Engineering Geology Ltd
+64 9 486 2546
info@egl.co.nz
Unit 7C, 331 Rosedale Road, Albany, Auckland
PO Box 301054, Albany, Auckland 0752
www.egl.co.nz

Project:

Bendigo Ophir Gold Project

EGL Job No:	9702	Date:	September 2024
TESTPIT No: MTP031		Photographed by: F. Schmit	

Testpit at completion. Max depth 2.5m

Spoil pile at end of excavation

Engineering Geology Ltd
+64 9 486 2546
info@egl.co.nz
Unit 7C, 331 Rosedale Road, Albany, Auckland
PO Box 301054, Albany, Auckland 0752
www.egl.co.nz

Project:

Bendigo Ophir Gold Project

EGL Job No:	9702	Date:	September 2024
TESTPIT No: MTP032		Photographed by: F. Schmit	

Testpit at completion. Max depth 1m

Spoil pile at end of excavation

Engineering Geology Ltd
+64 9 486 2546
info@egl.co.nz
Unit 7C, 331 Rosedale Road, Albany, Auckland
PO Box 301054, Albany, Auckland 0752
www.egl.co.nz

Project:

Bendigo Ophir Gold Project

EGL Job No:	9702	Date:	September 2024
TESTPIT No: MTP034		Photographed by: F. Schmit	

Testpit at completion. Max depth 5m

Spoil pile at end of excavation

Engineering Geology Ltd
+64 9 486 2546
info@egl.co.nz
Unit 7C, 331 Rosedale Road, Albany, Auckland
PO Box 301054, Albany, Auckland 0752
www.egl.co.nz

Project:

Bendigo Ophir Gold Project

EGL Job No:	9702	Date:	September 2024
TESTPIT No: MTP035		Photographed by: F. Schmit	

Testpit at completion. Max depth 3m

Spoil pile at end of excavation

Engineering Geology Ltd
+64 9 486 2546
info@egl.co.nz
Unit 7C, 331 Rosedale Road, Albany, Auckland
PO Box 301054, Albany, Auckland 0752
www.egl.co.nz

Project:

Bendigo Ophir Gold Project

EGL Job No:	9702	Date:	September 2024
TESTPIT No: MTP036		Photographed by: F. Schmit	

Testpit at completion. Max depth 3.2m

Engineering Geology Ltd
+64 9 486 2546
info@egl.co.nz
Unit 7C, 331 Rosedale Road, Albany, Auckland
PO Box 301054, Albany, Auckland 0752
www.egl.co.nz

Project:

Bendigo Ophir Gold Project

EGL Job No:	9702	Date:	September 2024

Spoil pile at end of excavation

TESTPIT No: MTP037	Photographed by: F. Schmit

Testpit at completion. Max depth 4.4m

Spoil pile at end of excavation

Engineering Geology Ltd
+64 9 486 2546
info@egl.co.nz
Unit 7C, 331 Rosedale Road, Albany, Auckland
PO Box 301054, Albany, Auckland 0752
www.egl.co.nz

Project:

Bendigo Ophir Gold Project

EGL Job No:	9702	Date:	September 2024
TESTPIT No: MTP038		Photographed by: F. Schmit	

Testpit at completion. Max depth 5m

Engineering Geology Ltd
+64 9 486 2546
info@egl.co.nz
Unit 7C, 331 Rosedale Road, Albany, Auckland
PO Box 301054, Albany, Auckland 0752
www.egl.co.nz

Project:

Bendigo Ophir Gold Project

EGL Job No:	9702	Date:	September 2024

Spoil pile at end of excavation

TESTPIT No: MTP039	Photographed by: F. Schmit

Testpit at completion. Max depth 3m

Engineering Geology Ltd
+64 9 486 2546
info@egl.co.nz
Unit 7C, 331 Rosedale Road, Albany, Auckland
PO Box 301054, Albany, Auckland 0752
www.egl.co.nz

Project:

Bendigo Ophir Gold Project

EGL Job No:	9702	Date:	September 2024

Spoil pile at end of excavation

TESTPIT No: MTP040 | Photographed by: F. Schmit

Testpit at completion. Max depth 2.5m

Engineering Geology Ltd
+64 9 486 2546
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Unit 7C, 331 Rosedale Road, Albany, Auckland
PO Box 301054, Albany, Auckland 0752
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Project:

Bendigo Ophir Gold Project

EGL Job No:	9702	Date:	September 2024

Spoil pile at end of excavation

TESTPIT No: MTP041	Photographed by: F. Schmit

Testpit at completion. Max depth 7m

Engineering Geology Ltd
+64 9 486 2546
info@egl.co.nz
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PO Box 301054, Albany, Auckland 0752
www.egl.co.nz

Project:

Bendigo Ophir Gold Project

EGL Job No:	9702	Date:	September 2024

Spoil pile at end of excavation

TESTPIT No: MTP042	Photographed by: F. Schmit

Testpit at completion. Max depth 7.5m

Engineering Geology Ltd
+64 9 486 2546
info@egl.co.nz
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PO Box 301054, Albany, Auckland 0752
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Project:

Bendigo Ophir Gold Project

EGL Job No:	9702	Date:	September 2024

Spoil pile at end of excavation

TESTPIT No: MTP043 | Photographed by: F. Schmit

Testpit at completion. Max depth 7m

Engineering Geology Ltd
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info@egl.co.nz
Unit 7C, 331 Rosedale Road, Albany, Auckland
PO Box 301054, Albany, Auckland 0752
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Project:

Bendigo Ophir Gold Project

EGL Job No:	9702	Date:	September 2024

Spoil pile at end of excavation

TESTPIT No: MTP044	Photographed by: F. Schmit

Testpit at completion. Max depth 6m

Engineering Geology Ltd
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Unit 7C, 331 Rosedale Road, Albany, Auckland
PO Box 301054, Albany, Auckland 0752
www.egl.co.nz

Project:

Bendigo Ophir Gold Project

EGL Job No:	9702	Date:	September 2024

Spoil pile at end of excavation

TESTPIT No: MTP045	Photographed by: F. Schmit

Testpit at completion. Max depth 7m

Engineering Geology Ltd
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Project:

Bendigo Ophir Gold Project

EGL Job No:	9702	Date:	September 2024

Spoil pile at end of excavation

TESTPIT No: MTP046	Photographed by: F. Schmit

Testpit at completion. Max depth 6m

Spoil pile at end of excavation

Engineering Geology Ltd
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Unit 7C, 331 Rosedale Road, Albany, Auckland
PO Box 301054, Albany, Auckland 0752
www.egl.co.nz

Project:

Bendigo Ophir Gold Project

EGL Job No:	9702	Date:	February 2025

TESTPIT MTP047 — Photographed by:

Testpit at completion. Max depth 2.8m

Engineering Geology Ltd
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Unit 7C, 331 Rosedale Road, Albany, Auckland
PO Box 301054, Albany, Auckland 0752
www.egl.co.nz

Project:

Bendigo Ophir Gold Project

EGL Job No:	9702	Date:	February 2025
TESTPIT MTP048		Photographed by	

Testpit at completion. Max depth 3.1m

Engineering Geology Ltd
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Unit 7C, 331 Rosedale Road, Albany, Auckland
PO Box 301054, Albany, Auckland 0752
www.egl.co.nz

Project:

Bendigo Ophir Gold Project

EGL Job No:	9702	Date:	February 2025
TESTPIT MTP049		Photographed by:	

Testpit at completion. Max depth 3.1m

Engineering Geology Ltd
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info@egl.co.nz
Unit 7C, 331 Rosedale Road, Albany, Auckland
PO Box 301054, Albany, Auckland 0752
www.egl.co.nz

Project:

Bendigo Ophir Gold Project

EGL Job No:	9702	Date:	February 2025
TESTPIT MTP050		Photographed by:	

Testpit at completion. Max depth 4.12m

Engineering Geology Ltd
+64 9 486 2546
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Unit 7C, 331 Rosedale Road, Albany, Auckland
PO Box 301054, Albany, Auckland 0752
www.egl.co.nz

Project:

Bendigo Ophir Gold Project

EGL Job No:	9702	Date:	February 2025

TESTPIT MTP051 — Photographed by:

Testpit at completion. Max depth 6.9m

Spoil pile at end of excavation.

Engineering Geology Ltd
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Unit 7C, 331 Rosedale Road, Albany, Auckland
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Project:

Bendigo Ophir Gold Project

EGL Job No:	9702	Date:	February 2025
TESTPIT MTP052		Photographed by:	

Testpit at completion. Max depth 3.2m

Engineering Geology Ltd
+64 9 486 2546
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Unit 7C, 331 Rosedale Road, Albany, Auckland
PO Box 301054, Albany, Auckland 0752
www.egl.co.nz

Project:

Bendigo Ophir Gold Project

EGL Job No:	9702	Date:	February 2025
TESTPIT MTP053		Photographed by:	

Testpit at completion. Max depth 3.8m

Engineering Geology Ltd
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info@egl.co.nz
Unit 7C, 331 Rosedale Road, Albany, Auckland
PO Box 301054, Albany, Auckland 0752
www.egl.co.nz

Project:

Bendigo Ophir Gold Project

EGL Job No:	9702	Date:	February 2025

TESTPIT MTP054 | Photographed by:

Testpit at completion. Max depth 3.6m

Engineering Geology Ltd
+64 9 486 2546
info@egl.co.nz
Unit 7C, 331 Rosedale Road, Albany, Auckland
PO Box 301054, Albany, Auckland 0752
www.egl.co.nz

Project:

Bendigo Ophir Gold Project

EGL Job No:	9702	Date:	February 2025

TESTPIT MTP055 — Photographed by:

Testpit at completion. Max depth 3.5m

Engineering Geology Ltd
+64 9 486 2546
info@egl.co.nz
Unit 7C, 331 Rosedale Road, Albany, Auckland
PO Box 301054, Albany, Auckland 0752
www.egl.co.nz

Project:

Bendigo Ophir Gold Project

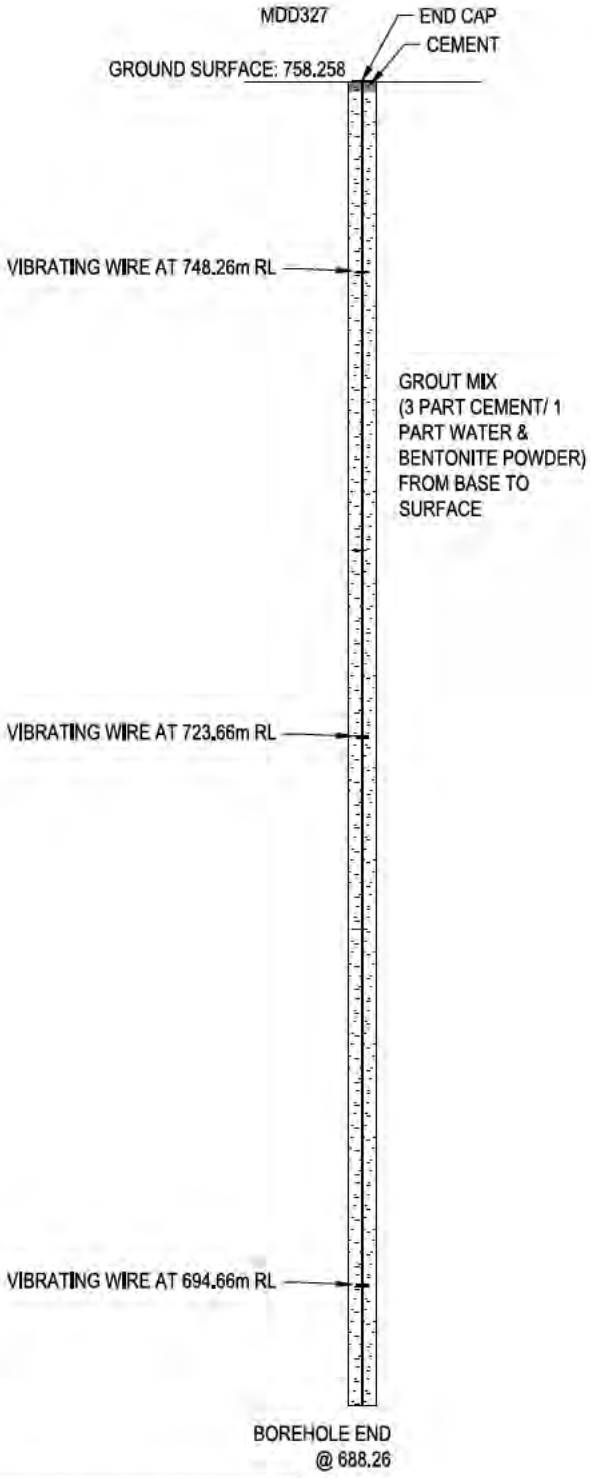
EGL Job No:	9702	Date:	February 2025

TESTPIT MTP056 — Photographed by:

Testpit at completion. Max depth 4.2m

Spoil pile at end of excavation.

APPENDIX D
Piezometer Installation Details



NOTES:

1. SEE SUMMARY TABLES FOR DETAILS OF VWP DATA
2. SEE BOREHOLE LOGS FOR DETAILED BOREHOLE DESCRIPTIONS
3. VALUES ARE RL ELEVATIONS BASED ON THE NZVD2016
4. NOT TO SCALE HORIZONTALLY

EGL Geotechnical, Earthquake and Dam Engineers
Engineering Geology Ltdwww.egl.co.nz

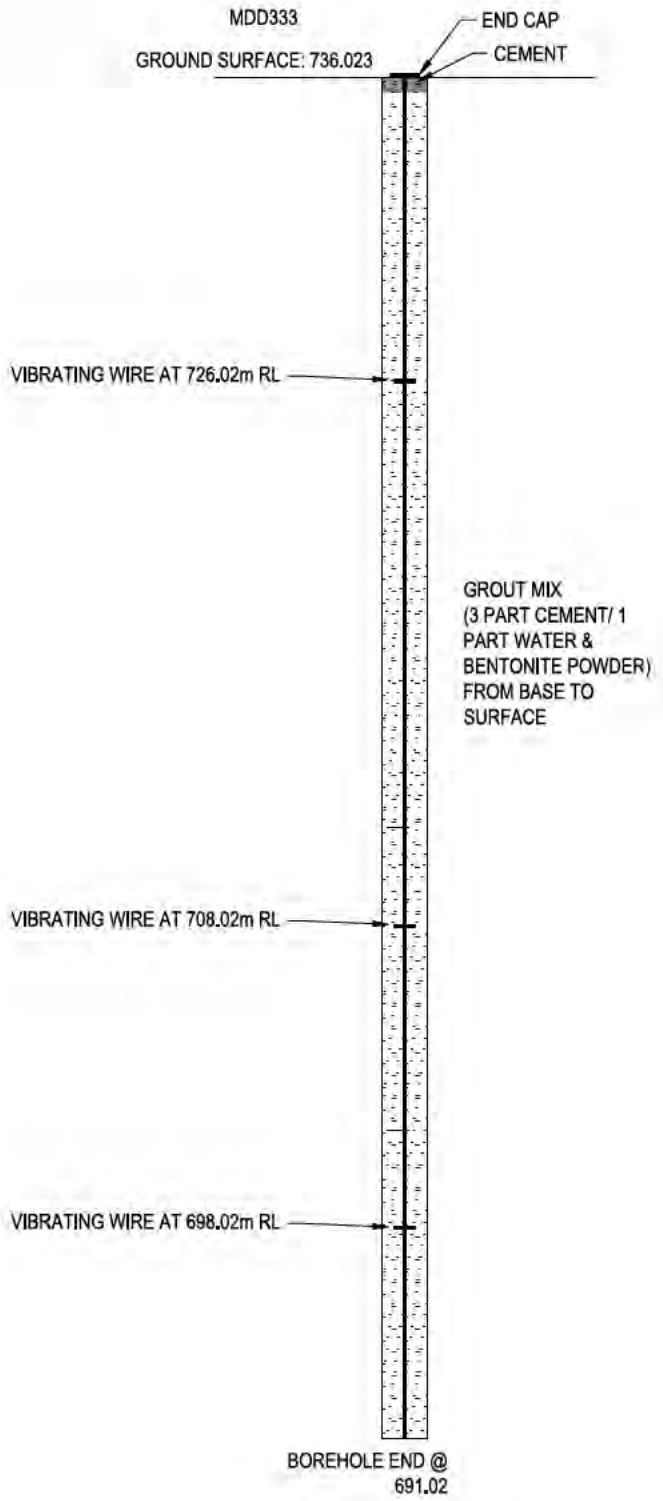
MATAKANUI GOLD LIMITED

MDD327 VWP INSTALLATIONS
BENDIGO-OPHIR BOREHOLES
RISE AND SHINE CREEK

DRAWN	JF	DATE	03/03/2025	JOB No	REV.
CHECKED	PC	SCALE (A4)	1:400	9702	A

PRINTED: 2025-03-04 10:01:21

Z:\Mining Jobs\0-Bendigo\9702 - Matakanui Gold Ltd\06 Working\33 Groundwater\Piezo Monitoring Graphs\EGL9702 VWP Install Details.dwg



