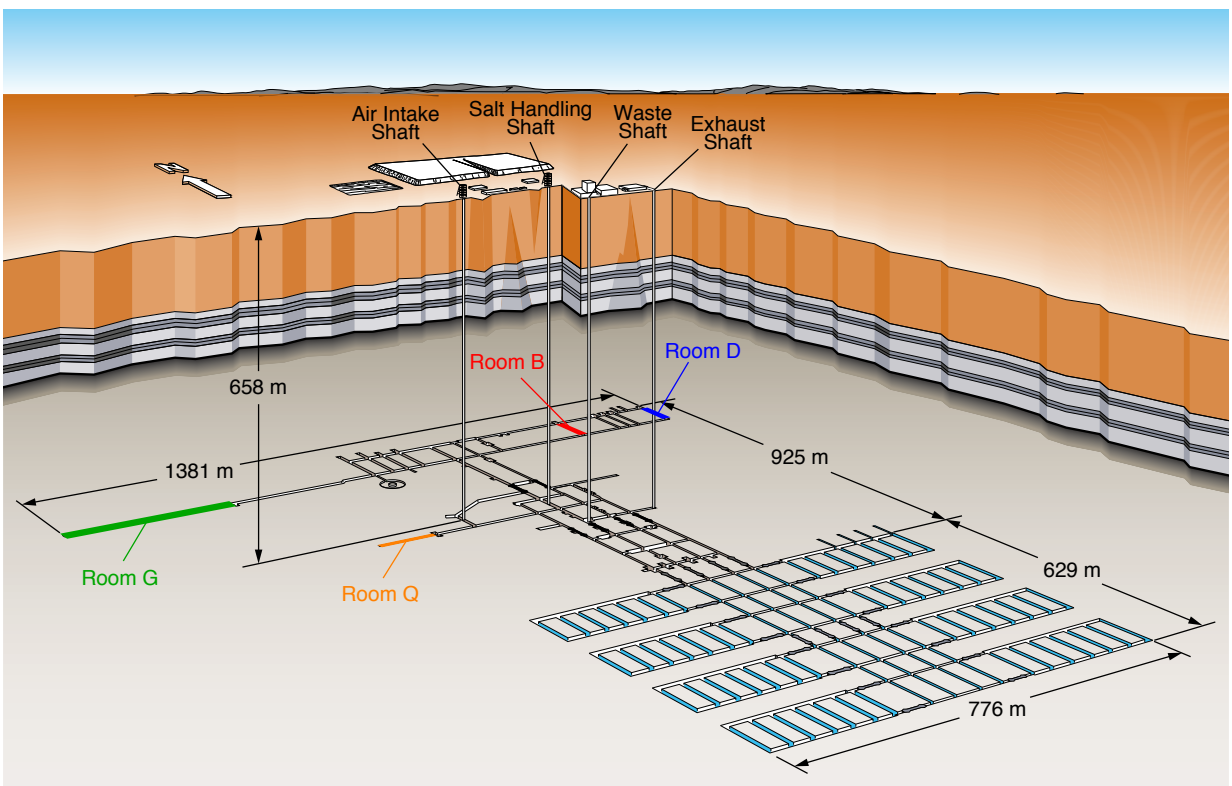


Figure 1-1. WIPP layout showing the location of Rooms D, B, G, and Q.

Several independent groups of researchers have compared their models against the closure of Rooms D, B, G, and Q. Munson and co-workers compared their models against the closure of these rooms, as well as others, in a series of papers (Munson et al. 1989; Munson et al. 1990b;

Munson and DeVries 1990; Munson and Weatherby 1993; Munson et al. 1996; Munson 1997) that led to the current WIPP porosity response surface model (Butcher 1997; Stone 1997). More recently, Ofoegbu and Dasgupta (2016), Ofoegbu and Dasgupta (2017), and Ofoegbu and Dasgupta (2018) compared various incarnations of their salt constitutive model against the closure of Rooms D and B. In addition, the Joint Project III partners compared eight different salt constitutive models against the closure of Rooms D and B (Hampel et al. 2016; Hampel et al. 2018; Reedlunn 2018). Other rooms at the WIPP may also be useful for model validation, such as the Room A series (Munson et al. 1991; Munson et al. 1992c) or Room H (Munson et al. 1987a), but Rooms D, B, G, and Q are reasonably similar to one another and more straightforward to analyze, so they are the focus of this report.

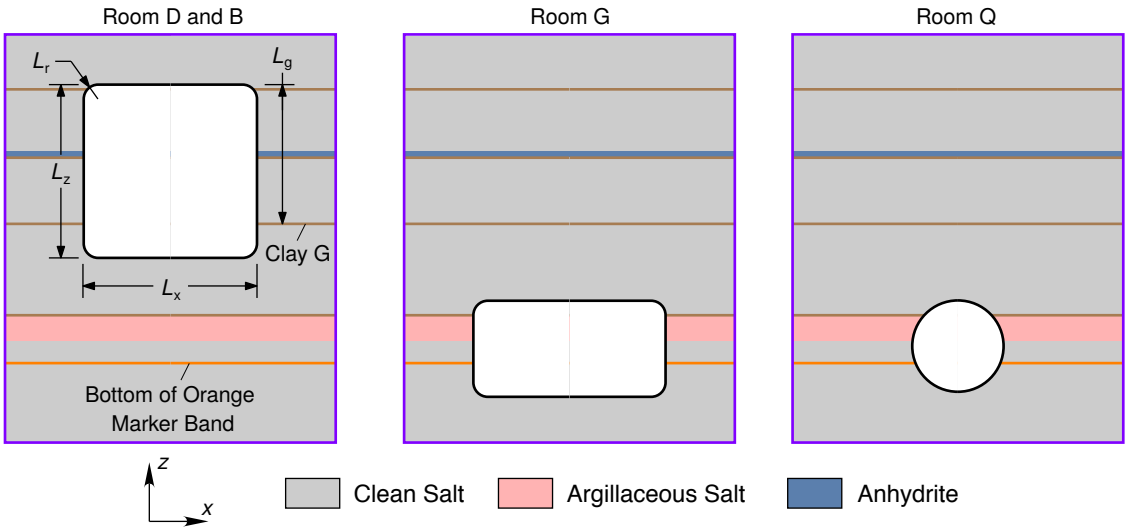


Figure 1-2. Rooms D, B, G, and Q nominal initial cross-sectional geometries and locations.

The locations of these four rooms and their cross-sectional geometries are respectively shown in Figs. 1-1 and 1-2. The stratigraphy in Fig. 1-2 is the 1983 reference stratigraphy (Krieg 1984, Fig. 5) with the bottom of the orange marker band at 4.42 m below Clay G (Jensen et al. 1993, Appendix B) added for reference. Fig. 1-2 also depicts a coordinate system where the x, y, and z directions respectively correspond to the room width L_x, the room length L_y (into the page in Fig. 1-2), and the room height L_z. Table 1-1 lists the values of these dimensions for each room, as well as its position relative to Clay G L_g and the corner radius L_r. The sources for these dimensions were Munson et al. (1989, Fig. 3-3) for Rooms D and B, Morgan and Stone (1985, Fig. 8) for Room G*, Jensen et al. (1993, Fig. 5-4) for Room Q, and Carrasco (2015) for L_r in Rooms D, B, and G†.

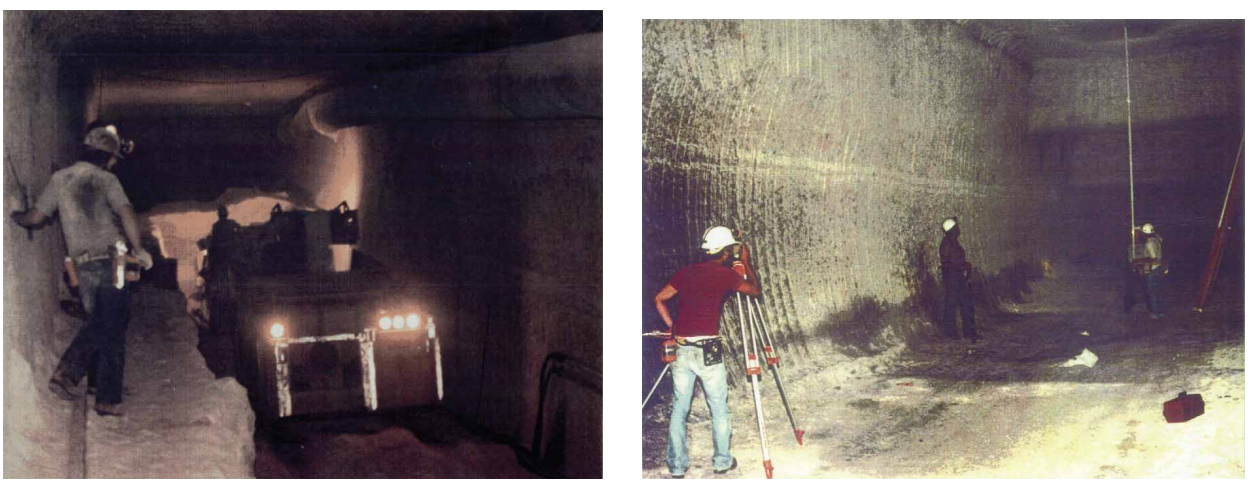
*Munson et al. (1992b, Fig. 2.2.3 and 2.2.4), Munson et al. (1987b, Fig. 3.0.1), and Morgan and Stone (1985, Fig. 8) respectively place Room G at $L_g = -2.81$, -2.44, -2.62, and -2.44 m. A position of $L_g = -2.44$ m was adopted herein because it places the Room G ceiling about 2 m above the bottom of the orange marker band, which agrees with statements in Munson et al. (1987b, pg. 15).

†Surprisingly, the fillet radius L_r for Rooms D, B, and G does not seem to be formally documented, but the room corners were finished with a 0.46 m radius cutting head (Carrasco 2015), which agrees with measurements of the profiles in Munson et al. (1987b) (Herrick 2015).

Some of the salient details from each experiment help explain the continued interest in their closure histories. All four rooms are long and slender, which suggests one can treat the deformation in each room's mid-section as a plane-strain initial boundary value problem. Rooms D and B are square cross-section drifts that were nominally identical for the first year after they were excavated. Heaters were turned on in Room B after one year to simulate the effects of heat generating nuclear waste, while the other three rooms were configured without heaters. Room G is particularly relevant because its rectangular cross-section has a similar width-to-height ratio and elevation within the WIPP stratigraphy as many of the waste disposal rooms in the foreground of Fig. 1-1. Room Q is similar to Room G in that it is quite isolated (no nearby excavations) and the ceiling has nearly the same elevation, but it has a circular cross-section instead of a rectangular cross-section.

Room	L_x (m)	L_y (m)	L_z (m)	L_r (m)	L_g (m)
D	5.5	93.3	5.5	0.46	4.42
B	5.5	93.3	5.5	0.46	4.42
G	6.1	359.7	3.05	0.46	-2.44
Q	2.9	108.6	2.9	1.45	-2.43

Table 1-1. Nominal initial room dimensions (Morgan and Stone 1985; Munson et al. 1989; Munson et al. 1996, Fig. 8, Fig. 3-3, Fig. 6).



(a) Multi-pass mining of a test room (Munson et al. 1992a) **(b) Room D being surveyed (Munson et al. 1988)**

Figure 1-3. Photos of test room mining and instrumentation.

Munson et al. (1988), Munson et al. (1990a), Munson et al. (1992b), Jensen et al. (1993), and Munson et al. (1992a) thoroughly documented many details of the four experiments, starting with the mining of each room. A few hours after the mining face passed pre-determined measurement stations along the room length, mining sequence measurement points (eyebolts) were driven into the room surfaces. More than one pass was required to mine Rooms D, B, and G, as shown in Fig. 1-3a, and the miner necessarily destroyed certain temporary mining sequence measurement

points with each pass. The technicians installed new permanent mining sequence points as soon as they had access to the location, usually within hours. To measure the distance between each pair of points, technicians temporarily installed a tape extensometer and then removed it to avoid blocking the passage of mining equipment and personnel. After the room was completed, extensive surveys confirmed the as-built room dimensions (see Fig. 1-3b), and temporary closure stations were installed with manually read instruments, followed by permanent closure stations with remotely read instruments. These later closure stations were installed as close as possible to the mining sequence closure stations, but they did not necessarily supersede the mining sequence closure stations. Measurements were collected from all three types of closure stations as long as the equipment was functional and technicians had access to the room.

Despite the thorough documentation from the 1980's and 1990's, this report re-examines the Room D, B, G, and Q experiments to rectify several issues.

1. Although plots of the closure histories were published in the aforementioned reports, some plots are difficult to read, especially in the first month after the room was excavated, and the digital copies of the raw closure data were inadvertently destroyed. The exact destruction date and means of destruction are uncertain, but the digital copies may have been destroyed along with the MODCOMP WIPP B-49 media (Chavez 2009; Duran 2021). Regardless, the only raw data found in the WIPP records archive were thousands of hand-written mining sequence closure gage installation and measurement data sheets (see Figs. 2-1 and 2-2 for examples).

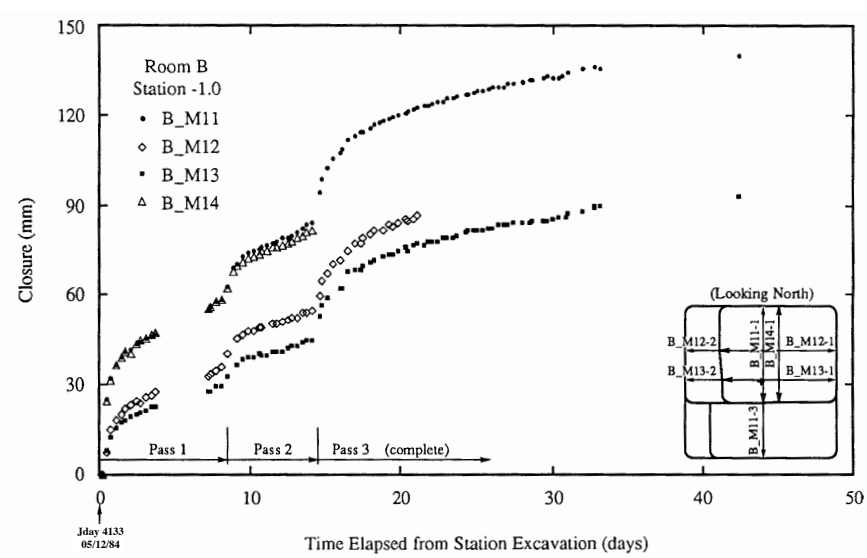


Figure 1-4. Room B Station -1.0 m early mining sequence closure measurements (Fig. 5.2.1b in Munson et al. (1992a)).

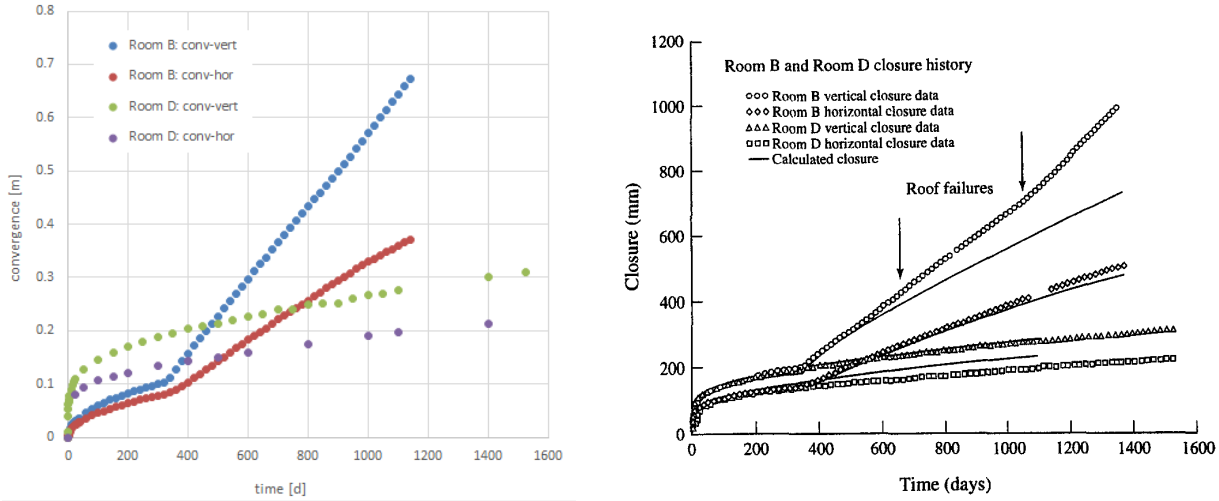
2. When a mining sequence measurement point was installed for the first time, the room closure that preceded the installation was not captured. In addition, each time a mining sequence measurement point was excavated and re-installed, the measurement datum was lost and a short period of rapid closure was not captured. As a result, Munson et al. (1992a)

shifted the post-excavation closure values to construct their reported closure curves, such as those in Fig. 1-4. This shifting process has a significant impact on the amount of closure accrued during the mining period, but the details of their shifting process were not fully explained in Munson et al. (1992a, pg. 90–93). They mention a forward extrapolation of the "before" excavation closure data to the estimated station excavation time, and a backward extrapolation of the "after" excavation closure data to the estimated station excavation time, but they do not define the estimated excavation time, define the extrapolation functions, specify whether certain measurements were ignored while fitting the extrapolation curves, or plot the resulting extrapolation curves.

3. Munson et al. (1992a) often contend that the closure was similar for the various stations along the mid-section of each room, yet they never directly compared the closure curves for a given room on a single plot. This verification is important because nearly all simulations of these four rooms assume plane-strain deformations. Similarly, the mining sequence closure histories were never directly compared against the manually read or remotely read closure histories from nearby locations. There is no reason to suspect these measurements produced inconsistent closure curves, but it builds confidence to confirm they are, indeed, consistent.

4. The mining sequence closure measurements were collected for as long as the stations remained functional, which was well past the previously reported results. For example, the Room D mining sequence closure measurements extend for 7.8 yr after the central Room D station was excavated, which is 1.9× longer than that reported in Munson's capstone room closure paper (Munson 1997) and 1.3× longer than that reported in Munson et al. (1992a). Similarly, the Room G mining sequence closure measurements extend to 10.4 yr after the central Room G station was excavated, which is 2.8× longer than that reported in Munson (1997) and 1.6× longer than that reported in Munson et al. (1992a). Funding limitations during the 1990's may have prevented Munson and co-workers from publishing the full closure histories. Regardless, one can be more confident of geomechanical models that have been validated against 10.4 yr of measurements, rather than 3.8 yr, especially when those models are then used to predict hundreds, if not thousands, of years into the future.

The following example further motivates the need to re-investigate these closure histories. During Joint Project III, one of the partners digitized the Room D closure histories from Munson et al. (1989, Fig. 3.5) and digitized the Room B manually recorded closure histories from the temporary closure stations in Munson et al. (1990a, average of Fig. 5.1.4o–5.1.4r and average of Fig. 5.1.4v–5.1.4y). This digitization resulted in Fig. 1-5a, which shows Room B's horizontal and vertical closure as substantially less than Room D's horizontal and vertical closure during the first year, while both rooms were unheated. Munson (1997)'s published results in Fig. 1-5b, on the other hand, show good agreement between the Room D and B closure histories during the first year. The source of the discrepancy is the Room B closure histories in Fig. 1-5a do not include the mining sequence closure measurements, while the Room B closure histories in Fig. 1-5b do include the mining sequence closure measurements. After much correspondence (Hampel and Gährken 2016), the more complete Room B closure curves in Fig. 1-5b were adopted by Joint Project III, but the confusion would have been avoided or resolved more easily if the raw closure data was available (Issue # 1). Furthermore, the discussions caused the Joint Project III partners



(a) Hampel and Gährken (2016) **(b) Munson (1997)**

Figure 1-5. A preliminary (and erroneous) comparison between Room D and B's closure in (a), versus a more accurate comparison between Room D and B's closure in (b).

to raise questions about how the closure of Room D and B were reconstructed from the mining sequence closure gages (Issue # 2).

The remainder of this report describes the steps taken to resolve the issues listed above. Chapter 2 discusses the process used to reconstruct the closure histories, starting from the hand-written mining sequence closure measurements; Chapter 3 presents the reconstructed Room D, B, G, and Q's closure curves; and Chapter 4 summarizes the results.

2. CLOSURE RECONSTRUCTION PROCESS

This chapter presents the sources of raw data in Section 2.1, the closure shifting process in Section 2.2, the smoothing and interpolation of the closure histories in Section 2.3, and notes about digital files associated with this report in Section 2.4.

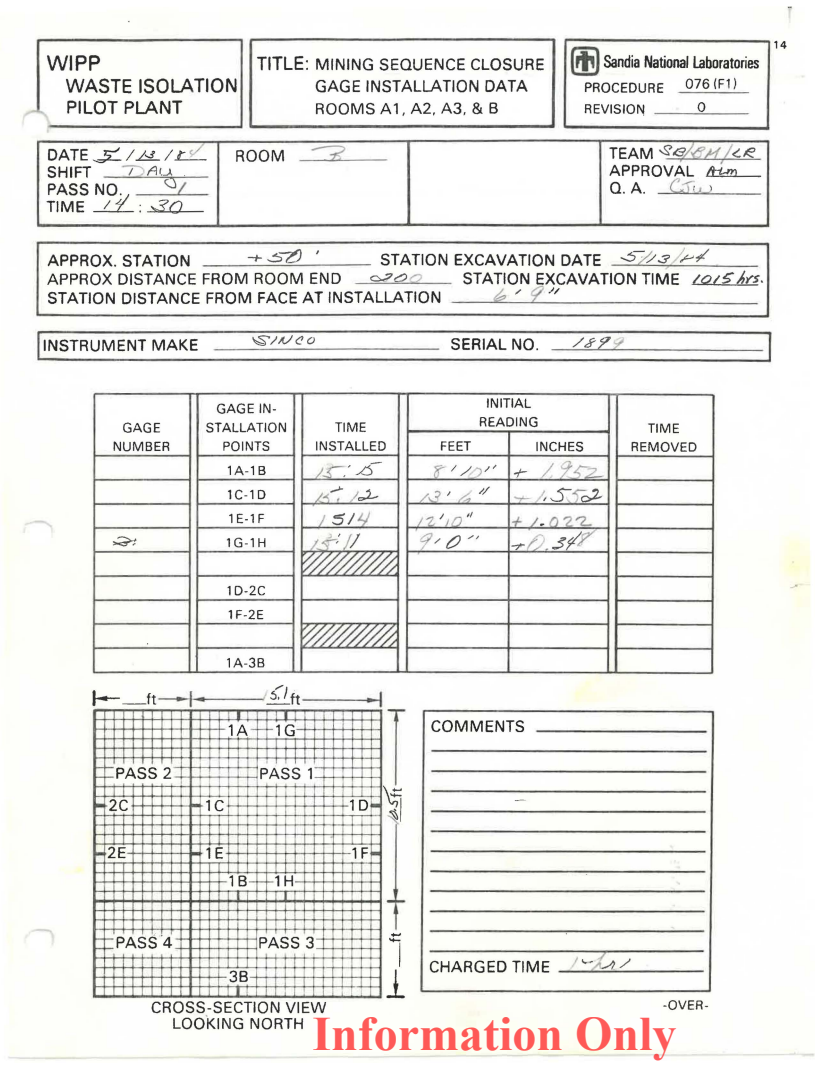
2.1. Raw Data Sources

The primary sources of raw data were dozens of hand-written Mining Sequence Closure Gage Installation Data Sheets and thousands of hand-written Mining Sequence Closure Gage Reading Data Sheets. The Room D, B, and G Installation Data Sheets (see Fig. 2-1a for an example) recorded the approximate station position (in feet), (approximate) station excavation time t_{ex}, (approximate) distance to the mining face f, gage number, paired points, time of installation (reading) t, first distance reading α_i across each newly installed pair of measurement points, and any relevant comments. The Room Q Installation Data Sheets (see Fig. 2-1b for an example) were formatted differently, yet contained much of the same information, except they did not include t_{ex}. Once gages were installed, technicians recorded subsequent readings on Reading Data Sheets (see Fig. 2-2 for an example). The Reading Data Sheets included the (approximate) station position, time of reading t, gage number, paired points, a distance reading α_i, f, and any relevant comments (remarks). These pieces of information have been reorganized and listed in the tables contained in Appendices A.2, B.2, C.2 and D.2.

The station position recorded on each Installation and Reading Data Sheet was an approximate distance from the center of the room ($y = 0$). The actual paired point cartesian coordinates were more accurately measured and reported in Section 5 of Munson et al. (1992a). This report adopts the station names utilized in Section 5 of Munson et al. (1992a), such as Station -16.4 m for Room D, but utilizes the more precise paired point cartesian coordinates, such as -16.29 m and -16.60 m for gage number D_M03-2 from Table 5.3.2a in Munson et al. (1992a), to compute the time the mining face passed any paired points t_{pass}. For reference, these more precise station positions are listed as point 1 y and point 2 y in the metadata tables in Appendices A.2, B.2, C.2 and D.2.

The approximate distances from the closure station to the mining face f are included in the appendices for reference, but the recorded values should be treated with caution. Hand-written notes on the data sheets indicate technicians would often compute f by simply subtracting the *approximate* station position from the mining face position. The technicians may never have directly measured the physical distance f. Furthermore, some technicians would assign a positive or negative sign to f, while others would report the absolute distance.

Some technician comments (remarks) on the installation and data sheets were clearly specific to a certain gage measurement, while other comments were relevant to all the gage measurements on



WIPP WASTE ISOLATION PILOT PLANT

TITLE: MINING SEQUENCE CLOSURE GAGE INSTALLATION DATA ROOMS A1, A2, A3, & B

Sandia National Laboratories
PROCEDURE 076 (F1)
REVISION 0

DATE 5/13/94
SHIFT DAY
PASS NO. 01
TIME 14:30

ROOM B

TEAM SB/GH/LR
APPROVAL Alm
Q. A. CJW

APPROX. STATION +50'
APPROX DISTANCE FROM ROOM END 200
STATION DISTANCE FROM FACE AT INSTALLATION 6'9"
STATION EXCAVATION DATE 5/13/94
STATION EXCAVATION TIME 1015 hrs.

INSTRUMENT MAKE SINCO
SERIAL NO. 1899

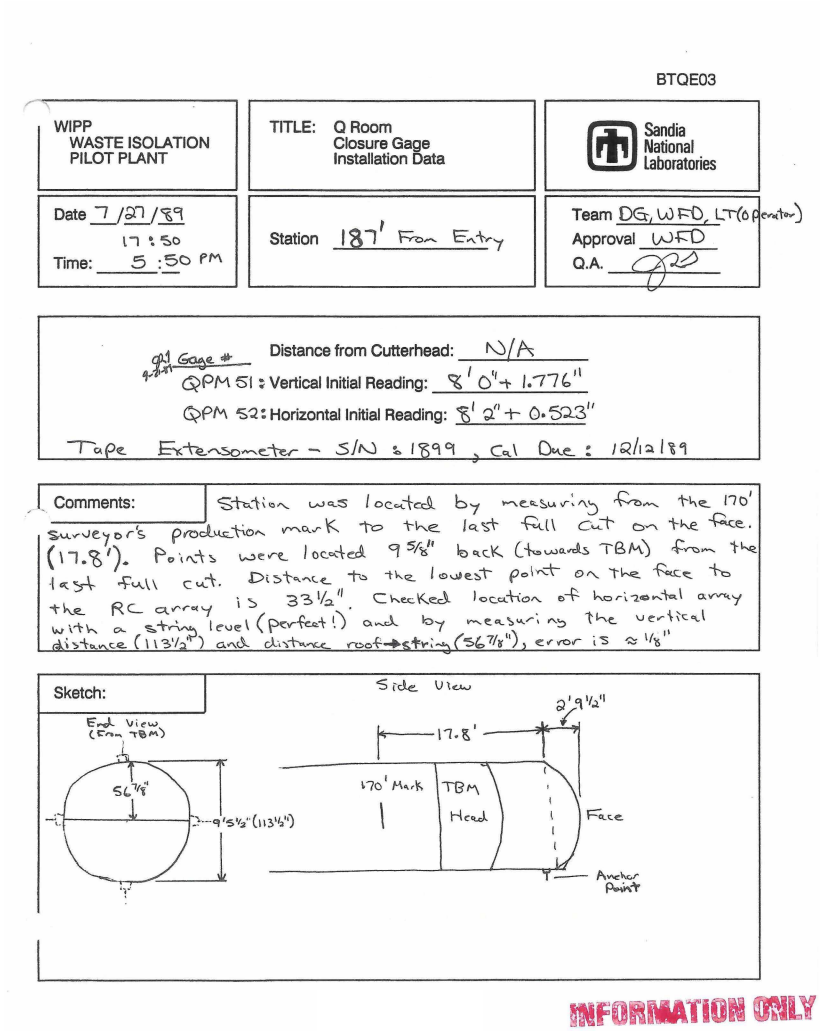
GAGE NUMBER	GAGE INSTALLATION POINTS	TIME INSTALLED	INITIAL READING FEET	INITIAL READING INCHES	TIME REMOVED
	1A-1B	15:15	8'10"	+ 1.952	
	1C-1D	15:12	13'4"	+ 1.552	
	1E-1F	1514	12'10"	+ 1.022	
	1G-1H	15:11	9'0"	+ 0.348	
	1D-2C				
	1F-2E				
	1A-3B				

(a) Installation sheet typical for Rooms D, B, and G

Figure 2-1. Examples of Mining Sequence Closure Gage Installation Data Sheets.

that sheet, although the comment may have been written once. If a single comment, such as "Room Complete," was thought to potentially apply to all the gage measurements, it is listed in all the closure data tables for a given room in Appendices A.2, B.2, C.2 and D.2. This policy also means a comment such as, "Read all points twice except QPM32 – read it four times," is listed in all the Room Q closure data tables in Appendix D.2, although only Table D-10 pertains to gage QPM32.

The gage number indicated the room, station, and paired points to which the reading α_i pertained. See Munson et al. (1992a, pg. 47–48) for the gage numbering scheme. The paired points specified the position and orientation of a gage at a particular station, which is reviewed on a per-room basis in Sections 3.1 to 3.4. (For Room Q, technicians simply recorded "horizontal" or "vertical" instead of the paired points.) The subscript i in α_i designates the orientation of the reading, where α_x indicates a reading across the horizontal paired points at room mid-height



BTQE03

WIPP WASTE ISOLATION PILOT PLANT	TITLE: Q Room Closure Gage Installation Data	Sandia National Laboratories
Date 7/27/89 17:50 Time: 5:50 PM	Station 187' From Entry	Team DG, WFD, LT(Operator) Approval WFD Q.A.

Gage # Distance from Cutterhead: N/A
QPM 51: Vertical Initial Reading: 8' 0" + 1.776"
QPM 52: Horizontal Initial Reading: 8' 2" + 0.523"
Tape Extensometer - S/N: 1899, Cal Due: 12/12/89

Comments: Station was located by measuring from the 170' surveyor's production mark to the last full cut on the face. (17.8'). Points were located 9 5/8" back (towards TBM) from the last full cut. Distance to the lowest point on the face to the RC array is 33 1/2". Checked location of horizontal array with a string level (perfect!) and by measuring the vertical distance (113 1/2") and distance roof→string (56 7/8"), error is ≈ 1/8"

Sketch:

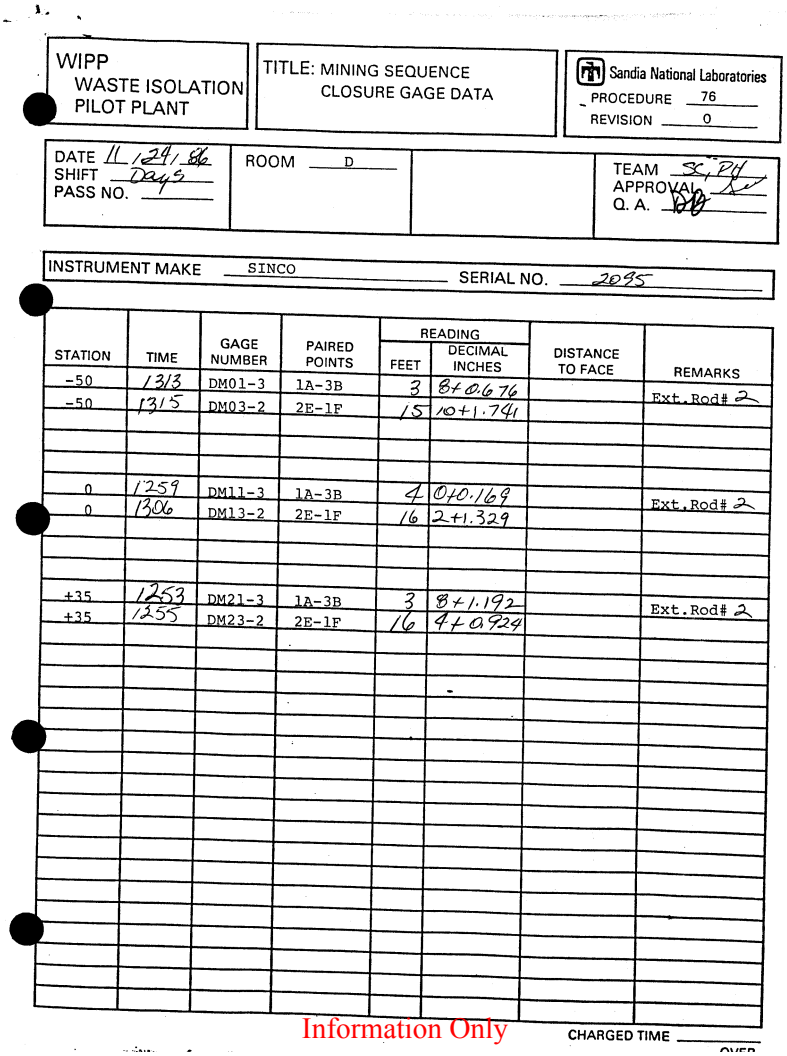
INFORMATION ONLY

(b) Installation sheet typical for Room Q

Figure 2-1. (Continued) Examples of Mining Sequence Closure Gage Installation Data Sheets.

(paired points 1E-1F and 2E-1F in Figs. 2-1a and 2-2) and α_z indicates a reading across the vertical paired points at room mid-width (paired points 1A-1B and 1A-3B in Figs. 2-1a and 2-2). Readings from paired points at pass 1 mid-height and room mid-width, yet offset from the eventual room mid-height and mid-width, were also collected during the experiments, such as the readings across 1C-1D and 1G-1H in Fig. 2-1a, but these readings were not analyzed herein because they were deemed less important than the α_x and α_z readings.

As previously mentioned, α_i was measured between a pair of eyebolts (paired points) by a tape extensometer. The tape extensometer contained a tape measure, a compression spring, a knurled collar, and a dial gage (Munson et al. 1997, pg. 39–40). The tape was graduated in feet and 2 inch intervals. Before each measurement, the knurled collar and compression spring were used to tension the extensometer to approximately 100 N (22 lbf) while aligning a set of reference marks. The dial gage had a measuring range of 50.8 mm (2 in) and a resolution of 0.025 mm (0.001 in).



WIPP WASTE ISOLATION PILOT PLANT

TITLE: MINING SEQUENCE CLOSURE GAGE DATA

Sandia National Laboratories
PROCEDURE 76
REVISION 0

DATE 11/24/86
SHIFT Days
PASS NO.
ROOM D
TEAM SC, PG
APPROVAL
Q. A.

INSTRUMENT MAKE SINCO SERIAL NO. 2095

STATION	TIME	GAGE NUMBER	PAIRED POINTS	READING FEET	READING DECIMAL INCHES	DISTANCE TO FACE	REMARKS
-50	1313	DM01-3	1A-3B	3	8+0.676		Ext.Rod# 2
-50	1315	DM03-2	2E-1F	15	10+1.741		
0	1259	DM11-3	1A-3B	4	0+0.169		Ext.Rod# 2
0	1306	DM13-2	2E-1F	16	2+1.329		
+35	1253	DM21-3	1A-3B	3	8+1.192		Ext.Rod# 2
+35	1255	DM23-2	2E-1F	16	4+0.924		

Information Only

CHARGED TIME

Figure 2-2. Example of a Mining Sequence Closure Gage Reading Data Sheet.

According to the manufacturer, the extensometer had a repeatability of 0.13 mm (0.005 in).

The gage installation technicians also recorded the estimated station excavation time t_{ex}, with what appears to be 15 minute resolution, on the Room D, B, and G Mining Sequence Closure Gage Installation Data Sheets. In a few instances, the technician neglected to record a t_{ex} estimate for a Room D, B, or G station excavation, so t_{ex} was computed as the average of the two neighboring closure reading times. Technicians did not record estimates of t_{ex} for Room Q, so t_{ex} for Room Q was estimated from the mining face position histories, as described in the following paragraph. The source for each t_{ex} value is listed in the metadata tables in Appendices A.2, B.2, C.2 and D.2.

The mining face position y_{mf} vs. time t curves for each room were also useful. The raw mining face position data was not located, so the y_{mf} vs. t curves were simply digitized directly off plots in Munson et al. (1992a, i.e. Fig. 2.2.13). Each mining face position plot in Munson et al. (1992a)

starts at $t = 0$, which is the room excavation start time, but only the plot for Room Q (Fig. 2.2.23 in Munson et al. (1992a)) provided a precise hour of day that excavation completed (14:00 on 1990-8-8, with the date written in YYYY-MM-DD format), from which it was possible to compute the hour of day that excavation began. Munson et al. (1992a) only defined $t = 0$ to within an 8-hour work shift (Graveyard, Day, or Swing Shift) on a given date for Rooms D, B, and G, so a more precise time of day was subjectively estimated herein by studying each room's multi-pass mining isometric schematic in Munson et al. (1992a, i.e. Fig. 2.2.12). Each date and estimated time of day corresponding to $t = 0$ for the analyses in this report are listed in the metadata tables in Appendices A.2, B.2, C.2 and D.2 for reference. Due to the uncertain time datum of the Room D, B, and G mining face position curves, the y_{mf} vs. time t curves were used to determine the time the mining face passed any paired points t_{pass}, but not to determine t_{ex} for Rooms D, B, and G. As will be shown, each t_{ex} is often quite close to a t_{pass} time, but they are not identical, so the t_{pass} values were only used as interpretation aids for Rooms D, B, and G. For Room Q, however, the time datum was significantly more certain and t_{ex} was not estimated by technicians during gage installation, so $t_{\mathrm{ex}} = t_{\mathrm{pass}}$ was adopted for the Room Q closure reconstruction.

Although the mining sequence closure histories are the focus of this report, it was often helpful to compare them against the closure histories from the remotely read closure gages. The remotely read closure histories for Rooms D, B, G, and Q were digitized from Munson et al. (1988, Fig. 5.1.2a – 5.1.2b), Munson et al. (1990a, Fig. 5.1.5a – 5.1.5l), Munson et al. (1992b, Fig. 5.1.2a – 5.1.2j), and Jensen et al. (1996, Fig. 5-9 – 5-14), respectively. Note that the y position of several remotely read horizontal closure stations did not exactly correspond to the y position of a remotely read vertical closure station. To keep the presentation simple in this report, however, each remotely read horizontal closure station is referred to by the name of the nearest remotely read vertical closure station. For example, the Station +0.8 m in Munson et al. (1990a, Fig. 5.1.5i), which only measured horizontal closure, is referred to as Station +2.2 m, where the vertical closure was measured.

The Room Q remotely read closure histories were especially important, yet difficult to locate. Room Q's primary purpose was to monitor inflow of brine, so a seal system was installed at the entrance to Room Q to prevent ventilating the room with fresh air. (Although Room Q was sealed for long durations, the air pressure within the room remained at ≈ 0.97 bar (Jensen et al. 1993; Jensen et al. 1996).) The seal restricted access to the mining sequence closure stations, making the remotely read closure measurements the only high frequency closure measurements starting about 0.8 yr after Room Q was excavated. Jensen et al. (1993) published remotely read closure readings from Room Q, but only through November 1991, and extensive searches did not uncover substantially later readings. Fortunately, a draft of a follow-up report (Jensen et al. 1996) was discovered in the WIPP records archives. This draft appears to never have been published, possibly due to funding limitations, but it documents the remotely read closure histories until July 1995, the end of the Room Q experiment.

Munson et al. (1988), Munson et al. (1990a), and Munson et al. (1992b) also report the closure histories from the Room D, B, and G manually read temporary closure stations, but those plots were not digitized for this report. (Manually read closure stations were not installed in Room Q.) Nearly every manually read temporary closure station was within 3 m of a remotely read closure station. (The only manually read temporary closure stations further than 3 m were those at the

north and south entrances to Room B, which are not of interest herein.) Comparing closure measurements at the same location can build confidence, but the remotely read and mining sequence closure histories at the same location were found to generally agree, as will be shown in Chapter 3, so further comparisons were deemed unnecessary. Some manually read temporary closure stations also measured the vertical closure histories near the room walls (i.e. Fig. 5.1.1c in Munson et al. (1988)) and horizontal closure histories near the room ceiling/floor (i.e. Fig. 5.1.1e in Munson et al. (1988)), and these measurements could be useful for further model validation studies, but this report is only concerned with the closure at room mid-height and mid-width.

2.2. Closure Shifting

The repeated excavation of the mining sequence closure stations, physical adjustments to the paired measurement points, and miscellaneous other reasons necessitated shifting the mining sequence closure displacements to construct reasonably continuous closure curves. As discussed in Section 6 of Munson et al. (1992a), the act of excavating a station causes non-uniform, three-dimensional, displacement fields, but one would need a validated geomechanical model to accurately compute closure displacement shifts that include these three-dimensional effects. Instead, the analysis herein assumes the entire effect of excavating a station occurs after the mining face has excavated the station, effectively treating the excavation's effect like a heaviside step function. This assumption allows the analysis to estimate the missing closure history by extrapolating the closure measurements before (if needed) and after the station was excavated.

The first step in the analysis was to break up the closure readings into a series of segments. A segment is defined as a contiguous set of closure readings, without any shifts in the midst of the set. (A shift may occur only immediately before the start of a closure segment.) The closure data tables in Appendices A.2, B.2, C.2 and D.2 specify a segment number for each reading α_i. The start of each segment was identified by significant jumps in α_i. In most cases, the jumps were traced back to excavating a station, re-installation of measurement points, switching to a new extension rod, or some other reason, but in some instances a definitive cause was not found. The reason (or lack of reason) for each shift is listed in the "Analysis Notes" columns in the metadata tables in Appendices A.2, B.2, C.2 and D.2.

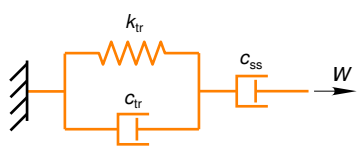


Figure 2-3. Jeffreys element: a spring in parallel with a dashpot, which are both in series with a second dashpot.

After importing the raw data into a Python programming environment, the displacement $\beta_i = \alpha_i - \alpha_i^{\text{start}}$ for each segment s was computed, where α_i^{start} is the first α_i reading of segment s. To determine the appropriate displacement shift, these β_i segments were fit with either a simple line or a Jeffreys element's creep displacement function (Joseph 2013, see Section 2.2). As shown

in Fig. 2-3, a Jefferys element consists of a spring (spring constant k_{tr}) in parallel with a dashpot (dashpot constant c_{tr}) for the transient response, which are both in series with a second dashpot (dashpot constant c_{ss}) for the steady-state response. A step change in load W causes a creep displacement $\tilde{\beta}_i(t)$ of the form,

$$\tilde{\beta}_i(t) = p_0 \left[1 - \exp\left(-\frac{t - p_1}{p_2}\right)\right] + p_3\,(t - p_1), \tag{2.1}$$

where $p_0 = W/k_{\text{tr}}$, p_1 is the time when W is applied, $p_2 = c_{\text{tr}}/k_{\text{tr}}$ is the creep time constant, and $p_3 = W/c_{\text{ss}}$ is the steady-state displacement rate. The four parameters p_m were fit to each set of carefully selected closure displacement measurements β_i, where measurements deemed as minor outliers were excluded. For each fit, the Nelder-Mead optimization algorithm (Nelder and Mead 1965) implemented in Scipy (Virtanen et al. 2020) minimized the following residual,

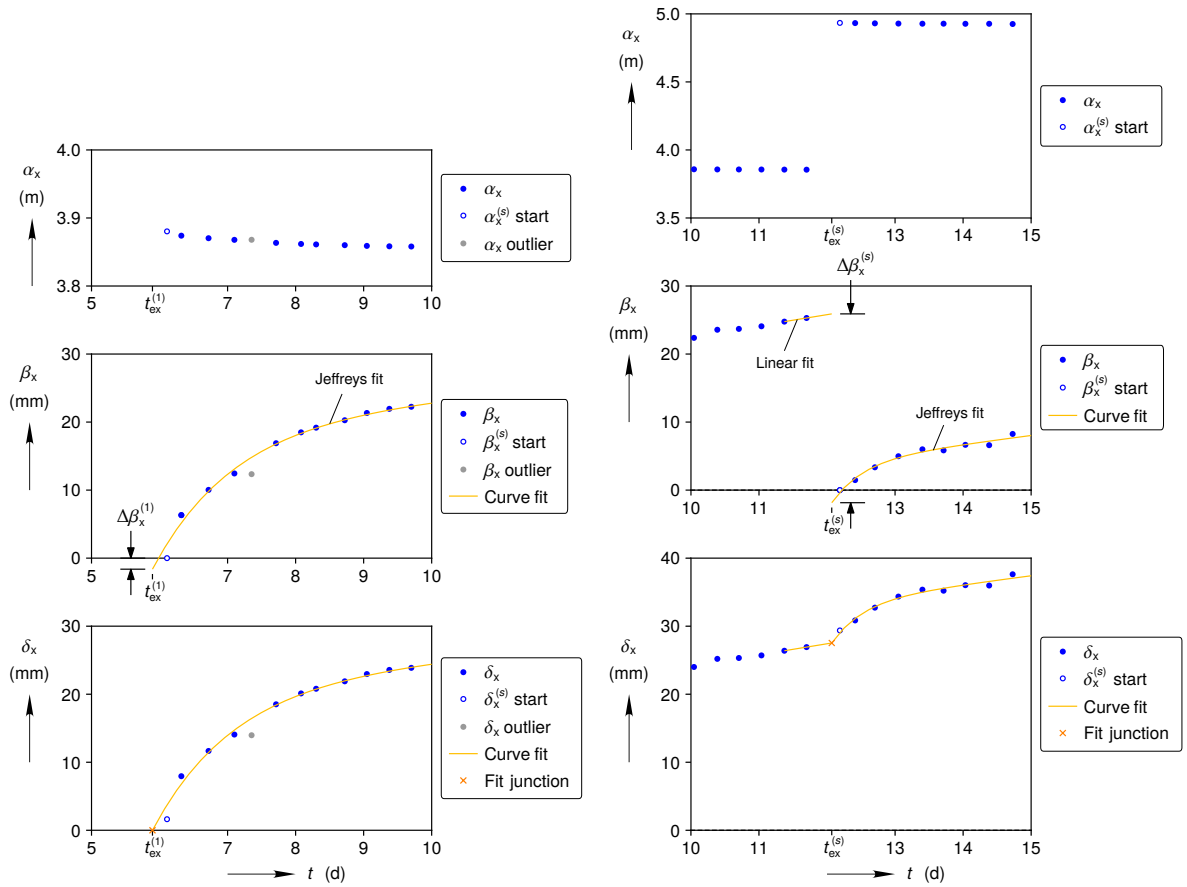
$$r_i = \sum_{j=k+1}^{m} \frac{t_j - t_{j-1}}{2} \left[\left(\tilde{\beta}_i(t_{j-1}) - \beta_i(t_{j-1})\right)^2 + \left(\tilde{\beta}_i(t_j) - \beta_i(t_j)\right)^2\right], \tag{2.2}$$

where t_k and t_m are the first and last respective times in the set. (Equation (2.2) is a trapezoidal rule approximation of $\int_{t_k}^{t_m} \left(\tilde{\beta}_i - \beta_i\right)^2 \mathrm{d}t$.) In most cases, many more than four $\beta_i(t_j)$ values were available, making the four parameter equation in Eq. (2.1) overdetermined and relatively easy to fit. For a few rare cases where only three $\beta_i(t_j)$ values were available, the steady-state displacement rate was set to $p_3 = \dot{\beta}_i(t_n)\left[\dot{\beta}_i(t_n)/\dot{\beta}_i(t_{n-1})\right]$, where t_n is the third (last) time in the set and $\dot{\beta}_i(t_n) = \left[\beta_i(t_n) - \beta_i(t_{n-1})\right]/(t_n - t_{n-1})$. The metadata tables in Appendices A.2, B.2, C.2 and D.2 specify the fit type and the set of β_i data points fit before and after each jump in α_i. The fits were then used to compute each closure shift, as demonstrated in the next four examples.

It helps to introduce the following notation to precisely describe the four examples. The raw reading, segment displacement, and shifted closure displacement for segment s and orientation i are defined as $\alpha_i^{(s)}$, $\beta_i^{(s)}$, and $\delta_i^{(s)}$, respecitvely. Each of these segmented quantities are then related to their respective agglomerate counterparts as $\alpha_i = \bigcup_{s=1}^{S} \alpha_i^{(s)}$, $\beta_i = \bigcup_{s=1}^{S} \beta_i^{(s)}$, and $\delta_i = \bigcup_{s=1}^{S} \delta_i^{(s)}$, where S is the total number of segments. In addition, the excavation time corresponding to the start of segment s is denoted as $t_{\text{ex}}^{(s)}$.

Figure 2-4a presents an example of shifting the closure segment after the first excavation pass. Raw $\alpha_{\text{x}}^{(1)}$ measurements for segment 1 are plotted against t in the top plot, where valid data points are denoted with filled and unfilled blue dots, and outliers are denoted with gray dots. The unfilled blue dot denotes $\alpha_i^{\text{start, }(1)}$, the $\alpha_i^{(1)}$ at the start of closure segment 1 (or the corresponding $\beta_i^{(1)}$ or $\delta_i^{(1)}$). The second plot from the top in Fig. 2-4a depicts the closure displacement $\beta_{\text{x}}^{(1)}$, a fit of the Jeffreys creep function, $t_{\text{ex}}^{(1)}$, and the closure shift $\Delta\beta_{\text{x}}^{(1)}$. The shifted closure for segment 1 is simply $\delta_{\text{x}}^{(1)} = \beta_{\text{x}}^{(1)} + \Delta\beta_{\text{x}}^{(1)}$, which is shown in the bottom plot along with the shifted Jeffreys curve fit. In this particular case, $\Delta\beta_{\text{x}}^{(1)}$ is relatively small, but it is often larger in other cases.

Figure 2-4b depicts an example of shifting the closure segment after an excavation pass other than the first excavation pass. The raw α_{x} measurements in the top plot jump from $\alpha_{\text{x}}^{(s-1)} \approx 3.86$ m to



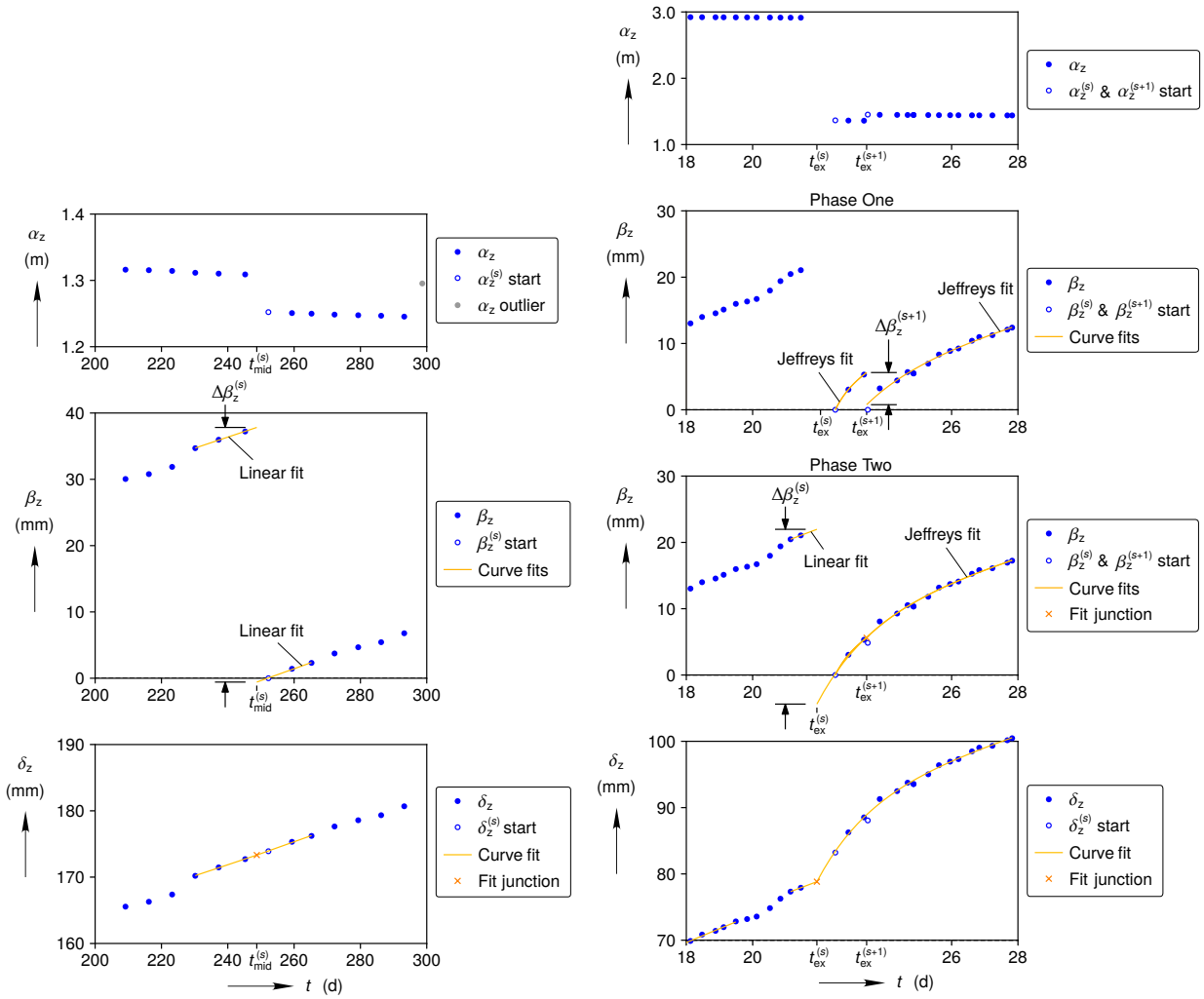
(a) Shift associated with first excavation

(b) Shift associated with a subsequent excavation

Figure 2-4. Examples of closure segment shifts.

$\alpha_x^{(s)} \approx 4.93$ m at $t_{ex}^{(s)}$. As before, the unfilled blue dot denotes the $\alpha_i^{(s)}$ at the start of closure segment s (or the corresponding $\beta_i^{(s)}$ or $\delta_i^{(s)}$). The second plot from the top presents a linear fit of the pre-excavation closure displacements $\beta_x^{(s-1)}$ and a Jeffreys curve fit of the post-excavation closure displacements $\beta_x^{(s)}$. Both fits terminate at $t_{ex}^{(s)}$ and the distance between their termini is the closure shift $\Delta\beta_x^{(s)}$ for segment s. The shifted closure of segment s is computed as $\delta_x^{(s)} = \beta_x^{(s)} + \sum_{k=1}^{s} \Delta\beta_x^{(k)}$, which is shown in the bottom plot, along with the shifted linear fit, shifted Jeffreys curve fit, and the junction between the two curve fits.

In many cases, the shift did not correspond to a significant excavation event. The α_i readings would jump if the technicians started using a different extension rod in-between the paired points, if they re-installed the measurement points after a minor trimming pass, if they adjusted the measurement points, or due to some other miscellaneous reason. As no substantial excavation event occurred in these cases, the technicians usually did not record a time for the α_i jump. The slope $\dot{\beta}_i$ on either side of the jump was nearly the same, however, so the size of the shift $\Delta\beta_x^{(s)}$ was insensitive to the jump time. Consequently, the shift time $t_{mid}^{(s)}$ for segment s was chosen to be in



(c) Shift not associated with an excavation **(d) Two-phase shift**

Figure 2-4. (Continued) Examples of closure segment shifts.

the middle of the two α_i reading times on either side of the jump.

Figure 2-4c displays an example of a straightforward shift that is not associated with an excavation. The jump in α_z readings in the top plot is due to installing new measurement points, according to the technician's measurement notes. The second plot from the top shows a linear fit of the three $\beta_z^{(s-1)}$ points before the jump and a linear fit of the three $\beta_z^{(s)}$ points after the jump. The bottom plot shows the closure curve is virtually linear across $t_{\text{mid}}^{(s)}$.

The majority of shifts were similar to that described in the above three simple examples. In some instances for Room B and G, however, a station was excavated, only two or three α_i readings were recorded during segment s before one of the paired points was re-installed, starting segment $s+1$. In order to fit Eq. (2.1) against more than two or three β_i values before extrapolating back to $t_{\text{ex}}^{(s)}$, a two-phase shifting procedure was conceived. Segment $s+1$ was shifted during phase 1, and

segment s and $s+1$ were shifted *together* during phase 2. The metadata tables in Appendices A.2, B.2, C.2 and D.2 specify whether a given shift occurred during phase 1 or phase 2. The vast majority occurred during phase 2.

Figure 2-4d depicts an example of a two-phase shift in detail. The first α_z jump in the top plot is due to excavating the closure station, while the smaller second α_z jump is due to a minor trimming pass. The phase one shift (the second plot from the top) involves a Jeffreys curve fit of the three $\beta_z^{(s)}$ points (using the methodology described above for handling three data points), another Jeffreys curve fit of the $\beta_z^{(s+1)}$ points, and the resulting $\Delta\beta_z^{(s+1)}$ shift. The phase two shift (the third plot from the top) involves a linear fit of two $\beta_z^{(s-1)}$ points, a Jeffreys curve fit of $\beta_z^{(s)}$ *and* $\beta_z^{(s+1)}$ points, and the resulting $\Delta\beta_z^{(s)}$ shift. Finally, the bottom plot presents the shifted closure history and the shifted curve fits after all shifts have been applied.

The remainder of the closure reconstruction figures do not break up the phase one and phase two shifts into separate plots, as is done in Fig. 2-4d. Instead, any phase one shifted curve fits are shown on the β_i vs. t plot, while the phase two shifted curve fits are shown on the δ_i vs. t plot. This approach saves space and avoids overlapping phase one and phase two curve fits on the same plot.

The remotely read closure histories required shifting as well, since the remotely read closure history plots in Munson et al. (1988), Munson et al. (1990a), Munson et al. (1992b), and Jensen et al. (1996) constitute β_i histories, not δ_i histories. Recall that the remotely read closure gages were installed months after the mining sequence closure histories, so the β_i histories are missing the initial rapid closure after mining. To compensate for these missing measurements, a $\Delta\beta_i$ shift was applied to each remotely read β_i history to make it agree, in a least squares sense, with the δ_i history at the nearest mining sequence station. This least squares agreement was enforced over $0 \leq t \leq 1$ yr in most cases, but it was over $0 \leq t \leq 0.96$ yr for Room B to avoid the heating phase, and it was over $1.5 \leq t \leq 2$ yr for remotely read gage QP233 (Station +28.5 m in Room Q) because the QP233 measurements were obviously erroneous during $0.7 \leq t \leq 1.5$ yr (Jensen et al. 1993, Fig. 7-10)(Jensen et al. 1996, Fig. 5-10).

2.3. Smoothing and Interpolation

After the mining sequence closure histories for a given room were reconstructed, the histories were smoothed and interpolated using cubic smoothing splines from the Scipy package (Virtanen et al. 2020). Although Chapter 3 focuses on the un-smoothed closure histories, smoothed histories can be desirable for simplified plots and computation of closure rates ($\dot{\delta}_i$). The amount of cubic spline smoothing was controlled by a smoothing parameter that was manually selected to qualitatively balance the desire to remove minor measurement noise with the desire to avoid changing the fundamental character of the closure curve. Rather than smoothing each curve all at once, a given curve was broken into chunks that were each smoothed separately. This approach allowed $\dot{\delta}_i$ to change discontinuously across an excavation event or when the heaters were turned on in Room B. It also permitted less smoothing during the mining period, when the closure evolved rapidly, and more smoothing after the mining period, when the closure evolved more

gradually. Data points on the interior of each chunk were assigned a weight of 1, while data points at the start and end of each chunk were assigned a weight of 10, to encourage the cubic spline to pass through the start and end points.

Smoothing and interpolating were performed on the Room D, B, and G mining sequence closure histories. As previously mentioned, however, the Room Q mining sequence closure measurements became infrequent once the seal system was installed, so the Room Q mining sequence and remotely read closure histories were spliced together prior to smoothing and interpolating. The spliced together histories utilized the mining sequence closure histories prior to 1990-5-10, and utilized the remotely read closure history from the closest remotely read station after 1990-5-10. Two pairs of remotely read closure gages were installed for each orientation at each station. As will be shown in Fig. 3-15a, each pair of remotely read gages produced similar closure measurements when operating properly. The vertical closure gage at Station +28.5 m with the larger gage number (QP233), however, malfunctioned for $0.7 < t < 1.5$ yr, while the vertical closure gage with the smaller gage number (QP231) operated properly throughout. Consequently, the remotely read closure history from the gage with the smaller gage number was used for the spliced together smoothed and interpolated histories at all stations for simplicity.

Plots of the smoothed closure curves compared against the un-smoothed closure histories can be found in Appendices A.3, B.3, C.3 and D.3. The plots also include closure rate curves ($\dot{\delta}_i$ vs. t) derived from the smoothed closure data set. The (smoothed) closure rates were computed using Numpy's gradient function (Harris et al. 2020), which utilized second-order accurate central differences on the data set interior and first-order accurate forward/backward differences at the data set edges. The smoothed closure data sets can be found in Appendices A.4, B.4, C.4 and D.4.

2.4. Digital Files

All the digital files associated with this report are archived in the Sandia National Laboratories Concurrent Versioning System repository on the FWM server at `/nfs/data/CVSLIB/WIPP_EXTERNAL/ROOM_CLOSURE_histories`. These files include the raw mining sequence closure data, digitized remotely read closure measurements, digitized mining face positions, Python scripts, custom Python packages/modules, and LaTeX files used to generate this document. All Python scripts were run using Python version 3.8.1 (Van Rossum and Drake 2009), Numpy version 1.19.1 (Harris et al. 2020), Scipy version 1.5.0 (Virtanen et al. 2020), and Matplotlib version 3.3.1 (Hunter 2007).

3. CLOSURE RECONSTRUCTION RESULTS

This chapter presents the closure of each room in the order it was mined in Sections 3.1 to 3.4. (See Figure 2.2.3 in Munson et al. (1992a) for a Gantt chart detailing the room excavation schedule.) Section 3.5 compares the rooms' horizontal and vertical room closure histories against each other. As stated in Section 2.1, horizontal and vertical mining sequence closure measurements were collected at locations other than the final room mid-with and mid-height, but they are not reported herein.

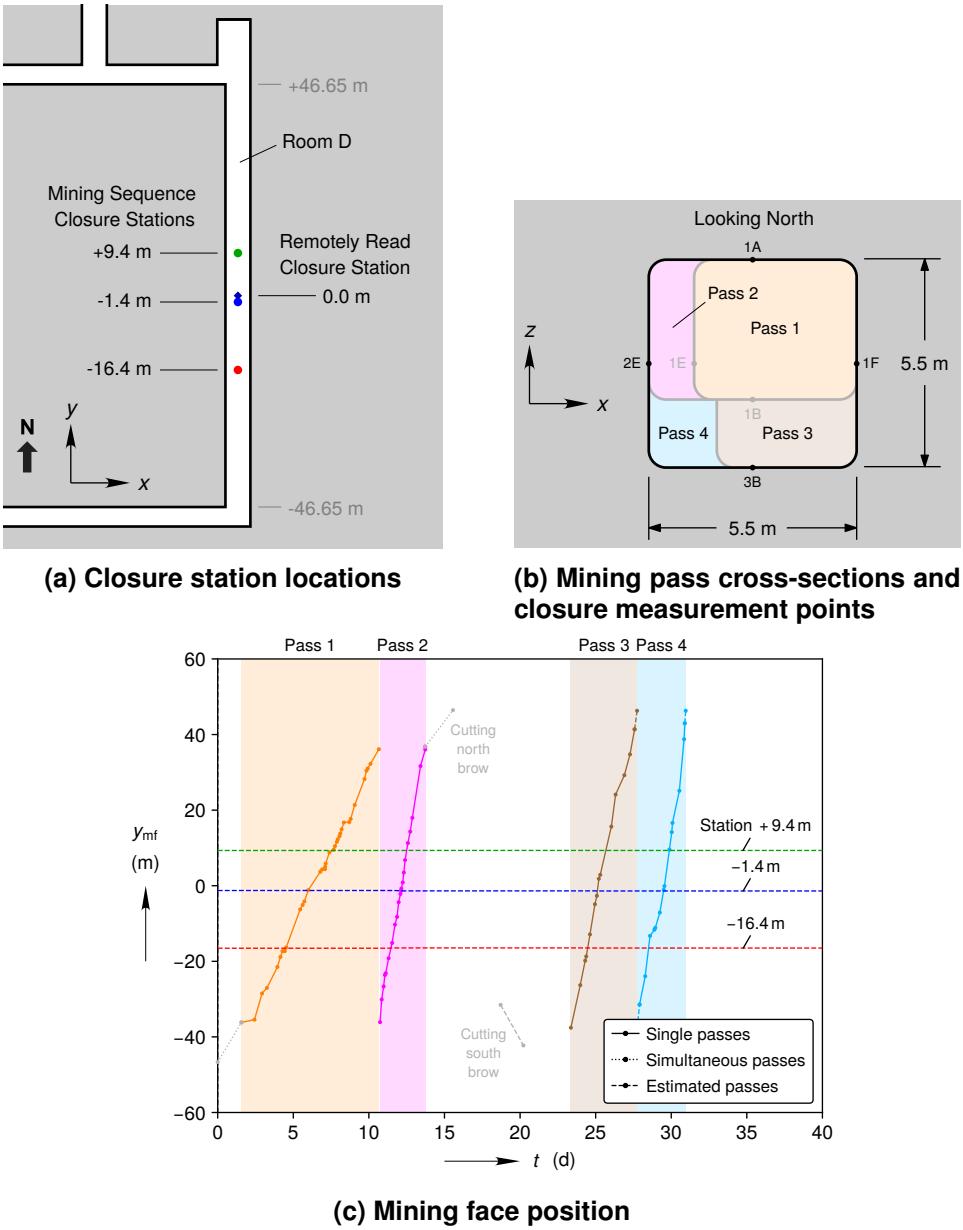
3.1. Room D

Room D had three mining sequence closure stations and one remotely read closure station along its 93.3 m length (see Fig. 3-1a). The station names roughly correspond to their distance, in meters, from the room mid-length ($y = 0$). For example, mining sequence Station -1.4 m was 1.4 m to the south of the room mid-length.

The room's 5.5×5.5 m cross section was mined in four continuous passes, as shown in Fig. 3-1b. After pass 1, technicians installed paired points 1E-1F to measure the horizontal closure and paired points 1A-1B to measure the vertical closure at each closure station. During pass 2, the temporary mining sequence 1E point was mined out and replaced with a permanent mining sequence 2E point at each closure station. Similarly, during pass 3, point 1B was destroyed and replaced with point 3B at each closure station. Pass 4 did not excavate significant amounts of material near any of the measurement points, but some points were damaged and replaced, presumably during minor trimming operations.

The position of the mining face y_{mf} during each pass, along with the position of the three mining sequence closure stations, can be seen in Fig. 3-1c. Time $t = 0$ corresponds to the start of mining Room D and is listed in each metadata table in Appendix A.2 for reference. The miner began excavating Room D by mining several simultaneous passes until the miner reached $y_{\mathrm{mf}} = -36$ m, where it switched to exclusively mining pass 1. Pass 1 progressed fairly slowly, requiring roughly nine days to complete. Pass 2 removed less material and consequently required only three days to complete. In-between pass one and pass two, the miner cut the north brow (see the upper right of Fig. 1-3b for a photo of the brow), cut the south brow, and performed a few minor trimming passes (not shown in Fig. 3-1c). Pass 3 and 4 excavated the room floor in 4.4 d and 3.2 d, respectively.

The reconstruction of Station -1.4 m's early horizontal closure is shown in Fig. 3-2 as an example of the reconstruction process. Similar plots at the other stations and orientations can be found in Appendix A.1. The top plot in Fig. 3-2 is simply a smaller version of Fig. 3-1c that shows when the mining face passed Station -1.4 m. The fine dashed vertical blue lines indicate t_{pass} for each mining pass. The t_{pass} lines nicely coincide with several, but not all, of the jumps in the α_{x} vs. t



(a) Closure station locations

(b) Mining pass cross-sections and closure measurement points

(c) Mining face position

Figure 3-1. Room D plan view, mining cross-section, and mining face position. The mining cross-section and mining face position were respectively derived from Fig. 2.2.12 and 2.2.13 in Munson et al. (1992a).

and β_x vs. t data sets. The third jump at $t = 22.6$ d is due to a minor trimming pass that is not included in Fig. 3-1c. The abrupt increase in $\dot{\delta}_x$, yet relatively continuous α_x values, at $t = 25.0$ d is due to excavating the floor during pass 3, which did not destroy the 2E or 1F paired points. Pass 4, on the other hand, destroyed point 2E, even though Fig. 3-1b suggests point 2E would have survived if pass 4 conformed to its idealized shape and dimensions. Close comparison of the t_{ex} times, which are denoted with "fit junction" cross markers, against the t_{pass} lines reveals they do not exactly agree. As discussed in Section 2.1, the Room D y_{mf} vs. t data used to determine the

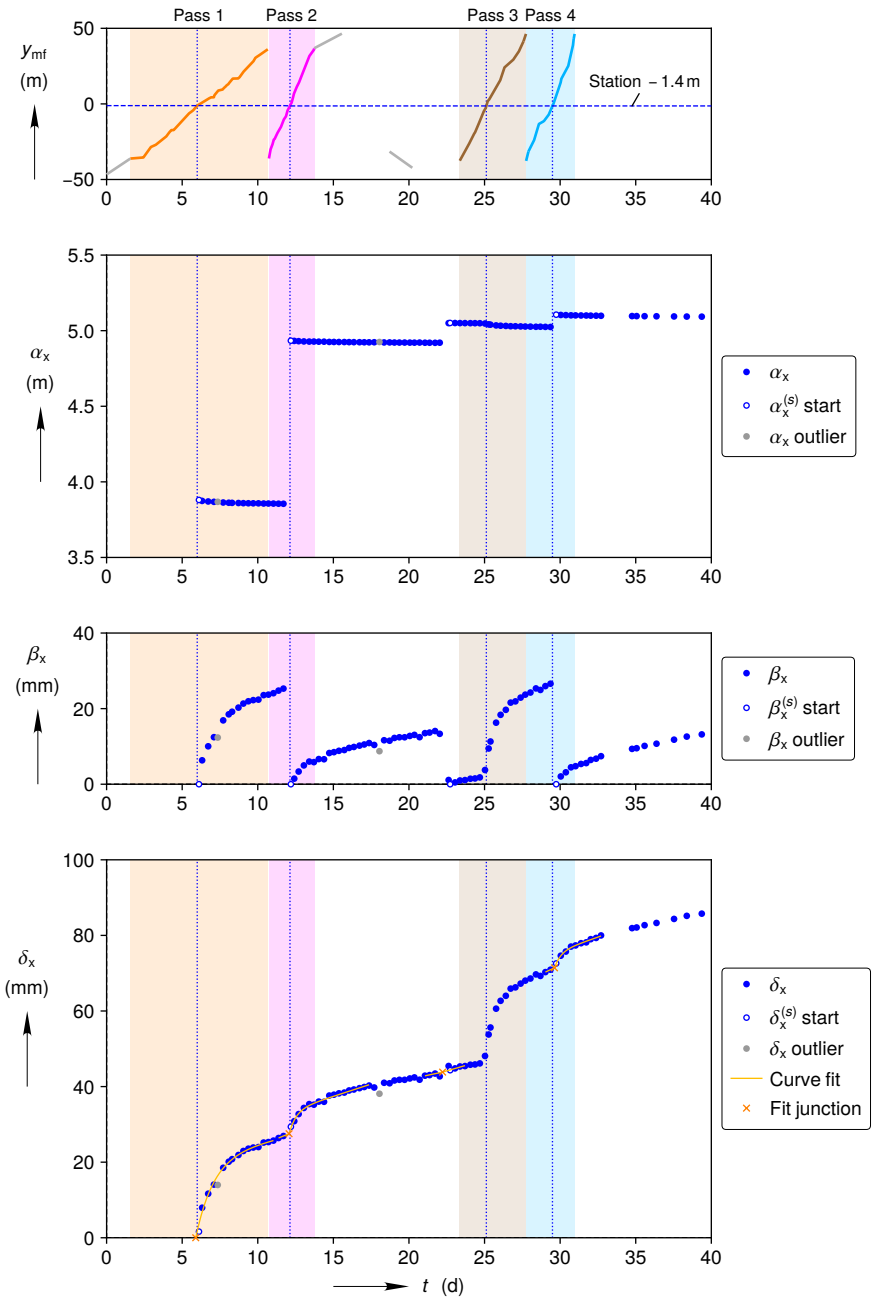
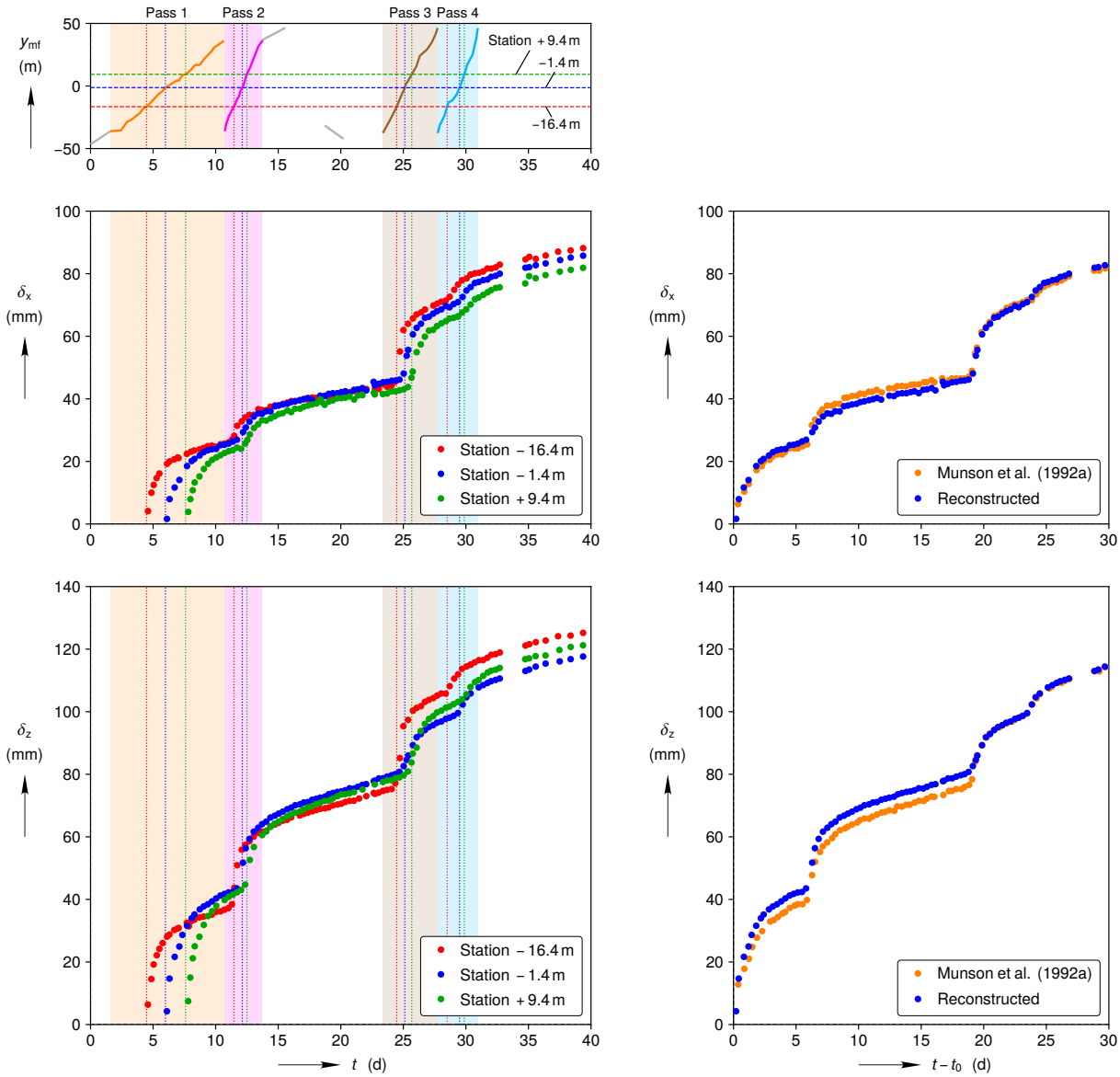


Figure 3-2. Room D mining sequence station -1.4 m horizontal closure reconstruction process during mining.

t_{pass} values was thought to be less reliable than the t_{ex} values, so the t_{pass} values were only used to loosely interpret the closure curves, while the t_{ex} values were crucial to the closure segment shifting process.

The early reconstructed closure histories at the three mining sequence closure stations are compared in Fig. 3-3a. Observe that all three closure histories are qualitatively similar in shape



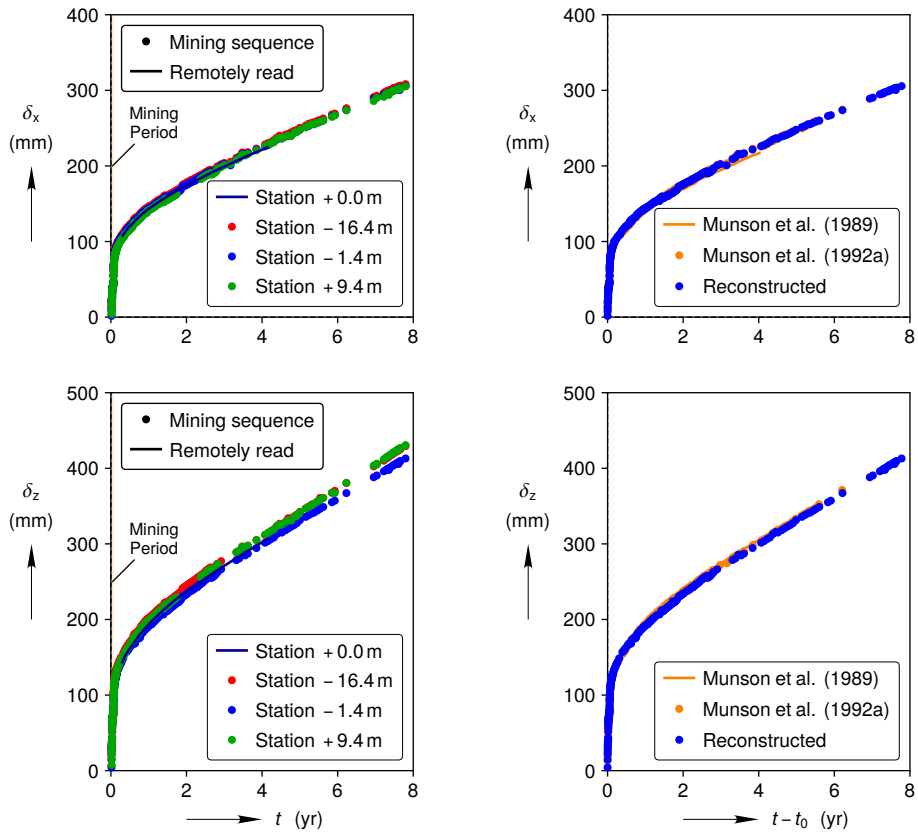
(a) Mining face position and mining sequence closure histories

(b) Previously published results compared against reconstructed mining sequence Station -1.4 m closure histories

Figure 3-3. Early Room D mining sequence horizontal and vertical closure histories.

and magnitude. Also note that the start of each transient steep closure period reasonably coincides with the mining face passing the corresponding closure station.

Fig. 3-3b confirms the reconstructed Station -1.4 m horizontal and vertical closure histories agree fairly well with the histories reported in Munson et al. (1992a). The Munson et al. (1992a) closure histories were digitized from Fig. 5.3.1b in Munson et al. (1992a) as faithfully as possible, but some points may have been inadvertently dropped or slightly inaccurate, as Fig. 5.3.1b is a black and white plot with overlapping points. The plots in Fig. 3-3b use $t - t_0$ for the horizontal axes,



(a) Full closure histories

(b) Previously published results compared against reconstructed mining sequence Station -1.4 m closure histories

Figure 3-4. Full Room D horizontal and vertical closure histories.

where t_0 is the time the station was first excavated, because Munson et al. (1992a) plotted all their closure curves in that manner. (The time t_0 for each station is listed in the metadata tables in Appendix A.2 for reference.) Despite some differences due to shifting the closure segments different amounts after each mining pass, the closures are nearly identical at $t - t_0 = 30$ d.

Figure 3-4 extends the early time comparisons out to the full duration of the Room D experiment. Figure 3-4a shows the remotely read closure histories at Station +0.0 m (solid lines) are consistent with the mining sequence closure histories (dots). Moreover, the closure histories are quite similar at all four closure stations, which confirms that one can simulate Room D's closure, at least along the room's mid-section, with a plane strain model that neglects variation in the y-direction. Figure 3-4b demonstrates that the full reconstructed closure histories at Station -1.4 m are very similar to the Station -1.4 m closure histories in Munson et al. (1992a) and the measured closure histories in Fig. 3-4 (and Fig. 3-5) of Munson et al. (1989). The comparisons against the closure histories in Munson et al. (1989) are particularly important since Munson et al. (1989) compared closure measurements against simulation results.

Plots of each Room D mining sequence closure history reconstruction, the raw data behind each mining sequence closure history plot, plots of smoothed and interpolated mining sequence closure curves, the raw data behind each smoothed and interpolated mining sequence closure curve, and the raw remotely read closure data can be found in Appendix A.

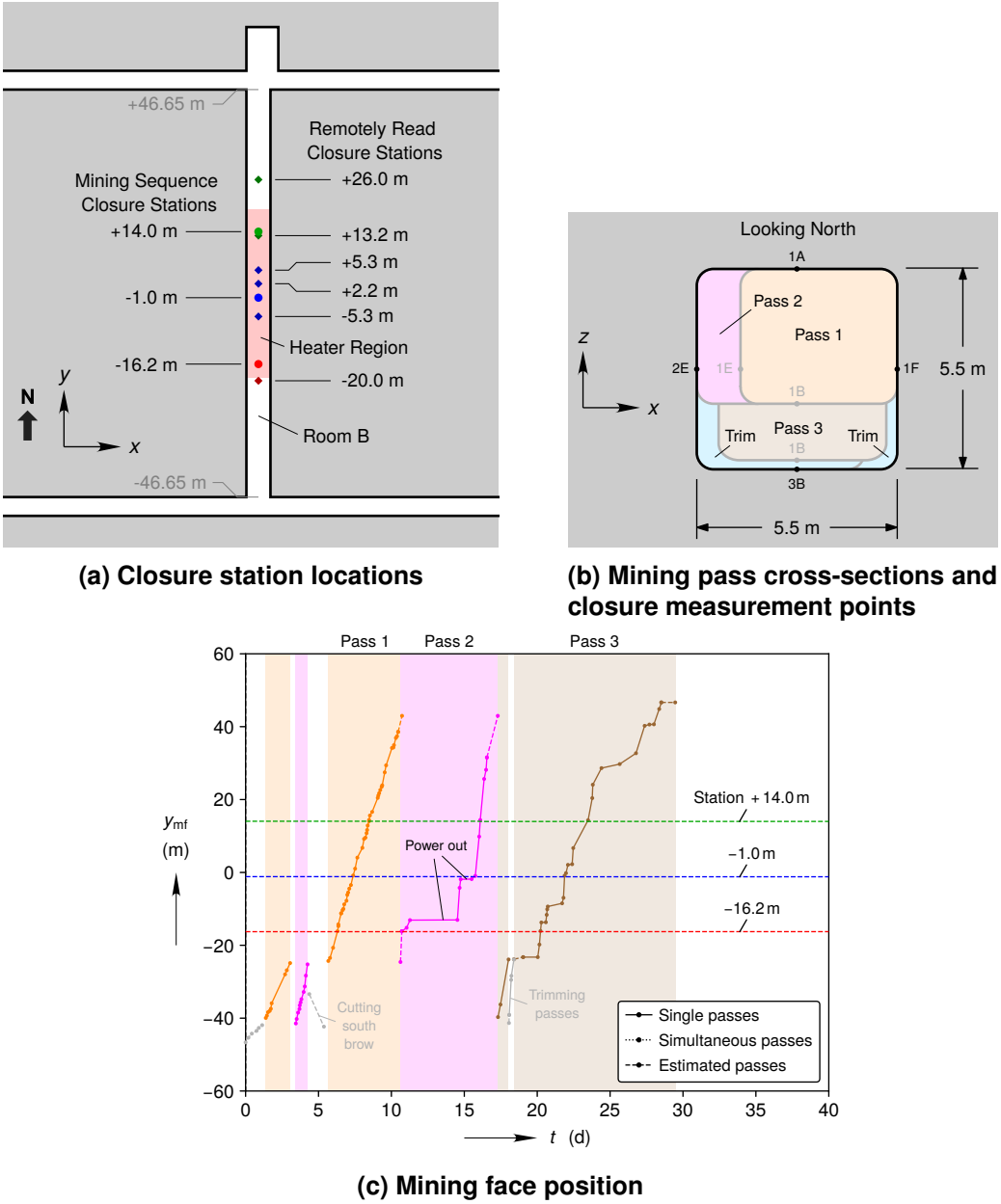
3.2. Room B

As mentioned in Chapter 1, Room B and D were nominally identical, except heaters were installed in the Room B floor to mimic the heat generated by high-level nuclear waste. As shown in Figs. 3-5a and 3-5b, Room B's nominal length, width, and height were the same as Room B. As with Room D, the position $y = 0$ corresponds to the middle of Room B's length. The three mining sequence closure stations and six remotely read closure stations are shown in Fig. 3-5a, along with the heater region ($|y| \leq 19.2$ m)* in the room mid-section. The power output of the outermost "guard" heaters at $|y| = 19.2$ m was roughly $2.2\times$ the power output of the interior heaters in order to compensate for the finite room length "end-effects". The heaters were activated about one year after the room was excavated, which caused the air temperature within the room to eventually reach 50°C.

The cross-section of the first two mining passes of Room B were the same as those in Room D, but the geometry of the remaining Room B passes were different. Unfortunately, Fig. 2.2.10, Fig. 2.2.30, and Table 2.2.1 in Munson et al. (1992a) all provide conflicting accounts of the Room B mining after pass 2. The schematic in Fig. 3-5b is a best estimate, based on Fig. 2.2.10 in Munson et al. (1992a), except the bottom of pass 3 was raised 0.25 m. The 0.25 m was determined from the difference in room height after pass 3 and after the room was completed in Table 2.2.1 of Munson et al. (1992a). This removal of a 0.25 m thick slab of salt from the floor during the trimming passes is consistent with the observation that point 3B was destroyed at each station well after the pass 3 mining face had passed the given station.

The progression of the mining face in Room B is presented in Fig. 3-5c. Time $t = 0$ corresponds to the start of Room B mining and is listed in each metadata table in Appendix B.2 for reference. The miner began by mining simultaneous passes up to $y = -49.1$ m, mining pass 1 and 2 for $-49.1 < y < -24.9$ m separately, and cutting the south brow. Then, starting at -24.9 m, the miner completed pass 1 in one continuous pass. While the miner completed pass 2, two power outages delayed mining and prohibited collecting closure measurements. The Room B multi-pass mining isometric view (Fig. 2.2.10 in Munson et al. (1992a)) indicates pass 3 and the trim passes occurred in a staggered fashion, but this staggered method of mining was only conveyed in the mining face position plot (Fig. 2.2.11 in Munson et al. (1992a) and Fig. 3-5c herein) for $17.3 < t < 18.4$ d. For $t > 18.4$ d, the trim passes that accompanied pass 3 are omitted from the mining face position plot. (If the trim pass y_{mf} histories are considered important in the future, it may be possible to obtain them by digitizing parts of the isometric view (Fig. 2.2.10 in Munson et al. (1992a)).)

*Figure 2.1.4 in Munson et al. (1990a) shows the location of all heaters in Room B with dots, but the outermost dots at $y = \pm 20.6$ were actually unheated Waste Package Performance canisters, so the $|y| \leq 19.2$ m region ignores these outermost canisters.



(a) Closure station locations

(b) Mining pass cross-sections and closure measurement points

(c) Mining face position

Figure 3-5. Room B plan view, mining cross-section, and mining face position. The mining cross-section and mining face position are derived from Fig. 2.2.10 and 2.2.11, and Table 2.2.1, in Munson et al. (1992a).

Figure 3-6 depicts the reconstruction of mining sequence Station -1.0 m's vertical closure as an example of the closure reconstruction process. The magnitude of the first β_z shift after Station -1.0 m was first excavated was somewhat difficult to determine because the first two β_z readings were nearly identical. The closure should have evolved most rapidly immediately following pass 1, so it is extremely unlikely that two β_z readings separated by 7 hours would be almost the same value. One of the two readings must be an outlier, but which one? The first reading was assumed to be the outlier herein because that choice made the Station -1.0 m δ_z

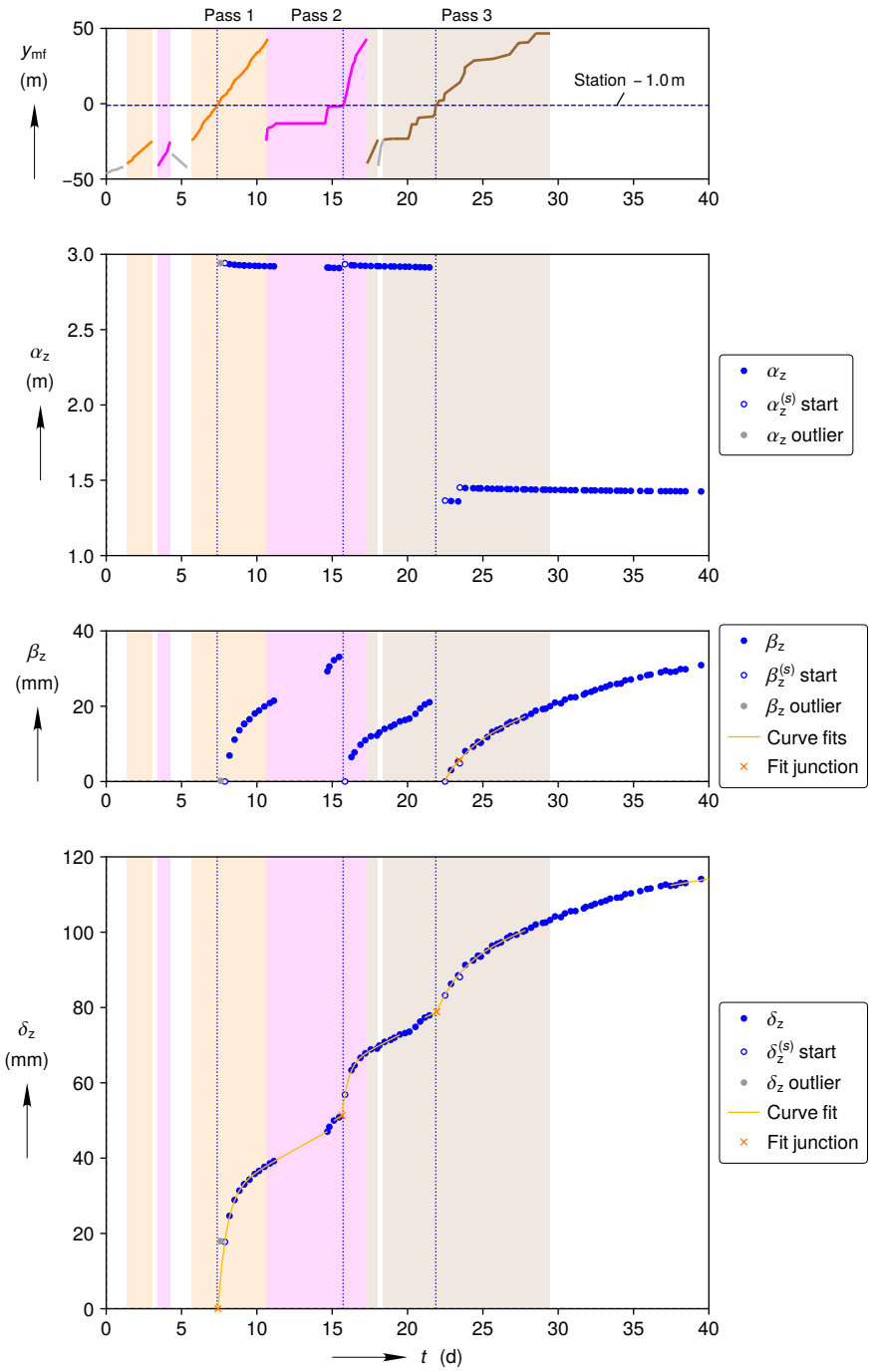


Figure 3-6. Room B mining sequence station -1.0 m vertical closure reconstruction process during mining.

history agree better with the δ_z histories at the other two closure stations (see Fig. 3-7a). After the steep transient closure period, the longer of the two power outages during pass 2 is plainly visible as a gap in closure measurements for $11.1 < t < 14.7$ d. During pass 3 and the subsequent trim passes, point 3B was mined out twice in quick succession. The two-phase shift procedure shown in Fig. 2-4d examined this very case in detail, so it will not be repeated here.

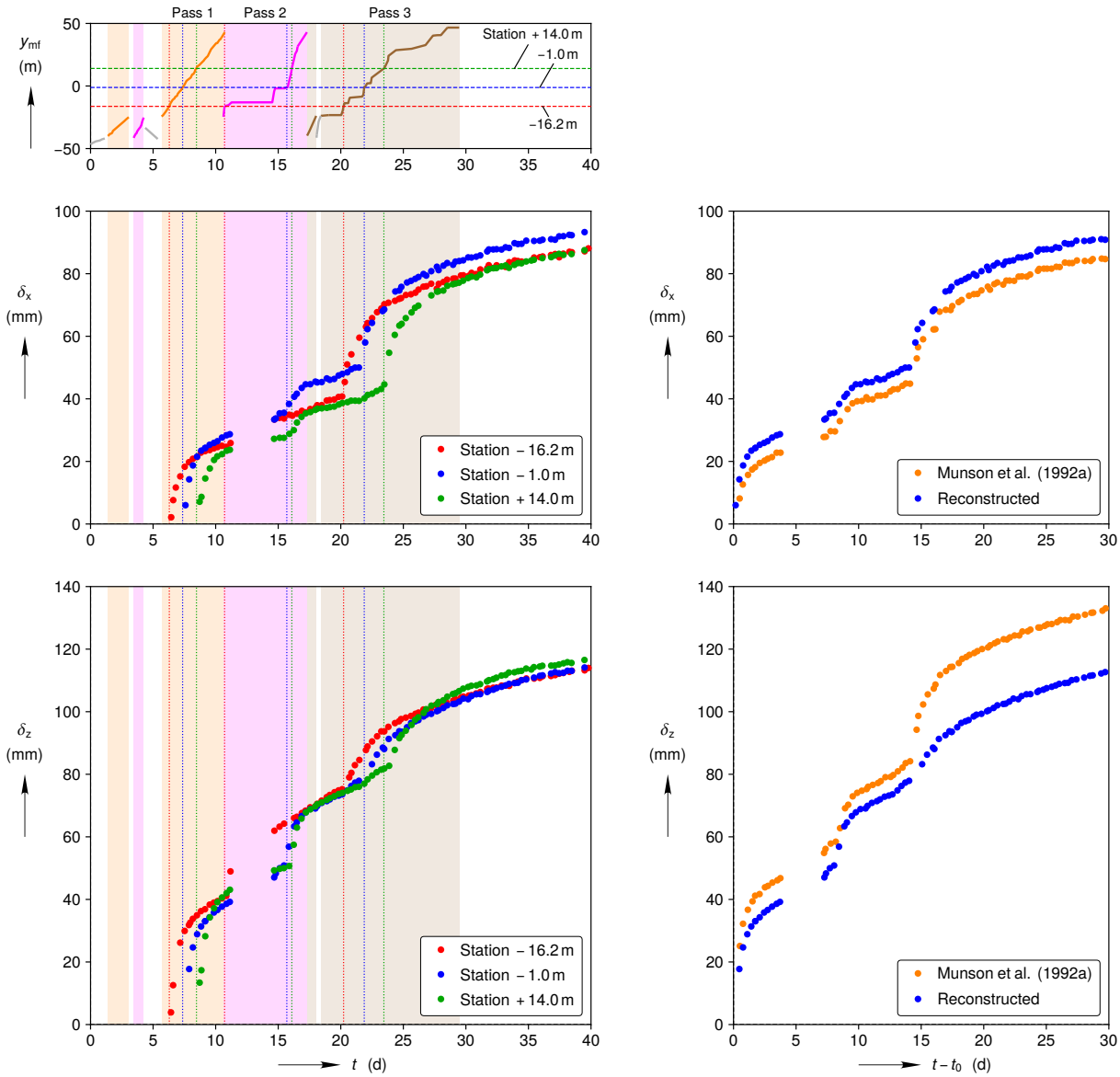
The longer power outage during pass 2 did not cause any issues for most closure reconstructions, but it necessitated a special approach to reconstruct the Station -16.2 m horizontal closure. The Station -16.2 m horizontal closure during pass 2 is believed to be relatively insensitive to the approach employed, but a description is included in Appendix B.1 for completeness.

The early horizontal and vertical closure histories at all three stations are compared in Fig. 3-7a. The closure histories are similar in shape and magnitude. All three stations exhibit particularly rapid accumulation of vertical closure after pass 1 excavated the stations, and particularly rapid accumulation of horizontal closure after pass 3 (and the trim passes) excavated the stations.

The Station -1.0 m closure histories reported in Munson et al. (1992a, Fig. 5.2.1b) are compared against the early reconstructed Station -1.0 m closure histories in Fig. 3-7b. The horizontal axis is $t - t_0$, where t_0 is the time that Station -1.0 m was excavated, which is listed as the first t_{ex} time in Tables B-5 and B-7. The Munson et al. (1992a) closure shifts at $t - t_0 = 0$ are clearly different from those computed herein, but not so different as to cause concern. The Munson et al. (1992a) vertical closure shift at $t - t_0 = 14.4$ d (after Station -1.0 m was excavated during pass 3), however, is substantially larger than that computed herein. Close inspection reveals that the two data points at $t - t_0 = 14.6$ d and 14.8 d exist in the Munson et al. (1992a) data set, but not in the closure data set reconstructed herein. These two times respectively correspond to the $t =$1984-05-26 20:43 and 1984-05-27 01:10 times in Table B-8, where one can easily see the α_x readings are clear outliers that produced $\delta_z = -3315.28$ mm and $\delta_z = 336.89$ mm. The $t - t_0 = 14.8$ d reading was also called out by the technician as a "bad reading". Consequently, based on the information available to the authors, the smaller vertical closure shift at $t - t_0 = 14.4$ d adopted by the δ_z closure history reconstructed herein appears more defensible than the larger shift adopted by Munson et al. (1992a).

The mining sequence and remotely read closure histories in Fig. 3-8a show how the closure varies along the room length. All nine stations exhibit the roughly same closure for $0 \leq t \leq 0.96$ yr, as one might expect[†]. Once the heaters are activated, the closure histories at the four central stations (Station -5.3 m, -1.0 m, +2.2 m, and +5.3 m) are nearly the same for $0.96 < t \leq 2.8$ yr, while the closure histories at the other stations decrease substantially with increasing distance from $y = 0$. This reduction of closure with increasing $|y|$ is likely due to thermal end effects. The salt temperatures within $|y| \leq 5.3$ m exhibited negligible variation along the y-direction, but they were about 2°C cooler near the ends of the heater region than at $y = 0$ (Munson et al. 1990a, pg. 401). A 2°C drop reduced the closure a slight amount, but the far colder salt outside of the heater region probably played a much larger role in restraining the closure just inside the heater region. After $t = 2.8$ yr, the δ_z histories at Station -5.3 m and +13.2 m exhibit non-linear behavior that Munson

[†]Munson et al. (1990a, pg. 157) claimed Station +26.0 m and -20.0 m exhibited about 15 % less closure than the other, more centrally located, remotely read closure stations, but that assertion is not borne out when the remotely read closure histories are shifted and plotted in Fig. 3-8a.



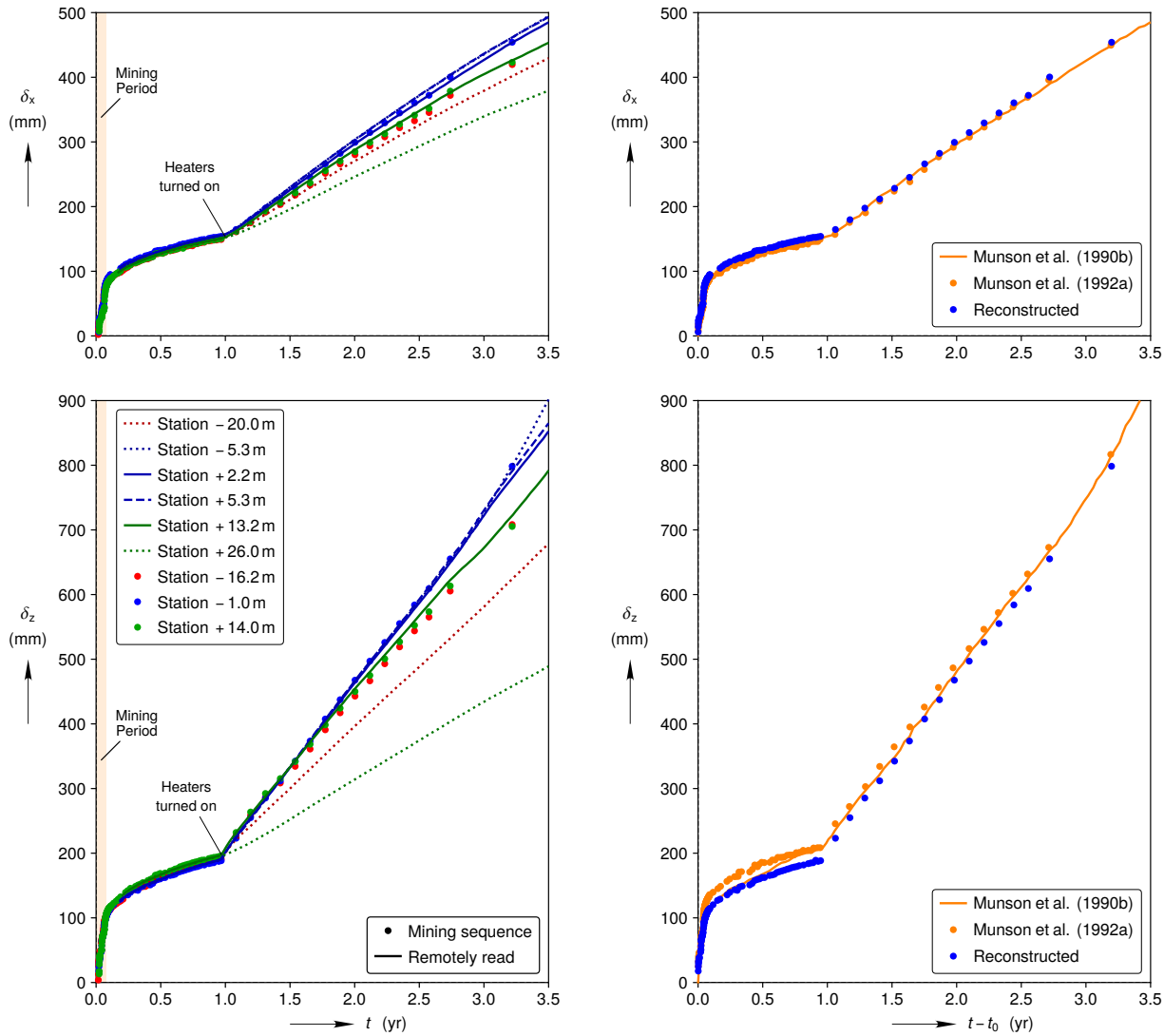
(a) Mining face position and mining sequence closure histories

(b) Previously published results compared against mining sequence Station -1.0 m closure histories

Figure 3-7. Early Room B mining sequence horizontal and vertical closure histories.

et al. (1990a, pg. 57–58, 87–94, 156–157) attributed to the heterogeneously distributed fractures observed in Room B's ceiling.

Two sets of previous reported Room B closure histories are compared against the full reconstructed mining sequence closure histories at Station -1.0 m in Fig. 3-8b. The first set of previous results are from Munson et al. (1990b, Fig. 2), who compared simulation results against Room B's measured closure, but they did not specify which closure station their measured closure



(a) Mining sequence and remotely read closure histories

(b) Previously published results compared against reconstructed mining sequence Station -1.0 m closure histories

Figure 3-8. Full Room B horizontal and vertical closure histories.

histories came from[‡]. Regardless, the Munson et al. (1990b) closure histories match the Station -1.0 m histories quite well until $t = 0.55$ yr, where their δ_z curve gradually increases to 19 mm above the reconstructed Station -1.0 m δ_z history at $t = 0.96$ yr. This small offset remains to the end of the experiment. The cause for the gradual δ_z increase at $t = 0.55$ yr is not clear since it was not observed in the mining sequence and remotely read closure histories reported in Munson et al. (1992a) and Munson et al. (1990a). The second set of previous results are, again, the Station -1.0 m mining sequence closure histories from Munson et al. (1992a, Fig. 5.2.1b). As

[‡]Note that Munson et al. (1990b) is cited because that reference is focused on Room B, but the closure histories were actually digitized from Munson (1997, Fig. 12), which contains a clearer re-print of the same plot.

might be expected, the δ_z difference of 20 mm observed at $t = 30$ d in Fig. 3-7b persists until the end of the experiment, but the closure histories are otherwise quite similar.

Plots of each Room B mining sequence closure history reconstruction, the raw data behind each mining sequence closure history plot, plots of smoothed and interpolated mining sequence closure curves, the raw data behind each smoothed and interpolated mining sequence closure curve, and the raw remotely read closure data can be found in Appendix B.

3.3. Room G

Room G was a very long and slender room (see Fig. 3-9a) with three mining sequence closure stations and five remotely read closure stations along its 359.7 m length. The cross-section (see Fig. 3-9b) was mined to have a width to height ratio of $L_x/L_z = 2$, which is similar to the $L_x/L_z = 2.54$ ratio of WIPP waste disposal rooms.

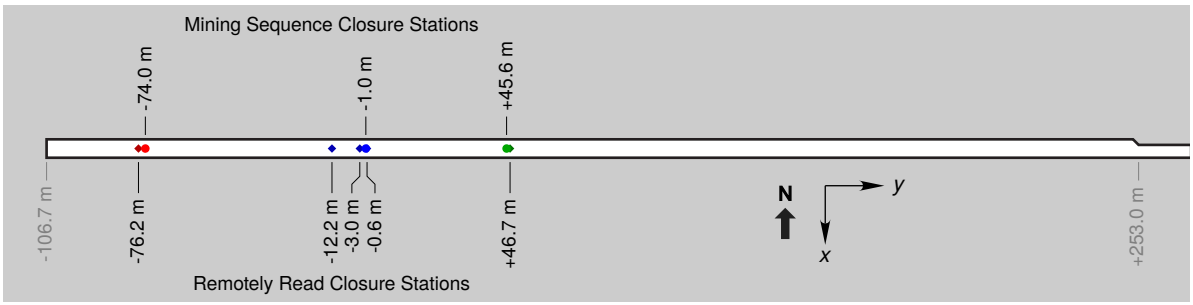
The Room G geometry was mined in two major mining passes (pass 1 and 2), followed by two smaller floor passes (pass 3 and 4)[§ ¶]. The horizontal paired measurement points at each closure station were initially 1C-1D. They became 1C-2D after 1D was destroyed and the room width was increased during pass 2. The vertical measurement points were always referred to as 1A-1B, although 1B was destroyed and the room height was increased during pass 3.

The mining face position versus time is shown in Fig. 3-9c. The time $t = 0$ corresponds to the start of Room G mining, which is listed in each metadata table in Appendix C.2, while $y = 0$ is 106.7 m from the west end of the room, not at room mid-length. The position $y = 0$ corresponds to a planned, but ultimately un-mined, north-south running cross-drift. The east-west running Room G was mined in a step-wise manner, with each step extending only 15 to 30 m. During a given step, the miner would execute a pass, then back up, excavate the next pass, and repeat. Once all four passes of the given step were complete, which required 2.5 to 5 days, the miner would move on to the next step.

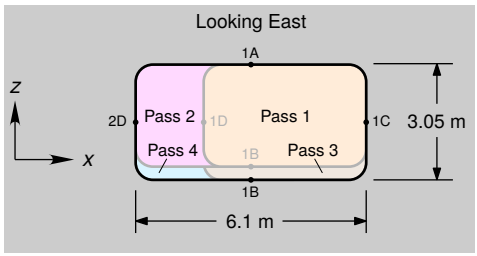
The short duration of each pass within a step made reconstructing some of Room G's early mining sequence closure histories more challenging than the Room D and B early histories. For example, in Fig. 3-10, only two α_z readings were collected at Station -1.0 m between its initial excavation and the destruction of point 1A during a minor trimming pass. The paucity of readings was somewhat resolved using the two-phase shifting process described in Section 2.2, but it was not straightforward to fit the readings after point 1A was re-installed at $t = 33.68$ d. One or more of the four readings during $33.68 \leq t \leq 34.53$ d appear to be outliers, yet it is not clear which ones, so simple linear fits were employed during the phase one and phase two shifts at $t = 33.60$ d and $t = 33.33$ d, respectively. The resulting "curve" shape traced out by the six δ_z points in the $33.33 \leq t \leq 34.53$ d range appears unusual compared to the curve shapes observed after a

[§]Note that Fig. 2.2.33 in Munson et al. (1992a) combines pass 3 and 4 into pass 3, which is inconsistent with Fig. 2.2.16 and 2.2.17 in Munson et al. (1992a), as well as the pass number recorded on many mining sequence closure gage installation and reading sheets, so this report ignores Fig. 2.2.33 in favor of Fig. 2.2.16 and 2.2.17.

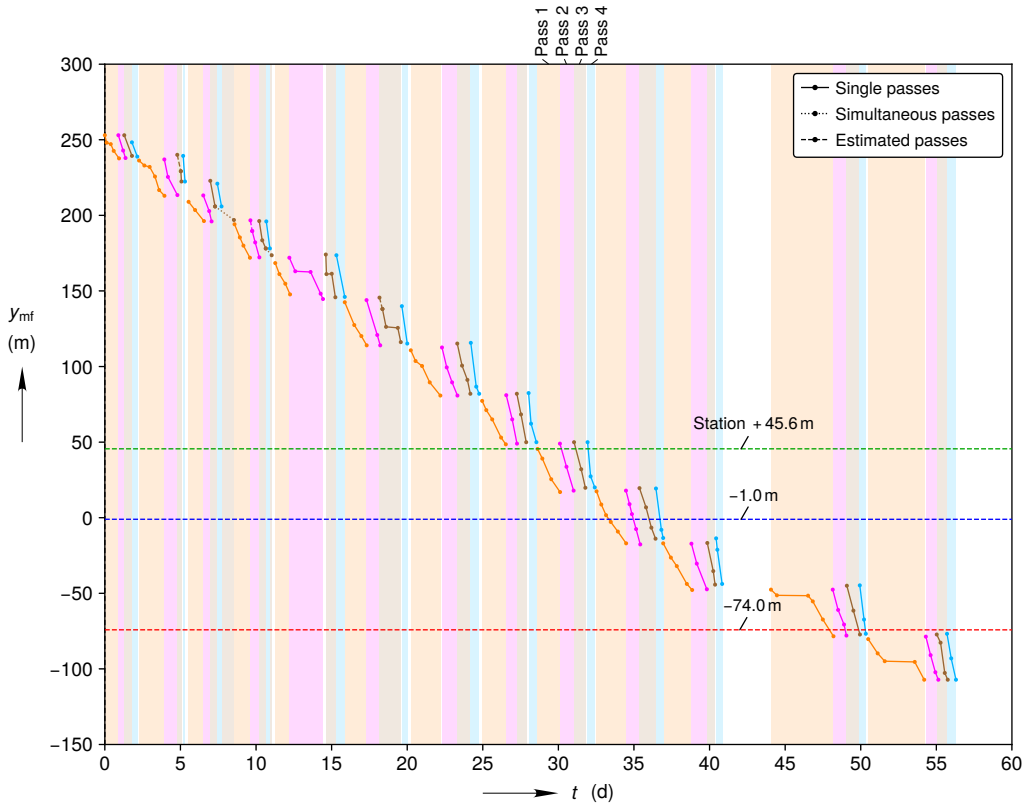
[¶]Munson et al. (1992a) refers to pass 3 and 4 as the south floor trim pass and north floor trim pass, respectively. The names pass 3 and 4 are adopted herein to follow the convention that mining face position vs. time plots, such as Figs. 3-1c, 3-5c and 3-9c, include significant mining passes and ignore minor trim passes.



(a) Closure station locations



(b) Mining pass cross-sections and closure measurement points



(c) Mining face position

Figure 3-9. Room G plan view, mining cross-section, and mining face position. The mining cross-section and mining face position are respectively derived from Fig. 2.2.16 and 2.2.17 in Munson et al. (1992a).

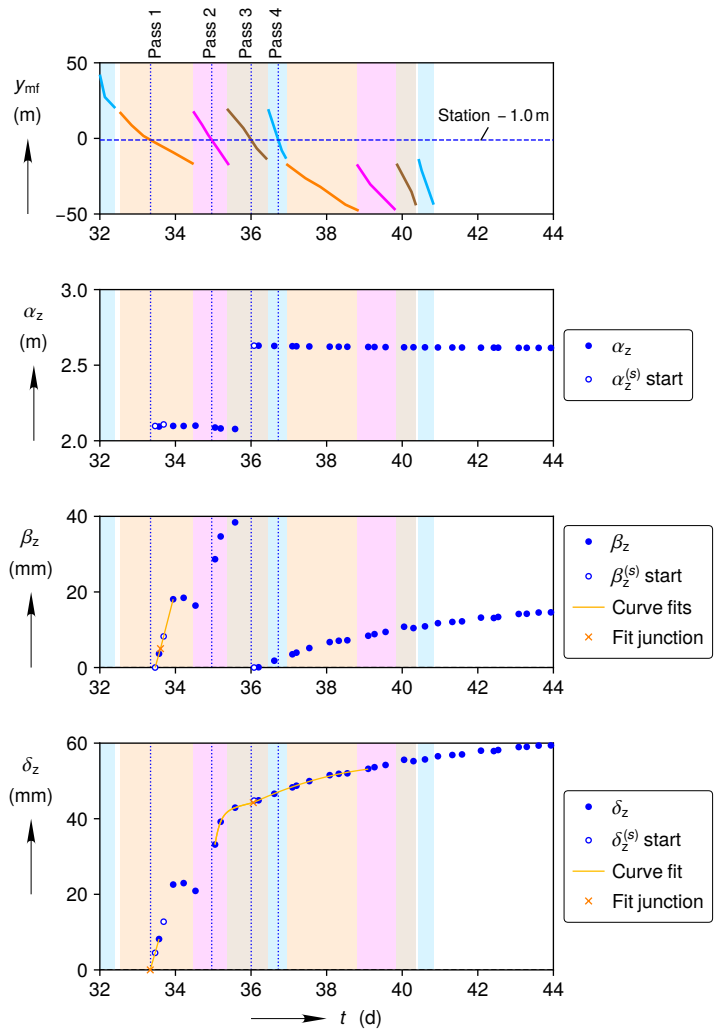
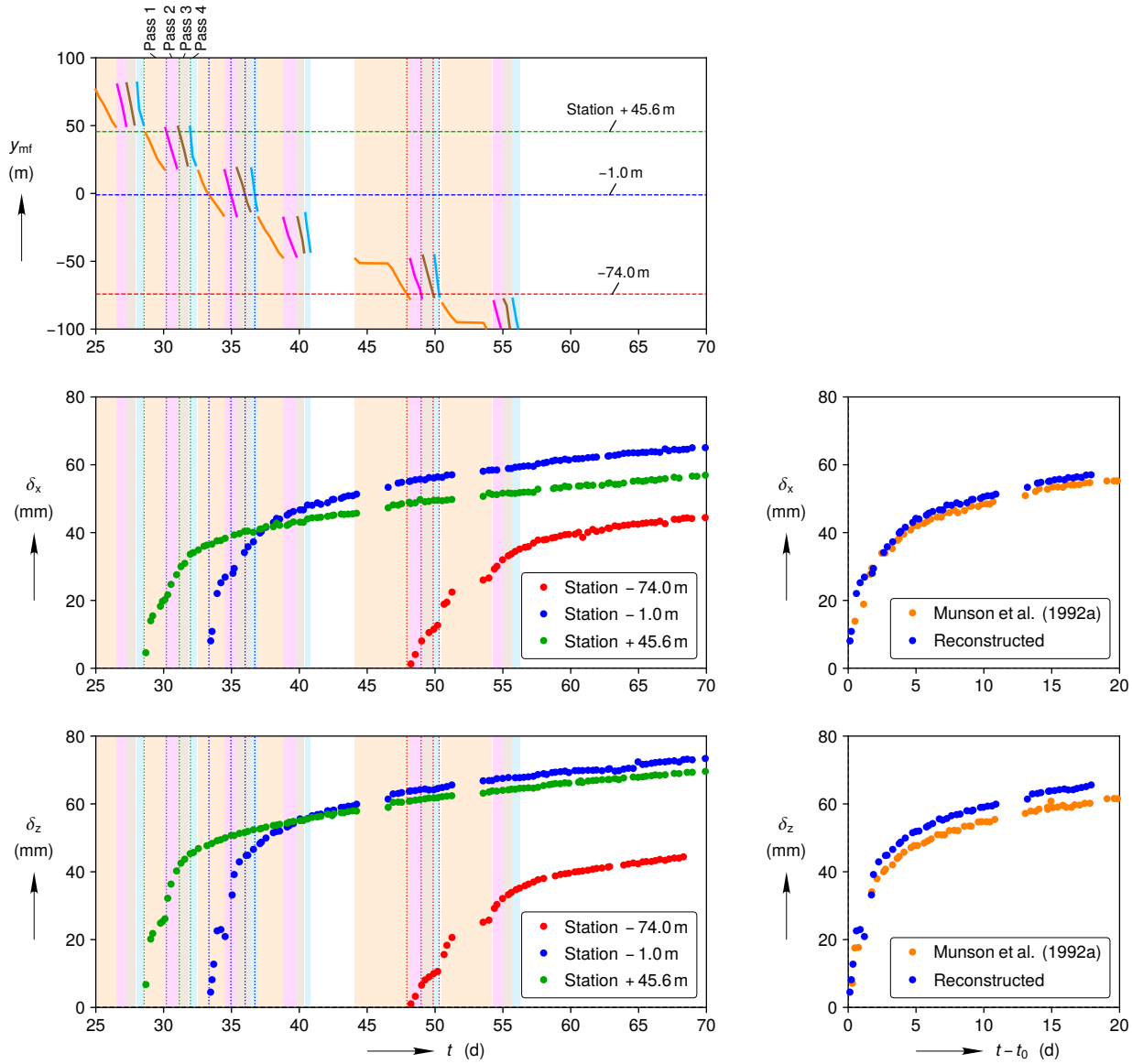


Figure 3-10. Early Room G mining sequence Station -1.0 m vertical closure reconstruction process.

Room D or B station was excavated. Fortunately, the other Room G closure curves were more straightforward to reconstruct during mining than Station -1.0 m's vertical closure because they had fewer suspected outlier readings, but more readings and more time between each mining pass would have been welcome.

The early closure histories at each mining sequence station are compared in Fig. 3-11a. Station +45.6 m and -1.0 m both exhibit rapid closure after their initial excavation during pass 1 and again after they were excavated during pass 2. Station -74.0 m, by contrast, exhibits more gradual closure after the pass 1 and pass 2 excavation events in Fig. 3-11a. A probable explanation for this disparity is Station +45.6 m and -1.0 m were excavated near the start or middle of a mining step, while Station -74.0 m was excavated near the end of a mining step, as shown in the top plot of Fig. 3-11a. Station -74.0 m, therefore, was about 4 m away from the current end of the room while it was excavated during pass 1, 2, 3 and 4 ($47.93 < t \leq 50.49$ d). The solid end of the room likely propped open Station -74.0 m during $47.93 \leq t \leq 50.50$ d.



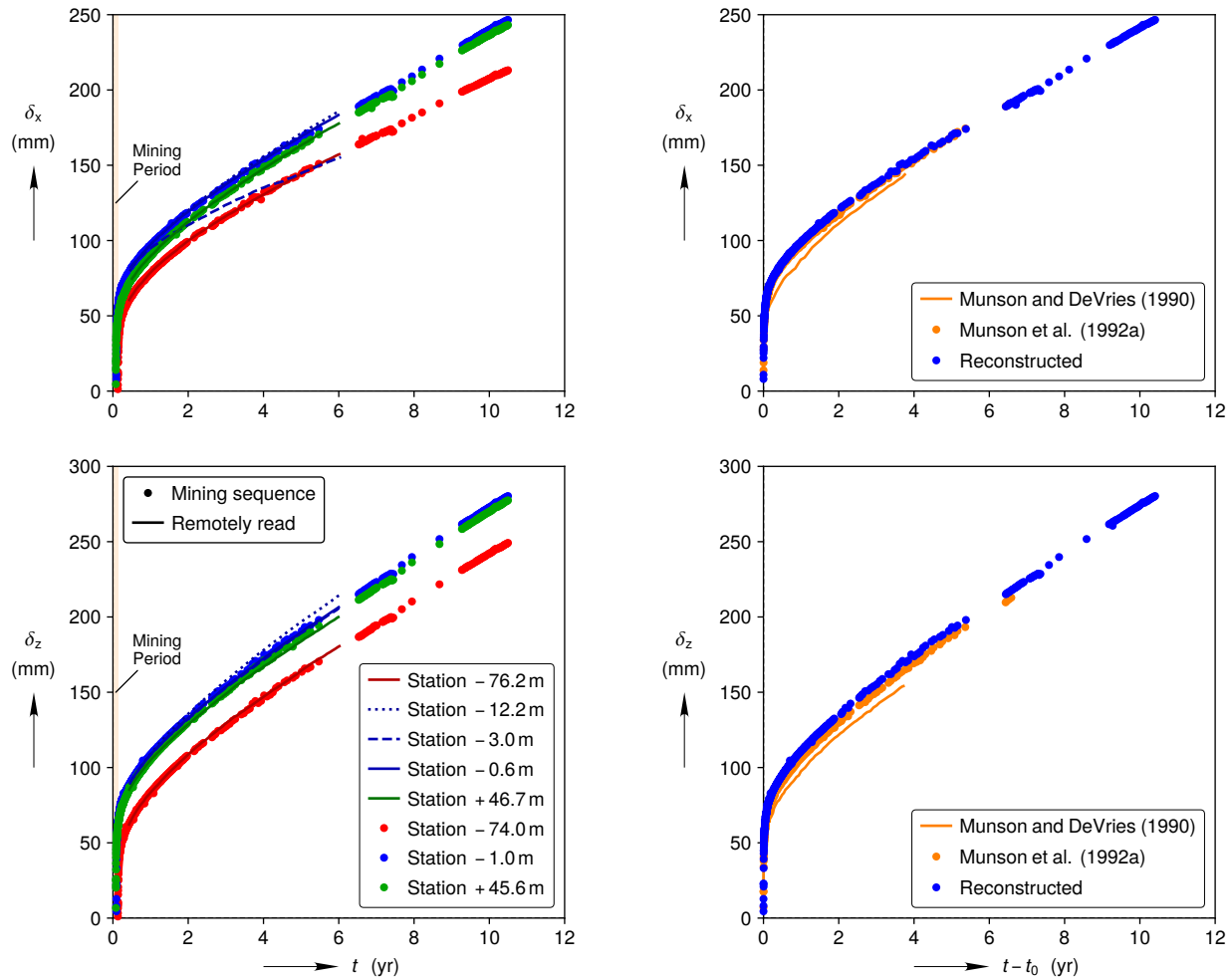
(a) Mining face position and mining sequence closure histories

(b) Previously published results compared against reconstructed mining sequence Station -1.0 m closure histories

Figure 3-11. Early Room G mining sequence horizontal and vertical closure histories.

Station -74.0 m closes considerably more when the room is lengthened during the next mining step ($50.50 < t \leq 56.23$ d), but apparently not enough to catch up with Station +45.6 m and -1.0 m by $t = 70$ d.

The mining sequence and remotely read closure histories over the full duration of the Room G are compared in Fig. 3-12a. Munson et al. (1992b, pg. 69) described the remotely read Station -3.0 m δ_x history as "so uncharacteristic as to indicate a major problem with either the gage or the data



(a) Mining sequence and remotely read closure histories

(b) Previously published results compared against reconstructed mining sequence Station -1.0 m closure histories

Figure 3-12. Room G horizontal and vertical closure histories.

acquisition system." Putting the remotely read Station -3.0 m δ_x history aside, the remaining mining sequence closure histories each agree with the nearest and remotely read closure history. As might be expected from Fig. 3-11a, mining sequence Station +45.6 m and -1.0 m continue to exhibit similar horizontal and vertical closures in Fig. 3-12a, while Station -74.0 m exhibits less closure.

The Station -74.0 m vertical closure rate $\dot{\delta}_z$ in Fig. 3-12a appears to be roughly the same as the other two stations, but the horizontal closure rate $\dot{\delta}_x$, strangely, is about 18 % smaller than the other two stations at $t = 10.5$ yr. Munson et al. (1992b, pg. 69) also observed that Station –76.2 m's δ_x history was slightly smaller than the other remotely read δ_x histories, but they wrote that the exact reasons for this small difference were unknown. One might be tempted to question the mining sequence Station -74.0 m δ_x history, but the nearby remotely read Station -76.2 m δ_x history agrees quite well, which suggests these Station -74.0 m and -76.2 m

closure histories are, in fact, reliable measurements. One might also consider attributing the 18 % smaller $\dot{\delta}_x$ to end effects, since Station -74.0 m is 5.4 room widths (and 10.7 room heights) away from the western end of Room G. End effects probably play a small role, though, as Room D's $\dot{\delta}_x$ histories at $t = 8$ yr do not exhibit discernible end effects and Room D's outermost station (Station -16.4 m) is 5.5 room widths/heights away from the south end of Room D.

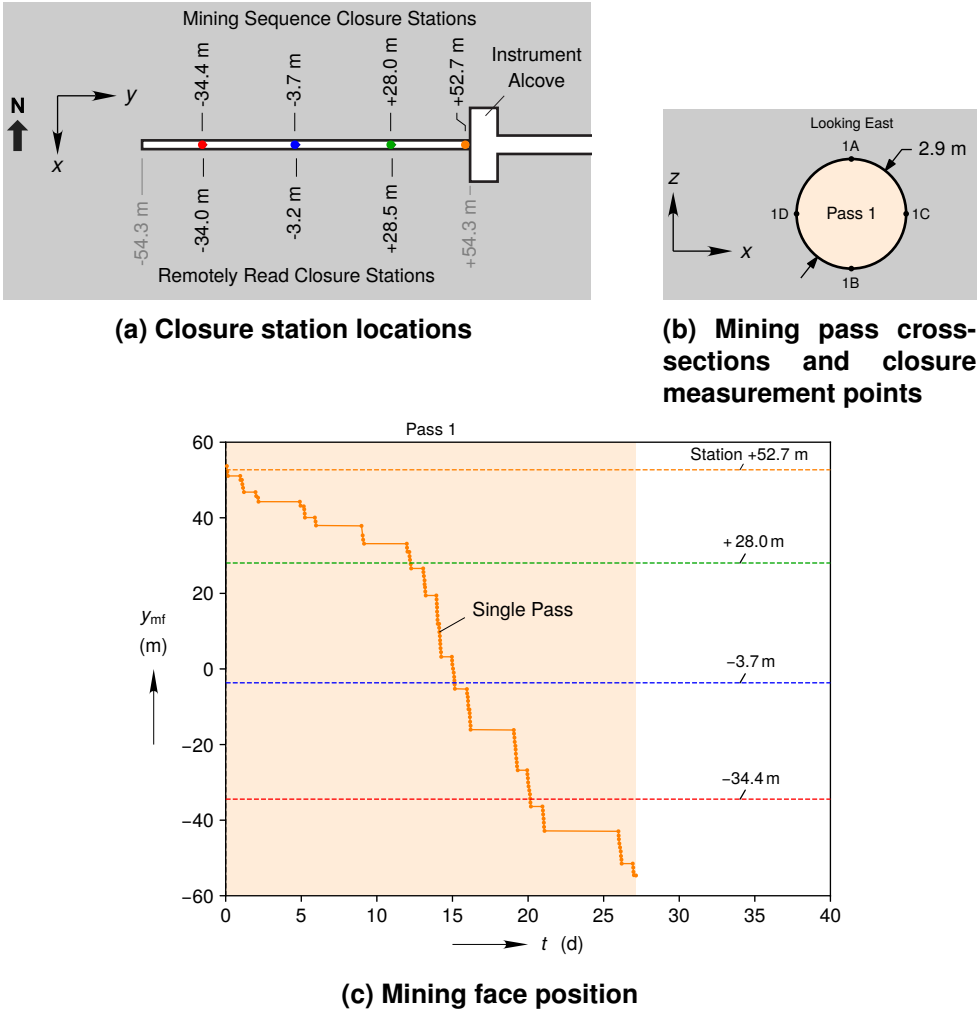
Figures 3-11b and 3-12b compares two sets of previously published Room G closure histories against the reconstructed mining sequence Station -1.0 m closure histories. The horizontal axis in all the subfigures is $t - t_0$, where t_0 is the time the station was first excavated, which is listed as the first t_{ex} time in Tables C-5 and C-7. The first set of previous results were digitized from Munson et al. (1992a, Fig. 5.4.1b), where some of the δ_i values corresponding to $t - t_0 < 2$ d were difficult to discern, so they are missing in Fig. 3-12b. Although the reconstructed closure histories were shifted slightly differently than the Munson et al. (1992a) histories during $t - t_0 < 2$ d, the closure histories remain fairly close. The second set of previous results were digitized from Munson and DeVries (1990, Fig. 3), which compared Room G simulations against the measured closure at an unspecified location in Room G. The Munson and DeVries (1990) δ_x and δ_z histories are, for unknown reasons, slightly smaller than the corresponding Munson et al. (1992a) and reconstructed Station -1.0 m closure histories.

Plots of each Room G mining sequence closure history reconstruction, the raw data behind each mining sequence closure history plot, plots of smoothed and interpolated mining sequence closure curves, the raw data behind each smoothed and interpolated mining sequence closure curve, and the raw remotely read closure data can be found in Appendix C.

3.4. Room Q

Room Q was a circular cross-section room (see Fig. 3-13b) with four mining sequence closure stations and three remotely read closure stations along its 108.6 m length (see Fig. 3-13a). The measurements at Mining Sequence Station +52.7 m will not be considered herein because the gages were installed nearly 28 days after the station was excavated, and the readings are certain to be affected by the neighboring instrument alcove. Each remotely read closure station had two closure gages for each orientation, for a total of six horizontal and six vertical remotely read closure histories.

Unlike the other three rooms studied, Room Q was mined in a single pass with a tunnel boring machine (TBM). The mining face position during this single pass is shown in Fig. 3-13c. The time $t = 0$ corresponds to the start of Room Q mining, which is listed in each metadata table in Appendix D.2, and $y = 0$ corresponds to the center of the room length. Each time the TBM crew mined past a mining sequence closure station, they had to clear out the "muck" behind the TBM, back-up the TBM, shut down the TBM, complete a lockout/tagout, remove the TBM cutting head access covers, ventilate, and take gas readings. Then the geotechnical crew was permitted to climb through the TBM, install the closure gages, and take an initial measurement. The delay between t_{ex} and the first reading was likely between 3 and 6 hours (Deyonge 2021), which agrees with the $t_{ex} = t_{pass}$ times computed from the station positions and mining face position histories, as discussed in Section 2.1. Several days often passed before the second reading, partly because



(a) Closure station locations

(b) Mining pass cross-sections and closure measurement points

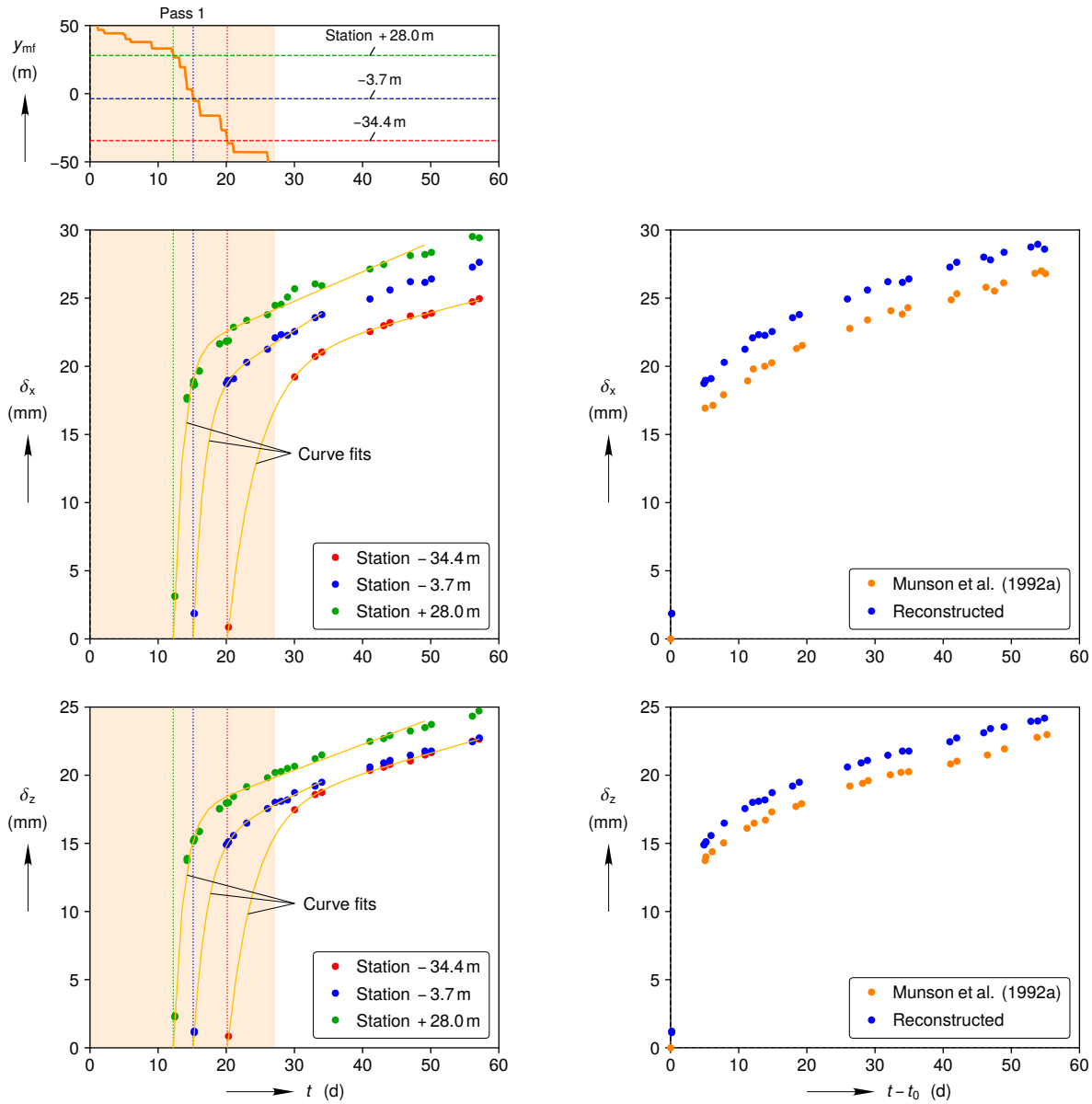
(c) Mining face position

Figure 3-13. Room Q plan view, mining cross-section, and mining face position. The mining face position is derived from Fig. 2.2.23 in Munson et al. (1992a).

the TBM machine had to completely pass the mining sequence closure station before another reading could be collected.

Fig. 3-14a compares the early closure histories at all three mining sequence stations. The closure reconstruction process was particularly simple with Room Q's single mining pass, so an example is omitted in favor of just referring the reader to Section 2.2 and the plots in Appendix D.1. It is worth reviewing, however, the Jeffreys curve fits (shown in Fig. 3-14a) used to estimate the closure prior to the first measurement at each station. The Station -34.4 m and -3.7 m curve fits conform quite well to the measured closure data, but the Station +28.0 m curve fits are only fair. This means one must attach a small amount of extra uncertainty, perhaps ± 1 mm, to the δ_x and δ_z values at Station +28.0 m. Regardless, all three stations exhibit rapid accumulation of horizontal and vertical closure followed by a monotonic decrease in the closure rates.

Figure 3-14b compares the Station -3.7 m closure data digitized from Munson et al. (1992a, Fig. 5.7.1c) against the early reconstructed closure histories. The horizontal axis is $t - t_0$, where t_0



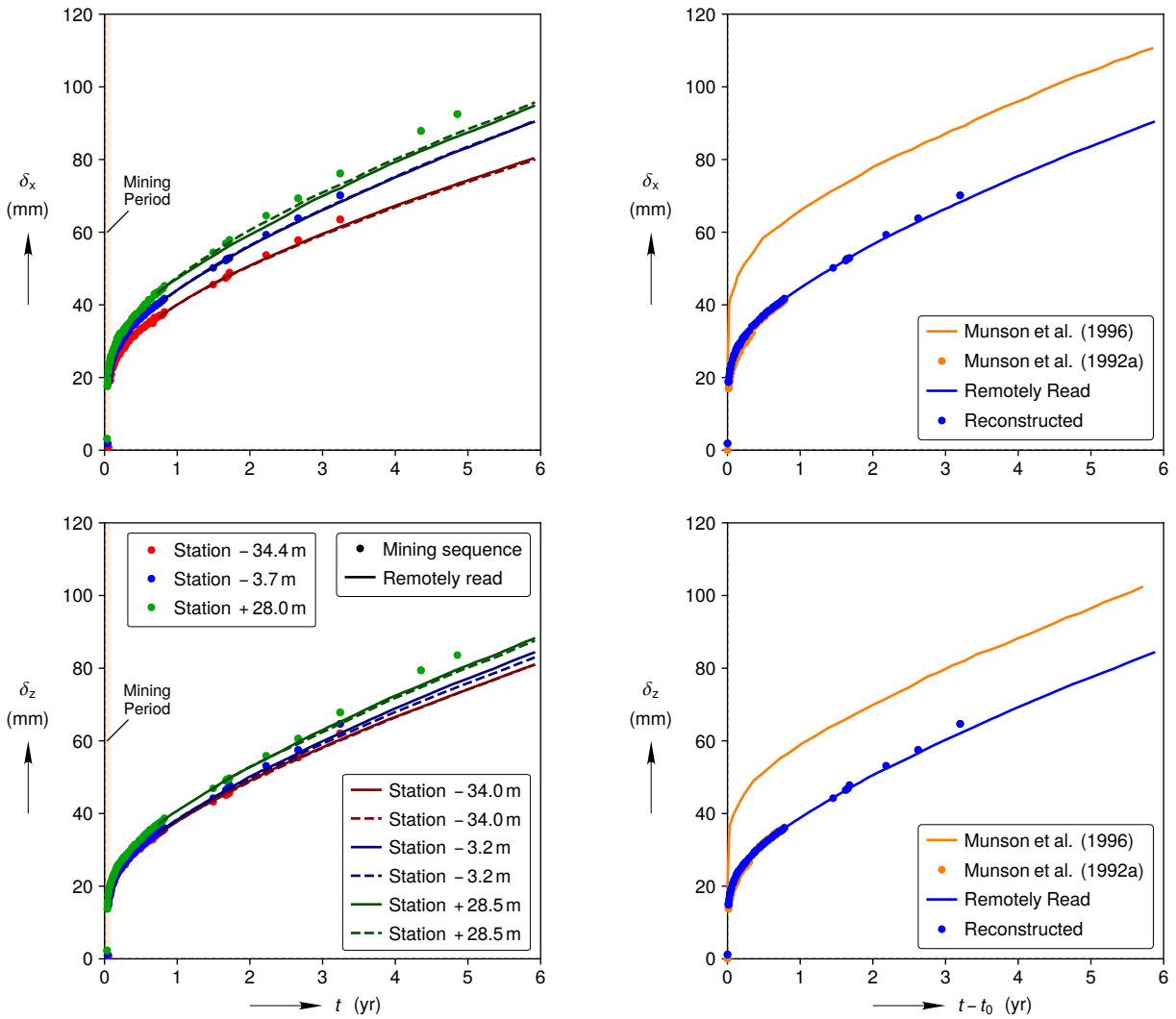
(a) Mining face position and mining sequence closure histories

(b) Previously published results compared against reconstructed mining sequence Station -3.7 m closure histories

Figure 3-14. Early Room Q mining sequence horizontal and vertical closure histories.

is the time the station was excavated, which is listed as the estimated t_{ex} time in Tables D-5 and D-7. The Munson et al. (1992a) δ_x and δ_z values appear nearly identical to the corresponding reconstructed values, except the Munson et al. (1992a) closure data points have not been shifted upward to account for the closure prior to the first measurement.

