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OPTV DATA PROCESSING
RGLDIP vsn 6.2
BOREHOLE IMAGE LOG

28 Nov 2006

MACTEC

Borehole: RISB-#02

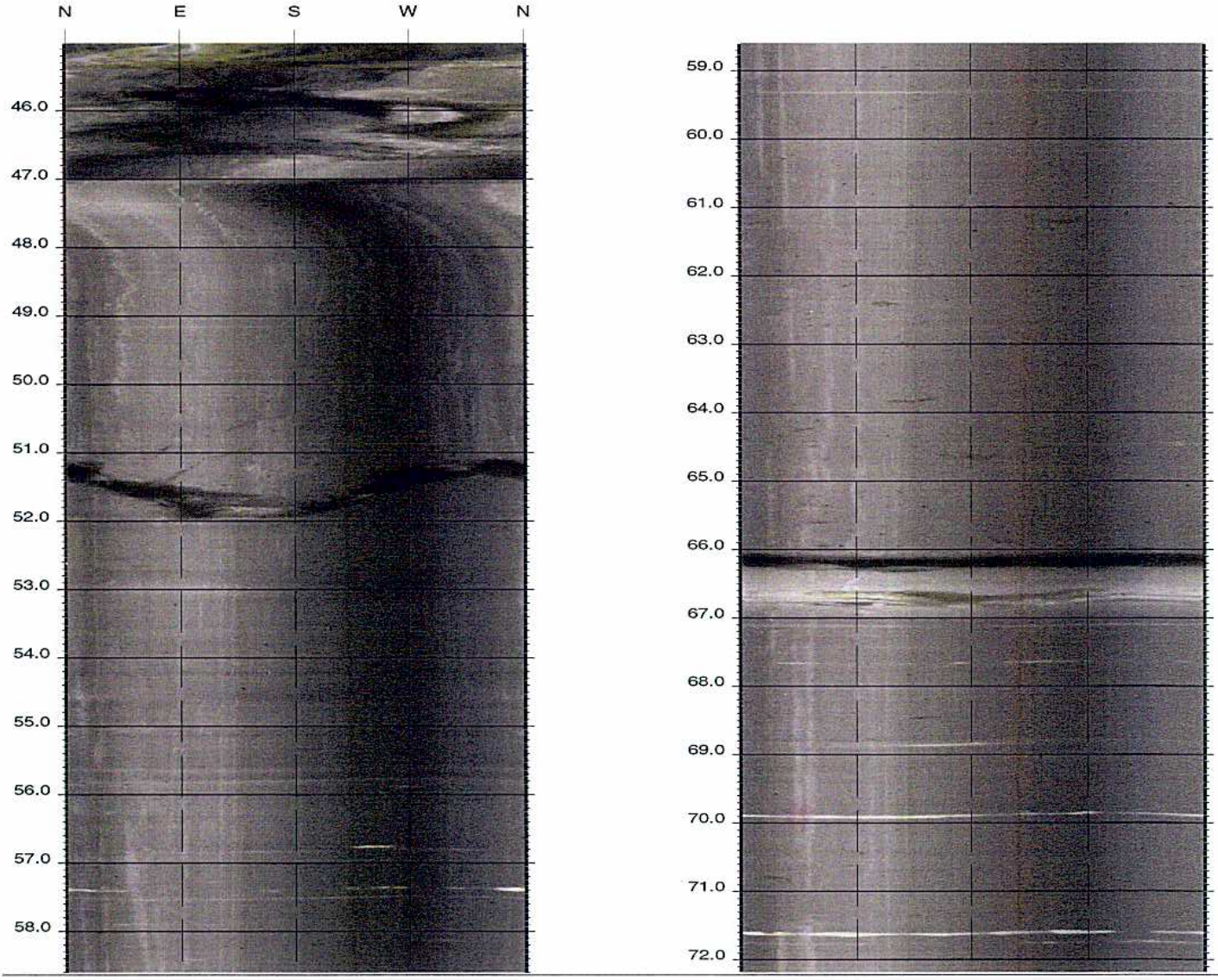
Casmailia Landfill

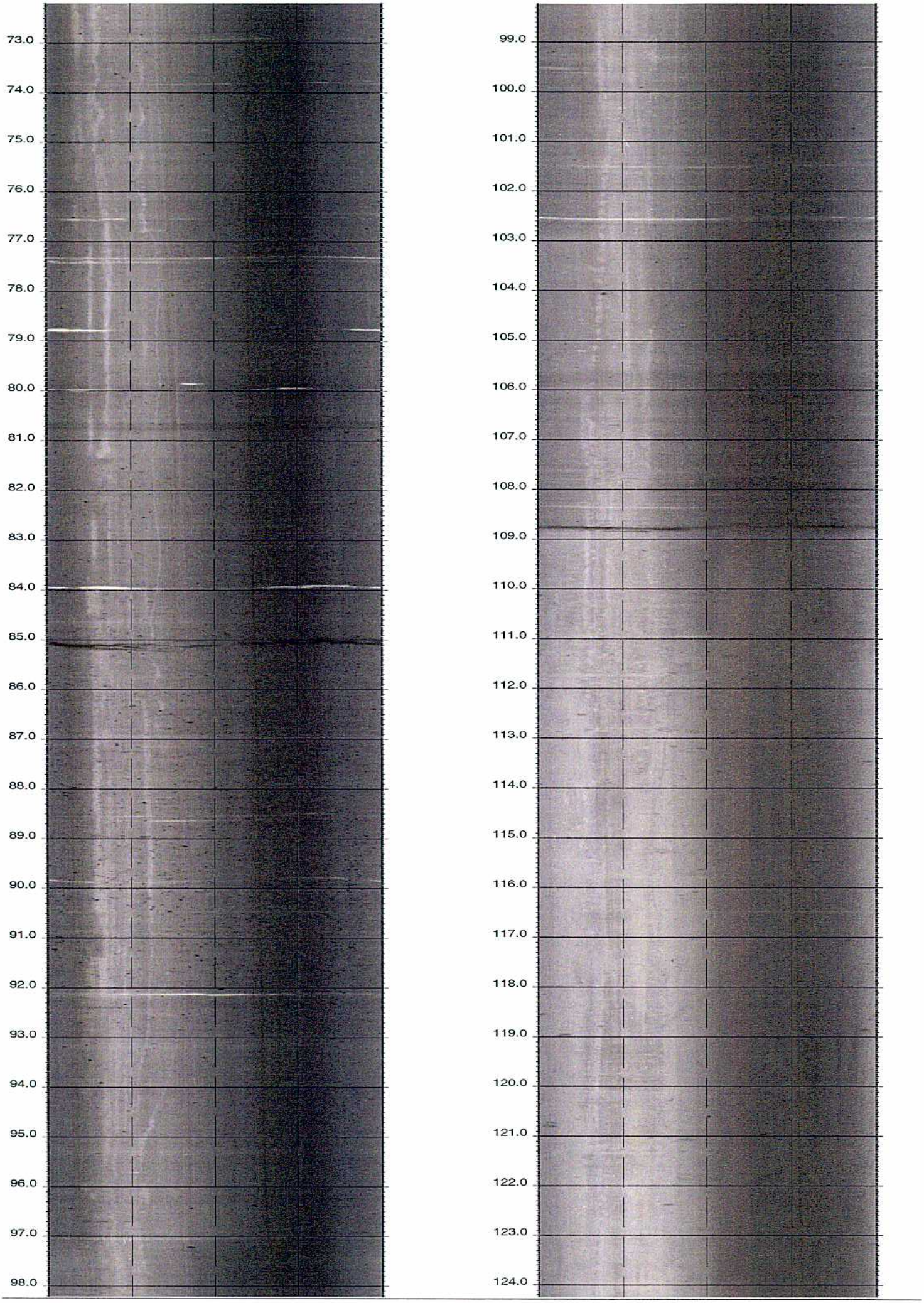
top of borehole.....
East:
North:
Elev:

North ref. is magnetic
Depth units are feet
Vertical scale: 1/30

Zone from 45.0080 to 250.5200ft
Format: BHTV NESWN

Borehole diam: 4.000inch
data intervals.....
Azimuth: 0.5000deg
Depth: 0.0080ft

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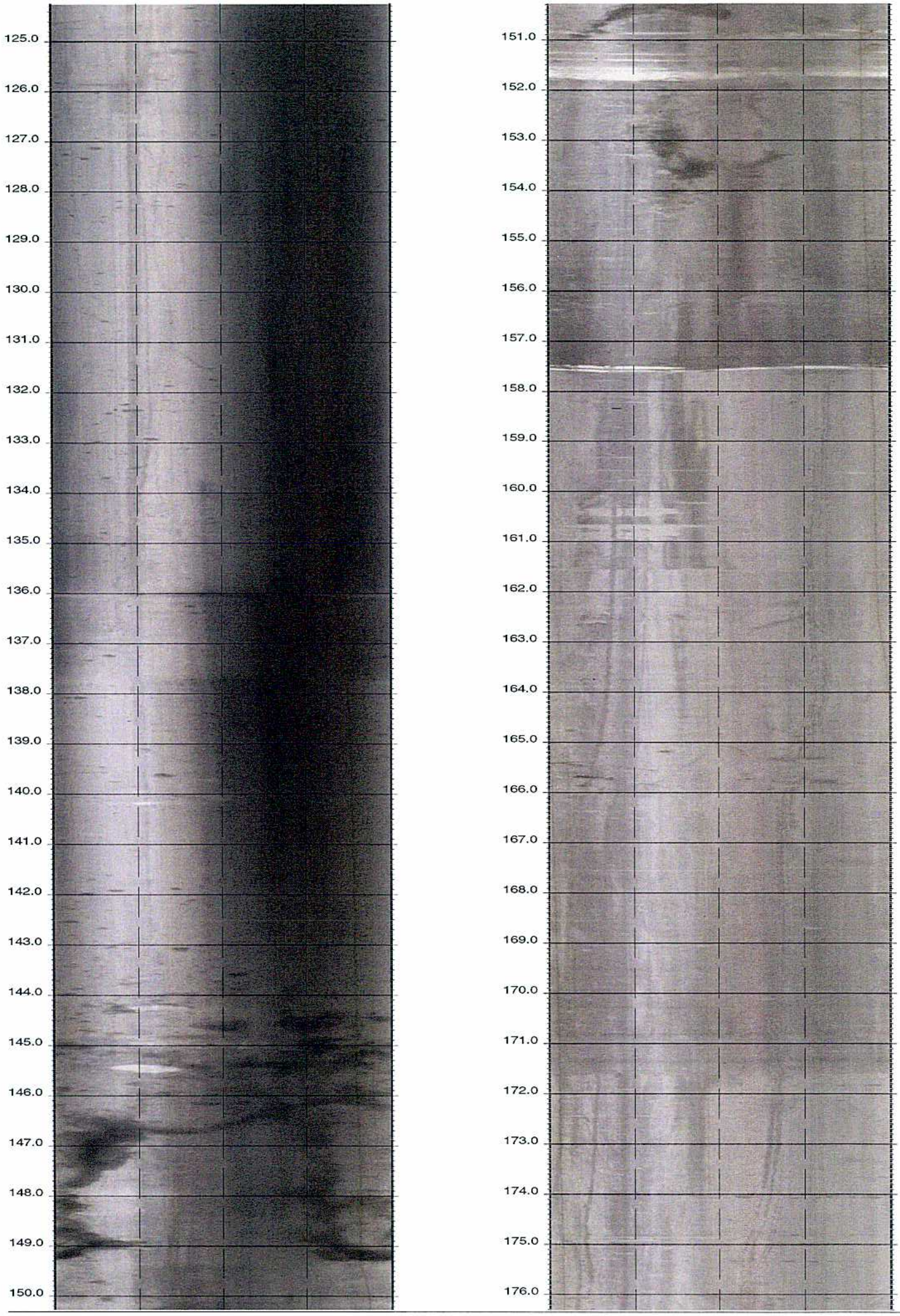
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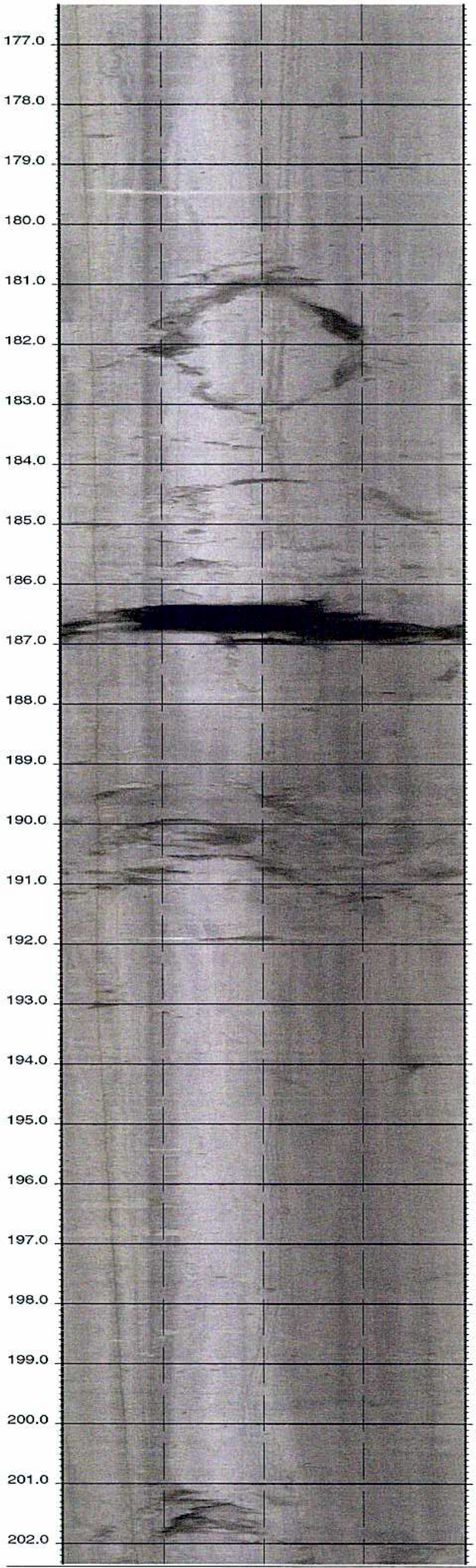
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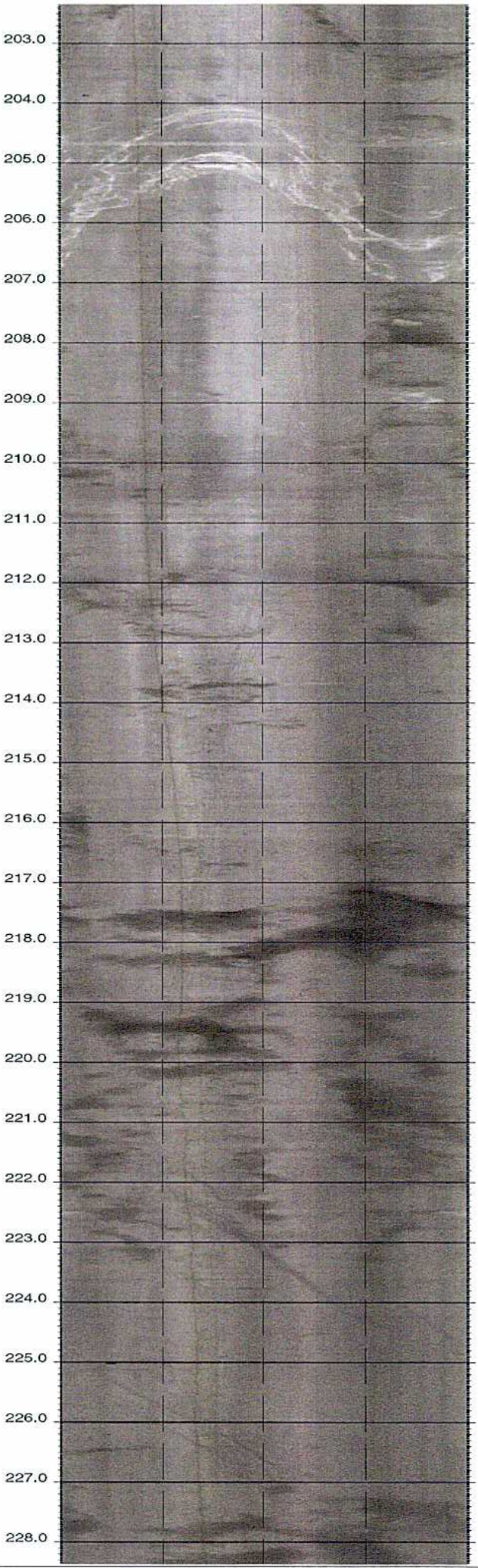
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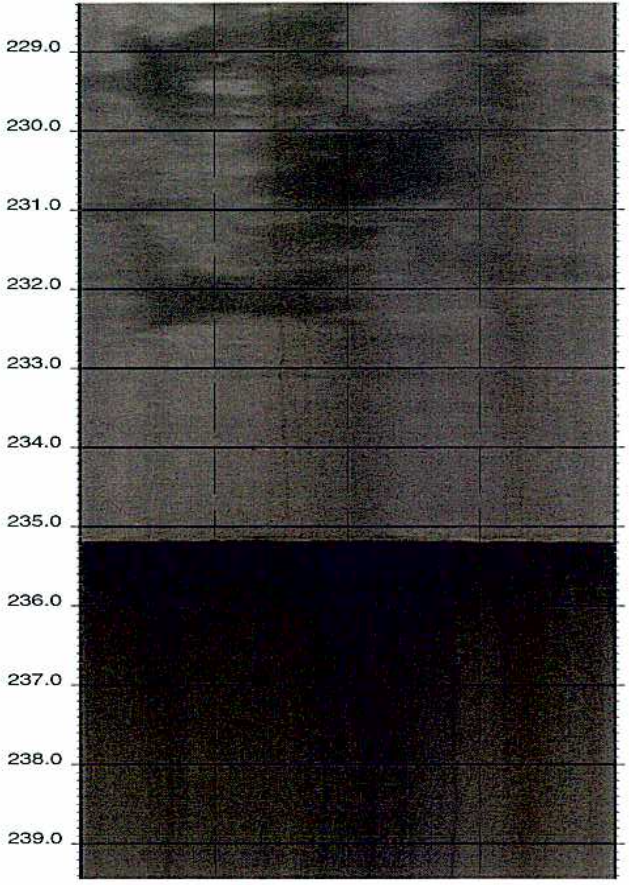
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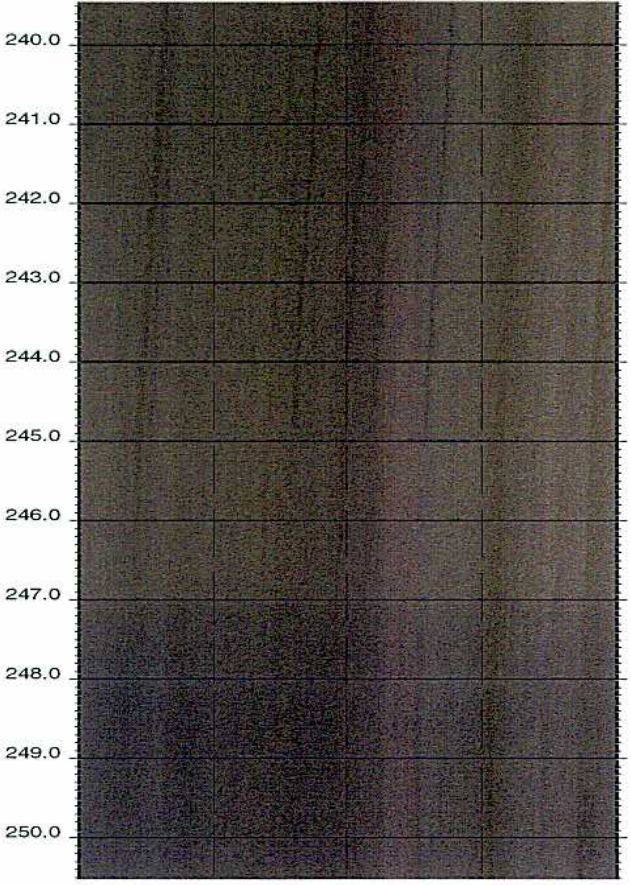
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OPTV DATA PROCESSING
RGLDIP vsn 6.2
INTERPRETED OPTV DIPS LOG

