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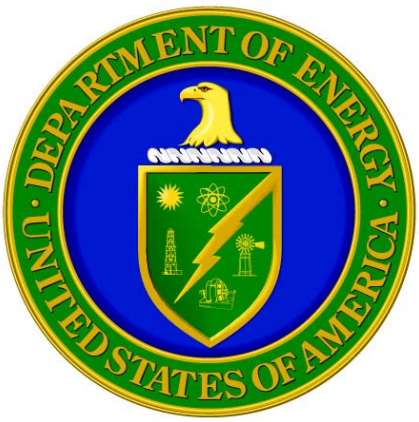
Volume 2

Geotechnical Analysis Report for July 2005 - June 2006

Supporting Data

March 2007



Waste Isolation Pilot Plant

FOREWORD AND ACKNOWLEDGMENTS

This Supporting Data Document to the Geotechnical Analysis Report (GAR) presents the data that were used to assess the geotechnical status of the Waste Isolation Pilot Plant (WIPP). This report presents data for the underground facility including the shafts, shaft stations, access drifts, and the Waste Disposal Area. The data are presented in both tables and plots in order to meet the needs of several audiences. This report presents the data collected through June 30, 2006. This data can be provided in its original format upon written request to the U.S. Department of Energy (DOE) at the following address:

U.S. Department of Energy
Carlsbad Field Office
P.O. Box 3090
Carlsbad, NM 88221-3090

The Geotechnical Analysis Report is a multi-author report that was prepared by Washington TRU Solutions for the DOE, Carlsbad Field Office, Carlsbad, New Mexico. Work was supported by the DOE under Contract No. DE-AC29-01AL66444.

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1.0 Introduction

This report is a compilation of geotechnical data presented as plots for each active instrument installed in the underground at the Waste Isolation Pilot Plant (WIPP) through June 30, 2006. A summary of the geotechnical analyses that were performed using the enclosed data is provided in Volume 1 of the Geotechnical Analysis Report (GAR).

1.1 Instrumentation

Geomechanical instrument data included in this report reflect the measurements of the geomechanical response of the underground and shafts. The instruments consist of convergence points, borehole extensometers, rockbolt load cells, pressure cells, strain gages, piezometers, and joint meters.

Closure measurements are taken at convergence points. Rock displacement is calculated by measuring the distance between two opposing points. Displacement is monitored over time and is plotted as closure versus time. Annual rates of closure are calculated for the convergence data and are compared with annual closure rates from previous reporting periods.

Borehole extensometers are used to determine the absolute movements of the ground around the openings. With these instruments, rods or wires are placed into a hole and anchored at various depths. The displacement at the extensometer head (located near the excavation face) is measured relative to each of the fixed anchors. These data are used in the extensometer *displacement* plots presented here. As part of the post-processing of acquired extensometer data a *relative displacement* value is calculated. The deepest anchor is assumed to be fixed in undisturbed ground and a displacement for the remaining anchors relative to the deepest anchor is calculated. Annual rates of collar displacement are calculated for each extensometer and are compared with the annual displacement rate reported during the previous reporting period.

Rockbolt load cells are used to determine the ground loading and the effectiveness of rockbolts. Plots consist of load versus time for each instrumented bolt.

Earth pressure cells and strain gages are used in and around the shaft liners to determine their loads. These are also depicted in time-based plots. Monitoring of these instruments indicates whether there is any stress buildup in the shaft lining systems.

Piezometers are used to measure the gauge pressure of groundwater. They have been installed in the shafts at varying elevations to monitor the hydraulic head acting on the shaft liners. Plots from piezometers are presented as pressure versus time.

Joint meters are installed perpendicular to a crack and monitor any changes in separation of the crack which may occur over time.

1.2 Data Plot Explanation

Data are presented in graphical form for ease in interpretation. Time-based plots are used in this report. Each plot generally consists of a legend in the upper right-hand corner that gives the array name and specific location of the instrument or point evaluated. The legend ties the graphical cross-sectional representation of the drift or shaft typically presented in the lower right-hand corner to the symbols on the curve in the graph. For extensometers, each anchor is designated with an alpha character "A" closest to the collar and "C," "D," or "E" for the furthest point from the collar (the deepest anchor). For convergence points, the horizontal and vertical sections of the drift are referred to as chords. Breaks in the graph for convergence data and a numeric designator added to the legend typically indicate that the convergence point was lost due to normal mine maintenance activities and later reinstalled.

1.3 Report Organization

Chapter 1.0 provides an introduction to this Supporting Data volume of the GAR. Chapter 2.0 provides instrument data analysis for the Salt Handling Shaft, Waste Shaft, and Exhaust Shaft followed by data plots for the extensometers, piezometers, earth pressure cells, spot welded strain gages, and embedment strain gages installed in the shafts. Chapter 3.0 provides instrument data analysis for the Salt Handling Shaft Station and Waste Shaft Station, an instrument data summary only for the area immediately surrounding the Air Intake Shaft, and data plots for extensometers, convergence points, and rockbolt load cells for all three locations. Chapter 4.0 provides instrument data analysis for the access drifts followed by data plots for the extensometers, convergence points, joint meters and rock bolt load cells. Chapter 5.0 provides instrument data analysis for the Waste Disposal Area followed by data plots for the extensometers, rock bolt load cells and convergence points.

Chapter 6.0 provides geologic data collected through the mapping of fractures and the observed displacements in vertical boreholes.

2.0 Instrumentation Summary for Shafts

Instrumentation data analysis for three of the four shafts at the WIPP follows. Table 2-1 presents data and analysis of the Salt Shaft. Plots of the instrument data are presented as Figures 2-1 through 2-13. Table 2-2 presents data and analysis of the Waste Shaft. Plots of the instrument data are presented as Figures 2-14 through 2-26. Table 2-3 presents data and analysis of the Exhaust Shaft. Plots of the instrument data are presented as Figures 2-27 through 2-34.

Table 2-1
Salt Handling Shaft Data Analysis

PIEZOMETERS

Field Tag	Level feet	Figure Number	Date of 2005-2006 Max. Reading	2005-2006 Maximum Pressure Readings (psi)	Date of 2004-2005 Max. Reading	2004-2005 Maximum Pressure Readings (psi)	Change in Maximum Pressure From Previous Year (psi)	Comments
37X-PE-00201	580	2-1	05/01/06	101	04/04/05	108	-7	
37X-PE-00202	580	2-1	05/01/06	108	04/04/05	113	-5	
37X-PE-00203	620	2-2	04/06/06	229	04/04/05	223	6	Noisy transducer.
37X-PE-00204	620	2-2	04/06/06	184	04/04/05	180	4	Noisy transducer.
37X-PE-00205	691	2-3	04/06/06	170	07/06/04	168	2	
37X-PE-00206	691	2-3	04/06/06	166	07/06/04	161	5	
37X-PE-00207	726	2-4	12/05/05	144	01/31/05	143	1	
37X-PE-00209	802	2-5	08/01/05	74	07/06/04	77	-3	
37X-PE-00210	802	2-5	09/02/05	74	07/06/04	78	-4	
37X-PE-00211	850	2-6	04/06/06	129	07/06/04	120	9	
37X-PE-00212	850	2-6	04/06/06	140	07/06/04	128	12	

EARTH PRESSURE CELLS

Field Tag	Level feet	Figure Number	Date of 2005-2006 Max. Reading	2005-2006 Maximum Pressure Readings (psi)	Date of 2004-2005 Max. Reading	2004-2005 Maximum Pressure Readings (psi)	Change in Maximum Pressure From Previous Year (psi)	Comments
37X- WE-00201	860	2-7	09/02/05	-7	07/06/04	-5	-2	
37X- WE-00202	860	2-7	07/11/05	-22	07/06/04	-21	-1	
37X- WE-00203	860	2-7	04/06/06	3	06/02/05	3	0	

Table 2-1 (Continued)
Salt Handling Shaft Data Analysis

SPOT WELDED STRAIN GAGES

Field Tag	Level feet	Figure Number	Date of 2005-2006 Max. Reading	2005-2006 Maximum Total microstrain	Date of 2004-2005 Max. Reading	2004-2005 Maximum Total microstrain	Change in Maximum Strain From Previous Year	Comments
37X-ZE-00201	856.3	2-8	07/11/05	748	10/12/04	727	21	
37X-ZE-00206	856.3	2-8	07/11/05	668	07/06/04	677	-9	
37X-ZE-00220	862.4	2-9	12/05/05	829	10/12/04	825	4	
37X-ZE-00223	862.4	2-9	07/11/05	591	07/06/04	568	23	

EMBEDMENT STRAIN GAGES

Field Tag	Level feet	Figure Number	Date of 2005-2006 Max. Reading	2005-2006 Maximum Total microstrain	Date of 2004-2005 Max. Reading	2004-2005 Maximum Total microstrain	Change in Maximum Strain From Previous Year	Comments
37X-ZE-00209	856.3	2-10	01/03/06	-554	04/04/05	-554	0	
37X-ZE-00210	856.3	2-10	07/11/05	984	07/06/04	989	-5	
37X-ZE-00211	856.3	2-10	07/11/05	328	07/06/04	323	5	
37X-ZE-00212	856.3	2-10	12/05/05	-810	01/31/05	-804	-6	
37X-ZE-00213	856.3	2-10	07/11/05	339	07/06/04	322	17	
37X-ZE-00214	856.3	2-10	12/05/05	-121	01/31/05	-125	4	
37X-ZE-00215	856.3	2-10	07/11/05	95	07/06/04	82	13	
37X-ZE-00216	856.3	2-10	07/11/05	589	07/06/04	587	2	
37X-ZE-00225	862.4	2-11	07/11/05	200	07/06/04	183	17	
37X-ZE-00235	856.3	2-12	01/03/06	-424	03/01/05	-427	3	
37X-ZE-00236	856.3	2-12	07/11/05	101	07/06/04	96	5	
37X-ZE-00237	856.3	2-12	07/11/05	86	01/31/05	-207	293	The 1/31/05 reading is anomalous, see Figure 2-12.
37X-ZE-00238	856.3	2-12	07/11/05	493	07/06/04	485	8	
37X-ZE-00239	862.4	2-13	07/11/05	340	07/06/04	323	17	

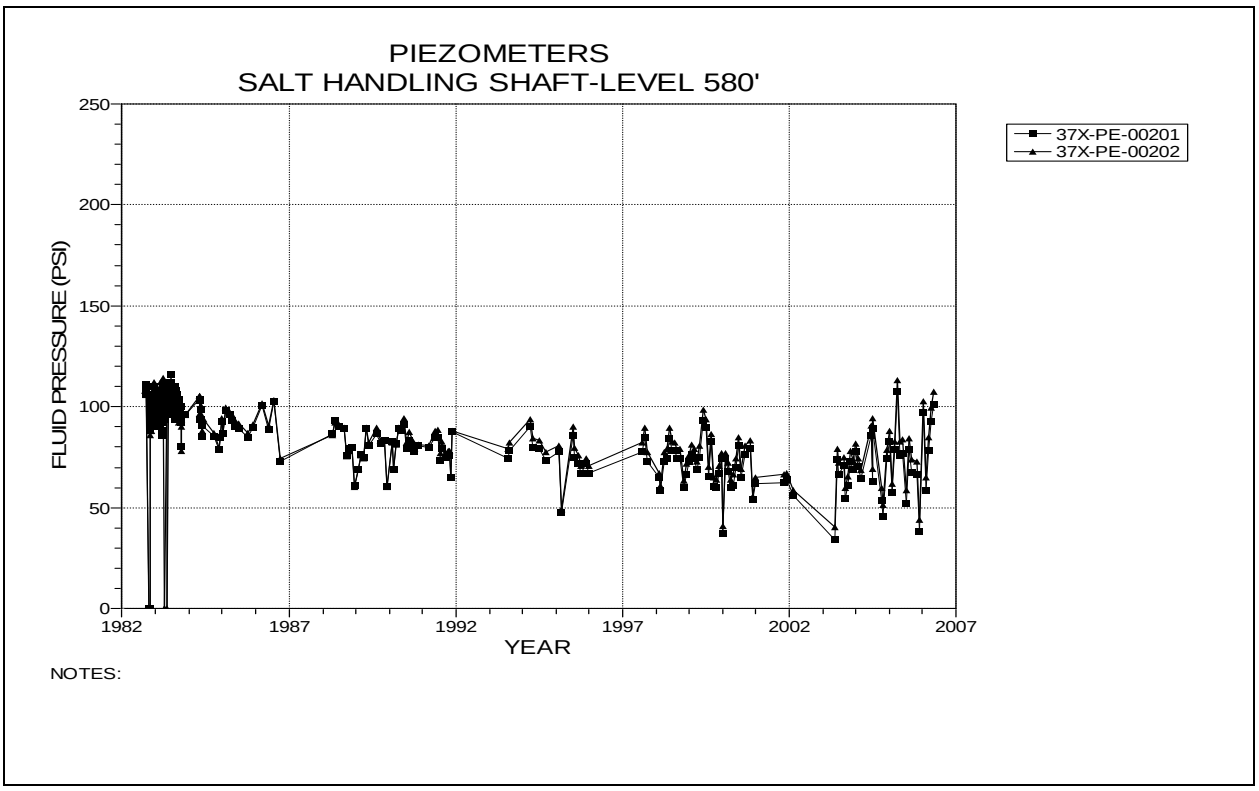

Figure 2-1 Piezometers 37X-PE-00201 and 37X-PE-00202
Salt Handling Shaft – Level 580 at the Forty-niner Member

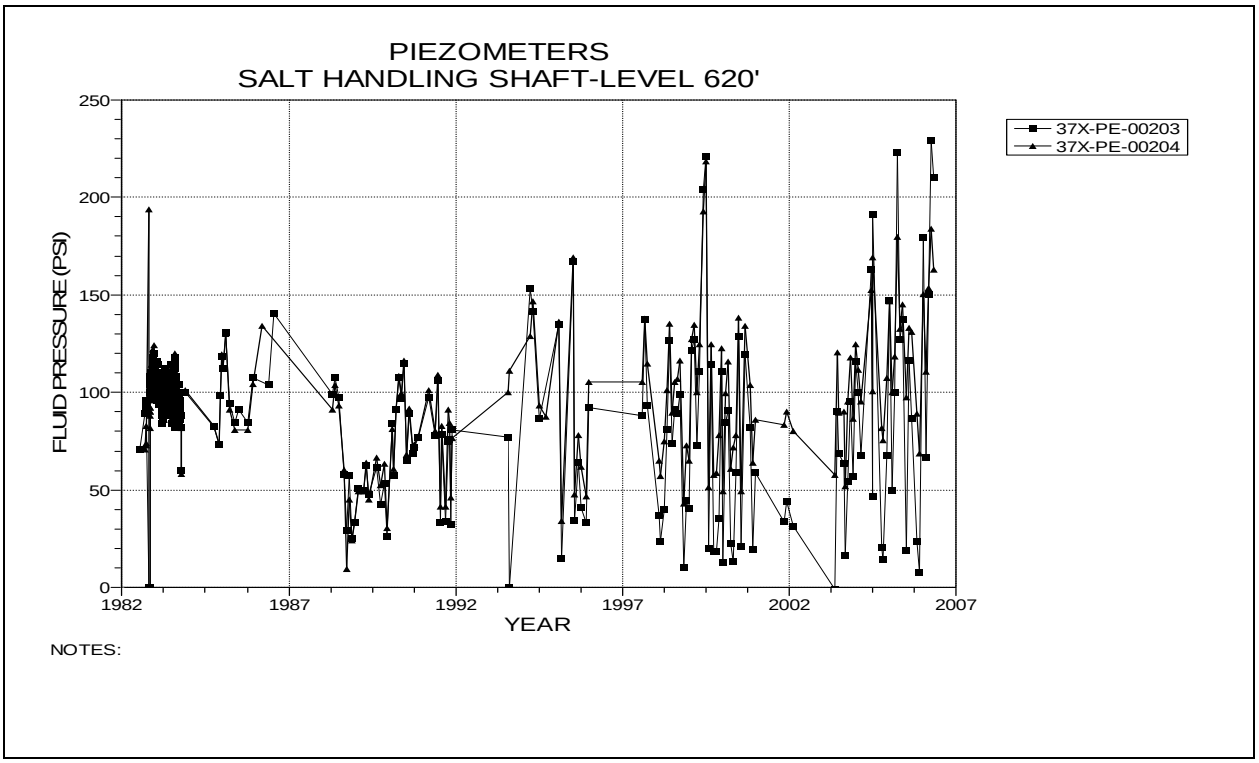

Figure 2-2 Piezometers 37X-PE-00203 and 37X-PE-00204
Salt Handling Shaft – Level 620 at the Magenta Dolomite Member

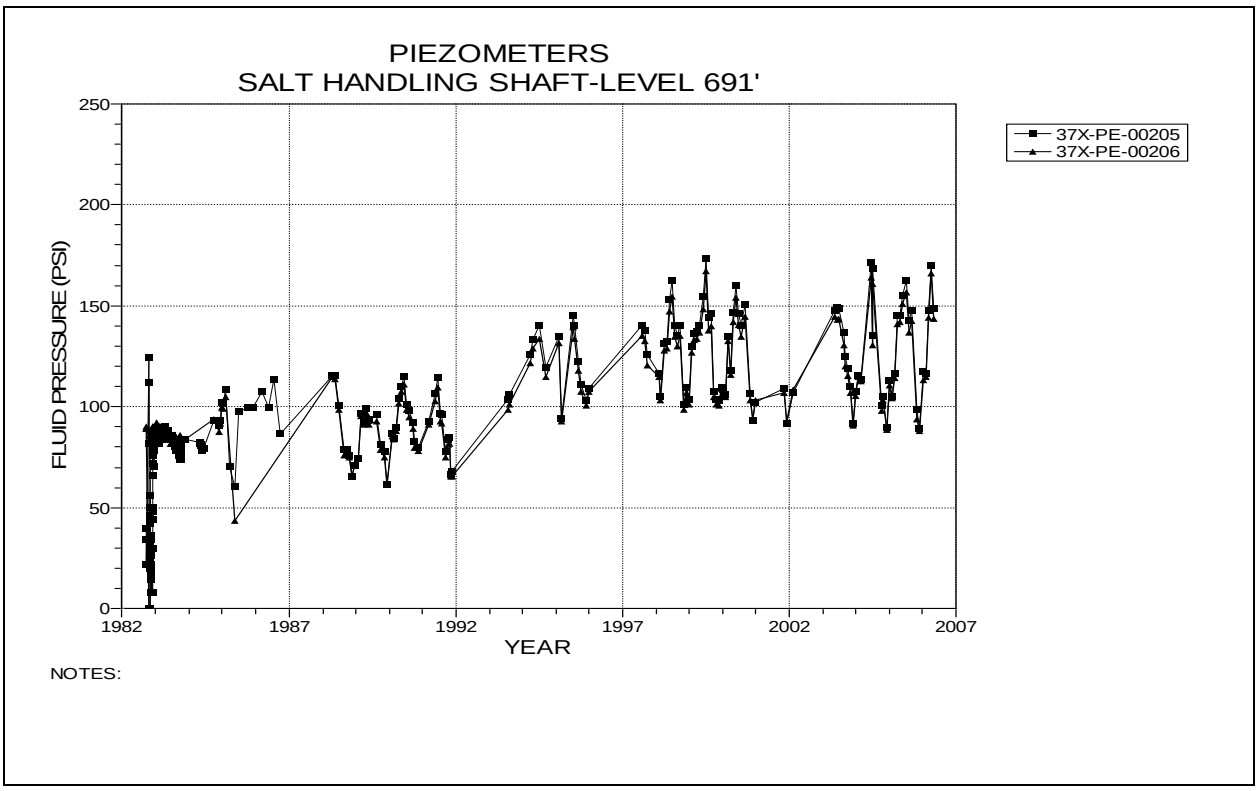

Figure 2-3 Piezometers 37X-PE-00205 and 37X-PE-00206
Salt Handling Shaft – Level 691 at the Tamarisk Member

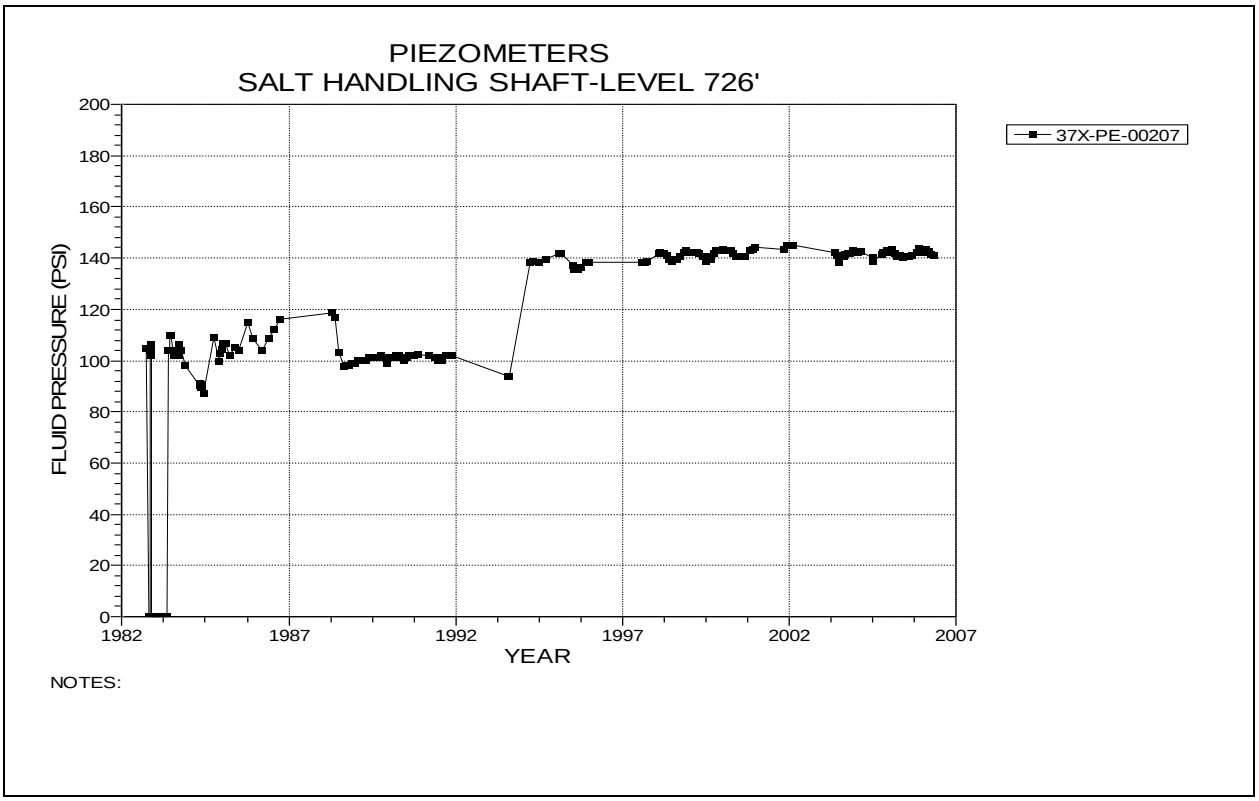

Figure 2-4 Piezometer 37X-PE-00207
Salt Handling Shaft – Level 726 at the Culebra Dolomite Member

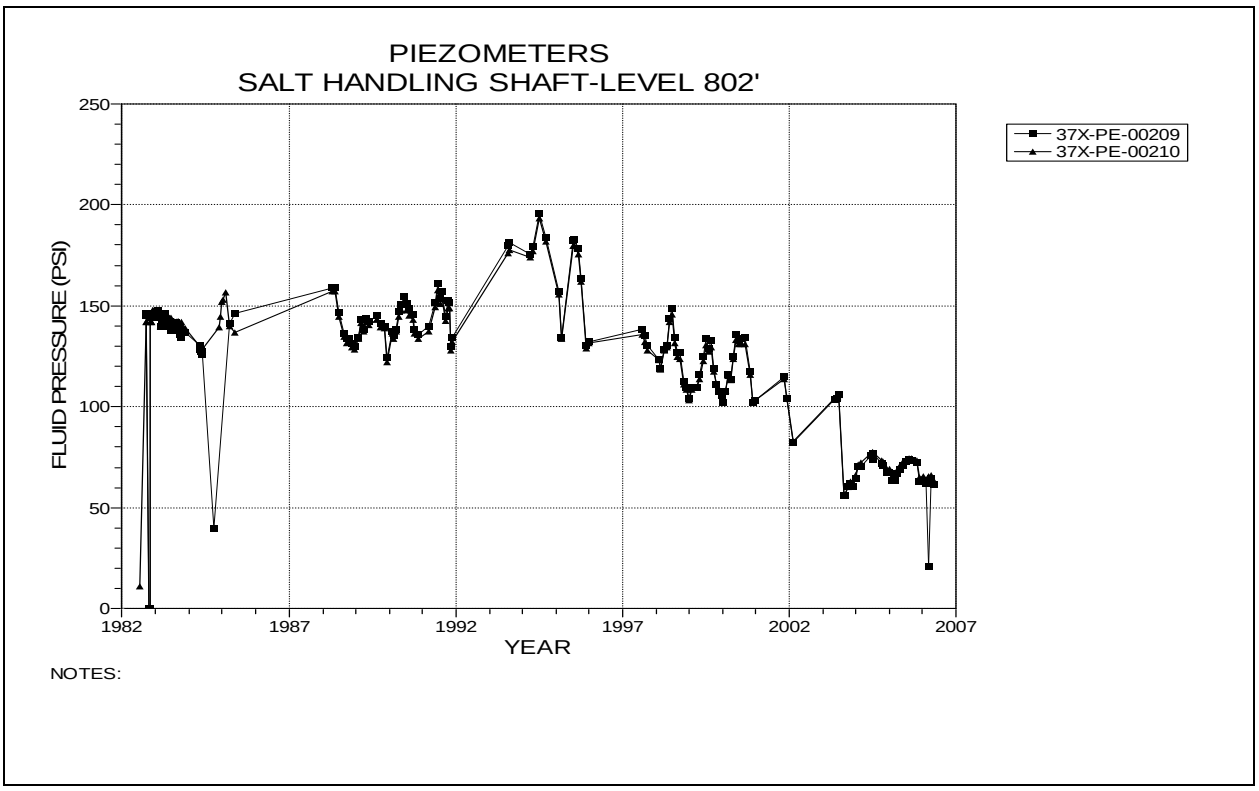

Figure 2-5 Piezometers 37X-PE-00209 and 37X-PE-00210
Salt Handling Shaft – Level 802 at the Los Medaños Member

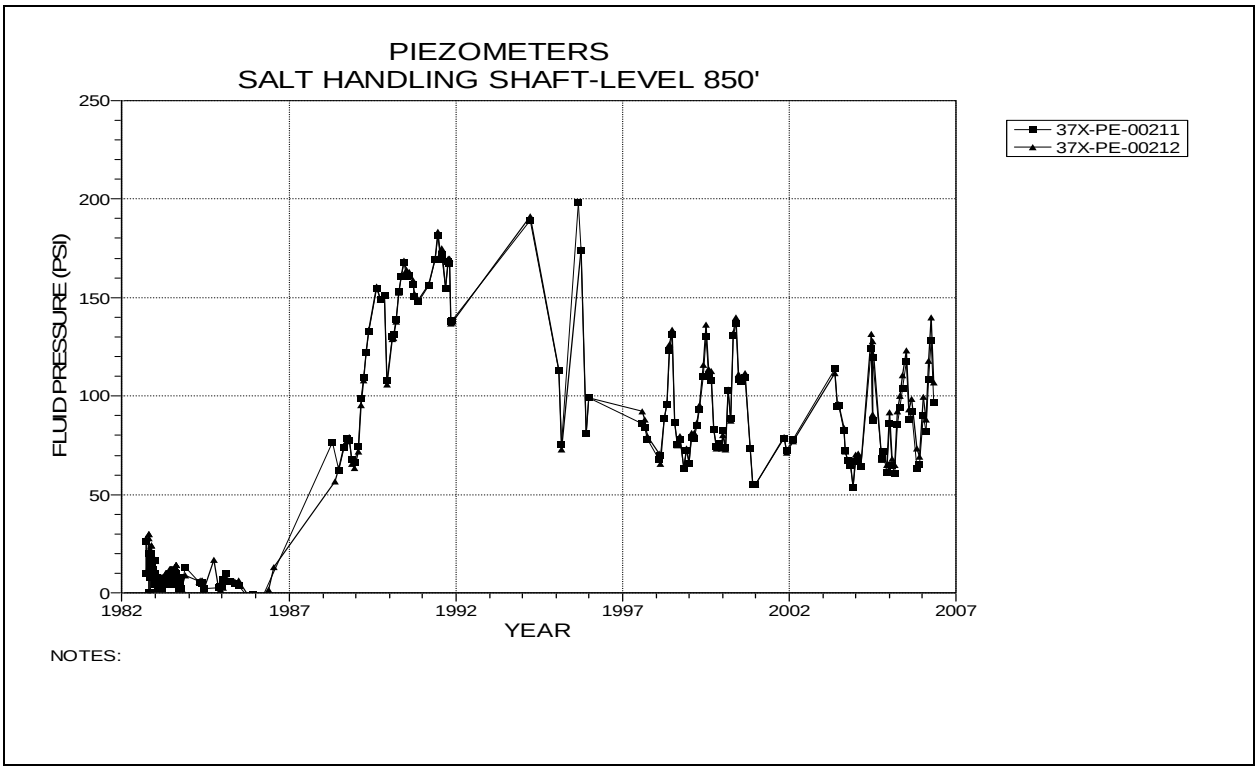

Figure 2-6 Piezometers 37X-PE-00211 and 37X-PE-00212
Salt Handling Shaft – Level 850 at the Rustler-Salado Contact

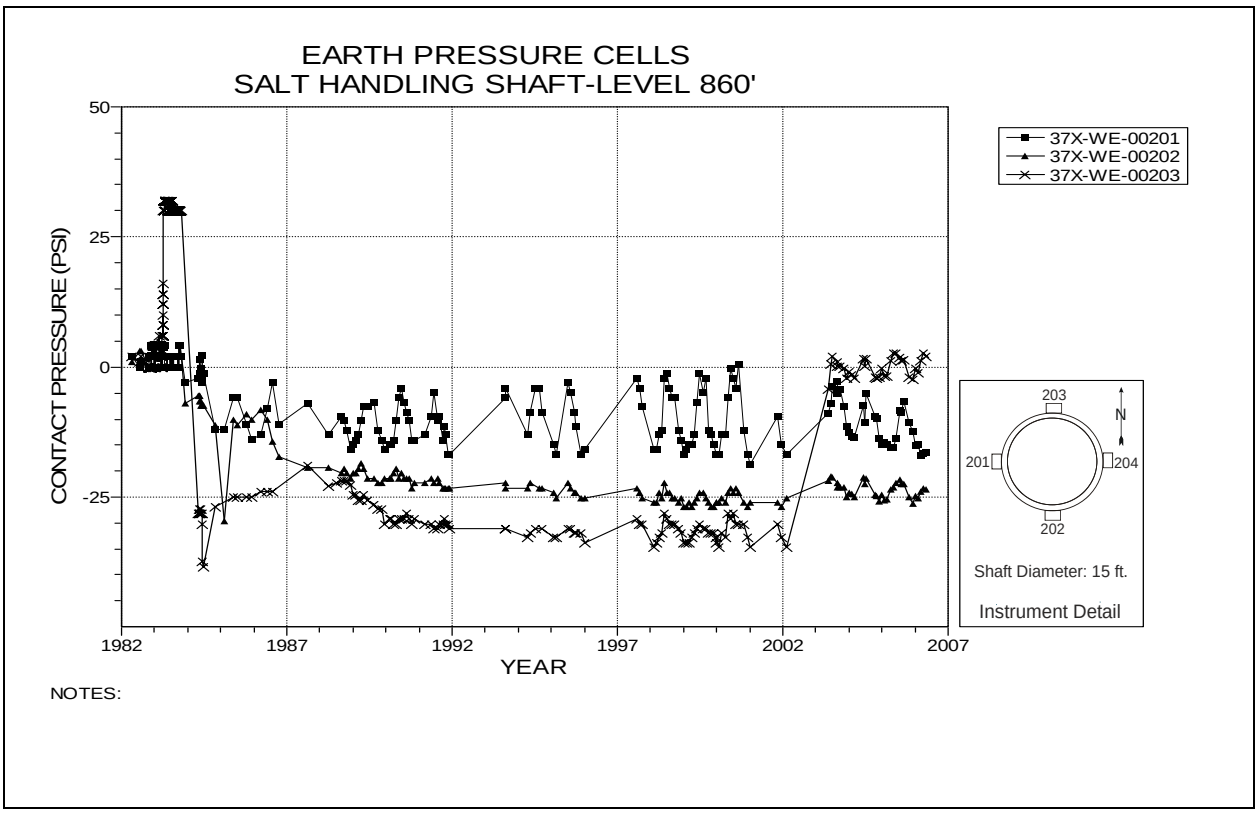

Figure 2-7 Earth Pressure Cells Behind Shaft Key
Salt Handling Shaft Key – Level 860

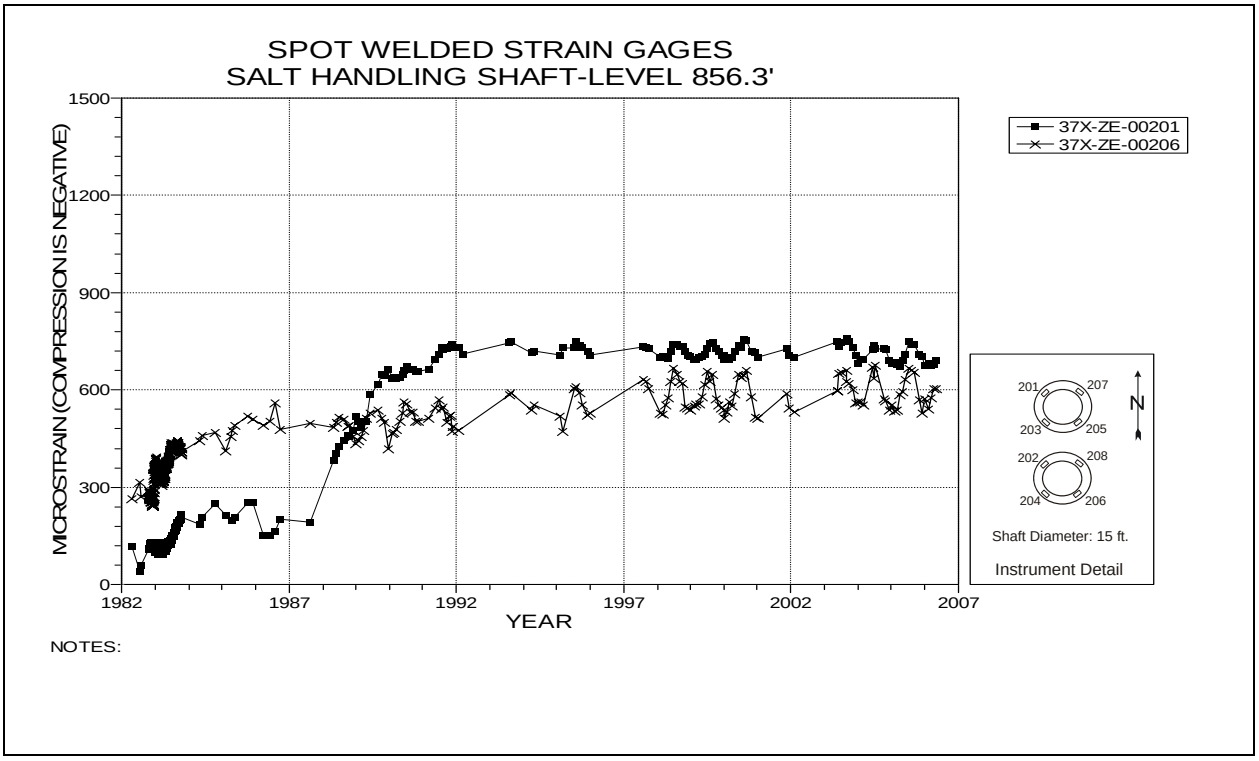

Figure 2-8 Spot Welded Strain Gages
Salt Handling Shaft Key – Level 856.3

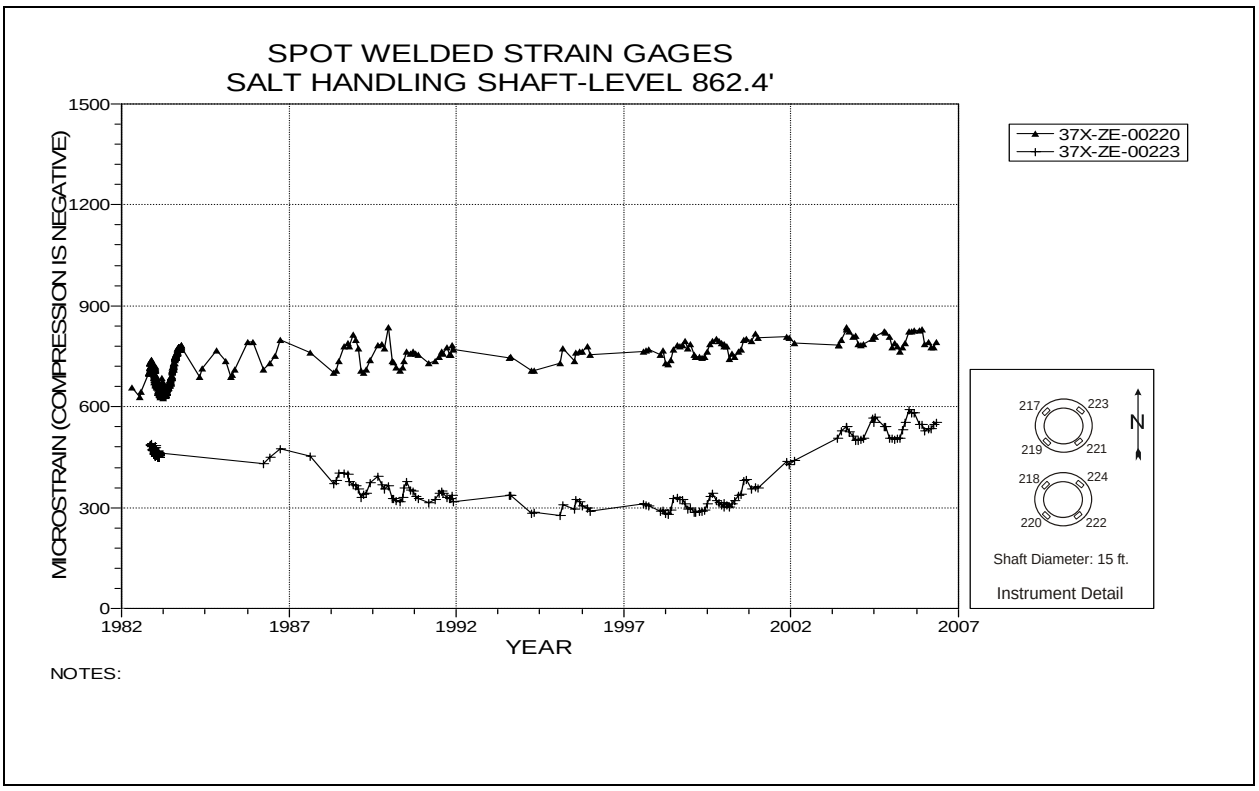

Figure 2-9 Spot Welded Strain Gages
Salt Handling Shaft Key – Level 862.4

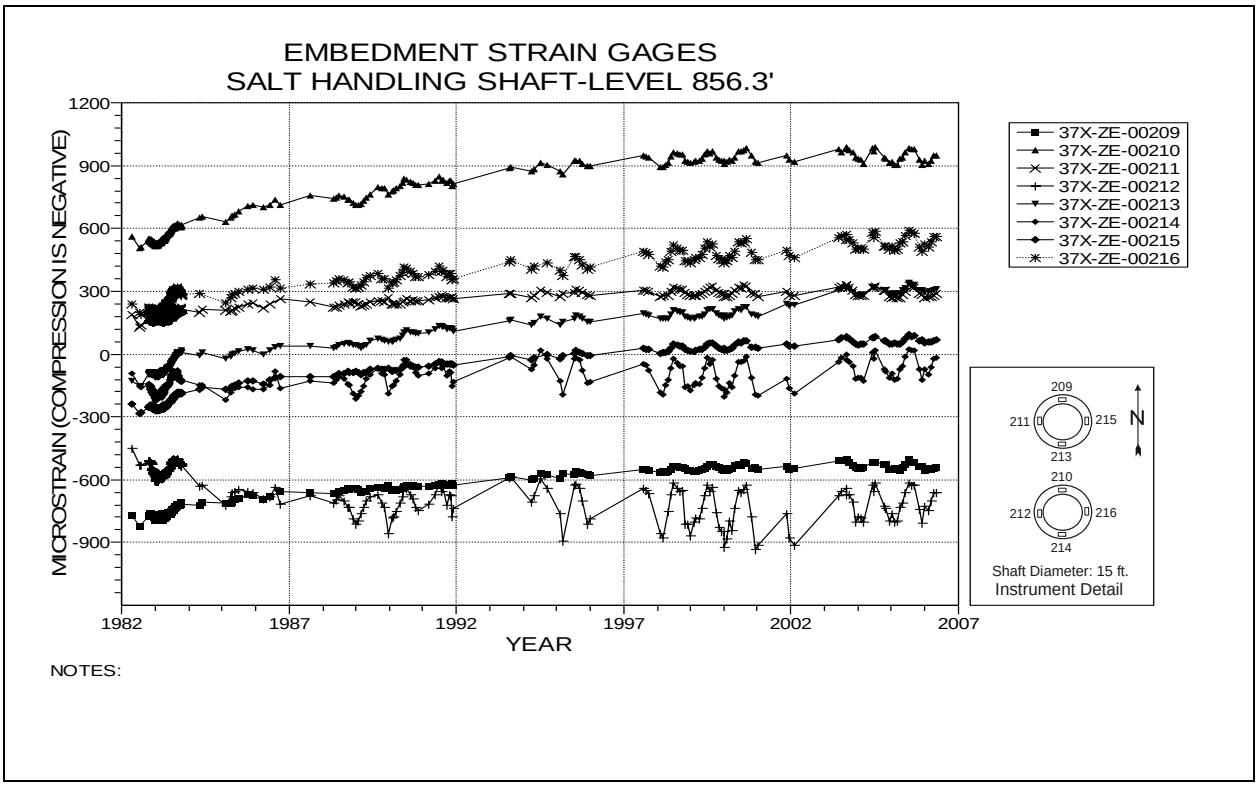

Figure 2-10 Embedment Strain Gages
Salt Handling Shaft Key – Level 856.3

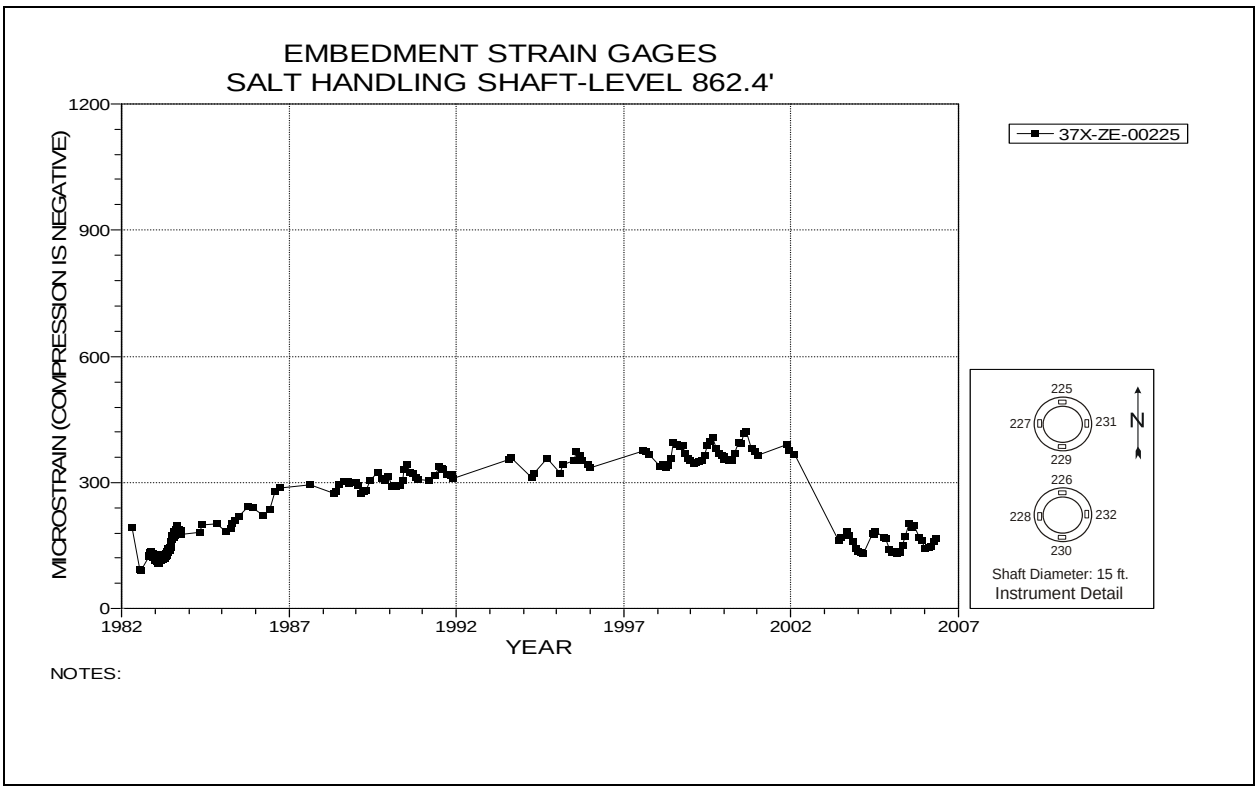

Figure 2-11 Embedment Strain Gages
Salt Handling Shaft Key Level 862.4

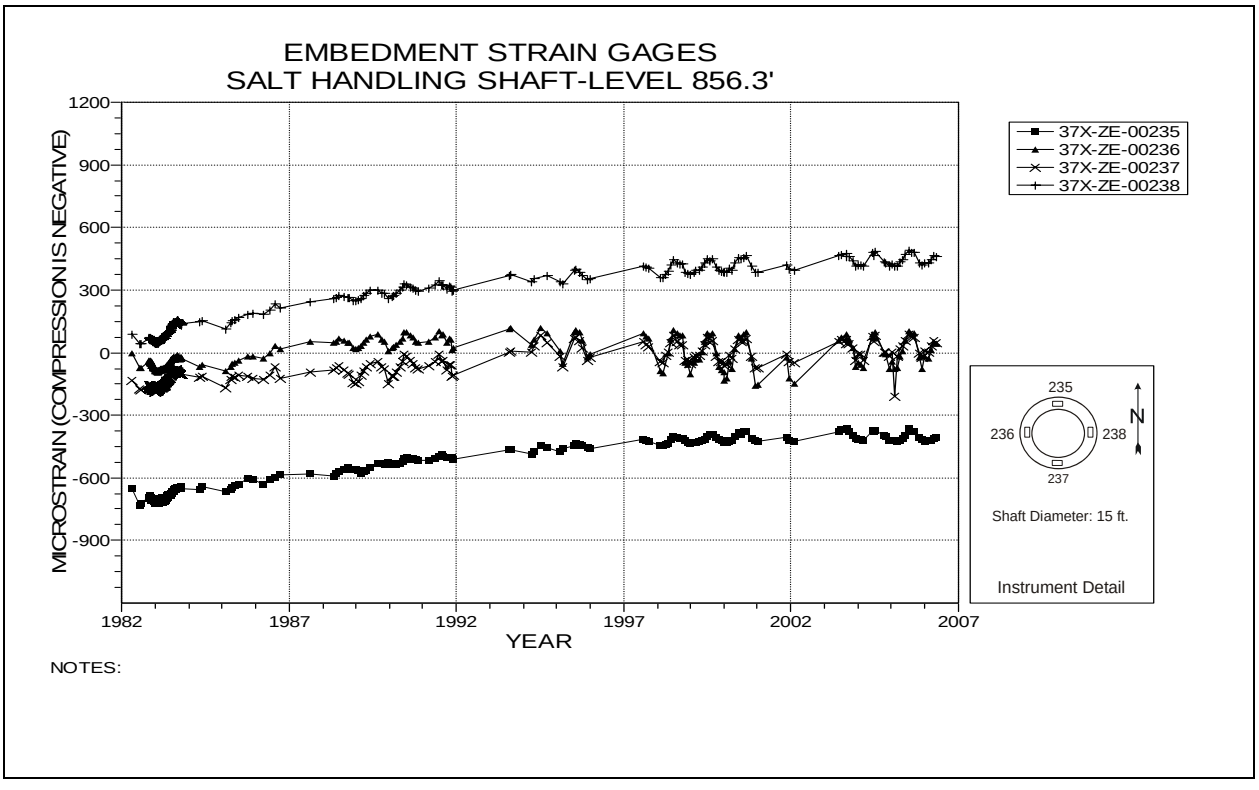

Figure 2-12 Embedment Strain Gages
Salt Handling Shaft Key Level 856.3

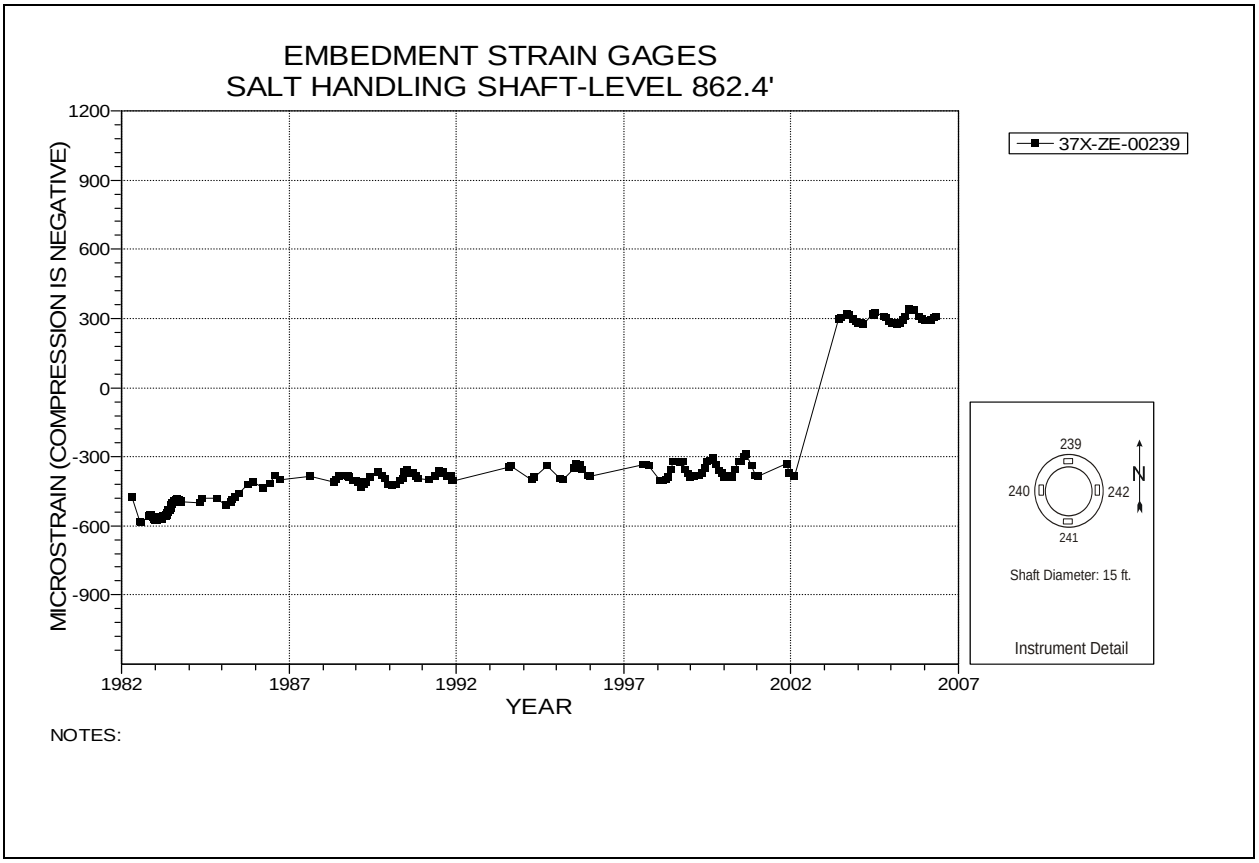

Figure 2-13 Embedment Strain Gages
Salt Handling Shaft Key – Level 862.4

Table 2-2
Waste Shaft Data Analysis

EXTENSOMETERS

Field Tag	Level feet	Figure Number	Date of Last Reading	Collar Displacement Relative to Deepest Anchor (inches)	Displacement Rate 2005 to 2006 (in/year)	Displacement Rate 2004 to 2005 (in/year)	Rate Change Percent	Comments
31X-GE-00203	1071	2-14	04/27/06	0.260	-0.003	0.061	-105%	
31X-GE-00204	1566	2-15	04/27/06	0.205	-0.010	0.006	-267%	
31X-GE-00206	1566	2-16	04/27/06	0.868	0.010	0.122	-92%	
31X-GE-00207	2059	2-17	04/27/06	2.244	-0.025	0.444	-106%	
31X-GE-00208	2059	2-18	04/27/06	2.050	0.041	0.011	273%	
31X-GE-00209	2059	2-19	04/27/06	1.694	-0.807	0.175	-561%	

PIEZOMETERS

Field Tag	Level feet	Figure Number	Date of Max. Reading	2005-2006 Readings (psi)	Date of Maximum Max. Reading	2004-2005 Readings (psi)	Change in Maximum Pressure From Previous Year (psi)	Comments
31X-PE-00202	532	2-20	09/02/05	-4	05/12/05	-4	0	
31X-PE-00203	611	2-21	09/02/05	36	05/12/05	33	3	
31X-PE-00204	611	2-21	09/02/05	11	03/10/05	3	8	
31X-PE-00205	669	2-22	01/03/06	-1	04/01/05	0	-1	
31X-PE-00206	669	2-22	09/02/05	-1	05/12/05	-1	0	
31X-PE-00208	717	2-23	09/02/05	138	05/12/05	130	8	
31X-PE-00209	758	2-24	09/02/05	47	05/12/05	46	1	
31X-PE-00210	758	2-24	08/17/05	8	03/10/05	1	7	
31X-PE-00211	845	2-25	09/02/05	74	01/21/05	64	10	
31X-PE-00212	845	2-25	09/02/05	80	05/12/05	70	10	

Table 2-2 (Continued)
Waste Shaft Data Analysis

EARTH PRESSURE CELLS

Field Tag	Level feet	Figure Number	Date of 2005-2006 Max. Reading	2005-2006 Maximum Pressure Readings (psi)	Date of 2004-2005 Max. Reading	2004-2005 Maximum Pressure Readings (psi)	Change in Maximum Pressure From Previous Year (psi)	Comments
31X- WE-00201	866	2-26	09/02/05	84	04/01/05	72	12	
31X- WE-00202	866	2-26	09/02/05	86	05/12/05	71	15	
31X- WE-00203	866	2-26	08/17/05	110	05/12/05	86	24	
31X- WE-00204	866	2-26	09/02/05	100	05/12/05	83	17	

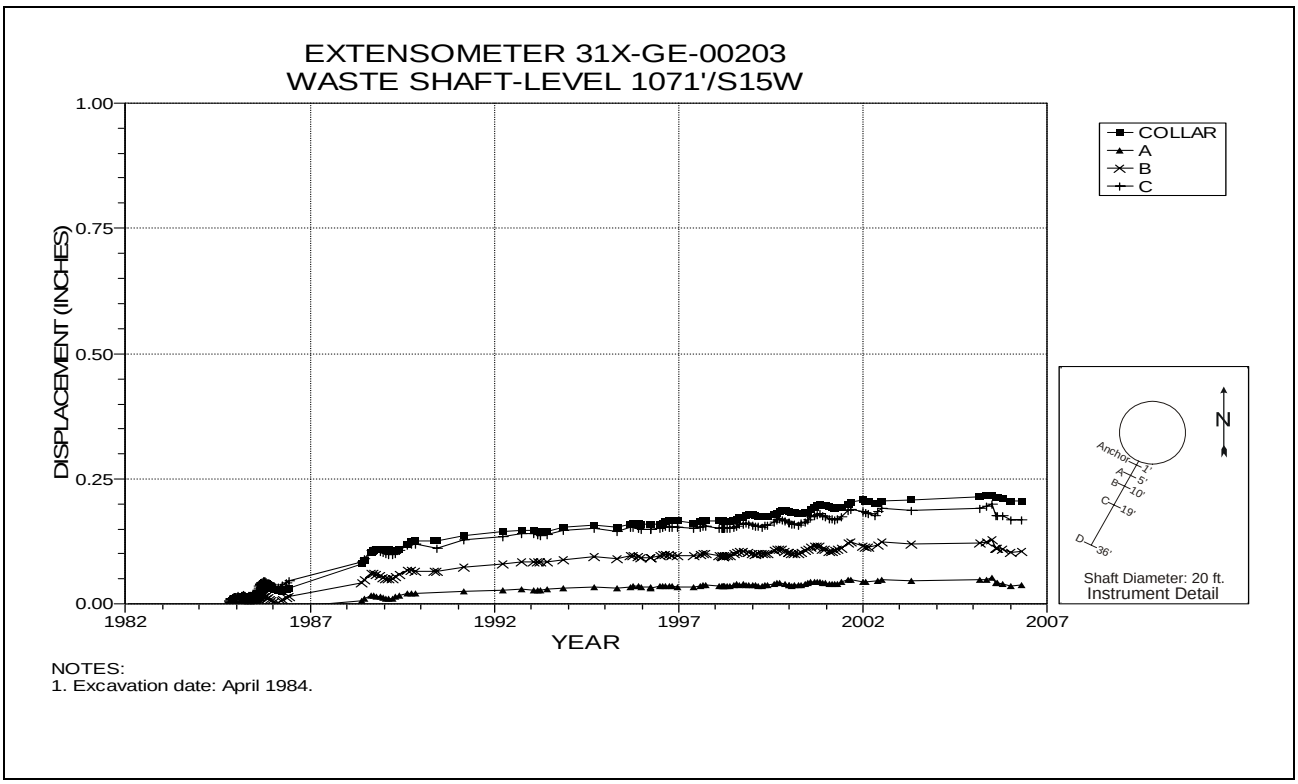

Figure 2-14 Extensometer 31X-GE-00203
Waste Shaft – Level 1071 / S15W

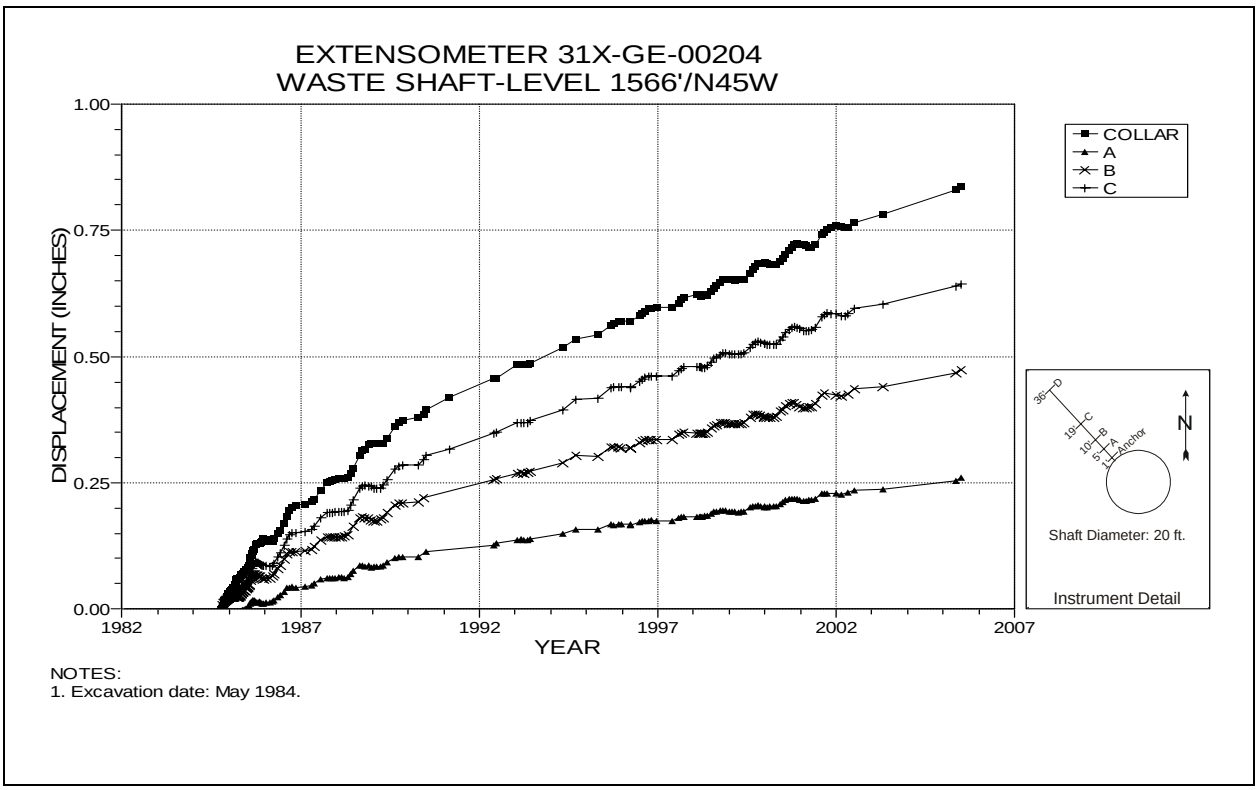

Figure 2-15 Extensometer 31X-GE-00204
Waste Shaft – Level 1566 / N45W

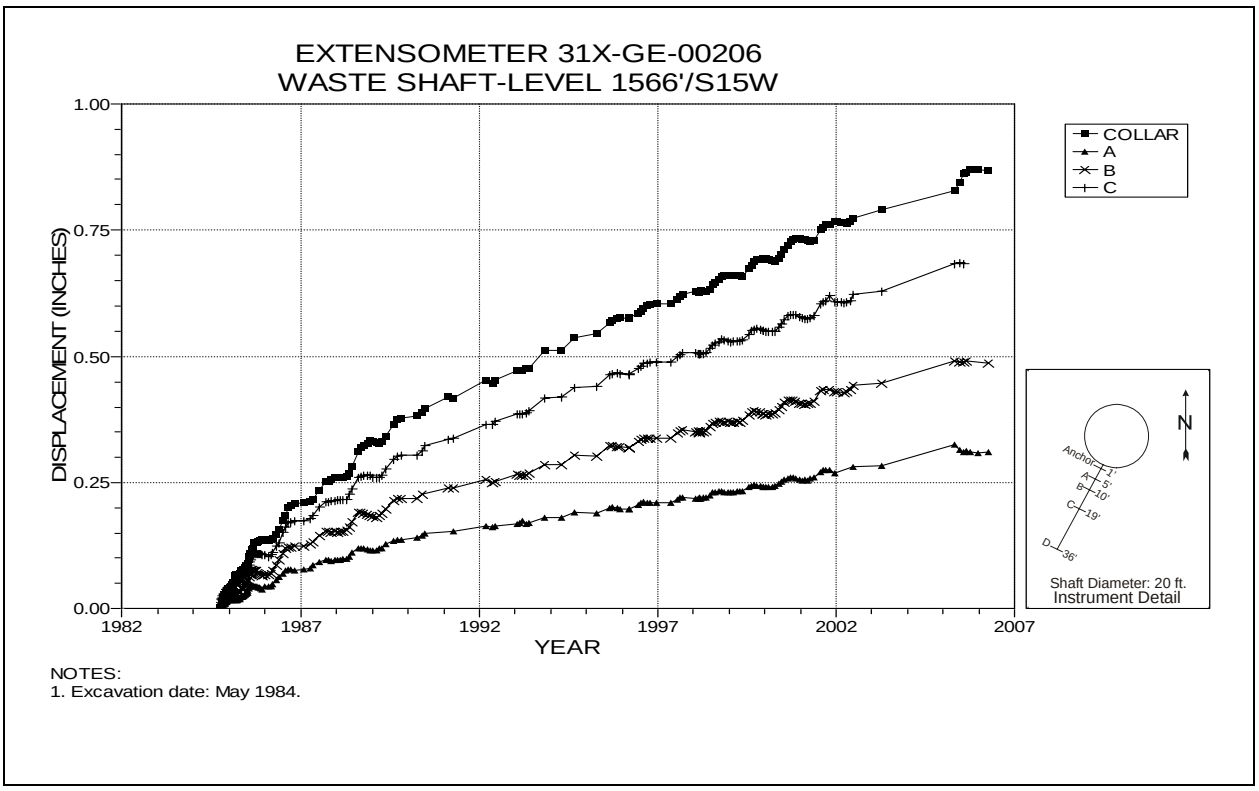

Figure 2-16 Extensometer 31X-GE-00206
Waste Shaft – Level 1566 / S15W

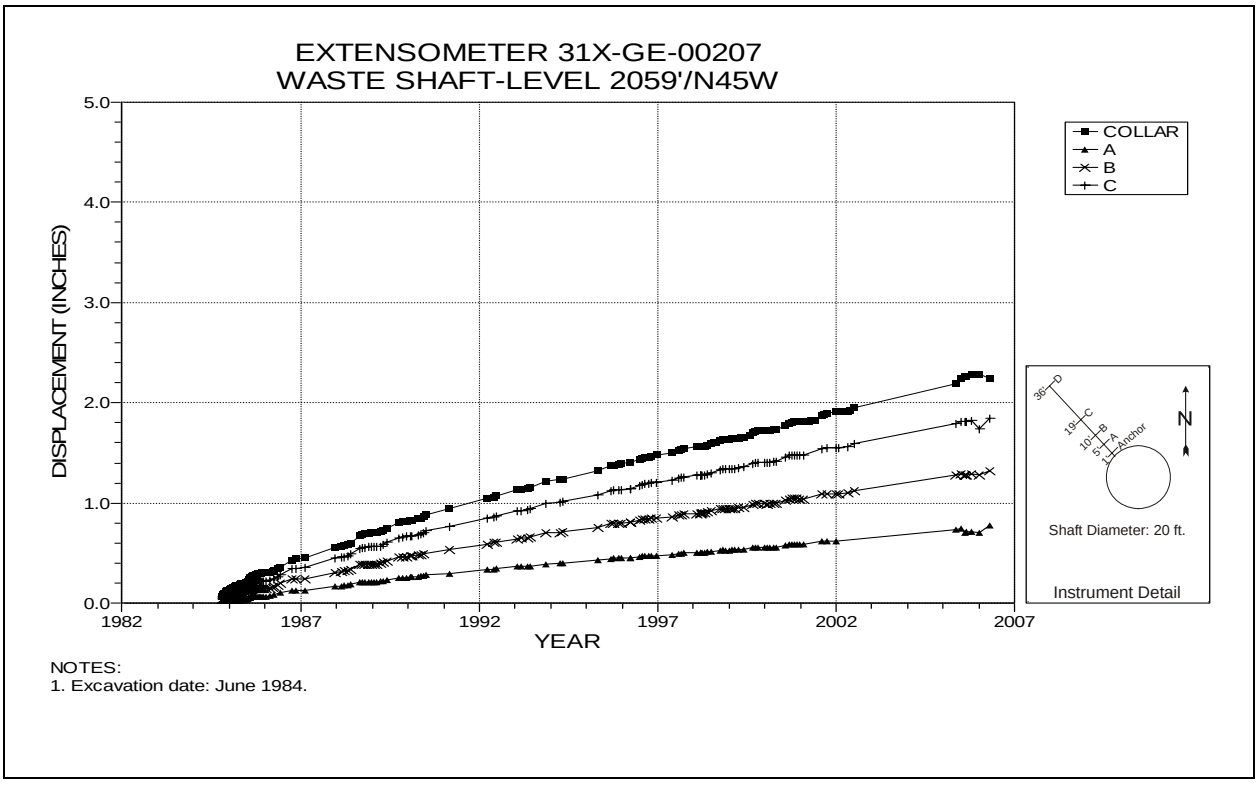

Figure 2-17 Extensometer 31X-GE-00207
Waste Shaft – Level 2059 / N45W

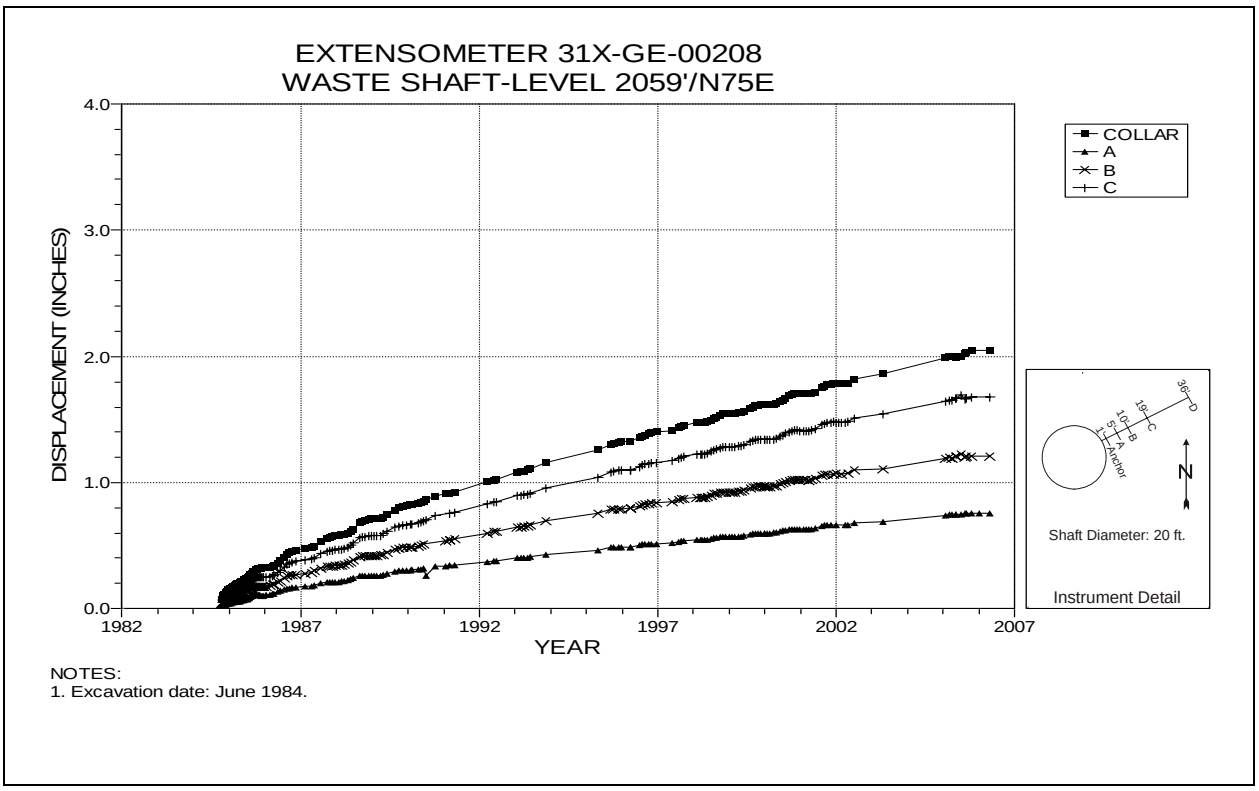

Figure 2-18 Extensometer 31X-GE-00208
Waste Shaft – Level 2059 / N75E

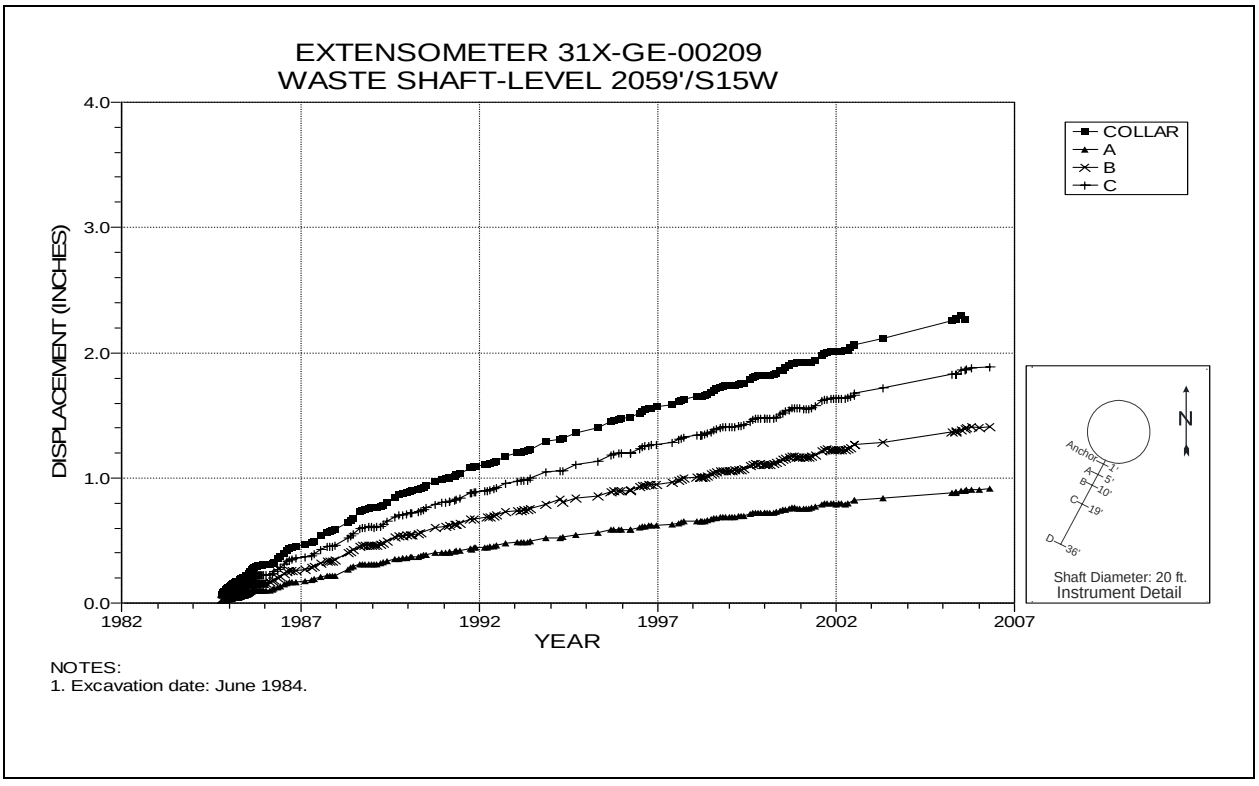

Figure 2-19 Extensometer 31X-GE-00209
Waste Shaft – Level 2059 / S15W

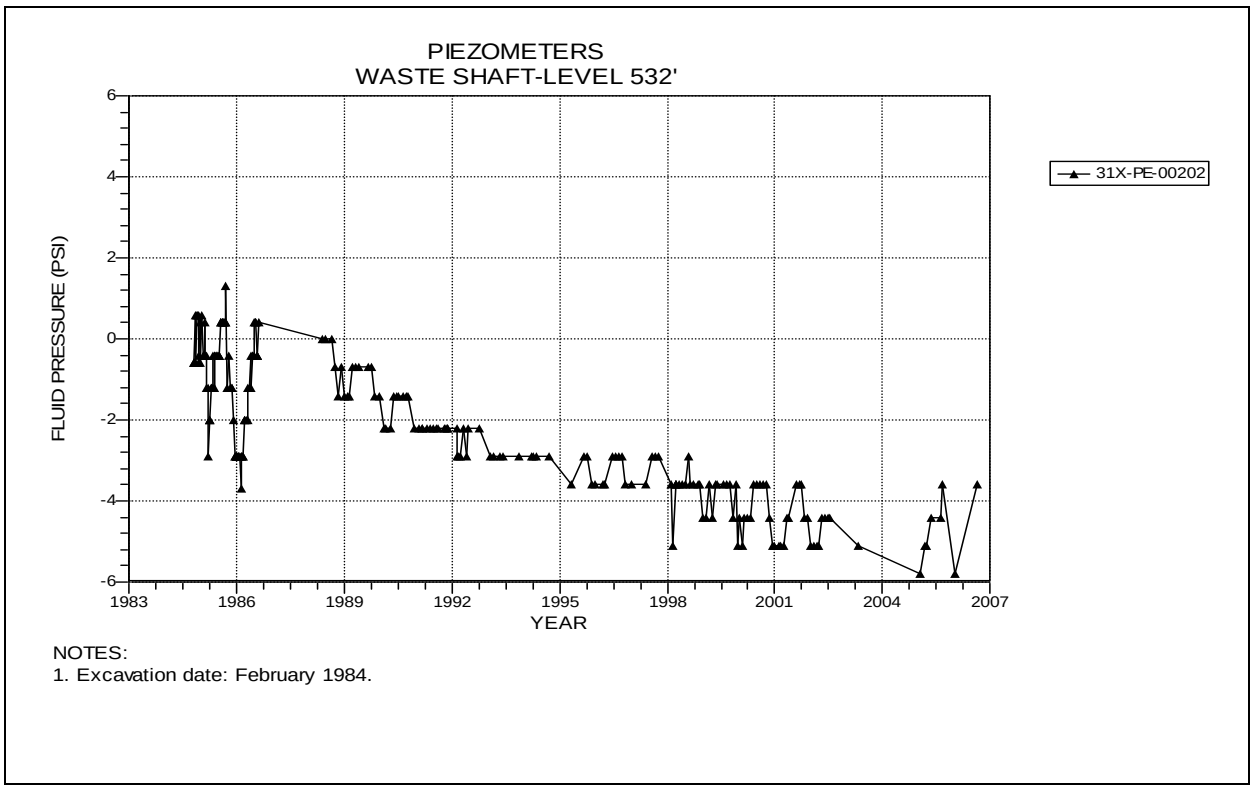

Figure 2-20 Piezometers 31X-PE-00201 and 31X-PE-00202
Waste Shaft – Level 532 at the Base of Dewey Lake Redbeds

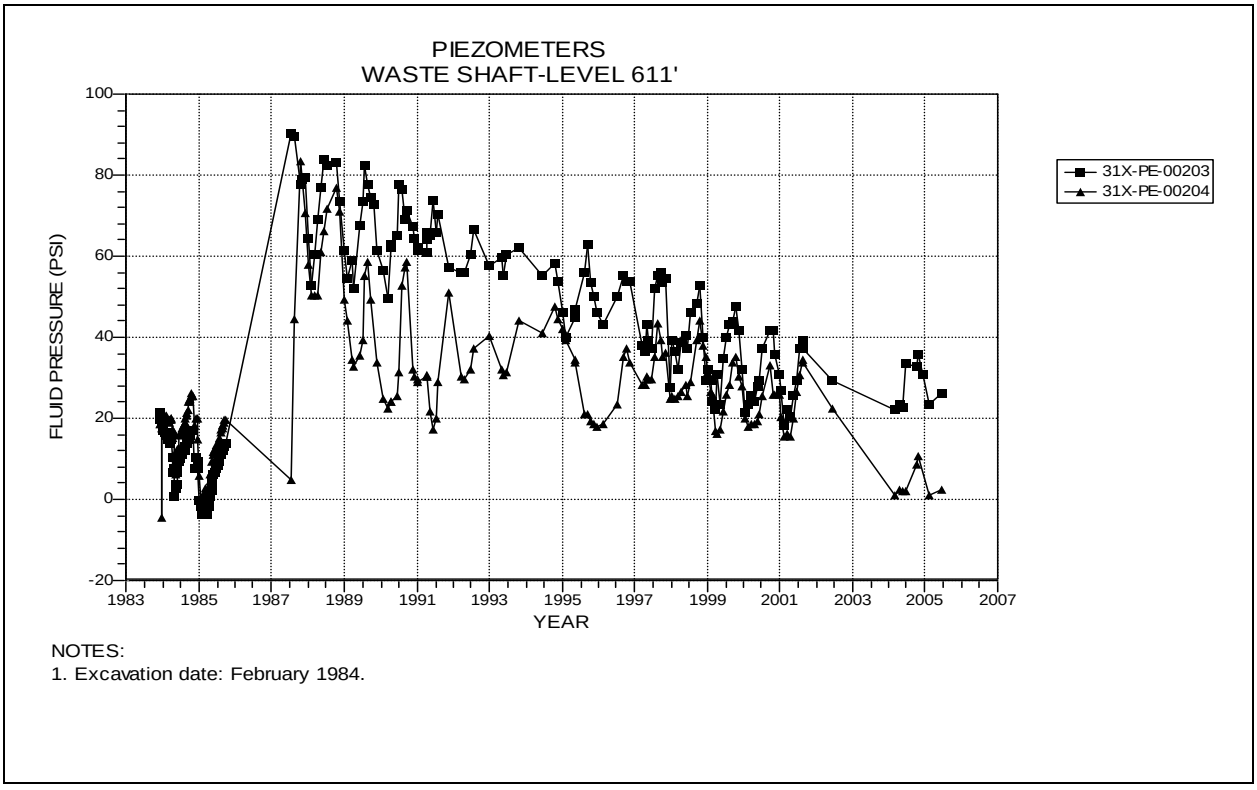

Figure 2-21 Piezometers 31X-PE-00203 and 31X-PE-00204
Waste Shaft – Level 611 at the Magenta Dolomite Member

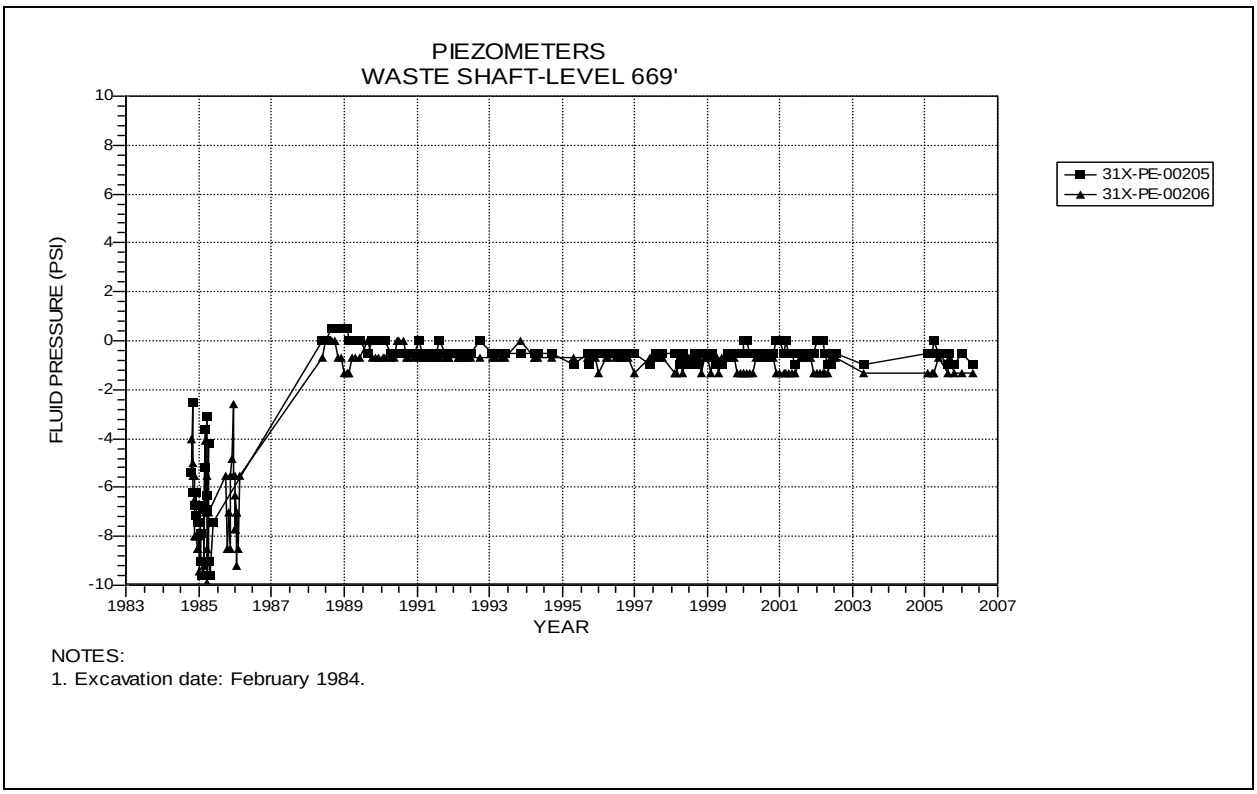

Figure 2-22 Piezometers 31X-PE-00205 and 31X-PE-00206
Waste Shaft – Level 669 at the Tamarisk Member

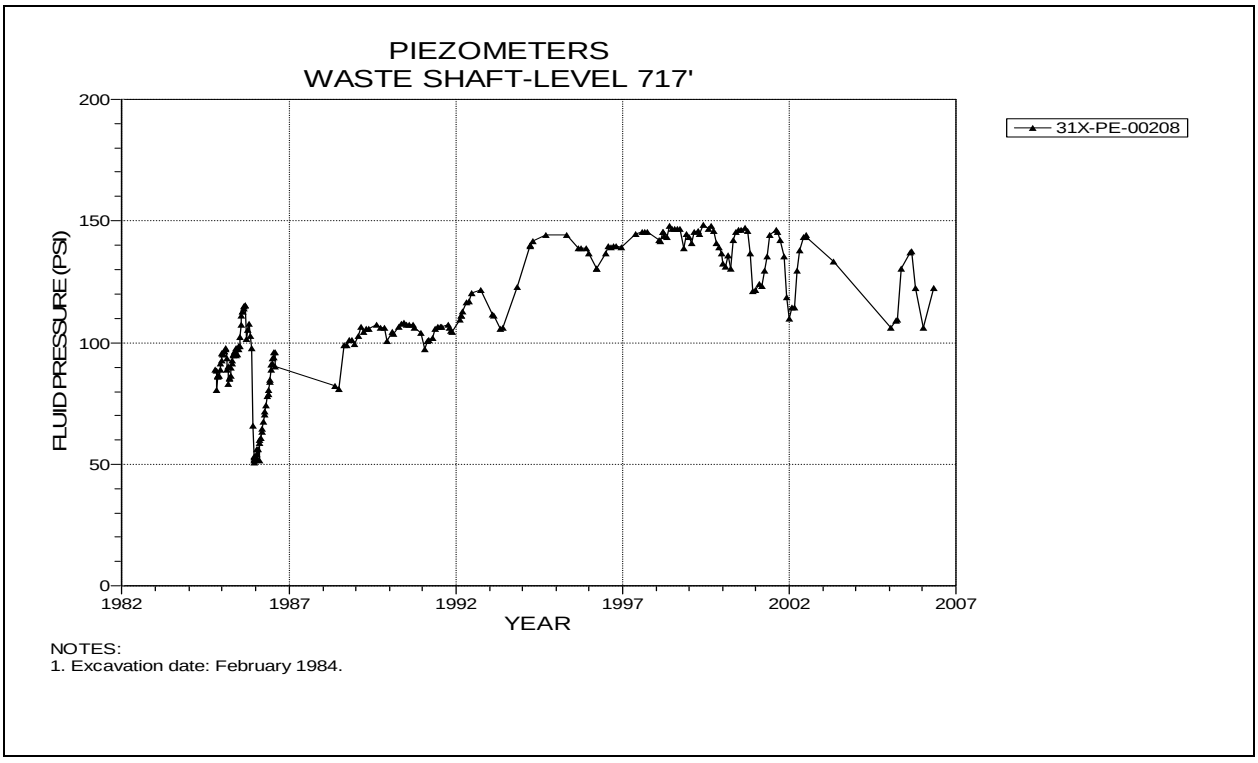

Figure 2-23 Piezometer 31X-PE-00208
Waste Shaft – Level 717 at the Culebra Dolomite Member

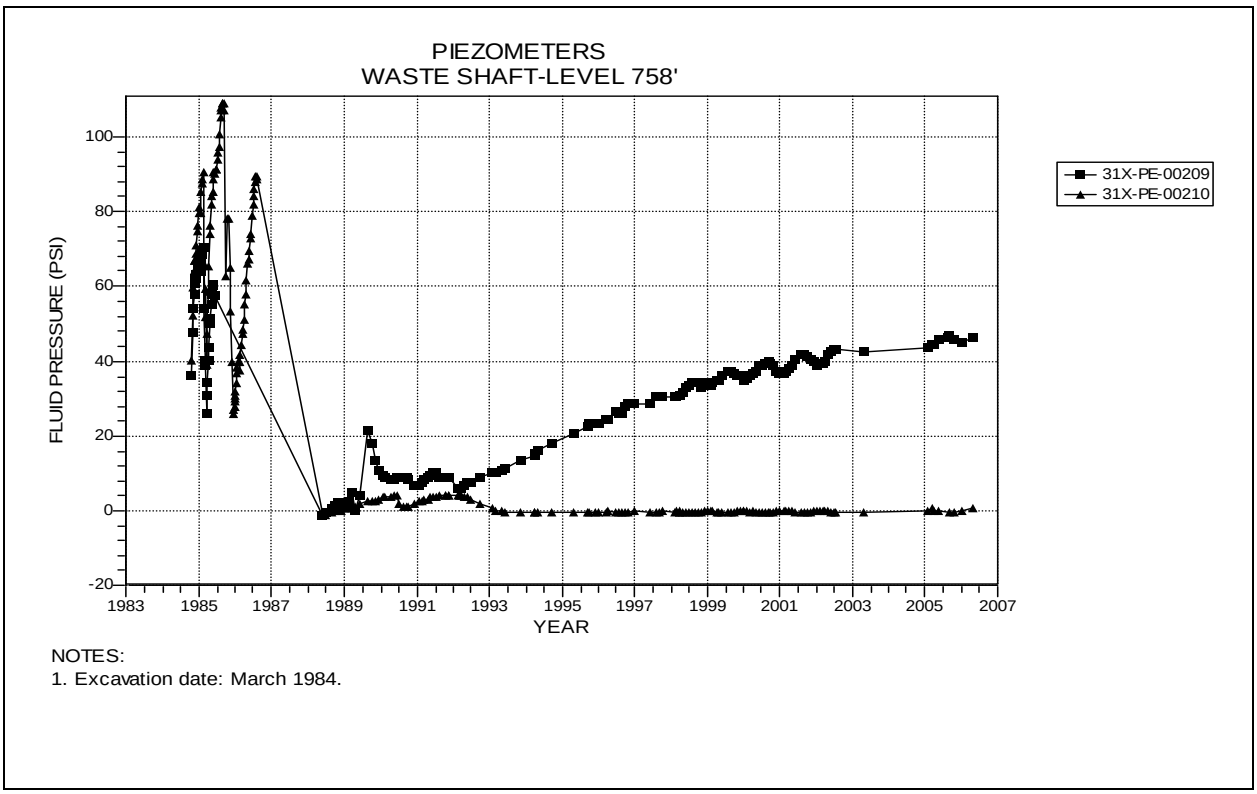

Figure 2-24 Piezometers 31X-PE-00209 and 31X-PE-00210
Waste Shaft – Level 758 at the Los Medaños Member

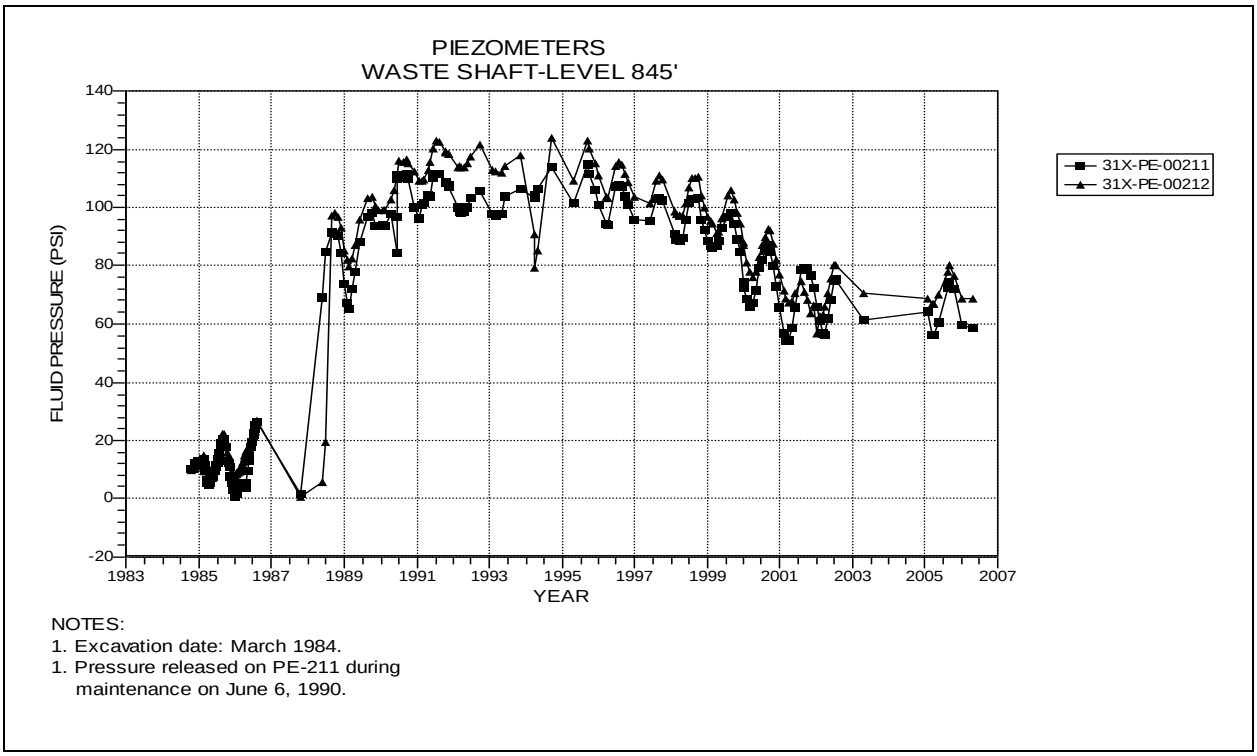

Figure 2-25 Piezometers 31X-PE-00211 and 31X-PE-00212
Waste Shaft – Level 845 at the Rustler-Salado Contact

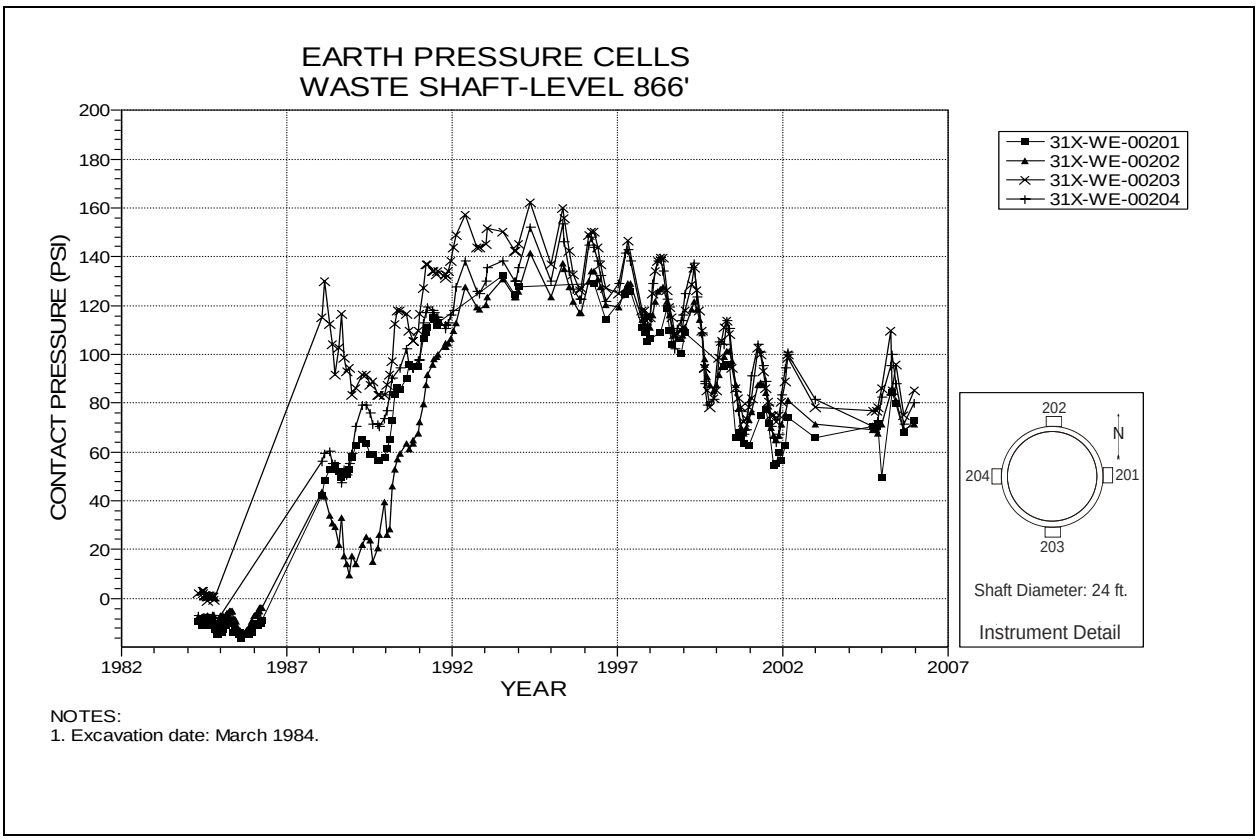

Figure 2-26 Earth Pressure Cells
Waste Shaft Key – Level 866

Table 2-3
Exhaust Shaft Data Analysis

PIEZOMETERS

Field Tag	Level feet	Figure Number	Date of 2005-2006 Max. Reading	2005-2006 Maximum Pressure Readings (psi)	Date of 2004-2005 Max. Reading	2004-2005 Maximum Pressure Readings (psi)	Change in Maximum Pressure From Previous Year (psi)	Comments
35X-PE-00202	544	2-27	10/03/05	-2	09/01/04	-2	0	
35X-PE-00204	615	2-28	06/19/06	126	09/01/04	125	1	
35X-PE-00205	615	2-28	08/01/05	136	09/01/04	136	0	
35X-PE-00208	673	2-29	10/03/05	6	09/01/04	6	0	
35X-PE-00210	721	2-30	06/19/06	141	06/02/05	140	1	
35X-PE-00213	768	2-31	10/03/05	9	09/01/04	10	-1	
35X-PE-00214	768	2-31	06/19/06	6	08/03/04	7	-1	
35X-PE-00216	850	2-32	06/12/06	88	09/01/04	87	1	
35X-PE-00218	850	2-32	06/12/06	21	09/01/04	16	5	
35X-PE-00219	887	2-33	10/03/05	29	10/04/04	29	0	
35X-PE-00220	887	2-33	08/01/05	26	10/04/04	27	-1	

EARTH PRESSURE CELLS

Field Tag	Level feet	Figure Number	Date of 2005-2006 Max. Reading	2005-2006 Maximum Pressure Readings (psi)	Date of 2004-2005 Max. Reading	2004-2005 Maximum Pressure Readings (psi)	Change in Maximum Pressure From Previous Year (psi)	Comments
35X-WE-00201	874	2-34	09/01/05	43	11/01/04	44	-1	
35X-WE-00202	874	2-34	07/05/05	58	07/15/04	56	2	

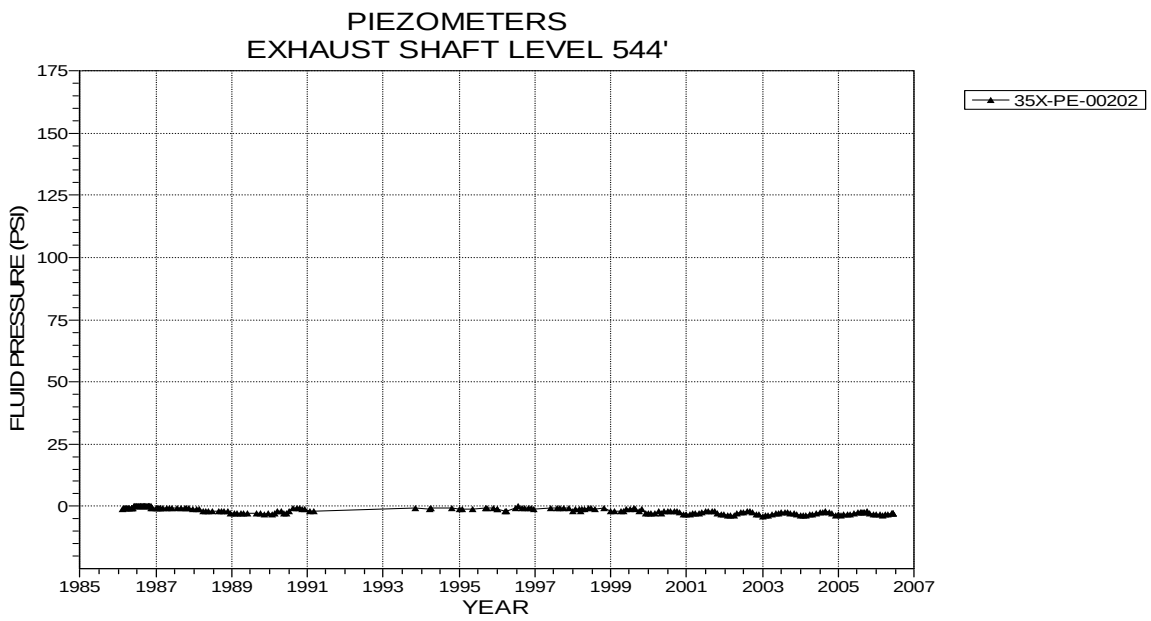

Figure 2-27 Piezometer 35X-PE-00202
Exhaust Shaft – Level 544 at the Base of Dewey Lake Redbeds

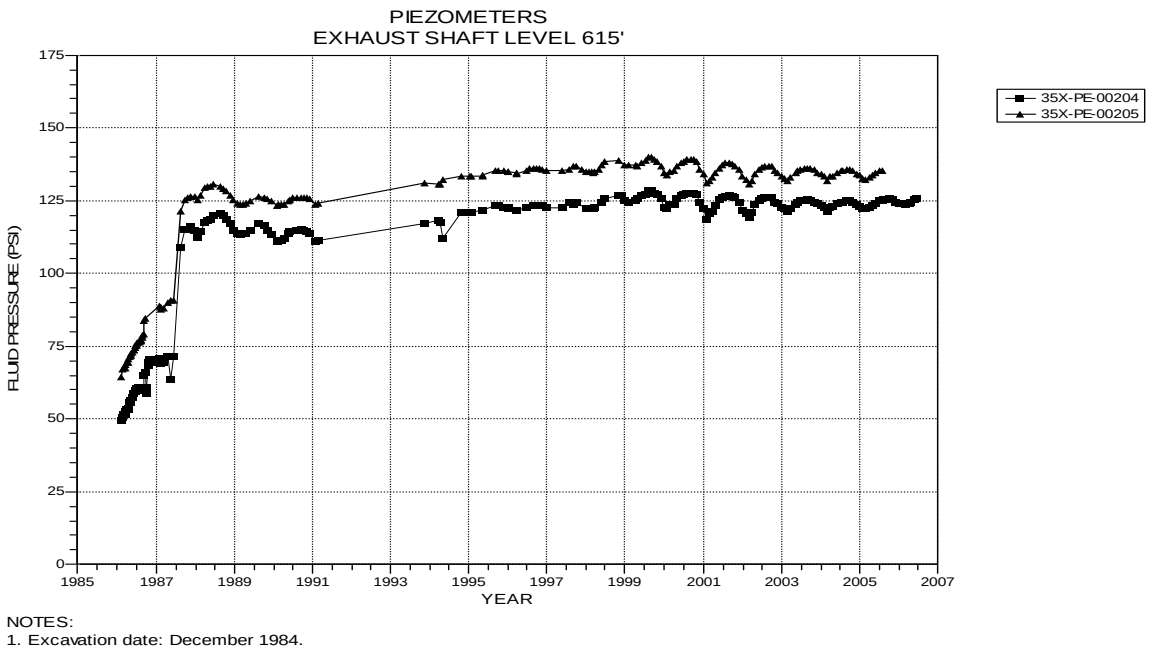

Figure 2-28 Piezometers 35X-PE-00204 and 35X-PE-00205
Exhaust Shaft – Level 615 at the Magenta Dolomite Member

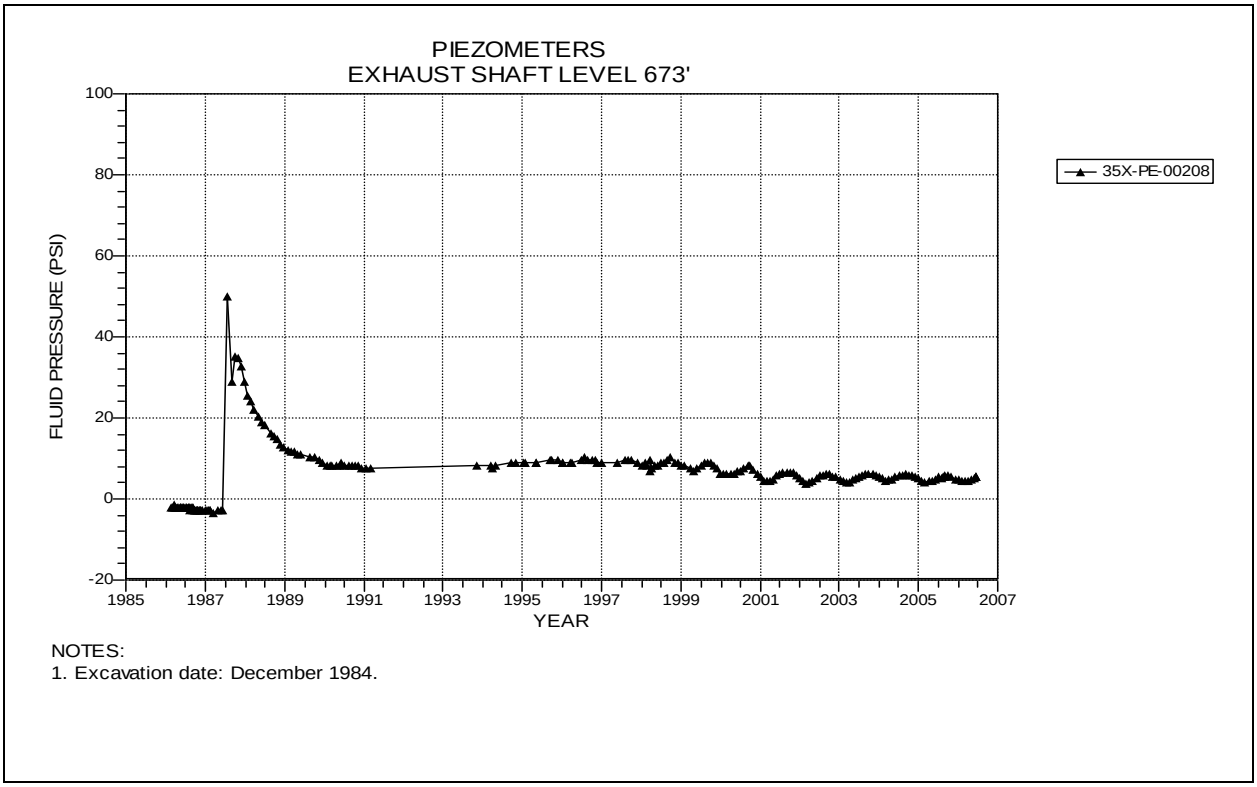

Figure 2-29 Piezometer 35X-PE-00208
Exhaust Shaft – Level 673 at the Tamarisk Member

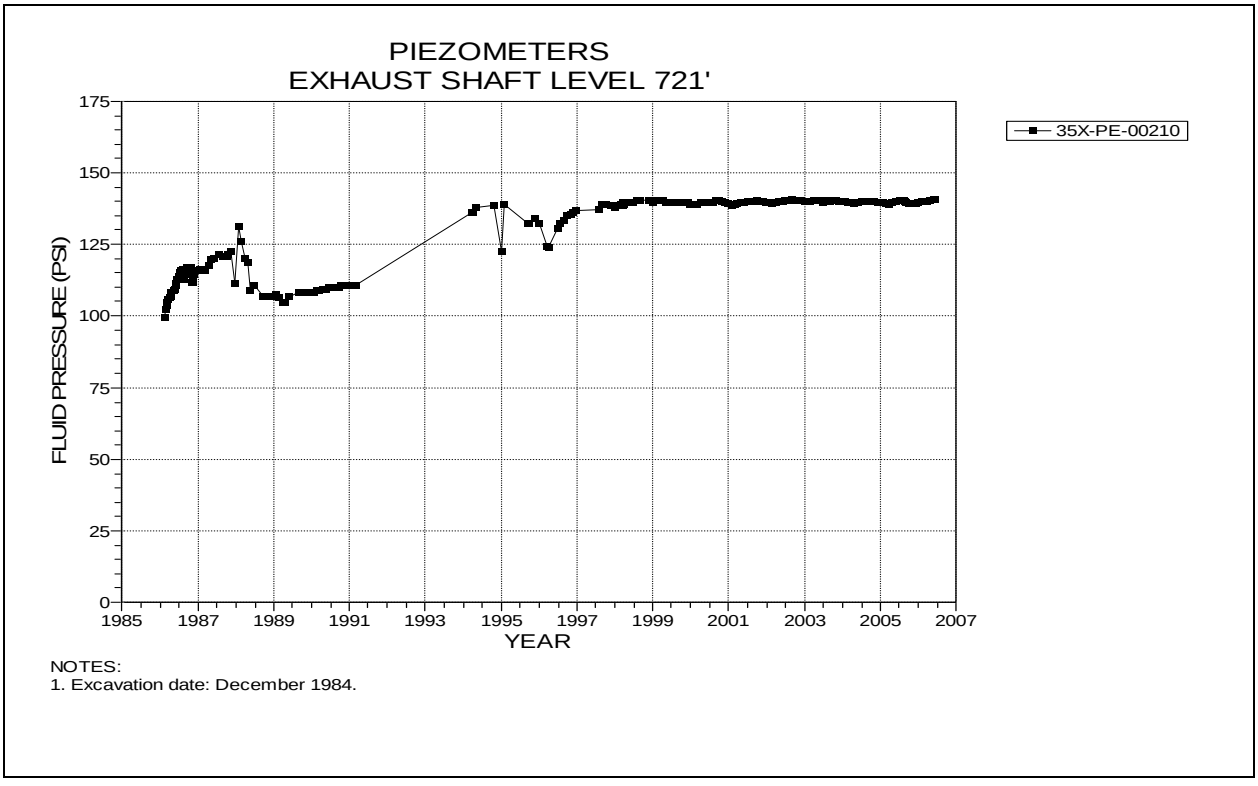

Figure 2-30 Piezometer 35X-PE-00210
Exhaust Shaft – Level 721 at the Culebra Dolomite Member

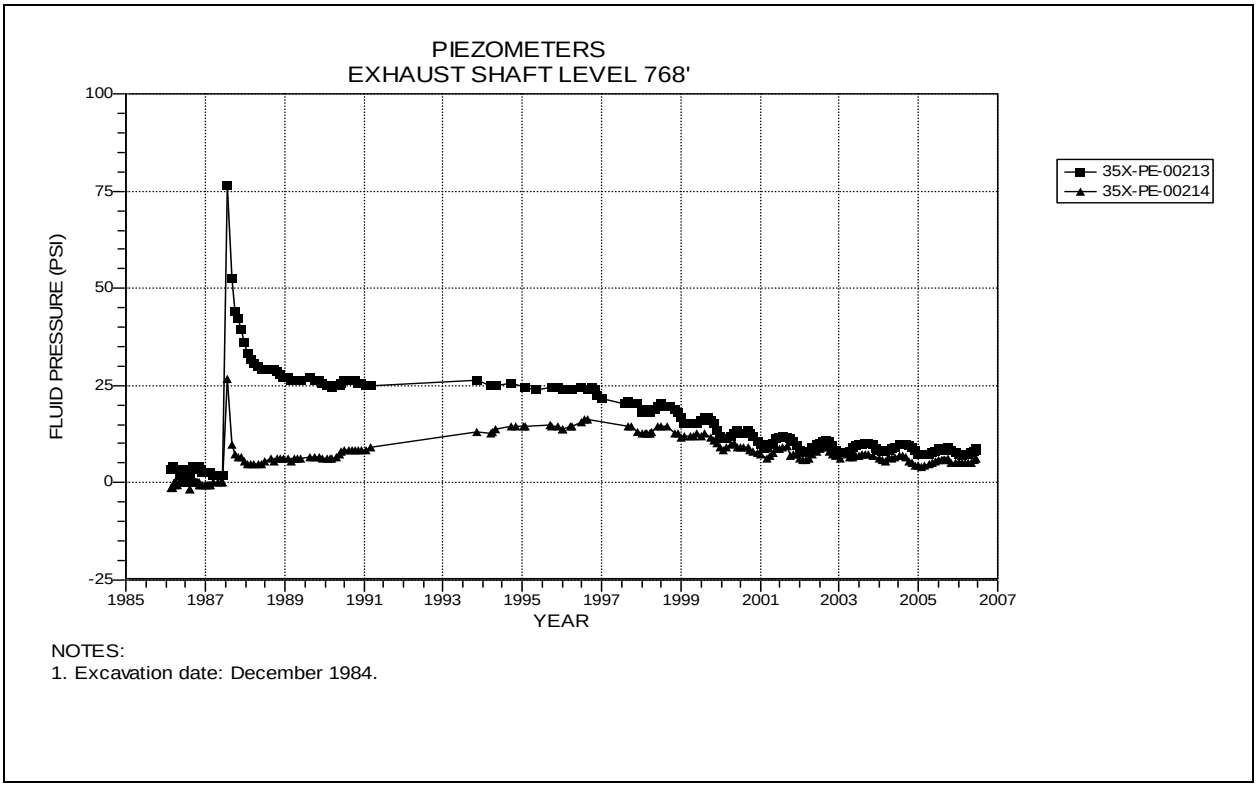

Figure 2-31 Piezometers 35X-PE-00213 and 35X-PE-00214
Exhaust Shaft – Level 768 at the Los Medaños Member

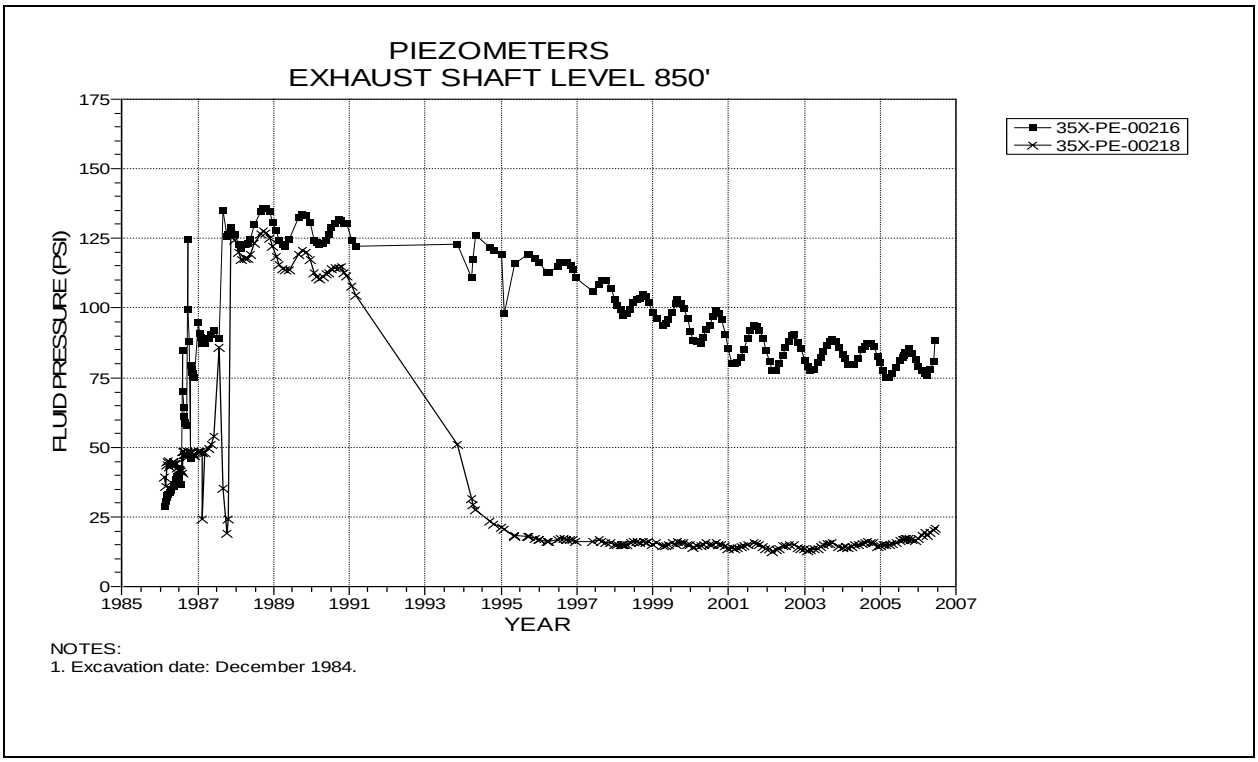

Figure 2-32 Piezometers 35X-PE-00216 and 35X-PE-00218
Exhaust Shaft – Level 850 at the Rustler-Salado Contact

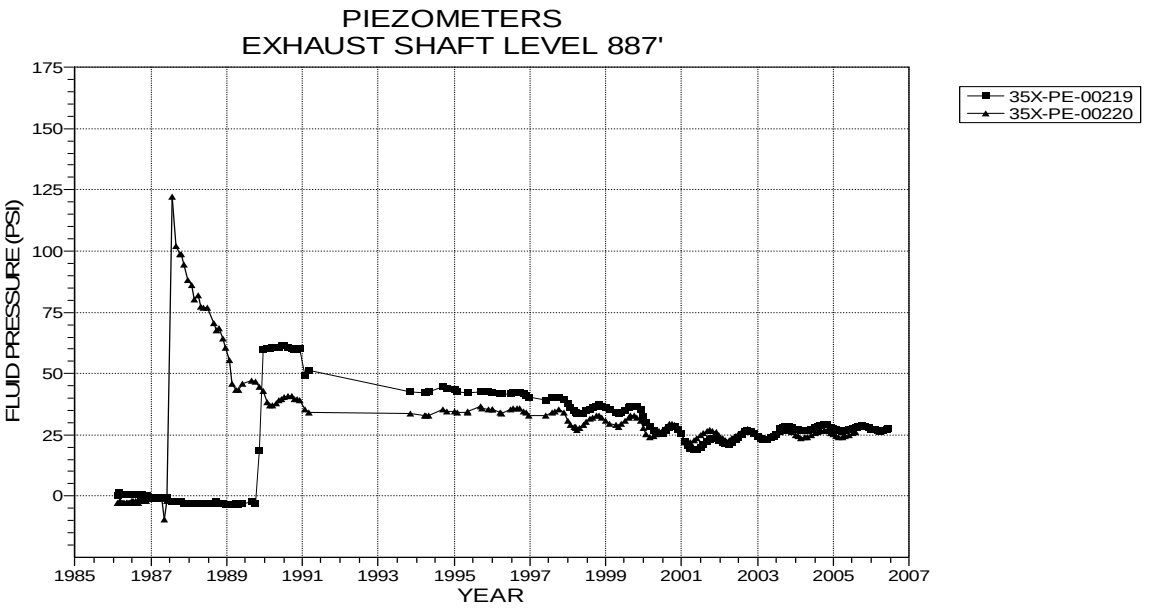

Figure 2-33 Piezometers 35X-PE-00219 and 35X-PE-00220
Exhaust Shaft – Level 887 below the Lower Chemical Seal

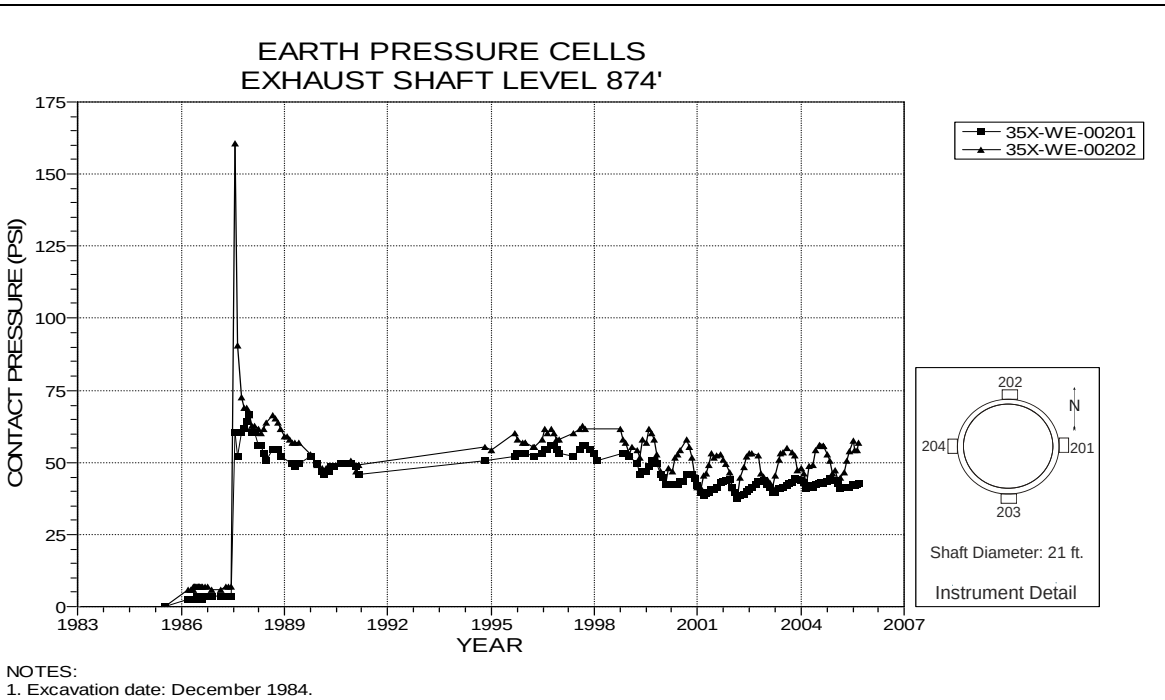

Figure 2-34 Earth Pressure Cells 35X-WE-00201 and 35X-WE-00202
Exhaust Shaft Key – Level 874

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3.0 Instrumentation Summary for Shaft Stations

Instrumentation data analysis for the Salt Handling Shaft Station, Waste Shaft Station, and the area around the Air Intake Shaft follow. Table 3-1 presents data analyses for each of the Salt Handling Shaft Station instruments. Figures 3-1 through 3-6 present plots of the instrumentation data for the Salt Handling Shaft Station. Tables 3-2 presents data and analysis for the Waste Shaft Station. Plots from the instrumentation in the Waste Shaft Station are presented as Figures 3-7 through 3-16. Table 3-3 and Figures 3-17 through 3-22 present the data from rock bolt load cells and borehole extensometers located in the immediate area around the Air Intake Shaft.

Table 3-1
Salt Handling Shaft Station Data Analysis

EXTENSOMETERS

Field Tag	Location	Figure Number	Date of Last Reading	Collar Displacement Relative to Deepest Anchor (Inches)	Displacement Rate 2005 to 2006[3] in/year	Displacement Rate 2004 to 2005 in/year	Rate Change[1] Percent	Comments
51X-GE-01026	E0 DRIFT-S30 Roof	3-1	02/06/06	NR[3]	NR	0.56	N/A	Instrument not reading.
51X-GE-01027	E0 DRIFT-S60 Roof	3-2	03/06/06	0.16	0.03	0.46	-94%[2]	

[1] NA indicates insufficient data to compare annualized rates.

[2] 2005-2006 rate interval was taken over the winter months.

[3] NR indicates no Instrument reading due to malfunction.

CONVERGENCE POINTS

Field Tag	Location	Figure Number	Last Reading		Cumulative Displacement Inches	Closure Rate 2005 to 2006 in/year	Closure Rate 2004 to 2005 in/year	Rate Change Percent	Comments
			Date	Inches					
E0-W12-5 A-C	Salt Shaft-W12	3-3	01/24/06	5.930	19.099	0.50	0.70	-29%	No longer accessible.
E0-S18-6 A-E	E0 Drift-S18	3-4	05/25/06	11.768	29.324	1.36	1.38	-1%	
E0-S18-4 B-D	E0 Drift-S18	3-4	05/25/06	12.749	29.807	1.50	1.50	0%	
E0-S18-4 F-H	E0 Drift-S18	3-4	05/25/06	8.039	18.895	0.95	0.93	2%	
E0-S30-5 A-C	E0 Drift-S30	3-5	05/25/06	12.305	43.912	1.46	1.45	1%	
E0-S65-3 A-C	E0 Drift-S65	3-6	05/25/06	9.047	39.398	1.02	1.07	-5%	

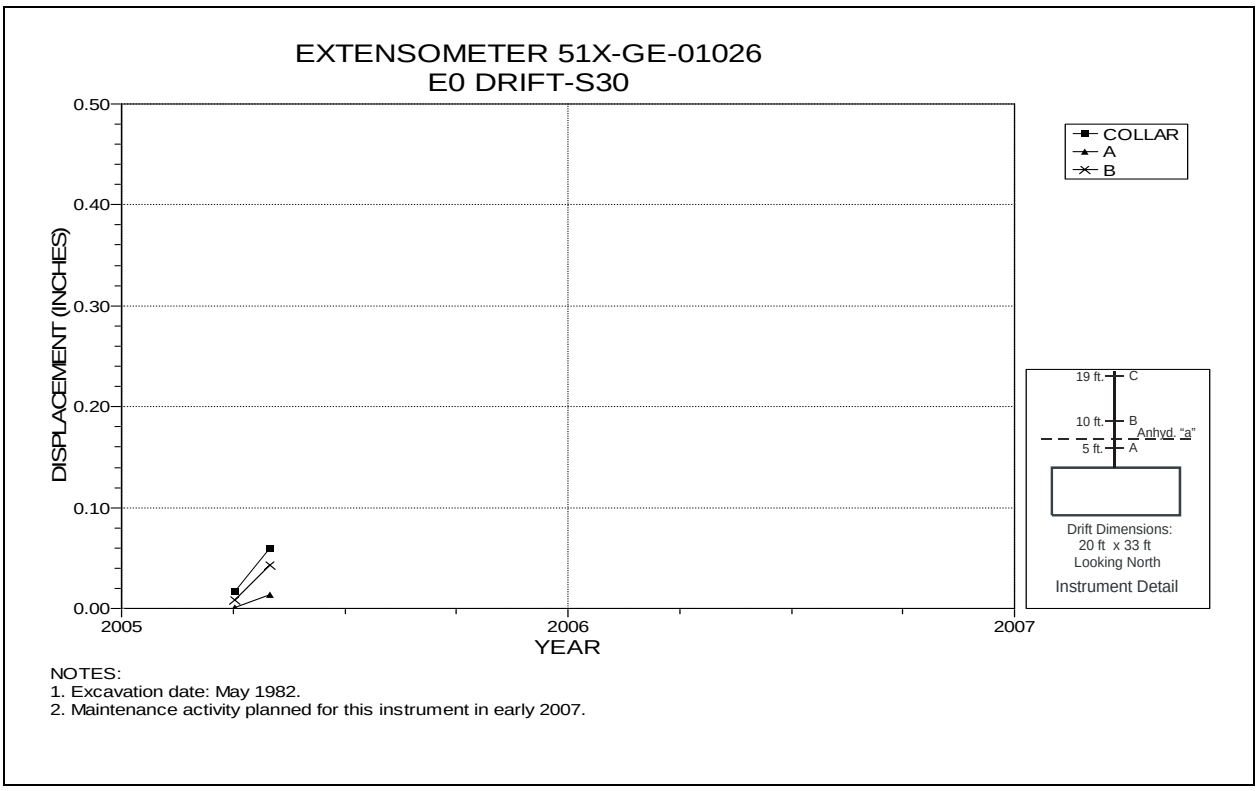


Figure 3-1 Extensometer 51X-GE-01026
Salt Shaft Station at South 30 – Roof

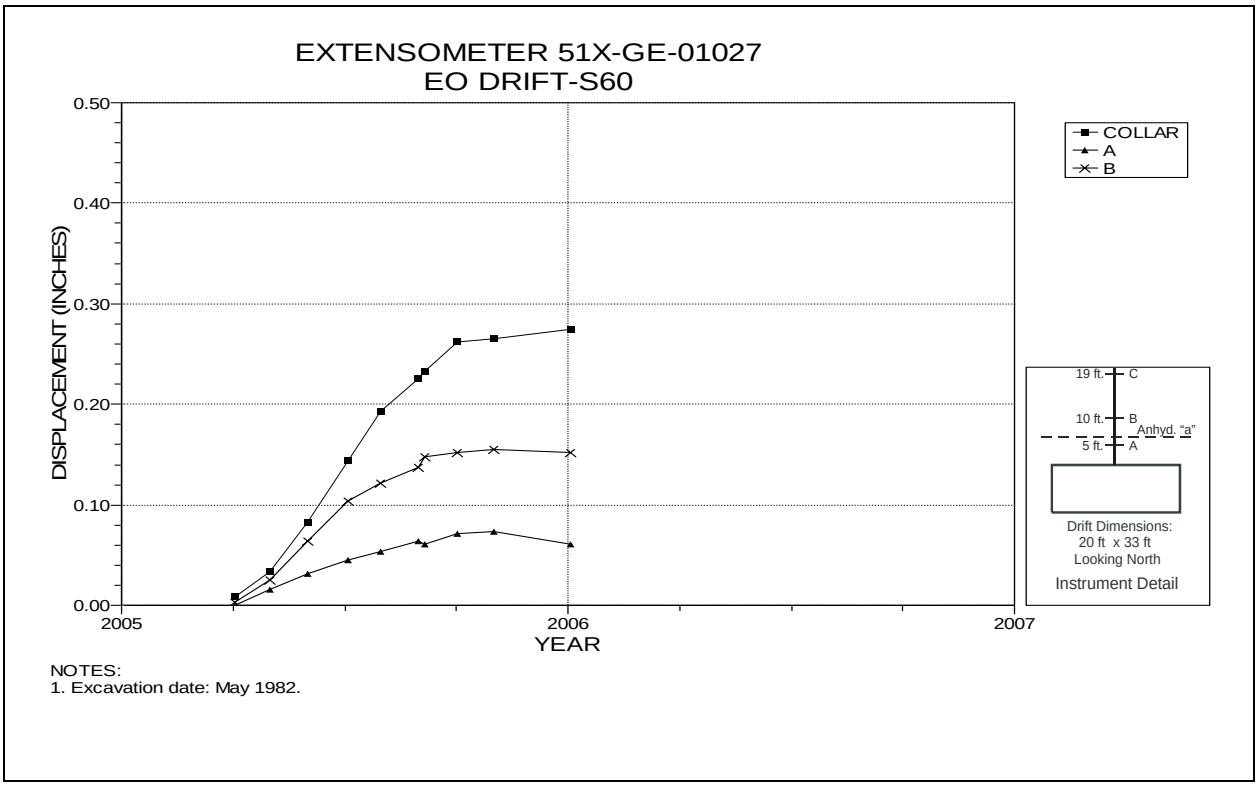


Figure 3-2 Extensometer 51X-GE-01027
Salt Shaft Station at South 60 – Roof

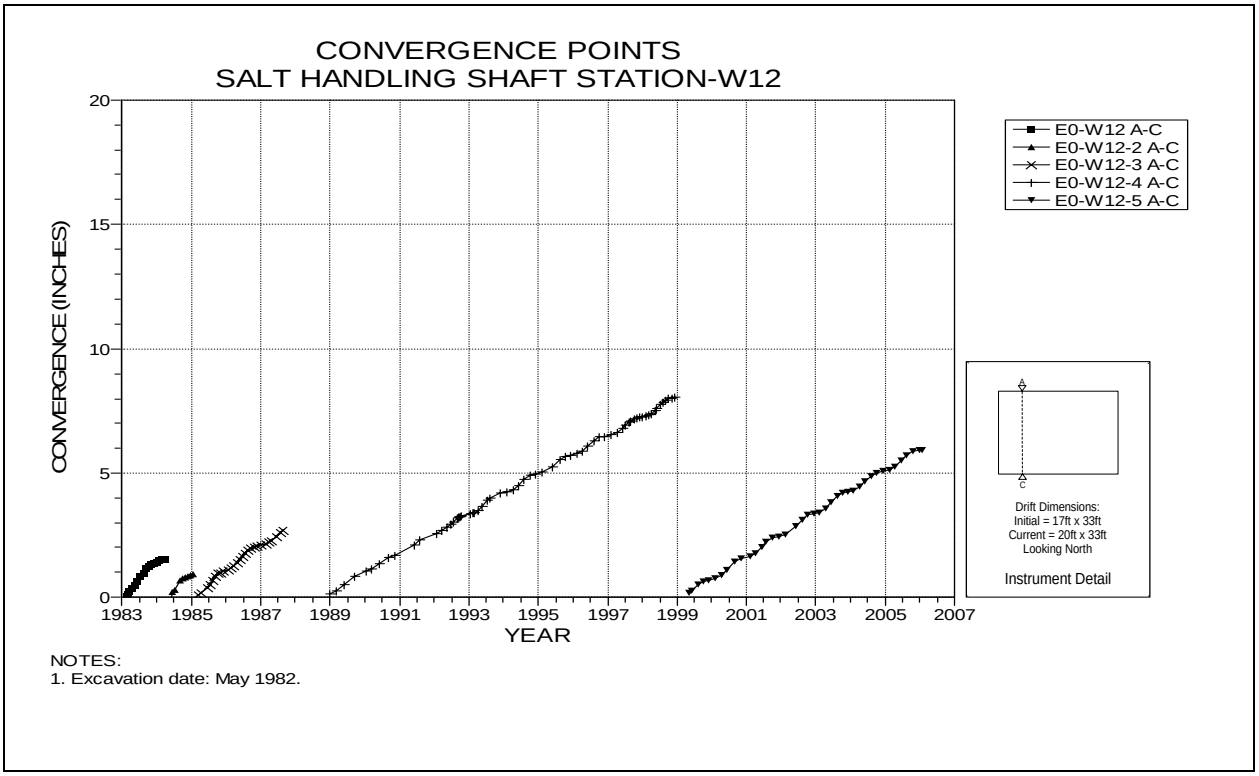


Figure 3-3 Convergence Point Array
Salt Handling Shaft Station 12 Feet West of Shaft – Roof to Floor

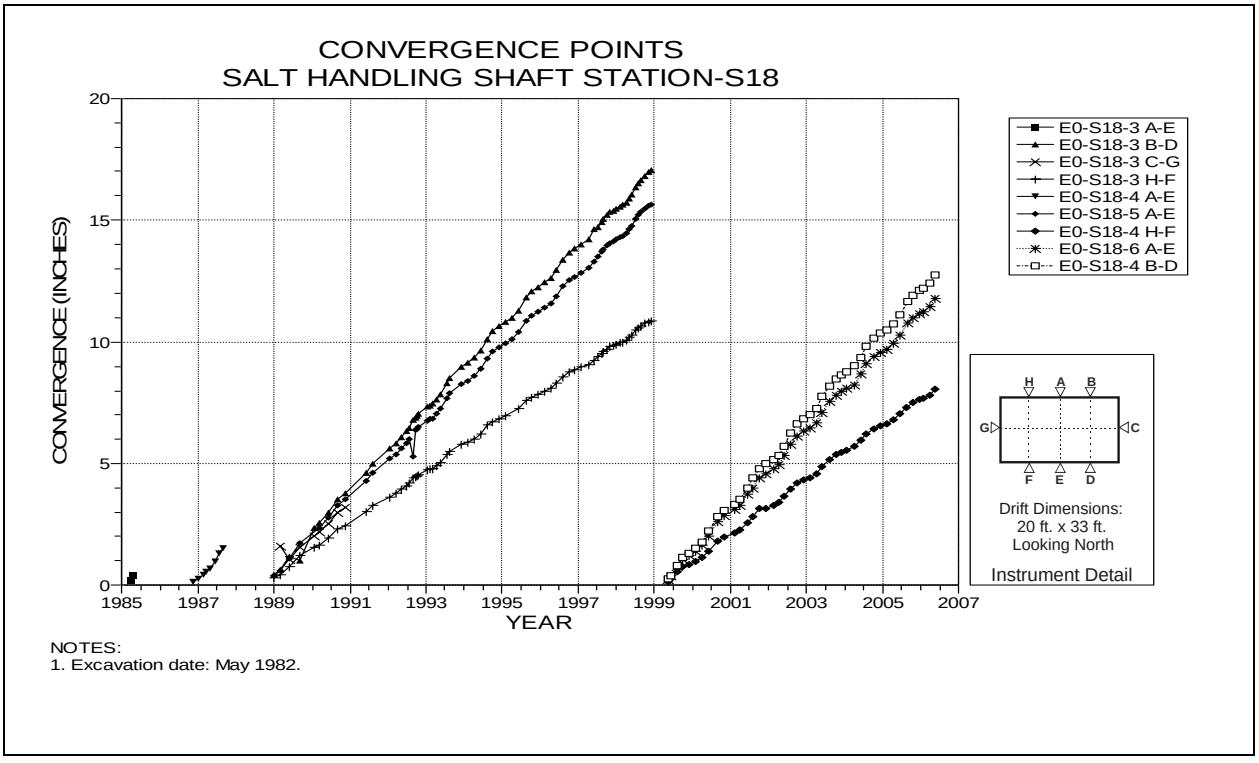


Figure 3-4 Convergence Point Array
Salt Handling Shaft Station at South 18 – All Chords

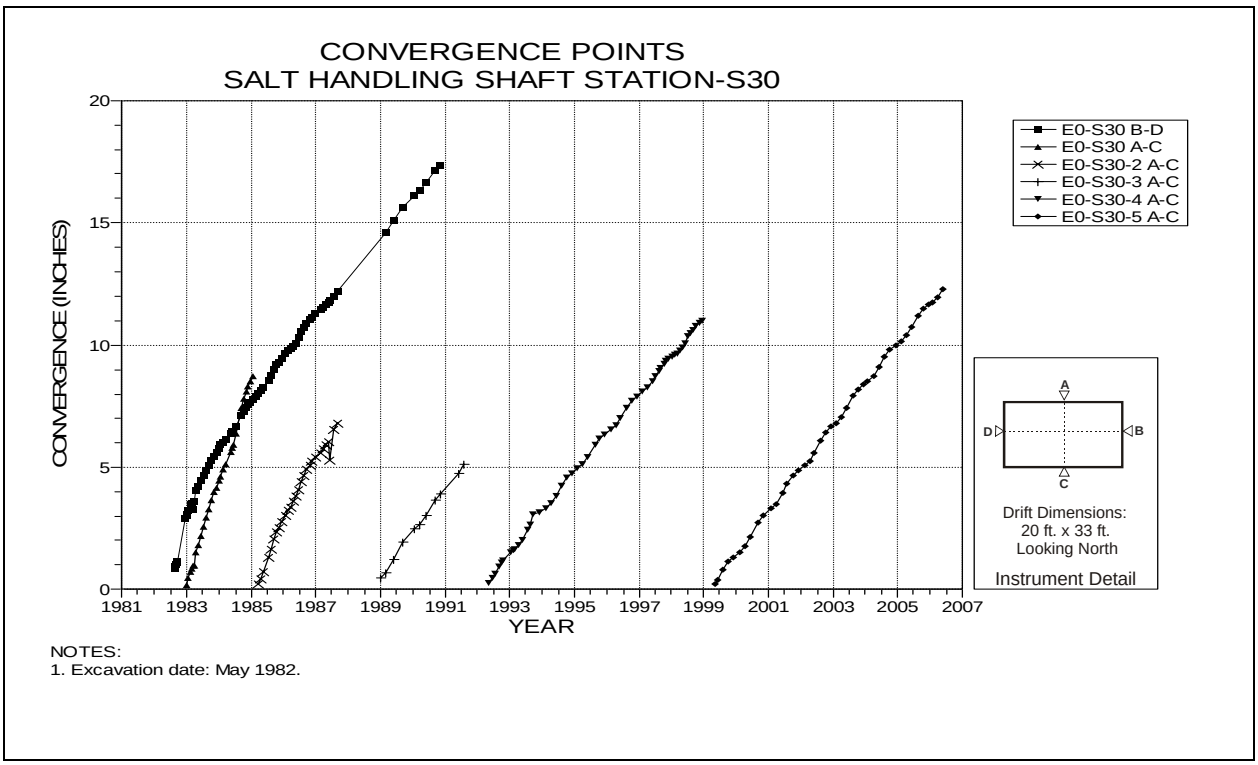


Figure 3-5 Convergence Point Array
Salt Handling Shaft Station at South 30 – All Chords

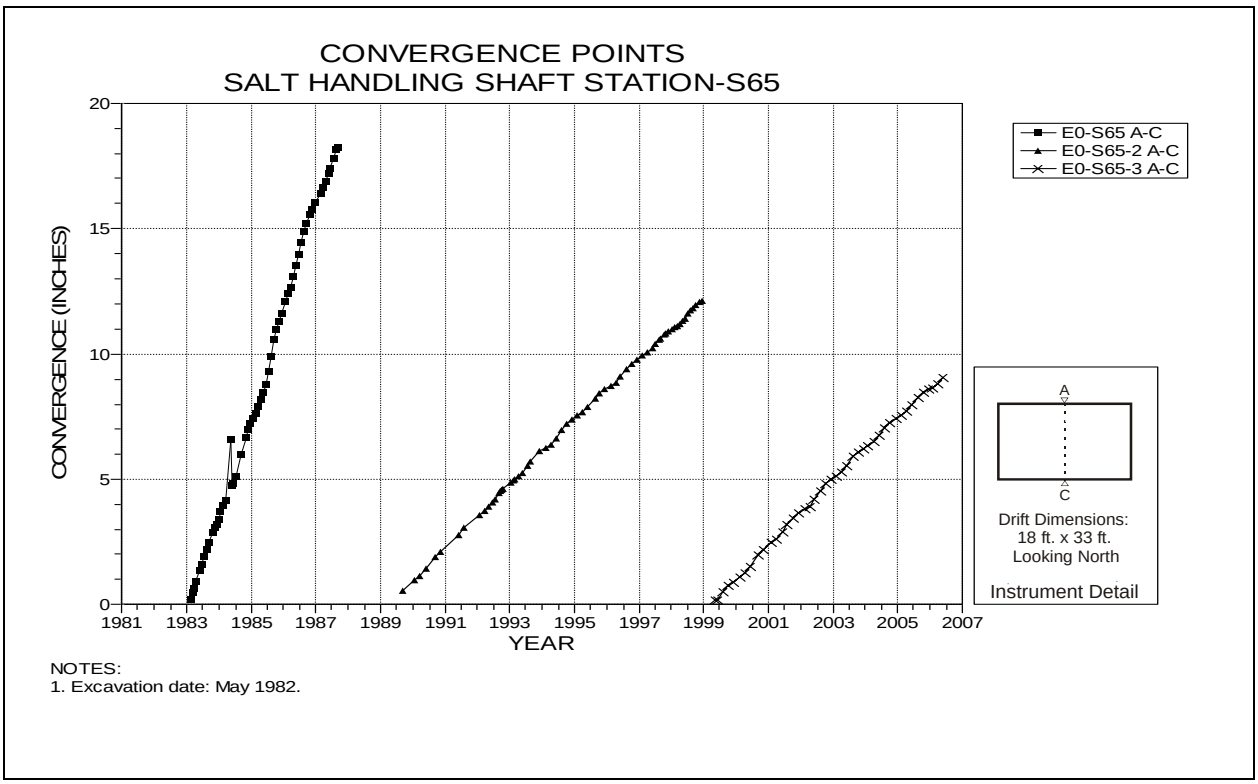


Figure 3-6 Convergence Point Array
Salt Handling Shaft Station at South 65 – Roof to Floor

Table 3-2
Waste Shaft Station Data Analysis

EXTENSOMETERS

Fieldtag	Location	Figure Number	Date of Last Reading	Collar Displacement Relative to Deepest Anchor (Inches)	Displacement Rate 2005 to 2006 in/year	Displacement Rate 2004 to 2005 in/year	Rate Change Percent	Comments
51X-GE-00268	W30 Drift-S400 Roof	3-7	01/11/06	8.972	0.28	0.25	15%	
51X-GE-00356	Waste Shaft Brow North	3-8	06/26/06	0.159	0.08	0.06	17%	
51X-GE-00357	Waste Shaft Brow South	3-9	06/26/06	0.339	0.20	0.13	52%	
51X-GE-01025	S400 Drift-E87 Roof	3-10	08/02/05	0.827	N/A	0.52	N/A	Power removed due to mine maintenance.

CONVERGENCE POINTS

Field Tag	Location	Figure Number	Last Reading		Cumulative Displacement Inches	Closure Rate 2005 to 2006 in/year	Closure Rate 2004 to 2005 in/year	Rate Change Percent	Comments
			Date	Inches					
S400-E30-2 C-H	S400 Drift-E30	3-11	06/27/06	18.298	18.371	0.82	0.81	1%	
S400-E90-2 C-G	S400 Drift-E90	3-12	06/27/06	20.824	21.015	0.95	0.89	7%	

ROCKBOLT LOAD CELLS

Field Tag	Location	Figure Number	Date of Initial Reading	Date of Last Reading	Load (kips)	Comments
51X WG-00226	Waste Shaft Station Brow	3-13	7/15/1992	06/26/06	38.88	
51X WG-00227	Waste Shaft Station Brow	3-13	7/15/1992	06/26/06	39.77	
51X WG-00228	Waste Shaft Station Brow	3-13	3/20/1996	06/26/06	33.44	
51X WG-00229	Waste Shaft Station Brow	3-13	3/20/1996	06/26/06	31.24	
51X WG-00230	Waste Shaft Station Brow	3-13	3/20/1996	06/26/06	56.05	
51X WG-00231	Waste Shaft Station Brow	3-14	3/20/1996	06/26/06	1.15	Broken bolt.
51X WG-00232	Waste Shaft Station Brow	3-14	7/15/1992	06/26/06	56.93	
51X WG-00233	Waste Shaft Station Brow	3-14	7/15/1992	06/26/06	5.75	
51X WG-00234	Waste Shaft Station Brow	3-14	7/15/1992	06/26/06	67.69	
51X WG-00235	Waste Shaft Station Brow	3-14	3/20/1996	06/26/06	45.24	
51X-WG-00287	S400-E40 Roof	3-15	6/28/2004	06/26/06	37.16	
51X-WG-00288	S400-E80 Roof	3-16	6/28/2004	06/26/06	41.52	

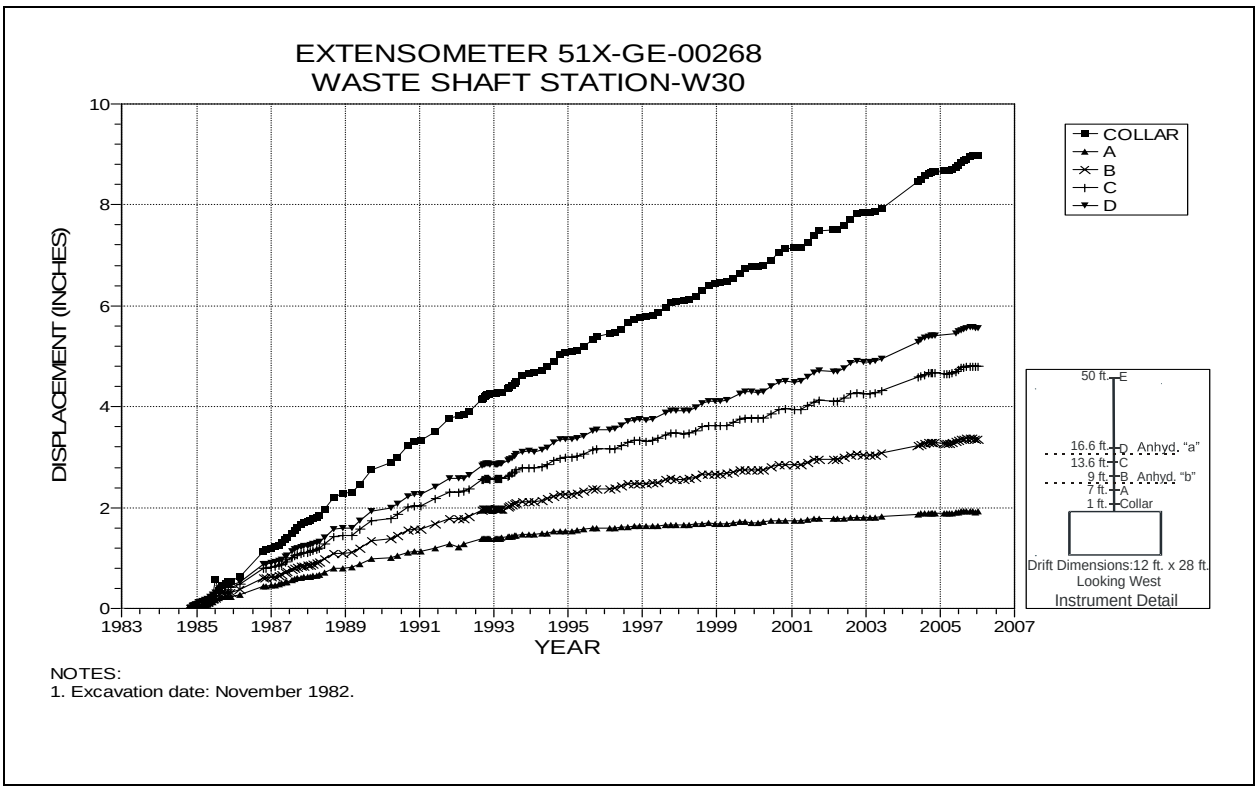


Figure 3-7 Extensometer 51X-GE-00268
Waste Shaft Station at West 30 – Roof

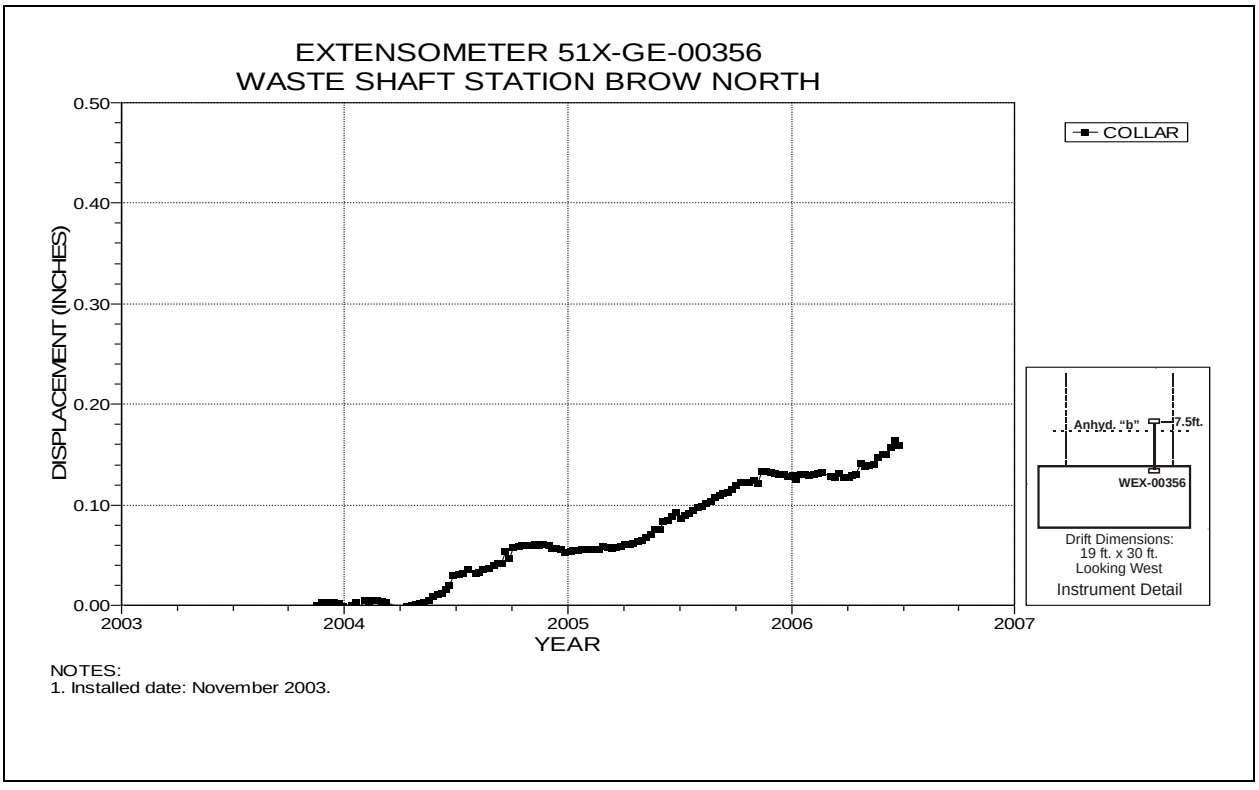
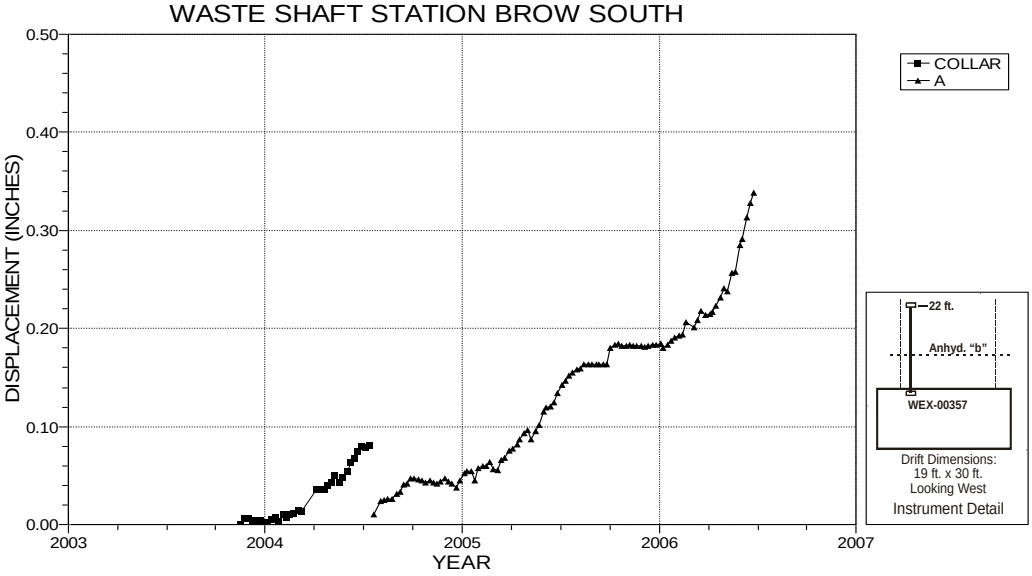
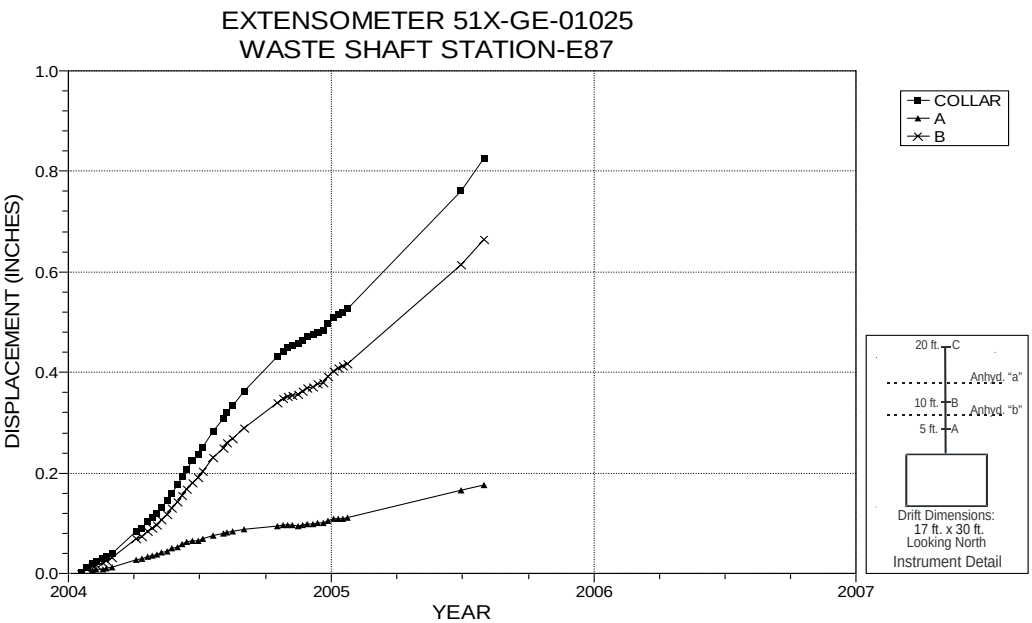


Figure 3-8 Extensometer 51X-GE-00356
Waste Shaft Station Brow – North



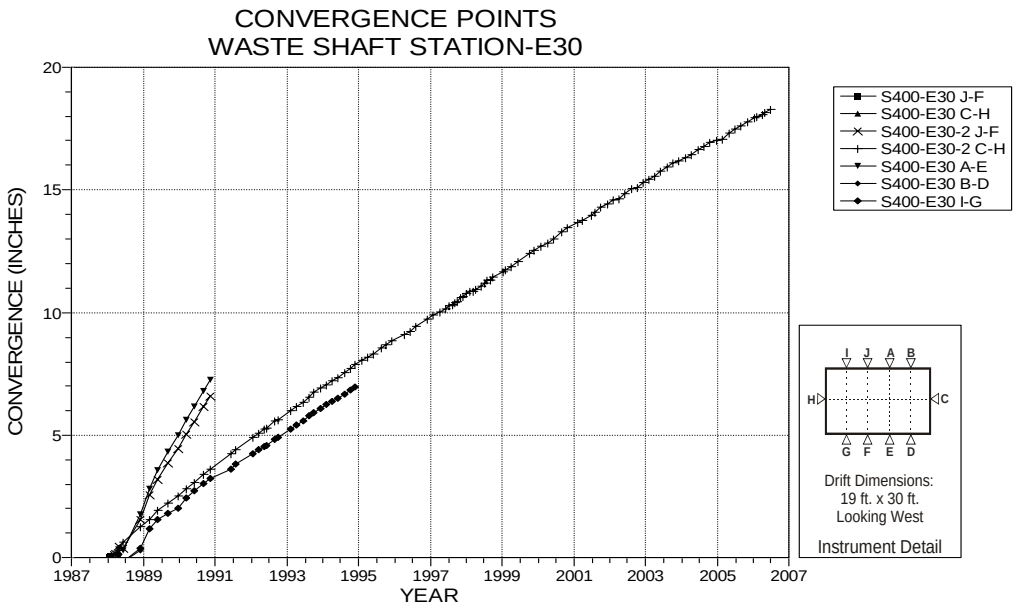
NOTES:
1. Installed date: November 2003.
2. Reinstalled July 2004.

Figure 3-9 Extensometer 51X-GE-00357
Waste Shaft Station Brow – South



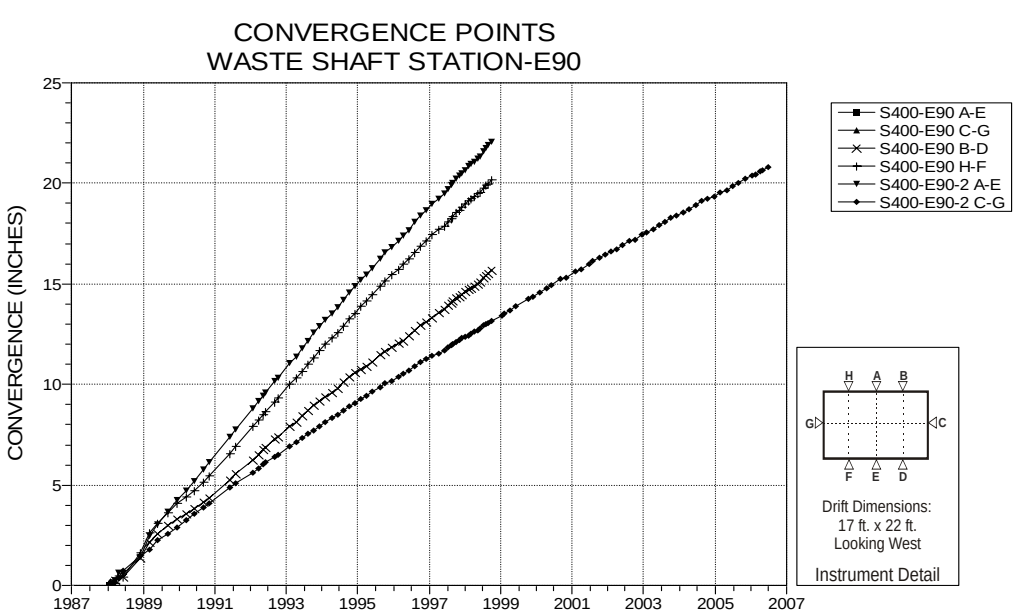
NOTES:

Figure 3-10 Extensometer 51X-GE-01025
Waste Shaft Station at East 87- Roof



NOTES:
1. Excavation date: November 1982.

Figure 3-11 Convergence Point Array
Waste Shaft Station at East 30 – All Chords



NOTES:
1. Excavation date: November 1982.

Figure 3-12 Convergence Point Array
Waste Shaft Station at East 90 – All Chords

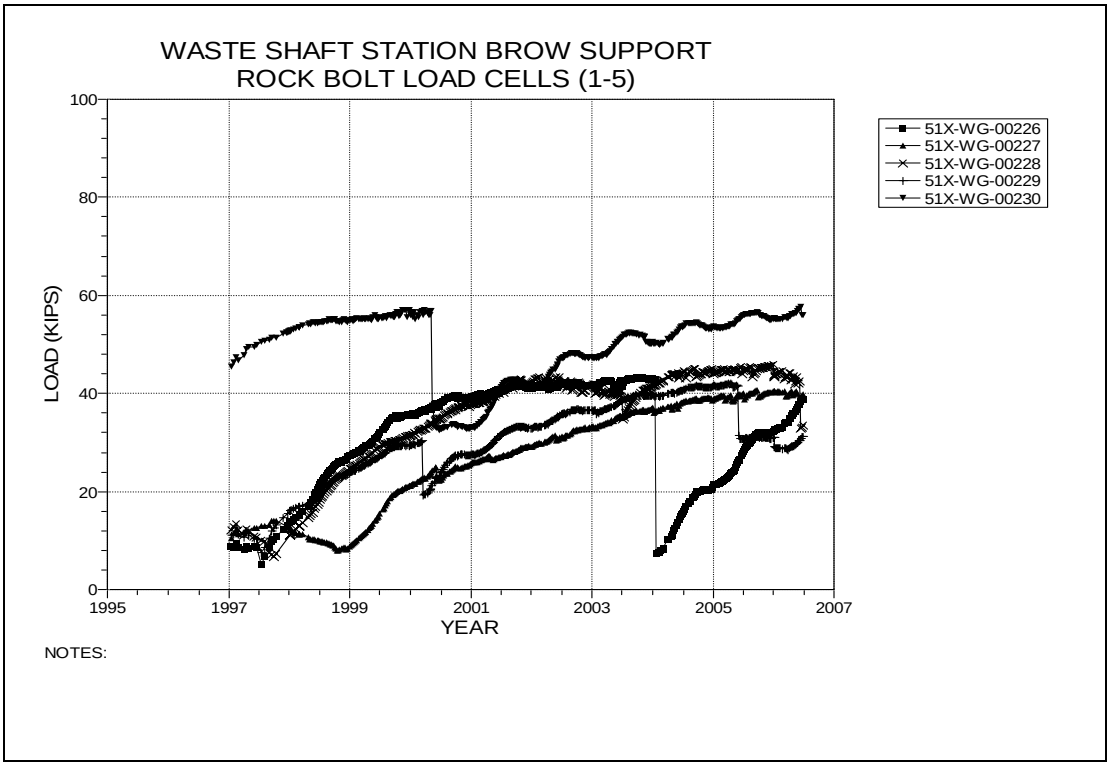


Figure 3-13 Rock Bolt Load Cells
Waste Shaft Station Brow – Roof Bolts Set 1

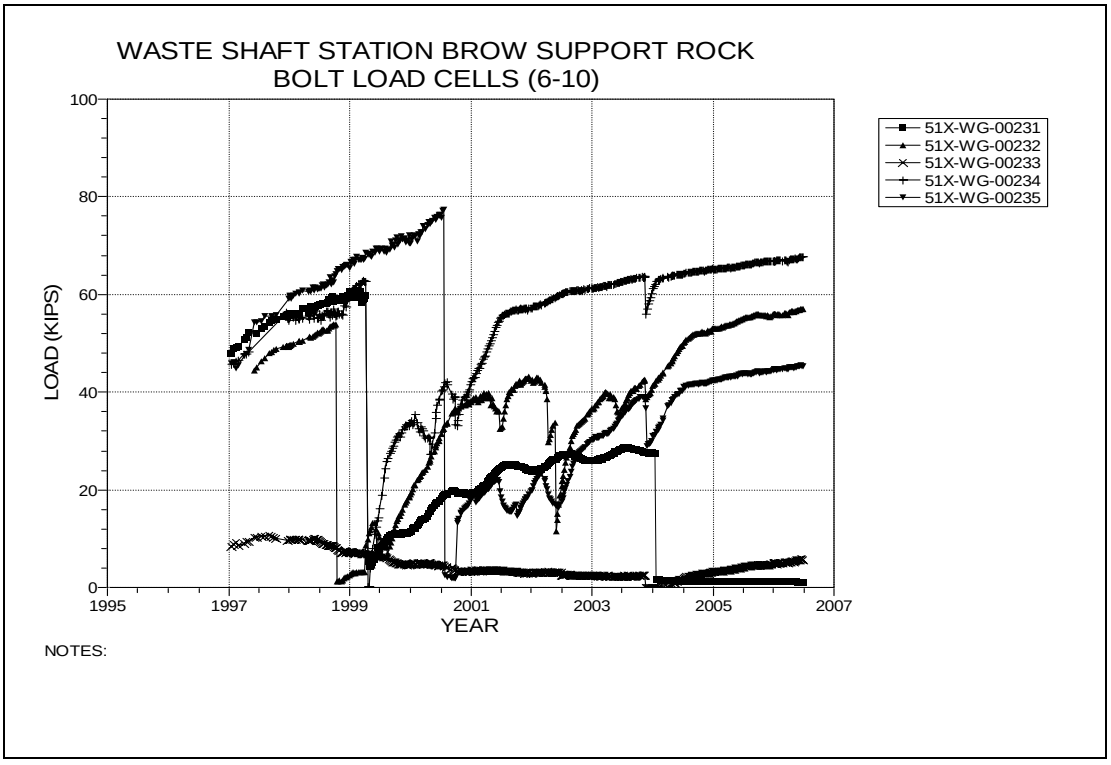


Figure 3-14 Rock Bolt Load Cells
Waste Shaft Station Brow – Roof Bolts Set 2

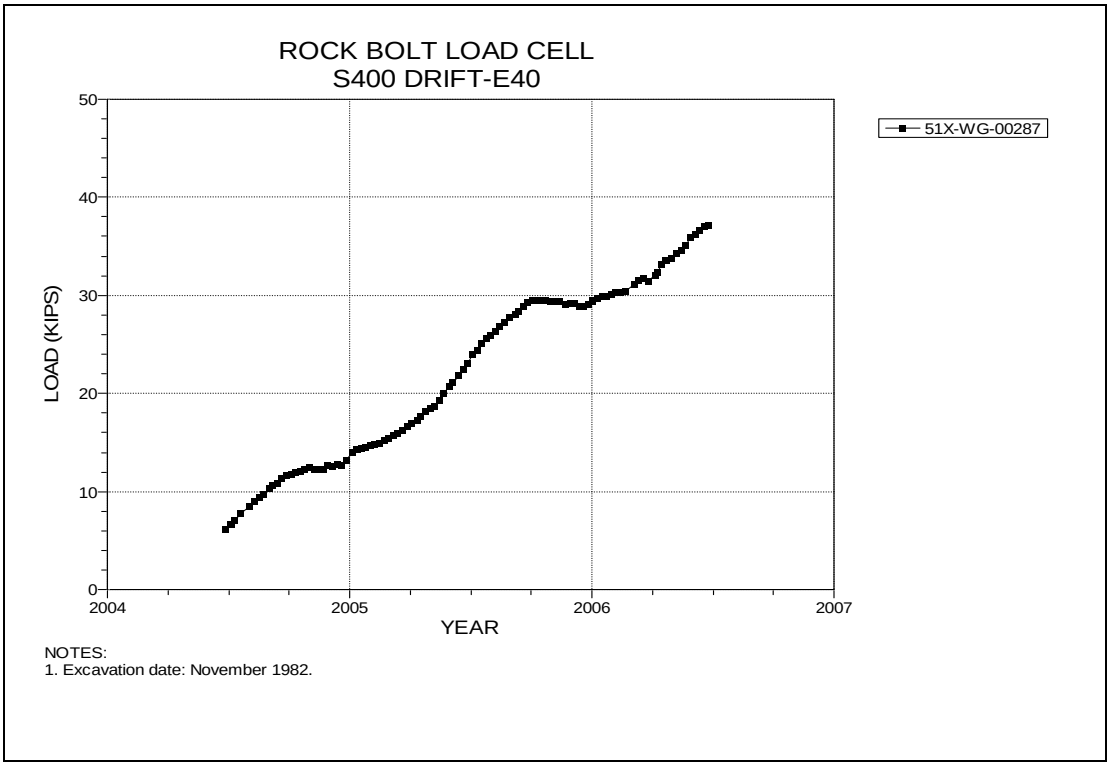


Figure 3-15 Rock Bolt Load Cell
Waste Shaft Station at East 40 – Roof

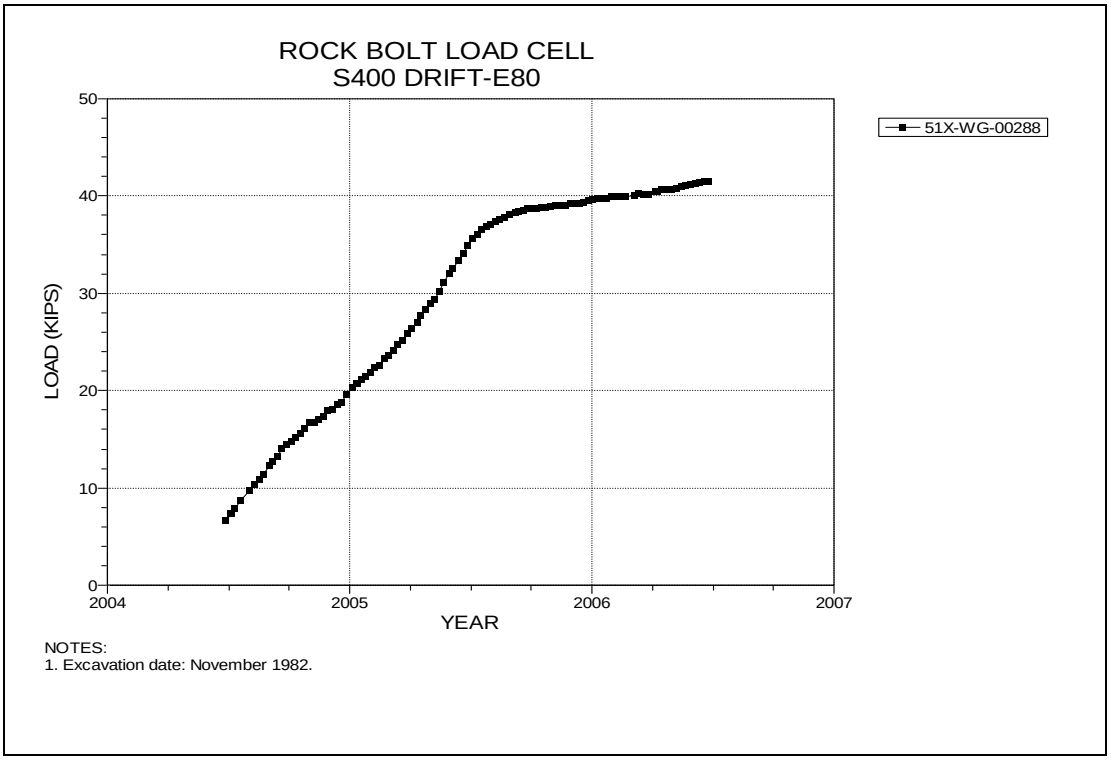


Figure 3-16 Rock Bolt Load Cell
Waste Shaft Station at East 80 – Roof

Table 3-3
Air Intake Shaft Station Data Analysis

EXTENSOMETERS

Field Tag	Location	Figure Number	Date of Last Reading	Collar Displacement Relative to Deepest Anchor (Inches)	Displacement Rate 2005 to 2006 in/year	Displacement Rate 2004 to 2005 in/year	Rate Change Percent	Comments
41X-GE-00122	S65-W620 Roof	3-17	06/12/06	2.530	0.28	0.25	12%	Calc. used “C”.
41X-GE-00123	N93-W620 Roof	3-18	06/12/06	3.527	0.38	0.35	9%	

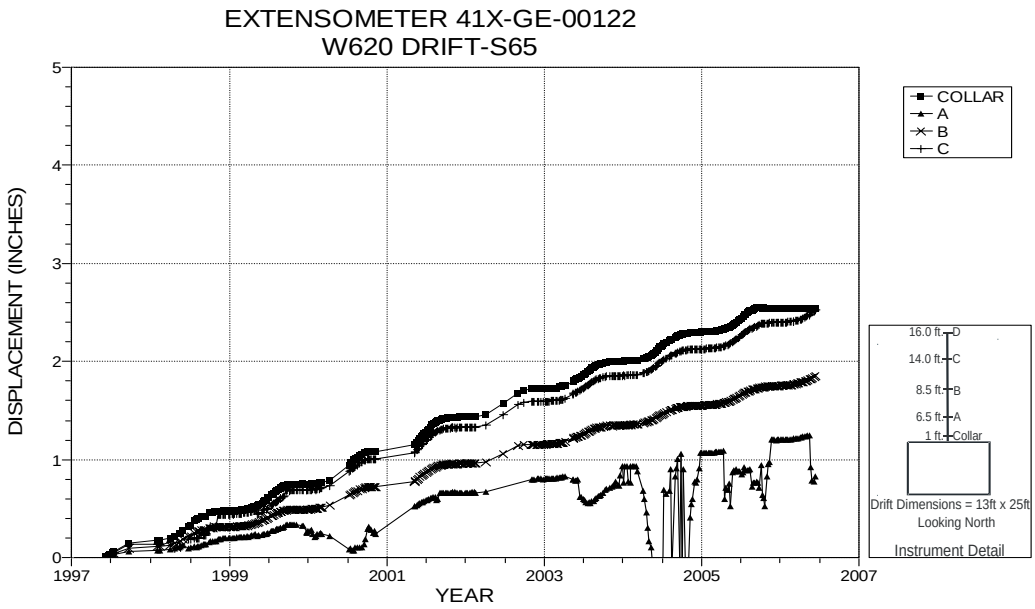
ROCKBOLT LOAD CELLS

Field Tag	Location	Figure Number	Date of Initial Reading	Date of Last Reading	Load (kips)	Comments
51X-WG-00236	AIS Station Brow – South	3-19	01/19/93	06/12/06	22.31	
51X-WG-00237	AIS Station Brow – South	3-19	01/19/93	06/12/06	54.86	
51X-WG-00238	AIS Station Brow – South	3-19	01/19/93	06/12/06	4.83	
51X-WG-00239	AIS Station Brow – South	3-19	01/19/93	06/12/06	14.97	
51X-WG-00240	AIS Station Brow – South	3-19	01/19/93	06/12/06	11.56	
51X-WG-00241	AIS Station Brow – South	3-20	01/19/93	06/12/06	57.27	
51X-WG-00242	AIS Station Brow – South	3-20	01/19/93	06/12/06	0.02	
51X-WG-00243	AIS Station Brow - South	3-20	01/19/93	06/12/06	0.33	
51X-WG-00244	AIS Station Brow – South	3-20	12/24/94	06/12/06	16.98	
51X-WG-00245	AIS Station Brow – South	3-20	01/19/93	06/12/06	60.67	
51X-WG-00246	AIS Station Brow – North	3-21	01/19/93	06/12/06	47.06	
51X-WG-00247	AIS Station Brow – North	3-21	01/19/93	06/12/06	34.96	
51X-WG-00248	AIS Station Brow – North	3-21	01/19/93	06/12/06	0.42	
51X-WG-00249	AIS Station Brow – North	3-21	01/19/93	06/12/06	12.78	

Table 3-3 (Continued)
Air Intake Shaft Station Data Analysis

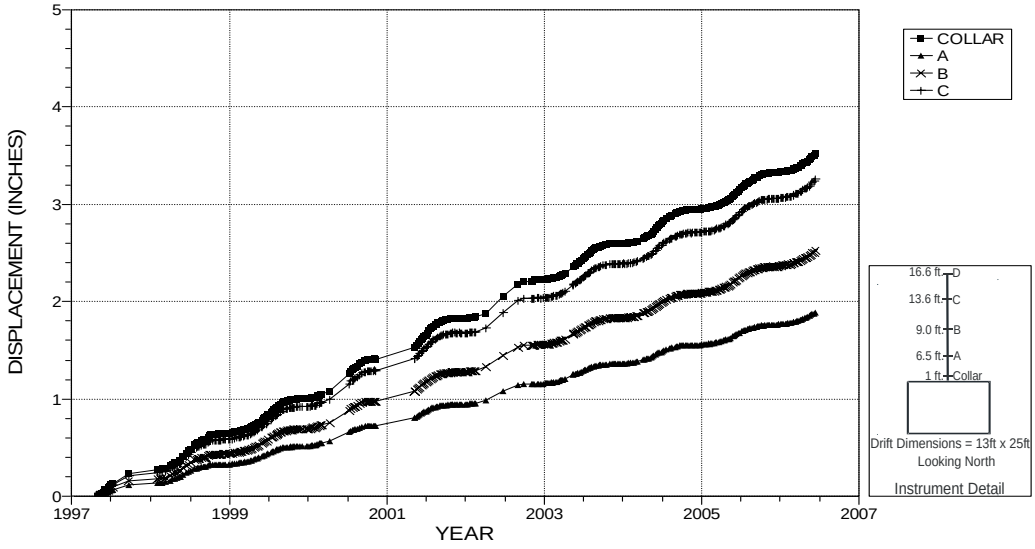
ROCKBOLT LOAD CELLS (Continued)

Field Tag	Location	Figure Number	Date of Initial Reading	Date of Last Reading	Load (kips)	Comments
51X-WG-00250	AIS Station Brow – North	3-21	12/24/94	06/12/06	19.38	
51X-WG-00251	AIS Station Brow – North	3-22	01/19/93	06/12/06	39.88	
51X-WG-00252	AIS Station Brow – North	3-22	01/19/93	06/12/06	2.01	
51X-WG-00253	AIS Station Brow – North	3-22	01/19/93	06/12/06	47.66	
51X-WG-00254	AIS Station Brow – North	3-22	01/19/93	06/12/06	15.22	
51X-WG-00255	AIS Station Brow - North	3-22	01/19/93	06/12/06	14.07	



NOTES:
1. Excavation date: January 1988.
2. Anchor A transducer malfunction.
3. Anchor D (Collar) has reached its maximum range.

Figure 3-17 Extensometer 41X-GE-00122
Air Intake Shaft Station at South 65 – Roof



NOTES:
1. Excavation date: January 1988.

Figure 3-18 Extensometer 41X-GE-00123
Air Intake Shaft Station at North 93 – Roof

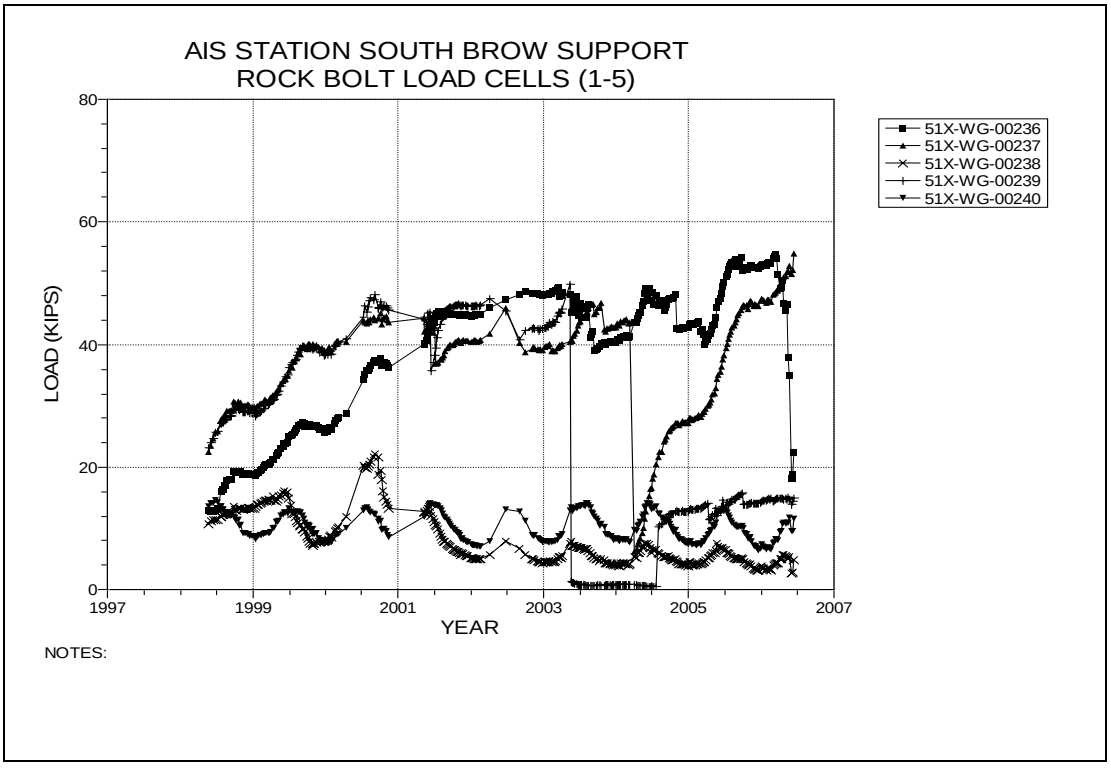


Figure 3-19 Rock Bolt Load Cells
Air Intake Shaft Station Brow – South Side Roof Bolts Set 1

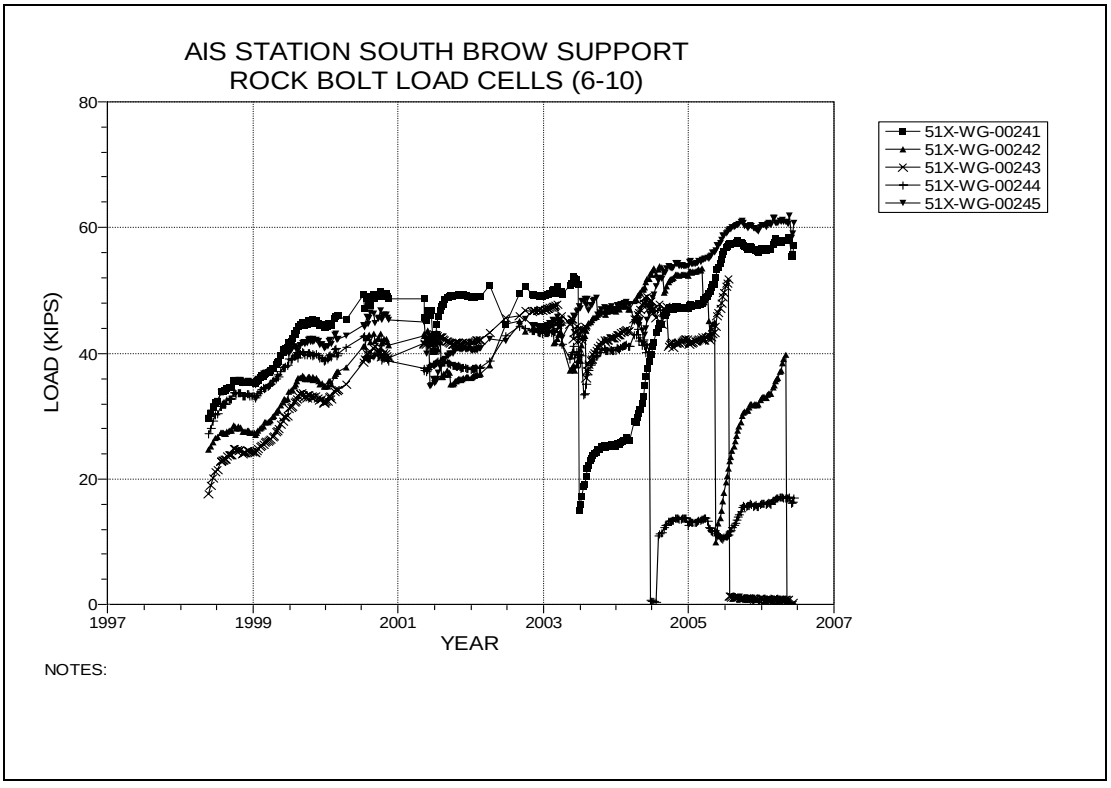


Figure 3-20 Rock Bolt Load Cells
Air Intake Shaft Station Brow – South Side Roof Bolts Set 2

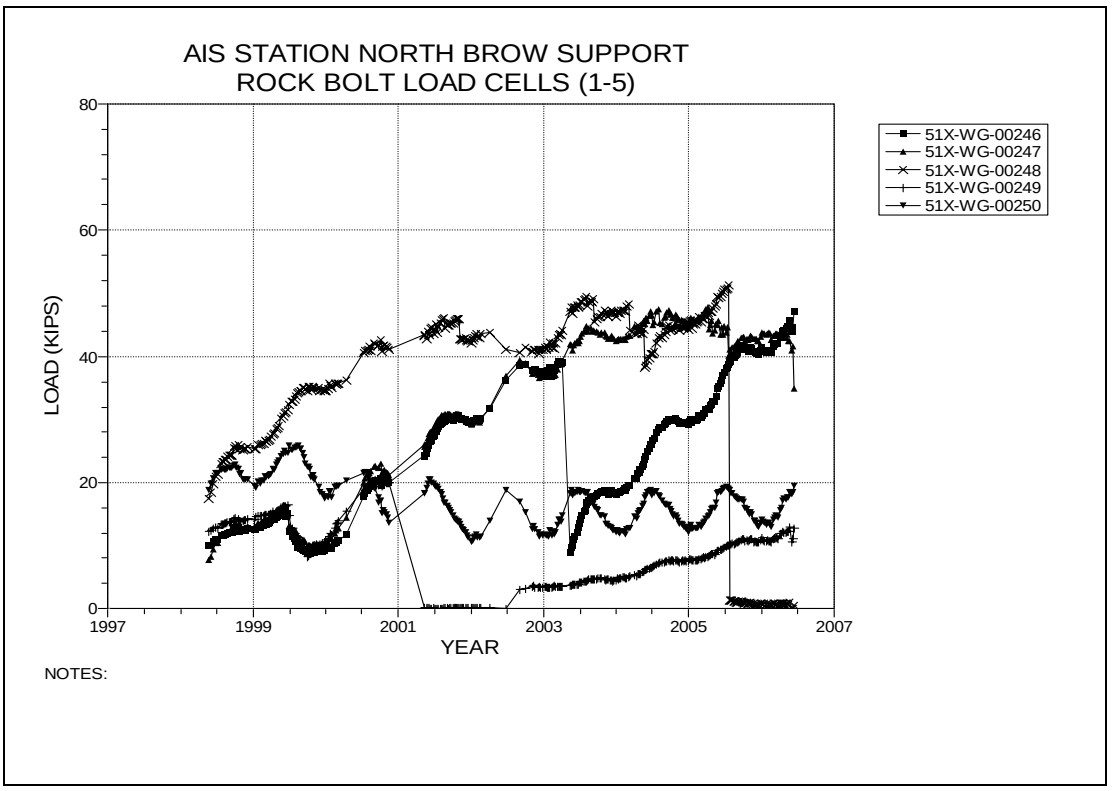


Figure 3-21 Rock Bolt Load Cells
Air Intake Shaft Station Brow – North Side Roof Bolts Set 1

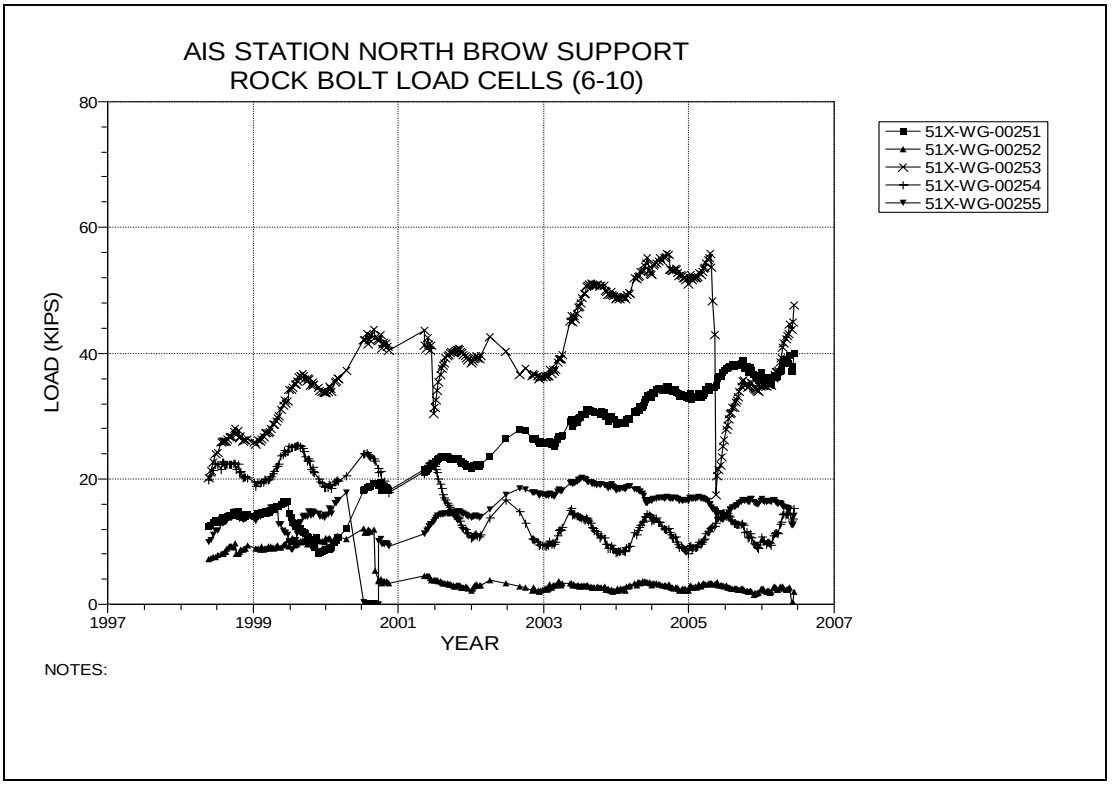


Figure 3-22 Rock Bolt Load Cells
Air Intake Shaft Station Brow – North Side Roof Bolts Set 2

4.0 Instrumentation Summary for the Access Drifts

This chapter presents the instrumentation data and data analyses for the access drifts throughout the WIPP underground. Table 4-1 provides the results of analyses performed on the instrument data including displacement, convergence rates, and rock bolt loading. Figures 4-1 through 4-39 present data from borehole extensometers installed in the access drifts while Figures 4-40 through 4-254 present the convergence point data. Figure 4-255 presents data from joint meters installed at the S1950/E300 overcast. Figure 4-256 through 4-258 presents the data from rock bolt load cells installed at E140/S1550, E140/S1775, and E140/S2900.

Table 4-1
Access Drifts Data Analysis

EXTENSOMETERS

Field Tag	Location		Figure Number	Date of Last Reading	Collar Displacement Relative to Deepest Anchor (inches)	Displacement Rate 2005 to 2006 (in/year)	Displacement Rate 2004 to 2005 (in/year)	Rate Change Percent	Comments
51X-GE-00364	E140 DRIFT-N1266	Roof	4-1	06/15/06	1.272	0.64	0.43	49%	
51X-GE-00365	E140 DRIFT-N940	Roof	4-2	06/15/06	1.647	0.76	0.61	25%	
51X-GE-00373	E300 DRIFT-N1341	Roof	4-3	06/15/06	0.745	0.49	0.41	20%	
51X-GE-00374	E300 DRIFT-N1186	Roof	4-4	06/15/06	1.296	1.09	0.47	132%	
51X-GE-00105-3	E140 DRIFT-N150-3	Roof	4-5	05/24/06	1.586	0.21	0.36	-42%	
51X-GE-00372	E140 DRIFT-S146	Roof	4-6	06/29/06	0.863	0.51	0.49	4%	
51X-GE-00474	S1000 DRIFT-E120	Roof	4-7	06/26/06	0.928	0.09	0.10	-10%	
51X-GE-00472	E140 DRIFT-S1000	Roof	4-8	06/26/06	4.020	0.35	0.25	40%	
51X-GE-00473	S1000 DRIFT-E160	Roof	4-9	06/26/06	0.768	0.07	0.13	-46%	
51X-GE-00464	E140 DRIFT-S1025	Roof	4-10	06/26/06	3.653	0.04	0.20	-80%	
51X-GE-00333	E140 DRIFT-S1075	Roof	4-11	06/19/06	3.805	0.53	0.42	26%	
51X-GE-00460-2	E140 DRIFT-S1150	Roof	4-12	06/26/06	2.379	0.79	0.60	32%	
41X-GE-00103	E140 DRIFT-S1150	Roof	4-13	06/19/06	5.856	1.06	0.83	28%	
51X-GE-00461	E140 DRIFT-S1225	Roof	4-14	06/26/06	2.946	0.43	0.33	30%	
51X-GE-00334	E140 DRIFT-S1225	Roof	4-15	06/19/06	4.235	0.63	0.52	21%	
51X-GE-00462	S1300 DRIFT-E120	Roof	4-16	06/26/06	0.503	0.07	0.04	75%	
51X-GE-00465	E140 DRIFT-S1300	Roof	4-17	06/26/06	1.842	0.19	0.14	36%	
51X-GE-00335	E140 DRIFT-S1300	Roof	4-18	06/19/06	2.866	0.36	0.30	20%	
51X-GE-00463	S1300 DRIFT-E160	Roof	4-19	06/26/06	2.816	0.35	0.31	13%	
51X-GE-00442	S1600 DRIFT-E120	Roof	4-20	06/26/06	0.743	0.07	0.05	40%	
51X-GE-00441	S1600-E160 BROW	Roof	4-21	06/26/06	1.958	0.16	0.15	7%	
51X-GE-00443	E140 DRIFT-S1685	Roof	4-22	03/15/06	4.013	1.54	0.19	711%	
51X-GE-00339-2	E140 DRIFT-S1685	Roof	4-23	06/19/06	5.887	1.89	1.38	37%	
51X-GE-00492	E140 DRIFT-S2750	Roof	4-24	06/27/06	1.726	0.47	0.89	-47%	

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Table 4-1 (Continued)
Access Drifts Data Analysis

EXTENSOMETERS (Continued)

Field Tag	Location		Figure Number	Date of Last Reading	Collar Displacement Relative to Deepest Anchor (inches)	Displacement Rate 2005 to 2006 (in/year)	Displacement Rate 2004 to 2005 (in/year)	Rate Change Percent	Comments
51X-GE-00367	E140 DRIFT-S2916	Roof	4-25	06/26/06	4.724	1.85	2.35	-21%	
51X-GE-00361	E0 DRIFT-N1266	Roof	4-26	06/15/06	2.924	1.24	1.15	8%	
51X-GE-00352	E0 DRIFT-N940	Roof	4-27	06/15/06	1.493	0.46	0.41	12%	
51X-GE-00353	E0 DRIFT-N626	Roof	4-28	06/15/06	1.576	0.48	0.43	12%	
51X-GE-00355	E0 DRIFT-N300	Roof	4-29	06/15/06	2.261	0.42	0.35	20%	
51X-GE-00481	N300 DRIFT-W10	Roof	4-30	05/25/06	1.632	0.36	0.23	57%	
41X-GE-00127	W110-N300	Roof	4-31	06/26/06	5.244	-0.01	0.24	-104%	
41X-GE-00126	W212-N300	Roof	4-32	06/26/06	7.387	0.73	0.76	-4%	
41X-GE-00125	W417-N248	Roof	4-33	06/26/06	4.399	0.50	0.45	11%	
41X-GE-00124	W519-N190	Roof	4-34	06/26/06	4.322	0.51	0.45	13%	
51X-GE-00494	E300 DRIFT-S2892	Roof	4-35	05/08/06	2.397	0.97	0.55	76%	
51X-GE-00490	W30 DRIFT-S2750	Roof	4-36	05/15/06	0.858	0.25	0.13	92%	
51X-GE-00491	W30 DRIFT-S2916	Roof	4-37	05/15/06	2.795	1.05	0.74	42%	
51X-GE-00489	W30 DRIFT-S3080	Roof	4-38	05/15/06	4.440	1.16	0.62	87%	
51X-GE-00495	W170 DRIFT-S2634	Roof	4-39	06/14/06	3.145	1.30	0.86	51%	

Table 4-1 (Continued)
Access Drifts Data Analysis

CONVERGENCE POINTS

Field Tag	Location	Figure Number	Last Reading 2005 to 2006		Cumulative Displacement (inches)	Closure Rate 2005 to 2006 (in/year)	Closure Rate 2004 to 2005 (in/year)	Rate Change Percent	Comments
			Date	Inches					
E300-N1341-2 A-C	E300 DRIFT-N1341	4-40	05/22/06	2.682	2.682	2.16	2.11	2%	
E300-N1262-2 A-C	E300 DRIFT-N1262	4-41	05/22/06	2.646	2.646	2.06	2.12	-3%	
E300-N1186-2 A-C	E300 DRIFT-N1186	4-42	05/22/06	2.828	2.828	2.48	1.75	42%	
E300-N250-2 A-C	E300 DRIFT-N250	4-43	03/17/06	14.650	29.003	1.51	1.55	-3%	
E300-N170-2 A-E	E300 DRIFT-N170	4-44	05/10/06	21.986	21.986	1.38	1.34	3%	
E300-N170-2 H-F	E300 DRIFT-N170	4-44	05/10/06	19.595	19.595	1.26	1.25	1%	
E300-N170-2 C-G	E300 DRIFT-N170	4-44	05/10/06	2.140	17.033	0.99	1.01	-2%	
E300-N45 A-E	E300 DRIFT-N45	4-45	05/10/06	22.855	22.855	1.43	1.49	-4%	
E300-N45 H-F	E300 DRIFT-N45	4-45	05/10/06	19.870	19.870	1.42	1.50	-5%	
E300-N45 C-G	E300 DRIFT-N45	4-45	05/10/06	16.414	16.414	0.99	0.98	1%	
E300-S45-2 A-E	E300 DRIFT-S45	4-46	05/10/06	18.230	18.230	1.04	1.05	-1%	
E300-S45-2 B-D	E300 DRIFT-S45	4-46	05/10/06	14.829	14.829	0.95	0.92	3%	
E300-S45-2 H-F	E300 DRIFT-S45	4-46	05/10/06	15.788	15.788	0.94	0.70	34%	
E300-S45 C-G	E300 DRIFT-S45	4-46	05/10/06	14.210	14.210	0.76	0.76	0%	
E300-S90 A-C	E300 DRIFT-S90	4-47	05/08/06	14.124	14.124	0.69	0.64	8%	
E300-S250-2 A-C	E300 DRIFT-S250	4-48	05/08/06	5.277	9.687	0.52	0.58	-10%	
E300-S250-2 B-D	E300 DRIFT-S250	4-48	05/08/06	5.747	9.820	0.56	0.60	-7%	
E300-S700 A-C	E300 DRIFT-S700	4-49	05/08/06	16.843	16.843	0.55	0.53	4%	
E300-S850 A-E	E300 DRIFT-S850	4-50	05/08/06	12.928	12.928	0.42	0.39	8%	
E300-S850 B-D	E300 DRIFT-S850	4-50	05/08/06	9.681	9.681	0.29	0.33	-12%	
E300-S850 H-F	E300 DRIFT-S850	4-50	05/08/06	8.908	8.908	0.30	0.30	0%	
E300-S850-2 C-G	E300 DRIFT-S850	4-50	05/08/06	5.165	14.443	0.49	0.52	-6%	
E300-S1000 A-C	E300 DRIFT-S1000	4-51	05/08/06	16.773	16.773	0.54	0.51	6%	
E300-S1150-3 A-E	E300 DRIFT-S1150	4-52	05/08/06	8.972	14.462	0.50	0.50	0%	
E300-S1150-3 B-D	E300 DRIFT-S1150	4-52	05/08/06	6.241	10.300	0.31	0.36	-14%	

Table 4-1 (Continued)
Access Drifts Data Analysis

CONVERGENCE POINTS (Continued)

Field Tag	Location	Figure Number	Last Reading 2005 to 2006		Cumulative Displacement (inches)	Closure Rate 2005 to 2006 (in/year)	Closure Rate 2004 to 2005 (in/year)	Rate Change Percent	Comments
			Date	Inches					
E300-S1150-3 H-F	E300 DRIFT-S1150	4-52	05/08/06	6.227	9.847	0.31	0.37	-16%	
E300-S1150-2 C-G	E300 DRIFT-S1150	4-53	05/08/06	6.051	16.507	0.54	0.59	-8%	
E300-S1300 A-C	E300 DRIFT-S1300	4-54	05/08/06	10.262	10.262	0.64	0.62	3%	
E300-S1450 A-C	E300 DRIFT-S1450	4-55	05/08/06	5.852	5.852	0.64	0.62	3%	
E300-S1450 B-D	E300 DRIFT-S1450	4-55	05/08/06	6.602	6.602	0.73	0.76	-4%	
E300-S1687 A-C	E300 DRIFT-S1687	4-56	05/08/06	6.011	6.011	0.76	0.70	9%	
E300-S1687 B-D	E300 DRIFT-S1687	4-56	05/08/06	6.563	6.563	0.77	0.79	-3%	
E300-S1775 A-C	E300 DRIFT-S1775	4-57	05/08/06	5.629	5.629	0.62	0.66	-6%	
E300-S1775 B-D	E300 DRIFT-S1775	4-57	05/08/06	6.654	6.654	0.77	0.78	-1%	
E300-S1862 A-C	E300 DRIFT-S1862	4-58	05/08/06	5.913	5.913	0.71	0.69	3%	
E300-S1862 B-D	E300 DRIFT-S1862	4-58	05/08/06	7.085	7.085	0.84	0.84	0%	
E300-S2065 A-C	E300 DRIFT-S2065	4-59	05/08/06	6.912	6.912	0.87	0.80	9%	
E300-S2065 B-D	E300 DRIFT-S2065	4-59	05/08/06	9.004	9.004	1.15	1.12	3%	
E300-S2275 A-C	E300 DRIFT-S2275	4-60	05/08/06	8.294	8.294	1.13	1.12	1%	
E300-S2275 B-D	E300 DRIFT-S2275	4-60	05/08/06	10.293	10.293	1.49	1.45	3%	
E300-S2350 A-C	E300 DRIFT-S2350	4-61	05/08/06	9.694	9.694	1.28	1.34	-4%	
E300-S2350 B-D	E300 DRIFT-S2350	4-61	05/08/06	10.827	10.827	1.54	1.50	3%	
E300-S2425 A-C	E300 DRIFT-S2425	4-62	05/08/06	9.805	9.805	1.32	1.34	-1%	
E300-S2425 B-D	E300 DRIFT-S2425	4-62	05/08/06	11.007	11.007	1.54	1.56	-1%	
E300-S2634 A-C	E300 DRIFT-S2634	4-63	05/08/06	5.799	5.799	1.54	1.55	-1%	
E300-S2634 B-D	E300 DRIFT-S2634	4-63	05/08/06	5.973	5.973	1.56	1.59	-2%	
E300-S2833 A-C	E300 DRIFT-S2833	4-64	05/08/06	6.599	6.599	1.84	1.73	6%	
E300-S2833 B-D	E300 DRIFT-S2833	4-64	05/08/06	6.459	6.459	1.69	1.63	4%	
E300-S2916 A-C	E300 DRIFT-S2916	4-65	05/08/06	10.895	10.895	3.66	3.03	21%	
E300-S2916 B-D	E300 DRIFT-S2916	4-65	05/08/06	7.145	7.145	1.98	1.82	9%	
E300-S2998 A-C	E300 DRIFT-S2998	4-66	05/08/06	18.175	18.175	6.11	5.71	7%	
E300-S2998 B-D	E300 DRIFT-S2998	4-66	05/08/06	6.788	6.788	1.89	1.75	8%	

Table 4-1 (Continued)
Access Drifts Data Analysis

CONVERGENCE POINTS (Continued)

Field Tag	Location	Figure Number	Last Reading 2005 to 2006		Cumulative Displacement (inches)	Closure Rate 2005 to 2006 (in/year)	Closure Rate 2004 to 2005 (in/year)	Rate Change Percent[A]	Comments
			Date	Inches					
E300-S3195 A-C	E300 DRIFT-S3195	4-67	05/08/06	6.886	6.886	2.10	1.86	13%	
E300-S3195 B-D	E300 DRIFT-S3195	4-67	05/08/06	7.203	7.203	2.12	1.96	8%	
E140-N1420-2 A-C	E140 DRIFT-N1420	4-68	05/22/06	2.741	19.231	1.56	1.54	1%	
E140-N1266-4 B-D	E140 DRIFT-N1266	4-69	05/22/06	2.269	24.336	1.36	1.37	-1%	
E140-N1266-3 A-C	E140 DRIFT-N1266	4-69	05/22/06	4.193	41.970	2.61	2.43	7%	
E140-N1100-2 A-C	E140 DRIFT-N1100	4-70	05/22/06	2.432	2.432	1.42	1.07	33%	
E140-N940-2 A-C	E140 DRIFT-N940	4-71	05/22/06	4.372	4.372	2.65	2.56	4%	
E140-N940-2 B-D	E140 DRIFT-N940	4-71	05/22/06	1.946	1.946	1.28	1.37	-7%	
E140-N780-2 A-C	E140 DRIFT-N780	4-72	05/22/06	9.328	41.106	2.53	2.68	-6%	
E140-N686-2 A-C	E140 DRIFT-N686	4-73	05/22/06	6.831	21.547	2.03	2.11	-4%	
E140-N686-2 B-D	E140 DRIFT-N686	4-73	05/22/06	4.958	4.958	1.45	1.47	-1%	
E140-N626-3 A-C	E140 DRIFT-N626	4-74	05/22/06	8.468	41.062	2.55	2.65	-4%	
E140-N626-4 B-D	E140 DRIFT-N626	4-74	05/22/06	4.924	26.284	1.46	1.51	-3%	
E140-N562-2 A-C	E140 DRIFT-N562	4-75	05/22/06	6.490	18.331	1.92	1.99	-4%	
E140-N562-2 B-D	E140 DRIFT-N562	4-75	05/22/06	5.002	13.304	1.47	1.51	-3%	
E140-N460-3 A-C	E140 DRIFT-N460	4-76	05/22/06	8.579	29.475	1.58	1.69	-7%	
E140-N355 A-C	E140 DRIFT-N355	4-77	05/22/06	8.188	8.188	1.50	1.59	-6%	
E140-N355 B-D	E140 DRIFT-N355	4-77	05/22/06	7.343	7.343	1.36	1.42	-4%	
E140-N220-2 A-C	E140 DRIFT-N220	4-78	05/22/06	4.001	25.490	1.41	1.48	-5%	
E140-N150-3 A-C	E140 DRIFT-N150	4-79	05/22/06	2.419	18.862	1.05	1.06	-1%	
E140-N5-5 A-C	E140 DRIFT-N5	4-80	05/22/06	1.357	31.655	1.25	N/A	N/A	
E140-N5-3 B-D	E140 DRIFT-N5	4-80	05/22/06	9.965	25.206	0.96	0.98	-2%	
E140-S90-3 A-C	E140 DRIFT-S90	4-81	06/26/06	10.073	17.453	1.13	1.10	3%	
E140-S262-4 A-C	E140 DRIFT-S262	4-82	06/26/06	2.758	23.691	1.96	1.95	1%	
E140-S262-3 B-D	E140 DRIFT-S262	4-82	06/26/06	14.086	15.439	1.10	1.18	-7%	
E140-S460-2 B-D	E140 DRIFT-S460	4-83	06/26/06	20.358	26.302	0.94	0.93	1%	

[A] NA indicates insufficient data to compare annualized rates.

Table 4-1 (Continued)
Access Drifts Data Analysis

CONVERGENCE POINTS (Continued)

Field Tag	Location	Figure Number	Last Reading 2005 to 2006		Cumulative Displacement (inches)	Closure Rate 2005 to 2006 (in/year)	Closure Rate 2004 to 2005 (in/year)	Rate Change Percent	Comments
			Date	Inches					
E140-S460-4 A-C	E140 DRIFT-S460	4-83	06/26/06	16.698	34.954	1.76	1.70	4%	
E140-S550-4 A-C	E140 DRIFT-S550	4-84	06/26/06	11.020	35.137	1.30	1.18	10%	
E140-S550-4 B-D	E140 DRIFT-S550	4-84	06/26/06	21.360	30.002	1.10	1.05	5%	
E140-S700-6 A-D	E140 DRIFT-S700	4-85	06/26/06	2.164	23.792	1.50	1.32	14%	
E140-S700-5 B-C	E140 DRIFT-S700	4-86	06/26/06	2.421	23.770	1.63	1.47	11%	
E140-S700-5 E-F	E140 DRIFT-S700	4-86	06/26/06	1.373	18.165	1.00	0.83	20%	
E140-S850-8 A-C	E140 DRIFT-S850	4-87	06/26/06	3.407	42.542	2.25	2.42	-7%	
E140-S850-4 B-D	E140 DRIFT-S850	4-88	06/26/06	12.315	28.262	1.12	1.11	1%	
E140-S1000-2 A-C	E140 DRIFT-S1000	4-89	06/26/06	2.541	29.490	1.69	1.48	14%	
E140-S1025-3 A-C	E140 DRIFT-S1025	4-90	06/27/06	2.596	15.466	1.76	1.64	7%	
E140-S1075-3 A-E	E140 DRIFT-S1075	4-91	06/27/06	2.594	13.281	1.78	1.68	6%	
E140-S1075-3 B-D	E140 DRIFT-S1075	4-91	06/27/06	2.341	12.702	1.59	1.55	3%	
E140-S1075-3 F-H	E140 DRIFT-S1075	4-91	06/27/06	1.520	10.354	1.06	1.00	6%	
E140-S1075-2 C-G	E140 DRIFT-S1075	4-91	06/27/06	10.288	10.288	1.18	1.08	9%	
E140-S1150-4 L-H	E140 DRIFT-S1150	4-92	06/27/06	2.318	11.466	1.60	1.50	7%	
E140-S1150-3 A-G	E140 DRIFT-S1150	4-92	06/27/06	3.432	35.887	2.34	2.30	2%	
E140-S1150-3 B-F	E140 DRIFT-S1150	4-92	06/27/06	3.090	15.619	2.12	2.03	4%	
E140-S1150 C-K	E140 DRIFT-S1150	4-93	06/27/06	11.020	11.020	1.10	0.97	13%	
E140-S1150-2 D-J	E140 DRIFT-S1150	4-93	06/27/06	11.086	22.079	1.27	1.15	10%	
E140-S1150-2 E-I	E140 DRIFT-S1150	4-93	06/27/06	10.053	10.053	1.11	1.05	6%	
E140-S1225-3 A-E	E140 DRIFT-S1225	4-94	06/27/06	2.964	17.500	2.03	1.95	4%	
E140-S1225-2 B-D	E140 DRIFT-S1225	4-94	06/27/06	16.158	18.268	2.03	1.88	8%	
E140-S1225-2 H-F	E140 DRIFT-S1225	4-94	06/27/06	11.524	13.123	1.43	1.33	8%	
E140-S1225-2 C-G	E140 DRIFT-S1225	4-94	06/27/06	12.759	13.716	1.64	1.45	13%	
E140-S1300-4 A-C	E140 DRIFT-S1300	4-95	06/26/06	11.119	27.742	1.36	1.18	15%	

Table 4-1 (Continued)
Access Drifts Data Analysis

CONVERGENCE POINTS (Continued)

Field Tag	Location	Figure Number	Last Reading 2005 to 2006		Cumulative Displacement (inches)	Closure Rate 2005 to 2006 (in/year)	Closure Rate 2004 to 2005 (in/year)	Rate Change Percent	Comments
			Date	Inches					
E140-S1378-2 A-E	E140 DRIFT-S1375	4-96	06/27/06	15.206	26.044	1.99	1.78	12%	
E140-S1378-2 B-D	E140 DRIFT-S1375	4-96	06/27/06	10.165	19.869	1.27	1.17	9%	
E140-S1378-2 H-F	E140 DRIFT-S1375	4-96	06/27/06	17.481	28.759	2.17	2.01	8%	
E140-S1378 C-G	E140 DRIFT-S1375	4-97	06/27/06	12.957	17.127	1.31	1.22	7%	
E140-S1456-4 A-G	E140 DRIFT-S1450	4-98	06/27/06	19.630	54.699	3.53	2.95	20%	
E140-S1456-2 B-F	E140 DRIFT-S1456	4-99	06/27/06	19.054	29.222	2.58	2.35	10%	
E140-S1456-2 L-H	E140 DRIFT-S1456	4-99	06/27/06	14.642	23.412	2.13	1.87	14%	
E140-S1456-2 D-J	E140 DRIFT-S1456	4-100	06/27/06	13.055	34.403	1.53	1.49	3%	
E140-S1456 K-C	E140 DRIFT-S1456	4-101	06/27/06	12.600	12.600	1.24	1.21	2%	
E140-S1456-2 I-E	E140 DRIFT-S1456	4-101	06/27/06	10.854	12.464	1.23	1.21	2%	
E140-S1534-2 A-E	E140 DRIFT-S1534	4-102	06/27/06	31.189	34.350	2.91	2.74	6%	
E140-S1534-3 B-D	E140 DRIFT-S1534	4-102	06/27/06	6.348	19.792	2.36	2.45	-4%	
E140-S1534-2 H-F	E140 DRIFT-S1534	4-102	06/27/06	19.897	22.967	2.07	2.08	0%	
E140-S1534-2 C-G	E140 DRIFT-S1534	4-102	06/27/06	11.783	13.306	1.37	1.33	3%	
E140-S1600-5 A-C	E140 DRIFT-S1600	4-103	06/26/06	12.901	29.746	1.68	1.46	15%	
E140-S1687-2 A-E	E140 DRIFT-S1687	4-104	06/27/06	22.389	25.347	4.25	3.26	30%	
E140-S1687-2 B-D	E140 DRIFT-S1687	4-104	06/27/06	17.706	20.590	2.79	2.13	31%	
E140-S1687-2 H-F	E140 DRIFT-S1687	4-104	06/27/06	15.829	18.425	2.66	1.81	47%	
E140-S1687 C-G	E140 DRIFT-S1687	4-104	06/27/06	13.087	13.087	1.46	1.38	6%	
E140-S1775-2 A-G	E140 DRIFT-S1775	4-105	06/27/06	37.574	40.801	4.82	5.10	-5%	
E140-S1775-3 B-F	E140 DRIFT-S1775	4-105	06/27/06	9.124	33.730	3.82	3.84	-1%	
E140-S1775-2 L-H	E140 DRIFT-S1775	4-105	06/27/06	16.253	18.439	2.23	2.07	8%	
E140-S1775 C-K	E140 DRIFT-S1775	4-106	06/27/06	13.137	13.137	1.41	1.30	8%	
E140-S1775-2 D-J	E140 DRIFT-S1775	4-106	06/27/06	12.549	13.859	1.62	1.51	7%	
E140-S1775-2 I-E	E140 DRIFT-S1775	4-106	06/27/06	11.859	13.400	1.45	1.27	14%	
E140-S1862-2 A-E	E140 DRIFT-S1862	4-107	06/27/06	25.014	27.620	4.81	4.42	9%	

Table 4-1 (Continued)
Access Drifts Data Analysis

CONVERGENCE POINTS (Continued)

Field Tag	Location	Figure Number	Last Reading 2005 to 2006		Cumulative Displacement (inches)	Closure Rate 2005 to 2006 (in/year)	Closure Rate 2004 to 2005 (in/year)	Rate Change Percent	Comments
			Date	Inches					
E140-S1862-2 B-D	E140 DRIFT-S1862	4-107	06/27/06	22.076	24.99	3.97	3.61	10%	
E140-S1862-2 H-F	E140 DRIFT-S1862	4-107	06/27/06	12.542	14.373	1.84	1.84	0%	
E140-S1862-3 C-G	E140 DRIFT-S1862	4-107	06/27/06	6.598	13.003	1.50	1.38	9%	
E140-S1950-5 A-C	E140 DRIFT-S1950	4-108	06/27/06	8.026	38.136	2.53	2.11	20%	
E140-S2007-5 A-C	E140 DRIFT-S2007	4-109	06/27/06	4.196	22.286	2.81	2.83	-1%	
E140-S2065-4 A-C	E140 DRIFT-S2065	4-110	06/27/06	5.351	23.164	3.55	3.72	-5%	
E140-S2065-2 B-D	E140 DRIFT-S2065	4-110	06/27/06	5.916	12.616	1.70	1.66	2%	
E140-S2122-3 A-C	E140 DRIFT-S2122	4-111	06/27/06	10.160	23.710	3.13	2.84	10%	
E140-S2180-5 A-C	E140 DRIFT-S2180	4-112	06/27/06	3.832	27.212	2.68	2.44	10%	
E140-S2275-3 A-C	E140 DRIFT-S2275	4-113	06/27/06	9.088	34.844	6.53	5.59	17%	
E140-S2275 B-D	E140 DRIFT-S2275	4-113	06/27/06	12.747	12.747	1.94	1.95	-1%	
E140-S2350-4 A-C	E140 DRIFT-S2350	4-114	06/27/06	7.003	42.989	4.85	4.64	5%	
E140-S2350-2 B-D	E140 DRIFT-S2350	4-114	06/27/06	13.470	20.361	2.07	2.09	-1%	
E140-S2425-3 A-C	E140 DRIFT-S2425	4-115	06/27/06	6.183	23.474	4.25	4.14	3%	
E140-S2425 B-D	E140 DRIFT-S2425	4-115	06/27/06	13.324	13.324	2.00	2.00	0%	
E140-S2520-2 A-C	E140 DRIFT-S2520	4-116	06/27/06	11.075	19.725	3.44	3.05	13%	
E140-S2634 A-C	E140 DRIFT-S2634	4-117	06/27/06	18.453	18.453	5.22	4.64	13%	
E140-S2634 B-D	E140 DRIFT-S2634	4-117	06/27/06	7.300	7.300	2.01	2.02	0%	
E140-S2750-2 A-C	E140 DRIFT-S2750	4-118	06/27/06	4.880	8.909	2.41	2.27	6%	
E140-S2833-2 A-C	E140 DRIFT-S2833	4-119	06/27/06	6.330	12.666	3.01	3.14	-4%	
E140-S2833 B-D	E140 DRIFT-S2833	4-119	06/27/06	6.783	6.783	1.66	1.69	-2%	
E140-S2915-2 A-C	E140 DRIFT-S2915	4-120	06/27/06	7.690	16.557	3.65	3.85	-5%	
E140-S2915 B-D	E140 DRIFT-S2915	4-120	06/27/06	7.475	7.475	1.87	1.83	2%	
E140-S2998-2 A-C	E140 DRIFT-S2998	4-121	06/27/06	8.174	17.319	3.96	4.14	-4%	
E140-S2998 B-D	E140 DRIFT-S2998	4-121	06/27/06	7.094	7.094	1.77	1.70	4%	
E140-S3080 A-C	E140 DRIFT-S3080	4-122	06/27/06	9.854	9.854	2.70	2.61	3%	

Table 4-1 (Continued)
Access Drifts Data Analysis

CONVERGENCE POINTS (Continued)

Field Tag	Location	Figure Number	Last Reading 2005 to 2006		Cumulative Displacement (inches)	Closure Rate 2005 to 2006 (in/year)	Closure Rate 2004 to 2005 (in/year)	Rate Change Percent[A]	Comments
			Date	Inches					
E140-S3195 A-C	E140 DRIFT-S3195	4-123	06/27/06	16.830	16.830	4.74	5.45	-13%	
E140-S3195 B-D	E140 DRIFT-S3195	4-123	06/27/06	7.200	7.200	1.90	1.88	1%	
E140-S3295 A-C	E140 DRIFT-S3295	4-124	06/27/06	1.857	1.857	2.76	N/A	N/A	
E140-S3325 A-C	E140 DRIFT-S3325	4-125	06/27/06	1.917	1.917	2.80	N/A	N/A	
E140-S3395 A-C	E140 DRIFT-S3395	4-126	06/27/06	6.323	6.323	4.71	8.57	-45%	
E140-S3395 B-D	E140 DRIFT-S3395	4-126	06/27/06	2.631	2.631	2.04	2.77	-26%	
E140-S3480 A-C	E140 DRIFT-S3480	4-127	06/27/06	4.996	4.996	4.05	4.99	-19%	
E140-S3480 B-D	E140 DRIFT-S3480	4-127	06/27/06	2.755	2.755	2.12	3.11	-32%	
E140-S3565 A-C	E140 DRIFT-S3565	4-128	06/27/06	4.050	4.050	3.28	4.32	-24%	
E140-S3565 B-D	E140 DRIFT-S3565	4-128	06/27/06	2.316	2.316	2.04	2.80	-27%	
E140-S3650 A-C	E140 DRIFT-S3650	4-129	06/23/06	1.841	1.841	2.20	N/A	N/A	
E0-N1420-2 A-C	N1420 DRIFT-E0	4-130	05/25/06	1.852	16.336	1.28	1.27	1%	
E0-N1266-4 A-C	E0 DRIFT-N1266	4-131	05/25/06	6.384	43.310	2.32	2.28	2%	
E0-N1110-5 A-C	E0 DRIFT-N1110	4-132	05/25/06	2.341	36.821	1.51	1.57	-4%	
E0-N940-5 A-C	E0 DRIFT-N940	4-133	05/25/06	3.315	44.089	2.19	2.35	-7%	
E0-N780-2 A-C	E0 DRIFT-N780	4-134	05/25/06	5.750	26.190	1.91	2.01	-5%	
E0-N686 A-C	E0 DRIFT-N686	4-135	03/31/06	6.940	6.940	2.04	2.12	-4%	
E0-N686 B-D	E0 DRIFT-N686	4-135	03/31/06	4.704	4.704	1.30	1.49	-13%	
E0-N626-4 A-C	E0 DRIFT-N626	4-136	03/31/06	6.480	47.458	1.78	1.95	-9%	
E0-N562 A-C	E0 DRIFT-N562	4-137	03/31/06	5.110	5.110	1.55	1.61	-4%	
E0-N562 B-D	E0 DRIFT-N562	4-137	03/31/06	4.690	4.690	1.35	1.50	-10%	
E0-N460-3 A-C	E0 DRIFT-N460	4-138	03/31/06	9.073	29.220	1.63	1.83	-11%	
E0-N300-5 A-C	E0 DRIFT-N290	4-139	05/25/06	3.646	43.321	1.51	1.50	1%	
E0-N225-2 A-C	E0 DRIFT-N225	4-140	05/25/06	8.151	8.242	1.55	1.57	-1%	
E0-N225 B-D	E0 DRIFT-N225	4-140	05/25/06	7.339	7.339	1.32	1.33	-1%	

[A] NA indicates insufficient data to compare annualized rates.

Table 4-1 (Continued)
Access Drifts Data Analysis

CONVERGENCE POINTS (Continued)

Field Tag	Location	Figure Number	Last Reading 2005 to 2006		Cumulative Displacement (inches)	Closure Rate 2005 to 2006 (in/year)	Closure Rate 2004 to 2005 (in/year)	Rate Change Percent	Comments
			Date	Inches					
E0-N75 A-C	E0 DRIFT-N80	4-141	05/25/06	8.198	25.218	1.67	1.74	-4%	
E0-N75 B-D	E0 DRIFT-N80	4-141	05/25/06	5.802	5.802	1.22	1.19	3%	
W30-S120 A-C	W30 DRIFT-S120	4-142	05/15/06	19.356	19.356	0.88	0.85	4%	
W30-S250-4 A-C	W30 DRIFT-S250	4-143	05/15/06	1.833	25.619	0.84	0.94	-11%	
W30-S250-5 B-D	W30 DRIFT-S250	4-143	05/15/06	11.073	22.027	0.71	0.73	-3%	
W30-S400 A-C	W30 DRIFT-S400	4-144	05/15/06	17.224	17.224	0.73	0.74	-1%	
W30-S500 B-D	W30 DRIFT-S500	4-145	05/15/06	20.821	20.821	0.68	0.70	-3%	
W30-S500 A-C	W30 DRIFT-S500	4-145	05/15/06	21.999	21.999	0.73	0.73	0%	
W30-S700-2 A-C	W30 DRIFT-S700	4-146	05/15/06	8.420	28.861	0.86	0.85	1%	
W30-S850-2 A-E	W30 DRIFT-S850	4-147	05/15/06	10.289	17.042	0.58	0.56	4%	
W30-S850-2 B-D	W30 DRIFT-S850	4-147	05/15/06	7.047	11.609	0.38	0.37	3%	
W30-S850 H-F	W30 DRIFT-S850	4-147	05/15/06	12.639	12.639	0.39	0.39	0%	
W30-S850 C-G	W30 DRIFT-S850	4-147	05/15/06	19.068	19.068	0.63	0.67	-6%	
W30-S1000-3 A-C	W30 DRIFT-S1000	4-148	05/15/06	16.028	32.895	1.11	1.11	0%	
W30-S1100 A-C	W30 DRIFT-S1100	4-149	05/15/06	9.937	9.937	0.84	0.86	-2%	
W30-S1200 A-C	W30 DRIFT-S1200	4-150	05/15/06	9.991	9.991	0.86	0.82	5%	
W30-S1300 A-C	W30 DRIFT-S1300	4-151	05/15/06	17.233	17.233	1.01	0.95	6%	
W30-S1453 A-C	W30 DRIFT-S1453	4-152	05/15/06	11.990	11.990	0.78	0.77	1%	
W30-S1453-2 B-D	W30 DRIFT-S1453	4-152	05/15/06	7.132	12.055	0.71	0.74	-4%	
W30-S1600-1 A-C	W30 DRIFT-S1600	4-153	05/15/06	6.964	15.706	0.93	0.92	1%	
W30-S1775 A-C	W30 DRIFT-S1775	4-154	05/15/06	8.831	8.831	0.55	0.55	0%	
W30-S1775-2 B-D	W30 DRIFT-S1775	4-154	05/15/06	6.483	10.523	0.67	0.68	-1%	
W30-S1950 A-C	W30 DRIFT-S1950	4-155	05/15/06	15.135	15.135	0.95	0.90	6%	
W30-S2067 A-C	W30 DRIFT-S2067	4-156	05/15/06	11.740	11.740	0.85	0.83	2%	
W30-S2067-2 B-D	W30 DRIFT-S2067	4-156	05/15/06	7.469	12.378	0.87	0.86	1%	

Table 4-1 (Continued)
Access Drifts Data Analysis

CONVERGENCE POINTS (Continued)

Field Tag	Location	Figure Number	Last Reading 2005 to 2006		Cumulative Displacement (inches)	Closure Rate 2005 to 2006 (in/year)	Closure Rate 2004 to 2005 (in/year)	Rate Change Percent	Comments
			Date	Inches					
W30-S2180 A-C	W30 DRIFT-S2180	4-157	10/18/05	18.029	18.029	1.55	1.15	35%	
W30-S2275-2 A-C	W30 DRIFT-S2275	4-158	05/15/06	5.613	6.452	0.87	0.92	-5%	
W30-S2275 B-D	W30 DRIFT-S2275	4-158	05/15/06	7.544	7.544	1.02	1.00	2%	
W30-S2350-2 A-C	W30 DRIFT-S2350	4-159	05/15/06	6.189	7.277	0.93	0.97	-4%	
W30-S2350 B-D	W30 DRIFT-S2350	4-159	05/15/06	8.517	8.517	1.12	1.14	-2%	
W30-S2425-2 A-C	W30 DRIFT-S2425	4-160	05/15/06	6.571	7.560	0.97	1.02	-5%	
W30-S2425 B-D	W30 DRIFT-S2425	4-160	05/15/06	8.956	8.956	1.22	1.23	-1%	
W30-S2520-2 A-C	W30 DRIFT-S2520	4-161	05/15/06	9.844	11.765	1.40	1.27	10%	
W30-S2685-2 A-C	W30 DRIFT-S2685	4-162	05/15/06	8.403	10.537	1.68	1.74	-3%	
W30-S2685-2 B-D	W30 DRIFT-S2685	4-162	05/15/06	6.828	9.008	1.29	1.28	1%	
W30-S2750 A-C	W30 DRIFT-S2750	4-163	05/15/06	5.587	5.587	1.38	1.40	-1%	
W30-S2833 A-C	W30 DRIFT-S2833	4-164	05/15/06	5.142	5.142	1.42	1.38	3%	
W30-S2833 B-D	W30 DRIFT-S2833	4-164	05/15/06	5.014	5.014	1.31	1.31	0%	
W30-S2916 A-C	W30 DRIFT-S2916	4-165	05/15/06	7.275	7.275	2.29	2.03	13%	
W30-S2916 B-D	W30 DRIFT-S2916	4-165	05/15/06	4.594	4.594	1.20	1.21	-1%	
W30-S2998 A-C	W30 DRIFT-S2998	4-166	05/15/06	5.053	5.053	1.31	1.29	2%	
W30-S2998 B-D	W30 DRIFT-S2998	4-166	05/15/06	4.904	4.904	1.24	1.25	-1%	
W30-S3080 A-C	W30 DRIFT-S3080	4-167	05/15/06	9.121	9.121	2.19	2.21	-1%	
W30-S3195 A-C	W30 DRIFT-S3195	4-168	05/15/06	5.822	5.822	1.53	1.48	3%	
W30-S3195 B-D	W30 DRIFT-S3195	4-168	05/15/06	5.288	5.288	1.27	1.35	-6%	
W30-S3310 A-C	W30 DRIFT-S3310	4-169	05/15/06	6.457	6.457	1.55	1.94	-20%	
W30-S3395 A-C	W30 DRIFT-S3395	4-170	06/06/06	1.926	1.926	1.69	2.35	-28%	
W30-S3395 B-D	W30 DRIFT-S3395	4-170	06/06/06	1.736	1.736	1.50	2.08	-28%	
W30-S3480 A-C	W30 DRIFT-S3480	4-171	06/06/06	1.989	1.989	1.74	2.34	-26%	
W30-S3480 B-D	W30 DRIFT-S3480	4-171	06/06/06	1.721	1.721	1.47	2.31	-36%	

Table 4-1 (Continued)
Access Drifts Data Analysis

CONVERGENCE POINTS (Continued)

Field Tag	Location	Figure Number	Last Reading 2005 to 2006		Cumulative Displacement (inches)	Closure Rate 2005 to 2006 (in/year)	Closure Rate 2004 to 2005 (in/year)	Rate Change Percent[A]	Comments
			Date	Inches					
W30-S3565 A-C	W30 DRIFT-S3565	4-172	06/06/06	1.778	1.778	1.54	2.34	-34%	
W30-S3565 B-D	W30 DRIFT-S3565	4-172	06/06/06	1.717	1.717	1.46	2.26	-35%	
S3650-W30 A-C	S3650 DRIFT-W30	4-173	06/20/06	1.245	1.245	1.59	N/A	N/A	
W170-N150-2 A-C	W170 DRIFT-N150	4-174	06/12/06	6.470	7.916	0.47	0.42	12%	
W170-S5 A-C	W170 DRIFT-S5	4-175	06/12/06	11.872	11.872	0.65	0.50	30%	
W170-S5-2 B-D	W170 DRIFT-S5	4-175	06/12/06	5.679	13.471	0.66	0.65	2%	
W170-S90-3 A-C	W170 DRIFT-S90	4-176	06/12/06	3.677	10.947	0.83	0.84	-1%	
W170-S232-2 A-C	W170 DRIFT-S232	4-177	06/12/06	3.305	8.917	0.57	0.65	-12%	
W170-S232-2 B-D	W170 DRIFT-S232	4-177	06/12/06	6.417	9.059	0.54	0.60	-10%	
W170-S400 A-C	W170 DRIFT-S400	4-178	06/12/06	10.836	10.836	0.63	0.60	5%	
W170-S560-3 A-C	W170 DRIFT-S560	4-179	06/12/06	3.585	9.680	0.62	0.59	5%	
W170-S560-2 B-D	W170 DRIFT-S560	4-179	06/12/06	7.236	10.368	0.60	0.65	-8%	
W170-S700 A-C	W170 DRIFT-S700	4-180	06/12/06	18.568	18.568	0.66	0.61	8%	
W170-S850-6 A-E	W170 DRIFT-S850	4-181	06/12/06	3.406	15.895	0.59	0.60	-2%	
W170-S850-5 B-D	W170 DRIFT-S850	4-182	06/12/06	2.876	11.875	0.49	0.47	4%	
W170-S850-6 H-F	W170 DRIFT-S850	4-182	06/12/06	2.500	10.880	0.43	0.36	19%	
W170-S850-3 C-G	W170 DRIFT-S850	4-183	06/12/06	7.253	18.066	0.65	0.67	-3%	
W170-S1000-2 A-C	W170 DRIFT-S1000	4-184	06/12/06	4.672	21.356	0.92	0.95	-3%	
W170-S1150-3 A-E	W170 DRIFT-S1150	4-185	06/12/06	5.769	19.041	0.82	0.78	5%	
W170-S1150-3 B-D	W170 DRIFT-S1150	4-185	06/12/06	4.037	13.275	0.55	0.50	10%	
W170-S1150-2 C-G	W170 DRIFT-S1150	4-185	06/12/06	7.983	19.560	0.75	0.75	0%	
W170-S1150 H-F	W170 DRIFT-S1150	4-185	06/12/06	12.427	12.427	0.40	0.49	-18%	
W170-S1300-3 A-C	W170 DRIFT-S1300	4-186	06/14/06	15.427	18.507	1.33	1.28	4%	
W170-S1445-3 A-C	W170 DRIFT-S1445	4-187	06/14/06	5.333	10.068	0.67	0.66	2%	
W170-S1445-2 B-D	W170 DRIFT-S1445	4-187	06/14/06	7.051	9.709	0.62	0.68	-9%	

[A] NA indicates insufficient data to compare annualized rates.