The full mining sequence closure histories are compared against one another and against the shifted remotely read closure histories in Fig. 3-15a. As previously mentioned, the remotely read



(a) Mining sequence and remotely read closure histories

(b) Previously published results compared against remotely read Station -3.2 m closure histories and reconstructed mining sequence Station -3.7 m closure histories

Figure 3-15. Room Q horizontal and vertical closure histories.

closure stations were installed to provide more frequent closure measurements after the room was sealed ($t \gtrsim 0.82$ yr). The solid curves in Fig. 3-15a correspond to the smaller remotely read gage numbers (i.e. vertical gage QP251 at Station -3.2 m) and the dashed curves in Fig. 3-15a correspond to the larger remotely read gage numbers (i.e. vertical gage QP253 at Station -3.2 m). The repeatability of the remotely read closure measurements at each station is quite good, and the agreement between the remotely read measurements and the few mining sequence closure measurements is fairly good. The remotely read δ_i histories are thought to be more reliable than the $t > 0.82$ yr mining sequence closure δ_i histories because the sparsity of mining sequence data points made it difficult to identify outliers and decide how to shift the mining sequence β_i values.

Comparing across closure stations, the horizontal closure, and the vertical closure to a lesser extent, is slightly greater at stations closer to the instrument alcove (positive y-direction). This variation is probably not due to end effects. Station -34.0 m and +28.5 m are 7.0 and 8.9 room diameters away from the east and west ends of the room, respectively, which is greater than the 5.5 room widths/heights at Station -16.2 m in Room D. Although the cause for the variation across closure stations is not known, it should be noted that the small scale of the vertical axis in Fig. 3-15a magnifies differences more than the corresponding plots for Rooms D, B, and G.

Two previously published closure histories are compared against the remotely read closure histories at Station -3.2 m and the mining sequence closure histories at Station -3.7 m in Fig. 3-15b. The Munson et al. (1992a) closure histories agree quite well with the reconstructed mining sequence closure histories, as one might expect, but the Munson et al. (1992a) data ends at $t = 0.82$ yr. The Munson et al. (1996) closure histories were digitized from Figure 4 in Munson et al. (1996), which lists the location as "3.6 m west of center" [‖]. Surprisingly, the Munson et al. (1996) closure histories are roughly 20 mm greater than the reconstructed/remotely read data *and* Munson et al. (1992a) closure histories. Although Munson and Weatherby (1993), Munson et al. (1996), and Munson (1997) did not mention applying any artificial shifts, it is presumed that they shifted the measured Room Q closure histories upward to make them compare better with their simulation predictions. Unless new experimental evidence and/or insights come to light, the authors of this report prefer to avoid shifting the closure histories beyond the shifts determined by the methods described in Section 2.2. In this way, the measured and predicted closure histories remain as independent as possible.

Plots of each Room Q mining sequence closure history reconstruction, the raw data behind each mining sequence closure history plot, plots of smoothed and interpolated mining sequence closure curves, the raw data behind each smoothed and interpolated mining sequence closure curve, and the raw remotely read closure data can be found in Appendix D.

3.5. Compare Rooms

The smoothed and interpolated closure histories from all mining sequence stations and all rooms are compared in Fig. 3-16 to conclude this chapter. (See Section 2.3 for a description of the smoothing and interpolation process.) The horizontal axis $t - t_0$ is the time since a given station was excavated, which helps remove the temporal offset caused by sequentially excavating each station within a given room. The closure at all three stations of each room are included in Fig. 3-16 in order to give a qualitative understanding of the repeatability and uncertainty. The smaller Room Q clearly closes most slowly, followed by Room G, and then Room D and B. By plotting the closures of all four rooms on the same scales, Room Q's station-to-station horizontal closure variation appears small.

[‖] Munson (1997) cites Munson and Weatherby (1993) for their comparison between the Room Q closure simulation and measurements, but the measurements in Munson et al. (1996) are preferred herein. Figure 2 in Munson and Weatherby (1993) depicts 2.4 years of closure measurements at Station -34.4 m and Station +28.0 m, while Figure 4 in Munson et al. (1996) contains almost 6 years of closure measurements at the central closure station. Otherwise, the plots appear to qualitatively agree.

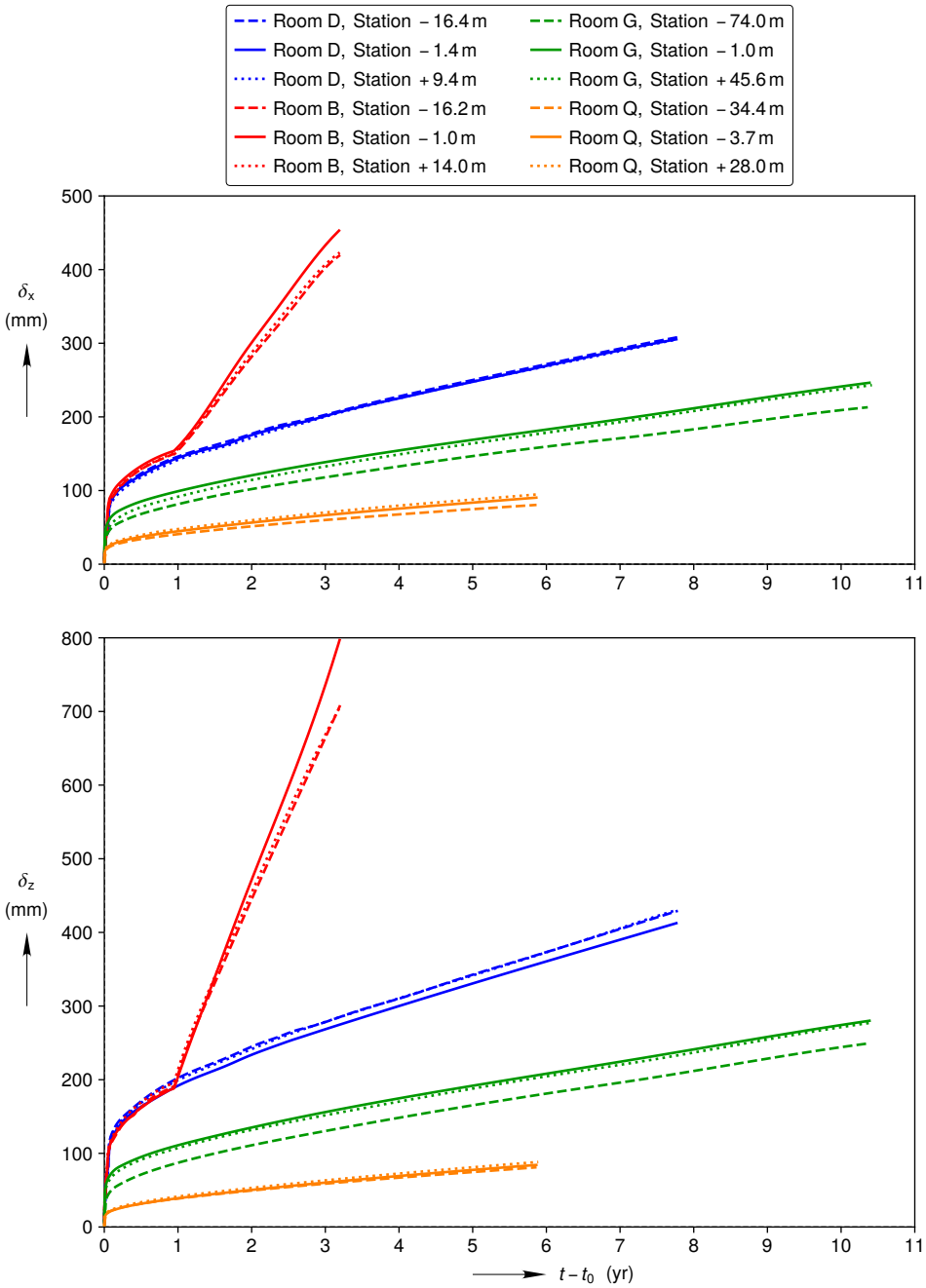


Figure 3-16. Room D, B, G, and Q horizontal (top plot) and vertical (bottom plot) smoothed and interpolated closure histories compared.

As mentioned previously, Room D and B were nominally identical before the heaters were turned on, so one would expect them to have roughly the same closure for the first year, which is indeed the case in Fig. 3-16. The horizontal closure is slightly smaller in Room D than Room B (≈ 6.5 % smaller at $t - t_0 = 0.95$ yr), but Room D and B's vertical closure curves overlap quite nicely (≈ 1 % difference at $t - t_0 = 0.95$ yr). This favorable comparison should hopefully prevent a repeat of the confusion that occurred during Joint Project III (see Fig. 1-5 and associated discussion).

4. SUMMARY

This report details the careful reconstruction of the Room D, B, G, and Q closure histories from hand-written mining sequence closure data sheets. These four rooms were chosen because of their relative isolation from the rest of the WIPP underground, variation in geometry, and simplicity compared to other room closure experiments at the WIPP. Special care was taken to document the process used to shift the closure segments during multi-pass room mining. Notably, the hand-written data sheets extended the Room D and G closure histories several years beyond any previously published results. In addition, each closure history was smoothed and interpolated so future studies can easily plot closure curves and calculate closure rates without excessive noise. The raw closure history data, as well as the smoothed and interpolated closure data, can be found in the appendices.

The reconstructed mining sequence closure histories were plotted against various other closure histories to verify and analyze the results. The reconstructed mining sequence closure histories compared quite well with the remotely read closure histories, except for the Room G Station -3.0 m remotely read horizontal closure, where the instrument may have malfunctioned. The closure histories along the mid-section of each room were relatively similar, except for Room G Station -74 m, indicating one can model the closure of a room's mid-plane as a plane-strain deformation. The reconstructed closure histories also compared reasonably well with previously published results, except for one notable case: the reconstructed Room Q Station -3.7 m horizontal and vertical closures 30 d after excavation were both about 45 % lower than those previously reported in Munson and Weatherby (1993), Munson et al. (1996), and Munson (1997).

Although the uncertainty associated with each room's closure was not quantified, one can qualitatively assess the uncertainty by comparing the quality of the curve fits used to shift the closure segments during the mining period, comparing the closure histories along a given room, and comparing the closure histories for similar rooms. Using these criteria, the Room D closure histories probably have the least uncertainty out of the four rooms analyzed herein. The other rooms had fewer measurements during the mining period, and/or less consistency between various locations along the length of a room.

On the other hand, uncertainty is not the only metric of quality. For example, Room G is the most isolated from the rest of the WIPP underground, the longest running experiment, and the most similar to the WIPP disposal rooms. Consequently, comprehensive model validation efforts should compare model predictions against all four of these experiments and perhaps others. Such future validation studies will hopefully be aided by the reconstructions, comparisons, and raw data contained in this report.

BIBLIOGRAPHY

Butcher, B. M. (1997). *A summary of the sources of input parameter values for the Waste Isolation Pilot Plant final porosity surface calculations*. Tech. rep. SAND97-0796. Albuquerque, NM, USA: Sandia National Laboratories.

Carrasco, R. (Sept. 2015). *Cutting head radius for Room B and Room D corners*. Personal Communication.

Chavez, M. (Mar. 2009). *Los Medanos and B-49 WIPP Media*. Memorandum. Sandia National Laboratories.

Deyonge, W. F. (Apr. 2021). *Room Q Mining Sequence Closure Gage Installation Process*. Personal Communication.

Duran, G. (Jan. 2021). *Destroyed Digital Records of Room Closure*. Personal Communication.

Hampel, A. and Gährken, A. (May 2016). *Confusion Regarding Room D and B Closure*. Personal Communication.

Hampel, A., Günther, R.-M., Salzer, K., Lüdeling, C., Minkley, W., Pudewills, A., Yildirim, S., Staudtmeister, K., Rokahr, R., Gährken, A., Missal, C., Stahlmann, J., Herchen, K., Düsterloh, U., Lux, K.-H., Reedlunn, B., Argüello, J. G., and Hansen, F. D. (2018). "Joint Project III on the comparison of constitutive models for the mechanical behavior of rock salt: modeling of the temperature influence on deformation at WIPP". In: *The Mechanical Behavior of Salt IX*. Ed. by S. Fahland, J. Hammer, F. D. Hansen, S. Heusermann, K.-H. Lux, and W. M. Minkley. BGR (Federal Institute for Geosciences and Natural Resources), pp. 427–446. ISBN: 978-3-9814108-6-0.

Hampel, A., Herchen, K., Lux, K.-H., Günther, R.-M., Salzer, K., Minkley, W., Pudewills, A., Yildirim, S., Rokahr, R., Missal, C., Gährken, A., and Stahlmann, J. (2016). *Verbundprojekt: Vergleich aktueller Stoffgesetze und Vorgehensweisen anhand von Modellberechnungen zum thermo-mechanischen Verhalten und zur Verheilungtoffgesetze anhand von Modellberechnungen zum thermo-mechanischen Verhalten und zur Verheilung von Steinsalz – Synthesebericht*. Tech. rep. BMBF-FKZ 02E10810. Projektträger Karlsruhe, Wassertechnologie und Entsorgung (PTKA-WTE), Karlsruher Institut für Technologie (KIT). DOI: 10.2314/GBV:88655800X.

Harris, C. R., Millman, K. J., Walt, S. J. van der, Gommers, R., Virtanen, P., Cournapeau, D., Wieser, E., Taylor, J., Berg, S., Smith, N. J., Kern, R., Picus, M., Hoyer, S., Kerkwijk, M. H. van, Brett, M., Haldane, A., R'ıo, J. F. del, Wiebe, M., Peterson, P., G'erard-Marchant, P., Sheppard, K., Reddy, T., Weckesser, W., Abbasi, H., Gohlke, C., and Oliphant, T. E. (Sept. 2020). "Array programming with NumPy". In: *Nature* 585.7825, pp. 357–362. DOI: 10.1038/s41586-020-2649-2. URL: https://doi.org/10.1038/s41586-020-2649-2.

Herrick, C. (Sept. 2015). *Room B and Room D corner radii estimate*. Personal Communication.

Hunter, J. D. (2007). "Matplotlib: A 2D graphics environment". In: *Computing in Science & Engineering* 9.3, pp. 90–95. DOI: 10.1109/MCSE.2007.55.

Jensen, A., Howard, C., Chester, C., and Bower, R. (Oct. 1996). *Large-Scale Brine Inflow Data Report for Room Q: November 25, 1991 through July 6, 1995*. Tech. rep. SAND94-1393 (Copy of 5/14/96 draft on file in the Sandia WIPP archives as WPO 37958) (ERMS237958). Sandia National Laboratories.

Jensen, A., Jones, R., Lorusso, E., and Howard, C. (1993). *Large-scale brine inflow data report for Room Q prior to November 25, 1991*. Tech. rep. SAND92-1173. Sandia National Laboratories, Albuquerque, NM (United States).

Joseph, D. D. (2013). *Fluid dynamics of viscoelastic liquids*. Vol. 84. Springer Science & Business Media.

Krieg, R. D. (1984). *Reference stratigraphy and rock properties for the Waste Isolation Pilot Plant (WIPP) project*. Tech. rep. SAND83-1908. Albuquerque, NM, USA: Sandia National Laboratories.

Morgan, H. and Stone, C. (1985). *Pretest reference calculation for the 6.1 meter (20 ft) wide drifts of the Geomechanical Evaluation (WIPP Room G in situ experiment)*. Tech. rep. SAND85-0893. Albuquerque, NM, USA; Livermore, CA, USA: Sandia National Laboratories.

Munson, D. E. (1997). "Constitutive model of creep in rock salt applied to underground room closure". In: *International Journal of Rock Mechanics and Mining Sciences* 34.2, pp. 233–247.

Munson, D. E. and DeVries, K. L. (May 1990). "Progress in validation of structural codes for radioactive waste repository applications in bedded salt". In: *Proc. GEOVAL-90 Symposium on Validation of Geosphere Flow and Transport Models*. SAND89-2176, pp. 16–23.

Munson, D. E., Fossum, A. F., and Senseny, P. E. (1989). *Advances in resolution of discrepancies between predicted and measured in situ WIPP room closures*. Tech. rep. SAND88-2948. Albuquerque, NM, USA: Sandia National Laboratories.

Munson, D. E., Hoag, D. L., Blankenship, D. A., DeYonge, W., Schiermeister, D., Jones, R., and Baird, G. (1997). *Instrumentation of the thermal/structural interactions in situ tests at the Waste Isolation Pilot Plant (WIPP)*. Tech. rep. SAND87-2686. Sandia National Labs., Albuquerque, NM (United States).

Munson, D. E., Jensen, A. L., Webb, S. W., and De Vries, K. L. (1996). "Brine release based on structural calculations of damage around an excavation at the Waste Isolation Pilot Plant (WIPP)". In: *Rock Mechanics Tools and Techniques: Proceedings of the 2nd North American Rock Mechanics Symposium: NARMS'96, a Regional Conference of ISRM, Montréal, Québec, Canada, 19-21 June 1996*. SAND95-1704C. Taylor & Francis US, pp. 1495–1500.

Munson, D. E., Jones, R., Ball, J., Clancy, R., Hoag, D., and Petney, S. (1990a). *Overtest for simulated defense high-level waste (Room B): in situ data report (May 1984-February 1988). Waste Isolation Pilot Plant (WIPP) Thermal/Structural Interactions Program.* Tech. rep. SAND89-2671. Albuquerque, NM, USA; Livermore, CA, USA: Sandia National Laboratories.

Munson, D. E., Jones, R., Hoag, D., and Ball, J. (1987a). *Heated axisymmetric pillar test (Room H): in situ data report, February 1985-April 1987: Waste Isolation Pilot Plant (WIPP): Thermal/Structural Interactions Program*. Tech. rep. SAND87-2488. Sandia National Labs., Albuquerque, NM (USA); Tech. Reps., Inc., Albuquerque, NM (USA); RE/SPEC, Inc., Albuquerque, NM (USA).

Munson, D. E., Jones, R., Hoag, D., and Ball, J. (1988). *Mining development test (Room D): in situ data report (March 1984-May 1988): Waste Isolation Pilot Plant (WIPP) Thermal/Structural Interactions Program*. Tech. rep. SAND88-1460. Albuquerque, NM, USA; Livermore, CA, USA: Sandia National Laboratories.

Munson, D. E., Jones, R. L., Northrop-Salazar, C. L., and Woerner, S. (1992a). *Multipass mining sequence room closures: in situ data report. Waste Isolation Pilot Plant (WIPP) Thermal/Structural Interactions Program*. Tech. rep. SAND87-2687. Albuquerque, NM, USA; Livermore, CA, USA: Sandia National Laboratories.

Munson, D. E., Matalucci, R., Hoag, D., and Blankenship, D. (1987b). *Construction of the thermal/structural interactions in situ tests at the Waste Isolation Pilot Plant (WIPP)*. Tech. rep. SAND87-2685. Albuquerque, NM, USA; Livermore, CA, USA: Sandia National Laboratories.

Munson, D. E., Petney, S. V., Christian-Frear, T. L., Ball, J. R., Jones, R. L., and Northrop-Salazar, C. L. (Dec. 1992b). *Geomechanical evaluation (Room G): in situ data report (December 1984 - November 1990) Waste Isolation Pilot Plant (WIPP) Thermal/Structural Interactions Program*. Tech. rep. SAND92-0582. Sandia National Laboratories.

Munson, D. E., Petney, S., Clancy, R., Ball, J., Jones, R., and Northrop-Salazar, C. (1991). *18 W/m^2 Mockup for Defense High-level Waste (Rooms A): in situ Data Report: Vol. 1–Mechanical response gages (February 1985–June 1990), Waste Isolation Pilot Plant (WIPP) Thermal/Structural Interactions Program*. Tech. rep. SAND90-2748. Sandia National Laboratories (SNL-NM).

Munson, D. E. and Weatherby, J. (1993). "Two- and three-dimensional calculations of scaled in situ tests using the M-D model of salt creep". In: *The 34th US Symposium on Rock Mechanics (USRMS)*. American Rock Mechanics Association, pp. 507–510.

Munson, D. E., DeVries, K. L., and Callahan, G. D. (1990b). "Comparison of calculations and in situ results for a large, heated, test room at the Waste Isolation Pilot Plant (WIPP)". In: *The 31st U.S. Symposium on Rock Mechanics (USRMS)*. ARMA-90-0389. American Rock Mechanics Association, pp. 389–396.

Munson, D., Petney, S., Christian-Frear, T., Ball, J., Jones, R., and Northrop-Salazar, C. (1992c). *18 W/m^2 Mockup for Defense High-level Waste (Rooms A): in situ Data Report, Vol. II–Thermal Response Gages (February 1985–June 1990)*. Tech. rep. SAND90-2749. Sandia National Laboratories.

Nelder, J. A. and Mead, R. (1965). "A simplex method for function minimization". In: *The computer journal* 7.4, pp. 308–313.

Ofoegbu, G. and Dasgupta, B. (2016). *Implementation of a creep model in FLAC to study the thermomechanical response of salt as a host repository medium–progress report*. Tech. rep. Contract No. NRC–HQ–12–C–02–0089. San Antonio: Southwest Research Institute, Center for Nuclear Waste Regulatory Analyses.

Ofoegbu, G. and Dasgupta, B. (2017). *Implementation of a creep model in FLAC to study the thermomechanical response of salt as a host repository medium–2nd progress report*. Tech. rep. Contract No. NRC–HQ–12–C–02–0089. San Antonio: Southwest Research Institute, Center for Nuclear Waste Regulatory Analyses.

Ofoegbu, G. and Dasgupta, B. (2018). *Implementation of a creep model in FLAC to study the thermomechanical response of salt as a host repository medium–3rd progress report*. Tech. rep. Contract No. NRC–HQ–12–C–02–0089. San Antonio: Southwest Research Institute, Center for Nuclear Waste Regulatory Analyses.

Reedlunn, B. (2018). "Joint Project III on the Comparison of Constitutive Models for the Mechanical Behavior of Rock Salt: Reinvestigation into Isothermal Room Closure Predictions at the Waste Isolation Pilot Plant". In: *The Mechanical Behavior of Salt IX*. Ed. by S. Fahland,

J. Hammer, F. D. H. Hansen, S. Heusermann, K.-H. Lux, and W. Minkley. BGR (Federal Institute for Geosciences and Natural Resources). ISBN: 978-3-9814108-6-0.

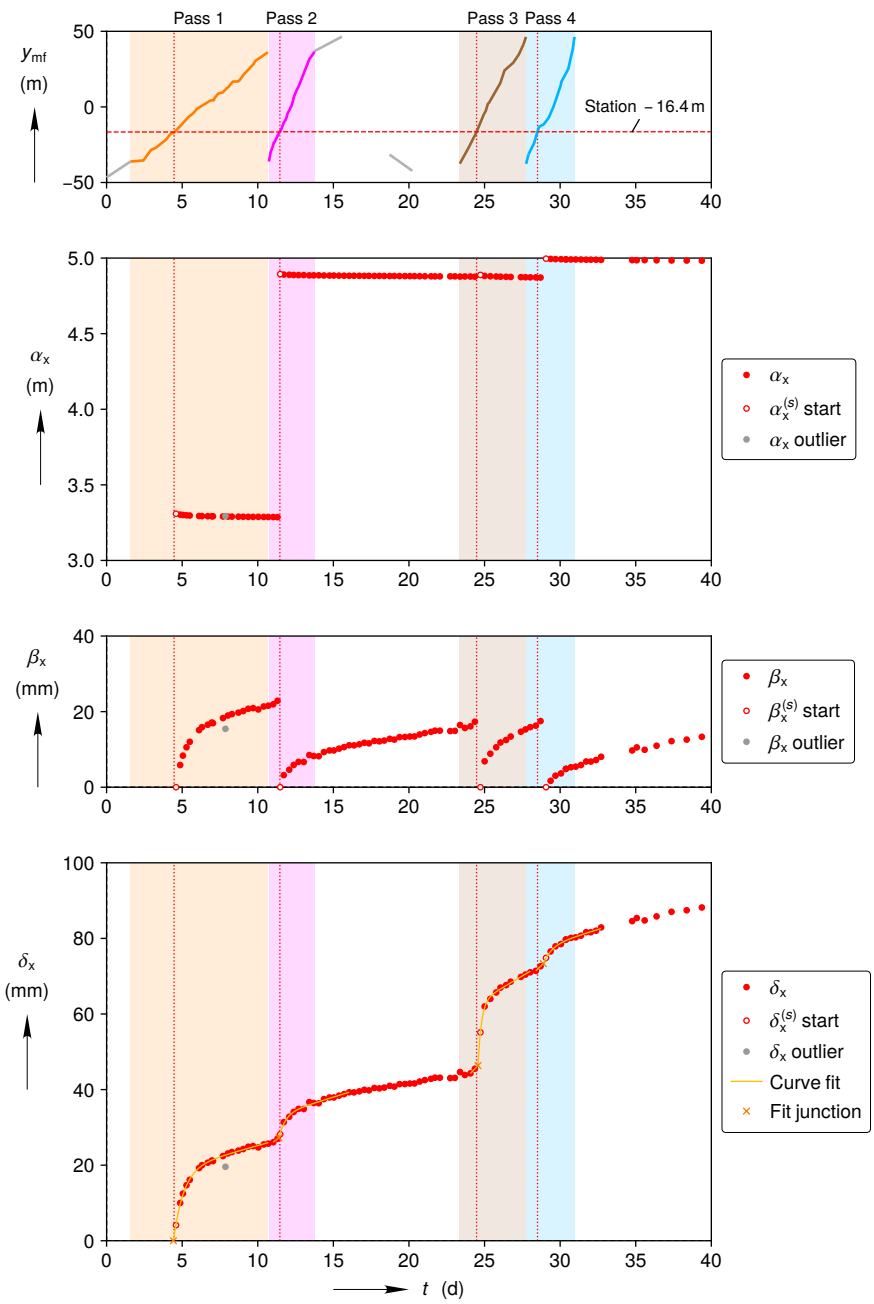
Stone, C. M. (Aug. 1997). *Final disposal room structural response calculations*. Tech. rep. SAND97-0795. Albuquerque, NM, USA; Livermore, CA, USA: Sandia National Laboratories.

Van Rossum, G. and Drake, F. L. (2009). *Python 3 Reference Manual*. Scotts Valley, CA: CreateSpace. ISBN: 1441412697.

Virtanen, P., Gommers, R., Oliphant, T. E., Haberland, M., Reddy, T., Cournapeau, D., Burovski, E., Peterson, P., Weckesser, W., Bright, J., van der Walt, S. J., Brett, M., Wilson, J., Millman, K. J., Mayorov, N., Nelson, A. R. J., Jones, E., Kern, R., Larson, E., Carey, C. J., Polat, İ., Feng, Y., Moore, E. W., VanderPlas, J., Laxalde, D., Perktold, J., Cimrman, R., Henriksen, I., Quintero, E. A., Harris, C. R., Archibald, A. M., Ribeiro, A. H., Pedregosa, F., van Mulbregt, P., and SciPy 1.0 Contributors (2020). "SciPy 1.0: Fundamental algorithms for scientific computing in Python". In: *Nature Methods* 17, pp. 261–272. DOI: 10.1038/s41592-019-0686-2.

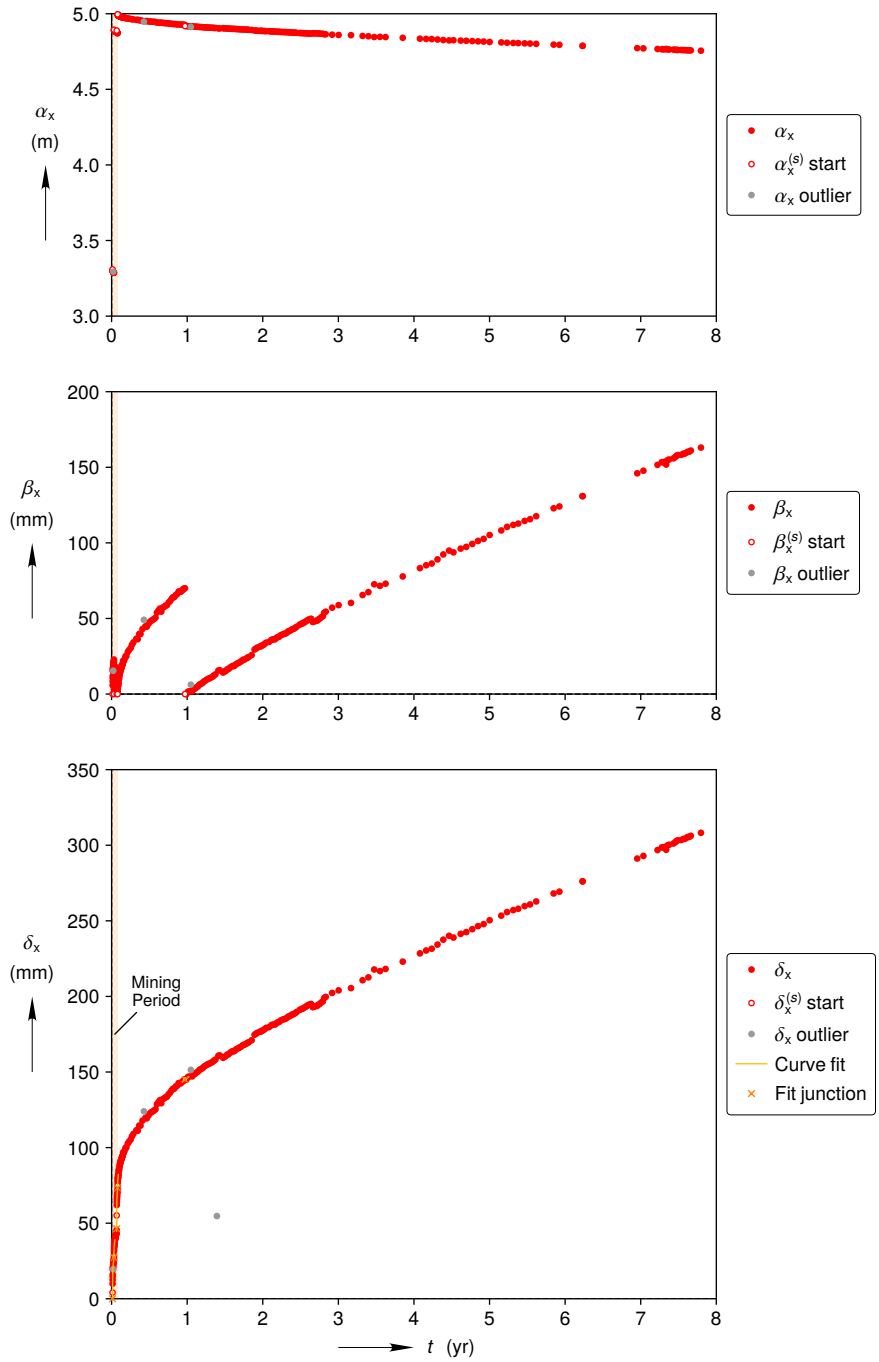
APPENDIX A. Room D Supplemental Information

A.1. Mining Sequence Closure Reconstruction Plots



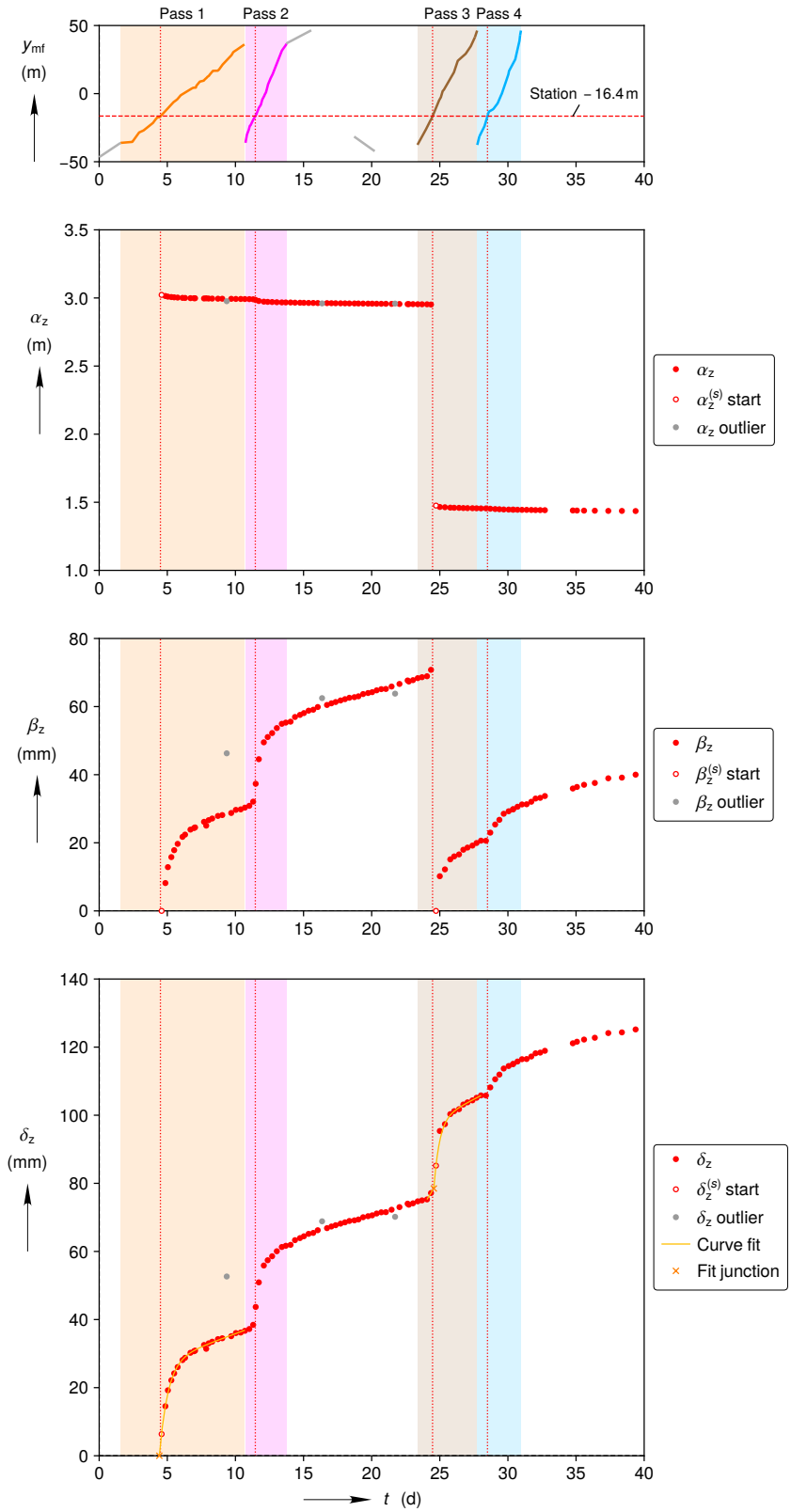
(a) Reconstruction during mining period

Figure A-1. Room D Station -16.4 m horizontal closure reconstruction process.



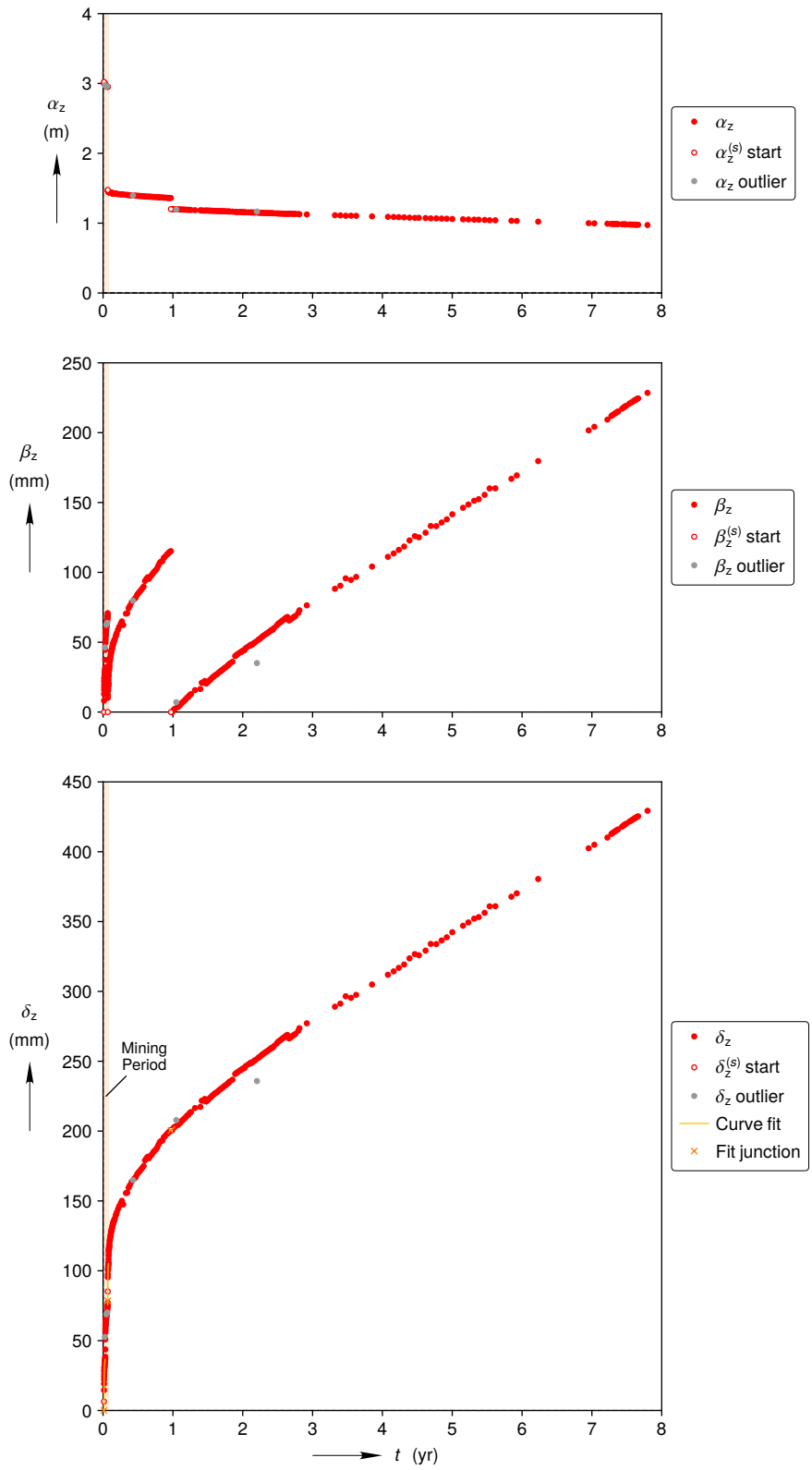
(b) Full reconstruction

Figure A-1. (Continued) Room D Station -16.4 m horizontal closure reconstruction process.



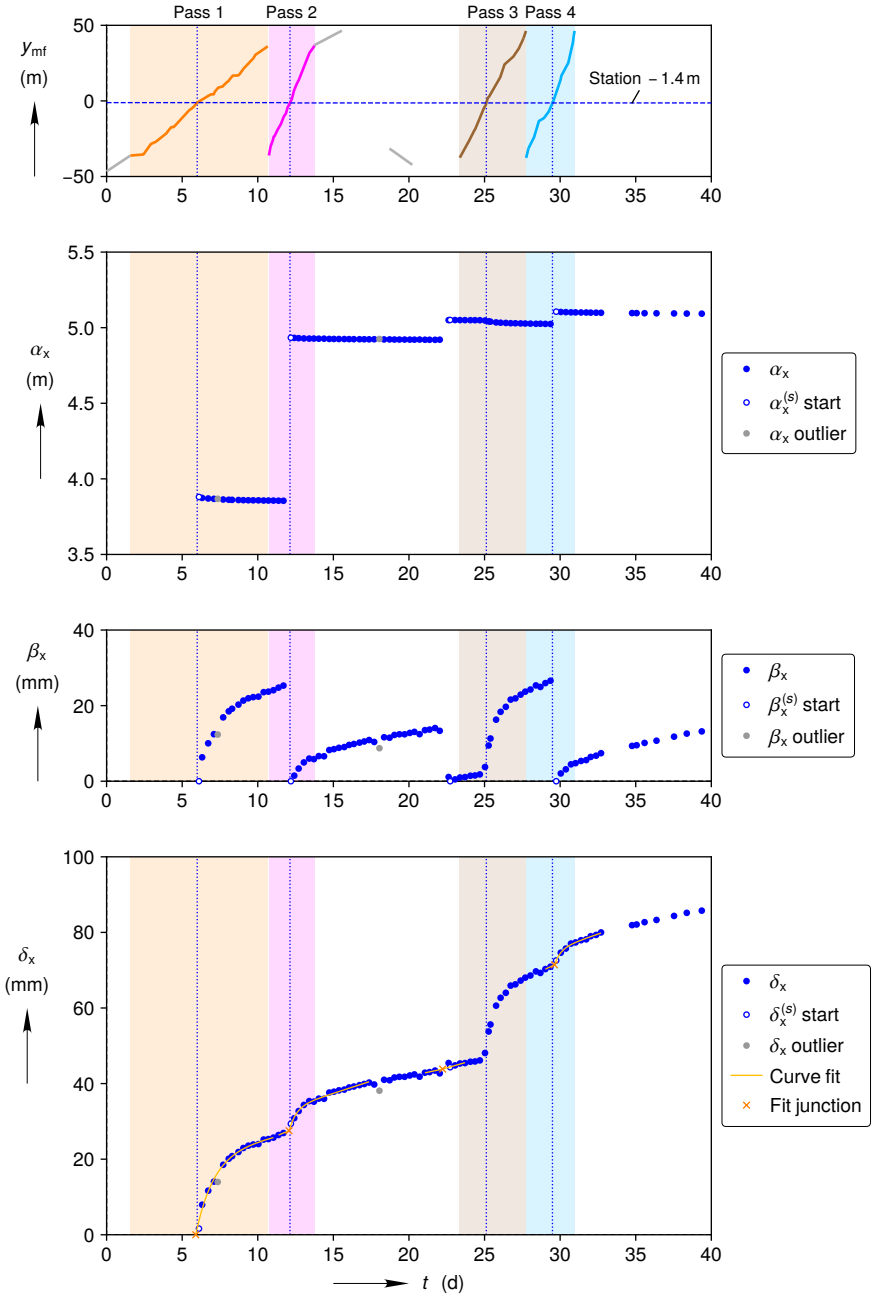
(a) Reconstruction during mining period

Figure A-2. Room D Station -16.4 m vertical closure reconstruction process.



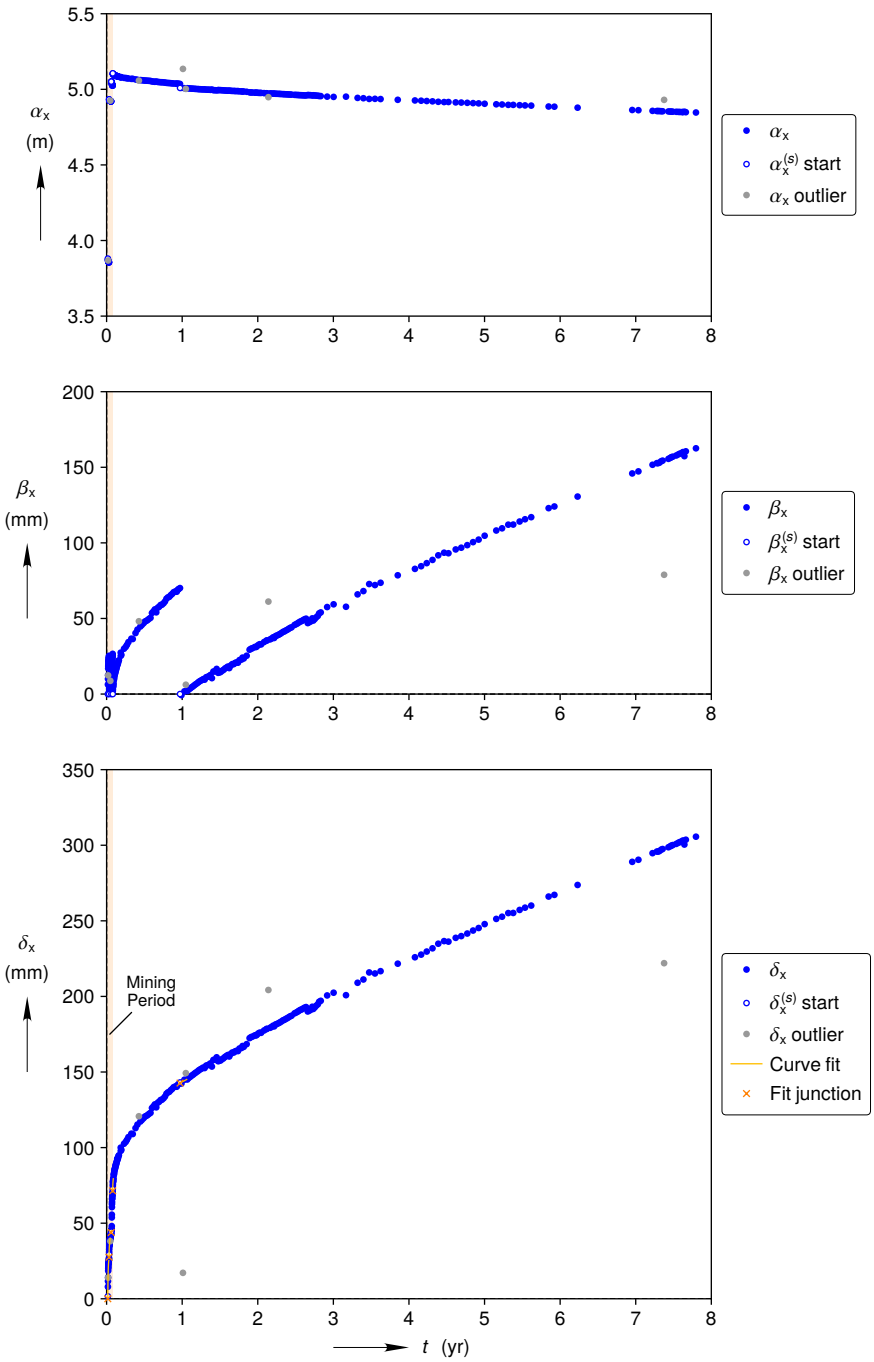
(b) Full reconstruction

Figure A-2. (Continued) Room D Station -16.4 m vertical closure reconstruction process.



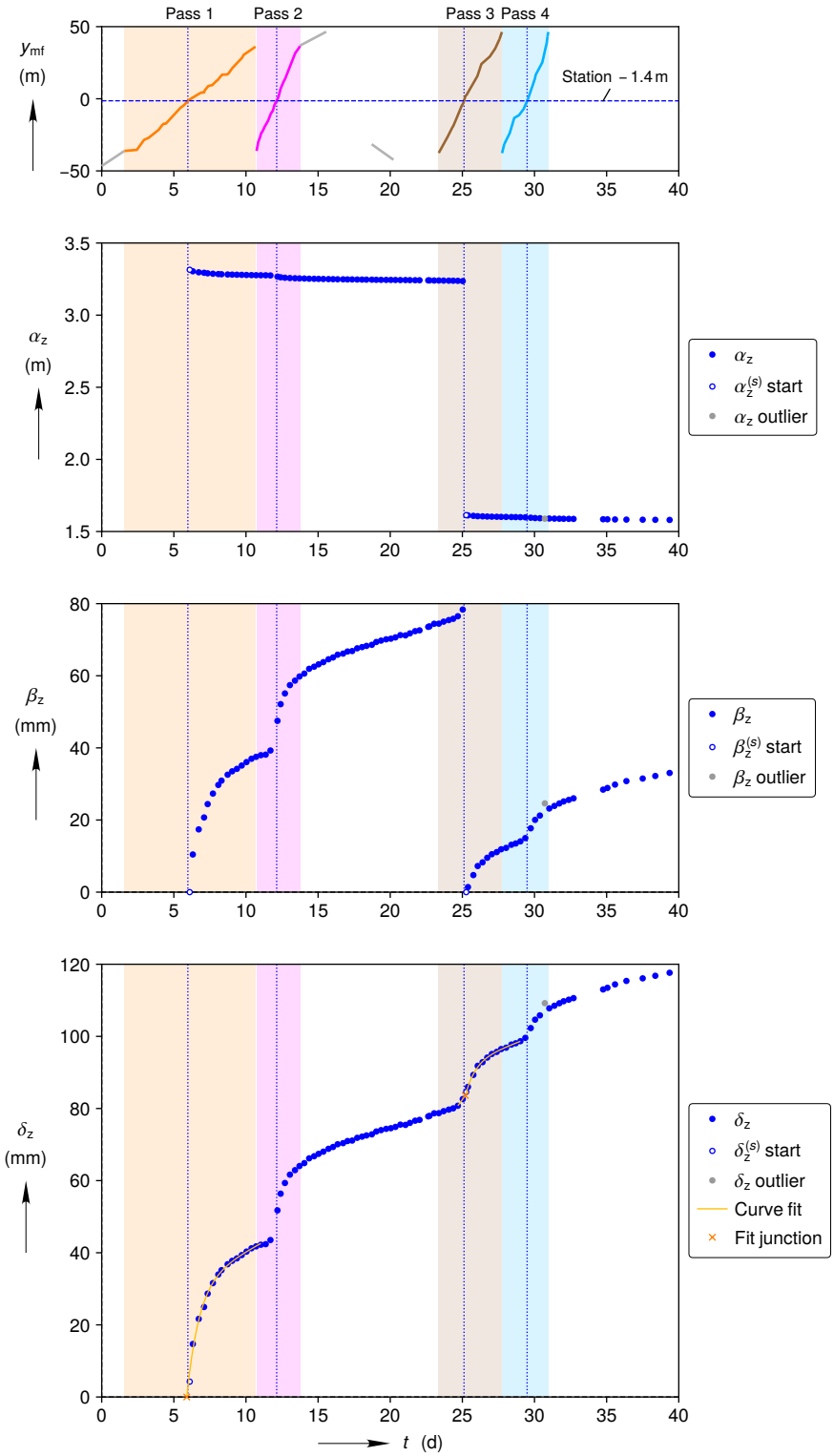
(a) Reconstruction during mining period

Figure A-3. Room D Station -1.4 m horizontal closure reconstruction process.



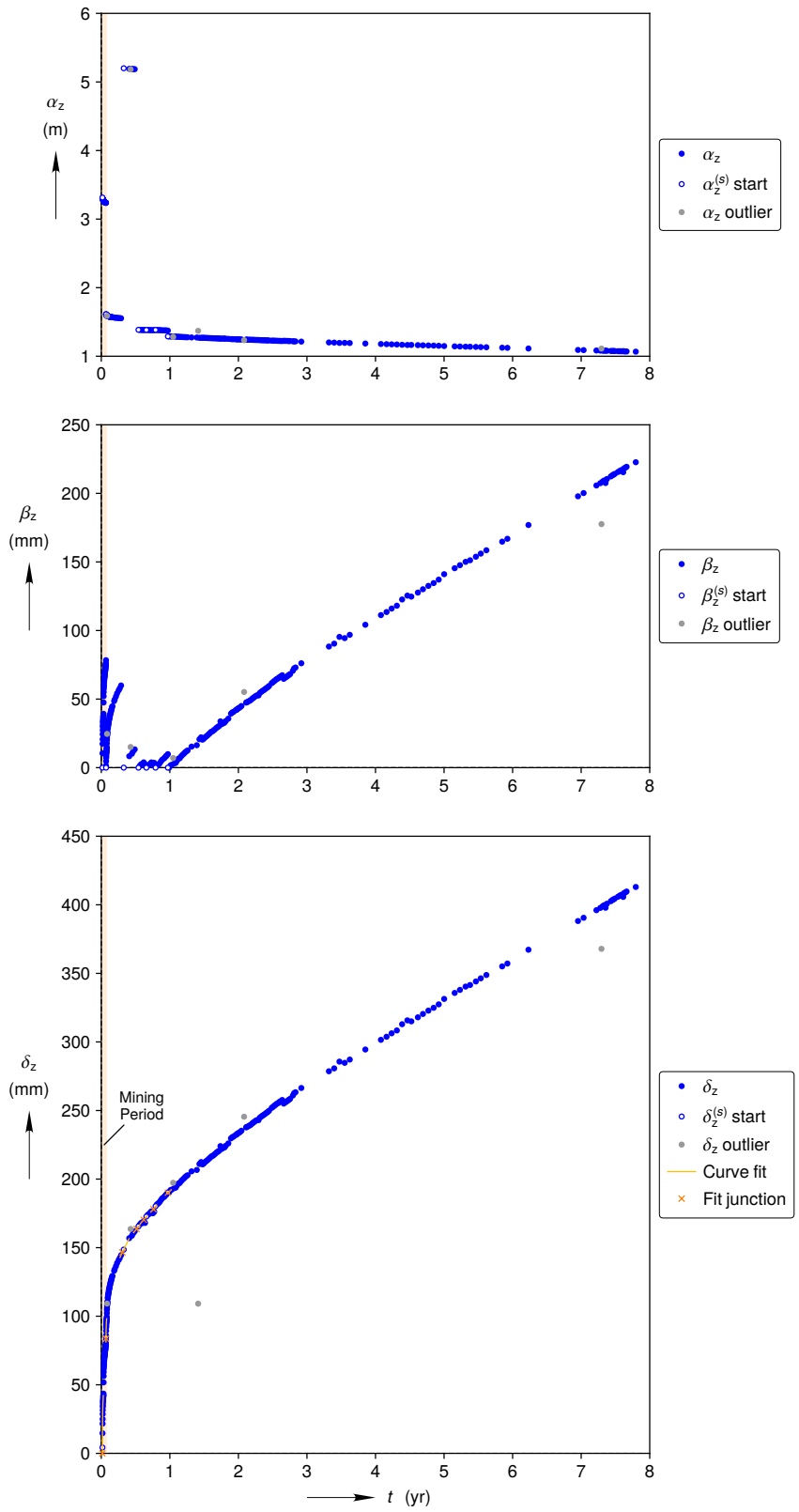
(b) Full reconstruction

Figure A-3. (Continued) Room D Station -1.4 m horizontal closure reconstruction process.



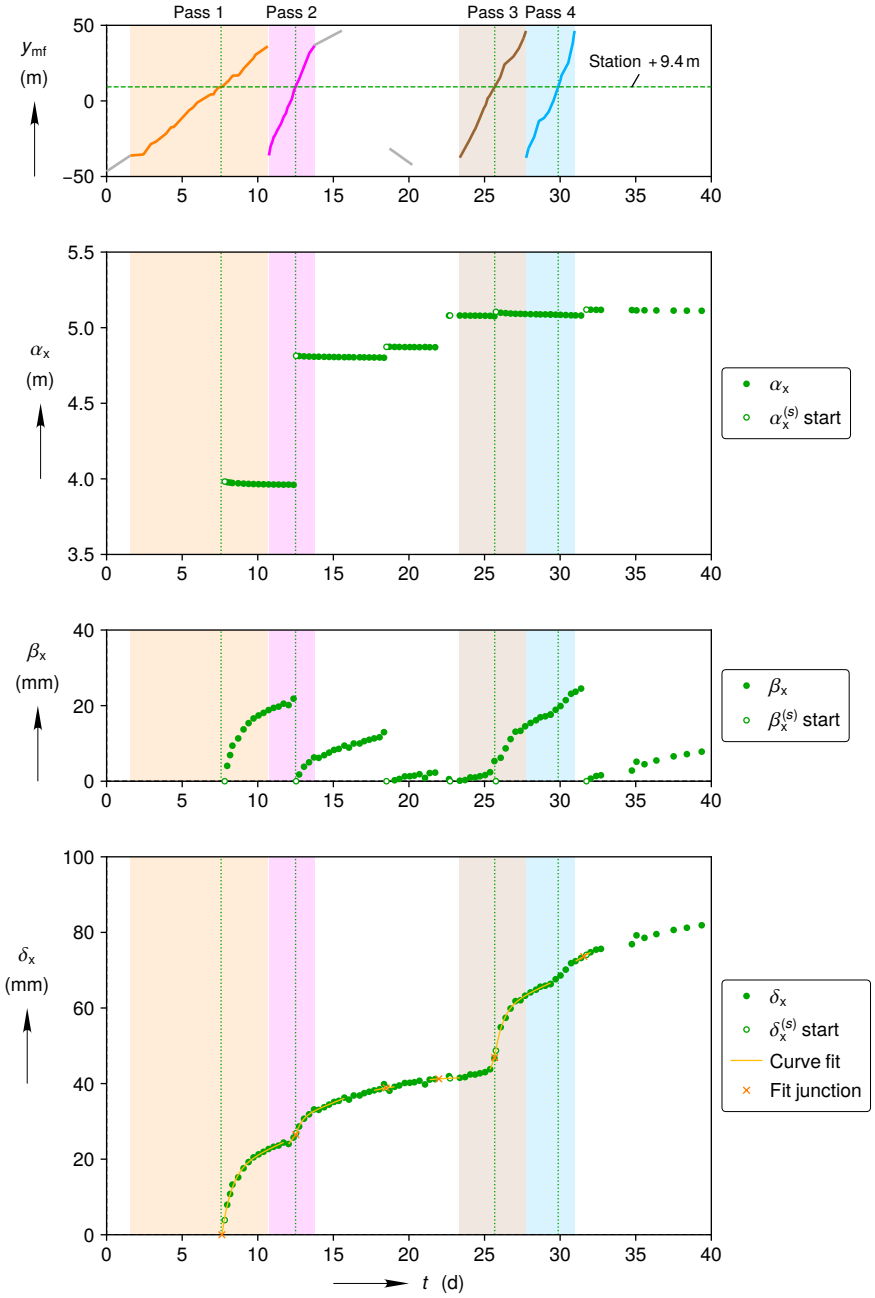
(a) Reconstruction during mining period

Figure A-4. Room D Station -1.4 m vertical closure reconstruction process.



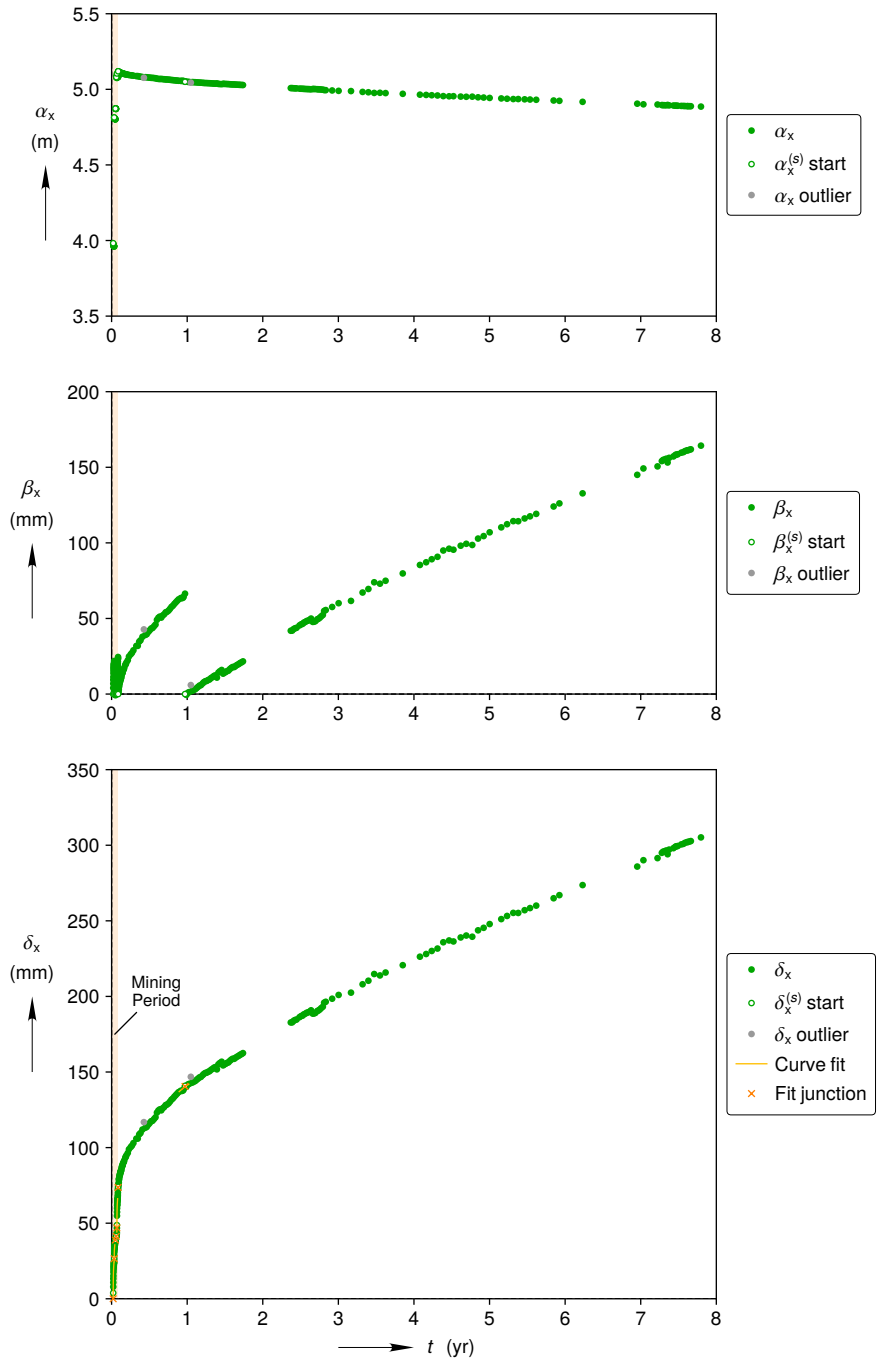
(b) Full reconstruction

Figure A-4. (Continued) Room D Station -1.4 m vertical closure reconstruction process.



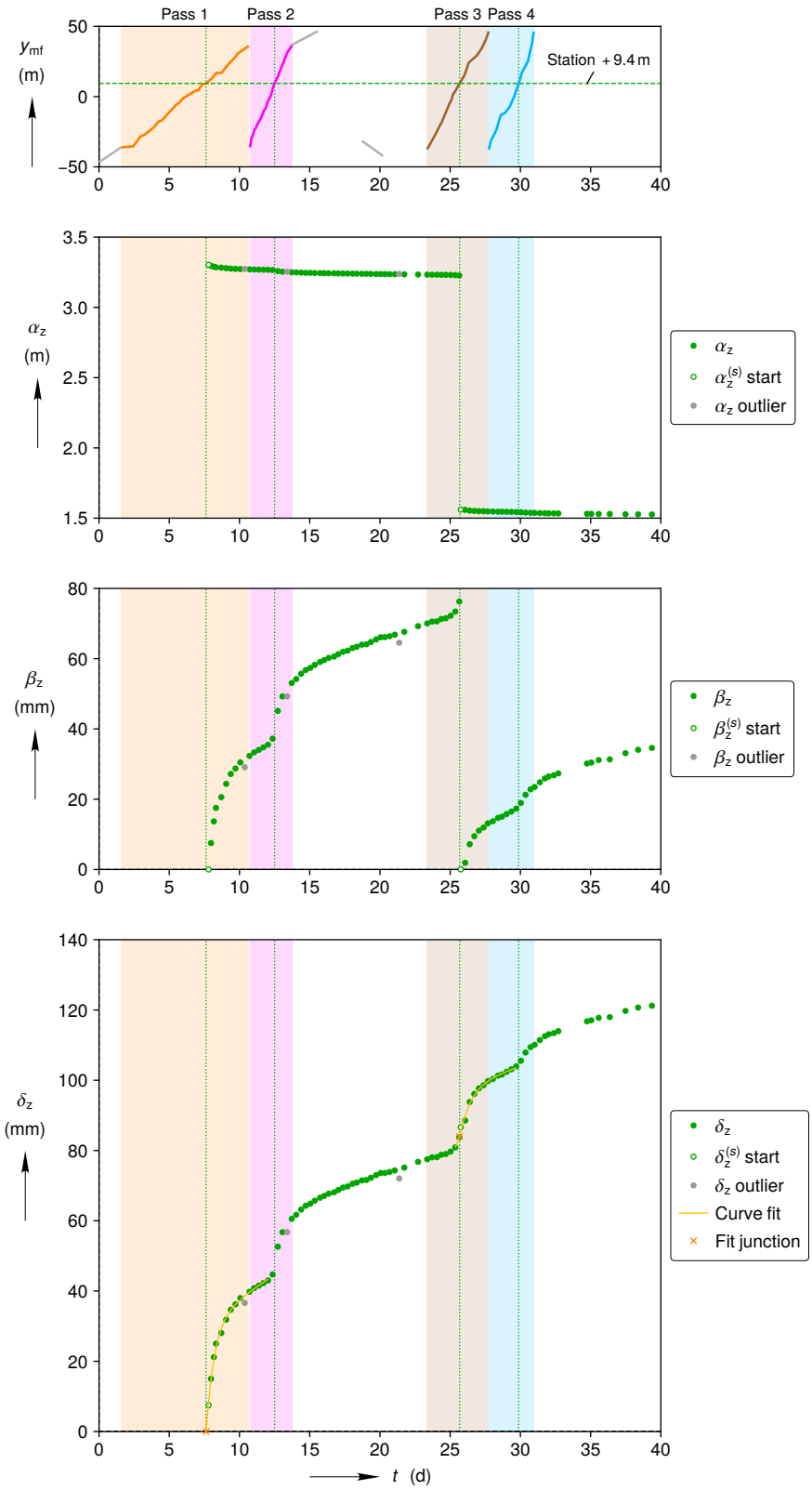
(a) Reconstruction during mining period

Figure A-5. Room D Station +9.4 m horizontal closure reconstruction process.



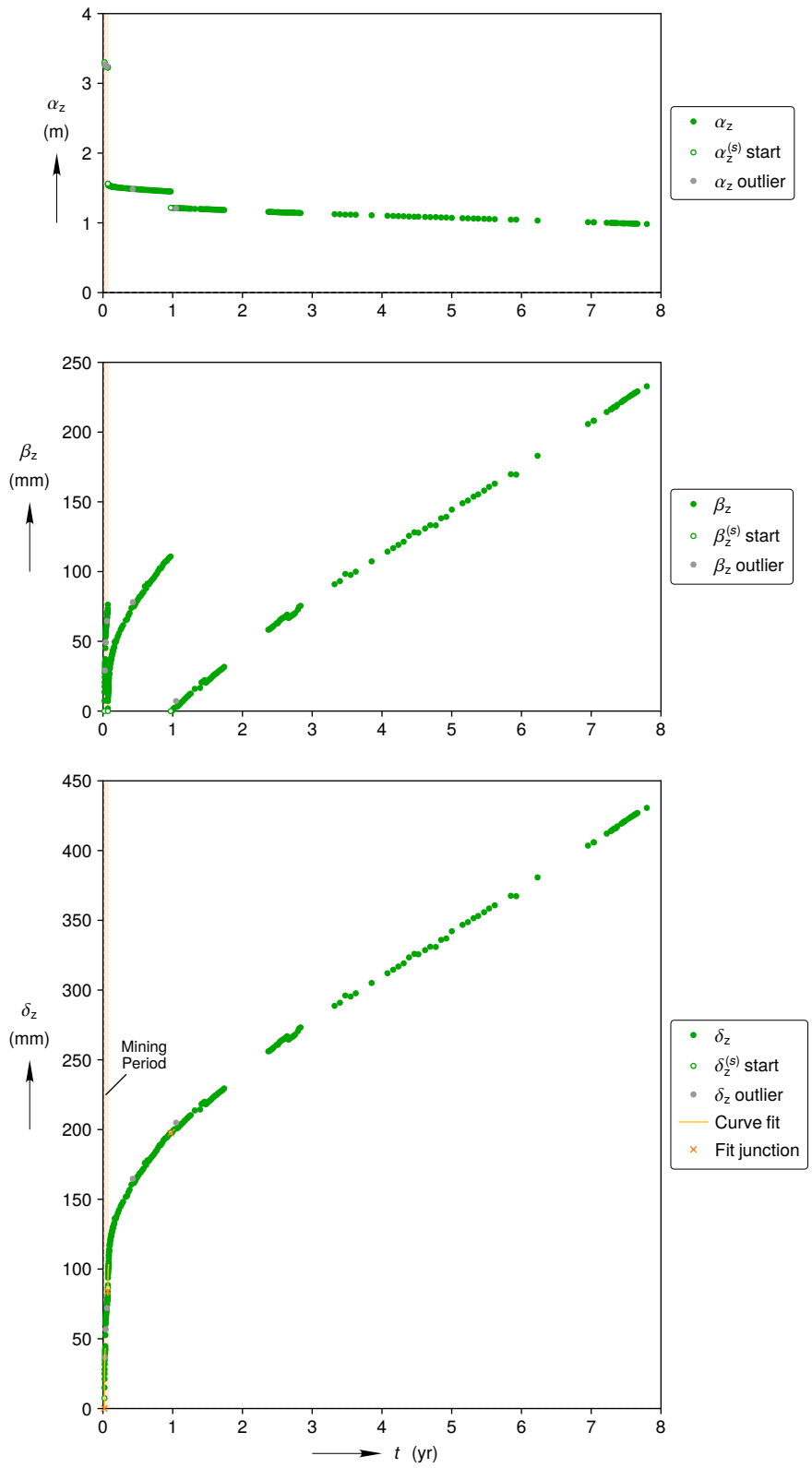
(b) Full reconstruction

Figure A-5. (Continued) Room D Station +9.4 m horizontal closure reconstruction process.



(a) Reconstruction during mining period

Figure A-6. Room D Station +9.4 m vertical closure reconstruction process.



(b) Full reconstruction

Figure A-6. (Continued) Room D Station +9.4 m vertical closure reconstruction process.

A.2. Mining Sequence Closure Data

Table A-1. Room D Station -16.4 m horizontal mining sequence metadata

										Pre-Jump Fitting Inputs				Post-Jump Fitting Inputs			
s	Segment Start Time	Analysis Notes	Gage Number	Paired Points	Point 1 y	Point 2 y	Estimated t_{ex}	t_{ex} Source	Shift Phase	Type	Start Index	End Index	Ignore Index	Type	Start Index	End Index	Ignore Index
(–)	(YYYY-MM-DD HH:MM)	(–)	(–)	(–)	(m)	(m)	(YYYY-MM-DD HH:MM)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)
0	1984-03-14 16:00	Estimated start of mining Room D.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1	1984-03-19 06:13	First reading after station mined out during pass 1.	D_M03-1	1E-1F	-16.6	-16.6	1984-03-19 02:00	Gage installation data sheet	2	–	–	–	–	Jeffreys	1	21	–
2	1984-03-26 03:38	First reading after point 1E mined out and replaced with 2E during pass 2.	D_M03-2	2E-1F	-16.29	-16.6	1984-03-26 01:28	Average of neighboring reading times	2	Linear	-2	-1	–	Jeffreys	1	15	–
3	1984-04-08 09:26	First reading after point 1F mined out and replaced during pass 3.	D_M03-2	2E-1F	-16.29	-16.6	1984-04-08 05:30	Gage installation data sheet	2	Linear	-2	-1	–	Jeffreys	1	11	–
4	1984-04-12 17:37	First reading after point 2E mined out and replaced during pass 4.	D_M03-2	2E-1F	-16.29	-16.6	1984-04-12 13:16	Average of neighboring reading times	2	Linear	-2	-1	–	Jeffreys	1	13	–
5	1985-03-04 13:53	First reading after points replaced.	D_M03-2	2E-1F	-16.29	-16.6	–	–	2	Linear	-4	-1	–	Linear	1	4	–

Table A-2. Room D Station -16.4 m horizontal mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_x (m)	δ_x (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
1	1984-03-19	06:13	1.8	3.30916	4.13	–	–	–
1	1984-03-19	12:47	5.2	3.30330	9.99	–	–	–
1	1984-03-19	17:10	7.5	3.30081	12.48	–	–	–
1	1984-03-19	22:50	9.6	3.29860	14.69	–	–	–
1	1984-03-20	04:02	11.3	3.29715	16.14	–	–	–
1	1984-03-20	18:50	2.0	3.29405	19.24	–	–	–
1	1984-03-20	23:24	19.2	3.29329	20.00	–	–	–
1	1984-03-21	08:38	20.0	3.29263	20.66	–	–	–
1	1984-03-21	15:12	20.9	3.29204	21.24	–	–	–
1	1984-03-21	16:52	21.4	3.29222	21.07	–	–	–
1	1984-03-22	08:44	26.8	3.29087	22.41	–	–	–
1	1984-03-22	12:40	40.2	3.29372	19.57	×	–	–
1	1984-03-22	16:39	30.2	3.29019	23.10	–	–	–
1	1984-03-22	22:55	33.2	3.28981	23.48	–	–	–
1	1984-03-23	09:15	34.1	3.28943	23.86	–	–	–
1	1984-03-23	16:55	37.8	3.28902	24.27	–	–	–
1	1984-03-24	00:52	43.3	3.28841	24.88	–	–	–
1	1984-03-24	08:32	44.8	3.28823	25.05	–	–	–
1	1984-03-24	16:50	48.8	3.28859	24.70	–	–	–
1	1984-03-25	01:28	52.7	3.28780	25.49	–	–	–
1	1984-03-25	08:44	52.9	3.28760	25.69	–	–	–
1	1984-03-25	16:35	–	3.28722	26.07	–	–	2nd pass in progress. 2nd pass is up to 75.5’ from N1100 rib. [Under "Distance to Face" column it says] (North face in pass 1.)
1	1984-03-25	23:18	–	3.28630	26.99	–	–	2nd pass in progress. 2nd pass is @ 91’ from N1100 rib. [Under "Distance to Face" column it says] (North face in pass 1.)
2	1984-03-26	03:38	1.2	4.89412	28.18	–	–	At start of G.Y. mining machine too close to read points safely.
2	1984-03-26	09:17	6.0	4.89092	31.38	–	–	–
2	1984-03-26	17:58	15.5	4.88950	32.81	–	–	–
2	1984-03-27	00:59	23.2	4.88823	34.08	–	–	–
2	1984-03-27	08:42	30.8	4.88742	34.89	–	–	–
2	1984-03-27	16:59	–	4.88744	34.86	–	–	–
2	1984-03-28	01:49	48.2	4.88561	36.69	–	–	–
2	1984-03-28	08:54	52.7	4.88587	36.44	–	–	–
2	1984-03-28	16:52	–	4.88592	36.39	–	–	–
2	1984-03-29	01:01	57.0	4.88483	37.48	–	–	–
2	1984-03-29	09:48	59.4	4.88439	37.91	–	–	–
2	1984-03-29	16:42	–	4.88439	37.91	–	–	–
2	1984-03-30	00:59	61.6	4.88391	38.39	–	–	–
2	1984-03-30	09:03	62.8	4.88351	38.80	–	–	Complete
2	1984-03-30	17:04	–	4.88302	39.28	–	–	–
2	1984-03-31	00:44	–	4.88305	39.26	–	–	–
2	1984-03-31	09:12	62.8	4.88277	39.54	–	–	–
2	1984-03-31	17:10	–	4.88236	39.94	–	–	–
2	1984-04-01	00:32	–	4.88251	39.79	–	–	–
2	1984-04-01	09:06	62.8	4.88188	40.43	–	–	–
2	1984-04-01	17:02	–	4.88198	40.32	–	–	–
2	1984-04-02	00:46	–	4.88178	40.53	–	–	–
2	1984-04-02	09:28	–	4.88132	40.99	–	–	–
2	1984-04-02	16:46	–	4.88152	40.78	–	–	–
2	1984-04-03	00:58	–	4.88086	41.44	–	–	–
2	1984-04-03	09:33	–	4.88084	41.47	–	–	–
2	1984-04-03	17:25	–	4.88071	41.59	–	–	–
2	1984-04-04	00:49	–	4.88069	41.62	–	–	–
2	1984-04-04	09:00	–	4.88018	42.13	–	–	–
2	1984-04-04	17:13	–	4.87980	42.51	–	–	–
2	1984-04-05	02:58	–	4.87947	42.84	–	–	–
2	1984-04-05	09:20	–	4.87916	43.14	–	–	–
2	1984-04-05	17:04	–	4.87916	43.14	–	–	–
2	1984-04-06	09:32	–	4.87926	43.04	–	–	–
2	1984-04-06	16:55	–	4.87921	43.09	–	–	Open Room
2	1984-04-06	–	–	–	–	–	–	No data recorded
2	1984-04-07	01:04	-21.8	4.87766	44.64	–	–	Miner down for repairs. Face pass 3 at 28.5’ from N1100 rib.
2	1984-04-07	08:48	–	4.87845	43.86	–	–	–
2	1984-04-07	17:35	-10.1	4.87802	44.29	–	–	–
2	1984-04-08	00:38	-3.5	4.87680	45.51	–	–	Face at 88.5 ft from N1100 rib.
3	1984-04-08	09:26	3.4	4.88864	55.14	–	–	Pass 3 face at 111’ from N1100 rib. Delay time 40 minutes to install pt. 3B and read others. Pt. 1H destroyed during pass 3 and unnecessary to replace. NOTE: Extension hooked to pt. 1A is incorrect extension meant for a different station. Calibration record should be changed and extension tape re-labeled or correct tape should be hung at sta. 100 pt. 1A.
3	1984-04-08	16:07	12.2	4.88178	62.00	–	–	–
3	1984-04-09	01:08	19.2	4.87977	64.00	–	–	–
3	1984-04-09	10:29	–	4.87807	65.70	–	–	2C-1D and 2E-1F readings were reversed
3	1984-04-09	17:17	32.0	4.87680	66.97	–	–	–
3	1984-04-10	02:13	40.5	4.87614	67.63	–	–	–
3	1984-04-10	09:31	–	4.87523	68.55	–	–	Change 2E-F” to 15ft 10+1.938in
3	1984-04-10	16:53	45.7	4.88043	63.34	–	×	Service pipes to miner were in the way. Could not get true reading. Tape extensometer was laying against the pipe.
3	1984-04-11	01:44	51.1	4.87396	69.82	–	–	Face pass 3 @ 267.5’ @ 0152 hrs.
3	1984-04-11	09:01	57.9	4.87335	70.43	–	–	–

Table A-2. Room D Station -16.4 m horizontal mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_x (m)	δ_x (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
3	1984-04-11	16:35	-15.2	4.87274	71.04	–	–	–
3	1984-04-12	01:24	-7.6	4.87235	71.42	–	–	face pass 4 at 75' @ 0150 hrs.
3	1984-04-12	08:55	-3.0	4.87114	72.64	–	–	–
4	1984-04-12	17:37	5.2	4.99621	74.85	–	–	Point 2E' reinstalled. This delay time is also noted on the installation data sheet.
4	1984-04-13	00:53	9.1	4.99450	76.55	–	–	–
4	1984-04-13	08:35	16.2	4.99316	77.89	–	–	–
4	1984-04-13	17:20	25.9	4.99255	78.50	–	–	–
4	1984-04-14	01:10	–	4.99135	79.70	–	–	–
4	1984-04-14	01:10	–	4.99135	79.70	–	–	–
4	1984-04-14	09:05	41.5	4.99092	80.13	–	–	–
4	1984-04-14	16:41	59.4	4.99077	80.28	–	–	–
4	1984-04-15	01:02	–	4.99034	80.71	–	–	–
4	1984-04-15	09:15	–	4.98940	81.65	–	–	Finished Room
4	1984-04-15	16:42	–	4.98942	81.63	–	–	Finished Room
4	1984-04-16	00:57	–	4.98902	82.04	–	–	–
4	1984-04-16	09:04	–	4.98815	82.90	–	–	Room Complete
4	1984-04-17	–	–	–	–	–	–	Mine shutdown - no data taken
4	1984-04-18	10:21	–	4.98648	84.58	–	–	Finished room
4	1984-04-18	17:40	–	4.98566	85.39	–	–	Complete
4	1984-04-19	06:10	–	4.98630	84.75	–	–	–
4	1984-04-20	01:06	–	4.98523	85.82	–	–	Room open
4	1984-04-21	00:52	–	4.98401	87.04	–	–	Finish Open Room
4	1984-04-22	00:55	–	4.98361	87.45	–	–	–
4	1984-04-23	00:58	–	4.98287	88.18	–	–	–
4	1984-04-24	00:34	–	4.98213	88.92	–	–	–
4	1984-04-25	00:38	–	4.98140	89.66	–	–	Room Finished
4	1984-04-26	01:40	–	4.98114	89.91	–	–	–
4	1984-04-27	00:58	–	4.98038	90.67	–	–	Complete Room
4	1984-04-28	02:43	–	4.97977	91.28	–	–	Room complete
4	1984-04-29	03:48	–	4.97942	91.64	–	–	Room complete
4	1984-04-30	05:20	–	4.97924	91.81	–	–	Room complete
4	1984-05-01	00:47	–	4.97837	92.68	–	–	Room complete
4	1984-05-03	00:48	–	4.97817	92.88	–	–	Room complete
4	1984-05-04	05:52	–	4.97700	94.05	–	–	–
4	1984-05-05	01:42	–	4.97685	94.20	–	–	–
4	1984-05-06	00:42	–	4.97675	94.30	–	–	–
4	1984-05-07	01:38	–	4.97644	94.61	–	–	–
4	1984-05-09	00:58	–	4.97426	96.79	–	–	–
4	1984-05-11	02:28	–	4.97477	96.28	–	–	–
4	1984-05-13	01:30	–	4.97406	97.00	–	–	–
4	1984-05-15	00:27	–	4.97357	97.48	–	–	–
4	1984-05-16	–	–	–	–	–	–	Power outage
4	1984-05-17	–	–	–	–	–	–	Power outage
4	1984-05-18	–	–	–	–	–	–	Power outage
4	1984-05-19	–	–	–	–	–	–	Power outage
4	1984-05-20	01:47	–	4.97185	99.21	–	–	–
4	1984-05-22	01:56	–	4.97103	100.02	–	–	–
4	1984-05-25	02:16	–	4.97103	100.02	–	–	–
4	1984-05-31	21:09	–	4.96834	102.71	–	–	–
4	1984-06-06	20:43	–	4.96710	103.96	–	–	–
4	1984-06-15	04:05	–	4.96567	105.38	–	–	–
4	1984-06-21	01:24	–	4.96359	107.46	–	–	–
4	1984-06-28	02:13	–	4.96199	109.06	–	–	–
4	1984-07-12	05:07	–	4.95958	111.47	–	–	–
4	1984-07-19	01:50	–	4.95991	111.14	–	–	–
4	1984-07-26	01:48	–	4.95648	114.57	–	–	–
4	1984-08-01	10:17	–	4.95651	114.55	–	–	–
4	1984-08-10	16:59	–	4.95323	117.82	–	–	–
4	1984-08-17	18:03	–	4.94706	124.00	×	–	–
4	1984-08-24	18:35	–	4.95143	119.63	–	–	–
4	1984-08-31	17:10	–	4.95170	119.35	–	–	–
4	1984-09-08	18:10	–	4.94982	121.23	–	–	–
4	1984-09-14	21:35	–	4.94853	122.52	–	–	–
4	1984-09-21	17:45	–	4.94772	123.34	–	–	–
4	1984-09-28	18:00	–	4.94721	123.84	–	–	–
4	1984-10-05	21:46	–	4.94652	124.53	–	–	–
4	1984-10-12	21:09	–	4.94571	125.34	–	–	–
4	1984-10-19	19:35	–	4.94233	128.72	–	–	–
4	1984-10-26	19:47	–	4.94101	130.04	–	–	–
4	1984-11-02	18:17	–	4.93972	131.34	–	–	–
4	1984-11-09	17:41	–	4.94170	129.36	–	–	–
4	1984-11-16	20:25	–	4.93903	132.02	–	–	–
4	1984-11-23	18:33	–	4.93852	132.53	–	–	–
4	1984-11-30	18:25	–	4.93768	133.37	–	–	–
4	1984-12-06	19:42	–	4.93746	133.60	–	–	–
4	1984-12-14	19:09	–	4.93575	135.30	–	–	–
4	1984-12-21	18:56	–	4.93481	136.24	–	–	–
4	1984-12-28	18:12	–	4.93337	137.69	–	–	–
4	1985-01-04	18:20	–	4.93217	138.88	–	–	–
4	1985-01-11	17:01	–	4.93207	138.98	–	–	–
4	1985-01-18	18:32	–	4.93065	140.40	–	–	–
4	1985-01-25	19:26	–	4.93006	140.99	–	–	–
4	1985-02-01	18:36	–	4.92834	142.72	–	–	–
4	1985-02-11	22:48	–	4.92859	142.46	–	–	–
4	1985-02-16	16:19	–	4.92770	143.35	–	–	–

Table A-2. Room D Station -16.4 m horizontal mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_x (m)	δ_x (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
4	1985-02-22	19:34	–	4.92724	143.81	–	–	–
4	1985-02-25	13:45	–	4.92651	144.54	–	–	–
4	1985-03-04	09:45	–	4.92623	144.82	–	–	–
5	1985-03-04	13:53	–	4.91856	145.19	–	–	–
5	1985-03-11	09:08	–	4.91866	145.09	–	–	–
5	1985-03-18	14:07	–	4.91703	146.72	–	–	–
5	1985-03-25	12:40	–	4.91673	147.02	–	–	–
5	1985-04-01	12:53	–	4.91233	151.42	×	–	–
5	1985-04-08	10:56	–	4.91665	147.10	–	–	–
5	1985-04-15	13:02	–	4.91533	148.42	–	–	–
5	1985-04-22	11:03	–	4.91490	148.85	–	–	–
5	1985-04-29	14:25	–	4.91404	149.71	–	–	–
5	1985-05-06	09:15	–	4.91348	150.27	–	–	–
5	1985-05-13	14:46	–	4.91228	151.47	–	–	–
5	1985-05-20	11:18	–	4.91183	151.92	–	–	–
5	1985-05-28	14:27	–	4.91117	152.58	–	–	–
5	1985-06-03	13:02	–	4.91028	153.47	–	–	–
5	1985-06-10	10:47	–	4.90969	154.06	–	–	–
5	1985-06-17	11:17	–	4.90901	154.74	–	–	–
5	1985-06-24	10:20	–	4.90850	155.25	–	–	–
5	1985-07-01	10:53	–	4.90814	155.61	–	–	–
5	1985-07-08	14:40	–	4.90764	156.11	–	–	–
5	1985-07-16	13:42	–	4.90700	156.75	–	–	–
5	1985-07-22	08:45	–	4.90621	157.54	–	–	–
5	1985-07-29	10:47	–	4.90553	158.22	–	–	–
5	1985-08-05	13:24	–	5.00903	54.72	×	–	–
5	1985-08-12	14:36	–	4.90301	160.74	–	–	–
5	1985-08-19	14:38	–	4.90276	160.99	–	–	–
5	1985-08-28	11:11	–	5.15602	-92.27	×	–	–
5	1985-09-04	10:13	–	4.90436	159.39	–	–	–
5	1985-09-09	13:20	–	4.90377	159.98	–	–	–
5	1985-09-16	13:30	–	4.90332	160.43	–	–	–
5	1985-09-23	14:45	–	4.90230	161.45	–	–	–
5	1985-09-30	11:28	–	4.90205	161.70	–	–	–
5	1985-10-07	14:19	–	4.90108	162.67	–	–	–
5	1985-10-14	11:22	–	4.90042	163.33	–	–	–
5	1985-10-21	11:00	–	4.89994	163.81	–	–	–
5	1985-10-28	11:09	–	4.90002	163.73	–	–	–
5	1985-11-04	11:09	–	4.89900	164.75	–	–	–
5	1985-11-11	14:14	–	4.89834	165.41	–	–	–
5	1985-11-19	11:12	–	4.89788	165.87	–	–	–
5	1985-11-25	11:05	–	4.89735	166.40	–	–	–
5	1985-12-02	12:23	–	4.89679	166.96	–	–	–
5	1985-12-09	12:57	–	4.89585	167.90	–	–	–
5	1985-12-16	11:46	–	4.89575	168.00	–	–	–
5	1985-12-26	09:08	–	4.89496	168.79	–	–	–
5	1985-12-31	09:09	–	4.89448	169.27	–	–	–
5	1986-01-06	12:38	–	4.89407	169.68	–	–	–
5	1986-01-20	11:01	–	4.89278	170.97	–	–	–
5	1986-02-03	14:18	–	4.88909	174.66	–	–	–
5	1986-02-10	11:05	–	4.88846	175.29	–	–	–
5	1986-02-17	11:32	–	4.88777	175.98	–	–	–
5	1986-02-28	14:48	–	4.88714	176.61	–	–	–
5	1986-03-06	10:30	–	4.88701	176.74	–	–	–
5	1986-03-10	14:20	–	4.88645	177.30	–	–	–
5	1986-03-17	09:15	–	4.88615	177.60	–	–	–
5	1986-03-24	14:33	–	4.88533	178.42	–	–	–
5	1986-03-31	10:07	–	4.88455	179.20	–	–	–
5	1986-04-14	11:14	–	4.88406	179.69	–	–	–
5	1986-04-25	11:13	–	4.88287	180.88	–	–	–
5	1986-04-28	10:50	–	4.88259	181.16	–	–	–
5	1986-05-05	11:23	–	4.88236	181.39	–	–	–
5	1986-05-13	12:24	–	4.88234	181.41	–	–	–
5	1986-05-20	10:48	–	4.88132	182.43	–	–	–
5	1986-05-28	09:40	–	4.88084	182.91	–	–	–
5	1986-06-02	10:09	–	4.88058	183.17	–	–	–
5	1986-06-09	12:31	–	4.87970	184.05	–	–	–
5	1986-06-16	10:57	–	4.87929	184.46	–	–	–
5	1986-06-24	09:19	–	4.87881	184.94	–	–	–
5	1986-06-30	11:06	–	4.87865	185.10	–	–	–
5	1986-07-07	10:54	–	4.87820	185.55	–	–	–
5	1986-07-15	09:14	–	4.87718	186.57	–	–	–
5	1986-07-21	11:04	–	4.87688	186.87	–	–	–
5	1986-07-28	12:03	–	4.87637	187.38	–	–	–
5	1986-08-04	09:31	–	4.87563	188.12	–	–	–
5	1986-08-11	11:03	–	4.87545	188.30	–	–	–
5	1986-08-18	10:54	–	4.87482	188.93	–	–	–
5	1986-08-25	11:33	–	4.87411	189.64	–	–	–
5	1986-09-08	14:36	–	4.87274	191.01	–	–	–
5	1986-09-16	09:41	–	4.87218	191.57	–	–	–
5	1986-09-23	10:49	–	4.87187	191.88	–	–	–
5	1986-09-29	11:24	–	4.87131	192.44	–	–	–
5	1986-10-06	11:18	–	4.87081	192.94	–	–	–
5	1986-10-13	13:15	–	4.87007	193.68	–	–	–
5	1986-10-20	11:18	–	4.86948	194.27	–	–	–
5	1986-10-27	13:37	–	4.86908	194.67	–	–	–

Table A-2. Room D Station -16.4 m horizontal mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_x (m)	δ_x (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
5	1986-11-03	14:07	–	4.86872	195.03	–	–	–
5	1986-11-11	13:43	–	4.87086	192.89	–	–	–
5	1986-11-17	09:36	–	4.87063	193.12	–	–	–
5	1986-11-24	13:15	–	4.87022	193.53	–	–	–
5	1986-12-03	11:05	–	4.86999	193.76	–	–	–
5	1986-12-08	11:04	–	4.86926	194.49	–	–	–
5	1986-12-15	13:30	–	4.86870	195.05	–	–	–
5	1986-12-22	14:36	–	4.86776	195.99	–	–	–
5	1986-12-30	10:24	–	4.86712	196.63	–	–	–
5	1987-01-05	14:02	–	4.86484	198.91	–	–	–
5	1987-01-13	10:51	–	4.86405	199.70	–	–	–
5	1987-02-13	09:54	–	4.86143	202.32	–	–	–
5	1987-03-16	13:53	–	4.85973	204.02	–	–	–
5	1987-05-15	10:21	–	4.85826	205.49	–	–	–
5	1987-07-10	10:20	–	4.85305	210.70	–	–	–
5	1987-08-07	13:31	–	4.85112	212.63	–	–	–
5	1987-09-04	13:16	–	4.84594	217.81	–	–	–
5	1987-10-02	10:05	–	4.84698	216.77	–	–	–
5	1987-10-29	12:31	–	4.84558	218.17	–	–	–
5	1988-01-20	12:34	–	4.84076	222.99	–	–	–
5	1988-03-18	–	–	–	–	–	–	No data recorded
5	1988-04-12	13:30	–	4.83527	228.48	–	–	–
5	1988-05-12	13:30	–	4.83337	230.38	–	–	–
5	1988-06-08	13:57	–	4.83222	231.53	–	–	–
5	1988-07-06	10:15	–	4.82948	234.27	–	–	–
5	1988-08-03	09:20	–	4.82620	237.55	–	–	–
5	1988-08-31	09:32	–	4.82366	240.09	–	–	–
5	1988-09-21	13:25	–	4.82483	238.92	–	–	–
5	1988-10-26	12:41	–	4.82237	241.38	–	–	–
5	1988-11-22	10:41	–	4.82120	242.55	–	–	–
5	1988-12-21	11:01	–	4.81927	244.48	–	–	–
5	1989-01-18	10:43	–	4.81726	246.49	–	–	–
5	1989-02-14	10:43	–	4.81592	247.83	–	–	–
5	1989-03-15	10:32	–	4.81335	250.40	–	–	–
5	1989-05-10	12:59	–	4.81033	253.42	–	–	–
5	1989-06-07	13:18	–	4.80797	255.78	–	–	–
5	1989-07-07	13:32	–	4.80667	257.08	–	–	–
5	1989-07-31	13:15	–	4.80578	257.97	–	–	–
5	1989-08-31	09:50	–	4.80403	259.72	–	–	–
5	1989-09-26	13:08	–	4.80289	260.86	–	–	–
5	1989-10-26	10:05	–	4.80093	262.82	–	–	–
5	1990-01-18	13:26	–	4.79567	268.08	–	–	–
5	1990-02-15	09:24	–	4.79445	269.30	–	–	–
5	1990-06-07	13:09	–	4.78765	276.10	–	–	–
5	1990-06-07	13:09	–	4.78765	276.10	–	–	–
5	1991-02-26	12:47	–	4.77256	291.19	–	–	–
5	1991-03-28	09:14	–	4.77083	292.92	–	–	–
5	1991-04-29	–	–	–	–	–	–	No data taken. Inaccessibility to room.
5	1991-05-16	–	–	–	–	–	–	No data taken - room D a red area
5	1991-05-21	–	–	–	–	–	–	Room D a red area - no access
5	1991-05-24	–	–	–	–	–	–	Area in red area - no access
5	1991-05-31	–	–	–	–	–	–	No readings taken due to training.
5	1991-06-04	14:10	–	4.76694	296.81	–	–	–
5	1991-06-25	09:07	–	4.76514	298.61	–	–	–
5	1991-07-01	13:57	–	4.76527	298.48	–	–	–
5	1991-07-08	10:30	–	4.76496	298.79	–	–	–
5	1991-07-16	10:04	–	4.76677	296.98	–	–	–
5	1991-07-23	09:09	–	4.76380	299.95	–	–	–
5	1991-07-30	12:43	–	4.76341	300.34	–	–	–
5	1991-08-16	–	–	–	–	–	–	No data taken due to shortage of time
5	1991-08-20	09:40	–	4.76265	301.10	–	–	–
5	1991-08-29	13:10	–	4.76174	302.01	–	–	–
5	1991-09-03	13:11	–	4.76103	302.72	–	–	–
5	1991-09-10	12:55	–	4.76047	303.28	–	–	–
5	1991-09-27	10:54	–	4.76032	303.43	–	–	–
5	1991-10-03	–	–	–	–	–	–	Unable due to roof bolting
5	1991-10-07	13:26	–	4.75955	304.20	–	–	–
5	1991-10-15	09:47	–	4.75948	304.27	–	–	–
5	1991-10-25	10:15	–	4.75861	305.14	–	–	–
5	1991-10-29	09:45	–	4.75826	305.49	–	–	–
5	1991-11-05	14:02	–	4.75821	305.54	–	–	–
5	1991-11-12	13:04	–	4.75750	306.25	–	–	–
5	1991-12-31	10:46	–	4.75554	308.21	–	–	–

Table A-3. Room D Station -16.4 m vertical mining sequence metadata

										Pre-Jump Fitting Inputs				Post-Jump Fitting Inputs			
s	Segment Start Time	Analysis Notes	Gage Number	Paired Points	Point 1 y	Point 2 y	Estimated t_{ex}	t_{ex} Source	Shift Phase	Type	Start Index	End Index	Ignore Index	Type	Start Index	End Index	Ignore Index
(–)	(YYYY-MM-DD HH:MM)	(–)	(–)	(–)	(m)	(m)	(YYYY-MM-DD HH:MM)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)
0	1984-03-14 16:00	Estimated start of mining Room D.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1	1984-03-19 06:00	First reading after station mined out during pass 1.	D_M01-1	1A-1B	-16.47	-16.47	1984-03-19 02:00	Gage installation data sheet	2	–	–	–	–	Jeffreys	1	22	[13 18]
2	1984-04-08 09:17	First reading after point 1B mined out and replaced with point 3B during pass 3.	D_M01-3	1A-3B	-16.6	-16.47	1984-04-08 05:30	Gage installation data sheet	2	Linear	-2	-1	–	Jeffreys	1	11	[2]
3	1985-03-04 13:36	First reading after points replaced.	D_M01-3	1A-3B	-16.6	-16.47	–	–	2	Linear	-3	-1	–	Linear	1	4	–

Table A-4. Room D Station -16.4 m vertical mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_z (m)	δ_z (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
1	1984-03-19	06:00	1.8	3.02235	6.36	–	–	–
1	1984-03-19	12:38	5.2	3.01417	14.54	–	–	–
1	1984-03-19	17:03	7.5	3.00949	19.22	–	–	–
1	1984-03-19	23:08	9.6	3.00655	22.16	–	–	–
1	1984-03-20	04:08	11.3	3.00452	24.19	–	–	–
1	1984-03-20	10:15	13.7	3.00266	26.05	–	–	–
1	1984-03-20	18:47	15.4	3.00060	28.11	–	–	–
1	1984-03-20	23:17	19.2	2.99994	28.77	–	–	–
1	1984-03-21	08:48	20.0	2.99847	30.24	–	–	–
1	1984-03-21	15:05	20.9	2.99801	30.70	–	–	–
1	1984-03-21	16:57	21.4	2.99784	30.87	–	–	–
1	1984-03-22	08:41	26.8	2.99618	32.53	–	–	–
1	1984-03-22	12:33	40.2	2.99730	31.41	–	–	–
1	1984-03-22	16:48	30.2	2.99570	33.01	–	–	–
1	1984-03-22	23:05	33.2	2.99522	33.49	–	–	–
1	1984-03-23	09:12	34.1	2.99446	34.25	–	–	–
1	1984-03-23	16:51	37.8	2.99420	34.51	–	–	–
1	1984-03-24	00:41	43.3	2.97607	52.64	×	–	[Technician originally recorded] 9’ 8+0.168" [then technician then noted it should be] 9’ 8+1.168"
1	1984-03-24	08:36	44.8	2.99359	35.12	–	–	–
1	1984-03-24	16:45	48.8	2.99268	36.03	–	–	–
1	1984-03-25	01:20	52.7	2.99253	36.18	–	–	–
1	1984-03-25	08:42	52.9	2.99202	36.69	–	–	–
1	1984-03-25	16:30	–	2.99148	37.22	–	–	2nd pass in progress. 2nd pass is up to 75.5’ from N1100 rib. [Under "Distance to Face" column it says] (North face in pass 1.)
1	1984-03-25	23:13	–	2.99027	38.44	–	–	2nd pass in progress. 2nd pass is @ 91’ from N1100 rib. [Under "Distance to Face" column it says] (North face in pass 1.)
1	1984-03-26	03:43	1.2	2.98501	43.70	–	–	At start of G.Y. mining machine too close to read points safely.
1	1984-03-26	09:13	6.0	2.97779	50.92	–	–	–
1	1984-03-26	18:02	15.5	2.97284	55.87	–	–	–
1	1984-03-27	00:50	23.2	2.97129	57.42	–	–	–
1	1984-03-27	08:39	30.8	2.97012	58.59	–	–	–
1	1984-03-27	16:55	–	2.96865	60.06	–	–	–
1	1984-03-28	01:43	48.2	2.96741	61.30	–	–	–
1	1984-03-28	08:45	52.7	2.96705	61.66	–	–	–
1	1984-03-28	17:08	–	2.96677	61.94	–	–	–
1	1984-03-29	00:55	57.0	2.96540	63.31	–	–	–
1	1984-03-29	09:41	59.4	2.96479	63.92	–	–	–
1	1984-03-29	16:38	–	2.96426	64.45	–	–	–
1	1984-03-30	00:55	61.6	2.96354	65.16	–	–	–
1	1984-03-30	09:06	62.8	2.96327	65.44	–	–	Complete
1	1984-03-30	17:02	–	2.96248	66.23	–	–	–
1	1984-03-31	00:38	–	2.95986	68.85	×	–	Pass has been mined to N1420
1	1984-03-31	09:19	62.8	2.96187	66.84	–	–	–
1	1984-03-31	17:04	–	2.96139	67.32	–	–	–
1	1984-04-01	00:34	–	2.96101	67.70	–	–	–
1	1984-04-01	09:12	62.8	2.96055	68.16	–	–	–
1	1984-04-01	16:59	–	2.96017	68.54	–	–	–
1	1984-04-02	00:42	–	2.95976	68.95	–	–	–
1	1984-04-02	09:34	–	2.95958	69.13	–	–	–
1	1984-04-02	16:40	–	2.95933	69.38	–	–	–
1	1984-04-03	00:54	–	2.95867	70.04	–	–	–
1	1984-04-03	09:37	–	2.95836	70.35	–	–	Complete
1	1984-04-03	16:55	–	2.95811	70.60	–	–	Open Room
1	1984-04-04	00:45	–	2.95758	71.13	–	–	–
1	1984-04-04	08:56	–	2.95722	71.49	–	–	–
1	1984-04-04	17:03	–	2.95717	71.54	–	–	Open Room
1	1984-04-05	03:04	–	2.95646	72.25	–	–	–
1	1984-04-05	09:14	–	2.95854	70.17	×	–	–
1	1984-04-05	16:58	–	2.95570	73.01	–	–	Open Room
1	1984-04-06	07:19	–	2.95468	74.03	–	–	–
1	1984-04-06	09:27	–	2.95499	73.72	–	–	–
1	1984-04-06	16:48	–	2.95458	74.13	–	–	Open Room
1	1984-04-07	01:09	-21.8	2.95399	74.72	–	–	Miner down for repairs. Face pass 3 at 28.5’ from N1100 rib.
1	1984-04-07	08:42	–	2.95372	74.99	–	–	–
1	1984-04-07	17:30	-10.1	2.95344	75.27	–	–	–
1	1984-04-08	00:31	-3.5	2.95156	77.15	–	–	Face at 88.5 ft from N1100 rib.
2	1984-04-08	09:17	3.4	1.47561	85.19	–	–	Pass 3 face at 111’ from N1100 rib. Delay time 40 minutes to install pt. 3B and read others. Pt. 1H destroyed during pass 3 and unnecessary to replace. NOTE: Extension hooked to pt. 1A is incorrect extension meant for a different station. Calibration record should be changed and extension tape re-labeled or correct tape should be hung at sta. 100 pt. 1A.
2	1984-04-08	16:00	12.2	1.46543	95.37	–	–	–
2	1984-04-09	01:03	19.2	1.46342	97.38	–	–	–
2	1984-04-09	10:27	–	1.46047	100.33	–	–	–
2	1984-04-09	17:20	32.0	1.45961	101.19	–	–	–
2	1984-04-10	01:51	–	1.45903	101.77	–	–	–
2	1984-04-10	09:27	–	1.45766	103.15	–	–	–
2	1984-04-10	16:51	45.7	1.45702	103.78	–	–	–
2	1984-04-11	01:30	51.1	1.45644	104.36	–	–	–

Table A-4. Room D Station -16.4 m vertical mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_z (m)	δ_z (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
2	1984-04-11	08:47	57.9	1.45567	105.13	–	–	–
2	1984-04-11	16:33	-15.2	1.45499	105.81	–	–	–
2	1984-04-12	01:18	-7.6	1.45501	105.79	–	–	face pass 4 at 75' @ 0150 hrs.
2	1984-04-12	08:56	-3.0	1.45263	108.17	–	–	–
2	1984-04-12	17:32	5.2	1.45024	110.56	–	–	–
2	1984-04-13	00:56	9.1	1.44887	111.93	–	–	–
2	1984-04-13	08:37	16.2	1.44709	113.71	–	–	–
2	1984-04-13	17:15	25.9	1.44635	114.45	–	–	–
2	1984-04-14	01:06	–	1.44577	115.03	–	–	–
2	1984-04-14	01:06	–	1.44577	115.03	–	–	–
2	1984-04-14	08:55	41.5	1.44503	115.77	–	–	–
2	1984-04-14	16:46	59.4	1.44435	116.46	–	–	–
2	1984-04-15	00:56	–	1.44429	116.51	–	–	–
2	1984-04-15	09:10	–	1.44356	117.24	–	–	Finished Room
2	1984-04-15	16:40	–	1.44262	118.18	–	–	Finished Room
2	1984-04-16	00:53	–	1.44242	118.39	–	–	–
2	1984-04-16	09:06	–	1.44188	118.92	–	–	Room Complete
2	1984-04-17	–	–	–	–	–	–	Mine shutdown - no data taken
2	1984-04-18	10:19	–	1.43967	121.13	–	–	Finished room
2	1984-04-18	17:37	–	1.43921	121.59	–	–	Complete
2	1984-04-19	06:06	–	1.43858	122.22	–	–	–
2	1984-04-20	01:04	–	1.43805	122.75	–	–	Room open
2	1984-04-21	00:49	–	1.43667	124.13	–	–	Finish Open Room
2	1984-04-22	00:46	–	1.43647	124.33	–	–	–
2	1984-04-23	00:55	–	1.43561	125.19	–	–	–
2	1984-04-24	00:30	–	1.43462	126.18	–	–	–
2	1984-04-25	00:35	–	1.43370	127.10	–	–	Room Finished
2	1984-04-26	01:36	–	1.43253	128.27	–	–	–
2	1984-04-27	00:52	–	1.43251	128.29	–	–	Complete room
2	1984-04-28	02:43	–	1.43142	129.38	–	–	–
2	1984-04-29	03:52	–	1.43088	129.92	–	–	Room Complete
2	1984-04-30	05:25	–	1.43055	130.25	–	–	–
2	1984-05-01	00:40	–	1.42954	131.26	–	–	Room complete
2	1984-05-03	00:39	–	1.42850	132.30	–	–	Room complete
2	1984-05-04	05:47	–	1.42784	132.97	–	–	–
2	1984-05-05	01:36	–	1.42723	133.57	–	–	–
2	1984-05-06	00:37	–	1.42687	133.93	–	–	–
2	1984-05-07	01:33	–	1.42608	134.72	–	–	–
2	1984-05-09	00:56	–	1.42578	135.02	–	–	–
2	1984-05-11	02:25	–	1.42458	136.22	–	–	–
2	1984-05-13	01:27	–	1.42433	136.47	–	–	–
2	1984-05-15	00:23	–	1.42339	137.41	–	–	–
2	1984-05-16	–	–	–	–	–	–	Power outage
2	1984-05-17	–	–	–	–	–	–	Power outage
2	1984-05-18	–	–	–	–	–	–	Power outage
2	1984-05-19	–	–	–	–	–	–	Power outage
2	1984-05-20	01:39	–	1.42126	139.54	–	–	–
2	1984-05-22	01:52	–	1.42034	140.46	–	–	–
2	1984-05-25	02:06	–	1.41907	141.73	–	–	–
2	1984-05-31	21:13	–	1.41663	144.17	–	–	–
2	1984-06-06	20:45	–	1.41458	146.22	–	–	–
2	1984-06-15	04:06	–	1.41239	148.41	–	–	–
2	1984-06-21	01:23	–	1.41072	150.08	–	–	–
2	1984-06-28	02:11	–	1.41333	147.47	–	–	Technician originally wrote 4ft 8+0.643in. Then approver (ALM) corrected this to be 4ft 6+1.643in.
2	1984-07-12	05:05	–	1.40518	155.62	–	–	–
2	1984-07-19	01:50	–	1.40490	155.90	–	–	–
2	1984-07-26	01:45	–	1.40129	159.51	–	–	–
2	1984-08-01	10:15	–	1.39969	161.11	–	–	–
2	1984-08-10	16:57	–	1.39713	163.67	–	–	–
2	1984-08-17	18:01	–	1.39586	164.94	×	–	–
2	1984-08-24	18:35	–	1.39482	165.99	–	–	–
2	1984-08-31	17:00	–	1.39375	167.05	–	–	–
2	1984-09-08	18:05	–	1.39172	169.08	–	–	–
2	1984-09-14	21:34	–	1.39057	170.23	–	–	–
2	1984-09-21	17:43	–	1.38946	171.34	–	–	–
2	1984-09-28	17:58	–	1.38839	172.41	–	–	–
2	1984-10-05	21:45	–	1.38704	173.76	–	–	–
2	1984-10-12	21:08	–	1.38582	174.98	–	–	–
2	1984-10-19	19:32	–	1.38179	179.02	–	–	–
2	1984-10-26	19:45	–	1.38036	180.44	–	–	–
2	1984-11-02	18:15	–	1.37922	181.58	–	–	–
2	1984-11-09	17:40	–	1.38024	180.56	–	–	–
2	1984-11-16	20:24	–	1.37858	182.22	–	–	–
2	1984-11-23	18:32	–	1.37765	183.16	–	–	–
2	1984-11-30	18:24	–	1.37627	184.53	–	–	–
2	1984-12-06	19:39	–	1.37516	185.64	–	–	–
2	1984-12-14	19:08	–	1.37414	186.66	–	–	–
2	1984-12-21	18:55	–	1.37282	187.98	–	–	–
2	1984-12-28	18:11	–	1.37076	190.04	–	–	–
2	1985-01-04	18:19	–	1.36878	192.02	–	–	–
2	1985-01-11	17:00	–	1.36792	192.88	–	–	–
2	1985-01-18	18:30	–	1.36769	193.11	–	–	–
2	1985-01-25	19:25	–	1.36538	195.42	–	–	Ext. Tape
2	1985-02-01	18:35	–	1.36436	196.44	–	–	Ext. Tape
2	1985-02-11	22:49	–	1.36276	198.04	–	–	Ext. Tape

Table A-4. Room D Station -16.4 m vertical mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_z (m)	δ_z (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
2	1985-02-16	16:18	–	1.36235	198.45	–	–	Ext. Tape
2	1985-02-22	19:33	–	1.36141	199.39	–	–	Ext. Tape
2	1985-02-25	13:43	–	1.36088	199.92	–	–	Ext. Tape
2	1985-03-04	09:42	–	1.36042	200.38	–	–	Ext. Tape
3	1985-03-04	13:36	–	1.20152	200.80	–	–	–
3	1985-03-11	09:07	–	1.20162	200.70	–	–	Ext. Rod 2
3	1985-03-18	14:05	–	1.19990	202.42	–	–	Ext. Rod 2
3	1985-03-25	12:39	–	1.19911	203.21	–	–	Ext. Rod 2
3	1985-04-01	12:52	–	1.19446	207.86	×	–	Ext. Rod 2
3	1985-04-08	10:54	–	1.19807	204.25	–	–	Ext. Rod 2
3	1985-04-15	13:01	–	1.19725	205.06	–	–	Ext. Rod 2
3	1985-04-22	11:02	–	1.19637	205.95	–	–	Ext. Rod 2
3	1985-04-29	14:25	–	1.19512	207.20	–	–	Ext. Rod 2
3	1985-05-06	09:14	–	1.19428	208.04	–	–	Ext. Rod 2
3	1985-05-13	14:47	–	1.19342	208.90	–	–	Ext. Rod 2
3	1985-05-20	11:19	–	1.19245	209.87	–	–	Ext. Rod 2
3	1985-05-28	14:27	–	1.19118	211.14	–	–	Ext. Rod 2
3	1985-06-03	13:01	–	1.19070	211.62	–	–	Ext. Rod 2
3	1985-06-10	10:47	–	1.18938	212.94	–	–	Ext. Rod 2
3	1985-06-17	11:16	–	1.18864	213.68	–	–	Ext. Rod 2
3	1985-06-24	10:19	–	1.33652	65.80	–	×	Ext. Rod 1
3	1985-07-01	10:54	–	1.33576	66.56	–	×	Ext. Rod 1
3	1985-07-08	14:38	–	1.18580	216.52	–	–	Ext. Rod 2
3	1985-07-16	13:42	–	1.34135	60.97	–	×	Ext. Rod 1
3	1985-07-22	08:44	–	1.34082	61.50	–	×	Ext. Rod 1
3	1985-07-29	10:47	–	1.33988	62.44	–	×	Ext. Rod 1
3	1985-08-05	13:23	–	1.18501	217.31	–	–	Ext. Rod 2
3	1985-08-12	14:35	–	1.18054	221.78	–	–	Ext. Rod 2
3	1985-08-19	14:37	–	1.18049	221.83	–	–	Ext. Rod 2
3	1985-08-28	11:11	–	1.17930	223.02	–	–	Ext. Rod 2
3	1985-09-04	10:12	–	1.18115	221.17	–	–	Ext. Rod 2
3	1985-09-09	13:18	–	1.18057	221.75	–	–	Ext. Rod 2
3	1985-09-16	13:30	–	1.17965	222.67	–	–	Ext. Rod 2
3	1985-09-23	14:44	–	1.17871	223.61	–	–	–
3	1985-09-30	11:28	–	1.17790	224.42	–	–	–
3	1985-10-07	14:19	–	1.17678	225.54	–	–	–
3	1985-10-14	11:21	–	1.17612	226.20	–	–	–
3	1985-10-21	10:59	–	1.17523	227.09	–	–	–
3	1985-10-28	11:07	–	1.17470	227.62	–	–	–
3	1985-11-04	11:10	–	1.17396	228.36	–	–	–
3	1985-11-11	14:13	–	1.17302	229.30	–	–	–
3	1985-11-19	11:11	–	1.17231	230.01	–	–	–
3	1985-11-25	11:03	–	1.17155	230.77	–	–	–
3	1985-12-02	12:24	–	1.17099	231.33	–	–	–
3	1985-12-09	12:57	–	1.17000	232.32	–	–	–
3	1985-12-16	11:46	–	1.16944	232.88	–	–	Ext. Rod 2
3	1985-12-26	09:07	–	1.16822	234.10	–	–	–
3	1985-12-31	09:08	–	1.16774	234.58	–	–	–
3	1986-01-06	12:37	–	1.16675	235.57	–	–	Ext. Rod 2
3	1986-01-20	11:00	–	1.16556	236.76	–	–	–
3	1986-02-03	14:17	–	1.16141	240.90	–	–	–
3	1986-02-10	11:04	–	1.16073	241.59	–	–	–
3	1986-02-17	11:31	–	1.15997	242.35	–	–	–
3	1986-02-28	14:46	–	1.15890	243.42	–	–	–
3	1986-03-06	10:31	–	1.15857	243.75	–	–	–
3	1986-03-10	14:19	–	1.15811	244.21	–	–	–
3	1986-03-17	09:14	–	1.15738	244.94	–	–	–
3	1986-03-24	14:32	–	1.15717	245.15	–	–	–
3	1986-03-31	10:07	–	1.15567	246.64	–	–	–
3	1986-04-14	11:13	–	1.15443	247.89	–	–	–
3	1986-04-25	11:12	–	1.15334	248.98	–	–	–
3	1986-04-28	10:49	–	1.15367	248.65	–	–	–
3	1986-05-05	11:22	–	1.15301	249.31	–	–	–
3	1986-05-13	12:33	–	1.15207	250.25	–	–	–
3	1986-05-20	10:47	–	1.15146	250.86	–	–	–
3	1986-05-28	09:38	–	1.16647	235.85	×	–	–
3	1986-06-02	10:08	–	1.15009	252.23	–	–	–
3	1986-06-09	12:29	–	1.14935	252.97	–	–	–
3	1986-06-16	10:56	–	1.14866	253.65	–	–	–
3	1986-06-24	09:18	–	1.14765	254.67	–	–	–
3	1986-06-30	11:05	–	1.14709	255.23	–	–	–
3	1986-07-07	10:53	–	1.14633	255.99	–	–	–
3	1986-07-15	09:12	–	1.14557	256.75	–	–	–
3	1986-07-21	11:02	–	1.14513	257.19	–	–	–
3	1986-07-28	12:02	–	1.14432	258.00	–	–	–
3	1986-08-04	09:30	–	1.14374	258.58	–	–	–
3	1986-08-11	11:02	–	1.14280	259.52	–	–	–
3	1986-08-18	10:53	–	1.14264	259.67	–	–	–
3	1986-08-25	11:32	–	1.14143	260.89	–	–	–
3	1986-09-08	14:36	–	1.13962	262.70	–	–	–
3	1986-09-16	09:40	–	1.13838	263.94	–	–	–
3	1986-09-23	10:48	–	1.13767	264.65	–	–	–
3	1986-09-29	11:22	–	1.13711	265.21	–	–	–
3	1986-10-06	11:17	–	1.13627	266.05	–	–	–
3	1986-10-13	13:16	–	1.13558	266.74	–	–	–
3	1986-10-20	11:17	–	1.13485	267.47	–	–	–

Table A-4. Room D Station -16.4 m vertical mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_z (m)	δ_z (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
3	1986-10-27	13:34	–	1.13401	268.31	–	–	–
3	1986-11-03	14:06	–	1.13345	268.87	–	–	–
3	1986-11-11	13:41	–	1.13594	266.38	–	–	–
3	1986-11-17	09:35	–	1.13561	266.71	–	–	–
3	1986-11-24	13:13	–	1.13477	267.55	–	–	–
3	1986-12-03	11:02	–	1.13398	268.34	–	–	–
3	1986-12-08	11:03	–	1.13342	268.89	–	–	–
3	1986-12-15	13:29	–	1.13279	269.53	–	–	–
3	1986-12-22	14:35	–	1.28849	113.83	–	×	–
3	1986-12-30	10:31	–	1.13058	271.74	–	–	–
3	1987-01-05	14:01	–	1.12867	273.64	–	–	–
3	1987-01-13	10:50	–	1.12799	274.33	–	×	–
3	1987-02-13	09:52	–	1.12514	277.18	–	–	–
3	1987-03-16	14:16	–	1.27904	123.28	–	×	–
3	1987-05-15	10:20	–	1.27561	126.71	–	×	–
3	1987-07-10	10:22	–	1.11326	289.06	–	–	–
3	1987-08-07	13:30	–	1.11107	291.25	–	–	–
3	1987-09-04	13:13	–	1.10579	296.53	–	–	–
3	1987-10-02	10:03	–	1.10691	295.41	–	–	–
3	1987-10-29	12:29	–	1.10480	297.52	–	–	–
3	1988-01-20	12:33	–	1.09736	304.96	–	–	–
3	1988-03-18	–	–	–	–	–	–	No data recorded
3	1988-04-12	13:28	–	1.09040	311.92	–	–	–
3	1988-05-12	13:37	–	1.08798	314.34	–	–	–
3	1988-06-08	13:56	–	1.08544	316.88	–	–	–
3	1988-07-06	10:11	–	1.08306	319.26	–	–	–
3	1988-08-03	09:16	–	1.07864	323.68	–	–	–
3	1988-08-31	09:28	–	1.07561	326.71	–	–	–
3	1988-09-21	13:20	–	1.07643	325.89	–	–	–
3	1988-10-26	10:52	–	1.07312	329.19	–	–	–
3	1988-11-22	10:38	–	1.06832	333.99	–	–	–
3	1988-12-21	10:58	–	1.06843	333.89	–	–	–
3	1989-01-18	10:41	–	1.06583	336.48	–	–	–
3	1989-02-14	10:41	–	1.06357	338.74	–	–	–
3	1989-03-15	10:30	–	1.05994	342.38	–	–	–
3	1989-05-10	12:45	–	1.05529	347.03	–	–	–
3	1989-06-07	13:24	–	1.05293	349.39	–	–	–
3	1989-07-07	13:30	–	1.05026	352.05	–	–	–
3	1989-07-31	13:17	–	1.04912	353.20	–	–	–
3	1989-08-31	09:45	–	1.04602	356.30	–	–	–
3	1989-09-26	13:06	–	1.04140	360.92	–	–	–
3	1989-10-26	10:08	–	1.04135	360.97	–	–	–
3	1990-01-18	13:23	–	1.03454	367.78	–	–	–
3	1990-02-15	09:20	–	1.03210	370.22	–	–	–
3	1990-06-07	13:20	–	1.02187	380.45	–	–	–
3	1991-02-26	12:51	–	0.99987	402.45	–	–	–
3	1991-03-28	09:17	–	0.99733	404.99	–	–	–
3	1991-04-29	–	–	–	–	–	–	No data taken. Inaccessibility to room.
3	1991-05-16	–	–	–	–	–	–	No data taken - room D a red area
3	1991-05-21	–	–	–	–	–	–	Room D a red area - no access
3	1991-05-24	–	–	–	–	–	–	Area in red area - no access
3	1991-05-31	–	–	–	–	–	–	No readings taken due to training.
3	1991-06-04	14:11	–	0.99217	410.14	–	–	–
3	1991-06-25	09:08	–	0.98958	412.73	–	–	–
3	1991-07-01	13:55	–	0.98892	413.40	–	–	–
3	1991-07-08	10:27	–	0.98826	414.06	–	–	–
3	1991-07-16	10:02	–	0.98758	414.74	–	–	–
3	1991-07-23	09:06	–	0.98687	415.45	–	–	–
3	1991-07-30	12:53	–	0.98633	415.99	–	–	–
3	1991-08-16	–	–	–	–	–	–	No data taken due to shortage of time
3	1991-08-20	09:41	–	0.98435	417.97	–	–	–
3	1991-08-29	13:10	–	0.98341	418.91	–	–	–
3	1991-09-03	13:04	–	0.98288	419.44	–	–	–
3	1991-09-10	12:52	–	0.98229	420.02	–	–	–
3	1991-09-27	10:56	–	0.98077	421.55	–	–	–
3	1991-10-03	–	–	–	–	–	–	Unable due to roof bolting
3	1991-10-07	13:30	–	0.97996	422.36	–	–	–
3	1991-10-15	09:45	–	0.97925	423.07	–	–	–
3	1991-10-25	09:42	–	0.97826	424.06	–	–	–
3	1991-10-29	09:45	–	0.97820	424.11	–	–	–
3	1991-11-05	13:52	–	0.97739	424.93	–	–	–
3	1991-11-12	13:07	–	0.97696	425.36	–	–	–
3	1991-12-31	10:45	–	0.97300	429.32	–	–	–

Table A-5. Room D Station -1.4 m horizontal mining sequence metadata

										Pre-Jump Fitting Inputs				Post-Jump Fitting Inputs			
s	Segment Start Time	Analysis Notes	Gage Number	Paired Points	Point 1 y	Point 2 y	Estimated t_{ex}	t_{ex} Source	Shift Phase	Type	Start Index	End Index	Ignore Index	Type	Start Index	End Index	Ignore Index
(–)	(YYYY-MM-DD HH:MM)	(–)	(–)	(–)	(m)	(m)	(YYYY-MM-DD HH:MM)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)
0	1984-03-14 16:00	Estimated start of mining Room D.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1	1984-03-20 18:38	First reading after station mined out during pass 1.	D_M13-1	1E-1F	-1.14	-1.14	1984-03-20 13:30	Gage installation data sheet	2	–	–	–	–	Jeffreys	1	17	[4 6]
2	1984-03-26 20:32	First reading after point 1E mined out and replaced with 2E during pass 2.	D_M13-2	2E-1F	-1.54	-1.14	1984-03-26 17:40	Gage installation data sheet	2	Linear	-2	-1	–	Jeffreys	1	18	[6 7 8]
3	1984-04-06 06:58	First reading after point 1F mined out and replaced during a minor trimming east rib between pass 2 and 3.	D_M13-2	2E-1F	-1.54	-1.14	–	–	2	Linear	-4	-2	–	Linear	2	5	–
4	1984-04-13 09:44	First reading after point 2E mined out and replaced during pass 4.	D_M13-2	2E-1F	-1.54	-1.14	1984-04-13 07:00	Gage installation data sheet	2	Linear	-2	-1	–	Jeffreys	1	10	–
5	1985-03-04 14:00	First reading after points replaced.	D_M13-2	2E-1F	-1.54	-1.14	–	–	2	Linear	-2	-1	–	Linear	1	6	[3 5]

Table A-6. Room D Station -1.4 m horizontal mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_x (m)	δ_x (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
1	1984-03-20	18:38	2.0	3.88031	1.62	–	–	–
1	1984-03-20	23:41	4.2	3.87398	7.95	–	–	–
1	1984-03-21	09:17	4.7	3.87027	11.66	–	–	–
1	1984-03-21	15:05	5.6	–	–	–	–	–
1	1984-03-21	18:24	6.9	3.86786	14.07	–	–	–
1	1984-03-22	00:28	9.8	3.86796	13.97	×	–	–
1	1984-03-22	09:06	11.6	3.86342	18.51	–	–	–
1	1984-03-22	17:55	14.9	3.86182	20.11	–	–	–
1	1984-03-22	23:14	18.0	3.86113	20.80	–	–	–
1	1984-03-23	09:20	21.9	3.86004	21.89	–	–	–
1	1984-03-23	17:08	22.6	3.85897	22.96	–	–	–
1	1984-03-24	01:04	28.0	3.85836	23.57	–	–	–
1	1984-03-24	08:49	29.6	3.85806	23.87	–	–	–
1	1984-03-24	17:04	33.5	3.85793	24.00	–	–	–
1	1984-03-25	01:18	37.5	3.85674	25.19	–	–	–
1	1984-03-25	08:54	37.7	3.85661	25.32	–	–	–
1	1984-03-25	16:52	37.3	3.85623	25.70	–	–	–
1	1984-03-26	00:57	37.2	3.85554	26.39	–	–	–
1	1984-03-26	08:47	–	3.85501	26.92	–	–	[Next to the distance to face reading technician recorded] (pass 1)
2	1984-03-26	20:32	2.1	4.93382	29.37	–	–	–
2	1984-03-26	–	–	–	–	–	–	No data taken. Miner too close to pt. 150'. Installed points 2C & 2E at station 150' see installation sheet. [Under the distance to face column heading technician recorded] north face pass 1.
2	1984-03-27	01:55	7.9	4.93235	30.84	–	–	–
2	1984-03-27	08:53	15.5	4.93047	32.72	–	–	–
2	1984-03-27	17:11	–	4.92884	34.35	–	–	–
2	1984-03-28	01:39	32.9	4.92783	35.37	–	–	–
2	1984-03-28	09:07	37.5	4.92798	35.21	–	–	–
2	1984-03-28	16:49	–	4.92717	36.03	–	–	–
2	1984-03-29	01:12	42.7	4.92722	35.98	–	–	–
2	1984-03-29	09:29	44.2	4.92557	37.63	–	–	–
2	1984-03-29	16:54	–	4.92534	37.86	–	–	–
2	1984-03-30	00:49	46.3	4.92498	38.21	–	–	–
2	1984-03-30	09:22	47.5	4.92478	38.41	–	–	–
2	1984-03-30	16:58	–	4.92422	38.97	–	–	–
2	1984-03-31	00:34	–	4.92397	39.23	–	–	Pass has been mined to N1420
2	1984-03-31	09:29	47.5	4.92361	39.58	–	–	–
2	1984-03-31	17:02	–	4.92331	39.89	–	–	–
2	1984-04-01	00:44	–	4.92293	40.27	–	–	–
2	1984-04-01	08:53	47.5	4.92343	39.76	–	–	–
2	1984-04-01	17:09	–	4.92509	38.11	×	–	–
2	1984-04-02	00:32	–	4.92219	41.00	–	–	–
2	1984-04-02	09:16	–	4.92232	40.88	–	–	–
2	1984-04-02	16:55	–	4.92158	41.61	–	–	–
2	1984-04-03	00:48	10.7	4.92140	41.79	–	–	–
2	1984-04-03	09:06	–	4.92140	41.79	–	–	–
2	1984-04-03	17:21	–	4.92105	42.15	–	–	Room Open
2	1984-04-04	00:41	–	4.92077	42.43	–	–	–
2	1984-04-04	08:53	–	4.92138	41.82	–	–	–
2	1984-04-04	17:24	–	4.92031	42.88	–	–	Open Room
2	1984-04-05	00:46	–	4.92016	43.04	–	–	–
2	1984-04-05	09:28	–	4.91975	43.44	–	–	–
2	1984-04-05	16:53	–	4.92049	42.71	–	–	Open Room
3	1984-04-06	06:58	–	5.04995	45.45	–	–	1 and 2 complete. Miner trimming east rib. Installed new points in east rib at 1D' and 1F'.
3	1984-04-06	09:25	–	5.05107	44.33	–	–	–
3	1984-04-06	17:07	–	5.05059	44.81	–	–	Open Face
3	1984-04-07	00:58	-37.0	5.05008	45.32	–	–	Face at 28.5 ft from N1100 rib.
3	1984-04-07	08:56	–	5.04998	45.42	–	–	–
3	1984-04-07	17:29	-25.3	5.04962	45.78	–	–	–
3	1984-04-08	00:51	-18.7	5.04955	45.86	–	–	Face at 88.5 ft from N1100 rib.
3	1984-04-08	08:31	-11.9	5.04927	46.13	–	–	Pass 3 face at 111 ft from N1100 rib.
3	1984-04-08	16:43	-4.6	5.04731	48.09	–	–	15' back to face
3	1984-04-08	22:30	3.0	5.04162	53.78	–	–	–
3	1984-04-09	01:25	4.0	5.03977	55.63	–	–	–
3	1984-04-09	10:20	11.9	5.03479	60.61	–	–	–
3	1984-04-09	17:29	16.8	5.03271	62.70	–	–	–
3	1984-04-10	01:46	25.3	5.03138	64.02	–	–	–
3	1984-04-10	09:25	–	5.02948	65.92	–	–	–
3	1984-04-10	17:00	30.5	5.02915	66.25	–	–	–
3	1984-04-11	01:16	35.8	5.02816	67.24	–	–	face pass 3 at 267.5 ft at 0152 hrs
3	1984-04-11	08:40	42.7	5.02737	68.03	–	–	–
3	1984-04-11	16:51	30.5	5.02681	68.59	–	–	–
3	1984-04-12	01:33	-22.9	5.02572	69.68	–	–	face pass 4 at 75' @ 0150 hrs.
3	1984-04-12	08:41	-12.2	5.02613	69.27	–	–	40' Back to face
3	1984-04-12	16:35	-10.4	5.02511	70.29	–	–	–
3	1984-04-13	00:42	-6.4	5.02448	70.93	–	–	–
4	1984-04-13	09:44	1.5	5.10591	72.57	–	–	–
4	1984-04-13	17:02	10.7	5.10385	74.63	–	–	–
4	1984-04-14	01:03	–	5.10276	75.72	–	–	–
4	1984-04-14	09:13	26.2	5.10144	77.04	–	–	–
4	1984-04-14	16:30	44.2	5.10113	77.35	–	–	–
4	1984-04-15	01:10	–	5.10055	77.93	–	–	–
4	1984-04-15	09:25	–	5.10032	78.16	–	–	Finish. Room open

Table A-6. Room D Station -1.4 m horizontal mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_x (m)	δ_x (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
4	1984-04-15	16:32	–	5.09948	79.00	–	–	Finished room
4	1984-04-16	01:04	–	5.09915	79.33	–	–	–
4	1984-04-16	08:56	–	5.09849	79.99	–	–	Room complete
4	1984-04-17	–	–	–	–	–	–	No data taken. Mine shutdown.
4	1984-04-18	10:10	–	5.09656	81.92	–	–	–
4	1984-04-18	17:26	–	5.09638	82.10	–	–	Room D Complete
4	1984-04-19	06:02	–	5.09577	82.71	–	–	–
4	1984-04-20	00:59	–	5.09519	83.29	–	–	–
4	1984-04-21	04:50	–	5.09412	84.36	–	–	Finish. Open room.
4	1984-04-22	01:02	–	5.09331	85.17	–	–	–
4	1984-04-23	00:51	–	5.09273	85.76	–	–	–
4	1984-04-24	00:43	–	5.09229	86.19	–	–	–
4	1984-04-25	00:43	–	5.09209	86.39	–	–	Room finished.
4	1984-04-26	01:19	–	5.09113	87.36	–	–	Room finished.
4	1984-04-27	01:11	–	5.09057	87.91	–	–	Complete
4	1984-04-28	02:52	–	5.08965	88.83	–	–	Complete
4	1984-04-29	03:58	–	5.08996	88.52	–	–	Complete
4	1984-04-30	05:33	–	5.08899	89.49	–	–	Complete
4	1984-05-01	00:56	–	5.08866	89.82	–	–	Complete
4	1984-05-03	00:55	–	5.08765	90.84	–	–	–
4	1984-05-04	05:41	–	5.08714	91.34	–	–	–
4	1984-05-05	01:33	–	5.08582	92.66	–	–	–
4	1984-05-06	00:49	–	5.08645	92.03	–	–	Complete
4	1984-05-07	01:28	–	5.08566	92.82	–	–	Complete
4	1984-05-09	00:46	–	5.08546	93.02	–	–	–
4	1984-05-11	02:22	–	5.08406	94.42	–	–	–
4	1984-05-13	01:14	–	5.08356	94.92	–	–	–
4	1984-05-15	–	–	–	–	–	–	No data taken. Drill in the way.
4	1984-05-16	–	–	–	–	–	–	Power outage.
4	1984-05-17	–	–	–	–	–	–	Power outage.
4	1984-05-18	–	–	–	–	–	–	Power outage.
4	1984-05-19	–	–	–	–	–	–	Power outage.
4	1984-05-20	–	–	–	–	–	–	Could not read due to drill stand in way.
4	1984-05-21	21:06	–	5.07850	99.98	–	–	–
4	1984-05-22	01:46	–	5.08066	97.82	–	–	–
4	1984-05-25	02:27	–	5.07997	98.51	–	–	–
4	1984-06-06	20:39	–	5.07594	102.54	–	–	–
4	1984-06-15	04:08	–	5.07472	103.76	–	–	–
4	1984-06-21	01:30	–	5.07337	105.11	–	–	–
4	1984-06-28	01:57	–	5.07154	106.94	–	–	–
4	1984-07-12	04:35	–	5.06928	109.20	–	–	–
4	1984-07-19	01:44	–	5.06951	108.97	–	–	–
4	1984-07-26	–	–	–	–	–	–	No data taken.
4	1984-08-01	10:12	–	5.06557	112.91	–	–	–
4	1984-08-10	17:02	–	5.06326	115.22	–	–	–
4	1984-08-17	17:59	–	5.05775	120.73	×	–	–
4	1984-08-24	18:53	–	5.06123	117.25	–	–	–
4	1984-08-31	17:15	–	5.06024	118.24	–	–	–
4	1984-09-08	17:50	–	5.05912	119.36	–	–	–
4	1984-09-14	21:25	–	5.05805	120.43	–	–	–
4	1984-09-21	17:30	–	5.05755	120.93	–	–	–
4	1984-09-28	18:10	–	5.05699	121.49	–	–	–
4	1984-10-05	21:50	–	5.05612	122.36	–	–	–
4	1984-10-12	21:13	–	5.05551	122.97	–	–	–
4	1984-10-19	19:28	–	5.05229	126.19	–	–	–
4	1984-10-26	19:41	–	5.05125	127.23	–	–	–
4	1984-11-02	18:12	–	5.04990	128.58	–	–	–
4	1984-11-09	17:31	–	5.05186	126.62	–	–	–
4	1984-11-16	20:29	–	5.04881	129.67	–	–	–
4	1984-11-23	18:30	–	5.04812	130.36	–	–	–
4	1984-11-30	18:27	–	5.04698	131.50	–	–	–
4	1984-12-06	19:34	–	5.04685	131.63	–	–	–
4	1984-12-14	19:06	–	5.04589	132.59	–	–	–
4	1984-12-21	18:52	–	5.04469	133.79	–	–	–
4	1984-12-28	18:03	–	5.04284	135.64	–	–	–
4	1985-01-04	18:26	–	5.04198	136.50	–	–	–
4	1985-01-11	17:07	–	5.04157	136.91	–	–	–
4	1985-01-18	18:36	–	5.04048	138.00	–	–	–
4	1985-01-25	19:21	–	5.03964	138.84	–	–	–
4	1985-02-01	18:33	–	5.03852	139.96	–	–	–
4	1985-02-11	22:45	–	5.03786	140.62	–	–	–
4	1985-02-16	16:30	–	5.03822	140.26	–	–	–
4	1985-02-22	19:29	–	5.03679	141.69	–	–	–
4	1985-02-25	13:40	–	5.03652	141.97	–	–	–
4	1985-03-04	09:56	–	5.03580	142.68	–	–	–
5	1985-03-04	14:00	–	5.00926	143.09	–	–	–
5	1985-03-11	09:24	–	5.00997	142.38	–	–	–
5	1985-03-18	14:16	–	5.13519	17.16	×	–	–
5	1985-03-25	12:47	–	5.00746	144.89	–	–	–
5	1985-04-01	12:51	–	5.00309	149.26	×	–	–
5	1985-04-08	11:03	–	5.00731	145.05	–	–	–
5	1985-04-15	13:00	–	5.00621	146.14	–	–	–
5	1985-04-22	11:12	–	5.00560	146.75	–	–	–
5	1985-04-29	14:23	–	5.00479	147.56	–	–	–
5	1985-05-06	09:26	–	5.00416	148.20	–	–	–
5	1985-05-13	14:41	–	5.00334	149.01	–	–	–

Table A-6. Room D Station -1.4 m horizontal mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_x (m)	δ_x (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
5	1985-05-20	11:13	–	5.00266	149.69	–	–	–
5	1985-05-28	14:26	–	5.00190	150.46	–	–	–
5	1985-06-03	13:10	–	5.00116	151.19	–	–	–
5	1985-06-10	10:43	–	5.00057	151.78	–	–	–
5	1985-06-17	11:14	–	5.00004	152.31	–	–	–
5	1985-06-24	10:26	–	4.99941	152.95	–	–	–
5	1985-07-01	11:02	–	4.99974	152.62	–	–	–
5	1985-07-08	14:37	–	4.99814	154.22	–	–	–
5	1985-07-16	13:40	–	4.99781	154.55	–	–	–
5	1985-07-22	08:54	–	4.99748	154.88	–	–	–
5	1985-07-29	10:44	–	4.99664	155.71	–	–	–
5	1985-08-05	13:15	–	4.99875	153.61	–	–	–
5	1985-08-12	14:34	–	4.99435	158.00	–	–	–
5	1985-08-19	14:36	–	4.99425	158.10	–	–	–
5	1985-08-28	11:17	–	4.99262	159.73	–	–	–
5	1985-09-04	10:12	–	4.99521	157.14	–	–	–
5	1985-09-09	13:17	–	4.99499	157.36	–	–	–
5	1985-09-16	13:28	–	4.99471	157.64	–	–	–
5	1985-09-23	14:51	–	4.99384	158.51	–	–	–
5	1985-09-30	11:27	–	4.99331	159.04	–	–	–
5	1985-10-07	14:26	–	4.99237	159.98	–	–	–
5	1985-10-14	11:20	–	4.99179	160.57	–	–	–
5	1985-10-21	11:12	–	4.99110	161.25	–	–	–
5	1985-10-28	11:01	–	4.99209	160.26	–	–	–
5	1985-11-04	11:16	–	4.99039	161.96	–	–	–
5	1985-11-11	14:19	–	4.98947	162.88	–	–	–
5	1985-11-19	11:07	–	4.98945	162.90	–	–	–
5	1985-11-25	11:16	–	4.98869	163.66	–	–	–
5	1985-12-02	12:32	–	4.98831	164.05	–	–	–
5	1985-12-09	12:53	–	4.98851	163.84	–	–	–
5	1985-12-16	11:42	–	4.98681	165.54	–	–	–
5	1985-12-26	09:11	–	4.98648	165.87	–	–	–
5	1985-12-31	09:16	–	4.98516	167.19	–	–	–
5	1986-01-06	12:35	–	4.98572	166.64	–	–	–
5	1986-01-20	10:58	–	4.98391	168.44	–	–	–
5	1986-02-03	14:24	–	4.97992	172.43	–	–	–
5	1986-02-10	11:03	–	4.97929	173.06	–	–	–
5	1986-02-17	11:28	–	4.97893	173.42	–	–	–
5	1986-02-28	14:45	–	4.97812	174.23	–	–	–
5	1986-03-06	10:28	–	4.97817	174.18	–	–	–
5	1986-03-10	14:18	–	4.97776	174.59	–	–	–
5	1986-03-17	09:23	–	4.97685	175.50	–	–	–
5	1986-03-24	14:30	–	4.97629	176.06	–	–	–
5	1986-03-31	10:16	–	4.97642	175.93	–	–	–
5	1986-04-14	11:11	–	4.97487	177.48	–	–	–
5	1986-04-25	11:21	–	4.97398	178.37	–	–	–
5	1986-04-28	10:47	–	4.97378	178.57	–	–	–
5	1986-05-05	11:21	–	4.94810	204.25	×	–	–
5	1986-05-13	12:31	–	4.97312	179.23	–	–	–
5	1986-05-20	10:46	–	4.97258	179.77	–	–	–
5	1986-05-28	09:27	–	4.97172	180.63	–	–	–
5	1986-06-02	10:06	–	4.97218	180.17	–	–	–
5	1986-06-09	12:28	–	4.97086	181.49	–	–	–
5	1986-06-16	10:54	–	4.97053	181.83	–	–	–
5	1986-06-24	09:16	–	4.96999	182.36	–	–	–
5	1986-06-30	11:04	–	4.96951	182.84	–	–	–
5	1986-07-07	10:51	–	4.96890	183.45	–	–	–
5	1986-07-15	09:11	–	4.96811	184.24	–	–	–
5	1986-07-21	11:01	–	4.96786	184.49	–	–	–
5	1986-07-28	12:01	–	4.96722	185.13	–	–	–
5	1986-08-04	09:29	–	4.96677	185.58	–	–	–
5	1986-08-11	11:00	–	4.96613	186.22	–	–	–
5	1986-08-18	10:52	–	4.96552	186.83	–	–	–
5	1986-08-25	11:31	–	4.96512	187.24	–	–	–
5	1986-09-08	14:34	–	4.96357	188.78	–	–	–
5	1986-09-16	09:36	–	4.96303	189.32	–	–	–
5	1986-09-23	10:47	–	4.96250	189.85	–	–	–
5	1986-09-29	11:20	–	4.96189	190.46	–	–	–
5	1986-10-06	11:25	–	4.96131	191.05	–	–	–
5	1986-10-13	13:10	–	4.96095	191.40	–	–	–
5	1986-10-20	11:13	–	4.96034	192.01	–	–	–
5	1986-10-27	13:50	–	4.95978	192.57	–	–	–
5	1986-11-03	14:21	–	4.95940	192.95	–	–	–
5	1986-11-11	13:55	–	4.96232	190.03	–	–	–
5	1986-11-17	09:30	–	4.96181	190.54	–	–	–
5	1986-11-24	13:06	–	4.96136	190.99	–	–	–
5	1986-12-03	10:55	–	4.95920	193.15	–	–	–
5	1986-12-08	11:01	–	4.96065	191.71	–	–	–
5	1986-12-15	13:26	–	4.95960	192.75	–	–	–
5	1986-12-22	14:33	–	4.95849	193.86	–	–	–
5	1986-12-30	10:42	–	4.95757	194.78	–	–	–
5	1987-01-05	13:59	–	4.95590	196.46	–	–	–
5	1987-01-13	10:47	–	4.95526	197.09	–	–	–
5	1987-02-13	10:05	–	4.95170	200.65	–	–	–
5	1987-03-16	14:10	–	4.94990	202.45	–	–	–
5	1987-05-15	10:25	–	4.95153	200.82	–	–	–

Table A-6. Room D Station -1.4 m horizontal mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_x (m)	δ_x (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
5	1987-07-10	10:31	–	4.94332	209.03	–	–	–
5	1987-08-07	13:52	–	4.94116	211.19	–	–	–
5	1987-09-04	13:05	–	4.93649	215.86	–	–	–
5	1987-10-02	10:22	–	4.93718	215.18	–	–	–
5	1987-10-29	12:43	–	4.93565	216.70	–	–	–
5	1988-01-20	12:46	–	4.93070	221.65	–	–	–
5	1988-03-18	–	–	–	–	–	–	–
5	1988-04-12	13:24	–	4.92646	225.89	–	–	–
5	1988-05-12	13:51	–	4.92470	227.65	–	–	–
5	1988-06-08	13:40	–	4.92267	229.68	–	–	–
5	1988-07-06	10:09	–	4.92054	231.81	–	–	–
5	1988-08-03	09:12	–	4.91749	234.86	–	–	–
5	1988-08-31	09:18	–	4.91576	236.59	–	–	–
5	1988-09-21	13:16	–	4.91612	236.23	–	–	–
5	1988-10-26	12:39	–	4.91360	238.75	–	–	–
5	1988-11-22	10:34	–	4.91246	239.89	–	–	–
5	1988-12-21	10:52	–	4.91076	241.59	–	–	–
5	1989-01-18	10:35	–	4.90878	243.57	–	–	–
5	1989-02-14	10:36	–	4.90710	245.25	–	–	–
5	1989-03-15	10:26	–	4.90454	247.81	–	–	–
5	1989-05-10	12:52	–	4.90108	251.27	–	–	–
5	1989-06-07	13:53	–	4.89963	252.72	–	–	–
5	1989-07-07	13:27	–	4.89722	255.13	–	–	–
5	1989-07-31	13:30	–	4.89715	255.21	–	–	–
5	1989-08-31	10:15	–	4.89514	257.21	–	–	–
5	1989-09-26	13:00	–	4.89364	258.71	–	–	–
5	1989-10-26	10:28	–	4.89227	260.08	–	–	–
5	1990-01-18	13:20	–	4.88630	266.05	–	–	–
5	1990-02-15	10:00	–	4.88518	267.17	–	–	–
5	1990-06-07	13:18	–	4.87863	273.72	–	–	–
5	1991-02-26	13:40	–	4.86334	289.01	–	–	–
5	1991-03-28	09:42	–	4.86197	290.38	–	–	–
5	1991-04-29	–	–	–	–	–	–	No data taken. Inaccessibility to room.
5	1991-05-16	–	–	–	–	–	–	No data taken - room D a red area
5	1991-05-21	–	–	–	–	–	–	Room D a red area - no access
5	1991-05-24	–	–	–	–	–	–	Area in red area - no access
5	1991-05-31	–	–	–	–	–	–	No readings taken due to training.
5	1991-06-04	14:20	–	4.85760	294.75	–	–	–
5	1991-06-25	09:26	–	4.85653	295.82	–	–	–
5	1991-07-01	13:51	–	4.85656	295.79	–	–	–
5	1991-07-08	10:45	–	4.85618	296.18	–	–	–
5	1991-07-16	09:48	–	4.85526	297.09	–	–	–
5	1991-07-23	09:29	–	4.85485	297.50	–	–	–
5	1991-07-30	13:06	–	4.93037	221.98	×	–	–
5	1991-08-16	–	–	–	–	–	–	No data taken due to shortage of time.
5	1991-08-20	09:35	–	4.85369	298.67	–	–	–
5	1991-08-29	13:15	–	4.85305	299.30	–	–	–
5	1991-09-03	11:17	–	4.85259	299.76	–	–	–
5	1991-09-10	13:25	–	4.85224	300.11	–	–	–
5	1991-09-27	10:50	–	4.85145	300.90	–	–	–
5	1991-10-03	–	–	–	–	–	–	No data taken due to roof bolting
5	1991-10-07	13:19	–	4.85071	301.64	–	–	–
5	1991-10-15	10:01	–	4.85018	302.17	–	–	–
5	1991-10-25	10:10	–	4.84977	302.58	–	–	–
5	1991-10-29	10:10	–	4.84922	303.14	–	–	–
5	1991-11-05	13:45	–	4.85191	300.44	–	–	–
5	1991-11-12	13:27	–	4.84871	303.64	–	–	–
5	1991-12-31	10:57	–	4.84670	305.65	–	–	–

Table A-7. Room D Station -1.4 m vertical mining sequence metadata

										Pre-Jump Fitting Inputs				Post-Jump Fitting Inputs			
s	Segment Start Time	Analysis Notes	Gage Number	Paired Points	Point 1 y	Point 2 y	Estimated t_{ex}	t_{ex} Source	Shift Phase	Type	Start Index	End Index	Ignore Index	Type	Start Index	End Index	Ignore Index
(–)	(YYYY-MM-DD HH:MM)	(–)	(–)	(–)	(m)	(m)	(YYYY-MM-DD HH:MM)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)
0	1984-03-14 16:00	Estimated start of mining Room D.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1	1984-03-20 18:25	First reading after station mined out during pass 1.	D_M11-1	1A-1B	-1.39	-1.39	1984-03-20 13:30	Gage installation data sheet	2	–	–	–	–	Jeffreys	1	17	–
2	1984-04-08 22:23	First reading after point 1B mined out and replaced with 3B during pass 3.	D_M11-3	1A-3B	-1.48	-1.39	1984-04-08 21:00	Gage installation data sheet	2	Linear	-2	-1	–	Jeffreys	1	13	–
3	1984-07-12 04:55	First reading where technician noted that extension tape was broken suggesting that points were measured using some other means.	D_M11-3	1A-3B	-1.48	-1.39	–	–	2	Linear	-2	-1	–	Linear	1	5	[2 3 4]
4	1984-09-28 18:05	First time ext. rod #2 was used.	D_M11-3	1A-3B	-1.48	-1.39	–	–	2	Linear	-4	-3	–	Linear	1	2	–
5	1984-11-09 17:43	A shift is required to avoid having a negative 1A-3B closure rate over the past 4 weeks. The 2E-1F closure rate is positive during this time period and so are 1A-3B and 2E-1F closure rates at the other two stations.	D_M11-3	1A-3B	-1.48	-1.39	–	–	2	Linear	-5	-4	–	Linear	1	2	–
6	1984-12-28 18:04	A shift is required to avoid having a negative 1A-3B closure rate over the past 3 weeks. The 2E-1F closure rate is positive during this time period and so are 1A-3B and 2E-1F closure rates at the other two stations.	D_M11-3	1A-3B	-1.48	-1.39	–	–	2	Linear	-4	-3	–	Linear	1	2	–
7	1985-03-04 13:35	First reading after points replaced.	D_M11-3	1A-3B	-1.48	-1.39	–	–	2	Linear	-2	-1	–	Linear	1	4	–

Table A-8. Room D Station -1.4 m vertical mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_z (m)	δ_z (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
1	1984-03-20	18:25	2.0	3.31447	4.25	–	–	–
1	1984-03-20	23:35	4.2	3.30403	14.69	–	–	–
1	1984-03-21	09:22	4.7	3.29707	21.65	–	–	–
1	1984-03-21	15:05	5.6	–	–	–	–	No data taken. Cannot enter mine.
1	1984-03-21	18:18	6.9	3.29377	24.95	–	–	–
1	1984-03-22	00:15	9.8	3.29006	28.66	–	–	–
1	1984-03-22	09:01	11.6	3.28714	31.58	–	–	–
1	1984-03-22	17:58	14.9	3.28475	33.97	–	–	–
1	1984-03-22	23:18	18.0	3.28356	35.16	–	–	–
1	1984-03-23	09:28	21.9	3.28191	36.81	–	–	–
1	1984-03-23	17:02	22.6	3.28097	37.75	–	–	–
1	1984-03-24	00:57	28.0	3.28028	38.44	–	–	–
1	1984-03-24	08:55	29.6	3.27937	39.35	–	–	–
1	1984-03-24	16:55	33.5	3.27840	40.32	–	–	–
1	1984-03-25	01:10	37.5	3.27749	41.23	–	–	–
1	1984-03-25	08:51	37.7	3.27696	41.77	–	–	–
1	1984-03-25	16:44	37.3	3.27650	42.22	–	–	–
1	1984-03-26	00:50	37.2	3.27635	42.38	–	–	–
1	1984-03-26	08:42	–	3.27520	43.52	–	–	[Next to the distance to face reading technician recorded] (pass 1)
1	1984-03-26	20:23	2.1	3.26697	51.75	–	–	–
1	1984-03-26	–	–	–	–	–	–	No readings taken miner too close to pt 150’
1	1984-03-27	01:40	7.9	3.26235	56.37	–	–	–
1	1984-03-27	08:49	15.5	3.25938	59.34	–	–	–
1	1984-03-27	17:05	–	3.25707	61.66	–	–	–
1	1984-03-28	01:32	32.9	3.25582	62.90	–	–	–
1	1984-03-28	09:02	37.5	3.25468	64.04	–	–	–
1	1984-03-28	17:03	–	3.25387	64.86	–	–	–
1	1984-03-29	01:05	42.7	3.25255	66.18	–	–	–
1	1984-03-29	09:22	44.2	3.25196	66.76	–	–	–
1	1984-03-29	16:48	–	3.25130	67.42	–	–	–
1	1984-03-30	00:42	46.3	3.25069	68.03	–	–	–
1	1984-03-30	09:15	47.5	3.24990	68.82	–	–	–
1	1984-03-30	16:52	–	3.24940	69.33	–	–	–
1	1984-03-31	00:30	–	3.24863	70.09	–	–	–
1	1984-03-31	09:34	47.5	3.24833	70.39	–	–	–
1	1984-03-31	16:56	–	3.24775	70.98	–	–	–
1	1984-04-01	00:42	–	3.24762	71.10	–	–	–
1	1984-04-01	09:02	47.5	3.24686	71.87	–	–	–
1	1984-04-01	17:05	–	3.24653	72.20	–	–	–
1	1984-04-02	00:28	–	3.24620	72.53	–	–	–
1	1984-04-02	09:23	–	3.24589	72.83	–	–	–
1	1984-04-02	16:49	–	3.24510	73.62	–	–	–
1	1984-04-03	00:44	10.7	3.24472	74.00	–	–	–
1	1984-04-03	09:12	–	3.24437	74.36	–	–	–
1	1984-04-03	17:03	–	3.24419	74.53	–	–	Room Open
1	1984-04-04	00:39	–	3.24383	74.89	–	–	–
1	1984-04-04	08:48	–	3.24320	75.52	–	–	–
1	1984-04-04	17:18	–	3.24328	75.45	–	–	Open Room
1	1984-04-05	00:43	–	3.24272	76.01	–	–	–
1	1984-04-05	09:22	–	3.24211	76.62	–	–	–
1	1984-04-05	16:45	–	3.24188	76.84	–	–	Open Room
1	1984-04-06	07:13	–	3.24091	77.81	–	–	1 and 2 complete
1	1984-04-06	09:18	–	3.24079	77.94	–	–	–
1	1984-04-06	17:01	–	3.24005	78.67	–	–	Open Face
1	1984-04-07	00:49	-37.0	3.24002	78.70	–	–	Face at 28.5 ft from N1100 rib.
1	1984-04-07	08:50	–	3.23947	79.26	–	–	–
1	1984-04-07	17:24	-25.3	3.23903	79.69	–	–	–
1	1984-04-08	00:45	-18.7	3.23868	80.04	–	–	Face at 88.5 ft from N1100 rib.
1	1984-04-08	08:28	-11.9	3.23797	80.76	–	–	Pass 3 face at 111 ft from N1100 rib.
1	1984-04-08	16:37	-4.6	3.23611	82.61	–	–	15’ back to face
2	1984-04-08	22:23	3.0	1.61336	84.59	–	–	–
2	1984-04-09	01:19	4.0	1.61196	85.99	–	–	–
2	1984-04-09	10:17	11.9	1.60863	89.32	–	–	–
2	1984-04-09	17:30	16.8	1.60612	91.83	–	–	–
2	1984-04-10	01:35	25.3	1.60510	92.85	–	–	–
2	1984-04-10	09:21	–	1.60383	94.12	–	–	–
2	1984-04-10	16:59	30.5	1.60284	95.11	–	–	–
2	1984-04-11	01:11	35.8	1.60226	95.69	–	–	face pass 3 at 267.5 ft at 0152 hrs
2	1984-04-11	08:32	42.7	1.60147	96.48	–	–	–
2	1984-04-11	16:46	30.5	1.60109	96.86	–	–	–
2	1984-04-12	01:30	-22.9	1.60023	97.73	–	–	face pass 4 at 75’ @ 0150 hrs.
2	1984-04-12	08:44	-12.2	1.59987	98.08	–	–	40’ Back to face
2	1984-04-12	16:31	-10.4	1.59929	98.67	–	–	–
2	1984-04-13	00:42	-6.4	1.59837	99.58	–	–	–
2	1984-04-13	09:45	1.5	1.59565	102.30	–	–	–
2	1984-04-13	17:00	10.7	1.59332	104.63	–	–	–
2	1984-04-14	00:58	–	1.59212	105.83	–	–	–
2	1984-04-14	09:09	26.2	1.58874	109.21	×	–	–
2	1984-04-14	16:36	44.2	1.59017	107.78	–	–	–
2	1984-04-15	01:06	–	1.58946	108.50	–	–	–
2	1984-04-15	09:20	–	1.58877	109.18	–	–	Room open
2	1984-04-15	16:29	–	1.58821	109.74	–	–	Finish room
2	1984-04-16	01:01	–	1.58778	110.17	–	–	Room complete
2	1984-04-16	08:58	–	1.58735	110.60	–	–	–
2	1984-04-17	–	–	–	–	–	–	No data taken. Mine shut down.