28 Nov 2006

MACTEC

Borehole: RISB-#02

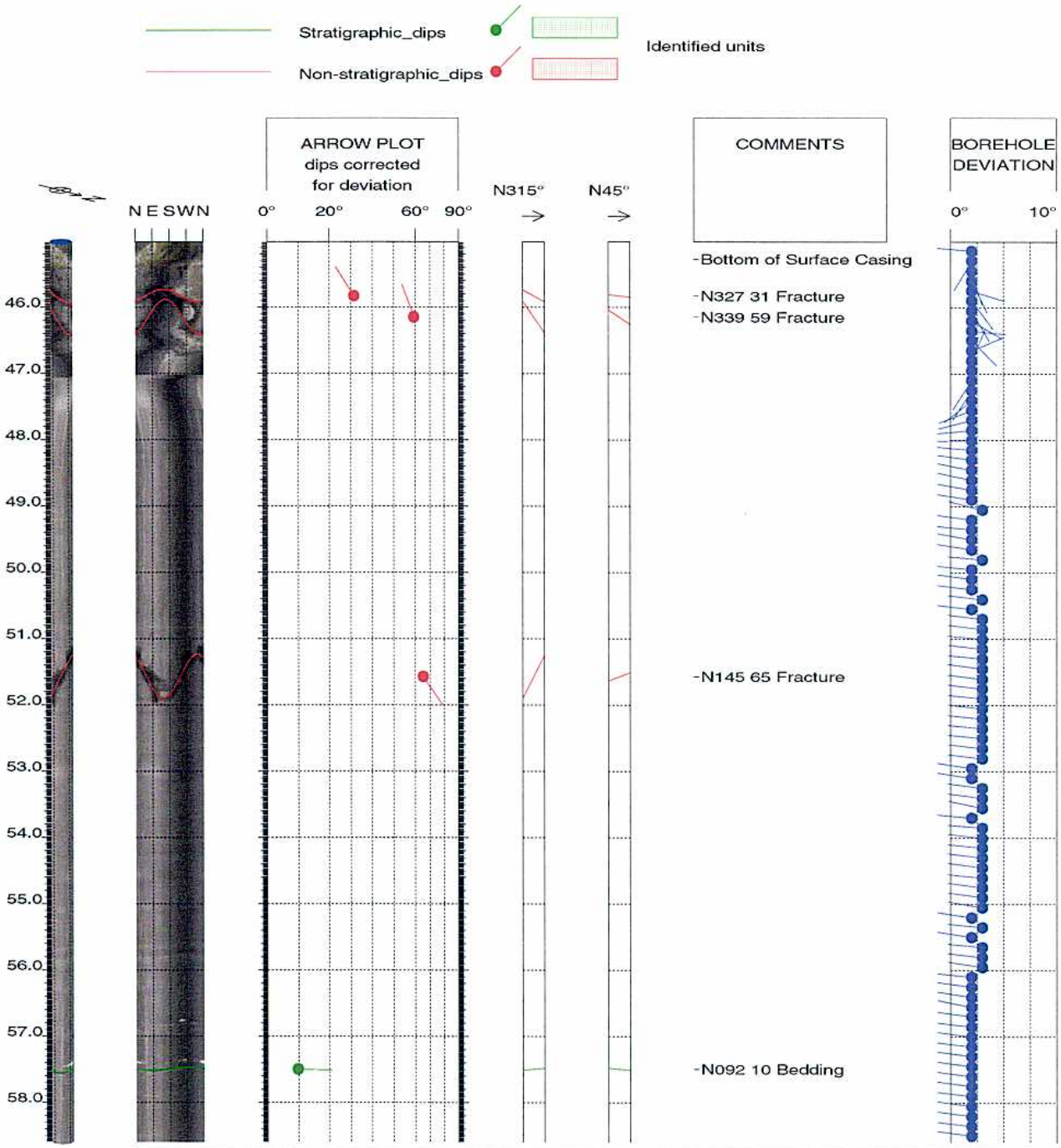
Casmailia Landfill

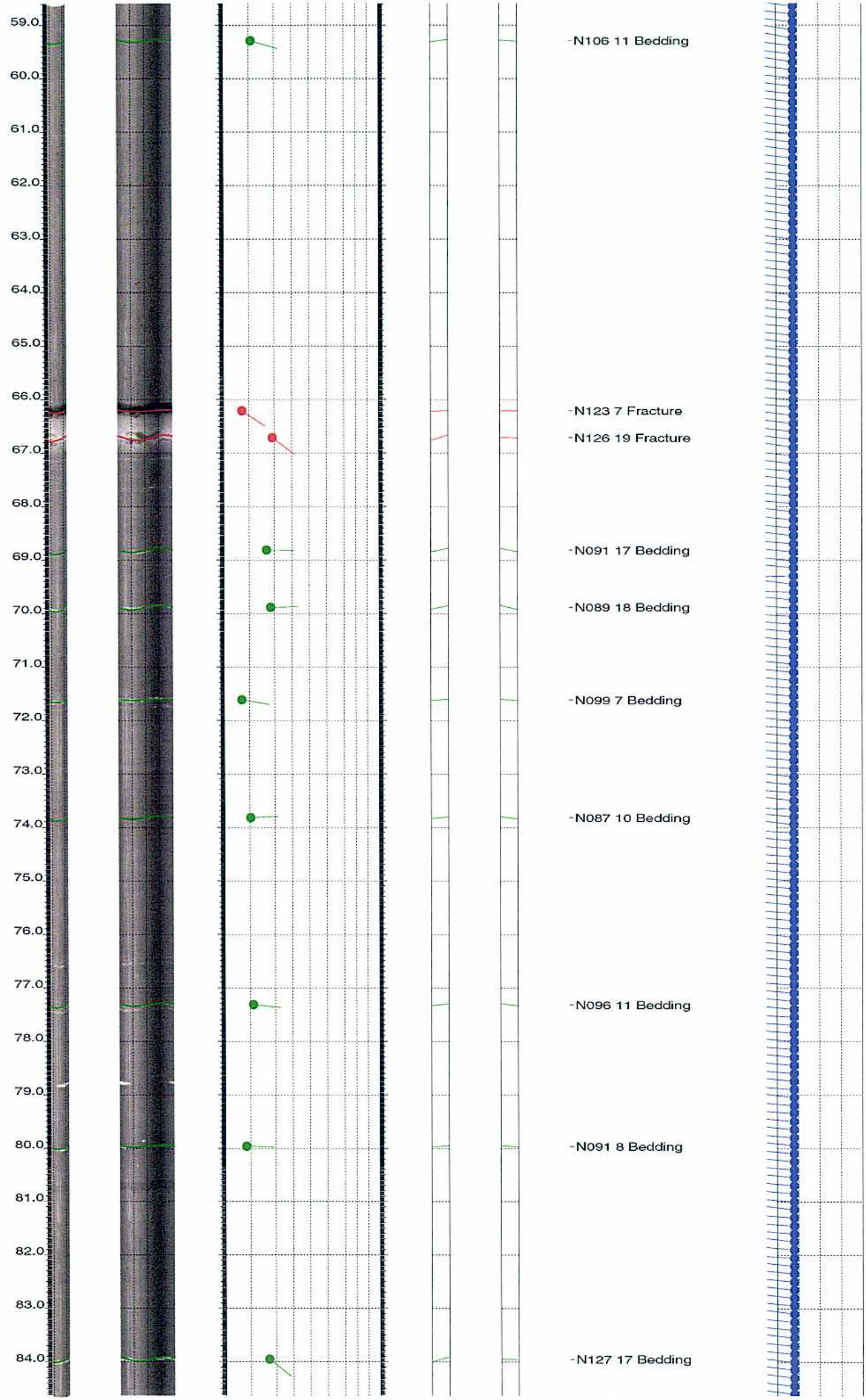
top of borehole.....
East:
North:
Elev:

North ref. is magnetic
Depth units are feet
Vertical scale: 1/30
Horiz scale = vert scale