NOTES:

1. SEE SUMMARY TABLES FOR DETAILS OF VWP DATA
2. SEE BOREHOLE LOGS FOR DETAILED BOREHOLE DESCRIPTIONS
3. VALUES ARE RL ELEVATIONS BASED ON THE NZVD2016
4. NOT TO SCALE HORIZONTALLY

EGL Geotechnical, Earthquake and Dam Engineers
Engineering Geology Ltdwww.egl.co.nz

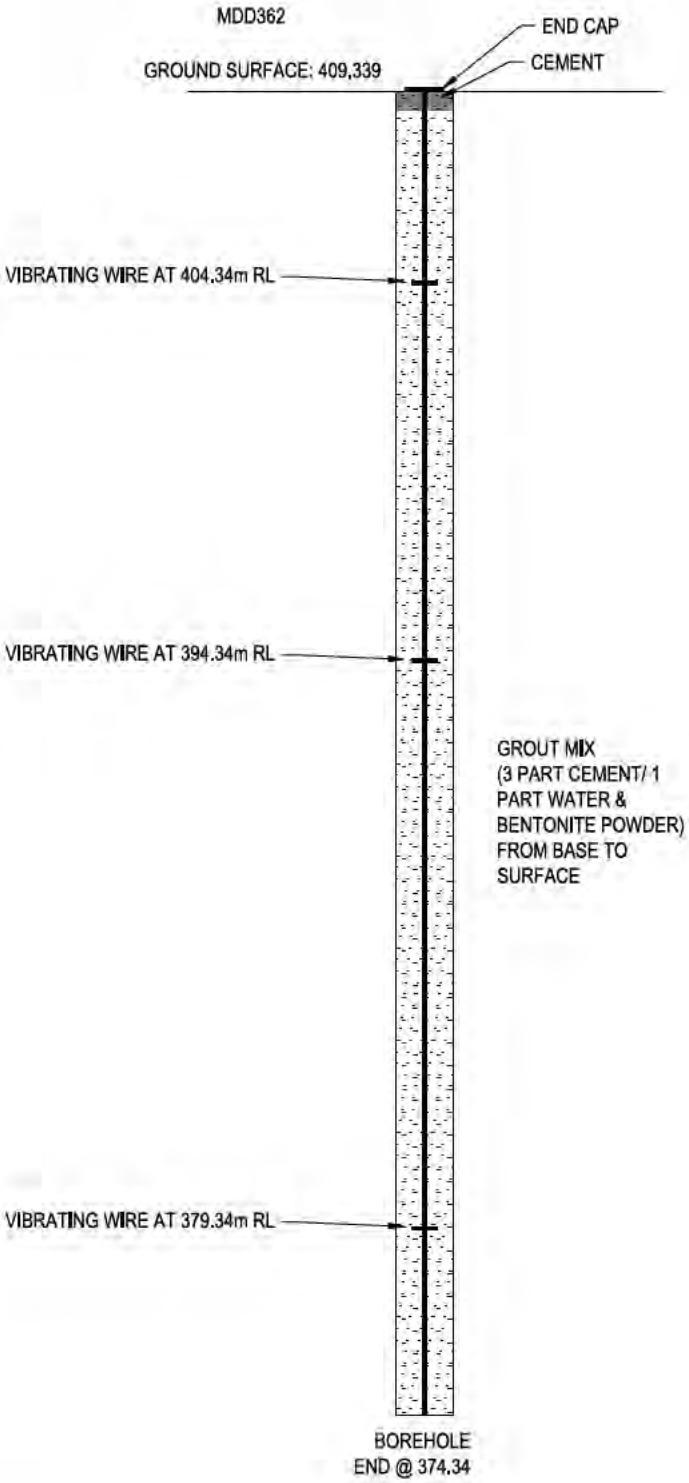
MATAKANUI GOLD LIMITED

MDD333 VWP INSTALLATIONS BENDIGO-OPHIR BOREHOLES RISE AND SHINE CREEK

DRAWN	JF	DATE	03/03/2025	JOB No	REV.
CHECKED	PC	SCALE (A4)	1:250	9702	A

PRINTED: 2025-03-04 10:01:23

Z:\Mining Jobs\0-Bendigo\9702 - Matakanui Gold Ltd\06 Working\33 Groundwater\Piezo Monitoring Graphs\EGL9702 VWP Install Details.dwg



NOTES:

1. SEE SUMMARY TABLES FOR DETAILS OF VWP DATA
2. SEE BOREHOLE LOGS FOR DETAILED BOREHOLE DESCRIPTIONS
3. VALUES ARE RL ELEVATIONS BASED ON THE NZVD2016
4. NOT TO SCALE HORIZONTALLY

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Engineering Geology Ltdwww.egl.co.nz

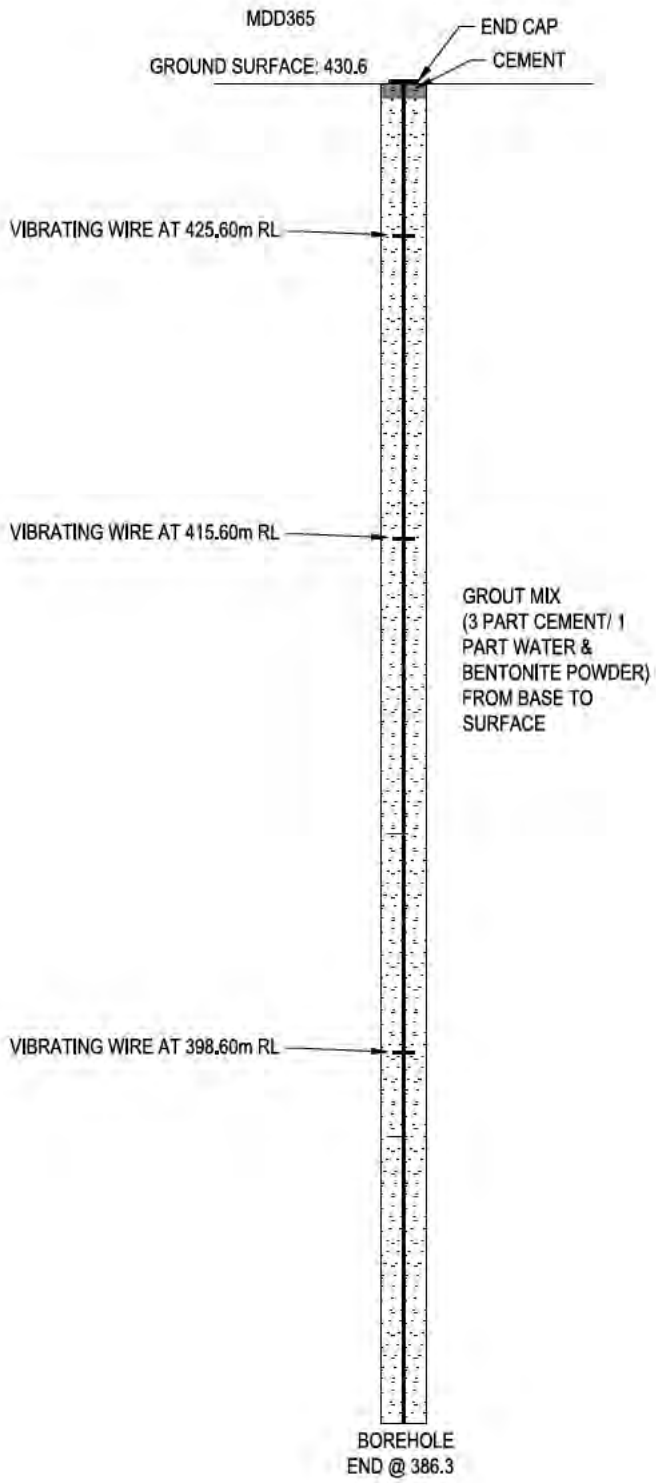
MATAKANUI GOLD LIMITED

MDD362 VWP INSTALLATIONS BENDIGO-OPHIR BOREHOLES SHEPHERDS INFRASTRUCTURE

DRAWN	JF	DATE	03/03/2025	JOB No	REV.
CHECKED	PC	SCALE (A4)	1:200	9702	A

PRINTED: 2025-03-04 10:01:26

Z:\Mining Jobs\0-Bendigo\9702 - Matakanui Gold Ltd\06 Working\33 Groundwater\Piezo Monitoring Graphs\EGL9702 VWP Install Details.dwg



NOTES:

1. SEE SUMMARY TABLES FOR DETAILS OF VWP DATA
2. SEE BOREHOLE LOGS FOR DETAILED BOREHOLE DESCRIPTIONS
3. VALUES ARE RL ELEVATIONS BASED ON THE NZVD2016
4. NOT TO SCALE HORIZONTALLY

EGL Geotechnical, Earthquake and Dam Engineers
Engineering Geology Ltdwww.egl.co.nz

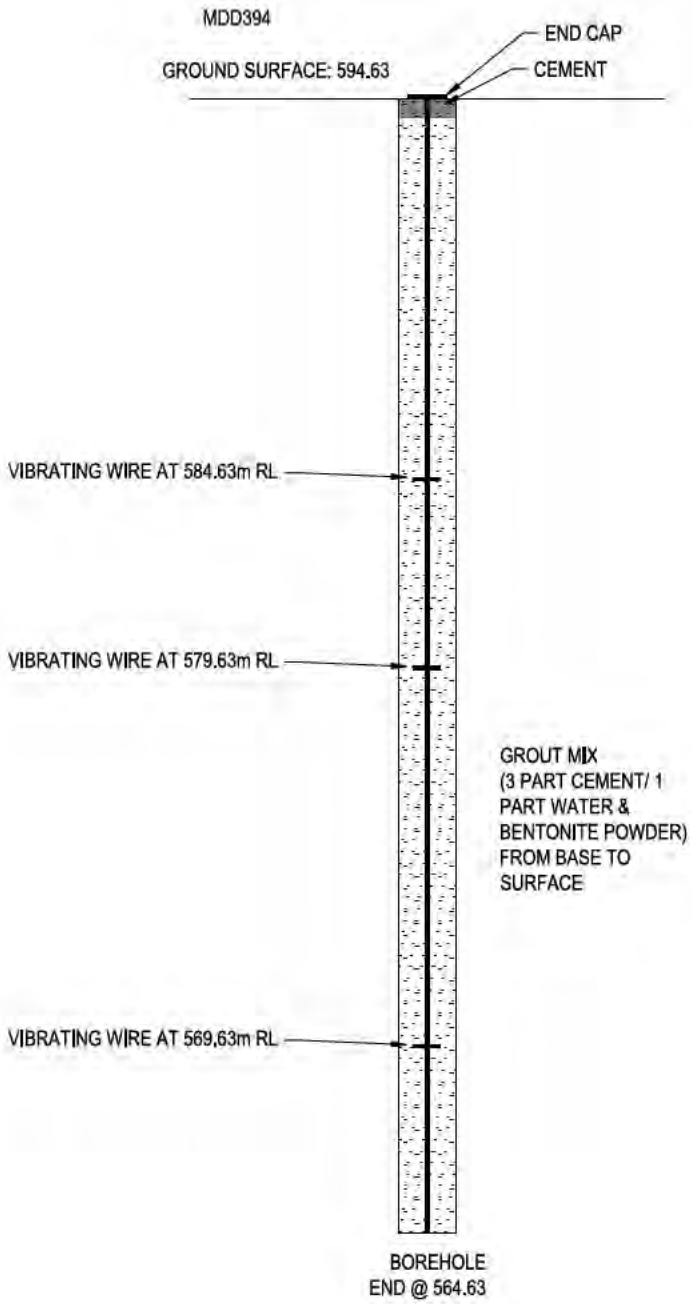
MATAKANUI GOLD LIMITED

MDD365 VWP INSTALLATIONS BENDIGO-OPHIR BOREHOLES SHEPHERDS INFRASTRUCTURE

DRAWN	JF	DATE	03/03/2025	JOB No	REV.
CHECKED	PC	SCALE (A4)	1:250	9702	A

PRINTED: 2025-03-04 10:01:28

Z:\Mining Jobs\0-Bendigo\9702 - Matakanui Gold Ltd\06 Working\33 Groundwater\Piezo Monitoring Graphs\EGL9702 VWP Install Details.dwg



NOTES:

1. SEE SUMMARY TABLES FOR DETAILS OF VWP DATA
2. SEE BOREHOLE LOGS FOR DETAILED BOREHOLE DESCRIPTIONS
3. VALUES ARE RL ELEVATIONS BASED ON THE NZVD2016
4. NOT TO SCALE HORIZONTALLY

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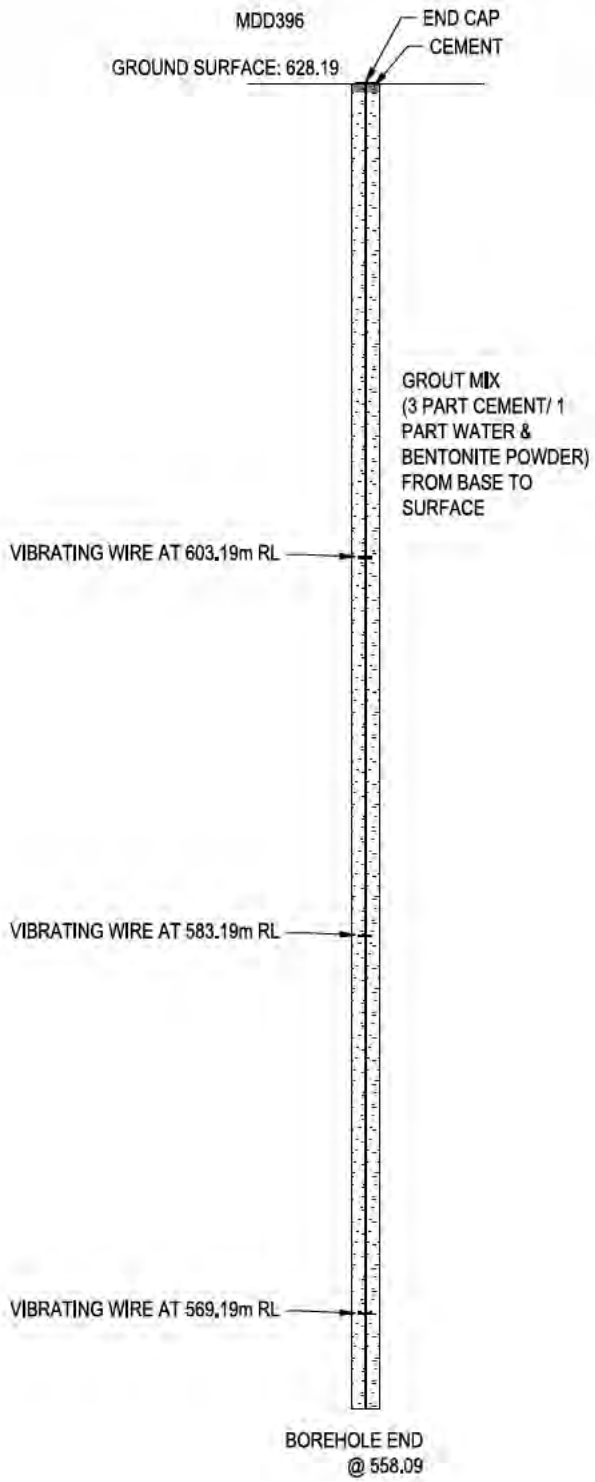
MATAKANUI GOLD LIMITED

