

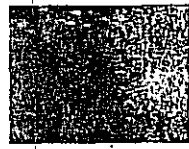
UNDERHILL ENGINEERING LTD.

Consulting Engineers

Mailing address: P.O. Box 4068, Whitehorse, Yukon Y1A 3S9

Office: 312 B Hanson Street, Whitehorse

Telephone (403) 668-2048 ■ Telex 036-8-465



1984 10 16

003459

OUR FILE:

Y-2678X

YOUR FILE:

Cyprus Anvil Mining Corporation
P.O. Box 1000
Faro, YT
Y0B 1K0

Attention: Mr. N.G. Cornish

Dear Sirs:

Re: Deformation Study - Down-Valley Tailings Containment Project

From our recently completed field observation program, the data has been reduced and is enclosed herewith in the normal manner.

The elevation listings of the vertical monitoring stations have been updated to include Epoch "E" (September 1984) observations. Note the elevation change in Epoch "C" (September 1982) and Epoch "D" (September 1983) for Incremental Settlement Installation BS-17 (2+900 BS[s]). These new elevations represent the observations taken to 2+900BS(s) Upper, whereas the previous values sent to you represented observations taken to 2+900BS(s) Lower.

Also note, as requested, elevations were observed to the top of the Incremental Settlement Installations as well as to the top of the casing caps.

As requested by you on site, we observed elevations to the spikes along the canal dyke and are tabulated here within.

Regarding your question concerning the lack of horizontal data about Station 496(3+130CD), this is because it is only a vertical monitoring station.

We trust this information meets your requirements. Please do not hesitate to contact me if you have any questions.

Yours very truly,

UNDERHILL ENGINEERING LTD.

Robert W. Gray, EIT

RWG/lc

Enclosures

UNDERHILL ENGINEERING LTD.

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Dear Sirs:

Re: Deformation Study - Down-Valley Tailings Containment Project

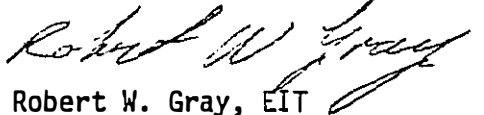
I would like to recommend that during the next observation program we observe elevations to the control points on the north side of the valley, namely, stations 289, 290, 291 and 292. As this has not been done since Epoch "A", and the elevations are critical to the distance reductions, we should check their elevations during the next observation program.

Also to reduce the size of the 95% relative error ellipse around station 552 (2+900 BS (Upper)) we would suggest cutting out and observing a cross-tie from control station 282.

If there are any questions please do not hesitate to contact me.

Yours very truly,

UNDERHILL ENGINEERING LTD.


Robert W. Gray, EIT

RWG/lc

FARO DEFORMATION SURVEY

CANAL DYKE

REL STATION	STATION DESCRIPTION	DEC./81 ELEVATION	APR./82 ELEVATION	SEPT./82 ELEVATION	SEPT./83 ELEVATION	SEPT./84 ELEVATION
	0 + 150 CD	1090.615	1090.614	1090.611	1090.612	1090.611
	0 + 300 CD	1089.991	1089.990	1089.997	1089.982	1089.978
50	0 + 400 CD	1089.968	1089.966	1089.967	1089.953	1089.947
	0 + 510 CD	1089.834	1089.836	1089.848	1089.828	1089.820
	0 + 610 CD	1089.839	1089.835	1089.852	1089.831	1089.824
	0 + 710 CD	1089.537	1089.533	1089.539	1089.521	1089.514
	0 + 840 CD	1089.023	1089.024	1089.033	1089.012	1089.005
	0 + 960 CD	1088.637	1088.634	1088.655	1088.636	1088.620
13	0 + 990 CD	1088.672	1088.669	1088.686	1088.663	1088.655
	1 + 110 CD	1088.250	1088.253	1088.256	1088.236	1088.229
	1 + 230 CD	1088.182	1088.181	1088.182	1088.148	1088.124 ^B
5	1 + 350 CD	1087.693	1087.696	1087.704	1087.692	1087.686
	1 + 440 CD	1087.562	1087.562	1087.574	1087.558	1087.555
5	1 + 530 CD	1087.268	1087.272	1087.277	1087.260	1087.255
	1 + 610 CD	1087.194	1087.194	1087.200	1087.168	1087.165
	1 + 705 CD	1087.067	1087.065	1087.071	1087.031	1087.020
	1 + 800 CD	1087.317	1087.306	1087.301	1087.146	1087.072 ^B
	1 + 900 CD	1086.679	1086.679	1086.673	1086.655	1086.644
	2 + 000 CD	1086.631	1086.628	1086.621	1086.600	1086.598
	2 + 100 CD	1086.223	1086.218	1086.219	1086.198	1086.188
	2 + 200 CD	1086.196	1086.180	1086.118	1085.895	1085.881
	2 + 260 CD	1086.121	1086.107	1086.091	1085.980	1085.936 ^B