Zone from 250.520 to 45.008ft
Format: BHTV-NESWN

Borehole diam: 4.000inch
Vertical = borehole-axis

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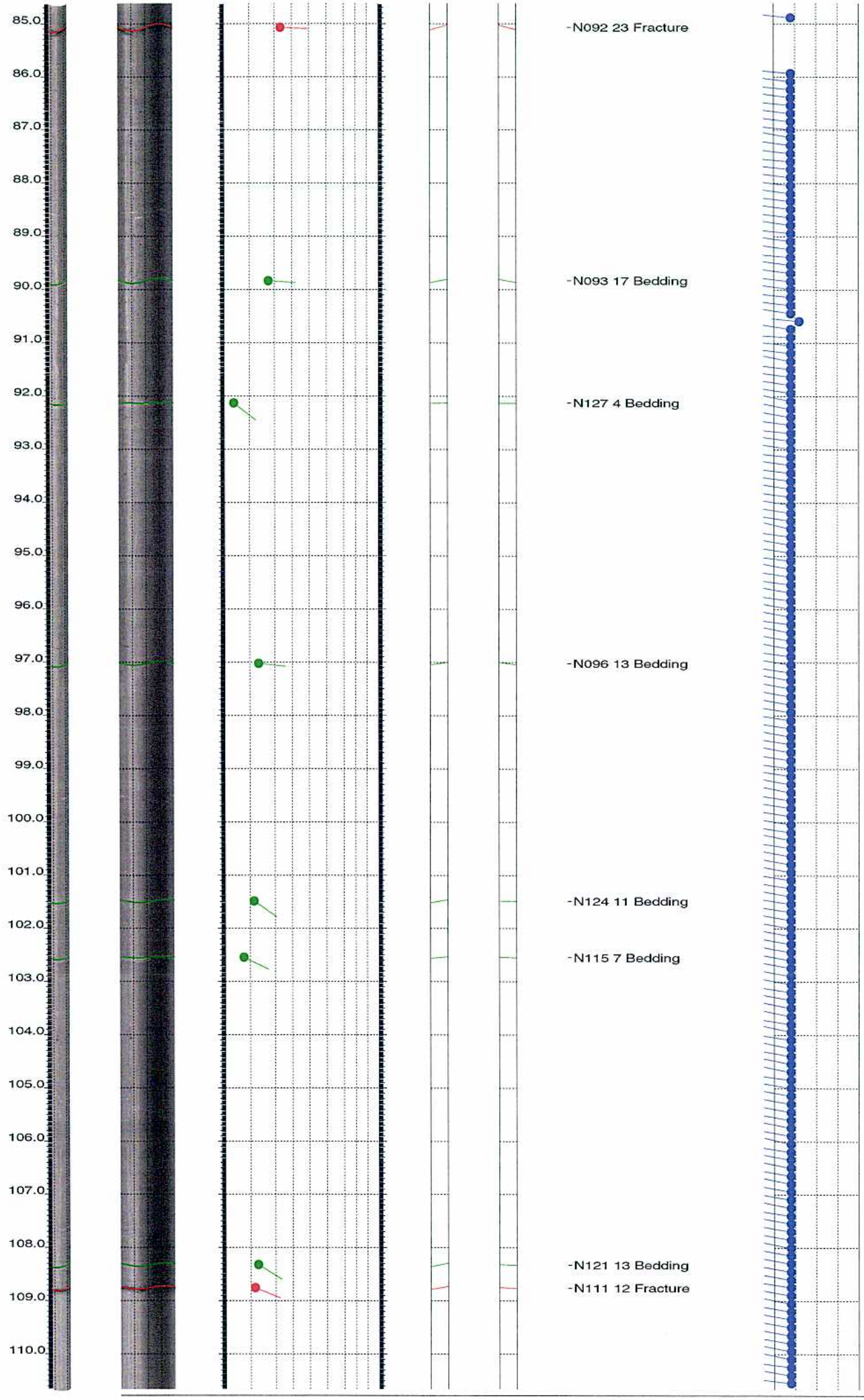
-N106 11 Bedding
-N123 7 Fracture
-N126 19 Fracture
-N091 17 Bedding
-N089 18 Bedding
-N099 7 Bedding
-N087 10 Bedding
-N096 11 Bedding
-N091 8 Bedding
-N127 17 Bedding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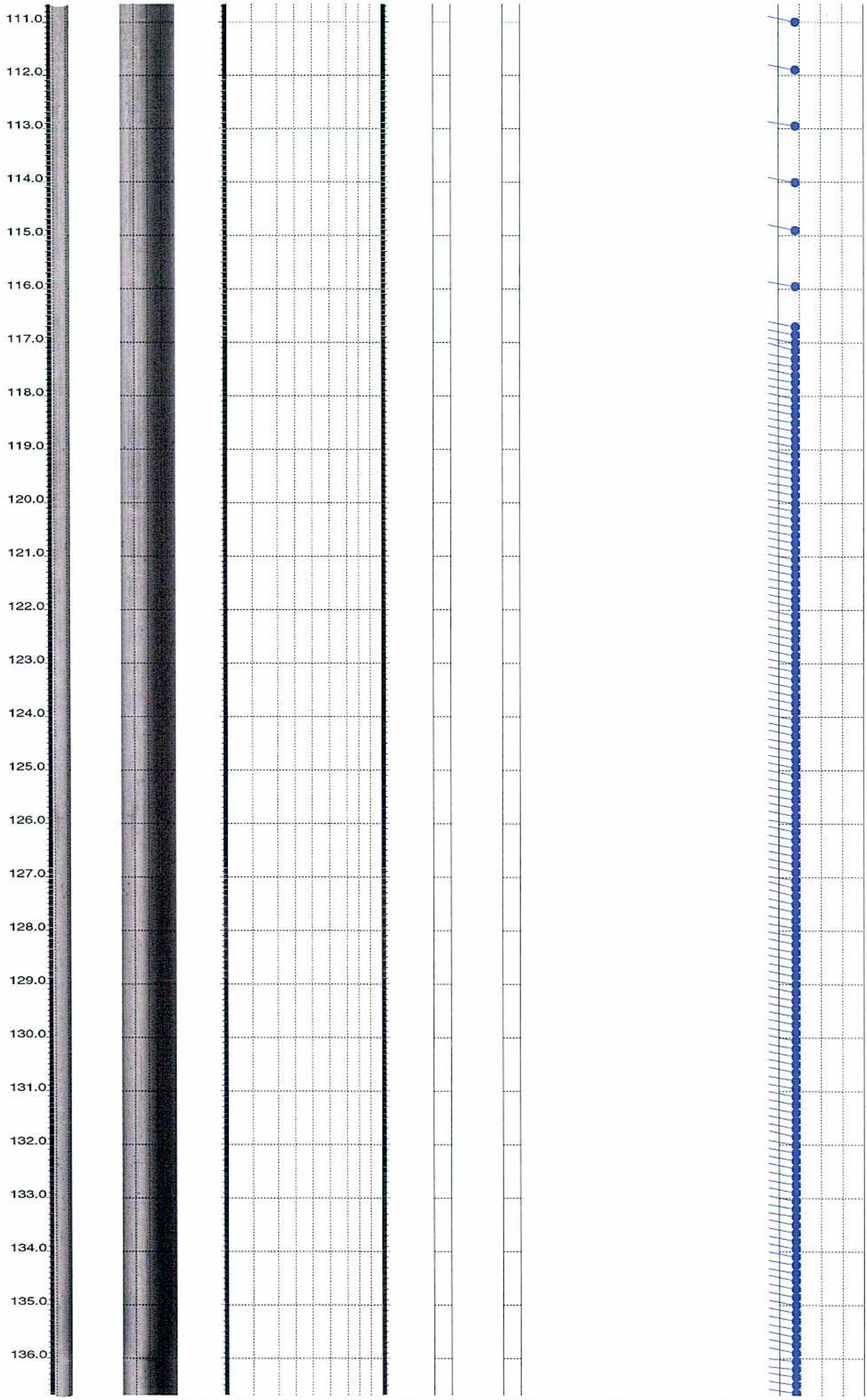
-N092 23 Fracture
-N093 17 Bedding
-N127 4 Bedding
-N096 13 Bedding
-N124 11 Bedding
-N115 7 Bedding
-N121 13 Bedding
-N111 12 Fracture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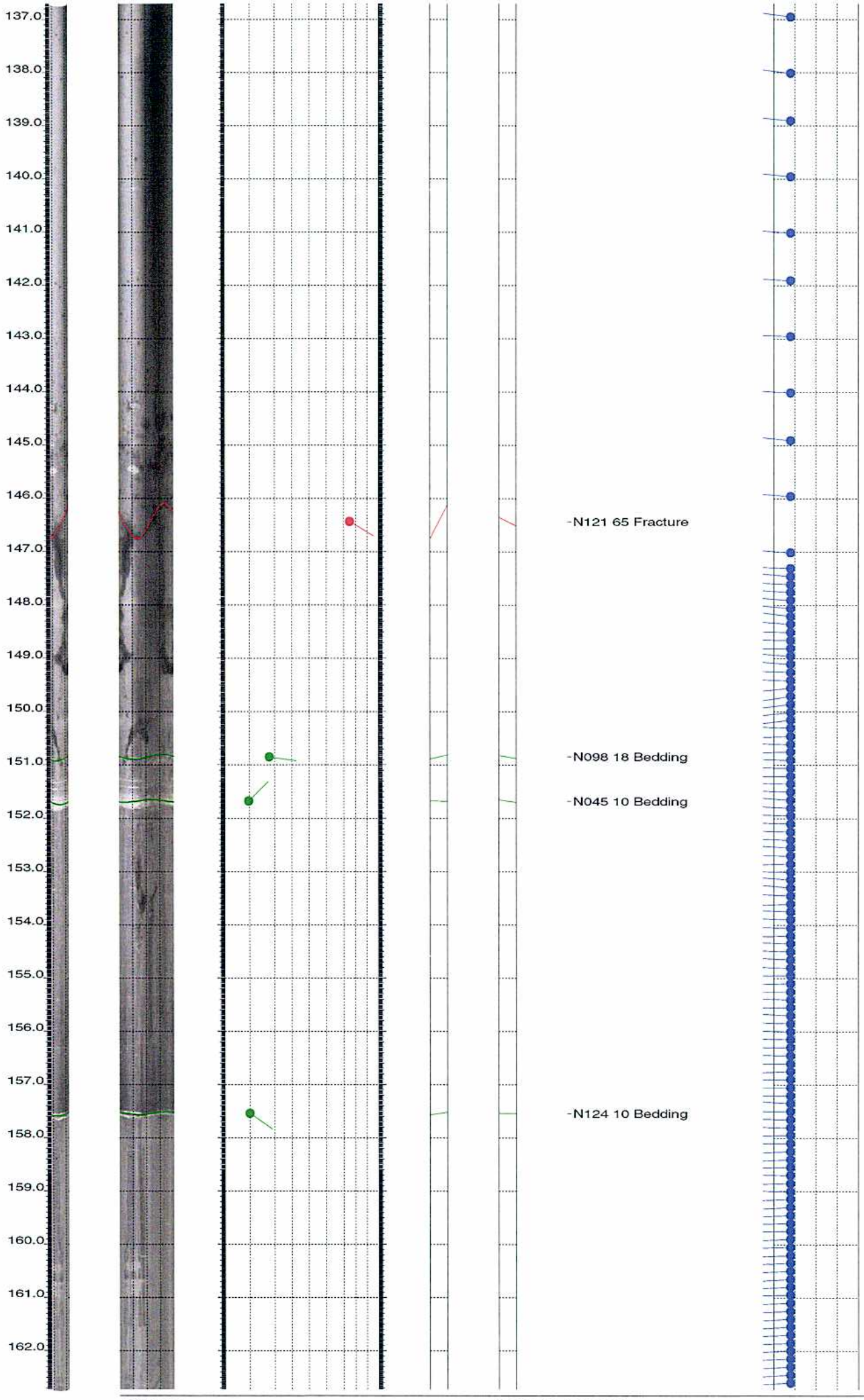
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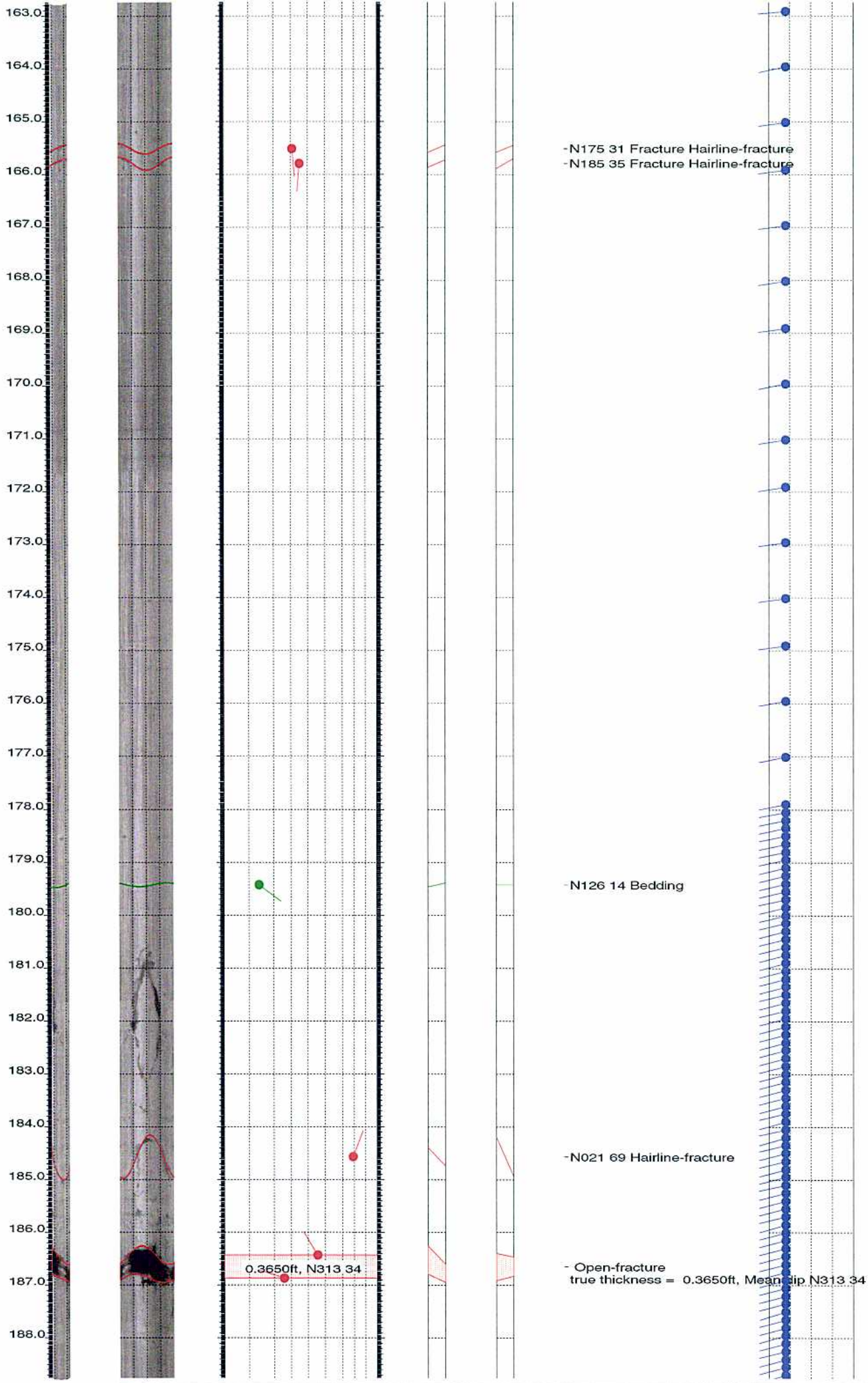