MDD394 VWP INSTALLATIONS BENDIGO-OPHIR BOREHOLES SHEPHERDS CREEK TSF

DRAWN	JF	DATE	03/03/2025	JOB No	REV.
CHECKED	PC	SCALE (A4)	1:200	9702	A

PRINTED: 2025-03-04 10:01:30

Z:\Mining Jobs\0-Bendigo\9702 - Matakanui Gold Ltd\06 Working\33 Groundwater\Piezo Monitoring Graphs\EGL9702 VWP Install Details.dwg



NOTES:

1. SEE SUMMARY TABLES FOR DETAILS OF VWP DATA
2. SEE BOREHOLE LOGS FOR DETAILED BOREHOLE DESCRIPTIONS
3. VALUES ARE RL ELEVATIONS BASED ON THE NZVD2016
4. NOT TO SCALE HORIZONTALLY

EGL Geotechnical, Earthquake and Dam Engineers
Engineering Geology Ltdwww.egl.co.nz

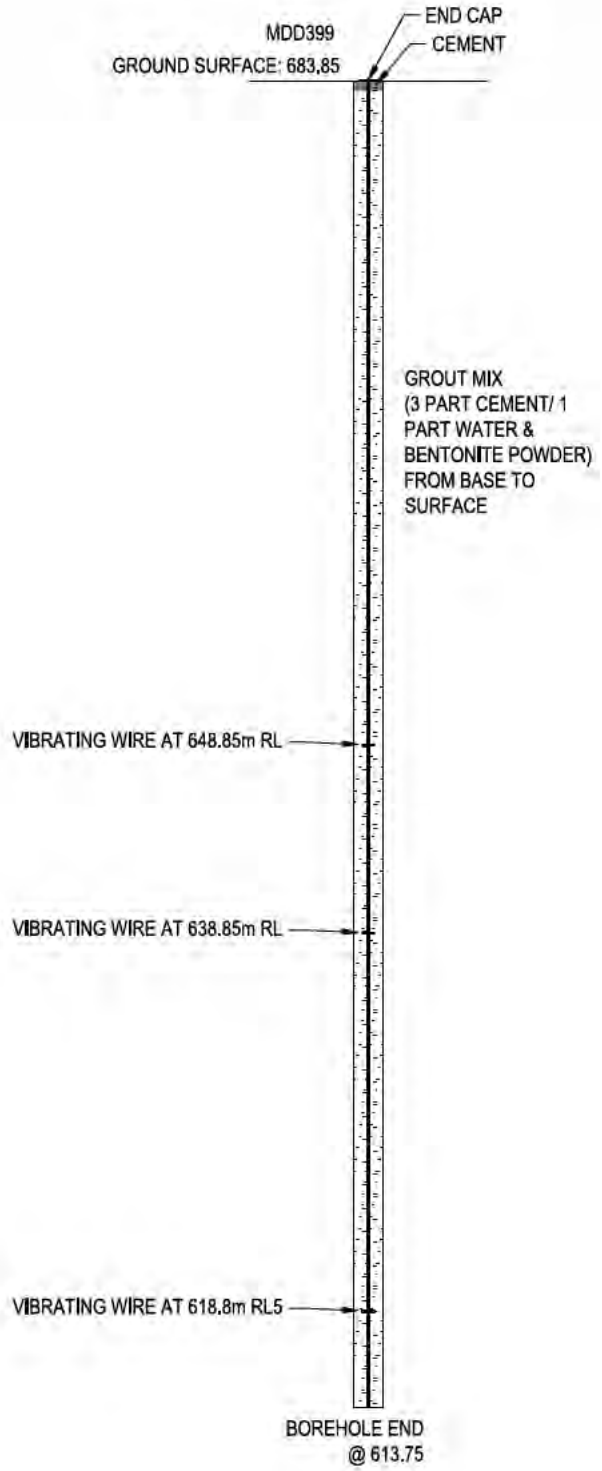
MATAKANUI GOLD LIMITED

MDD396 VWP INSTALLATIONS
BENDIGO-OPHIR BOREHOLES
SHEPHERDS CREEK TSF

DRAWN	JF	DATE	03/03/2025	JOB No	REV.
CHECKED	PC	SCALE (A4)	1:400	9702	A

PRINTED: 2025-03-04 10:01:33

Z:\Mining Jobs\0-Bendigo\9702 - Matakanui Gold Ltd\06 Working\33 Groundwater\Piezo Monitoring Graphs\EGL9702 VWP Install Details.dwg



NOTES:

1. SEE SUMMARY TABLES FOR DETAILS OF VWP DATA
2. SEE BOREHOLE LOGS FOR DETAILED BOREHOLE DESCRIPTIONS
3. VALUES ARE RL ELEVATIONS BASED ON THE NZVD2016
4. NOT TO SCALE HORIZONTALLY

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Engineering Geology Ltdwww.egl.co.nz

MATAKANUI GOLD LIMITED

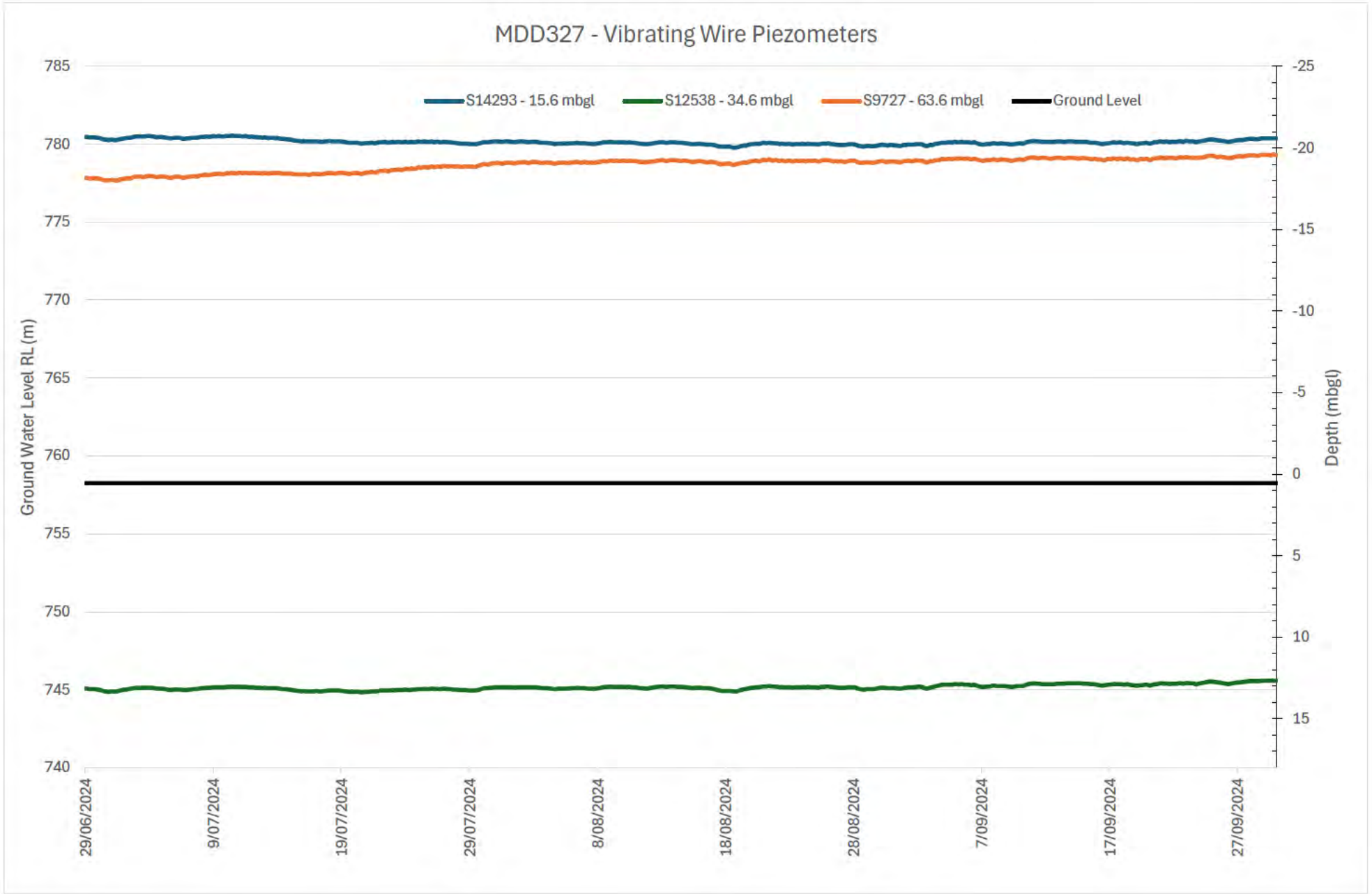
MDD399 VWP INSTALLATIONS
BENDIGO-OPHIR BOREHOLES
SHEPHERDS CREEK TSF

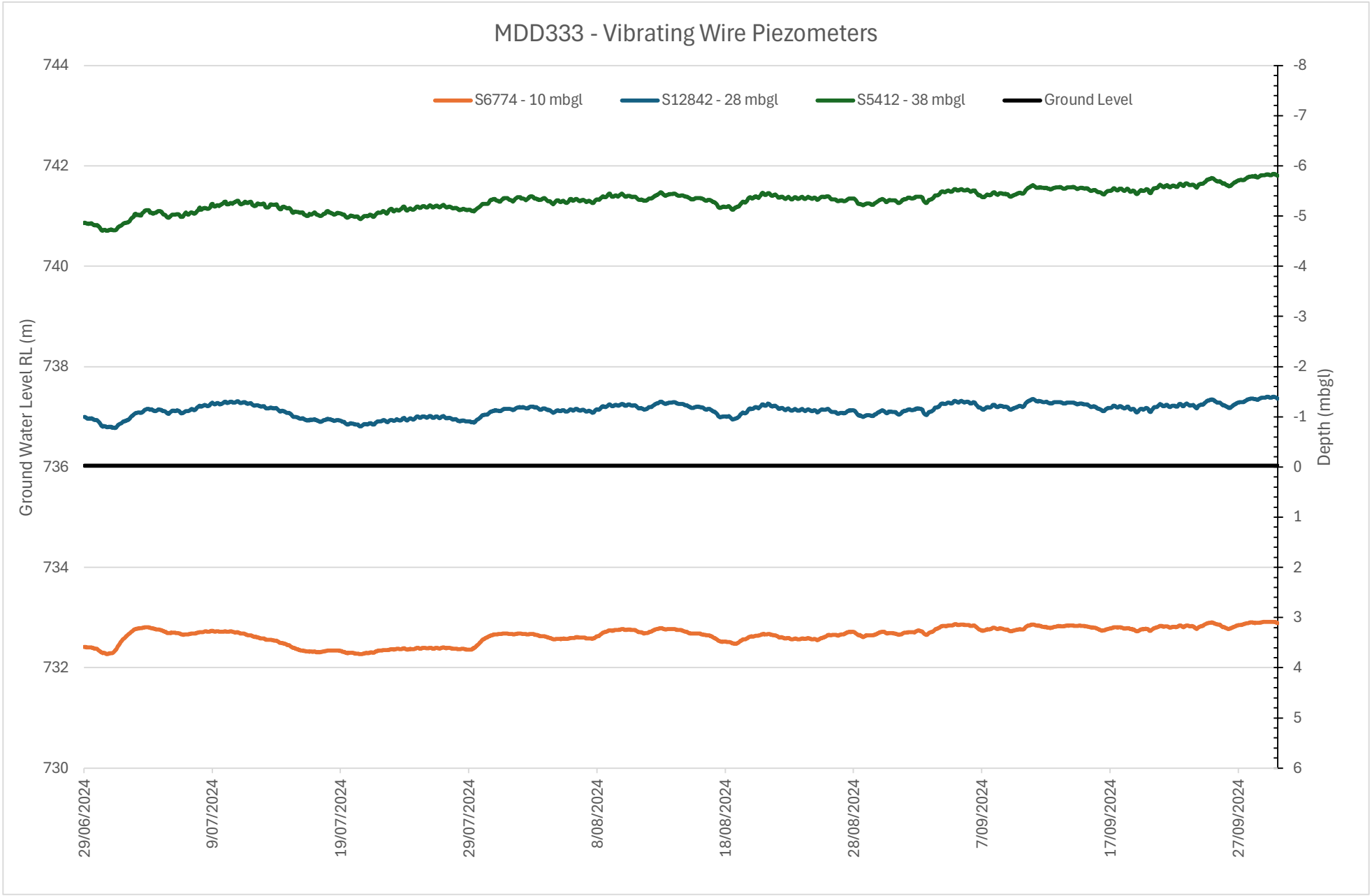
DRAWN	JF	DATE	03/03/2025	JOB No	REV.
CHECKED	PC	SCALE (A4)	1:400	9702	A