FARO DEFORMATION SURVEY

CANAL DYKE

UEL	STATION	DEC./81	APR./82	SEPT./82	SEPT./83	SEPT./84
STATION	DESCRIPTION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION
411	2 + 365 CD	1086.055	1086.040	1085.959	1085.832	1085.790
	2 + 460 CD	1085.673	1085.669	1085.670	1085.659	1085.653
	2 + 600 CD	1085.672	1085.668	1085.665	1085.653	1085.646
	2 + 765 CD	1085.365	1085.367	1085.359	1085.350	1085.342
419	2 + 900 CD	1080.725	1080.732	1080.720	1080.709	1080.701
499	3 + 000 CD	1075.332	1075.337	1075.300	1075.105	1075.030
496	3 + 130 CD	1068.905	1068.895	1068.870	1068.843	1068.827
497	3 + 300 CD	1060.502	1060.482	1060.490	1060.480	1060.466
500	3 + 550 CD	1057.300	1057.291	1057.296	1057.290	1057.275

FARO DEFORMATION SURVEY

CANAL BACKSLOPE

STATION	DESCRIPTION	DEC./81 ELEVATION	APR./82 ELEVATION	SEPT./82 ELEVATION	SEPT./83 ELEVATION	SEPT./84 ELEVATION
0 + 150	BS	1095.842	1095.840	1095.842	1095.838	1095.838
0 + 400	BS	1094.034	1094.031	1094.040	1094.028	1094.028
0 + 610	BS	1104.451	1104.444	1104.434	1104.406	1104.409
0 + 960	BS	1092.575	1092.570	1092.583	1092.565	1092.576
1 + 110	BS	1089.122	1089.124	1089.133	1089.114	1089.123
1 + 200	BS	1099.009	1099.000		1098.958	1098.994
1 + 300	BS	1096.793	1096.787	1096.799	1096.775	1096.790
1 + 530	BS	1088.505	1088.502	1088.515	1088.488	1088.501
1 + 900	BS	1098.417	1098.410	1098.412	1098.334	1098.246
2 + 100	BS	1094.985	1095.029	1095.032	1094.993	1095.032
2 + 260	BS	1094.494	1094.493	1094.502	1094.478	1094.483
2 + 460	BS	1094.236	1094.227	1094.240	1094.185	1094.168
2 + 560	BS	1091.540	1091.539	1091.547	1091.526	1091.517
2 + 760	BS	1090.442	1090.453	1090.451	1090.446	1090.447
2 + 900	BS(Lower)	1087.892	1087.899	1087.881	1087.879	1087.879
2 + 900	BS(Upper)	1092.556	1092.557	1092.557	1092.548	1092.548
3 + 000	BS	1083.006	1083.003	1082.977	1082.904	1082.802
3 + 130	BS	1081.645	1081.646	1081.639	1081.605	1081.575
3 + 240	BS	1065.520	1065.511	1065.516	1065.477	1065.457
3 + 550	BS	1057.805	1057.801	1057.798	1057.800	1057.785

FARO DEFORMATION SURVEY

SPOIL PILES

UEL STATION	STATION DESCRIPTION	DEC./81 ELEVATION	APR./82 ELEVATION	SEPT./82 ELEVATION	SEPT./83 ELEVATION	SEPT. ELEVATION
154	0 + 990 SP	1088.794	1088.769	1088.776	1088.655	1088.50
157	1 + 530 SP	1093.097	1093.053	1093.042	1092.982	1092.90
158	1 + 900 SP	1083.253	1083.230	1082.905	1082.813	1082.68
408	2 + 040 SP	1083.974	1083.924	1083.663	1083.655	1083.50
418	2 + 950 SP	1079.416	1079.411	1079.384	1079.318	1079.28

FARO DEFORMATION SURVEY

INTERMEDIATE DAM

STATION	STATION DESCRIPTION	DEC./81 ELEVATION	APR./82 ELEVATION	SEPT./82 ELEVATION	SEPT./83 ELEVATION	SEPT./84 ELEVATION
01	0 + 250 ID	1064.563	1064.570	1064.571	1064.592	1064.584
412	0 + 450 ID	1064.249	1064.260	1064.260	1064.283	1064.271
113	0 + 627 ID	1065.112	1065.116	1065.100	1065.093	1065.078
14		1067.772	1067.782	1067.771	1067.767	1067.758