-N121 65 Fracture
-N098 18 Bedding
-N045 10 Bedding
-N124 10 Bedding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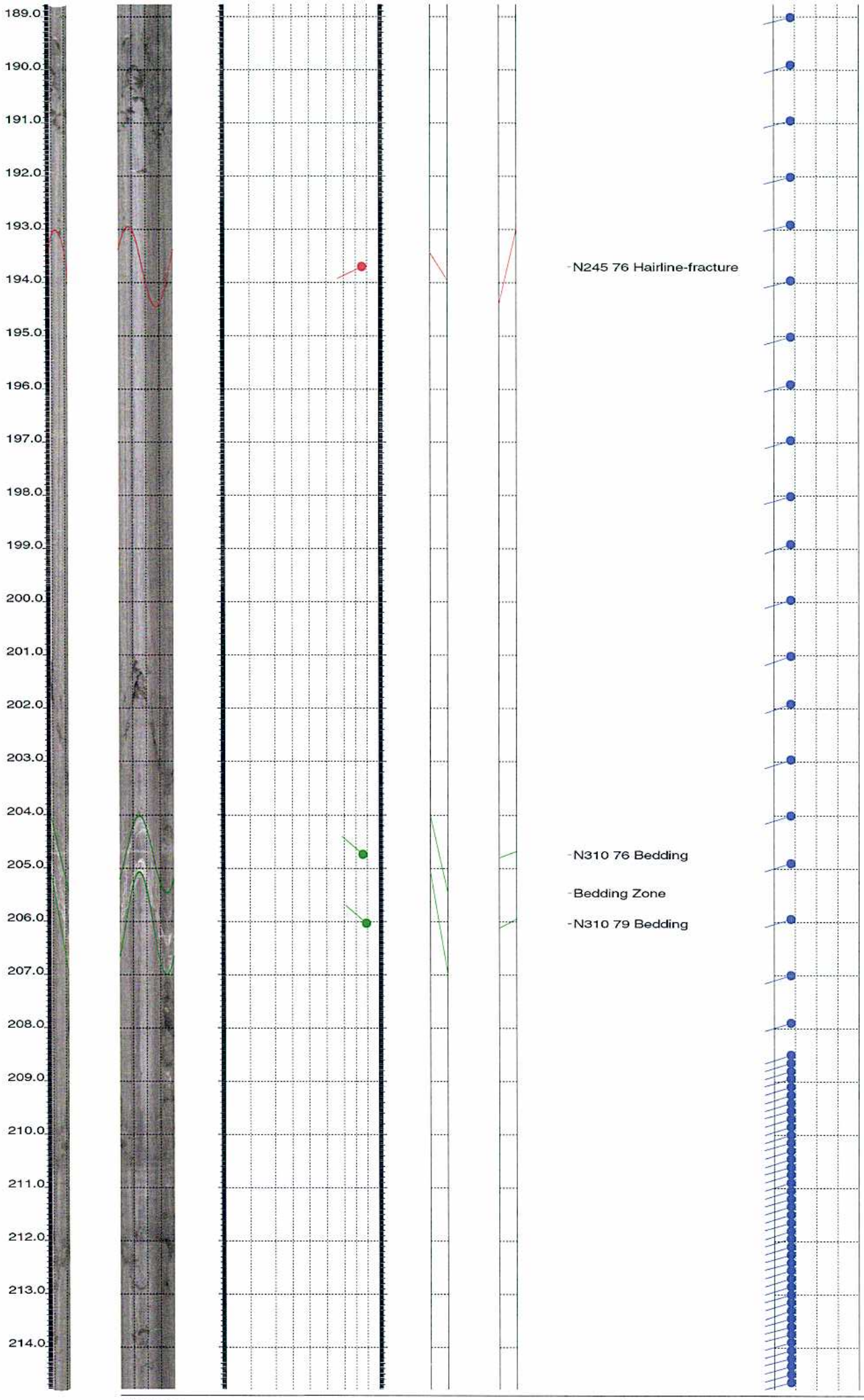
188.0
-N175 31 Fracture Hairline-fracture
-N185 35 Fracture Hairline-fracture
-N126 14 Bedding
-N021 69 Hairline-fracture
0.3650ft, N313 34
- Open-fracture
true thickness = 0.3650ft, Mean dip N313 34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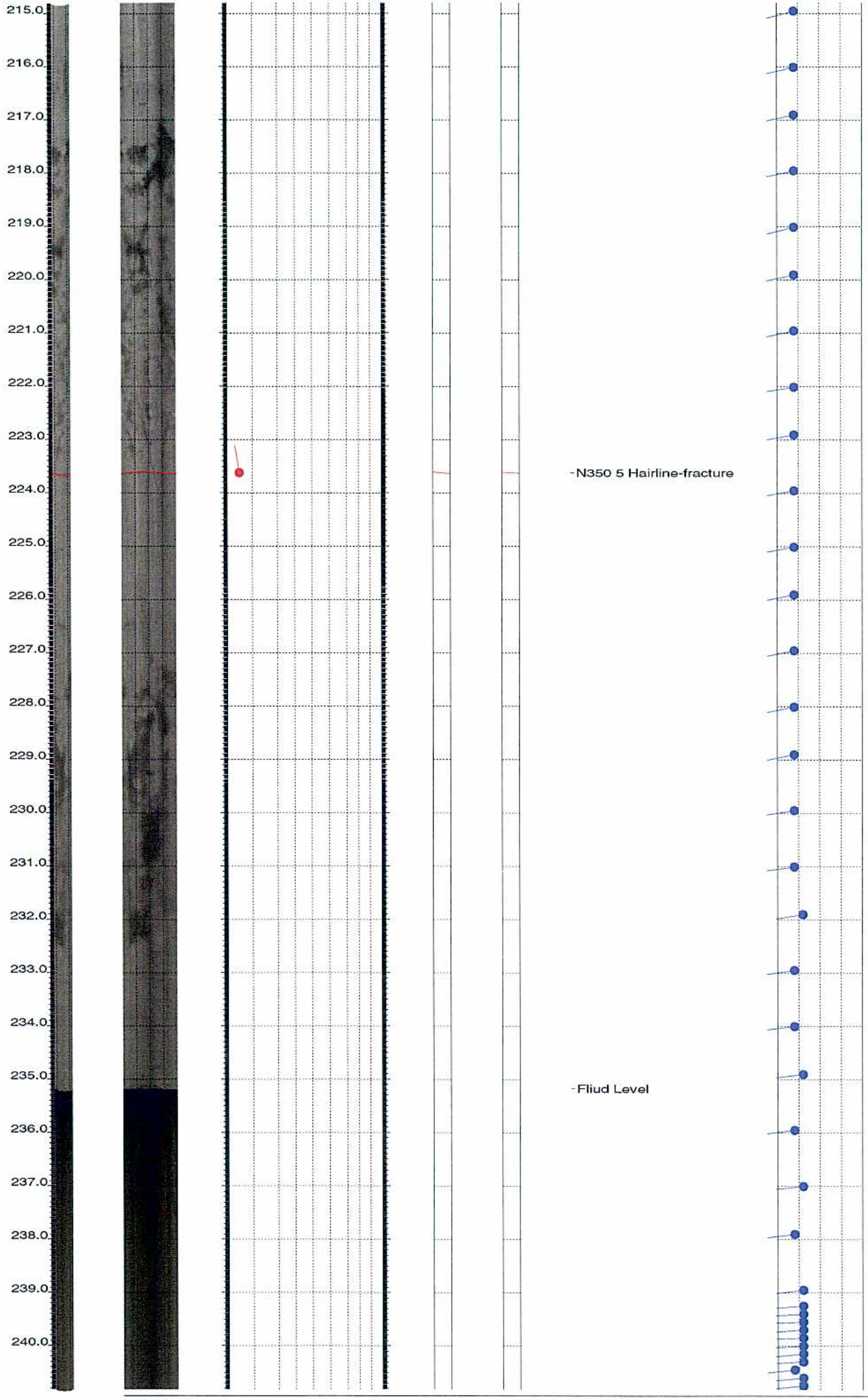
N245 76 Hairline-fracture
N310 76 Bedding
Bedding Zone
N310 79 Bedding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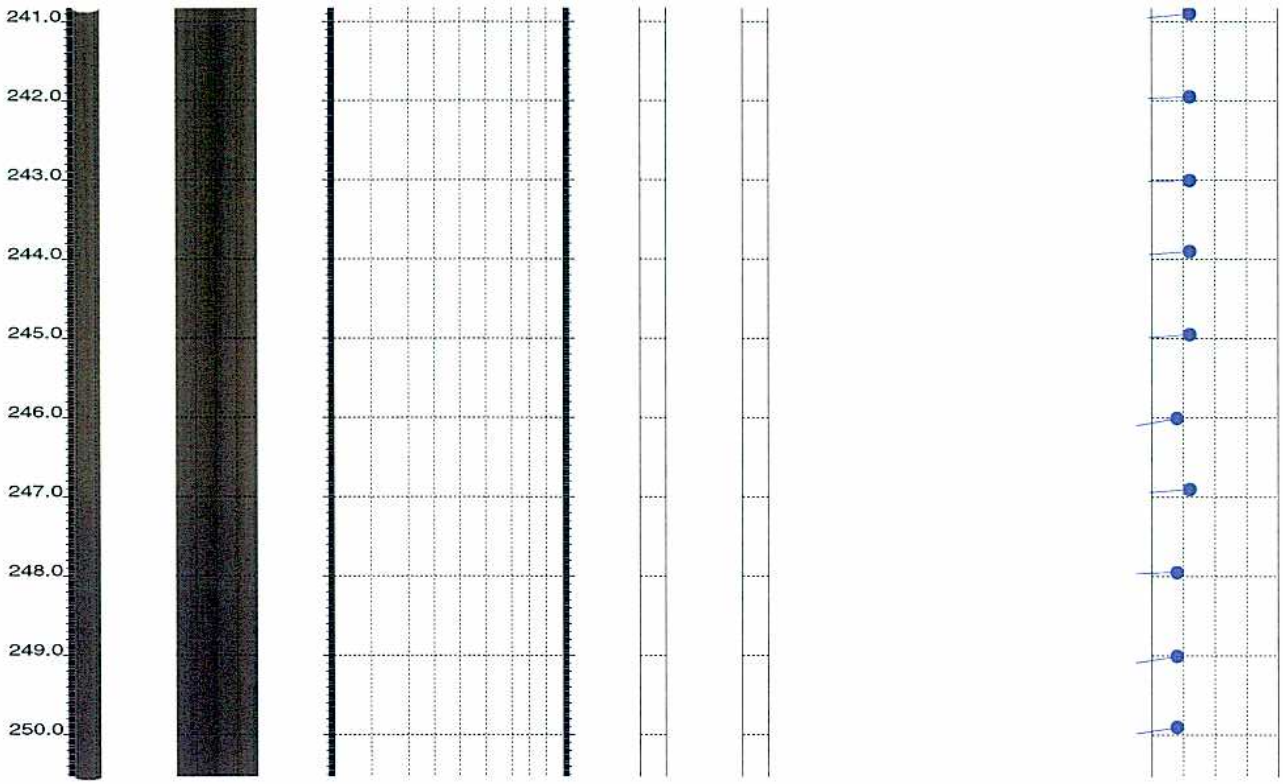
-N350 5 Hairline-fracture
-Fliud Level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RGLDIPv6.2 OPTV results