Table A-8. Room D Station -1.4 m vertical mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_z (m)	δ_z (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
2	1984-04-18	10:08	–	1.58493	113.02	–	–	–
2	1984-04-18	17:22	–	1.58448	113.47	–	–	Room D Complete
2	1984-04-19	05:57	–	1.58354	114.41	–	–	–
2	1984-04-20	00:54	–	1.58257	115.38	–	–	–
2	1984-04-21	04:00	–	1.58186	116.09	–	–	Open Room
2	1984-04-22	00:58	–	1.58115	116.80	–	–	–
2	1984-04-23	00:47	–	1.58031	117.64	–	–	–
2	1984-04-24	00:38	–	1.57914	118.81	–	–	–
2	1984-04-25	00:39	–	1.57846	119.49	–	–	Room finished
2	1984-04-26	01:15	–	1.57792	120.03	–	–	Room finished
2	1984-04-27	01:06	–	1.57721	120.74	–	–	Complete
2	1984-04-28	02:47	–	1.57655	121.40	–	–	Room complete
2	1984-04-29	04:06	–	1.57571	122.24	–	–	Complete
2	1984-04-30	05:37	–	1.57490	123.05	–	–	Complete
2	1984-05-01	00:54	–	1.57457	123.38	–	–	Complete
2	1984-05-03	00:53	–	1.57333	124.62	–	–	–
2	1984-05-04	05:44	–	1.57282	125.13	–	–	–
2	1984-05-05	01:29	–	1.57254	125.41	–	–	–
2	1984-05-06	00:45	–	1.57173	126.22	–	–	Complete
2	1984-05-07	01:24	–	1.57099	126.96	–	–	Complete
2	1984-05-09	00:43	–	1.57033	127.62	–	–	–
2	1984-05-11	02:17	–	1.56906	128.89	–	–	–
2	1984-05-13	01:10	–	1.56855	129.40	–	–	–
2	1984-05-15	–	–	–	–	–	–	No data taken drill in way
2	1984-05-16	–	–	–	–	–	–	Power outage
2	1984-05-17	–	–	–	–	–	–	Power outage
2	1984-05-18	–	–	–	–	–	–	Power outage
2	1984-05-19	–	–	–	–	–	–	Power outage
2	1984-05-20	–	–	–	–	–	–	Could not read due to drill stand in way.
2	1984-05-22	01:40	–	1.56482	133.13	–	–	–
2	1984-05-25	02:21	–	1.56367	134.28	–	–	–
2	1984-05-31	21:04	–	1.56141	136.54	–	–	–
2	1984-06-06	20:36	–	1.55915	138.80	–	–	–
2	1984-06-15	04:14	–	1.55699	140.96	–	–	–
2	1984-06-21	01:29	–	1.55552	142.43	–	–	–
2	1984-06-28	01:50	–	1.55346	144.49	–	–	–
3	1984-07-12	04:55	–	5.19974	148.56	–	–	Extension tape is broken
3	1984-07-19	–	–	–	–	–	–	Tape broke. No data taken.
3	1984-07-26	–	–	–	–	–	–	No data taken
3	1984-08-01	–	–	–	–	–	–	No data taken. BO tape
3	1984-08-10	17:45	–	5.19138	156.91	–	–	–
3	1984-08-17	18:07	–	5.18467	163.62	×	–	–
3	1984-08-24	19:06	–	5.18958	158.72	–	–	–
3	1984-08-31	17:50	–	5.18777	160.52	–	–	–
3	1984-09-08	18:02	–	5.18640	161.89	–	–	–
3	1984-09-14	21:23	–	1.55148	3796.81	–	×	Ext rod
3	1984-09-21	17:28	–	1.54950	3798.79	–	×	#1 Rod Ext. [after this is an asterix which points to] #1 Rod Ext. 11ft 11.0934in [which might actually be 11ft 0.934 in]
4	1984-09-28	18:05	–	1.38549	165.52	–	–	#2 rod ext. 12ft 5.486in
4	1984-10-05	21:48	–	1.38412	166.89	–	–	–
4	1984-10-12	21:11	–	1.38298	168.04	–	–	Rod 2
4	1984-10-19	19:29	–	1.38308	167.94	–	–	Ext. Rod 2
4	1984-10-26	19:34	–	1.38163	169.38	–	–	Ext. Rod 2
4	1984-11-02	18:09	–	1.38298	168.04	–	–	Ext. Rod 2
5	1984-11-09	17:43	–	1.38359	172.66	–	–	Ext. Rod 2
5	1984-11-16	20:20	–	1.38239	173.85	–	–	Ext. Rod 2
5	1984-11-23	18:29	–	1.38179	174.46	–	–	Ext. Rod 2
5	1984-11-30	18:26	–	1.38064	175.61	–	–	Ext. Rod 2
5	1984-12-06	19:29	–	1.37978	176.47	–	–	–
5	1984-12-14	19:00	–	1.38118	175.07	–	–	Ext. Tape
5	1984-12-21	18:47	–	1.38008	176.16	–	–	Ext. Rod 2
6	1984-12-28	18:04	–	1.38384	180.18	–	–	Ext. Rod 2
6	1985-01-04	18:22	–	1.38247	181.55	–	–	Ext. Rod 2
6	1985-01-11	17:02	–	1.38186	182.16	–	–	Ext. Rod 2
6	1985-01-18	18:34	–	1.38085	183.18	–	–	Ext. Rod 2
6	1985-01-25	19:17	–	1.37945	184.58	–	–	Ext. Rod 2
6	1985-02-01	18:26	–	1.37810	185.92	–	–	Ext. Rod 2
6	1985-02-11	22:43	–	1.37714	186.89	–	–	Ext. Rod 2
6	1985-02-16	16:25	–	1.37638	187.65	–	–	Ext. Rod 2
6	1985-02-22	19:25	–	1.37546	188.56	–	–	Ext. Rod 2
6	1985-02-25	13:36	–	1.37508	188.95	–	–	Ext. Rod 2
6	1985-03-04	09:52	–	1.37399	190.04	–	–	Ext. Rod 2
7	1985-03-04	13:35	–	1.28951	190.29	–	–	–
7	1985-03-11	09:13	–	1.28948	190.32	–	–	Ext. Rod 2
7	1985-03-18	14:09	–	1.28783	191.97	–	–	Ext. Rod 2
7	1985-03-25	12:43	–	1.28742	192.38	–	–	Ext. Rod 2
7	1985-04-01	12:47	–	1.28250	197.30	×	–	Ext. Rod 2
7	1985-04-08	10:59	–	1.28633	193.47	–	–	Ext. Rod 2
7	1985-04-15	12:55	–	1.28595	193.85	–	–	Ext. Rod 2
7	1985-04-22	11:04	–	1.28430	195.50	–	–	Ext. Rod 2
7	1985-04-29	14:19	–	1.28298	196.82	–	–	Ext. Rod 2
7	1985-05-06	09:18	–	1.28267	197.13	–	–	Ext. Rod 2
7	1985-05-13	14:42	–	1.28138	198.42	–	–	Ext. Rod 2
7	1985-05-20	11:13	–	1.28034	199.46	–	–	Ext. Rod 2
7	1985-05-28	14:21	–	1.27937	200.43	–	–	Ext. Rod 2
7	1985-06-03	13:05	–	1.27846	201.34	–	–	Ext. Rod 2

Table A-8. Room D Station -1.4 m vertical mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_z (m)	δ_z (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
7	1985-06-10	10:37	–	1.27762	202.18	–	–	Ext. Rod 2
7	1985-06-17	11:07	–	1.27698	202.82	–	–	Ext. Rod 2
7	1985-06-24	10:22	–	1.42469	55.12	–	×	Ext. Rod 1
7	1985-07-01	10:55	–	1.42392	55.88	–	×	Ext. Rod 1
7	1985-07-08	14:33	–	1.27417	205.64	–	–	Ext. Rod 2
7	1985-07-16	13:33	–	1.42951	50.29	–	×	Ext. Rod 1
7	1985-07-22	08:48	–	1.42898	50.82	–	×	Ext. Rod 1
7	1985-07-29	10:40	–	1.42804	51.76	–	×	Ext. Rod 1
7	1985-08-05	13:21	–	1.27315	206.65	–	–	Ext. Rod 2
7	1985-08-12	14:29	–	1.37066	109.14	×	–	Ext. Rod 2
7	1985-08-19	14:30	–	1.26878	211.02	–	–	Ext. Rod 2
7	1985-08-28	11:13	–	1.26738	212.42	–	–	Ext. Rod 2
7	1985-09-04	10:15	–	1.26909	210.72	–	–	Ext. Rod 2
7	1985-09-09	13:05	–	1.26865	211.15	–	–	–
7	1985-09-16	13:21	–	1.26769	212.11	–	–	–
7	1985-09-23	14:47	–	1.26682	212.98	–	–	–
7	1985-09-30	11:22	–	1.26614	213.66	–	–	–
7	1985-10-07	14:14	–	1.26520	214.60	–	–	–
7	1985-10-14	11:13	–	1.26434	215.47	–	–	–
7	1985-10-21	11:04	–	1.26335	216.46	–	–	–
7	1985-10-28	10:56	–	1.26296	216.84	–	–	–
7	1985-11-04	11:13	–	1.26223	217.57	–	–	–
7	1985-11-11	14:16	–	1.26134	218.46	–	–	–
7	1985-11-19	11:04	–	1.26032	219.48	–	–	–
7	1985-11-25	11:09	–	1.25984	219.96	–	–	–
7	1985-12-02	12:28	–	1.25913	220.67	–	–	–
7	1985-12-09	12:49	–	1.25575	224.05	–	–	–
7	1985-12-16	11:34	–	1.25778	222.02	–	–	–
7	1985-12-26	09:02	–	1.25694	222.86	–	–	–
7	1985-12-31	09:12	–	1.25664	223.16	–	–	–
7	1986-01-06	12:30	–	1.25555	224.25	–	–	–
7	1986-01-20	10:47	–	1.25379	226.01	–	–	–
7	1986-02-03	14:20	–	1.25011	229.69	–	–	–
7	1986-02-10	10:56	–	1.24925	230.55	–	–	–
7	1986-02-17	11:23	–	1.24879	231.01	–	–	–
7	1986-02-28	14:41	–	1.24760	232.20	–	–	–
7	1986-03-06	10:24	–	1.24729	232.51	–	–	–
7	1986-03-10	14:10	–	1.24656	233.25	–	–	–
7	1986-03-17	09:18	–	1.24607	233.73	–	–	–
7	1986-03-24	14:26	–	1.24541	234.39	–	–	–
7	1986-03-31	10:10	–	1.24455	235.25	–	–	–
7	1986-04-14	11:06	–	1.23431	245.49	×	–	Ext. Rod 2
7	1986-04-25	11:14	–	1.24203	237.77	–	–	–
7	1986-04-28	10:43	–	1.24188	237.92	–	–	–
7	1986-05-05	11:17	–	1.24137	238.43	–	–	–
7	1986-05-13	12:23	–	1.24074	239.06	–	–	–
7	1986-05-20	10:43	–	1.24018	239.62	–	–	–
7	1986-05-28	09:15	–	1.23914	240.66	–	–	–
7	1986-06-02	10:00	–	1.23863	241.17	–	–	–
7	1986-06-09	12:23	–	1.23789	241.91	–	–	–
7	1986-06-16	10:50	–	1.23716	242.64	–	–	–
7	1986-06-24	09:12	–	1.23668	243.13	–	–	–
7	1986-06-30	10:59	–	1.23683	242.97	–	–	–
7	1986-07-07	10:42	–	1.23500	244.80	–	–	–
7	1986-07-15	09:03	–	1.23419	245.62	–	–	–
7	1986-07-21	10:56	–	1.23358	246.23	–	–	–
7	1986-07-28	11:58	–	1.23294	246.86	–	–	–
7	1986-08-04	09:24	–	1.23228	247.52	–	–	–
7	1986-08-11	10:55	–	1.23149	248.31	–	–	–
7	1986-08-18	10:47	–	1.23086	248.94	–	–	–
7	1986-08-25	11:26	–	1.22997	249.83	–	–	–
7	1986-09-08	14:31	–	1.22789	251.91	–	–	–
7	1986-09-16	09:31	–	1.22705	252.75	–	–	–
7	1986-09-23	10:42	–	1.22624	253.57	–	–	–
7	1986-09-29	11:12	–	1.22555	254.25	–	–	–
7	1986-10-06	11:21	–	1.22479	255.01	–	–	–
7	1986-10-13	13:04	–	1.22436	255.45	–	–	–
7	1986-10-20	11:06	–	1.22342	256.39	–	–	–
7	1986-10-27	13:44	–	1.22293	256.87	–	–	–
7	1986-11-03	14:13	–	1.22212	257.68	–	–	–
7	1986-11-11	13:48	–	1.22474	255.06	–	–	–
7	1986-11-17	09:22	–	1.22400	255.80	–	–	Ext. Rod 2
7	1986-11-24	12:59	–	1.22349	256.31	–	–	Ext. Rod 2
7	1986-12-03	10:44	–	1.22258	257.22	–	–	Ext. Rod 2
7	1986-12-08	10:55	–	1.22199	257.81	–	–	Ext. Rod 2
7	1986-12-15	13:21	–	1.22131	258.49	–	–	Ext. Rod 2
7	1986-12-22	14:26	–	1.37691	102.89	–	×	Ext. Rod 1
7	1986-12-30	10:30	–	1.21884	260.96	–	–	Ext. Rod 2
7	1987-01-05	13:54	–	1.21717	262.63	–	–	Ext. Rod 2
7	1987-01-13	10:37	–	1.21648	263.32	–	–	Ext. Rod 2
7	1987-02-13	09:55	–	1.21338	266.42	–	–	Ext. Rod 6
7	1987-03-16	13:58	–	1.36708	112.72	–	×	Ext. Rod 1
7	1987-05-15	10:25	–	1.36619	113.61	–	×	Ext. Rod 1
7	1987-07-10	10:35	–	1.20119	278.61	–	–	Ext. Rod 2
7	1987-08-07	13:23	–	1.19908	280.72	–	–	Ext. Rod 2
7	1987-09-04	12:59	–	1.19416	285.65	–	–	Ext. Rod 2

Table A-8. Room D Station -1.4 m vertical mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_z (m)	δ_z (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
7	1987-10-02	10:08	–	1.19504	284.76	–	–	Ext. Rod 2
7	1987-10-29	12:33	–	1.19266	287.14	–	–	–
7	1988-01-20	12:36	–	1.18532	294.49	–	–	–
7	1988-03-18	–	–	–	–	–	–	No data taken.
7	1988-04-12	13:14	–	1.17826	301.55	–	–	–
7	1988-05-12	13:40	–	1.17602	303.78	–	–	–
7	1988-06-08	13:38	–	1.17351	306.30	–	–	–
7	1988-07-06	09:49	–	1.17142	308.38	–	–	–
7	1988-08-03	08:57	–	1.16688	312.93	–	–	–
7	1988-08-31	09:21	–	1.16406	315.75	–	–	–
7	1988-09-21	12:47	–	1.16479	315.01	–	–	–
7	1988-10-26	10:44	–	1.16185	317.95	–	–	–
7	1988-11-22	10:23	–	1.15941	320.39	–	–	–
7	1988-12-21	10:34	–	1.15697	322.83	–	–	–
7	1989-01-18	10:14	–	1.15491	324.89	–	–	–
7	1989-02-14	10:25	–	1.15240	327.40	–	–	–
7	1989-03-15	10:11	–	1.14844	331.37	–	–	–
7	1989-05-10	12:39	–	1.14407	335.73	–	–	–
7	1989-06-07	13:31	–	1.14186	337.94	–	–	–
7	1989-07-07	13:08	–	1.13944	340.36	–	–	–
7	1989-07-31	13:19	–	1.13828	341.53	–	–	–
7	1989-08-31	09:56	–	1.13571	344.09	–	–	–
7	1989-09-26	12:46	–	1.13342	346.38	–	–	–
7	1989-10-26	10:11	–	1.13099	348.82	–	–	–
7	1990-01-18	13:10	–	1.12471	355.09	–	–	–
7	1990-02-15	10:11	–	1.12263	357.17	–	–	–
7	1990-06-07	13:14	–	1.11257	367.23	–	–	–
7	1991-02-26	13:21	–	1.09164	388.16	–	–	–
7	1991-03-28	09:23	–	1.08928	390.52	–	–	–
7	1991-04-29	–	–	–	–	–	–	No data due to in accessibility of room.
7	1991-05-15	–	–	–	–	–	–	No data taken - drill in way.
7	1991-05-16	–	–	–	–	–	–	No data taken - room D a red area
7	1991-05-21	–	–	–	–	–	–	Room D a red area - no access
7	1991-05-24	–	–	–	–	–	–	Area in red area - no access
7	1991-05-31	–	–	–	–	–	–	No readings taken due to training.
7	1991-06-04	14:26	–	1.08374	396.06	–	–	–
7	1991-06-25	09:20	–	1.08207	397.74	–	–	–
7	1991-07-01	13:47	–	1.11191	367.89	×	–	Ext. Rod 2
7	1991-07-08	10:35	–	1.08077	399.03	–	–	–
7	1991-07-16	09:39	–	1.08011	399.69	–	–	–
7	1991-07-23	09:20	–	1.08196	397.84	–	–	–
7	1991-07-30	12:54	–	1.07904	400.76	–	–	–
7	1991-08-06	–	–	–	–	–	–	No data taken due to shortage of time.
7	1991-08-20	09:37	–	1.07716	402.64	–	–	–
7	1991-08-29	13:15	–	1.07625	403.55	–	–	–
7	1991-09-03	11:02	–	1.07592	403.88	–	–	–
7	1991-09-10	13:06	–	1.07528	404.52	–	–	–
7	1991-09-27	10:33	–	1.07394	405.86	–	–	–
7	1991-10-03	–	–	–	–	–	–	No data taken due to roof bolding.
7	1991-10-07	13:17	–	1.07307	406.73	–	–	–
7	1991-10-15	10:05	–	1.07254	407.26	–	–	–
7	1991-10-25	10:00	–	1.07406	405.74	–	–	–
7	1991-10-29	09:59	–	1.07132	408.48	–	–	–
7	1991-11-05	13:26	–	1.07079	409.01	–	–	–
7	1991-11-12	13:10	–	1.07013	409.67	–	–	–
7	1991-12-31	10:57	–	1.06680	413.00	–	–	–

Table A-9. Room D Station +9.4 m horizontal mining sequence metadata

										Pre-Jump Fitting Inputs				Post-Jump Fitting Inputs			
s (–)	Segment Start Time (YYYY-MM-DD HH:MM)	Analysis Notes (–)	Gage Number (–)	Paired Points (–)	Point 1 y (m)	Point 2 y (m)	Estimated t_{ex} (YYYY-MM-DD HH:MM)	t_{ex} Source (–)	Shift Phase (–)	Type (–)	Start Index (–)	End Index (–)	Ignore Index (–)	Type (–)	Start Index (–)	End Index (–)	Ignore Index (–)
0	1984-03-14 16:00	Estimated start of mining Room D.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1	1984-03-22 11:30	First reading after station mined out during pass 1.	D_M23-1	1E-1F	9.28	9.28	1984-03-22 07:00	Gage installation data sheet	2	–	–	–	–	Jeffreys	1	14	–
2	1984-03-27 04:50	First reading after point 1E mined out and replaced with 2E during pass 2.	D_M23-2	2E-1F	9.34	9.28	1984-03-27 04:25	Gage installation data sheet	2	Linear	-2	-1	–	Jeffreys	1	11	–
3	1984-04-02 04:20	First reading after point 2E was cut out and reinstalled during trimming during pass 2.	D_M23-2	2E-1F	9.34	9.28	1984-04-02 03:45	Gage installation data sheet	2	Linear	-3	-2	–	Linear	1	3	[2]
4	1984-04-05 21:03	Point 1F was cut out (again) and reinstalled during trimming during pass 2.	D_M23-2	2E-1F	9.34	9.28	1984-04-05 15:19	Average of neighboring reading times	2	Linear	-2	-1	–	Linear	3	4	–
5	1984-04-09 10:03	First reading after point 1F cut out and replaced during pass 3.	D_M23-2	2E-1F	9.34	9.28	1984-04-09 08:00	Gage installation data sheet	2	Linear	-2	-1	–	Jeffreys	1	12	–
6	1984-04-15 09:45	First reading after point 2E cut out and replaced probably during a final trimming pass.	D_M23-2	2E-1F	9.34	9.28	1984-04-15 05:30	Average of neighboring reading times	2	Linear	-2	-1	–	Linear	1	2	–
7	1985-03-04 13:59	First reading after points replaced.	D_M23-2	2E-1F	9.34	9.28	–	–	2	Linear	-6	-1	[-5 -4 -3 -2]	Linear	1	4	–

Table A-10. Room D Station +9.4 m horizontal mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_x (m)	δ_x (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
1	1984-03-22	11:30	2.1	3.98221	3.87	–	–	–
1	1984-03-22	15:29	3.8	3.97815	7.94	–	–	–
1	1984-03-22	20:04	5.4	3.97530	10.78	–	–	–
1	1984-03-22	23:44	7.3	3.97281	13.27	–	–	–
1	1984-03-23	08:56	8.2	3.97088	15.20	–	–	–
1	1984-03-23	17:24	11.9	3.96850	17.59	–	–	–
1	1984-03-24	01:24	17.4	3.96685	19.24	–	–	–
1	1984-03-24	09:16	18.9	3.96560	20.48	–	–	–
1	1984-03-24	17:13	22.9	3.96481	21.27	–	–	–
1	1984-03-25	01:08	26.8	3.96413	21.96	–	–	–
1	1984-03-25	09:10	27.0	3.96339	22.69	–	–	–
1	1984-03-25	17:09	–	3.96281	23.28	–	–	[Under the distance to face column heading technician recorded] North Face in Pass 1. 2nd pass up to 75.5’ from N1100 drift.
1	1984-03-26	01:04	–	3.96248	23.61	–	–	–
1	1984-03-26	08:58	–	3.96169	24.40	–	–	[Next to the distance to face reading the technician recorded] (Pass 1)
1	1984-03-26	16:55	–	3.96207	24.01	–	–	[Under the distance to face column heading technician recorded] North Face Pass 1
1	1984-03-27	00:48	–	3.96037	25.72	–	–	–
2	1984-03-27	04:50	1.8	4.81416	26.87	–	–	–
2	1984-03-27	09:42	4.9	4.81239	28.65	–	–	–
2	1984-03-27	17:25	12.8	4.81033	30.70	–	–	–
2	1984-03-28	01:26	22.3	4.80916	31.87	–	–	–
2	1984-03-28	09:18	26.8	4.80786	33.17	–	–	1st Pass 90’
2	1984-03-28	16:43	31.1	4.80799	33.04	–	–	–
2	1984-03-29	01:25	32.0	4.80728	33.75	–	–	–
2	1984-03-29	09:15	33.5	4.80659	34.44	–	–	1st Pass 110’
2	1984-03-29	17:06	35.7	4.80588	35.15	–	–	–
2	1984-03-30	00:35	35.7	4.80560	35.43	–	–	–
2	1984-03-30	09:30	36.9	4.80474	36.29	–	–	Pass 1&2 Complete
2	1984-03-30	16:47	–	4.80527	35.76	–	–	–
2	1984-03-31	00:20	–	4.80418	36.85	–	–	Pass completed to N1420
2	1984-03-31	09:45	36.9	4.80418	36.85	–	–	Pass 1&2 Complete
2	1984-03-31	16:52	–	4.80357	37.46	–	–	–
2	1984-04-01	00:51	–	4.80319	37.84	–	–	First and second pass have been mined to N1420 drift.
2	1984-04-01	08:47	36.9	4.80284	38.20	–	–	1&2 complete
2	1984-04-01	17:18	–	4.80253	38.50	–	–	–
2	1984-04-02	00:24	–	4.80118	39.85	–	–	–
3	1984-04-02	04:20	–	4.87291	38.89	–	–	–
3	1984-04-02	09:05	56.4	4.87370	38.10	–	–	Trimming pass 2 on west rib. Trim face is at 175ft. Trimming from North to South. Taking approx 2in to 3in of west rib at 175ft station. Trucks mucking out through the N.1420 Drift.
3	1984-04-02	17:10	–	4.87266	39.14	–	–	–
3	1984-04-03	00:38	–	4.87230	39.50	–	–	–
3	1984-04-03	09:19	–	4.87164	40.16	–	–	1&2 complete
3	1984-04-03	17:16	–	4.87159	40.21	–	–	Room open
3	1984-04-04	00:34	–	4.87144	40.36	–	–	–
3	1984-04-04	08:44	–	4.87106	40.74	–	–	–
3	1984-04-04	17:30	–	4.87202	39.78	–	–	Open Face
3	1984-04-05	00:53	–	4.87075	41.05	–	–	Miner is trimming between 50ft-20ft from N1100 along west rib.
3	1984-04-05	09:36	–	4.87063	41.17	–	–	–
4	1984-04-05	21:03	–	–	–	–	–	–
4	1984-04-06	07:37	–	5.08000	41.96	–	–	1&2 complete. Mining east wall out to final rib
4	1984-04-06	09:14	–	5.08056	41.40	–	–	–
4	1984-04-07	00:40	-47.7	5.08043	41.53	–	–	Face pass 3 at 28.5’ from N1100 rib.
4	1984-04-07	09:04	–	5.08025	41.71	–	–	–
4	1984-04-07	17:21	-36.0	5.07954	42.42	–	–	–
4	1984-04-08	01:00	-29.4	5.07957	42.39	–	–	Face at 88.5 ft from N1100 rib.
4	1984-04-08	08:39	-22.6	5.07924	42.72	–	–	Pass 3 face at 111’ from N1100 rib.
4	1984-04-08	16:54	-15.2	5.07893	43.03	–	–	50’ back to face
4	1984-04-09	00:50	-6.7	5.07817	43.79	–	–	163’ from N1100
4	1984-04-09	07:40	-0.6	5.07522	46.74	–	–	–
5	1984-04-09	10:03	1.5	5.10487	48.72	–	–	Assume 2E-1F was destroyed and reinstalled for 10:00 reading
5	1984-04-09	17:38	6.1	5.09867	54.91	–	–	–
5	1984-04-10	01:29	14.6	5.09618	57.40	–	–	–
5	1984-04-10	09:19	–	5.09372	59.87	–	–	–
5	1984-04-10	17:06	19.8	5.09176	61.82	–	–	–
5	1984-04-11	01:05	25.1	5.09153	62.05	–	–	Face pass 3 at 267.5ft at 0152 hrs.
5	1984-04-11	08:28	32.0	5.09034	63.24	–	–	–
5	1984-04-11	17:01	41.1	5.08945	64.13	–	–	–
5	1984-04-12	01:44	33.5	5.08874	64.84	–	–	–
5	1984-04-12	08:33	22.9	5.08795	65.63	–	–	–
5	1984-04-12	16:28	21.0	5.08770	65.89	–	–	–
5	1984-04-13	00:44	–	5.08724	66.34	–	–	–
5	1984-04-13	00:44	–	5.08724	66.34	–	–	–
5	1984-04-13	08:53	9.8	5.08597	67.61	–	–	–
5	1984-04-13	16:36	0.0	5.08498	68.60	–	–	–
5	1984-04-14	00:55	9.4	5.08343	70.15	–	–	–
5	1984-04-14	09:24	15.5	5.08173	71.85	–	–	–
5	1984-04-14	16:25	33.5	5.08119	72.39	–	–	–
5	1984-04-15	01:16	–	5.08036	73.23	–	–	–
6	1984-04-15	09:45	–	5.11942	74.07	–	–	Room Open

Table A-10. Room D Station +9.4 m horizontal mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_x (m)	δ_x (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
6	1984-04-15	16:23	–	5.11874	74.75	–	–	–
6	1984-04-16	01:11	–	5.11805	75.44	–	–	–
6	1984-04-16	08:48	–	5.11785	75.64	–	–	Room Complete
6	1984-04-17	–	–	–	–	–	–	No data recorded
6	1984-04-18	09:54	–	5.11660	76.89	–	–	Finished Room
6	1984-04-18	17:14	–	5.11426	79.22	–	–	Complete
6	1984-04-19	05:54	–	5.11492	78.56	–	–	–
6	1984-04-20	00:48	–	5.11393	79.55	–	–	–
6	1984-04-21	04:10	–	5.11284	80.65	–	–	Room Open
6	1984-04-22	01:11	–	5.11226	81.23	–	–	–
6	1984-04-23	00:45	–	5.11160	81.89	–	–	–
6	1984-04-24	00:49	–	5.11089	82.60	–	–	–
6	1984-04-25	00:46	–	5.11109	82.40	–	–	–
6	1984-04-26	00:54	–	5.10934	84.15	–	–	Room Finished
6	1984-04-27	01:28	–	5.10982	83.67	–	–	Complete
6	1984-04-28	03:01	–	5.10939	84.10	–	–	Complete
6	1984-04-29	04:11	–	5.10891	84.58	–	–	Complete
6	1984-04-30	05:45	–	5.10842	85.06	–	–	Complete
6	1984-05-01	01:02	–	5.10746	86.03	–	–	Complete
6	1984-05-03	01:01	–	5.10644	87.05	–	–	Complete
6	1984-05-04	05:59	–	5.10596	87.53	–	–	–
6	1984-05-05	01:27	–	5.10555	87.94	–	–	–
6	1984-05-06	00:57	–	5.10504	88.44	–	–	Complete
6	1984-05-07	01:20	–	5.10507	88.42	–	–	Complete
6	1984-05-09	00:53	–	5.10385	89.64	–	–	–
6	1984-05-11	02:14	–	5.10324	90.25	–	–	–
6	1984-05-13	01:34	–	5.10291	90.58	–	–	–
6	1984-05-15	00:33	–	5.10187	91.62	–	–	–
6	1984-05-16	–	–	–	–	–	–	Power outage
6	1984-05-17	–	–	–	–	–	–	Power outage
6	1984-05-18	–	–	–	–	–	–	Power outage
6	1984-05-19	–	–	–	–	–	–	Power outage
6	1984-05-20	01:26	–	5.10007	93.42	–	–	–
6	1984-05-22	01:35	–	5.09966	93.83	–	–	–
6	1984-05-25	02:36	–	5.09864	94.84	–	–	–
6	1984-05-31	21:17	–	5.09707	96.42	–	–	–
6	1984-06-06	13:53	–	5.09458	98.91	–	–	–
6	1984-06-15	04:33	–	5.09311	100.38	–	–	–
6	1984-06-21	01:47	–	5.09217	101.32	–	–	–
6	1984-06-28	01:47	–	5.09049	103.00	–	–	–
6	1984-07-12	04:28	–	5.08757	105.92	–	–	–
6	1984-07-19	01:38	–	5.08754	105.94	–	–	–
6	1984-07-26	02:08	–	5.08475	108.74	–	–	–
6	1984-08-01	10:07	–	5.08386	109.63	–	–	–
6	1984-08-10	17:27	–	5.08155	111.94	–	–	–
6	1984-08-17	17:55	–	5.07665	116.84	×	–	–
6	1984-08-24	19:16	–	5.08033	113.16	–	–	–
6	1984-08-31	17:10	–	5.07980	113.69	–	–	–
6	1984-09-08	17:45	–	5.07822	115.27	–	–	–
6	1984-09-14	21:19	–	5.07721	116.28	–	–	–
6	1984-09-21	17:22	–	5.07606	117.42	–	–	–
6	1984-09-28	18:22	–	5.07573	117.75	–	–	–
6	1984-10-05	22:03	–	5.07456	118.92	–	–	–
6	1984-10-12	21:20	–	5.07345	120.04	–	–	–
6	1984-10-19	19:16	–	5.07032	123.16	–	–	–
6	1984-10-26	19:32	–	5.06893	124.56	–	–	–
6	1984-11-02	18:06	–	5.06819	125.30	–	–	–
6	1984-11-09	17:24	–	5.06885	124.64	–	–	–
6	1984-11-16	20:34	–	5.06743	126.06	–	–	–
6	1984-11-23	18:35	–	5.06666	126.82	–	–	–
6	1984-11-30	18:30	–	5.06537	128.12	–	–	–
6	1984-12-06	19:28	–	5.06509	128.40	–	–	–
6	1984-12-14	18:56	–	5.06425	129.24	–	–	–
6	1984-12-21	18:58	–	5.06308	130.40	–	–	–
6	1984-12-28	18:01	–	5.06179	131.70	–	–	–
6	1985-01-04	18:31	–	5.06100	132.49	–	–	–
6	1985-01-11	17:11	–	5.05983	133.66	–	–	–
6	1985-01-18	18:43	–	5.05877	134.72	–	–	–
6	1985-01-25	19:29	–	5.05775	135.74	–	–	–
6	1985-02-01	18:35	–	5.05676	136.73	–	–	–
6	1985-02-11	22:41	–	5.05590	137.59	–	–	–
6	1985-02-16	16:33	–	5.05605	137.44	–	–	–
6	1985-02-22	19:22	–	5.05574	137.74	–	–	–
6	1985-02-25	13:35	–	5.05506	138.43	–	–	–
6	1985-03-04	09:58	–	5.05303	140.46	–	–	–
7	1985-03-04	13:59	–	5.05008	140.88	–	–	–
7	1985-03-11	07:27	–	5.05064	140.32	–	–	–
7	1985-03-18	14:19	–	5.04919	141.77	–	–	–
7	1985-03-25	12:38	–	5.04876	142.20	–	–	–
7	1985-04-01	12:44	–	5.04414	146.82	×	–	–
7	1985-04-08	11:06	–	5.04800	142.96	–	–	–
7	1985-04-15	12:51	–	5.04734	143.62	–	–	–
7	1985-04-22	11:15	–	5.04695	144.00	–	–	–
7	1985-04-29	14:16	–	5.04612	144.84	–	–	–
7	1985-05-06	09:27	–	5.04533	145.63	–	–	–
7	1985-05-13	14:45	–	5.04449	146.47	–	–	–

Table A-10. Room D Station +9.4 m horizontal mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_x (m)	δ_x (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
7	1985-05-20	11:16	–	5.04419	146.77	–	–	–
7	1985-05-28	14:19	–	5.04304	147.91	–	–	–
7	1985-06-03	13:14	–	5.04220	148.75	–	–	–
7	1985-06-10	10:44	–	5.04160	149.36	–	–	–
7	1985-06-17	11:06	–	5.04139	149.56	–	–	–
7	1985-06-24	10:28	–	5.04078	150.17	–	–	–
7	1985-07-01	11:06	–	5.04038	150.58	–	–	–
7	1985-07-08	14:31	–	5.03944	151.52	–	–	–
7	1985-07-16	13:29	–	5.03883	152.13	–	–	–
7	1985-07-22	08:57	–	5.03809	152.87	–	–	–
7	1985-07-29	10:45	–	5.03771	153.25	–	–	–
7	1985-08-05	13:26	–	5.03921	151.75	–	–	–
7	1985-08-12	14:35	–	5.03591	155.05	–	–	–
7	1985-08-19	14:28	–	5.03502	155.94	–	–	–
7	1985-08-28	11:20	–	5.03415	156.80	–	–	–
7	1985-09-04	10:08	–	5.03659	154.37	–	–	–
7	1985-09-09	13:23	–	5.03601	154.95	–	–	–
7	1985-09-16	13:16	–	5.03555	155.41	–	–	–
7	1985-09-23	14:53	–	5.03491	156.04	–	–	–
7	1985-09-30	11:19	–	5.03458	156.37	–	–	–
7	1985-10-07	14:22	–	5.03352	157.44	–	–	–
7	1985-10-14	11:10	–	5.03273	158.23	–	–	–
7	1985-10-21	11:15	–	5.03215	158.81	–	–	–
7	1985-10-28	11:06	–	5.03222	158.73	–	–	–
7	1985-11-04	11:21	–	5.03144	159.52	–	–	–
7	1985-11-11	14:24	–	5.03077	160.18	–	–	–
7	1985-11-19	10:59	–	5.03022	160.74	–	–	–
7	1985-11-25	11:22	–	5.02956	161.40	–	–	–
7	1985-12-02	12:34	–	5.02910	161.86	–	–	–
7	1985-12-09	12:59	–	5.02846	162.49	–	–	–
7	1985-12-16	–	–	–	–	–	–	–
7	1985-12-26	–	–	–	–	–	–	Blocked by core
7	1985-12-31	–	–	–	–	–	–	Blocked by core
7	1986-01-06	–	–	–	–	–	–	Blocked by core
7	1986-01-20	–	–	–	–	–	–	Blocked by core
7	1986-02-03	–	–	–	–	–	–	Blocked by core
7	1986-02-10	–	–	–	–	–	–	Blocked by core
7	1986-02-17	–	–	–	–	–	–	Blocked by core
7	1986-02-28	–	–	–	–	–	–	Blocked by core
7	1986-03-06	–	–	–	–	–	–	Blocked by core
7	1986-03-10	–	–	–	–	–	–	Blocked by core
7	1986-03-17	–	–	–	–	–	–	Blocked by core
7	1986-03-24	–	–	–	–	–	–	Blocked by core
7	1986-03-31	–	–	–	–	–	–	Blocked by core
7	1986-04-14	–	–	–	–	–	–	Blocked by core
7	1986-04-25	–	–	–	–	–	–	Blocked by core
7	1986-04-28	–	–	–	–	–	–	Blocked by core
7	1986-05-05	–	–	–	–	–	–	Blocked by core
7	1986-05-13	–	–	–	–	–	–	Blocked by core
7	1986-05-20	–	–	–	–	–	–	Blocked by core
7	1986-05-28	–	–	–	–	–	–	Blocked by core
7	1986-06-02	–	–	–	–	–	–	Blocked by core
7	1986-06-09	–	–	–	–	–	–	Blocked by core
7	1986-06-16	–	–	–	–	–	–	Blocked by core
7	1986-06-24	–	–	–	–	–	–	Blocked by core
7	1986-06-30	–	–	–	–	–	–	Blocked by core
7	1986-07-07	–	–	–	–	–	–	Blocked by core
7	1986-07-15	–	–	–	–	–	–	Blocked by core
7	1986-07-21	–	–	–	–	–	–	Blocked
7	1986-07-28	11:55	–	5.00819	182.76	–	–	–
7	1986-08-04	09:18	–	5.00812	182.84	–	–	–
7	1986-08-11	10:51	–	5.00705	183.91	–	–	–
7	1986-08-18	10:43	–	5.00657	184.39	–	–	–
7	1986-08-25	11:23	–	5.00624	184.72	–	–	–
7	1986-09-08	14:26	–	5.00469	186.27	–	–	–
7	1986-09-16	09:28	–	5.00395	187.00	–	–	–
7	1986-09-23	10:37	–	5.00367	187.28	–	–	–
7	1986-09-29	11:07	–	5.00283	188.12	–	–	–
7	1986-10-06	11:15	–	5.00240	188.55	–	–	–
7	1986-10-13	13:18	–	5.00174	189.21	–	–	–
7	1986-10-20	11:16	–	5.00154	189.42	–	–	–
7	1986-10-27	13:57	–	5.00098	189.98	–	–	–
7	1986-11-03	14:04	–	5.00014	190.81	–	–	–
7	1986-11-11	13:09	–	5.00235	188.60	–	–	–
7	1986-11-17	09:20	–	5.00225	188.71	–	–	–
7	1986-11-24	12:55	–	5.00187	189.09	–	–	–
7	1986-12-03	11:01	–	5.00063	190.33	–	–	–
7	1986-12-08	10:50	–	5.00035	190.61	–	–	–
7	1986-12-15	13:18	–	4.99963	191.32	–	–	–
7	1986-12-22	14:18	–	4.99867	192.29	–	–	–
7	1986-12-30	10:47	–	4.99778	193.18	–	–	–
7	1987-01-05	13:48	–	4.99511	195.84	–	–	–
7	1987-01-13	10:33	–	4.99450	196.45	–	–	–
7	1987-02-13	10:14	–	4.99247	198.49	–	–	–
7	1987-03-16	14:20	–	4.98998	200.97	–	–	–
7	1987-05-15	11:08	–	4.98846	202.50	–	–	–

Table A-10. Room D Station +9.4 m horizontal mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_x (m)	δ_x (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
7	1987-07-10	10:28	–	4.98292	208.04	–	–	–
7	1987-08-07	13:21	–	4.98058	210.37	–	–	–
7	1987-09-04	12:49	–	4.97614	214.82	–	–	–
7	1987-10-02	10:28	–	4.97708	213.88	–	–	–
7	1987-10-29	12:46	–	4.97515	215.81	–	–	–
7	1988-01-20	12:53	–	4.97030	220.66	–	–	–
7	1988-03-18	–	–	–	–	–	–	No data recorded
7	1988-04-12	13:08	–	4.96468	226.27	–	–	–
7	1988-05-12	13:57	–	4.96291	228.05	–	–	–
7	1988-06-08	13:13	–	4.96090	230.06	–	–	–
7	1988-07-06	09:41	–	4.95930	231.66	–	–	–
7	1988-08-03	08:51	–	4.95513	235.82	–	–	–
7	1988-08-31	09:08	–	4.95394	237.02	–	–	–
7	1988-09-21	12:43	–	4.95460	236.36	–	–	–
7	1988-10-26	12:32	–	4.95196	239.00	–	–	–
7	1988-11-22	10:13	–	4.95069	240.27	–	–	–
7	1988-12-21	10:31	–	4.95148	239.48	–	–	–
7	1989-01-18	10:08	–	4.94723	243.72	–	–	–
7	1989-02-14	10:20	–	4.94558	245.37	–	–	–
7	1989-03-15	10:05	–	4.94309	247.86	–	–	–
7	1989-05-10	13:10	–	4.93982	251.14	–	–	–
7	1989-06-07	14:02	–	4.93773	253.22	–	–	–
7	1989-07-07	13:15	–	4.93570	255.25	–	–	–
7	1989-07-31	13:41	–	4.93575	255.20	–	–	–
7	1989-08-31	10:43	–	4.93392	257.03	–	–	–
7	1989-09-26	12:40	–	4.93253	258.43	–	–	–
7	1989-10-26	10:38	–	4.93090	260.05	–	–	–
7	1990-01-18	13:08	–	4.92603	264.93	–	–	–
7	1990-02-15	10:30	–	4.92397	266.99	–	–	–
7	1990-06-07	13:23	–	4.91731	273.64	–	–	–
7	1991-02-26	13:53	–	4.90507	285.89	–	–	–
7	1991-03-28	09:49	–	4.90085	290.10	–	–	–
7	1991-04-29	–	–	–	–	–	–	No data taken. Inaccessibility to room.
7	1991-05-16	–	–	–	–	–	–	No data taken - room D a red area
7	1991-05-21	–	–	–	–	–	–	Room D a red area - no access
7	1991-05-24	–	–	–	–	–	–	Area in red area - no access
7	1991-05-31	–	–	–	–	–	–	No readings taken due to training.
7	1991-06-04	14:34	–	4.89948	291.47	–	–	–
7	1991-06-25	09:33	–	4.89598	294.98	–	–	–
7	1991-07-01	13:40	–	4.89521	295.74	–	–	–
7	1991-07-08	10:51	–	4.89496	296.00	–	–	–
7	1991-07-16	09:33	–	4.89443	296.53	–	–	–
7	1991-07-23	09:36	–	4.89692	294.04	–	–	–
7	1991-07-30	13:10	–	4.89384	297.11	–	–	–
7	1991-08-16	–	–	–	–	–	–	No data recorded
7	1991-08-20	09:04	–	4.89290	298.05	–	–	–
7	1991-08-29	13:20	–	4.89196	298.99	–	–	–
7	1991-09-03	10:52	–	4.89166	299.30	–	–	–
7	1991-09-10	13:31	–	4.89146	299.50	–	–	–
7	1991-09-27	10:01	–	4.89041	300.54	–	–	–
7	1991-10-03	–	–	–	–	–	–	No data recorded
7	1991-10-07	13:09	–	4.89006	300.90	–	–	–
7	1991-10-15	10:16	–	4.88935	301.61	–	–	–
7	1991-10-25	09:42	–	4.88887	302.09	–	–	–
7	1991-10-29	10:16	–	4.88887	302.09	–	–	–
7	1991-11-05	13:15	–	4.88848	302.47	–	–	–
7	1991-11-12	14:38	–	4.88820	302.75	–	–	–
7	1991-12-31	12:01	–	4.88577	305.19	–	–	–

Table A-11. Room D Station +9.4 m vertical mining sequence metadata

										Pre-Jump Fitting Inputs				Post-Jump Fitting Inputs			
s	Segment Start Time	Analysis Notes	Gage Number	Paired Points	Point 1 y	Point 2 y	Estimated t_{ex}	t_{ex} Source	Shift Phase	Type	Start Index	End Index	Ignore Index	Type	Start Index	End Index	Ignore Index
(–)	(YYYY-MM-DD HH:MM)	(–)	(–)	(–)	(m)	(m)	(YYYY-MM-DD HH:MM)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)
0	1984-03-14 16:00	Estimated start of mining Room D.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1	1984-03-22 11:16	First reading after station mined out during pass 1.	D_M21-1	1A-1B	9.37	9.37	1984-03-22 07:00	Gage installation data sheet	2	–	–	–	–	Jeffreys	1	15	[10]
2	1984-04-09 10:06	First reading after point 1B mined out and replaced with point 3B during pass 3.	D_M21-3	1A-3B	9.34	9.37	1984-04-09 08:00	Gage installation data sheet	2	Linear	-2	-1	–	Jeffreys	1	13	–
3	1985-03-04 13:33	First reading after points replaced.	D_M21-3	1A-3B	9.34	9.37	–	–	2	Linear	-2	-1	–	Linear	1	4	–

Table A-12. Room D Station +9.4 m vertical mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_z (m)	δ_z (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
1	1984-03-22	11:16	2.1	3.30289	7.49	–	–	–
1	1984-03-22	15:22	3.8	3.29537	15.01	–	–	–
1	1984-03-22	20:10	5.4	3.28920	21.18	–	–	–
1	1984-03-22	23:50	7.3	3.28536	25.02	–	–	1A-1B 1G-1H readings reversed
1	1984-03-23	08:52	8.2	3.28231	28.07	–	–	–
1	1984-03-23	17:15	11.9	3.27853	31.85	–	–	–
1	1984-03-24	01:09	17.4	3.27571	34.67	–	–	–
1	1984-03-24	09:12	18.9	3.27416	36.22	–	–	–
1	1984-03-24	17:21	22.9	3.27241	37.97	–	–	–
1	1984-03-25	00:55	26.8	3.27378	36.60	×	–	–
1	1984-03-25	09:08	27.0	3.27058	39.80	–	–	–
1	1984-03-25	17:04	–	3.26956	40.82	–	–	[Under the distance to face column heading technician recorded] North Face in Pass 1. 2nd pass up to 75.5’ from N1100 drift.
1	1984-03-26	00:59	–	3.26885	41.53	–	–	[Next to the distance to face reading the technician recorded] (Pass 1)
1	1984-03-26	08:51	–	3.26814	42.24	–	–	–
1	1984-03-26	16:44	–	3.26738	43.00	–	–	[Under the distance to face column heading technician recorded] North Face Pass 1
1	1984-03-27	00:35	–	3.26565	44.73	–	–	–
1	1984-03-27	09:37	4.9	3.25775	52.63	–	–	–
1	1984-03-27	17:20	12.8	3.25364	56.74	–	–	–
1	1984-03-28	01:19	22.3	3.25361	56.77	×	–	–
1	1984-03-28	09:14	26.8	3.24983	60.55	–	–	1st Pass 90’
1	1984-03-28	16:58	31.1	3.24869	61.70	–	–	–
1	1984-03-29	01:18	32.0	3.24719	63.20	–	–	–
1	1984-03-29	09:08	33.5	3.24612	64.26	–	–	1st Pass 110’
1	1984-03-29	17:00	35.7	3.24551	64.87	–	–	–
1	1984-03-30	00:36	35.7	3.24467	65.71	–	–	–
1	1984-03-30	09:37	36.9	3.24383	66.55	–	–	Pass 1&2 Complete
1	1984-03-30	16:42	–	3.24330	67.08	–	–	–
1	1984-03-31	00:23	–	3.24267	67.72	–	–	Pass completed to N1420
1	1984-03-31	09:39	36.9	3.24228	68.10	–	–	Pass 1&2 Complete
1	1984-03-31	16:46	–	3.24160	68.78	–	–	–
1	1984-04-01	00:47	–	3.24094	69.44	–	–	First and second pass has been mined to N1420 drift.
1	1984-04-01	08:42	36.9	3.24061	69.77	–	–	1&2 complete
1	1984-04-01	17:13	–	3.23985	70.54	–	–	–
1	1984-04-02	00:21	–	3.23952	70.87	–	–	–
1	1984-04-02	09:06	56.4	3.23891	71.48	–	–	–
1	1984-04-02	17:04	–	3.23878	71.60	–	–	–
1	1984-04-03	00:36	–	3.23814	72.24	–	–	–
1	1984-04-03	09:26	–	3.23741	72.97	–	–	1&2 complete
1	1984-04-03	17:08	–	3.23680	73.58	–	–	Room open
1	1984-04-04	00:30	–	3.23675	73.64	–	–	–
1	1984-04-04	08:35	–	3.23649	73.89	–	–	–
1	1984-04-04	17:25	–	3.23606	74.32	–	–	–
1	1984-04-05	00:49	–	3.23835	72.04	×	–	Miner is trimming between 50ft-20ft from N1100 along west rib.
1	1984-04-05	09:38	–	3.23525	75.13	–	–	–
1	1984-04-06	09:07	–	3.23362	76.76	–	–	–
1	1984-04-06	–	–	–	–	–	–	1&2 complete. Mining east wall out to final rib.
1	1984-04-07	00:45	-47.7	3.23286	77.52	–	–	Face pass 3 at 28.5’ from N1100 rib.
1	1984-04-07	08:58	–	3.23233	78.05	–	–	–
1	1984-04-07	17:15	-36.0	3.23228	78.11	–	–	–
1	1984-04-08	00:54	-29.4	3.23159	78.79	–	–	Face at 88.5 ft from N1100 rib.
1	1984-04-08	08:33	-22.6	3.23139	78.99	–	–	Pass 3 face at 111’ from N1100 rib.
1	1984-04-08	16:48	-15.2	3.23068	79.71	–	–	50’ back to face
1	1984-04-09	00:46	-6.7	3.22948	80.90	–	–	163’ from N1100
1	1984-04-09	07:34	-0.6	3.22661	83.77	–	–	–
2	1984-04-09	10:06	1.5	1.56091	86.63	–	–	–
2	1984-04-09	17:35	6.1	1.55900	88.53	–	–	–
2	1984-04-10	01:23	14.6	1.55372	93.82	–	–	–
2	1984-04-10	09:15	–	1.55143	96.10	–	–	–
2	1984-04-10	17:04	19.8	1.54986	97.68	–	–	–
2	1984-04-11	01:00	25.1	1.54897	98.57	–	–	–
2	1984-04-11	08:24	32.0	1.54777	99.76	–	–	–
2	1984-04-11	16:58	41.1	1.54719	100.34	–	–	–
2	1984-04-12	01:39	33.5	1.54622	101.31	–	–	–
2	1984-04-12	08:26	22.9	1.54589	101.64	–	–	–
2	1984-04-12	16:25	21.0	1.54513	102.40	–	–	–
2	1984-04-13	00:38	–	1.54442	103.11	–	–	–
2	1984-04-13	08:55	9.8	1.54358	103.95	–	–	–
2	1984-04-13	16:50	0.0	1.54198	105.55	–	–	–
2	1984-04-14	00:50	9.4	1.53965	107.89	–	–	–
2	1984-04-14	09:20	15.5	1.53810	109.44	–	–	–
2	1984-04-14	16:21	33.5	1.53744	110.10	–	–	–
2	1984-04-15	01:12	–	1.53609	111.44	–	–	–
2	1984-04-15	09:55	–	1.53500	112.54	–	–	Room Open
2	1984-04-15	16:21	–	1.53444	113.09	–	–	–
2	1984-04-16	01:07	–	1.53411	113.42	–	–	–
2	1984-04-16	08:50	–	1.53355	113.98	–	–	Room Complete
2	1984-04-17	–	–	–	–	–	–	No data recorded. Mine shutdown.
2	1984-04-18	09:47	–	1.53076	116.78	–	–	Finished Room
2	1984-04-18	17:09	–	1.53048	117.06	–	–	Complete
2	1984-04-19	05:49	–	1.52977	117.77	–	–	–
2	1984-04-20	00:44	–	1.52956	117.97	–	–	–

Table A-12. Room D Station +9.4 m vertical mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_z (m)	δ_z (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
2	1984-04-21	03:30	–	1.52781	119.72	–	–	Room Open
2	1984-04-22	01:06	–	1.52684	120.69	–	–	–
2	1984-04-23	00:41	–	1.52631	121.22	–	–	–
2	1984-04-24	00:45	–	1.52502	122.52	–	–	–
2	1984-04-25	00:44	–	1.52461	122.92	–	–	–
2	1984-04-26	00:52	–	1.52403	123.51	–	–	Room finished
2	1984-04-26	00:52	–	1.52403	123.51	–	–	–
2	1984-04-27	01:22	–	1.52303	124.50	–	–	Complete
2	1984-04-28	02:57	–	1.52225	125.29	–	–	Complete
2	1984-04-29	04:18	–	1.52197	125.57	–	–	–
2	1984-04-30	05:49	–	1.52093	126.61	–	–	–
2	1984-05-01	01:00	–	1.52072	126.81	–	–	Complete
2	1984-05-03	00:59	–	1.51925	128.28	–	–	Complete
2	1984-05-04	05:56	–	1.51925	128.28	–	–	–
2	1984-05-05	01:23	–	1.51803	129.50	–	–	–
2	1984-05-06	00:52	–	1.51768	129.86	–	–	Complete
2	1984-05-07	01:16	–	1.51732	130.21	–	–	Complete
2	1984-05-09	00:49	–	1.51641	131.13	–	–	–
2	1984-05-11	02:08	–	1.51557	131.97	–	–	–
2	1984-05-13	01:31	–	1.51455	132.98	–	–	–
2	1984-05-15	00:30	–	1.51127	136.26	–	–	–
2	1984-05-16	–	–	–	–	–	–	Power outage
2	1984-05-17	–	–	–	–	–	–	Power outage
2	1984-05-18	–	–	–	–	–	–	Power outage
2	1984-05-19	–	–	–	–	–	–	Power outage
2	1984-05-20	01:20	–	1.51150	136.03	–	–	–
2	1984-05-22	01:27	–	1.51102	136.51	–	–	–
2	1984-05-25	02:30	–	1.50965	137.88	–	–	–
2	1984-05-31	21:20	–	1.50721	140.32	–	–	–
2	1984-06-06	13:55	–	1.50520	142.33	–	–	–
2	1984-06-15	04:35	–	1.50254	145.00	–	–	–
2	1984-06-21	01:45	–	1.50096	146.57	–	–	–
2	1984-06-28	01:45	–	1.49931	148.22	–	–	–
2	1984-07-12	04:26	–	1.49578	151.75	–	–	–
2	1984-07-19	01:38	–	1.49504	152.49	–	–	–
2	1984-07-26	02:05	–	1.49243	155.11	–	–	–
2	1984-08-01	10:05	–	1.49062	156.91	–	–	–
2	1984-08-10	17:24	–	1.48697	160.57	–	–	–
2	1984-08-17	17:53	–	1.48285	164.68	×	–	–
2	1984-08-24	19:14	–	1.48577	161.76	–	–	–
2	1984-08-31	17:00	–	1.48402	163.51	–	–	–
2	1984-09-08	17:40	–	1.48209	165.44	–	–	–
2	1984-09-14	21:18	–	1.48069	166.84	–	–	–
2	1984-09-21	17:20	–	1.47904	168.49	–	–	–
2	1984-09-28	18:19	–	1.47831	169.23	–	–	–
2	1984-10-05	22:01	–	1.47676	170.78	–	–	–
2	1984-10-12	21:19	–	1.47554	172.00	–	–	–
2	1984-10-19	19:14	–	1.47147	176.06	–	–	–
2	1984-10-26	19:31	–	1.47295	174.59	–	–	–
2	1984-11-02	18:05	–	1.46954	177.99	–	–	–
2	1984-11-09	17:23	–	1.47005	177.48	–	–	–
2	1984-11-16	20:21	–	1.46855	178.98	–	–	–
2	1984-11-23	18:34	–	1.46731	180.23	–	–	–
2	1984-11-30	18:28	–	1.46627	181.27	–	–	–
2	1984-12-06	19:27	–	1.46520	182.33	–	–	–
2	1984-12-14	18:56	–	1.46350	184.04	–	–	–
2	1984-12-21	18:57	–	1.46230	185.23	–	–	–
2	1984-12-28	18:00	–	1.46045	187.08	–	–	–
2	1985-01-04	18:30	–	1.45870	188.84	–	–	Ext. Tape
2	1985-01-11	17:10	–	1.45862	188.91	–	–	Ext. Tape
2	1985-01-18	18:42	–	1.45710	190.44	–	–	Ext. Tape
2	1985-01-25	19:28	–	1.45524	192.29	–	–	Ext. Rod 2
2	1985-02-01	18:36	–	1.45400	193.54	–	–	Ext. Tape
2	1985-02-11	22:40	–	1.45321	194.32	–	–	Ext. Tape
2	1985-02-16	16:32	–	1.45227	195.26	–	–	Ext. Rod 2
2	1985-02-22	19:21	–	1.45123	196.30	–	–	Ext. Tape
2	1985-02-25	13:33	–	1.45090	196.63	–	–	Ext. Tape
2	1985-03-04	09:58	–	1.45011	197.42	–	–	Ext. Tape
3	1985-03-04	13:33	–	1.21590	197.77	–	–	–
3	1985-03-11	09:25	–	1.21592	197.74	–	–	Ext. Rod 2
3	1985-03-18	14:18	–	1.21412	199.55	–	–	Ext. Rod 2
3	1985-03-25	12:37	–	1.21341	200.26	–	–	Ext. Rod 2
3	1985-04-01	12:43	–	1.20871	204.96	×	–	Ext. Rod 2
3	1985-04-08	11:10	–	1.21267	200.99	–	–	Ext. Rod 2
3	1985-04-15	12:52	–	1.21173	201.93	–	–	Ext. Rod 2
3	1985-04-22	11:14	–	1.21087	202.80	–	–	Ext. Rod 2
3	1985-04-29	14:15	–	1.20957	204.09	–	–	Ext. Rod 2
3	1985-05-06	09:28	–	1.20894	204.73	–	–	Ext. Rod 2
3	1985-05-13	14:44	–	1.20769	205.97	–	–	Ext. Rod 2
3	1985-05-20	11:17	–	1.20686	206.81	–	–	Ext. Rod 2
3	1985-05-28	14:18	–	1.20569	207.98	–	–	Ext. Rod 2
3	1985-06-03	13:12	–	1.20500	208.66	–	–	Ext. Rod 2
3	1985-06-10	10:43	–	1.20396	209.71	–	–	Ext. Rod 2
3	1985-06-17	11:05	–	1.20335	210.32	–	–	Ext. Rod 2
3	1985-06-24	10:27	–	1.35113	62.54	–	×	Ext. Rod 1
3	1985-07-01	11:06	–	1.35021	63.45	–	×	Ext. Rod 1

Table A-12. Room D Station +9.4 m vertical mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_z (m)	δ_z (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
3	1985-07-08	14:31	–	1.19995	213.72	–	–	Ext. Rod 2
3	1985-07-15	–	–	–	–	–	–	Blocked by core
3	1985-07-16	13:28	–	1.35588	57.79	–	×	Ext. Rod 1
3	1985-07-22	08:56	–	1.35517	58.50	–	×	Ext. Rod 1
3	1985-07-29	10:44	–	1.35418	59.49	–	×	Ext. Rod 1
3	1985-08-05	13:25	–	1.19929	214.38	–	–	Ext. Rod 2
3	1985-08-12	14:35	–	1.19537	218.29	–	–	Ext. Rod 2
3	1985-08-19	14:27	–	1.19489	218.77	–	–	Ext. Rod 2
3	1985-08-28	11:19	–	1.19370	219.97	–	–	–
3	1985-09-04	10:18	–	1.19560	218.06	–	–	–
3	1985-09-09	13:21	–	1.19479	218.88	–	–	–
3	1985-09-16	13:15	–	1.19400	219.66	–	–	–
3	1985-09-23	14:53	–	1.19311	220.55	–	–	–
3	1985-09-30	11:18	–	1.19243	221.24	–	–	–
3	1985-10-07	14:21	–	1.19129	222.38	–	–	–
3	1985-10-14	11:10	–	1.19047	223.19	–	–	–
3	1985-10-21	11:14	–	1.18938	224.29	–	–	–
3	1985-10-28	11:05	–	1.18910	224.56	–	–	–
3	1985-11-04	11:20	–	1.18814	225.53	–	–	–
3	1985-11-11	14:24	–	1.18722	226.44	–	–	–
3	1985-11-19	10:56	–	1.18646	227.21	–	–	–
3	1985-11-25	11:21	–	1.18590	227.77	–	–	–
3	1985-12-02	12:35	–	1.18519	228.48	–	–	–
3	1985-12-09	12:58	–	1.18417	229.49	–	–	–
3	1985-12-16	–	–	–	–	–	–	Blocked by core
3	1985-12-26	–	–	–	–	–	–	Blocked by core
3	1985-12-31	–	–	–	–	–	–	Blocked by core
3	1986-01-06	–	–	–	–	–	–	Blocked by core
3	1986-01-20	–	–	–	–	–	–	Blocked by core
3	1986-02-03	–	–	–	–	–	–	Blocked by core
3	1986-02-10	–	–	–	–	–	–	Blocked by core
3	1986-02-17	–	–	–	–	–	–	Blocked by core
3	1986-02-28	–	–	–	–	–	–	Blocked by core
3	1986-03-06	–	–	–	–	–	–	Blocked by core
3	1986-03-10	–	–	–	–	–	–	Blocked by core
3	1986-03-17	–	–	–	–	–	–	Blocked by core
3	1986-03-24	–	–	–	–	–	–	Blocked by core
3	1986-03-31	–	–	–	–	–	–	Blocked by core
3	1986-04-14	–	–	–	–	–	–	Blocked by core
3	1986-04-25	–	–	–	–	–	–	Blocked by core
3	1986-04-28	–	–	–	–	–	–	Blocked by core
3	1986-05-05	–	–	–	–	–	–	Blocked by core
3	1986-05-13	–	–	–	–	–	–	Blocked by core
3	1986-05-20	–	–	–	–	–	–	Blocked by core
3	1986-05-28	–	–	–	–	–	–	Blocked by core
3	1986-06-02	–	–	–	–	–	–	Blocked by core
3	1986-06-09	–	–	–	–	–	–	Blocked by core
3	1986-06-16	–	–	–	–	–	–	Blocked by core
3	1986-06-24	–	–	–	–	–	–	Blocked by core
3	1986-06-30	–	–	–	–	–	–	Blocked by core
3	1986-07-07	–	–	–	–	–	–	Blocked by core
3	1986-07-21	–	–	–	–	–	–	Blocked
3	1986-07-28	11:54	–	1.15758	256.09	–	–	–
3	1986-08-04	09:18	–	1.15727	256.39	–	–	–
3	1986-08-11	10:50	–	1.15639	257.28	–	–	–
3	1986-08-18	10:42	–	1.15580	257.86	–	–	–
3	1986-08-25	11:21	–	1.15481	258.85	–	–	–
3	1986-09-08	14:26	–	1.15303	260.63	–	–	–
3	1986-09-16	09:28	–	1.15291	260.76	–	–	–
3	1986-09-23	10:37	–	1.15138	262.28	–	–	–
3	1986-09-29	11:06	–	1.15049	263.17	–	–	–
3	1986-10-06	11:14	–	1.14960	264.06	–	–	–
3	1986-10-13	13:18	–	1.14915	264.52	–	–	–
3	1986-10-20	11:14	–	1.14859	265.08	–	–	–
3	1986-10-27	13:54	–	1.14793	265.74	–	–	–
3	1986-11-03	14:03	–	1.14676	266.91	–	–	–
3	1986-11-11	13:57	–	1.14922	264.44	–	–	–
3	1986-11-17	09:19	–	1.14846	265.20	–	–	–
3	1986-11-24	12:53	–	1.14788	265.79	–	–	Ext. Rod 2
3	1986-12-03	10:59	–	1.14699	266.68	–	–	Ext. Rod 2
3	1986-12-08	10:49	–	1.14656	267.11	–	–	Ext. Rod 2
3	1986-12-15	13:17	–	1.14567	268.00	–	–	Ext. Rod 2
3	1986-12-22	14:14	–	1.30127	112.40	–	×	Ext. Rod 1
3	1986-12-30	10:45	–	1.14313	270.54	–	–	Ext. Rod 2
3	1987-01-05	13:48	–	1.14127	272.39	–	–	Ext. Rod 2
3	1987-01-13	10:32	–	1.14043	273.23	–	–	Ext. Rod 2
3	1987-02-13	–	–	–	–	–	–	Blocked salt bricks
3	1987-03-16	14:18	–	1.29113	122.53	–	×	Ext. Rod 1
3	1987-05-15	11:07	–	1.28819	125.48	–	×	Ext. Rod 1
3	1987-07-10	10:26	–	1.12497	288.70	–	–	Ext. Rod 2
3	1987-08-07	13:18	–	1.12273	290.93	–	–	Ext. Rod 2
3	1987-09-04	12:46	–	1.11757	296.09	–	–	Ext. Rod 2
3	1987-10-02	10:26	–	1.11831	295.35	–	–	Ext. Rod 2
3	1987-10-29	12:45	–	1.11597	297.69	–	–	Ext. Rod 2
3	1988-01-20	12:52	–	1.10858	305.08	–	–	Ext. Rod 2
3	1988-03-18	–	–	–	–	–	–	No data recorded

Table A-12. Room D Station +9.4 m vertical mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_z (m)	δ_z (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
3	1988-04-12	13:07	–	1.10160	312.07	–	–	–
3	1988-05-12	13:56	–	1.09911	314.56	–	–	–
3	1988-06-08	13:09	–	1.09677	316.89	–	–	–
3	1988-07-06	09:39	–	1.09451	319.15	–	–	–
3	1988-08-03	08:48	–	1.09024	323.42	–	–	–
3	1988-08-31	09:06	–	1.08770	325.96	–	–	–
3	1988-09-21	12:41	–	1.08806	325.61	–	–	–
3	1988-10-26	10:50	–	1.08504	328.63	–	–	–
3	1988-11-22	10:10	–	1.08260	331.07	–	–	–
3	1988-12-21	10:29	–	1.08278	330.89	–	–	–
3	1989-01-18	10:05	–	1.07770	335.97	–	–	–
3	1989-02-14	10:17	–	1.07668	336.99	–	–	–
3	1989-03-15	10:03	–	1.07150	342.17	–	–	–
3	1989-05-10	12:42	–	1.06690	346.76	–	–	–
3	1989-06-07	14:00	–	1.06497	348.69	–	–	–
3	1989-07-07	13:12	–	1.06218	351.49	–	–	–
3	1989-07-31	13:33	–	1.06053	353.14	–	–	–
3	1989-08-31	10:39	–	1.05786	355.81	–	–	–
3	1989-09-26	12:35	–	1.05517	358.50	–	–	–
3	1989-10-26	10:35	–	1.05291	360.76	–	–	–
3	1990-01-18	13:05	–	1.04610	367.57	–	–	–
3	1990-02-15	10:23	–	1.04635	367.31	–	–	–
3	1990-06-07	13:21	–	1.03289	380.77	–	–	–
3	1991-02-26	13:48	–	1.01011	403.56	–	–	–
3	1991-03-28	09:52	–	1.00777	405.90	–	–	–
3	1991-03-29	09:49	–	1.00777	405.90	–	–	–
3	1991-04-29	–	–	–	–	–	–	No data taken. Inaccessibility to room.
3	1991-05-16	–	–	–	–	–	–	No data taken - room D a red area
3	1991-05-21	–	–	–	–	–	–	Room D a red area - no access
3	1991-05-24	–	–	–	–	–	–	Area in red area - no access
3	1991-05-31	–	–	–	–	–	–	No readings taken due to training.
3	1991-06-04	14:31	–	1.00152	412.14	–	–	–
3	1991-06-25	09:29	–	0.99967	414.00	–	–	–
3	1991-07-01	13:33	–	0.99929	414.38	–	–	–
3	1991-07-08	10:49	–	0.99835	415.32	–	–	–
3	1991-07-16	09:30	–	0.99774	415.93	–	–	–
3	1991-07-23	09:34	–	0.99764	416.03	–	–	–
3	1991-07-30	13:08	–	0.99629	417.38	–	–	–
3	1991-08-16	–	–	–	–	–	–	No data recorded
3	1991-08-20	09:06	–	0.99441	419.26	–	–	–
3	1991-08-29	13:20	–	0.99344	420.22	–	–	–
3	1991-09-03	10:50	–	0.99301	420.65	–	–	–
3	1991-09-10	13:29	–	0.99230	421.36	–	–	–
3	1991-09-27	09:59	–	0.99083	422.84	–	–	–
3	1991-10-03	–	–	–	–	–	–	No data recorded
3	1991-10-07	13:08	–	0.98976	423.90	–	–	–
3	1991-10-15	10:14	–	0.98918	424.49	–	–	–
3	1991-10-25	09:43	–	0.98831	425.35	–	–	–
3	1991-10-29	10:15	–	0.98786	425.81	–	–	–
3	1991-11-05	13:12	–	0.98732	426.34	–	–	–
3	1991-11-12	14:38	–	0.98671	426.95	–	–	–
3	1991-12-31	12:00	–	0.98306	430.61	–	–	–

A.3. Smoothed and Interpolated Closure Plots

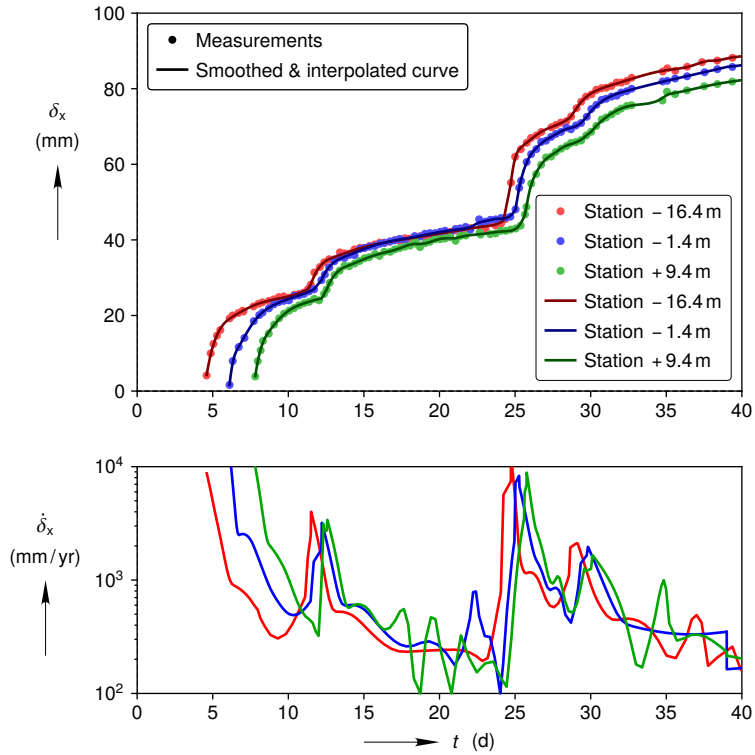


Figure A-7. Room D smoothed and interpolated horizontal closure curves compared against reconstructed mining sequence closure measurements during mining in the top plot. Closure rate curves computed from the smoothed closure curves during mining in the bottom plot.

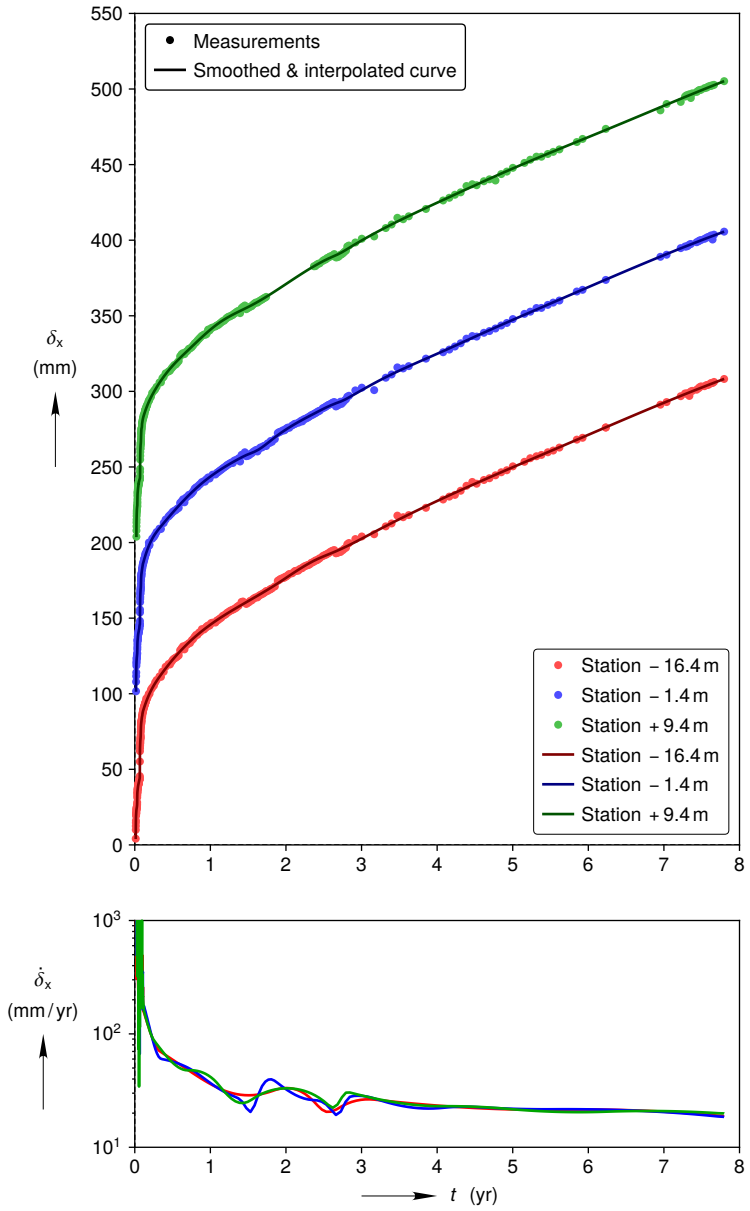


Figure A-8. Room D smoothed and interpolated full horizontal closure curves compared against reconstructed mining sequence closure measurements in the top plot. (Each successive station's horizontal closure curve and measurements are shifted up by 100 mm to enhance legibility.) Closure rate curves computed from the smoothed closure curves in the bottom plot.

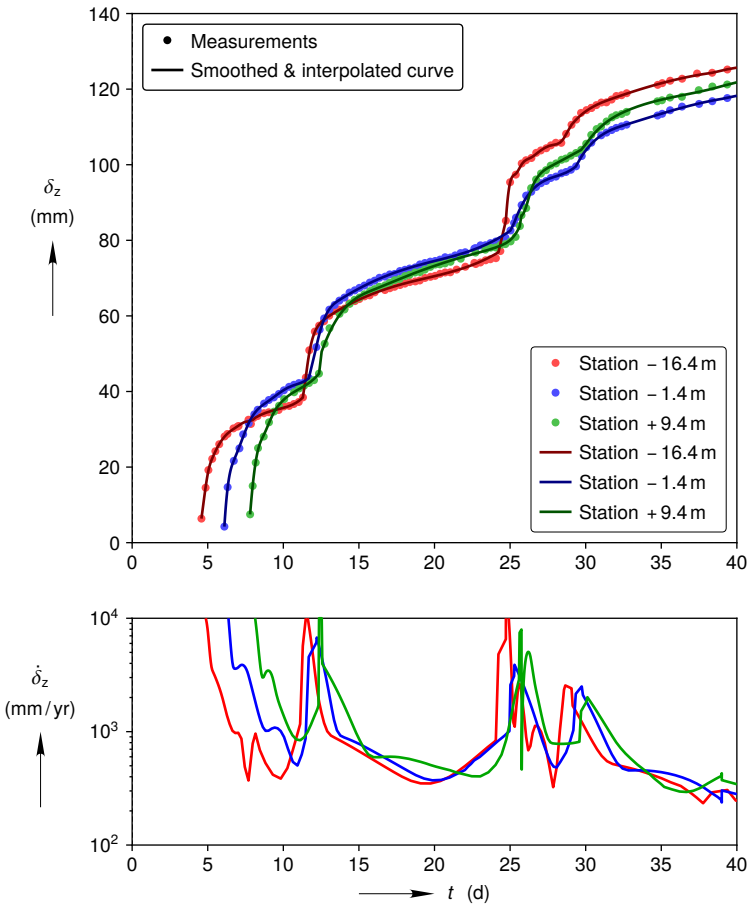


Figure A-9. Room D smoothed and interpolated vertical closure curves compared against reconstructed mining sequence closure measurements during mining in the top plot. Closure rate curves computed from the smoothed closure curves during mining in the bottom plot.

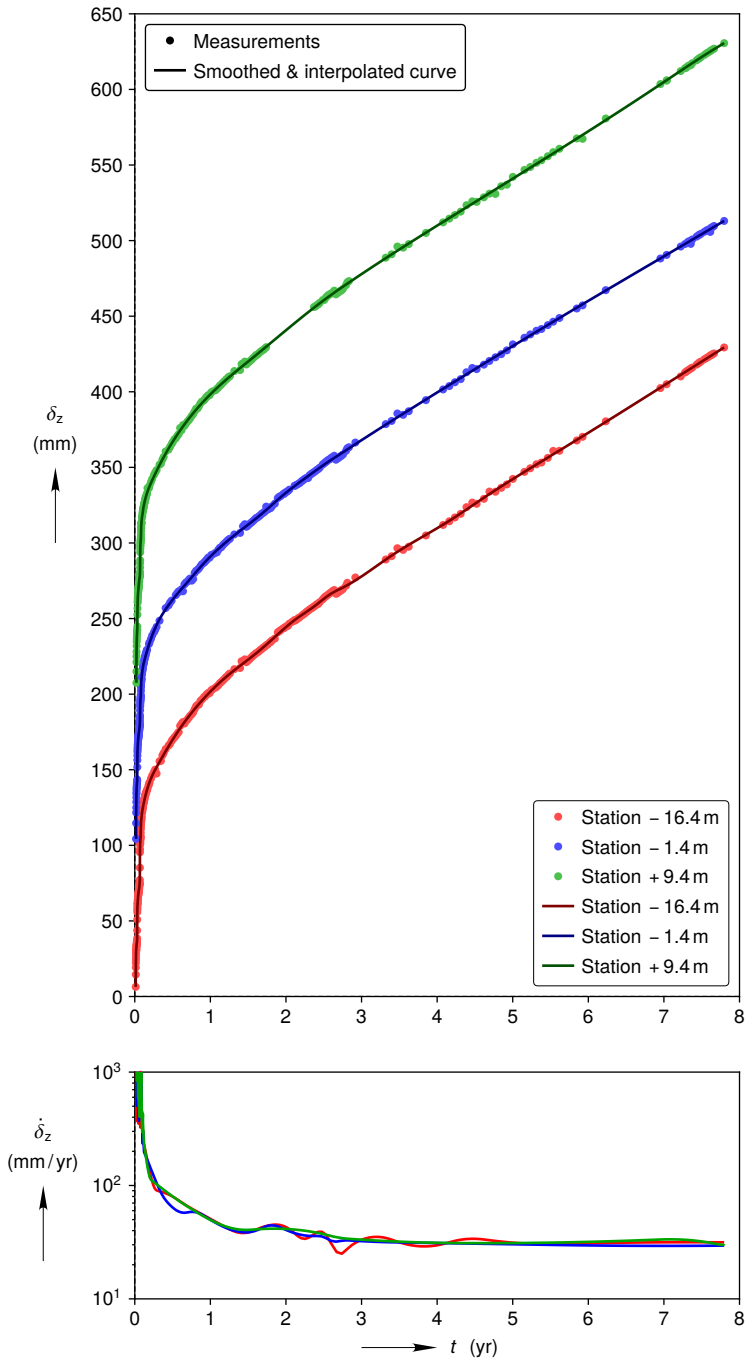


Figure A-10. Room D smoothed and interpolated full vertical closure curves compared against reconstructed mining sequence closure measurements in the top plot. (Each successive station's vertical closure curve and measurements are shifted up by 100 mm to enhance legibility.) Closure rate curves computed from the smoothed closure curves in the bottom plot.

A.4. Smoothed and Interpolated Closure Data

The t values in Table A-13 are relative to the estimated start of room excavation (1984-03-14 16:00). The first t value for each station in Table A-13 corresponds to t_0 for that station.

Table A-13. Room D smoothed and interpolated mining sequence closure data

Station -16.4 m			Station -1.4 m			Station +9.4 m		
t (yr)	δ_x (mm)	δ_z (mm)	t (yr)	δ_x (mm)	δ_z (mm)	t (yr)	δ_x (mm)	δ_z (mm)
0.012092	–	–	0.016142	–	–	0.020876	–	–
0.012548	3.91	6.36	0.016703	1.29	4.25	0.021363	3.61	7.49
0.012552	3.94	6.40	0.016706	1.33	4.32	0.021365	3.63	7.54
0.012618	4.52	7.13	0.016743	1.83	5.17	0.021410	4.08	8.36
0.012688	5.12	7.91	0.016779	2.30	5.98	0.021458	4.54	9.21
0.012762	5.73	8.74	0.016816	2.76	6.76	0.021505	4.99	10.03
0.012836	6.31	9.56	0.016856	3.24	7.58	0.021555	5.45	10.87
0.012913	6.90	10.43	0.016899	3.74	8.42	0.021605	5.89	11.69
0.012990	7.47	11.29	0.016942	4.21	9.22	0.021658	6.34	12.53
0.013067	8.02	12.14	0.016988	4.69	10.04	0.021710	6.77	13.34
0.013145	8.54	12.98	0.017037	5.18	10.87	0.021765	7.21	14.15
0.013226	9.07	13.84	0.017086	5.64	11.65	0.021823	7.65	14.98
0.013307	9.57	14.68	0.017138	6.10	12.44	0.021883	8.09	15.81
0.013391	10.08	15.52	0.017196	6.59	13.26	0.021945	8.53	16.64
0.013480	10.58	16.36	0.017258	7.07	14.07	0.022010	8.97	17.46
0.013575	11.10	17.21	0.017322	7.53	14.86	0.022078	9.41	18.27
0.013679	11.63	18.07	0.017393	8.00	15.64	0.022150	9.85	19.10
0.013793	12.18	18.92	0.017472	8.48	16.45	0.022225	10.29	19.91
0.013921	12.77	19.74	0.017561	8.96	17.26	0.022305	10.73	20.72
0.014061	13.36	20.50	0.017659	9.44	18.04	0.022393	11.18	21.54
0.014212	13.95	21.19	0.017773	9.92	18.83	0.022488	11.63	22.36
0.014378	14.54	21.84	0.017908	10.41	19.62	0.022593	12.10	23.19
0.014558	15.13	22.48	0.018070	10.91	20.41	0.022710	12.58	24.00
0.014757	15.72	23.15	0.018267	11.43	21.20	0.022843	13.07	24.81
0.014978	16.31	23.85	0.018484	11.97	21.99	0.023000	13.60	25.62
0.015228	16.89	24.60	0.018705	12.53	22.78	0.023188	14.15	26.42
0.015519	17.48	25.41	0.018923	13.08	23.57	0.023400	14.70	27.17
0.015850	18.04	26.25	0.019140	13.63	24.36	0.023640	15.24	27.91
0.016222	18.56	27.09	0.019352	14.17	25.14	0.023900	15.79	28.68
0.016653	19.05	27.92	0.019561	14.70	25.93	0.024152	16.30	29.49
0.017183	19.57	28.75	0.019766	15.21	26.72	0.024392	16.76	30.30
0.017834	20.15	29.55	0.019968	15.71	27.51	0.024627	17.21	31.12
0.018511	20.73	30.23	0.020171	16.20	28.29	0.024862	17.63	31.93
0.019229	21.32	30.93	0.020379	16.69	29.09	0.025102	18.05	32.74
0.019999	21.90	31.66	0.020594	17.18	29.88	0.025355	18.48	33.55
0.020853	22.49	32.10	0.020818	17.68	30.67	0.025630	18.92	34.36
0.021846	23.07	32.49	0.021057	18.17	31.46	0.025947	19.40	35.17
0.022597	23.44	33.33	0.021321	18.69	32.25	0.026324	19.93	35.98
0.023812	23.91	34.15	0.021615	19.22	33.04	0.026744	20.48	36.74
0.025535	24.45	34.99	0.021952	19.78	33.82	0.027212	21.02	37.48
0.027390	25.03	35.67	0.022339	20.35	34.59	0.027749	21.57	38.22
0.028799	25.62	36.35	0.022777	20.92	35.31	0.028392	22.12	38.97
0.029860	26.20	37.17	0.023280	21.50	36.00	0.029186	22.66	39.75
0.030610	26.72	38.00	0.023866	22.07	36.66	0.030131	23.18	40.55
0.031443	28.19	43.59	0.024559	22.64	37.35	0.031091	23.63	41.36
0.031514	28.47	44.46	0.025316	23.18	38.14	0.031941	24.00	42.16
0.031584	28.75	45.30	0.026036	23.63	38.92	0.032651	24.26	42.97
0.031662	29.05	46.18	0.026769	24.04	39.71	0.033246	24.43	43.78
0.031740	29.33	47.01	0.027570	24.45	40.49	0.033638	24.98	44.39
0.031824	29.63	47.87	0.028588	24.95	41.27	0.033813	25.53	44.69
0.031916	29.95	48.75	0.029734	25.52	41.86	0.034318	26.87	50.54
0.032015	30.27	49.62	0.030771	26.09	42.40	0.034476	27.42	51.17
0.032120	30.60	50.50	0.031672	26.67	43.13	0.034649	27.97	51.83
0.032233	30.93	51.36	0.033354	29.31	51.76	0.034835	28.53	52.53
0.032353	31.27	52.19	0.033474	29.70	52.58	0.035037	29.09	53.26
0.032487	31.62	53.02	0.033601	30.09	53.40	0.035259	29.65	54.03
0.032642	32.00	53.88	0.033734	30.48	54.22	0.035504	30.19	54.84
0.032818	32.40	54.72	0.033875	30.87	55.04	0.035762	30.70	55.66
0.033030	32.83	55.57	0.034023	31.25	55.84	0.036035	31.17	56.47
0.033291	33.30	56.41	0.034177	31.62	56.62	0.036323	31.60	57.28
0.033629	33.81	57.25	0.034346	32.00	57.42	0.036632	31.98	58.10
0.034081	34.34	58.08	0.034529	32.38	58.20	0.036962	32.32	58.91
0.034659	34.84	58.91	0.034733	32.76	59.00	0.037314	32.62	59.72
0.035427	35.31	59.75	0.034958	33.14	59.78	0.037702	32.88	60.53
0.036323	35.78	60.58	0.035219	33.53	60.58	0.038126	33.13	61.34
0.037268	36.27	61.41	0.035521	33.92	61.36	0.038600	33.40	62.16
0.038269	36.79	62.24	0.035894	34.33	62.16	0.039132	33.71	62.96
0.039334	37.32	63.07	0.036373	34.74	62.95	0.039750	34.09	63.77
0.040476	37.84	63.90	0.037027	35.19	63.73	0.040482	34.54	64.58
0.041710	38.33	64.73	0.037857	35.68	64.52	0.041381	35.08	65.39
0.043057	38.79	65.56	0.038737	36.21	65.30	0.042365	35.62	66.11
0.044538	39.23	66.39	0.039652	36.77	66.09	0.043536	36.17	66.83
0.046181	39.65	67.22	0.040609	37.33	66.87	0.044901	36.68	67.64
0.048028	40.09	68.06	0.041615	37.89	67.66	0.046244	37.17	68.44

Table A-13. Room D smoothed and interpolated mining sequence closure data

Station -16.4 m			Station -1.4 m			Station +9.4 m		
t (yr)	δ_x (mm)	δ_z (mm)	t (yr)	δ_x (mm)	δ_z (mm)	t (yr)	δ_x (mm)	δ_z (mm)
0.050115	40.57	68.88	0.042684	38.41	68.44	0.047444	37.71	69.17
0.052442	41.13	69.71	0.043824	38.90	69.23	0.048407	38.26	69.74
0.054840	41.70	70.54	0.045048	39.35	70.01	0.049528	38.81	70.40
0.057089	42.25	71.37	0.046378	39.76	70.80	0.050929	38.91	71.21
0.059071	42.73	72.20	0.047828	40.17	71.58	0.052394	39.15	72.02
0.060784	43.13	73.03	0.049425	40.58	72.37	0.053565	39.70	72.63
0.062272	43.44	73.86	0.051198	41.05	73.15	0.054751	40.24	73.23
0.063577	43.68	74.70	0.053175	41.62	73.93	0.056418	40.43	74.04
0.064740	44.00	75.53	0.055237	42.19	74.70	0.058178	40.63	74.85
0.065777	44.58	76.35	0.057319	42.64	75.48	0.059809	41.18	75.56
0.066411	45.17	76.90	0.059233	42.95	76.27	0.061763	41.47	76.36
0.067680	54.93	85.19	0.060549	43.53	76.87	0.063796	41.84	77.17
0.067719	55.41	86.02	0.061246	44.10	77.22	0.065607	42.18	77.98
0.067761	55.90	86.85	0.062020	44.67	77.63	0.067058	42.33	78.79
0.067804	56.39	87.68	0.063363	45.06	78.41	0.068057	42.56	79.59
0.067852	56.91	88.54	0.064553	45.48	79.20	0.068710	43.10	80.41
0.067903	57.43	89.38	0.065615	45.59	79.99	0.069091	43.65	81.03
0.067957	57.96	90.23	0.066579	45.69	80.77	0.069379	44.20	81.59
0.068016	58.50	91.07	0.067459	46.23	81.56	0.069616	44.76	82.12
0.068082	59.07	91.92	0.067902	46.81	81.98	0.069817	45.32	82.61
0.068154	59.64	92.76	0.068218	47.38	82.29	0.069996	45.88	83.10
0.068234	60.23	93.58	0.068479	47.97	82.56	0.070154	46.44	83.56
0.068324	60.82	94.37	0.069174	53.69	84.60	0.070505	48.72	86.63
0.068424	61.40	95.10	0.069262	54.27	84.94	0.070568	49.28	86.65
0.068540	61.99	95.77	0.069352	54.85	85.28	0.070633	49.83	86.70
0.068678	62.58	96.36	0.069446	55.43	85.64	0.070700	50.38	86.79
0.068850	63.16	96.84	0.069545	56.00	86.00	0.070772	50.94	86.91
0.069081	63.75	97.20	0.069648	56.58	86.37	0.070847	51.49	87.08
0.069422	64.33	97.52	0.069758	57.16	86.75	0.070928	52.05	87.30
0.069863	64.91	98.35	0.069874	57.74	87.14	0.071012	52.60	87.56
0.070179	65.29	99.18	0.069998	58.32	87.55	0.071103	53.16	87.88
0.070505	65.66	100.02	0.070130	58.90	87.97	0.071200	53.71	88.26
0.070963	66.19	100.85	0.070272	59.48	88.40	0.071304	54.25	88.71
0.071461	66.78	101.36	0.070424	60.05	88.85	0.071419	54.81	89.23
0.071969	67.36	101.70	0.070590	60.63	89.32	0.071544	55.36	89.84
0.072506	67.95	102.12	0.070774	61.20	89.82	0.071681	55.91	90.52
0.073104	68.53	102.78	0.070978	61.77	90.34	0.071832	56.45	91.29
0.073831	69.12	103.60	0.071209	62.35	90.90	0.071995	56.98	92.10
0.074693	69.67	104.43	0.071474	62.92	91.49	0.072166	57.49	92.91
0.075719	70.26	105.08	0.071779	63.50	92.12	0.072356	58.02	93.72
0.076669	70.84	105.35	0.072127	64.07	92.76	0.072566	58.57	94.49
0.077435	71.42	105.81	0.072513	64.64	93.40	0.072794	59.11	95.20
0.078007	71.96	106.64	0.072930	65.22	94.01	0.073040	59.66	95.85
0.078360	72.36	107.47	0.073395	65.79	94.59	0.073313	60.21	96.48
0.079573	74.83	110.57	0.073933	66.36	95.15	0.073621	60.75	97.09
0.079848	75.42	111.04	0.074597	66.94	95.71	0.073980	61.30	97.69
0.080149	76.01	111.53	0.075302	67.51	96.19	0.074424	61.84	98.29
0.080480	76.59	112.03	0.075966	68.08	96.55	0.074971	62.39	98.88
0.080857	77.18	112.57	0.076657	68.65	96.89	0.075565	62.93	99.39
0.081290	77.77	113.14	0.077498	69.23	97.30	0.076093	63.48	99.81
0.081805	78.36	113.75	0.078817	69.75	98.08	0.076593	64.02	100.21
0.082432	78.94	114.42	0.079746	70.31	98.87	0.077197	64.57	100.68
0.083212	79.53	115.14	0.080345	70.88	99.53	0.078069	65.12	101.36
0.084166	80.11	115.87	0.081421	72.58	102.30	0.079100	65.62	102.16
0.085318	80.70	116.61	0.081711	73.16	102.92	0.079996	66.17	102.87
0.086628	81.28	117.33	0.082022	73.74	103.54	0.080613	66.71	103.37
0.087933	81.87	118.00	0.082359	74.32	104.18	0.081076	67.26	103.74
0.089207	82.45	118.63	0.082728	74.89	104.82	0.082204	68.60	105.50
0.090502	83.04	119.26	0.083134	75.47	105.47	0.082531	69.15	106.17
0.091868	83.62	119.89	0.083588	76.04	106.13	0.082874	69.70	106.83
0.093392	84.21	120.56	0.084104	76.61	106.81	0.083232	70.25	107.49
0.095319	84.79	121.36	0.084705	77.19	107.50	0.083611	70.79	108.14
0.097506	85.20	122.19	0.085423	77.76	108.20	0.084015	71.34	108.78
0.099785	85.79	122.96	0.086303	78.33	108.90	0.084449	71.89	109.43
0.101044	86.37	123.34	0.087416	78.91	109.62	0.084920	72.44	110.08
0.102237	86.96	123.68	0.088771	79.48	110.30	0.085432	72.99	110.72
0.105056	87.45	124.33	0.090226	80.05	110.97	0.086004	73.53	111.38
0.107793	88.30	125.25	0.091739	80.62	111.66	0.086659	74.08	112.05
0.109331	88.55	125.64	0.093310	81.20	112.37	0.087442	74.63	112.75
0.121636	90.51	128.63	0.094934	81.77	113.10	0.088460	75.18	113.54
0.135479	92.58	131.68	0.096606	82.34	113.84	0.089677	75.59	114.35
0.150860	94.72	134.73	0.098309	82.91	114.56	0.091074	75.83	115.16
0.167780	96.90	137.71	0.100033	83.49	115.25	0.092705	76.12	115.96
0.186237	99.08	140.56	0.101762	84.06	115.90	0.094030	76.67	116.53
0.206232	101.24	143.26	0.103476	84.63	116.48	0.094797	77.21	116.83
0.227766	103.36	145.79	0.105163	85.20	117.00	0.095370	77.76	117.04
0.250838	105.43	148.18	0.106771	85.76	117.41	0.095933	78.31	117.24
0.276985	107.56	150.64	0.106776	85.76	117.42	0.097145	78.85	117.64
0.304671	109.65	153.14	0.106782	85.77	117.42	0.099135	79.40	118.24
0.333895	111.73	155.75	0.117014	87.50	120.21	0.100802	79.95	118.73
0.364658	113.85	158.45	0.129319	89.66	122.64	0.102455	80.49	119.22
0.395420	115.91	161.12	0.143162	91.91	125.25	0.104204	81.04	119.79
0.427720	118.01	163.87	0.157005	93.98	127.72	0.106250	81.58	120.56
0.461559	120.13	166.69	0.172387	96.09	130.32	0.106772	81.70	120.78
0.496935	122.27	169.57	0.189306	98.19	133.01	0.106777	81.70	120.78

Table A-13. Room D smoothed and interpolated mining sequence closure data

Station -16.4 m			Station -1.4 m			Station +9.4 m		
t (yr)	δ_x (mm)	δ_z (mm)	t (yr)	δ_x (mm)	δ_z (mm)	t (yr)	δ_x (mm)	δ_z (mm)
0.532312	124.33	172.36	0.207763	100.25	135.75	0.106782	81.70	120.78
0.569226	126.41	175.18	0.227759	102.24	138.50	0.115125	83.42	123.72
0.607679	128.49	178.00	0.250830	104.26	141.43	0.127426	85.39	126.63
0.647670	130.57	180.81	0.275440	106.16	144.28	0.141264	87.44	129.48
0.689199	132.64	183.62	0.301588	107.95	147.04	0.156640	89.54	132.19
0.732266	134.69	186.42	0.330812	109.79	149.83	0.173554	91.66	134.73
0.778409	136.80	189.30	0.363113	111.73	152.62	0.192005	93.77	137.12
0.826090	138.87	192.16	0.398490	113.84	155.41	0.211993	95.86	139.44
0.876848	140.98	195.08	0.433866	115.92	158.00	0.233520	97.93	141.82
0.929144	143.04	197.97	0.469243	117.98	160.43	0.256584	100.00	144.31
0.984516	145.12	200.89	0.506158	120.10	162.83	0.281185	102.09	146.89
1.042964	147.21	203.82	0.543072	122.17	165.12	0.307324	104.20	149.55
1.102950	149.26	206.69	0.579987	124.21	167.33	0.335001	106.32	152.28
1.166013	151.31	209.55	0.618440	126.29	169.57	0.364215	108.44	155.07
1.232151	153.39	212.39	0.658431	128.40	171.87	0.394967	110.54	157.90
1.301366	155.48	215.21	0.698422	130.45	174.17	0.427257	112.63	160.77
1.372119	157.57	217.96	0.739951	132.51	176.59	0.461084	114.69	163.66
1.444410	159.67	220.71	0.783018	134.58	179.11	0.496448	116.72	166.57
1.516702	161.74	223.48	0.827624	136.63	181.71	0.533351	118.74	169.48
1.588993	163.83	226.33	0.875305	138.71	184.43	0.571790	120.74	172.39
1.658208	165.84	229.19	0.926063	140.81	187.22	0.611768	122.74	175.29
1.725884	167.85	232.10	0.979897	142.90	190.04	0.653283	124.76	178.18
1.792023	169.86	235.03	1.036807	144.98	192.86	0.696336	126.82	181.05
1.856624	171.89	237.95	1.096794	147.05	195.68	0.739388	128.88	183.80
1.921224	173.99	240.87	1.159856	149.09	198.50	0.782441	130.93	186.44
1.984287	176.08	243.66	1.224457	151.07	201.25	0.825493	132.97	188.98
2.047349	178.18	246.34	1.292134	153.04	204.03	0.870084	135.06	191.50
2.110412	180.26	248.85	1.362888	155.01	206.84	0.914674	137.11	193.93
2.175012	182.34	251.20	1.435179	156.91	209.64	0.960802	139.15	196.34
2.242689	184.43	253.50	1.507470	158.53	212.43	1.010005	141.25	198.81
2.314980	186.51	255.95	1.578224	159.95	215.18	1.060745	143.28	201.27
2.394962	188.58	258.87	1.647439	161.80	217.96	1.116099	145.33	203.85
2.468791	190.26	261.78	1.707425	163.86	220.49	1.177602	147.38	206.61
2.544159	191.83	264.68	1.761259	165.93	222.84	1.245257	149.38	209.54
2.627216	193.53	267.39	1.813555	168.02	225.16	1.314448	151.23	212.45
2.710274	195.32	269.47	1.865851	170.06	227.49	1.385178	153.00	215.36
2.793332	197.25	271.56	1.922762	172.15	229.97	1.455907	154.73	218.23
2.876390	199.31	273.94	1.982748	174.21	232.48	1.528174	156.54	221.16
2.957910	201.40	276.48	2.047349	176.28	235.08	1.598903	158.43	224.05
3.036354	203.46	279.09	2.116564	178.36	237.75	1.669633	160.46	226.96
3.114797	205.54	281.79	2.188855	180.41	240.46	1.737287	162.49	229.77
3.193241	207.61	284.55	2.264223	182.45	243.20	1.803403	164.56	232.51
3.273222	209.69	287.37	2.341129	184.47	245.96	1.867982	166.64	235.20
3.353204	211.75	290.13	2.419573	186.51	248.77	1.931024	168.70	237.82
3.434724	213.82	292.85	2.496478	188.48	251.53	1.994065	170.79	240.44
3.517782	215.90	295.50	2.577999	190.42	254.32	2.055569	172.82	242.97
3.600840	217.95	298.05	2.661057	192.13	256.97	2.118610	174.90	245.56
3.683898	219.98	300.53	2.744115	193.70	259.65	2.181651	176.95	248.12
3.766956	221.99	302.96	2.825635	195.77	262.33	2.246230	179.01	250.72
3.850013	223.98	305.37	2.897926	197.81	264.69	2.312347	181.05	253.34
3.933071	225.94	307.78	2.970218	199.87	267.04	2.381539	183.10	256.04
4.016129	227.89	310.23	3.042509	201.93	269.37	2.455343	185.16	258.86
4.099187	229.81	312.74	3.116339	203.99	271.74	2.533760	187.18	261.79
4.182245	231.72	315.33	3.191706	206.04	274.15	2.613715	189.03	264.68
4.265303	233.61	318.02	3.270150	208.09	276.64	2.696745	190.88	267.59
4.348361	235.48	320.78	3.351670	210.14	279.22	2.772087	192.96	270.18
4.431419	237.34	323.59	3.434729	212.16	281.85	2.839742	195.04	272.48
4.514477	239.19	326.40	3.517787	214.12	284.46	2.907396	197.07	274.76
4.597535	241.03	329.20	3.600845	216.04	287.07	2.978125	199.14	277.13
4.680592	242.85	331.97	3.683903	217.91	289.67	3.050392	201.20	279.53
4.763650	244.67	334.69	3.766961	219.75	292.27	3.124196	203.25	281.97
4.846708	246.47	337.36	3.850020	221.58	294.87	3.199539	205.29	284.44
4.929766	248.27	340.01	3.933078	223.40	297.45	3.277956	207.36	286.99
5.012824	250.07	342.62	4.016136	225.23	300.04	3.357911	209.43	289.58
5.095882	251.85	345.20	4.099194	227.08	302.61	3.439403	211.48	292.20
5.178940	253.64	347.77	4.182253	228.94	305.18	3.522433	213.53	294.86
5.261998	255.42	350.31	4.265311	230.83	307.75	3.605463	215.55	297.50
5.345056	257.20	352.85	4.348369	232.72	310.31	3.688493	217.53	300.13
5.428114	258.98	355.38	4.431427	234.62	312.87	3.771524	219.49	302.75
5.511172	260.75	357.90	4.514485	236.50	315.42	3.854554	221.43	305.36
5.594229	262.53	360.43	4.597544	238.38	317.96	3.937584	223.35	307.96
5.677287	264.32	362.97	4.680602	240.24	320.50	4.020614	225.26	310.55
5.760345	266.10	365.51	4.763660	242.08	323.04	4.103644	227.18	313.14
5.843403	267.89	368.06	4.846718	243.92	325.57	4.186674	229.09	315.72
5.926461	269.68	370.62	4.929776	245.75	328.09	4.269704	231.00	318.30
6.009519	271.47	373.19	5.012835	247.56	330.61	4.352734	232.91	320.88
6.092577	273.26	375.76	5.095893	249.38	333.12	4.435764	234.81	323.46
6.175635	275.04	378.34	5.178951	251.18	335.63	4.518794	236.70	326.03
6.258693	276.82	380.92	5.262009	252.98	338.14	4.601824	238.59	328.61
6.341751	278.60	383.52	5.345068	254.78	340.63	4.684854	240.46	331.18
6.424808	280.38	386.11	5.428126	256.58	343.13	4.767884	242.32	333.75
6.507866	282.15	388.71	5.511184	258.37	345.62	4.850915	244.16	336.33
6.590924	283.91	391.31	5.594242	260.17	348.10	4.933945	245.98	338.90
6.673982	285.66	393.92	5.677300	261.97	350.58	5.016975	247.78	341.48
6.757040	287.41	396.53	5.760359	263.77	353.05	5.100005	249.56	344.06

Table A-13. Room D smoothed and interpolated mining sequence closure data

Station -16.4 m			Station -1.4 m			Station +9.4 m		
t (yr)	δ_x (mm)	δ_z (mm)	t (yr)	δ_x (mm)	δ_z (mm)	t (yr)	δ_x (mm)	δ_z (mm)
6.840098	289.15	399.15	5.843417	265.57	355.52	5.183035	251.33	346.65
6.923156	290.88	401.76	5.926475	267.37	357.99	5.266065	253.08	349.23
7.006214	292.60	404.38	6.009533	269.16	360.45	5.349095	254.81	351.82
7.089272	294.30	407.00	6.092591	270.95	362.90	5.432125	256.54	354.42
7.172330	295.99	409.62	6.175650	272.74	365.36	5.515155	258.26	357.02
7.255388	297.67	412.25	6.258708	274.53	367.81	5.598185	259.96	359.62
7.338445	299.34	414.87	6.341766	276.30	370.26	5.681215	261.67	362.23
7.421503	300.99	417.49	6.424824	278.08	372.70	5.764245	263.36	364.85
7.504561	302.62	420.12	6.507883	279.84	375.15	5.847275	265.06	367.47
7.587619	304.24	422.74	6.590941	281.60	377.59	5.930306	266.75	370.10
7.670677	305.84	425.36	6.673999	283.34	380.03	6.013336	268.45	372.74
7.753735	307.42	427.98	6.757057	285.08	382.47	6.096366	270.15	375.39
7.796802	308.23	429.34	6.840115	286.81	384.90	6.179396	271.85	378.05
–	–	–	6.923174	288.52	387.34	6.262426	273.56	380.71
–	–	–	7.006232	290.23	389.78	6.345456	275.28	383.39
–	–	–	7.089290	291.92	392.22	6.428486	277.00	386.07
–	–	–	7.172348	293.59	394.65	6.511516	278.73	388.77
–	–	–	7.255406	295.25	397.09	6.594546	280.46	391.48
–	–	–	7.338465	296.90	399.53	6.677576	282.19	394.20
–	–	–	7.421523	298.52	401.97	6.760606	283.93	396.94
–	–	–	7.504581	300.14	404.41	6.843636	285.66	399.68
–	–	–	7.587639	301.73	406.85	6.926666	287.40	402.44
–	–	–	7.670698	303.30	409.30	7.009697	289.13	405.22
–	–	–	7.753756	304.86	411.74	7.092727	290.86	408.00
–	–	–	7.796823	305.65	413.01	7.175757	292.58	410.78
–	–	–	–	–	–	7.258787	294.30	413.55
–	–	–	–	–	–	7.341817	296.01	416.30
–	–	–	–	–	–	7.424847	297.71	419.02
–	–	–	–	–	–	7.507877	299.41	421.70
–	–	–	–	–	–	7.590907	301.09	424.34
–	–	–	–	–	–	7.673937	302.76	426.92
–	–	–	–	–	–	7.756967	304.42	429.44
–	–	–	–	–	–	7.796945	305.21	430.62

A.5. Remotely Read Closure Data

The t_i values in Table A-14 are relative to the estimated start of room excavation (1984-03-14 16:00).

Table A-14. Room D remotely read closure data

Station +0.0 m			
Gage D_202		Gage D_201	
t_x (yr)	δ_x (mm)	t_z (yr)	δ_z (mm)
0.289756	106.64	0.289756	141.80
0.366519	112.14	0.312676	144.78
0.383115	113.27	0.324132	146.18
0.401785	114.47	0.335583	147.44
0.420455	115.66	0.345992	148.57
0.439123	116.72	0.356401	149.70
0.457793	117.85	0.365769	150.69
0.476464	119.11	0.377211	151.76
0.496165	119.97	0.388651	152.75
0.516902	120.70	0.399055	153.75
0.536606	121.76	0.412570	154.81
0.554237	122.75	0.426083	155.80
0.572905	123.75	0.438559	156.80
0.591570	124.54	0.451038	157.86
0.608164	125.54	0.464556	158.99
0.624759	126.53	0.480144	160.05
0.640317	127.53	0.494699	161.18
0.655874	128.39	0.509242	162.04
0.673502	129.19	0.523791	163.04
0.691132	130.11	0.537299	163.90
0.707725	130.98	0.549767	164.70
0.725355	131.84	0.561199	165.50
0.741947	132.63	0.571592	166.23
0.759576	133.49	0.585104	167.22
0.782387	134.36	0.599645	168.02
0.802089	135.28	0.610043	168.88
0.822827	136.08	0.622514	169.75
0.843566	137.01	0.633952	170.67
0.864306	138.00	0.645384	171.47
0.886080	138.86	0.657857	172.40
0.907855	139.73	0.670328	173.26
0.929628	140.45	0.682802	174.19
0.950366	141.32	0.695278	175.19
0.972141	142.24	0.708785	176.05
0.994953	143.17	0.721256	176.91
1.020873	144.03	0.735800	177.78
1.043682	144.76	0.749313	178.77
1.064419	145.49	0.762825	179.77
1.086191	146.22	0.777369	180.63
1.104854	146.88	0.791912	181.49
1.133885	147.88	0.807490	182.29
1.156694	148.61	0.824111	183.29
1.178468	149.40	0.838658	184.22
1.200240	150.13	0.856318	185.28
1.225125	151.06	0.870862	186.14
1.245860	151.72	0.887483	187.14
1.267633	152.45	0.902024	187.93
1.290443	153.25	0.917607	188.86
1.313251	153.91	0.933184	189.66
1.336060	154.64	0.949800	190.52
1.358869	155.37	0.965383	191.45
1.383751	156.09	0.981999	192.31
1.405523	156.76	0.998616	193.18

Table A-14. Room D remotely read closure data

Station +0.0 m			
Gage D_202		Gage D_201	
t_x (yr)	δ_x (mm)	t_z (yr)	δ_z (mm)
1.429369	157.55	1.014198	194.11
1.455289	158.41	1.030820	195.10
1.479135	159.21	1.049509	195.97
1.502981	159.94	1.068200	196.89
1.526828	160.80	1.085853	197.76
1.553782	161.53	1.102467	198.55
1.580738	162.32	1.119080	199.35
1.610802	163.12	1.134660	200.21
1.635686	163.98	1.151274	201.01
1.660567	164.71	1.167887	201.81
1.682338	165.30	1.185542	202.74
1.707220	166.03	1.201120	203.53
1.728991	166.63	1.218767	204.26
1.755946	167.43	1.236419	205.13
1.777719	168.15	1.254072	205.99
1.801564	168.82	1.270694	206.98
1.825407	169.41	1.290424	207.98
1.850286	169.94	1.311186	208.84
1.880350	170.67	1.330906	209.57
1.910414	171.47	1.348558	210.44
1.937369	172.26	1.366211	211.30
1.966397	173.06	1.384897	212.09
1.998535	173.92	1.402550	212.96
2.026525	174.58	1.423314	213.89
2.058663	175.51	1.441997	214.62
2.088728	176.30	1.462759	215.48
2.128120	177.16	1.481445	216.28
2.169588	178.29	1.499098	217.14
2.202761	179.08	1.516750	218.00
2.232826	179.88	1.535439	218.87
2.263926	180.67	1.552047	219.53
2.295027	181.47	1.569695	220.26
2.326129	182.40	1.588378	220.99
2.360341	183.32	1.606028	221.79
2.391442	184.19	1.624714	222.58
2.425653	185.05	1.643400	223.38
2.453643	185.77	1.662087	224.18
2.478524	186.44	1.681809	224.97
2.501333	187.10	1.700495	225.77
2.529322	187.76	1.723330	226.63
2.558349	188.49	1.745130	227.56
2.581158	189.15	1.766923	228.29
2.602929	189.75	1.786648	229.15
2.630919	190.48	1.807407	229.95
2.687937	191.94	1.828163	230.68
2.710743	192.47	1.849950	231.28
2.733551	193.06	1.871743	232.01
2.758431	193.66	1.894574	232.80
2.787457	194.32	1.913255	233.47
2.814408	194.78	1.934014	234.26
2.844471	195.51	1.955809	235.06
2.875572	196.31	1.978641	235.86
2.902525	196.97	1.999399	236.65
2.929477	197.50	2.021192	237.38
2.953320	198.03	2.041948	238.11
2.979236	198.62	2.063738	238.78
3.003079	199.15	2.084500	239.64
3.032105	199.82	2.107331	240.44

Table A-14. Room D remotely read closure data

Station +0.0 m			
Gage D_202		Gage D_201	
t_x (yr)	δ_x (mm)	t_z (yr)	δ_z (mm)
3.063205	200.61	2.130160	241.17
3.097416	201.47	2.151955	241.96
3.126442	202.13	2.174787	242.76
3.161688	202.93	2.199693	243.62
3.201079	203.72	2.225639	244.55
3.231142	204.45	2.248471	245.35
3.259133	205.18	2.270263	246.08
3.288159	205.84	2.293095	246.87
3.323405	206.64	2.314887	247.60
3.353469	207.37	2.340833	248.53
3.384569	208.16	2.360550	249.20
3.410486	208.82	2.381307	249.93
3.439510	209.29	2.403105	250.79
3.469573	210.02	2.425936	251.59
3.495490	210.61	2.449804	252.38
3.527625	211.27	2.470563	253.18
3.553541	211.87	2.493392	253.91
3.577385	212.47	2.513114	254.70
3.601228	213.06	2.532834	255.43
3.625072	213.66	2.551515	256.10
3.655134	214.32	2.572271	256.83
3.683122	214.85	2.593025	257.49
3.713184	215.45	2.614817	258.22
3.743246	216.11	2.637649	259.02
3.772272	216.70	2.660475	259.68
3.800261	217.30	2.687460	260.68
3.832397	218.03	2.709252	261.41
3.869714	218.76	2.728969	262.07
3.904961	219.62	2.749723	262.74
3.943315	220.35	2.769443	263.47
3.979596	221.01	2.789160	264.13
4.012767	221.67	2.807838	264.73
4.042829	222.33	2.829628	265.39
4.070819	223.00	2.852457	266.12
4.098809	223.66	2.871137	266.78
4.126799	224.32	2.889816	267.38
4.150642	224.85	2.909533	268.04
4.174485	225.45	2.930286	268.71
–	–	2.952076	269.37
–	–	2.969718	269.97
–	–	2.988396	270.57
–	–	3.003965	271.16
–	–	3.028867	271.89
–	–	3.053768	272.62
–	–	3.078675	273.49
–	–	3.099428	274.15
–	–	3.118107	274.75
–	–	3.137824	275.41
–	–	3.160653	276.14
–	–	3.181406	276.81
–	–	3.202157	277.40
–	–	3.224980	278.00
–	–	3.246773	278.73
–	–	3.269599	279.39
–	–	3.291391	280.12
–	–	3.312148	280.85
–	–	3.337049	281.58
–	–	3.360917	282.38

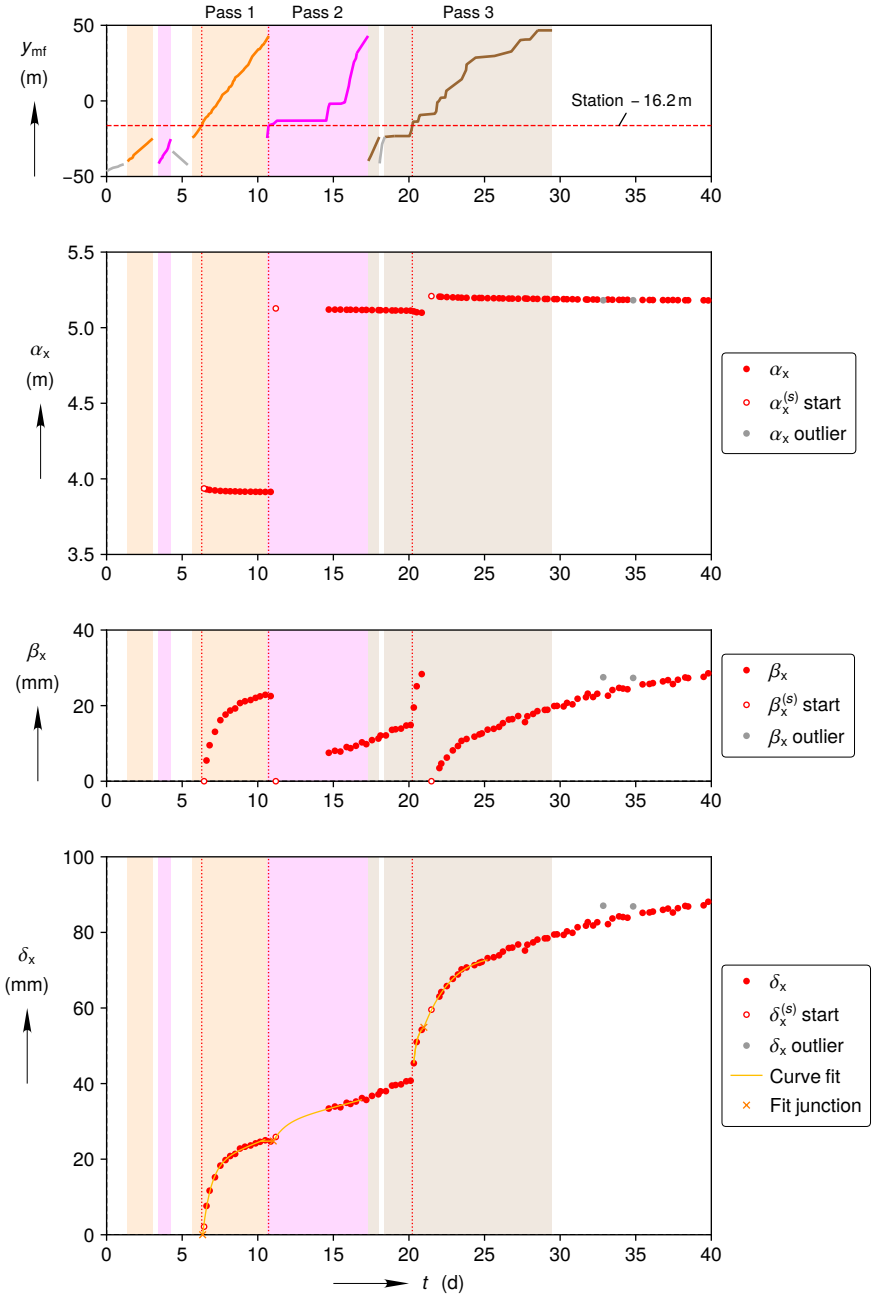
Table A-14. Room D remotely read closure data

Station +0.0 m			
Gage D_202		Gage D_201	
t_x (yr)	δ_x (mm)	t_z (yr)	δ_z (mm)
–	–	3.384782	283.11
–	–	3.408647	283.84
–	–	3.432521	284.77
–	–	3.455344	285.37
–	–	3.481282	286.10
–	–	3.504111	286.83
–	–	3.524864	287.49
–	–	3.544584	288.22
–	–	3.567410	288.88
–	–	3.589203	289.61
–	–	3.612034	290.41
–	–	3.634860	291.07
–	–	3.660803	291.94
–	–	3.680518	292.53
–	–	3.704380	293.20
–	–	3.727207	293.86
–	–	3.750038	294.66
–	–	3.773901	295.32
–	–	3.799838	296.05
–	–	3.823701	296.71
–	–	3.847566	297.44
–	–	3.868320	298.11
–	–	3.890112	298.84
–	–	3.912941	299.57
–	–	3.935767	300.23
–	–	3.963780	301.03
–	–	3.992824	301.69
–	–	4.017728	302.49
–	–	4.042635	303.35
–	–	4.069615	304.21
–	–	4.093483	305.01
–	–	4.121499	305.87
–	–	4.147434	306.54
–	–	4.178567	307.60

APPENDIX B. Room B Supplemental Information

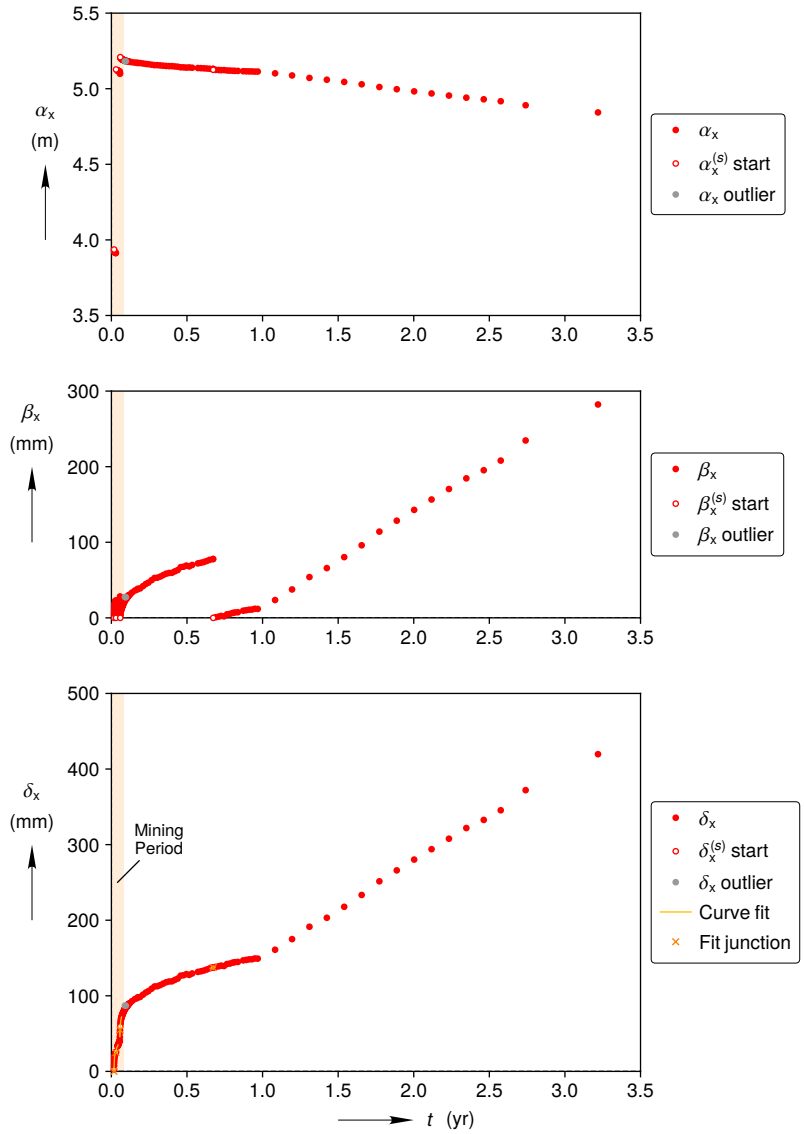
B.1. Mining Sequence Closure Reconstruction Plots

As shown in Fig. B-1a, the power outage during $11.1 < t < 14.7$ d, which prevented technicians from collecting α_x readings at Station -16.2 m, coincided with most of the steep transient closure after point 1E was cut out and point 2E was installed. The absence of $\beta_x^{(2)}$ values made it difficult to fit the time constant p_2 in Eq. (2.1) at Station -16.2 m. Fortunately, the Jeffreys creep displacement function was successfully fit against the $\beta_x^{(2)}$ values collected after Stations -1.0 m and +14.0 m were excavated during pass 2, because they were excavated *after* the power outage. Consequently, the p_2 values from the other two stations were averaged to obtain $p_2 = (1.807 + 0.519)/2 = 0.803$ d for Station -16.2 m. Once p_2 was specified, the other three three p_j values for for Station -16.2 m were fit in the usual manner. This procedure produced the curve fit in Fig. B-1a that spans the power outage time period and back extrapolates to $t^{(2)}$. The small jump between the end of $\delta_x^{(1)}$ and the start of $\delta_x^{(2)}$ suggests the δ_x history is not terribly sensitive to the method used to curve fit the $\beta_x^{(2)}$ data.