FARO DEFORMATION SURVEY

CROSS VALLEY DAM

UEL STATION	STATION DESCRIPTION	DEC./81 ELEVATION	APR./82 ELEVATION	SEPT./82 ELEVATION	SEPT./83 ELEVATION	SEPT./84 ELEVATION
502	0 + 180 CVDC	1065.833	1065.830	1065.816		
	0 + 204	1065.800	1065.792	1065.775	1065.745	1065.733
	SP "A"	1067.223	1067.215	1067.213	1067.202	1067.197
	0 + 210	1065.873	1065.865	1065.848		
	0 + 240	1065.804	1065.795			
	0 + 270	1066.050	1066.044	1066.026		
	0 + 300	1065.974	1065.965	1065.948		
415	0 + 330	1065.965	1065.950	1065.933		
	0 + 338 CVDC	1066.027	1066.007	1065.985	1065.934	1065.920
	SP "B"	1066.737	1066.717	1066.707		
	0 + 360	1065.915	1065.893	1065.877		
	0 + 390	1065.888		1065.852		
	0 + 420	1065.799				
	0 + 450	1065.752	1065.745	1065.714		
416	0 + 460 CVDC	1065.983	1065.971	1065.939	1065.872	1065.857
	SP "C"	1066.520	1066.509	1066.509	1066.498	1066.489
	0 + 480	1065.882	1065.872	1065.852		
	0 + 510	1065.830	1065.820	1065.796		
	0 + 540	1065.890				
417	0 + 568 CVDC	1065.971	1065.967	1065.938	1065.918	1065.907
	SP "D"	1067.158	1067.140	1067.129	1067.103	1067.093
	0 + 570	1065.829	1065.815	1065.785	1065.766	1065.756
	0 + 600	1065.973	1065.958	1065.923		
	0 + 630	1065.734				

FARO DEFORMATION SURVEY

INCREMENTAL SETTLEMENT INSTALLATIONS

STATION NO.	STATION DESCRIPTION	SEPT./82 ELEVATION	SEPT./83 ELEVATION	SEPT./84 ELEVATION
CD-4	0 + 400 CD(s)	1090.10	1089.95	1090.09 (1089.66)
CD-10	0 + 990 CD(s)	1088.92	1088.82	1088.88 (1088.75)
CD-15	1 + 530 CD(s)	1087.61	1087.55	1087.54 (1087.39)
CD-19	1 + 900 CD(s)	1086.90	1086.89	1086.87 (1086.70)
CD-21	2 + 100 CD(s)	1086.43	1086.41	1086.39 (1086.24)
CD-27	2 + 765 CD(s)	1085.54	1085.53	1085.53 (1085.16)
CD-28	2 + 900 CD(s)	1080.48	1081.06	1080.45 (1080.32)
CD-29	3 + 000 CD(s)	1075.40	1075.44	1075.13 (1074.97)
BS-2	0 + 400 BS(s)	1094.63	1094.55	1094.53 (1094.53)
BS-5	0 + 960 BS(s)	1092.81	1092.79	1092.80 (1092.62)
BS-9	1 + 530 BS(s)	1088.52	1088.48	1088.48 (1088.47)
BS-10	1 + 900 BS(s)	1098.61	1098.51	1098.49 (1098.48)
BS-11	2 + 100 BS(s)	1095.28	1095.33	1095.32 (1095.32)
BS-17	2 + 900 BS(s)	1092.92	1092.67	1092.86 (1092.75)
BS-18	3 + 000 BS(s)	1083.33	1083.38	1083.30 (1083.17)
SP-2	1 + 530 SP(s)	1093.07	1092.99	1092.94 (1092.94)
SP-3	1 + 900 SP(s)	1083.29	1083.24	1083.24 (1083.24)
SP-5	2 + 950 SP(s)	1079.60	1079.10	1079.55 (1079.55)

NOTE: Elevations are taken to the top of the casing caps.

Elevations to top of the Incremental Settlement Installation in brackets.

FARO DEFORMATION SURVEY

CANAL DYKE

STATION DESCRIPTION	SEPT./84 ELEVATION
Spike #1	1087.03
Spike #2	1087.02
Spike #3	1086.97
Spike #4	1086.80
Spike #5	1086.38
Spike #6	1086.35
Spike #7	1086.33
Spike #8	1086.10
Spike #9	1086.01
Spike #10	1085.99
Spike #11	1085.90
Spike #12	1086.03
Spike #13	1085.75
Spike #14	1085.65
Spike #15	1085.77
Spike #16	1085.29
Spike #17	1085.58
Spike #18	1085.80
Spike #19	1085.72
Spike #20	1085.43
Spike #21	1085.48
Spike #22	1085.21
Spike #23	1085.56
Spike #24	1085.40