K = 0: Stratigraphic dips
K = 2: Non-stratigraphic dips

borehole RISB-#02
zone from 45.008 to 250.528 ft
North ref is magnetic
Dip format: Dip-azimuth and Dip

	Depth	Azimuth	Dip	1-P0/100	n	Q	K	Upper Depth	Lower Depth	Well Diam	Well deviation Azimuth	Dev	Thickness	
1	223.611	N350	4.7	0.982	4	A	2	223.596	223.626	0.333	259.49	2.00	0.0000	Hairline-fracture
2	206.029	N310	79.1	0.939	10	C	0	205.067	206.990	0.333	251.89	2.00	0.0000	Bedding
3	204.733	N310	76.0	0.879	8	D	0	204.009	205.457	0.333	252.92	2.00	0.0000	Bedding
4	193.688	N245	75.5	0.923	6	C	2	192.937	194.439	0.333	256.00	2.00	0.0000	Hairline-fracture
5	186.864	N288	25.8	0.959	4	B	2	186.778	186.951	0.333	255.00	2.00	0.3650	Open-fracture
6	186.423	N328	45.5	0.966	4	B	2	186.250	186.597	0.333	256.00	2.00	0.0000	Open-fracture
7	184.562	N021	69.0	0.920	9	C	2	184.151	184.973	0.333	256.44	2.00	0.0000	Hairline-fracture
8	179.421	N126	14.1	0.968	4	B	0	179.383	179.459	0.333	257.00	2.00	0.0000	Bedding
9	165.779	N185	35.1	0.928	5	C	2	165.660	165.898	0.333	262.00	2.00	0.0000	Fracture Hairline-fracture
10	165.498	N175	30.8	0.983	11	A	2	165.398	165.598	0.333	263.00	2.00	0.0000	Fracture Hairline-fracture
11	157.534	N124	10.0	0.954	5	B	0	157.509	157.558	0.333	270.25	2.00	0.0000	Bedding
12	151.668	N045	9.6	0.996	4	A	0	151.644	151.693	0.333	273.87	2.00	0.0000	Bedding
13	150.838	N098	17.8	0.948	5	B	0	150.791	150.885	0.333	270.24	2.00	0.0000	Bedding
14	146.419	N121	64.9	0.912	7	C	2	146.091	146.748	0.333	273.00	2.00	0.0000	Fracture
15	108.753	N111	11.7	0.976	4	A	2	108.724	108.781	0.333	279.06	2.00	0.0000	Fracture
16	108.321	N121	13.0	0.973	6	B	0	108.288	108.354	0.333	280.00	2.00	0.0000	Bedding
17	102.547	N115	7.4	0.995	4	A	0	102.531	102.563	0.333	280.00	2.00	0.0000	Bedding
18	101.492	N124	11.5	1.000	4	A	0	101.463	101.520	0.333	279.36	2.00	0.0000	Bedding
19	97.030	N096	13.4	0.951	4	B	0	96.996	97.063	0.333	278.88	2.00	0.0000	Bedding
20	92.135	N127	3.8	1.000	4	A	0	92.129	92.142	0.333	281.74	2.00	0.0000	Bedding
21	89.840	N093	17.5	0.951	5	B	0	89.794	89.886	0.333	277.05	2.00	0.0000	Bedding
22	85.076	N092	23.5	0.937	4	C	2	85.011	85.142	0.333	277.00	2.00	0.0000	Fracture
23	83.947	N127	17.3	0.996	4	A	0	83.900	83.993	0.333	276.65	2.00	0.0000	Bedding
24	79.963	N091	8.4	0.972	5	B	0	79.945	79.982	0.333	275.87	2.00	0.0000	Bedding

25	77.315	N096	11.2	0.993	4	A	0	77.288	77.342	0.333	276.00	2.00	0.0000 Bedding
26	73.818	N087	10.3	0.985	4	A	0	73.794	73.843	0.333	276.13	2.00	0.0000 Bedding
27	71.614	N099	6.9	0.965	4	B	0	71.600	71.628	0.333	275.00	2.00	0.0000 Bedding
28	69.885	N089	18.4	1.000	3	A	0	69.836	69.934	0.333	274.15	2.00	0.0000 Bedding
29	68.816	N091	16.8	1.000	3	A	0	68.772	68.860	0.333	275.79	2.00	0.0000 Bedding
30	66.715	N126	19.2	0.973	4	A	2	66.663	66.767	0.333	277.00	2.00	0.0000 Fracture
31	66.212	N123	7.2	1.000	3	A	2	66.196	66.228	0.333	276.45	2.00	0.0000 Fracture
32	59.294	N106	10.9	0.965	4	B	0	59.267	59.320	0.333	279.40	2.00	0.0000 Bedding
33	57.491	N092	9.7	0.986	4	A	0	57.468	57.513	0.333	278.00	2.00	0.0000 Bedding
34	51.564	N145	65.3	0.990	5	A	2	51.232	51.895	0.333	277.24	3.00	0.0000 Fracture
35	46.140	N339	59.2	0.865	6	D	2	45.879	46.401	0.333	131.85	2.00	0.0000 Fracture
36	45.821	N327	31.4	0.885	7	D	2	45.727	45.916	0.333	125.31	2.00	0.0000 Fracture

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DIP DATA INTERPRETATION
RGLDIP vsn 6.2
FRACTURE ANALYSIS LOG

28 Nov 2006

MACTEC

Borehole: RISB-#02

Casmailia Landfill

top of borehole.....
East:
North:
Elev:

North ref: magnetic
Depth units are feet
Vertical scale: 1/150

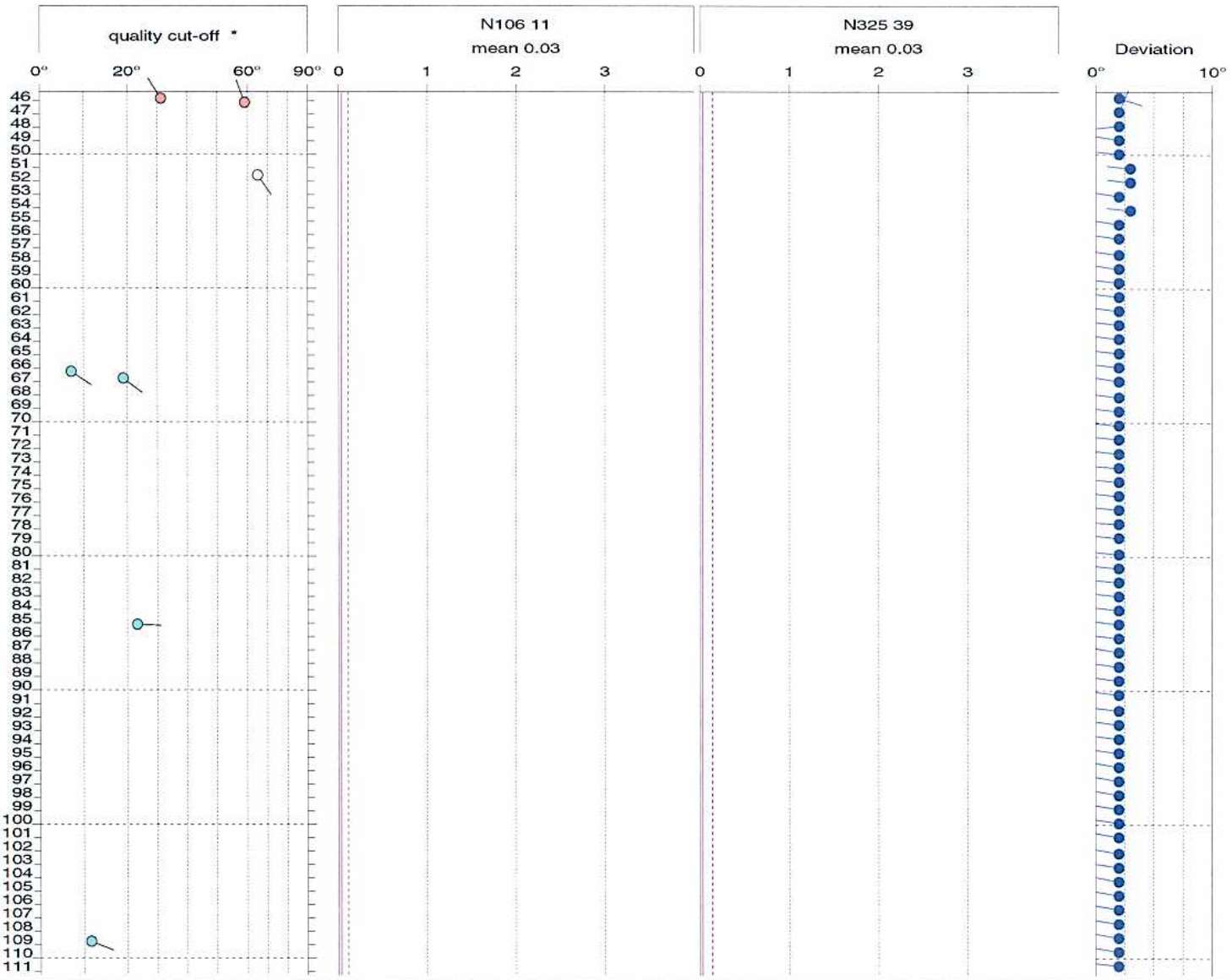
Zone from 224.111 to 45.321ft
Mean dip format: dip-azimuth and dip
Frequency histogram parameters:

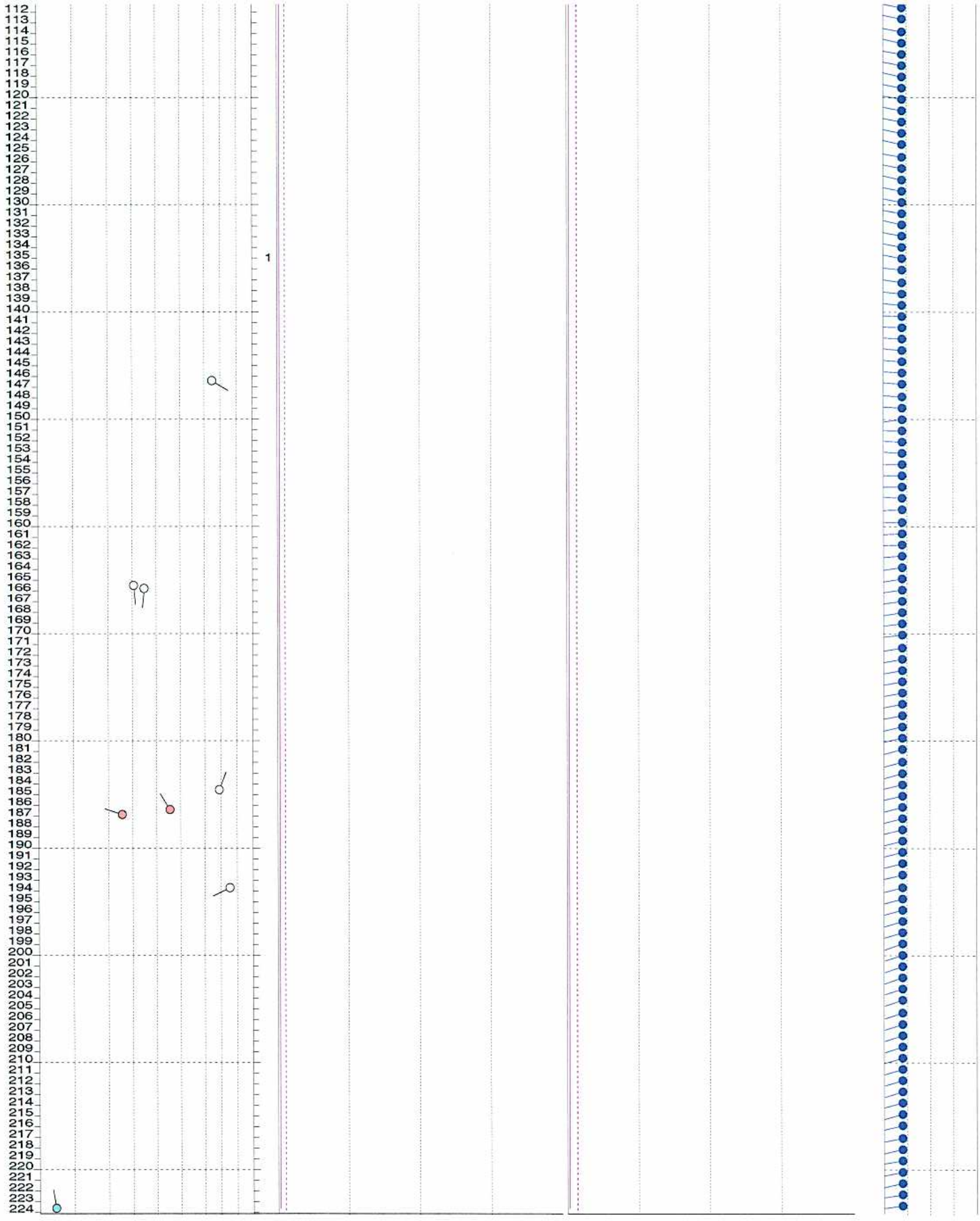
measurement distance 7.101ft
step distance 2.367ft