Table 4-1 (Continued)
Access Drifts Data Analysis

CONVERGENCE POINTS (Continued)

Field Tag	Location	Figure Number	Last Reading 2005 to 2006		Cumulative Displacement (inches)	Closure Rate 2005 to 2006 (in/year)	Closure Rate 2004 to 2005 (in/year)	Rate Change Percent	Comments
			Date	Inches					
W170-S1600-2 A-C	W170 DRIFT-S1600	4-188	06/14/06	6.656	12.454	0.87	0.81	7%	
W170-S1779-2 A-C	W170 DRIFT-S1779	4-189	06/14/06	7.034	13.265	0.95	0.92	3%	
W170-S1779-2 B-D	W170 DRIFT-S1779	4-189	06/14/06	8.374	11.509	0.80	0.83	-4%	
W170-S1950-2 A-C	W170 DRIFT-S1950	4-190	06/14/06	6.237	11.660	0.71	0.79	-10%	
W170-S2060-2 A-C	W170 DRIFT-S2060	4-191	06/14/06	6.609	12.167	0.87	0.87	0%	
W170-S2060-2 B-D	W170 DRIFT-S2060	4-191	06/14/06	8.900	12.224	0.91	0.91	0%	
W170-S2180-2 A-C	W170 DRIFT-S2180	4-192	06/14/06	8.334	14.349	1.03	1.05	-2%	
W170-S2275 A-C	W170 DRIFT-S2275	4-193	06/14/06	7.089	7.089	0.96	0.99	-3%	
W170-S2275 B-D	W170 DRIFT-S2275	4-193	06/14/06	7.559	7.559	1.07	1.09	-2%	
W170-S2350 A-C	W170 DRIFT-S2350	4-194	06/14/06	9.322	9.322	1.25	1.32	-5%	
W170-S2350 B-D	W170 DRIFT-S2350	4-194	06/14/06	7.832	7.832	1.00	1.09	-8%	
W170-S2425 A-C	W170 DRIFT-S2425	4-195	06/14/06	8.439	8.439	1.08	1.13	-4%	
W170-S2425 B-D	W170 DRIFT-S2425	4-195	06/14/06	8.608	8.608	1.12	1.15	-3%	
W170-S2520 A-C	W170 DRIFT-S2520	4-196	06/14/06	9.301	9.301	1.22	1.25	-2%	
W170-S2685-2 A-C	W170 DRIFT-S2685	4-197	06/14/06	8.493	8.493	2.33	1.77	32%	
W170-S2685-2 B-D	W170 DRIFT-S2685	4-197	06/14/06	6.489	6.489	1.30	1.30	0%	
W170-S2750 A-C	W170 DRIFT-S2750	4-198	06/14/06	5.522	5.522	1.46	1.48	-1%	
W170-S2833 A-C	W170 DRIFT-S2833	4-199	06/14/06	5.267	5.267	1.44	1.45	-1%	
W170-S2833 B-D	W170 DRIFT-S2833	4-199	06/14/06	4.513	4.513	1.12	1.23	-9%	
W170-S2916 A-C	W170 DRIFT-S2916	4-200	06/14/06	10.449	10.449	1.80	2.89	-38%	
W170-S2916 B-D	W170 DRIFT-S2916	4-200	06/14/06	4.617	4.617	1.26	1.36	-7%	
W170-S2998 A-C	W170 DRIFT-S2998	4-201	06/14/06	6.833	6.833	1.91	1.85	3%	
W170-S2998 B-D	W170 DRIFT-S2998	4-201	06/14/06	5.107	5.107	1.28	1.35	-5%	
W170-S3080 A-C	W170 DRIFT-S3080	4-202	06/14/06	5.521	5.521	1.48	1.44	3%	
W170-S3195 A-C	W170 DRIFT-S3195	4-203	06/14/06	5.919	5.919	1.40	1.53	-8%	

Table 4-1 (Continued)
Access Drifts Data Analysis

CONVERGENCE POINTS (Continued)

Field Tag	Location	Figure Number	Last Reading 2005 to 2006		Cumulative Displacement (inches)	Closure Rate 2005 to 2006 (in/year)	Closure Rate 2004 to 2005 (in/year)	Rate Change Percent[A]	Comments
			Date	Inches					
W170-S3195 B-D	W170 DRIFT-S3195	4-203	06/14/06	5.086	5.086	1.16	1.32	-12%	
W170-S3310 A-C	W170 DRIFT-S3310	4-204	04/19/06	5.462	5.462	1.38	1.94	-29%	
W170-S3395 A-C	W170 DRIFT-S3395	4-205	06/14/06	1.470	1.470	1.59	N/A	N/A	
W170-S3395 B-D	W170 DRIFT-S3395	4-205	06/14/06	1.220	1.220	1.26	N/A	N/A	
W170-S3480 A-C	W170 DRIFT-S3480	4-206	06/14/06	1.580	1.580	1.73	N/A	N/A	
W170-S3480 B-D	W170 DRIFT-S3480	4-206	06/14/06	1.466	1.466	1.59	N/A	N/A	
W170-S3565 A-C	W170 DRIFT-S3565	4-207	06/14/06	1.389	1.389	1.51	N/A	N/A	
W170-S3565 B-D	W170 DRIFT-S3565	4-207	06/14/06	1.254	1.254	1.34	N/A	N/A	
W170- S3650 A-C	S3650 DRIFT-W170	4-208	06/06/06	1.091	1.091	1.21	N/A	N/A	
N780-E70 A-C	N780 DRIFT-E70	4-209	05/25/06	4.553	4.553	1.36	1.13	20%	
N780-E70 B-D	N780 DRIFT-E70	4-209	05/25/06	4.589	4.589	1.35	1.18	14%	
N460-E70-3 A-C	N460 DRIFT-E70	4-210	05/22/06	6.524	23.036	1.22	1.22	0%	
N460-E70-2 B-D	N460 DRIFT-E70	4-210	05/22/06	7.404	19.152	1.35	1.42	-5%	
N300-W170-2 A-C	N300 DRIFT-W170	4-211	05/25/06	4.040	26.318	1.70	1.38	23%	
N300-W170-1 B-D	N300 DRIFT-W170	4-211	05/25/06	9.022	17.267	1.28	1.02	25%	
N250-E220-2 A-E	N250 DRIFT-E220	4-212	05/10/06	23.361	23.361	1.48	1.48	0%	
N250-E220-2 B-D	N250 DRIFT-E220	4-212	05/10/06	24.317	24.317	1.64	1.62	1%	
N250-E220-2 H-F	N250 DRIFT-E220	4-212	05/10/06	18.028	18.028	1.06	1.12	-5%	
N250-E220 C-G	N250 DRIFT-E220	4-212	05/10/06	17.306	17.306	0.98	0.99	-1%	
N215-W500-2 A-C	N215 DRIFT-W500	4-213	05/25/06	3.345	21.692	1.43	1.11	29%	
N215-W500-2 B-D	N215 DRIFT-W500	4-213	05/25/06	7.262	14.132	0.89	0.73	22%	
N215-W620-2 A-C	N215 DRIFT-W620	4-214	05/25/06	2.051	18.289	1.09	0.85	28%	
N140-E90 A-C	N140 DRIFT-E90	4-215	05/23/06	13.296	13.296	0.71	0.51	39%	
N140-E90 B-D	N140 DRIFT-E90	4-215	05/23/06	13.706	13.706	0.68	0.66	3%	
N140-W50-2 B-D	N140 DRIFT-W50	4-216	06/12/06	8.626	20.832	1.02	0.76	34%	

[A] NA indicates insufficient data to compare annualized rates.

Table 4-1 (Continued)
Access Drifts Data Analysis

CONVERGENCE POINTS (Continued)

Field Tag	Location	Figure Number	Last Reading 2005 to 2006		Cumulative Displacement (inches)	Closure Rate 2005 to 2006 (in/year)	Closure Rate 2004 to 2005 (in/year)	Rate Change Percent	Comments
			Date	Inches					
S90-W120 A-C	S90 DRIFT-W120	4-217	06/12/06	4.122	4.122	0.59	0.58	2%	
S90-W120 B-D	S90 DRIFT-W120	4-217	06/12/06	4.363	4.363	0.63	0.64	-2%	
S90-W400-2 A-C	S90 DRIFT-W400	4-218	06/12/06	0.830	14.203	0.58	0.74	-22%	
S90-W400-2 B-D	S90 DRIFT-W400	4-218	06/12/06	5.785	13.708	0.63	0.59	7%	
S90-W590-2 A-C	S90 DRIFT-W590	4-219	06/12/06	0.772	10.123	0.54	0.73	-26%	
S90-W590-2 B-D	S90 DRIFT-W590	4-219	06/12/06	5.491	9.328	0.57	0.53	8%	
S90-W620 A-C	S90 DRIFT-W620	4-220	06/12/06	18.861	18.861	1.02	0.98	4%	
S90-W770 A-C	S90 DRIFT-W770	4-221	06/12/06	12.846	12.846	0.81	0.76	7%	
S90-W770-2 B-D	S90 DRIFT-W770	4-221	06/12/06	6.069	11.756	0.81	0.76	7%	
S90-W905 A-C	S90 DRIFT-W905	4-222	06/12/06	4.712	4.712	1.90	1.78	7%	
CORE-W10 A-C	CORE STORAGE W10	4-223	06/12/06	17.432	17.432	0.84	0.70	20%	
CORE-W101 A-C	CORE STORAGE W101	4-223	06/12/06	19.595	19.595	1.09	0.95	15%	
CORE-W117 A-C	CORE STORAGE W117	4-223	06/12/06	17.809	17.809	0.98	0.85	15%	
CORE-W133 A-C	CORE STORAGE W133	4-223	06/12/06	15.231	15.231	0.78	0.68	15%	
CORE-W20 A-C	CORE STORAGE W20	4-223	06/12/06	16.298	16.298	0.83	0.75	11%	
CORE-W30 A-C	CORE STORAGE W30	4-223	06/12/06	16.989	16.989	0.89	0.81	10%	
CORE-W51 A-C	CORE STORAGE W51	4-223	06/12/06	19.089	19.089	1.07	0.97	10%	
CORE-W62 A-C	CORE STORAGE W62	4-223	06/12/06	19.855	19.855	1.14	1.04	10%	
CORE-W73 A-C	CORE STORAGE W73	4-223	06/12/06	20.039	20.039	1.17	1.05	11%	
S700-E55 A-C	S700 DRIFT-E55	4-224	06/22/06	1.535	1.535	0.70	0.68	3%	
S700-E55 B-D	S700 DRIFT-E55	4-224	06/22/06	1.508	1.508	0.66	0.66	0%	
S700-W98-2 A-C	S700 DRIFT-W98	4-225	06/22/06	1.584	16.085	1.26	N/A	N/A	
S1000-E160-2 A-C	S1000 DRIFT-E160	4-226	06/26/06	1.183	7.114	0.75	0.81	-7%	
S1000-E120-3 A-C	S1000 DRIFT-E120	4-227	06/26/06	1.572	10.051	1.00	1.04	-4%	
S1000-E58-4 A-C	S1000 DRIFT-E58	4-228	06/22/06	1.579	17.064	1.11	1.27	-13%	

Table 4-1 (Continued)
Access Drifts Data Analysis

CONVERGENCE POINTS (Continued)

Field Tag	Location	Figure Number	Last Reading 2005 to 2006		Cumulative Displacement (inches)	Closure Rate 2005 to 2006 (in/year)	Closure Rate 2004 to 2005 (in/year)	Rate Change Percent[A]	Comments
			Date	Inches					
S1000-E58-2 B-D	S1000 DRIFT-E58	4-228	06/22/06	12.073	12.073	0.90	0.87	3%	
S1000-W98-2 A-C	S1000 DRIFT-W98	4-229	06/23/06	4.103	22.872	1.70	1.65	3%	
S1300-E160 A-C	S1300 DRIFT-E160	4-230	06/26/06	12.960	12.960	1.36	1.17	16%	
S1300-E120 A-C	S1300 DRIFT-E120	4-231	06/26/06	9.324	9.324	0.88	0.81	9%	
S1300-E24 A-C	S1300 DRIFT-E24	4-232	06/23/06	15.555	15.555	0.96	0.91	5%	
S1300-W55 A-C	S1300 DRIFT-W55	4-233	08/29/05	11.936	11.936	N/A	0.94	N/A	
S1300-W100-2 A-C	S1300 DRIFT-W100	4-234	08/29/05	17.510	24.030	N/A	1.47	N/A	
S1600-E170 A-C	S1600 DRIFT-E170	4-235	06/26/06	10.929	10.929	1.01	0.90	12%	
S1600-E110 A-C	S1600 DRIFT-E110	4-236	06/26/06	9.957	9.957	0.92	0.86	7%	
S1950-E113-4 A-C	S1950 DRIFT-E113	4-237	06/22/06	4.002	7.929	0.66	0.63	5%	
S1950-E281-3 A-C	S1950 DRIFT-E281	4-238	06/22/06	8.495	15.064	1.05	1.01	4%	
S1950-E284-3 A-C	S1950 DRIFT-E284	4-239	06/22/06	8.566	15.205	1.07	1.02	5%	
S2180-E55-2 A-C	S2180 DRIFT-E55	4-240	06/23/06	7.404	7.724	1.29	1.31	-2%	
S2180-E55 B-D	S2180 DRIFT-E55	4-240	06/23/06	6.120	6.120	1.00	1.06	-6%	
S2180-E220 A-C	S2180 DRIFT-E220	4-241	06/22/06	7.520	7.520	1.23	1.22	1%	
S2180-E220 B-D	S2180 DRIFT-E220	4-241	06/22/06	7.890	7.890	1.36	1.32	3%	
S2180-W100-2 A-C	S2180 DRIFT-W100	4-242	06/23/06	9.379	9.528	1.65	1.63	1%	
S2180-W100-2 B-D	S2180 DRIFT-W100	4-242	06/23/06	5.931	6.117	0.95	0.94	1%	
S2520-E220 A-C	S2520 DRIFT-E220	4-243	06/22/06	11.042	11.042	1.45	1.46	-1%	
S2520-E220 B-D	S2520 DRIFT-E220	4-243	06/22/06	10.938	10.938	1.51	1.52	-1%	
S2520-W100 A-C	S2520 DRIFT-W100	4-244	06/23/06	10.264	10.264	1.32	1.43	-8%	
S2520-W100 B-D	S2520 DRIFT-W100	4-244	06/23/06	9.899	9.899	1.27	1.41	-10%	
S2750-E55 A-C	S2750 DRIFT-E55	4-245	04/25/06	5.778	5.778	1.56	1.60	-3%	
S2750-E55 B-D	S2750 DRIFT-E55	4-245	04/25/06	5.142	5.142	1.38	1.40	-1%	
S2750-E220 A-C	S2750 DRIFT-E220	4-246	06/22/06	7.090	7.090	2.16	2.01	7%	

[A] NA indicates insufficient data to compare annualized rates.

Table 4-1 (Continued)
Access Drifts Data Analysis

CONVERGENCE POINTS (Continued)

Field Tag	Location	Figure Number	Last Reading 2005 to 2006		Cumulative Displacement (inches)	Closure Rate 2005 to 2006 (in/year)	Closure Rate 2004 to 2005 (in/year)	Rate Change Percent[1]	Comments
			Date	Inches					
S2750-E220 B-D	S2750 DRIFT-E220	4-246	06/22/06	5.814	5.814	1.42	1.55	-8%	
S2750-W93 A-C	S2750 DRIFT-W93	4-247	04/25/06	5.811	5.811	1.84	1.59	16%	
S2750-W93 B-D	S2750 DRIFT-W93	4-247	04/25/06	3.982	3.982	1.05	1.11	-5%	
S3080-E55 A-C	S3080 DRIFT-E55	4-248	06/22/06	6.678	6.678	1.65	1.62	2%	
S3080-E55-2 B-D	S3080 DRIFT-E55	4-248	06/22/06	3.474	5.174	1.34	1.27	6%	
S3080-E220-2 A-C	S3080 DRIFT-E220	4-249	06/22/06	3.614	6.348	1.84	1.71	8%	
S3080-E220 B-D	S3080 DRIFT-E220	4-249	06/22/06	6.159	6.159	1.60	1.58	1%	
S3080-W100 A-C	S3080 DRIFT-W100	4-250	06/22/06	6.080	6.080	1.76	1.56	13%	
S3080-W100 B-D	S3080 DRIFT-W100	4-250	06/22/06	4.971	4.971	1.22	1.25	-2%	
S3310-E55 A-C	S3310 DRIFT-E55	4-251	06/23/06	6.648	6.648	1.77	1.87	-5%	
S3310-E55 B-D	S3310 DRIFT-E55	4-251	06/23/06	5.990	5.990	1.52	1.75	-13%	
S3310-E220 A-C	S3310 DRIFT-E220	4-252	06/23/06	7.295	7.295	2.04	2.00	2%	
S3310-E220 B-D	S3310 DRIFT-E220	4-252	06/23/06	7.236	7.236	2.06	2.00	3%	
S3310-W100-2 A-C	S3310 DRIFT-W100	4-253	06/23/06	1.421	5.957	1.73	N/A	N/A	
S3310-W100 B-D	S3310 DRIFT-W100	4-253	06/23/06	5.372	5.372	1.55	1.73	-10%	
S3650-W100 A-C	S3650 DRIFT-W100	4-254	06/20/06	1.171	1.171	1.51	N/A	N/A	
S3650-W100 B-D	S3650 DRIFT-W100	4-254	06/20/06	0.971	0.971	1.21	N/A	N/A	

[1] NA indicates insufficient data to compare annualized rates.

Table 4-1 (Continued)
Access Drifts Data Analysis

JOINT METERS

Field Tag	Location	Figure Number	Date of Last Reading	Cumulative Displacement (inches)	Dilation Rate 2005 to 2006 (in/year)	Dilation Rate 2004 to 2005 (in/year)	Rate Change Percent	Comments
51X-CG-02703	S1950-E300 Overcast-NE	4-255	05/08/06	0.596	0.02	0.02	0%	
51X-CG-02706	S1950-E300 Overcast-SW	4-255	04/25/06	1.199	0.07	0.07	0%	
51X-CG-02707	S1950-E300 Overcast-NW	4-255	05/08/06	1.225	0.08	0.07	14%	
51X-CG-02708	S1950-E300 Overcast-SE	4-255	05/08/06	0.669	0.03	0.03	0%	

ROCKBOLT LOAD CELLS

Field Tag	Location	Figure Number	Date of Initial Reading	Date of Last Reading	Load (kips)	Comments
51X-WG-00293	E140 DRIFT-S1550	4-256	03/17/04	3/31/2006	54.8	
51X-WG-00294	E140 DRIFT-S1775	4-257	03/17/04	3/31/2006	57.6	
51X-WG-00295	E140 DRIFT-S2900	4-258	03/31/04	6/15/2006	48.9	
51X-WG-00296	E140 DRIFT-S2900	4-258	03/31/04	6/15/2006	57.8	

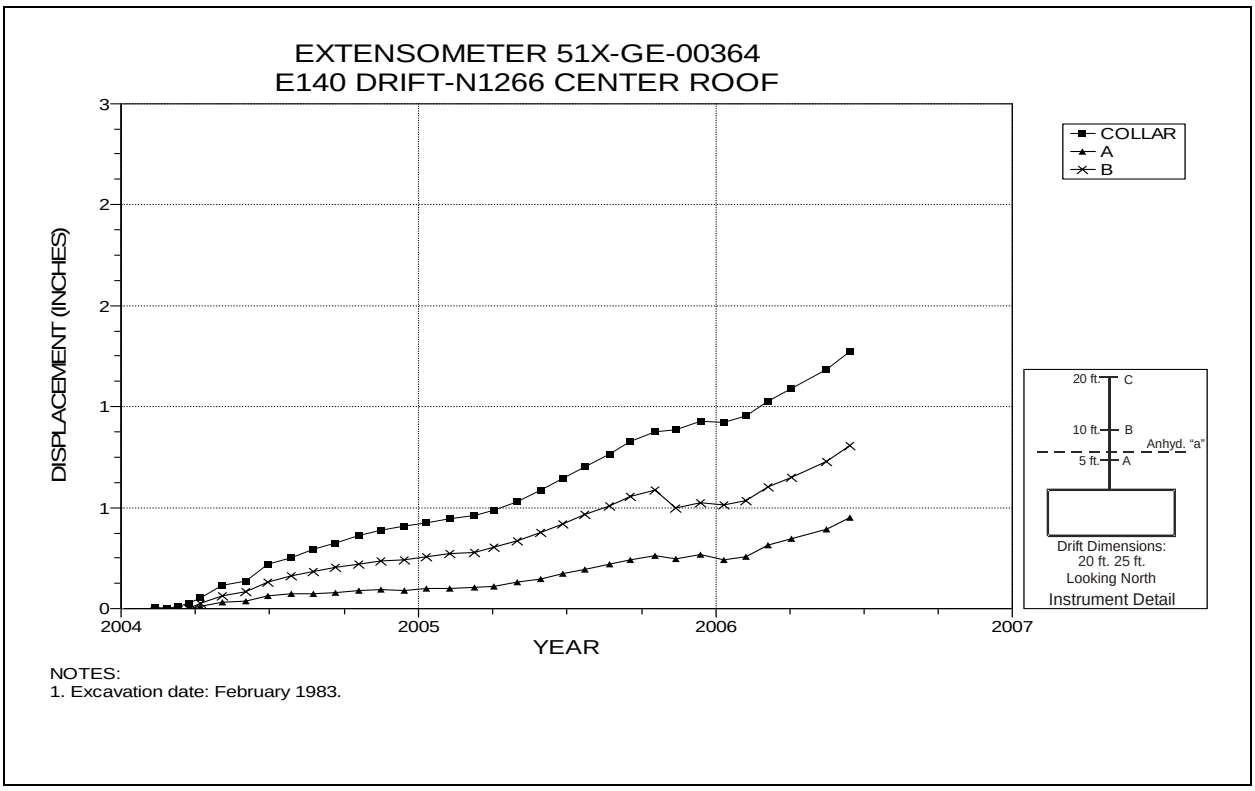


Figure 4-1 Extensometer 51X-GE-00364
E140 Drift at N1266 – Roof

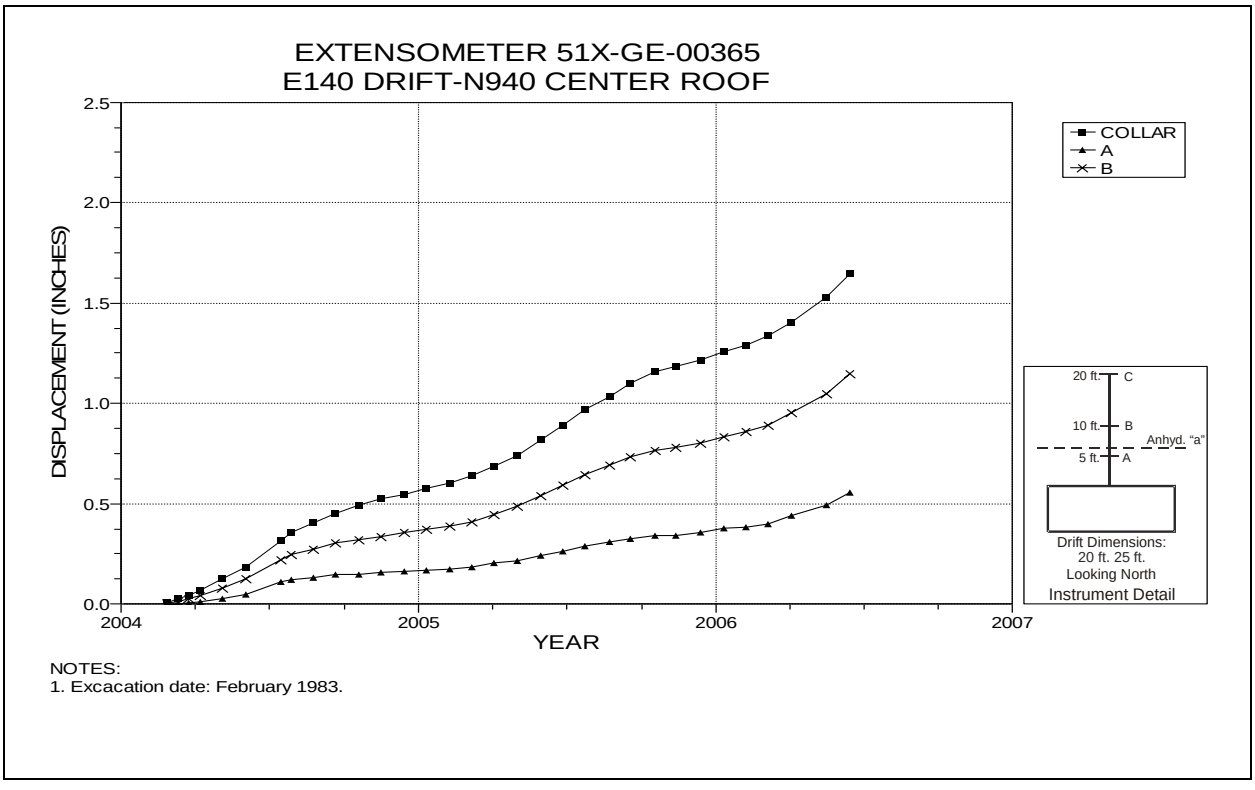


Figure 4-2 Extensometer 51X-GE-00365
E140 Drift at N940 – Roof

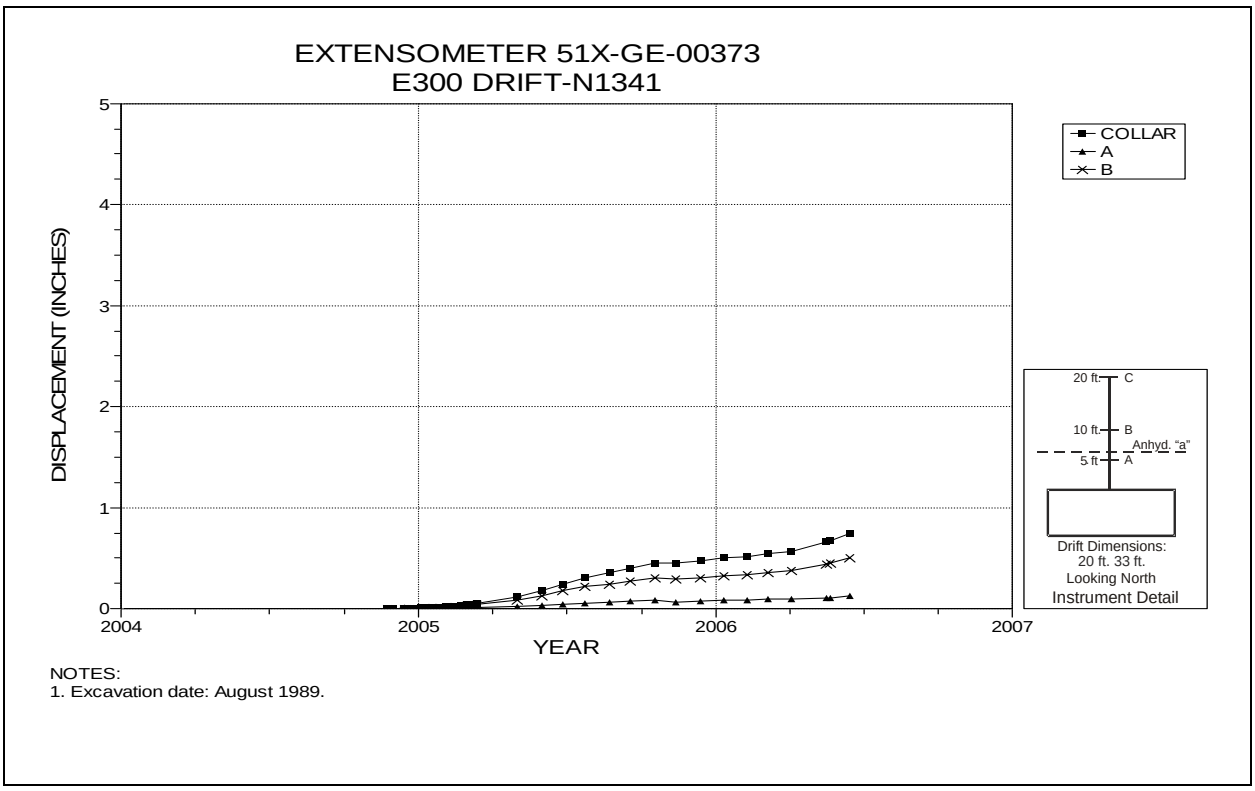


Figure 4-3 Extensometer 51X-GE-00373
E300 Drift at N1341 – Roof

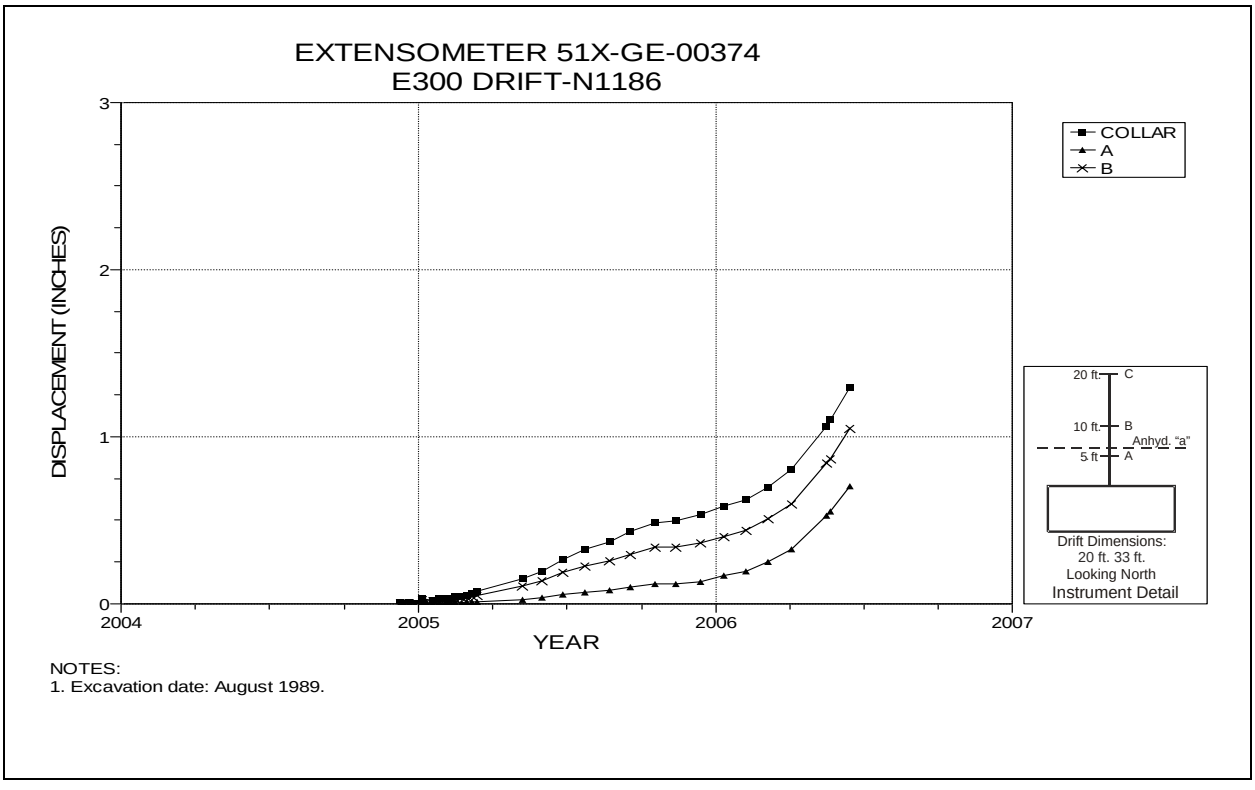


Figure 4-4 Extensometer 51X-GE-00374
E300 Drift at N1186 – Roof

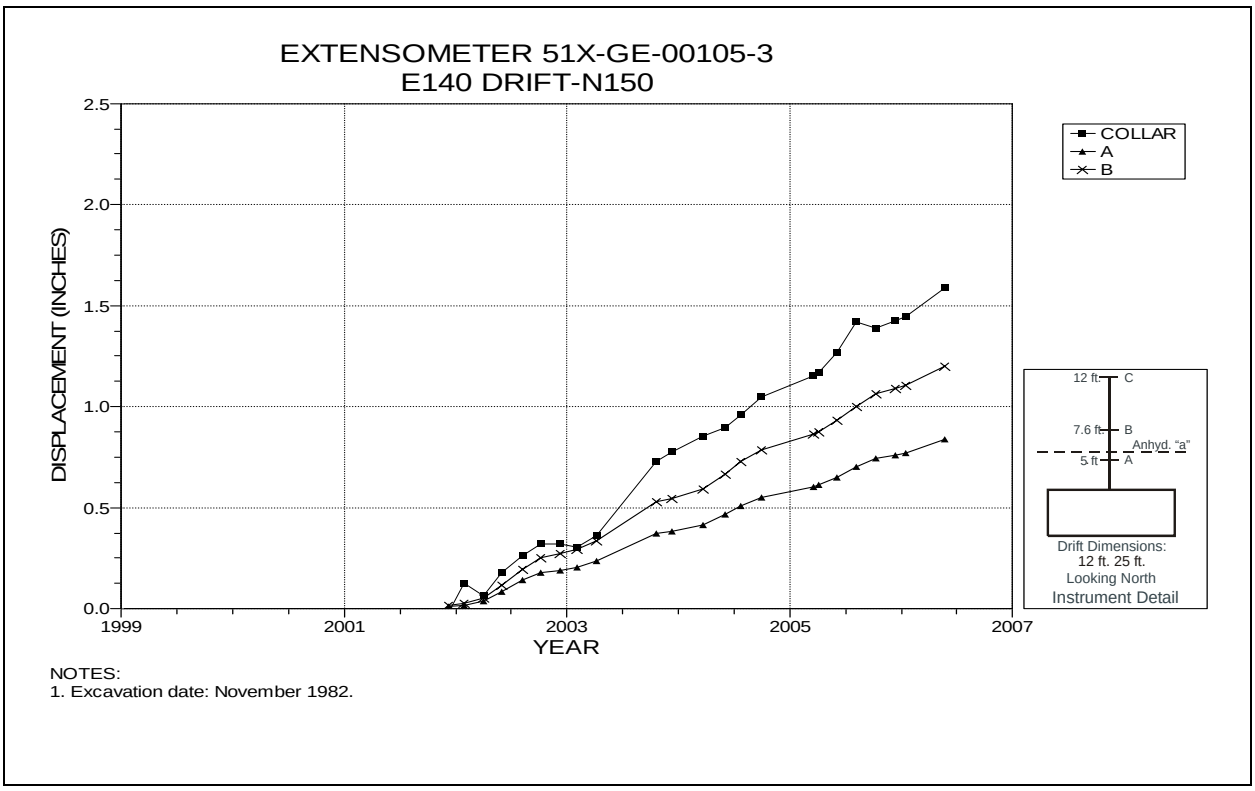


Figure 4-5 Extensometer 51X-GE-00105-3
E140 at N150 – Roof

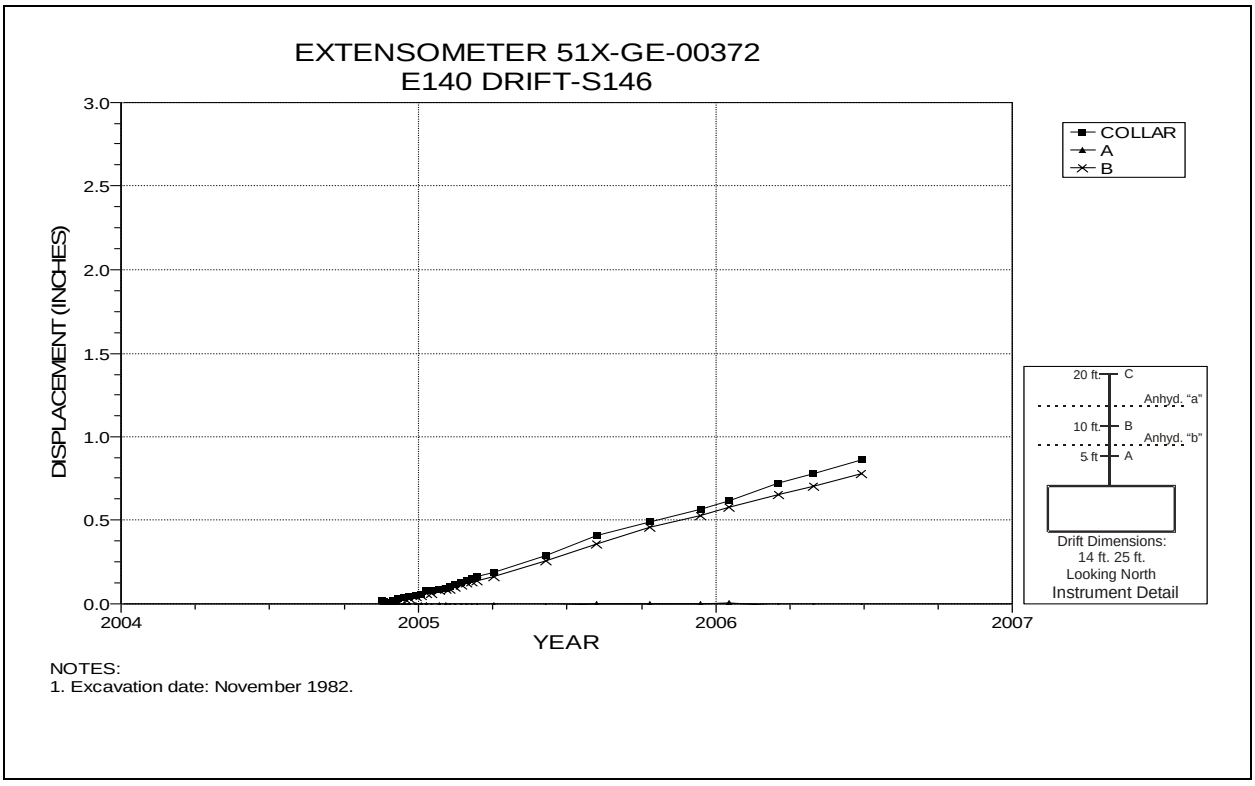


Figure 4-6 Extensometer 51X-GE-00372
E140 Drift at S146 – Roof

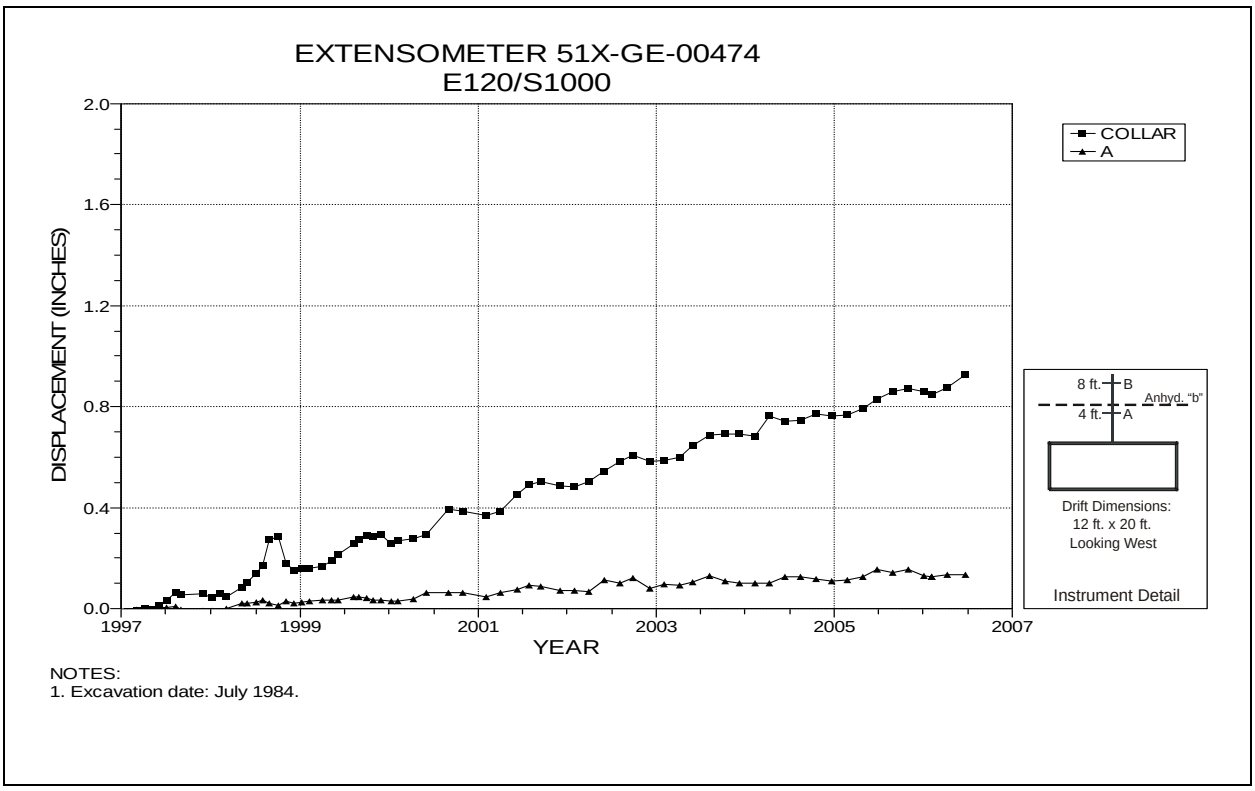


Figure 4-7 Extensometer 51X-GE-00474
S1000 Drift at E120 – Roof

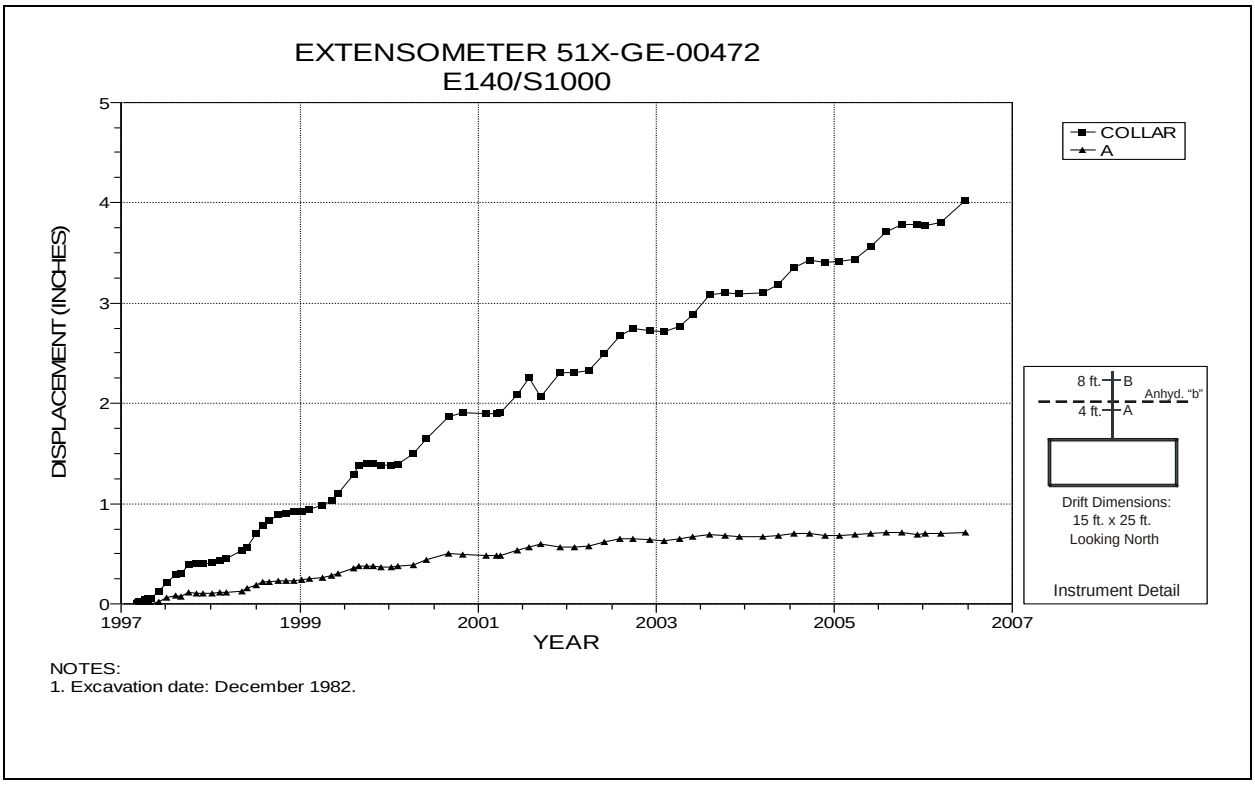


Figure 4-8 Extensometer 51X-GE-00472
E140 Drift at S1000 – Roof

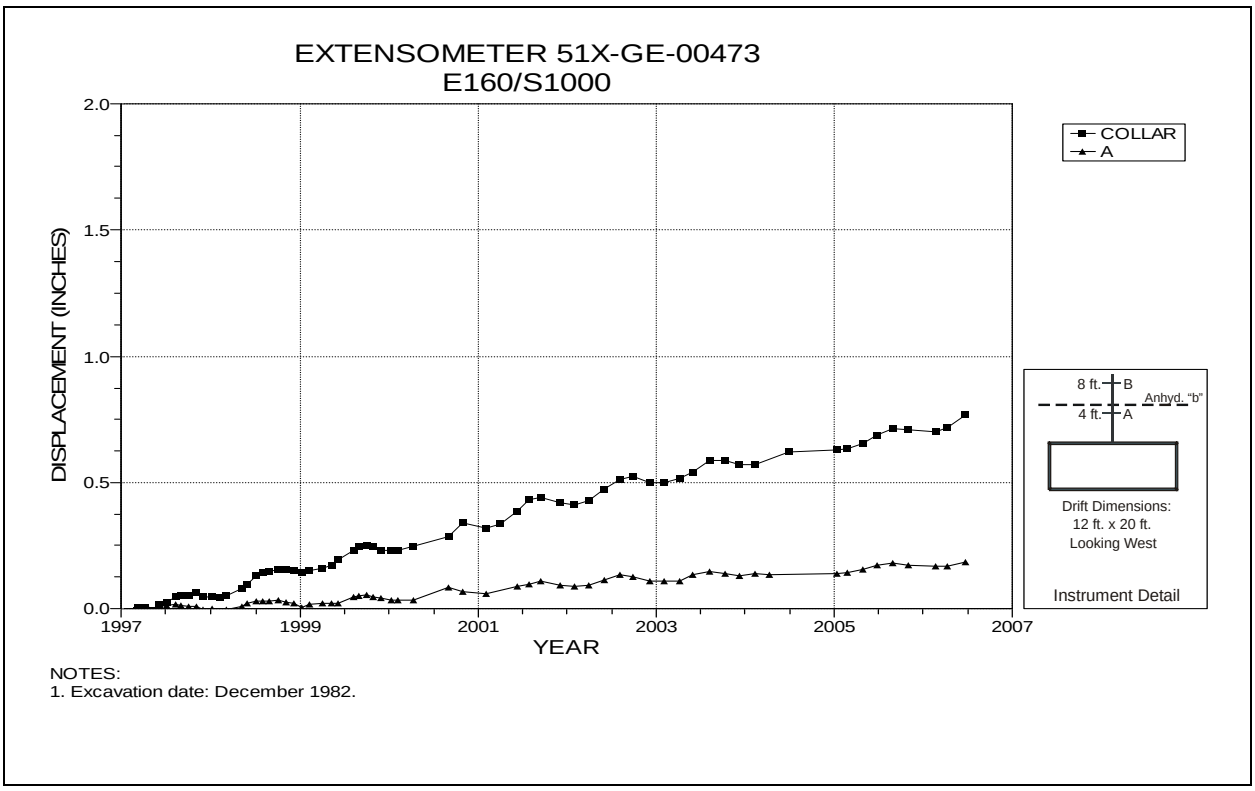


Figure 4-9 Extensometer 51X-GE-00473
S1000 Drift at E160 – Roof

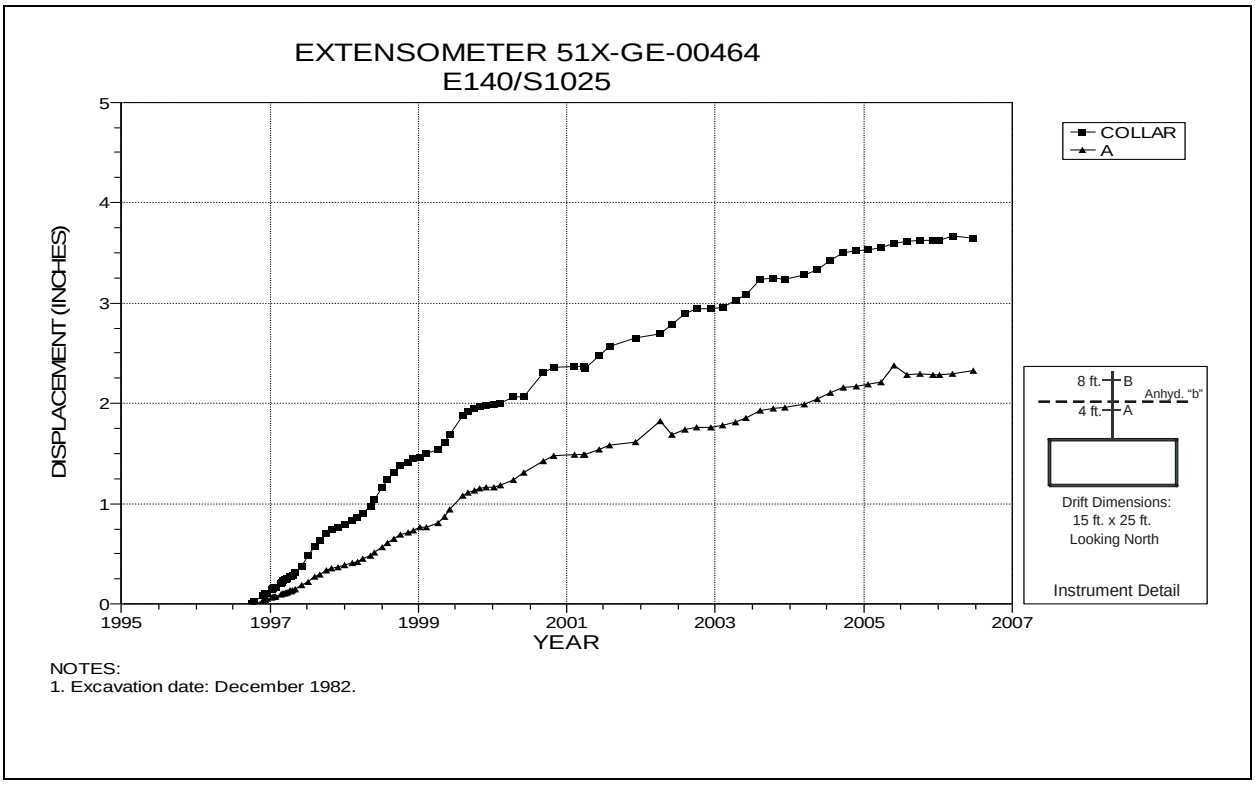


Figure 4-10 Extensometer 51X-GE-00464
E140 Drift at S1025 – Roof

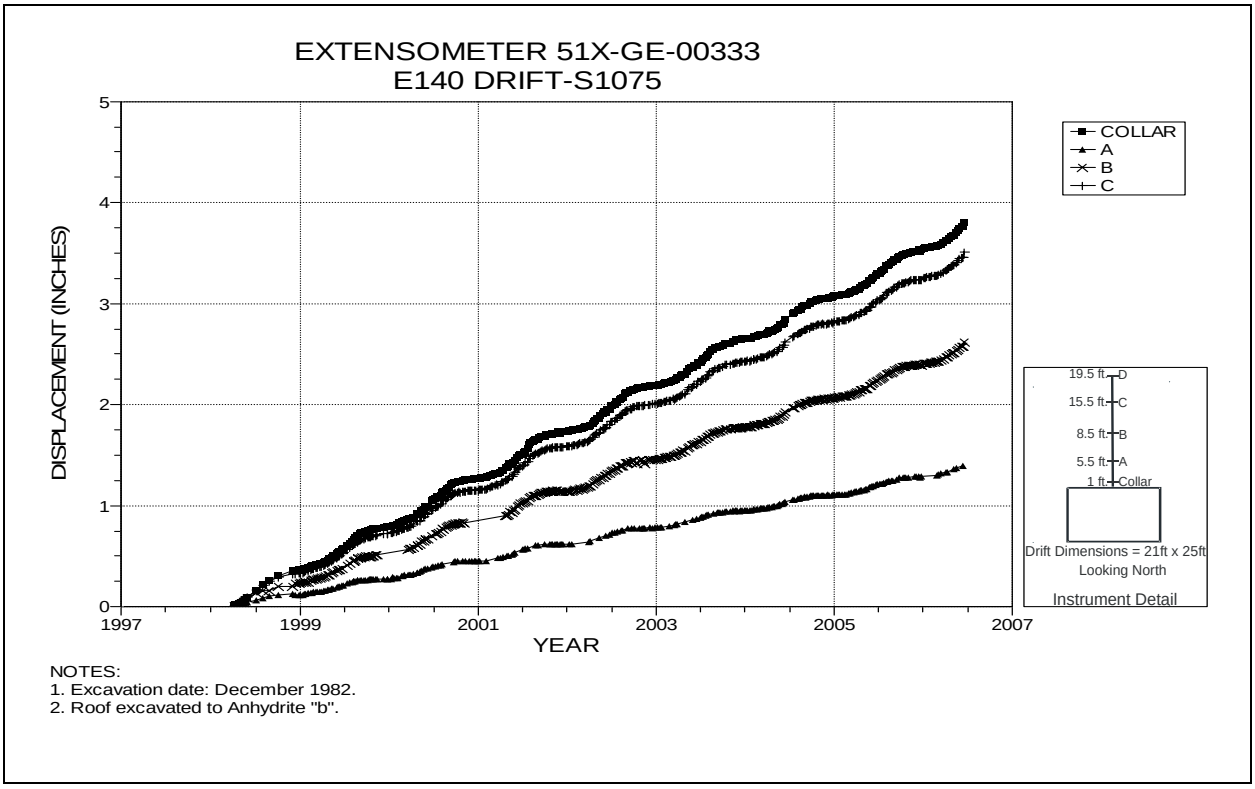


Figure 4-11 Extensometer 51X-GE-00333
E140 Drift at S1075 – Roof

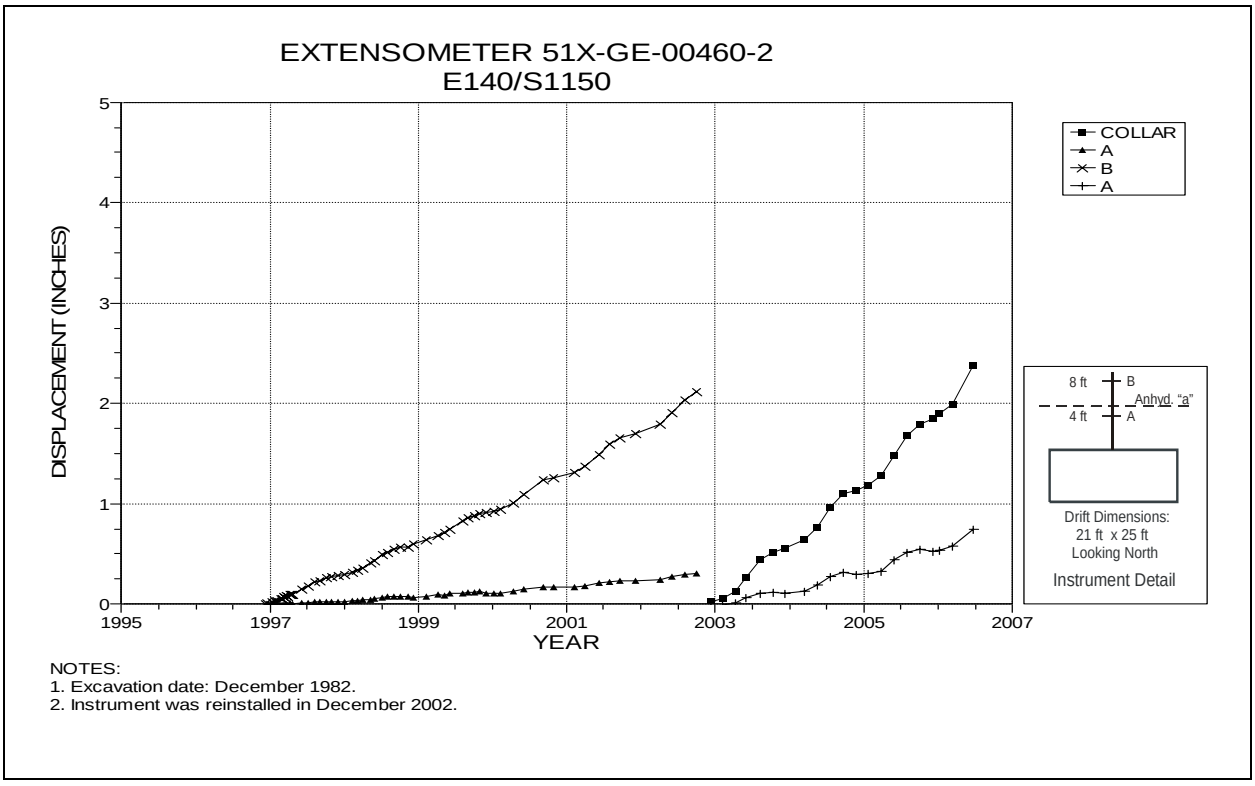


Figure 4-12 Extensometer 51X-GE-00460-2
E140 Drift at S1150 – Roof

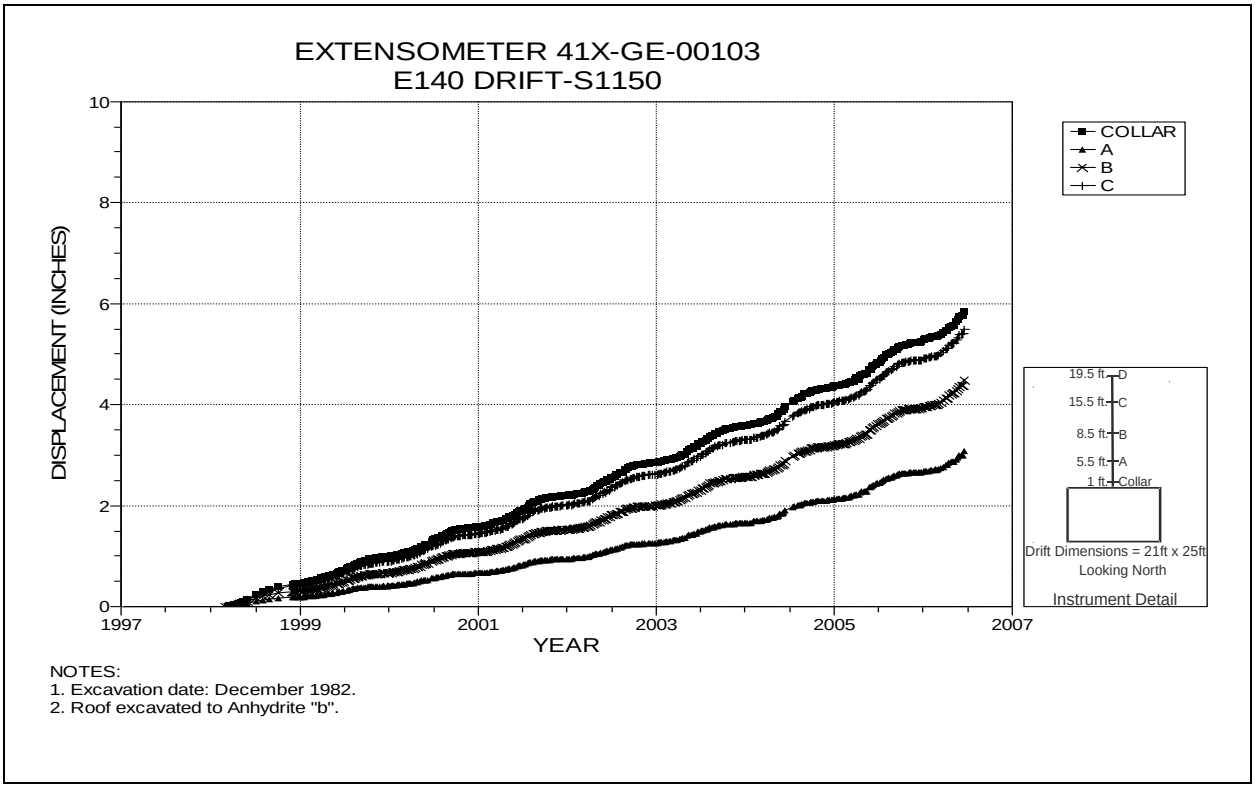


Figure 4-13 Extensometer 41X-GE-00103
E140 at S1150 – Roof

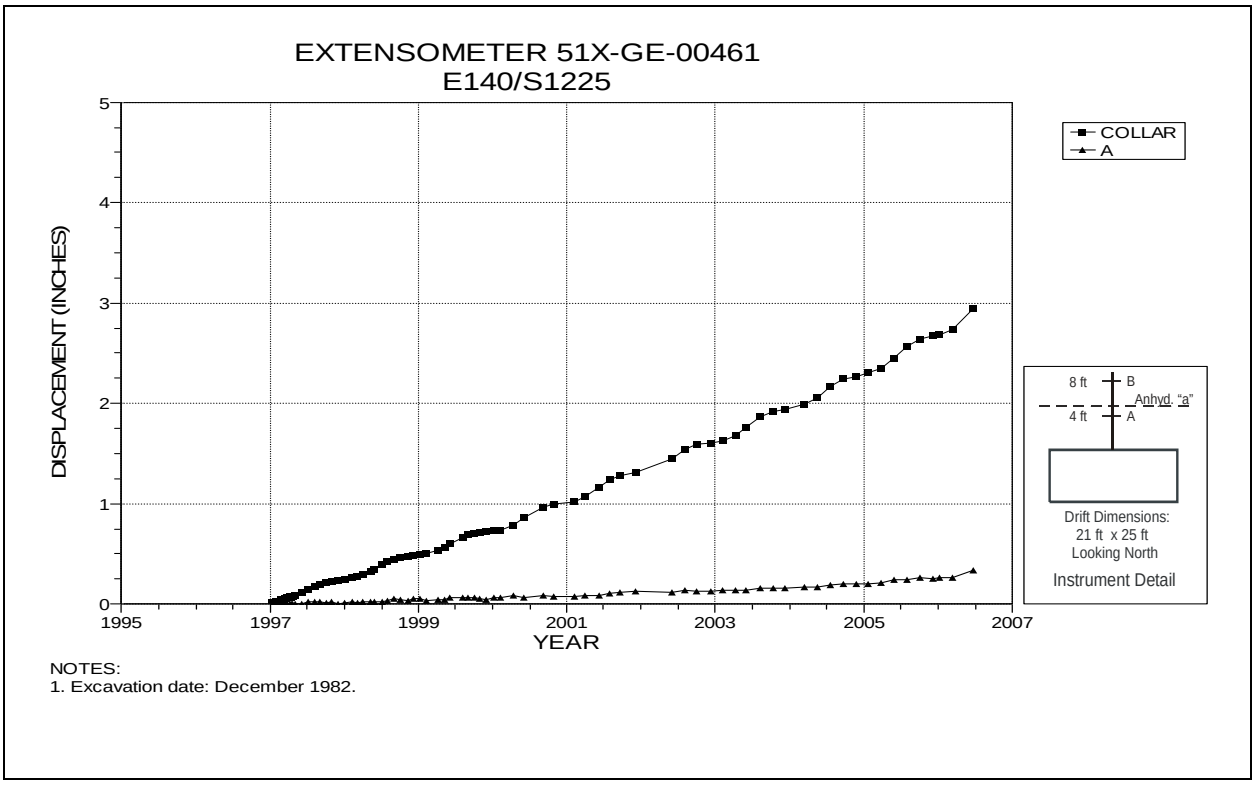


Figure 4-14 Extensometer 51X-GE-00461
E140 Drift at S1225 – Roof

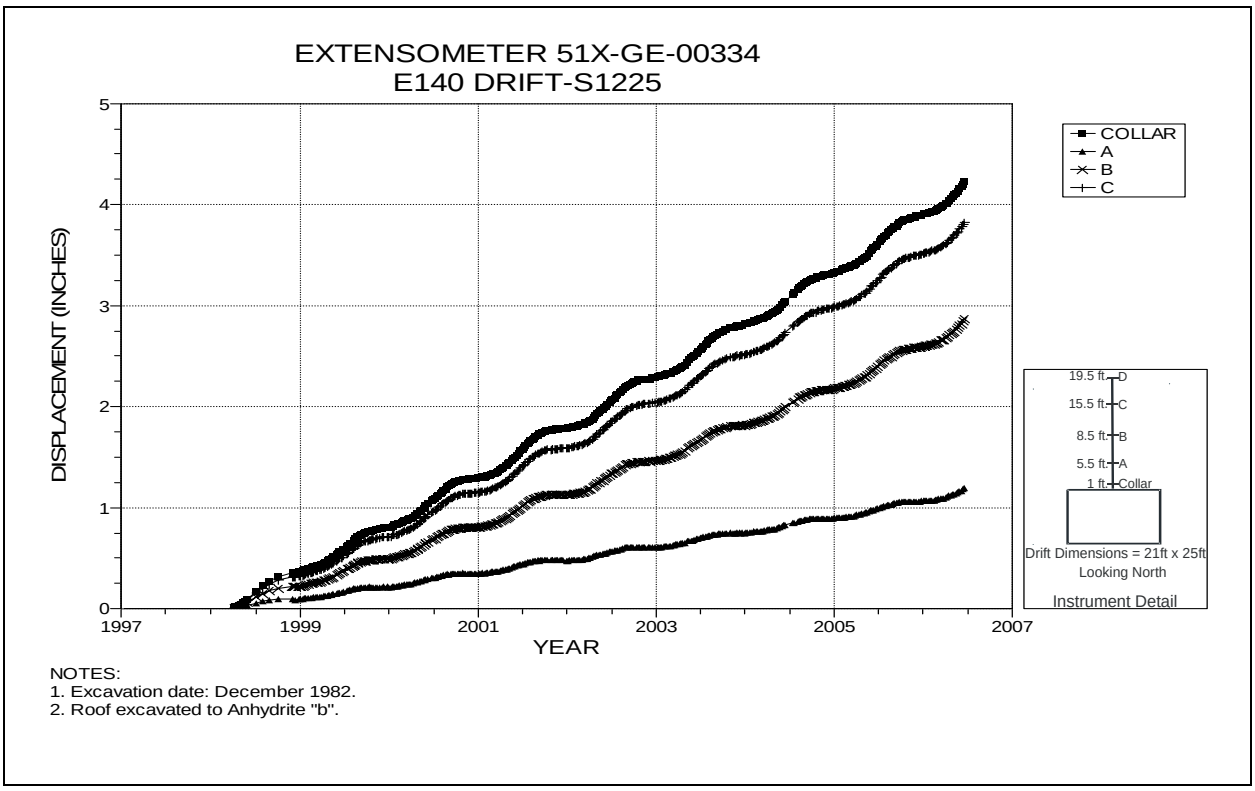


Figure 4-15 Extensometer 51X-GE-00334
E140 Drift at S1225 – Roof

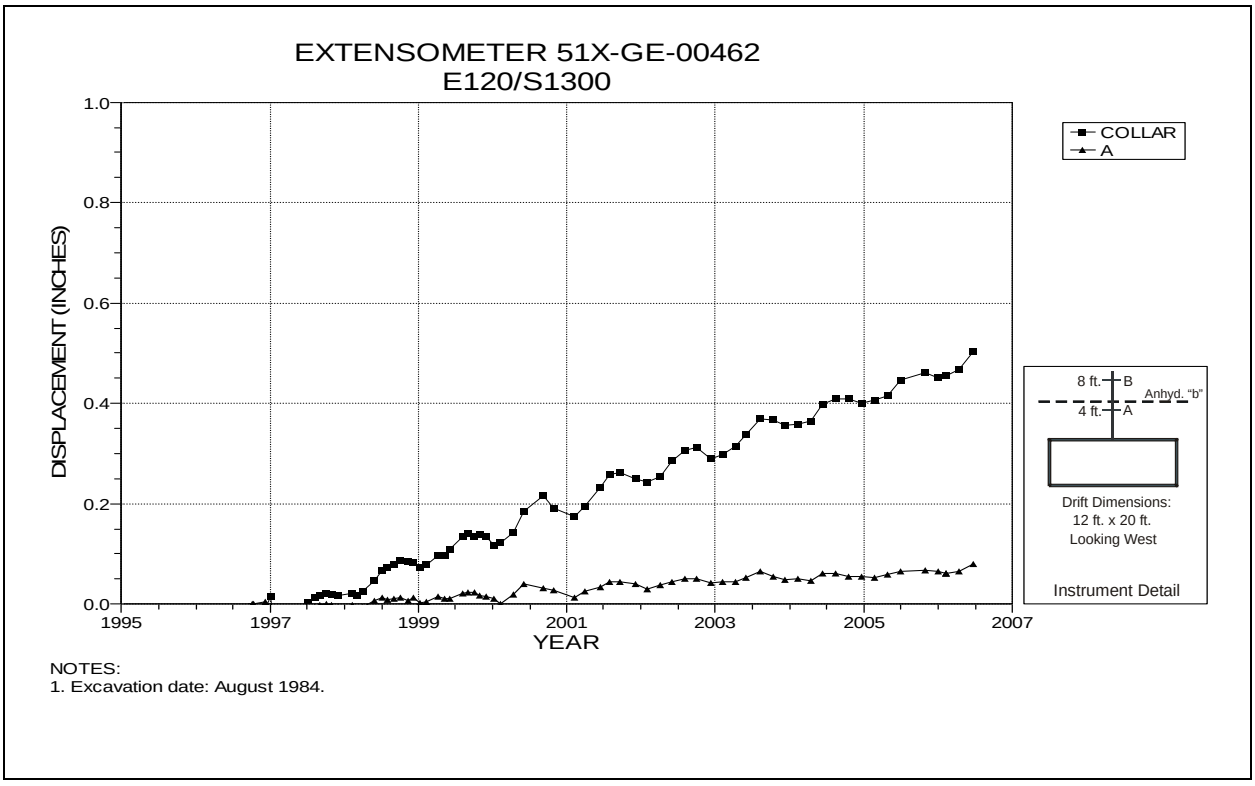


Figure 4-16 Extensometer 51X-GE-00462
E120 at S1300 – Roof

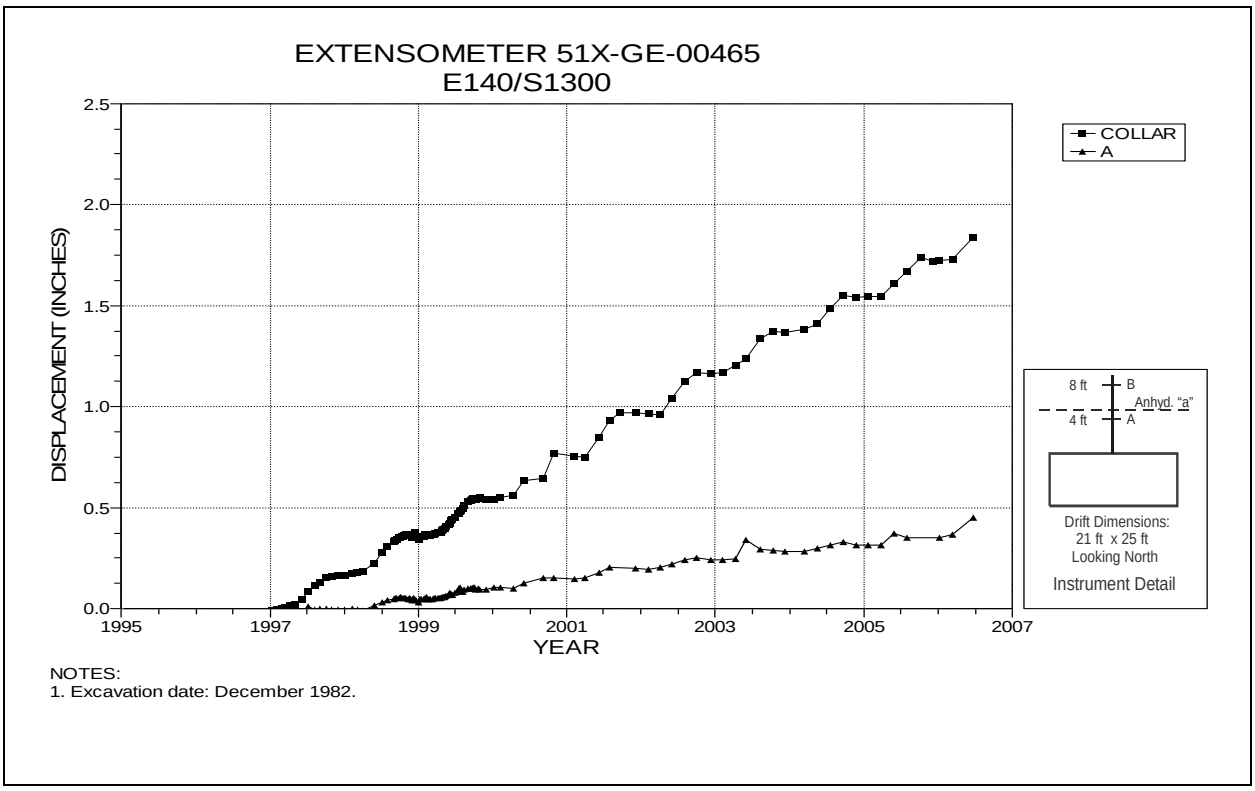


Figure 4-17 Extensometer 51X-GE-00465
E140 Drift at S1300 – Roof

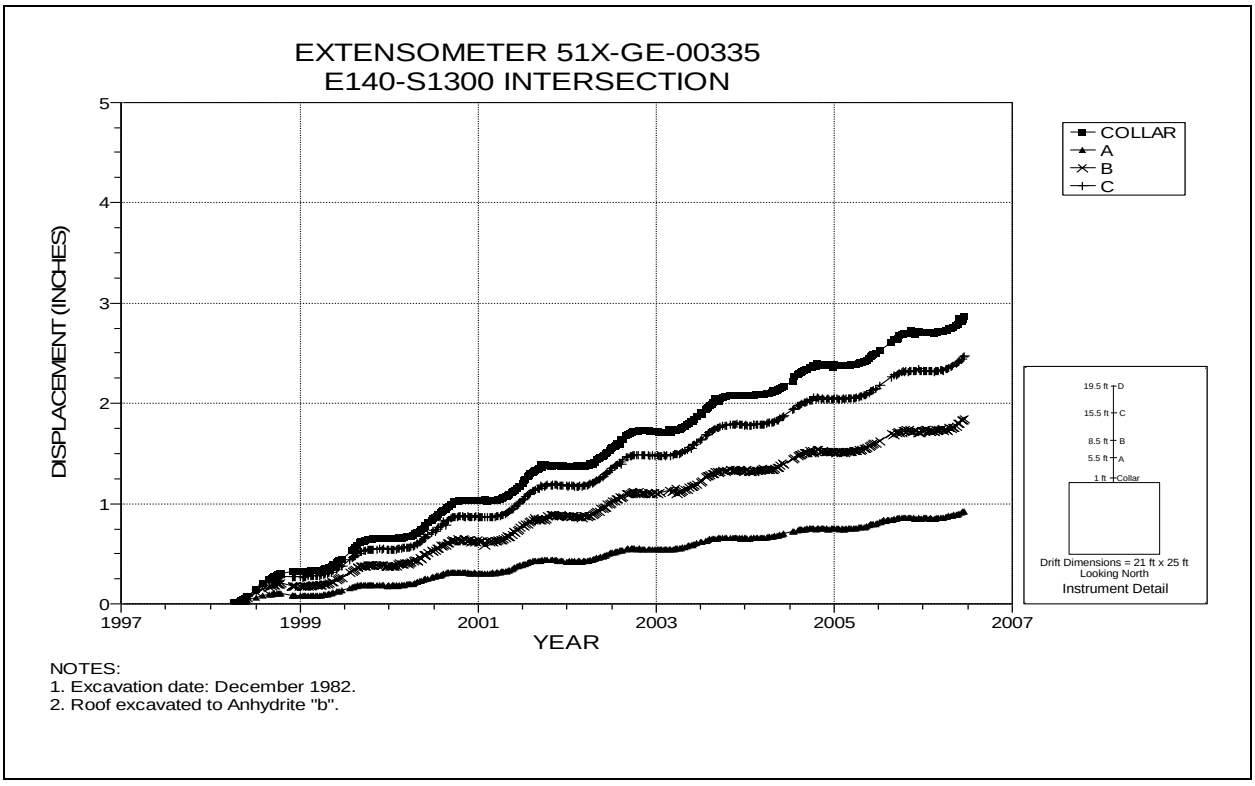


Figure 4-18 Extensometer 51X-GE-00335
E140 Drift at S1300 – Roof

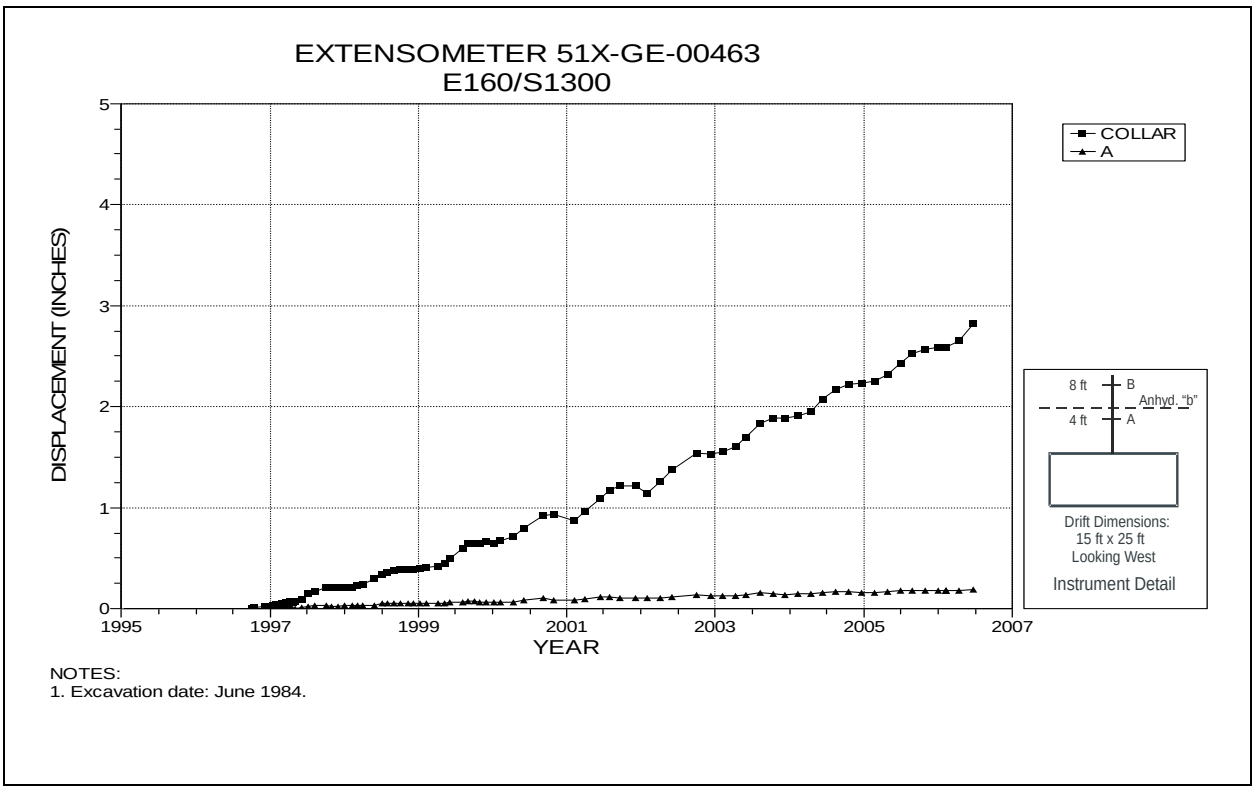


Figure 4-19 Extensometer 51X-GE-00463
S1300 Drift at E160 – Roof

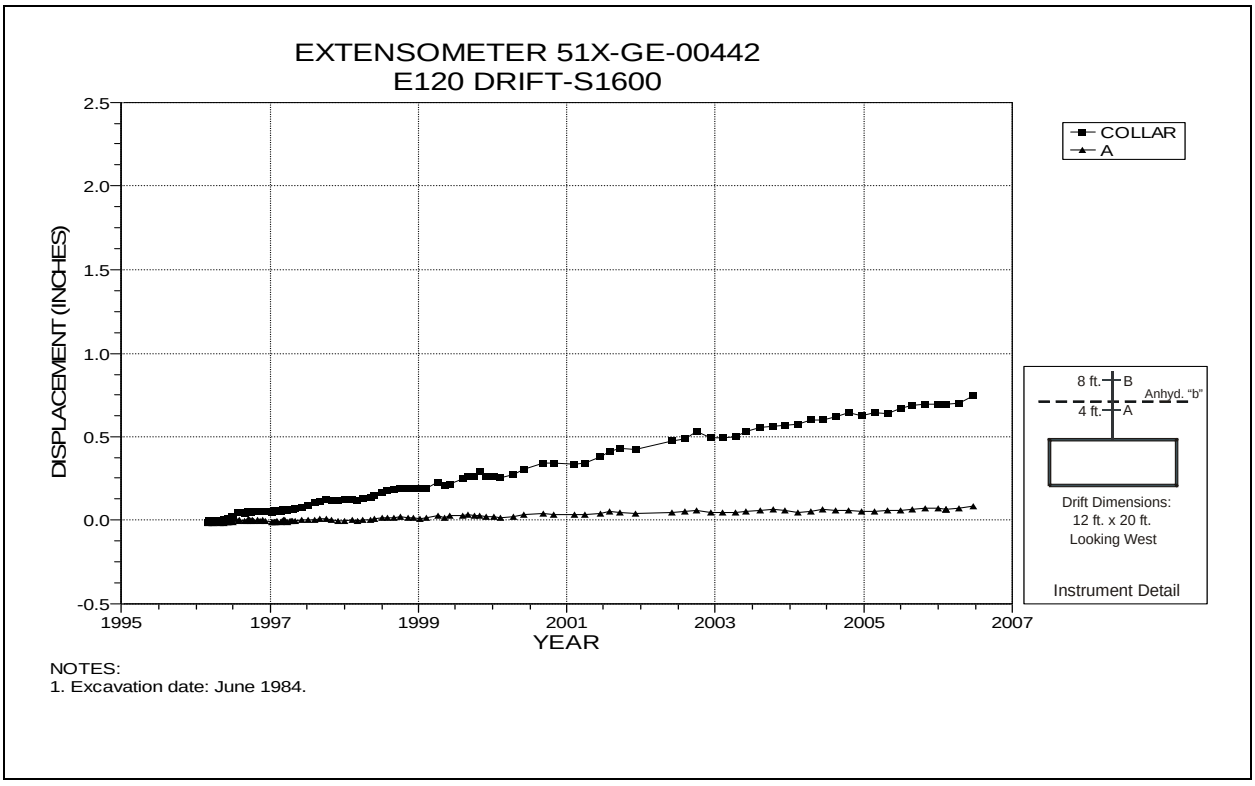


Figure 4-20 Extensometer 51X-GE-00442
S1600 Drift at E120 – Roof

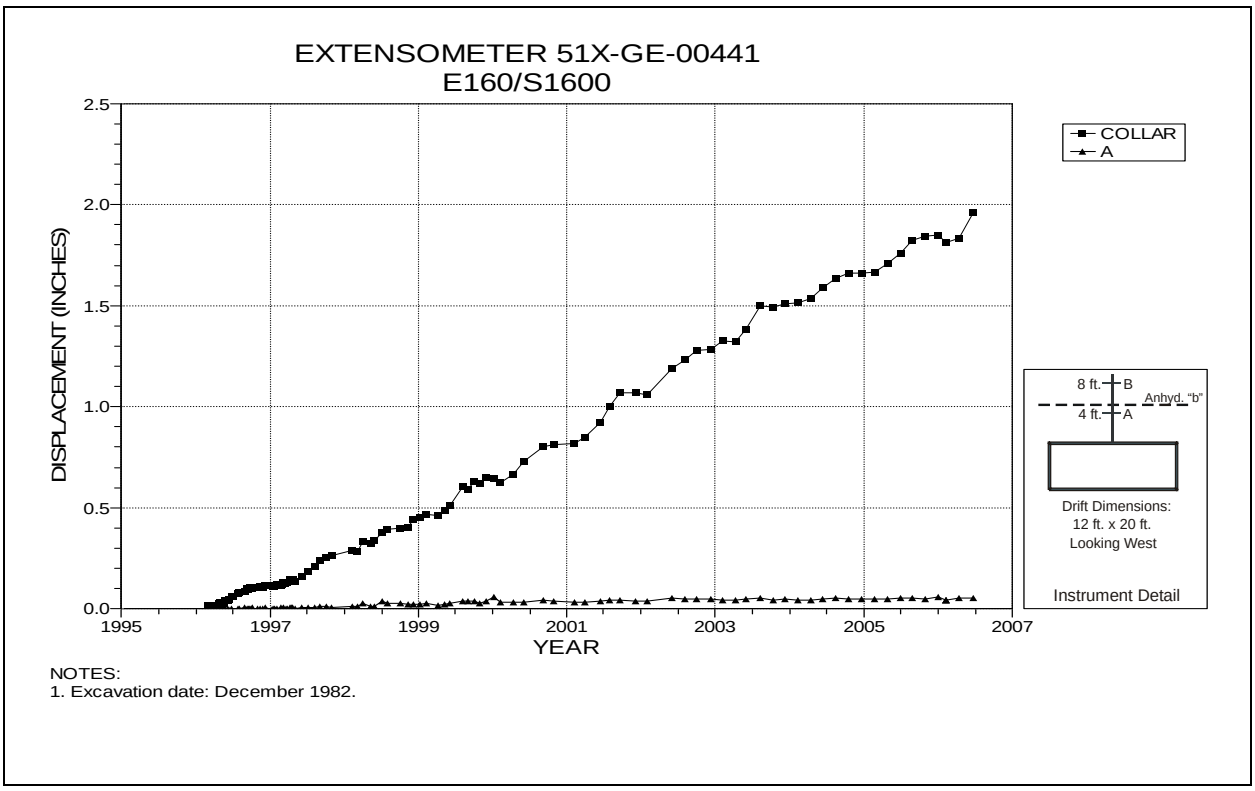


Figure 4-21 Extensometer 51X-GE-00411
S1600 Drift at E160 – Roof

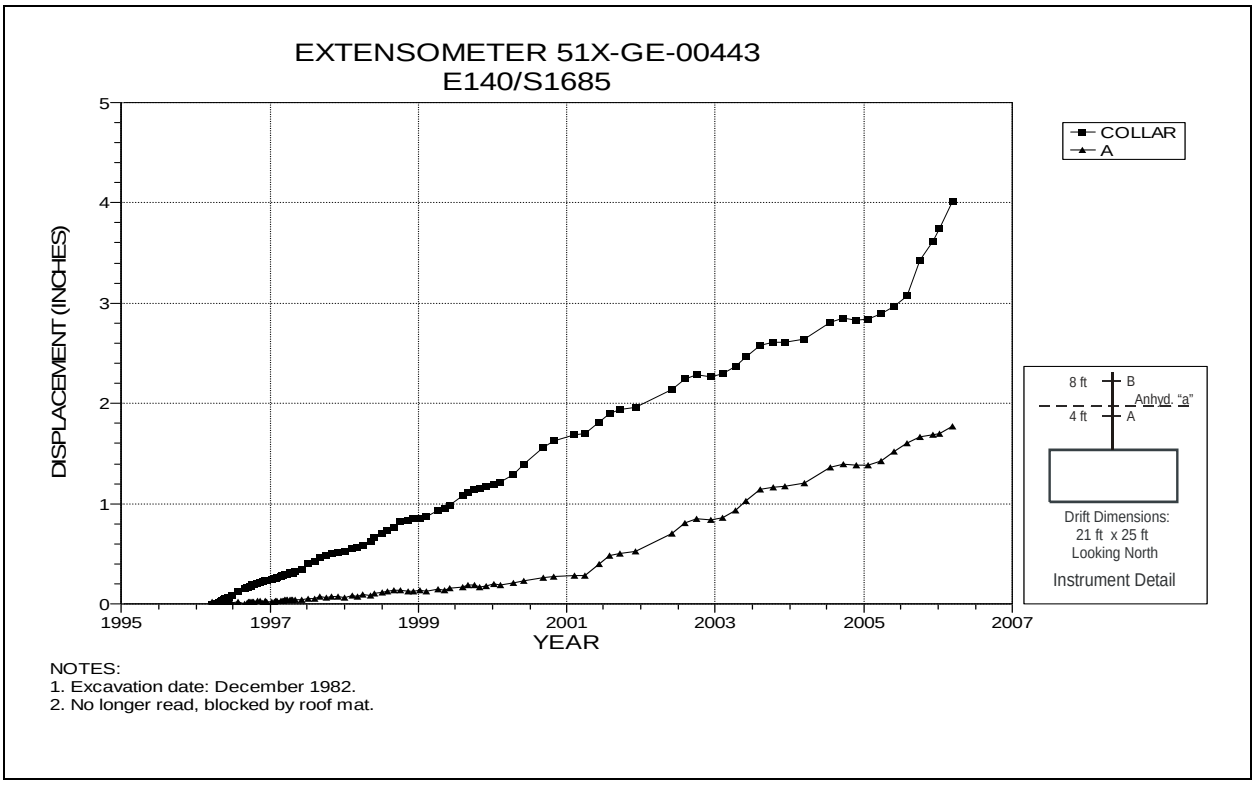
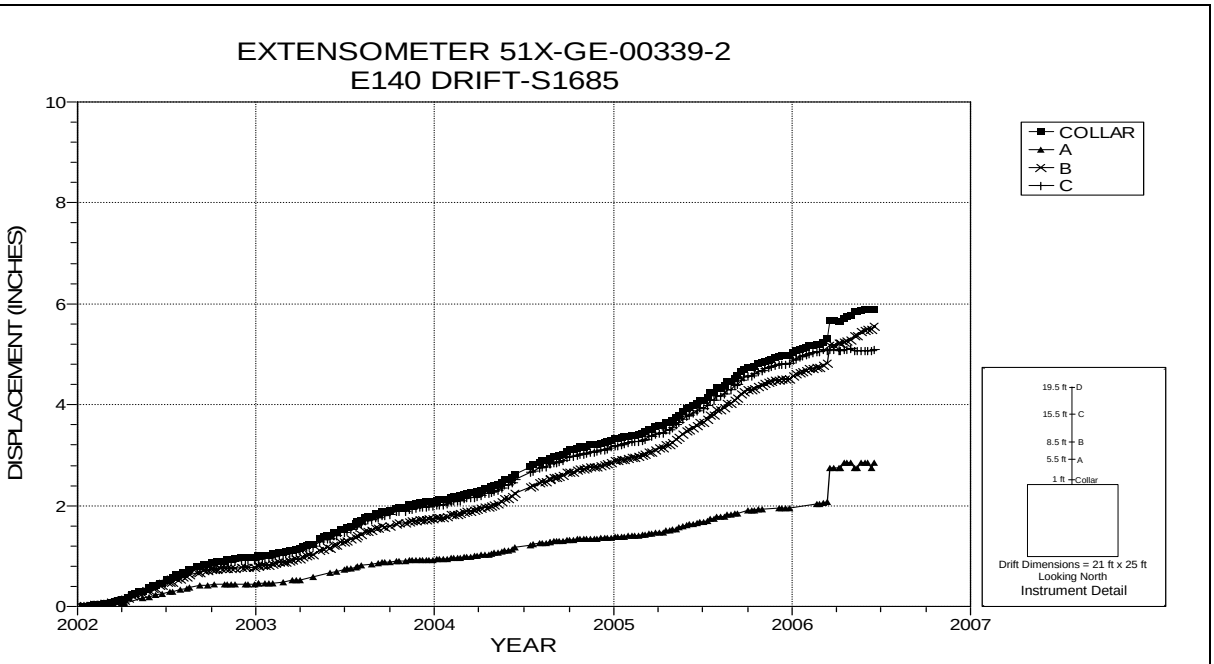
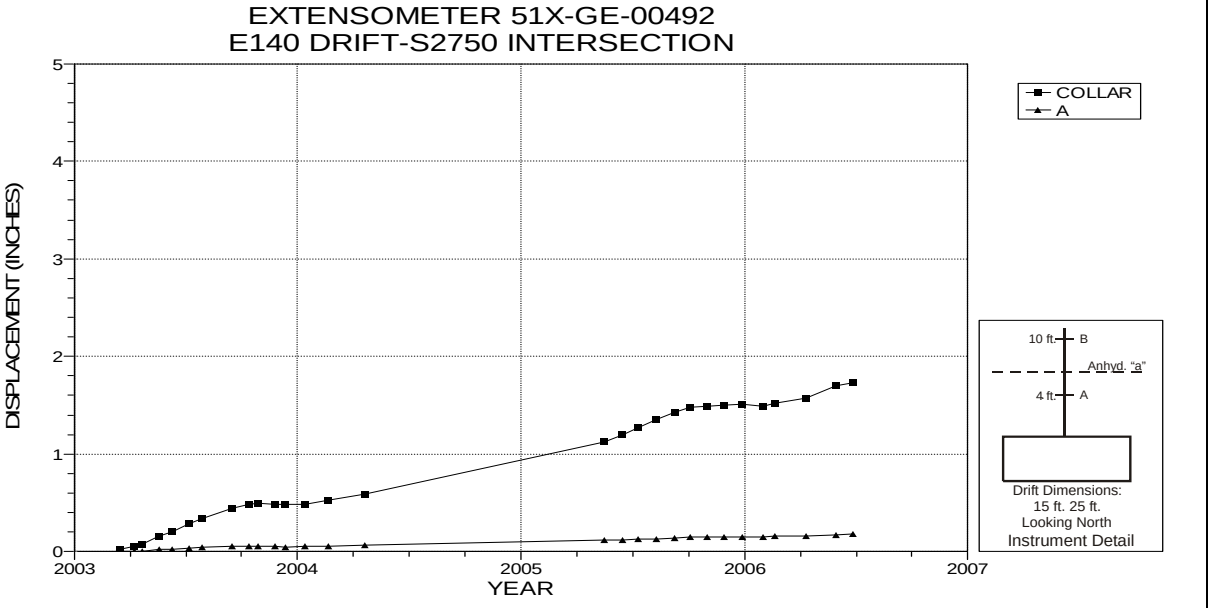


Figure 4-22 Extensometer 51X-GE-00443
E140 Drift at S1685 – Roof



NOTES:
1. Excavation date: December 1982.
2. Roof excavated to Anhydrite "b".
3. Anchors C and D (Collar) have reached maximum range.
4. Mechanical offset of unkown origin occurred in March 2006

Figure 4-23 Extensometer 51X-GE-00339-2
E140 Drift at S1685 – Roof



NOTES:
1. Excavation date: January 1983.

Figure 4-24 Extensometer 51X-GE-00492
E140 Drift at S2750 Drift Intersection – Roof

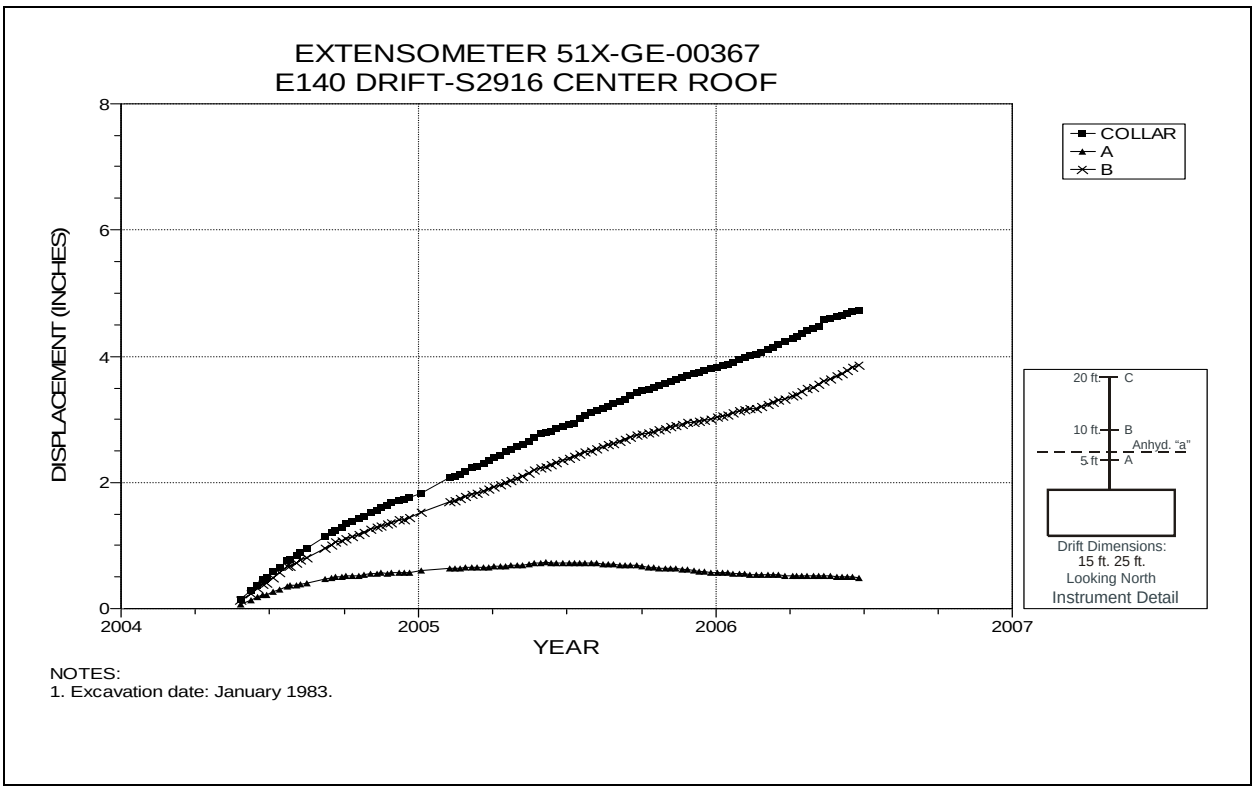


Figure 4-25 Extensometer 51X-GE-00367
E140 Drift at S2916 – Roof

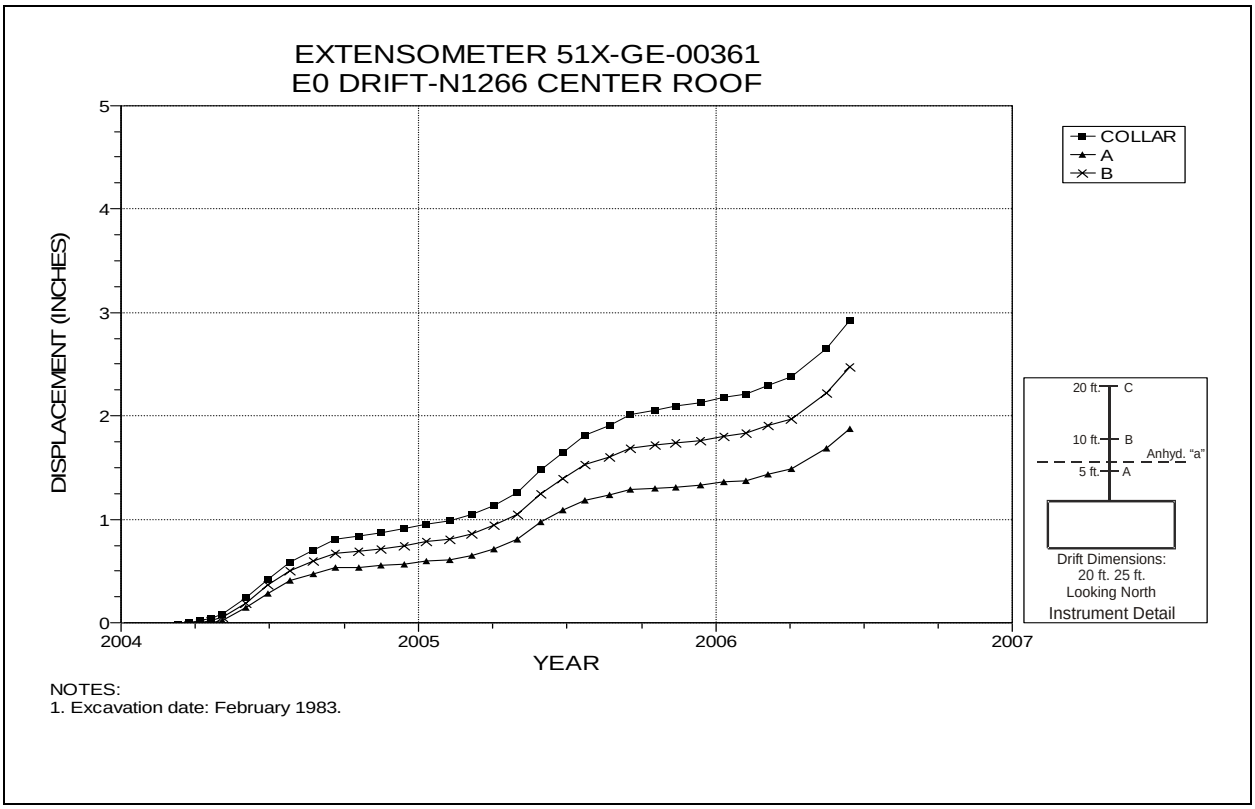


Figure 4-26 Extensometer 51X-GE-00361
E0 Drift at N1266 – Roof

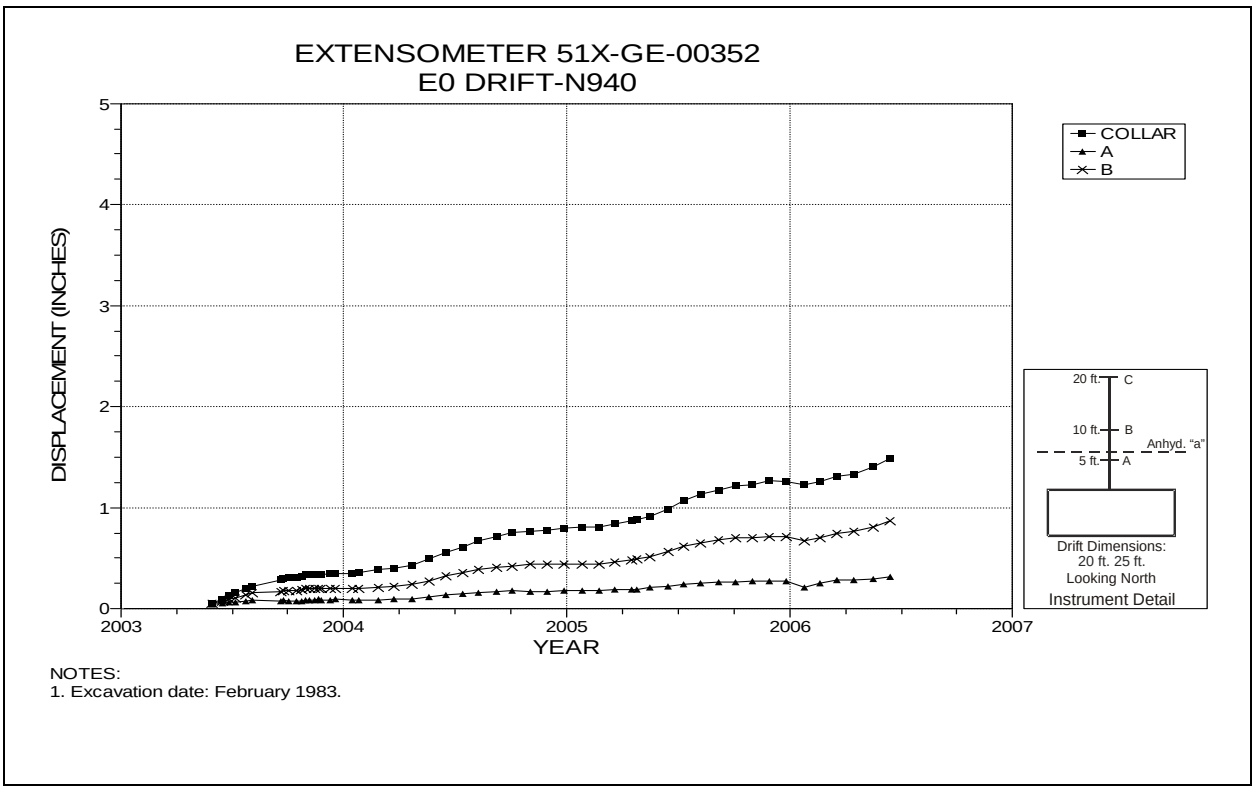


Figure 4-27 Extensometer 51X-GE-00352
E0 Drift at N940 – Roof

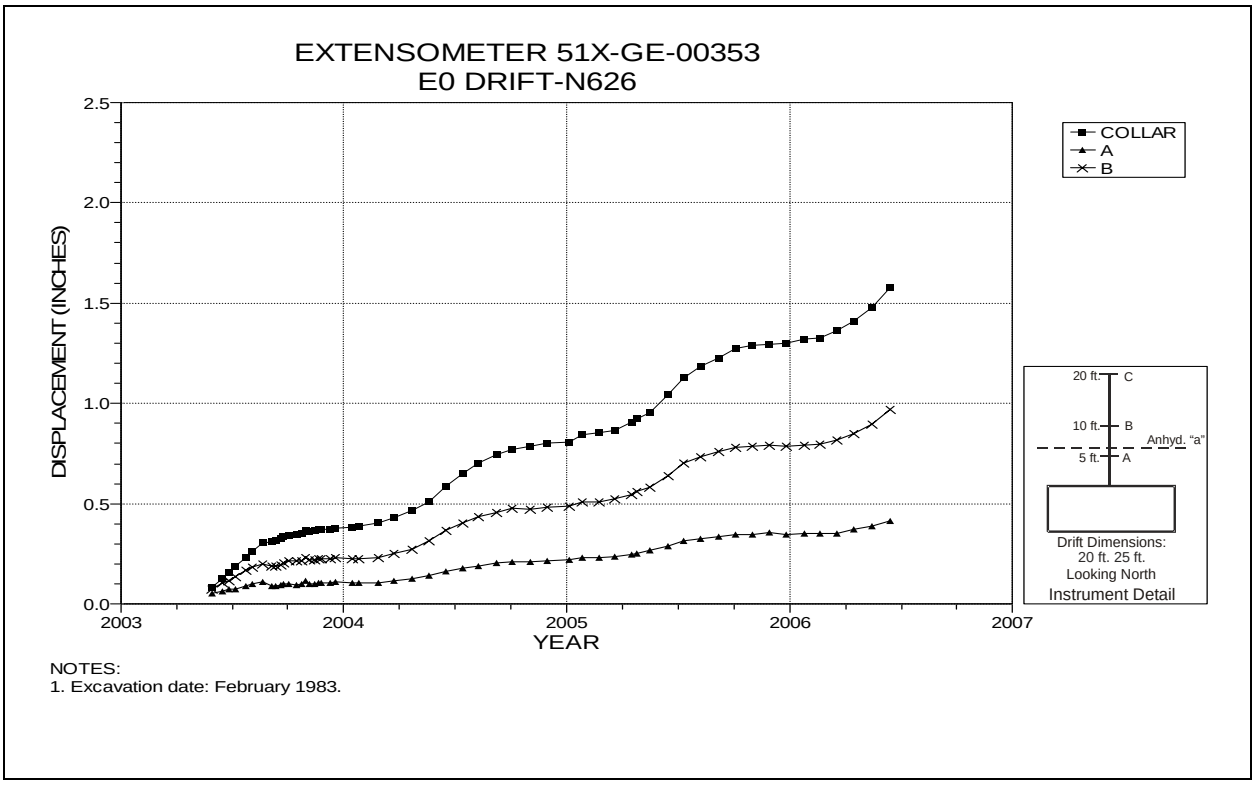


Figure 4-28 Extensometer 51X-GE-00353
E0 Drift at N626 – Roof

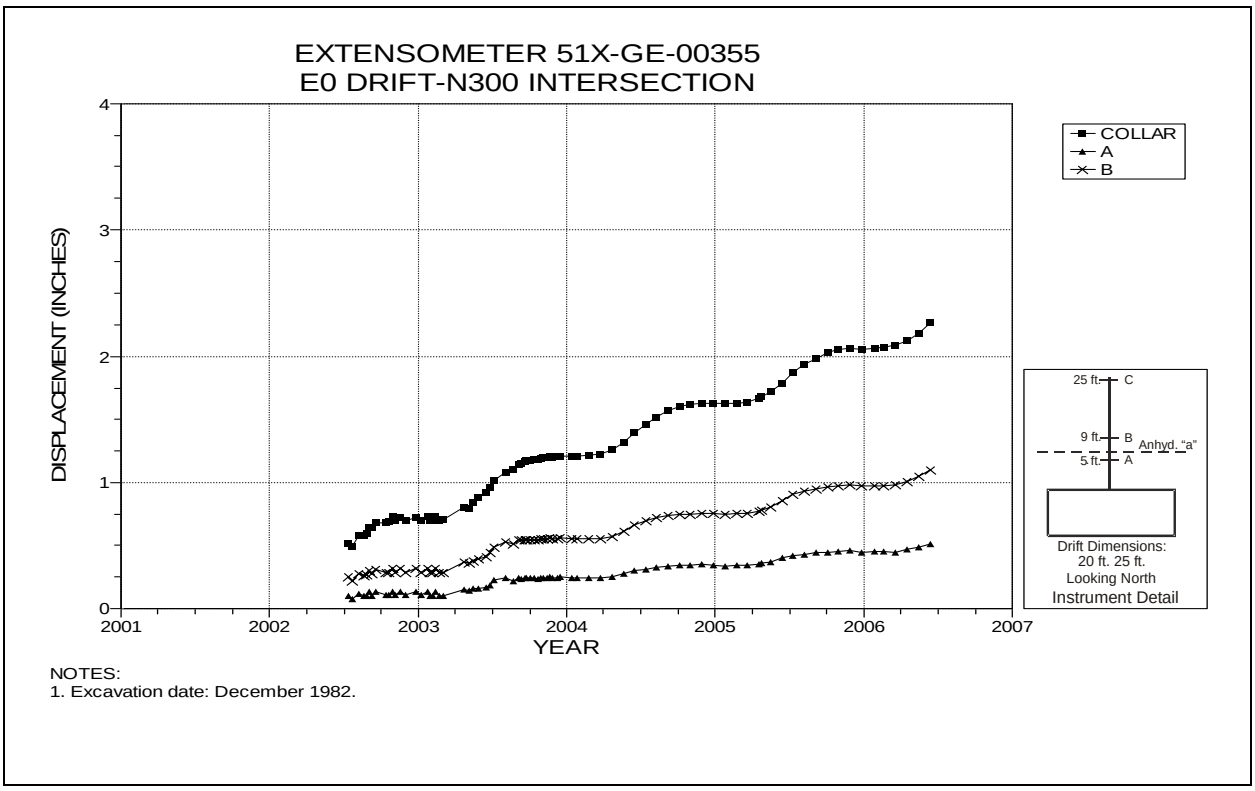


Figure 4-29 Extensometer 51X-GE-00355
E0 Drift at N300 – Roof

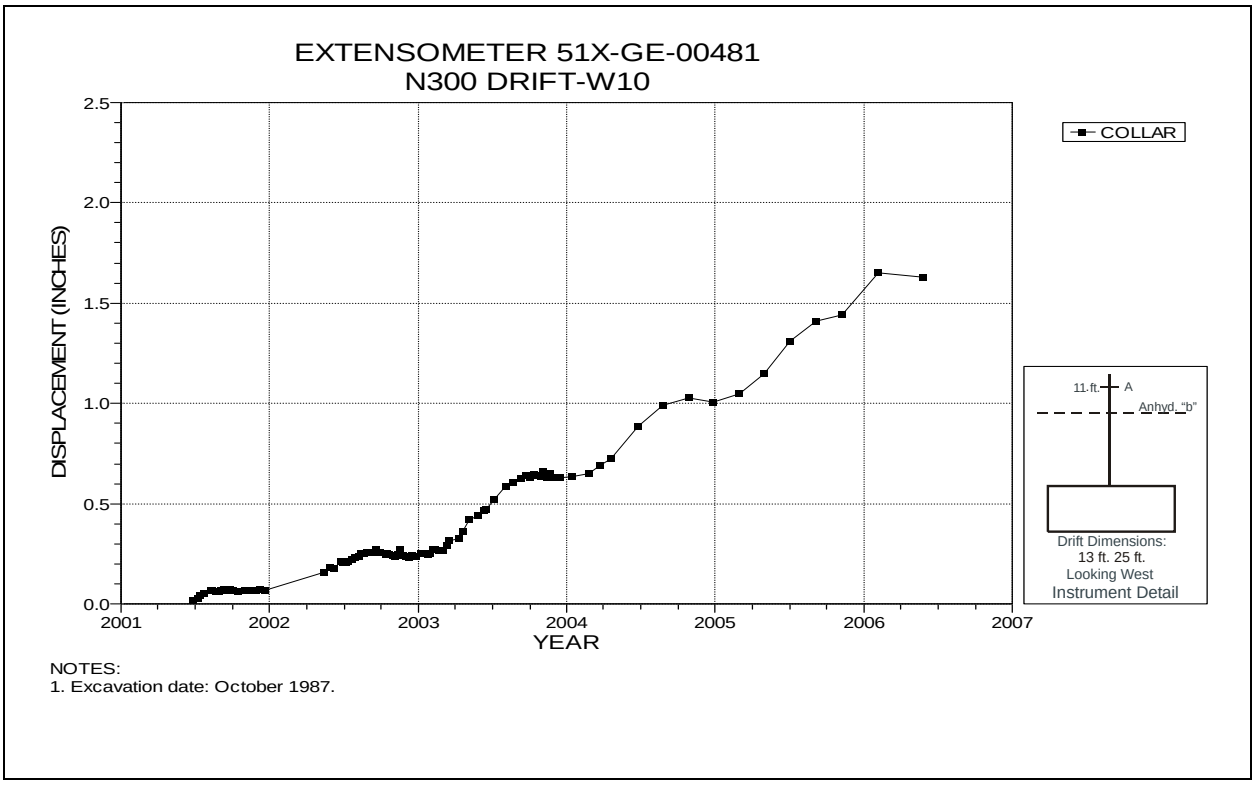


Figure 4-30 Extensometer 51X-GE-00481
N300 Drift at W10 – Roof

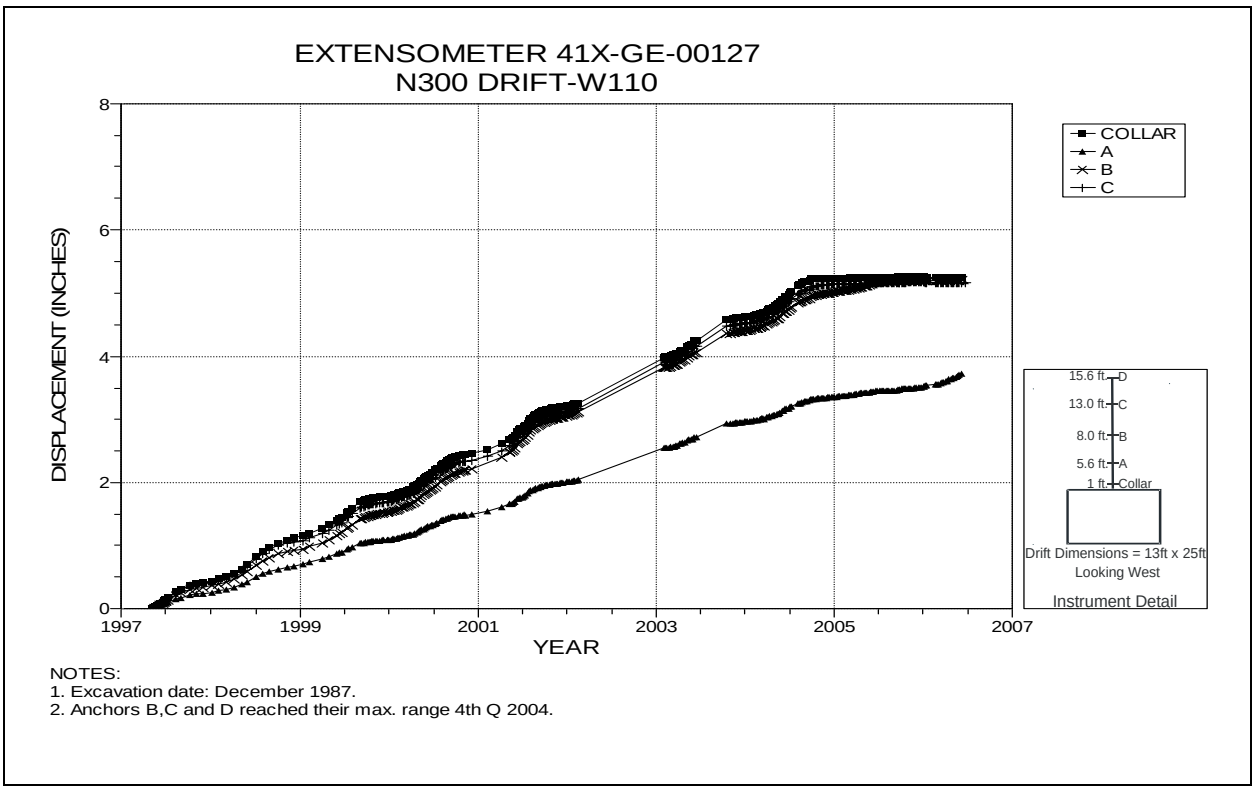


Figure 4-31 Extensometer 41X-GE-00127
N300 Drift at W110 – Roof

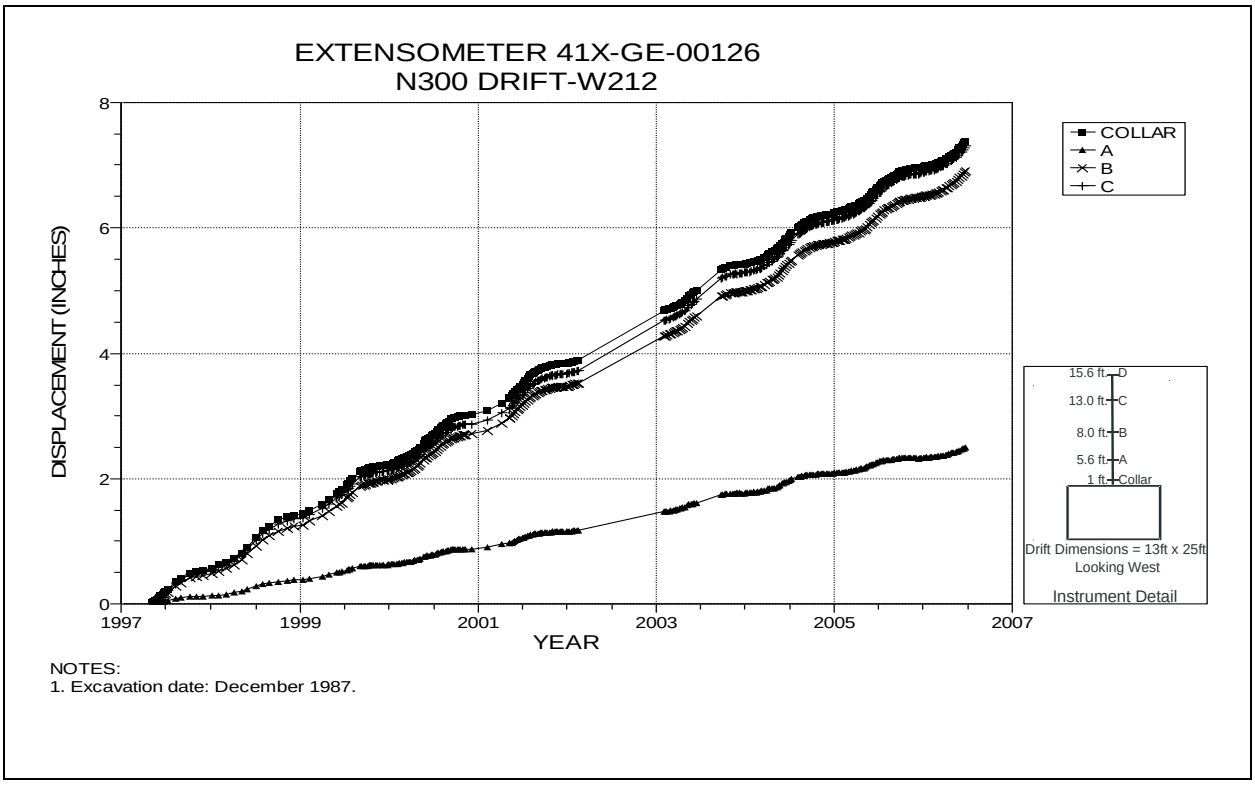
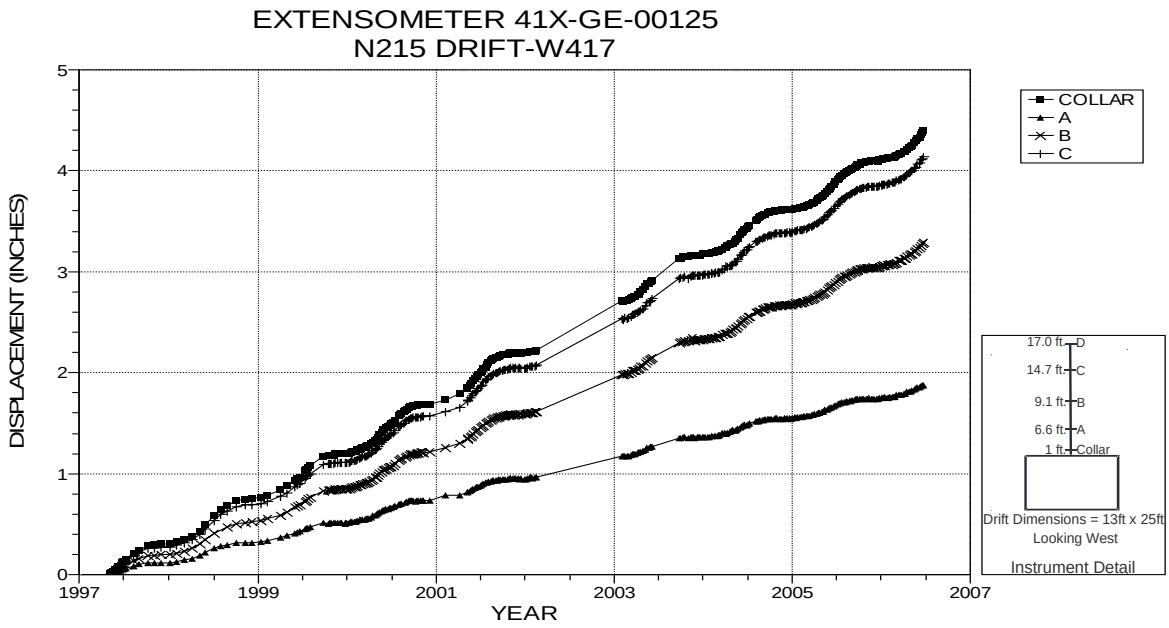
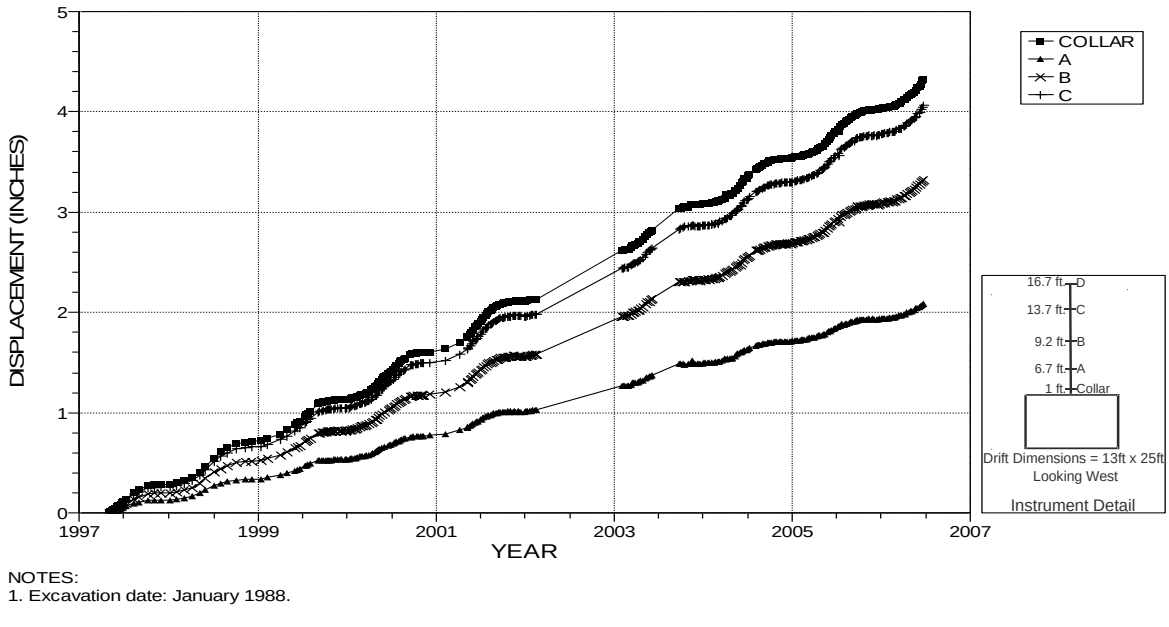


Figure 4-32 Extensometer 41X-GE-00126
N300 Drift at W212 – Roof



NOTES:
1. Excavation date: December 1987.

Figure 4-33 Extensometer 41X-GE-00125
N215 Drift at W417 – Roof



NOTES:
1. Excavation date: January 1988.

Figure 4-34 Extensometer 41X-GE-00124
N215 Drift at W519 – Roof

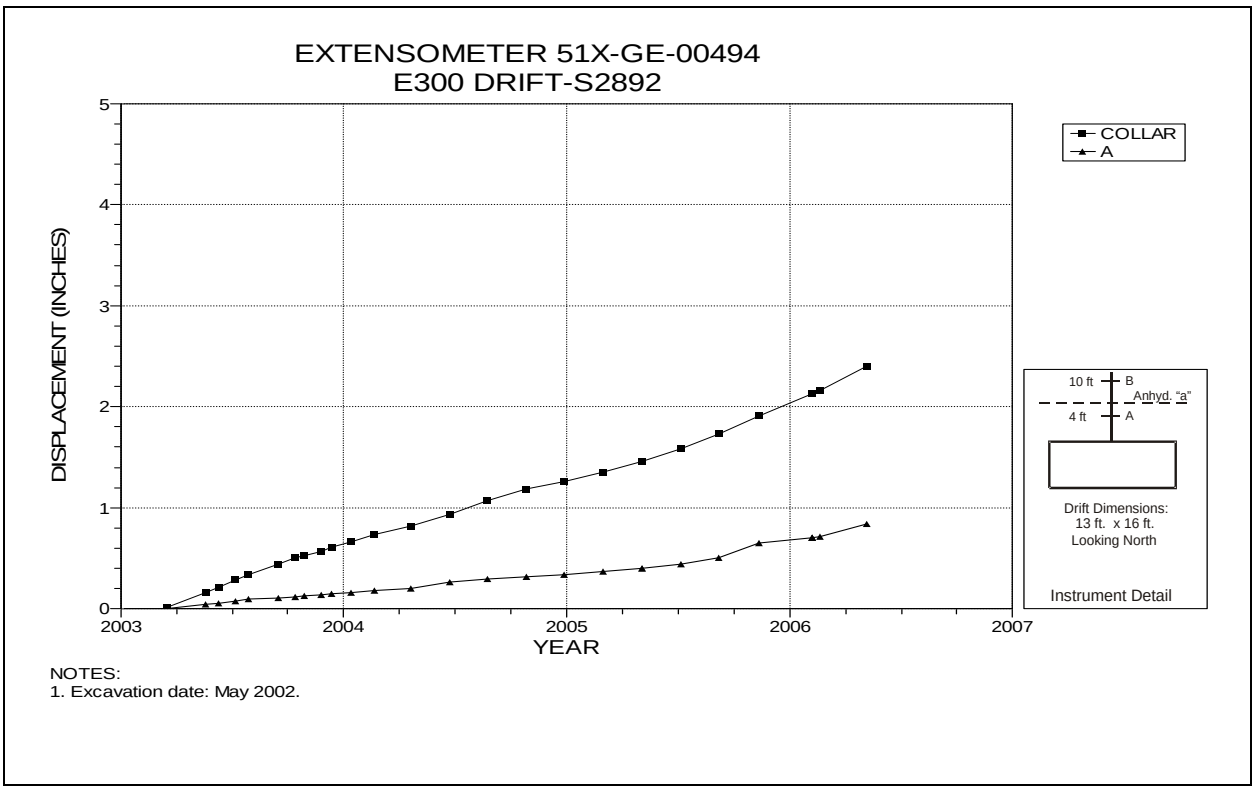


Figure 4-35 Extensometer 51X-GE-00494
E300 Drift at S2892 – Roof

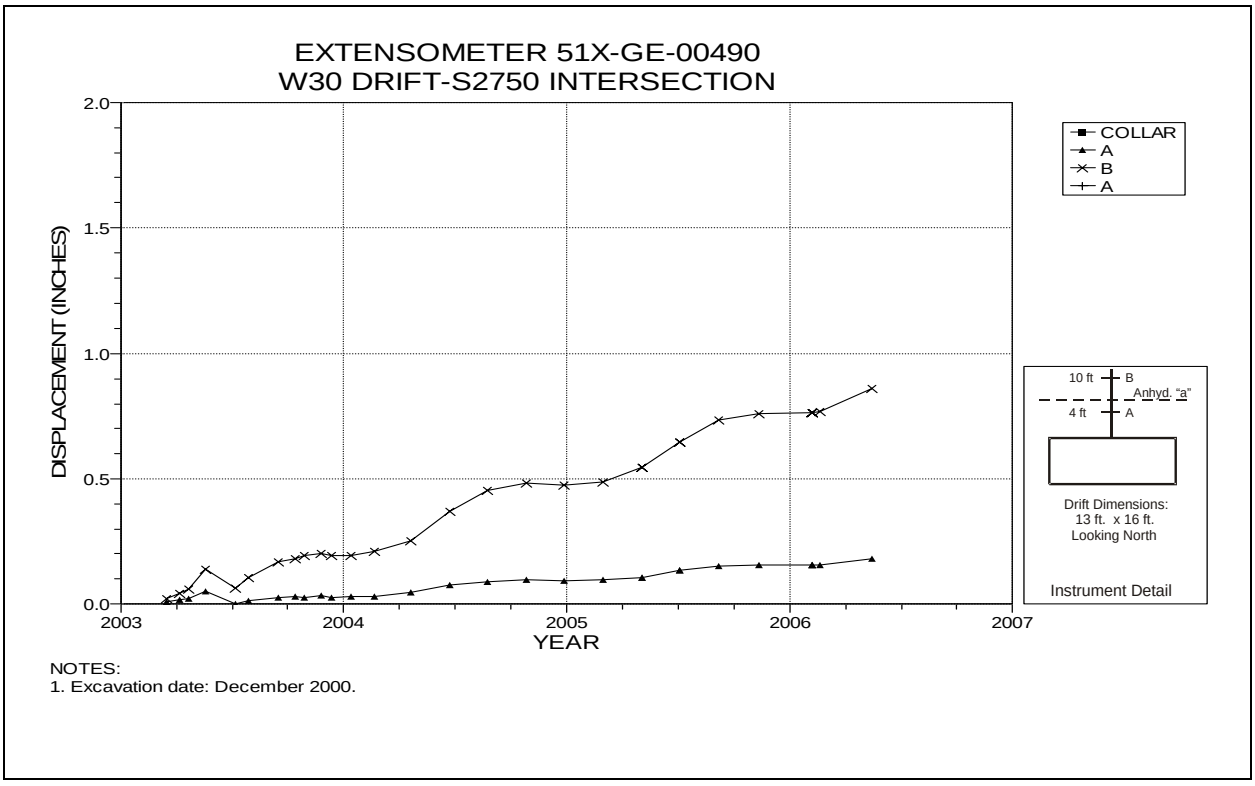


Figure 4-36 Extensometer 51X-GE-00490
W30 Drift at S2750 Drift Intersection – Roof

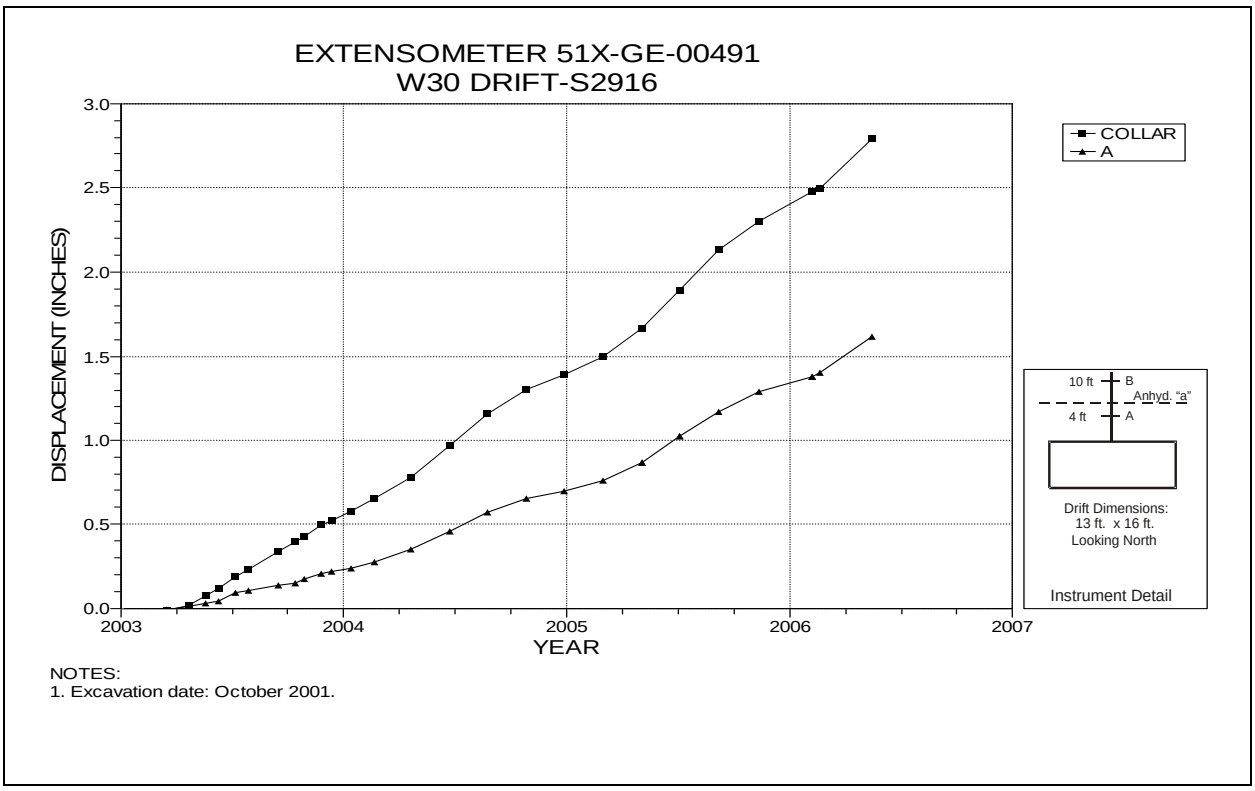


Figure 4-37 Extensometer 51X-GE-00491
W30 Drift at S2916 – Roof

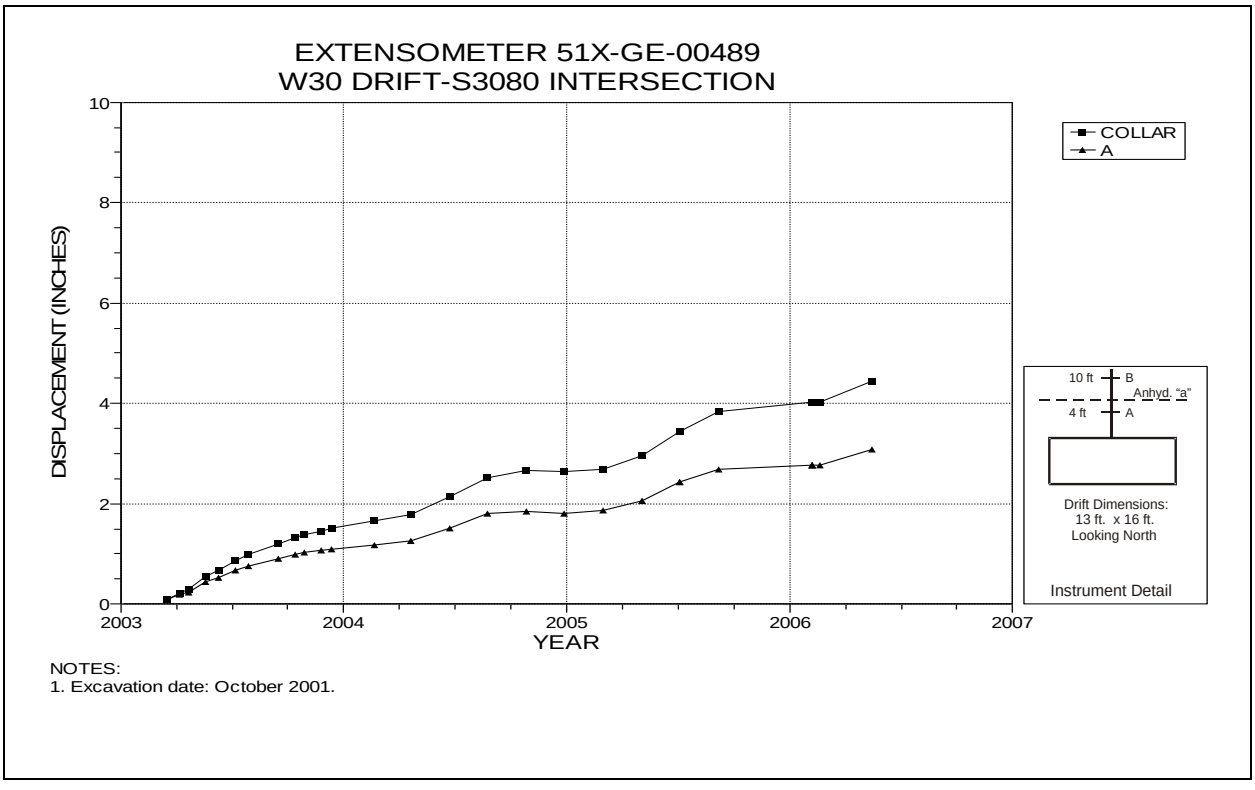


Figure 4-38 Extensometer 51X-GE-00489
W30 Drift at S3080 Drift Intersection – Roof

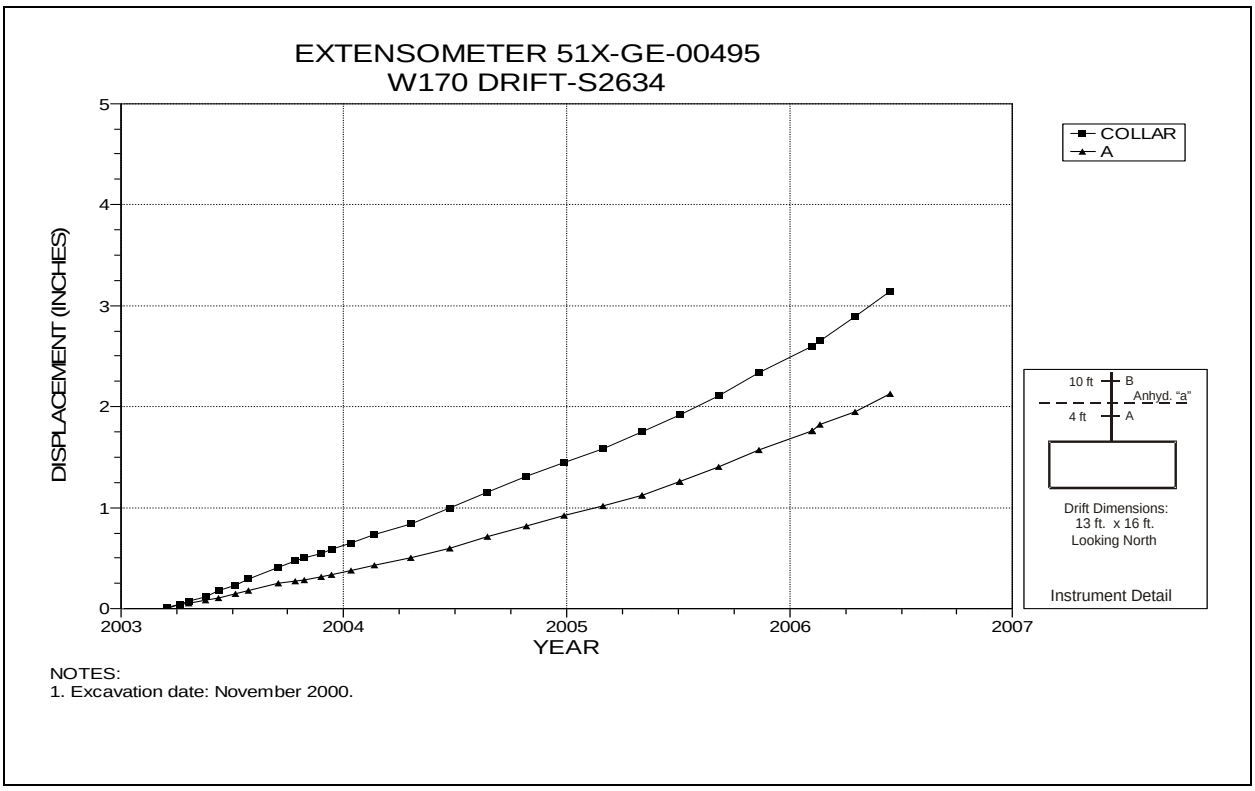


Figure 4-39 Extensometer 51X-GE-00495
W170 Drift at S2634 – Roof

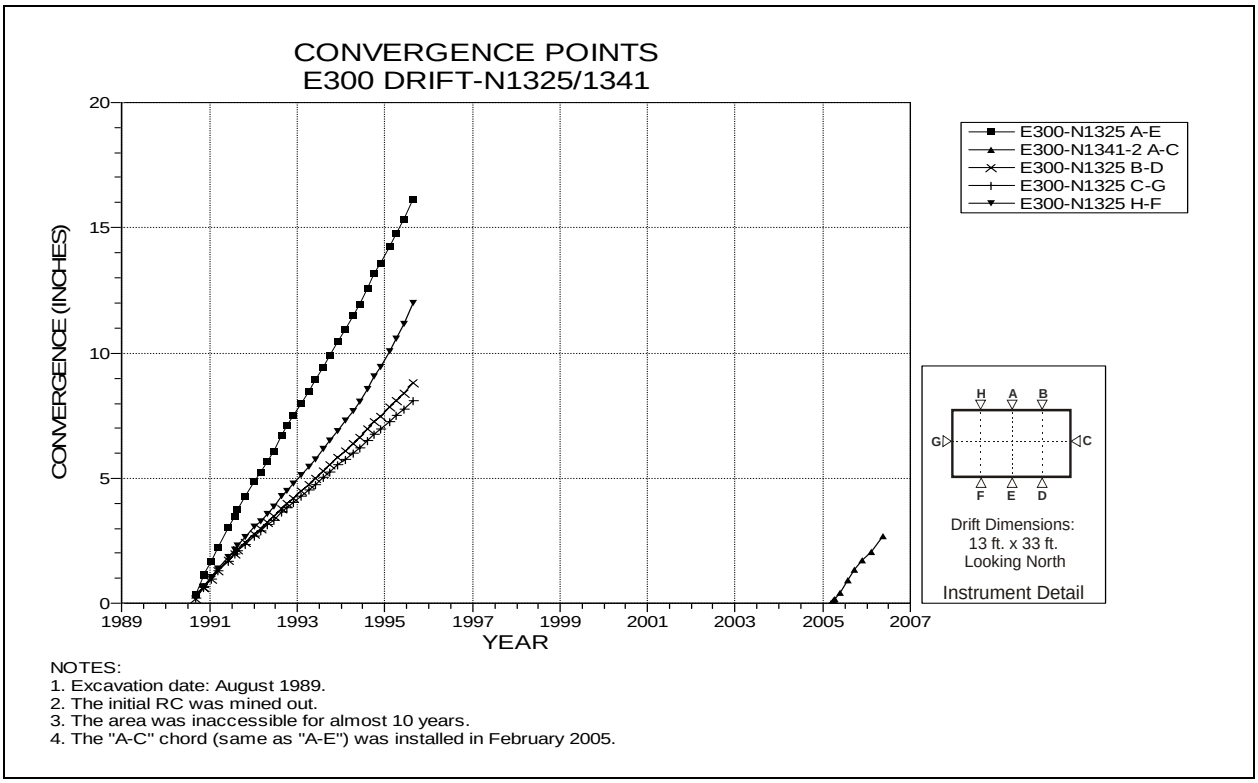


Figure 4-40 Convergence Point Array
E300 Drift at N1341 – All Chords

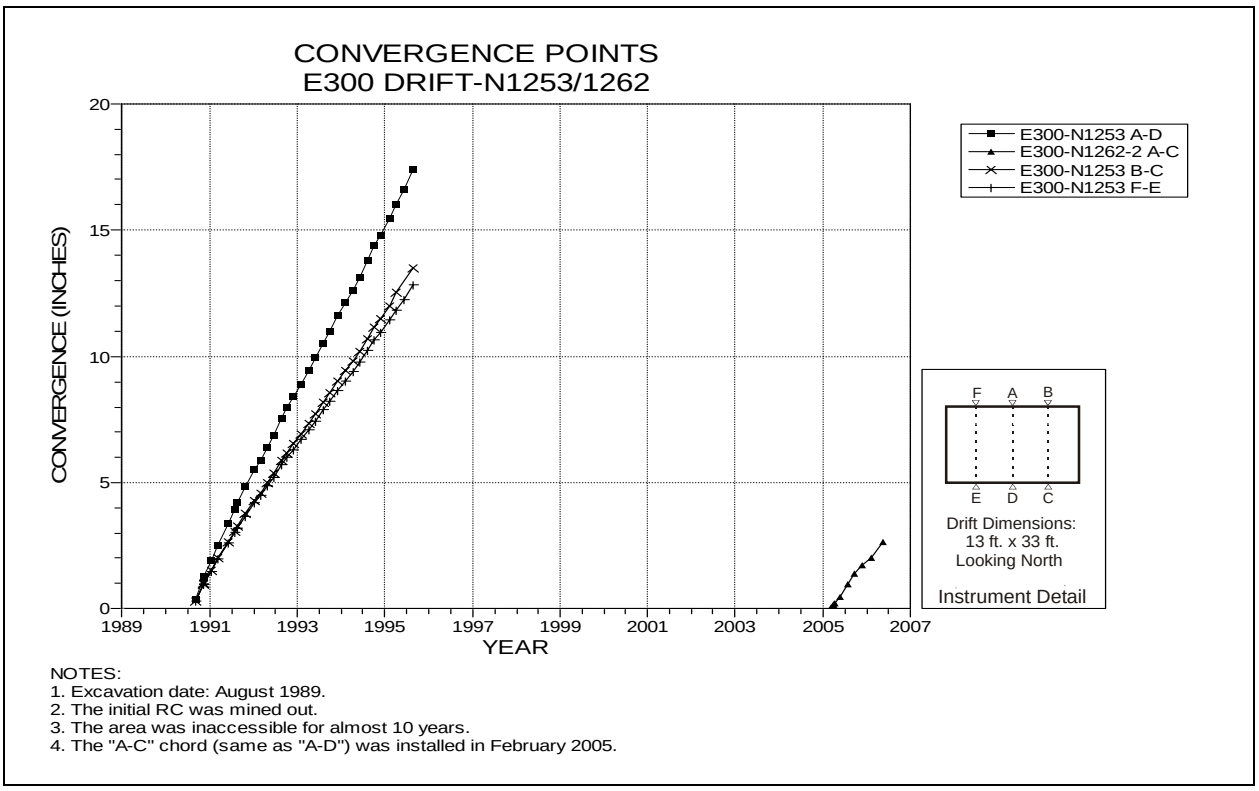


Figure 4-41 Convergence Point Array
E300 Drift at N1262 – All Chords

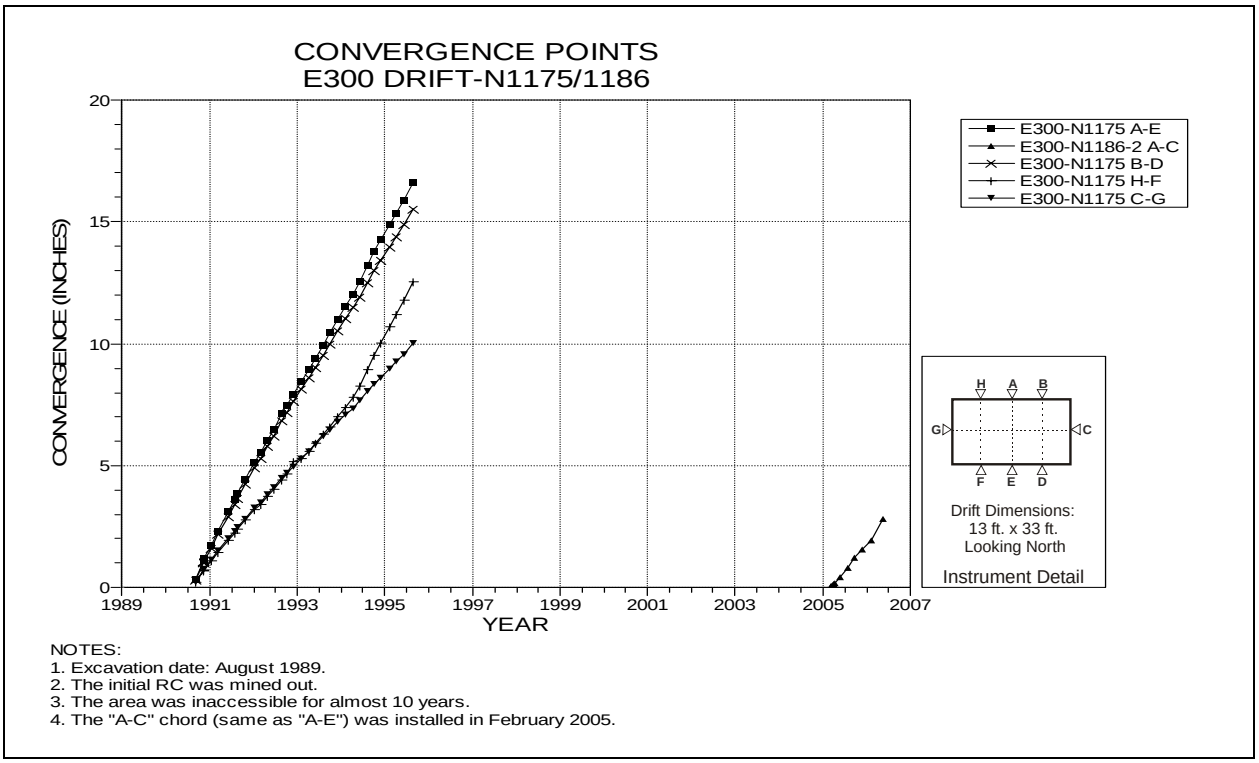


Figure 4-42 Convergence Point Array
E300 Drift at N1186 – All Chords

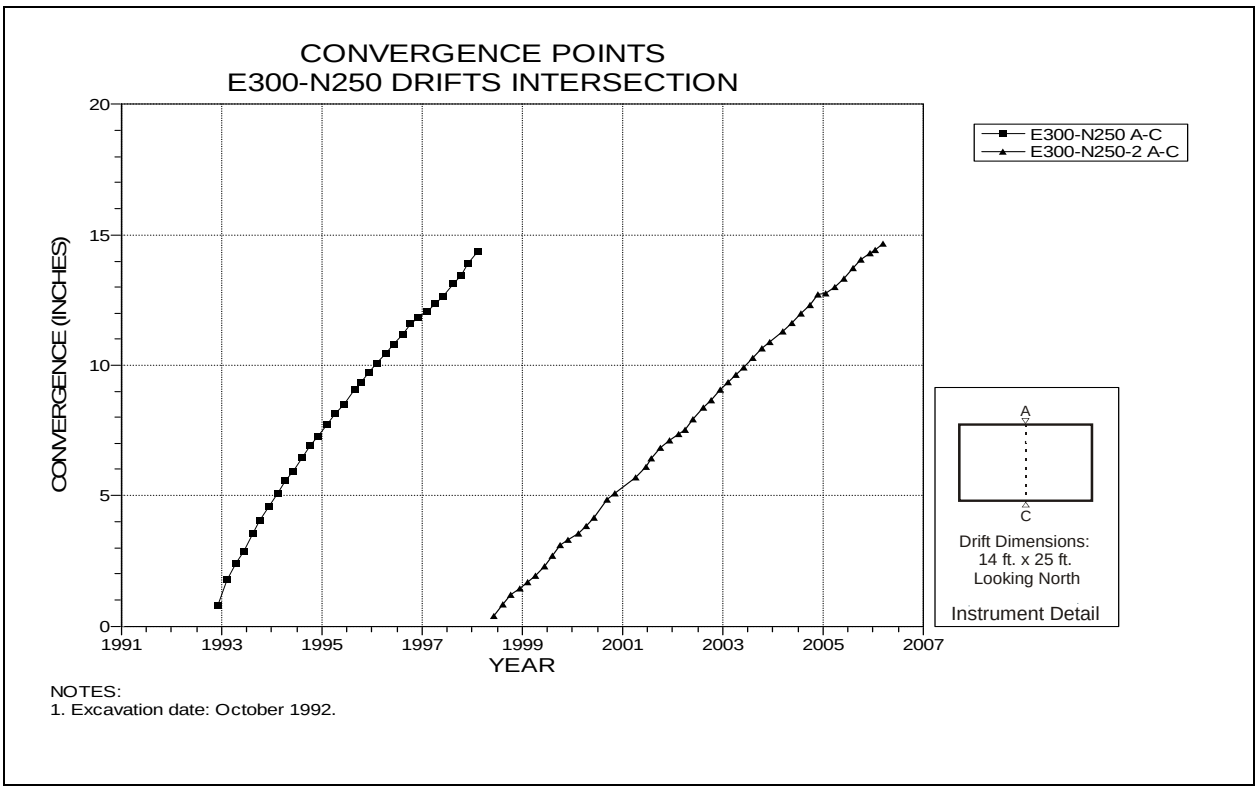


Figure 4-43 Convergence Point Array
E300 Shop – E300 Drift at N250 – Roof to Floor

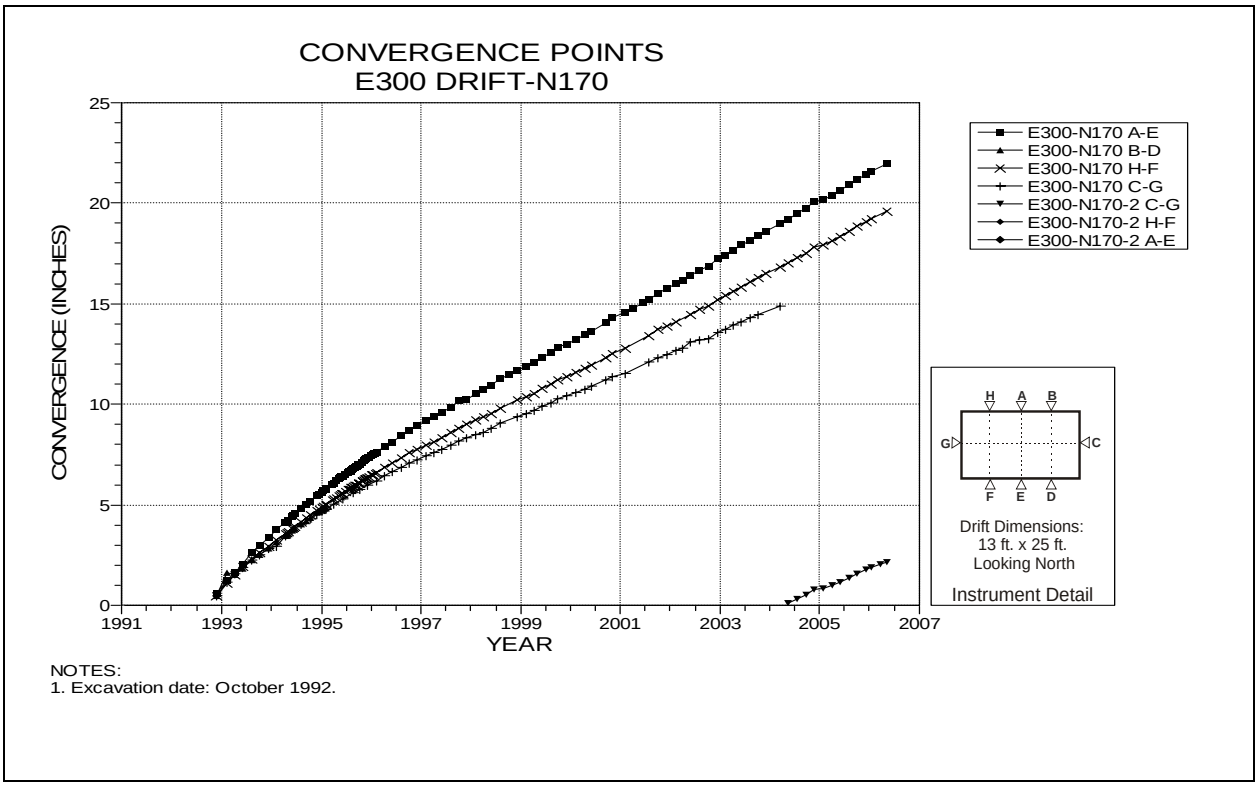


Figure 4-44 Convergence Point Array
E300 Shop – E300 Drift at N170 – All Chords

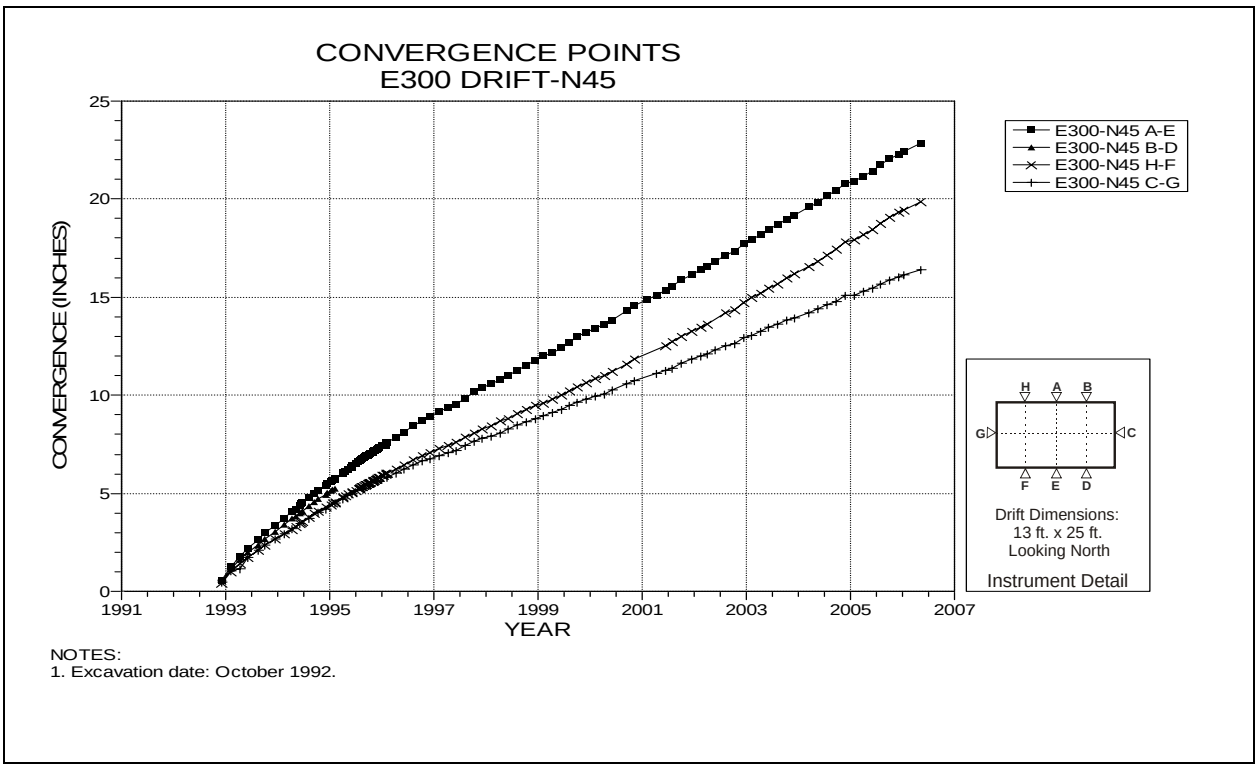


Figure 4-45 Convergence Point Array
E300 Shop – E300 Drift at N45 – All Chords

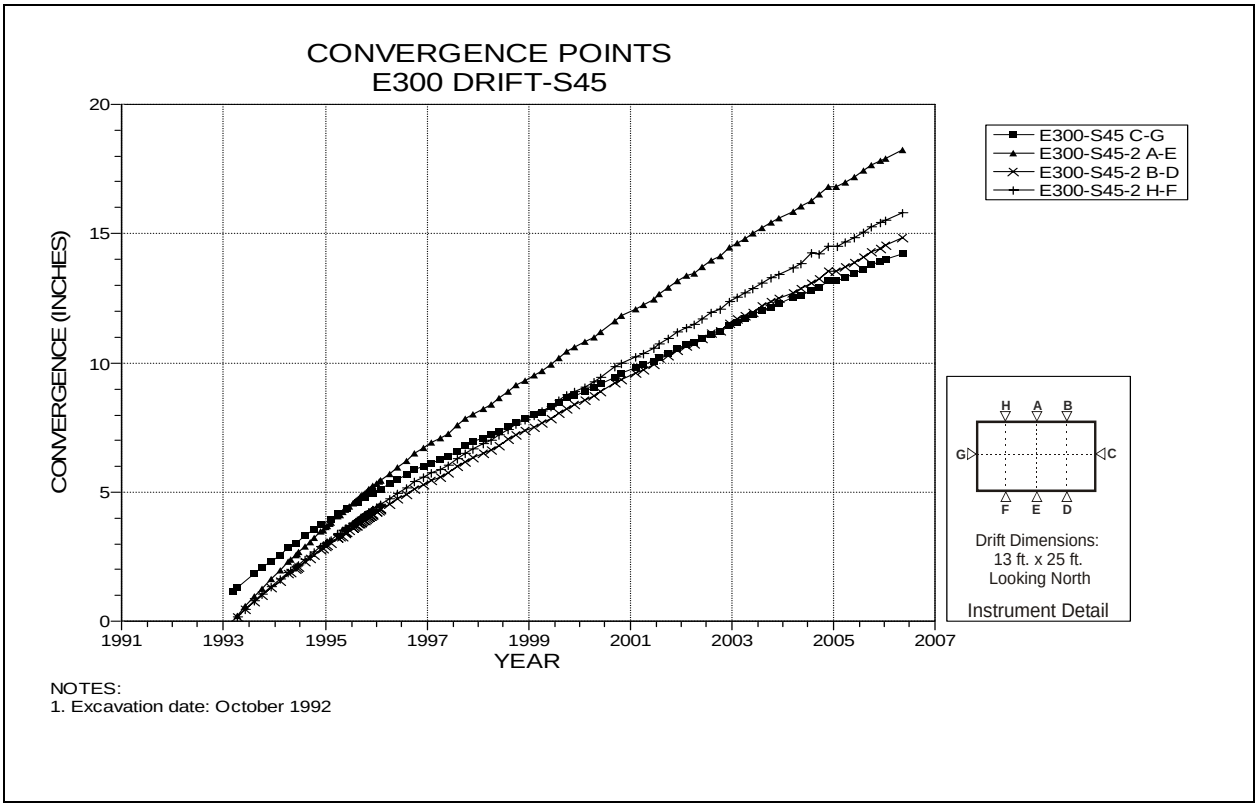


Figure 4-46 Convergence Point Array
E300 Shop – E300 Drift at S45 – All Chords

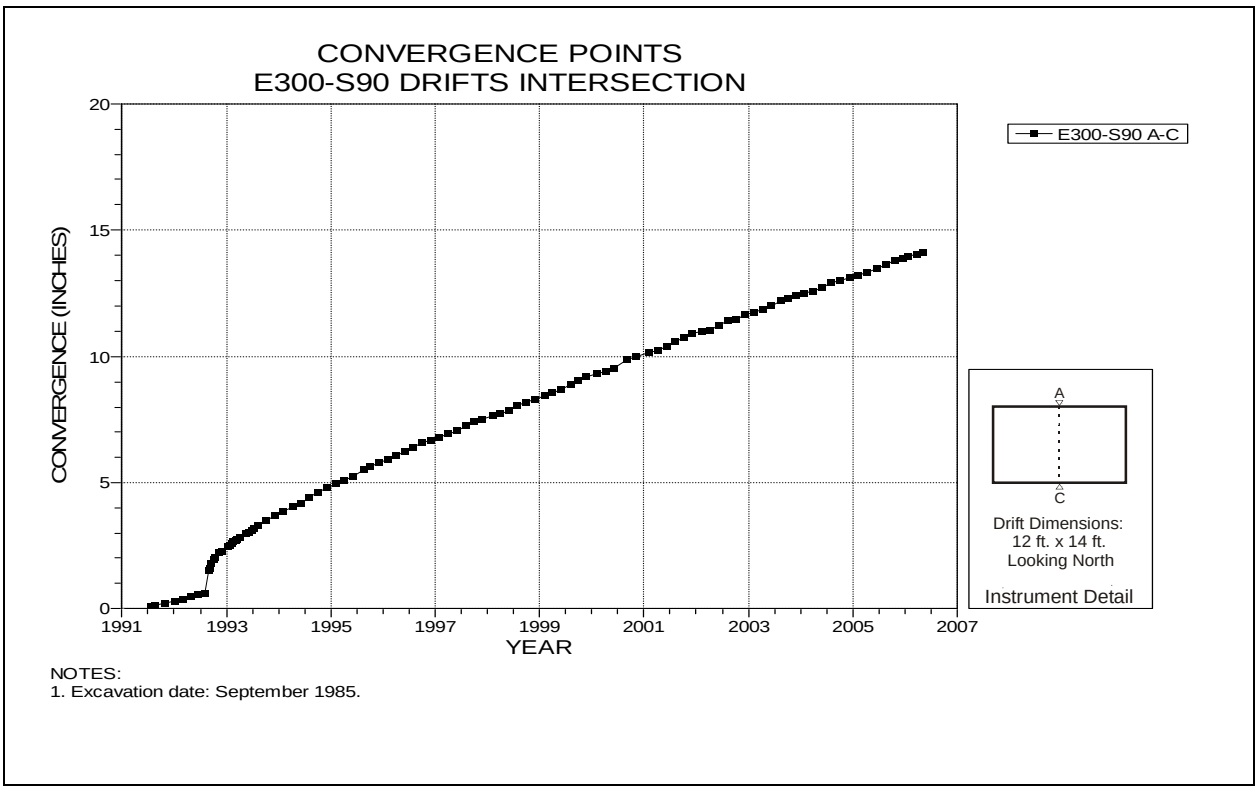


Figure 4-47 Convergence Point Array
E300 Drift at S90 Drift Intersection – Roof to Floor

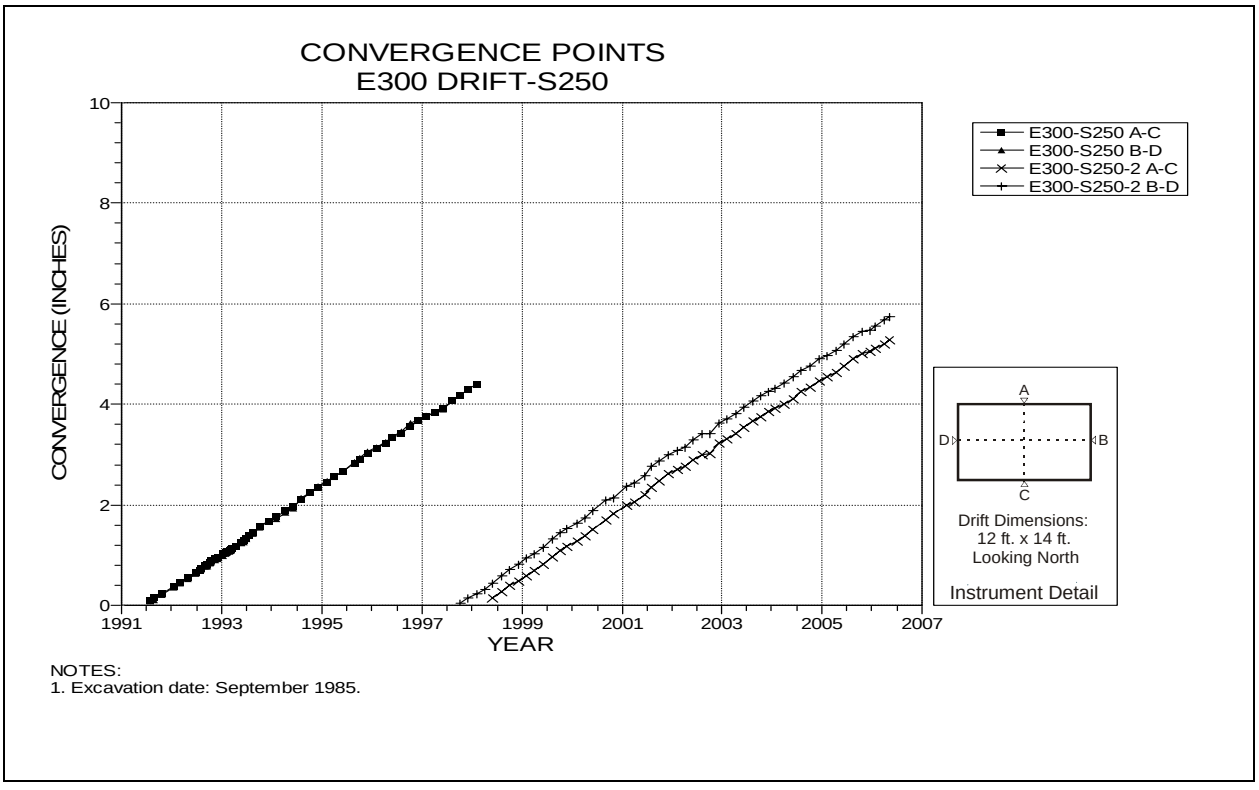


Figure 4-48 Convergence Point Array
E300 Drift at S250 – All Chords

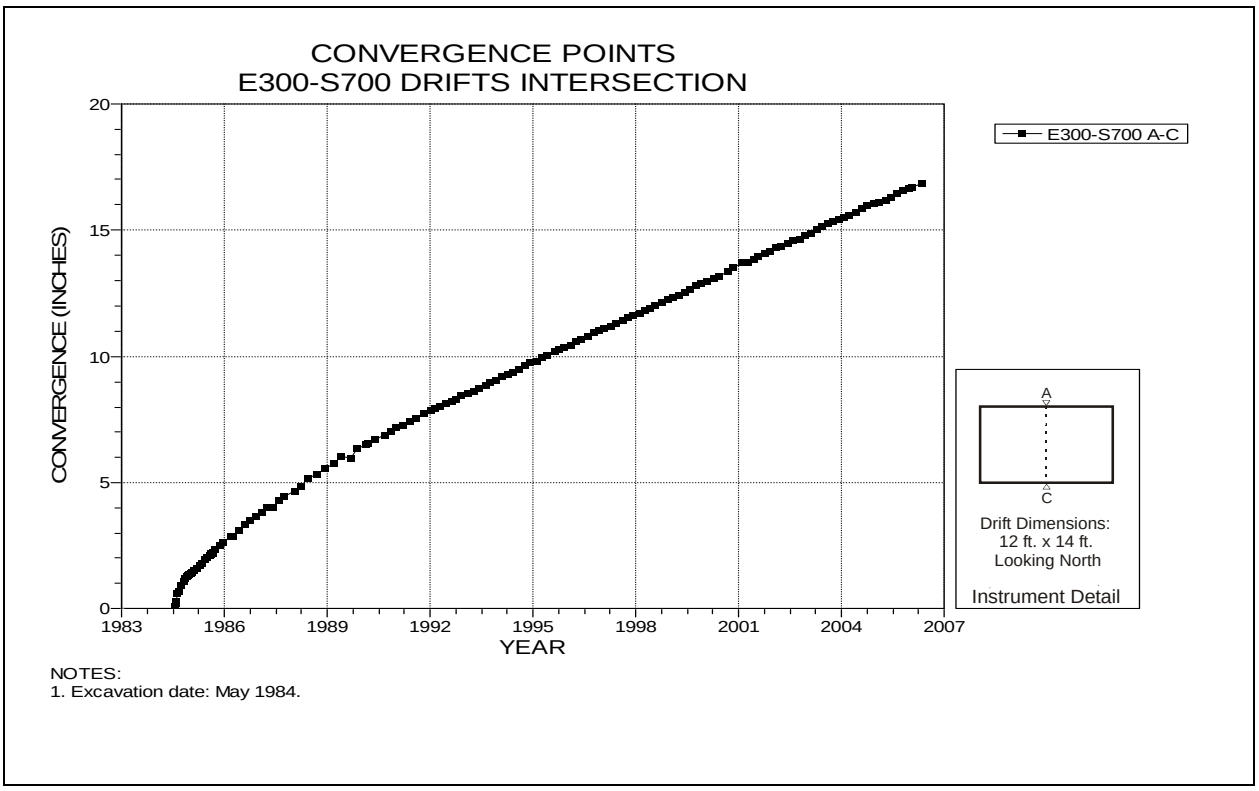


Figure 4-49 Convergence Point Array
E300 Drift at S700 Drift Intersection – Roof to Floor

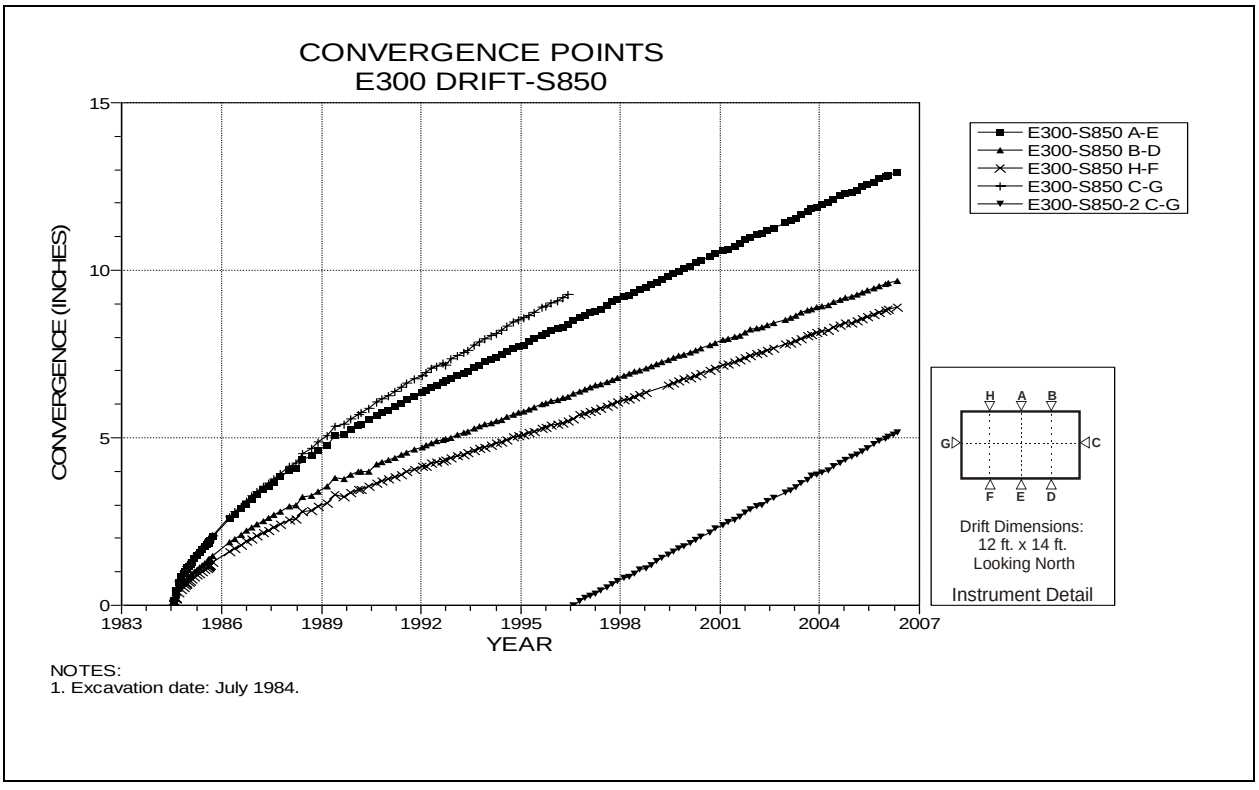


Figure 4-50 Convergence Point Array
E300 Drift at S850 – All Chords

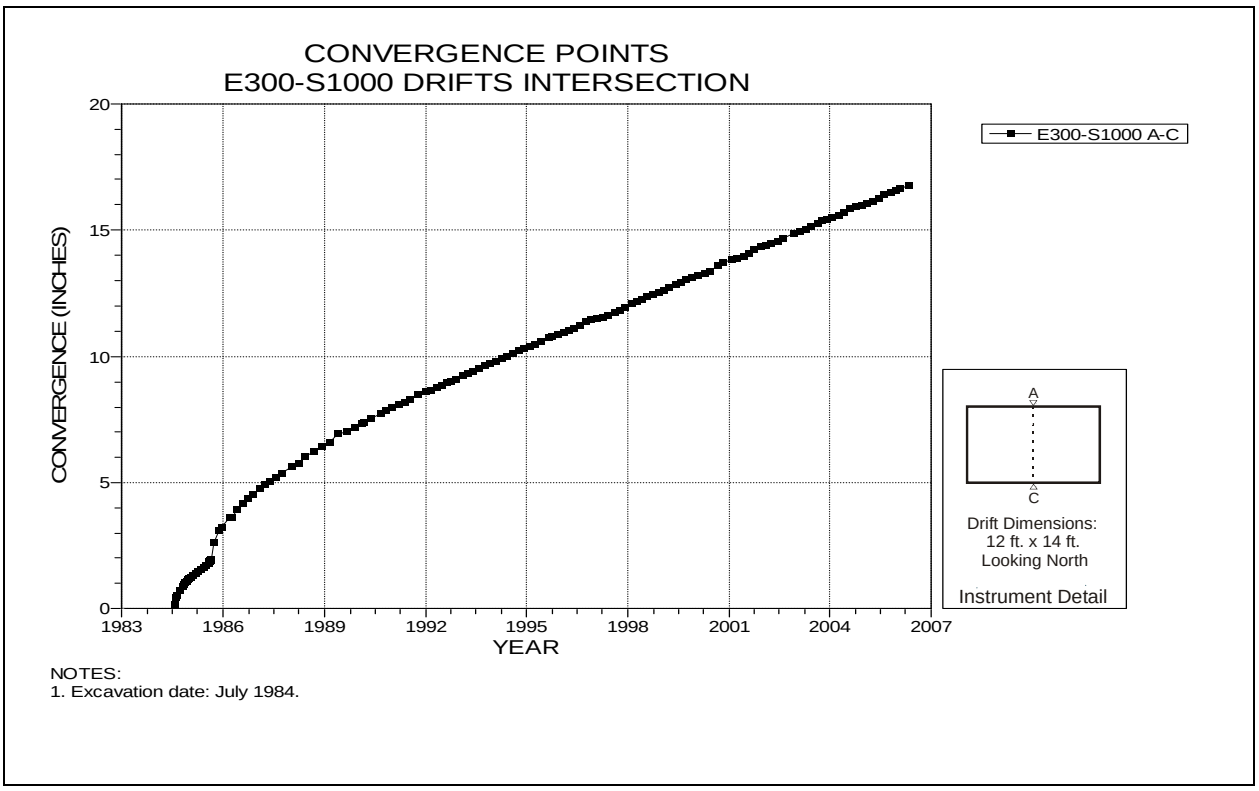


Figure 4-51 Convergence Point Array
E300 Drift at S1000 Drift Intersection – Roof to Floor

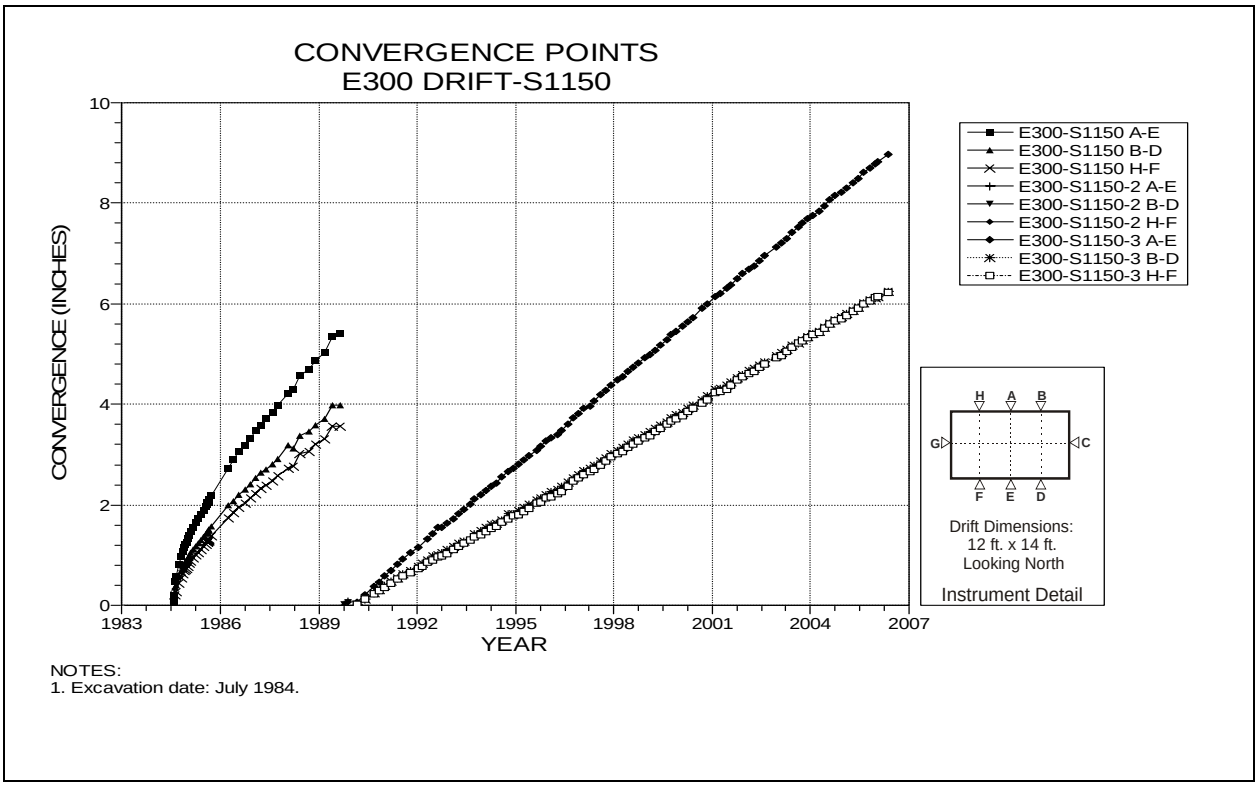


Figure 4-52 Convergence Point Array
E300 Drift at S1150 – Roof to Floor

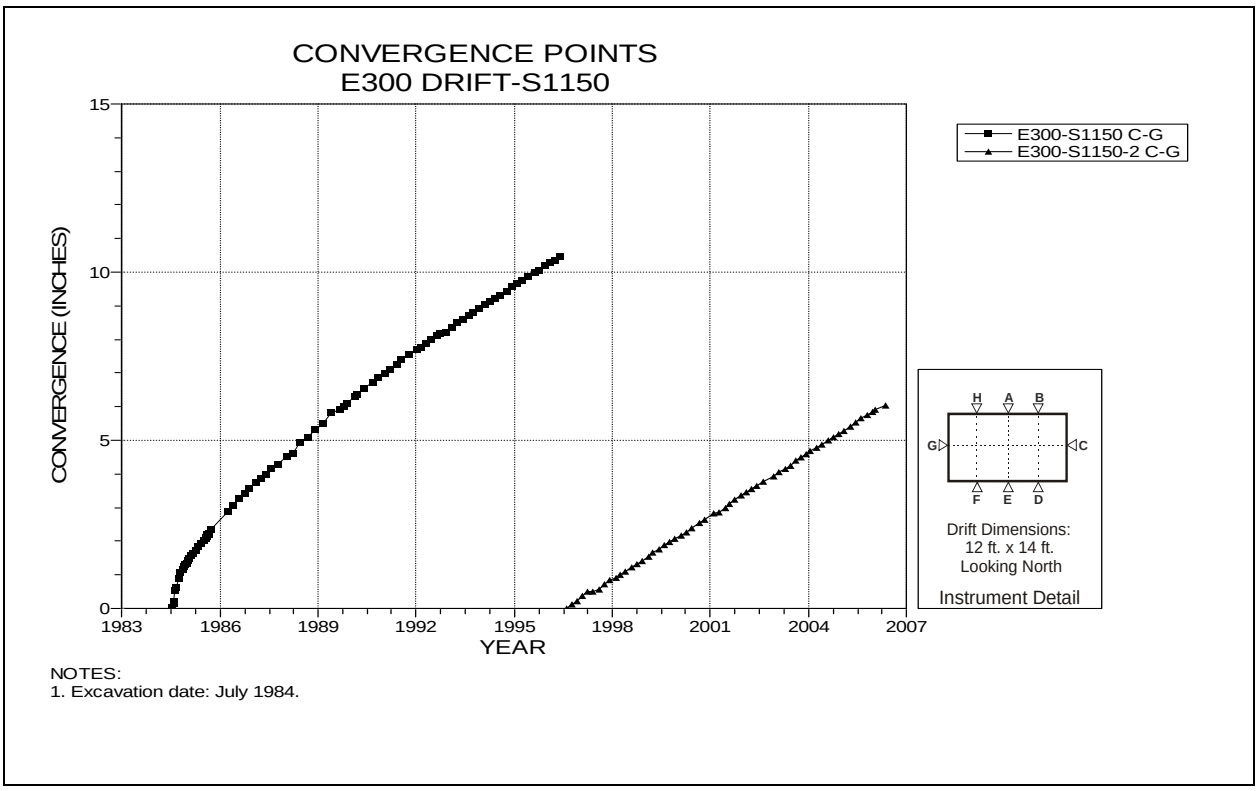


Figure 4-53 Convergence Point Array
E300 Drift at S1150 – Rib to Rib

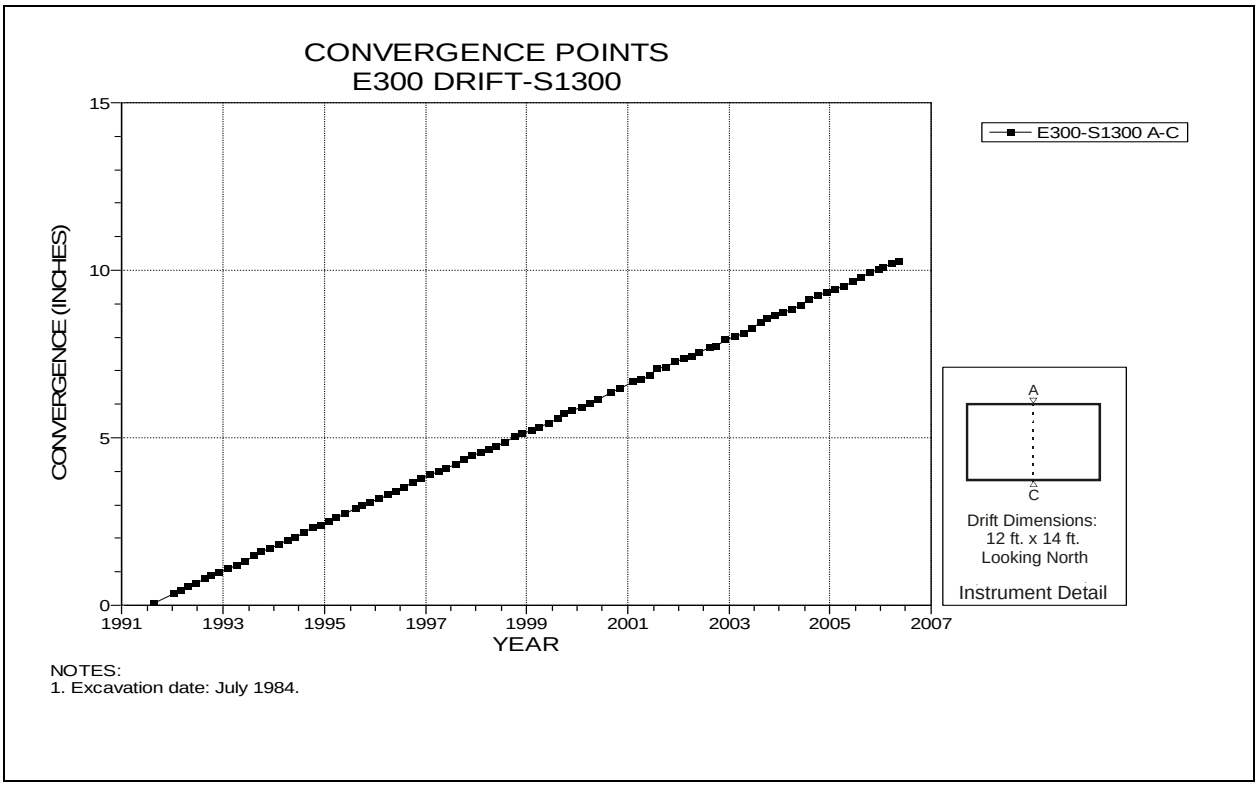


Figure 4-54 Convergence Point Array
E300 Drift at S1300 Drift Intersection – Roof to Floor

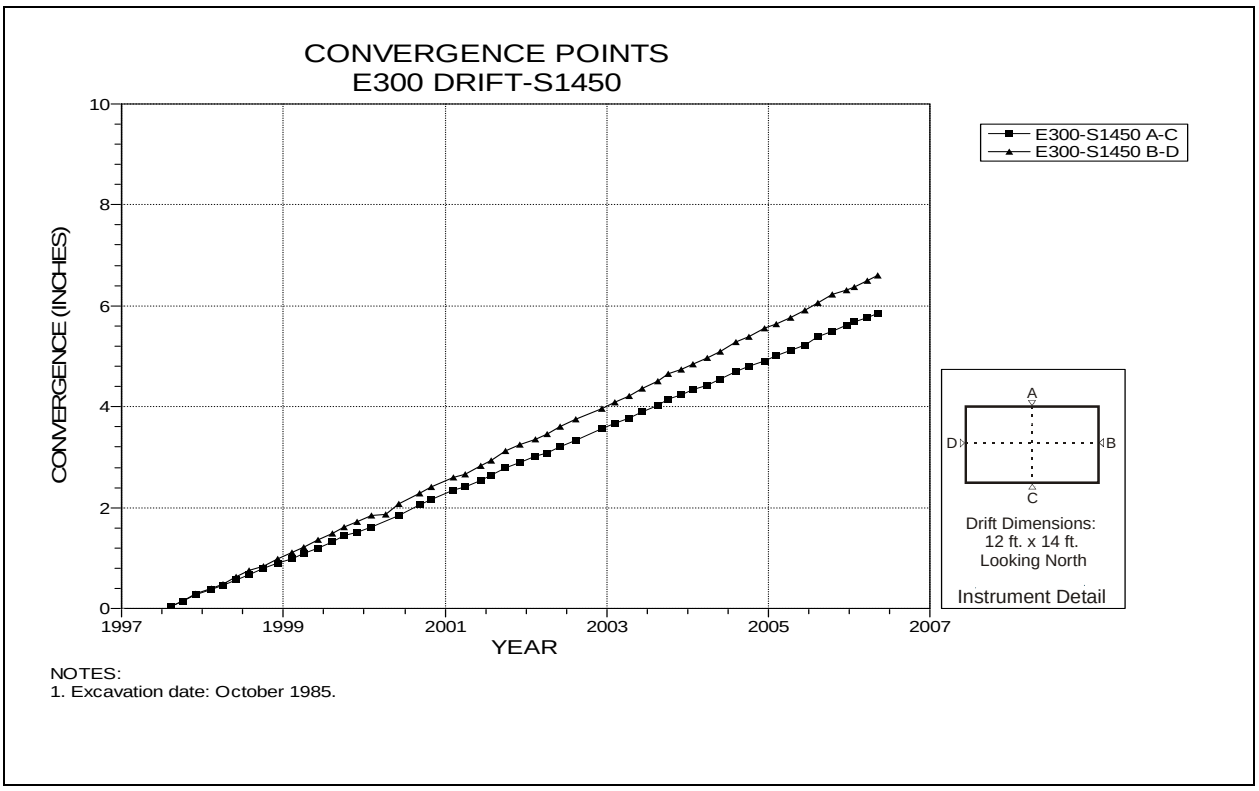


Figure 4-55 Convergence Point Array
E300 Drift at S1450 – All Chords

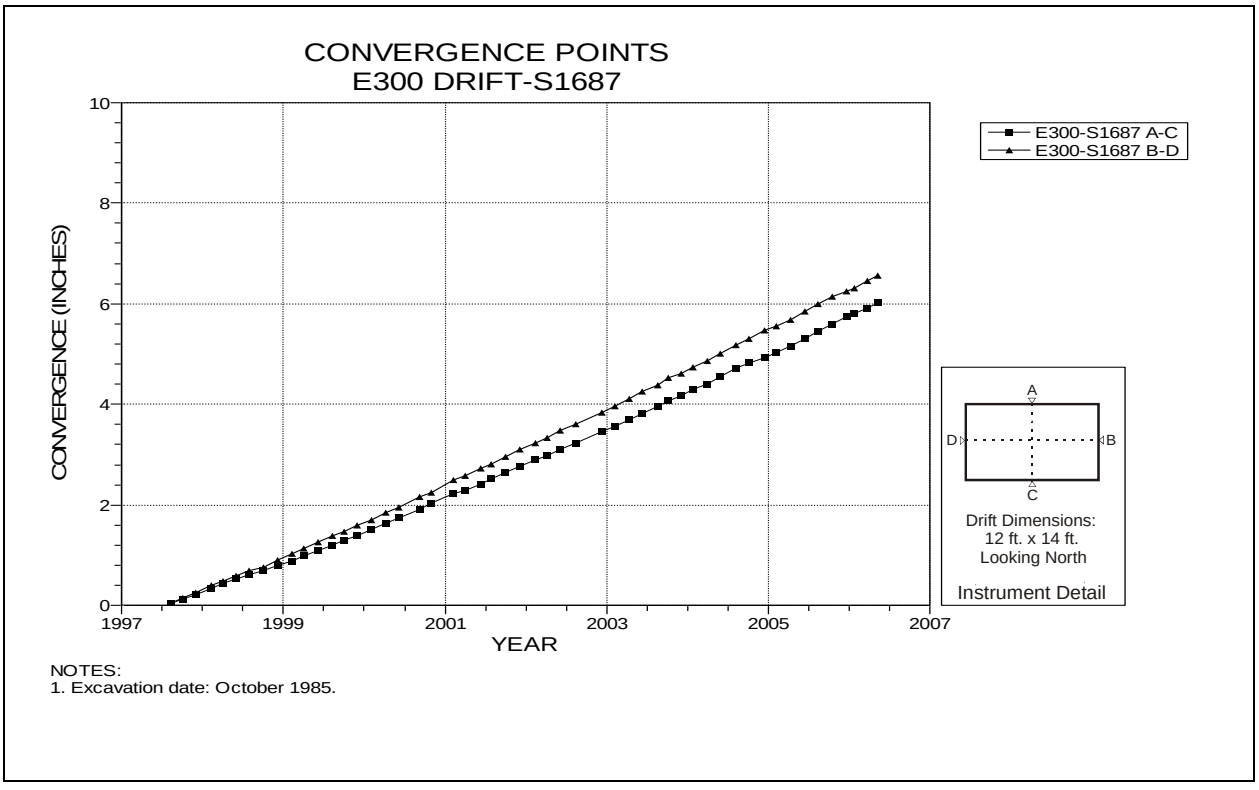


Figure 4-56 Convergence Point Array
E300 Drift at S1687 – All Chords

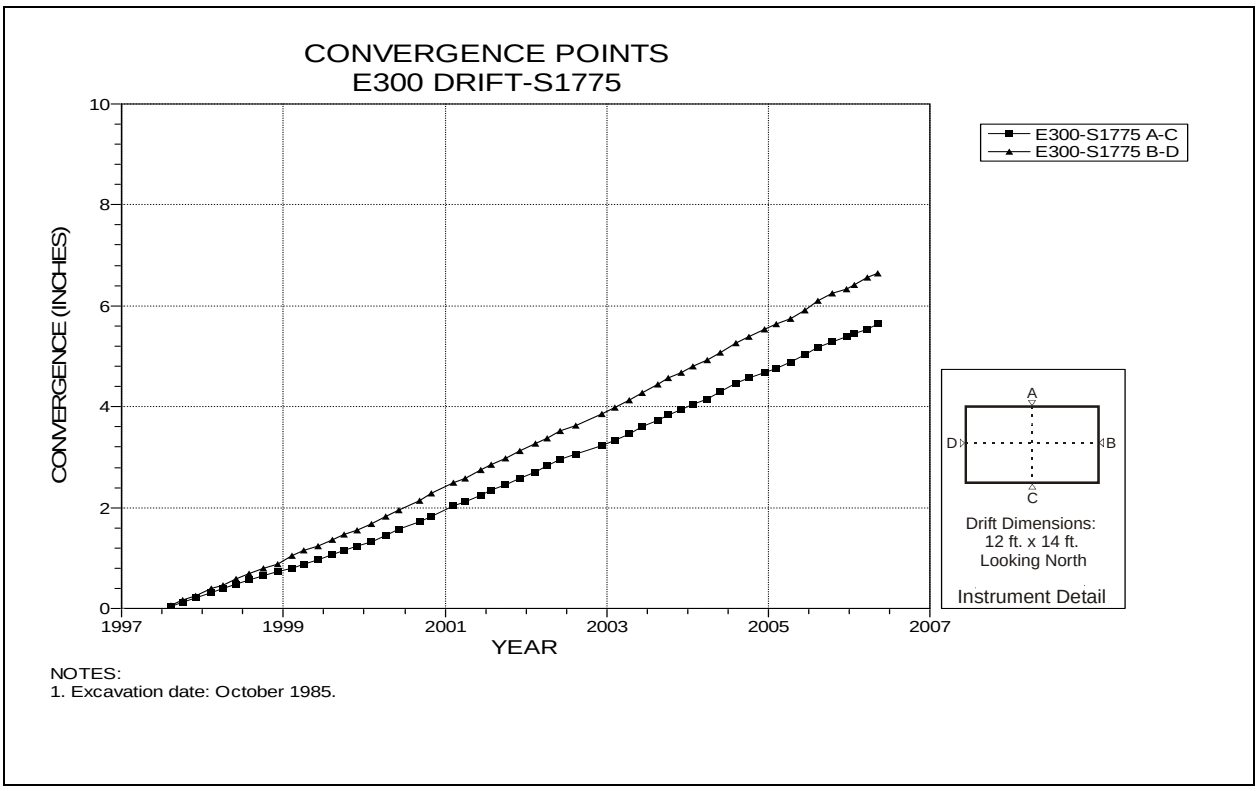


Figure 4-57 Convergence Point Array
E300 Drift at S1775 – All Chords

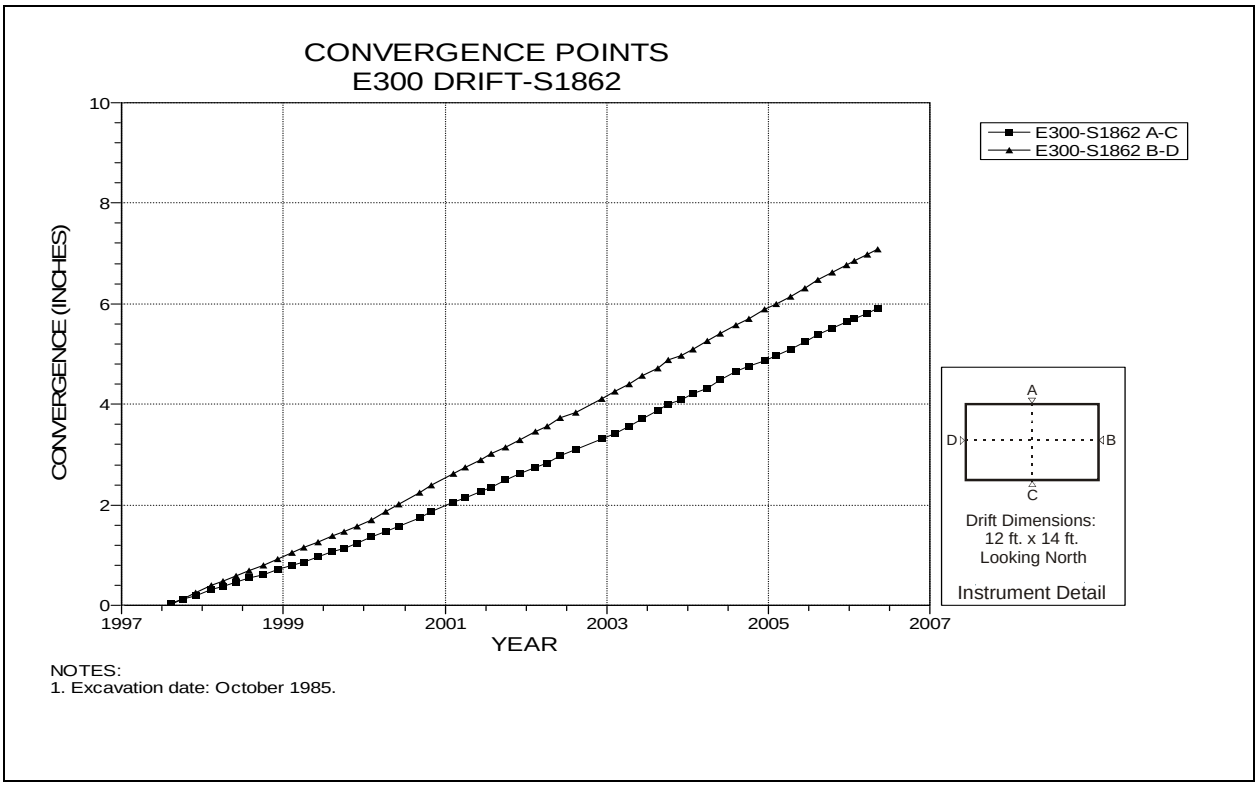


Figure 4-58 Convergence Point Array
E300 Drift at S1862 – All Chords

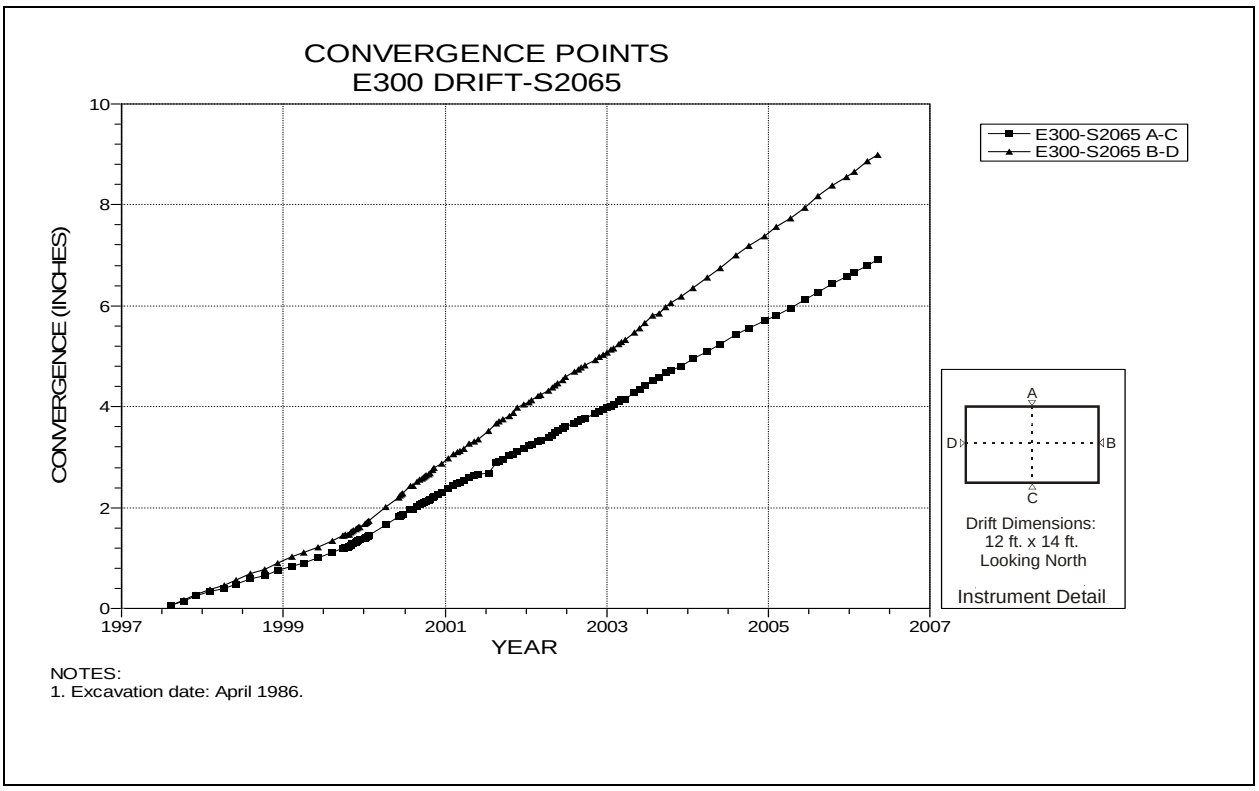


Figure 4-59 Convergence Point Array
E300 Drift at S2065 – All Chords

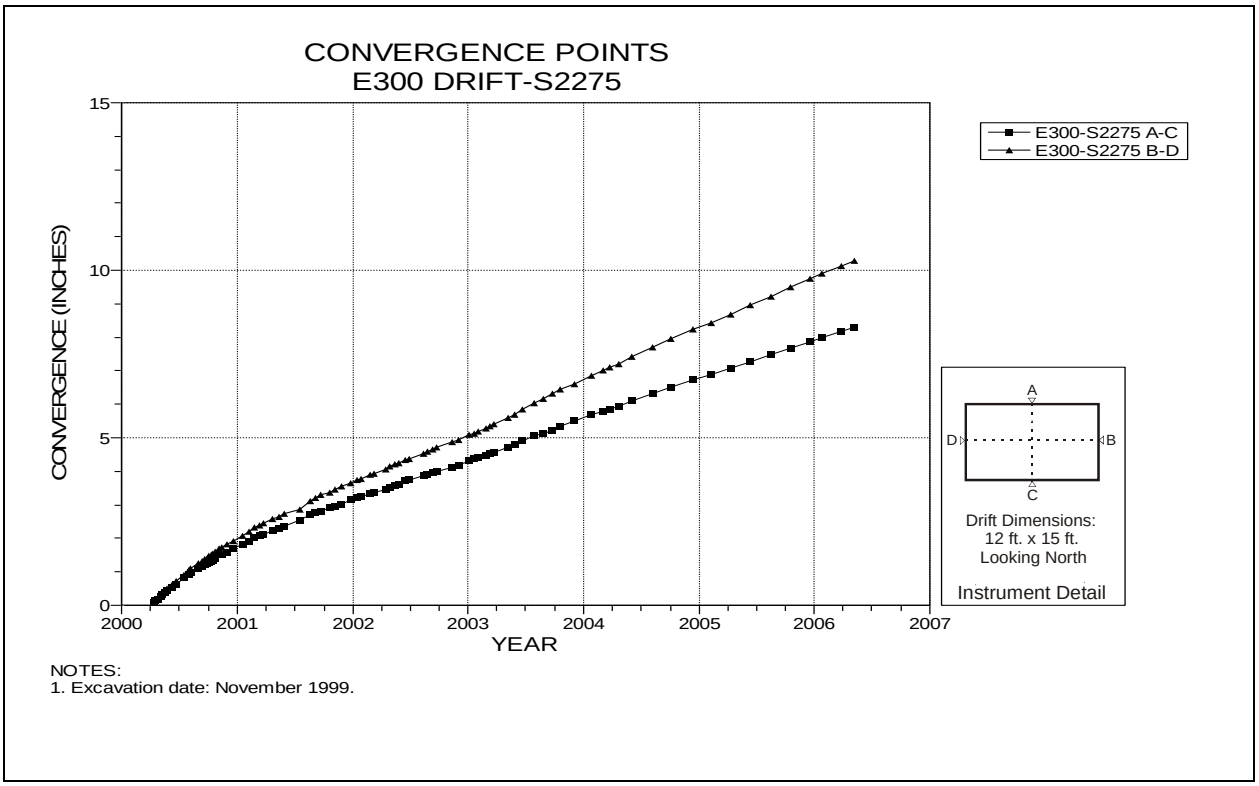


Figure 4-60 Convergence Point Array
E300 Drift at S2275 – All Chords

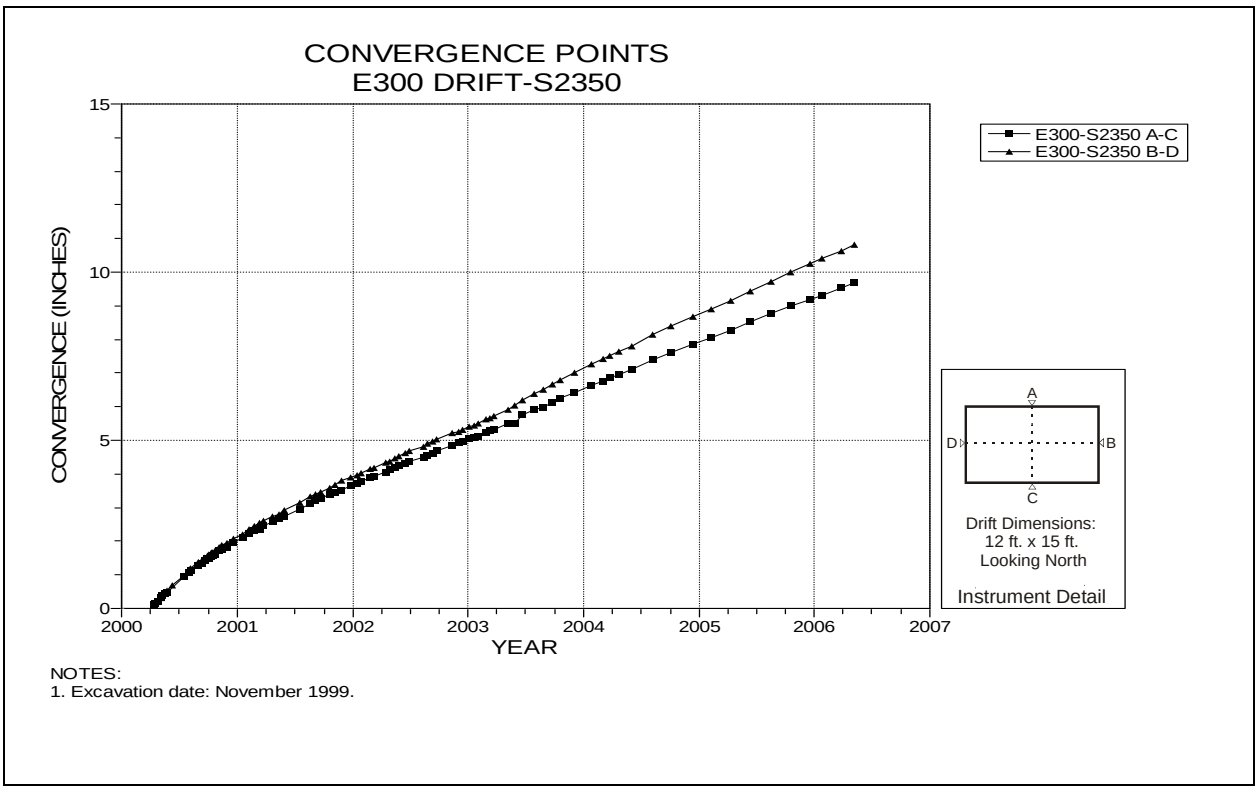


Figure 4-61 Convergence Point Array
E300 Drift at S2350 – All Chords

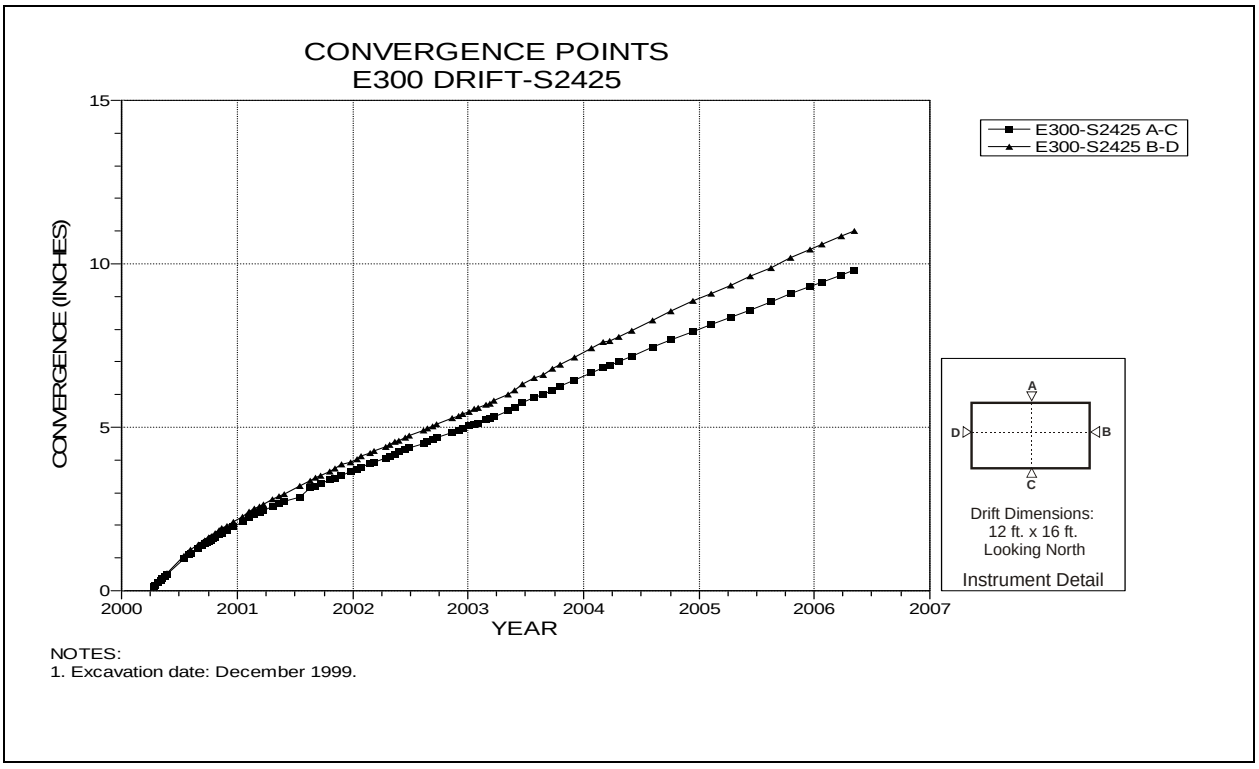


Figure 4-62 Convergence Point Array
E300 Drift at S2425 – All Chords

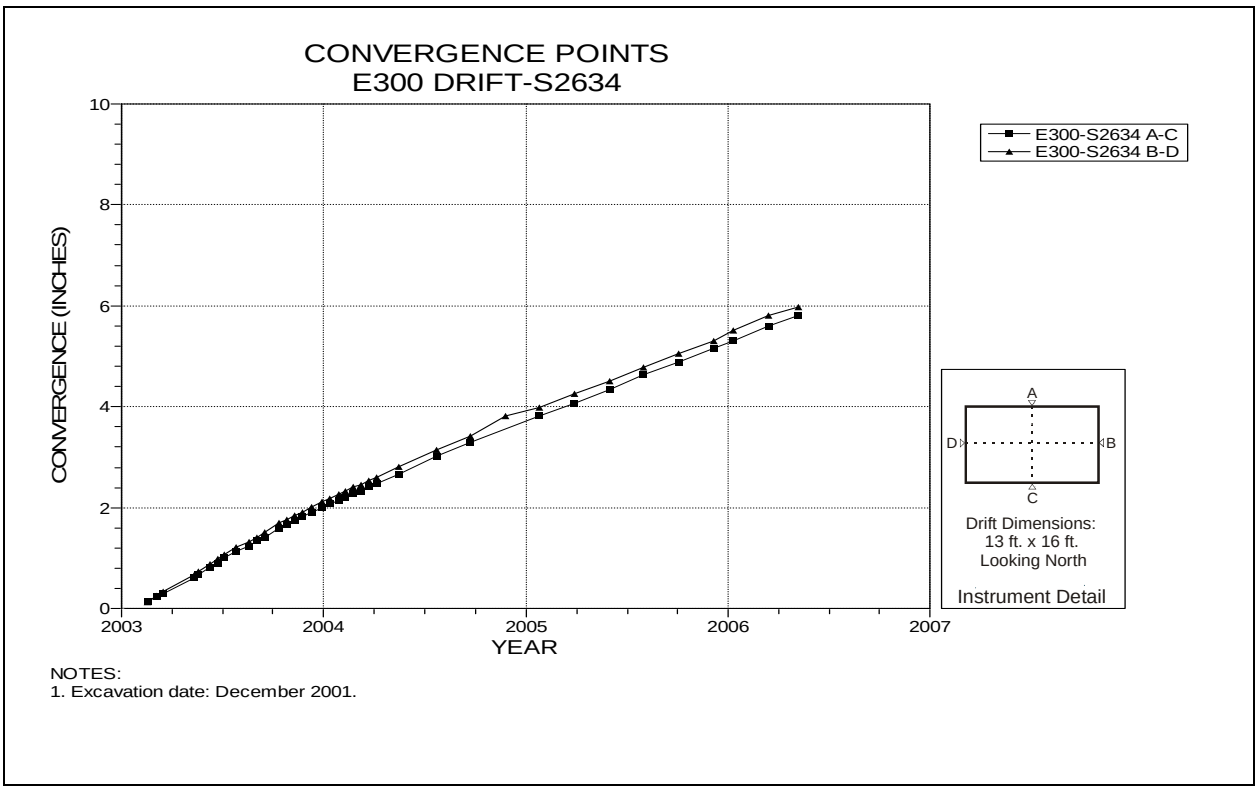


Figure 4-63 Convergence Point Array
E300 Drift at S2634 – All Chords

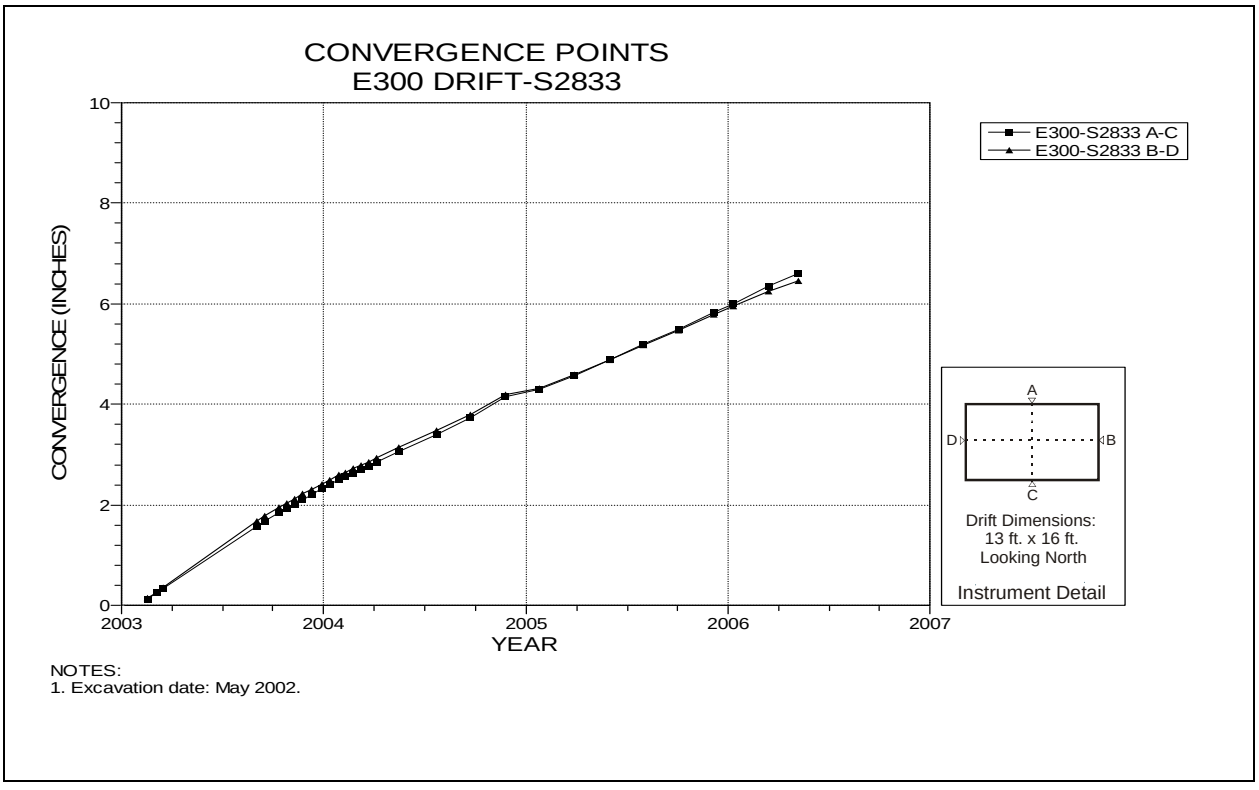


Figure 4-64 Convergence Point Array
E300 Drift at S2833 – All Chords

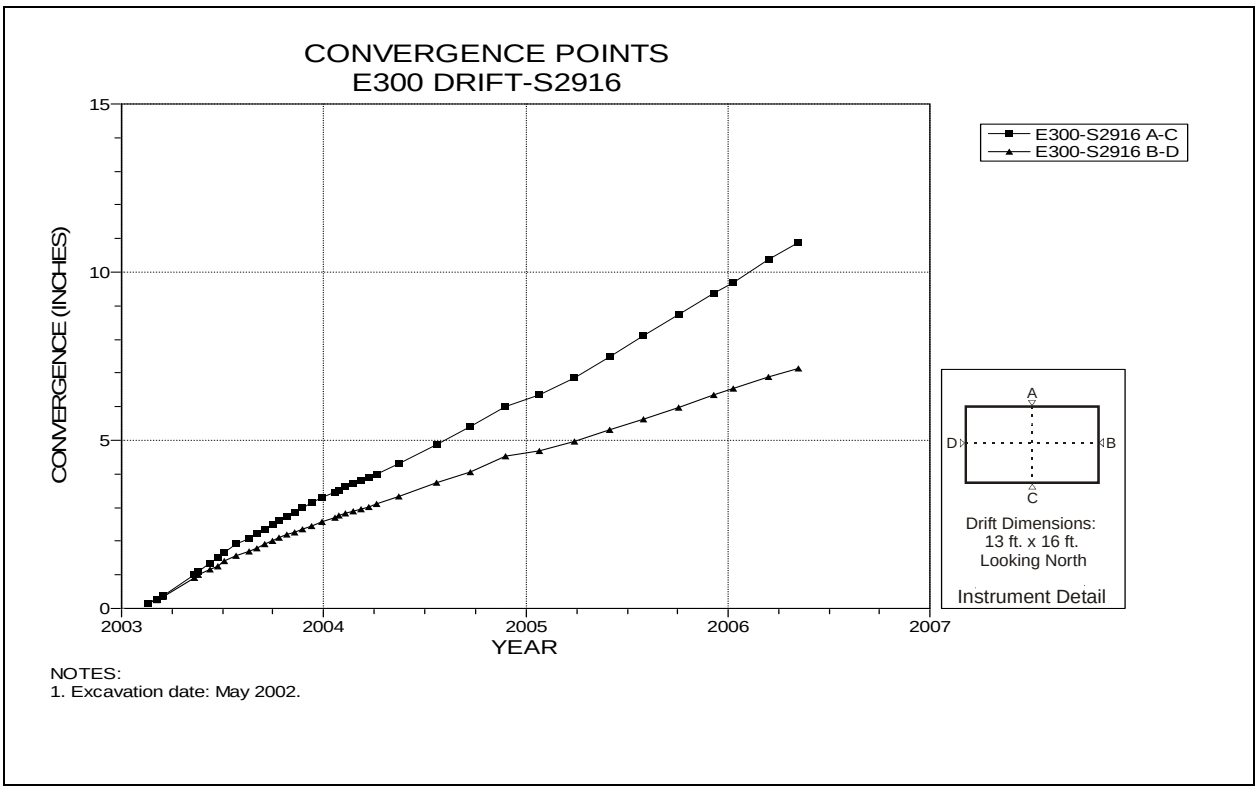


Figure 4-65 Convergence Point Array
E300 Drift at S2916 – All Chords

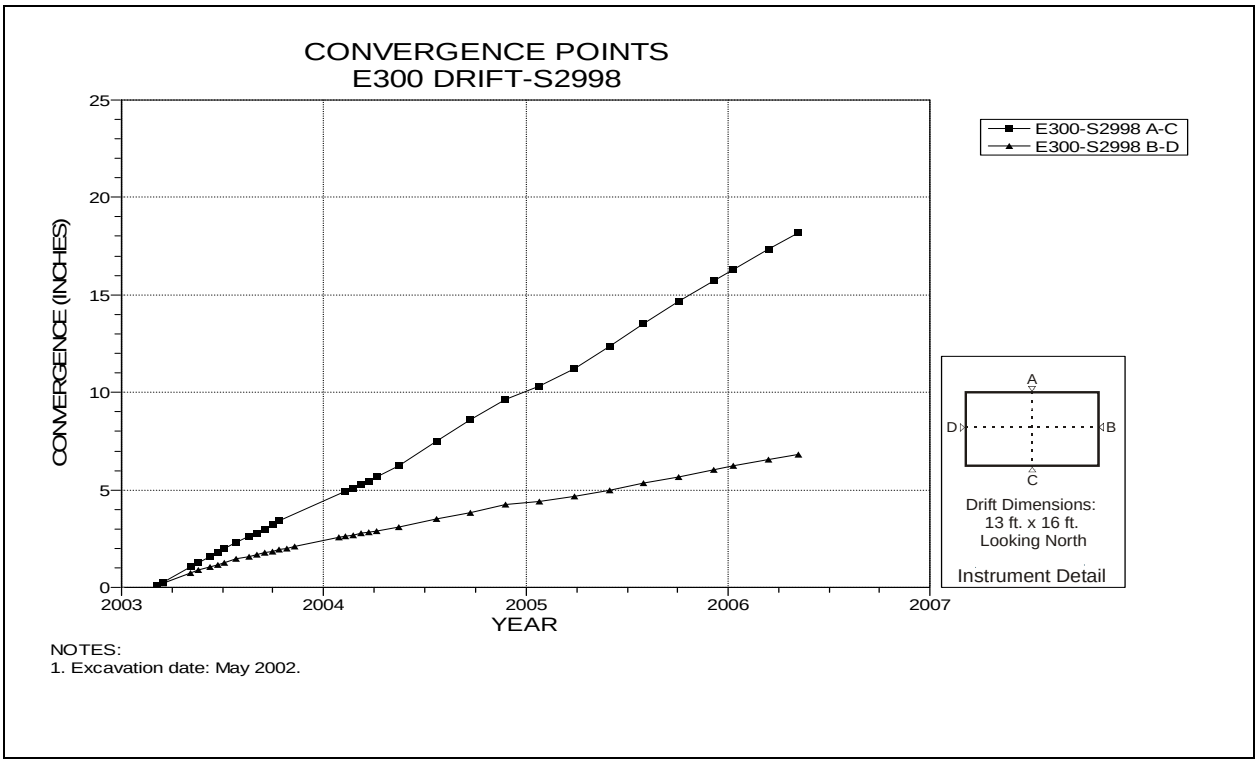


Figure 4-66 Convergence Point Array
E300 Drift at S2998 – All Chords

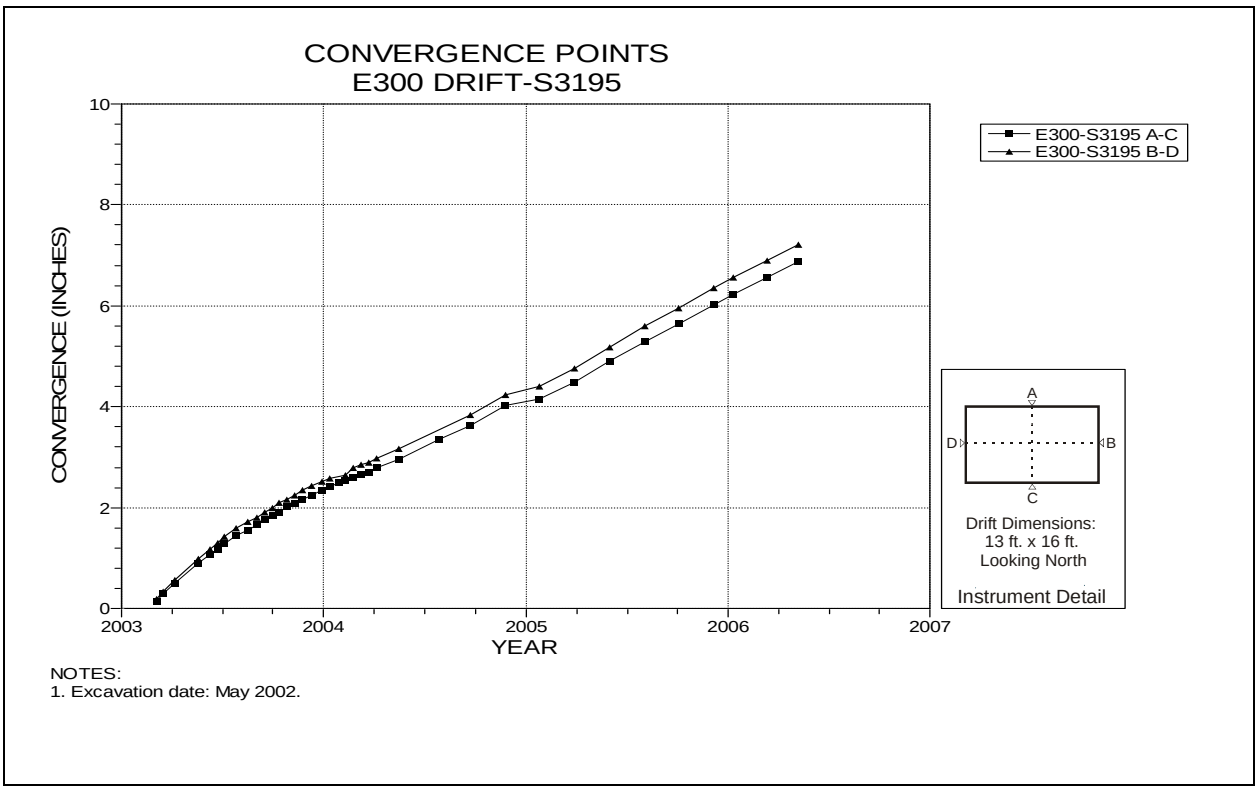


Figure 4-67 Convergence Point Array
E300 Drift at S3195 – All Chords

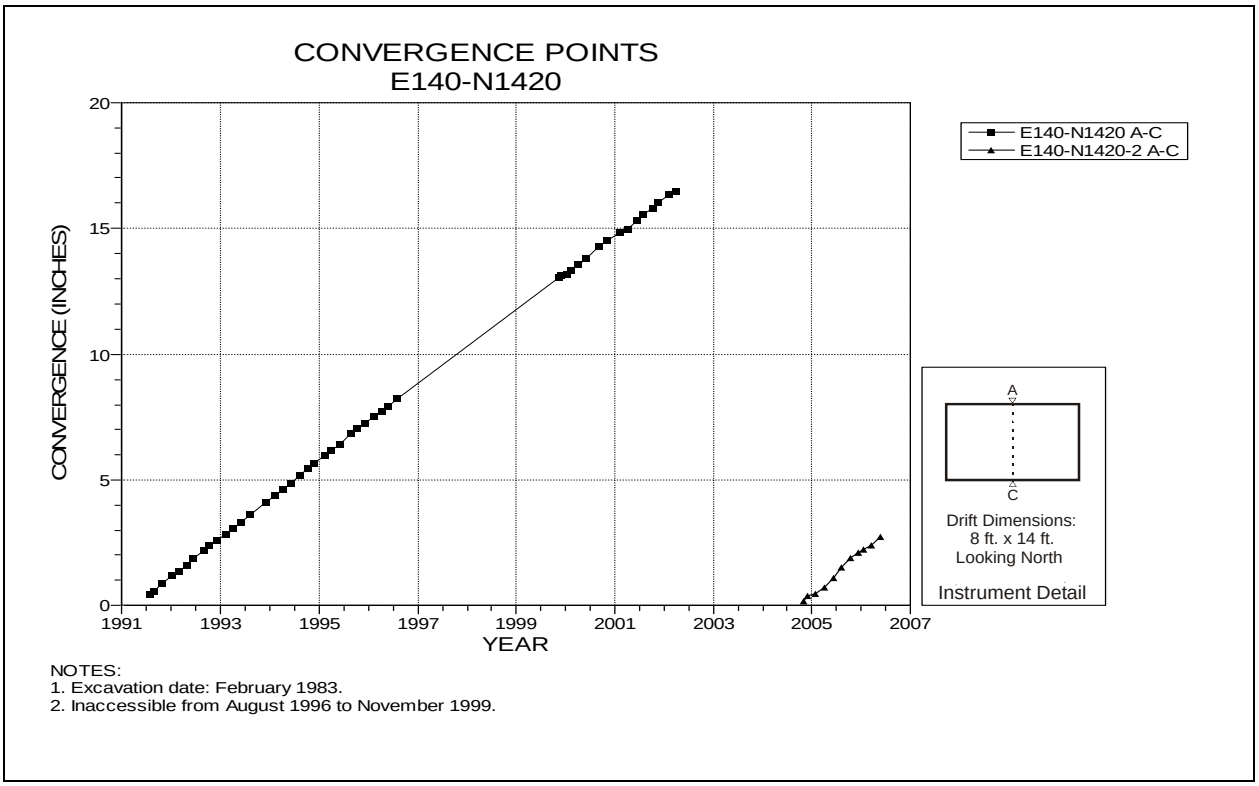


Figure 4-68 Convergence Point Array
E140 Drift at N1420 Drift Intersection – Roof to Floor