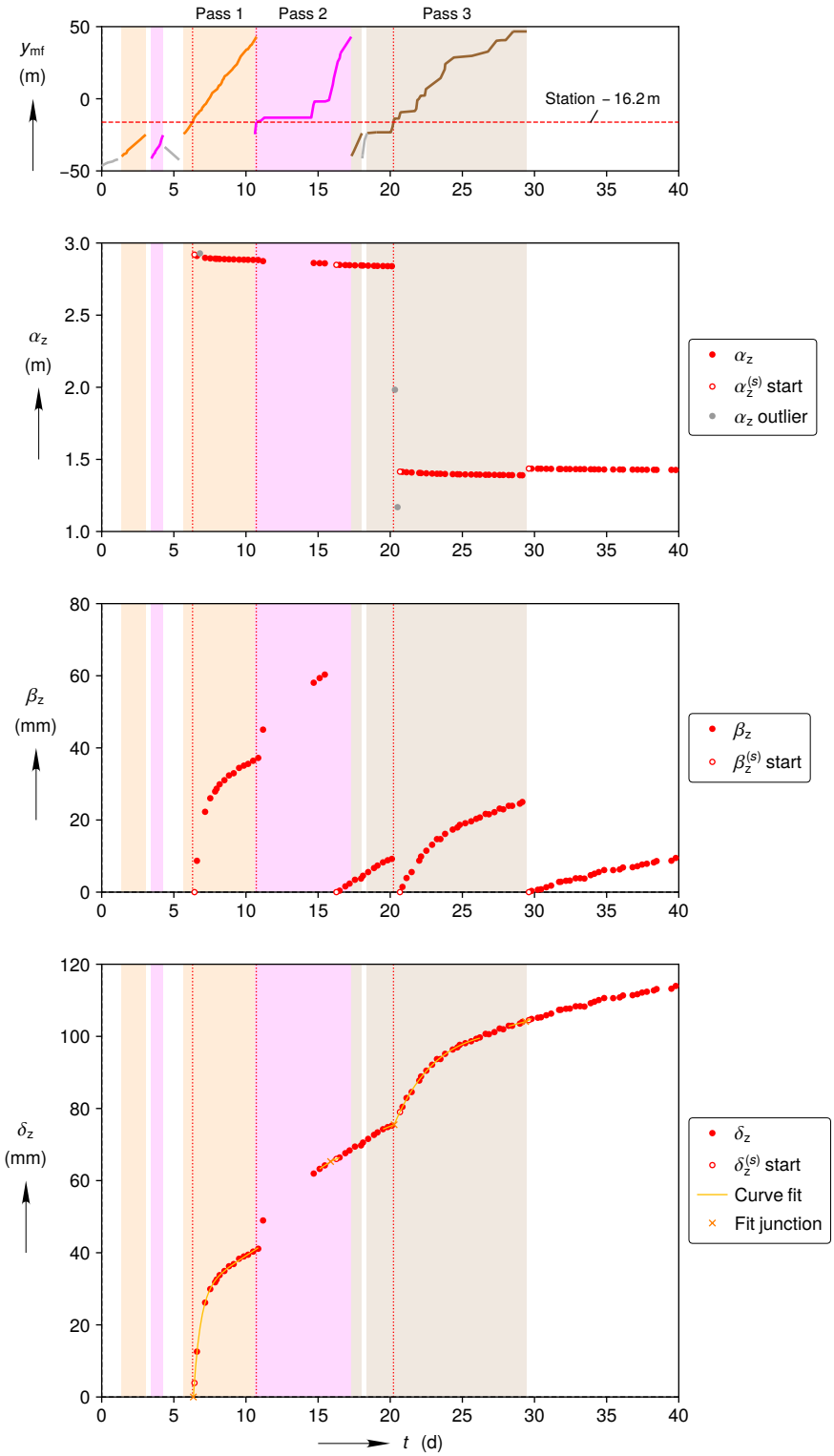
(a) Reconstruction during mining period

Figure B-1. Room B Station -16.2 m horizontal closure reconstruction process.



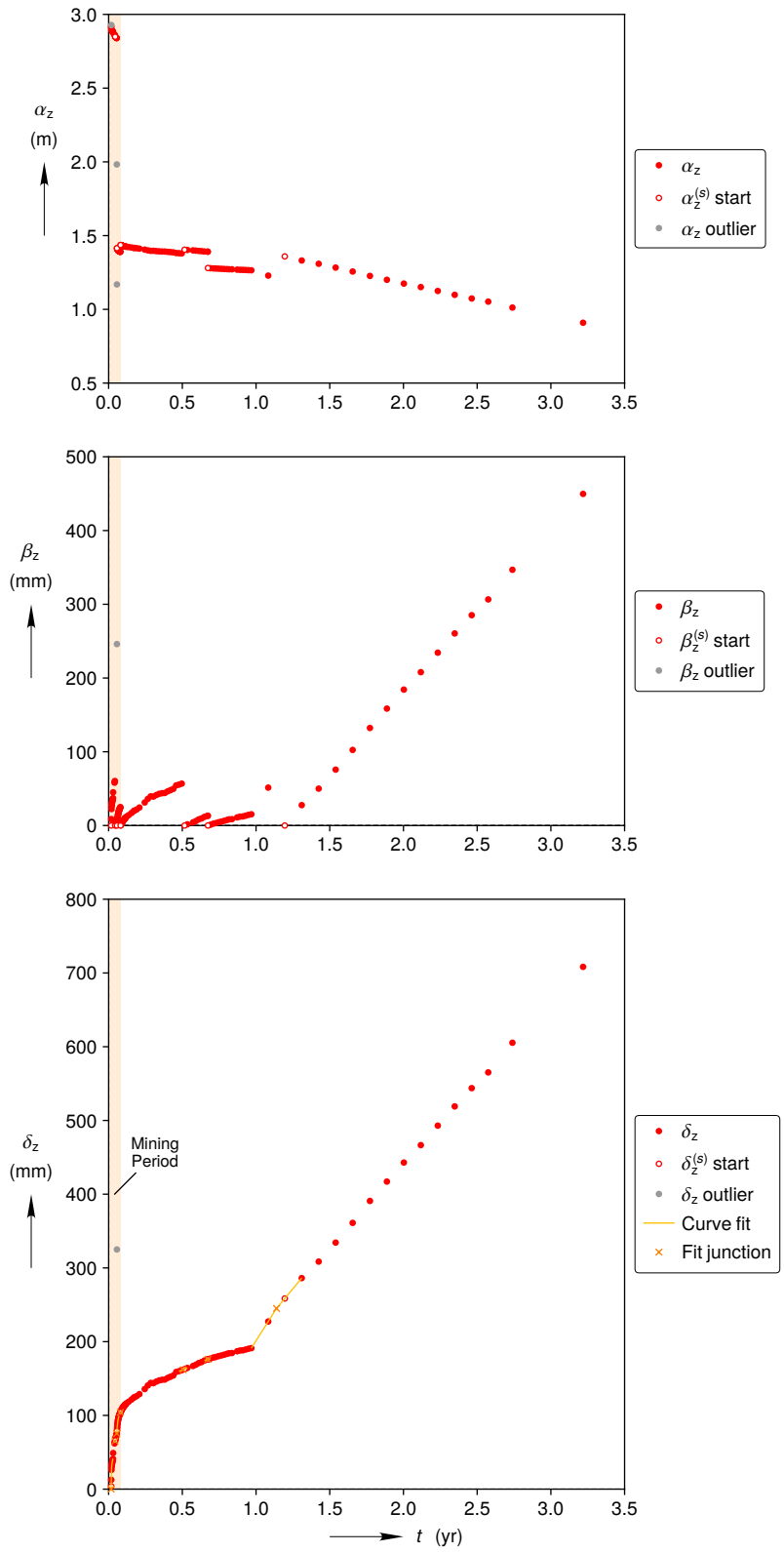
(b) Full reconstruction

Figure B-1. (Continued) Room B Station -16.2 m horizontal closure reconstruction process.



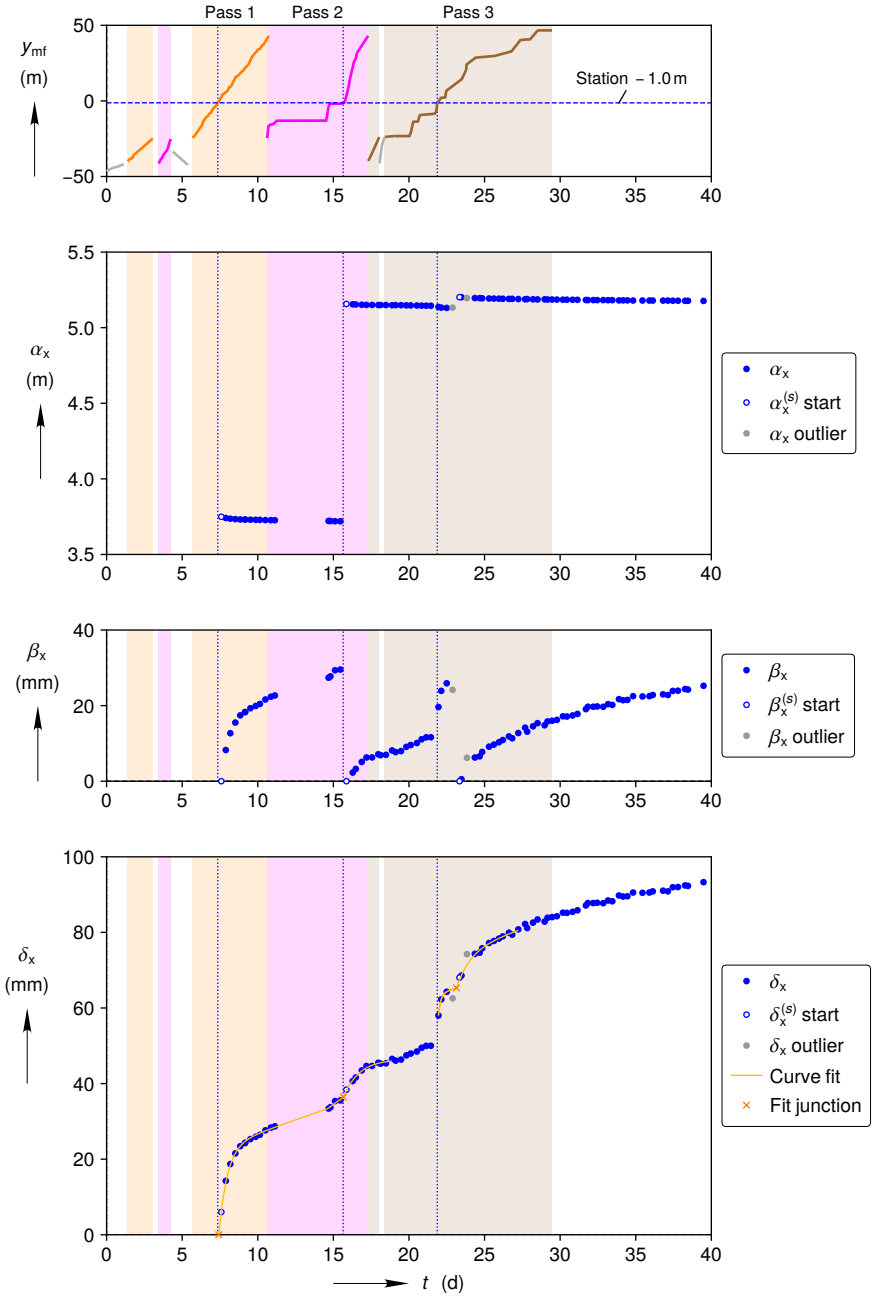
(a) Reconstruction during mining period

Figure B-2. Room B Station -16.2 m vertical closure reconstruction process.



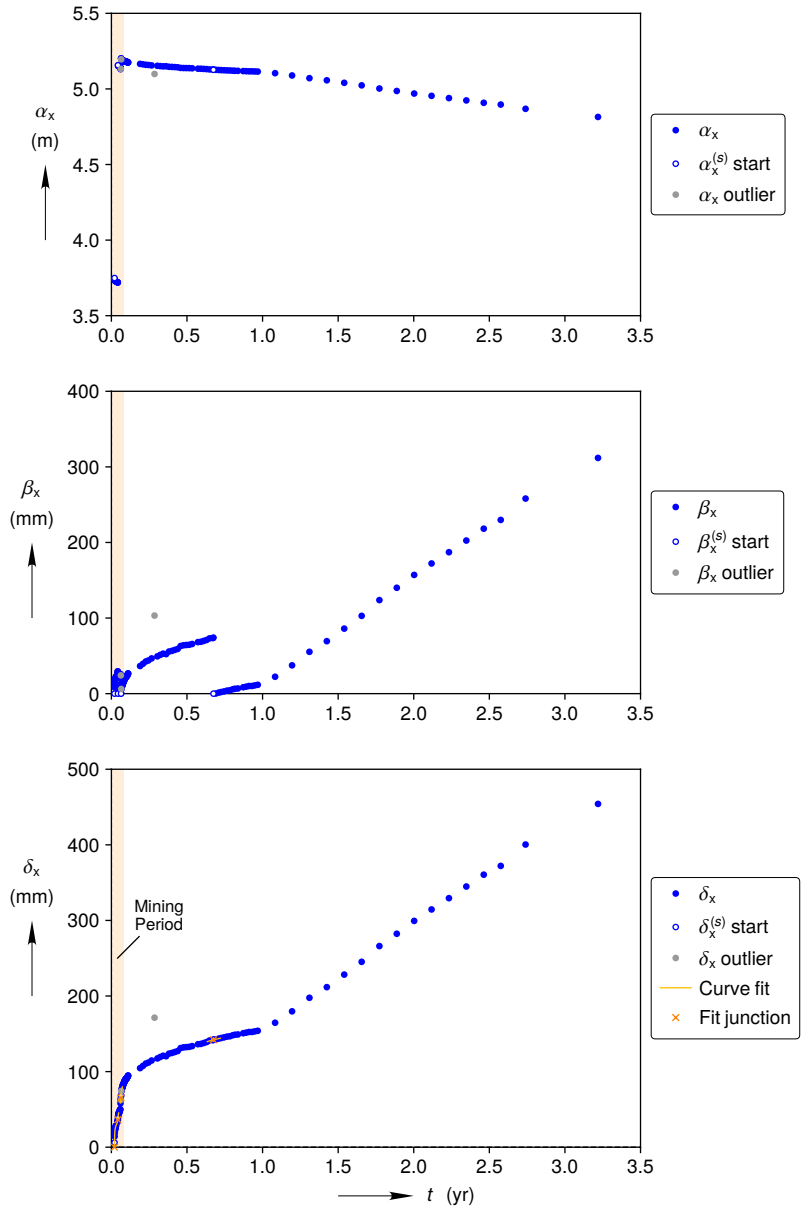
(b) Full reconstruction

Figure B-2. (Continued) Room B Station -16.2 m vertical closure reconstruction process.



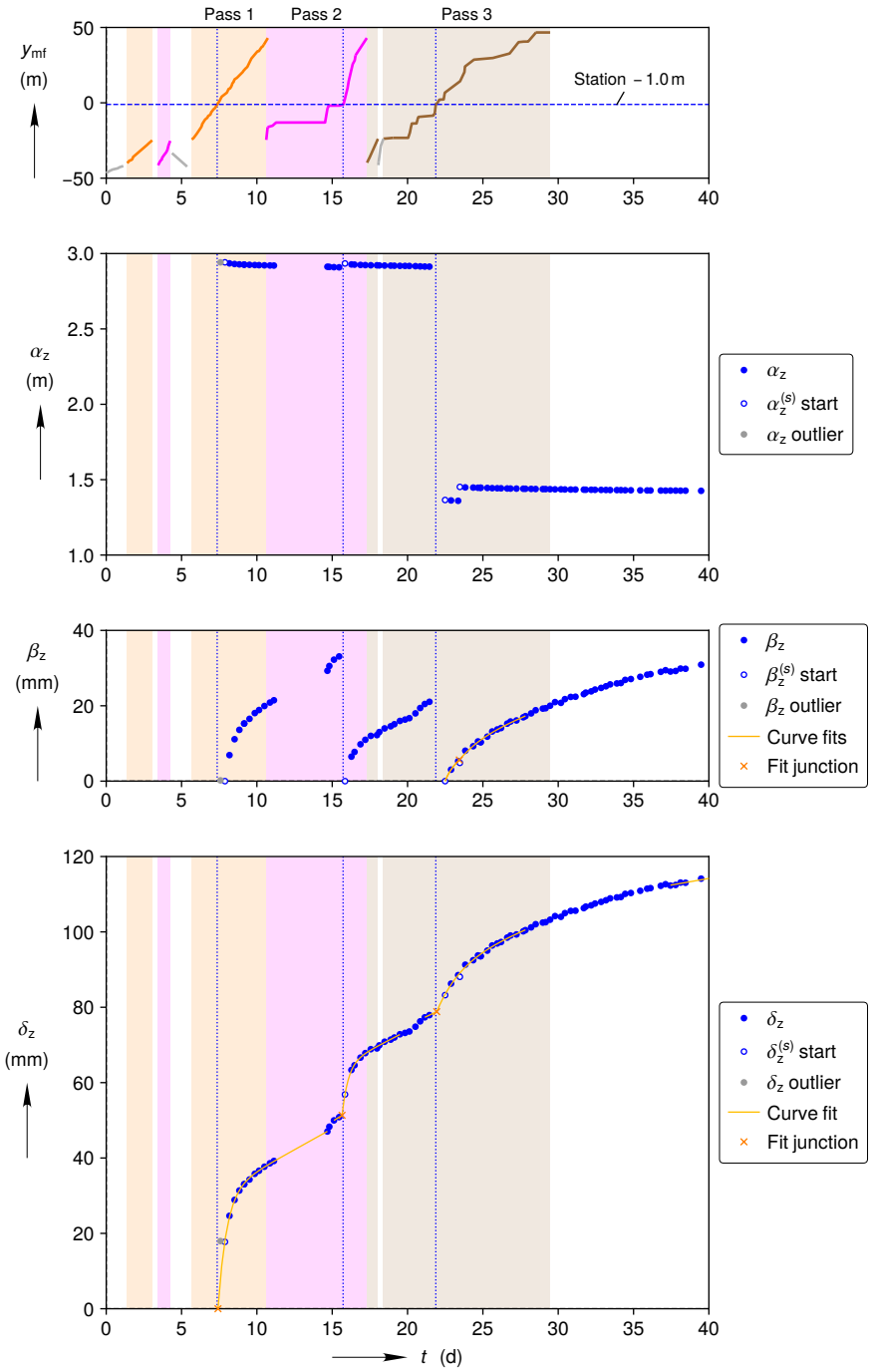
(a) Reconstruction during mining period

Figure B-3. Room B Station -1.0 m horizontal closure reconstruction process.



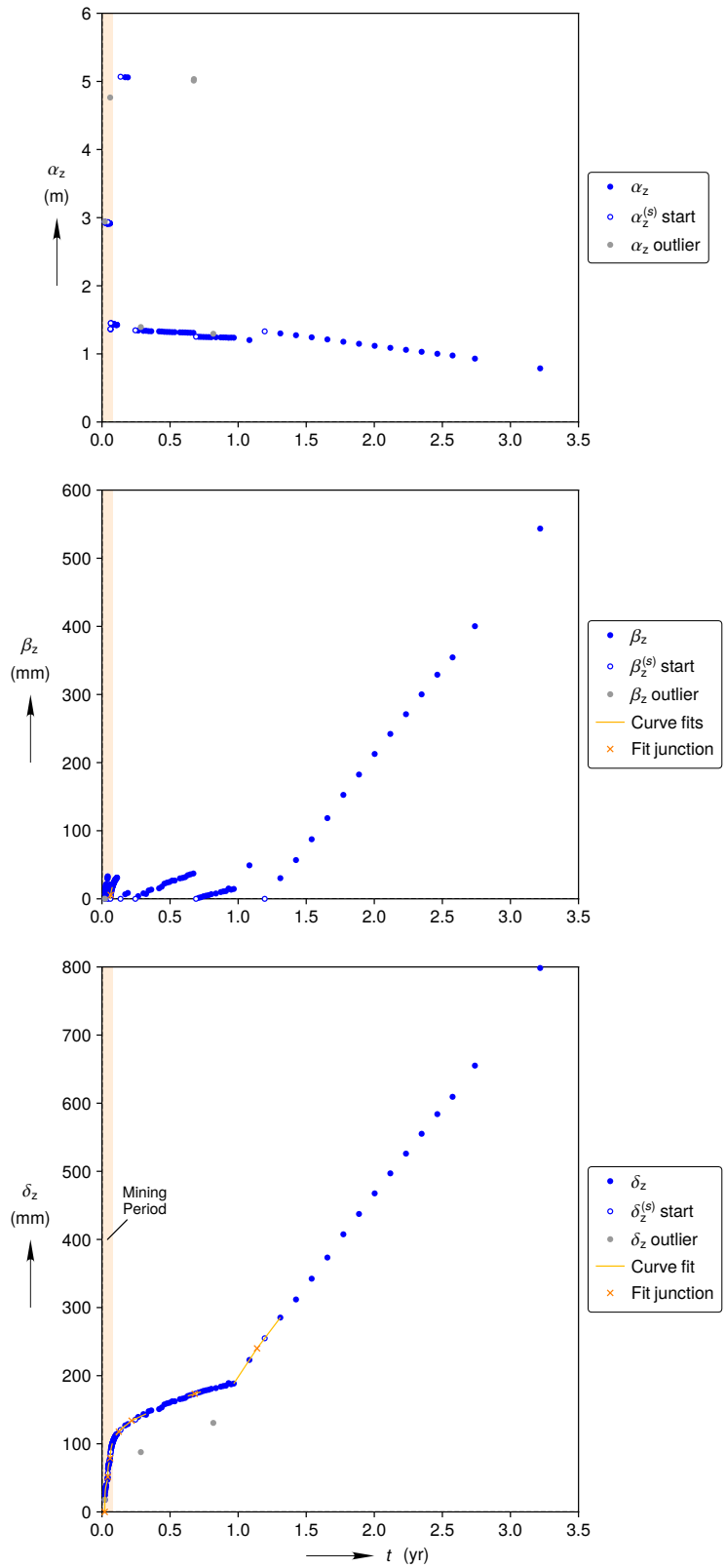
(b) Full reconstruction

Figure B-3. (Continued) Room B Station -1.0 m horizontal closure reconstruction process.



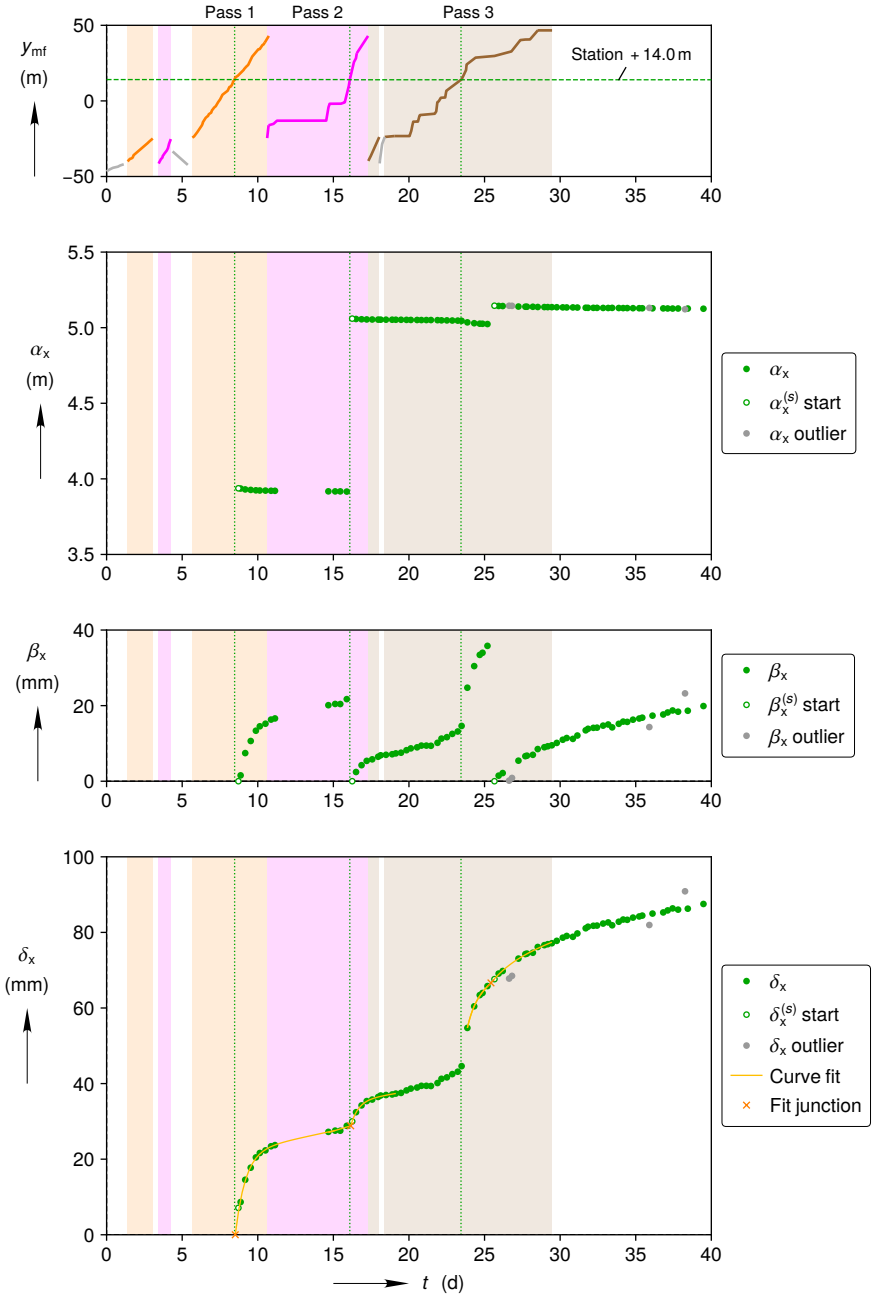
(a) Reconstruction during mining period

Figure B-4. Room B Station -1.0 m vertical closure reconstruction process.



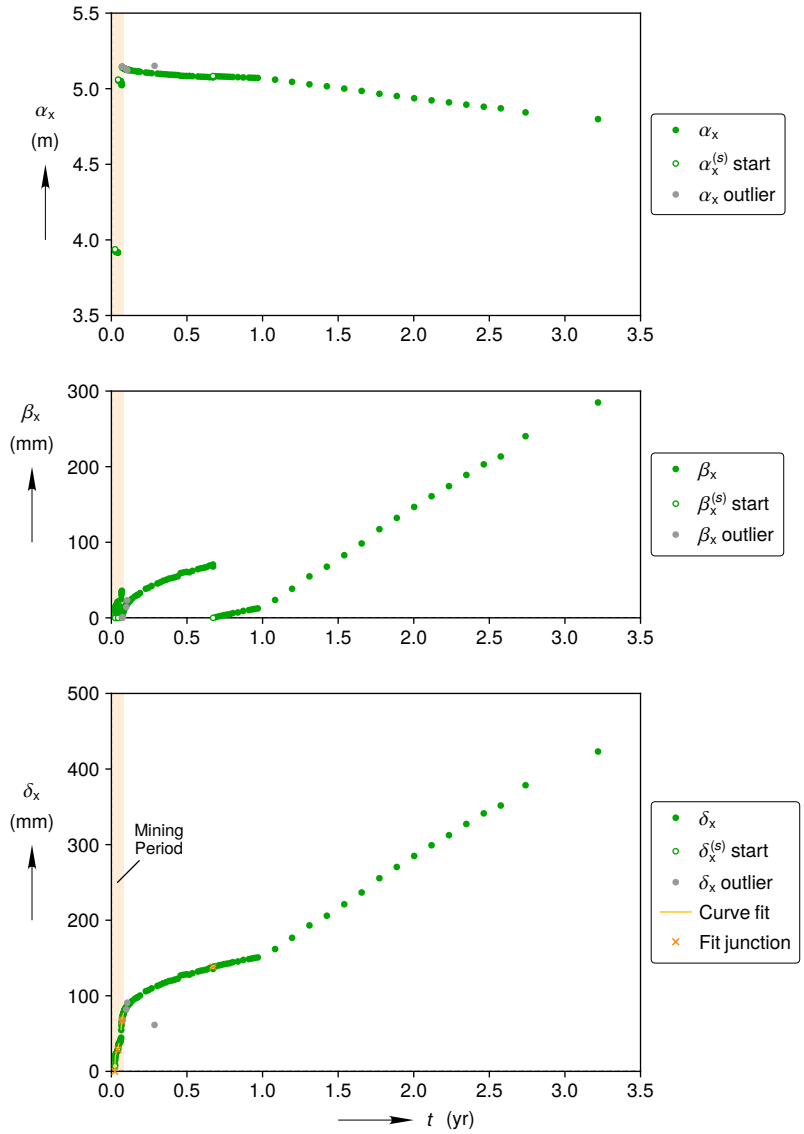
(b) Full reconstruction

Figure B-4. (Continued) Room B Station -1.0 m vertical closure reconstruction process.



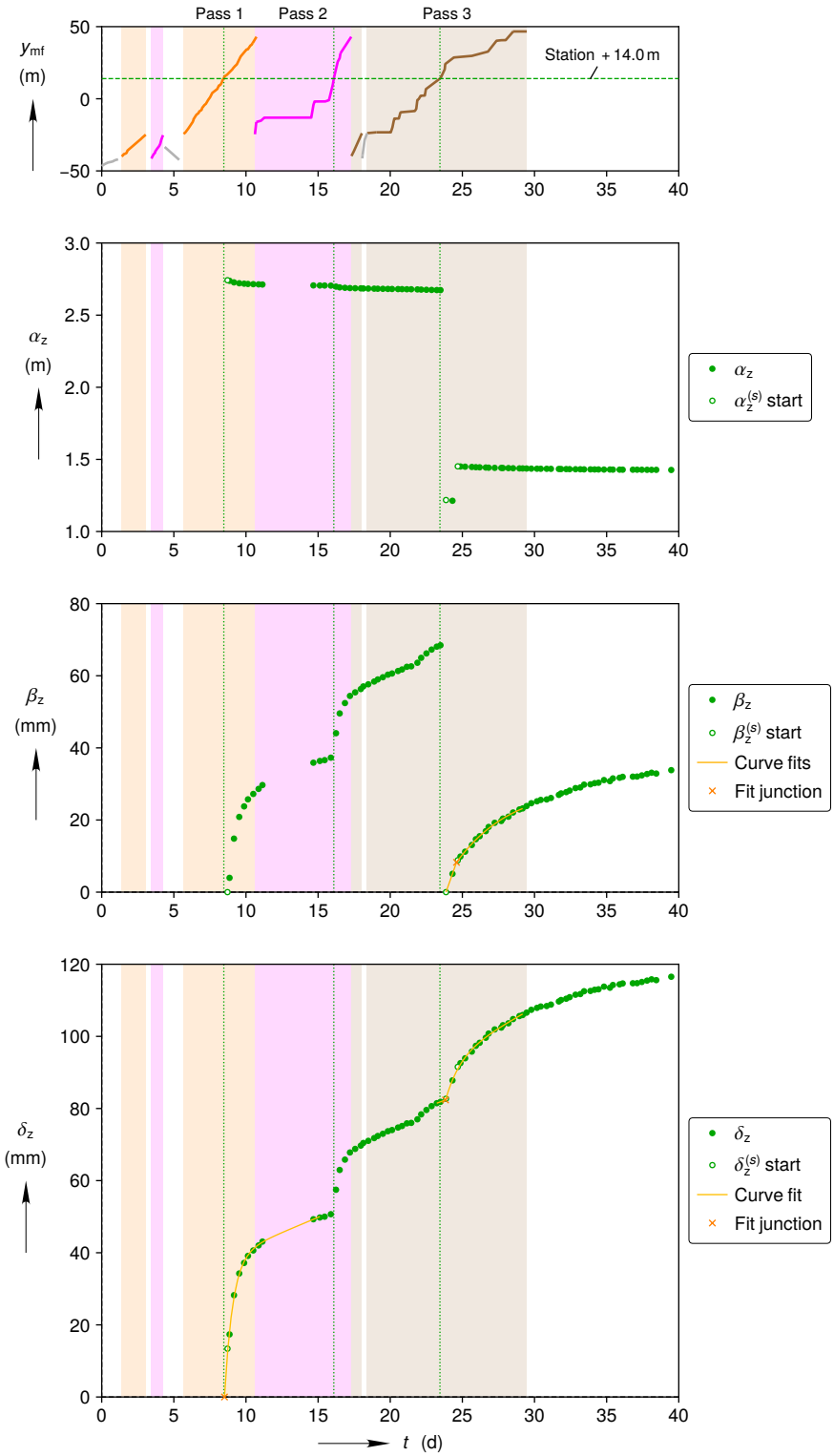
(a) Reconstruction during mining period

Figure B-5. Room B Station +14.0 m horizontal closure reconstruction process.



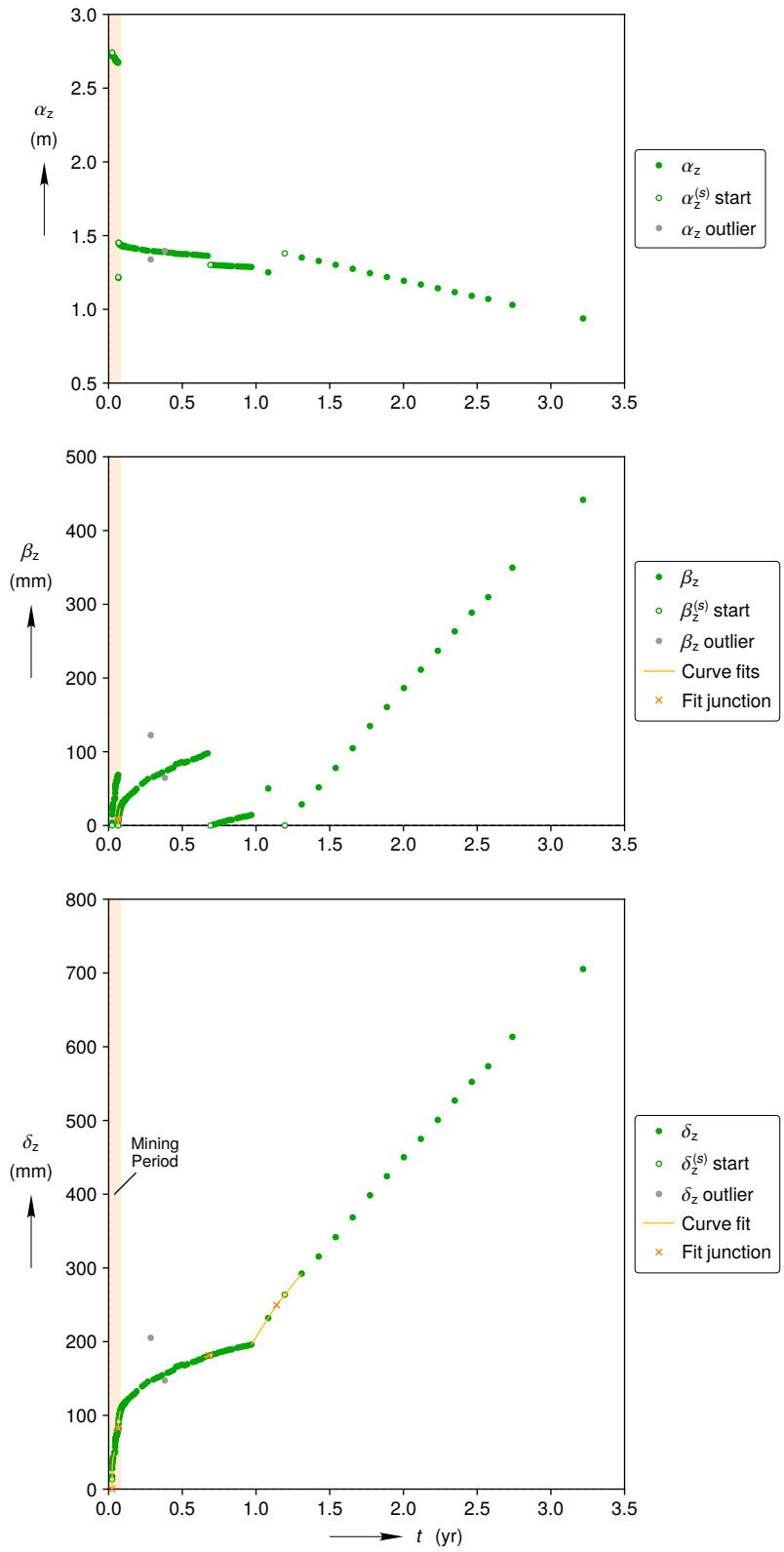
(b) Full reconstruction

Figure B-5. (Continued) Room B Station +14.0 m horizontal closure reconstruction process.



(a) Reconstruction during mining period

Figure B-6. Room B Station +14.0 m vertical closure reconstruction process.



(b) Full reconstruction

Figure B-6. (Continued) Room B Station +14.0 m vertical closure reconstruction process.

B.2. Mining Sequence Closure Data

Table B-1. Room B Station -16.2 m horizontal mining sequence metadata

										Pre-Jump Fitting Inputs				Post-Jump Fitting Inputs			
s	Segment Start Time	Analysis Notes	Gage Number	Paired Points	Point 1 y	Point 2 y	Estimated t_{ex}	t_{ex} Source	Shift Phase	Type	Start Index	End Index	Ignore Index	Type	Start Index	End Index	Ignore Index
(–)	(YYYY-MM-DD HH:MM)	(–)	(–)	(–)	(m)	(m)	(YYYY-MM-DD HH:MM)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)
0	1984-05-04 22:00	Estimated start of mining Room B.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1	1984-05-11 08:45	First reading after station mined out during pass 1.	B_M03-1	1E-1F	-16.32	-16.32	1984-05-11 06:30	Gage installation data sheet	2	–	–	–	–	Jeffreys	1	14	–
2	1984-05-16 02:36	First reading after point 1E mined out and replaced with 2E during pass 2. Note that the Jeffreys time constant was set to 0.803 d (the average value from the other two stations during pass 2) to compensate for the missing measurements during the power outage.	B_M03-2	2E-1F	-16.29	-16.32	1984-05-15 22:33	Average of neighboring reading times	2	Linear	-3	-1	–	Jeffreys	1	10	–
3	1984-05-26 01:07	Point 2E mined out during a minor trimming pass.	B_M03-2	2E-1F	-16.29	-16.32	1984-05-25 21:42	Average of neighboring reading times	2	Jeffreys	-3	-1	–	Jeffreys	2	13	–
4	1985-01-05 22:30	First reading after paired points were replaced.	B_M03-2	2E-1F	-16.29	-16.32	–	–	2	Linear	-3	-1	–	Linear	1	2	–

Table B-2. Room B Station -16.2 m horizontal mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_x (m)	δ_x (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
1	1984-05-11	08:45	1.5	3.93644	2.14	–	–	–
1	1984-05-11	12:36	4.7	3.93095	7.62	–	–	Face pass 1 @115.5
1	1984-05-11	17:32	7.3	3.92692	11.66	–	–	–
1	1984-05-12	02:04	11.6	3.92336	15.22	–	–	–
1	1984-05-12	10:37	15.8	3.92029	18.29	–	–	–
1	1984-05-12	18:49	20.4	3.91881	19.77	–	–	–
1	1984-05-13	02:14	25.1	3.91775	20.83	–	–	–
1	1984-05-13	10:05	30.2	3.91719	21.39	–	–	–
1	1984-05-13	17:48	32.3	3.91577	22.81	–	–	–
1	1984-05-14	01:41	37.6	3.91528	23.30	–	–	–
1	1984-05-14	10:34	43.6	3.91495	23.63	–	–	–
1	1984-05-14	18:31	46.9	3.91439	24.19	–	–	–
1	1984-05-15	01:38	50.3	3.91399	24.59	–	–	–
1	1984-05-15	09:59	54.4	3.91358	25.00	–	–	–
1	1984-05-15	18:30	-7.6	3.91391	24.67	–	–	–
2	1984-05-16	02:36	3.0	5.12742	25.88	–	–	Initial Reading
2	1984-05-17	–	–	–	–	–	–	Power Outage
2	1984-05-18	–	–	–	–	–	–	Power Outage
2	1984-05-19	14:45	–	5.11990	33.39	–	–	–
2	1984-05-20	00:27	14.3	5.11937	33.93	–	–	–
2	1984-05-20	09:10	14.3	5.11957	33.72	–	–	–
2	1984-05-20	19:01	17.7	5.11838	34.92	–	–	Pts 1A & 1G have been destroyed
2	1984-05-21	01:12	–	5.11868	34.61	–	–	16 feet 8 plus 1.523 inches was originally recorded for 2C-1D paired points but auditor noted that this reading was meant to be recorded for 2E-1F
2	1984-05-21	09:51	–	5.11805	35.25	–	–	–
2	1984-05-21	19:22	–	5.11713	36.16	–	–	–
2	1984-05-22	02:16	–	5.11762	35.68	–	–	16 feet 8 plus 1.481 inches was originally recorded for 2C-1D paired points but auditor noted that this reading was meant to be recorded for 2E-1F
2	1984-05-22	11:20	–	5.11655	36.75	–	–	–
2	1984-05-22	21:31	-9.1	5.11614	37.15	–	–	–
2	1984-05-23	00:47	6.7	5.11533	37.97	–	–	–
2	1984-05-23	09:23	-7.6	5.11531	37.99	–	–	–
2	1984-05-23	19:06	-7.3	5.11383	39.46	–	–	–
2	1984-05-24	00:46	7.0	5.11368	39.62	–	–	to Pass #4
2	1984-05-24	09:23	-7.6	5.11350	39.79	–	–	–
2	1984-05-24	17:45	7.6	5.11269	40.61	–	–	–
2	1984-05-25	00:41	6.1	5.11254	40.76	–	–	–
2	1984-05-25	05:42	2.4	5.10791	45.38	–	–	–
2	1984-05-25	10:17	6.1	5.10230	51.00	–	–	–
2	1984-05-25	18:17	6.7	5.09908	54.22	–	–	–
3	1984-05-26	01:07	7.0	–	–	–	–	2E mined out.
3	1984-05-26	09:40	7.6	5.20880	59.55	–	–	Initial RDG.
3	1984-05-26	22:18	–	5.20532	63.03	–	–	Face pass 3&4 at Sta. 0 18:30 hours.
3	1984-05-27	01:19	–	5.20413	64.22	–	–	–
3	1984-05-27	10:07	24.4	5.20255	65.80	–	–	–
3	1984-05-27	19:38	–	5.20065	67.70	–	–	–
3	1984-05-28	03:45	–	5.19948	68.87	–	–	–
3	1984-05-28	09:27	24.1	5.19814	70.22	–	–	–
3	1984-05-28	17:25	–	5.19763	70.73	–	–	–
3	1984-05-29	05:59	44.2	5.19702	71.34	–	–	–
3	1984-05-29	13:49	–	5.19641	71.95	–	–	–
3	1984-05-29	17:43	44.8	5.19615	72.20	–	–	–
3	1984-05-30	02:52	44.2	5.19516	73.19	–	–	–
3	1984-05-30	12:34	–	5.19493	73.42	–	–	–
3	1984-05-30	21:05	–	5.19443	73.93	–	–	–
3	1984-05-31	03:08	45.1	5.19344	74.92	–	–	–
3	1984-05-31	12:31	51.8	5.19250	75.86	–	–	–
3	1984-05-31	18:08	57.3	5.19237	75.98	–	–	–
3	1984-06-01	03:23	–	5.19156	76.80	–	–	–
3	1984-06-01	14:11	–	5.19316	75.20	–	–	–
3	1984-06-01	17:58	–	5.19161	76.75	–	–	–
3	1984-06-02	03:07	–	5.19100	77.36	–	–	–
3	1984-06-02	09:55	61.9	5.19026	78.09	–	–	Break through completed
3	1984-06-02	21:39	–	5.18993	78.42	–	–	–
3	1984-06-03	01:47	–	5.18991	78.45	–	–	–
3	1984-06-03	12:33	–	5.18892	79.44	–	–	Room complete except for floor trimming
3	1984-06-03	17:04	–	5.18886	79.49	–	–	Room complete except for trimming tights
3	1984-06-04	03:31	–	5.18902	79.34	–	–	–
3	1984-06-04	08:52	–	5.18808	80.28	–	–	–
3	1984-06-04	17:34	–	5.18846	79.90	–	–	–
3	1984-06-05	01:41	–	5.18698	81.37	–	–	–
3	1984-06-05	14:59	–	5.18658	81.78	–	–	–
3	1984-06-05	17:51	–	5.18564	82.72	–	–	–
3	1984-06-06	02:22	–	5.18653	81.83	–	–	–
3	1984-06-06	08:57	–	5.18566	82.69	–	–	–
3	1984-06-06	18:26	–	5.18130	87.06	×	–	–
3	1984-06-07	01:56	–	5.18617	82.18	–	–	–
3	1984-06-07	09:01	–	5.18467	83.68	–	–	–
3	1984-06-07	19:30	–	5.18411	84.24	–	–	–
3	1984-06-08	01:44	–	5.18429	84.06	–	–	–
3	1984-06-08	08:56	–	5.18447	83.88	–	–	–
3	1984-06-08	17:56	–	5.18147	86.88	×	–	–
3	1984-06-09	08:54	–	5.18317	85.18	–	–	–
3	1984-06-09	19:50	–	5.18307	85.28	–	–	–

Table B-2. Room B Station -16.2 m horizontal mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_x (m)	δ_x (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
3	1984-06-09	–	–	–	–	–	–	Drill rigs obstructing EMSC gauges. Room complete.
3	1984-06-10	01:16	–	5.18284	85.51	–	–	–
3	1984-06-10	17:12	–	5.18239	85.97	–	–	–
3	1984-06-11	01:11	–	5.18206	86.30	–	–	–
3	1984-06-11	09:00	–	5.18310	85.26	–	–	–
3	1984-06-11	16:56	–	5.18196	86.40	–	–	–
3	1984-06-12	04:34	–	5.18135	87.01	–	–	–
3	1984-06-12	09:13	–	5.18150	86.86	–	–	–
3	1984-06-12	–	–	–	–	–	–	No readings - Hoist down - No Access U/G
3	1984-06-13	09:48	–	5.18119	87.16	–	–	–
3	1984-06-13	17:08	–	5.18025	88.10	–	–	–
3	1984-06-14	01:10	–	5.17949	88.86	–	–	–
3	1984-06-14	01:27	–	5.18033	88.02	–	–	–
3	1984-06-14	10:07	–	5.18018	88.18	–	–	–
3	1984-06-14	17:10	–	5.18023	88.13	–	–	–
3	1984-06-15	09:49	–	5.17934	89.02	–	–	–
3	1984-06-16	17:21	–	5.17860	89.75	–	–	–
3	1984-06-18	16:54	–	5.17809	90.26	–	–	–
3	1984-06-23	16:36	–	5.17538	92.98	–	–	–
3	1984-06-30	17:16	–	5.17266	95.70	–	–	–
3	1984-07-06	03:04	–	5.17139	96.97	–	–	–
3	1984-07-07	18:43	–	5.17032	98.03	–	–	–
3	1984-07-13	07:01	–	5.16987	98.49	–	–	–
3	1984-07-20	04:18	–	5.16689	101.46	–	–	–
3	1984-07-27	02:13	–	5.16402	104.33	–	–	–
3	1984-08-02	10:04	–	5.16217	106.19	–	–	–
3	1984-08-10	02:07	–	5.15894	109.41	–	–	–
3	1984-08-17	03:08	–	5.15602	112.33	–	–	–
3	1984-08-24	01:45	–	5.15567	112.69	–	–	–
3	1984-08-31	02:05	–	5.15419	114.16	–	–	–
3	1984-09-07	01:25	–	5.15226	116.09	–	–	No cap on floor pt
3	1984-09-14	03:18	–	5.15043	117.92	–	–	–
3	1984-09-21	02:37	–	5.14947	118.89	–	–	–
3	1984-09-28	04:34	–	5.14921	119.14	–	–	–
3	1984-10-05	02:50	–	5.14736	120.99	–	–	–
3	1984-10-12	02:25	–	5.14561	122.75	–	–	–
3	1984-10-19	06:11	–	5.14175	126.61	–	–	–
3	1984-10-26	05:34	–	5.14116	127.19	–	–	–
3	1984-11-02	02:08	–	5.13966	128.69	–	–	–
3	1984-11-09	02:36	–	5.14068	127.67	–	–	–
3	1984-11-16	02:05	–	5.13883	129.53	–	–	–
3	1984-11-30	01:48	–	5.13674	131.61	–	–	–
3	1984-12-07	02:47	–	5.13596	132.40	–	–	–
3	1984-12-14	03:09	–	5.13497	133.39	–	–	–
3	1984-12-21	02:46	–	5.13362	134.74	–	–	–
3	1984-12-28	04:03	–	5.13212	136.23	–	–	–
3	1985-01-05	03:34	–	5.13100	137.35	–	–	–
3	1985-01-05	20:52	–	5.13103	137.33	–	–	–
4	1985-01-05	22:30	–	5.12526	137.39	–	–	Ram-set point replaced with new star anchors & eye-bolts and grouted. Point 1A was not replaced since it was an existing expansion anchor. Only grout was applied. [Technician/installer also indicated that this is one of three] new readings.
4	1985-01-12	04:50	–	5.12440	138.26	–	–	–
4	1985-01-19	05:42	–	5.12361	139.04	–	–	–
4	1985-01-25	03:58	–	5.12275	139.91	–	–	–
4	1985-02-01	02:30	–	5.12328	139.37	–	–	–
4	1985-02-08	05:49	–	5.12059	142.07	–	–	–
4	1985-02-15	03:50	–	5.12000	142.65	–	–	–
4	1985-02-22	02:52	–	5.11876	143.89	–	–	–
4	1985-02-27	13:35	–	5.11815	144.50	–	–	–
4	1985-03-06	13:09	–	5.11785	144.81	–	–	–
4	1985-03-19	11:29	–	5.11579	146.87	–	–	–
4	1985-03-26	13:00	–	5.11518	147.48	–	–	–
4	1985-04-02	09:39	–	5.11449	148.16	–	–	–
4	1985-04-09	13:11	–	5.11432	148.34	–	–	–
4	1985-04-16	12:48	–	5.11325	149.41	–	–	–
4	1985-04-23	13:11	–	5.11348	149.18	–	–	–
4	1985-06-04	09:44	–	5.10172	160.94	–	–	–
4	1985-07-15	10:24	–	5.08770	174.96	–	–	–
4	1985-08-26	09:58	–	5.07129	191.37	–	–	–
4	1985-10-07	10:46	–	5.05945	203.20	–	–	–
4	1985-11-18	10:08	–	5.04492	217.73	–	–	–
4	1985-12-30	13:50	–	5.02928	233.38	–	–	–
4	1986-02-11	09:38	–	5.01119	251.46	–	–	–
4	1986-03-25	09:23	–	4.99671	265.94	–	–	–
4	1986-05-06	09:38	–	4.98244	280.22	–	–	–
4	1986-06-17	10:17	–	4.96870	293.96	–	–	–
4	1986-07-29	10:42	–	4.95483	307.83	–	–	–
4	1986-09-09	10:26	–	4.94073	321.92	–	–	–
4	1986-10-21	12:36	–	4.92999	332.67	–	–	–
4	1986-12-01	14:06	–	4.91721	345.44	–	–	–
4	1987-01-30	17:43	–	4.89062	372.04	–	–	–
4	1987-07-24	13:57	–	4.84299	419.66	–	–	–
4	1987-10-09	–	–	–	–	–	–	Room closed - bad back
4	1988-01-01	–	–	–	–	–	–	Room closed - bad back

Table B-3. Room B Station -16.2 m vertical mining sequence metadata

										Pre-Jump Fitting Inputs				Post-Jump Fitting Inputs			
s (−)	Segment Start Time (YYYY-MM-DD HH:MM)	Analysis Notes (−)	Gage Number (−)	Paired Points (−)	Point 1 y (m)	Point 2 y (m)	Estimated t_{ex} (YYYY-MM-DD HH:MM)	t_{ex} Source (−)	Shift Phase (−)	Type (−)	Start Index (−)	End Index (−)	Ignore Index (−)	Type (−)	Start Index (−)	End Index (−)	Ignore Index (−)
0	1984-05-04 22:00	Estimated start of mining Room B.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1	1984-05-11 08:20	First reading after station mined out during pass 1.	B_M01-1	1A-1B	-16.22	-16.22	1984-05-11 06:30	Gage installation data sheet	2	–	–	–	–	Jeffreys	1	16	[3]
2	1984-05-21 04:23	First reading after point 1A destroyed and re-installed.	B_M01-1	1A-1B	-16.22	-16.22	–	–	2	Linear	-3	-2	–	Linear	1	2	–
3	1984-05-25 05:49	First reading after point 1B mined out and replaced with 3B.	B_M01-3	1A-3B	-16.2	-16.22	1984-05-25 04:30	Gage installation data sheet	2	Linear	-3	-1	–	Jeffreys	3	20	–
4	1984-06-03 12:34	Point 3B was trimmed out and replaced shortly before reading.	B_M01-3	1A-3B	-16.2	-16.22	–	–	2	Linear	-4	-1	–	Linear	1	2	–
5	1984-11-09 02:32	Reading jumped 0.977 inches for an uknown reason.	B_M01-3	1A-3B	-16.2	-16.22	–	–	2	Linear	-2	-1	–	Linear	1	2	–
6	1985-01-05 22:31	First reading after paired points replaced. Also first reading with ext rod #2 instead of ext tape.	B_M01-3	1A-3B	-16.2	-16.22	–	–	2	Linear	-3	-1	–	Linear	1	2	–
7	1985-07-15 10:23	First reading with ext rod #1 instead of ext rod #2.	B_M01-3	1A-3B	-16.2	-16.22	–	–	2	Linear	-2	-1	–	Linear	1	2	–

Table B-4. Room B Station -16.2 m vertical mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_z (m)	δ_z (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
1	1984-05-11	08:20	1.5	2.91948	3.89	–	–	–
1	1984-05-11	12:27	4.7	2.91079	12.58	–	–	Face Pass 1 at 115.5
1	1984-05-11	17:24	7.3	2.92799	-4.61	×	–	–
1	1984-05-12	02:00	11.6	2.89720	26.17	–	–	–
1	1984-05-12	10:35	15.8	2.89344	29.93	–	–	–
1	1984-05-12	18:43	20.4	2.89156	31.81	–	–	–
1	1984-05-12	21:13	–	2.89080	32.57	–	–	–
1	1984-05-13	02:07	25.1	2.88958	33.79	–	–	–
1	1984-05-13	10:07	30.2	2.88844	34.93	–	–	–
1	1984-05-13	17:44	32.3	2.88712	36.25	–	–	–
1	1984-05-14	01:34	37.6	2.88651	36.86	–	–	–
1	1984-05-14	10:33	43.6	2.88503	38.34	–	–	–
1	1984-05-14	18:28	46.9	2.88440	38.97	–	–	–
1	1984-05-15	01:34	50.3	2.88392	39.45	–	–	–
1	1984-05-15	09:55	54.4	2.88305	40.32	–	–	–
1	1984-05-15	18:24	-7.6	2.88226	41.11	–	–	–
1	1984-05-16	02:25	3.0	2.87442	48.95	–	–	–
1	1984-05-17	–	–	–	–	–	–	Power Outage
1	1984-05-18	–	–	–	–	–	–	Power Outage
1	1984-05-19	14:40	–	2.86141	61.96	–	–	–
1	1984-05-20	00:32	14.3	2.86012	63.25	–	–	–
1	1984-05-20	09:12	14.3	2.85915	64.22	–	–	–
1	1984-05-20	19:00	–	–	–	–	–	Pts 1A and 1G have been destroyed.
2	1984-05-21	04:23	–	2.84853	66.01	–	–	Initial reading.
2	1984-05-21	09:48	–	2.84813	66.41	–	–	–
2	1984-05-21	19:16	–	2.84693	67.61	–	–	–
2	1984-05-21	–	–	–	–	–	–	1A has been drilled out.
2	1984-05-22	02:21	–	2.84617	68.37	–	–	–
2	1984-05-22	11:18	–	2.84510	69.44	–	–	–
2	1984-05-22	21:26	-9.1	2.84477	69.77	–	–	–
2	1984-05-23	00:40	-6.7	2.84399	70.55	–	–	–
2	1984-05-23	09:15	-7.6	2.84297	71.57	–	–	–
2	1984-05-23	19:00	-7.3	2.84185	72.69	–	–	–
2	1984-05-24	00:49	-7.0	2.84117	73.37	–	–	To pass #4
2	1984-05-24	09:57	-7.6	2.84028	74.26	–	–	–
2	1984-05-24	17:47	-7.6	2.83969	74.85	–	–	–
2	1984-05-25	00:44	-6.1	2.83931	75.23	–	–	–
3	1984-05-25	05:49	2.4	1.98260	-488.68	×	–	Initial reading. Delay changed to installation
3	1984-05-25	10:08	6.1	1.16888	325.03	×	–	[Technician circled this reading and wrote] ?
3	1984-05-25	14:10	1.8	1.41491	79.01	–	–	–
3	1984-05-25	18:21	6.7	1.41346	80.46	–	–	–
3	1984-05-26	01:06	7.0	1.41100	82.92	–	–	–
3	1984-05-26	09:37	7.6	1.40934	84.57	–	–	–
3	1984-05-26	22:16	–	1.40617	87.75	–	–	Face Pass 3&4 at Sta. 0 1830 hrs.
3	1984-05-27	01:16	–	1.40503	88.89	–	–	–
3	1984-05-27	10:03	24.4	1.40343	90.49	–	–	–
3	1984-05-27	19:40	–	1.40178	92.14	–	–	–
3	1984-05-28	03:42	–	1.40020	93.71	–	–	–
3	1984-05-28	09:29	24.1	1.40020	93.71	–	–	–
3	1984-05-28	17:17	–	1.39875	95.16	–	–	–
3	1984-05-29	05:58	44.2	1.39756	96.36	–	–	–
3	1984-05-29	13:45	–	1.39697	96.94	–	–	–
3	1984-05-29	17:38	44.8	1.39626	97.65	–	–	–
3	1984-05-30	02:50	44.2	1.39581	98.11	–	–	–
3	1984-05-30	12:38	45.7	1.39527	98.64	–	–	–
3	1984-05-30	21:09	–	1.39459	99.33	–	–	–
3	1984-05-31	03:06	45.1	1.39421	99.71	–	–	–
3	1984-05-31	12:35	51.8	1.39322	100.70	–	–	–
3	1984-05-31	18:12	57.3	1.39332	100.60	–	–	Trimming floor at +110
3	1984-06-01	03:22	–	1.39273	101.18	–	–	–
3	1984-06-01	11:57	–	1.39174	102.17	–	–	–
3	1984-06-01	18:02	–	1.39195	101.97	–	–	–
3	1984-06-02	03:05	–	1.39098	102.93	–	–	–
3	1984-06-02	08:52	61.9	1.39098	102.93	–	–	Break through completed
3	1984-06-02	21:42	–	1.39037	103.54	–	–	Room complete
3	1984-06-03	01:45	–	1.38991	104.00	–	–	–
4	1984-06-03	12:34	–	1.43617	104.51	–	–	Room complete except for floor trimming. Floor point trimmed out during day shift. Replaced 6-3-84 @12:30. Reinstallation reading.
4	1984-06-03	17:06	–	1.43584	104.84	–	–	Room complete except for trimming tights
4	1984-06-04	03:30	–	1.43551	105.17	–	–	–
4	1984-06-04	08:50	–	1.43538	105.29	–	–	–
4	1984-06-04	17:36	–	1.43482	105.85	–	–	Room complete
4	1984-06-05	01:40	–	1.43436	106.31	–	–	–
4	1984-06-05	14:57	–	1.43332	107.35	–	–	–
4	1984-06-05	17:49	–	1.43330	107.38	–	–	–
4	1984-06-06	02:20	–	1.43302	107.66	–	–	–
4	1984-06-06	08:55	–	1.43297	107.71	–	–	–
4	1984-06-06	18:27	–	1.43233	108.34	–	–	–
4	1984-06-07	01:54	–	1.43231	108.37	–	–	–
4	1984-06-07	09:03	–	1.43241	108.26	–	–	–
4	1984-06-07	19:27	–	1.43147	109.20	–	–	–
4	1984-06-08	01:42	–	1.43106	109.61	–	–	–
4	1984-06-08	08:53	–	1.43060	110.07	–	–	–
4	1984-06-08	17:55	–	1.43005	110.63	–	–	–
4	1984-06-09	08:53	–	1.43007	110.60	–	–	–

Table B-4. Room B Station -16.2 m vertical mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_z (m)	δ_z (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
4	1984-06-09	19:48	–	1.42987	110.80	–	–	–
4	1984-06-09	–	–	–	–	–	–	Drill rigs obstructing EMSC gauges. Room complete.
4	1984-06-10	01:13	–	1.42933	111.34	–	–	–
4	1984-06-10	17:10	–	1.42926	111.41	–	–	–
4	1984-06-11	01:12	–	1.42898	111.69	–	–	–
4	1984-06-11	08:58	–	1.42852	112.15	–	–	–
4	1984-06-11	16:55	–	1.42829	112.38	–	–	–
4	1984-06-12	04:32	–	1.42794	112.74	–	–	–
4	1984-06-12	09:07	–	1.42756	113.12	–	–	–
4	1984-06-12	–	–	–	–	–	–	No readings - Hoist down - No Access U/G
4	1984-06-13	09:46	–	1.42745	113.22	–	–	–
4	1984-06-13	17:05	–	1.42669	113.98	–	–	–
4	1984-06-14	01:11	–	1.42611	114.56	–	–	–
4	1984-06-14	01:26	–	1.42723	113.45	–	–	–
4	1984-06-14	10:05	–	1.42695	113.73	–	–	–
4	1984-06-14	17:08	–	1.42639	114.28	–	–	–
4	1984-06-15	09:45	–	1.42603	114.64	–	–	–
4	1984-06-16	17:19	–	1.42514	115.53	–	–	–
4	1984-06-18	16:51	–	1.42403	116.65	–	–	–
4	1984-06-23	16:35	–	1.42210	118.58	–	–	–
4	1984-06-30	17:15	–	1.41912	121.55	–	–	–
4	1984-07-06	03:02	–	1.41661	124.06	–	–	Open room
4	1984-07-07	18:41	–	1.41597	124.70	–	–	–
4	1984-07-13	06:58	–	1.41453	126.15	–	–	–
4	1984-07-20	04:20	–	1.41181	128.86	–	–	–
4	1984-07-27	–	–	–	–	–	–	Heater hole
4	1984-08-02	10:00	–	1.40492	135.75	–	–	–
4	1984-08-10	02:05	–	1.40007	140.60	–	–	–
4	1984-08-17	03:10	–	1.39662	144.05	–	–	–
4	1984-08-24	01:43	–	1.39692	143.75	–	–	–
4	1984-08-31	02:04	–	1.39484	145.83	–	–	–
4	1984-09-07	01:24	–	1.39322	147.46	–	–	No cap on floor pt
4	1984-09-14	03:15	–	1.39238	148.30	–	–	With 12’ ext. tape
4	1984-09-21	02:35	–	1.39207	148.60	–	–	With 12’ ext. tape
4	1984-09-28	04:33	–	1.38984	150.84	–	–	Ext. tape
4	1984-10-05	02:49	–	1.38824	152.44	–	–	Ext. tape
4	1984-10-12	02:23	–	1.38654	154.14	–	–	Ext. tape
4	1984-10-19	06:10	–	1.38176	158.91	–	–	–
4	1984-10-26	05:32	–	1.38069	159.98	–	–	–
4	1984-11-02	02:06	–	1.37940	161.27	–	–	With 12’ ext. tape
5	1984-11-09	02:32	–	1.40421	162.74	–	–	–
5	1984-11-16	02:05	–	1.40261	164.34	–	–	Ext. Tape
5	1984-11-30	01:47	–	1.39992	167.03	–	–	Ext. Tape
5	1984-12-07	02:46	–	1.39819	168.76	–	–	Ext. Tape
5	1984-12-14	03:08	–	1.39598	170.97	–	–	Ext. Tape
5	1984-12-21	02:45	–	1.39464	172.32	–	–	w/Ext. Tape
5	1984-12-28	04:01	–	1.39253	174.43	–	–	Ext. Tape
5	1985-01-05	03:32	–	1.39103	175.92	–	–	Ext. Tape
5	1985-01-05	20:50	–	1.39108	175.87	–	–	–
6	1985-01-05	22:31	–	1.28013	175.97	–	–	#2 Rod Ext. Ram-set point replaced with new star anchors & eye-bolts and grouted. Point 1A was not replaced since it was an existing expansion anchor. Only grout was applied. [Technician/installer also indicated that this is one of three] new readings.
6	1985-01-12	04:04	–	1.27909	177.01	–	–	Ext. Rod #2
6	1985-01-19	06:26	–	1.27767	178.43	–	–	Ext. Rod #2
6	1985-01-25	03:57	–	1.27693	179.17	–	–	Ext. Rod #2
6	1985-02-01	02:29	–	1.27579	180.31	–	–	–
6	1985-02-08	05:46	–	1.27480	181.30	–	–	Ext. Rod #2
6	1985-02-15	03:49	–	1.27381	182.30	–	–	Rod #2
6	1985-02-22	02:51	–	1.27267	183.44	–	–	Ext. Rod #2
6	1985-02-27	13:32	–	1.27175	184.35	–	–	w/Ext. Rod #2
6	1985-03-06	13:08	–	1.27155	184.56	–	–	–
6	1985-03-19	11:28	–	1.26911	186.99	–	–	Ext. Rod #2
6	1985-03-26	12:59	–	1.26809	188.01	–	–	Ext. Rod #2
6	1985-04-02	11:19	–	1.26782	188.29	–	–	Ext. Rod #2
6	1985-04-09	13:10	–	1.26680	189.31	–	–	Ext. Rod #2
6	1985-04-16	10:57	–	1.26568	190.42	–	–	Ext. Rod #2
6	1985-04-23	13:09	–	1.26492	191.19	–	–	Ext. Rod #2
6	1985-06-04	09:43	–	1.22875	227.35	–	–	Ext Rod #2
7	1985-07-15	10:23	–	1.35890	258.58	–	–	Rod #1
7	1985-08-26	09:59	–	1.33126	286.22	–	–	Rod #1
7	1985-10-07	09:40	–	1.30891	308.57	–	–	Ext. Rod #1
7	1985-11-18	10:07	–	1.28313	334.35	–	–	Rod #1
7	1985-12-30	13:49	–	1.25641	361.07	–	–	Rod #1
7	1986-02-11	09:36	–	1.22664	390.84	–	–	Rod #1
7	1986-03-25	09:23	–	1.20035	417.13	–	–	Rod #1
7	1986-05-06	09:36	–	1.17460	442.89	–	–	Rod #1
7	1986-06-17	10:15	–	1.15095	466.53	–	–	Rod #1
7	1986-07-29	10:40	–	1.12453	492.95	–	–	Rod #1
7	1986-09-09	10:25	–	1.09842	519.06	–	–	Ext. Rod #1
7	1986-10-21	12:35	–	1.07366	543.83	–	–	Rod #1
7	1986-12-01	10:50	–	1.05230	565.19	–	–	Ext. Rod #1
7	1987-01-30	09:24	–	1.01209	605.40	–	–	Rod #1
7	1987-07-24	10:53	–	0.90919	708.29	–	–	Ext. Rod #1
7	1987-10-09	–	–	–	–	–	–	Room closed - bad back

Table B-4. Room B Station -16.2 m vertical mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_z (m)	δ_z (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
7	1988-01-01	–	–	–	–	–	–	Room closed - bad back

Table B-5. Room B Station -1.0 m horizontal mining sequence metadata

										Pre-Jump Fitting Inputs				Post-Jump Fitting Inputs			
s	Segment Start Time	Analysis Notes	Gage Number	Paired Points	Point 1 y	Point 2 y	Estimated t_{ex}	t_{ex} Source	Shift Phase	Type	Start Index	End Index	Ignore Index	Type	Start Index	End Index	Ignore Index
(–)	(YYYY-MM-DD HH:MM)	(–)	(–)	(–)	(m)	(m)	(YYYY-MM-DD HH:MM)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)
0	1984-05-04 22:00	Estimated start of mining Room B.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1	1984-05-12 12:06	First reading after station mined out during pass 1.	B_M13-1	1E-1F	-1.25	-1.25	1984-05-12 08:00	Gage installation data sheet	2	–	–	–	–	Jeffreys	1	16	–
2	1984-05-20 18:42	First reading after point 1E mined out and replaced with 2E.	B_M13-2	2E-1F	-1.39	-1.25	1984-05-20 13:53	Average of neighboring reading times	2	Linear	-4	-1	–	Jeffreys	1	10	–
3	1984-05-28 06:15	First reading after point mined out during a trimming pass and re-installed.	B_M13-2	2E-1F	-1.39	-1.25	1984-05-28 01:30	Gage installation data sheet	2	Jeffreys	-4	-2	–	Jeffreys	1	13	[3]
4	1985-01-06 11:45	First reading after paired points replaced.	B_M13-2	2E-1F	-1.39	-1.25	–	–	2	Linear	-4	-1	–	Linear	1	4	–

Table B-6. Room B Station -1.0 m horizontal mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_x (m)	δ_x (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
1	1984-05-12	12:06	1.8	3.74907	6.01	–	–	–
1	1984-05-12	19:13	5.2	3.74081	14.26	–	–	–
1	1984-05-13	02:25	9.9	3.73637	18.71	–	–	–
1	1984-05-13	10:24	14.9	3.73355	21.53	–	–	–
1	1984-05-13	18:10	17.1	3.73164	23.43	–	–	–
1	1984-05-14	01:53	22.4	3.73078	24.30	–	–	–
1	1984-05-14	01:53	22.4	3.73078	24.30	–	–	–
1	1984-05-14	10:19	28.3	3.72976	25.31	–	–	–
1	1984-05-14	18:42	31.7	3.72915	25.92	–	–	–
1	1984-05-15	01:25	35.1	3.72862	26.46	–	–	–
1	1984-05-15	10:06	39.2	3.72745	27.62	–	–	–
1	1984-05-15	18:50	-22.9	3.72671	28.36	–	–	–
1	1984-05-16	01:08	37.5	3.72638	28.69	–	–	Dist. to 1st pass.
1	1984-05-17	–	–	–	–	–	–	Power outage
1	1984-05-18	–	–	–	–	–	–	Power outage
1	1984-05-19	14:23	–	3.72168	33.39	–	–	–
1	1984-05-19	17:23	-0.9	3.72133	33.75	–	–	Power out at approx 17:10
1	1984-05-20	00:40	-0.9	3.71970	35.37	–	–	3’ ahead of 2nd pass
1	1984-05-20	09:05	-0.9	3.71953	35.55	–	–	–
2	1984-05-20	18:42	2.4	5.15673	38.38	–	–	–
2	1984-05-21	04:43	–	5.15445	40.66	–	–	16 feet 10 plus 0.931 inches was originally recorded for 2C-1D paired points but auditor noted that this reading was meant to be recorded for 2E-1F
2	1984-05-21	09:36	–	5.15348	41.63	–	–	–
2	1984-05-21	19:04	–	5.15163	43.48	–	–	–
2	1984-05-22	02:33	–	5.15046	44.65	–	–	–
2	1984-05-22	11:28	–	5.15043	44.67	–	–	–
2	1984-05-22	21:20	-24.4	5.14960	45.51	–	–	–
2	1984-05-23	00:59	21.9	5.14985	45.26	–	–	–
2	1984-05-23	09:27	-22.9	5.14975	45.36	–	–	–
2	1984-05-23	19:13	-22.6	5.14858	46.53	–	–	–
2	1984-05-24	00:56	22.3	5.14904	46.07	–	–	–
2	1984-05-24	09:25	-22.9	5.14876	46.35	–	–	–
2	1984-05-24	17:53	22.9	5.14764	47.47	–	–	–
2	1984-05-25	00:52	21.3	5.14716	47.95	–	–	–
2	1984-05-25	10:36	-9.1	5.14662	48.48	–	–	–
2	1984-05-25	18:10	-8.5	5.14563	49.48	–	–	FACE PASS 3&4 AT sta. -28
2	1984-05-26	01:24	8.2	5.14513	49.98	–	–	–
2	1984-05-26	08:49	-7.6	5.14510	50.01	–	–	–
2	1984-05-26	20:49	–	5.13710	58.01	–	–	–
2	1984-05-27	01:16	–	5.13283	62.28	–	–	–
2	1984-05-27	09:55	9.1	5.13083	64.28	–	–	–
2	1984-05-27	19:16	–	5.13255	62.56	×	–	–
3	1984-05-28	06:15	6.1	5.20215	68.05	–	–	Reinstallation of pt
3	1984-05-28	09:23	8.8	5.20162	68.58	–	–	–
3	1984-05-28	18:04	–	5.19595	74.25	×	–	–
3	1984-05-29	06:37	29.0	5.19587	74.32	–	–	–
3	1984-05-29	14:14	–	5.19557	74.63	–	–	–
3	1984-05-29	18:15	29.6	5.19440	75.80	–	–	–
3	1984-05-30	05:09	29.0	5.19300	77.19	–	–	–
3	1984-05-30	12:45	30.5	5.19247	77.73	–	–	–
3	1984-05-30	20:49	–	5.19184	78.36	–	–	–
3	1984-05-31	03:01	29.9	5.19125	78.94	–	–	–
3	1984-05-31	12:42	36.6	5.19029	79.91	–	–	–
3	1984-05-31	17:57	42.1	5.19079	79.40	–	–	Trimming floor at plus 110
3	1984-06-01	03:34	–	5.18940	80.80	–	–	–
3	1984-06-01	14:23	–	5.18798	82.22	–	–	–
3	1984-06-01	17:41	–	5.18904	81.15	–	–	–
3	1984-06-02	02:57	–	5.18762	82.58	–	–	–
3	1984-06-02	10:09	46.6	5.18678	83.42	–	–	–
3	1984-06-02	21:24	–	5.18734	82.86	–	–	Room complete.
3	1984-06-03	02:00	–	5.18632	83.87	–	–	–
3	1984-06-03	09:12	–	5.18615	84.05	–	–	–
3	1984-06-03	16:52	–	5.18592	84.28	–	–	–
3	1984-06-04	02:23	–	5.18498	85.22	–	–	–
3	1984-06-04	08:44	–	5.18503	85.17	–	–	–
3	1984-06-04	17:50	–	5.18475	85.45	–	–	Swing room complete.
3	1984-06-05	01:34	–	5.18434	85.85	–	–	–
3	1984-06-05	14:53	–	5.18307	87.12	–	–	–
3	1984-06-05	18:00	–	5.18244	87.76	–	–	–
3	1984-06-06	02:34	–	5.18244	87.76	–	–	–
3	1984-06-06	08:51	–	5.18236	87.83	–	–	–
3	1984-06-06	18:20	–	5.18246	87.73	–	–	–
3	1984-06-07	02:03	–	5.18175	88.44	–	–	–
3	1984-06-07	08:52	–	5.18196	88.24	–	–	–
3	1984-06-07	19:20	–	5.18043	89.77	–	–	–
3	1984-06-08	01:53	–	5.18071	89.49	–	–	–
3	1984-06-08	08:46	–	5.18063	89.56	–	–	–
3	1984-06-08	17:47	–	5.17964	90.55	–	–	–
3	1984-06-09	08:44	–	5.17972	90.48	–	–	–
3	1984-06-09	19:42	–	5.17964	90.55	–	–	–
3	1984-06-09	–	–	–	–	–	–	Drill rigs obstructing EMSC gauges
3	1984-06-10	01:04	–	5.17934	90.86	–	–	–
3	1984-06-10	17:23	–	5.17916	91.04	–	–	–
3	1984-06-11	01:02	–	5.17934	90.86	–	–	–
3	1984-06-11	08:51	–	5.17825	91.95	–	–	–

Table B-6. Room B Station -1.0 m horizontal mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_x (m)	δ_x (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
3	1984-06-11	17:06	–	5.17820	92.00	–	–	–
3	1984-06-12	04:22	–	5.17776	92.43	–	–	–
3	1984-06-12	08:57	–	5.17789	92.31	–	–	–
3	1984-06-12	–	–	–	–	–	–	No Readings. Hoist down. No access U/G
3	1984-06-13	09:40	–	5.17690	93.30	–	–	–
3	1984-06-13	–	–	–	–	–	–	Drill is in way.
3	1984-06-14	01:03	–	5.17553	94.67	–	–	–
3	1984-06-14	01:34	–	5.17594	94.26	–	–	N
3	1984-06-14	10:16	–	5.17550	94.69	–	–	–
3	1984-06-14	–	–	–	–	–	–	Drill is in way.
3	1984-06-15	–	–	–	–	–	–	Inaccessible. Tape ext. broken.
3	1984-06-16	–	–	–	–	–	–	Drill in way.
3	1984-06-18	–	–	–	–	–	–	Could not read drill.
3	1984-06-23	–	–	5.17124	98.96	–	–	–
3	1984-07-06	–	–	5.16661	103.58	–	–	–
3	1984-07-07	–	–	5.18787	82.32	–	–	–
3	1984-07-13	06:34	–	5.16560	104.60	–	–	–
3	1984-07-20	04:22	–	5.16268	107.52	–	–	–
3	1984-07-27	02:07	–	5.15958	110.62	–	–	–
3	1984-08-02	10:32	–	5.15823	111.96	–	–	–
3	1984-08-10	02:13	–	5.15551	114.68	–	–	–
3	1984-08-17	03:14	–	5.09887	171.32	×	–	–
3	1984-08-24	02:00	–	5.15277	117.43	–	–	–
3	1984-08-31	02:21	–	5.15084	119.36	–	–	–
3	1984-09-07	01:40	–	5.14921	120.98	–	–	–
3	1984-09-14	03:32	–	5.14988	120.32	–	–	–
3	1984-09-21	02:47	–	5.14645	123.75	–	–	–
3	1984-09-28	04:26	–	5.14553	124.66	–	–	–
3	1984-10-05	03:03	–	5.14429	125.91	–	–	–
3	1984-10-12	02:12	–	5.14299	127.20	–	–	–
3	1984-10-19	06:00	–	5.13908	131.12	–	–	–
3	1984-10-26	05:26	–	5.13814	132.06	–	–	–
3	1984-11-02	02:21	–	5.13779	132.41	–	–	–
3	1984-11-09	02:47	–	5.13745	132.74	–	–	–
3	1984-11-16	01:58	–	5.13644	133.76	–	–	–
3	1984-11-30	01:39	–	5.13397	136.22	–	–	–
3	1984-12-07	02:52	–	5.13354	136.65	–	–	–
3	1984-12-14	03:15	–	5.13235	137.85	–	–	–
3	1984-12-21	02:37	–	5.13110	139.09	–	–	–
3	1984-12-28	03:52	–	5.12900	141.20	–	–	–
3	1985-01-05	03:46	–	5.12867	141.53	–	–	–
3	1985-01-06	11:14	–	5.12806	142.14	–	–	These are the last readings before the removal of the EMP's and replacement with perm RC's.
4	1985-01-06	11:45	–	5.12646	142.30	–	–	Initial readings on RC's which replaced early mining points at STA. 0.
4	1985-01-12	04:53	–	5.12628	142.48	–	–	–
4	1985-01-19	05:37	–	5.12509	143.67	–	–	–
4	1985-01-25	04:04	–	5.12432	144.43	–	–	–
4	1985-02-01	02:36	–	5.12348	145.27	–	–	–
4	1985-02-08	06:00	–	5.12247	146.29	–	–	–
4	1985-02-15	03:57	–	5.12201	146.74	–	–	–
4	1985-02-22	02:57	–	5.12067	148.09	–	–	–
4	1985-02-27	13:43	–	5.11998	148.78	–	–	–
4	1985-03-06	13:16	–	5.11962	149.13	–	–	–
4	1985-03-19	11:34	–	5.11797	150.78	–	–	–
4	1985-03-26	13:11	–	5.11721	151.55	–	–	–
4	1985-04-02	09:36	–	5.11637	152.38	–	–	–
4	1985-04-09	13:21	–	5.11632	152.43	–	–	–
4	1985-04-16	12:52	–	5.11551	153.25	–	–	–
4	1985-04-23	13:18	–	5.11477	153.98	–	–	–
4	1985-06-04	10:06	–	5.10413	164.63	–	–	–
4	1985-07-15	10:34	–	5.08902	179.74	–	–	–
4	1985-08-26	09:24	–	5.07111	197.65	–	–	–
4	1985-10-07	09:49	–	5.05704	211.72	–	–	–
4	1985-11-18	10:53	–	5.04043	228.33	–	–	–
4	1985-12-30	13:58	–	5.02354	245.22	–	–	–
4	1986-02-11	10:21	–	5.00271	266.05	–	–	–
4	1986-03-25	09:50	–	4.98640	282.36	–	–	–
4	1986-05-06	10:09	–	4.96938	299.37	–	–	–
4	1986-06-17	10:25	–	4.95424	314.51	–	–	–
4	1986-07-29	10:53	–	4.93933	329.42	–	–	–
4	1986-09-09	10:36	–	4.92392	344.84	–	–	–
4	1986-10-21	12:44	–	4.90825	360.51	–	–	–
4	1986-12-01	14:11	–	4.89664	372.12	–	–	–
4	1987-01-30	12:36	–	4.86837	400.39	–	–	–
4	1987-07-24	14:06	–	4.81462	454.14	–	–	–
4	1987-10-09	–	–	–	–	–	–	Room closed. Bad back.
4	1988-01-01	–	–	–	–	–	–	Room closed. Bad back.

Table B-7. Room B Station -1.0 m vertical mining sequence metadata

										Pre-Jump Fitting Inputs				Post-Jump Fitting Inputs			
s	Segment Start Time	Analysis Notes	Gage Number	Paired Points	Point 1 y	Point 2 y	Estimated t_{ex}	t_{ex} Source	Shift Phase	Type	Start Index	End Index	Ignore Index	Type	Start Index	End Index	Ignore Index
(–)	(YYYY-MM-DD HH:MM)	(–)	(–)	(–)	(m)	(m)	(YYYY-MM-DD HH:MM)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)
0	1984-05-04 22:00	Estimated start of mining Room B.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1	1984-05-12 12:01	First reading after station mined out during pass 1.	B_M11-1	1A-1B	-1.03	-1.11	1984-05-12 08:00	Gage installation data sheet	2	–	–	–	–	Jeffreys	2	16	–
2	1984-05-20 18:20	First reading after paired points 1A-1B replaced during pass 2.	B_M11-1	1A-1B	-1.03	-1.11	–	Average of neighboring reading times	2	Linear	-2	-1	–	Jeffreys	1	12	–
3	1984-05-26 20:43	First reading after point 1B mined out and replaced with point 3B during pass 3 and 4.	B_M11-3	1A-3B	-1.03	-1.11	1984-05-26 20:30	Gage installation data sheet	2	Linear	-3	-2	–	Jeffreys	3	20	–
4	1984-05-28 09:20	First reading after point 1B re-installed.	B_M11-3	1A-3B	-1.03	-1.11	1984-05-28 08:30	Gage installation data sheet	1	Jeffreys	-3	-1	–	Jeffreys	1	15	–
5	1984-06-23 16:31	Technician noted "drill in way" and "extension tape broken" for several previous readings. Technician noted "Point to point" and "No extension" for this reading.	B_M11-3	1A-3B	-1.03	-1.11	–	–	2	Linear	-14	-6	[-10 -8]	Linear	1	2	–
6	1984-08-02 10:35	Operator noted "heater hole" and "blocked" for two previous readings. Assuming the points had to be reinstalled or a new extension tape was acquired.	B_M11-3	1A-3B	-1.03	-1.11	–	–	2	Linear	-6	-3	[-4]	Linear	1	5	[3]
7	1985-01-06 12:38	First reading after paired points replaced.	B_M11-3	1A-3B	-1.03	-1.11	–	–	2	Linear	-4	-2	–	Linear	2	4	–
8	1985-07-15 10:32	First time Ext. Rod #1 was used instead of Rod #2.	B_M11-3	1A-3B	-1.03	-1.11	–	–	2	Linear	-2	-1	–	Linear	1	2	–

Table B-8. Room B Station -1.0 m vertical mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_z (m)	δ_z (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
1	1984-05-12	12:01	1.8	2.94162	17.95	×	–	–
1	1984-05-12	19:09	5.2	2.94183	17.75	–	–	–
1	1984-05-13	02:19	9.9	2.93492	24.66	–	–	–
1	1984-05-13	10:27	14.9	2.93070	28.87	–	–	–
1	1984-05-13	18:05	17.1	2.92821	31.36	–	–	–
1	1984-05-14	01:47	22.4	2.92654	33.04	–	–	–
1	1984-05-14	01:47	22.4	2.92654	33.04	–	–	–
1	1984-05-14	10:13	28.3	2.92529	34.28	–	–	–
1	1984-05-14	18:38	31.7	2.92377	35.81	–	–	–
1	1984-05-15	01:28	35.1	2.92296	36.62	–	–	–
1	1984-05-15	10:02	39.2	2.92189	37.69	–	–	–
1	1984-05-15	18:47	-22.9	2.92097	38.60	–	–	–
1	1984-05-16	01:10	37.5	2.92036	39.21	–	–	–
1	1984-05-17	–	–	–	–	–	–	Power Outage
1	1984-05-18	–	–	–	–	–	–	Power Outage
1	1984-05-19	14:20	–	2.91254	47.03	–	–	–
1	1984-05-19	17:24	-0.9	2.91127	48.30	–	–	–
1	1984-05-20	00:46	-0.9	2.90960	49.98	–	–	3’ ahead of second pass
1	1984-05-20	09:02	-0.9	2.90873	50.84	–	–	–
2	1984-05-20	18:20	2.4	2.93428	56.86	–	–	–
2	1984-05-21	04:36	–	2.92778	63.36	–	–	–
2	1984-05-21	09:33	–	2.92654	64.61	–	–	–
2	1984-05-21	19:00	–	2.92451	66.64	–	–	–
2	1984-05-22	02:42	–	2.92331	67.83	–	–	–
2	1984-05-22	11:27	–	2.92227	68.87	–	–	–
2	1984-05-22	21:17	-24.4	2.92207	69.08	–	–	–
2	1984-05-23	01:00	21.9	2.92125	69.89	–	–	–
2	1984-05-23	09:24	-22.9	2.92029	70.85	–	–	–
2	1984-05-23	19:08	-22.6	2.91973	71.41	–	–	–
2	1984-05-24	01:01	22.3	2.91917	71.97	–	–	–
2	1984-05-24	09:50	-22.9	2.91831	72.84	–	–	–
2	1984-05-24	17:59	22.9	2.91795	73.19	–	–	–
2	1984-05-25	00:54	21.3	2.91757	73.57	–	–	–
2	1984-05-25	10:32	-9.1	2.91630	74.84	–	–	–
2	1984-05-25	18:07	-8.5	2.91488	76.26	–	–	face pass 3&4 at STA.-28
2	1984-05-26	01:27	-8.2	2.91381	77.33	–	–	–
2	1984-05-26	08:52	-7.6	2.91323	77.92	–	–	–
2	1984-05-26	18:30	0.0	–	–	–	–	–
3	1984-05-26	20:43	4.6	4.76364	-3315.28	×	–	Initial reading. Face pass 3 and 4 at sta. 0 at 18:30 hrs.
3	1984-05-27	01:10	–	1.11148	336.89	×	×	Bad reading.
3	1984-05-27	09:50	9.1	1.36515	83.22	–	–	Initial reading.
3	1984-05-27	19:18	–	1.36210	86.27	–	–	–
3	1984-05-28	06:36	–	1.35984	88.53	–	–	–
4	1984-05-28	09:20	8.8	1.45197	88.07	–	–	Initial reading.
4	1984-05-28	17:59	–	1.44874	91.29	–	–	–
4	1984-05-29	06:35	29.0	1.44755	92.49	–	–	–
4	1984-05-29	14:10	–	1.44628	93.76	–	–	–
4	1984-05-29	18:27	–	1.44648	93.55	–	–	–
4	1984-05-29	18:27	29.6	1.44648	93.55	–	–	–
4	1984-05-30	05:05	29.0	1.44501	95.03	–	–	–
4	1984-05-30	12:50	30.5	1.44363	96.40	–	–	–
4	1984-05-30	20:55	–	1.44310	96.93	–	–	–
4	1984-05-31	02:57	29.9	1.44272	97.31	–	–	–
4	1984-05-31	12:44	36.6	1.44155	98.48	–	–	–
4	1984-05-31	18:00	42.1	1.44099	99.04	–	–	Trimming floor at plus 110
4	1984-06-01	03:31	–	1.44071	99.32	–	–	–
4	1984-06-01	14:20	–	1.43988	100.16	–	–	–
4	1984-06-01	17:49	–	1.43957	100.46	–	–	–
4	1984-06-02	02:53	–	1.43883	101.20	–	–	–
4	1984-06-02	10:06	46.6	1.43800	102.04	–	–	–
4	1984-06-02	21:28	–	1.43756	102.47	–	–	–
4	1984-06-03	01:56	–	1.43746	102.57	–	–	–
4	1984-06-03	09:07	–	1.43680	103.23	–	–	–
4	1984-06-03	16:57	–	1.43584	104.20	–	–	–
4	1984-06-04	02:21	–	1.43604	103.99	–	–	–
4	1984-06-04	08:41	–	1.43505	104.98	–	–	–
4	1984-06-04	17:53	–	1.43446	105.57	–	–	Swing room complete.
4	1984-06-05	01:31	–	1.43441	105.62	–	–	–
4	1984-06-05	14:45	–	1.43373	106.31	–	–	–
4	1984-06-05	17:56	–	1.43332	106.71	–	–	–
4	1984-06-06	02:32	–	1.43299	107.04	–	–	–
4	1984-06-06	08:42	–	1.43251	107.52	–	–	–
4	1984-06-06	18:21	–	1.43208	107.96	–	–	–
4	1984-06-07	02:01	–	1.43165	108.39	–	–	–
4	1984-06-07	08:45	–	1.43114	108.90	–	–	–
4	1984-06-07	19:23	–	1.43088	109.15	–	–	–
4	1984-06-08	01:50	–	1.43078	109.25	–	–	–
4	1984-06-08	08:42	–	1.42994	110.09	–	–	–
4	1984-06-08	17:46	–	1.42972	110.32	–	–	–
4	1984-06-09	08:40	–	1.42913	110.90	–	–	–
4	1984-06-09	19:41	–	1.42857	111.46	–	–	–
4	1984-06-09	–	–	–	–	–	–	Drill rigs obstructing EMSC gauges
4	1984-06-10	01:02	–	1.42842	111.61	–	–	–
4	1984-06-10	17:21	–	1.42781	112.22	–	–	–
4	1984-06-11	00:59	–	1.42738	112.66	–	–	–
4	1984-06-11	08:47	–	1.42773	112.30	–	–	–

Table B-8. Room B Station -1.0 m vertical mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_z (m)	δ_z (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
4	1984-06-11	17:01	–	1.42758	112.45	–	–	–
4	1984-06-12	00:49	–	1.42695	113.09	–	–	–
4	1984-06-12	08:49	–	1.42700	113.04	–	–	–
4	1984-06-12	–	–	–	–	–	–	No Readings. Hoist down. No access U/G
4	1984-06-13	09:39	–	1.42591	114.13	–	–	–
4	1984-06-13	–	–	–	–	–	–	Drill is in way.
4	1984-06-14	01:13	–	1.42560	114.43	–	–	–
4	1984-06-14	10:16	–	1.42583	114.20	–	–	–
4	1984-06-14	–	–	–	–	–	–	–
4	1984-06-14	–	–	–	–	–	–	Drill is in way.
4	1984-06-15	–	–	–	–	–	–	Inaccessible. Tape ext. broken.
4	1984-06-16	–	–	–	–	–	–	Drill in way.
4	1984-06-18	–	–	–	–	–	–	Could not read drill. Extension tape broken.
5	1984-06-23	16:31	–	5.06844	120.30	–	–	Point to point. No extension.
5	1984-07-06	02:39	–	5.06176	126.98	–	–	–
5	1984-07-07	–	–	–	–	–	–	–
5	1984-07-13	06:30	–	5.05983	128.91	–	–	–
5	1984-07-20	–	–	–	–	–	–	–
5	1984-07-27	–	–	–	–	–	–	–
6	1984-08-02	10:35	–	1.34620	135.50	–	–	–
6	1984-08-10	02:11	–	1.34224	139.47	–	–	–
6	1984-08-17	03:12	–	1.39393	87.78	×	–	–
6	1984-08-24	01:59	–	1.33815	143.56	–	–	–
6	1984-08-31	02:20	–	1.33911	142.59	–	–	–
6	1984-09-07	01:38	–	1.33393	147.77	–	–	–
6	1984-09-14	03:27	–	1.33269	149.02	–	–	With 12" extension tape.
6	1984-09-21	–	–	–	–	–	–	No reading. Equipment in the way.
6	1984-09-28	–	–	–	–	–	–	Scissors in the way.
6	1984-10-05	03:06	–	1.33076	150.95	–	–	Ext. cable
6	1984-10-12	02:14	–	1.32839	153.31	–	–	add cable ext
6	1984-10-19	05:59	–	1.32395	157.75	–	–	–
6	1984-10-26	05:25	–	1.32240	159.30	–	–	–
6	1984-11-02	02:19	–	1.32146	160.24	–	–	–
6	1984-11-09	02:45	–	1.31938	162.33	–	–	–
6	1984-11-16	01:55	–	1.31933	162.38	–	–	Ext. tape
6	1984-11-30	01:38	–	1.31615	165.55	–	–	W/wire ext.
6	1984-12-07	02:51	–	1.31542	166.29	–	–	Ext. tape
6	1984-12-14	03:14	–	1.31432	167.38	–	–	Ext. tape
6	1984-12-21	02:35	–	1.31150	170.20	–	–	W/ext. cable
6	1984-12-28	03:51	–	1.31023	171.47	–	–	w/wire cable
6	1985-01-05	03:42	–	1.30899	172.72	–	–	Ext. wire
6	1985-01-06	01:58	–	5.01218	-3530.48	×	–	These are the last readings before the removal of the EMP's and replacement with perm RC's.
7	1985-01-06	12:38	–	5.03382	-3607.77	×	–	Initial readings on RC's which replaced early mining points at STA. 0.
7	1985-01-12	04:00	–	1.25214	173.91	–	–	–
7	1985-01-19	06:32	–	1.25072	175.33	–	–	–
7	1985-01-25	04:03	–	1.24983	176.22	–	–	–
7	1985-02-01	02:35	–	1.24841	177.64	–	–	–
7	1985-02-08	05:58	–	1.24747	178.58	–	–	–
7	1985-02-15	03:56	–	1.24671	179.34	–	–	–
7	1985-02-22	02:57	–	1.24536	180.69	–	–	–
7	1985-02-27	13:42	–	1.29537	130.68	×	–	–
7	1985-03-06	13:15	–	1.24430	181.76	–	–	–
7	1985-03-19	11:33	–	1.24219	183.86	–	–	–
7	1985-03-26	13:07	–	1.24120	184.85	–	–	–
7	1985-04-02	11:14	–	1.24071	185.34	–	–	–
7	1985-04-09	13:20	–	1.23698	189.07	–	–	–
7	1985-04-16	11:02	–	1.23868	187.37	–	–	–
7	1985-04-23	13:17	–	1.23761	188.44	–	–	–
7	1985-06-04	10:05	–	1.20294	223.11	–	–	–
8	1985-07-15	10:32	–	1.33083	254.93	–	–	–
8	1985-08-26	09:22	–	1.30048	285.28	–	–	–
8	1985-10-07	09:34	–	1.27389	311.88	–	–	–
8	1985-11-18	10:48	–	1.24338	342.38	–	–	–
8	1985-12-30	13:56	–	1.21234	373.42	–	–	–
8	1986-02-11	10:20	–	1.17823	407.53	–	–	–
8	1986-03-25	09:50	–	1.14836	437.40	–	–	–
8	1986-05-06	10:07	–	1.11816	467.60	–	–	–
8	1986-06-17	10:24	–	1.08875	497.02	–	–	–
8	1986-07-29	10:52	–	1.05979	525.97	–	–	–
8	1986-09-09	10:33	–	1.03066	555.11	–	–	–
8	1986-10-21	12:43	–	1.00180	583.96	–	–	–
8	1986-12-01	10:43	–	0.97638	609.39	–	–	–
8	1987-01-30	09:17	–	0.93058	655.18	–	–	–
8	1987-07-24	09:58	–	0.78730	798.46	–	–	–
8	1987-10-09	–	–	–	–	–	–	Room closed. Bad back.
8	1988-01-01	–	–	–	–	–	–	Room closed. Bad back.

Table B-9. Room B Station +14.0 m horizontal mining sequence metadata

										Pre-Jump Fitting Inputs				Post-Jump Fitting Inputs			
s	Segment Start Time	Analysis Notes	Gage Number	Paired Points	Point 1 y	Point 2 y	Estimated t_{ex}	t_{ex} Source	Shift Phase	Type	Start Index	End Index	Ignore Index	Type	Start Index	End Index	Ignore Index
(–)	(YYYY-MM-DD HH:MM)	(–)	(–)	(–)	(m)	(m)	(YYYY-MM-DD HH:MM)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)
0	1984-05-04 22:00	Estimated start of mining Room B.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1	1984-05-13 15:14	First reading after station mined out during pass 1.	B_M23-1	1E-1F	14.11	14.11	1984-05-13 10:15	Gage installation data sheet	2	–	–	–	–	Jeffreys	1	13	–
2	1984-05-21 03:55	First reading after point 1E mined out and replaced with 2E.	B_M23-2	2E-1F	13.85	14.11	1984-05-21 01:30	Gage installation data sheet	2	Linear	-4	-1	–	Jeffreys	1	10	–
3	1984-05-30 13:45	First reading after point 1F re-installed.	B_M23-2	2E-1F	13.85	14.11	1984-05-30 11:30	Gage installation data sheet	2	Jeffreys	-5	-1	–	Jeffreys	1	13	[4 5]
4	1985-01-05 14:00	First reading after paired points replaced.	B_M23-2	2E-1F	13.85	14.11	–	–	2	Linear	-3	-2	–	Linear	1	2	–

Table B-10. Room B Station +14.0 m horizontal mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_x (m)	δ_x (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
1	1984-05-13	15:14	2.1	3.93756	7.11	–	–	–
1	1984-05-13	18:46	1.8	3.93601	8.66	–	–	–
1	1984-05-14	02:05	7.2	3.93012	14.55	–	–	–
1	1984-05-14	10:49	13.1	3.92692	17.75	–	–	–
1	1984-05-14	18:59	16.5	3.92420	20.47	–	–	–
1	1984-05-15	01:13	19.8	3.92303	21.64	–	–	–
1	1984-05-15	10:13	23.9	3.92234	22.32	–	–	–
1	1984-05-15	19:03	-38.1	3.92125	23.41	–	–	–
1	1984-05-16	01:19	22.3	3.92095	23.72	–	–	–
1	1984-05-17	–	–	–	–	–	–	Power outage
1	1984-05-18	–	–	–	–	–	–	Power outage
1	1984-05-19	14:05	–	3.91744	27.22	–	–	–
1	1984-05-20	00:51	-16.2	3.91711	27.55	–	–	53’ ahead of 2nd pass
1	1984-05-20	08:58	-16.2	3.91714	27.53	–	–	–
1	1984-05-20	19:17	-12.8	3.91584	28.82	–	–	–
2	1984-05-21	03:55	–	5.05986	29.99	–	–	16 feet 6 plus 1.207 inches was originally recorded for 2C-1D paired points but auditor noted that this reading was meant to be recorded for 2E-1F
2	1984-05-21	09:59	–	5.05742	32.42	–	–	–
2	1984-05-21	18:45	–	5.05562	34.23	–	–	–
2	1984-05-22	02:54	–	5.05447	35.37	–	–	–
2	1984-05-22	11:40	–	5.05407	35.78	–	–	–
2	1984-05-22	21:07	-39.6	5.05338	36.46	–	–	–
2	1984-05-23	01:07	37.2	5.05300	36.84	–	–	–
2	1984-05-23	09:32	-38.1	5.05287	36.97	–	–	–
2	1984-05-23	19:19	-37.8	5.05272	37.12	–	–	–
2	1984-05-24	01:08	37.5	5.05249	37.35	–	–	–
2	1984-05-24	09:27	-38.1	5.05231	37.53	–	–	–
2	1984-05-24	18:05	7.6	5.05165	38.19	–	–	–
2	1984-05-25	00:59	36.6	5.05117	38.67	–	–	–
2	1984-05-25	10:53	-24.4	5.05089	38.95	–	–	–
2	1984-05-25	17:45	23.8	5.05043	39.41	–	–	–
2	1984-05-26	01:37	23.5	5.05043	39.41	–	–	–
2	1984-05-26	08:55	-22.9	5.05049	39.36	–	–	–
2	1984-05-26	19:18	15.2	5.04970	40.15	–	–	–
2	1984-05-27	01:37	–	5.04858	41.26	–	–	–
2	1984-05-27	10:14	-6.1	5.04820	41.64	–	–	–
2	1984-05-27	18:47	–	5.04734	42.51	–	–	–
2	1984-05-28	03:28	–	5.04670	43.14	–	–	–
2	1984-05-28	09:35	-6.4	5.04523	44.62	–	–	–
2	1984-05-28	18:44	–	5.03512	54.73	–	–	–
2	1984-05-29	05:34	–	5.02940	60.44	–	–	–
2	1984-05-29	14:24	–	5.02643	63.41	–	–	–
2	1984-05-29	18:47	14.3	5.02587	63.97	–	–	–
2	1984-05-30	02:38	13.7	5.02404	65.80	–	–	–
3	1984-05-30	13:45	15.2	5.14525	67.63	–	–	Initial reading.
3	1984-05-30	20:23	–	5.14378	69.11	–	–	–
3	1984-05-31	02:48	14.6	5.14309	69.79	–	–	–
3	1984-05-31	13:02	21.3	5.14510	67.78	×	–	New pt trimmed 5/30/84
3	1984-05-31	17:35	26.8	5.14439	68.50	×	–	–
3	1984-06-01	03:48	–	5.13982	73.07	–	–	–
3	1984-06-01	14:47	–	5.13862	74.26	–	–	–
3	1984-06-01	17:20	–	5.13850	74.39	–	–	–
3	1984-06-02	02:41	–	5.13827	74.62	–	–	–
3	1984-06-02	10:27	31.4	5.13674	76.14	–	–	–
3	1984-06-02	20:56	–	5.13626	76.62	–	–	–
3	1984-06-03	02:18	–	5.13601	76.88	–	–	–
3	1984-06-03	08:53	–	5.13575	77.13	–	–	–
3	1984-06-03	16:39	–	5.13512	77.77	–	–	Room complete except for trimming tights.
3	1984-06-04	02:09	–	5.13428	78.60	–	–	–
3	1984-06-04	08:26	–	5.13382	79.06	–	–	Trim
3	1984-06-04	18:14	–	5.13405	78.83	–	–	Room complete.
3	1984-06-05	01:23	–	5.13316	79.72	–	–	–
3	1984-06-05	14:33	–	5.13179	81.09	–	–	–
3	1984-06-05	18:16	–	5.13138	81.50	–	–	–
3	1984-06-06	02:46	–	5.13113	81.75	–	–	–
3	1984-06-06	08:33	–	5.13108	81.81	–	–	–
3	1984-06-06	18:13	–	5.13055	82.34	–	–	–
3	1984-06-07	02:16	–	5.13024	82.64	–	–	–
3	1984-06-07	08:37	–	5.13100	81.88	–	–	–
3	1984-06-07	19:05	–	5.13006	82.82	–	–	–
3	1984-06-08	02:04	–	5.12948	83.41	–	–	–
3	1984-06-08	08:34	–	5.12956	83.33	–	–	–
3	1984-06-08	17:39	–	5.12897	83.91	–	–	–
3	1984-06-09	03:31	–	5.12867	84.22	–	–	–
3	1984-06-09	08:25	–	5.12844	84.45	–	–	–
3	1984-06-09	19:36	–	5.13093	81.96	×	–	[Technician or auditor drew an arrow pointing to this reading and wrote] ?
3	1984-06-10	00:39	–	5.12790	84.98	–	–	–
3	1984-06-10	17:39	–	5.12760	85.28	–	–	–
3	1984-06-11	00:43	–	5.12707	85.82	–	–	–
3	1984-06-11	08:33	–	5.12653	86.35	–	–	–
3	1984-06-11	17:16	–	5.12686	86.02	–	–	–
3	1984-06-12	04:17	–	5.12201	90.87	×	–	[Technician or auditor drew an arrow pointing to this reading and wrote] ?
3	1984-06-12	08:39	–	5.12661	86.28	–	–	–

Table B-10. Room B Station +14.0 m horizontal mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_x (m)	δ_x (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
3	1984-06-12	–	–	–	–	–	–	No readings. Hoist down. No access U/G.
3	1984-06-13	09:31	–	5.12536	87.52	–	–	–
3	1984-06-13	–	–	–	–	–	–	Drill in way.
3	1984-06-14	00:50	–	5.12448	88.41	–	–	–
3	1984-06-14	10:27	–	5.12470	88.18	–	–	–
3	1984-06-14	17:24	–	5.12432	88.56	–	–	–
3	1984-06-14	–	–	–	–	–	–	Drill in way. Room complete.
3	1984-06-15	10:06	–	5.12371	89.17	–	–	–
3	1984-06-16	17:17	–	5.12369	89.20	–	–	–
3	1984-06-18	16:46	–	5.12303	89.86	–	–	–
3	1984-06-23	16:24	–	5.11980	93.08	–	–	–
3	1984-06-30	17:16	–	5.11678	96.11	–	–	–
3	1984-07-06	01:55	–	5.11503	97.86	–	–	–
3	1984-07-07	18:35	–	5.11482	98.06	–	–	–
3	1984-07-13	03:20	–	5.11249	100.40	–	–	–
3	1984-07-20	04:25	–	–	–	–	–	Blocked by drilling rig.
3	1984-07-27	01:56	–	5.10680	106.09	–	–	–
3	1984-08-02	10:52	–	5.10548	107.41	–	–	–
3	1984-08-10	02:17	–	5.10301	109.87	–	–	–
3	1984-08-17	03:17	–	5.15140	61.49	×	–	–
3	1984-08-24	02:54	–	5.09976	113.12	–	–	–
3	1984-08-31	02:48	–	5.09819	114.70	–	–	–
3	1984-09-07	02:10	–	5.09626	116.63	–	–	–
3	1984-09-14	03:38	–	5.09496	117.92	–	–	–
3	1984-09-21	03:21	–	5.09331	119.57	–	–	–
3	1984-09-28	04:11	–	5.09267	120.21	–	–	–
3	1984-10-05	03:25	–	5.09146	121.43	–	–	–
3	1984-10-12	01:48	–	5.09041	122.47	–	–	–
3	1984-10-19	05:41	–	5.08602	126.86	–	–	–
3	1984-10-26	05:05	–	5.08513	127.75	–	–	–
3	1984-11-02	02:35	–	5.08442	128.46	–	–	–
3	1984-11-09	03:03	–	5.08495	127.93	–	–	–
3	1984-11-16	14:40	–	5.08307	129.81	–	–	–
3	1984-11-30	01:21	–	5.08076	132.12	–	–	–
3	1984-12-07	03:03	–	5.07962	133.27	–	–	–
3	1984-12-14	03:29	–	5.07893	133.95	–	–	–
3	1984-12-21	02:24	–	5.07804	134.84	–	–	–
3	1984-12-28	03:39	–	5.07611	136.77	–	–	–
3	1985-01-05	03:57	–	5.07469	138.19	–	–	–
3	1985-01-05	13:27	–	5.07738	135.50	–	–	Last reading before permanent installation as permanent RC's.
4	1985-01-05	14:00	–	5.08378	138.26	–	–	Initial readings after points installed as permanent RC's in place of EMCP's at sta. +50.
4	1985-01-12	04:59	–	5.08287	139.17	–	–	–
4	1985-01-19	05:34	–	5.08183	140.22	–	–	–
4	1985-01-25	04:17	–	5.08119	140.85	–	–	–
4	1985-02-01	03:49	–	5.08010	141.94	–	–	–
4	1985-02-08	06:16	–	5.07947	142.58	–	–	–
4	1985-02-15	04:12	–	5.07896	143.09	–	–	–
4	1985-02-22	03:09	–	5.07754	144.51	–	–	–
4	1985-02-27	–	–	–	–	–	–	–
4	1985-03-06	13:28	–	5.07665	145.40	–	–	–
4	1985-03-19	11:50	–	5.07456	147.48	–	–	–
4	1985-03-26	–	–	–	–	–	–	–
4	1985-04-02	09:27	–	5.07345	148.60	–	–	–
4	1985-04-09	13:41	–	5.07266	149.38	–	–	–
4	1985-04-16	12:58	–	5.07190	150.15	–	–	–
4	1985-04-23	13:30	–	5.07131	150.73	–	–	–
4	1985-06-04	10:28	–	5.06016	161.88	–	–	–
4	1985-07-15	10:52	–	5.04533	176.71	–	–	–
4	1985-08-26	09:12	–	5.02890	193.15	–	–	–
4	1985-10-07	10:55	–	5.01614	205.90	–	–	–
4	1985-11-18	11:19	–	5.00090	221.14	–	–	–
4	1985-12-30	14:22	–	4.98536	236.68	–	–	–
4	1986-02-11	10:37	–	4.96651	255.53	–	–	–
4	1986-03-25	10:07	–	4.95160	270.44	–	–	–
4	1986-05-06	10:31	–	4.93705	285.00	–	–	–
4	1986-06-17	10:43	–	4.92288	299.17	–	–	–
4	1986-07-29	11:09	–	4.90957	312.48	–	–	–
4	1986-09-09	10:48	–	4.89473	327.31	–	–	–
4	1986-10-21	13:12	–	4.88071	341.33	–	–	–
4	1986-12-01	14:19	–	4.87032	351.72	–	–	–
4	1987-01-30	12:46	–	4.84348	378.57	–	–	–
4	1987-07-24	14:12	–	4.79887	423.17	–	–	–
4	1987-10-09	–	–	–	–	–	–	Room closed. Bad back.
4	1988-01-01	–	–	–	–	–	–	Room closed. Bad back.

Table B-11. Room B Station +14.0 m vertical mining sequence metadata

										Pre-Jump Fitting Inputs				Post-Jump Fitting Inputs			
s	Segment Start Time	Analysis Notes	Gage Number	Paired Points	Point 1 y	Point 2 y	Estimated t_{ex}	t_{ex} Source	Shift Phase	Type	Start Index	End Index	Ignore Index	Type	Start Index	End Index	Ignore Index
(–)	(YYYY-MM-DD HH:MM)	(–)	(–)	(–)	(m)	(m)	(YYYY-MM-DD HH:MM)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)
0	1984-05-04 22:00	Estimated start of mining Room B.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1	1984-05-13 15:15	First reading after station mined out during pass 1.	B_M21-1	1A-1B	13.98	13.98	1984-05-13 10:15	Gage installation data sheet	2	–	–	–	–	Jeffreys	1	13	–
2	1984-05-28 18:47	First reading after point 1B mined out and replaced with point 3B.	B_M21-3	1A-3B	14.03	13.98	1984-05-28 18:00	Gage installation data sheet	2	Linear	-2	-1	–	Jeffreys	1	17	–
3	1984-05-29 14:20	First reading after point 1B re-installed.	B_M21-3	1A-3B	14.03	13.98	1984-05-29 12:15	Gage installation data sheet	1	Linear	-2	-1	–	Jeffreys	1	15	–
4	1985-01-05 14:15	First reading after paired points replaced.	B_M21-3	1A-3B	14.03	13.98	–	–	2	Linear	-3	-2	–	Linear	2	3	–
5	1985-07-15 10:47	First reading using Ext. Rod #1 insead of Ext. Rod #2.	B_M21-3	1A-3B	14.03	13.98	–	–	2	Linear	-2	-1	–	Linear	1	2	–

Table B-12. Room B Station +14.0 m vertical mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_z (m)	δ_z (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
1	1984-05-13	15:15	2.1	2.74198	13.40	–	–	–
1	1984-05-13	18:40	1.8	2.73802	17.36	–	–	–
1	1984-05-14	02:03	7.2	2.72715	28.23	–	–	–
1	1984-05-14	10:47	13.1	2.72113	34.25	–	–	–
1	1984-05-14	18:55	16.5	2.71821	37.17	–	–	–
1	1984-05-15	01:18	19.8	2.71625	39.13	–	–	–
1	1984-05-15	10:09	23.9	2.71475	40.63	–	–	–
1	1984-05-15	18:59	-38.1	2.71335	42.02	–	–	–
1	1984-05-16	01:24	22.3	2.71229	43.09	–	–	–
1	1984-05-17	–	–	–	–	–	–	Power outage
1	1984-05-18	–	–	–	–	–	–	Power outage
1	1984-05-19	14:09	–	2.70609	49.29	–	–	–
1	1984-05-20	00:53	-16.2	2.70561	49.77	–	–	53’ ahead of 2nd pass.
1	1984-05-20	08:54	-16.2	2.70538	50.00	–	–	–
1	1984-05-20	19:12	-12.8	2.70469	50.69	–	–	–
1	1984-05-21	03:47	–	2.69791	57.47	–	–	–
1	1984-05-21	09:54	–	2.69243	62.95	–	–	–
1	1984-05-21	18:40	–	2.68956	65.82	–	–	–
1	1984-05-22	02:59	–	2.68757	67.81	–	–	–
1	1984-05-22	11:39	–	2.68658	68.80	–	–	–
1	1984-05-22	21:03	-39.6	2.68567	69.71	–	–	–
1	1984-05-23	01:14	37.2	2.68493	70.45	–	–	–
1	1984-05-23	09:29	–	2.68435	71.03	–	–	–
1	1984-05-23	19:15	-37.8	2.68359	71.79	–	–	–
1	1984-05-24	01:15	37.5	2.68300	72.38	–	–	–
1	1984-05-24	09:45	-38.1	2.68239	72.99	–	–	–
1	1984-05-24	18:06	7.6	2.68168	73.70	–	–	–
1	1984-05-25	01:02	36.6	2.68135	74.03	–	–	–
1	1984-05-25	10:56	-24.4	2.68067	74.71	–	–	–
1	1984-05-25	17:39	23.8	2.68023	75.15	–	–	–
1	1984-05-26	01:39	23.5	2.67950	75.88	–	–	–
1	1984-05-26	08:57	-22.9	2.67937	76.01	–	–	–
1	1984-05-26	19:11	15.2	2.67838	77.00	–	–	–
1	1984-05-27	01:29	–	2.67701	78.37	–	–	–
1	1984-05-27	10:12	-6.1	2.67579	79.59	–	–	–
1	1984-05-27	18:49	–	2.67472	80.66	–	–	–
1	1984-05-28	03:25	–	2.67391	81.47	–	–	–
1	1984-05-28	09:37	–	2.67353	81.85	–	–	–
2	1984-05-28	18:47	6.1	1.21831	82.71	–	–	Initial read for 3B.
2	1984-05-29	05:32	13.7	1.21323	87.79	–	–	–
3	1984-05-29	14:20	15.2	1.45171	91.54	–	–	–
3	1984-05-29	18:48	14.3	1.45067	92.58	–	–	–
3	1984-05-30	02:36	13.7	1.44932	93.93	–	–	–
3	1984-05-30	13:45	15.2	1.44747	95.78	–	–	–
3	1984-05-30	20:25	–	1.44587	97.38	–	–	–
3	1984-05-31	02:46	14.6	1.44503	98.22	–	–	–
3	1984-05-31	12:57	21.3	1.44363	99.62	–	–	–
3	1984-05-31	17:41	–	1.44247	100.79	–	–	–
3	1984-06-01	03:47	–	1.44132	101.93	–	–	–
3	1984-06-01	14:45	–	1.44081	102.44	–	–	–
3	1984-06-01	17:24	–	1.44015	103.10	–	–	–
3	1984-06-02	02:39	–	1.43962	103.63	–	–	–
3	1984-06-02	10:22	–	1.43845	104.80	–	–	–
3	1984-06-02	20:58	–	1.43761	105.64	–	–	–
3	1984-06-03	02:15	–	1.43734	105.92	–	–	–
3	1984-06-03	08:50	–	1.43667	106.58	–	–	–
3	1984-06-03	16:40	–	1.43589	107.37	–	–	–
3	1984-06-04	02:07	–	1.43535	107.90	–	–	–
3	1984-06-04	08:24	–	1.43497	108.28	–	–	–
3	1984-06-04	18:16	–	1.43485	108.41	–	–	Room complete.
3	1984-06-05	01:22	–	1.43444	108.81	–	–	–
3	1984-06-05	14:30	–	1.43358	109.68	–	–	–
3	1984-06-05	18:11	–	1.43317	110.08	–	–	–
3	1984-06-06	02:43	–	1.43281	110.44	–	–	–
3	1984-06-06	08:28	–	1.43238	110.87	–	–	–
3	1984-06-06	18:14	–	1.43170	111.56	–	–	Open
3	1984-06-07	02:14	–	1.43152	111.73	–	–	–
3	1984-06-07	08:29	–	1.43073	112.52	–	–	–
3	1984-06-07	19:03	–	1.43066	112.60	–	–	–
3	1984-06-08	02:02	–	1.43032	112.93	–	–	–
3	1984-06-08	08:32	–	1.43020	113.05	–	–	–
3	1984-06-08	17:36	–	1.42946	113.79	–	–	–
3	1984-06-09	03:31	–	1.42977	113.49	–	–	–
3	1984-06-09	08:27	–	1.42900	114.25	–	–	–
3	1984-06-09	19:35	–	1.42883	114.43	–	–	–
3	1984-06-10	00:42	–	1.42857	114.68	–	–	–
3	1984-06-10	17:35	–	1.42852	114.73	–	–	–
3	1984-06-11	00:41	–	1.42850	114.76	–	–	–
3	1984-06-11	08:31	–	1.42817	115.09	–	–	–
3	1984-06-11	17:15	–	1.42778	115.47	–	–	–
3	1984-06-12	00:43	–	1.42743	115.82	–	–	–
3	1984-06-12	08:36	–	1.42766	115.59	–	–	–
3	1984-06-12	–	–	–	–	–	–	No readings hoist down. No access U/G.
3	1984-06-13	09:29	–	1.42672	116.53	–	–	–
3	1984-06-13	–	–	–	–	–	–	Drill in way.
3	1984-06-14	00:52	–	1.42537	117.88	–	–	–

Table B-12. Room B Station +14.0 m vertical mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_z (m)	δ_z (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
3	1984-06-14	10:25	–	1.42618	117.07	–	–	–
3	1984-06-14	17:20	–	1.42601	117.25	–	–	–
3	1984-06-14	–	–	–	–	–	–	Drill in way. Room complete.
3	1984-06-15	10:06	–	1.42537	117.88	–	–	–
3	1984-06-16	17:15	–	1.42448	118.77	–	–	–
3	1984-06-18	16:40	–	1.42344	119.81	–	–	–
3	1984-06-23	16:21	–	1.42044	122.81	–	–	–
3	1984-06-30	17:09	–	1.41724	126.01	–	–	–
3	1984-07-06	01:50	–	1.41468	128.57	–	–	–
3	1984-07-07	18:31	–	1.41414	129.11	–	–	–
3	1984-07-13	05:20	–	1.41072	132.54	–	–	–
3	1984-07-20	04:25	–	–	–	–	–	Blocked by drilling rig.
3	1984-07-27	01:53	–	1.40388	139.37	–	–	–
3	1984-08-02	10:50	–	1.40109	142.16	–	–	N
3	1984-08-10	02:16	–	1.39751	145.74	–	–	–
3	1984-08-17	03:19	–	1.33800	205.26	×	–	–
3	1984-08-24	02:52	–	1.39459	148.67	–	–	–
3	1984-08-31	02:48	–	1.39253	150.72	–	–	–
3	1984-09-07	02:08	–	1.39111	152.15	–	–	–
3	1984-09-14	03:33	–	1.38877	154.48	–	–	With 12’ ext. tape
3	1984-09-21	03:18	–	1.39583	147.42	×	–	With 12’ ext. tape
3	1984-09-28	04:10	–	1.38552	157.73	–	–	Cable ext.
3	1984-10-05	03:24	–	1.38382	159.44	–	–	Ext. tape
3	1984-10-12	01:49	–	1.38201	161.24	–	–	W/ext. tape
3	1984-10-19	05:40	–	1.37724	166.01	–	–	–
3	1984-10-26	05:04	–	1.37617	167.08	–	–	–
3	1984-11-02	02:33	–	1.37452	168.73	–	–	W 12’ ext. tape
3	1984-11-09	03:02	–	1.37538	167.87	–	–	–
3	1984-11-16	01:43	–	1.37381	169.44	–	–	Ext. tape
3	1984-11-30	01:19	–	1.37079	172.47	–	–	Tape ext.
3	1984-12-07	03:02	–	1.36982	173.43	–	–	Ext. tape
3	1984-12-14	03:28	–	1.36779	175.46	–	–	Ext. tape
3	1984-12-21	02:23	–	1.36677	176.48	–	–	W/ext. tape
3	1984-12-28	03:37	–	1.36418	179.07	–	–	Tape ext.
3	1985-01-05	03:52	–	1.36268	180.57	–	–	Ext. tape
3	1985-01-05	13:25	–	5.01320	-3469.95	×	–	These are the last readings before reinstallation as permanent RC’s.
4	1985-01-05	14:15	–	5.08340	-3600.28	×	–	Initial readings after points installed as permanent RC’s in place of EMCP’s at sta. +50.
4	1985-01-12	03:47	–	1.30137	181.76	–	–	#2 Rod Ext.
4	1985-01-19	06:39	–	1.30028	182.85	–	–	#2 Rod Ext.
4	1985-01-25	04:16	–	1.29962	183.51	–	–	Ext. Rod #2
4	1985-02-01	03:48	–	1.29794	185.19	–	–	–
4	1985-02-08	06:14	–	1.29692	186.20	–	–	Ext. Rod #2
4	1985-02-15	04:13	–	1.29606	187.07	–	–	Rod #2
4	1985-02-22	03:09	–	1.29476	188.36	–	–	Ext. Rod #2
4	1985-02-27	13:58	–	1.29393	189.20	–	–	–
4	1985-03-06	13:28	–	1.29370	189.43	–	–	–
4	1985-03-19	11:49	–	1.29146	191.67	–	–	Ext. Rod #2
4	1985-03-26	13:19	–	1.29052	192.61	–	–	Ext. Rod #2
4	1985-04-02	11:05	–	1.28961	193.52	–	–	Ext. Rod #2
4	1985-04-09	13:40	–	1.28918	193.95	–	–	Ext. Rod #2
4	1985-04-16	11:08	–	1.28826	194.87	–	–	Ext. Rod #2
4	1985-04-23	13:30	–	1.28714	195.98	–	–	–
4	1985-06-04	10:26	–	1.25110	232.03	–	–	Ext. Rod #2
5	1985-07-15	10:47	–	1.37986	263.70	–	–	Rod #1
5	1985-08-26	09:11	–	1.35118	292.38	–	–	Rod #1
5	1985-10-07	09:20	–	1.32812	315.44	–	–	Ext. Rod #1
5	1985-11-18	11:18	–	1.30183	341.73	–	–	Rod #1
5	1985-12-30	14:21	–	1.27505	368.50	–	–	Rod #1
5	1986-02-11	10:35	–	1.24503	398.53	–	–	Rod #1
5	1986-03-25	10:07	–	1.21923	424.33	–	–	Rod #1
5	1986-05-06	10:30	–	1.19347	450.09	–	–	Rod #1
5	1986-06-17	10:42	–	1.16858	474.98	–	–	Rod #1
5	1986-07-29	11:09	–	1.14290	500.66	–	–	Rod #1
5	1986-09-09	10:47	–	1.11661	526.95	–	–	Ext. Rod #1
5	1986-10-21	13:11	–	1.09121	552.35	–	–	Rod #1
5	1986-12-01	09:42	–	1.07013	573.43	–	–	Ext. Rod #1
5	1987-01-30	09:04	–	1.03022	613.33	–	–	Rod #1
5	1987-07-24	09:44	–	0.93825	705.31	–	–	Ext. Rod #1
5	1987-10-09	–	–	–	–	–	–	Room closed. Bad back.
5	1988-01-01	–	–	–	–	–	–	Room closed. Bad back.

B.3. Smoothed and Interpolated Closure Plots

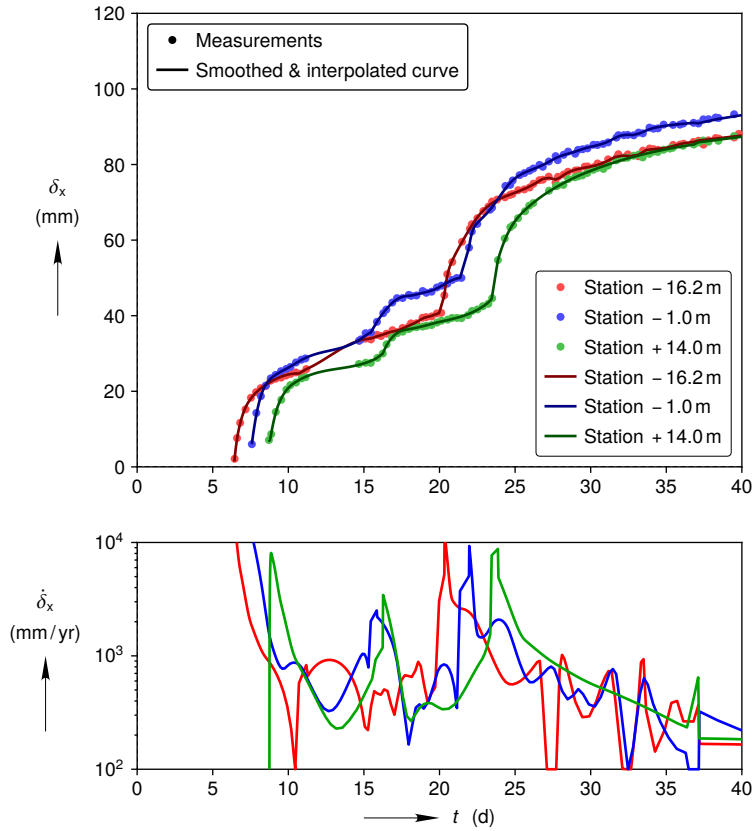


Figure B-7. Room B smoothed and interpolated horizontal closure curves compared against reconstructed mining sequence closure measurements during mining in the top plot. Closure rate curves computed from the smoothed closure curves during mining in the bottom plot.

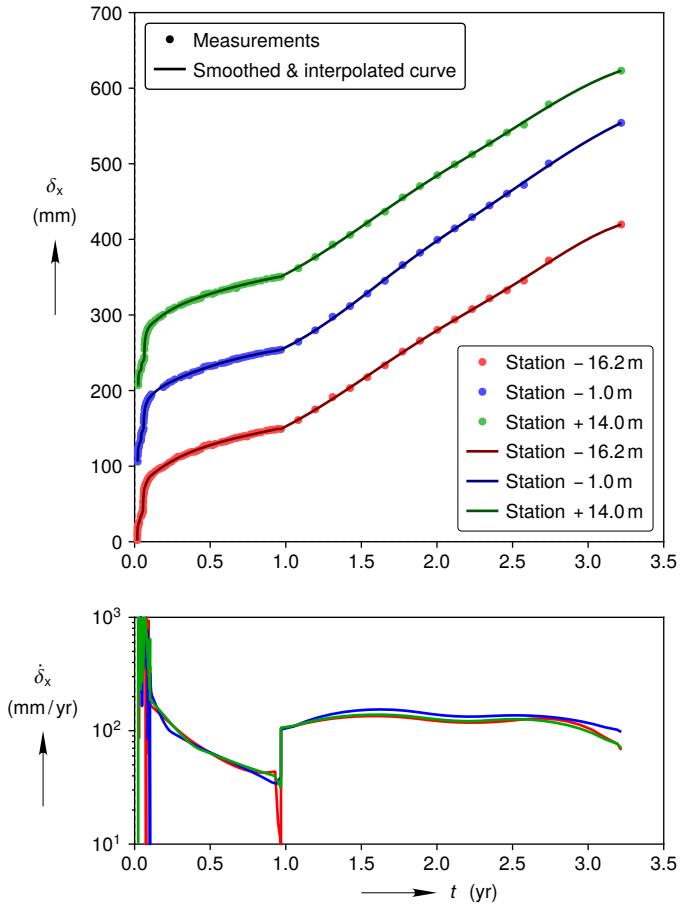


Figure B-8. Room B smoothed and interpolated full horizontal closure curves compared against reconstructed mining sequence closure measurements in the top plot. (Each successive station's horizontal closure curve and measurements are shifted up by 100 mm to enhance legibility.) Closure rate curves computed from the smoothed closure curves in the bottom plot.

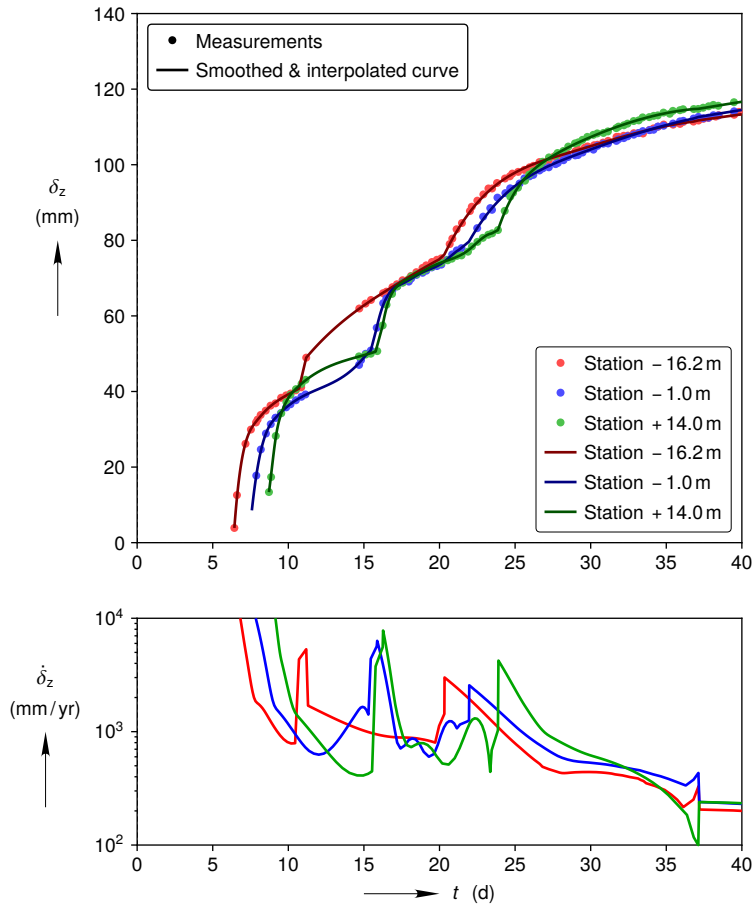


Figure B-9. Room B smoothed and interpolated vertical closure curves compared against reconstructed mining sequence closure measurements during mining in the top plot. Closure rate curves computed from the smoothed closure curves during mining in the bottom plot.

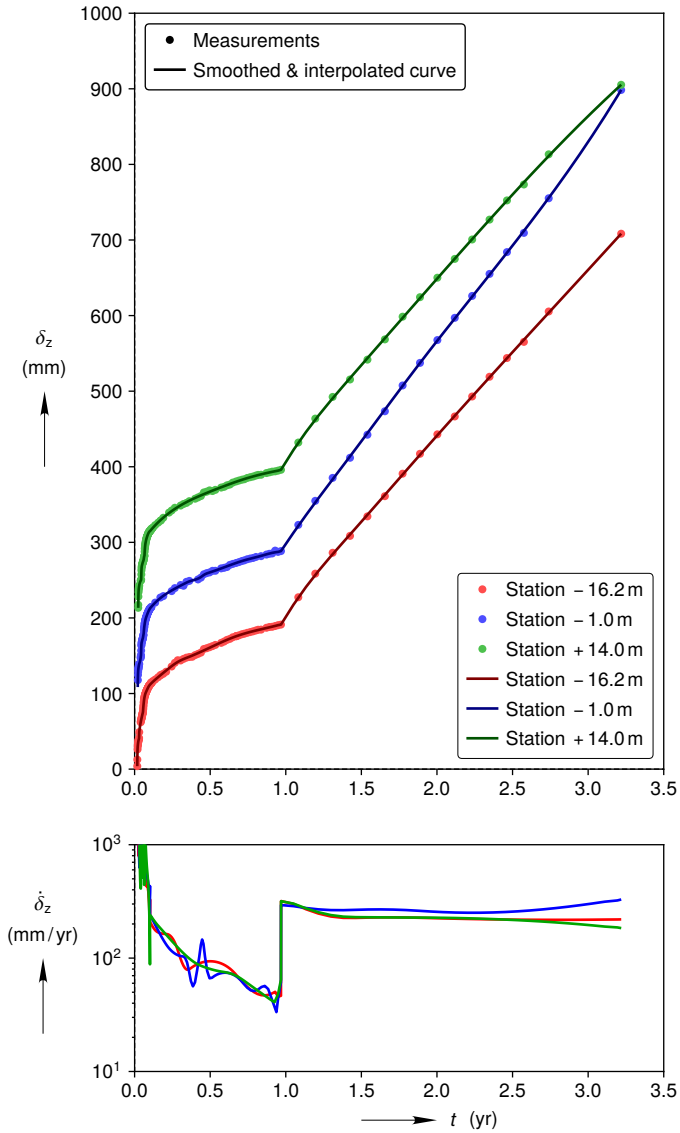


Figure B-10. Room B smoothed and interpolated full vertical closure curves compared against reconstructed mining sequence closure measurements in the top plot. (Each successive station's vertical closure curve and measurements are shifted up by 100 mm to enhance legibility.) Closure rate curves computed from the smoothed closure curves in the bottom plot.

B.4. Smoothed and Interpolated Closure Data

The t values in Table B-13 are relative to the estimated start of room excavation (1984-05-04 22:00). The first t value for each station in Table B-13 corresponds to t_0 for that station.