Interpretation 1

Dip data sets .....
OPTV dips

open symbols not used in mean-dip/zone-axis calculation

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DIP DATA INTERPRETATION
RGLDIP vsn 6.2
FRACTURE ANALYSIS STEREOGRAMS

28 Nov 2006

MACTEC

Borehole: RISB-#02

Casmailia Landfill

top of borehole.....
East:
North:
Elev:

North ref: magnetic
Depth units are feet

Zone from 224.111 to 45.321ft
Mean dip format: dip-azimuth and dip

Interpretation 1

Dip data sets .....
OPTV dips

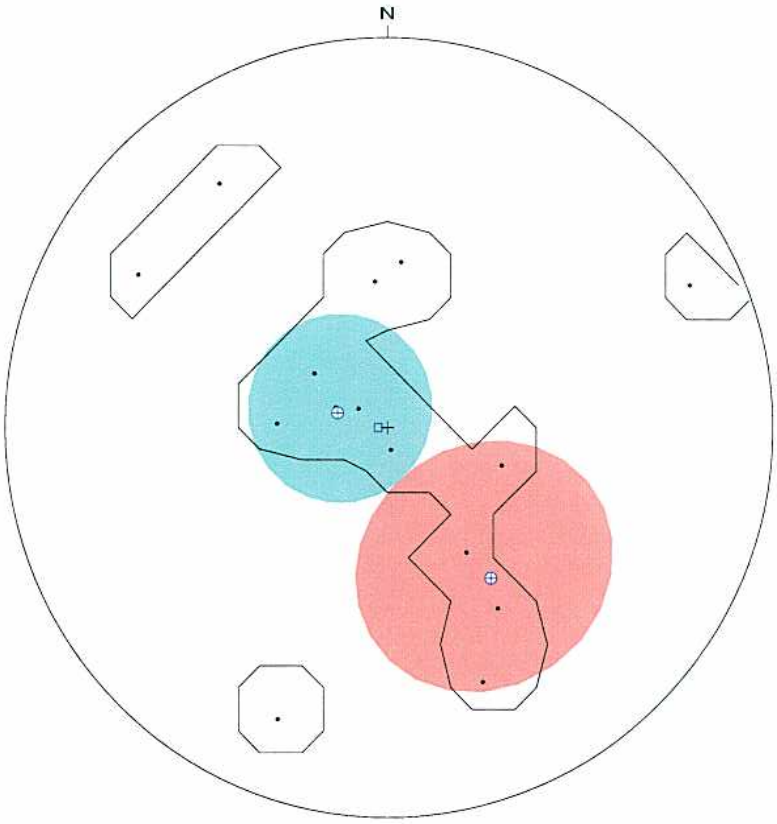
RISB-#02
Zone 0. 45.321 - 224.101ft
Deviation 2.00 N269.80

dipdata sets.....
OPTV dips

	mean dip	n	f
N106 11	N106 11	5	(0.03)
N325 39	N325 39	4	(0.03)

intersections

	N106 11	N325 39
N106 11		06 N048
N325 39	06 N048	



⊕ mean dip
□ well axis

equal-area lower-hemisphere 0-90
contour-levels 1,

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DIP DATA INTERPRETATION
RGLDIP vsn 6.2
DIP-AZIMUTH, FRACTURE ROSE-DIAGRAM

28 Nov 2006

MACTEC

Borehole: RISB-#02

Casmailia Landfill

top of borehole.....
East:
North:
Alt:

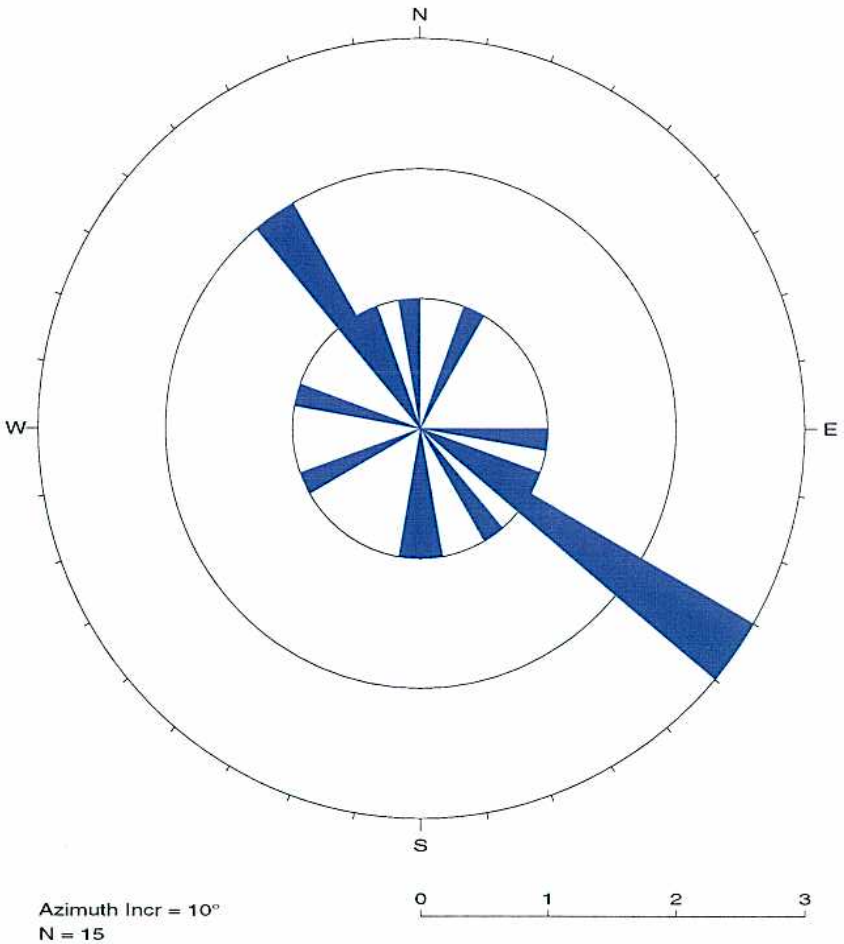
North ref. is magnetic
Depth units are feet

Zone from 224.111 to 45.321ft

Interpretation 1

Dip data sets .....
OPTV dips

RISB-#02
45.321 - 224.111ft
Dip-azimuth, fracture rose-diagram



Azimuth Incr = 10°
N = 15

RGLDIPv6.2 DIP DATA INTERPRETATION: FRACTURE ANALYSIS

borehole RISB-#02
zone from 45.000 to 224.000 m
North ref is magnetic
28 Nov 2006

Data is classed into 1 types
5 OPTV_dips

Quality cut-off level: *

Mean well deviation: 2.0°deg to N269.8°

2 small-circles defined

	SEARCH AREA azim	pl	cone	MEAN DIP azimuth	dip	n	f
1	291.8°	79.1°	19.7°	16°	11°	5	0.03
2	144.8°	53.0°	26.8°	235°	39°	4	0.03

Total number of data = 9
Number of data unaccounted for = 6

ZONE No.	DEVIATION Dev	Azim	DEPTHS m TOP	BASE	No. DATA	MEAN DIPS and FREQUENCIES Azi	Dip	n	f	Azi	Dip	n	f	Azi	Dip	n	f	Azi	Dip	n	f	Azi	Dip	n	f
1	2.0	269.8	45.32	224.10	15	16	11	5	14.18	235	39	4	23.42	0	0	0	0.00	0	0	0	0.00	0	0	0	0.00

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DIP DATA INTERPRETATION
RGLDIP vsn 6.2
STRUCTURAL INTERPRETATION LOG

28 Nov 2006

MACTEC

Borehole: RISB-#02

Casmailia Landfill

top of borehole.....
East:
North:
Elev:

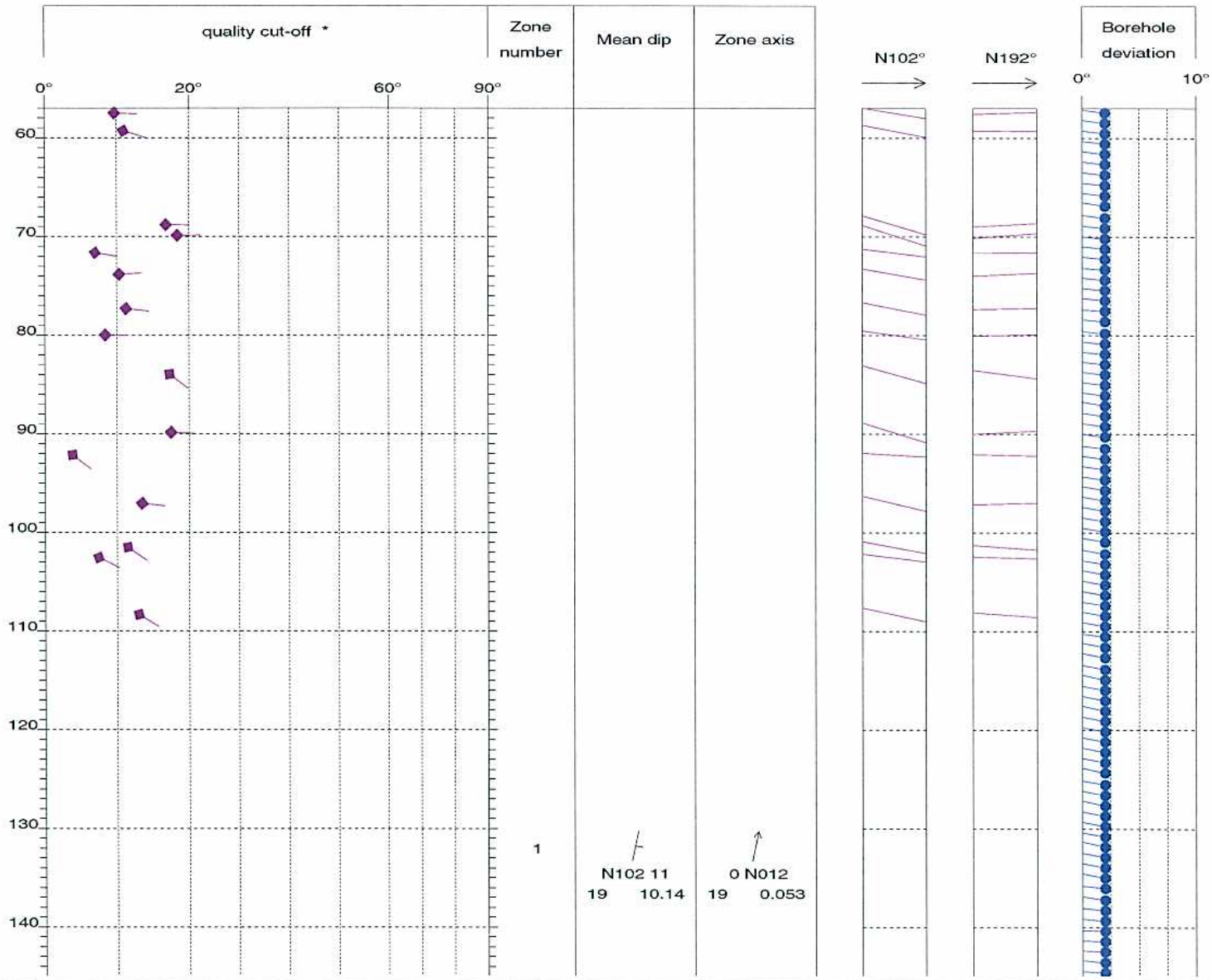
North ref: magnetic
Depth units are feet
Vertical scale: 1/200