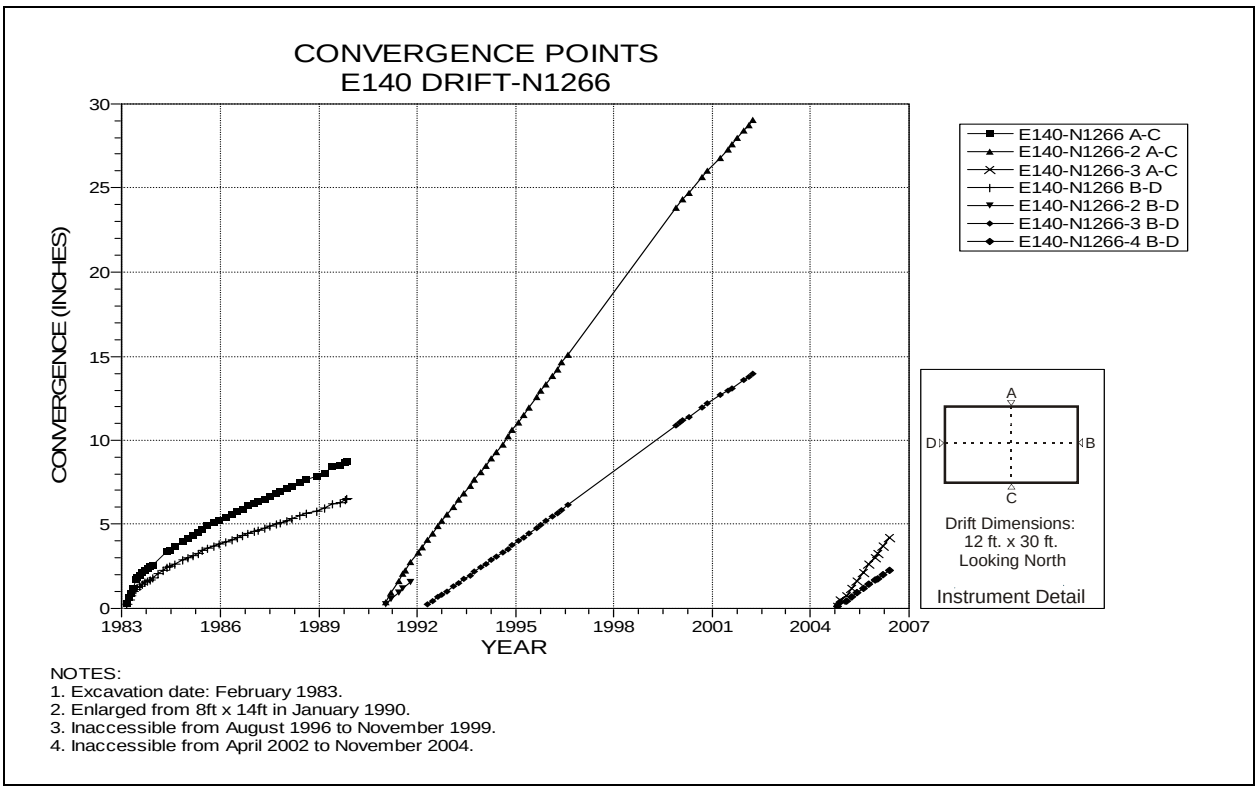


Figure 4-69 Convergence Point Array
E140 Drift at N1266 – All Chords

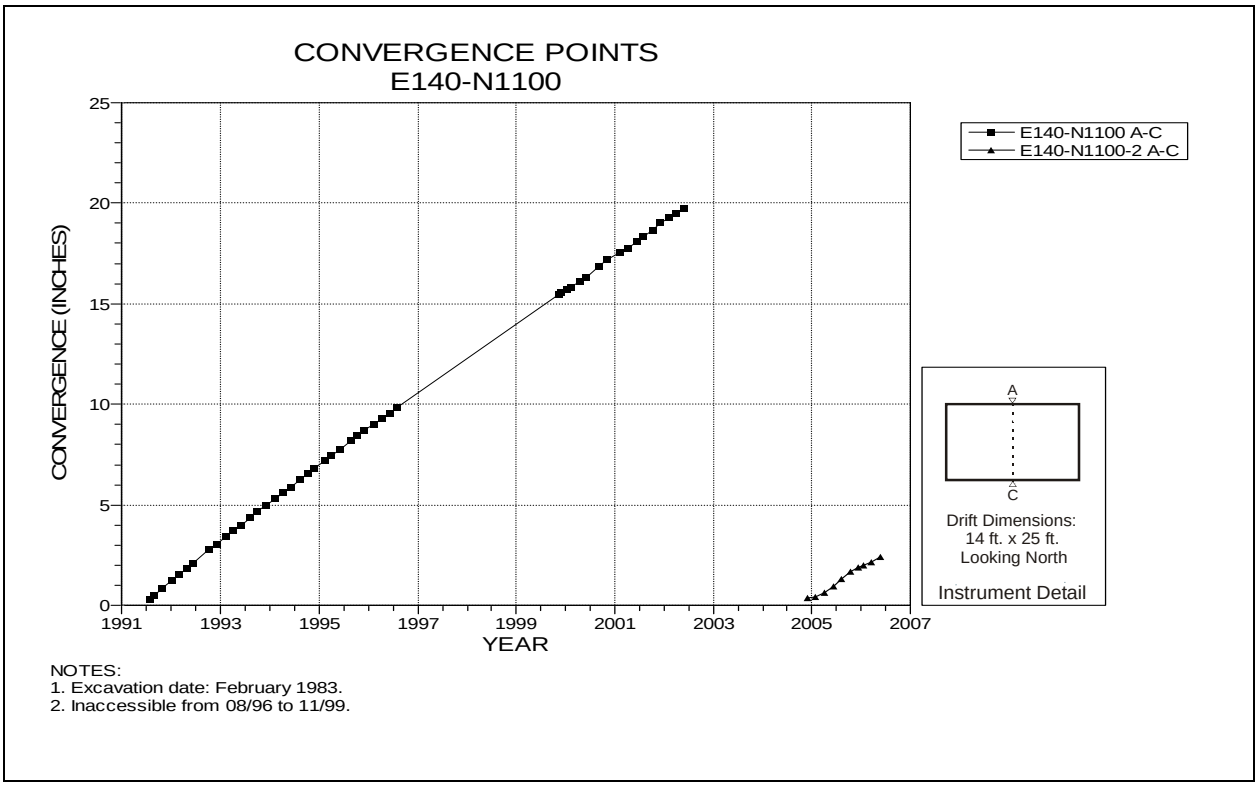


Figure 4-70 Convergence Point Array
E140 Drift at N1100 Drift Intersection – Roof to Floor

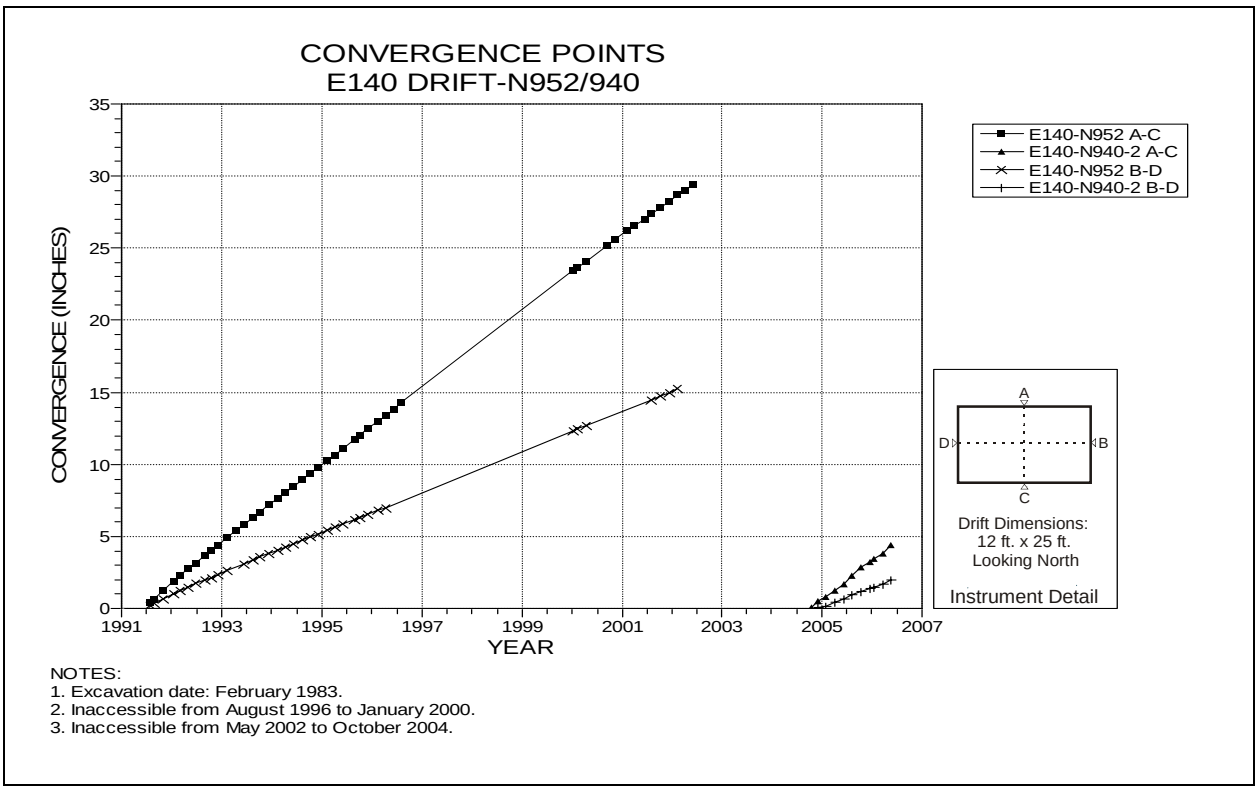


Figure 4-71 Convergence Point Array
E140 Drift at N940 – All Chords

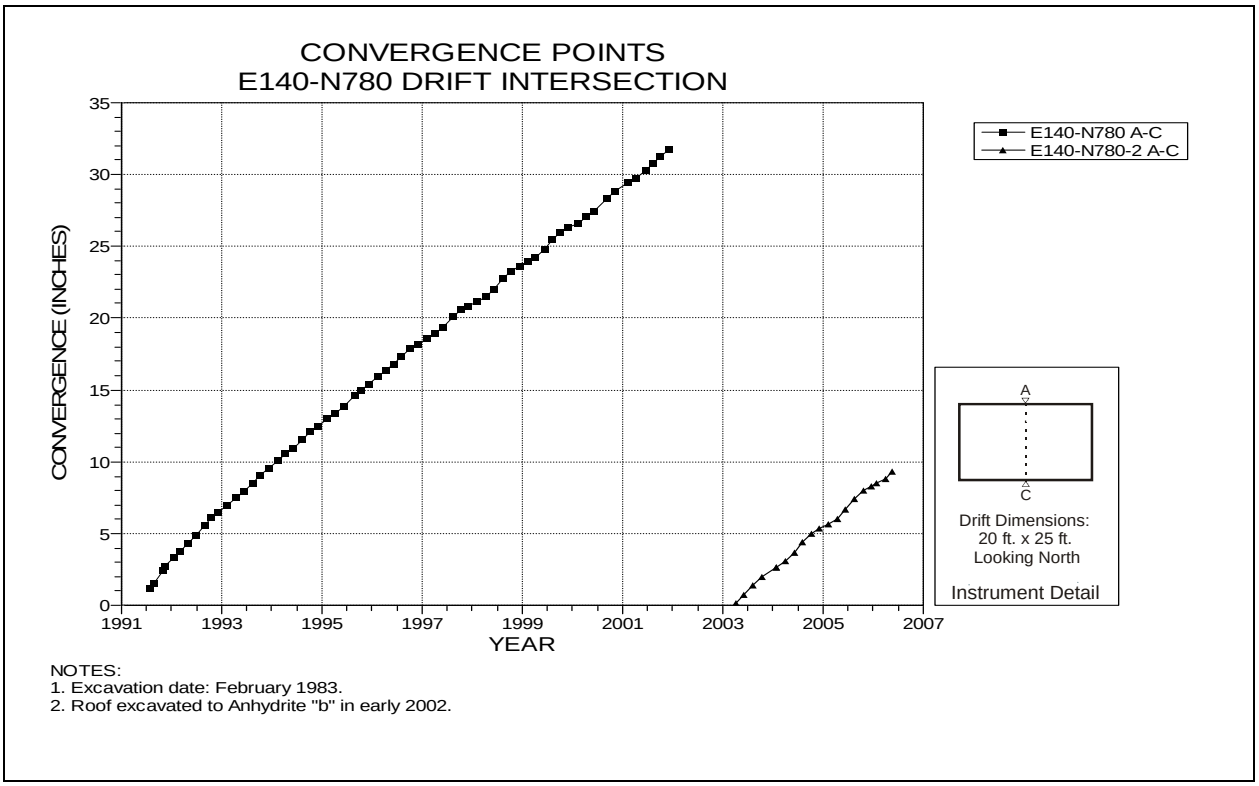


Figure 4-72 Convergence Point Array
E140 Drift at N780 Drift Intersection – Roof to Floor

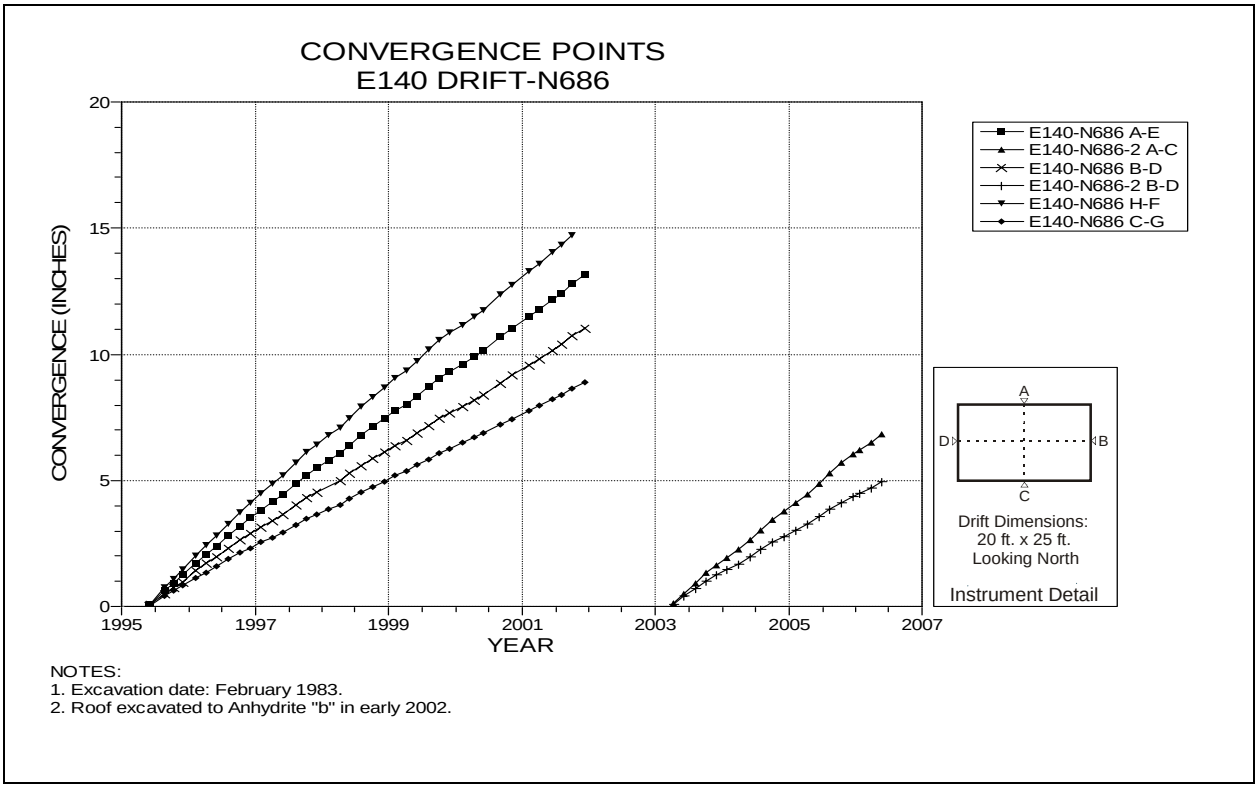


Figure 4-73 Convergence Point Array
E140 Drift at N686 – All Chords

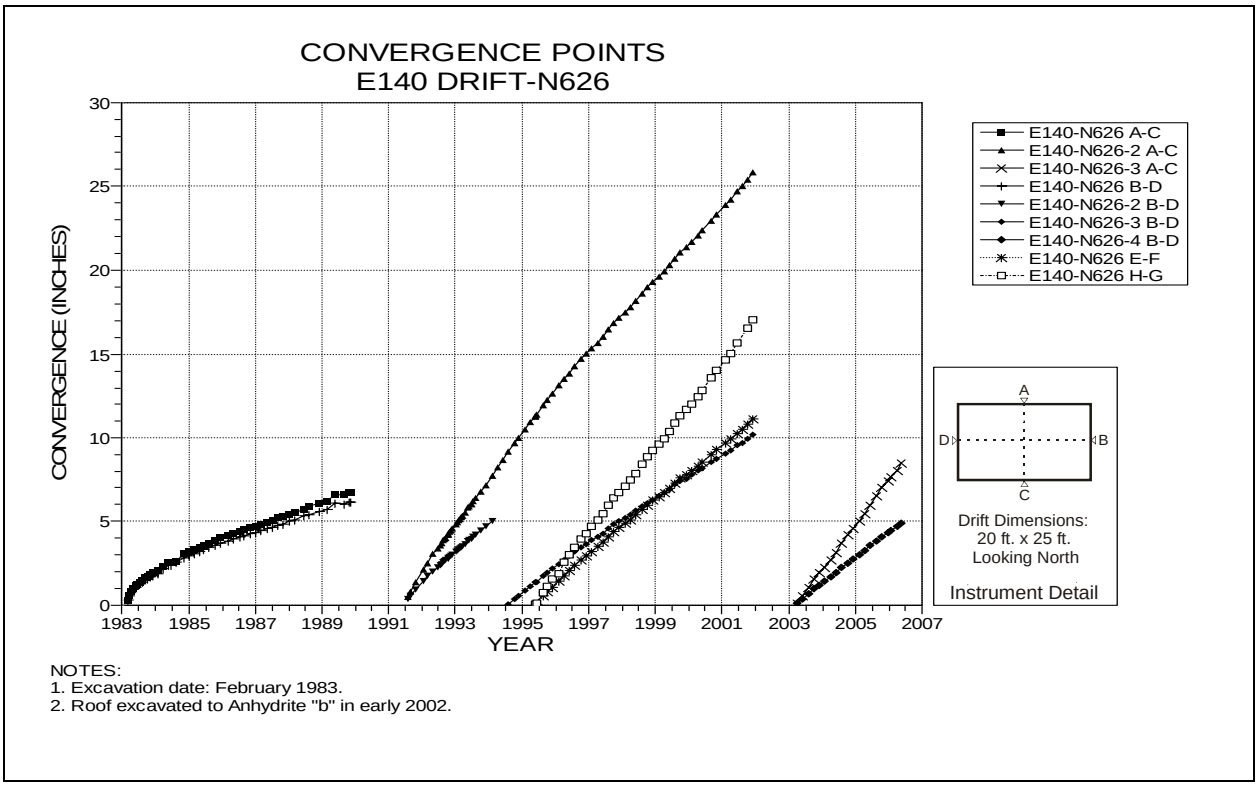


Figure 4-74 Convergence Point Array
E140 Drift at N626 – All Chords

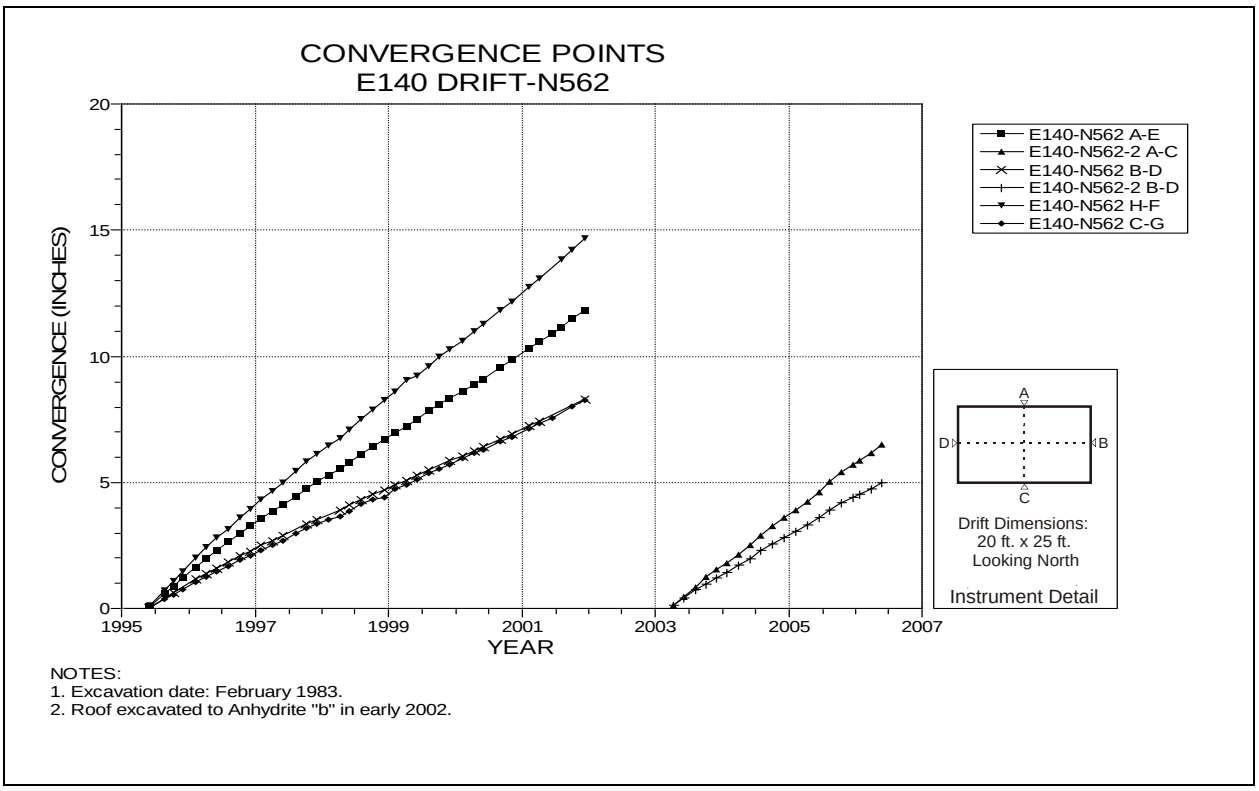


Figure 4-75 Convergence Point Array
E140 Drift at N562 – All Chords

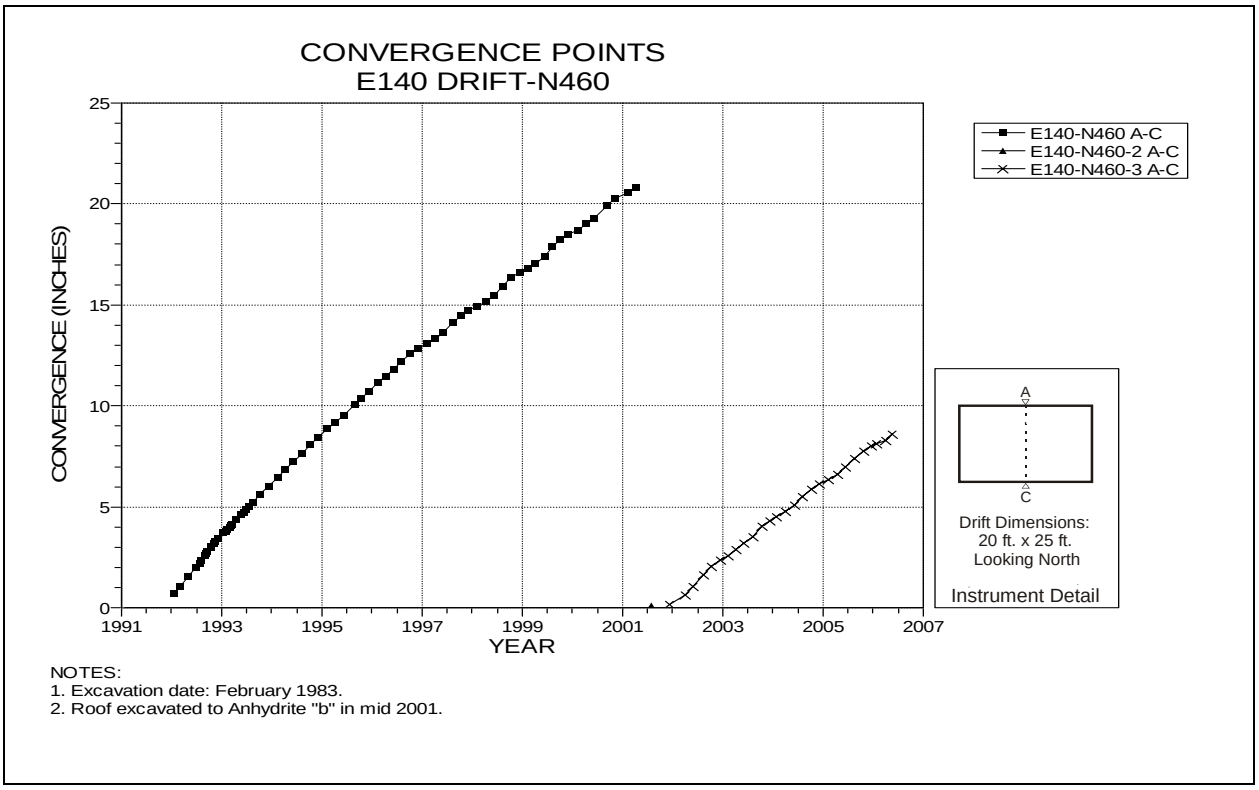


Figure 4-76 Convergence Point Array
E140 Drift at N460 Drift Intersection – Roof to Floor

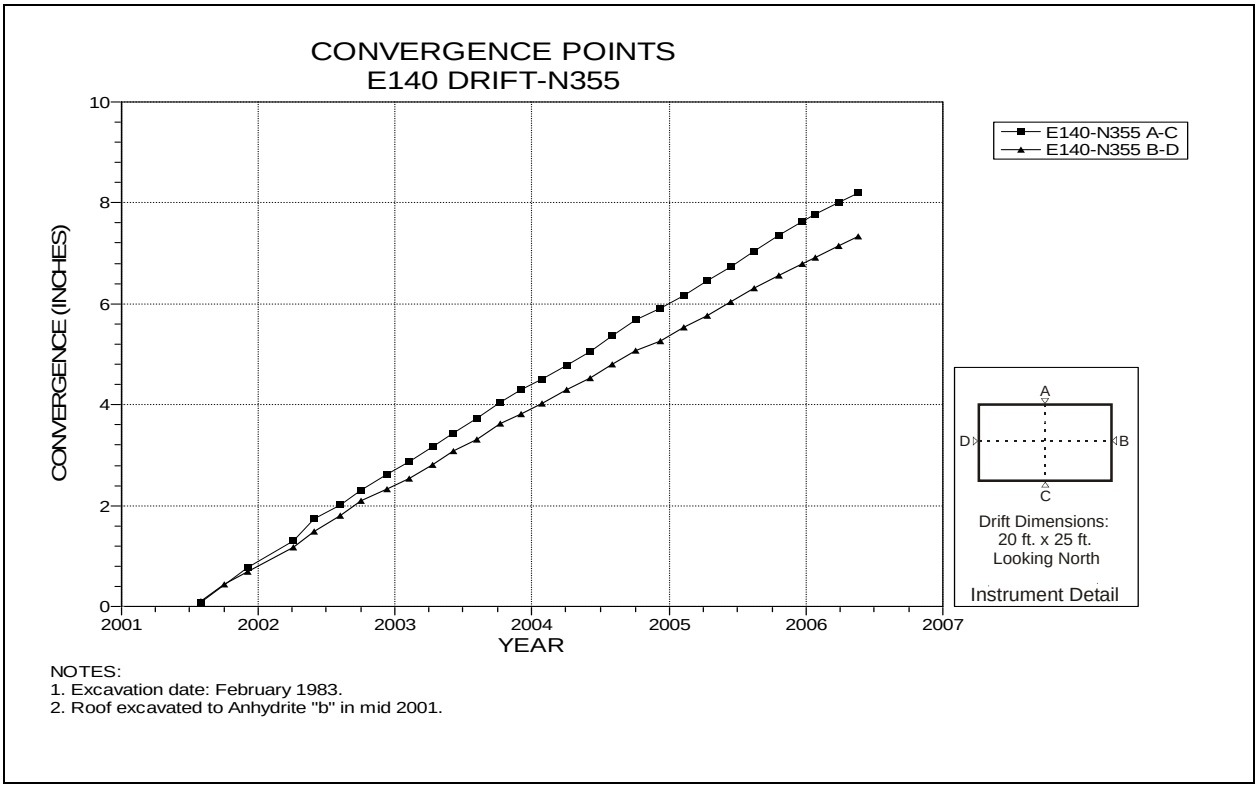


Figure 4-77 Convergence Point Array
E140 Drift at N355 – All Chords

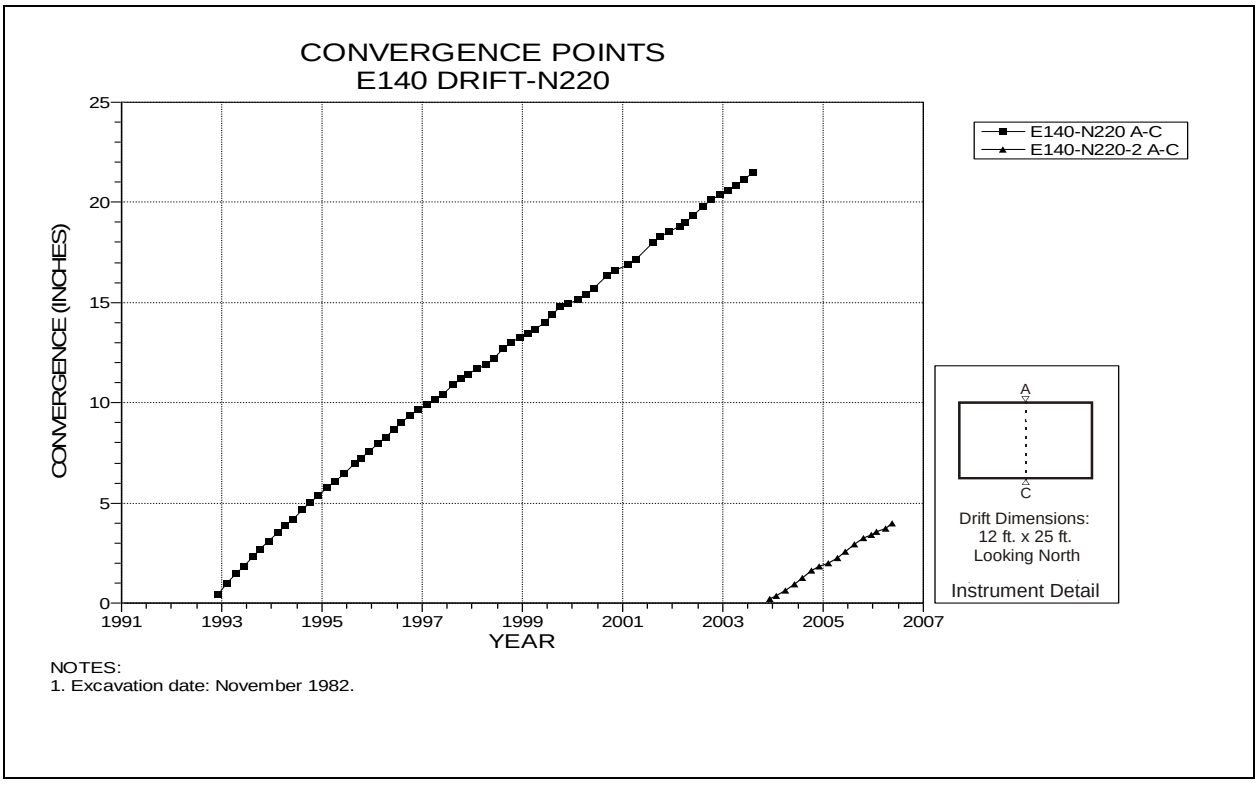


Figure 4-78 Convergence Point Array
E140 Drift at N220 – Roof to Floor

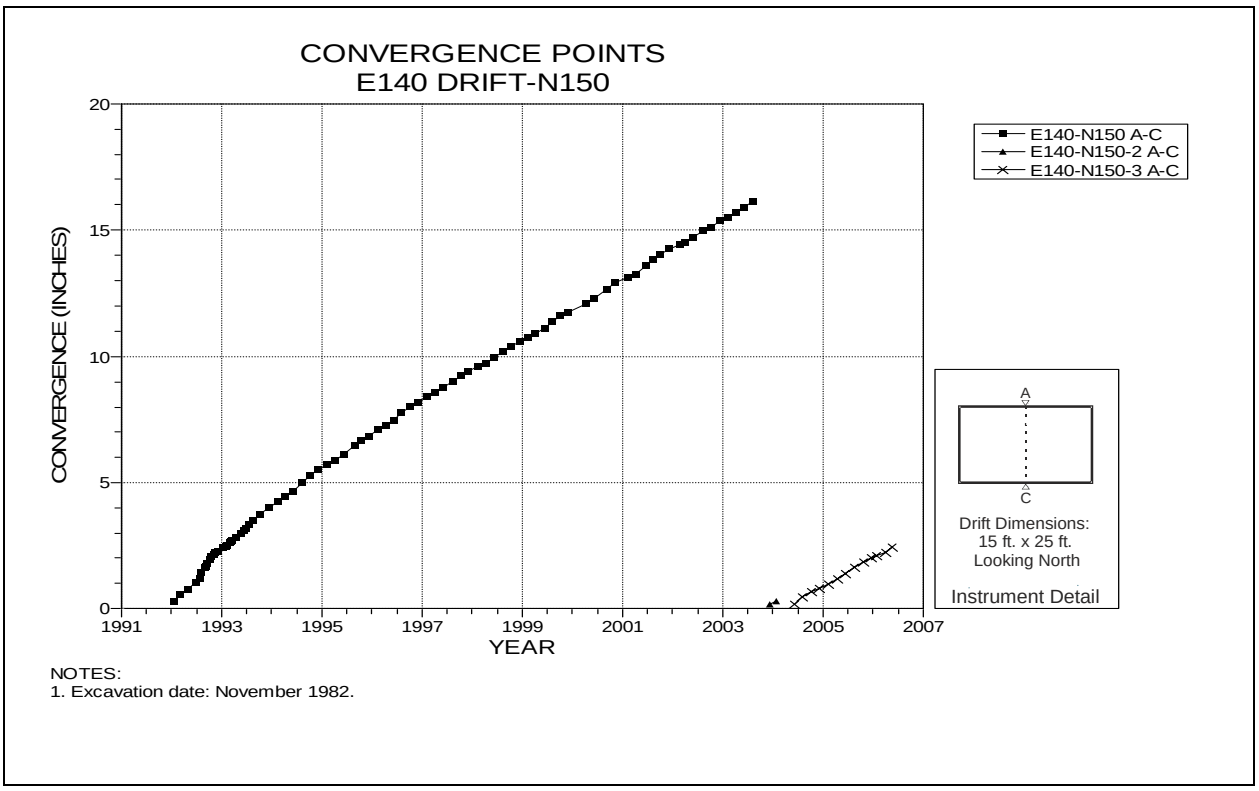


Figure 4-79 Convergence Point Array
E140 Drift at N150 Drift Intersection – Roof to Floor

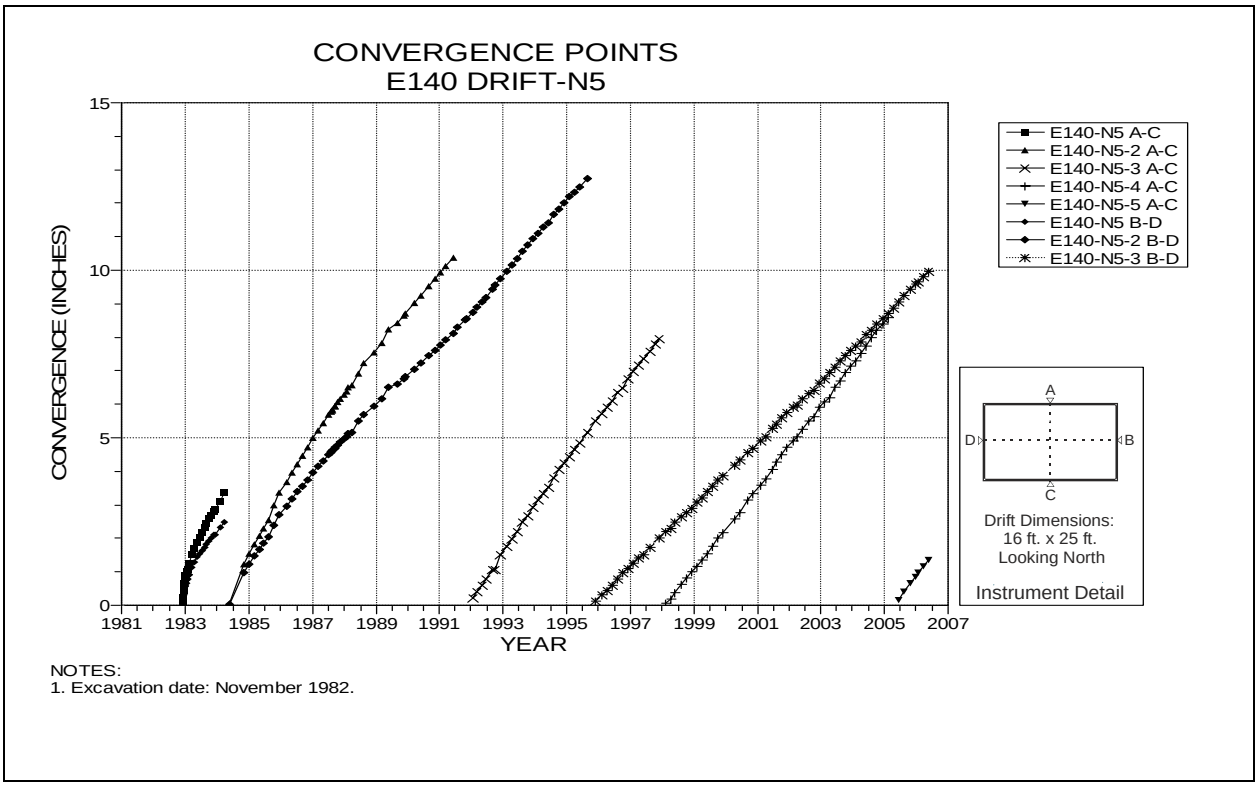


Figure 4-80 Convergence Point Array
E140 Drift at N5 – All Chords

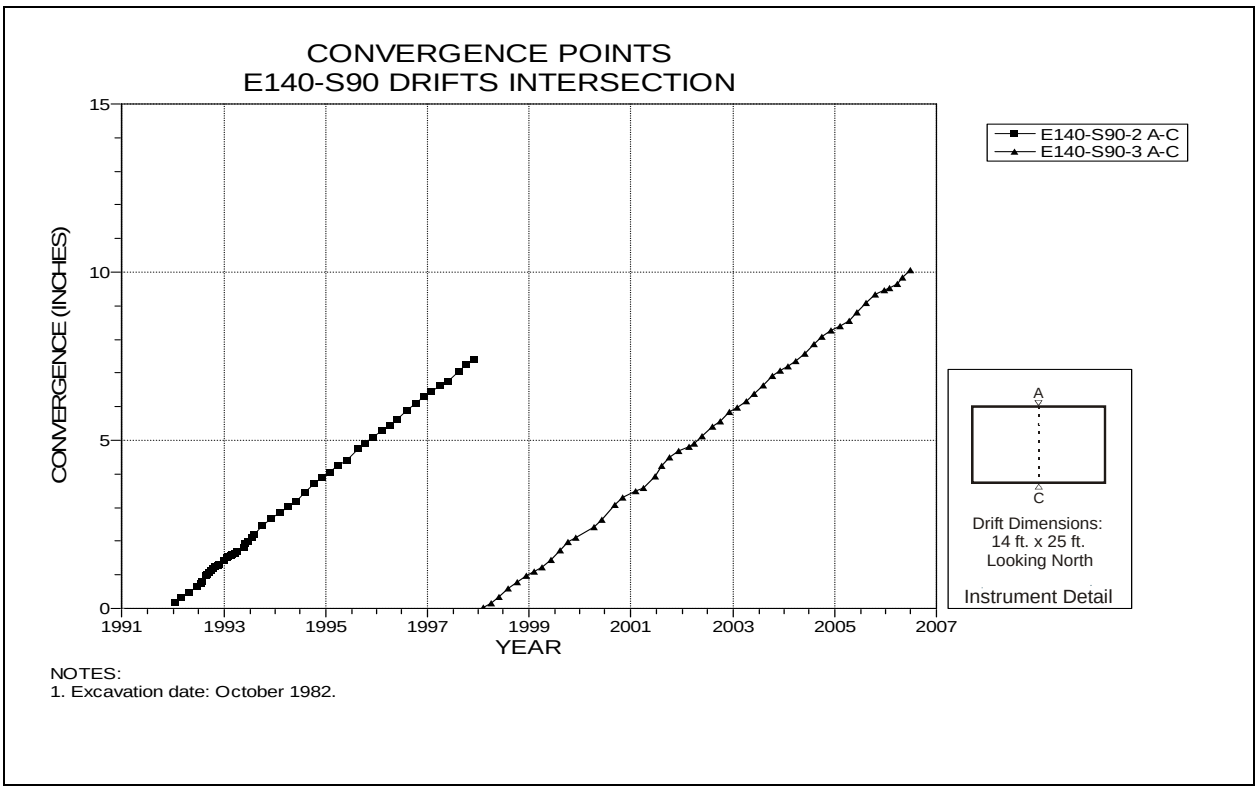


Figure 4-81 Convergence Point Array
E140 Drift at S90 Drift Intersection – Roof to Floor

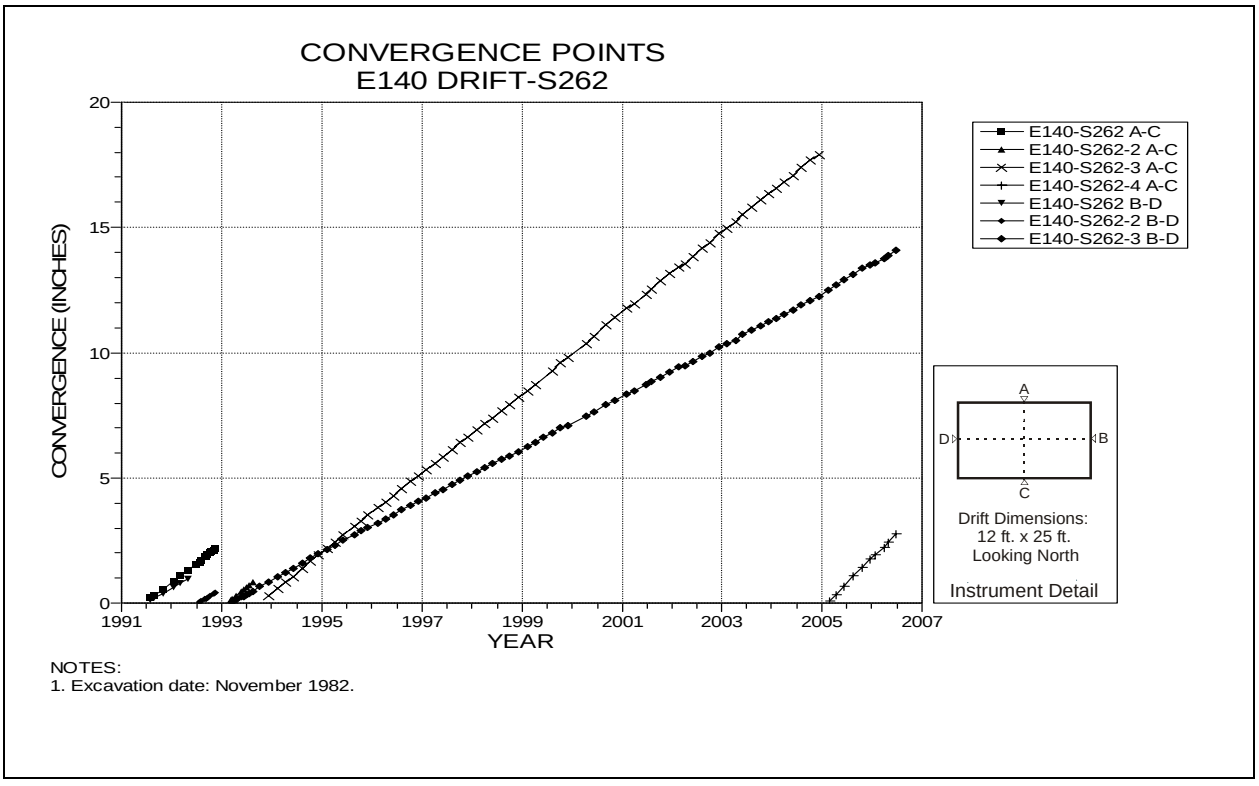


Figure 4-82 Convergence Point Array
E140 Drift at S262 – All Chords

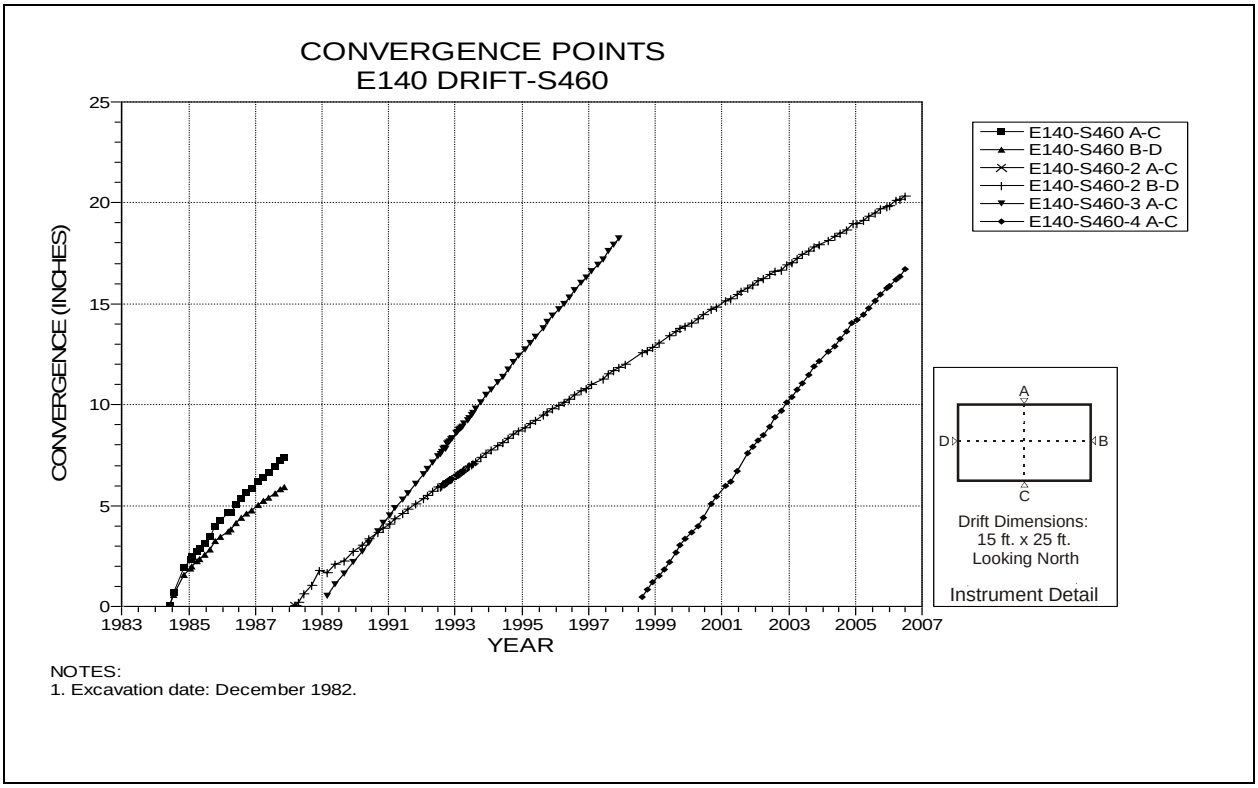


Figure 4-83 Convergence Point Array
E140 Drift at S460 – All Chords

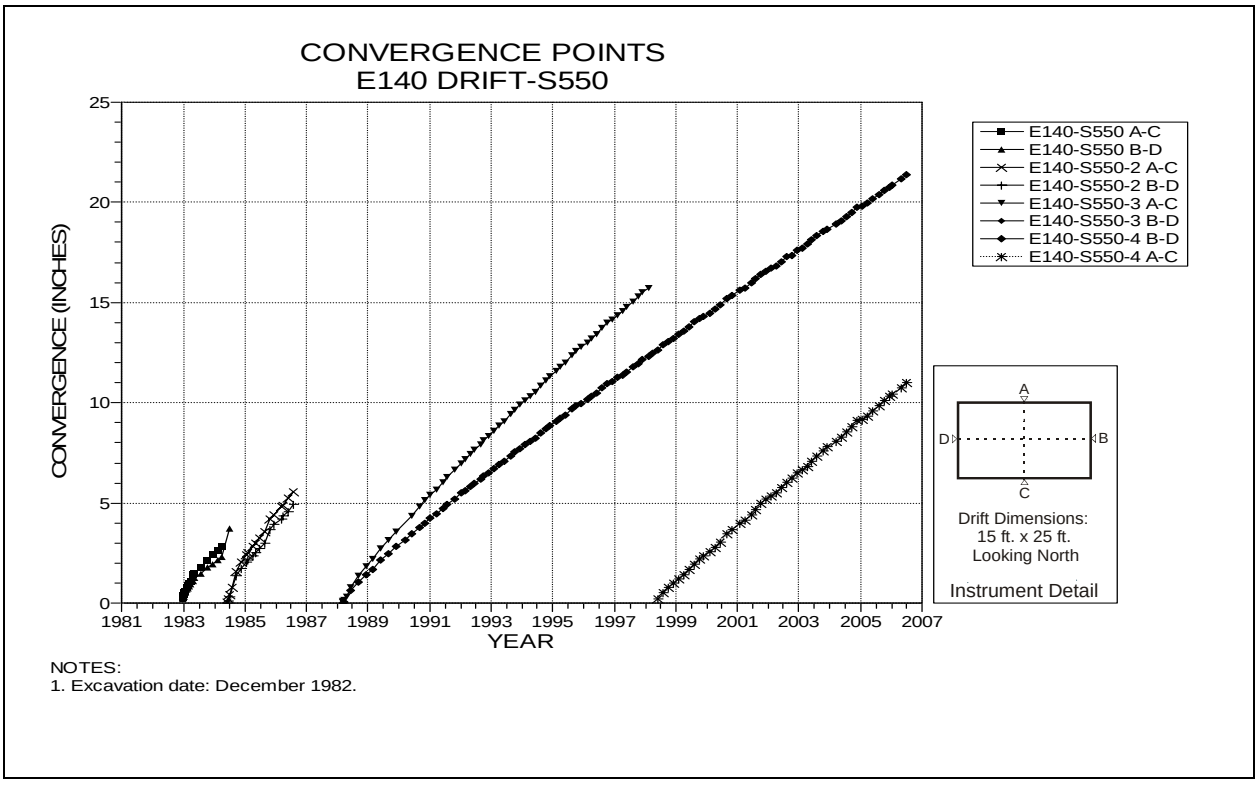


Figure 4-84 Convergence Point Array
E140 Drift at S550 – All Chords

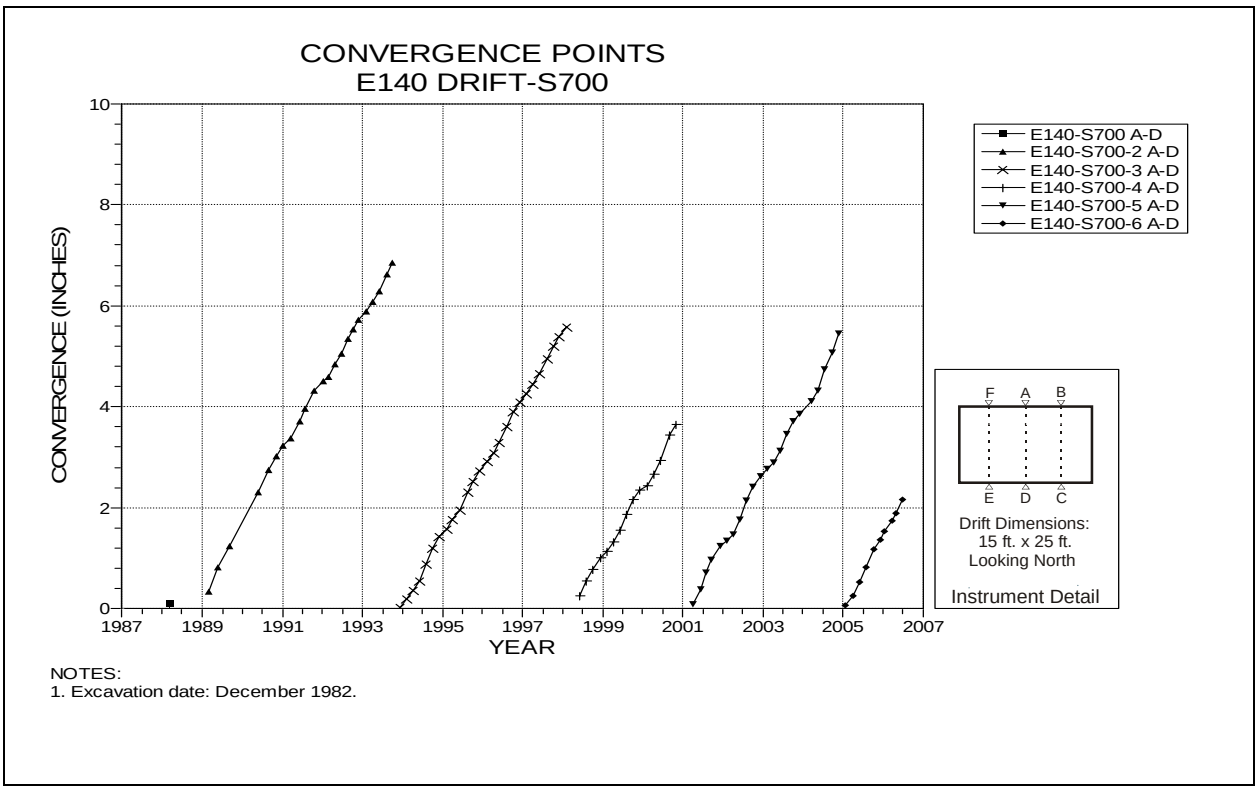


Figure 4-85 Convergence Point Array
E140 Drift at S700 Drift Intersection – Roof to Floor Centerline

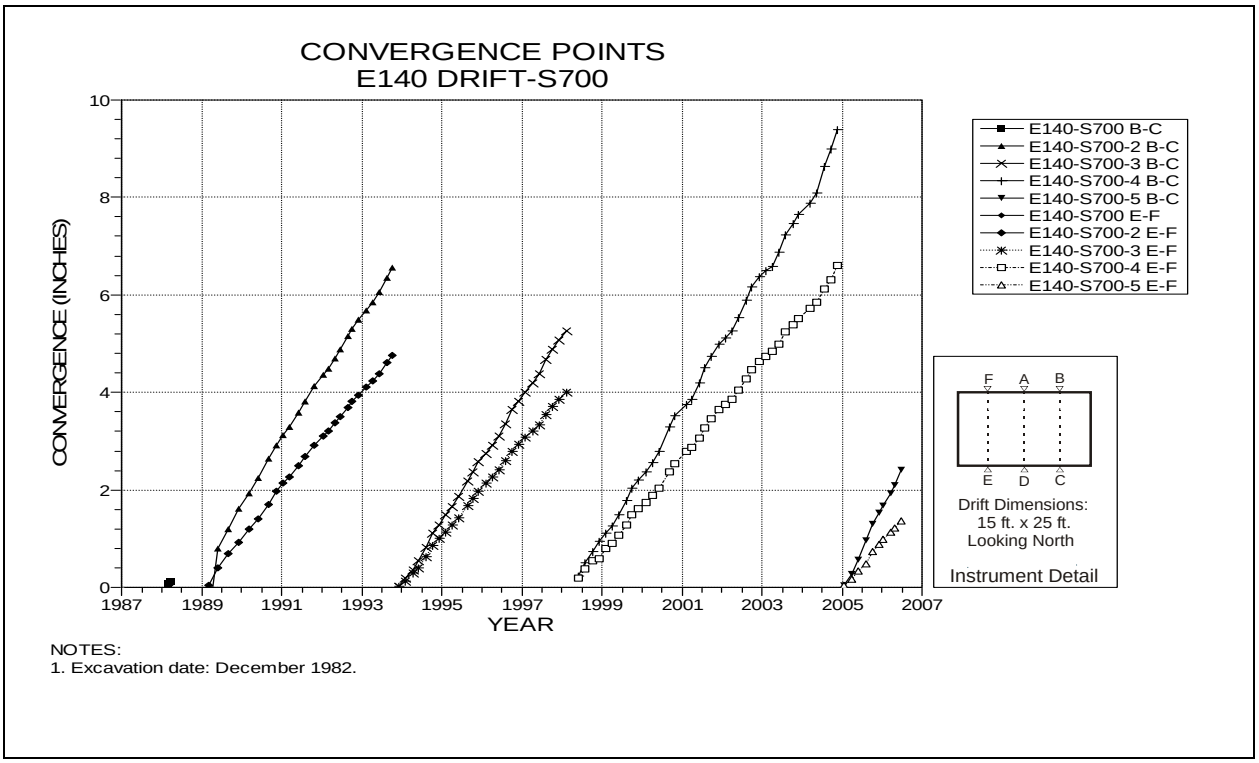


Figure 4-86 Convergence Point Array
E140 Drift at S700 Drift Intersection – Roof to Floor Quarter Points

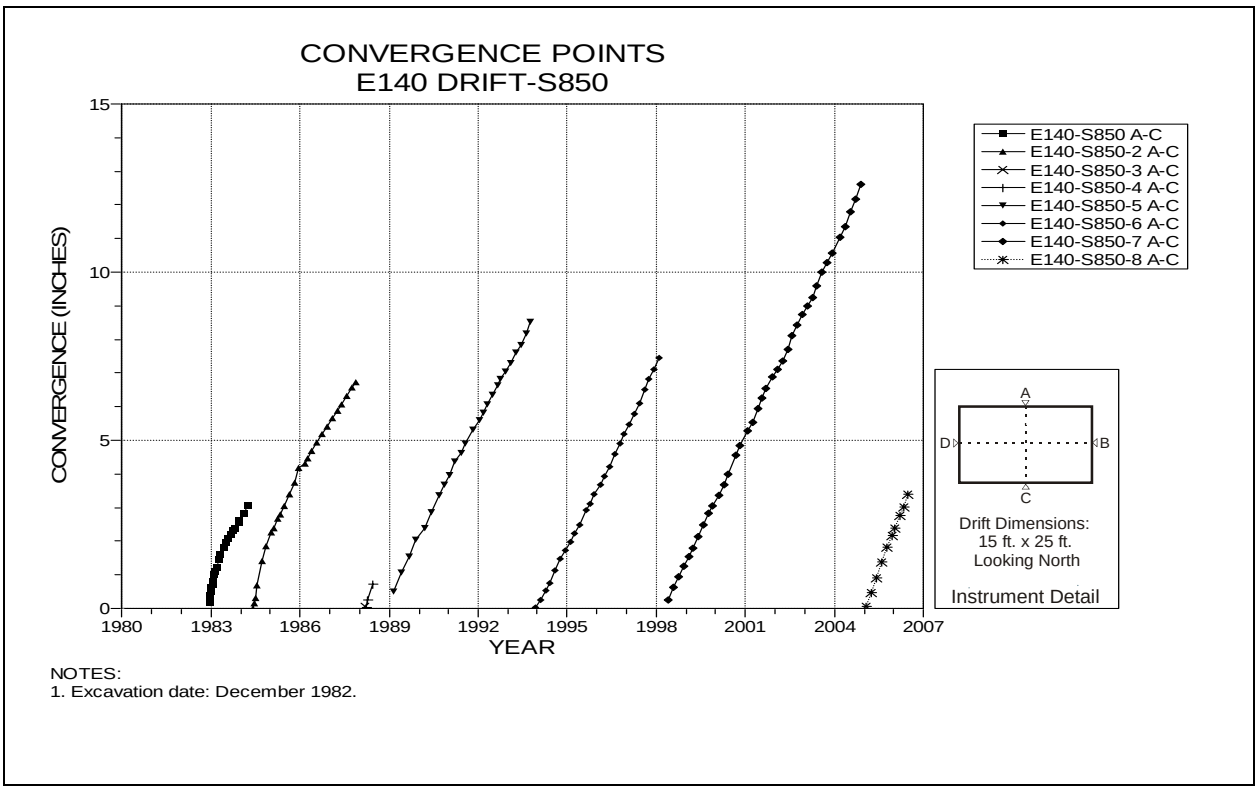


Figure 4-87 Convergence Point Array
E140 Drift at S850 – Roof to Floor

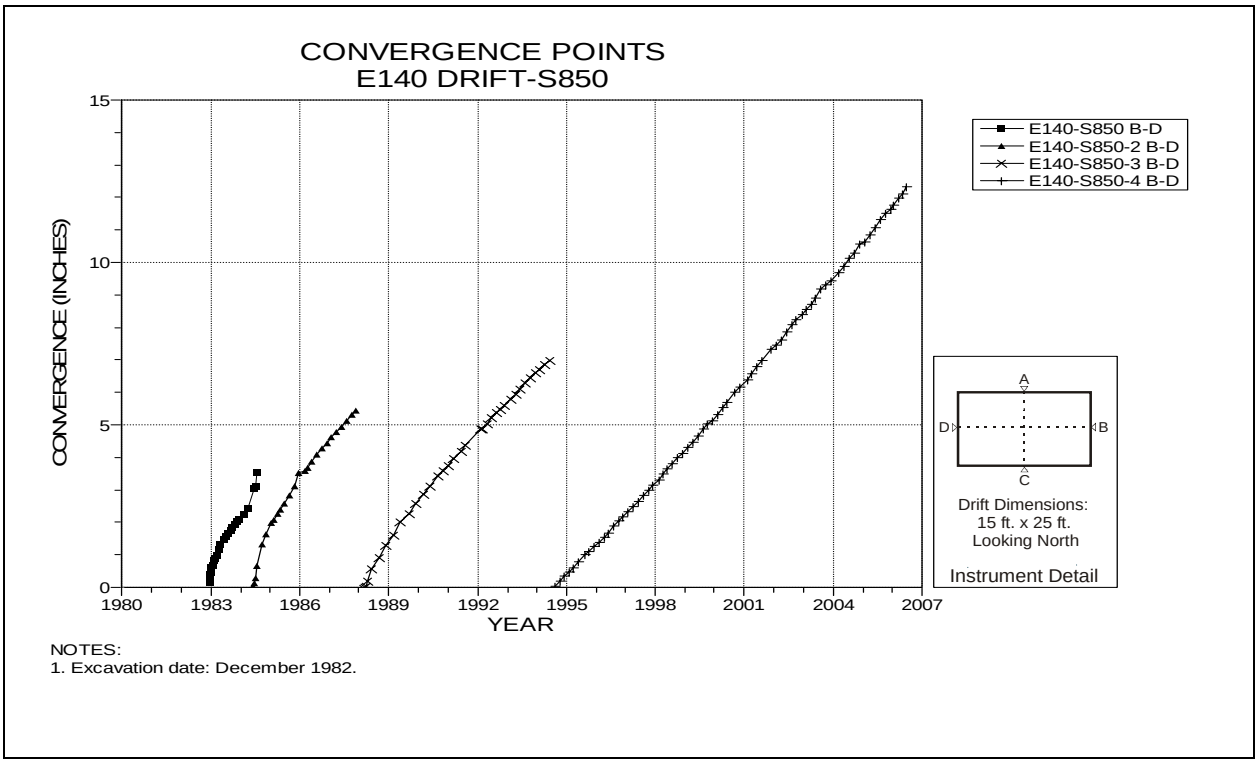


Figure 4-88 Convergence Point Array
E140 Drift at S850 – Rib to Rib

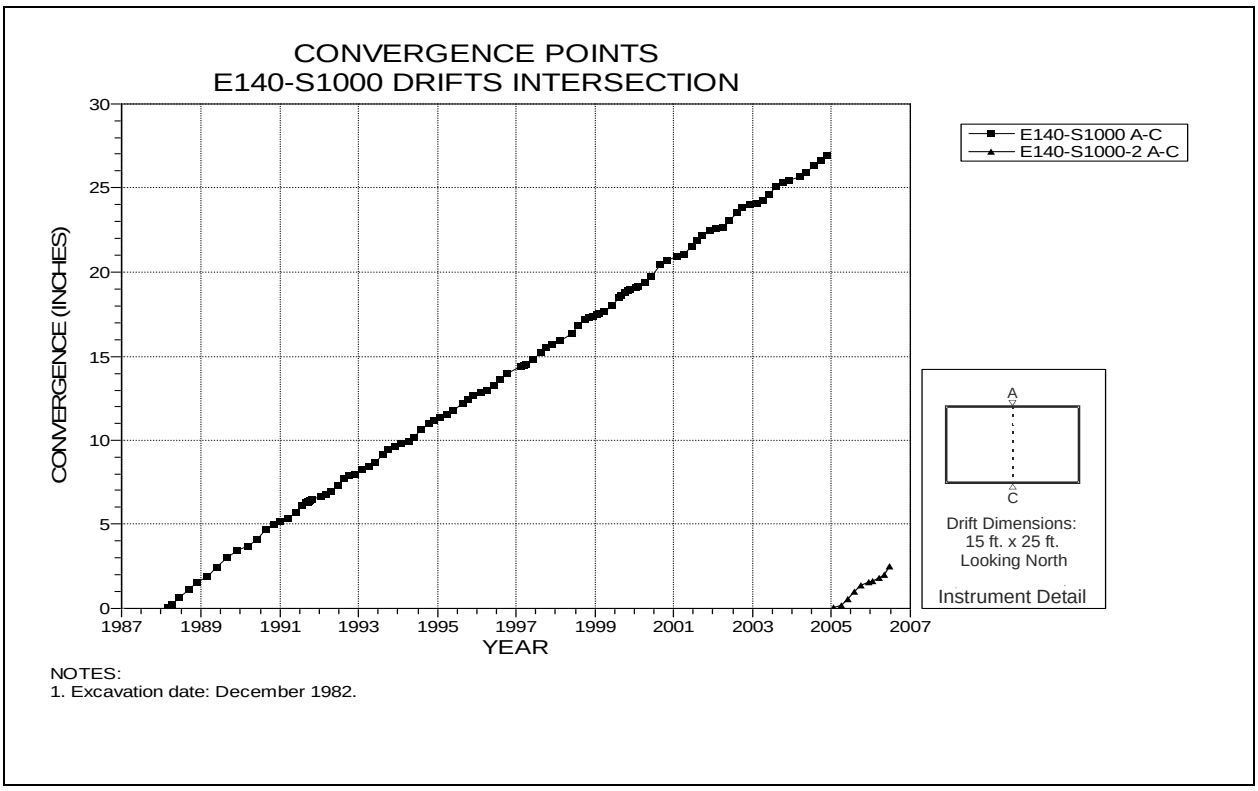


Figure 4-89 Convergence Point Array
E140 Drift at S1000 Drift Intersection – Roof to Floor

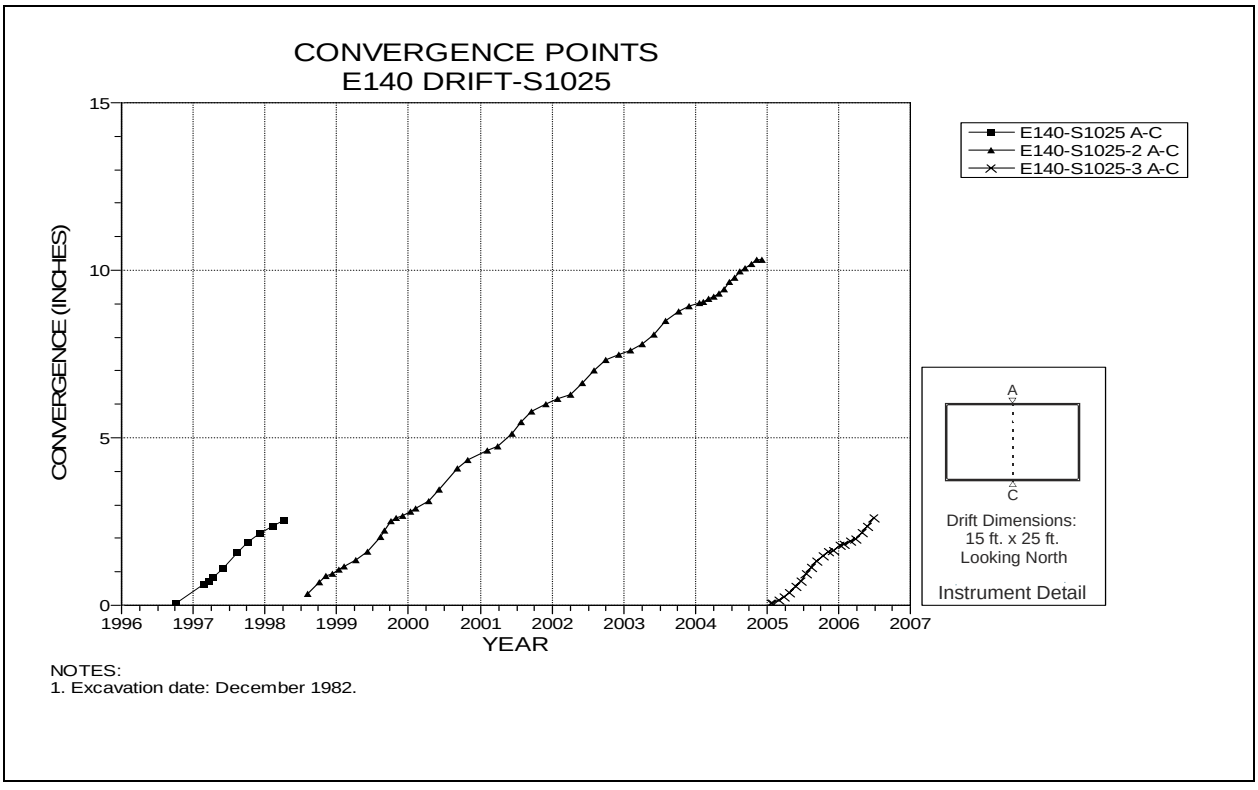


Figure 4-90 Convergence Point Array
E140 Drift at S1025 – Roof to Floor

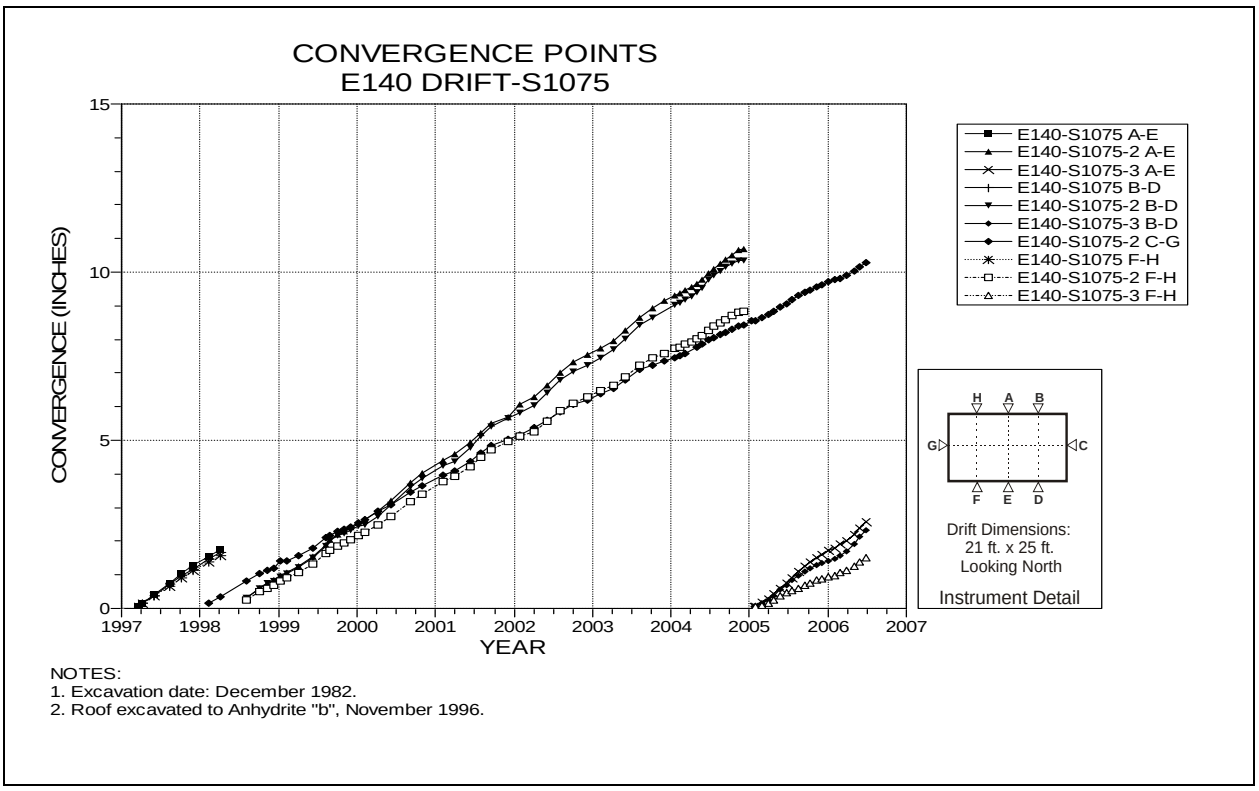


Figure 4-91 Convergence Point Array
E140 Drift at S1075 – All Chords

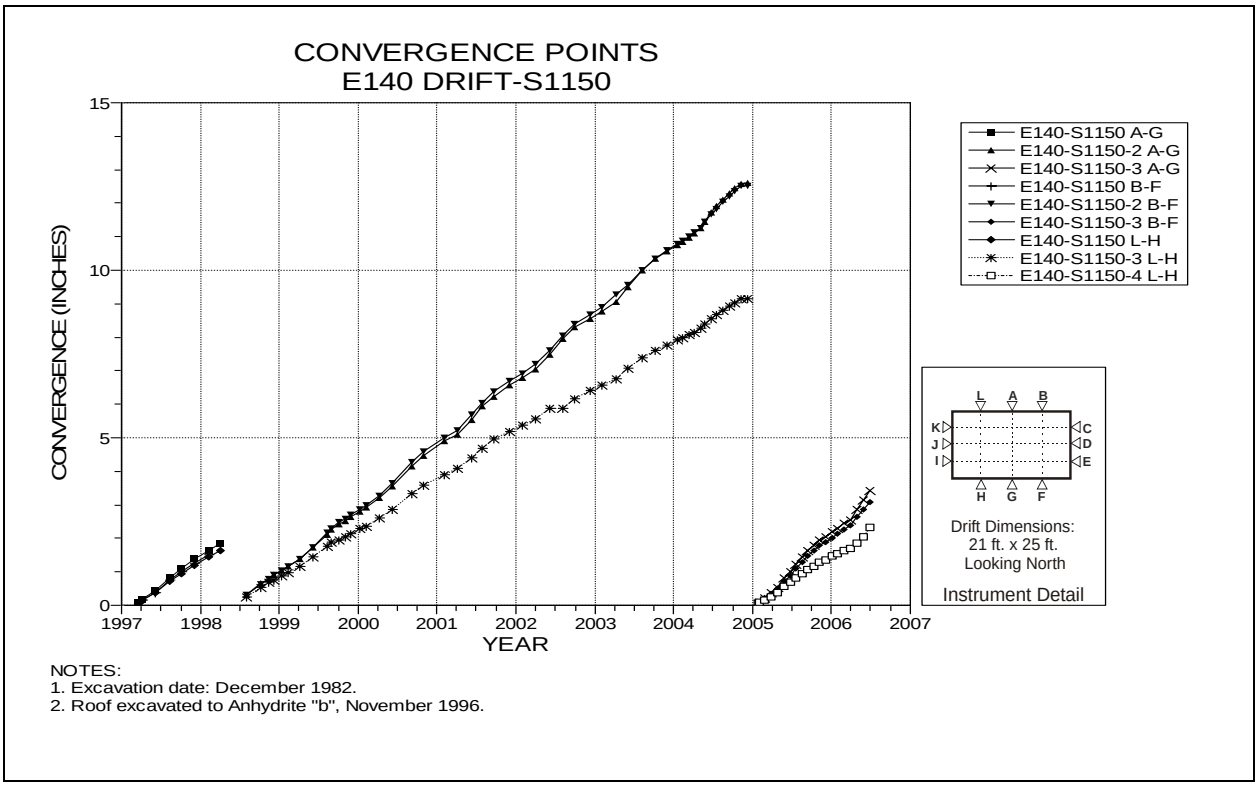
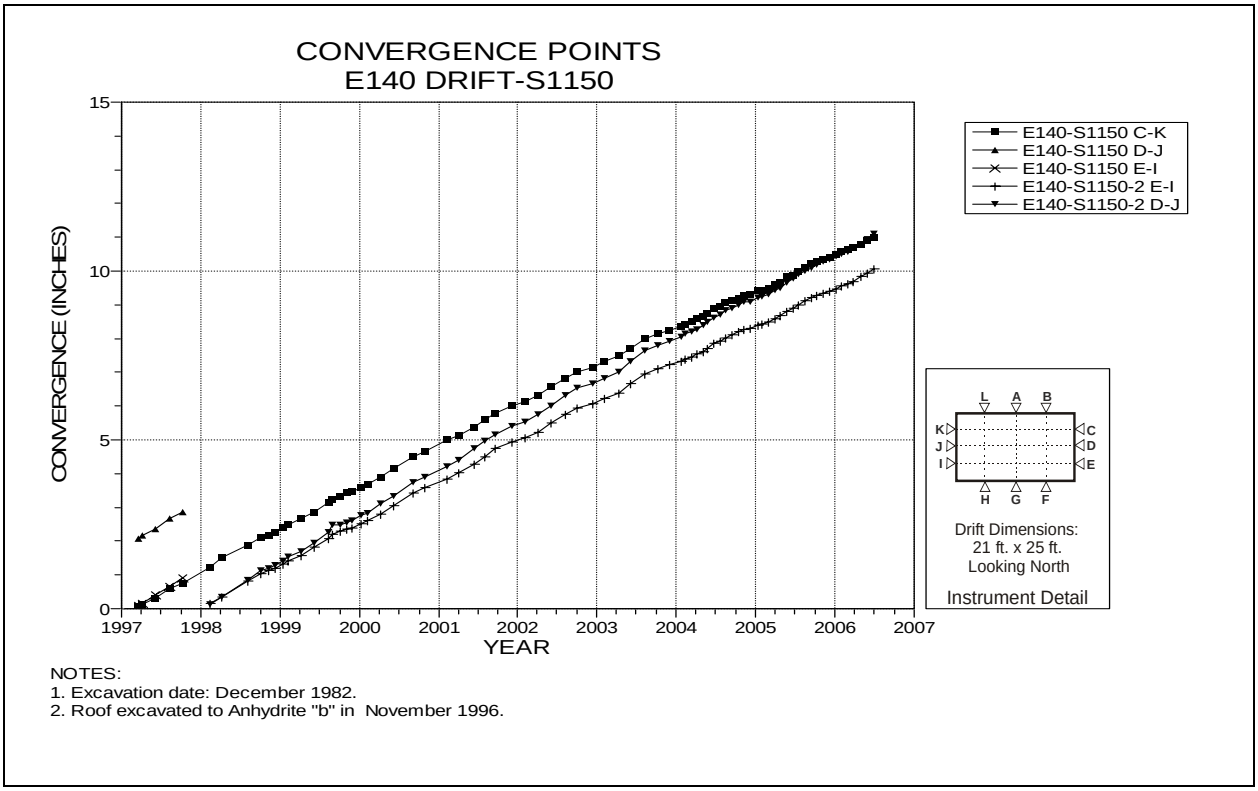
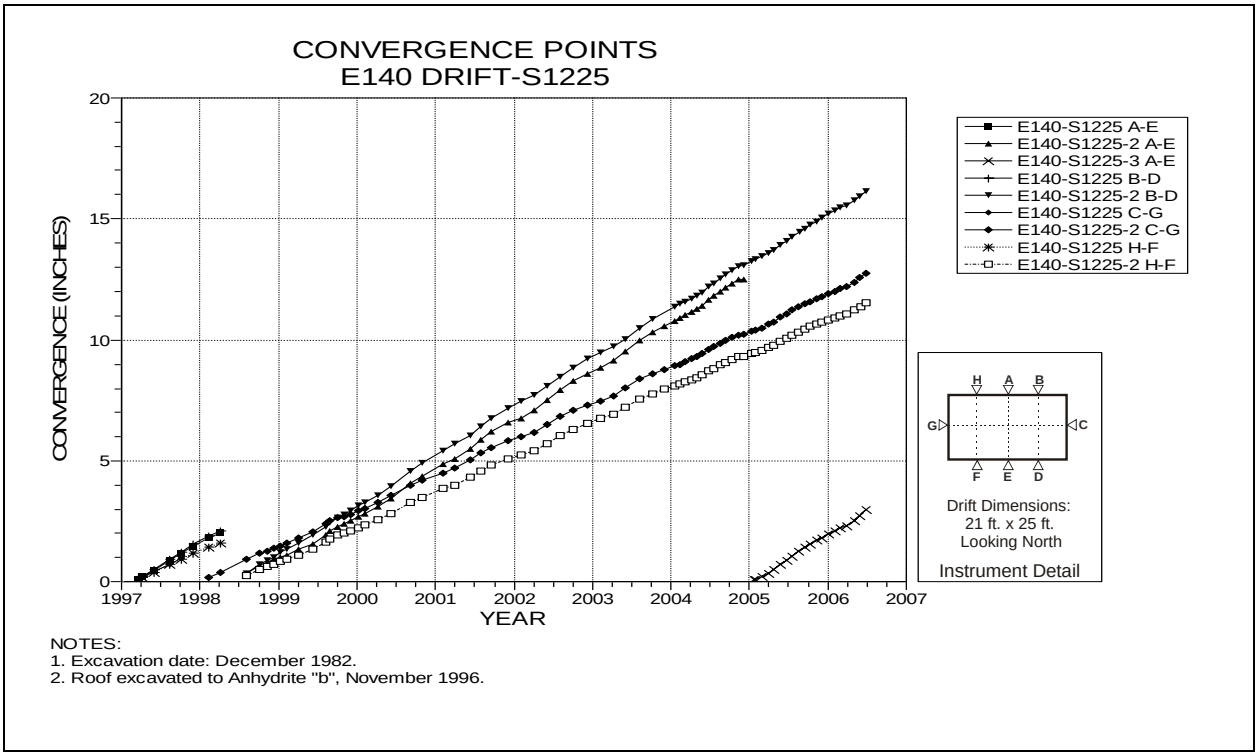


Figure 4-92 Convergence Point Array
E140 Drift at S1150 – Roof to Floor



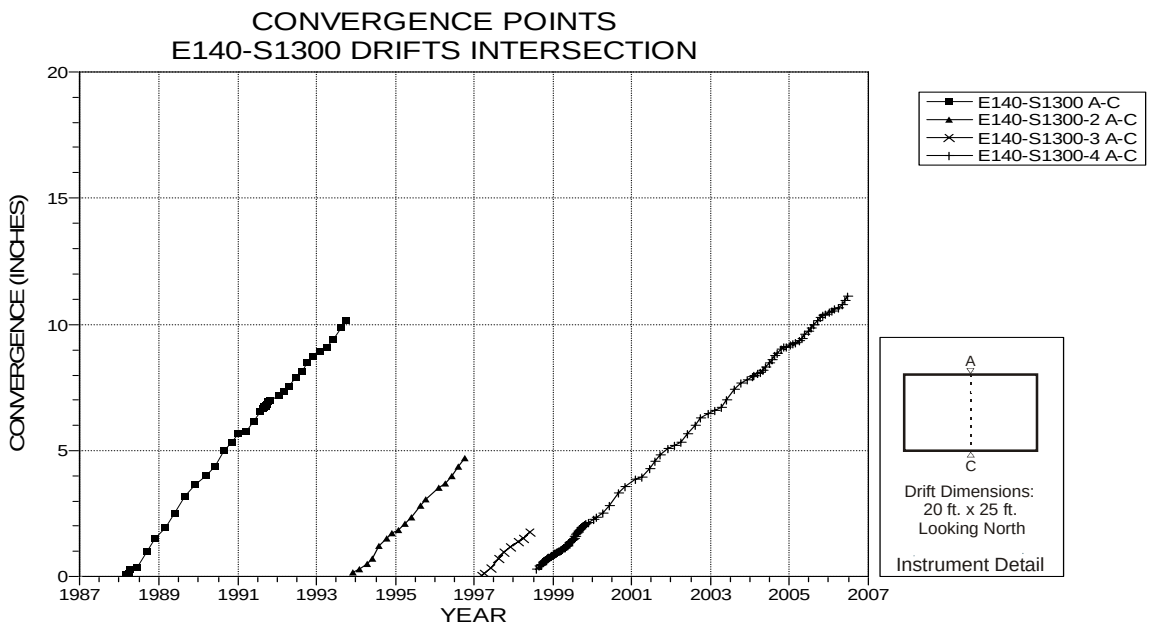
NOTES:
1. Excavation date: December 1982.
2. Roof excavated to Anhydrite "b" in November 1996.

Figure 4-93 Convergence Point Array
E140 Drift at S1150 – Rib to Rib



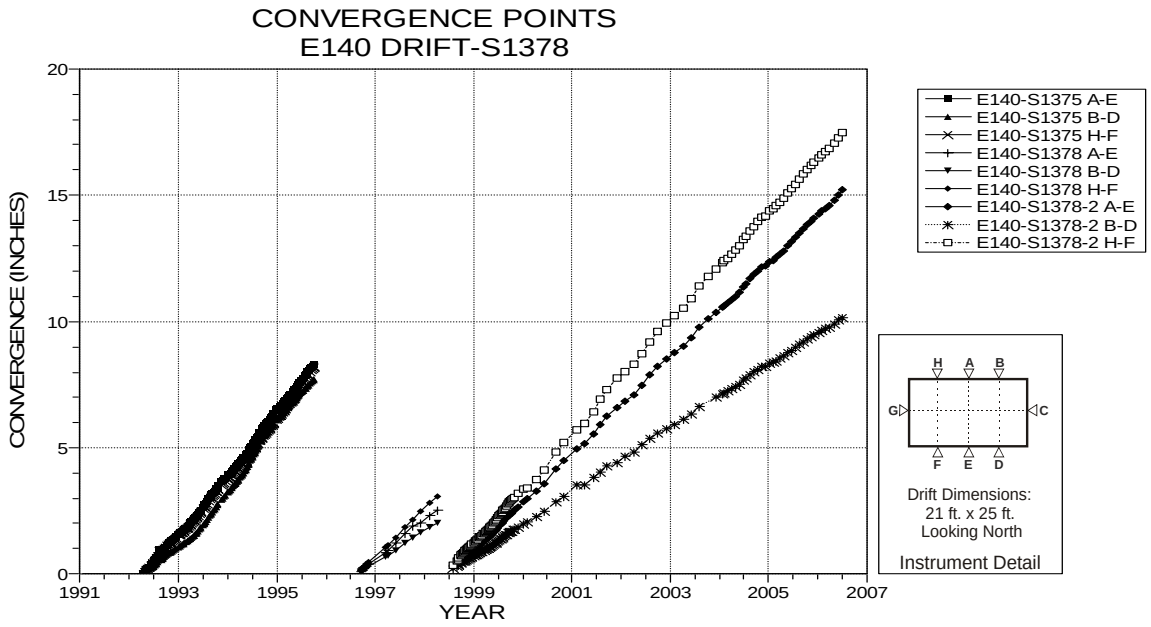
NOTES:
1. Excavation date: December 1982.
2. Roof excavated to Anhydrite "b", November 1996.

Figure 4-94 Convergence Point Array
E140 Drift at S1225 – All Chords



NOTES:
1. Excavation date: December 1982.
2. Roof excavated to Anhydrite "b" in December 1996.

Figure 4-95 Convergence Point Array
E140 Drift at S1300 Drift Intersection – Roof to Floor



NOTES:
1. Excavation date: December 1982.
2. Roof excavated to Anhydrite "b" in December 1995.

Figure 4-96 Convergence Point Array
E140 Drift at S1378 – Roof to Floor

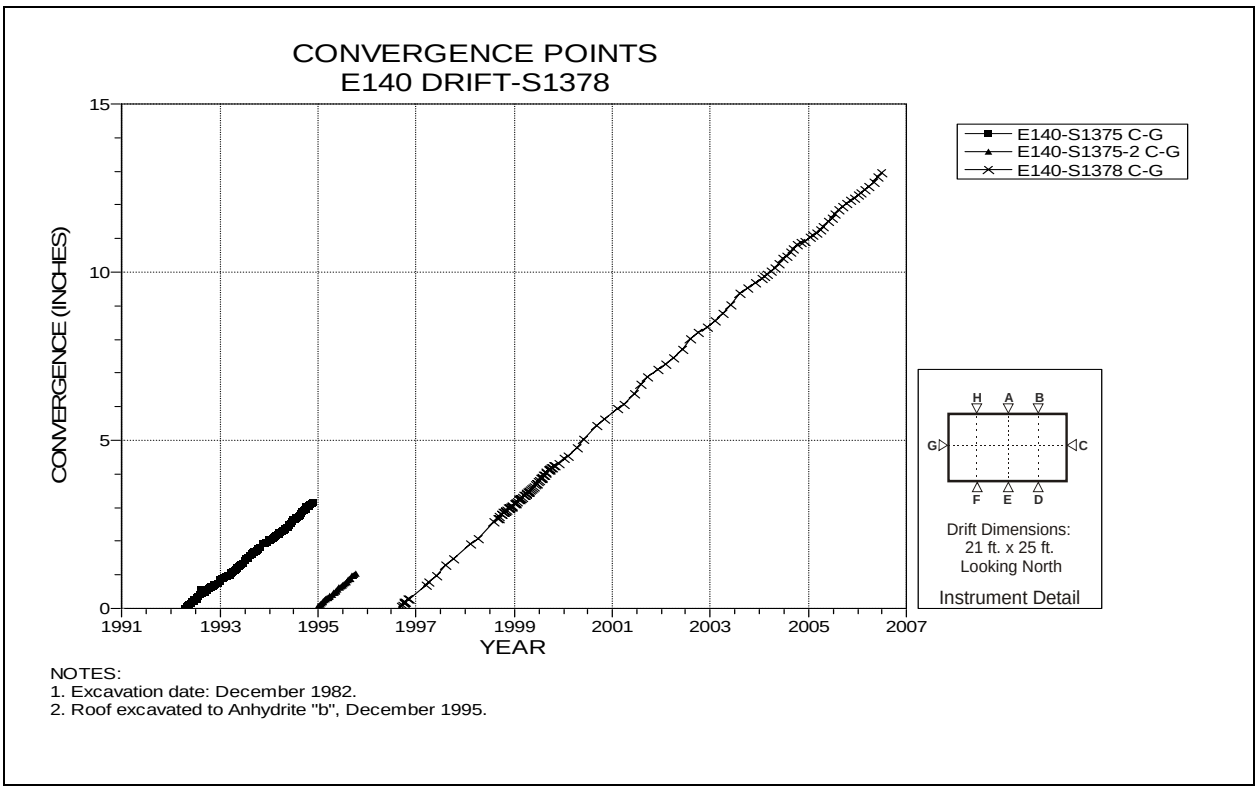


Figure 4-97 Convergence Point Array
E140 Drift at S1378 – Rib to Rib

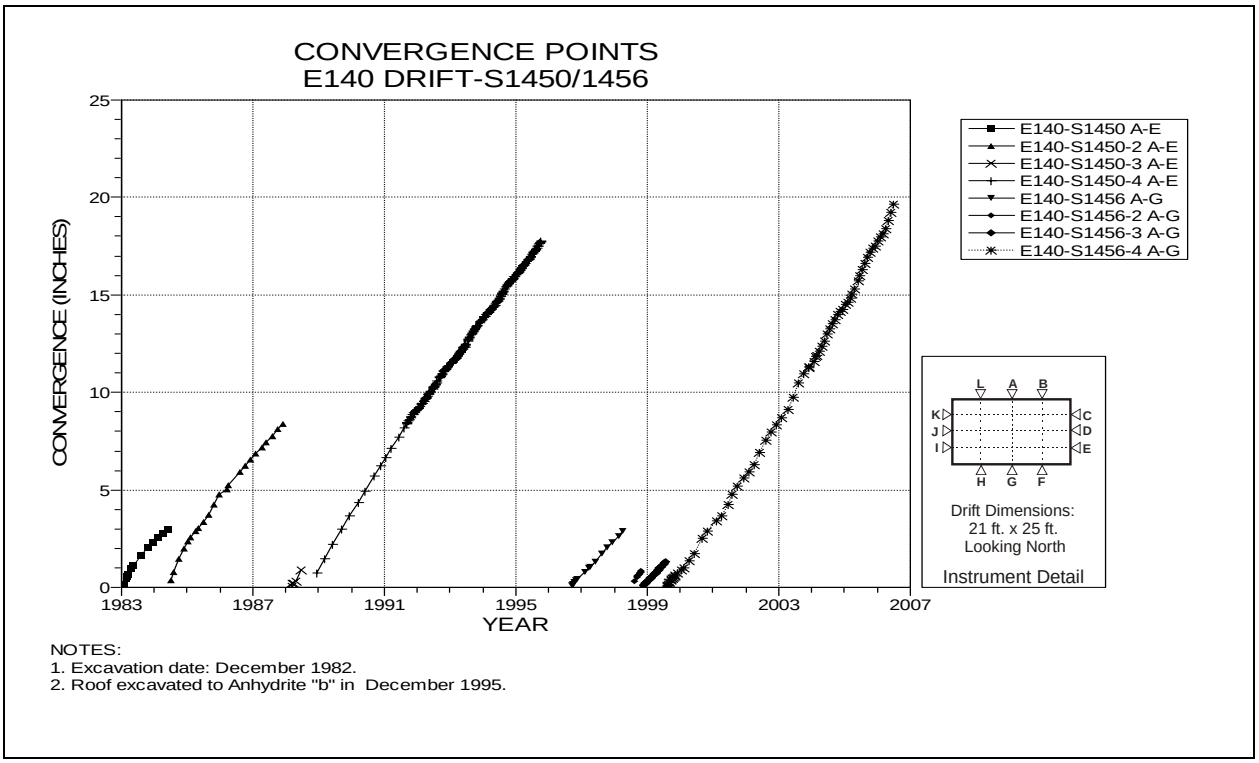


Figure 4-98 Convergence Point Array
E140 Drift at S1450/1456 – Roof to Floor – Centerline

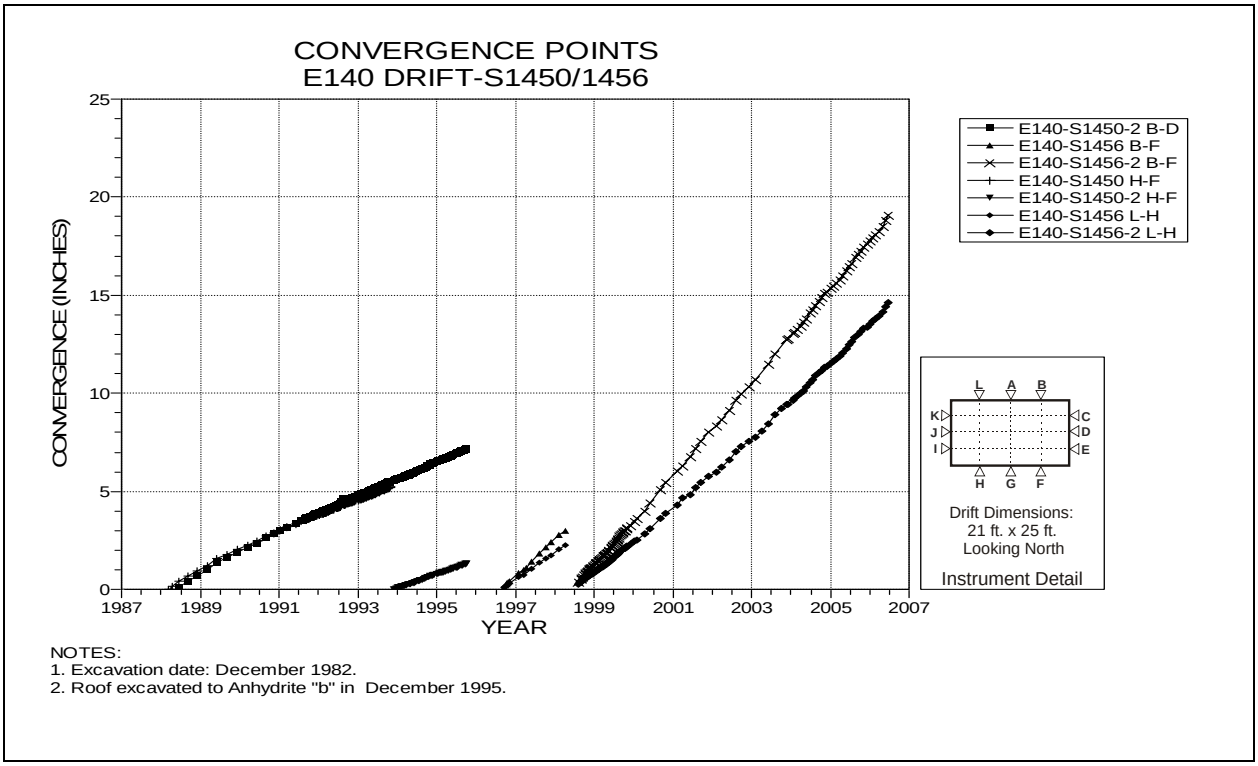


Figure 4-99 Convergence Point Array
E140 Drift at S1450/S1456 – Roof to Floor – Quarter Points

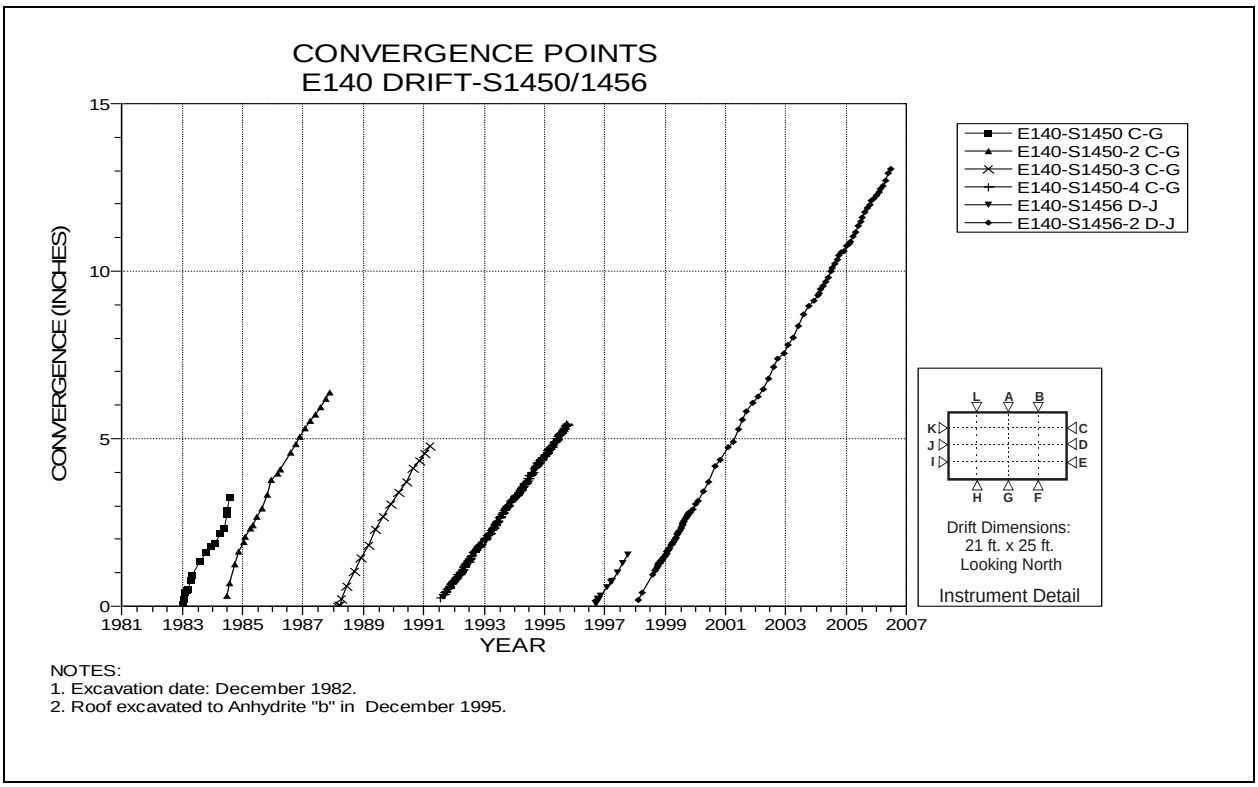


Figure 4-100 Convergence Point Array
E140 Drift at S1450/S1456 – Rib to Rib – Midheight

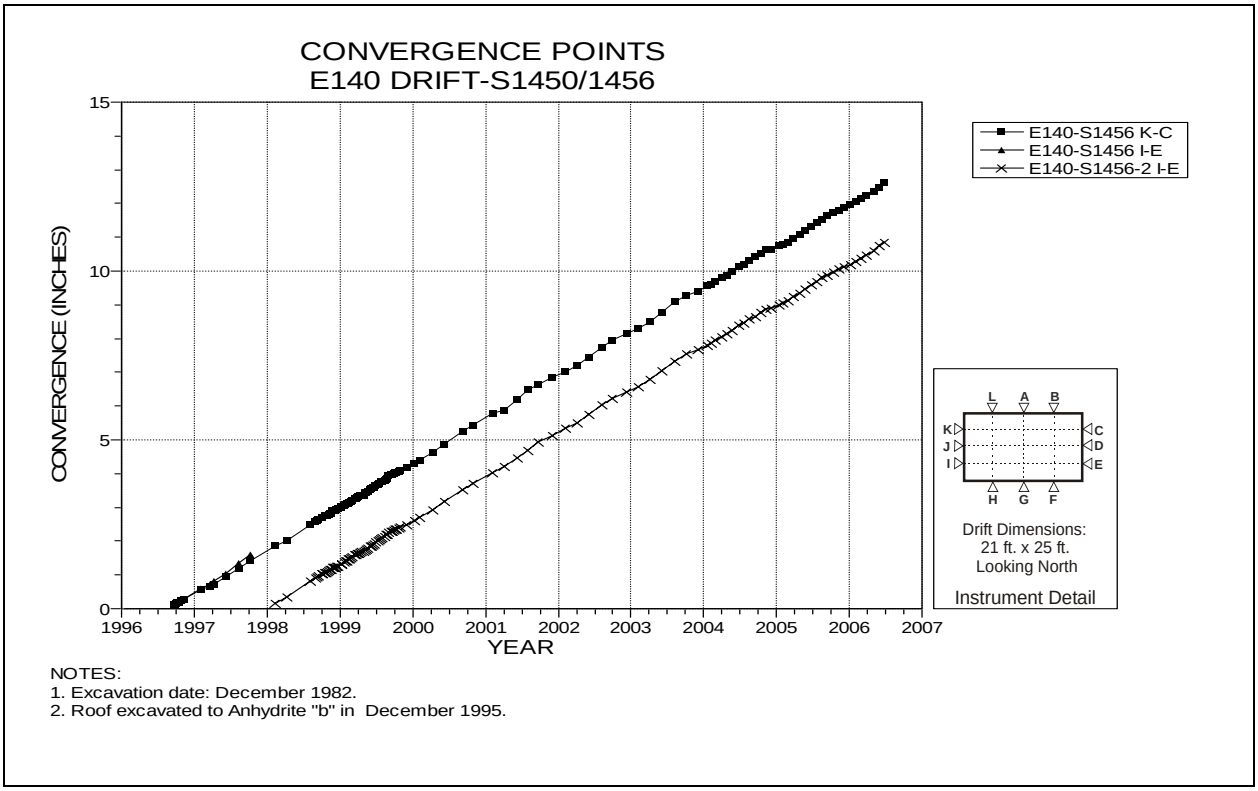


Figure 4-101 Convergence Point Array
E140 Drift at S1450/S1456 – Rib to Rib – Quarter Points

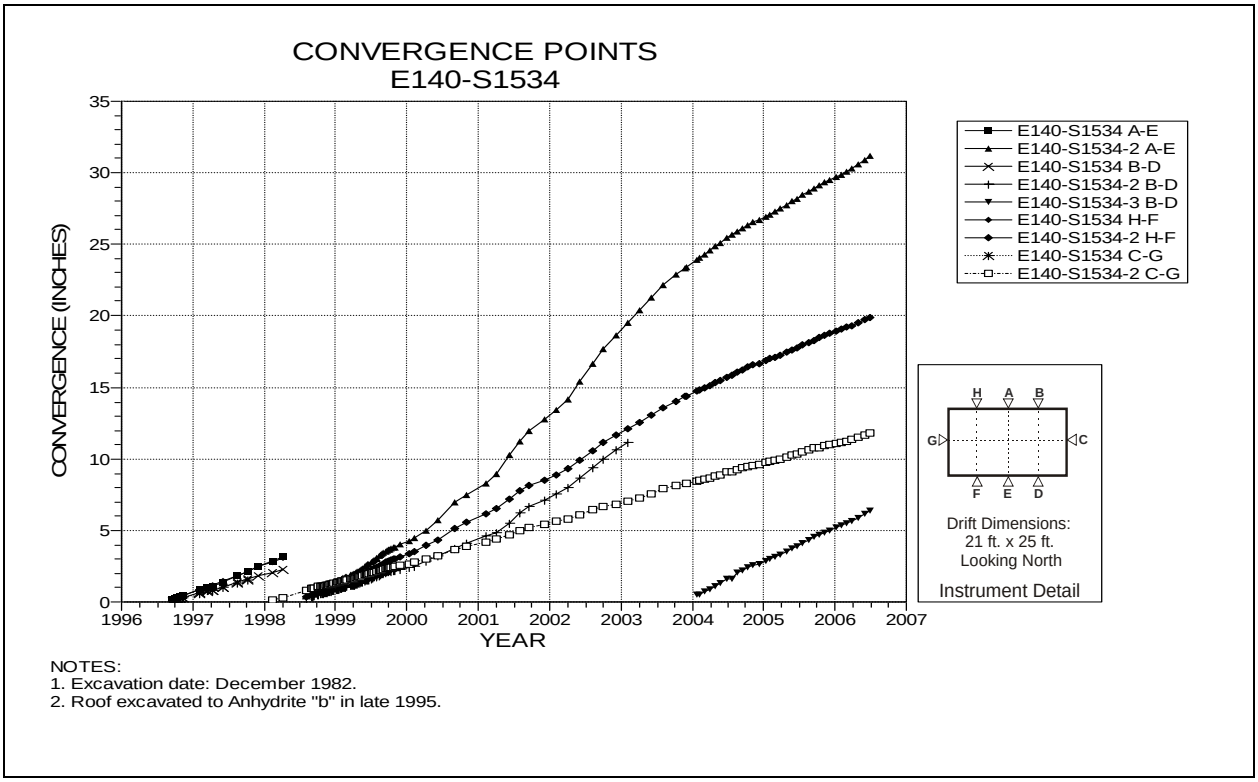


Figure 4-102 Convergence Point Array
E140 Drift at S1534 – All Chords

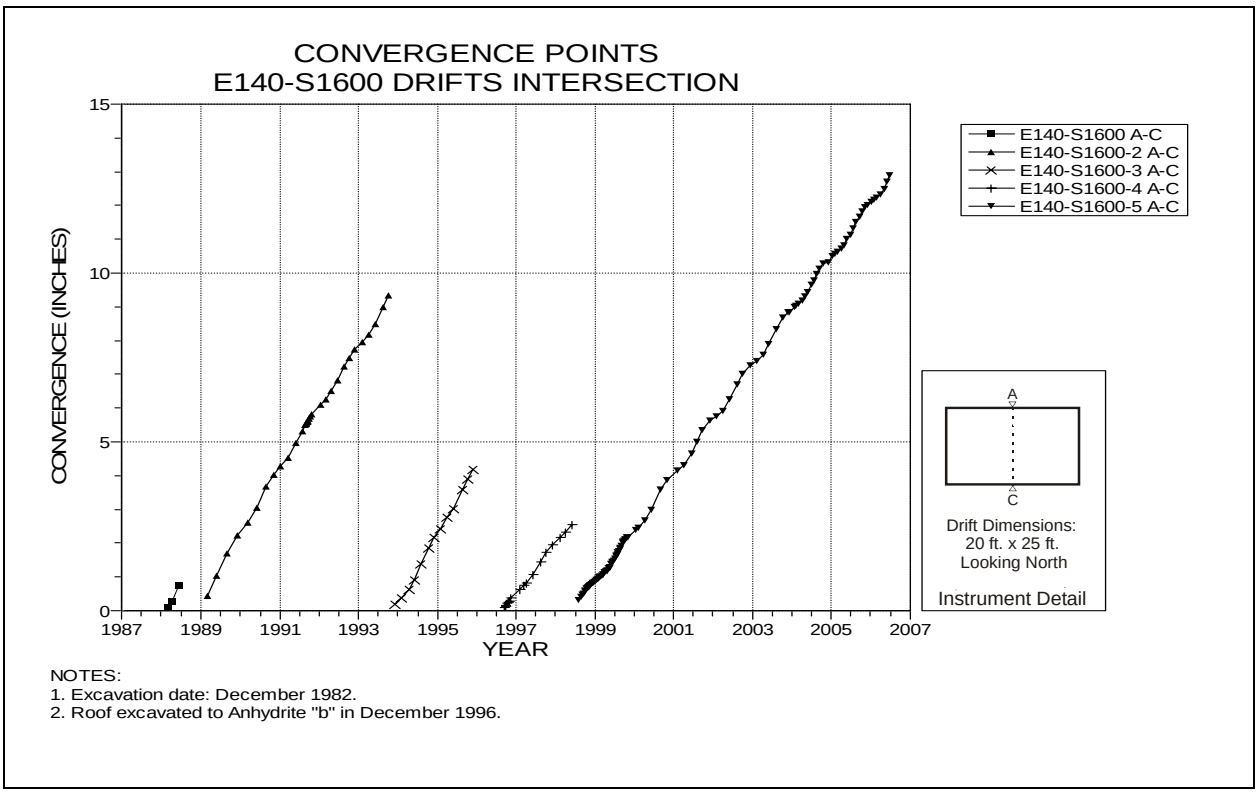


Figure 4-103 Convergence Point Array
E140 Drift at S1600 Drift Intersection – Roof to Floor

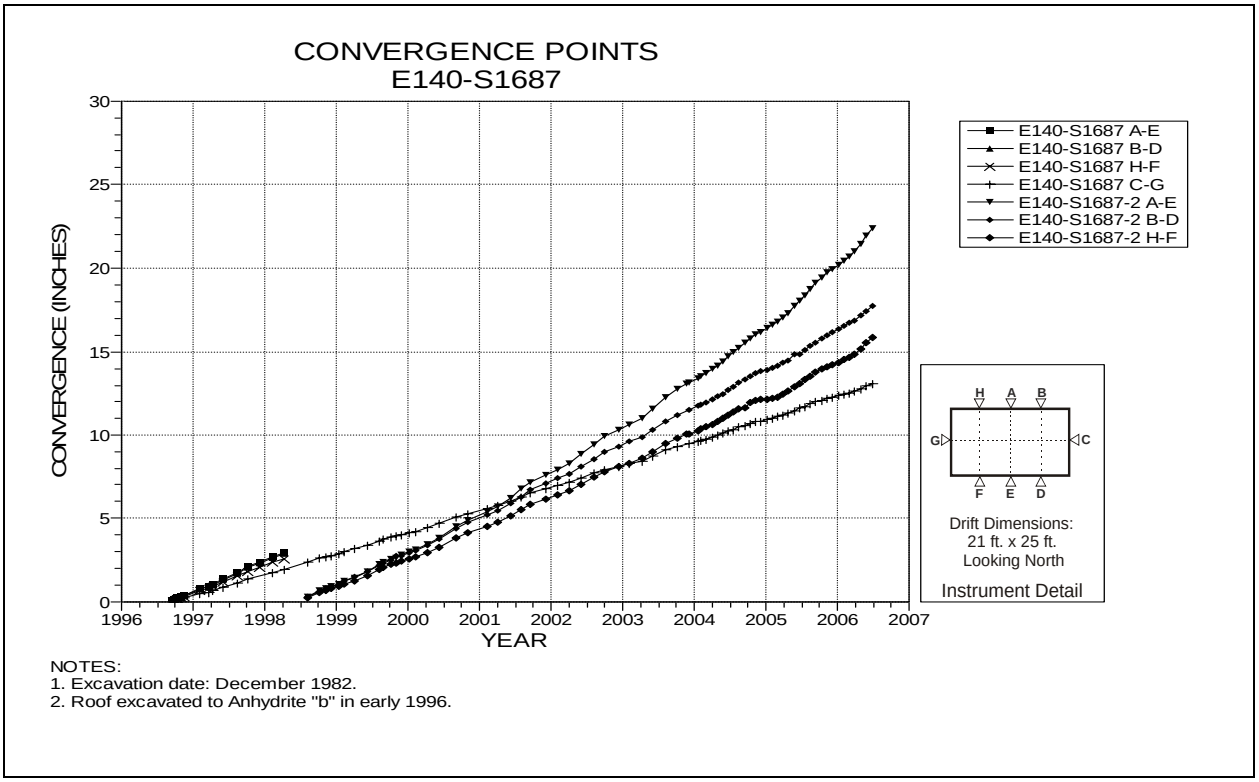


Figure 4-104 Convergence Point Array
E140 Drift at S1687 – All Chords

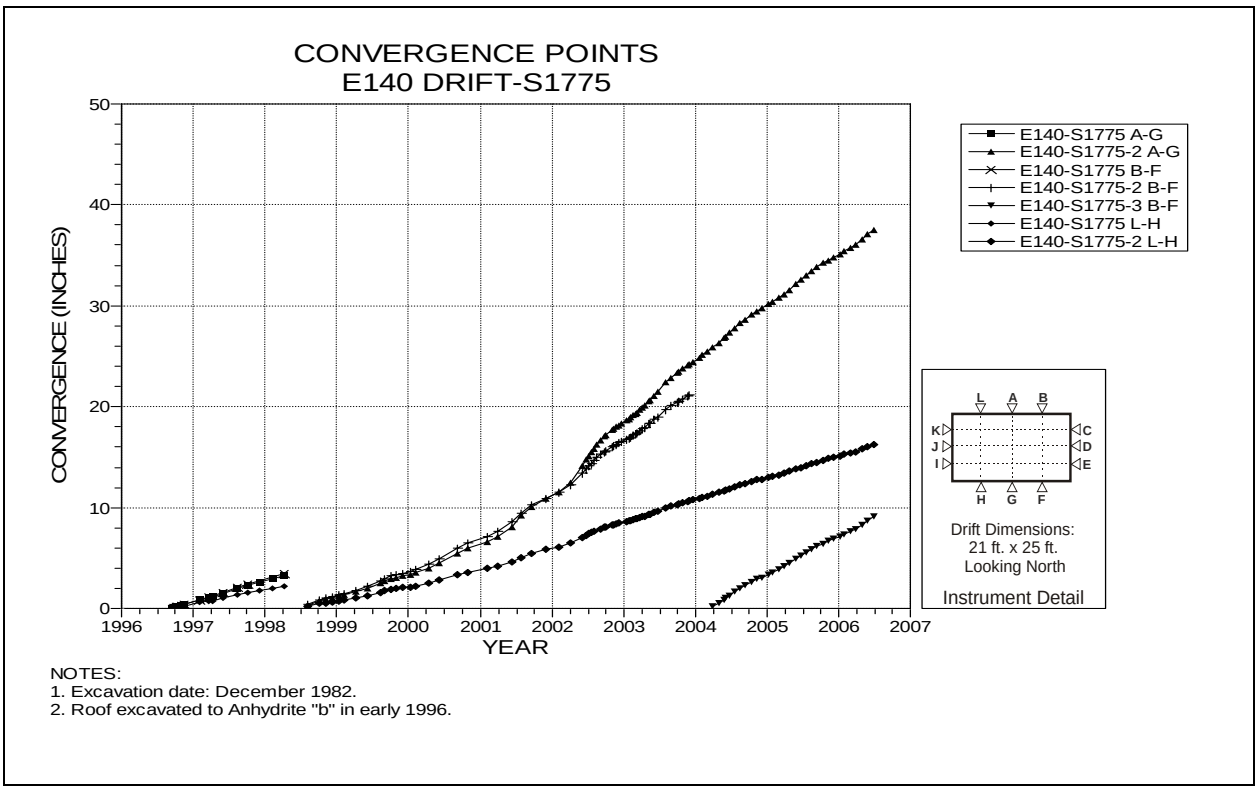


Figure 4-105 Convergence Point Array
E140 Drift at S1775 – Roof to Floor

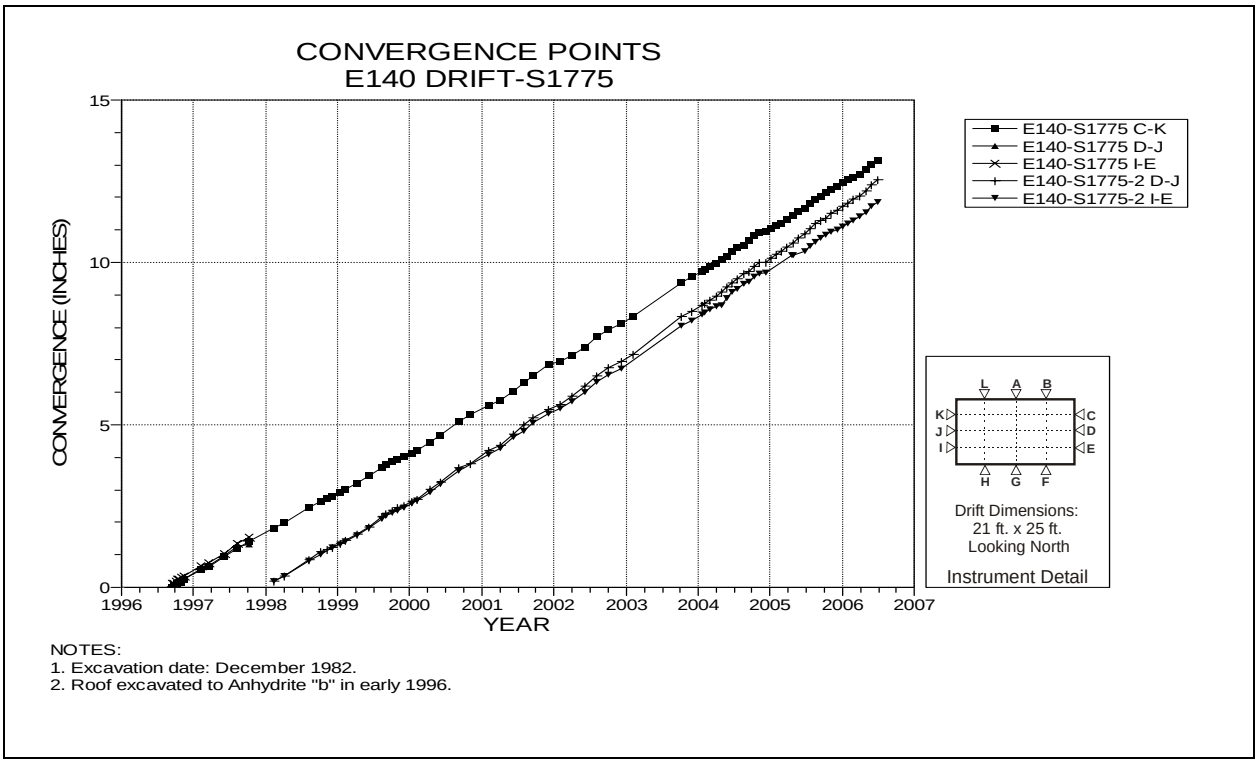


Figure 4-106 Convergence Point Array
E140 Drift at S1775 – Rib to Rib

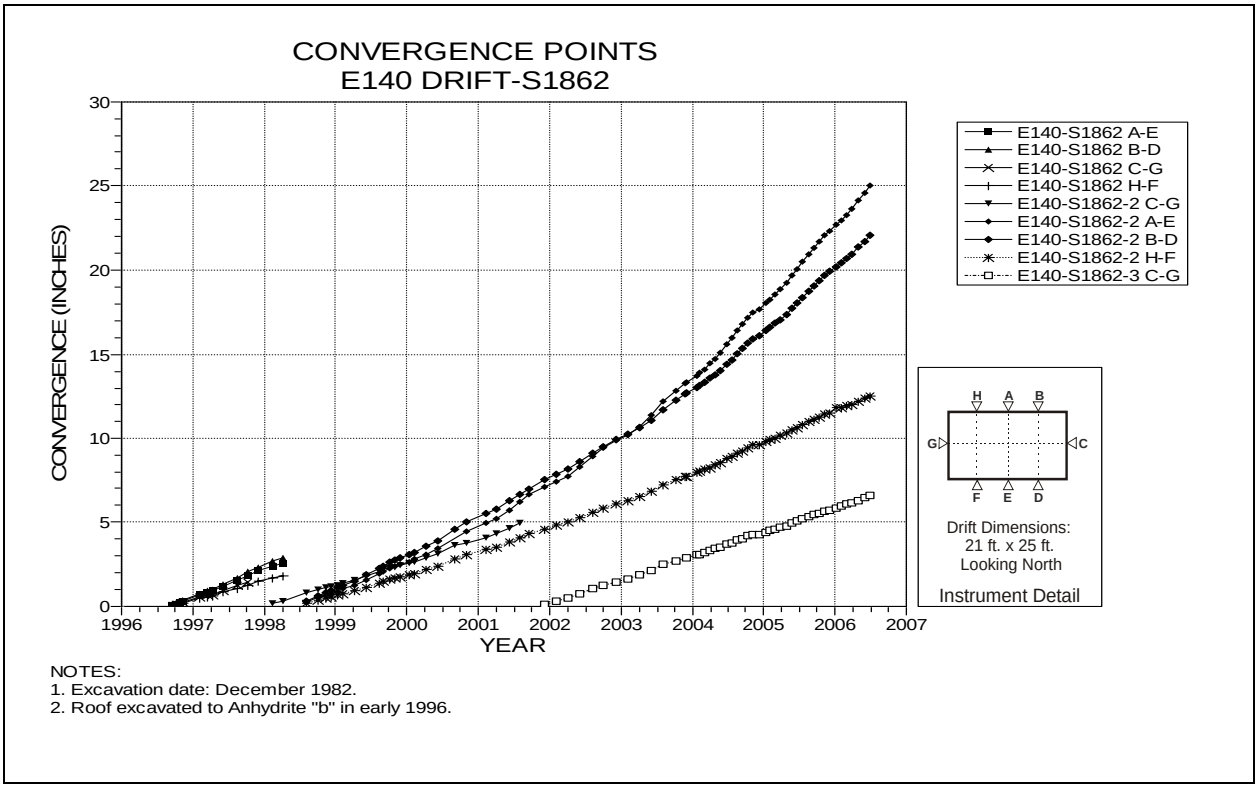


Figure 4-107 Convergence Point Array
E140 Drift at S1862 – All Chords

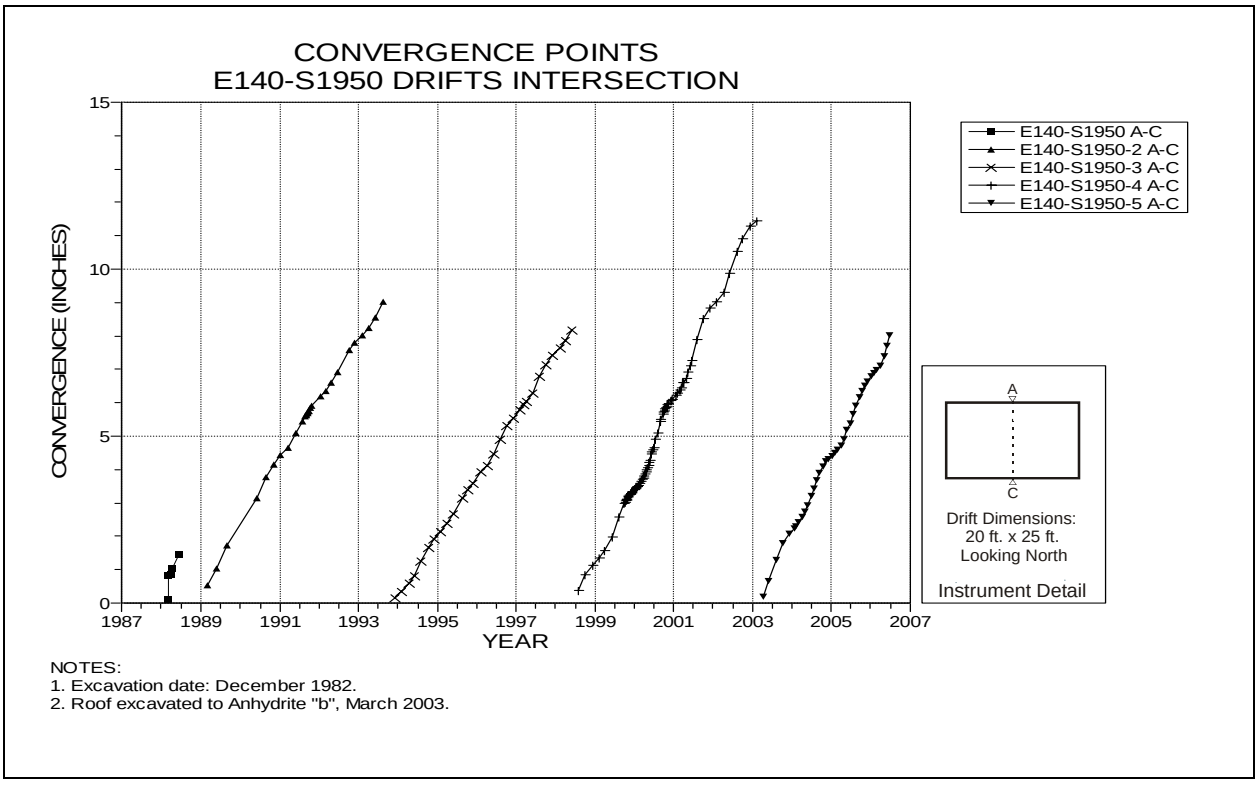


Figure 4-108 Convergence Point Array
E140 Drift at S1950 Drift Intersection – Roof to Floor

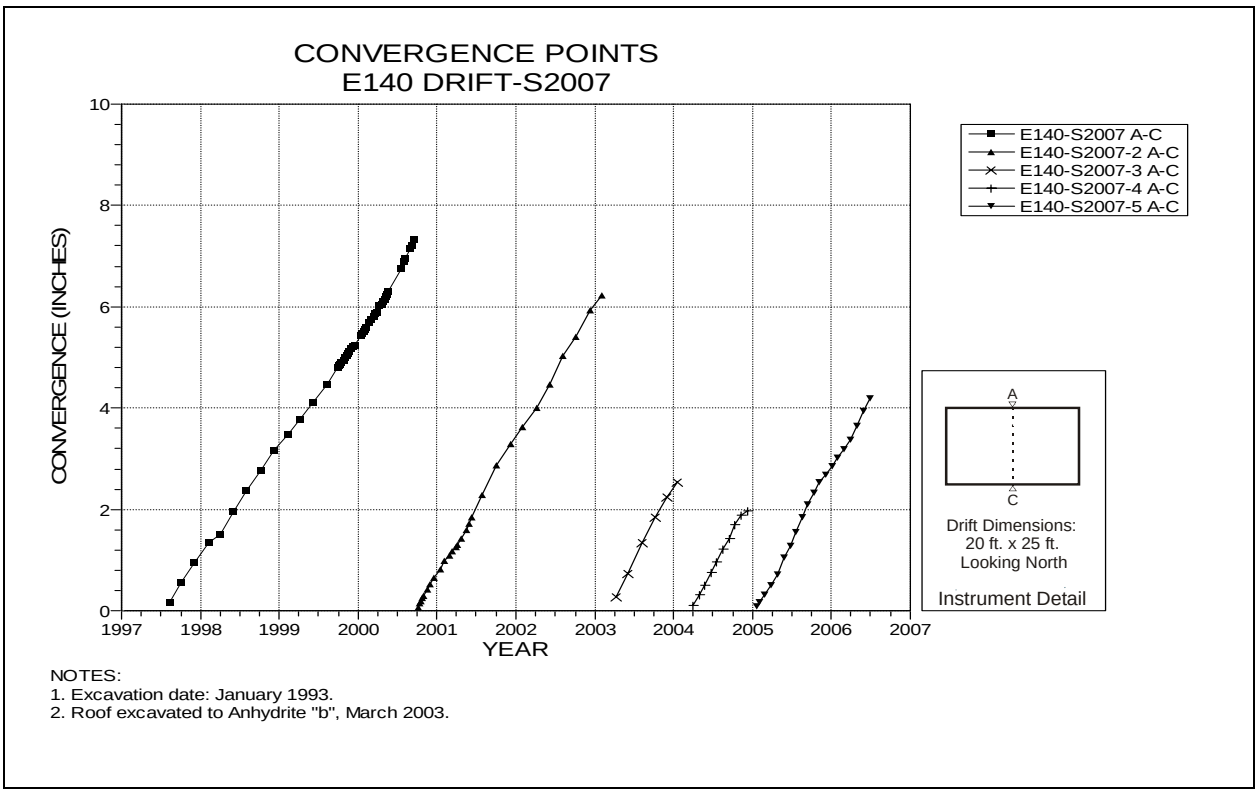


Figure 4-109 Convergence Point Array
E140 Drift at S2007 – Roof to Floor

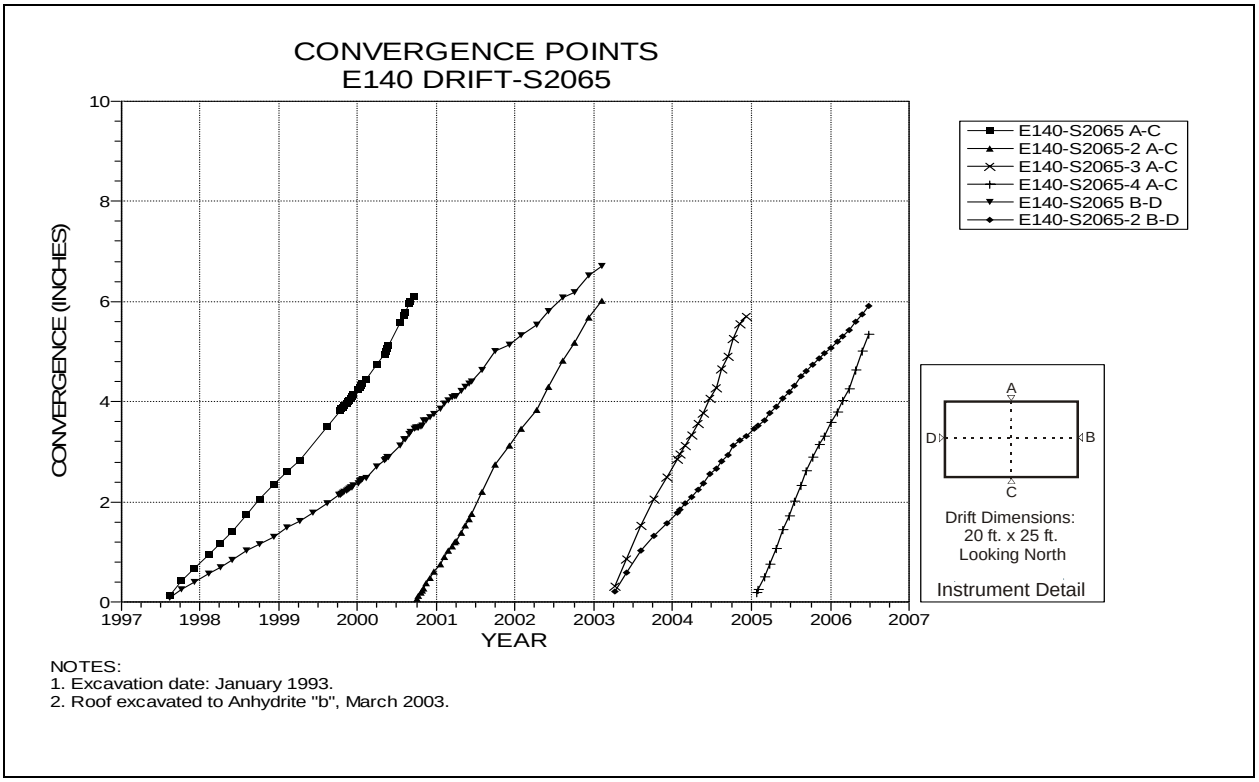


Figure 4-110 Convergence Point Array
E140 Drift at S2065 – All Chords

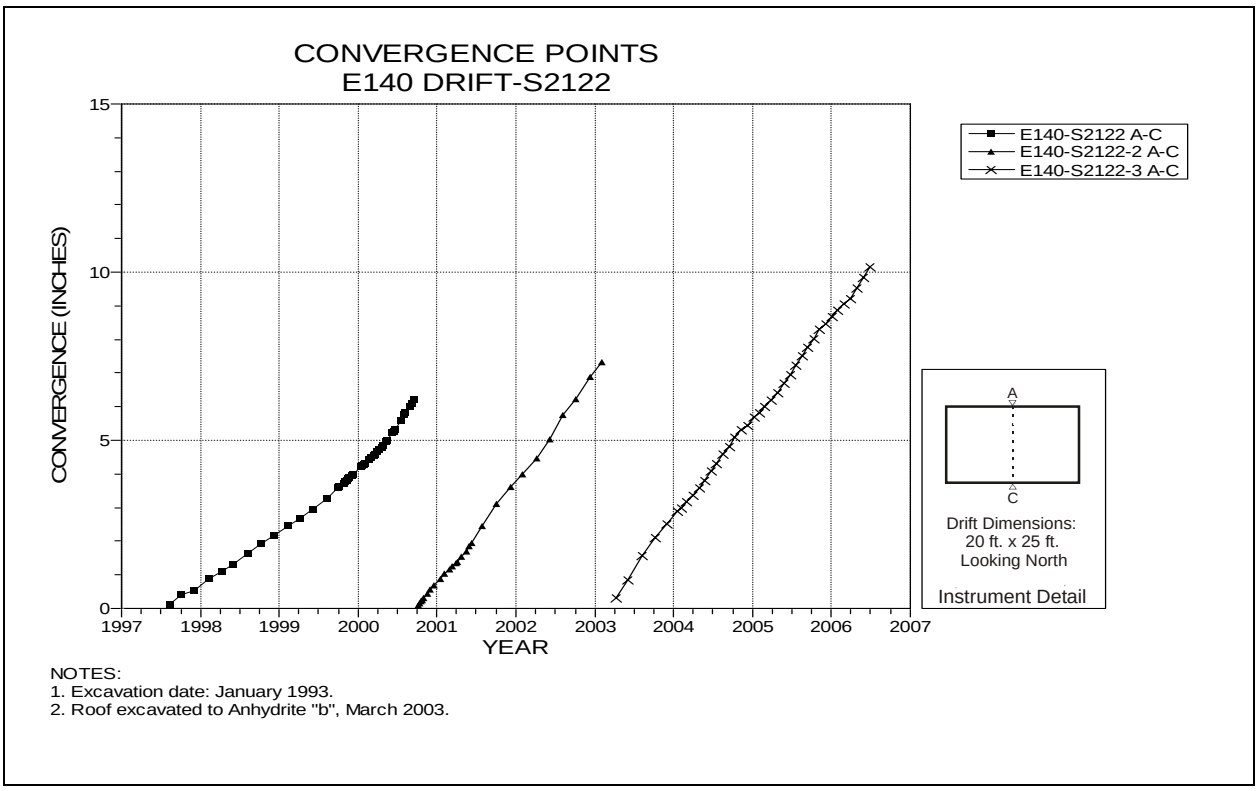


Figure 4-111 Convergence Point Array
E140 Drift at S2122 – Roof to Floor

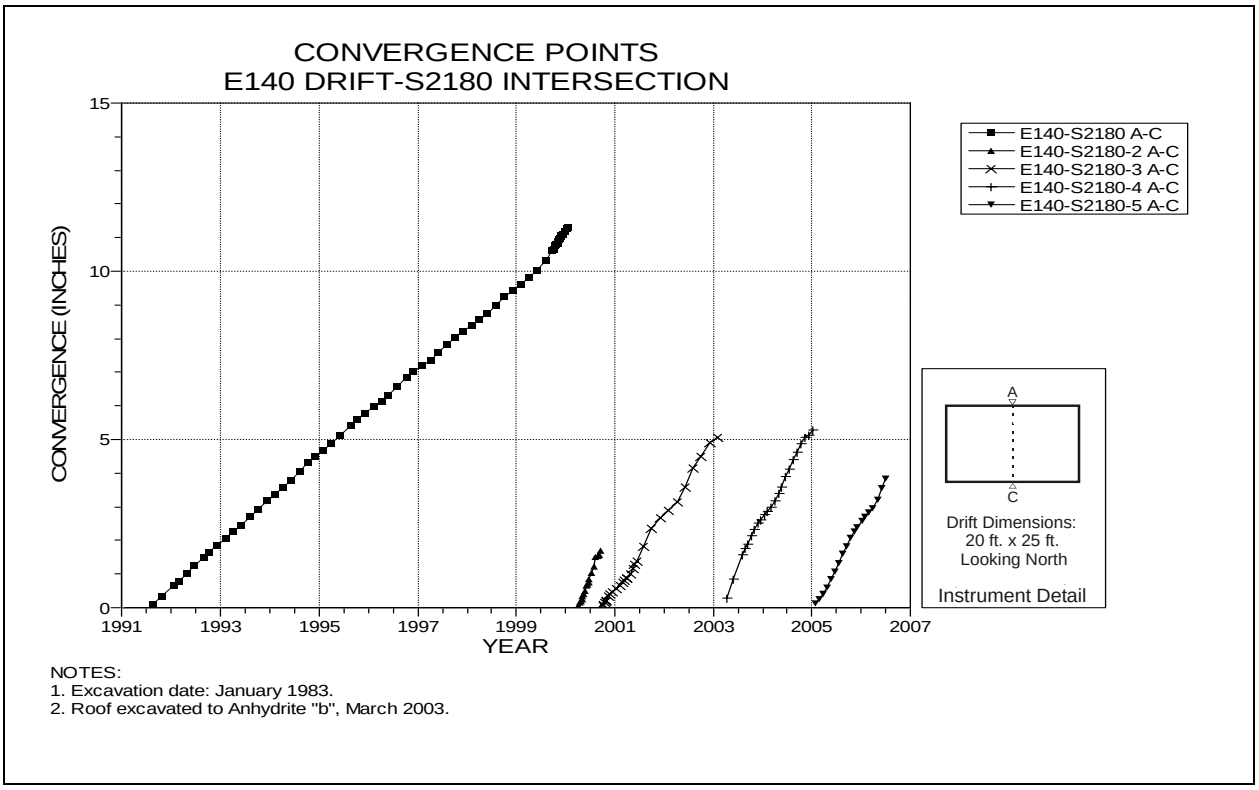


Figure 4-112 Convergence Point Array
E140 Drift at S2180 Drift Intersection – Roof to Floor

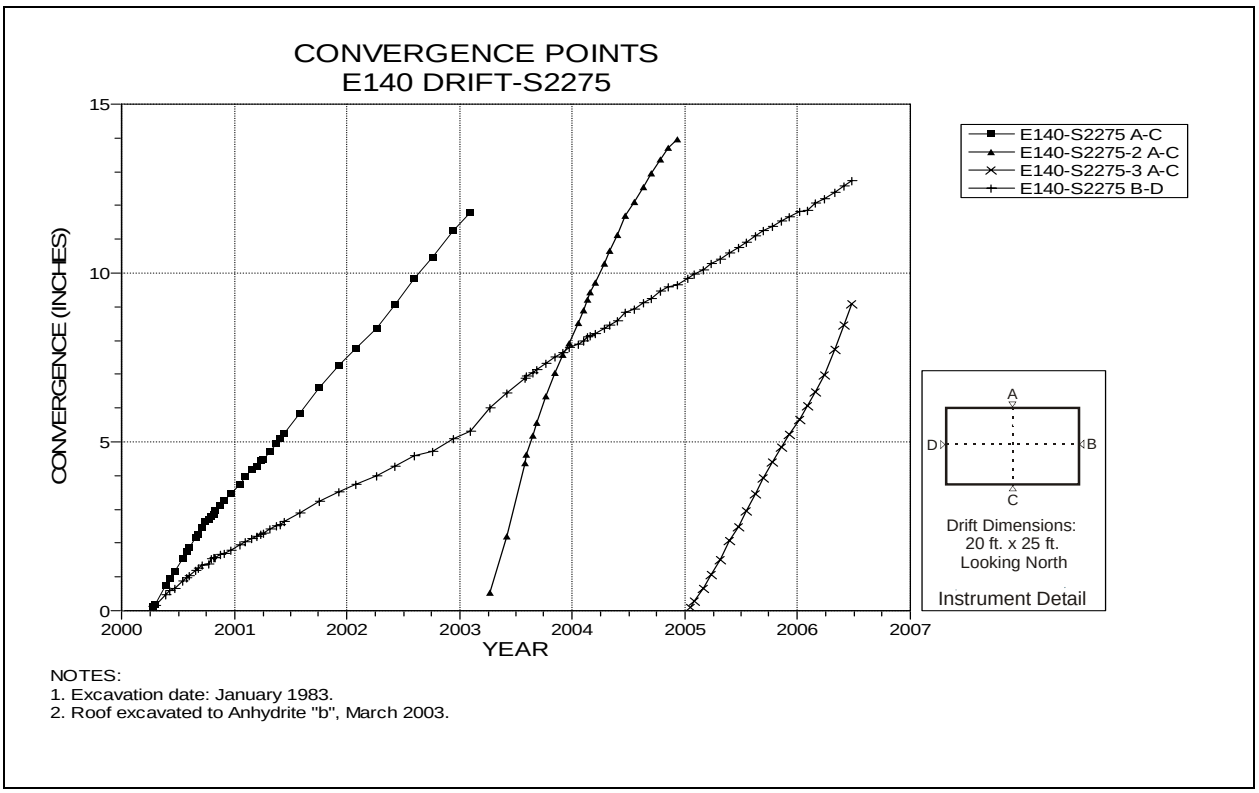


Figure 4-113 Convergence Point Array
E140 Drift at S2275 – All Chords

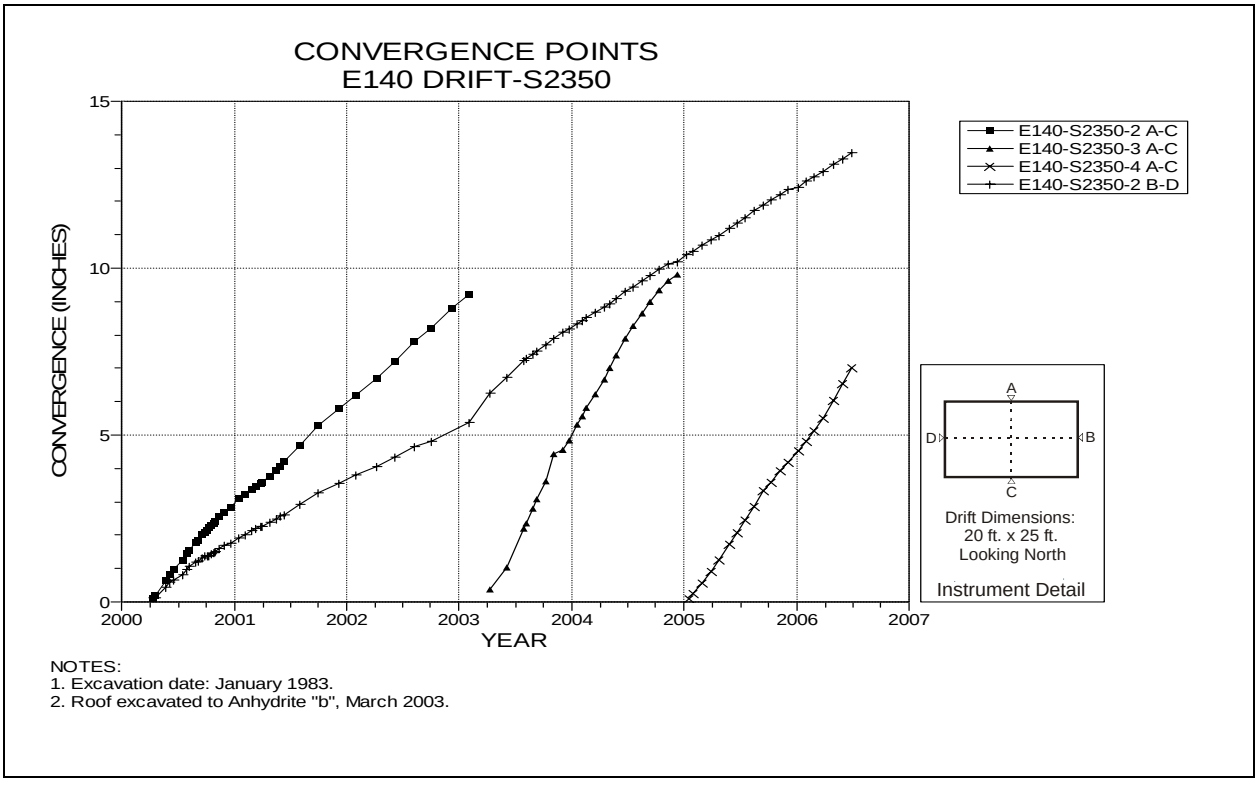


Figure 4-114 Convergence Point Array
E140 Drift at S2350 – All Chords

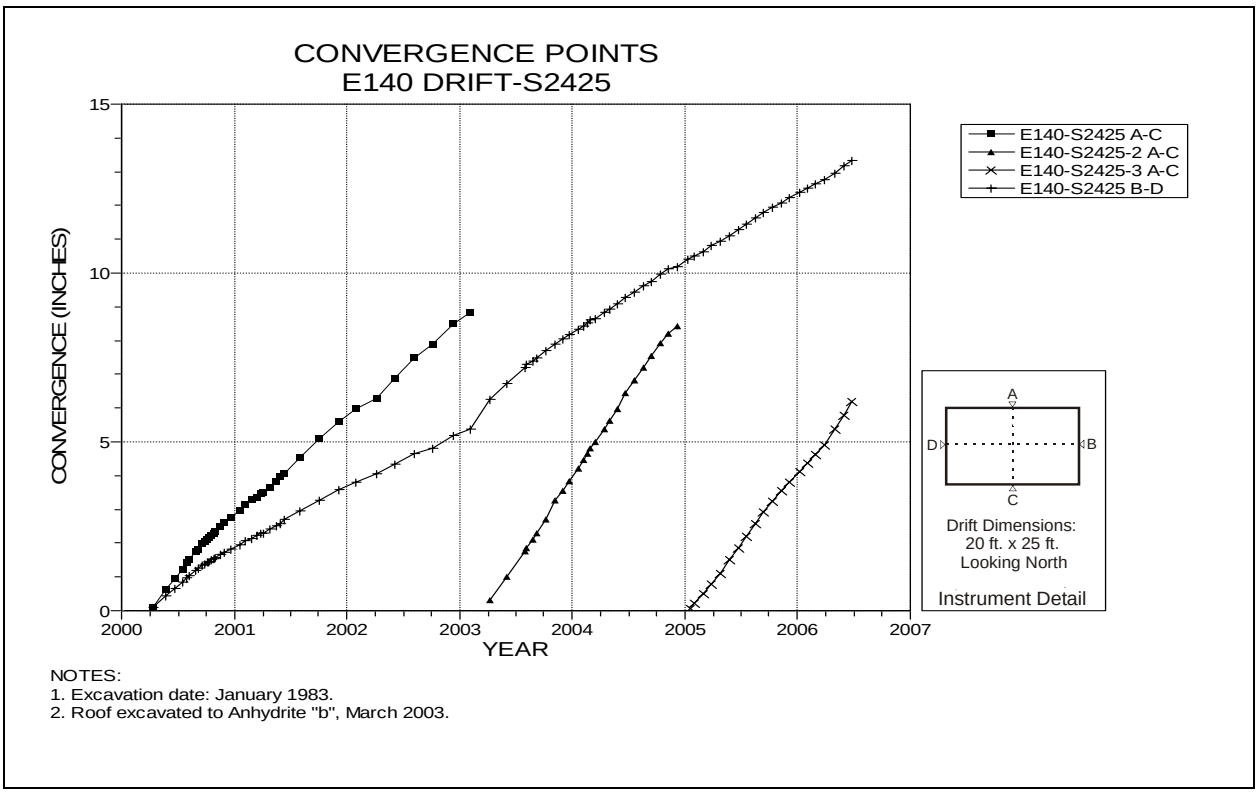


Figure 4-115 Convergence Point Array
E140 Drift at S2425 – All Chords

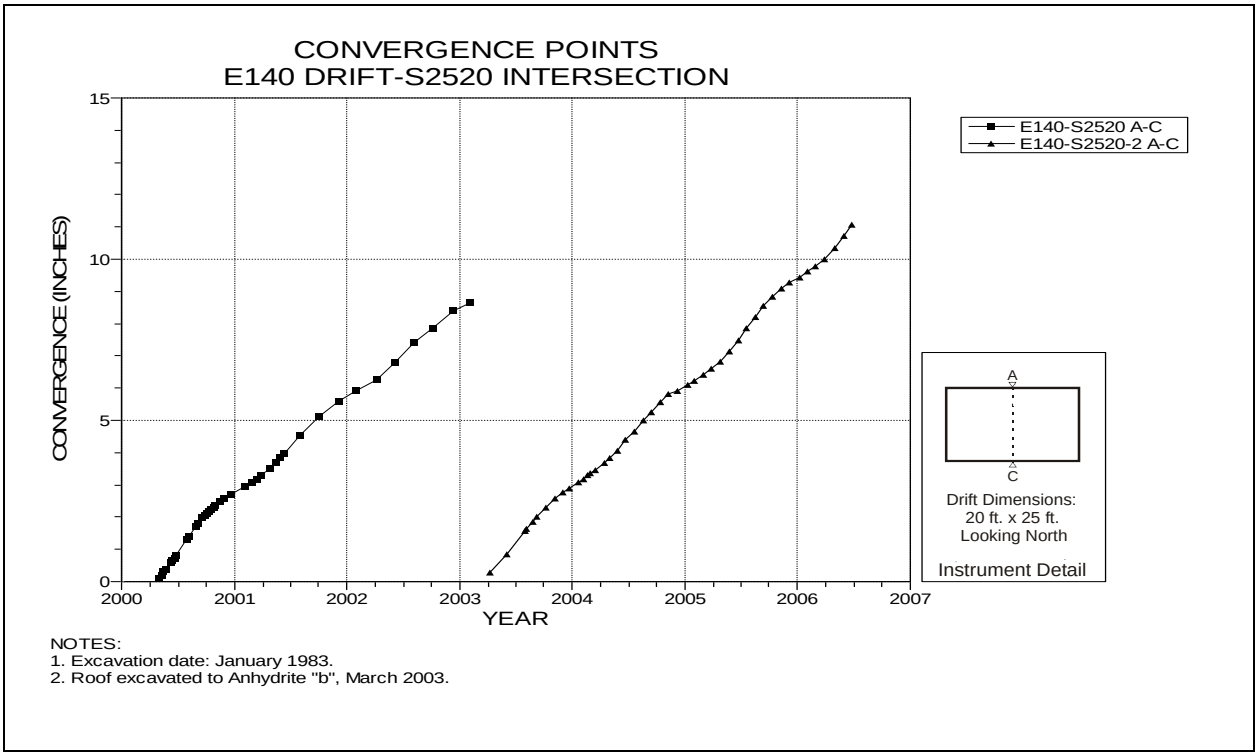


Figure 4-116 Convergence Point Array
E140 Drift at S2520 Drift Intersection – Roof to Floor

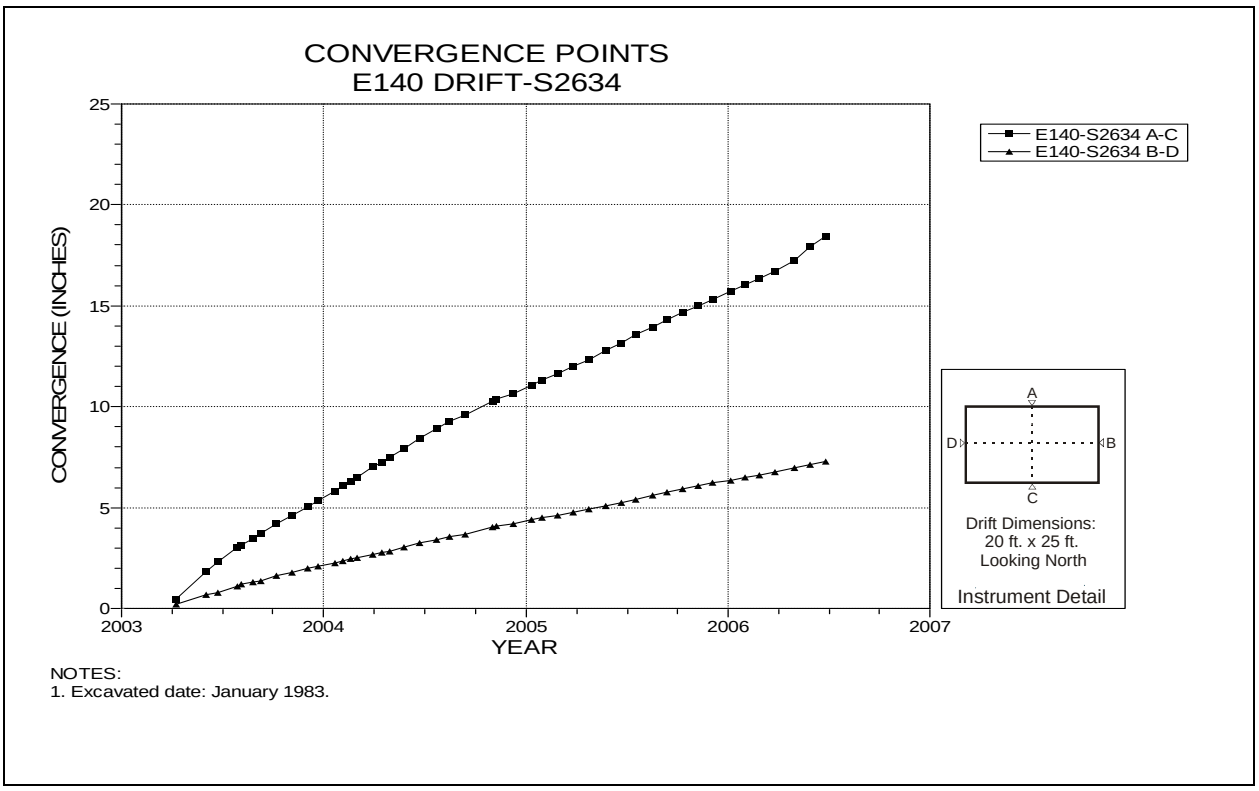


Figure 4-117 Convergence Point Array
E140 Drift at S2634 – All Chords

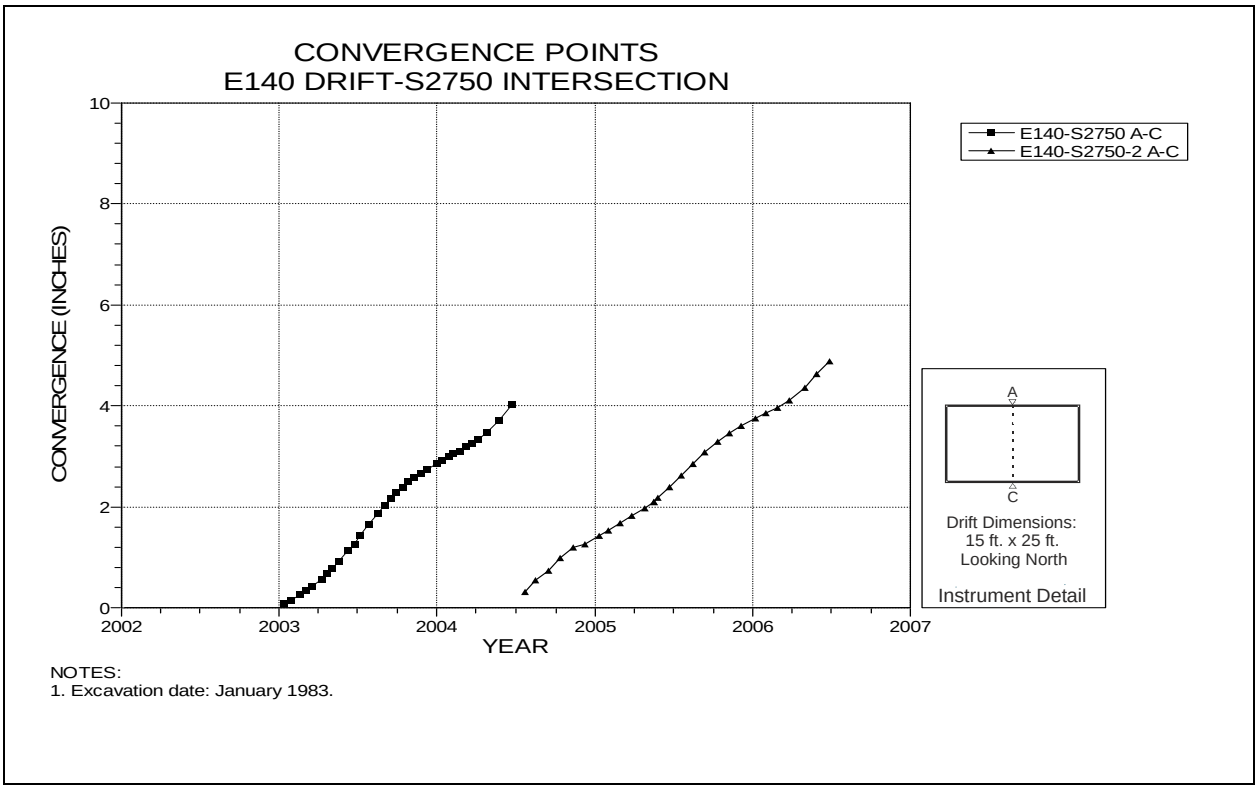


Figure 4-118 Convergence Point Array
E140 Drift at S2750 Drift Intersection – Roof to Floor

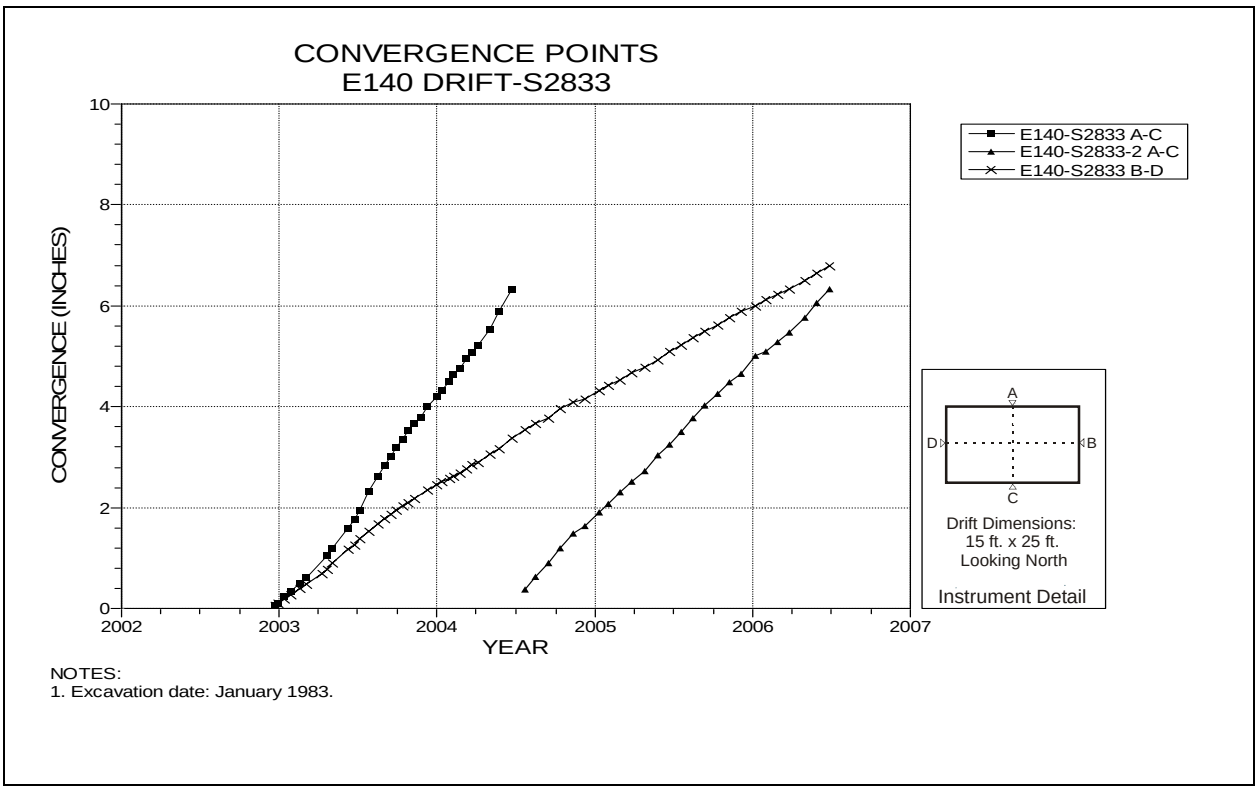


Figure 4-119 Convergence Point Array
E140 Drift at S2833 – All Chords

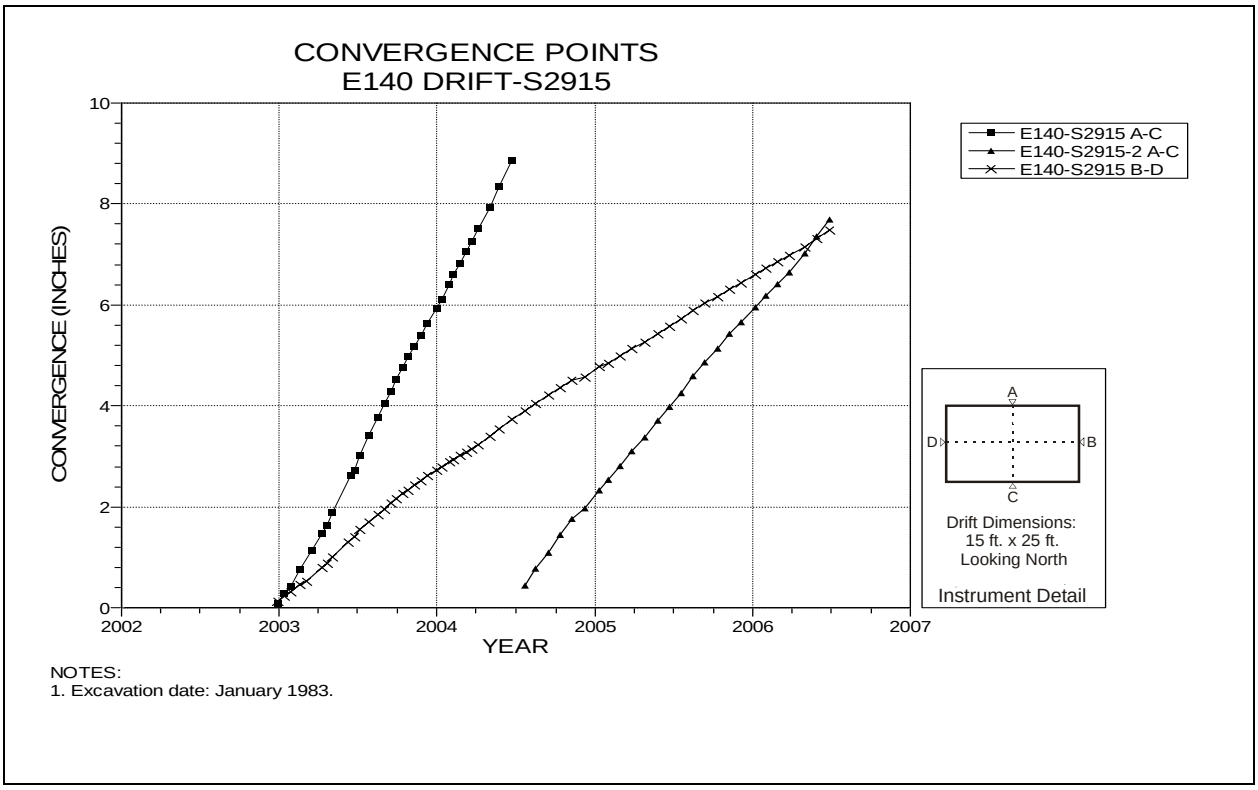


Figure 4-120 Convergence Point Array
E140 Drift at S2915 – All Chords

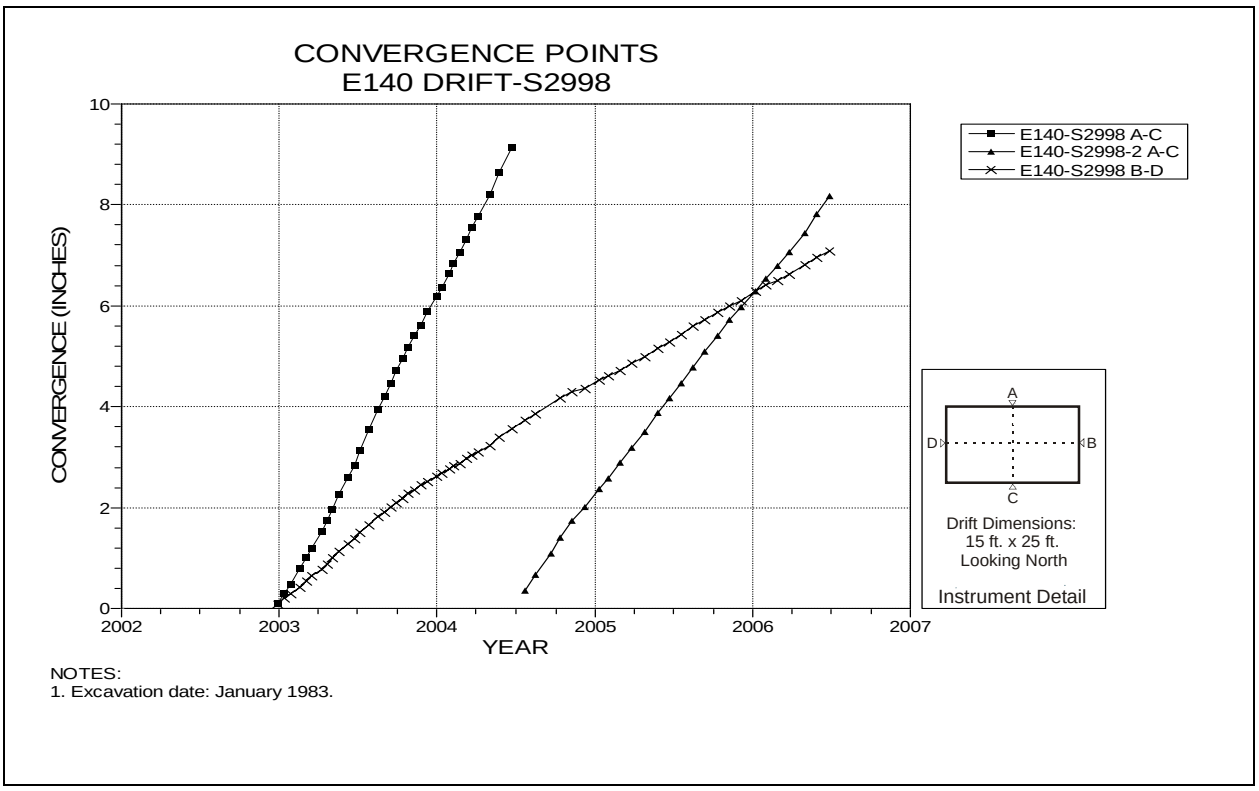


Figure 4-121 Convergence Point Array
E140 Drift at S2998 – All Chords

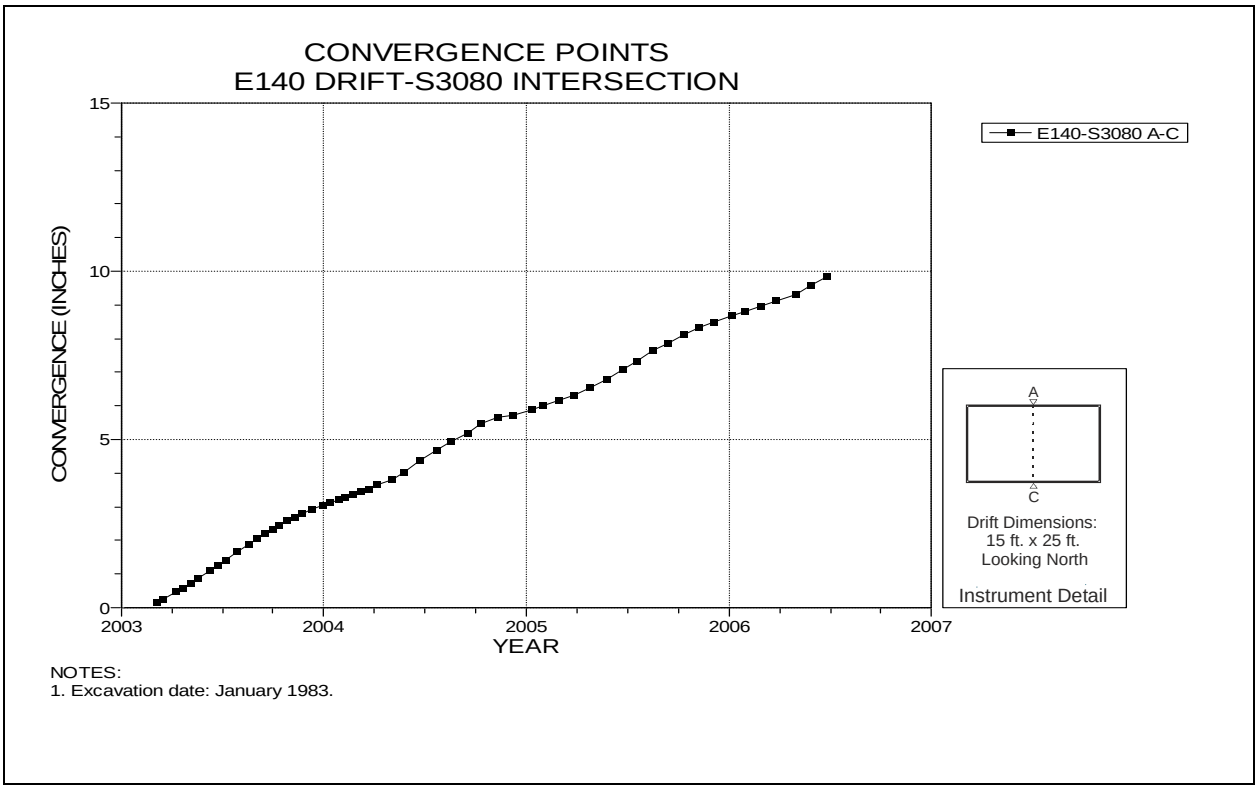


Figure 4-122 Convergence Point Array
E140 Drift at S3080 Drift Intersection – Roof to Floor

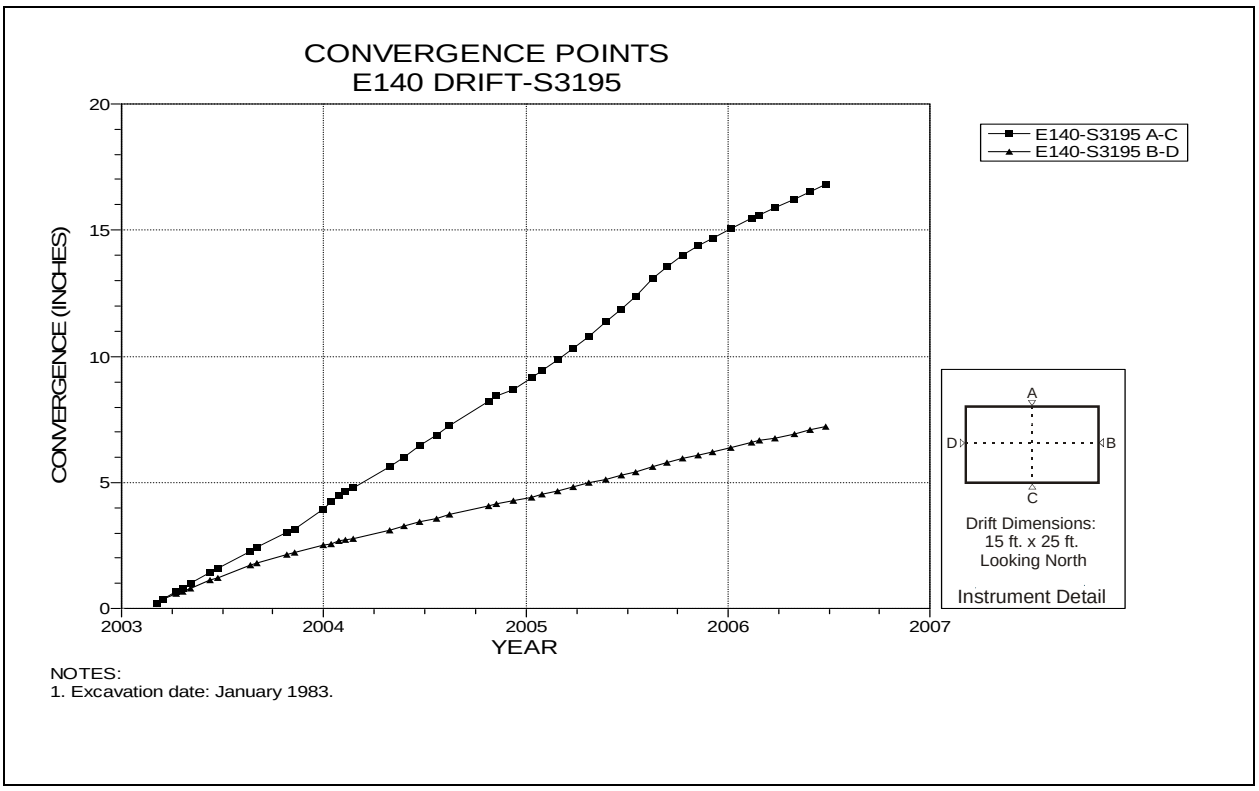


Figure 4-123 Convergence Point Array
E140 Drift at S3195 – All Chords

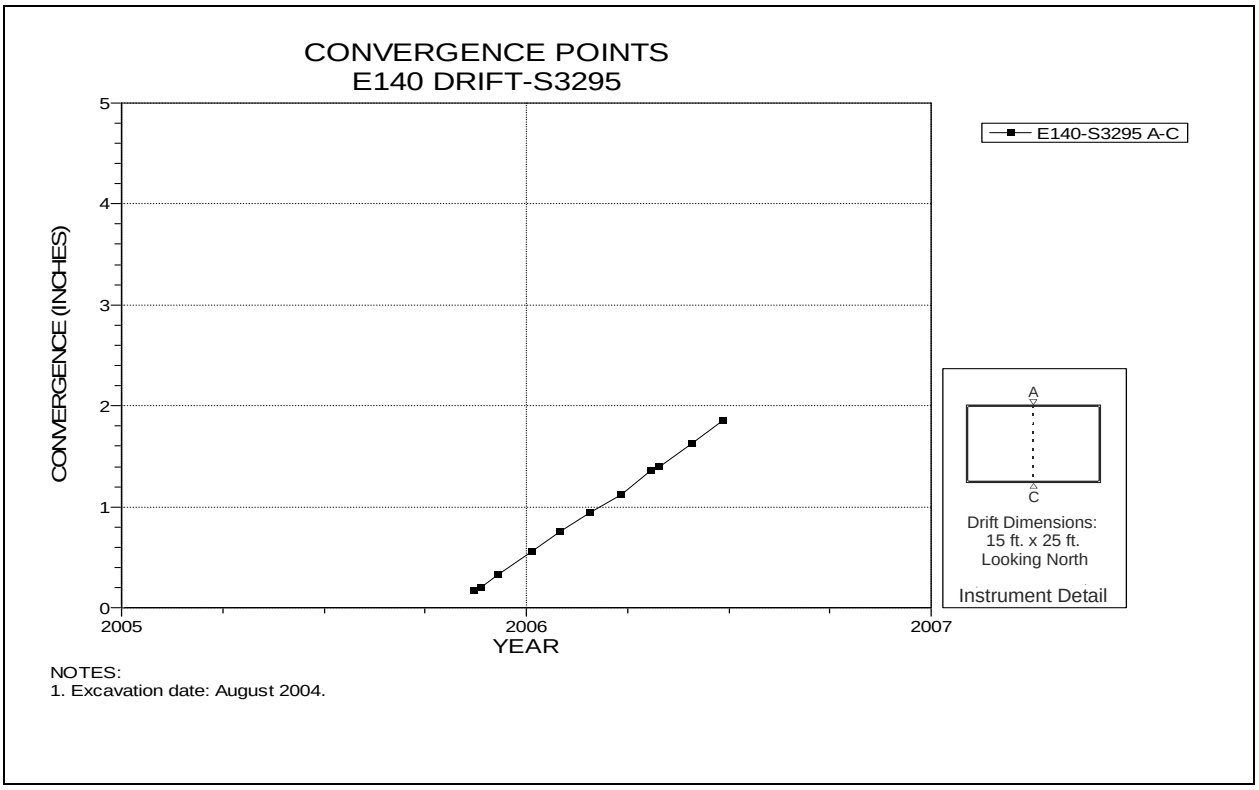


Figure 4-124 Convergence Point Array
E140 Drift at S3295 – Roof to Floor

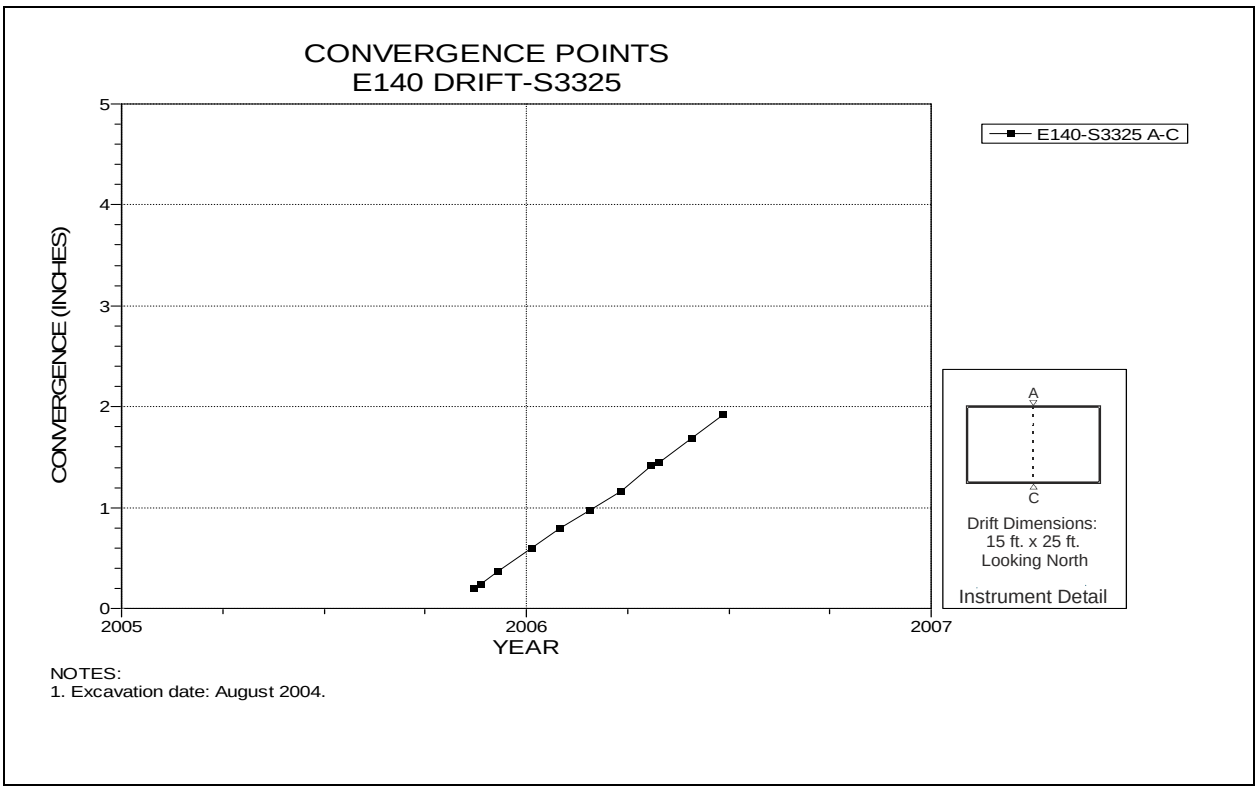


Figure 4-125 Convergence Point Array
E140 Drift at S3325 – Roof to Floor

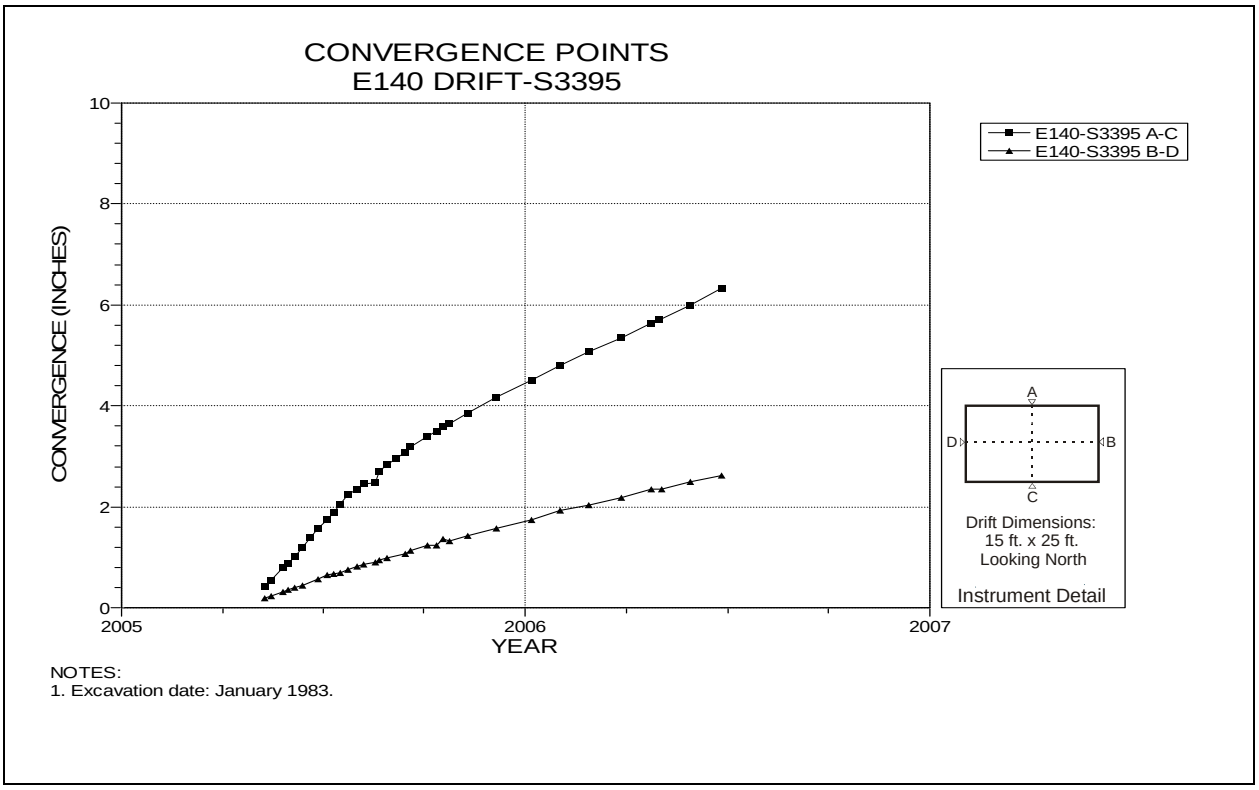


Figure 4-126 Convergence Point Array
E140 Drift at S3395 – All Chords

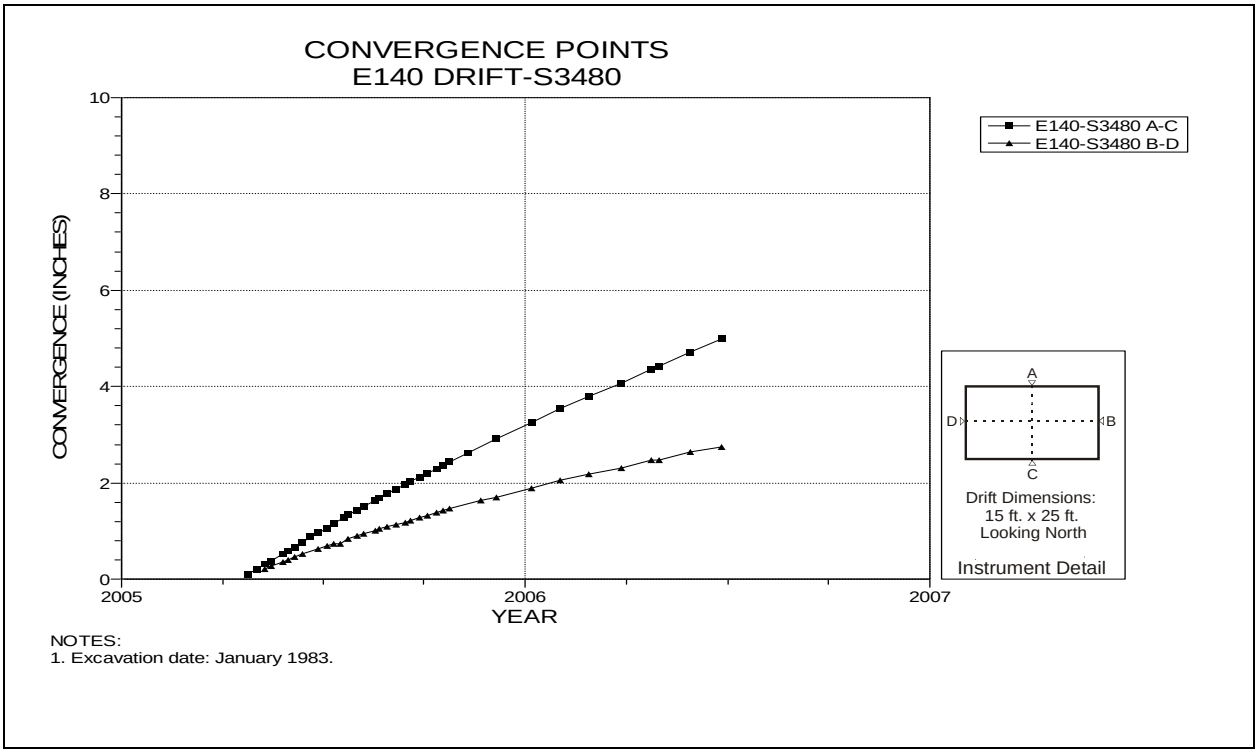


Figure 4-127 Convergence Point Array
E140 Drift at S3480 – All Chords

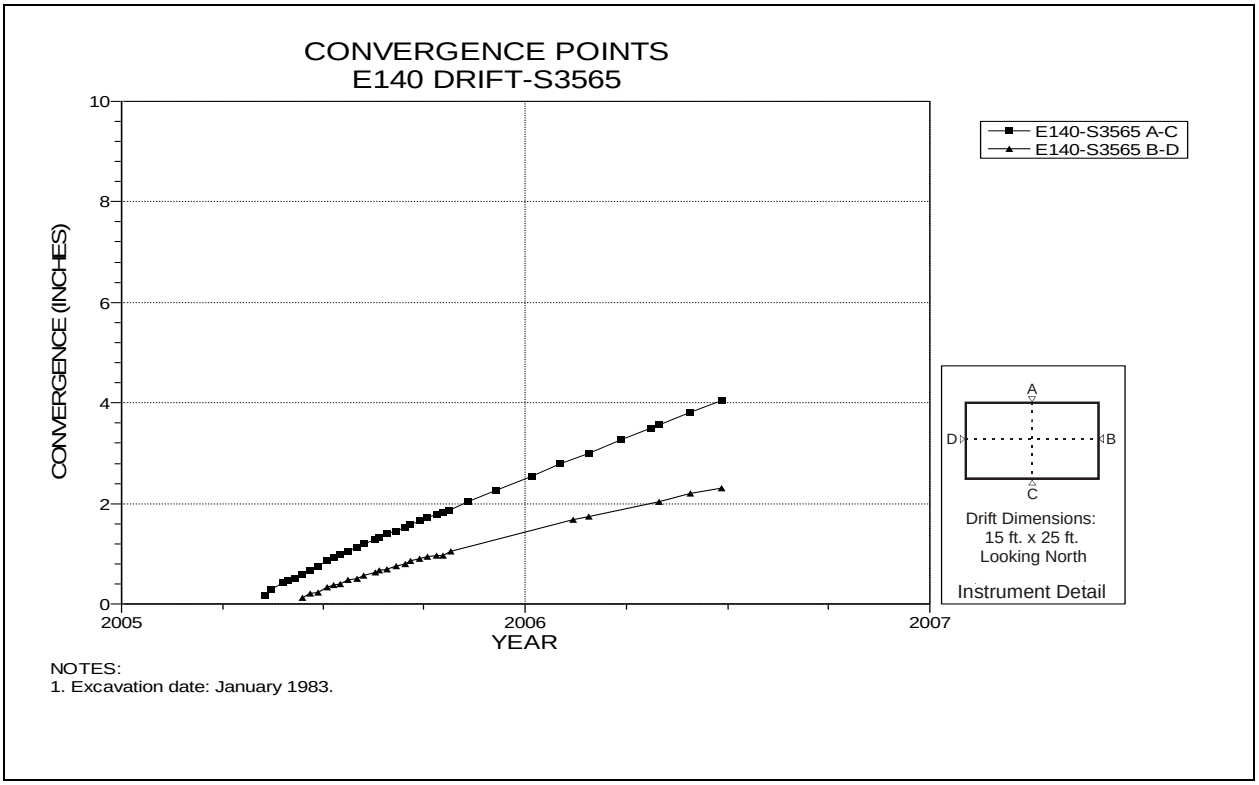


Figure 4-128 Convergence Point Array
E140 Drift at S3565 – All Chords

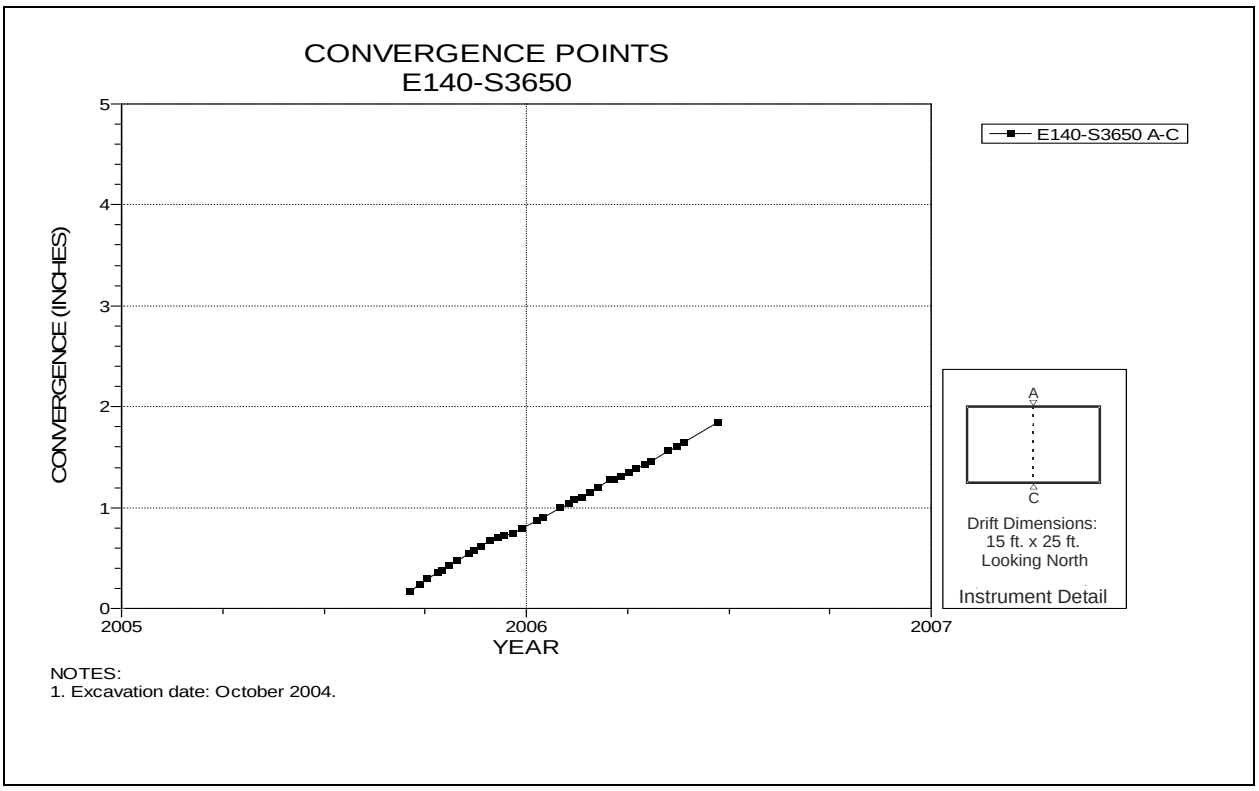


Figure 4-129 Convergence Point Array
E140 Drift at S3650 Drift Intersection – All Chords

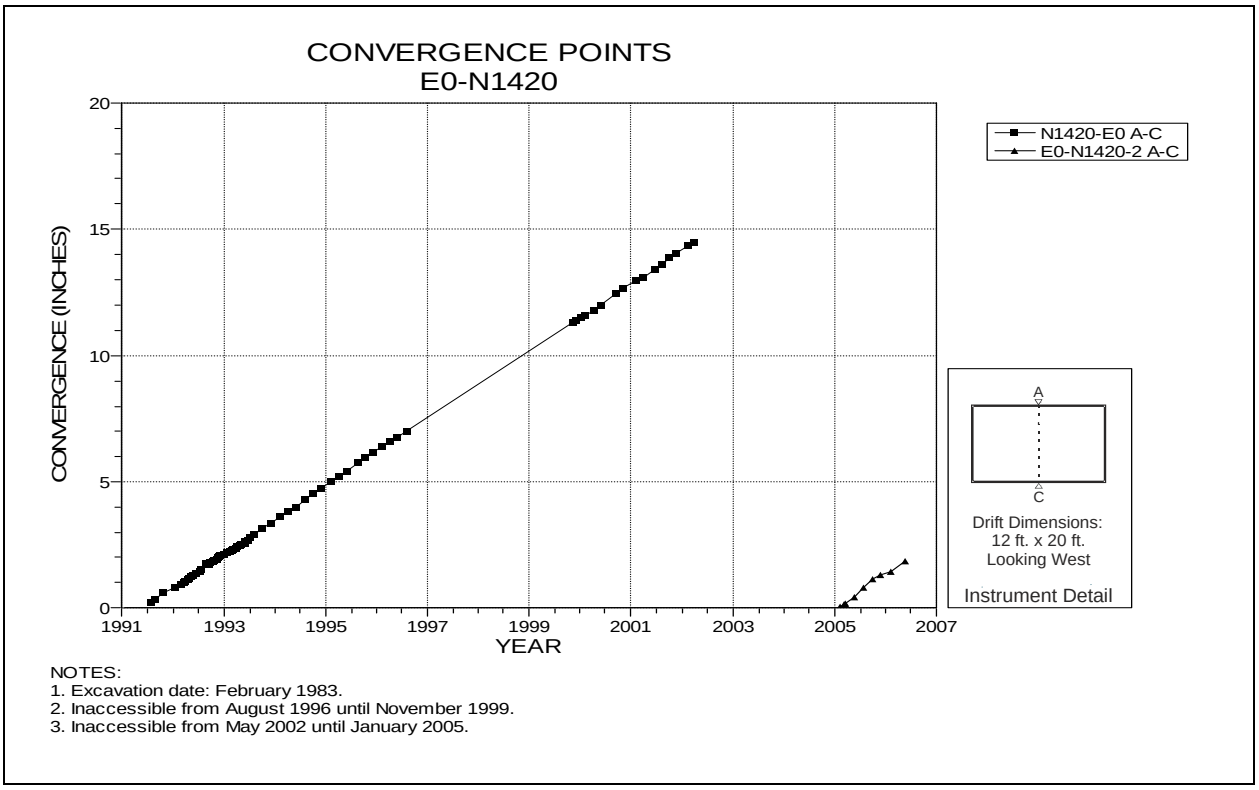


Figure 4-130 Convergence Point Array
E0 Drift at N1420 Drift Intersection – All Chords

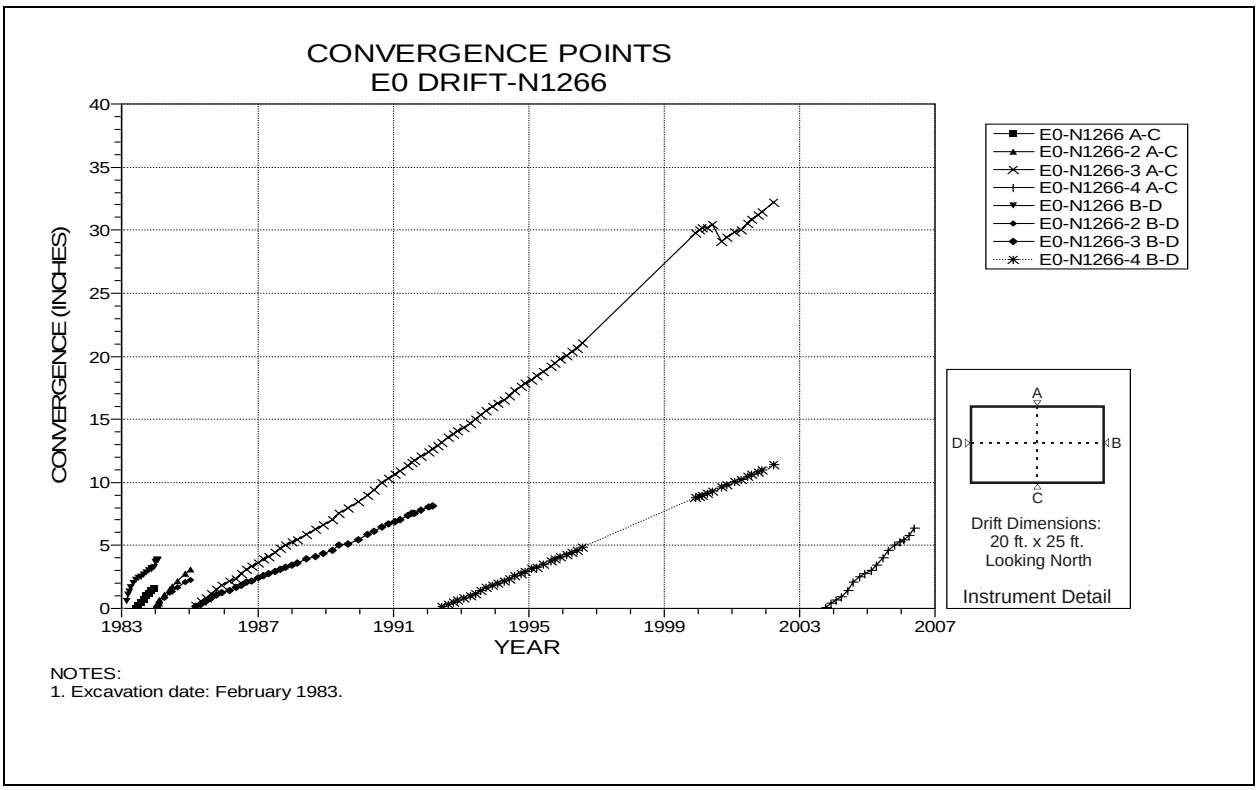


Figure 4-131 Convergence Point Array
E0 Drift at N1266 – All Chords

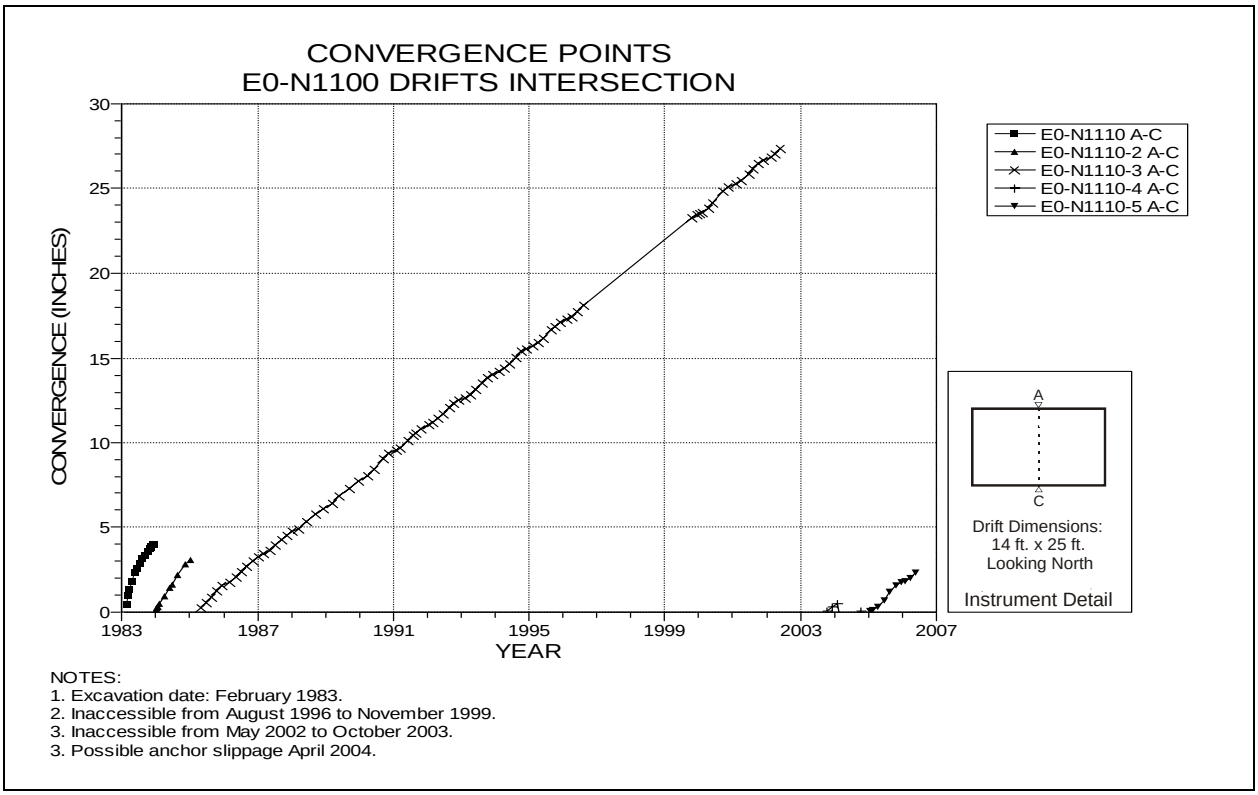


Figure 4-132 Convergence Point Array
E0 Drift at N1100 Drift Intersection – All Chords

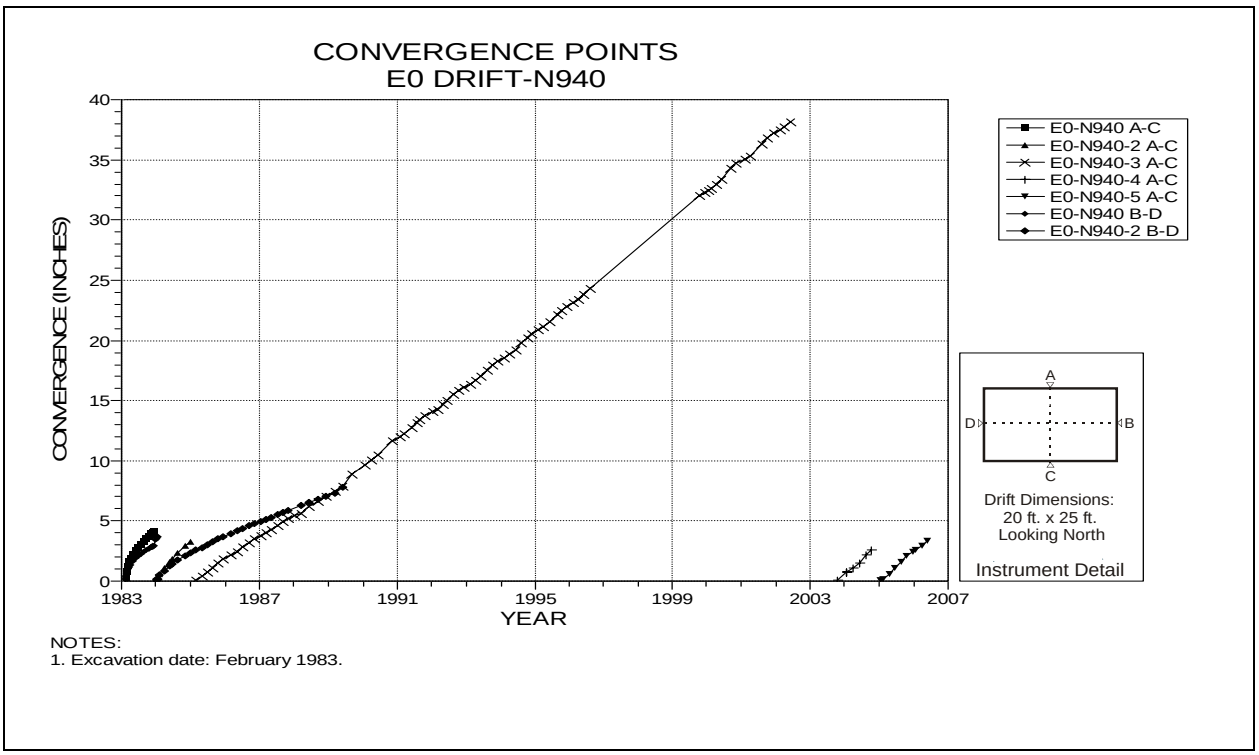


Figure 4-133 Convergence Point Array
E0 Drift at N940 – All Chords

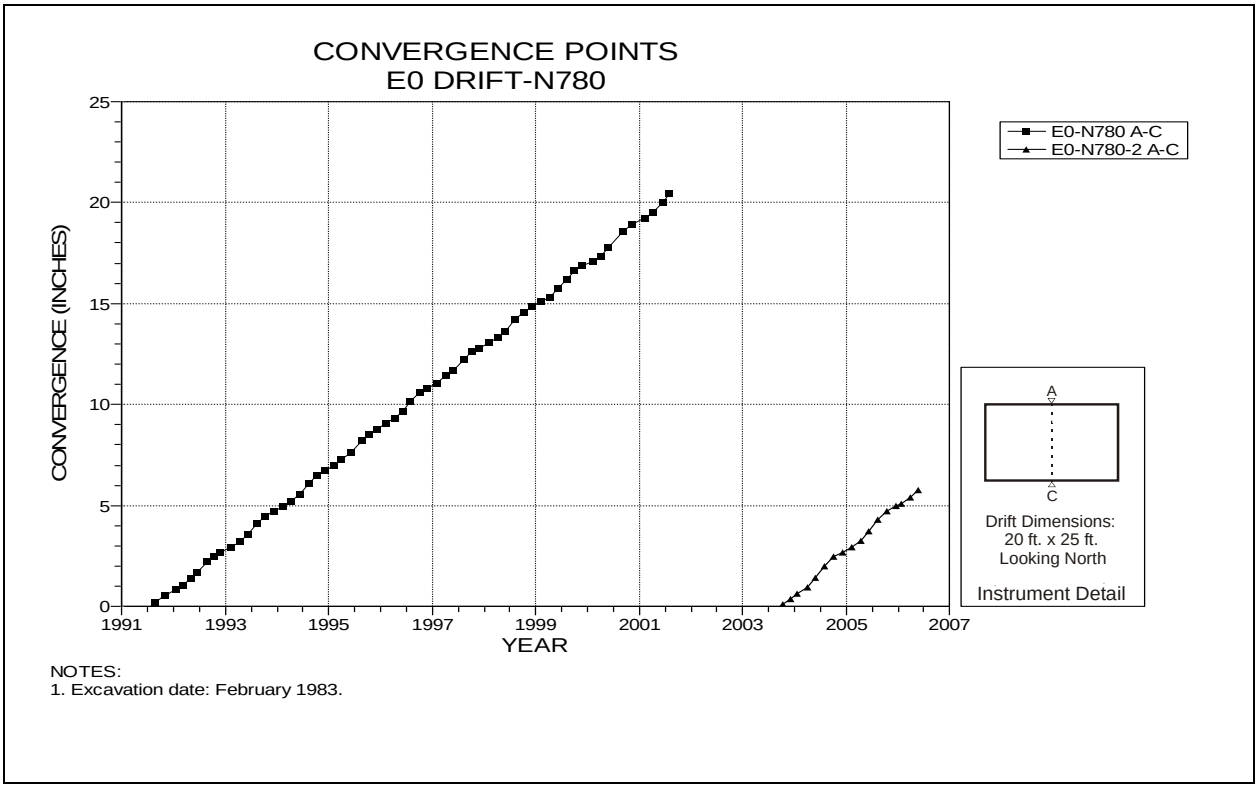


Figure 4-134 Convergence Point Array
E0 Drift at N780 – Roof to Floor

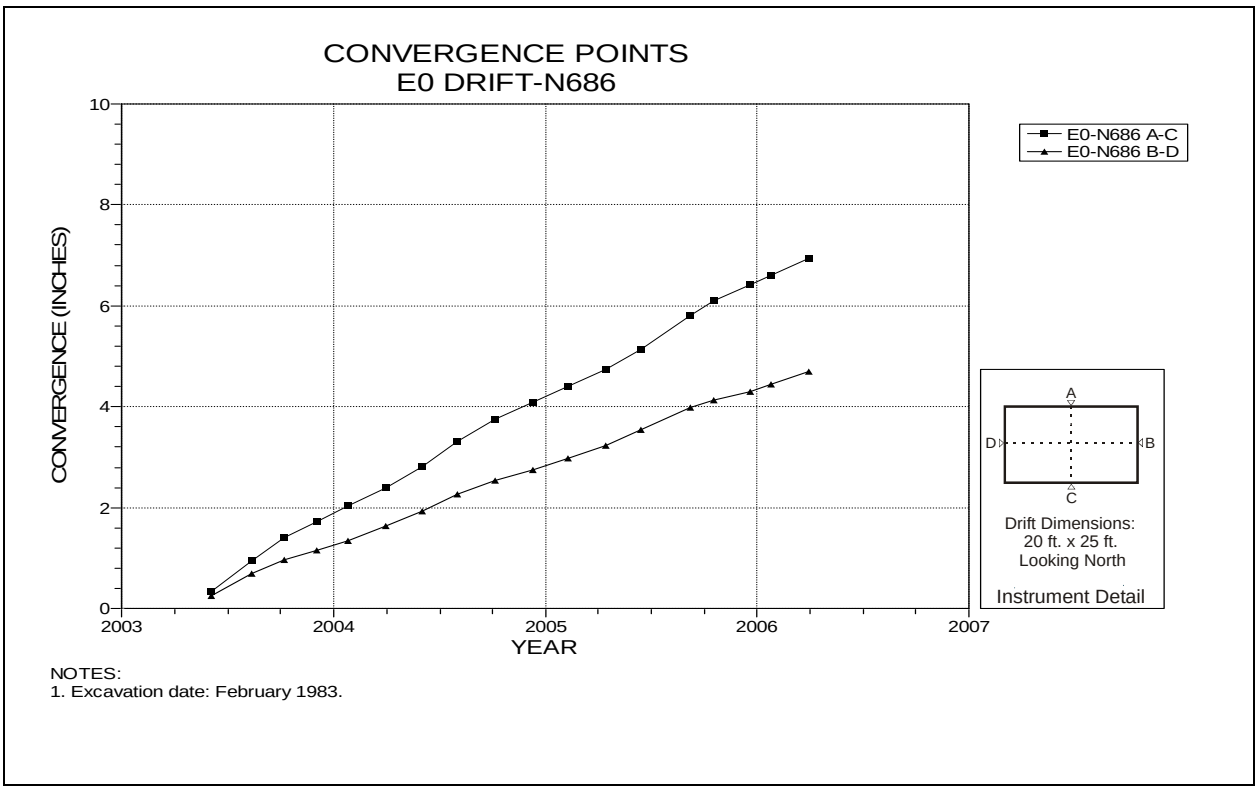


Figure 4-135 Convergence Point Array
E0 Drift at N686 – All Chords

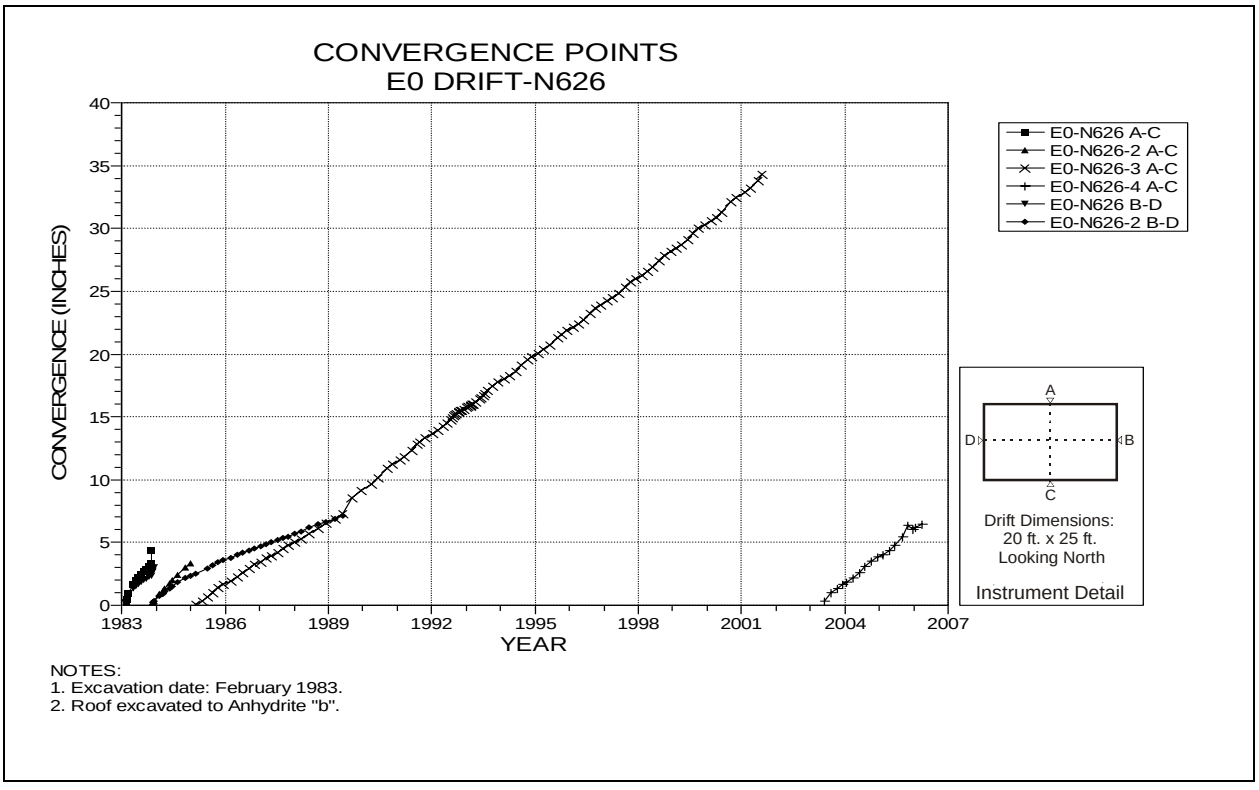


Figure 4-136 Convergence Point Array
E0 Drift at N626 – All Chords

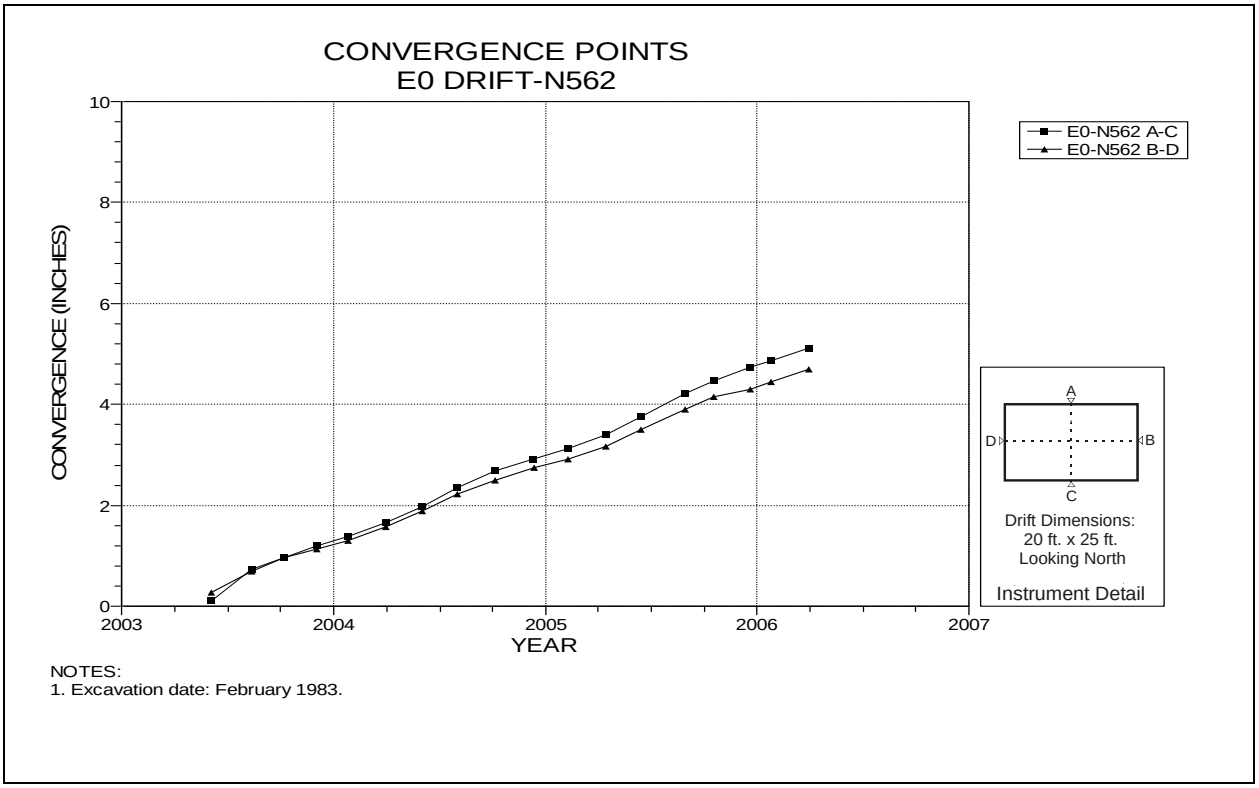


Figure 4-137 Convergence Point Array
E0 Drift at N562 – All Chords

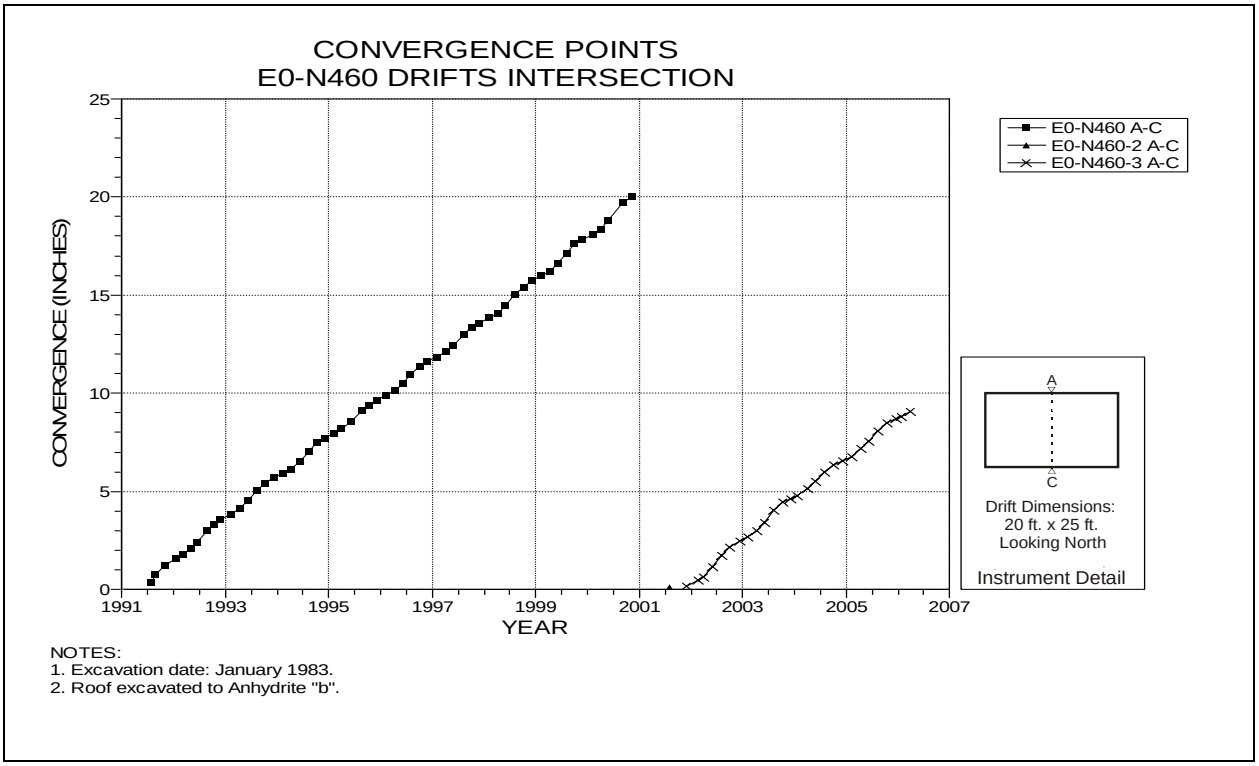


Figure 4-138 Convergence Point Array
E0 Drift at N460 Drift Intersection – Roof to Floor