Table B-13. Room B smoothed and interpolated mining sequence closure data

Station -16.2 m			Station -1.0 m			Station +14.0 m		
t (yr)	δ_x (mm)	δ_z (mm)	t (yr)	δ_x (mm)	δ_z (mm)	t (yr)	δ_x (mm)	δ_z (mm)
0.017397	–	–	0.020315	–	–	0.023298	–	–
0.017606	1.42	3.90	0.020773	6.01	8.55	0.023869	7.11	13.38
0.017608	1.46	3.95	0.020778	6.06	8.61	0.023873	7.09	13.42
0.017637	1.90	4.51	0.020821	6.56	9.18	0.023928	6.94	14.02
0.017669	2.37	5.10	0.020864	7.04	9.75	0.023979	6.95	14.59
0.017700	2.82	5.69	0.020907	7.51	10.30	0.024030	7.09	15.18
0.017732	3.25	6.27	0.020950	7.98	10.85	0.024081	7.33	15.78
0.017763	3.68	6.83	0.020998	8.48	11.44	0.024132	7.65	16.39
0.017797	4.12	7.43	0.021045	8.97	12.01	0.024183	8.02	17.01
0.017831	4.54	8.02	0.021093	9.44	12.58	0.024230	8.40	17.59
0.017865	4.95	8.59	0.021140	9.91	13.13	0.024277	8.78	18.18
0.017899	5.35	9.16	0.021192	10.40	13.73	0.024324	9.16	18.77
0.017935	5.76	9.75	0.021244	10.89	14.31	0.024371	9.53	19.36
0.017972	6.16	10.33	0.021295	11.36	14.87	0.024418	9.89	19.95
0.018008	6.54	10.90	0.021347	11.81	15.43	0.024466	10.25	20.54
0.018047	6.93	11.49	0.021403	12.29	16.01	0.024513	10.60	21.13
0.018086	7.30	12.07	0.021459	12.76	16.59	0.024560	10.94	21.71
0.018124	7.66	12.63	0.021520	13.25	17.19	0.024607	11.27	22.29
0.018166	8.03	13.22	0.021580	13.72	17.77	0.024654	11.60	22.87
0.018207	8.38	13.79	0.021640	14.17	18.34	0.024705	11.94	23.48
0.018250	8.74	14.38	0.021705	14.64	18.93	0.024756	12.27	24.09
0.018294	9.08	14.95	0.021770	15.10	19.51	0.024807	12.60	24.69
0.018338	9.41	15.51	0.021839	15.56	20.10	0.024858	12.92	25.27
0.018384	9.75	16.08	0.021908	16.01	20.68	0.024913	13.25	25.88
0.018432	10.08	16.66	0.021981	16.46	21.27	0.024968	13.57	26.47
0.018481	10.40	17.23	0.022054	16.89	21.84	0.025027	13.90	27.08
0.018531	10.73	17.80	0.022132	17.33	22.42	0.025086	14.22	27.66
0.018585	11.06	18.39	0.022214	17.77	23.00	0.025149	14.55	28.25
0.018638	11.37	18.95	0.022296	18.19	23.57	0.025215	14.88	28.85
0.018694	11.69	19.51	0.022382	18.60	24.14	0.025286	15.21	29.44
0.018752	12.01	20.08	0.022473	19.02	24.71	0.025361	15.55	30.02
0.018812	12.34	20.65	0.022567	19.42	25.28	0.025443	15.90	30.62
0.018875	12.66	21.21	0.022667	19.81	25.84	0.025530	16.25	31.20
0.018941	12.98	21.78	0.022774	20.21	26.42	0.025624	16.61	31.79
0.019011	13.32	22.35	0.022887	20.59	26.98	0.025726	16.98	32.37
0.019084	13.65	22.92	0.023007	20.97	27.55	0.025836	17.35	32.95
0.019161	13.99	23.49	0.023137	21.34	28.12	0.025957	17.73	33.54
0.019241	14.32	24.05	0.023279	21.71	28.70	0.026087	18.11	34.11
0.019326	14.65	24.61	0.023434	22.06	29.27	0.026224	18.49	34.69
0.019418	15.00	25.18	0.023603	22.41	29.83	0.026374	18.87	35.27
0.019515	15.34	25.74	0.023792	22.75	30.41	0.026535	19.26	35.86
0.019619	15.68	26.30	0.024004	23.08	30.97	0.026707	19.65	36.44
0.019731	16.03	26.87	0.024245	23.42	31.53	0.026896	20.03	37.02
0.019852	16.38	27.43	0.024521	23.76	32.09	0.027104	20.42	37.60
0.019983	16.73	27.99	0.024836	24.12	32.66	0.027336	20.81	38.18
0.020126	17.08	28.55	0.025181	24.46	33.22	0.027595	21.19	38.75
0.020285	17.45	29.11	0.025543	24.79	33.78	0.027889	21.58	39.33
0.020465	17.82	29.67	0.025923	25.10	34.34	0.028223	21.96	39.91
0.020668	18.22	30.23	0.026324	25.41	34.91	0.028600	22.34	40.49
0.020901	18.65	30.79	0.026751	25.74	35.47	0.029004	22.71	41.06
0.021155	19.08	31.32	0.027204	26.10	36.04	0.029432	23.06	41.64
0.021431	19.51	31.85	0.027691	26.50	36.60	0.029884	23.41	42.22
0.021732	19.94	32.40	0.028217	26.96	37.16	0.030363	23.74	42.79
0.022047	20.36	32.95	0.028739	27.42	37.67	0.030877	24.06	43.37
0.022374	20.75	33.51	0.029269	27.88	38.14	0.031427	24.37	43.94
0.022713	21.13	34.07	0.029826	28.33	38.60	0.032019	24.66	44.52
0.023069	21.49	34.63	0.030434	28.79	39.06	0.032667	24.93	45.09
0.023450	21.86	35.19	0.031141	29.24	39.56	0.033378	25.19	45.67
0.023859	22.24	35.75	0.031999	29.70	40.12	0.034167	25.44	46.24
0.024302	22.63	36.31	0.032896	30.08	40.68	0.035050	25.67	46.82
0.024784	23.01	36.86	0.033793	30.41	41.24	0.036048	25.91	47.39
0.025313	23.39	37.42	0.034651	30.69	41.81	0.037178	26.16	47.97
0.025889	23.76	37.98	0.035449	30.95	42.37	0.038451	26.46	48.54
0.026517	24.10	38.54	0.036174	31.20	42.93	0.039833	26.88	49.11
0.027190	24.38	39.10	0.036834	31.45	43.50	0.040932	27.30	49.56
0.027895	24.59	39.66	0.037429	31.71	44.06	0.041811	27.73	49.93
0.028610	24.71	40.21	0.037972	31.98	44.62	0.042546	28.16	50.25
0.029308	24.71	40.77	0.038468	32.26	45.18	0.043182	28.59	50.54
0.030620	25.86	48.95	0.038929	32.56	45.75	0.044465	29.93	57.47
0.030948	26.07	49.52	0.039356	32.87	46.31	0.044541	30.20	58.07
0.031280	26.30	50.07	0.039753	33.18	46.88	0.044616	30.45	58.65
0.031623	26.55	50.64	0.040124	33.50	47.44	0.044695	30.71	59.23
0.031970	26.82	51.20	0.040478	33.84	48.00	0.044779	30.98	59.81
0.032322	27.10	51.76	0.040818	34.19	48.57	0.044866	31.25	60.39

Table B-13. Room B smoothed and interpolated mining sequence closure data

Station -16.2 m			Station -1.0 m			Station +14.0 m		
t (yr)	δ_x (mm)	δ_z (mm)	t (yr)	δ_x (mm)	δ_z (mm)	t (yr)	δ_x (mm)	δ_z (mm)
0.032684	27.40	52.32	0.041159	34.55	49.13	0.044957	31.52	60.96
0.033051	27.72	52.88	0.041508	34.91	49.69	0.045056	31.80	61.55
0.033427	28.05	53.44	0.041884	35.25	50.26	0.045160	32.08	62.12
0.033809	28.39	54.00	0.042306	35.54	50.82	0.045271	32.37	62.70
0.034200	28.75	54.56	0.043387	38.28	56.86	0.045390	32.67	63.28
0.034601	29.12	55.12	0.043476	38.48	57.43	0.045521	32.97	63.86
0.035012	29.50	55.69	0.043568	38.68	58.01	0.045663	33.29	64.44
0.035428	29.88	56.25	0.043664	38.89	58.57	0.045822	33.61	65.01
0.035853	30.26	56.80	0.043762	39.10	59.14	0.046001	33.95	65.59
0.036289	30.65	57.36	0.043866	39.32	59.71	0.046207	34.30	66.16
0.036734	31.04	57.92	0.043977	39.55	60.28	0.046453	34.67	66.74
0.037188	31.43	58.48	0.044090	39.78	60.84	0.046750	35.05	67.32
0.037658	31.81	59.04	0.044213	40.03	61.42	0.047119	35.43	67.89
0.038137	32.17	59.60	0.044342	40.29	61.99	0.047571	35.79	68.47
0.038626	32.52	60.16	0.044480	40.56	62.56	0.048131	36.10	69.05
0.039125	32.84	60.72	0.044628	40.84	63.12	0.048837	36.34	69.62
0.039639	33.14	61.28	0.044787	41.14	63.69	0.049642	36.54	70.20
0.040162	33.39	61.84	0.044962	41.46	64.25	0.050412	36.76	70.77
0.040695	33.60	62.40	0.045156	41.79	64.82	0.051142	37.00	71.34
0.041243	33.76	62.96	0.045374	42.16	65.38	0.051864	37.27	71.92
0.041800	33.86	63.52	0.045625	42.56	65.94	0.052597	37.55	72.50
0.042368	34.01	64.08	0.045926	43.01	66.51	0.053371	37.85	73.07
0.042945	34.28	64.63	0.046264	43.46	67.02	0.054232	38.17	73.65
0.043532	34.58	65.19	0.046645	43.92	67.47	0.055263	38.53	74.22
0.044128	34.83	65.75	0.047093	44.38	67.88	0.056425	38.91	74.79
0.044735	35.12	66.31	0.047688	44.83	68.31	0.057508	39.29	75.37
0.045346	35.44	66.87	0.048484	45.16	68.87	0.058397	39.65	75.94
0.045967	35.72	67.43	0.049171	45.27	69.43	0.059115	39.98	76.52
0.046593	35.91	67.99	0.049816	45.38	69.99	0.059714	40.29	77.10
0.047219	36.10	68.54	0.050458	45.58	70.56	0.060226	40.58	77.67
0.047850	36.45	69.11	0.051133	45.84	71.12	0.060690	40.88	78.25
0.048481	36.87	69.67	0.051904	46.12	71.68	0.061130	41.19	78.83
0.049112	37.30	70.22	0.052828	46.42	72.24	0.061567	41.52	79.40
0.049743	37.71	70.78	0.053773	46.87	72.80	0.062015	41.89	79.97
0.050379	38.13	71.34	0.054440	47.33	73.27	0.062491	42.32	80.54
0.050892	38.56	71.79	0.055017	47.79	73.76	0.062927	42.74	81.00
0.051357	38.99	72.19	0.055560	48.24	74.31	0.063316	43.17	81.35
0.051953	39.42	72.70	0.056045	48.65	74.88	0.063653	43.60	81.59
0.052614	39.69	73.26	0.056506	49.02	75.44	0.063947	44.03	81.74
0.053289	39.94	73.82	0.056957	49.35	76.00	0.064205	44.46	81.83
0.053978	40.33	74.38	0.057417	49.63	76.57	0.065336	54.73	82.69
0.054687	40.68	74.94	0.057909	49.86	77.13	0.065428	55.19	83.09
0.055635	45.39	76.24	0.058470	50.00	77.69	0.065520	55.63	83.47
0.055672	45.83	76.35	0.060098	58.01	79.66	0.065612	56.07	83.86
0.055708	46.27	76.46	0.060147	58.48	79.78	0.065712	56.52	84.26
0.055753	46.79	76.59	0.060204	59.00	79.93	0.065811	56.96	84.65
0.055798	47.28	76.73	0.060260	59.48	80.08	0.065910	57.40	85.04
0.055843	47.75	76.86	0.060326	59.99	80.24	0.066017	57.84	85.45
0.055888	48.20	76.99	0.060391	60.47	80.40	0.066123	58.28	85.85
0.055942	48.71	77.15	0.060464	60.95	80.59	0.066237	58.73	86.27
0.055996	49.19	77.31	0.060545	61.44	80.79	0.066350	59.16	86.68
0.056051	49.64	77.47	0.060635	61.92	81.01	0.066471	59.61	87.10
0.056114	50.14	77.65	0.060732	62.38	81.25	0.066592	60.04	87.52
0.056177	50.60	77.83	0.060846	62.83	81.52	0.066719	60.48	87.95
0.056249	51.08	78.04	0.060985	63.29	81.85	0.066854	60.93	88.39
0.056321	51.52	78.25	0.061164	63.75	82.27	0.066989	61.36	88.82
0.056403	51.98	78.48	0.061400	64.21	82.82	0.067131	61.79	89.26
0.056493	52.44	78.73	0.061652	64.61	83.39	0.067280	62.23	89.71
0.056592	52.89	79.00	0.061912	65.00	83.96	0.067436	62.66	90.17
0.056700	53.34	79.30	0.062181	65.39	84.53	0.067599	63.10	90.64
0.056818	53.77	79.62	0.062457	65.79	85.11	0.067769	63.53	91.11
0.056953	54.22	79.98	0.062734	66.19	85.67	0.067954	63.97	91.60
0.057098	54.68	80.37	0.063019	66.62	86.24	0.068145	64.40	92.09
0.057242	55.12	80.74	0.063312	67.07	86.80	0.068351	64.84	92.59
0.057386	55.55	81.12	0.063597	67.53	87.33	0.068564	65.27	93.09
0.057540	55.99	81.51	0.063865	67.98	87.82	0.068791	65.70	93.61
0.057693	56.43	81.89	0.064125	68.45	88.28	0.069032	66.12	94.13
0.057856	56.89	82.29	0.064370	68.91	88.70	0.069295	66.56	94.67
0.058018	57.33	82.69	0.064606	69.37	89.10	0.069572	66.99	95.21
0.058181	57.77	83.07	0.064833	69.83	89.47	0.069862	67.42	95.75
0.058343	58.20	83.46	0.065061	70.30	89.84	0.070168	67.85	96.28
0.058514	58.66	83.85	0.065281	70.76	90.18	0.070487	68.29	96.81
0.058686	59.10	84.24	0.065501	71.21	90.52	0.070813	68.72	97.32
0.058857	59.55	84.63	0.065720	71.67	90.85	0.071147	69.15	97.81
0.059029	60.00	85.00	0.065940	72.13	91.17	0.071494	69.58	98.30
0.059200	60.44	85.37	0.066168	72.60	91.50	0.071856	70.01	98.78
0.059372	60.88	85.74	0.066396	73.05	91.82	0.072225	70.44	99.24
0.059543	61.32	86.10	0.066632	73.52	92.14	0.072608	70.87	99.69
0.059715	61.75	86.45	0.066876	73.98	92.47	0.073006	71.30	100.13
0.059895	62.20	86.81	0.067128	74.44	92.80	0.073417	71.73	100.56
0.060076	62.64	87.17	0.067396	74.89	93.14	0.073843	72.16	100.99
0.060256	63.08	87.52	0.067689	75.35	93.50	0.074290	72.59	101.42
0.060446	63.53	87.88	0.068015	75.81	93.88	0.074751	73.02	101.84
0.060635	63.97	88.23	0.068381	76.27	94.31	0.075226	73.45	102.27
0.060834	64.42	88.59	0.068796	76.73	94.77	0.075723	73.88	102.70

Table B-13. Room B smoothed and interpolated mining sequence closure data

Station -16.2 m			Station -1.0 m			Station +14.0 m		
t (yr)	δ_x (mm)	δ_z (mm)	t (yr)	δ_x (mm)	δ_z (mm)	t (yr)	δ_x (mm)	δ_z (mm)
0.061033	64.85	88.95	0.069284	77.19	95.28	0.076234	74.30	103.13
0.061240	65.29	89.31	0.069846	77.64	95.85	0.076766	74.73	103.57
0.061457	65.73	89.68	0.070440	78.04	96.42	0.077319	75.16	104.01
0.061682	66.17	90.06	0.071066	78.42	96.99	0.077894	75.59	104.45
0.061917	66.60	90.44	0.071725	78.80	97.55	0.078490	76.02	104.89
0.062170	67.04	90.84	0.072417	79.21	98.11	0.079107	76.45	105.33
0.062440	67.48	91.26	0.073133	79.67	98.67	0.079753	76.88	105.78
0.062729	67.91	91.69	0.073792	80.12	99.15	0.080420	77.31	106.23
0.063036	68.34	92.13	0.074402	80.58	99.57	0.081115	77.74	106.68
0.063370	68.77	92.60	0.074972	81.04	99.96	0.081839	78.16	107.14
0.063740	69.21	93.09	0.075541	81.50	100.32	0.082591	78.59	107.60
0.064146	69.64	93.62	0.076168	81.95	100.71	0.083372	79.02	108.07
0.064598	70.07	94.17	0.076982	82.41	101.20	0.084180	79.44	108.54
0.065085	70.48	94.73	0.077958	82.83	101.77	0.085025	79.87	109.02
0.065599	70.87	95.30	0.078967	83.23	102.33	0.085905	80.30	109.50
0.066141	71.23	95.86	0.079887	83.69	102.83	0.086820	80.73	109.98
0.066718	71.59	96.42	0.080765	84.15	103.31	0.087778	81.16	110.47
0.067332	71.94	96.98	0.081815	84.57	103.87	0.088778	81.59	110.96
0.067991	72.30	97.54	0.082873	84.93	104.43	0.089835	82.02	111.44
0.068695	72.70	98.11	0.083947	85.34	105.00	0.090949	82.44	111.93
0.069435	73.13	98.65	0.084866	85.79	105.47	0.092134	82.87	112.41
0.070130	73.56	99.13	0.085558	86.25	105.82	0.093397	83.30	112.88
0.070780	74.00	99.55	0.086152	86.71	106.12	0.094752	83.73	113.34
0.071385	74.43	99.92	0.086754	87.17	106.43	0.096214	84.16	113.78
0.071935	74.86	100.24	0.087478	87.62	106.78	0.097810	84.58	114.18
0.072450	75.30	100.52	0.088642	87.89	107.35	0.099570	85.01	114.54
0.072919	75.73	100.77	0.089830	87.82	107.91	0.100804	85.29	114.74
0.073406	76.16	101.02	0.091050	88.26	108.47	0.101607	85.88	114.78
0.074570	76.46	101.58	0.091783	88.72	108.80	0.101776	85.91	114.82
0.075807	76.05	102.14	0.092499	89.18	109.12	0.107201	86.93	116.12
0.076520	76.48	102.45	0.093434	89.64	109.52	0.112794	87.95	117.42
0.076944	76.91	102.63	0.094793	90.05	110.08	0.118388	88.96	118.69
0.077368	77.34	102.81	0.096217	90.36	110.64	0.124152	89.98	119.97
0.077865	77.78	103.03	0.097731	90.61	111.21	0.130085	91.00	121.25
0.078487	78.21	103.30	0.099350	90.83	111.77	0.136018	92.01	122.50
0.079345	78.64	103.67	0.100774	91.04	112.23	0.142120	93.02	123.75
0.080617	79.05	104.23	0.101641	90.91	112.63	0.148392	94.04	125.01
0.081881	79.37	104.79	0.101810	90.97	112.67	0.154834	95.06	126.27
0.083154	79.79	105.35	0.105031	92.01	113.44	0.161445	96.09	127.54
0.084038	80.22	105.74	0.109438	93.04	114.48	0.168056	97.09	128.78
0.084751	80.65	106.05	0.114354	94.07	115.59	0.174836	98.10	130.02
0.085365	81.09	106.31	0.119608	95.12	116.75	0.181786	99.11	131.26
0.085933	81.52	106.55	0.125032	96.16	117.91	0.188906	100.11	132.50
0.086556	81.96	106.82	0.130626	97.20	119.07	0.196195	101.11	133.74
0.087892	82.35	107.38	0.136389	98.23	120.22	0.203823	102.14	135.01
0.089273	82.23	107.94	0.142491	99.27	121.40	0.211621	103.15	136.27
0.090708	82.54	108.50	0.148763	100.29	122.56	0.219588	104.16	137.52
0.091249	82.97	108.70	0.155374	101.32	123.75	0.227725	105.17	138.76
0.091701	83.41	108.87	0.162323	102.35	124.94	0.236200	106.18	140.02
0.092179	83.84	109.04	0.169612	103.38	126.15	0.244845	107.18	141.27
0.093785	84.09	109.60	0.177240	104.41	127.35	0.253830	108.20	142.53
0.095545	84.32	110.16	0.185376	105.45	128.59	0.263153	109.21	143.79
0.096755	84.75	110.51	0.193851	106.48	129.82	0.272646	110.22	145.04
0.097793	85.18	110.78	0.202835	107.52	131.06	0.282477	111.22	146.29
0.098912	85.61	111.05	0.212158	108.55	132.30	0.292648	112.23	147.55
0.100753	85.97	111.42	0.221989	109.58	133.55	0.303158	113.23	148.80
0.101664	86.34	111.74	0.232159	110.61	134.80	0.314176	114.25	150.08
0.101833	86.37	111.78	0.242668	111.65	136.04	0.325534	115.26	151.34
0.107935	87.39	113.03	0.253347	112.68	137.26	0.337230	116.26	152.60
0.114037	88.39	114.24	0.264195	113.70	138.47	0.349435	117.28	153.87
0.120308	89.41	115.44	0.275383	114.74	139.69	0.361979	118.28	155.14
0.126580	90.40	116.61	0.286739	115.77	140.90	0.375032	119.29	156.41
0.133021	91.41	117.77	0.298266	116.80	142.11	0.388423	120.30	157.68
0.139631	92.43	118.94	0.309961	117.82	143.33	0.402154	121.30	158.94
0.146411	93.45	120.11	0.321996	118.85	144.58	0.416393	122.31	160.21
0.153191	94.45	121.26	0.334201	119.87	145.84	0.430971	123.32	161.48
0.160140	95.46	122.43	0.346744	120.90	147.07	0.445719	124.32	162.74
0.167259	96.47	123.62	0.359457	121.93	148.16	0.460805	125.33	164.01
0.174548	97.48	124.83	0.372509	122.95	149.06	0.476231	126.34	165.29
0.182006	98.50	126.06	0.385899	123.99	149.82	0.491826	127.35	166.56
0.189464	99.50	127.28	0.399460	125.01	150.58	0.507761	128.35	167.84
0.197091	100.49	128.53	0.413359	126.03	151.50	0.524034	129.36	169.12
0.204888	101.49	129.80	0.427428	127.05	152.75	0.540646	130.37	170.42
0.212685	102.47	131.07	0.438107	127.81	154.02	0.557428	131.37	171.71
0.220651	103.45	132.37	0.446751	128.41	155.27	0.574549	132.37	173.02
0.228618	104.40	133.66	0.455396	129.00	156.55	0.591839	133.37	174.33
0.236754	105.35	134.95	0.465736	129.71	157.81	0.609299	134.35	175.64
0.245059	106.30	136.24	0.479974	130.66	159.07	0.626928	135.32	176.95
0.253534	107.25	137.51	0.495738	131.69	160.12	0.644727	136.28	178.25
0.262348	108.22	138.79	0.511841	132.72	161.18	0.662865	137.24	179.55
0.271670	109.21	140.06	0.528283	133.75	162.31	0.681512	138.20	180.85
0.281332	110.21	141.29	0.545064	134.78	163.49	0.700836	139.18	182.16
0.291332	111.23	142.46	0.562184	135.80	164.73	0.720839	140.18	183.46
0.301502	112.23	143.53	0.579304	136.80	166.00	0.741519	141.18	184.75
0.312011	113.23	144.54	0.596254	137.77	167.26	0.762709	142.18	186.00

Table B-13. Room B smoothed and interpolated mining sequence closure data

Station -16.2 m			Station -1.0 m			Station +14.0 m		
t (yr)	δ_x (mm)	δ_z (mm)	t (yr)	δ_x (mm)	δ_z (mm)	t (yr)	δ_x (mm)	δ_z (mm)
0.322689	114.23	145.49	0.613204	138.71	168.52	0.784406	143.19	187.23
0.333707	115.23	146.41	0.630155	139.63	169.77	0.806613	144.20	188.43
0.345063	116.23	147.31	0.647444	140.55	171.03	0.829327	145.20	189.59
0.356758	117.24	148.23	0.665073	141.46	172.29	0.852551	146.21	190.73
0.368793	118.24	149.19	0.683379	142.39	173.55	0.876283	147.21	191.83
0.381166	119.25	150.21	0.702533	143.33	174.81	0.900523	148.21	192.89
0.393878	120.26	151.28	0.722874	144.29	176.06	0.925441	149.22	193.94
0.406930	121.26	152.41	0.744909	145.31	177.31	0.949004	150.15	194.87
0.420320	122.27	153.59	0.767962	146.34	178.53	0.968230	150.73	195.99
0.434049	123.27	154.82	0.791862	147.37	179.76	0.968680	150.77	196.14
0.448118	124.27	156.10	0.816271	148.38	181.01	1.051068	159.52	222.31
0.462017	125.24	157.39	0.839493	149.31	182.27	1.133456	168.96	245.94
0.475746	126.16	158.66	0.861359	150.15	183.52	1.215844	179.00	267.56
0.489475	127.07	159.95	0.883564	150.98	184.77	1.298232	189.53	287.74
0.503035	127.94	161.22	0.908311	151.87	186.02	1.380621	200.44	307.03
0.516595	128.78	162.49	0.938144	152.89	187.13	1.463009	211.64	325.98
0.530324	129.62	163.77	0.948992	153.25	187.38	1.545397	223.00	344.87
0.544054	130.44	165.05	0.968205	153.98	188.45	1.627785	234.44	363.73
0.557953	131.25	166.32	0.968655	154.02	188.59	1.710173	245.84	382.56
0.572021	132.04	167.60	1.051044	162.47	212.78	1.792562	257.10	401.36
0.586428	132.84	168.88	1.133432	171.98	235.93	1.874950	268.11	420.14
0.601005	133.63	170.15	1.215821	182.41	258.32	1.957338	278.79	438.89
0.616090	134.42	171.43	1.298210	193.60	280.25	2.039726	289.17	457.60
0.631684	135.23	172.71	1.380598	205.39	302.00	2.122114	299.31	476.24
0.647787	136.04	173.98	1.462987	217.64	323.86	2.204503	309.30	494.78
0.664736	136.87	175.26	1.545376	230.19	345.92	2.286891	319.29	513.21
0.682703	137.74	176.53	1.627764	242.89	368.07	2.369279	329.43	531.49
0.702026	138.65	177.81	1.710153	255.58	390.20	2.451667	339.77	549.60
0.722705	139.60	179.09	1.792542	268.11	412.19	2.534055	350.21	567.51
0.744739	140.59	180.36	1.874930	280.32	433.93	2.616444	360.62	585.20
0.767283	141.59	181.58	1.957319	292.10	455.31	2.698832	370.85	602.64
0.790165	142.59	182.76	2.039708	303.49	476.38	2.781220	380.78	619.82
0.813386	143.59	183.89	2.122096	314.61	497.22	2.863608	390.29	636.69
0.836777	144.59	185.00	2.204485	325.58	517.94	2.945996	399.23	653.24
0.860168	145.59	186.10	2.286874	336.53	538.61	3.028384	407.48	669.44
0.883558	146.59	187.20	2.369263	347.58	559.35	3.110773	414.91	685.26
0.906780	147.59	188.31	2.451651	358.77	580.23	3.193161	421.37	700.68
0.929831	148.58	189.45	2.534040	370.04	601.35	3.218823	423.17	705.40

B.5. Remotely Read Closure Data

The t_i values in Table B-14 are relative to the estimated start of room excavation (1984-05-04 22:00).

Table B-14. Room B remotely read closure data

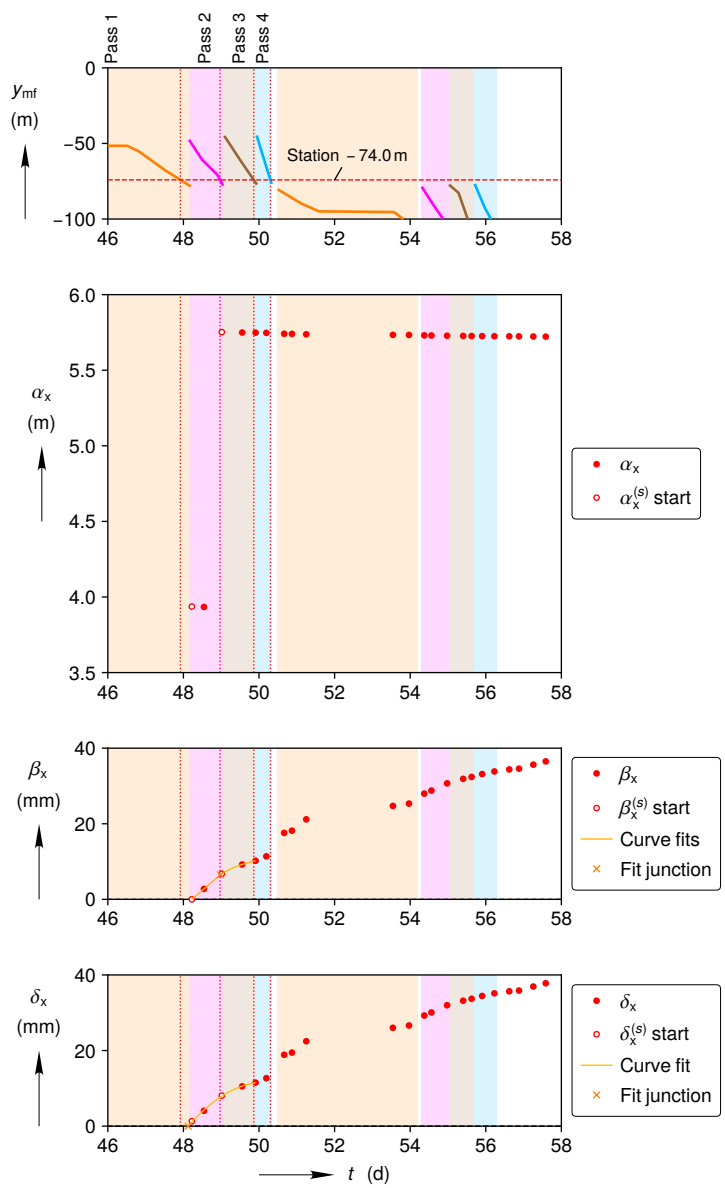
Station -20.0 m				Station -5.3 m				Station +2.2 m				Station +5.3 m				Station +13.2 m				Station +26.0 m			
Gage B_207		Gage B_201		Gage B_208		Gage B_202		Gage B_209		Gage B_203		Gage B_210		Gage B_204		Gage B_211		Gage B_205		Gage B_212		Gage B_206	
t_x (yr)	δ_x (mm)	t_z (yr)	δ_z (mm)	t_x (yr)	δ_x (mm)	t_z (yr)	δ_z (mm)	t_x (yr)	δ_x (mm)	t_z (yr)	δ_z (mm)	t_x (yr)	δ_x (mm)	t_z (yr)	δ_z (mm)	t_x (yr)	δ_x (mm)	t_z (yr)	δ_z (mm)	t_x (yr)	δ_x (mm)	t_z (yr)	δ_z (mm)
0.283596	111.72	0.321926	146.41	0.198722	105.55	0.198722	129.22	0.179557	105.23	0.182295	126.72	0.179557	102.11	0.179557	124.69	0.165868	97.50	0.198722	133.83	0.321926	115.08	0.321926	151.95
0.322898	115.62	0.361231	150.48	0.244185	110.81	0.233955	133.87	0.215650	109.90	0.216352	131.99	0.242734	110.07	0.211570	130.11	0.202120	102.30	0.228740	139.40	0.367503	118.23	0.362351	156.15
0.365289	118.17	0.400537	154.55	0.322701	118.33	0.269190	138.67	0.255872	113.96	0.250410	137.12	0.322459	118.48	0.248754	135.38	0.238367	106.80	0.264969	144.23	0.408950	121.82	0.402759	159.59
0.408721	121.47	0.440883	158.01	0.364022	121.94	0.586065	166.55	0.322914	119.23	0.321650	144.52	0.364894	121.78	0.322098	144.28	0.322206	114.14	0.322935	151.01	0.452458	124.97	0.445238	163.17
0.453181	124.32	0.483297	161.63	0.406377	125.55	0.628518	170.00	0.368296	122.69	0.357781	148.89	0.407328	125.08	0.362394	148.05	0.376027	118.78	0.360199	154.93	0.498032	127.97	0.487714	166.61
0.497640	127.02	0.562963	166.92	0.452856	128.55	0.680273	173.15	0.451845	128.11	0.602531	168.08	0.450797	128.38	0.575251	165.85	0.419488	121.93	0.571360	172.73	0.541533	130.66	0.530184	169.75
0.540033	129.72	0.607454	169.64	0.496236	131.26	0.723748	175.84	0.494135	130.82	0.645909	170.95	0.493227	131.38	0.618651	169.17	0.462945	124.77	0.614834	175.90	0.587100	133.21	0.572660	173.19
0.585521	131.97	0.649873	172.66	0.539618	134.12	0.767223	178.54	0.538489	133.38	0.693420	173.83	0.537724	134.22	0.661021	171.88	0.506411	128.21	0.658309	178.77	0.633701	135.76	0.615126	176.18
0.643420	135.27	0.693326	175.67	0.585061	136.52	0.810693	180.93	0.582843	135.94	0.737831	176.70	0.583254	137.07	0.704421	175.35	0.550900	130.91	0.705923	182.09	0.678229	138.00	0.659654	178.86
0.690978	137.82	0.737817	178.39	0.629478	139.83	0.855203	183.63	0.627195	138.95	0.782241	179.73	0.625676	139.47	0.747824	178.22	0.597453	133.45	0.749398	184.66	0.725860	140.24	0.706256	181.85
0.739567	140.07	0.783344	180.96	0.672853	141.78	0.900746	186.32	0.699400	142.86	0.919614	187.75	0.681547	142.46	0.793296	180.94	0.641939	135.99	0.794942	187.68	0.770384	142.34	0.751811	184.23
0.785053	142.02	0.829908	183.23	0.719331	144.64	0.945246	188.42	0.744787	145.12	0.962993	190.47	0.726037	144.86	0.834635	183.36	0.687468	139.13	0.839452	190.25	0.818013	144.43	0.801520	187.36
0.829511	144.57	0.875434	185.95	0.765805	146.74	0.977388	193.82	0.791205	147.23	0.985672	196.95	0.771559	147.10	0.884242	186.08	0.731939	140.77	0.882926	192.52	0.861500	146.38	0.845007	189.75
0.878099	146.66	0.923033	188.21	0.812278	148.85	0.998175	200.58	0.835561	149.34	1.006280	203.87	0.816044	149.20	0.928685	188.19	0.778488	143.01	0.926401	194.79	0.909131	148.62	0.890562	192.13
0.923584	148.46	0.966490	190.63	0.858751	150.80	1.017926	207.19	0.883010	151.75	1.029995	210.05	0.861560	150.99	0.973122	191.06	0.821933	145.10	0.969875	197.65	0.955722	150.56	0.935082	194.52
0.969071	150.56	0.988185	196.80	0.904191	152.75	1.040775	213.49	0.927367	153.56	1.051639	216.67	0.907082	153.24	0.991687	197.53	0.867441	146.88	0.989542	204.13	1.002311	152.36	0.982702	196.75
1.012499	153.56	1.009877	203.42	0.951697	155.01	1.065696	220.10	0.973787	155.36	1.076389	222.70	0.953633	155.18	1.012318	204.31	0.915016	148.67	1.009209	210.75	1.047878	154.90	1.023100	199.74
1.052835	157.46	1.033641	209.59	0.999202	156.96	1.087511	226.41	1.016077	158.07	1.097001	229.17	0.999151	157.13	1.031916	210.93	0.959495	150.76	1.029911	217.23	1.091391	158.35	1.064549	203.48
1.092142	161.82	1.058439	216.06	1.037431	161.17	1.111393	232.71	1.055266	162.44	1.119676	236.09	1.038494	161.18	1.055652	217.25	1.002940	152.85	1.052683	223.70	1.132830	161.50	1.102899	207.37
1.130416	166.32	1.089453	221.79	1.074630	165.83	1.136306	238.72	1.090328	166.95	1.145458	242.27	1.075774	165.54	1.081455	223.58	1.042286	157.20	1.077526	230.18	1.183598	165.70	1.145382	211.11
1.168687	170.38	1.114254	227.81	1.110798	170.65	1.161225	245.17	1.128485	171.62	1.171239	248.45	1.110995	170.49	1.106225	229.90	1.079562	161.40	1.100298	236.35	1.222978	169.45	1.182701	215.15
1.205929	175.03	1.146304	233.38	1.143872	175.91	1.187176	251.48	1.175919	178.54	1.195982	255.22	1.144147	175.45	1.129962	236.07	1.115811	166.05	1.125141	242.68	1.263391	173.05	1.222095	219.50
1.243170	179.54	1.177319	238.80	1.177975	180.72	1.211061	257.94	1.212010	183.65	1.218660	261.85	1.179370	180.56	1.154733	242.09	1.149994	170.70	1.149983	248.70	1.411589	187.45	1.260452	223.69
1.280413	184.20	1.208333	244.52	1.211048	185.99	1.234946	264.39	1.246039	188.47	1.249602	268.78	1.212522	185.52	1.179503	248.42	1.187284	175.80	1.174826	254.88	1.452004	191.20	1.298815	228.18
1.316619	188.55	1.237277	250.09	1.246185	190.95	1.258829	270.70	1.282131	193.58	1.275379	275.55	1.245677	190.63	1.204272	254.89	1.222502	180.60	1.200703	261.20	1.493458	195.25	1.337172	232.38
1.353860	193.06	1.266220	255.96	1.278225	196.07	1.281677	277.00	1.315129	198.40	1.304261	281.73	1.278832	195.74	1.228009	260.91	1.254619	185.40	1.225546	267.53	1.532838	199.00	1.373464	236.72
1.392134	197.57	1.296198	261.68	1.312331	201.33	1.305562	283.46	1.350189	203.51	1.329008	288.05	1.311992	201.30	1.249677	267.24	1.288811	190.66	1.250388	273.55	1.572221	202.90	1.411827	241.22
1.429375	202.07	1.326177	267.40	1.346436	206.45	1.328409	289.62	1.385248	208.63	1.352721	294.38	1.347217	206.56	1.274447	273.56	1.324029	195.46	1.276266	280.02	1.609539	207.10	1.448126	245.86
1.466618	206.73	1.356155	273.12	1.379509	211.56	1.355391	295.77	1.419277	213.59	1.377470	300.55	1.381399	211.21	1.299216	280.03	1.358216	200.41	1.302143	286.05	1.648914	210.55	1.485455	250.36
1.504892	211.23	1.387169	278.85	1.414647	216.83	1.378240	302.08	1.453305	218.71	1.402215	307.03	1.413520	216.32	1.322950	286.51	1.393436	205.36	1.326986	291.92	1.688302	214.75	1.521754	255.01
1.541100	215.74	1.416111	284.72	1.448752	221.79	1.403157	308.38	1.487334	223.82	1.426964	313.20	1.448742	221.43	1.345652	292.83	1.428654	210.16	1.352864	298.25	1.727687	218.80	1.558052	259.65
1.579372	219.94	1.448162	290.14	1.480793	227.05	1.429106	314.54	1.521361	229.09	1.450679	319.38	1.481899	226.69	1.371455	299.30	1.461805	214.96	1.378741	304.42	1.768104	222.70	1.593310	264.00
1.615581	224.60	1.491581	298.27	1.513865	232.17	1.451954	320.85	1.556422	233.90	1.474391	325.85	1.514020	231.80	1.395191	305.48	1.498059	219.92	1.404619	310.45	1.807487	226.60	1.629608	268.65
1.652823	229.26	1.520525	303.84	1.547970	237.13	1.475839	327.30	1.589419	238.87	1.498106	332.03	1.548209	236.91	1.418925	312.10	1.532244	224.72	1.430496	316.32	1.843771	230.80	1.666944	273.44
1.691093	233.31	1.549466	309.86	1.582076	242.40	1.499720	333.46	1.625511	243.83	1.521819	338.35	1.580329	242.02	1.443696	318.27	1.567462	229.52	1.457409	322.65	1.883151	234.55	1.704274	277.94
1.726269	237.97	1.579445	315.58	1.616179	247.21	1.523598	339.46	1.659540	248.79	1.547598	344.83	1.616586	247.12	1.466397	324.60	1.601646	234.32	1.482252	328.67	1.923571	238.60	1.741606	282.58
1.765577	242.47	1.608387	321.45	1.649249	252.02	1.547483	345.92	1.692537	253.76	1.570280	351.00	1.648706	252.23	1.490133	330.92	1.637896	238.97	1.507094	334.84	1.963991	242.65	1.776864	286.93
1.801784	246.98	1.638368	326.87	1.682322	257.14	1.571363	352.08	1.727598	258.57	1.595028	357.18	1.682891	257.04	1.514905	336.94	1.672083	243.92	1.530902	341.17	2.003373	246.55	1.814190	291.27
1.839027	251.64	1.668347	332.59	1.717459	262.25	1.595248	358.53	1.764722	263.54	1.619775	363.50	1.717075	261.85	1.536573	343.26	1.706270	248.87	1.556779	347.19	2.044825	250.45	1.851523	295.92
1.876264	255.69	1.698325	338.32	1.751563	267.22	1.619131	364.84	1.798751	268.50	1.642458	369.53	1.750230	266.96	1.560305	350.04	1.741488	253.68	1.583692	353.37	2.101822	255.85	1.894033	300.86
1.913507	260.50	1.727269	344.04	1.784635	272.18	1.641982	371.30	1.832779	273.47	1.666173	375.70	1.785452	272.06	1.585073	356.66	1.777737	258.33	1.608534	359.99	2.143274	259.75	1.929297	305.51
1.949714	264.85	1.758281	349.91	1.820807	277.59	1.665862	377.45	1.866808	278.43	1.689887	382.02	1.819639	277.02	1.608810	362.83	1.811919	262.98	1.633377	366.02	2.184721	263.35	1.966623	309.85
1.989020	269.21	1.788260	355.63	1.853879	282.56	1.689747	383.91	1.902901	283.25	1.712567	388.35	1.852791	281.98	1.631513	369.01	1.847133	267.48	1.658219	372.34	2.223069	267.25	2.003952	314.35
2.026257	273.26	1.816167	361.50	1.890049	287.67	1.713630	390.21	1.936930	288.06	1.737314	394.67	1.888012	286.94	1.655248	375.33	1.885454	272.43	1.684097	378.67	2.264523	271.30	2.040247	318.85
2.066596	277.47	1.846147	367.07	1.924153	292.64	1.737513	396.52	1.975085	293.33	1.758962	400.85	1.923232	291.90	1.677951	381.50	1.922744	277.53	1.709975	384.84	2.304935	274.90	2.075505	323.19
2.104870	281.98	1.876125	372.79	1.959289	297.60	1.761396	402.83	2.009114	298.14	1.783708	407.32	1.957421	297.00	1.701686	387.98	1.960028	282.18	1.733782	390.87	2.345350	278.65	2.112834	327.69
2.142111	286.48	1.906103	378.66	1.993394	302.71	1.784244	409.13	2.045207	302.81	1.808456	413.50	1.993671	301.66	1.725424	394.00	1.996279	286.98	1.759660	397.04	2.385765	282.40	2.150160	332.03
2.181417	290.69	2.033256	402.45	2.028531	307.68	1.808127	415.44	2.080268	307.62	1.831136	419.82	2.027861	306.92	1.748125	400.32	2.031495	291.63	1.785537	403.22	2.425142	286.00	2.188527	336.68
2.218659	295.34	2.062202	407.87	2.063665	312.34	1.833044	421.74	2.116361	312.28	1.856918	426.00	2.063078	311.58	1.772894	406.80	2.069810	296.13	1.810380	409.39	2.463490	289.90	2.223785	341.02
2.257963	299.40	2.093216	413.44	2.098802	317.30	1.856929	428.20	2.153486	316.95	1.880632	432.32	2.098298	316.53	1.796630	413.12	2.107088	300.48	1.836257	415.42	2.504942	293.80	2.261117	345.67
2.296237	303.90	2.124230	419.16	2.133936	321.97	1.879778	434.51	2.189579	321.61	1.904344	438.80	2.132489	321.79	1.819334	419.14	2.144371	305.13	1.862135	421.59	2.546396	297.85	2.298443	350.01
2.332442	308.11	2.155245	424.73	2.168038	326.63	1.904692	440.66	2.225672	326.43	1.929091	445.12	2.167705	326.45	1.843070	425.31	2.181652	309.63	1.891118	427.92	2.586808	301.45	2.334742	354.66
2.386229	313.96	2.184189	430.31	2.204207	331.59	1.928579	447.27	2.262796	331.24	1.951774	451.15	2.202921	331.11	1.866808	431.34	2.217901	314.28	1.916995	433.94	2.627226	305.35	2.373098	358.85

Table B-14. Room B remotely read closure data

Station -20.0 m				Station -5.3 m				Station +2.2 m				Station +5.3 m				Station +13.2 m				Station +26.0 m			
Gage B_207		Gage B_201		Gage B_208		Gage B_202		Gage B_209		Gage B_203		Gage B_210		Gage B_204		Gage B_211		Gage B_205		Gage B_212		Gage B_206	
t_x (yr)	δ_x (mm)	t_z (yr)	δ_z (mm)	t_x (yr)	δ_x (mm)	t_z (yr)	δ_z (mm)	t_x (yr)	δ_x (mm)	t_z (yr)	δ_z (mm)	t_x (yr)	δ_x (mm)	t_z (yr)	δ_z (mm)	t_x (yr)	δ_x (mm)	t_z (yr)	δ_z (mm)	t_x (yr)	δ_x (mm)	t_z (yr)	δ_z (mm)
2.425533	318.02	2.213134	435.88	2.239342	336.41	1.953494	453.43	2.296825	336.06	1.977553	457.62	2.237110	336.22	1.891576	437.96	2.255177	318.48	1.940803	440.11	2.667640	309.10	2.411465	363.50
2.463804	322.07	2.244147	441.60	2.294113	344.08	1.977379	459.88	2.333951	340.57	2.001270	463.50	2.272324	340.72	1.914279	444.13	2.293492	322.98	1.966680	445.99	2.708058	313.00	2.447760	367.99
2.502077	326.43	2.274127	447.17	2.330282	349.04	2.001262	466.19	2.370044	345.08	2.027049	469.97	2.310652	346.13	1.940083	450.30	2.331808	327.62	1.992558	452.16	2.748470	316.60	2.483021	372.49
2.539317	330.78	2.305142	452.74	2.365416	353.55	2.025147	472.64	2.406136	350.05	2.050766	476.00	2.345874	351.24	1.963819	456.63	2.368056	332.12	2.018436	458.19	2.787852	320.50	2.521385	376.99
2.576556	335.14	2.334086	458.31	2.401584	358.37	2.050057	478.50	2.442230	354.56	2.076547	482.17	2.382122	355.74	1.988588	462.95	2.406370	336.62	2.045348	464.21	2.827227	323.95	2.557683	381.63
2.615860	339.20	2.366135	464.03	2.437750	363.03	2.074974	484.81	2.477291	359.38	2.101292	488.80	2.418381	361.00	2.012322	469.58	2.442617	341.12	2.072261	470.09	2.888365	329.50	2.593975	385.98
2.655166	343.40	2.397152	469.30	2.472886	367.84	2.098856	491.11	2.513384	364.19	2.125007	494.97	2.452563	365.66	2.036060	475.60	2.478862	345.47	2.107455	478.07	2.929814	333.25	2.631298	390.17
2.694469	347.45	2.427131	474.87	2.508022	372.81	2.122739	497.42	2.548446	368.71	2.151824	500.85	2.487781	370.47	2.060830	481.92	2.518212	350.12	2.134367	484.09	2.971261	336.85	2.668627	394.67
2.731709	351.81	2.457113	480.14	2.545221	377.47	2.148683	503.27	2.585569	373.82	2.176573	507.02	2.524034	375.27	2.086633	488.24	2.555491	354.47	2.159210	490.12	3.011676	340.60	2.704926	399.31
2.769980	355.86	2.487091	485.86	2.581389	382.28	2.172566	509.58	2.621662	378.48	2.201322	513.04	2.559252	380.08	2.111405	494.27	2.591736	358.82	2.186123	495.99	3.053120	344.05	2.742255	403.81
2.811349	359.77	2.519141	491.43	2.617556	386.95	2.197473	515.28	2.656723	383.30	2.227103	519.37	2.596534	384.59	2.136172	500.89	2.630052	363.47	2.214070	502.02	3.095596	347.34	2.777513	408.15
2.849620	363.82	2.548086	497.00	2.652689	391.46	2.221356	521.59	2.692818	387.51	2.251852	525.39	2.630716	389.24	2.160945	506.76	2.667338	368.27	2.239948	508.04	3.138069	350.49	2.815873	412.50
2.886857	367.88	2.578065	502.58	2.689890	396.27	2.303371	542.16	2.729941	392.63	2.276599	531.72	2.667998	393.75	2.185713	513.24	2.704611	372.32	2.266861	514.06	3.179516	354.09	2.854239	417.14
2.925127	371.93	2.608045	508.15	2.725023	400.78	2.330352	548.16	2.763971	397.14	2.301348	537.89	2.703220	398.86	2.211518	519.41	2.741895	376.97	2.292738	520.09	3.220952	357.09	2.891565	421.49
2.966497	375.84	2.638022	514.02	2.761191	405.60	2.356303	554.47	2.800065	401.81	2.326096	544.07	2.737403	403.51	2.236290	525.43	2.780204	381.17	2.318616	526.11	3.263429	360.39	2.929929	425.98
3.006833	379.74	2.670074	519.29	2.798390	410.26	2.387441	561.83	2.835126	406.47	2.425093	568.32	2.774687	408.17	2.260025	531.76	2.817483	385.52	2.345529	531.99	3.304875	363.99	2.966220	430.33
3.046137	383.79	2.700052	525.16	2.832491	414.77	2.413394	568.28	2.873283	411.13	2.447776	574.34	2.810939	412.98	2.300275	542.14	2.855795	389.86	2.372441	538.01	3.347349	367.13	3.004577	434.52
3.084407	387.85	2.731066	530.73	2.868660	419.74	2.438306	574.29	2.909377	415.35	2.473556	580.67	2.846151	417.33	2.325047	548.17	2.896169	393.91	2.399354	544.19	3.389827	370.58	3.041910	439.17
3.122679	392.05	2.760012	536.15	2.905857	424.10	2.462191	580.74	2.945470	420.01	2.499338	586.84	2.892760	423.49	2.349818	554.34	2.934479	398.11	2.426267	550.21	3.431269	373.88	3.081297	443.21
3.161980	395.81	2.789991	541.87	2.942023	428.61	2.487106	586.90	3.133158	443.33	2.525117	593.32	2.931074	427.85	2.374586	560.81	2.973820	402.16	2.452144	556.54	3.474782	377.33	3.121725	447.55
3.200251	399.86	2.819969	547.59	2.980253	432.97	2.512022	593.21	3.167188	448.00	2.548835	599.19	2.966288	432.35	2.400392	566.84	3.014192	406.05	2.478022	562.41	3.519333	380.93	3.158011	451.60
3.239554	403.77	2.849948	553.31	3.016417	437.33	2.536939	599.51	3.205346	452.06	2.574614	605.67	3.003570	436.86	2.423094	573.16	3.053533	410.10	2.503900	568.58	3.562849	384.52	3.197405	455.94
3.278857	407.82	2.879927	558.89	3.052584	441.99	2.559790	605.97	3.242472	456.42	2.598327	611.99	3.039818	441.36	2.447864	579.33	3.093906	414.00	2.529777	574.61	3.604285	387.52	3.233690	459.99
3.318161	411.87	2.910941	564.61	3.089782	446.51	2.584705	612.12	3.281663	460.48	2.623074	618.32	3.078132	445.72	2.471599	585.80	3.133245	417.89	2.556690	580.48	3.647793	390.67	3.272043	464.03
3.358495	415.48	2.941956	570.18	3.126978	450.72	2.609624	618.58	3.318788	465.00	2.646788	624.64	3.116444	449.92	2.497404	591.83	3.173619	421.94	2.583603	586.66	3.690261	393.52	3.311437	468.37
3.398831	419.38	2.970899	575.90	3.165209	455.23	2.634539	624.74	3.355914	469.21	2.669468	630.97	3.153721	454.13	2.521140	598.15	3.213989	425.69	2.610515	592.68	3.732740	396.97	3.349790	472.42
3.438135	423.44	3.001915	581.32	3.201374	459.59	2.657389	631.19	3.396135	473.58	2.695247	637.44	3.192037	458.63	2.545910	604.47	3.253323	429.28	2.637428	598.86	–	–	3.387106	476.31
3.477437	427.34	3.030855	587.49	3.239602	463.80	2.680238	637.50	3.435326	477.64	2.717929	643.62	3.229315	462.84	2.569646	610.65	3.294727	433.03	2.663306	605.03	–	–	3.425466	480.65
3.517771	430.94	3.060834	593.21	3.277836	468.77	2.705157	643.95	3.472451	482.00	2.741642	649.94	3.265563	467.34	2.593383	616.82	3.334070	437.23	2.689183	611.21	–	–	3.462792	485.00
3.558108	435.00	3.089778	598.78	3.315033	473.13	2.731104	649.96	3.510610	486.06	2.766389	656.27	3.304908	471.55	2.618155	622.84	3.374443	441.12	2.715061	617.38	–	–	3.501145	489.04
3.597412	439.05	3.118719	604.80	3.351197	477.34	2.754989	656.42	3.550832	490.13	2.789070	662.59	3.343222	475.90	2.640856	629.32	3.414813	444.87	2.744044	623.26	–	–	3.538465	493.08
3.638781	442.96	3.148697	610.68	3.389428	481.85	2.779906	662.72	3.588990	494.49	2.813817	668.92	3.380500	480.11	2.663559	635.49	3.454156	449.07	2.774062	628.98	–	–	3.575787	497.28
3.679114	446.41	3.178675	616.40	3.426624	486.06	2.804822	669.03	3.627148	498.70	2.836494	675.54	3.418807	484.01	2.687293	641.96	3.495562	452.96	2.802010	634.70	–	–	3.613103	501.17
3.717379	449.86	3.208654	622.12	3.462787	490.27	2.830771	675.18	3.665306	502.92	2.858140	682.01	3.456087	488.36	2.713097	648.28	3.535936	457.01	2.832028	640.58	–	–	3.652494	505.37
–	–	3.237597	627.84	3.499984	494.48	2.855688	681.49	3.706560	506.98	2.880816	688.79	3.495435	492.72	2.735800	654.46	3.577345	461.06	2.863081	645.85	–	–	3.689816	509.56
–	–	3.268610	633.71	3.538212	498.70	2.878537	687.80	3.744717	511.34	2.901430	695.11	3.532714	497.07	2.760569	660.78	3.615647	464.80	2.893099	651.43	–	–	3.730241	513.75

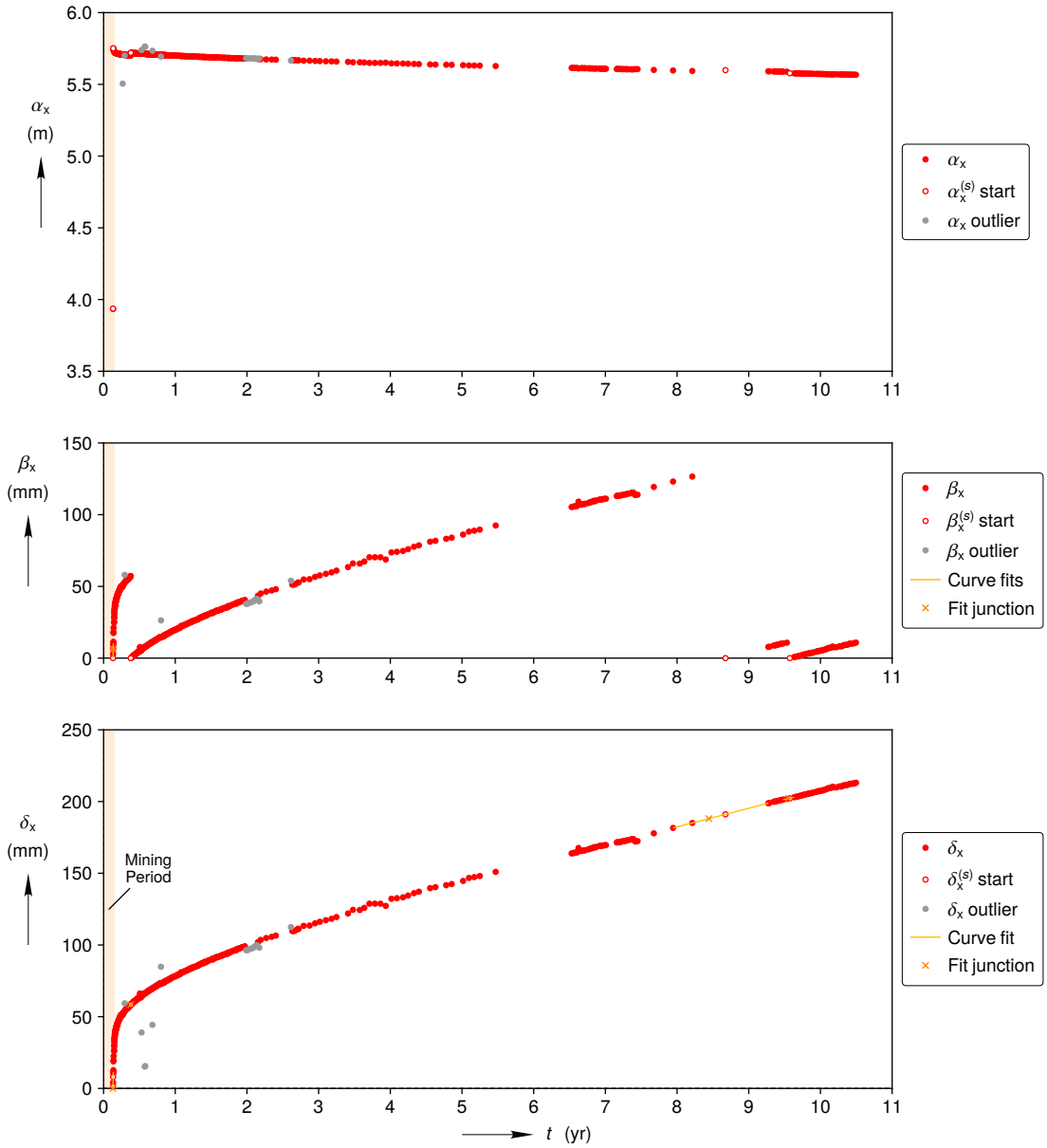
APPENDIX C. Room G Supplemental Information

C.1. Mining Sequence Closure Reconstruction Plots



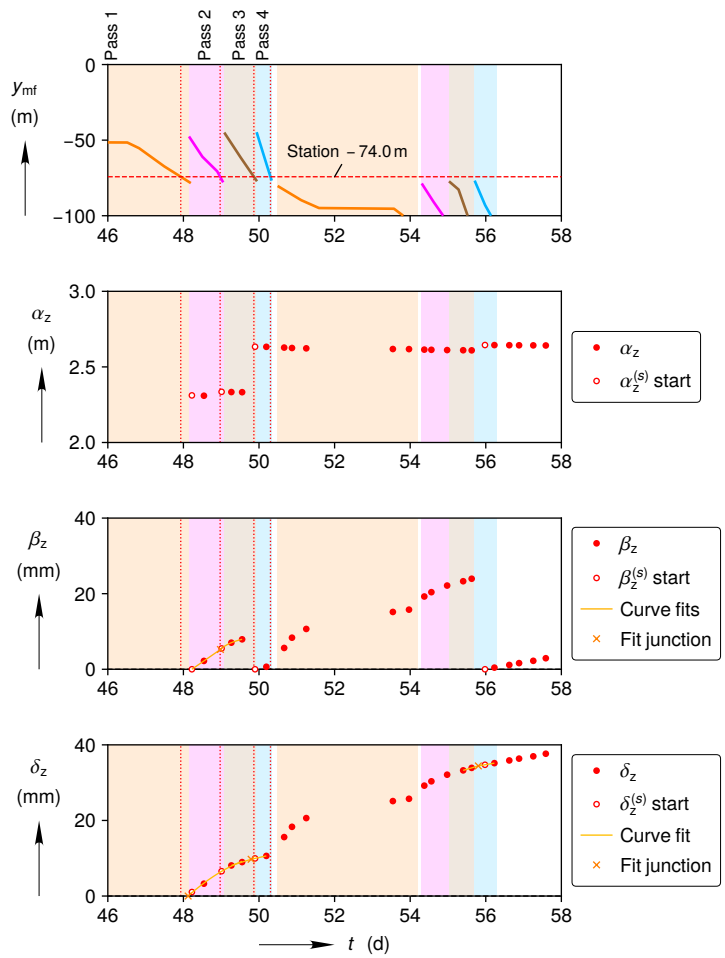
(a) Reconstruction during mining period

Figure C-1. Room G Station -74.0 m horizontal closure reconstruction process.



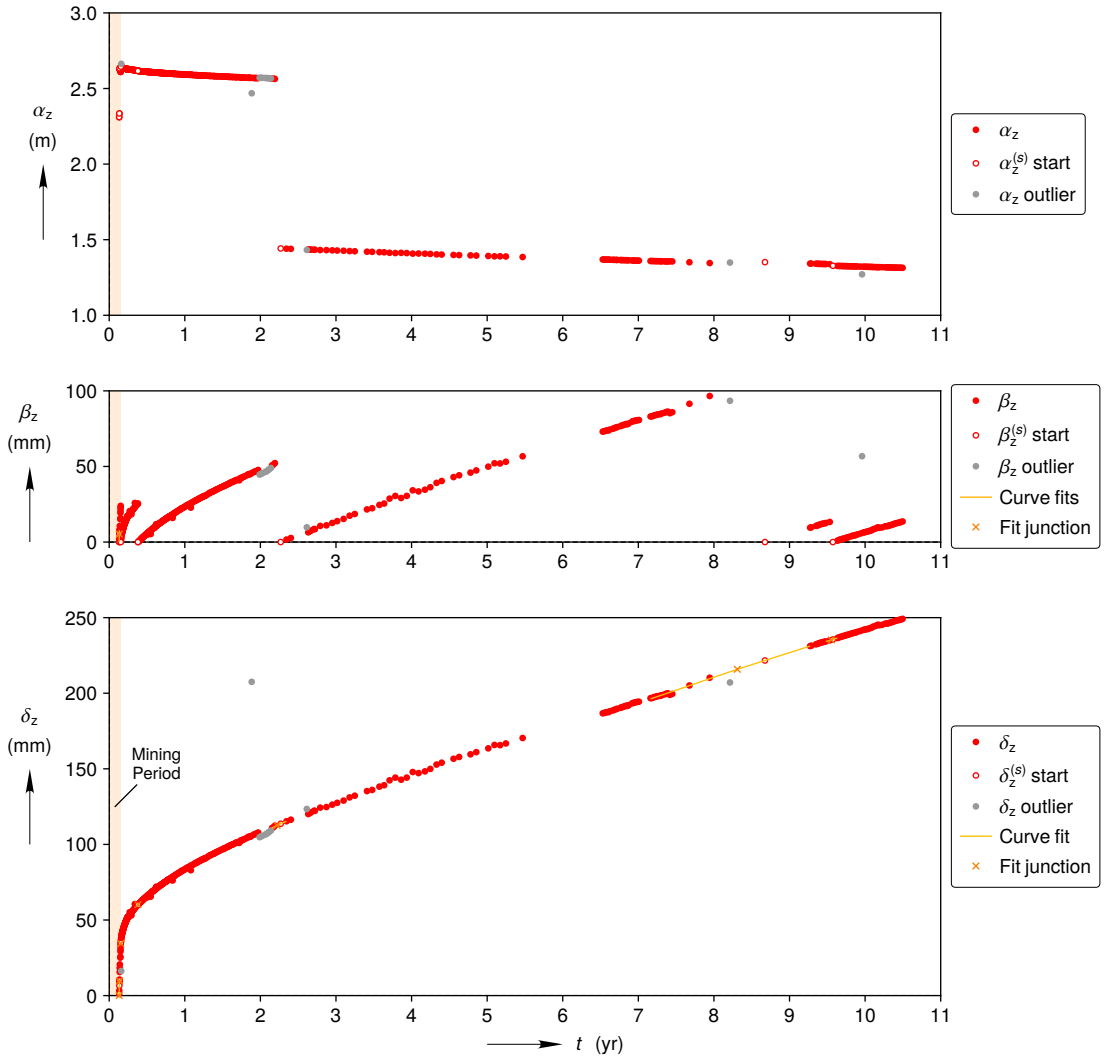
(b) Full reconstruction

Figure C-1. (Continued) Room G Station -74.0 m horizontal closure reconstruction process.



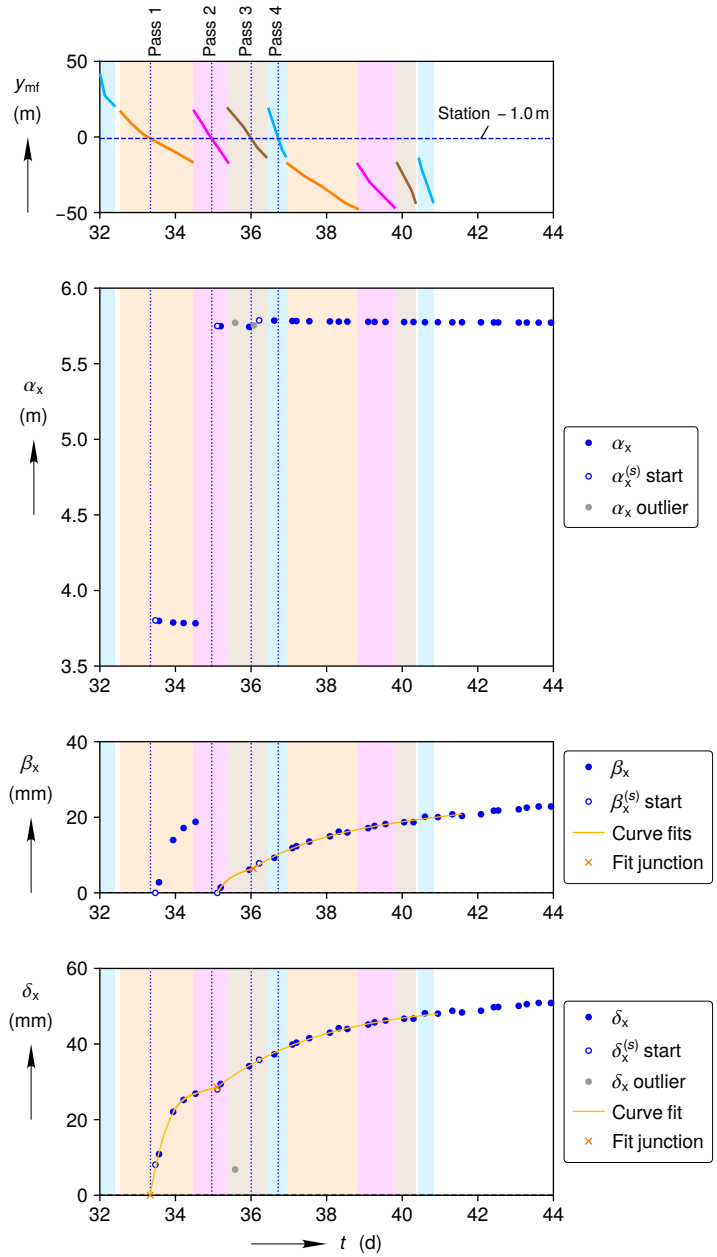
(a) Reconstruction during mining period

Figure C-2. Room G Station -74.0 m vertical closure reconstruction process.



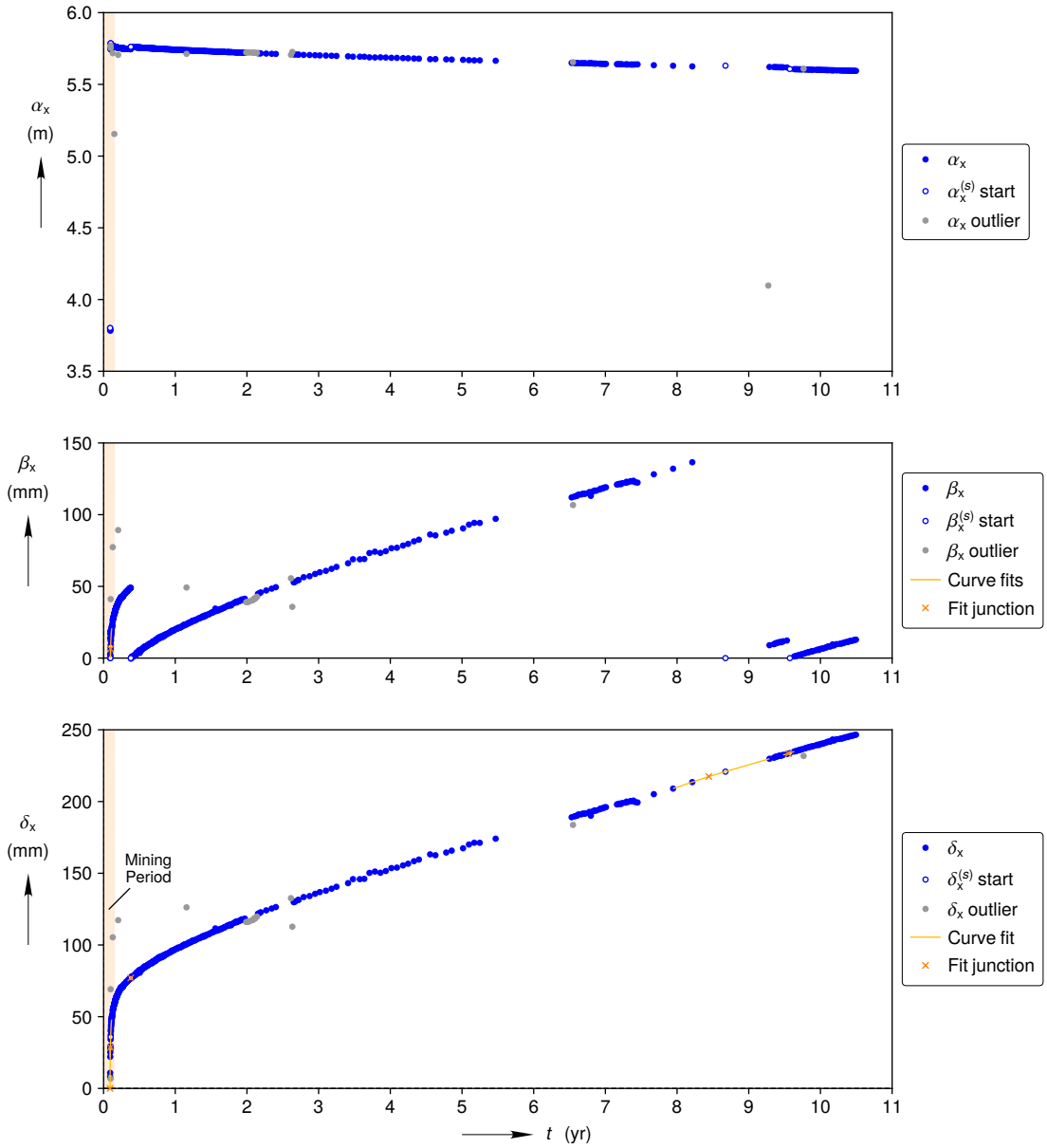
(b) Full reconstruction

Figure C-2. (Continued) Room G Station -74.0 m vertical closure reconstruction process.



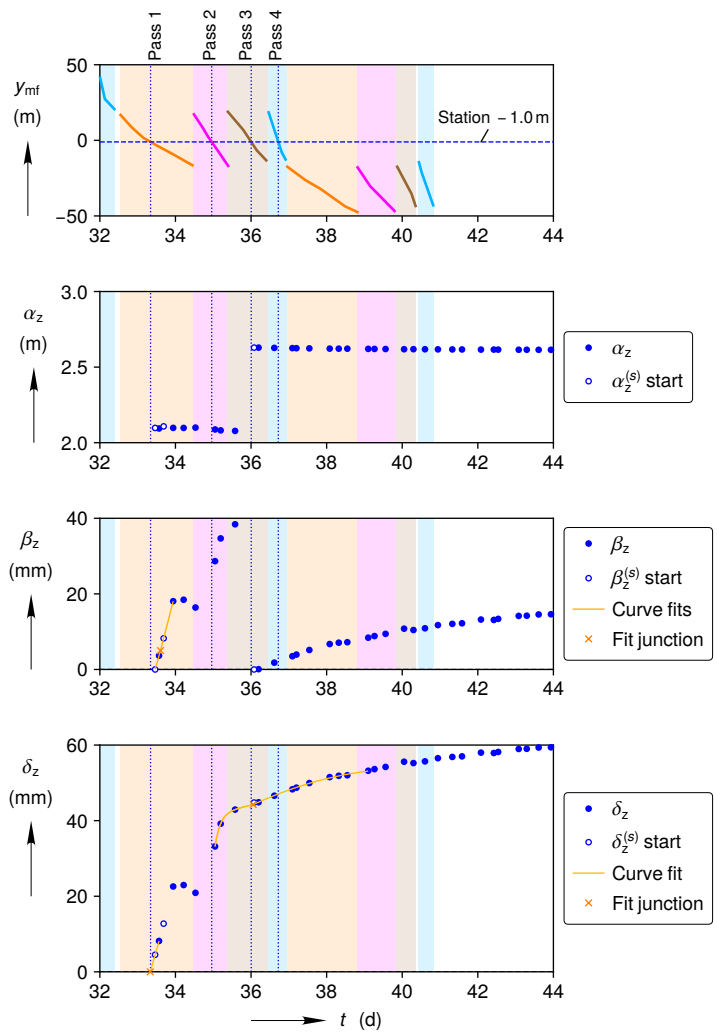
(a) Reconstruction during mining period

Figure C-3. Room G Station -1.0 m horizontal closure reconstruction process.



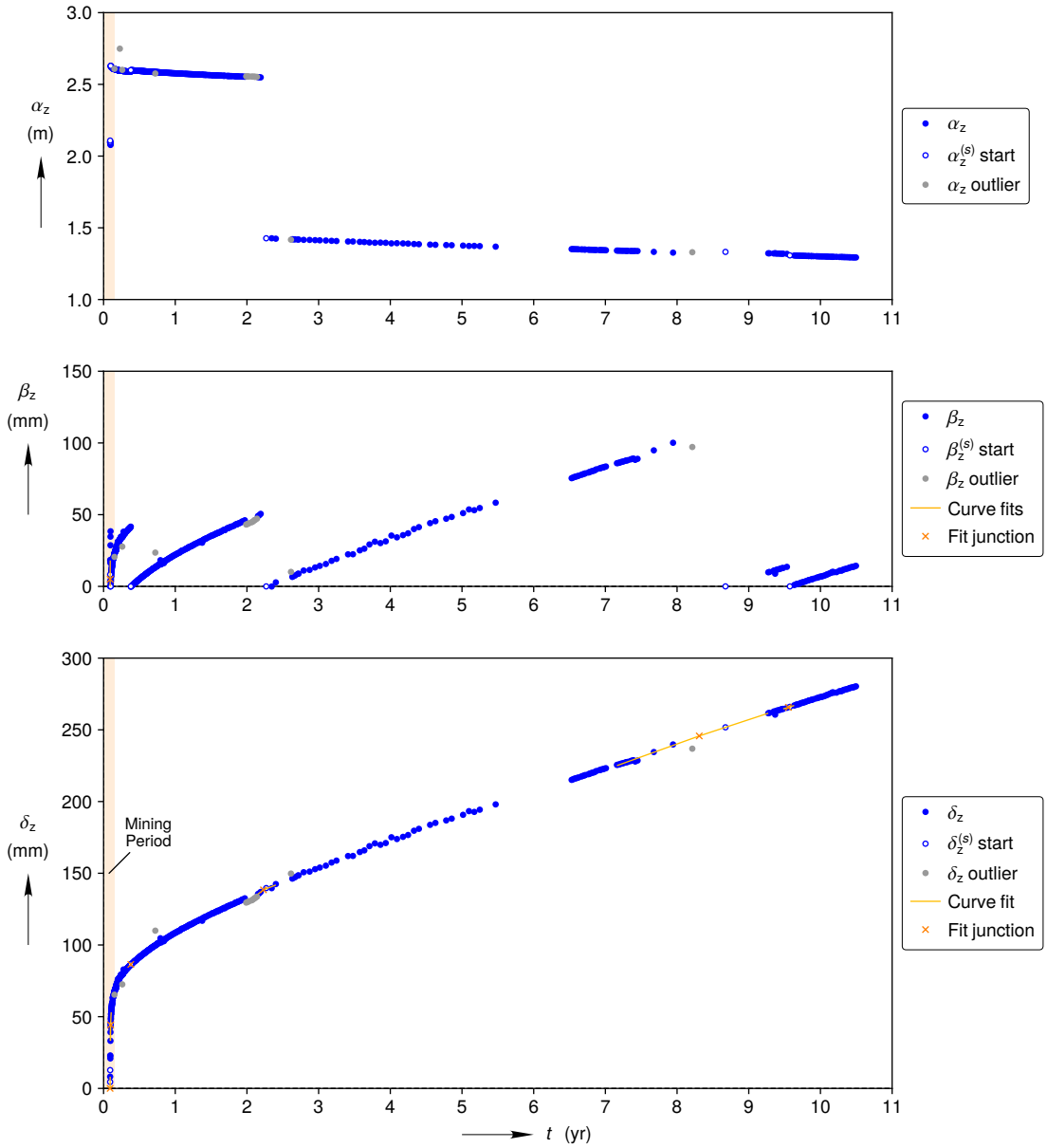
(b) Full reconstruction

Figure C-3. (Continued) Room G Station -1.0 m horizontal closure reconstruction process.



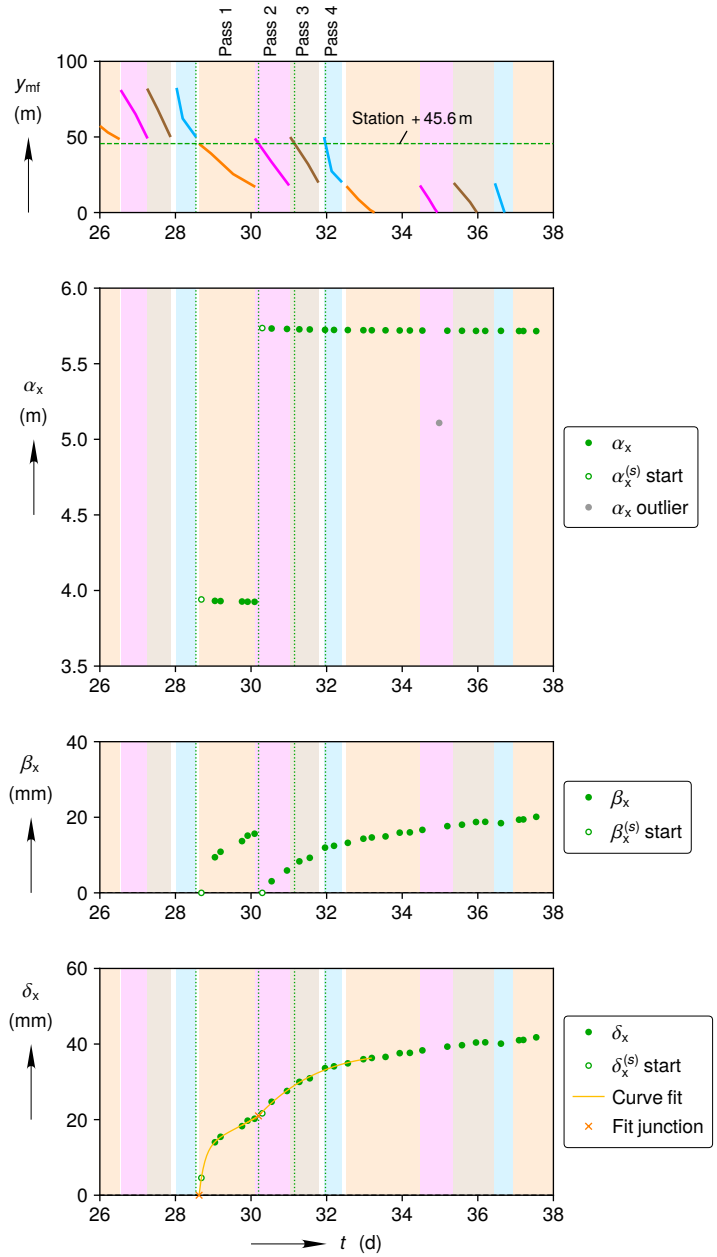
(a) Reconstruction during mining period

Figure C-4. Room G Station -1.0 m vertical closure reconstruction process.



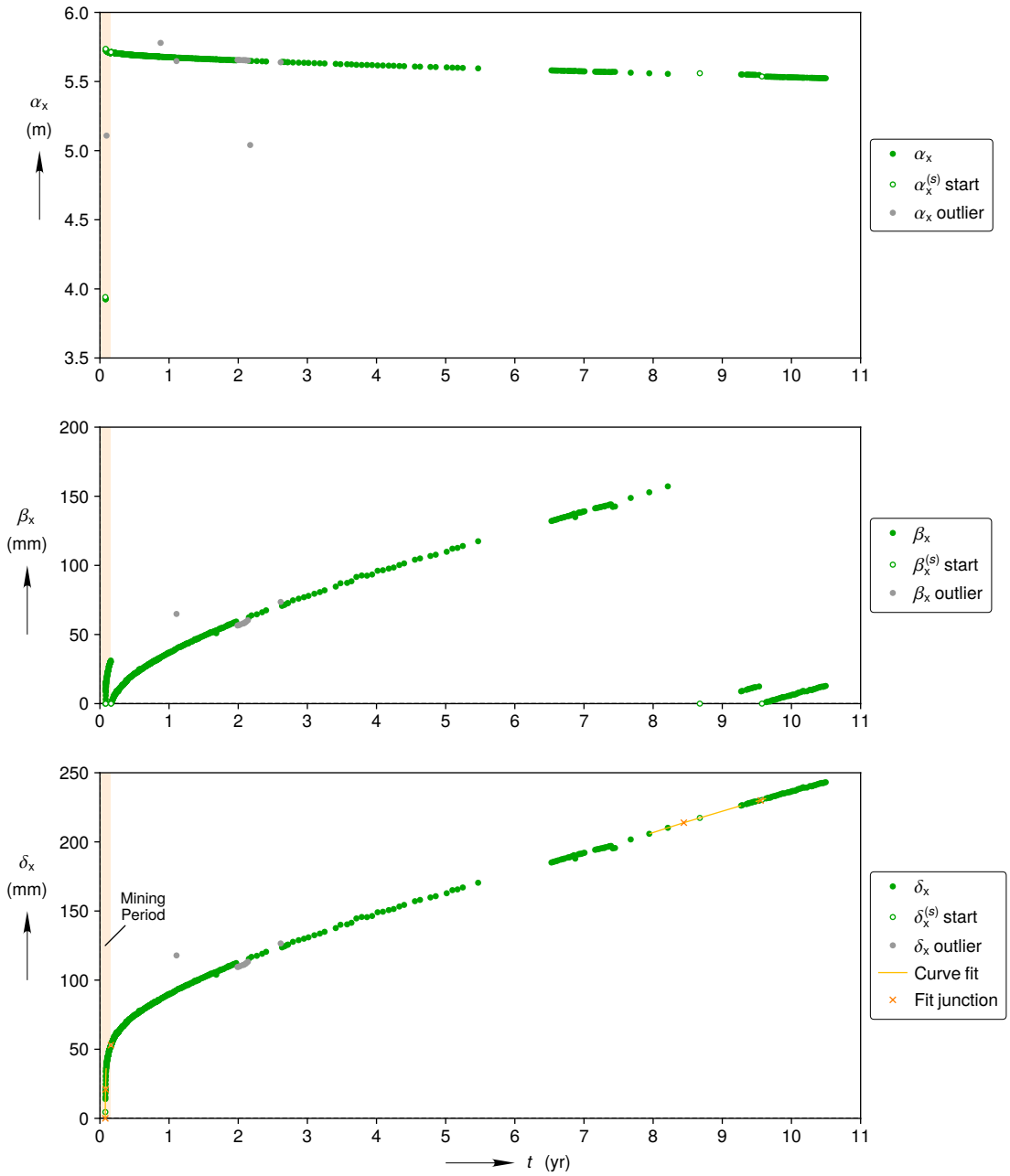
(b) Full reconstruction

Figure C-4. (Continued) Room G Station -1.0 m vertical closure reconstruction process.



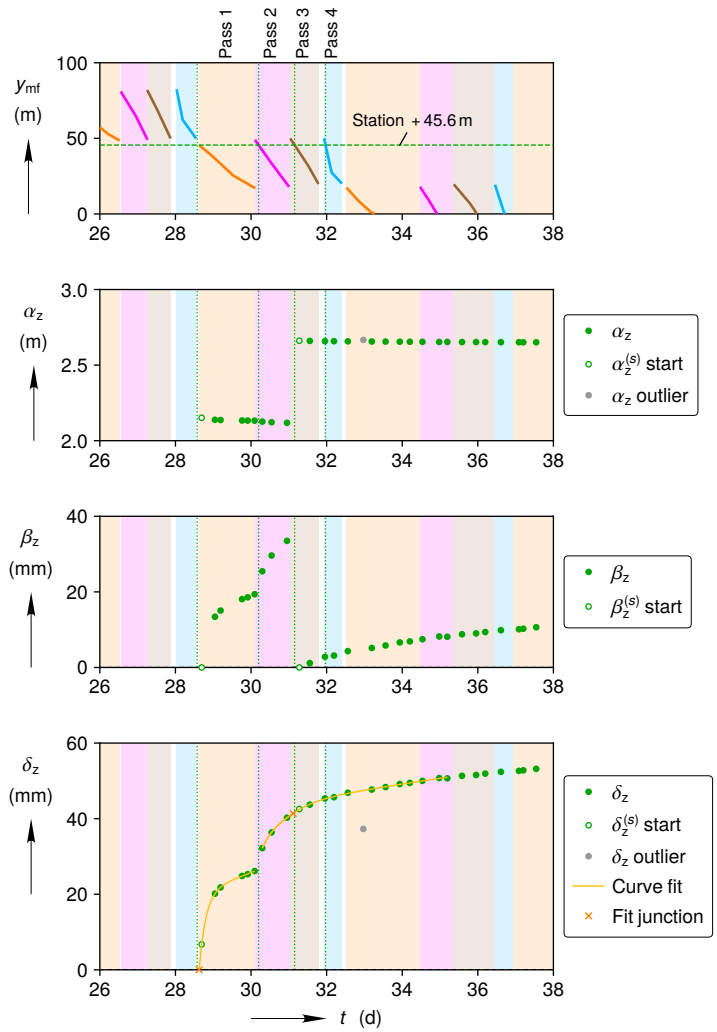
(a) Reconstruction during mining period

Figure C-5. Room G Station +45.6 m horizontal closure reconstruction process.



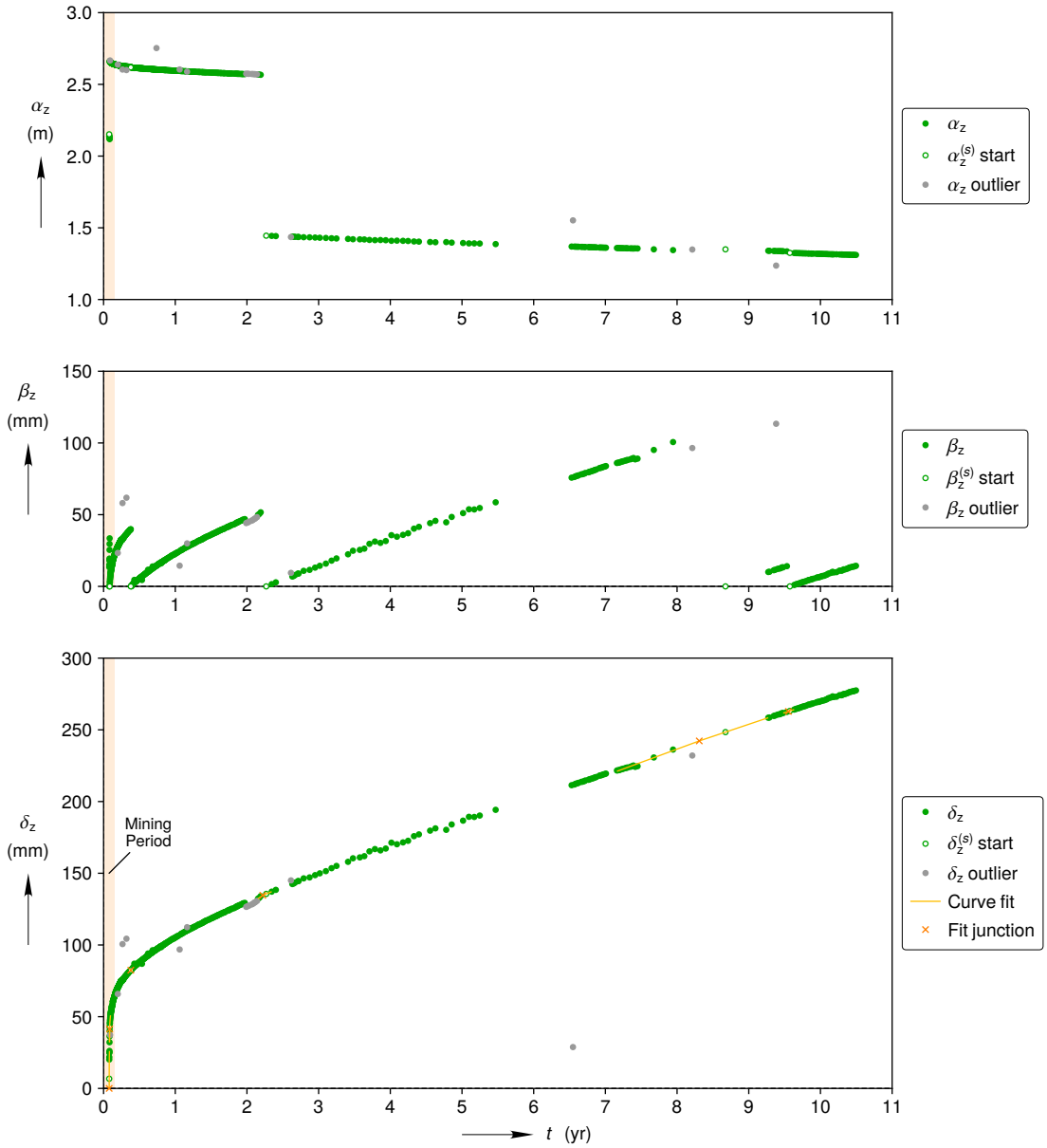
(b) Full reconstruction

Figure C-5. (Continued) Room G Station +45.6 m horizontal closure reconstruction process.



(a) Reconstruction during mining period

Figure C-6. Room G Station +45.6 m vertical closure reconstruction process.



(b) Full reconstruction

Figure C-6. (Continued) Room G Station +45.6 m vertical closure reconstruction process.

C.2. Mining Sequence Closure Data

Table C-1. Room G Station -74.0 m horizontal mining sequence metadata

										Pre-Jump Fitting Inputs				Post-Jump Fitting Inputs			
s	Segment Start Time	Analysis Notes	Gage Number	Paired Points	Point 1 y	Point 2 y	Estimated t_{ex}	t_{ex} Source	Shift Phase	Type	Start Index	End Index	Ignore Index	Type	Start Index	End Index	Ignore Index
(–)	(YYYY-MM-DD HH:MM)	(–)	(–)	(–)	(m)	(m)	(YYYY-MM-DD HH:MM)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)
0	1984-11-09 20:00	Estimated start of mining Room G.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1	1984-12-28 01:20	First reading after station mined out during pass 1.	GM22-1	1C-1D	-74	-74.15	1984-12-27 23:00	Gage installation data sheet	2	–	–	–	–	Jeffreys	1	6	–
2	1984-12-28 20:23	First reading after point 1D mined out and replaced with point 2D during pass 2.	GM22-2	1C-2D	-74	-74.24	1984-12-28 19:30	Gage installation data sheet	1	Linear	-2	-1	–	Jeffreys	1	4	–
3	1985-03-28 12:30	First reading after paired points 1C-2D replaced.	GM22-2	1C-2D	-74	-74.24	–	–	2	Linear	-2	-1	–	Linear	1	2	–
4	1993-07-14 10:00	Readings at all three stations jump slightly.	GM22-2	1C-2D	-74	-74.24	–	–	2	Linear	-2	-1	–	Linear	1	2	–
5	1994-06-07 13:30	Readings at all three stations jump slightly.	GM22-2	1C-2D	-74	-74.24	–	–	2	Linear	-2	-1	–	Linear	1	2	–

Table C-2. Room G Station -74.0 m horizontal mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_x (m)	δ_x (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
1	1984-12-28	01:20	3.0	3.93675	1.29	–	–	Initial reading.
1	1984-12-28	09:03	3.4	3.93398	4.06	–	–	11’ to pass 1. -35’ to pass 2.
2	1984-12-28	20:23	3.4	5.75191	8.06	–	–	Initial reading.
2	1984-12-29	02:28	–	–	–	–	–	Point blocked by muck pile. -70’ to pass 3. 11’ to pass 1.
2	1984-12-29	09:19	–	5.74944	10.52	–	–	-33’ to pass 3. 11’ to pass 1.
2	1984-12-29	17:51	3.4	5.74845	11.51	–	–	Point 1C was loose. Retightened therefore new initial reading.
2	1984-12-30	00:39	3.7	5.74728	12.68	–	–	–
2	1984-12-30	12:00	–	5.74109	18.88	–	–	Pass 1 - 25 ft. Pass 2 - 10 ft.
2	1984-12-30	16:55	10.7	5.74050	19.46	–	–	–
2	1984-12-31	02:00	-16.8	5.73750	22.46	–	–	–
2	1985-01-02	09:01	–	5.73395	26.01	–	–	Pass 1 65’. Pass 2 10’. 1140 ft face.
2	1985-01-02	19:14	25.9	5.73334	26.62	–	–	–
2	1985-01-03	04:57	12.2	5.73070	29.27	–	–	–
2	1985-01-03	09:29	18.3	5.72988	30.08	–	–	–
2	1985-01-03	19:27	32.0	5.72798	31.98	–	–	–
2	1985-01-04	05:38	19.8	5.72679	33.18	–	–	–
2	1985-01-04	11:02	31.1	5.72628	33.69	–	–	–
2	1985-01-04	17:42	15.2	5.72552	34.45	–	–	50’ (4th pass)
2	1985-01-05	01:29	32.0	5.72483	35.13	–	–	–
2	1985-01-05	10:55	–	5.72430	35.67	–	–	–
2	1985-01-05	17:06	32.0	5.72409	35.87	–	–	–
2	1985-01-06	02:11	32.0	5.72303	36.94	–	–	–
2	1985-01-06	10:05	100.0	5.72216	37.80	–	–	–
2	1985-01-06	20:03	32.0	5.72209	37.88	–	–	–
2	1985-01-07	01:20	32.0	5.72196	38.00	–	–	–
2	1985-01-07	11:05	–	5.72153	38.44	–	–	–
2	1985-01-07	16:43	–	5.72135	38.61	–	–	–
2	1985-01-08	01:43	32.0	5.72092	39.05	–	–	–
2	1985-01-08	09:59	–	5.72056	39.40	–	–	–
2	1985-01-08	16:34	–	5.72049	39.48	–	–	–
2	1985-01-09	03:22	–	5.72044	39.53	–	–	–
2	1985-01-09	10:01	–	5.71988	40.09	–	–	–
2	1985-01-09	17:13	–	5.72138	38.59	–	–	–
2	1985-01-10	02:12	–	5.71988	40.09	–	–	–
2	1985-01-10	10:56	–	5.71901	40.95	–	–	–
2	1985-01-10	17:38	–	5.71962	40.34	–	–	–
2	1985-01-11	03:06	32.0	5.71924	40.72	–	–	–
2	1985-01-11	14:02	–	5.71861	41.36	–	–	–
2	1985-01-11	16:44	–	5.71873	41.23	–	–	–
2	1985-01-12	02:06	32.0	5.71797	41.99	–	–	–
2	1985-01-12	09:13	–	5.71817	41.79	–	–	–
2	1985-01-12	17:45	–	5.71782	42.14	–	–	–
2	1985-01-13	01:53	32.0	5.71772	42.25	–	–	–
2	1985-01-13	10:42	–	5.71741	42.55	–	–	–
2	1985-01-13	18:53	–	5.71751	42.45	–	–	–
2	1985-01-14	03:11	32.0	5.71724	42.73	–	–	–
2	1985-01-14	09:38	–	5.71711	42.86	–	–	–
2	1985-01-14	18:44	–	5.71698	42.98	–	–	–
2	1985-01-15	01:40	32.0	5.71703	42.93	–	–	–
2	1985-01-15	09:41	–	5.71657	43.39	–	–	–
2	1985-01-15	18:49	–	5.71734	42.63	–	–	–
2	1985-01-16	11:09	–	5.71602	43.95	–	–	–
2	1985-01-16	19:33	–	5.71607	43.90	–	–	–
2	1985-01-17	03:25	32.0	5.71574	44.23	–	–	–
2	1985-01-17	09:59	–	5.71561	44.35	–	–	–
2	1985-01-17	18:09	–	5.71581	44.15	–	–	–
2	1985-01-18	17:50	–	5.71553	44.43	–	–	–
2	1985-01-18	–	32.0	–	–	–	–	Graveyard - points blocked
2	1985-01-19	01:48	–	5.71528	44.68	–	–	–
2	1985-01-19	10:23	–	5.71449	45.47	–	–	–
2	1985-01-19	19:18	–	5.71475	45.22	–	–	–
2	1985-01-20	01:57	32.0	5.71485	45.12	–	–	–
2	1985-01-20	14:00	–	5.71429	45.67	–	–	–
2	1985-01-20	17:03	–	5.71464	45.32	–	–	–
2	1985-01-21	05:08	32.0	5.71424	45.73	–	–	–
2	1985-01-21	18:19	–	5.71398	45.98	–	–	–
2	1985-01-21	–	–	–	–	–	–	No readings due to bore hole checkout
2	1985-01-22	01:55	32.0	5.71386	46.11	–	–	–
2	1985-01-22	–	–	–	–	–	–	No readings due to bore hole checkout
2	1985-01-22	–	–	–	–	–	–	Day shift. No readings due to bore hole checkout
2	1985-01-23	05:25	–	5.71348	46.49	–	–	–
2	1985-01-23	20:26	–	5.71348	46.49	–	–	–
2	1985-01-24	02:36	–	5.71297	47.00	–	–	–
2	1985-01-24	09:30	–	5.71310	46.87	–	–	–
2	1985-01-24	18:18	–	5.71297	47.00	–	–	–
2	1985-01-25	01:52	–	5.71264	47.33	–	–	–
2	1985-01-25	10:00	–	5.71282	47.15	–	–	–
2	1985-01-25	17:14	–	5.71271	47.25	–	–	–
2	1985-01-26	01:44	–	5.71254	47.43	–	–	–
2	1985-01-26	09:20	–	5.71233	47.63	–	–	–
2	1985-01-26	21:53	–	5.71198	47.99	–	–	–
2	1985-01-27	01:11	–	5.71231	47.66	–	–	–
2	1985-01-27	09:01	32.0	5.71226	47.71	–	–	–
2	1985-01-27	20:19	–	5.71170	48.27	–	–	–
2	1985-01-28	01:35	–	5.71200	47.96	–	–	–

Table C-2. Room G Station -74.0 m horizontal mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_x (m)	δ_x (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
2	1985-01-28	09:24	32.0	5.71175	48.21	–	–	–
2	1985-01-28	17:33	–	5.71160	48.37	–	–	–
2	1985-01-29	01:33	–	5.71155	48.42	–	–	–
2	1985-01-29	10:08	32.0	5.71144	48.52	–	–	–
2	1985-01-29	19:07	–	5.71114	48.82	–	–	–
2	1985-01-30	01:35	–	5.71155	48.42	–	–	–
2	1985-01-30	10:29	32.0	5.71134	48.62	–	–	–
2	1985-01-30	18:09	–	5.71083	49.13	–	–	–
2	1985-01-31	01:24	–	5.71134	48.62	–	–	–
2	1985-01-31	12:46	32.0	5.71116	48.80	–	–	–
2	1985-01-31	19:14	–	5.71066	49.31	–	–	–
2	1985-02-01	01:54	–	5.71045	49.51	–	–	–
2	1985-02-01	11:18	32.0	5.71078	49.18	–	–	–
2	1985-02-01	17:44	–	5.71017	49.79	–	–	–
2	1985-02-02	01:15	–	5.71043	49.54	–	–	–
2	1985-02-02	09:56	32.0	5.70997	49.99	–	–	–
2	1985-02-02	17:35	–	5.71043	49.54	–	–	–
2	1985-02-03	01:31	–	5.71038	49.59	–	–	–
2	1985-02-03	09:11	32.0	5.71020	49.76	–	–	–
2	1985-02-03	17:30	–	5.70969	50.27	–	–	–
2	1985-02-04	02:05	–	5.70984	50.12	–	–	–
2	1985-02-04	09:25	32.0	5.71002	49.94	–	–	–
2	1985-02-04	17:49	–	5.70962	50.35	–	–	–
2	1985-02-05	02:37	–	5.70936	50.60	–	–	–
2	1985-02-05	10:03	32.0	5.70979	50.17	–	–	–
2	1985-02-05	17:23	–	5.70949	50.48	–	–	–
2	1985-02-06	03:30	–	5.70906	50.91	–	–	–
2	1985-02-06	09:45	32.0	5.70875	51.21	–	–	–
2	1985-02-06	17:55	–	5.70878	51.19	–	–	–
2	1985-02-07	06:26	–	5.70936	50.60	–	–	–
2	1985-02-07	12:44	32.0	5.70931	50.65	–	–	–
2	1985-02-07	18:08	–	5.70941	50.55	–	–	–
2	1985-02-08	02:08	–	5.70903	50.93	–	–	–
2	1985-02-08	09:19	–	5.70946	50.50	–	–	–
2	1985-02-08	18:20	–	5.70901	50.96	–	–	–
2	1985-02-09	03:00	–	5.70873	51.24	–	–	–
2	1985-02-09	09:34	–	5.70928	50.68	–	–	–
2	1985-02-09	18:07	–	5.70857	51.39	–	–	–
2	1985-02-10	01:14	–	5.70873	51.24	–	–	–
2	1985-02-10	08:41	–	5.70893	51.03	–	–	–
2	1985-02-10	18:06	–	5.70860	51.36	–	–	–
2	1985-02-11	01:28	–	5.70875	51.21	–	–	–
2	1985-02-11	09:16	–	5.70911	50.86	–	–	–
2	1985-02-11	18:04	–	5.70865	51.31	–	–	–
2	1985-02-12	02:37	–	5.70840	51.57	–	–	–
2	1985-02-12	09:08	–	5.70888	51.08	–	–	–
2	1985-02-12	–	–	–	–	–	–	Readings not taken due to room dimensions in Room 11
2	1985-02-13	00:00	–	5.70850	51.47	–	–	–
2	1985-02-13	03:09	–	5.70794	52.02	–	–	–
2	1985-02-13	16:53	32.0	5.70842	51.54	–	–	–
2	1985-02-14	03:12	–	5.70829	51.67	–	–	–
2	1985-02-14	09:10	–	5.70888	51.08	–	–	–
2	1985-02-14	18:45	–	5.70850	51.47	–	–	–
2	1985-02-15	01:32	–	5.70804	51.92	–	–	–
2	1985-02-15	09:03	–	5.50494	255.02	×	–	–
2	1985-02-15	18:15	–	5.70804	51.92	–	–	–
2	1985-02-16	05:30	–	5.70781	52.15	–	–	–
2	1985-02-16	08:54	–	5.70817	51.80	–	–	–
2	1985-02-16	16:45	–	5.70794	52.02	–	–	–
2	1985-02-17	01:39	–	5.70751	52.46	–	–	–
2	1985-02-17	08:56	–	5.70784	52.13	–	–	–
2	1985-02-17	17:31	–	5.70794	52.02	–	–	–
2	1985-02-18	02:36	–	5.70735	52.61	–	–	–
2	1985-02-18	09:03	–	5.70756	52.41	–	–	–
2	1985-02-19	–	–	–	–	–	–	Blocked by install crews
2	1985-02-20	11:05	–	5.70667	53.29	–	–	–
2	1985-02-21	–	–	–	–	–	–	No readings. Other work
2	1985-02-22	10:02	–	5.70654	53.42	–	–	–
2	1985-02-25	10:09	–	5.70062	59.34	×	–	–
2	1985-02-26	09:36	–	5.70593	54.03	–	–	–
2	1985-02-27	09:09	–	5.70568	54.29	–	–	–
2	1985-02-28	13:16	–	5.70565	54.31	–	–	–
2	1985-03-01	10:18	–	5.70512	54.84	–	–	–
2	1985-03-04	10:55	–	5.70476	55.20	–	–	–
2	1985-03-05	09:59	–	5.70459	55.38	–	–	–
2	1985-03-06	09:37	–	5.70456	55.40	–	–	–
2	1985-03-07	10:16	–	5.70431	55.66	–	–	–
2	1985-03-08	09:57	–	5.70438	55.58	–	–	–
2	1985-03-11	10:37	–	5.70428	55.68	–	–	–
2	1985-03-12	12:34	–	5.70382	56.14	–	–	–
2	1985-03-13	13:22	–	5.70354	56.42	–	–	–
2	1985-03-14	09:31	–	5.70344	56.52	–	–	–
2	1985-03-15	10:37	–	5.70380	56.16	–	–	–
2	1985-03-18	09:51	–	5.70260	57.36	–	–	–
2	1985-03-19	09:25	–	5.70293	57.03	–	–	–
2	1985-03-20	–	–	–	–	–	–	No readings taken due to Room 3 cross-sections & geologic mapping.

Table C-2. Room G Station -74.0 m horizontal mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_x (m)	δ_x (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
2	1985-03-21	11:19	–	5.70283	57.13	–	–	–
2	1985-03-22	10:31	–	5.70268	57.28	–	–	–
2	1985-03-25	09:42	–	5.70182	58.15	–	–	–
2	1985-03-26	09:12	–	5.70200	57.97	–	–	–
2	1985-03-27	10:13	–	5.70154	58.43	–	–	–
2	1985-03-28	12:06	–	5.70146	58.50	–	–	–
3	1985-03-28	12:30	–	5.72005	58.50	–	–	Ramsett EMCP's were replaced by stur-anchors and grouted.
3	1985-03-29	10:40	–	5.72005	58.50	–	–	–
3	1985-04-01	10:07	–	5.71962	58.93	–	–	–
3	1985-04-02	12:47	–	5.71962	58.93	–	–	–
3	1985-04-03	09:10	–	5.71944	59.11	–	–	–
3	1985-04-04	09:54	–	5.71957	58.98	–	–	–
3	1985-04-08	08:48	–	5.71871	59.85	–	–	–
3	1985-04-09	09:39	–	5.71835	60.20	–	–	–
3	1985-04-10	09:09	–	5.71840	60.15	–	–	–
3	1985-04-11	08:50	–	5.71845	60.10	–	–	–
3	1985-04-15	12:41	–	5.71784	60.71	–	–	–
3	1985-04-16	10:23	–	5.71757	60.99	–	–	–
3	1985-04-17	08:44	–	5.71769	60.86	–	–	–
3	1985-04-18	09:10	–	5.71757	60.99	–	–	–
3	1985-04-19	09:02	–	5.71749	61.07	–	–	–
3	1985-04-22	09:02	–	5.71706	61.50	–	–	–
3	1985-04-23	08:57	–	5.71726	61.30	–	–	–
3	1985-04-24	08:56	–	5.71703	61.52	–	–	–
3	1985-04-25	09:03	–	5.71668	61.88	–	–	–
3	1985-04-26	09:01	–	5.71665	61.91	–	–	–
3	1985-04-29	09:35	–	5.71665	61.91	–	–	–
3	1985-04-30	13:02	–	5.71612	62.44	–	–	–
3	1985-05-01	09:02	–	5.71640	62.16	–	–	–
3	1985-05-02	09:03	–	5.71609	62.46	–	–	–
3	1985-05-03	09:55	–	5.71574	62.82	–	–	–
3	1985-05-06	12:24	–	5.71561	62.95	–	–	–
3	1985-05-07	08:47	–	5.71551	63.05	–	–	–
3	1985-05-08	10:10	–	5.71551	63.05	–	–	–
3	1985-05-10	09:29	–	5.71513	63.43	–	–	–
3	1985-05-13	13:50	–	5.71480	63.76	–	–	–
3	1985-05-14	10:12	–	5.71238	66.17	–	–	–
3	1985-05-15	09:04	–	5.71259	65.97	–	–	–
3	1985-05-16	09:22	–	5.71462	63.94	–	–	–
3	1985-05-17	10:48	–	5.71444	64.12	–	–	–
3	1985-05-19	09:02	–	5.71515	63.40	–	–	–
3	1985-05-20	09:33	–	5.71416	64.39	–	–	–
3	1985-05-21	09:02	–	5.71426	64.29	–	–	–
3	1985-05-22	09:53	–	5.73959	38.97	×	–	–
3	1985-05-23	09:38	–	5.71386	64.70	–	–	–
3	1985-05-24	12:50	–	5.71386	64.70	–	–	–
3	1985-05-28	10:43	–	5.71335	65.21	–	–	–
3	1985-05-29	09:05	–	5.71332	65.23	–	–	–
3	1985-05-30	09:26	–	5.71312	65.44	–	–	–
3	1985-05-31	09:21	–	5.71320	65.36	–	–	–
3	1985-06-03	09:17	–	5.71297	65.59	–	–	–
3	1985-06-04	09:37	–	5.71274	65.82	–	–	–
3	1985-06-05	09:24	–	5.71271	65.84	–	–	–
3	1985-06-06	09:51	–	5.71246	66.10	–	–	–
3	1985-06-07	10:08	–	5.76331	15.25	×	–	–
3	1985-06-10	09:35	–	5.76301	15.55	×	–	–
3	1985-06-11	10:00	–	5.71190	66.66	–	–	–
3	1985-06-12	09:20	–	5.71185	66.71	–	–	–
3	1985-06-13	10:23	–	5.71200	66.55	–	–	–
3	1985-06-14	09:43	–	5.71185	66.71	–	–	–
3	1985-06-17	09:47	–	5.71162	66.93	–	–	–
3	1985-06-18	09:52	–	5.71134	67.21	–	–	–
3	1985-06-19	09:23	–	5.71132	67.24	–	–	–
3	1985-06-20	09:47	–	5.71129	67.27	–	–	–
3	1985-06-21	09:00	–	5.71106	67.49	–	–	–
3	1985-06-24	10:44	–	5.71068	67.87	–	–	–
3	1985-06-25	12:56	–	5.71071	67.85	–	–	–
3	1985-06-26	08:50	–	5.71058	67.98	–	–	–
3	1985-06-27	09:13	–	5.71066	67.90	–	–	–
3	1985-06-28	00:00	–	–	–	–	–	Not read - short handed
3	1985-07-01	09:02	–	5.71022	68.33	–	–	–
3	1985-07-02	09:30	–	5.71015	68.41	–	–	–
3	1985-07-03	09:37	–	5.70977	68.79	–	–	–
3	1985-07-08	10:33	–	5.70944	69.12	–	–	–
3	1985-07-09	09:47	–	5.70962	68.94	–	–	–
3	1985-07-10	08:41	–	5.70941	69.14	–	–	–
3	1985-07-11	09:36	–	5.70921	69.35	–	–	–
3	1985-07-12	09:11	–	5.70928	69.27	–	–	–
3	1985-07-15	13:09	–	5.70906	69.50	–	–	–
3	1985-07-16	14:05	–	5.73423	44.33	×	–	–
3	1985-07-17	14:13	–	5.70865	69.91	–	–	–
3	1985-07-18	09:46	–	5.70850	70.06	–	–	–
3	1985-07-19	09:50	–	5.70855	70.01	–	–	–
3	1985-07-22	14:04	–	5.70822	70.34	–	–	–
3	1985-07-23	09:14	–	5.70840	70.16	–	–	–

Table C-2. Room G Station -74.0 m horizontal mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_x (m)	δ_x (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
3	1985-07-24	08:46	–	5.70817	70.39	–	–	–
3	1985-07-25	10:00	–	5.70824	70.31	–	–	–
3	1985-07-26	13:43	–	5.70809	70.47	–	–	–
3	1985-07-29	08:58	–	5.70794	70.62	–	–	–
3	1985-07-30	08:52	–	5.70753	71.02	–	–	–
3	1985-07-31	11:02	–	5.70746	71.10	–	–	–
3	1985-08-01	08:46	–	5.70751	71.05	–	–	–
3	1985-08-02	09:40	–	5.70753	71.02	–	–	–
3	1985-08-05	09:57	–	5.70723	71.33	–	–	–
3	1985-08-06	09:13	–	5.70723	71.33	–	–	–
3	1985-08-07	10:00	–	5.70702	71.53	–	–	–
3	1985-08-08	09:21	–	5.70697	71.58	–	–	–
3	1985-08-09	10:07	–	5.70687	71.68	–	–	–
3	1985-08-12	09:36	–	5.70652	72.04	–	–	–
3	1985-08-13	08:53	–	5.70654	72.01	–	–	–
3	1985-08-14	10:37	–	5.70644	72.12	–	–	–
3	1985-08-15	10:42	–	5.70634	72.22	–	–	–
3	1985-08-16	10:49	–	5.70624	72.32	–	–	–
3	1985-08-19	09:10	–	5.70603	72.52	–	–	–
3	1985-08-20	08:46	–	5.70591	72.65	–	–	–
3	1985-08-21	09:11	–	5.70581	72.75	–	–	–
3	1985-08-22	09:22	–	5.70550	73.06	–	–	–
3	1985-08-23	13:19	–	5.70555	73.01	–	–	–
3	1985-08-26	13:43	–	5.70535	73.21	–	–	–
3	1985-08-27	10:34	–	5.70527	73.28	–	–	–
3	1985-08-28	09:09	–	5.70535	73.21	–	–	–
3	1985-08-29	09:16	–	5.69374	84.82	×	–	–
3	1985-08-30	13:08	–	5.70560	72.95	–	–	–
3	1985-09-03	10:28	–	5.70512	73.44	–	–	–
3	1985-09-04	10:34	–	5.70507	73.49	–	–	–
3	1985-09-05	08:51	–	5.70517	73.39	–	–	–
3	1985-09-06	08:59	–	5.70499	73.56	–	–	–
3	1985-09-09	08:53	–	5.70494	73.62	–	–	–
3	1985-09-10	09:33	–	5.70471	73.84	–	–	–
3	1985-09-11	09:31	–	5.70494	73.62	–	–	–
3	1985-09-12	09:34	–	5.70441	74.15	–	–	–
3	1985-09-13	09:23	–	5.70431	74.25	–	–	–
3	1985-09-16	09:16	–	5.70443	74.12	–	–	–
3	1985-09-17	09:34	–	5.70436	74.20	–	–	–
3	1985-09-18	09:38	–	5.70426	74.30	–	–	–
3	1985-09-19	12:46	–	5.70380	74.76	–	–	–
3	1985-09-20	08:44	–	5.70380	74.76	–	–	–
3	1985-09-23	09:32	–	5.70370	74.86	–	–	–
3	1985-09-26	09:31	–	5.70332	75.24	–	–	–
3	1985-09-30	09:21	–	5.70314	75.42	–	–	–
3	1985-10-03	10:12	–	5.70319	75.37	–	–	–
3	1985-10-07	13:02	–	5.70243	76.13	–	–	–
3	1985-10-10	08:33	–	5.70240	76.16	–	–	–
3	1985-10-14	09:17	–	5.70210	76.46	–	–	–
3	1985-10-17	09:18	–	5.70212	76.43	–	–	–
3	1985-10-21	09:29	–	5.70144	77.12	–	–	–
3	1985-10-23	13:31	–	5.70128	77.27	–	–	–
3	1985-10-28	09:11	–	5.70113	77.43	–	–	–
3	1985-10-31	09:47	–	5.70078	77.78	–	–	–
3	1985-11-04	08:59	–	5.70052	78.03	–	–	–
3	1985-11-07	09:20	–	5.70052	78.03	–	–	–
3	1985-11-11	09:28	–	5.70012	78.44	–	–	–
3	1985-11-14	09:00	–	5.70029	78.26	–	–	–
3	1985-11-19	09:27	–	5.69953	79.03	–	–	–
3	1985-11-21	08:45	–	5.69963	78.92	–	–	–
3	1985-11-25	08:51	–	5.69925	79.30	–	–	–
3	1985-12-02	09:13	–	5.69913	79.43	–	–	–
3	1985-12-05	09:21	–	5.69844	80.12	–	–	–
3	1985-12-09	09:03	–	5.69763	80.93	–	–	–
3	1985-12-12	10:34	–	5.69791	80.65	–	–	–
3	1985-12-16	09:33	–	5.69768	80.88	–	–	–
3	1985-12-19	09:24	–	5.69760	80.96	–	–	–
3	1985-12-26	09:00	–	5.69697	81.59	–	–	–
3	1985-12-30	13:22	–	5.69669	81.87	–	–	–
3	1986-01-02	10:23	–	5.69661	81.95	–	–	–
3	1986-01-06	09:31	–	5.69636	82.20	–	–	–
3	1986-01-09	09:55	–	5.69610	82.45	–	–	–
3	1986-01-13	09:22	–	5.69580	82.76	–	–	–
3	1986-01-16	08:46	–	5.69582	82.73	–	–	–
3	1986-01-20	09:13	–	5.69534	83.22	–	–	–
3	1986-01-23	09:23	–	5.69521	83.34	–	–	–
3	1986-01-27	09:03	–	5.69483	83.72	–	–	–
3	1986-01-30	09:55	–	5.69509	83.47	–	–	–
3	1986-02-03	10:21	–	5.69448	84.08	–	–	–
3	1986-02-06	10:46	–	5.69422	84.33	–	–	–
3	1986-02-10	09:29	–	5.69397	84.59	–	–	–
3	1986-02-13	10:11	–	5.69387	84.69	–	–	–
3	1986-02-17	09:32	–	5.69379	84.77	–	–	–
3	1986-02-20	09:04	–	5.69377	84.79	–	–	–
3	1986-02-27	13:41	–	5.69321	85.35	–	–	–
3	1986-03-05	12:39	–	5.69311	85.45	–	–	–

Table C-2. Room G Station -74.0 m horizontal mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_x (m)	δ_x (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
3	1986-03-10	09:12	–	5.69229	86.26	–	–	–
3	1986-03-13	08:42	–	5.69247	86.09	–	–	–
3	1986-03-17	10:48	–	5.69189	86.67	–	–	–
3	1986-03-25	12:57	–	5.69123	87.33	–	–	–
3	1986-03-27	08:39	–	5.69153	87.03	–	–	–
3	1986-03-31	08:17	–	5.69130	87.25	–	–	–
3	1986-04-03	08:34	–	5.69102	87.53	–	–	–
3	1986-04-07	08:46	–	5.69067	87.89	–	–	–
3	1986-04-10	13:24	–	5.69023	88.32	–	–	–
3	1986-04-14	10:00	–	5.69059	87.97	–	–	–
3	1986-04-17	09:40	–	5.69041	88.14	–	–	–
3	1986-04-24	09:43	–	5.68960	88.96	–	–	–
3	1986-05-01	09:11	–	5.68927	89.29	–	–	–
3	1986-05-05	09:27	–	5.68907	89.49	–	–	–
3	1986-05-08	–	–	–	–	–	–	Hoist down
3	1986-05-13	13:56	–	5.68853	90.02	–	–	–
3	1986-05-16	14:27	–	5.68830	90.25	–	–	–
3	1986-05-20	08:52	–	5.68871	89.85	–	–	–
3	1986-05-23	09:20	–	5.68803	90.53	–	–	–
3	1986-05-29	08:36	–	5.68782	90.73	–	–	–
3	1986-06-02	08:40	–	5.68744	91.12	–	–	–
3	1986-06-05	08:51	–	5.68721	91.34	–	–	–
3	1986-06-09	08:32	–	5.68688	91.67	–	–	–
3	1986-06-13	09:32	–	5.68714	91.42	–	–	–
3	1986-06-16	12:48	–	5.68693	91.62	–	–	–
3	1986-06-19	09:15	–	5.68678	91.78	–	–	–
3	1986-06-26	10:11	–	5.68620	92.36	–	–	–
3	1986-06-30	12:29	–	5.68625	92.31	–	–	–
3	1986-07-03	08:50	–	5.68617	92.39	–	–	–
3	1986-07-10	13:19	–	5.68531	93.25	–	–	–
3	1986-07-15	09:50	–	5.68533	93.22	–	–	–
3	1986-07-17	12:53	–	5.68515	93.40	–	–	–
3	1986-07-21	08:54	–	5.68498	93.58	–	–	–
3	1986-07-31	09:13	–	5.68493	93.63	–	–	–
3	1986-08-04	09:49	–	5.68389	94.67	–	–	–
3	1986-08-07	10:23	–	5.68396	94.60	–	–	–
3	1986-08-11	13:34	–	5.68411	94.44	–	–	–
3	1986-08-14	10:28	–	5.68363	94.93	–	–	–
3	1986-08-21	08:51	–	5.68322	95.33	–	–	–
3	1986-08-25	09:35	–	5.68302	95.54	–	–	–
3	1986-09-04	09:31	–	5.68251	96.04	–	–	–
3	1986-09-11	12:25	–	5.68208	96.48	–	–	–
3	1986-09-11	12:25	–	5.68208	96.48	–	–	–
3	1986-09-15	13:36	–	5.68195	96.60	–	–	–
3	1986-09-18	09:33	–	5.68203	96.53	–	–	–
3	1986-09-22	11:11	–	5.68127	97.29	–	–	–
3	1986-09-25	09:22	–	5.68127	97.29	–	–	–
3	1986-09-29	10:01	–	5.68109	97.47	–	–	–
3	1986-10-06	09:36	–	5.68086	97.69	–	–	–
3	1986-10-13	09:09	–	5.68035	98.20	–	–	–
3	1986-10-17	13:05	–	5.68002	98.53	–	–	–
3	1986-10-22	10:58	–	5.68010	98.46	–	–	–
3	1986-10-30	13:06	–	5.67944	99.12	–	–	–
3	1986-11-06	13:10	–	5.68223	96.32	×	–	–
3	1986-11-13	10:15	–	5.68213	96.42	×	–	–
3	1986-11-20	13:10	–	5.68160	96.96	×	–	–
3	1986-12-04	09:36	–	5.68099	97.57	×	–	–
3	1986-12-11	09:48	–	5.68056	98.00	×	–	–
3	1986-12-18	09:48	–	5.67985	98.71	×	–	–
3	1986-12-22	09:55	–	5.67941	99.14	×	–	–
3	1986-12-31	09:01	–	5.67875	99.80	×	–	–
3	1987-01-05	09:33	–	5.67660	101.96	–	–	–
3	1987-01-12	09:28	–	5.68046	98.10	×	–	–
3	1987-01-19	09:38	–	5.67502	103.54	–	–	–
3	1987-02-16	11:05	–	5.67372	104.83	–	–	Rod #5
3	1987-03-16	11:20	–	5.67289	105.67	–	–	Rod #5
3	1987-04-06	14:02	–	5.67202	106.53	–	–	Rod #5
3	1987-06-22	14:34	–	5.66610	112.45	×	–	Rod #5
3	1987-06-29	13:44	–	5.66887	109.68	–	–	Rod #5
3	1987-07-06	14:38	–	5.66885	109.71	–	–	Rod #5
3	1987-07-13	11:14	–	5.66857	109.99	–	–	Rod #5
3	1987-07-27	11:19	–	5.66732	111.23	–	–	Rod #5
3	1987-07-31	13:49	–	5.66740	111.16	–	–	Rod #5
3	1987-08-26	10:19	–	5.66522	113.34	–	–	Rod #5
3	1987-09-25	12:31	–	5.66501	113.54	–	–	Rod #5
3	1987-10-23	13:08	–	5.66344	115.12	–	–	Rod #5
3	1987-11-16	11:38	–	5.66237	116.19	–	–	Rod #5
3	1987-12-17	11:38	–	5.66128	117.28	–	–	Rod #5
3	1988-01-15	10:29	–	5.66029	118.27	–	–	Rod #5
3	1988-02-09	10:53	–	5.65907	119.49	–	–	Rod #5
3	1988-03-11	–	–	–	–	–	–	Note: Not done due to (and the rest of note is unreadable)
3	1988-04-08	09:37	–	5.65661	121.95	–	–	Rod #5
3	1988-05-03	12:52	–	5.65407	124.49	–	–	Rod #5
3	1988-06-07	10:17	–	5.65417	124.39	–	–	Rod #5
3	1988-06-30	09:39	–	5.65269	125.86	–	–	Rod #5
3	1988-07-26	11:17	–	5.64977	128.78	–	–	Rod #5

Table C-2. Room G Station -74.0 m horizontal mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_x (m)	δ_x (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
3	1988-08-23	09:20	–	5.64975	128.81	–	–	Rod #5
3	1988-09-20	09:18	–	5.64977	128.78	–	–	Rod #5
3	1988-10-17	13:02	–	5.65132	127.23	–	–	Rod #5
3	1988-11-15	10:15	–	5.64634	132.21	–	–	Rod #5
3	1988-12-13	13:10	–	5.64594	132.62	–	–	Rod #5
3	1989-01-13	10:46	–	5.64535	133.20	–	–	Rod #5
3	1989-02-08	10:09	–	5.64411	134.45	–	–	Rod #5
3	1989-03-10	10:26	–	5.64243	136.12	–	–	Rod #5
3	1989-04-04	09:53	–	5.64142	137.14	–	–	Rod #5
3	1989-05-31	14:12	–	5.63893	139.63	–	–	Rod #5
3	1989-06-27	14:43	–	5.63827	140.29	–	–	Rod #5
3	1989-08-21	13:29	–	5.63689	141.66	–	–	Rod #5
3	1989-09-18	13:00	–	5.63608	142.47	–	–	Rod #5
3	1989-11-15	13:15	–	5.63392	144.63	–	–	Rod #5
3	1989-12-15	13:05	–	5.63184	146.72	–	–	Rod #5
3	1990-01-11	12:17	–	5.63123	147.33	–	–	Rod #5
3	1990-02-08	13:51	–	5.63049	148.06	–	–	Rod #5
3	1990-04-30	12:52	–	5.62760	150.96	–	–	Rod #5
3	1991-05-22	13:08	–	5.61472	163.84	–	–	Rod #5
3	1991-05-29	13:46	–	5.61454	164.01	–	–	Rod #5
3	1991-06-05	10:55	–	5.61424	164.32	–	–	Rod #5
3	1991-06-12	09:33	–	5.61414	164.42	–	–	Rod #5
3	1991-06-19	13:03	–	5.61398	164.57	–	–	Rod #5
3	1991-06-26	12:56	–	5.61096	167.60	–	–	Rod #5
3	1991-07-10	12:57	–	5.61310	165.46	–	–	Rod #5
3	1991-07-17	13:27	–	5.61276	165.79	–	–	Rod #5
3	1991-07-26	13:05	–	5.61259	165.97	–	–	Rod #5
3	1991-07-31	12:42	–	5.61249	166.07	–	–	Rod #5
3	1991-08-16	10:47	–	5.61188	166.68	–	–	Rod #5
3	1991-08-21	10:40	–	5.61162	166.93	–	–	Rod #5
3	1991-08-28	13:15	–	5.61127	167.29	–	–	Rod #5
3	1991-09-04	10:17	–	5.61106	167.49	–	–	Rod #5
3	1991-09-12	10:01	–	5.61038	168.18	–	–	Rod #5
3	1991-09-18	09:27	–	5.61063	167.93	–	–	Rod #5
3	1991-09-25	12:38	–	5.61015	168.41	–	–	Rod #5
3	1991-10-04	–	–	–	–	–	–	No readings taken due to work in Q room
3	1991-10-11	09:28	–	5.60951	169.04	–	–	Rod #5
3	1991-10-18	09:46	–	5.60944	169.12	–	–	Rod #5 Part of readings taken on 10/17/91
3	1991-10-23	09:52	–	5.60944	169.12	–	–	Rod #5
3	1991-10-30	09:44	–	5.60918	169.37	–	–	Rod #5
3	1991-11-06	13:13	–	5.60906	169.50	–	–	Rod #5
3	1991-11-13	10:18	–	5.60890	169.65	–	–	Rod #5 This procedure is obsolete. These readings are for information only.
3	1991-11-26	–	–	–	–	–	–	Procedure dropped
3	1992-01-06	–	–	–	–	–	–	Not completed due to shut down
3	1992-01-08	10:36	–	5.60705	171.51	–	–	–
3	1992-01-08	10:36	–	5.60705	171.51	–	–	Rod 5
3	1992-01-14	14:21	–	5.60677	171.79	–	–	Rod 5
3	1992-01-21	09:45	–	5.60690	171.66	–	–	Rod 5
3	1992-01-28	13:24	–	5.60659	171.96	–	–	Rod 5
3	1992-02-04	14:03	–	5.60629	172.27	–	–	Rod 5
3	1992-02-11	10:48	–	5.60624	172.32	–	–	Rod 5
3	1992-02-21	10:52	–	5.60591	172.65	–	–	Rod 5
3	1992-02-26	13:35	–	5.60573	172.83	–	–	Rod 5
3	1992-03-03	12:52	–	5.60558	172.98	–	–	Rod 5
3	1992-03-13	–	–	–	–	–	–	No readings taken due to priority work in Room Q.
3	1992-03-17	10:01	–	5.60512	173.44	–	–	Rod 5
3	1992-03-24	13:56	–	5.60469	173.87	–	–	Rod 5
3	1992-04-01	13:31	–	5.60471	173.84	–	–	Rod 5
3	1992-04-10	13:00	–	5.60644	172.12	–	–	Rod 5
3	1992-04-15	–	–	–	–	–	–	Package was not received
3	1992-04-22	13:12	–	5.60614	172.42	–	–	Rod 5
3	1992-07-14	10:06	–	5.60073	177.83	–	–	Rod 5
3	1992-10-20	09:57	–	5.59697	181.59	–	–	Rod 5
3	1993-01-26	09:58	–	5.59349	185.07	–	–	Rod 5
4	1993-07-14	10:00	–	5.59905	191.08	–	–	Rod 5
4	1994-02-17	13:18	–	5.59128	198.85	–	–	–
4	1994-02-23	13:17	–	5.59115	198.98	–	–	–
4	1994-03-17	13:40	–	5.59024	199.90	–	–	–
4	1994-03-24	14:19	–	5.59024	199.90	–	–	–
4	1994-03-29	13:28	–	5.58990	200.23	–	–	–
4	1994-04-05	13:26	–	5.58965	200.48	–	–	–
4	1994-04-14	10:29	–	5.58950	200.63	–	–	–
4	1994-04-21	10:11	–	5.58909	201.04	–	–	–
4	1994-04-28	10:22	–	5.58894	201.19	–	–	–
4	1994-05-04	13:17	–	5.58879	201.34	–	–	–
4	1994-05-23	12:52	–	5.58830	201.83	–	–	–
5	1994-06-07	13:30	–	5.57754	202.27	–	–	–
5	1994-06-29	09:45	–	5.57680	203.01	–	–	–
5	1994-07-07	09:44	–	5.57657	203.24	–	–	–
5	1994-07-13	09:53	–	5.57639	203.41	–	–	–
5	1994-07-21	10:06	–	5.57611	203.69	–	–	–
5	1994-07-27	09:58	–	5.57591	203.90	–	–	–
5	1994-08-03	10:12	–	5.57566	204.15	–	–	–
5	1994-08-10	13:26	–	5.57548	204.33	–	–	–
5	1994-08-16	13:48	–	5.57505	204.76	–	–	–

Table C-2. Room G Station -74.0 m horizontal mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_x (m)	δ_x (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
5	1994-08-23	10:51	–	5.57492	204.89	–	–	–
5	1994-08-30	10:23	–	5.57472	205.09	–	–	–
5	1994-09-09	12:46	–	5.57441	205.39	–	–	–
5	1994-09-12	12:45	–	5.57408	205.72	–	–	–
5	1994-09-23	09:58	–	5.57406	205.75	–	–	–
5	1994-09-26	10:51	–	5.57385	205.95	–	–	–
5	1994-10-05	13:15	–	5.57355	206.26	–	–	–
5	1994-10-19	13:21	–	5.57312	206.69	–	–	–
5	1994-10-26	13:30	–	5.57263	207.17	–	–	–
5	1994-11-02	09:43	–	5.57266	207.15	–	–	–
5	1994-11-08	09:36	–	5.57235	207.45	–	–	–
5	1994-11-15	12:58	–	5.57230	207.50	–	–	–
5	1994-11-21	13:10	–	5.57197	207.83	–	–	–
5	1994-11-29	12:35	–	5.57177	208.04	–	–	–
5	1994-12-07	12:23	–	5.57129	208.52	–	–	–
5	1994-12-13	10:13	–	5.57113	208.67	–	–	–
5	1994-12-20	09:40	–	5.57045	209.36	–	–	–
5	1994-12-29	12:58	–	5.57037	209.43	–	–	–
5	1995-01-06	09:39	–	5.57004	209.76	–	–	–
5	1995-01-10	–	–	–	–	–	–	–
5	1995-01-11	09:35	–	5.56946	210.35	–	–	–
5	1995-01-18	09:56	–	5.56992	209.89	–	–	–
5	1995-01-31	12:57	–	5.56994	209.86	–	–	–
5	1995-02-15	10:03	–	5.56925	210.55	–	–	–
5	1995-02-24	10:02	–	5.56938	210.42	–	–	–
5	1995-03-01	10:20	–	5.56900	210.80	–	–	–
5	1995-03-08	10:33	–	5.56859	211.21	–	–	–
5	1995-03-14	12:45	–	5.56839	211.41	–	–	–
5	1995-03-22	10:31	–	5.56829	211.52	–	–	–
5	1995-03-29	09:52	–	5.56814	211.67	–	–	–
5	1995-04-06	10:31	–	5.56765	212.15	–	–	–
5	1995-04-10	12:40	–	5.56738	212.43	–	–	–
5	1995-04-19	10:17	–	5.56735	212.46	–	–	–
5	1995-04-26	12:57	–	5.56735	212.46	–	–	–
5	1995-05-02	10:03	–	5.56705	212.76	–	–	–
5	1995-05-10	10:24	–	5.56671	213.09	–	–	–

Table C-3. Room G Station -74.0 m vertical mining sequence metadata

										Pre-Jump Fitting Inputs				Post-Jump Fitting Inputs			
s	Segment Start Time	Analysis Notes	Gage Number	Paired Points	Point 1 y	Point 2 y	Estimated t_{ex}	t_{ex} Source	Shift Phase	Type	Start Index	End Index	Ignore Index	Type	Start Index	End Index	Ignore Index
(–)	(YYYY-MM-DD HH:MM)	(–)	(–)	(–)	(m)	(m)	(YYYY-MM-DD HH:MM)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)
0	1984-11-09 20:00	Estimated start of mining Room G.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1	1984-12-28 01:23	First reading after station mined out during pass 1.	GM21-1	1A-1B	-74.24	-74.21	1984-12-27 23:00	Gage installation data sheet	2	–	–	–	–	Jeffreys	1	5	–
2	1984-12-28 20:15	First reading after point 1B mined out and re-installed during pass 2.	GM21-1	1A-1B	-74.24	-74.21	1984-12-28 19:30	Gage installation data sheet	1	Linear	-2	-1	–	Jeffreys	1	3	–
3	1984-12-29 17:30	First reading after point 1B mined out during pass 3 and re-installed during pass 4.	GM21-1	1A-1B	-74.24	-74.21	1984-12-29 15:00	Gage installation data sheet	2	Linear	-2	-1	–	Linear	1	2	–
4	1985-01-04 19:30	First reading after point 1B re-installed.	GM21-1	1A-1B	-74.24	-74.21	–	–	2	Linear	-2	-1	–	Linear	1	2	–
5	1985-03-28 12:30	First reading after paired points 1A-1B replaced.	GM21-1	1A-1B	-74.24	-74.21	–	–	2	Linear	-2	-1	–	Linear	1	2	–
6	1987-02-16 11:04	First time technician noted using rod #5.	GM21-1	1A-1B	-74.24	-74.21	–	–	2	Linear	-3	-2	–	Linear	1	2	–
7	1993-07-14 09:52	Readings at all three stations jump slightly.	GM21-1	1A-1B	-74.24	-74.21	–	–	2	Linear	-19	-2	[-5 -6 -10]	Linear	1	2	–
8	1994-06-07 13:28	Readings at all three stations jump slightly.	GM21-1	1A-1B	-74.24	-74.21	–	–	2	Linear	-2	-1	–	Linear	1	2	–

Table C-4. Room G Station -74.0 m vertical mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_z (m)	δ_z (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
1	1984-12-28	01:23	3.0	2.31155	1.06	–	–	Initial reading.
1	1984-12-28	09:02	3.4	2.30934	3.27	–	–	11’ to pass 1. -35’ to pass 2.
2	1984-12-28	20:15	3.4	2.33515	6.57	–	–	Floor pt reinstalled.
2	1984-12-29	02:27	–	2.33363	8.09	–	–	-70’ to pass 3. 11’ to pass 1.
2	1984-12-29	09:17	–	2.33274	8.98	–	–	-33’ to pass 3. 11’ to pass 1.
3	1984-12-29	17:30	3.4	2.63347	9.96	–	–	Initial reading.
3	1984-12-30	00:40	3.7	2.63281	10.62	–	–	–
3	1984-12-30	11:59	–	2.62783	15.60	–	–	Pass 1 - 25 ft. Pass 2 - 10 ft.
3	1984-12-30	16:57	10.7	2.62512	18.31	–	–	–
3	1984-12-31	02:01	-16.8	2.62280	20.63	–	–	–
3	1985-01-02	09:00	–	2.61831	25.12	–	–	Pass 1 65’. Pass 2 10’. 1140 ft face.
3	1985-01-02	19:15	25.9	2.61770	25.73	–	–	–
3	1985-01-03	04:58	12.2	2.61422	29.21	–	–	–
3	1985-01-03	09:28	18.3	2.61308	30.35	–	–	–
3	1985-01-03	19:28	32.0	2.61132	32.11	–	–	–
3	1985-01-04	05:39	19.8	2.61018	33.25	–	–	–
3	1985-01-04	11:03	31.1	2.60952	33.91	–	–	–
4	1985-01-04	19:30	15.2	2.64467	34.73	–	–	Floor point was reinstalled. New initial reading. 50’ (4th pass).
4	1985-01-05	01:29	32.0	2.64424	35.16	–	–	–
4	1985-01-05	10:56	–	2.64353	35.87	–	–	–
4	1985-01-05	17:09	32.0	2.64305	36.36	–	–	–
4	1985-01-06	02:10	32.0	2.64244	36.97	–	–	–
4	1985-01-06	10:07	100.0	2.64175	37.65	–	–	–
4	1985-01-06	20:07	32.0	2.64137	38.03	–	–	–
4	1985-01-07	01:23	32.0	2.66314	16.27	×	–	–
4	1985-01-07	16:42	–	2.64063	38.77	–	–	–
4	1985-01-07	–	–	–	–	–	–	Day - Point damaged new reading
4	1985-01-08	01:45	32.0	2.64018	39.23	–	–	–
4	1985-01-08	10:01	–	2.64000	39.40	–	–	–
4	1985-01-08	16:33	–	2.63985	39.56	–	–	–
4	1985-01-09	03:24	–	2.63944	39.96	–	–	–
4	1985-01-09	10:05	–	2.63931	40.09	–	–	–
4	1985-01-09	17:09	–	2.63916	40.24	–	–	–
4	1985-01-10	02:12	–	2.63896	40.45	–	–	–
4	1985-01-10	10:57	–	2.63865	40.75	–	–	–
4	1985-01-10	17:39	–	2.63842	40.98	–	–	–
4	1985-01-11	03:12	32.0	2.63830	41.11	–	–	–
4	1985-01-11	14:01	–	2.63802	41.39	–	–	–
4	1985-01-11	16:45	–	2.63789	41.51	–	–	–
4	1985-01-12	17:44	–	2.63743	41.97	–	–	–
4	1985-01-12	–	–	–	–	–	–	Blocked by drill bit
4	1985-01-12	–	32.0	–	–	–	–	Graveyard. Drilling equipment in way
4	1985-01-13	01:58	32.0	2.63713	42.27	–	–	–
4	1985-01-13	10:41	–	2.63682	42.58	–	–	–
4	1985-01-13	18:53	–	2.63705	42.35	–	–	–
4	1985-01-14	03:10	32.0	2.63649	42.91	–	–	–
4	1985-01-14	09:37	–	2.63639	43.01	–	–	–
4	1985-01-14	18:45	–	2.63639	43.01	–	–	–
4	1985-01-15	01:46	32.0	2.63611	43.29	–	–	–
4	1985-01-15	09:42	–	2.63576	43.65	–	–	–
4	1985-01-15	18:50	–	2.63604	43.37	–	–	–
4	1985-01-16	01:50	32.0	2.63563	43.77	–	–	–
4	1985-01-16	11:12	–	2.63535	44.05	–	–	–
4	1985-01-16	19:32	–	2.63538	44.03	–	–	–
4	1985-01-17	03:24	32.0	2.63500	44.41	–	–	–
4	1985-01-17	–	–	–	–	–	–	Swing - blocked by drill rig
4	1985-01-17	–	–	–	–	–	–	Day - blocked
4	1985-01-18	–	–	–	–	–	–	Blocked by drill rig
4	1985-01-18	–	–	–	–	–	–	FNR - Not read. Boreole checkout.
4	1985-01-18	–	32.0	–	–	–	–	Graveyard - points blocked
4	1985-01-19	10:24	–	2.63398	45.42	–	–	–
4	1985-01-19	19:17	–	2.63368	45.73	–	–	–
4	1985-01-19	–	–	–	–	–	–	Drill in way
4	1985-01-20	01:59	32.0	2.63380	45.60	–	–	–
4	1985-01-20	14:01	–	2.63360	45.81	–	–	–
4	1985-01-20	17:05	–	2.63347	45.93	–	–	–
4	1985-01-21	05:10	32.0	2.63322	46.19	–	–	–
4	1985-01-21	18:18	–	2.63294	46.47	–	–	–
4	1985-01-21	–	–	–	–	–	–	Day - Not read due to bore hole checkout
4	1985-01-22	01:57	32.0	2.63296	46.44	–	–	–
4	1985-01-22	–	–	–	–	–	–	No readings due to bore hole checkout
4	1985-01-22	–	–	–	–	–	–	Day shift. No readings due to bore hole checkout
4	1985-01-23	05:24	–	2.63276	46.64	–	–	–
4	1985-01-23	09:46	–	2.63261	46.80	–	–	–
4	1985-01-23	20:22	–	2.63230	47.10	–	–	–
4	1985-01-24	02:35	–	2.63220	47.20	–	–	–
4	1985-01-24	09:35	–	2.63207	47.33	–	–	–
4	1985-01-24	18:18	–	2.63195	47.46	–	–	–
4	1985-01-25	01:53	–	2.63167	47.74	–	–	–
4	1985-01-25	10:02	–	2.63192	47.48	–	–	–
4	1985-01-25	17:10	–	2.63159	47.81	–	–	–
4	1985-01-26	01:43	–	2.63131	48.09	–	–	–
4	1985-01-26	09:21	–	2.63119	48.22	–	–	–
4	1985-01-26	21:54	–	2.63106	48.35	–	–	–
4	1985-01-27	01:10	–	2.63098	48.42	–	–	–

Table C-4. Room G Station -74.0 m vertical mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_z (m)	δ_z (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
4	1985-01-27	09:04	32.0	2.63083	48.57	–	–	–
4	1985-01-27	20:20	–	2.63073	48.68	–	–	–
4	1985-01-28	01:34	–	2.63070	48.70	–	–	–
4	1985-01-28	09:25	32.0	2.63063	48.78	–	–	–
4	1985-01-28	17:35	–	2.63037	49.03	–	–	–
4	1985-01-29	01:34	–	2.63040	49.01	–	–	–
4	1985-01-29	10:09	32.0	2.63027	49.13	–	–	–
4	1985-01-29	19:08	–	2.63012	49.29	–	–	–
4	1985-01-30	01:34	–	2.63002	49.39	–	–	–
4	1985-01-30	10:31	32.0	2.63004	49.36	–	–	–
4	1985-01-30	18:08	–	2.62987	49.54	–	–	–
4	1985-01-31	01:23	–	2.62976	49.64	–	–	–
4	1985-01-31	12:49	32.0	2.62969	49.72	–	–	–
4	1985-01-31	19:16	–	2.62923	50.17	–	–	–
4	1985-02-01	01:53	–	2.62913	50.28	–	–	–
4	1985-02-01	11:19	32.0	2.62918	50.22	–	–	–
4	1985-02-01	17:46	–	2.62920	50.20	–	–	–
4	1985-02-02	01:14	–	2.62920	50.20	–	–	–
4	1985-02-02	09:55	32.0	2.62895	50.45	–	–	–
4	1985-02-02	17:37	–	2.62882	50.58	–	–	–
4	1985-02-03	01:30	–	2.62887	50.53	–	–	–
4	1985-02-03	09:13	32.0	2.62880	50.61	–	–	–
4	1985-02-03	17:32	–	2.62872	50.68	–	–	–
4	1985-02-04	02:04	–	2.62860	50.81	–	–	–
4	1985-02-04	09:28	32.0	2.62847	50.94	–	–	–
4	1985-02-04	17:50	–	2.62826	51.14	–	–	–
4	1985-02-05	02:39	–	2.62816	51.24	–	–	–
4	1985-02-05	10:06	32.0	2.62819	51.22	–	–	–
4	1985-02-05	17:25	–	2.62796	51.44	–	–	–
4	1985-02-06	03:31	–	2.62760	51.80	–	–	–
4	1985-02-06	09:48	32.0	2.62735	52.05	–	–	–
4	1985-02-06	17:55	–	2.62755	51.85	–	–	–
4	1985-02-07	06:28	–	2.62801	51.39	–	–	–
4	1985-02-07	12:45	32.0	2.62793	51.47	–	–	–
4	1985-02-07	18:10	–	2.62796	51.44	–	–	–
4	1985-02-08	02:08	–	2.62801	51.39	–	–	–
4	1985-02-08	09:18	–	2.62768	51.72	–	–	–
4	1985-02-08	18:22	–	2.62768	51.72	–	–	–
4	1985-02-09	03:01	–	2.62748	51.93	–	–	–
4	1985-02-09	09:34	–	2.62758	51.83	–	–	–
4	1985-02-09	18:10	–	2.62758	51.83	–	–	–
4	1985-02-10	01:13	–	2.62740	52.00	–	–	–
4	1985-02-10	08:41	–	2.62733	52.08	–	–	–
4	1985-02-10	18:07	–	2.62717	52.23	–	–	–
4	1985-02-11	01:31	–	2.62748	51.93	–	–	–
4	1985-02-11	09:15	–	2.62730	52.10	–	–	–
4	1985-02-11	18:06	–	2.62740	52.00	–	–	–
4	1985-02-12	02:37	–	2.62725	52.16	–	–	–
4	1985-02-12	09:07	–	2.62722	52.18	–	–	–
4	1985-02-12	–	–	–	–	–	–	Readings not taken due to room dimensions in Room 11
4	1985-02-13	03:10	–	2.62689	52.51	–	–	–
4	1985-02-13	09:36	–	2.62710	52.31	–	–	–
4	1985-02-13	16:52	32.0	2.62699	52.41	–	–	–
4	1985-02-14	03:11	–	2.62699	52.41	–	–	–
4	1985-02-14	09:10	–	2.62689	52.51	–	–	–
4	1985-02-14	18:47	–	2.62674	52.66	–	–	–
4	1985-02-15	01:32	–	2.62666	52.74	–	–	–
4	1985-02-15	09:02	–	2.62669	52.71	–	–	–
4	1985-02-15	18:16	–	2.62646	52.94	–	–	–
4	1985-02-16	05:32	–	2.62628	53.12	–	–	–
4	1985-02-16	08:53	–	2.62644	52.97	–	–	–
4	1985-02-16	16:47	–	2.62420	55.20	–	–	–
4	1985-02-17	01:40	–	2.62603	53.37	–	–	–
4	1985-02-17	08:55	–	2.62626	53.15	–	–	–
4	1985-02-17	17:33	–	2.62613	53.27	–	–	–
4	1985-02-18	02:38	–	2.62593	53.48	–	–	–
4	1985-02-18	09:02	–	2.62593	53.48	–	–	–
4	1985-02-19	–	–	–	–	–	–	Blocked by install crews
4	1985-02-20	11:05	–	2.62537	54.03	–	–	–
4	1985-02-21	–	–	–	–	–	–	No readings. Other work
4	1985-02-22	10:02	–	2.62499	54.42	–	–	–
4	1985-02-25	10:09	–	2.62628	53.12	–	–	–
4	1985-02-26	09:36	–	2.62428	55.13	–	–	–
4	1985-02-27	09:11	–	2.62405	55.36	–	–	–
4	1985-02-28	13:17	–	2.62387	55.53	–	–	–
4	1985-03-01	10:23	–	2.62357	55.84	–	–	–
4	1985-03-04	11:01	–	2.62313	56.27	–	–	–
4	1985-03-05	10:02	–	2.62291	56.50	–	–	–
4	1985-03-06	09:38	–	2.62291	56.50	–	–	–
4	1985-03-07	10:19	–	2.62245	56.96	–	–	–
4	1985-03-08	09:58	–	2.62250	56.91	–	–	–
4	1985-03-11	10:33	–	2.62194	57.46	–	–	–
4	1985-03-12	12:41	–	2.62166	57.74	–	–	–
4	1985-03-13	13:24	–	2.61882	60.59	–	–	–
4	1985-03-14	09:39	–	2.62143	57.97	–	–	–
4	1985-03-15	10:35	–	2.62128	58.12	–	–	–