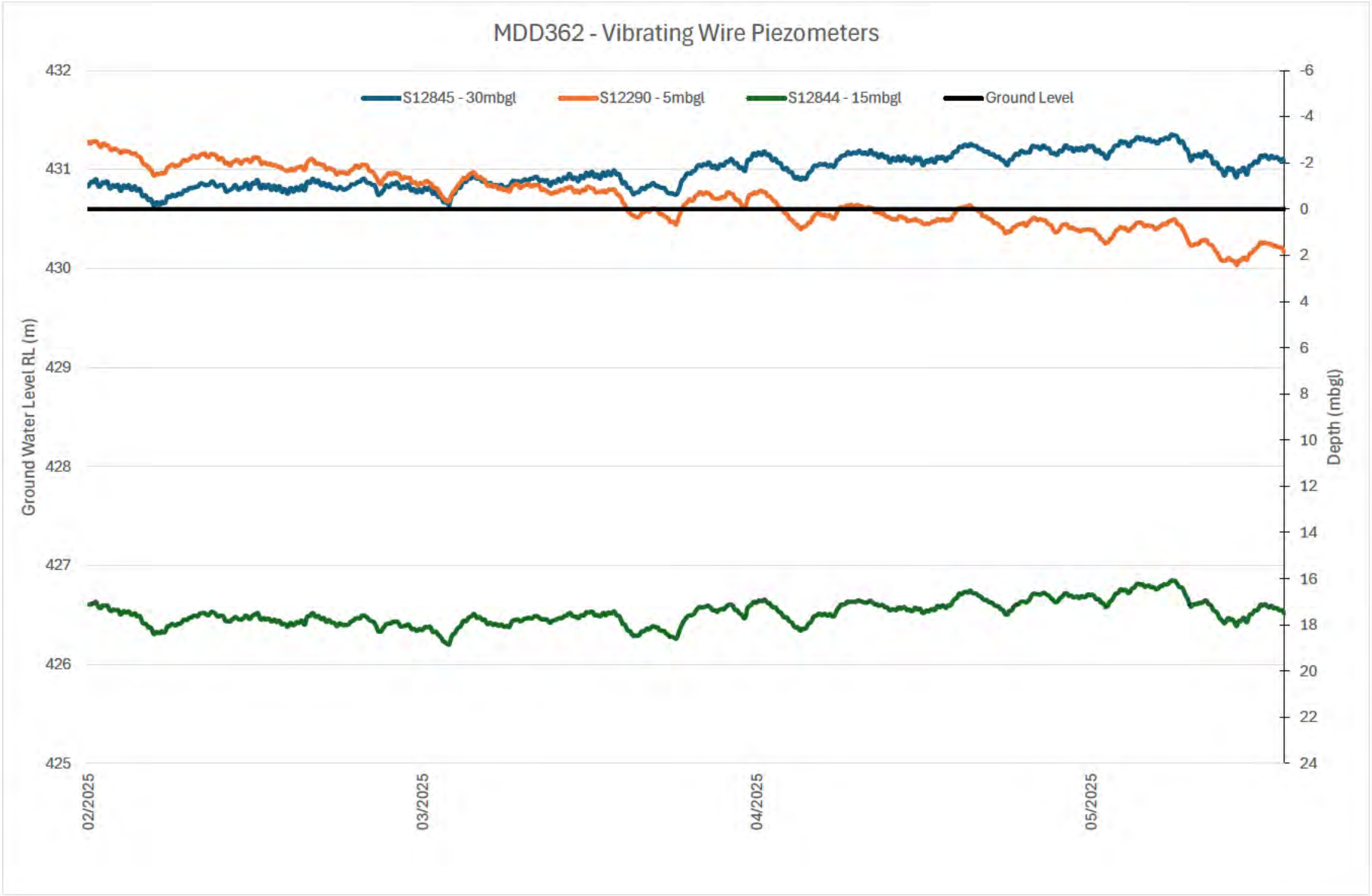
PRINTED: 2025-03-04 10:01:35

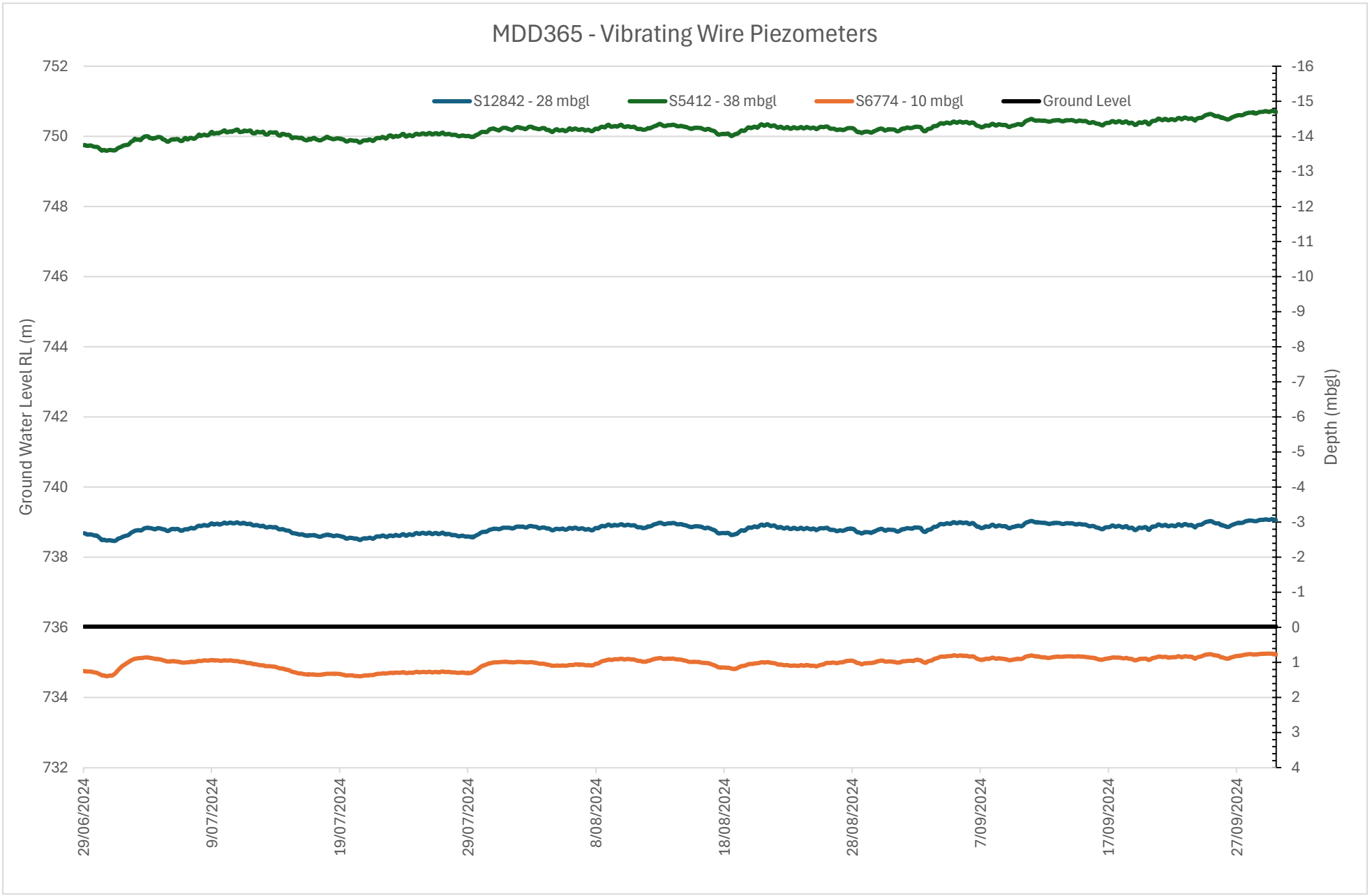
Z:\Mining Jobs\0-Bendigo\9702 - Matakanui Gold Ltd\06 Working\33 Groundwater\Piezo Monitoring Graphs\EGL9702 VWP Install Details.dwg

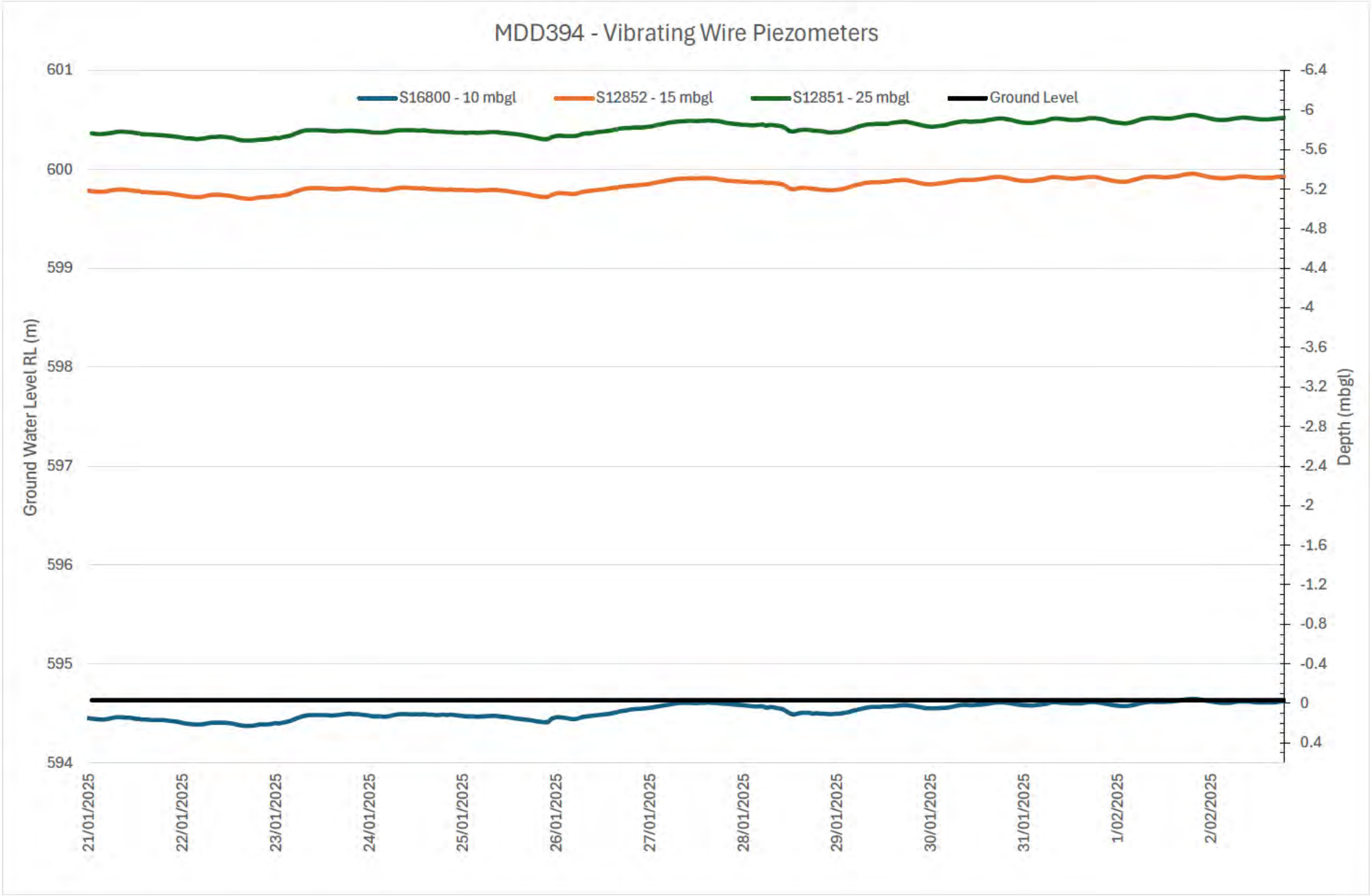
APPENDIX E
Groundwater Monitoring Data

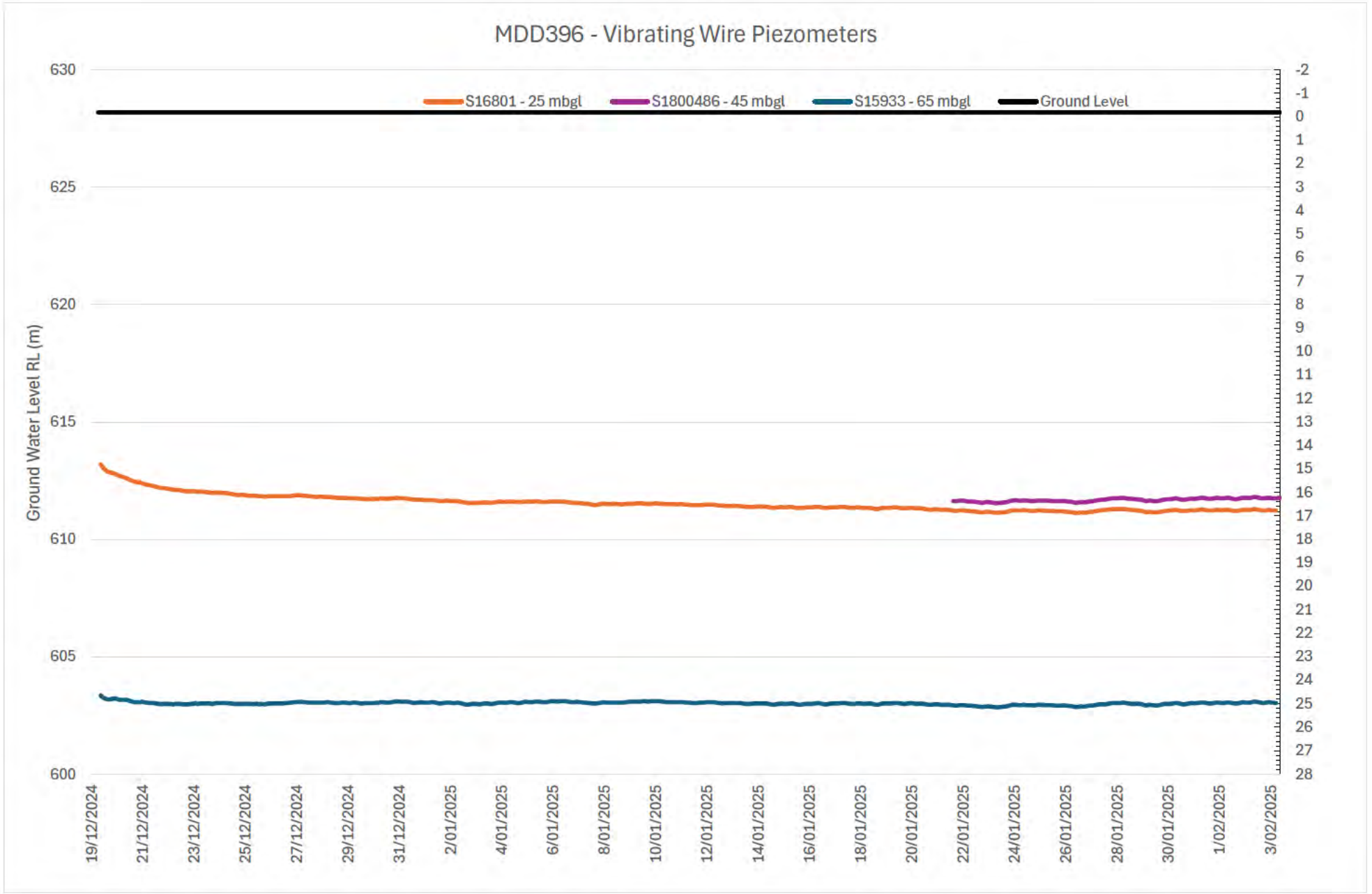

MDD327 - Vibrating Wire Piezometers
S14293 - 15.6 mbgl
S12538 - 34.6 mbgl
S9727 - 63.6 mbgl
Ground Level
Ground Water Level RL (m)
Depth (mbgl)
785
780
775
770
765
760
755
750
745
740
-25
-20
-15
-10
-5
0
5
10
15
29/06/2024
9/07/2024
19/07/2024
29/07/2024
8/08/2024
18/08/2024
28/08/2024
7/09/2024
17/09/2024
27/09/2024


MDD333 - Vibrating Wire Piezometers
S6774 - 10 mbgl
S12842 - 28 mbgl
S5412 - 38 mbgl
Ground Level
Ground Water Level RL (m)
Depth (mbgl)
744
742
740
738
736
734
732
730
-8
-7
-6
-5
-4
-3
-2
-1
0
1
2
3
4
5
6
29/06/2024
9/07/2024
19/07/2024
29/07/2024
8/08/2024
18/08/2024
28/08/2024
7/09/2024
17/09/2024
27/09/2024


MDD362 - Vibrating Wire Piezometers
S12845 - 30mbgl
S12290 - 5mbgl
S12844 - 15mbgl
Ground Level
Ground Water Level RL (m)
Depth (mbgl)
432
431
430
429
428
427
426
425
-6
-4
-2
0
2
4
6
8
10
12
14
16
18
20
22
24
02/2025
03/2025
04/2025
05/2025


MDD365 - Vibrating Wire Piezometers
S12842 - 28 mbgl
S5412 - 38 mbgl
S6774 - 10 mbgl
Ground Level
Ground Water Level RL (m)
Depth (mbgl)
752
750
748
746
744
742
740
738
736
734
732
-16
-15
-14
-13
-12
-11
-10
-9
-8
-7
-6
-5
-4
-3
-2
-1
0
1
2
3
4
29/06/2024
9/07/2024
19/07/2024
29/07/2024
8/08/2024
18/08/2024
28/08/2024
7/09/2024
17/09/2024
27/09/2024


MDD394 - Vibrating Wire Piezometers
S16800 - 10 mbgl
S12852 - 15 mbgl
S12851 - 25 mbgl
Ground Level
Ground Water Level RL (m)
Depth (mbgl)
601
600
599
598
597
596
595
594
-6.4
-6
-5.6
-5.2
-4.8
-4.4
-4
-3.6
-3.2
-2.8
-2.4
-2
-1.6
-1.2
-0.8
-0.4
0
0.4
21/01/2025
22/01/2025
23/01/2025
24/01/2025
25/01/2025
26/01/2025
27/01/2025
28/01/2025
29/01/2025
30/01/2025
31/01/2025
1/02/2025
2/02/2025