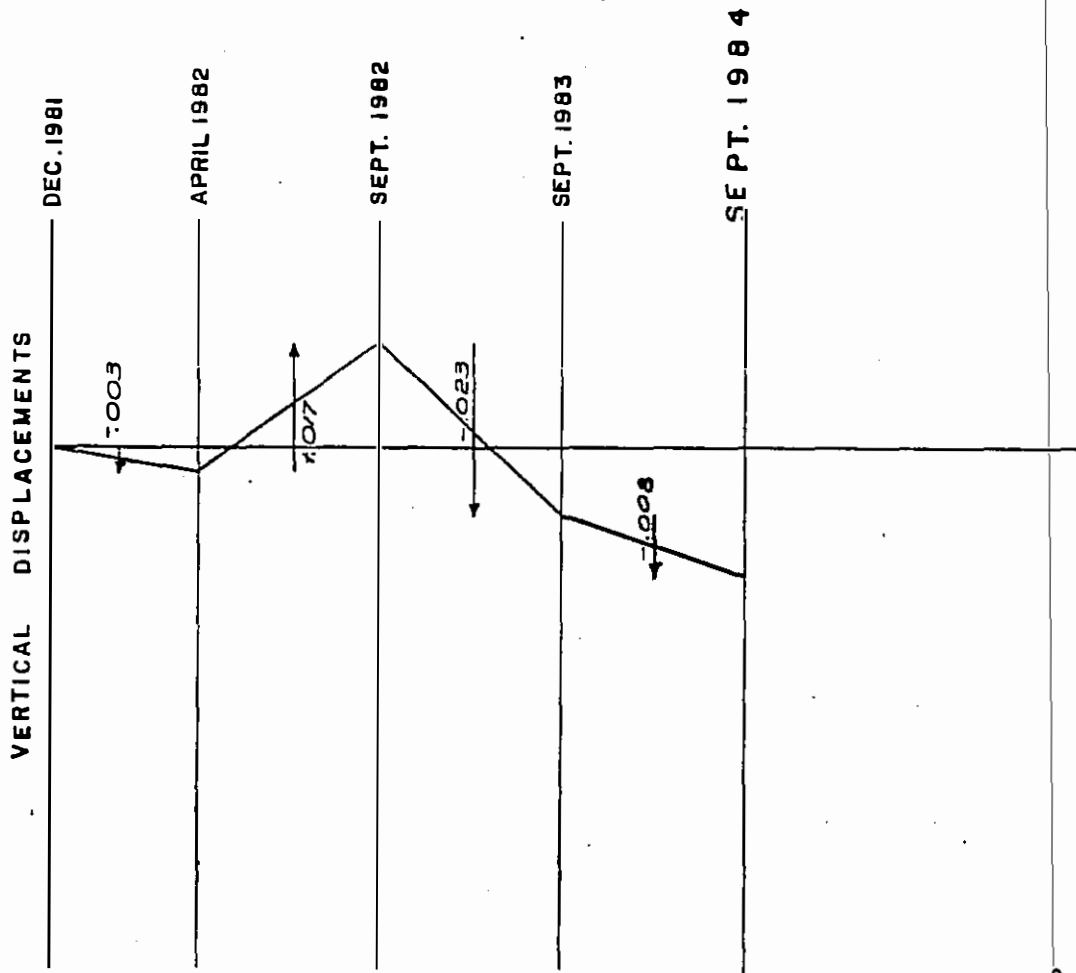
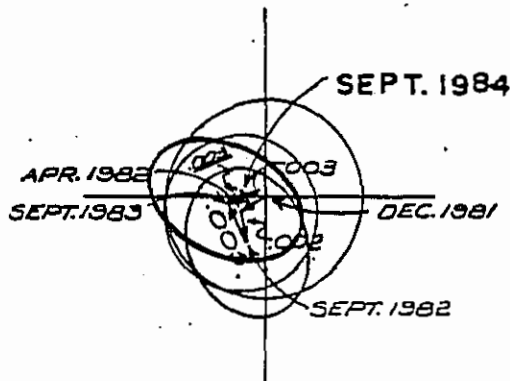
FARO DEFORMATION SURVEY

CANAL DYKE

STATION DESCRIPTION	SEPT./84 ELEVATION
Spike #25	1085.38
Spike #26	1085.10
Spike #27	1085.12
Spike #28	1084.94
Spike #29	1085.26
Spike #30	1084.97
Spike #31	1084.94
Spike #32	1084.87
Spike #33	1084.72
Spike #34	1083.48
Spike #35	1082.08
Spike #36	1078.56
Spike #37	1077.47
Spike #38	1076.33
Spike #39	1073.44
Spike #40	1072.64
Spike #41	1071.75
Spike #42	1070.25
Top of Stake #43	1067.26
Top of Stake #44	1065.76
Top of Stake #45	1063.89

INSTRUMENT STATION NUMBER
01990 C.D.