Table C-4. Room G Station -74.0 m vertical mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_z (m)	δ_z (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
4	1985-03-18	09:50	–	2.62075	58.66	–	–	–
4	1985-03-19	09:26	–	2.62059	58.81	–	–	–
4	1985-03-20	–	–	–	–	–	–	No readings taken due to Room 3 cross-sections & geologic mapping.
4	1985-03-21	11:15	–	2.62016	59.24	–	–	–
4	1985-03-22	10:30	–	2.61996	59.45	–	–	–
4	1985-03-25	09:38	–	2.61973	59.67	–	–	–
4	1985-03-26	09:11	–	2.61960	59.80	–	–	–
4	1985-03-27	10:13	–	2.61922	60.18	–	–	–
4	1985-03-28	12:05	–	2.61925	60.16	–	–	–
5	1985-03-28	12:30	–	2.61595	60.16	–	–	Ramsett EMCP's were replaced by stur-anchors and grouted.
5	1985-03-29	10:39	–	2.61595	60.16	–	–	–
5	1985-04-01	10:06	–	2.61549	60.61	–	–	–
5	1985-04-02	12:54	–	2.61526	60.84	–	–	–
5	1985-04-03	09:08	–	2.61531	60.79	–	–	–
5	1985-04-04	09:54	–	2.61518	60.92	–	–	–
5	1985-04-08	08:50	–	2.61450	61.60	–	–	–
5	1985-04-09	09:39	–	2.61442	61.68	–	–	–
5	1985-04-10	09:08	–	2.61427	61.83	–	–	–
5	1985-04-11	08:52	–	2.61402	62.09	–	–	–
5	1985-04-15	12:42	–	2.61381	62.29	–	–	–
5	1985-04-16	10:29	–	2.61336	62.75	–	–	–
5	1985-04-17	08:50	–	2.61328	62.82	–	–	–
5	1985-04-18	09:04	–	2.61313	62.98	–	–	–
5	1985-04-19	09:01	–	2.61295	63.15	–	–	–
5	1985-04-22	09:01	–	2.61272	63.38	–	–	–
5	1985-04-23	09:01	–	2.61249	63.61	–	–	–
5	1985-04-24	09:02	–	2.61242	63.69	–	–	–
5	1985-04-25	09:10	–	2.61239	63.71	–	–	–
5	1985-04-26	09:00	–	2.61206	64.04	–	–	–
5	1985-04-29	09:43	–	2.61186	64.25	–	–	–
5	1985-04-30	12:59	–	2.61170	64.40	–	–	–
5	1985-05-01	09:09	–	2.61148	64.63	–	–	–
5	1985-05-02	09:08	–	2.61148	64.63	–	–	–
5	1985-05-03	10:03	–	2.61132	64.78	–	–	–
5	1985-05-06	12:20	–	2.61089	65.21	–	–	–
5	1985-05-07	08:47	–	2.61079	65.31	–	–	–
5	1985-05-08	10:12	–	2.61079	65.31	–	–	–
5	1985-05-09	09:01	–	2.61071	65.39	–	–	–
5	1985-05-10	09:28	–	2.61036	65.74	–	–	–
5	1985-05-13	13:52	–	2.60995	66.15	–	–	–
5	1985-05-14	10:11	–	2.61099	65.11	–	–	–
5	1985-05-15	09:03	–	2.60988	66.23	–	–	–
5	1985-05-16	09:30	–	2.60970	66.40	–	–	–
5	1985-05-17	10:49	–	2.60939	66.71	–	–	–
5	1985-05-20	09:40	–	2.60934	66.76	–	–	–
5	1985-05-21	09:02	–	2.60919	66.91	–	–	–
5	1985-05-22	09:54	–	2.60906	67.04	–	–	–
5	1985-05-23	09:37	–	2.60904	67.06	–	–	–
5	1985-05-24	12:51	–	2.60868	67.42	–	–	–
5	1985-05-28	10:42	–	2.60833	67.78	–	–	–
5	1985-05-29	09:04	–	2.61066	65.44	–	–	–
5	1985-05-30	09:31	–	2.60807	68.03	–	–	–
5	1985-05-31	09:20	–	2.60802	68.08	–	–	–
5	1985-06-03	09:16	–	2.60772	68.39	–	–	–
5	1985-06-04	09:38	–	2.60744	68.67	–	–	–
5	1985-06-05	09:30	–	2.60741	68.69	–	–	–
5	1985-06-06	09:52	–	2.60721	68.89	–	–	–
5	1985-06-07	10:07	–	2.60711	69.00	–	–	–
5	1985-06-10	09:37	–	2.60680	69.30	–	–	–
5	1985-06-11	10:04	–	2.60662	69.48	–	–	–
5	1985-06-12	09:25	–	2.60675	69.35	–	–	–
5	1985-06-14	09:40	–	2.60657	69.53	–	–	–
5	1985-06-16	10:23	–	2.60660	69.50	–	–	–
5	1985-06-17	09:53	–	2.60609	70.01	–	–	–
5	1985-06-18	09:51	–	2.60579	70.32	–	–	–
5	1985-06-19	09:24	–	2.60586	70.24	–	–	–
5	1985-06-20	09:48	–	2.60574	70.37	–	–	–
5	1985-06-21	09:02	–	2.60553	70.57	–	–	–
5	1985-06-24	10:49	–	2.60408	72.02	–	–	–
5	1985-06-25	12:57	–	2.60535	70.75	–	–	–
5	1985-06-26	08:52	–	2.60520	70.90	–	–	–
5	1985-06-27	09:14	–	2.60502	71.08	–	–	–
5	1985-06-28	00:00	–	–	–	–	–	Not read - short handed
5	1985-07-01	09:00	–	2.60462	71.48	–	–	–
5	1985-07-02	09:29	–	2.60434	71.76	–	–	–
5	1985-07-03	09:38	–	2.60429	71.81	–	–	–
5	1985-07-08	10:34	–	2.60373	72.37	–	–	–
5	1985-07-09	09:51	–	2.60383	72.27	–	–	–
5	1985-07-10	08:42	–	2.60360	72.50	–	–	–
5	1985-07-11	09:37	–	2.60340	72.70	–	–	–
5	1985-07-12	09:12	–	2.60342	72.68	–	–	–
5	1985-07-15	13:08	–	2.60312	72.98	–	–	–
5	1985-07-16	14:06	–	2.60320	72.91	–	–	–
5	1985-07-17	14:16	–	2.60286	73.24	–	–	–

Table C-4. Room G Station -74.0 m vertical mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_z (m)	δ_z (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
5	1985-07-18	09:45	–	2.60281	73.29	–	–	–
5	1985-07-19	10:02	–	2.60276	73.34	–	–	–
5	1985-07-22	14:03	–	2.60241	73.69	–	–	–
5	1985-07-23	09:15	–	2.60226	73.85	–	–	–
5	1985-07-24	08:48	–	2.60246	73.64	–	–	–
5	1985-07-25	10:01	–	2.60208	74.02	–	–	–
5	1985-07-26	13:46	–	2.60205	74.05	–	–	–
5	1985-07-29	09:04	–	2.60185	74.25	–	–	–
5	1985-07-30	08:51	–	2.60162	74.48	–	–	–
5	1985-07-31	11:04	–	2.60144	74.66	–	–	–
5	1985-08-01	08:50	–	2.60147	74.63	–	–	–
5	1985-08-02	00:00	–	2.60129	74.81	–	–	–
5	1985-08-05	09:57	–	2.60106	75.04	–	–	–
5	1985-08-06	09:14	–	2.60101	75.09	–	–	–
5	1985-08-07	10:04	–	2.60088	75.22	–	–	–
5	1985-08-08	09:20	–	2.60086	75.24	–	–	–
5	1985-08-09	10:06	–	2.60058	75.52	–	–	–
5	1985-08-12	09:42	–	2.60030	75.80	–	–	–
5	1985-08-13	08:52	–	2.60053	75.57	–	–	–
5	1985-08-14	10:46	–	2.60048	75.62	–	–	–
5	1985-08-15	10:43	–	2.60015	75.95	–	–	–
5	1985-08-16	10:58	–	2.59994	76.16	–	–	–
5	1985-08-19	09:14	–	2.59969	76.41	–	–	–
5	1985-08-20	08:52	–	2.59964	76.46	–	–	–
5	1985-08-21	09:20	–	2.59954	76.56	–	–	–
5	1985-08-22	09:20	–	2.59939	76.72	–	–	–
5	1985-08-23	13:25	–	2.59918	76.92	–	–	–
5	1985-08-26	13:43	–	2.59926	76.84	–	–	–
5	1985-08-27	10:37	–	2.59895	77.15	–	–	–
5	1985-08-28	09:07	–	2.59888	77.22	–	–	–
5	1985-08-29	09:14	–	2.59885	77.25	–	–	–
5	1985-08-30	13:06	–	2.59916	76.95	–	–	–
5	1985-09-03	10:36	–	2.59845	77.66	–	–	–
5	1985-09-04	10:33	–	2.59860	77.50	–	–	–
5	1985-09-05	08:52	–	2.59827	77.83	–	–	–
5	1985-09-06	09:00	–	2.59812	77.99	–	–	–
5	1985-09-09	08:52	–	2.59794	78.16	–	–	–
5	1985-09-10	09:37	–	2.59779	78.32	–	–	–
5	1985-09-11	09:25	–	2.59789	78.22	–	–	–
5	1985-09-12	09:42	–	2.59999	76.11	–	–	–
5	1985-09-13	09:27	–	2.59768	78.42	–	–	–
5	1985-09-16	09:15	–	2.59748	78.62	–	–	–
5	1985-09-17	09:33	–	2.59715	78.95	–	–	–
5	1985-09-18	09:41	–	2.59702	79.08	–	–	–
5	1985-09-19	12:42	–	2.59700	79.10	–	–	–
5	1985-09-20	08:48	–	2.59690	79.21	–	–	–
5	1985-09-23	09:31	–	2.59657	79.54	–	–	–
5	1985-09-26	09:31	–	2.59639	79.71	–	–	–
5	1985-09-30	09:27	–	2.59583	80.27	–	–	–
5	1985-10-03	10:14	–	2.59578	80.32	–	–	–
5	1985-10-07	13:07	–	2.59530	80.81	–	–	–
5	1985-10-10	08:34	–	2.59512	80.98	–	–	–
5	1985-10-14	09:20	–	2.59466	81.44	–	–	–
5	1985-10-17	09:17	–	2.59461	81.49	–	–	–
5	1985-10-21	09:29	–	2.59420	81.90	–	–	–
5	1985-10-23	13:35	–	2.59364	82.46	–	–	–
5	1985-10-28	09:10	–	2.59364	82.46	–	–	–
5	1985-10-31	09:48	–	2.59331	82.79	–	–	–
5	1985-11-04	08:58	–	2.59301	83.09	–	–	–
5	1985-11-07	09:18	–	2.59281	83.30	–	–	–
5	1985-11-11	09:43	–	2.59250	83.60	–	–	–
5	1985-11-14	09:02	–	2.59210	84.01	–	–	–
5	1985-11-19	09:30	–	2.59174	84.36	–	–	–
5	1985-11-21	08:46	–	2.59161	84.49	–	–	–
5	1985-11-25	08:53	–	2.59118	84.92	–	–	–
5	1985-12-02	09:12	–	2.59090	85.20	–	–	–
5	1985-12-05	09:24	–	2.59047	85.63	–	–	–
5	1985-12-09	09:06	–	2.59319	82.91	–	–	–
5	1985-12-12	10:34	–	2.58994	86.17	–	–	–
5	1985-12-16	09:34	–	2.58978	86.32	–	–	–
5	1985-12-19	09:30	–	2.58950	86.60	–	–	–
5	1985-12-26	09:07	–	2.58884	87.26	–	–	–
5	1985-12-30	13:26	–	2.58867	87.44	–	–	–
5	1986-01-02	10:24	–	2.58826	87.84	–	–	–
5	1986-01-06	09:37	–	2.58816	87.94	–	–	–
5	1986-01-09	09:57	–	2.58803	88.07	–	–	–
5	1986-01-13	09:26	–	2.58750	88.60	–	–	–
5	1986-01-16	08:50	–	2.58735	88.76	–	–	–
5	1986-01-20	09:12	–	2.58704	89.06	–	–	–
5	1986-01-23	09:24	–	2.58689	89.21	–	–	–
5	1986-01-27	08:58	–	2.58656	89.54	–	–	–
5	1986-01-30	10:02	–	2.58628	89.82	–	–	–
5	1986-02-03	10:20	–	2.58615	89.95	–	–	–
5	1986-02-06	10:50	–	2.58572	90.38	–	–	–
5	1986-02-10	09:27	–	2.58575	90.36	–	–	–
5	1986-02-13	10:18	–	2.58536	90.74	–	–	–

Table C-4. Room G Station -74.0 m vertical mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_z (m)	δ_z (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
5	1986-02-17	09:31	–	2.58534	90.76	–	–	–
5	1986-02-20	09:04	–	2.58501	91.09	–	–	–
5	1986-02-27	13:40	–	2.58448	91.63	–	–	–
5	1986-03-05	12:44	–	2.58384	92.26	–	–	–
5	1986-03-10	09:13	–	2.58343	92.67	–	–	–
5	1986-03-13	08:49	–	2.58328	92.82	–	–	–
5	1986-03-17	10:49	–	2.58293	93.18	–	–	–
5	1986-03-25	12:57	–	2.58242	93.68	–	–	–
5	1986-03-27	08:44	–	2.58242	93.68	–	–	–
5	1986-03-31	08:18	–	2.58211	93.99	–	–	–
5	1986-04-03	08:39	–	2.58191	94.19	–	–	–
5	1986-04-07	08:47	–	2.58161	94.50	–	–	–
5	1986-04-10	13:25	–	2.58127	94.83	–	–	–
5	1986-04-14	09:59	–	2.58102	95.08	–	–	–
5	1986-04-17	09:43	–	2.58094	95.16	–	–	–
5	1986-04-24	09:42	–	2.58039	95.72	–	–	–
5	1986-05-01	09:15	–	2.57993	96.17	–	–	–
5	1986-05-05	09:26	–	2.57962	96.48	–	–	–
5	1986-05-08	–	–	–	–	–	–	Hoist down
5	1986-05-13	13:56	–	2.57924	96.86	–	–	–
5	1986-05-16	14:30	–	2.57894	97.16	–	–	–
5	1986-05-20	08:55	–	2.57881	97.29	–	–	–
5	1986-05-23	09:21	–	2.57853	97.57	–	–	–
5	1986-05-29	08:36	–	2.57820	97.90	–	–	–
5	1986-06-02	08:40	–	2.57790	98.21	–	–	–
5	1986-06-05	08:50	–	2.57762	98.48	–	–	–
5	1986-06-09	08:36	–	2.57739	98.71	–	–	–
5	1986-06-13	09:33	–	2.57726	98.84	–	–	–
5	1986-06-16	12:55	–	2.57686	99.25	–	–	–
5	1986-06-19	09:16	–	2.57658	99.53	–	–	–
5	1986-06-26	10:11	–	2.57627	99.83	–	–	–
5	1986-06-30	12:29	–	2.57604	100.06	–	–	–
5	1986-07-03	08:49	–	2.57589	100.21	–	–	–
5	1986-07-10	13:24	–	2.57536	100.75	–	–	–
5	1986-07-15	09:49	–	2.57492	101.18	–	–	–
5	1986-07-17	12:52	–	2.57500	101.10	–	–	–
5	1986-07-21	08:53	–	2.57482	101.28	–	–	–
5	1986-07-31	09:13	–	2.57510	101.00	–	–	–
5	1986-08-04	09:48	–	2.57373	102.37	–	–	–
5	1986-08-07	10:23	–	2.57371	102.40	–	–	–
5	1986-08-11	13:31	–	2.57345	102.65	–	–	–
5	1986-08-14	10:27	–	2.57322	102.88	–	–	–
5	1986-08-21	08:50	–	2.57277	103.34	–	–	–
5	1986-08-25	09:34	–	2.57256	103.54	–	–	–
5	1986-09-04	09:32	–	2.57190	104.20	–	–	–
5	1986-09-11	12:24	–	2.57119	104.91	–	–	–
5	1986-09-15	13:36	–	2.57106	105.04	–	–	–
5	1986-09-18	09:32	–	2.57122	104.89	–	–	–
5	1986-09-22	11:10	–	2.57071	105.39	–	–	–
5	1986-09-25	09:23	–	2.57081	105.29	–	–	–
5	1986-09-29	10:00	–	2.46858	207.53	×	–	–
5	1986-10-06	09:35	–	2.56979	106.31	–	–	–
5	1986-10-13	09:10	–	2.56946	106.64	–	–	–
5	1986-10-17	13:02	–	2.56911	106.99	–	–	–
5	1986-10-22	10:56	–	2.56901	107.10	–	–	–
5	1986-10-30	13:05	–	2.56824	107.86	–	–	–
5	1986-11-06	13:09	–	2.57132	104.78	×	–	–
5	1986-11-13	10:15	–	2.57084	105.27	×	–	–
5	1986-11-20	13:09	–	2.57040	105.70	×	–	–
5	1986-12-04	09:35	–	2.56954	106.56	×	–	–
5	1986-12-11	09:47	–	2.56906	107.04	×	–	–
5	1986-12-18	09:47	–	2.56824	107.86	×	–	–
5	1986-12-22	09:51	–	2.56789	108.21	×	–	–
5	1986-12-31	09:02	–	2.56692	109.18	×	–	–
5	1987-01-05	09:39	–	2.56525	110.85	–	–	–
5	1987-01-12	09:26	–	2.56474	111.36	–	–	–
5	1987-01-19	09:43	–	2.56372	112.38	–	–	–
6	1987-02-16	11:04	–	1.44211	113.67	–	–	Rod #5
6	1987-03-16	11:15	–	1.44046	115.32	–	–	Rod #5
6	1987-04-06	14:00	–	1.43942	116.36	–	–	Rod #5
6	1987-06-22	14:34	–	1.43233	123.45	×	–	Rod #5
6	1987-06-29	13:39	–	1.43568	120.10	–	–	Rod #5
6	1987-07-06	14:31	–	1.43505	120.73	–	–	Rod #5
6	1987-07-13	11:10	–	1.43452	121.26	–	–	Rod #5
6	1987-07-27	11:18	–	1.43350	122.28	–	–	Rod #5
6	1987-07-31	13:45	–	1.43360	122.18	–	–	Rod #5
6	1987-08-26	10:18	–	1.43144	124.34	–	–	Rod #5
6	1987-09-25	12:29	–	1.43106	124.72	–	–	Rod #5
6	1987-10-23	13:07	–	1.42949	126.29	–	–	Rod #5
6	1987-11-16	11:37	–	1.42827	127.51	–	–	Rod #5
6	1987-12-17	11:37	–	1.42679	128.99	–	–	Rod #5
6	1988-01-15	10:27	–	1.42469	131.09	–	–	Rod #5
6	1988-02-09	10:55	–	1.42354	132.24	–	–	Rod #5
6	1988-03-11	–	–	–	–	–	–	Note: Not done due to (and the rest of note is unreadable)
6	1988-04-08	09:36	–	1.42052	135.26	–	–	Rod #5
6	1988-05-03	12:50	–	1.41973	136.05	–	–	Rod #5

Table C-4. Room G Station -74.0 m vertical mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_z (m)	δ_z (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
6	1988-06-07	10:16	–	1.41757	138.21	–	–	Rod #5
6	1988-06-30	09:37	–	1.41663	139.15	–	–	Rod #5
6	1988-07-26	11:16	–	1.41338	142.40	–	–	Rod #5
6	1988-08-23	09:16	–	1.41160	144.18	–	–	Rod #5
6	1988-09-20	09:16	–	1.41298	142.80	–	–	Rod #5
6	1988-10-17	13:00	–	1.41158	144.20	–	–	Rod #5
6	1988-11-15	10:13	–	1.40790	147.88	–	–	Rod #5
6	1988-12-13	13:08	–	1.40861	147.17	–	–	Rod #5
6	1989-01-13	10:43	–	1.40746	148.32	–	–	Rod #5
6	1989-02-08	10:08	–	1.40584	149.94	–	–	Rod #5
6	1989-03-10	10:25	–	1.40297	152.81	–	–	Rod #5
6	1989-04-04	09:51	–	1.40172	154.06	–	–	Rod #5
6	1989-05-31	14:10	–	1.39913	156.65	–	–	Rod #5
6	1989-06-27	14:40	–	1.39794	157.84	–	–	Rod #5
6	1989-08-21	13:27	–	1.39619	159.59	–	–	Rod #5
6	1989-09-18	13:07	–	1.39474	161.04	–	–	Rod #5
6	1989-11-15	13:14	–	1.39222	163.56	–	–	Rod #5
6	1989-12-15	13:06	–	1.38999	165.79	–	–	Rod #5
6	1990-01-11	12:18	–	1.39012	165.66	–	–	Rod #5
6	1990-02-08	13:53	–	1.38900	166.78	–	–	Rod #5
6	1990-04-30	12:48	–	1.38539	170.39	–	–	Rod #5
6	1991-05-22	13:06	–	1.36906	186.72	–	–	Rod #5
6	1991-05-29	13:45	–	1.36881	186.97	–	–	Rod #5
6	1991-06-05	10:53	–	1.36850	187.28	–	–	Rod #5
6	1991-06-12	09:32	–	1.36827	187.51	–	–	Rod #5
6	1991-06-19	10:47	–	1.36830	187.48	–	–	Rod #5
6	1991-06-26	12:55	–	1.36766	188.12	–	–	Rod #5
6	1991-07-10	12:55	–	1.36715	188.63	–	–	Rod #5
6	1991-07-17	13:25	–	1.36677	189.01	–	–	Rod #5
6	1991-07-26	13:03	–	1.36627	189.51	–	–	Rod #5
6	1991-07-31	12:39	–	1.36606	189.72	–	–	Rod #5
6	1991-08-16	10:45	–	1.36543	190.35	–	–	Rod #5
6	1991-08-21	10:40	–	1.36510	190.68	–	–	Rod #5
6	1991-08-28	13:10	–	1.36479	190.99	–	–	Rod #5
6	1991-09-04	10:17	–	1.36449	191.29	–	–	Rod #5
6	1991-09-12	10:03	–	1.36401	191.78	–	–	Rod #5
6	1991-09-18	09:25	–	1.36421	191.57	–	–	Rod #5
6	1991-09-25	12:37	–	1.36365	192.13	–	–	Rod #5
6	1991-10-04	–	–	–	–	–	–	No readings taken due to work in Q room
6	1991-10-11	09:26	–	1.36243	193.35	–	–	Rod #5
6	1991-10-17	09:45	–	1.36218	193.60	–	–	Rod #5 Part of readings taken on 10/17/91
6	1991-10-23	09:53	–	1.36195	193.83	–	–	Rod #5
6	1991-10-30	09:46	–	1.36164	194.14	–	–	Rod #5
6	1991-11-06	13:11	–	1.36154	194.24	–	–	Rod #5
6	1991-11-13	10:10	–	1.36139	194.39	–	–	Rod #5 This procedure is obsolete. These readings are for information only.
6	1991-11-26	–	–	–	–	–	–	Procedure dropped
6	1992-01-06	–	–	–	–	–	–	Not completed due to shut down
6	1992-01-08	10:07	–	1.35905	196.73	–	–	Rod 5
6	1992-01-14	14:20	–	1.35898	196.80	–	–	Rod 5
6	1992-01-21	09:45	–	1.35862	197.16	–	–	Rod 5
6	1992-01-28	13:26	–	1.35824	197.54	–	–	Rod 5
6	1992-02-04	14:02	–	1.35804	197.74	–	–	Rod 5
6	1992-02-11	10:47	–	1.35771	198.07	–	–	Rod 5
6	1992-02-21	10:51	–	1.35755	198.23	–	–	Rod 5
6	1992-02-26	13:33	–	1.35740	198.38	–	–	Rod 5
6	1992-03-03	12:44	–	1.35702	198.76	–	–	Rod 5
6	1992-03-13	–	–	–	–	–	–	No readings taken due to priority work in Room Q.
6	1992-03-17	09:59	–	1.35651	199.27	–	–	Rod 5
6	1992-03-24	13:55	–	1.35608	199.70	–	–	Rod 5
6	1992-04-01	13:29	–	1.35585	199.93	–	–	Rod 5
6	1992-04-10	12:59	–	1.35687	198.91	–	–	Rod 5
6	1992-04-15	–	–	–	–	–	–	Package was not received
6	1992-04-22	13:10	–	1.35623	199.55	–	–	Rod 5
6	1992-07-14	10:05	–	1.35064	205.14	–	–	Rod 5
6	1992-10-20	09:55	–	1.34551	210.27	–	–	Rod 5
6	1993-01-26	09:56	–	1.34866	207.12	×	–	Rod 5
7	1993-07-14	09:52	–	1.35153	221.67	–	–	Rod 5
7	1994-02-17	13:16	–	1.34201	231.19	–	–	–
7	1994-02-23	13:14	–	1.34176	231.45	–	–	–
7	1994-03-17	13:39	–	1.34087	232.34	–	–	–
7	1994-03-24	14:17	–	1.34054	232.67	–	–	–
7	1994-03-29	13:27	–	1.34036	232.84	–	–	–
7	1994-04-05	13:25	–	1.33990	233.30	–	–	–
7	1994-04-14	10:27	–	1.33957	233.63	–	–	–
7	1994-04-21	10:09	–	1.33937	233.84	–	–	–
7	1994-04-28	10:21	–	1.33911	234.09	–	–	–
7	1994-05-04	13:16	–	1.33894	234.27	–	–	–
7	1994-05-23	12:50	–	1.33822	234.98	–	–	–
8	1994-06-07	13:28	–	1.32766	235.57	–	–	–
8	1994-06-29	09:44	–	1.32674	236.49	–	–	–
8	1994-07-07	13:27	–	1.32629	236.95	–	–	–
8	1994-07-13	09:52	–	1.32596	237.28	–	–	–
8	1994-07-21	10:09	–	1.32578	237.45	–	–	–
8	1994-07-27	09:56	–	1.32537	237.86	–	–	–
8	1994-08-03	10:14	–	1.32522	238.01	–	–	–

Table C-4. Room G Station -74.0 m vertical mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_z (m)	δ_z (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
8	1994-08-10	13:24	–	1.32481	238.42	–	–	–
8	1994-08-16	13:47	–	1.32464	238.60	–	–	–
8	1994-08-23	10:50	–	1.32436	238.88	–	–	–
8	1994-08-30	10:21	–	1.32405	239.18	–	–	–
8	1994-09-09	12:46	–	1.32357	239.66	–	–	–
8	1994-09-12	12:41	–	1.32344	239.79	–	–	–
8	1994-09-23	09:57	–	1.32314	240.10	–	–	–
8	1994-09-26	10:50	–	1.32301	240.22	–	–	–
8	1994-10-05	13:13	–	1.32255	240.68	–	–	–
8	1994-10-19	13:20	–	1.32199	241.24	–	–	–
8	1994-10-26	13:28	–	1.27086	292.37	×	–	–
8	1994-11-02	09:42	–	1.32133	241.90	–	–	–
8	1994-11-08	09:34	–	1.32118	242.05	–	–	–
8	1994-11-15	12:55	–	1.32088	242.36	–	–	–
8	1994-11-21	13:09	–	1.32080	242.43	–	–	–
8	1994-11-29	12:34	–	1.32037	242.86	–	–	–
8	1994-12-07	12:32	–	1.32009	243.14	–	–	–
8	1994-12-13	10:11	–	1.31973	243.50	–	–	–
8	1994-12-20	09:39	–	1.31912	244.11	–	–	–
8	1994-12-29	12:57	–	1.31874	244.49	–	–	–
8	1995-01-06	09:38	–	1.31834	244.90	–	–	–
8	1995-01-10	–	–	–	–	–	–	–
8	1995-01-11	09:34	–	1.31790	245.33	–	–	–
8	1995-01-18	09:54	–	1.31823	245.00	–	–	–
8	1995-01-31	12:55	–	1.31798	245.25	–	–	–
8	1995-02-15	10:02	–	1.31719	246.04	–	–	–
8	1995-02-24	10:01	–	1.31714	246.09	–	–	–
8	1995-03-01	10:19	–	1.31699	246.24	–	–	–
8	1995-03-08	10:32	–	1.31669	246.55	–	–	–
8	1995-03-14	12:44	–	1.31641	246.83	–	–	–
8	1995-03-22	10:30	–	1.31613	247.11	–	–	–
8	1995-03-29	09:50	–	1.31572	247.51	–	–	–
8	1995-04-06	10:30	–	1.31531	247.92	–	–	–
8	1995-04-10	12:39	–	1.31514	248.10	–	–	–
8	1995-04-19	10:15	–	1.31491	248.33	–	–	–
8	1995-04-26	12:57	–	1.31470	248.53	–	–	–
8	1995-05-02	10:02	–	1.31440	248.83	–	–	–
8	1995-05-10	10:22	–	1.31404	249.19	–	–	–

Table C-5. Room G Station -1.0 m horizontal mining sequence metadata

										Pre-Jump Fitting Inputs				Post-Jump Fitting Inputs			
s	Segment Start Time	Analysis Notes	Gage Number	Paired Points	Point 1 y	Point 2 y	Estimated t_{ex}	t_{ex} Source	Shift Phase	Type	Start Index	End Index	Ignore Index	Type	Start Index	End Index	Ignore Index
(–)	(YYYY-MM-DD HH:MM)	(–)	(–)	(–)	(m)	(m)	(YYYY-MM-DD HH:MM)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)
0	1984-11-09 20:00	Estimated start of mining Room G.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1	1984-12-13 07:15	First reading after station mined out during pass 1.	GM12-1	1C-1D	-1	-1.0	1984-12-13 04:00	Gage installation data sheet	2	–	–	–	–	Jeffreys	1	5	–
2	1984-12-14 22:35	First reading after point 1D mined out and replaced with point 2D during pass 2.	GM12-2	1C-2D	-1	-1.09	1984-12-14 22:30	Gage installation data sheet	2	Jeffreys	-3	-1	–	Jeffreys	1	20	[3]
3	1984-12-15 21:50	First reading after pass 3 mined out one of the 1C-2D points.	GM12-2	1C-2D	-1	-1.09	1984-12-15 21:25	Gage installation data sheet	1	Jeffreys	-4	-1	[-2]	Jeffreys	2	18	–
4	1985-03-28 13:00	First reading after paired points 1C-2D replaced.	GM12-2	1C-2D	-1	-1.09	–	–	2	Linear	-2	-1	–	Linear	1	2	–
5	1993-07-14 10:13	Readings at all three stations jump slightly.	GM12-2	1C-2D	-1	-1.09	–	–	2	Linear	-2	-1	–	Linear	1	3	[2]
6	1994-06-07 13:22	Readings at all three stations jump slightly.	GM12-2	1C-2D	-1	-1.09	–	–	2	Linear	-2	-1	–	Linear	1	2	–

Table C-6. Room G Station -1.0 m horizontal mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_x (m)	δ_x (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
1	1984-12-13	07:15	0.9	3.80197	8.08	–	–	–
1	1984-12-13	09:33	1.2	3.79918	10.87	–	–	–
1	1984-12-13	18:32	9.1	3.78800	22.05	–	–	Pass 1 at 865’.
1	1984-12-14	01:11	12.5	3.78483	25.22	–	–	–
1	1984-12-14	08:45	12.2	3.78318	26.87	–	–	+40’ (Pass 1). -55’ (Pass 2).
2	1984-12-14	22:35	6.1	5.74982	28.01	–	–	Initial reading
2	1984-12-15	00:44	15.2	5.74840	29.44	–	–	–
2	1984-12-15	09:53	15.2	5.77103	6.80	×	–	50’ (Pass 1&2). -65’ (Pass 3)
2	1984-12-15	18:49	15.2	5.74370	34.13	–	–	–
3	1984-12-15	21:50	1.5	5.75343	69.13	×	–	–
3	1984-12-16	01:10	5.5	5.78673	35.83	–	–	New point 1C. 18’ to pass 3. 50’ to pass 1&2.
3	1984-12-16	10:44	-13.7	5.78528	37.28	–	–	(-45’ Pass 3). (50’ Pass 1&2).
3	1984-12-16	22:16	18.3	5.78269	39.87	–	–	–
3	1984-12-17	00:51	20.4	5.78221	40.35	–	–	–
3	1984-12-17	09:01	29.0	5.78099	41.57	–	–	+95’ (Pass 1)
3	1984-12-17	22:05	36.6	5.77957	43.00	–	–	–
3	1984-12-18	03:43	40.2	5.77837	44.19	–	–	Fass pass 1 at 967’. Note: Face pass 2 at 885’ and floor trim at 880’.
3	1984-12-18	09:10	42.7	5.77858	43.99	–	–	+140’ (Pass 1)
3	1984-12-18	22:24	27.4	5.77741	45.16	–	–	–
3	1984-12-19	02:26	33.5	5.77685	45.71	–	–	110’ (Pass 2). Face pass 1 at sta.-156. Face pass 2 at sta.-115. Mining pass 2 now.
3	1984-12-19	09:23	–	5.77634	46.22	–	–	(151’ Pass 1). (135’ Pass 2)
3	1984-12-19	21:13	25.9	5.77586	46.70	–	–	–
3	1984-12-20	03:09	–	5.77586	46.70	–	–	152’ to pass 1. 148’ to pass 2. Face pass 1 at 987’ (STA. -157). Face pass 2 at 985’ (STA. -153). Floor pass on south side at 975’ (STA. -145).
3	1984-12-20	10:25	15.2	5.77441	48.15	–	–	+50’ Pass 4
3	1984-12-20	18:39	44.2	5.77451	48.05	–	–	–
3	1984-12-21	03:50	45.1	5.77378	48.79	–	–	148’ to face pass 2. Face pass 1 at STA. -157’. Face pass 2 at STA -153’.
3	1984-12-21	09:57	45.7	5.77421	48.36	–	–	–
3	1984-12-21	22:01	46.0	5.77375	48.81	–	–	–
3	1984-12-22	06:11	46.3	5.77281	49.75	–	–	152’ pass 1 & 2
3	1984-12-22	08:58	–	5.77276	49.80	–	–	–
3	1984-12-22	21:59	46.0	5.77245	50.11	–	–	–
3	1984-12-23	03:06	46.0	5.77202	50.54	–	–	–
3	1984-12-23	10:39	46.3	5.77169	50.87	–	–	152’ to pass 1 & 2
3	1984-12-23	18:27	46.0	5.77169	50.87	–	–	–
3	1984-12-24	01:12	46.3	5.77121	51.35	–	–	–
3	1984-12-26	09:02	52.7	5.76920	53.36	–	–	–
3	1984-12-26	17:45	53.3	5.71721	105.35	×	–	–
3	1984-12-27	02:45	64.9	5.76796	54.60	–	–	–
3	1984-12-27	08:58	65.5	5.76773	54.83	–	–	–
3	1984-12-27	22:23	72.2	5.76748	55.09	–	–	–
3	1984-12-28	00:40	76.2	5.76735	55.21	–	–	–
3	1984-12-28	09:06	76.5	5.76699	55.57	–	–	251’ pass 1. 205 pass 2.
3	1984-12-28	17:34	76.5	5.76682	55.75	–	–	–
3	1984-12-29	02:19	51.8	5.76699	55.57	–	–	–
3	1984-12-29	09:12	63.1	5.76633	56.23	–	–	–
3	1984-12-29	17:55	76.5	5.76646	56.10	–	–	–
3	1984-12-30	00:36	-72.5	5.76610	56.46	–	–	–
3	1984-12-30	08:41	–	5.76628	56.28	–	–	Pass 1 - 217 ft. Pass 2 - 212 ft.
3	1984-12-30	16:58	83.8	5.76560	56.97	–	–	–
3	1984-12-31	01:45	-89.9	5.76552	57.04	–	–	–
3	1985-01-02	09:04	–	5.76448	58.08	–	–	Pass 1 277’. Pass 2 222’.
3	1985-01-02	19:17	99.1	5.76417	58.39	–	–	–
3	1985-01-03	01:00	85.3	5.76412	58.44	–	–	–
3	1985-01-03	09:15	91.4	5.76410	58.46	–	–	–
3	1985-01-03	19:30	105.2	5.15412	668.45	×	–	–
3	1985-01-04	05:42	93.0	5.76364	58.92	–	–	–
3	1985-01-04	11:00	104.2	5.76367	58.90	–	–	–
3	1985-01-04	17:46	88.4	5.76329	59.28	–	–	290’ (4th pass)
3	1985-01-05	01:33	105.2	5.76316	59.40	–	–	–
3	1985-01-05	08:57	–	5.76298	59.58	–	–	–
3	1985-01-05	17:11	105.2	5.76288	59.68	–	–	–
3	1985-01-06	02:01	105.2	5.76303	59.53	–	–	–
3	1985-01-06	10:01	26.8	5.76222	60.34	–	–	–
3	1985-01-06	19:57	105.2	5.76207	60.50	–	–	–
3	1985-01-07	01:25	–	5.76184	60.73	–	–	–
3	1985-01-07	11:00	–	5.76148	61.08	–	–	–
3	1985-01-07	16:52	–	5.76120	61.36	–	–	–
3	1985-01-08	01:37	105.2	5.76130	61.26	–	–	–
3	1985-01-08	09:46	–	5.76090	61.67	–	–	–
3	1985-01-08	16:39	–	5.76118	61.39	–	–	–
3	1985-01-09	03:27	–	5.76080	61.77	–	–	–
3	1985-01-09	09:49	–	5.76080	61.77	–	–	–
3	1985-01-09	17:04	–	5.76072	61.84	–	–	–
3	1985-01-10	02:36	–	5.76047	62.10	–	–	–
3	1985-01-10	11:06	–	5.76036	62.20	–	–	–
3	1985-01-10	17:33	–	5.76029	62.27	–	–	–
3	1985-01-11	13:56	–	5.76001	62.55	–	–	–
3	1985-01-11	16:39	–	5.75988	62.68	–	–	–
3	1985-01-12	02:09	105.2	5.75978	62.78	–	–	–
3	1985-01-12	09:05	–	5.75955	63.01	–	–	–
3	1985-01-12	17:39	–	5.75920	63.37	–	–	–

Table C-6. Room G Station -1.0 m horizontal mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_x (m)	δ_x (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
3	1985-01-13	02:04	105.2	5.75909	63.47	–	–	–
3	1985-01-13	10:35	–	5.75902	63.54	–	–	–
3	1985-01-13	19:05	–	5.75909	63.47	–	–	–
3	1985-01-14	03:02	105.2	5.75889	63.67	–	–	–
3	1985-01-14	09:29	–	5.75894	63.62	–	–	–
3	1985-01-14	18:48	–	5.75869	63.87	–	–	–
3	1985-01-15	01:31	105.2	5.75874	63.82	–	–	–
3	1985-01-15	09:36	–	5.75889	63.67	–	–	–
3	1985-01-15	18:55	–	5.75788	64.69	–	–	–
3	1985-01-16	01:40	105.2	5.75843	64.13	–	–	–
3	1985-01-16	11:05	–	5.75803	64.54	–	–	–
3	1985-01-16	19:42	–	5.75823	64.33	–	–	–
3	1985-01-17	03:19	105.2	5.75803	64.54	–	–	–
3	1985-01-17	09:54	–	5.75800	64.56	–	–	–
3	1985-01-17	18:52	–	5.75755	65.02	–	–	–
3	1985-01-18	17:58	–	5.75752	65.04	–	–	–
3	1985-01-18	–	–	–	–	–	–	FNR - Not read. Boreole checkout.
3	1985-01-18	–	106.7	–	–	–	–	Graveyard - points blocked
3	1985-01-19	01:58	–	5.75772	64.84	–	–	–
3	1985-01-19	10:18	–	5.75727	65.30	–	–	–
3	1985-01-19	19:13	–	5.75727	65.30	–	–	–
3	1985-01-20	01:50	105.2	5.75716	65.40	–	–	–
3	1985-01-20	16:53	–	5.75706	65.50	–	–	–
3	1985-01-20	–	–	–	–	–	–	Day. Blocked by drill.
3	1985-01-21	18:13	–	5.75638	66.19	–	–	–
3	1985-01-21	–	–	–	–	–	–	Day - not read. Did bore hole checkout
3	1985-01-21	–	105.2	–	–	–	–	Graveyard - blocked by drill
3	1985-01-22	01:50	105.2	5.75638	66.19	–	–	–
3	1985-01-22	–	–	–	–	–	–	No readings due to bore hole checkout
3	1985-01-22	–	–	–	–	–	–	Day shift. No readings due to bore hole checkout
3	1985-01-23	05:19	–	5.70530	117.27	×	–	–
3	1985-01-23	09:40	–	5.75602	66.54	–	–	–
3	1985-01-23	20:17	–	5.75584	66.72	–	–	–
3	1985-01-24	02:31	–	5.75569	66.87	–	–	–
3	1985-01-24	09:28	–	5.75577	66.80	–	–	–
3	1985-01-24	18:13	–	5.75561	66.95	–	–	–
3	1985-01-25	01:47	–	5.75551	67.05	–	–	–
3	1985-01-25	09:55	–	5.75551	67.05	–	–	–
3	1985-01-25	17:07	–	5.75541	67.15	–	–	–
3	1985-01-26	01:38	–	5.75536	67.20	–	–	–
3	1985-01-26	09:17	–	5.75528	67.28	–	–	–
3	1985-01-26	21:45	–	5.75495	67.61	–	–	–
3	1985-01-27	01:04	–	5.75508	67.48	–	–	–
3	1985-01-27	09:09	105.2	5.75523	67.33	–	–	–
3	1985-01-27	20:16	–	5.75483	67.74	–	–	–
3	1985-01-28	01:30	–	5.75442	68.14	–	–	–
3	1985-01-28	09:30	105.2	5.75462	67.94	–	–	–
3	1985-01-28	17:29	–	5.75429	68.27	–	–	–
3	1985-01-29	01:26	–	5.75457	67.99	–	–	–
3	1985-01-29	10:13	105.2	5.75462	67.94	–	–	–
3	1985-01-29	19:04	–	5.75419	68.37	–	–	–
3	1985-01-30	01:28	–	5.75412	68.45	–	–	–
3	1985-01-30	10:33	105.2	5.75417	68.40	–	–	–
3	1985-01-30	18:03	–	5.75399	68.57	–	–	–
3	1985-01-31	01:22	–	5.75404	68.52	–	–	–
3	1985-01-31	12:54	105.2	5.75399	68.57	–	–	–
3	1985-01-31	19:11	–	5.75363	68.93	–	–	–
3	1985-02-01	01:47	–	5.75351	69.06	–	–	–
3	1985-02-01	11:21	105.2	5.75358	68.98	–	–	–
3	1985-02-01	17:48	–	5.75335	69.21	–	–	–
3	1985-02-02	01:10	–	5.75356	69.01	–	–	–
3	1985-02-02	09:59	105.2	5.75340	69.16	–	–	–
3	1985-02-02	17:42	–	5.75343	69.13	–	–	–
3	1985-02-03	01:27	–	5.75292	69.64	–	–	–
3	1985-02-03	09:17	105.2	5.75318	69.39	–	–	–
3	1985-02-03	17:34	–	5.75318	69.39	–	–	–
3	1985-02-04	01:56	–	5.75302	69.54	–	–	–
3	1985-02-04	09:30	105.2	5.75315	69.41	–	–	–
3	1985-02-04	17:54	–	5.75295	69.62	–	–	–
3	1985-02-05	02:32	–	5.75241	70.15	–	–	–
3	1985-02-05	10:08	105.2	5.75280	69.77	–	–	–
3	1985-02-05	17:27	–	5.75264	69.92	–	–	–
3	1985-02-06	03:25	–	5.75234	70.22	–	–	–
3	1985-02-06	09:49	105.2	5.75198	70.58	–	–	–
3	1985-02-06	18:00	–	5.75201	70.56	–	–	–
3	1985-02-07	06:22	–	5.75280	69.77	–	–	–
3	1985-02-07	12:49	105.2	5.75269	69.87	–	–	–
3	1985-02-07	18:13	–	5.75257	70.00	–	–	–
3	1985-02-08	02:02	–	5.75252	70.05	–	–	–
3	1985-02-08	09:14	–	5.75244	70.12	–	–	–
3	1985-02-08	18:25	–	5.75239	70.17	–	–	–
3	1985-02-09	02:54	–	5.75274	69.82	–	–	–
3	1985-02-09	09:31	–	5.75249	70.07	–	–	–
3	1985-02-09	18:13	–	5.75213	70.43	–	–	–
3	1985-02-10	01:06	–	5.75213	70.43	–	–	–
3	1985-02-10	08:44	–	5.75211	70.45	–	–	–

Table C-6. Room G Station -1.0 m horizontal mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_x (m)	δ_x (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
3	1985-02-10	18:10	–	5.75183	70.73	–	–	–
3	1985-02-11	01:25	–	5.75208	70.48	–	–	–
3	1985-02-11	09:11	–	5.75231	70.25	–	–	–
3	1985-02-11	18:08	–	5.75186	70.71	–	–	–
3	1985-02-12	02:32	–	5.75226	70.30	–	–	–
3	1985-02-12	09:14	–	5.75208	70.48	–	–	–
3	1985-02-12	–	–	–	–	–	–	Readings not taken due to room dimensions in Room 11
3	1985-02-13	03:06	–	5.75196	70.61	–	–	–
3	1985-02-13	09:33	–	5.75206	70.50	–	–	–
3	1985-02-13	16:58	105.2	5.75170	70.86	–	–	–
3	1985-02-14	03:07	–	5.75150	71.06	–	–	–
3	1985-02-14	09:16	–	5.75198	70.58	–	–	–
3	1985-02-14	18:49	–	5.75188	70.68	–	–	–
3	1985-02-15	01:29	–	5.75165	70.91	–	–	–
3	1985-02-15	09:12	–	5.75137	71.19	–	–	–
3	1985-02-15	18:20	–	5.75145	71.11	–	–	–
3	1985-02-16	05:36	–	5.75142	71.14	–	–	–
3	1985-02-16	08:58	–	5.75150	71.06	–	–	–
3	1985-02-16	16:50	–	5.75170	70.86	–	–	–
3	1985-02-17	01:45	–	5.75122	71.34	–	–	–
3	1985-02-17	09:00	–	5.75132	71.24	–	–	–
3	1985-02-17	17:37	–	5.75117	71.39	–	–	–
3	1985-02-18	00:00	–	5.75104	71.52	–	–	–
3	1985-02-18	02:40	–	5.75104	71.52	–	–	–
3	1985-02-19	09:20	–	5.75097	71.60	–	–	–
3	1985-02-20	11:14	–	5.75010	72.46	–	–	–
3	1985-02-21	–	–	–	–	–	–	No readings. Other work
3	1985-02-22	10:09	–	5.75018	72.38	–	–	–
3	1985-02-25	09:47	–	5.74970	72.87	–	–	–
3	1985-02-26	09:43	–	5.74944	73.12	–	–	–
3	1985-02-27	09:14	–	5.74944	73.12	–	–	–
3	1985-02-28	13:24	–	5.74934	73.22	–	–	–
3	1985-03-01	09:54	–	5.74906	73.50	–	–	–
3	1985-03-04	11:04	–	5.74855	74.01	–	–	–
3	1985-03-05	09:53	–	5.74832	74.24	–	–	–
3	1985-03-06	09:40	–	5.74827	74.29	–	–	–
3	1985-03-07	10:04	–	5.74820	74.37	–	–	–
3	1985-03-08	10:01	–	5.74830	74.26	–	–	–
3	1985-03-11	10:29	–	5.74759	74.97	–	–	–
3	1985-03-12	12:44	–	5.74764	74.92	–	–	–
3	1985-03-13	13:32	–	5.74716	75.41	–	–	–
3	1985-03-14	09:44	–	5.74741	75.15	–	–	–
3	1985-03-15	10:49	–	5.74708	75.48	–	–	–
3	1985-03-18	10:06	–	5.74672	75.84	–	–	–
3	1985-03-19	09:32	–	5.74662	75.94	–	–	–
3	1985-03-20	–	–	–	–	–	–	No readings taken due to Room 3 cross-sections & geologic mapping.
3	1985-03-21	11:24	–	5.74624	76.32	–	–	–
3	1985-03-22	10:42	–	5.74589	76.68	–	–	–
3	1985-03-25	09:57	–	5.74581	76.75	–	–	–
3	1985-03-26	09:34	–	5.74553	77.03	–	–	–
3	1985-03-27	10:34	–	5.74566	76.91	–	–	–
3	1985-03-28	12:17	–	5.74556	77.01	–	–	–
4	1985-03-28	13:00	–	5.76174	77.00	–	–	Ramsett EMCP's were replaced with dulled stur-anchors and grouted inplace.
4	1985-03-29	10:36	–	5.76214	76.59	–	–	Readings transposed according to previous and subseqent data. [Auditor indicated with arrows that the GM01-1 and GM02-2 readings were transposed with the GM11-1 and GM12-2 readings.]
4	1985-04-01	09:46	–	5.76075	77.99	–	–	–
4	1985-04-02	12:57	–	5.76128	77.46	–	–	–
4	1985-04-03	09:16	–	5.76067	78.07	–	–	–
4	1985-04-04	10:06	–	5.76095	77.79	–	–	–
4	1985-04-08	09:01	–	5.76077	77.97	–	–	–
4	1985-04-09	09:53	–	5.76026	78.47	–	–	–
4	1985-04-10	09:13	–	5.76052	78.22	–	–	–
4	1985-04-11	09:26	–	5.76057	78.17	–	–	–
4	1985-04-15	12:57	–	5.75993	78.80	–	–	–
4	1985-04-16	10:37	–	5.75998	78.75	–	–	–
4	1985-04-17	10:21	–	5.75970	79.03	–	–	–
4	1985-04-18	09:24	–	5.75950	79.24	–	–	–
4	1985-04-19	09:07	–	5.75927	79.47	–	–	–
4	1985-04-22	09:05	–	5.75930	79.44	–	–	–
4	1985-04-23	09:10	–	5.75912	79.62	–	–	–
4	1985-04-24	09:06	–	5.75935	79.39	–	–	–
4	1985-04-25	09:38	–	5.75843	80.30	–	–	–
4	1985-04-26	09:27	–	5.75798	80.76	–	–	–
4	1985-04-29	09:58	–	5.75795	80.79	–	–	–
4	1985-04-30	12:57	–	5.75800	80.74	–	–	–
4	1985-05-01	09:13	–	5.75785	80.89	–	–	–
4	1985-05-02	09:30	–	5.75793	80.81	–	–	–
4	1985-05-03	10:13	–	5.75716	81.57	–	–	–
4	1985-05-06	12:30	–	5.75704	81.70	–	–	–
4	1985-05-07	08:50	–	5.75798	80.76	–	–	–
4	1985-05-08	10:32	–	5.75737	81.37	–	–	–
4	1985-05-09	09:42	–	5.75719	81.55	–	–	–

Table C-6. Room G Station -1.0 m horizontal mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_x (m)	δ_x (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
4	1985-05-10	09:43	–	5.75620	82.54	–	–	–
4	1985-05-13	14:03	–	5.75810	80.63	–	–	–
4	1985-05-14	09:59	–	5.75650	82.23	–	–	–
4	1985-05-15	09:19	–	5.75635	82.39	–	–	–
4	1985-05-16	09:58	–	5.75643	82.31	–	–	–
4	1985-05-17	11:50	–	5.75617	82.56	–	–	–
4	1985-05-20	10:05	–	5.75574	83.00	–	–	–
4	1985-05-21	09:16	–	5.75612	82.61	–	–	–
4	1985-05-22	10:30	–	5.75622	82.51	–	–	–
4	1985-05-23	09:52	–	5.75564	83.10	–	–	–
4	1985-05-24	13:14	–	5.75544	83.30	–	–	–
4	1985-05-28	10:49	–	5.75523	83.50	–	–	–
4	1985-05-29	09:21	–	5.75483	83.91	–	–	–
4	1985-05-30	09:38	–	5.75485	83.88	–	–	–
4	1985-05-31	09:50	–	5.75480	83.94	–	–	–
4	1985-06-03	09:23	–	5.75407	84.67	–	–	–
4	1985-06-04	09:27	–	5.75457	84.16	–	–	–
4	1985-06-05	09:35	–	5.75440	84.34	–	–	–
4	1985-06-06	09:47	–	5.75450	84.24	–	–	–
4	1985-06-07	10:34	–	5.75358	85.15	–	–	–
4	1985-06-10	09:27	–	5.75407	84.67	–	–	–
4	1985-06-11	09:17	–	5.75386	84.88	–	–	–
4	1985-06-12	09:23	–	5.75368	85.05	–	–	–
4	1985-06-13	11:03	–	5.75335	85.38	–	–	–
4	1985-06-14	11:14	–	5.75361	85.13	–	–	–
4	1985-06-17	09:57	–	5.75328	85.46	–	–	–
4	1985-06-18	09:47	–	5.75330	85.43	–	–	–
4	1985-06-19	09:33	–	5.75300	85.74	–	–	–
4	1985-06-20	10:16	–	5.75330	85.43	–	–	–
4	1985-06-21	09:22	–	5.75297	85.76	–	–	–
4	1985-06-24	10:54	–	5.75259	86.15	–	–	–
4	1985-06-25	13:05	–	5.75246	86.27	–	–	–
4	1985-06-26	09:10	–	5.75249	86.25	–	–	–
4	1985-06-27	09:21	–	5.75244	86.30	–	–	–
4	1985-06-28	00:00	–	–	–	–	–	Not read - short handed
4	1985-07-01	09:20	–	5.75168	87.06	–	–	–
4	1985-07-02	09:47	–	5.75208	86.65	–	–	–
4	1985-07-03	09:28	–	5.75193	86.81	–	–	–
4	1985-07-08	10:48	–	5.75173	87.01	–	–	–
4	1985-07-09	10:00	–	5.75145	87.29	–	–	–
4	1985-07-10	09:01	–	5.75112	87.62	–	–	–
4	1985-07-11	10:54	–	5.75155	87.19	–	–	–
4	1985-07-12	09:32	–	5.75112	87.62	–	–	–
4	1985-07-15	13:11	–	5.75132	87.42	–	–	–
4	1985-07-16	14:32	–	5.75066	88.08	–	–	–
4	1985-07-17	14:21	–	5.75056	88.18	–	–	–
4	1985-07-18	10:06	–	5.75081	87.92	–	–	–
4	1985-07-19	10:26	–	5.75013	88.61	–	–	–
4	1985-07-22	14:00	–	5.75005	88.69	–	–	–
4	1985-07-23	09:22	–	5.75033	88.41	–	–	–
4	1985-07-24	09:00	–	5.75028	88.46	–	–	–
4	1985-07-25	10:32	–	5.75031	88.43	–	–	–
4	1985-07-26	14:02	–	5.74972	89.02	–	–	–
4	1985-07-29	09:06	–	5.74982	88.91	–	–	–
4	1985-07-30	09:24	–	5.74992	88.81	–	–	–
4	1985-07-31	11:21	–	5.74942	89.32	–	–	–
4	1985-08-01	09:29	–	5.74914	89.60	–	–	–
4	1985-08-02	10:11	–	5.74980	88.94	–	–	–
4	1985-08-05	10:21	–	5.74899	89.75	–	–	–
4	1985-08-06	09:18	–	5.74873	90.01	–	–	–
4	1985-08-07	10:23	–	5.74848	90.26	–	–	–
4	1985-08-08	09:53	–	5.74855	90.18	–	–	–
4	1985-08-09	10:27	–	5.74893	89.80	–	–	–
4	1985-08-12	10:22	–	5.74827	90.46	–	–	–
4	1985-08-13	09:50	–	5.74827	90.46	–	–	–
4	1985-08-14	10:48	–	5.74766	91.07	–	–	–
4	1985-08-15	10:54	–	5.74792	90.82	–	–	–
4	1985-08-16	11:15	–	5.74787	90.87	–	–	–
4	1985-08-19	09:46	–	5.74726	91.48	–	–	–
4	1985-08-20	09:09	–	5.74810	90.64	–	–	–
4	1985-08-21	09:31	–	5.74777	90.97	–	–	–
4	1985-08-22	09:35	–	5.74751	91.23	–	–	–
4	1985-08-23	13:50	–	5.74726	91.48	–	–	–
4	1985-08-26	13:48	–	5.74711	91.63	–	–	–
4	1985-08-27	11:05	–	5.74690	91.83	–	–	–
4	1985-08-28	09:18	–	5.74711	91.63	–	–	–
4	1985-08-29	09:54	–	5.74662	92.11	–	–	–
4	1985-08-30	13:23	–	5.74726	91.48	–	–	–
4	1985-09-03	11:01	–	5.74728	91.45	–	–	–
4	1985-09-04	11:06	–	5.74660	92.14	–	–	–
4	1985-09-05	09:09	–	5.74660	92.14	–	–	–
4	1985-09-06	09:08	–	5.74655	92.19	–	–	–
4	1985-09-09	09:32	–	5.74632	92.42	–	–	–
4	1985-09-10	10:01	–	5.74645	92.29	–	–	–
4	1985-09-11	09:38	–	5.74665	92.09	–	–	–
4	1985-09-12	10:31	–	5.74581	92.93	–	–	–

Table C-6. Room G Station -1.0 m horizontal mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_x (m)	δ_x (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
4	1985-09-13	09:38	–	5.74632	92.42	–	–	–
4	1985-09-16	09:28	–	5.74589	92.85	–	–	–
4	1985-09-17	09:55	–	5.74566	93.08	–	–	–
4	1985-09-18	09:47	–	5.74571	93.03	–	–	–
4	1985-09-19	12:57	–	5.74573	93.00	–	–	–
4	1985-09-20	08:55	–	5.74525	93.49	–	–	–
4	1985-09-23	09:34	–	5.74538	93.36	–	–	–
4	1985-09-26	09:53	–	5.74502	93.71	–	–	–
4	1985-09-30	09:36	–	5.74477	93.97	–	–	–
4	1985-10-03	10:37	–	5.74467	94.07	–	–	–
4	1985-10-07	13:16	–	5.74426	94.48	–	–	–
4	1985-10-10	09:13	–	5.74411	94.63	–	–	–
4	1985-10-14	09:36	–	5.74365	95.09	–	–	–
4	1985-10-17	09:27	–	5.74373	95.01	–	–	–
4	1985-10-21	09:55	–	5.74281	95.92	–	–	–
4	1985-10-23	13:41	–	5.74271	96.03	–	–	–
4	1985-10-28	09:17	–	5.74258	96.15	–	–	–
4	1985-10-31	09:58	–	5.74274	96.00	–	–	–
4	1985-11-04	09:52	–	5.74223	96.51	–	–	–
4	1985-11-07	10:34	–	5.74190	96.84	–	–	–
4	1985-11-11	09:00	–	5.74167	97.07	–	–	–
4	1985-11-14	09:53	–	5.74134	97.40	–	–	–
4	1985-11-19	09:37	–	5.74124	97.50	–	–	–
4	1985-11-21	09:16	–	5.74121	97.52	–	–	–
4	1985-11-25	10:04	–	5.74050	98.24	–	–	–
4	1985-12-02	09:39	–	5.74055	98.18	–	–	–
4	1985-12-05	09:50	–	5.74037	98.36	–	–	–
4	1985-12-09	09:23	–	5.74017	98.57	–	–	–
4	1985-12-12	10:08	–	5.73966	99.07	–	–	–
4	1985-12-16	09:52	–	5.73961	99.12	–	–	–
4	1985-12-19	09:39	–	5.73893	99.81	–	–	–
4	1985-12-26	09:15	–	5.73834	100.39	–	–	–
4	1985-12-30	13:35	–	5.73883	99.91	–	–	–
4	1986-01-02	10:47	–	5.73834	100.39	–	–	–
4	1986-01-06	09:42	–	5.71251	126.23	×	–	–
4	1986-01-09	10:10	–	5.73796	100.78	–	–	–
4	1986-01-13	09:36	–	5.73738	101.36	–	–	–
4	1986-01-16	10:16	–	5.73756	101.18	–	–	–
4	1986-01-20	09:30	–	5.73717	101.56	–	–	–
4	1986-01-23	09:45	–	5.73674	101.99	–	–	–
4	1986-01-27	09:11	–	5.73684	101.89	–	–	–
4	1986-01-30	10:09	–	5.73667	102.07	–	–	–
4	1986-02-03	11:06	–	5.73595	102.78	–	–	–
4	1986-02-06	10:11	–	5.73575	102.99	–	–	–
4	1986-02-10	09:41	–	5.73585	102.88	–	–	–
4	1986-02-13	10:23	–	5.73537	103.37	–	–	–
4	1986-02-17	10:01	–	5.73547	103.26	–	–	–
4	1986-02-20	09:19	–	5.73550	103.24	–	–	–
4	1986-02-27	13:50	–	5.73476	103.98	–	–	–
4	1986-03-05	13:08	–	5.73441	104.33	–	–	–
4	1986-03-10	09:49	–	5.73397	104.76	–	–	–
4	1986-03-13	09:12	–	5.73392	104.81	–	–	–
4	1986-03-17	11:01	–	5.73382	104.92	–	–	–
4	1986-03-25	13:26	–	5.73311	105.63	–	–	–
4	1986-03-27	08:50	–	5.73278	105.96	–	–	–
4	1986-03-31	09:22	–	5.73273	106.01	–	–	–
4	1986-04-03	08:48	–	5.73303	105.70	–	–	–
4	1986-04-07	08:59	–	5.73214	106.59	–	–	–
4	1986-04-10	13:14	–	5.73253	106.21	–	–	–
4	1986-04-14	10:19	–	5.73194	106.80	–	–	–
4	1986-04-17	09:51	–	5.73197	106.77	–	–	–
4	1986-04-24	09:53	–	5.73136	107.38	–	–	–
4	1986-05-01	10:06	–	5.73118	107.56	–	–	–
4	1986-05-05	09:34	–	5.73075	107.99	–	–	–
4	1986-05-08	–	–	–	–	–	–	Hoist down
4	1986-05-13	14:04	–	5.73009	108.65	–	–	–
4	1986-05-16	14:19	–	5.73004	108.70	–	–	–
4	1986-05-20	09:24	–	5.72978	108.95	–	–	–
4	1986-05-23	09:27	–	5.72960	109.13	–	–	–
4	1986-05-29	08:56	–	5.72892	109.82	–	–	–
4	1986-06-02	09:28	–	5.72719	111.55	–	–	–
4	1986-06-05	09:28	–	5.72897	109.77	–	–	–
4	1986-06-09	08:50	–	5.72851	110.22	–	–	–
4	1986-06-13	10:12	–	5.72831	110.43	–	–	–
4	1986-06-16	13:08	–	5.72841	110.33	–	–	–
4	1986-06-19	10:01	–	5.72823	110.50	–	–	–
4	1986-06-26	10:15	–	5.72765	111.09	–	–	–
4	1986-06-30	13:05	–	5.72750	111.24	–	–	–
4	1986-07-03	08:55	–	5.72757	111.16	–	–	–
4	1986-07-10	13:53	–	5.72694	111.80	–	–	–
4	1986-07-15	10:04	–	5.72668	112.05	–	–	–
4	1986-07-17	13:35	–	5.72656	112.18	–	–	–
4	1986-07-21	09:05	–	5.72618	112.56	–	–	–
4	1986-07-31	09:41	–	5.72554	113.20	–	–	–
4	1986-08-04	10:07	–	5.72519	113.55	–	–	–
4	1986-08-07	12:38	–	5.72519	113.55	–	–	–

Table C-6. Room G Station -1.0 m horizontal mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_x (m)	δ_x (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
4	1986-08-11	13:43	–	5.72508	113.65	–	–	–
4	1986-08-14	10:35	–	5.72450	114.24	–	–	–
4	1986-08-21	09:44	–	5.72506	113.68	–	–	–
4	1986-08-25	09:40	–	5.72417	114.57	–	–	–
4	1986-09-04	10:36	–	5.72341	115.33	–	–	–
4	1986-09-11	12:45	–	5.72292	115.81	–	–	–
4	1986-09-15	14:04	–	5.72239	116.35	–	–	–
4	1986-09-18	10:13	–	5.72292	115.81	–	–	–
4	1986-09-22	11:51	–	5.72224	116.50	–	–	–
4	1986-09-25	09:34	–	5.72239	116.35	–	–	–
4	1986-09-29	10:52	–	5.72211	116.63	–	–	–
4	1986-10-06	10:11	–	5.72173	117.01	–	–	–
4	1986-10-13	10:19	–	5.72089	117.84	–	–	–
4	1986-10-17	13:46	–	5.72112	117.62	–	–	–
4	1986-10-22	11:03	–	5.72092	117.82	–	–	–
4	1986-10-30	13:49	–	5.72036	118.38	–	–	–
4	1986-11-06	13:41	–	5.72272	116.02	×	–	–
4	1986-11-13	10:56	–	5.72265	116.09	×	–	–
4	1986-11-20	13:20	–	5.72242	116.32	×	–	–
4	1986-12-04	09:51	–	5.72158	117.16	×	–	–
4	1986-12-11	15:24	–	5.72125	117.49	×	–	–
4	1986-12-18	10:05	–	5.72003	118.71	×	–	–
4	1986-12-22	10:53	–	5.72031	118.43	×	–	–
4	1986-12-31	09:15	–	5.71901	119.72	×	–	–
4	1987-01-05	10:04	–	5.71693	121.81	–	–	–
4	1987-01-12	09:32	–	5.71655	122.19	–	–	–
4	1987-01-19	10:49	–	5.71591	122.82	–	–	–
4	1987-02-16	12:40	–	5.71459	124.14	–	–	Rod #5
4	1987-03-16	10:41	–	5.71332	125.41	–	–	Rod #5
4	1987-04-06	13:42	–	5.71231	126.43	–	–	Rod #5
4	1987-06-22	14:30	–	5.70611	132.63	×	–	Rod #5
4	1987-06-29	13:37	–	5.72600	112.74	×	–	Rod #5
4	1987-07-06	13:57	–	5.70890	129.83	–	–	Rod #5
4	1987-07-13	11:30	–	5.70860	130.14	–	–	Rod #5
4	1987-07-27	11:16	–	5.70741	131.33	–	–	Rod #5
4	1987-07-31	13:56	–	5.70733	131.41	–	–	Rod #5
4	1987-08-26	10:13	–	5.70532	133.41	–	–	Rod #5
4	1987-09-25	12:25	–	5.70464	134.10	–	–	Rod #5
4	1987-10-23	13:04	–	5.70306	135.68	–	–	Rod #5
4	1987-11-16	11:45	–	5.70187	136.87	–	–	Rod #5
4	1987-12-17	11:34	–	5.70090	137.83	–	–	Rod #5
4	1988-01-15	10:25	–	5.69951	139.23	–	–	Rod #5
4	1988-02-09	11:01	–	5.69816	140.58	–	–	Rod #5
4	1988-03-11	–	–	–	–	–	–	Note: Not done due to (and the rest of note is unreadable)
4	1988-04-08	09:35	–	5.69562	143.12	–	–	Rod #5
4	1988-05-03	12:47	–	5.69283	145.91	–	–	Rod #5
4	1988-06-07	10:41	–	5.69285	145.89	–	–	Rod #5
4	1988-06-30	09:57	–	5.69265	146.09	–	–	Rod #5
4	1988-07-26	11:43	–	5.68848	150.25	–	–	Rod #5
4	1988-08-23	10:12	–	5.68754	151.19	–	–	Rod #5
4	1988-09-20	10:21	–	5.68838	150.36	–	–	Rod #5
4	1988-10-17	13:22	–	5.68719	151.55	–	–	Rod #5
4	1988-11-15	10:32	–	5.68513	153.61	–	–	Rod #5
4	1988-12-13	14:22	–	5.68480	153.94	–	–	Rod #5
4	1989-01-13	10:35	–	5.68328	155.46	–	–	Rod #5
4	1989-02-08	10:05	–	5.68211	156.63	–	–	Rod #5
4	1989-03-10	10:22	–	5.68033	158.41	–	–	Rod #5
4	1989-04-04	10:22	–	5.67919	159.55	–	–	Rod #5
4	1989-05-31	13:11	–	5.67555	163.18	–	–	Rod #5
4	1989-06-27	14:37	–	5.67619	162.55	–	–	Rod #5
4	1989-08-21	13:25	–	5.67428	164.45	–	–	Rod #5
4	1989-09-18	12:58	–	5.67296	165.77	–	–	Rod #5
4	1989-11-15	10:51	–	5.67131	167.43	–	–	Rod #5
4	1989-12-15	12:49	–	5.66870	170.04	–	–	Rod #5
4	1990-01-11	12:23	–	5.66745	171.29	–	–	Rod #5
4	1990-02-08	13:27	–	5.66750	171.24	–	–	Rod #5
4	1990-04-30	12:44	–	5.66463	174.11	–	–	Rod #5
4	1991-05-22	13:01	–	5.64970	189.04	–	–	Rod #5
4	1991-05-29	13:21	–	5.65503	183.71	×	–	Rod #5
4	1991-06-05	10:49	–	5.64909	189.65	–	–	Rod #5
4	1991-06-12	09:24	–	5.64878	189.96	–	–	Rod #5
4	1991-06-19	12:59	–	5.64860	190.13	–	–	Rod #5
4	1991-06-26	12:49	–	5.64772	191.02	–	–	Rod #5
4	1991-07-10	12:51	–	5.64766	191.07	–	–	Rod #5
4	1991-07-17	13:06	–	5.64718	191.56	–	–	Rod #5
4	1991-07-26	13:16	–	5.64716	191.58	–	–	Rod #5
4	1991-07-31	12:34	–	5.64711	191.63	–	–	Rod #5
4	1991-08-16	10:56	–	5.64672	192.01	–	–	Rod #5
4	1991-08-21	09:20	–	5.64596	192.77	–	–	Rod #5
4	1991-08-28	10:48	–	5.64863	190.11	–	–	Rod #5
4	1991-09-04	10:15	–	5.64589	192.85	–	–	Rod #5
4	1991-09-12	09:57	–	5.64520	193.54	–	–	Rod #5
4	1991-09-18	10:15	–	5.64490	193.84	–	–	Rod #5
4	1991-09-25	12:32	–	5.64500	193.74	–	–	Rod #5
4	1991-10-04	–	–	–	–	–	–	No readings taken due to work in Q room
4	1991-10-11	09:42	–	5.64416	194.58	–	–	Rod #5

Table C-6. Room G Station -1.0 m horizontal mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_x (m)	δ_x (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
4	1991-10-17	11:07	–	5.64363	195.11	–	–	Rod #5
4	1991-10-23	09:47	–	5.64358	195.16	–	–	Rod #5
4	1991-10-30	09:55	–	5.64330	195.44	–	–	Rod #5
4	1991-11-06	13:28	–	5.64281	195.92	–	–	Rod #5
4	1991-11-13	10:26	–	5.64266	196.08	–	–	Rod #5 This procedure is obsolete. These readings are for information only.
4	1991-11-26	–	–	–	–	–	–	Procedure dropped
4	1992-01-06	–	–	–	–	–	–	Not completed due to shut down
4	1992-01-08	10:32	–	5.64076	197.98	–	–	Rod 5
4	1992-01-14	14:19	–	5.64050	198.24	–	–	Rod 5
4	1992-01-21	09:45	–	5.64020	198.54	–	–	Rod 5
4	1992-01-28	13:39	–	5.64048	198.26	–	–	Rod 5
4	1992-02-04	13:58	–	5.63979	198.95	–	–	Rod 5
4	1992-02-21	10:47	–	5.63951	199.23	–	–	Rod 5
4	1992-02-26	12:51	–	5.63880	199.94	–	–	Rod 5
4	1992-03-03	12:42	–	5.63913	199.61	–	–	Rod 5
4	1992-03-13	–	–	–	–	–	–	No readings taken due to priority work in Room Q.
4	1992-03-17	09:56	–	5.63837	200.37	–	–	Rod 5
4	1992-03-24	13:50	–	5.63847	200.27	–	–	Rod 5
4	1992-04-01	13:26	–	5.63809	200.65	–	–	Rod 5
4	1992-04-10	12:52	–	5.63910	199.63	–	–	Rod 5
4	1992-04-15	–	–	–	–	–	–	Package was not received
4	1992-04-22	13:07	–	5.63938	199.35	–	–	Rod 5
4	1992-07-14	09:57	–	5.63359	205.14	–	–	Rod 5
4	1992-10-20	09:50	–	5.62971	209.03	–	–	Rod 5
4	1993-01-26	09:51	–	5.62519	213.55	–	–	Rod 5
5	1993-07-14	10:13	–	5.63021	220.84	–	–	Rod 5
5	1994-02-17	13:12	–	4.09735	1753.71	×	–	–
5	1994-02-23	13:09	–	5.62122	229.83	–	–	–
5	1994-03-17	13:34	–	5.62051	230.54	–	–	–
5	1994-03-24	14:13	–	5.62016	230.90	–	–	–
5	1994-03-29	13:24	–	5.61970	231.36	–	–	–
5	1994-04-05	13:19	–	5.61962	231.43	–	–	–
5	1994-04-14	10:25	–	5.61901	232.04	–	–	–
5	1994-04-21	10:04	–	5.61917	231.89	–	–	–
5	1994-04-28	10:18	–	5.61891	232.14	–	–	–
5	1994-05-04	13:13	–	5.61851	232.55	–	–	–
5	1994-05-23	12:47	–	5.61795	233.11	–	–	–
6	1994-06-07	13:22	–	5.60708	233.72	–	–	–
6	1994-06-29	09:39	–	5.60593	234.87	–	–	–
6	1994-07-07	09:39	–	5.60563	235.17	–	–	–
6	1994-07-13	09:50	–	5.60540	235.40	–	–	–
6	1994-07-21	10:01	–	5.60504	235.76	–	–	–
6	1994-07-27	09:53	–	5.60489	235.91	–	–	–
6	1994-08-03	10:09	–	5.60451	236.29	–	–	–
6	1994-08-10	13:21	–	5.60433	236.47	–	–	–
6	1994-08-16	13:44	–	5.60903	231.77	×	–	–
6	1994-08-23	10:46	–	5.60370	237.10	–	–	–
6	1994-08-30	10:19	–	5.60337	237.43	–	–	–
6	1994-09-09	12:42	–	5.60299	237.81	–	–	–
6	1994-09-12	12:41	–	5.60294	237.86	–	–	–
6	1994-09-23	09:54	–	5.60243	238.37	–	–	–
6	1994-09-26	10:48	–	5.60250	238.30	–	–	–
6	1994-10-05	13:10	–	5.60212	238.68	–	–	–
6	1994-10-19	13:17	–	5.60156	239.23	–	–	–
6	1994-10-26	13:25	–	5.60118	239.62	–	–	–
6	1994-11-02	09:35	–	5.60139	239.41	–	–	–
6	1994-11-08	09:32	–	5.60078	240.02	–	–	–
6	1994-11-15	12:52	–	5.60050	240.30	–	–	–
6	1994-11-21	13:06	–	5.60050	240.30	–	–	–
6	1994-11-29	12:21	–	5.60009	240.71	–	–	–
6	1994-12-07	12:30	–	5.59976	241.04	–	–	–
6	1994-12-13	10:08	–	5.59938	241.42	–	–	–
6	1994-12-20	09:36	–	5.59895	241.85	–	–	–
6	1994-12-29	12:54	–	5.59907	241.72	–	–	–
6	1995-01-06	09:35	–	5.59844	242.36	–	–	–
6	1995-01-10	–	–	–	–	–	–	–
6	1995-01-11	09:31	–	5.59752	243.27	–	–	–
6	1995-01-18	09:51	–	5.59829	242.51	–	–	–
6	1995-01-31	12:50	–	5.59735	243.45	–	–	–
6	1995-02-15	10:00	–	5.59714	243.65	–	–	–
6	1995-02-24	09:57	–	5.59689	243.91	–	–	–
6	1995-03-01	10:16	–	5.59679	244.01	–	–	–
6	1995-03-08	10:30	–	5.59646	244.34	–	–	–
6	1995-03-14	12:40	–	5.59618	244.62	–	–	–
6	1995-03-22	10:27	–	5.59585	244.95	–	–	–
6	1995-03-29	09:47	–	5.59582	244.98	–	–	–
6	1995-04-06	10:27	–	5.59539	245.41	–	–	–
6	1995-04-10	12:35	–	5.59509	245.71	–	–	–
6	1995-04-19	10:12	–	5.59506	245.74	–	–	–
6	1995-04-26	12:51	–	5.59471	246.09	–	–	–
6	1995-05-02	09:59	–	5.59445	246.35	–	–	–
6	1995-05-10	10:20	–	5.59422	246.58	–	–	–

Table C-7. Room G Station -1.0 m vertical mining sequence metadata

										Pre-Jump Fitting Inputs				Post-Jump Fitting Inputs			
s	Segment Start Time	Analysis Notes	Gage Number	Paired Points	Point 1 y	Point 2 y	Estimated t_{ex}	t_{ex} Source	Shift Phase	Type	Start Index	End Index	Ignore Index	Type	Start Index	End Index	Ignore Index
(–)	(YYYY-MM-DD HH:MM)	(–)	(–)	(–)	(m)	(m)	(YYYY-MM-DD HH:MM)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)
0	1984-11-09 20:00	Estimated start of mining Room G.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1	1984-12-13 07:05	First reading after station mined out during pass 1.	GM11-1	1A-1B	-1.06	-1.03	1984-12-13 04:00	Gage installation data sheet	2	–	–	–	–	Linear	1	2	–
2	1984-12-13 12:30	First reading after point 1A mined out during minor trimming during pass 1.	GM11-1	1A-1B	-1.06	-1.03	1984-12-13 10:30	Gage installation data sheet	1	Linear	-2	-1	–	Linear	1	2	–
3	1984-12-15 21:55	First reading after point 1B mined out during pass 3.	GM11-1	1A-1B	-1.06	-1.03	1984-12-15 21:25	Gage installation data sheet	2	Jeffreys	-3	-1	–	Jeffreys	1	10	–
4	1985-03-28 13:00	First reading after points 1A-1B replaced.	GM11-1	1A-1B	-1.06	-1.03	–	–	2	Linear	-2	-1	–	Linear	1	2	–
5	1987-02-16 12:39	First time technician noted using rod #5.	GM11-1	1A-1B	-1.06	-1.03	–	–	2	Linear	-3	-1	–	Linear	1	3	–
6	1993-07-14 10:11	Readings at all three stations jump slightly.	GM11-1	1A-1B	-1.06	-1.03	–	–	2	Linear	-19	-2	[-5 -6 -10]	Linear	1	2	–
7	1994-06-07 13:24	Readings at all three stations jump slightly.	GM11-1	1A-1B	-1.06	-1.03	–	–	2	Linear	-2	-1	–	Linear	1	2	–

Table C-8. Room G Station -1.0 m vertical mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_z (m)	δ_z (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
1	1984-12-13	07:05	0.9	2.09771	4.51	–	–	–
1	1984-12-13	09:35	1.2	2.09405	8.17	–	–	–
2	1984-12-13	12:30	3.0	2.10800	12.75	–	–	1A & 1G were trimmed out. Reinstalled. New initial readings.
2	1984-12-13	18:34	9.1	2.09817	22.58	–	–	Pass 1 at 865'.
2	1984-12-14	01:12	12.5	2.09779	22.96	–	–	–
2	1984-12-14	08:43	12.2	2.09984	20.90	–	–	+40' (Pass 1). -55' (Pass 2).
2	1984-12-14	21:09	6.1	2.08758	33.17	–	–	–
2	1984-12-15	00:43	15.2	2.08156	39.19	–	–	–
2	1984-12-15	09:53	15.2	2.07782	42.93	–	–	50' (Pass 1&2). -65' (Pass 3)
3	1984-12-15	21:55	1.5	2.62903	44.79	–	–	Initial reading
3	1984-12-16	00:47	5.5	2.62895	44.87	–	–	18' to pass 3. 50' to pass 1&2.
3	1984-12-16	10:46	-13.7	2.62722	46.60	–	–	(-45' Pass 3). (50' Pass 1&2).
3	1984-12-16	22:15	18.3	2.62552	48.30	–	–	–
3	1984-12-17	00:50	20.4	2.62509	48.73	–	–	–
3	1984-12-17	09:01	29.0	2.62387	49.95	–	–	+95' (Pass 1)
3	1984-12-17	21:57	36.6	2.62230	51.52	–	–	–
3	1984-12-18	03:42	40.2	2.62194	51.88	–	–	Fass pass 1 at 967'. Note: Face pass 2 at 885' and floor trim at 880'.
3	1984-12-18	09:09	42.7	2.62181	52.01	–	–	+140' (Pass 1)
3	1984-12-18	22:25	27.4	2.62062	53.20	–	–	–
3	1984-12-19	02:24	33.5	2.62019	53.63	–	–	110' (Pass 2). Face pass 1 at sta.-156. Face pass 2 at sta.-115. Mining pass 2 now.
3	1984-12-19	09:25	–	2.61960	54.22	–	–	(151' Pass 1). (135' Pass 2)
3	1984-12-19	21:11	25.9	2.61823	55.59	–	–	–
3	1984-12-20	03:08	–	2.61859	55.23	–	–	152' to pass 1. 148' to pass 2. Face pass 1 at 987' (STA. -157). Face pass 2 at 985' (STA. -153). Floor pass on south side at 975' (STA. -145).
3	1984-12-20	10:27	15.2	2.61813	55.69	–	–	+50' Pass 4
3	1984-12-20	18:40	44.2	2.61729	56.53	–	–	–
3	1984-12-21	03:49	45.1	2.61696	56.86	–	–	148' to face pass 2. Face pass 1 at STA. -157'. Face pass 2 at STA -153'.
3	1984-12-21	09:58	45.7	2.61681	57.01	–	–	–
3	1984-12-21	22:00	46.0	2.61582	58.00	–	–	–
3	1984-12-22	06:10	46.3	2.61592	57.90	–	–	152' pass 1 & 2
3	1984-12-22	08:56	–	2.61564	58.18	–	–	–
3	1984-12-22	21:58	46.0	2.61485	58.97	–	–	–
3	1984-12-23	03:05	46.0	2.61480	59.02	–	–	–
3	1984-12-23	10:38	46.3	2.61447	59.35	–	–	152' to pass 1 & 2
3	1984-12-23	18:26	46.0	2.61442	59.40	–	–	–
3	1984-12-24	01:16	46.3	2.61389	59.93	–	–	–
3	1984-12-26	09:01	52.7	2.61239	61.43	–	–	–
3	1984-12-26	17:47	53.3	2.61087	62.95	–	–	–
3	1984-12-27	02:44	64.9	2.61074	63.08	–	–	–
3	1984-12-27	08:56	65.5	2.61049	63.34	–	–	–
3	1984-12-27	22:24	72.2	2.61008	63.74	–	–	–
3	1984-12-28	00:39	76.2	2.60998	63.84	–	–	–
3	1984-12-28	09:05	76.5	2.60988	63.94	–	–	251' pass 1. 205 pass 2.
3	1984-12-28	17:35	76.5	2.60962	64.20	–	–	–
3	1984-12-29	02:18	51.8	2.60942	64.40	–	–	–
3	1984-12-29	09:11	63.1	2.60970	64.12	–	–	–
3	1984-12-29	17:55	76.5	2.60965	64.17	–	–	–
3	1984-12-30	00:35	-72.5	2.60927	64.55	–	–	–
3	1984-12-30	08:40	–	2.60899	64.83	–	–	Pass 1 - 217 ft. Pass 2 - 212 ft.
3	1984-12-30	17:00	83.8	2.60871	65.11	–	–	–
3	1984-12-31	01:43	-89.9	2.60822	65.60	–	–	–
3	1985-01-02	09:02	–	2.60701	66.81	–	–	Pass 1 277'. Pass 2 222'.
3	1985-01-02	19:18	99.1	2.60693	66.89	–	–	–
3	1985-01-03	00:58	85.3	2.60693	66.89	–	–	–
3	1985-01-03	09:20	91.4	2.60637	67.45	–	–	–
3	1985-01-03	19:31	105.2	2.60629	67.53	–	–	–
3	1985-01-04	05:42	93.0	2.60604	67.78	–	–	–
3	1985-01-04	10:58	104.2	2.60848	65.34	×	–	–
3	1985-01-04	17:47	88.4	2.60609	67.73	–	–	290' (4th pass)
3	1985-01-05	01:34	105.2	2.60607	67.75	–	–	–
3	1985-01-05	08:58	–	2.60596	67.86	–	–	–
3	1985-01-05	17:12	105.2	2.60584	67.98	–	–	–
3	1985-01-06	02:01	105.2	2.60566	68.16	–	–	–
3	1985-01-06	10:01	26.8	2.60515	68.67	–	–	–
3	1985-01-06	19:59	105.2	2.60490	68.92	–	–	–
3	1985-01-07	01:27	105.2	2.60513	68.69	–	–	–
3	1985-01-07	11:03	–	2.60457	69.25	–	–	–
3	1985-01-07	16:49	–	2.60447	69.35	–	–	–
3	1985-01-08	01:40	105.2	2.60431	69.51	–	–	–
3	1985-01-08	09:49	–	2.60414	69.69	–	–	–
3	1985-01-08	16:37	–	2.60457	69.25	–	–	–
3	1985-01-09	03:29	–	2.60398	69.84	–	–	–
3	1985-01-09	09:52	–	2.60398	69.84	–	–	–
3	1985-01-09	17:03	–	2.60398	69.84	–	–	–
3	1985-01-10	02:29	–	2.60388	69.94	–	–	–
3	1985-01-10	11:05	–	2.60391	69.91	–	–	–
3	1985-01-10	17:32	–	2.60380	70.02	–	–	–
3	1985-01-11	03:18	105.2	2.60403	69.79	–	–	–
3	1985-01-11	13:55	–	2.60363	70.19	–	–	–
3	1985-01-11	16:36	–	2.60342	70.40	–	–	–
3	1985-01-12	02:11	105.2	2.60414	69.69	–	–	–

Table C-8. Room G Station -1.0 m vertical mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_z (m)	δ_z (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
3	1985-01-12	09:08	–	2.60403	69.79	–	–	–
3	1985-01-12	17:35	–	2.60355	70.27	–	–	–
3	1985-01-13	02:03	105.2	2.60330	70.52	–	–	–
3	1985-01-13	10:33	–	2.60335	70.47	–	–	–
3	1985-01-13	19:04	–	2.60142	72.40	–	–	–
3	1985-01-14	03:05	105.2	2.60218	71.64	–	–	–
3	1985-01-14	09:29	–	2.60210	71.72	–	–	–
3	1985-01-14	18:47	–	2.60182	72.00	–	–	–
3	1985-01-15	01:36	105.2	2.60162	72.20	–	–	–
3	1985-01-15	09:36	–	2.60147	72.35	–	–	–
3	1985-01-15	18:56	–	2.60142	72.40	–	–	–
3	1985-01-16	01:43	105.2	2.60124	72.58	–	–	–
3	1985-01-16	11:06	–	2.60111	72.71	–	–	–
3	1985-01-16	19:40	–	2.60147	72.35	–	–	–
3	1985-01-17	03:18	–	2.60076	73.06	–	–	–
3	1985-01-17	09:55	–	2.60063	73.19	–	–	–
3	1985-01-17	18:54	–	2.60081	73.01	–	–	–
3	1985-01-18	17:56	–	2.60043	73.39	–	–	–
3	1985-01-18	–	–	–	–	–	–	FNR - Not read. Boreole checkout.
3	1985-01-18	–	106.7	–	–	–	–	Graveyard - points blocked
3	1985-01-19	02:02	–	2.60015	73.67	–	–	–
3	1985-01-19	10:19	–	2.60007	73.75	–	–	–
3	1985-01-19	19:11	–	2.59997	73.85	–	–	–
3	1985-01-20	01:52	105.2	2.59984	73.98	–	–	–
3	1985-01-20	16:55	–	2.59870	75.12	–	–	–
3	1985-01-20	–	–	–	–	–	–	Day. Blocked by drill.
3	1985-01-21	05:05	105.2	2.59832	75.50	–	–	–
3	1985-01-21	18:10	–	2.59809	75.73	–	–	–
3	1985-01-21	–	–	–	–	–	–	Day - not read did bore hole checkout
3	1985-01-22	01:51	105.2	2.59791	75.91	–	–	–
3	1985-01-22	–	–	–	–	–	–	No readings due to bore hole checkout
3	1985-01-22	–	–	–	–	–	–	Day shift. No readings due to bore hole checkout
3	1985-01-23	05:18	–	2.59786	75.96	–	–	–
3	1985-01-23	09:38	–	2.59761	76.21	–	–	–
3	1985-01-23	20:13	–	2.59743	76.39	–	–	–
3	1985-01-24	02:30	–	2.59862	75.20	–	–	–
3	1985-01-24	09:29	–	2.59839	75.43	–	–	–
3	1985-01-24	18:13	–	2.59850	75.32	–	–	–
3	1985-01-25	01:44	–	2.59832	75.50	–	–	–
3	1985-01-25	09:56	–	2.59837	75.45	–	–	–
3	1985-01-25	17:04	–	2.59829	75.53	–	–	–
3	1985-01-26	01:37	–	2.59791	75.91	–	–	–
3	1985-01-26	09:17	–	2.59799	75.83	–	–	–
3	1985-01-26	21:44	–	2.59779	76.04	–	–	–
3	1985-01-27	01:03	–	2.59763	76.19	–	–	–
3	1985-01-27	09:13	105.2	2.59763	76.19	–	–	–
3	1985-01-27	20:15	–	2.59743	76.39	–	–	–
3	1985-01-28	01:27	–	2.59743	76.39	–	–	–
3	1985-01-28	09:32	105.2	2.59735	76.47	–	–	–
3	1985-01-28	17:31	–	2.59735	76.47	–	–	–
3	1985-01-29	01:29	–	2.59761	76.21	–	–	–
3	1985-01-29	10:14	105.2	2.59700	76.82	–	–	–
3	1985-01-29	19:04	–	2.59702	76.80	–	–	–
3	1985-01-30	01:27	–	2.59692	76.90	–	–	–
3	1985-01-30	10:35	105.2	2.59674	77.08	–	–	–
3	1985-01-30	18:01	–	2.59679	77.03	–	–	–
3	1985-01-31	01:22	–	2.59664	77.18	–	–	–
3	1985-01-31	12:56	105.2	2.59651	77.31	–	–	–
3	1985-01-31	19:13	–	2.74879	-74.97	×	–	–
3	1985-02-01	01:46	–	2.59626	77.56	–	–	–
3	1985-02-01	11:24	105.2	2.59639	77.43	–	–	–
3	1985-02-01	17:50	–	2.59626	77.56	–	–	–
3	1985-02-02	01:09	–	2.59621	77.61	–	–	–
3	1985-02-02	09:59	105.2	2.59601	77.81	–	–	–
3	1985-02-02	17:43	–	2.59603	77.79	–	–	–
3	1985-02-03	01:25	–	2.59591	77.91	–	–	–
3	1985-02-03	09:19	105.2	2.59580	78.02	–	–	–
3	1985-02-03	17:40	–	2.59555	78.27	–	–	–
3	1985-02-04	01:57	–	2.59563	78.19	–	–	–
3	1985-02-04	09:33	105.2	2.59555	78.27	–	–	–
3	1985-02-04	17:55	–	2.59563	78.19	–	–	–
3	1985-02-05	02:33	–	2.59537	78.45	–	–	–
3	1985-02-05	10:11	105.2	2.59530	78.52	–	–	–
3	1985-02-05	17:30	–	2.59502	78.80	–	–	–
3	1985-02-06	03:26	–	2.59522	78.60	–	–	–
3	1985-02-06	09:51	105.2	2.59443	79.39	–	–	–
3	1985-02-06	18:00	–	2.59466	79.16	–	–	–
3	1985-02-07	06:23	–	2.59542	78.40	–	–	–
3	1985-02-07	12:51	105.2	2.59527	78.55	–	–	–
3	1985-02-07	18:14	–	2.59537	78.45	–	–	–
3	1985-02-08	02:01	–	2.59530	78.52	–	–	–
3	1985-02-08	09:13	–	2.59509	78.73	–	–	–
3	1985-02-08	18:27	–	2.59479	79.03	–	–	–
3	1985-02-09	02:55	–	2.59486	78.96	–	–	–
3	1985-02-09	09:30	–	2.59476	79.06	–	–	–
3	1985-02-09	18:15	–	2.59479	79.03	–	–	–

Table C-8. Room G Station -1.0 m vertical mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_z (m)	δ_z (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
3	1985-02-10	01:10	–	2.59486	78.96	–	–	–
3	1985-02-10	08:44	–	2.59481	79.01	–	–	–
3	1985-02-10	18:11	–	2.59453	79.29	–	–	–
3	1985-02-11	01:23	–	2.59456	79.26	–	–	–
3	1985-02-11	09:12	–	2.59484	78.98	–	–	–
3	1985-02-11	18:10	–	2.59458	79.24	–	–	–
3	1985-02-12	02:33	–	2.59448	79.34	–	–	–
3	1985-02-12	09:13	–	2.59431	79.51	–	–	–
3	1985-02-12	–	–	–	–	–	–	Readings not taken due to room dimensions in Room 11
3	1985-02-13	03:07	–	2.60129	72.53	×	–	–
3	1985-02-13	09:32	–	2.59431	79.51	–	–	–
3	1985-02-13	17:00	105.2	2.59423	79.59	–	–	–
3	1985-02-14	03:06	–	2.59451	79.31	–	–	–
3	1985-02-14	09:15	–	2.59446	79.36	–	–	–
3	1985-02-14	18:51	–	2.59423	79.59	–	–	–
3	1985-02-15	01:28	–	2.59433	79.49	–	–	–
3	1985-02-15	09:11	–	2.59397	79.85	–	–	–
3	1985-02-15	18:23	–	2.59405	79.77	–	–	–
3	1985-02-16	05:35	–	2.59385	79.97	–	–	–
3	1985-02-16	08:57	–	2.59382	80.00	–	–	–
3	1985-02-16	16:52	–	2.59375	80.07	–	–	–
3	1985-02-17	01:45	–	2.59359	80.23	–	–	–
3	1985-02-17	09:00	–	2.59357	80.25	–	–	–
3	1985-02-17	17:38	–	2.59359	80.23	–	–	–
3	1985-02-18	02:41	–	2.59357	80.25	–	–	–
3	1985-02-18	09:08	–	2.59357	80.25	–	–	–
3	1985-02-19	09:20	–	2.59090	82.92	–	–	–
3	1985-02-20	11:11	–	2.59309	80.73	–	–	–
3	1985-02-21	–	–	–	–	–	–	No readings. Other work
3	1985-02-22	10:10	–	2.59271	81.12	–	–	–
3	1985-02-25	09:48	–	2.59227	81.55	–	–	–
3	1985-02-26	09:42	–	2.59217	81.65	–	–	–
3	1985-02-27	09:18	–	2.59192	81.90	–	–	–
3	1985-02-28	13:20	–	2.59182	82.00	–	–	–
3	1985-03-01	09:49	–	2.59146	82.36	–	–	–
3	1985-03-04	11:07	–	2.59095	82.87	–	–	–
3	1985-03-05	09:54	–	2.59067	83.15	–	–	–
3	1985-03-06	09:42	–	2.59080	83.02	–	–	–
3	1985-03-07	10:11	–	2.59062	83.20	–	–	–
3	1985-03-08	10:06	–	2.59042	83.40	–	–	–
3	1985-03-11	10:27	–	2.59016	83.66	–	–	–
3	1985-03-12	12:46	–	2.58966	84.16	–	–	–
3	1985-03-13	13:33	–	2.58953	84.29	–	–	–
3	1985-03-14	09:43	–	2.58966	84.16	–	–	–
3	1985-03-15	10:51	–	2.58938	84.44	–	–	–
3	1985-03-18	10:05	–	2.58895	84.87	–	–	–
3	1985-03-19	09:34	–	2.58864	85.18	–	–	–
3	1985-03-20	–	–	–	–	–	–	No readings taken due to Room 3 cross-sections & geologic mapping.
3	1985-03-21	11:21	–	2.58844	85.38	–	–	–
3	1985-03-22	10:43	–	2.58869	85.13	–	–	–
3	1985-03-25	09:54	–	2.58788	85.94	–	–	–
3	1985-03-26	09:33	–	2.58780	86.02	–	–	–
3	1985-03-27	10:33	–	2.58773	86.09	–	–	–
3	1985-03-28	12:15	–	2.58740	86.42	–	–	–
4	1985-03-28	13:00	–	2.59921	86.42	–	–	–
4	1985-03-29	10:36	–	2.59951	86.12	–	–	Readings transposed according to previous and subseqent data. [Auditor indicated with arrows that the GM01-1 and GM02-2 readings were transposed with the GM11-1 and GM12-2 readings.]
4	1985-04-01	09:49	–	2.59898	86.65	–	–	–
4	1985-04-02	12:59	–	2.59875	86.88	–	–	–
4	1985-04-03	09:20	–	2.59870	86.93	–	–	–
4	1985-04-04	10:07	–	2.59857	87.06	–	–	–
4	1985-04-08	08:58	–	2.59804	87.59	–	–	–
4	1985-04-09	09:51	–	2.59791	87.72	–	–	–
4	1985-04-10	09:17	–	2.59779	87.85	–	–	–
4	1985-04-11	09:28	–	2.59761	88.02	–	–	–
4	1985-04-15	12:55	–	2.59720	88.43	–	–	–
4	1985-04-16	10:43	–	2.59690	88.73	–	–	–
4	1985-04-17	08:55	–	2.59692	88.71	–	–	–
4	1985-04-18	09:27	–	2.59674	88.89	–	–	–
4	1985-04-19	09:07	–	2.59659	89.04	–	–	–
4	1985-04-22	09:10	–	2.59626	89.37	–	–	–
4	1985-04-23	09:11	–	2.59618	89.45	–	–	–
4	1985-04-24	09:08	–	2.59631	89.32	–	–	–
4	1985-04-25	09:39	–	2.59626	89.37	–	–	–
4	1985-04-26	09:28	–	2.59611	89.52	–	–	–
4	1985-04-29	10:04	–	2.59558	90.06	–	–	–
4	1985-04-30	12:56	–	2.59537	90.26	–	–	–
4	1985-05-01	09:11	–	2.59524	90.39	–	–	–
4	1985-05-02	09:28	–	2.59522	90.41	–	–	–
4	1985-05-03	10:07	–	2.59499	90.64	–	–	–
4	1985-05-06	12:32	–	2.59456	91.07	–	–	–
4	1985-05-07	08:51	–	2.59446	91.17	–	–	–
4	1985-05-08	10:31	–	2.59456	91.07	–	–	–

Table C-8. Room G Station -1.0 m vertical mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_z (m)	δ_z (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
4	1985-05-09	09:20	–	2.59441	91.22	–	–	–
4	1985-05-10	09:42	–	2.59431	91.33	–	–	–
4	1985-05-13	14:04	–	2.59385	91.78	–	–	–
4	1985-05-14	09:58	–	2.59370	91.94	–	–	–
4	1985-05-15	09:18	–	2.59380	91.83	–	–	–
4	1985-05-16	08:57	–	2.59344	92.19	–	–	–
4	1985-05-17	11:49	–	2.59334	92.29	–	–	–
4	1985-05-20	10:06	–	2.59309	92.54	–	–	–
4	1985-05-21	09:14	–	2.59309	92.54	–	–	–
4	1985-05-22	10:31	–	2.59283	92.80	–	–	–
4	1985-05-23	09:51	–	2.59283	92.80	–	–	–
4	1985-05-24	13:18	–	2.59276	92.87	–	–	–
4	1985-05-28	10:48	–	2.59210	93.54	–	–	–
4	1985-05-29	09:54	–	2.59220	93.43	–	–	–
4	1985-05-30	09:38	–	2.59207	93.56	–	–	–
4	1985-05-31	09:49	–	2.59194	93.69	–	–	–
4	1985-06-03	09:21	–	2.59166	93.97	–	–	–
4	1985-06-04	09:24	–	2.59166	93.97	–	–	–
4	1985-06-05	09:34	–	2.59144	94.20	–	–	–
4	1985-06-06	09:45	–	2.59128	94.35	–	–	–
4	1985-06-07	10:34	–	2.59118	94.45	–	–	–
4	1985-06-10	09:31	–	2.59070	94.93	–	–	–
4	1985-06-11	09:16	–	2.59090	94.73	–	–	–
4	1985-06-12	09:22	–	2.59062	95.01	–	–	–
4	1985-06-13	11:01	–	2.59065	94.98	–	–	–
4	1985-06-14	11:14	–	2.59055	95.08	–	–	–
4	1985-06-17	09:50	–	2.59016	95.47	–	–	–
4	1985-06-18	09:46	–	2.59014	95.49	–	–	–
4	1985-06-19	09:32	–	2.58999	95.64	–	–	–
4	1985-06-20	10:12	–	2.58989	95.75	–	–	–
4	1985-06-21	09:23	–	2.58956	96.08	–	–	–
4	1985-06-24	10:55	–	2.58933	96.30	–	–	–
4	1985-06-25	13:09	–	2.58940	96.23	–	–	–
4	1985-06-26	09:04	–	2.58925	96.38	–	–	–
4	1985-06-27	09:24	–	2.58915	96.48	–	–	–
4	1985-06-28	00:00	–	–	–	–	–	Not read - short handed
4	1985-07-01	09:21	–	2.58872	96.91	–	–	–
4	1985-07-02	09:49	–	2.58862	97.02	–	–	–
4	1985-07-03	09:30	–	2.58864	96.99	–	–	–
4	1985-07-08	10:36	–	2.58796	97.68	–	–	–
4	1985-07-09	10:02	–	2.58796	97.68	–	–	–
4	1985-07-10	09:00	–	2.58780	97.83	–	–	–
4	1985-07-11	10:55	–	2.58775	97.88	–	–	–
4	1985-07-12	09:46	–	2.58763	98.01	–	–	–
4	1985-07-15	13:12	–	2.58737	98.26	–	–	–
4	1985-07-16	14:32	–	2.58719	98.44	–	–	–
4	1985-07-17	14:20	–	2.58709	98.54	–	–	–
4	1985-07-18	10:05	–	2.58696	98.67	–	–	–
4	1985-07-19	10:27	–	2.58694	98.69	–	–	–
4	1985-07-22	14:01	–	2.58663	99.00	–	–	–
4	1985-07-23	09:20	–	2.58658	99.05	–	–	–
4	1985-07-24	09:06	–	2.58641	99.22	–	–	–
4	1985-07-25	10:31	–	2.58641	99.22	–	–	–
4	1985-07-26	14:02	–	2.58641	99.22	–	–	–
4	1985-07-29	09:08	–	2.58615	99.48	–	–	–
4	1985-07-30	09:25	–	2.58587	99.76	–	–	–
4	1985-07-31	11:19	–	2.57566	109.97	×	–	–
4	1985-08-01	09:28	–	2.58585	99.78	–	–	–
4	1985-08-02	10:16	–	2.58567	99.96	–	–	–
4	1985-08-05	10:20	–	2.58542	100.22	–	–	–
4	1985-08-06	09:17	–	2.58531	100.32	–	–	–
4	1985-08-07	10:24	–	2.58521	100.42	–	–	–
4	1985-08-08	09:54	–	2.58521	100.42	–	–	–
4	1985-08-09	10:28	–	2.58486	100.77	–	–	–
4	1985-08-12	10:26	–	2.58475	100.88	–	–	–
4	1985-08-13	09:49	–	2.58458	101.05	–	–	–
4	1985-08-14	11:00	–	2.58442	101.21	–	–	–
4	1985-08-15	10:53	–	2.58432	101.31	–	–	–
4	1985-08-16	11:16	–	2.58440	101.23	–	–	–
4	1985-08-19	09:45	–	2.58409	101.54	–	–	–
4	1985-08-20	09:14	–	2.58389	101.74	–	–	–
4	1985-08-21	09:29	–	2.58394	101.69	–	–	–
4	1985-08-22	09:38	–	2.58384	101.79	–	–	–
4	1985-08-23	13:49	–	2.58379	101.84	–	–	–
4	1985-08-26	13:46	–	2.58094	104.69	–	–	–
4	1985-08-27	11:03	–	2.58331	102.32	–	–	–
4	1985-08-28	09:23	–	2.58331	102.32	–	–	–
4	1985-08-29	10:00	–	2.58318	102.45	–	–	–
4	1985-08-30	13:30	–	2.58387	101.76	–	–	–
4	1985-09-03	11:00	–	2.58282	102.81	–	–	–
4	1985-09-04	11:04	–	2.58288	102.76	–	–	–
4	1985-09-05	09:14	–	2.58270	102.93	–	–	–
4	1985-09-06	09:07	–	2.58247	103.16	–	–	–
4	1985-09-09	09:33	–	2.58237	103.26	–	–	–
4	1985-09-10	09:54	–	2.58232	103.31	–	–	–
4	1985-09-11	09:37	–	2.58229	103.34	–	–	–

Table C-8. Room G Station -1.0 m vertical mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_z (m)	δ_z (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
4	1985-09-12	10:30	–	2.58211	103.52	–	–	–
4	1985-09-13	09:42	–	2.58300	102.63	–	–	–
4	1985-09-16	09:27	–	2.58183	103.80	–	–	–
4	1985-09-17	09:53	–	2.58183	103.80	–	–	–
4	1985-09-18	09:47	–	2.58161	104.03	–	–	–
4	1985-09-19	12:57	–	2.58143	104.20	–	–	–
4	1985-09-20	08:54	–	2.58133	104.30	–	–	–
4	1985-09-23	09:35	–	2.58117	104.46	–	–	–
4	1985-09-26	09:57	–	2.58089	104.74	–	–	–
4	1985-09-30	09:37	–	2.58049	105.14	–	–	–
4	1985-10-03	10:38	–	2.58026	105.37	–	–	–
4	1985-10-07	13:14	–	2.57990	105.73	–	–	–
4	1985-10-10	09:12	–	2.57955	106.08	–	–	–
4	1985-10-14	09:35	–	2.57934	106.29	–	–	–
4	1985-10-17	09:25	–	2.57904	106.59	–	–	–
4	1985-10-21	09:55	–	2.57884	106.79	–	–	–
4	1985-10-23	13:43	–	2.57843	107.20	–	–	–
4	1985-10-28	09:38	–	2.57805	107.58	–	–	–
4	1985-10-31	09:56	–	2.57797	107.66	–	–	–
4	1985-11-04	09:53	–	2.57757	108.06	–	–	–
4	1985-11-07	10:35	–	2.57729	108.34	–	–	–
4	1985-11-11	09:51	–	2.57713	108.50	–	–	–
4	1985-11-14	09:53	–	2.57675	108.88	–	–	–
4	1985-11-19	09:39	–	2.57645	109.18	–	–	–
4	1985-11-21	09:17	–	2.57632	109.31	–	–	–
4	1985-11-25	10:05	–	2.57589	109.74	–	–	–
4	1985-12-02	09:37	–	2.57571	109.92	–	–	–
4	1985-12-05	09:49	–	2.57520	110.43	–	–	–
4	1985-12-09	09:25	–	2.57482	110.81	–	–	–
4	1985-12-12	10:08	–	2.57432	111.32	–	–	–
4	1985-12-16	09:50	–	2.57429	111.34	–	–	–
4	1985-12-19	09:40	–	2.57419	111.44	–	–	–
4	1985-12-26	09:22	–	2.57368	111.95	–	–	–
4	1985-12-30	13:41	–	2.57332	112.31	–	–	–
4	1986-01-02	10:46	–	2.57312	112.51	–	–	–
4	1986-01-06	09:44	–	2.57289	112.74	–	–	–
4	1986-01-09	10:11	–	2.57261	113.02	–	–	–
4	1986-01-13	09:35	–	2.57251	113.12	–	–	–
4	1986-01-16	10:21	–	2.57195	113.68	–	–	–
4	1986-01-20	09:29	–	2.57162	114.01	–	–	–
4	1986-01-23	09:44	–	2.57160	114.03	–	–	–
4	1986-01-27	09:11	–	2.57132	114.31	–	–	–
4	1986-01-30	10:13	–	2.57122	114.41	–	–	–
4	1986-02-03	11:05	–	2.57084	114.80	–	–	–
4	1986-02-06	10:11	–	2.57071	114.92	–	–	–
4	1986-02-10	09:50	–	2.57033	115.30	–	–	–
4	1986-02-13	10:27	–	2.57007	115.56	–	–	–
4	1986-02-17	10:02	–	2.56984	115.79	–	–	–
4	1986-02-20	09:18	–	2.56951	116.12	–	–	–
4	1986-02-27	13:50	–	2.56908	116.55	–	–	–
4	1986-03-05	13:13	–	2.56873	116.90	–	–	–
4	1986-03-10	09:52	–	2.56842	117.21	–	–	–
4	1986-03-13	09:11	–	2.56819	117.44	–	–	–
4	1986-03-17	11:01	–	2.56779	117.84	–	–	–
4	1986-03-25	13:25	–	2.56751	118.12	–	–	–
4	1986-03-27	08:51	–	2.56875	116.88	–	–	–
4	1986-03-31	09:21	–	2.56685	118.78	–	–	–
4	1986-04-03	08:49	–	2.56667	118.96	–	–	–
4	1986-04-07	08:58	–	2.56644	119.19	–	–	–
4	1986-04-10	13:15	–	2.56609	119.54	–	–	–
4	1986-04-14	10:18	–	2.56591	119.72	–	–	–
4	1986-04-17	09:52	–	2.56578	119.85	–	–	–
4	1986-04-24	09:52	–	2.56525	120.38	–	–	–
4	1986-05-01	10:05	–	2.56464	120.99	–	–	–
4	1986-05-05	09:34	–	2.56454	121.09	–	–	–
4	1986-05-08	–	–	–	–	–	–	Hoist down
4	1986-05-13	14:03	–	2.56388	121.75	–	–	–
4	1986-05-16	14:20	–	2.56362	122.01	–	–	–
4	1986-05-20	09:23	–	2.56367	121.96	–	–	–
4	1986-05-23	09:26	–	2.56332	122.31	–	–	–
4	1986-05-29	08:57	–	2.56306	122.57	–	–	–
4	1986-06-02	09:27	–	2.56266	122.97	–	–	–
4	1986-06-05	09:27	–	2.56245	123.18	–	–	–
4	1986-06-09	08:48	–	2.56225	123.38	–	–	–
4	1986-06-13	10:11	–	2.56210	123.53	–	–	–
4	1986-06-16	13:07	–	2.56167	123.96	–	–	–
4	1986-06-19	10:00	–	2.56187	123.76	–	–	–
4	1986-06-26	10:14	–	2.56129	124.35	–	–	–
4	1986-06-30	13:04	–	2.56093	124.70	–	–	–
4	1986-07-03	08:53	–	2.56083	124.80	–	–	–
4	1986-07-10	13:56	–	2.56022	125.41	–	–	–
4	1986-07-15	10:03	–	2.55991	125.72	–	–	–
4	1986-07-17	13:35	–	2.55974	125.89	–	–	–
4	1986-07-21	09:04	–	2.55999	125.64	–	–	–
4	1986-07-31	09:49	–	2.55880	126.83	–	–	–
4	1986-08-04	10:06	–	2.55862	127.01	–	–	–

Table C-8. Room G Station -1.0 m vertical mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_z (m)	δ_z (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
4	1986-08-07	12:36	–	2.55857	127.06	–	–	–
4	1986-08-11	13:40	–	2.55824	127.39	–	–	–
4	1986-08-14	10:34	–	2.55801	127.62	–	–	–
4	1986-08-21	09:43	–	2.55768	127.95	–	–	–
4	1986-08-25	09:39	–	2.55742	128.21	–	–	–
4	1986-09-04	10:33	–	2.55702	128.61	–	–	–
4	1986-09-11	12:43	–	2.55618	129.45	–	–	–
4	1986-09-15	14:05	–	2.55605	129.58	–	–	–
4	1986-09-18	10:12	–	2.55595	129.68	–	–	–
4	1986-09-22	11:50	–	2.55565	129.98	–	–	–
4	1986-09-25	09:32	–	2.55562	130.01	–	–	–
4	1986-09-29	10:50	–	2.55519	130.44	–	–	–
4	1986-10-06	10:09	–	2.55496	130.67	–	–	–
4	1986-10-13	10:17	–	2.55435	131.28	–	–	–
4	1986-10-17	13:45	–	2.55392	131.71	–	–	–
4	1986-10-22	11:03	–	2.55389	131.74	–	–	–
4	1986-10-30	13:50	–	2.55311	132.52	–	–	–
4	1986-11-06	13:39	–	2.55608	129.55	×	–	–
4	1986-11-13	10:54	–	2.55567	129.96	×	–	–
4	1986-11-20	13:21	–	2.55521	130.42	×	–	–
4	1986-12-04	09:45	–	2.55450	131.13	×	–	–
4	1986-12-11	10:25	–	2.55392	131.71	×	–	–
4	1986-12-18	10:04	–	2.55308	132.55	×	–	–
4	1986-12-22	10:51	–	2.55280	132.83	×	–	–
4	1986-12-31	09:14	–	2.55199	133.64	×	–	–
4	1987-01-05	10:38	–	2.55013	135.50	–	–	–
4	1987-01-12	09:34	–	2.54958	136.05	–	–	–
4	1987-01-19	10:49	–	2.54864	136.99	–	–	–
5	1987-02-16	12:39	–	1.42697	139.67	–	–	Rod #5
5	1987-03-16	10:40	–	1.42705	139.59	–	–	Rod #5
5	1987-04-06	13:33	–	1.42418	142.46	–	–	Rod #5
5	1987-06-22	14:30	–	1.41686	149.78	×	–	Rod #5
5	1987-06-29	13:35	–	1.42037	146.27	–	–	Rod #5
5	1987-07-06	13:49	–	1.41973	146.91	–	–	Rod #5
5	1987-07-13	11:29	–	1.41940	147.24	–	–	Rod #5
5	1987-07-27	11:14	–	1.41826	148.38	–	–	Rod #5
5	1987-07-31	13:51	–	1.41811	148.53	–	–	Rod #5
5	1987-08-26	10:11	–	1.41592	150.72	–	–	Rod #5
5	1987-09-25	12:23	–	1.41549	151.15	–	–	Rod #5
5	1987-10-23	13:03	–	1.41379	152.85	–	–	Rod #5
5	1987-11-16	11:41	–	1.41267	153.97	–	–	Rod #5
5	1987-12-17	11:33	–	1.41135	155.29	–	–	Rod #5
5	1988-01-15	10:23	–	1.40917	157.47	–	–	Rod #5
5	1988-02-09	10:59	–	1.40782	158.82	–	–	Rod #5
5	1988-03-11	–	–	–	–	–	–	Note: Not done due to (and the rest of note is unreadable)
5	1988-04-08	09:33	–	1.40462	162.02	–	–	Rod #5
5	1988-05-03	12:43	–	1.40457	162.07	–	–	Rod #5
5	1988-06-07	10:43	–	1.40185	164.79	–	–	Rod #5
5	1988-06-30	09:56	–	1.40071	165.93	–	–	Rod #5
5	1988-07-26	11:45	–	1.39774	168.90	–	–	Rod #5
5	1988-08-23	10:09	–	1.39581	170.83	–	–	Rod #5
5	1988-09-20	10:23	–	1.39680	169.84	–	–	Rod #5
5	1988-10-17	13:19	–	1.39558	171.06	–	–	Rod #5
5	1988-11-15	10:35	–	1.39154	175.10	–	–	Rod #5
5	1988-12-13	14:20	–	1.39278	173.86	–	–	–
5	1989-01-13	10:33	–	1.39126	175.38	–	–	Rod #5
5	1989-02-08	10:03	–	1.38996	176.68	–	–	Rod #5
5	1989-03-10	10:19	–	1.38699	179.65	–	–	Rod #5
5	1989-04-04	10:22	–	1.38567	180.97	–	–	Rod #5
5	1989-05-31	13:08	–	1.38288	183.76	–	–	Rod #5
5	1989-06-27	14:35	–	1.38153	185.11	–	–	Rod #5
5	1989-08-21	13:23	–	1.37980	186.84	–	–	Rod #5
5	1989-09-18	12:55	–	1.37856	188.08	–	–	Rod #5
5	1989-11-15	10:50	–	1.37589	190.75	–	–	Rod #5
5	1989-12-15	12:48	–	1.37333	193.31	–	–	Rod #5
5	1990-01-11	12:20	–	1.37386	192.78	–	–	Rod #5
5	1990-02-08	13:20	–	1.37234	194.30	–	–	Rod #5
5	1990-04-30	12:41	–	1.36863	198.01	–	–	Rod #5
5	1991-05-22	13:03	–	1.35153	215.11	–	–	Rod #5
5	1991-05-29	13:20	–	1.35118	215.46	–	–	Rod #5
5	1991-06-05	10:51	–	1.35070	215.94	–	–	Rod #5
5	1991-06-12	09:26	–	1.35049	216.15	–	–	Rod #5
5	1991-06-19	11:01	–	1.35016	216.48	–	–	Rod #5
5	1991-06-26	12:50	–	1.34988	216.76	–	–	Rod #5
5	1991-07-10	12:53	–	1.34920	217.44	–	–	Rod #5
5	1991-07-17	13:08	–	1.34884	217.80	–	–	Rod #5
5	1991-07-26	13:14	–	1.34844	218.20	–	–	Rod #5
5	1991-07-31	12:35	–	1.34816	218.48	–	–	Rod #5
5	1991-08-16	10:54	–	1.34760	219.04	–	–	Rod #5
5	1991-08-21	09:20	–	1.34727	219.37	–	–	Rod #5
5	1991-08-28	10:50	–	1.34694	219.70	–	–	Rod #5
5	1991-09-04	10:15	–	1.34656	220.08	–	–	Rod #5
5	1991-09-12	09:55	–	1.34635	220.29	–	–	Rod #5
5	1991-09-18	10:13	–	1.34597	220.67	–	–	Rod #5
5	1991-09-25	12:34	–	1.34536	221.28	–	–	Rod #5
5	1991-10-04	–	–	–	–	–	–	No readings taken due to work in Q room

Table C-8. Room G Station -1.0 m vertical mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_z (m)	δ_z (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
5	1991-10-11	09:40	–	1.34475	221.89	–	–	Rod #5
5	1991-10-17	11:03	–	1.34452	222.12	–	–	Rod #5
5	1991-10-23	09:44	–	1.34417	222.47	–	–	Rod #5
5	1991-10-30	09:54	–	1.34407	222.57	–	–	Rod #5
5	1991-11-06	13:25	–	1.34369	222.95	–	–	Rod #5
5	1991-11-13	10:28	–	1.34341	223.23	–	–	Rod #5 This procedure is obsolete. These readings are for information only.
5	1991-11-26	–	–	–	–	–	–	Procedure dropped
5	1992-01-06	–	–	–	–	–	–	Not completed due to shut down
5	1992-01-08	10:31	–	1.34109	225.55	–	–	Rod 5
5	1992-01-14	14:18	–	1.34092	225.72	–	–	Rod 5
5	1992-01-21	09:45	–	1.34074	225.90	–	–	Rod 5
5	1992-01-28	13:17	–	1.34028	226.36	–	–	Rod 5
5	1992-02-04	13:51	–	1.34010	226.54	–	–	Rod 5
5	1992-02-11	10:40	–	1.33980	226.84	–	–	Rod 5
5	1992-02-21	10:45	–	1.33934	227.30	–	–	Rod 5
5	1992-02-26	12:49	–	1.33916	227.48	–	–	Rod 5
5	1992-03-03	12:40	–	1.33901	227.63	–	–	Rod 5
5	1992-03-13	–	–	–	–	–	–	No readings taken due to priority work in Room Q.
5	1992-03-17	09:52	–	1.33845	228.19	–	–	Rod 5
5	1992-03-24	13:51	–	1.33810	228.54	–	–	Rod 5
5	1992-04-01	13:23	–	1.33784	228.80	–	–	Rod 5
5	1992-04-10	12:56	–	1.33876	227.88	–	–	Rod 5
5	1992-04-15	–	–	–	–	–	–	Package was not received
5	1992-04-22	13:04	–	1.33805	228.59	–	–	Rod 5
5	1992-07-14	10:00	–	1.33213	234.51	–	–	Rod 5
5	1992-10-20	09:47	–	1.32685	239.79	–	–	Rod 5
5	1993-01-26	09:53	–	1.32979	236.85	×	–	Rod 5
6	1993-07-14	10:11	–	1.33210	251.74	–	–	Rod 5
6	1994-02-17	13:08	–	1.32227	261.57	–	–	–
6	1994-02-23	13:07	–	1.32202	261.83	–	–	–
6	1994-03-17	13:31	–	1.32105	262.79	–	–	–
6	1994-03-24	14:09	–	1.32326	260.58	–	–	–
6	1994-03-29	13:21	–	1.32062	263.23	–	–	–
6	1994-04-05	13:15	–	1.32029	263.56	–	–	–
6	1994-04-14	10:22	–	1.32006	263.78	–	–	–
6	1994-04-21	10:02	–	1.31971	264.14	–	–	–
6	1994-04-28	10:17	–	1.31935	264.50	–	–	–
6	1994-05-04	13:11	–	1.31925	264.60	–	–	–
6	1994-05-23	12:45	–	1.31849	265.36	–	–	–
7	1994-06-07	13:24	–	1.30759	265.98	–	–	–
7	1994-06-29	09:38	–	1.30665	266.92	–	–	–
7	1994-07-07	13:22	–	1.30622	267.36	–	–	–
7	1994-07-13	09:48	–	1.30586	267.71	–	–	–
7	1994-07-21	09:58	–	1.30581	267.76	–	–	–
7	1994-07-27	09:51	–	1.30541	268.17	–	–	–
7	1994-08-03	10:07	–	1.30498	268.60	–	–	–
7	1994-08-10	13:19	–	1.30475	268.83	–	–	–
7	1994-08-16	13:42	–	1.30447	269.11	–	–	–
7	1994-08-23	10:44	–	1.30424	269.34	–	–	–
7	1994-08-30	10:17	–	1.30386	269.72	–	–	–
7	1994-09-09	12:41	–	1.30335	270.23	–	–	–
7	1994-09-12	12:39	–	1.30317	270.40	–	–	–
7	1994-09-23	09:52	–	1.30277	270.81	–	–	–
7	1994-09-26	10:46	–	1.30272	270.86	–	–	–
7	1994-10-05	13:08	–	1.30226	271.32	–	–	–
7	1994-10-19	13:15	–	1.30167	271.90	–	–	–
7	1994-10-26	13:23	–	1.30137	272.21	–	–	–
7	1994-11-02	09:34	–	1.30112	272.46	–	–	–
7	1994-11-08	09:30	–	1.30076	272.82	–	–	–
7	1994-11-15	12:50	–	1.30068	272.89	–	–	–
7	1994-11-21	13:04	–	1.30040	273.17	–	–	–
7	1994-11-29	12:30	–	1.30012	273.45	–	–	–
7	1994-12-07	12:27	–	1.29964	273.93	–	–	–
7	1994-12-13	10:06	–	1.29929	274.29	–	–	–
7	1994-12-20	09:34	–	1.29891	274.67	–	–	–
7	1994-12-29	12:52	–	1.29832	275.25	–	–	–
7	1995-01-06	09:33	–	1.29794	275.64	–	–	–
7	1995-01-10	–	–	–	–	–	–	–
7	1995-01-11	09:29	–	1.29741	276.17	–	–	–
7	1995-01-18	09:50	–	1.29769	275.89	–	–	–
7	1995-01-31	12:52	–	1.29764	275.94	–	–	–
7	1995-02-15	09:58	–	1.29664	276.93	–	–	–
7	1995-02-24	09:55	–	1.29662	276.96	–	–	–
7	1995-03-01	10:15	–	1.29634	277.24	–	–	–
7	1995-03-08	10:28	–	1.29578	277.79	–	–	–
7	1995-03-14	12:39	–	1.29558	278.00	–	–	–
7	1995-03-22	10:26	–	1.29530	278.28	–	–	–
7	1995-03-29	09:46	–	1.29504	278.53	–	–	–
7	1995-04-06	10:26	–	1.29461	278.96	–	–	–
7	1995-04-10	12:33	–	1.29438	279.19	–	–	–
7	1995-04-19	10:10	–	1.29400	279.57	–	–	–
7	1995-04-26	12:49	–	1.29398	279.60	–	–	–
7	1995-05-02	09:57	–	1.29362	279.95	–	–	–
7	1995-05-10	10:17	–	1.29327	280.31	–	–	–

Table C-9. Room G Station +45.6 m horizontal mining sequence metadata

										Pre-Jump Fitting Inputs				Post-Jump Fitting Inputs			
s	Segment Start Time	Analysis Notes	Gage Number	Paired Points	Point 1 y	Point 2 y	Estimated t_{ex}	t_{ex} Source	Shift Phase	Type	Start Index	End Index	Ignore Index	Type	Start Index	End Index	Ignore Index
(–)	(YYYY-MM-DD HH:MM)	(–)	(–)	(–)	(m)	(m)	(YYYY-MM-DD HH:MM)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)
0	1984-11-09 20:00	Estimated start of mining Room G.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1	1984-12-08 12:28	First reading after station mined out during pass 1.	GM02-1	1C-1D	45.6	45.6	1984-12-08 11:00	Gage installation data sheet	2	–	–	–	–	Jeffreys	1	6	–
2	1984-12-10 03:08	First reading after point 1D mined out and replaced with point 2D during pass 2.	GM02-2	1C-2D	45.6	45.6	1984-12-10 00:41	Average of neighboring reading times	2	Linear	-3	-1	–	Jeffreys	1	10	–
3	1985-01-07 13:27	First reading after point 2D re-installed because it was damaged.	GM02-2	1C-2D	45.6	45.6	–	–	2	Linear	-6	-3	–	Linear	1	4	[3]
4	1993-07-14 10:25	Readings at all three stations jump slightly.	GM02-2	1C-2D	45.6	45.6	–	–	2	Linear	-2	-1	–	Linear	1	2	–
5	1994-06-07 13:14	Readings at all three stations jump slightly.	GM02-2	1C-2D	45.6	45.6	–	–	2	Linear	-2	-1	–	Linear	1	2	–

Table C-10. Room G Station +45.6 m horizontal mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_x (m)	δ_x (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
1	1984-12-08	12:28	2.4	3.94076	4.59	–	–	–
1	1984-12-08	21:04	7.6	3.93134	14.01	–	–	NOTE: Gage number were deduced by comparison with other EMCP's in other rooms. Note gage number in SANDIA gage list.
1	1984-12-09	00:38	8.2	3.92989	15.46	–	–	–
1	1984-12-09	14:16	26.5	3.92707	18.28	–	–	–
1	1984-12-09	17:50	25.9	3.92562	19.73	–	–	Face pass 1 at 768'
1	1984-12-09	22:15	2.7	3.92511	20.23	–	–	89' to pass 1. 9' to pass 2. Pass 1 at 772'. Pass 2 at 674'. EMCP at 683'. (Footages from "O" point of 1004' west of room entry.)
2	1984-12-10	03:08	2.7	5.73595	21.66	–	–	Initial reading.
2	1984-12-10	09:04	7.6	5.73288	24.73	–	–	–
2	1984-12-10	18:50	26.5	5.73004	27.58	–	–	–
2	1984-12-11	02:41	4.6	5.72762	29.99	–	–	–
2	1984-12-11	09:18	12.8	5.72668	30.93	–	–	–
2	1984-12-11	18:59	–	5.72399	33.62	–	–	Face pass 2 at 770' which is 87' west of these EMCP's. Miner trimming floort at 715' which is 32' west of these EMCP's.
2	1984-12-12	00:41	–	5.72351	34.10	–	–	70' to finished floor trim
2	1984-12-12	09:27	30.8	5.72272	34.89	–	–	–
2	1984-12-12	19:20	37.2	5.72163	35.98	–	–	–
2	1984-12-13	00:41	44.2	5.72130	36.31	–	–	–
2	1984-12-13	09:24	47.5	5.72102	36.59	–	–	–
2	1984-12-13	18:24	55.5	5.72003	37.58	–	–	Pass 1 at 865'.
2	1984-12-14	00:51	58.8	5.71995	37.66	–	–	–
2	1984-12-14	08:48	–	5.71929	38.32	–	–	195' (Pass 1). +95' (Pass 2).
2	1984-12-14	19:28	13.7	5.10855	649.06	×	–	–
2	1984-12-15	00:39	61.6	5.71830	39.31	–	–	–
2	1984-12-15	09:57	–	5.71792	39.69	–	–	102' (Pass 1&2). 87' (Pass 3)
2	1984-12-15	18:51	31.1	5.71721	40.40	–	–	–
2	1984-12-16	00:43	–	5.71716	40.45	–	–	–
2	1984-12-16	10:41	–	5.71751	40.10	–	–	(+107' Pass 3). (+153' Pass 1&2)
2	1984-12-16	22:11	64.6	5.71660	41.01	–	–	–
2	1984-12-17	00:55	66.8	5.71652	41.09	–	–	–
2	1984-12-17	09:06	72.2	5.71584	41.78	–	–	237' (Pass 1)
2	1984-12-17	21:55	82.9	5.71589	41.72	–	–	–
2	1984-12-18	03:40	86.6	5.71482	42.79	–	–	Fass pass 1 at 967'. Note: Face pass 2 at 885' and floor trim at 880'.
2	1984-12-18	09:14	89.0	5.71546	42.16	–	–	292' (Pass 1)
2	1984-12-18	22:20	73.8	5.71548	42.13	–	–	–
2	1984-12-19	02:20	79.9	5.71505	42.56	–	–	262' (Pass 2). Face pass 1 at sta.-156. Face pass 2 at sta.-115. Mining pass 2 now.
2	1984-12-19	09:32	–	5.71447	43.15	–	–	(303' Pass 1). (287' Pass 2)
2	1984-12-19	21:10	74.1	5.71454	43.07	–	–	–
2	1984-12-20	03:04	–	5.71459	43.02	–	–	304' to face pass 1. 300' to pass 2. Face pass 1 at 987' (STA. -157). Face pass 2 at 985' (STA. -153). Floor pass on south side at 975' (STA. -145).
2	1984-12-20	10:23	61.6	5.71358	44.04	–	–	+202' Pass 4
2	1984-12-20	18:34	92.4	5.71325	44.37	–	–	–
2	1984-12-21	03:45	91.4	5.71320	44.42	–	–	300' to face pass 2. Face pass 1 at STA. -157'. Face pass 2 at STA -153'.
2	1984-12-21	10:00	92.0	5.71307	44.54	–	–	–
2	1984-12-21	21:59	92.4	5.71282	44.80	–	–	–
2	1984-12-22	06:07	92.7	5.71256	45.05	–	–	304' pass 1 & 2
2	1984-12-22	09:01	–	5.71243	45.18	–	–	–
2	1984-12-22	21:54	92.4	5.71216	45.46	–	–	–
2	1984-12-23	03:02	92.4	5.71226	45.36	–	–	–
2	1984-12-23	10:35	92.7	5.71216	45.46	–	–	304' to Pass 1 & 2
2	1984-12-23	18:23	92.4	5.71208	45.53	–	–	–
2	1984-12-24	01:10	62.2	5.71190	45.71	–	–	Face -98.7'
2	1984-12-26	09:07	99.1	5.71030	47.31	–	–	–
2	1984-12-26	17:48	99.7	5.70944	48.18	–	–	–
2	1984-12-27	02:42	108.2	5.70954	48.07	–	–	–
2	1984-12-27	08:53	111.9	5.70911	48.51	–	–	–
2	1984-12-27	22:18	118.6	5.70865	48.96	–	–	–
2	1984-12-28	00:37	122.5	5.70908	48.53	–	–	–
2	1984-12-28	09:07	122.8	5.70883	48.79	–	–	403' pass 1. 357' pass 2.
2	1984-12-28	17:30	122.8	5.70789	49.73	–	–	–
2	1984-12-29	02:13	98.1	5.70852	49.09	–	–	–
2	1984-12-29	09:08	109.4	5.70840	49.22	–	–	–
2	1984-12-29	17:57	122.8	5.70809	49.52	–	–	–
2	1984-12-30	00:31	-115.8	5.70809	49.52	–	–	–
2	1984-12-30	08:43	–	5.70822	49.40	–	–	Pass 1 - 405 ft. Pass 2 - 400 ft.
2	1984-12-30	17:01	130.1	5.70801	49.60	–	–	–
2	1984-12-31	01:41	-136.2	5.70784	49.78	–	–	–
2	1985-01-02	09:07	–	5.70692	50.69	–	–	Pass 1 457'. Pass 2 402'.
2	1985-01-02	19:23	145.4	5.70593	51.68	–	–	–
2	1985-01-03	01:06	131.7	5.70636	51.25	–	–	–
2	1985-01-03	09:12	137.8	5.70641	51.20	–	–	–
2	1985-01-03	19:33	151.5	5.70598	51.63	–	–	–
2	1985-01-04	05:45	139.3	5.70593	51.68	–	–	–
2	1985-01-04	10:55	150.6	5.70606	51.55	–	–	–
2	1985-01-04	17:50	134.7	5.70606	51.55	–	–	442' (4th pass)
2	1985-01-05	01:36	151.8	5.70583	51.78	–	–	–
2	1985-01-05	08:53	–	5.70570	51.91	–	–	–
2	1985-01-05	17:14	150.9	5.70565	51.96	–	–	–

Table C-10. Room G Station +45.6 m horizontal mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_x (m)	δ_x (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
2	1985-01-06	01:53	151.8	5.70575	51.86	–	–	–
2	1985-01-06	09:54	17.4	5.70479	52.82	–	–	–
2	1985-01-06	19:51	150.9	5.70878	48.84	–	×	Point 2D was hit during trimming
2	1985-01-07	05:50	–	5.70753	50.08	–	×	–
3	1985-01-07	13:27	111.3	5.71241	52.99	–	–	–
3	1985-01-07	16:55	–	5.71218	53.22	–	–	–
3	1985-01-07	–	–	–	–	–	–	Point damaged. New reading
3	1985-01-08	01:33	151.8	5.71226	53.14	–	–	–
3	1985-01-08	09:37	–	5.71170	53.70	–	–	–
3	1985-01-08	16:43	–	5.71190	53.50	–	–	–
3	1985-01-09	09:41	–	5.71165	53.75	–	–	–
3	1985-01-09	13:33	–	5.71165	53.75	–	–	–
3	1985-01-10	00:00	–	5.71132	54.08	–	–	–
3	1985-01-10	02:43	–	5.71155	53.85	–	–	–
3	1985-01-10	11:12	–	5.71144	53.95	–	–	–
3	1985-01-11	03:23	151.5	5.71147	53.93	–	–	–
3	1985-01-11	13:51	–	5.71089	54.51	–	–	–
3	1985-01-11	16:33	–	5.71073	54.67	–	–	–
3	1985-01-12	02:18	151.5	5.71119	54.21	–	–	–
3	1985-01-12	08:53	–	5.71116	54.23	–	–	–
3	1985-01-12	17:32	–	5.71078	54.62	–	–	–
3	1985-01-13	10:28	–	5.71025	55.15	–	–	–
3	1985-01-13	19:08	–	5.71007	55.33	–	–	–
3	1985-01-13	–	151.5	–	–	–	–	Points blocked by drill.
3	1985-01-14	03:17	151.5	5.71030	55.10	–	–	–
3	1985-01-14	09:24	–	5.71007	55.33	–	–	–
3	1985-01-14	18:53	–	5.70979	55.61	–	–	–
3	1985-01-15	01:25	151.5	5.71002	55.38	–	–	–
3	1985-01-15	09:31	–	5.70967	55.73	–	–	–
3	1985-01-15	19:02	–	5.70949	55.91	–	–	–
3	1985-01-16	10:52	–	5.70906	56.34	–	–	–
3	1985-01-16	19:46	–	5.70934	56.06	–	–	–
3	1985-01-16	–	151.5	–	–	–	–	Graveyard - drill in way
3	1985-01-17	18:56	–	5.70875	56.65	–	–	–
3	1985-01-17	–	–	–	–	–	–	Blocked
3	1985-01-17	–	151.5	–	–	–	–	Graveyard - points blocked by drill
3	1985-01-18	03:10	151.5	5.70880	56.60	–	–	–
3	1985-01-18	18:05	–	5.70847	56.93	–	–	–
3	1985-01-18	–	–	–	–	–	–	FNR - Not read. Boreole checkout.
3	1985-01-19	02:05	–	5.70862	56.77	–	–	–
3	1985-01-19	10:31	–	5.70822	57.18	–	–	–
3	1985-01-19	19:08	–	5.70799	57.41	–	–	–
3	1985-01-20	01:45	151.5	5.70822	57.18	–	–	–
3	1985-01-20	13:56	–	5.70791	57.49	–	–	–
3	1985-01-20	16:48	–	5.70786	57.54	–	–	–
3	1985-01-21	04:58	151.5	5.70801	57.38	–	–	–
3	1985-01-21	18:08	–	5.70776	57.64	–	–	–
3	1985-01-21	–	–	–	–	–	–	Day - not read due to bore hole checkout
3	1985-01-22	01:47	151.5	5.70741	57.99	–	–	–
3	1985-01-22	–	–	–	–	–	–	No readings due to bore hole checkout
3	1985-01-22	–	–	–	–	–	–	Day shift. No readings due to bore hole checkout
3	1985-01-23	05:13	–	5.70621	59.19	–	–	–
3	1985-01-23	09:34	–	5.70713	58.27	–	–	–
3	1985-01-23	20:11	–	5.70700	58.40	–	–	–
3	1985-01-24	02:27	–	5.70710	58.30	–	–	–
3	1985-01-24	09:23	–	5.70659	58.81	–	–	–
3	1985-01-24	18:07	–	5.70674	58.65	–	–	–
3	1985-01-25	01:40	–	5.70682	58.58	–	–	–
3	1985-01-25	09:51	–	5.70674	58.65	–	–	–
3	1985-01-25	17:02	–	5.70687	58.53	–	–	–
3	1985-01-26	01:34	–	5.70647	58.93	–	–	–
3	1985-01-26	09:12	–	5.70644	58.96	–	–	–
3	1985-01-26	21:37	–	5.70621	59.19	–	–	–
3	1985-01-27	00:58	–	5.70636	59.03	–	–	–
3	1985-01-27	09:15	151.5	5.70616	59.24	–	–	–
3	1985-01-27	20:13	–	5.70591	59.49	–	–	–
3	1985-01-28	01:23	–	5.70591	59.49	–	–	–
3	1985-01-28	09:34	151.5	5.70588	59.52	–	–	–
3	1985-01-28	17:25	–	5.70568	59.72	–	–	–
3	1985-01-29	01:23	–	5.70563	59.77	–	–	–
3	1985-01-29	10:17	151.5	5.70563	59.77	–	–	–
3	1985-01-29	19:00	–	5.70550	59.90	–	–	–
3	1985-01-30	01:22	–	5.70568	59.72	–	–	–
3	1985-01-30	10:36	151.5	5.70558	59.82	–	–	–
3	1985-01-30	17:55	–	5.70568	59.72	–	–	–
3	1985-01-31	01:17	–	5.70527	60.13	–	–	–
3	1985-01-31	12:59	151.5	5.70504	60.36	–	–	–
3	1985-01-31	19:08	–	5.70502	60.38	–	–	–
3	1985-02-01	01:42	–	5.70489	60.51	–	–	–
3	1985-02-01	11:26	151.5	5.70499	60.41	–	–	–
3	1985-02-01	17:56	–	5.70474	60.66	–	–	–
3	1985-02-02	01:07	–	5.70469	60.71	–	–	–
3	1985-02-02	10:05	151.5	5.70494	60.46	–	–	–
3	1985-02-02	17:46	–	5.70438	61.02	–	–	–
3	1985-02-03	01:23	–	5.70438	61.02	–	–	–
3	1985-02-03	09:22	151.5	5.70461	60.79	–	–	–