MDD396 - Vibrating Wire Piezometers
S16801 - 25 mbgl
S1800486 - 45 mbgl
S15933 - 65 mbgl
Ground Level
Ground Water Level RL (m)
630
625
620
615
610
605
600
-2
-1
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
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29/12/2024
31/12/2024
2/01/2025
4/01/2025
6/01/2025
8/01/2025
10/01/2025
12/01/2025
14/01/2025
16/01/2025
18/01/2025
20/01/2025
22/01/2025
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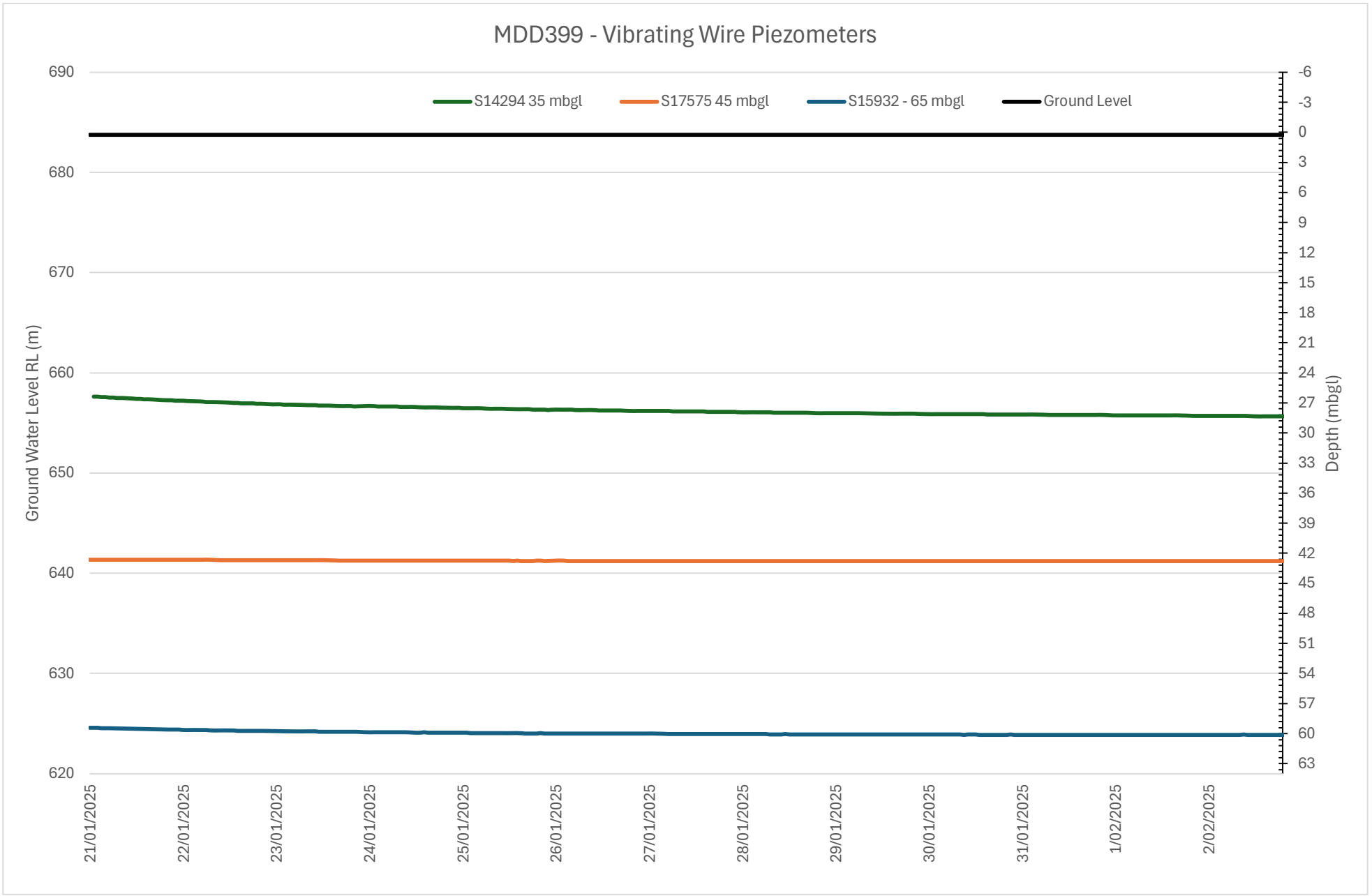
1/02/2025
3/02/2025


MDD399 - Vibrating Wire Piezometers
S14294 35 mbgl
S17575 45 mbgl
S15932 - 65 mbgl
Ground Level
Ground Water Level RL (m)
Depth (mbgl)
690
680
670
660
650
640
630
620
-6
-3
0
3
6
9
12
15
18
21
24
27
30
33
36
39
42
45
48
51
54
57
60
63
21/01/2025
22/01/2025
23/01/2025
24/01/2025
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28/01/2025
29/01/2025
30/01/2025
31/01/2025
1/02/2025
2/02/2025

APPENDIX F
Packer Test Results

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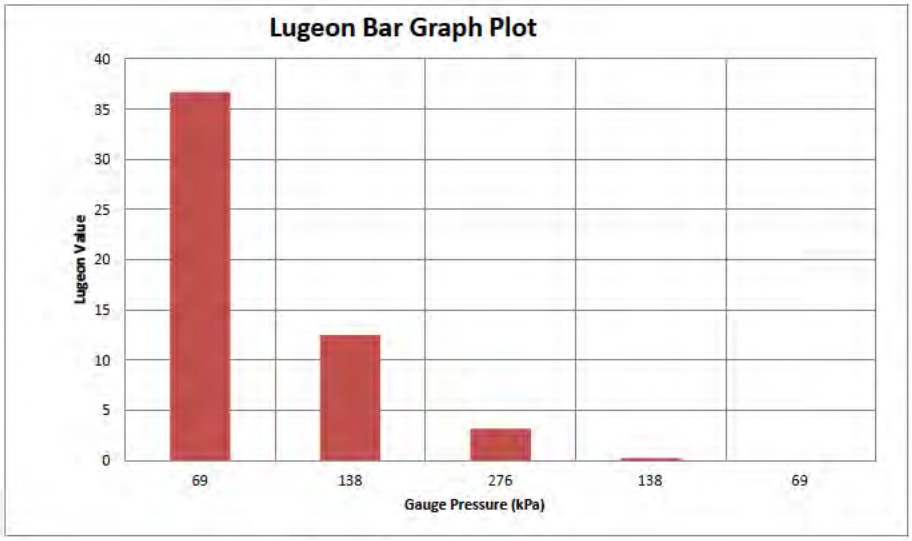
RECORDER:	DATE: 7/06/2024	SITE: Bendigo					JOB No: 9702	
BOREHOLE No: MDD327		Drill Bit Size HQ3		Hole Diameter (m)	0.096		BH DEPTH:	70
G.W. DEPTH (hw):	0.00	Gauge height above GL (m) (hg):					Single Water Packer	
Test Top(m)	49.4	Base(m)	54.9	TEST LENGTH(m):	5.5	MID POINT (m) (hm):		52.15

Gauge Pressure (Pg)									Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon
	Time (min)	0.00	5.00	10.00	15.00							
	Flowmeter	560368.0	560466.0	560505.0	560548.0							
	Flow (L)		98.00	39.00	43.00							
	Flow (L/min)		19.60	7.80	8.60							
69	WL (L/min/m)		3.56	1.42	1.56				1	14	68	36.7
Gauge Pressure (Pg)									Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon
	Time (min)	0.00	5.00	10.00	15.00							
	Flowmeter	560548.0	560617.0	560646.0	560686.0							
	Flow (L)		69.00	29.00	40.00							
	Flow (L/min)		13.80	5.80	8.00							
138	WL (L/min/m)		2.51	1.05	1.45				4	9	134	12.5
Gauge Pressure (Pg)									Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon
	Time (min)	0.00	5.00	10.00	15.00							
	Flowmeter	560686.0	560738.0	560756.0	560758.0							
	Flow (L)		52.00	18.00	2.00							
	Flow (L/min)		10.40	3.60	0.40							
276	WL (L/min/m)		1.89	0.65	0.07				1	5	275	3.2
Gauge Pressure (Pg)									Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon
	Time (min)	0.00	5.00	10.00	15.00							
	Flowmeter	560758.0	560756.0	560759.0	560761.0							
	Flow (L)		-2.00	3.00	2.00							
	Flow (L/min)		-0.40	0.60	0.40							
138	WL (L/min/m)		-0.07	0.11	0.07				1	0	137	0.3
Gauge Pressure (Pg)									Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon
	Time (min)	0.00	5.00	10.00	15.00							
	Flowmeter	560761.0	560757.0	560758.0	560761.0							
	Flow (L)		-4.00	1.00	3.00							
	Flow (L/min)		112151.40	112151.60	112152.20							
69	WL (L/min/m)		20391.16	20391.20	20391.31				1	0	68	0.0

If test section below G.W. $P_e = P_g + 9.81(hg+hw) - P_L$
If test section above G.W. $P_e = P_g + 9.81(hg+hm) - P_L$
Lugeon Value = (Flow rate/Stage length)x(1000 kPa/Pe)
(P in kPa, h in metres)

Lugeon Value	0.3
Flow Type	Void Filling

Notes



1 lugeon unit (m/s)	0.0000001	
	Lugeon	k (m/s)
	0.3	2.7E-08

K (m/s) method used $k=(Q/2\pi LH_1) \times \text{Log}_e\{L/r\}$ = 9.2E-07
Formula from Clayton C. R. I., Simons N.E., Matthews M.C., 1982, Site Investigation, pg 289

NOTE:

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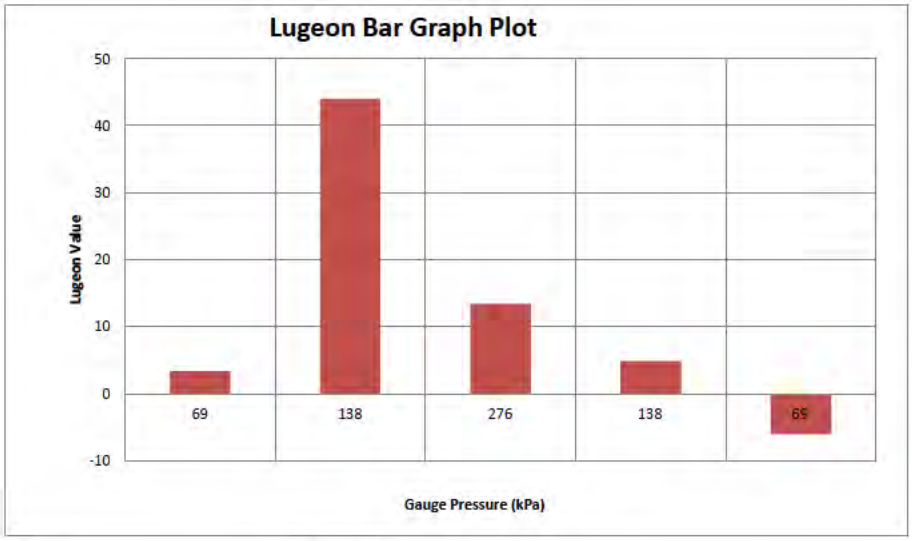
www.egl.co.nz

RECORDER:		DATE: 7/06/2024		SITE: Bendigo							JOB No: 9702		Notes
BOREHOLE No: MDD327			Drill Bit Size HQ3		Hole Diameter (m)	0.096				BH DEPTH:	70		
G.W. DEPTH (hw):	0.00		Gauge height above GL (m) (hg):							Single Water Packer			
Test Top(m)	63.1	Base(m)	64.4	TEST LENGTH(m):	1.3			MID POINT (m) (hm):		63.75			
Gauge Pressure (Pg)	Time (min)	0.00	5.00	10.00	15.00				Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon	
	Flowmeter	562054.0	562056.0	562057.0	562057.0								
	Flow (L)		2.00	1.00	0.00								
	Flow (L/min)		0.40	0.20	0.00				1	0	68	3.4	
69	WL (L/min/m)		0.31	0.15	0.00								
Gauge Pressure (Pg)	Time (min)	0.00	5.00	10.00	15.00				Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon	
	Flowmeter	562057.0	562095.0	562133.0	562172.0								
	Flow (L)		38.00	38.00	39.00								
	Flow (L/min)		7.60	7.60	7.80				4	8	134	44.0	
138	WL (L/min/m)		5.85	5.85	6.00								
Gauge Pressure (Pg)	Time (min)	0.00	5.00	10.00	15.00				Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon	
	Flowmeter	562172.0	562223.0	562235.0	562244.0								
	Flow (L)		51.00	12.00	9.00								
	Flow (L/min)		10.20	2.40	1.80				1	5	275	13.4	
276	WL (L/min/m)		7.85	1.85	1.38								
Gauge Pressure (Pg)	Time (min)	0.00	5.00	10.00	15.00				Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon	
	Flowmeter	562244.0	562235.0	562236.0	562257.0								
	Flow (L)		-9.00	1.00	21.00								
	Flow (L/min)		-1.80	0.20	4.20				1	1	137	4.9	
138	WL (L/min/m)		-1.38	0.15	3.23								
Gauge Pressure (Pg)	Time (min)	0.00	5.00	10.00	15.00				Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon	
	Flowmeter	562257.0	562249.0	562249.0	562249.0								
	Flow (L)		-8.00	0.00	0.00								
	Flow (L/min)		112449.80	112449.80	112449.80				1	-1	68	-6.0	
69	WL (L/min/m)		86499.85	86499.85	86499.85								

Lugeon Value	3.4
Flow Type	Dilatant

If test section below G.W. $P_e = P_g + 9.81(hg+hw) - P_L$
If test section above G.W. $P_e = P_g + 9.81(hg+hm) - P_L$
Lugeon Value = (Flow rate/Stage length)x(1000 kPa/Pe)
(P in kPa, h in metres)



1 lugeon unit (m/s) 0.0000001

Lugeon	k (m/s)
3.4	3.4E-07

K (m/s) method used $k=(Q/2\pi LH_1) \times \text{Log}_e\{L/r\}$ = **1.3E-06**
Formula from Clayton C. R. I., Simons N.E., Matthews M.C., 1982, Site Investigation, pg 289

NOTE:

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RECORDER:		DATE:		SITE: Bendigo							JOB No: 9702	
BOREHOLE No: MDD362			Drill Bit Size PQ		Hole Diameter (m)	0.1226			BH DEPTH:	35		Notes
G.W. DEPTH (hw):	0.00		Gauge height above GL (m) (hg):						Water Packer			
Test Top(m)	20.7	Base(m)	28.2	TEST LENGTH(m):	7.5			MID POINT (m) (hm):		24.45		

Gauge Pressure (Pg)									Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon
	Time (min)	0.00	5.00	10.00	15.00							
	Flowmeter	56268.8	56299.0	56306.8	56321.4							
	Flow (L)		30.20	7.80	14.60							
	Flow (L/min)		6.04	1.56	2.92				1	4	68	7.5
69	WL (L/min/m)		0.81	0.21	0.39							

Gauge Pressure (Pg)									Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon
	Time (min)	0.00	5.00	10.00	15.00							
	Flowmeter	56321.4	56331.3	56337.7	56390.0							
	Flow (L)		9.90	6.40	52.30							
	Flow (L/min)		1.98	1.28	10.46				4	5	134	4.6
138	WL (L/min/m)		0.26	0.17	1.39							

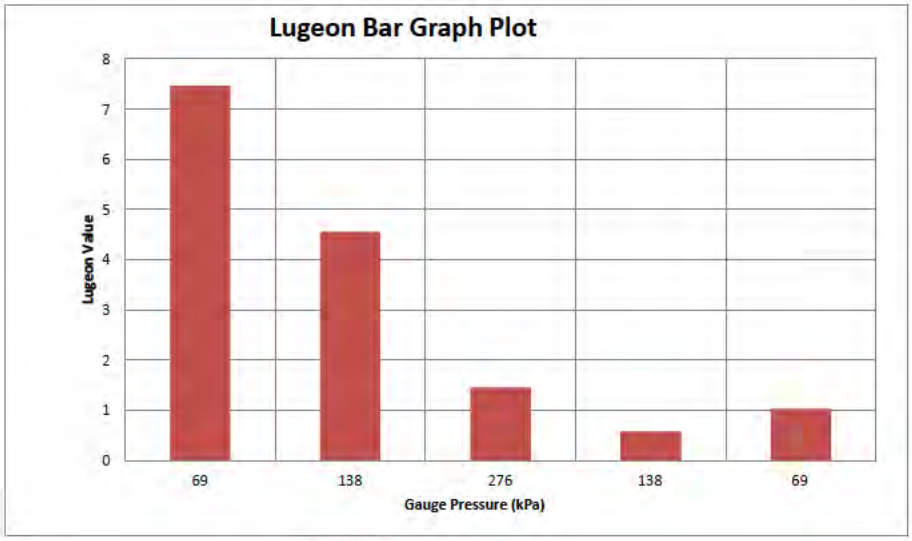
Gauge Pressure (Pg)									Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon
	Time (min)	0.00	5.00	10.00	15.00							
	Flowmeter	56344.9	56363.4	56377.5	56390.0							
	Flow (L)		18.50	14.10	12.50							
	Flow (L/min)		3.70	2.82	2.50				1	3	275	1.5
276	WL (L/min/m)		0.49	0.38	0.33							