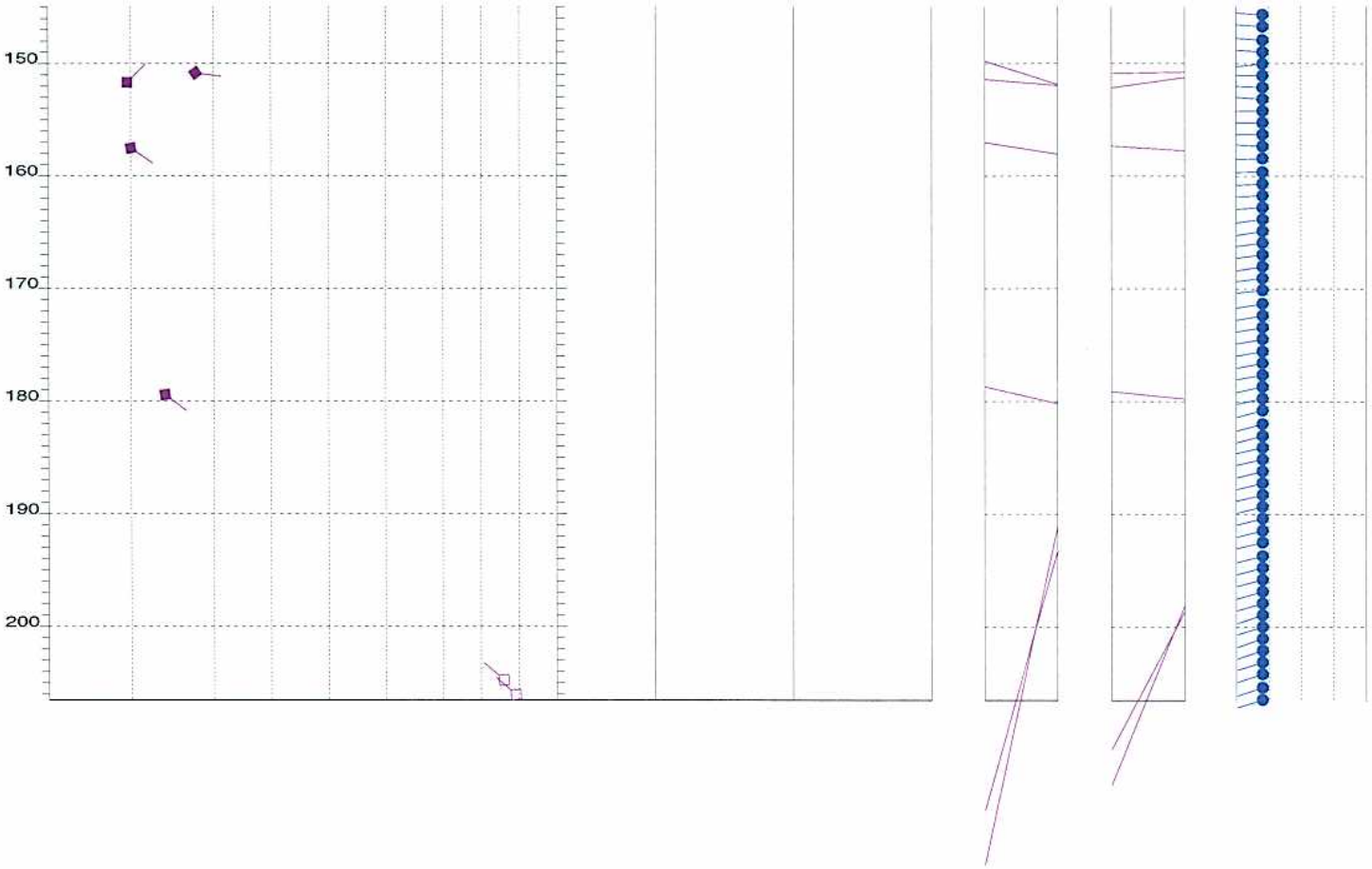
Zone from 206.519 to 57.001ft
Mean dip format: dip-azimuth and dip

Interpretation 2

Dip data sets .....
OPTV dips

open symbols not used in mean-dip/zone-axis calculation




150
160
170
180
190
200

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DIP DATA INTERPRETATION
RGLDIP vsn 6.2
STRUCTURAL INTERPRETATION STEREOGRAMS

28 Nov 2006

MACTEC

Borehole: RISB-#02

Casmailia Landfill

top of borehole.....
East:
North:
Alt:

North ref: magnetic
Depth units are feet

Zone from 206.519 to 57.001ft
Mean dip format: dip-azimuth and dip

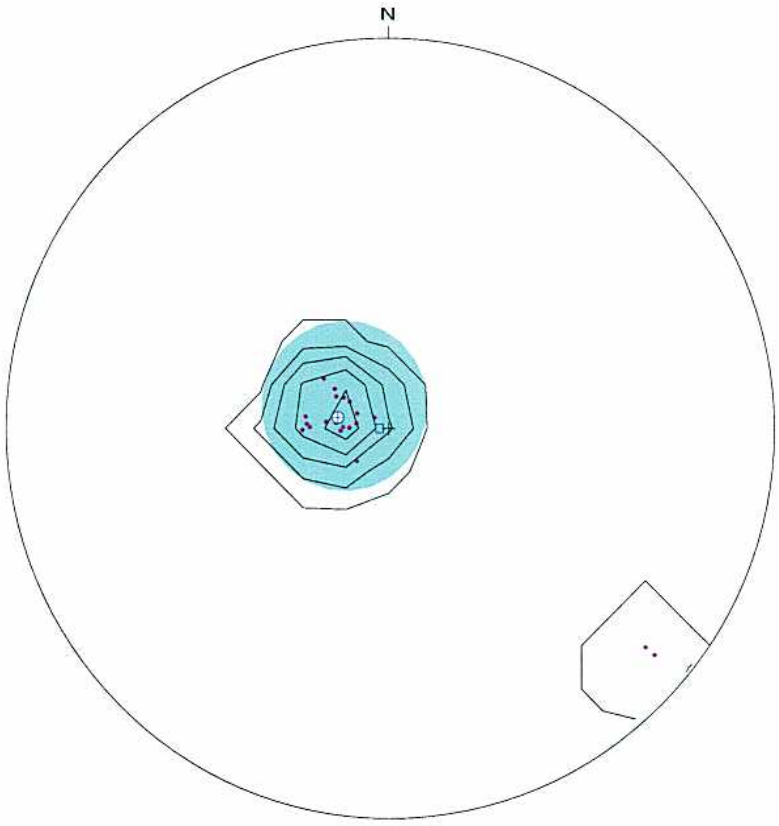
Interpretation 2

Dip data sets .....
OPTV dips

RISB-#02
Zone 0. 57.001 - 206.519ft
Deviation 2.00 N271.10

dipdata sets.....
OPTV dips

	mean dip	n	dsp	zone axis	n	dev
N102 11	N102 11	19	10.1			



equal-area lower-hemisphere 0-90

⊕ mean dip
zone axis
well axis

contour-levels 1,3,6,10,15,

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DIP DATA INTERPRETATION
RGLDIP vsn 6.2
DIP-AZIMUTH, STRUCTURAL ROSE-DIAGRAM

28 Nov 2006

MACTEC

Borehole: RISB-#02

Casmailia Landfill

top of borehole.....
East:
North:
Alt:

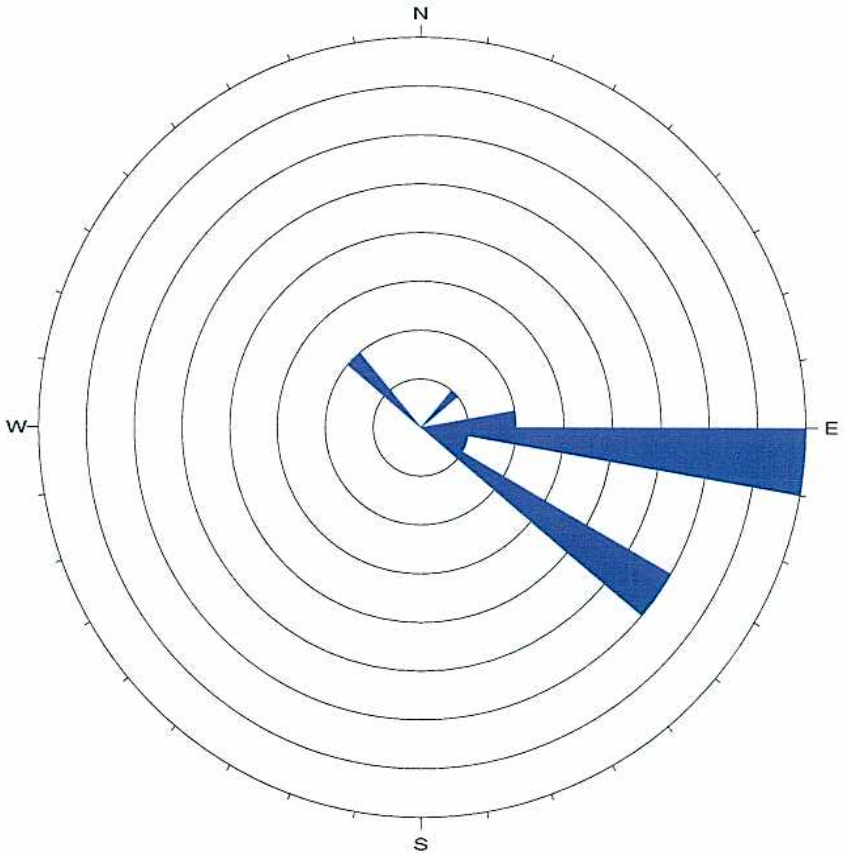
North ref. is magnetic
Depth units are feet

Zone from 206.519 to 57.001ft

Interpretation 2

Dip data sets .....
OPTV dips

RISB-#02
57.001 - 206.519ft
Dip-azimuth, structural rose-diagram



Azimuth Incr = 10°
N = 21

RGLDIPv6.2 DIP DATA INTERPRETATION: STRUCTURAL

borehole RISB-#02
zone from 57.000 to 206.000 m
North ref is magnetic
10 Oct 2006

Data is classed into 1 types
5 OPTV_dips

Quality cut-off level: *

Mean well deviation: 2.0°deg to N271.1°

0 small-circles defined
SEARCH AREA MEAN DIP
azim pl cone azimuth dip n

Total number of data = 0
Number of data unaccounted for = 21

ZONE No.	DEVIATION Dev	Azim	DEPTHS m TOP	BASE	No. DATA	MEAN DIPS and ZONE AXES Azi Dip n Disp / Azm Pl n Dev	Azi Dip n Disp / Azm Pl n Dev	Azi Dip n Disp / Azm Pl n Dev	Azi Dip n Disp / Azm Pl n Dev	Azi Dip n Disp / Azm Pl n Dev
1	0.0	0.0	57.00	206.52	21	0 0 0 0.00 / 0 0 0 0.000	0 0 0 0.00 / 0 0 0 0.000	0 0 0 0.00 / 0 0 0 0.000	0 0 0 0.00 / 0 0 0 0.000	0 0 0 0.00 / 0 0 0 0.000