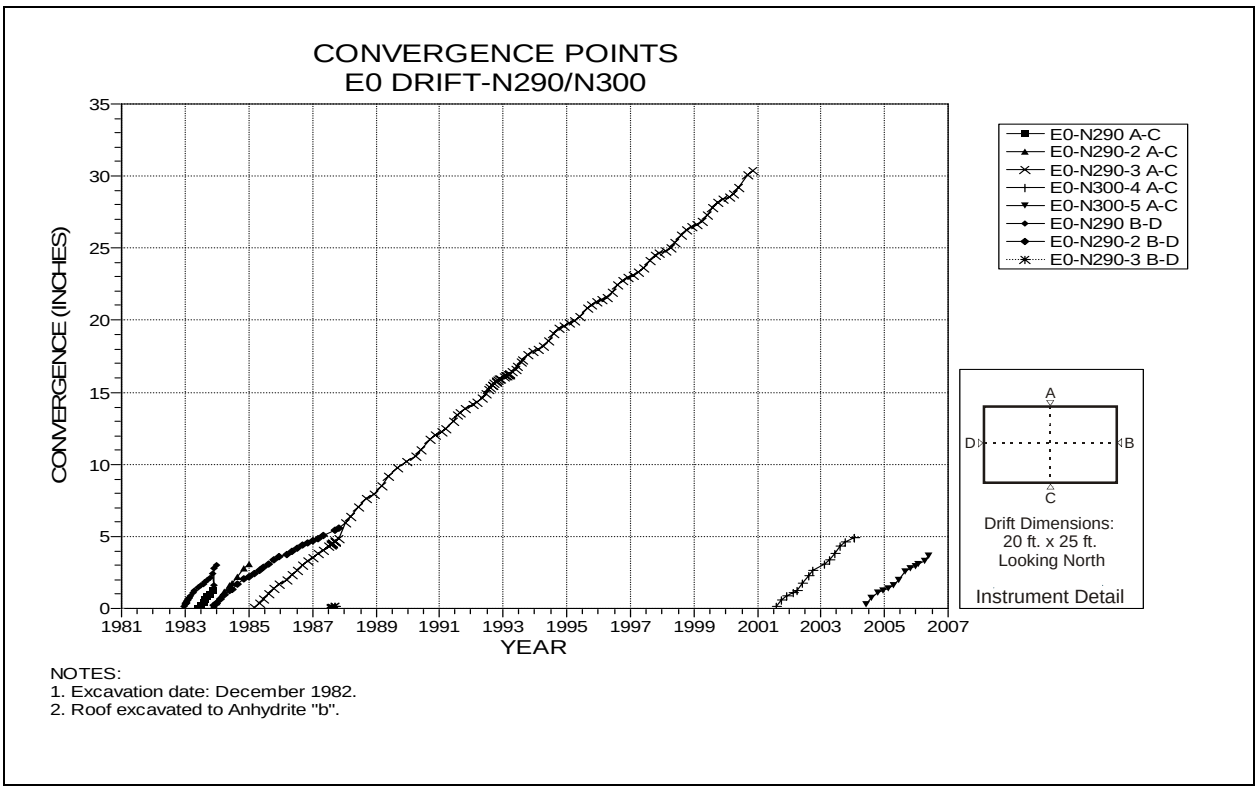


Figure 4-139 Convergence Point Array
E0 Drift at N300 – All Chords

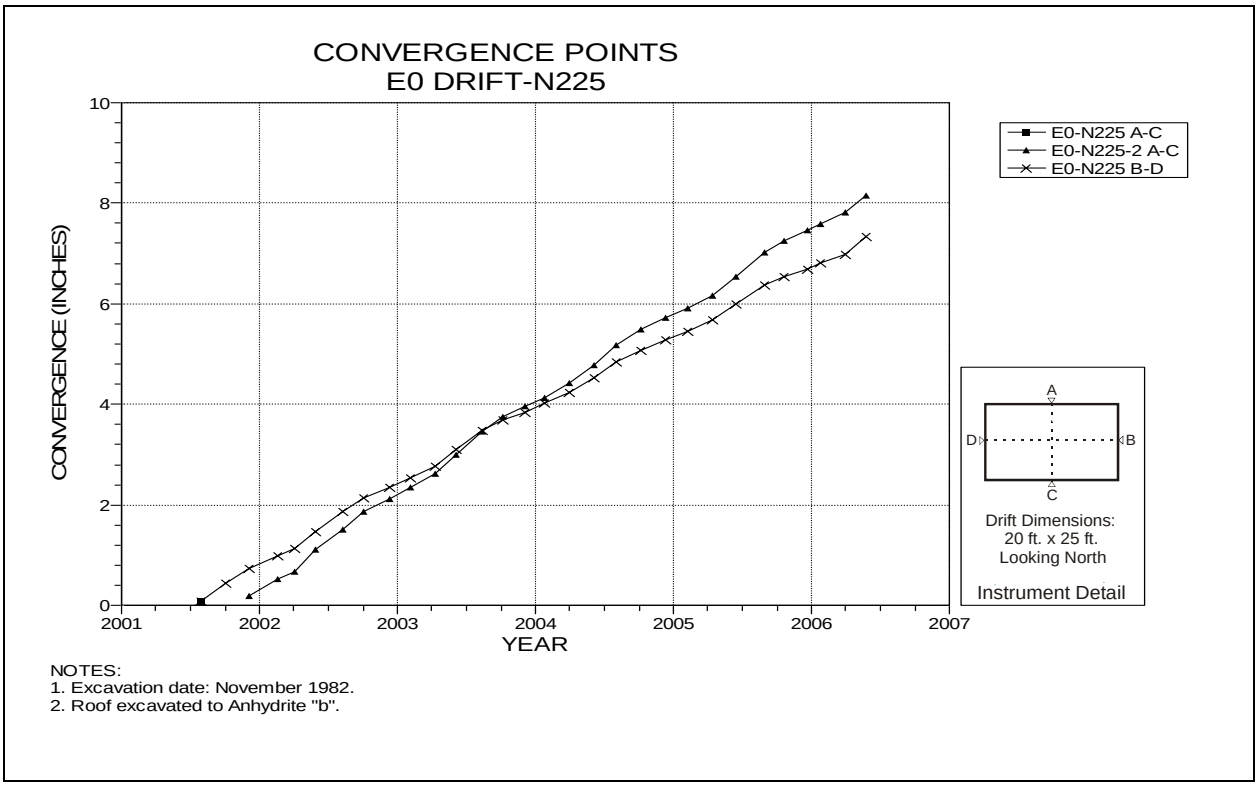


Figure 4-140 Convergence Point Array
E0 Drift at N225 – All Chords

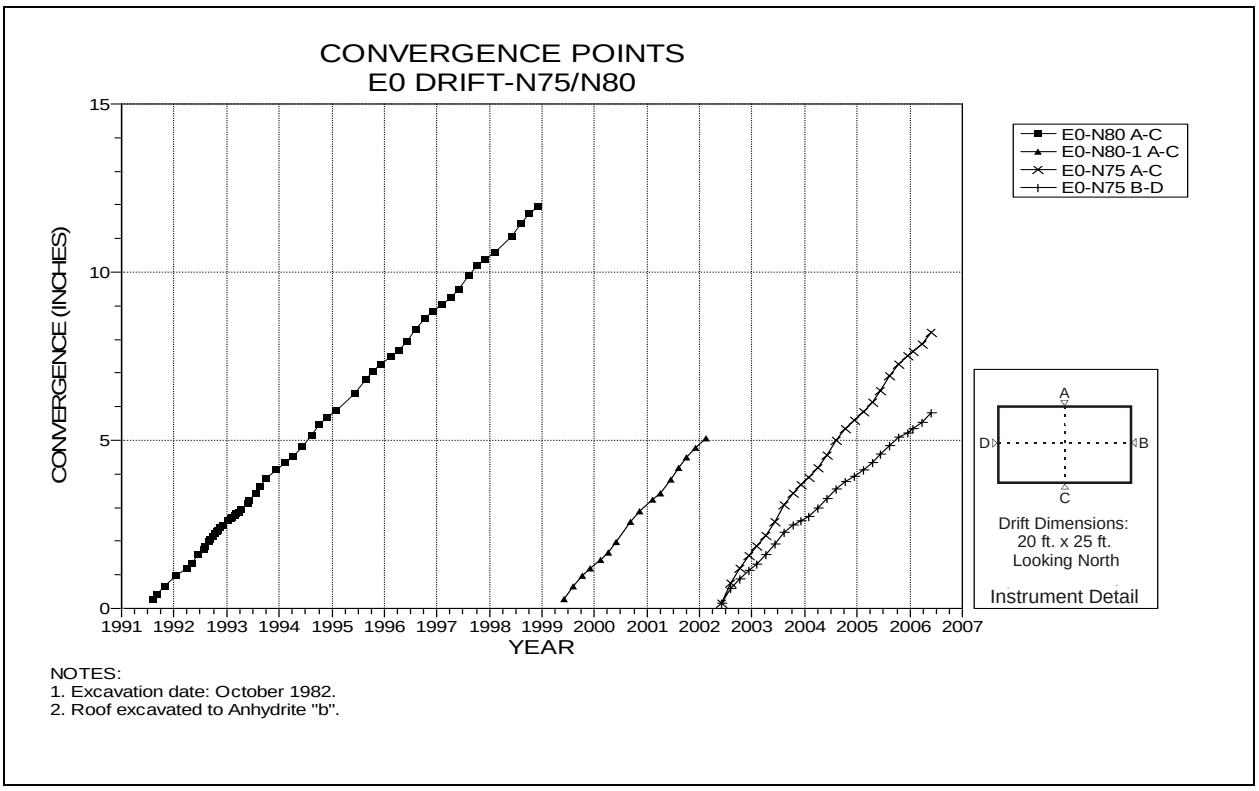


Figure 4-141 Convergence Point Array
E0 Drift at N75 – All Chords

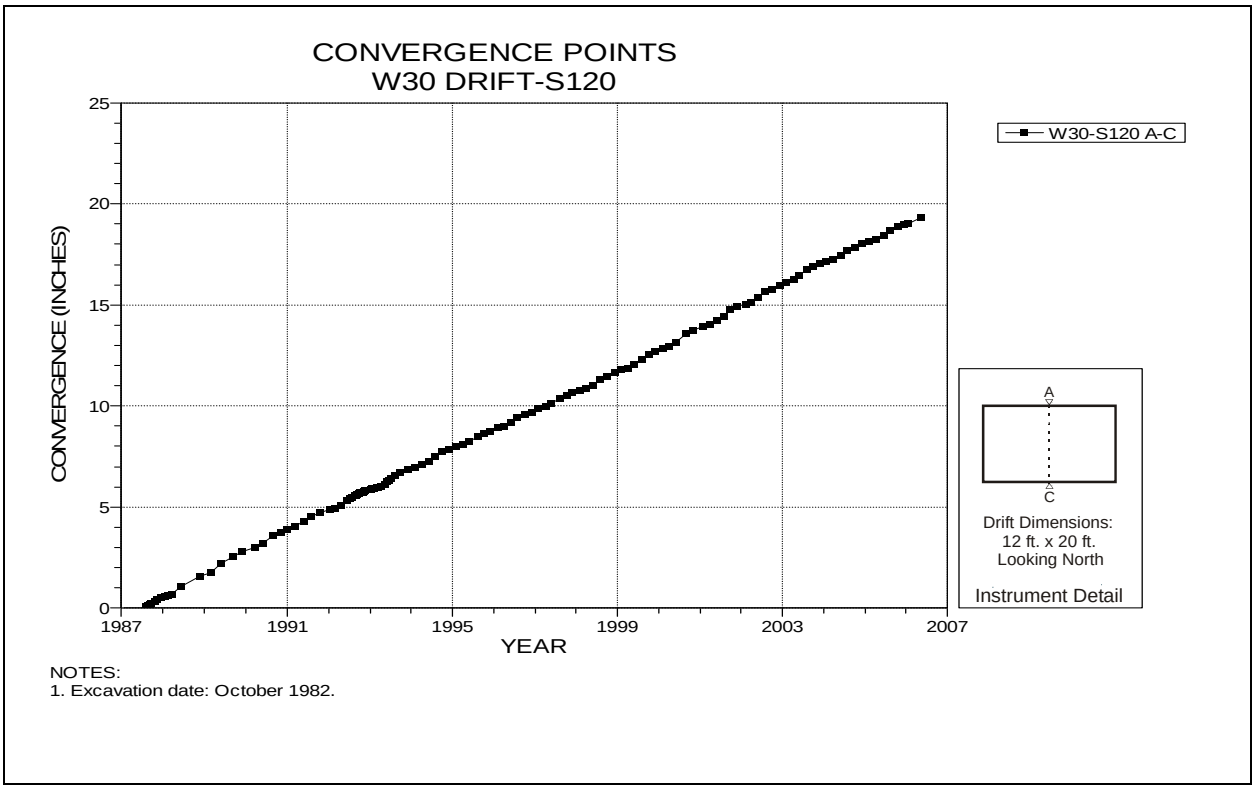


Figure 4-142 Convergence Point Array
W30 Drift at S120 – Roof to Floor

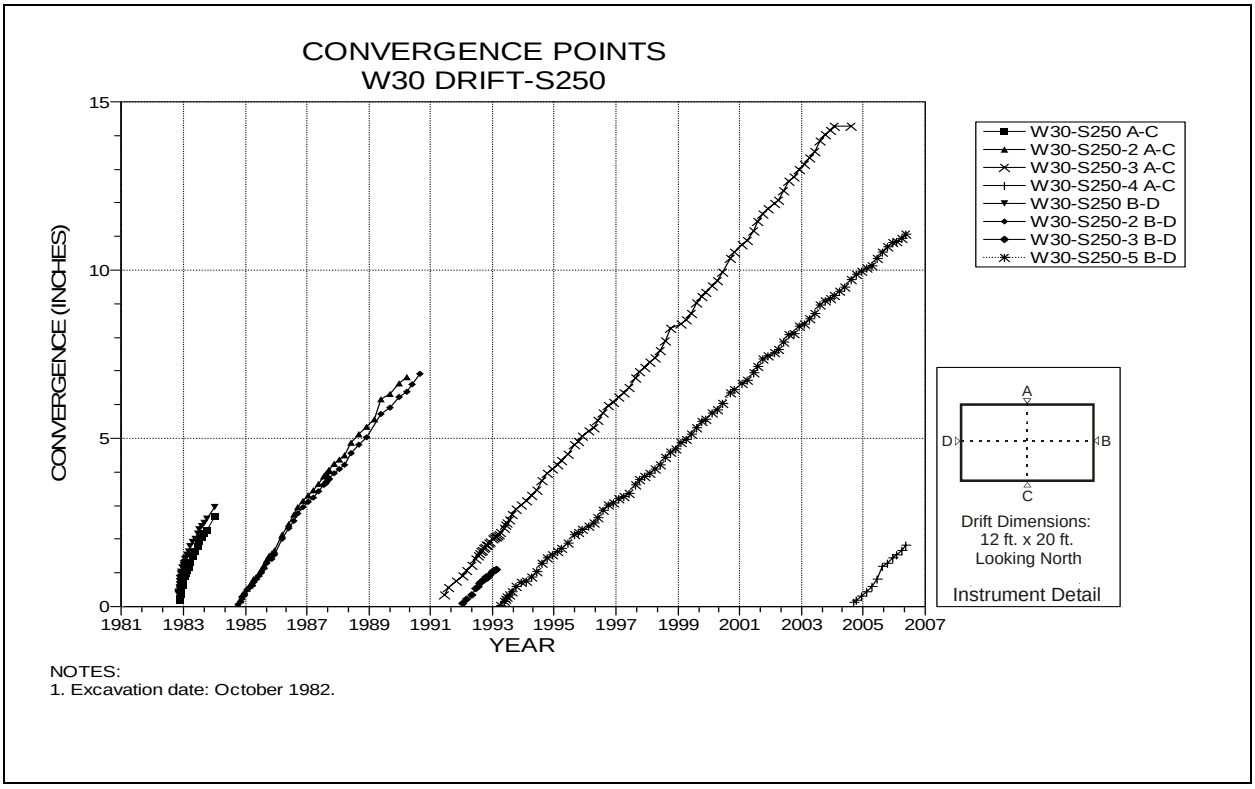


Figure 4-143 Convergence Point Array
W30 Drift at S250 – All Chords

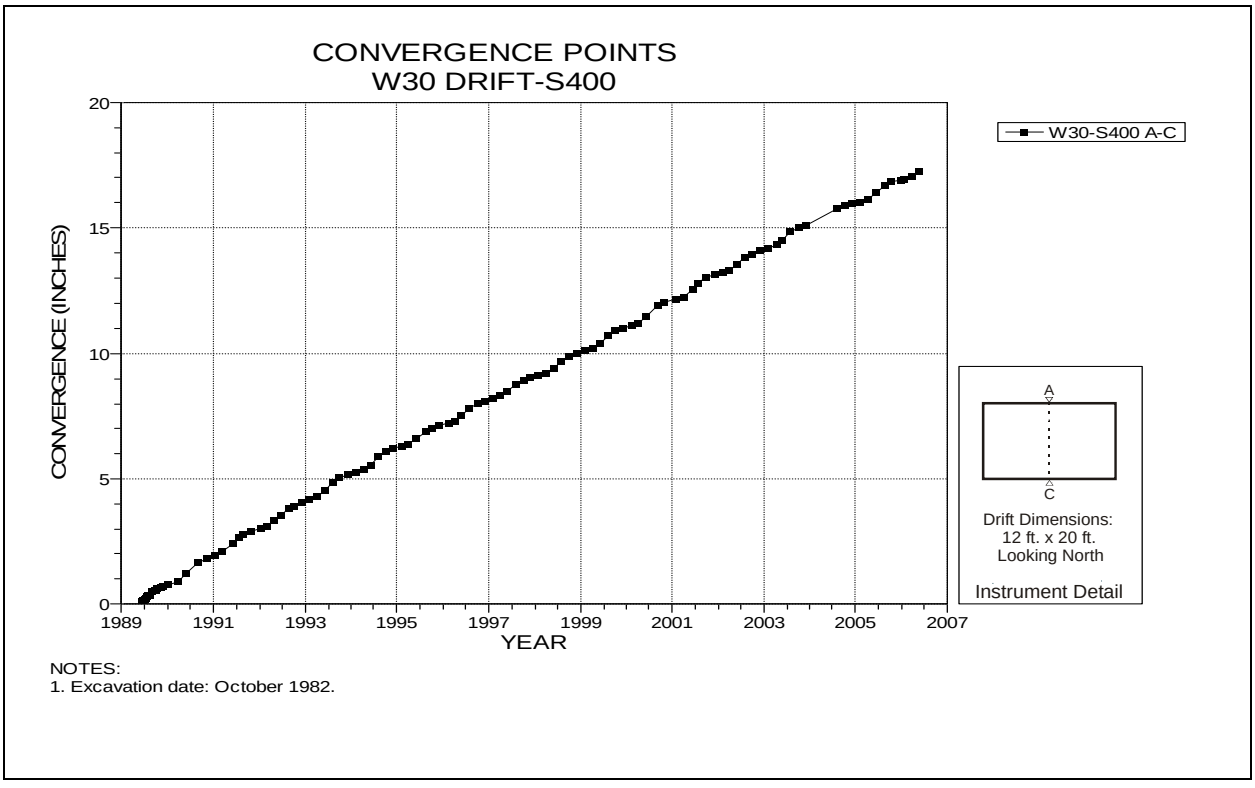


Figure 4-144 Convergence Point Array
W30 Drift at S400 Drift Intersection – Roof to Floor

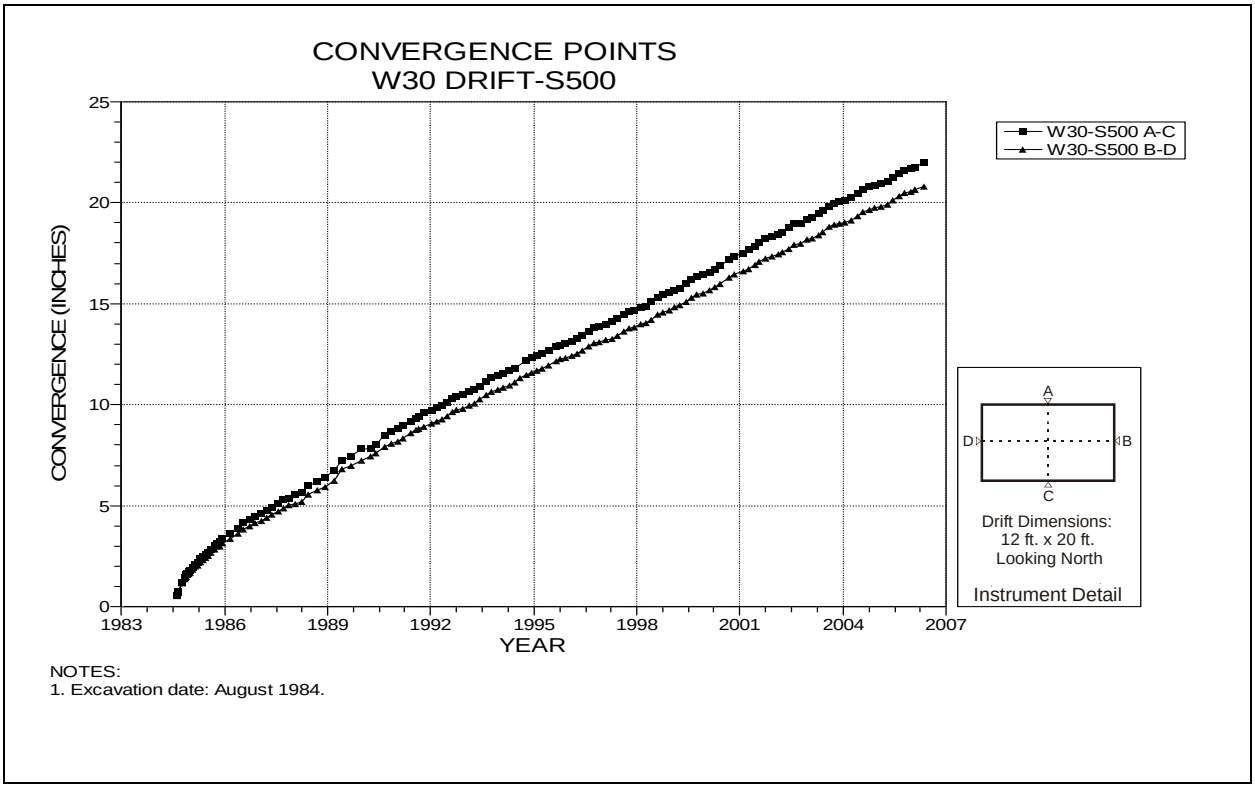


Figure 4-145 Convergence Point Array
W30 Drift at S500 – All Chords

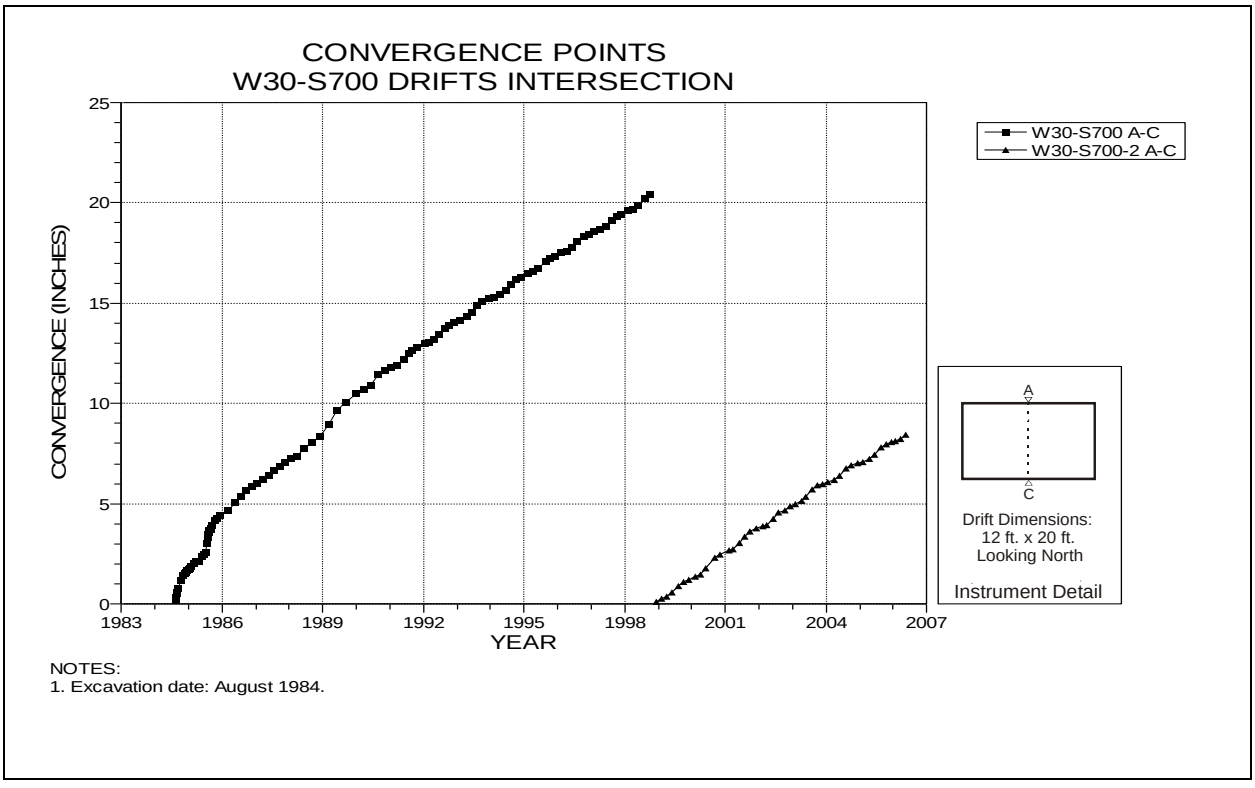


Figure 4-146 Convergence Point Array
W30 Drift at S700 Drift Intersection – Roof to Floor

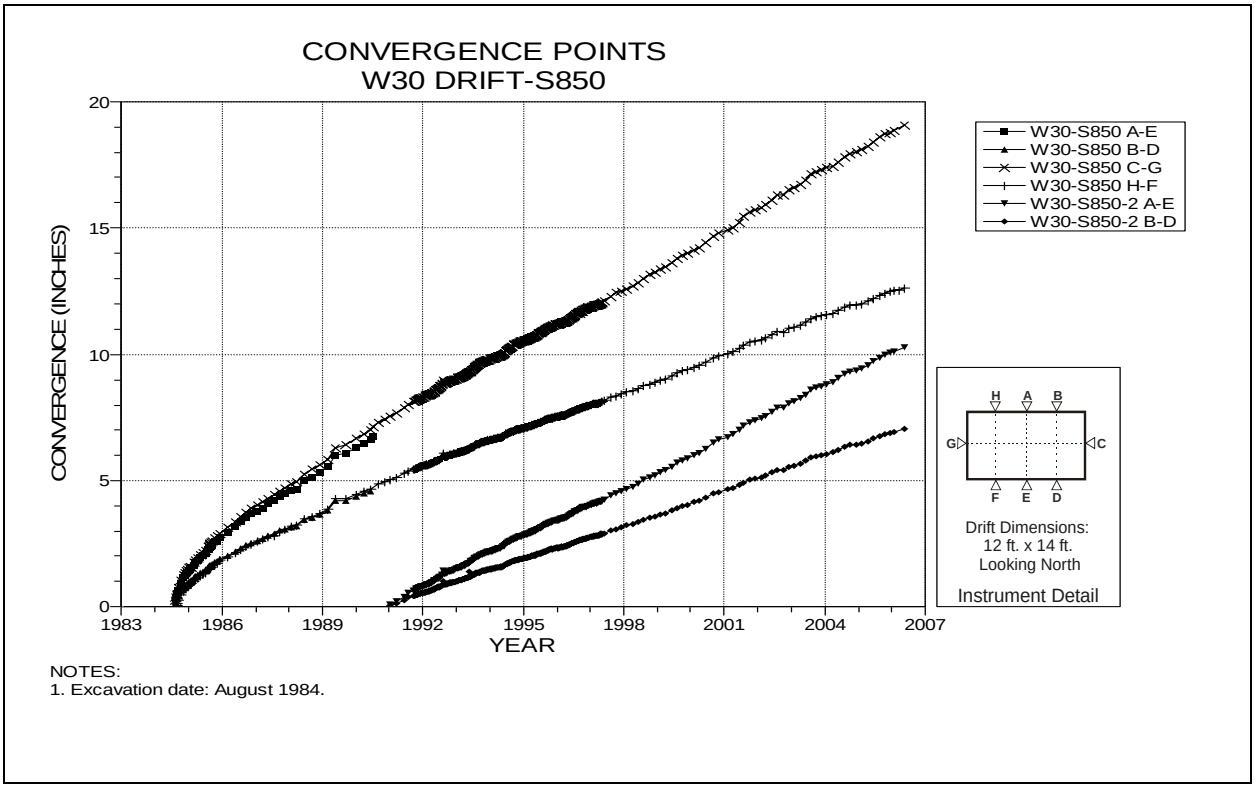


Figure 4-147 Convergence Point Array
W30 Drift at S850 – All Chords

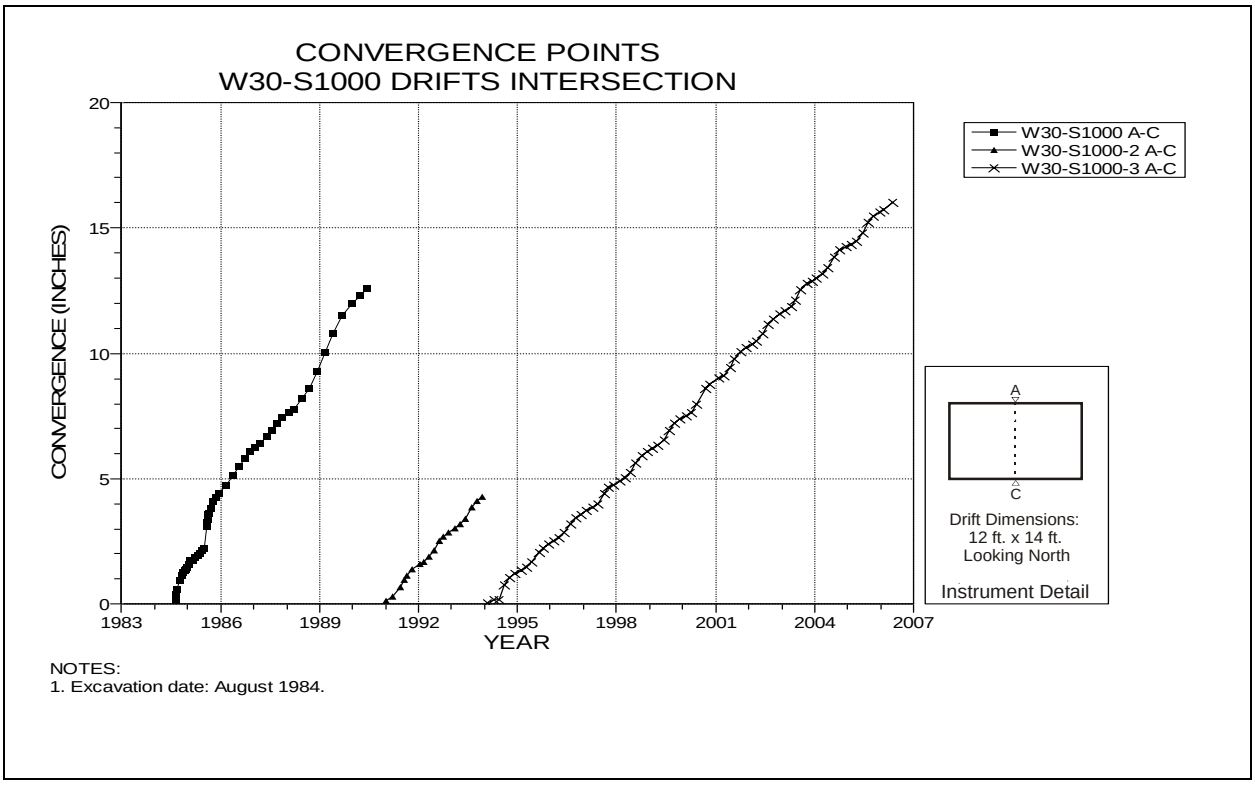


Figure 4-148 Convergence Point Array
W30 Drift at S1000 Drift Intersection – Roof to Floor

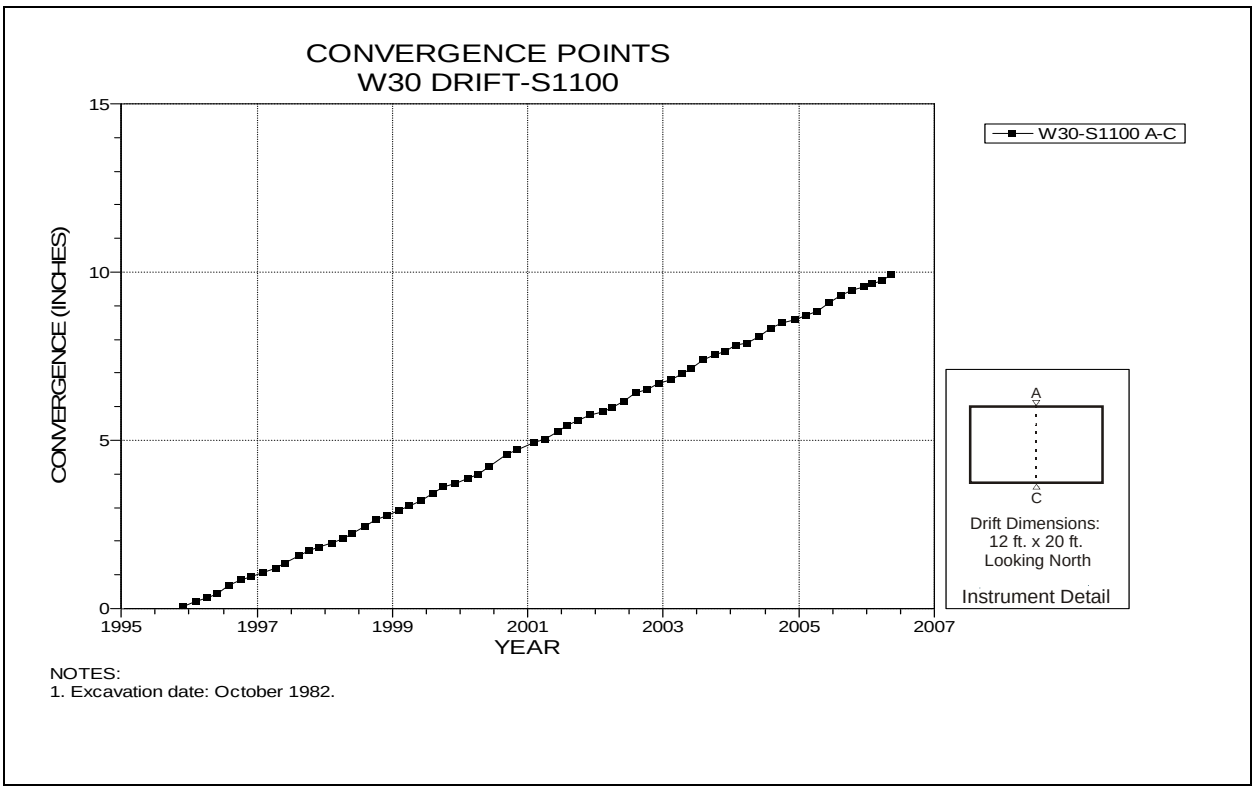


Figure 4-149 Convergence Point Array
W30 Drift at S1100 – Roof to Floor

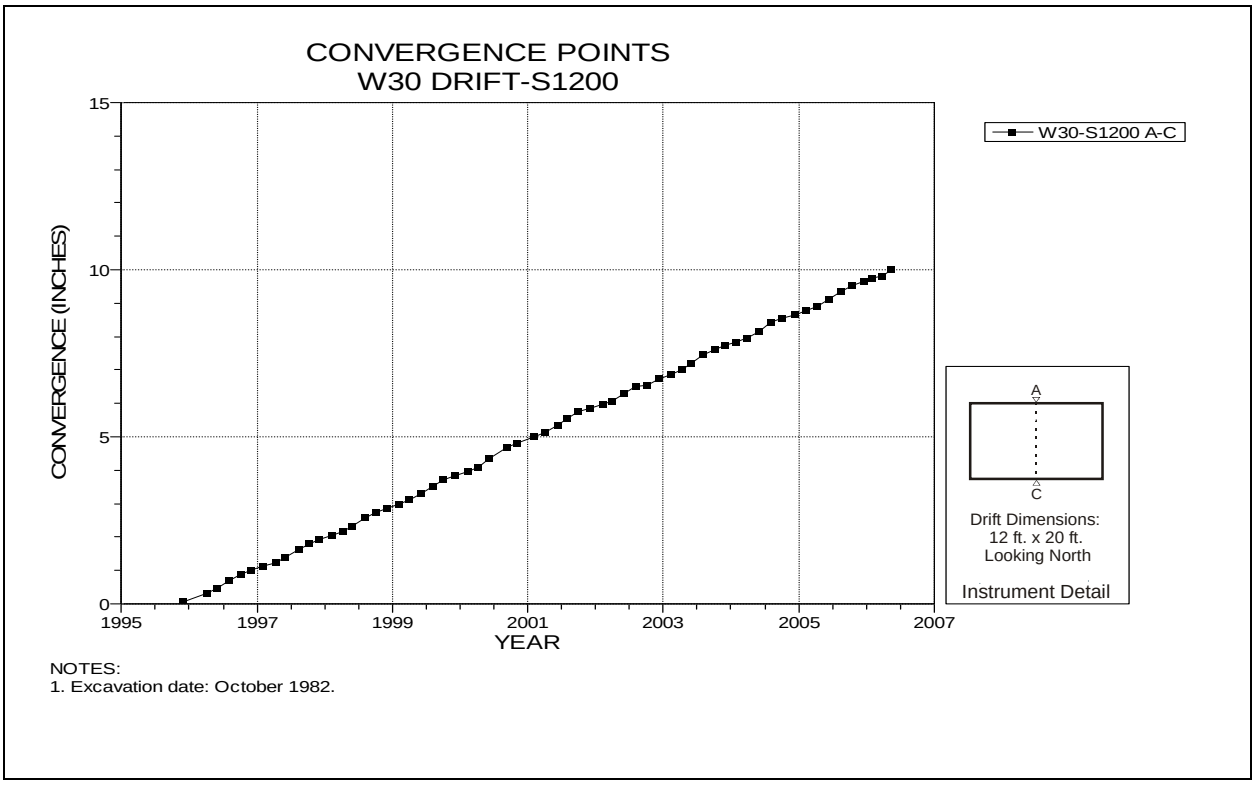


Figure 4-150 Convergence Point Array
W30 Drift at S1200 – Roof to Floor

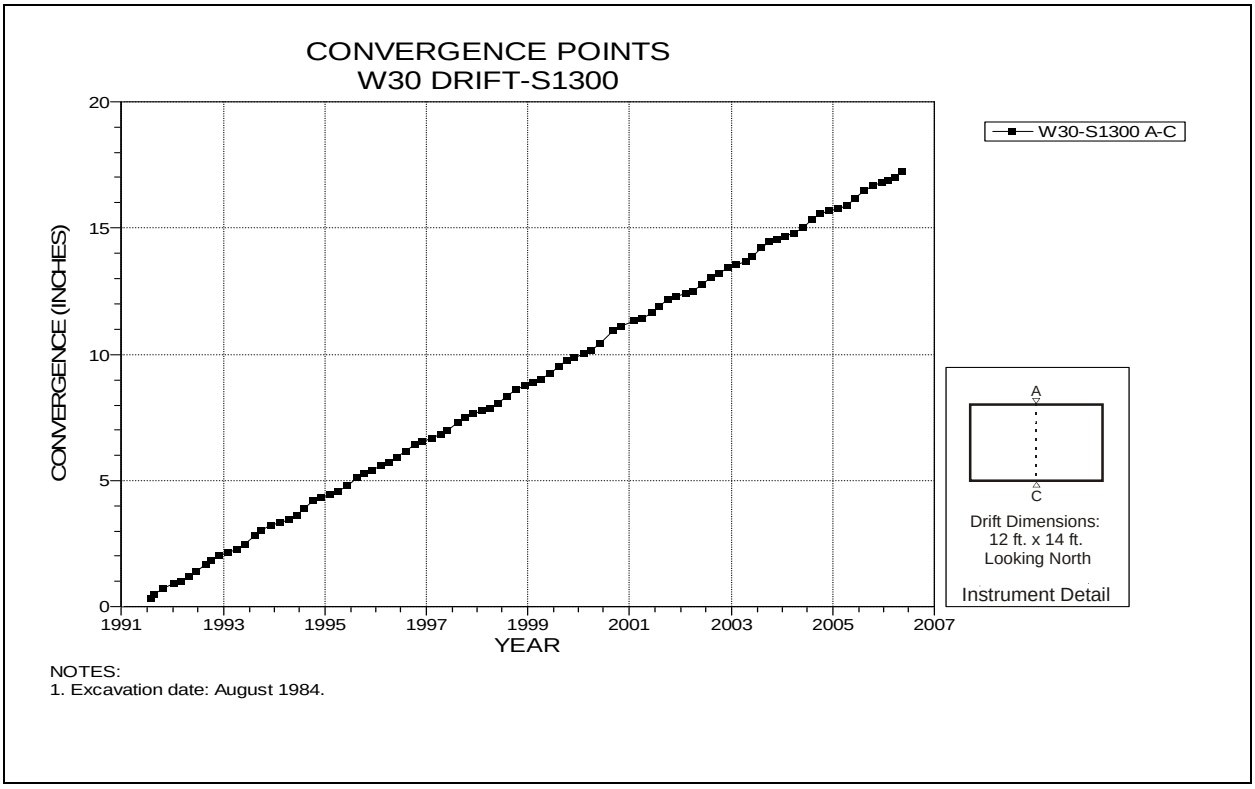


Figure 4-151 Convergence Point Array
W30 Drift at S1300 Drift Intersection – Roof to Floor

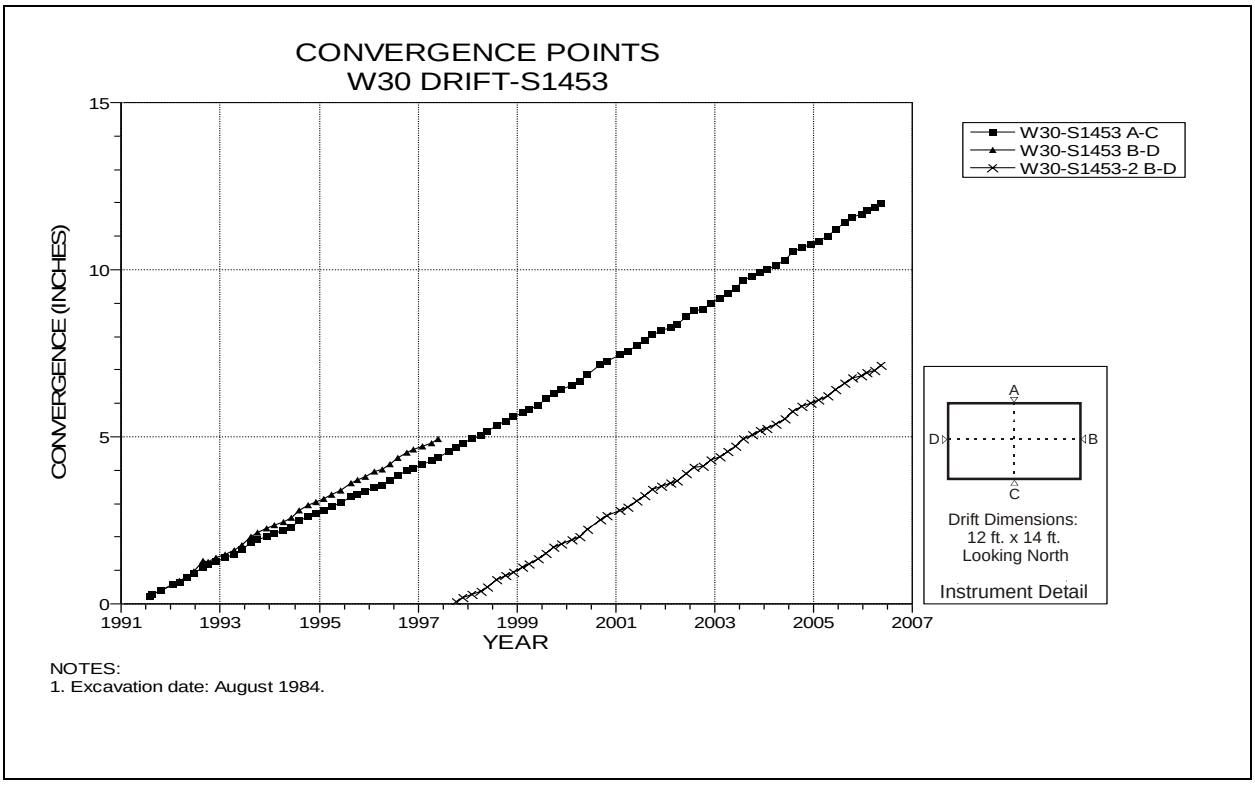
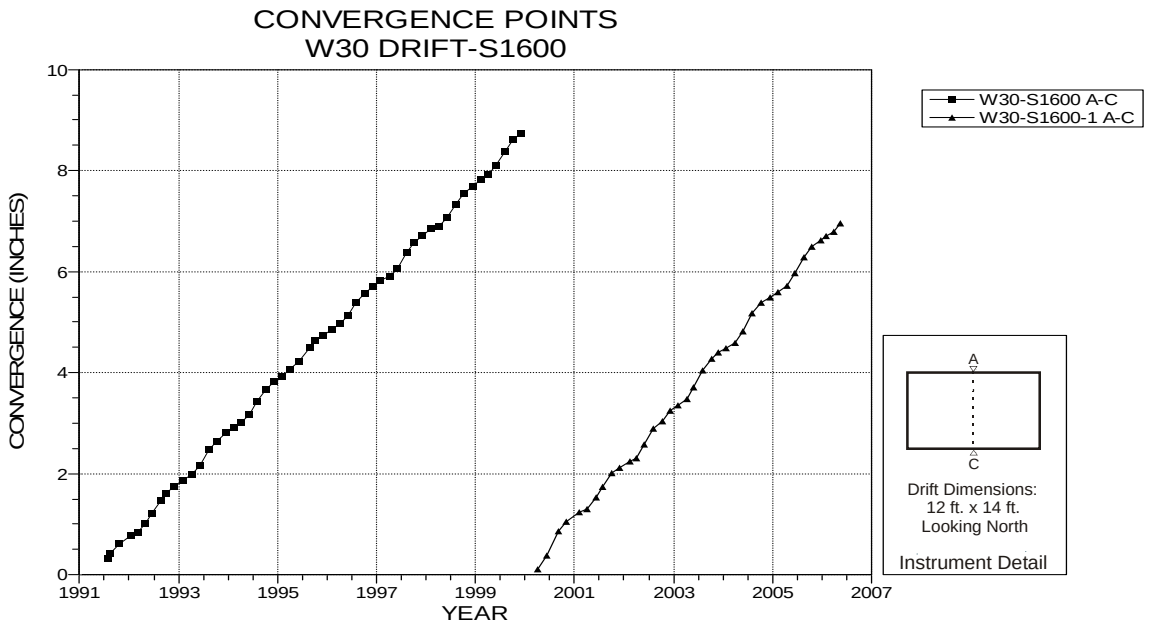
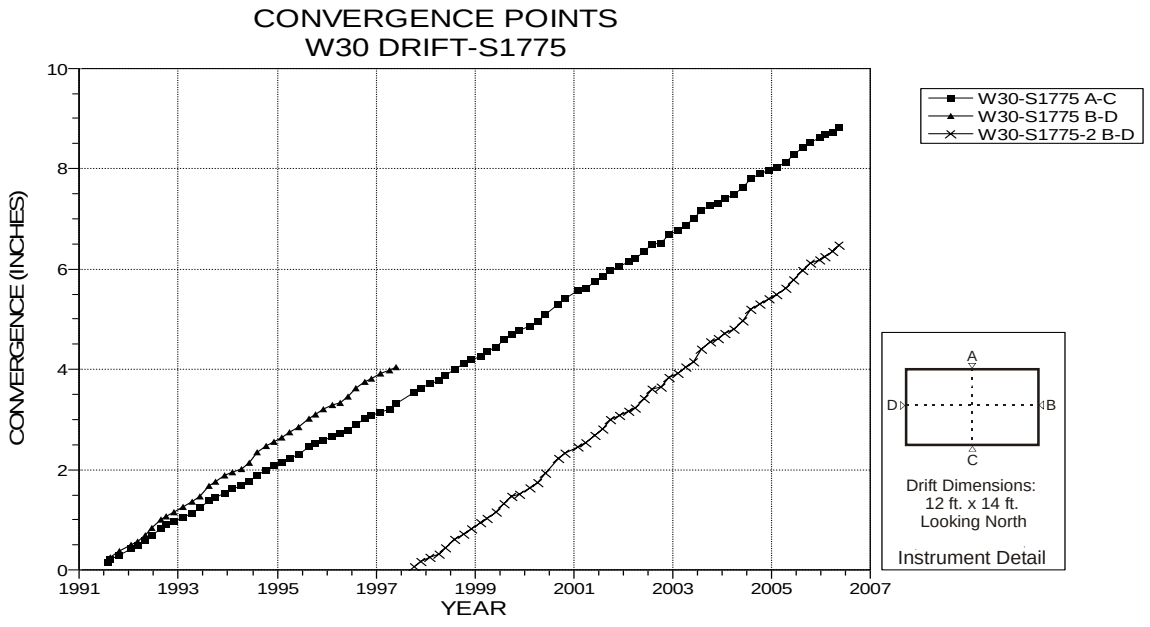


Figure 4-152 Convergence Point Array
W30 Drift at S1453 – All Chords



NOTES:
1. Excavation date: September 1984.

Figure 4-153 Convergence Point Array
W30 Drift at S1600 Drift Intersection – Roof to Floor



NOTES:
1. Excavation date: February 1986.

Figure 4-154 Convergence Point Array
W30 Drift at S1775 – All Chords

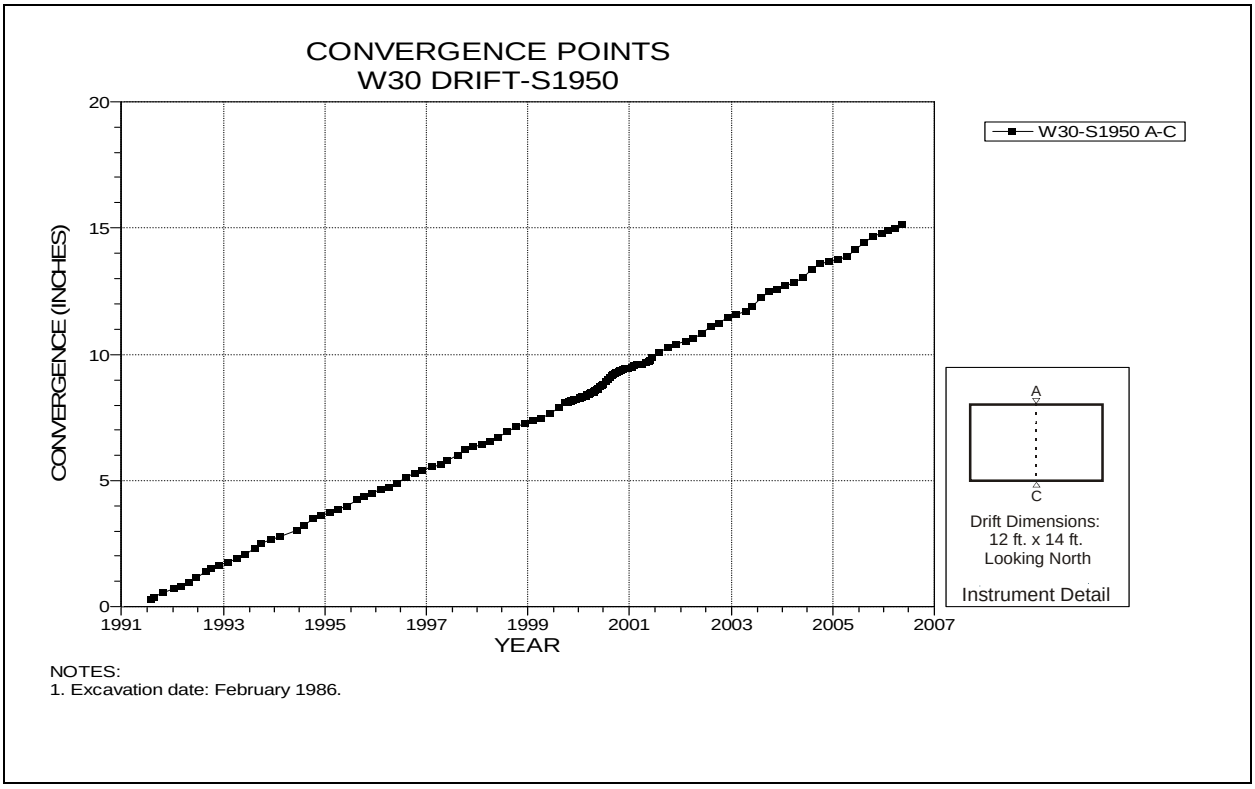


Figure 4-155 Convergence Point Array
W30 Drift at S1950 Drift Intersection – Roof to Floor

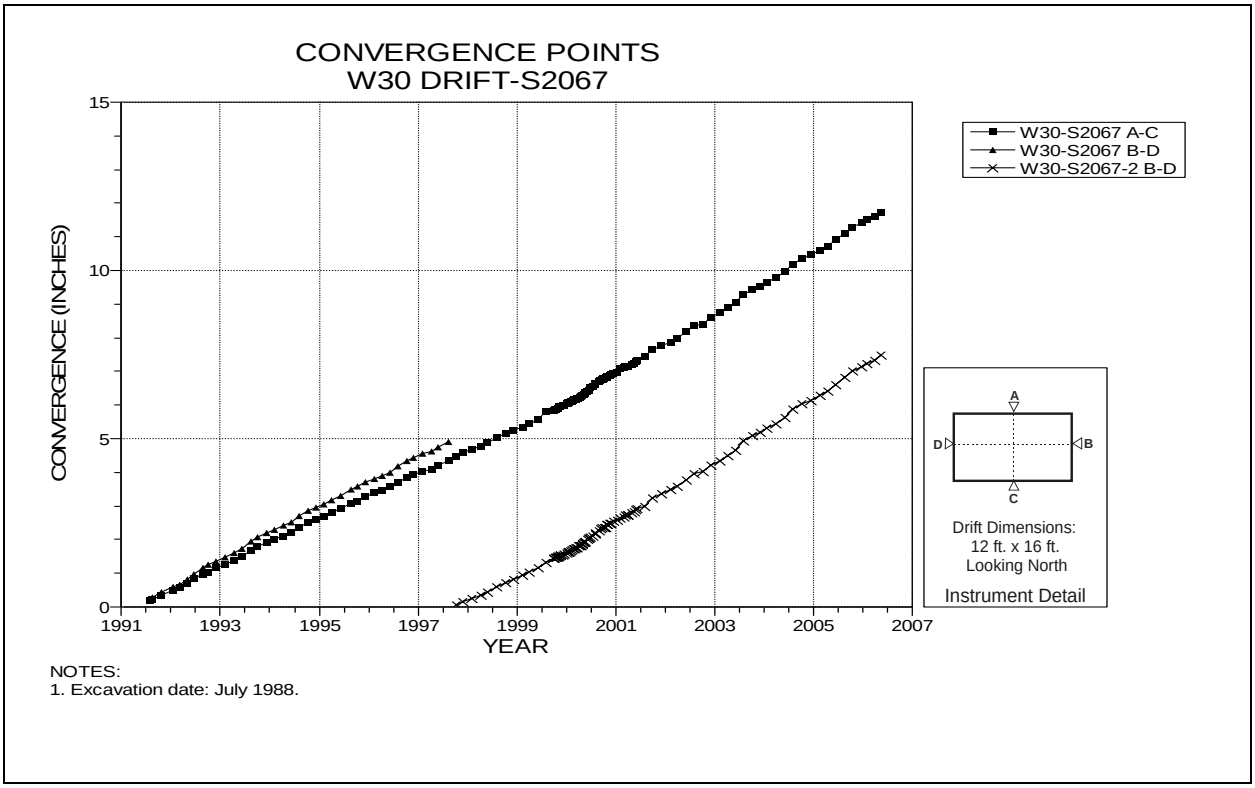


Figure 4-156 Convergence Point Array
W30 Drift at S2067 – All Chords

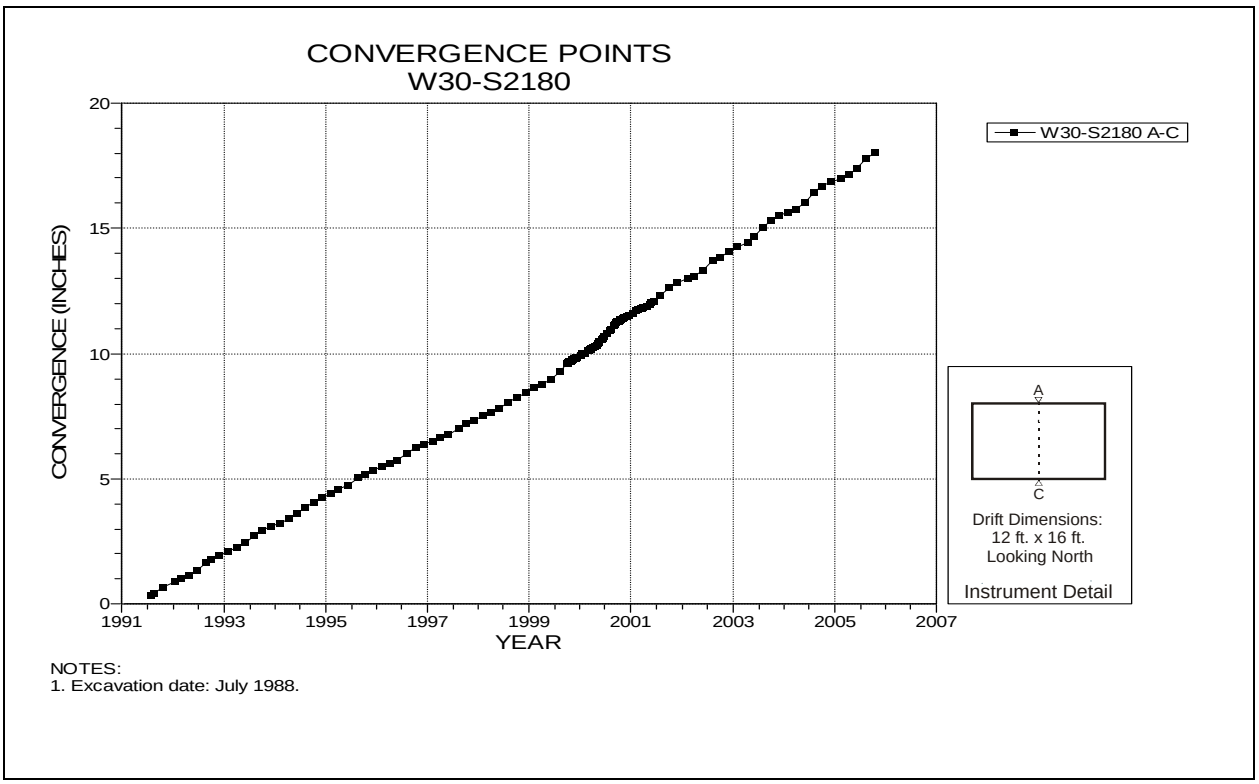


Figure 4-157 Convergence Point Array
W30 Drift at S2180 Drift Intersection – Roof to Floor

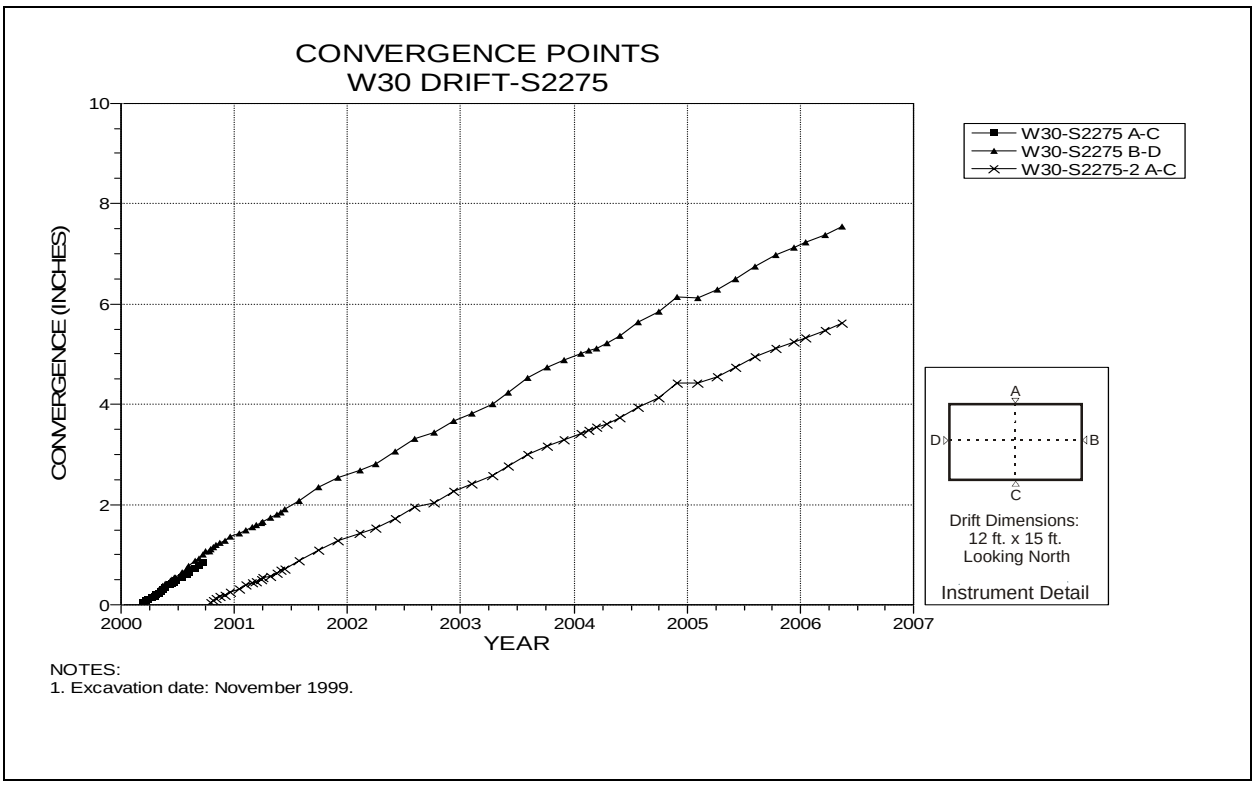


Figure 4-158 Convergence Point Array
W30 Drift at S2275 – All Chords

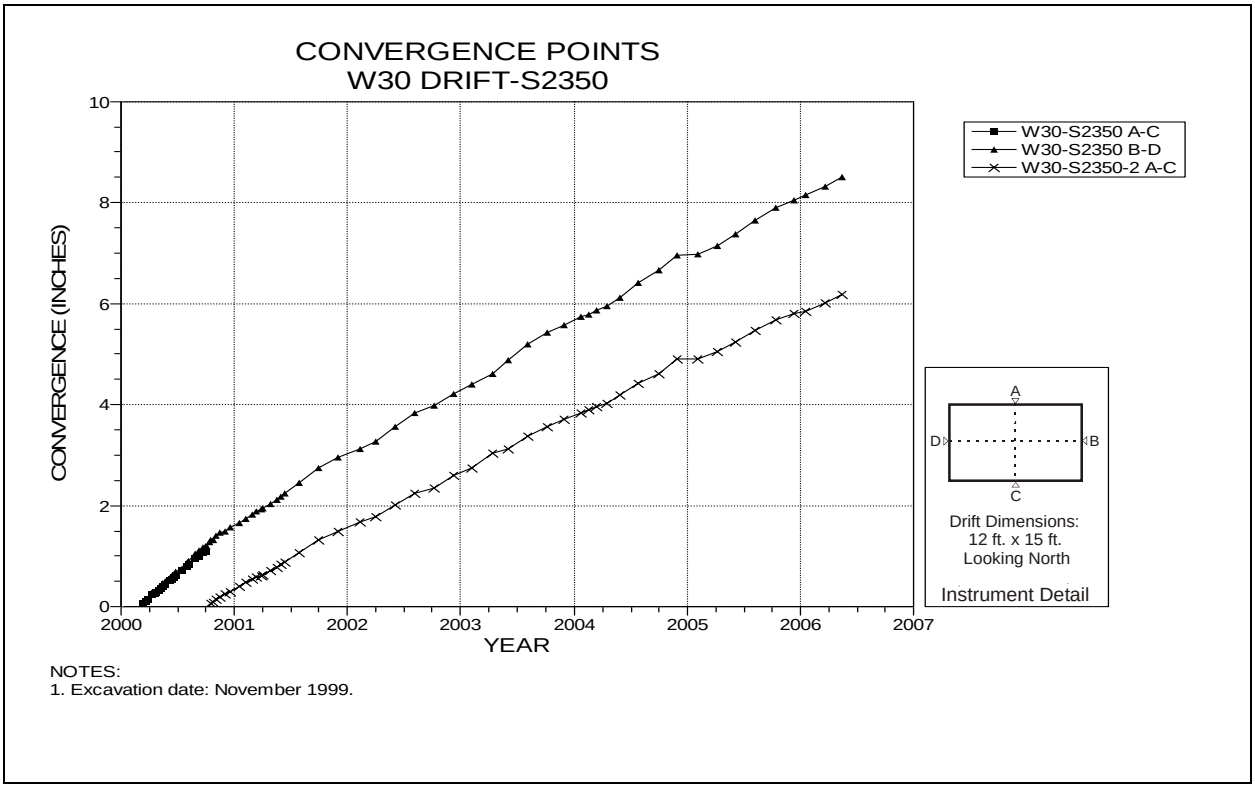


Figure 4-159 Convergence Point Array
W30 Drift at S2350 – All Chords

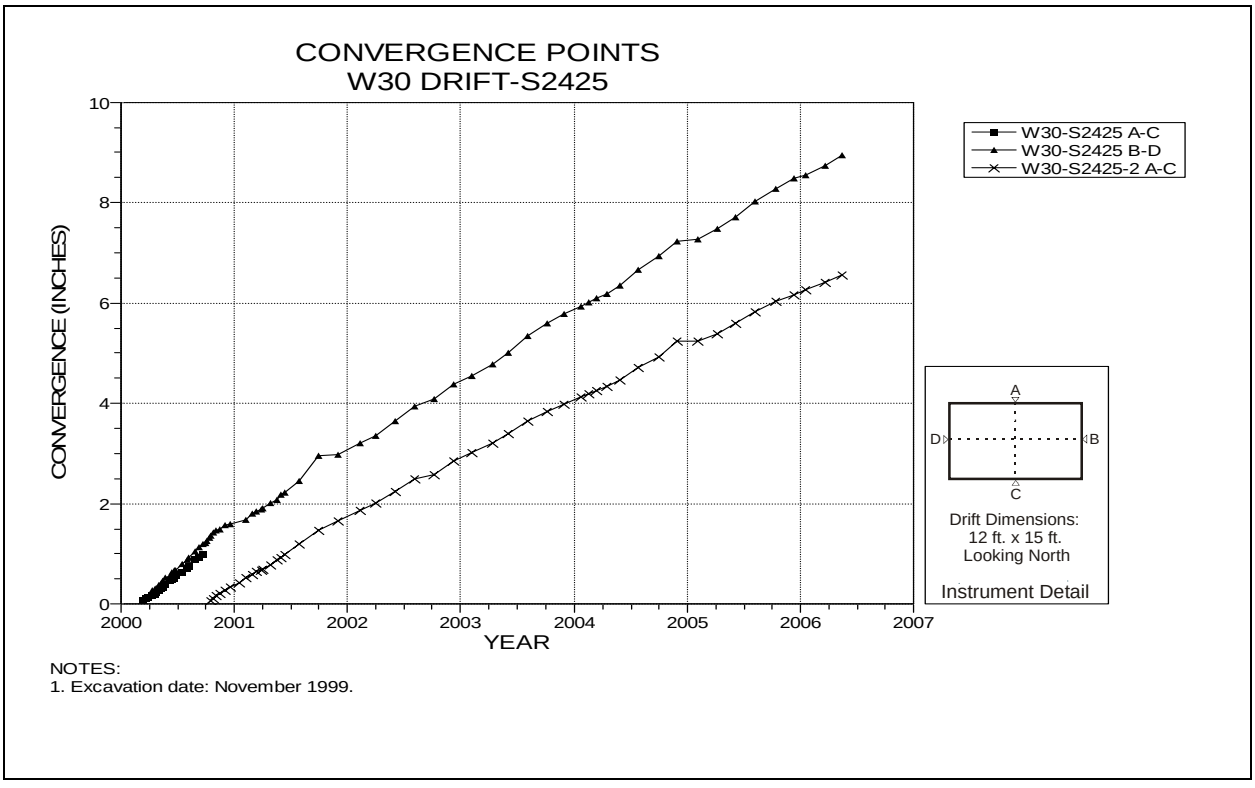


Figure 4-160 Convergence Point Array
W30 Drift at S2425 – All Chords

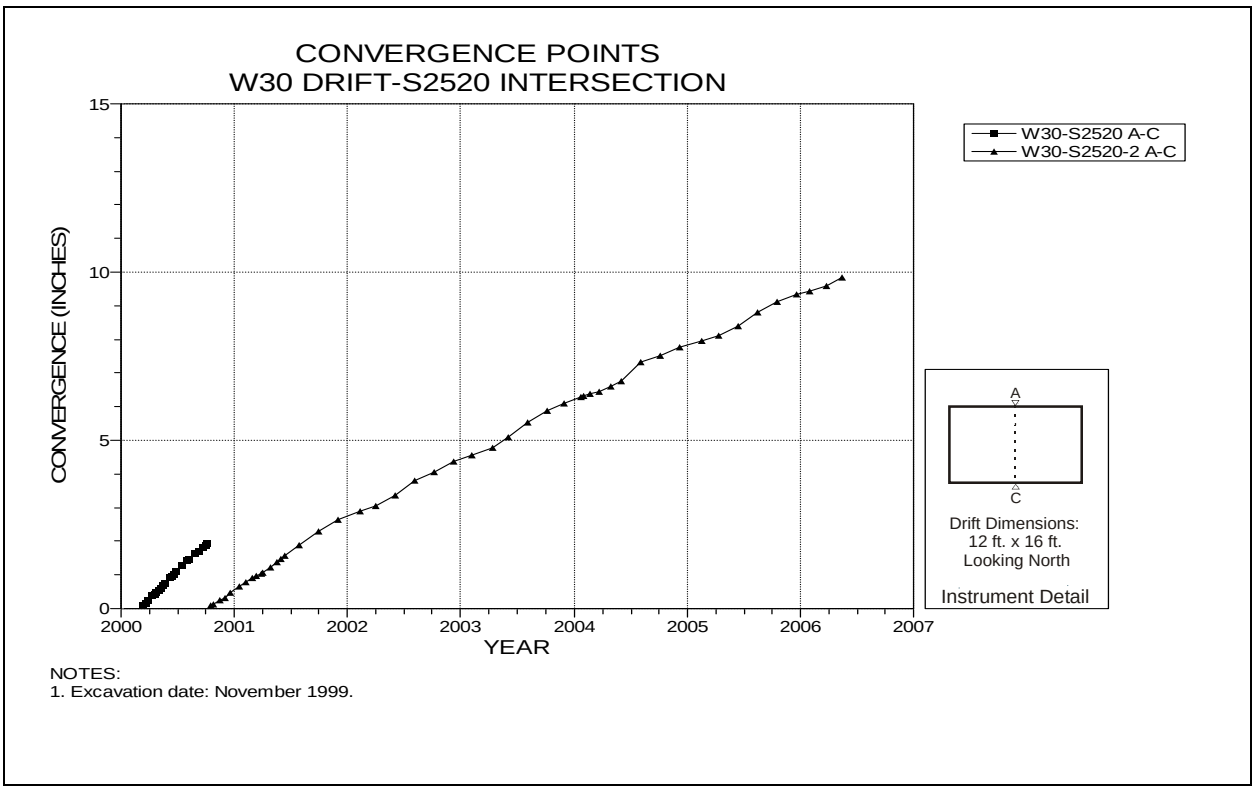


Figure 4-161 Convergence Point Array
W30 Drift at S2520 Drift Intersection – Roof to Floor

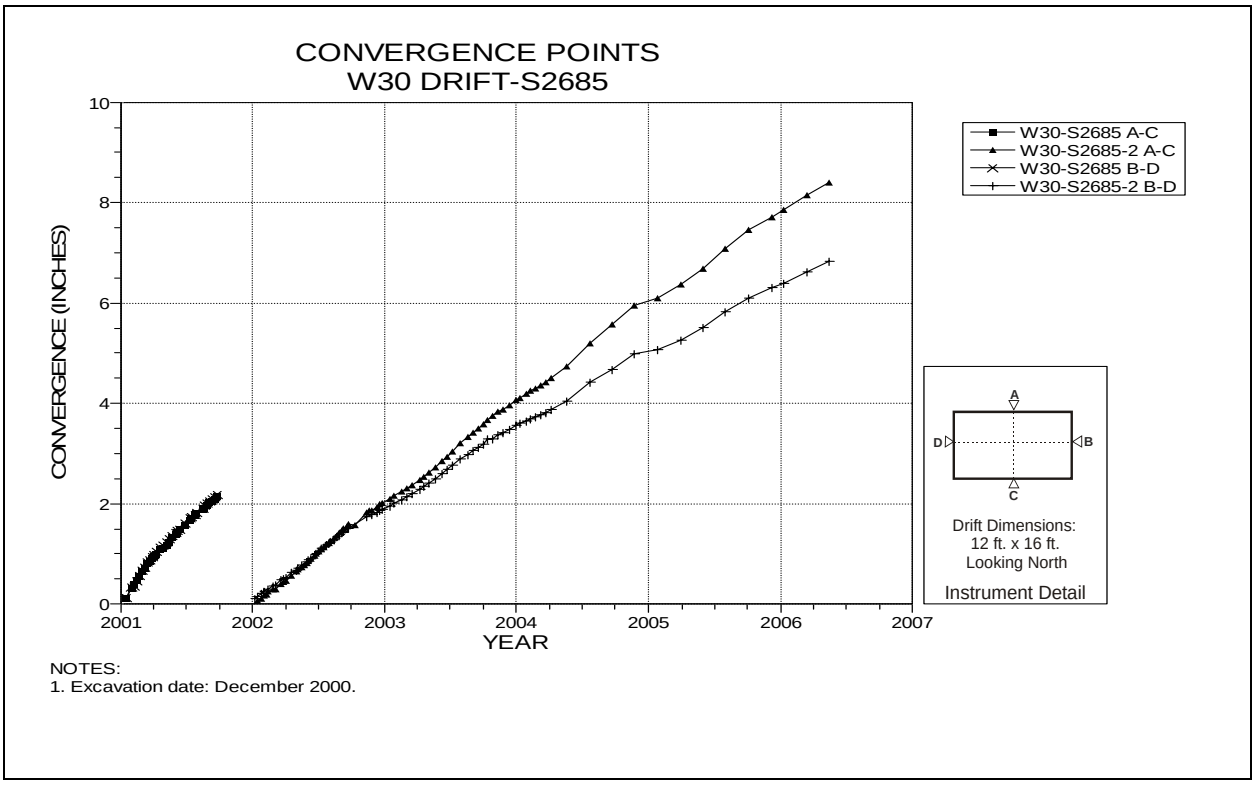


Figure 4-162 Convergence Point Array
W30 Drift at S2685 – All Chords

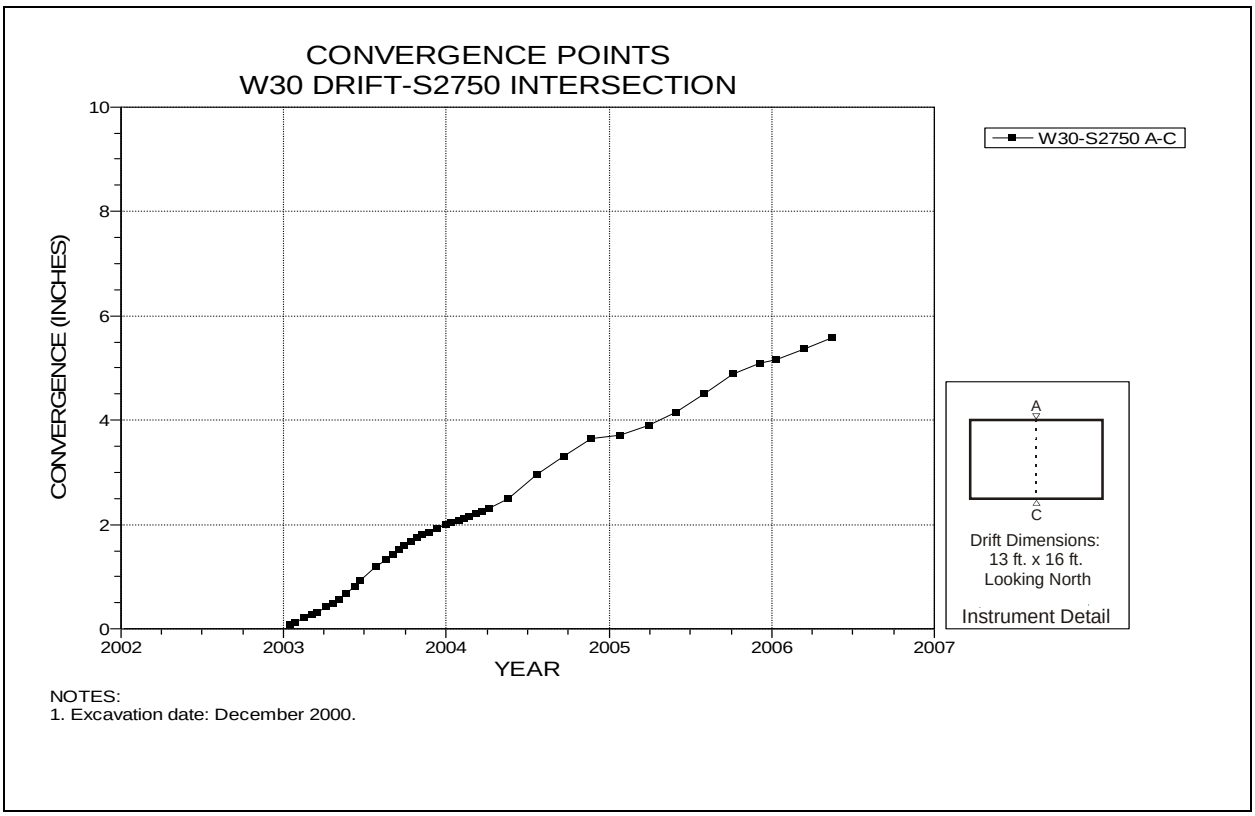


Figure 4-163 Convergence Point Array
W30 Drift at S2750 Drift Intersection – Roof to Floor

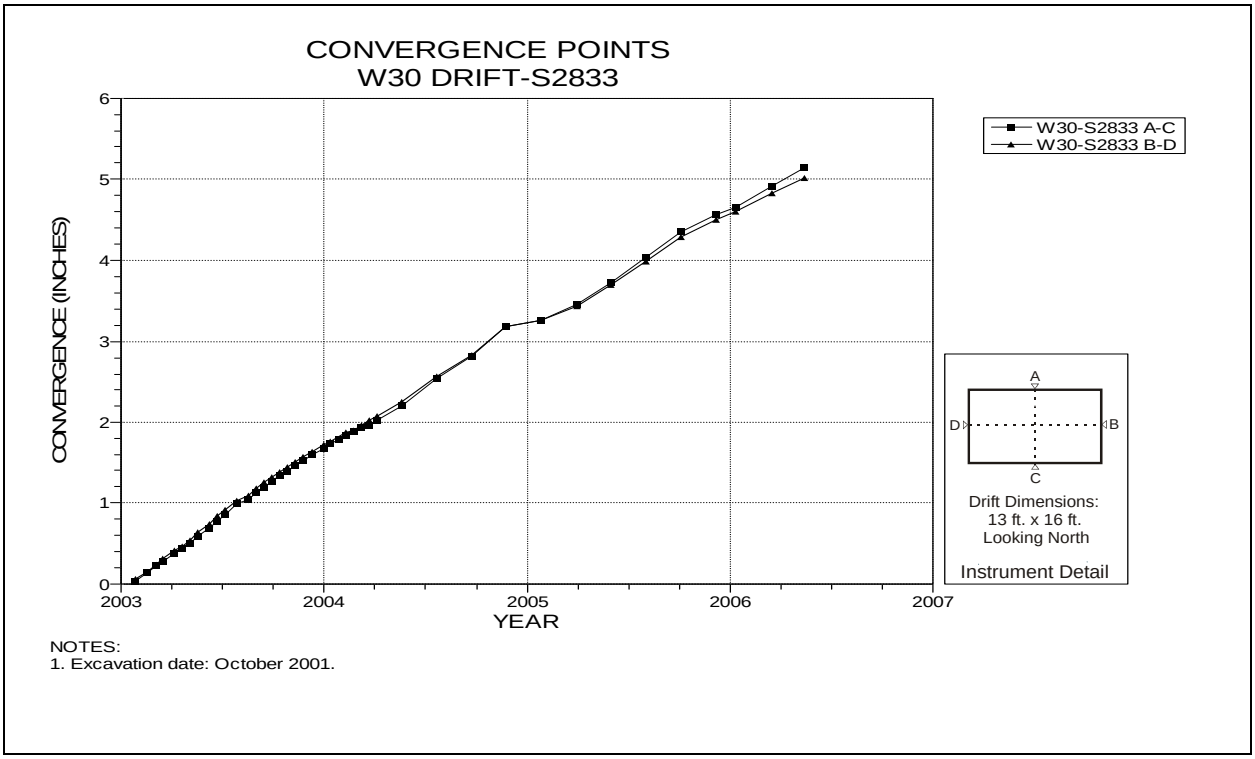


Figure 4-164 Convergence Point Array
W30 Drift at S2833 – All Chords

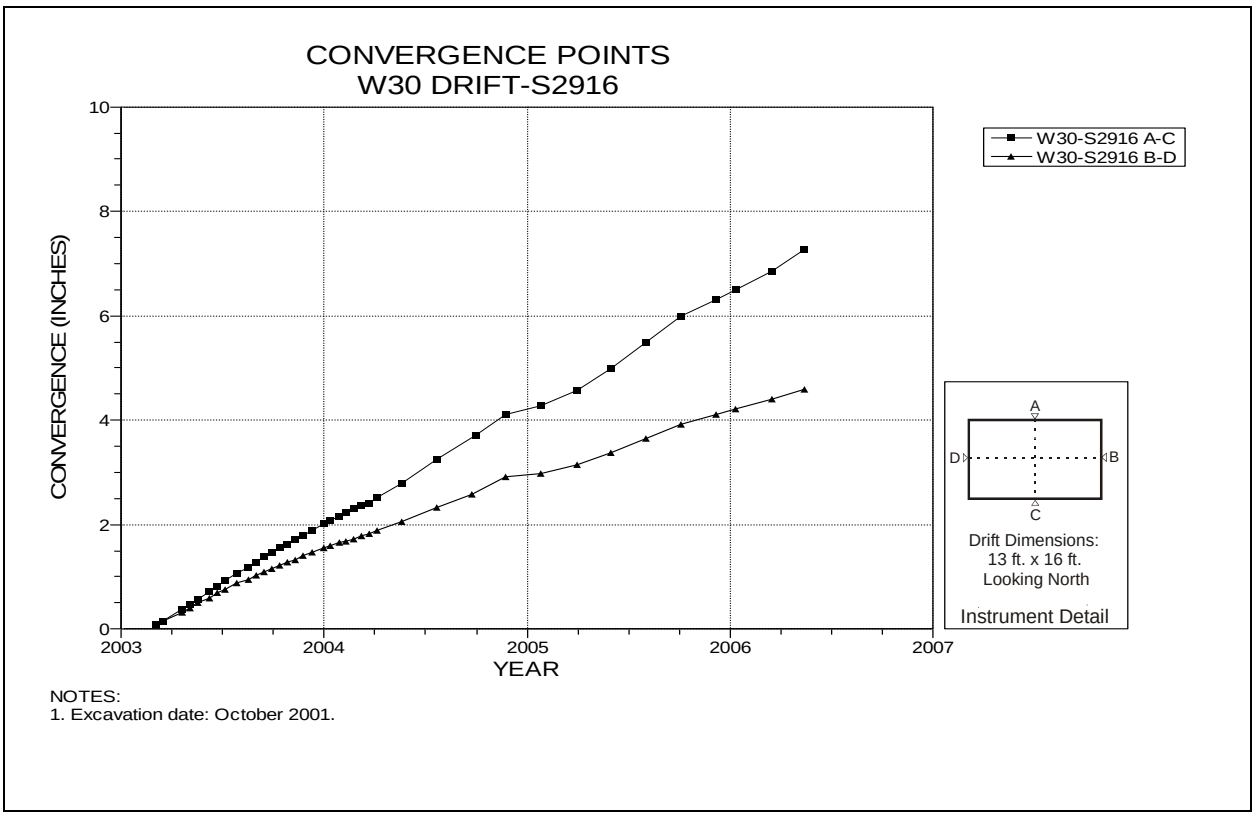


Figure 4-165 Convergence Point Array
W30 Drift at S2916 – All Chords

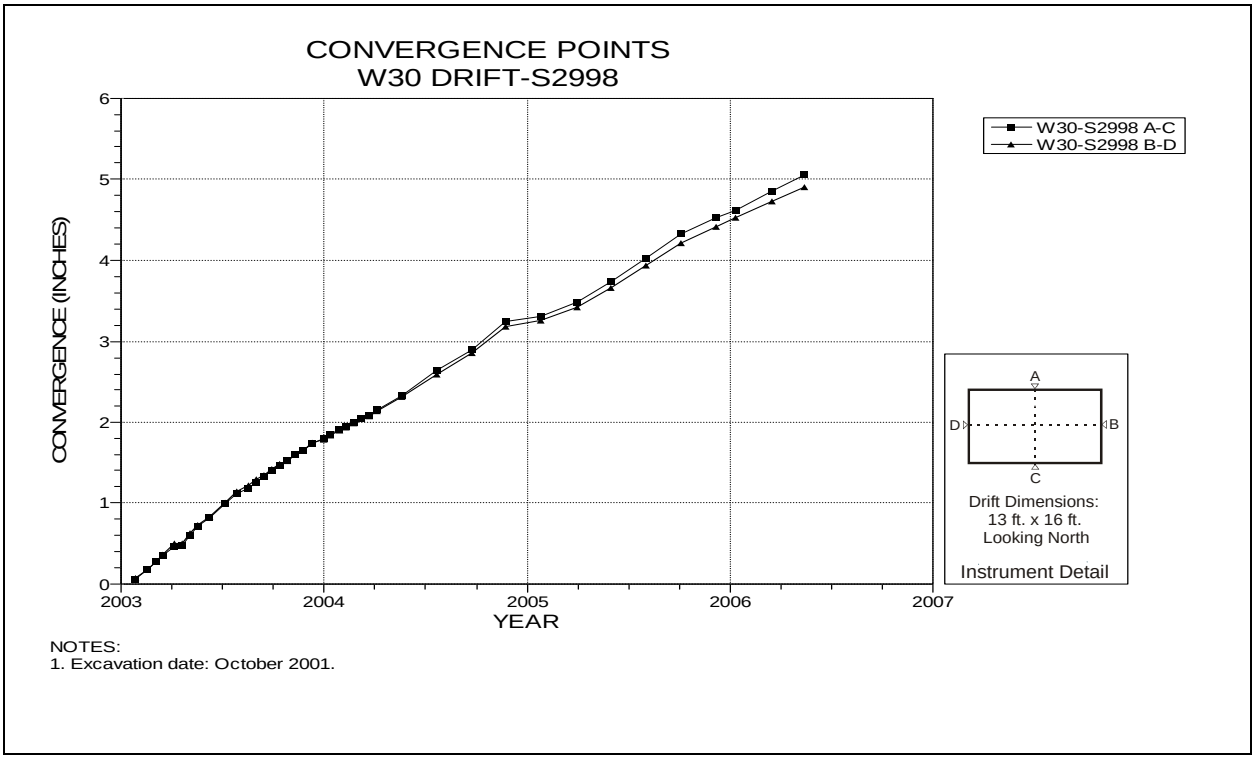


Figure 4-166 Convergence Point Array
W30 Drift at S2998 – All Chords

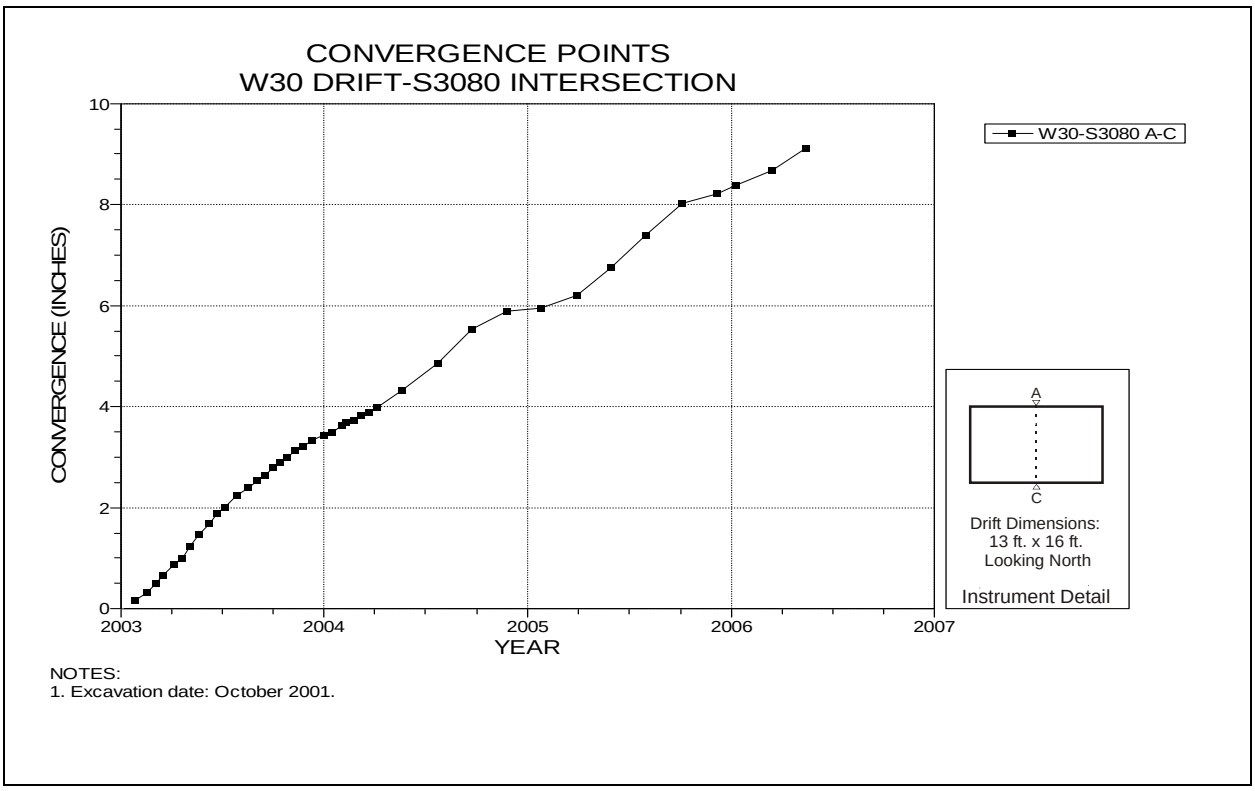


Figure 4-167 Convergence Point Array
W30 Drift at S3080 Drift Intersection – Roof to Floor

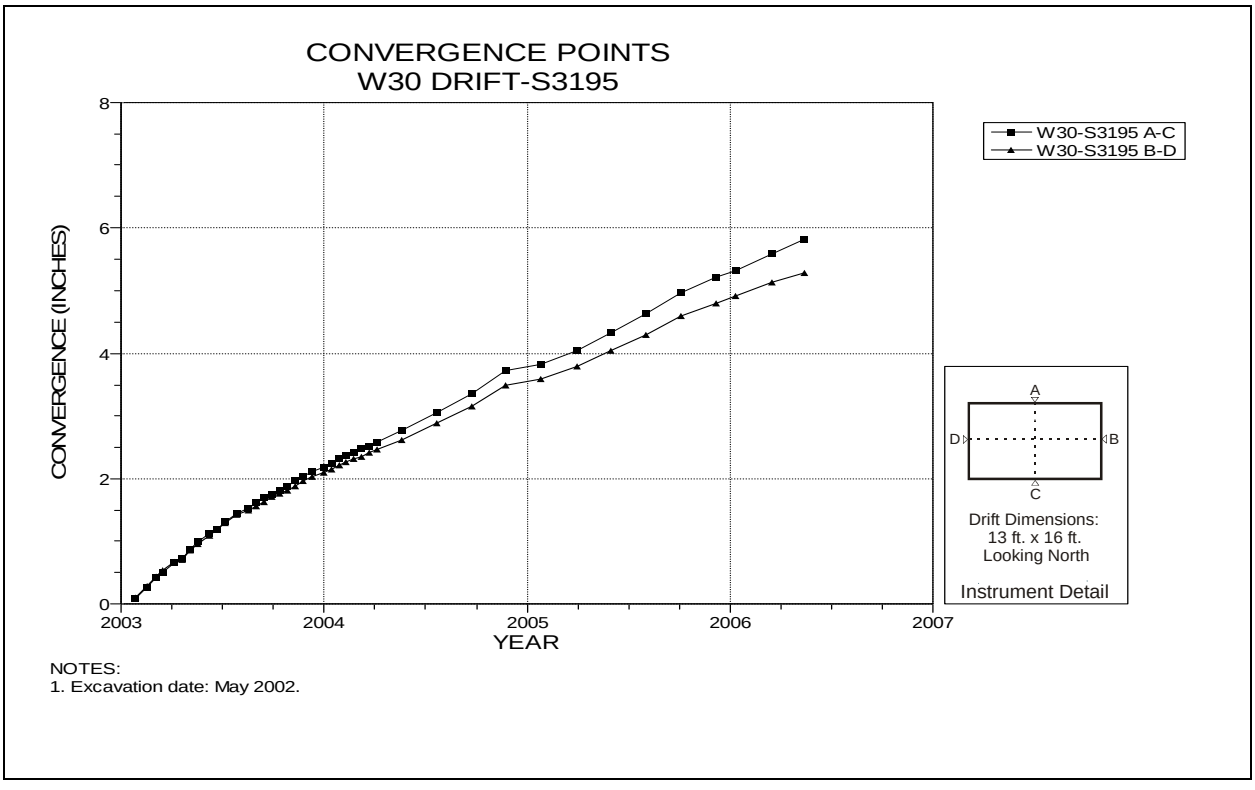


Figure 4-168 Convergence Point Array
W30 Drift at S3195 – All Chords

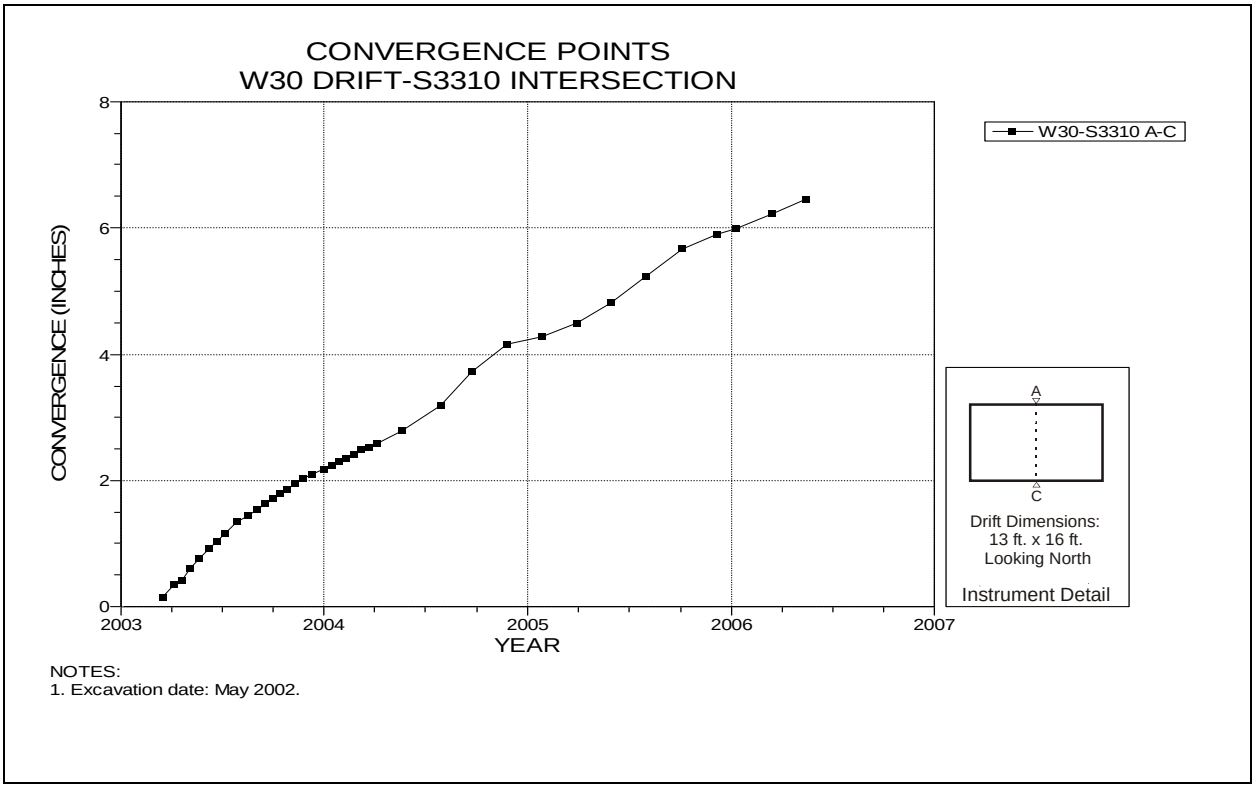


Figure 4-169 Convergence Point Array
W30 Drift at S3310 Drift Intersection – Roof to Floor

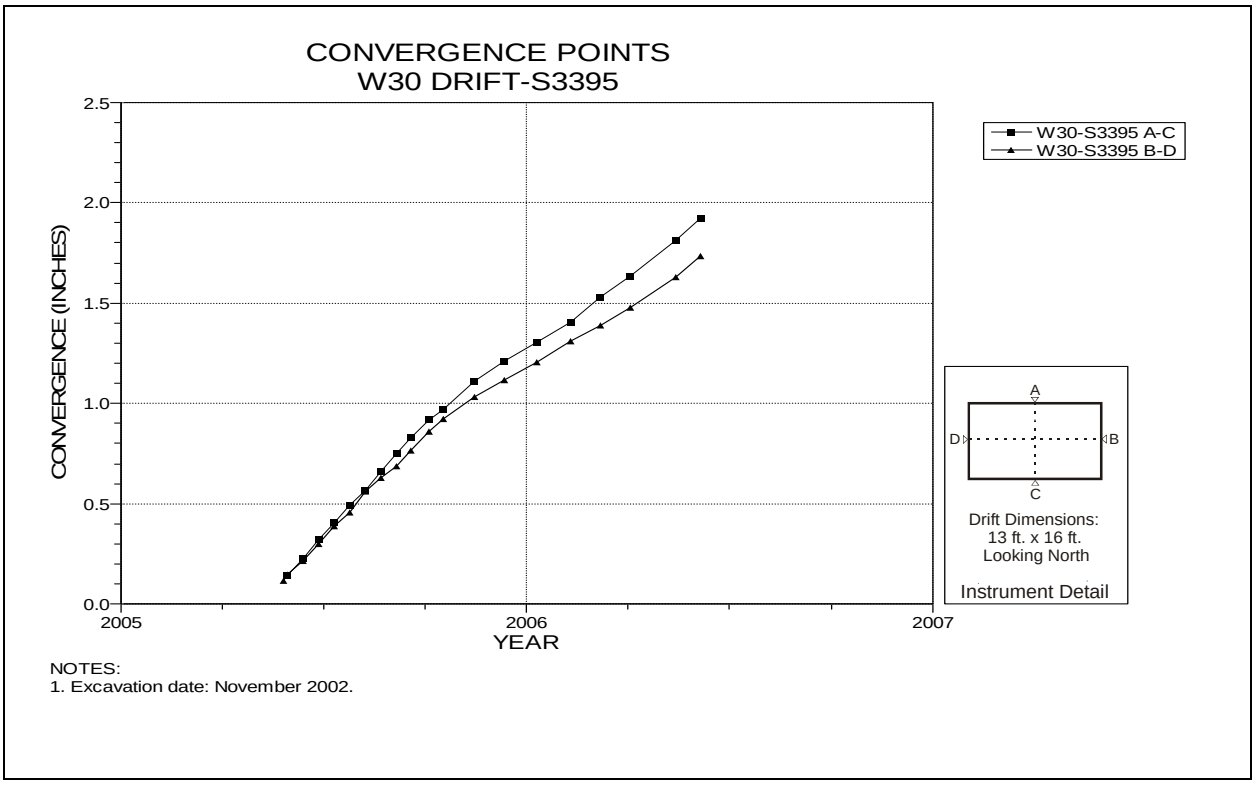


Figure 4-170 Convergence Point Array
W30 Drift at S3395 – All Chords

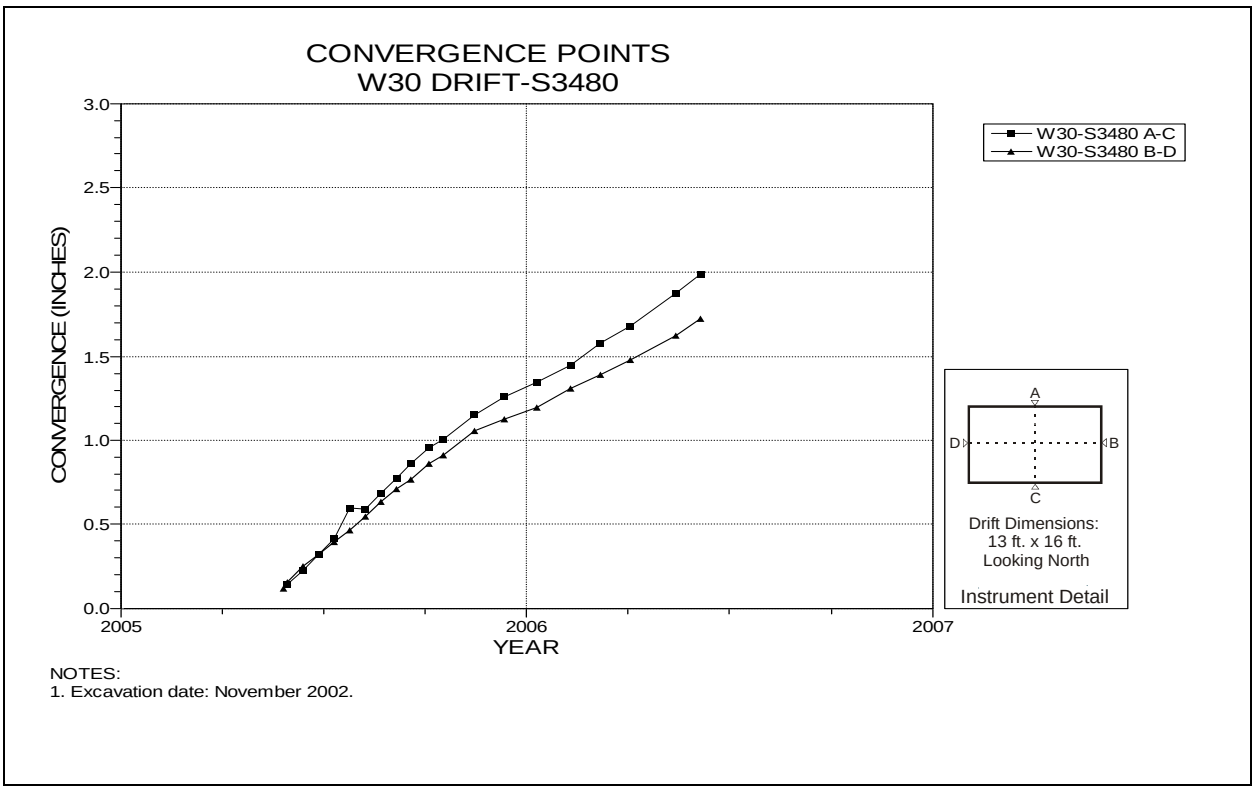


Figure 4-171 Convergence Point Array
W30 Drift at S3480 – All Chords

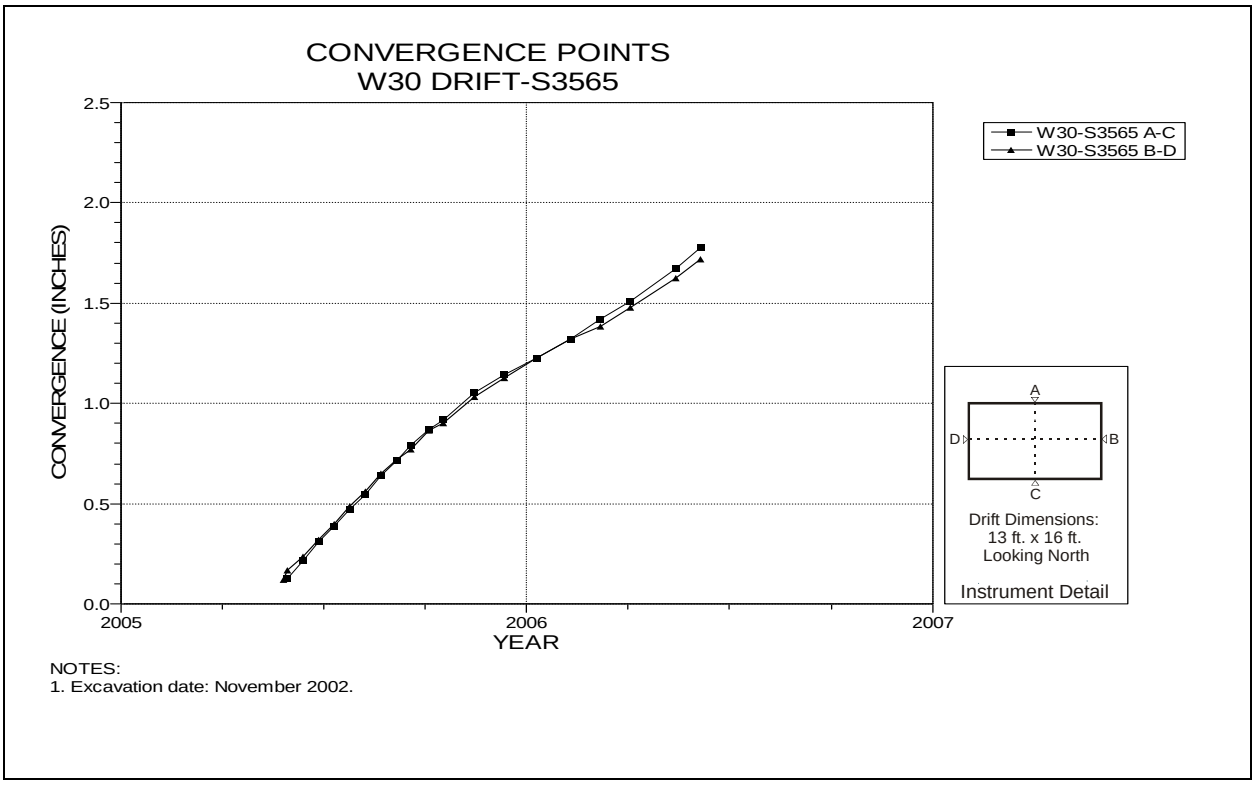


Figure 4-172 Convergence Point Array
W30 Drift at S3565 – All Chords

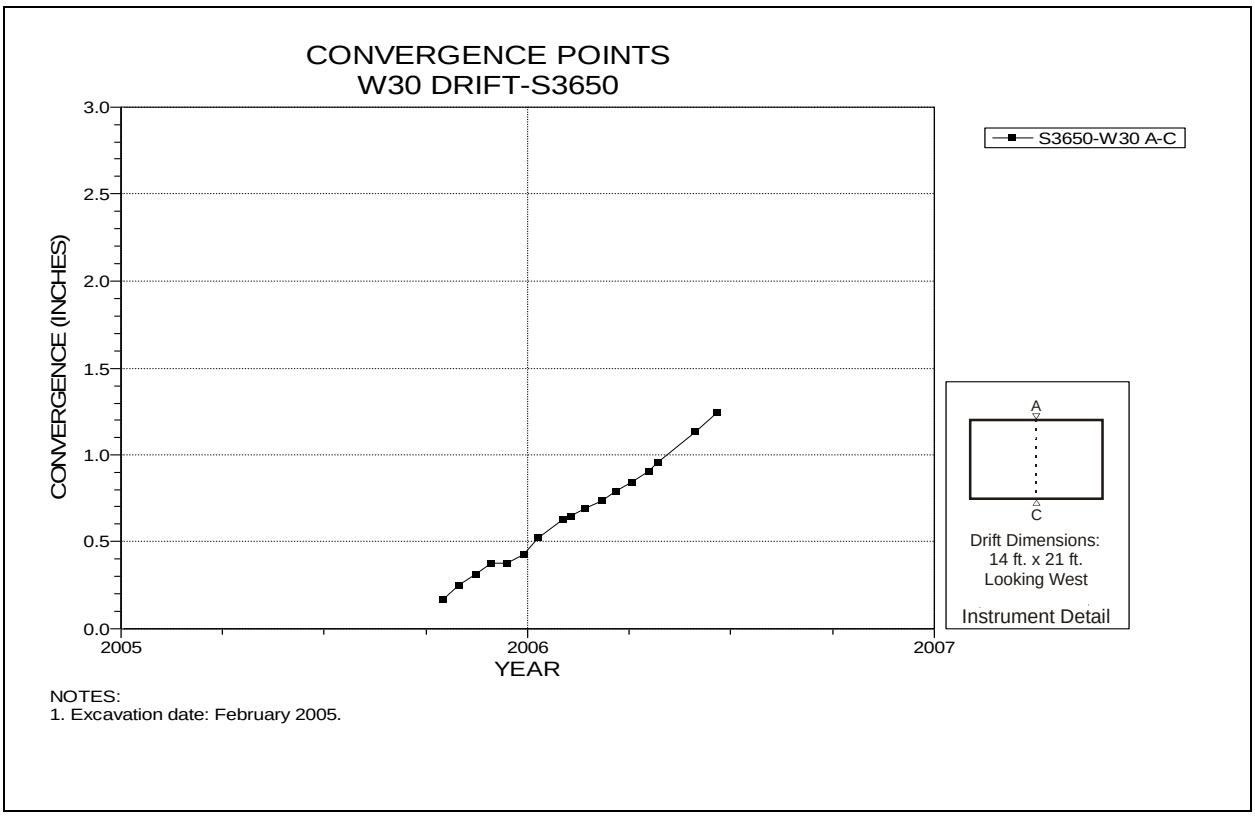


Figure 4-173 Convergence Point Array
W30 Drift at S3560 Drift Intersection – Roof to Floor

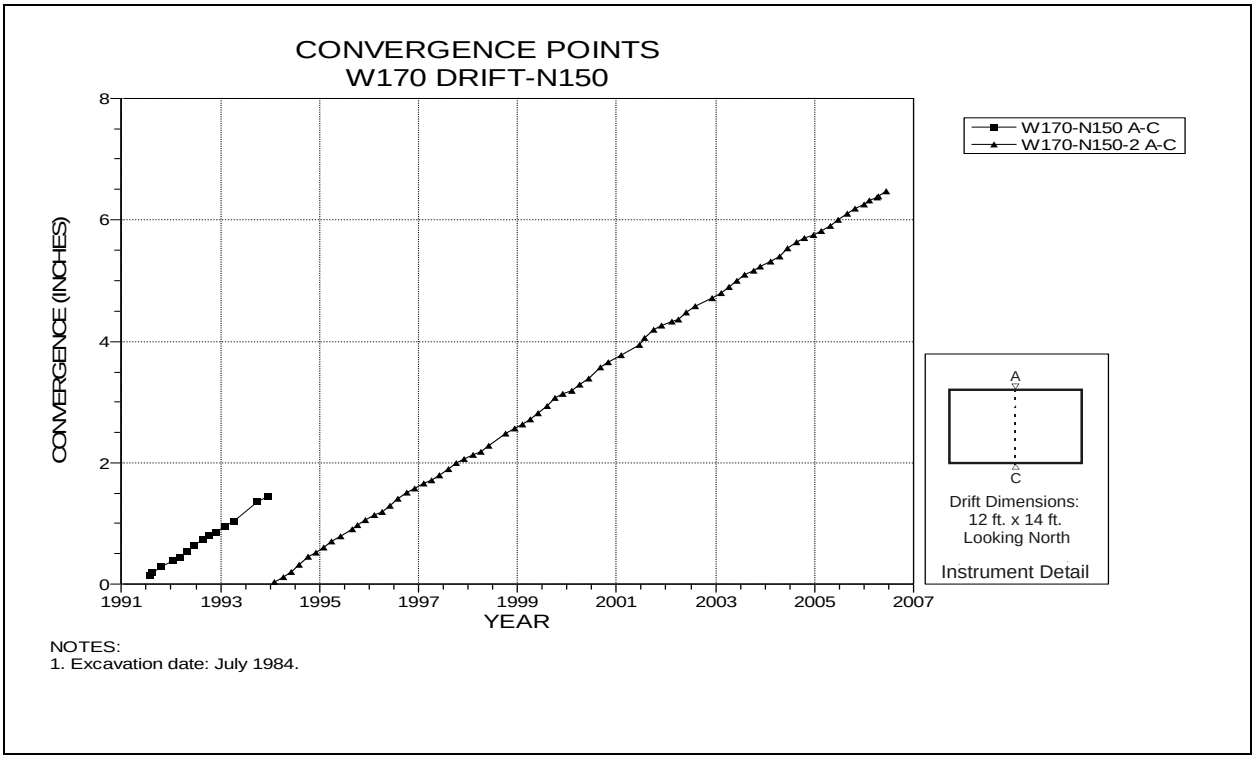


Figure 4-174 Convergence Point Array
W170 Drift at N150 Drift Intersection – Roof to Floor

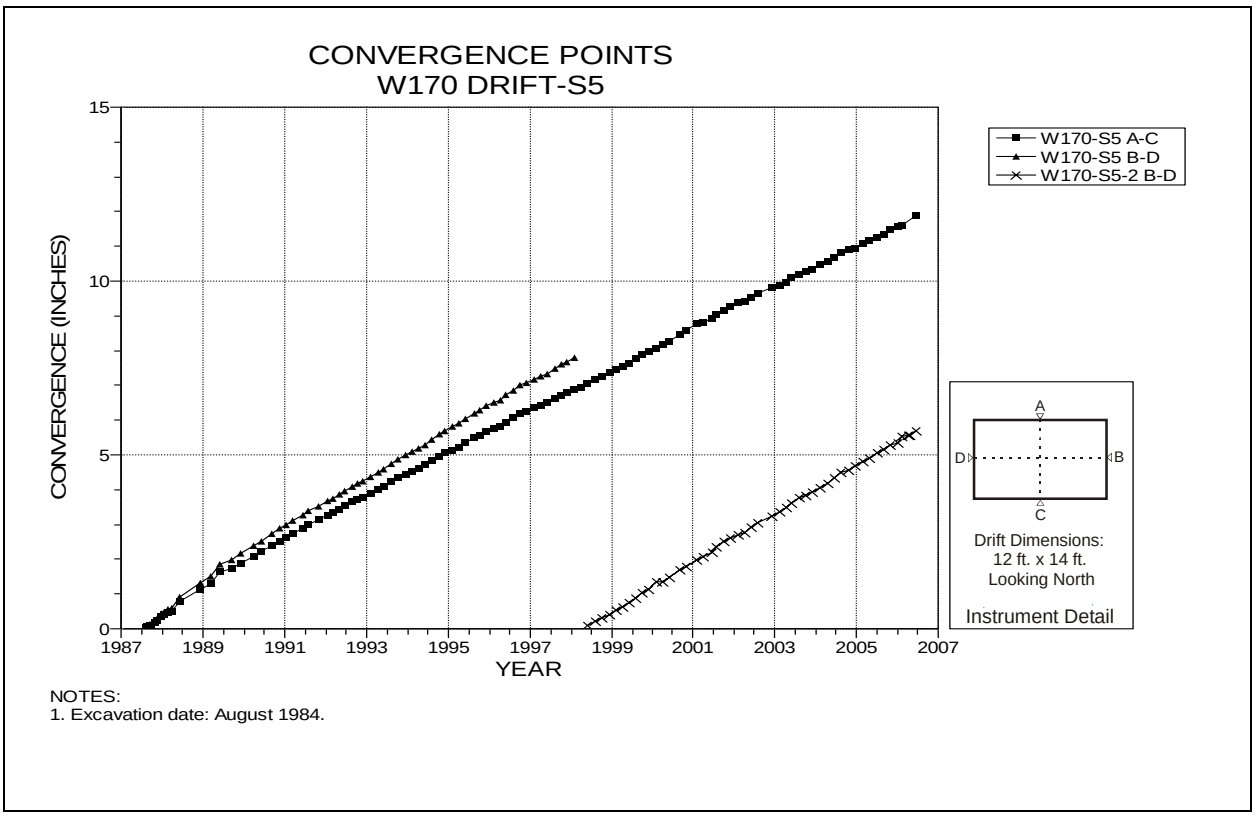


Figure 4-175 Convergence Point Array
W170 Drift at S5 – All Chords

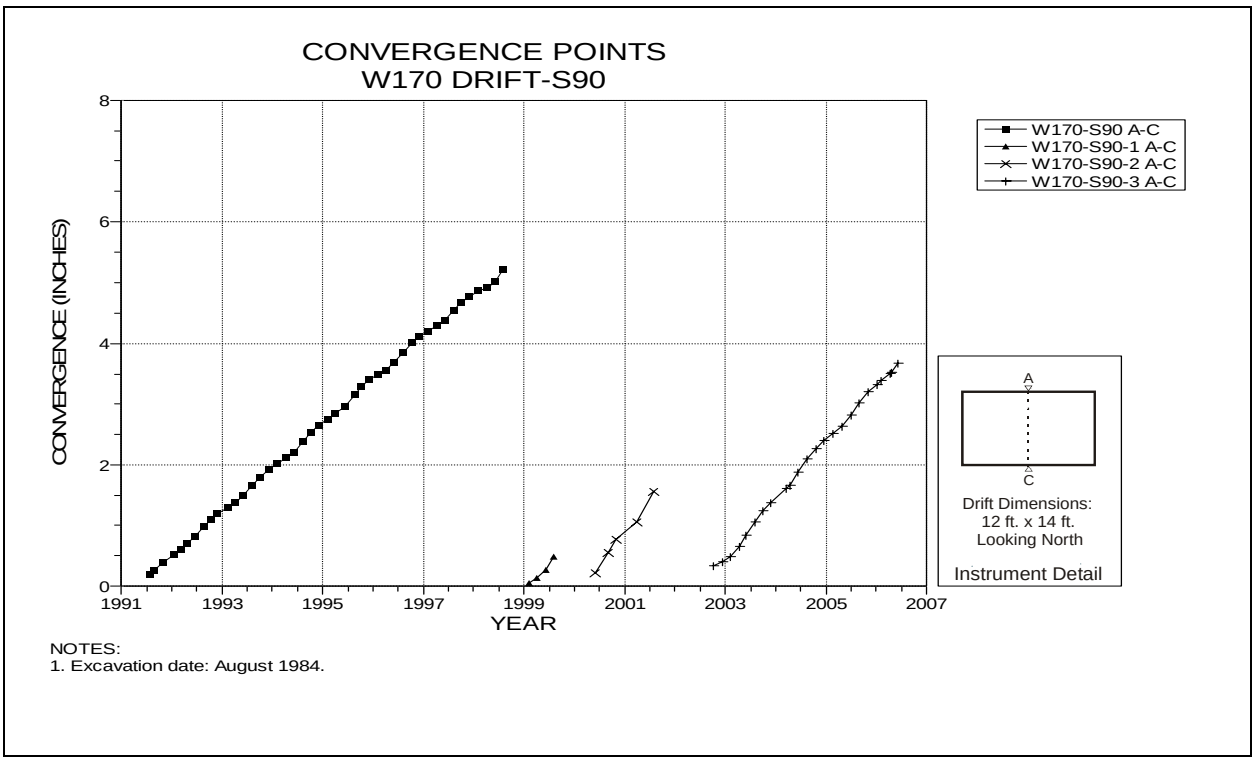


Figure 4-176 Convergence Point Array
W170 Drift at S90 – Roof to Floor

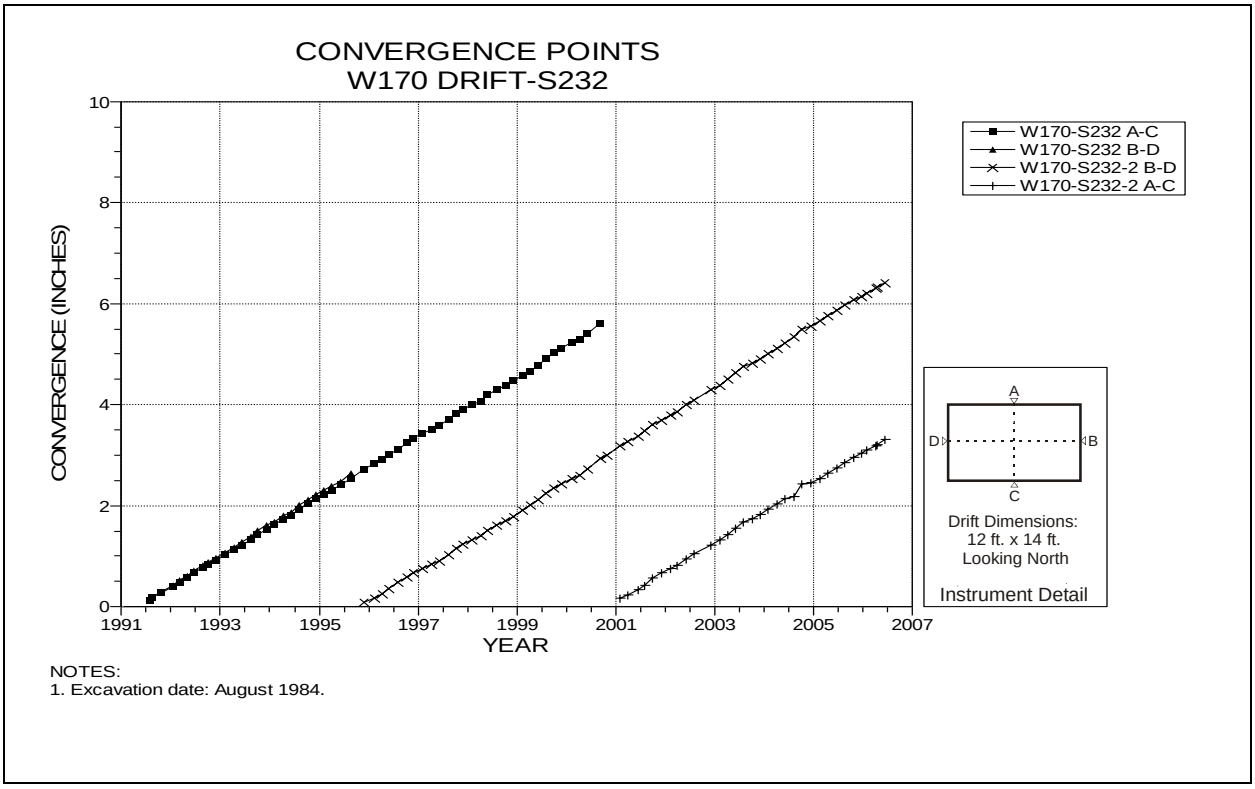


Figure 4-177 Convergence Point Array
W170 Drift at S232 – All Chords

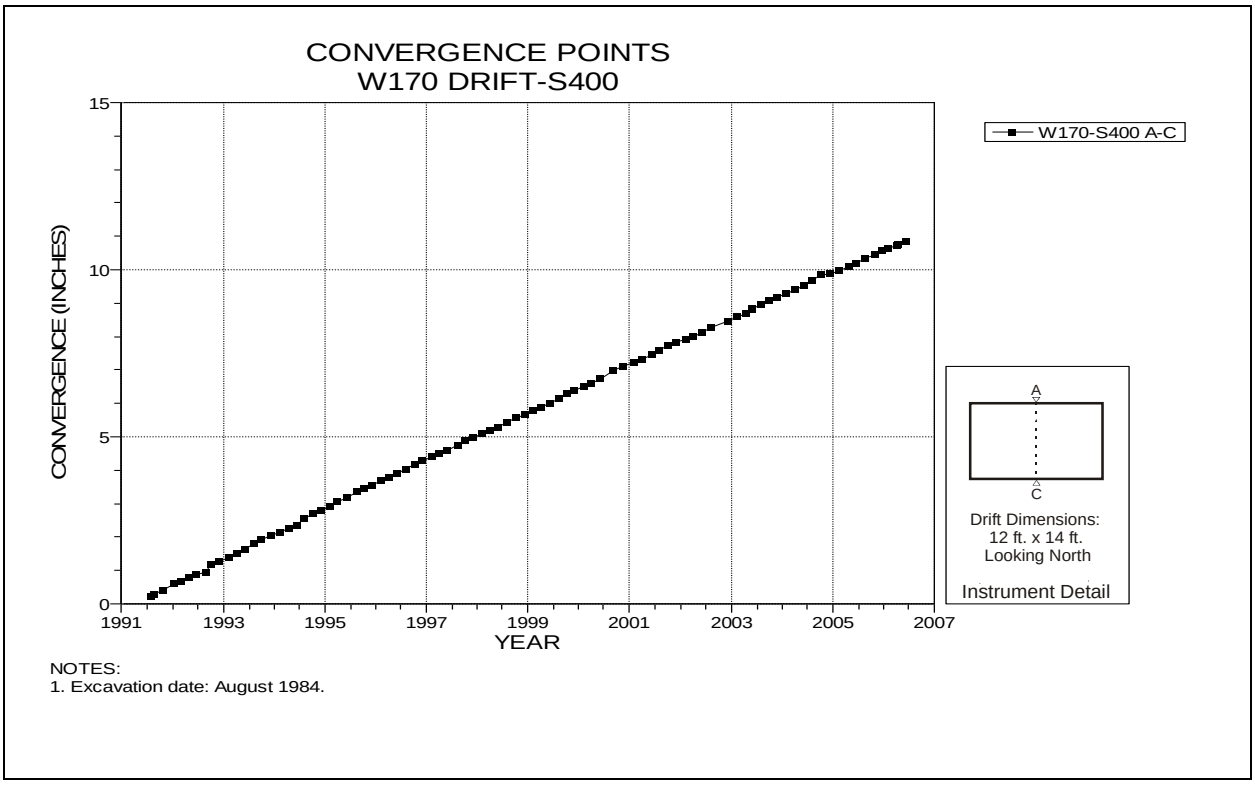
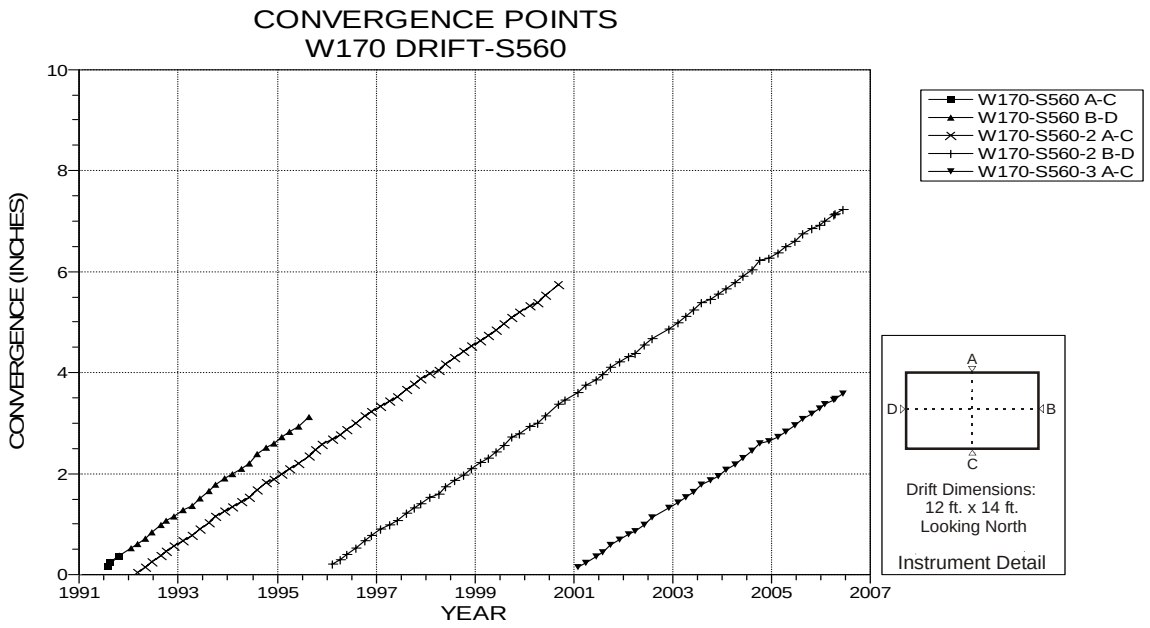
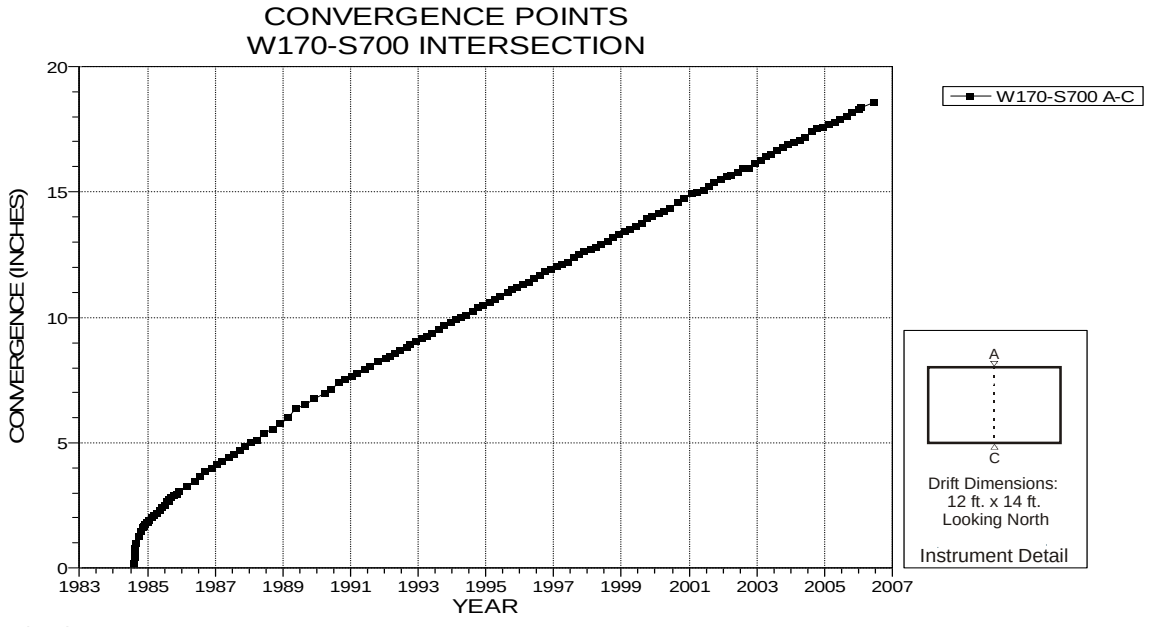


Figure 4-178 Convergence Point Array
W170 Drift at S400 Drift Intersection – Roof to Floor



NOTES:
1. Excavation date: August 1984.

Figure 4-179 Convergence Point Array
W170 Drift at S560 – All Chords



NOTES:
1. Excavation date: August 1984.

Figure 4-180 Convergence Point Array
W170 Drift at S700 Drift Intersection – Roof to Floor

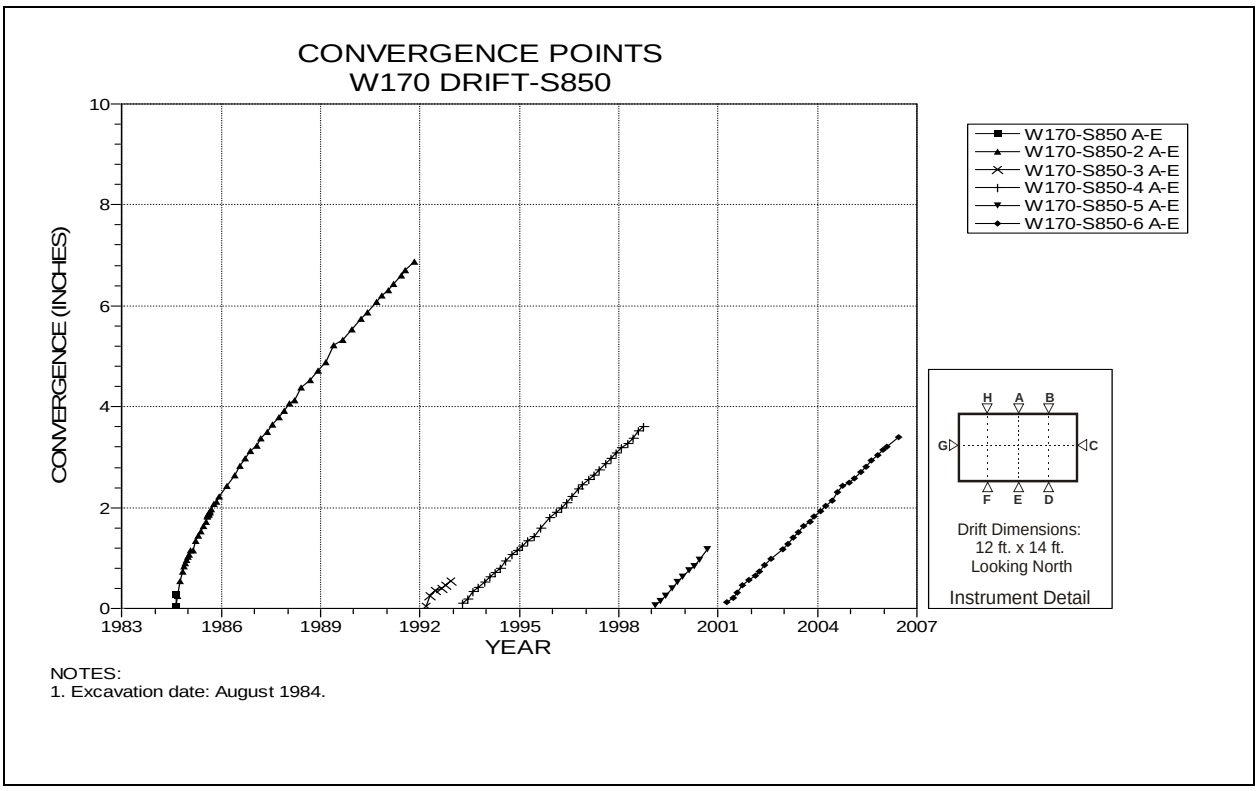


Figure 4-181 Convergence Point Array
W170 Drift at S850 – Roof to Floor – Centerline

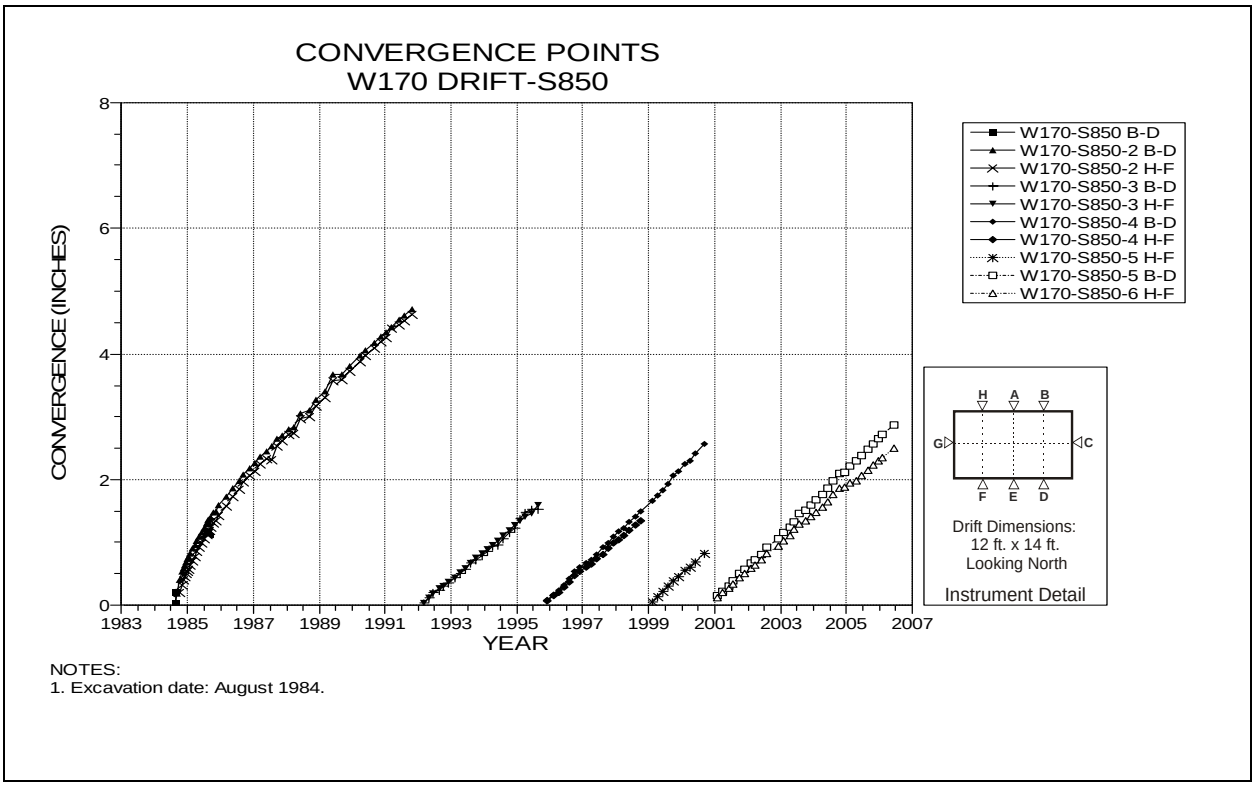


Figure 4-182 Convergence Point Array
W170 Drift at S850 – Roof to Floor – Quarter Points

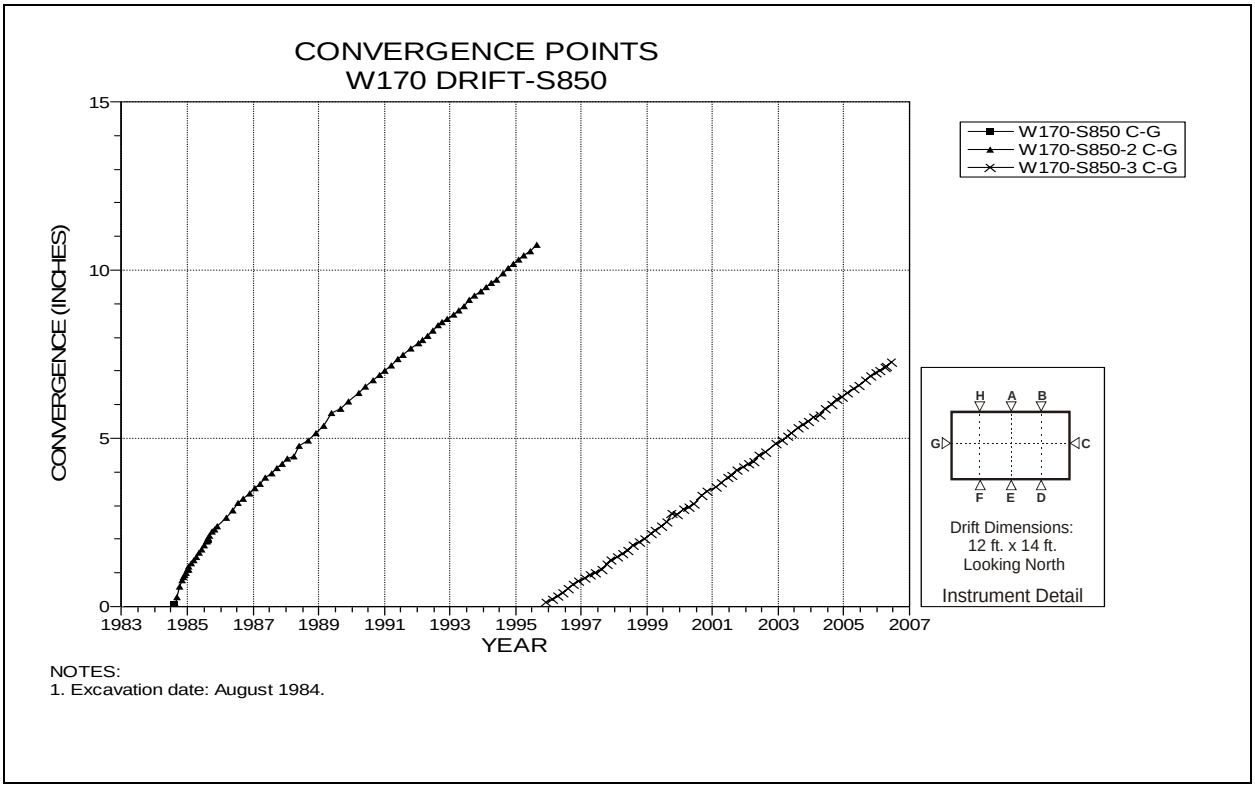


Figure 4-183 Convergence Point Array
W170 Drift at S850 – Rib to Rib

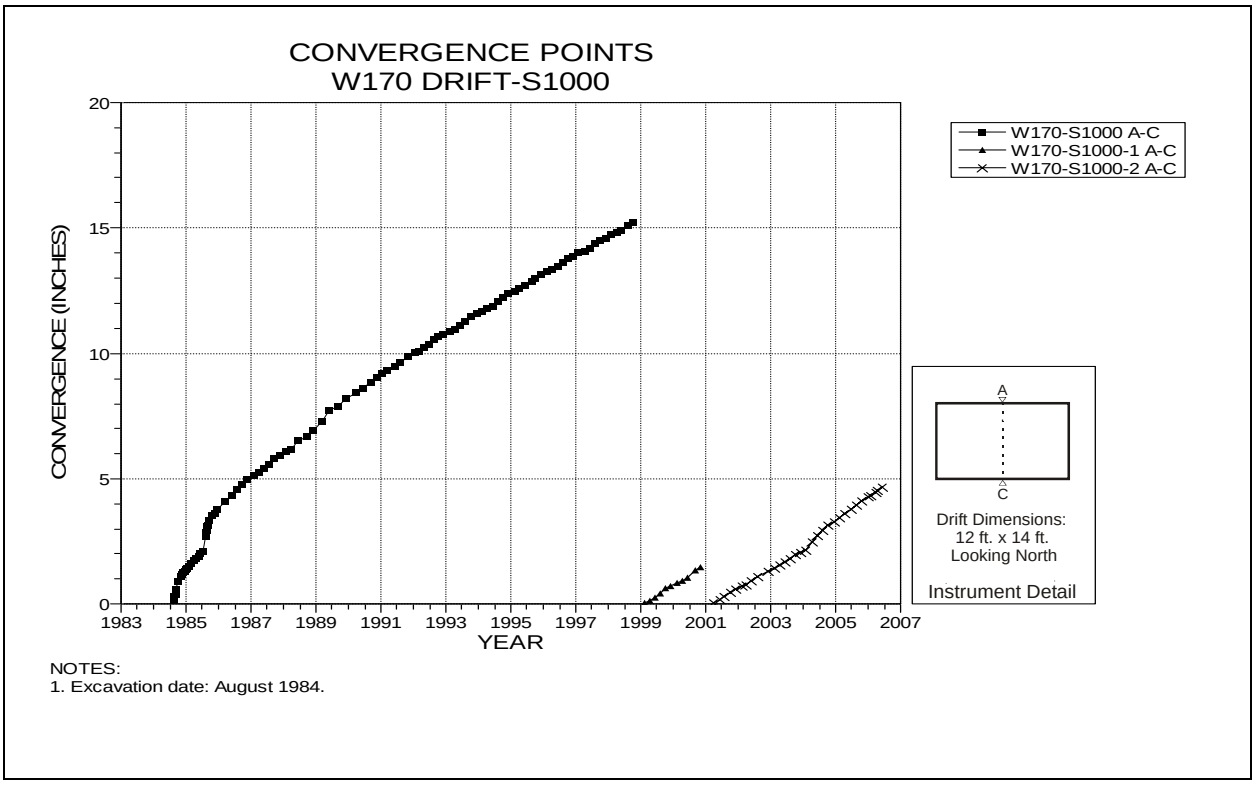


Figure 4-184 Convergence Point Array
W170 Drift at S1000 – Roof to Floor

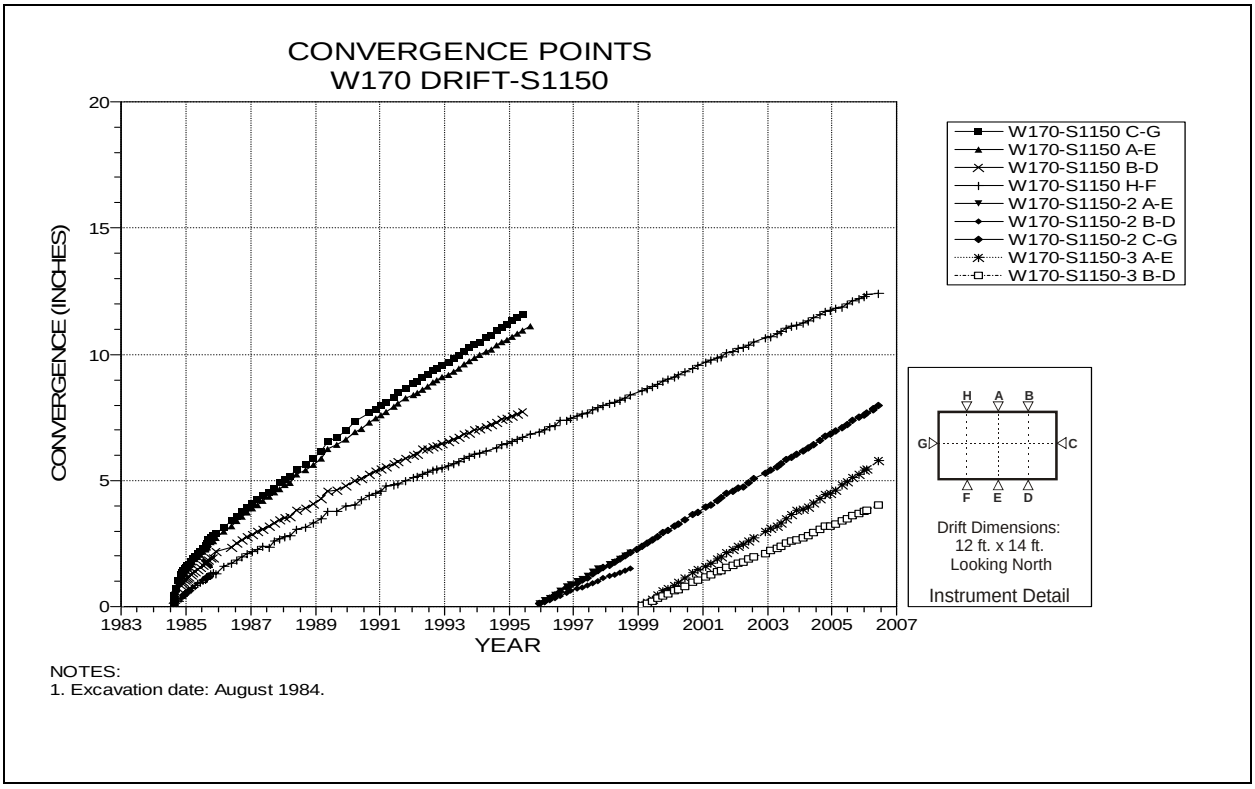


Figure 4-185 Convergence Point Array
W170 Drift at S1150 – All Chords

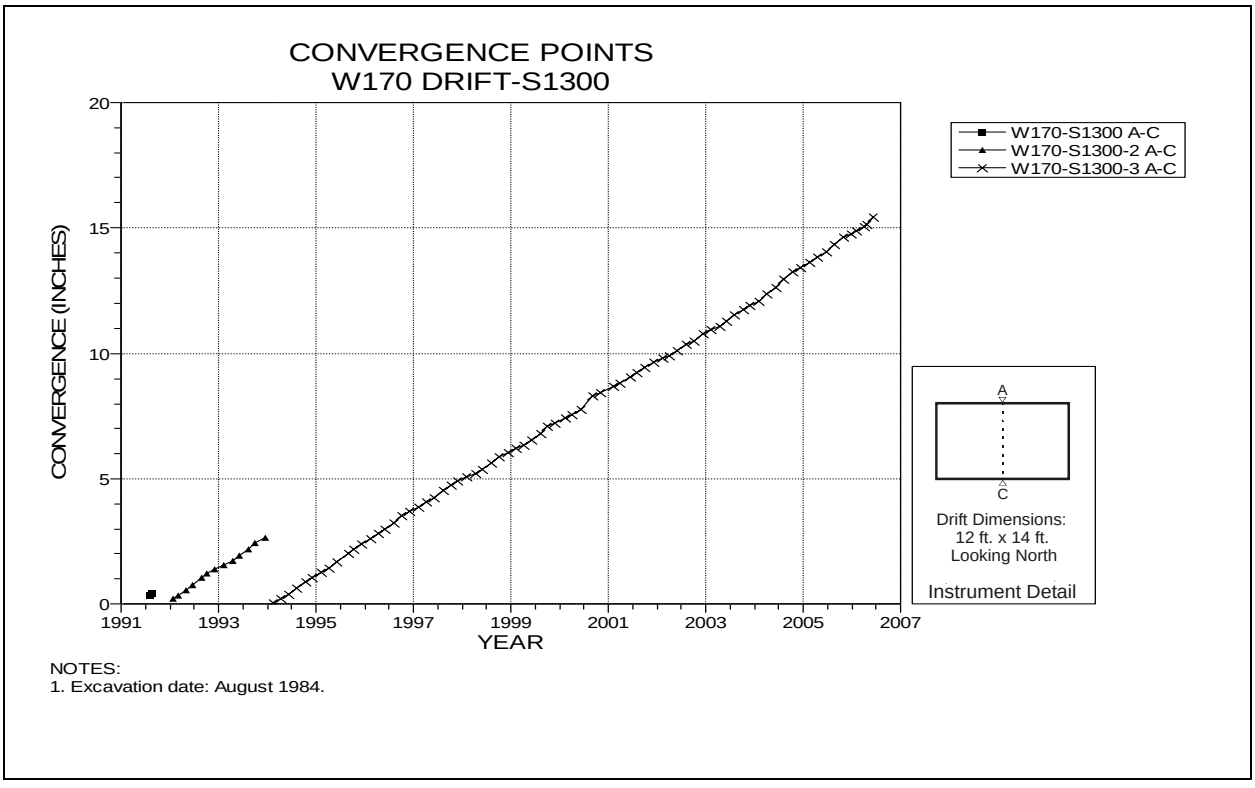


Figure 4-186 Convergence Point Array
W170 Drift at S1300 Drift Intersection – Roof to Floor

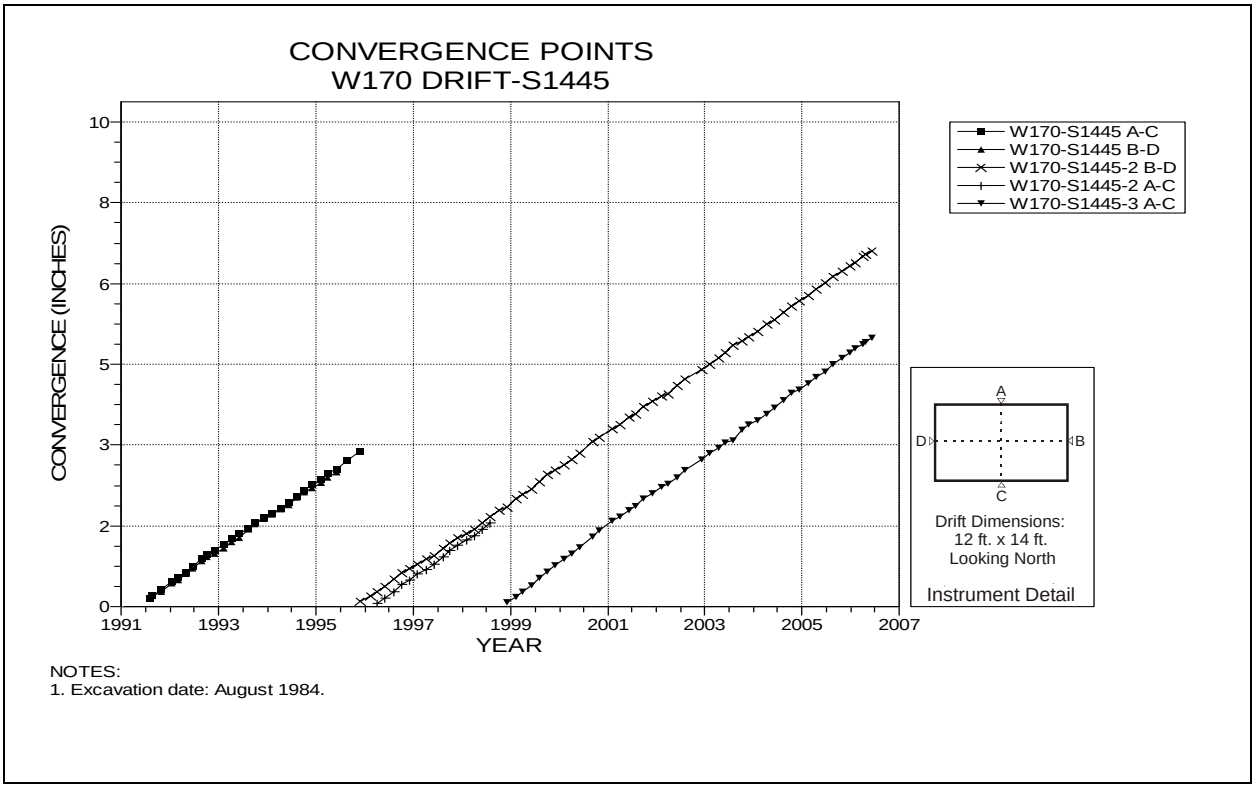


Figure 4-187 Convergence Point Array
W170 Drift at S1445 – All Chords

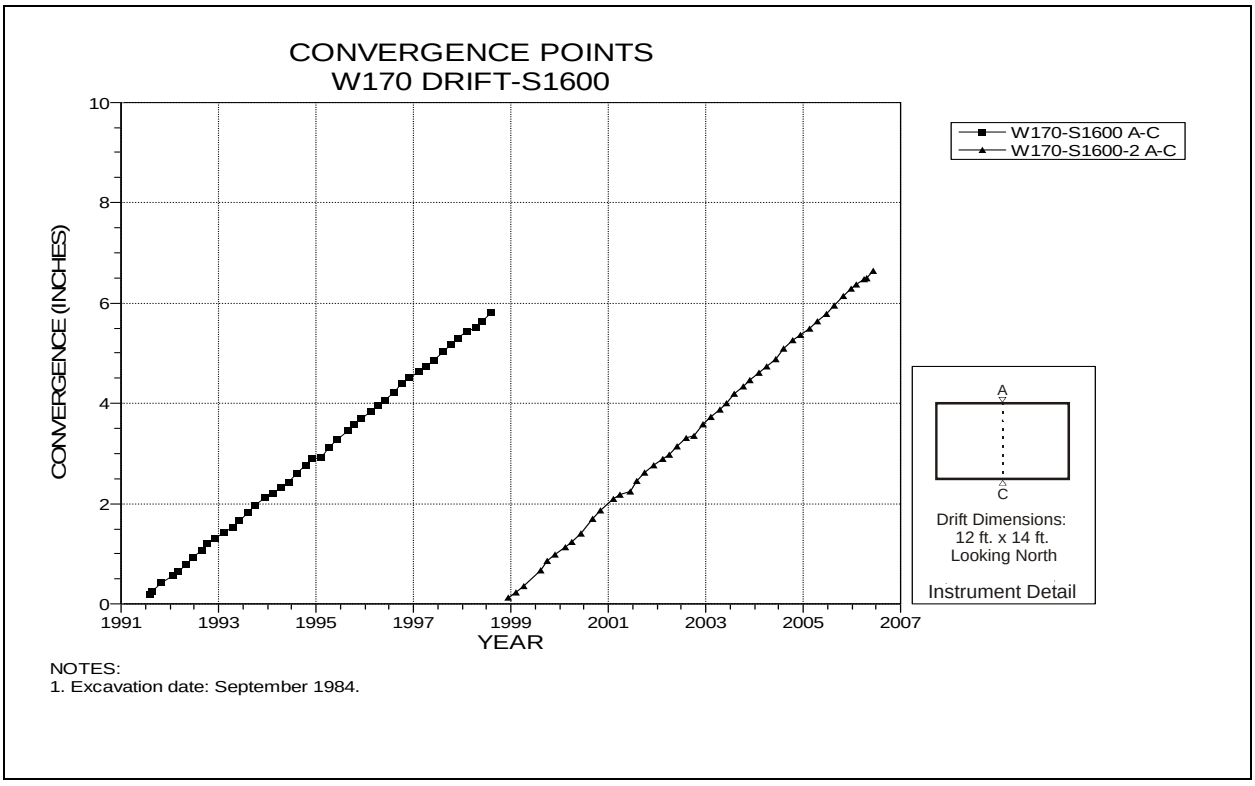
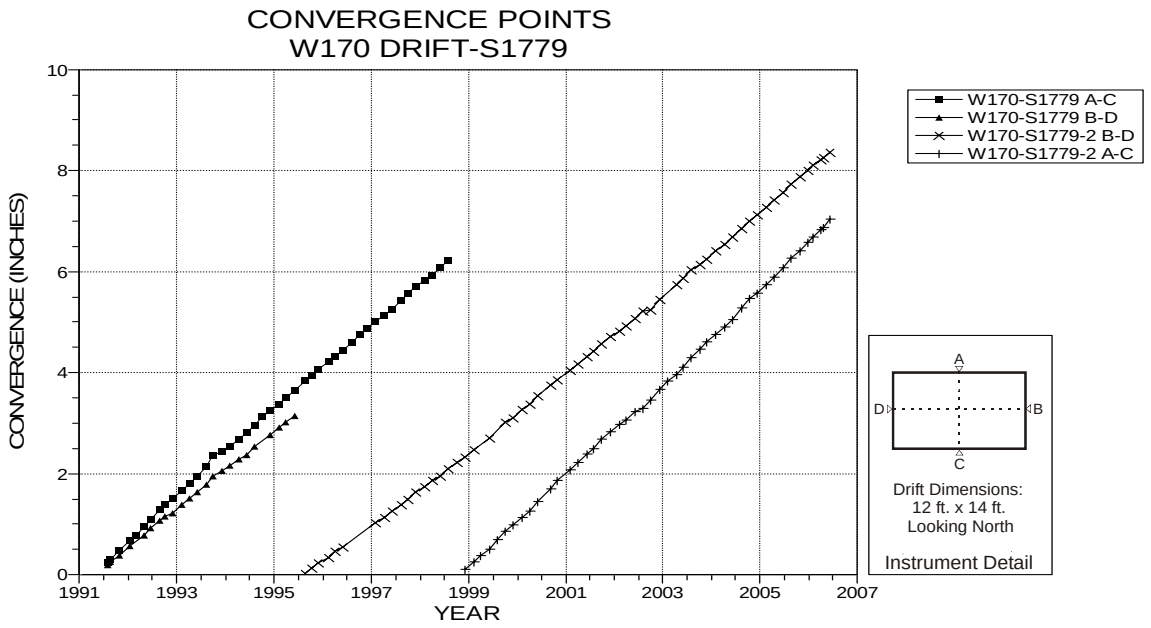
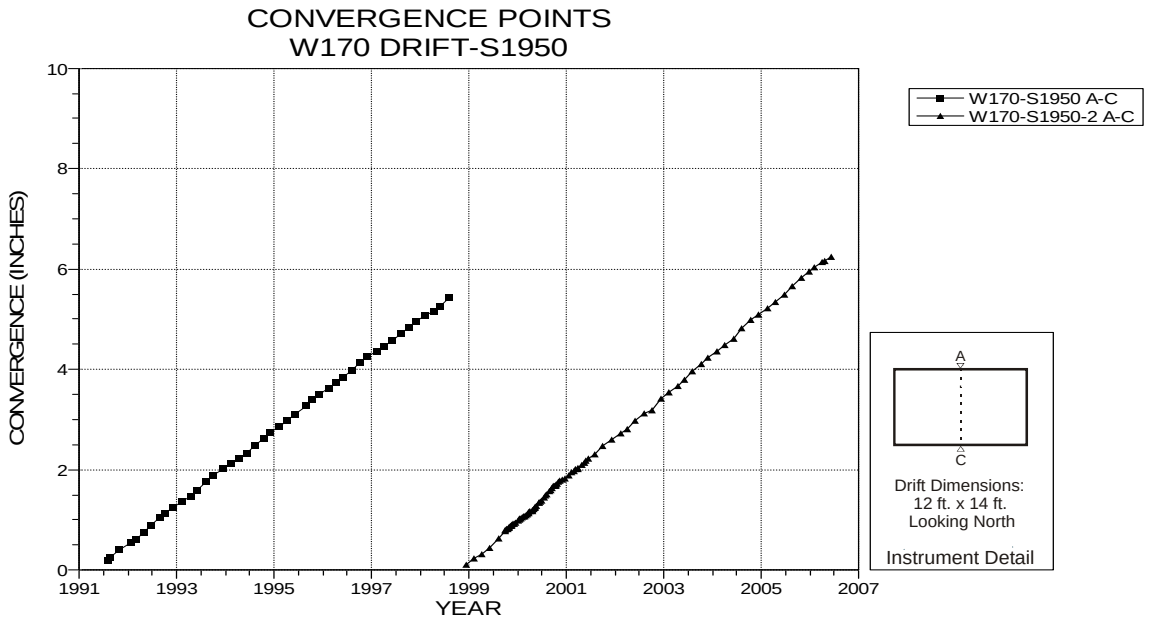


Figure 4-188 Convergence Point Array
W170 Drift at S1600 Drift Intersection – Roof to Floor



NOTES:
1. Excavation date: December 1985.

Figure 4-189 Convergence Point Array
W170 Drift at S1779 – All Chords



NOTES:
1. Excavation date: December 1985.

Figure 4-190 Convergence Point Array
W170 Drift at S1950 Drift Intersection – Roof to Floor

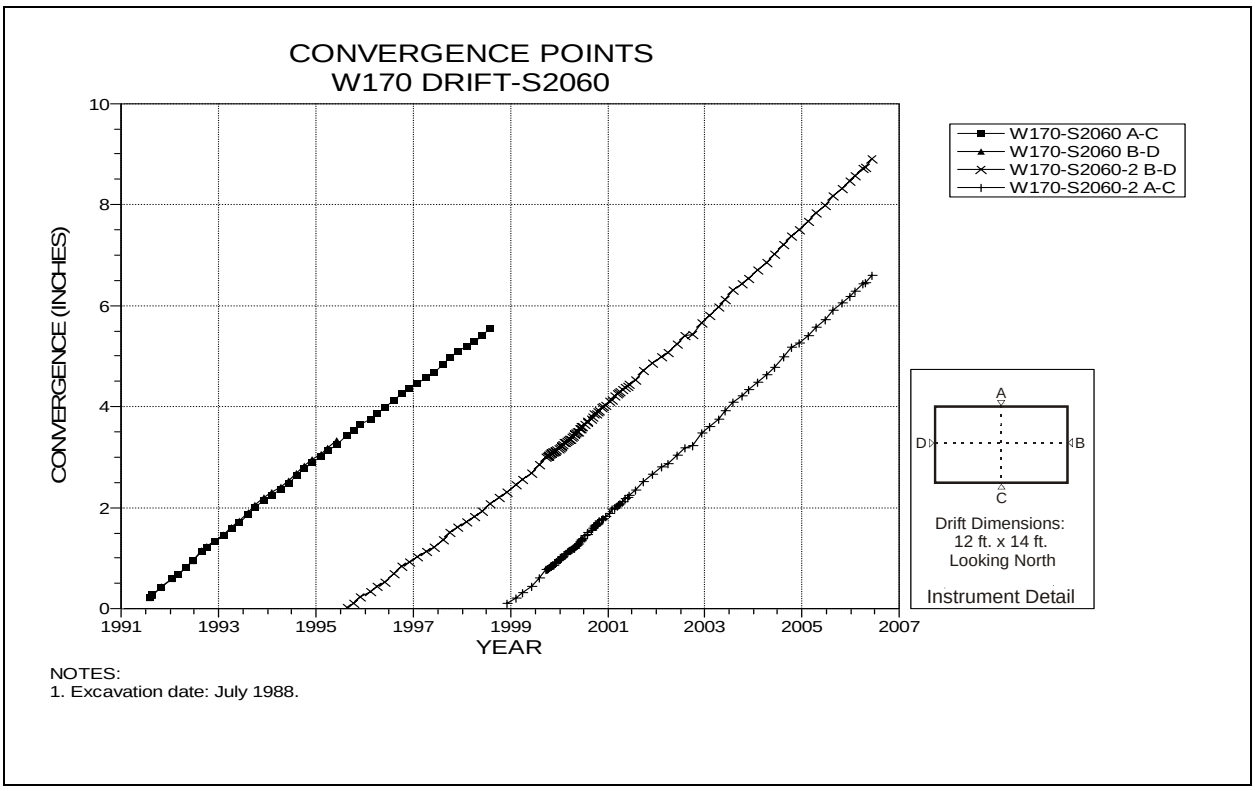


Figure 4-191 Convergence Point Array
W170 Drift at S2060 – All Chords

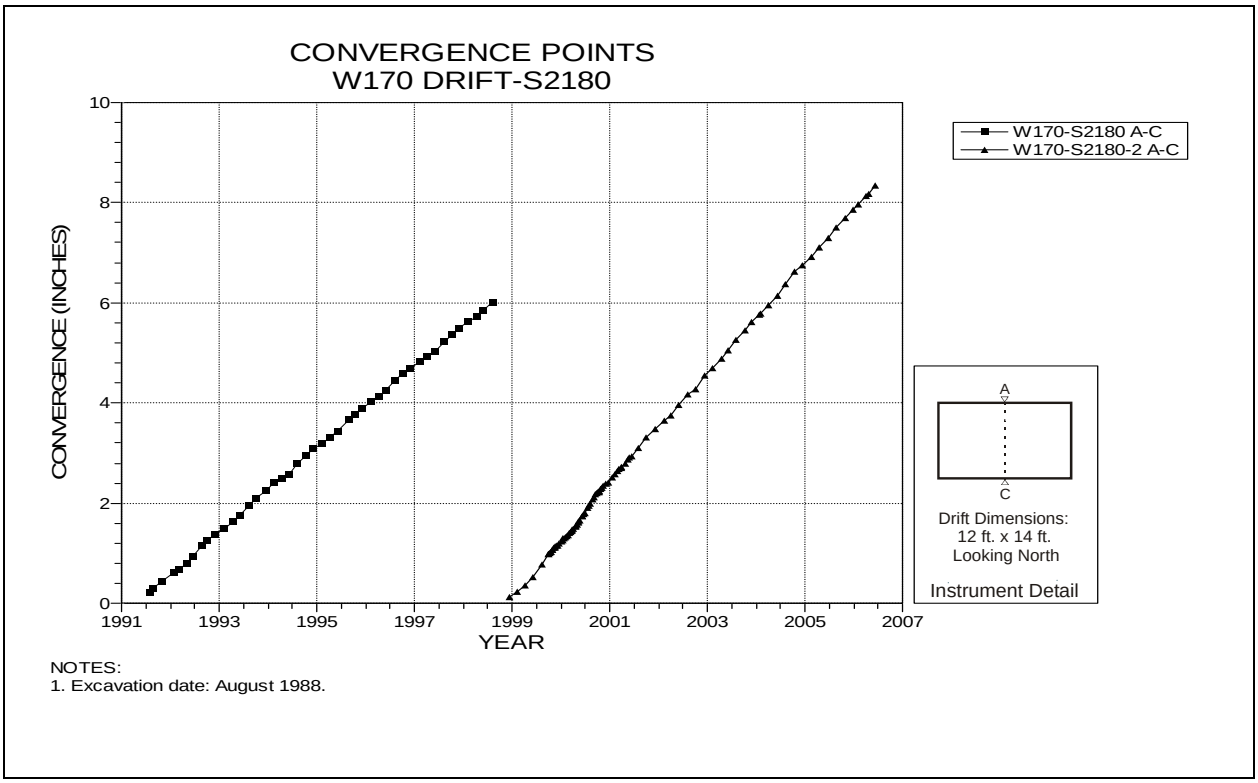


Figure 4-192 Convergence Point Array
W170 Drift at S2180 Drift Intersection – Roof to Floor

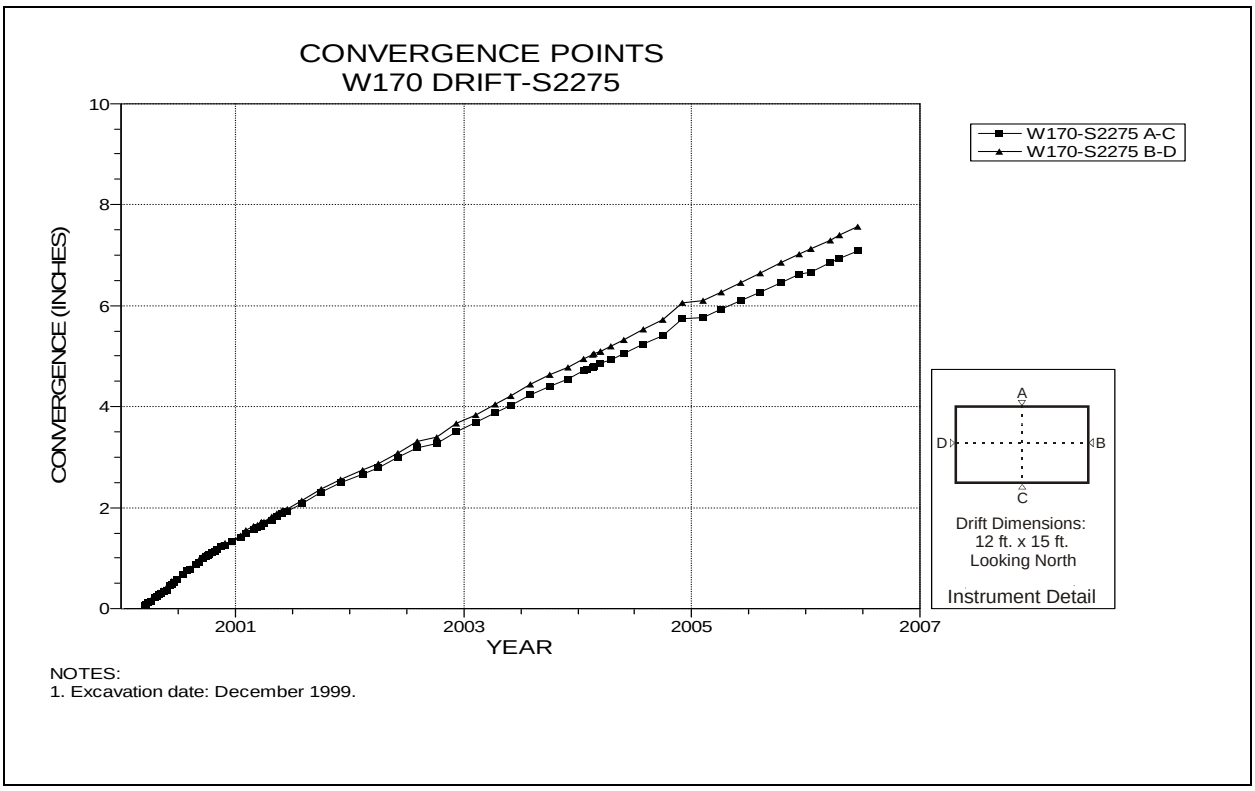


Figure 4-193 Convergence Point Array
W170 Drift at S2275 – All Chords

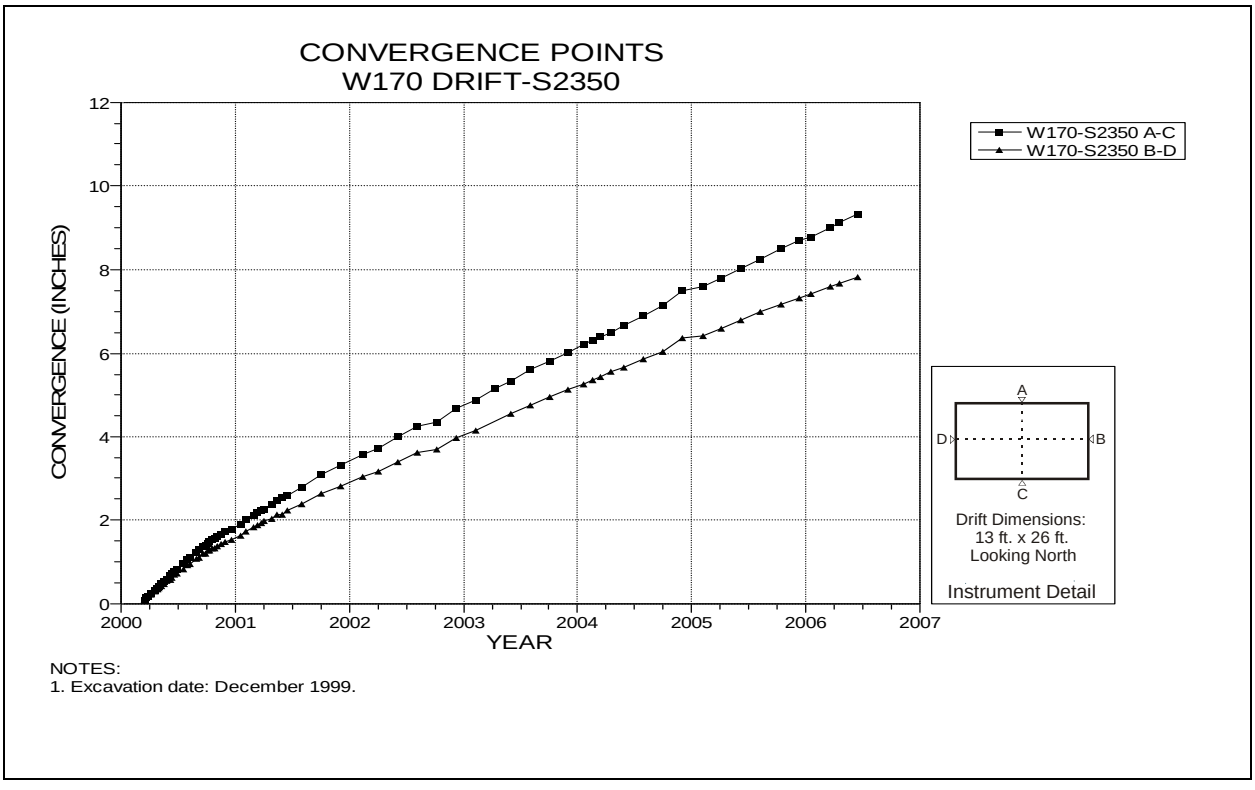


Figure 4-194 Convergence Point Array
W170 Drift at S2350 – All Chords

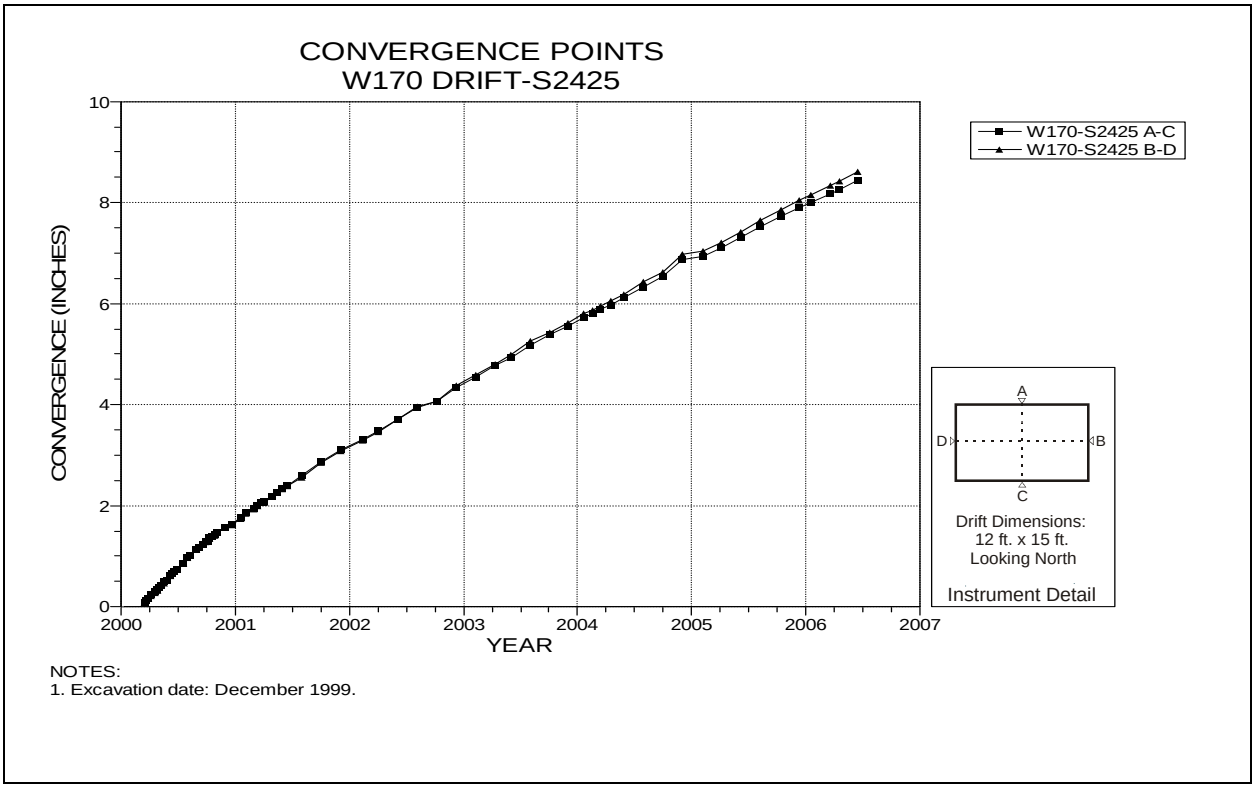


Figure 4-195 Convergence Point Array
W170 Drift at S2425 – All Chords

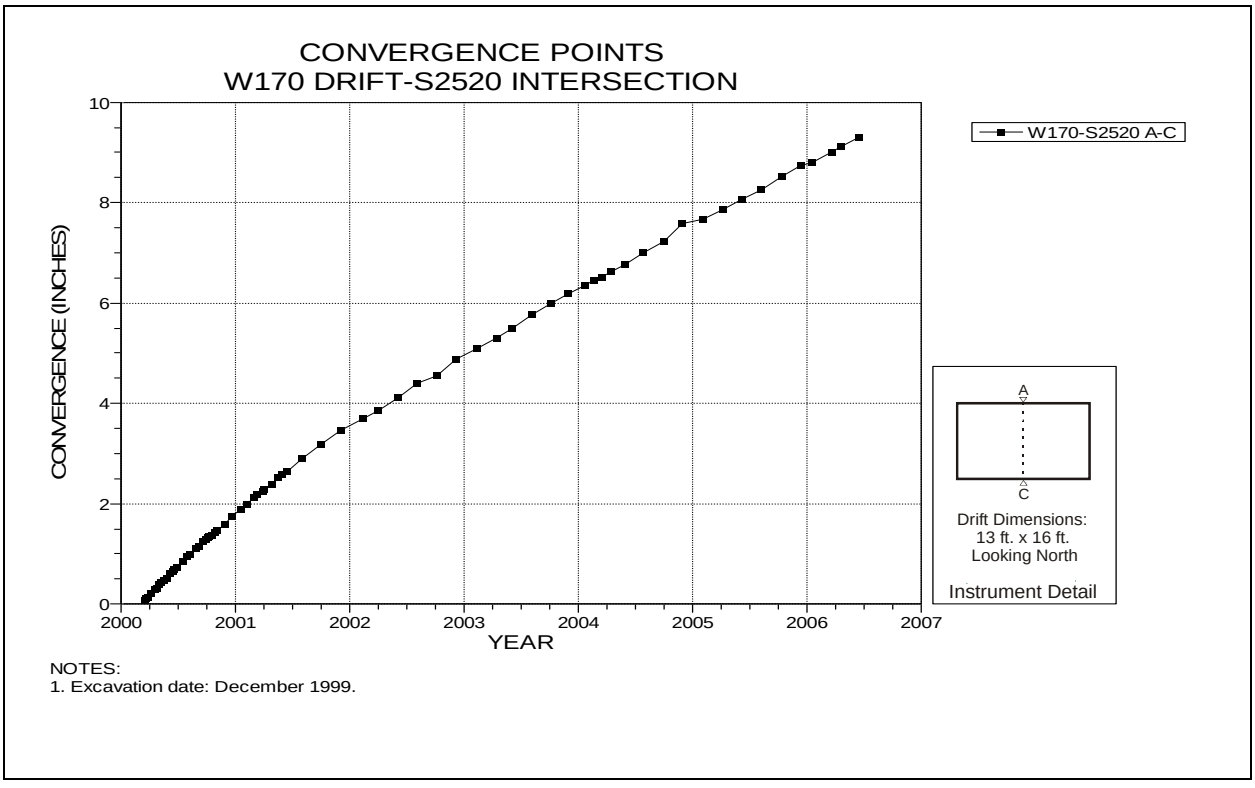
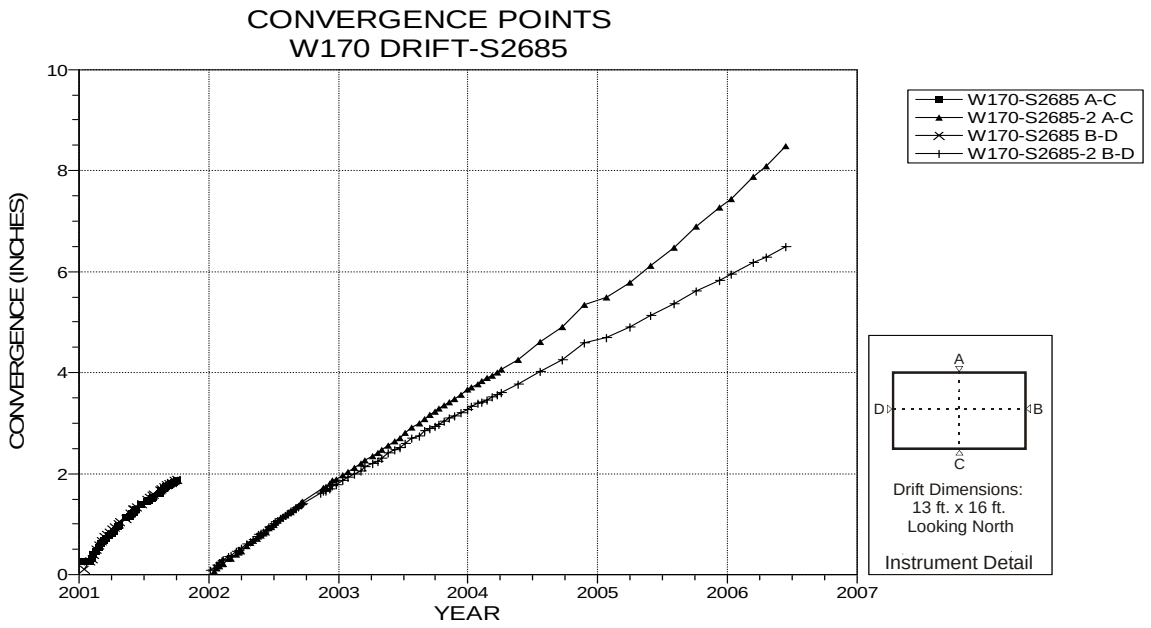
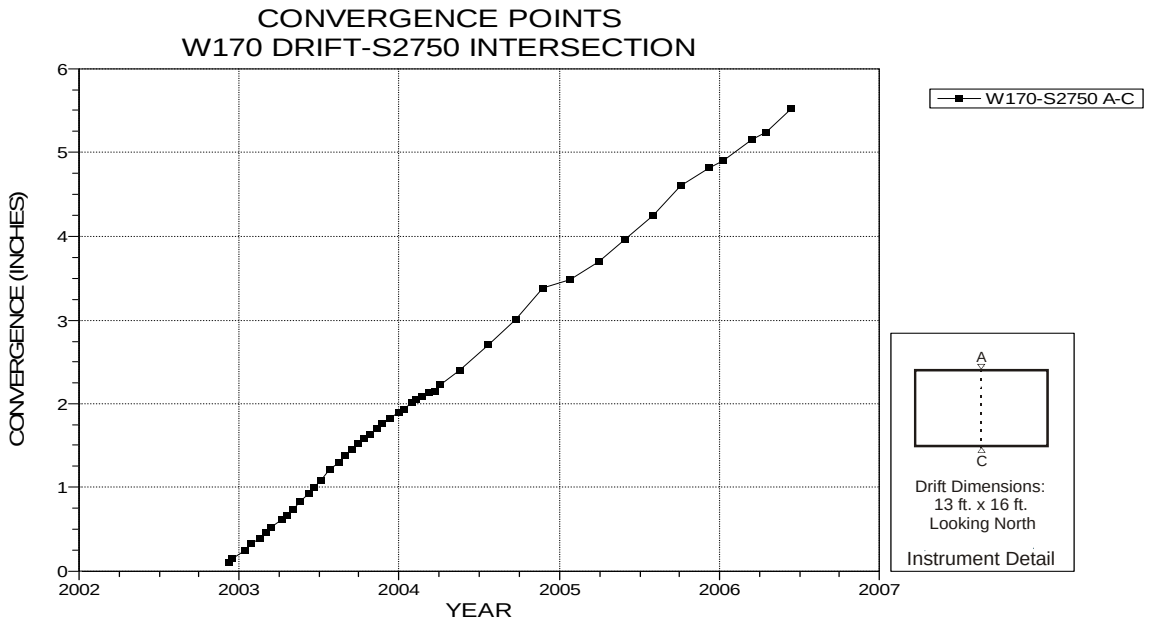


Figure 4-196 Convergence Point Array
W170 Drift at S2520 Drift Intersection – Roof to Floor



NOTES:
1. Excavation date: November 2000.

Figure 4-197 Convergence Point Array
W170 Drift at S2685 – All Chords



NOTES:
1. Excavation date: November 2000.

Figure 4-198 Convergence Point Array
W170 Drift at S2750 Drift Intersection – Roof to Floor

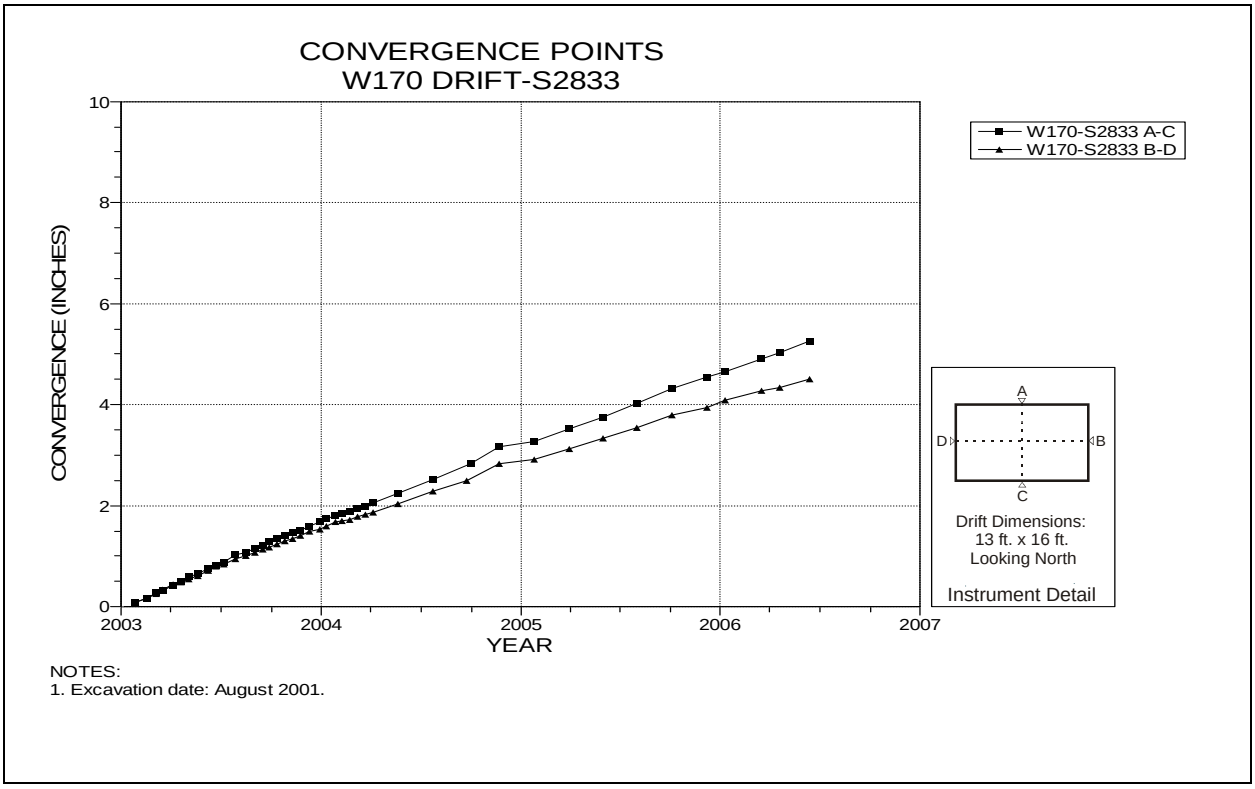


Figure 4-199 Convergence Point Array
W170 Drift at S2833 – All Chords

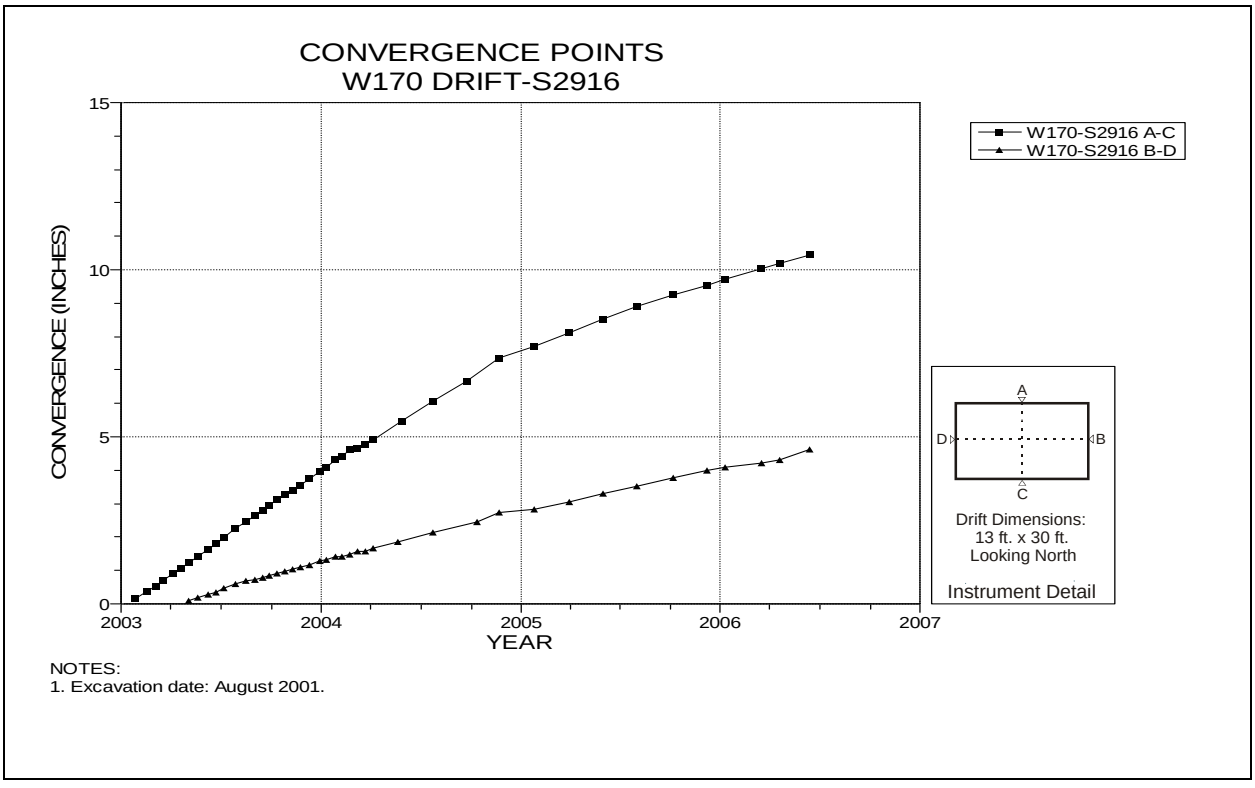


Figure 4-200 Convergence Point Array
W170 Drift at S2916 – All Chords

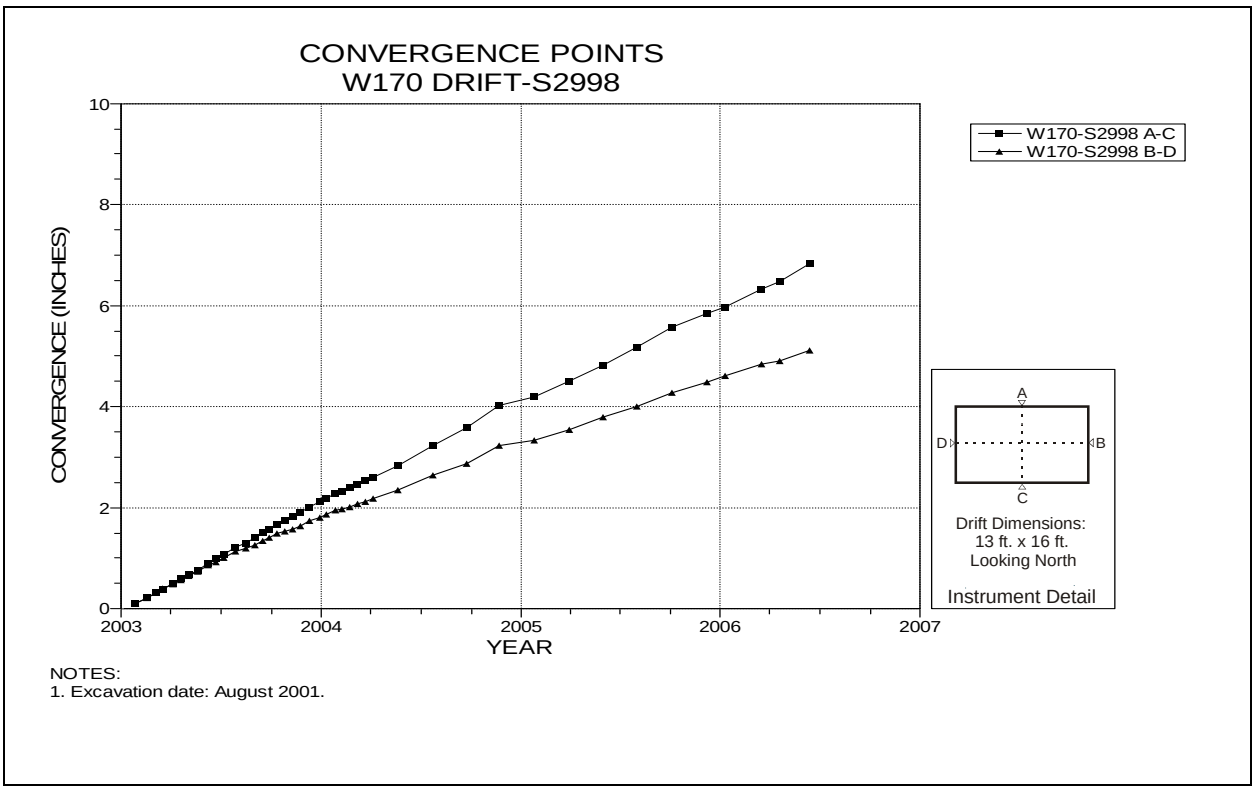


Figure 4-201 Convergence Point Array
W170 Drift at S2998 – All Chords

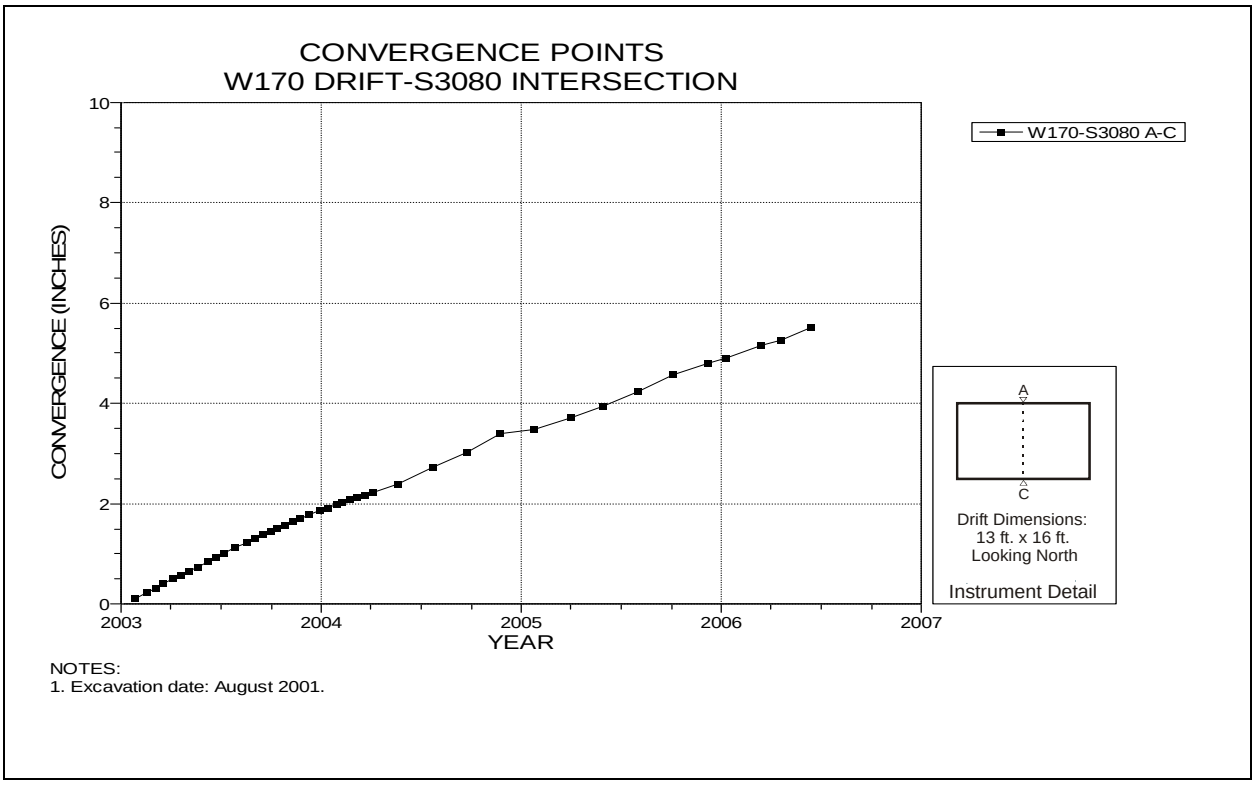


Figure 4-202 Convergence Point Array
W170 Drift at S3080 Drift Intersection – Roof to Floor

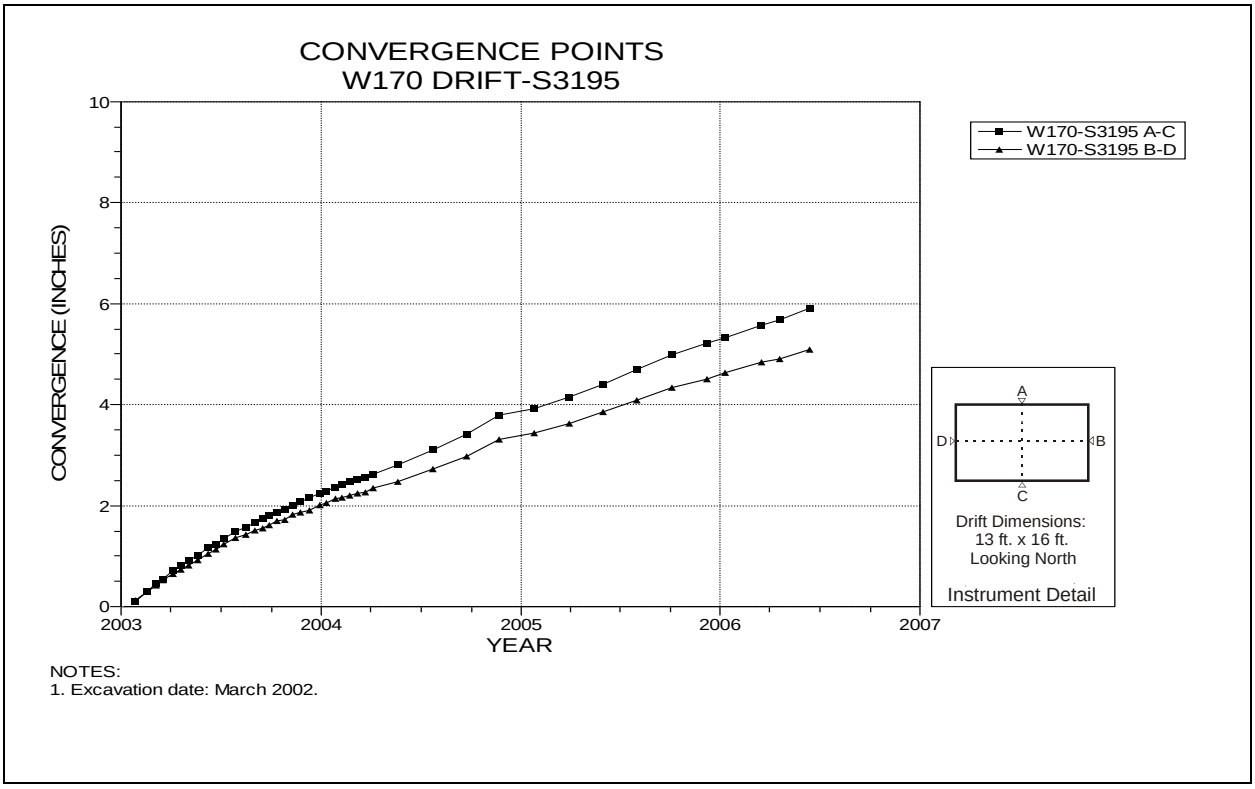


Figure 4-203 Convergence Point Array
W170 Drift at S3195 – All Chords

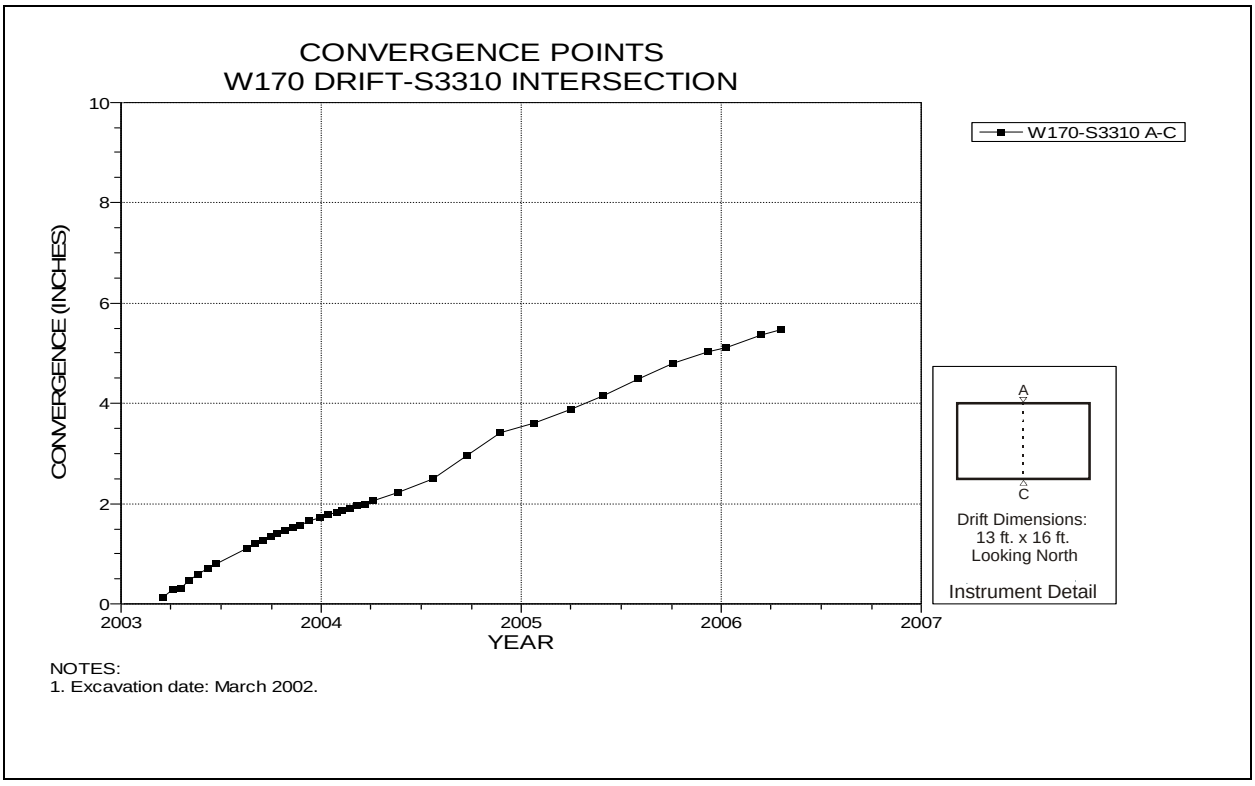


Figure 4-204 Convergence Point Array
W170 Drift at S3310 Drift Intersection – Roof to Floor

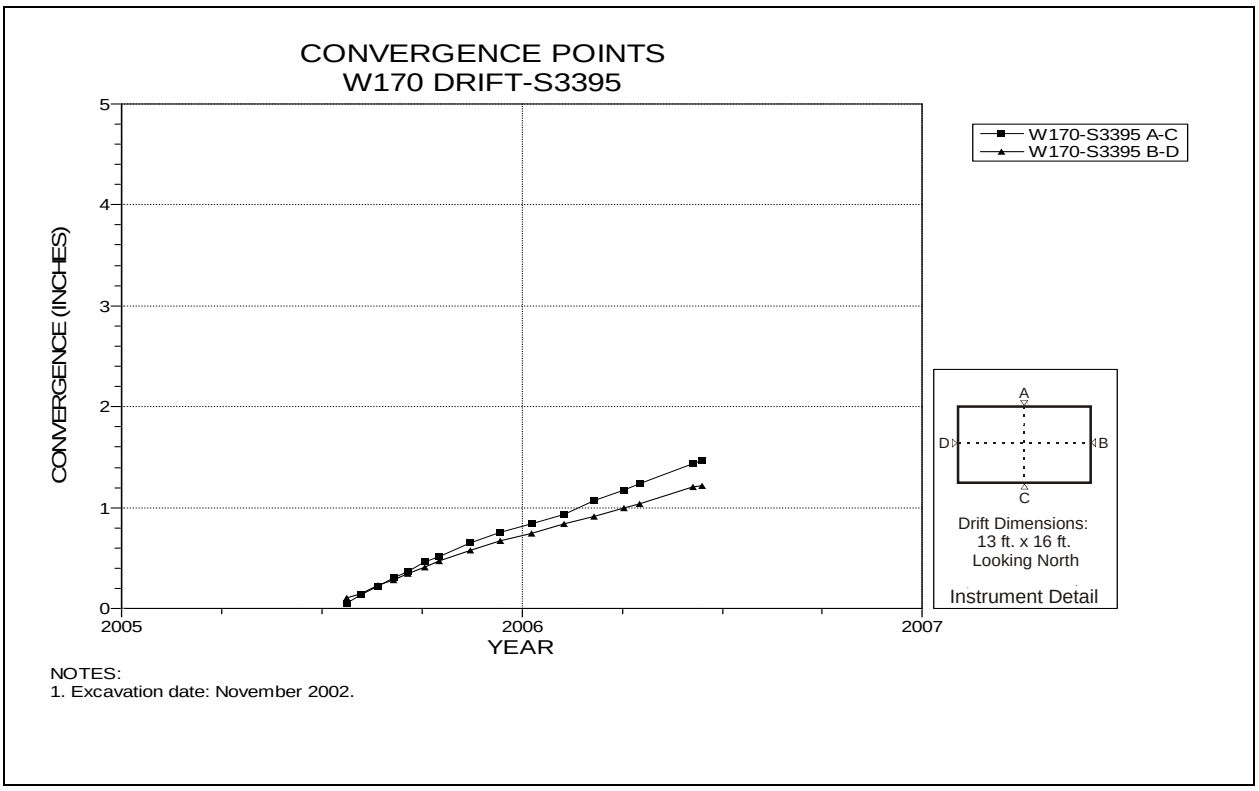


Figure 4-205 Convergence Point Array
W170 Drift at S3395 Drift – All Chords

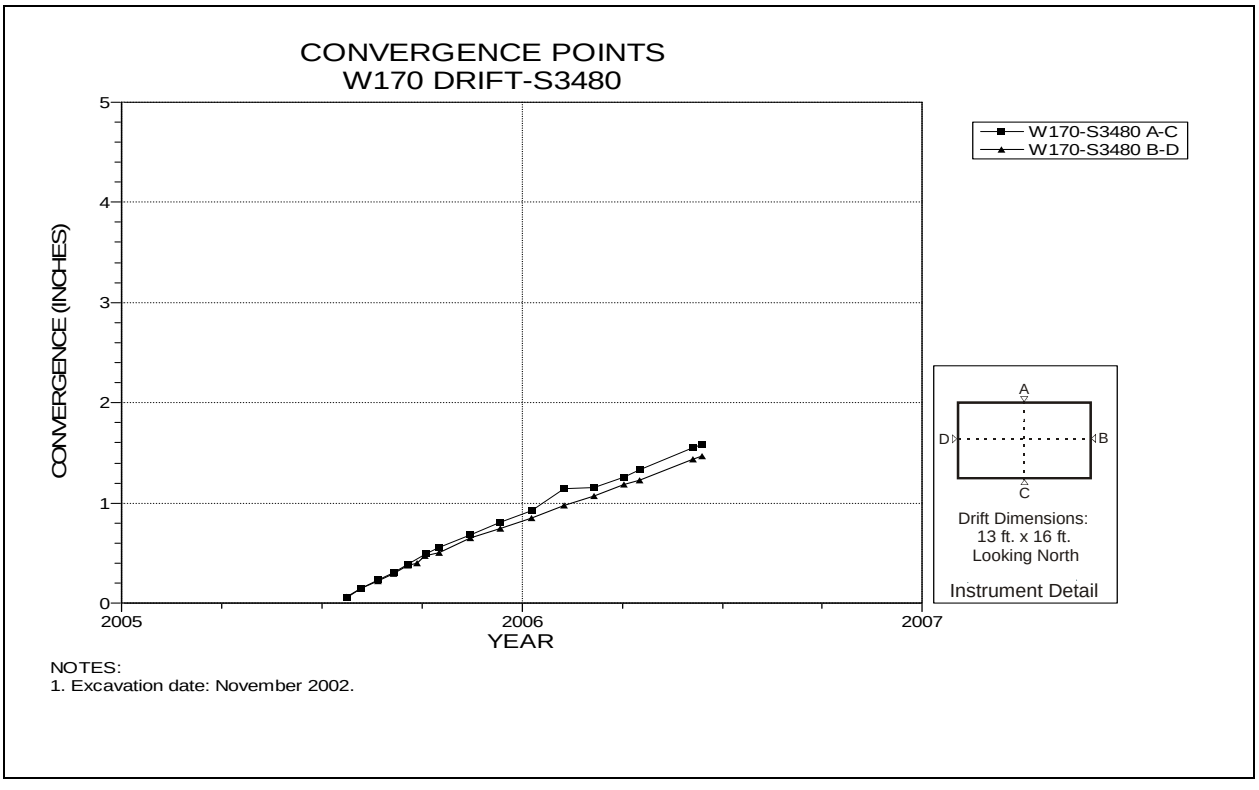


Figure 4-206 Convergence Point Array
W170 Drift at S3480 Drift – All Chords

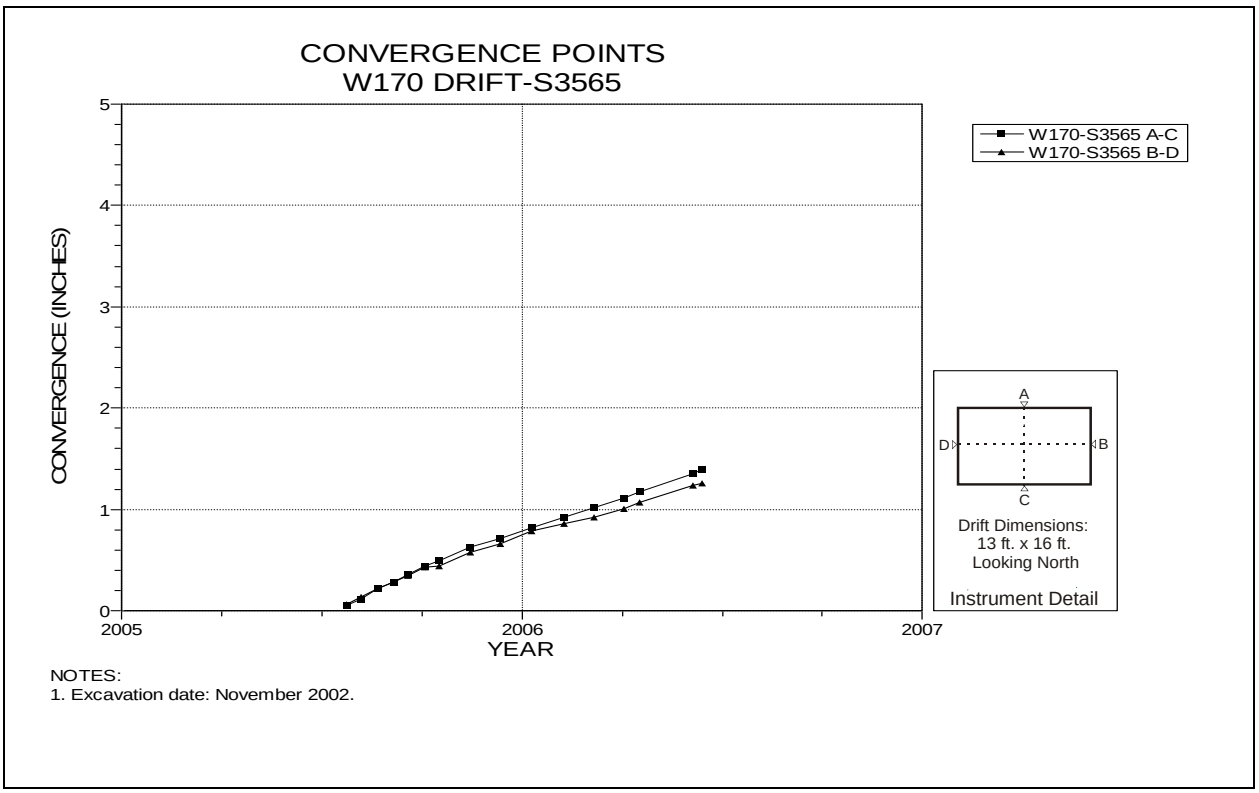


Figure 4-207 Convergence Point Array
W170 Drift at S3565 – All Chords

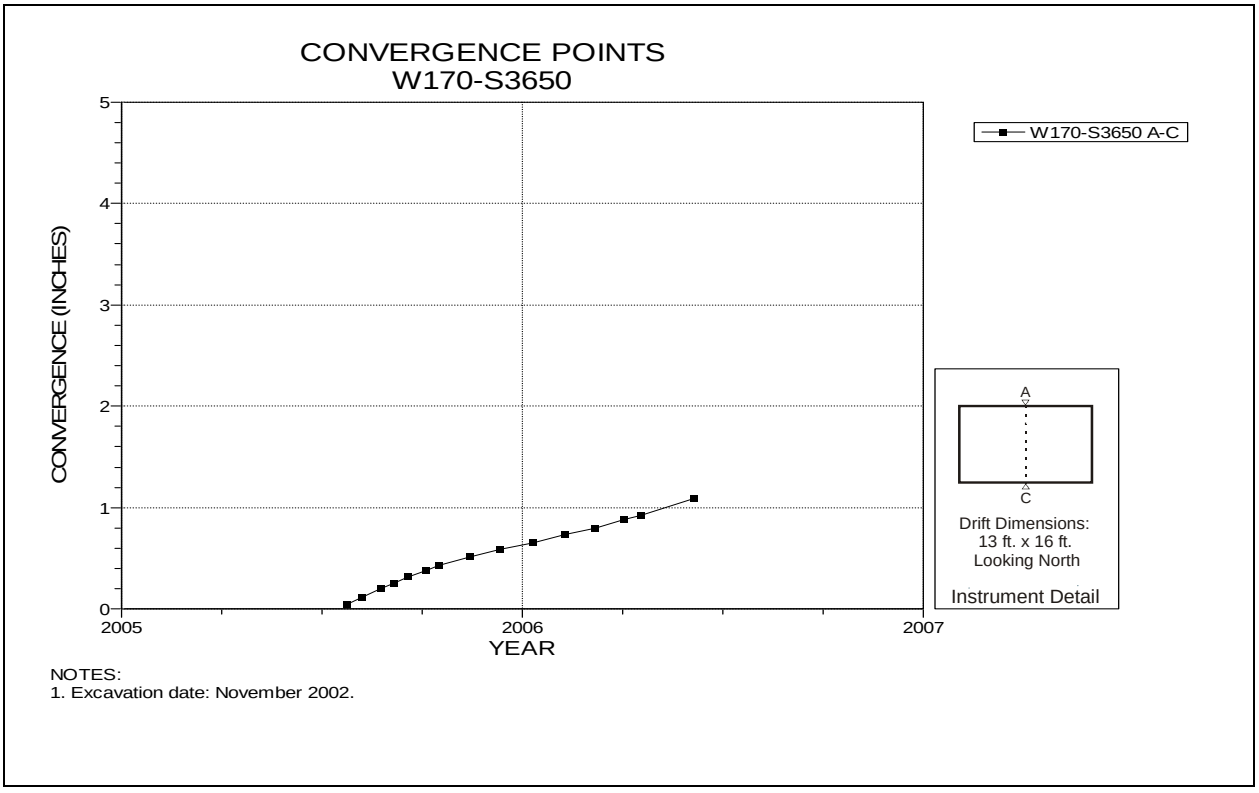


Figure 4-208 Convergence Point Array
W170 Drift at S3650 Drift Intersection – Roof to Floor

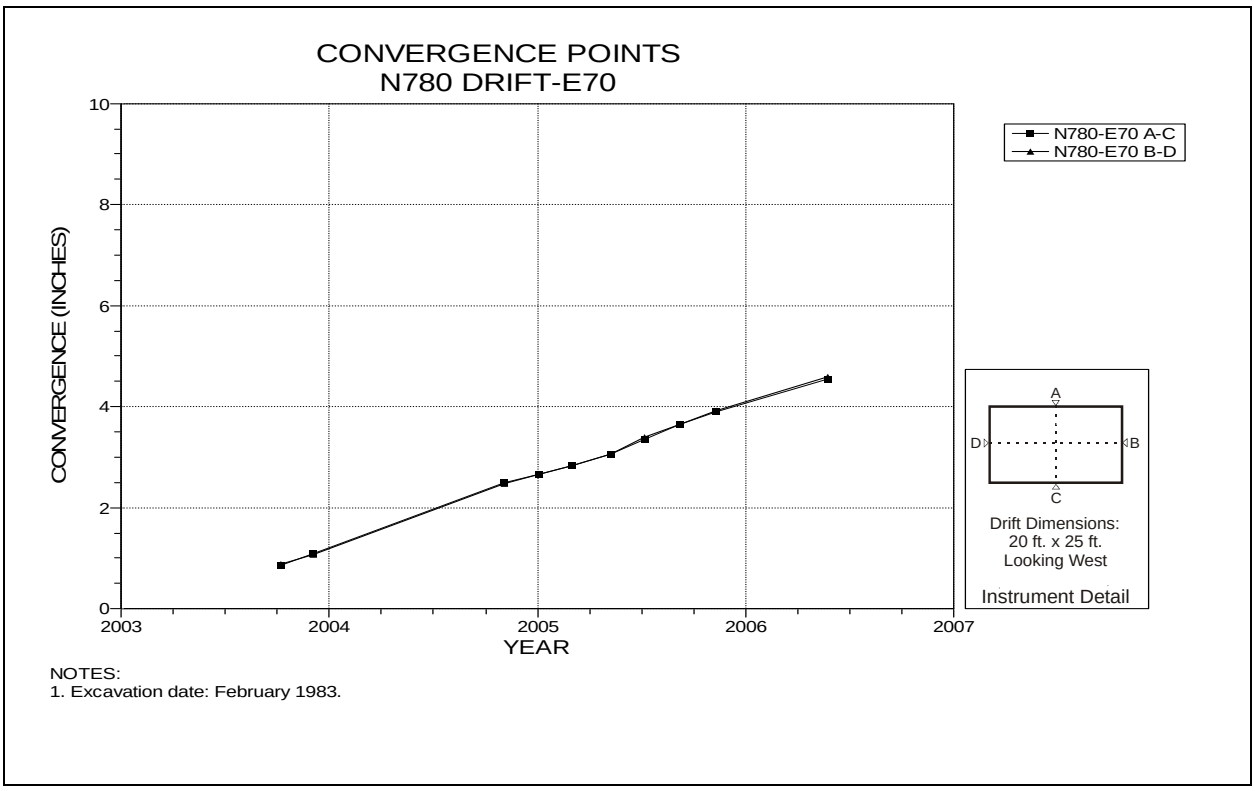


Figure 4-209 Convergence Point Array
N780 Drift at E70 – All Chords

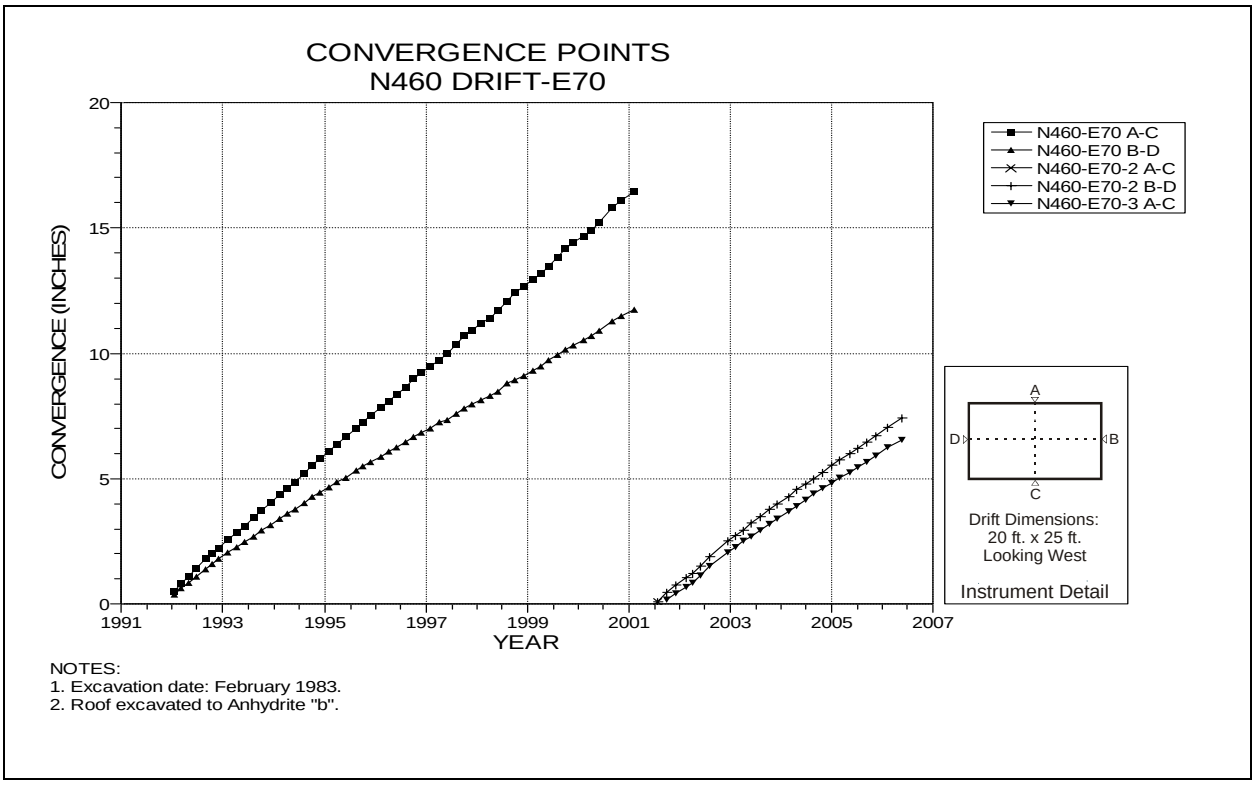


Figure 4-210 Convergence Point Array
N460 Drift at E70 – All Chords

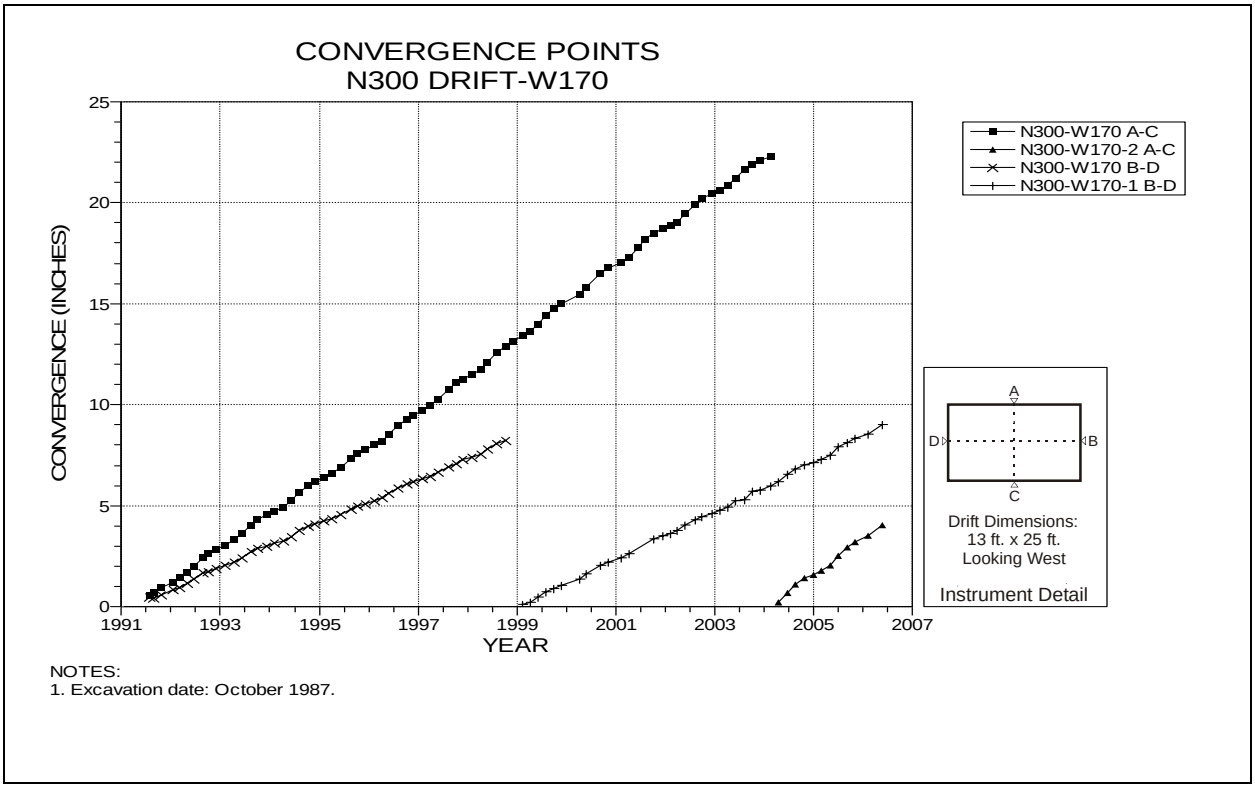


Figure 4-211 Convergence Point Array
N300 Drift at W170 – All Chords

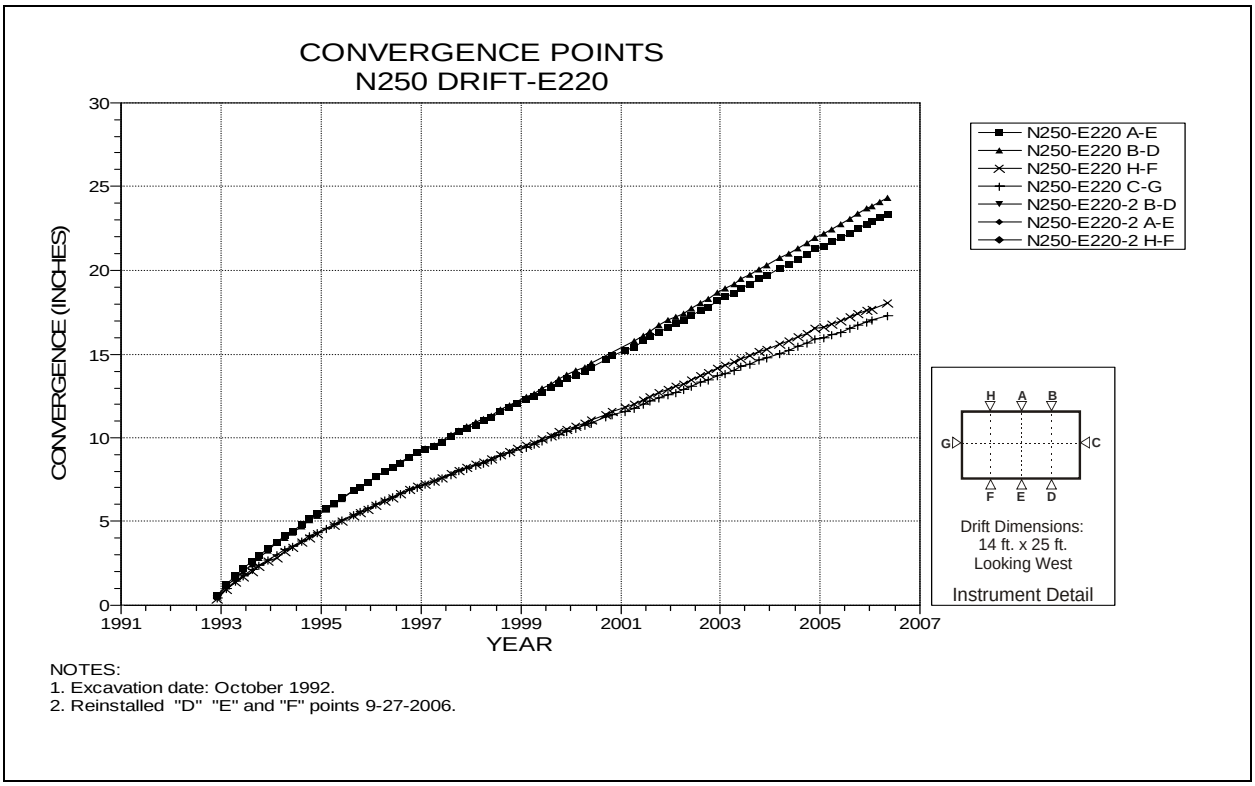
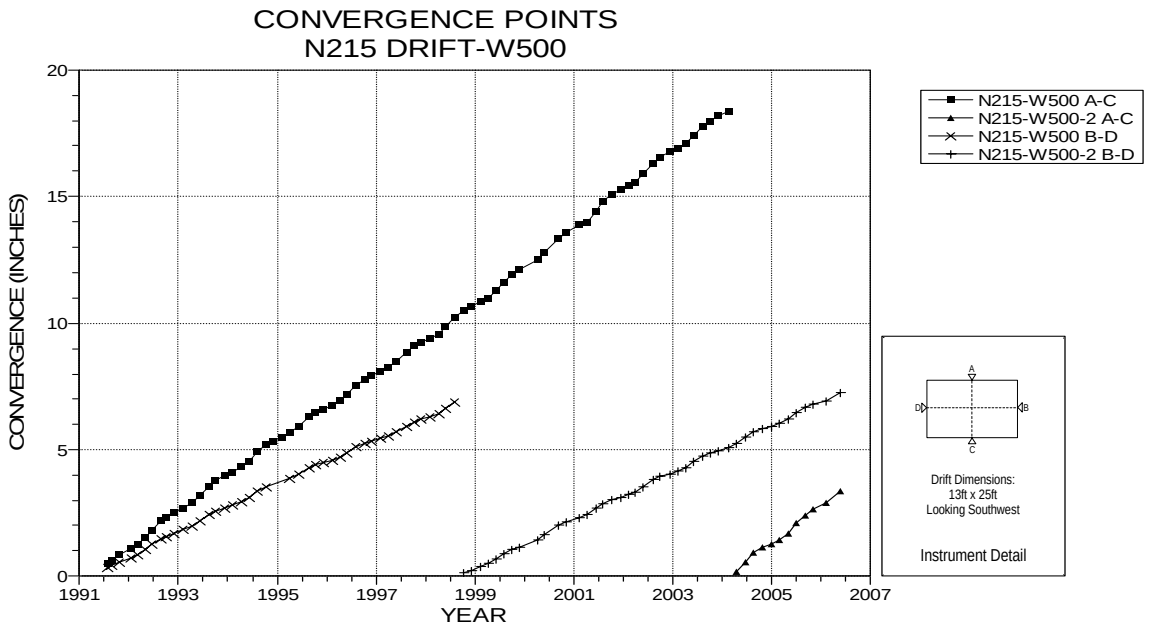
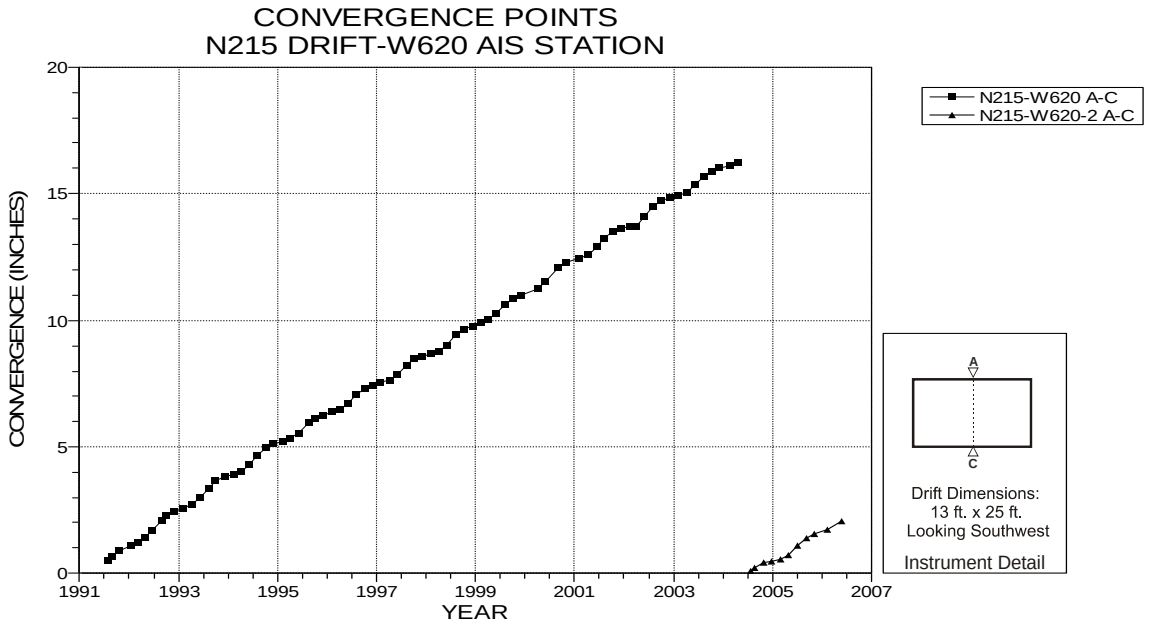


Figure 4-212 Convergence Point Array
N250 Drift at E220 – All Chords



NOTES:
1. Excavation date: December 1987.