Gauge Pressure (Pg)									Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon
	Time (min)	0.00	5.00	10.00	15.00							
	Flowmeter	56390.0	56393.8	56396.5	56399.0							
	Flow (L)		3.80	2.70	2.50							
	Flow (L/min)		0.76	0.54	0.50				1	1	137	0.6
138	WL (L/min/m)		0.10	0.07	0.07							

Gauge Pressure (Pg)									Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon
	Time (min)	0.00	5.00	10.00	15.00							
	Flowmeter	56399.0	56401.4	56404.0	56406.9							
	Flow (L)		2.40	2.60	2.90							
	Flow (L/min)		11280.28	11280.80	11281.38				1	1	68	1.0
69	WL (L/min/m)		1504.04	1504.11	1504.18							

Lugeon Value	1.0
Flow Type	Void Filling

If test section below G.W. $P_e = P_g + 9.81(hg+hw) - P_L$
If test section above G.W. $P_e = P_g + 9.81(hg+hm) - P_L$
Lugeon Value = (Flow rate/Stage length)x(1000 kPa/Pe)
(P in kPa, h in metres)



1 lugeon unit (m/s)	0.0000001	
	Lugeon	k (m/s)
	1.0	1.0E-07

K (m/s) method used $k=(Q/2\pi LH_1) \times \text{Log}_e\{L/r\}$ = **3.1E-07**
Formula from Clayton C. R. I., Simons N.E., Matthews M.C., 1982, Site Investigation, pg 289

NOTE:

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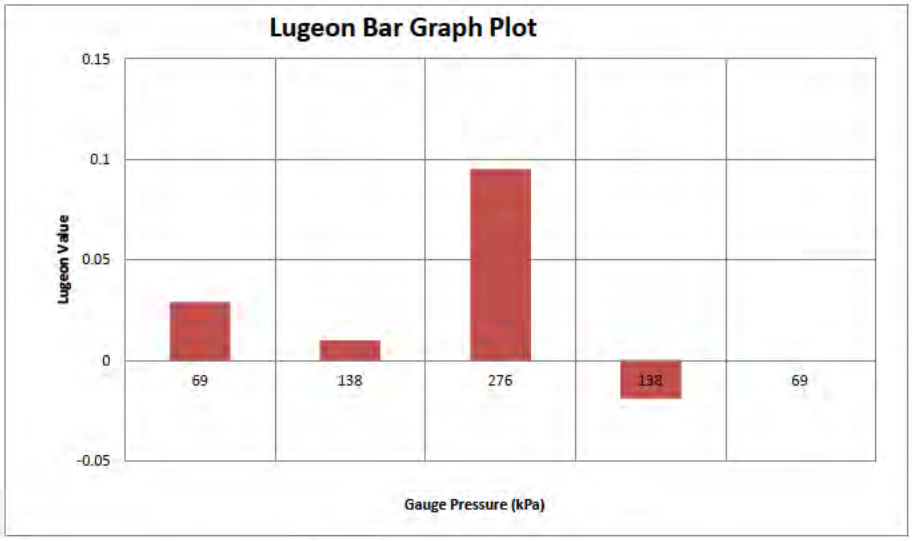
RECORDER:		DATE:		SITE: Bendigo							JOB No: 9702		
BOREHOLE No: MDD362			Drill Bit Size PQ		Hole Diameter (m)	0.1226			BH DEPTH:		35		Notes
G.W. DEPTH (hw):		0.00	Gauge height above GL (m) (hg):						Water Packer				
Test Top(m)	29.9	Base(m)	35	TEST LENGTH(m):		5.1		MID POINT (m) (hm):			32.45		
Gauge Pressure (Pg)	Time (min)	0.00	5.00	10.00	15.00				Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon	
	Flowmeter	56409.0	56409.1	56409.1	56409.1								
	Flow (L)		0.10	0.00	0.00								
	Flow (L/min)		0.02	0.00	0.00				1	0	68	0.0	
69	WL (L/min/m)		0.00	0.00	0.00								
Gauge Pressure (Pg)	Time (min)	0.00	5.00	10.00	15.00				Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon	
	Flowmeter	56409.4	56409.5	56409.5	56409.5								
	Flow (L)		0.10	0.00	0.00								
	Flow (L/min)		0.02	0.00	0.00				4	0	134	0.0	
138	WL (L/min/m)		0.00	0.00	0.00								
Gauge Pressure (Pg)	Time (min)	0.00	5.00	10.00	15.00				Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon	
	Flowmeter	56409.5	56410.4	56410.8	56411.5								
	Flow (L)		0.90	0.40	0.70								
	Flow (L/min)		0.18	0.08	0.14				1	0	275	0.1	
276	WL (L/min/m)		0.04	0.02	0.03								
Gauge Pressure (Pg)	Time (min)	0.00	5.00	10.00	15.00				Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon	
	Flowmeter	56411.5	56411.3	56411.3	56411.3								
	Flow (L)		-0.20	0.00	0.00								
	Flow (L/min)		-0.04	0.00	0.00				1	0	137	0.0	
138	WL (L/min/m)		-0.01	0.00	0.00								
Gauge Pressure (Pg)	Time (min)	0.00	5.00	10.00	15.00				Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon	
	Flowmeter	56411.3	56411.3	56411.3	56411.3								
	Flow (L)		0.00	0.00	0.00								
	Flow (L/min)		11282.26	11282.26	11282.26				1	0	68	0.0	
69	WL (L/min/m)		2212.21	2212.21	2212.21								

If test section below G.W. $P_e = P_g + 9.81(hg+hw) - P_L$
If test section above G.W. $P_e = P_g + 9.81(hg+hm) - P_L$
Lugeon Value = (Flow rate/Stage length)x(1000 kPa/Pe)
(P in kPa, h in metres)

Lugeon Value	0.0
Flow Type	No Flow



1 lugeon unit (m/s)	0.0000001	
	Lugeon	k (m/s)
	0.0	2.3E-09

K (m/s) method used $k=(Q/2\pi LH_1) \times \text{Log}_e\{L/r\}$ = **4.5E-09**
Formula from Clayton C. R. I., Simons N.E., Matthews M.C., 1982, Site Investigation, pg 289

NOTE:

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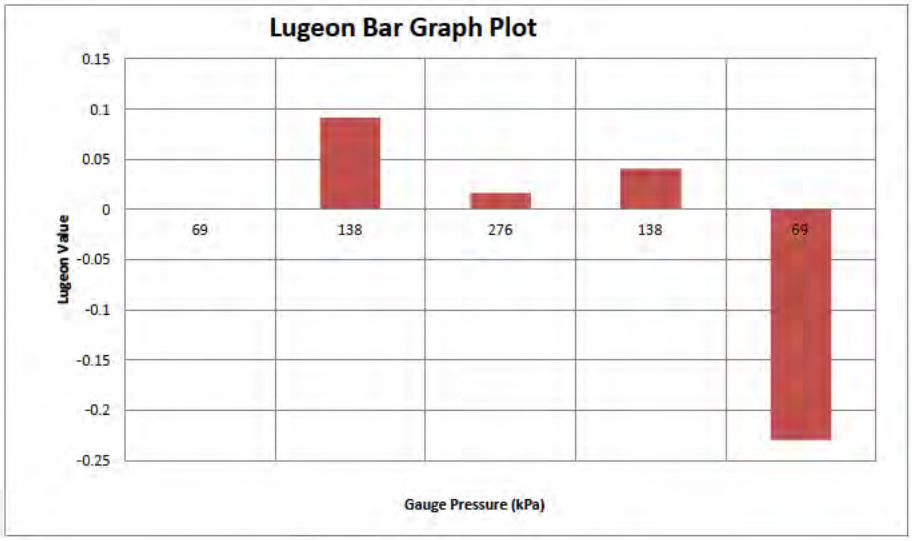
RECORDER:		DATE:		SITE: Bendigo							JOB No: 9702		Notes
BOREHOLE No: MDD365			Drill Bit Size HQ		Hole Diameter (m)	0.096			BH DEPTH:		44.3		
G.W. DEPTH (hw):		0.00	Gauge height above GL (m) (hg):						Water Packer				
Test Top(m)	35.3	Base(m)	41.3	TEST LENGTH(m):		6		MID POINT (m) (hm):			38.3		
Gauge Pressure (Pg)	Time (min)	0.00	5.00	10.00	15.00				Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon	
	Flowmeter	56412.9	56412.9	56412.9	56412.9								
	Flow (L)		0.00	0.00	0.00								
	Flow (L/min)		0.00	0.00	0.00				1	0	68	0.0	
69	WL (L/min/m)		0.00	0.00	0.00								
Gauge Pressure (Pg)	Time (min)	0.00	5.00	10.00	15.00				Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon	
	Flowmeter	56412.9	56414.0	56414.0	56414.0								
	Flow (L)		1.10	0.00	0.00								
	Flow (L/min)		0.22	0.00	0.00				4	0	134	0.1	
138	WL (L/min/m)		0.04	0.00	0.00								
Gauge Pressure (Pg)	Time (min)	0.00	5.00	10.00	15.00				Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon	
	Flowmeter	56414.0	56414.4	56414.4	56414.4								
	Flow (L)		0.40	0.00	0.00								
	Flow (L/min)		0.08	0.00	0.00				1	0	275	0.0	
276	WL (L/min/m)		0.01	0.00	0.00								
Gauge Pressure (Pg)	Time (min)	0.00	5.00	10.00	15.00				Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon	
	Flowmeter	56414.4	56414.9	56414.9	56414.9								
	Flow (L)		0.50	0.00	0.00								
	Flow (L/min)		0.10	0.00	0.00				1	0	137	0.0	
138	WL (L/min/m)		0.02	0.00	0.00								
Gauge Pressure (Pg)	Time (min)	0.00	5.00	10.00	15.00				Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon	
	Flowmeter	56414.9	56413.5	56413.5	56413.5								
	Flow (L)		-1.40	0.00	0.00								
	Flow (L/min)		11282.70	11282.70	11282.70				1	0	68	-0.2	
69	WL (L/min/m)		1880.45	1880.45	1880.45								

If test section below G.W. $P_e = P_g + 9.81(hg+hw) - P_L$
If test section above G.W. $P_e = P_g + 9.81(hg+hm) - P_L$
Lugeon Value = (Flow rate/Stage length)x(1000 kPa/Pe)
(P in kPa, h in metres)

Lugeon Value	0.0
Flow Type	No Flow



1 lugeon unit (m/s)	0.0000001	
	Lugeon	k (m/s)
	0.0	0.0E+00

K (m/s) method used $k=(Q/2\pi LH_1) \times \text{Log}_e\{L/r\}$ = **1.2E-09**
Formula from Clayton C. R. I., Simons N.E., Matthews M.C., 1982, Site Investigation, pg 289

NOTE: Hole making water - bit at 34m

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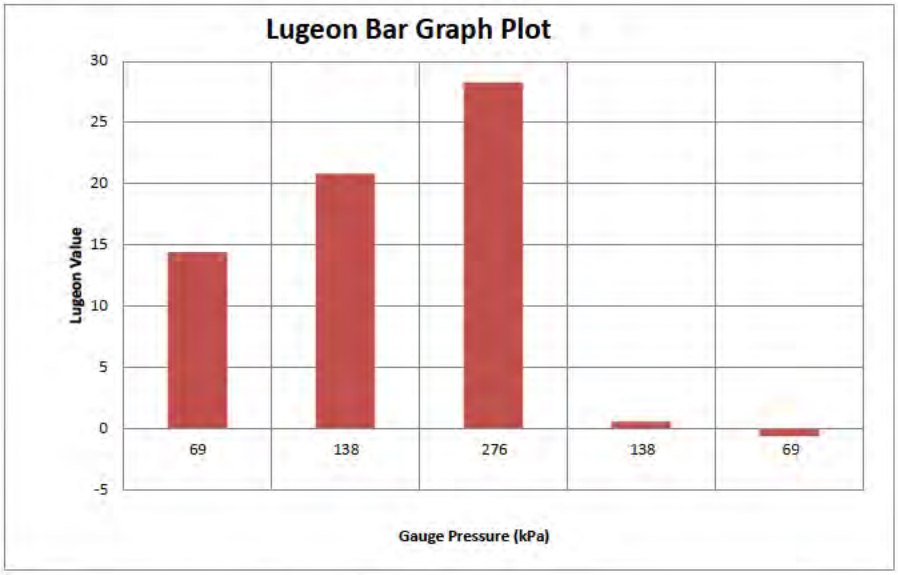
RECORDER:		DATE:		SITE: Bendigo							JOB No: 9702	
BOREHOLE No: MDD394			Drill Bit Size HQ		Hole Diameter (m)	0.096			BH DEPTH:	30		Notes
G.W. DEPTH (hw):	0.00		Gauge height above GL (m) (hg):						Water Packer			
Test Top(m)	11.5	Base(m)	16	TEST LENGTH(m):	4.5			MID POINT (m) (hm):	13.75			

Gauge Pressure (Pg)	Time (min)	0.00	5.00	10.00	15.00				Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon
	Flowmeter	564272	564313	564316	564317							
	Flow (L)		41.00	3.00	1.00							
	Flow (L/min)		8.20	0.60	0.20							
69	WL (L/min/m)		1.82	0.13					1	4	68	14.4
Gauge Pressure (Pg)	Time (min)	0.00	5.00	10.00	15.00				Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon
	Flowmeter	564317	564396	564451	564505							
	Flow (L)		79.00	55.00	54.00							
	Flow (L/min)		15.80	11.00	10.80							
138	WL (L/min/m)		3.51	2.44	2.40				4	13	134	20.8
Gauge Pressure (Pg)	Time (min)	0.00	5.00	10.00	15.00				Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon
	Flowmeter	564505	564688	564853	565016							
	Flow (L)		183.00	165.00	163.00							
	Flow (L/min)		36.60	33.00	32.60							
276	WL (L/min/m)		8.13	7.33	7.24				8	34	268	28.3
Gauge Pressure (Pg)	Time (min)	0.00	5.00	10.00	15.00				Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon
	Flowmeter	565016	565017	565019	565021							
	Flow (L)		1.00	2.00	2.00							
	Flow (L/min)		0.20	0.40	0.40							
138	WL (L/min/m)		0.04	0.09	0.09				1	0	137	0.5
Gauge Pressure (Pg)	Time (min)	0.00	5.00	10.00	15.00				Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon
	Flowmeter	565021	565018	565018	565018							
	Flow (L)		-3.00	0.00	0.00							
	Flow (L/min)		-0.60	0.00	0.00							
69	WL (L/min/m)		-0.13	0.00	0.00				1	0	68	-0.7

If test section below G.W. $P_e = P_g + 9.81(hg+hw) - P_L$
If test section above G.W. $P_e = P_g + 9.81(hg+hm) - P_L$
Lugeon Value = (Flow rate/Stage length)x(1000 kPa/Pe)
(P in kPa, h in metres)

Lugeon Value	0.5
Flow Type	Dilation



1 lugeon unit (m/s)	0.0000001	
	Lugeon	k (m/s)
	0.5	5.4E-08

K (m/s) method used $k=(Q/2\pi LH_1) \times \mathrm{Log}_e\{L/r\}$ = **2.0E-06**

Formula from Clayton C. R. I., Simons N.E., Matthews M.C., 1982, Site Investigation, pg 269