Table C-10. Room G Station +45.6 m horizontal mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_x (m)	δ_x (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
3	1985-02-03	17:43	–	5.70428	61.12	–	–	–
3	1985-02-04	01:52	–	5.70436	61.04	–	–	–
3	1985-02-04	09:35	151.5	5.70431	61.09	–	–	–
3	1985-02-04	17:59	–	5.70380	61.60	–	–	–
3	1985-02-05	02:26	–	5.70377	61.63	–	–	–
3	1985-02-05	10:13	151.5	5.70438	61.02	–	–	–
3	1985-02-05	17:34	–	5.70342	61.98	–	–	–
3	1985-02-06	03:18	–	5.70370	61.70	–	–	–
3	1985-02-06	09:52	151.5	5.70319	62.21	–	–	–
3	1985-02-06	18:06	–	5.70324	62.16	–	–	–
3	1985-02-07	06:17	–	5.70413	61.27	–	–	–
3	1985-02-07	12:54	151.5	5.70367	61.73	–	–	–
3	1985-02-07	18:18	–	5.70385	61.55	–	–	–
3	1985-02-08	01:57	–	5.70354	61.85	–	–	–
3	1985-02-08	09:09	–	5.70398	61.42	–	–	–
3	1985-02-08	18:30	–	5.70372	61.68	–	–	–
3	1985-02-09	02:50	–	5.70352	61.88	–	–	–
3	1985-02-09	09:26	–	5.70390	61.50	–	–	–
3	1985-02-09	18:19	–	5.70339	62.01	–	–	–
3	1985-02-10	00:58	–	5.70382	61.57	–	–	–
3	1985-02-10	08:47	–	5.70367	61.73	–	–	–
3	1985-02-10	18:14	–	5.70299	62.41	–	–	–
3	1985-02-11	01:20	–	5.70296	62.44	–	–	–
3	1985-02-11	09:09	–	5.70370	61.70	–	–	–
3	1985-02-11	18:11	–	5.70329	62.11	–	–	–
3	1985-02-12	02:27	–	5.70306	62.34	–	–	–
3	1985-02-12	09:17	–	5.70354	61.85	–	–	–
3	1985-02-12	–	–	–	–	–	–	Readings not taken due to room dimensions in Room 11
3	1985-02-13	09:29	–	5.70304	62.36	–	–	–
3	1985-02-13	12:59	–	5.70304	62.36	–	–	–
3	1985-02-13	17:03	151.5	5.70316	62.24	–	–	–
3	1985-02-14	03:02	–	5.70304	62.36	–	–	–
3	1985-02-14	09:19	–	5.70339	62.01	–	–	–
3	1985-02-14	18:54	–	5.70339	62.01	–	–	–
3	1985-02-15	01:17	–	5.70238	63.02	–	–	–
3	1985-02-15	09:14	–	5.70273	62.67	–	–	–
3	1985-02-15	18:24	–	5.70260	62.79	–	–	–
3	1985-02-16	05:40	–	5.70260	62.79	–	–	–
3	1985-02-16	09:01	–	5.70309	62.31	–	–	–
3	1985-02-16	16:53	–	5.70255	62.84	–	–	–
3	1985-02-17	01:49	–	5.70233	63.07	–	–	–
3	1985-02-17	09:04	–	5.70266	62.74	–	–	–
3	1985-02-17	17:41	–	5.70240	63.00	–	–	–
3	1985-02-18	02:43	–	5.70215	63.25	–	–	–
3	1985-02-18	09:15	–	5.70233	63.07	–	–	–
3	1985-02-19	09:16	–	5.70227	63.12	–	–	–
3	1985-02-20	10:58	–	5.70139	64.01	–	–	–
3	1985-02-21	–	–	–	–	–	–	No readings. Other work
3	1985-02-22	09:48	–	5.70149	63.91	–	–	–
3	1985-02-25	10:21	–	5.70062	64.78	–	–	–
3	1985-02-26	09:47	–	5.70088	64.52	–	–	–
3	1985-02-27	09:21	–	5.70042	64.98	–	–	–
3	1985-02-28	13:30	–	5.70057	64.83	–	–	–
3	1985-03-01	09:28	–	5.70045	64.95	–	–	–
3	1985-03-04	11:11	–	5.69994	65.46	–	–	–
3	1985-03-05	09:48	–	5.69940	65.99	–	–	–
3	1985-03-06	10:08	–	5.69946	65.94	–	–	–
3	1985-03-07	09:43	–	5.69910	66.30	–	–	–
3	1985-03-08	10:23	–	5.69862	66.78	–	–	–
3	1985-03-11	09:44	–	5.69902	66.38	–	–	–
3	1985-03-12	13:08	–	5.69874	66.65	–	–	–
3	1985-03-13	13:39	–	5.69841	66.98	–	–	–
3	1985-03-14	10:01	–	5.69874	66.65	–	–	–
3	1985-03-15	11:12	–	5.69852	66.88	–	–	–
3	1985-03-18	10:31	–	5.69783	67.57	–	–	–
3	1985-03-19	09:48	–	5.69778	67.62	–	–	–
3	1985-03-20	–	–	–	–	–	–	No readings taken due to Room 3 cross-sections & geologic mapping.
3	1985-03-21	11:28	–	5.69717	68.23	–	–	–
3	1985-03-22	10:58	–	5.69752	67.87	–	–	–
3	1985-03-25	10:24	–	5.69694	68.46	–	–	–
3	1985-03-26	09:46	–	5.69686	68.53	–	–	–
3	1985-03-27	09:30	–	5.69653	68.86	–	–	–
3	1985-03-28	12:20	–	5.69653	68.86	–	–	–
3	1985-03-28	14:15	–	5.69537	70.03	–	–	Ramsett EMCP's were replaced with grouted stur-anchor points.
3	1985-03-29	10:44	–	5.69585	69.55	–	–	Readings transposed according to previous and subseqent data. [Auditor indicated with arrows that the GM01-1 and GM02-2 readings were transposed with the GM11-1 and GM12-2 readings.]
3	1985-04-01	09:24	–	5.69590	69.50	–	–	–
3	1985-04-02	13:23	–	5.69600	69.40	–	–	–
3	1985-04-03	09:33	–	5.69539	70.01	–	–	–
3	1985-04-04	10:23	–	5.69509	70.31	–	–	–
3	1985-04-08	09:18	–	5.69473	70.67	–	–	–
3	1985-04-09	10:16	–	5.69453	70.87	–	–	–

Table C-10. Room G Station +45.6 m horizontal mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_x (m)	δ_x (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
3	1985-04-10	09:27	–	5.69422	71.18	–	–	–
3	1985-04-11	09:40	–	5.69384	71.56	–	–	–
3	1985-04-15	13:11	–	5.69356	71.84	–	–	–
3	1985-04-16	10:51	–	5.69351	71.89	–	–	–
3	1985-04-17	10:35	–	5.69351	71.89	–	–	–
3	1985-04-18	09:34	–	5.69336	72.04	–	–	–
3	1985-04-19	09:19	–	5.69318	72.22	–	–	–
3	1985-04-22	09:26	–	5.69316	72.24	–	–	–
3	1985-04-23	09:37	–	5.69275	72.65	–	–	–
3	1985-04-24	09:27	–	5.69280	72.60	–	–	–
3	1985-04-25	10:10	–	5.69265	72.75	–	–	–
3	1985-04-26	09:34	–	5.69239	73.00	–	–	–
3	1985-04-29	10:20	–	5.69224	73.16	–	–	–
3	1985-04-30	12:37	–	5.69186	73.54	–	–	–
3	1985-05-01	09:30	–	5.69214	73.26	–	–	–
3	1985-05-02	09:44	–	5.69194	73.46	–	–	–
3	1985-05-03	10:35	–	5.69178	73.61	–	–	–
3	1985-05-06	12:58	–	5.69135	74.05	–	–	–
3	1985-05-07	09:18	–	5.69128	74.12	–	–	–
3	1985-05-08	10:44	–	5.69090	74.50	–	–	–
3	1985-05-09	09:59	–	5.69117	74.22	–	–	–
3	1985-05-10	09:56	–	5.69077	74.63	–	–	–
3	1985-05-13	13:58	–	5.69057	74.83	–	–	–
3	1985-05-14	09:35	–	5.69059	74.81	–	–	–
3	1985-05-15	09:41	–	5.69062	74.78	–	–	–
3	1985-05-16	10:03	–	5.69029	75.11	–	–	–
3	1985-05-17	11:18	–	5.69036	75.04	–	–	–
3	1985-05-20	10:16	–	5.69016	75.24	–	–	–
3	1985-05-21	09:29	–	5.69013	75.27	–	–	–
3	1985-05-22	10:04	–	5.68985	75.54	–	–	–
3	1985-05-23	10:12	–	5.68988	75.52	–	–	–
3	1985-05-24	12:58	–	5.68973	75.67	–	–	–
3	1985-05-28	11:13	–	5.68940	76.00	–	–	–
3	1985-05-29	09:21	–	5.68960	75.80	–	–	–
3	1985-05-30	09:50	–	5.68914	76.26	–	–	–
3	1985-05-31	09:32	–	5.68899	76.41	–	–	–
3	1985-06-03	09:56	–	5.68896	76.43	–	–	–
3	1985-06-04	08:55	–	5.68764	77.75	–	–	–
3	1985-06-05	09:47	–	5.68858	76.81	–	–	–
3	1985-06-06	09:29	–	5.68874	76.66	–	–	–
3	1985-06-07	11:00	–	5.68838	77.02	–	–	–
3	1985-06-10	09:10	–	5.68742	77.98	–	–	–
3	1985-06-11	09:38	–	5.68736	78.03	–	–	–
3	1985-06-12	09:01	–	5.68787	77.53	–	–	–
3	1985-06-13	11:20	–	5.68785	77.55	–	–	–
3	1985-06-14	10:30	–	5.68769	77.70	–	–	–
3	1985-06-17	10:16	–	5.68752	77.88	–	–	–
3	1985-06-18	09:03	–	5.68764	77.75	–	–	–
3	1985-06-19	10:15	–	5.68742	77.98	–	–	–
3	1985-06-20	10:28	–	5.68731	78.08	–	–	–
3	1985-06-21	09:31	–	5.68729	78.11	–	–	–
3	1985-06-24	11:11	–	5.68678	78.62	–	–	–
3	1985-06-25	13:18	–	5.68670	78.69	–	–	–
3	1985-06-26	09:13	–	5.68670	78.69	–	–	–
3	1985-06-27	09:35	–	5.68660	78.80	–	–	–
3	1985-06-28	00:00	–	–	–	–	–	Not read - short handed
3	1985-07-01	09:24	–	5.68620	79.20	–	–	–
3	1985-07-02	10:13	–	5.68602	79.38	–	–	–
3	1985-07-03	09:05	–	5.68571	79.68	–	–	–
3	1985-07-08	10:53	–	5.68564	79.76	–	–	–
3	1985-07-09	10:24	–	5.68549	79.91	–	–	–
3	1985-07-10	09:11	–	5.68531	80.09	–	–	–
3	1985-07-11	11:18	–	5.68554	79.86	–	–	–
3	1985-07-12	09:49	–	5.68508	80.32	–	–	–
3	1985-07-15	13:35	–	5.68495	80.45	–	–	–
3	1985-07-16	14:35	–	5.68485	80.55	–	–	–
3	1985-07-17	14:35	–	5.68462	80.78	–	–	–
3	1985-07-18	09:36	–	5.68462	80.78	–	–	–
3	1985-07-19	10:42	–	5.68465	80.75	–	–	–
3	1985-07-22	13:38	–	5.68416	81.23	–	–	–
3	1985-07-23	10:05	–	5.68411	81.29	–	–	–
3	1985-07-24	09:11	–	5.68442	80.98	–	–	–
3	1985-07-25	10:50	–	5.68378	81.62	–	–	–
3	1985-07-26	14:10	–	5.68394	81.46	–	–	–
3	1985-07-29	09:26	–	5.68386	81.54	–	–	–
3	1985-07-30	09:34	–	5.68381	81.59	–	–	–
3	1985-07-31	11:35	–	5.68335	82.05	–	–	–
3	1985-08-01	09:32	–	5.68355	81.84	–	–	–
3	1985-08-02	00:00	–	5.68353	81.87	–	–	–
3	1985-08-05	10:28	–	5.68325	82.15	–	–	–
3	1985-08-06	09:50	–	5.68348	81.92	–	–	–
3	1985-08-07	10:28	–	5.68274	82.66	–	–	–
3	1985-08-08	10:17	–	5.68287	82.53	–	–	–
3	1985-08-09	10:40	–	5.68267	82.73	–	–	–
3	1985-08-12	10:41	–	5.68239	83.01	–	–	–
3	1985-08-13	10:05	–	5.68251	82.89	–	–	–

Table C-10. Room G Station +45.6 m horizontal mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_x (m)	δ_x (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
3	1985-08-14	11:07	–	5.68211	83.29	–	–	–
3	1985-08-15	11:10	–	5.68223	83.16	–	–	–
3	1985-08-16	11:22	–	5.68244	82.96	–	–	–
3	1985-08-19	09:55	–	5.68168	83.72	–	–	–
3	1985-08-20	09:30	–	5.68193	83.47	–	–	–
3	1985-08-21	10:10	–	5.68198	83.42	–	–	–
3	1985-08-22	10:04	–	5.68173	83.67	–	–	–
3	1985-08-23	13:53	–	5.68137	84.03	–	–	–
3	1985-08-26	14:06	–	5.68124	84.16	–	–	–
3	1985-08-27	11:12	–	5.68109	84.31	–	–	–
3	1985-08-28	09:46	–	5.68117	84.23	–	–	–
3	1985-08-29	10:12	–	5.68091	84.49	–	–	–
3	1985-08-30	13:46	–	5.68147	83.93	–	–	–
3	1985-09-03	11:06	–	5.68119	84.21	–	–	–
3	1985-09-04	11:31	–	5.68101	84.38	–	–	–
3	1985-09-05	09:18	–	5.68079	84.61	–	–	–
3	1985-09-06	09:21	–	5.68081	84.59	–	–	–
3	1985-09-09	09:39	–	5.68053	84.87	–	–	–
3	1985-09-10	10:16	–	5.68066	84.74	–	–	–
3	1985-09-11	10:03	–	5.68018	85.22	–	–	–
3	1985-09-12	10:46	–	5.68025	85.15	–	–	–
3	1985-09-13	09:48	–	5.67962	85.78	–	–	–
3	1985-09-16	09:48	–	5.68007	85.32	–	–	–
3	1985-09-17	10:02	–	5.67990	85.50	–	–	–
3	1985-09-18	10:06	–	5.67969	85.70	–	–	–
3	1985-09-19	12:51	–	5.67982	85.58	–	–	–
3	1985-09-20	09:33	–	5.67967	85.73	–	–	–
3	1985-09-23	09:56	–	5.67931	86.09	–	–	–
3	1985-09-26	10:02	–	5.77924	-13.84	×	–	–
3	1985-09-30	10:01	–	5.67847	86.92	–	–	–
3	1985-10-03	10:42	–	5.67853	86.87	–	–	–
3	1985-10-07	13:31	–	5.67817	87.23	–	–	–
3	1985-10-10	10:03	–	5.67787	87.53	–	–	–
3	1985-10-14	09:39	–	5.67753	87.86	–	–	–
3	1985-10-17	09:41	–	5.67741	87.99	–	–	–
3	1985-10-21	09:59	–	5.67713	88.27	–	–	–
3	1985-10-23	14:02	–	5.67680	88.60	–	–	–
3	1985-10-28	10:04	–	5.67662	88.78	–	–	–
3	1985-10-31	10:15	–	5.67611	89.29	–	–	–
3	1985-11-04	09:58	–	5.67568	89.72	–	–	–
3	1985-11-07	10:39	–	5.67601	89.39	–	–	–
3	1985-11-11	10:27	–	5.67558	89.82	–	–	–
3	1985-11-14	10:12	–	5.67515	90.25	–	–	–
3	1985-11-19	09:44	–	5.67505	90.35	–	–	–
3	1985-11-21	09:48	–	5.67500	90.40	–	–	–
3	1985-11-25	10:20	–	5.67459	90.81	–	–	–
3	1985-12-02	10:31	–	5.67428	91.11	–	–	–
3	1985-12-05	10:22	–	5.67378	91.62	–	–	–
3	1985-12-09	10:16	–	5.67350	91.90	–	–	–
3	1985-12-12	09:33	–	5.67332	92.08	–	–	–
3	1985-12-16	10:29	–	5.67289	92.51	–	–	–
3	1985-12-19	10:09	–	5.64754	117.86	×	–	–
3	1985-12-26	10:09	–	5.67192	93.48	–	–	–
3	1985-12-30	14:05	–	5.67169	93.71	–	–	–
3	1986-01-02	11:34	–	5.67159	93.81	–	–	–
3	1986-01-06	10:09	–	5.67141	93.99	–	–	–
3	1986-01-09	10:35	–	5.67121	94.19	–	–	–
3	1986-01-13	10:06	–	5.67118	94.21	–	–	–
3	1986-01-16	10:23	–	5.67075	94.65	–	–	–
3	1986-01-20	09:57	–	5.67042	94.98	–	–	–
3	1986-01-23	10:27	–	5.67035	95.05	–	–	–
3	1986-01-27	09:34	–	5.67014	95.26	–	–	–
3	1986-01-30	10:39	–	5.66976	95.64	–	–	–
3	1986-02-03	11:10	–	5.66958	95.81	–	–	–
3	1986-02-06	10:54	–	5.66931	96.09	–	–	–
3	1986-02-10	10:11	–	5.66890	96.50	–	–	–
3	1986-02-13	10:47	–	5.66898	96.42	–	–	–
3	1986-02-17	10:03	–	5.66867	96.73	–	–	–
3	1986-02-20	09:51	–	5.66887	96.53	–	–	–
3	1986-02-27	14:19	–	5.66798	97.41	–	–	–
3	1986-03-05	13:20	–	5.66768	97.72	–	–	–
3	1986-03-10	10:28	–	5.66737	98.02	–	–	–
3	1986-03-13	09:16	–	5.66735	98.05	–	–	–
3	1986-03-17	11:25	–	5.66687	98.53	–	–	–
3	1986-03-25	13:33	–	5.66588	99.52	–	–	–
3	1986-03-27	09:17	–	5.66608	99.32	–	–	–
3	1986-03-31	09:39	–	5.66628	99.12	–	–	–
3	1986-04-03	09:19	–	5.66565	99.75	–	–	–
3	1986-04-07	09:03	–	5.66565	99.75	–	–	–
3	1986-04-10	13:12	–	5.66511	100.28	–	–	–
3	1986-04-14	10:22	–	5.66544	99.95	–	–	–
3	1986-04-17	09:59	–	5.66504	100.36	–	–	–
3	1986-04-24	10:31	–	5.66435	101.05	–	–	–
3	1986-05-01	10:07	–	5.66390	101.50	–	–	–
3	1986-05-05	10:30	–	5.66387	101.53	–	–	–
3	1986-05-08	–	–	–	–	–	–	Hoist down

Table C-10. Room G Station +45.6 m horizontal mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_x (m)	δ_x (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
3	1986-05-13	14:09	–	5.66326	102.14	–	–	–
3	1986-05-16	13:47	–	5.66306	102.34	–	–	–
3	1986-05-20	09:42	–	5.66285	102.54	–	–	–
3	1986-05-23	11:38	–	5.66263	102.77	–	–	–
3	1986-05-29	09:40	–	5.66224	103.15	–	–	–
3	1986-06-02	09:42	–	5.66214	103.26	–	–	–
3	1986-06-05	09:33	–	5.66169	103.71	–	–	–
3	1986-06-09	09:27	–	5.66169	103.71	–	–	–
3	1986-06-13	10:14	–	5.66148	103.92	–	–	–
3	1986-06-16	13:45	–	5.66090	104.50	–	–	–
3	1986-06-19	10:09	–	5.66075	104.65	–	–	–
3	1986-06-26	10:54	–	5.66080	104.60	–	–	–
3	1986-06-30	13:11	–	5.66067	104.73	–	–	–
3	1986-07-03	09:49	–	5.66014	105.26	–	–	–
3	1986-07-10	14:03	–	5.65978	105.62	–	–	–
3	1986-07-15	10:36	–	5.65963	105.77	–	–	–
3	1986-07-17	14:05	–	5.66148	103.92	–	–	–
3	1986-07-21	09:29	–	5.65927	106.13	–	–	–
3	1986-07-31	09:56	–	5.65854	106.86	–	–	–
3	1986-08-04	10:44	–	5.65841	106.99	–	–	–
3	1986-08-07	12:50	–	5.65803	107.37	–	–	–
3	1986-08-11	14:06	–	5.65777	107.62	–	–	–
3	1986-08-14	11:13	–	5.65790	107.50	–	–	–
3	1986-08-21	09:55	–	5.65742	107.98	–	–	–
3	1986-08-25	10:36	–	5.65734	108.06	–	–	–
3	1986-09-04	10:40	–	5.65653	108.87	–	–	–
3	1986-09-11	13:33	–	5.65607	109.33	–	–	–
3	1986-09-15	14:18	–	5.65595	109.45	–	–	–
3	1986-09-18	10:23	–	5.65534	110.06	–	–	–
3	1986-09-22	14:39	–	5.65531	110.09	–	–	–
3	1986-09-25	10:05	–	5.65539	110.01	–	–	–
3	1986-09-29	10:13	–	5.65493	110.47	–	–	–
3	1986-10-06	10:28	–	5.65462	110.77	–	–	–
3	1986-10-13	10:55	–	5.65424	111.16	–	–	–
3	1986-10-17	13:51	–	5.65374	111.66	–	–	–
3	1986-10-22	11:47	–	5.65376	111.64	–	–	–
3	1986-10-30	13:57	–	5.65305	112.35	–	–	–
3	1986-11-06	14:16	–	5.65589	109.50	×	–	–
3	1986-11-13	11:06	–	5.65564	109.76	×	–	–
3	1986-11-20	14:02	–	5.65523	110.16	×	–	–
3	1986-12-04	10:41	–	5.65450	110.90	×	–	–
3	1986-12-11	10:28	–	5.65424	111.16	×	–	–
3	1986-12-18	10:50	–	5.65358	111.82	×	–	–
3	1986-12-22	10:56	–	5.65313	112.27	×	–	–
3	1986-12-31	10:02	–	5.65214	113.26	×	–	–
3	1987-01-05	10:42	–	5.65000	115.40	–	–	–
3	1987-01-12	13:22	–	5.04048	724.92	×	–	–
3	1987-01-19	10:52	–	5.64858	116.82	–	–	Rod #5
3	1987-02-16	13:23	–	5.64782	117.58	–	–	Rod #5
3	1987-03-16	10:26	–	5.64634	119.05	–	–	Rod #5
3	1987-04-06	12:44	–	5.64492	120.48	–	–	Rod #5
3	1987-06-22	13:35	–	5.63885	126.55	×	–	Rod #5
3	1987-06-29	14:27	–	5.64172	123.68	–	–	Rod #5
3	1987-07-06	13:35	–	5.64106	124.34	–	–	Rod #5
3	1987-07-13	11:35	–	5.64096	124.44	–	–	Rod #5
3	1987-07-27	11:03	–	5.63987	125.53	–	–	Rod #5
3	1987-07-31	13:59	–	5.63971	125.68	–	–	Rod #5
3	1987-08-26	10:04	–	5.63768	127.72	–	–	Rod #5
3	1987-09-25	12:17	–	5.63649	128.91	–	–	Rod #5
3	1987-10-23	12:57	–	5.63545	129.95	–	–	Rod #5
3	1987-11-16	12:15	–	5.63446	130.94	–	–	Rod #5
3	1987-12-17	10:46	–	5.63293	132.47	–	–	Rod #5
3	1988-01-15	10:18	–	5.63174	133.66	–	–	Rod #5
3	1988-02-09	11:08	–	5.63044	134.96	–	–	Rod #5
3	1988-03-11	–	–	–	–	–	–	Note: Not done due to (and the rest of note is unreadable)
3	1988-04-08	09:29	–	5.62775	137.65	–	–	Rod #5
3	1988-05-03	12:30	–	5.62534	140.06	–	–	Rod #5
3	1988-06-07	11:18	–	5.62508	140.31	–	–	Rod #5
3	1988-06-30	10:50	–	5.62392	141.48	–	–	Rod #5
3	1988-07-26	12:21	–	5.62077	144.63	–	–	Rod #5
3	1988-08-23	12:14	–	5.61972	145.67	–	–	Rod #5
3	1988-09-20	11:17	–	5.61985	145.55	–	–	Rod #5
3	1988-10-17	13:27	–	5.61901	146.39	–	–	Rod #5
3	1988-11-15	10:42	–	5.61630	149.10	–	–	Rod #5
3	1988-12-13	14:33	–	5.61591	149.48	–	–	Rod #5
3	1989-01-13	09:33	–	5.61475	150.65	–	–	Rod #5
3	1989-02-08	09:54	–	5.61396	151.44	–	–	Rod #5
3	1989-03-10	09:33	–	5.61216	153.24	–	–	Rod #5
3	1989-04-04	13:06	–	5.61099	154.41	–	–	Rod #5
3	1989-05-31	12:56	–	5.60829	157.10	–	–	Rod #5
3	1989-06-27	14:25	–	5.60738	158.02	–	–	Rod #5
3	1989-08-21	13:34	–	5.60560	159.80	–	–	Rod #5
3	1989-09-18	12:39	–	5.60469	160.71	–	–	Rod #5
3	1989-11-15	10:24	–	5.60255	162.84	–	–	Rod #5
3	1989-12-15	11:00	–	5.60032	165.08	–	–	Rod #5
3	1990-01-11	12:26	–	5.59979	165.61	–	–	Rod #5

Table C-10. Room G Station +45.6 m horizontal mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_x (m)	δ_x (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
3	1990-02-08	10:58	–	5.59839	167.01	–	–	Rod #5
3	1990-04-30	12:31	–	5.59496	170.44	–	–	Rod #5
3	1991-05-22	12:52	–	5.58033	185.07	–	–	Rod #5
3	1991-05-29	10:40	–	5.58002	185.37	–	–	Rod #5
3	1991-06-05	10:27	–	5.57969	185.70	–	–	Rod #5
3	1991-06-12	09:13	–	5.57944	185.96	–	–	Rod #5
3	1991-06-19	12:55	–	5.57924	186.16	–	–	Rod #5
3	1991-06-26	12:44	–	5.57878	186.62	–	–	Rod #5
3	1991-07-10	12:41	–	5.57825	187.15	–	–	Rod #5
3	1991-07-17	12:57	–	5.57794	187.46	–	–	Rod #5
3	1991-07-26	12:59	–	5.57769	187.71	–	–	Rod #5
3	1991-07-31	12:27	–	5.57743	187.97	–	–	Rod #5
3	1991-08-16	11:02	–	5.57677	188.63	–	–	Rod #5
3	1991-08-21	09:10	–	5.57667	188.73	–	–	Rod #5
3	1991-08-28	09:58	–	5.57644	188.96	–	–	Rod #5
3	1991-09-04	10:05	–	5.57601	189.39	–	–	Rod #5
3	1991-09-12	09:39	–	5.57560	189.79	–	–	Rod #5
3	1991-09-18	13:33	–	5.57502	190.38	–	–	Rod #5
3	1991-09-25	12:21	–	5.57751	187.89	–	–	Rod #5
3	1991-10-04	–	–	–	–	–	–	No readings taken due to work in Q room
3	1991-10-11	10:35	–	5.57444	190.96	–	–	Rod #5
3	1991-10-17	10:29	–	5.57406	191.34	–	–	Rod #5
3	1991-10-23	09:36	–	5.57421	191.19	–	–	Rod #5
3	1991-10-30	10:05	–	5.57388	191.52	–	–	Rod #5
3	1991-11-06	13:46	–	5.57352	191.88	–	–	Rod #5
3	1991-11-13	10:42	–	5.57329	192.11	–	–	Rod #5 This procedure is obsolete. These readings are for information only.
3	1991-11-26	–	–	–	–	–	–	Procedure dropped
3	1992-01-06	–	–	–	–	–	–	Not completed due to shut down
3	1992-01-08	10:08	–	5.57113	194.26	–	–	Rod 5
3	1992-01-14	14:17	–	5.57085	194.54	–	–	Rod 5
3	1992-01-21	09:45	–	5.57075	194.65	–	–	Rod 5
3	1992-01-28	12:58	–	5.57050	194.90	–	–	Rod 5
3	1992-02-04	13:46	–	5.57025	195.15	–	–	Rod 5
3	1992-02-11	10:34	–	5.57007	195.33	–	–	Rod 5
3	1992-02-21	10:41	–	5.56969	195.71	–	–	Rod 5
3	1992-02-26	12:41	–	5.56981	195.59	–	–	Rod 5
3	1992-03-03	12:31	–	5.56925	196.14	–	–	Rod 5
3	1992-03-13	–	–	–	–	–	–	No readings taken due to priority work in Room Q.
3	1992-03-17	09:42	–	5.56890	196.50	–	–	Rod 5
3	1992-03-24	13:40	–	5.56844	196.96	–	–	Rod 5
3	1992-04-01	13:14	–	5.56831	197.08	–	–	Rod 5
3	1992-04-10	12:44	–	5.57012	195.28	–	–	Rod 5
3	1992-04-15	–	–	–	–	–	–	Package was not received
3	1992-04-22	12:56	–	5.56981	195.59	–	–	Rod 5
3	1992-07-14	09:49	–	5.56364	201.76	–	–	Rod 5
3	1992-10-20	09:34	–	5.55955	205.85	–	–	Rod 5
3	1993-01-26	09:38	–	5.55523	210.16	–	–	Rod 5
4	1993-07-14	10:25	–	5.55973	217.33	–	–	Rod 5
4	1994-02-17	12:58	–	5.55084	226.22	–	–	–
4	1994-02-23	12:56	–	5.55051	226.55	–	–	–
4	1994-03-17	13:20	–	5.54977	227.29	–	–	–
4	1994-03-24	14:01	–	5.54937	227.70	–	–	–
4	1994-03-29	13:10	–	5.54906	228.00	–	–	–
4	1994-04-05	13:07	–	5.54888	228.18	–	–	–
4	1994-04-14	10:12	–	5.54860	228.46	–	–	–
4	1994-04-21	09:53	–	5.54820	228.86	–	–	–
4	1994-04-28	10:07	–	5.54802	229.04	–	–	–
4	1994-05-04	13:01	–	5.54784	229.22	–	–	–
4	1994-05-23	12:35	–	5.54731	229.75	–	–	–
5	1994-06-07	13:14	–	5.53644	230.33	–	–	–
5	1994-06-29	09:28	–	5.53537	231.40	–	–	–
5	1994-07-07	09:27	–	5.53499	231.78	–	–	–
5	1994-07-13	09:39	–	5.53486	231.91	–	–	–
5	1994-07-21	09:49	–	5.53484	231.93	–	–	–
5	1994-07-27	09:42	–	5.53420	232.57	–	–	–
5	1994-08-03	09:56	–	5.53392	232.85	–	–	–
5	1994-08-10	13:10	–	5.53375	233.02	–	–	–
5	1994-08-16	13:33	–	5.53362	233.15	–	–	–
5	1994-08-23	10:36	–	5.53319	233.58	–	–	–
5	1994-08-30	10:07	–	5.53296	233.81	–	–	–
5	1994-09-09	12:33	–	5.53245	234.32	–	–	–
5	1994-09-12	12:32	–	5.53237	234.40	–	–	–
5	1994-09-23	09:43	–	5.53171	235.06	–	–	–
5	1994-09-26	10:38	–	5.53187	234.90	–	–	–
5	1994-10-05	10:28	–	5.53164	235.13	–	–	–
5	1994-10-19	13:07	–	5.53105	235.72	–	–	–
5	1994-10-26	13:12	–	5.53080	235.97	–	–	–
5	1994-11-02	09:28	–	5.53077	236.00	–	–	–
5	1994-11-08	09:24	–	5.53034	236.43	–	–	–
5	1994-11-15	12:35	–	5.52999	236.78	–	–	–
5	1994-11-21	12:49	–	5.52994	236.83	–	–	–
5	1994-11-29	12:18	–	5.52981	236.96	–	–	–
5	1994-12-07	12:14	–	5.52933	237.44	–	–	–
5	1994-12-13	09:58	–	5.52874	238.03	–	–	–
5	1994-12-20	09:26	–	5.52844	238.33	–	–	–

Table C-10. Room G Station +45.6 m horizontal mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_x (m)	δ_x (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
5	1994-12-29	12:39	–	5.52816	238.61	–	–	–
5	1995-01-06	09:18	–	5.52760	239.17	–	–	–
5	1995-01-10	–	–	–	–	–	–	–
5	1995-01-11	09:17	–	5.52724	239.53	–	–	–
5	1995-01-18	09:36	–	5.52760	239.17	–	–	–
5	1995-01-31	12:35	–	5.52750	239.27	–	–	–
5	1995-02-15	09:45	–	5.52640	240.37	–	–	–
5	1995-02-24	09:41	–	5.52661	240.16	–	–	–
5	1995-03-01	10:04	–	5.52646	240.31	–	–	–
5	1995-03-08	10:14	–	5.52587	240.90	–	–	–
5	1995-03-14	12:29	–	5.52582	240.95	–	–	–
5	1995-03-22	10:15	–	5.52541	241.36	–	–	–
5	1995-03-29	09:34	–	5.52496	241.81	–	–	–
5	1995-04-06	10:12	–	5.52475	242.02	–	–	–
5	1995-04-10	12:24	–	5.52442	242.35	–	–	–
5	1995-04-19	09:55	–	5.52414	242.63	–	–	–
5	1995-04-26	12:38	–	5.52430	242.47	–	–	–
5	1995-05-02	09:44	–	5.52392	242.85	–	–	–
5	1995-05-10	10:04	–	5.52364	243.13	–	–	–

Table C-11. Room G Station +45.6 m vertical mining sequence metadata

										Pre-Jump Fitting Inputs				Post-Jump Fitting Inputs			
s	Segment Start Time	Analysis Notes	Gage Number	Paired Points	Point 1 y	Point 2 y	Estimated t_{ex}	t_{ex} Source	Shift Phase	Type	Start Index	End Index	Ignore Index	Type	Start Index	End Index	Ignore Index
(–)	(YYYY-MM-DD HH:MM)	(–)	(–)	(–)	(m)	(m)	(YYYY-MM-DD HH:MM)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)
0	1984-11-09 20:00	Estimated start of mining Room G.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1	1984-12-08 12:38	First reading after station mined out during pass 1.	GM01-1	1A-1B	45.55	45.55	1984-12-08 11:00	Gage installation data sheet	2	–	–	–	–	Jeffreys	1	6	–
2	1984-12-11 02:40	First reading after point 1B mined out during pass 3.	GM01-1	1A-1B	45.55	45.55	1984-12-10 22:45	Average of neighboring reading times	2	Jeffreys	-3	-1	–	Jeffreys	1	13	–
3	1985-03-28 14:15	First reading after points 1A-1B replaced.	GM01-1	1A-1B	45.55	45.55	–	–	2	Linear	-2	-1	–	Linear	1	2	–
4	1987-02-16 13:25	First time technician noted using Rod #5.	GM01-1	1A-1B	45.55	45.55	–	–	2	Linear	-3	-2	–	Linear	1	2	–
5	1993-07-14 10:19	Readings at all three stations jump slightly.	GM01-1	1A-1B	45.55	45.55	–	–	2	Linear	-20	-3	[-6 -7 -11]	Linear	1	2	–
6	1994-06-07 13:12	Readings at all three stations jump slightly.	GM01-1	1A-1B	45.55	45.55	–	–	2	Linear	-2	-1	–	Linear	1	2	–

Table C-12. Room G Station +45.6 m vertical mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_z (m)	δ_z (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
1	1984-12-08	12:38	2.4	2.15179	6.75	–	–	–
1	1984-12-08	21:05	7.6	2.13838	20.16	–	–	NOTE: Gage number were deduced by comparison with other EMCP's in other rooms. Note gage number in SANDIA gage list.
1	1984-12-09	00:39	8.2	2.13672	21.81	–	–	–
1	1984-12-09	14:18	26.5	2.13370	24.83	–	–	–
1	1984-12-09	17:53	25.9	2.13322	25.31	–	–	Face pass 1 at 768'
1	1984-12-09	22:17	2.7	2.13241	26.13	–	–	89' to pass 1. 9' to pass 2. Pass 1 at 772'. Pass 2 at 674'. EMCP at 683'. (Footages from "O" point of 1004' west of room entry.)
1	1984-12-10	03:09	2.7	2.12634	32.20	–	–	–
1	1984-12-10	09:03	7.6	2.12217	36.36	–	–	–
1	1984-12-10	18:50	26.5	2.11828	40.25	–	–	–
2	1984-12-11	02:40	4.6	2.66141	42.54	–	–	Initial reading.
2	1984-12-11	09:20	12.8	2.66024	43.70	–	–	–
2	1984-12-11	18:55	–	2.65859	45.35	–	–	Face pass 2 at 770' which is 87' west of these EMCP's. Miner trimming floort at 715' which is 32' west of these EMCP's.
2	1984-12-12	00:40	–	2.65826	45.68	–	–	70' to finished floor trim
2	1984-12-12	09:27	30.8	2.65709	46.85	–	–	–
2	1984-12-12	19:19	37.2	2.66667	37.28	×	–	–
2	1984-12-13	00:40	44.2	2.65626	47.69	–	–	–
2	1984-12-13	09:25	47.5	2.65560	48.35	–	–	–
2	1984-12-13	18:27	55.5	2.65478	49.16	–	–	Pass 1 at 865'.
2	1984-12-14	00:50	58.8	2.65450	49.44	–	–	–
2	1984-12-14	08:52	–	2.65394	50.00	–	–	195' (Pass 1). +95' (Pass 2).
2	1984-12-14	19:28	13.7	2.65321	50.74	–	–	–
2	1984-12-15	00:38	61.6	2.65328	50.66	–	–	–
2	1984-12-15	09:58	–	2.65262	51.32	–	–	102' (Pass 1&2). 87' (Pass 3)
2	1984-12-15	18:54	31.1	2.65239	51.55	–	–	–
2	1984-12-16	00:43	–	2.65204	51.91	–	–	–
2	1984-12-16	10:40	–	2.65156	52.39	–	–	(+107' Pass 3). (+153' Pass 1&2)
2	1984-12-16	22:08	64.6	2.65130	52.64	–	–	–
2	1984-12-17	00:54	66.8	2.65115	52.80	–	–	–
2	1984-12-17	09:05	72.2	2.65077	53.18	–	–	237' (Pass 1)
2	1984-12-17	21:53	82.9	2.65029	53.66	–	–	–
2	1984-12-18	03:38	86.6	2.65019	53.76	–	–	Fass pass 1 at 967'. Note: Face pass 2 at 885' and floor trim at 880'.
2	1984-12-18	09:16	89.0	2.64996	53.99	–	–	292' (Pass 1)
2	1984-12-18	22:22	73.8	2.64963	54.32	–	–	–
2	1984-12-19	02:18	79.9	2.64932	54.63	–	–	262' (Pass 2). Face pass 1 at sta.-156. Face pass 2 at sta.-115. Mining pass 2 now.
2	1984-12-19	09:30	–	2.64909	54.85	–	–	(303' Pass 1). (287' Pass 2)
2	1984-12-19	21:05	74.1	2.64886	55.08	–	–	–
2	1984-12-20	03:03	–	2.64881	55.13	–	–	304' to face pass 1. 300' to pass 2. Face pass 1 at 987' (STA. -157). Face pass 2 at 985' (STA. -153). Floor pass on south side at 975' (STA. -145).
2	1984-12-20	10:30	61.6	2.64838	55.57	–	–	+202' Pass 4
2	1984-12-20	18:36	92.4	2.64792	56.02	–	–	–
2	1984-12-21	03:44	91.4	2.64780	56.15	–	–	300' to face pass 2. Face pass 1 at STA. -157'. Face pass 2 at STA -153'.
2	1984-12-21	10:01	92.0	2.64762	56.33	–	–	–
2	1984-12-21	21:58	92.4	2.64696	56.99	–	–	–
2	1984-12-22	06:05	92.7	2.64739	56.56	–	–	304' pass 1 & 2
2	1984-12-22	09:00	–	2.64683	57.11	–	–	–
2	1984-12-22	21:53	92.4	2.64653	57.42	–	–	–
2	1984-12-23	03:01	92.4	2.64655	57.39	–	–	–
2	1984-12-23	10:34	92.7	2.64620	57.75	–	–	304' to Pass 1 & 2
2	1984-12-23	18:22	92.4	2.64597	57.98	–	–	–
2	1984-12-24	01:09	62.2	2.64604	57.90	–	–	Face -98.7'
2	1984-12-26	09:06	99.1	2.64495	58.99	–	–	–
2	1984-12-26	17:50	99.7	2.64348	60.47	–	–	–
2	1984-12-27	02:41	108.2	2.64340	60.54	–	–	–
2	1984-12-27	08:51	111.9	2.64345	60.49	–	–	–
2	1984-12-27	22:20	118.6	2.64312	60.82	–	–	–
2	1984-12-28	00:36	122.5	2.64305	60.90	–	–	–
2	1984-12-28	09:08	122.8	2.64284	61.10	–	–	403' pass 1. 357' pass 2.
2	1984-12-28	17:32	122.8	2.64267	61.28	–	–	–
2	1984-12-29	02:14	98.1	2.64244	61.51	–	–	–
2	1984-12-29	09:07	109.4	2.64224	61.71	–	–	–
2	1984-12-29	18:00	122.8	2.64221	61.74	–	–	–
2	1984-12-30	00:30	-115.8	2.64211	61.84	–	–	–
2	1984-12-30	08:44	–	2.64180	62.14	–	–	Pass 1 - 405 ft. Pass 2 - 400 ft.
2	1984-12-30	17:03	130.1	2.64165	62.30	–	–	–
2	1984-12-31	01:38	-136.2	2.64152	62.42	–	–	–
2	1985-01-02	09:05	–	2.64079	63.16	–	–	Pass 1 457'. Pass 2 402'.
2	1985-01-02	19:21	145.4	2.64043	63.52	–	–	–
2	1985-01-03	01:03	131.7	2.64010	63.85	–	–	–
2	1985-01-03	09:09	137.8	2.64018	63.77	–	–	–
2	1985-01-03	19:34	151.5	2.63992	64.02	–	–	–
2	1985-01-04	05:46	139.3	2.63980	64.15	–	–	The technician only recorded '05' for the time of day. The time of 5:46 was based on the other readings.
2	1985-01-04	10:54	150.6	2.63959	64.35	–	–	–
2	1985-01-04	17:50	134.7	2.63962	64.33	–	–	442' (4th pass)
2	1985-01-05	01:37	151.8	2.63934	64.61	–	–	–
2	1985-01-05	08:55	–	2.63931	64.63	–	–	–

Table C-12. Room G Station +45.6 m vertical mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_z (m)	δ_z (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
2	1985-01-05	17:14	150.9	2.63919	64.76	–	–	–
2	1985-01-06	01:56	151.8	2.63929	64.66	–	–	–
2	1985-01-06	09:57	17.4	2.63903	64.91	–	–	–
2	1985-01-06	19:54	150.9	2.63855	65.40	–	–	–
2	1985-01-07	05:51	–	2.63827	65.67	–	–	–
2	1985-01-07	10:56	–	2.63812	65.83	–	–	–
2	1985-01-07	16:54	–	2.63794	66.00	–	–	–
2	1985-01-08	01:33	151.8	2.63799	65.95	–	–	–
2	1985-01-08	09:39	–	2.63771	66.23	–	–	–
2	1985-01-08	16:42	–	2.63782	66.13	–	–	–
2	1985-01-09	09:45	–	2.63754	66.41	–	–	–
2	1985-01-09	13:35	–	2.63715	66.79	–	–	–
2	1985-01-09	16:58	–	2.63764	66.31	–	–	–
2	1985-01-10	02:48	–	2.63718	66.77	–	–	–
2	1985-01-10	11:10	–	2.63705	66.89	–	–	–
2	1985-01-10	17:29	–	2.63698	66.97	–	–	–
2	1985-01-11	03:23	151.5	2.63680	67.15	–	–	–
2	1985-01-11	13:48	–	2.63675	67.20	–	–	–
2	1985-01-11	16:34	–	2.63677	67.17	–	–	–
2	1985-01-12	02:21	151.5	2.63647	67.48	–	–	–
2	1985-01-12	08:56	–	2.63680	67.15	–	–	–
2	1985-01-12	17:31	–	2.63629	67.66	–	–	–
2	1985-01-13	10:29	–	2.63601	67.94	–	–	–
2	1985-01-13	19:07	–	2.63611	67.83	–	–	–
2	1985-01-13	–	151.5	–	–	–	–	Points blocked by drill
2	1985-01-14	03:18	151.5	2.63596	67.99	–	–	–
2	1985-01-14	09:22	–	2.63578	68.16	–	–	–
2	1985-01-14	18:52	–	2.63563	68.32	–	–	–
2	1985-01-15	01:26	151.5	2.63538	68.57	–	–	–
2	1985-01-15	09:32	–	2.63553	68.42	–	–	–
2	1985-01-15	19:01	–	2.63535	68.60	–	–	–
2	1985-01-16	11:00	–	2.63495	69.00	–	–	–
2	1985-01-16	19:44	–	2.63500	68.95	–	–	–
2	1985-01-16	–	151.5	–	–	–	–	Graveyard - drill in way
2	1985-01-17	09:51	–	2.63464	69.31	–	–	–
2	1985-01-17	18:58	–	2.63461	69.33	–	–	–
2	1985-01-17	–	151.5	–	–	–	–	Graveyard - points blocked by drill
2	1985-01-18	18:07	–	2.63436	69.59	–	–	–
2	1985-01-18	–	–	–	–	–	–	FNR - Not read. Boreole checkout.
2	1985-01-18	–	–	–	–	–	–	Graveyard - points blocked.
2	1985-01-19	02:09	–	2.63416	69.79	–	–	–
2	1985-01-19	10:32	–	2.63408	69.87	–	–	–
2	1985-01-19	19:07	–	2.63401	69.94	–	–	–
2	1985-01-20	04:15	151.5	2.63383	70.12	–	–	–
2	1985-01-20	13:56	–	2.63378	70.17	–	–	–
2	1985-01-20	16:50	–	2.63360	70.35	–	–	–
2	1985-01-21	04:58	151.5	2.63809	65.85	×	–	–
2	1985-01-21	18:06	–	2.63345	70.50	–	–	–
2	1985-01-21	–	–	–	–	–	–	Day shift. No readings due to bore hole checkout
2	1985-01-22	01:47	–	2.63352	70.42	–	–	–
2	1985-01-22	–	–	–	–	–	–	Swing shift. No readings due to bore hole checkout
2	1985-01-22	–	–	–	–	–	–	Day shift. No readings due to bore hole checkout
2	1985-01-23	05:12	–	2.63314	70.81	–	–	–
2	1985-01-23	09:35	–	2.63296	70.98	–	–	–
2	1985-01-23	20:08	–	2.63301	70.93	–	–	–
2	1985-01-24	02:25	–	2.63289	71.06	–	–	–
2	1985-01-24	09:24	–	2.63317	70.78	–	–	–
2	1985-01-24	18:06	–	2.63256	71.39	–	–	–
2	1985-01-25	01:41	–	2.63253	71.42	–	–	–
2	1985-01-25	09:51	–	2.63266	71.29	–	–	–
2	1985-01-25	16:59	–	2.63251	71.44	–	–	–
2	1985-01-26	01:33	–	2.63223	71.72	–	–	–
2	1985-01-26	09:14	–	2.63223	71.72	–	–	–
2	1985-01-26	21:40	–	2.63195	72.00	–	–	–
2	1985-01-27	00:59	–	2.63192	72.02	–	–	–
2	1985-01-27	09:17	151.5	2.63182	72.13	–	–	–
2	1985-01-27	20:12	–	2.63157	72.38	–	–	–
2	1985-01-28	01:22	151.5	2.63164	72.30	–	–	–
2	1985-01-28	09:34	–	2.63154	72.41	–	–	–
2	1985-01-28	17:24	–	2.63169	72.25	–	–	–
2	1985-01-29	01:24	–	2.63141	72.53	–	–	–
2	1985-01-29	10:17	151.5	2.63134	72.61	–	–	–
2	1985-01-29	18:59	–	2.63108	72.86	–	–	–
2	1985-01-30	01:24	–	2.63116	72.79	–	–	–
2	1985-01-30	10:36	151.5	2.63119	72.76	–	–	–
2	1985-01-30	17:54	–	2.63103	72.91	–	–	–
2	1985-01-31	01:16	–	2.63088	73.07	–	–	–
2	1985-01-31	13:01	151.5	2.63073	73.22	–	–	–
2	1985-01-31	19:09	–	2.63073	73.22	–	–	–
2	1985-02-01	01:43	–	2.63032	73.62	–	–	–
2	1985-02-01	11:27	151.5	2.63050	73.45	–	–	–
2	1985-02-01	17:58	–	2.63053	73.42	–	–	–
2	1985-02-02	01:06	–	2.63027	73.68	–	–	–
2	1985-02-02	10:07	151.5	2.63027	73.68	–	–	–
2	1985-02-02	17:49	–	2.63022	73.73	–	–	–
2	1985-02-03	01:22	–	2.63014	73.80	–	–	–

Table C-12. Room G Station +45.6 m vertical mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_z (m)	δ_z (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
2	1985-02-03	09:24	151.5	2.62997	73.98	–	–	–
2	1985-02-03	17:45	–	2.62979	74.16	–	–	–
2	1985-02-04	01:51	–	2.62981	74.13	–	–	–
2	1985-02-04	09:37	151.5	2.62961	74.34	–	–	–
2	1985-02-04	18:00	–	2.62959	74.36	–	–	–
2	1985-02-05	02:29	–	2.62966	74.29	–	–	–
2	1985-02-05	10:15	151.5	2.62943	74.51	–	–	–
2	1985-02-05	17:35	–	2.62936	74.59	–	–	–
2	1985-02-06	03:22	–	2.62938	74.56	–	–	–
2	1985-02-06	09:54	151.5	2.62885	75.10	–	–	–
2	1985-02-06	18:06	–	2.62898	74.97	–	–	–
2	1985-02-07	06:19	–	2.62956	74.39	–	–	–
2	1985-02-07	12:56	151.5	2.62938	74.56	–	–	–
2	1985-02-07	18:18	–	2.62953	74.41	–	–	–
2	1985-02-08	01:59	–	2.62926	74.69	–	–	–
2	1985-02-08	09:08	–	2.62943	74.51	–	–	–
2	1985-02-08	18:32	–	2.62920	74.74	–	–	–
2	1985-02-09	02:51	–	2.62900	74.95	–	–	–
2	1985-02-09	09:25	–	2.62903	74.92	–	–	–
2	1985-02-09	18:21	–	2.62890	75.05	–	–	–
2	1985-02-10	00:59	–	2.62915	74.79	–	–	–
2	1985-02-10	08:47	–	2.62887	75.07	–	–	–
2	1985-02-10	18:15	–	2.62875	75.20	–	–	–
2	1985-02-11	01:19	–	2.62898	74.97	–	–	–
2	1985-02-11	09:08	–	2.62910	74.84	–	–	–
2	1985-02-11	18:14	–	2.62887	75.07	–	–	–
2	1985-02-12	02:26	–	2.62885	75.10	–	–	–
2	1985-02-12	09:16	–	2.62900	74.95	–	–	–
2	1985-02-12	–	–	–	–	–	–	Readings not taken due to room dimensions in Room 11
2	1985-02-13	02:58	–	2.62844	75.50	–	–	–
2	1985-02-13	09:28	–	2.62857	75.38	–	–	–
2	1985-02-13	17:07	151.5	2.62862	75.33	–	–	–
2	1985-02-14	03:02	–	2.62867	75.28	–	–	–
2	1985-02-14	09:18	–	2.60332	100.63	×	–	–
2	1985-02-14	18:56	–	2.62837	75.58	–	–	–
2	1985-02-15	01:21	–	2.62852	75.43	–	–	–
2	1985-02-15	09:13	–	2.62839	75.56	–	–	–
2	1985-02-15	18:27	–	2.62814	75.81	–	–	–
2	1985-02-16	05:42	–	2.62811	75.83	–	–	–
2	1985-02-16	09:00	–	2.62811	75.83	–	–	–
2	1985-02-16	16:55	–	2.62793	76.01	–	–	–
2	1985-02-17	01:49	–	2.62786	76.09	–	–	–
2	1985-02-17	09:04	–	2.62796	75.99	–	–	–
2	1985-02-17	17:42	–	2.62783	76.11	–	–	–
2	1985-02-18	02:45	–	2.62786	76.09	–	–	–
2	1985-02-18	09:14	–	2.62781	76.14	–	–	–
2	1985-02-19	09:16	–	2.62778	76.16	–	–	–
2	1985-02-20	10:59	–	2.62727	76.67	–	–	–
2	1985-02-21	–	–	–	–	–	–	No readings. Other work
2	1985-02-22	09:48	–	2.62702	76.93	–	–	–
2	1985-02-25	10:20	–	2.62628	77.66	–	–	–
2	1985-02-26	09:48	–	2.62626	77.69	–	–	–
2	1985-02-27	09:23	–	2.62608	77.87	–	–	–
2	1985-02-28	13:26	–	2.62565	78.30	–	–	–
2	1985-03-01	09:30	–	2.62573	78.22	–	–	–
2	1985-03-04	11:10	–	2.62519	78.76	–	–	–
2	1985-03-05	09:50	–	2.62509	78.86	–	–	–
2	1985-03-06	10:10	–	2.59959	104.36	×	–	–
2	1985-03-07	09:43	–	2.62479	79.16	–	–	–
2	1985-03-08	10:26	–	2.62443	79.52	–	–	–
2	1985-03-11	09:46	–	2.62407	79.87	–	–	–
2	1985-03-12	13:07	–	2.62390	80.05	–	–	–
2	1985-03-13	13:42	–	2.62372	80.23	–	–	–
2	1985-03-14	10:01	–	2.62359	80.36	–	–	–
2	1985-03-15	11:14	–	2.62352	80.43	–	–	–
2	1985-03-18	10:31	–	2.62296	80.99	–	–	–
2	1985-03-19	09:56	–	2.62275	81.19	–	–	–
2	1985-03-20	–	–	–	–	–	–	No readings taken due to Room 3 cross-sections & geologic mapping.
2	1985-03-21	11:30	–	2.62263	81.32	–	–	–
2	1985-03-22	10:58	–	2.62242	81.52	–	–	–
2	1985-03-25	10:20	–	2.62202	81.93	–	–	–
2	1985-03-26	09:45	–	2.62191	82.03	–	–	–
2	1985-03-27	09:33	–	2.62174	82.21	–	–	–
2	1985-03-28	12:22	–	2.62153	82.41	–	–	–
3	1985-03-28	14:15	–	2.61828	82.43	–	–	Ramsett EMCP's were replaced with grouted stur-anchor points.
3	1985-03-29	10:43	–	2.61803	82.69	–	–	Readings transposed according to previous and subseqent data. [Auditor indicated with arrows that the GM01-1 and GM02-2 readings were transposed with the GM11-1 and GM12-2 readings.]
3	1985-04-01	09:24	–	2.61821	82.51	–	–	–
3	1985-04-02	13:20	–	2.61767	83.04	–	–	–
3	1985-04-03	09:32	–	2.61752	83.19	–	–	–
3	1985-04-04	10:23	–	2.61727	83.45	–	–	–
3	1985-04-08	09:21	–	2.61661	84.11	–	–	–

Table C-12. Room G Station +45.6 m vertical mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_z (m)	δ_z (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
3	1985-04-09	10:14	–	2.61645	84.26	–	–	–
3	1985-04-10	09:29	–	2.61645	84.26	–	–	–
3	1985-04-11	09:43	–	2.61625	84.46	–	–	–
3	1985-04-15	13:09	–	2.61376	86.95	–	–	–
3	1985-04-16	10:53	–	2.61554	85.18	–	–	–
3	1985-04-17	10:33	–	2.61541	85.30	–	–	–
3	1985-04-18	09:42	–	2.61544	85.28	–	–	–
3	1985-04-19	09:23	–	2.61531	85.40	–	–	–
3	1985-04-22	09:30	–	2.61503	85.68	–	–	–
3	1985-04-23	09:40	–	2.61468	86.04	–	–	–
3	1985-04-24	09:26	–	2.61473	85.99	–	–	–
3	1985-04-25	10:13	–	2.61468	86.04	–	–	–
3	1985-04-26	09:35	–	2.61447	86.24	–	–	–
3	1985-04-29	10:20	–	2.61412	86.60	–	–	–
3	1985-04-30	12:36	–	2.61417	86.55	–	–	–
3	1985-05-01	09:32	–	2.61389	86.83	–	–	–
3	1985-05-02	09:43	–	2.61369	87.03	–	–	–
3	1985-05-03	10:33	–	2.61361	87.11	–	–	–
3	1985-05-06	13:00	–	2.61328	87.44	–	–	–
3	1985-05-07	09:19	–	2.61315	87.56	–	–	–
3	1985-05-08	10:45	–	2.61308	87.64	–	–	–
3	1985-05-09	10:02	–	2.61290	87.82	–	–	–
3	1985-05-10	09:55	–	2.61285	87.87	–	–	–
3	1985-05-13	13:59	–	2.61244	88.27	–	–	–
3	1985-05-14	09:34	–	2.61226	88.45	–	–	–
3	1985-05-15	09:43	–	2.61226	88.45	–	–	–
3	1985-05-16	10:04	–	2.61224	88.48	–	–	–
3	1985-05-17	11:50	–	2.61198	88.73	–	–	–
3	1985-05-20	10:15	–	2.61181	88.91	–	–	–
3	1985-05-21	09:27	–	2.61165	89.06	–	–	–
3	1985-05-22	10:04	–	2.61155	89.16	–	–	–
3	1985-05-23	10:13	–	2.61125	89.47	–	–	–
3	1985-05-24	12:56	–	2.61384	86.88	–	–	–
3	1985-05-28	11:12	–	2.61076	89.95	–	–	–
3	1985-05-29	09:27	–	2.61074	89.98	–	–	–
3	1985-05-30	09:53	–	2.61071	90.00	–	–	–
3	1985-05-31	09:30	–	2.61056	90.15	–	–	–
3	1985-06-03	09:54	–	2.61023	90.48	–	–	–
3	1985-06-04	08:59	–	2.61013	90.59	–	–	–
3	1985-06-05	09:46	–	2.61010	90.61	–	–	–
3	1985-06-06	09:26	–	2.60985	90.86	–	–	–
3	1985-06-07	11:02	–	2.60980	90.92	–	–	–
3	1985-06-10	09:05	–	2.60957	91.14	–	–	–
3	1985-06-11	09:38	–	2.60932	91.40	–	–	–
3	1985-06-12	09:03	–	2.60929	91.42	–	–	–
3	1985-06-13	11:21	–	2.60919	91.53	–	–	–
3	1985-06-14	10:34	–	2.60904	91.68	–	–	–
3	1985-06-17	10:14	–	2.60881	91.91	–	–	–
3	1985-06-18	09:05	–	2.60868	92.03	–	–	–
3	1985-06-19	10:15	–	2.60853	92.19	–	–	–
3	1985-06-20	10:29	–	2.60830	92.41	–	–	–
3	1985-06-21	09:32	–	2.60822	92.49	–	–	–
3	1985-06-24	11:12	–	2.60667	94.04	–	–	–
3	1985-06-25	13:19	–	2.60784	92.87	–	–	–
3	1985-06-26	09:11	–	2.60802	92.69	–	–	–
3	1985-06-27	09:36	–	2.60794	92.77	–	–	–
3	1985-06-28	00:00	–	–	–	–	–	Not read - short handed
3	1985-07-01	09:25	–	2.60731	93.40	–	–	–
3	1985-07-02	10:16	–	2.60726	93.46	–	–	–
3	1985-07-03	09:04	–	2.60711	93.61	–	–	–
3	1985-07-08	10:55	–	2.60660	94.12	–	–	–
3	1985-07-09	10:29	–	2.60634	94.37	–	–	–
3	1985-07-10	09:12	–	2.60629	94.42	–	–	–
3	1985-07-11	11:10	–	2.60645	94.27	–	–	–
3	1985-07-12	09:49	–	2.60619	94.52	–	–	–
3	1985-07-15	13:34	–	2.60589	94.83	–	–	–
3	1985-07-16	14:37	–	2.60584	94.88	–	–	–
3	1985-07-17	14:34	–	2.60439	96.33	–	–	–
3	1985-07-18	09:35	–	2.60571	95.01	–	–	–
3	1985-07-19	10:41	–	2.60556	95.16	–	–	–
3	1985-07-22	13:37	–	2.60510	95.61	–	–	Before roof bolting
3	1985-07-22	14:17	–	2.60490	95.82	–	–	Reading after roof bolts installed near point
3	1985-07-23	10:03	–	2.60505	95.67	–	–	–
3	1985-07-24	09:12	–	2.60502	95.69	–	–	–
3	1985-07-25	10:54	–	2.60477	95.94	–	–	–
3	1985-07-26	14:07	–	2.60482	95.89	–	–	–
3	1985-07-29	09:30	–	2.60457	96.15	–	–	–
3	1985-07-30	09:35	–	2.60447	96.25	–	–	–
3	1985-07-31	11:40	–	2.60426	96.45	–	–	–
3	1985-08-01	09:34	–	2.60431	96.40	–	–	–
3	1985-08-02	10:59	–	2.60408	96.63	–	–	–
3	1985-08-05	10:27	–	2.60401	96.71	–	–	–
3	1985-08-06	09:47	–	2.75300	-52.29	×	–	–
3	1985-08-07	10:26	–	2.60360	97.11	–	–	–
3	1985-08-08	10:20	–	2.60363	97.09	–	–	–
3	1985-08-09	10:42	–	2.60353	97.19	–	–	–

Table C-12. Room G Station +45.6 m vertical mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_z (m)	δ_z (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
3	1985-08-12	10:41	–	2.60325	97.47	–	–	–
3	1985-08-13	10:06	–	2.60299	97.72	–	–	–
3	1985-08-14	11:06	–	2.60304	97.67	–	–	–
3	1985-08-15	11:13	–	2.60292	97.80	–	–	–
3	1985-08-16	11:21	–	2.60269	98.03	–	–	–
3	1985-08-19	09:56	–	2.60266	98.05	–	–	–
3	1985-08-20	09:34	–	2.60236	98.36	–	–	–
3	1985-08-21	10:08	–	2.60243	98.28	–	–	–
3	1985-08-22	10:10	–	2.60228	98.43	–	–	–
3	1985-08-23	13:52	–	2.60223	98.48	–	–	–
3	1985-08-26	14:08	–	2.60170	99.02	–	–	–
3	1985-08-27	11:17	–	2.60177	98.94	–	–	–
3	1985-08-28	09:45	–	2.60162	99.09	–	–	–
3	1985-08-29	10:13	–	2.60159	99.12	–	–	–
3	1985-08-30	13:43	–	2.60223	98.48	–	–	–
3	1985-09-03	11:05	–	2.60134	99.37	–	–	–
3	1985-09-04	11:30	–	2.60137	99.35	–	–	–
3	1985-09-05	09:17	–	2.60109	99.63	–	–	–
3	1985-09-06	09:24	–	2.60099	99.73	–	–	–
3	1985-09-09	09:38	–	2.60071	100.01	–	–	–
3	1985-09-10	10:15	–	2.60060	100.11	–	–	–
3	1985-09-11	10:00	–	2.60055	100.16	–	–	–
3	1985-09-12	10:45	–	2.60048	100.24	–	–	–
3	1985-09-13	09:49	–	2.60048	100.24	–	–	–
3	1985-09-16	09:47	–	2.60020	100.52	–	–	–
3	1985-09-17	10:00	–	2.59997	100.75	–	–	–
3	1985-09-18	10:05	–	2.59992	100.80	–	–	–
3	1985-09-19	12:52	–	2.59979	100.92	–	–	–
3	1985-09-20	09:31	–	2.59972	101.00	–	–	–
3	1985-09-23	09:57	–	2.59956	101.15	–	–	–
3	1985-09-26	10:01	–	2.59916	101.56	–	–	–
3	1985-09-30	10:02	–	2.59880	101.91	–	–	–
3	1985-10-03	10:46	–	2.59857	102.14	–	–	–
3	1985-10-07	13:30	–	2.59827	102.45	–	–	–
3	1985-10-10	10:03	–	2.59794	102.78	–	–	–
3	1985-10-14	09:39	–	2.59768	103.03	–	–	–
3	1985-10-17	09:44	–	2.59730	103.41	–	–	–
3	1985-10-21	09:58	–	2.59707	103.64	–	–	–
3	1985-10-23	13:57	–	2.59667	104.05	–	–	–
3	1985-10-28	10:03	–	2.59641	104.30	–	–	–
3	1985-10-31	10:14	–	2.59629	104.43	–	–	–
3	1985-11-04	10:03	–	2.59613	104.58	–	–	–
3	1985-11-07	10:40	–	2.59555	105.17	–	–	–
3	1985-11-11	10:31	–	2.59550	105.22	–	–	–
3	1985-11-14	10:11	–	2.59514	105.57	–	–	–
3	1985-11-19	09:43	–	2.59474	105.98	–	–	–
3	1985-11-21	09:49	–	2.59456	106.16	–	–	–
3	1985-11-25	10:20	–	2.59433	106.38	–	–	–
3	1985-12-02	10:33	–	2.60386	96.86	×	–	–
3	1985-12-05	10:21	–	2.59349	107.22	–	–	–
3	1985-12-09	10:16	–	2.59304	107.68	–	–	–
3	1985-12-12	09:22	–	2.59288	107.83	–	–	–
3	1985-12-16	10:28	–	2.59253	108.19	–	–	–
3	1985-12-19	10:11	–	2.59237	108.34	–	–	–
3	1985-12-26	09:59	–	2.59166	109.05	–	–	–
3	1985-12-30	14:02	–	2.59146	109.25	–	–	–
3	1986-01-02	11:35	–	2.59123	109.48	–	–	–
3	1986-01-06	10:10	–	2.59088	109.84	–	–	–
3	1986-01-09	10:36	–	2.58831	112.40	×	–	–
3	1986-01-13	10:05	–	2.59055	110.17	–	–	–
3	1986-01-16	10:24	–	2.59016	110.55	–	–	–
3	1986-01-20	09:59	–	2.58989	110.83	–	–	–
3	1986-01-23	10:27	–	2.58976	110.96	–	–	–
3	1986-01-27	09:35	–	2.58928	111.44	–	–	–
3	1986-01-30	10:36	–	2.58912	111.59	–	–	–
3	1986-02-03	11:11	–	2.58902	111.69	–	–	–
3	1986-02-06	10:58	–	2.58869	112.02	–	–	–
3	1986-02-10	10:10	–	2.58846	112.25	–	–	–
3	1986-02-13	10:46	–	2.58811	112.61	–	–	–
3	1986-02-17	10:05	–	2.58806	112.66	–	–	–
3	1986-02-20	09:54	–	2.58780	112.91	–	–	–
3	1986-02-27	14:22	–	2.58724	113.47	–	–	–
3	1986-03-05	13:22	–	2.58669	114.03	–	–	–
3	1986-03-10	10:28	–	2.58638	114.33	–	–	–
3	1986-03-13	09:15	–	2.58633	114.39	–	–	–
3	1986-03-17	11:25	–	2.58597	114.74	–	–	–
3	1986-03-25	13:35	–	2.58557	115.15	–	–	–
3	1986-03-27	09:18	–	2.58539	115.33	–	–	–
3	1986-03-31	09:40	–	2.58506	115.66	–	–	–
3	1986-04-03	09:20	–	2.58470	116.01	–	–	–
3	1986-04-07	09:03	–	2.58458	116.14	–	–	–
3	1986-04-10	13:13	–	2.58417	116.54	–	–	–
3	1986-04-14	10:22	–	2.58389	116.82	–	–	–
3	1986-04-17	10:00	–	2.58376	116.95	–	–	–
3	1986-04-24	10:31	–	2.58328	117.43	–	–	–
3	1986-05-01	10:08	–	2.58303	117.69	–	–	–

Table C-12. Room G Station +45.6 m vertical mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_z (m)	δ_z (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
3	1986-05-05	10:30	–	2.58260	118.12	–	–	–
3	1986-05-08	–	–	–	–	–	–	Hoist down
3	1986-05-13	14:10	–	2.58216	118.55	–	–	–
3	1986-05-16	14:32	–	2.58186	118.86	–	–	–
3	1986-05-20	09:43	–	2.58171	119.01	–	–	–
3	1986-05-23	11:38	–	2.58140	119.31	–	–	–
3	1986-05-29	09:47	–	2.58110	119.62	–	–	–
3	1986-06-02	09:41	–	2.58082	119.90	–	–	–
3	1986-06-05	09:34	–	2.58064	120.07	–	–	–
3	1986-06-09	09:27	–	2.58041	120.30	–	–	–
3	1986-06-13	10:14	–	2.58016	120.56	–	–	–
3	1986-06-16	13:45	–	2.57975	120.96	–	–	–
3	1986-06-19	10:10	–	2.57970	121.01	–	–	–
3	1986-06-26	10:54	–	2.57924	121.47	–	–	–
3	1986-06-30	13:11	–	2.57899	121.73	–	–	–
3	1986-07-03	09:49	–	2.57873	121.98	–	–	–
3	1986-07-10	14:03	–	2.57835	122.36	–	–	–
3	1986-07-15	10:37	–	2.57813	122.59	–	–	–
3	1986-07-17	14:05	–	2.57790	122.82	–	–	–
3	1986-07-21	09:28	–	2.57777	122.95	–	–	–
3	1986-07-31	09:57	–	2.57698	123.73	–	–	–
3	1986-08-04	10:45	–	2.57675	123.96	–	–	–
3	1986-08-07	12:50	–	2.57665	124.06	–	–	–
3	1986-08-11	14:03	–	2.57647	124.24	–	–	–
3	1986-08-14	11:14	–	2.57607	124.65	–	–	–
3	1986-08-21	09:54	–	2.57576	124.95	–	–	–
3	1986-08-25	10:36	–	2.57538	125.33	–	–	–
3	1986-09-04	10:41	–	2.57510	125.61	–	–	–
3	1986-09-11	13:32	–	2.57454	126.17	–	–	–
3	1986-09-15	14:19	–	2.57419	126.53	–	–	–
3	1986-09-18	10:22	–	2.57391	126.81	–	–	–
3	1986-09-22	14:45	–	2.57368	127.03	–	–	–
3	1986-09-25	10:04	–	2.57353	127.19	–	–	–
3	1986-09-29	10:12	–	2.57317	127.54	–	–	–
3	1986-10-06	10:25	–	2.57274	127.97	–	–	–
3	1986-10-13	10:56	–	2.57241	128.30	–	–	–
3	1986-10-17	13:51	–	2.57211	128.61	–	–	–
3	1986-10-22	11:48	–	2.57165	129.07	–	–	–
3	1986-10-30	14:02	–	2.57137	129.35	–	–	–
3	1986-11-06	14:15	–	2.57414	126.58	×	–	–
3	1986-11-13	11:07	–	2.57371	127.01	×	–	–
3	1986-11-20	14:02	–	2.57327	127.44	×	–	–
3	1986-12-04	10:40	–	2.57246	128.25	×	–	–
3	1986-12-11	10:27	–	2.57193	128.79	×	–	–
3	1986-12-18	10:57	–	2.57114	129.57	×	–	–
3	1986-12-22	10:56	–	2.57094	129.78	×	–	–
3	1986-12-31	10:03	–	2.57000	130.72	×	–	–
3	1987-01-05	10:41	–	2.56847	132.24	–	–	–
3	1987-01-12	13:32	–	2.56779	132.93	–	–	–
3	1987-01-19	10:54	–	2.56664	134.07	–	–	–
4	1987-02-16	13:25	–	1.44508	135.60	–	–	Rod #5
4	1987-03-16	10:25	–	1.44351	137.18	–	–	Rod #5
4	1987-04-06	12:45	–	1.44226	138.42	–	–	Rod #5
4	1987-06-22	13:35	–	1.43566	145.02	×	–	Rod #5
4	1987-06-29	14:27	–	1.43820	142.48	–	–	Rod #5
4	1987-07-06	13:33	–	1.43779	142.89	–	–	Rod #5
4	1987-07-13	11:36	–	1.43718	143.50	–	–	Rod #5
4	1987-07-27	11:02	–	1.43619	144.49	–	–	Rod #5
4	1987-07-31	13:57	–	1.43614	144.54	–	–	Rod #5
4	1987-08-26	10:02	–	1.43424	146.45	–	–	Rod #5
4	1987-09-25	12:18	–	1.43358	147.11	–	–	Rod #5
4	1987-10-23	12:55	–	1.43200	148.68	–	–	Rod #5
4	1987-11-16	12:14	–	1.43073	149.95	–	–	Rod #5
4	1987-12-17	10:45	–	1.42921	151.48	–	–	Rod #5
4	1988-01-15	10:17	–	1.42715	153.53	–	–	Rod #5
4	1988-02-09	11:10	–	1.42557	155.11	–	–	Rod #5
4	1988-03-11	–	–	–	–	–	–	Note: Not done due to (and the rest of note is unreadable)
4	1988-04-08	09:28	–	1.42270	157.98	–	–	Rod #5
4	1988-05-03	12:33	–	1.42024	160.44	–	–	Rod #5
4	1988-06-07	11:17	–	1.41963	161.05	–	–	Rod #5
4	1988-06-30	10:52	–	1.41877	161.92	–	–	Rod #5
4	1988-07-26	12:20	–	1.41541	165.27	–	–	Rod #5
4	1988-08-23	12:12	–	1.41381	166.87	–	–	Rod #5
4	1988-09-20	11:15	–	1.41475	165.93	–	–	Rod #5
4	1988-10-17	13:25	–	1.41346	167.22	–	–	Rod #5
4	1988-11-15	10:41	–	1.40937	171.31	–	–	Rod #5
4	1988-12-13	14:31	–	1.41046	170.22	–	–	Rod #5
4	1989-01-13	09:35	–	1.40917	171.52	–	–	Rod #5
4	1989-02-08	09:53	–	1.40805	172.63	–	–	Rod #5
4	1989-03-10	09:32	–	1.40482	175.86	–	–	Rod #5
4	1989-04-04	13:05	–	1.40358	177.11	–	–	Rod #5
4	1989-05-31	12:50	–	1.40099	179.70	–	–	Rod #5
4	1989-06-27	14:24	–	1.39939	181.30	–	–	Rod #5
4	1989-08-21	13:43	–	1.40040	180.28	–	–	Rod #5
4	1989-09-18	12:37	–	1.39667	184.01	–	–	Rod #5
4	1989-11-15	10:23	–	1.39400	186.68	–	–	Rod #5

Table C-12. Room G Station +45.6 m vertical mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_z (m)	δ_z (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
4	1989-12-15	10:00	–	1.39134	189.35	–	–	Rod #5
4	1990-01-11	12:25	–	1.39144	189.25	–	–	Rod #5
4	1990-02-08	10:56	–	1.39045	190.24	–	–	Rod #5
4	1990-04-30	12:30	–	1.38646	194.22	–	–	Rod #5
4	1991-05-22	12:51	–	1.36929	211.40	–	–	Rod #5
4	1991-05-29	10:40	–	1.55186	28.82	×	–	Rod #5
4	1991-06-05	10:20	–	1.36881	211.88	–	–	Rod #5
4	1991-06-12	09:12	–	1.36830	212.39	–	–	Rod #5
4	1991-06-19	11:03	–	1.36804	212.64	–	–	Rod #5
4	1991-06-26	12:44	–	1.36766	213.02	–	–	Rod #5
4	1991-07-10	12:40	–	1.36698	213.71	–	–	Rod #5
4	1991-07-17	12:54	–	1.36685	213.83	–	–	Rod #5
4	1991-07-26	12:58	–	1.36644	214.24	–	–	Rod #5
4	1991-07-31	12:26	–	1.36601	214.67	–	–	Rod #5
4	1991-08-16	11:00	–	1.36553	215.15	–	–	Rod #5
4	1991-08-21	09:10	–	1.36520	215.48	–	–	–
4	1991-08-28	09:55	–	1.36492	215.76	–	–	Rod #5
4	1991-09-04	10:05	–	1.36464	216.04	–	–	Rod #5
4	1991-09-12	09:37	–	1.36426	216.42	–	–	Rod #5
4	1991-09-18	13:32	–	1.36388	216.81	–	–	Rod #5
4	1991-09-25	12:20	–	1.36357	217.11	–	–	Rod #5
4	1991-10-04	–	–	–	–	–	–	No readings taken due to work in Q room
4	1991-10-11	10:34	–	1.36263	218.05	–	–	Rod #5
4	1991-10-17	10:28	–	1.36243	218.25	–	–	Rod #5
4	1991-10-23	09:36	–	1.36223	218.46	–	–	Rod #5
4	1991-10-30	10:04	–	1.36180	218.89	–	–	Rod #5
4	1991-11-06	13:44	–	1.36157	219.12	–	–	Rod #5
4	1991-11-13	10:37	–	1.36121	219.47	–	–	Rod #5 This procedure is obsolete. These readings are for information only.
4	1992-01-06	–	–	–	–	–	–	Not completed due to shut down
4	1992-01-08	10:35	–	1.35905	221.63	–	–	Rod 5
4	1992-01-14	14:16	–	1.35885	221.83	–	–	Rod 5
4	1992-01-21	09:40	–	1.35872	221.96	–	–	Rod 5
4	1992-01-28	13:03	–	1.35826	222.42	–	–	Rod 5
4	1992-02-04	13:45	–	1.35804	222.65	–	–	Rod 5
4	1992-02-11	10:32	–	1.35773	222.95	–	–	Rod 5
4	1992-02-21	10:40	–	1.35738	223.31	–	–	Rod 5
4	1992-02-26	12:42	–	1.35707	223.61	–	–	Rod 5
4	1992-03-03	12:29	–	1.35694	223.74	–	–	Rod 5
4	1992-03-13	–	–	–	–	–	–	No readings taken due to priority work in Room Q.
4	1992-03-17	09:41	–	1.35646	224.22	–	–	Rod 5
4	1992-03-24	13:38	–	1.35608	224.60	–	–	Rod 5
4	1992-04-01	13:13	–	1.35557	225.11	–	–	Rod 5
4	1992-04-10	12:43	–	1.35651	224.17	–	–	Rod 5
4	1992-04-15	–	–	–	–	–	–	Package was not received
4	1992-04-22	12:55	–	1.35603	224.65	–	–	Rod 5
4	1992-07-14	09:48	–	1.34996	230.72	–	–	Rod 5
4	1992-10-20	09:35	–	1.34445	236.24	–	–	Rod 5
4	1992-11-26	–	–	–	–	–	–	Procedure dropped
4	1993-01-26	09:37	–	1.34861	232.07	×	–	Rod 5
5	1993-07-14	10:19	–	1.34988	248.40	–	–	Rod 5
5	1994-02-17	12:56	–	1.33985	258.43	–	–	–
5	1994-02-23	12:54	–	1.33970	258.59	–	–	–
5	1994-03-17	13:18	–	1.33861	259.68	–	–	–
5	1994-03-24	13:59	–	1.33833	259.96	–	–	–
5	1994-03-29	13:08	–	1.23650	361.79	×	–	–
5	1994-04-05	13:08	–	1.33769	260.59	–	–	–
5	1994-04-14	10:13	–	1.33746	260.82	–	–	–
5	1994-04-21	09:55	–	1.33721	261.07	–	–	–
5	1994-04-28	10:05	–	1.33660	261.68	–	–	–
5	1994-05-04	12:59	–	1.33657	261.71	–	–	–
5	1994-05-23	12:33	–	1.33579	262.50	–	–	–
6	1994-06-07	13:12	–	1.32512	263.14	–	–	–
6	1994-06-29	09:27	–	1.32415	264.11	–	–	–
6	1994-07-07	13:12	–	1.32372	264.54	–	–	–
6	1994-07-13	09:37	–	1.32349	264.77	–	–	–
6	1994-07-21	09:45	–	1.32316	265.10	–	–	–
6	1994-07-27	09:40	–	1.32293	265.33	–	–	–
6	1994-08-03	09:58	–	1.32250	265.76	–	–	–
6	1994-08-10	13:07	–	1.32220	266.06	–	–	–
6	1994-08-16	13:31	–	1.32192	266.34	–	–	–
6	1994-08-23	10:35	–	1.32174	266.52	–	–	–
6	1994-08-30	10:06	–	1.32138	266.87	–	–	–
6	1994-09-09	12:32	–	1.32077	267.48	–	–	–
6	1994-09-12	12:31	–	1.32072	267.53	–	–	–
6	1994-09-23	09:42	–	1.32034	267.92	–	–	–
6	1994-09-26	10:37	–	1.32009	268.17	–	–	–
6	1994-10-05	10:26	–	1.31978	268.47	–	–	–
6	1994-10-19	13:05	–	1.31920	269.06	–	–	–
6	1994-10-26	13:11	–	1.31879	269.47	–	–	–
6	1994-11-02	09:27	–	1.31882	269.44	–	–	–
6	1994-11-08	09:22	–	1.31844	269.82	–	–	–
6	1994-11-15	12:36	–	1.31813	270.13	–	–	–
6	1994-11-21	12:51	–	1.31785	270.41	–	–	–
6	1994-11-29	12:17	–	1.31770	270.56	–	–	–
6	1994-12-07	12:16	–	1.31722	271.04	–	–	–

Table C-12. Room G Station +45.6 m vertical mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_z (m)	δ_z (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
6	1994-12-13	09:56	–	1.31691	271.34	–	–	–
6	1994-12-20	09:25	–	1.31623	272.03	–	–	–
6	1994-12-29	12:40	–	1.31587	272.39	–	–	–
6	1995-01-06	09:17	–	1.31552	272.74	–	–	–
6	1995-01-10	–	–	–	–	–	–	–
6	1995-01-11	09:15	–	1.31493	273.33	–	–	–
6	1995-01-18	09:37	–	1.31536	272.89	–	–	–
6	1995-01-31	12:34	–	1.31516	273.10	–	–	–
6	1995-02-15	09:43	–	1.31412	274.14	–	–	–
6	1995-02-24	09:40	–	1.31417	274.09	–	–	–
6	1995-03-01	10:03	–	1.31399	274.27	–	–	–
6	1995-03-08	10:16	–	1.31326	275.00	–	–	–
6	1995-03-14	12:27	–	1.31336	274.90	–	–	–
6	1995-03-22	10:14	–	1.31295	275.31	–	–	–
6	1995-03-29	09:33	–	1.31262	275.64	–	–	–
6	1995-04-06	10:11	–	1.31201	276.25	–	–	–
6	1995-04-10	12:22	–	1.31191	276.35	–	–	–
6	1995-04-19	09:54	–	1.31153	276.73	–	–	–
6	1995-04-26	12:37	–	1.31135	276.91	–	–	–
6	1995-05-02	09:42	–	1.31115	277.11	–	–	–
6	1995-05-10	10:02	–	1.31079	277.47	–	–	–

C.3. Smoothed and Interpolated Closure Plots

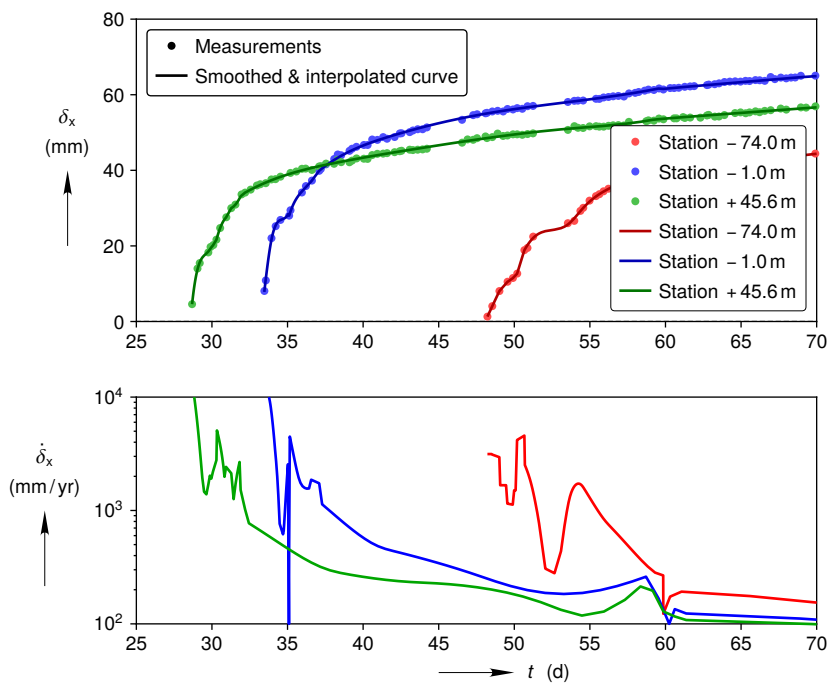


Figure C-7. Room G smoothed and interpolated horizontal closure curves compared against reconstructed mining sequence closure measurements during mining in the top plot. Closure rate curves computed from the smoothed closure curves during mining in the bottom plot.

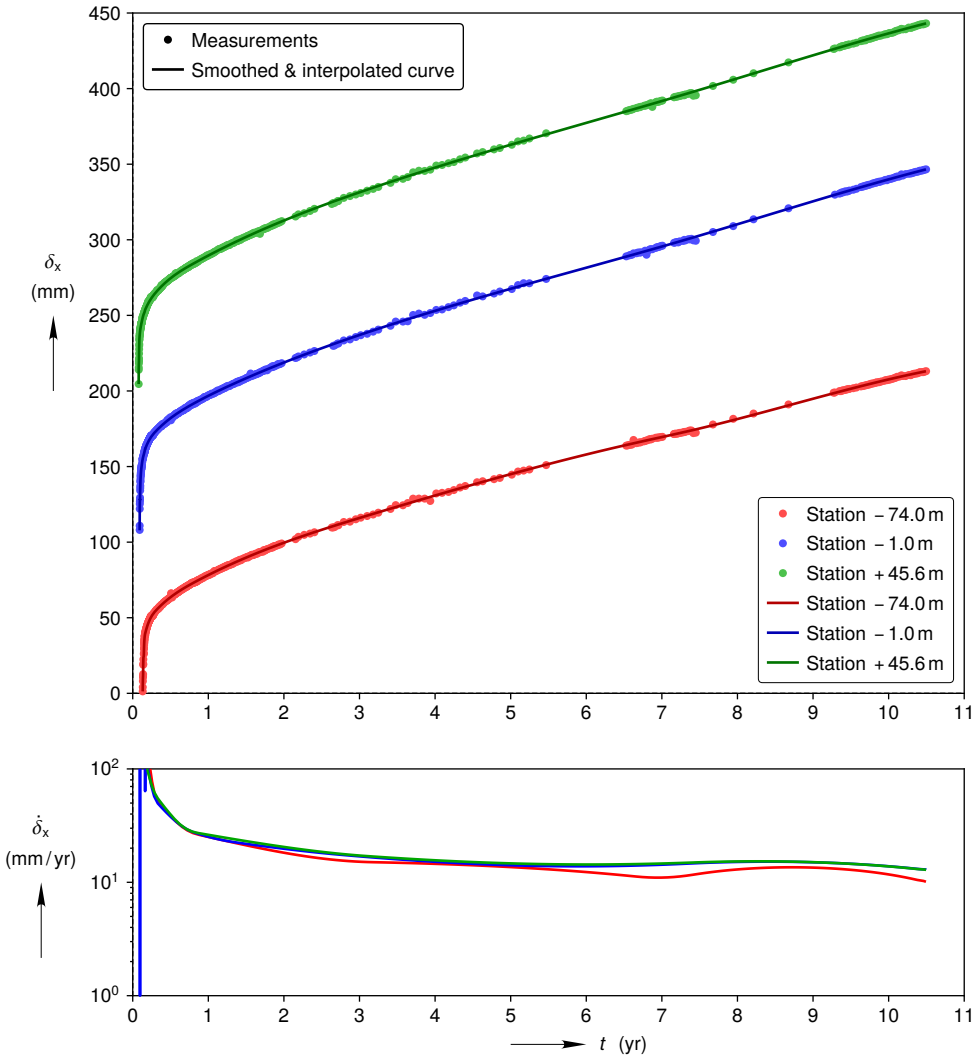


Figure C-8. Room G smoothed and interpolated full horizontal closure curves compared against reconstructed mining sequence closure measurements in the top plot. (Each successive station's horizontal closure curve and measurements are shifted up by 100 mm to enhance legibility.) Closure rate curves computed from the smoothed closure curves in the bottom plot.

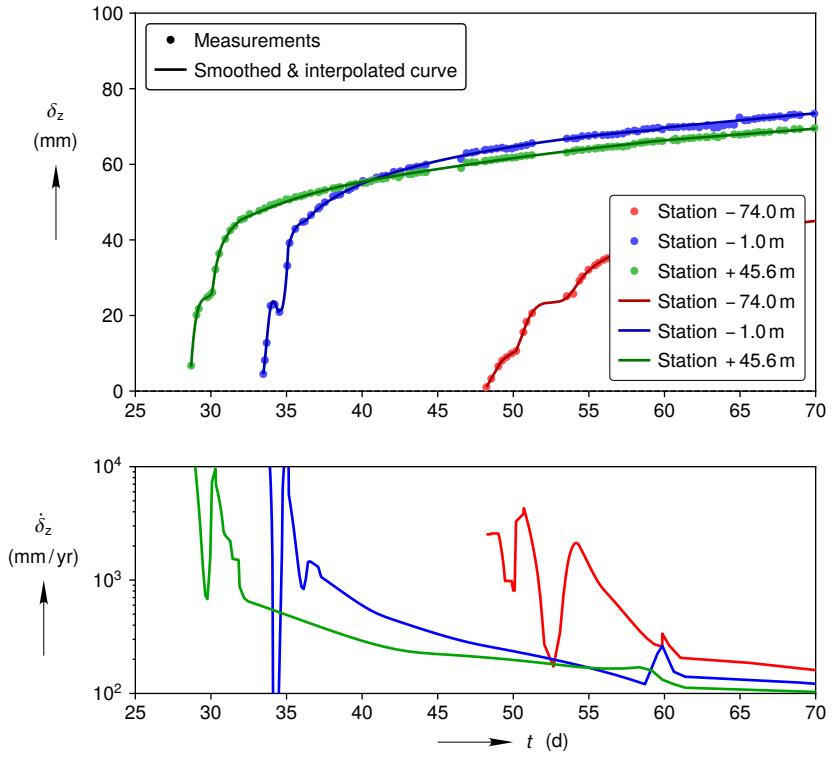


Figure C-9. Room G smoothed and interpolated vertical closure curves compared against reconstructed mining sequence closure measurements during mining in the top plot. Closure rate curves computed from the smoothed closure curves during mining in the bottom plot.

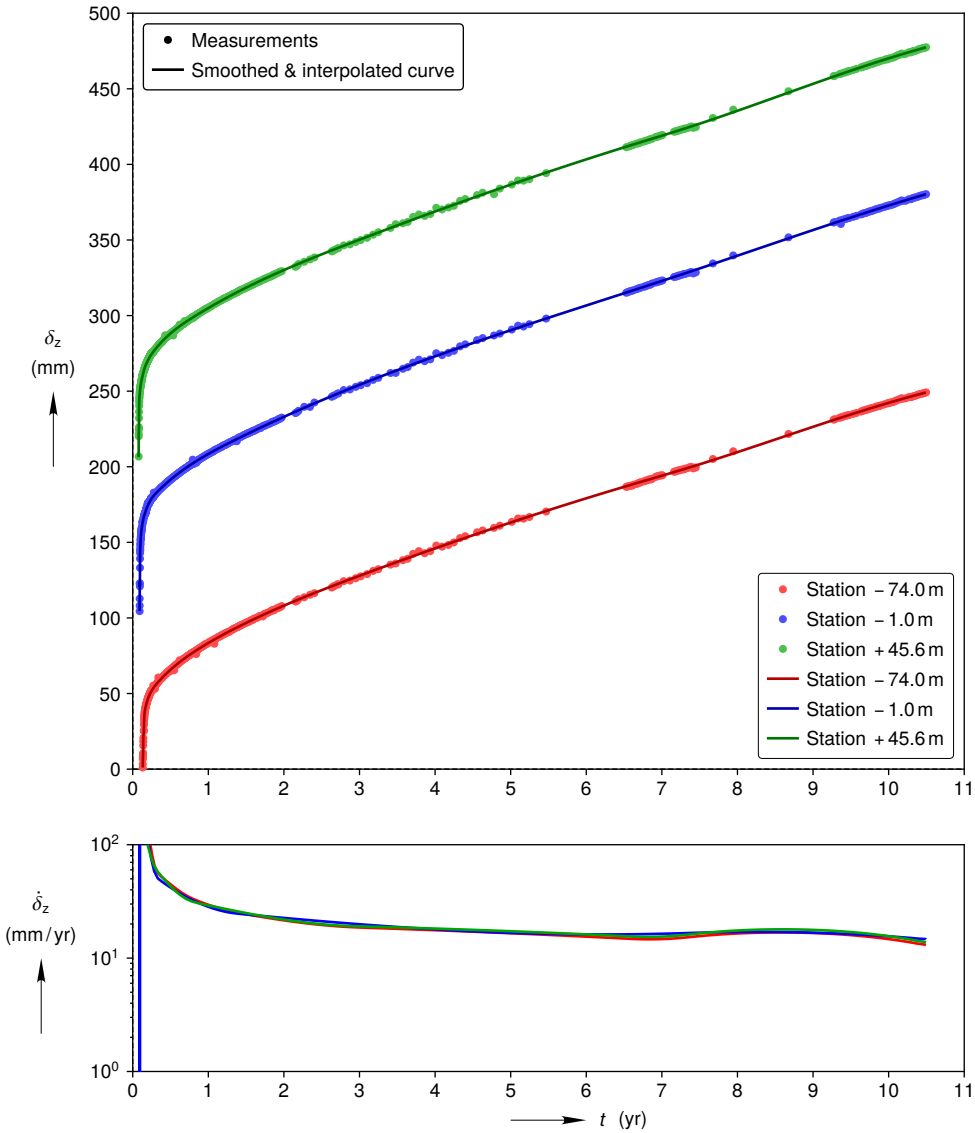


Figure C-10. Room G smoothed and interpolated full vertical closure curves compared against reconstructed mining sequence closure measurements in the top plot. (Each successive station's vertical closure curve and measurements are shifted up by 100 mm to enhance legibility.) Closure rate curves computed from the smoothed closure curves in the bottom plot.

C.4. Smoothed and Interpolated Closure Data

The t values in Table C-13 are relative to the estimated start of room excavation (1984-11-09 20:00). The first t value for each station in Table C-13 corresponds to t_0 for that station.

Table C-13. Room G smoothed and interpolated mining sequence closure data

Station -74.0 m			Station -1.0 m			Station +45.6 m		
t (yr)	δ_x (mm)	δ_z (mm)	t (yr)	δ_x (mm)	δ_z (mm)	t (yr)	δ_x (mm)	δ_z (mm)
0.131753	–	–	0.091262	–	–	0.078352	–	–
0.132025	1.29	1.05	0.091613	7.83	4.51	0.078538	4.59	6.35
0.132025	1.29	1.05	0.091614	7.84	4.52	0.078539	4.60	6.36
0.132151	1.69	1.36	0.091664	8.47	5.06	0.078571	5.04	7.04
0.132277	2.08	1.68	0.091713	9.09	5.64	0.078605	5.47	7.71
0.132402	2.48	2.00	0.091764	9.72	6.26	0.078639	5.91	8.38
0.132528	2.87	2.32	0.091814	10.34	6.92	0.078674	6.35	9.06
0.132653	3.27	2.64	0.091865	10.97	7.62	0.078710	6.79	9.73
0.132779	3.66	2.95	0.091915	11.57	8.32	0.078748	7.24	10.40
0.132904	4.06	3.27	0.091964	12.16	9.03	0.078787	7.68	11.07
0.134183	8.03	6.57	0.092010	12.71	9.73	0.078827	8.13	11.73
0.134340	8.29	6.97	0.092056	13.26	10.43	0.078869	8.58	12.40
0.134512	8.58	7.36	0.092102	13.79	11.14	0.078913	9.03	13.07
0.134704	8.90	7.76	0.092148	14.31	11.84	0.078958	9.49	13.74
0.134927	9.27	8.15	0.092193	14.82	12.54	0.079006	9.94	14.41
0.135163	9.67	8.50	0.092238	15.32	13.25	0.079056	10.41	15.08
0.135400	10.06	8.77	0.092283	15.82	13.95	0.079109	10.87	15.75
0.135636	10.46	8.96	0.092328	16.30	14.64	0.079166	11.34	16.42
0.136607	11.45	9.96	0.092374	16.79	15.35	0.079226	11.82	17.09
0.136870	11.85	10.17	0.092421	17.27	16.05	0.079290	12.30	17.75
0.137132	12.24	10.38	0.092469	17.76	16.75	0.079359	12.78	18.42
0.137394	12.64	10.59	0.092518	18.24	17.45	0.079435	13.27	19.09
0.138716	18.87	15.60	0.092568	18.72	18.15	0.079518	13.77	19.76
0.138806	19.10	16.00	0.092621	19.22	18.85	0.079611	14.28	20.42
0.138902	19.34	16.40	0.092677	19.72	19.55	0.079716	14.79	21.09
0.139003	19.58	16.81	0.092736	20.23	20.25	0.079837	15.31	21.75
0.139109	19.83	17.22	0.092801	20.77	20.96	0.079981	15.84	22.42
0.139219	20.08	17.63	0.092874	21.35	21.65	0.080160	16.38	23.08
0.139335	20.33	18.04	0.092959	21.97	22.34	0.080392	16.92	23.71
0.139456	20.59	18.45	0.093052	22.59	22.91	0.080713	17.46	24.26
0.139582	20.85	18.85	0.093154	23.21	23.35	0.081127	17.99	24.61
0.139718	21.11	19.26	0.093269	23.83	23.64	0.081488	18.53	24.82
0.139859	21.37	19.66	0.093401	24.45	23.74	0.081761	19.07	25.05
0.140010	21.63	20.06	0.093559	25.07	23.59	0.082019	19.61	25.37
0.140176	21.90	20.46	0.093759	25.69	23.09	0.082324	20.15	25.95
0.140357	22.17	20.86	0.093961	26.16	22.39	0.082949	21.66	32.18
0.140558	22.44	21.26	0.094155	26.48	21.69	0.083043	22.15	32.85
0.140785	22.72	21.66	0.094399	26.76	21.00	0.083141	22.63	33.51
0.141052	22.99	22.06	0.095006	27.13	21.70	0.083243	23.12	34.17
0.141374	23.28	22.46	0.095129	27.21	22.39	0.083351	23.61	34.84
0.141802	23.57	22.85	0.095225	27.28	23.09	0.083465	24.09	35.50
0.142516	23.91	23.25	0.095307	27.35	23.79	0.083587	24.58	36.17
0.144172	24.30	23.49	0.095379	27.42	24.49	0.083717	25.07	36.83
0.145350	24.70	23.74	0.095444	27.49	25.19	0.083859	25.55	37.49
0.145980	25.09	24.12	0.095504	27.56	25.89	0.084016	26.04	38.16
0.146397	25.46	24.51	0.095560	27.64	26.60	0.084195	26.53	38.82
0.146714	25.81	24.91	0.095611	27.72	27.29	0.084407	27.02	39.48
0.146981	26.15	25.31	0.095660	27.80	28.00	0.084686	27.50	40.15
0.147218	26.48	25.70	0.095706	27.88	28.70	0.085634	29.99	42.54
0.147439	26.81	26.11	0.095750	27.96	29.41	0.086064	30.43	43.20
0.147646	27.13	26.50	0.095792	28.05	30.11	0.086414	30.97	43.73
0.147842	27.45	26.90	0.095832	28.14	30.81	0.086692	31.51	44.16
0.148033	27.77	27.30	0.095870	28.23	31.51	0.086929	32.05	44.52
0.148225	28.10	27.71	0.095907	28.32	32.21	0.087139	32.58	44.83
0.148411	28.42	28.10	0.095943	28.41	32.91	0.087330	33.12	45.12
0.148602	28.75	28.51	0.096119	28.02	37.81	0.088144	34.11	45.71
0.148798	29.09	28.91	0.096238	28.56	38.51	0.088833	34.65	46.16
0.149000	29.43	29.31	0.096366	29.12	39.21	0.089553	35.20	46.63
0.149211	29.78	29.71	0.096506	29.69	39.90	0.090317	35.74	47.10
0.149433	30.14	30.12	0.096663	30.27	40.60	0.091127	36.29	47.59
0.149664	30.50	30.51	0.096840	30.87	41.30	0.091982	36.83	48.09
0.149911	30.87	30.92	0.097043	31.49	41.98	0.092896	37.37	48.61
0.150168	31.24	31.31	0.097271	32.11	42.62	0.093871	37.91	49.14
0.150444	31.61	31.72	0.097531	32.73	43.21	0.094920	38.45	49.69
0.150736	31.99	32.11	0.097828	33.35	43.72	0.096060	39.00	50.26
0.151048	32.37	32.51	0.098166	33.97	44.15	0.097304	39.54	50.85
0.151386	32.76	32.91	0.098535	34.59	44.50	0.098653	40.08	51.47
0.151748	33.15	33.31	0.098922	35.21	44.81	0.100137	40.62	52.10
0.152136	33.54	33.71	0.099318	35.83	45.15	0.101757	41.15	52.75
0.152554	33.94	34.10	0.099717	36.45	45.62	0.103511	41.69	53.41
0.153002	34.33	34.50	0.100111	37.07	46.30	0.105385	42.23	54.07
0.153485	34.73	34.90	0.101557	39.89	48.31	0.107334	42.77	54.70
0.153998	35.13	35.29	0.102093	40.51	48.89	0.109358	43.31	55.32
0.154542	35.52	35.69	0.102654	41.13	49.48	0.111457	43.84	55.91

Table C-13. Room G smoothed and interpolated mining sequence closure data

Station -74.0 m			Station -1.0 m			Station +45.6 m		
t (yr)	δ_x (mm)	δ_z (mm)	t (yr)	δ_x (mm)	δ_z (mm)	t (yr)	δ_x (mm)	δ_z (mm)
0.155126	35.91	36.09	0.103253	41.76	50.08	0.113631	44.38	56.49
0.155755	36.31	36.48	0.103889	42.38	50.68	0.115864	44.92	57.05
0.156435	36.71	36.87	0.104562	43.00	51.29	0.118143	45.46	57.59
0.157174	37.10	37.26	0.105285	43.63	51.90	0.120467	46.00	58.12
0.157990	37.50	37.65	0.106058	44.25	52.52	0.122821	46.54	58.65
0.158896	37.89	38.03	0.106893	44.88	53.15	0.125205	47.08	59.18
0.159913	38.29	38.41	0.107791	45.50	53.78	0.127648	47.62	59.71
0.161066	38.68	38.79	0.108764	46.12	54.42	0.130152	48.15	60.24
0.162379	39.08	39.17	0.109823	46.74	55.07	0.132761	48.69	60.79
0.163859	39.47	39.55	0.110971	47.36	55.72	0.135504	49.23	61.35
0.163879	39.48	39.56	0.112217	47.98	56.37	0.138443	49.76	61.93
0.165111	39.63	39.98	0.113539	48.60	57.02	0.141681	50.30	62.55
0.167178	40.05	40.43	0.114923	49.22	57.66	0.145309	50.83	63.21
0.179577	42.41	42.95	0.116369	49.85	58.30	0.149132	51.30	63.87
0.194043	44.78	45.44	0.117878	50.47	58.92	0.153120	51.76	64.54
0.210576	47.05	47.78	0.119449	51.09	59.54	0.156914	52.30	65.16
0.231241	49.37	50.14	0.121095	51.71	60.15	0.159747	52.83	65.64
0.256040	51.58	52.43	0.122828	52.33	60.76	0.161966	53.38	66.02
0.289105	53.83	54.84	0.124661	52.95	61.36	0.163895	53.65	66.30
0.330436	56.06	57.28	0.126618	53.57	61.96	0.165961	53.89	66.55
0.373834	58.19	59.63	0.128725	54.19	62.58	0.168028	54.13	66.80
0.421364	60.36	62.06	0.131007	54.82	63.20	0.190763	56.57	69.34
0.473028	62.52	64.53	0.133500	55.44	63.85	0.217631	59.07	71.93
0.528825	64.66	67.03	0.136243	56.05	64.53	0.248633	61.52	74.47
0.588755	66.76	69.53	0.139248	56.67	65.23	0.285835	64.01	77.05
0.652819	68.82	72.03	0.142477	57.29	65.93	0.329238	66.53	79.68
0.723082	70.90	74.58	0.145856	57.91	66.60	0.376774	69.04	82.31
0.797478	72.97	77.12	0.149235	58.53	67.22	0.428444	71.51	84.94
0.876007	75.06	79.67	0.152477	59.15	67.76	0.486314	74.00	87.62
0.956602	77.14	82.16	0.155494	59.77	68.22	0.550385	76.47	90.31
1.039265	79.22	84.60	0.158250	60.40	68.60	0.622722	78.95	93.06
1.121927	81.24	86.94	0.160743	61.02	68.91	0.703327	81.44	95.85
1.204589	83.20	89.19	0.163012	61.64	69.17	0.785999	83.80	98.51
1.287251	85.11	91.37	0.163889	61.54	69.62	0.868671	86.07	101.06
1.369914	86.97	93.49	0.165956	61.82	69.94	0.951342	88.29	103.55
1.452576	88.77	95.55	0.168022	62.10	70.26	1.034014	90.46	105.96
1.535238	90.53	97.57	0.188690	64.63	73.14	1.116686	92.59	108.32
1.617900	92.24	99.54	0.213492	67.16	75.93	1.199357	94.67	110.61
1.700563	93.90	101.47	0.244494	69.70	78.65	1.282029	96.70	112.84
1.783225	95.53	103.36	0.283763	72.20	81.23	1.364701	98.70	115.02
1.865887	97.11	105.21	0.331300	74.68	83.72	1.447372	100.65	117.14
1.948549	98.66	107.03	0.385036	77.23	86.34	1.530044	102.56	119.21
2.031211	100.17	108.81	0.442907	79.75	89.00	1.612716	104.43	121.23
2.113874	101.65	110.56	0.506978	82.28	91.76	1.695387	106.27	123.21
2.196536	103.09	112.28	0.577249	84.79	94.59	1.778059	108.07	125.14
2.279198	104.51	113.98	0.653720	87.28	97.46	1.860731	109.84	127.03
2.361860	105.90	115.65	0.734325	89.69	100.28	1.943402	111.57	128.88
2.444523	107.27	117.29	0.816997	92.00	102.98	2.026074	113.27	130.69
2.527185	108.62	118.91	0.899669	94.22	105.54	2.108746	114.94	132.47
2.609847	109.94	120.52	0.982341	96.35	107.96	2.191417	116.58	134.22
2.692509	111.25	122.11	1.065013	98.41	110.27	2.274089	118.20	135.94
2.775172	112.54	123.68	1.147685	100.41	112.49	2.356761	119.78	137.64
2.857834	113.82	125.24	1.230357	102.36	114.63	2.439432	121.35	139.31
2.940496	115.08	126.79	1.313029	104.26	116.72	2.522104	122.88	140.96
3.023158	116.34	128.33	1.395701	106.12	118.77	2.604776	124.40	142.59
3.105821	117.59	129.86	1.478373	107.95	120.80	2.687447	125.90	144.20
3.188483	118.83	131.39	1.561045	109.75	122.80	2.770119	127.37	145.81
3.271145	120.07	132.91	1.643717	111.51	124.77	2.852791	128.83	147.40
3.353807	121.31	134.42	1.726389	113.25	126.73	2.935462	130.28	148.98
3.436470	122.55	135.93	1.809061	114.96	128.66	3.018134	131.70	150.56
3.519132	123.78	137.43	1.891733	116.64	130.56	3.100806	133.12	152.13
3.601794	125.01	138.92	1.974405	118.30	132.45	3.183477	134.52	153.69
3.684456	126.23	140.41	2.057077	119.93	134.31	3.266149	135.91	155.25
3.767118	127.45	141.89	2.139749	121.53	136.16	3.348821	137.28	156.81
3.849781	128.66	143.36	2.222421	123.12	137.98	3.431492	138.65	158.36
3.932443	129.87	144.83	2.305093	124.67	139.78	3.514164	140.00	159.90
4.015105	131.08	146.28	2.387765	126.21	141.57	3.596836	141.35	161.44
4.097767	132.28	147.74	2.470437	127.73	143.33	3.679507	142.68	162.97
4.180430	133.47	149.18	2.553109	129.23	145.08	3.762179	144.01	164.49
4.263092	134.66	150.62	2.635781	130.70	146.80	3.844851	145.32	166.01
4.345754	135.84	152.05	2.718452	132.17	148.51	3.927522	146.62	167.53
4.428416	137.02	153.47	2.801124	133.61	150.20	4.010194	147.92	169.04
4.511079	138.19	154.89	2.883796	135.04	151.88	4.092866	149.21	170.54
4.593741	139.36	156.30	2.966468	136.45	153.54	4.175537	150.49	172.03
4.676403	140.51	157.70	3.049140	137.85	155.18	4.258209	151.76	173.52
4.759065	141.66	159.09	3.131812	139.24	156.81	4.340881	153.02	175.00
4.841728	142.81	160.48	3.214484	140.61	158.42	4.423552	154.28	176.48
4.924390	143.94	161.86	3.297156	141.96	160.02	4.506224	155.53	177.95
5.007052	145.07	163.23	3.379828	143.31	161.60	4.588896	156.77	179.41
5.089714	146.20	164.59	3.462500	144.64	163.17	4.671567	158.01	180.87
5.172377	147.31	165.95	3.545172	145.96	164.72	4.754239	159.24	182.32
5.255039	148.41	167.30	3.627844	147.26	166.26	4.836911	160.46	183.76
5.337701	149.51	168.65	3.710516	148.56	167.79	4.919583	161.68	185.20
5.420363	150.60	169.98	3.793188	149.84	169.31	5.002254	162.90	186.63
5.503026	151.68	171.31	3.875860	151.12	170.81	5.084926	164.11	188.05

Table C-13. Room G smoothed and interpolated mining sequence closure data

Station -74.0 m			Station -1.0 m			Station +45.6 m		
t (yr)	δ_x (mm)	δ_z (mm)	t (yr)	δ_x (mm)	δ_z (mm)	t (yr)	δ_x (mm)	δ_z (mm)
5.585688	152.75	172.63	3.958532	152.38	172.31	5.167598	165.32	189.47
5.668350	153.81	173.94	4.041204	153.63	173.79	5.250269	166.52	190.88
5.751012	154.87	175.25	4.123876	154.88	175.26	5.332941	167.72	192.28
5.833674	155.91	176.54	4.206548	156.11	176.72	5.415613	168.92	193.67
5.916337	156.94	177.83	4.289220	157.34	178.17	5.498284	170.12	195.06
5.998999	157.96	179.11	4.371892	158.56	179.61	5.580956	171.31	196.44
6.081661	158.98	180.39	4.454564	159.77	181.04	5.663628	172.50	197.81
6.164323	159.98	181.66	4.537236	160.97	182.47	5.746299	173.69	199.18
6.246986	160.97	182.91	4.619908	162.17	183.88	5.828971	174.88	200.54
6.329648	161.95	184.16	4.702580	163.36	185.29	5.911643	176.06	201.89
6.412310	162.92	185.41	4.785251	164.54	186.69	5.994314	177.25	203.23
6.494972	163.88	186.64	4.867923	165.72	188.09	6.076986	178.44	204.56
6.577635	164.83	187.87	4.950595	166.90	189.47	6.159658	179.62	205.89
6.660297	165.76	189.09	5.033267	168.07	190.85	6.242329	180.81	207.21
6.742959	166.69	190.30	5.115939	169.23	192.23	6.325001	182.00	208.52
6.825621	167.60	191.52	5.198611	170.39	193.60	6.407673	183.19	209.82
6.908284	168.51	192.73	5.281283	171.55	194.96	6.490344	184.38	211.12
6.990946	169.42	193.94	5.363955	172.70	196.32	6.573016	185.57	212.41
7.073608	170.33	195.16	5.446627	173.85	197.68	6.655688	186.77	213.69
7.156270	171.24	196.38	5.529299	175.00	199.03	6.738359	187.96	214.96
7.238933	172.17	197.62	5.611971	176.15	200.38	6.821031	189.16	216.23
7.321595	173.11	198.87	5.694643	177.30	201.72	6.903703	190.37	217.50
7.404257	174.06	200.14	5.777315	178.44	203.06	6.986374	191.58	218.77
7.486919	175.03	201.42	5.859987	179.58	204.40	7.069046	192.79	220.05
7.569582	176.02	202.72	5.942659	180.73	205.74	7.151718	194.00	221.34
7.652244	177.03	204.03	6.025331	181.87	207.08	7.234389	195.22	222.64
7.734906	178.05	205.35	6.108003	183.02	208.42	7.317061	196.45	223.96
7.817568	179.09	206.69	6.190675	184.16	209.75	7.399733	197.68	225.29
7.900230	180.15	208.04	6.273347	185.31	211.09	7.482404	198.92	226.65
7.982893	181.21	209.39	6.356019	186.46	212.43	7.565076	200.16	228.02
8.065555	182.29	210.76	6.438691	187.61	213.76	7.647748	201.41	229.40
8.148217	183.38	212.13	6.521363	188.77	215.10	7.730419	202.66	230.81
8.230879	184.47	213.51	6.604035	189.93	216.44	7.813091	203.92	232.22
8.313542	185.57	214.90	6.686707	191.09	217.78	7.895763	205.18	233.65
8.396204	186.68	216.28	6.769379	192.25	219.13	7.978434	206.44	235.09
8.478866	187.80	217.67	6.852051	193.42	220.48	8.061106	207.70	236.54
8.561528	188.91	219.06	6.934722	194.60	221.83	8.143778	208.96	238.00
8.644191	190.03	220.46	7.017394	195.78	223.18	8.226449	210.23	239.46
8.726853	191.16	221.85	7.100066	196.96	224.54	8.309121	211.50	240.94
8.809515	192.28	223.24	7.182738	198.15	225.90	8.391793	212.76	242.41
8.892177	193.40	224.62	7.265410	199.35	227.27	8.474464	214.03	243.89
8.974840	194.51	226.00	7.348082	200.56	228.64	8.557136	215.29	245.37
9.057502	195.63	227.38	7.430754	201.77	230.02	8.639808	216.55	246.85
9.140164	196.74	228.75	7.513426	202.99	231.40	8.722479	217.81	248.34
9.222826	197.84	230.11	7.596098	204.22	232.79	8.805151	219.07	249.81
9.305489	198.93	231.46	7.678770	205.45	234.18	8.887823	220.32	251.29
9.388151	200.02	232.80	7.761442	206.69	235.58	8.970494	221.57	252.76
9.470813	201.09	234.13	7.844114	207.93	236.98	9.053166	222.81	254.23
9.553475	202.16	235.44	7.926786	209.17	238.38	9.135838	224.05	255.68
9.636137	203.21	236.74	8.009458	210.42	239.78	9.218509	225.28	257.13
9.718800	204.24	238.03	8.092130	211.67	241.19	9.301181	226.51	258.57
9.801462	205.26	239.30	8.174802	212.93	242.59	9.383853	227.72	260.00
9.884124	206.27	240.55	8.257474	214.18	244.00	9.466524	228.94	261.42
9.966786	207.26	241.79	8.340146	215.44	245.41	9.549196	230.14	262.82
10.049449	208.23	243.00	8.422818	216.70	246.81	9.631868	231.33	264.20
10.132111	209.17	244.20	8.505490	217.96	248.22	9.714539	232.52	265.57
10.214773	210.10	245.37	8.588162	219.21	249.62	9.797211	233.69	266.92
10.297435	211.00	246.51	8.670834	220.47	251.03	9.879883	234.86	268.26
10.380098	211.88	247.64	8.753506	221.72	252.42	9.962554	236.01	269.57
10.462760	212.74	248.73	8.836178	222.97	253.82	10.045226	237.15	270.86
10.493758	213.05	249.14	8.918850	224.22	255.21	10.127898	238.28	272.12
–	–	–	9.001521	225.46	256.60	10.210569	239.40	273.36
–	–	–	9.084193	226.70	257.98	10.293241	240.50	274.58
–	–	–	9.166865	227.94	259.36	10.375913	241.59	275.77
–	–	–	9.249537	229.16	260.73	10.458584	242.67	276.93
–	–	–	9.332209	230.39	262.10	10.495787	243.15	277.44

C.5. Remotely Read Closure Data

The t_i values in Table C-14 are relative to the estimated start of room excavation (1984-11-09 20:00).

Table C-14. Room G remotely read closure data

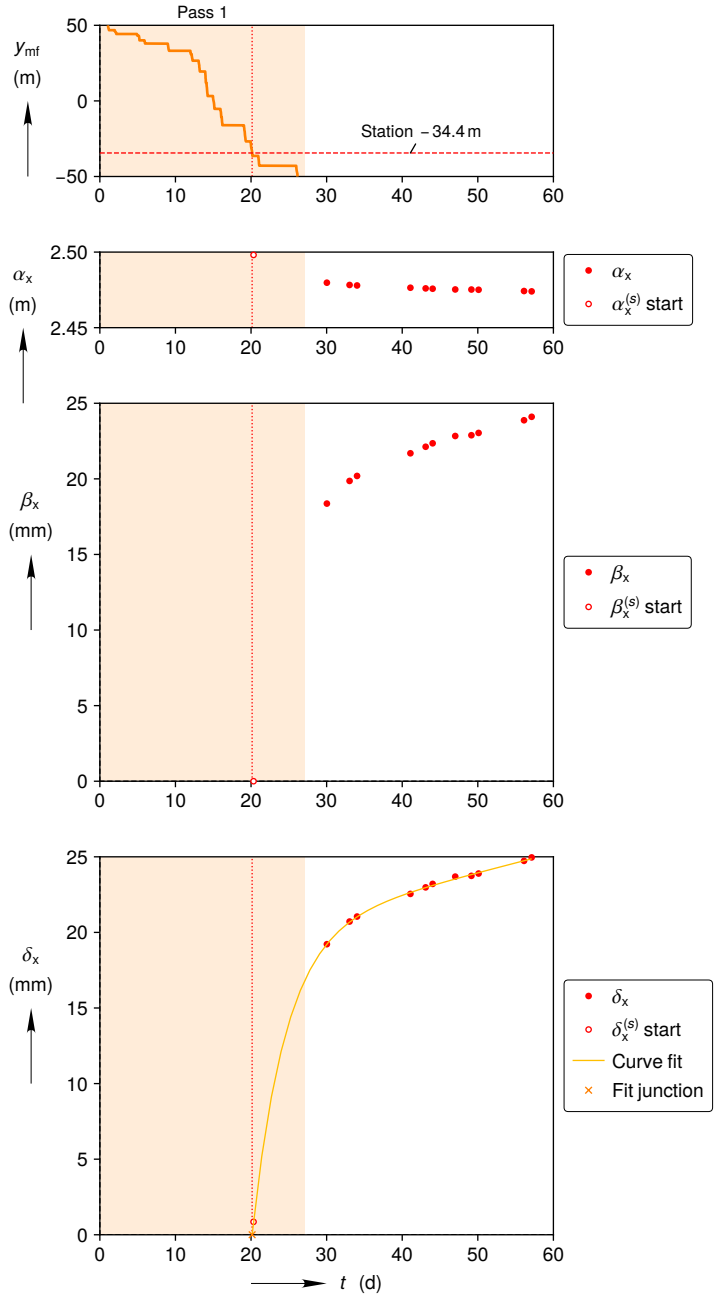
Station -76.2 m				Station -12.2 m				Station -3.0 m				Station -0.6 m				Station +46.7 m			
Gage GB212		Gage GB211		Gage GD236		Gage GD233		Gage GD235		Gage GD232		Gage GD234		Gage GD231		Gage GA202		Gage GA201	
t_x (yr)	δ_x (mm)	t_z (yr)	δ_z (mm)	t_x (yr)	δ_x (mm)	t_z (yr)	δ_z (mm)	t_x (yr)	δ_x (mm)	t_z (yr)	δ_z (mm)	t_x (yr)	δ_x (mm)	t_z (yr)	δ_z (mm)	t_x (yr)	δ_x (mm)	t_z (yr)	δ_z (mm)
0.417979	59.77	0.417979	61.33	0.450833	79.53	0.450833	88.59	0.450833	81.64	0.450833	89.30	0.488611	80.98	0.450833	89.38	0.489163	73.91	0.417979	84.53
0.449268	61.46	0.443066	63.02	0.488585	81.22	0.478911	90.28	0.491528	83.18	0.485478	90.91	0.529523	82.51	0.488407	91.07	0.533174	75.59	0.449217	86.07
0.493074	63.07	0.483751	64.79	0.529461	82.83	0.516336	91.90	0.544720	84.79	0.526411	92.67	0.567316	84.35	0.522856	92.69	0.580308	77.05	0.489821	87.76
0.536880	64.68	0.511950	66.41	0.573469	84.44	0.556876	93.51	0.601021	86.17	0.564187	94.20	0.617652	85.96	0.563550	94.38	0.624324	78.81	0.527301	89.30
0.580685	66.29	0.549503	68.03	0.617476	86.06	0.594302	95.20	0.647943	87.40	0.611388	95.89	0.661714	87.64	0.613596	96.00	0.668326	80.34	0.564782	90.92
0.624491	67.91	0.593307	69.80	0.664606	87.59	0.637957	96.74	0.707362	88.70	0.652308	97.49	0.712041	89.10	0.660510	97.46	0.712323	81.79	0.611627	92.61
0.671425	69.37	0.630860	71.41	0.718000	89.13	0.678497	98.35	0.769894	89.85	0.699503	99.10	0.762373	90.63	0.704317	99.08	0.759457	83.25	0.655346	94.07
0.718360	70.67	0.674644	72.95	0.761999	90.66	0.722154	99.97	0.829318	91.23	0.746691	100.64	0.815840	92.08	0.751243	100.69	0.809721	84.62	0.702188	95.61
0.774681	72.13	0.718441	74.65	0.818548	92.43	0.768926	101.58	0.885618	92.61	0.797010	102.09	0.859888	93.54	0.798157	102.16	0.866263	86.08	0.745908	97.07
0.824745	73.74	0.834106	78.11	0.871933	93.89	0.812581	103.12	0.951279	93.84	0.844199	103.62	0.916499	95.07	0.845083	103.77	0.910251	87.38	0.798992	98.69
0.877937	75.20	0.868535	79.65	0.925302	95.19	0.856234	104.58	1.010697	95.14	0.885112	105.15	0.966822	96.44	0.888871	105.16	0.969928	88.83	0.845836	100.30
0.924872	76.66	0.924798	81.27	0.978696	96.72	0.906122	106.19	1.167012	97.75	0.938569	106.61	1.023428	97.90	0.938911	106.70	1.023329	90.21	0.895800	101.92
0.981194	78.28	0.974800	82.58	1.032073	98.11	0.952893	107.73	1.226421	98.90	0.988881	107.99	1.076900	99.43	0.985831	108.24	1.079857	91.43	0.948883	103.46
1.037515	79.73	1.024820	84.12	1.201599	102.25	1.012127	109.26	1.304583	100.29	1.042344	109.52	1.164928	101.27	1.042109	109.78	1.189799	94.27	0.998844	104.92
1.106352	81.42	1.074822	85.43	1.254984	103.71	1.055782	110.80	1.373366	101.51	1.161819	112.58	1.221549	102.95	1.176515	113.01	1.233796	95.72	1.051927	106.46
1.162674	82.73	1.127961	86.97	1.314600	104.86	1.102551	112.26	1.439017	102.59	1.215276	114.04	1.284415	104.10	1.229661	114.40	1.290333	97.10	1.108126	107.77
1.218995	83.96	1.184199	88.28	1.371108	106.24	1.152434	113.65	1.507776	103.43	1.275007	115.49	1.341012	105.40	1.279682	115.71	1.346860	98.32	1.161206	109.15
1.275317	85.19	1.240456	89.82	1.430748	107.62	1.202321	115.18	1.573426	104.51	1.325313	116.79	1.403889	106.70	1.332828	117.10	1.400256	99.62	1.220527	110.54
1.331638	86.49	1.284227	91.21	1.490372	108.85	1.252204	116.57	1.642200	105.58	1.381914	118.33	1.457346	108.00	1.389087	118.40	1.459925	100.92	1.270484	111.85
1.394218	87.80	1.340478	92.67	1.550012	110.23	1.305205	118.03	1.717191	106.19	1.441638	119.70	1.526502	109.30	1.442233	119.79	1.522724	102.15	1.326687	113.31
1.453668	88.87	1.393604	94.06	1.606521	111.61	1.355090	119.49	1.776610	107.50	1.495082	121.01	1.583113	110.83	1.501631	121.33	1.579252	103.37	1.382884	114.54
1.522506	90.26	1.443611	95.44	1.663029	112.99	1.411205	120.87	1.851615	108.34	1.548513	122.15	1.649120	111.98	1.554771	122.64	1.642065	104.82	1.439086	116.00
1.585085	91.56	1.502980	96.91	1.722661	114.29	1.461088	122.25	1.917256	109.26	1.605094	123.46	1.708861	113.35	1.611024	123.87	1.704865	106.05	1.495283	117.23
1.650794	92.79	1.556100	98.21	1.782277	115.44	1.520321	123.71	1.992271	110.26	1.667950	124.76	1.768588	114.50	1.664157	125.10	1.761397	107.35	1.554605	118.62
1.710244	94.02	1.615463	99.60	1.838794	116.90	1.573319	125.02	2.064148	111.03	1.724530	126.06	1.818906	115.80	1.714184	126.49	1.811662	108.72	1.613927	120.08
1.769695	95.48	1.671701	100.91	1.901549	118.13	1.629436	126.48	2.136050	112.18	1.781118	127.44	1.881773	116.95	1.770450	127.88	1.874452	109.79	1.670128	121.47
1.832274	96.48	1.724820	102.22	1.961165	119.28	1.682433	127.79	2.204824	113.25	1.840843	128.82	1.947784	118.17	1.832935	129.03	1.930984	111.10	1.732571	122.93
1.891725	97.71	1.777946	103.61	2.020781	120.43	1.735433	129.17	2.279824	114.02	1.891143	130.04	2.013795	119.40	1.895446	130.49	1.987511	112.32	1.788770	124.24
1.951175	98.94	1.837290	104.76	2.086683	121.81	1.791546	130.48	2.351716	115.02	1.957136	131.34	2.076662	120.55	1.951706	131.80	2.056583	113.54	1.844966	125.39
2.020012	100.17	1.893528	106.07	2.152562	122.96	1.844544	131.78	2.426721	115.86	2.023128	132.64	2.142678	121.85	2.014210	133.19	2.116251	114.84	1.904287	126.78
2.082592	101.32	1.949772	107.46	2.215317	124.19	1.897543	133.17	2.501731	116.78	2.076572	133.94	2.199266	122.99	2.076702	134.42	2.175895	115.76	1.963605	128.01
2.145171	102.47	2.006010	108.77	2.274925	125.26	1.953657	134.47	2.567391	118.01	2.139428	135.25	2.265282	124.29	2.136074	135.65	2.238700	117.06	2.029164	129.24
2.214009	103.62	2.065373	110.15	2.337688	126.57	2.006655	135.78	2.639278	118.93	2.199140	136.47	2.334423	125.36	2.195459	137.04	2.298358	118.21	2.094727	130.62
2.279717	104.70	2.124729	111.46	2.406706	127.79	2.065883	137.01	2.714289	119.85	2.255714	137.70	2.397300	126.66	2.254838	138.35	2.364280	119.20	2.150923	131.78
2.345426	105.77	2.187210	112.85	2.463207	129.10	2.125111	138.24	2.898686	122.08	2.318570	139.00	2.457031	127.89	2.317330	139.58	2.427094	120.65	2.203998	132.93
2.411134	106.77	2.243441	114.08	2.535356	130.32	2.178110	139.62	2.967469	123.30	2.375170	140.53	2.526168	128.88	2.386067	140.89	2.493029	121.88	2.266438	134.24
2.479971	107.92	2.305903	115.24	2.598095	131.40	2.237339	140.93	3.051848	124.22	2.438026	141.83	2.592165	129.88	2.439200	142.12	2.558955	122.95	2.335119	135.55
2.548809	109.00	2.362141	116.55	2.657703	132.47	2.290337	142.24	3.120603	124.99	2.500869	142.98	2.658172	131.02	2.492327	143.28	2.621760	124.25	2.391317	136.78
2.611388	110.00	2.427715	117.63	2.726729	133.77	2.352684	143.62	3.192485	125.83	2.560580	144.20	2.727327	132.32	2.554813	144.43	2.678282	125.39	2.456879	138.17
2.680226	111.22	2.490183	118.86	2.792600	134.85	2.411915	145.01	3.264382	126.91	2.623430	145.43	2.793344	133.63	2.617305	145.66	2.747330	126.23	2.519316	139.32
2.752192	112.22	2.546414	120.09	2.855371	136.23	2.468029	146.31	3.339382	127.68	2.686285	146.73	2.862485	134.70	2.686035	146.90	2.806993	127.46	2.578634	140.55
2.811642	113.30	2.605764	121.32	2.914995	137.46	2.533490	147.62	3.411250	128.29	2.745997	147.95	2.922207	135.77	2.751659	148.28	2.879192	128.53	2.637952	141.78
2.883609	114.45	2.668226	122.48	2.980866	138.53	2.589604	148.93	3.486265	129.29	2.805703	149.10	2.981944	137.07	2.814151	149.51	2.941977	129.52	2.700392	143.09
2.949317	115.30	2.730694	123.71	3.040473	139.60	2.655065	150.23	3.561280	130.29	2.865415	150.33	3.047946	138.14	2.876669	151.05	3.011063	130.97	2.765953	144.40
3.015026	116.45	2.790044	124.94	3.103213	140.68	2.717409	151.46	3.636275	130.98	2.928257	151.47	3.113947	139.21	2.942280	152.29	3.076994	132.12	2.828392	145.63
3.083863	117.45	2.849387	126.10	3.172247	142.06	2.773526	152.92	3.711300	132.13	2.984832	152.70	3.186233	140.36	3.004778	153.59	3.136648	133.19	2.893950	146.79
3.155829	118.37	2.914974	127.33	3.238133	143.28	2.835871	154.23	3.842553	133.51	3.044550	154.00	3.255380	141.50	3.064150	154.83	3.205710	134.26	2.953266	147.94
3.227796	119.37	2.974343	128.80	3.307119	144.20	2.891985	155.54	3.917568	134.51	3.107387	155.07	3.324531	142.73	3.129762	156.06	3.271646	135.48	3.021948	149.25
3.299762	120.52	3.036811	130.03	3.366727	145.28	2.951211	156.69	3.992554	135.04	3.167086	156.14	3.387402	143.95	3.189134	157.29	3.337572	136.55	3.087508	150.56
3.371728	121.44	3.105515	131.26	3.435713	146.20	3.010441	158.00	4.061304	135.73	3.233072	157.37	3.459679	144.94	3.251626	158.52	3.403517	137.93	3.149950	151.94
3.440566	122.67	3.171115	132.65	3.498460	147.35	3.075901	159.23	4.136309	136.58	3.349333	159.51	3.525676	145.94	3.314098	159.52	3.469443	139.00	3.206146	153.10
3.509403	123.67	3.227327	133.65	3.561191	148.34	3.135129	160.46	4.214413	137.04	3.415320	160.74	3.591672	146.93	3.373471	160.76	3.538505	140.07	3.268586	154.40
3.578241	124.59	3.296006	134.57	3.633341	149.57	3.200588	161.69	4.292527	137.65	3.478163	161.88	3.657684	148.16	3.439082	161.99	3.604431	141.14	3.337261	155.40

Table C-14. Room G remotely read closure data

Station -76.2 m				Station -12.2 m				Station -3.0 m				Station -0.6 m				Station +46.7 m			
Gage GB212		Gage GB211		Gage GD236		Gage GD233		Gage GD235		Gage GD232		Gage GD234		Gage GD231		Gage GA202		Gage GA201	
t_x (yr)	δ_x (mm)	t_z (yr)	δ_z (mm)	t_x (yr)	δ_x (mm)	t_z (yr)	δ_z (mm)	t_x (yr)	δ_x (mm)	t_z (yr)	δ_z (mm)	t_x (yr)	δ_x (mm)	t_z (yr)	δ_z (mm)	t_x (yr)	δ_x (mm)	t_z (yr)	δ_z (mm)
3.650207	125.66	3.361586	135.73	3.699227	150.80	3.256703	163.07	4.367513	138.19	3.544149	163.11	3.726825	149.23	3.504680	163.07	3.676634	142.29	3.409062	156.64
3.719044	126.66	3.424048	136.88	3.765106	151.95	3.315931	164.30	4.445627	138.80	3.603861	164.33	3.795971	150.37	3.564046	164.22	3.742570	143.51	3.471499	157.79
3.784753	127.51	3.489615	137.89	3.830968	152.94	3.378275	165.53	4.520618	139.42	3.676122	165.56	3.865108	151.37	3.626538	165.45	3.805360	144.58	3.555789	159.33
3.853590	128.58	3.561451	139.27	3.899970	154.02	3.440619	166.76	4.592505	140.34	3.738965	166.70	3.927980	152.59	3.698382	166.61	3.871281	145.57	3.618226	160.48
3.919299	129.43	3.630143	140.35	3.962725	155.25	3.496731	167.99	4.661260	141.10	3.801808	167.85	4.003405	153.74	3.764006	167.99	3.946625	146.80	3.690023	161.56
3.988136	130.35	3.692604	141.51	4.031719	156.24	3.559075	169.22	4.739374	141.72	3.864663	169.15	4.069402	154.73	3.823378	169.23	4.012547	147.79	3.749339	162.72
4.056973	131.27	3.755060	142.59	4.094450	157.24	3.621420	170.53	4.814379	142.56	3.933781	170.30	4.135409	155.88	3.888990	170.46	4.081614	148.94	3.808654	163.79
4.122682	132.27	3.814397	143.66	4.166584	158.31	3.683764	171.76	4.889384	143.41	4.002905	171.53	4.207685	156.87	3.957720	171.69	4.150676	150.00	3.886694	164.95
4.188390	133.19	3.879977	144.82	4.235570	159.23	3.742992	172.99	4.964390	144.25	4.068885	172.67	4.276836	158.10	4.020206	172.85	4.210325	151.00	3.958492	166.03
4.266615	134.27	3.948675	145.98	4.298317	160.38	3.805336	174.22	5.039400	145.17	4.134865	173.82	4.345968	159.02	4.088930	174.00	4.279387	152.07	4.017810	167.26
4.335452	135.19	4.017386	147.29	4.370450	161.45	3.864564	175.45	5.111272	145.86	4.204002	175.20	4.411970	160.09	4.148290	175.08	4.351595	153.29	4.080244	168.26
4.407418	136.11	4.073592	148.21	4.439436	162.37	3.930019	176.45	5.183145	146.55	4.269988	176.42	4.477972	161.16	4.210781	176.31	4.423784	154.21	4.145798	169.26
4.482514	137.11	4.136054	149.37	4.508446	163.52	3.992364	177.75	5.258145	147.32	4.335962	177.50	4.581679	162.69	4.276380	177.39	4.495982	155.28	4.217600	170.57
4.557609	137.95	4.204758	150.60	4.580571	164.52	4.048475	178.91	5.333146	148.09	4.401942	178.64	4.647681	163.76	4.338872	178.62	4.561913	156.42	4.286277	171.64
4.623317	138.95	4.267220	151.75	4.640163	165.44	4.113935	180.14	5.411279	149.01	4.471073	179.94	4.719962	164.83	4.407596	179.78	4.630970	157.42	4.339354	172.88
4.689026	140.03	4.335899	152.68	4.706041	166.59	4.170045	181.29	5.486284	149.85	4.530778	181.09	4.789094	165.74	4.476314	180.85	4.696882	158.26	4.411149	173.88
4.757863	140.87	4.401479	153.83	4.775043	167.66	4.232389	182.52	5.558152	150.46	4.596765	182.32	4.855100	166.89	4.541912	181.93	4.759672	159.33	4.570357	176.49
4.829830	141.79	4.470165	154.84	4.844053	168.81	4.297847	183.67	5.633153	151.23	4.659595	183.31	4.917952	167.81	4.604398	183.09	4.831885	160.63	4.639037	177.72
4.892409	142.71	4.538863	155.99	4.913055	169.89	4.360188	184.75	5.720660	152.23	4.719294	184.38	4.996518	168.96	4.679367	184.32	4.900942	161.62	4.713957	178.88
4.967504	143.71	4.601325	157.15	4.975778	170.81	4.422532	185.98	5.795655	152.92	4.785280	185.61	5.065664	170.10	4.744972	185.47	4.970014	162.84	4.779513	179.96
5.039471	144.87	4.666892	158.15	5.041649	171.88	4.487991	187.21	5.895654	153.92	4.851248	186.60	5.131651	170.94	4.807445	186.47	5.039071	163.84	4.845075	181.34
5.114566	145.79	4.735597	159.38	5.113774	172.88	4.550334	188.36	5.973778	154.68	4.917221	187.67	5.207077	172.09	4.876163	187.55	5.111265	164.83	4.910630	182.34
5.186532	146.71	4.798058	160.54	5.179637	173.87	4.615795	189.67	6.061266	155.37	4.980077	188.97	5.273074	173.09	4.935535	188.78	5.180322	165.82	4.982429	183.50
5.255370	147.78	4.860507	161.54	5.242376	174.95	4.681253	190.82	–	–	5.049182	189.97	5.342220	174.23	5.004266	190.02	5.249384	166.89	5.051107	184.65
5.330465	148.78	4.960459	163.54	5.311354	175.79	4.743597	192.05	–	–	5.121436	191.12	5.411357	175.23	5.069864	191.09	5.315310	167.96	5.107303	185.81
5.405560	149.70	5.026039	164.70	5.383479	176.79	4.815289	193.28	–	–	5.184273	192.19	5.483638	176.30	5.132350	192.25	5.374959	168.95	5.182219	186.81
5.471269	150.55	5.094743	165.93	5.452481	177.86	4.874515	194.44	–	–	5.256515	193.18	5.555915	177.29	5.194822	193.25	5.447158	170.02	5.247774	187.81
5.540106	151.55	5.163442	167.09	5.524614	178.93	4.939975	195.67	–	–	5.316220	194.33	5.634470	178.29	5.266666	194.41	5.516215	171.02	5.316450	188.88
5.612073	152.47	5.225897	168.17	5.593600	179.85	5.008550	196.90	–	–	5.379057	195.40	5.697323	179.20	5.329139	195.41	5.579005	172.09	5.382010	190.12
5.677781	153.31	5.291483	169.40	5.659463	180.85	5.080242	198.13	–	–	5.445030	196.47	5.772739	180.20	5.394743	196.56	5.657471	173.08	5.453804	191.04
5.749747	154.08	5.357051	170.40	5.728456	181.84	5.148816	199.28	–	–	5.517285	197.62	5.882726	181.73	5.460342	197.64	5.729669	174.15	5.516239	192.12
5.827972	155.00	5.428854	171.40	5.794311	182.76	5.214274	200.43	–	–	5.580128	198.77	5.951867	182.80	5.525921	198.49	5.798717	174.99	5.584916	193.20
5.899938	156.00	5.494434	172.56	5.878994	184.07	5.285963	201.51	–	–	5.649245	199.92	6.017864	183.79	5.594645	199.64	5.886596	176.06	5.647353	194.35
5.968775	156.85	5.563101	173.33	5.947995	185.14	5.348303	202.59	–	–	5.715226	201.06	–	–	5.657124	200.72	5.952517	177.05	5.709788	195.43
6.047000	157.62	5.628674	174.41	6.023252	186.14	5.413763	203.82	–	–	5.787480	202.21	–	–	5.719603	201.80	6.030988	178.12	5.772224	196.50
–	–	5.694261	175.64	–	–	5.479221	204.97	–	–	5.872297	203.51	–	–	5.782082	202.88	–	–	5.884601	198.12
–	–	5.762940	176.56	–	–	5.541560	205.97	–	–	5.941408	204.58	–	–	5.897656	204.72	–	–	5.950160	199.35
–	–	5.828513	177.64	–	–	5.603903	207.12	–	–	6.007401	205.88	–	–	5.960135	205.80	–	–	6.018835	200.35

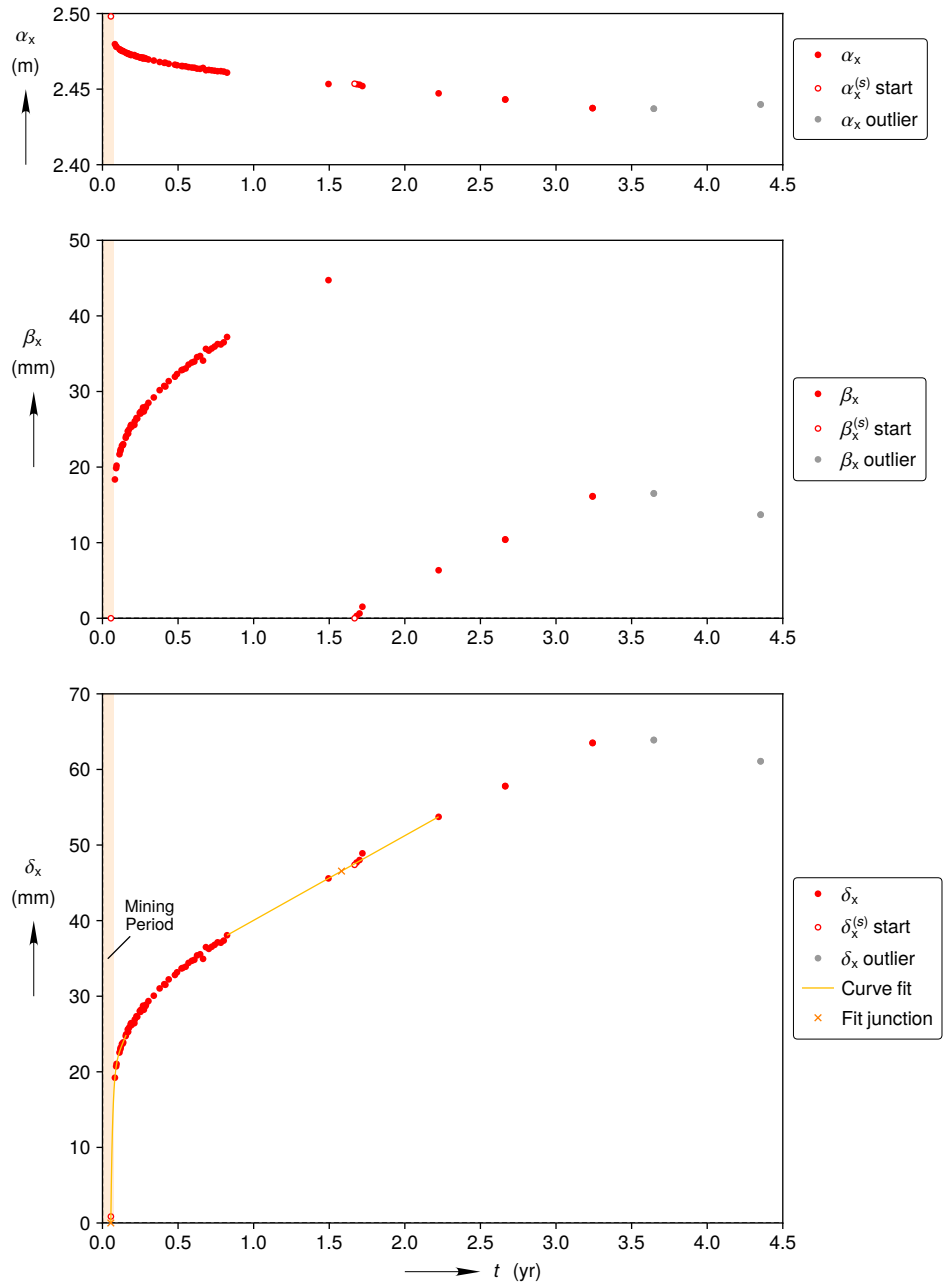
APPENDIX D. Room Q Supplemental Information

D.1. Mining Sequence Closure Reconstruction Plots



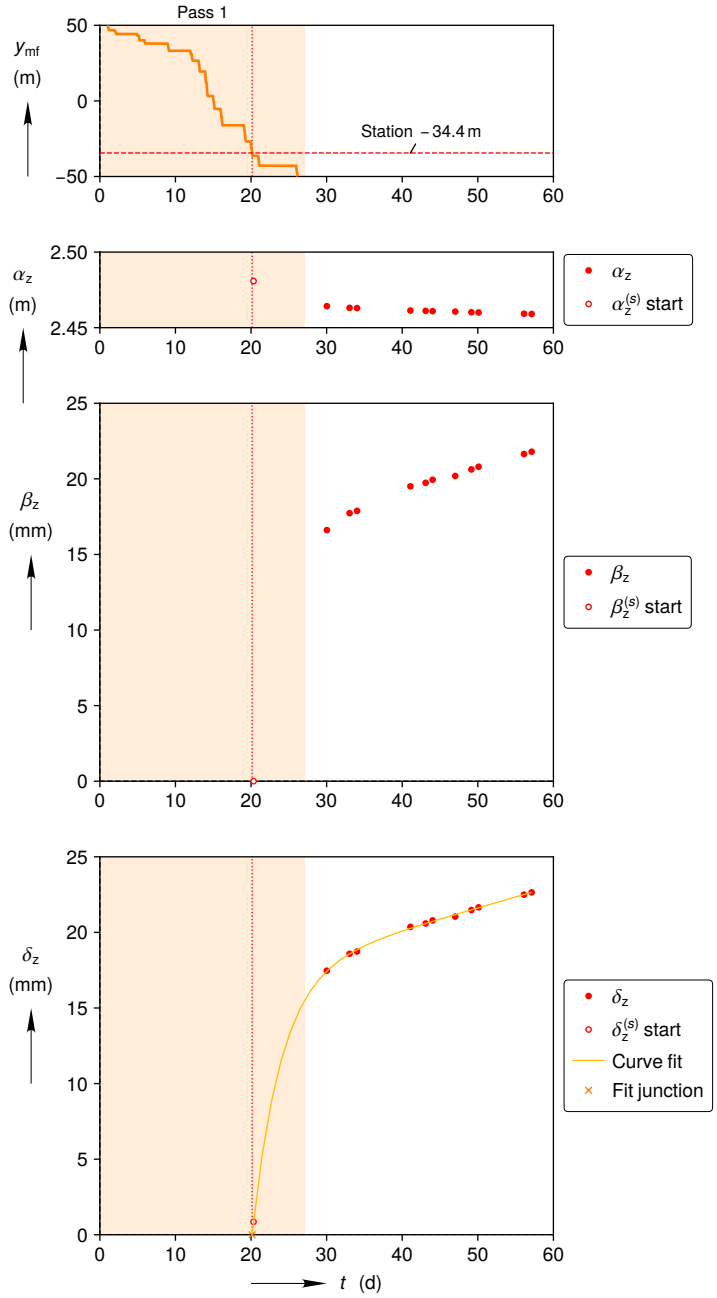
(a) Reconstruction during mining period

Figure D-1. Room Q Station -34.4 m horizontal closure reconstruction process.