Figure 4-213 Convergence Point Array
N215 Drift at W500 – All Chords



NOTES:
1. Excavation date: January 1988.

Figure 4-214 Convergence Point Array
N215 Drift at W620 at Air Intake Shaft – Roof to Floor

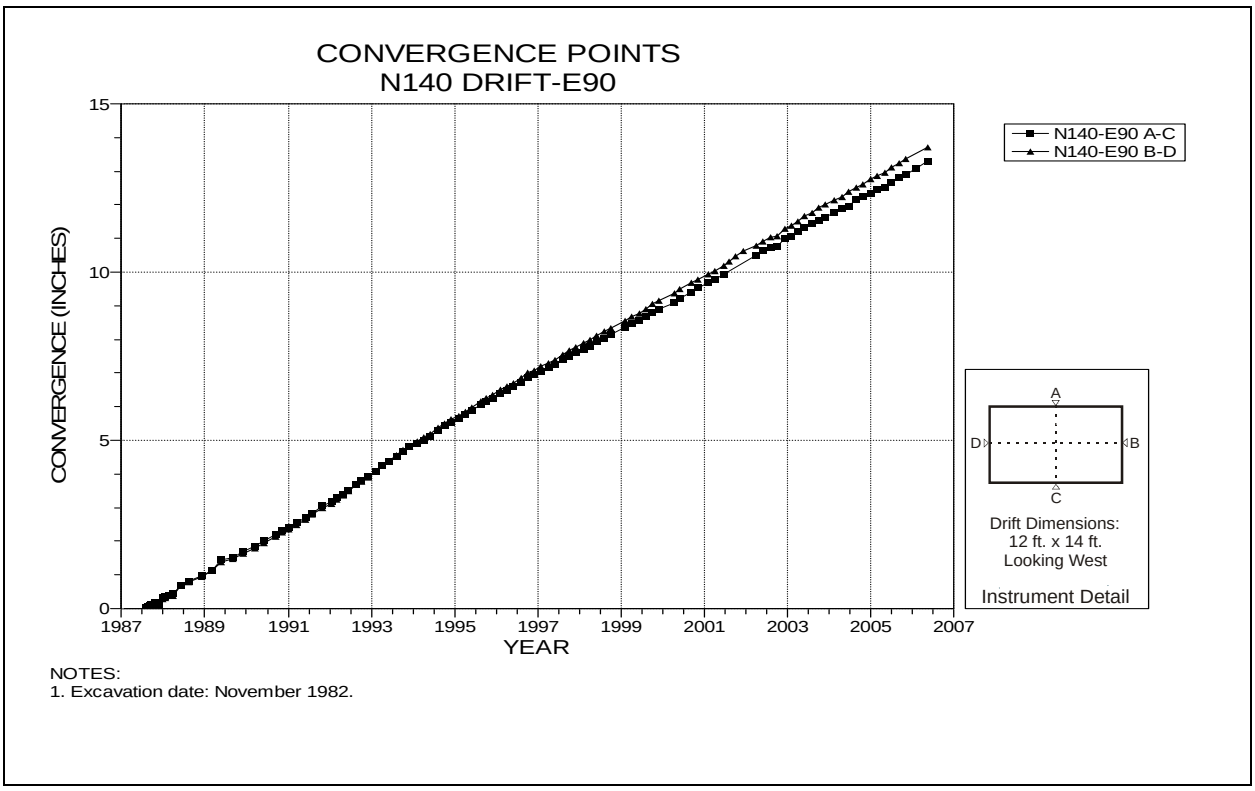


Figure 4-215 Convergence Point Array
N140 Drift at E90 – All Chords

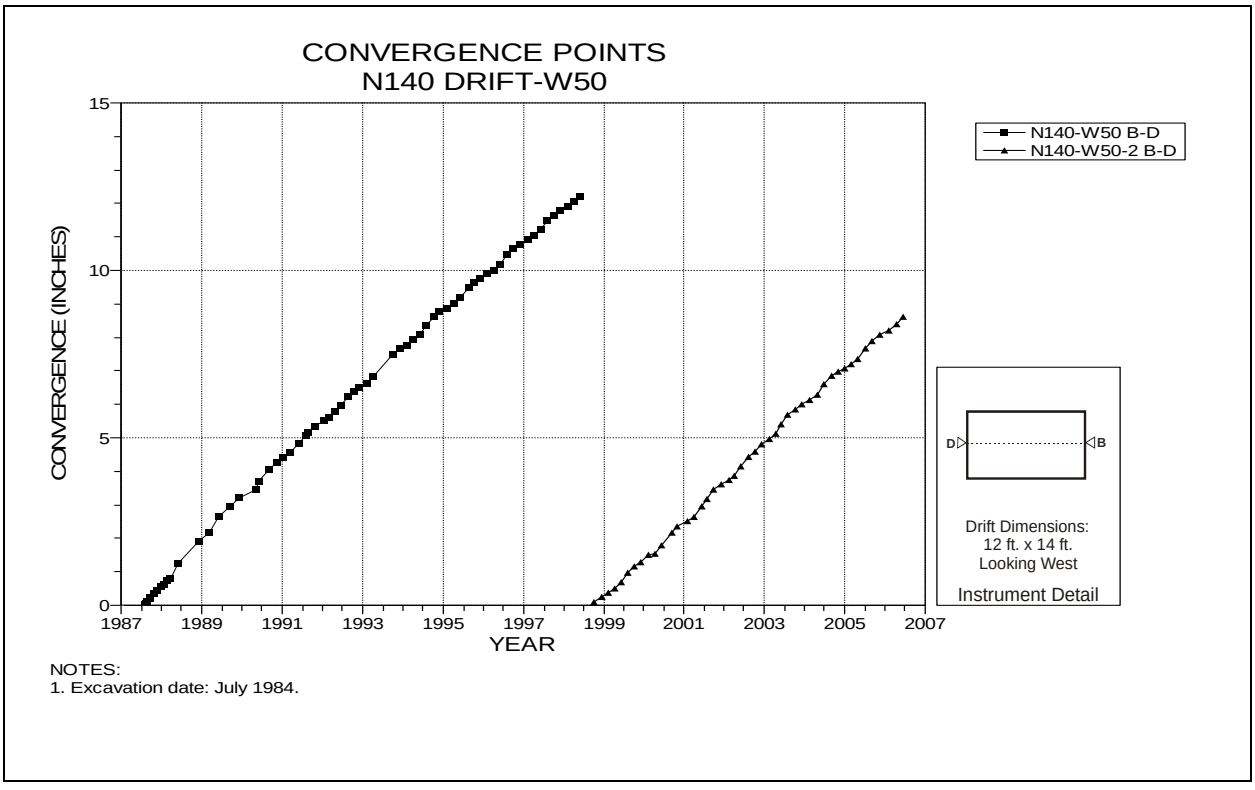


Figure 4-216 Convergence Point Array
N140 Drift at W50 – Rib to Rib

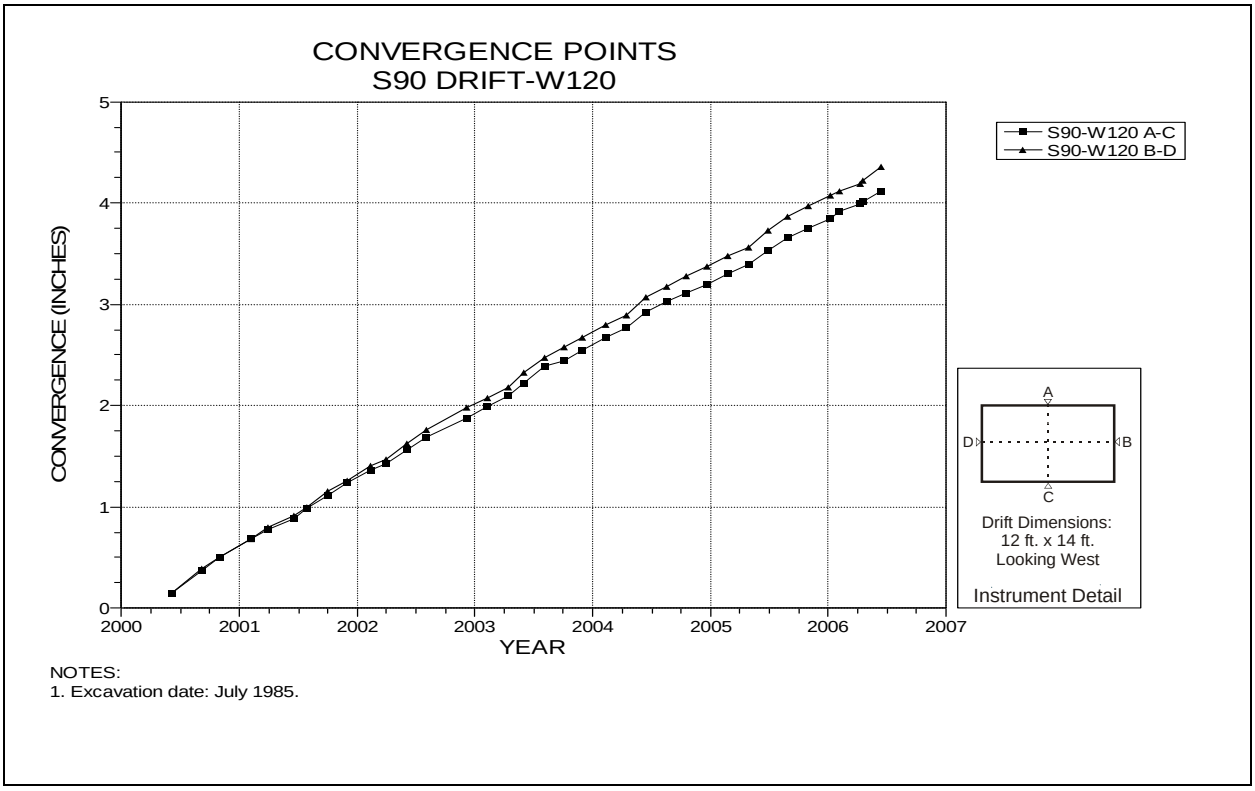


Figure 4-217 Convergence Point Array
S90 Drift at W120 – All Chords

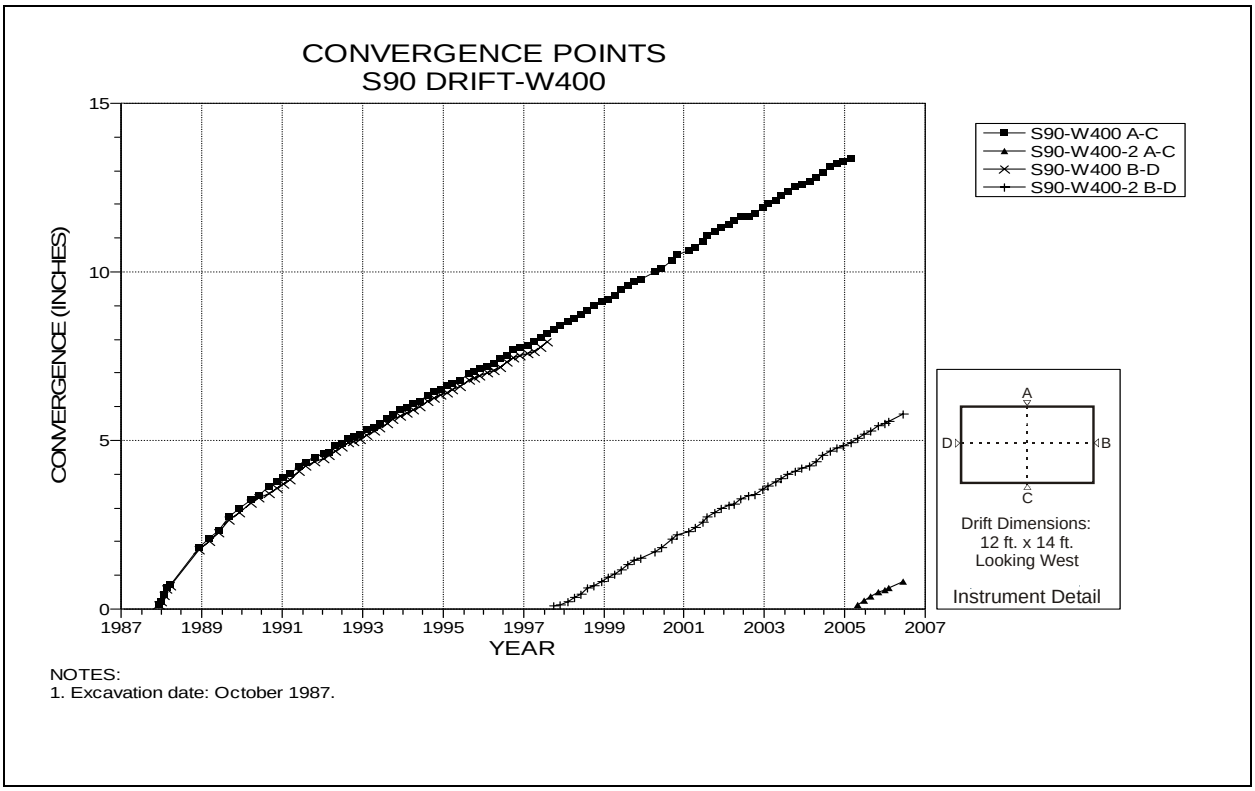


Figure 4-218 Convergence Point Array
S90 Drift at W400 – All Chords

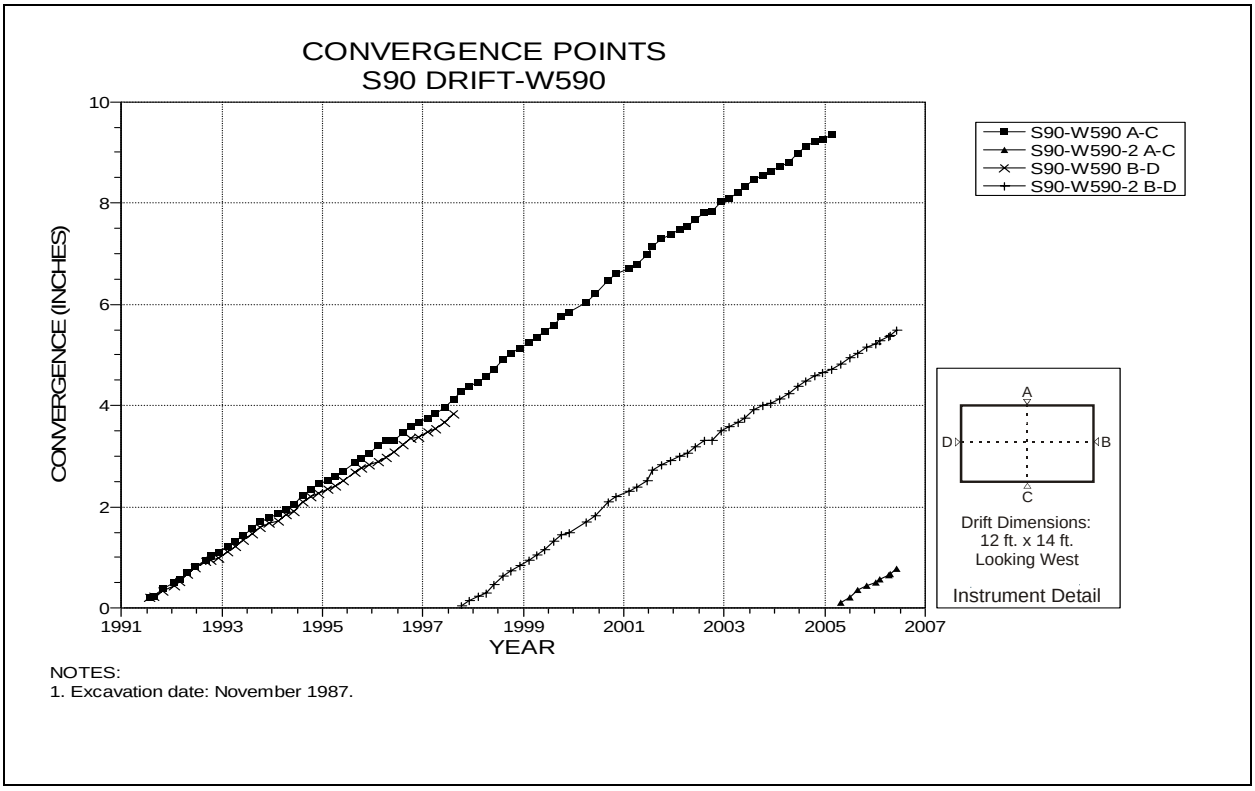


Figure 4-219 Convergence Point Array
S90 Drift at W590 – All Chords

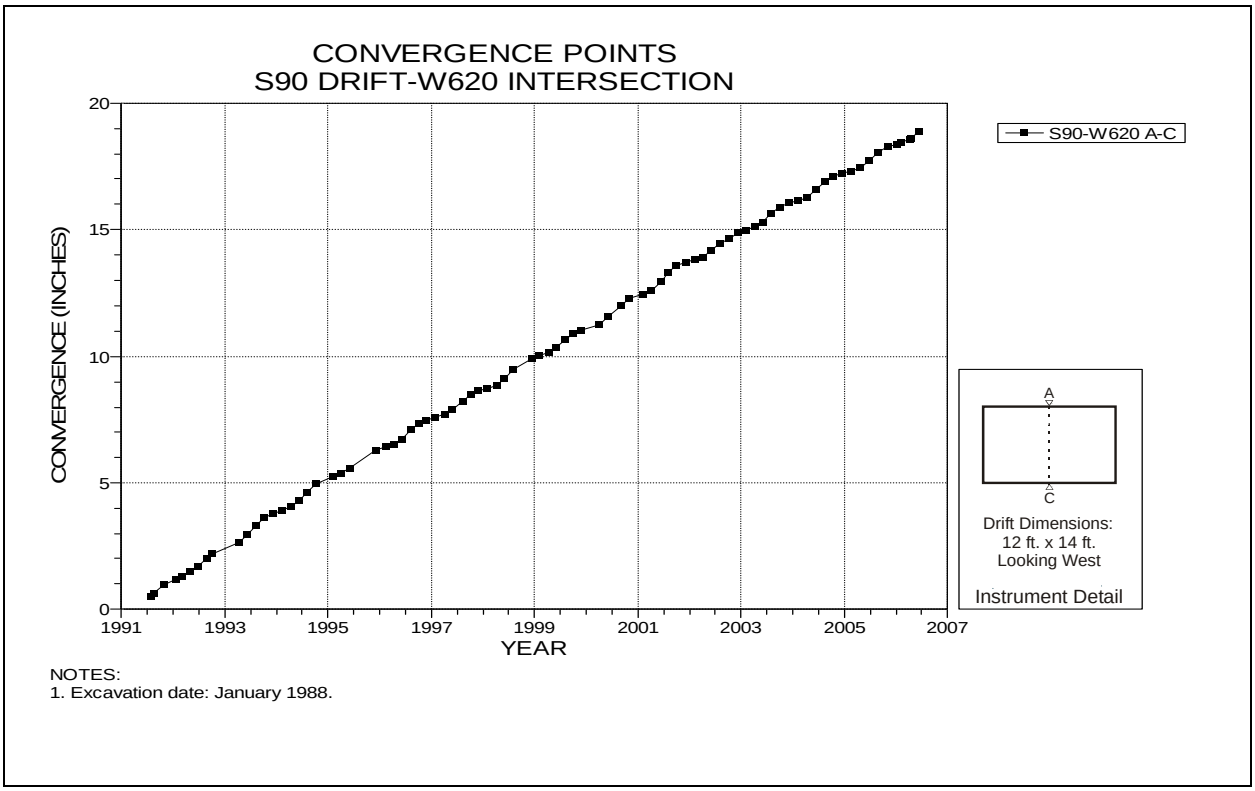


Figure 4-220 Convergence Point Array
S90 Drift at W620 – Roof to Floor

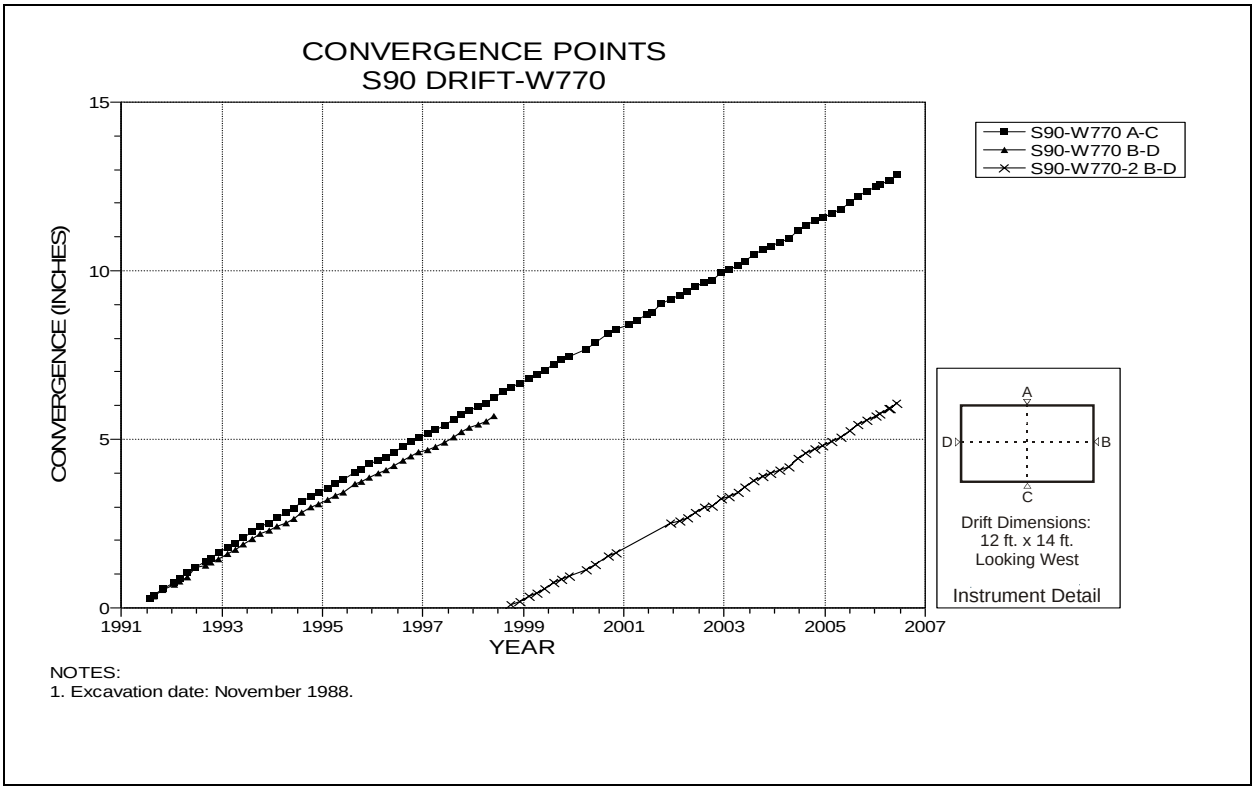


Figure 4-221 Convergence Point Array
S90 Drift at W770 – All Chords

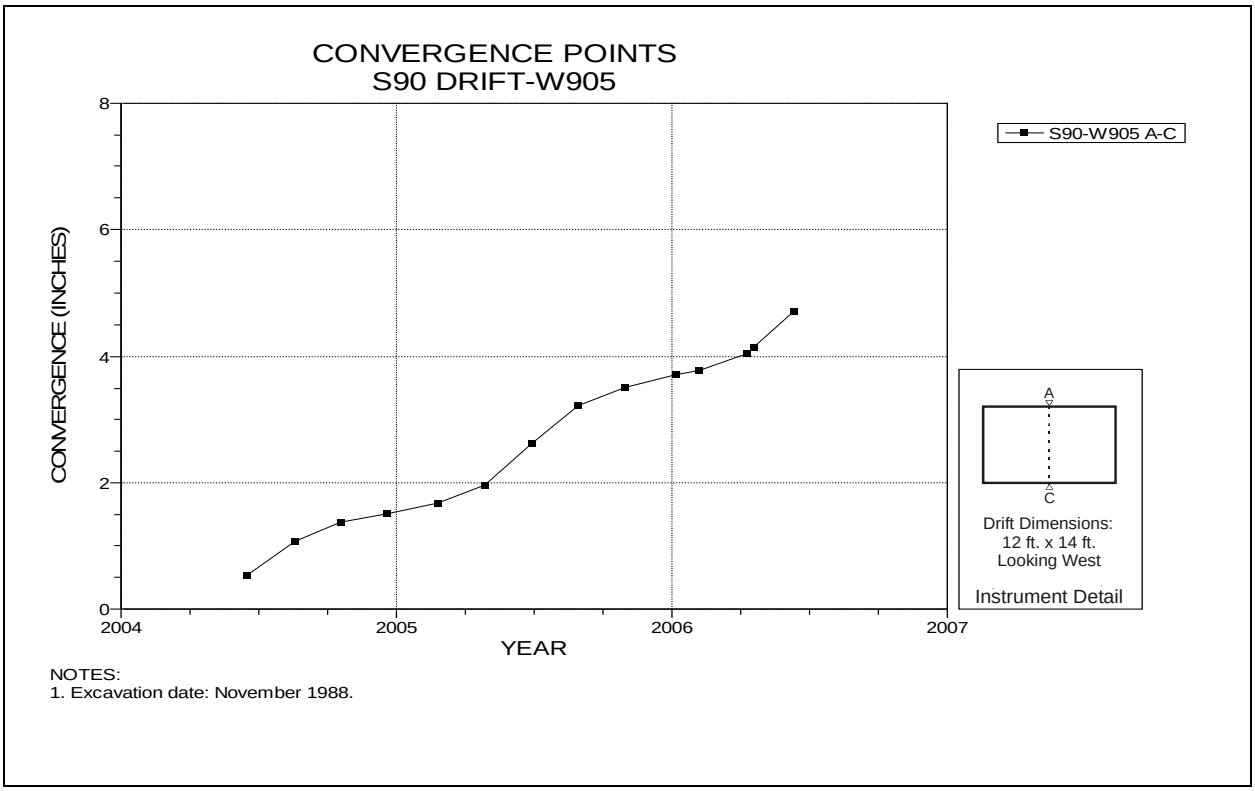


Figure 4-222 Convergence Point Array
S90 Drift at W905 – Roof to Floor

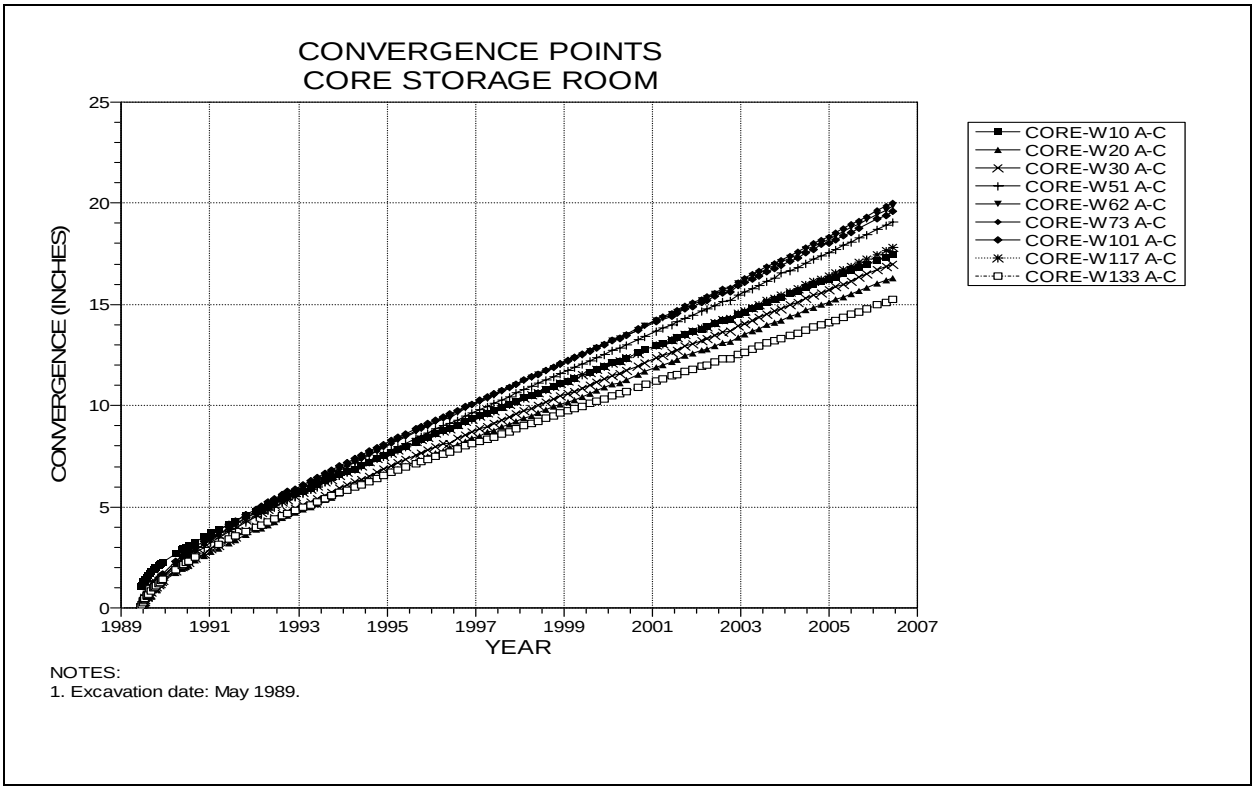


Figure 4-223 Convergence Point Array
S400 Core Storage Library – All Chords

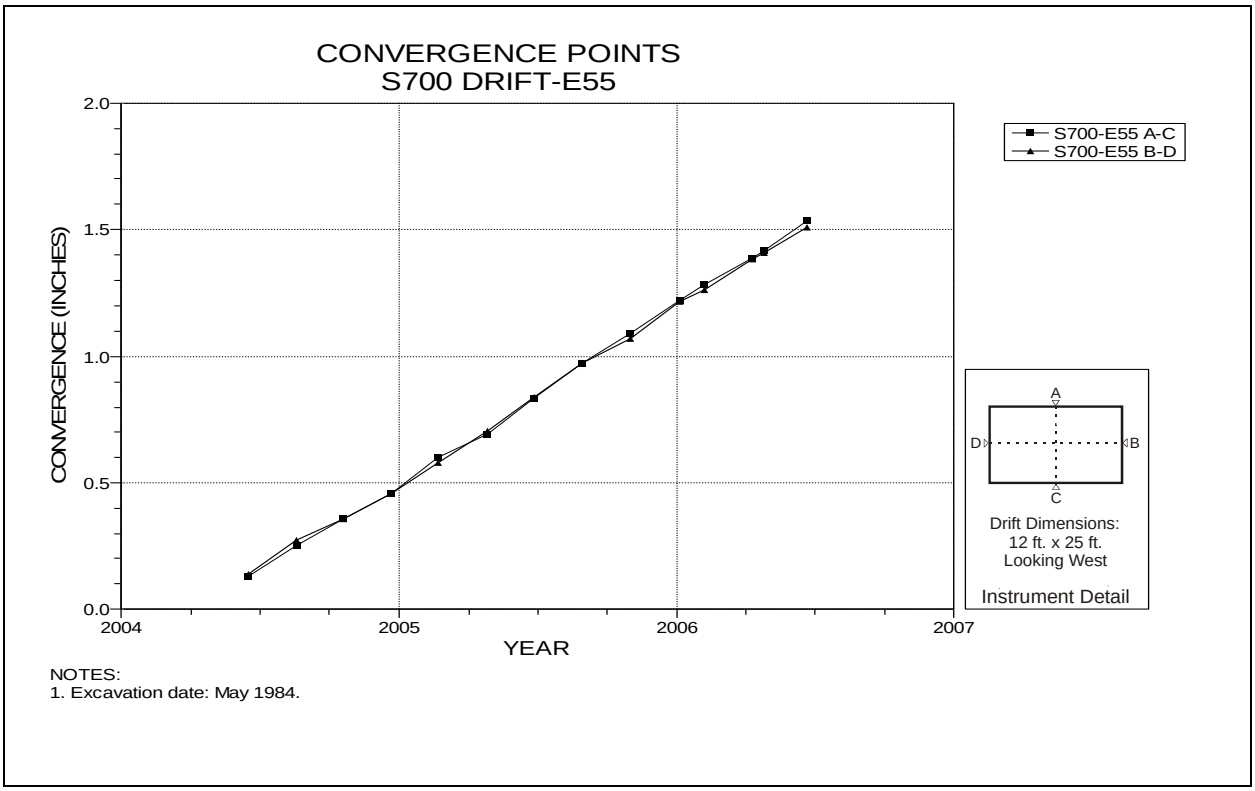


Figure 4-224 Convergence Point Array
S700 Drift at E55 – All Chords

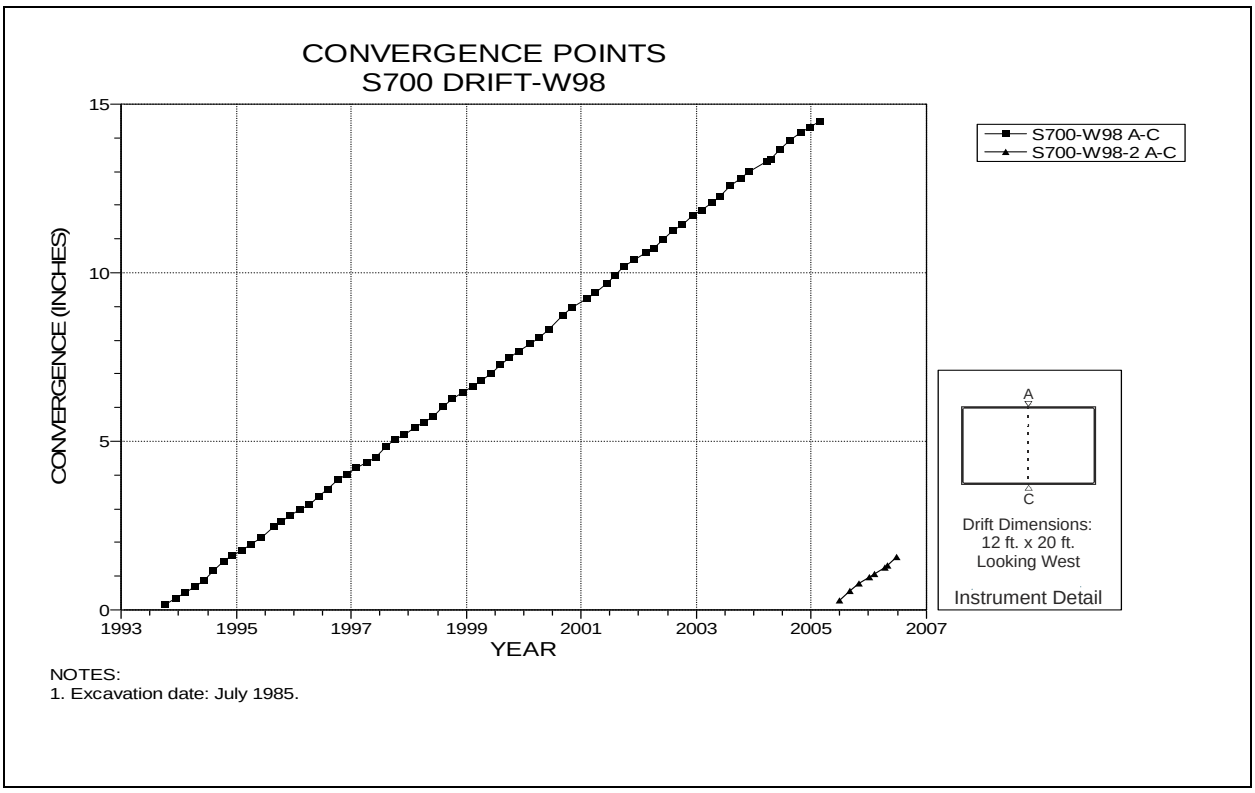


Figure 4-225 Convergence Point Array
S700 Drift at W98 – Roof to Floor

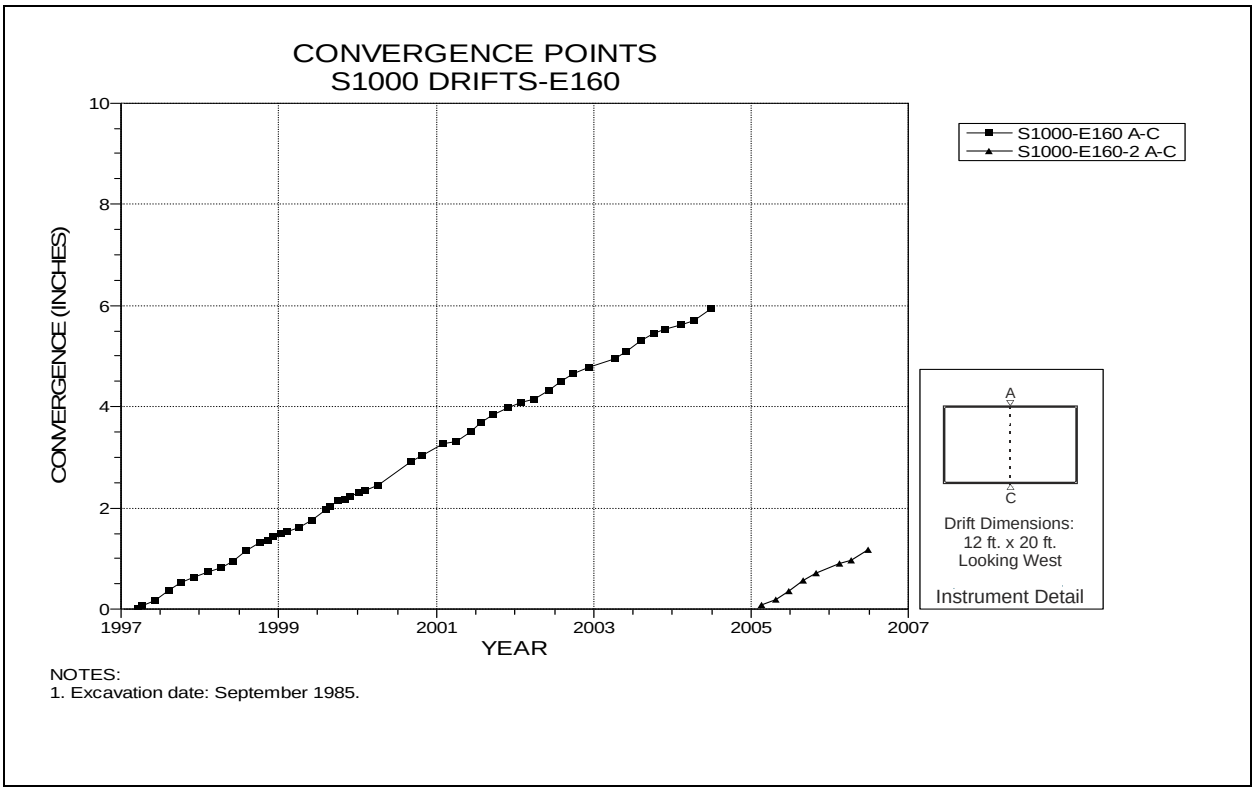


Figure 4-226 Convergence Point Array
S1000 Drift at E160 – Roof to Floor

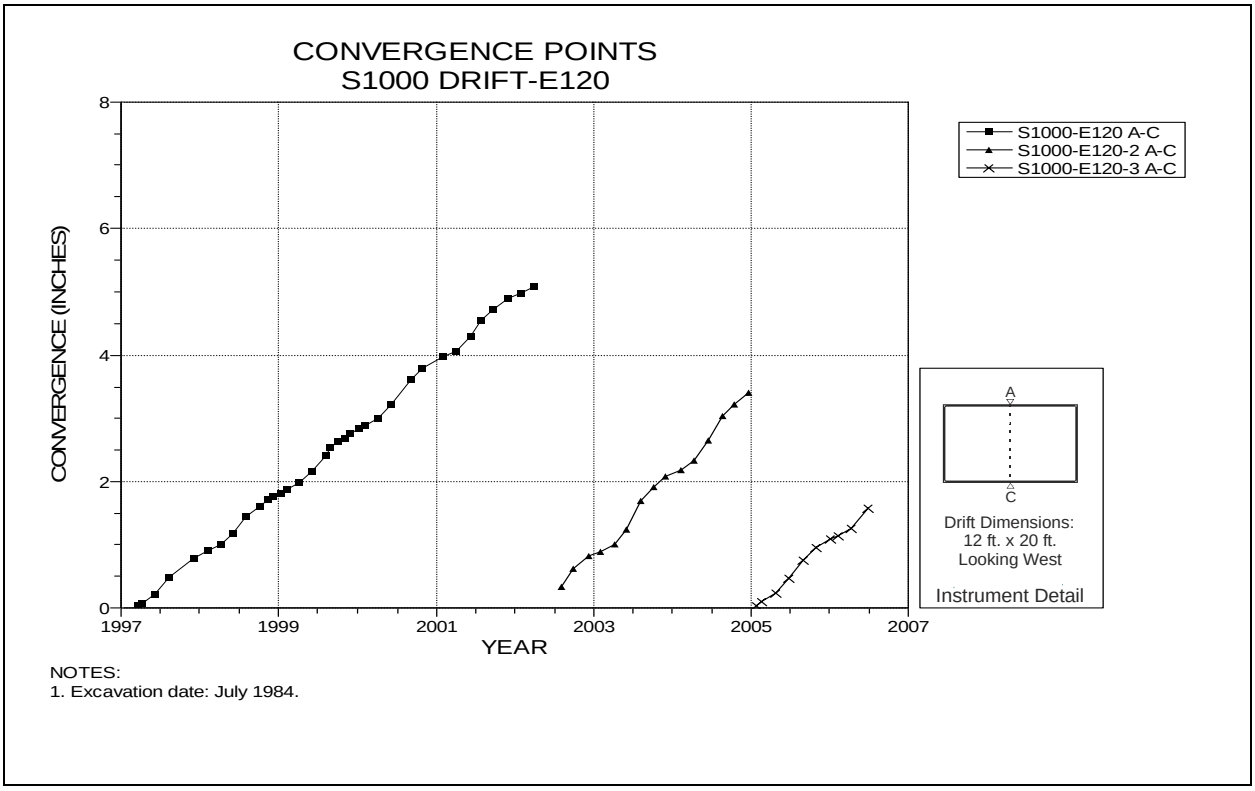


Figure 4-227 Convergence Point Array
S1000 Drift at E120 – Roof to Floor

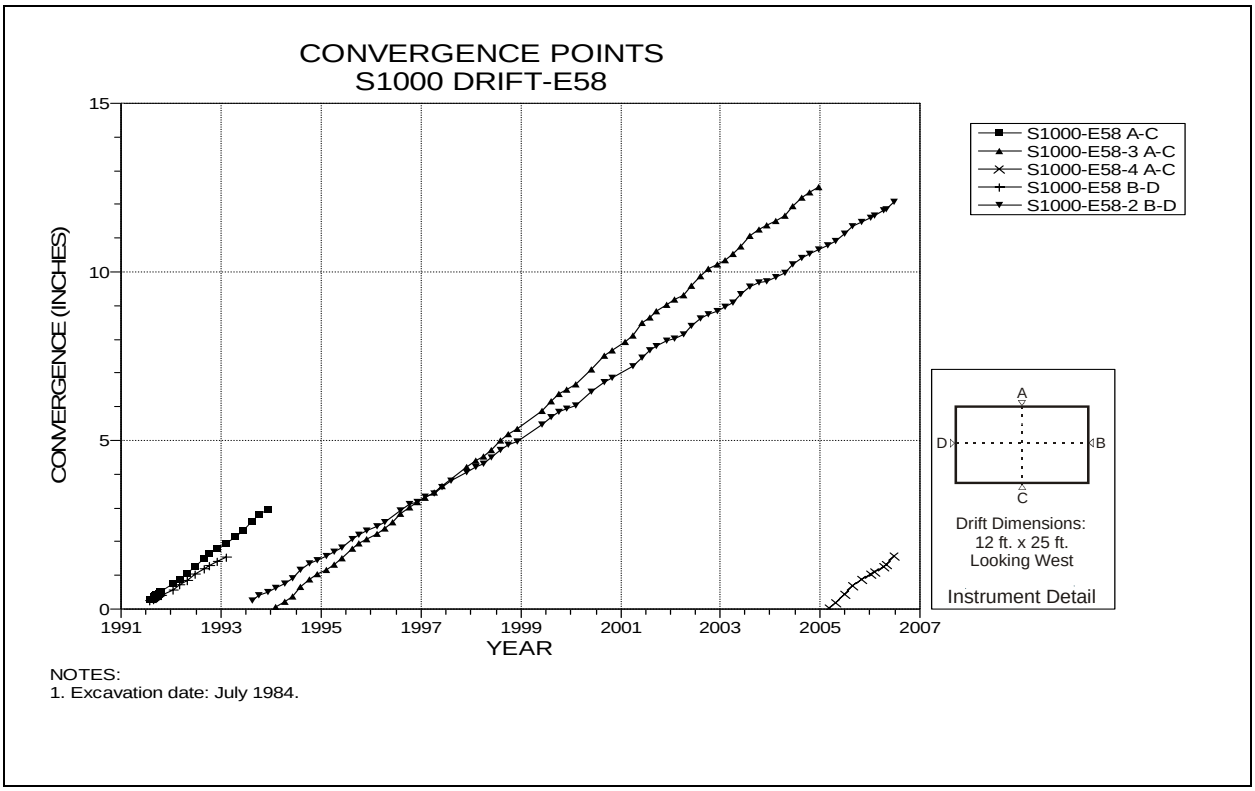
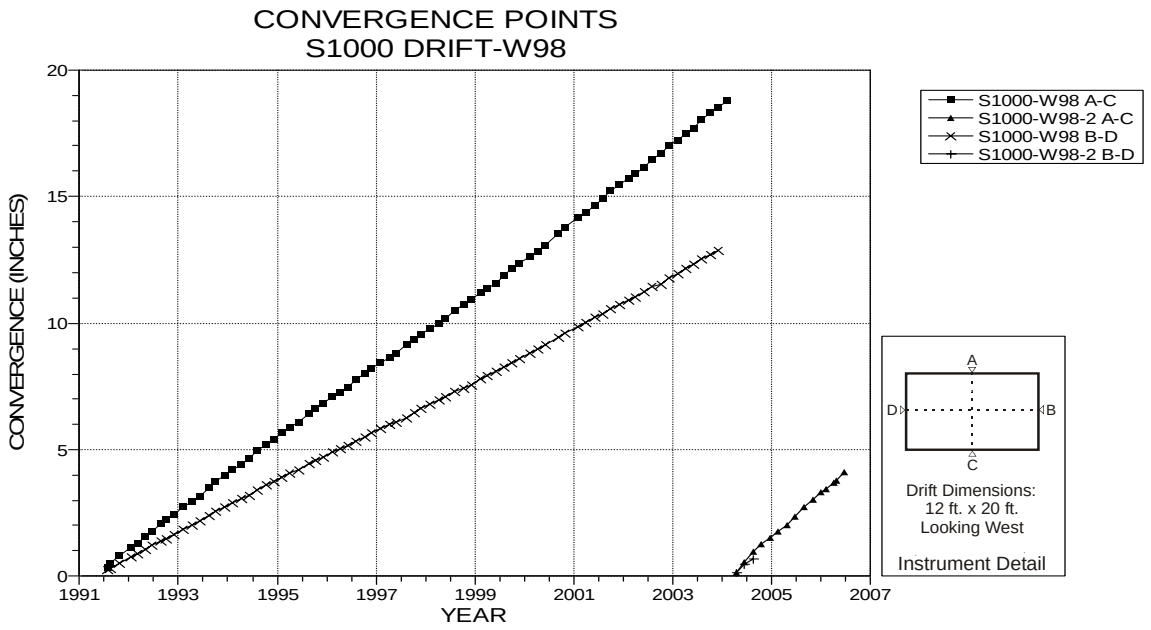
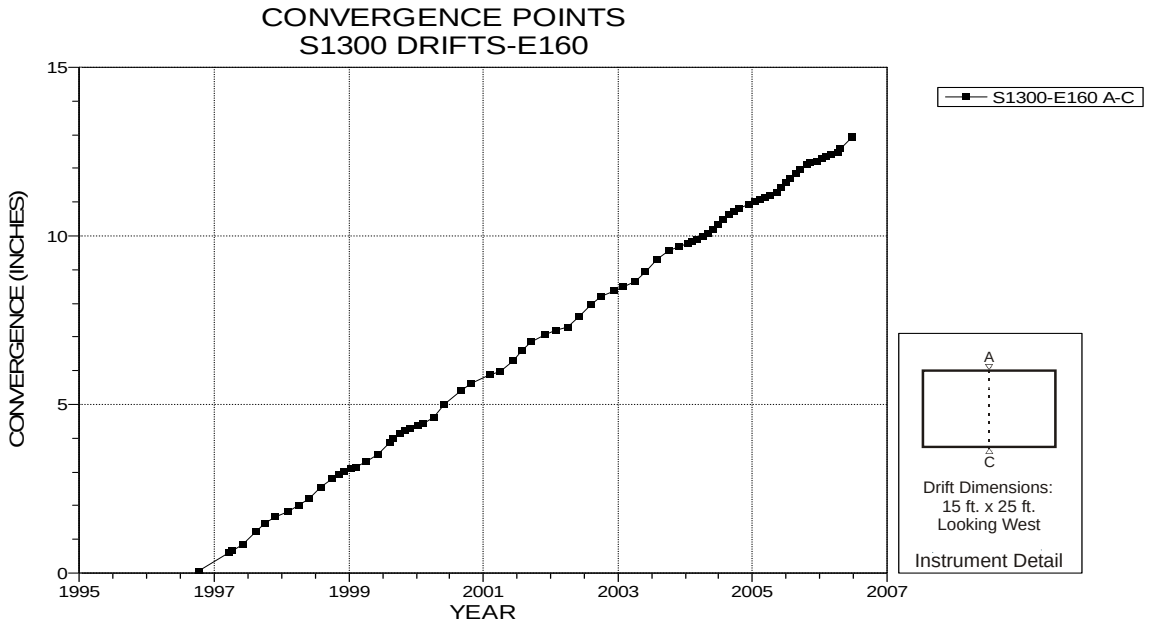


Figure 4-228 Convergence Point Array
S1000 Drift at E58 – All Chords



NOTES:
1. Excavation date: August 1985.

Figure 4-229 Convergence Point Array
S1000 Drift at W98 – All Chords



NOTES:
1. Excavation date: June 1984.

Figure 4-230 Convergence Point Array
S1300 Drift at E160 – Roof to Floor

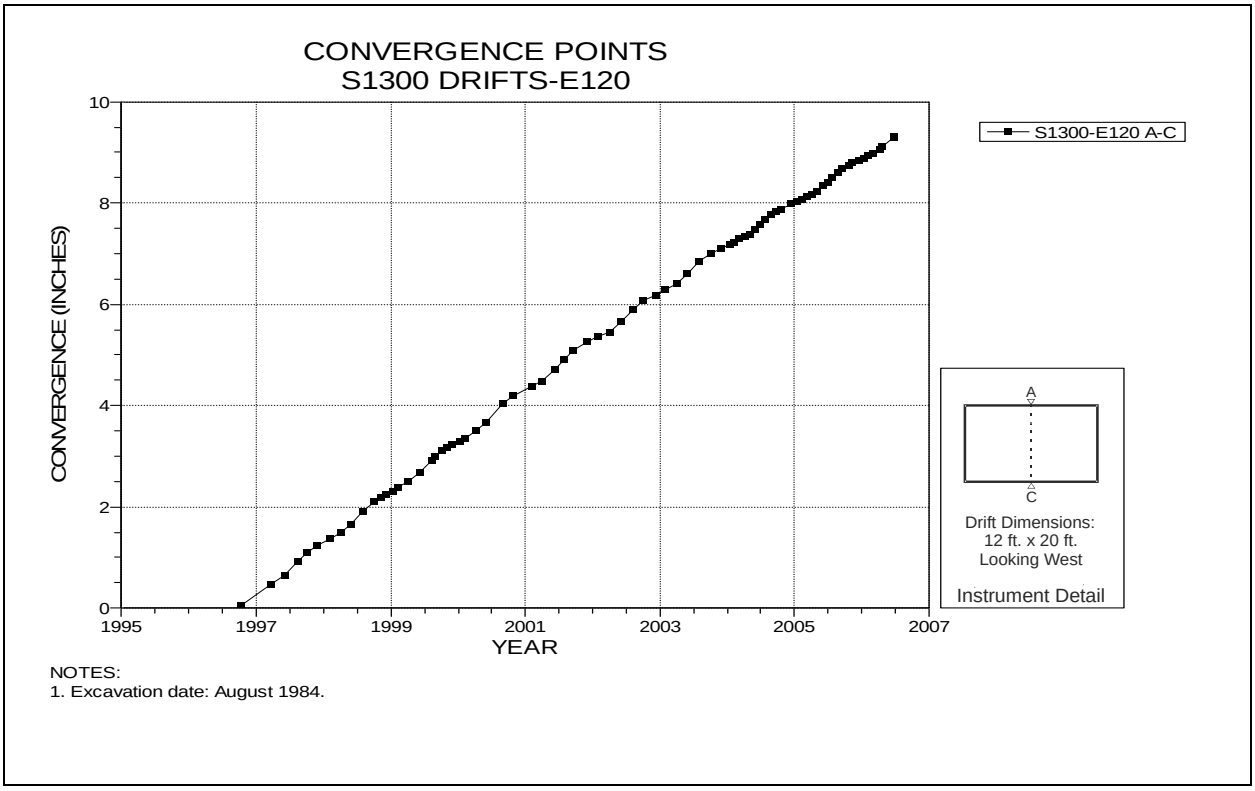


Figure 4-231 Convergence Point Array
S1300 Drift at E120 – Roof to Floor

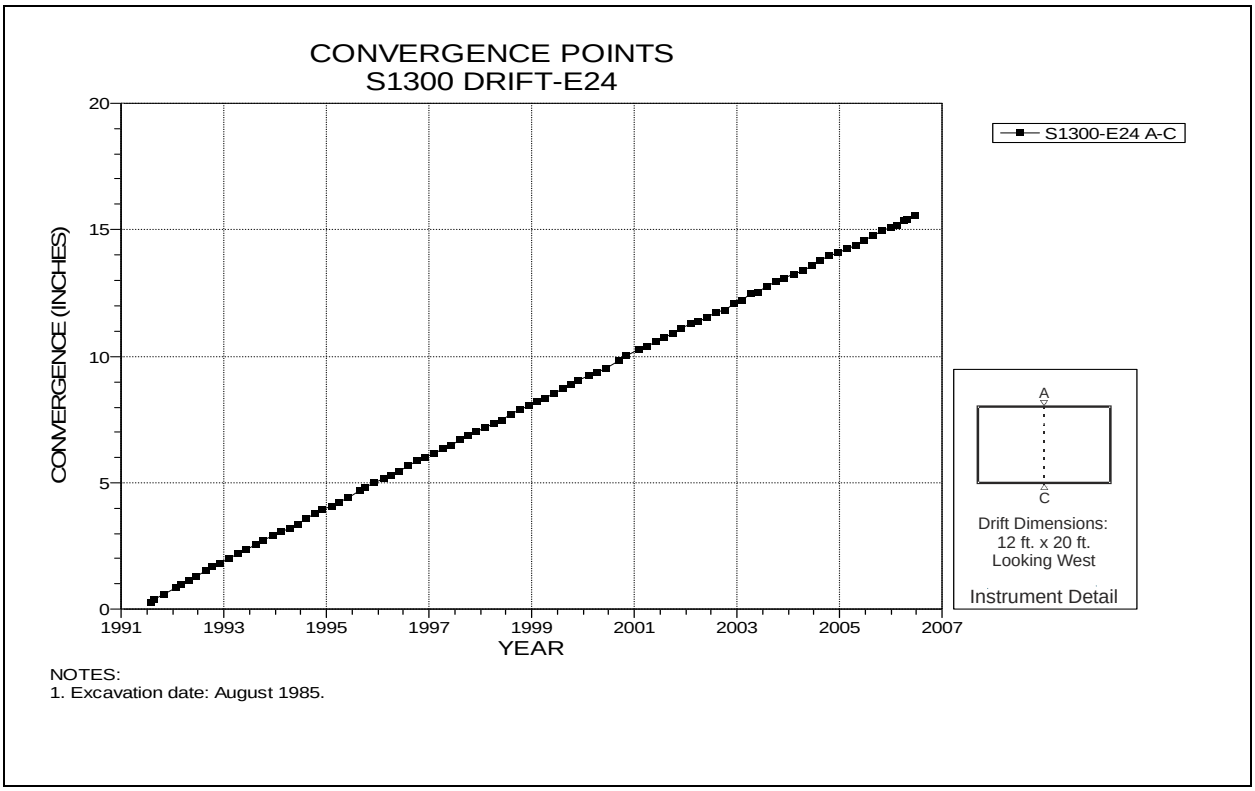


Figure 4-232 Convergence Point Array
S1300 Drift at E24 – Roof to Floor

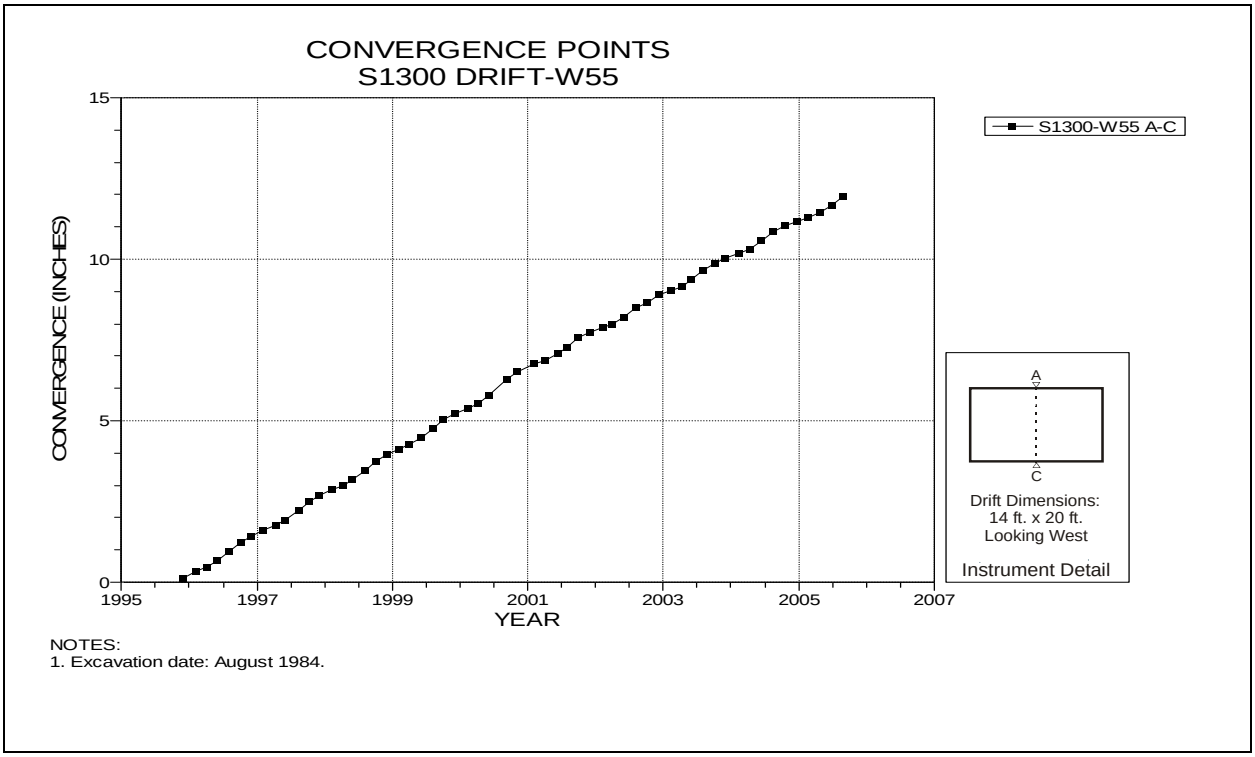


Figure 4-233 Convergence Point Array
S1300 Drift at W55 – Roof to Floor

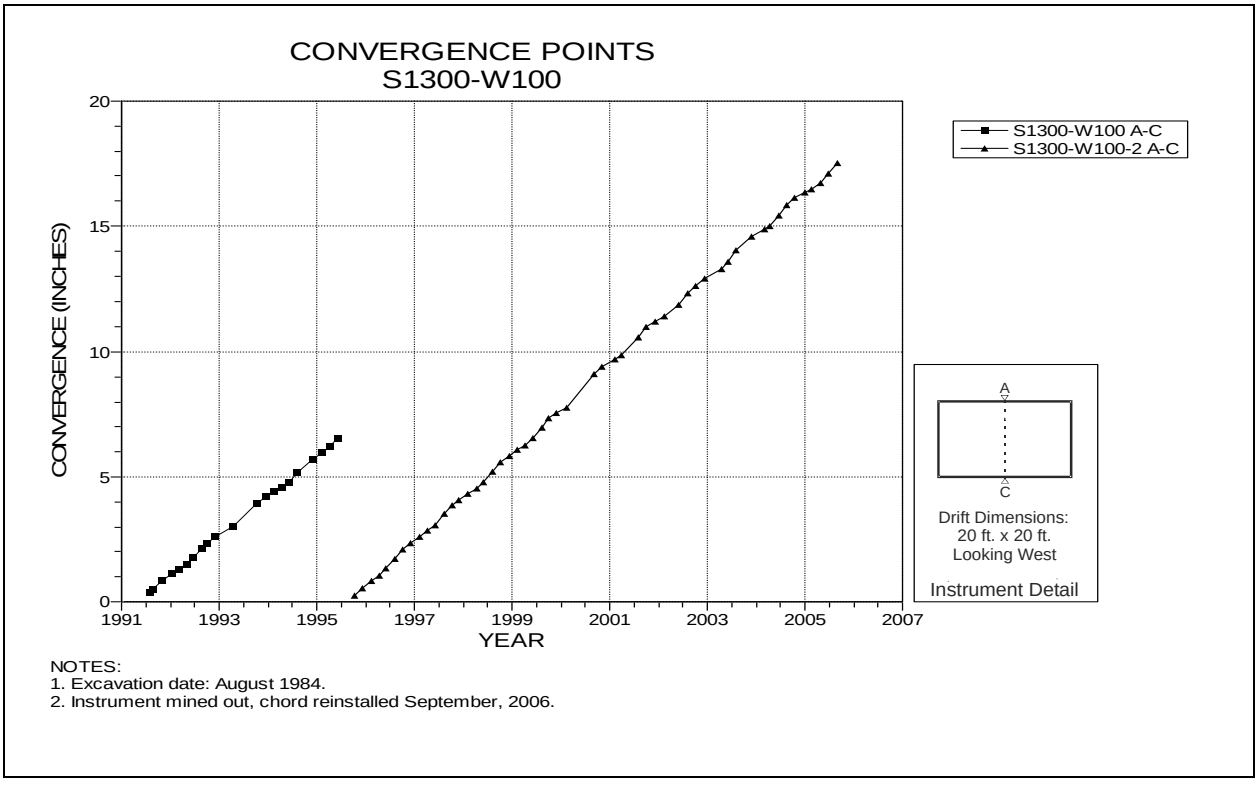


Figure 4-234 Convergence Point Array
S1300 Drift at W100 – Roof to Floor

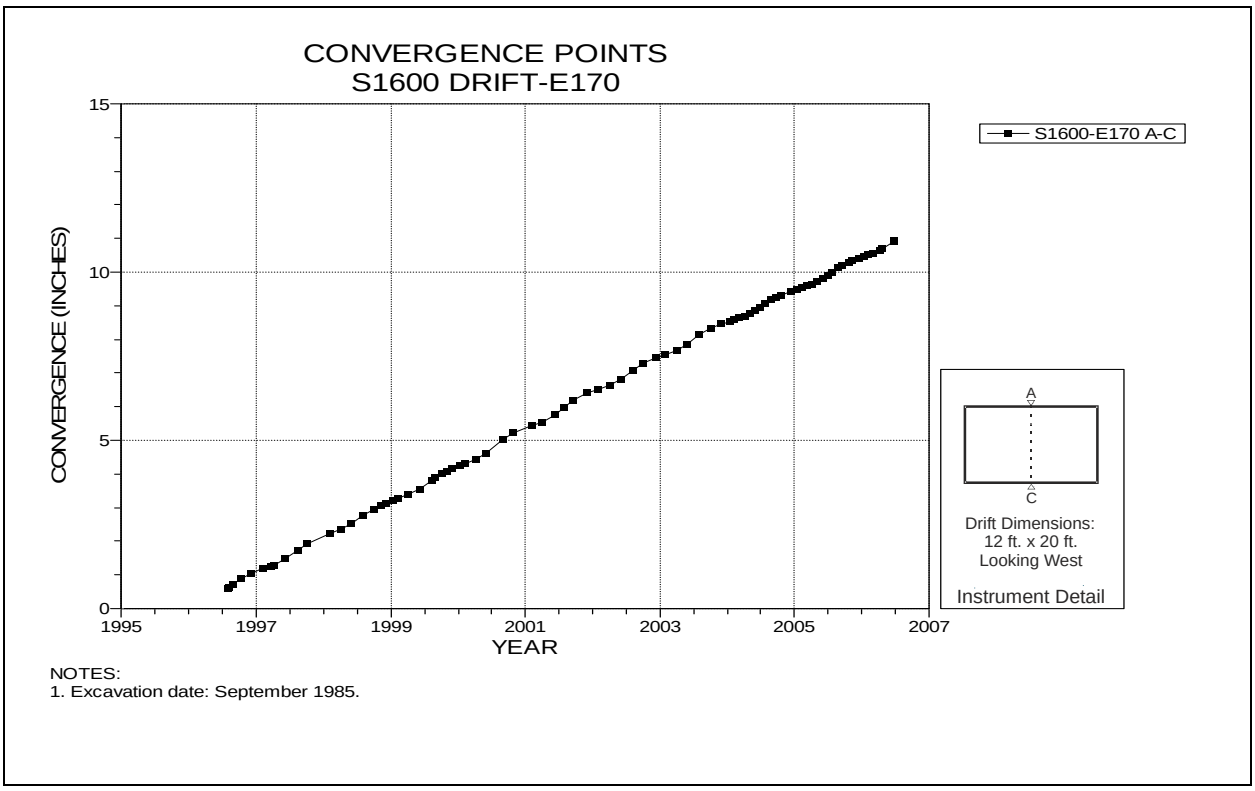


Figure 4-235 Convergence Point Array
S1600 Drift at E170 – Roof to Floor

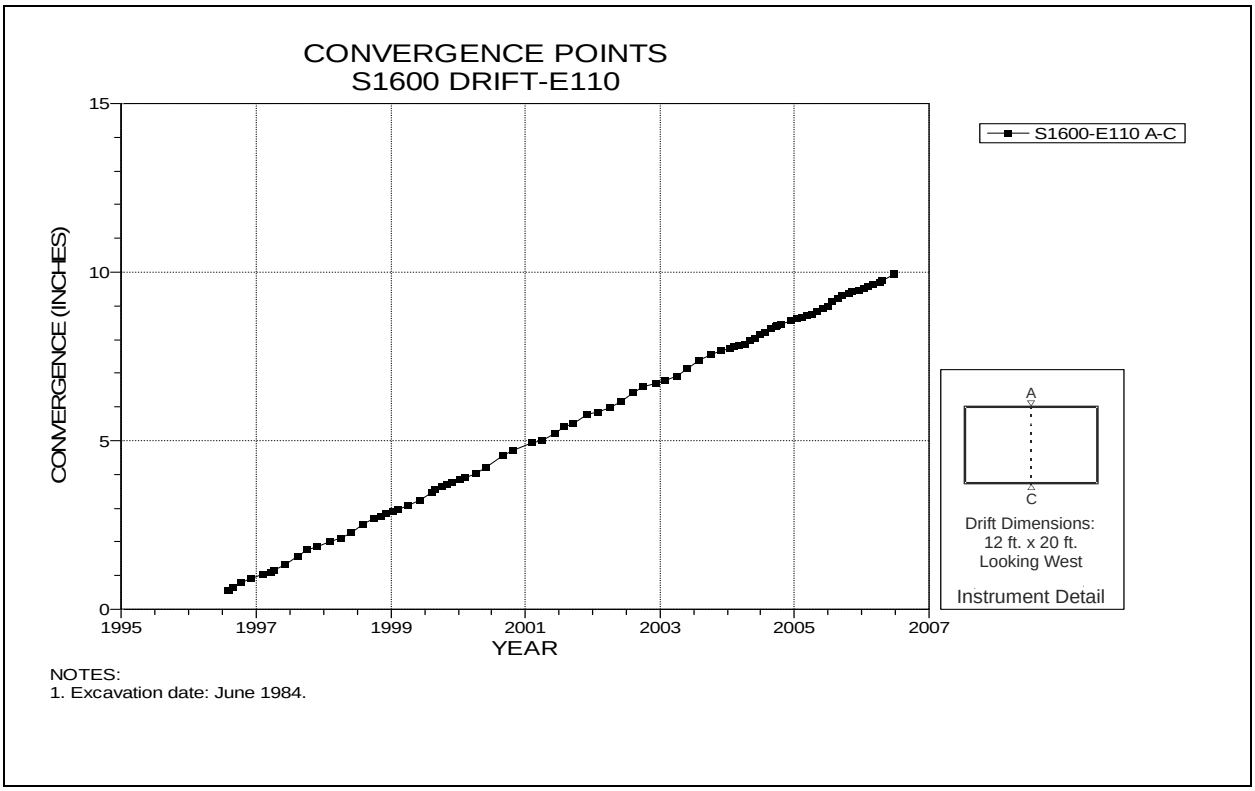


Figure 4-236 Convergence Point Array
S1600 Drift at E110 – Roof to Floor

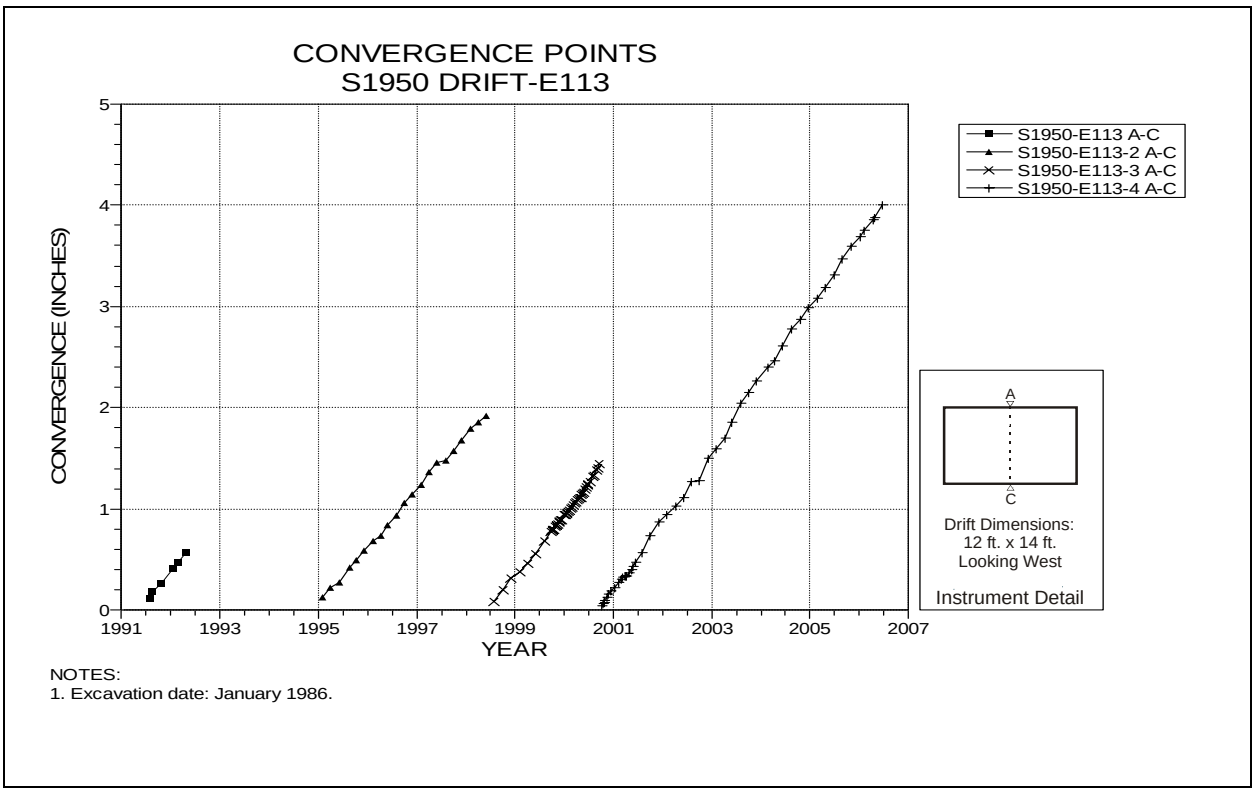


Figure 4-237 Convergence Point Array
S1950 Drift at E113 – Roof to Floor

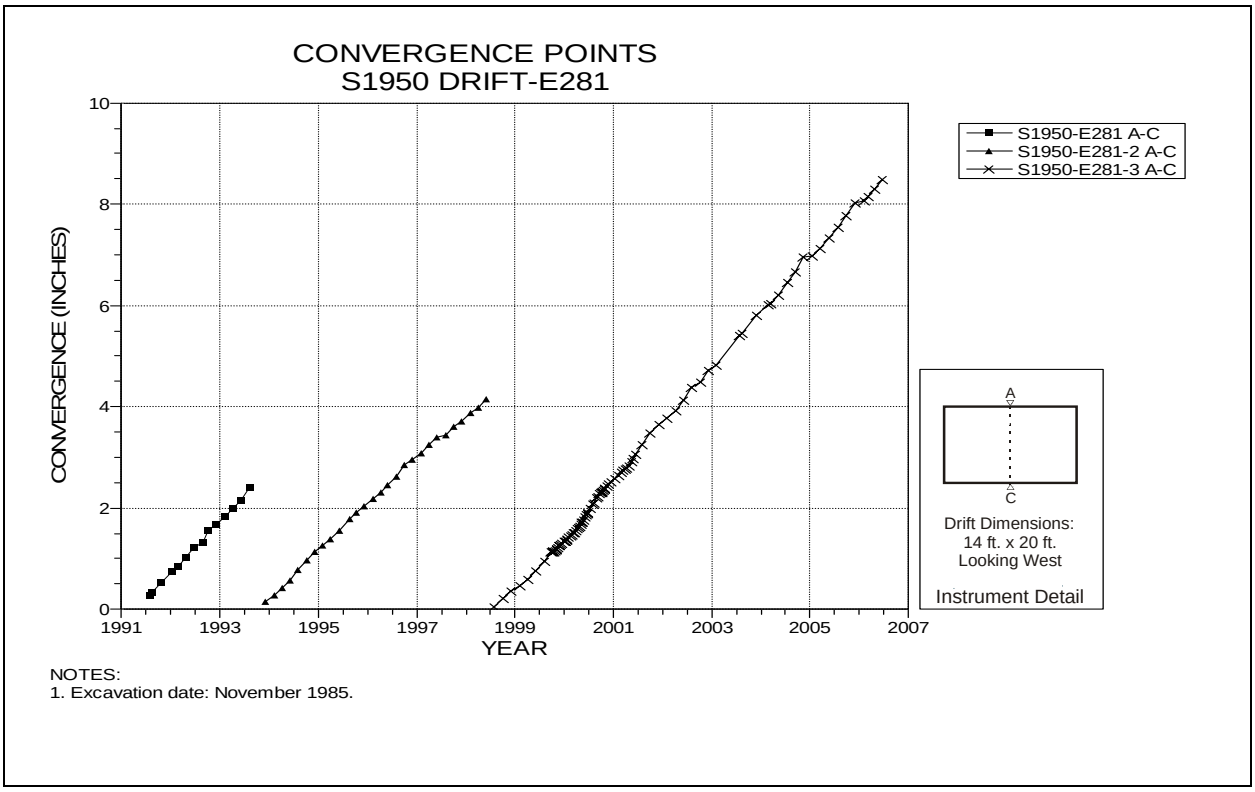


Figure 4-238 Convergence Point Array
S1950 Drift at E281 – Roof to Floor

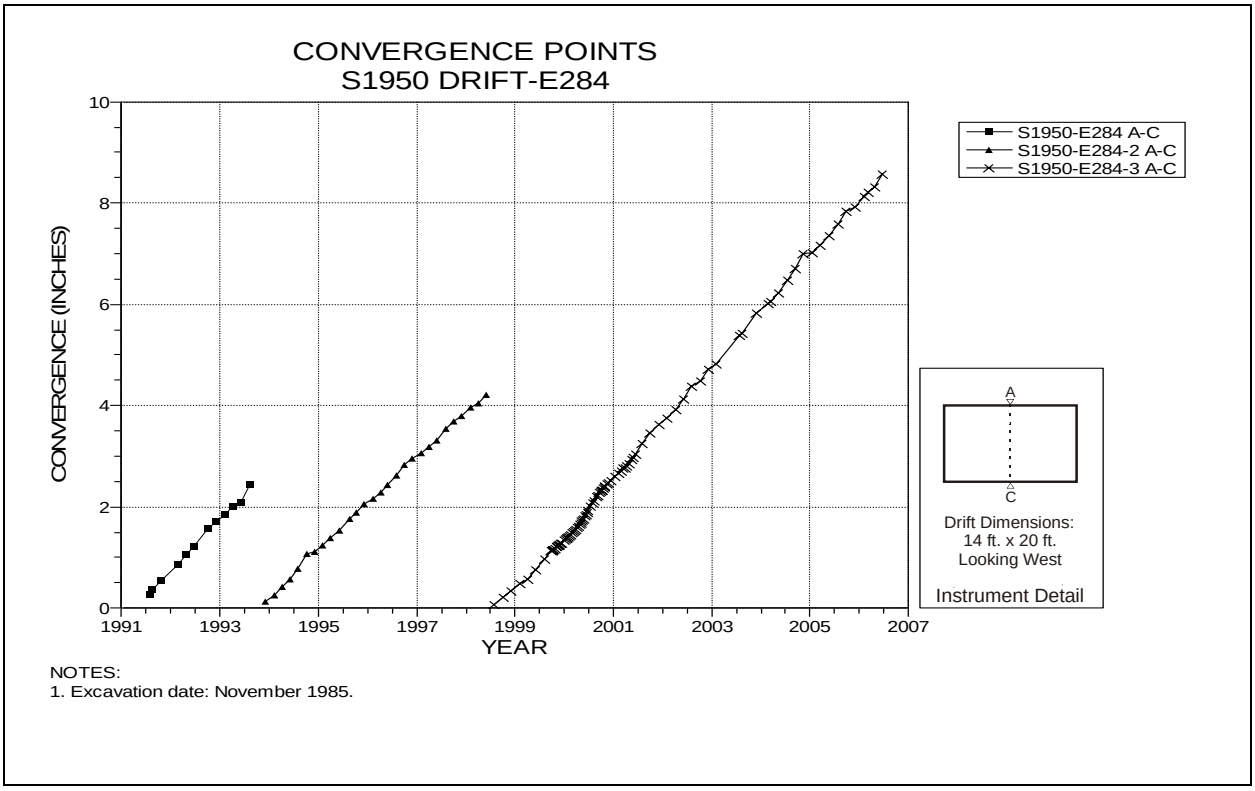


Figure 4-239 Convergence Point Array
S1950 Drift at E284 – Roof to Floor

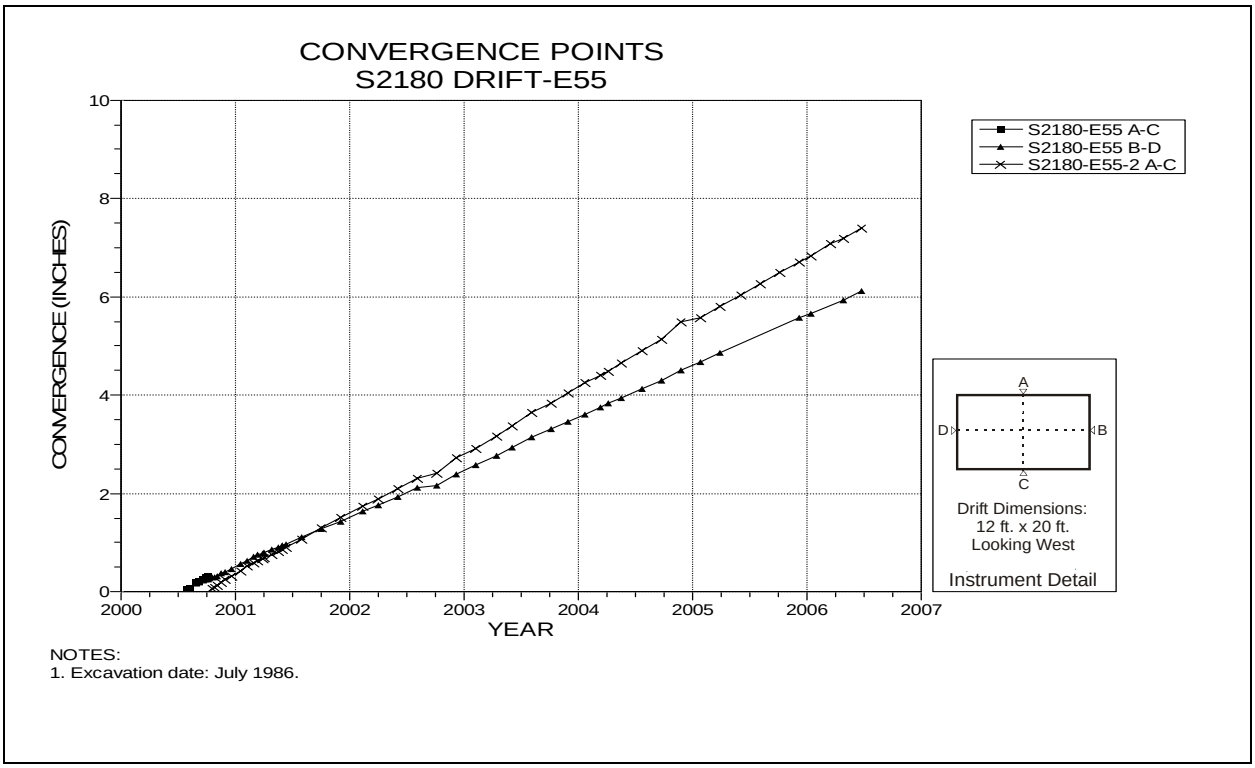


Figure 4-240 Convergence Point Array
S2180 Drift at E55 – All Chords

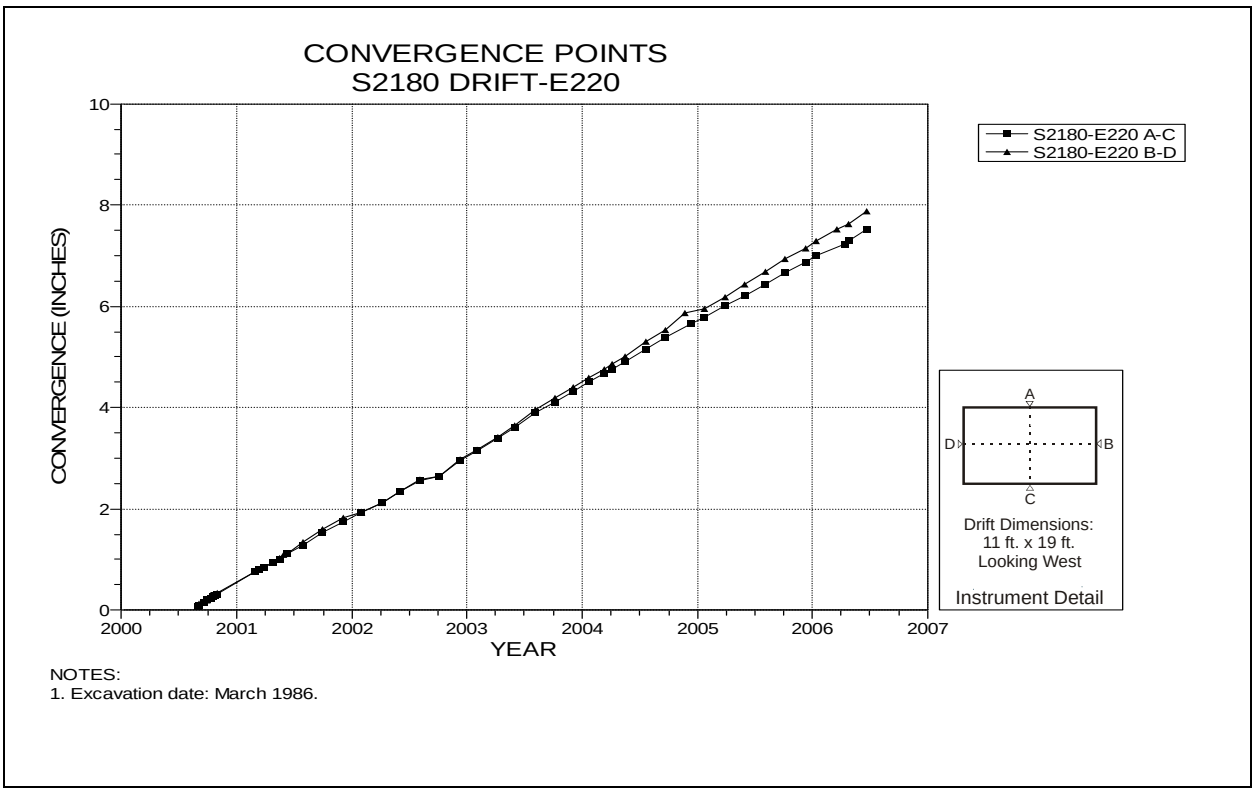


Figure 4-241 Convergence Point Array
S2180 Drift at E220 – All Chords

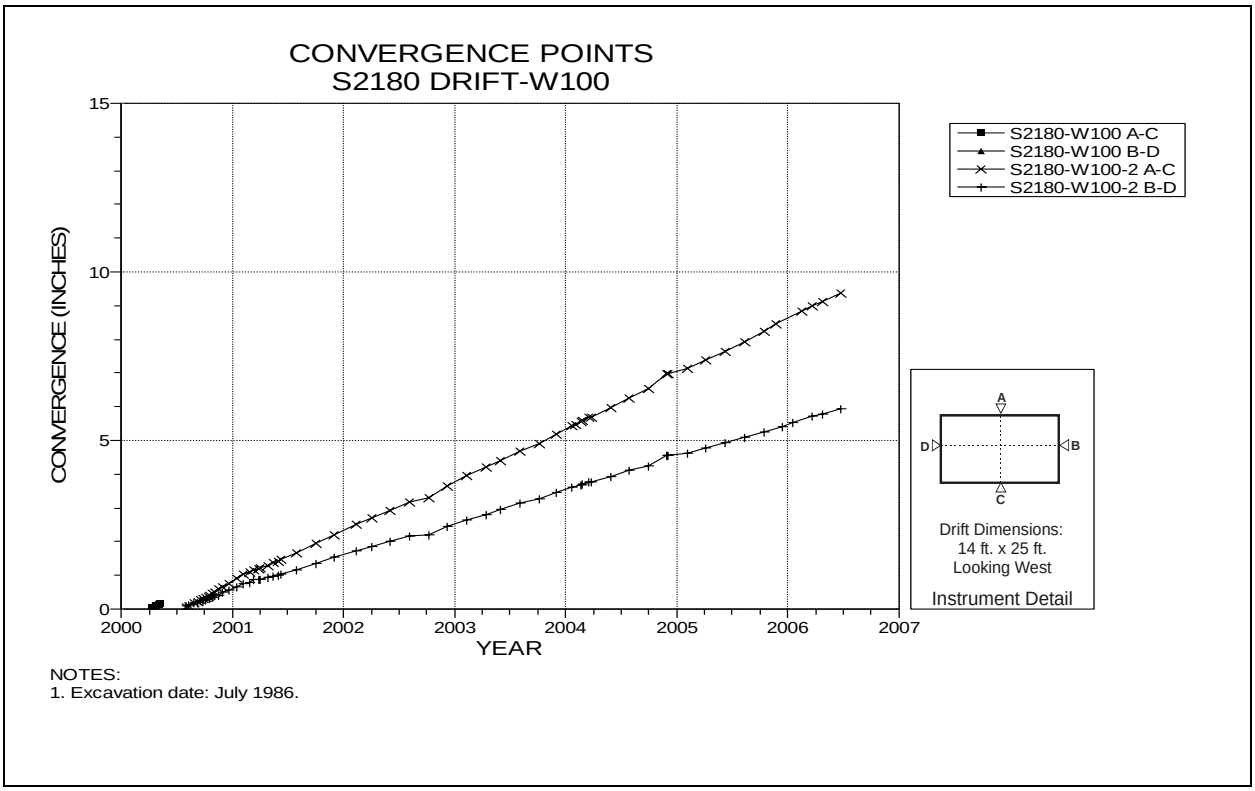


Figure 4-242 Convergence Point Array
S2180 Drift at W100 – All Chords

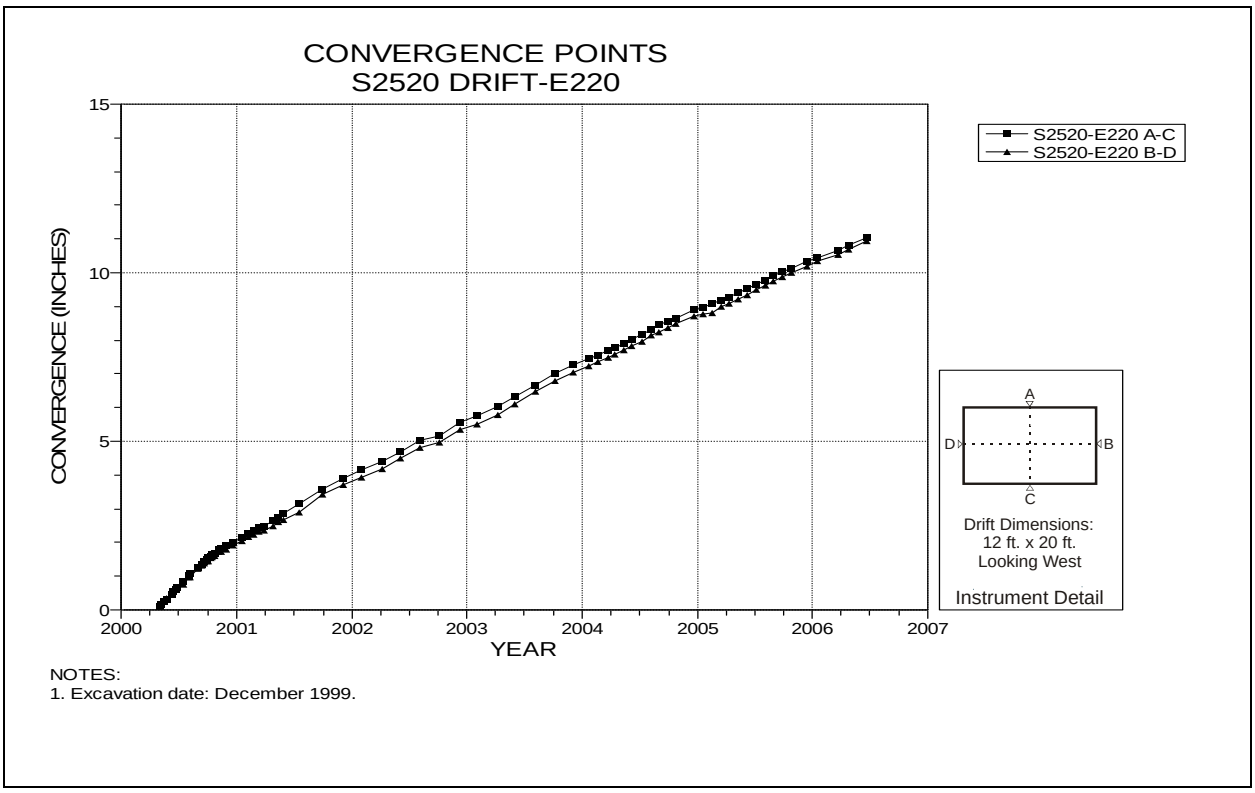


Figure 4-243 Convergence Point Array
S2520 Drift at E220 – All Chords

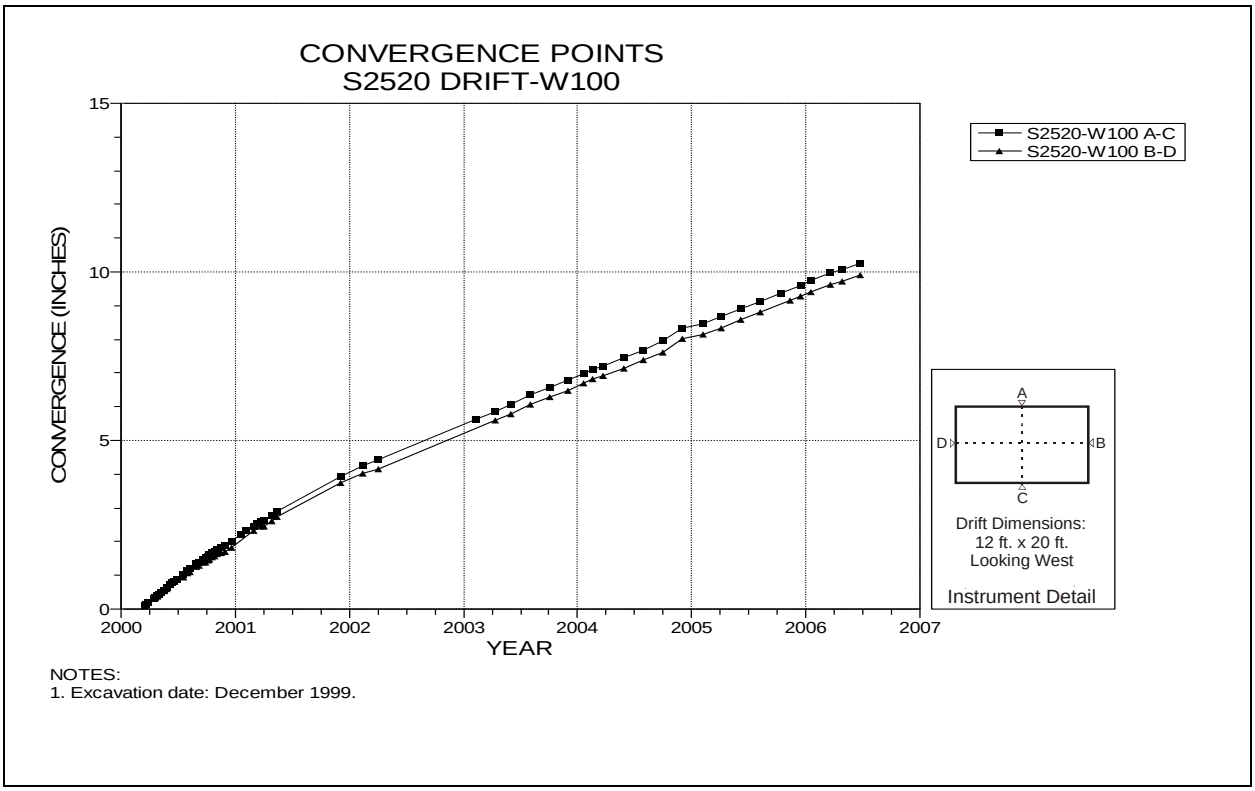


Figure 4-244 Convergence Point Array
S2520 Drift at W100 – All Chords

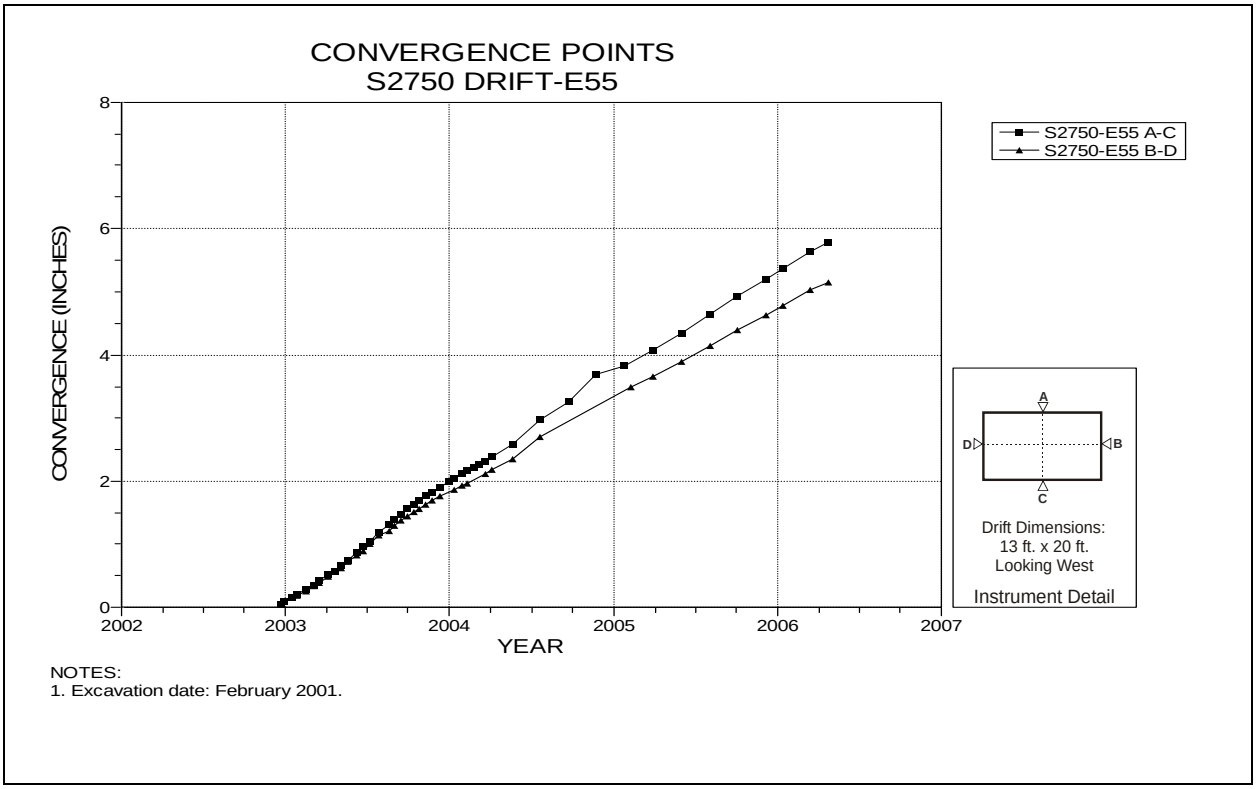


Figure 4-245 Convergence Point Array
S2750 Drift at E55 – All Chords

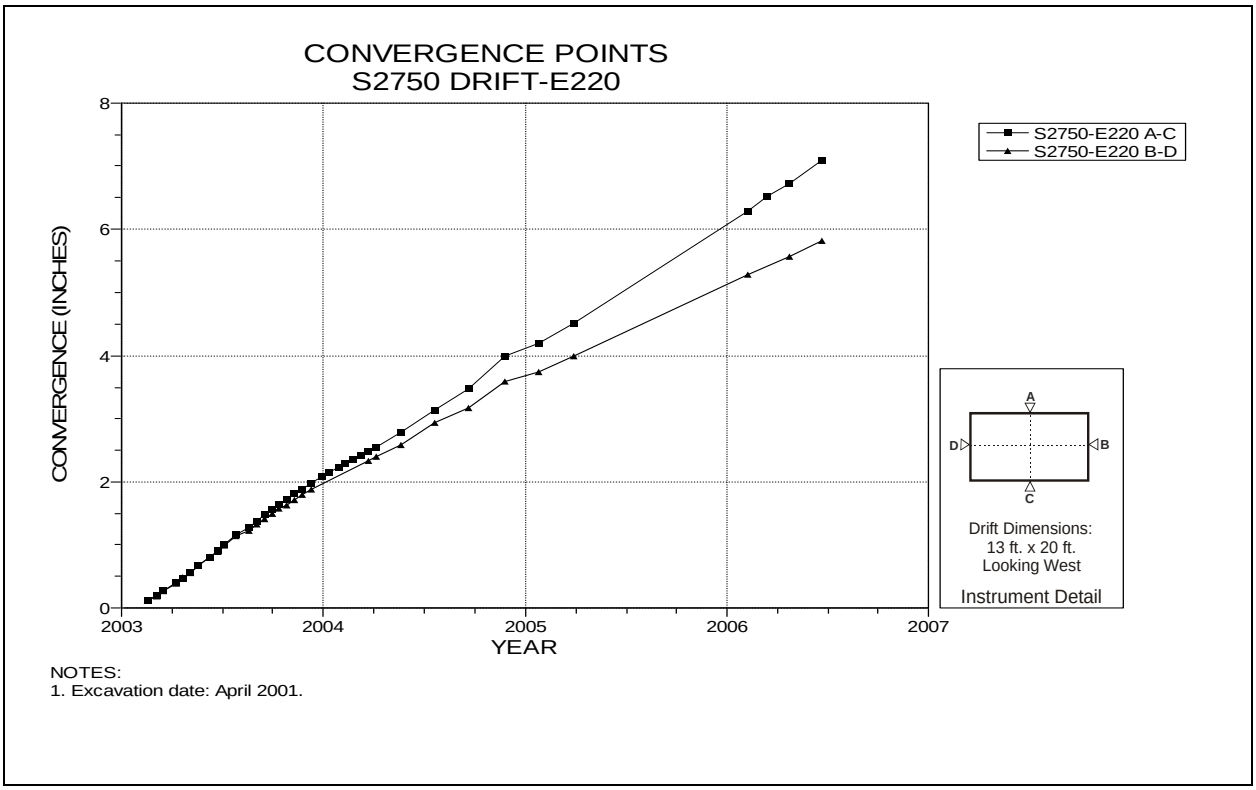


Figure 4-246 Convergence Point Array
S2750 Drift at E220 – All Chords

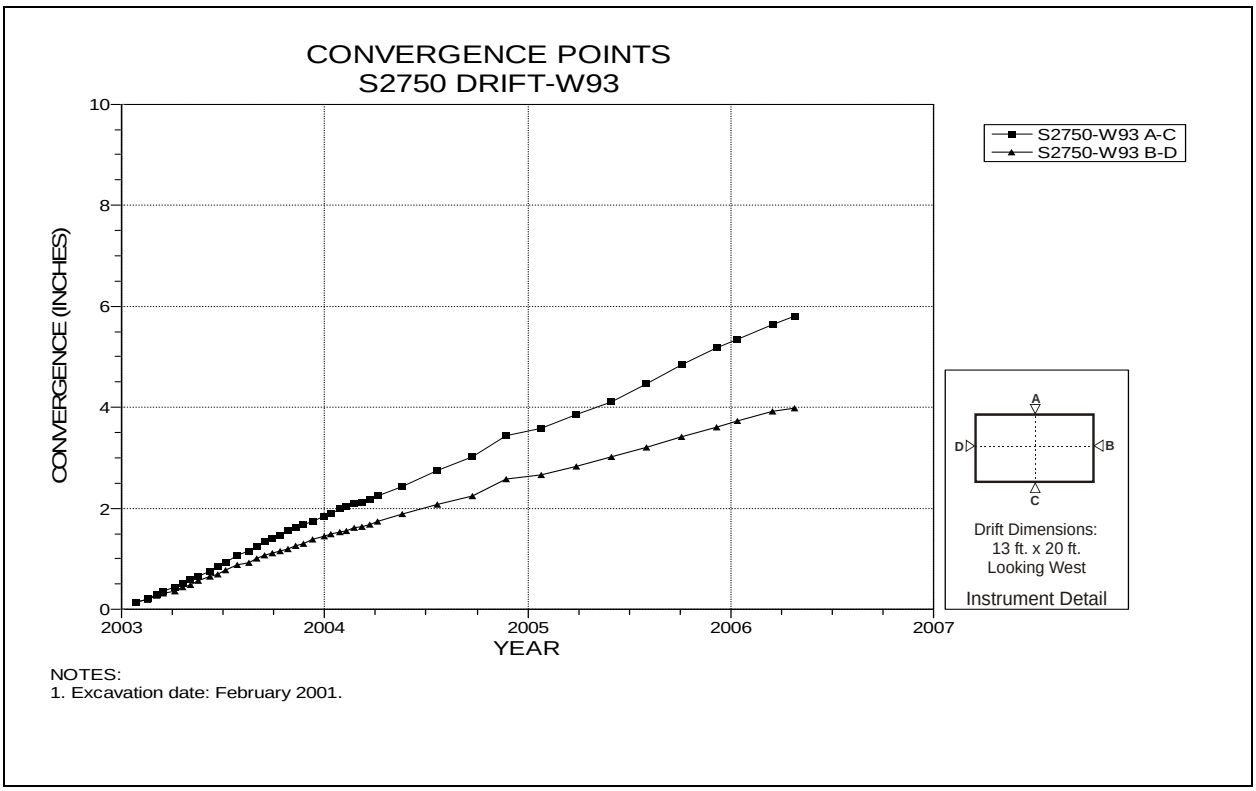


Figure 4-247 Convergence Point Array
S2750 Drift at W93 – All Chords

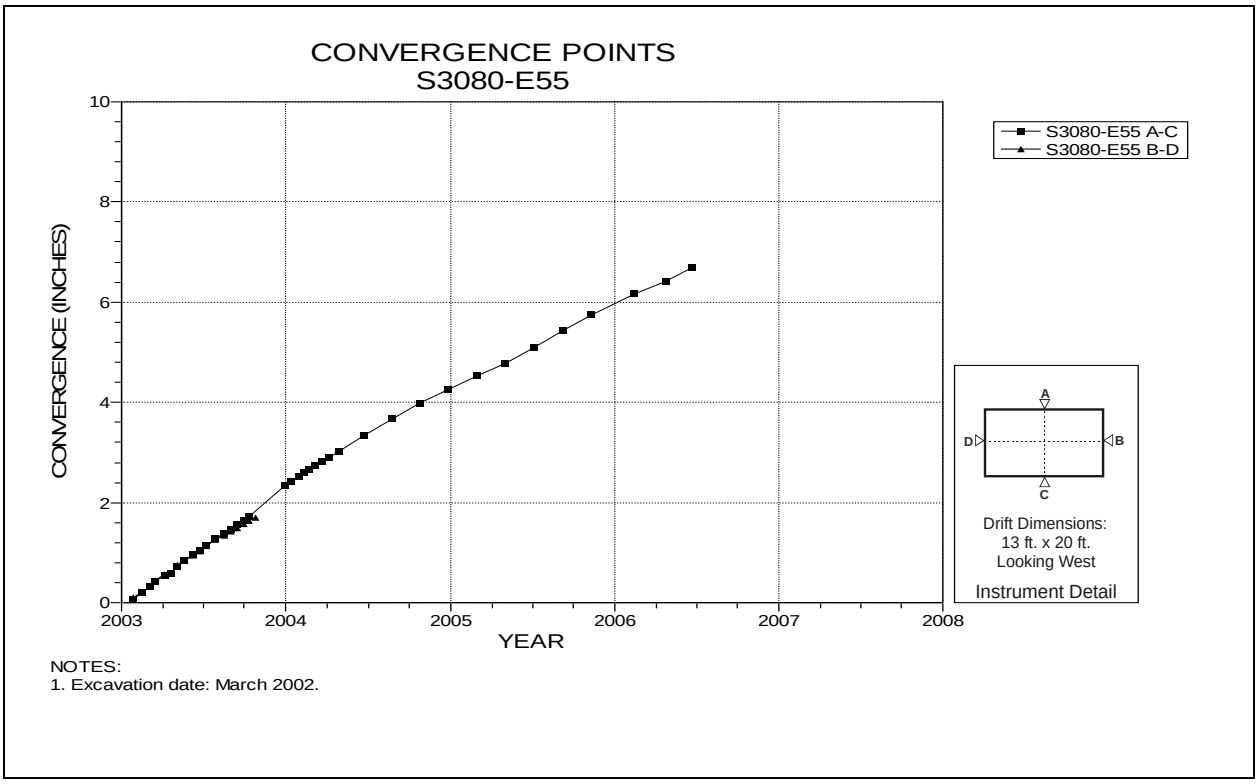


Figure 4-248 Convergence Point Array
S3080 Drift at E55 – All Chords

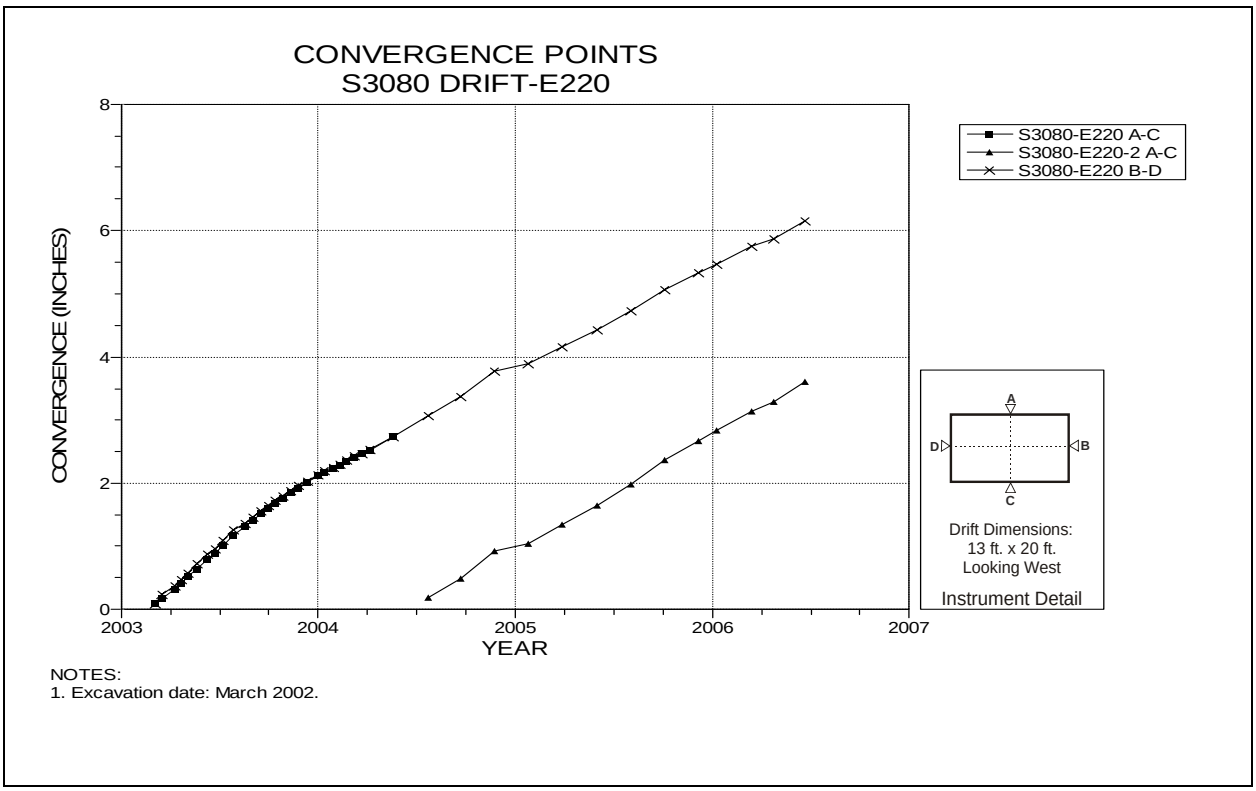


Figure 4-249 Convergence Point Array
S3080 Drift at E220 – All Chords

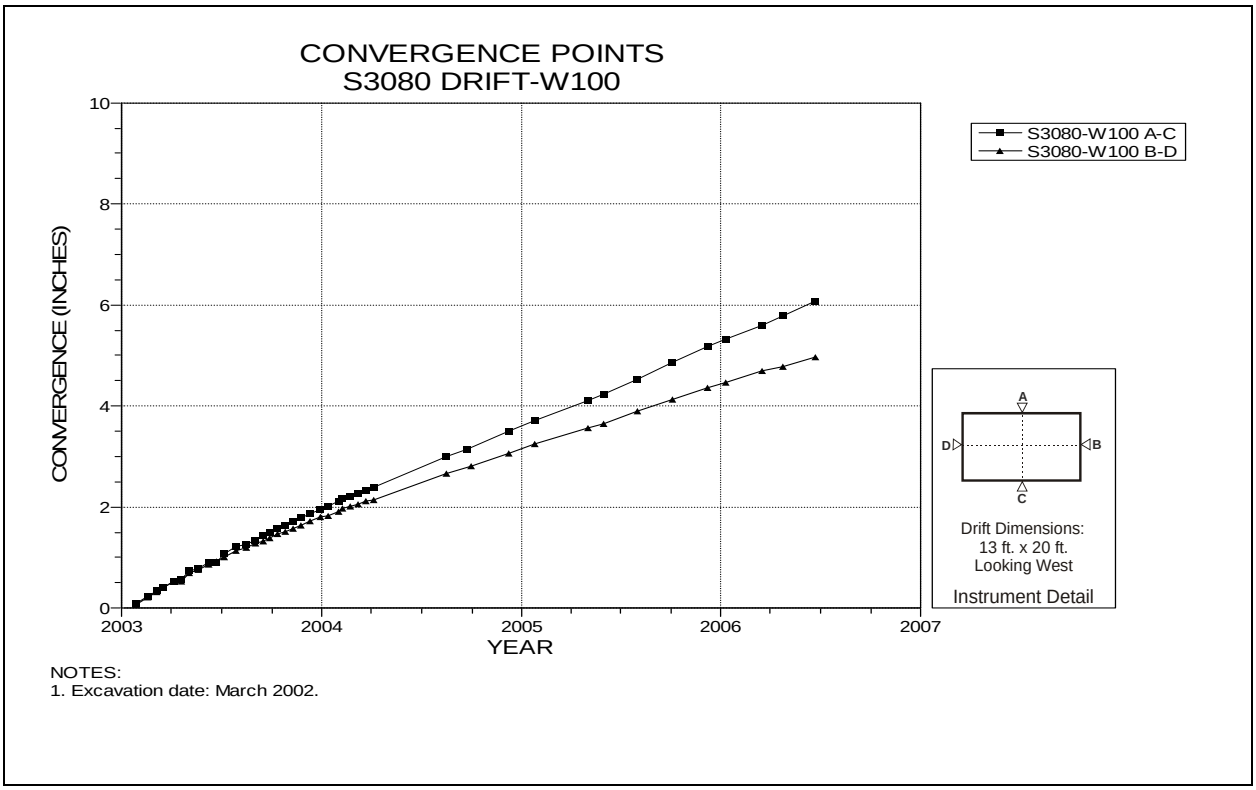


Figure 4-250 Convergence Point Array
S3080 Drift at W100 – All Chords

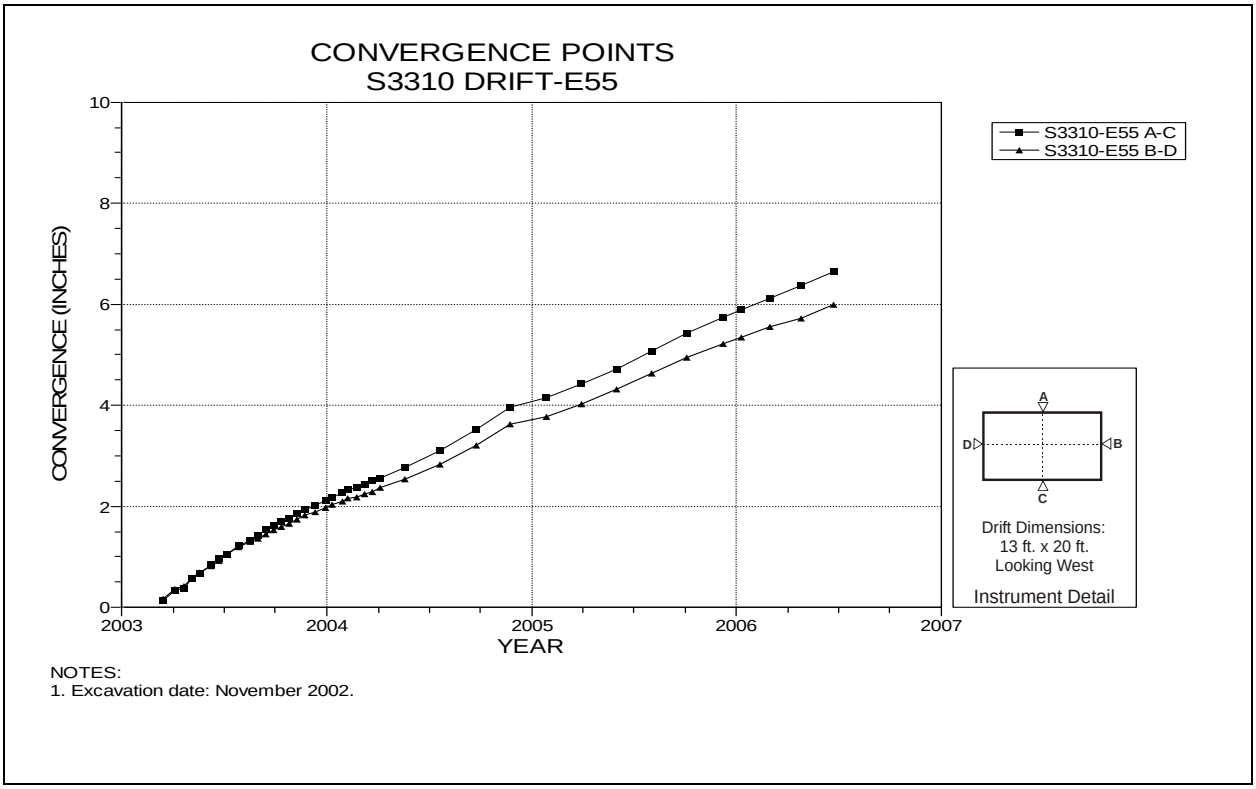


Figure 4-251 Convergence Point Array
S3310 Drift at E55 – All Chords

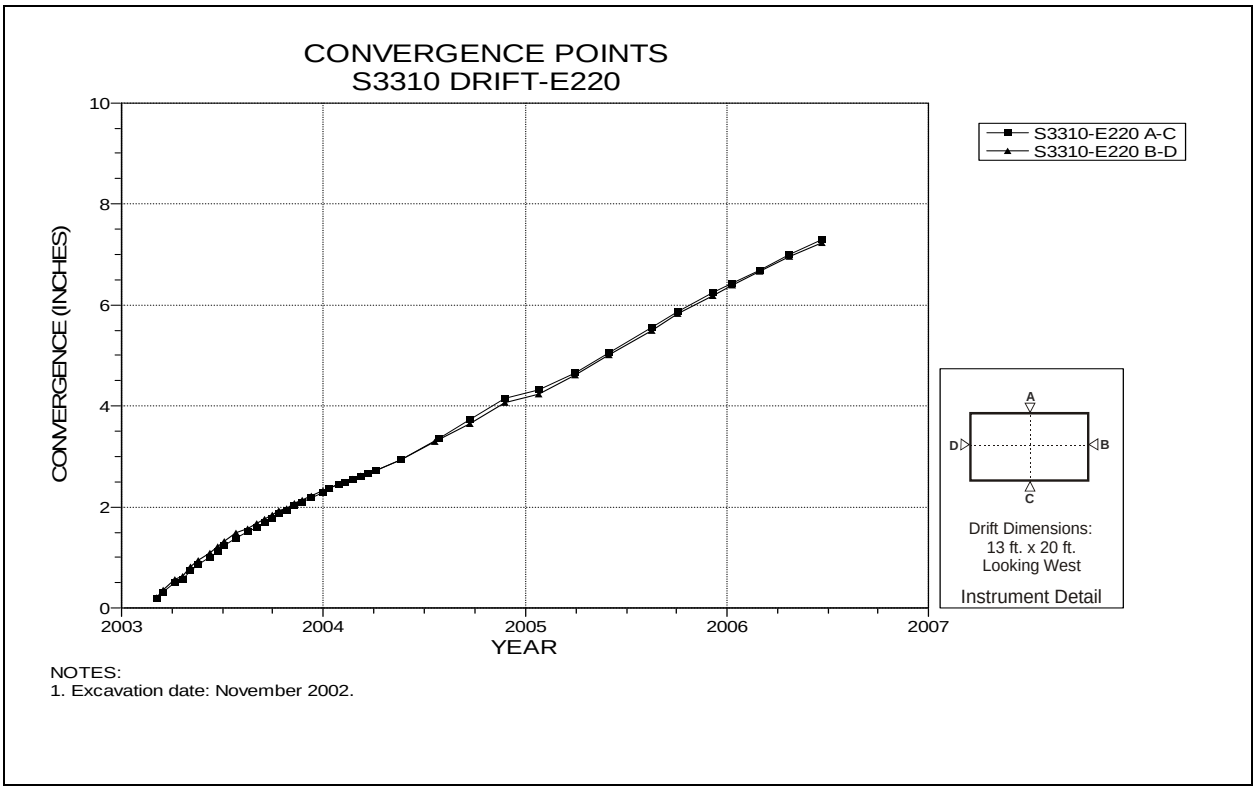


Figure 4-252 Convergence Point Array
S3310 Drift at E220 – All Chords

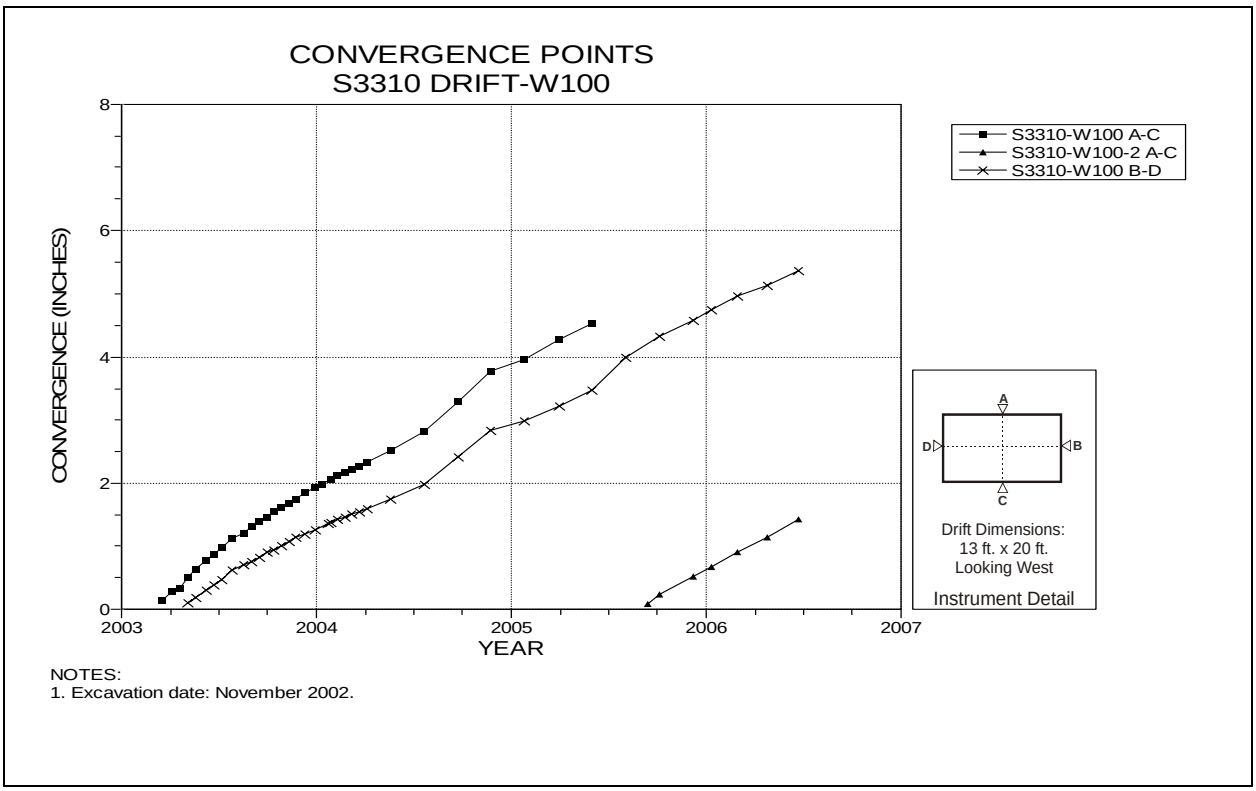


Figure 4-253 Convergence Point Array
S3310 Drift at W100 – All Chords

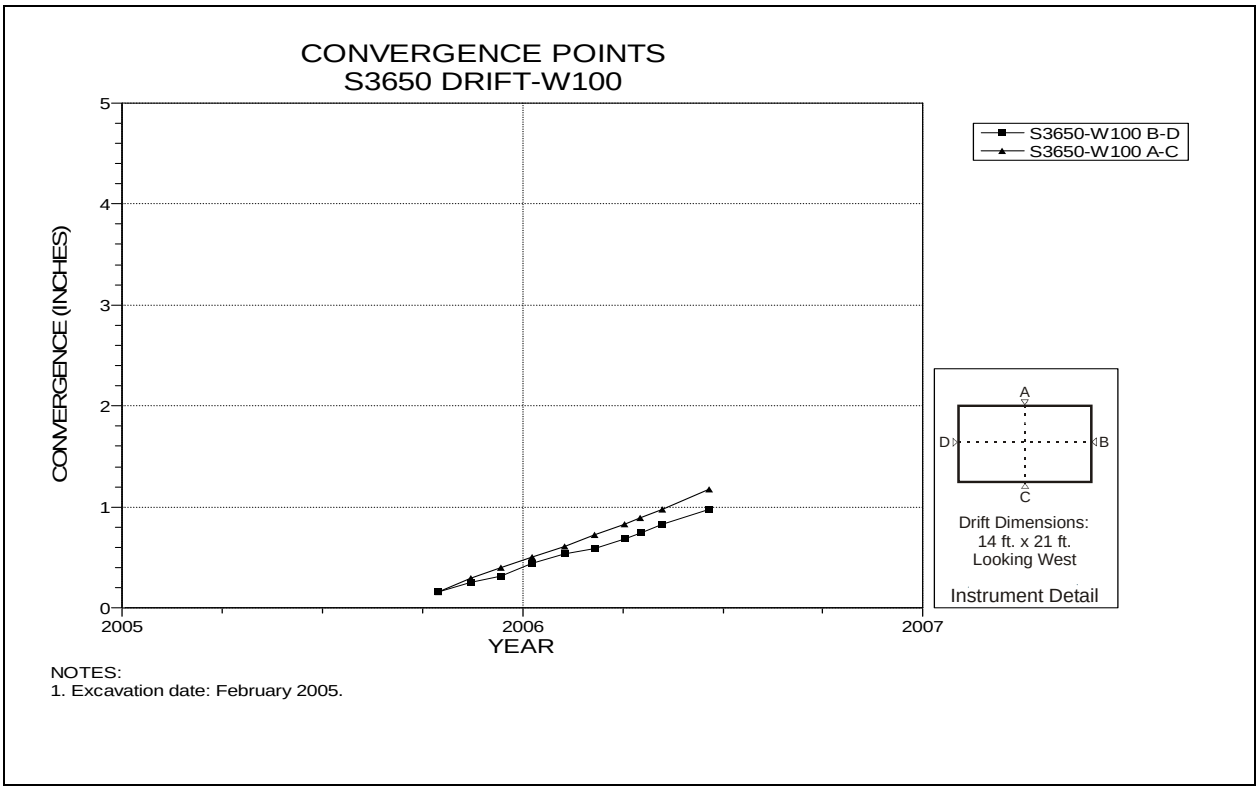


Figure 4-254 Convergence Point Array
S3650 Drift at W100 – All Chords

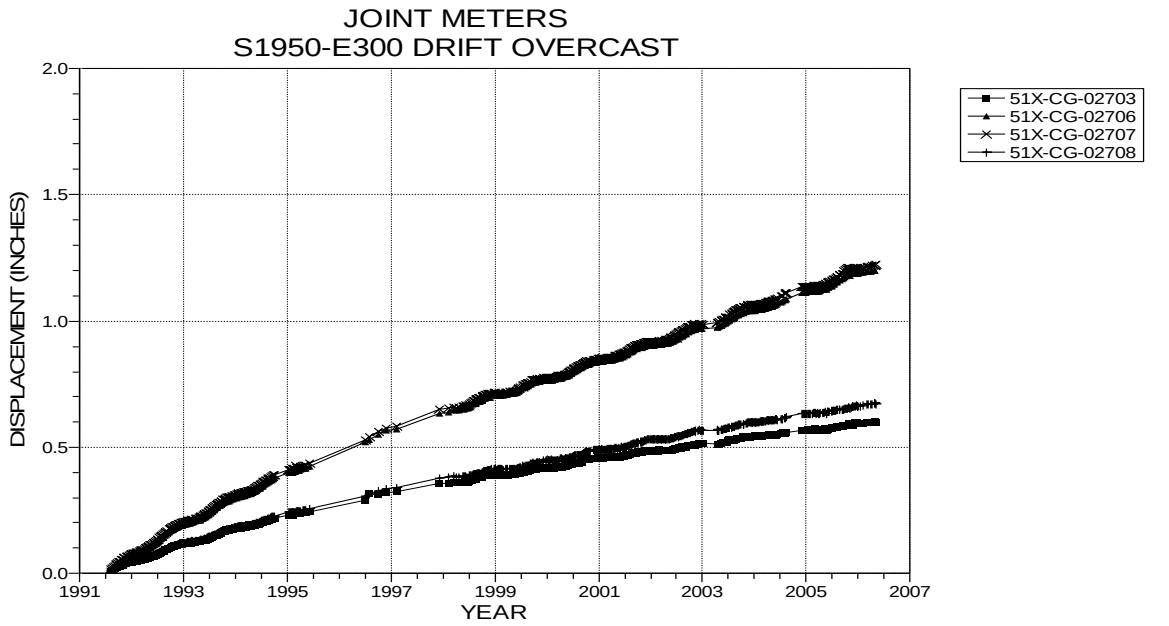


Figure 4-255 Joint Meters
S1950 Drift at E300 – Drift Overcast

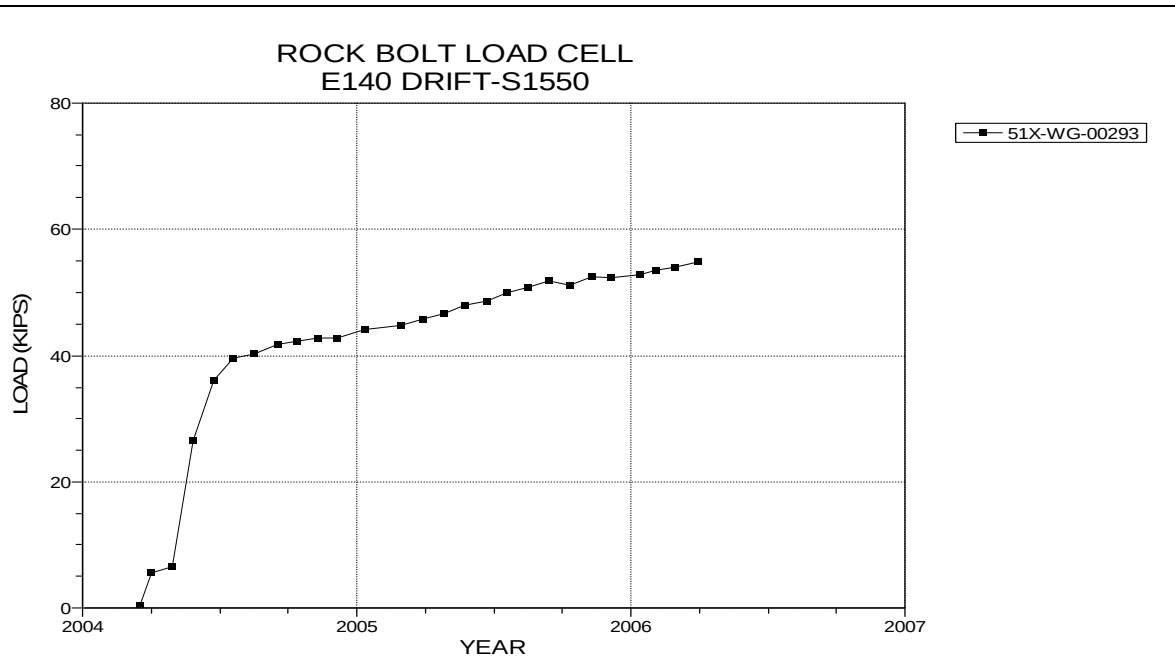
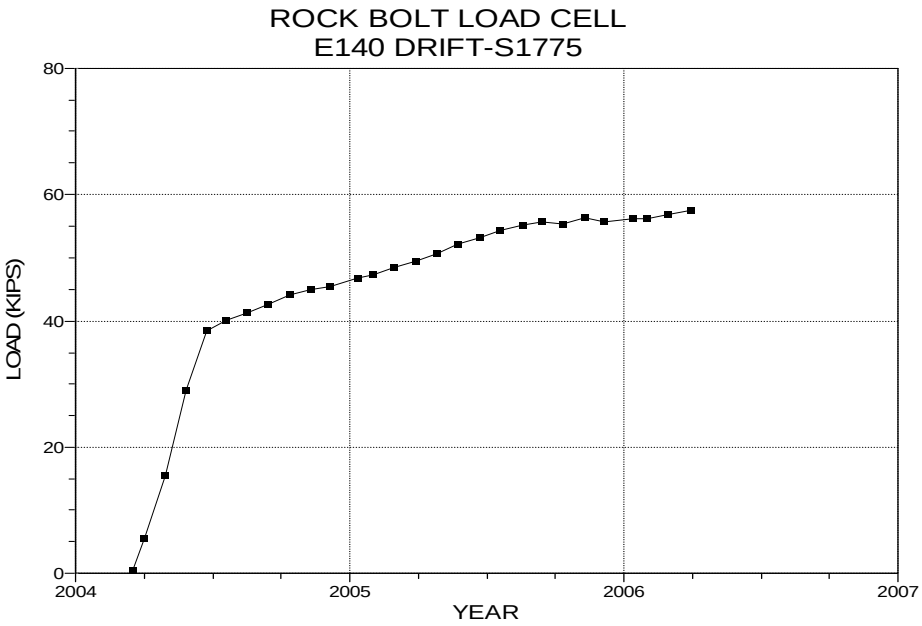
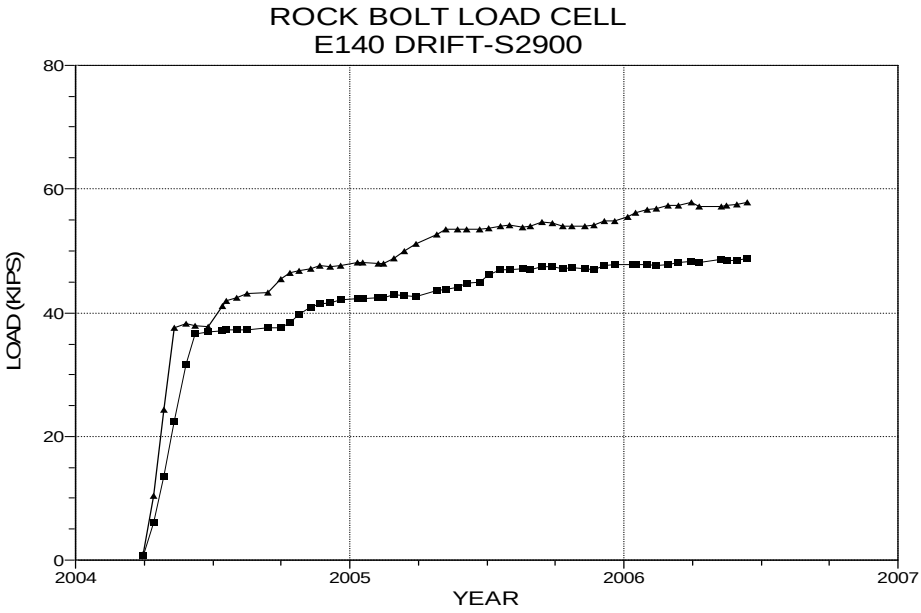


Figure 4-256 Rock Bolt Load Cell
E140 Drift at S1550



NOTES:
1. Excavation date: December 1982.
2.Reinstall RBLC due to broken bolt, replace Oct. 2006

Figure 4-257 Rock Bolt Load Cell
E140 Drift at S1775



NOTES:
1. Excavation date: January 1983.

Figure 4-258 Rock Bolt Load Cells
E140 Drift at S2900

5.0 Instrumentation Summary for the Waste Disposal Area

This chapter presents a summary of the data collected from instruments located in the Waste Disposal Area at the WIPP. Table 5-1 presents data and analysis of the access drifts associated with Panel 1. Plots of the instrument data are presented as Figures 5-1 through 5-15.

Remote monitoring of Panel 2 instrumentation was discontinued in December 2005 due to the closure of Panel 2 (datalink into Panel 2 was removed). Table 5-2 presents data and analysis of Panel 2. Plots of the instrument data are presented as Figures 5-16 through 5-26.

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During the reporting period CH waste was emplaced in Rooms 4-7 of Panel 3. Remote monitoring continued from instrumentation tied into the Geotechnical Instrumentation System throughout the reporting period. Manually read instrumentation data were collected and are reported for areas not blocked by emplaced waste. Plots of the instrument data are presented as Figures 5-27 through 5-82.

Panel 4 was mined to final dimensions and instrumentation was installed during the current reporting period. Table 5-4 presents data and analysis of Panel 4. Plots of the instrument data are presented as Figures 5-83 through 5-146.

Table 5-1
Panel 1 Access Drifts Data Analysis

CONVERGENCE POINTS

Field Tag	Location	Figure Number	Last Reading 2005 to 2006		Cumulative Displacement (inches)	Closure Rate 2005 to 2006 (in/year)	Closure Rate 2004 to 2005 (in/year)	Rate Change Percent	Comments
			Date	Inches					
S1600-E311-2 A-C	S1600 DRIFT-E311	5-1	02/06/06	11.772	17.219	0.812	0.621	31%	
S1600-E311-5 B-D	S1600 DRIFT-E311	5-1	06/22/06	6.627	15.870	0.777	0.565	37%	
S1600-E332-3 A-C	S1600 DRIFT-E332	5-2	06/22/06	11.072	15.499	0.831	0.696	19%	
S1600-E357-2 A-C	S1600 DRIFT-E357	5-3	06/22/06	12.745	18.143	0.972	0.886	9%	
S1600-E382-2 A-C	S1600 DRIFT-E382	5-4	06/22/06	12.809	18.189	0.943	0.857	9%	
S1600-E407-2 A-G	S1600 DRIFT-E407	5-5	06/22/06	13.809	19.251	1.056	0.946	12%	
S1600-E407-2 B-F	S1600 DRIFT-E407	5-5	06/22/06	12.751	17.757	1.013	0.873	16%	
S1600-E407-2 H-L	S1600 DRIFT-E407	5-5	06/22/06	13.459	18.524	1.042	0.958	8%	
S1600-E432-2 A-C	S1600 DRIFT-E432	5-6	06/22/06	15.791	22.550	1.172	1.038	13%	
S1600-E453 A-C	S1600 DRIFT-E453	5-7	06/22/06	1.551	1.551	0.506	0.473	9%	
S1600-E453 B-D	S1600 DRIFT-E453	5-7	06/22/06	1.514	1.514	0.463	0.525	-13%	
S1950-E311-6 A-C	S1950 DRIFT-E311	5-8	06/22/06	3.003	24.964	1.129	0.985	14%	
S1950-E311-3 B-D	S1950 DRIFT-E311	5-8	06/22/06	9.480	22.523	1.189	0.96	24%	
S1950-E332-4 A-C	S1950 DRIFT-E332	5-9	06/22/06	11.196	29.855	1.383	1.288	7%	
S1950-E332-4 B-D	S1950 DRIFT-E332	5-9	06/22/06	6.850	24.837	1.263	1.115	13%	
S1950-E357-7 A-C	S1950 DRIFT-E357	5-10	06/22/06	14.024	34.266	1.734	1.652	5%	
S1950-E357-4 B-D	S1950 DRIFT-E357	5-10	06/22/06	7.418	25.918	1.396	1.262	11%	
S1950-E382-5 A-C	S1950 DRIFT-E382	5-11	06/22/06	16.579	35.264	1.92	1.825	5%	
S1950-E382-3 B-D	S1950 DRIFT-E382	5-11	06/22/06	13.665	28.047	1.475	1.354	10%	
S1950-E407-4 A-G	S1950 DRIFT-E407	5-12	06/22/06	16.334	38.210	2.134	2.219	-4%	
S1950-E407-3 H-L	S1950 DRIFT-E407	5-12	06/22/06	17.483	38.240	1.832	1.871	-2%	
S1950-E407-3 D-J	S1950 DRIFT-E407	5-13	06/22/06	14.463	28.640	1.521	1.409	8%	
S1950-E432-3 A-C	S1950 DRIFT-E432	5-14	06/22/06	16.675	38.496	2.049	1.966	4%	
S1950-E432-3 B-D	S1950 DRIFT-E432	5-14	06/22/06	13.698	28.099	1.429	1.305	9%	
S1950-E457-5 A-C	S1950 DRIFT-E457	5-15	06/22/06	2.172	34.518	0.75	0.651	15%	
S1950-E457-4 B-D	S1950 DRIFT-E457	5-15	06/22/06	10.668	25.960	0.529	0.562	-5%	

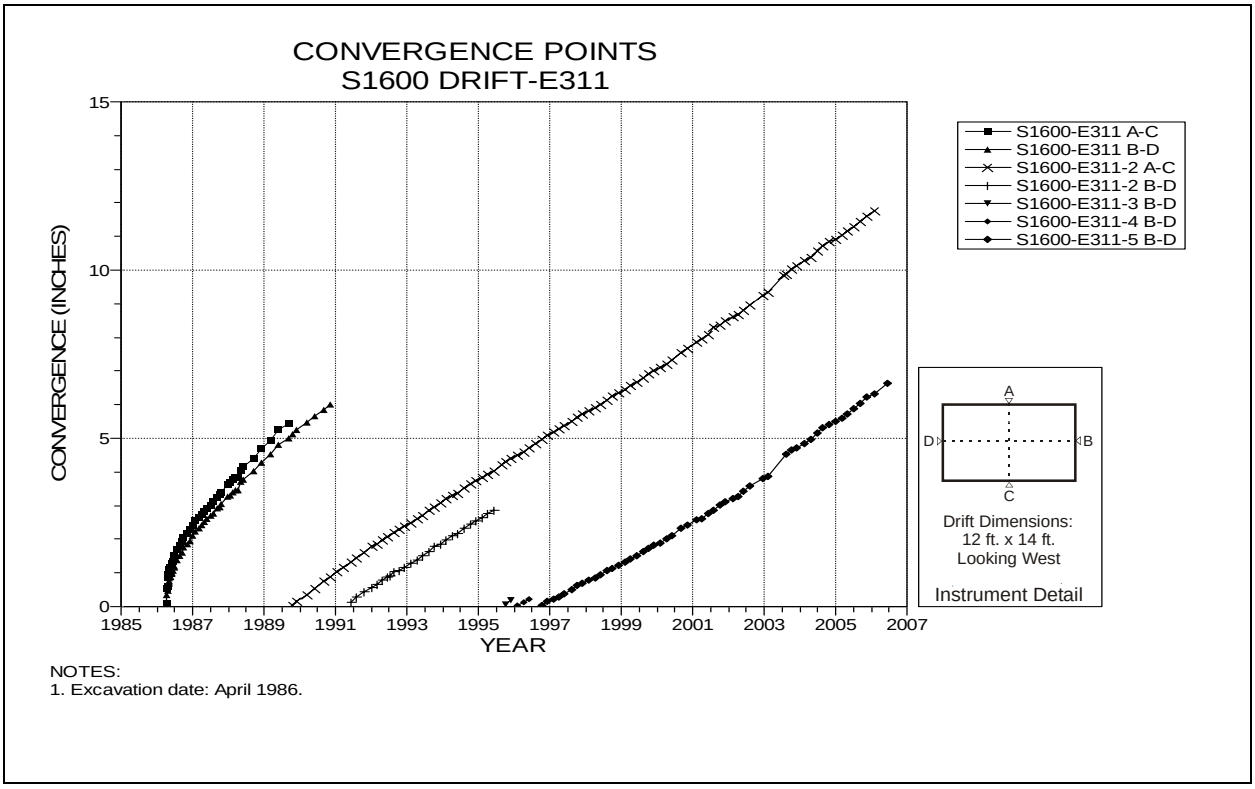


Figure 5-1 Convergence Point Array
S1600 Drift at E311 – All Chords

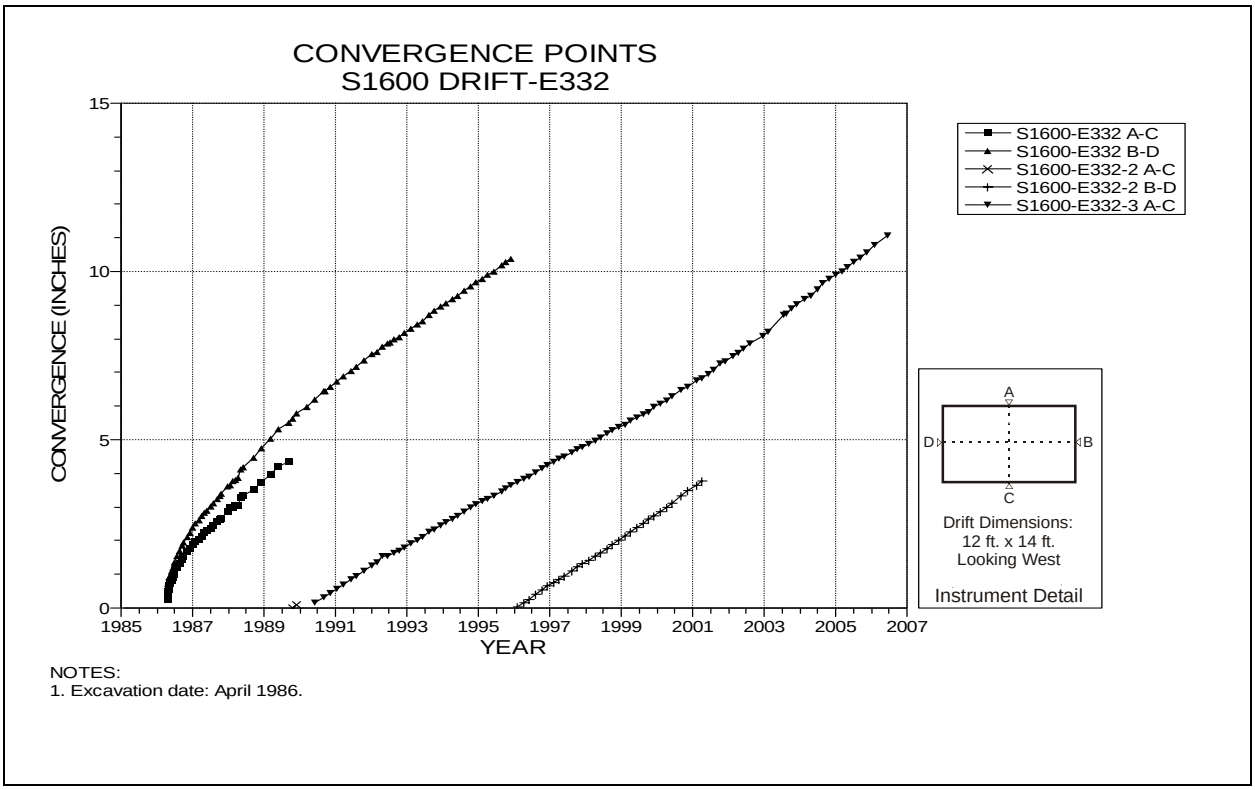


Figure 5-2 Convergence Point Array
S1600 Drift at E332 – All Chords

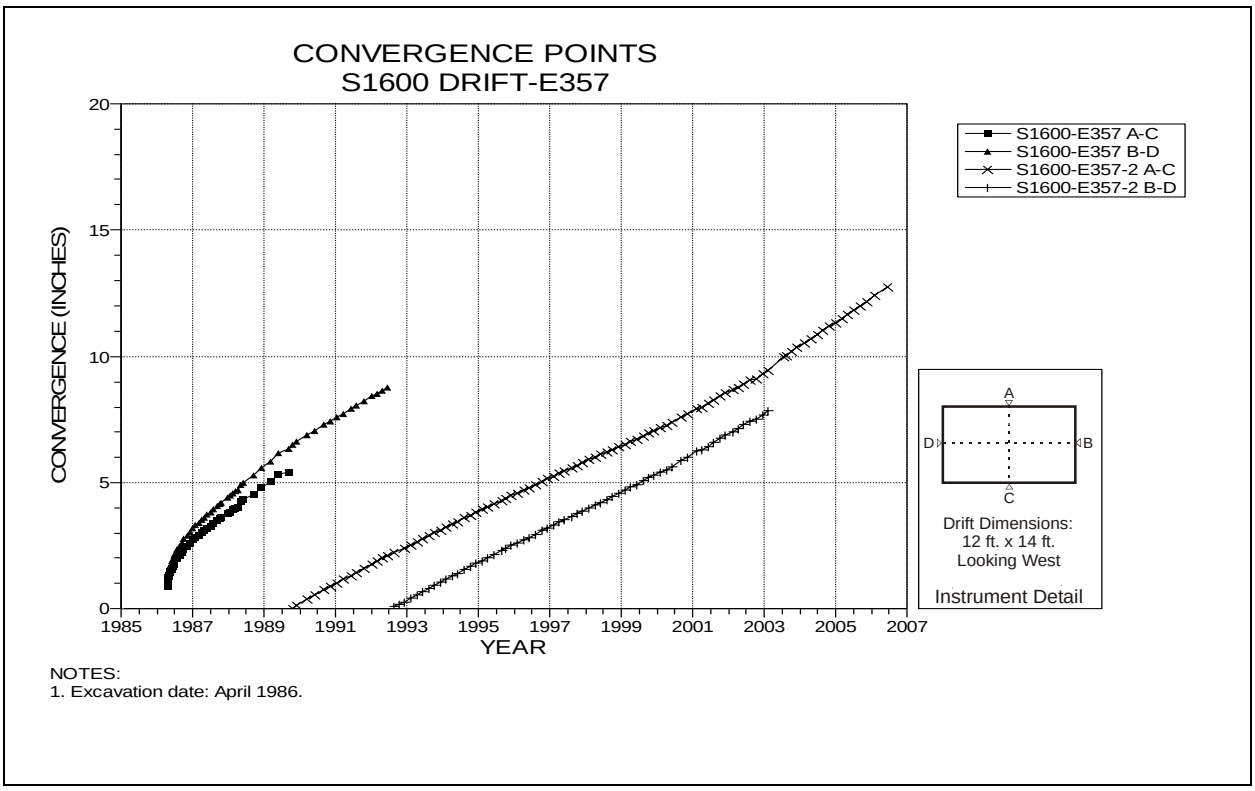


Figure 5-3 Convergence Point Array
S1600 Drift at E357 – All Chords

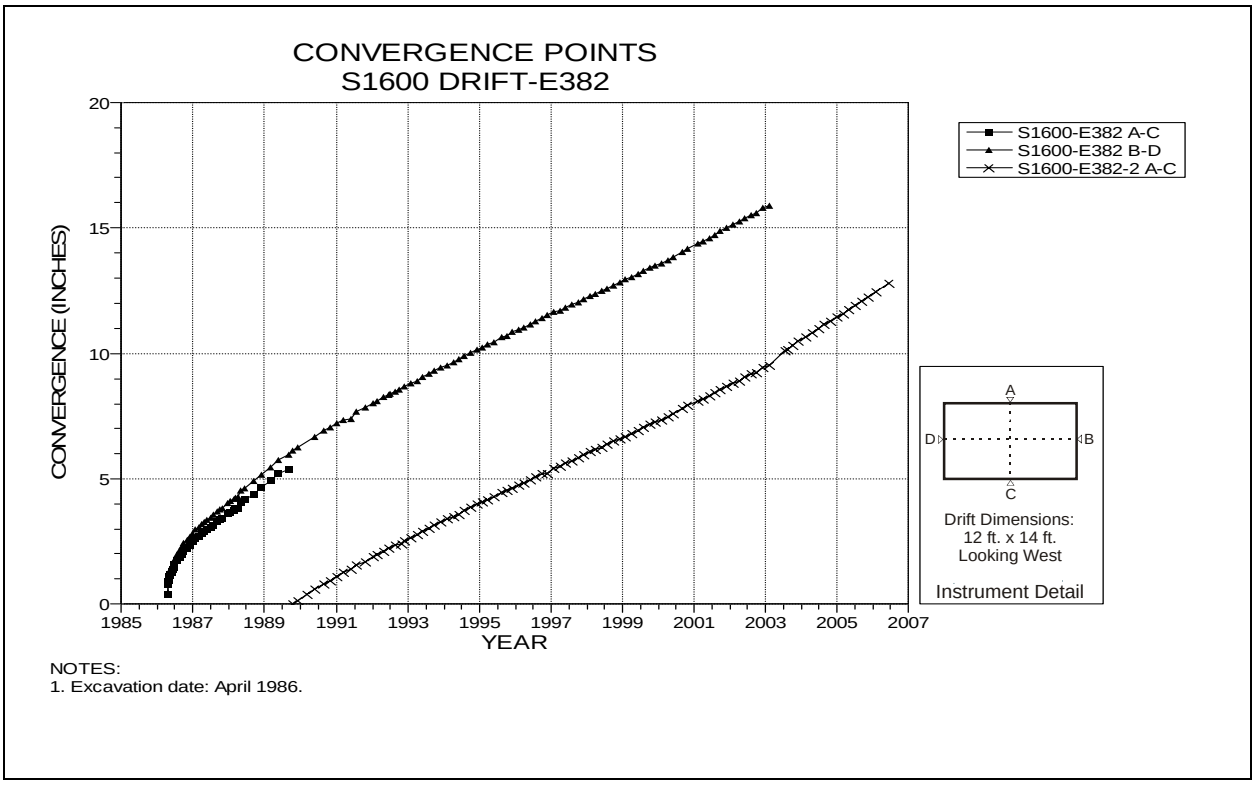
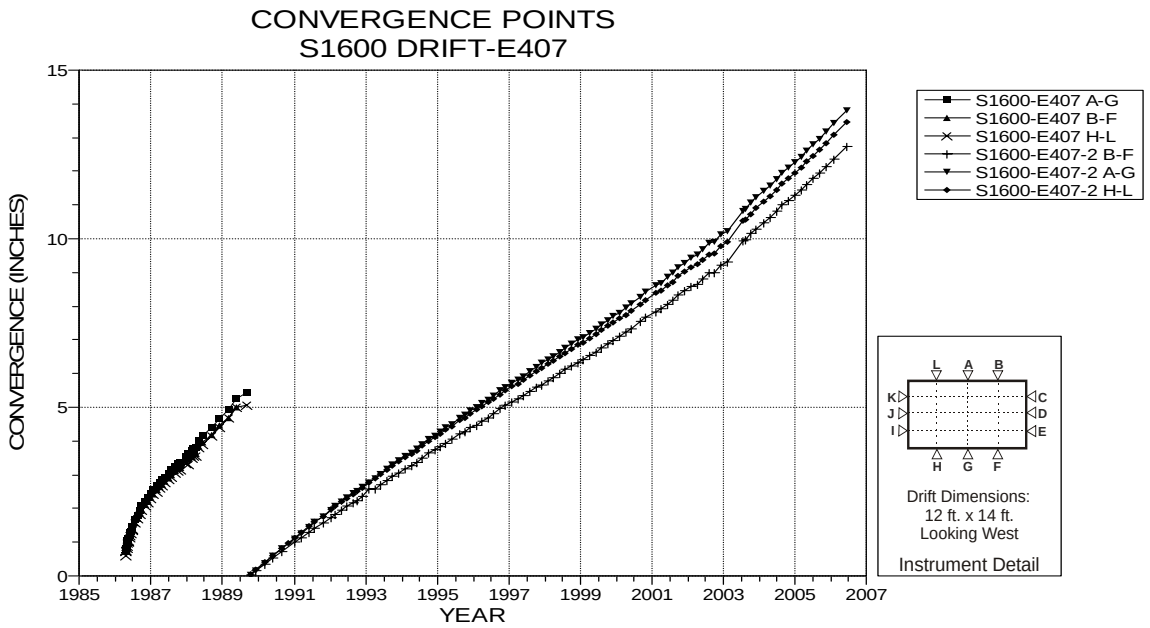
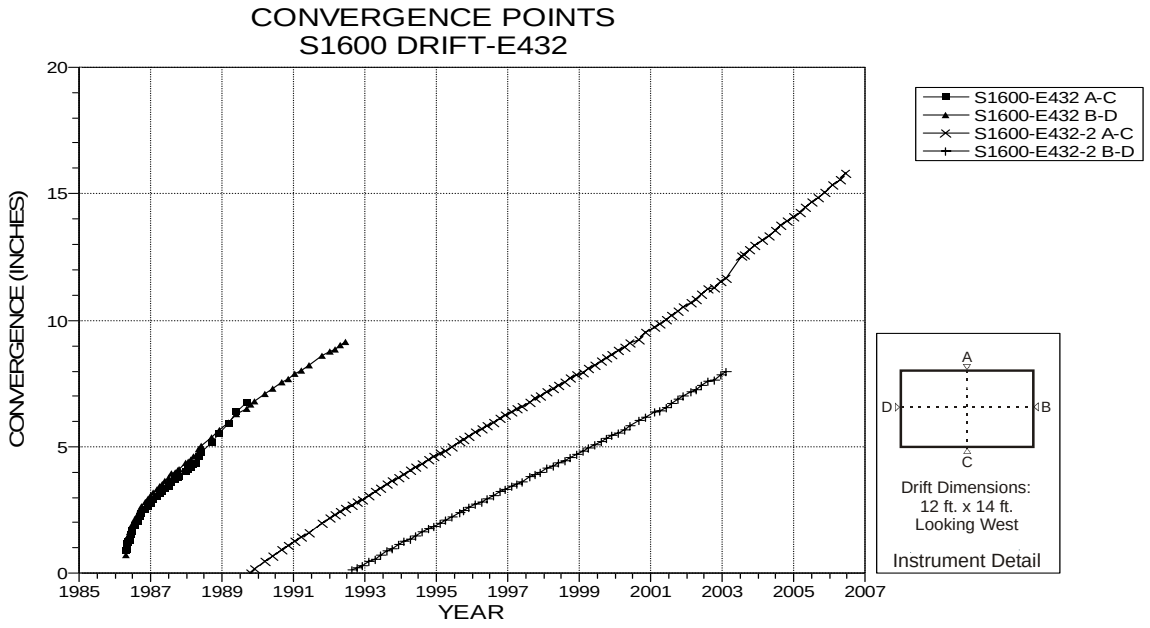


Figure 5-4 Convergence Point Array
S1600 Drift at E382 – All Chords



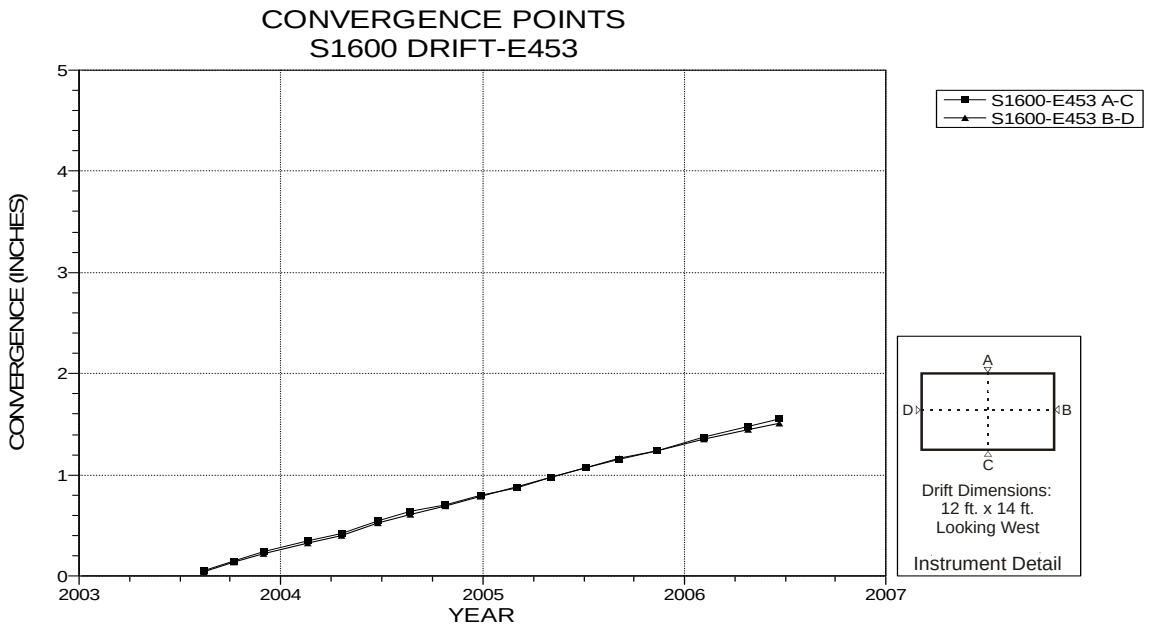
NOTES:
1. Excavation date: April 1986.

Figure 5-5 Convergence Point Array
S1600 Drift at E407 – Roof to Floor



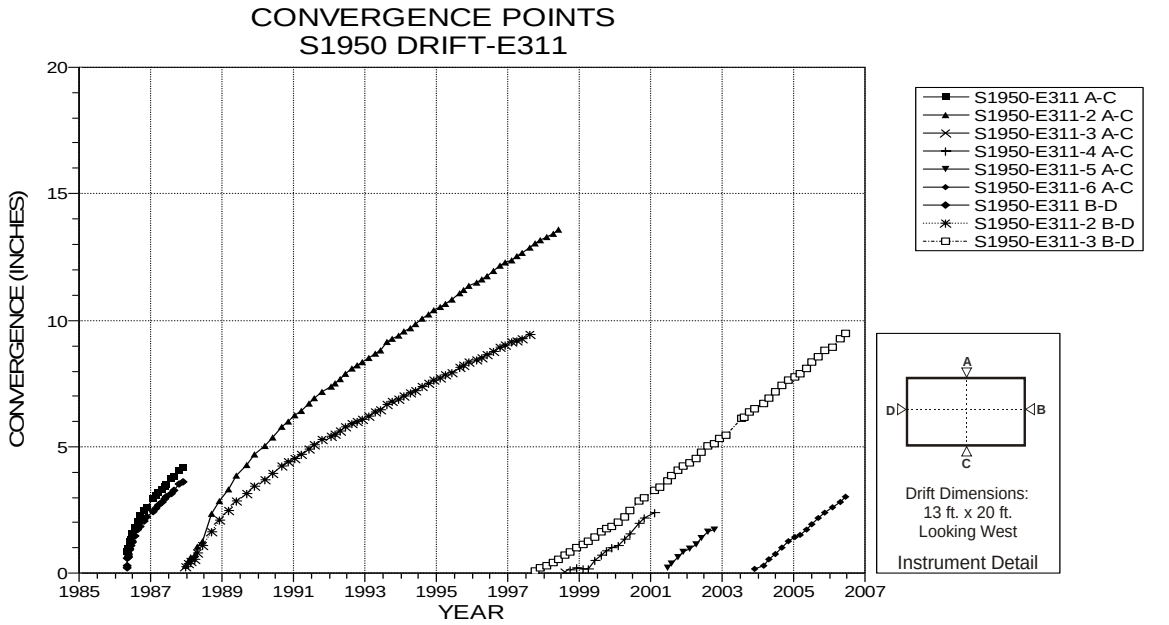
NOTES:
1. Excavation date: April 1986.

Figure 5-6 Convergence Point Array
S1600 Drift at E432 – All Chords



NOTES:
1. Excavation date: April 1986.

Figure 5-7 Convergence Point Array
S1600 Drift at E453 – All Chords



NOTES:
1. Excavation date: May 1986.

Figure 5-8 Convergence Point Array
S1950 Drift at E311 – All Chords

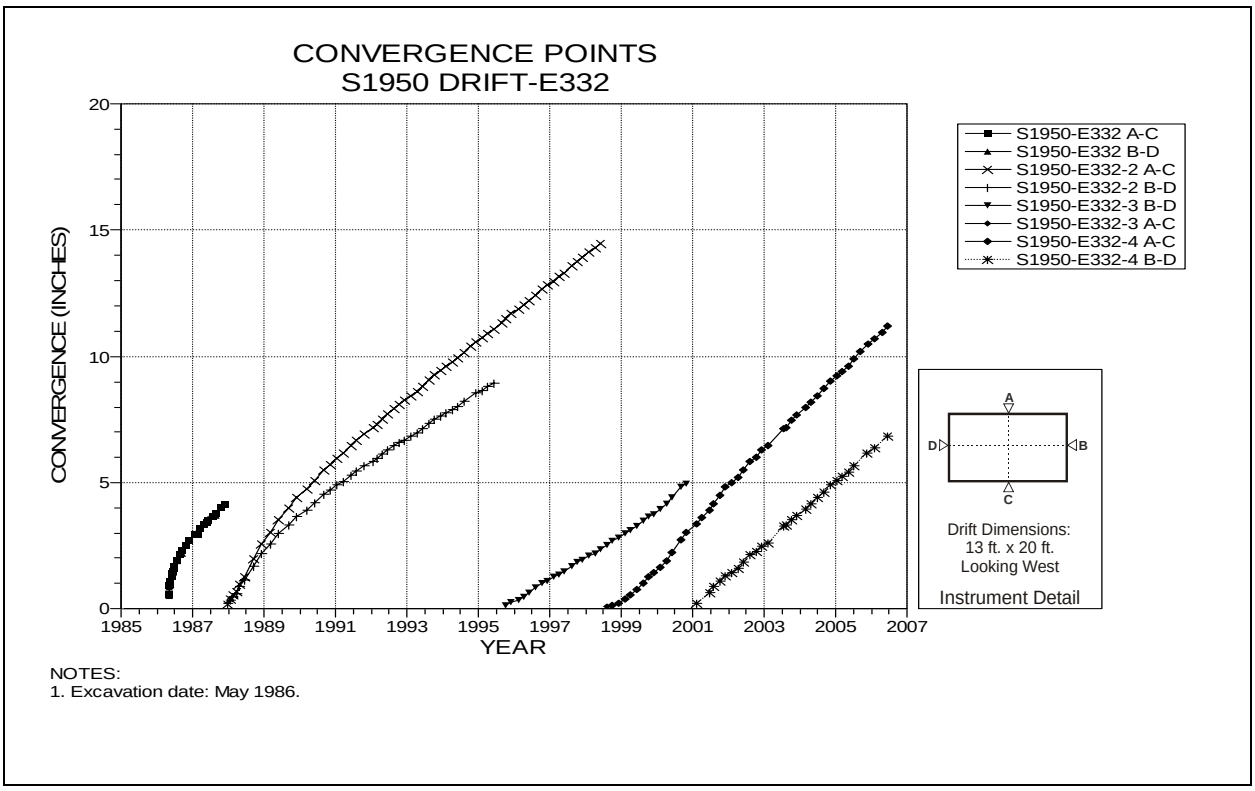


Figure 5-9 Convergence Point Array
S1950 Drift at E332 – All Chords

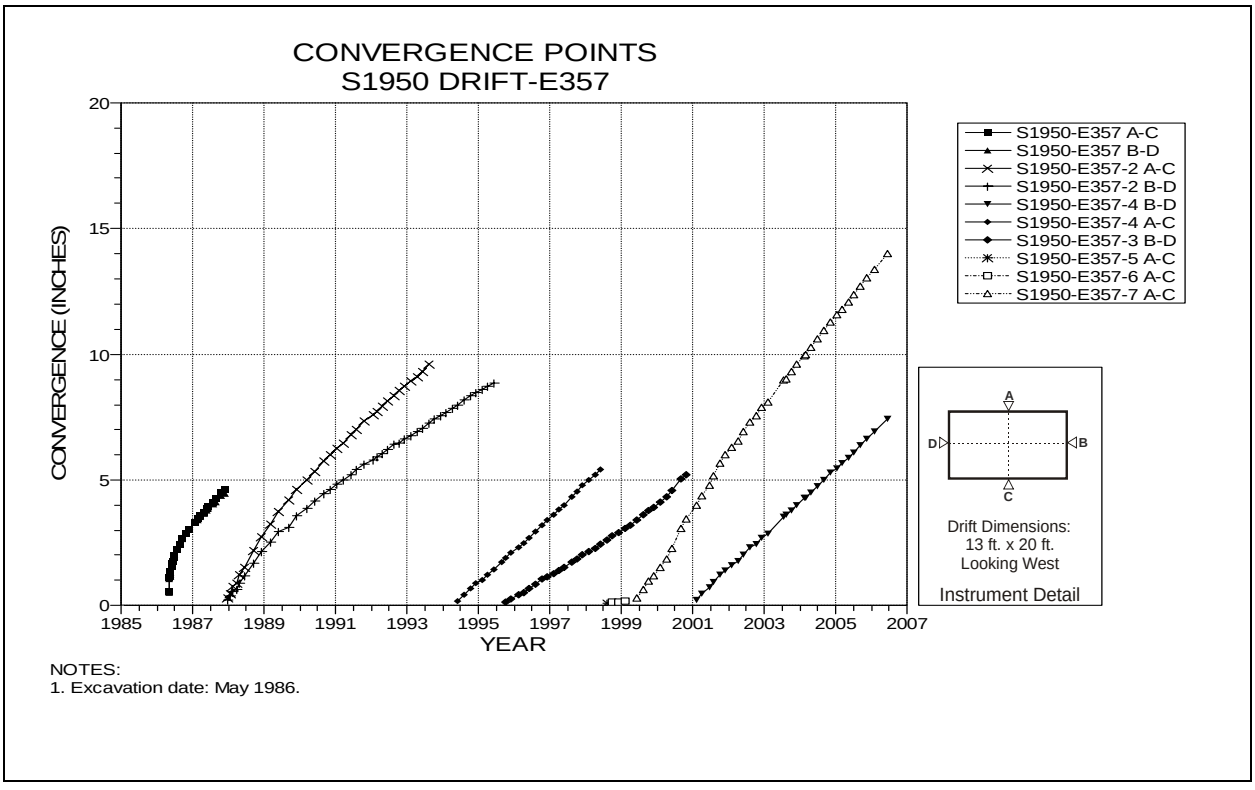


Figure 5-10 Convergence Point Array
S1950 Drift at E357 – All Chords

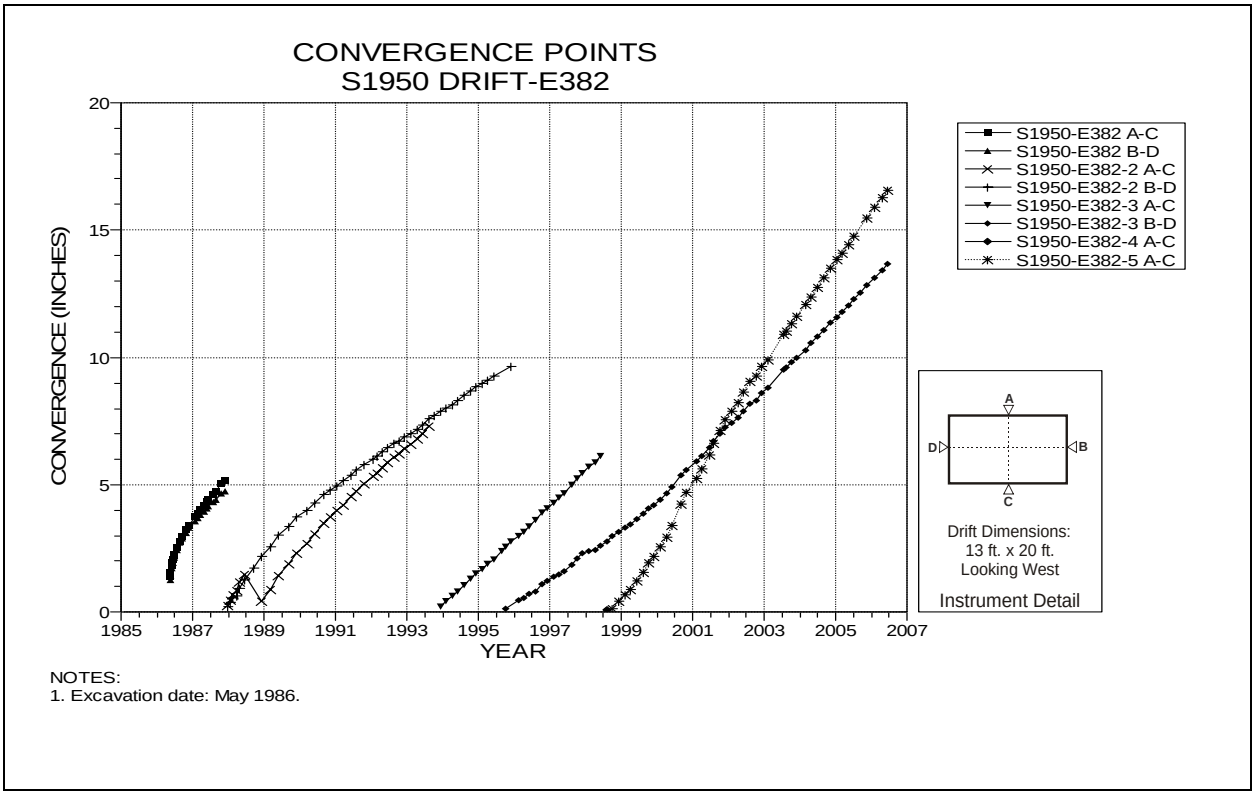


Figure 5-11 Convergence Point Array
S1950 Drift at E382 – All Chords

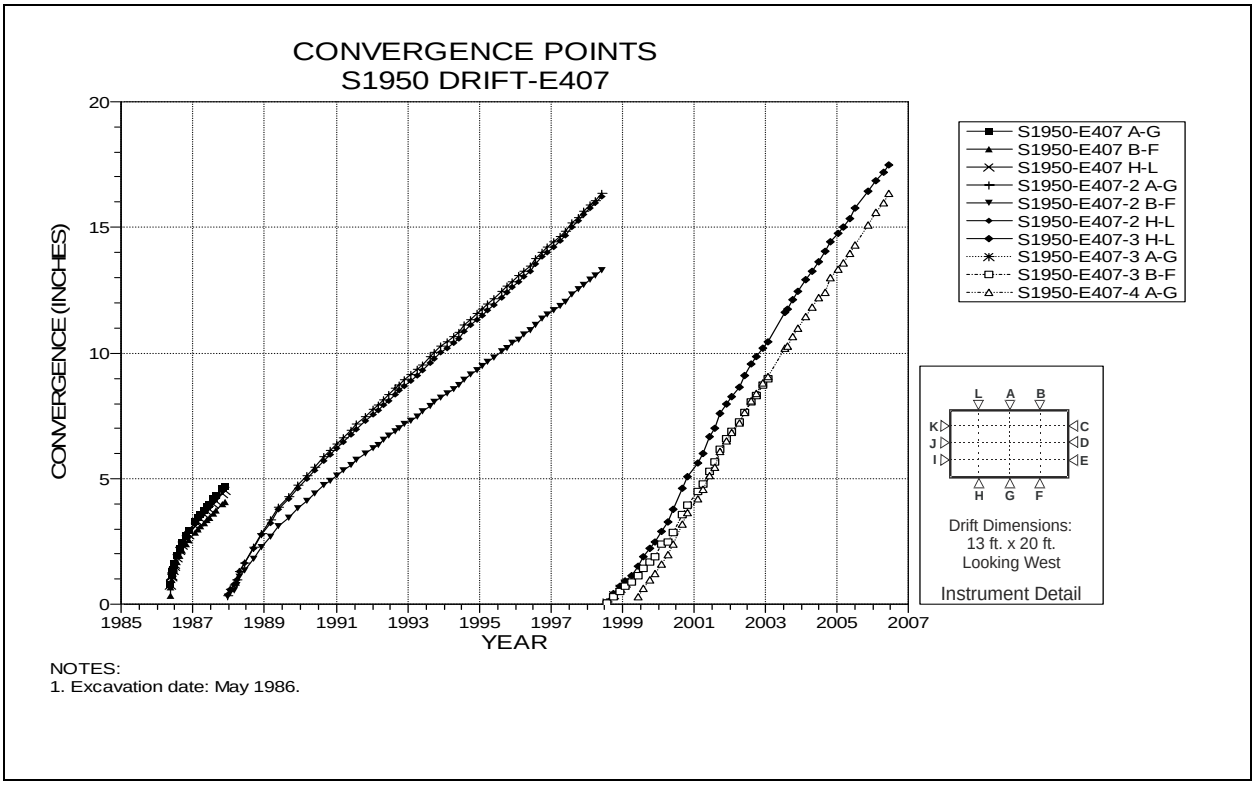


Figure 5-12 Convergence Point Array
S1950 Drift at E407 – Roof to Floor

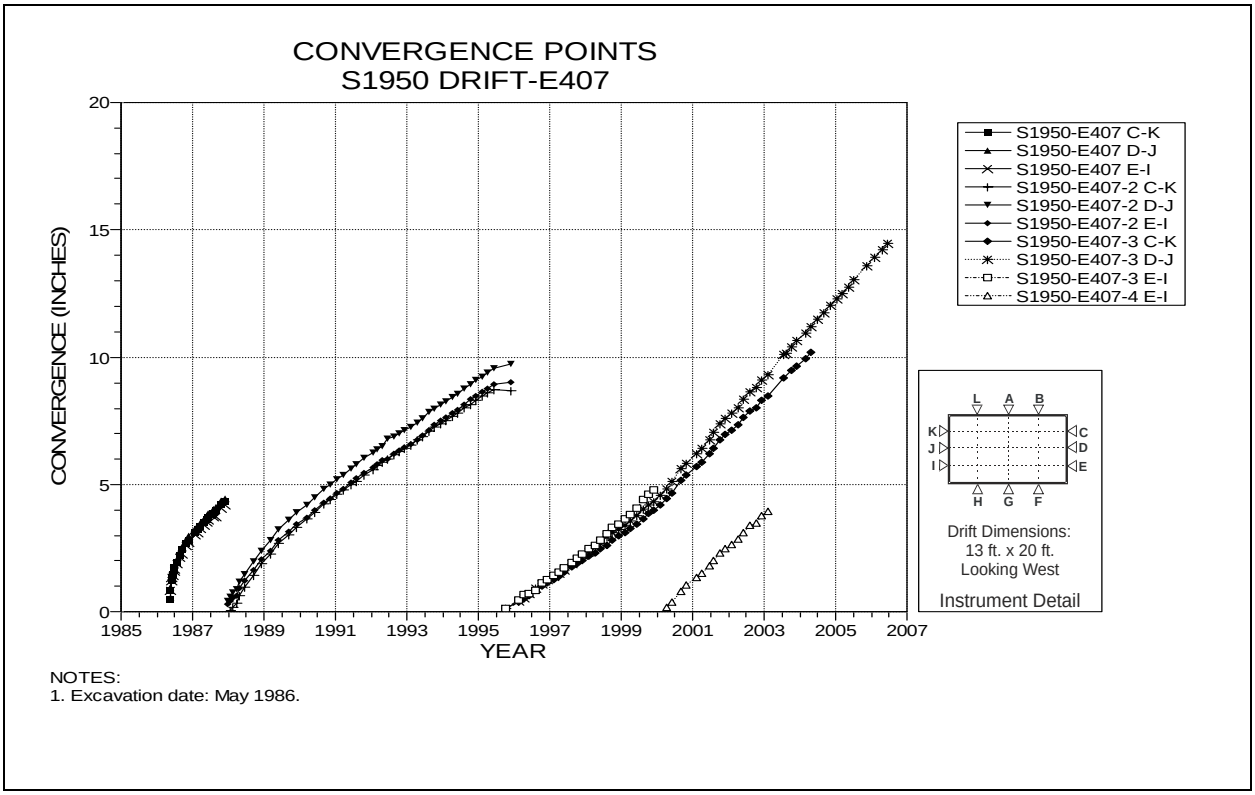


Figure 5-13 Convergence Point Array
S1950 Drift at E407 – Rib to Rib

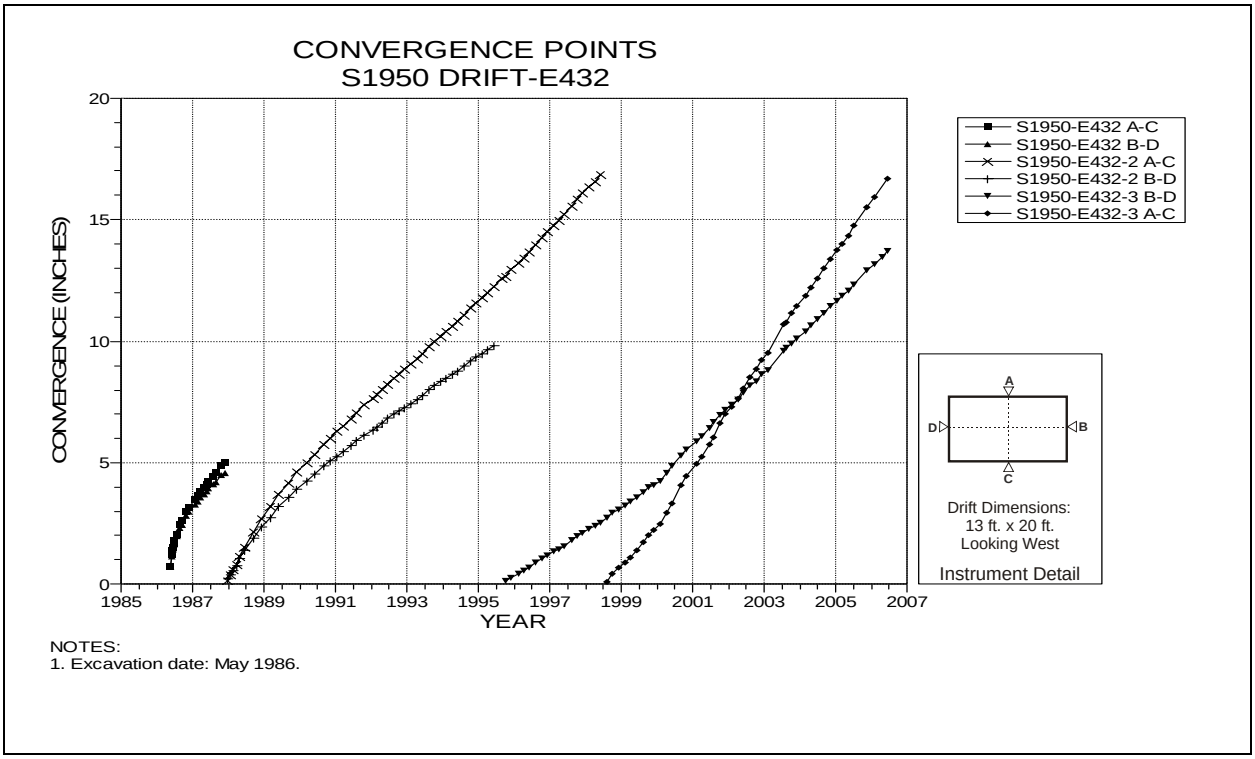


Figure 5-14 Convergence Point Array
S1950 Drift at E432 – All Chords

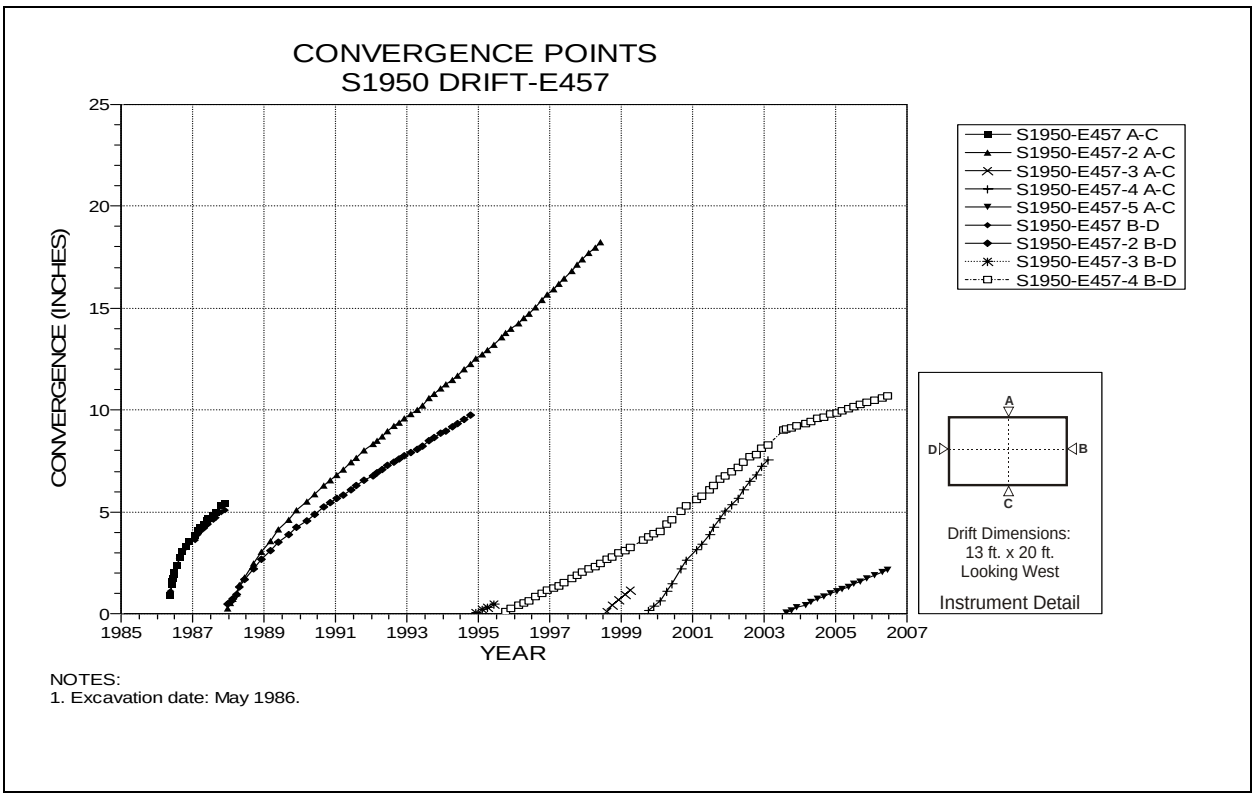


Figure 5-15 Convergence Point Array
S1950 Drift at E457 – All Chords

Table 5-2
Panel 2 Data Analysis

EXTENSOMETERS

Field Tag	Location	Figure Number	Date of Last Reading[1]	Collar Displacement Relative to Deepest Anchor (inches)	Displacement Rate 2005 to 2006 (in/year)	Displacement Rate 2004 to 2005 (in/year)	Rate Change Percent	Comments
51X-GE-00341	PANEL 2 ROOM 1 - CENTER ROOF	5-16	10/14/05	6.883	2.16	1.55	39%	
51X-GE-00342	PANEL 2 ROOM 2 - CENTER ROOF	5-17	12/05/05	4.776	0.96	0.84	14%	
51X-GE-00343	PANEL 2 ROOM 3 - CENTER ROOF	5-18	12/05/05	7.660	2.71	1.75	55%	
51X-GE-00344	PANEL 2 ROOM 4 - CENTER ROOF	5-19	12/05/05	5.589	1.16	1.07	8%	
51X-GE-00345	PANEL 2 ROOM 5 - CENTER ROOF	5-20	12/05/05	5.730	1.23	1.12	9%	
51X-GE-00346	PANEL 2 ROOM 6 - CENTER ROOF	5-21	12/05/05	2.443[2]	0.54	0.47	15%	
51X-GE-00347	PANEL 2 ROOM 7 - CENTER ROOF	5-22	12/05/05	6.040	1.56	1.27	23%	
51X-GE-00350	S2520 DRIFT-E735	5-23	12/05/05	8.349	2.77	1.93	43%	
51X-GE-00349	S2520 DRIFT-E1120	5-24	12/05/05	7.710[2]	2.80	2.63	6%	

[1] The data logger communication link was severed in December 2005 due to panel closure.
[2] The deepest anchor (anchor "C") failed; therefore, anchor "B" was used in the rate calculations as the deepest anchor.

CONVERGENCE POINTS (Panel 2 Access Drifts)

Field Tag	Location	Figure Number	Last Reading 2005 to 2006		Cumulative Displacement (inches)	Closure Rate 2005 to 2006 (in/year)	Closure Rate 2004 to 2005 (in/year)	Rate Change Percent	Comments
			Date	Inches					
S2180-E410-2 A-C	S2180 DRIFT-E410	5-25	06/22/06	2.765	7.585	1.19	1.18	1%	
S2180-E410 B-D	S2180 DRIFT-E410	5-25	06/22/06	9.085	9.085	1.46	1.50	-3%	
S2520-E410-3 A-C	S2520 DRIFT-E410	5-26	06/22/06	6.303	14.496	2.60	2.49	4%	
S2520-E410 B-D	S2520 DRIFT-E410	5-26	06/22/06	14.687	14.687	2.42	2.36	3%	

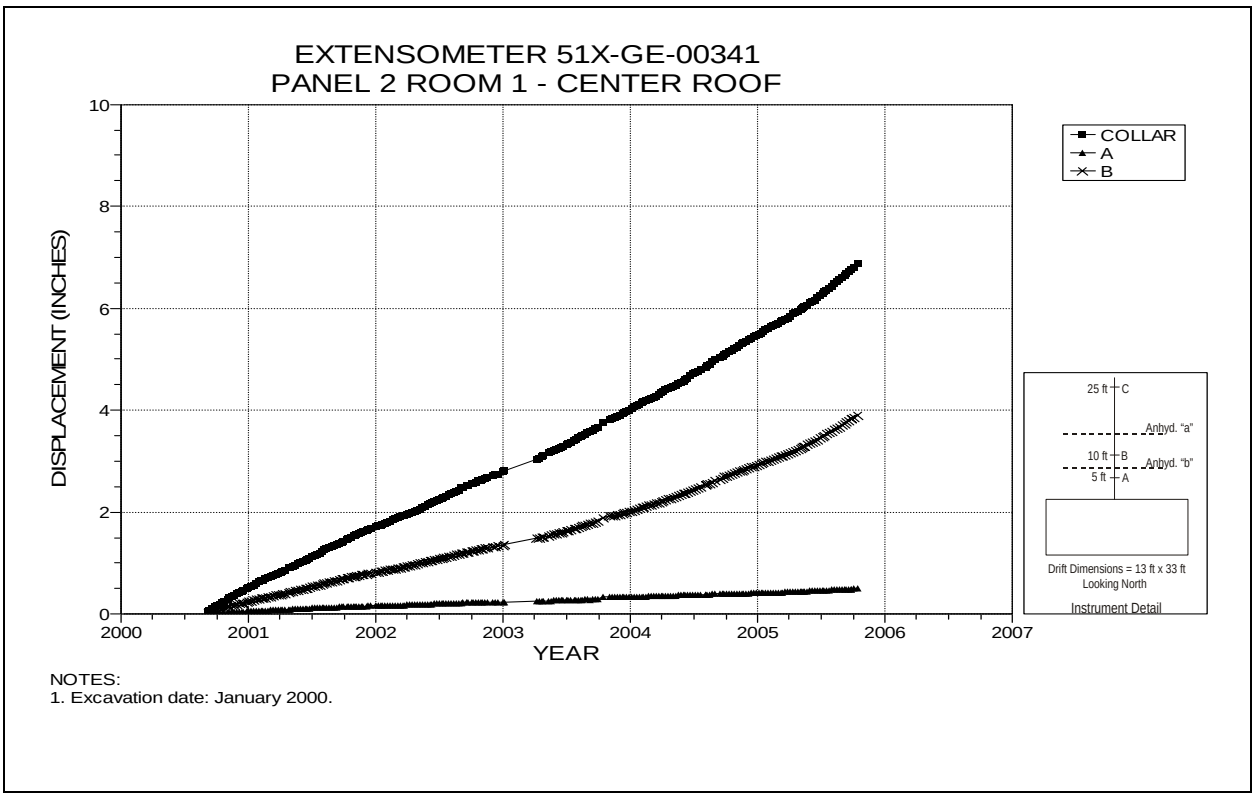


Figure 5-16 Extensometer 51X-GE-00341
Room 1, Panel 2 – Room Center – Roof

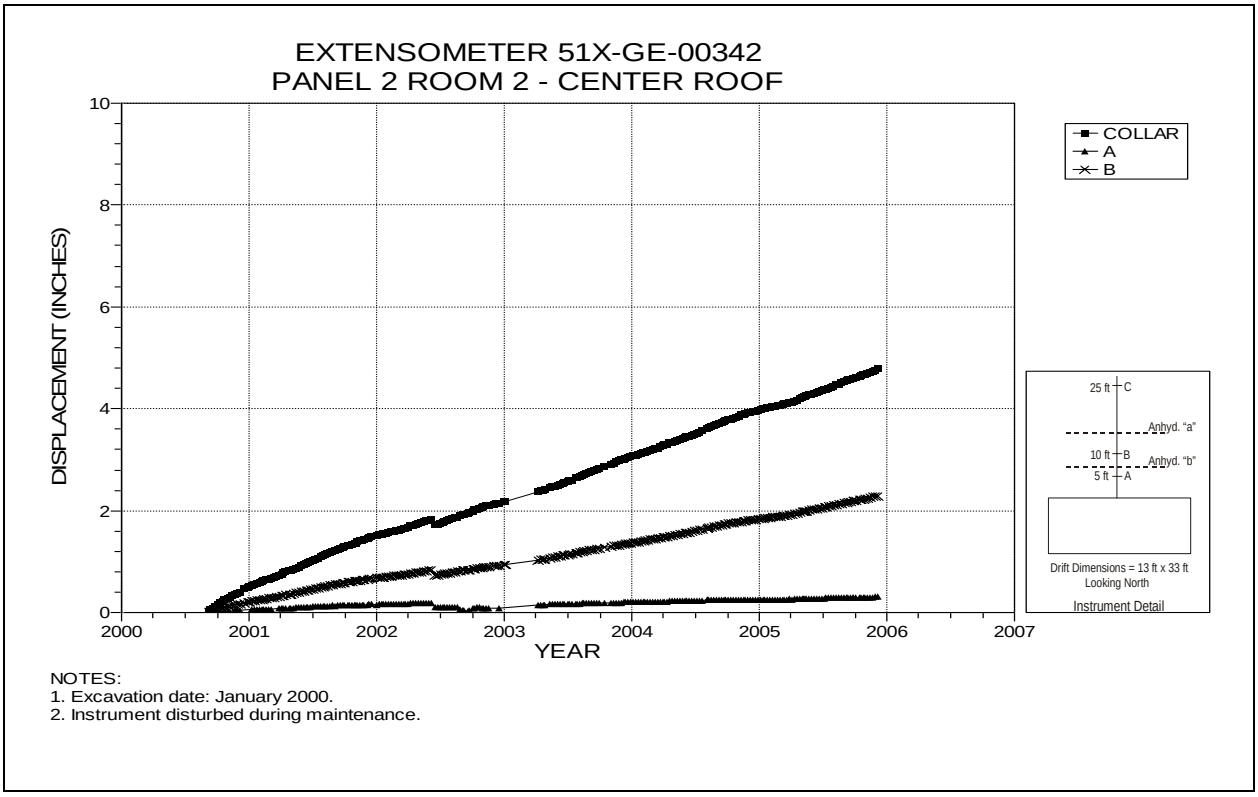


Figure 5-17 Extensometer 51X-GE-00342
Room 2, Panel 2 – Room Center – Roof

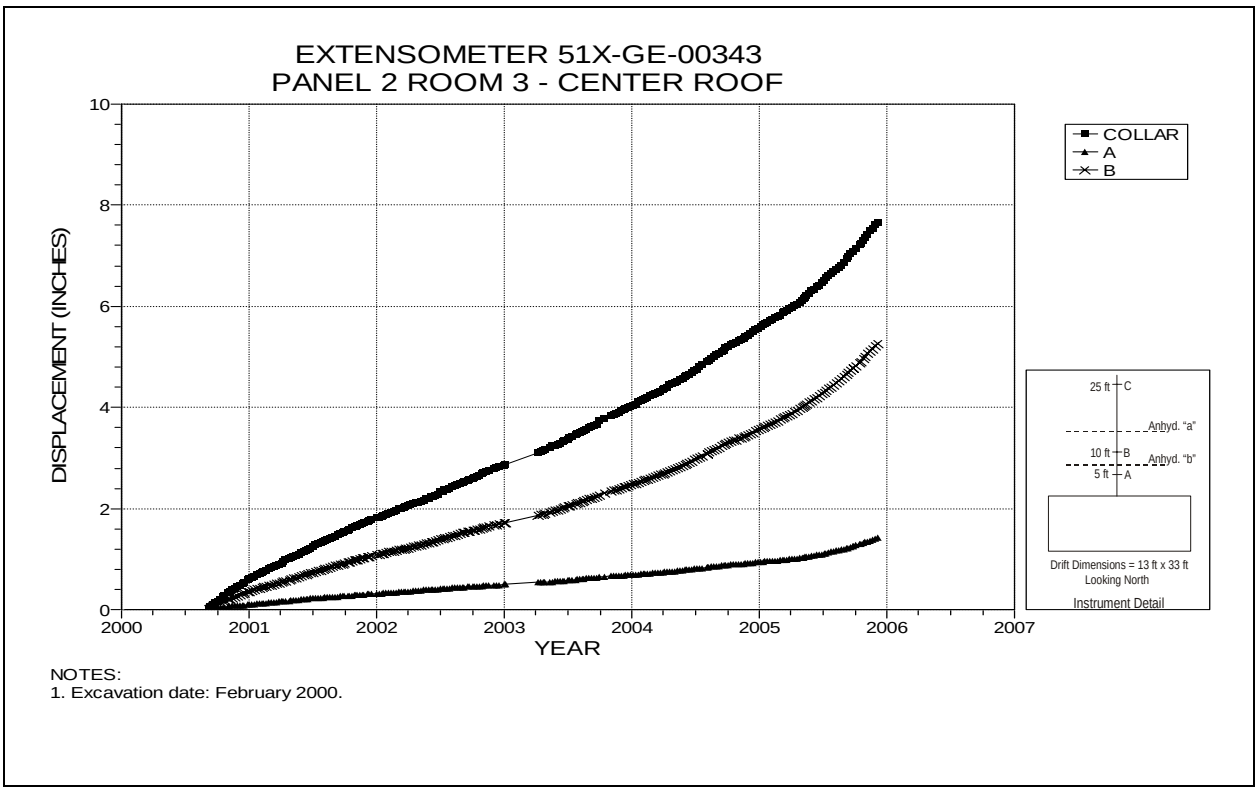


Figure 5-18 Extensometer 51X-GE-00343
Room 3, Panel 2 – Room Center – Roof

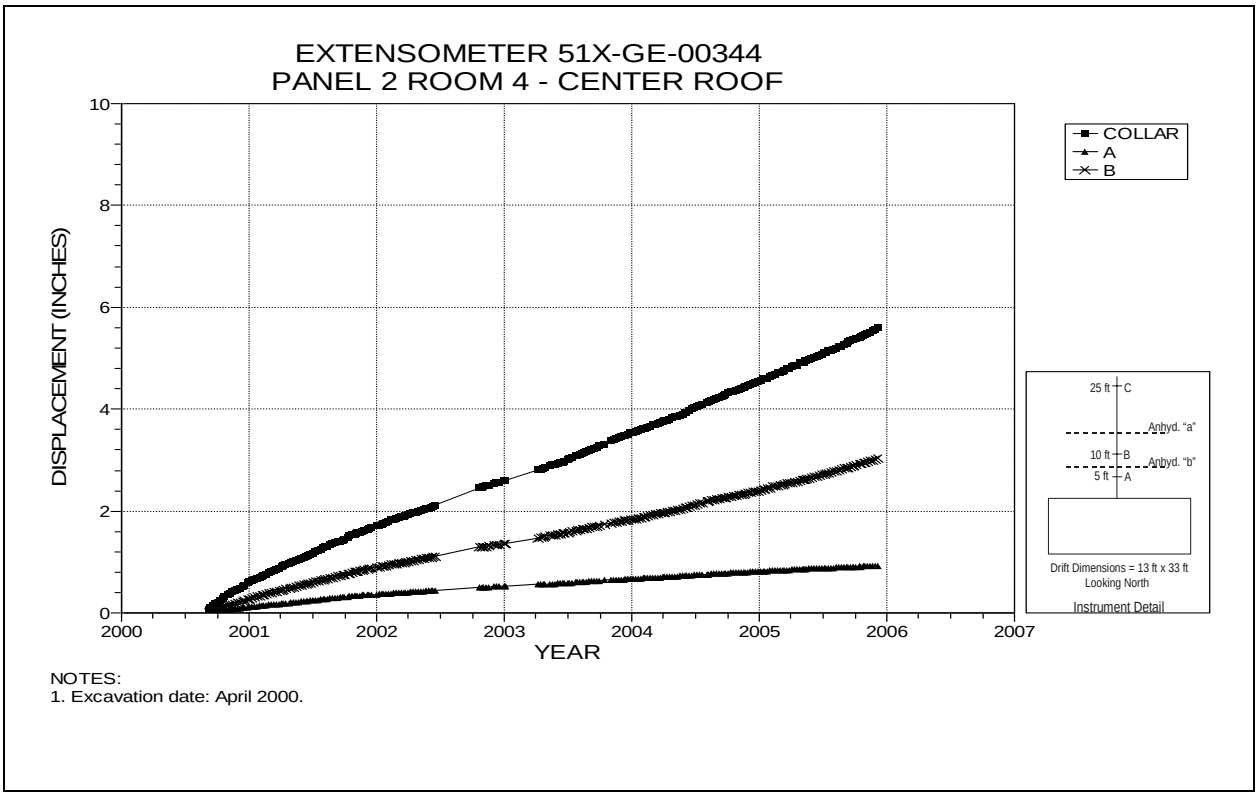


Figure 5-19 Extensometer 51X-GE-00344
Room 4, Panel 2 – Room Center – Roof

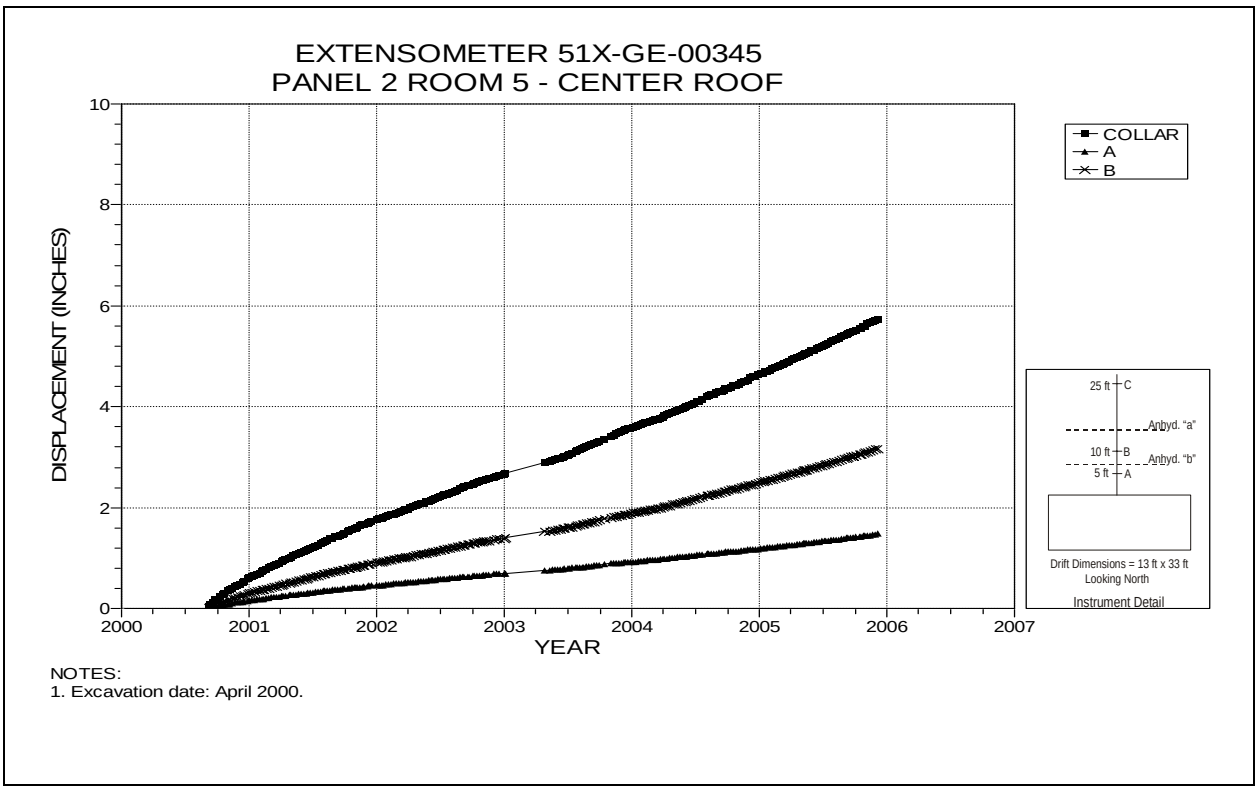


Figure 5-20 Extensometer 51X-GE-00345
Room 5, Panel 2 – Room Center – Roof

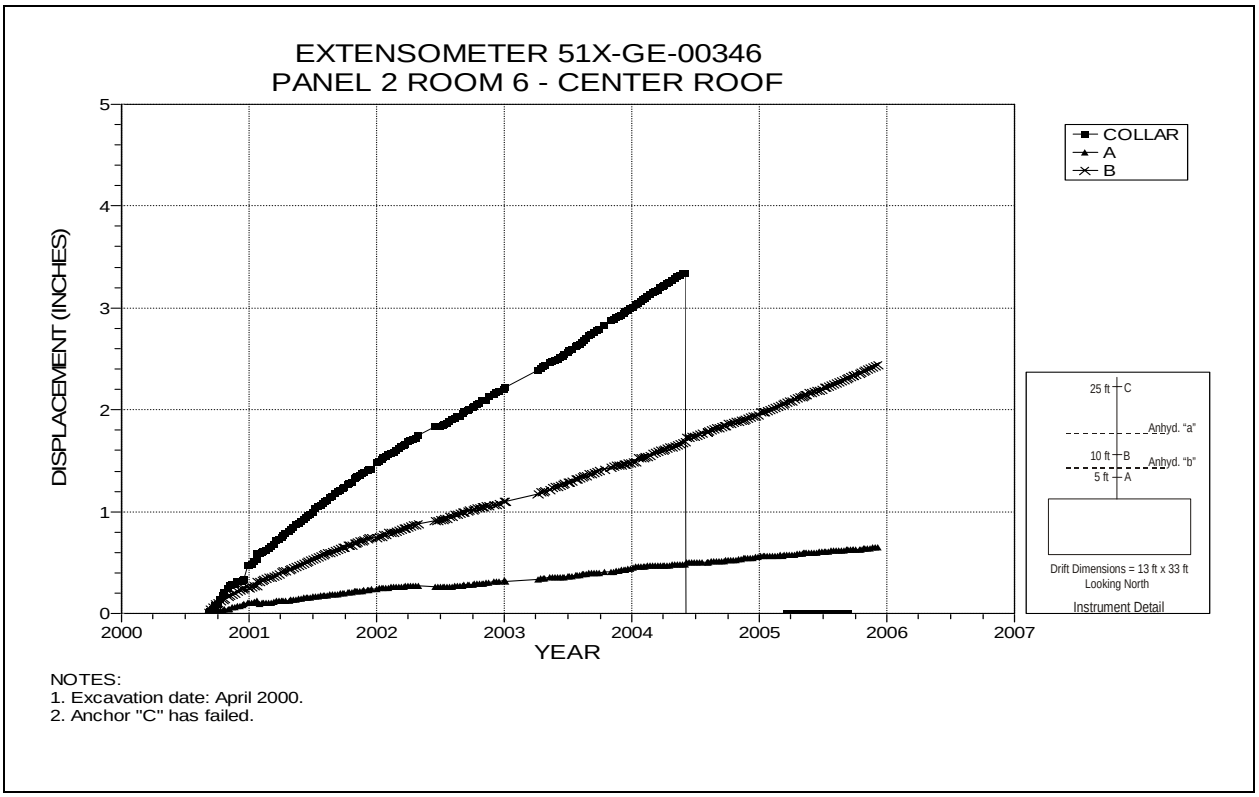


Figure 5-21 Extensometer 51X-GE-00346
Room 6, Panel 2 – Room Center – Roof

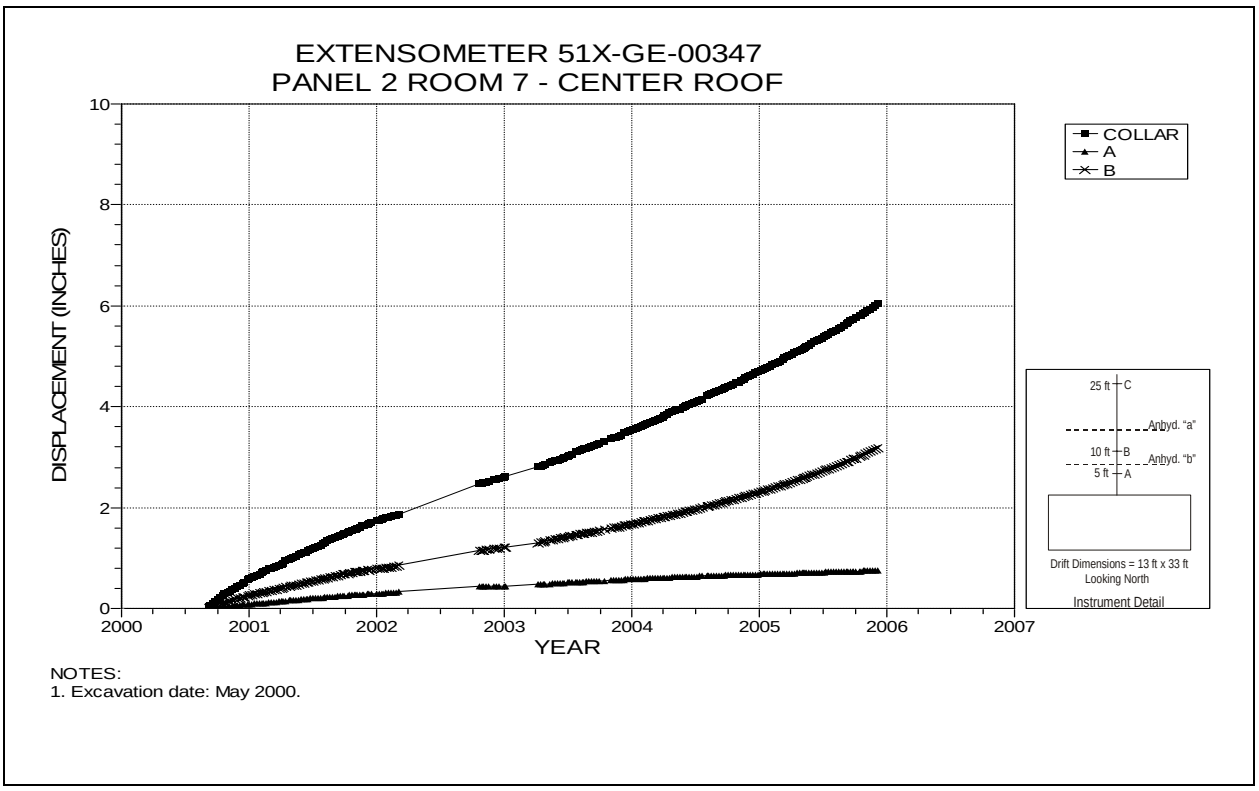


Figure 5-22 Extensometer 51X-GE-00347
Room 7, Panel 2 – Room Center – Roof

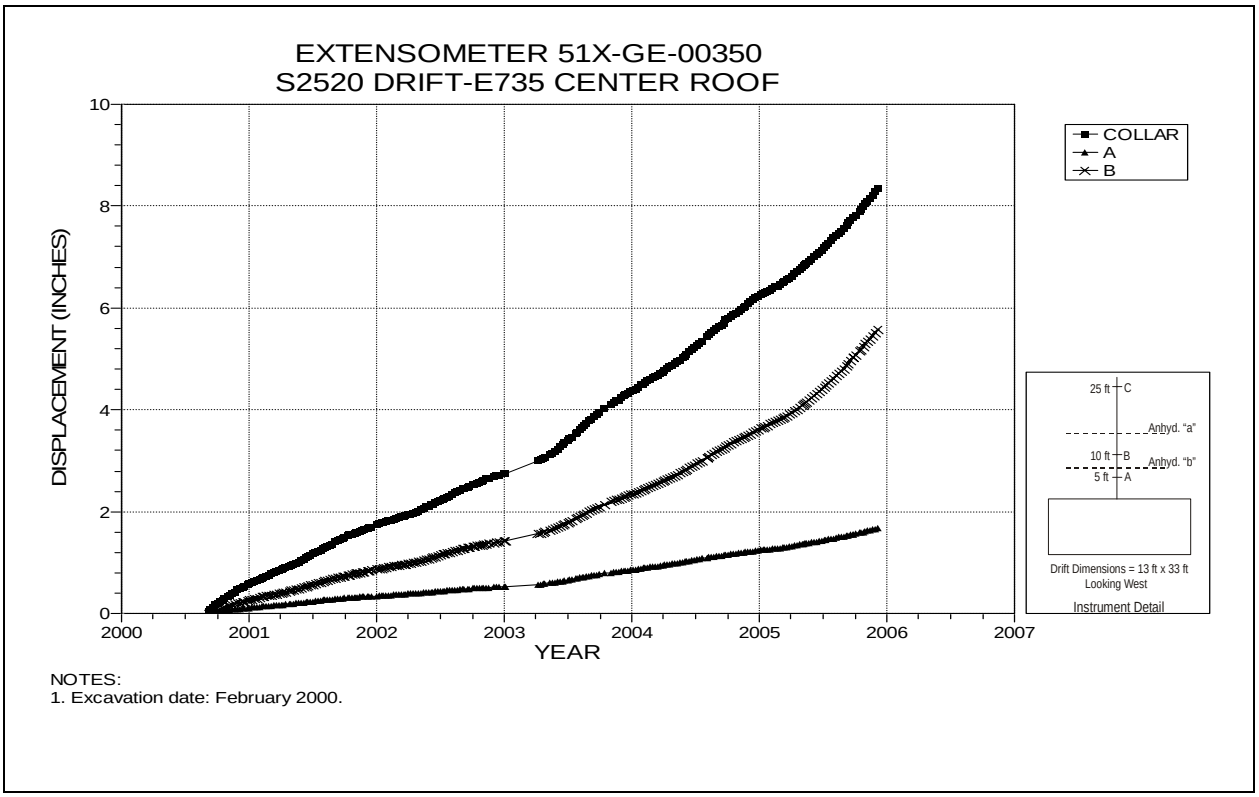


Figure 5-23 Extensometer 51X-GE-00350
S2520 Drift at E735 – Roof

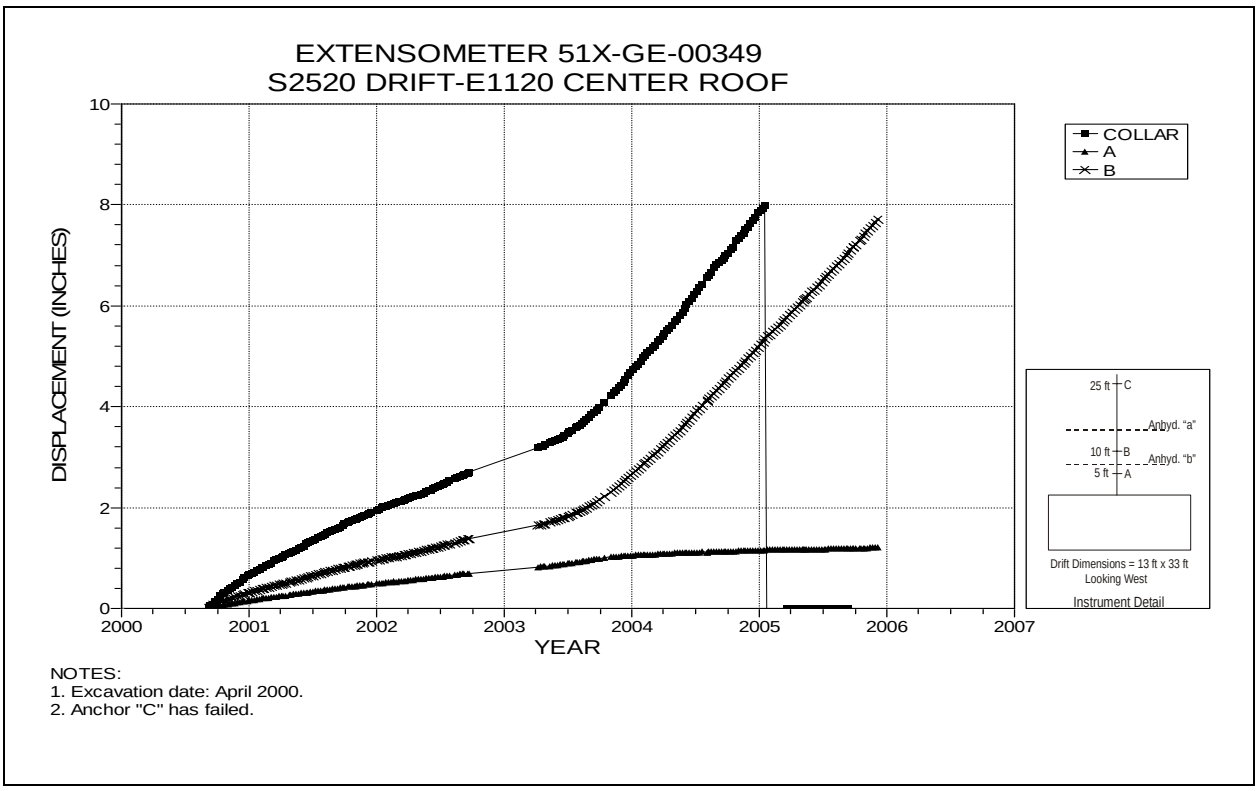


Figure 5-24 Extensometer 51X-GE-00349
S2520 Drift at E1120 – Roof

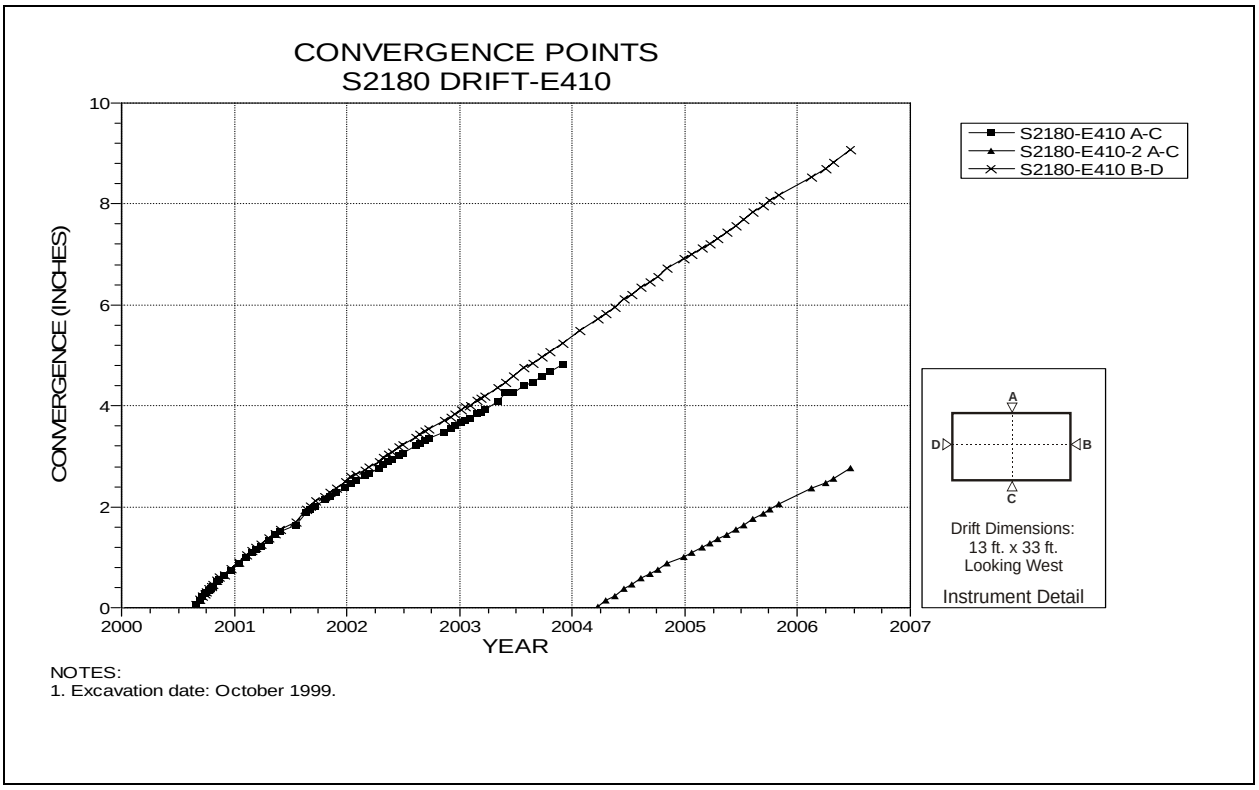


Figure 5-25 Convergence Point Array
S2180 Drift at E410 – All Chords

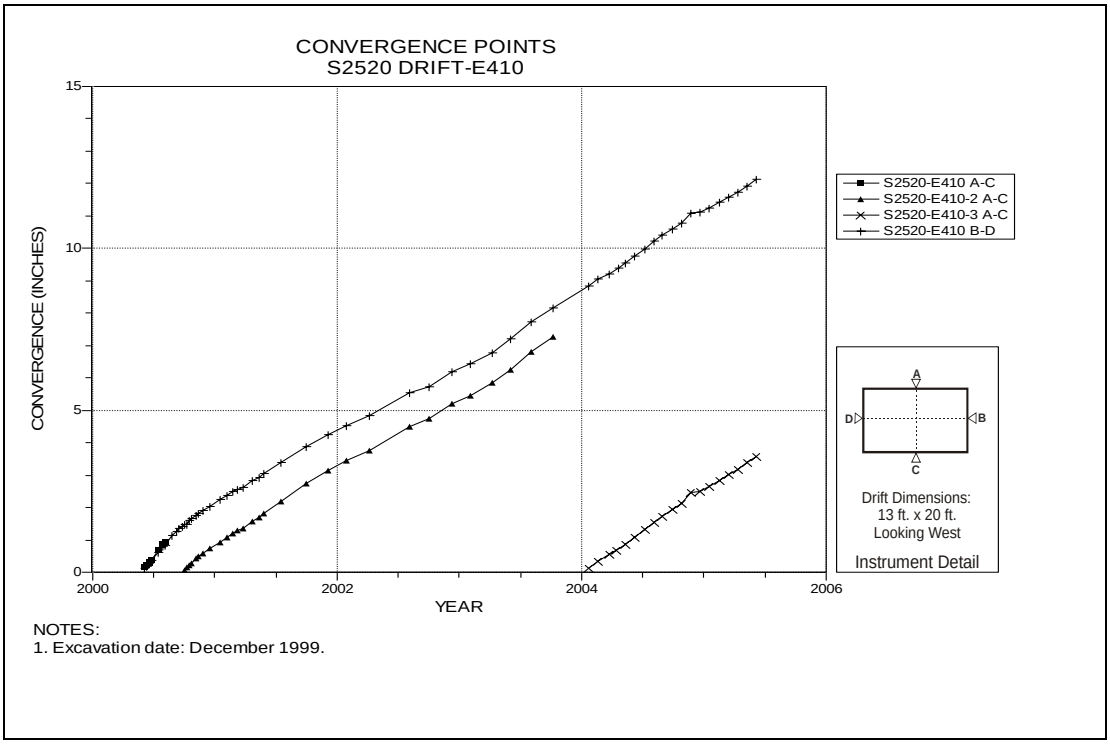


Figure 5-26 Convergence Point Array
S2520 Drift at E410 Drift – All Chords

Table 5-3
Panel 3 Data Analysis

EXTENSOMETERS

Field Tag	Location	Figure Number	Date of Last Reading	Collar Displacement Relative to Deepest Anchor (inches)	Displacement Rate 2005 to 2006 (in/year)	Displacement Rate 2004 to 2005 (in/year)	Rate Change Percent	Comments
51X-GE-00354-2	PANEL 3 ROOM 1 CENTER ROOF	5-27	06/26/06	8.936	3.27	2.63	24%	
51X-GE-00358	PANEL 3 ROOM 2 CENTER ROOF	5-28	06/26/06	5.818	2.32	2.34	-1%	
51X-GE-00359	PANEL 3 ROOM 3 CENTER ROOF	5-29	06/26/06	11.773	4.36	5.37	-19%	
51X-GE-00360	PANEL 3 ROOM 4 CENTER ROOF	5-30	04/10/06	5.371	2.57	2.11	22%	
51X-GE-00362	PANEL 3 ROOM 5 CENTER ROOF	5-31	06/26/06	9.246	2.85	5.03	-43%	
51X-GE-00363	PANEL 3 ROOM 6 CENTER ROOF	5-32	06/26/06	9.244	2.48	4.44	-44%	
51X-GE-00366	PANEL 3 ROOM 7 CENTER ROOF	5-33	06/26/06	3.729	1.56	1.49	5%	
51X-GE-00370	S2750 DRIFT-E725 ROOF	5-34	06/26/06	4.415	1.67	3.07	-46%	
51X-GE-00371	S2750 DRIFT-E1115 ROOF	5-35	06/26/06	3.325	1.45	2.15	-33%	
51X-GE-00369	S3080 DRIFT-E725 ROOF	5-36	06/26/06	9.011	3.90	5.73	-32%	
51X-GE-00368	S3080 DRIFT-E1120 ROOF	5-37	06/26/06	5.020	2.42	2.82	-14%	

ROCKBOLT LOAD CELLS

Field Tag	Location	Figure Number	Date of Initial Reading	Date of Last Reading	Load (kips)	Comments
51X-WG-00289	S2750 DRIFT-E950	5-38	02/09/04	12/12/05	20.6	Mechanical bolts, except where indicated otherwise.
51X-WG-00290	S2750 DRIFT-E950	5-38	02/09/04	12/12/05	9.5	
51X-WG-00291	S2750 DRIFT-E950	5-38	02/09/04	12/12/05	14.5	
51X-WG-00297	S2750 DRIFT-E958	5-38	06/22/04	12/12/05	43.2	Threaded bar.
51X-WG-00299	S2750 DRIFT-E980	5-38	02/09/04	12/12/05	14.5	
51X-WG-00298	S2750 DRIFT-E1020	5-38	02/09/04	12/12/05	17.9	
51X-WG-00292	S2750 DRIFT-E1050	5-38	02/09/04	12/12/05	17.6	
51X-WG-00300	S3080 DRIFT-E580	5-39	07/22/04	03/29/06	51.7	Threaded bar.
51X-WG-00302	S3080 DRIFT-E727	5-40	05/16/05	06/26/06	53.8	Threaded bar.