SURVEY STATION NUMBER
153

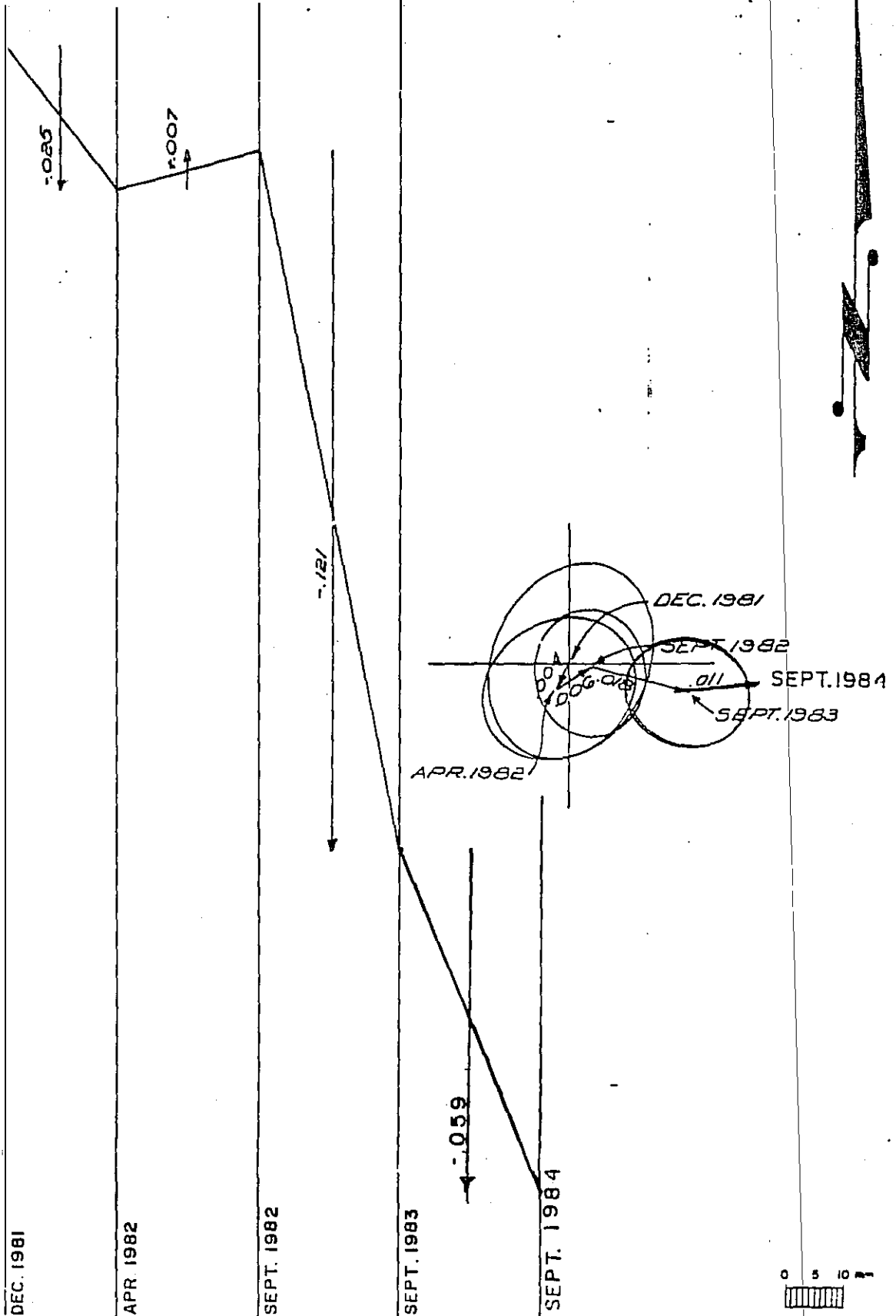


CLIENT	CYPRUS ANVIL MINING CORP.		UNDERHILL ENGINEERING LTD	
PROJECT	CYPRUS ANVIL DOWN VALLEY TAILINGS CONTAINMENT PROJECT		JOB NO. Y-2678	SHEET 1 OF 38
			DATE SEPTEMBER 1983	DRAWING NUMBER 134-3
			SCALE 1:1	

INSTRUMENT STATION NUMBER
0+990 S.P.