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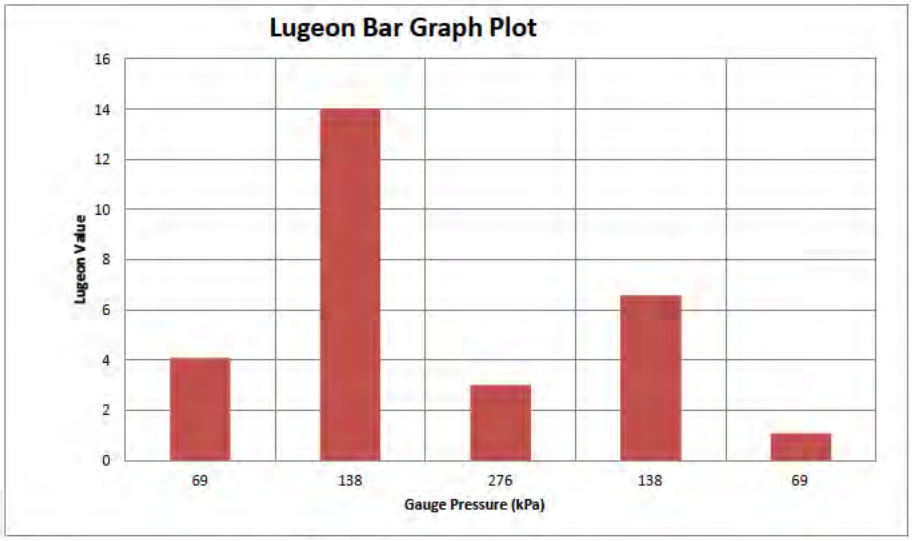
RECORDER:		DATE:		SITE: Bendigo						JOB No: 9702		Notes
BOREHOLE No: MDD394			Drill Bit Size HQ		Hole Diameter (m)	0.096			BH DEPTH:	30		
G.W. DEPTH (hw):		0.00	Gauge height above GL (m) (hg):						Water Packer			
Test Top(m)	23	Base(m)	28.4	TEST LENGTH(m):		5.4		MID POINT (m) (hm):		25.7		
Gauge Pressure (Pg)	Time (min)	0.00	5.00	10.00	15.00				Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon
	Flowmeter	565019	565033	565034	565034							
	Flow (L)		14.00	1.00	0.00							
	Flow (L/min)		2.80	0.20	0.00				1	2	68	4.1
69	WL (L/min/m)		0.52	0.04	0.00							
Gauge Pressure (Pg)	Time (min)	0.00	5.00	10.00	15.00				Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon
	Flowmeter	565034	565096	565140	565186							
	Flow (L)		62.00	44.00	46.00							
	Flow (L/min)		12.40	8.80	9.20				4	10	134	14.0
138	WL (L/min/m)		2.30	1.63	1.70							
Gauge Pressure (Pg)	Time (min)	0.00	5.00	10.00	15.00				Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon
	Flowmeter	565186	565219	565247	565253							
	Flow (L)		33.00	28.00	6.00							
	Flow (L/min)		6.60	5.60	1.20				1	4	275	3.0
276	WL (L/min/m)		1.22	1.04	0.22							
Gauge Pressure (Pg)	Time (min)	0.00	5.00	10.00	15.00				Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon
	Flowmeter	565253	565270	565395	565326							
	Flow (L)		17.00	125.00	-69.00							
	Flow (L/min)		3.40	25.00	-13.80				1	5	137	6.6
138	WL (L/min/m)		0.63	4.63	-2.56							
Gauge Pressure (Pg)	Time (min)	0.00	5.00	10.00	15.00				Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon
	Flowmeter	565326	565328	565331	565332							
	Flow (L)		2.00	3.00	1.00							
	Flow (L/min)		113065.60	113066.20	113066.40				1	0	68	1.1
69	WL (L/min/m)		20938.07	20938.19	20938.22							

If test section below G.W. $P_e = P_g + 9.81(hg+hw) - P_L$
If test section above G.W. $P_e = P_g + 9.81(hg+hm) - P_L$
Lugeon Value = (Flow rate/Stage length)x(1000 kPa/Pe)
(P in kPa, h in metres)

Lugeon Value	1.1
Flow Type	Dilation



1 lugeon unit (m/s)	0.0000001	
	Lugeon	k (m/s)
	1.1	1.1E-07

K (m/s) method used $k=(Q/2\pi LH_1) \times \text{Log}_e\{L/r\}$ = 7.1E-07
Formula from Clayton C. R. I., Simons N.E., Matthews M.C., 1982, Site Investigation, pg 289

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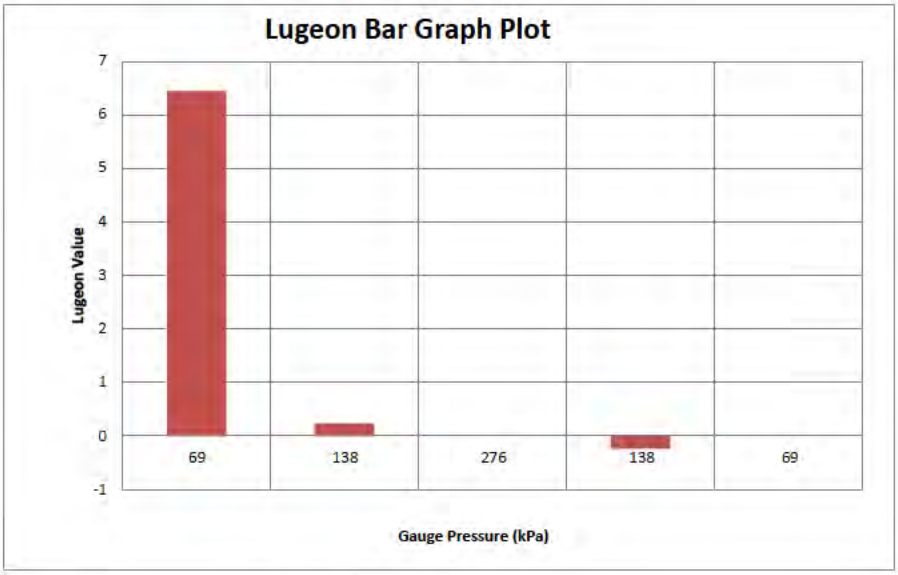
RECORDER:	DATE:	SITE: Bendigo								JOB No: 9702	Notes
BOREHOLE No: MDD396		Drill Bit Size HQ		Hole Diameter (m)	0.096				BH DEPTH:	70.1	
G.W. DEPTH (hw):	5.10	Gauge height above GL (m) (hg):							Water Packer		
Test Top(m)	19	Base(m)	22	TEST LENGTH(m):	3			MID POINT (m) (hm):		20.5	

Gauge Pressure (Pg)	Time (min)	0.00	5.00	10.00	15.00				Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon
	Flowmeter	565336	565359	565359	565359							
	Flow (L)		23.00	0.00	0.00							
	Flow (L/min)		4.60	0.00	0.00							
69	WL (L/min/m)		1.53	0.00	0.00					2	119	6.4
Gauge Pressure (Pg)	Time (min)	0.00	5.00	10.00	15.00				Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon
	Flowmeter	565375	565377	565377	565377							
	Flow (L)		2.00	0.00	0.00							
	Flow (L/min)		0.40	0.00	0.00							
138	WL (L/min/m)		0.13	0.00	0.00					0	188	0.2
Gauge Pressure (Pg)	Time (min)	0.00	5.00	10.00	15.00				Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon
	Flowmeter	565391	565391	565391	565391							
	Flow (L)		0.00	0.00	0.00							
	Flow (L/min)		0.00	0.00	0.00							
276	WL (L/min/m)		0.00	0.00	0.00					0	326	0.0
Gauge Pressure (Pg)	Time (min)	0.00	5.00	10.00	15.00				Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon
	Flowmeter	565388	565386	565386	565386							
	Flow (L)		-2.00	0.00	0.00							
	Flow (L/min)		-0.40	0.00	0.00							
138	WL (L/min/m)		-0.13	0.00	0.00					0	188	-0.2
Gauge Pressure (Pg)	Time (min)	0.00	5.00	10.00	15.00				Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon
	Flowmeter	565380	565380	565380	565380							
	Flow (L)		0.00	0.00	0.00							
	Flow (L/min)		0.00	0.00	0.00							
69	WL (L/min/m)		0.00	0.00	0.00					0	119	0.0

If test section below G.W. $P_e = P_g + 9.81(hg+hw) - P_L$
If test section above G.W. $P_e = P_g + 9.81(hg+hm) - P_L$
Lugeon Value = (Flow rate/Stage length)x(1000 kPa/Pe)
(P in kPa, h in metres)

Lugeon Value	0.2
Flow Type	Void Filling



1 lugeon unit (m/s)	0.0000001	
	Lugeon	k (m/s)
	0.2	2.4E-08

K (m/s) method used $k=(Q/2\pi LH_1) \times \text{Log}_e\{L/r\}$ = 8.8E-08

Formula from Clayton C. R. I., Simons N.E., Matthews M.C., 1982, Site Investigation, pg 269

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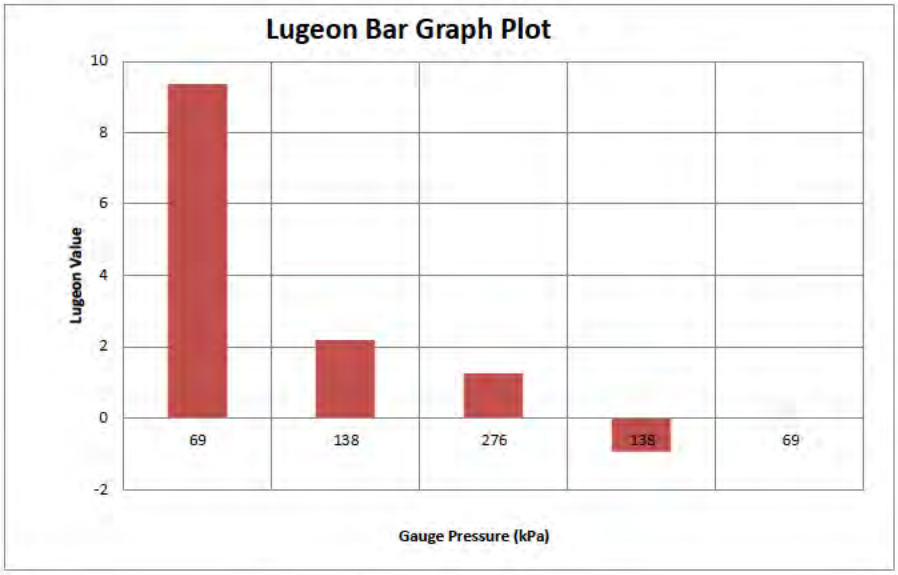
RECORDER:	DATE:	SITE: Bendigo	JOB No: 9702
BOREHOLE No: MDD396	Drill Bit Size HQ	Hole Diameter (m) 0.096	BH DEPTH: 70.1
G.W. DEPTH (hw): 0.00	Gauge height above GL (m) (hg):		Water Packer
Test Top(m) 41.3	Base(m) 44.4	TEST LENGTH(m): 3.1	MID POINT (m) (hm): 42.85

Notes

Gauge Pressure (Pg)									Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon
	Time (min)	0.00	5.00	10.00	15.00							
	Flowmeter	565372	565391	565392	565392							
	Flow (L)		19.00	1.00	0.00							
	Flow (L/min)		3.80	0.20	0.00							
69	WL (L/min/m)		1.23	0.06	0.00					2	69	9.4
Gauge Pressure (Pg)									Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon
	Time (min)	0.00	5.00	10.00	15.00							
	Flowmeter	565392	565406	565406	565406							
	Flow (L)		14.00	0.00	0.00							
	Flow (L/min)		2.80	0.00	0.00							
138	WL (L/min/m)		0.90	0.00	0.00					1	138	2.2
Gauge Pressure (Pg)									Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon
	Time (min)	0.00	5.00	10.00	15.00							
	Flowmeter	565406	565414	565414	565422							
	Flow (L)		8.00	0.00	8.00							
	Flow (L/min)		1.60	0.00	1.60							
276	WL (L/min/m)		0.52	0.00	0.52					1	276	1.2
Gauge Pressure (Pg)									Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon
	Time (min)	0.00	5.00	10.00	15.00							
	Flowmeter	565422	565416	565416	565416							
	Flow (L)		-6.00	0.00	0.00							
	Flow (L/min)		-1.20	0.00	0.00							
138	WL (L/min/m)		-0.39	0.00	0.00					0	138	-0.9
Gauge Pressure (Pg)									Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon
	Time (min)	0.00	5.00	10.00	15.00							
	Flowmeter	565416	565416	565416	565416							
	Flow (L)		0.00	0.00	0.00							
	Flow (L/min)		0.00	0.00	0.00							
69	WL (L/min/m)		0.00	0.00	0.00					0	69	0.0

If test section below G.W. $P_e = P_g + 9.81(hg+hw) - P_L$
If test section above G.W. $P_e = P_g + 9.81(hg+hm) - P_L$
Lugeon Value = (Flow rate/Stage length)x(1000 kPa/Pe)
(P in kPa, h in metres)

Lugeon Value	1.2
Flow Type	Void Filling



1 lugeon unit (m/s)	0.0000001	
	Lugeon	k (m/s)
	1.2	1.2E-07

K (m/s) method used $k=(Q/2\pi LH_1) \times \text{Log}_e\{L/r\}$ = 1.8E-07

Formula from Clayton C. R. I., Simons N.E., Matthews M.C., 1982, Site Investigation, pg 269

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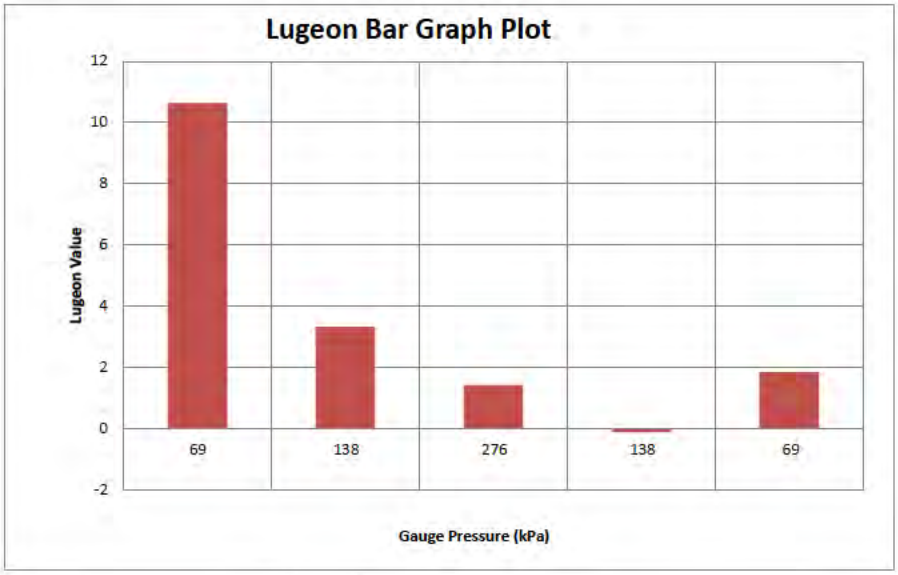
RECORDER:	DATE:	SITE: Bendigo	JOB No: 9702
BOREHOLE No: MDD396	Drill Bit Size HQ	Hole Diameter (m) 0.096	BH DEPTH: 70.1
G.W. DEPTH (hw): 0.16	Gauge height above GL (m) (hg):		Water Packer
Test Top(m) 50.4	Base(m) 54	TEST LENGTH(m): 3.6	MID POINT (m) (hm): 52.2

Notes

Gauge Pressure (Pg)									Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon
	Time (min)	0.00	5.00	10.00	15.00							
	Flowmeter	565398	565423	565425	565427							
	Flow (L)		25.00	2.00	2.00							
	Flow (L/min)		5.00	0.40	0.40							
69	WL (L/min/m)		1.39	0.11	0.11					3	71	10.6
Gauge Pressure (Pg)									Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon
	Time (min)	0.00	5.00	10.00	15.00							
	Flowmeter	565427	565440	565444	565452							
	Flow (L)		13.00	4.00	8.00							
	Flow (L/min)		2.60	0.80	1.60							
138	WL (L/min/m)		0.72	0.22	0.44					2	139	3.3
Gauge Pressure (Pg)									Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon
	Time (min)	0.00	5.00	10.00	15.00							
	Flowmeter	565452	565468	565472	565473							
	Flow (L)		16.00	4.00	1.00							
	Flow (L/min)		3.20	0.80	0.20							
276	WL (L/min/m)		0.89	0.22	0.06					1	277	1.4
Gauge Pressure (Pg)									Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon
	Time (min)	0.00	5.00	10.00	15.00							
	Flowmeter	565473	565469	565469	565472							
	Flow (L)		-4.00	0.00	3.00							
	Flow (L/min)		-0.80	0.00	0.60							
138	WL (L/min/m)		-0.22	0.00	0.17					0	139	-0.1
Gauge Pressure (Pg)									Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon
	Time (min)	0.00	5.00	10.00	15.00							
	Flowmeter	565472	565472	565475	565479							
	Flow (L)		0.00	3.00	4.00							
	Flow (L/min)		0.00	0.60	0.80							
69	WL (L/min/m)		0.00	0.17	0.22					0	71	1.8