Table 5-3 (Continued)
Panel 3 Data Analysis

CONVERGENCE POINTS

Field Tag	Location	Figure Number	Last Reading 2005 to 2006		Cumulative Displacement (inches)	Closure Rate 2005 to 2006 (in/year)	Closure Rate 2004 to 2005 (in/year)	Rate Change Percent[1]	Comments
			Date	Inches					
S2750-E410 A-C	S2750 DRIFT-E410	5-41	06/23/06	6.935	6.935	2.13	2.10	1%	
S2750-E410 B-D	S2750 DRIFT-E410	5-41	06/23/06	5.875	5.875	1.68	1.77	-5%	
S2750-E520-2 A-C	S2750 DRIFT-E520	5-42	06/06/06	6.971	9.829	3.12	3.90	-20%	
S2750-E586-3 A-C	S2750 DRIFT-E586	5-43	06/06/06	1.148	13.160	6.71	7.54	-11%	
S2750-E586 B-D	S2750 DRIFT-E586	5-43	06/06/06	5.228	5.228	2.62	2.78	-6%	
S2750-E660-3 A-C	S2750 DRIFT-E660	5-44	06/06/06	0.720	8.830	4.19	4.81	-13%	
S2750-E725-2 A-C	S2750 DRIFT-E725	5-45	05/08/06	0.376	7.730	4.03	5.77	-30%	
S2750-E725 B-D	S2750 DRIFT-E725	5-45	05/08/06	5.754	5.754	3.20	3.08	4%	
S2750-E790-3 A-C	S2750 DRIFT-E790	5-46	05/08/06	2.629	12.183	4.36	6.59	-34%	
S2750-E855-2 A-C	S2750 DRIFT-E855	5-47	01/12/06	1.191	7.851	4.21	6.70	-37%	
S2750-E855 B-D	S2750 DRIFT-E855	5-47	01/12/06	4.882	4.882	3.36	3.13	7%	
S2750-E920-3 A-C	S2750 DRIFT-E920	5-48	11/10/05	0.580	10.475	5.28	6.35	-17%	
S2750-E986-3 A-C	S2750 DRIFT-E986	5-49	11/21/05	0.679	9.411	4.83	5.09	-5%	
S2750-E1115 A-C	S2750 DRIFT-E1115	5-50	07/18/05	5.323	5.323	N/A	5.24	N/A	
S2750-E1115 B-D	S2750 DRIFT-E1115	5-50	07/18/05	3.275	3.275	N/A	3.18	N/A	
S2750-E1190-3 A-C	S2750 DRIFT-E1190	5-51	07/18/05	4.448	6.530	N/A	4.10	N/A	
S3080-E410-2 A-C	S3080 DRIFT-E410	5-52	06/06/06	4.894	7.432	2.68	2.37	13%	
S3080-E410 B-D	S3080 DRIFT-E410	5-52	06/06/06	7.001	7.001	2.27	2.25	1%	
S3080-E520-3 A-C	S3080 DRIFT-E520	5-53	06/06/06	1.720	12.235	10.23	4.24	141%	
S3080-E586-3 A-C	S3080 DRIFT-E586	5-54	06/06/06	2.094	13.785	12.37	5.03	146%	
S3080-E586 B-D	S3080 DRIFT-E586	5-54	06/06/06	6.080	6.080	3.21	2.88	11%	
S3080-E660-3 A-C	S3080 DRIFT-E660	5-55	06/06/06	1.007	12.284	5.93	5.86	1%	
S3080-E725-2 A-C	S3080 DRIFT-E725	5-56	06/06/06	1.256	11.667	7.36	8.25	-11%	
S3080-E725 B-D	S3080 DRIFT-E725	5-56	06/06/06	6.423	6.423	3.32	3.23	3%	
S3080-E790-3 A-C	S3080 DRIFT-E790	5-57	05/31/06	2.036	13.478	5.44	6.08	-11%	
S3080-E857-2 A-C	S3080 DRIFT-E857	5-58	11/10/05	6.906	10.279	6.13	4.63	32%	
S3080-E857 B-D	S3080 DRIFT-E857	5-58	05/08/06	6.487	6.487	3.78	3.15	20%	
S3080-E920-3 A-C	S3080 DRIFT-E920	5-59	03/29/06	3.269	15.581	6.40	7.01	-9%	
S3080-E986-3 A-C	S3080 DRIFT-E986	5-60	02/03/06	2.148	10.521	5.96	6.16	-3%	

[1] NA indicates insufficient data to compare annualized rates.

Table 5-3 (Continued)
Panel 3 Data Analysis

CONVERGENCE POINTS (Continued)

Field Tag	Location	Figure Number	Last Reading 2005 to 2006		Cumulative Displacement Inches	Closure Rate 2005 to 2006 in/year	Closure Rate 2004 to 2005 in/year	Rate Change Percent[1]	Comments
			Date	Inches					
S3080-E986 B-D	S3080 DRIFT-E986	5-60	02/03/06	5.947	5.947	4.39	3.24	35%	
S3080-E1050-3 A-C	S3080 DRIFT-E1050	5-61	02/03/06	2.187	11.430	6.03	6.44	-6%	
S3080-E1120 A-C	S3080 DRIFT-E1120	5-62	07/18/05	6.268	6.268	4.23	5.98	-29%	
S3080-E1120 B-D	S3080 DRIFT-E1120	5-62	09/29/05	3.923	3.923	3.40	2.99	14%	
S3080-E1190-2 A-C	S3080 DRIFT-E1190	5-63	09/29/05	7.832	10.195	5.26	6.48	-19%	
S3080-E1255-2 A-C	S3080 DRIFT-E1255	5-64	07/06/05	4.536	7.558	N/A	4.19	N/A	
S3080-E1255 B-D	S3080 DRIFT-E1255	5-64	07/06/05	4.881	4.881	N/A	2.70	N/A	
E520-S2833-3 A-C	E520 DRIFT-S2833	5-65	03/16/06	0.512	12.401	N/A	4.07	N/A	
E520-S2833 B-D	E520 DRIFT-S2833	5-65	01/10/06	8.596	8.596	3.00	3.05	-2%	
E520-S2916-3 A-C	E520 DRIFT-S2916	5-66	06/05/06	1.692	16.415	7.51	5.14	46%	
E520-S2998-3 A-C	E520 DRIFT-S2998	5-67	06/05/06	1.925	17.392	6.82	4.75	44%	
E520-S2998 B-D	E520 DRIFT-S2998	5-67	12/07/05	4.820	4.820	2.85	2.75	4%	
E660-S2833 B-D	E660 DRIFT-S2833	5-68	06/05/06	2.705	2.705	2.68	N/A	N/A	
E660-S2833-3 A-C	E660 DRIFT-S2833	5-68	06/05/06	1.667	11.205	4.31	5.82	-26%	
E660-S2916-3 A-C	E660 DRIFT-S2916	5-69	06/05/06	1.581	13.138	4.09	4.67	-12%	
E660-S2916 B-D	E660 DRIFT-S2916	5-69	05/10/06	6.144	6.144	2.75	2.81	-2%	
E660-S2998-3 A-C	E660 DRIFT-S2998	5-70	06/05/06	1.659	15.063	4.26	5.93	-28%	
E660-S2998 B-D	E660 DRIFT-S2998	5-70	06/05/06	6.608	6.608	2.95	2.87	3%	
E790-S2833-3 A-C	E790 DRIFT-S2833	5-71	05/31/06	1.635	13.658	4.27	4.82	-11%	
E790-S2833 B-D	E790 DRIFT-S2833	5-71	05/10/06	6.647	6.647	2.97	2.93	1%	
E790-S2916-3 A-C	E790 DRIFT-S2916	5-72	05/31/06	2.114	17.896	5.66	7.21	-21%	
E790-S2916 C-G	E790 DRIFT-S2916	5-72	05/10/06	8.220	8.220	3.12	3.10	1%	
E790-S2998-3 A-C	E790 DRIFT-S2998	5-73	05/31/06	1.399	11.910	7.33	4.29	71%	
E790-S2998 B-D	E790 DRIFT-S2998	5-73	03/29/06	7.910	7.910	3.25	3.33	-2%	
E920-S2833-3 A-C	E920 DRIFT-S2833	5-74	03/01/06	1.097	11.802	3.40	3.80	-11%	
E920-S2833 B-D	E920 DRIFT-S2833	5-74	01/06/06	5.510	5.510	2.84	2.83	0%	
E920-S2916-3 A-C	E920 DRIFT-S2916	5-75	03/01/06	1.447	14.109	4.49	4.73	-5%	
E920-S2916 B-D	E920 DRIFT-S2916	5-75	03/01/06	6.669	6.669	3.35	3.18	5%	
E920-S2998-3 A-C	E920 DRIFT-S2998	5-76	03/01/06	1.373	13.543	4.23	4.32	-2%	
E920-S2998 B-D	E920 DRIFT-S2998	5-76	03/01/06	6.504	6.504	3.37	3.02	12%	

[1] NA Indicates insufficient data to compare annualized rates.

Table 5-3 (Continued)
Panel 3 Data Analysis

CONVERGENCE POINTS Continued)

Field Tag	Location	Figure Number	Last Reading 2005 to 2006		Cumulative Displacement Inches	Closure Rate 2005 to 2006 in/year	Closure Rate 2004 to 2005 in/year	Rate Change Percent[1]	Comments
			Date	Inches					
E1050-S2833 B-D	E1050 DRIFT-S2833	5-77	12/19/05	6.322	6.322	3.11	2.85	9%	
E1050-S2916-3 A-C	E1050 DRIFT-S2916	5-78	12/19/05	0.988	9.886	4.52	6.79	-33%	
E1050-S2916 B-D	E1050 DRIFT-S2916	5-78	12/19/05	6.593	6.593	3.13	3.02	4%	
E1050-S2998-2 A-C	E1050 DRIFT-S2998	5-79	01/06/06	1.181	7.409	4.12	5.97	-31%	
E1050-S2998 B-D	E1050 DRIFT-S2998	5-79	01/06/06	7.011	7.011	3.32	3.05	9%	
E1190-S2833 A-C	E1190 DRIFT-S2833	5-80	07/18/05	4.434	4.434	N/A	3.86	N/A	
E1190-S2833 B-D	E1190 DRIFT-S2833	5-80	07/18/05	5.245	5.245	N/A	2.85	N/A	
E1190-S2916-2 A-C	E1190 DRIFT-S2916	5-81	09/29/05	9.430	11.819	4.27	7.83	-45%	
E1190-S2916 B-D	E1190 DRIFT-S2916	5-81	09/29/05	5.912	5.912	2.56	3.00	-15%	
E1190-S2998 A-C	E1190 DRIFT-S2998	5-82	09/29/05	7.469	7.469	4.07	6.01	-32%	
E1190-S2998 B-D	E1190 DRIFT-S2998	5-82	09/29/05	6.091	6.091	2.72	2.93	-7%	

[1] NA indicates insufficient data to compare annualized rates.

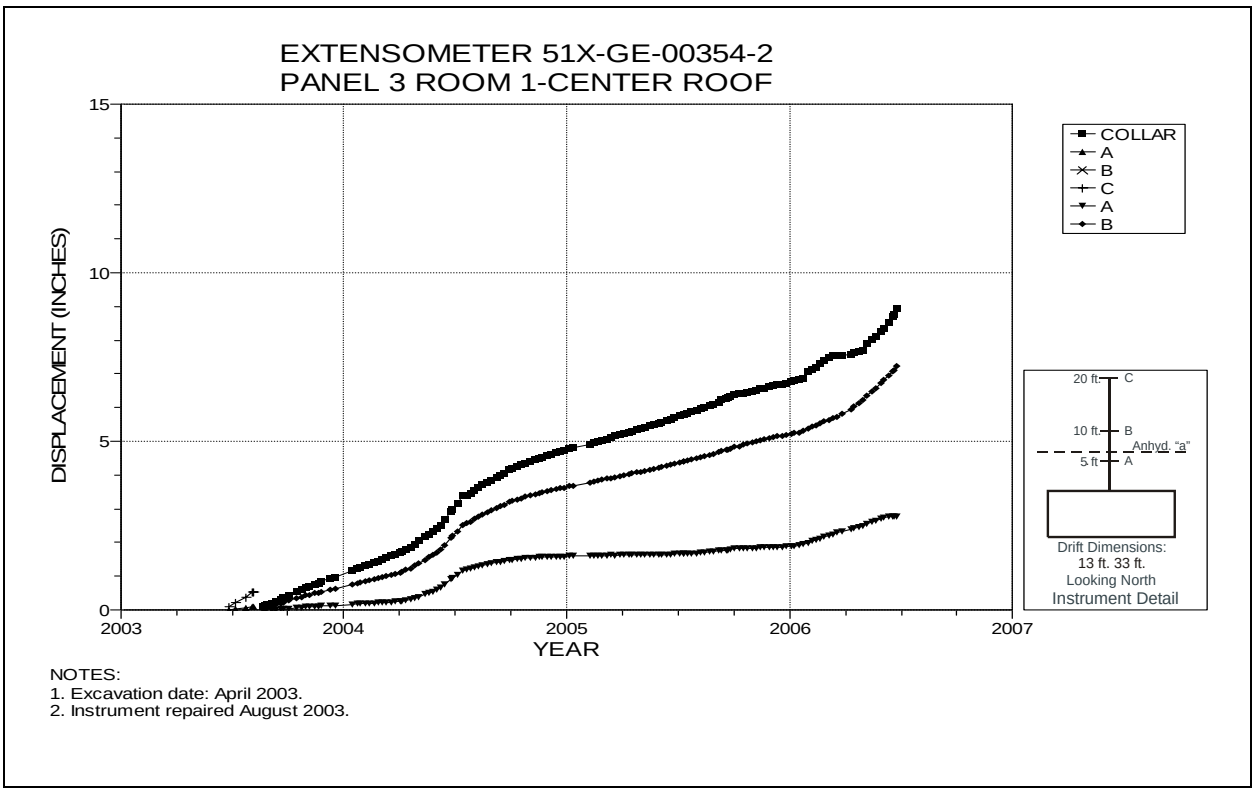


Figure 5-27 Extensometer 51X-GE-00354-2
Room 1, Panel 3 – Room Center – Roof

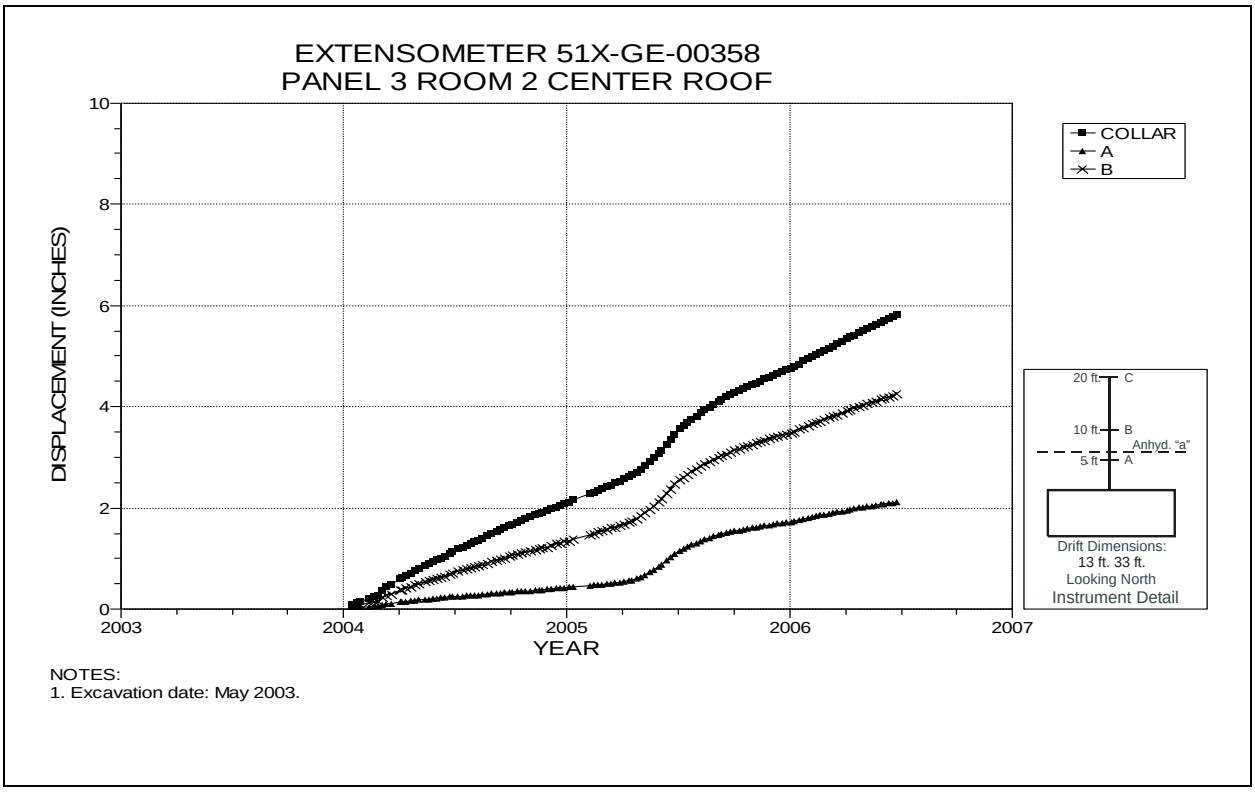


Figure 5-28 Extensometer 51X-GE-00358
Room 2, Panel 3 – Room Center – Roof

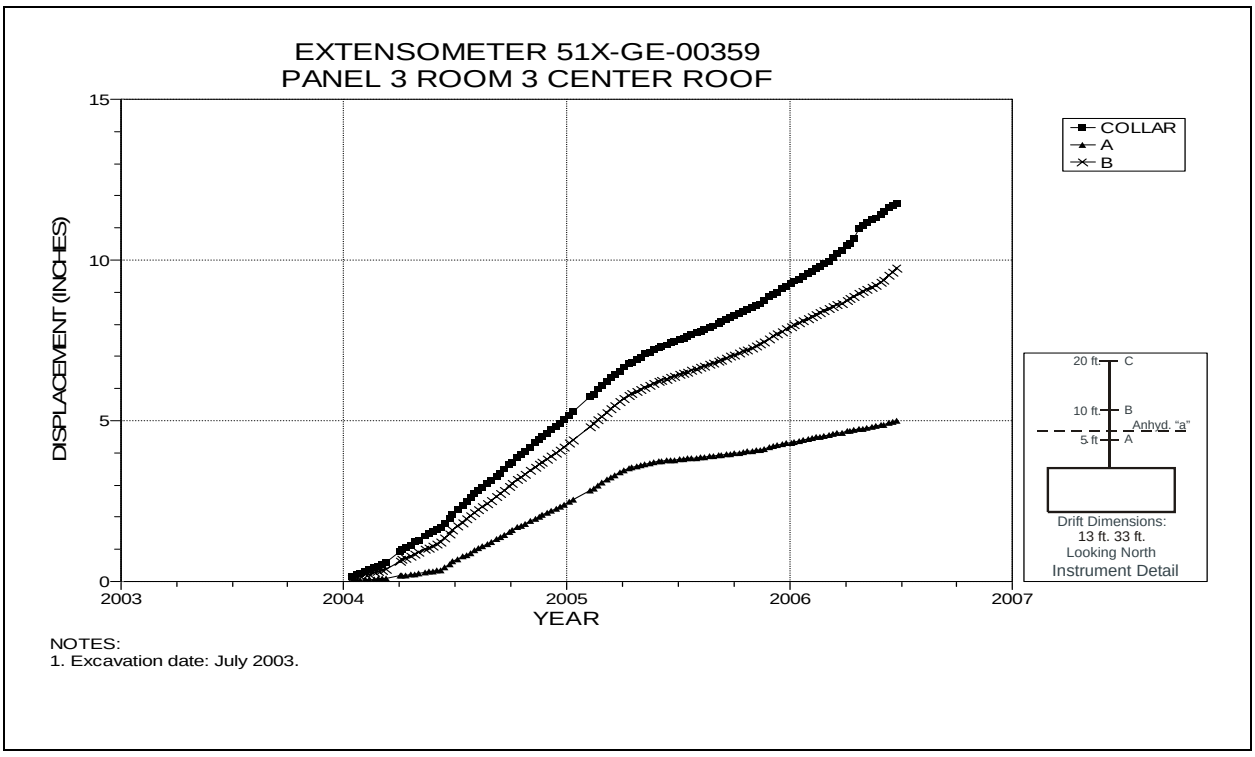


Figure 5-29 Extensometer 51X-GE-00359
Room 3, Panel 3 – Room Center – Roof

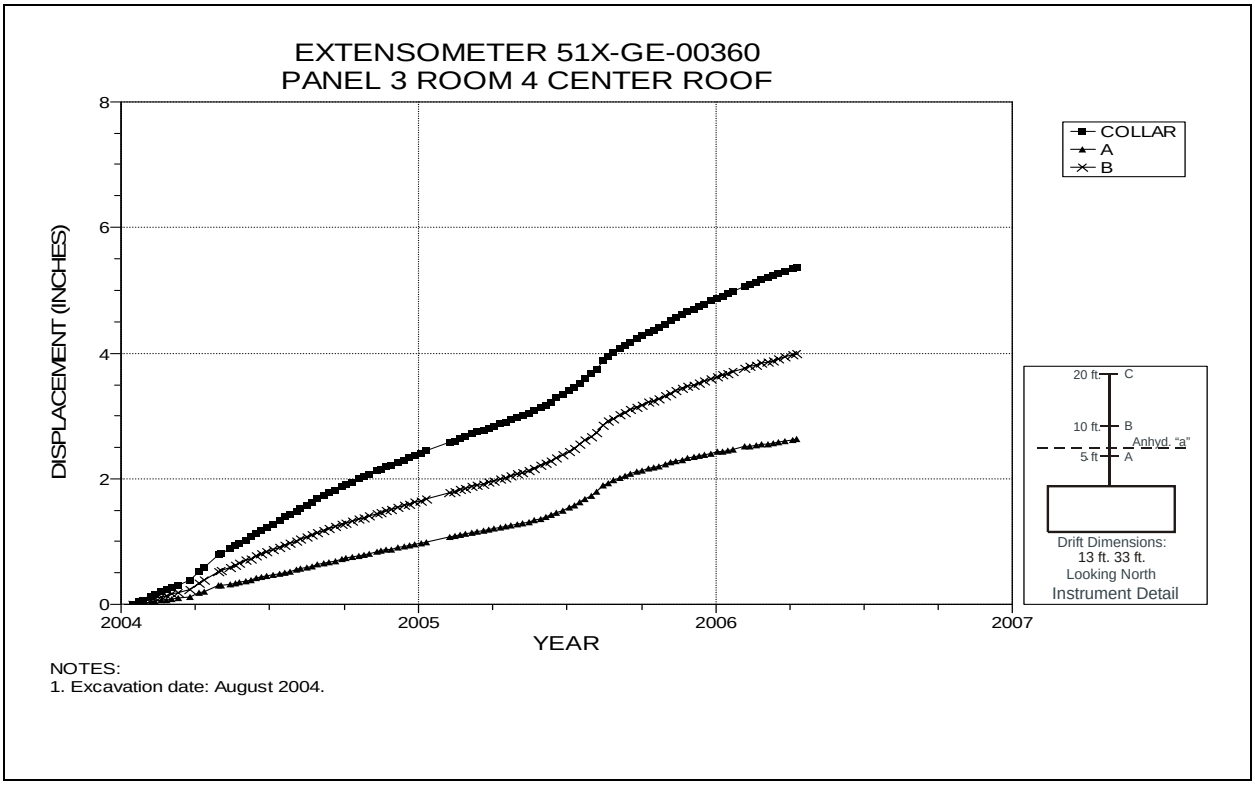


Figure 5-30 Extensometer 51X-GE-00360
Room 4, Panel 3 – Room Center – Roof

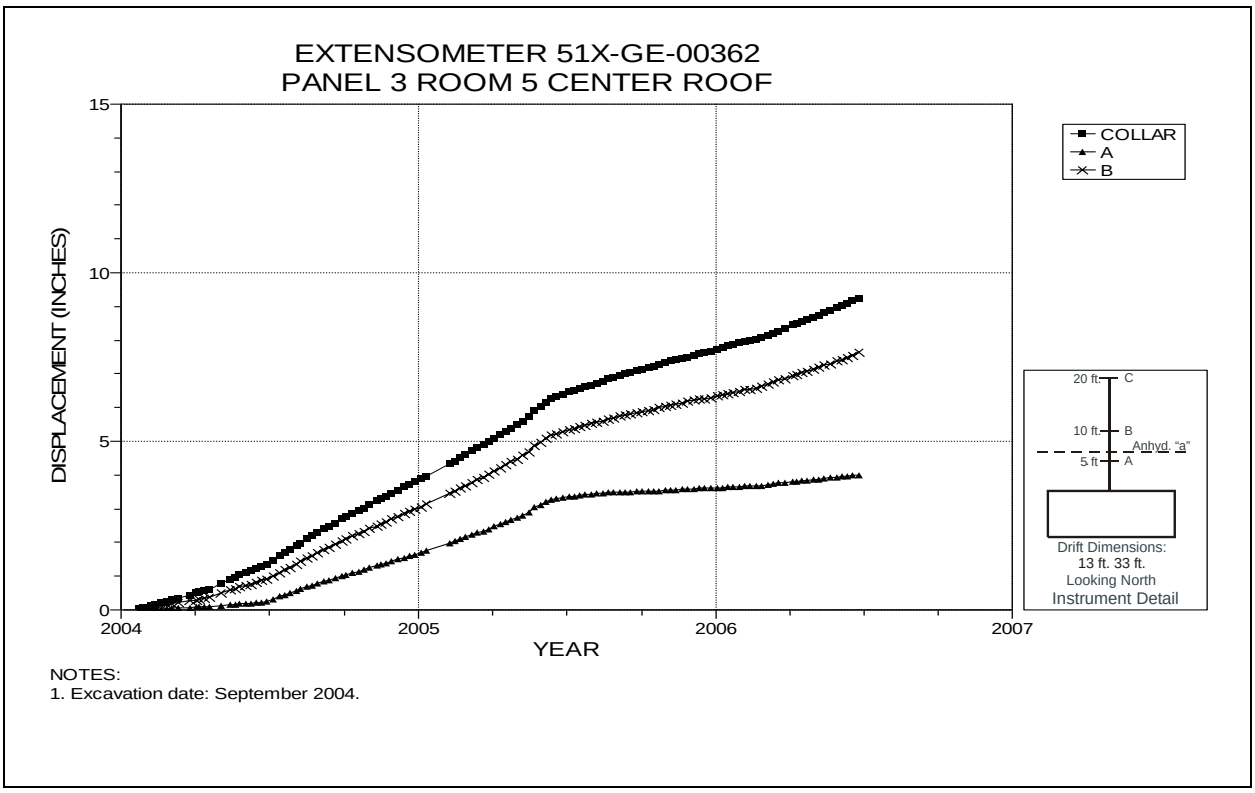


Figure 5-31 Extensometer 51X-GE-00362
Room 5, Panel 3 – Room Center – Roof

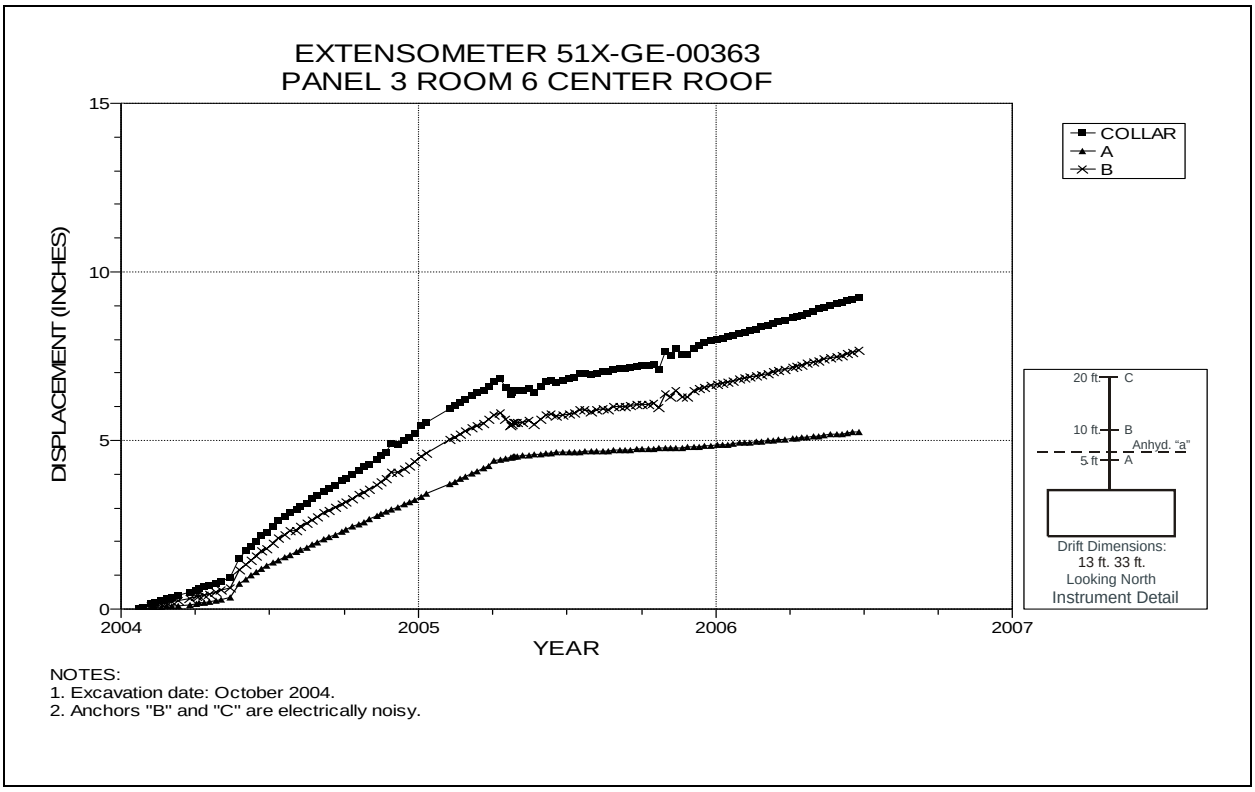


Figure 5-32 Extensometer 51X-GE-00363
Room 6, Panel 3 – Room Center – Roof

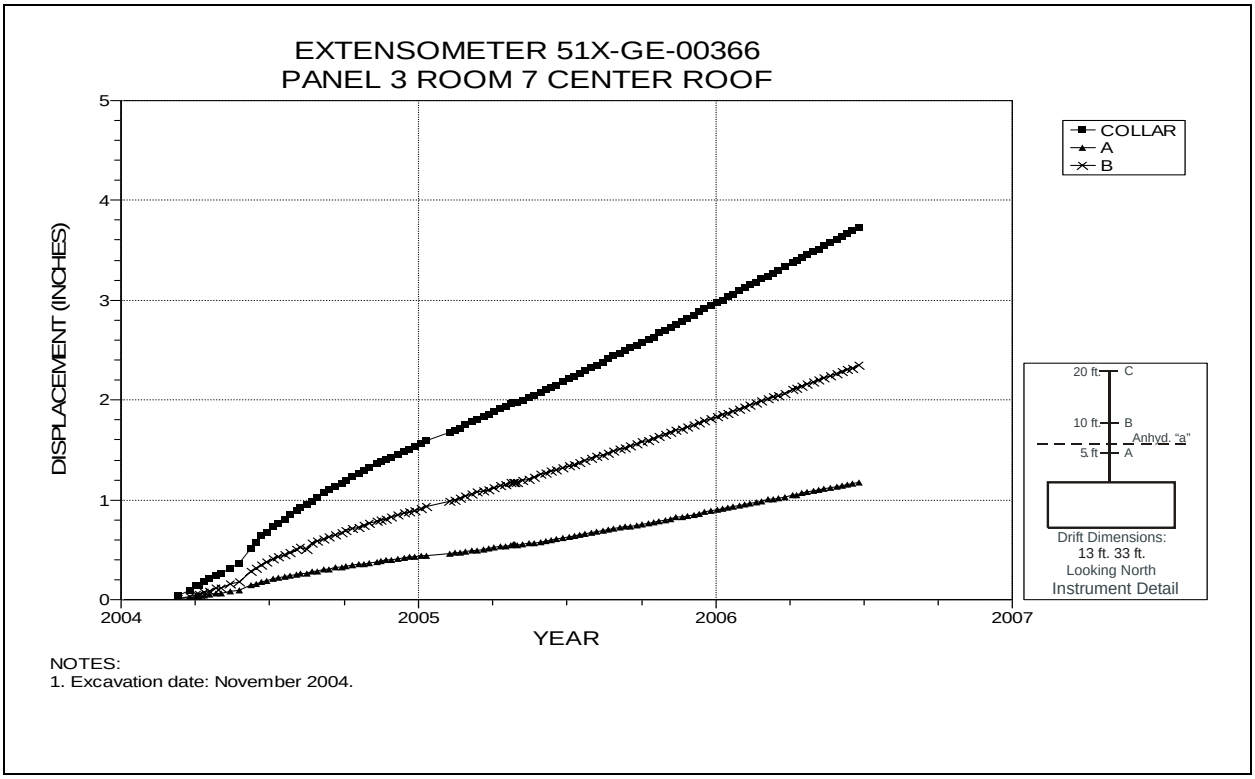


Figure 5-33 Extensometer 51X-GE-00366
Room 7, Panel 3 – Room Center – Roof

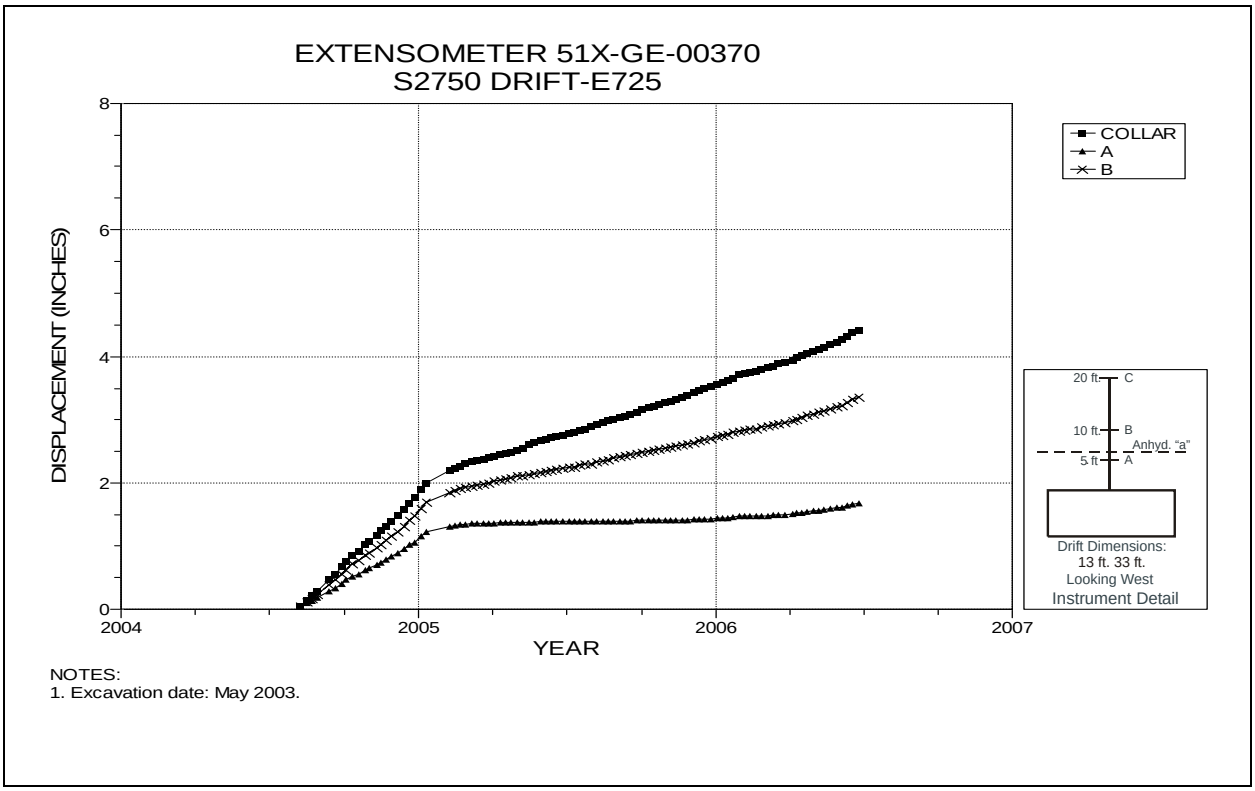


Figure 5-34 Extensometer 51X-GE-00370
S2750 Drift at E725 – Roof

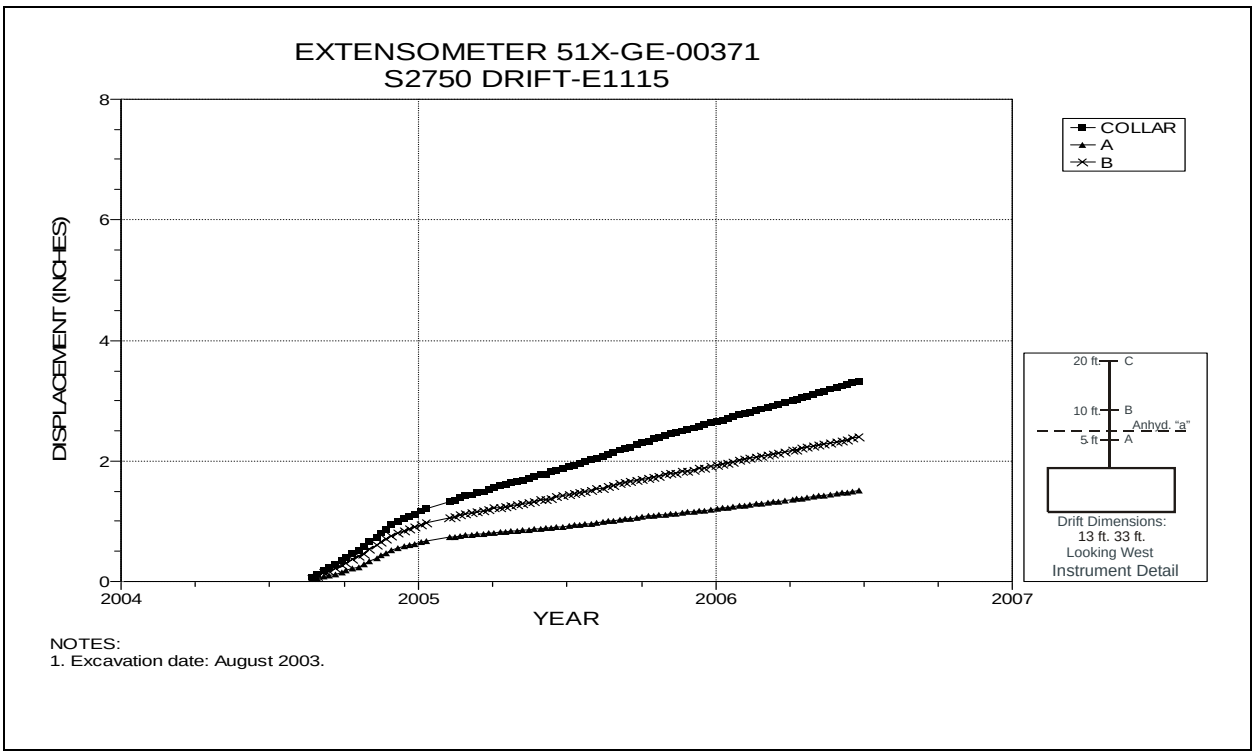


Figure 5-35 Extensometer 51X-GE-00371
S2750 Drift at E1115 – Roof

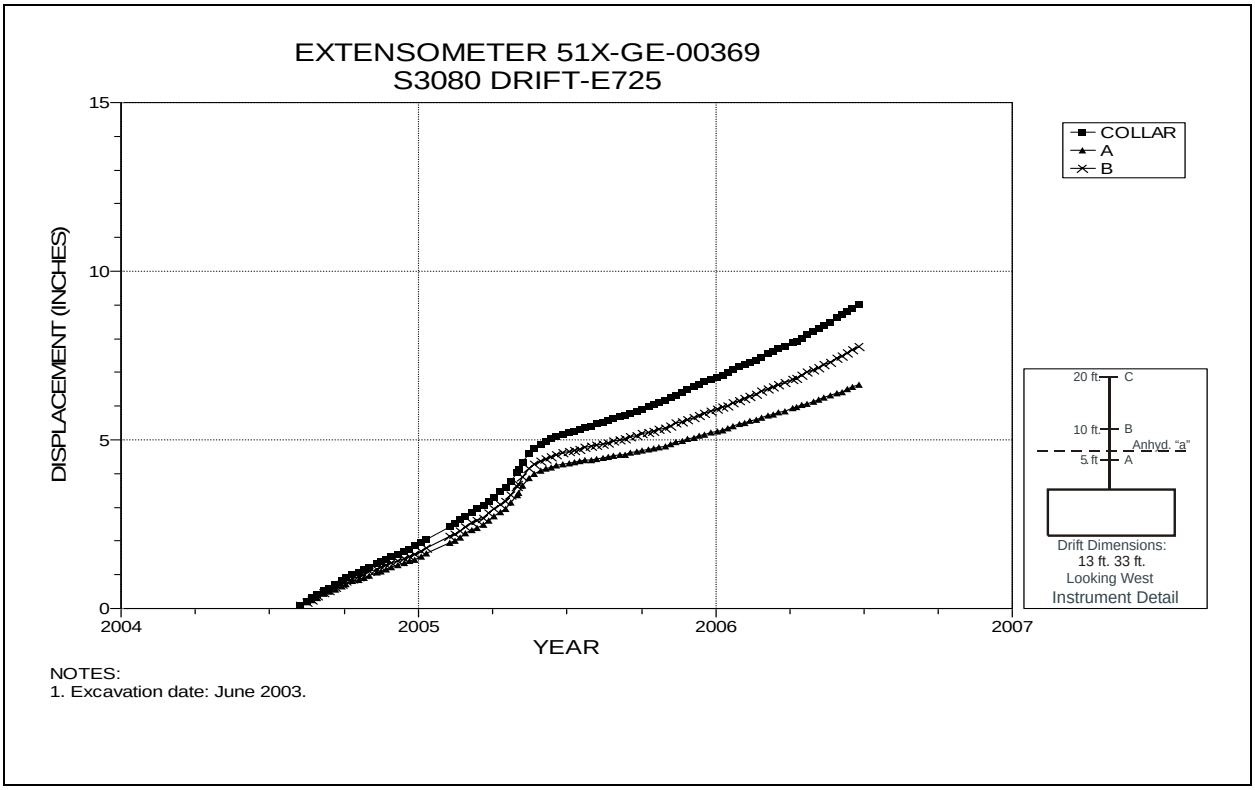


Figure 5-36 Extensometer 51X-GE-00369
S3080 Drift at E725 – Roof

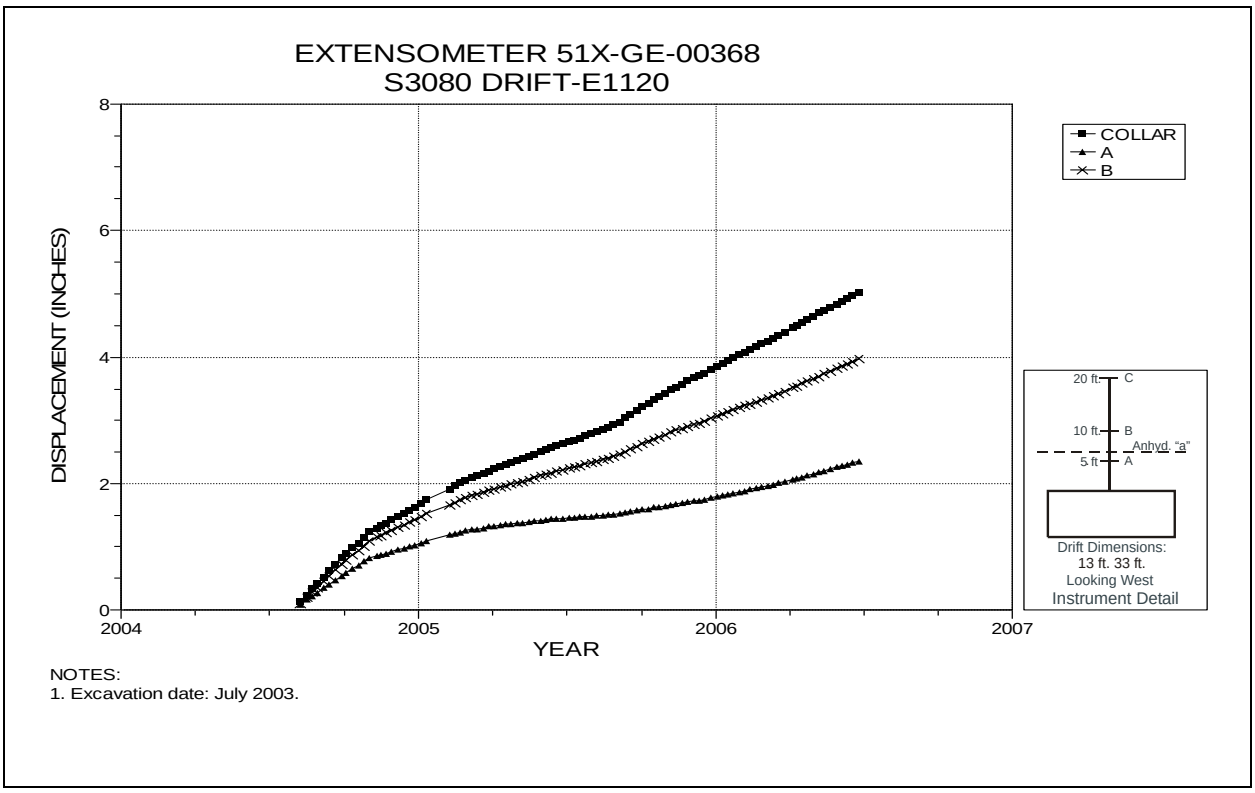


Figure 5-37 Extensometer 51X-GE-00368
S3080 Drift at E1120 – Roof

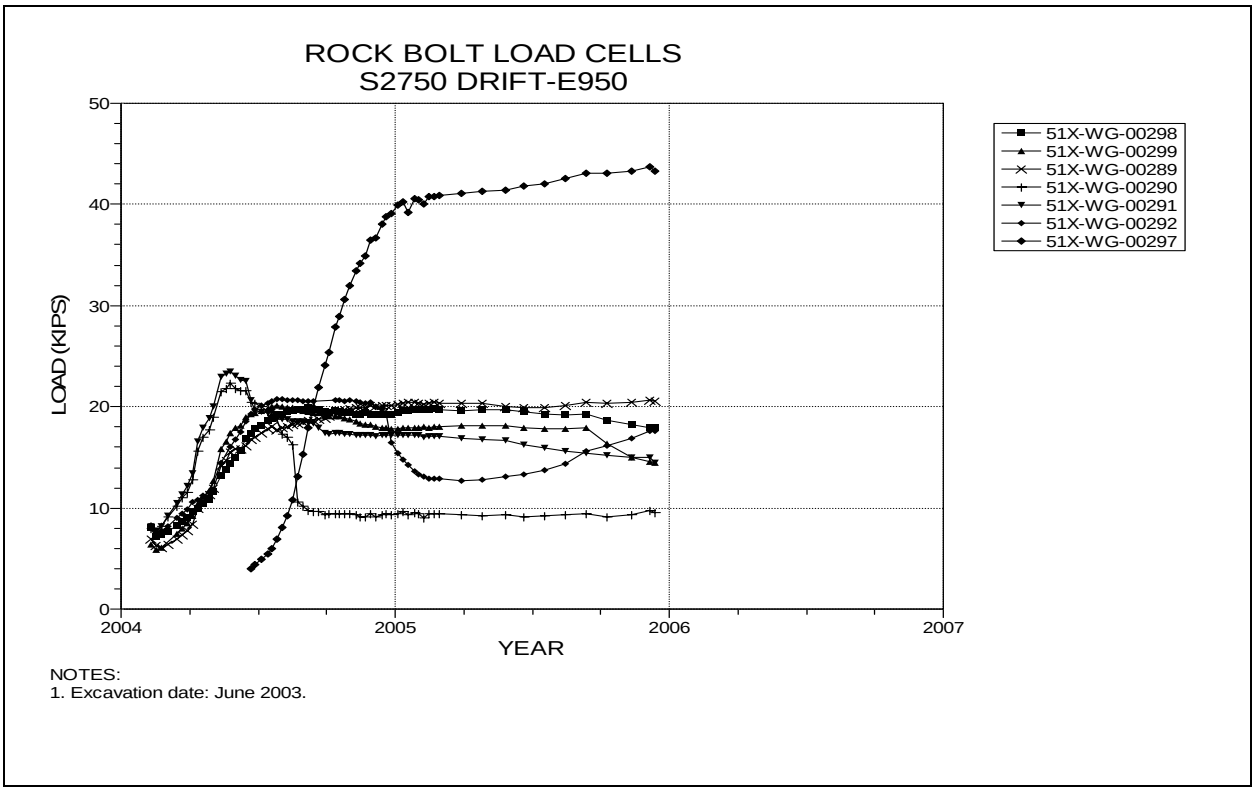


Figure 5-38 Rock Bolt Load Cells
S2750 Drift at E950/E1050 – Roof

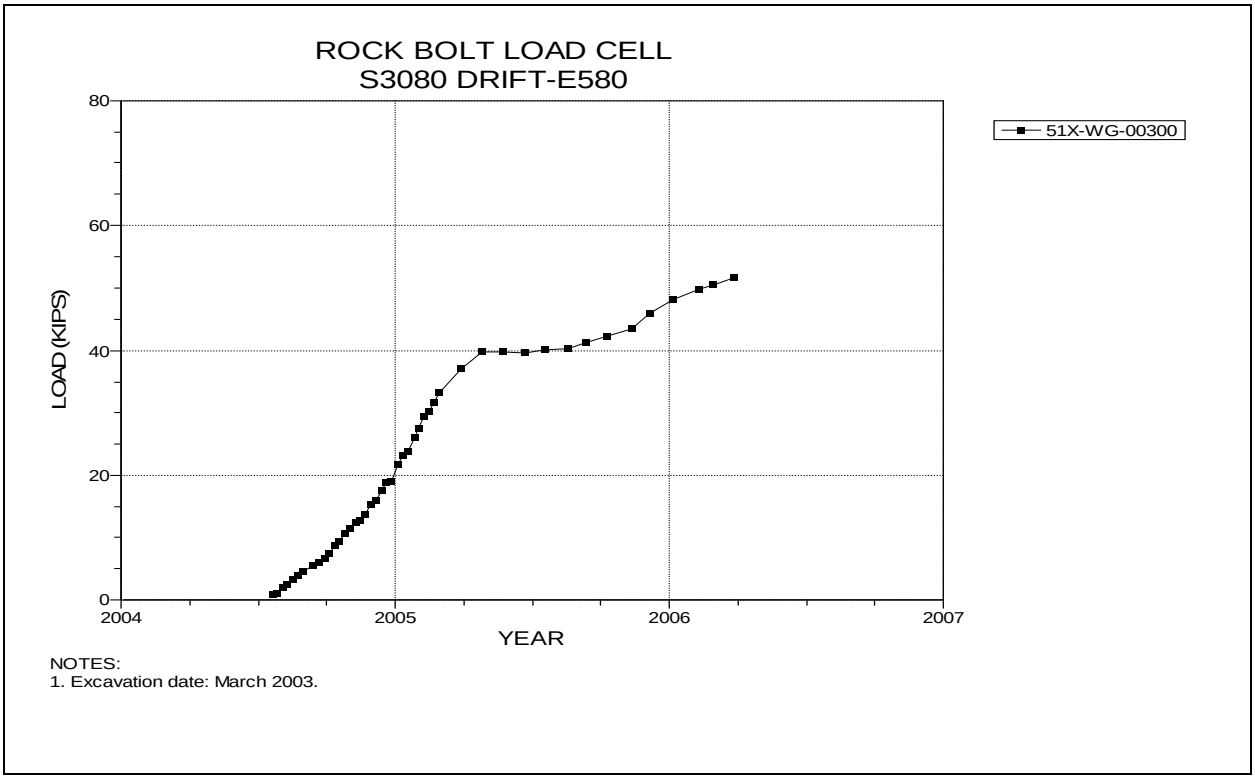


Figure 5-39 Rock Bolt Load Cell
S3080 Drift at E580 – Roof

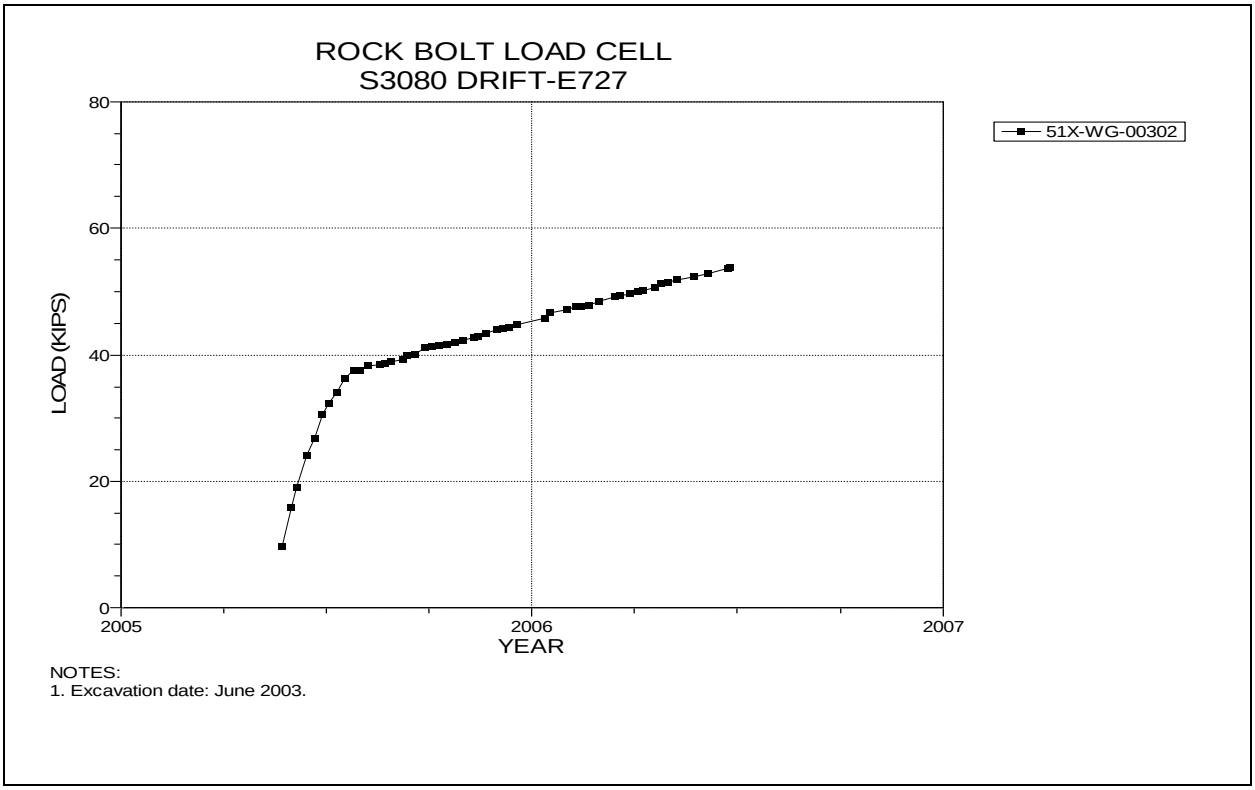


Figure 5-40 Rock Bolt Load Cells
S3080 Drift at E727 – Roof

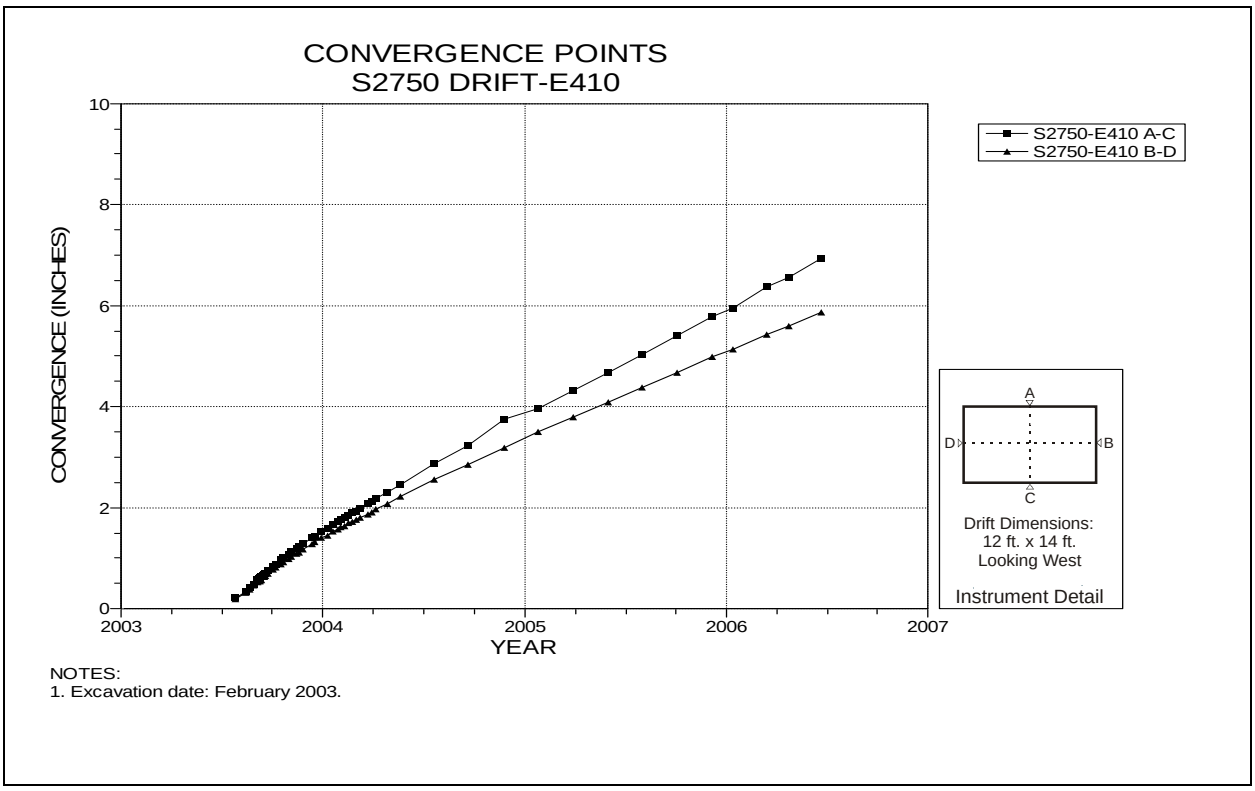


Figure 5-41 Convergence Point Array
S2750 Drift at E410 – All Chords

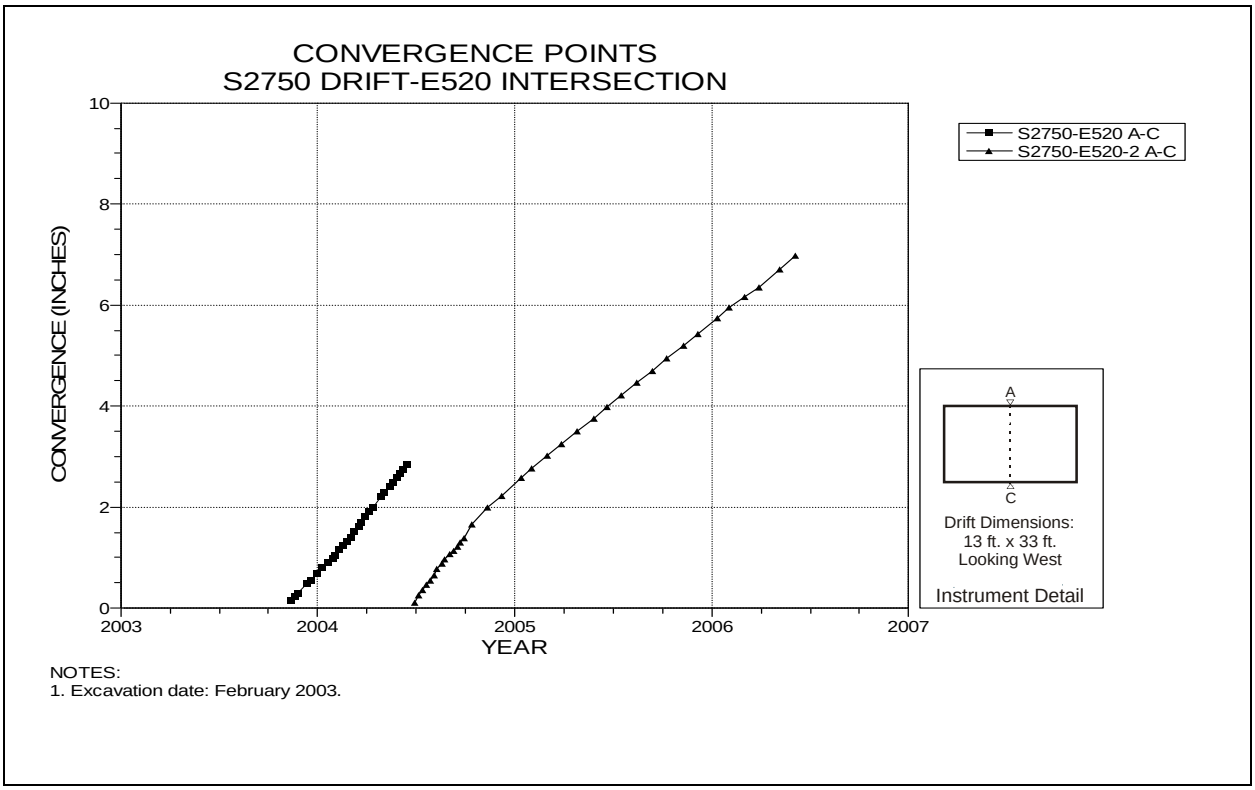


Figure 5-42 Convergence Point Array
S2750 Drift at E520 Drift Intersection (Room 1, Panel 3) – Roof to Floor

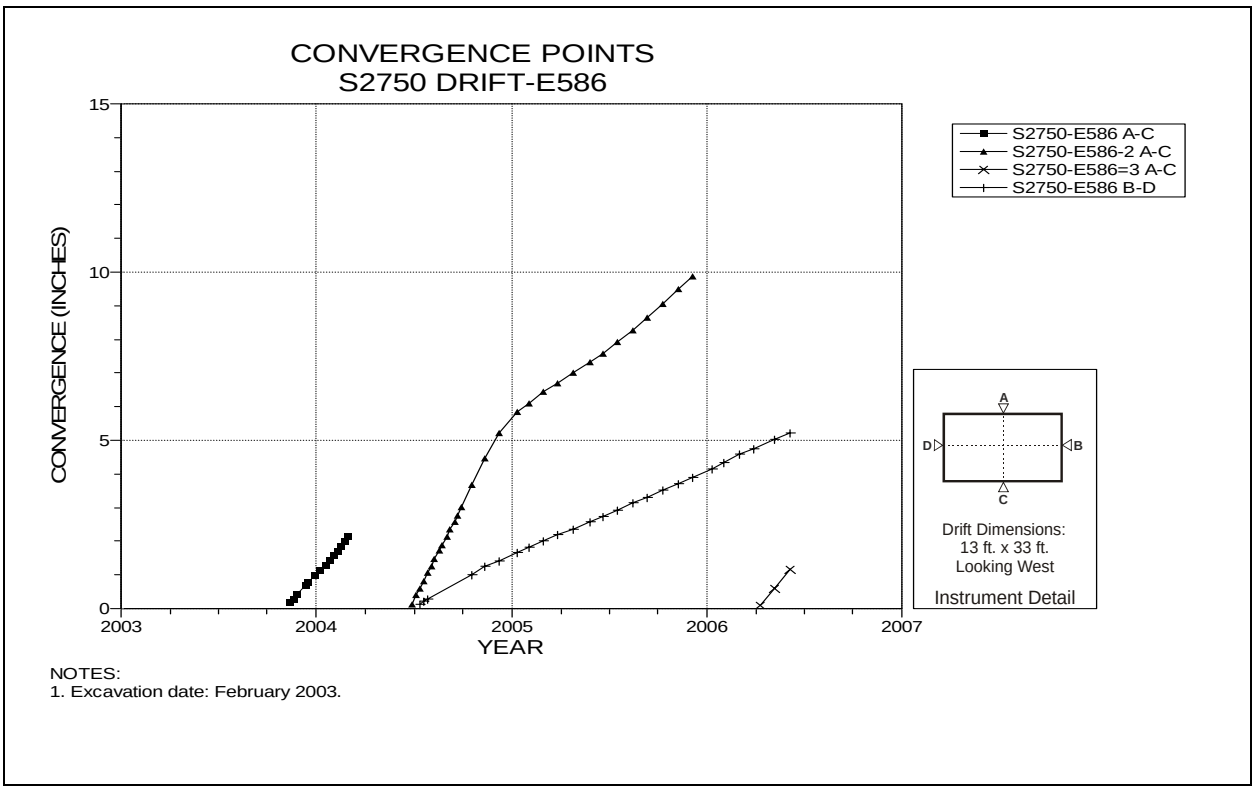


Figure 5-43 Convergence Point Array
S2750 Drift at E586 – Roof to Floor

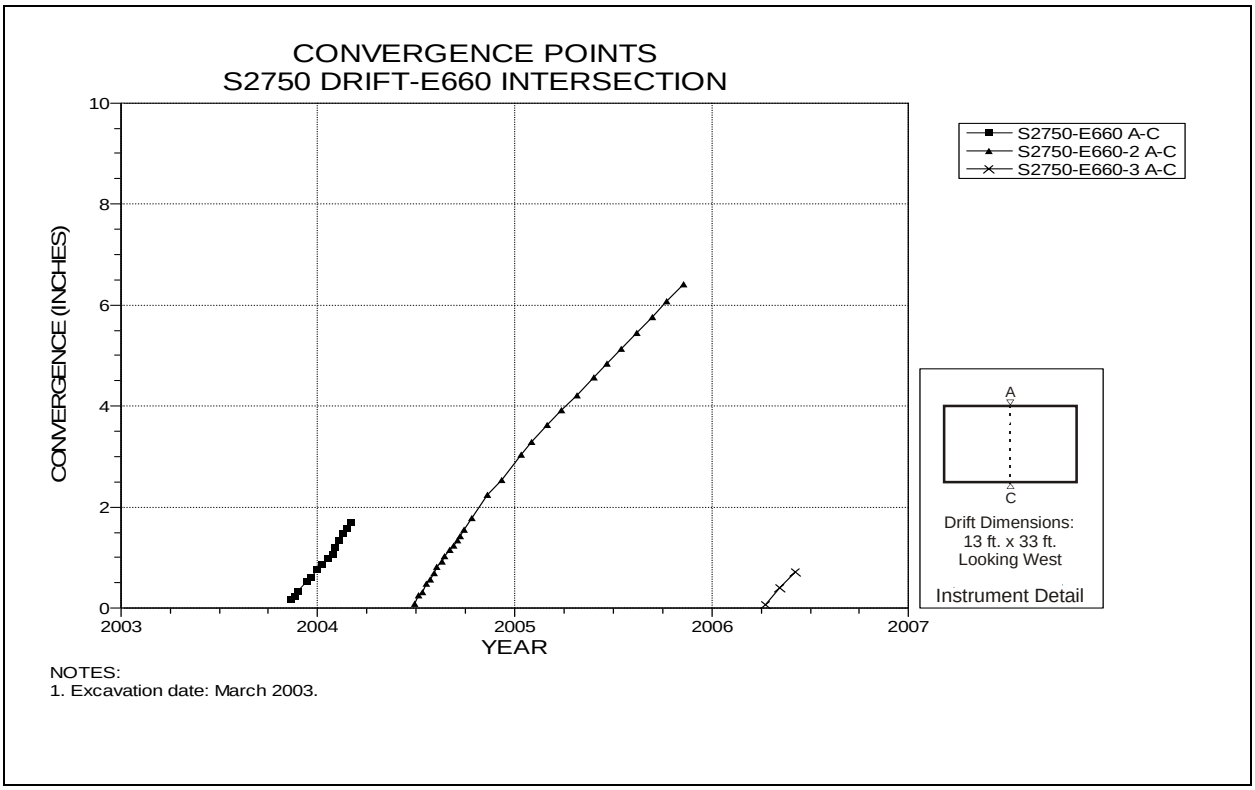


Figure 5-44 Convergence Point Array
S2750 Drift at E660 Drift Intersection (Room 2, Panel 3) – Roof to Floor

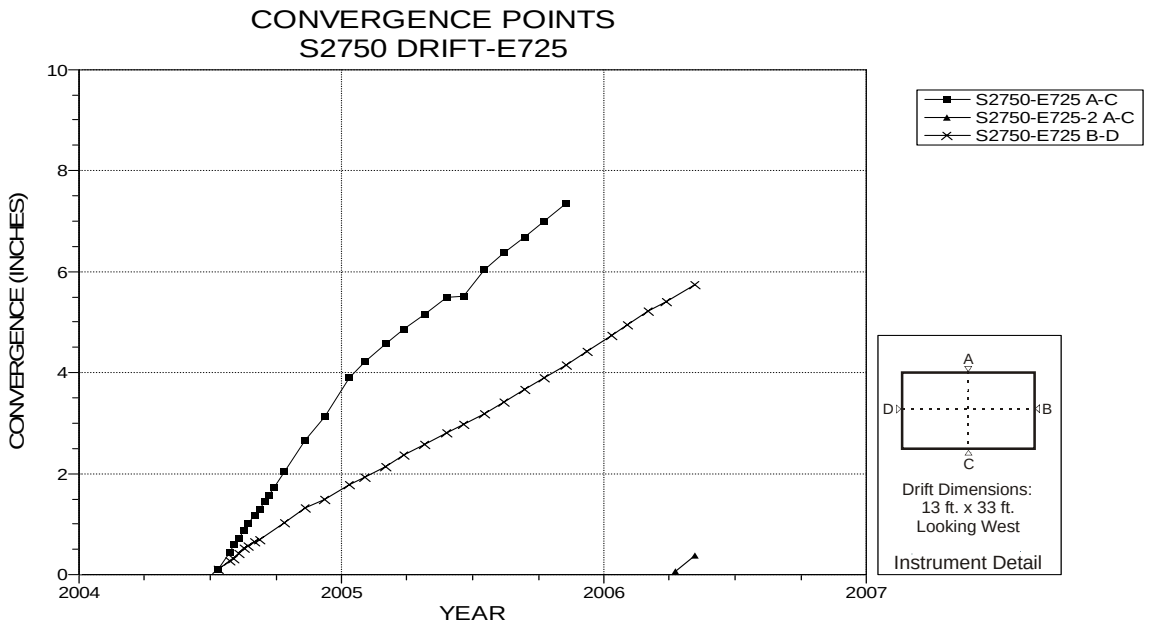


Figure 5-45 Convergence Point Array
S2750 Drift at E725 – All Chords

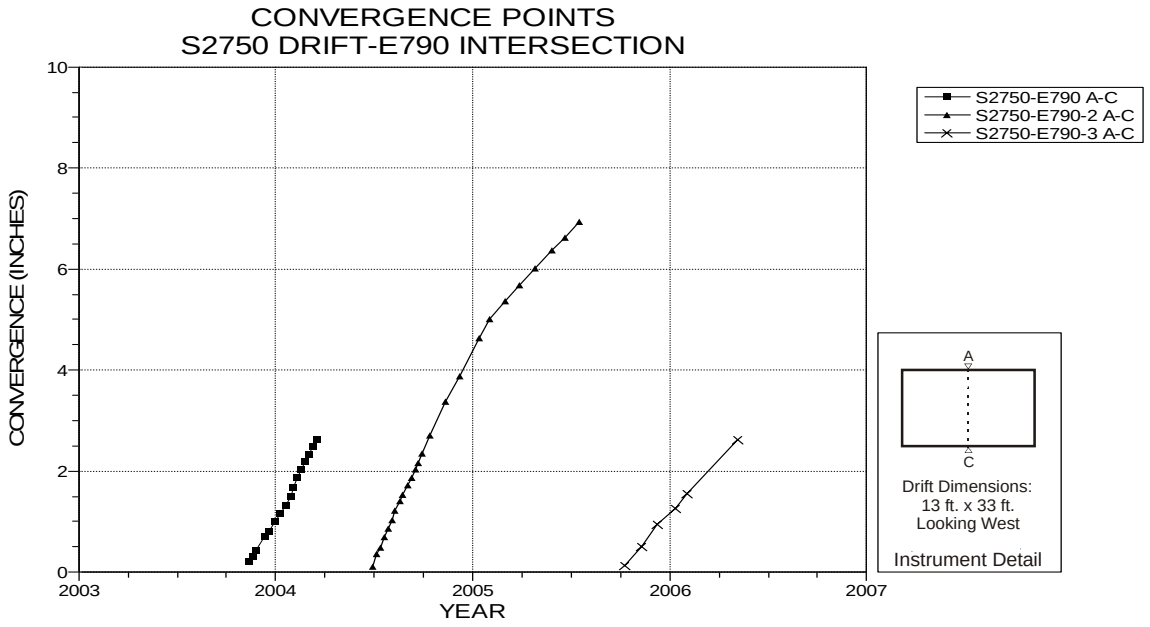


Figure 5-46 Convergence Point Array
S2750 Drift at E790 Drift Intersection (Room 3, Panel 3) – Roof to Floor

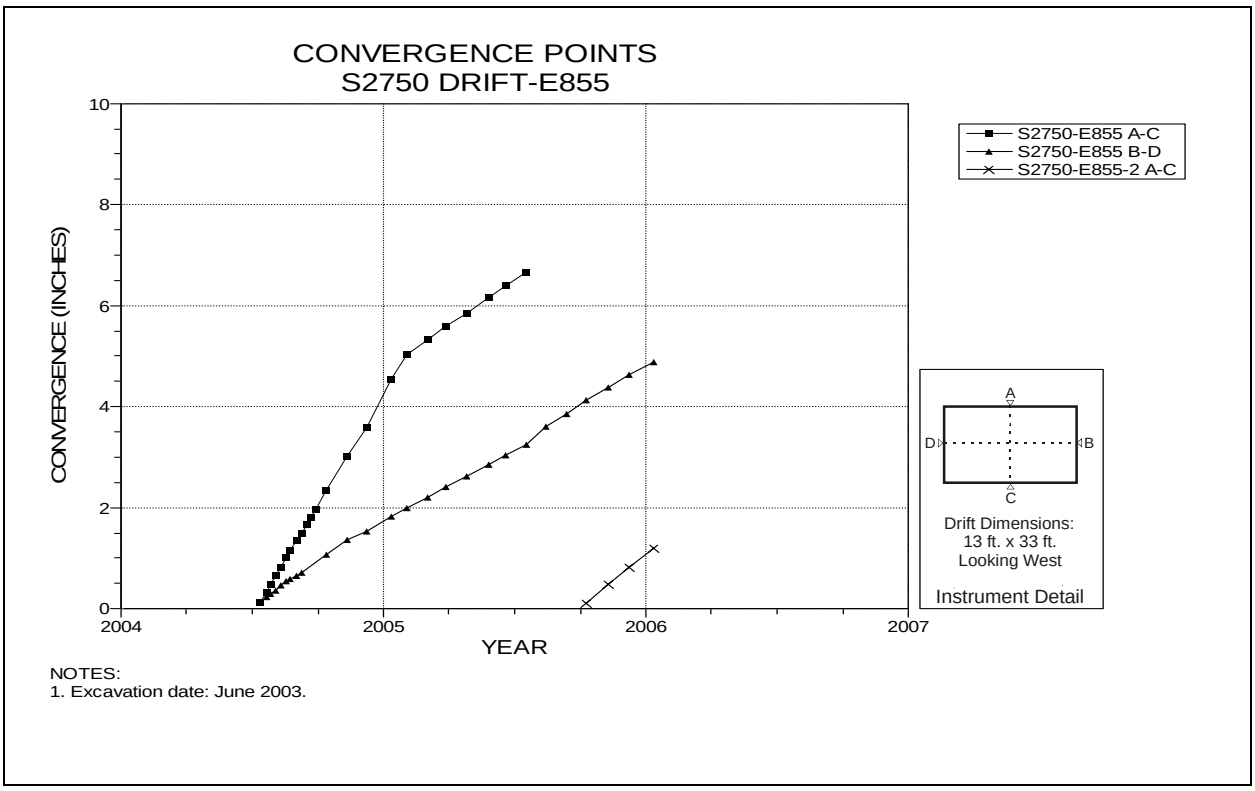


Figure 5-47 Convergence Point Array
S2750 Drift at E855 – All Chords

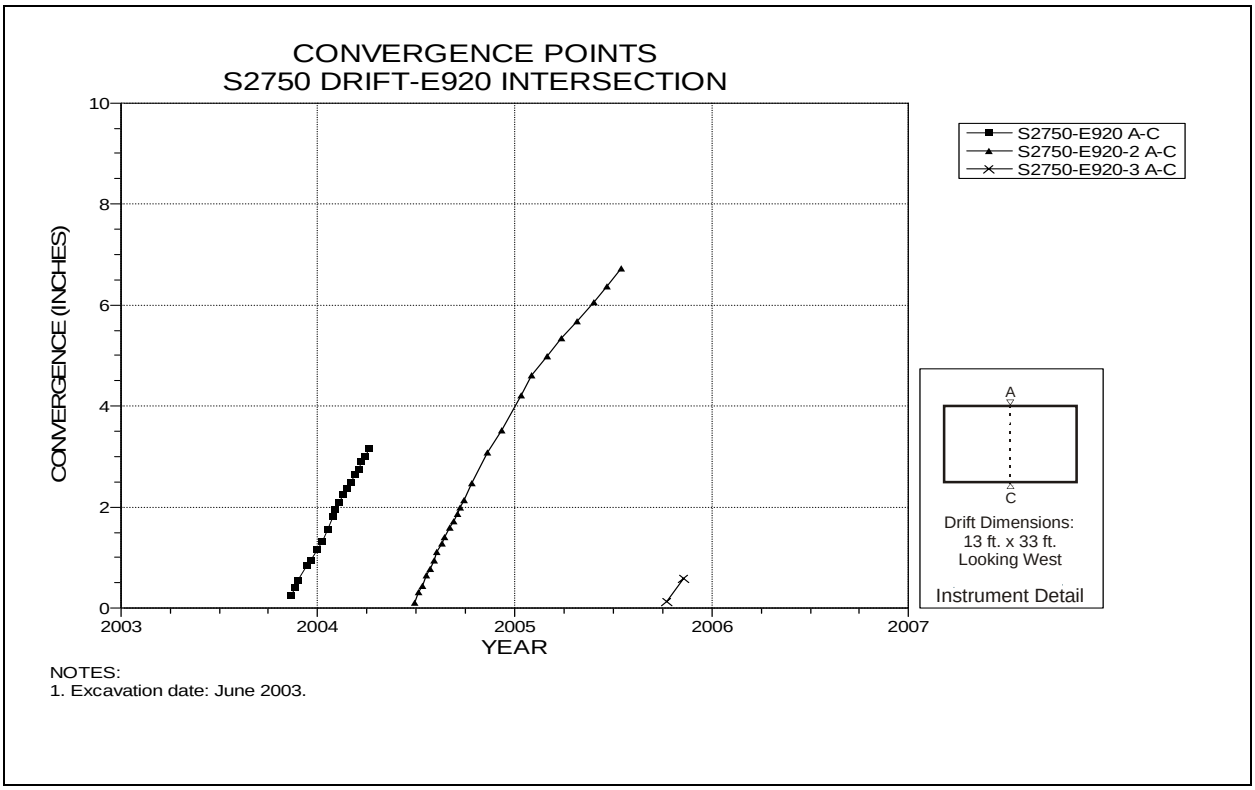


Figure 5-48 Convergence Point Array
S2750 Drift at E920 Drift Intersection (Room 4 Panel 3) – Roof to Floor

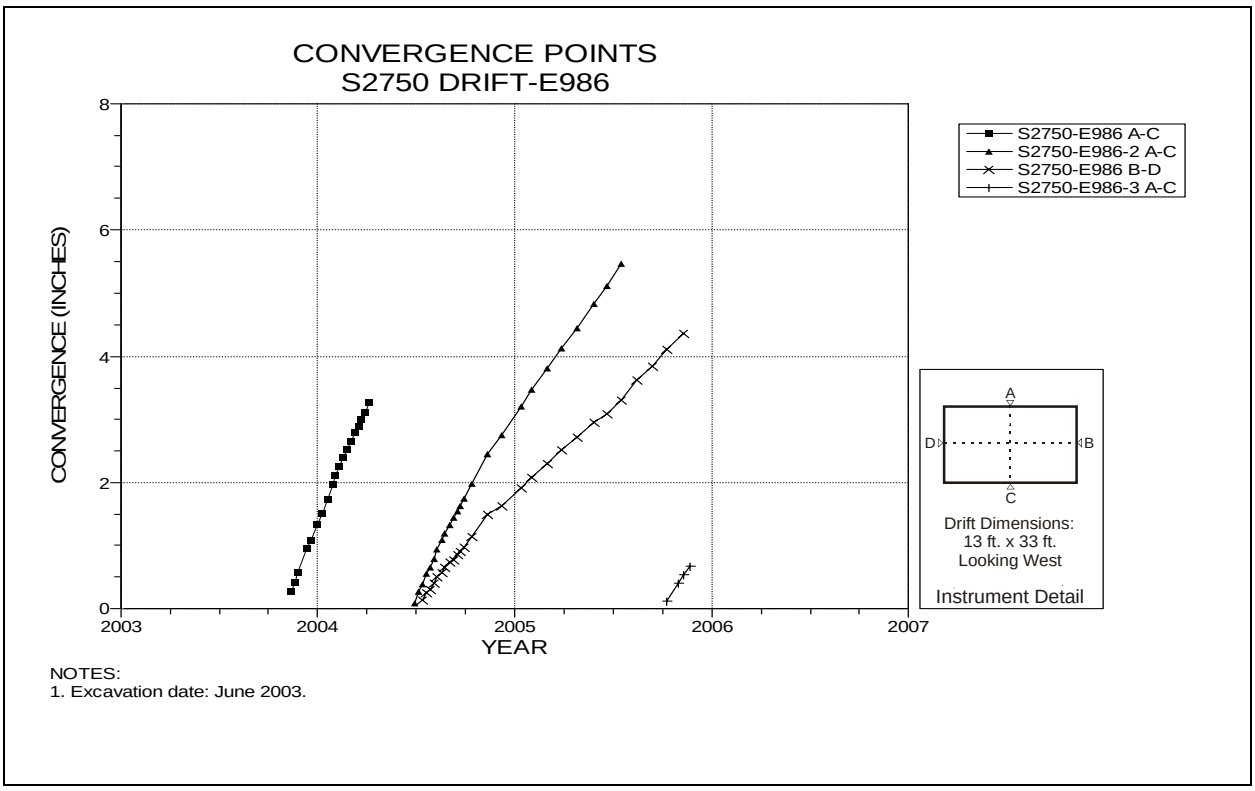


Figure 5-49 Convergence Point Array
S2750 Drift at E986 – All Chords

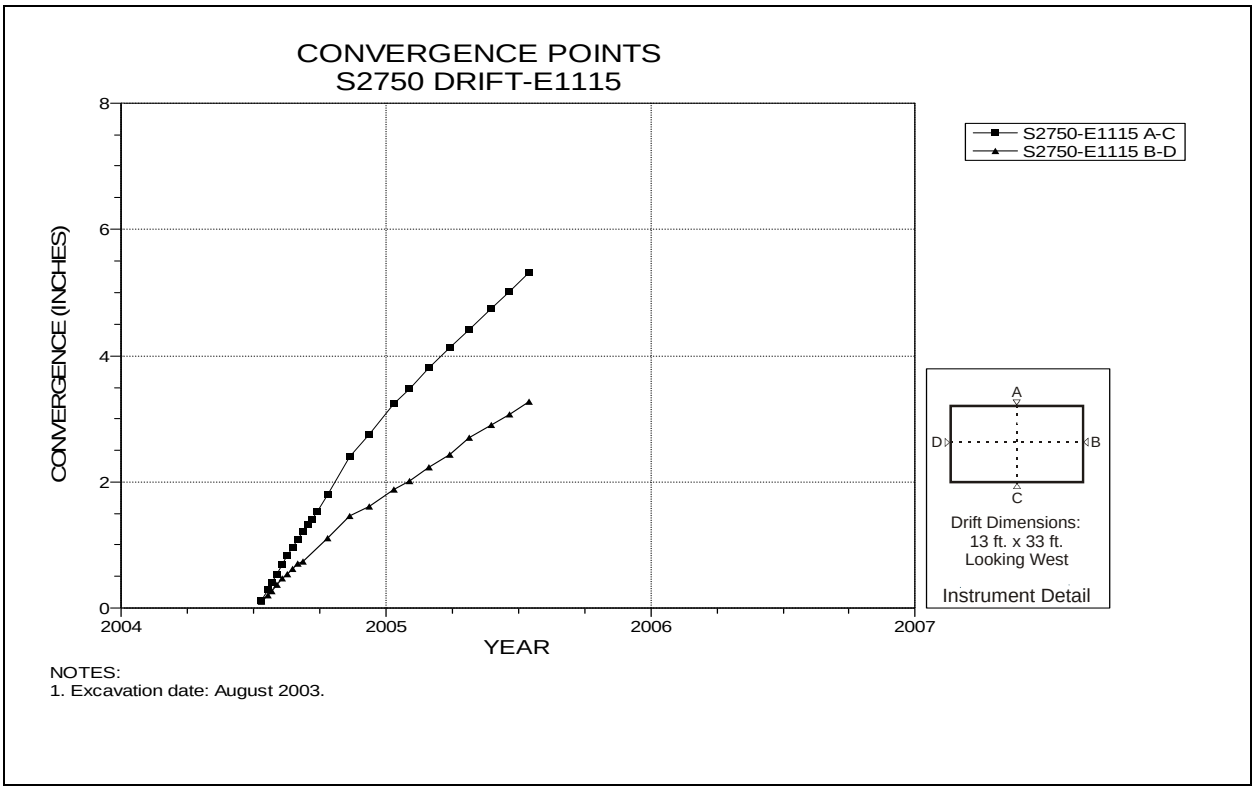


Figure 5-50 Convergence Point Array
S2750 Drift at E1115 – All Chords

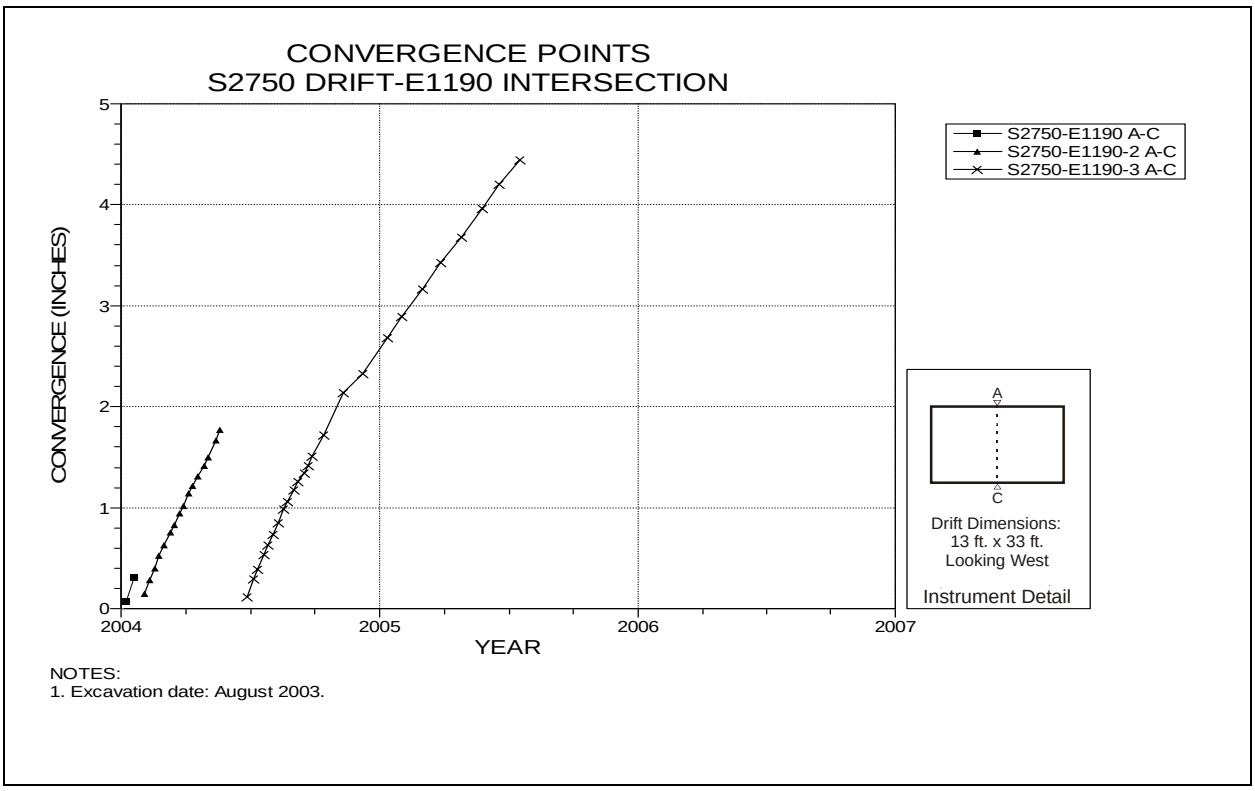


Figure 5-51 Convergence Point Array
S2750 Drift at E1190 Drift Intersection (Room 6 Panel 3) – Roof to Floor

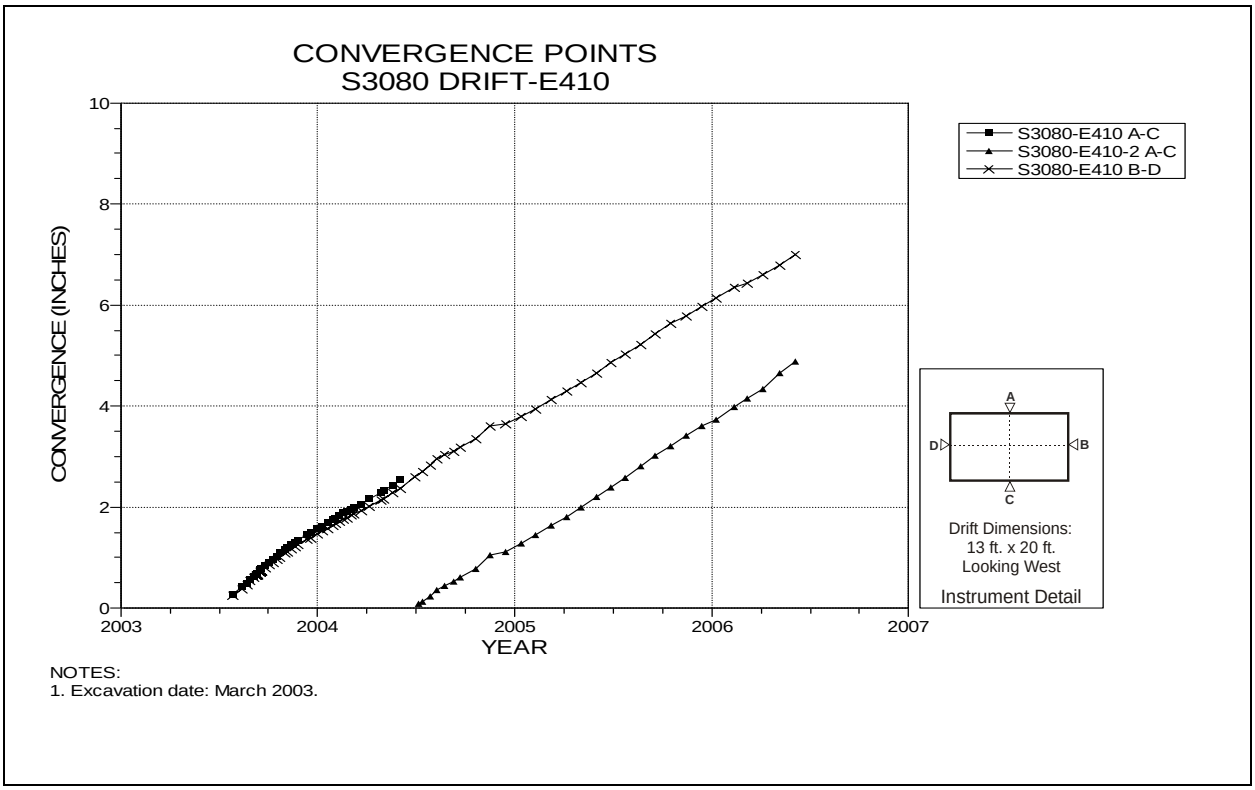


Figure 5-52 Convergence Point Array
S3080 Drift at E410 – All Chords

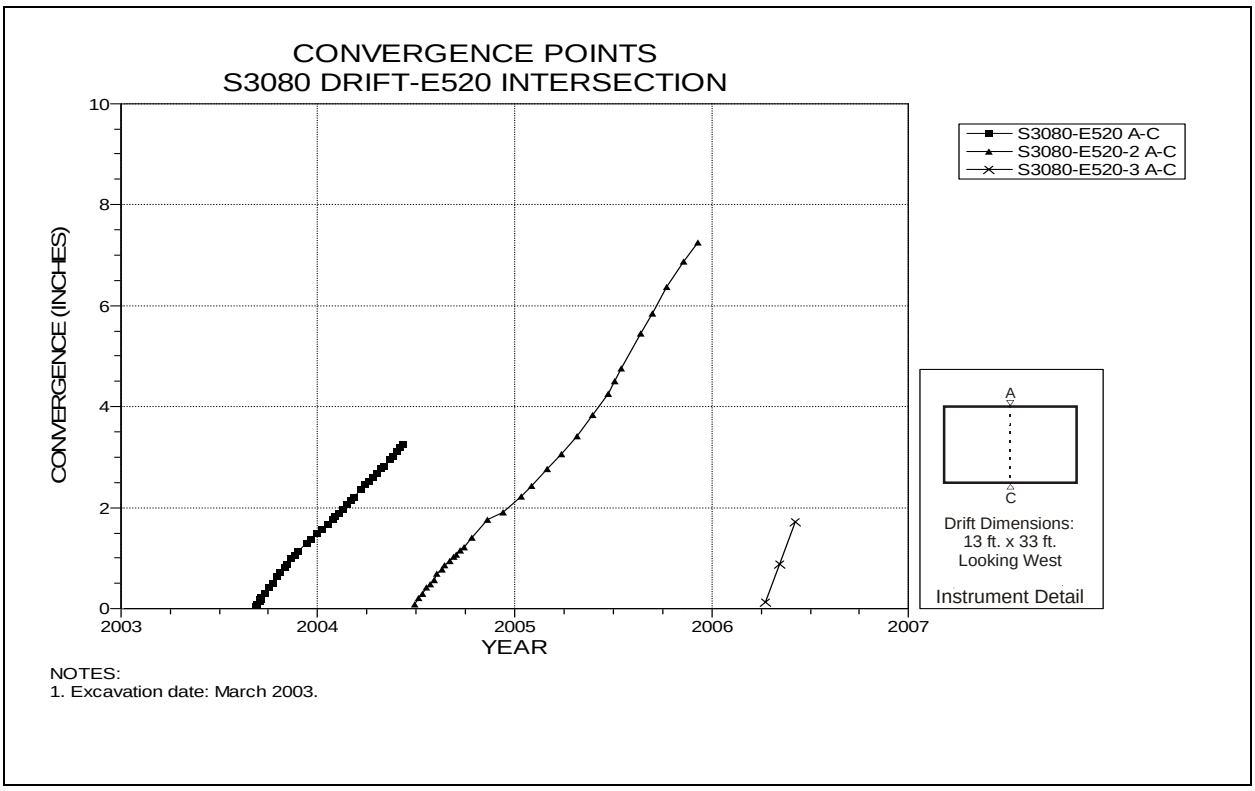


Figure 5-53 Convergence Point Array
S3080 Drift at E520 Drift Intersection (Room 1, Panel 3) – Roof to Floor

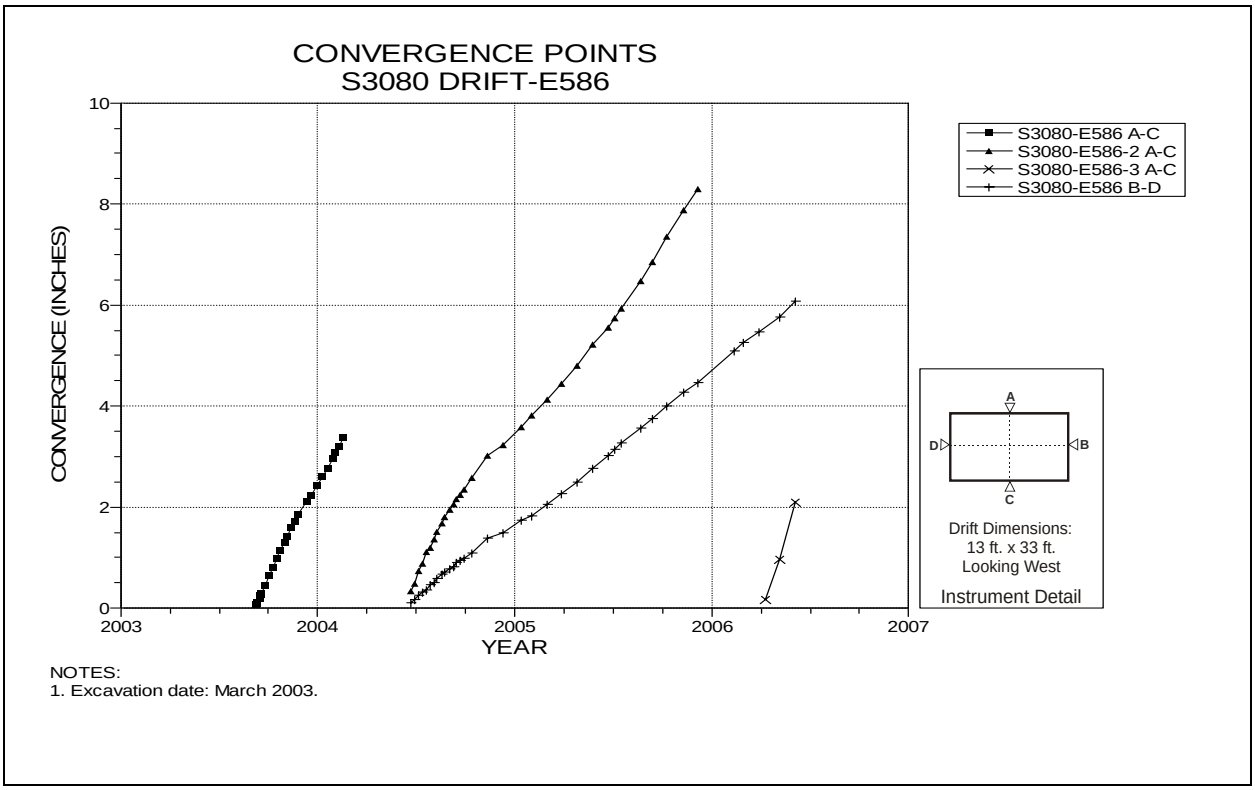


Figure 5-54 Convergence Point Array
S3080 Drift at E586 – All Chords

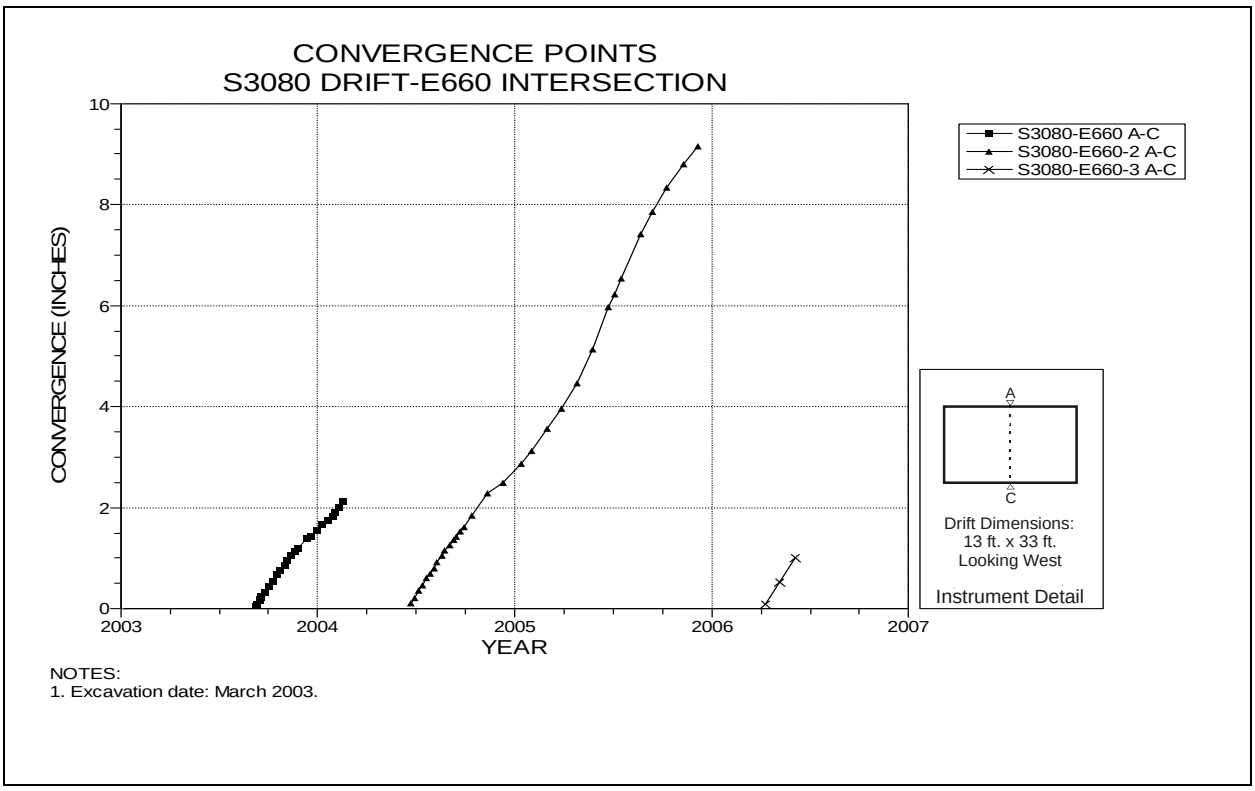


Figure 5-55 Convergence Point Array
S3080 Drift at E660 Drift Intersection (Room 2, Panel 3) – Roof to Floor

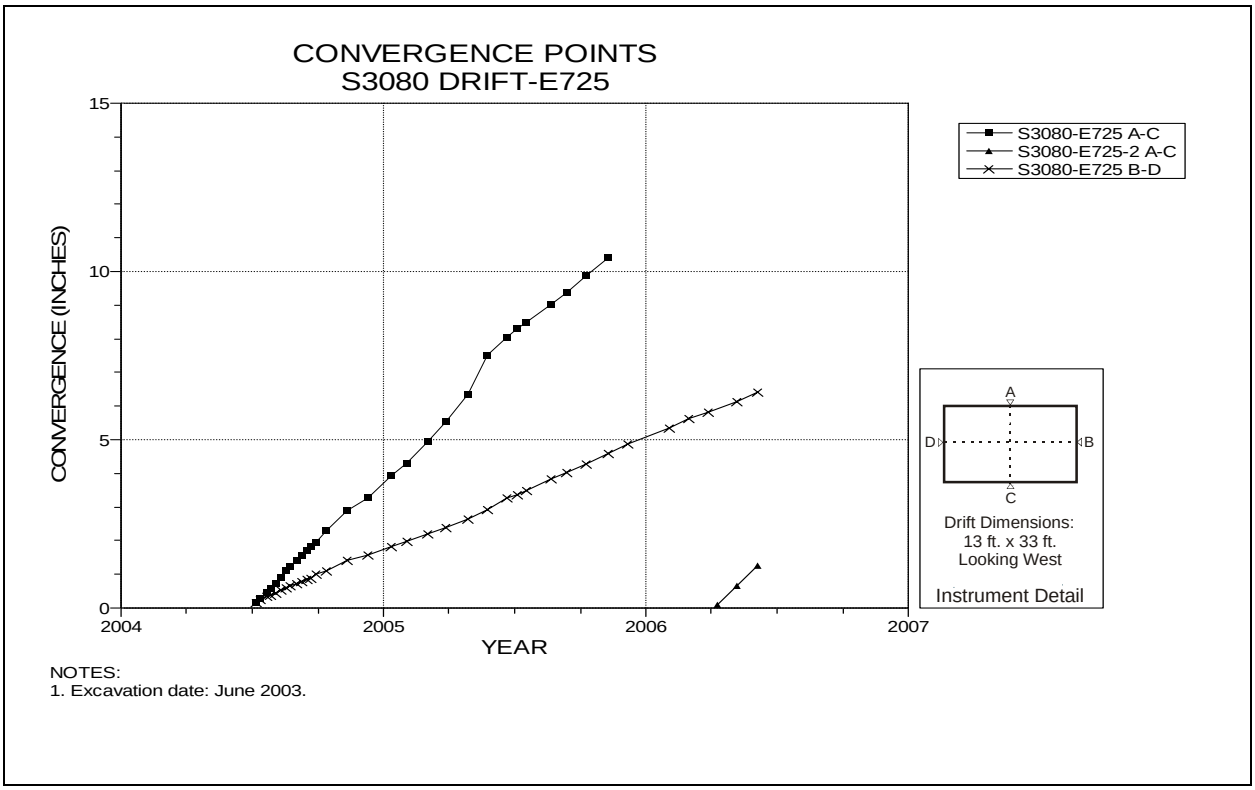


Figure 5-56 Convergence Point Array
S3080 Drift at E725 – All Chords

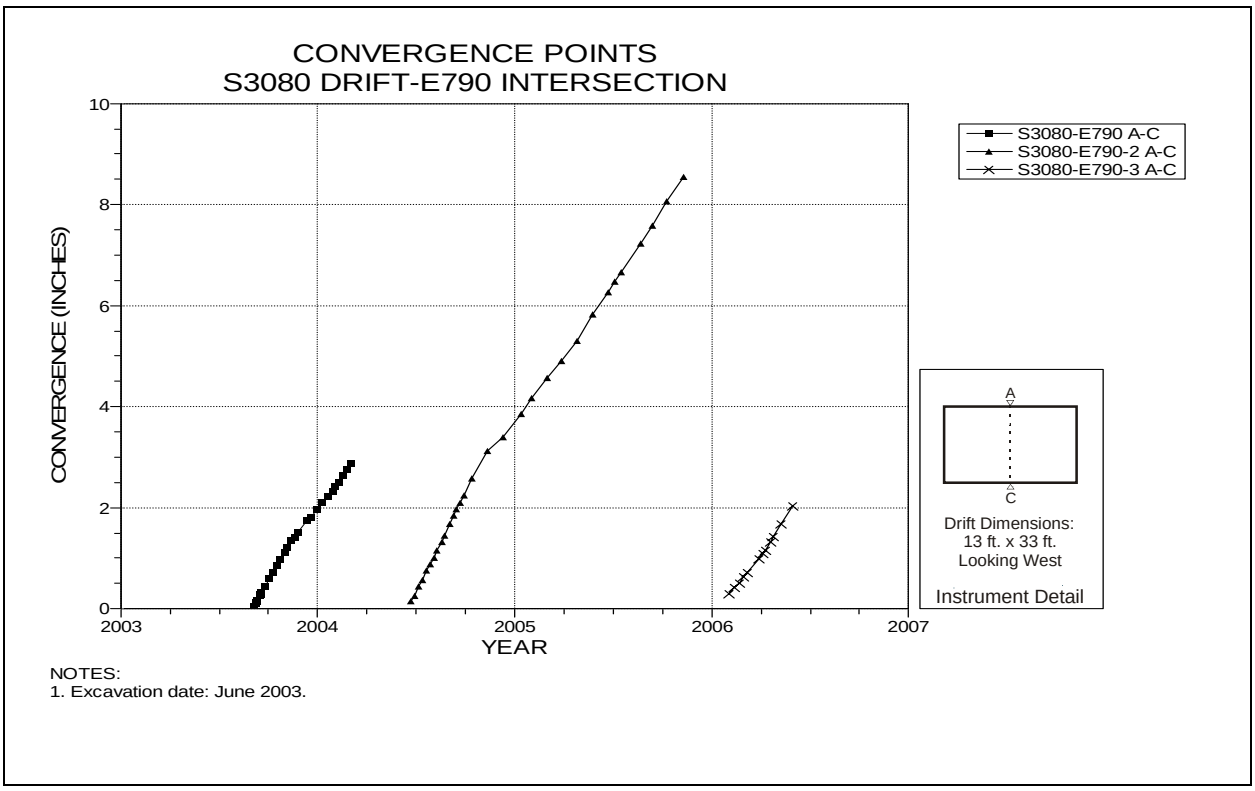


Figure 5-57 Convergence Point Array
S3080 Drift at E790 Drift Intersection (Room 3, Panel 3) – Roof to Floor

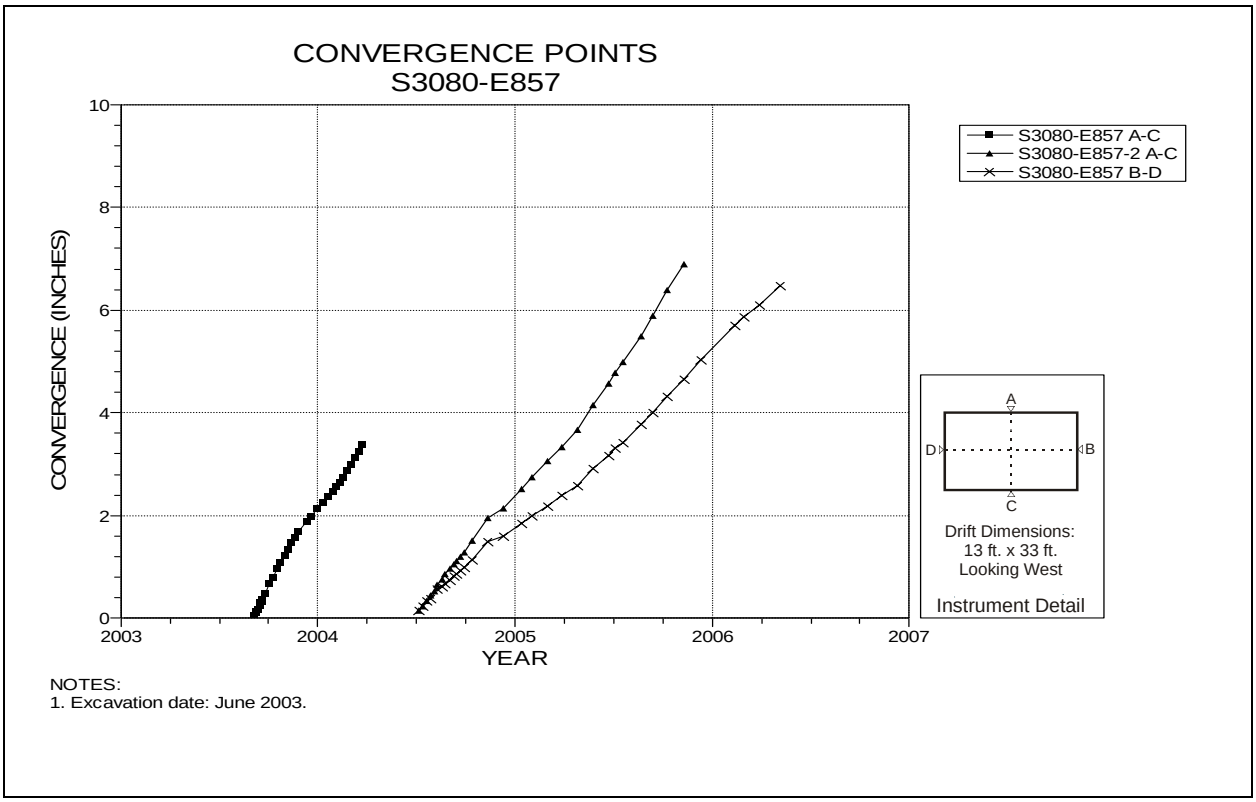


Figure 5-58 Convergence Point Array
S3080 Drift at E857 – All Chords

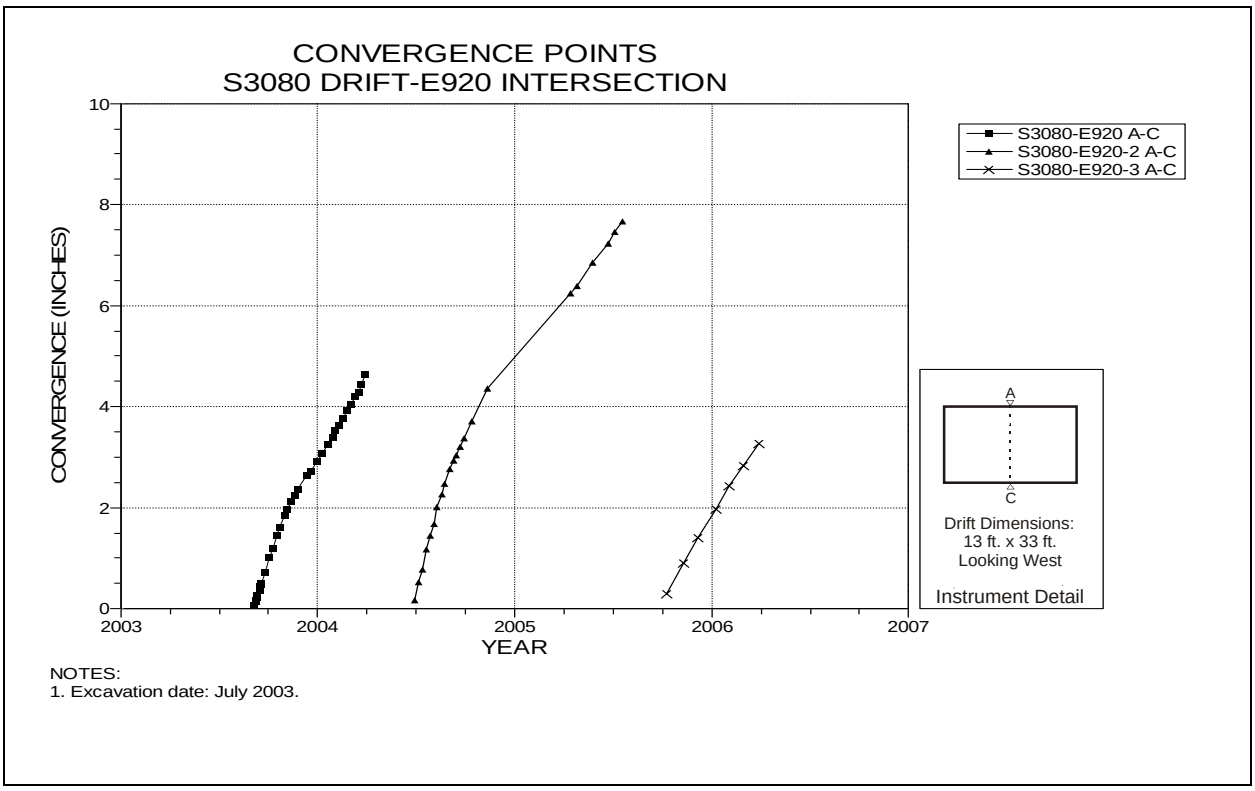


Figure 5-59 Convergence Point Array
S3080 Drift at E920 Drift Intersection (Room 4, Panel 3) – Roof to Floor

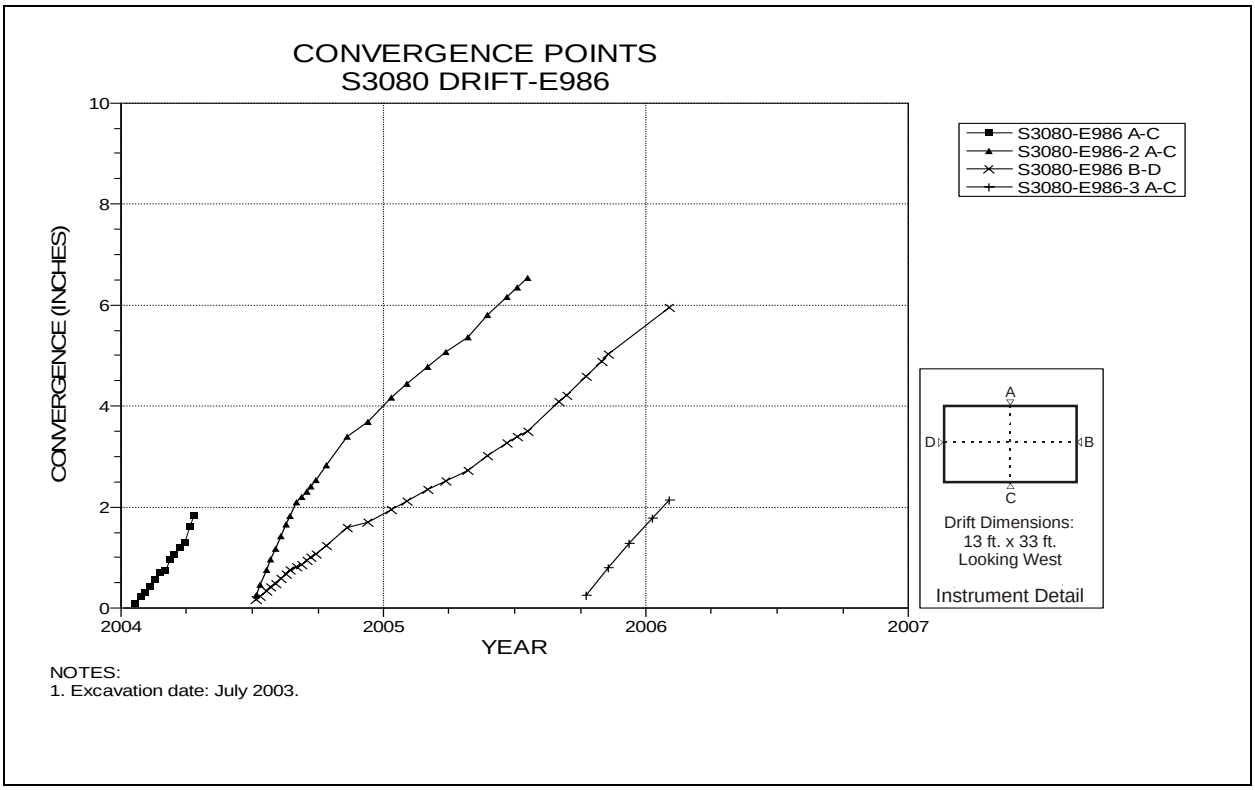
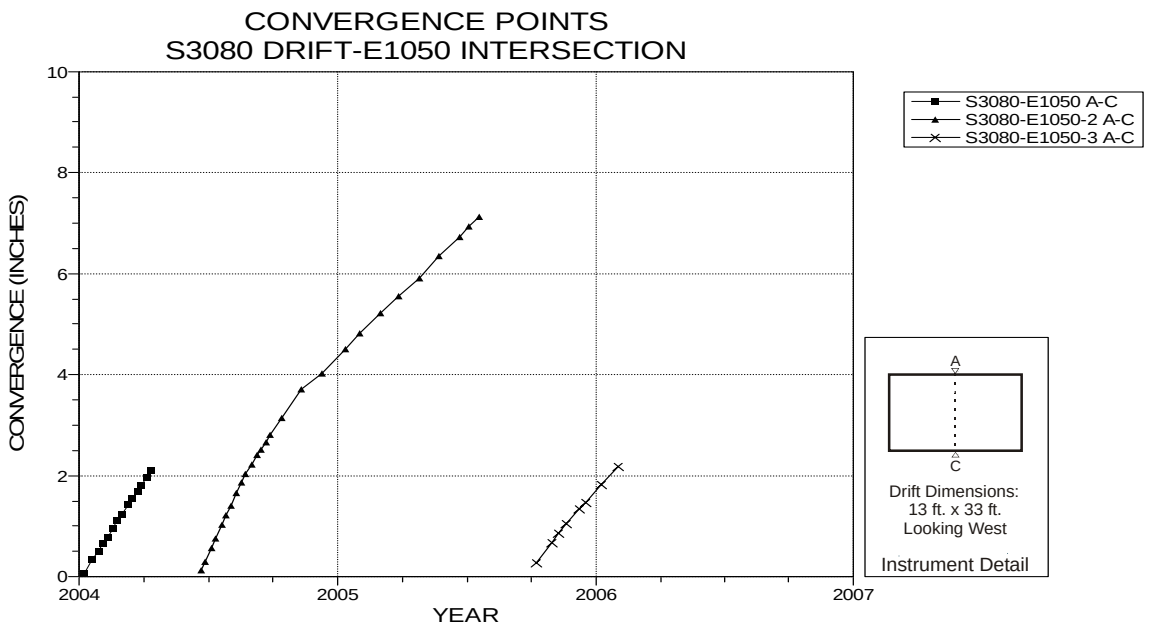
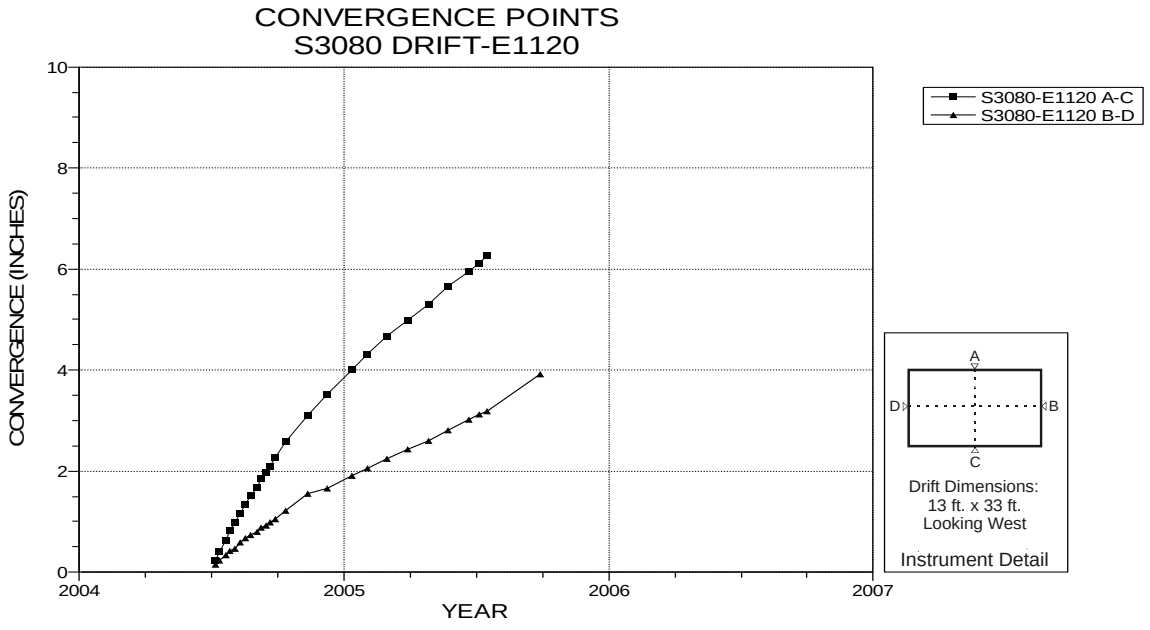


Figure 5-60 Convergence Point Array
S3080 Drift at E986 – All Chords



NOTES:
1. Excavation date: July 2003.

Figure 5-61 Convergence Point Array
S3080 Drift at E1050 Drift Intersection (Room 5, Panel 3) – Roof to Floor



NOTES:
1. Excavation date: July 2003.

Figure 5-62 Convergence Point Array
S3080 Drift at E1120 – All Chords

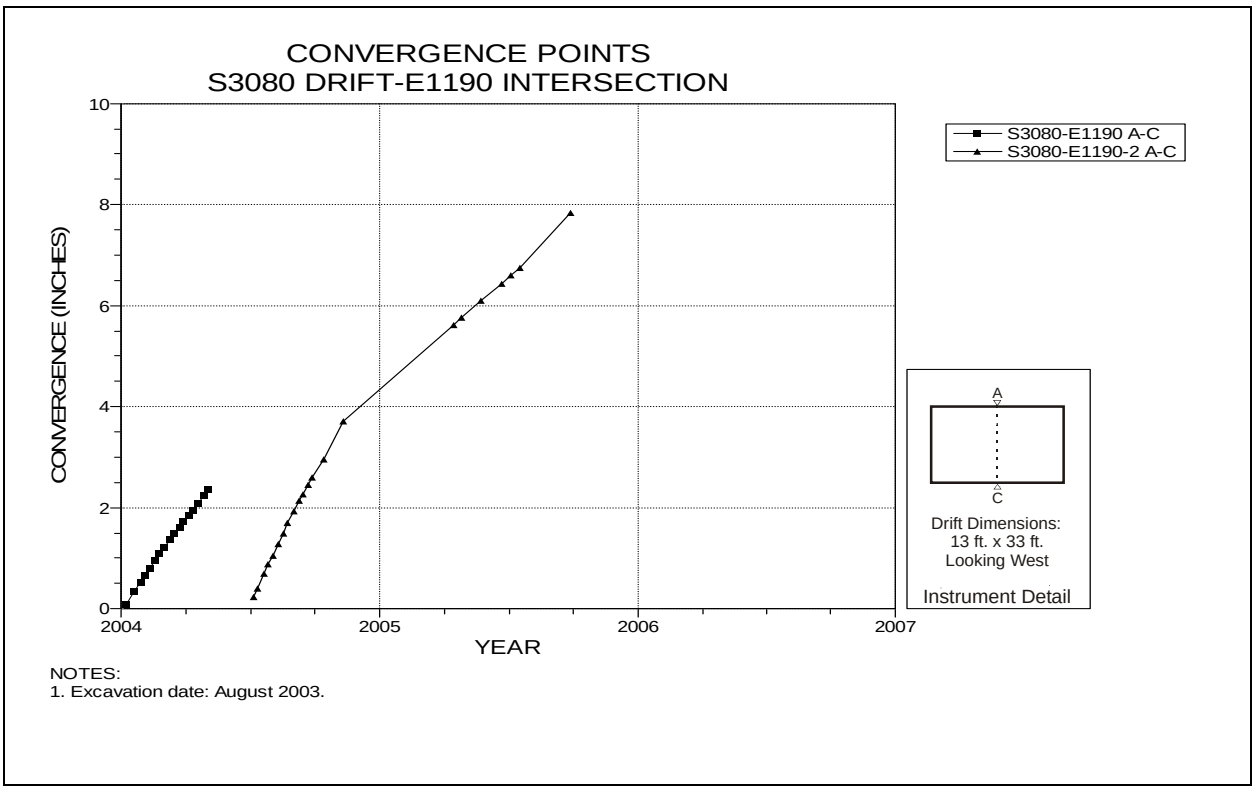


Figure 5-63 Convergence Point Array
S3080 Drift at E1190 Drift Intersection (Room 6, Panel 3) – Roof to Floor

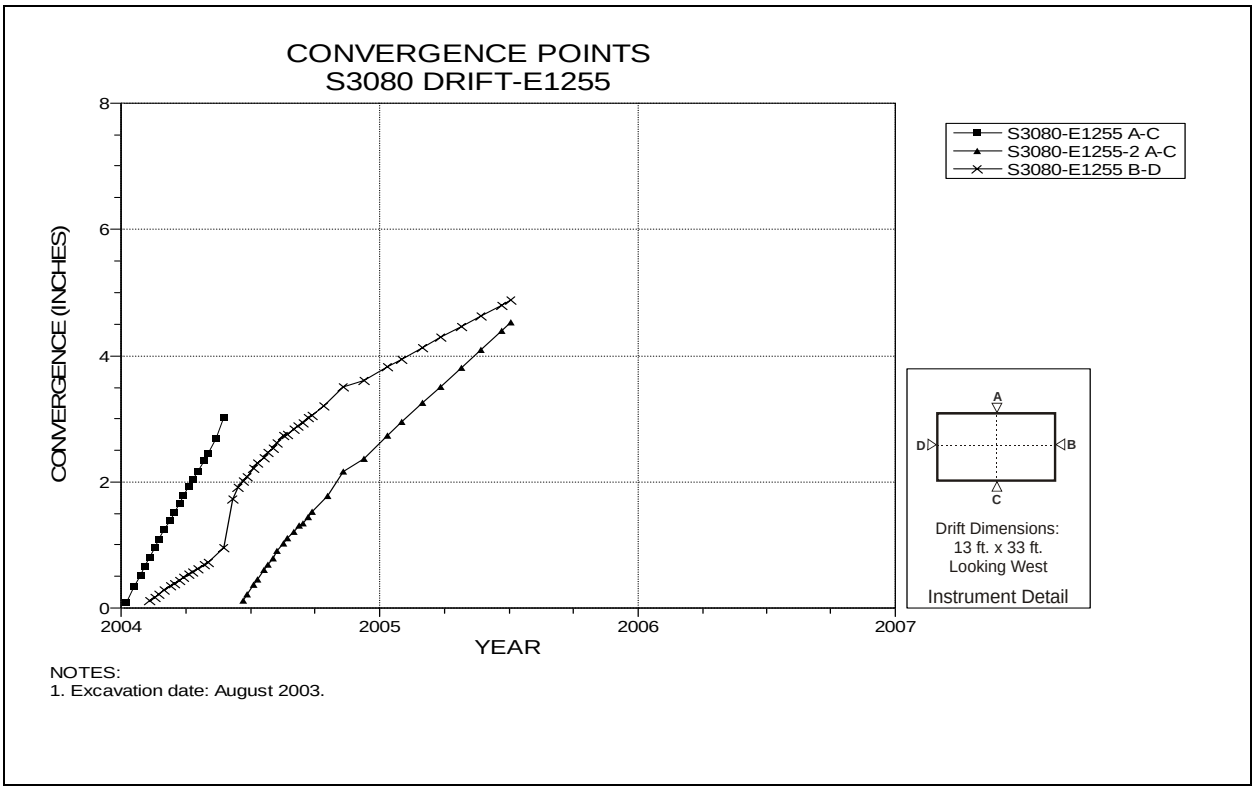


Figure 5-64 Convergence Point Array
S3080 Drift at E1255 – All Chords

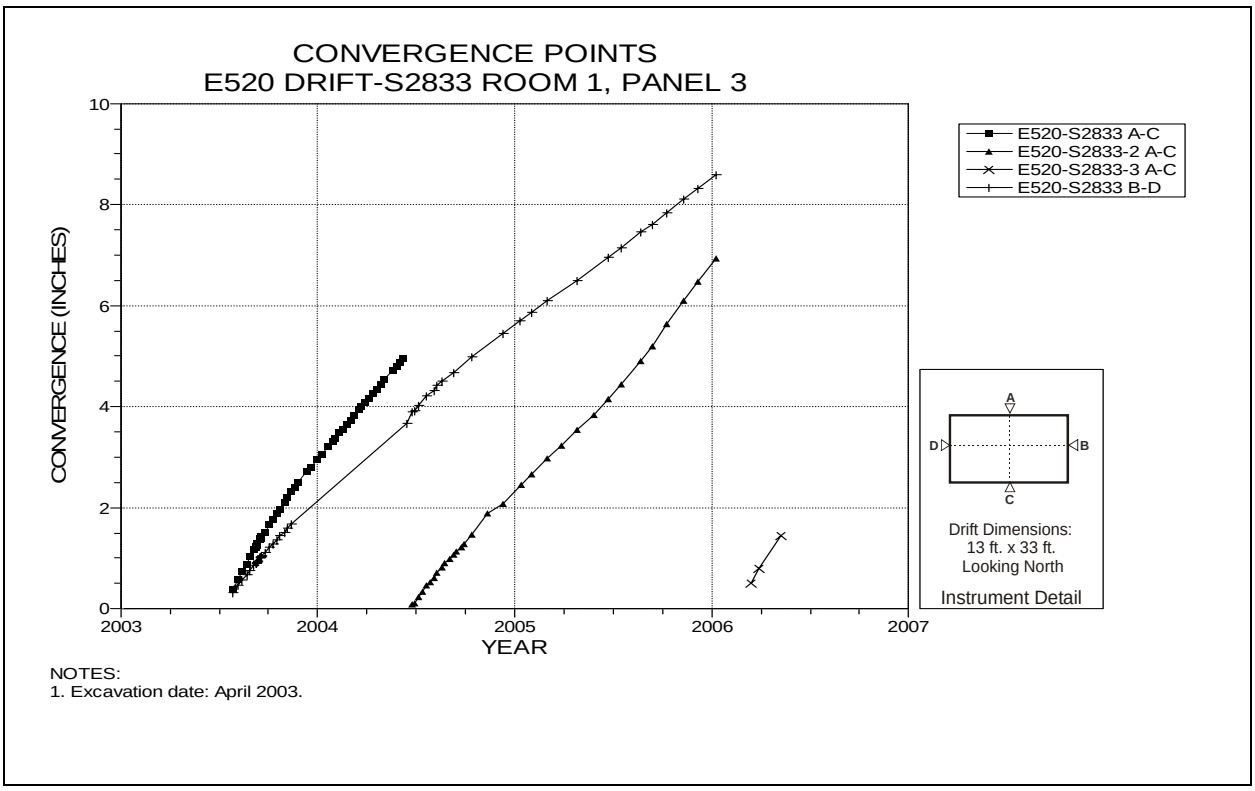


Figure 5-65 Convergence Point Array
Room 1, Panel 3 at S2833 – All Chords

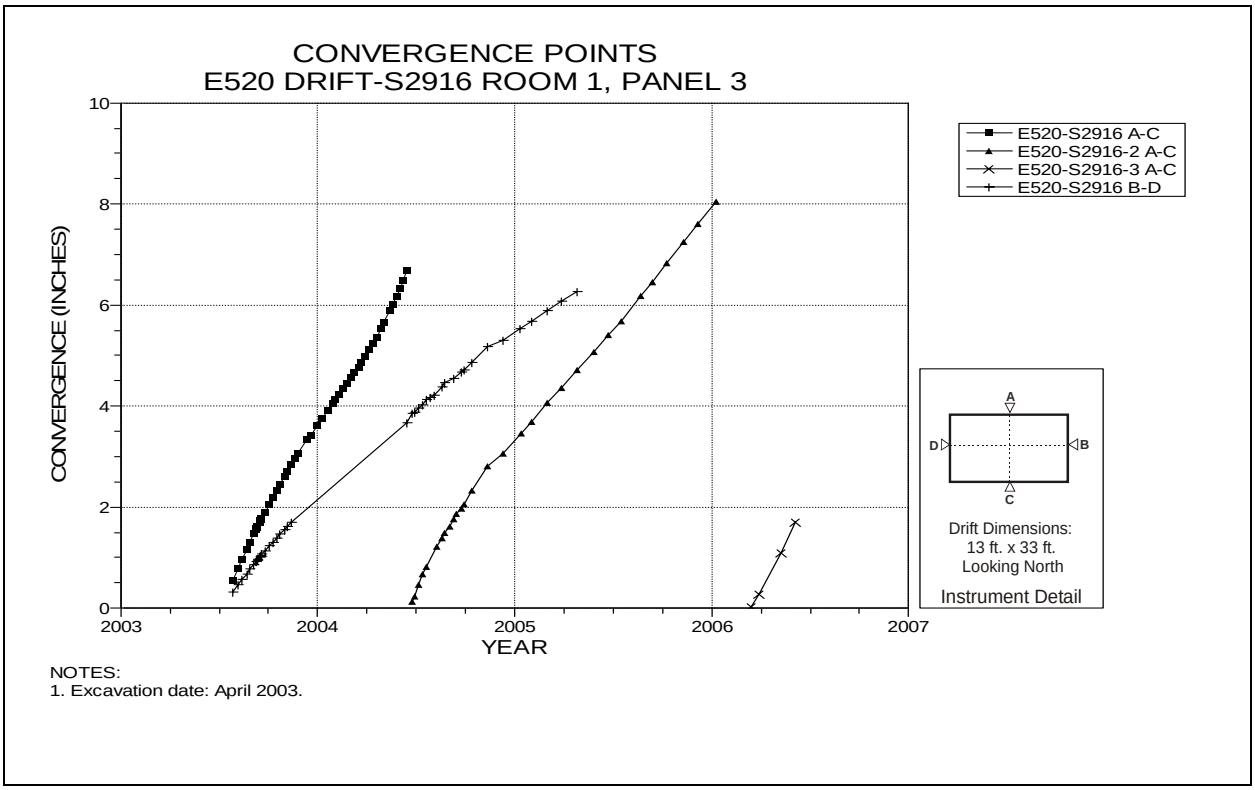


Figure 5-66 Convergence Point Array
Room 1, Panel 3 at S2916 – Room Center – All Chords

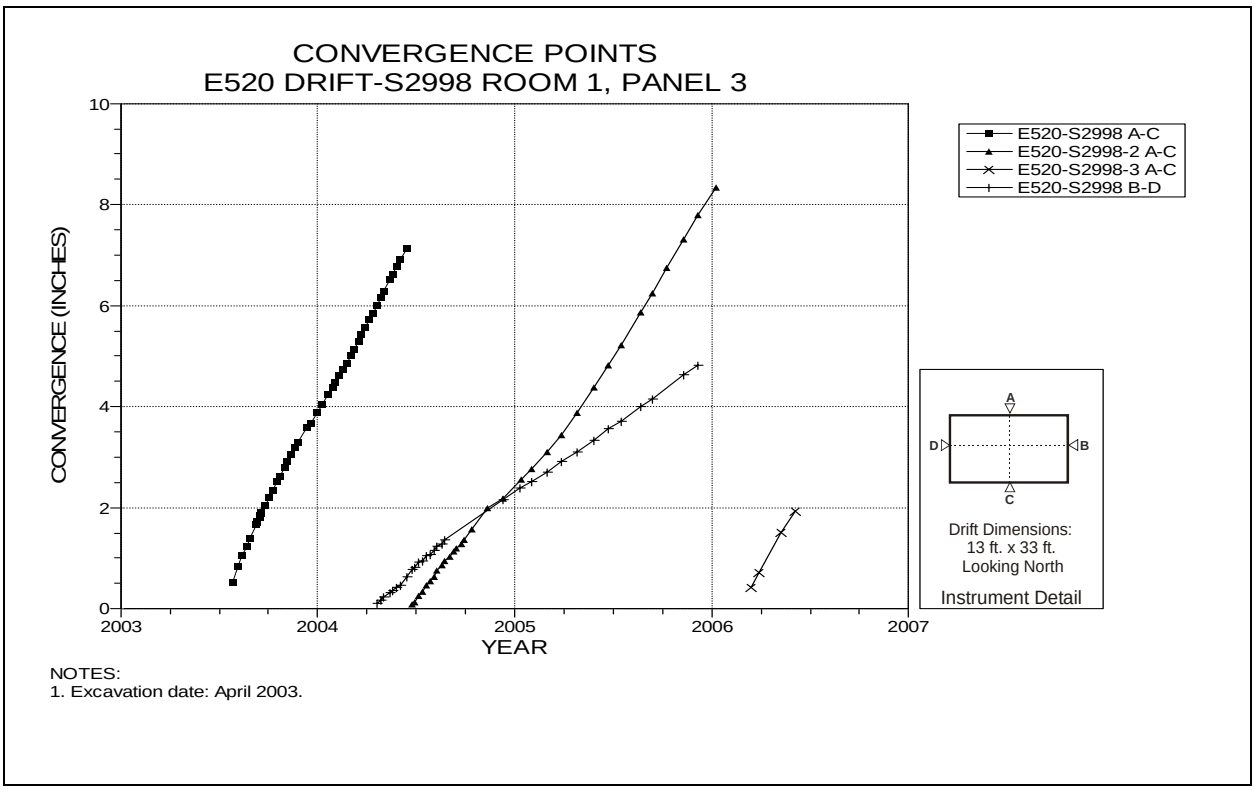


Figure 5-67 Convergence Point Array
Room 1, Panel 3 at S2998 – All Chords

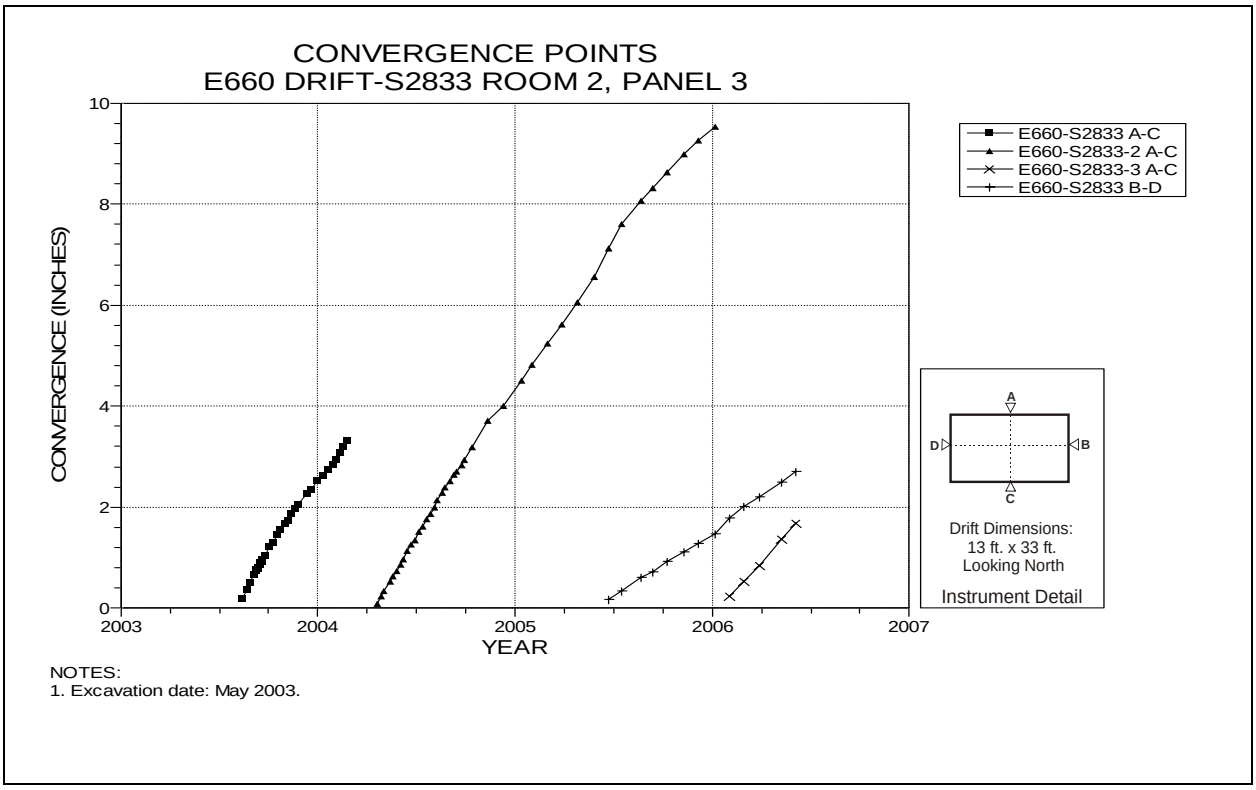


Figure 5-68 Convergence Point Array
Room 2, Panel 3 at S2833 – Roof to Floor

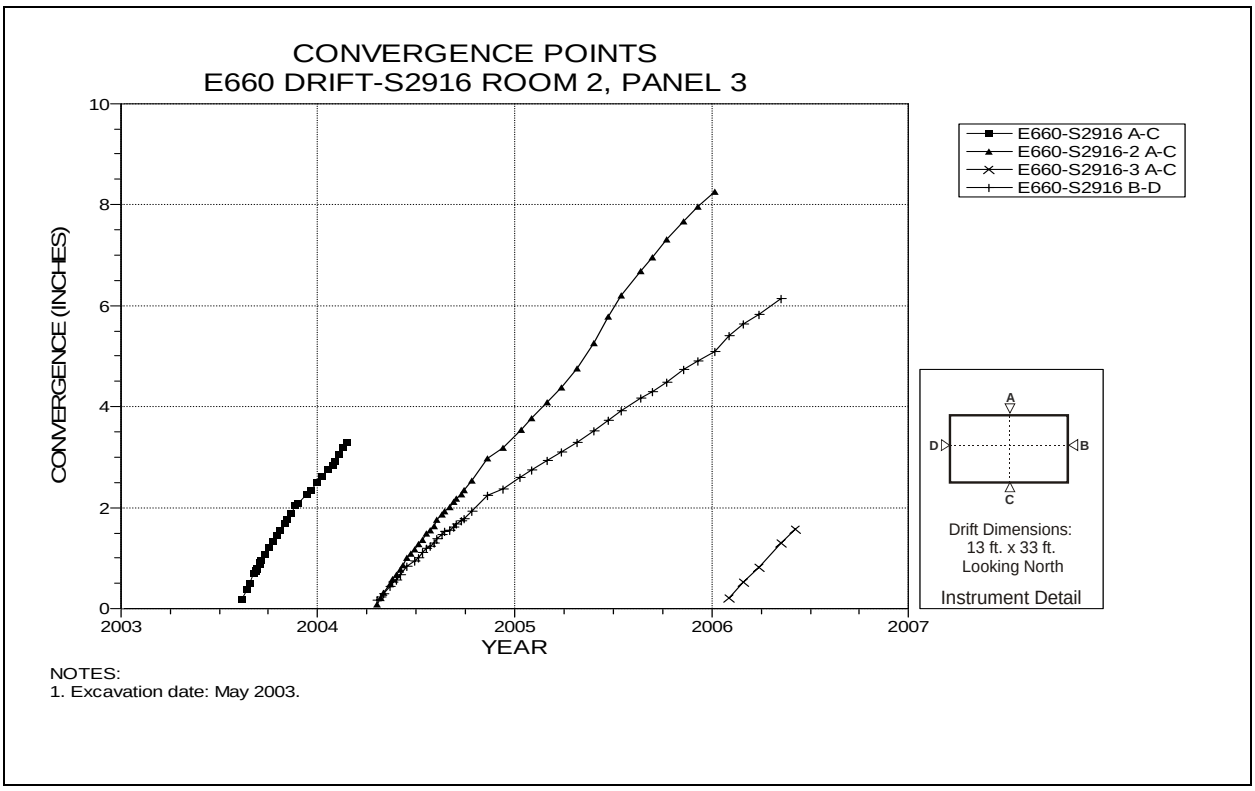


Figure 5-69 Convergence Point Array
Room 2, Panel 3 at S2916 – Room Center – All Chords

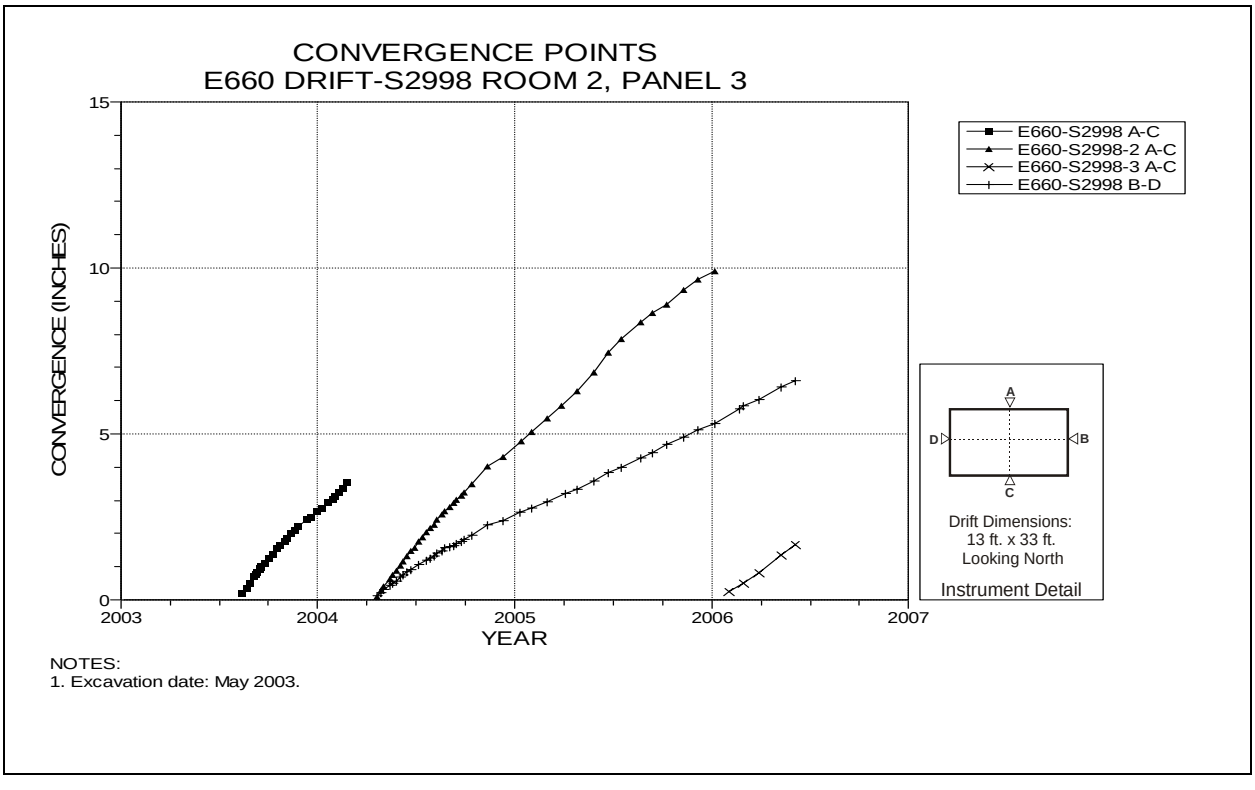


Figure 5-70 Convergence Point Array
Room 2, Panel 3 at S2998 – All Chords

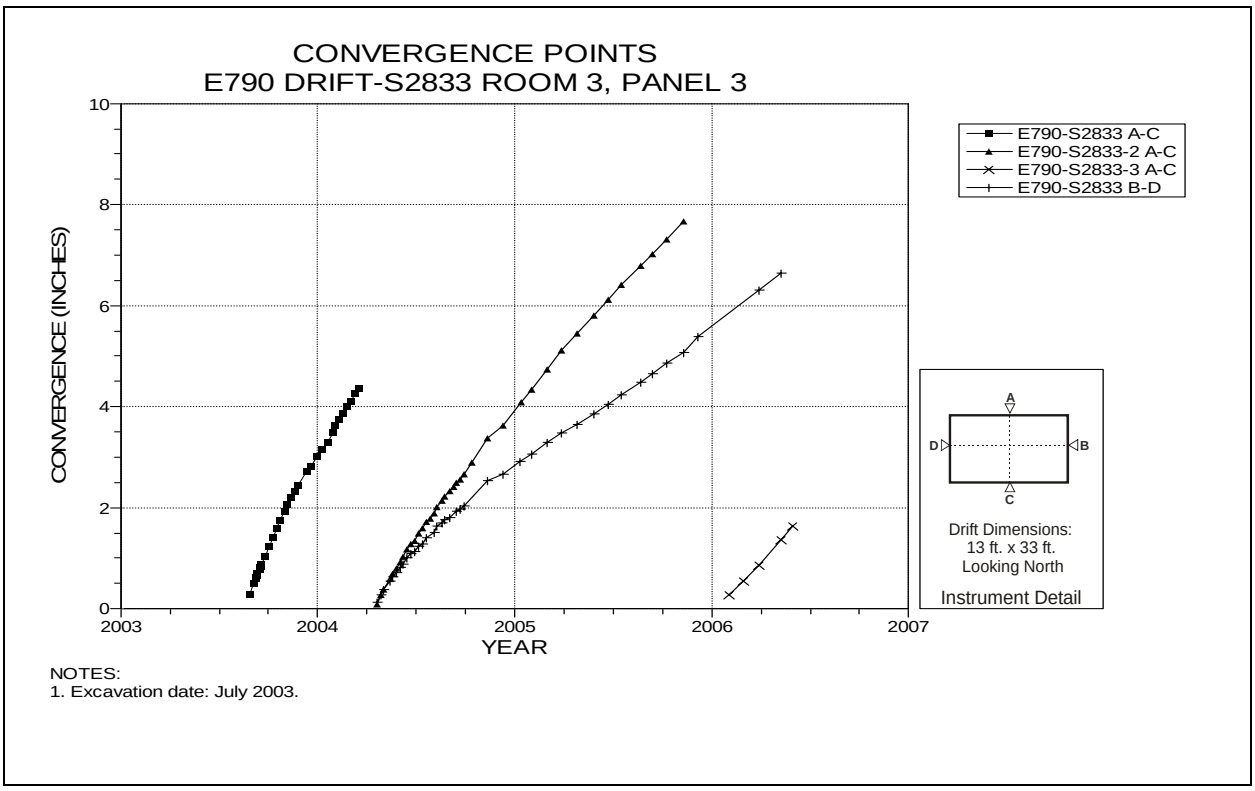


Figure 5-71 Convergence Point Array
Room 3, Panel 3 at S2833 – All Chords

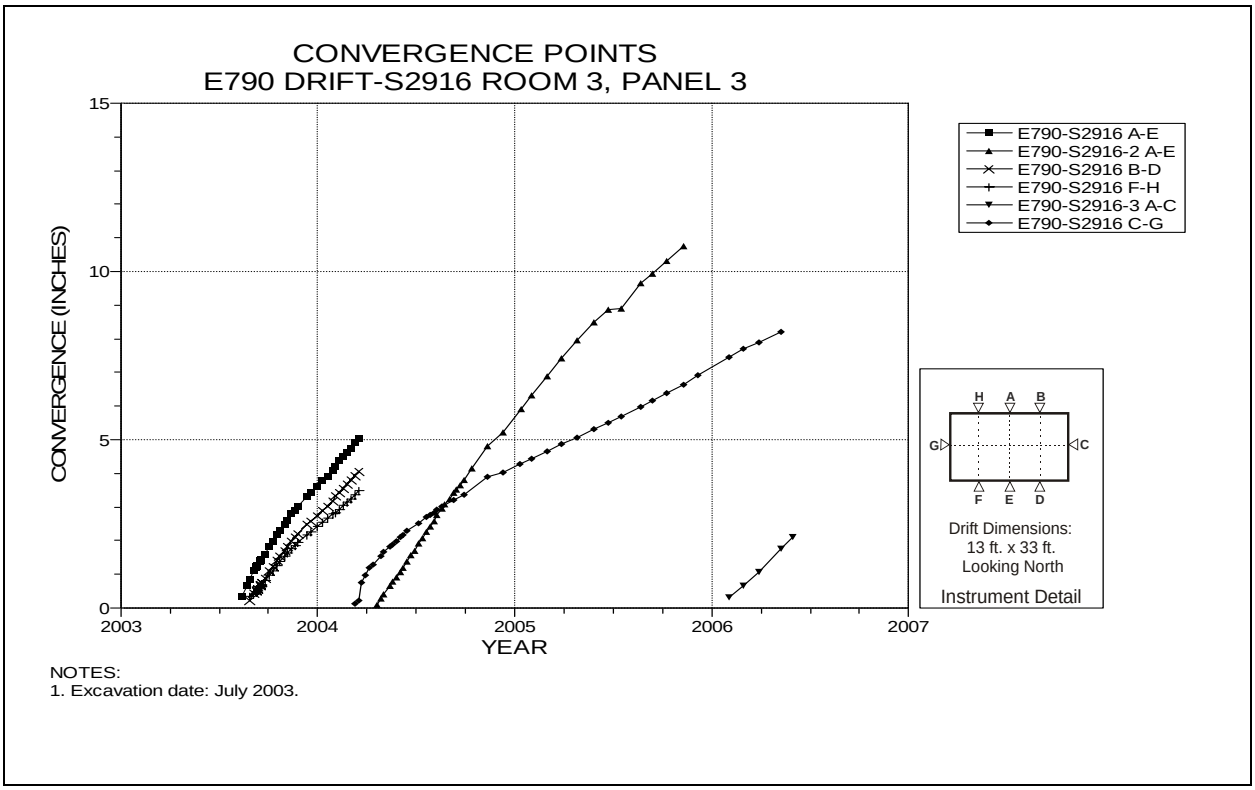


Figure 5-72 Convergence Point Array
Room 3, Panel 3 at S2916 – Room Center – All Chords

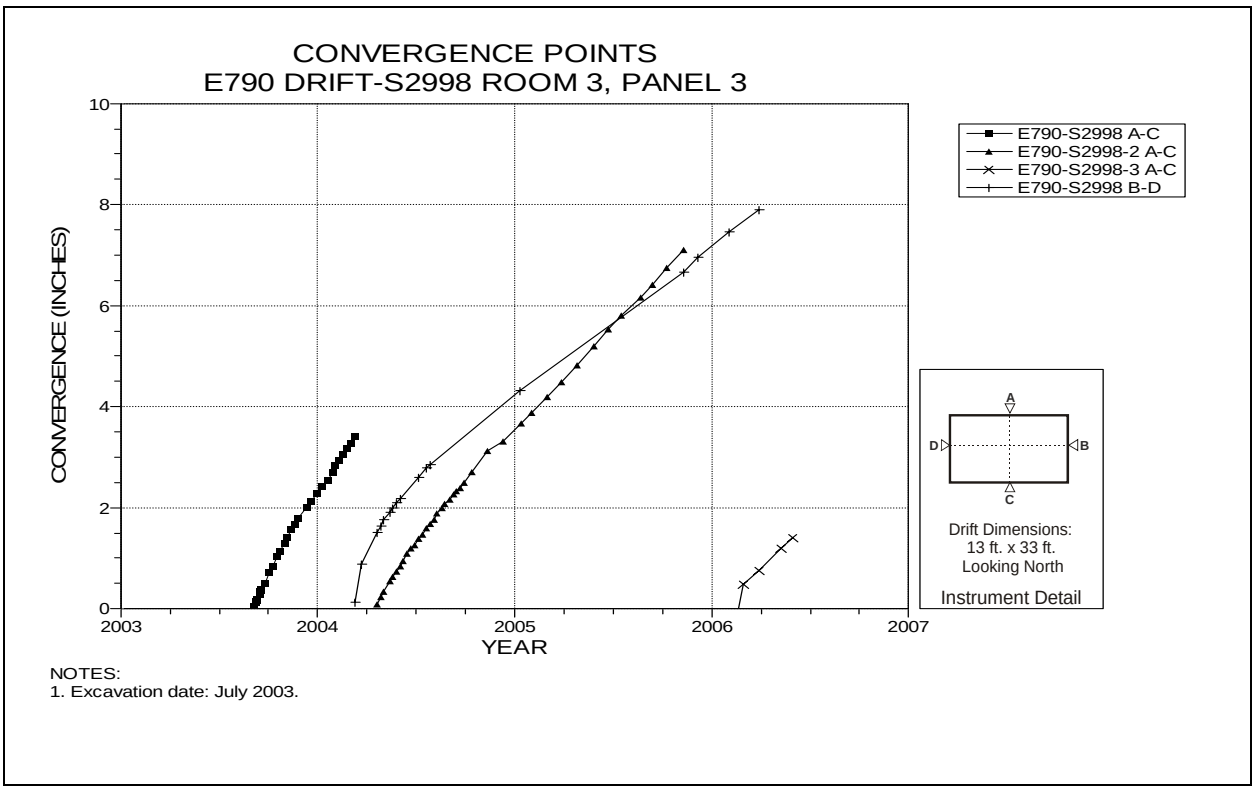


Figure 5-73 Convergence Point Array
Room 3, Panel 3 at S2998 – All Chords

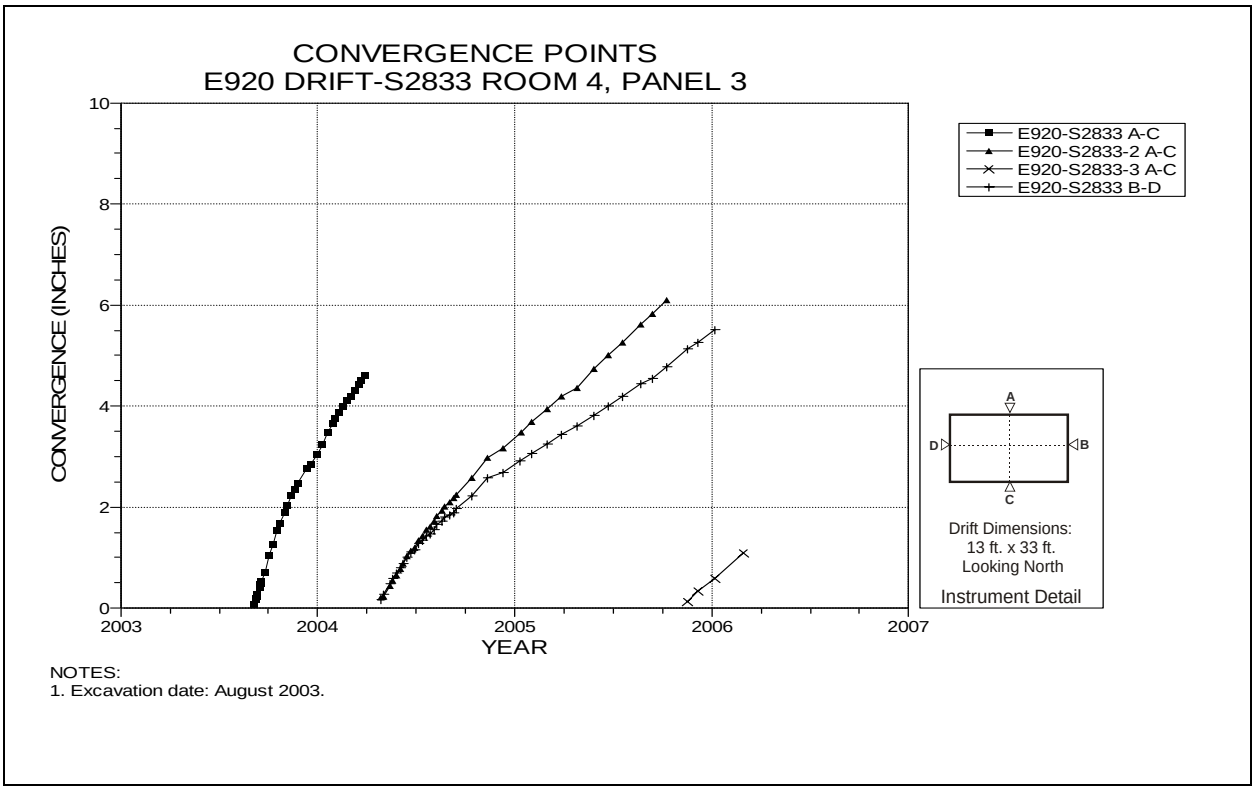


Figure 5-74 Convergence Point Array
Room 4, Panel 3 at S2833 – All Chords

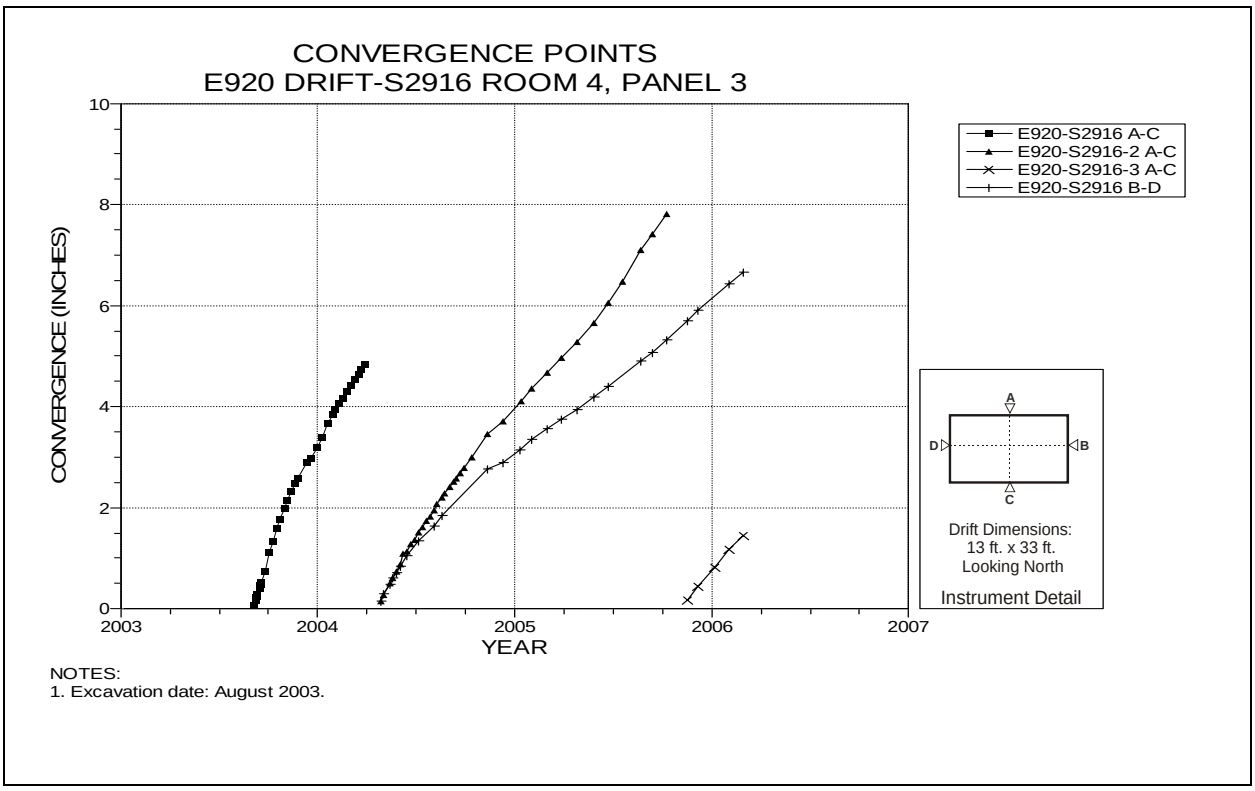


Figure 5-75 Convergence Point Array
Room 4, Panel 3 at S2916 – Room Center – All Chords

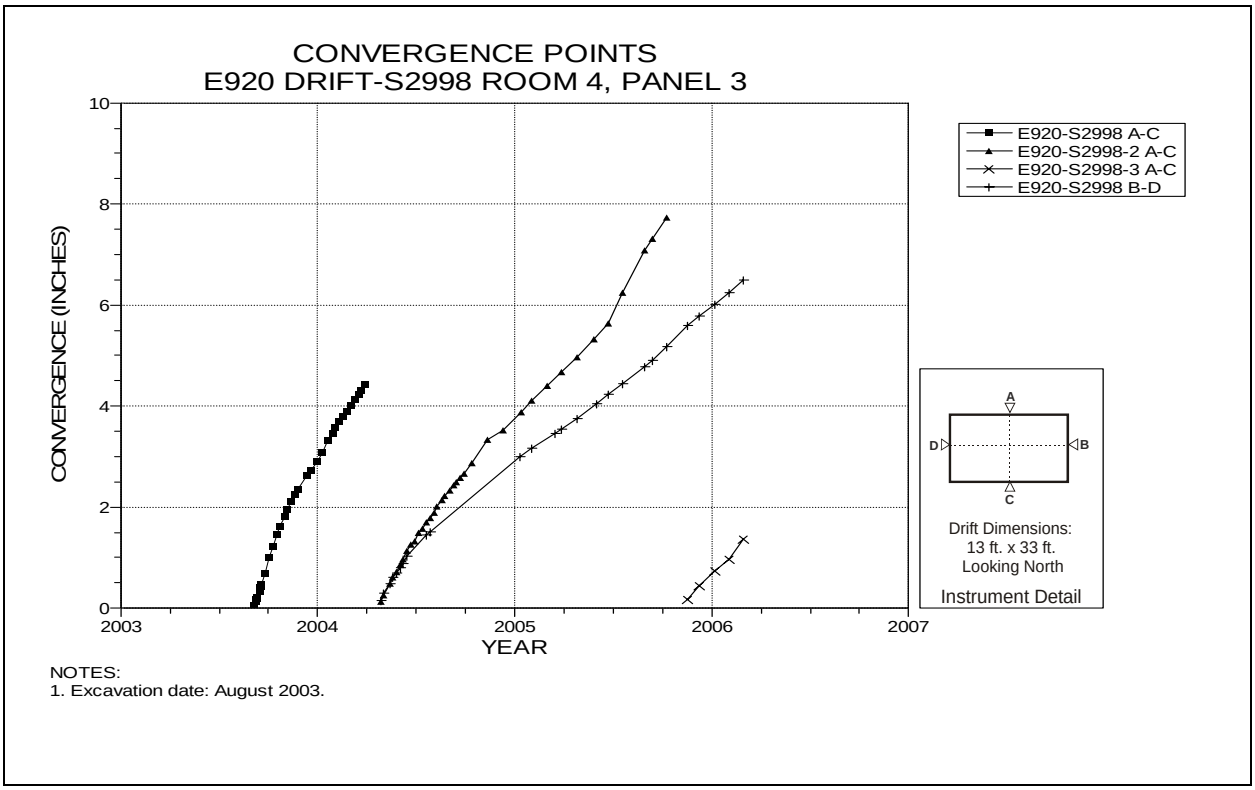
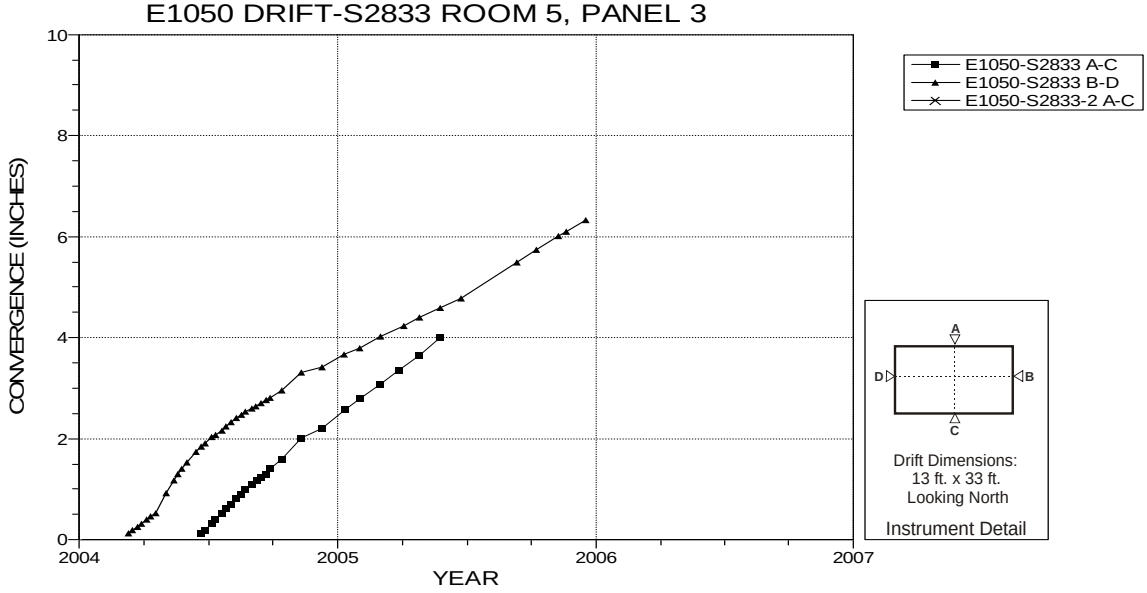
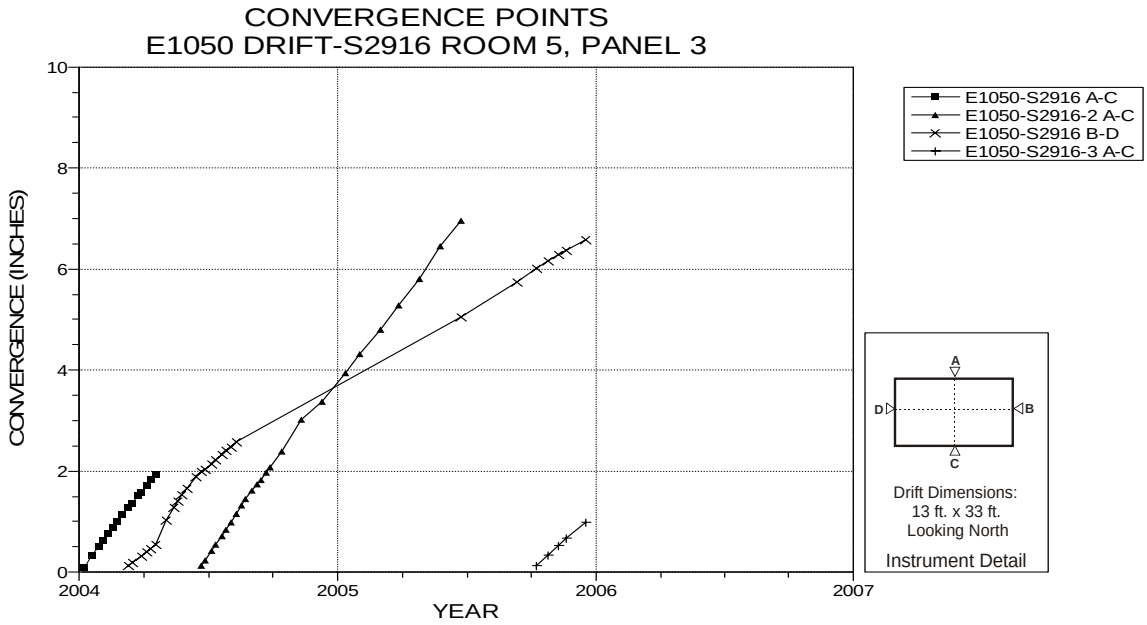


Figure 5-76 Convergence Point Array
Room 4, Panel 3 at S2998 – All Chords



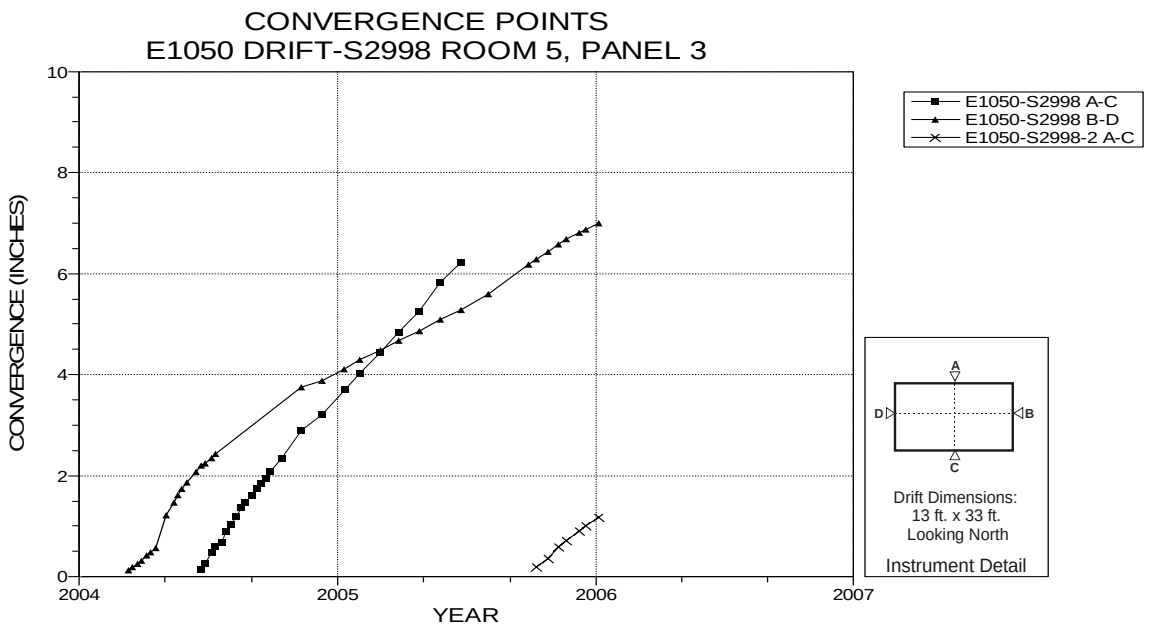
NOTES:
1. Excavation date: October 2003.

Figure 5-77 Convergence Point Array
Room 5, Panel 3 at S2833 – All Chords



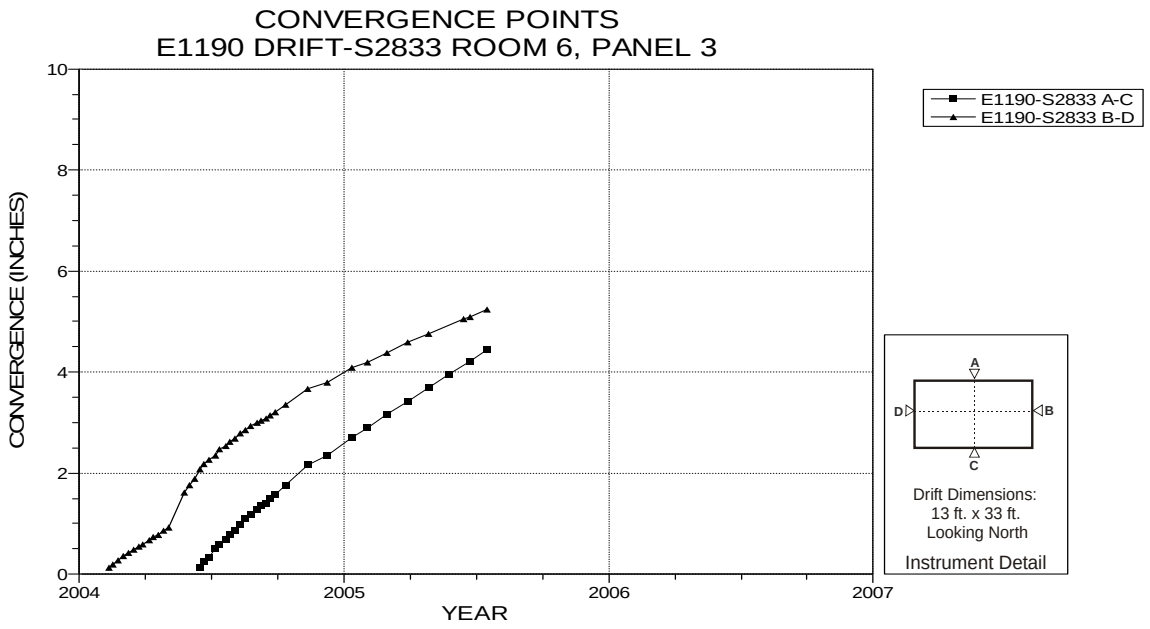
NOTES:
1. Excavation date: September 2003.

Figure 5-78 Convergence Point Array
Room 5, Panel 3 at S2916 – Room Center – All Chords



NOTES:
1. Excavation date: September 2003.

Figure 5-79 Convergence Point Array
Room 5, Panel 3 at S2998 – All Chords



NOTES:
1. Excavation date: October 2003.

Figure 5-80 Convergence Point Array
Room 6, Panel 3 at S2833 – All Chords

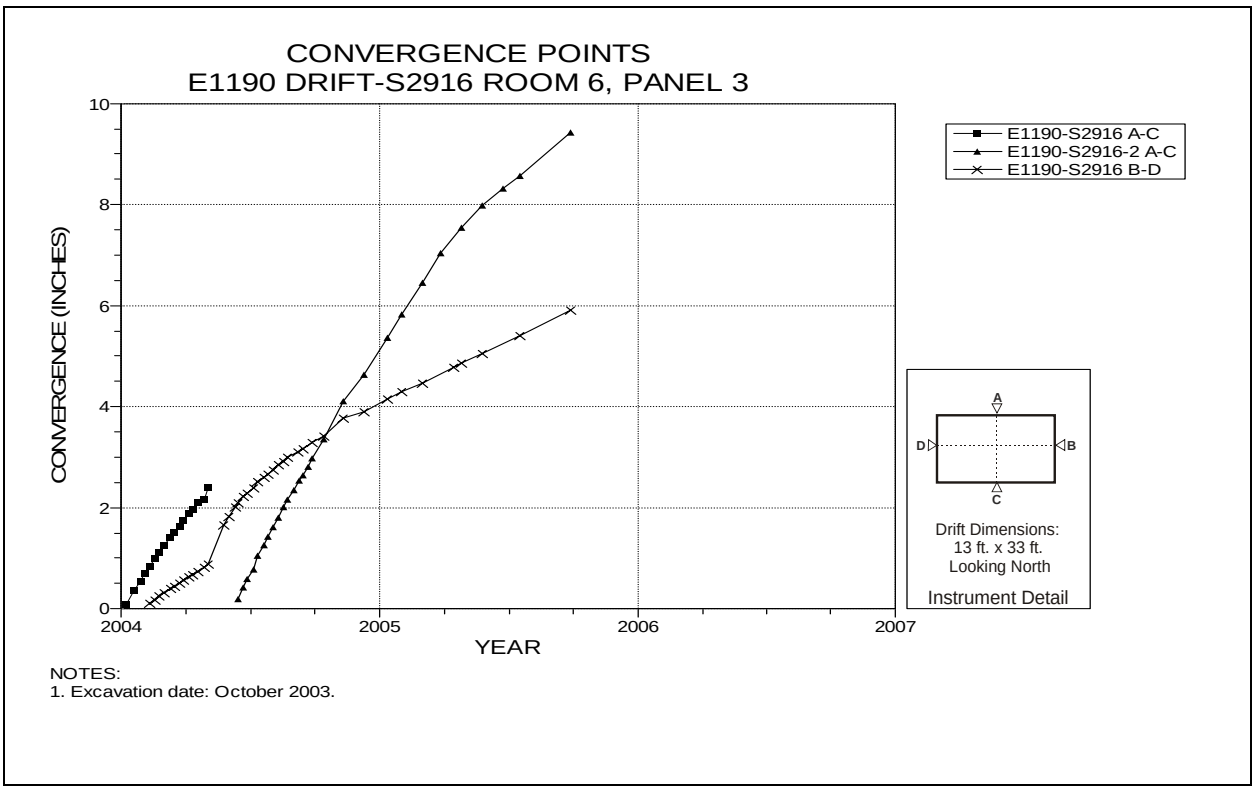


Figure 5-81 Convergence Point Array
Room 6, Panel 3 at S2916 – Room Center – All Chords

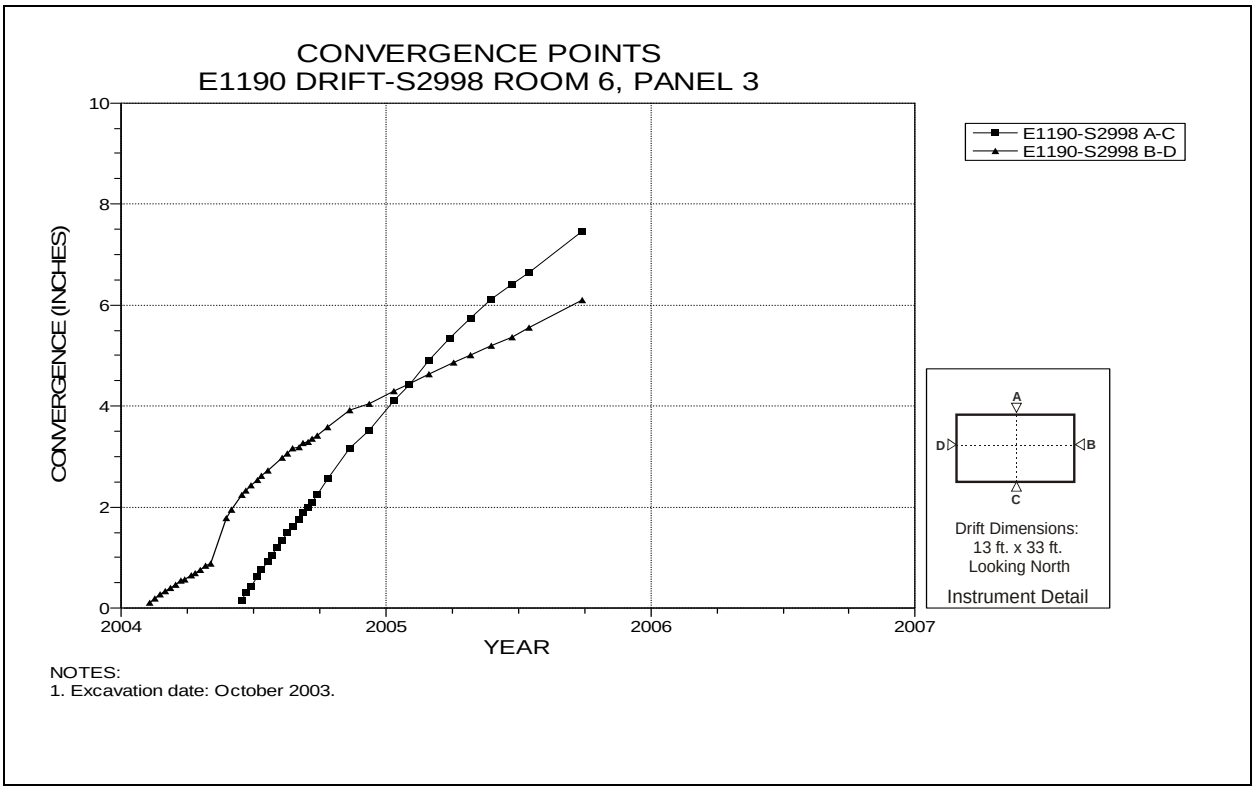


Figure 5-82 Convergence Point Array
Room 6, Panel 3 at S2998 – All Chords

Table 5-4
Panel 4 Data Analysis

EXTENSOMETERS

Field Tag	Location	Figure Number	Date of Last Reading	Collar Displacement Relative to Deepest Anchor (inches)	Displacement Rate 2005 to 2006 (in/year)	Displacement Rate 2004 to 2005[1] (in/year)	Rate Change Percent[1]	Comments
51X-GE-00376	PANEL 4 ROOM 1 CENTER ROOF	5-83	06/26/06	4.159	3.38	5.36	-37%	
51X-GE-00378	PANEL 4 ROOM 2 CENTER ROOF	5-84	06/27/06	2.518	2.74	N/A	N/A	
51X-GE-00383	PANEL 4 ROOM 3 CENTER ROOF`	5-85	06/28/06	1.015	3.41	N/A	N/A	
51X-GE-00380	PANEL 4 ROOM 4 CENTER ROOF	5-86	06/22/06	2.158	3.84	N/A	N/A	
51X-GE-00387	PANEL 4 ROOM 5 CENTER ROOF	5-87	06/22/06	0.162	6.68	N/A	N/A	
51X-GE-00381	PANEL 4 ROOM 6 CENTER ROOF	5-88	06/22/06	1.641	4.12	N/A	N/A	
51X-GE-00382	PANEL 4 ROOM 7 CENTER ROOF	5-89	06/19/06	1.082	3.49	N/A	N/A	
51X-GE-00377	S3310 DRIFT-E725 CENTER ROOF	5-90	06/28/06	4.262	4.60	N/A	N/A	
51X-GE-00384	S3310 DRIFT-E1125 CENTER ROOF	5-91	06/21/06	0.568	3.08	N/A	N/A	
51X-GE-00386	S3650 DRIFT-E725 CENTER ROOF	5-92	06/23/06	0.243	2.15	N/A	N/A	
51X-GE-00385	S3650 DRIFT-E1125	5-93	06/14/06	0.026	N/A	N/A	N/A	Installed June 2006.

[1] Only Room 1 had an extensometer installed prior to 7/1/2005.

Table 5-4 (Continued)
Panel 4 Data Analysis

ROCKBOLT LOAD CELLS

Field Tag	Location	Figure Number	Date of Initial Reading	Date of Last Reading	Load (kips)	Comments
51X-WG-00301	E520 DRIFT-S3480	5-94	03/14/05	06/29/06	34.4	
51X-WG-00304	E660 DRIFT-S3350	5-95	07/14/05	06/19/06	34.2	
51X-WG-00303	E660 DRIFT-S3480	5-96	07/14/05	06/29/06	29.7	
51X-WG-00307	E790 DRIFT-S3480	5-97	08/24/05	06/29/06	35.5	
51X-WG-00308	E920 DRIFT-S3480	5-98	10/06/05	06/29/06	22.8	
51X-GE-00309	E1050 DRIFT-S3480	5-99	10/26/05	06/29/06	26.6	
51X-WG-00311	E1190 DRIFT-S3480	5-100	01/19/06	06/29/06	27.7	
51X-WG-00312	E1320 DRIFT-S3480	5-101	01/20/06	06/29/06	17.9	
51X-WG-00306	S3310 DRIFT-E727	5-102	08/24/05	06/28/06	19.7	
51X-WG-00305	S3650 DRIFT-E727	5-103	08/24/05	06/19/06	23.2	
51X-WG-00310	S3650 DRIFT-E1125	5-104	11/22/05	06/29/06	22.6	

Table 5-4 (Continued)
Panel 4 Data Analysis

CONVERGENCE POINTS

Field Tag	Location	Figure Number	Last Reading 2005 to 2006		Cumulative Displacement (inches)	Closure Rate 2005 to 2006 (in/year)	Closure Rate 2004 to 2005 (in/year)	Rate Change Percent[1]	Comments
			Date	Inches					
S3310-E410 A-C	S3310 DRIFT-E410	5-105	06/29/06	3.139	3.139	2.86	4.33	-34%	
S3310-E520-2 A-C	S3310 DRIFT-E520	5-106	6/29/2006	0.219	5.439	5.31	N/A	N/A	
S3310-E586-2 A-C	S3310 DRIFT-E586	5-107	6/29/2006	0.363	0.363	6.45	13.64	-53%	
S3310-E660-2 A-C	S3310 DRIFT-E660	5-108	6/29/2006	0.422	8.852	7.82	N/A	N/A	
S3310-E790-2 A-C	S3310 DRIFT-E790	5-109	6/29/2006	0.407	8.429	9.45	N/A	N/A	
S3310-E920-2 A-C	S3310 DRIFT-E920	5-110	6/29/2006	0.350	11.221	11.36	N/A	N/A	
S3310-E986-2 A-C	S3310 DRIFT-E985	5-111	6/29/2006	1.932	2.412	8.47	N/A	N/A	
S3310-E1050-2 A-C	S3310 DRIFT-E1050	5-112	6/29/2006	2.022	2.528	8.91	N/A	N/A	
S3310-E1190-2 A-C	S3310 DRIFT-E1190	5-113	6/29/2006	1.982	2.094	8.96	N/A	N/A	
S3310-E1255-2 A-C	S3310 DRIFT-E1255	5-114	6/29/2006	2.163	2.271	7.46	N/A	N/A	
S3310-E1320-2 A-C	S3310 DRIFT-E1320	5-115	6/29/2006	1.111	1.187	5.05	N/A	N/A	
E520-S3395-2 A-C	E520 DRIFT-S3395	5-116	6/29/2006	0.289	8.904	7.63	13.04	-41%	
E520-S3395 B-D	E520 DRIFT-S3395	5-116	06/29/06	6.709	6.709	4.46	19.74	-77%	
E520-S3480-2 A-C	E520 DRIFT-S3480	5-117	6/29/2006	0.318	9.318	8.50	15.63	-46%	
E520-S3480 B-D	E520 DRIFT-S3480	5-117	06/29/06	7.212	7.212	4.84	10.78	-55%	
E520-S3565-2 A-C	E520 DRIFT-S3565	5-118	6/29/2006	0.981	9.282	7.81	16.02	-51%	
E520-S3565 B-D	E520 DRIFT-S3565	5-118	06/29/06	6.964	6.964	4.67	9.55	-51%	
E660-S3395 A-C	E660 DRIFT-S3395	5-119	5/17/2006	6.335	6.335	6.99	N/A	N/A	
E660-S3480-2 A-C	E660 DRIFT-S3480	5-120	6/29/2006	0.294	6.888	7.27	N/A	N/A	
E660-S3565-2 A-C	E660 DRIFT-S3565	5-121	6/29/2006	0.247	4.255	5.67	N/A	N/A	
E790-S3395-2 A-C	E790 DRIFT-S3395	5-122	6/29/2006	0.291	5.496	7.36	N/A	N/A	
E790-S3480-2 A-C	E790 DRIFT-S3480	5-123	6/29/2006	0.318	5.642	7.83	N/A	N/A	
E790-S3565-2 A-C	E790 DRIFT-S3565	5-124	6/29/2006	0.257	5.051	6.98	N/A	N/A	
E920-S3395-2 A-C	E920 DRIFT-S3395	5-125	6/29/2006	1.352	4.313	7.88	N/A	N/A	
E920-S3480-2 A-C	E920 DRIFT-S3480	5-126	6/29/2006	1.731	4.918	8.78	N/A	N/A	
E920-S3565-2 A-C	E920 DRIFT-S3565	5-127	6/29/2006	1.309	4.137	7.47	N/A	N/A	
E1050-S3395-2 A-C	E1050 DRIFT-S3395	5-128	6/29/2006	0.289	4.958	8.79	N/A	N/A	

[1] NA indicates insufficient data to compare annualized rates. These instruments were not installed during the 2004-2005 reporting period.

Table 5-4 (Continued)
Panel 4 Data Analysis

CONVERGENCE POINTS

Field Tag	Location	Figure Number	Last Reading 2005 to 2006		Cumulative Displacement (inches)	Closure Rate 2005 to 2006 (in/year)	Closure Rate 2004 to 2005 (in/year)	Rate Change Percent[1]	Comments
			Date	Inches					
E1050-S3480-2 A-C	E1050 DRIFT-S3480	5-129	6/29/2006	0.296	4.908	8.88	N/A	N/A	
E1050-S3565-2 A-C	E1050 DRIFT-S3565	5-130	6/29/2006	0.268	4.526	8.12	N/A	N/A	
E1190-S3395-2 A-C	E1190 DRIFT-S3395	5-131	6/29/2006	1.502	2.917	7.41	N/A	N/A	
E1190-S3480-2 A-C	E1190 DRIFT-S3480	5-132	6/29/2006	1.669	3.086	7.81	N/A	N/A	
E1190-S3565-2 A-C	E1190 DRIFT-S3565	5-133	6/29/2006	1.377	2.760	6.95	N/A	N/A	
E1320-S3395-2 A-C	E1320 DRIFT-S3395	5-134	6/29/2006	1.987	2.849	7.23	N/A	N/A	
E1320-S3480-2 A-C	E1320 DRIFT-S3480	5-135	6/29/2006	2.097	2.974	7.72	N/A	N/A	
E1320-S3565-2 A-C	E1320 DRIFT-S3565	5-136	6/29/2006	1.917	2.586	6.95	N/A	N/A	
S3650-E520-2 A-C	S3650 DRIFT-E520	5-137	6/29/2006	0.114	3.237	4.58	N/A	N/A	
S3650-E586-3 A-C	S3650 DRIFT-E586	5-138	6/29/2006	0.216	3.351	5.52	N/A	N/A	
S3650-E660-2 A-C	S3650 DRIFT-E660	5-139	6/29/2006	2.813	4.963	6.66	N/A	N/A	
S3650-E790-2 A-C	S3650 DRIFT-E790	5-140	6/29/2006	2.884	5.499	7.55	N/A	N/A	
S3650-E920 A-C	S3650 DRIFT-E920	5-141	6/29/2006	2.604	2.604	8.48	N/A	N/A	
S3650-E986 A-C	S3650 DRIFT-E986	5-142	6/29/2006	2.639	2.639	8.56	N/A	N/A	
S3650-E1050 A-C	S3650 DRIFT-E1050	5-143	6/29/2006	2.646	2.646	8.63	N/A	N/A	
S3650-E1190 A-C	S3650 DRIFT-E1190	5-144	6/29/2006	2.095	2.095	7.32	N/A	N/A	
S3650-E1255 A-C	S3650 DRIFT-E1255	5-145	6/29/2006	1.914	1.914	6.67	N/A	N/A	
S3650-E1320 A-C	S3650 DRIFT-E1320	5-146	6/19/2006	1.224	1.224	4.70	N/A	N/A	

[1] NA indicates insufficient data to compare annualized rates. These instruments were not installed during the 2004-2005 reporting period.