SURVEY STATION NUMBER
154

VERTICAL DISPLACEMENTS



CLIENT CYPRUS ANVIL MINING CORP.

UNDERHILL ENGINEERING LTD.

PROJECT
CYPRUS ANVIL
DOWN VALLEY TAILINGS
CONTAINMENT PROJECT

JOB NO. Y-2573
DATE SEPTEMBER 1984
SCALE 1:1

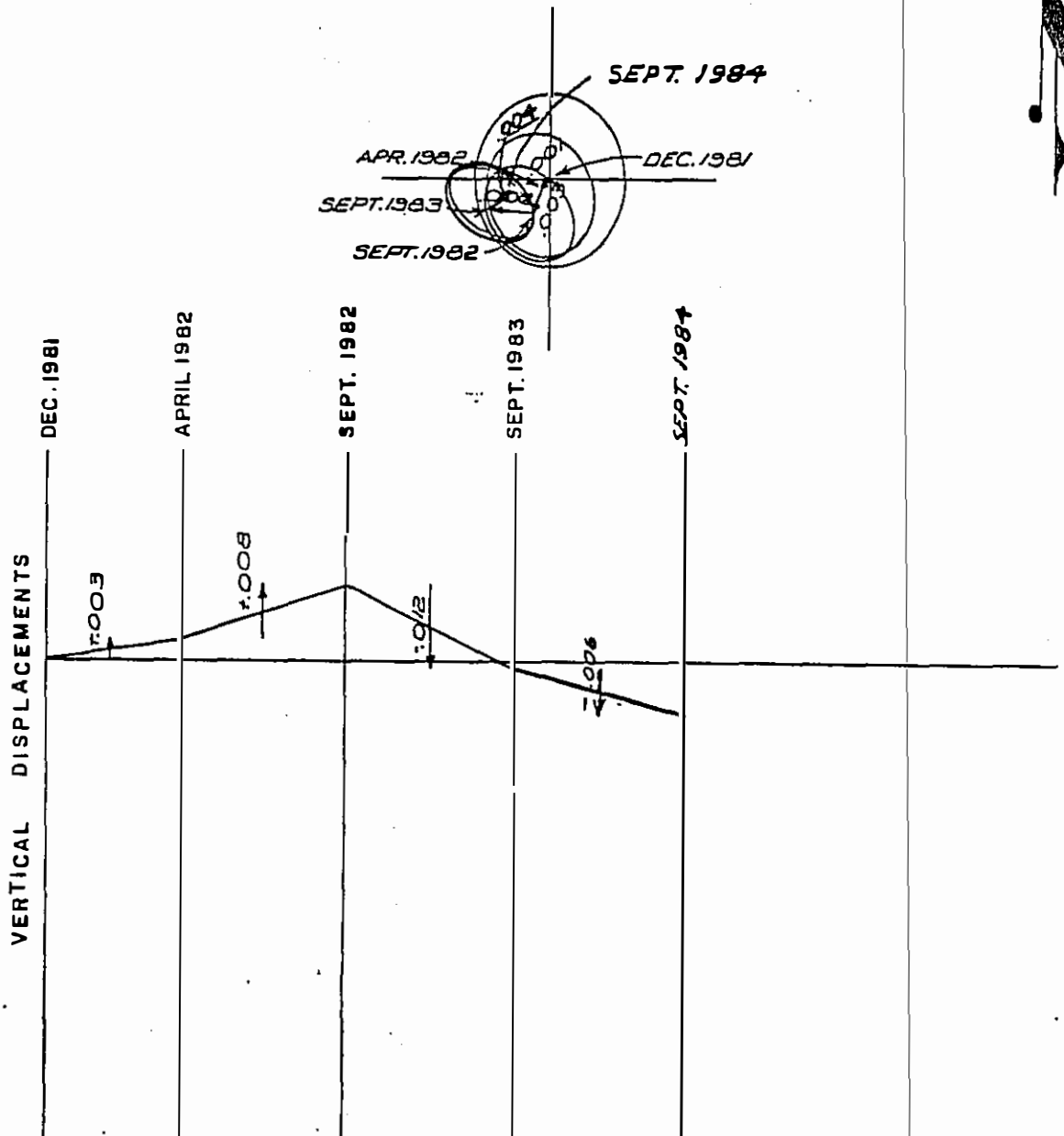
SHEET 2 OF 38
DRAWING NUMBER
134-3

INSTRUMENT STATION NUMBER

1+350 C.D.