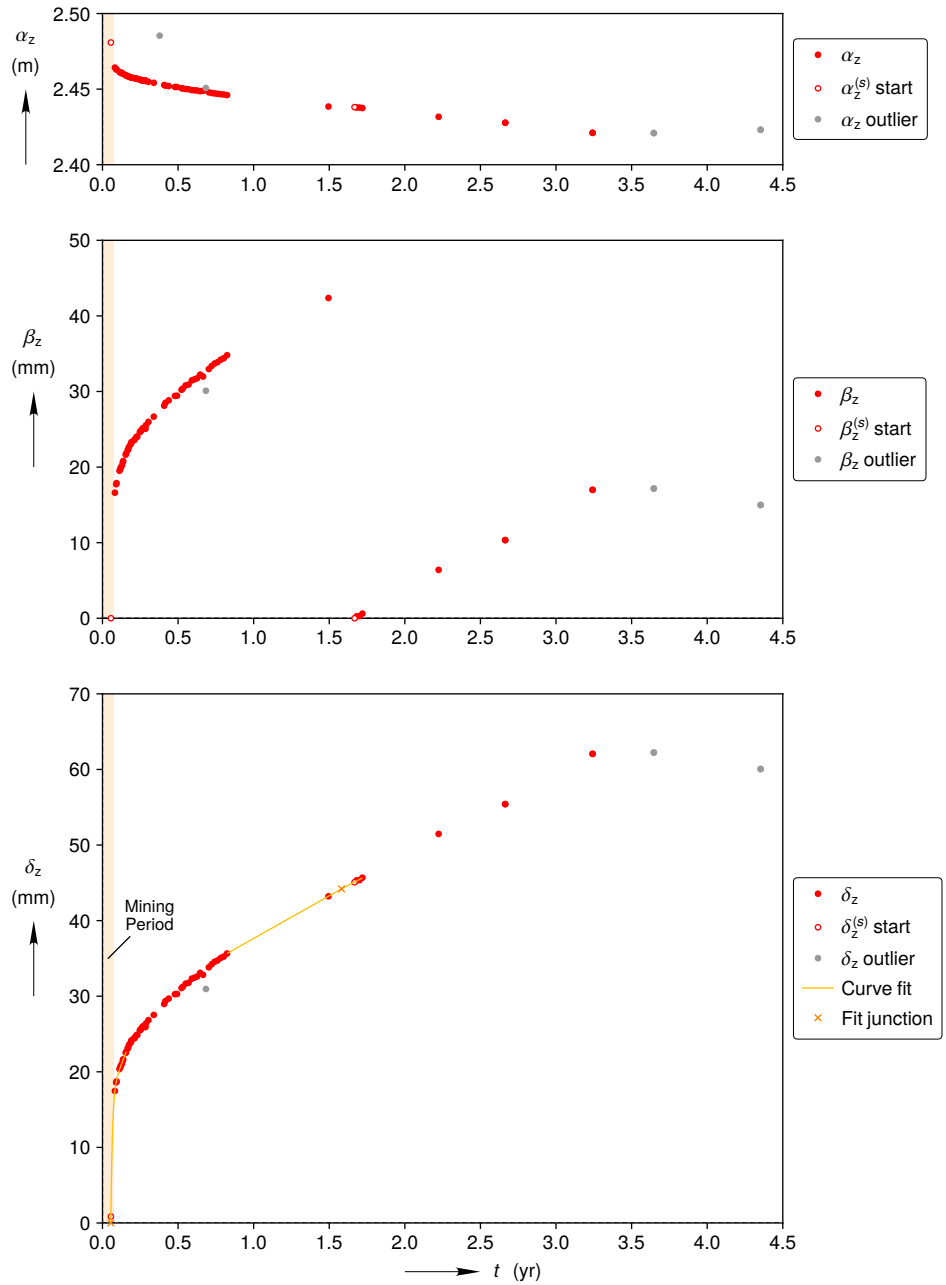
(b) Full reconstruction

Figure D-1. (Continued) Room Q Station -34.4 m horizontal closure reconstruction process.



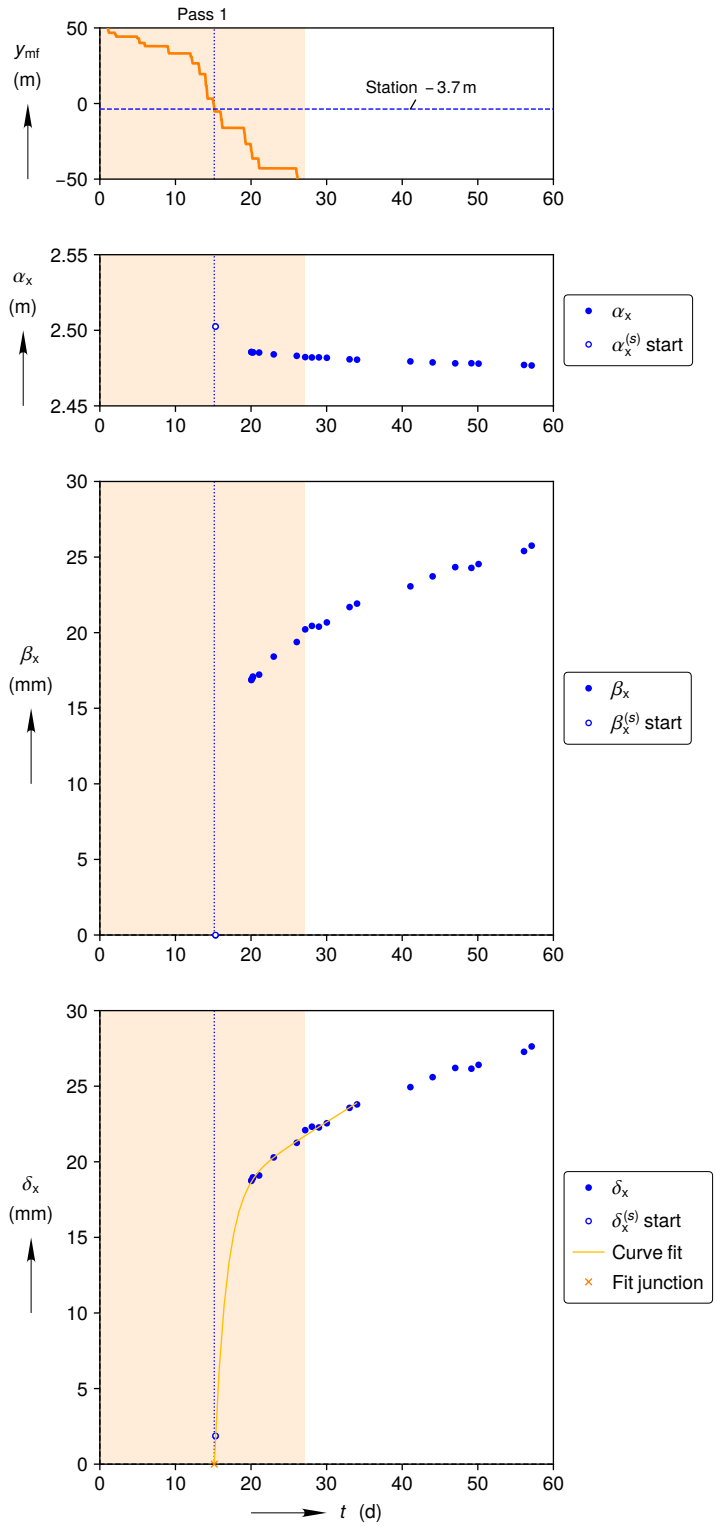
(a) Reconstruction during mining period

Figure D-2. Room Q Station -34.4 m vertical closure reconstruction process.



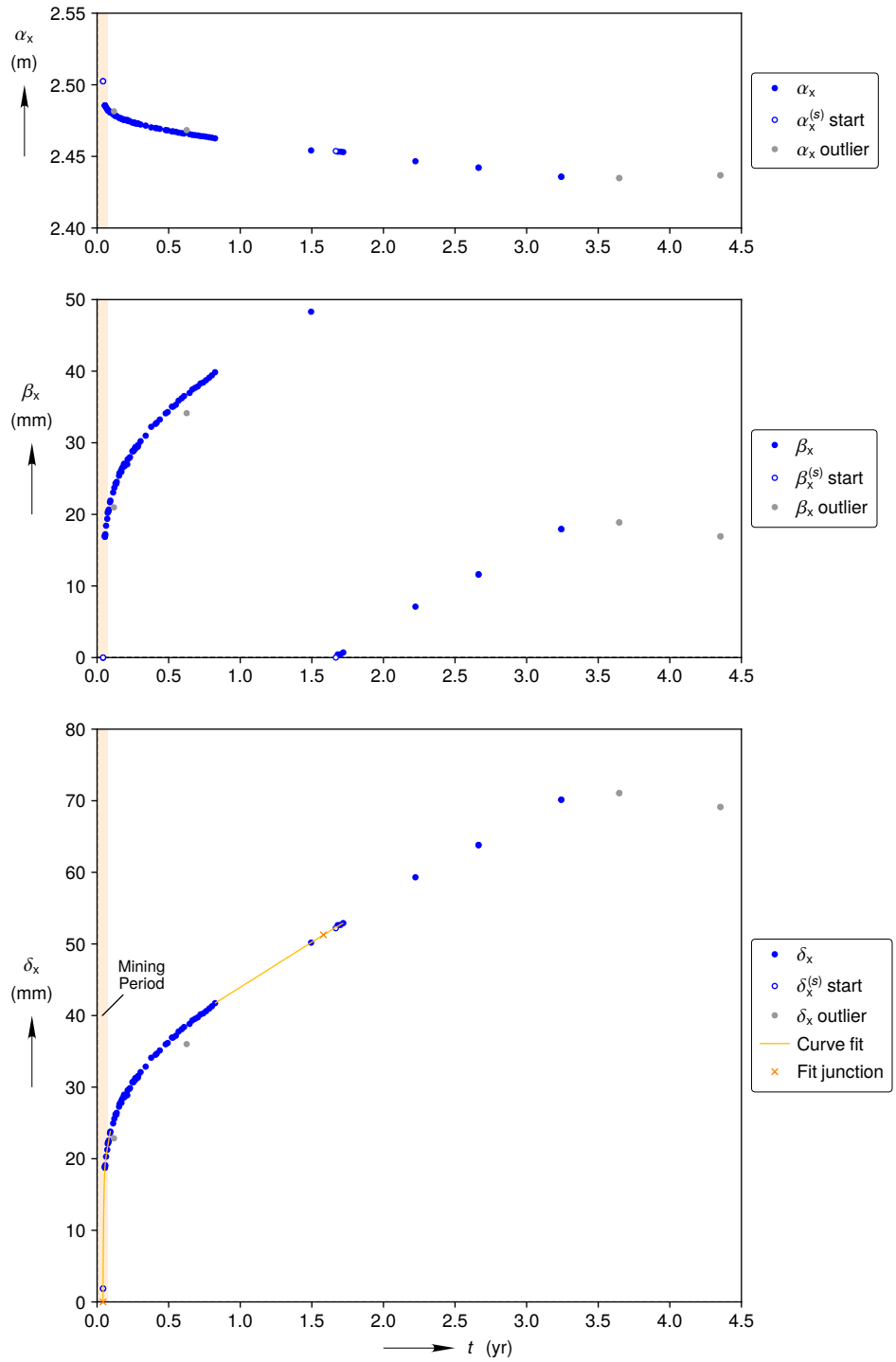
(b) Full reconstruction

Figure D-2. (Continued) Room Q Station -34.4 m vertical closure reconstruction process.



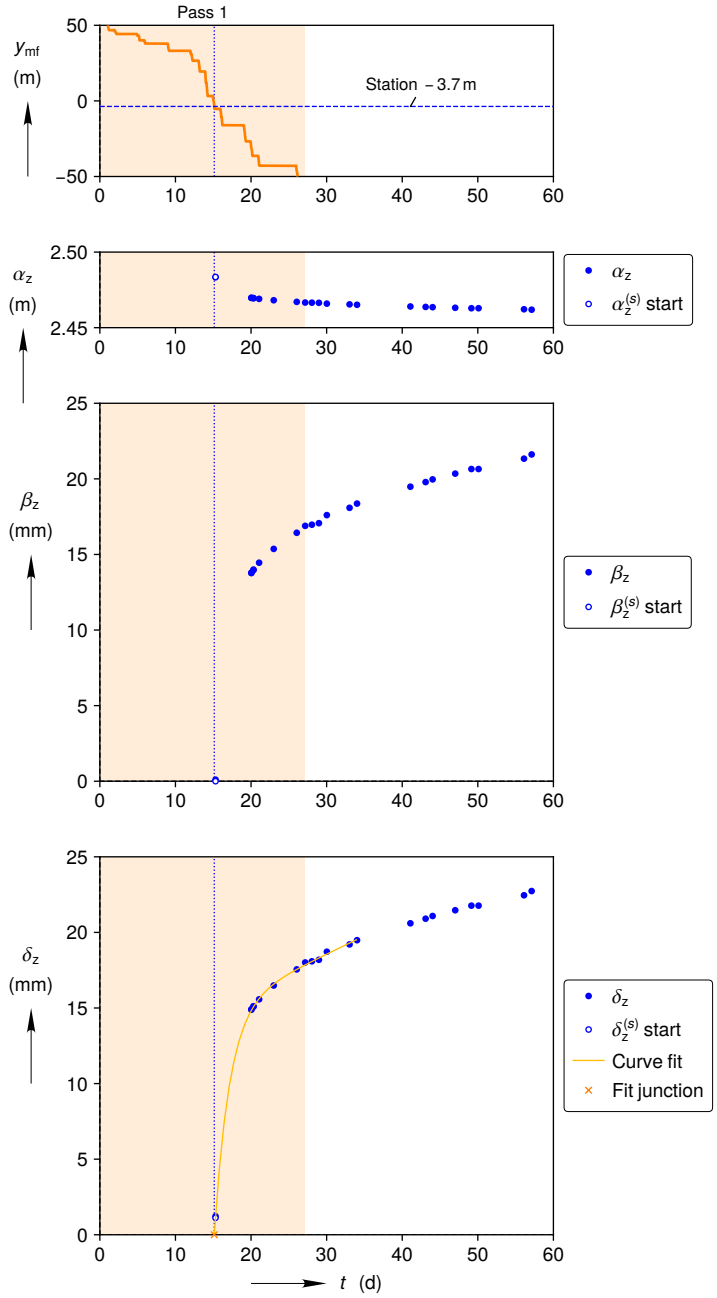
(a) Reconstruction during mining period

Figure D-3. Room Q Station -3.7 m horizontal closure reconstruction process.



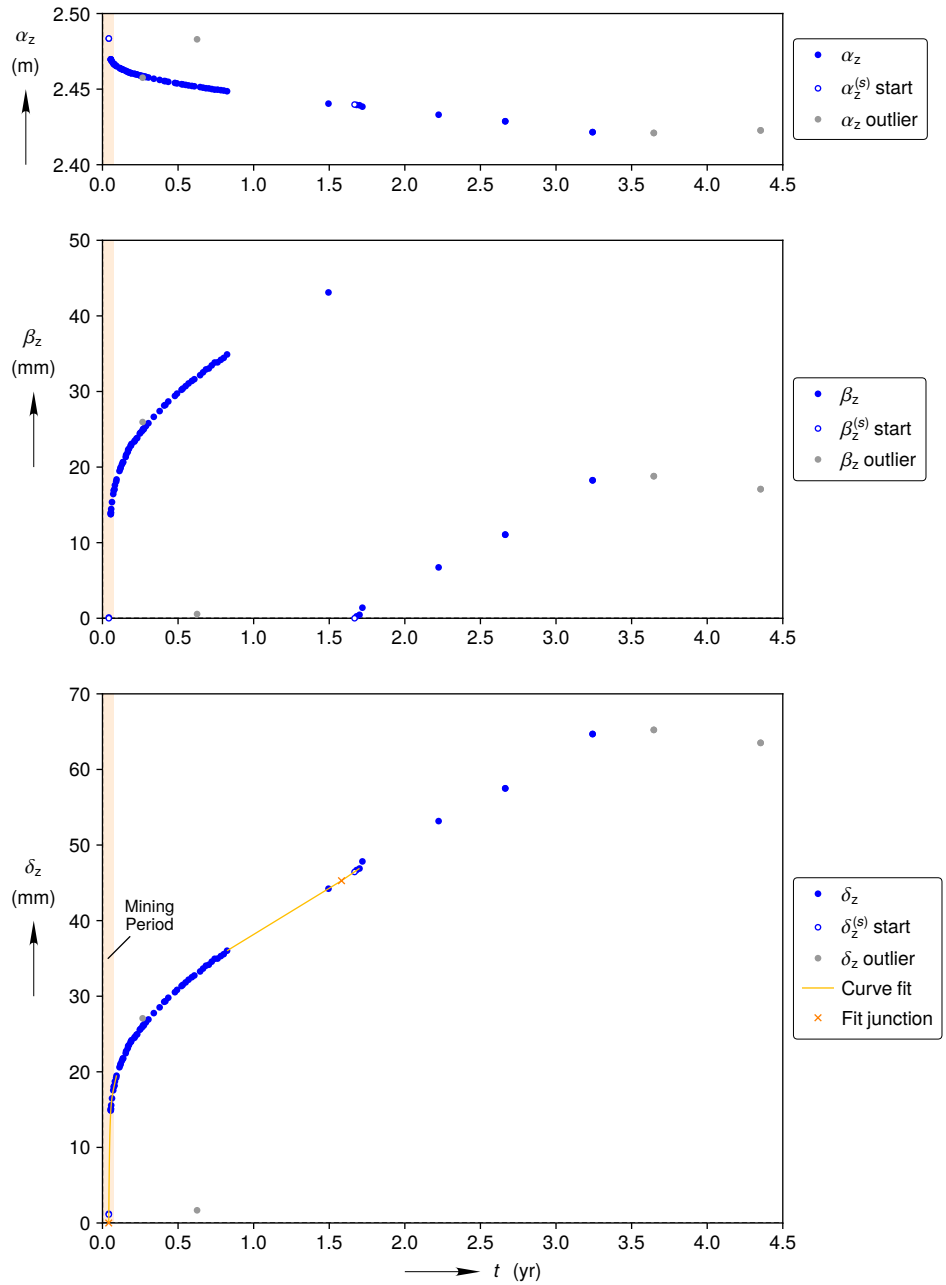
(b) Full reconstruction

Figure D-3. (Continued) Room Q Station -3.7 m horizontal closure reconstruction process.



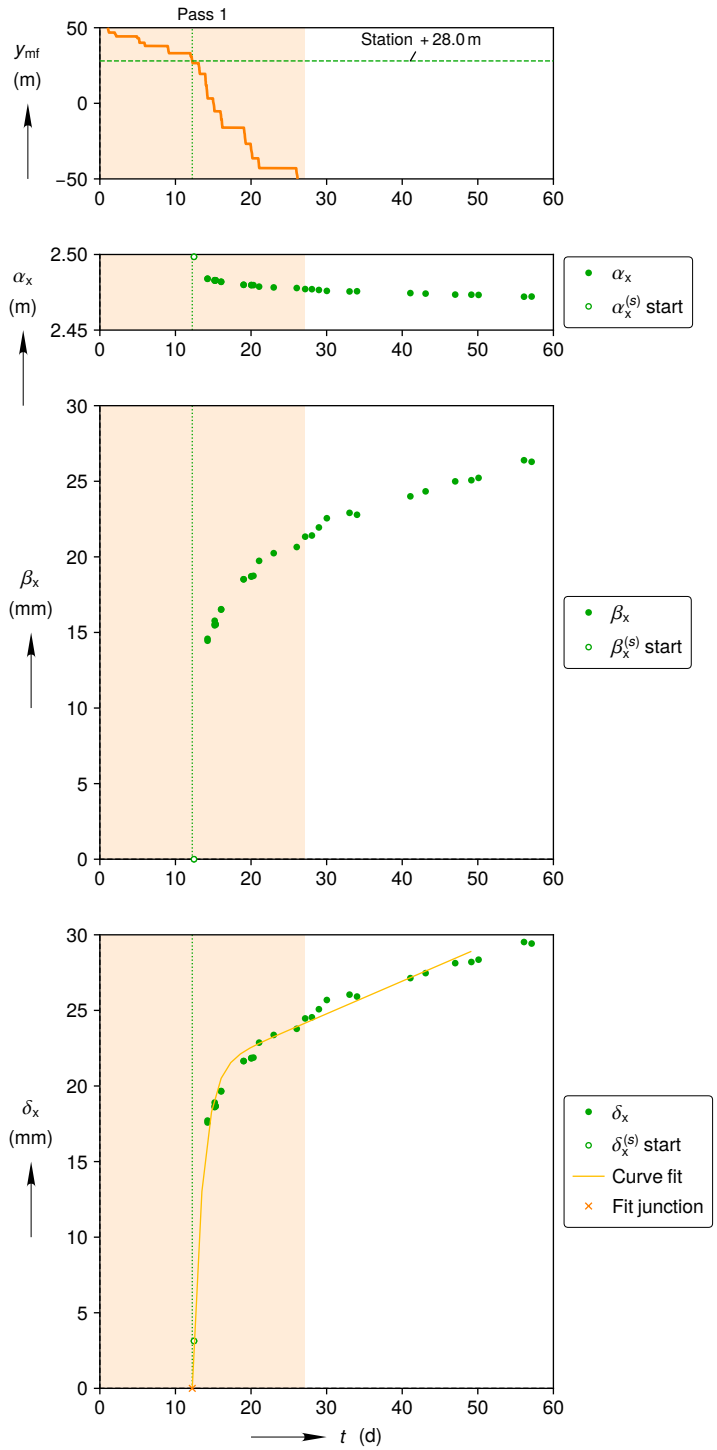
(a) Reconstruction during mining period

Figure D-4. Room Q Station -3.7 m vertical closure reconstruction process.



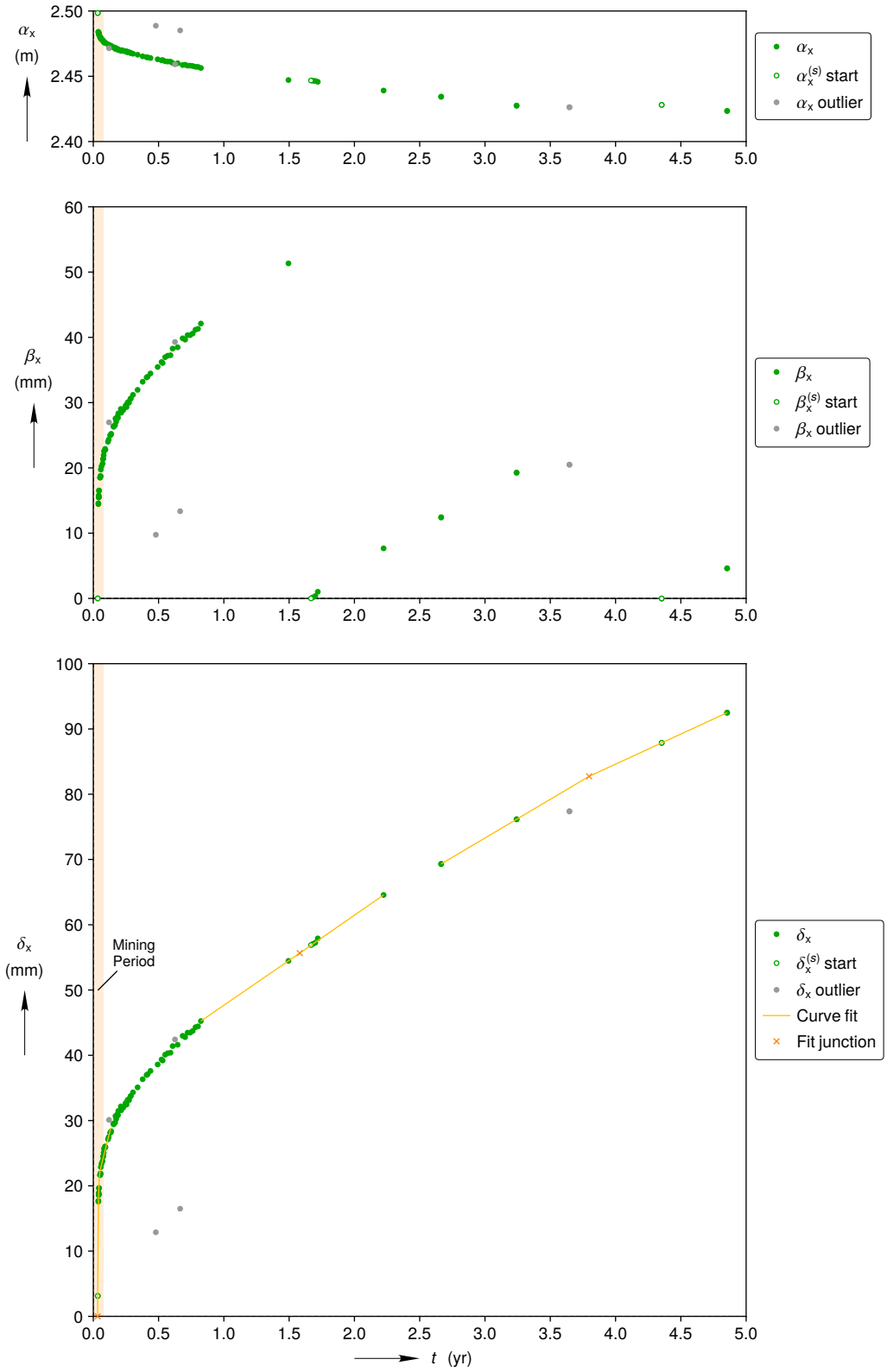
(b) Full reconstruction

Figure D-4. (Continued) Room Q Station -3.7 m vertical closure reconstruction process.



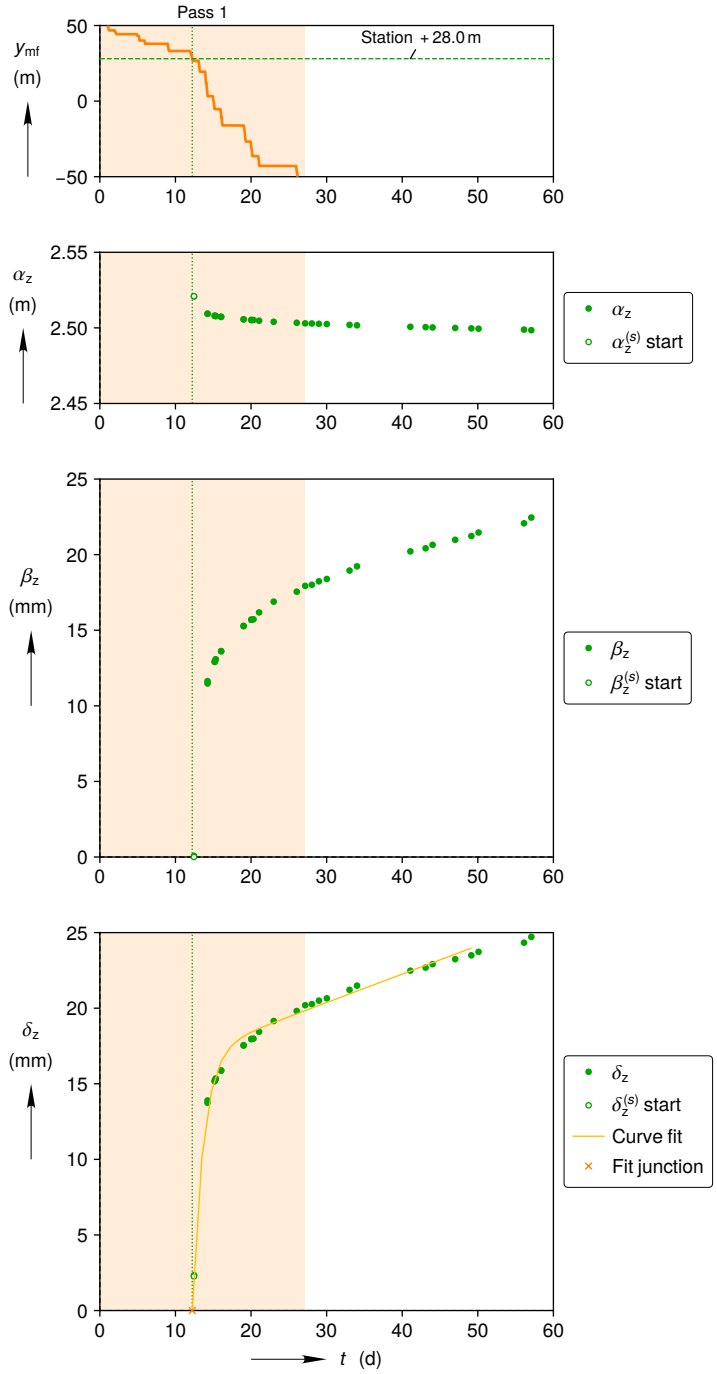
(a) Reconstruction during mining period

Figure D-5. Room Q Station +28.0 m horizontal closure reconstruction process.



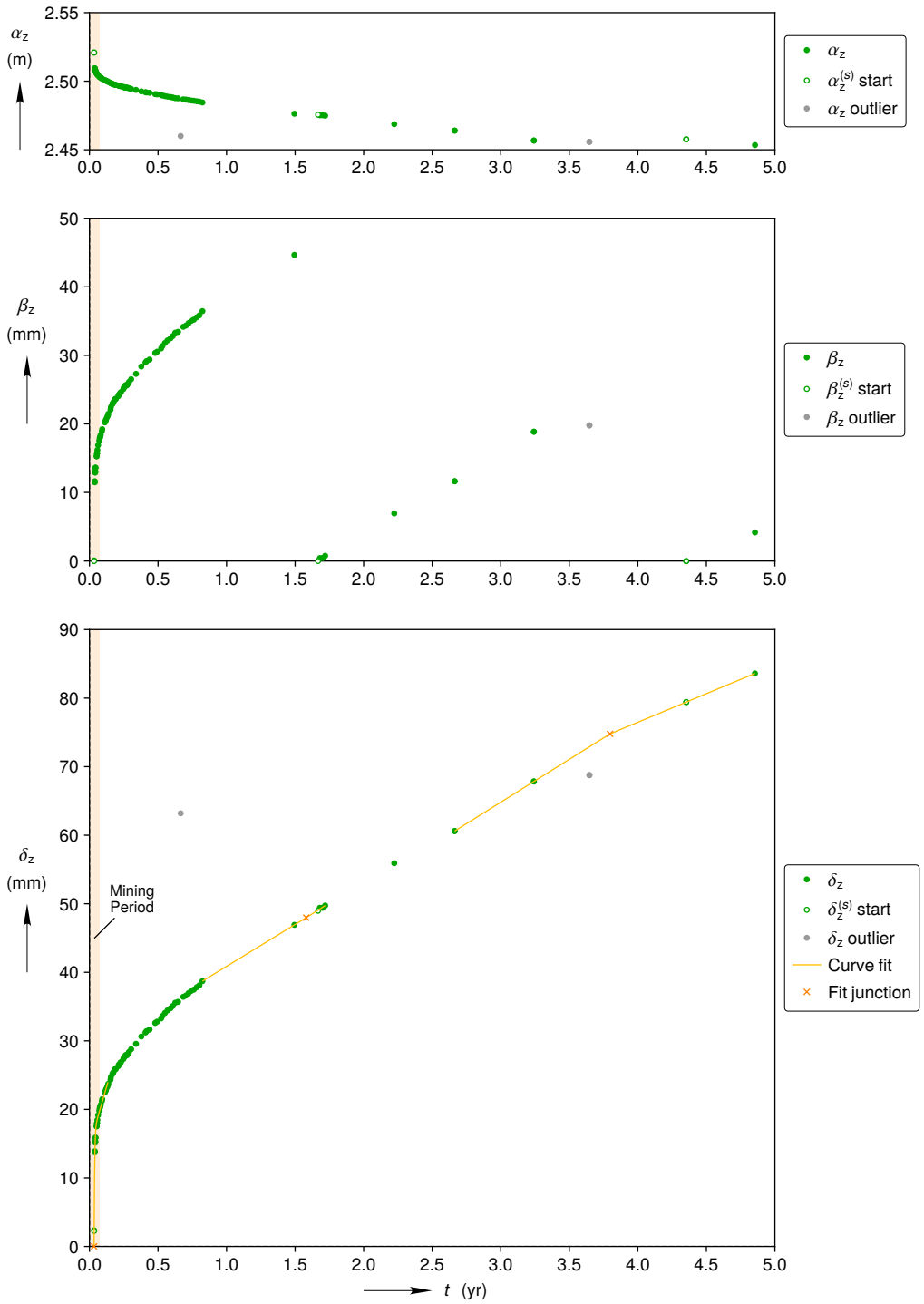
(b) Full reconstruction

Figure D-5. (Continued) Room Q Station +28.0 m horizontal closure reconstruction process.



(a) Reconstruction during mining period

Figure D-6. Room Q Station +28.0 m vertical closure reconstruction process.



(b) Full reconstruction

Figure D-6. (Continued) Room Q Station +28.0 m vertical closure reconstruction process.

D.2. Mining Sequence Closure Data

Table D-1. Room Q Station -34.4 m horizontal mining sequence metadata

										Pre-Jump Fitting Inputs				Post-Jump Fitting Inputs			
s	Segment Start Time	Analysis Notes	Gage Number	Paired Points	Point 1 y	Point 2 y	Estimated t_{ex}	t_{ex} Source	Shift Phase	Type	Start Index	End Index	Ignore Index	Type	Start Index	End Index	Ignore Index
(–)	(YYYY-MM-DD HH:MM)	(–)	(–)	(–)	(m)	(m)	(YYYY-MM-DD HH:MM)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)
0	1989-07-12 10:39	Estimated start of mining Room Q.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1	1989-08-01 18:36	First reading after station was mined out during pass 1.	QPM82-1	Horizontal	-34.44	-34.44	1989-08-01 14:06	Mining face position	2	–	–	–	–	Jeffreys	1	12	–
2	1991-03-13 11:04	Readings at all three stations jump slightly. No cause found in data sheets.	QPM82-1	Horizontal	-34.44	-34.44	–	–	2	Linear	-2	-1	–	Linear	1	5	[4]

Table D-2. Room Q Station -34.4 m horizontal mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_x (m)	δ_x (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
1	1989-08-01	18:36	–	2.49812	0.86	–	–	–
1	1989-08-11	11:26	108.6	2.47975	19.22	–	–	68.33 station to face
1	1989-08-14	11:29	108.6	2.47825	20.72	–	–	68.33 station to face
1	1989-08-15	11:16	108.6	2.47792	21.05	–	–	68.33 station to face
1	1989-08-22	12:40	20.8	2.47642	22.55	–	–	–
1	1989-08-24	13:02	20.8	2.47599	22.98	–	–	–
1	1989-08-25	11:14	20.8	2.47576	23.21	–	–	–
1	1989-08-28	11:00	20.8	2.47528	23.69	–	–	–
1	1989-08-30	14:19	20.8	2.47523	23.74	–	–	–
1	1989-08-31	13:08	20.8	2.47508	23.89	–	–	–
1	1989-09-06	13:25	20.8	2.47424	24.73	–	–	–
1	1989-09-07	13:37	20.8	2.47401	24.96	–	–	–
1	1989-09-11	12:47	20.8	2.47338	25.60	–	–	–
1	1989-09-12	12:26	20.8	2.47368	25.29	–	–	–
1	1989-09-14	10:55	20.8	2.47315	25.82	–	–	–
1	1989-09-18	10:40	20.8	2.47272	26.26	–	–	–
1	1989-09-19	11:07	20.8	2.47254	26.43	–	–	–
1	1989-09-20	10:49	20.8	2.47279	26.18	–	–	–
1	1989-09-27	12:39	20.8	2.47254	26.43	–	–	–
1	1989-09-28	11:05	20.8	2.47205	26.92	–	–	Read all points twice except QPM 32 - read it four times.
1	1989-10-02	12:34	20.8	2.47162	27.35	–	–	All readings were taken twice.
1	1989-10-04	10:46	20.8	2.47170	27.27	–	–	All readings were taken twice.
1	1989-10-10	13:05	20.8	2.47094	28.03	–	–	–
1	1989-10-10	13:07	20.8	2.47025	28.72	–	×	–
1	1989-10-12	09:30	20.8	2.47012	28.85	–	×	Duplicate Readings w/Different Tape Ext. 11/6/89 WFD
1	1989-10-12	09:31	20.8	2.47104	27.93	–	–	–
1	1989-10-13	10:41	20.8	2.47076	28.21	–	–	–
1	1989-10-13	10:42	20.8	2.46987	29.10	–	×	Duplicate Readings w/Different Tape Ext. 11/6/89 WFD
1	1989-10-16	12:37	20.8	2.47076	28.21	–	–	–
1	1989-10-17	10:13	20.8	2.47071	28.26	–	–	–
1	1989-10-18	10:39	20.8	2.47023	28.74	–	–	–
1	1989-10-20	11:00	20.8	2.47076	28.21	–	–	–
1	1989-10-24	10:50	20.8	2.47028	28.69	–	–	–
1	1989-10-25	12:38	20.8	2.47010	28.87	–	–	–
1	1989-10-31	10:51	20.8	2.46962	29.35	–	–	–
1	1989-11-13	10:19	20.8	2.46891	30.07	–	–	–
1	1989-11-27	13:10	20.8	2.46794	31.03	–	–	–
1	1989-12-08	14:09	20.8	2.46738	31.59	–	–	–
1	1989-12-11	10:43	20.8	2.46746	31.51	–	–	–
1	1989-12-19	10:56	20.8	2.46675	32.22	–	–	–
1	1990-01-03	11:05	20.8	2.46616	32.81	–	–	–
1	1990-01-08	13:07	20.8	2.46581	33.16	–	–	–
1	1990-01-19	10:45	20.8	2.46530	33.67	–	–	–
1	1990-01-22	09:57	20.8	2.46522	33.75	–	–	–
1	1990-01-29	10:09	20.8	2.46507	33.90	–	–	–
1	1990-02-05	09:12	20.8	2.46456	34.41	–	–	–
1	1990-02-13	09:35	20.8	2.46428	34.69	–	–	–
1	1990-02-19	09:35	20.8	2.46416	34.82	–	–	–
1	1990-02-26	00:00	20.8	2.46357	35.40	–	–	–
1	1990-03-05	09:20	20.8	2.46342	35.55	–	–	–
1	1990-03-12	10:12	20.8	2.46403	34.94	–	–	–
1	1990-03-19	08:53	20.8	2.46248	36.49	–	–	–
1	1990-03-26	09:09	20.8	2.46271	36.26	–	–	–
1	1990-04-02	09:24	20.8	2.46243	36.54	–	–	–
1	1990-04-09	10:08	20.8	2.46217	36.80	–	–	–
1	1990-04-16	12:55	20.8	2.46184	37.13	–	–	–
1	1990-04-24	09:23	20.8	2.46190	37.08	–	–	–
1	1990-05-01	09:28	20.8	2.46162	37.36	–	–	–
1	1990-05-09	10:14	20.8	2.46090	38.07	–	–	–
1	1991-01-09	10:32	20.8	2.45339	45.59	–	–	–
2	1991-03-13	11:04	20.8	2.45356	47.38	–	–	–
2	1991-03-18	09:44	20.8	2.45326	47.68	–	–	–
2	1991-03-25	10:44	20.8	2.45293	48.01	–	–	–
2	1991-04-01	10:18	20.8	2.45204	48.90	–	–	–
2	1991-10-02	13:11	20.8	2.44721	53.73	–	–	–
2	1992-03-11	12:50	20.8	2.44318	57.77	–	–	–
2	1992-03-11	12:50	20.8	2.44312	57.82	–	–	–
2	1992-10-08	13:07	20.8	2.43741	63.53	–	–	–
2	1992-10-08	13:09	20.8	2.43746	63.48	–	–	–
2	1993-03-05	10:25	20.8	2.43703	63.91	×	–	–
2	1993-03-05	10:27	20.8	2.43708	63.86	×	–	–
2	1993-11-18	11:30	20.8	2.43987	61.07	×	–	–
2	1993-11-18	11:31	20.8	2.43985	61.10	×	–	–
2	1994-05-20	13:30	20.8	–	–	–	–	Blocked. No access past the 90' station due to ground conditions.

Table D-3. Room Q Station -34.4 m vertical mining sequence metadata

										Pre-Jump Fitting Inputs				Post-Jump Fitting Inputs			
s	Segment Start Time	Analysis Notes	Gage Number	Paired Points	Point 1 y	Point 2 y	Estimated t_{ex}	t_{ex} Source	Shift Phase	Type	Start Index	End Index	Ignore Index	Type	Start Index	End Index	Ignore Index
(–)	(YYYY-MM-DD HH:MM)	(–)	(–)	(–)	(m)	(m)	(YYYY-MM-DD HH:MM)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)
0	1989-07-12 10:39	Estimated start of mining Room Q.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1	1989-08-01 18:36	First reading after station was mined out during pass 1.	QPM81-1	Vertical	-34.44	-34.44	1989-08-01 14:06	Mining face position	2	–	–	–	–	Jeffreys	1	12	–
2	1991-03-13 11:02	Readings at all three stations jump slightly. No cause found in data sheets.	QPM81-1	Vertical	-34.44	-34.44	–	–	2	Linear	-2	-1	–	Linear	1	4	–

Table D-4. Room Q Station -34.4 m vertical mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_z (m)	δ_z (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
1	1989-08-01	18:36	–	2.48084	0.85	–	–	–
1	1989-08-11	11:24	108.6	2.46423	17.47	–	–	68.33 station to face
1	1989-08-14	11:29	108.6	2.46311	18.58	–	–	68.33 station to face
1	1989-08-15	11:14	108.6	2.46296	18.74	–	–	–
1	1989-08-22	12:38	20.8	2.46134	20.36	–	–	–
1	1989-08-24	13:00	20.8	2.46111	20.59	–	–	–
1	1989-08-25	11:13	20.8	2.46090	20.79	–	–	–
1	1989-08-28	10:59	20.8	2.46065	21.05	–	–	–
1	1989-08-30	14:18	20.8	2.46022	21.48	–	–	–
1	1989-08-31	13:07	20.8	2.46004	21.66	–	–	–
1	1989-09-06	13:24	20.8	2.45920	22.50	–	–	–
1	1989-09-07	13:36	20.8	2.45905	22.65	–	–	–
1	1989-09-11	10:46	20.8	2.45859	23.11	–	–	–
1	1989-09-12	12:25	20.8	2.45852	23.18	–	–	–
1	1989-09-14	10:54	20.8	2.45816	23.54	–	–	–
1	1989-09-18	10:38	20.8	2.45783	23.87	–	–	–
1	1989-09-19	11:05	20.8	2.45775	23.94	–	–	–
1	1989-09-20	10:48	20.8	2.45753	24.17	–	–	–
1	1989-09-27	12:40	20.8	2.45727	24.43	–	–	–
1	1989-09-28	11:04	20.8	2.45715	24.55	–	–	Read all points twice except QPM 32 - read it four times.
1	1989-10-02	12:32	20.8	2.45684	24.86	–	–	All readings were taken twice.
1	1989-10-04	10:45	20.8	2.45684	24.86	–	–	All readings were taken twice.
1	1989-10-10	13:03	20.8	2.48646	-4.76	–	×	Bad reading WFD 11/6/89
1	1989-10-10	13:04	20.8	2.45623	25.47	–	–	–
1	1989-10-12	09:28	20.8	2.45608	25.62	–	–	–
1	1989-10-12	09:29	20.8	2.45504	26.66	–	×	Duplicate Readings w/Different Tape Ext. 11/6/89 WFD
1	1989-10-13	10:39	20.8	2.45488	26.81	–	×	Duplicate Readings w/Different Tape Ext. 11/6/89 WFD
1	1989-10-13	10:40	20.8	2.45608	25.62	–	–	–
1	1989-10-16	12:35	20.8	2.45588	25.82	–	–	–
1	1989-10-17	10:11	20.8	2.45572	25.98	–	–	–
1	1989-10-18	10:37	20.8	2.45570	26.00	–	–	–
1	1989-10-20	11:00	20.8	2.45567	26.03	–	–	–
1	1989-10-24	10:49	20.8	2.45577	25.92	–	–	–
1	1989-10-25	12:35	20.8	2.45529	26.41	–	–	–
1	1989-10-31	10:49	20.8	2.45486	26.84	–	–	–
1	1989-11-13	10:18	20.8	2.45417	27.52	–	–	–
1	1989-11-27	13:09	20.8	2.48536	-3.67	×	–	–
1	1989-12-08	14:08	20.8	2.45273	28.97	–	–	–
1	1989-12-11	10:42	20.8	2.45234	29.35	–	–	–
1	1989-12-19	10:55	20.8	2.45201	29.68	–	–	–
1	1990-01-03	11:04	20.8	2.45143	30.27	–	–	–
1	1990-01-08	13:02	20.8	2.45140	30.29	–	–	–
1	1990-01-19	10:44	20.8	2.45062	31.08	–	–	–
1	1990-01-22	09:56	20.8	2.45046	31.23	–	–	–
1	1990-01-29	10:07	20.8	2.45003	31.67	–	–	–
1	1990-02-05	09:10	20.8	2.44993	31.77	–	–	–
1	1990-02-13	09:34	20.8	2.44937	32.33	–	–	–
1	1990-02-19	09:33	20.8	2.44925	32.45	–	–	–
1	1990-02-26	00:00	20.8	2.44909	32.60	–	–	–
1	1990-03-05	09:22	20.8	2.44861	33.09	–	–	–
1	1990-03-12	10:14	20.8	2.44886	32.83	–	–	–
1	1990-03-19	08:52	20.8	2.45074	30.95	×	–	–
1	1990-03-26	09:09	20.8	2.44787	33.82	–	–	–
1	1990-04-02	09:23	20.8	2.44747	34.23	–	–	–
1	1990-04-09	10:05	20.8	2.44714	34.56	–	–	–
1	1990-04-16	12:54	20.8	2.44696	34.74	–	–	–
1	1990-04-24	09:22	20.8	2.44663	35.07	–	–	–
1	1990-05-01	09:28	20.8	2.44645	35.25	–	–	–
1	1990-05-09	10:12	20.8	2.44605	35.65	–	–	–
1	1991-01-09	10:34	20.8	2.43848	43.22	–	–	–
2	1991-03-13	11:02	20.8	2.43810	45.07	–	–	–
2	1991-03-18	09:45	20.8	2.43784	45.33	–	–	–
2	1991-03-25	10:42	20.8	2.43782	45.35	–	–	–
2	1991-04-01	10:15	20.8	2.43749	45.68	–	–	–
2	1991-10-02	13:09	20.8	2.43169	51.47	–	–	–
2	1992-03-11	12:52	20.8	2.42776	55.41	–	–	–
2	1992-03-11	12:52	20.8	2.42776	55.41	–	–	–
2	1992-10-08	13:07	20.8	2.42110	62.07	–	–	–
2	1992-10-08	13:09	20.8	2.42110	62.07	–	–	–
2	1993-03-05	10:42	20.8	2.42092	62.24	×	–	–
2	1993-03-05	10:43	20.8	2.42095	62.22	×	–	–
2	1993-11-18	11:28	20.8	2.42311	60.06	×	–	–
2	1993-11-18	11:29	20.8	2.42311	60.06	×	–	–
2	1994-05-20	13:30	20.8	–	–	–	–	Blocked. No access past the 90' station due to ground conditions.

Table D-5. Room Q Station -3.7 m horizontal mining sequence metadata

										Pre-Jump Fitting Inputs				Post-Jump Fitting Inputs			
s	Segment Start Time	Analysis Notes	Gage Number	Paired Points	Point 1 y	Point 2 y	Estimated t_{ex}	t_{ex} Source	Shift Phase	Type	Start Index	End Index	Ignore Index	Type	Start Index	End Index	Ignore Index
(–)	(YYYY-MM-DD HH:MM)	(–)	(–)	(–)	(m)	(m)	(YYYY-MM-DD HH:MM)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)
0	1989-07-12 10:39	Estimated start of mining Room Q.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1	1989-07-27 17:50	First reading after station was mined out during pass 1.	QPM52-1	Horizontal	-3.66	-3.66	1989-07-27 13:56	Mining face position	2	–	–	–	–	Jeffreys	1	15	–
2	1991-03-13 11:07	Readings at all three stations jump slightly. No cause found in data sheets.	QPM52-1	Horizontal	-3.66	-3.66	–	–	2	Linear	-2	-1	–	Linear	1	4	–

Table D-6. Room Q Station -3.7 m horizontal mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_x (m)	δ_x (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
1	1989-07-27	17:50	–	2.50248	1.87	–	–	–
1	1989-07-27	17:56	–	2.50251	1.85	–	–	–
1	1989-08-01	11:41	84.2	2.48559	18.77	–	–	89.33 station to face
1	1989-08-01	11:42	84.2	2.48562	18.74	–	–	89.33 station to face
1	1989-08-01	16:27	88.5	2.48539	18.97	–	–	103.29 station to face
1	1989-08-01	16:28	88.5	2.48544	18.92	–	–	103.29 station to face
1	1989-08-02	12:20	94.9	2.48526	19.10	–	–	124.33 station to face
1	1989-08-04	10:42	94.9	2.48407	20.29	–	–	124.33 station to face
1	1989-08-07	11:47	99.2	2.48310	21.25	–	–	138.33 station to face
1	1989-08-08	14:39	108.6	2.48227	22.09	–	–	288' points are blocked
1	1989-08-09	11:55	108.6	2.48204	22.32	–	–	–
1	1989-08-10	10:10	108.6	2.48209	22.27	–	–	169.33 station to face
1	1989-08-11	11:21	108.6	2.48181	22.55	–	–	169.33 station to face
1	1989-08-14	11:26	108.6	2.48079	23.57	–	–	169.33 station to face
1	1989-08-15	11:12	108.6	2.48056	23.79	–	–	169.33 station to face
1	1989-08-22	12:36	51.6	2.47942	24.94	–	–	–
1	1989-08-24	12:58	51.6	2.48150	22.86	×	–	1.597? WFD 8/29/89
1	1989-08-25	11:11	51.6	2.47876	25.60	–	–	–
1	1989-08-28	10:57	51.6	2.47815	26.21	–	–	–
1	1989-08-30	14:16	51.6	2.47820	26.16	–	–	–
1	1989-08-31	13:06	51.6	2.47795	26.41	–	–	–
1	1989-09-06	13:22	51.6	2.47708	27.27	–	–	–
1	1989-09-07	13:35	51.6	2.47673	27.63	–	–	–
1	1989-09-11	12:45	51.6	2.47635	28.01	–	–	–
1	1989-09-12	12:29	51.6	2.47655	27.81	–	–	–
1	1989-09-14	12:07	51.6	2.47599	28.37	–	–	–
1	1989-09-18	10:36	51.6	2.47561	28.75	–	–	–
1	1989-09-19	11:02	51.6	2.47541	28.95	–	–	–
1	1989-09-20	10:47	51.6	2.47576	28.60	–	–	–
1	1989-09-27	12:37	51.6	2.47548	28.87	–	–	–
1	1989-09-28	11:02	51.6	2.47480	29.56	–	–	Read all points twice except QPM 32 - read it four times.
1	1989-10-02	12:38	51.6	2.47462	29.74	–	–	All readings were taken twice.
1	1989-10-04	10:43	51.6	2.47449	29.87	–	–	All readings were taken twice.
1	1989-10-10	12:59	51.6	2.47366	30.70	–	–	–
1	1989-10-10	13:00	51.6	2.47292	31.44	–	×	–
1	1989-10-12	09:34	51.6	2.47284	31.52	–	×	Duplicate Readings w/Different Tape Ext. 11/6/89 WFD
1	1989-10-12	09:35	51.6	2.47363	30.73	–	–	–
1	1989-10-13	10:46	51.6	2.47279	31.57	–	×	Duplicate Readings w/Different Tape Ext. 11/6/89 WFD
1	1989-10-13	10:46	51.6	2.47366	30.70	–	–	–
1	1989-10-16	12:40	51.6	2.47330	31.06	–	–	–
1	1989-10-17	10:10	51.6	2.47338	30.98	–	–	–
1	1989-10-18	10:32	51.6	2.47307	31.29	–	–	–
1	1989-10-20	10:58	51.6	2.47312	31.24	–	–	–
1	1989-10-24	10:47	51.6	2.47305	31.31	–	–	–
1	1989-10-25	12:41	51.6	2.47277	31.59	–	–	–
1	1989-10-31	10:48	51.6	2.47226	32.10	–	–	–
1	1989-11-13	10:23	51.6	2.47150	32.86	–	–	–
1	1989-11-27	13:17	51.6	2.47025	34.11	–	–	–
1	1989-12-08	14:13	51.6	2.46985	34.51	–	–	–
1	1989-12-11	10:46	51.6	2.46969	34.67	–	–	–
1	1989-12-19	10:53	51.6	2.46924	35.12	–	–	–
1	1990-01-03	11:11	51.6	2.46837	35.99	–	–	–
1	1990-01-08	13:17	51.6	2.46819	36.16	–	–	–
1	1990-01-19	10:42	51.6	2.46743	36.93	–	–	–
1	1990-01-22	10:06	51.6	2.46743	36.93	–	–	–
1	1990-01-29	10:05	51.6	2.46718	37.18	–	–	–
1	1990-02-05	09:14	51.6	2.46659	37.76	–	–	–
1	1990-02-13	09:28	51.6	2.46626	38.10	–	–	–
1	1990-02-19	09:38	51.6	2.46596	38.40	–	–	–
1	1990-02-26	00:00	51.6	2.46835	36.01	×	–	–
1	1990-03-05	09:28	51.6	2.46553	38.83	–	–	–
1	1990-03-12	09:59	51.6	2.46504	39.31	–	–	–
1	1990-03-19	08:57	51.6	2.46482	39.54	–	–	–
1	1990-03-26	09:12	51.6	2.46461	39.75	–	–	–
1	1990-04-02	05:27	51.6	2.46421	40.15	–	–	–
1	1990-04-09	10:15	51.6	2.46405	40.30	–	–	–
1	1990-04-16	12:51	51.6	2.46375	40.61	–	–	–
1	1990-04-24	09:26	51.6	2.46339	40.97	–	–	–
1	1990-05-01	09:22	51.6	2.46306	41.30	–	–	–
1	1990-05-09	10:20	51.6	2.46263	41.73	–	–	–
1	1991-01-09	10:28	51.6	2.45417	50.19	–	–	–
2	1991-03-13	11:07	51.6	2.45374	52.20	–	–	–
2	1991-03-18	09:50	51.6	2.45331	52.63	–	–	–
2	1991-03-25	10:57	51.6	2.45328	52.66	–	–	–
2	1991-04-01	10:24	51.6	2.45303	52.91	–	–	–
2	1991-10-02	13:04	51.6	2.44663	59.31	–	–	–
2	1992-03-11	12:43	51.6	2.44216	63.78	–	–	–
2	1992-03-11	12:43	51.6	2.44211	63.83	–	–	–
2	1992-10-08	13:12	51.6	2.43578	70.16	–	–	–
2	1992-10-08	13:13	51.6	2.43581	70.13	–	–	–
2	1993-03-05	10:31	51.6	2.43489	71.05	×	–	–
2	1993-03-05	10:32	51.6	2.43484	71.10	×	–	–
2	1993-11-18	11:35	51.6	2.43683	69.12	×	–	–
2	1993-11-18	11:36	51.6	2.43680	69.14	×	–	–
2	1994-05-20	13:30	51.6	–	–	–	–	Blocked. No access past the 90' station due to ground conditions.

Table D-7. Room Q Station -3.7 m vertical mining sequence metadata

										Pre-Jump Fitting Inputs				Post-Jump Fitting Inputs			
s	Segment Start Time	Analysis Notes	Gage Number	Paired Points	Point 1 y	Point 2 y	Estimated t_{ex}	t_{ex} Source	Shift Phase	Type	Start Index	End Index	Ignore Index	Type	Start Index	End Index	Ignore Index
(–)	(YYYY-MM-DD HH:MM)	(–)	(–)	(–)	(m)	(m)	(YYYY-MM-DD HH:MM)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)
0	1989-07-12 10:39	Estimated start of mining Room Q.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1	1989-07-27 17:50	First reading after station was mined out during pass 1.	QPM51-1	Vertical	-3.66	-3.66	1989-07-27 13:56	Mining face position	2	–	–	–	–	Jeffreys	1	15	–
2	1991-03-13 11:05	Readings at all three stations jump slightly. No cause found in data sheets.	QPM51-1	Vertical	-3.66	-3.66	–	–	2	Linear	-2	-1	–	Linear	1	3	–

Table D-8. Room Q Station -3.7 m vertical mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_z (m)	δ_z (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
1	1989-07-27	17:50	–	2.48351	1.12	–	–	–
1	1989-07-27	17:56	–	2.48341	1.22	–	–	–
1	1989-08-01	11:39	84.3	2.46974	14.89	–	–	89.33 station to face
1	1989-08-01	11:40	84.2	2.46972	14.91	–	–	89.33 station to face
1	1989-08-01	18:24	88.5	2.46951	15.11	–	–	103.29 station to face
1	1989-08-01	18:25	88.5	2.46954	15.09	–	–	103.29 station to face
1	1989-08-02	12:18	94.9	2.46906	15.57	–	–	124.33 station to face
1	1989-08-04	10:40	94.9	2.46814	16.49	–	–	124.33 station to face
1	1989-08-07	11:47	99.2	2.46708	17.55	–	–	138.33 station to face
1	1989-08-08	14:37	108.6	2.46662	18.01	–	–	288' points are blocked
1	1989-08-09	11:53	108.6	2.46654	18.09	–	–	–
1	1989-08-10	10:08	108.6	2.46644	18.19	–	–	169.33 station to face
1	1989-08-11	11:20	108.6	2.46591	18.72	–	–	169.33 station to face
1	1989-08-14	11:26	108.6	2.46543	19.20	–	–	169.33 station to face
1	1989-08-15	11:10	108.6	2.46515	19.48	–	–	169.33 station to face
1	1989-08-22	12:34	51.6	2.46403	20.60	–	–	–
1	1989-08-24	12:56	51.6	2.46372	20.91	–	–	–
1	1989-08-25	11:10	51.6	2.46355	21.08	–	–	–
1	1989-08-28	10:56	51.6	2.46316	21.46	–	–	–
1	1989-08-30	14:15	51.6	2.46286	21.77	–	–	–
1	1989-08-31	13:05	51.6	2.46286	21.77	–	–	–
1	1989-09-06	13:21	51.6	2.46217	22.46	–	–	–
1	1989-09-07	13:34	51.6	2.46190	22.73	–	–	–
1	1989-09-11	12:44	51.6	2.46151	23.12	–	–	–
1	1989-09-12	12:28	51.6	2.46121	23.42	–	–	–
1	1989-09-14	12:05	51.6	2.46108	23.55	–	–	–
1	1989-09-18	10:35	51.6	2.46068	23.95	–	–	–
1	1989-09-19	11:00	51.6	2.46065	23.98	–	–	–
1	1989-09-20	10:46	51.6	2.46045	24.18	–	–	–
1	1989-09-27	12:38	51.6	2.46014	24.49	–	–	–
1	1989-09-28	11:01	51.6	2.46002	24.61	–	–	Read all points twice except QPM 32 - read it four times.
1	1989-10-02	12:36	51.6	2.45974	24.89	–	–	All readings were taken twice.
1	1989-10-04	10:42	51.6	2.45966	24.97	–	–	All readings were taken twice.
1	1989-10-10	12:57	51.6	2.45801	26.62	–	×	–
1	1989-10-10	12:58	51.6	2.45908	25.55	–	–	–
1	1989-10-12	09:33	51.6	2.45791	26.72	–	×	Duplicate Readings w/Different Tape Ext. 11/6/89 WFD
1	1989-10-12	09:33	51.6	2.45895	25.68	–	–	–
1	1989-10-13	10:44	51.6	2.45775	26.88	–	×	Duplicate Readings w/Different Tape Ext. 11/6/89 WFD
1	1989-10-13	10:45	51.6	2.45623	28.40	–	×	Bad Reading 11/6/89 WFD
1	1989-10-16	12:39	51.6	2.45872	25.91	–	–	–
1	1989-10-17	10:09	51.6	2.45755	27.08	×	–	–
1	1989-10-18	10:31	51.6	2.45847	26.16	–	–	–
1	1989-10-20	10:58	51.6	2.45849	26.14	–	–	–
1	1989-10-24	10:46	51.6	2.45811	26.52	–	–	–
1	1989-10-25	12:43	51.6	2.45806	26.57	–	–	–
1	1989-10-31	10:46	51.6	2.45770	26.93	–	–	–
1	1989-11-13	10:21	51.6	2.45687	27.76	–	–	–
1	1989-11-27	13:13	51.6	2.45610	28.53	–	–	–
1	1989-12-08	14:12	51.6	2.45537	29.26	–	–	–
1	1989-12-11	10:47	51.6	2.45529	29.34	–	–	–
1	1989-12-18	10:52	51.6	2.45483	29.80	–	–	–
1	1990-01-03	11:10	51.6	2.45410	30.53	–	–	–
1	1990-01-08	13:14	51.6	2.45379	30.84	–	–	–
1	1990-01-19	10:40	51.6	2.45328	31.35	–	–	–
1	1990-01-22	10:04	51.6	2.45313	31.50	–	–	–
1	1990-01-29	10:03	51.6	2.45280	31.83	–	–	–
1	1990-02-05	09:14	51.6	2.45245	32.18	–	–	–
1	1990-02-13	09:27	51.6	2.45212	32.51	–	–	–
1	1990-02-19	09:37	51.6	2.45189	32.74	–	–	–
1	1990-02-26	00:00	51.6	2.48295	1.68	×	–	–
1	1990-03-05	09:27	51.6	2.45135	33.28	–	–	–
1	1990-03-12	10:07	51.6	2.45097	33.66	–	–	–
1	1990-03-19	08:56	51.6	2.45059	34.04	–	–	–
1	1990-03-26	09:11	51.6	2.45046	34.16	–	–	–
1	1990-04-02	09:26	51.6	2.45006	34.57	–	–	–
1	1990-04-09	10:12	51.6	2.44968	34.95	–	–	–
1	1990-04-16	12:50	51.6	2.44965	34.98	–	–	–
1	1990-04-24	09:25	51.6	2.44932	35.31	–	–	–
1	1990-05-01	09:50	51.6	2.44907	35.56	–	–	–
1	1990-05-09	10:19	51.6	2.44861	36.02	–	–	–
1	1991-01-09	10:27	51.6	2.44041	44.22	–	–	–
2	1991-03-13	11:05	51.6	2.43980	46.43	–	–	–
2	1991-03-18	09:49	51.6	2.43954	46.69	–	–	–
2	1991-03-25	10:55	51.6	2.43934	46.89	–	–	–
2	1991-04-01	10:23	51.6	2.43840	47.83	–	–	–
2	1991-10-02	13:01	51.6	2.43307	53.17	–	–	–
2	1992-03-11	12:47	51.6	2.42872	57.51	–	–	–
2	1992-03-11	12:47	51.6	2.42875	57.48	–	–	–
2	1992-10-08	13:15	51.6	2.42153	64.70	–	–	–
2	1992-10-08	13:15	51.6	2.42156	64.67	–	–	–
2	1993-03-05	10:39	51.6	2.42100	65.23	×	–	–
2	1993-03-05	10:40	51.6	2.42100	65.23	×	–	–
2	1993-11-18	11:33	51.6	2.42270	63.53	×	–	–
2	1993-11-18	11:34	51.6	2.42273	63.50	×	–	–
2	1994-05-20	13:30	51.6	–	–	–	–	Blocked. No access past the 90' station due to ground conditions.

Table D-9. Room Q Station +28.0 m horizontal mining sequence metadata

										Pre-Jump Fitting Inputs				Post-Jump Fitting Inputs			
s	Segment Start Time	Analysis Notes	Gage Number	Paired Points	Point 1 y	Point 2 y	Estimated t_{ex}	t_{ex} Source	Shift Phase	Type	Start Index	End Index	Ignore Index	Type	Start Index	End Index	Ignore Index
(–)	(YYYY-MM-DD HH:MM)	(–)	(–)	(–)	(m)	(m)	(YYYY-MM-DD HH:MM)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)
0	1989-07-12 10:39	Estimated start of mining Room Q.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1	1989-07-24 21:28	First reading after station was mined out during pass 1.	QPM32-1	Horizontal	28.04	28.04	1989-07-24 16:03	Mining face position	2	–	–	–	–	Jeffreys	1	30	–
2	1991-03-13 11:18	Readings at all three stations jump slightly. No cause found in data sheets.	QPM32-1	Horizontal	28.04	28.04	–	–	2	Linear	-2	-1	–	Linear	1	5	[4]
3	1993-11-18 11:39	Readings jump at all three stations. No cause found in the data sheets.	QPM32-1	Horizontal	28.04	28.04	–	–	2	Linear	-6	-3	–	Linear	1	4	–

Table D-10. Room Q Station +28.0 m horizontal mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_x (m)	δ_x (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
1	1989-07-24	21:28	–	2.49847	3.13	–	–	–
1	1989-07-24	21:38	–	2.49847	3.13	–	–	–
1	1989-07-26	16:28	47.2	2.48389	17.71	–	–	–
1	1989-07-26	16:31	49.3	2.48402	17.58	–	–	.569" closure in 43 hrs
1	1989-07-27	15:14	57.2	2.48270	18.91	–	–	Bad reading
1	1989-07-27	15:15	57.2	2.48300	18.60	–	–	104' 9 -1/2" station to face
1	1989-07-27	15:20	57.2	2.48293	18.68	–	–	104' 9 -1/2" station to face
1	1989-07-27	18:20	57.2	2.48295	18.65	–	–	104' 9 -1/2" station to face
1	1989-07-27	18:23	57.2	2.48293	18.68	–	–	104' 9 -1/2" station to face
1	1989-07-28	11:46	63.1	2.48194	19.67	–	–	124 station to face
1	1989-07-28	11:47	63.1	2.48196	19.64	–	–	124 station to face
1	1989-07-31	11:04	68.4	2.47995	21.65	–	–	141.4 station to face
1	1989-07-31	11:05	68.4	2.47995	21.65	–	–	141.4 station to face
1	1989-08-01	11:33	84.2	2.47978	21.83	–	–	193.4 station to face
1	1989-08-01	11:35	84.2	2.47975	21.85	–	–	193.4 station to face
1	1989-08-01	18:21	88.5	2.47973	21.88	–	–	207.29 station to face
1	1989-08-02	12:16	94.9	2.47874	22.87	–	–	228.33 station to face
1	1989-08-04	10:37	94.9	2.47823	23.38	–	–	228.33 station to face
1	1989-08-07	11:43	99.2	2.47782	23.78	–	–	242.33 station to face
1	1989-08-08	14:34	108.6	2.47714	24.47	–	–	Boring is completed
1	1989-08-09	11:51	108.6	2.47706	24.54	–	–	288' points are blocked
1	1989-08-10	10:05	108.6	2.47653	25.08	–	–	273.33 station to face
1	1989-08-11	11:18	108.6	2.47592	25.69	–	–	273.33 station to face
1	1989-08-14	11:24	108.6	2.47556	26.04	–	–	273.33 station to face
1	1989-08-15	11:07	108.6	2.47569	25.92	–	–	273.4 station to face
1	1989-08-22	12:31	83.3	2.47447	27.14	–	–	–
1	1989-08-24	12:54	83.3	2.47414	27.47	–	–	–
1	1989-08-25	11:07	83.3	2.47150	30.11	×	–	1.403? WFD 8/29/89
1	1989-08-28	10:54	83.3	2.47348	28.13	–	–	–
1	1989-08-30	14:12	83.3	2.47340	28.20	–	–	–
1	1989-08-31	13:03	83.3	2.47325	28.35	–	–	–
1	1989-09-06	13:20	83.3	2.47208	29.52	–	–	–
1	1989-09-07	13:32	83.3	2.47218	29.42	–	–	–
1	1989-09-11	12:42	83.3	2.47193	29.68	–	–	–
1	1989-09-12	12:33	83.3	2.47091	30.69	–	–	–
1	1989-09-14	12:11	83.3	2.47137	30.23	–	–	–
1	1989-09-18	10:33	83.3	2.47058	31.02	–	–	–
1	1989-09-19	10:57	83.3	2.47081	30.79	–	–	–
1	1989-09-20	10:44	83.3	2.47012	31.48	–	–	–
1	1989-09-27	12:34	83.3	2.46944	32.16	–	–	–
1	1989-09-28	10:59	83.3	2.47002	31.58	–	–	Read all points twice except QPM 32 - read it four times.
1	1989-10-02	12:43	83.3	2.46964	31.96	–	–	All readings were taken twice.
1	1989-10-04	10:39	83.3	2.46959	32.01	–	–	All readings were taken twice.
1	1989-10-10	12:52	83.3	2.46898	32.62	–	–	–
1	1989-10-10	12:55	83.3	2.46807	33.54	–	×	–
1	1989-10-12	09:39	83.3	2.46885	32.75	–	–	–
1	1989-10-12	09:40	83.3	2.46827	33.33	–	×	Duplicate Readings w/Different Tape Ext. 11/6/89 WFD
1	1989-10-13	10:50	83.3	2.46916	32.44	–	–	–
1	1989-10-13	10:51	83.3	2.46799	33.61	–	×	Duplicate Readings w/Different Tape Ext. 11/6/89 WFD
1	1989-10-16	12:57	83.3	2.46847	33.13	–	–	–
1	1989-10-17	10:07	83.3	2.46847	33.13	–	–	–
1	1989-10-18	10:36	83.3	2.46837	33.23	–	–	–
1	1989-10-20	10:56	83.3	2.46847	33.13	–	–	–
1	1989-10-24	10:45	83.3	2.46789	33.71	–	–	–
1	1989-10-25	12:45	83.3	2.46784	33.76	–	–	–
1	1989-10-31	10:45	83.3	2.46728	34.32	–	–	–
1	1989-11-13	10:26	83.3	2.46652	35.09	–	–	–
1	1989-11-27	13:24	83.3	2.46527	36.33	–	–	–
1	1989-12-08	14:16	83.3	2.46461	36.99	–	–	–
1	1989-12-11	10:55	83.3	2.46451	37.09	–	–	–
1	1989-12-19	10:43	83.3	2.46400	37.60	–	–	–
1	1990-01-03	11:16	83.3	2.48872	12.89	×	–	–
1	1990-01-08	13:28	83.3	2.46301	38.59	–	–	–
1	1990-01-19	10:38	83.3	2.46225	39.35	–	–	–
1	1990-01-22	10:09	83.3	2.46240	39.20	–	–	–
1	1990-01-29	10:01	83.3	2.46151	40.09	–	–	–
1	1990-02-05	09:19	83.3	2.46129	40.32	–	–	–
1	1990-02-13	09:23	83.3	2.46121	40.39	–	–	–
1	1990-02-19	09:47	83.3	2.46019	41.41	–	–	–
1	1990-02-26	00:00	83.3	2.45918	42.43	×	–	–
1	1990-03-05	09:30	83.3	2.45999	41.61	–	–	–
1	1990-03-12	10:24	83.3	2.48511	16.49	×	–	–
1	1990-03-19	09:04	83.3	2.45862	42.98	–	–	–
1	1990-03-26	09:19	83.3	2.45882	42.78	–	–	–
1	1990-04-02	05:33	83.3	2.45814	43.47	–	–	–
1	1990-04-09	10:23	83.3	2.45814	43.47	–	–	–
1	1990-04-16	12:43	83.3	2.45788	43.72	–	–	–
1	1990-04-24	09:42	83.3	2.45730	44.31	–	–	–
1	1990-05-01	09:19	83.3	2.45717	44.43	–	–	–
1	1990-05-09	10:30	83.3	2.45636	45.25	–	–	–
1	1991-01-09	10:25	83.3	2.44714	54.47	–	–	–
2	1991-03-13	11:18	83.3	2.44676	56.89	–	–	–
2	1991-03-18	09:53	83.3	2.44660	57.05	–	–	–
2	1991-03-25	11:00	83.3	2.44640	57.25	–	–	–
2	1991-04-01	10:35	83.3	2.44574	57.91	–	–	–
2	1991-10-02	12:55	83.3	2.43909	64.56	–	–	–

Table D-10. Room Q Station +28.0 m horizontal mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_x (m)	δ_x (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
2	1992-03-11	12:41	83.3	2.43431	69.34	–	–	–
2	1992-03-11	12:41	83.3	2.43436	69.29	–	–	–
2	1992-10-08	13:18	83.3	2.42748	76.17	–	–	–
2	1992-10-08	13:18	83.3	2.42750	76.15	–	–	–
2	1993-03-05	10:34	83.3	2.42626	77.39	×	–	–
2	1993-03-05	10:35	83.3	2.42628	77.37	×	–	–
3	1993-11-18	11:39	83.3	2.42806	87.88	–	–	–
3	1993-11-18	11:40	83.3	2.42809	87.86	–	–	–
3	1994-05-20	13:05	83.3	2.42346	92.48	–	–	–
3	1994-05-20	13:05	83.3	2.42344	92.50	–	–	–

Table D-11. Room Q Station +28.0 m vertical mining sequence metadata

										Pre-Jump Fitting Inputs				Post-Jump Fitting Inputs			
s	Segment Start Time	Analysis Notes	Gage Number	Paired Points	Point 1 y	Point 2 y	Estimated t_{ex}	t_{ex} Source	Shift Phase	Type	Start Index	End Index	Ignore Index	Type	Start Index	End Index	Ignore Index
(–)	(YYYY-MM-DD HH:MM)	(–)	(–)	(–)	(m)	(m)	(YYYY-MM-DD HH:MM)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)	(–)
0	1989-07-12 10:39	Estimated start of mining Room Q.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1	1989-07-24 21:25	First reading after station was mined out during pass 1.	QPM31-1	Vertical	28.04	28.04	1989-07-24 16:03	Mining face position	2	–	–	–	–	Jeffreys	1	30	–
2	1991-03-13 11:08	Readings at all three stations jump slightly. No cause found in data sheets.	QPM31-1	Vertical	28.04	28.04	–	–	2	Linear	-2	-1	–	Linear	1	4	–
3	1993-11-18 11:39	Readings jump at all three stations. No cause found in the data sheets.	QPM31-1	Vertical	28.04	28.04	–	–	2	Linear	-6	-3	–	Linear	1	3	–

Table D-12. Room Q Station +28.0 m vertical mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_z (m)	δ_z (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
1	1989-07-24	21:25	–	2.52092	2.26	–	–	–
1	1989-07-24	21:36	–	2.52085	2.34	–	–	–
1	1989-07-26	16:26	47.2	2.50708	16.11	–	×	Bad reading
1	1989-07-26	16:30	49.3	2.50929	13.90	–	–	–
1	1989-07-26	16:32	49.3	2.50944	13.74	–	–	.449" closure in 43 hrs
1	1989-07-27	15:11	57.2	2.50802	15.17	–	–	104.79 station to face
1	1989-07-27	15:17	57.2	2.50800	15.19	–	–	104.79 station to face
1	1989-07-27	18:19	57.2	2.50784	15.34	–	–	104.79" station to face
1	1989-07-27	18:22	57.2	2.50787	15.32	–	–	104.79" station to face
1	1989-07-28	11:43	63.1	2.50731	15.88	–	–	124 station to face
1	1989-07-28	11:44	63.1	2.50731	15.88	–	–	124 station to face
1	1989-07-31	11:00	68.4	2.50566	17.53	–	–	141.33 station to face
1	1989-07-31	11:02	68.4	2.50563	17.55	–	–	141.33 station to face
1	1989-08-01	11:30	84.2	2.50523	17.96	–	–	193.33 station to face
1	1989-08-01	11:31	84.2	2.50523	17.96	–	–	193.33 station to face
1	1989-08-01	18:20	88.5	2.50520	17.99	–	–	207.29 station to face
1	1989-08-02	12:14	94.9	2.50474	18.44	–	–	228.33 station to face
1	1989-08-04	10:35	94.9	2.50403	19.15	–	–	228.33 station to face
1	1989-08-07	11:43	99.2	2.50337	19.81	–	–	242.33 station to face
1	1989-08-08	14:31	108.6	2.50299	20.20	–	–	Boring is completed
1	1989-08-09	11:49	108.6	2.50292	20.27	–	–	Room is complete.
1	1989-08-10	10:04	108.6	2.50269	20.50	–	–	273.33 station to face
1	1989-08-11	11:16	108.6	2.50253	20.65	–	–	273.33 station to face
1	1989-08-14	11:24	108.6	2.50198	21.21	–	–	273.33 station to face
1	1989-08-15	11:05	108.6	2.50170	21.49	–	–	273.33 station to face
1	1989-08-22	12:29	83.3	2.50071	22.48	–	–	–
1	1989-08-24	12:52	83.3	2.50050	22.68	–	–	–
1	1989-08-25	11:04	83.3	2.50027	22.91	–	–	–
1	1989-08-28	10:52	83.3	2.49994	23.24	–	–	–
1	1989-08-30	14:10	83.3	2.49969	23.50	–	–	–
1	1989-08-31	13:01	83.3	2.49946	23.73	–	–	–
1	1989-09-06	13:19	83.3	2.49885	24.34	–	–	–
1	1989-09-07	12:30	83.3	2.49847	24.72	–	–	–
1	1989-09-11	12:41	83.3	2.49801	25.17	–	–	–
1	1989-09-12	12:31	83.3	2.49794	25.25	–	–	–
1	1989-09-14	12:09	83.3	2.49773	25.45	–	–	–
1	1989-09-18	10:32	83.3	2.49735	25.83	–	–	–
1	1989-09-19	10:55	83.3	2.49728	25.91	–	–	–
1	1989-09-20	10:43	83.3	2.49730	25.89	–	–	–
1	1989-09-27	12:35	83.3	2.49687	26.32	–	–	–
1	1989-09-28	10:58	83.3	2.49667	26.52	–	–	Read all points twice except QPM 32 - read it four times.
1	1989-10-02	12:41	83.3	2.49639	26.80	–	–	All readings were taken twice.
1	1989-10-04	10:38	83.3	2.49629	26.90	–	–	All readings were taken twice.
1	1989-10-10	12:48	83.3	2.49469	28.50	–	×	–
1	1989-10-10	12:50	83.3	2.49585	27.33	–	–	–
1	1989-10-12	09:37	83.3	2.49446	28.73	–	×	Duplicate Readings w/Different Tape Ext. 11/6/89 WFD
1	1989-10-12	09:38	83.3	2.49558	27.61	–	–	–
1	1989-10-13	10:48	83.3	2.49433	28.86	–	×	Duplicate Readings w/Different Tape Ext. 11/6/89 WFD
1	1989-10-13	10:49	83.3	2.49555	27.64	–	–	–
1	1989-10-16	12:55	83.3	2.49530	27.89	–	–	–
1	1989-10-17	10:06	83.3	2.49527	27.92	–	–	–
1	1989-10-18	10:35	83.3	2.49530	27.89	–	–	–
1	1989-10-20	10:55	83.3	2.49530	27.89	–	–	–
1	1989-10-24	10:43	83.3	2.49502	28.17	–	–	–
1	1989-10-25	12:46	83.3	2.49481	28.37	–	–	–
1	1989-10-31	10:43	83.3	2.49441	28.78	–	–	–
1	1989-11-13	10:26	83.3	2.49362	29.57	–	–	–
1	1989-11-27	13:22	83.3	2.49255	30.63	–	–	–
1	1989-12-08	14:15	83.3	2.49197	31.22	–	–	–
1	1989-12-11	10:54	83.3	2.49177	31.42	–	–	–
1	1989-12-19	10:42	83.3	2.49154	31.65	–	–	–
1	1990-01-03	11:17	83.3	2.49057	32.62	–	–	–
1	1990-01-08	13:26	83.3	2.49039	32.79	–	–	–
1	1990-01-19	10:36	83.3	2.48991	33.28	–	–	–
1	1990-01-22	10:07	83.3	2.48958	33.61	–	–	–
1	1990-01-29	09:59	83.3	2.48912	34.06	–	–	–
1	1990-02-05	09:18	83.3	2.48874	34.44	–	–	–
1	1990-02-13	09:22	83.3	2.48844	34.75	–	–	–
1	1990-02-19	09:45	83.3	2.48811	35.08	–	–	–
1	1990-02-26	00:00	83.3	2.48763	35.56	–	–	–
1	1990-03-05	09:29	83.3	2.48750	35.69	–	–	–
1	1990-03-12	10:26	83.3	2.45999	63.20	×	–	–
1	1990-03-19	09:02	83.3	2.48676	36.43	–	–	–
1	1990-03-26	09:18	83.3	2.48658	36.60	–	–	–
1	1990-04-02	09:34	83.3	2.48623	36.96	–	–	–
1	1990-04-09	10:21	83.3	2.48590	37.29	–	–	–
1	1990-04-16	12:42	83.3	2.48572	37.47	–	–	–
1	1990-04-24	09:40	83.3	2.48536	37.82	–	–	–
1	1990-05-01	09:17	83.3	2.48509	38.10	–	–	–
1	1990-05-09	10:29	83.3	2.48448	38.71	–	–	–
1	1991-01-09	10:23	83.3	2.47627	46.92	–	–	–
2	1991-03-13	11:08	83.3	2.47559	48.98	–	–	–
2	1991-03-18	09:52	83.3	2.47515	49.41	–	–	–
2	1991-03-25	10:58	83.3	2.47515	49.41	–	–	–
2	1991-04-01	10:33	83.3	2.47482	49.74	–	–	–
2	1991-10-02	12:49	83.3	2.46865	55.91	–	–	–

Table D-12. Room Q Station +28.0 m vertical mining sequence closure data

s (−)	t (YYYY-MM-DD)	(HH:MM)	f (m)	α_z (m)	δ_z (mm)	Outlier Reading? (−)	Bad Reading? (−)	Measurement Notes (−)
2	1992-03-11	12:39	83.3	2.46395	60.61	–	–	–
2	1992-03-11	12:40	83.3	2.46395	60.61	–	–	–
2	1992-10-08	13:20	83.3	2.45671	67.85	–	–	–
2	1992-10-08	13:21	83.3	2.45674	67.82	–	–	–
2	1993-03-05	10:36	83.3	2.45580	68.76	×	–	–
2	1993-03-05	10:37	83.3	2.45580	68.76	×	–	–
3	1993-11-18	11:39	83.3	2.45758	79.43	–	–	–
3	1993-11-18	11:40	83.3	2.45760	79.41	–	–	–
3	1994-05-20	13:01	83.3	2.45341	83.60	–	–	–

D.3. Smoothed and Interpolated Closure Plots

Note that the closure histories within this section are composed of spliced together reconstructed mining sequence and remotely read closure measurements (see Section 2.3).

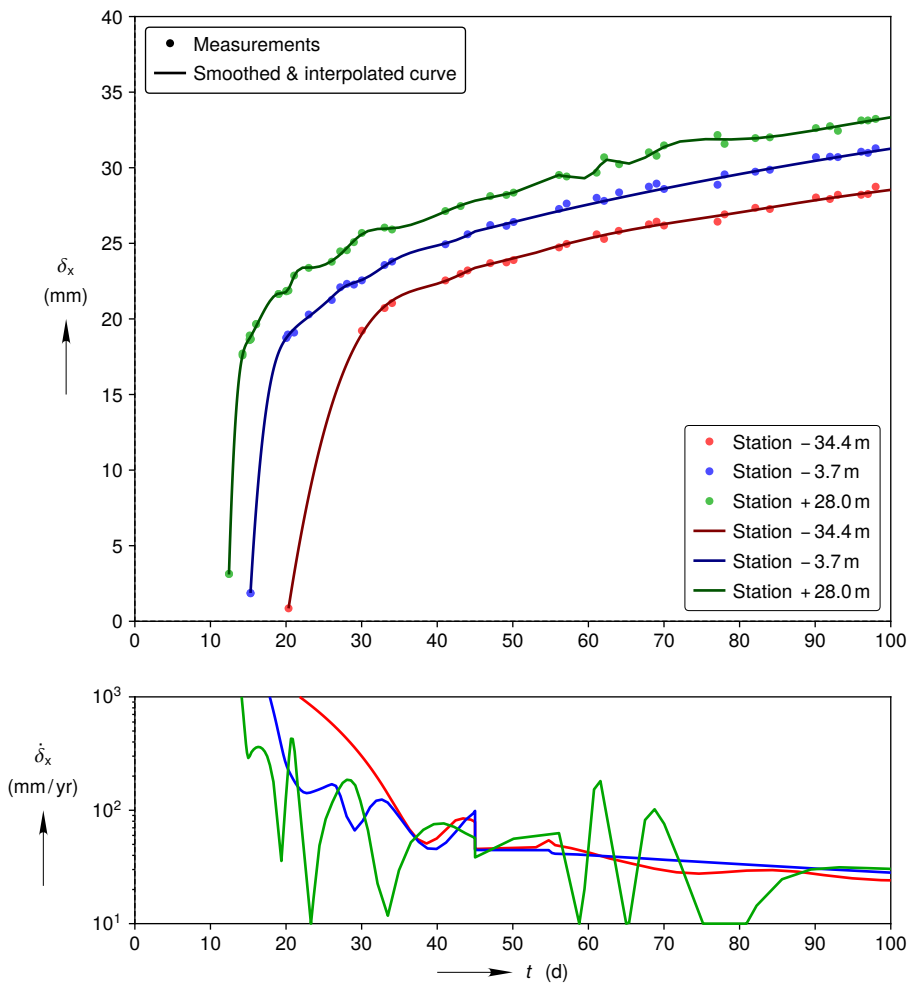


Figure D-7. Room Q smoothed and interpolated horizontal closure curves compared against reconstructed mining sequence closure measurements during mining in the top plot. Closure rate curves computed from the smoothed closure curves during mining in the bottom plot.

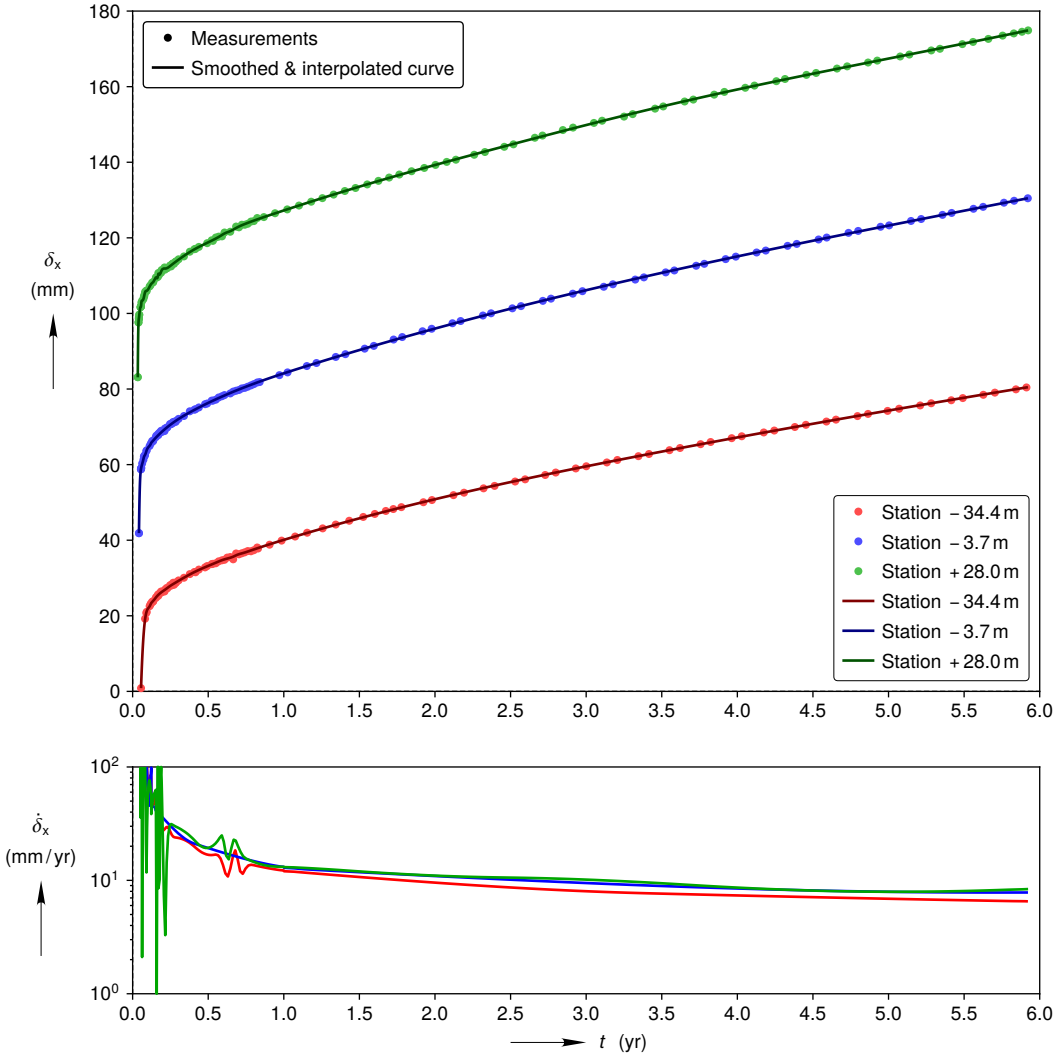


Figure D-8. Room Q smoothed and interpolated full horizontal closure curves compared against spliced together mining sequence and remotely read closure measurements in the top plot. (Each successive station's horizontal closure curve and measurements are shifted up by 40 mm to enhance legibility.) Closure rate curves computed from the smoothed closure curves in the bottom plot.

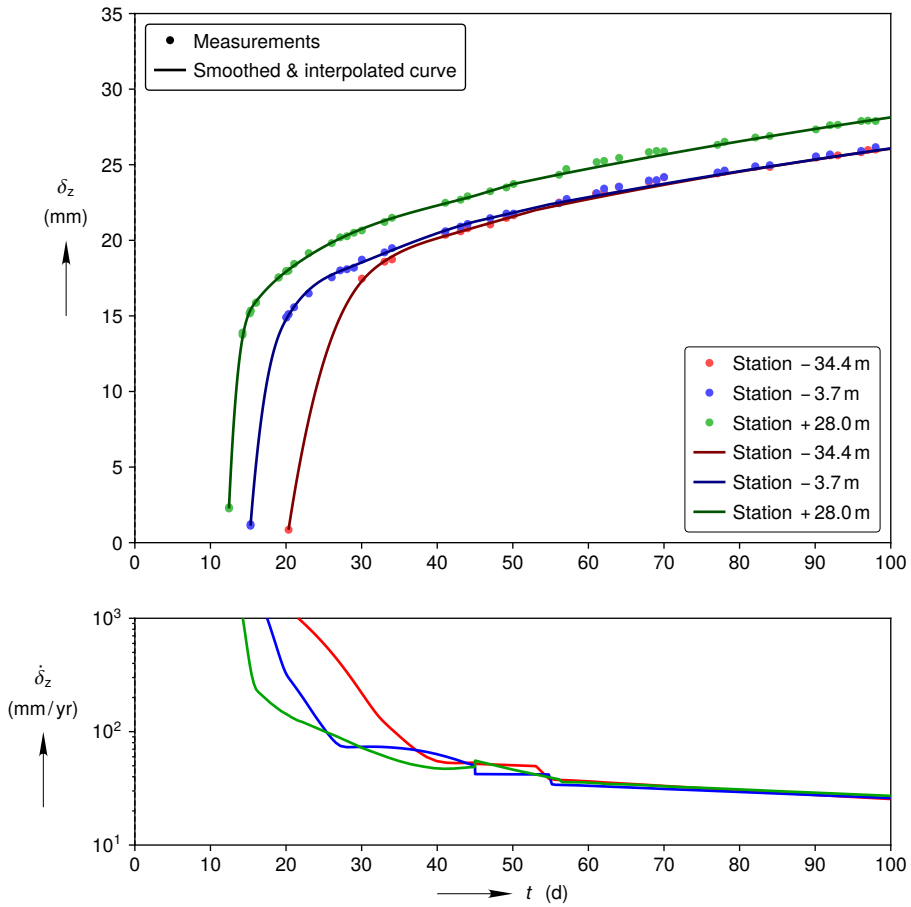


Figure D-9. Room Q smoothed and interpolated vertical closure curves compared against reconstructed mining sequence closure measurements during mining in the top plot. Closure rate curves computed from the smoothed closure curves during mining in the bottom plot.

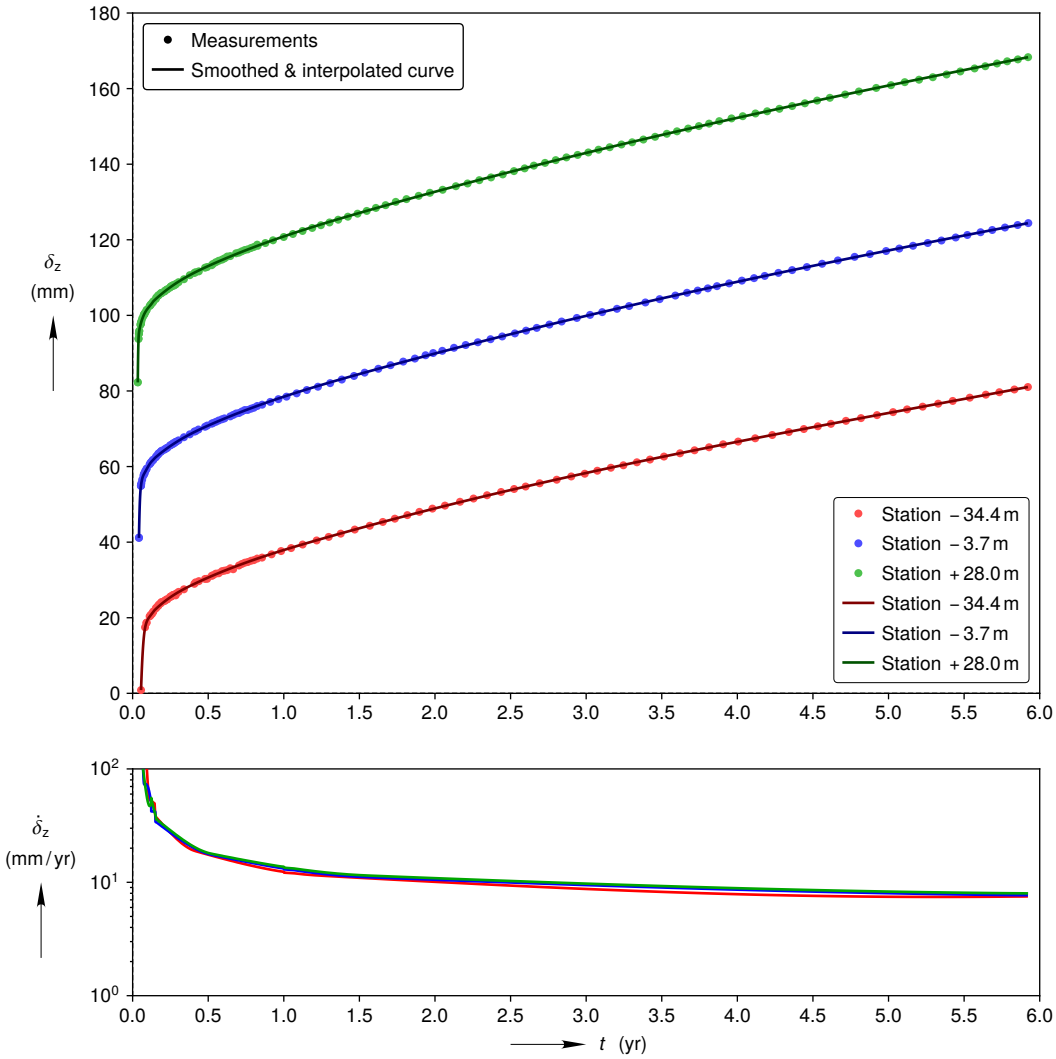


Figure D-10. Room Q smoothed and interpolated full vertical closure curves compared against spliced together mining sequence and remotely read closure measurements in the top plot. (Each successive station's vertical closure curve and measurements are shifted up by 40 mm to enhance legibility.) Closure rate curves computed from the smoothed closure curves in the bottom plot.

D.4. Smoothed and Interpolated Closure Data

The t values in Table D-13 are relative to the estimated start of room excavation (1989-07-12 10:39). The first t value for each station in Table D-13 corresponds to t_0 for that station. Note that the smoothed and interpolated closure histories within this section are derived from spliced together reconstructed mining sequence and remotely read closure measurements (see Section 2.3).

Table D-13. Room Q smoothed and interpolated spliced together mining sequence and remotely read closure data

Station -34.4 m			Station -3.7 m			Station +28.0 m		
t (yr)	δ_x (mm)	δ_z (mm)	t (yr)	δ_x (mm)	δ_z (mm)	t (yr)	δ_x (mm)	δ_z (mm)
0.055150	–	–	0.041442	–	–	0.033471	–	–
0.055663	0.86	0.86	0.041887	1.87	1.12	0.034082	3.10	2.26
0.055679	0.87	0.87	0.041906	1.93	1.16	0.034102	3.22	2.34
0.055868	1.10	1.10	0.042001	2.23	1.38	0.034164	3.58	2.59
0.056058	1.31	1.32	0.042096	2.52	1.59	0.034226	3.94	2.82
0.056247	1.53	1.54	0.042191	2.81	1.81	0.034288	4.30	3.06
0.056437	1.75	1.76	0.042287	3.10	2.02	0.034350	4.64	3.29
0.056626	1.96	1.97	0.042382	3.38	2.22	0.034412	4.98	3.52
0.056816	2.18	2.19	0.042477	3.65	2.43	0.034474	5.32	3.74
0.057005	2.39	2.40	0.042573	3.93	2.63	0.034535	5.65	3.96
0.057194	2.60	2.61	0.042668	4.20	2.83	0.034597	5.97	4.18
0.057400	2.82	2.83	0.042763	4.47	3.03	0.034659	6.29	4.40
0.057605	3.05	3.06	0.042859	4.73	3.22	0.034721	6.60	4.61
0.057810	3.27	3.28	0.042954	4.99	3.41	0.034783	6.91	4.82
0.058015	3.49	3.50	0.043068	5.30	3.64	0.034845	7.21	5.03
0.058220	3.71	3.71	0.043183	5.60	3.87	0.034907	7.50	5.23
0.058426	3.93	3.93	0.043297	5.90	4.09	0.034968	7.79	5.44
0.058631	4.14	4.14	0.043411	6.20	4.31	0.035030	8.08	5.63
0.058836	4.35	4.35	0.043526	6.49	4.53	0.035092	8.36	5.83
0.059057	4.58	4.57	0.043640	6.77	4.74	0.035175	8.72	6.09
0.059278	4.81	4.79	0.043754	7.05	4.95	0.035257	9.07	6.34
0.059499	5.03	5.01	0.043869	7.33	5.15	0.035340	9.42	6.59
0.059720	5.25	5.23	0.043983	7.60	5.36	0.035422	9.76	6.83
0.059941	5.47	5.44	0.044098	7.86	5.56	0.035505	10.09	7.07
0.060162	5.69	5.66	0.044212	8.12	5.76	0.035587	10.41	7.30
0.060383	5.91	5.86	0.044345	8.42	5.98	0.035670	10.72	7.53
0.060620	6.13	6.09	0.044479	8.72	6.20	0.035752	11.02	7.76
0.060856	6.36	6.30	0.044612	9.01	6.42	0.035835	11.31	7.98
0.061093	6.59	6.52	0.044746	9.29	6.64	0.035917	11.60	8.19
0.061330	6.81	6.73	0.044879	9.57	6.85	0.036020	11.95	8.46
0.061567	7.03	6.95	0.045012	9.84	7.06	0.036123	12.28	8.71
0.061819	7.26	7.17	0.045146	10.10	7.26	0.036226	12.60	8.96
0.062072	7.49	7.39	0.045279	10.36	7.46	0.036329	12.91	9.21
0.062324	7.72	7.60	0.045432	10.65	7.68	0.036433	13.21	9.44
0.062577	7.94	7.82	0.045584	10.93	7.90	0.036536	13.50	9.68
0.062830	8.16	8.03	0.045737	11.21	8.12	0.036659	13.83	9.94
0.063098	8.40	8.25	0.045889	11.48	8.33	0.036783	14.14	10.20
0.063366	8.63	8.46	0.046042	11.74	8.53	0.036907	14.44	10.46
0.063635	8.85	8.68	0.046213	12.03	8.76	0.037031	14.72	10.70
0.063903	9.08	8.89	0.046385	12.31	8.98	0.037154	14.99	10.93
0.064187	9.32	9.11	0.046556	12.58	9.19	0.037299	15.29	11.20
0.064471	9.55	9.32	0.046728	12.84	9.40	0.037443	15.57	11.45
0.064755	9.78	9.54	0.046918	13.12	9.63	0.037587	15.83	11.69
0.065040	10.00	9.75	0.047109	13.40	9.85	0.037732	16.07	11.92
0.065339	10.24	9.96	0.047300	13.66	10.06	0.037897	16.33	12.17
0.065639	10.47	10.18	0.047509	13.94	10.29	0.038062	16.57	12.41
0.065939	10.70	10.39	0.047719	14.21	10.51	0.038247	16.82	12.67
0.066255	10.94	10.60	0.047929	14.47	10.72	0.038433	17.04	12.91
0.066571	11.17	10.82	0.048157	14.74	10.94	0.038639	17.27	13.16
0.066886	11.41	11.03	0.048386	14.99	11.16	0.038845	17.46	13.39
0.067218	11.64	11.24	0.048634	15.26	11.38	0.039072	17.66	13.63
0.067549	11.88	11.45	0.048882	15.51	11.60	0.039319	17.84	13.87
0.067897	12.12	11.67	0.049149	15.77	11.82	0.039588	18.01	14.11
0.068244	12.36	11.88	0.049415	16.02	12.04	0.039897	18.17	14.35
0.068591	12.59	12.09	0.049701	16.26	12.25	0.040227	18.31	14.58
0.068954	12.84	12.30	0.050006	16.51	12.47	0.040619	18.45	14.82
0.069317	13.07	12.51	0.050330	16.75	12.70	0.041072	18.58	15.06
0.069696	13.31	12.72	0.050673	16.99	12.92	0.041608	18.73	15.29
0.070075	13.55	12.92	0.051036	17.22	13.14	0.042268	18.94	15.53
0.070470	13.79	13.13	0.051417	17.45	13.35	0.043072	19.21	15.76
0.070864	14.03	13.34	0.051817	17.66	13.57	0.043877	19.49	15.95
0.071275	14.27	13.54	0.052255	17.87	13.78	0.044660	19.78	16.13
0.071685	14.51	13.74	0.052732	18.07	14.00	0.045444	20.06	16.31
0.072111	14.75	13.95	0.053247	18.26	14.22	0.046227	20.34	16.47
0.072537	14.99	14.14	0.053799	18.45	14.43	0.047052	20.62	16.64
0.072979	15.22	14.34	0.054409	18.62	14.64	0.047939	20.90	16.81
0.073437	15.46	14.54	0.055076	18.79	14.86	0.048929	21.18	17.00

Table D-13. Room Q smoothed and interpolated spliced together mining sequence and remotely read closure data

Station -34.4 m			Station -3.7 m			Station +28.0 m		
t (yr)	δ_x (mm)	δ_z (mm)	t (yr)	δ_x (mm)	δ_z (mm)	t (yr)	δ_x (mm)	δ_z (mm)
0.073895	15.70	14.73	0.055782	18.96	15.08	0.050187	21.46	17.22
0.074368	15.93	14.93	0.056525	19.12	15.29	0.051589	21.66	17.45
0.074858	16.17	15.12	0.057306	19.27	15.50	0.053074	21.70	17.68
0.075363	16.41	15.31	0.058145	19.42	15.72	0.054641	21.76	17.91
0.075884	16.65	15.50	0.059041	19.57	15.93	0.055857	22.04	18.08
0.076420	16.89	15.69	0.060013	19.72	16.15	0.056559	22.33	18.18
0.076973	17.12	15.88	0.061061	19.88	16.36	0.057177	22.61	18.26
0.077541	17.36	16.06	0.062205	20.04	16.58	0.057878	22.89	18.35
0.078141	17.60	16.25	0.063463	20.22	16.79	0.058889	23.17	18.48
0.078757	17.83	16.43	0.064873	20.42	17.00	0.060745	23.39	18.71
0.079404	18.07	16.61	0.066474	20.66	17.22	0.062683	23.40	18.94
0.080067	18.31	16.79	0.068152	20.92	17.41	0.064724	23.40	19.18
0.080761	18.54	16.96	0.069772	21.18	17.58	0.066869	23.47	19.41
0.081487	18.78	17.13	0.071316	21.44	17.72	0.069117	23.61	19.64
0.082261	19.02	17.31	0.072822	21.70	17.85	0.071509	23.85	19.87
0.083082	19.25	17.48	0.074480	21.96	17.97	0.073571	24.13	20.06
0.083950	19.49	17.65	0.076710	22.21	18.14	0.075262	24.41	20.20
0.084881	19.73	17.82	0.079626	22.41	18.35	0.076788	24.70	20.33
0.085876	19.96	17.99	0.082523	22.60	18.56	0.078272	24.97	20.45
0.086949	20.20	18.16	0.085192	22.86	18.76	0.079840	25.25	20.58
0.088133	20.43	18.33	0.087403	23.12	18.92	0.081654	25.54	20.71
0.089443	20.67	18.50	0.089480	23.38	19.07	0.084438	25.81	20.91
0.090911	20.90	18.68	0.091577	23.64	19.23	0.087902	25.95	21.14
0.092600	21.14	18.87	0.093902	23.90	19.40	0.091635	25.98	21.37
0.094605	21.37	19.08	0.096742	24.15	19.60	0.095656	26.04	21.60
0.096878	21.59	19.29	0.099754	24.37	19.81	0.099986	26.22	21.83
0.099435	21.78	19.49	0.102842	24.55	20.03	0.104482	26.50	22.06
0.102339	21.96	19.70	0.106006	24.70	20.24	0.108276	26.78	22.24
0.105638	22.13	19.91	0.109284	24.84	20.45	0.111884	27.06	22.41
0.109332	22.32	20.12	0.112715	25.01	20.66	0.115576	27.34	22.58
0.113121	22.55	20.32	0.116355	25.21	20.88	0.119700	27.62	22.78
0.116135	22.79	20.48	0.119844	25.47	21.07	0.123185	27.82	22.95
0.118898	23.02	20.63	0.122626	25.73	21.21	0.123205	27.82	22.95
0.121676	23.26	20.78	0.123198	25.79	21.24	0.123226	27.82	22.95
0.123191	23.38	20.86	0.123217	25.79	21.24	0.137166	28.35	23.73
0.123207	23.38	20.86	0.123236	25.79	21.24	0.153623	29.52	24.35
0.123223	23.38	20.86	0.149906	26.98	22.37	0.154777	29.46	24.39
0.145274	24.38	22.01	0.151064	27.03	22.41	0.162856	29.31	24.68
0.149902	24.64	22.18	0.152222	27.08	22.45	0.166319	29.69	24.81
0.151060	24.70	22.23	0.160326	27.41	22.72	0.168627	30.19	24.89
0.152217	24.76	22.27	0.168430	27.74	22.99	0.170935	30.53	24.97
0.158003	25.04	22.49	0.176534	28.05	23.26	0.179014	30.28	25.25
0.164946	25.35	22.74	0.184638	28.36	23.52	0.184785	30.67	25.44
0.171889	25.62	22.99	0.192742	28.66	23.77	0.188247	31.03	25.56
0.179990	25.91	23.28	0.202004	28.99	24.06	0.191710	31.38	25.67
0.188090	26.17	23.55	0.211266	29.32	24.34	0.197480	31.74	25.86
0.196190	26.41	23.82	0.220528	29.63	24.61	0.206714	31.89	26.16
0.204291	26.63	24.08	0.229790	29.93	24.88	0.215947	31.87	26.45
0.212391	26.85	24.34	0.239052	30.23	25.14	0.225180	31.95	26.74
0.221649	27.12	24.62	0.248313	30.51	25.40	0.234413	32.14	27.01
0.230906	27.40	24.89	0.258733	30.83	25.68	0.244800	32.43	27.32
0.240164	27.67	25.16	0.269153	31.13	25.96	0.255187	32.76	27.62
0.249422	27.93	25.42	0.279572	31.42	26.23	0.265575	33.09	27.91
0.259836	28.20	25.70	0.289992	31.71	26.49	0.275962	33.40	28.19
0.270251	28.45	25.97	0.300411	31.98	26.75	0.286349	33.71	28.47
0.280666	28.70	26.24	0.311989	32.28	27.03	0.297891	34.06	28.77
0.291081	28.95	26.49	0.323566	32.57	27.31	0.309432	34.39	29.06
0.302653	29.23	26.77	0.335143	32.85	27.57	0.320973	34.72	29.35
0.314225	29.50	27.03	0.346721	33.12	27.83	0.332515	35.04	29.62
0.325797	29.77	27.29	0.359456	33.41	28.12	0.345210	35.38	29.92
0.338526	30.06	27.57	0.372191	33.70	28.39	0.357906	35.72	30.21
0.351255	30.35	27.84	0.384926	33.98	28.66	0.370601	36.05	30.49
0.363984	30.63	28.10	0.397661	34.25	28.92	0.383297	36.36	30.77
0.376713	30.91	28.35	0.411553	34.55	29.20	0.397147	36.69	31.06
0.389443	31.18	28.60	0.425446	34.84	29.47	0.410996	37.01	31.35
0.403329	31.46	28.87	0.439339	35.12	29.74	0.424846	37.32	31.63
0.417215	31.74	29.13	0.453232	35.40	30.00	0.438696	37.61	31.90
0.431102	32.00	29.39	0.467125	35.68	30.26	0.453699	37.91	32.19
0.444988	32.26	29.65	0.482175	35.98	30.53	0.468703	38.20	32.48
0.458874	32.51	29.90	0.497226	36.27	30.80	0.483707	38.50	32.75
0.473918	32.77	30.17	0.512276	36.56	31.07	0.498711	38.78	33.03
0.488962	33.02	30.44	0.527327	36.85	31.33	0.514869	39.10	33.32
0.504005	33.28	30.70	0.542377	37.13	31.59	0.531027	39.42	33.61
0.519049	33.53	30.97	0.557427	37.40	31.85	0.547185	39.75	33.89
0.534092	33.78	31.22	0.573636	37.70	32.13	0.562189	40.08	34.16
0.549136	34.03	31.48	0.589844	37.98	32.40	0.576038	40.39	34.40
0.565337	34.31	31.75	0.606052	38.27	32.67	0.589888	40.73	34.63
0.581538	34.57	32.02	0.622260	38.55	32.94	0.602583	41.05	34.85
0.597738	34.81	32.28	0.638469	38.83	33.20	0.618741	41.37	35.12
0.613939	35.01	32.54	0.654677	39.10	33.46	0.636053	41.61	35.41
0.630140	35.19	32.80	0.670885	39.37	33.72	0.653366	41.90	35.70
0.646341	35.36	33.05	0.687093	39.63	33.98	0.668369	42.23	35.95
0.663699	35.61	33.32	0.704459	39.91	34.25	0.682219	42.56	36.17

Table D-13. Room Q smoothed and interpolated spliced together mining sequence and remotely read closure data

Station -34.4 m			Station -3.7 m			Station +28.0 m		
t (yr)	δ_x (mm)	δ_z (mm)	t (yr)	δ_x (mm)	δ_z (mm)	t (yr)	δ_x (mm)	δ_z (mm)
0.678742	35.89	33.55	0.721825	40.19	34.52	0.697223	42.88	36.42
0.693786	36.17	33.77	0.739191	40.46	34.79	0.714535	43.20	36.69
0.711144	36.40	34.03	0.756557	40.72	35.05	0.731847	43.49	36.97
0.728502	36.58	34.29	0.773923	40.99	35.31	0.750313	43.78	37.26
0.747017	36.81	34.56	0.791289	41.25	35.57	0.768780	44.07	37.54
0.765532	37.05	34.82	0.809813	41.52	35.84	0.787246	44.34	37.83
0.784047	37.31	35.08	0.828336	41.79	36.11	0.805712	44.61	38.11
0.802562	37.56	35.34	0.846860	42.06	36.38	0.824178	44.88	38.38
0.821078	37.81	35.60	0.865384	42.32	36.64	0.842644	45.14	38.66
0.840750	38.08	35.86	0.883907	42.58	36.90	0.862265	45.41	38.95
0.860422	38.33	36.13	0.902431	42.84	37.16	0.881885	45.68	39.23
0.880095	38.59	36.39	0.922113	43.11	37.44	0.901506	45.94	39.52
0.899767	38.84	36.65	0.941794	43.38	37.71	0.921126	46.20	39.80
0.919440	39.09	36.90	0.961475	43.64	37.97	0.940746	46.46	40.07
0.940269	39.36	37.17	0.981157	43.90	38.24	0.960367	46.72	40.35
0.961099	39.61	37.43	0.999681	44.15	38.48	0.981141	47.00	40.64
0.981928	39.87	37.69	1.000838	44.16	38.50	0.999607	47.24	40.89
0.999286	40.08	37.91	1.001996	44.18	38.51	1.000762	47.25	40.90
1.000443	40.10	37.92	1.067987	45.03	39.37	1.001916	47.27	40.92
1.001601	40.11	37.94	1.135135	45.88	40.22	1.067702	48.13	41.80
1.068718	40.92	38.75	1.204599	46.74	41.07	1.135796	49.01	42.69
1.136993	41.73	39.56	1.276378	47.63	41.93	1.206198	49.91	43.58
1.206425	42.53	40.37	1.349315	48.51	42.78	1.277755	50.82	44.47
1.277014	43.34	41.18	1.423410	49.40	43.62	1.351620	51.74	45.36
1.348760	44.14	41.99	1.498662	50.30	44.47	1.426639	52.66	46.25
1.421664	44.94	42.80	1.575073	51.20	45.32	1.502812	53.58	47.13
1.495725	45.74	43.62	1.652641	52.09	46.17	1.580140	54.50	48.02
1.570942	46.54	44.44	1.730208	52.98	47.02	1.658621	55.42	48.91
1.647318	47.34	45.26	1.808934	53.87	47.87	1.737103	56.32	49.80
1.723693	48.12	46.07	1.888818	54.77	48.73	1.816738	57.23	50.69
1.801225	48.90	46.89	1.968701	55.65	49.58	1.897528	58.14	51.58
1.879914	49.68	47.70	2.049742	56.53	50.43	1.978318	59.03	52.47
1.959761	50.46	48.52	2.130783	57.40	51.27	2.060262	59.93	53.36
2.040765	51.23	49.34	2.212982	58.28	52.12	2.143360	60.84	54.25
2.122926	52.00	50.16	2.295181	59.14	52.96	2.226458	61.73	55.13
2.205087	52.76	50.97	2.377380	60.00	53.80	2.309556	62.62	56.01
2.287248	53.50	51.76	2.459579	60.84	54.62	2.392654	63.51	56.88
2.369410	54.24	52.55	2.541777	61.67	55.44	2.475752	64.39	57.74
2.451571	54.96	53.33	2.623976	62.49	56.25	2.558850	65.27	58.59
2.533732	55.67	54.10	2.706175	63.31	57.06	2.641948	66.14	59.43
2.615893	56.38	54.86	2.788374	64.11	57.85	2.725046	67.01	60.27
2.698054	57.07	55.61	2.870573	64.91	58.64	2.808144	67.88	61.10
2.780215	57.75	56.36	2.952772	65.70	59.43	2.891242	68.73	61.92
2.862376	58.43	57.09	3.034971	66.48	60.21	2.974340	69.58	62.74
2.944537	59.09	57.82	3.117170	67.25	60.98	3.057438	70.43	63.54
3.026698	59.75	58.54	3.199368	68.01	61.74	3.140536	71.26	64.34
3.108859	60.41	59.25	3.281567	68.77	62.50	3.223634	72.08	65.14
3.191021	61.05	59.95	3.363766	69.52	63.25	3.306732	72.90	65.93
3.273182	61.70	60.65	3.445965	70.26	64.00	3.389830	73.70	66.71
3.355343	62.33	61.34	3.528164	70.99	64.74	3.472928	74.49	67.48
3.437504	62.96	62.02	3.610363	71.72	65.47	3.556026	75.27	68.25
3.519665	63.59	62.70	3.692562	72.44	66.20	3.639124	76.04	69.02
3.601826	64.22	63.37	3.774760	73.15	66.93	3.722222	76.80	69.77
3.683987	64.84	64.04	3.856959	73.86	67.65	3.805320	77.55	70.53
3.766148	65.45	64.70	3.939158	74.57	68.36	3.888418	78.28	71.27
3.848309	66.07	65.36	4.021357	75.26	69.07	3.971517	79.01	72.01
3.930471	66.68	66.01	4.103556	75.96	69.77	4.054615	79.72	72.75
4.012632	67.28	66.66	4.185755	76.64	70.47	4.137713	80.43	73.48
4.094793	67.89	67.30	4.267954	77.33	71.17	4.220811	81.13	74.21
4.176954	68.49	67.94	4.350152	78.01	71.86	4.303909	81.82	74.93
4.259115	69.08	68.57	4.432351	78.68	72.54	4.387007	82.51	75.65
4.341276	69.67	69.20	4.514550	79.35	73.23	4.470105	83.19	76.36
4.423437	70.26	69.83	4.596749	80.02	73.90	4.553203	83.86	77.07
4.505598	70.85	70.46	4.678948	80.68	74.58	4.636301	84.53	77.78
4.587759	71.43	71.08	4.761147	81.34	75.25	4.719399	85.20	78.48
4.669921	72.01	71.70	4.843346	82.00	75.91	4.802497	85.86	79.17
4.752082	72.59	72.32	4.925544	82.66	76.58	4.885595	86.52	79.87
4.834243	73.16	72.93	5.007743	83.31	77.24	4.968693	87.18	80.56
4.916404	73.73	73.55	5.089942	83.96	77.89	5.051791	87.84	81.25
4.998565	74.30	74.16	5.172141	84.61	78.55	5.134889	88.50	81.93
5.080726	74.86	74.77	5.254340	85.25	79.20	5.217987	89.16	82.61
5.162887	75.42	75.38	5.336539	85.90	79.85	5.301085	89.82	83.29
5.245048	75.98	76.00	5.418738	86.54	80.49	5.384183	90.48	83.97
5.327209	76.53	76.61	5.500937	87.19	81.14	5.467281	91.15	84.64
5.409370	77.09	77.22	5.583135	87.83	81.78	5.550379	91.82	85.32
5.491532	77.64	77.83	5.665334	88.47	82.41	5.633477	92.49	85.99
5.573693	78.19	78.44	5.747533	89.11	83.05	5.716575	93.17	86.65
5.655854	78.73	79.05	5.829732	89.76	83.68	5.799673	93.86	87.32
5.738015	79.27	79.66	5.911931	90.40	84.32	5.882771	94.55	87.98
5.820176	79.81	80.28	5.922350	90.48	84.40	5.923166	94.88	88.31

D.5. Remotely Read Closure Data

The t_i values in Table D-14 are relative to the estimated start of room excavation (1989-07-12 10:39).

Table D-14. Room Q remotely read closure data

Station -34.0 m				Station -34.0 m				Station -3.2 m				Station -3.2 m				Station +28.5 m				Station +28.5 m			
Gage QP282		Gage QP281		Gage QP284		Gage QP283		Gage QP252		Gage QP251		Gage QP254		Gage QP253		Gage QP232		Gage QP231		Gage QP234		Gage QP233	
t_x (yr)	δ_x (mm)	t_z (yr)	δ_z (mm)	t_x (yr)	δ_x (mm)	t_z (yr)	δ_z (mm)	t_x (yr)	δ_x (mm)	t_z (yr)	δ_z (mm)	t_x (yr)	δ_x (mm)	t_z (yr)	δ_z (mm)	t_x (yr)	δ_x (mm)	t_z (yr)	δ_z (mm)	t_x (yr)	δ_x (mm)	t_z (yr)	δ_z (mm)
0.743520	36.51	0.743520	34.26	0.746901	36.50	0.746901	34.25	0.783308	40.82	0.749539	34.77	0.739794	40.13	0.739794	34.57	0.729909	43.31	0.733283	36.81	0.726645	43.18	1.469890	46.42
0.829661	37.80	0.796523	35.12	0.800866	37.38	0.780623	34.91	0.840292	41.84	0.806572	35.57	0.786970	40.93	0.793709	35.51	0.793898	44.33	0.773687	37.54	0.787465	44.12	1.540841	47.44
0.905877	38.81	0.856170	35.91	0.875078	38.40	0.827853	35.49	0.971138	43.67	0.856875	36.37	0.857732	41.95	0.850993	36.24	0.867991	45.49	0.827570	38.41	0.912492	46.23	1.611788	48.38
0.985405	39.89	0.919128	36.78	0.939171	39.28	0.875078	36.15	1.024823	44.40	0.910559	37.10	0.931865	43.04	0.908277	37.04	0.942100	46.51	0.878096	39.14	0.966555	47.11	1.672600	49.18
1.074887	40.97	0.982086	37.64	1.010015	40.16	0.932423	36.96	1.152335	46.08	0.964244	37.83	0.999258	44.06	0.972301	37.99	1.022958	47.53	0.928621	39.86	1.088185	48.85	1.730027	49.84
1.154423	41.98	1.048370	38.43	1.084236	41.04	0.999896	37.76	1.216100	46.88	1.017945	38.49	1.120566	45.81	1.032955	38.86	1.100441	48.54	0.999374	40.74	1.149005	49.80	1.800965	50.64
1.257172	43.13	1.124595	39.37	1.155080	41.91	1.063992	38.57	1.343629	48.49	1.085058	39.37	1.177850	46.53	1.107087	39.73	1.181298	49.56	1.060012	41.53	1.277383	51.47	1.865148	51.36
1.343344	44.14	1.217396	40.45	1.225928	42.72	1.128089	39.37	1.407410	49.22	1.152172	40.24	1.302528	48.13	1.181220	40.68	1.255416	50.50	1.124025	42.33	1.338202	52.42	1.925955	52.09
1.432835	45.15	1.296939	41.38	1.283282	43.38	1.185442	40.03	1.534972	50.68	1.226017	41.12	1.359812	48.86	1.251983	41.48	1.329534	51.45	1.188038	43.13	1.466572	53.94	1.980002	52.67
1.525644	46.16	1.376490	42.25	1.333891	43.89	1.259663	40.91	1.595388	51.41	1.306576	42.07	1.491229	50.46	1.322746	42.28	1.403651	52.39	1.245311	43.86	1.524003	54.67	2.034045	53.18
1.601885	46.95	1.469292	43.33	1.391248	44.48	1.350754	41.93	1.726266	53.09	1.383770	43.02	1.548513	51.19	1.406987	43.30	1.474412	53.19	1.302584	44.58	1.652385	56.41	2.077956	53.61
1.674806	47.74	1.568738	44.34	1.522826	45.94	1.451965	43.10	1.783332	53.75	1.464329	43.97	1.676560	52.72	1.481120	44.17	1.551903	54.14	1.359857	45.31	1.713192	57.14	2.128623	54.12
1.724530	48.24	1.654911	45.35	1.593679	46.67	1.532941	43.91	1.917609	55.28	1.534809	44.85	1.737214	53.52	1.561992	45.04	1.626021	55.08	1.423870	46.11	1.844946	58.81	2.186046	54.70
1.777572	48.75	1.734462	46.21	1.728636	48.06	1.613913	44.79	1.978040	55.94	1.625448	45.87	1.872001	54.90	1.642864	45.92	1.696773	55.95	1.487882	46.91	1.909129	59.54	2.250221	55.28
1.923447	50.05	1.817323	47.15	1.792741	48.72	1.694890	45.59	2.115699	57.40	1.706008	46.82	1.932655	55.70	1.730475	46.86	1.764159	56.75	1.548529	47.64	2.037495	60.99	2.321155	56.01
1.979799	50.62	1.896874	48.01	1.941202	50.11	1.792733	46.62	2.169416	57.99	1.789932	47.77	2.070811	57.08	1.811347	47.73	1.845033	57.62	1.609168	48.43	2.101678	61.72	2.375202	56.59
2.122356	51.92	1.983062	48.88	1.998564	50.62	1.890576	47.64	2.317171	59.45	1.867159	48.57	2.134835	57.81	1.905697	48.75	1.929280	58.49	1.673189	49.16	2.233411	63.02	2.439373	57.10
2.191975	52.57	2.065940	49.67	2.136905	51.87	1.998543	48.74	2.370888	60.04	1.937638	49.45	2.269621	59.12	2.006787	49.77	2.003414	59.29	1.740567	50.03	2.297590	63.68	2.517059	57.82
2.321273	53.72	2.165387	50.68	2.201014	52.45	2.086267	49.62	2.511944	61.35	1.987990	50.04	2.330275	59.77	2.097768	50.72	2.077548	60.09	1.811336	50.76	2.429327	65.06	2.594746	58.55
2.394211	54.37	2.254893	51.54	2.339360	53.62	2.170619	50.42	2.569027	61.94	2.048438	50.62	2.465061	61.08	2.185379	51.59	2.138212	60.67	1.892209	51.63	2.496886	65.78	2.675808	59.27
2.530146	55.53	2.344400	52.41	2.403465	54.28	2.254971	51.23	2.713433	63.33	2.125665	51.42	2.529085	61.74	2.262882	52.31	2.259522	61.98	1.966343	52.43	2.628624	67.16	2.767006	60.15
2.596454	56.10	2.437225	53.27	2.538443	55.30	2.335951	51.96	2.767150	63.91	2.202907	52.16	2.660502	63.04	2.340384	52.97	2.330290	62.71	2.050599	53.23	2.696187	67.96	2.854829	61.02
2.729071	57.26	2.523421	54.06	2.609300	55.96	2.416928	52.76	2.911572	65.23	2.283516	52.89	2.727895	63.70	2.427995	53.77	2.458340	64.09	2.138212	54.17	2.824548	69.34	2.902116	61.45
2.798690	57.90	2.599678	54.71	2.740898	57.06	2.497908	53.49	2.975369	65.89	2.367473	53.69	2.862682	64.93	2.512237	54.49	2.518995	64.74	2.215728	54.90	2.888723	69.92	2.949407	61.96
2.931315	58.99	2.692503	55.58	2.808379	57.72	2.589012	54.30	3.116458	67.06	2.444716	54.42	2.933445	65.66	2.599848	55.29	2.660499	66.48	2.293227	55.77	3.027204	71.16	3.040601	62.76
3.000941	59.56	2.805232	56.52	2.946729	58.82	2.669988	55.10	3.176890	67.71	2.528674	55.23	3.064861	66.82	2.680720	56.17	2.711041	67.07	2.370744	56.50	3.094759	71.81	3.135175	63.63
3.136893	60.57	2.901376	57.38	3.014214	59.40	2.754344	55.84	3.324694	68.96	2.602551	55.96	3.135624	67.55	2.761592	57.04	2.845831	68.52	2.448251	57.30	3.233236	72.97	3.216241	64.43
3.206512	61.22	2.990898	58.10	3.155944	60.43	2.858943	56.79	3.381777	69.54	2.673063	56.69	3.273780	68.71	2.852573	57.91	2.913233	69.17	2.522377	58.17	3.297410	73.55	3.266904	64.86
3.345781	62.23	3.073776	58.89	3.220057	60.94	2.943300	57.52	3.526199	70.86	2.757004	57.57	3.334434	69.29	2.946923	58.71	3.051421	70.41	2.593146	58.89	3.435887	74.71	3.317571	65.37
3.415408	62.81	3.163290	59.69	3.361787	61.96	3.024280	58.25	3.583298	71.37	2.837596	58.37	3.472591	70.46	3.037904	59.51	3.105337	70.99	2.653793	59.62	3.496694	75.44	3.358102	65.73
3.551359	63.82	3.246184	60.34	3.429276	62.48	3.125507	59.13	3.727736	72.61	2.938349	59.32	3.543353	71.18	3.135624	60.38	3.250288	72.08	2.727935	60.35	3.628428	76.75	3.415525	66.32
3.620986	64.40	3.335699	61.13	3.567626	63.57	3.219987	59.93	3.781469	73.13	3.025672	60.13	3.678140	72.27	3.233344	61.25	3.307569	72.73	2.798703	61.07	3.692602	77.33	3.466188	66.75
3.756937	65.41	3.421903	61.85	3.631739	64.09	3.321219	60.74	3.922542	74.37	3.106280	60.86	3.742164	72.85	3.327695	62.05	3.455854	74.18	2.869472	61.80	3.827712	78.63	3.520231	67.26
3.823246	65.98	3.514736	62.64	3.773469	65.11	3.415699	61.54	3.989705	75.03	3.203683	61.73	3.880320	74.16	3.428785	62.92	3.509770	74.77	2.943622	62.45	3.891886	79.21	3.567518	67.69
3.962516	66.99	3.620835	63.51	3.840954	65.70	3.510178	62.35	4.127445	76.13	3.284292	62.47	3.944343	74.82	3.533244	63.87	3.651323	76.07	3.014399	63.11	4.033739	80.37	3.624941	68.28
4.028832	67.50	3.716987	64.30	3.979308	66.72	3.594535	63.08	4.187910	76.64	3.391775	63.42	4.082499	75.98	3.624225	64.67	3.708620	76.58	3.081793	63.83	4.091158	80.88	3.716139	69.15
4.174739	68.51	3.813139	65.10	4.040046	67.23	3.692390	63.88	4.332348	77.88	3.485813	64.29	4.149893	76.63	3.711837	65.40	3.846800	77.89	3.155944	64.49	4.236383	81.97	3.770186	69.73
4.244374	69.01	3.905972	65.89	4.185156	68.18	3.803741	64.84	4.392812	78.39	3.589931	65.25	4.284679	77.72	3.819666	66.34	3.914194	78.62	3.233460	65.21	4.300557	82.55	3.817473	70.16
4.380333	69.95	4.005451	66.61	4.256021	68.70	3.908345	65.71	4.537267	79.56	3.667173	65.98	4.348703	78.30	3.907277	67.14	4.052398	79.70	3.304245	65.80	4.439030	83.64	3.861384	70.60
4.453278	70.53	4.118188	67.48	4.397755	69.65	4.019700	66.59	4.591001	80.08	3.737718	66.56	4.486859	79.39	4.001628	67.94	4.113062	80.29	3.378387	66.52	4.503205	84.22	3.915427	71.11
4.589245	71.40	4.230925	68.34	4.465244	70.16	4.114184	67.32	4.735439	81.32	3.804897	67.15	4.550883	79.98	4.102717	68.74	4.258005	81.45	3.455903	67.25	4.645066	85.52	3.962710	71.47
4.652243	71.90	4.340351	69.14	4.610350	71.18	4.208667	68.05	4.799269	81.83	3.865345	67.73	4.685669	81.06	4.217286	69.68	4.315294	82.03	3.533411	68.05	4.705861	86.03	4.020129	71.98
4.794839	72.84	4.439821	69.93	4.671091	71.62	4.330146	69.01	4.947105	82.93	3.945954	68.46	4.763171	81.72	4.325115	70.55	4.456872	83.12	3.600814	68.70	4.847714	87.19	4.077544	72.41
4.864466	73.42	4.532662	70.65	4.816205	72.50	4.438129	69.81	5.004237	83.30	4.029928	69.19	4.897958	82.74	4.405987	71.21	4.520917	83.63	3.674956	69.43	4.911884	87.70	4.134962	72.92
4.993804	74.21	4.618874	71.30	4.876942	73.01	4.546113	70.62	5.148692	84.47	4.110552	69.85	4.961981	83.24	4.513816	72.08	4.659113	84.79	3.745732	70.08	5.053733	88.79	4.243040	73.79
5.070068	74.79	4.718345	72.09	5.025428	73.96	4.647344	71.42	5.215887	84.98	4.181097	70.44	5.103507	84.33	4.628385	73.02	4.726524	85.37	3.813135	70.74	5.117904	89.29	4.354498	74.73
5.209354	75.65	4.817823	72.82	5.092917	74.48	4.741828	72.15	5.356993	86.08	4.271785	71.24	5.167531	84.84	4.732844	73.82	4.864736	86.39	3.880538	71.39	5.263124	90.31	4.438936	75.46
5.282299	76.23	4.923931	73.61	5.231280	75.35	4.843060	72.96	5.417457	86.59	4.362490	71.98	5.309057	85.86	4.806977	74.40	4.925408	86.90	3.961428	72.12	5.327295	90.82	4.513242	76.11
5.414956	77.03	5.030038	74.40	5.298773	75.79	4.944291	73.76	5.561928	87.69	4.459910	72.78	5.379820	86.44	4.894588	75.13	5.077107	87.99	4.035586	72.70	5.469143	91.90	4.587549	76.76
5.491220	77.60	5.122880	75.12	5.443883	76.74	5.055651	74.57	5.625758	88.20	4.560678	73.66	5.521345	87.45	4.995678	75.85	5.137778	88.49	4.119850	73.42	5.533318	92.48	4.661855	77.42
5.627187	78.47	5.225677	75.85	5.514752	77.18	5.177133	75.45	5.763498	89.30	4.664813	74.54	5.588739	87.96	5.100138	76.65	5.282730	89.58	4.197382	74.00	5.675171	93.64	4.732782	78.00
5.703451	79.05	5.328466	76.64	5.649734	78.13	5.298616	76.32	5.830694	89.81	4.775661	75.49	5.730264	89.05	5.191118	77.38	5.340036	90.02	4.278280	74.66	5.735970	94.22	4.820596	78.72
5.842736	79.91	5.424626	77.36	5.713847	78.65	5.396476	77.05	5.921415	90.47	4.876463	76.22	5.790918	89.63	5.292208	78.11	5.488345	91.25	4.362544	75.38	5.874443	95.31	4.905034	79.45

Table D-14. Room Q remotely read closure data

Station -34.0 m				Station -34.0 m				Station -3.2 m				Station -3.2 m				Station +28.5 m				Station +28.5 m			
Gage QP282		Gage QP281		Gage QP284		Gage QP283		Gage QP252		Gage QP251		Gage QP254		Gage QP253		Gage QP232		Gage QP231		Gage QP234		Gage QP233	
t_x (yr)	δ_x (mm)	t_z (yr)	δ_z (mm)	t_x (yr)	δ_x (mm)	t_z (yr)	δ_z (mm)	t_x (yr)	δ_x (mm)	t_z (yr)	δ_z (mm)	t_x (yr)	δ_x (mm)	t_z (yr)	δ_z (mm)	t_x (yr)	δ_x (mm)	t_z (yr)	δ_z (mm)	t_x (yr)	δ_x (mm)	t_z (yr)	δ_z (mm)
5.912371	80.42	5.537362	78.23	5.862337	79.52	5.501084	77.86	–	–	4.983979	77.02	5.918966	90.72	5.389928	78.83	5.559129	91.84	4.446808	76.11	5.921730	95.75	4.992844	80.10
–	–	5.643470	79.02	5.926450	80.04	5.598943	78.59	–	–	5.071334	77.68	–	–	5.494388	79.63	5.660254	92.63	4.527698	76.84	–	–	5.087410	80.83
–	–	5.733001	79.67	–	–	5.690055	79.25	–	–	5.162039	78.41	–	–	5.588739	80.36	5.754623	93.51	4.611961	77.56	–	–	5.185351	81.55
–	–	5.832479	80.39	–	–	5.774416	79.91	–	–	5.259475	79.15	–	–	5.683089	81.16	5.828781	94.09	4.713078	78.43	–	–	5.290045	82.27
–	–	5.922009	81.04	–	–	5.855404	80.49	–	–	5.350196	79.81	–	–	5.787549	81.95	5.882713	94.52	4.804081	79.23	–	–	5.391367	83.07
–	–	–	–	–	–	5.922893	81.01	–	–	5.444250	80.61	–	–	5.865051	82.54	5.923158	94.89	4.918684	80.18	–	–	5.492692	83.94
–	–	–	–	–	–	–	–	–	–	5.521510	81.27	–	–	5.918966	82.97	–	–	5.016443	80.90	–	–	5.600774	84.89
–	–	–	–	–	–	–	–	–	–	5.608849	82.00	–	–	–	–	–	–	5.107447	81.70	–	–	5.691968	85.68
–	–	–	–	–	–	–	–	–	–	5.686125	82.59	–	–	–	–	–	–	5.201840	82.36	–	–	5.769651	86.34
–	–	–	–	–	–	–	–	–	–	5.770115	83.24	–	–	–	–	–	–	5.292859	83.01	–	–	5.850709	86.99
–	–	–	–	–	–	–	–	–	–	5.854105	83.90	–	–	–	–	–	–	5.383871	83.74	–	–	5.921639	87.64

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