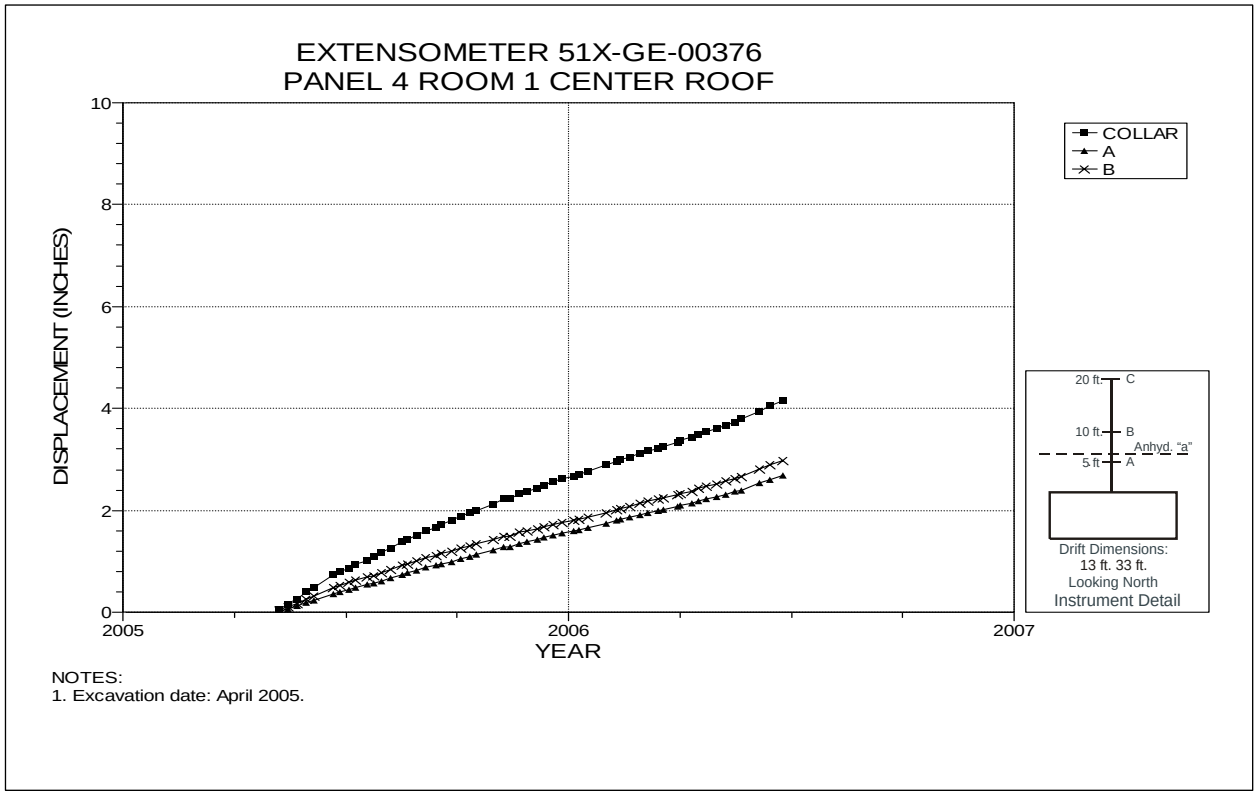


Figure 5-83 Extensometer 51X-GE-00376
Room 1, Panel 4 – Room Center – Roof

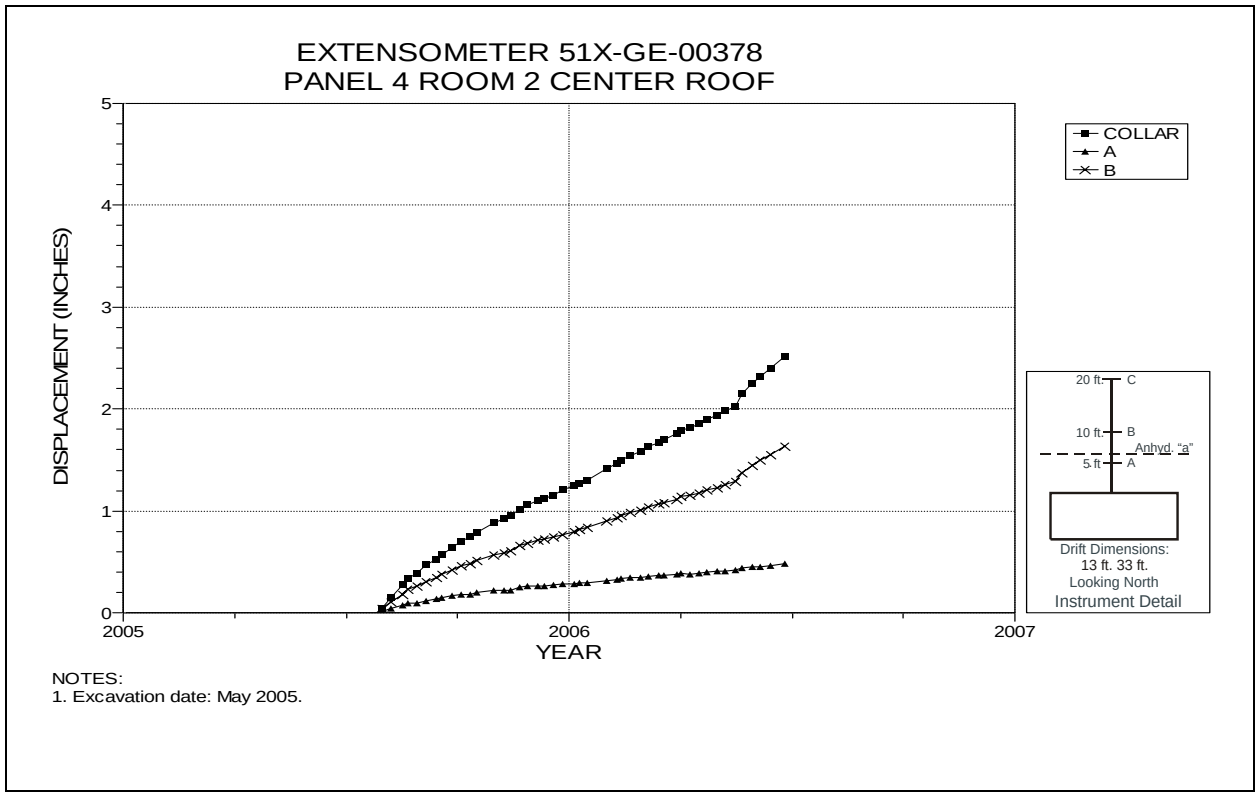


Figure 5-84 Extensometer 51X-GE-00378
Room 2, Panel 4 – Room Center – Roof

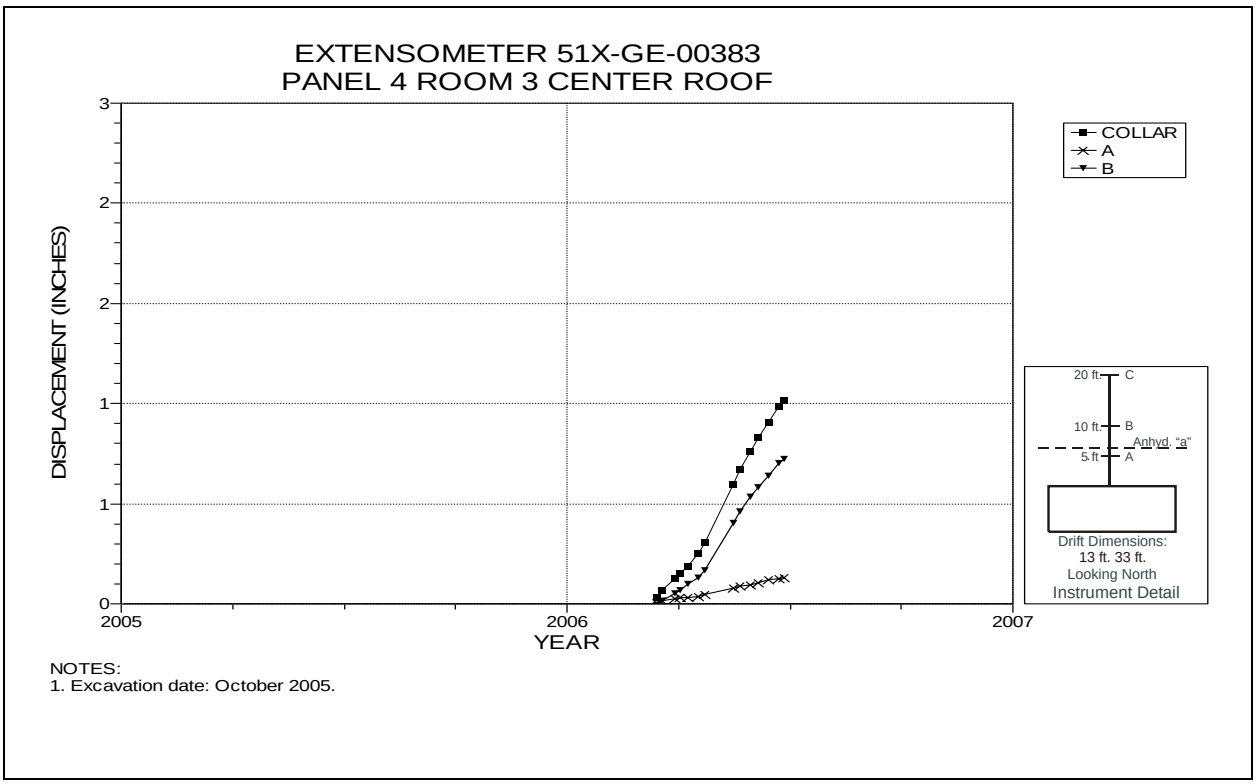


Figure 5-85 Extensometer 51X-GE-00383
Room 3, Panel 4 – Room Center – Roof

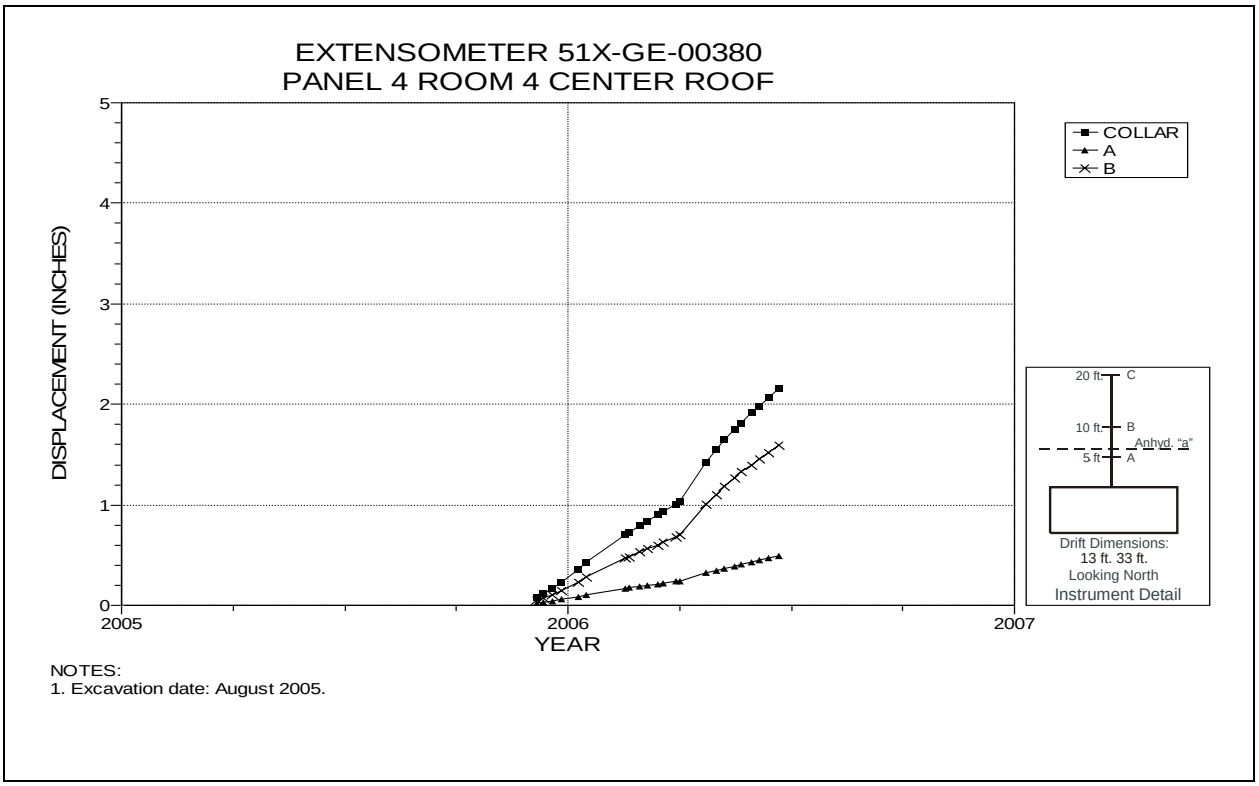


Figure 5-86 Extensometer 51X-GE-00380
Room 4, Panel 4 – Room Center – Roof

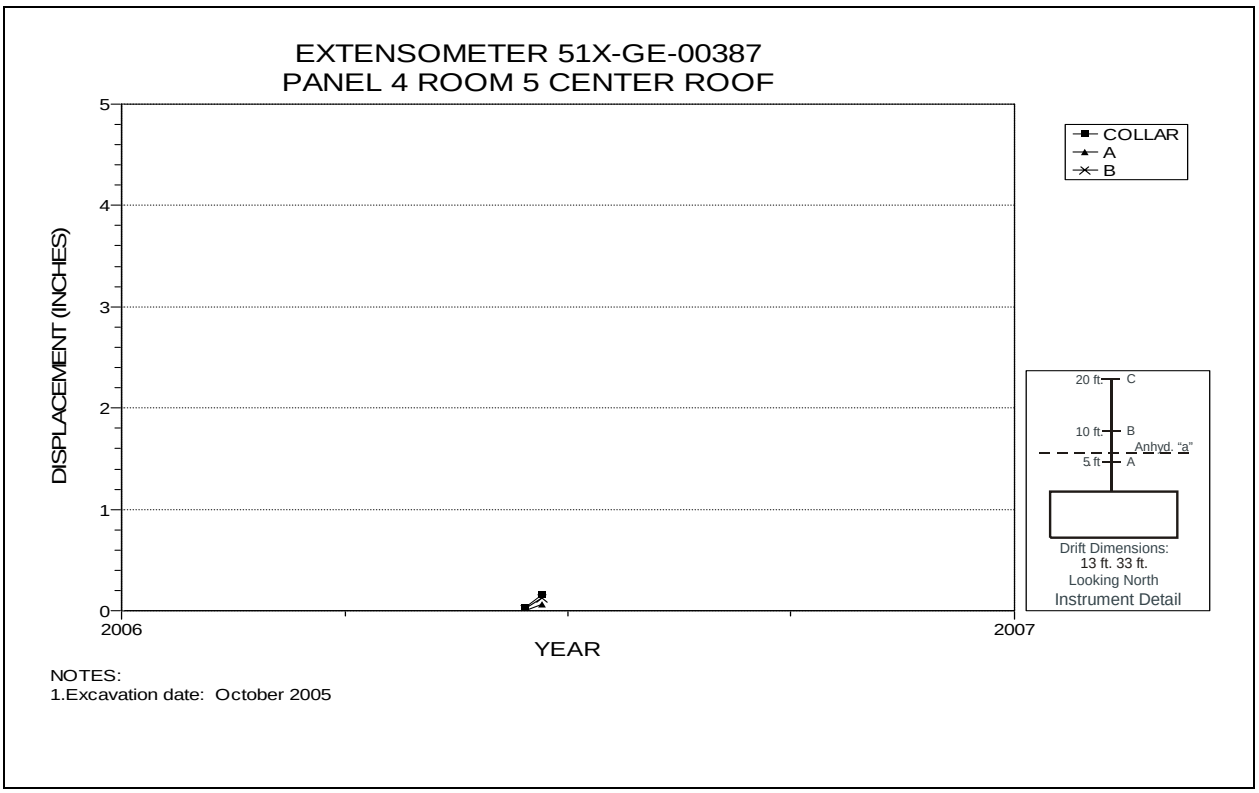


Figure 5-87 Extensometer 51X-GE-00387
Room 5, Panel 4 – Room Center – Roof

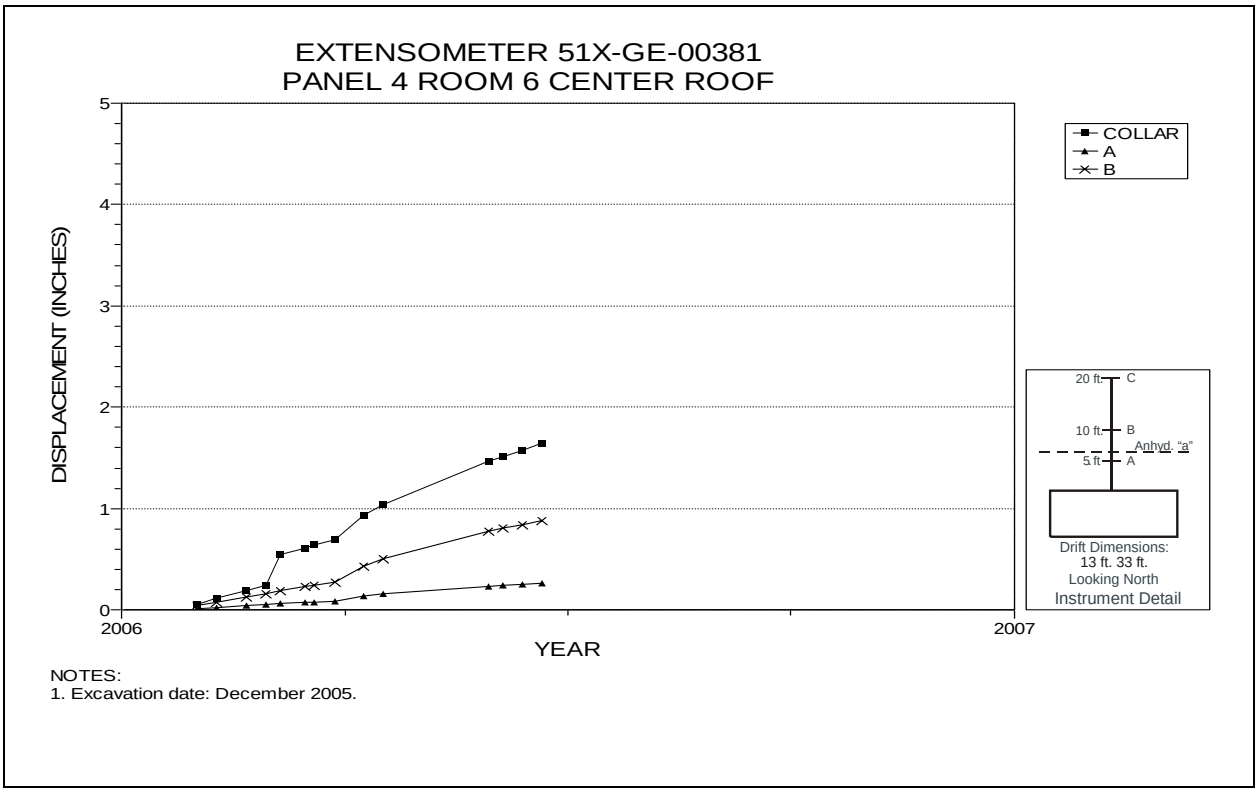


Figure 5-88 Extensometer 51X-GE-00381
Room 6, Panel 4 – Room Center – Roof

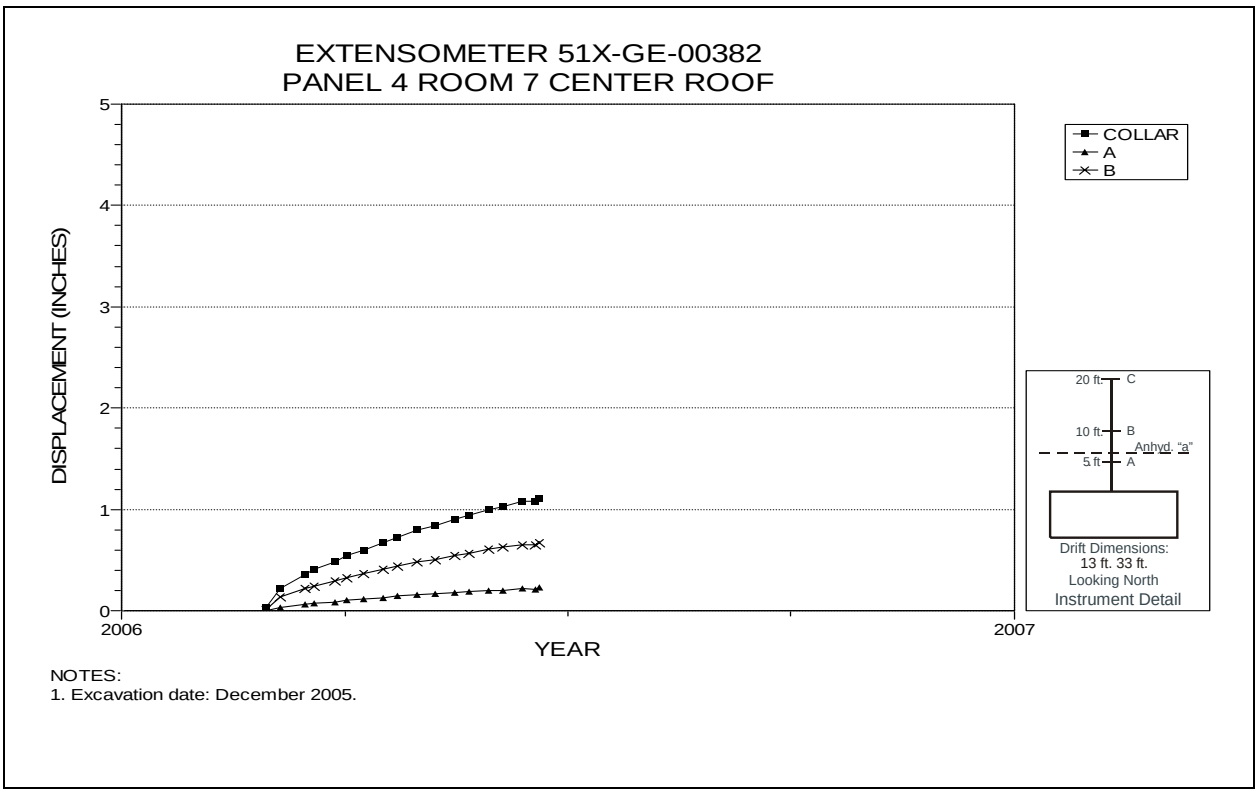


Figure 5-89 Extensometer 51X-GE-00382
Room 7, Panel 4 – Room Center – Roof

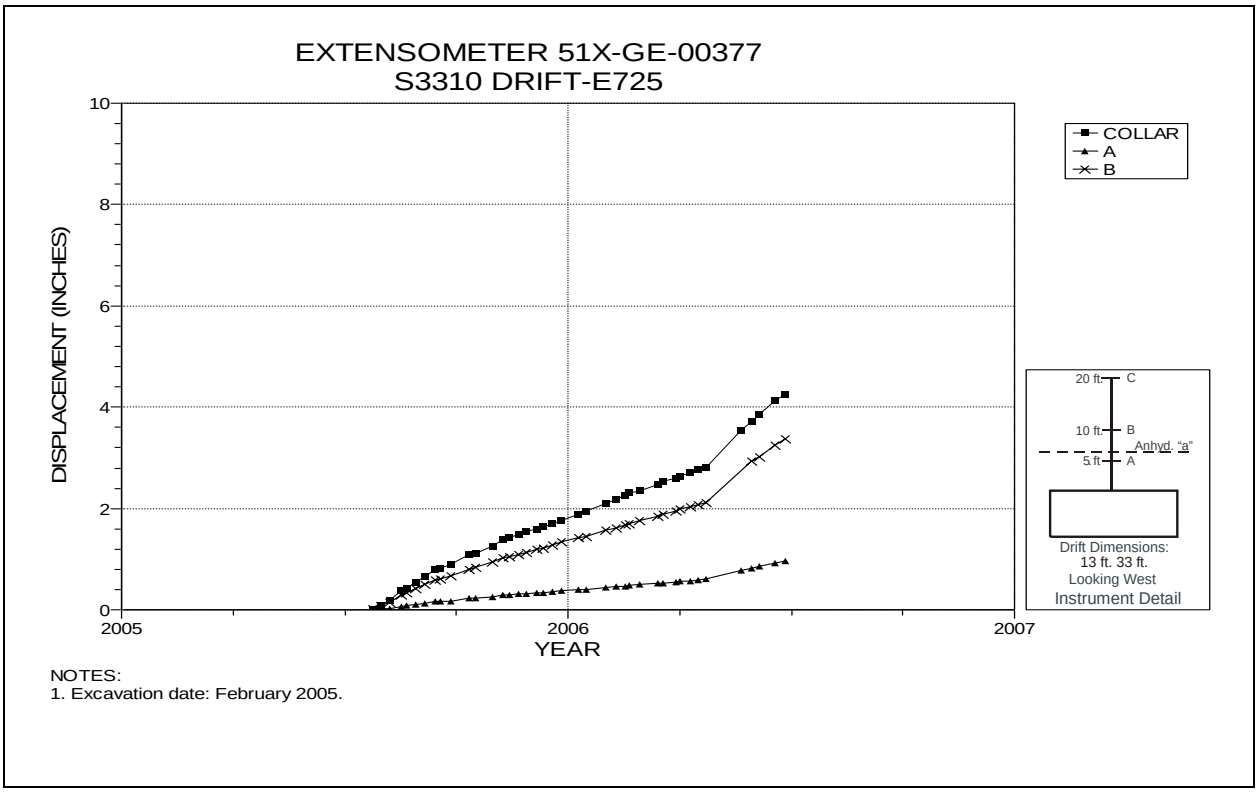


Figure 5-90 Extensometer 51X-GE-00377
S3310 Drift-E725 – Roof

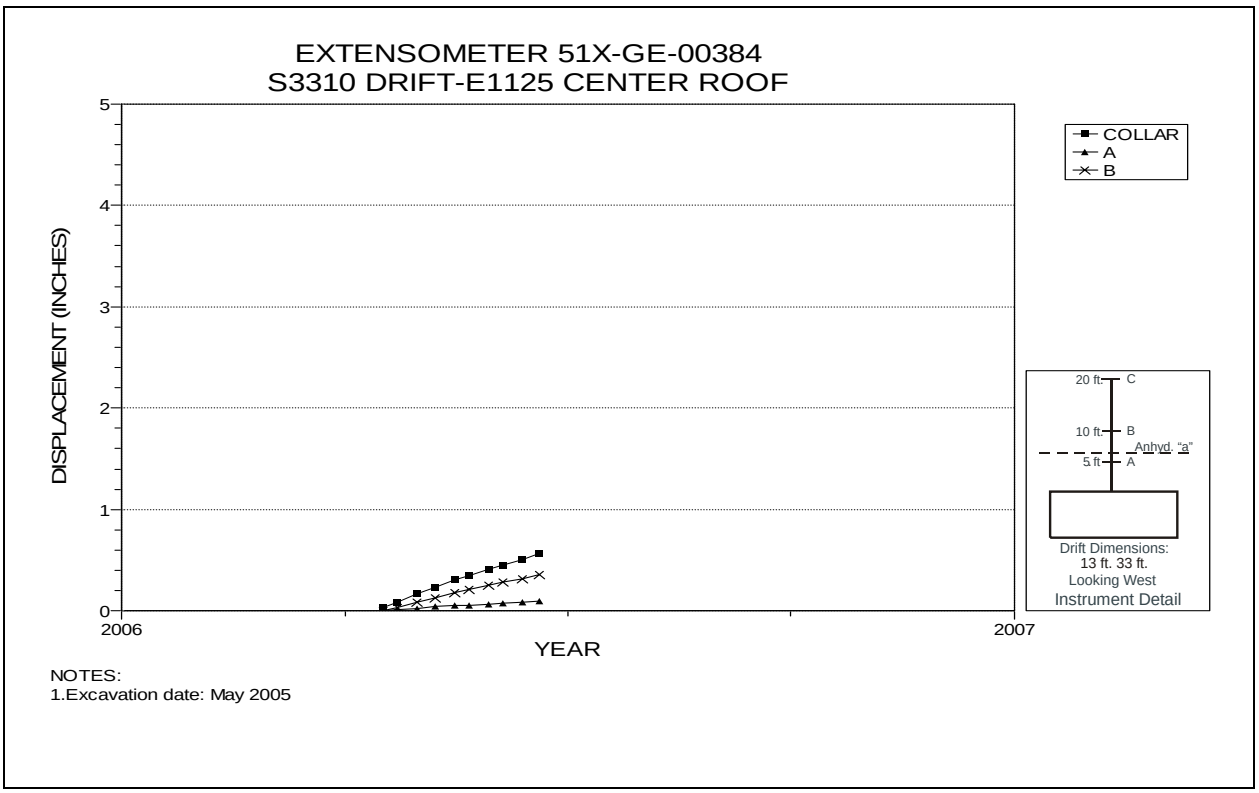


Figure 5-91 Extensometer 51X-GE-00384
S3310 Drift-E1125 – Roof

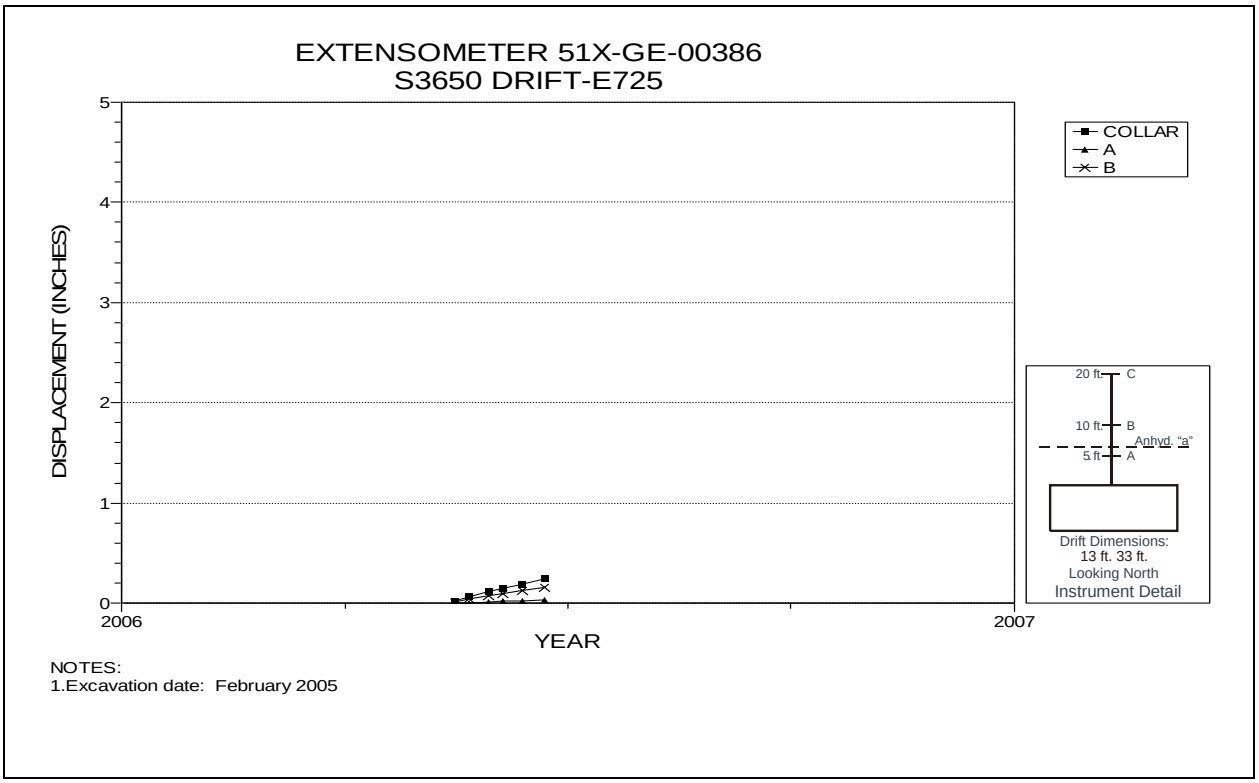


Figure 5-92 Extensometer 51X-GE-00386
S3650 Drift-E725 – Roof

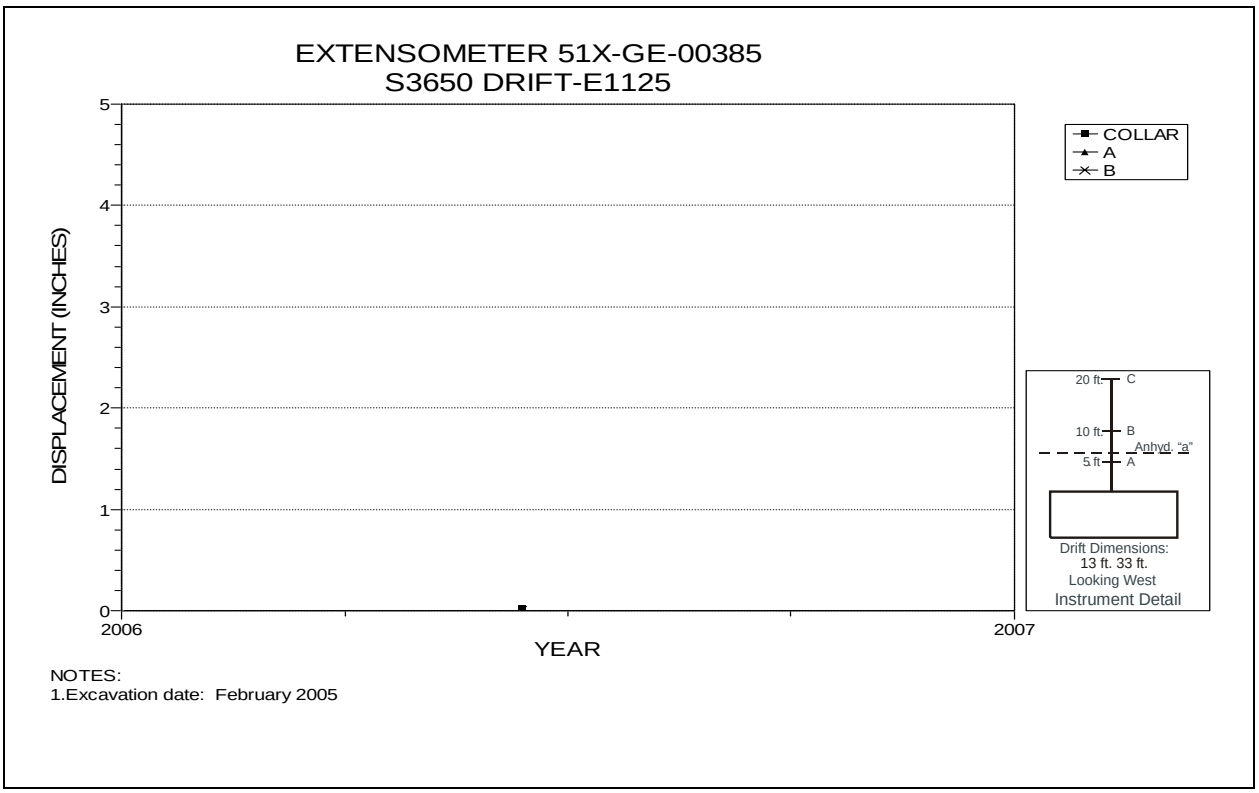


Figure 5-93 Extensometer 51X-GE-00385
S3650 Drift-E1125 – Roof

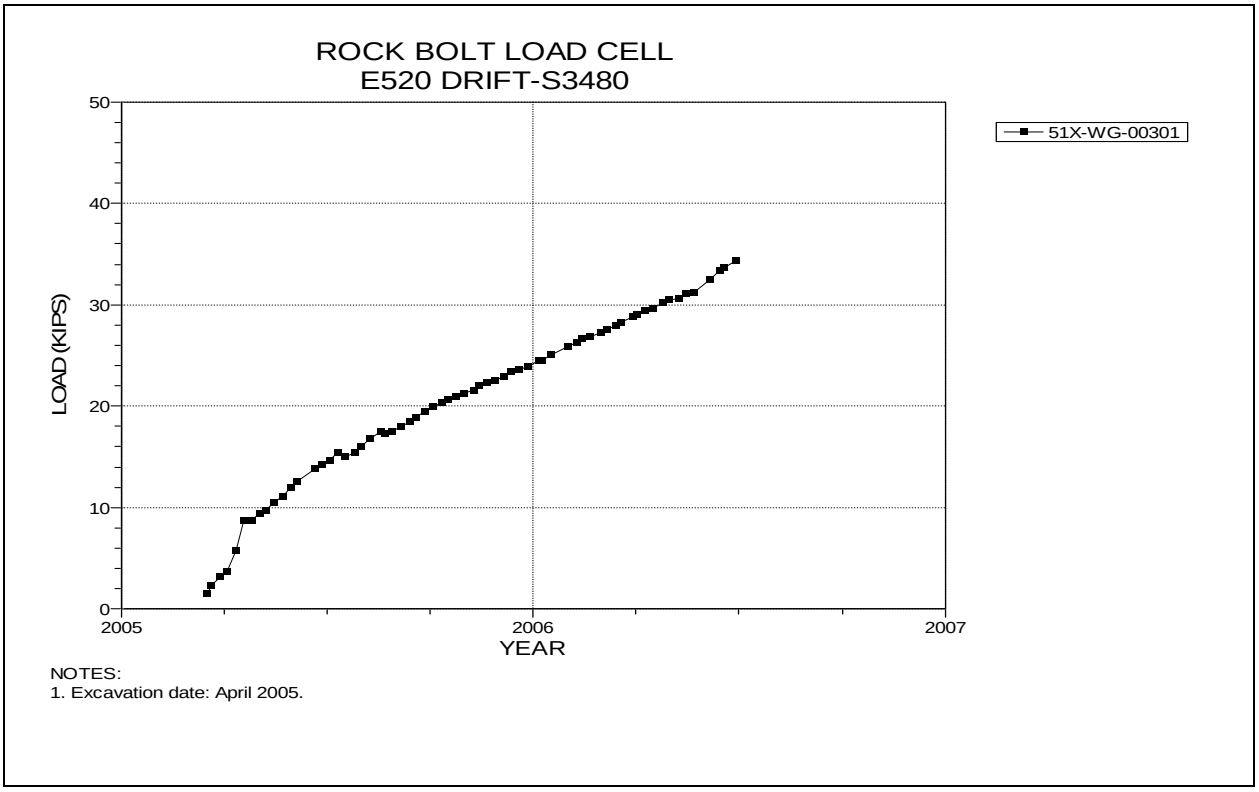


Figure 5-94 Rock Bolt Load Cell
Room 1, Panel 4

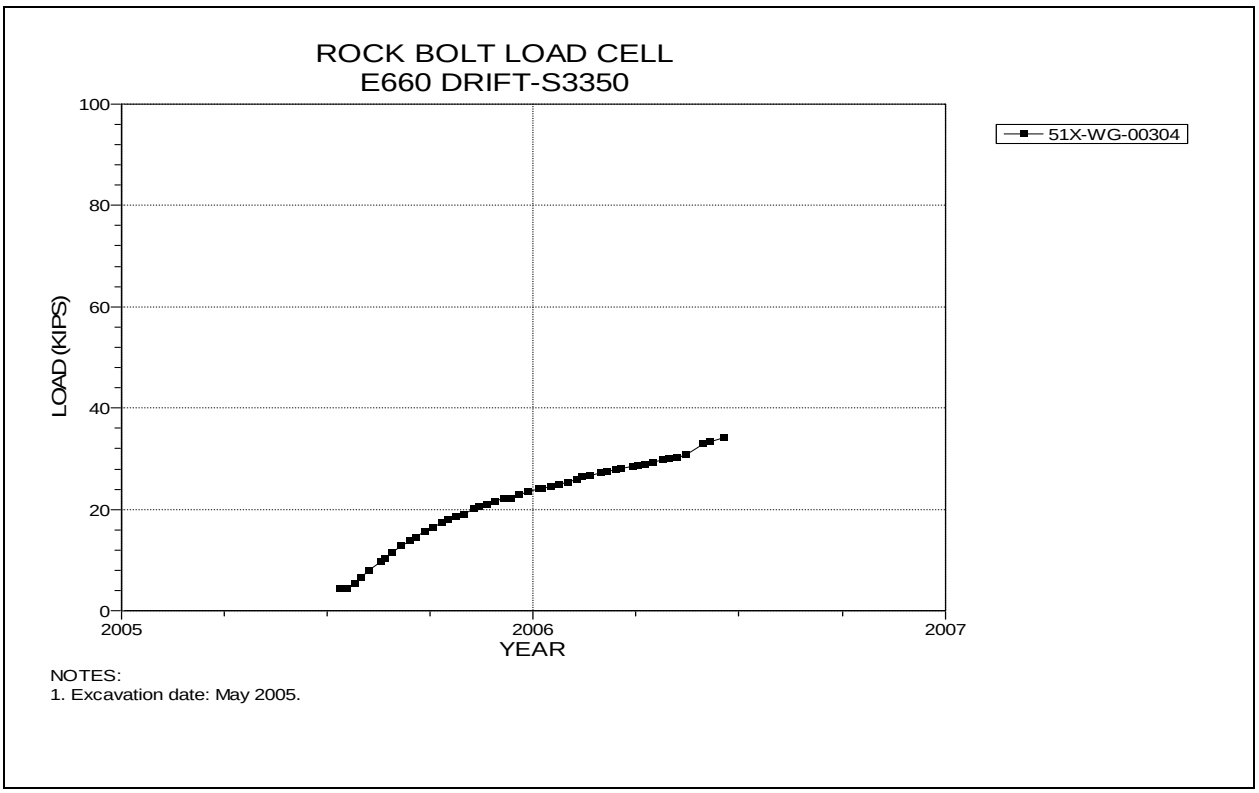


Figure 5-95 Rock Bolt Load Cell
Room 2, Panel 4

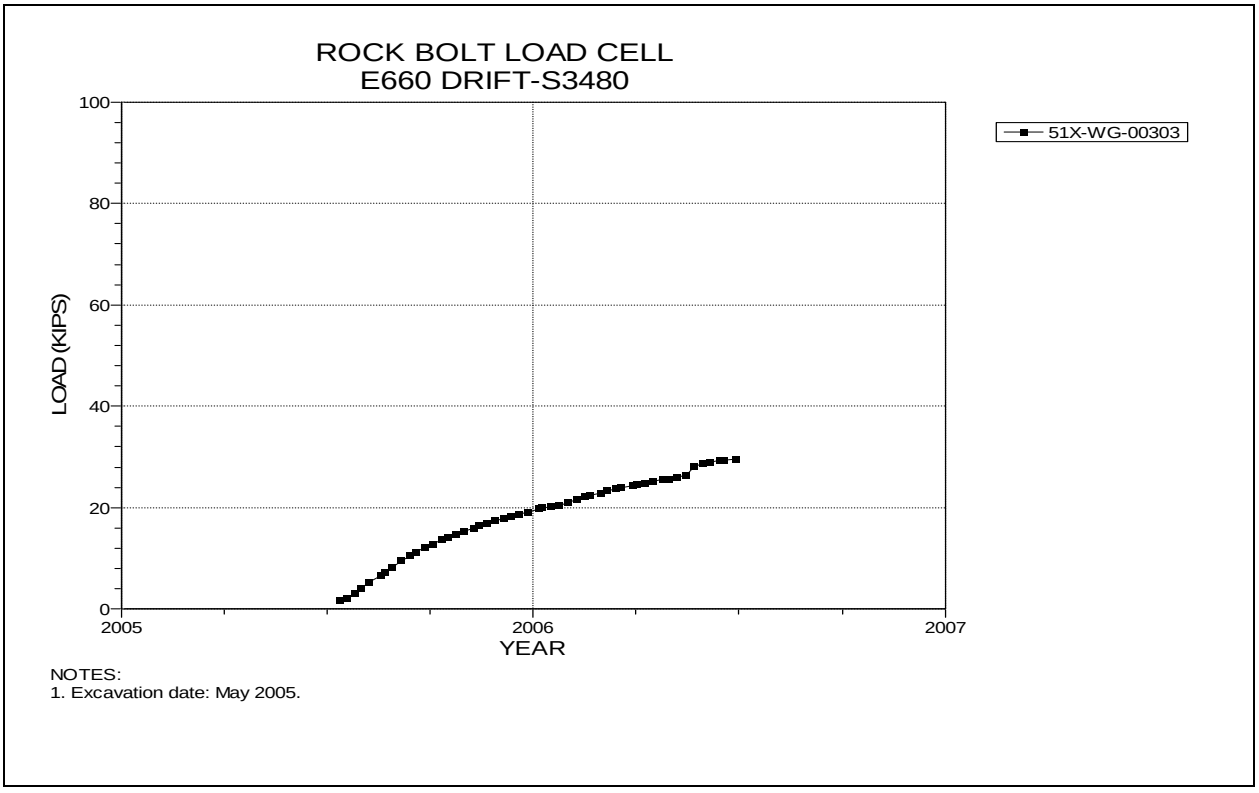


Figure 5-96 Rock Bolt Load Cell
Room 2, Panel 4

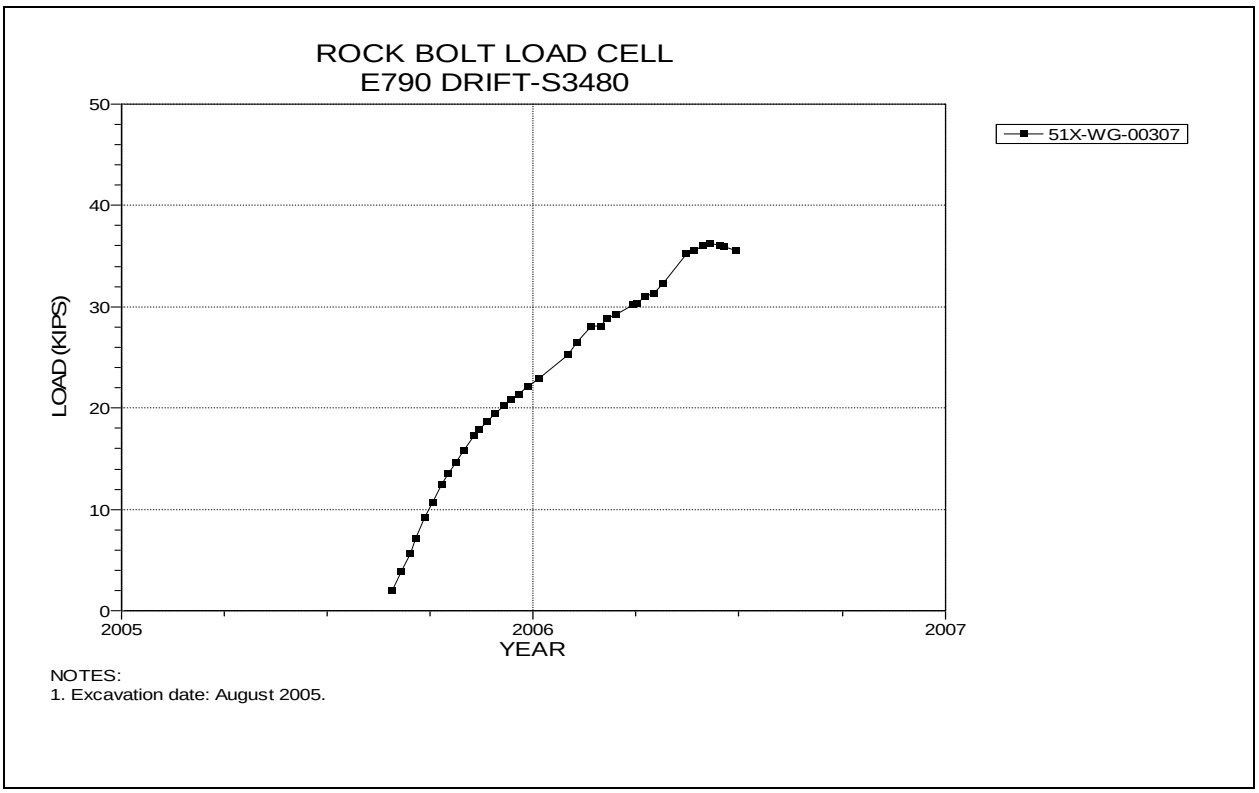


Figure 5-97 Rock Bolt Load Cell
Room 3, Panel 4

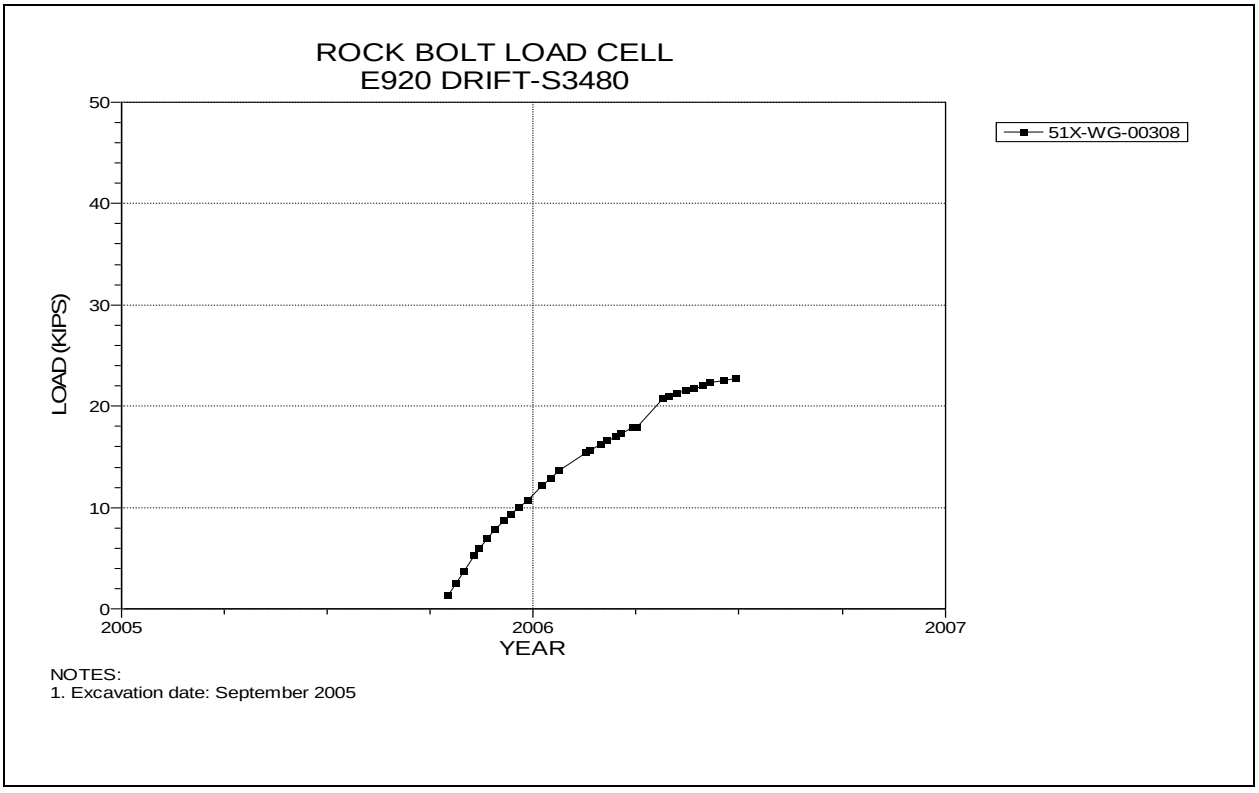


Figure 5-98 Rock Bolt Load Cell
Room 4, Panel 4

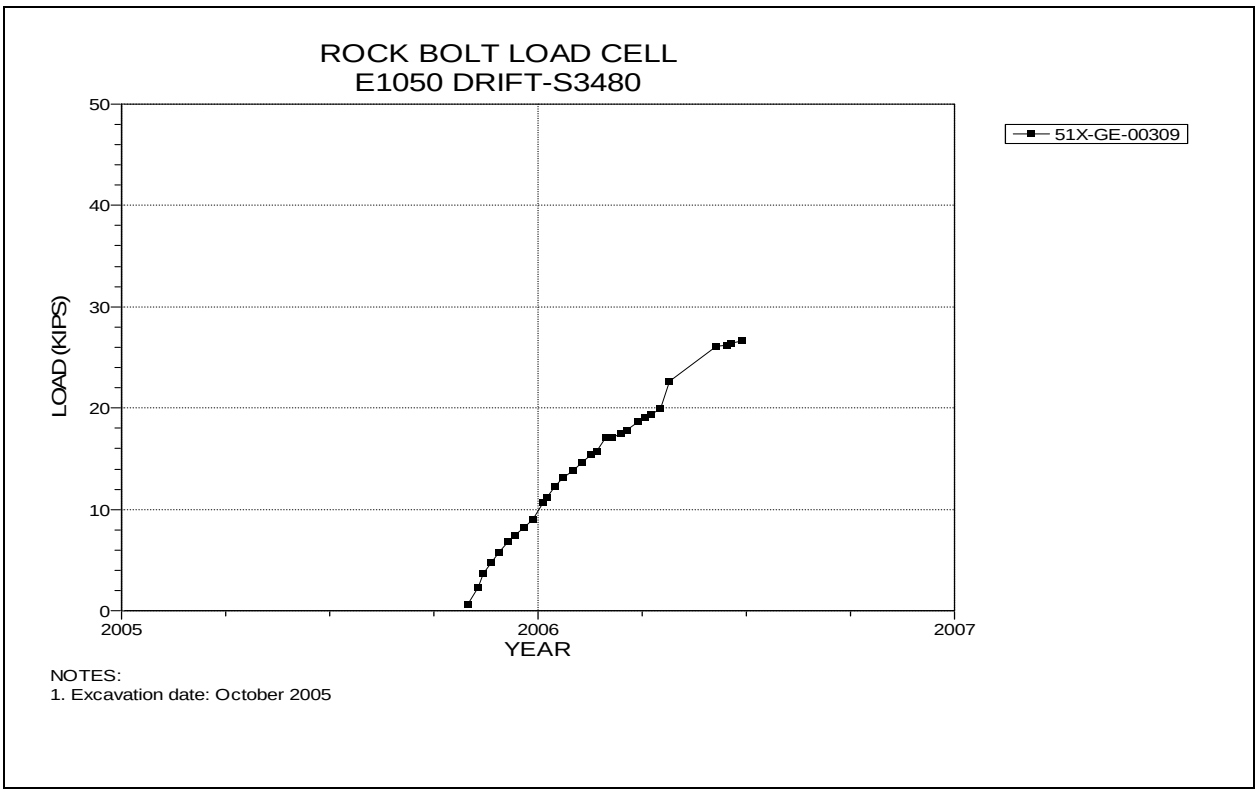


Figure 5-99 Rock Bolt Load Cell
Room 5, Panel 4

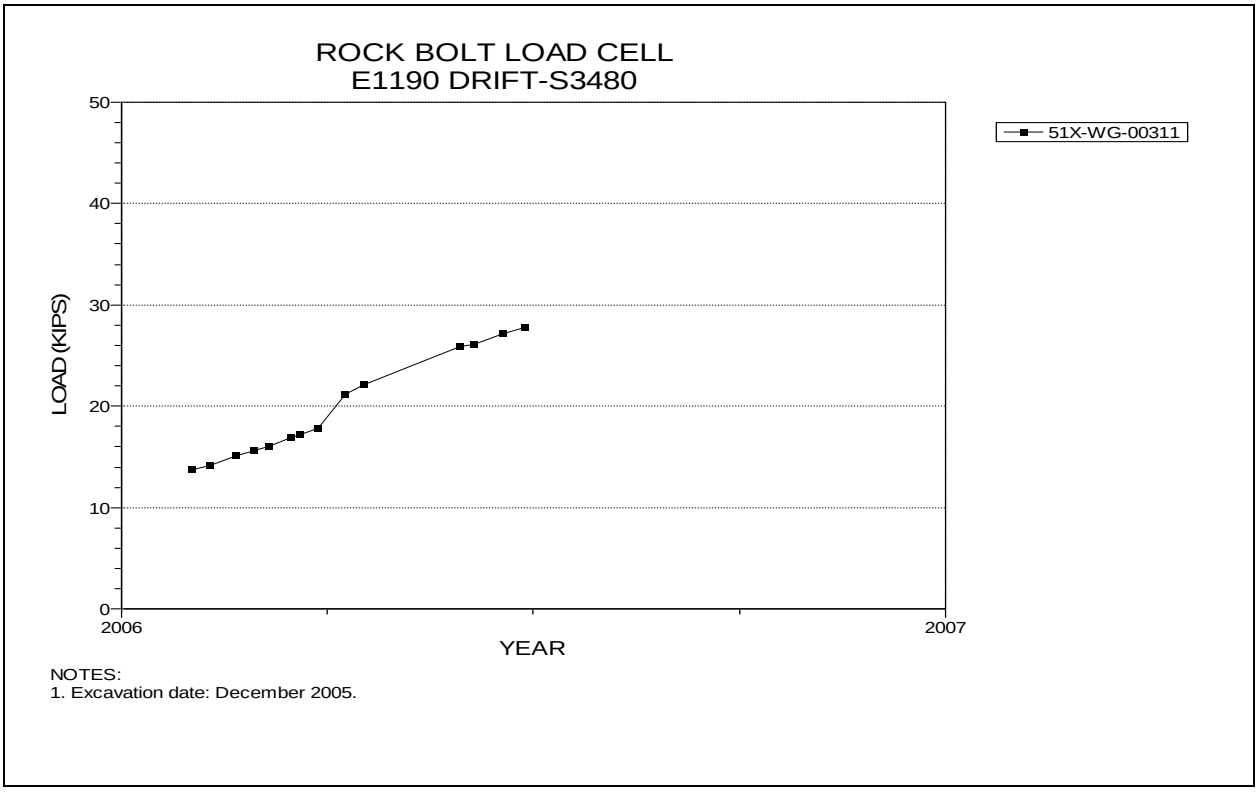


Figure 5-100 Rock Bolt Load Cell
Room 6, Panel 4

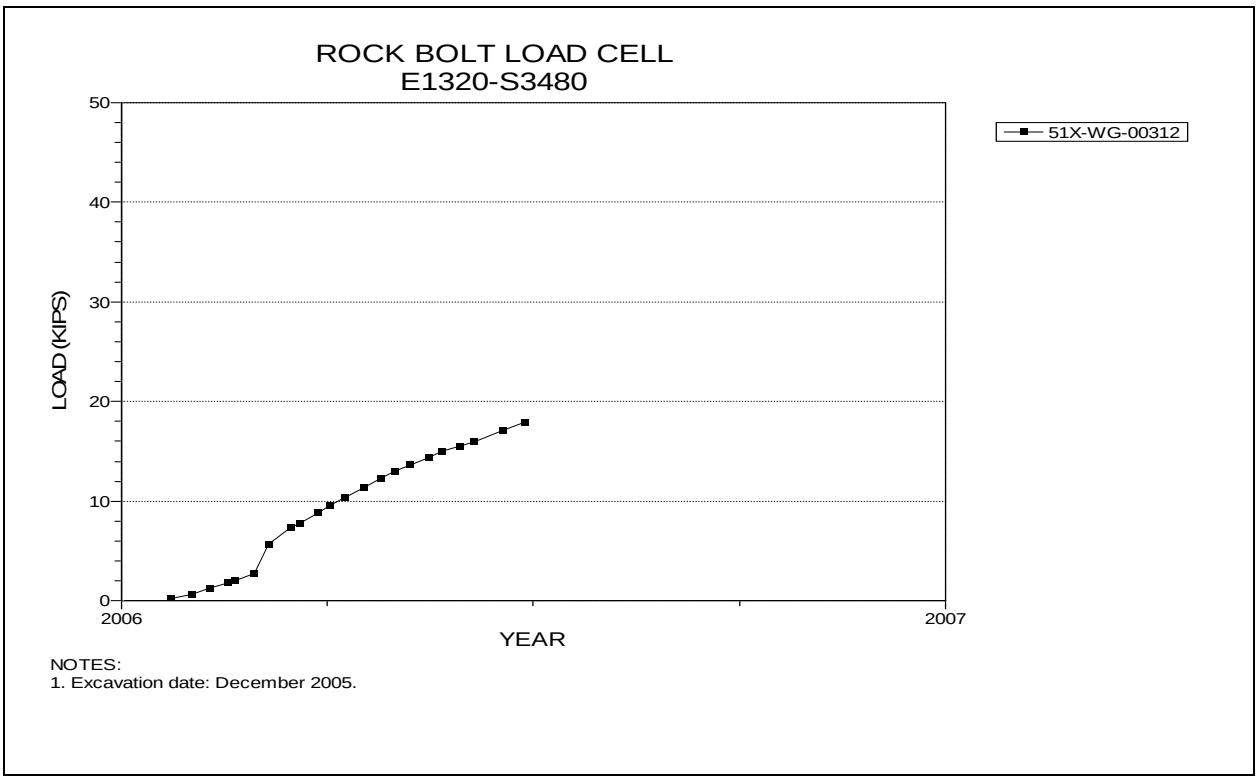


Figure 5-101 Rock Bolt Load Cell
Room 7, Panel 4

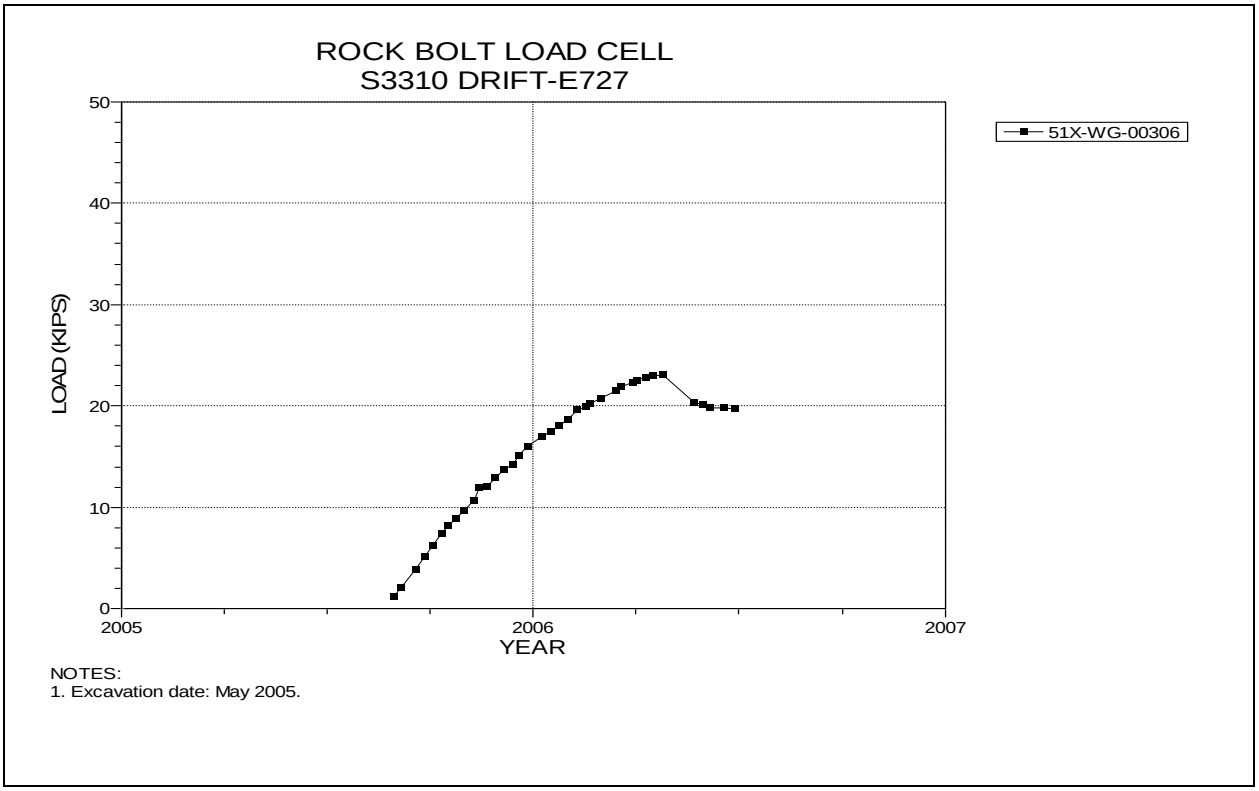


Figure 5-102 Rock Bolt Load Cell
S3310 Drift-E727

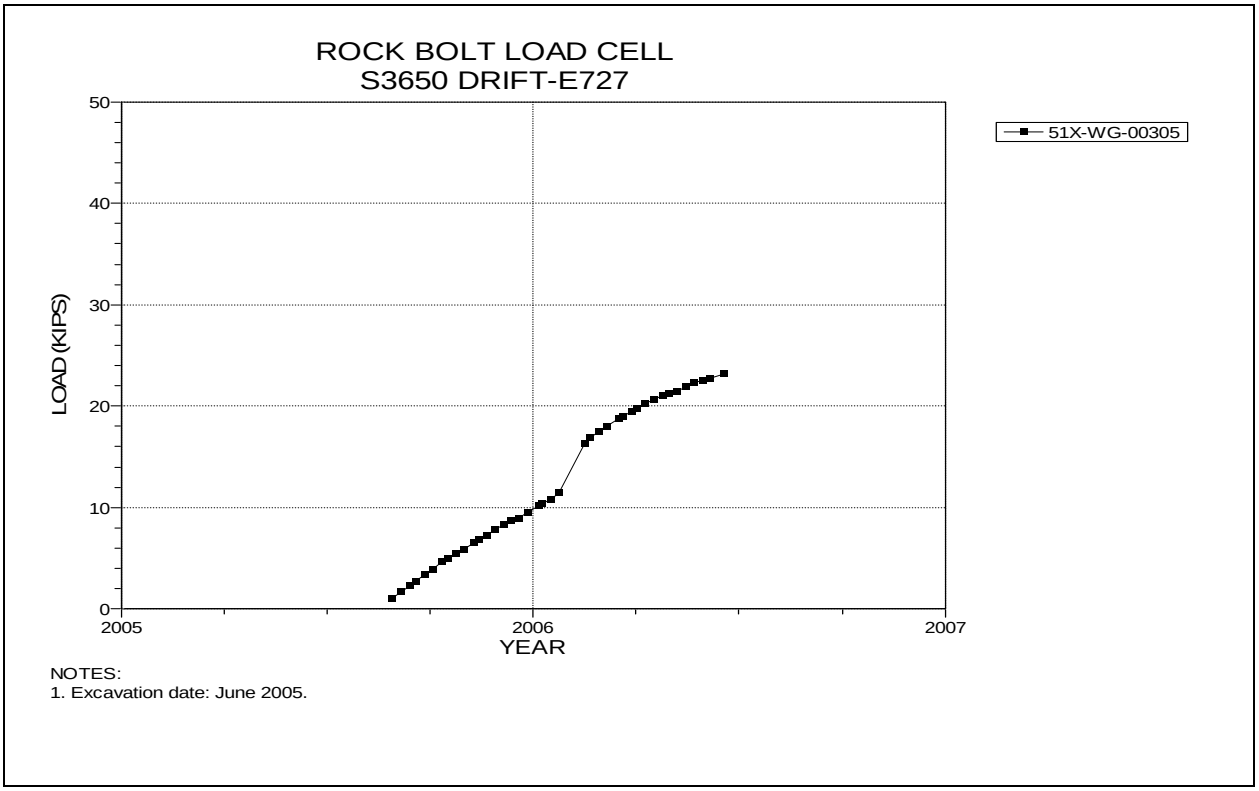


Figure 5-103 Rock Bolt Load Cell
S3650 Drift-E727

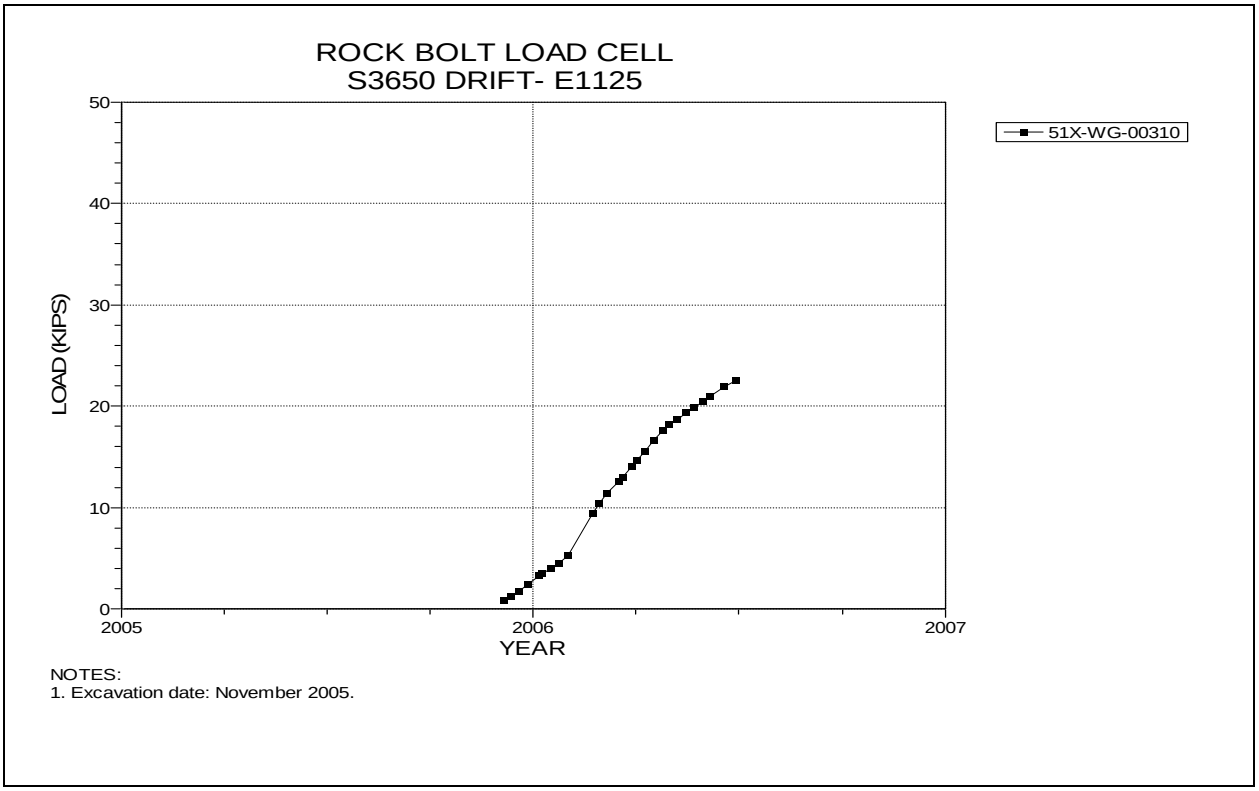


Figure 5-104 Rock Bolt Load Cell
S3650 Drift-E1125

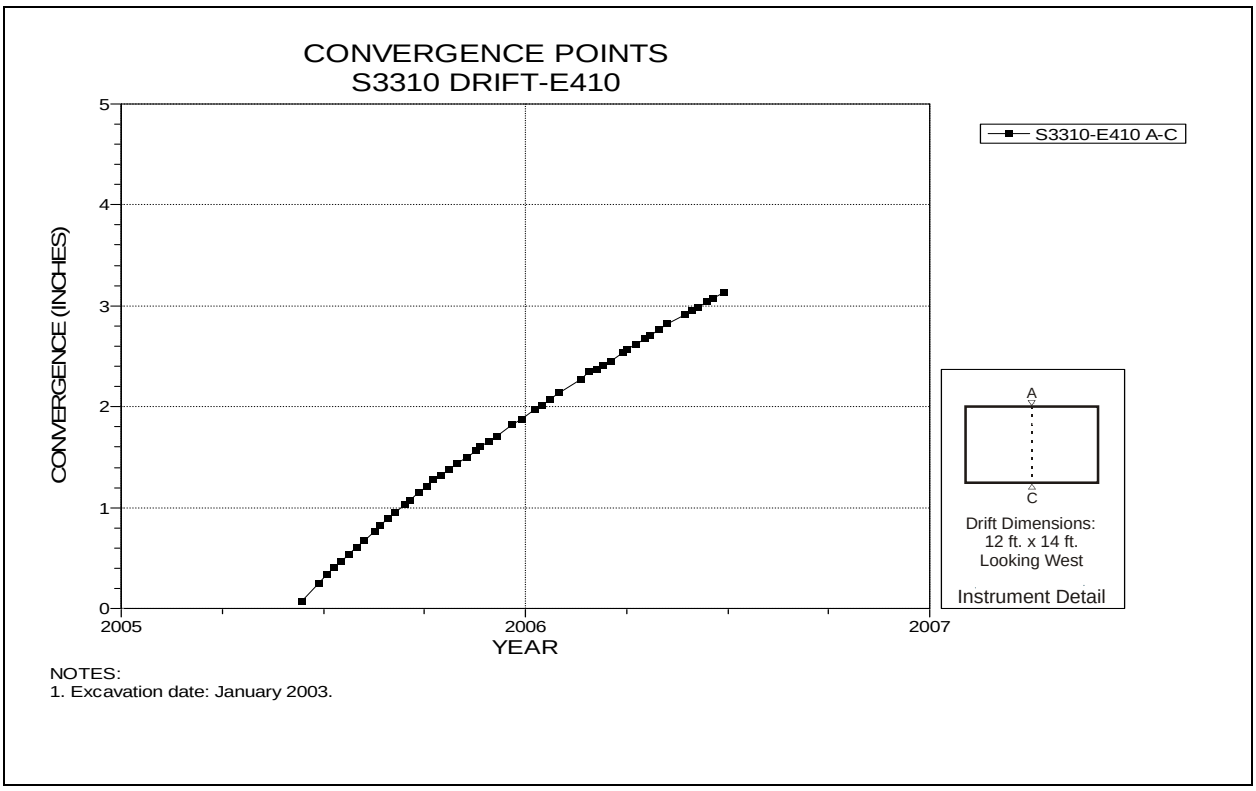


Figure 5-105 Convergence Point Array
S3310 Drift at E410 – Roof to Floor

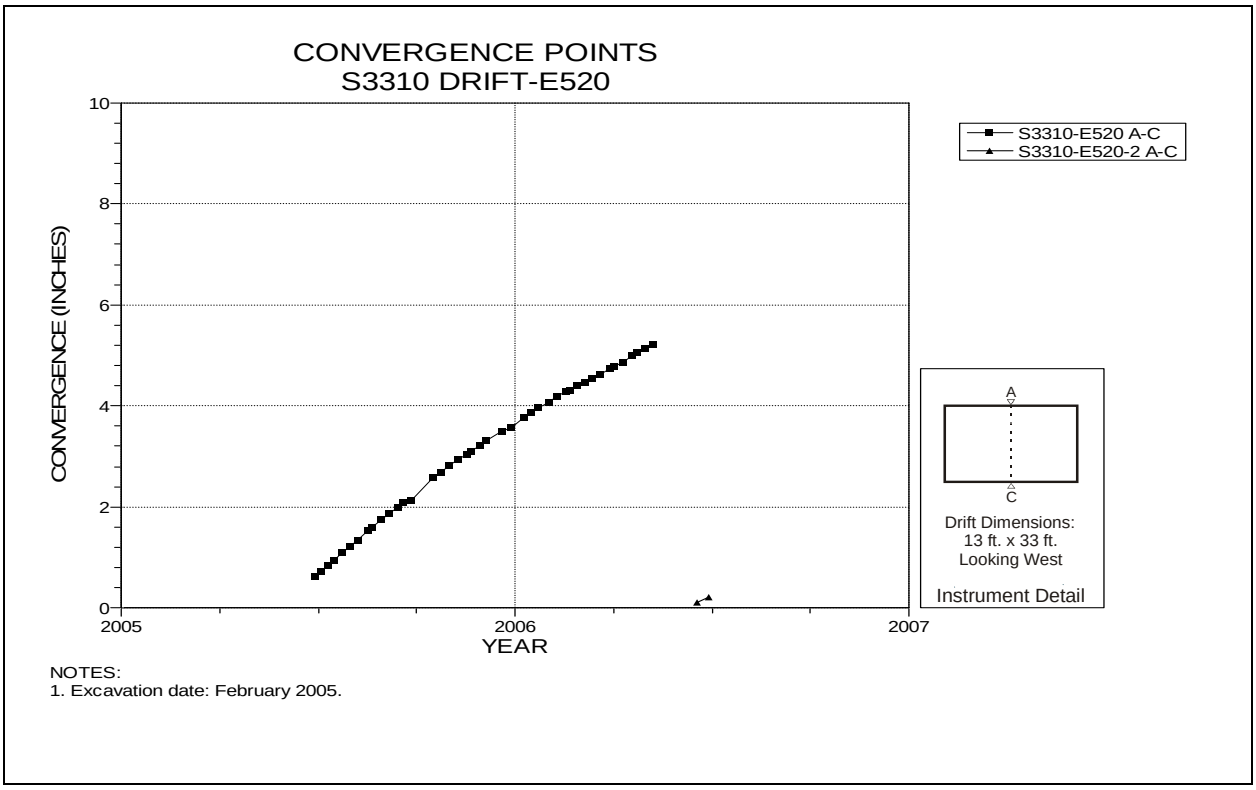


Figure 5-106 Convergence Point Array
S3310 Drift at E520 Drift Intersection (Room 1, Panel 4) – Roof to Floor

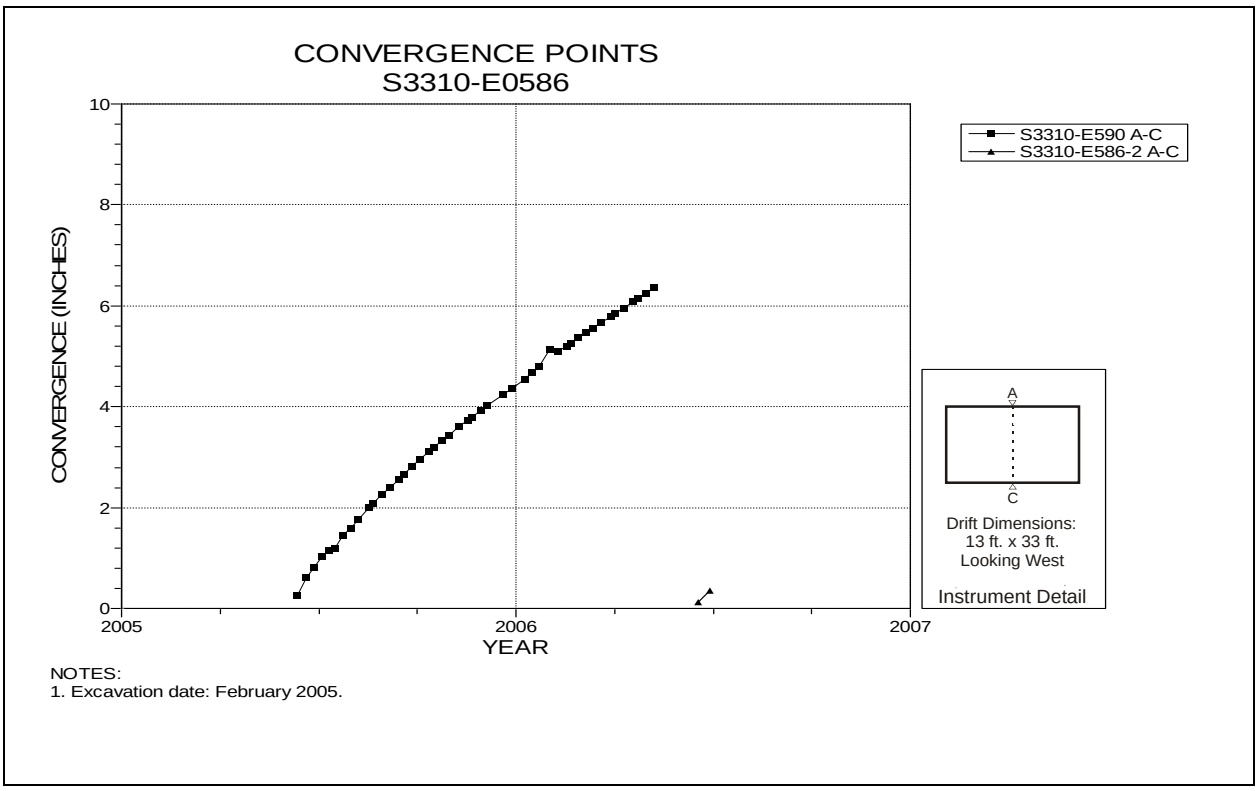


Figure 5-107 Convergence Point Array
S3310 Drift at E586 – Roof to Floor

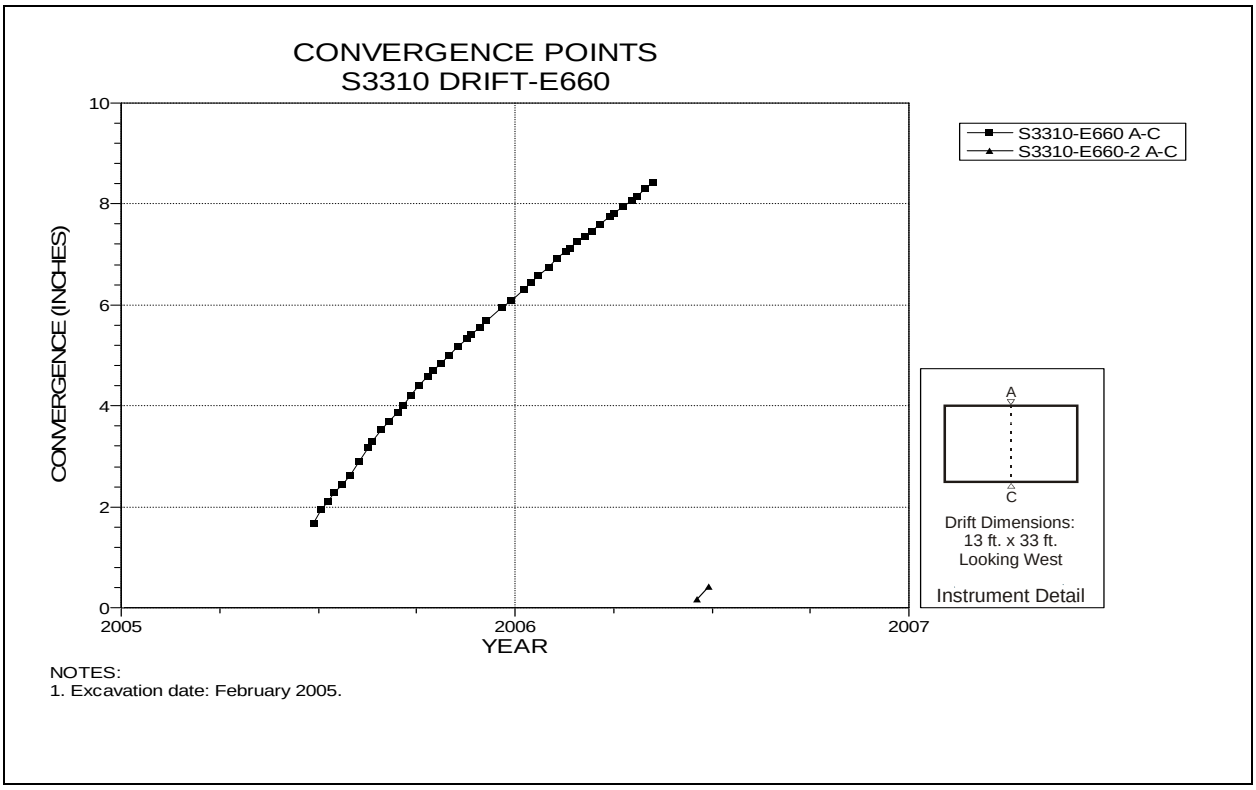


Figure 5-108 Convergence Point Array
S3310 Drift at E660 Drift Intersection (Room 2, Panel 4) – Roof to Floor

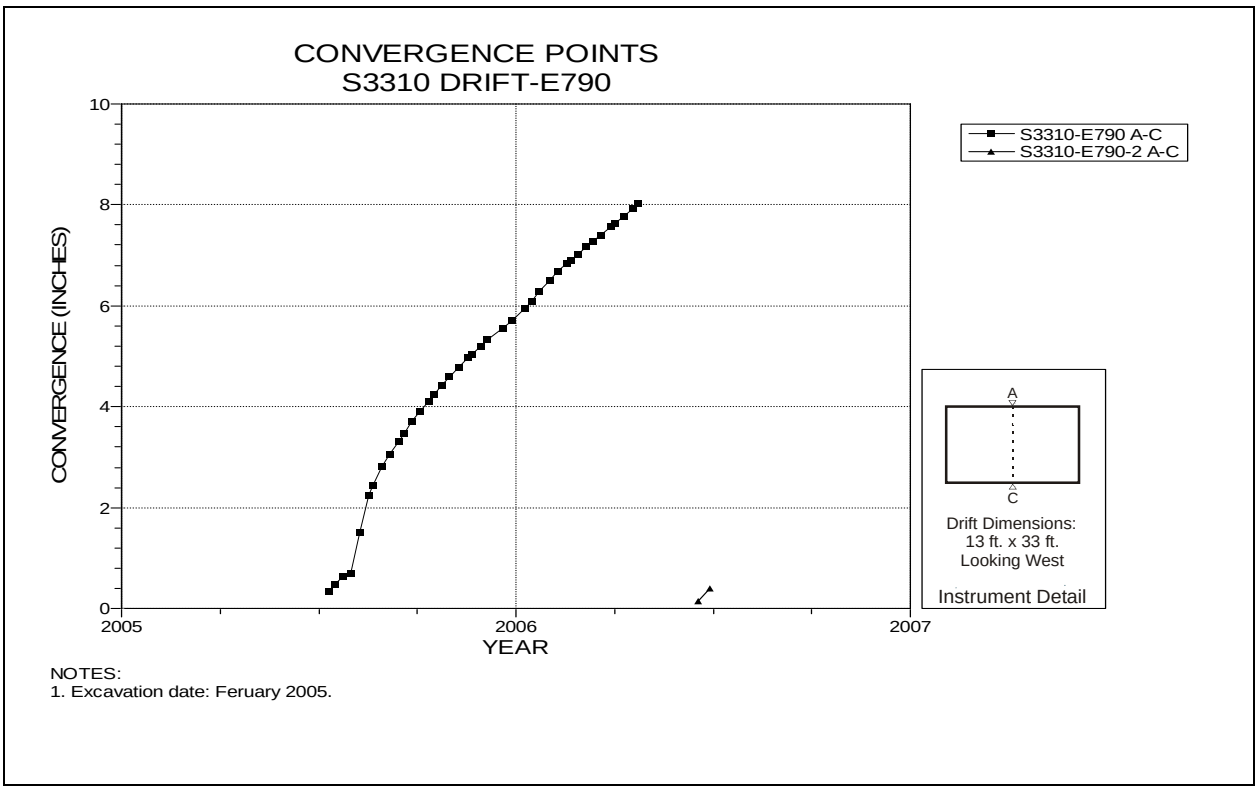


Figure 5-109 Convergence Point Array
S3310 Drift at E790 Drift Intersection (Room 3, Panel 4) – Roof to Floor

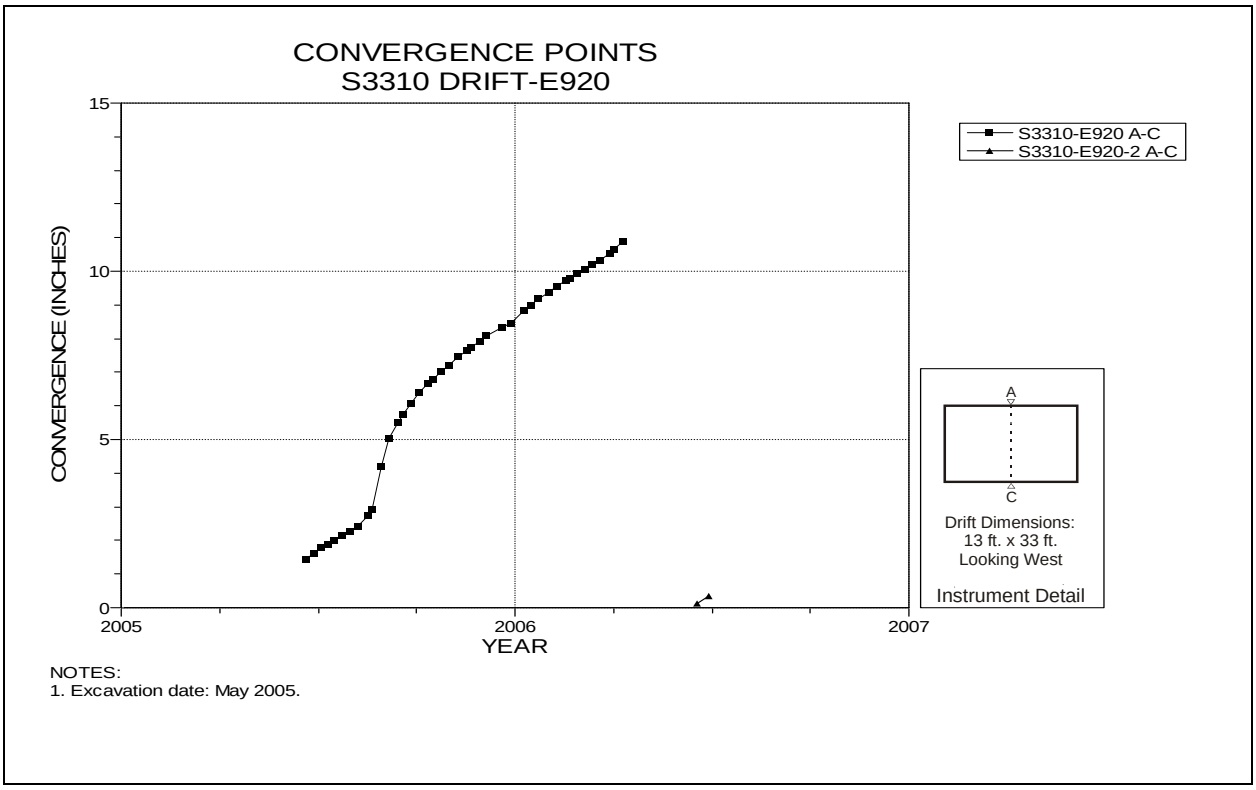


Figure 5-110 Convergence Point Array
S3310 Drift at E920 Drift Intersection (Room 4, Panel 4) – Roof to Floor

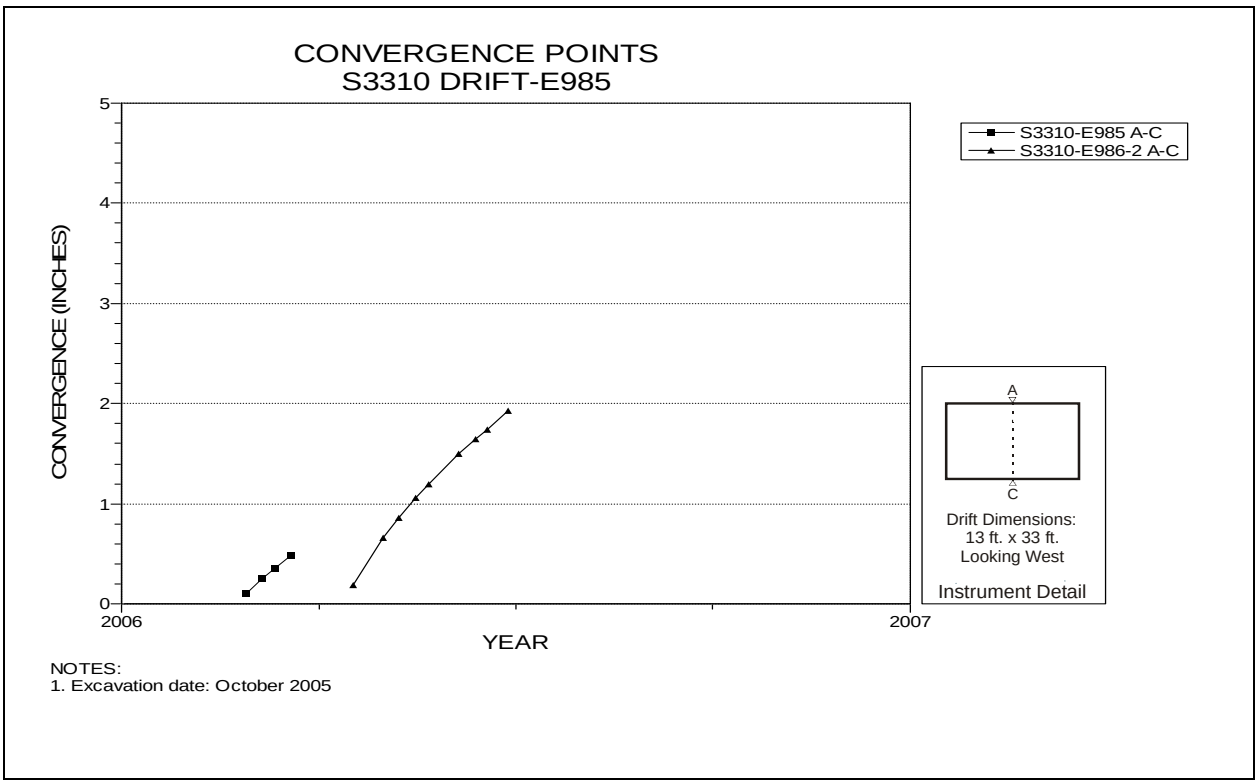


Figure 5-111 Convergence Point Array
S3310 Drift at E985 – Roof to Floor

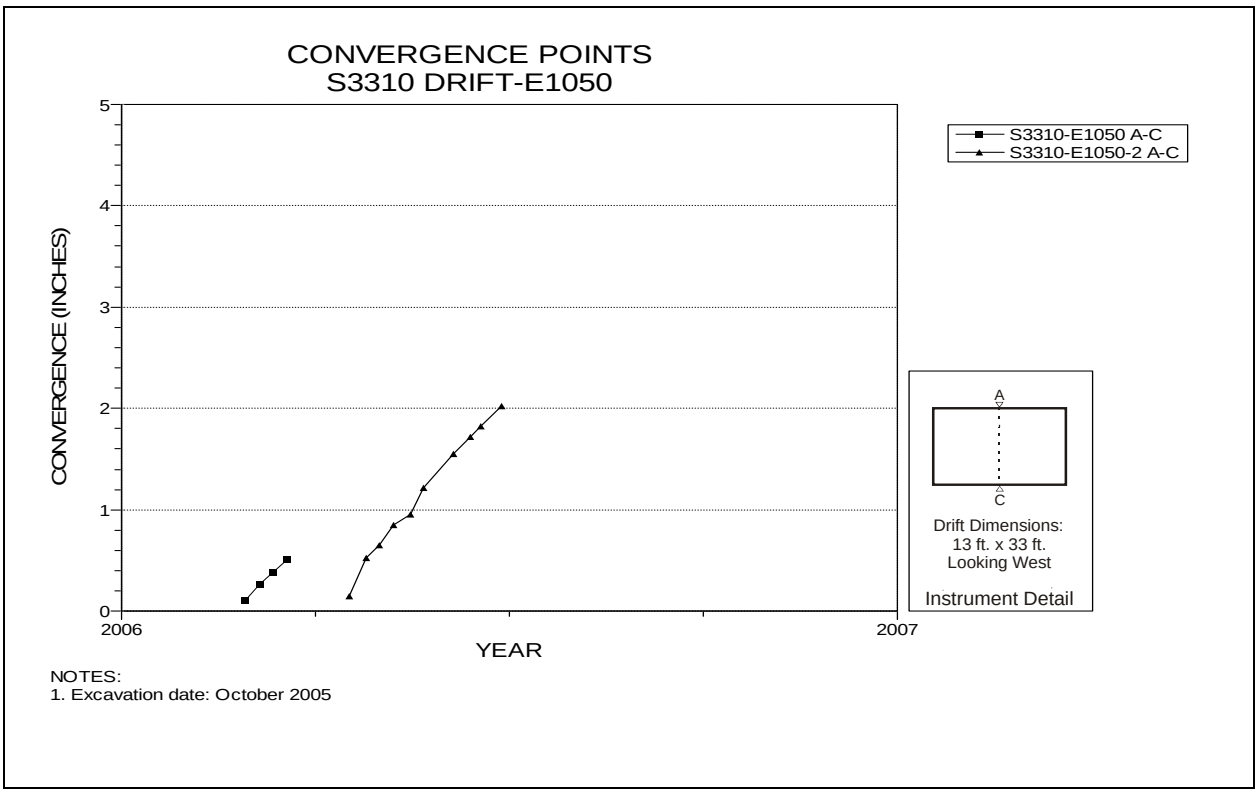


Figure 5-112 Convergence Point Array
S3310 Drift at E1050 Drift Intersection (Room 5, Panel 4) – Roof to Floor

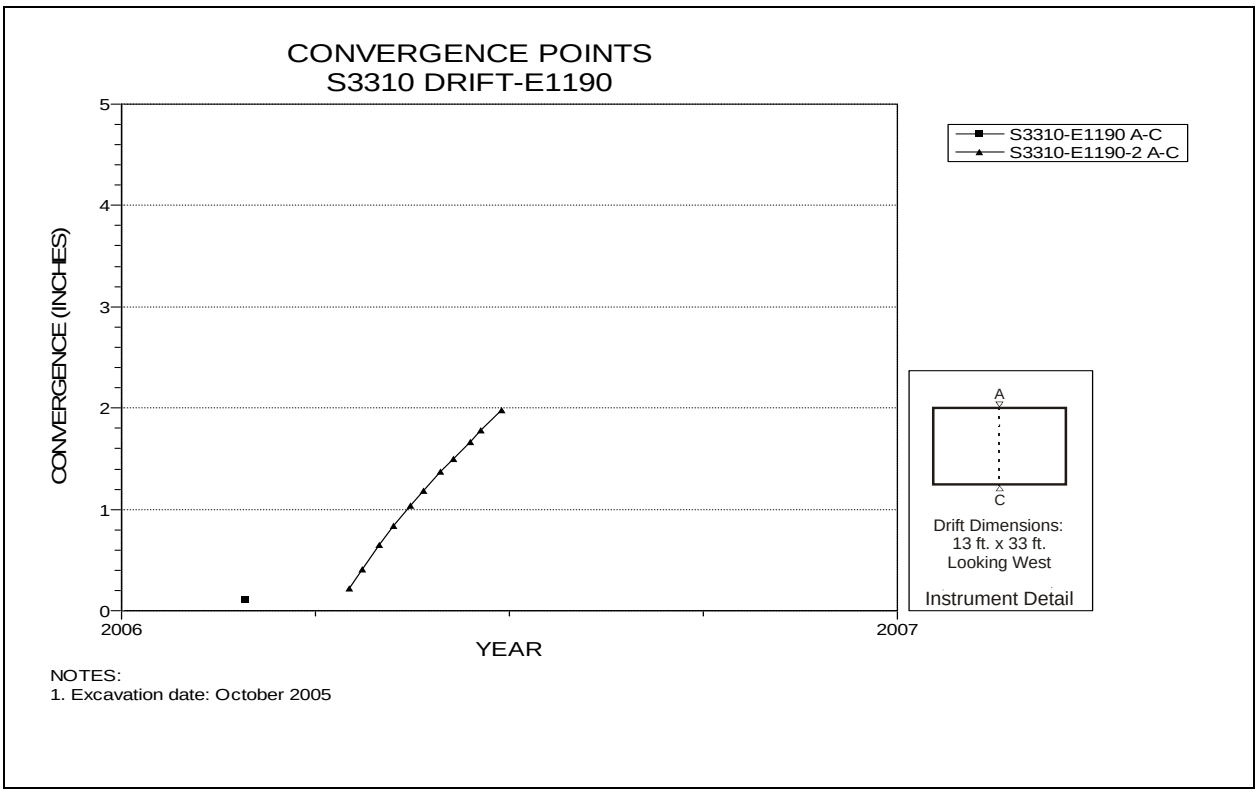


Figure 5-113 Convergence Point Array
S3310 Drift at E1190 Drift Intersection (Room 6, Panel 4) – Roof to Floor

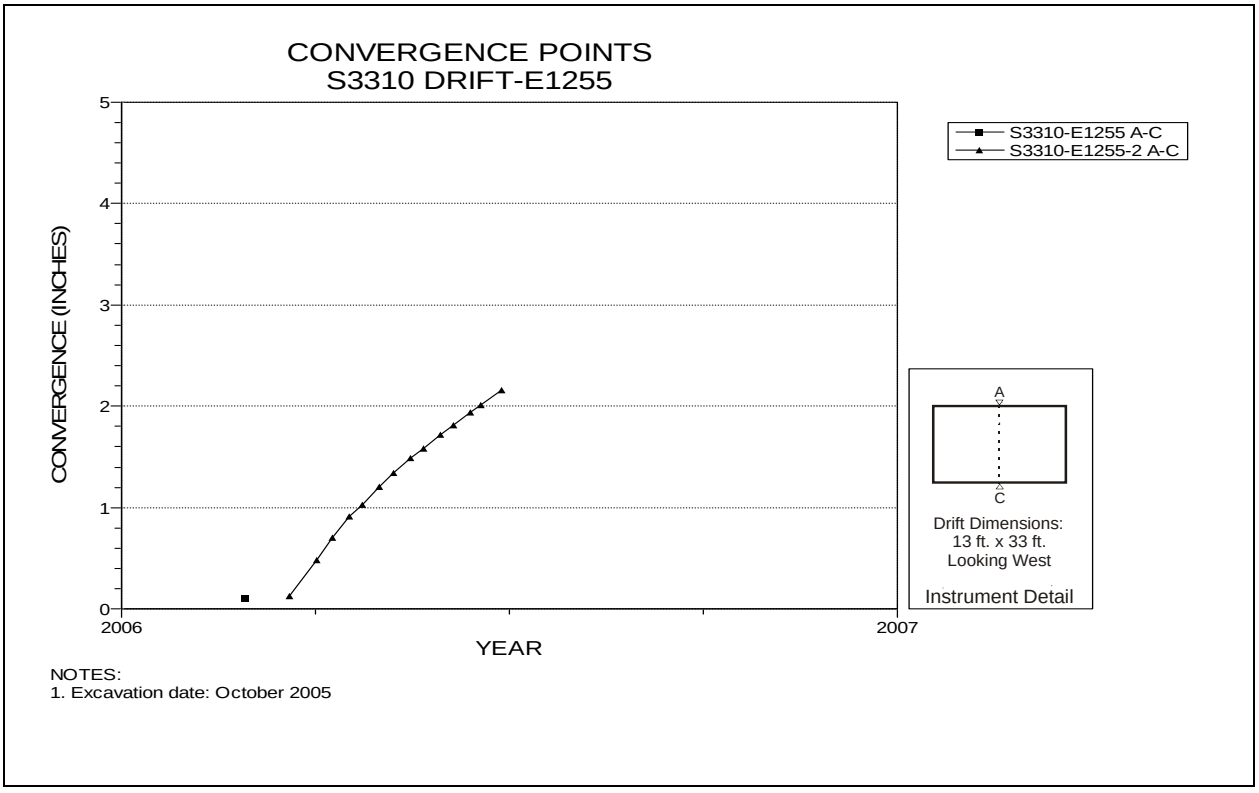


Figure 5-114 Convergence Point Array
S3310 Drift at E1255 – Roof to Floor

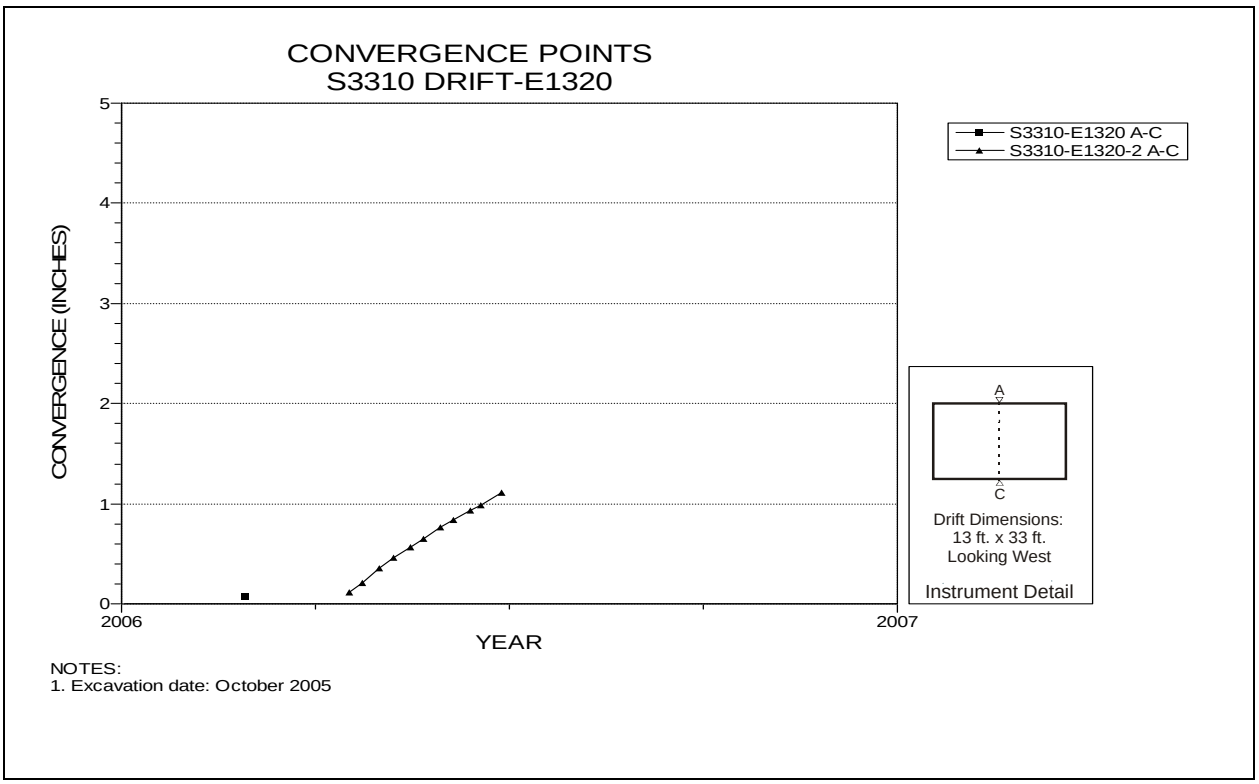


Figure 5-115 Convergence Point Array
S3310 Drift at E1320 Drift Intersection (Room 7, Panel 4) – Roof to Floor

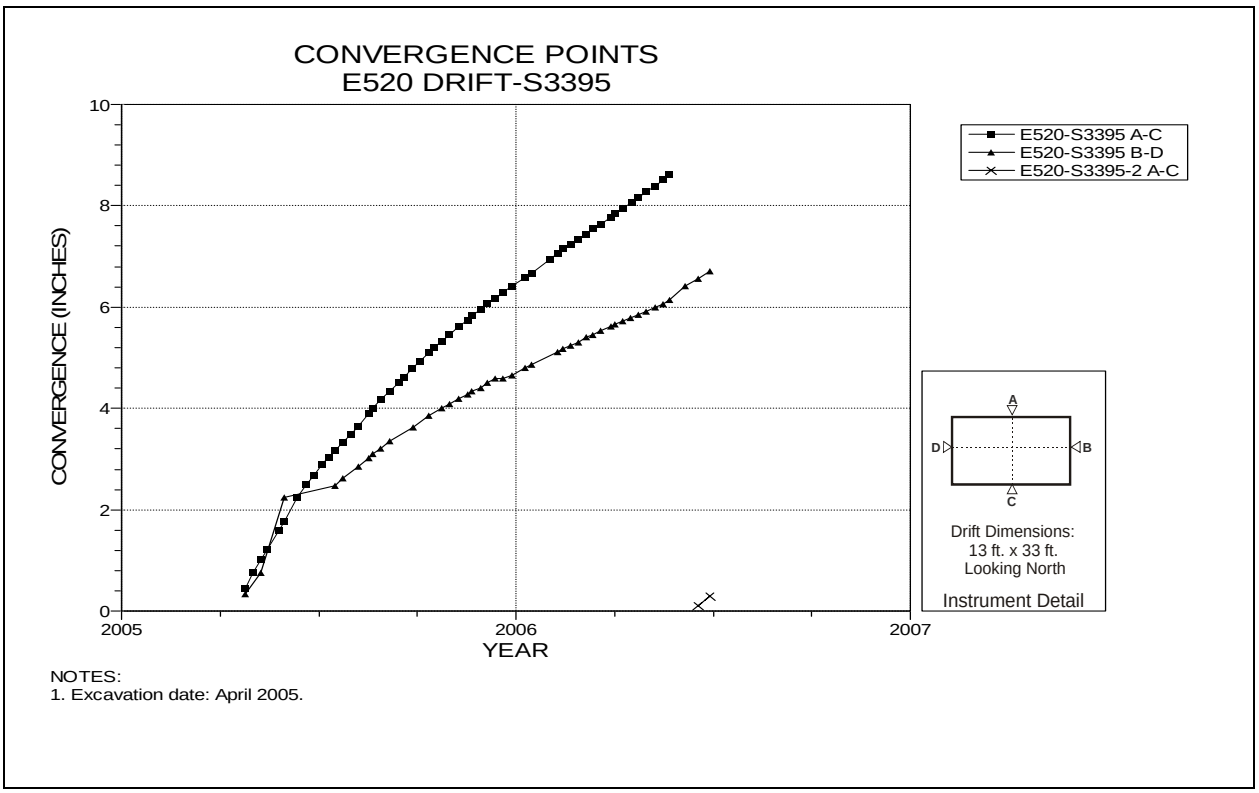


Figure 5-116 Convergence Point Array
Room 1, Panel 4 at S3395 – All Chords

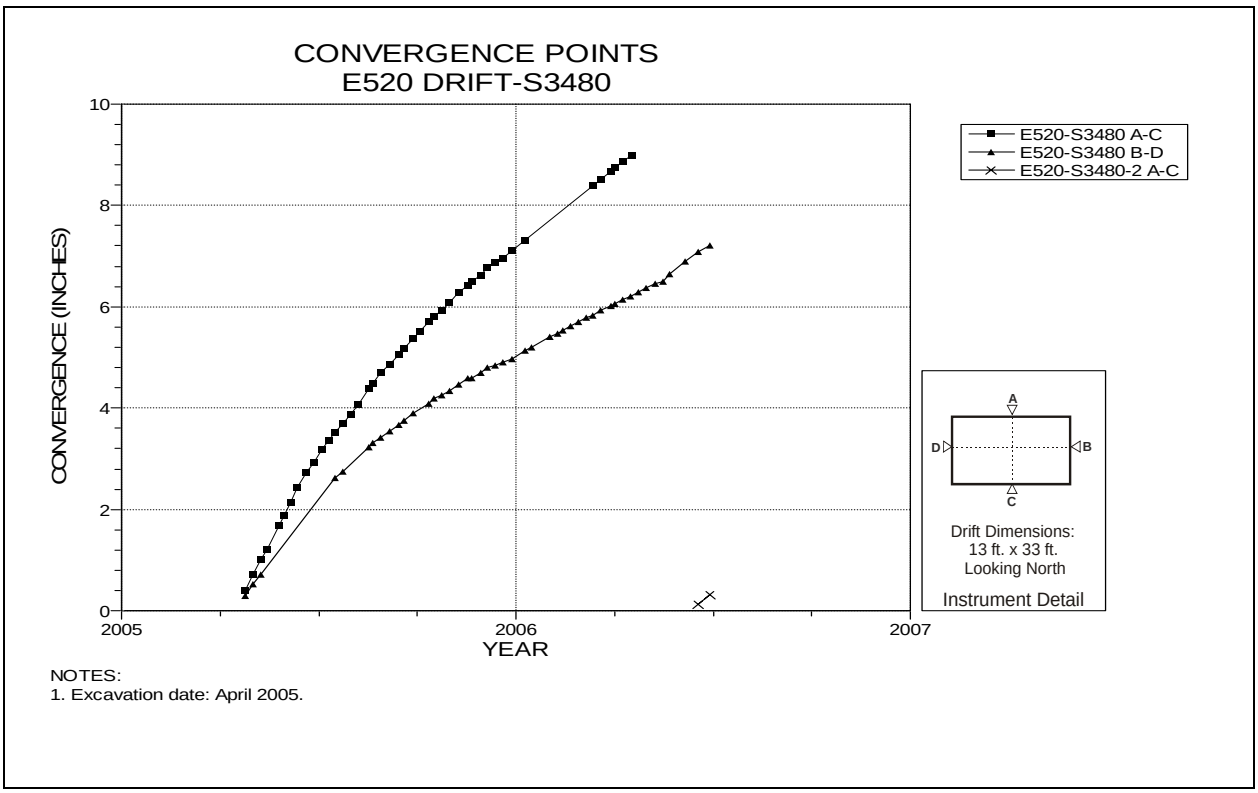


Figure 5-117 Convergence Point Array
Room 1, Panel 4 at S3480 – Room Center – All Chords

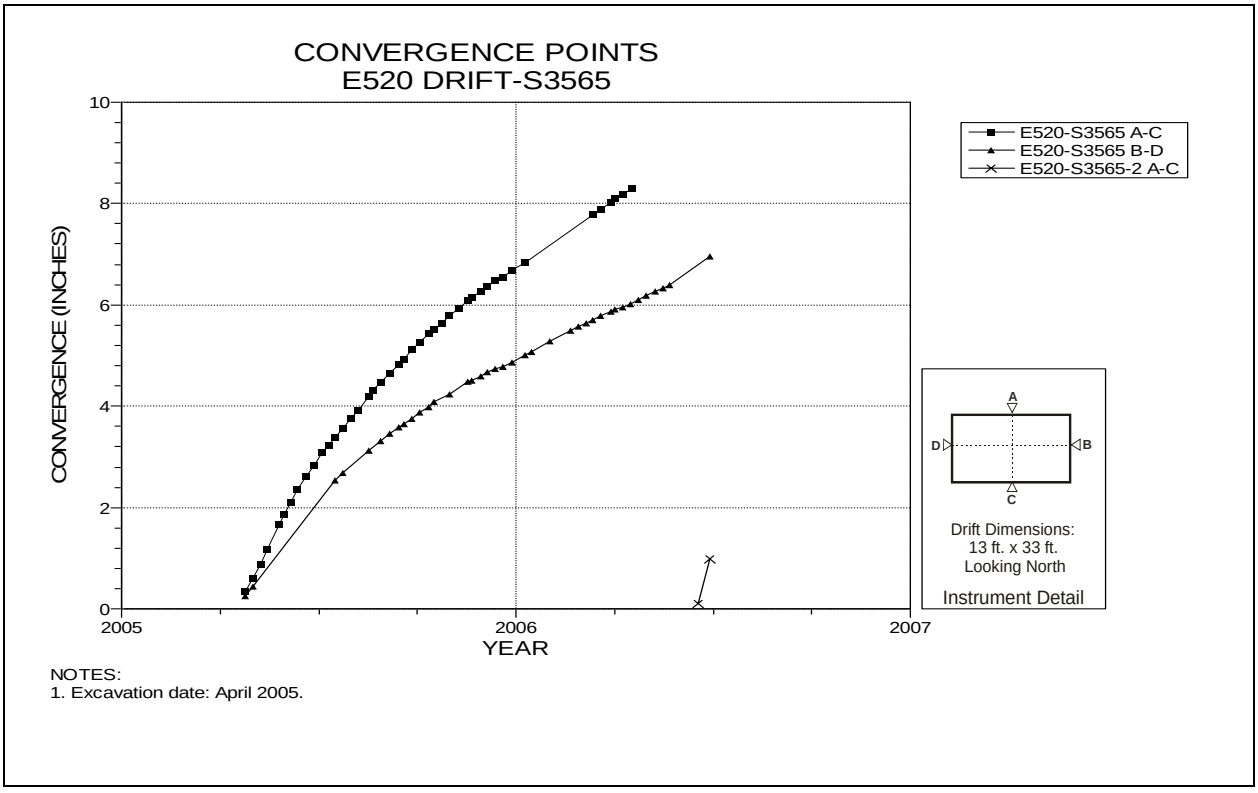


Figure 5-118 Convergence Point Array
Room 1, Panel 4 at S3565 – All Chords

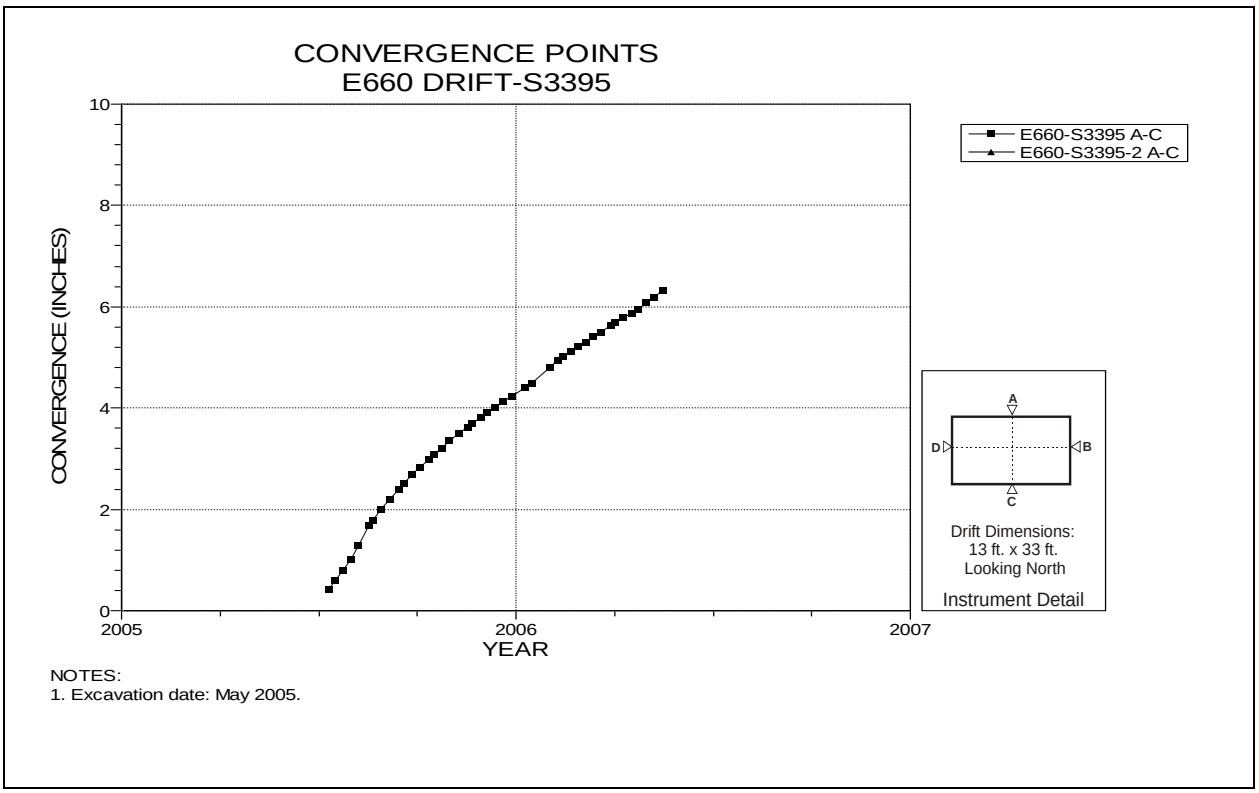


Figure 5-119 Convergence Point Array
Room 2, Panel 4 at S3395 – All Chords

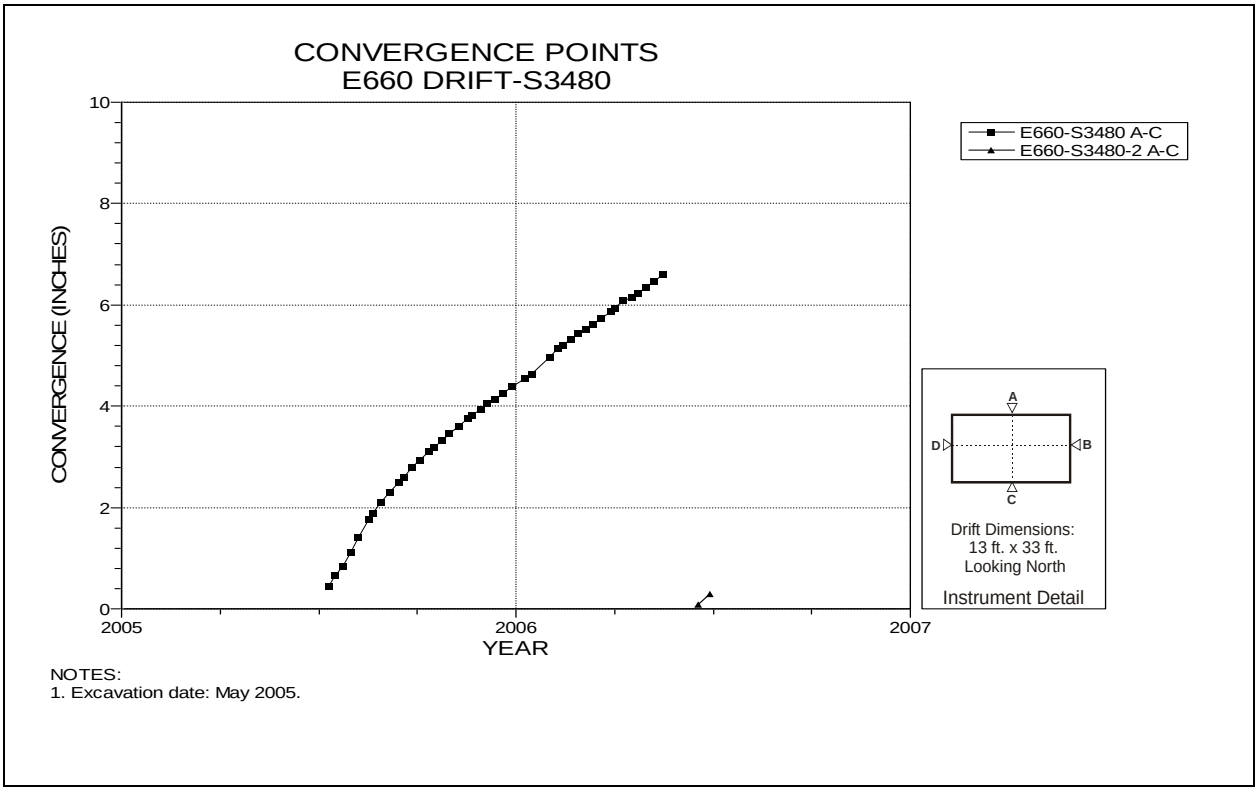


Figure 5-120 Convergence Point Array
Room 2, Panel 4 at S3480 – Room Center – All Chords

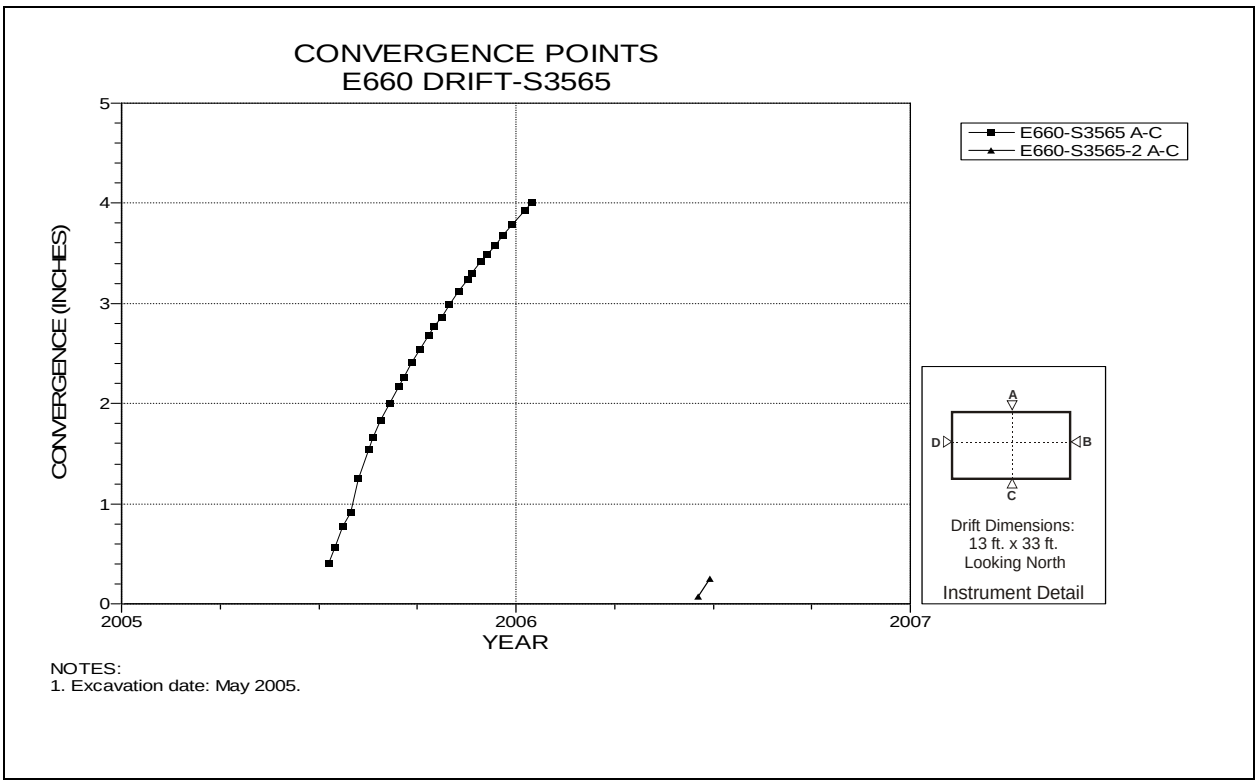


Figure 5-121 Convergence Point Array
Room 2, Panel 4 at S3565 – All Chords

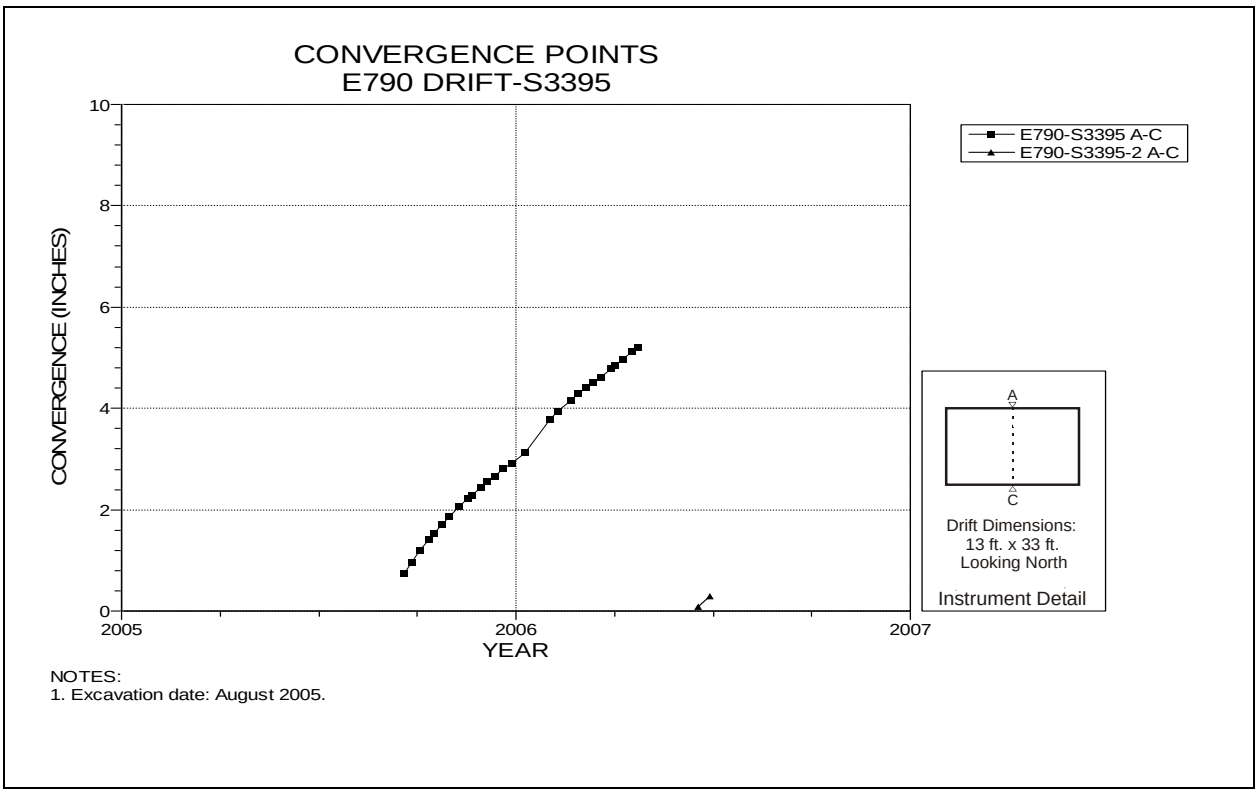


Figure 5-122 Convergence Point Array
Room 3, Panel 4 at S3395 – All Chords

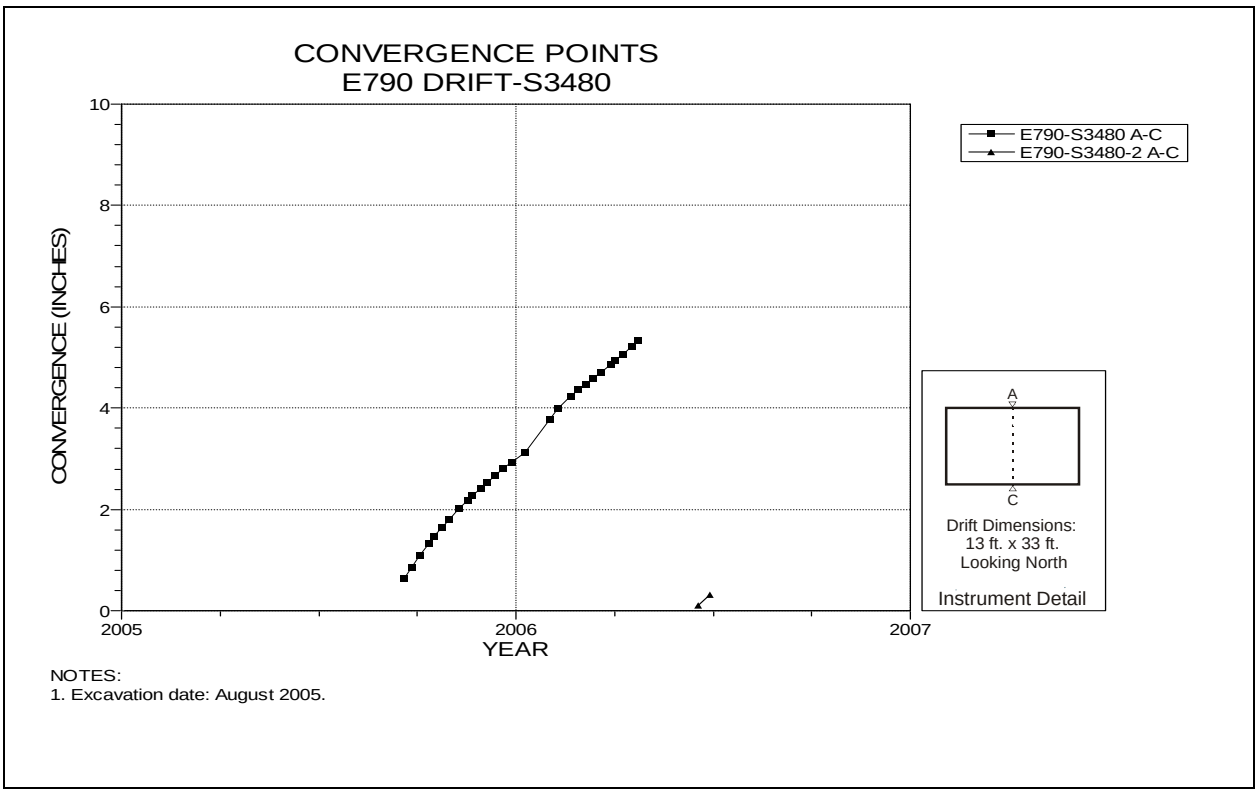


Figure 5-123 Convergence Point Array
Room 3, Panel 4 at S3480 – Room Center – All Chords

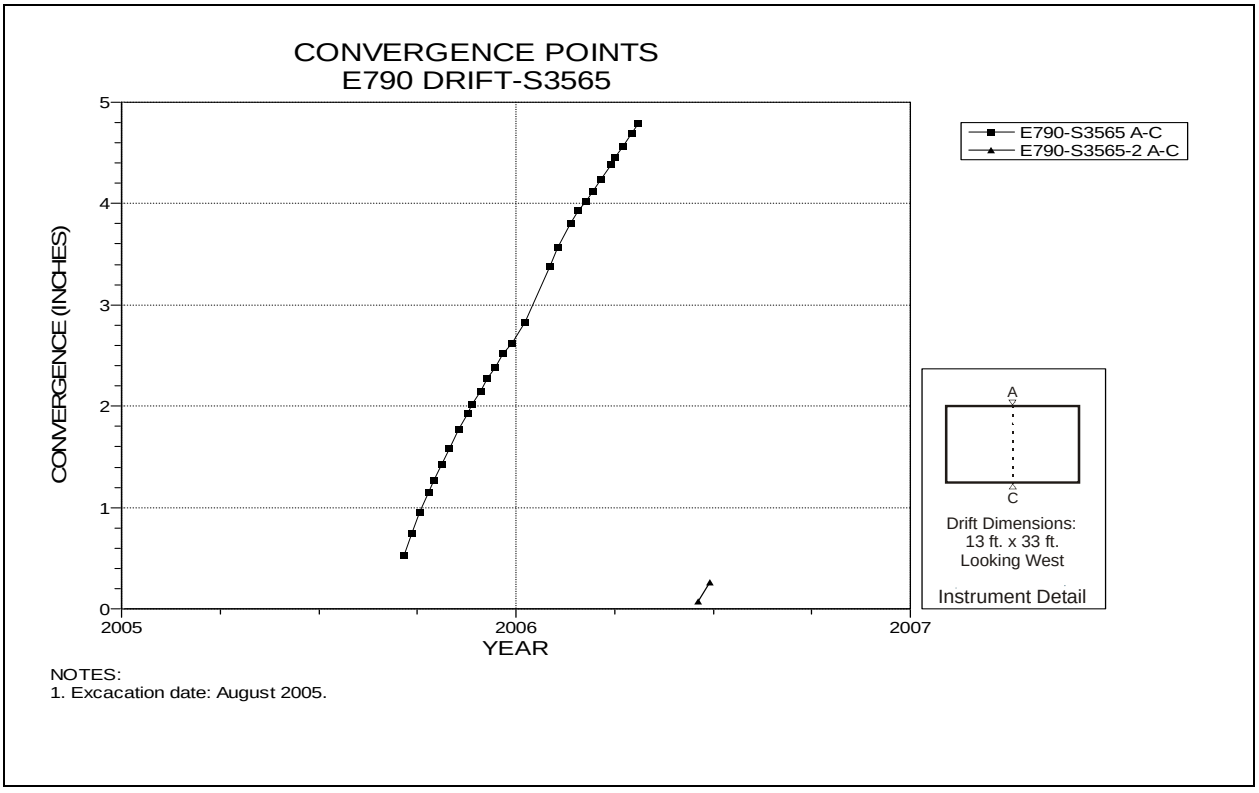


Figure 5-124 Convergence Point Array
Room 3, Panel 4 at S3565 – All Chords

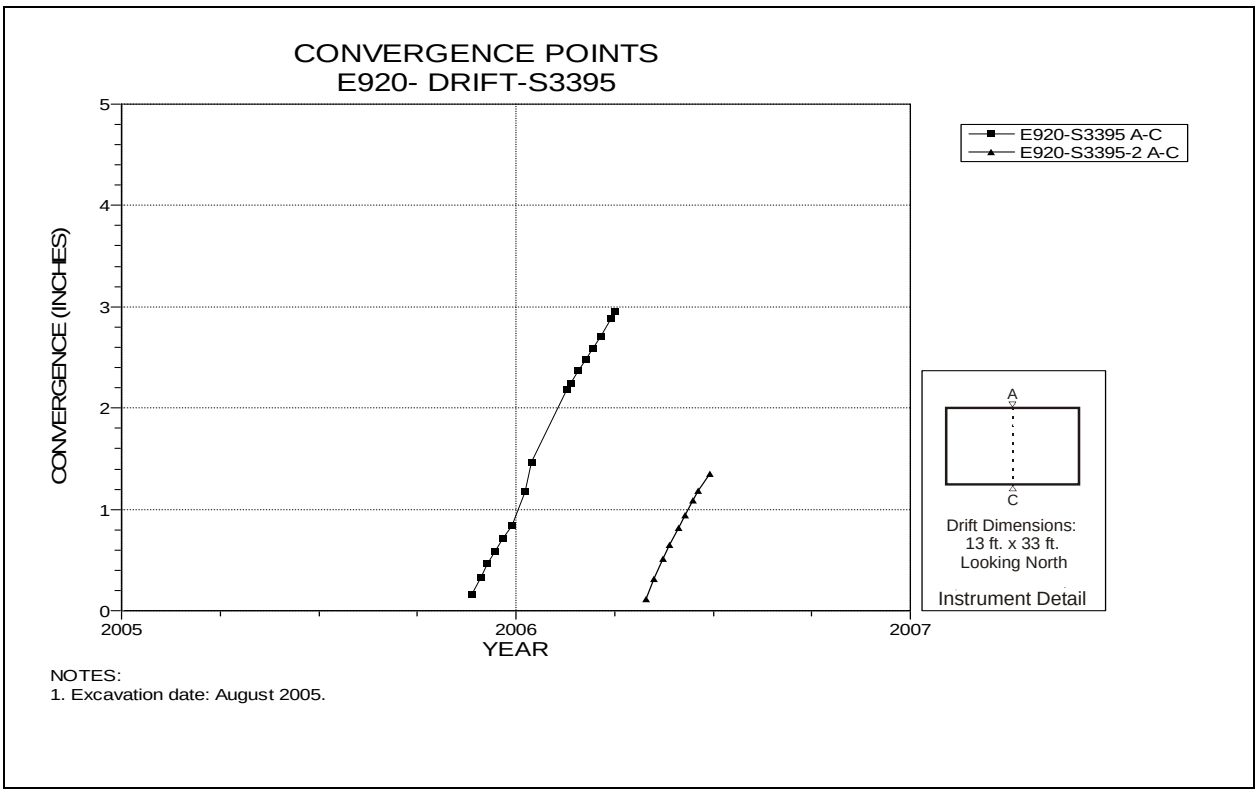


Figure 5-125 Convergence Point Array
Room 4, Panel 4 at S3395 – All Chords

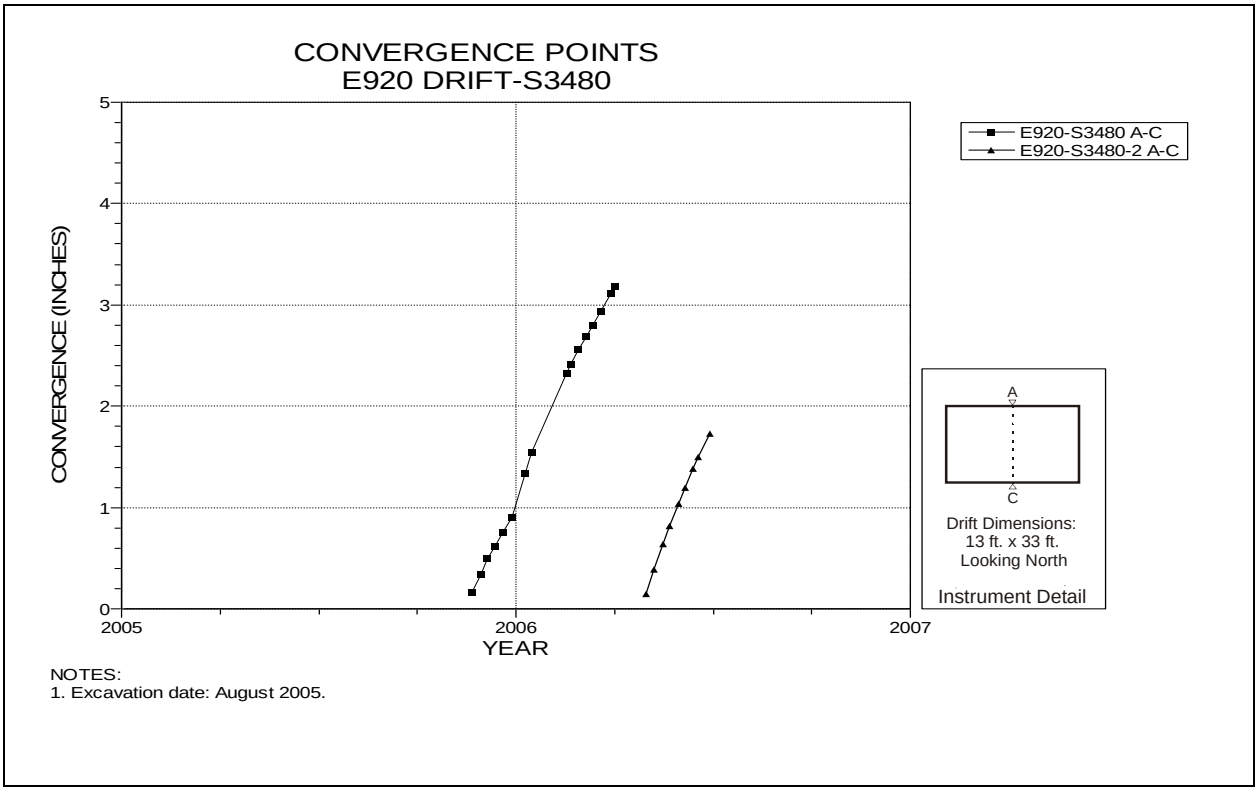


Figure 5-126 Convergence Point Array
Room 4, Panel 4 at S3480 – Room Center – All Chords

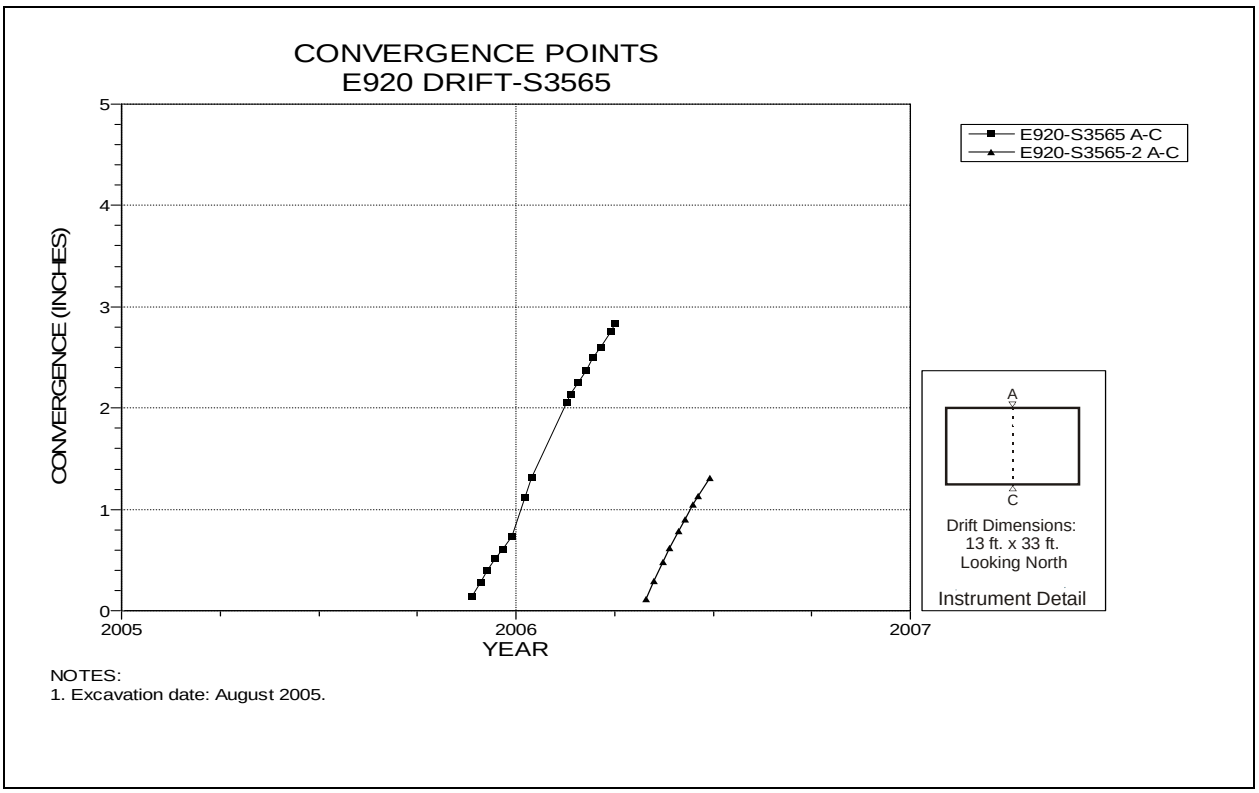


Figure 5-127 Convergence Point Array
Room 4, Panel 4 at S3565 – All Chords

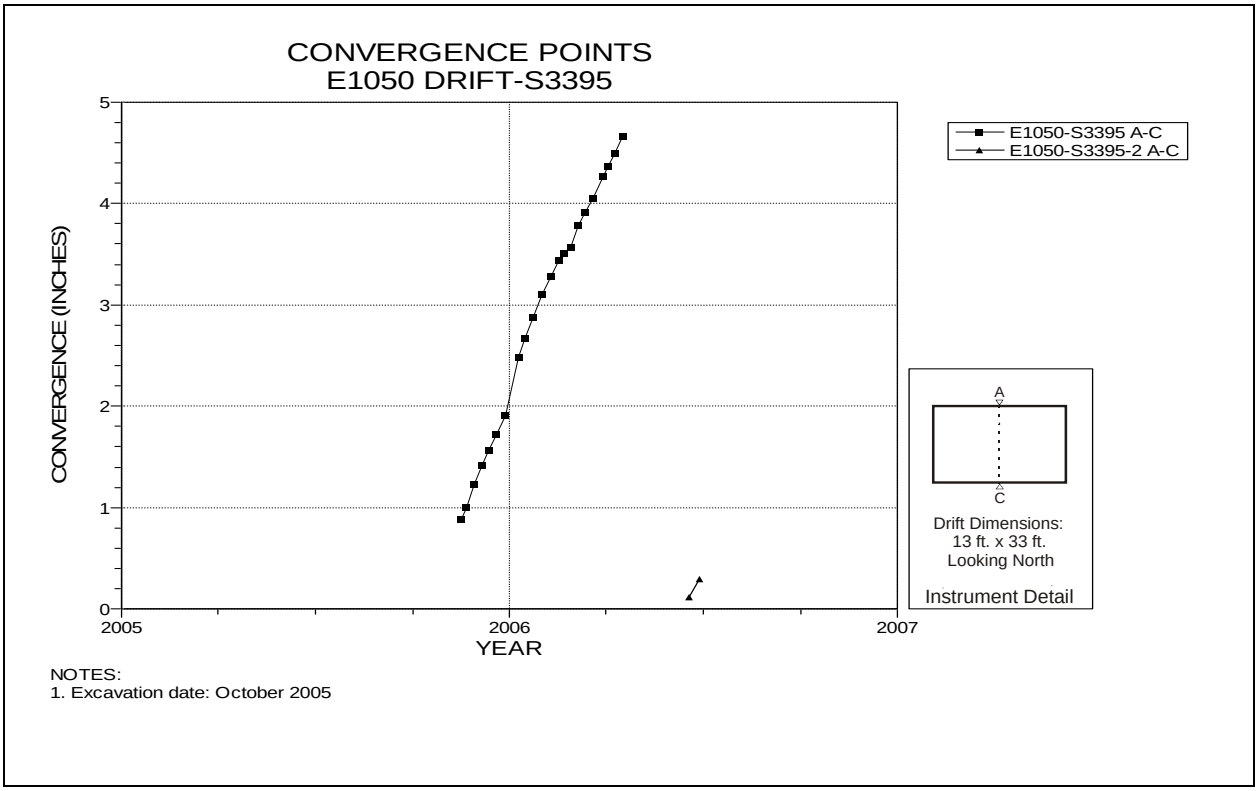


Figure 5-128 Convergence Point Array
Room 5, Panel 4 at S3395 – All Chords

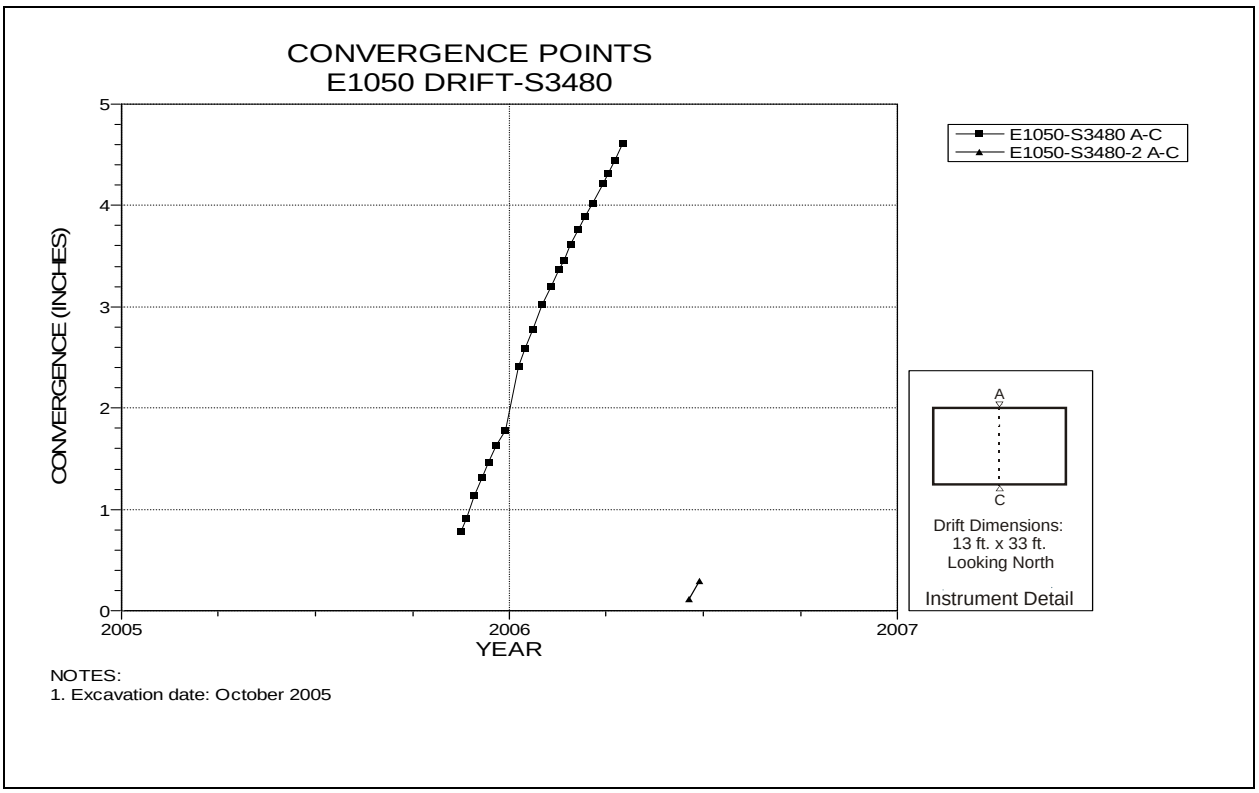


Figure 5-129 Convergence Point Array
Room 5, Panel 4 at S3480 – Room Center – All Chords

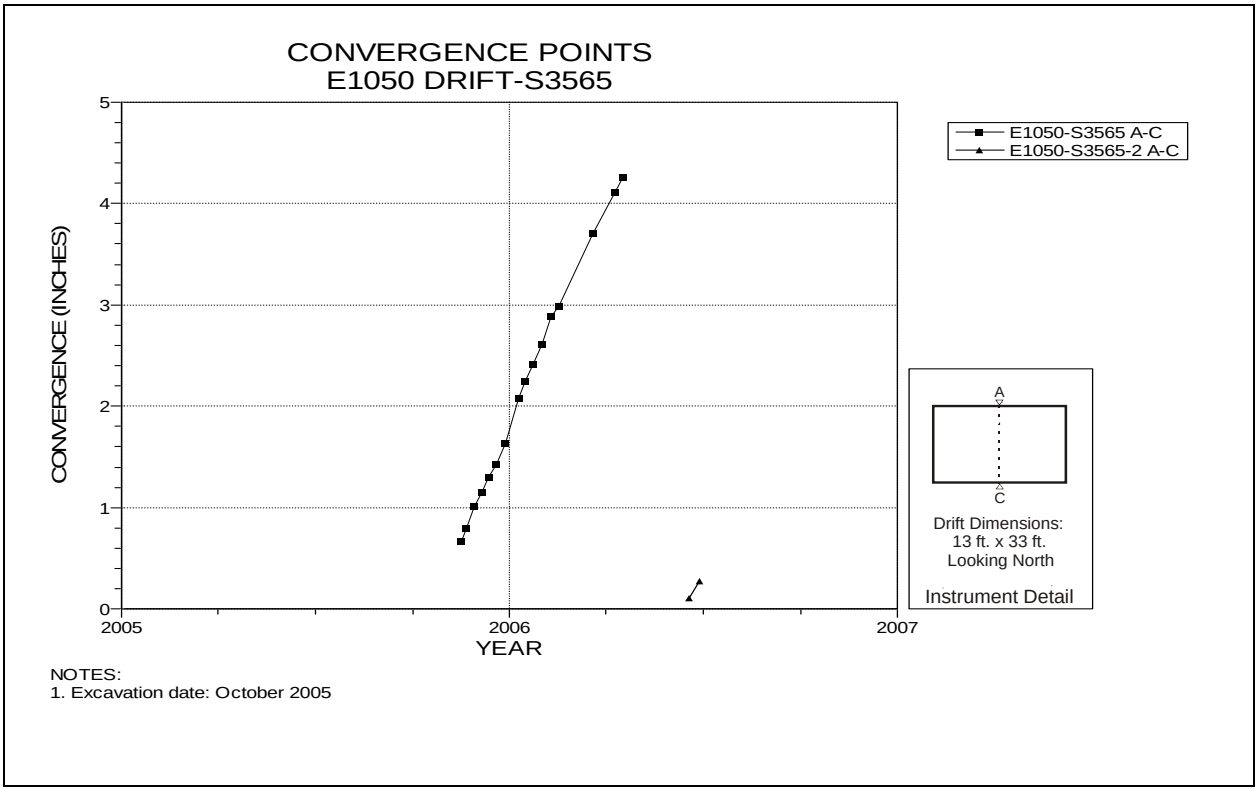


Figure 5-130 Convergence Point Array
Room 5, Panel 4 at S3565 – All Chords

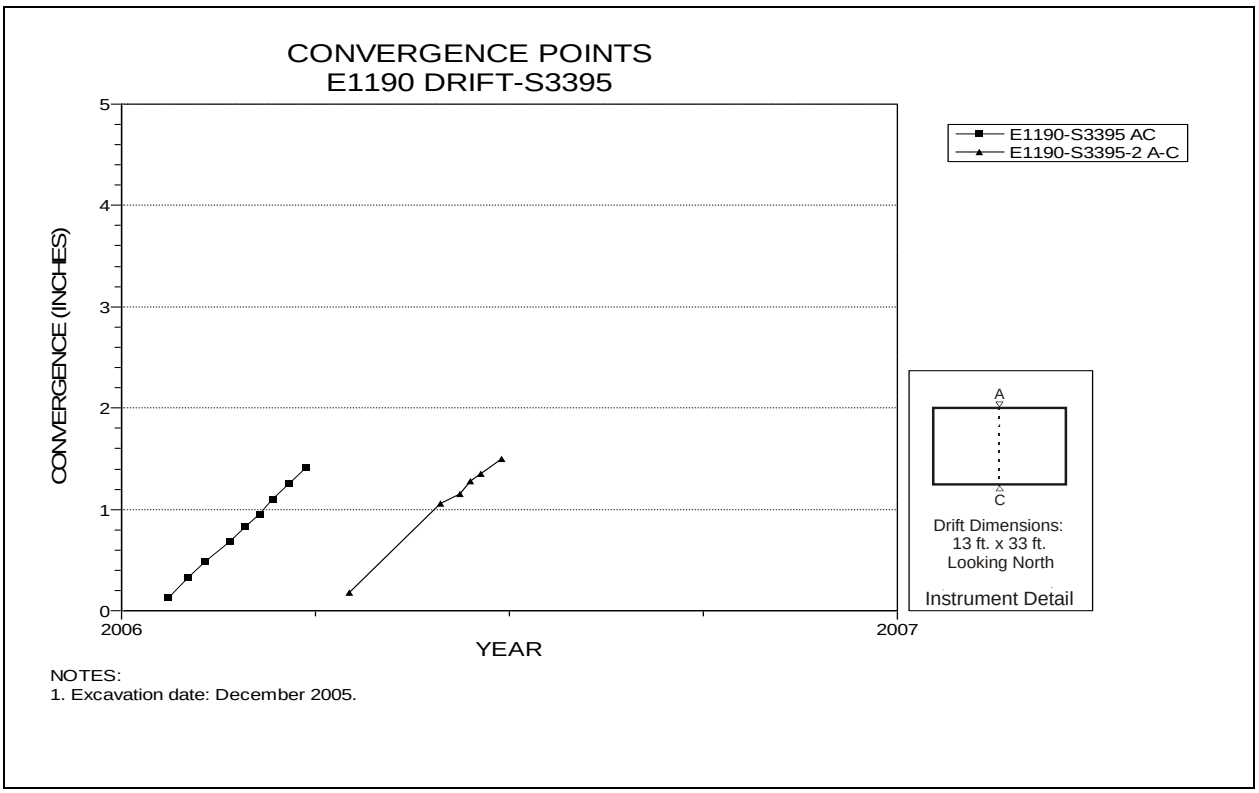


Figure 5-131 Convergence Point Array
Room 6, Panel 4 at S3395 – All Chords

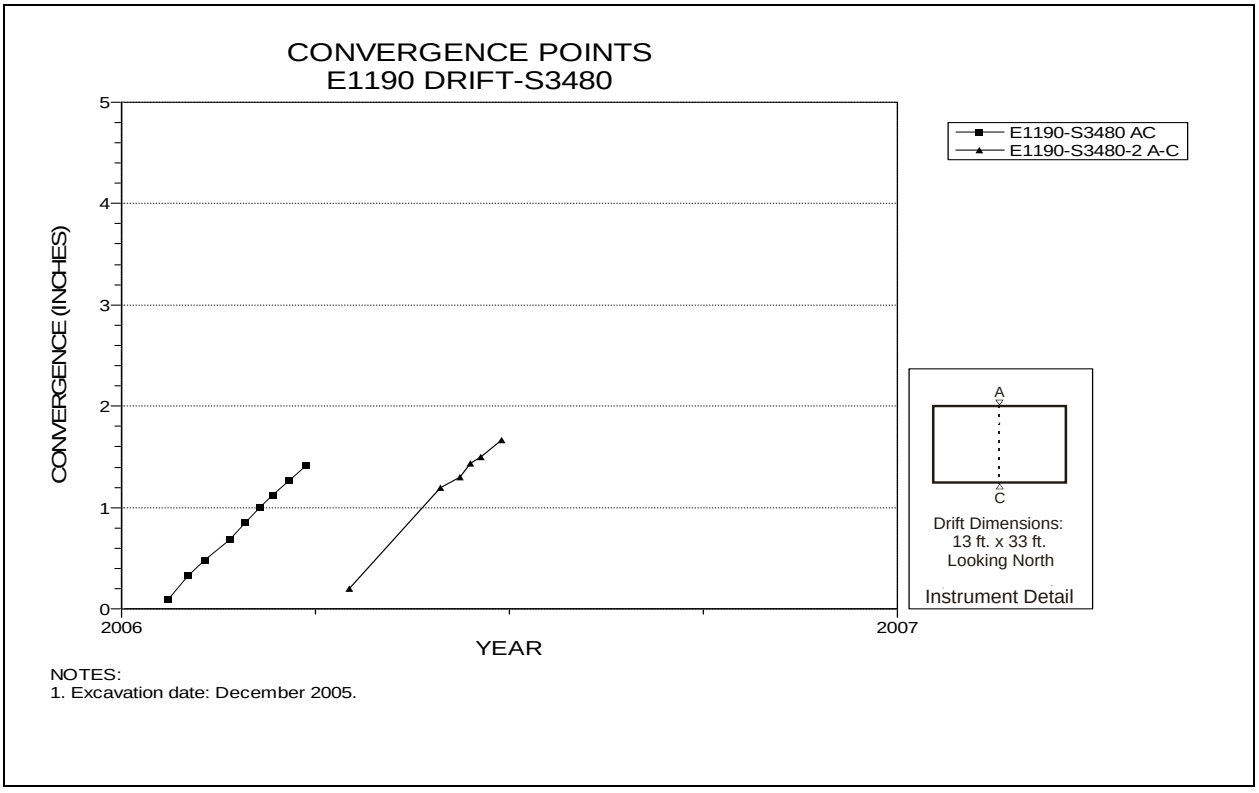


Figure 5-132 Convergence Point Array
Room 6, Panel 4 at S3480 – Room Center – All Chords

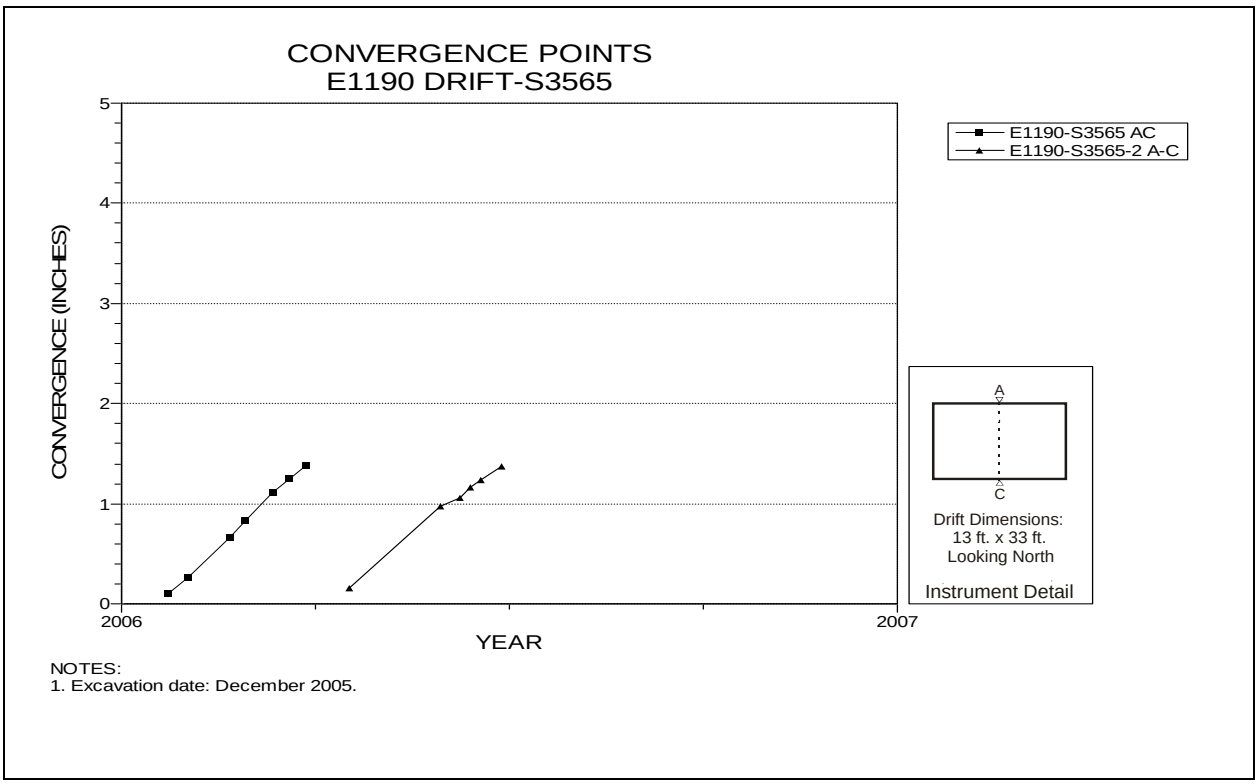


Figure 5-133 Convergence Point Array
Room 6, Panel 4 at S3565 – All Chords

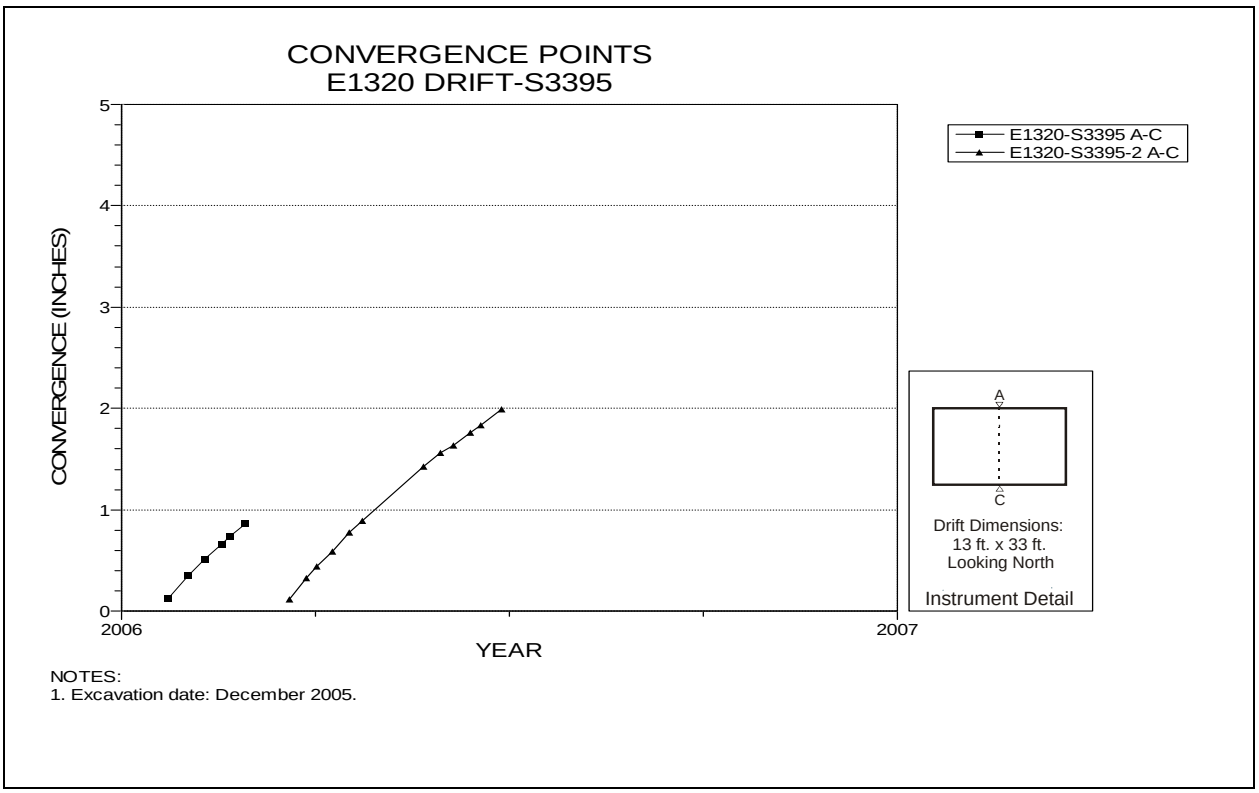


Figure 5-134 Convergence Point Array
Room 7, Panel 4 at S3395 – All Chords

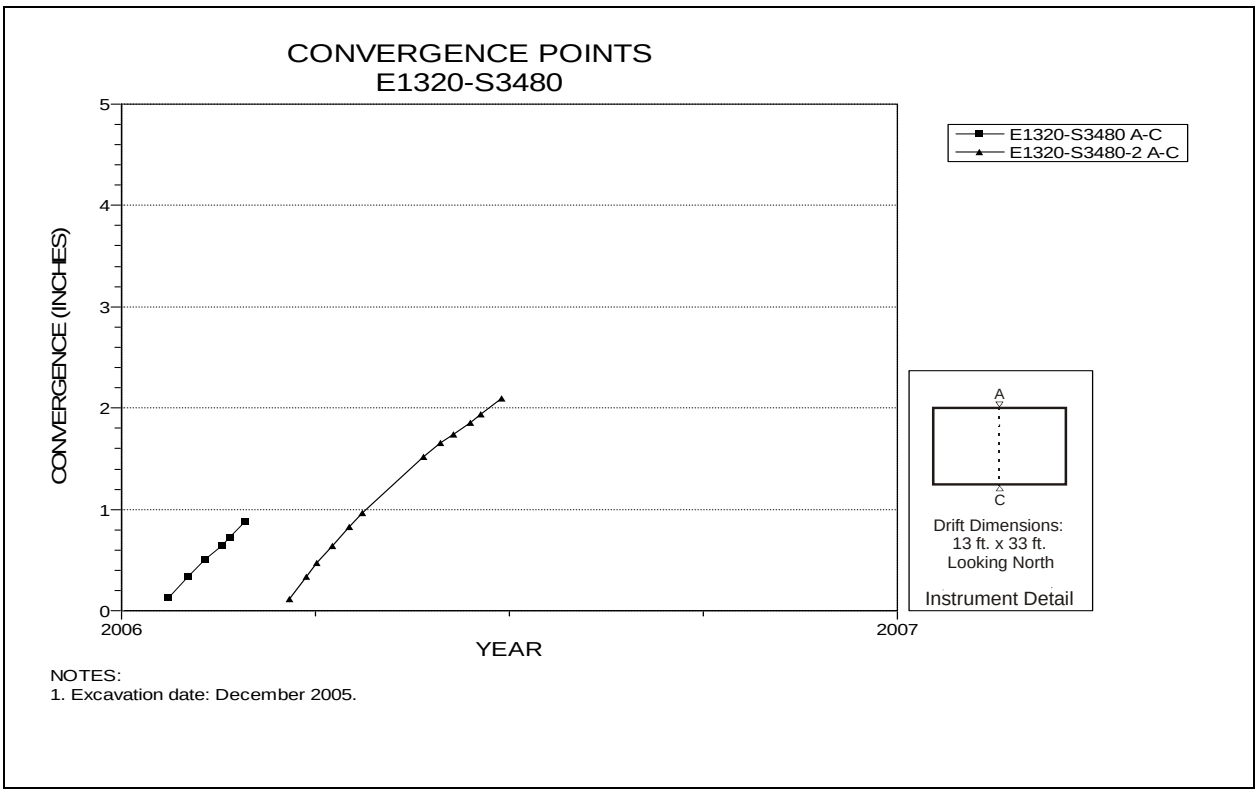


Figure 5-135 Convergence Point Array
Room 7, Panel 4 at S3480 – Room Center – All Chords

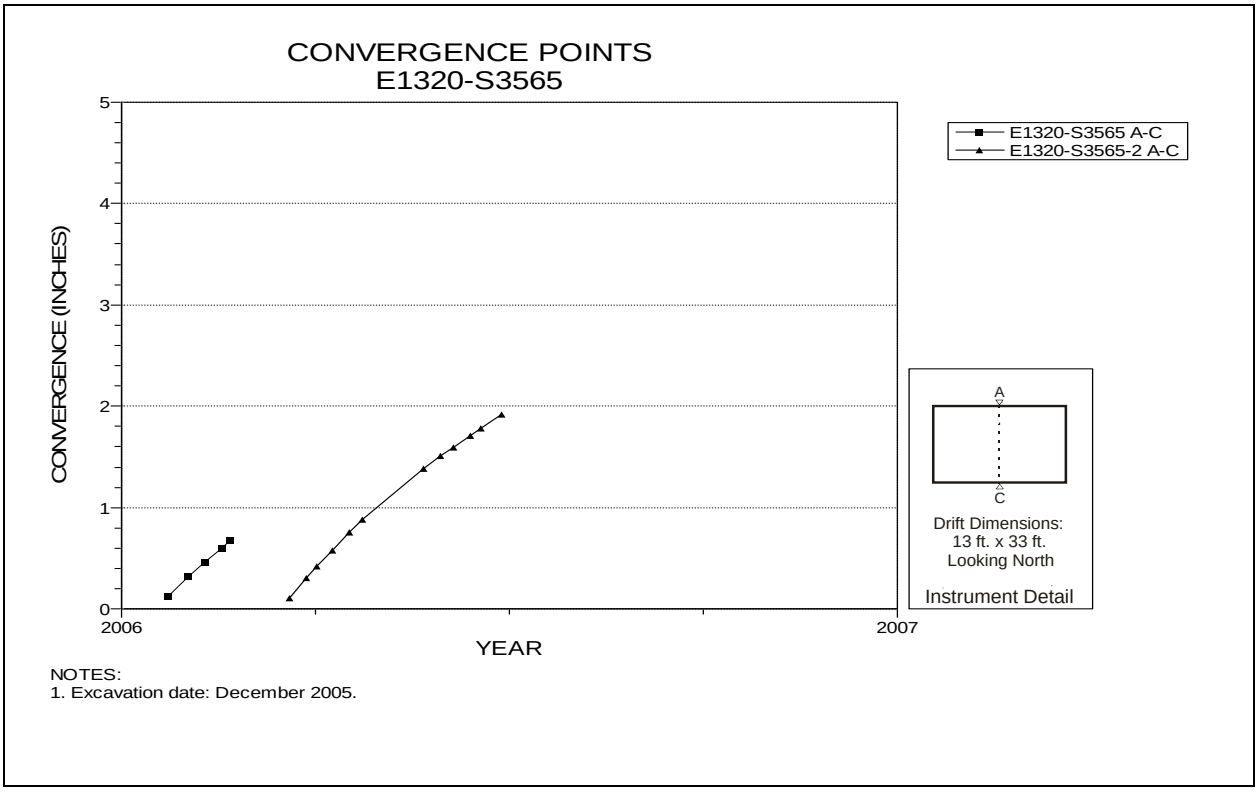


Figure 5-136 Convergence Point Array
Room 7, Panel 4 at S3565 – All Chords

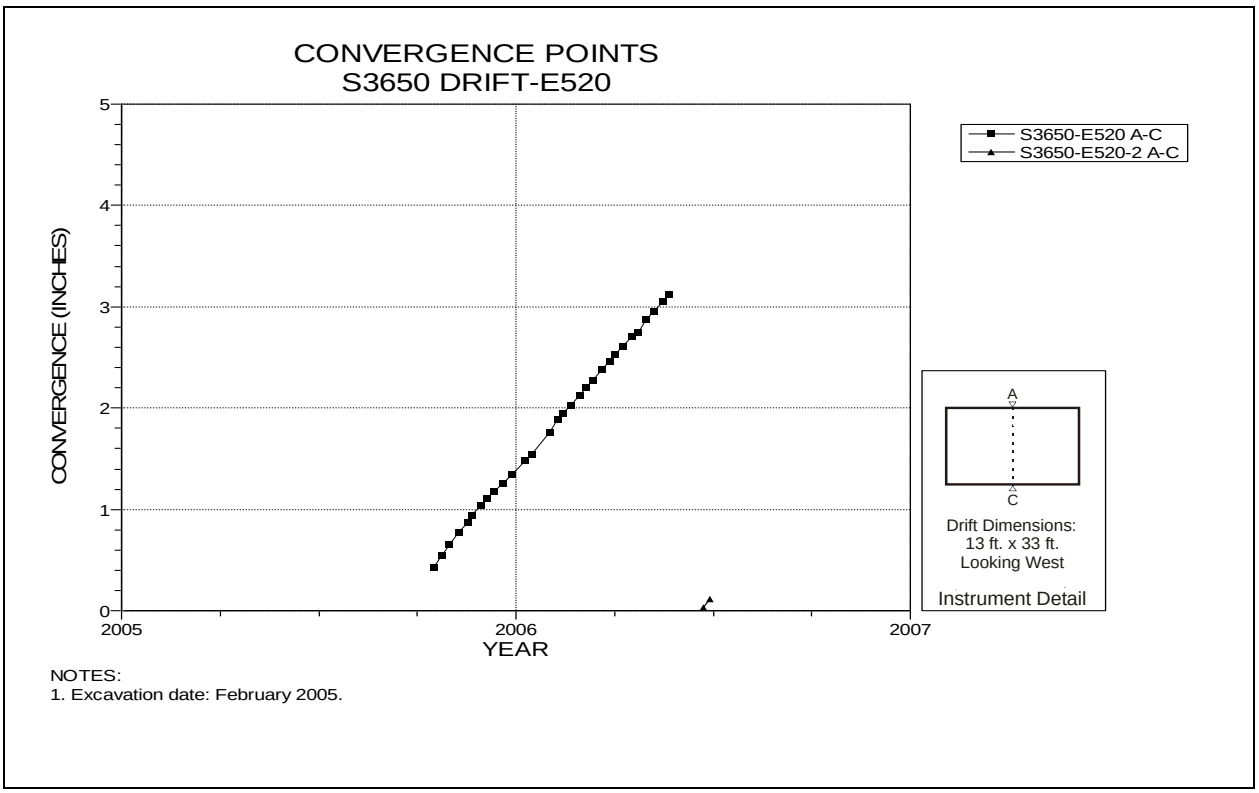


Figure 5-137 Convergence Point Array
S3650 Drift at E520 Drift Intersection (Room 1, Panel 4) – Roof to Floor

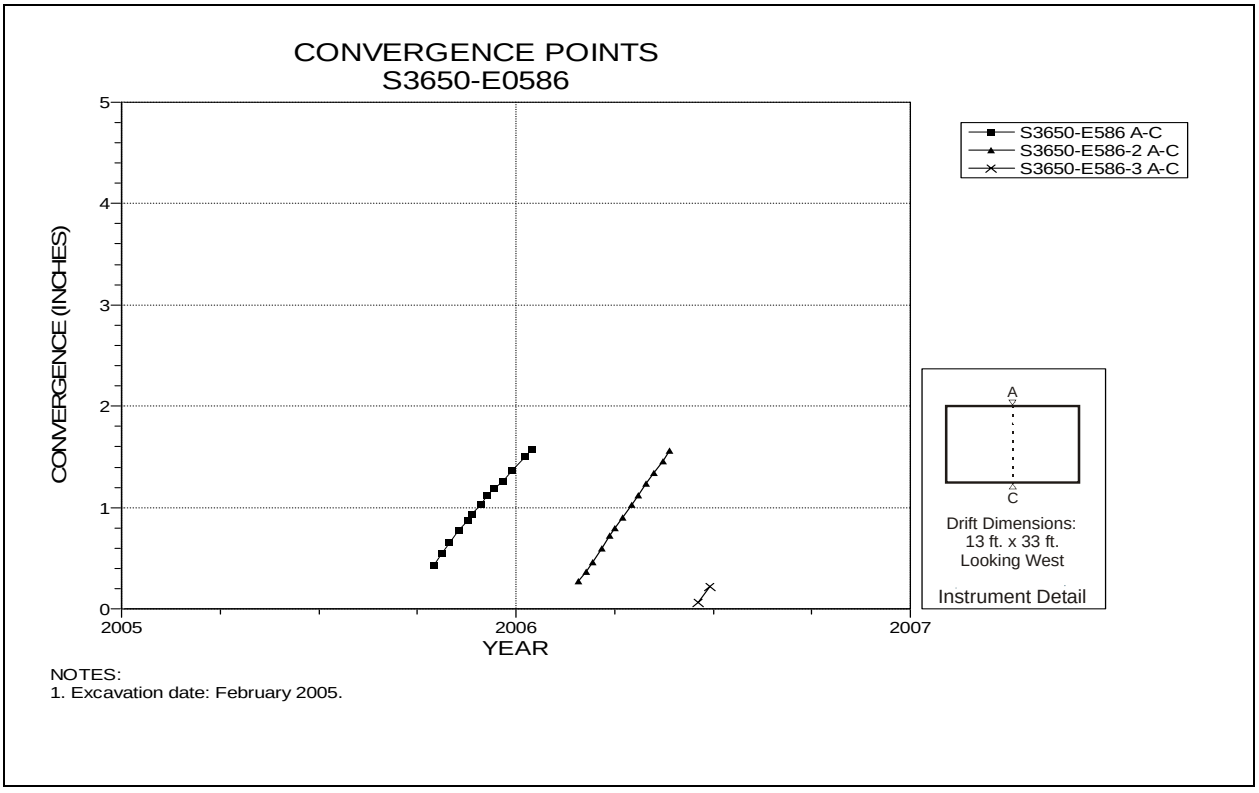


Figure 5-138 Convergence Point Array
S3650 Drift at E586 – Roof to Floor

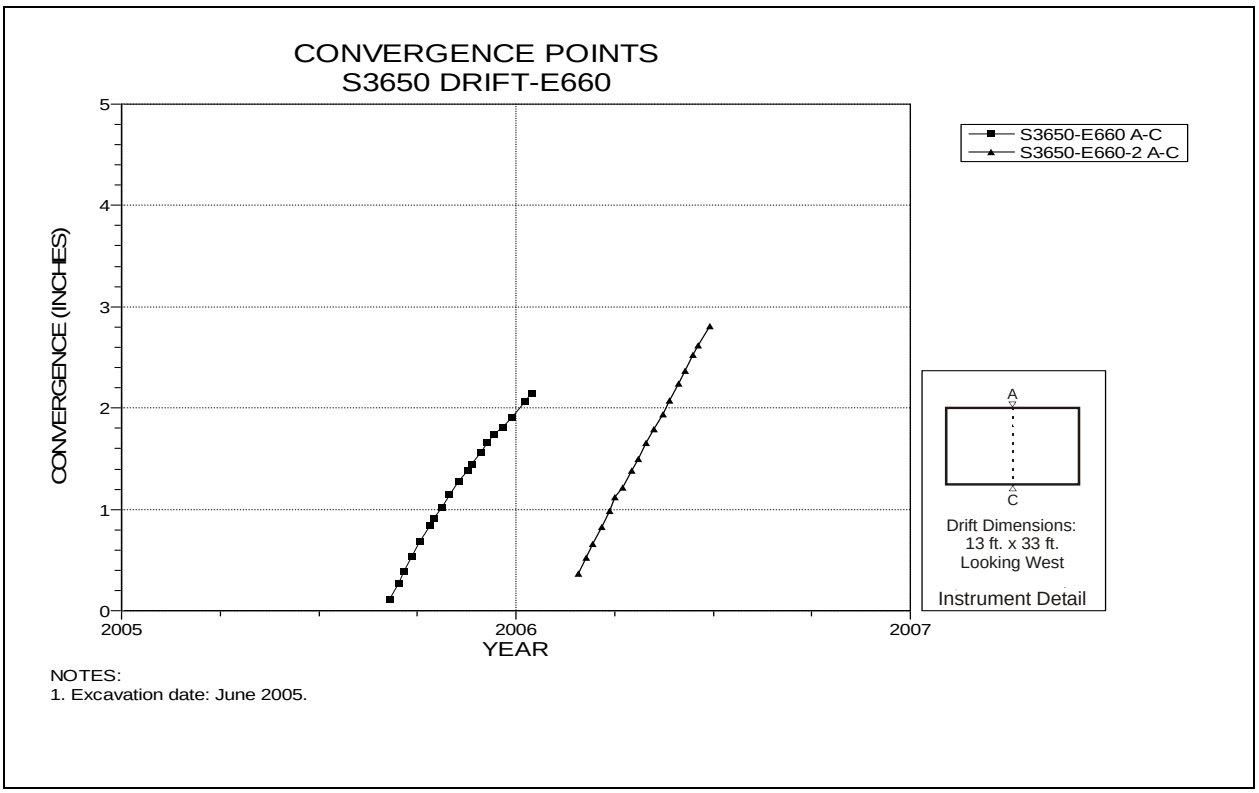


Figure 5-139 Convergence Point Array
S3650 Drift at E660 Drift Intersection (Room 2, Panel 4) – Roof to Floor

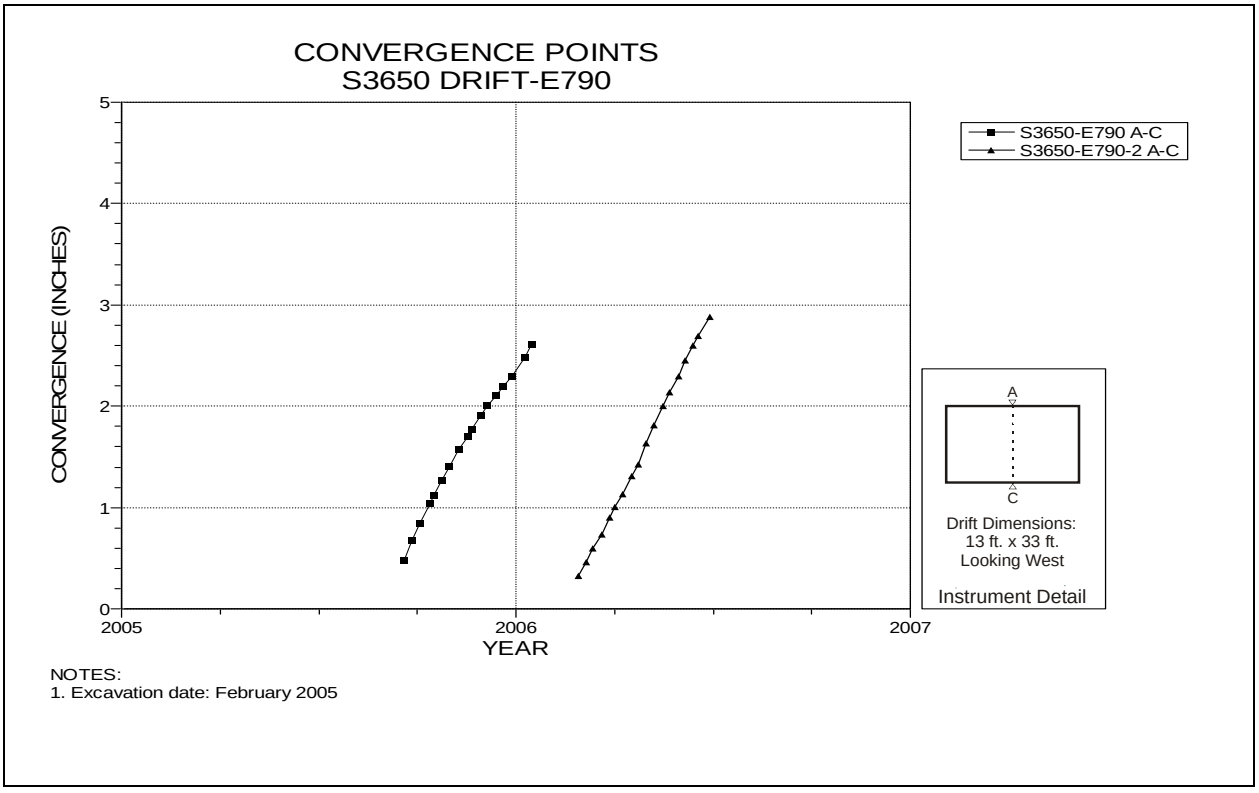


Figure 5-140 Convergence Point Array
S3650 Drift at E790 Drift Intersection (Room 3, Panel 4) – Roof to Floor

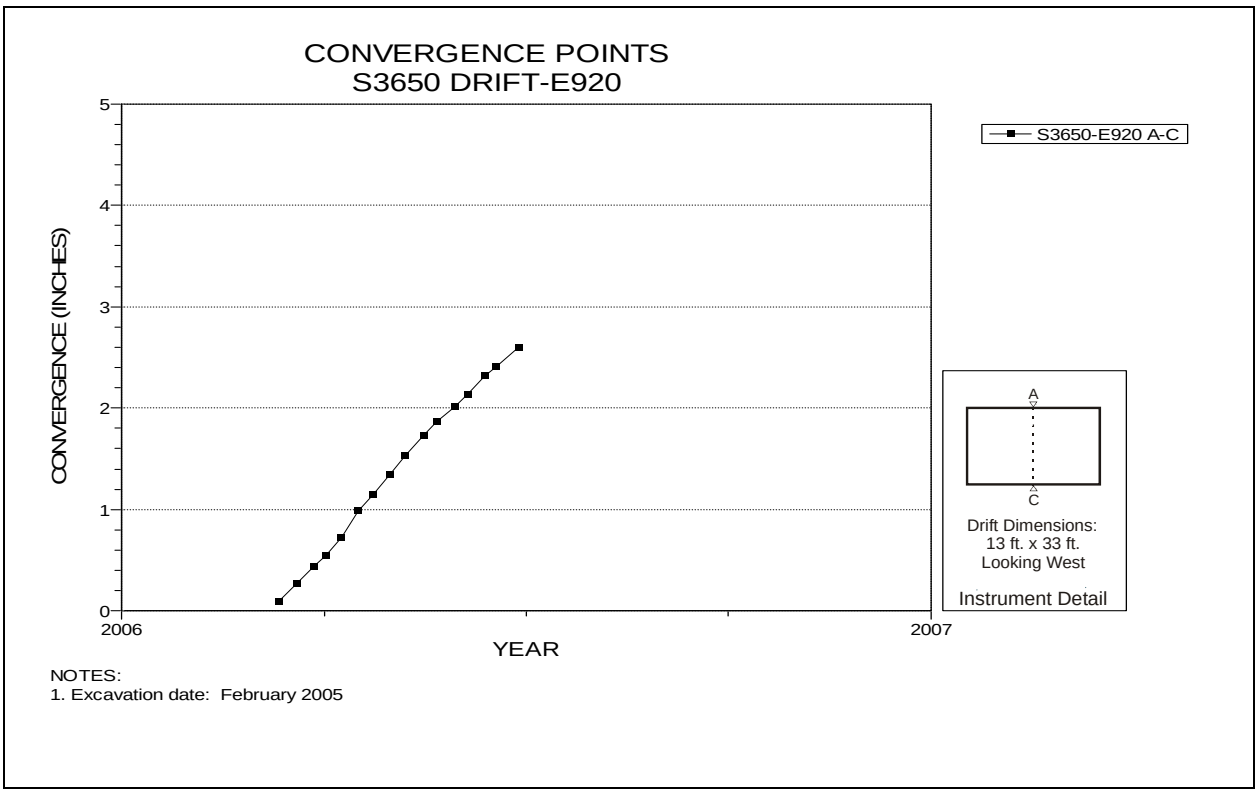


Figure 5-141 Convergence Point Array
S3650 Drift at E920 Drift Intersection (Room 4, Panel 4) – Roof to Floor

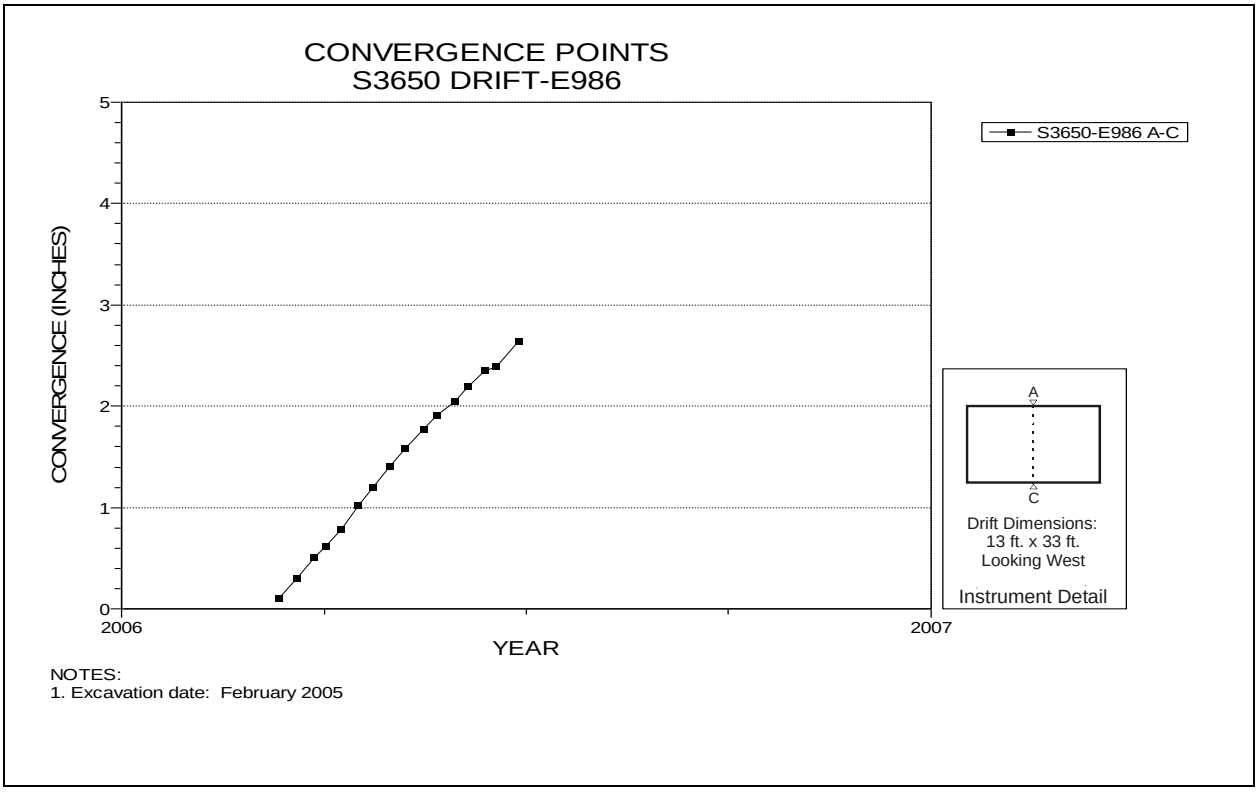


Figure 5-142 Convergence Point Array
S3650 Drift at E986 – Roof to Floor

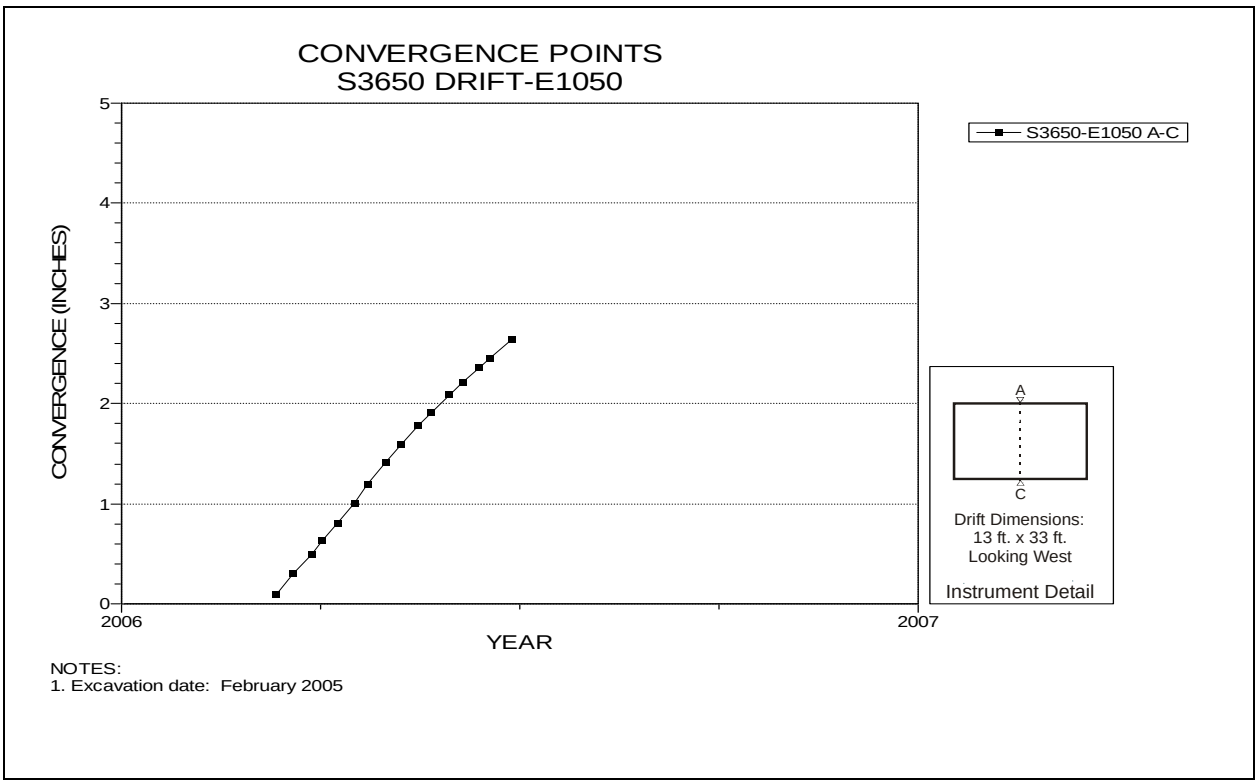


Figure 5-143 Convergence Point Array
S3650 Drift at E1050 Drift Intersection (Room 5, Panel 4) – Roof to Floor

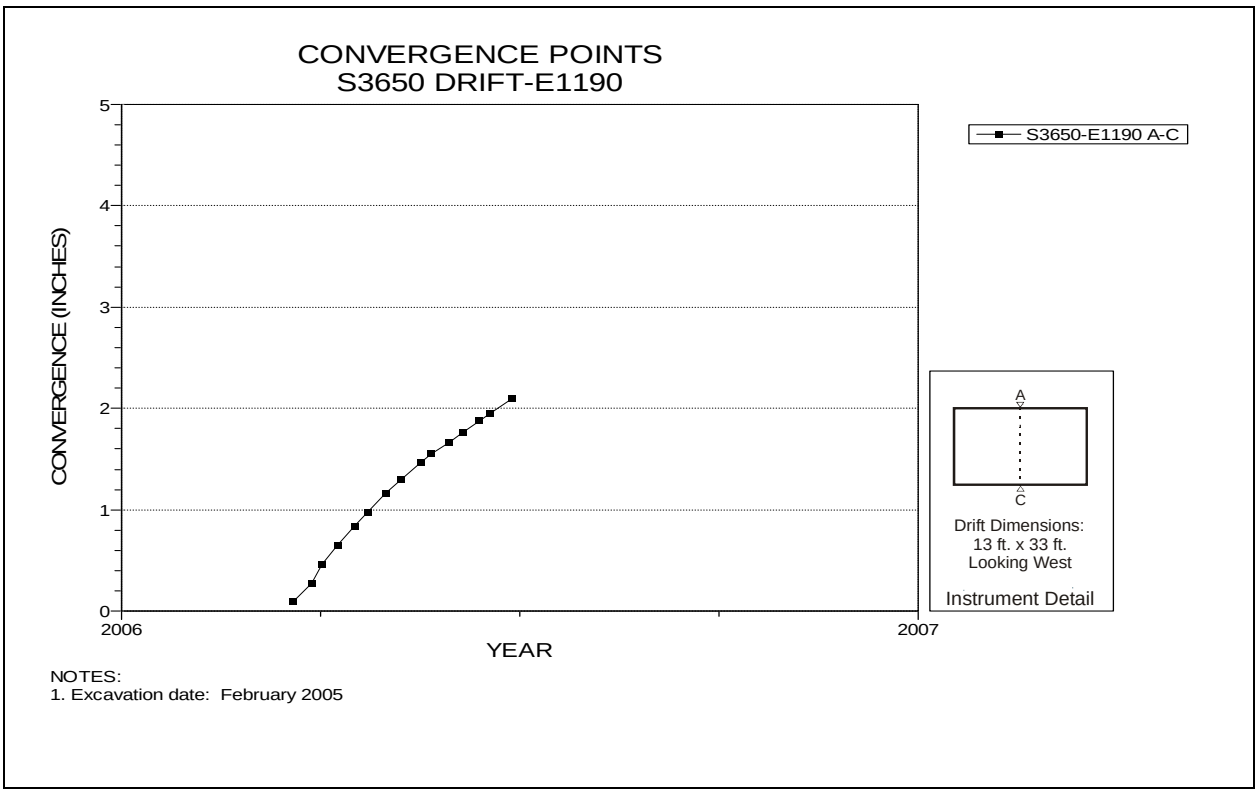


Figure 5-144 Convergence Point Array
S3650 Drift at E1190 Drift Intersection (Room 6, Panel 4) – Roof to Floor

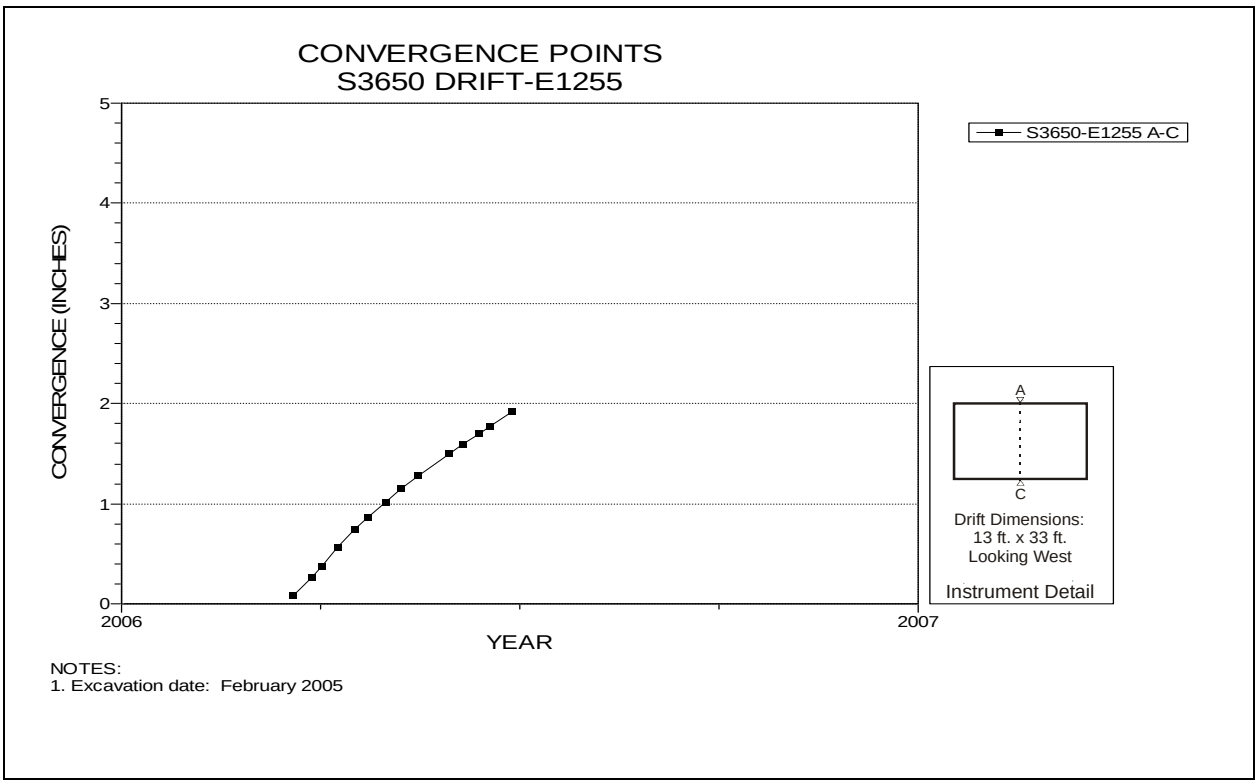


Figure 5-145 Convergence Point Array
S3650 Drift at E1255 – Roof to Floor

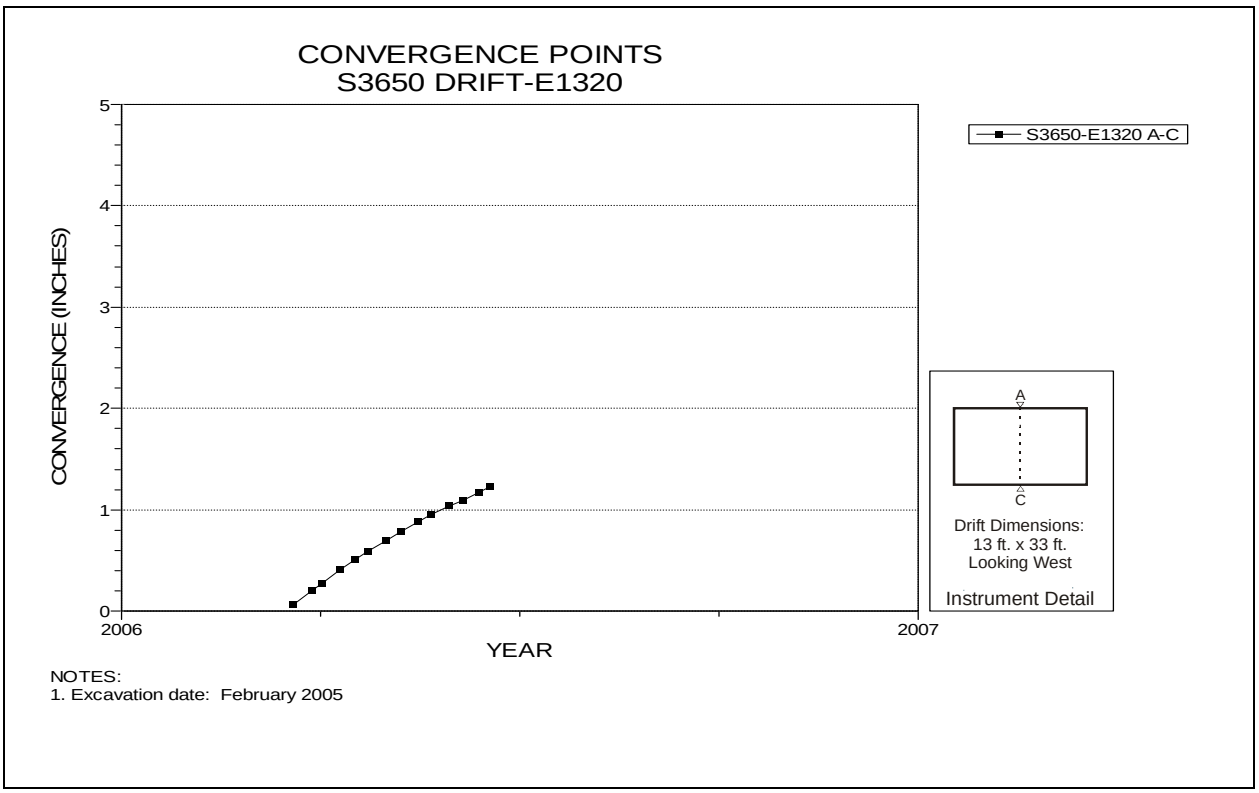


Figure 5-146 Convergence Point Array
S3650 Drift at E1320 Drift Intersection (Room 7, Panel 4) – Roof to Floor

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6.0 Geoscience Program Supporting Data

This chapter presents supporting data acquired as part of the Geoscience Program. It includes observations of clay seam displacements and other features in vertical observation holes, and fracture maps of excavation surfaces.

6.1 Borehole Inspections

This section presents a summary of the clay seam displacements (offsets) and fracture densities measured in observation boreholes located through the WIPP underground facility. Relative lateral displacement of rock strata above and below a clay layer is measured as offset within a borehole. Fracture density is a calculated parameter based on the number of fractures (separations) and fracture zones observed in an observation borehole. Fracture density is calculated to be the number of fractures plus twice the number of fracture zones in a roof beam divided by the thickness of the beam (in feet). Table 6-1 presents the observed offset data for boreholes, the observed fractures and fracture zones, and the calculated fracture densities. Table 6-2 is a summary of new boreholes drilled during this reporting period.

Fracture Mapping

This section presents graphical results of the fracture mapping done in Panels 3 and 4 of the Waste Disposal Area. Figures 6-1 through 6-22 are plan view fracture maps for the roof in these panels.

Stratigraphic Mapping

This section presents graphical results of stratigraphic mapping performed in Panel 3 of the Waste Disposal Area. Figures 6-23 through 6-60 are plan view stratigraphic maps for the north rib in S3310, the east rib in Rooms 1-7 and the south rib in S3650.

Table 6-1
Observation Borehole Fractures and Offset Data Summary

Hole	Location		Initial Inspection Date	Recent Inspection Date	Fr [1]	FZ [2]	Beam Height (ft)	Feature	Fracture Density [3]	Feature Depth (ft)	Feature Magnitude (in)	Hole Diameter (in)	Hole Closure (%)	Offset Rate (in/yr)
Panel 3 Room 1														
OH 401	S 2832	E 521	08/06/03	06/23/06			8.0	Separation		8.0	0.25	3.00	N/A	N/A
							6.2	Offset		6.2	0.13		4	0.04
					2	0	6.2	Clay H	0.32	6.2	0.38		N/A	N/A
							5.8	Offset		5.8	0.50		17	0.17
							5.8	Separation		5.8	0.13		N/A	N/A
							2.0	Offset		2.0	0.25		8	0.09
							2.0	Separation		2.0	1.00		N/A	N/A
OH 401-1	S 2830	E 520	02/14/05	06/23/06			8.0	Clay H		8.0	0.13	3.00	N/A	N/A
							6.5	Separation		6.5	1.00		N/A	N/A
							6.0	Offset		6.0	0.13		4	0.09
					1	0	6.0	Clay H	0.17	6.0	1.00		N/A	N/A
							2.0	Offset		2.0	0.13		4	0.09
							2.0	Separation		2.0	1.25		N/A	N/A
OH 402-1	S 2910	E 515	06/09/04	06/23/06			6.5	Offset		6.5	2.75	3.00	92	1.35
							6.5	Separation		6.5	0.50		N/A	N/A
							5.8	Offset		5.8	2.25		75	1.10
					2	0	5.8	Clay H	0.34	5.8	0.50		N/A	N/A
							1.6	Offset		1.6	1.00		33	0.49
							1.6	Separation		1.6	0.50		N/A	N/A
							0.6	Separation		0.6	0.25		N/A	N/A

[1] Fr = Number of fractures in immediate roof beam
[2] Number of fracture zones in immediate roof beam
[3] Fracture Density = (Fr + 2 FZ) / Beam Height

Table 6-1 (continued)
Observation Borehole Fractures and Offset Data Summary

Hole	Location		Initial Inspection Date	Recent Inspection Date	Fr [1]	FZ [2]	Beam Height (ft)	Feature	Fracture Density [3]	Feature Depth (ft)	Feature Magnitude (in)	Hole Diameter (in)	Hole Closure (%)	Offset Rate (in/yr)
Panel 3 Room 1 (continued)														
OH 402-2	S 2910	E 525	06/09/04	06/23/06			4.0	Offset		4.0	3.00	3.00	100	1.47
							3.8	Separation		3.8	2.00		N/A	N/A
							2.6	Offset		2.6	2.00		67	0.98
							2.6	Separation		2.6	1.50		N/A	N/A
							1.6	Offset		1.6	1.25		42	0.61
							1.6	Separation		1.6	2.00		N/A	N/A
OH 403	S 2998	E 520	06/09/04	06/23/06			7.1	Separation		7.1	0.38	3.00	N/A	N/A
							6.6	Separation		6.6	2.00		N/A	N/A
					3	0	5.9	Clay H	0.51	5.9	0.13		N/A	N/A
							5.8	Separation		5.8	0.13		N/A	N/A
							5.6	Separation		5.6	0.13		N/A	N/A
							1.9	Offset		1.9	0.75		25	0.37
							1.9	Separation		1.9	2.00		N/A	N/A
Panel 3 Room 2														
OH 404	S 2833	E 656	08/06/03	06/23/06			8.0	Separation		8.0	0.25	3.00	N/A	N/A
					5	0	6.2	Clay H	0.81	6.2	0.50		N/A	N/A
							5.6	Offset		5.6	1.50		50	0.52
							5.6	Separation		5.6	0.75		N/A	N/A
							5.4	Separation		5.4	0.13		N/A	N/A
							5.2	Offset		5.2	0.75		25	0.26
							5.2	Separation		5.2	0.13		N/A	N/A
							4.0	Separation		4.0	0.13		N/A	N/A
							1.7	Offset		1.7	0.75		25	0.26
							1.7	Separation		1.7	1.00		N/A	N/A
OH 405	S 2916	E 657	08/06/03	06/23/06			6.1	Offset		6.1	0.75	3.00	25	0.26
					3	0	6.1	Clay H	0.49	6.1	1.00		N/A	N/A
							5.8	Separation		5.8	0.13		4	0.04
							5.4	Offset		5.4	0.75		N/A	N/A
							5.4	Separation		5.4	0.25		N/A	N/A
							1.5	Offset		1.5	0.50		17	0.17
							1.5	Separation		1.5	0.13		N/A	N/A

[1] Fr = Number of fractures in immediate roof beam

[2] Number of fracture zones in immediate roof beam

[3] Fracture Density = (Fr + 2 FZ) / Beam Height

Table 6-1 (continued)
Observation Borehole Fractures and Offset Data Summary

Hole	Location		Initial Inspection Date	Recent Inspection Date	Fr [1]	FZ [2]	Beam Height (ft)	Feature	Fracture Density [3]	Feature Depth (ft)	Feature Magnitude (in)	Hole Diameter (in)	Hole Closure (%)	Offset Rate (in/yr)
Panel 3 Room 2 (continued)														
OH 406	S 2998	E 656	08/06/03	06/23/06			8.1	Separation		8.1	0.25	3.00	N/A	N/A
							7.5	Separation		7.5	0.25		N/A	N/A
							6.8	Separation		6.8	0.50		N/A	N/A
							6.3	Offset		6.3	1.00		33	0.35
							6.3	Separation		6.3	0.25		N/A	N/A
					6	0	6.0	Clay H	1.00	6.0	0.25		N/A	N/A
							5.9	Separation		5.9	0.13		N/A	N/A
							5.8	Separation		5.8	0.13		N/A	N/A
							5.6	Offset		5.6	0.75		25	0.26
							5.6	Separation		5.6	0.13		N/A	N/A
							3.0	Separation		3.0	0.13		N/A	N/A
							2.0	Offset		2.0	0.50		17	0.17
							2.0	Separation		2.0	2.00		N/A	N/A
							0.5	Separation		0.5	0.13		N/A	N/A
Panel 3 Room 3														
OH 407	S 2830	E 790	08/06/03	03/28/06			7.7	Separation		7.7	0.13	3.00	N/A	N/A
							7.1	Separation		7.1	0.13		N/A	N/A
							6.7	Separation		6.7	0.50		N/A	N/A
					5	0	6.2	Clay H	0.81	6.2	0.50		N/A	N/A
							5.9	Separation		5.9	0.25		N/A	N/A
							5.7	Separation		5.7	0.25		N/A	N/A
							5.3	Separation		5.3	0.13		N/A	N/A
							4.4	Separation		4.4	0.13		N/A	N/A
							1.7	Offset		1.7	0.13		4	0.05
							1.7	Separation		1.7	0.25		N/A	N/A
OH 408	S 2910	E 790	08/06/03	03/14/06			7.2	Separation		7.2	1.50	3.00	N/A	N/A
					4	0	6.0	Clay H	0.67	6.0	0.38		N/A	N/A
							5.5	Separation		5.5	1.00		N/A	N/A
							5.2	Offset		5.2	0.13		4	0.05
							5.2	Separation		5.2	0.38		N/A	N/A
							1.9	Separation		1.9	2.25		N/A	N/A
							1.5	Offset		1.5	0.13		4	0.05
							1.5	Separation		1.5	0.13		N/A	N/A

[1] Fr = Number of fractures in immediate roof beam

[2] Number of fracture zones in immediate roof beam

[3] Fracture Density = (Fr + 2 FZ) / Beam Height

Table 6-1 (continued)
Observation Borehole Fractures and Offset Data Summary

Hole	Location		Initial Inspection Date	Recent Inspection Date	Fr [1]	FZ [2]	Beam Height (ft)	Feature	Fracture Density [3]	Feature Depth (ft)	Feature Magnitude (in)	Hole Diameter (in)	Hole Closure (%)	Offset Rate (in/yr)
Panel 3 Room 3 (continued)														
OH 409	S 2990	E 790	08/06/03	03/14/06			7.7	Separation		7.7	0.38	3.00	N/A	N/A
							6.1	Separation		6.1	0.13		N/A	N/A
							5.9	Separation		5.9	0.13		N/A	N/A
							5.7	Offset		5.7	0.13		4	0.05
					6	0	5.7	Clay H	1.05	5.7	0.50		N/A	N/A
							5.6	Separation		5.6	0.13		N/A	N/A
							5.5	Separation		5.5	0.13		N/A	N/A
							5.3	Separation		5.3	0.13		N/A	N/A
							5.2	Offset		5.2	0.25		8	0.10
							5.2	Separation		5.2	0.13		N/A	N/A
							4.2	Separation		4.2	0.13		N/A	N/A
							1.0	Separation		1.0	0.13		N/A	N/A
Panel 3 Room 4														
OH 410	S 2835	E 924	09/04/03	12/20/05			7.0	Separation		7.0	0.38	3.00	N/A	N/A
							6.6	Offset		6.6	1.50		50	0.65
							6.6	Separation		6.6	0.38		N/A	N/A
							6.4	Offset		6.4	0.75		25	0.33
					2	0	6.4	Clay H	0.31	6.4	0.13		N/A	N/A
							5.9	Separation		5.9	0.25		N/A	N/A
							1.7	Separation		1.7	0.13		N/A	N/A
OH 411	S 2910	E 920	09/04/03	12/20/05			8.0	Separation		8.0	0.13	3.00	N/A	N/A
					9	0	6.2	Clay H	1.45	6.2	1.50		N/A	N/A
							6.0	Separation		6.0	0.13		N/A	N/A
							5.9	Separation		5.9	0.13		N/A	N/A
							5.8	Separation		5.8	0.13		N/A	N/A
							5.5	Separation		5.5	0.13		N/A	N/A
							5.3	Separation		5.3	0.13		N/A	N/A
							4.9	Separation		4.9	0.13		N/A	N/A
							4.5	Separation		4.5	0.06		N/A	N/A
							2.9	Separation		2.9	0.13		N/A	N/A
							1.7	Offset		1.7	1.00		33	0.44
							1.7	Separation		1.7	1.00		N/A	N/A

[1] Fr = Number of fractures in immediate roof beam

[2] Number of fracture zones in immediate roof beam

[3] Fracture Density = (Fr + 2 FZ) / Beam Height

Table 6-1 (continued)
Observation Borehole Fractures and Offset Data Summary

Hole	Location		Initial Inspection Date	Recent Inspection Date	Fr [1]	FZ [2]	Beam Height (ft)	Feature	Fracture Density [3]	Feature Depth (ft)	Feature Magnitude (in)	Hole Diameter (in)	Hole Closure (%)	Offset Rate (in/yr)
Panel 3 Room 4 (continued)														
OH 412	S 3014	E 923	09/04/03	12/20/05			7.1	Separation		7.1	0.13	3.00	N/A	N/A
							6.9	Separation		6.9	0.50		N/A	N/A
							6.4	Offset		6.4	0.25		8	0.11
							6.4	Separation		6.4	0.38		N/A	N/A
					5	0	6.1	Clay H	0.82	6.1	0.38		N/A	N/A
							5.9	Separation		5.9	0.13		N/A	N/A
							5.6	Separation		5.6	0.13		N/A	N/A
							5.3	Separation		5.3	0.13		N/A	N/A
							3.9	Separation		3.9	0.06		N/A	N/A
							2.0	Separation		2.0	0.75		N/A	N/A
	Panel 3 South 2750													
OH 438	S 2748	E 526	08/08/03	03/17/06			5.6	Offset		5.6	2.00	3.00	67	0.77
					2	0	5.6	Clay H	0.36	5.6	1.00		N/A	N/A
							5.2	Offset		5.2	0.75		25	0.29
							5.2	Separation		5.2	0.25		N/A	N/A
							1.0	Offset		1.0	0.06		2	0.02
							1.0	Separation		1.0	0.50		N/A	N/A
OH 428	S 2748	E 654	08/06/03	03/17/06			6.3	Separation		6.3	0.50	3.00	N/A	N/A
							6.2	Separation		6.2	0.50		N/A	N/A
							5.8	Offset		5.8	2.50		83	0.96
					5	0	5.8	Clay H	0.81	5.8	0.75		N/A	N/A
							5.5	Separation		5.5	0.25		N/A	N/A
							5.1	Separation		5.1	0.25		N/A	N/A
							4.8	Separation		4.8	0.25		N/A	N/A
							4.5	Separation		4.5	0.13		N/A	N/A
							1.4	Offset		1.4	0.25		8	0.10
							1.4	Separation		1.4	0.38		N/A	N/A

[1] Fr = Number of fractures in immediate roof beam

[2] Number of fracture zones in immediate roof beam

[3] Fracture Density = (Fr + 2 FZ) / Beam Height

Table 6-1 (continued)
Observation Borehole Fractures and Offset Data Summary

Hole	Location		Initial Inspection Date	Recent Inspection Date	Fr [1]	FZ [2]	Beam Height (ft)	Feature	Fracture Density [3]	Feature Depth (ft)	Feature Magnitude (in)	Hole Diameter (in)	Hole Closure (%)	Offset Rate (in/yr)
Panel 3 South 2750 (continued)														
OH 439	S 2750	E 789	08/08/03	03/17/06			8.0	Separation		8.0	0.13	3.00	N/A	N/A
							6.5	Offset		6.5	2.00		67	0.77
							6.5	Separation		6.5	1.50		N/A	N/A
					1	0	6.0	Clay H	0.17	6.0	0.38		N/A	N/A
							1.7	Offset		1.7	0.75		25	0.29
							1.7	Separation		1.7	1.50		N/A	N/A
OH 429	S 2748	E 924	08/09/03	09/26/05			7.9	Offset		7.9	0.50	3.00	17	0.23
							7.9	Separation		7.9	1.25		N/A	N/A
							6.9	Separation		6.9	0.06		N/A	N/A
							6.8	Offset		6.8	0.25		8	0.12
							6.8	Separation		6.8	0.50		N/A	N/A
							6.3	Separation		6.3	0.50		N/A	N/A
							6.1	Separation		6.1	0.06		N/A	N/A
					9	0	6.0	Clay H	1.50	6.0	0.06		N/A	N/A
							5.9	Separation		5.9	0.06		N/A	N/A
							5.8	Separation		5.8	0.06		N/A	N/A
							5.6	Separation		5.6	0.38		N/A	N/A
							5.5	Separation		5.5	0.13		N/A	N/A
							5.4	Separation		5.4	0.13		N/A	N/A
							5.0	Separation		5.0	0.06		N/A	N/A
							4.9	Separation		4.9	0.06		N/A	N/A
							2.5	Offset		2.5	0.13		4	0.06
							2.5	Separation		2.5	1.50		N/A	N/A
							1.5	Separation		1.5	0.06		N/A	N/A

[1] Fr = Number of fractures in immediate roof beam

[2] Number of fracture zones in immediate roof beam

[3] Fracture Density = (Fr + 2 FZ) / Beam Height

Table 6-1 (continued)
Observation Borehole Fractures and Offset Data Summary

Hole	Location	Initial Inspection Date	Recent Inspection Date	Fr [1]	FZ [2]	Beam Height (ft)	Feature	Fracture Density [3]	Feature Depth (ft)	Feature Magnitude (in)	Hole Diameter (in)	Hole Closure (%)	Offset Rate (in/yr)
Panel 3 South 2750 (continued)													
OH 496	S 2750 E 977	02/05/04	09/26/05			8.3	Separation		8.3	1.50	3.00	N/A	N/A
				18	0	7.2	Clay H	2.50	7.2	0.50		N/A	N/A
						6.6	Separation		6.6	0.50		N/A	N/A
						6.5	Separation		6.5	0.13		N/A	N/A
						6.4	Separation		6.4	0.13		N/A	N/A
						6.1	Separation		6.1	0.06		N/A	N/A
						5.8	Separation		5.8	0.06		N/A	N/A
						5.7	Separation		5.7	0.13		N/A	N/A
						5.4	Separation		5.4	0.06		N/A	N/A
						5.2	Separation		5.2	0.13		N/A	N/A
						5.1	Separation		5.1	0.06		N/A	N/A
						5.0	Separation		5.0	0.06		N/A	N/A
						4.7	Separation		4.7	0.06		N/A	N/A
						4.5	Separation		4.5	0.06		N/A	N/A
						4.2	Separation		4.2	0.06		N/A	N/A
						3.5	Separation		3.5	0.06		N/A	N/A
						3.4	Separation		3.4	0.06		N/A	N/A
						3.3	Separation		3.3	0.06		N/A	N/A
						3.1	Separation		3.1	0.25		N/A	N/A
						1.0	Offset		1.0	1.25		42	0.76
						1.0	Separation		1.0	8.50		N/A	N/A

[1] Fr = Number of fractures in immediate roof beam
[2] Number of fracture zones in immediate roof beam
[3] Fracture Density = (Fr + 2 FZ) / Beam Height

Table 6-1 (continued)
Observation Borehole Fractures and Offset Data Summary

Hole	Location		Initial Inspection Date	Recent Inspection Date	Fr [1]	FZ [2]	Beam Height (ft)	Feature	Fracture Density [3]	Feature Depth (ft)	Feature Magnitude (in)	Hole Diameter (in)	Hole Closure (%)	Offset Rate (in/yr)
Panel 3 South 2750 (continued)														
OH 494	S 2750	E 990	01/13/04	09/26/05			7.7	Separation		7.7	1.00	3.00	N/A	N/A
							7.5	Separation		7.5	0.13		N/A	N/A
							7.4	Separation		7.4	0.06		N/A	N/A
							6.7	Separation		6.7	0.25		N/A	N/A
							6.6	Offset		6.6	0.13		4	0.07
							6.6	Separation		6.6	0.50		N/A	N/A
							6.3	Separation		6.3	0.25		N/A	N/A
							6.2	Offset		6.2	0.25		8	0.15
					7	0	6.2	Clay H	1.13	6.2	0.50		N/A	N/A
							5.7	Separation		5.7	0.25		N/A	N/A
							5.4	Separation		5.4	0.06		N/A	N/A
							5.3	Separation		5.3	0.06		N/A	N/A
							5.2	Separation		5.2	0.13		N/A	N/A
							2.2	Separation		2.2	0.13		N/A	N/A
							1.5	Offset		1.5	0.50		17	0.29
							1.5	Separation		1.5	1.50		N/A	N/A
							1.0	Offset		1.0	0.13		4	0.07
							1.0	Separation		1.0	0.38		N/A	N/A

[1] Fr = Number of fractures in immediate roof beam

[2] Number of fracture zones in immediate roof beam

[3] Fracture Density = (Fr + 2 FZ) / Beam Height

Table 6-1 (continued)
Observation Borehole Fractures and Offset Data Summary

Hole	Location		Initial Inspection Date	Recent Inspection Date	Fr [1]	FZ [2]	Beam Height (ft)	Feature	Fracture Density [3]	Feature Depth (ft)	Feature Magnitude (in)	Hole Diameter (in)	Hole Closure (%)	Offset Rate (in/yr)
Panel 3 South 3080														
OH 440	S 3082	E 523	08/08/03	06/23/06			6.4	Offset		6.4	3.00	3.00	100	1.04
					2	0	6.0	Separation	0.33	6.0	0.38		N/A	N/A
							1.9	Offset		1.9	0.38		13	0.13
							1.9	Separation		1.9	2.50		N/A	N/A
							0.6	Offset		0.6	0.13		4	0.04
							0.6	Separation		0.6	0.25		N/A	N/A
OH 510	S 3080	E 580	08/02/04	06/23/06			6.4	Offset		6.4	2.75	3.00	92	1.45
					5	0	6.4	Clay H	0.78	6.4	2.00		N/A	N/A
							5.6	Separation		5.6	0.13		N/A	N/A
							4.5	Offset		4.5	0.13		4	0.07
							4.5	Separation		4.5	0.25		N/A	N/A
							3.0	Separation		3.0	0.75		N/A	N/A
							2.8	Separation		2.8	0.25		N/A	N/A
							1.6	Offset		1.6	1.00		33	0.53
							1.6	Separation		1.6	2.25		N/A	N/A
OH 431	S 3082	E 654	08/06/03	06/23/06			8.0	Separation		8.0	0.75	3.00	N/A	N/A
							7.1	Separation		7.1	0.50		N/A	N/A
							6.3	Offset		6.3	2.00		67	0.69
					2	0	6.3	Clay H	0.32	6.3	0.13		N/A	N/A
							5.3	Separation		5.3	0.75		N/A	N/A
							1.9	Offset		1.9	0.25		8	0.09
							1.9	Separation		1.9	1.00		N/A	N/A
OH 591	S 3080	E 725	06/21/05	03/14/06			8.0	Separation		8.0	0.50	3.00	N/A	N/A
							6.5	Separation		6.5	0.13		N/A	N/A
							6.0	Offset		6.0	0.50		17	0.69
					3	0	6.0	Clay H	0.50	6.0	0.38		N/A	N/A
							5.7	Separation		5.7	1.00		N/A	N/A
							5.4	Offset		5.4	0.50		17	0.69
							5.4	Separation		5.4	0.13		N/A	N/A
							1.5	Separation		1.5	2.75		N/A	N/A

[1] Fr = Number of fractures in immediate roof beam

[2] Number of fracture zones in immediate roof beam

[3] Fracture Density = (Fr + 2 FZ) / Beam Height

Table 6-1 (continued)
Observation Borehole Fractures and Offset Data Summary

Hole	Location		Initial Inspection Date	Recent Inspection Date	Fr [1]	FZ [2]	Beam Height (ft)	Feature	Fracture Density [3]	Feature Depth (ft)	Feature Magnitude (in)	Hole Diameter (in)	Hole Closure (%)	Offset Rate (in/yr)
Panel 3 South 3080 (continued)														
OH 461	S 3082	E 789	09/03/03	03/14/06			7.4	Offset		7.4	0.13	3.00	4	0.05
							7.4	Separation		7.4	3.25		N/A	N/A
							6.5	Offset		6.5	0.25		8	0.10
							6.5	Separation		6.5	0.25		N/A	N/A
							6.0	Offset		6.0	0.13		4	0.05
					3	0	6.0	Clay H	0.50	6.0	0.25		N/A	N/A
							5.7	Offset		5.7	0.50		17	0.20
							5.7	Separation		5.7	0.25		N/A	N/A
							2.5	Offset		2.5	0.13		4	0.05
							2.5	Separation		2.5	0.38		N/A	N/A
							1.6	Offset		1.6	0.25		8	0.10
							1.6	Separation		1.6	0.75		N/A	N/A
OH 432	S 3081	E 921	09/03/03	12/21/05	8	0	5.9	Offset	1.36	5.9	0.75	3.00	25	0.33
							5.7	Separation		5.7	0.25		N/A	N/A
							5.5	Separation		5.5	0.25		N/A	N/A
							5.4	Separation		5.4	2.50		N/A	N/A
							5.4	Separation		5.4	0.25		N/A	N/A
							4.0	Offset		4.0	0.13		4	0.05
							3.2	Separation		3.2	0.06		N/A	N/A
							2.5	Separation		2.5	0.75		N/A	N/A
							1.7	Separation		1.7	0.25		N/A	N/A
							1.4	Separation		1.4	1.50		N/A	N/A
							1.4	Offset		1.4	0.13		4	0.05
OH 504	S 3080	E 955	04/22/04	10/06/05			8.4	Separation		8.4	0.06	3.00	N/A	N/A
							8.1	Separation		8.1	0.06		N/A	N/A
							7.2	Offset		7.2	2.00		67	1.37
							7.2	Separation		7.2	0.25		N/A	N/A
							6.7	Offset		6.7	1.50		50	1.03
					5	0	6.7	Clay H	0.75	6.7	0.13		N/A	N/A
							2.8	Offset		2.8	1.00		33	0.69
							2.8	Separation		2.8	7.50		N/A	N/A
							2.5	Separation		2.5	1.25		N/A	N/A
							2.0	Separation		2.0	0.50		N/A	N/A
							1.7	Separation		1.7	0.13		N/A	N/A
							1.0	Separation		1.0	0.13		N/A	N/A

[1] Fr = Number of fractures in immediate roof beam

[2] Number of fracture zones in immediate roof beam

[3] Fracture Density = (Fr + 2 FZ) / Beam Height

Table 6-1 (continued)
Observation Borehole Fractures and Offset Data Summary

Hole	Location		Initial Inspection Date	Recent Inspection Date	Fr [1]	FZ [2]	Beam Height (ft)	Feature	Fracture Density [3]	Feature Depth (ft)	Feature Magnitude (in)	Hole Diameter (in)	Hole Closure (%)	Offset Rate (in/yr)
Panel 3 South 3080 (continued)														
OH 505	S 3080	E 1005	04/22/04	10/06/05			6.6	Offset		6.6	2.00	3.00	67	1.37
							6.6	Separation		6.6	0.50		N/A	N/A
							6.1	Offset		6.1	1.50		50	1.03
					1	0	6.1	Clay H	0.16	6.1	0.50		N/A	N/A
							1.6	Offset		1.6	0.50		17	0.34
							1.6	Separation		1.6	3.50		N/A	N/A
OH 506	S 3080	E 1055	04/22/04	10/06/05			7.9	Offset		7.9	2.25	3.00	75	1.54
							7.9	Separation		7.9	0.13		N/A	N/A
							6.6	Offset		6.6	2.00		67	1.37
							6.6	Separation		6.6	0.25		N/A	N/A
							6.1	Offset		6.1	1.50		50	1.03
					1	0	6.1	Clay H	0.16	6.1	0.25		N/A	N/A
							1.5	Offset		1.5	1.00		33	0.69
							1.5	Separation		1.5	3.25		N/A	N/A
OH 467	S 3082	E 1055	09/08/03	10/06/05			7.9	Offset		7.9	2.25	3.00	75	1.08
							7.9	Separation		7.9	1.00		N/A	N/A
							6.5	Separation		6.5	0.75		N/A	N/A
							6.3	Offset		6.3	1.75		58	0.84
					5	0	6.3	Clay H	0.79	6.3	0.38		N/A	N/A
							5.7	Separation		5.7	0.13		N/A	N/A
							5.6	Separation		5.6	0.13		N/A	N/A
							5.5	Offset		5.5	0.50		17	0.24
							5.5	Separation		5.5	0.13		N/A	N/A
							1.6	Offset		1.6	0.13		4	0.06
							1.6	Separation		1.6	3.25		N/A	N/A
							1.0	Separation		1.0	0.13		N/A	N/A

[1] Fr = Number of fractures in immediate roof beam
[2] Number of fracture zones in immediate roof beam
[3] Fracture Density = (Fr + 2 FZ) / Beam Height

Table 6-1 (continued)
Observation Borehole Fractures and Offset Data Summary

Hole	Location		Initial Inspection Date	Recent Inspection Date	Fr [1]	FZ [2]	Beam Height (ft)	Feature	Fracture Density [3]	Feature Depth (ft)	Feature Magnitude (in)	Hole Diameter (in)	Hole Closure (%)	Offset Rate (in/yr)
Panel 1 Closure - South 1950 & South 1600														
OH 391	S 1951	E 456	07/22/03	03/16/06	1	0	5.9	Separation	0.17	5.9	0.25	3.00	N/A	N/A
							4.5	Offset		4.5	1.50		50	0.57
							4.5	Separation		4.5	1.50		N/A	N/A
OH 392	S 1953	E 448	07/22/03	03/16/06	0	0	4.1	Offset		4.1	3.00	3.00	100	1.13
							4.1	Separation		4.1	1.00		N/A	N/A
OH 393	S 1614	E 451	07/22/03	03/16/06	0	0	-	No features	N/A	-	-	3.00	N/A	N/A
OH 394	S 1613	E 434	07/22/03	03/16/06	0	0	-	No features	N/A	-	-	3.00	N/A	N/A
East 300														
OH 507	N 1175	E 300	07/27/04	06/23/06	1	0	6.5	Separation	0.15	6.5	0.13	3.00	N/A	N/A
							1.3	Separation		1.3	0.50		N/A	N/A
OH 508	N 1250	E 300	07/27/04	06/23/06	1	0	6.1	Separation	0.16	6.1	0.13	3.00	N/A	N/A
							5.4	Separation		5.4	0.13		N/A	N/A
OH 509	N 1350	E 300	07/27/04	06/23/06	1	0	6.0	Separation	0.17	6.0	0.13	3.00	N/A	N/A
							5.5	Separation		5.5	0.13		N/A	N/A
OH 422	S 2825	E 300	08/06/03	06/15/06			6.5	Separation		6.5	0.13	3.00	N/A	N/A
					0	0	6.1	Clay H	0.00	6.1	0.00		N/A	N/A
OH 423	S 2890	E 300	08/06/03	06/15/06	1	0	5.8	Clay H	0.17	5.8	0.25	3.00	N/A	N/A
							1.2	Separation		1.2	0.13		N/A	N/A
OH 424	S 2950	E 300	08/06/03	06/15/06			5.6	Offset		5.6	0.13		4	0.04
					2	0	5.6	Clay H	0.36	5.6	0.25	3.00	N/A	N/A
							1.2	Offset		1.2	0.38		13	0.13
							1.2	Separation		1.2	0.75		N/A	N/A
OH 425	S 3020	E 300	08/06/03	06/15/06	1	0	5.6	Clay H	0.18	5.6	0.38	3.00	N/A	N/A
							0.5	Separation		0.5	0.38		N/A	N/A
OH 453	S 3310	E 300	08/20/04	06/15/06			6.2	Separation		6.2	0.13	3.00	N/A	N/A
							5.5	Offset		5.5	0.50		17	0.27
					0	0	5.5	Clay H	0.00	5.5	0.13		N/A	N/A
OH 457	S 3260	E 300	08/28/03	06/15/06	1	0	5.8	Clay H	0.17	5.8	0.25	3.00	N/A	N/A
							1.2	Separation		1.2	0.13		N/A	N/A
OH 458	S 3200	E 300	08/28/03	06/15/06	1	0	6.0	Clay H	0.17	6.0	0.13	3.00	N/A	N/A
							5.6	Separation		5.6	0.13		N/A	N/A
OH 459	S 3140	E 300	08/28/03	06/15/06	1	0	5.5	Clay H	0.18	5.5	0.25	3.00	N/A	N/A
							5.0	Separation		5.0	0.13		N/A	N/A

[1] Fr = Number of fractures in immediate roof beam

[2] Number of fracture zones in immediate roof beam

[3] Fracture Density = (Fr + 2 FZ) / Beam Height

Table 6-1 (continued)
Observation Borehole Fractures and Offset Data Summary

Hole	Location		Initial Inspection Date	Recent Inspection Date	Fr [1]	FZ [2]	Beam Height (ft)	Feature	Fracture Density [3]	Feature Depth (ft)	Feature Magnitude (in)	Hole Diameter (in)	Hole Closure (%)	Offset Rate (in/yr)
East 300 (continued)														
OH 604	S 3480	E 300	07/18/05	06/15/06			5.6	Separation		5.6	0.13	3.00	N/A	N/A
							5.4	Offset		5.4	0.13		4	0.14
					0	0	5.4	Clay H	0.00	5.4	0.13		N/A	N/A
OH 569	S 3650	E 300	04/20/05	06/15/06	0	0	-	No Features		-	-	3.00	N/A	N/A
East 140														
OH 521	N 40	E 140	11/22/04	03/28/06	0	0	-	No Features		-	-	3.00	N/A	N/A
OH 524	S 182	E 140	11/22/04	03/28/06	0	0	5.2	Separation		5.2	0.13	3.00	N/A	N/A
OH 498	S 415	E 140	02/17/04	03/28/06			4.8	Separation		4.8	2.00	3.00	N/A	N/A
							4.5	Separation		4.5	2.00		N/A	N/A
							3.8	Separation		3.8	2.00		N/A	N/A
							3.5	Separation		3.5	0.25		N/A	N/A
							3.1	Offset		3.1	1.00		33	0.47
							3.1	Separation		3.1	1.00		N/A	N/A
							1.6	Separation		1.6	0.13		N/A	N/A
OH 574	S 500	E 140	06/16/05	03/28/06	1	0	5.6	Clay G	0.18	5.6	0.50	3.00	N/A	N/A
							4.1	Offset		4.1	1.75		58	2.24
							4.1	Separation		4.1	3.00		N/A	N/A
OH 576	S 850	E 140	06/16/05	06/20/06	0	0	6.5	Separation		6.5	0.13	3.00	N/A	N/A
OH 575	S 1000	E 140	06/13/05	06/20/06	2	0	6.0	Clay H	0.33	6.0	0.13	3.00	N/A	N/A
							4.7	Separation		4.7	0.13		N/A	N/A
							4.5	Offset		4.5	0.50		17	0.49
							4.5	Separation		4.5	1.50		N/A	N/A
OH 577	S 1160	E 140	06/16/05	06/20/06			6.0	Separation		6.0	0.13	3.00	N/A	N/A
							5.9	Separation		5.9	0.13		N/A	N/A
							5.4	Offset		5.4	0.25		8	0.25
					2	0	5.4	Clay H	0.37	5.4	0.13		N/A	N/A
							2.6	Separation		2.6	0.38		N/A	N/A
							0.9	Separation		0.9	0.13		N/A	N/A
OH 578	S 1300	E 140	06/16/05	03/15/06	0	0	6.2	Clay H	0.00	6.2	0.13	3.00	N/A	N/A

[1] Fr = Number of fractures in immediate roof beam

[2] Number of fracture zones in immediate roof beam

[3] Fracture Density = (Fr + 2 FZ) / Beam Height

Table 6-1 (continued)
Observation Borehole Fractures and Offset Data Summary

Hole	Location		Initial Inspection Date	Recent Inspection Date	Fr [1]	FZ [2]	Beam Height (ft)	Feature	Fracture Density [3]	Feature Depth (ft)	Feature Magnitude (in)	Hole Diameter (in)	Hole Closure (%)	Offset Rate (in/yr)
East 140 (continued)														
OH 579	S 1463	E 140	06/16/05	06/20/06			6.4	Offset		6.4	0.25	3.00	8	0.25
					6	0	6.4	Clay H	0.94	6.4	0.13		N/A	N/A
							6.3	Offset		6.3	0.13		4	0.12
							6.3	Separation		6.3	0.25		N/A	N/A
							2.6	Separation		2.6	0.50		N/A	N/A
							2.5	Separation		2.5	0.13		N/A	N/A
							1.8	Offset		1.8	0.25		8	0.25
							1.8	Separation		1.8	0.13		N/A	N/A
							1.2	Offset		1.2	0.25		8	0.25
							1.2	Separation		1.2	0.75		N/A	N/A
							0.5	Offset		0.5	0.25		8	0.25
							0.5	Separation		0.5	0.38		N/A	N/A
OH 580	S 1463	E 140	06/16/05	06/20/06			6.8	Separation		6.8	0.13	3.00	N/A	N/A
							6.0	Separation		6.0	0.13		N/A	N/A
							5.9	Separation		5.9	0.13		N/A	N/A
					6	0	5.7	Clay H	1.05	5.7	1.00		N/A	N/A
							4.6	Separation		4.6	2.00		N/A	N/A
							4.2	Separation		4.2	0.38		N/A	N/A
							2.4	Offset		2.4	0.13		4	0.12
							2.4	Separation		2.4	2.00		N/A	N/A
							1.5	Separation		1.5	0.25		N/A	N/A
							1.0	Offset		1.0	0.06		2	0.06
							1.0	Separation		1.0	0.25		N/A	N/A
							0.7	Offset		0.7	0.06		2	0.06
							0.7	Separation		0.7	0.25		N/A	N/A
OH 581	S 1463	E 140	06/16/05	06/20/06			6.3	Offset		6.3	0.38	3.00	13	0.37
					1	0	6.3	Clay H	0.16	6.3	0.25		N/A	N/A
							1.1	Offset		1.1	0.25		8	0.25
							1.1	Separation		1.1	1.50		N/A	N/A
OH 582	S 1600	E 140	06/16/05	06/20/06	1	0	6.5	Clay H	0.15	6.5	0.13	3.00	N/A	N/A
							6.3	Separation		6.3	0.13		N/A	N/A

[1] Fr = Number of fractures in immediate roof beam

[2] Number of fracture zones in immediate roof beam

[3] Fracture Density = (Fr + 2 FZ) / Beam Height

Table 6-1 (continued)
Observation Borehole Fractures and Offset Data Summary

Hole	Location		Initial Inspection Date	Recent Inspection Date	Fr [1]	FZ [2]	Beam Height (ft)	Feature	Fracture Density [3]	Feature Depth (ft)	Feature Magnitude (in)	Hole Diameter (in)	Hole Closure (%)	Offset Rate (in/yr)
East 140 (continued)														
OH 511	S 1775	E 140	08/04/04	06/28/06			6.4	Offset		6.4	3.00	3.00	100	1.58
							6.4	Separation		6.4	1.50		N/A	N/A
							5.4	Offset		5.4	2.00		67	1.05
					5	0	5.4	Clay H	0.93	5.4	0.75		N/A	N/A
							4.5	Offset		4.5	0.25		8	0.13
							4.5	Separation		4.5	1.50		N/A	N/A
							3.9	Offset		3.9	0.25		8	0.13
							3.9	Separation		3.9	0.50		N/A	N/A
							3.5	Separation		3.5	0.13		N/A	N/A
							2.5	Separation		2.5	1.00		N/A	N/A
							0.7	Separation		0.7	2.00		N/A	N/A
OH 142-2	S 1780	E 140	06/29/05	06/28/06			6.6	Offset		6.6	2.50	3.00	83	0.02
					4	0	6.6	Clay H	0.61	6.6	1.00		N/A	N/A
							3.4	Separation		3.4	1.00		N/A	N/A
							2.9	Offset		2.9	2.00		67	2.01
							2.9	Separation		2.9	0.13		N/A	N/A
							1.7	Offset		1.7	1.50		50	1.50
							1.7	Separation		1.7	1.00		N/A	N/A
							0.8	Offset		0.8	1.00		33	1.00
							0.8	Separation		0.8	1.00		N/A	N/A
OH 143-2	S 1780	E 140	06/29/05	06/28/06			6.6	Offset		6.6	3.00	3.00	100	3.01
					6	0	6.6	Separation	0.91	6.6	2.00		N/A	N/A
							6.5	Offset		6.5	0.50		17	0.50
							5.8	Separation		5.8	0.38		N/A	N/A
							5.2	Separation		5.2	0.13		N/A	N/A
							3.9	Offset		3.9	0.25		8	0.25
							3.9	Separation		3.9	1.00		N/A	N/A
							2.4	Offset		2.4	0.25		8	0.25
							2.4	Separation		2.4	3.50		N/A	N/A
							1.5	Offset		1.5	0.50		17	0.50
							1.5	Separation		1.5	1.00		N/A	N/A
							1.0	Separation		1.0	0.50		N/A	N/A

[1] Fr = Number of fractures in immediate roof beam
[2] Number of fracture zones in immediate roof beam
[3] Fracture Density = (Fr + 2 FZ) / Beam Height

Table 6-1 (continued)
Observation Borehole Fractures and Offset Data Summary

Hole	Location	Initial Inspection Date	Recent Inspection Date	Fr [1]	FZ [2]	Beam Height (ft)	Feature	Fracture Density [3]	Feature Depth (ft)	Feature Magnitude (in)	Hole Diameter (in)	Hole Closure (%)	Offset Rate (in/yr)
	East 140 (continued)												
OH 144-2	S 1780 E 140	06/29/05	06/28/06			7.2	Separation		7.2	1.00	3.00	N/A	N/A
						6.6	Separation		6.6	1.00		N/A	N/A
						6.4	Offset		6.4	0.75		25	0.75
				8	0	6.4	Clay H	1.25	6.4	0.50		N/A	N/A
						6.0	Separation		6.0	0.25		N/A	N/A
						4.1	Separation		4.1	1.00		N/A	N/A
						3.3	Separation		3.3	0.13		N/A	N/A
						3.3	Separation		3.3	0.13		N/A	N/A
						2.8	Offset		2.8	0.38		13	0.38
						2.8	Separation		2.8	2.00		N/A	N/A
						2.4	Separation		2.4	0.13		N/A	N/A
						1.6	Offset		1.6	0.38		13	0.38
						1.6	Separation		1.6	0.75		N/A	N/A
						1.1	Offset		1.1	0.25		8	0.25
						1.1	Separation		1.1	0.50		N/A	N/A
OH 145-2	S 1832 E 140	03/15/06	06/28/06			6.5	Offset		6.5	2.00	3.00	67	6.95
				5	0	6.5	Clay H	0.77	6.5	0.25		N/A	N/A
						3.9	Separation		3.9	0.75		N/A	N/A
						3.0	Offset		3.0	1.75		58	6.08
						3.0	Separation		3.0	1.00		N/A	N/A
						2.5	Offset		2.5	1.50		50	5.21
						2.5	Separation		2.5	2.00		N/A	N/A
						1.5	Offset		1.5	1.25		42	4.35
						1.5	Separation		1.5	0.25		N/A	N/A
						1.0	Offset		1.0	1.00		33	3.48
						1.0	Separation		1.0	2.00		N/A	N/A

[1] Fr = Number of fractures in immediate roof beam

[2] Number of fracture zones in immediate roof beam

[3] Fracture Density = (Fr + 2 FZ) / Beam Height

Table 6-1 (continued)
Observation Borehole Fractures and Offset Data Summary

Hole	Location		Initial Inspection Date	Recent Inspection Date	Fr [1]	FZ [2]	Beam Height (ft)	Feature	Fracture Density [3]	Feature Depth (ft)	Feature Magnitude (in)	Hole Diameter (in)	Hole Closure (%)	Offset Rate (in/yr)
East 140 (continued)														
OH 146-2	S 1832	E 140	06/15/04	06/28/06	6	0	6.5	Clay H	0.92	6.5	0.50	3.00	N/A	N/A
							6.4	Separation		6.4	0.25		N/A	N/A
							6.0	Separation		6.0	1.00		N/A	N/A
							6.0	Offset		6.0	0.25		8	0.12
							4.6	Separation		4.6	4.00		N/A	N/A
							3.7	Separation		3.7	1.00		N/A	N/A
							2.3	Offset		2.3	1.00		33	0.49
							2.3	Separation		2.3	2.50		N/A	N/A
							1.4	Offset		1.4	1.50		50	0.74
							0.8	Separation		0.8	0.25		N/A	N/A
OH 147-2	S 1832	E 140	06/15/04	06/28/06	4	0	6.5	Clay H	0.62	6.5	1.25	3.00	N/A	N/A
							3.7	Separation		3.7	0.13		N/A	N/A
							3.3	Offset		3.3	2.25		75	1.11
							3.3	Separation		3.3	1.50		N/A	N/A
							2.7	Offset		2.7	1.25		42	0.61
							2.7	Separation		2.7	2.00		N/A	N/A
							1.5	Offset		1.5	1.25		42	0.61
							1.5	Separation		1.5	1.50		N/A	N/A
OH 583	S 1950	E 140	06/16/05	06/20/06			6.5	Separation		6.5	0.13	3.00	N/A	N/A
					1	0	5.8	Clay H	0.17	5.8	0.13		N/A	N/A
							1.9	Separation		1.9	0.13		N/A	N/A
OH 474	S 1999	E 140	01/21/05	06/20/06			7.0	Separation		7.0	0.13	3.00	N/A	N/A
							6.1	Separation		6.1	0.13		N/A	N/A
							5.9	Offset		5.9	0.13		4	0.09
					2	0	5.9	Clay H	0.34	5.9	0.13		N/A	N/A
							5.6	Separation		5.6	0.13		N/A	N/A
							1.5	Offset		1.5	0.06		2	0.04
							1.5	Separation		1.5	0.25		N/A	N/A

[1] Fr = Number of fractures in immediate roof beam

[2] Number of fracture zones in immediate roof beam

[3] Fracture Density = (Fr + 2 FZ) / Beam Height

Table 6-1 (continued)
Observation Borehole Fractures and Offset Data Summary

Hole	Location		Initial Inspection Date	Recent Inspection Date	Fr [1]	FZ [2]	Beam Height (ft)	Feature	Fracture Density [3]	Feature Depth (ft)	Feature Magnitude (in)	Hole Diameter (in)	Hole Closure (%)	Offset Rate (in/yr)
East 140 (continued)														
OH 512	S 2010	E 140	08/04/04	06/20/06	1	0	5.9	Clay H	0.17	5.9	0.13	3.00	N/A	N/A
							1.5	Offset		1.5	0.13		4	0.07
							1.5	Separation		1.5	0.38		N/A	N/A
OH 473	S 2092	E 140	01/21/05	06/20/06	6	0	5.8	Clay H	1.03	5.8	0.38	3.00	N/A	N/A
							5.5	Separation		5.5	0.13		N/A	N/A
							5.2	Separation		5.2	0.13		N/A	N/A
							5.1	Separation		5.1	0.13		N/A	N/A
							4.9	Separation		4.9	0.13		N/A	N/A
							2.5	Separation		2.5	0.13		N/A	N/A
							1.1	Offset		1.1	0.13		4	0.09
							1.1	Separation		1.1	0.50		N/A	N/A
OH 472	S 2167	E 140	01/21/05	06/20/06			6.2	Separation		6.2	0.13	3.00	N/A	N/A
							5.7	Offset		5.7	0.25		8	0.18
					0	0	5.7	Clay H	0.00	5.7	0.25		N/A	N/A
OH 584	S 2180	E 140	06/16/05	03/15/06	0	0	5.9	Clay H	0.00	5.9	0.13	3.00	N/A	N/A
OH 454	S 2275	E 140	12/30/04	06/20/06	6	0	6.1	Clay H	0.98	6.1	1.00	3.00	N/A	N/A
							5.7	Separation		5.7	1.00		N/A	N/A
							5.4	Separation		5.4	0.13		N/A	N/A
							5.3	Separation		5.3	0.13		N/A	N/A
							2.4	Separation		2.4	6.00		N/A	N/A
							1.4	Offset		1.4	0.50		17	0.34
							1.4	Separation		1.4	0.38		N/A	N/A
							1.2	Separation		1.2	0.13		N/A	N/A
OH 471	S 2333	E 140	01/21/05	03/15/06	3	0	6.3	Clay H	0.48	6.3	1.00	3.00	N/A	N/A
							5.2	Offset		5.2	0.75		25	0.65
							5.2	Separation		5.2	0.75		N/A	N/A
							2.6	Offset		2.6	0.13		4	0.11
							2.6	Separation		2.6	0.25		N/A	N/A
							1.3	Offset		1.3	0.50		17	0.44
							1.3	Separation		1.3	1.00		N/A	N/A

[1] Fr = Number of fractures in immediate roof beam

[2] Number of fracture zones in immediate roof beam

[3] Fracture Density = (Fr + 2 FZ) / Beam Height

Table 6-1 (continued)
Observation Borehole Fractures and Offset Data Summary

Hole	Location		Initial Inspection Date	Recent Inspection Date	Fr [1]	FZ [2]	Beam Height (ft)	Feature	Fracture Density [3]	Feature Depth (ft)	Feature Magnitude (in)	Hole Diameter (in)	Hole Closure (%)	Offset Rate (in/yr)
East 140 (continued)														
OH 513	S 2351	E 140	08/11/04	06/13/06			6.4	Separation		6.4	0.13	3.00	N/A	N/A
							6.0	Separation		6.0	0.13		N/A	N/A
							5.9	Offset		5.9	0.25		8	0.14
					3	0	5.9	Clay H	0.51	5.9	0.13		N/A	N/A
							5.4	Offset		5.4	0.25		8	0.14
							5.4	Separation		5.4	0.13		N/A	N/A
							2.3	Separation		2.3	2.00		N/A	N/A
							1.4	Offset		1.4	0.13		4	0.05
							1.4	Separation		1.4	1.00		N/A	N/A
OH 585	S 2358	E 140	06/16/05	06/13/06			6.1	Offset		6.1	0.50	3.00	17	0.50
					3	0	6.1	Clay H	0.49	6.1	0.13		N/A	N/A
							2.9	Offset		2.9	0.13		4	0.13
							2.9	Separation		2.9	0.25		N/A	N/A
							1.9	Offset		1.9	0.38		13	0.38
							1.9	Separation		1.9	1.00		N/A	N/A
							1.4	Separation		1.4	0.13		N/A	N/A
OH 586	S 2358	E 140	06/16/05	03/13/06	3	0	6.0	Clay H	0.50	6.0	0.13	3.00	N/A	N/A
							5.4	Offset		5.4	0.25		8	0.34
							5.4	Separation		5.4	0.25		N/A	N/A
							2.4	Separation		2.4	1.00		N/A	N/A
							1.4	Offset		1.4	0.13		4	0.17
							1.4	Separation		1.4	1.00		N/A	N/A
OH 587	S 2358	E 140	06/16/05	06/13/06			6.6	Separation		6.6	0.13	3.00	N/A	N/A
					2	0	6.0	Clay H	0.33	6.0	0.13		N/A	N/A
							2.5	Separation		2.5	0.25		N/A	N/A
							1.6	Separation		1.6	1.00		N/A	N/A
OH 588	S 2520	E 140	06/16/05	06/13/06			5.9	Separation		5.9	0.13	3.00	N/A	N/A
							5.8	Offset		5.8	0.06		2	0.06
					2	0	5.8	Clay H	0.34	5.8	0.25		N/A	N/A
							5.2	Separation		5.2	0.38		N/A	N/A
							1.6	Separation		1.6	0.13		N/A	N/A

[1] Fr = Number of fractures in immediate roof beam

[2] Number of fracture zones in immediate roof beam

[3] Fracture Density = (Fr + 2 FZ) / Beam Height

Table 6-1 (continued)
Observation Borehole Fractures and Offset Data Summary

Hole	Location		Initial Inspection Date	Recent Inspection Date	Fr [1]	FZ [2]	Beam Height (ft)	Feature	Fracture Density [3]	Feature Depth (ft)	Feature Magnitude (in)	Hole Diameter (in)	Hole Closure (%)	Offset Rate (in/yr)
East 140 (continued)														
OH 468	S 2640	E 140	03/29/04	06/13/06			5.0	Offset		5.0	3.00	3.00	100	1.36
							2.7	Separation		2.7	0.13		N/A	N/A
							2.2	Separation		2.2	0.25		N/A	N/A
							1.0	Separation		1.0	4.00		N/A	N/A
OH 589	S 2750	E 140	06/16/05	06/13/06			6.5	Separation		6.5	0.13	3.00	N/A	N/A
					1	0	6.0	Clay H	0.17	6.0	0.13		N/A	N/A
							5.7	Offset		5.7	0.13		4	0.13
							5.7	Separation		5.7	0.13		N/A	N/A
OH 500	S 2920	E 140	02/20/04	03/15/06			6.0	Offset		6.0	0.38	3.00	13	0.18
					6	0	6.0	Clay H	1.00	6.0	0.25		N/A	N/A
							5.8	Offset		5.8	0.38		13	0.18
							5.8	Separation		5.8	0.50		N/A	N/A
							5.1	Separation		5.1	0.38		N/A	N/A
							5.0	Separation		5.0	0.25		N/A	N/A
							4.6	Separation		4.6	0.13		N/A	N/A
							2.0	Offset		2.0	0.75		25	0.36
							2.0	Separation		2.0	1.50		N/A	N/A
							1.0	Offset		1.0	1.25		42	0.61
							1.0	Separation		1.0	0.38		N/A	N/A
OH 501	S 2986	E 140	02/20/04	03/15/06			5.6	Offset		5.6	3.00	3.00	100	1.45
							5.4	Separation		5.4	1.50		N/A	N/A
							1.7	Offset		1.7	1.25		42	0.61
							1.7	Separation		1.7	4.00		N/A	N/A
							1.0	Offset		1.0	1.00		33	0.48
							1.0	Separation		1.0	1.00		N/A	N/A
OH 590	S 3080	E 140	06/16/05	06/13/06	3	0	5.7	Clay H	0.53	5.7	1.00	3.00	N/A	N/A
							5.1	Separation		5.1	0.13		N/A	N/A
							1.3	Separation		1.3	0.50		N/A	N/A
							0.4	Separation		0.4	0.38		N/A	N/A

[1] Fr = Number of fractures in immediate roof beam

[2] Number of fracture zones in immediate roof beam

[3] Fracture Density = (Fr + 2 FZ) / Beam Height

Table 6-1 (continued)
Observation Borehole Fractures and Offset Data Summary

Hole	Location		Initial Inspection Date	Recent Inspection Date	Fr [1]	FZ [2]	Beam Height (ft)	Feature	Fracture Density [3]	Feature Depth (ft)	Feature Magnitude (in)	Hole Diameter (in)	Hole Closure (%)	Offset Rate (in/yr)
East 140 (continued)														
OH 493	S 3180	E 140	01/13/04	06/13/06			6.4	Separation		6.4	0.13	3.00	N/A	N/A
					3	0	5.7	Clay H	0.53	5.7	0.13		N/A	N/A
							5.4	Separation		5.4	0.50		N/A	N/A
							5.2	Offset		5.2	0.25		8	0.10
							5.2	Separation		5.2	0.50		N/A	N/A
							0.6	Offset		0.6	0.38		13	0.16
							0.6	Separation		0.6	4.00		N/A	N/A
OH 605	S 3380	E 140	08/09/05	06/13/06			6.3	Offset		6.3	0.13	3.00	4	0.15
					3	0	6.3	Clay H	0.48	6.3	0.25		N/A	N/A
							6.0	Separation		6.0	0.38		N/A	N/A
							2.4	Separation		2.4	1.00		N/A	N/A
							1.2	Offset		1.2	0.50		17	0.59
							1.2	Separation		1.2	3.00		N/A	N/A
OH 571	S 3480	E 140	02/28/05	06/13/06	1	0	5.3	Clay H	0.19	5.3	0.13	3.00	N/A	N/A
							5.1	Separation		5.1	0.13		N/A	N/A
OH 606	S 3486	E 140	09/01/05	06/13/06	3	0	5.2	Clay H	0.58	5.2	0.13	3.00	N/A	N/A
							5.0	Separation		5.0	0.38		N/A	N/A
							4.8	Offset		4.8	0.13		4	0.16
							4.8	Separation		4.8	0.13		N/A	N/A
							0.4	Separation		0.4	0.13		N/A	N/A
OH 607	S 3580	E 140	09/01/05	06/13/06			6.9	Separation		6.9	0.25	3.00	N/A	N/A
					1	0	5.2	Clay H	0.19	5.2	0.50		N/A	N/A
							1.0	Separation		1.0	0.13		N/A	N/A
OH 567	S 3650	E 140	06/21/05	06/13/06			6.5	Offset		6.5	0.06	3.00	2	0.06
							6.5	Separation		6.5	0.13		N/A	N/A
							5.1	Offset		5.1	0.25		8	0.26
					0	0	5.1	Clay H	0.00	5.1	0.13		N/A	N/A

[1] Fr = Number of fractures in immediate roof beam

[2] Number of fracture zones in immediate roof beam

[3] Fracture Density = (Fr + 2 FZ) / Beam Height

Table 6-1 (continued)
Observation Borehole Fractures and Offset Data Summary

Hole	Location		Initial Inspection Date	Recent Inspection Date	Fr [1]	FZ [2]	Beam Height (ft)	Feature	Fracture Density [3]	Feature Depth (ft)	Feature Magnitude (in)	Hole Diameter (in)	Hole Closure (%)	Offset Rate (in/yr)
Panel 4 Room 1														
OH 529	S 3380	E 520	03/14/05	06/13/06	3	0	5.9	Clay H	0.51	5.9	0.13	3.00	N/A	N/A
							5.7	Offset		5.7	0.13		4	0.10
							5.7	Separation		5.7	0.13		N/A	N/A
							5.5	Offset		5.5	0.13		4	0.10
							5.5	Separation		5.5	0.13		N/A	N/A
							5.3	Separation		5.3	0.13		N/A	N/A
OH 530	S 3480	E 520	03/14/05	06/13/06			7.4	Separation		7.4	0.13	3.00	N/A	N/A
							5.7	Offset		5.7	0.13		4	0.10
					3	0	5.7	Clay H	0.53	5.7	0.50		N/A	N/A
							5.1	Separation		5.1	0.25		N/A	N/A
							4.5	Offset		4.5	0.25		8	0.20
							4.5	Separation		4.5	0.38		N/A	N/A
							1.5	Offset		1.5	0.13		4	0.10
							1.5	Separation		1.5	0.25		N/A	N/A
OH 531	S 3580	E 520	03/14/05	06/13/06			7.3	Separation		7.3	0.13	3.00	N/A	N/A
							6.1	Separation		6.1	0.13		N/A	N/A
							6.0	Separation		6.0	0.13		N/A	N/A
							5.7	Offset		5.7	0.13		4	0.10
					2	0	5.7	Clay H	0.35	5.7	0.25		N/A	N/A
							5.2	Offset		5.2	0.25		8	0.20
							5.2	Separation		5.2	0.25		N/A	N/A
							4.7	Separation		4.7	0.13		N/A	N/A
Panel 4 Room 2														
OH 534	S 3380	E 660	08/22/05	06/13/06	0	0	5.1	Clay H	0.00	5.1	0.13	3.00	N/A	N/A
OH 535	S 3480	E 660	07/13/05	06/13/06			6.3	Separation		6.3	0.13	3.00	N/A	N/A
							5.6	Offset		5.6	0.25		8	0.31
					1	0	5.6	Clay H	0.18	5.6	0.13		N/A	N/A
							5.0	Separation		5.0	0.13		N/A	N/A
OH 536	S 3580	E 660	07/13/05	06/13/06	1	0	5.7	Clay H		5.7	0.25	3.00	N/A	N/A
							5.1	Separation		5.1	0.13		N/A	N/A

[1] Fr = Number of fractures in immediate roof beam

[2] Number of fracture zones in immediate roof beam

[3] Fracture Density = (Fr + 2 FZ) / Beam Height

Table 6-1 (continued)
Observation Borehole Fractures and Offset Data Summary

Hole	Location		Initial Inspection Date	Recent Inspection Date	Fr [1]	FZ [2]	Beam Height (ft)	Feature	Fracture Density [3]	Feature Depth (ft)	Feature Magnitude (in)	Hole Diameter (in)	Hole Closure (%)	Offset Rate (in/yr)
Panel 4 Room 3														
OH 539	S 3380	E 790	08/22/05	06/13/06			6.4	Offset		6.4	0.06	3.00	2	0.08
							6.4	Separation		6.4	0.25		N/A	N/A
							5.8	Offset		5.8	0.38		13	0.46
					1	0	5.8	Clay H	0.17	5.8	0.13		N/A	N/A
							5.1	Separation		5.1	0.13		N/A	N/A
OH 540	S 3480	E 790	08/22/05	06/13/06			6.5	Separation		6.5	0.25	3.00	N/A	N/A
							6.5	Offset		6.5	0.25		8	0.31
							5.8	Offset		5.8	0.13		N/A	N/A
					1	0	5.8	Clay H	0.17	5.8	0.25		N/A	N/A
OH 541	S 3580	E 790	08/22/05	06/13/06	5	0	5.8	Clay H	0.86	5.8	0.13	3.00	N/A	N/A
							5.7	Separation		5.7	0.13		N/A	N/A
							5.6	Separation		5.6	0.13		N/A	N/A
							5.5	Separation		5.5	0.13		N/A	N/A
							4.7	Separation		4.7	0.13		N/A	N/A
							4.5	Separation		4.5	0.13		N/A	N/A
Panel 4 Room 4														
OH 544	S 3380	E 920	09/01/05	06/13/06			6.4	Offset		6.4	0.25	3.00	8	0.32
							6.4	Separation		6.4	0.25		N/A	N/A
							6.0	Offset		6.0	0.25		8	0.32
					1	0	6.0	Clay H	0.17	6.0	0.13		N/A	N/A
							5.6	Separation		5.6	0.13		N/A	N/A
OH 545	S 3480	E 920	09/01/05	06/13/06			6.1	Separation		6.1	0.25	3.00	N/A	N/A
							5.3	Offset		5.3	0.25		8	0.32
					0	0	5.3	Clay H	0.00	5.3	0.50		N/A	N/A
OH 546	S 3580	E 920	08/22/05	06/13/06			5.9	Offset		5.9	0.25	3.00	8	0.31
					0	0	5.9	Clay H	0.00	5.9	0.13		N/A	N/A
Panel 4 Room 5														
OH 549	S 3380	E 1050	03/17/06	06/13/06	0	0	5.8	Clay H	0.00	5.8	0.38	3.00	N/A	N/A
OH 550	S 3480	E 1050	03/17/06	06/13/06			6.5	Separation		6.5	0.13	3.00	N/A	N/A
					1	0	5.7	Clay H	0.18	5.7	0.13		N/A	N/A
							2.5	Separation		2.5	0.13		N/A	N/A

[1] Fr = Number of fractures in immediate roof beam

[2] Number of fracture zones in immediate roof beam

[3] Fracture Density = (Fr + 2 FZ) / Beam Height

Table 6-1 (continued)
Observation Borehole Fractures and Offset Data Summary

Hole	Location		Initial Inspection Date	Recent Inspection Date	Fr [1]	FZ [2]	Beam Height (ft)	Feature	Fracture Density [3]	Feature Depth (ft)	Feature Magnitude (in)	Hole Diameter (in)	Hole Closure (%)	Offset Rate (in/yr)
Panel 4 Room 6														
OH 554	S 3380	E 1180	12/20/05	06/13/06	1	0	6.0	Clay H	0.17	6.0	0.13	3.00	N/A	N/A
							5.6	Separation		5.6	0.13		N/A	N/A
OH 555	S 3480	E 1180	09/01/05	06/13/06	1	0	6.1	Clay H	0.16	6.1	0.13	3.00	N/A	N/A
							5.7	Separation		5.7	0.13		N/A	N/A
OH 556	S 3580	E 1180	08/22/05	06/13/06			6.6	Separation		6.6	0.13	3.00	N/A	N/A
					0	0	6.1	Clay H	0.00	6.1	0.13		N/A	N/A
Panel 4 Room 7														
OH 559	S 3380	E 1320	12/19/05	06/13/06	0	0	5.9	Clay H	0.00	5.9	0.38	3.00	N/A	N/A
OH 560	S 3480	E 1320	12/19/05	06/13/06			6.1	Separation		6.1	0.13	3.00	N/A	N/A
					0	0	5.7	Clay H	0.00	5.7	0.25		N/A	N/A
OH 561	S 3580	E 1320	12/19/05	06/13/06			6.4	Separation		6.4	0.13	3.00	N/A	N/A
					0	0	5.9	Clay H	0.00	5.9	0.13		N/A	N/A
South 3310														
OH 528	S 3310	E 520	02/23/05	06/12/06			8.1	Separation		8.1	0.13	3.00	N/A	N/A
							6.1	Separation		6.1	0.38		N/A	N/A
							5.7	Separation		5.7	0.13		N/A	N/A
							5.5	Offset		5.5	1.50		50	1.16
					3	0	5.5	Clay H	0.55	5.5	0.13		N/A	N/A
							5.0	Offset		5.0	0.75		25	0.58
							5.0	Separation		5.0	0.13		N/A	N/A
							0.4	Separation		0.4	0.13		N/A	N/A
							0.3	Separation		0.3	0.38		N/A	N/A
OH 592	S 3310	E 592	07/13/05	06/12/06			6.0	Separation		6.0	0.13	3.00	N/A	N/A
							5.6	Offset		5.6	0.50		17	0.55
					1	0	5.6	Clay H	0.18	5.6	0.13		N/A	N/A
							5.5	Separation		5.5	0.13		N/A	N/A

[1] Fr = Number of fractures in immediate roof beam

[2] Number of fracture zones in immediate roof beam

[3] Fracture Density = (Fr + 2 FZ) / Beam Height

Table 6-1 (continued)
Observation Borehole Fractures and Offset Data Summary

Hole	Location		Initial Inspection Date	Recent Inspection Date	Fr [1]	FZ [2]	Beam Height (ft)	Feature	Fracture Density [3]	Feature Depth (ft)	Feature Magnitude (in)	Hole Diameter (in)	Hole Closure (%)	Offset Rate (in/yr)
South 3310 (continued)														
OH 533	S 3310	E 660	07/13/05	06/12/06			7.3	Offset		7.3	0.50	3.00	17	0.55
							7.3	Separation		7.3	0.25		N/A	N/A
							6.5	Separation		6.5	0.13		N/A	N/A
							6.3	Offset		6.3	0.50		17	0.55
							6.3	Separation		6.3	0.13		N/A	N/A
							5.5	Offset		5.5	0.38		13	0.41
					1	0	5.5	Clay H	0.18	5.5	0.13		N/A	N/A
							1.4	Separation		1.4	0.13		N/A	N/A
OH 593	S 3310	E 723	07/13/05	06/12/06			7.3	Separation		7.3	0.13	3.00	N/A	N/A
							5.8	Offset		5.8	1.50		50	1.64
					2	0	5.8	Clay H	0.34	5.8	2.00		N/A	N/A
							5.3	Offset		5.3	0.38		13	0.41
							5.3	Separation		5.3	2.00		N/A	N/A
							1.2	Separation		1.2	0.13		N/A	N/A
OH 538	S 3310	E 790	07/13/05	06/12/06			7.5	Separation		7.5	0.38	3.00	N/A	N/A
							7.3	Offset		7.3	0.75		25	0.82
							7.3	Separation		7.3	0.13		N/A	N/A
							6.4	Offset		6.4	0.50		17	0.55
							6.4	Separation		6.4	0.13		N/A	N/A
							5.8	Offset		5.8	0.38		13	0.41
					1	0	5.8	Clay H	0.17	5.8	0.25		N/A	N/A
							1.5	Separation		1.5	0.13		N/A	N/A
OH 594	S 3310	E 855	07/13/05	06/12/06			7.5	Separation		7.5	0.50	3.00	N/A	N/A
							6.5	Separation		6.5	0.13		N/A	N/A
					1	0	5.9	Clay H	0.17	5.9	0.25		N/A	N/A
							5.4	Offset		5.4	0.50		17	0.55
							5.4	Separation		5.4	0.13		N/A	N/A
OH 543	S 3310	E 920	07/13/05	06/12/06			7.2	Separation		7.2	0.25	3.00	N/A	N/A
							6.0	Separation		6.0	0.13		N/A	N/A
							5.5	Offset		5.5	1.75		58	1.91
					0	0	5.5	Clay H	0.00	5.5	0.13		N/A	N/A

[1] Fr = Number of fractures in immediate roof beam

[2] Number of fracture zones in immediate roof beam

[3] Fracture Density = (Fr + 2 FZ) / Beam Height

Table 6-1 (continued)
Observation Borehole Fractures and Offset Data Summary

Hole	Location		Initial Inspection Date	Recent Inspection Date	Fr [1]	FZ [2]	Beam Height (ft)	Feature	Fracture Density [3]	Feature Depth (ft)	Feature Magnitude (in)	Hole Diameter (in)	Hole Closure (%)	Offset Rate (in/yr)
South 3310 (continued)														
OH 616	S 3310	E 990	10/11/05	06/12/06			5.7	Offset		5.7	0.75	3.00	25	1.12
					0	0	5.7	Clay H	0.00	5.7	0.25		N/A	N/A
OH 548	S 3310	E 920	10/11/05	06/12/06			5.6	Offset		5.6	1.00	3.00	33	1.50
					1	0	5.6	Clay H	0.18	5.6	0.25		N/A	N/A
							5.2	Separation		5.2	0.13		N/A	N/A
OH 618	S 3310	E 1120	10/11/05	06/12/06			5.9	Offset		5.9	1.00	3.00	33	1.50
					0	0	5.9	Clay H	0.00	5.9	0.13		N/A	N/A
OH 553	S 3310	E 1181	10/11/05	06/12/06			6.2	Separation		6.2	0.25	3.00	N/A	N/A
							5.7	Offset		5.7	1.50		50	2.24
					1	0	5.7	Clay H	0.18	5.7	0.50		N/A	N/A
							1.4	Separation		1.4	0.13		N/A	N/A
OH 619	S 3310	E 1260	10/17/05	06/12/06			5.7	Separation		5.7	0.25	3.00	N/A	N/A
							5.6	Offset		5.6	0.38		13	0.58
					0	0	5.6	Clay H	0.00	5.6	0.13		N/A	N/A
South 3650														
OH 532	S 3650	E 520	02/23/05	06/12/06			6.1	Offset		6.1	1.25	3.00	42	0.96
							6.1	Separation		6.1	0.13		N/A	N/A
							5.7	Offset		5.7	1.00		33	0.77
					0	0	5.7	Clay H	0.00	5.7	0.25		N/A	N/A
OH 595	S 3650	E 592	08/22/05	06/12/06			7.1	Separation		7.1	0.38	3.00	N/A	N/A
							5.9	Separation		5.9	0.25		N/A	N/A
							5.6	Offset		5.6	0.13		4	0.16
					1	0	5.6	Clay H	0.18	5.6	0.38		N/A	N/A
							5.3	Separation		5.3	0.13		N/A	N/A
OH 537	S 3650	E 660	07/18/05	06/12/06			6.5	Offset		6.5	0.25	3.00	8	0.28
							6.5	Separation		6.5	1.00		N/A	N/A
							5.2	Offset		5.2	0.25		8	0.28
					0	0	5.2	Clay H	0.00	5.2	0.38		N/A	N/A
OH 630	S 3650	E 725	06/12/06	06/12/06			6.4	Separation		6.4	0.13	3.00	N/A	N/A
					1	0	5.8	Clay H	0.17	5.8	0.25		N/A	N/A
							5.3	Separation		5.3	0.13		N/A	N/A

[1] Fr = Number of fractures in immediate roof beam

[2] Number of fracture zones in immediate roof beam

[3] Fracture Density = (Fr + 2 FZ) / Beam Height

Table 6-1 (continued)
Observation Borehole Fractures and Offset Data Summary

Hole	Location		Initial Inspection Date	Recent Inspection Date	Fr [1]	FZ [2]	Beam Height (ft)	Feature	Fracture Density [3]	Feature Depth (ft)	Feature Magnitude (in)	Hole Diameter (in)	Hole Closure (%)	Offset Rate (in/yr)
South 3650 (continued)														
OH 596	S 3650	E 758	08/22/05	06/12/06			6.0	Separation		6.0	0.13	3.00	N/A	N/A
							5.7	Offset		5.7	0.50		17	0.62
					0	0	5.7	Clay H	0.00	5.7	0.38		N/A	N/A
OH 542	S 3650	E 790	08/22/05	06/12/06			6.0	Separation		6.0	0.38	3.00	N/A	N/A
							5.5	Offset		5.5	0.25		8	0.31
					0	0	5.5	Clay H	0.00	5.5	0.50		N/A	N/A
OH 611	S 3650	E 855	08/22/05	06/12/06			5.7	Separation		5.7	0.50	3.00	N/A	N/A
					0	0	5.3	Clay H	0.00	5.3	0.13		N/A	N/A
OH 547	S 3650	E 920	08/22/05	06/12/06			5.9	Separation		5.9	0.50	3.00	N/A	N/A
							5.6	Offset		5.6	1.00		33	1.24
					1	0	5.6	Clay H	0.18	5.6	0.38		N/A	N/A
							2.6	Separation		2.6	0.13		N/A	N/A
OH 617	S 3650	E 990	10/11/05	03/14/06			6.9	Separation		6.9	0.25	3.00	N/A	N/A
							6.0	Separation		6.0	0.50		N/A	N/A
							5.5	Offset		5.5	0.25		8	0.59
					1	0	5.5	Clay H	0.18	5.5	0.25		N/A	N/A
							1.1	Separation		1.1	0.25		N/A	N/A
OH 552	S 3650	E 1060	10/11/05	06/12/06			7.2	Separation		7.2	0.50	3.00	N/A	N/A
							5.6	Offset		5.6	0.75		25	1.12
					0	0	5.6	Clay H	0.00	5.6	2.00		N/A	N/A
OH 626	S 3650	E 1120	06/12/06	06/12/06			7.9	Separation		7.9	0.13	3.00	N/A	N/A
					1	0	5.2	Clay H	0.19	5.2	0.75		N/A	N/A
							1.7	Separation		1.7	0.13		N/A	N/A
OH 557	S 3650	E 1180	06/12/06	06/12/06			7.3	Separation		7.3	0.38	3.00	N/A	N/A
					0	0	5.8	Clay H	0.00	5.8	0.13		N/A	N/A
OH 625	S 3650	E 1255	06/12/06	06/12/06	0	0	5.6	Clay H	0.00	5.6	0.13	3.00	N/A	N/A
OH 562	S 3650	E 1320	01/03/06	06/12/06			6.0	Separation		6.0	0.13	3.00	N/A	N/A
					0	0	5.6	Clay H	0.00	5.6	0.13		N/A	N/A

[1] Fr = Number of fractures in immediate roof beam

[2] Number of fracture zones in immediate roof beam

[3] Fracture Density = (Fr + 2 FZ) / Beam Height

Table 6-1 (continued)
Observation Borehole Fractures and Offset Data Summary

Hole	Location		Initial Inspection Date	Recent Inspection Date	Fr [1]	FZ [2]	Beam Height (ft)	Feature	Fracture Density [3]	Feature Depth (ft)	Feature Magnitude (in)	Hole Diameter (in)	Hole Closure (%)	Offset Rate (in/yr)
South 3650 (continued)														
OH 564	S 3650	W 90	04/20/05	06/13/06			5.7	Separation		5.7	0.13	3.00	N/A	N/A
							5.6	Offset		5.6	0.06		2	0.05
					0	0	5.6	Clay H	0.00	5.6	0.13		N/A	N/A
OH 566	S 3650	E 90	06/21/05	06/21/06	0	0	-	No Features		-	-	3.00	N/A	N/A
OH 568	S 3650	E 235	06/21/05	06/23/06	0	0	5.5	Separation	0.00	5.5	0.13	3.00	N/A	N/A
OH 569	S 3650	E 300	04/20/05	06/15/06	0	0	-	No Features		-	-	3.00	N/A	N/A
West 30														
OH 455	S 2913	W 17	08/28/03	06/15/06	0	0	6.2	Clay H	0.00	6.2	0.13	3.00	N/A	N/A
OH 456	S 2950	W 30	08/28/03	06/15/06			6.0	Separation		6.0	0.13	3.00	N/A	N/A
					2	0	5.9	Clay H	0.34	5.9	0.13		N/A	N/A
							1.5	Separation		1.5	1.00		N/A	N/A
							0.9	Separation		0.9	0.13		N/A	N/A
OH 463	S 3079	W 17	09/03/03	06/15/06			7.4	Separation		7.4	0.13	3.00	N/A	N/A
							6.0	Offset		6.0	0.13		4	0.04
					2	0	5.6	Clay H	0.36	5.6	0.25		N/A	N/A
							5.5	Separation		5.5	0.13		N/A	N/A
							1.5	Separation		1.5	3.00		N/A	N/A
OH 565	S 3650	W 17	02/28/05	06/13/06			7.0	Separation		7.0	0.13	3.00	N/A	N/A
							5.9	Separation		5.9	0.13		N/A	N/A
							5.5	Offset		5.5	0.13		4	0.10
					0	0	5.5	Clay H	0.00	5.5	0.13		N/A	N/A
OH 449	S 3314	W 18	08/28/03	06/15/06	0	0	5.9	Clay H	0.00	5.9	-	3.00	N/A	N/A
OH 514	S 3400	W 30	12/08/04	06/15/06	0	0	5.7	Clay H	0.00	5.7	-	3.00	N/A	N/A
OH 515	S 3490	W 30	12/08/04	06/15/06	0	0	5.6	Clay H	0.00	5.6	0.13	3.00	N/A	N/A
OH 526	S 3590	W 30	12/08/04	06/23/05	0	0	5.9	Clay H	0.00	5.9	-	3.00	N/A	N/A
West 170														
OH 441	S 2750	W 170	08/18/03	06/13/06	3	0	5.9	Clay H	0.51	5.9	0.25	3.00	N/A	N/A
							5.1	Separation		5.1	0.50		N/A	N/A
							4.2	Separation		4.2	0.25		N/A	N/A
							1.3	Separation		1.3	0.25		N/A	N/A
OH 442	S 2820	W 170	08/18/03	06/13/06	0	0	5.6	Clay H	0.00	5.6	0.13	3.00	N/A	N/A
OH 444	S 3000	W 170	08/18/03	06/13/06			1.5	Separation		1.5	1.00	3.00	N/A	N/A

[1] Fr = Number of fractures in immediate roof beam

[2] Number of fracture zones in immediate roof beam

[3] Fracture Density = (Fr + 2 FZ) / Beam Height

Table 6-1 (continued)
Observation Borehole Fractures and Offset Data Summary

Hole	Location	Initial Inspection Date	Recent Inspection Date	Fr [1]	FZ [2]	Beam Height (ft)	Feature	Fracture Density [3]	Feature Depth (ft)	Feature Magnitude (in)	Hole Diameter (in)	Hole Closure (%)	Offset Rate (in/yr)
	West 170 (continued)												
OH 445	S 3079 W 170	08/18/03	06/13/06			5.3	Offset		5.3	1.00	3.00	33	0.35
				3	0	5.3	Clay H	0.57	5.3	0.25		N/A	N/A
						5.0	Offset		5.0	0.50		17	0.18
						5.0	Separation		5.0	0.25		N/A	N/A
						0.7	Separation		0.7	0.13		N/A	N/A
						0.4	Separation		0.4	0.25		N/A	N/A
OH 446	S 3198 W 170	08/28/03	06/13/06	1	0	5.7	Clay H	0.18	5.7	0.25	3.00	N/A	N/A
						5.5	Separation		5.5	0.13		N/A	N/A
OH 447	S 3314 W 170	08/28/03	06/21/05			5.8	Offset		5.8	0.38	3.00	13	0.21
				0	0	5.8	Clay H	0.00	5.8	0.13		N/A	N/A
OH 608	S 3380 W 170	09/01/05	06/13/06	1	0	5.7	Clay H	0.18	5.7	-	3.00	N/A	N/A
						5.2	Separation		5.2	0.13		N/A	N/A
OH 609	S 3480 W 170	09/01/05	06/13/06	0	0	5.2	Clay H	0.00	5.2	0.13	3.00	N/A	N/A
OH 611	S 3650 E 855	08/22/05	06/12/06	1	0	5.7	Clay H	0.18	5.7	0.50	3.00	N/A	N/A
						5.3	Separation		5.3	0.13		N/A	N/A
	South 2750												
OH 460	S 2750 W 100	09/03/03	06/15/06			6.1	Offset		6.1	0.50	3.00	17	0.18
				1	0	6.1	Clay H	0.16	6.1	0.25		N/A	N/A
						1.6	Separation		1.6	0.75		N/A	N/A
	South 3080												
OH 462	S 3082 W 91	09/03/03	06/23/06			6.2	Separation		6.2	0.13	3.00	N/A	N/A
				1	0	5.7	Clay H	0.18	5.7	0.13		N/A	N/A
						1.8	Separation		1.8	0.13		N/A	N/A
OH 464	S 3080 E 65	09/03/03	06/23/06	1	0	5.9	Clay H	0.17	5.9	0.13	3.00	N/A	N/A
						5.5	Separation		5.5	0.13		N/A	N/A
OH 503	S 3080 E 230	04/12/04	06/23/06	1	0	5.6	Clay H	0.18	5.6	0.13	3.00	N/A	N/A
						1.4	Separation		1.4	0.13		N/A	N/A
	South 3310												
OH 448	S 3316 W 95	08/28/03	06/23/06	1	0	5.8	Clay H	0.17	5.8	0.13	3.00	N/A	N/A
						1.6	Separation		1.6	0.13		N/A	N/A
OH 450	S 3310 E 65	08/28/03	06/23/06	0	0	5.8	Clay H	0.00	5.8	0.13	3.00	N/A	N/A
OH 452	S 3310 E 230	08/28/03	06/23/06	1	0	5.9	Clay H	0.17	5.9	0.13	3.00	N/A	N/A
						5.7	Separation		5.7	0.13		N/A	N/A

[1] Fr = Number of fractures in immediate roof beam

[2] Number of fracture zones in immediate roof beam

[3] Fracture Density = (Fr + 2 FZ) / Beam Height

Table 6-1 (continued)
Observation Borehole Fractures and Offset Data Summary

Hole	Location		Initial Inspection Date	Recent Inspection Date	Fr [1]	FZ [2]	Beam Height (ft)	Feature	Fracture Density [3]	Feature Depth (ft)	Feature Magnitude (in)	Hole Diameter (in)	Hole Closure (%)	Offset Rate (in/yr)
North End														
OH492	N 780	E 140	01/09/04	06/23/06			6.6	Separation		6.6	0.13	3.00	N/A	N/A
OH483	N 940	E 140	01/07/04	06/23/06			6.5	Offset		6.5	0.25	3.00	8	0.10
					1	0	6.5	Clay H	0.15	6.5	0.13		N/A	N/A
							1.5	Offset		1.5	0.13		4	0.05
							1.5	Separation		1.5	0.25		N/A	N/A
OH484	N 1265	E 140	01/07/04	06/23/06	1	0	6.4	Clay H	0.16	6.4	0.13	3.00	N/A	N/A
							1.5	Separation		1.5	0.25		N/A	N/A
OH485	N 1400	E 140	01/07/04	06/23/06			6.5	Offset		6.5	0.38	3.00	13	0.15
					0	0	6.5	Clay H	0.00	6.5	0.13		N/A	N/A
OH491	N 620	E 0	01/09/04	06/23/06			6.1	Offset		6.1	0.50	3.00	17	0.20
					0	0	6.1	Clay H	0.00	6.1	0.13		N/A	N/A
OH490	N 780	E 0	01/09/04	06/23/06			6.6	Offset		6.6	0.38	3.00	13	0.15
							6.6	Separation		6.6	0.13		N/A	N/A
							5.9	Offset		5.9	0.25		8	0.10
					0	0	5.9	Clay H	0.00	5.9	1.25		N/A	N/A
OH489	N 940	E 0	01/09/04	06/23/06			6.1	Separation		6.1	0.13	3.00	N/A	N/A
							5.9	Offset		5.9	0.25		8	0.10
					0	0	5.9	Clay H	0.00	5.9	0.13		N/A	N/A
OH488	N 1100	E 0	01/07/04	06/23/06			6.4	Separation		6.4	0.13	3.00	N/A	N/A
					0	0	6.0	Clay H	0.00	6.0	0.13		N/A	N/A
OH487	N 1266	E 0	01/07/04	06/23/06	1	0	6.4	Clay H	0.16	6.4	0.13	3.00	N/A	N/A
							1.6	Separation		1.6	1.00		N/A	N/A
OH486	N 1400	E 0	01/07/04	06/23/06			6.8	Offset		6.8	0.13	3.00	4	0.05
							6.8	Separation		6.8	0.13		N/A	N/A
							6.3	Offset		6.3	0.13		4	0.05
					0	0	6.3	Clay H	0.00	6.3	0.13		N/A	N/A

[1] Fr = Number of fractures in immediate roof beam

[2] Number of fracture zones in immediate roof beam

[3] Fracture Density = (Fr + 2 FZ) / Beam Height

Table 6-2
Summary of New Boreholes[1]

Hole	Location	Drill Date	Depth (feet)	Diameter (inches)
OH596	S3650-E725	07/30/05	20.3	3
OH553	S3310-E1181	09/25/05	20.1	3
OH558	S3310-E1316	10/25/05	20.9	3
OH547	S3650-E920	08/15/05	21.2	3
OH552	S3650-E1048	09/27/05	20.3	3
OH604	S3480-E300	07/18/05	20.4	3
OH534	S3380-E660	08/21/05	20.1	3
OH539	S3380-E790	08/16/05	20.1	3
OH540	S3480-E790	08/15/05	20.1	3
OH541	S3580-E790	07/30/05	20.1	3
OH542	S3650-E790	07/30/05	20.1	3
OH544	S3380-E920	08/27/05	21.0	3
OH545	S3480-E920	08/27/05	21.2	3
OH546	S3580-E920	08/15/05	20.1	3
OH547	S3650-E920	08/15/05	20.2	3
OH605	S3380-E140	08/09/05	21.6	3
OH606	S3480-E140	09/01/05	21.5	3
OH607	S3580-E140	09/01/05	20.5	3
OH608	S3380-W170	09/01/05	20.1	3
OH609	S3480-W170	09/01/05	20.1	3
OH610	S3580-W170	09/01/05	20.1	3
OH611	S3650-E855	08/15/05	20.0	3
OH612	S400-E245	11/12/05	30.3	9.87
OH613	S400-E235	12/05/05	30.9	9.87
OH614	S400-E235	11/18/05	30.3	9.87
OH615	S400-E235	12/2/05	31.5	9.87
OH620	S700-E140	11/17/05	20.0	3
OH621	S820-E140	11/17/05	20.0	3
OH473-2	S2992-E140	10/25/05	20.3	3
OH622	E-775-S3650	03/14/06	20.5	3
OH624	E300-S3550	06/15/06	20.6	3
OH622	E300-S3400	06/15/06	20.5	3
OH623	E300-S3450	06/15/06	20.7	3
OH625	E1255-S3650	06/12/06	19.8	3
OH626	E1120-S3650	06/12/06	20.0	3
OH630	E725-S3650	06/12/06	20.2	3

[1] All boreholes are drilled into the mine roof except for the S400 water interception floor holes, OH612 through OH615.