SURVEY STATION NUMBER

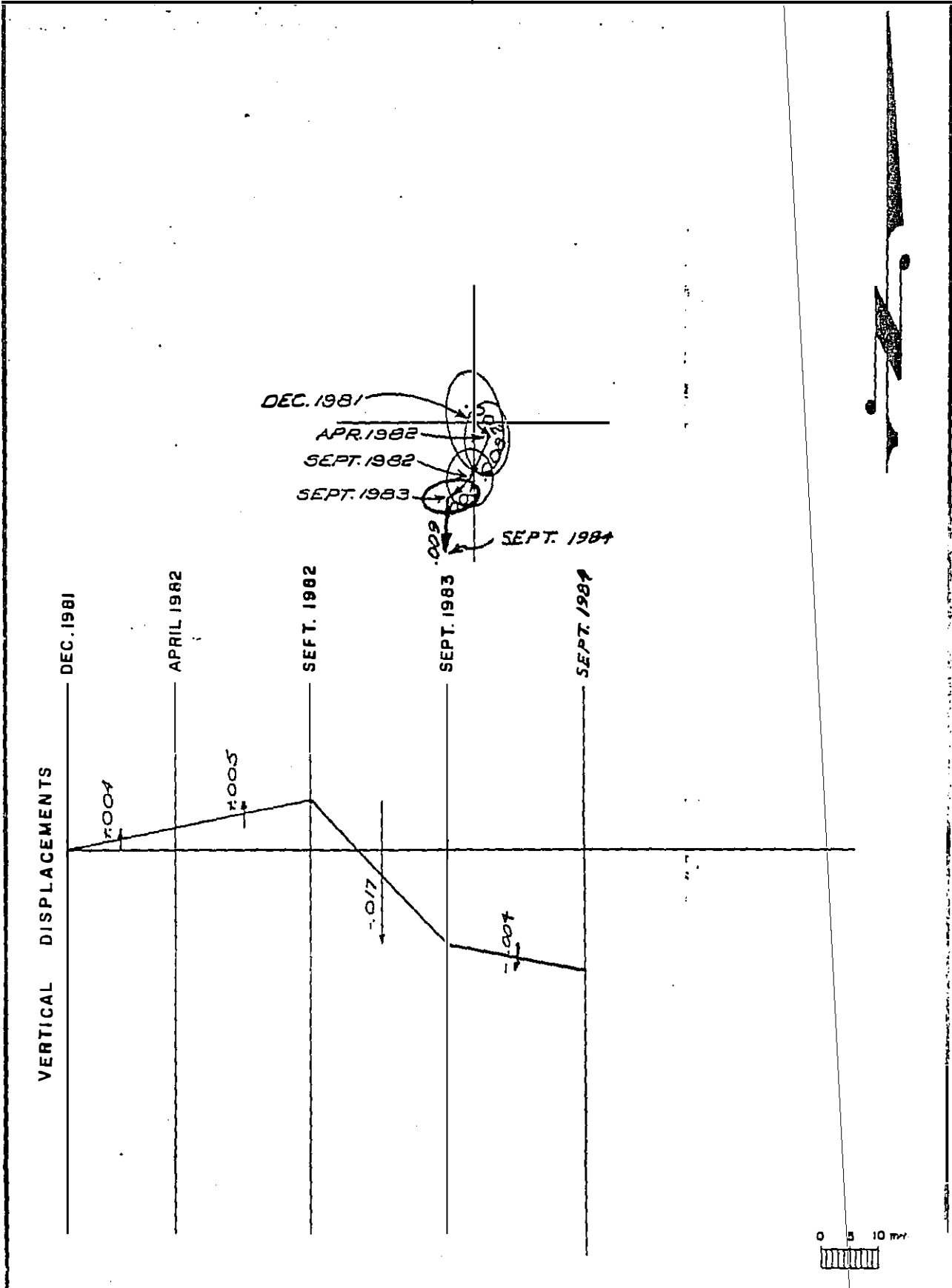
155



CLIENT	CYPRUS ANVIL MINING CORP.	UNDERHILL ENGINEERING LTD.	
PROJECT	CYPRUS ANVIL DOWN VALLEY TAILINGS CONTAINMENT PROJECT	JOB NO.	Y-2678
		DATE	SEPTEMBER 1987
		SCALE	1:1
		SHEET	3 OF 38
		DRAWING NUMBER	134-3

DISPLACEMENT VECTORS AND 95% RELATIVE ERROR ELLIPSES

INSTRUMENT STATION NUMBER 1+530 C.D.	SURVEY STATION NUMBER 156
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CLIENT CYPRUS ANVIL MINING CORP.	UNDERHILL ENGINEERING LTD.	
PROJECT CYPRUS ANVIL DOWN VALLEY TAILINGS CONTAINMENT PROJECT	JOB NO. Y-2678	SHEET 4 OF 38
	DATE SEPTEMBER 1984	DRAWING NUMBER
	SCALE 1:1	134-3