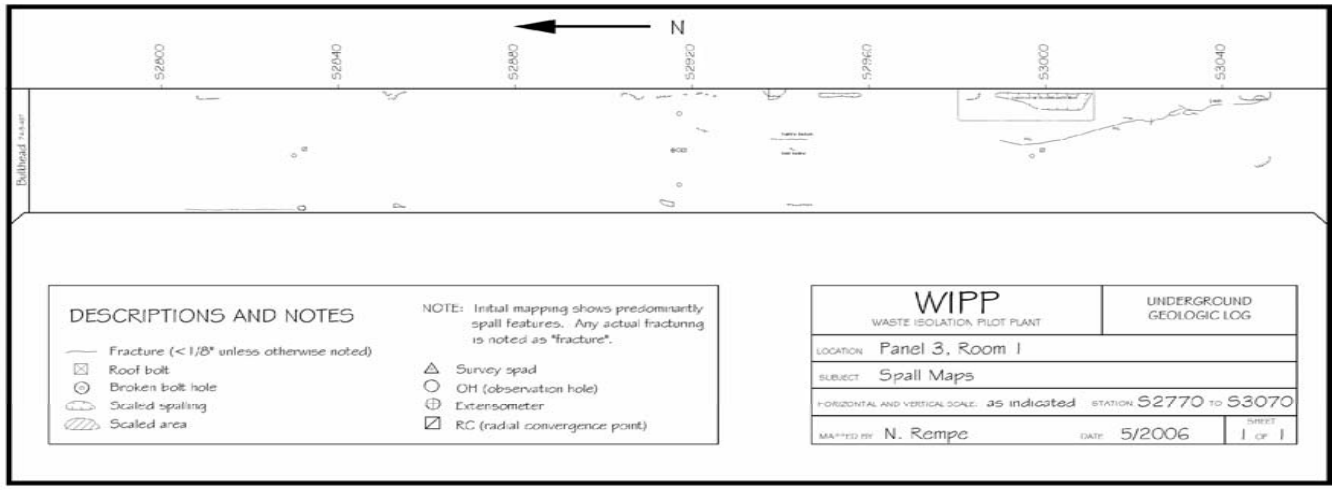

Figure 6-1
Panel 3, Room 1, S2770-S3070 Roof Fractures

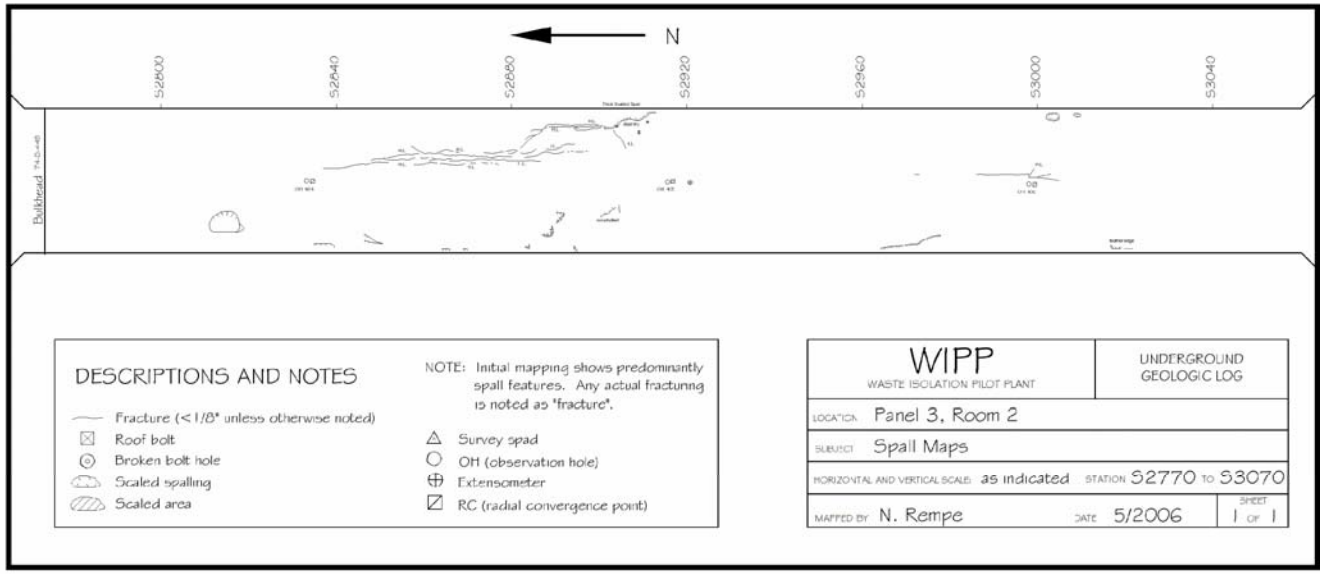

Figure 6-2
Panel 3, Room 2, S2770-S3070 Roof Fractures

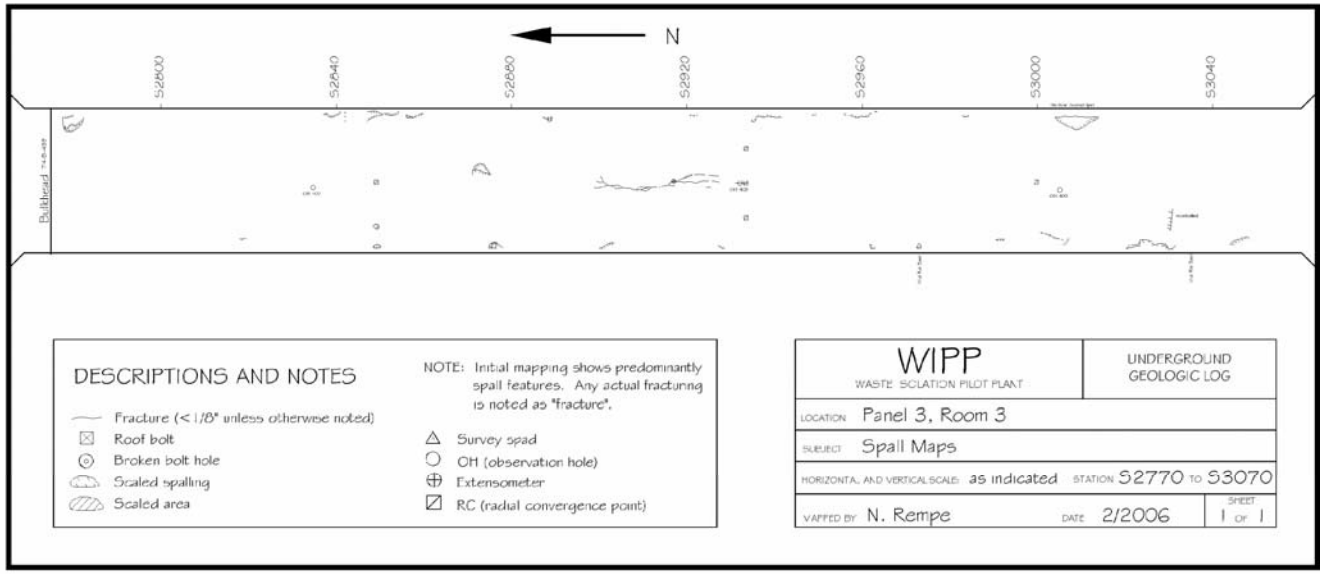

Figure 6-3
Panel 3, Room 3, S2770-S3070 Roof Fractures

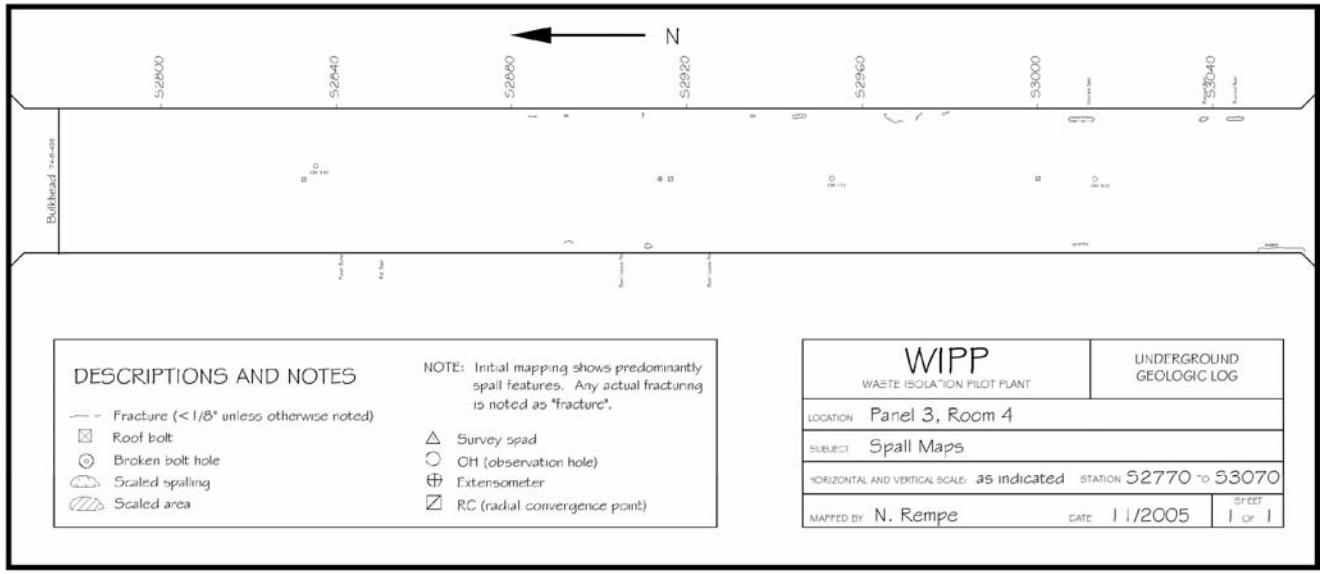

Figure 6-4
Panel 3, Room 4, S2770-S3070 Roof Fractures

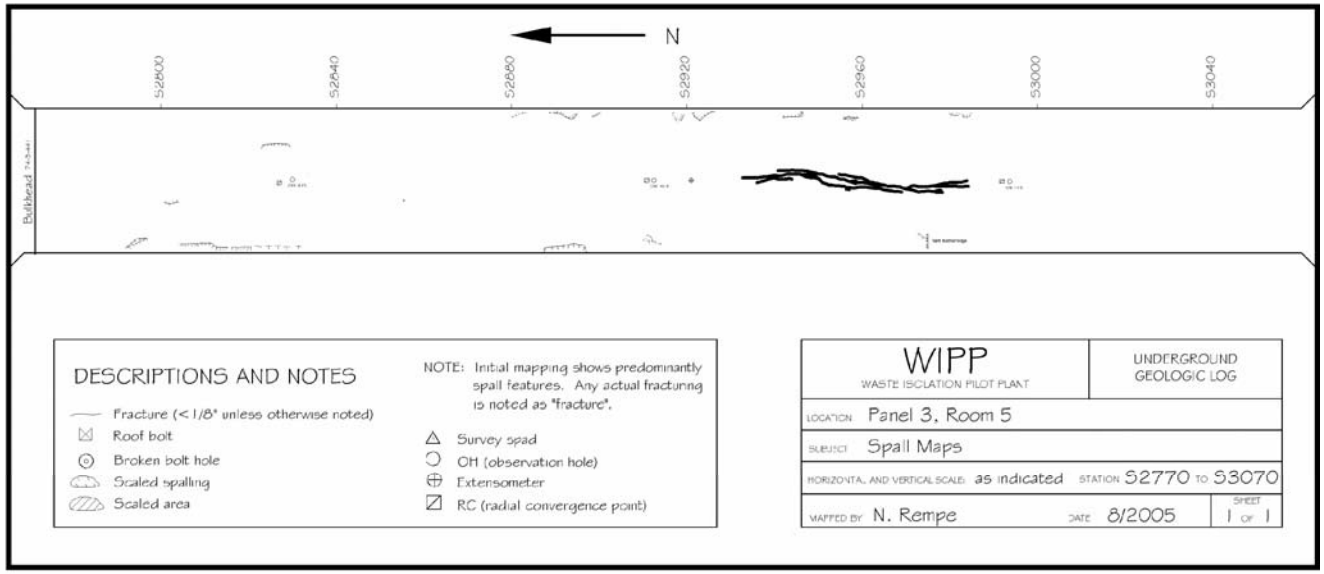

Figure 6-5
Panel 3, Room 5, S2770-S3070 Roof Fractures

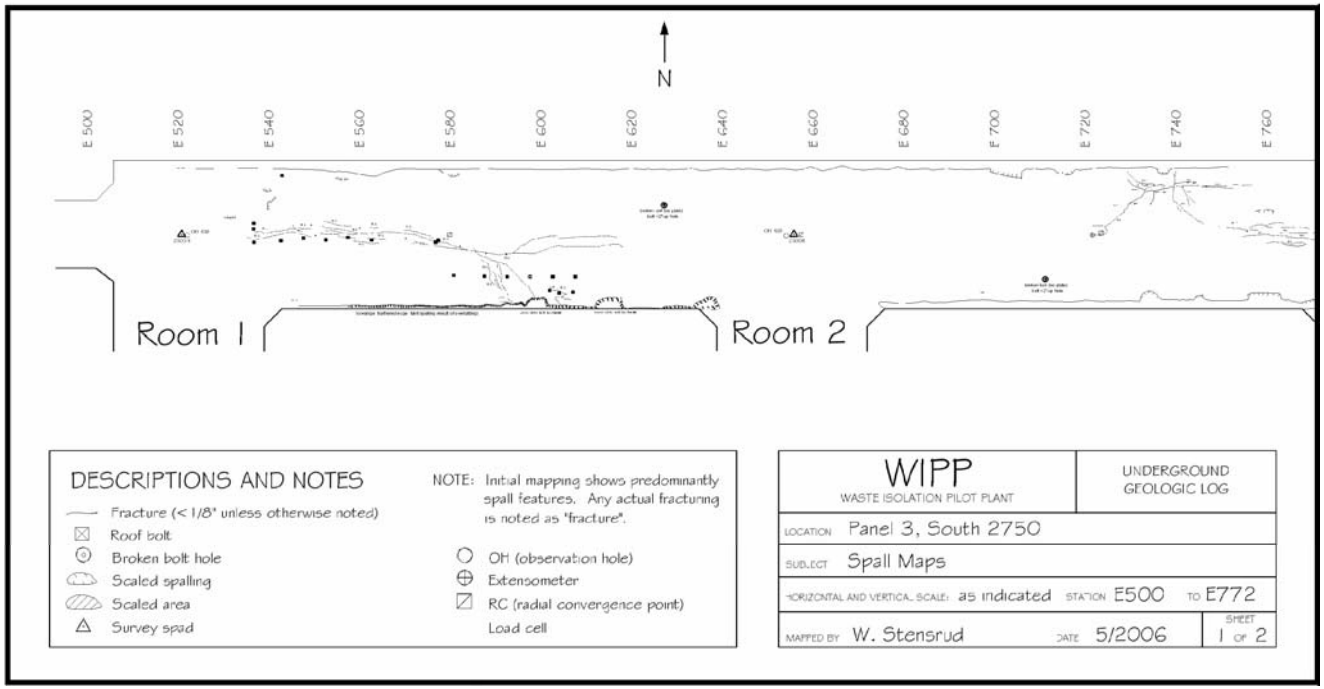

Figure 6-6
Panel 3, South 2750, E500-E772 Roof Fractures

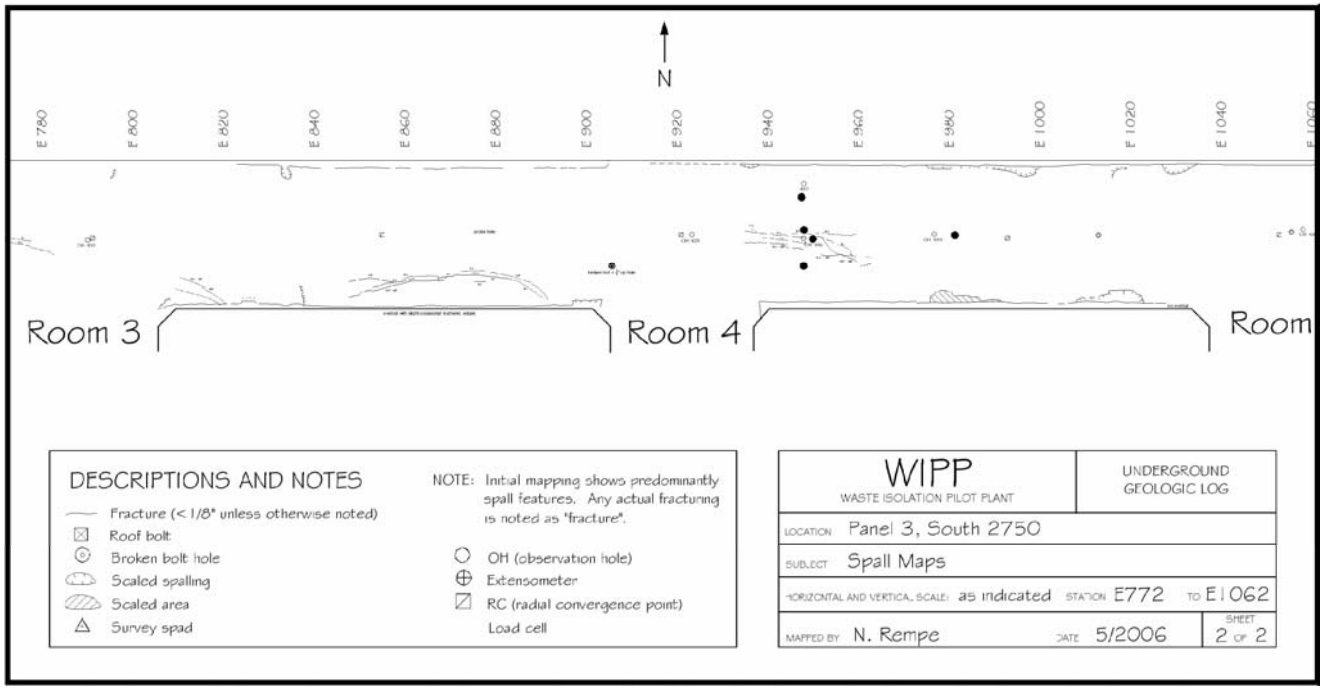

Figure 6-7
Panel 3, South 2750, E772-E1062 Roof Fractures

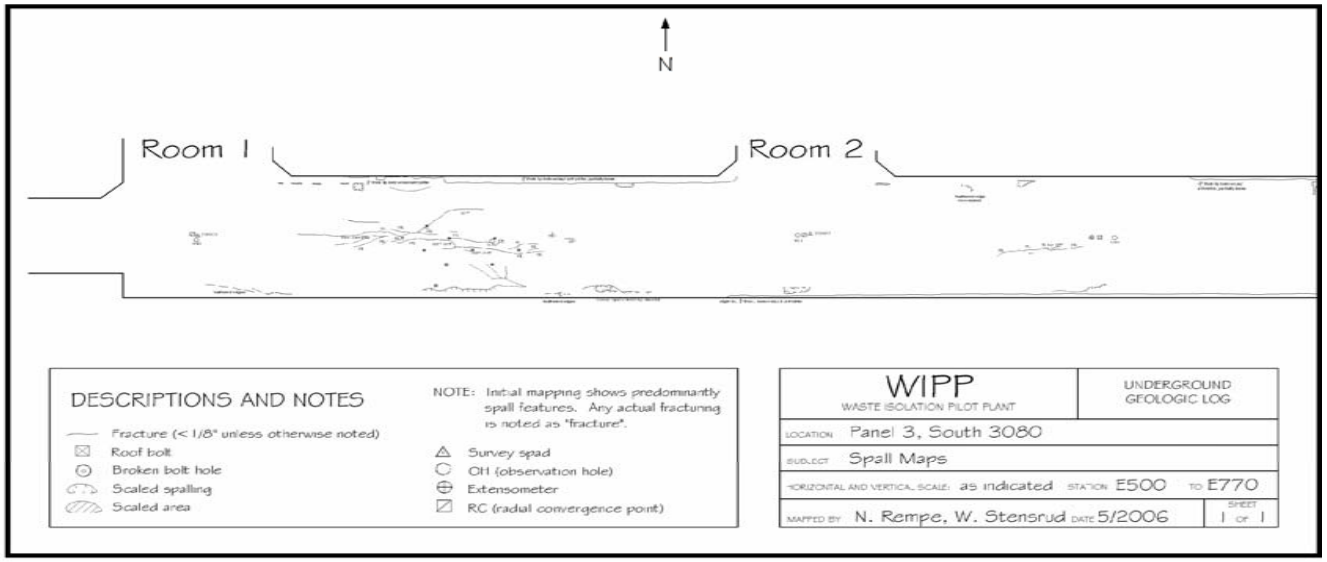

Figure 6-8
Panel 3, South 3080, E500-E770 Roof Fractures

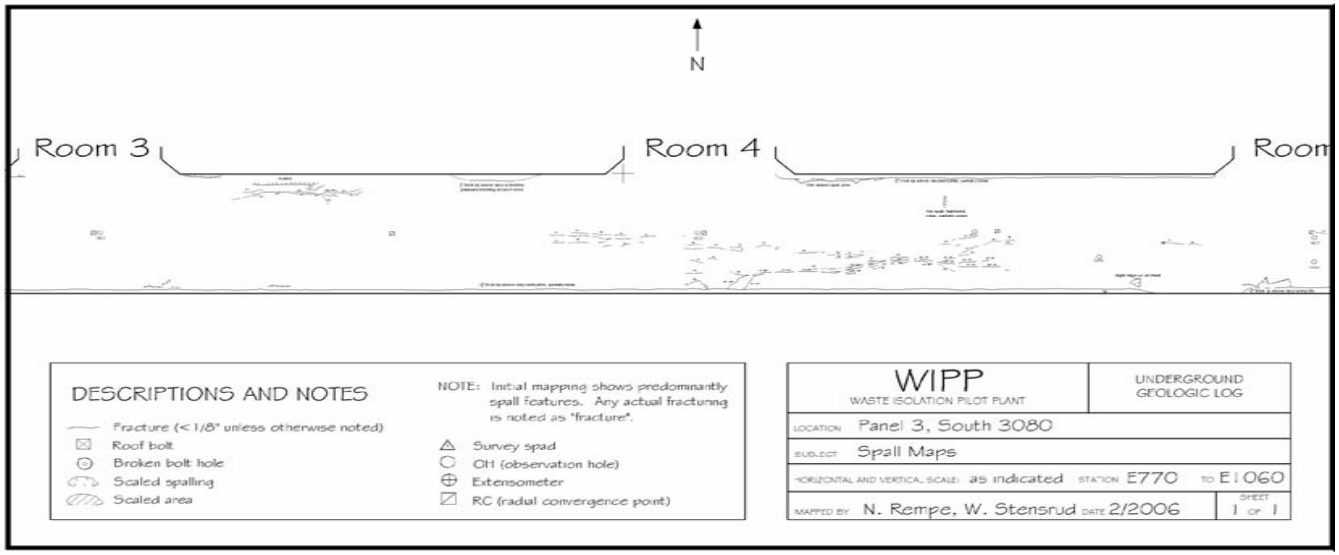

Figure 6-9
Panel 3, South 3080, E770-E1060 Roof Fractures

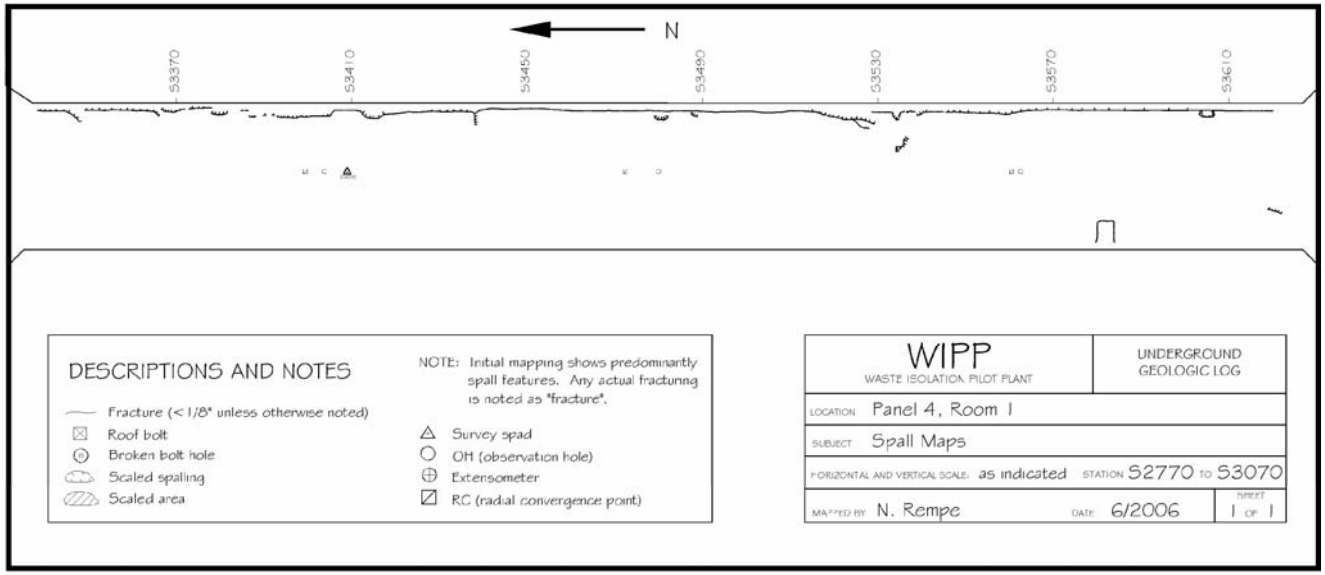

Figure 6-10
Panel 4, Room 1, S2770-S3070 Roof Fractures

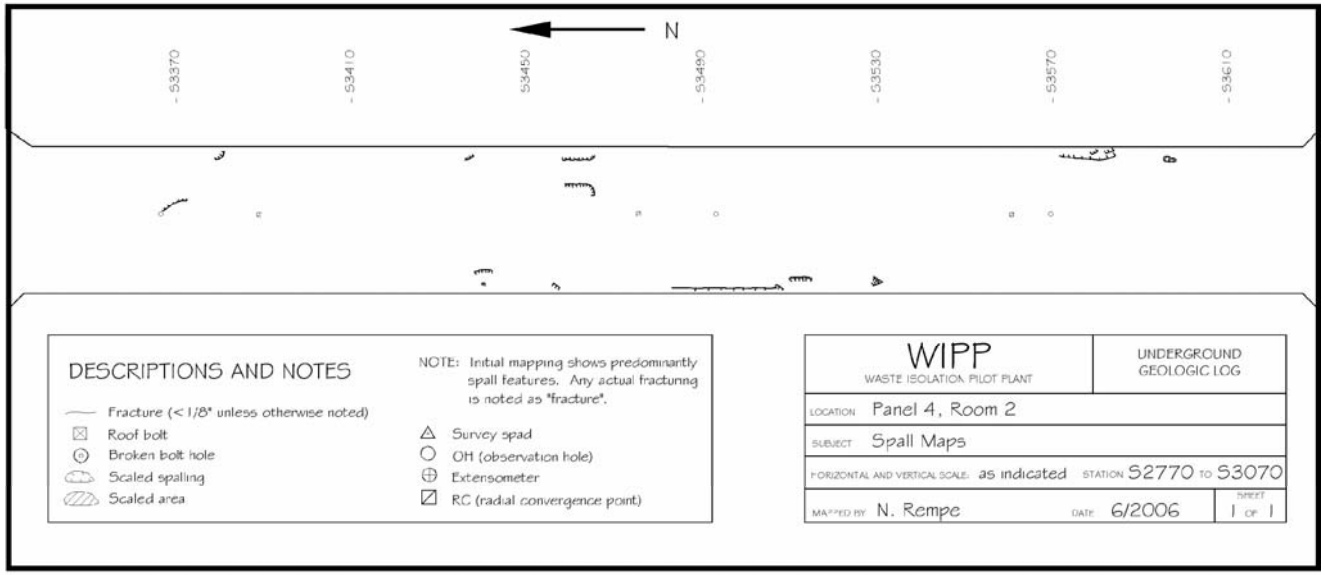

Figure 6-11
Panel 4, Room 2, S2770-S3070 Roof Fractures

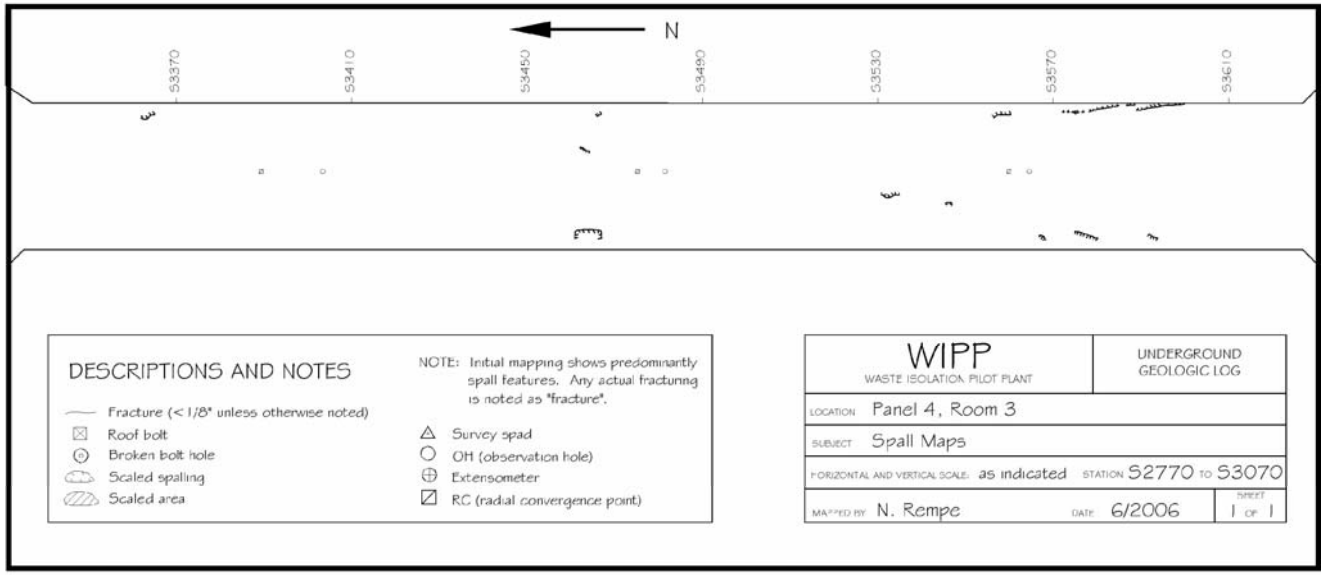

Figure 6-12
Panel 4, Room 3, S2770-S3070 Roof Fractures

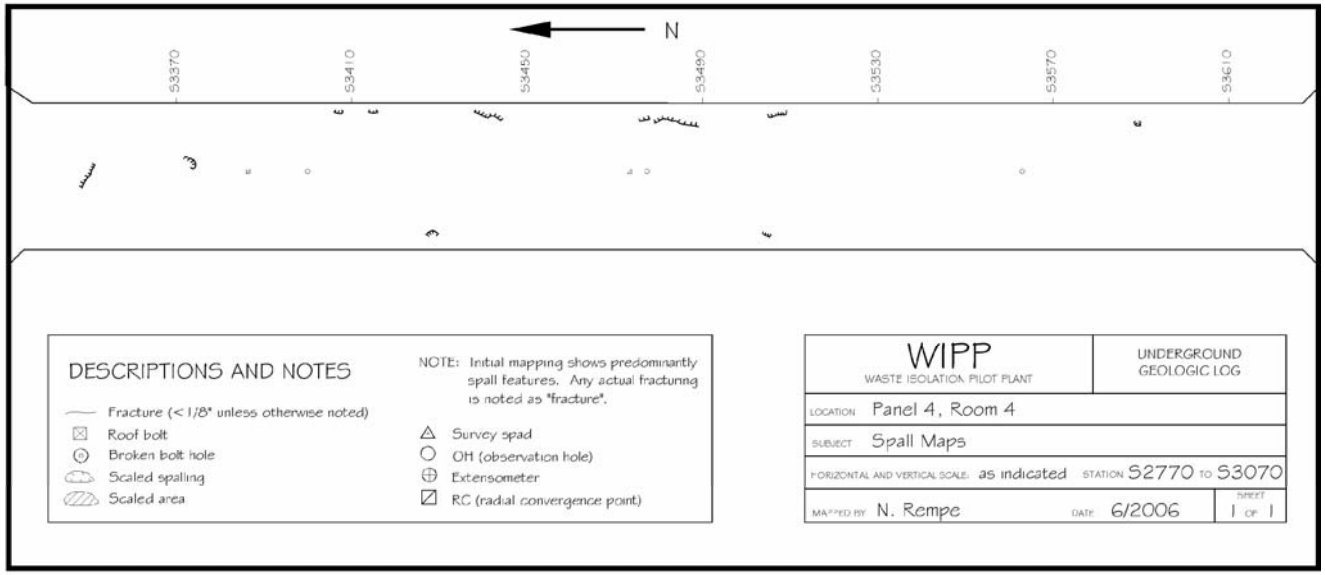

Figure 6-13
Panel 4, Room 4, S2770-S3070 Roof Fractures

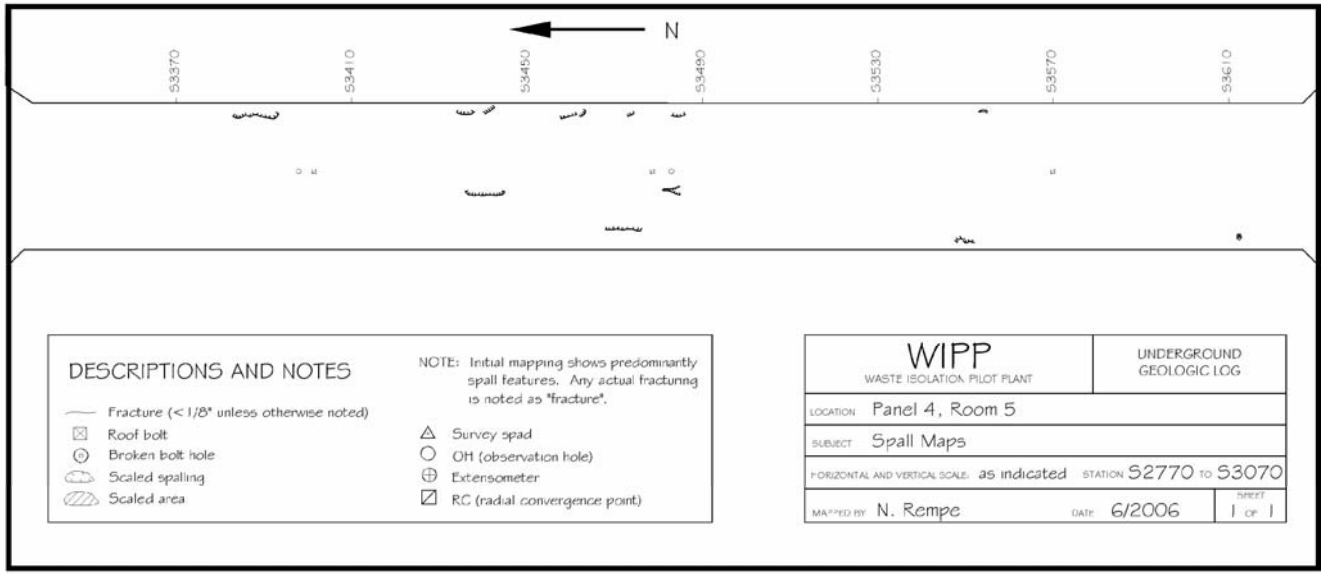

Figure 6-14
Panel 4, Room 5, S2770-S3070 Roof Fractures

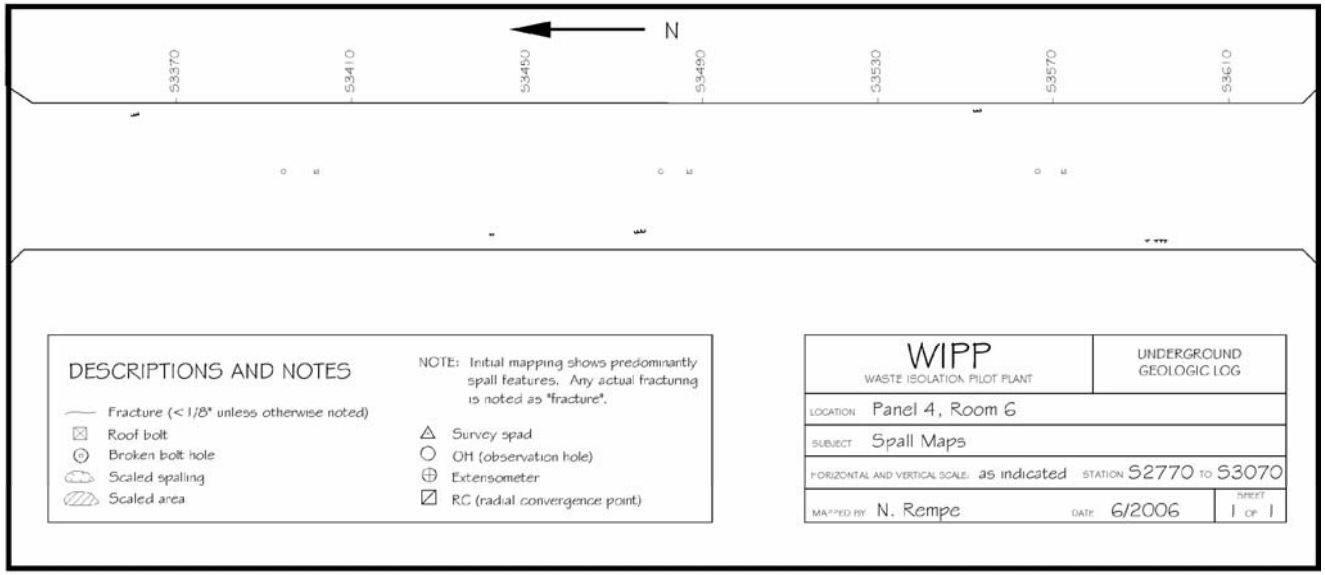

Figure 6-15
Panel 4, Room 6, S2770-S3070 Roof Fractures

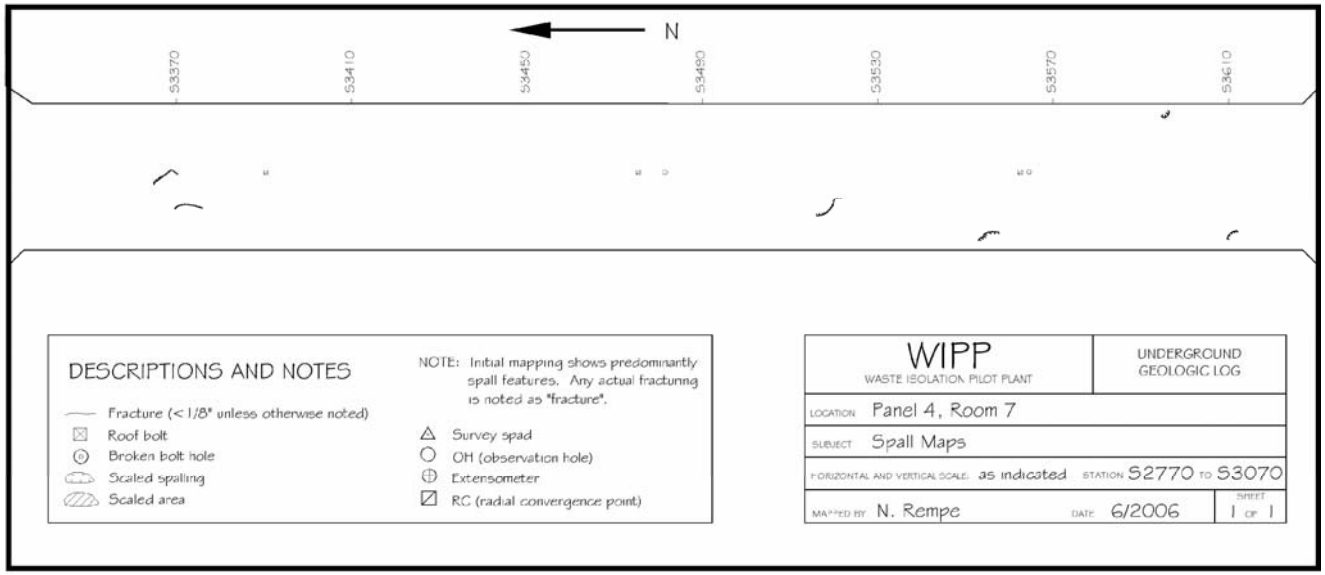

Figure 6-16
Panel 4, Room 7, S2770-S3070 Roof Fractures

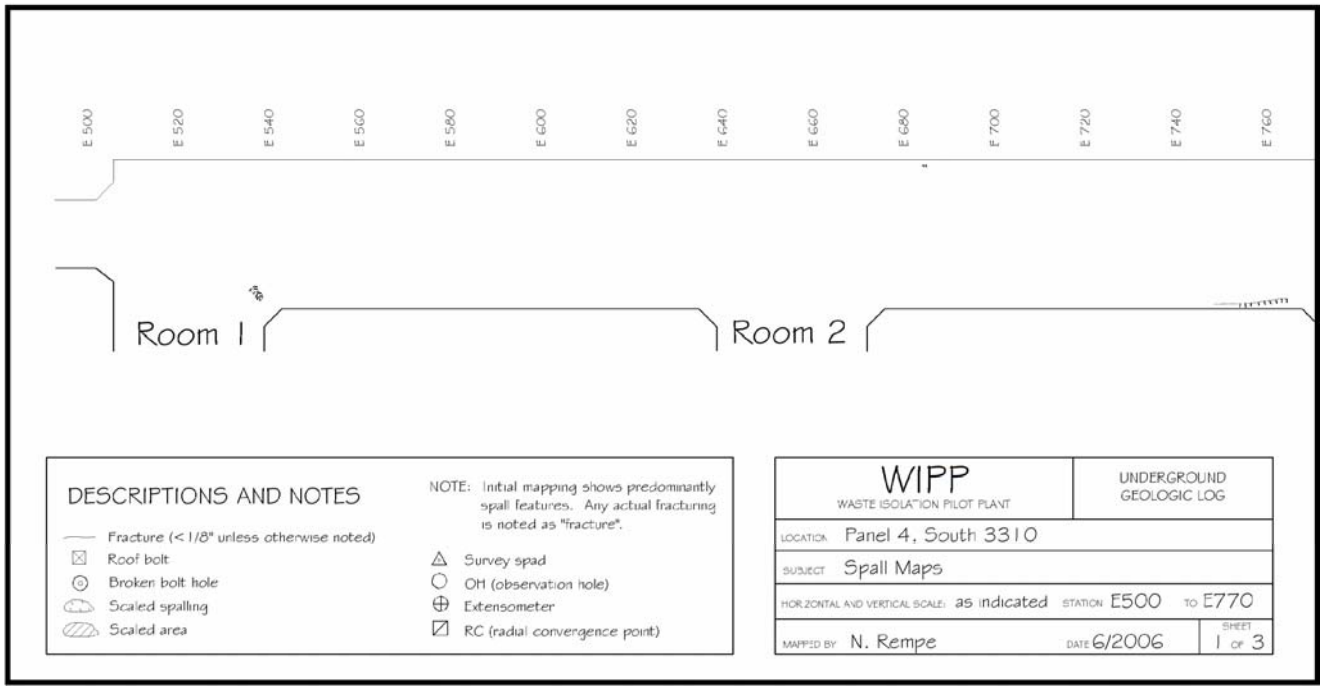

Figure 6-17
Panel 4, South 3310, E500-E770 Roof Fractures

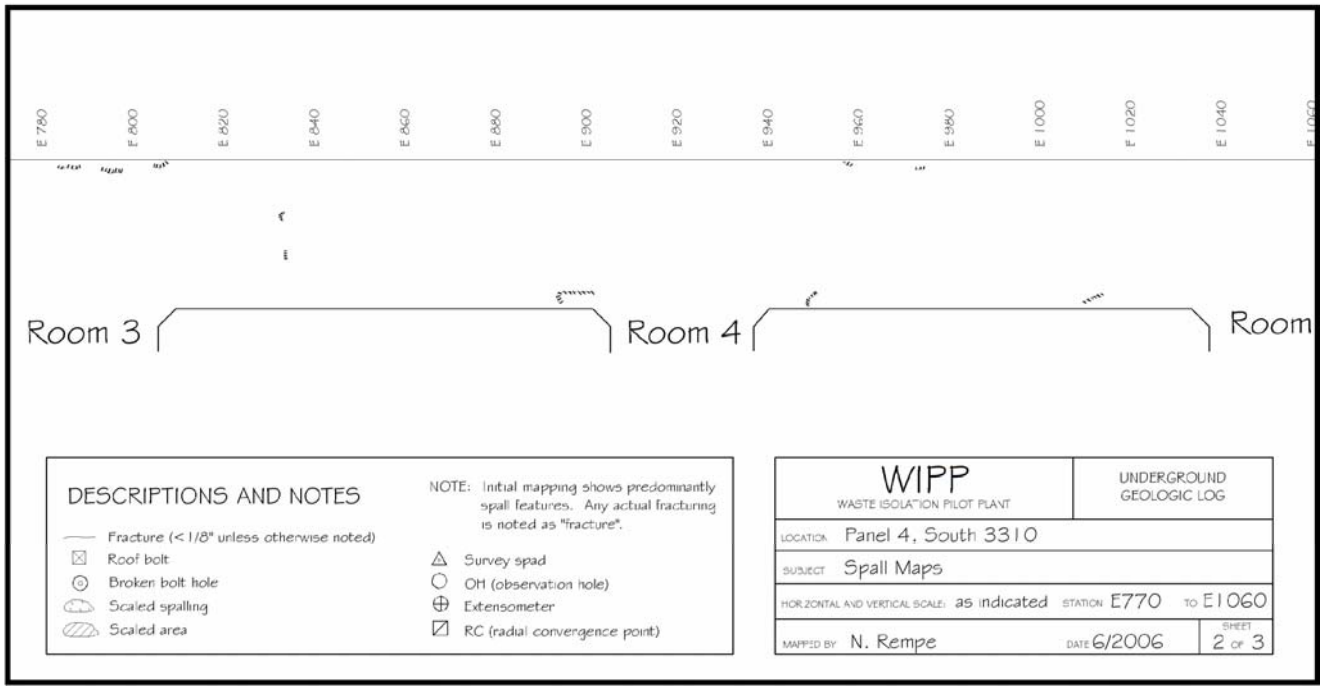

Figure 6-18
Panel 4, South 3310, E770-E1060 Roof Fractures

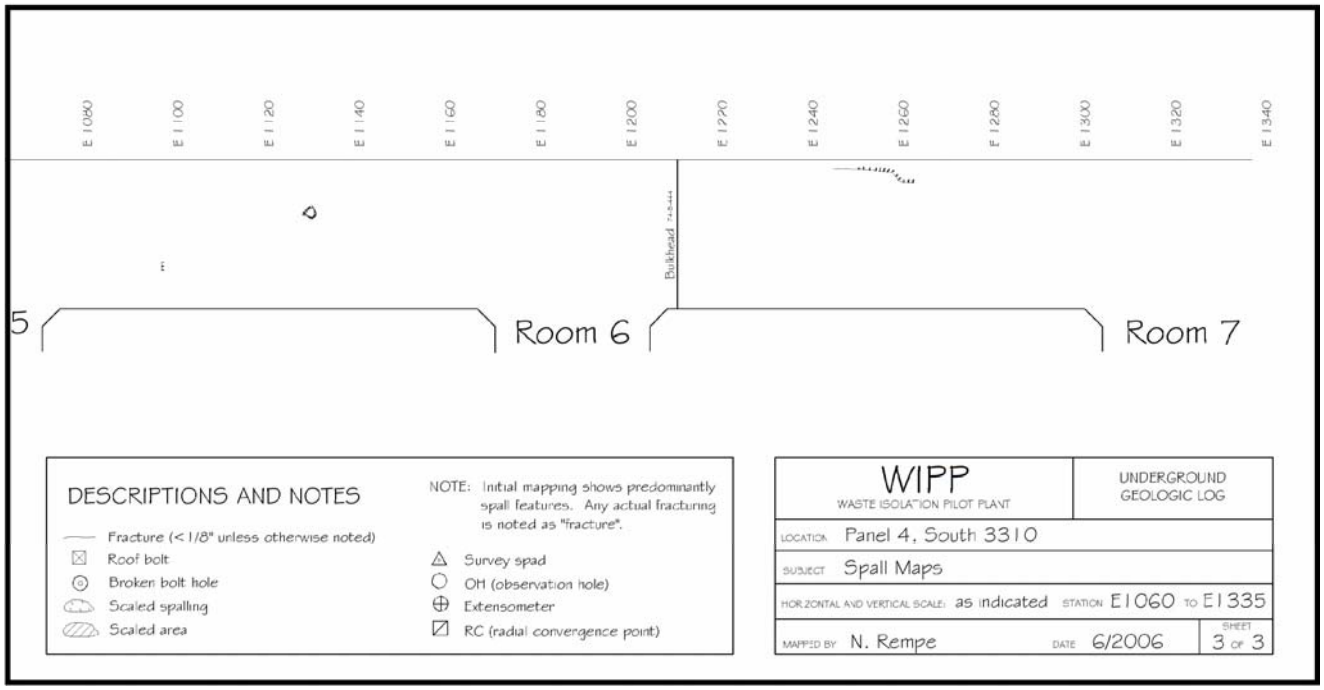

Figure 6-19
Panel 4, South 3310, E1060-E1335 Roof Fractures

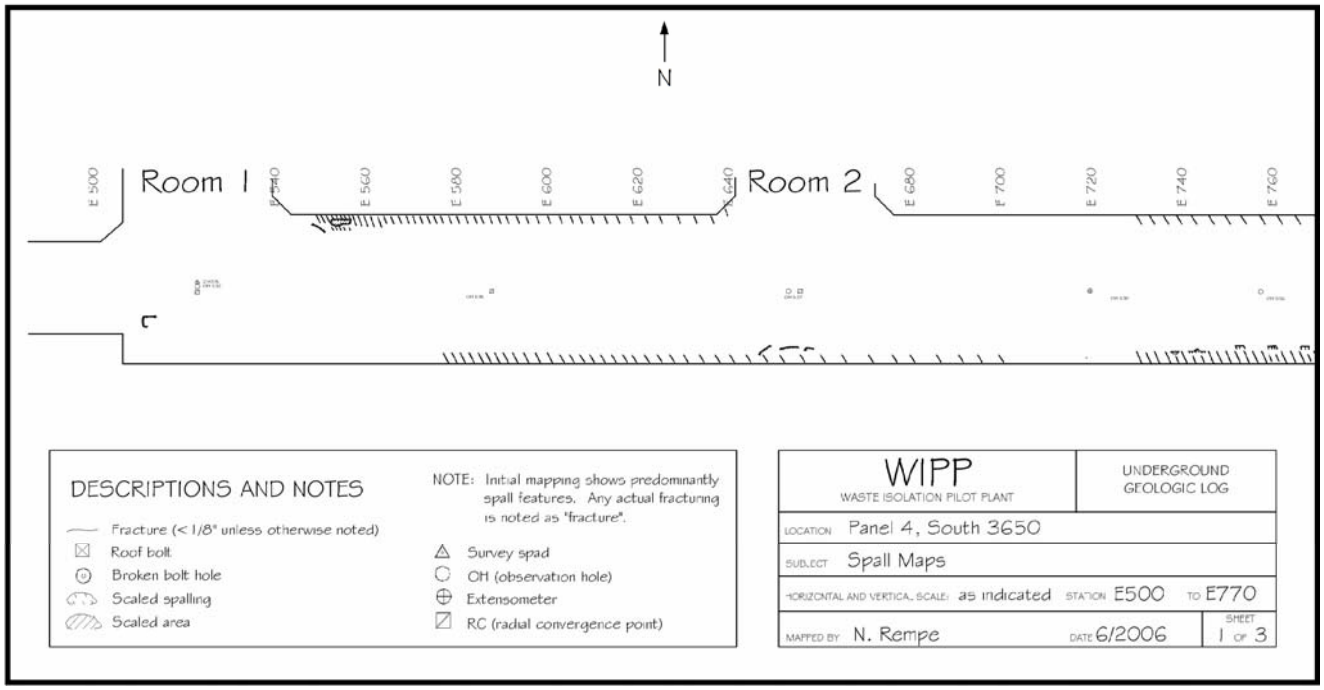

Figure 6-20
Panel 4, South 3650, E500-E770 Roof Fractures

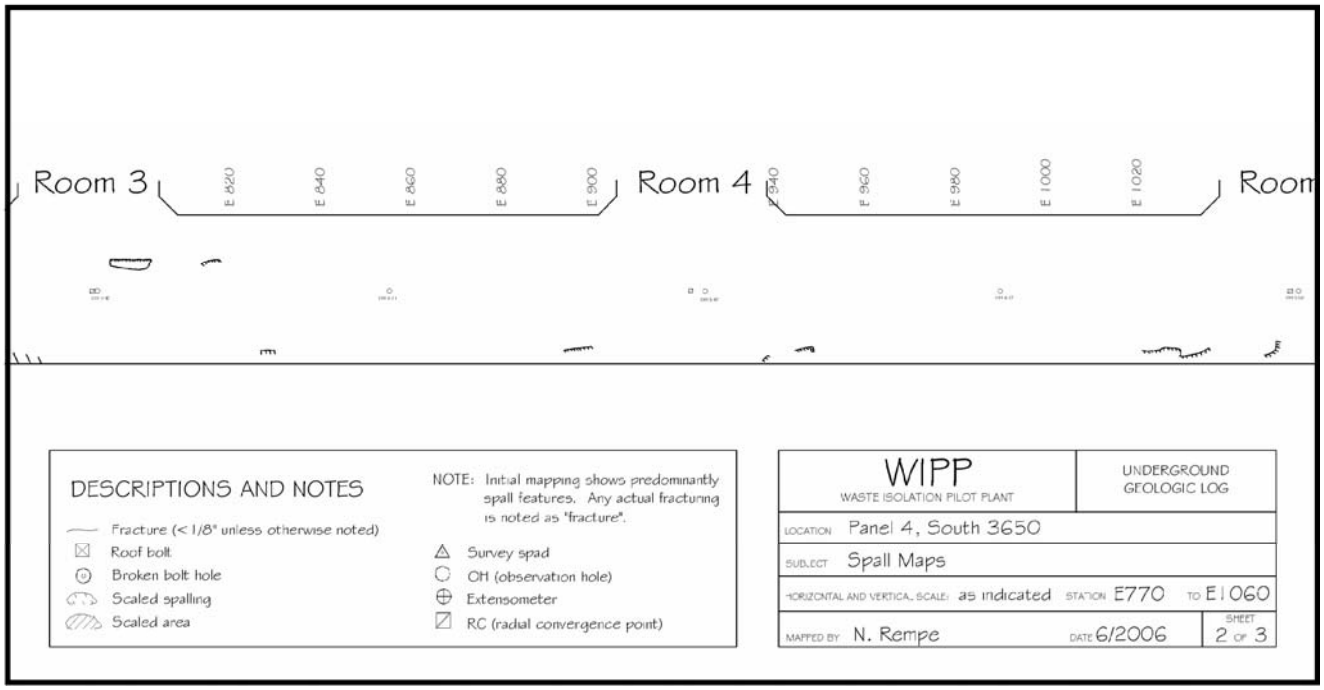

Figure 6-21
Panel 4, South 3650, E770-E1060 Roof Fractures

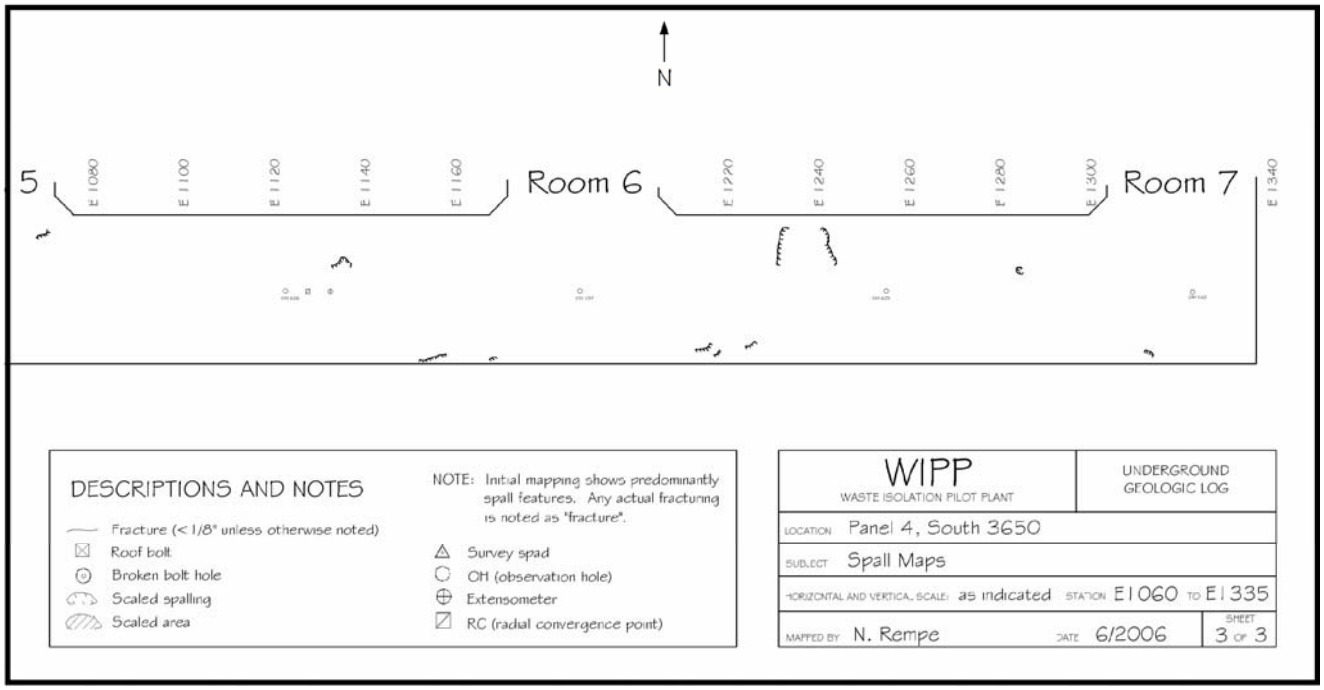

Figure 6-22
Panel 4, South 3650, E1060-E1335 Roof Fractures

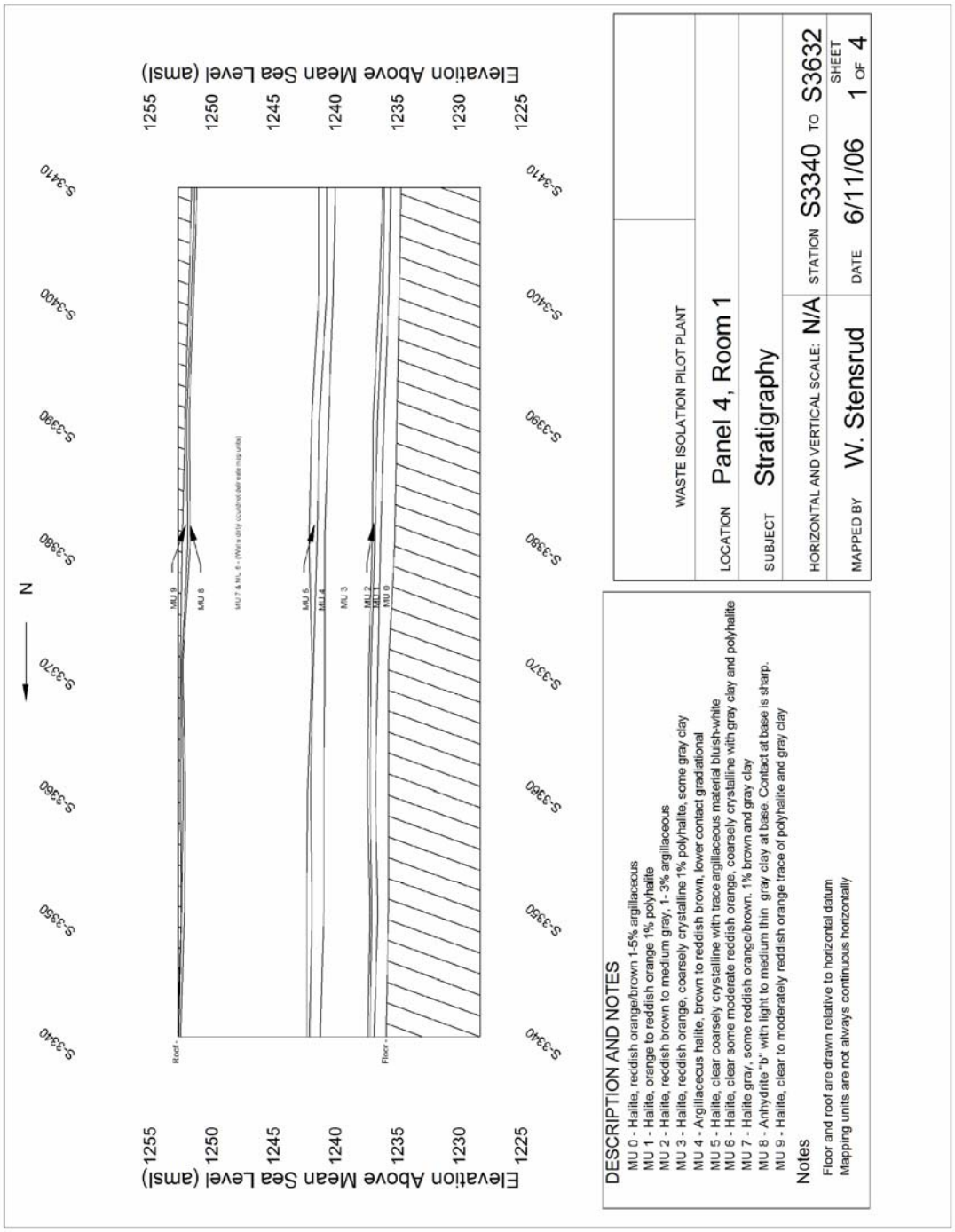

Figure 6-23. Panel 4 Room 1, S3340-S3632 Stratigraphic Map (1 of 4).

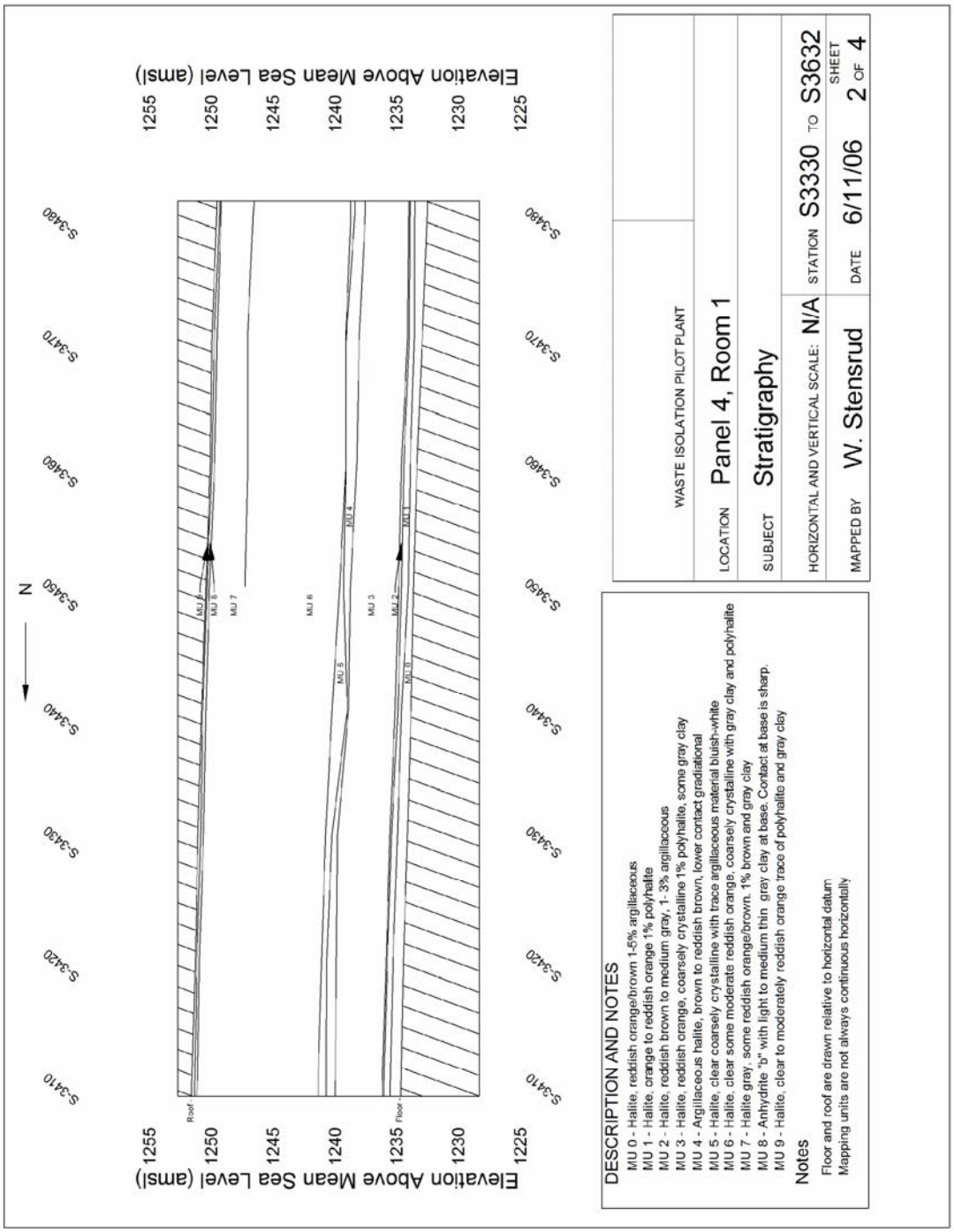

Figure 6-24. Panel 4 Room 1, S3340-S3632 Stratigraphic Map (2 of 4).

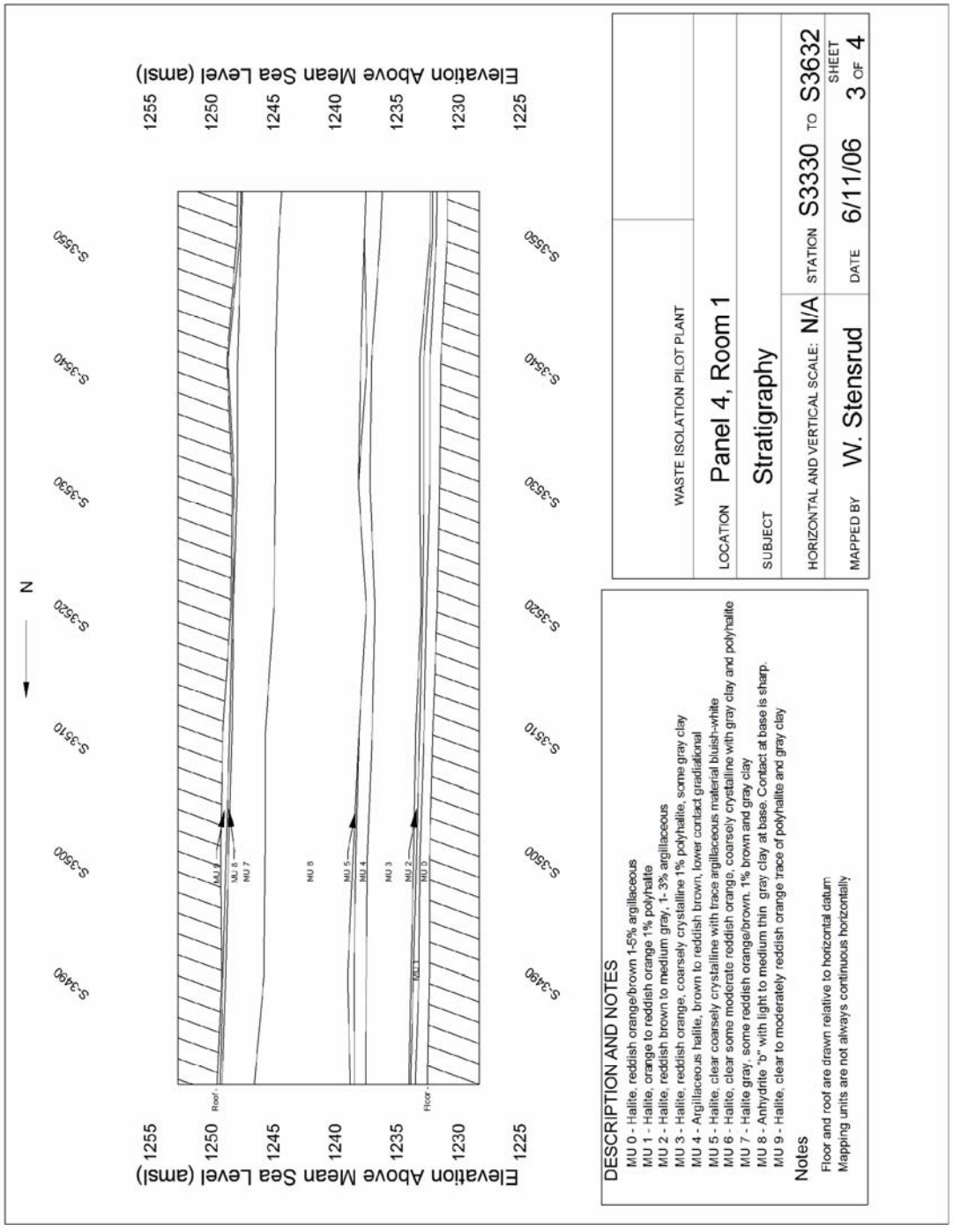

Figure 6-25. Panel 4 Room 1, S3340-S3632 Stratigraphic Map (3 of 4).

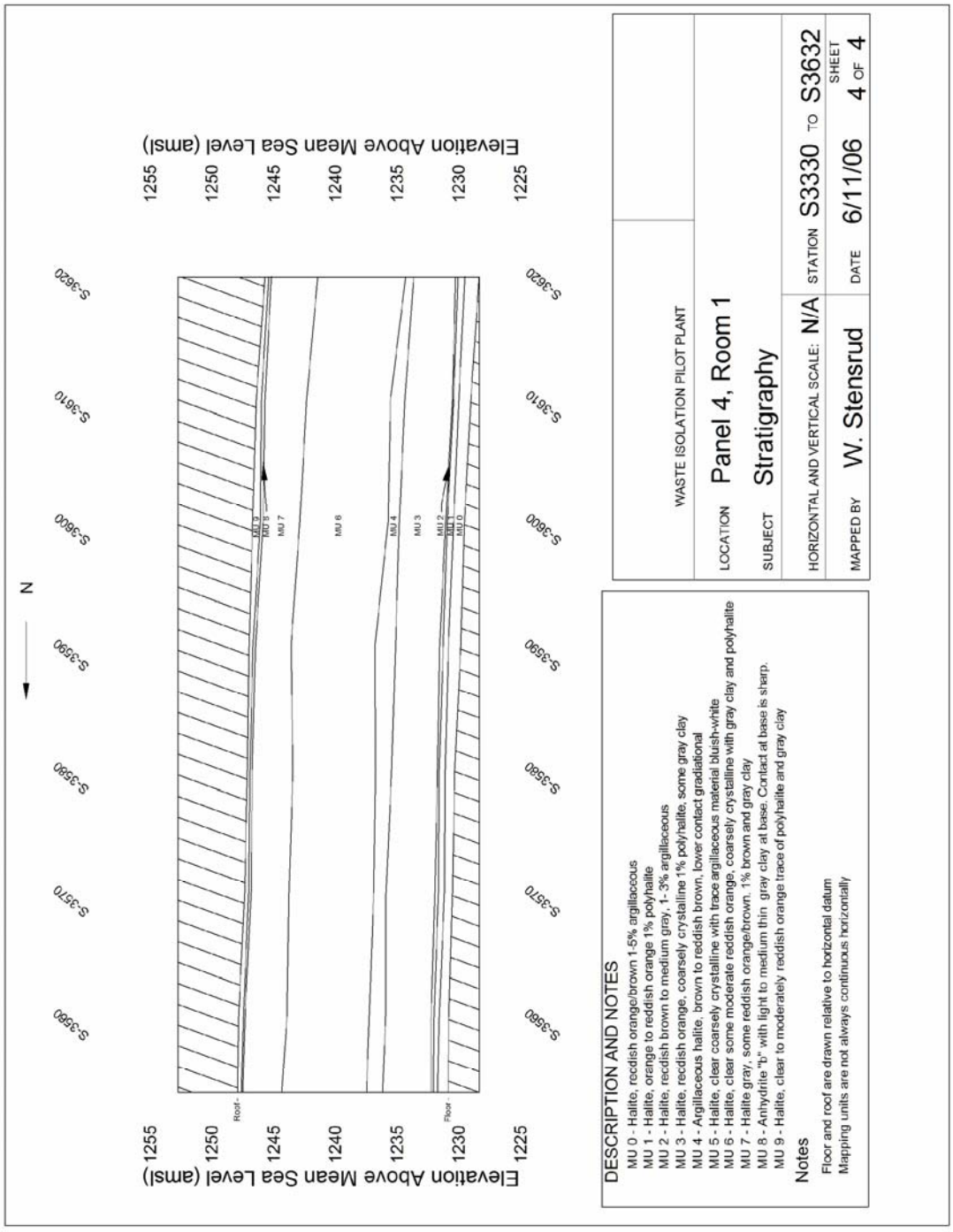

Figure 6-26. Panel 4 Room 1, S3340-S3632 Stratigraphic Map (4 of 4).

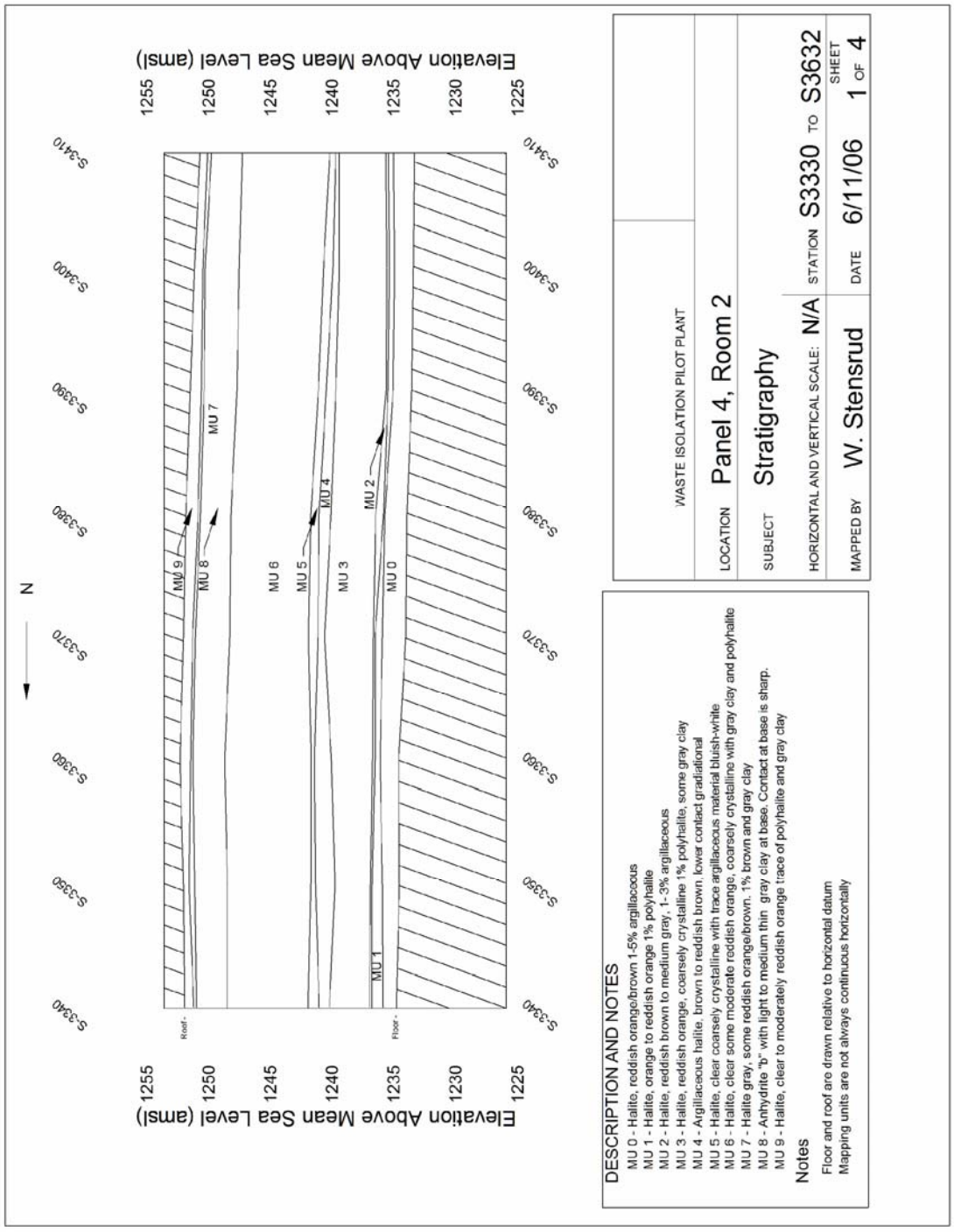

Figure 6-27. Panel 4 Room 2, S3340-S3632 Stratigraphic Map (1 of 4).

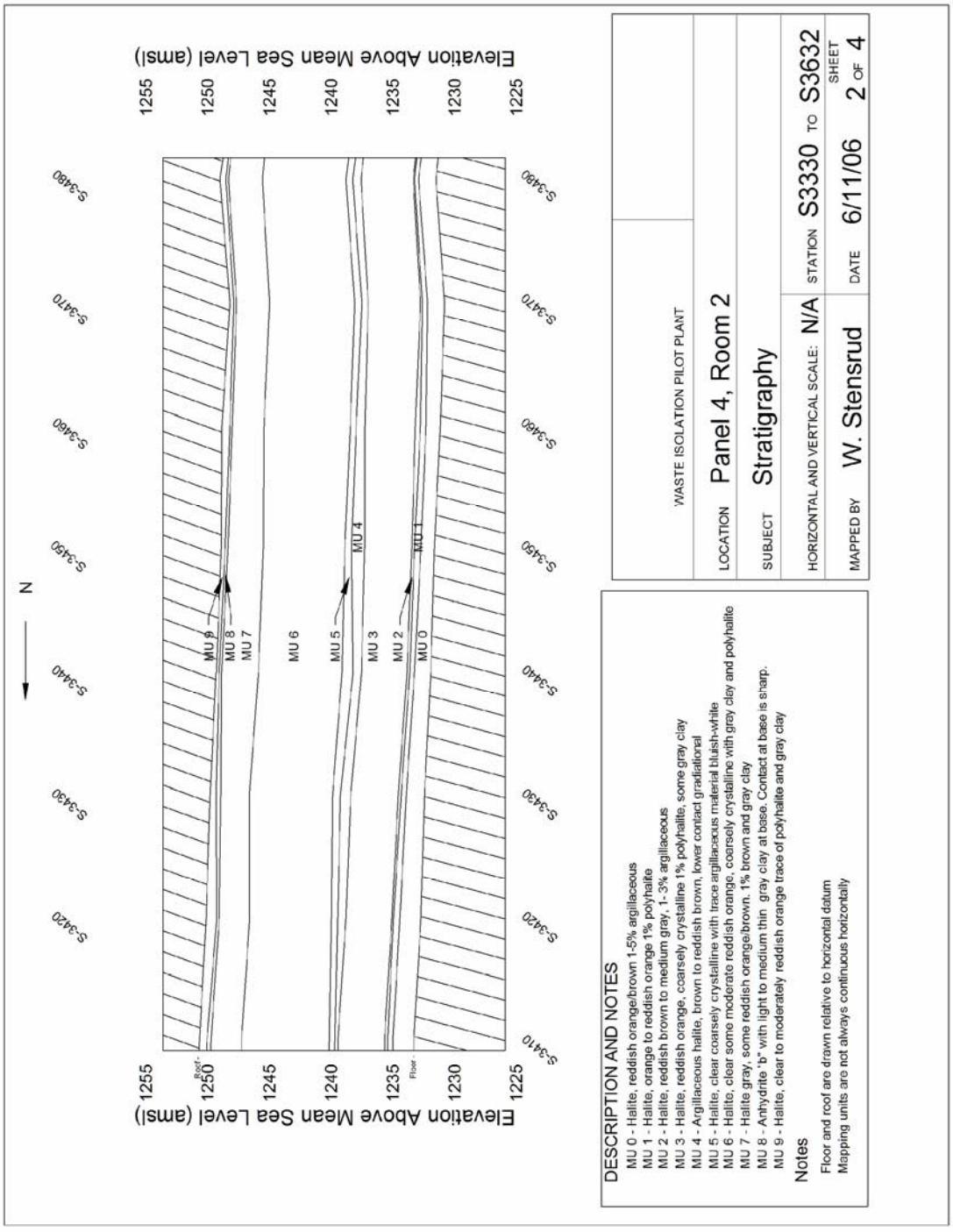

Figure 6-28. Panel 4 Room 2, S3340-S3632 Stratigraphic Map (2 of 4).

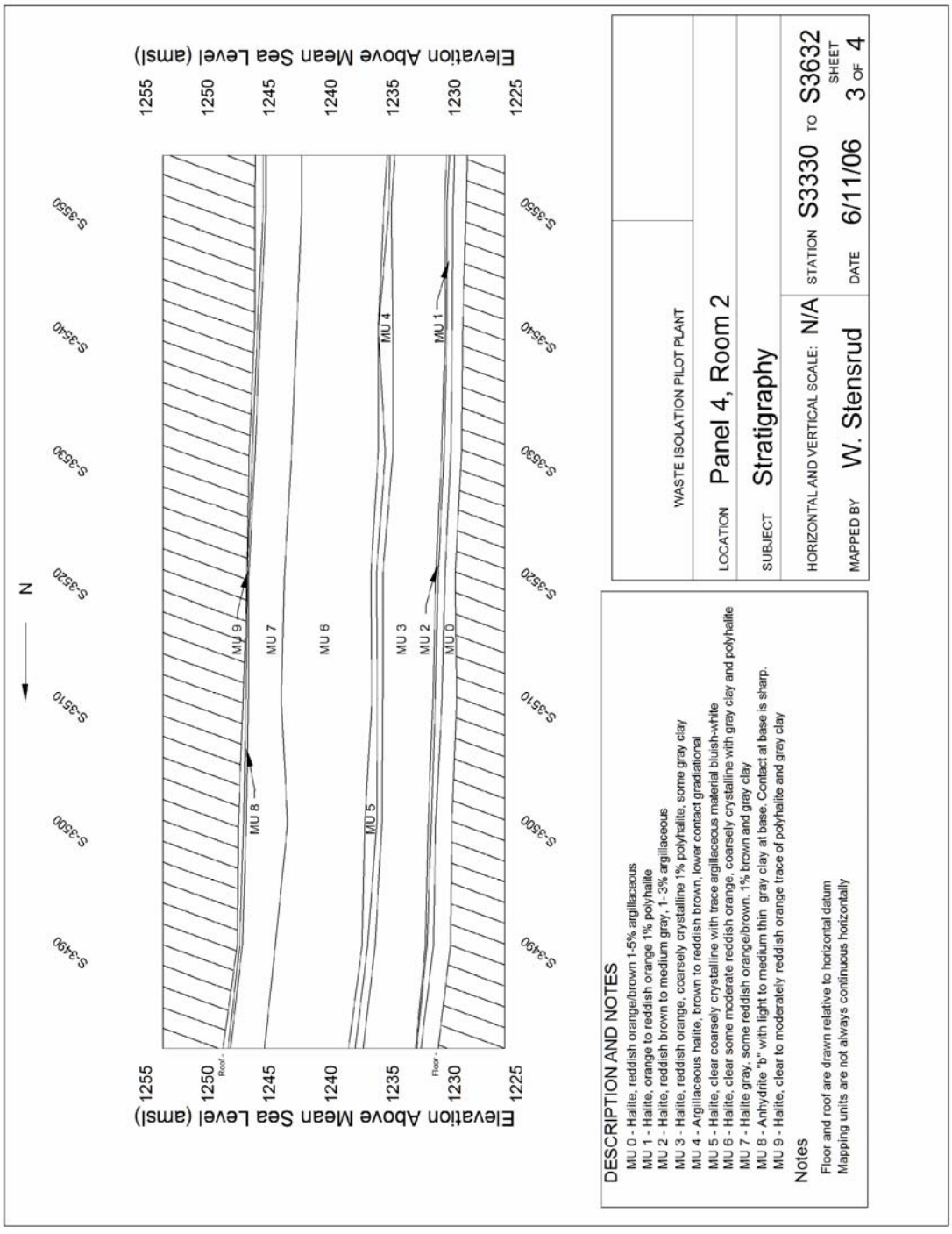

Figure 6-29. Panel 4 Room 2, S3340-S3632 Stratigraphic Map (3 of 4).

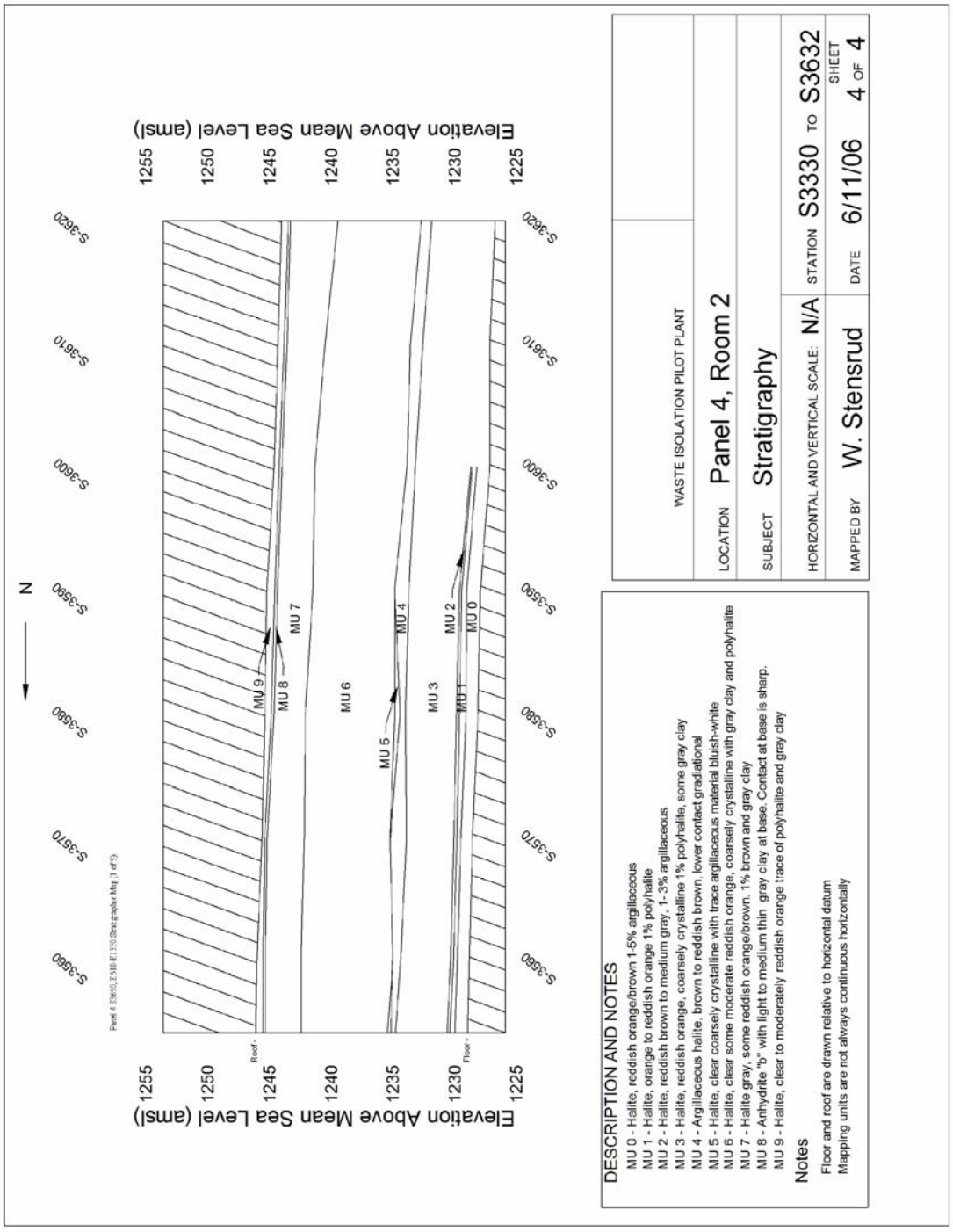

Figure 6-30. Panel 4 Room 2, S3340-S3632 Stratigraphic Map (4 of 4).

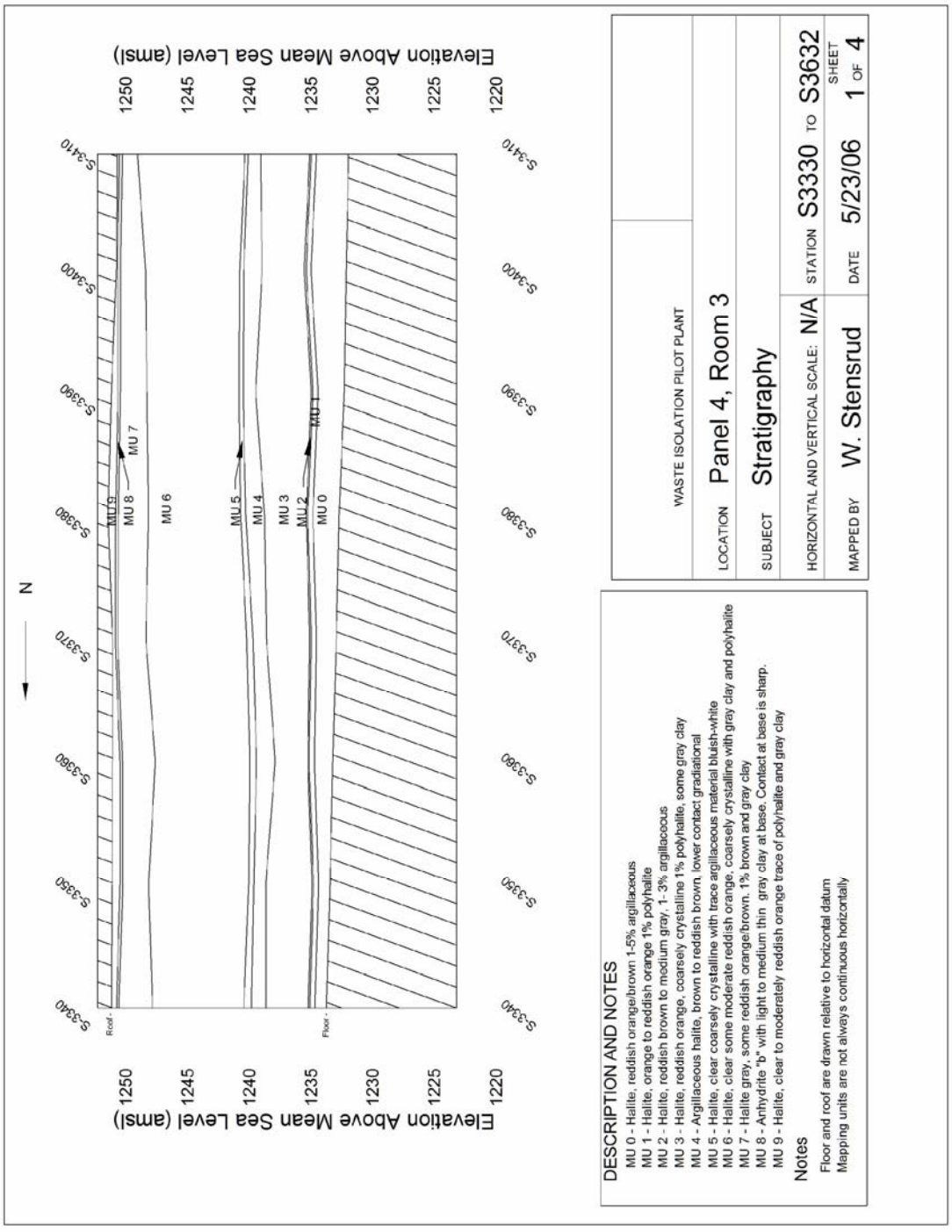

Figure 6-31. Panel 4 Room 3, S3340-S3632 Stratigraphic Map (1 of 4).

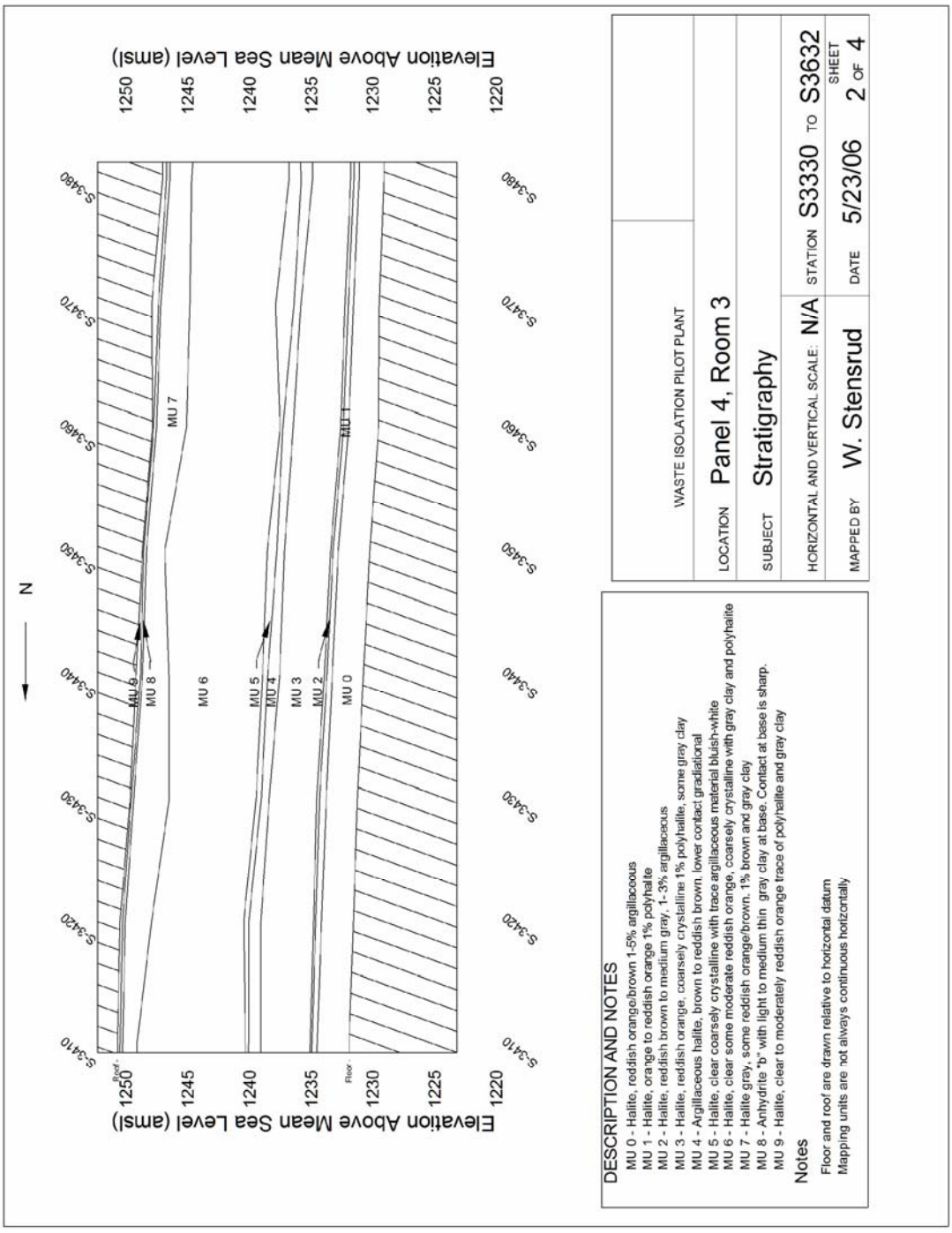

Figure 6-32. Panel 4 Room 3, S3340-S3632 Stratigraphic Map (2 of 4).

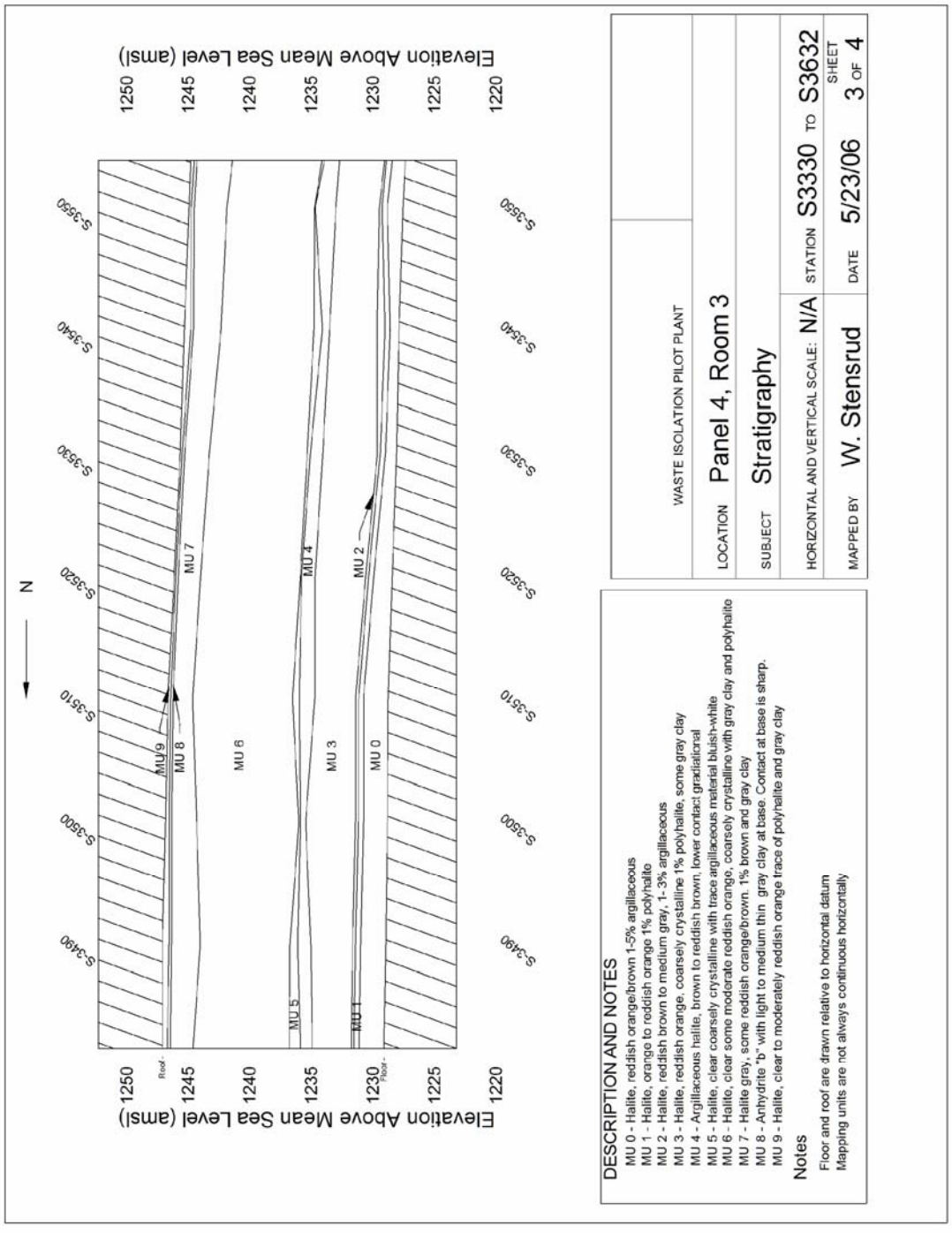

Figure 6-33. Panel 4 Room 3, S3340-S3632 Stratigraphic Map (3 of 4).

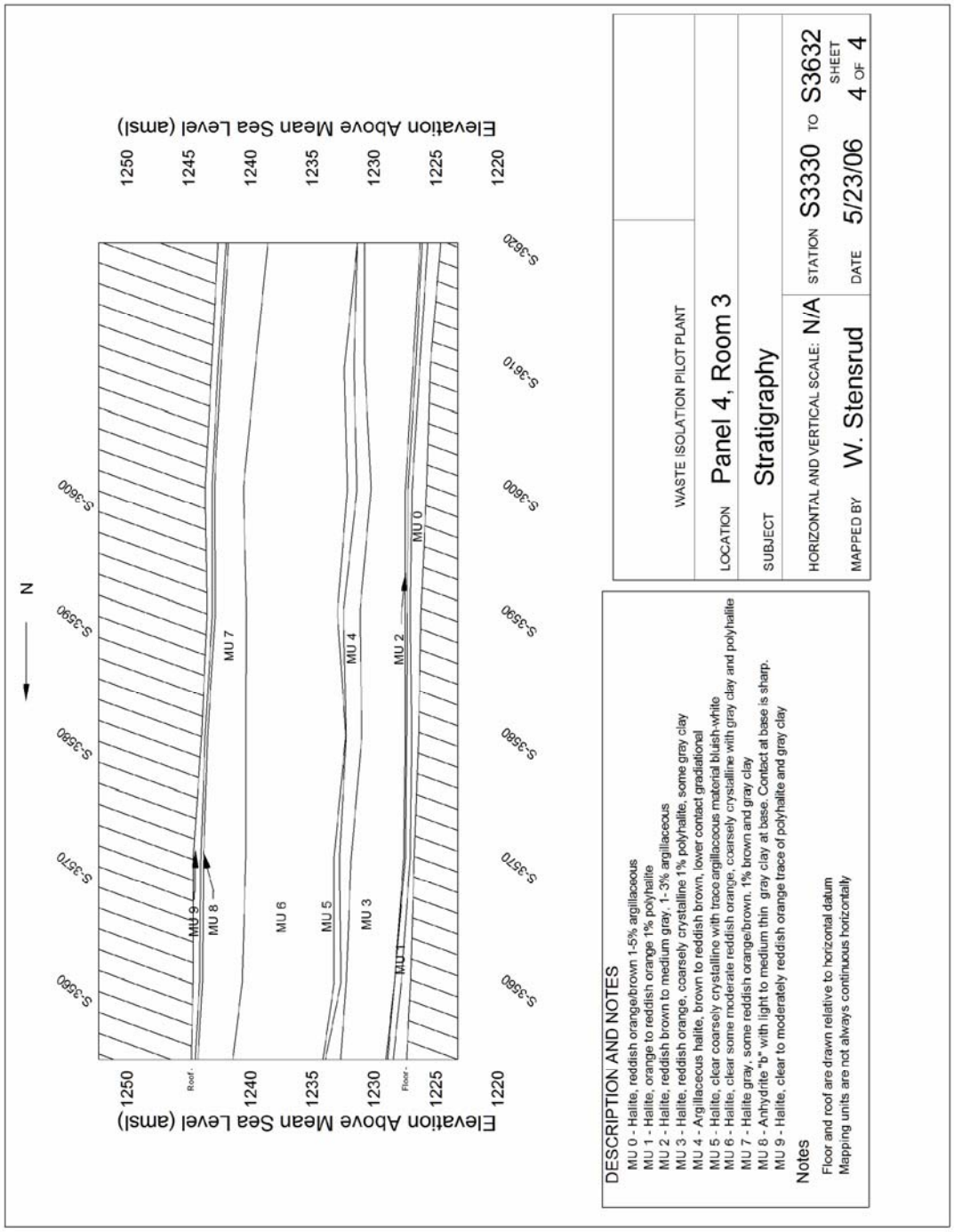

Figure 6-34. Panel 4 Room 3, S3340-S3632 Stratigraphic Map (4 of 4).

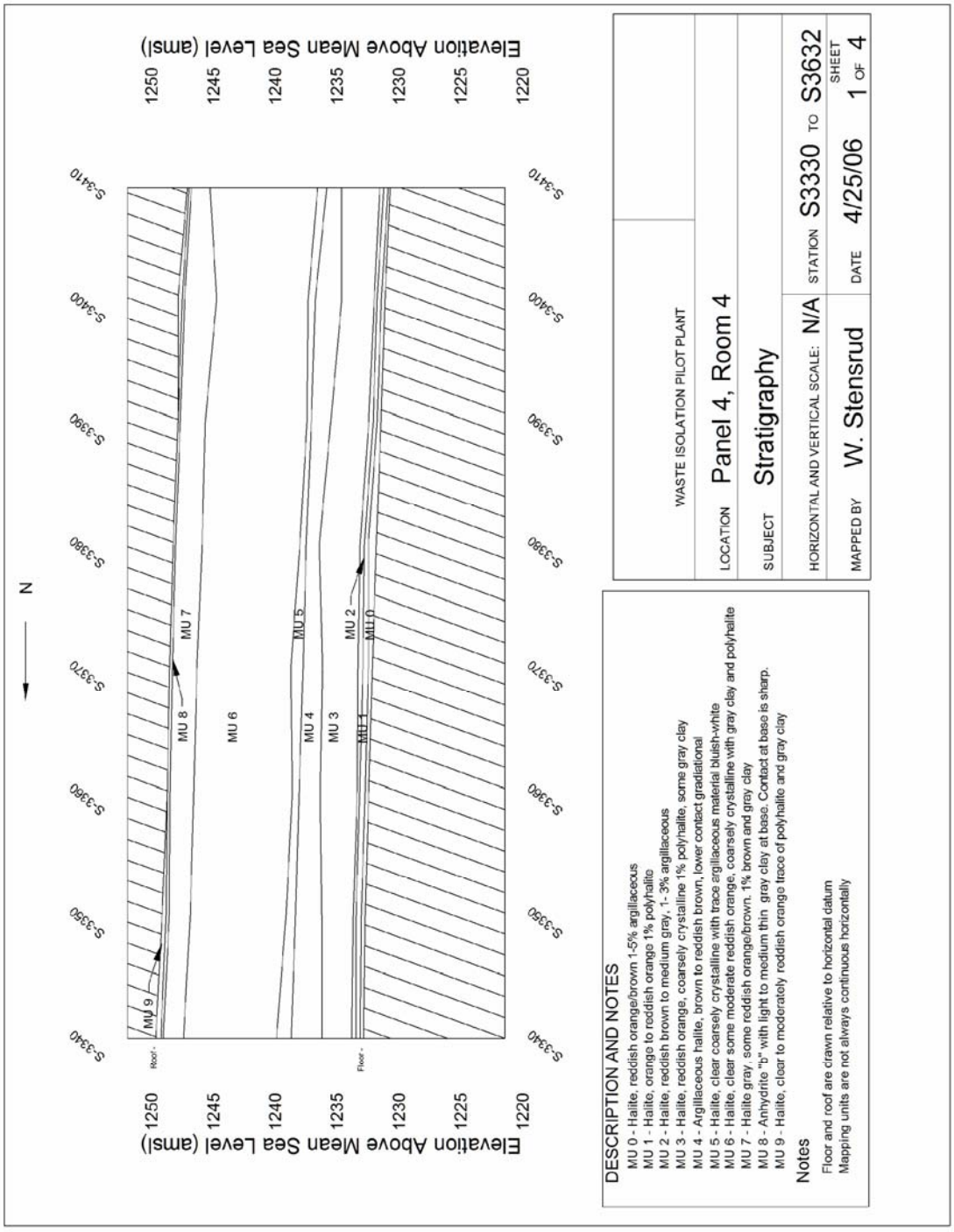

Figure 6-35. Panel 4 Room 4, S3340-S3632 Stratigraphic Map (1 of 4).

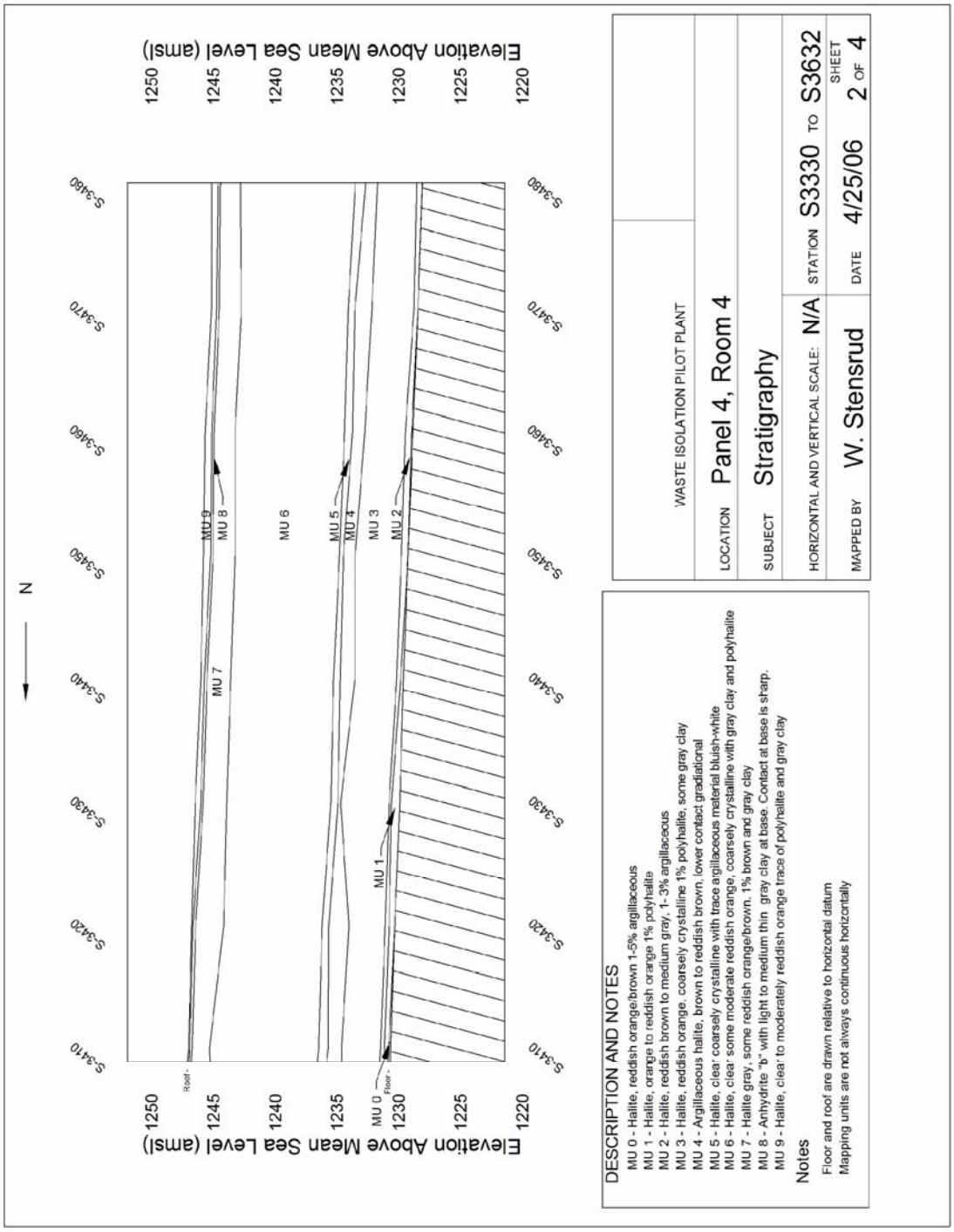

Figure 6-36. Panel 4 Room 4, S3340-S3632 Stratigraphic Map (2 of 4).

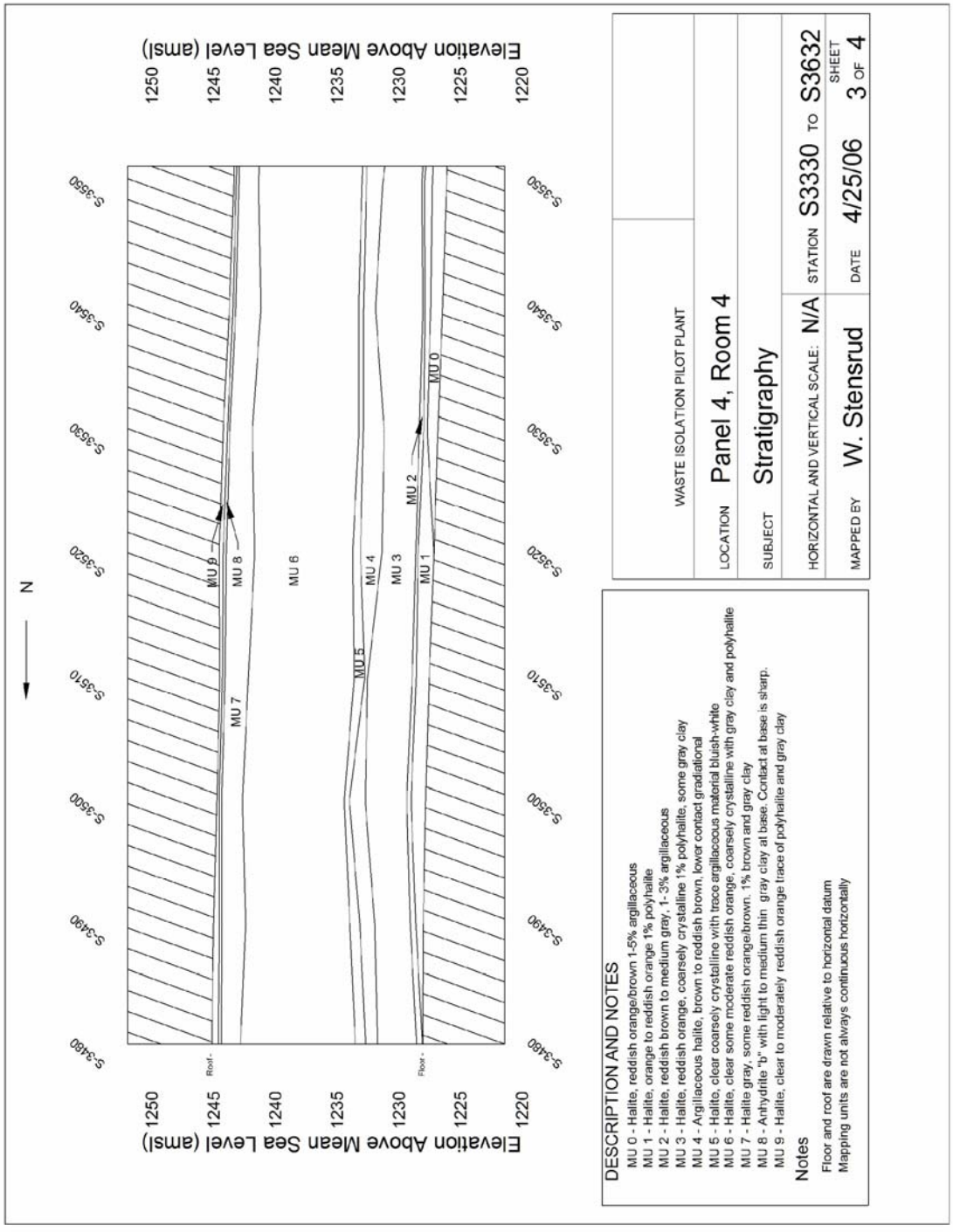

Figure 6-37. Panel 4 Room 4, S3340-S3632 Stratigraphic Map (3 of 4).

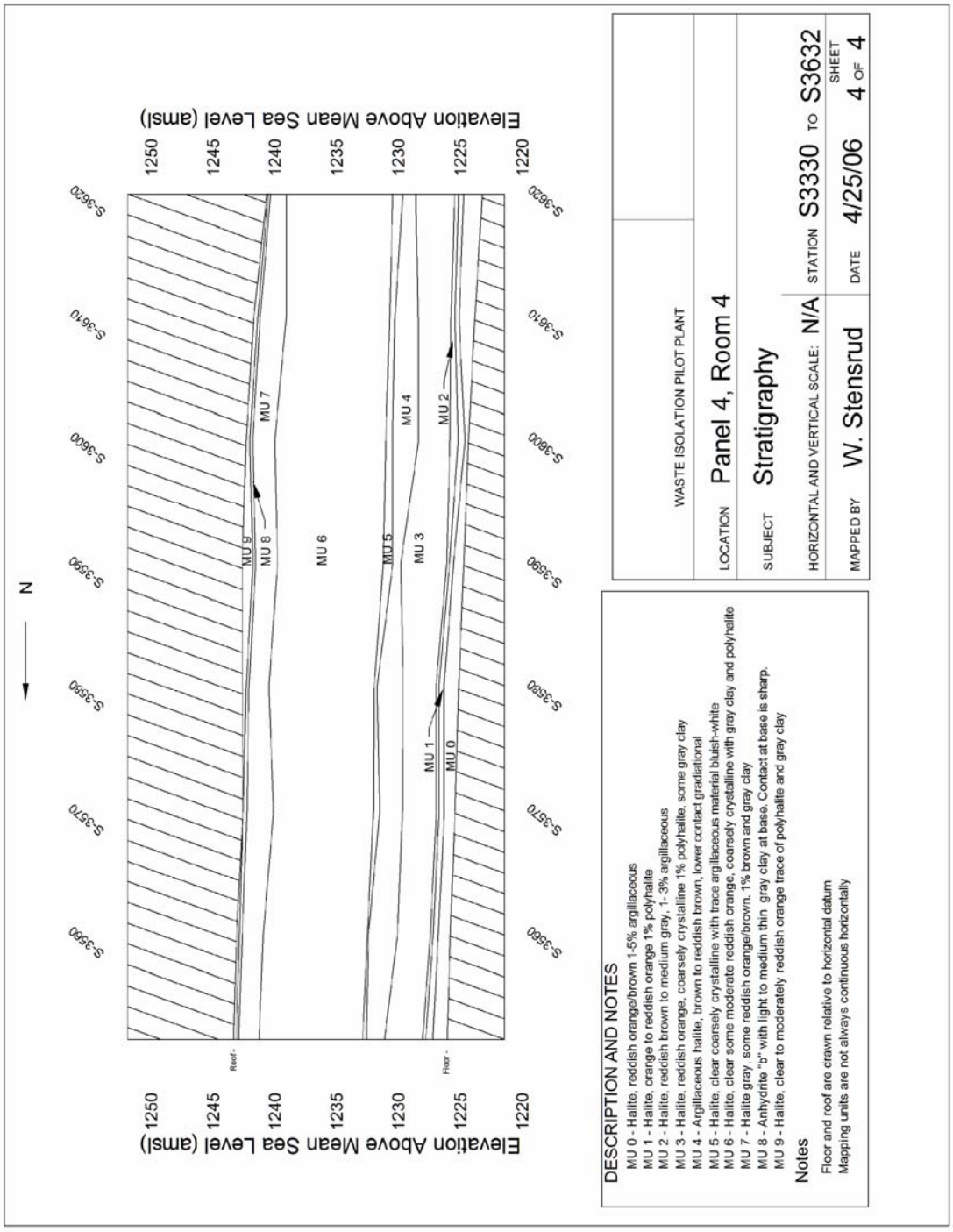

Figure 6-38. Panel 4 Room 4, S3340-S3632 Stratigraphic Map (4 of 4).

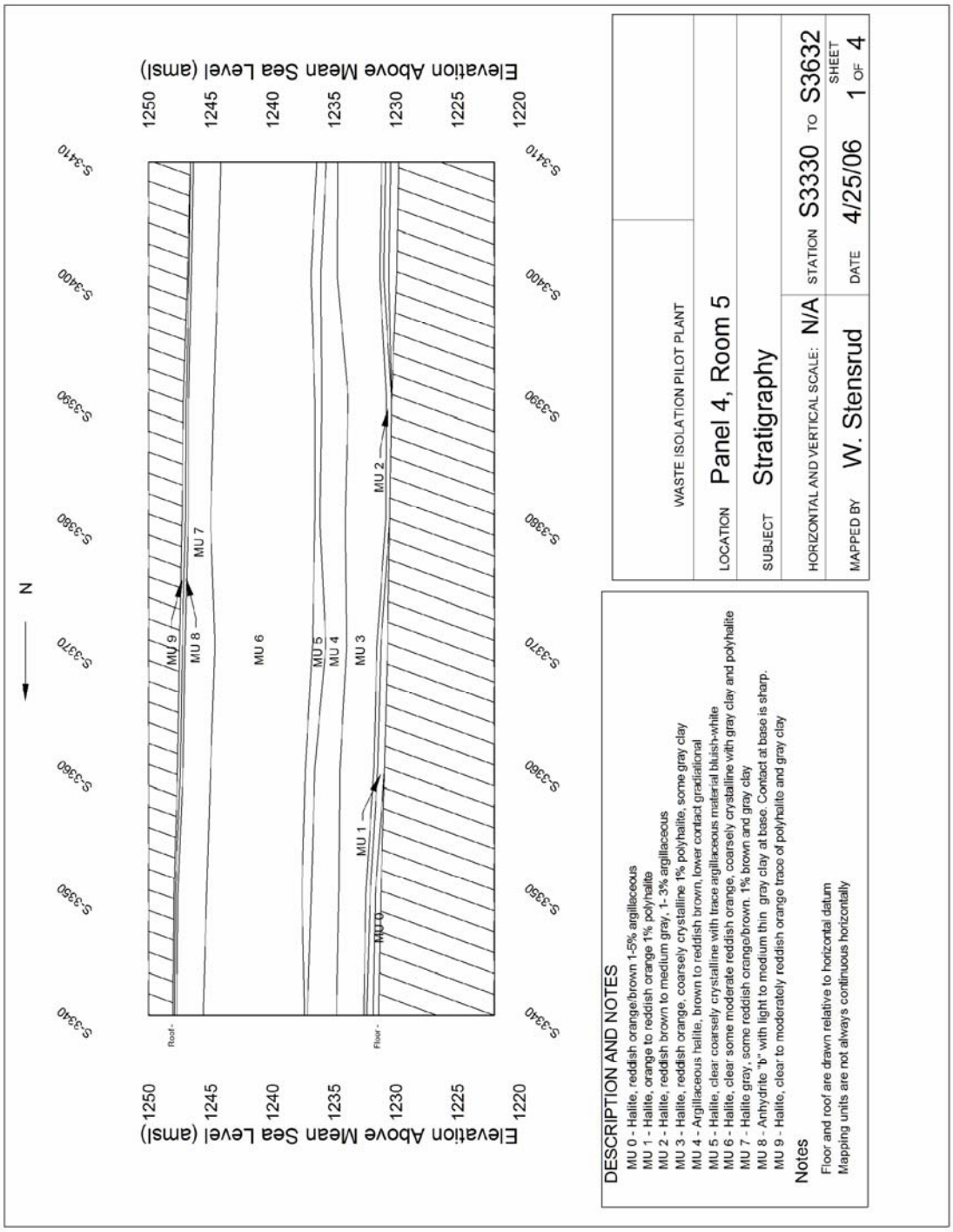

Figure 6-39. Panel 4 Room 5, S3340-S3632 Stratigraphic Map (1 of 4).

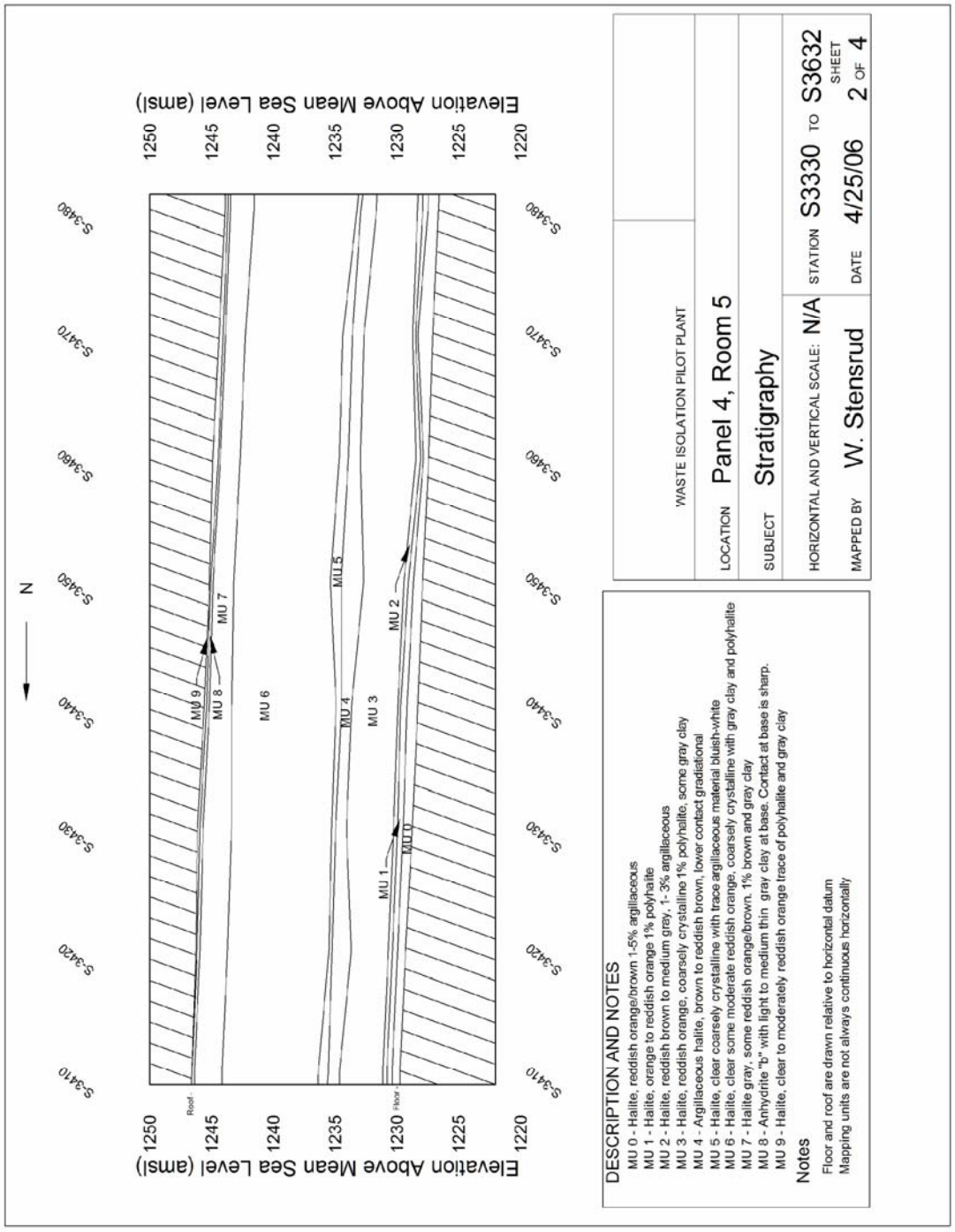

Figure 6-40. Panel 4 Room 5, S3340-S3632 Stratigraphic Map (2 of 4).

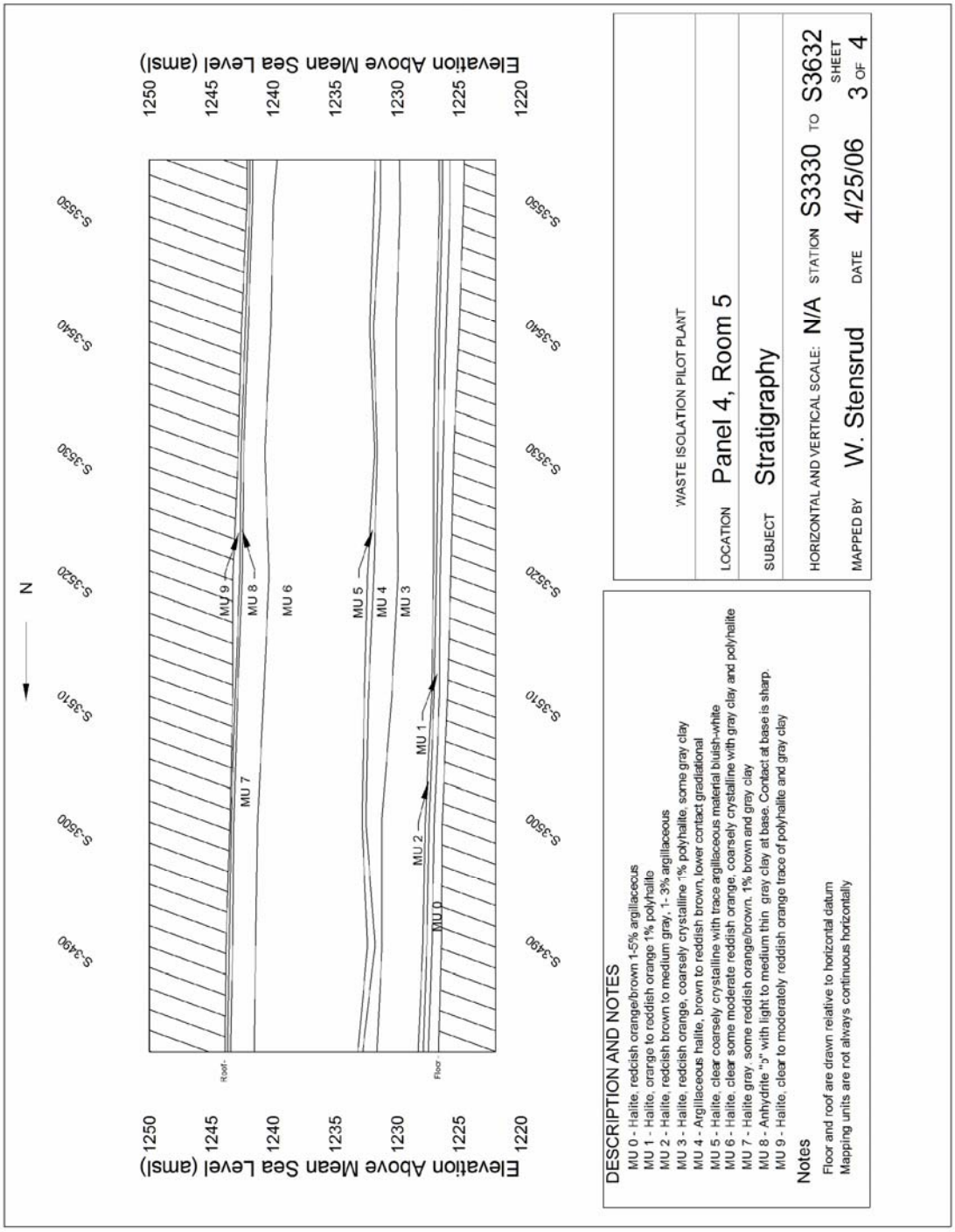

Figure 6-41. Panel 4 Room 5, S3340-S3632 Stratigraphic Map (3 of 4).

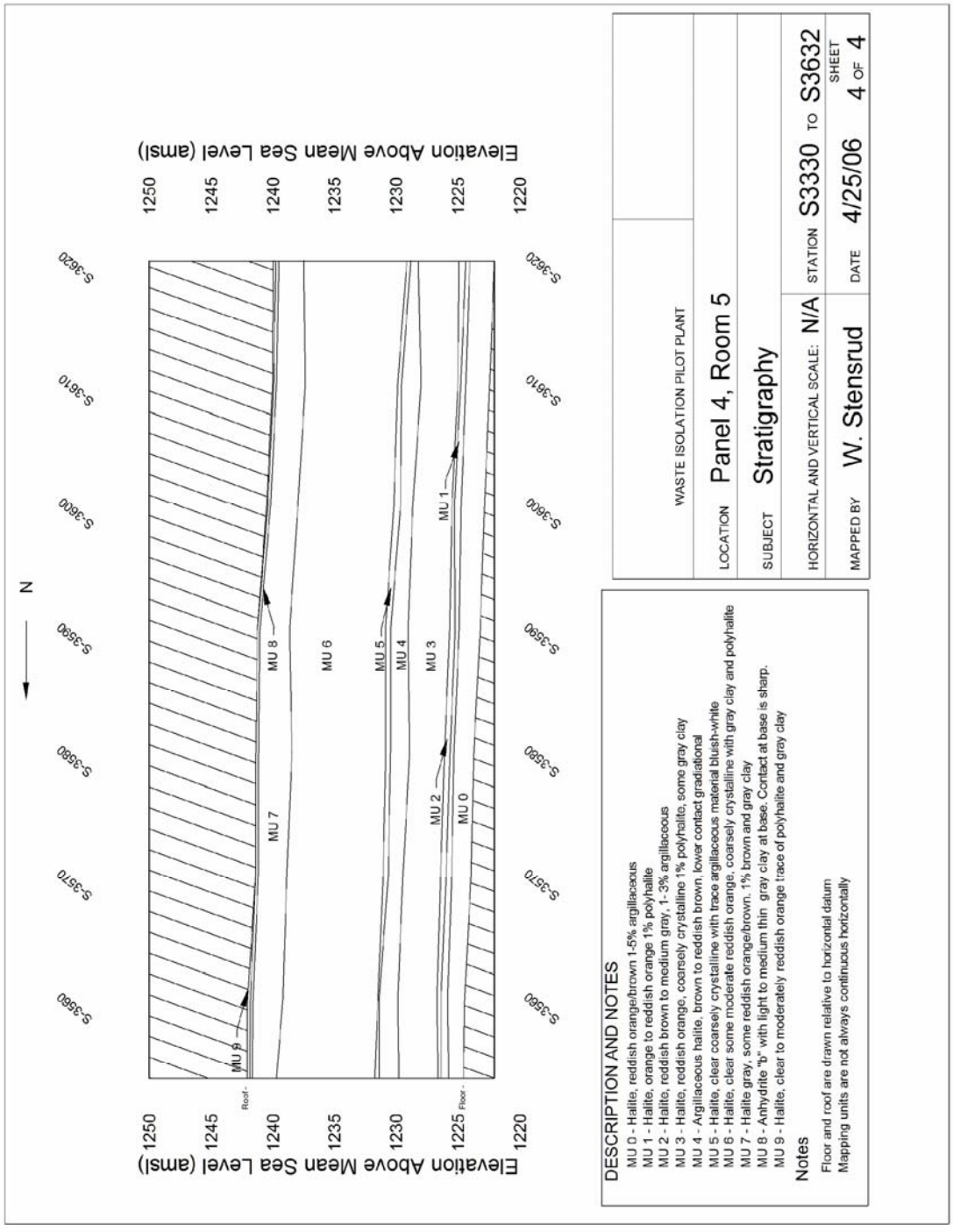

Figure 6-42. Panel 4 Room 5, S3340-S3632 Stratigraphic Map (4 of 4).

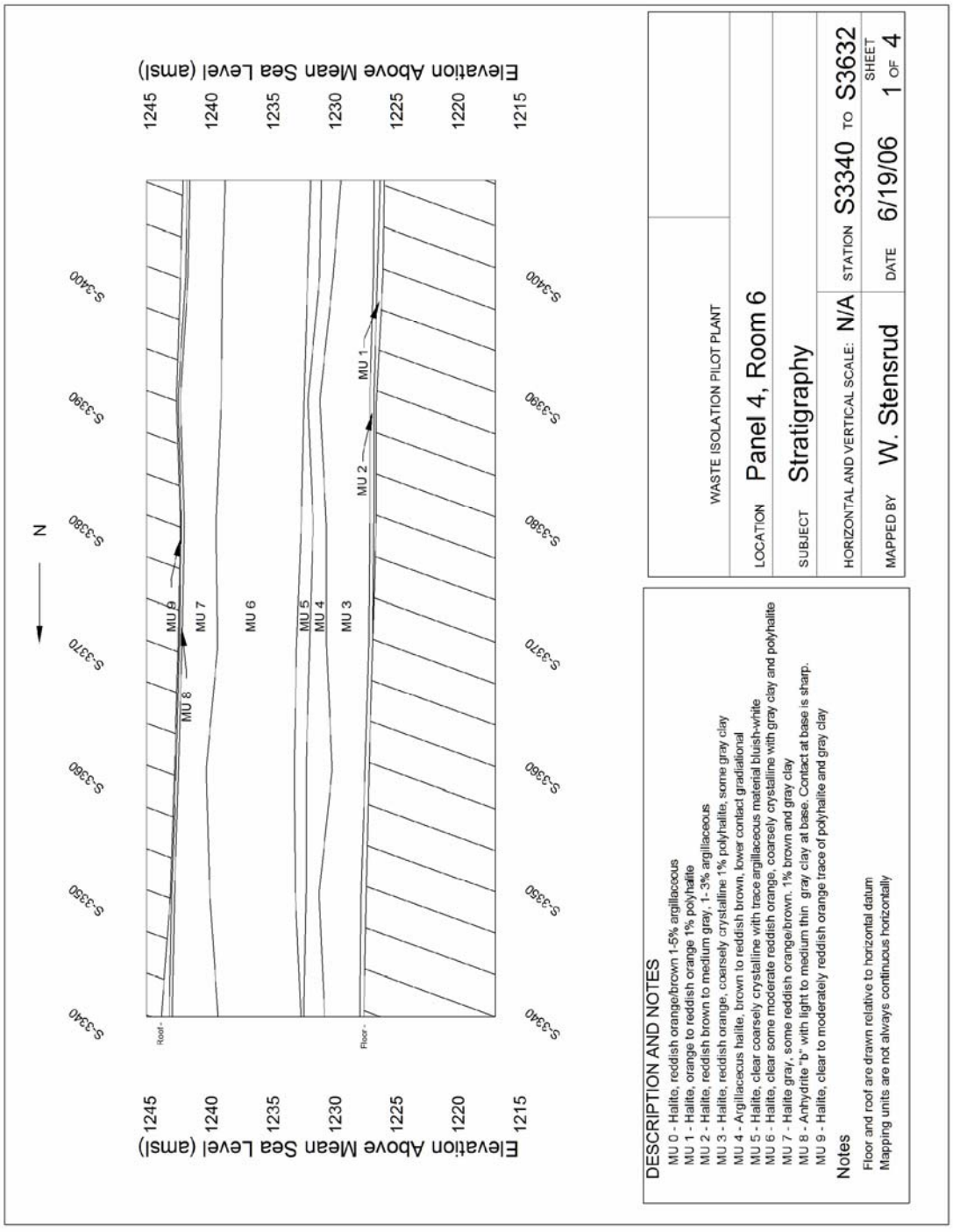

Figure 6-43. Panel 4 Room 6, S3340-S3632 Stratigraphic Map (1 of 4).

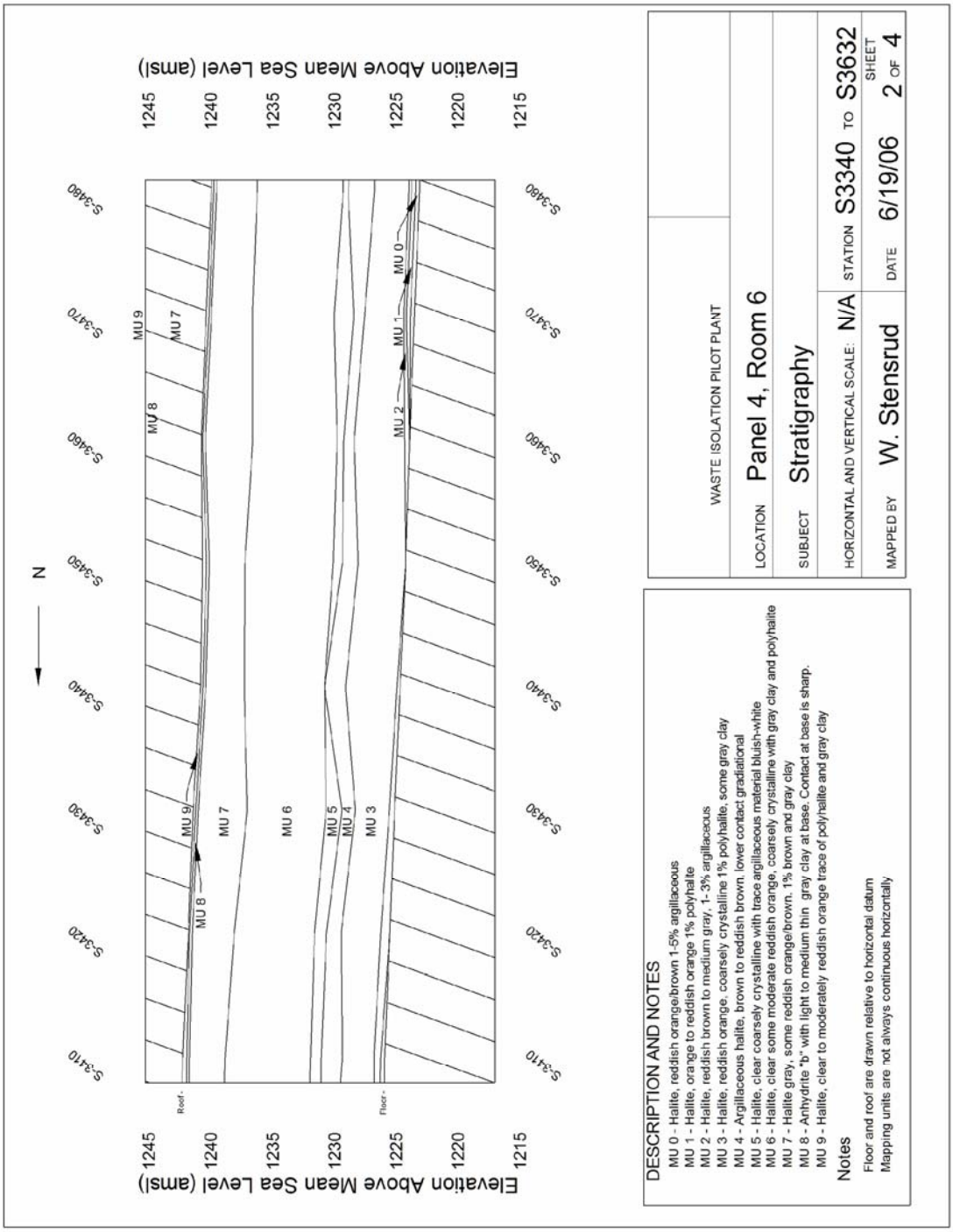

Figure 6-44. Panel 4 Room 6, S3340-S3632 Stratigraphic Map (2 of 4).

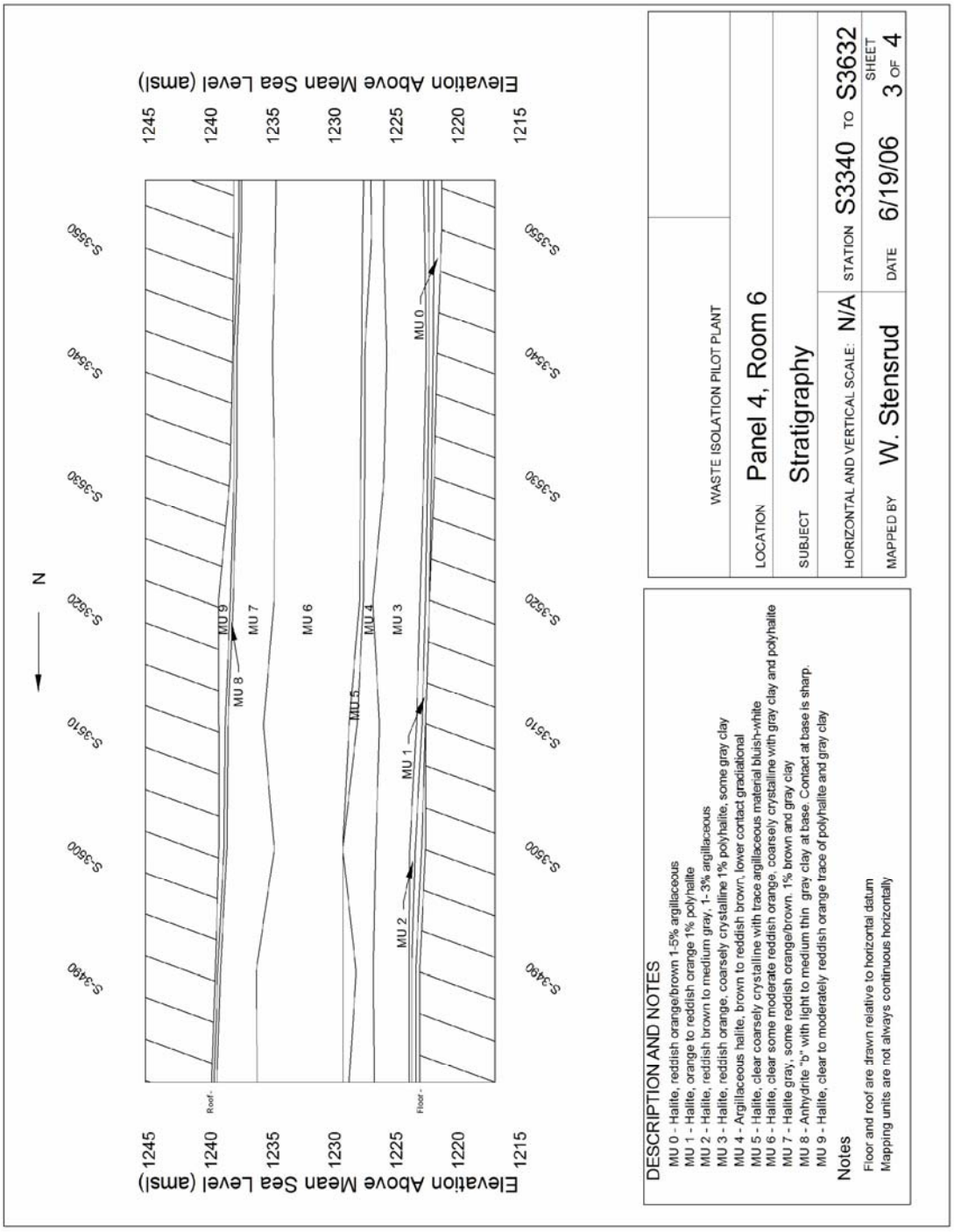

Figure 6-45. Panel 4 Room 6, S3340-S3632 Stratigraphic Map (3 of 4).

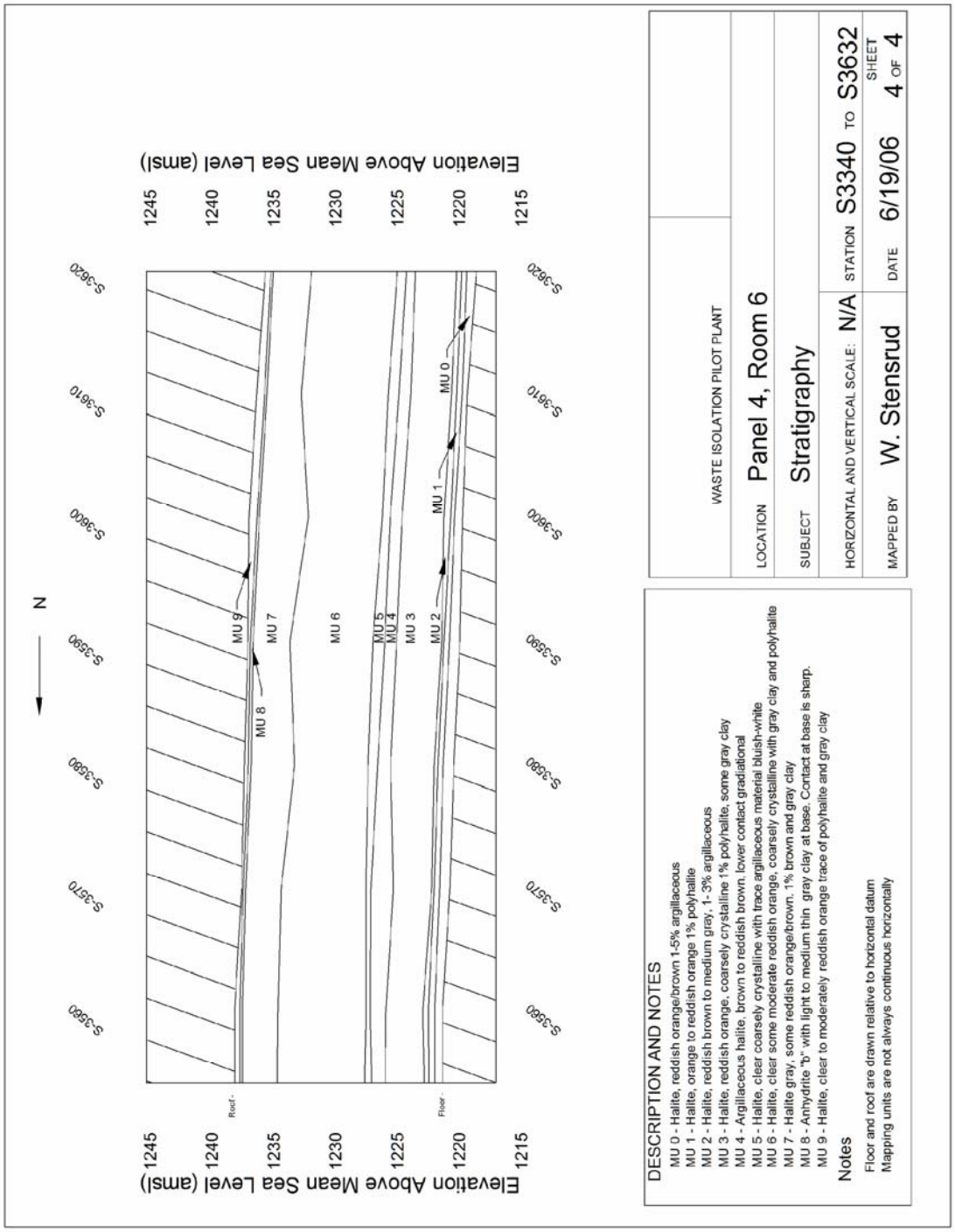

Figure 6-46. Panel 4 Room 6, S3340-S3632 Stratigraphic Map (4 of 4).

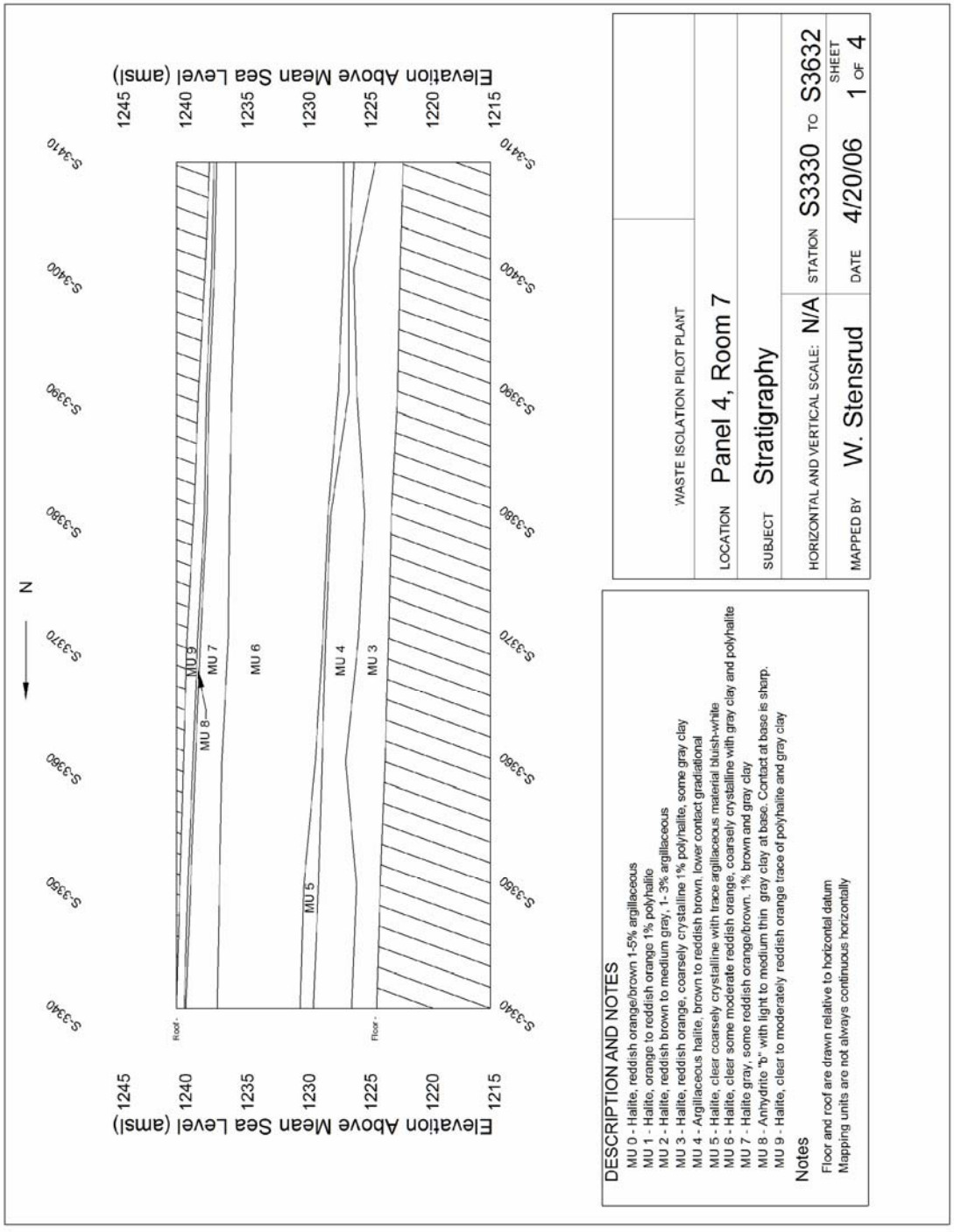

Figure 6-47. Panel 4 Room 7, S3340-S3632 Stratigraphic Map (1 of 4).

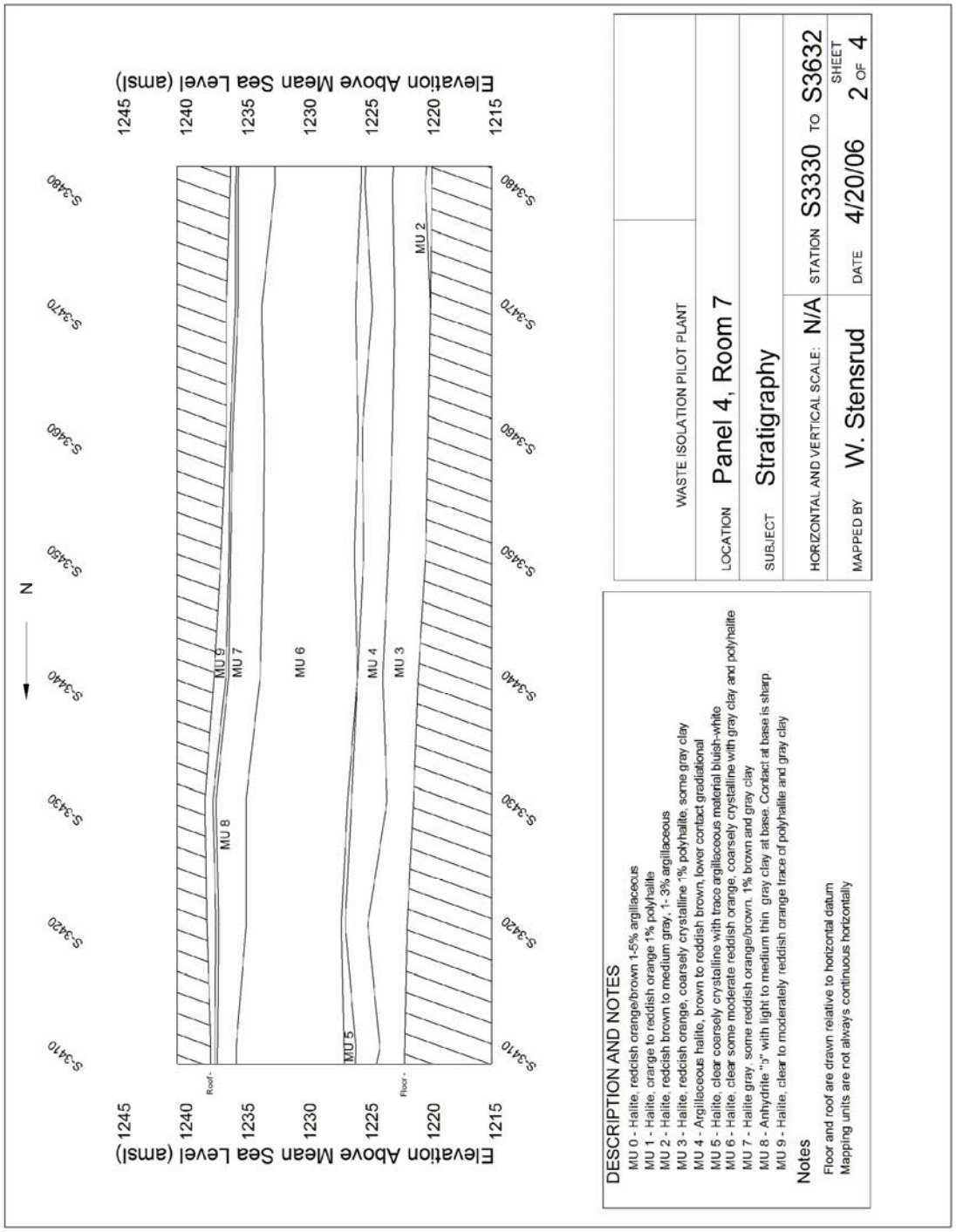

Figure 6-48. Panel 4 Room 7, S3340-S3632 Stratigraphic Map (2 of 4).

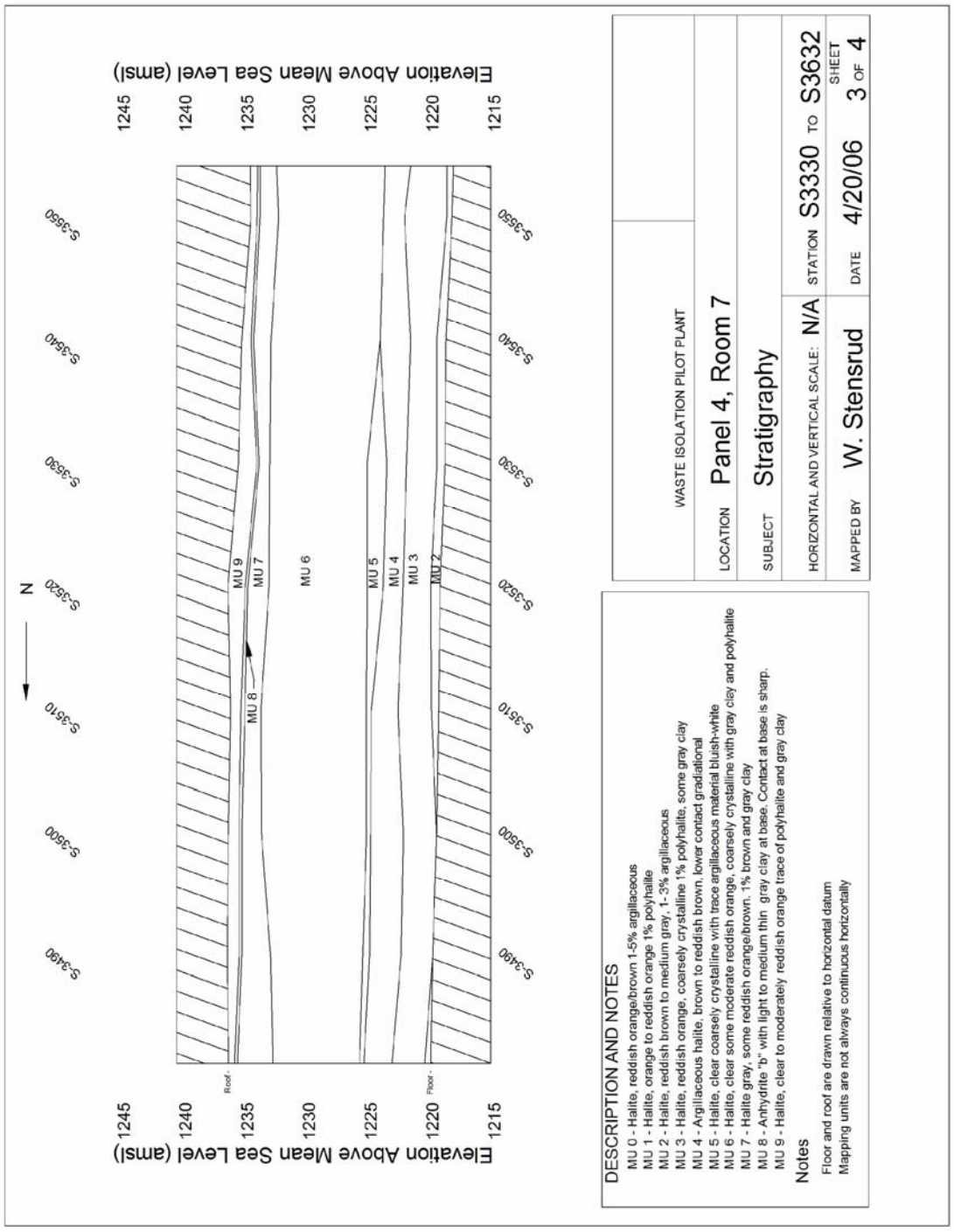

Figure 6-49. Panel 4 Room 7, S3340-S3632 Stratigraphic Map (3 of 4).

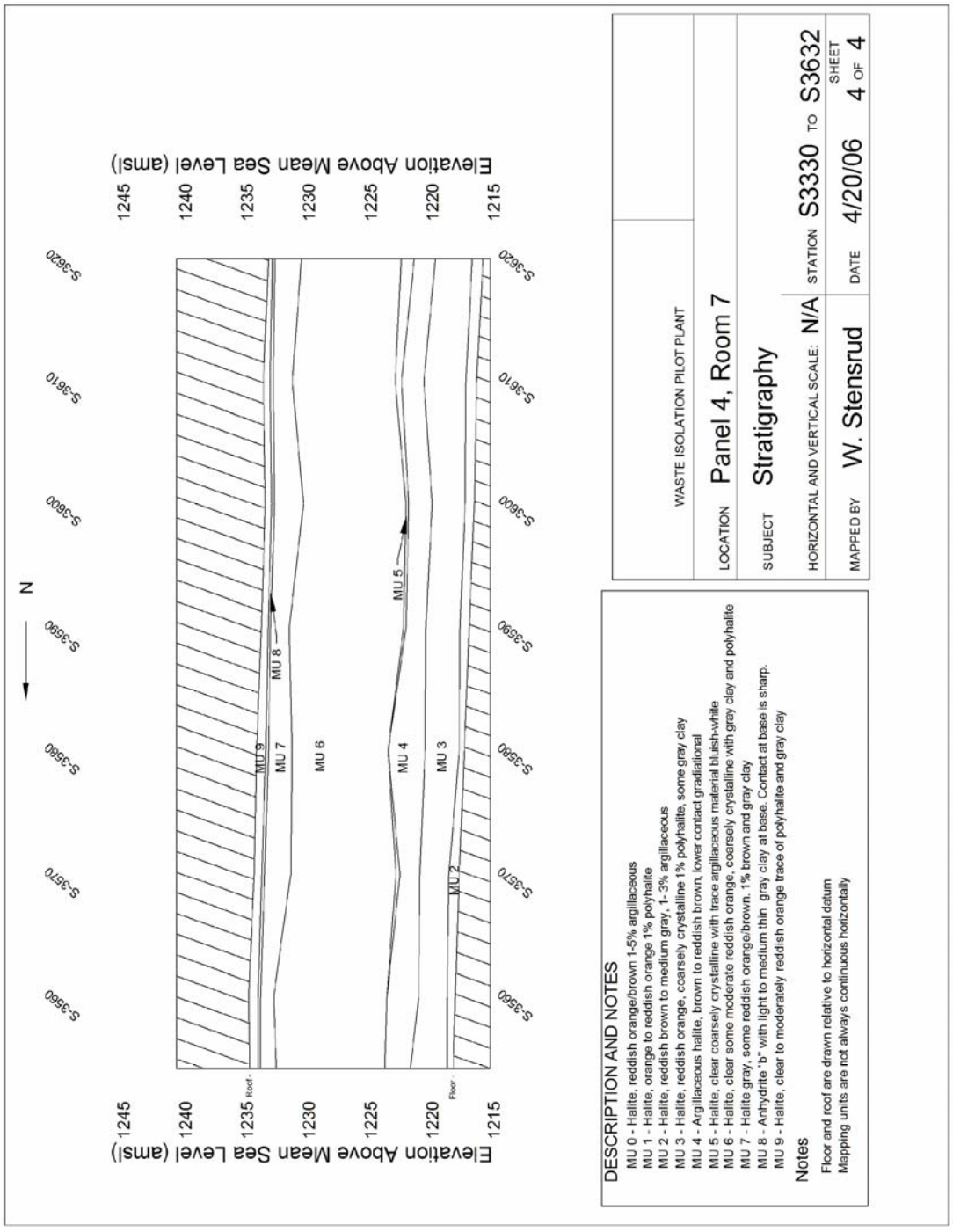

Figure 6-50. Panel 4 Room 7, S3340-S3632 Stratigraphic Map (4 of 4).

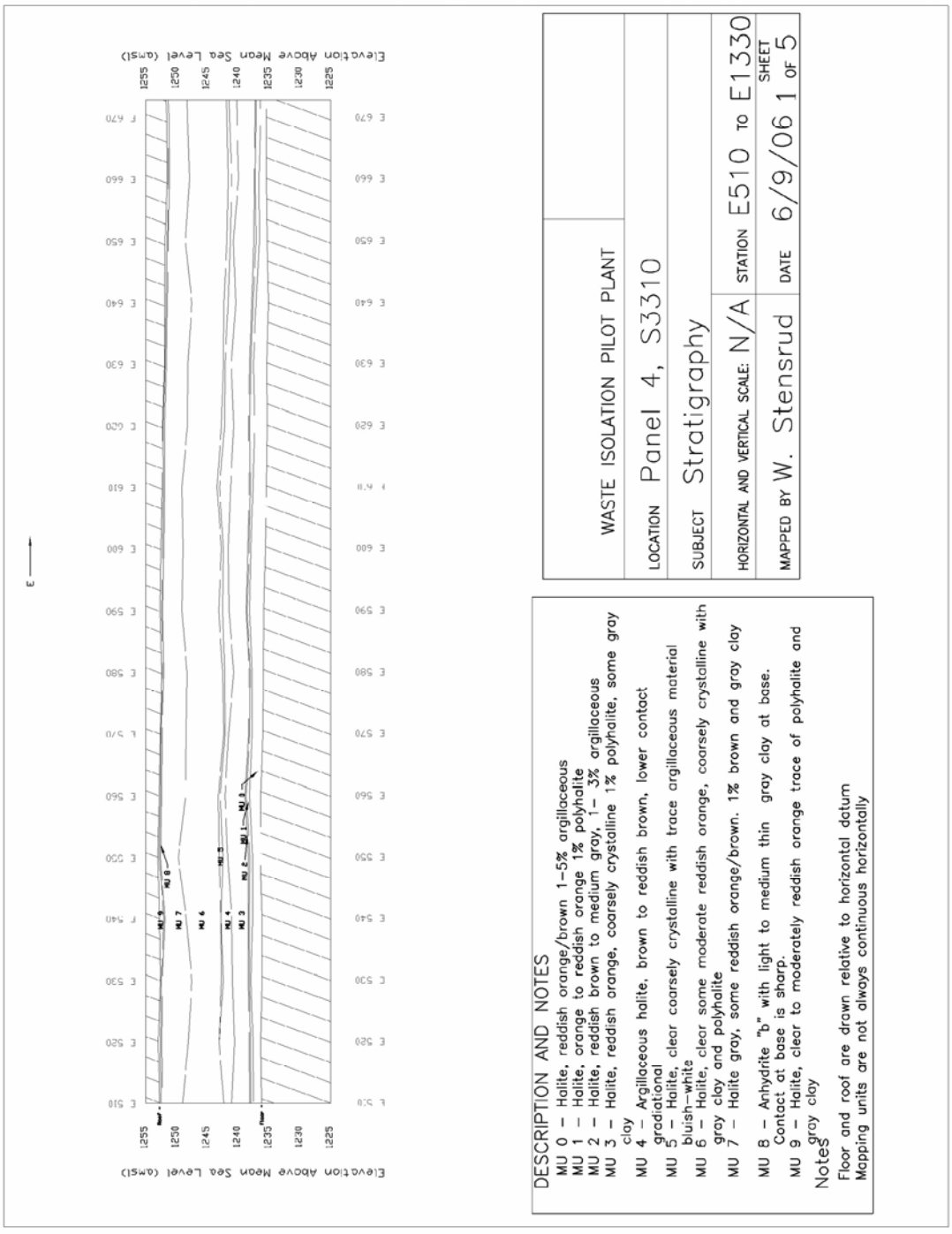

Figure 6-51. Panel 4 S3310, E510-E1330 Stratigraphic Map (1 of 5).

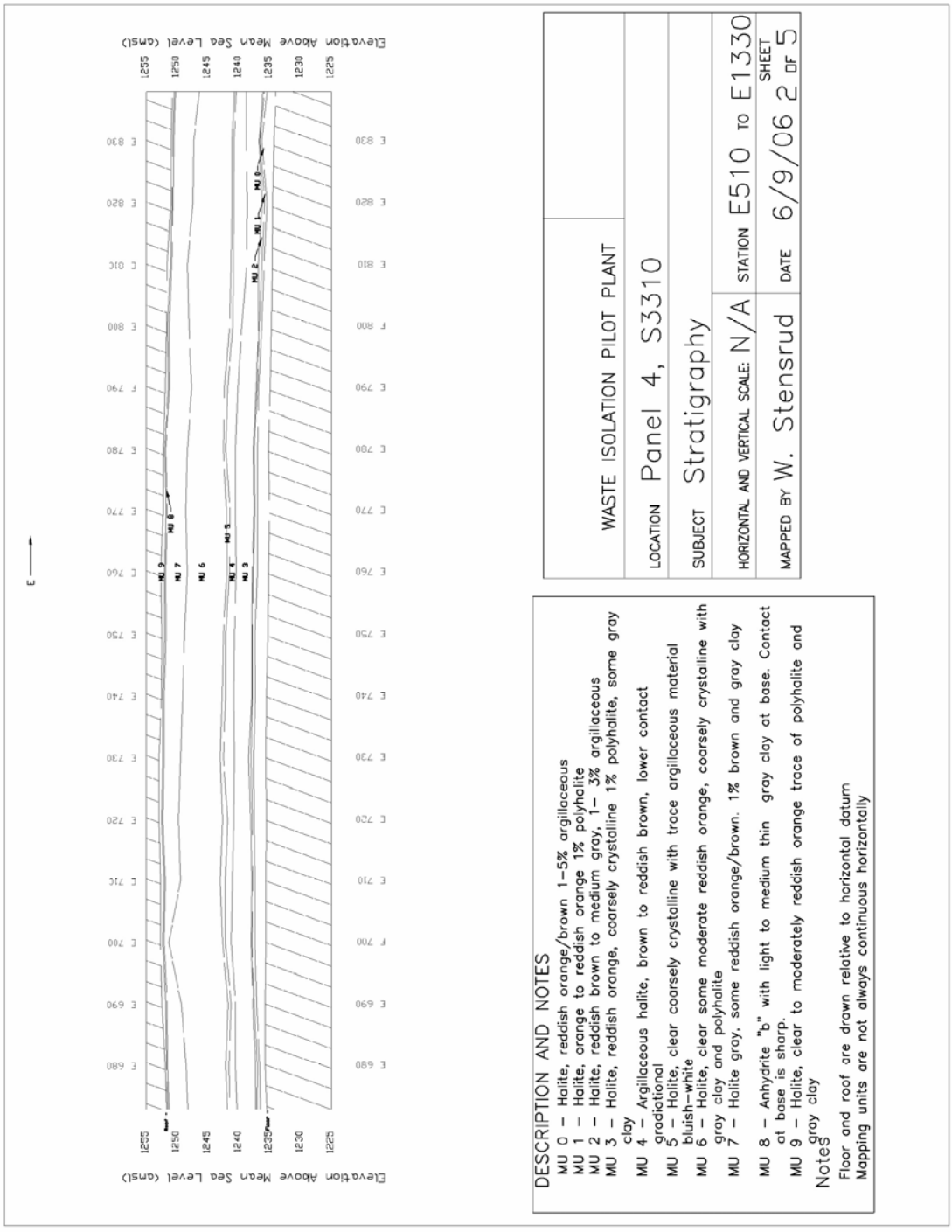

Figure 6-52. Panel 4 S3310, E510-E1330 Stratigraphic Map (2 of 5).

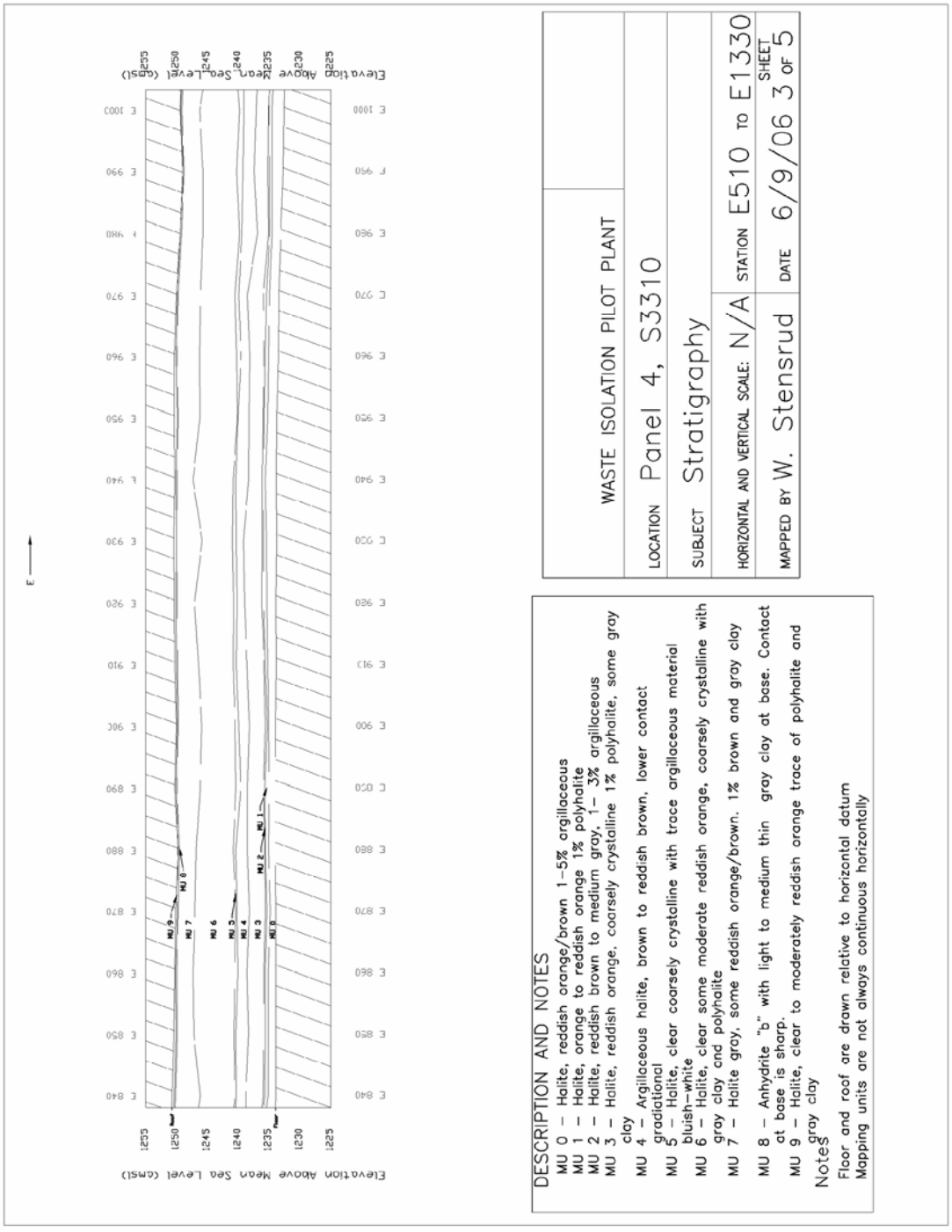

Figure 6-53. Panel 4 S3310, E510-E1330 Stratigraphic Map (3 of 5).

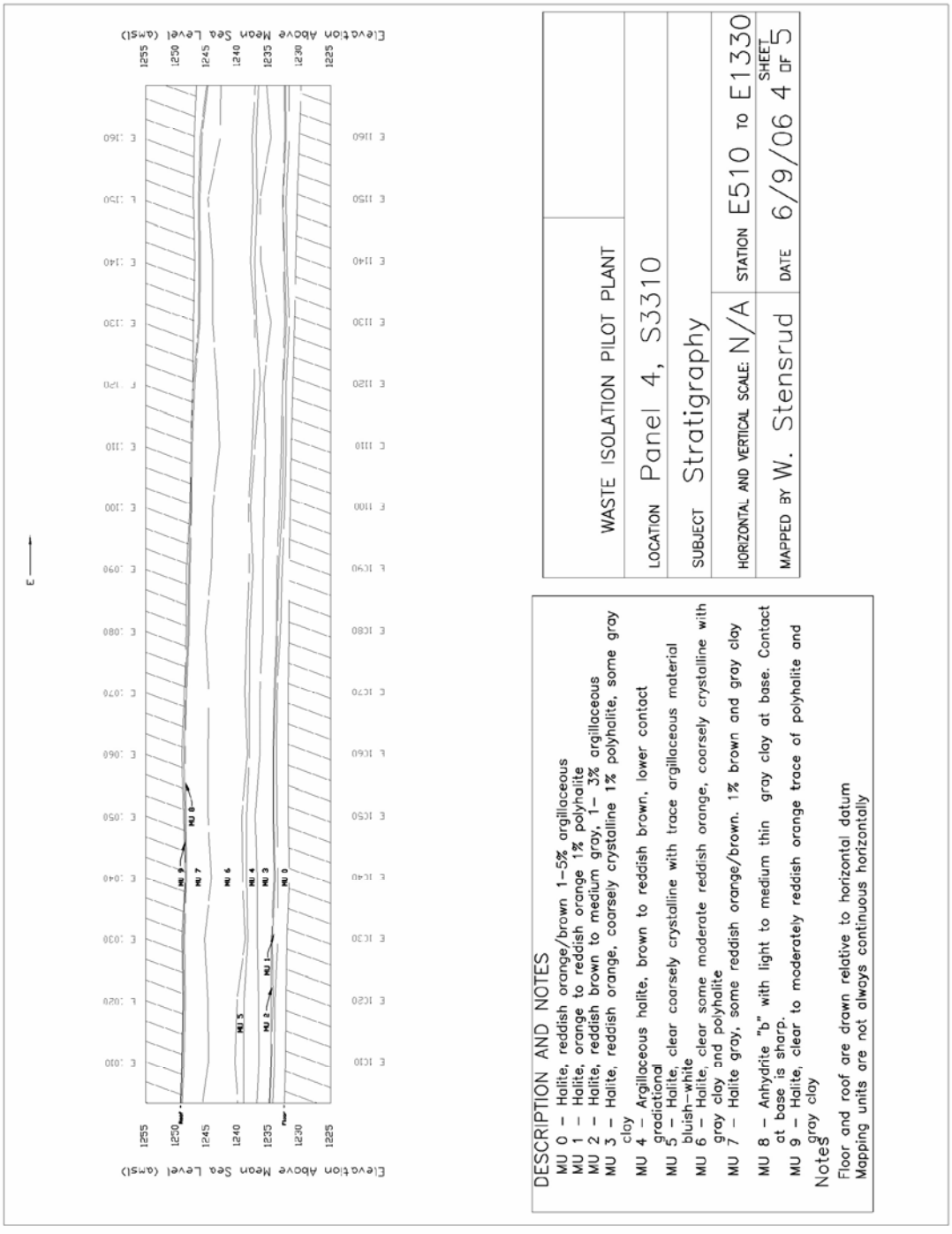

Figure 6-54. Panel 4 S3310, E510-E1330 Stratigraphic Map (4 of 5).

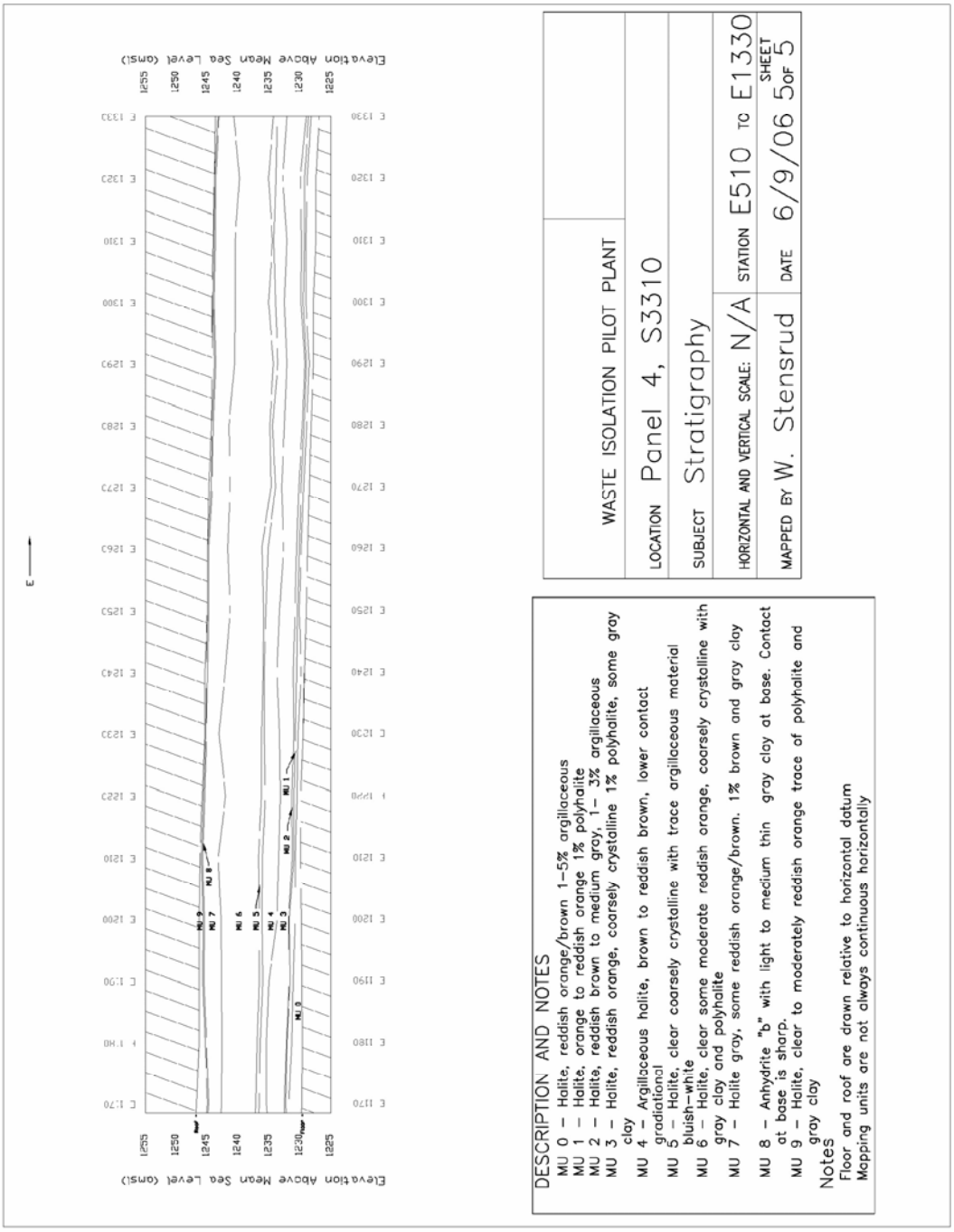

Figure 6-55. Panel 4 S3310, E510-E1330 Stratigraphic Map (5 of 5).

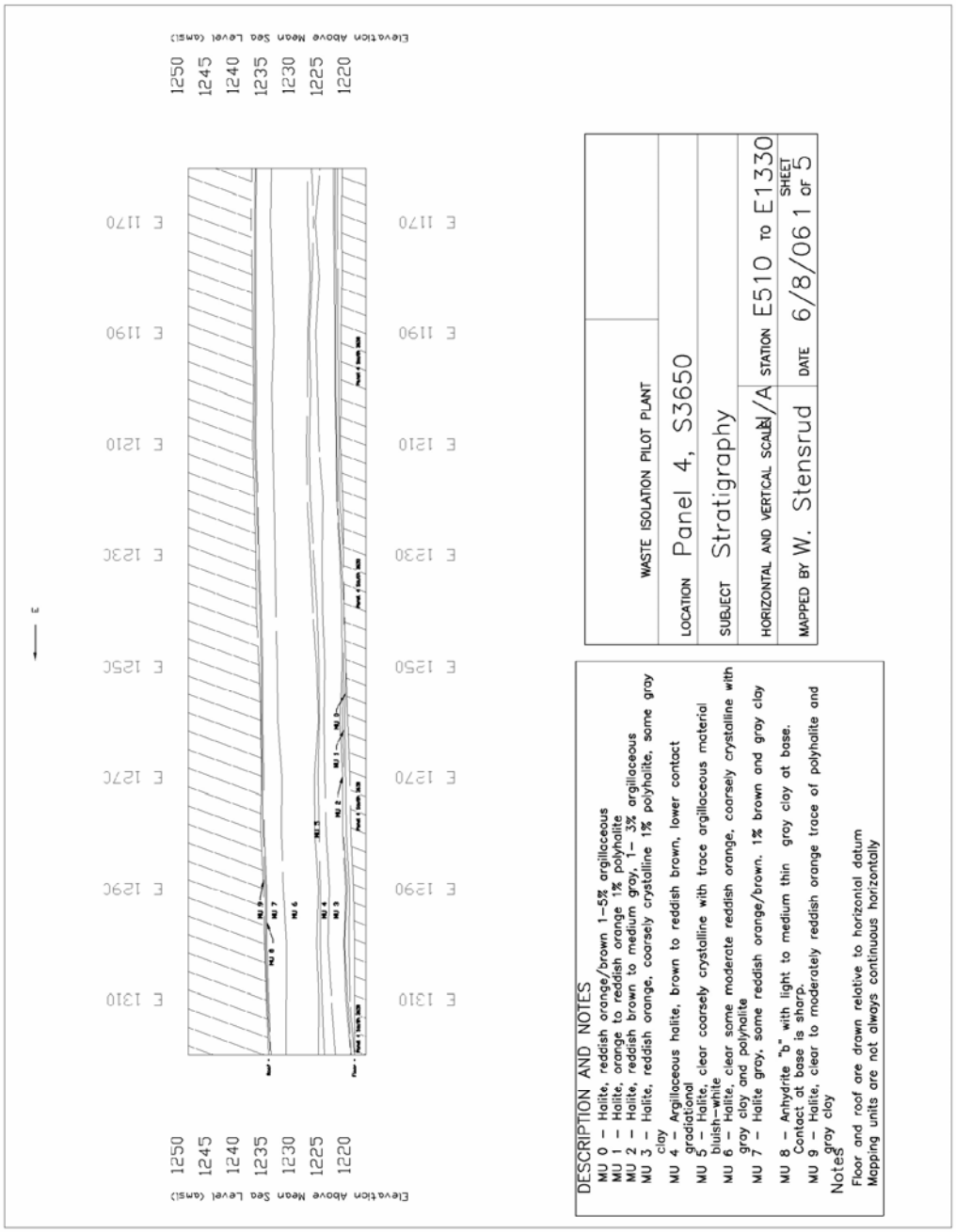

Figure 6-56. Panel 4 S3650, E510-E1330 Stratigraphic Map (1 of 5).

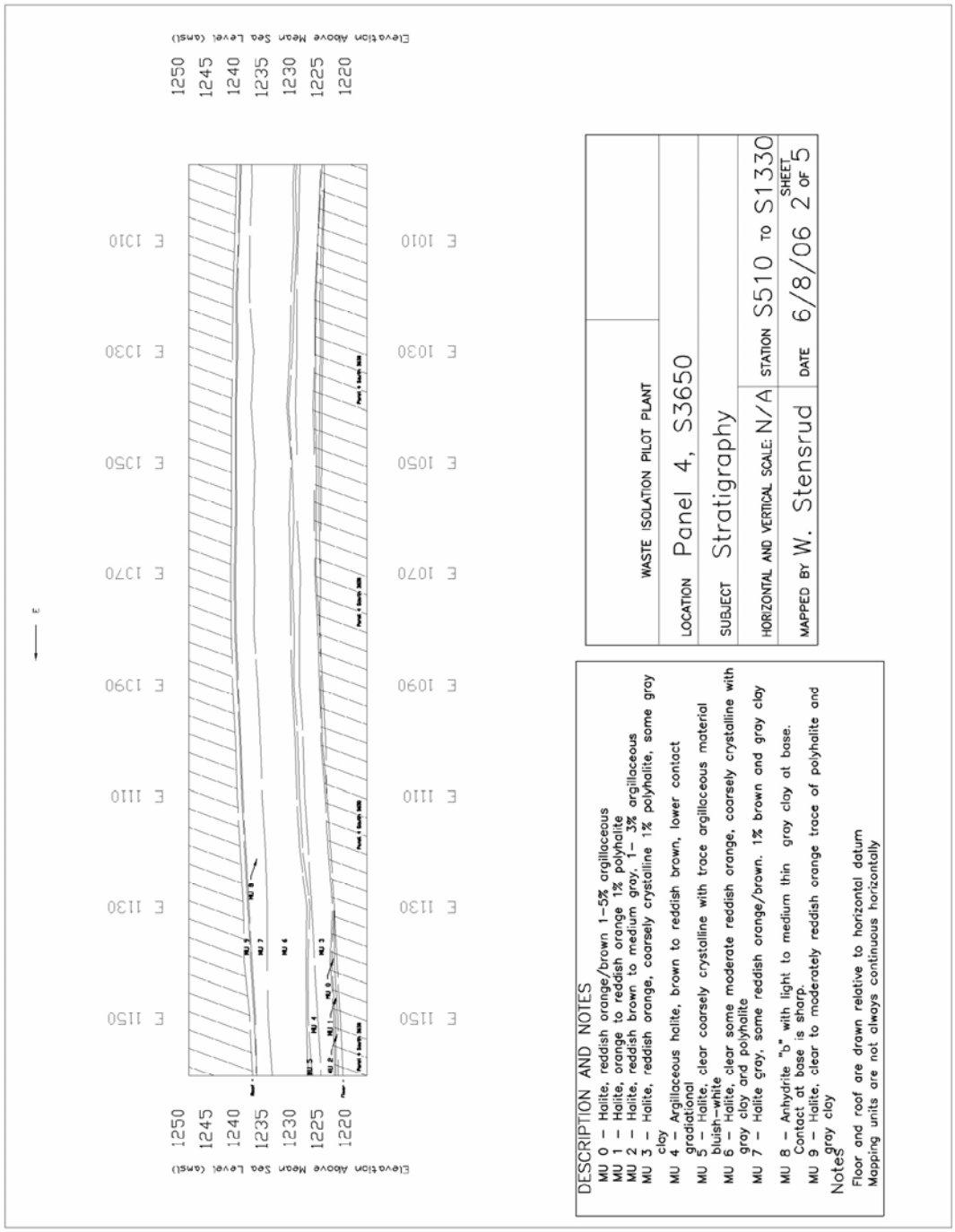

Figure 6-57. Panel 4 S3650, E510-E1330 Stratigraphic Map (2 of 5).

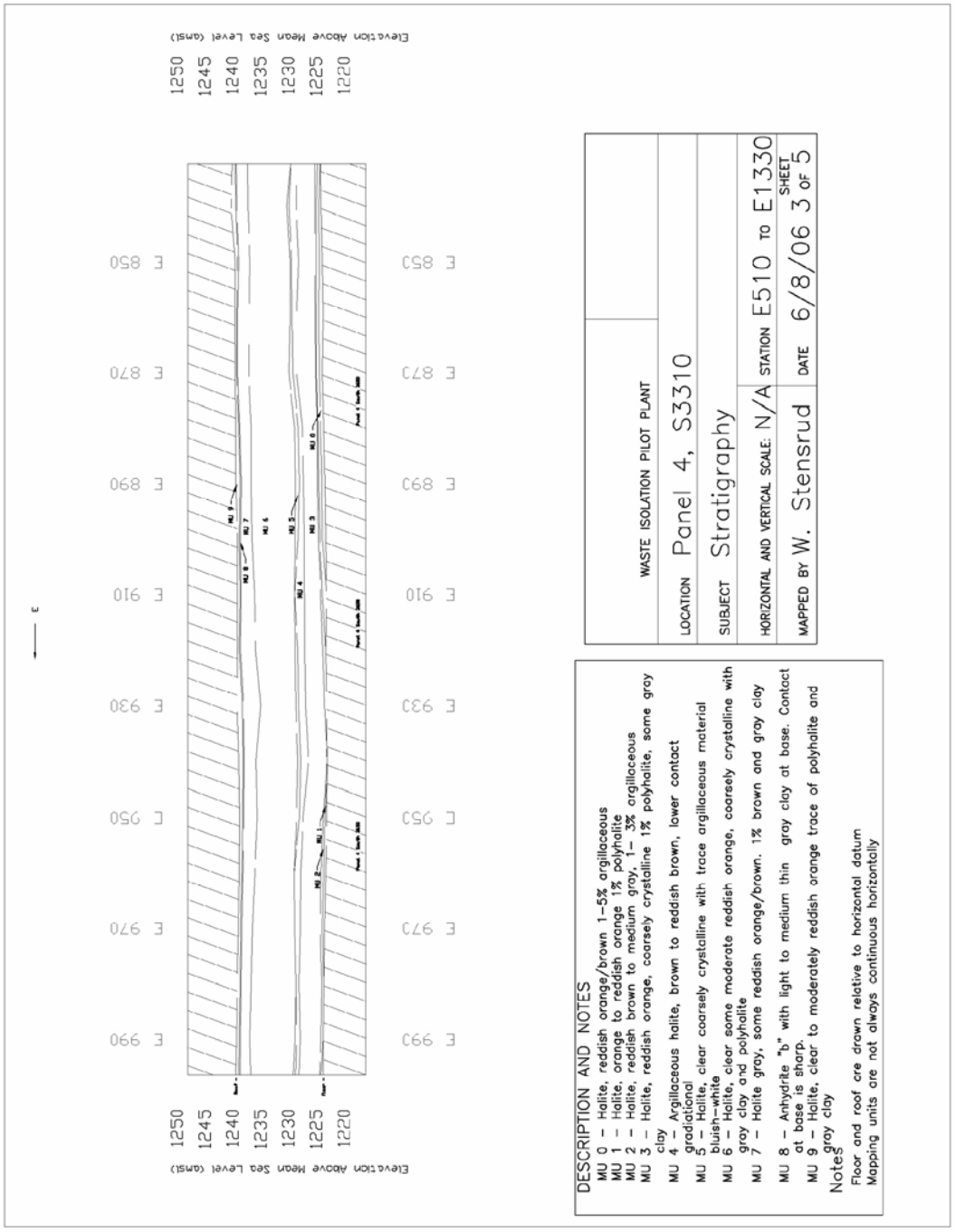

Figure 6-58. Panel 4 S3650, E510-E1330 Stratigraphic Map (3 of 5).

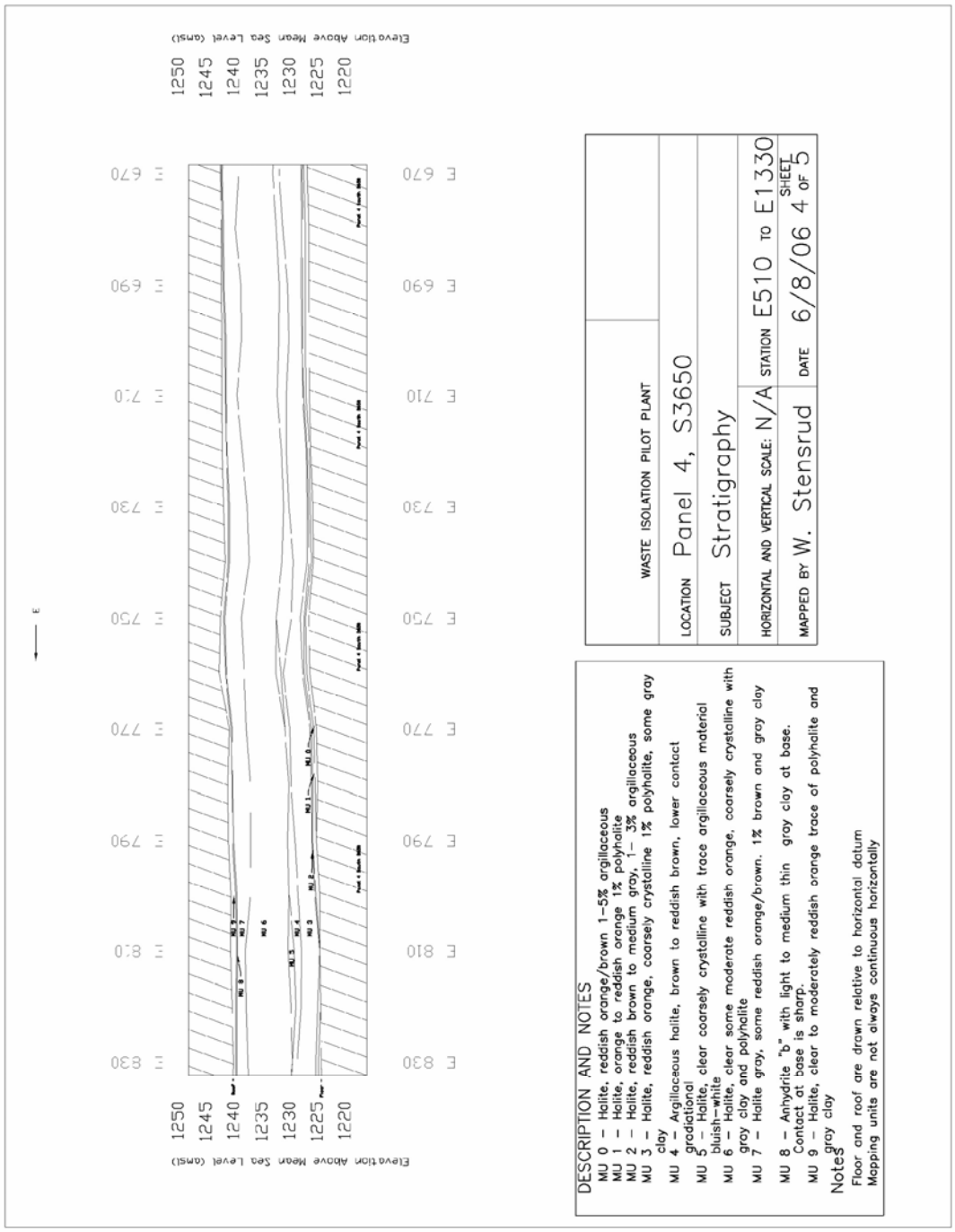

Figure 6-59. Panel 4 S3650, E510-E1330 Stratigraphic Map (4 of 5).

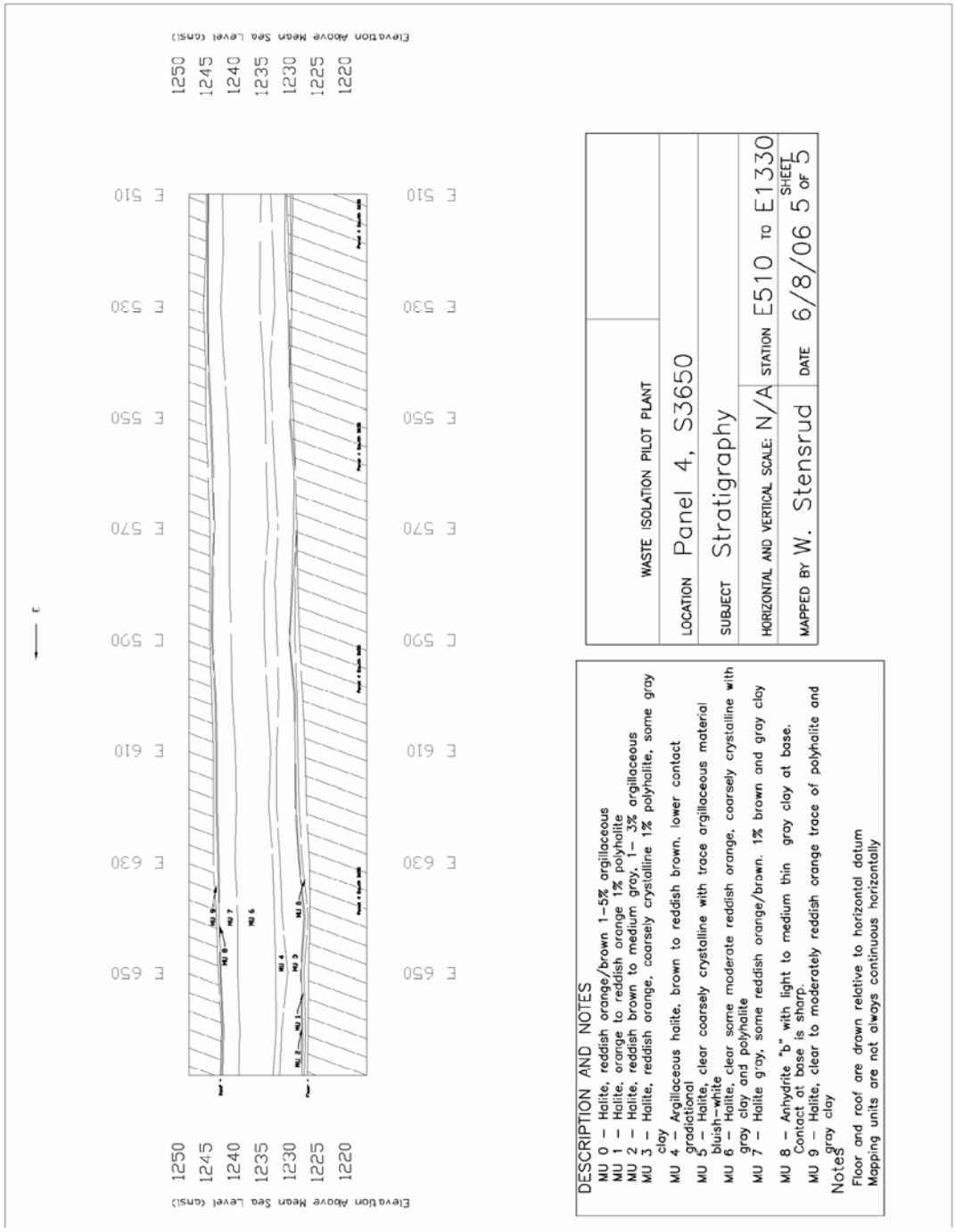

Figure 6-60. Panel 4 S3650, E510-E1330 Stratigraphic Map (5 of 5).