INSTRUMENT STATION NUMBER

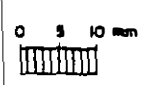
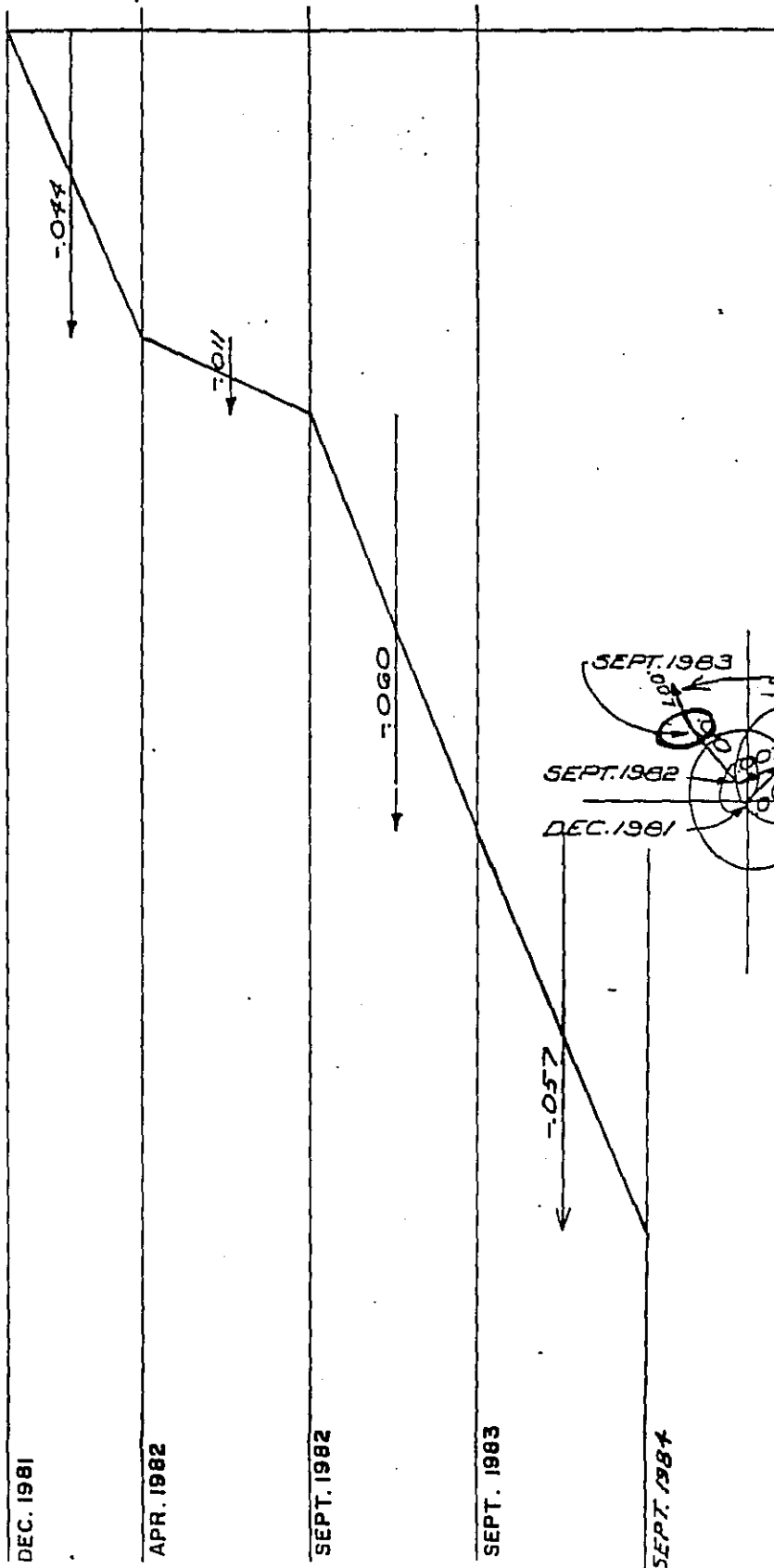
1+530 S.P.

SURVEY STATION NUMBER

157

NUMBER

VERTICAL DISPLACEMENTS



CLIENT	CYPRUS ANVIL MINING CORP.		UNDERHILL ENGINEERING LTD.	
PROJECT	CYPRUS ANVIL DOWN VALLEY TAILINGS CONTAINMENT PROJECT		JOB NO. Y-2678	SHEET 5 OF 38
			DATE SEPTEMBER 1984	DRAWING NUMBER 134-3