If test section below G.W. $P_e = P_g + 9.81(hg+hw) - P_L$
If test section above G.W. $P_e = P_g + 9.81(hg+hm) - P_L$
Lugeon Value = (Flow rate/Stage length)x(1000 kPa/Pe)
(P in kPa, h in metres)

Lugeon Value	1.4
Flow Type	Void Filling



1 lugeon unit (m/s) 0.0000001

Lugeon	k (m/s)
1.4	1.4E-07

K (m/s) method used $k=(Q/2\pi LH_1) \times \text{Log}_e\{L/r\}$ = 2.8E-07

Formula from Clayton C. R. I., Simons N.E., Matthews M.C., 1982, Site Investigation, pg 269

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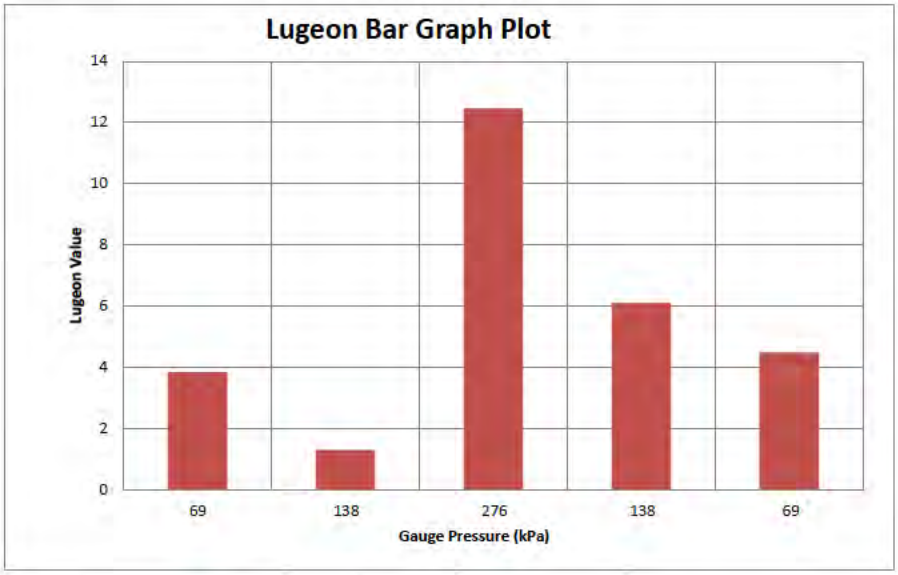
RECORDER:	DATE:	SITE: Bendigo								JOB No: 9702	
BOREHOLE No: MDD396		Drill Bit Size HQ		Hole Diameter (m)		0.096			BH DEPTH:	70.1	Notes
G.W. DEPTH (hw):	0.06	Gauge height above GL (m) (hg):							Water Packer		
Test Top(m)	61	Base(m)	64	TEST LENGTH(m):		3		MID POINT (m) (hm):		62.5	

Gauge Pressure (Pg)									Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon
	Time (min)	0.00	5.00	10.00	15.00							
	Flowmeter	565530	565536	565538	565540							
	Flow (L)		6.00	2.00	2.00							
	Flow (L/min)		1.20	0.40	0.40					1	70	3.8
69	WL (L/min/m)		0.40	0.13	0.13							
Gauge Pressure (Pg)									Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon
	Time (min)	0.00	5.00	10.00	15.00							
	Flowmeter	565550	565553	565556	565558							
	Flow (L)		3.00	3.00	2.00							
	Flow (L/min)		0.60	0.60	0.40					1	138	1.3
138	WL (L/min/m)		0.20	0.20	0.13							
Gauge Pressure (Pg)									Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon
	Time (min)	0.00	5.00	10.00	15.00							
	Flowmeter	565575	565628	565679	565730							
	Flow (L)		53.00	51.00	51.00							
	Flow (L/min)		10.60	10.20	10.20					10	276	12.5
276	WL (L/min/m)		3.53	3.40	3.40							
Gauge Pressure (Pg)									Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon
	Time (min)	0.00	5.00	10.00	15.00							
	Flowmeter	565732	565745	565759	565770							
	Flow (L)		13.00	14.00	11.00							
	Flow (L/min)		2.60	2.80	2.20					3	138	6.1
138	WL (L/min/m)		0.87	0.93	0.73							
Gauge Pressure (Pg)									Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon
	Time (min)	0.00	5.00	10.00	15.00							
	Flowmeter	565770	565774	565778	565784							
	Flow (L)		4.00	4.00	6.00							
	Flow (L/min)		0.80	0.80	1.20					1	70	4.5
69	WL (L/min/m)		0.27	0.27	0.40							

If test section below G.W. $P_e = P_g + 9.81(hg+hw) - P_L$
If test section above G.W. $P_e = P_g + 9.81(hg+hm) - P_L$
Lugeon Value = (Flow rate/Stage length)x(1000 kPa/Pe)
(P in kPa, h in metres)

Lugeon Value	1.3
Flow Type	Dilation



1 lugeon unit (m/s) 0.0000001

Lugeon	k (m/s)
1.3	1.3E-07

K (m/s) method used $k=(Q/2\pi LH_1) \times \text{Log}_e\{L/r\}$ = 7.8E-07

Formula from Clayton C. R. I., Simons N.E., Matthews M.C., 1982, Site Investigation, pg 269

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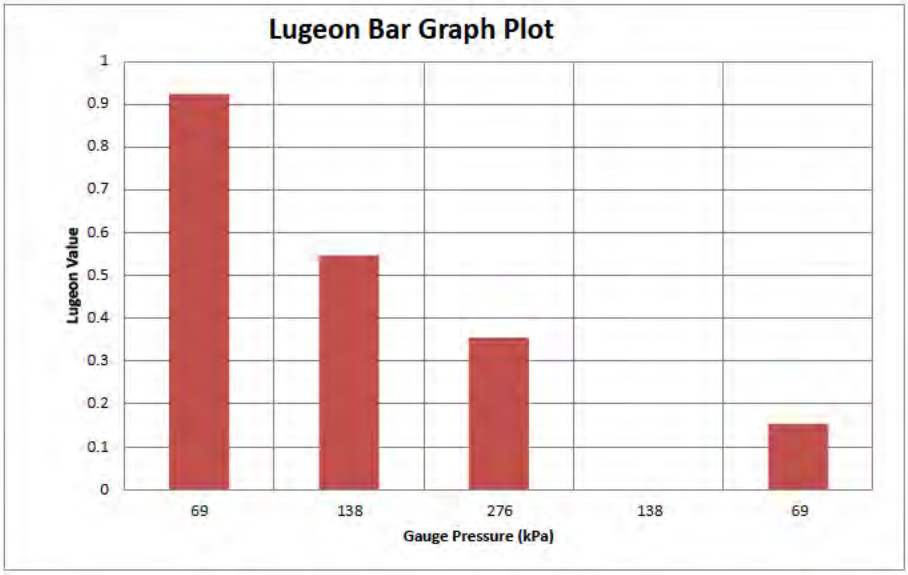
RECORDER:		DATE:		SITE: Bendigo							JOB No: 9702	
BOREHOLE No: MDD396			Drill Bit Size HQ		Hole Diameter (m)	0.096				BH DEPTH:	70.1	Notes
G.W. DEPTH (hw):	0.21		Gauge height above GL (m) (hg):							Water Packer		
Test Top(m)	64	Base(m)	70.1	TEST LENGTH(m):	6.1				MID POINT (m) (hm):		67.05	

Gauge Pressure (Pg)	Time (min)	0.00	5.00	10.00	15.00				Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon
	Flowmeter	565861	565863	565865	565866							
	Flow (L)		2.00	2.00	1.00							
	Flow (L/min)		0.40	0.40	0.20					0	71	0.9
69	WL (L/min/m)		0.07	0.07	0.03							
Gauge Pressure (Pg)	Time (min)	0.00	5.00	10.00	15.00				Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon
	Flowmeter	565880	565884	565886	565887							
	Flow (L)		4.00	2.00	1.00							
	Flow (L/min)		0.80	0.40	0.20					0	140	0.5
138	WL (L/min/m)		0.13	0.07	0.03							
Gauge Pressure (Pg)	Time (min)	0.00	5.00	10.00	15.00				Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon
	Flowmeter	565898	565902	565906	565907							
	Flow (L)		4.00	4.00	1.00							
	Flow (L/min)		0.80	0.80	0.20					1	278	0.4
276	WL (L/min/m)		0.13	0.13	0.03							
Gauge Pressure (Pg)	Time (min)	0.00	5.00	10.00	15.00				Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon
	Flowmeter	565902	565902	565902	565902							
	Flow (L)		0.00	0.00	0.00							
	Flow (L/min)		0.00	0.00	0.00					0	140	0.0
138	WL (L/min/m)		0.00	0.00	0.00							
Gauge Pressure (Pg)	Time (min)	0.00	5.00	10.00	15.00				Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon
	Flowmeter	565896	565896	565896	565897							
	Flow (L)		0.00	0.00	1.00							
	Flow (L/min)		0.00	0.00	0.20					0	71	0.2
69	WL (L/min/m)		0.00	0.00	0.03							

If test section below G.W. $P_e = P_g + 9.81(hg+hw) - P_L$
If test section above G.W. $P_e = P_g + 9.81(hg+hm) - P_L$
Lugeon Value = (Flow rate/Stage length)x(1000 kPa/Pe)
(P in kPa, h in metres)

Lugeon Value	0.2
Flow Type	Void Filling



1 lugeon unit (m/s)	0.0000001	
	Lugeon	k (m/s)
	0.2	1.5E-08

K (m/s) method used $k=(Q/2\pi LH_t) \times \text{Log}_e\{L/r\}$ = **4.5E-08**

Formula from Clayton C. R. I., Simons N.E., Matthews M.C., 1982, Site Investigation, pg 269

NOTE:

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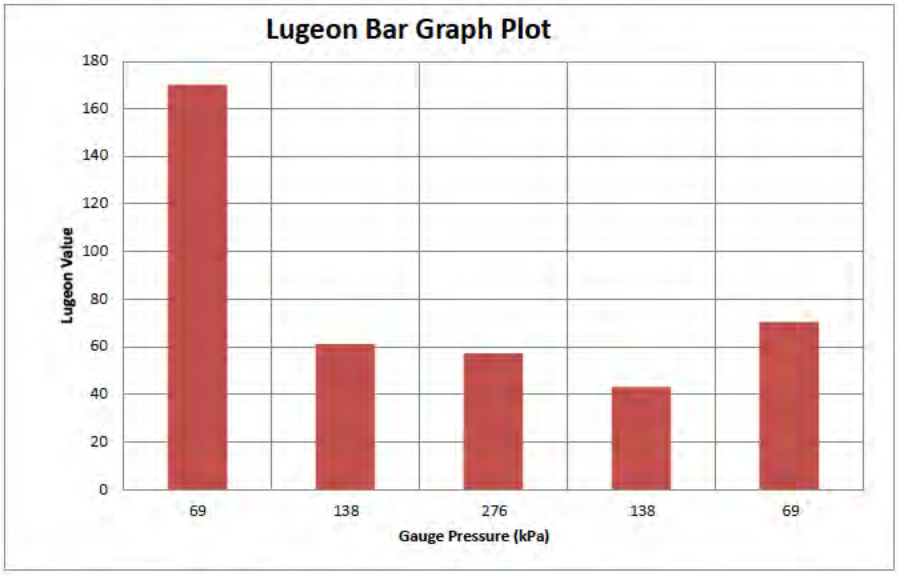
RECORDER:		DATE:		SITE: Bendigo							JOB No: 9702	
BOREHOLE No: MDD399			Drill Bit Size PQ		Hole Diameter (m)	0.1226			BH DEPTH:		70.1	Notes
G.W. DEPTH (hw):		0.80	Gauge height above GL (m) (hg):						Water Packer			
Test Top(m)	62.2	Base(m)	65.3	TEST LENGTH(m):		3.1		MID POINT (m) (hm):			63.75	

Gauge Pressure (Pg)	Time (min)	0.00	5.00	10.00	15.00				Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon	
	Flowmeter	566660	566941	567065	567183								
	Flow (L)		281.00	124.00	118.00								
	Flow (L/min)		56.20	24.80	23.60					41	77	170.1	
69	WL (L/min/m)		18.13	8.00	7.61								
Gauge Pressure (Pg)	Time (min)	0.00	5.00	10.00	15.00				Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon	
	Flowmeter	567232	567386	567510	567646								
	Flow (L)		154.00	124.00	136.00								
	Flow (L/min)		30.80	24.80	27.20					28	146	61.1	
138	WL (L/min/m)		9.94	8.00	8.77								
Gauge Pressure (Pg)	Time (min)	0.00	5.00	10.00	15.00				Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon	
	Flowmeter	567707	568004	568243	568460								
	Flow (L)		297.00	239.00	217.00								
	Flow (L/min)		59.40	47.80	43.40					50	284	57.1	
276	WL (L/min/m)		19.16	15.42	14.00								
Gauge Pressure (Pg)	Time (min)	0.00	5.00	10.00	15.00				Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon	
	Flowmeter	568464	568561	568660	568756								
	Flow (L)		97.00	99.00	96.00								
	Flow (L/min)		19.40	19.80	19.20					19	146	43.1	
138	WL (L/min/m)		6.26	6.39	6.19								
Gauge Pressure (Pg)	Time (min)	0.00	5.00	10.00	15.00				Head Loss (PL)	Average Flow (L/min)	Pe	Lugeon	
	Flowmeter	568749	568817	568907	569000								
	Flow (L)		68.00	90.00	93.00								
	Flow (L/min)		13.60	18.00	18.60					17	77	70.3	
69	WL (L/min/m)		4.39	5.81	6.00								

If test section below G.W. $P_e = P_g + 9.81(hg+hw) - P_L$
If test section above G.W. $P_e = P_g + 9.81(hg+hm) - P_L$
Lugeon Value = (Flow rate/Stage length)x(1000 kPa/Pe)
(P in kPa, h in metres)

Lugeon Value	43.1
Flow Type	Void Filling



1 lugeon unit (m/s) 0.0000001

Lugeon	k (m/s)
43.1	4.3E-06

K (m/s) method used $k=(Q/2\pi LH_1) \times \mathrm{Log}_e\{L/r\}$ = 7.0E-06

Formula from Clayton C. R. I., Simons N.E., Matthews M.C., 1982, Site Investigation, pg 269

NOTE:

Permeability Test Results Summary Table - Bendigo-Ophir Gold Project						Job Number	EGL9702
BHID	**Test Type**	**Depth**	**Flow Type**	**Lugeon**	**k (m/s) [1]**	**Corebox Photo**	**Geological Unit**
MDD365	Packer	35.3 to 41.3	No Flow	0	1.20E-09		TZ4 Schist
MDD362	Packer	20.7 to 28.2m	Void Filling	1	3.10E-07		TZ3 Schist

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Permeability Test Results Summary Table - Bendigo-Ophir Gold Project						Job Number	EGL9702
BHID	**Test Type**	**Depth**	**Flow Type**	**Lugeon**	**k (m/s) [1]**	**Corebox Photo**	**Geological Unit**
MDD362	Packer	29.9 to 35m	No Flow	0	4.50E-09		TZ4 Schist
MDD327	Packer	48.1 to 49.4m	Void Filling	0.3	9.20E-07		TZ3 Schist
MDD327	Packer	63.1 to 64.4m	Dilation	3.4	1.30E-06		TZ4 Schist

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Permeability Test Results Summary Table - Bendigo-Ophir Gold Project						Job Number	EGL9702
BHID	**Test Type**	**Depth**	**Flow Type**	**Lugeon**	**k (m/s) [1]**	**Corebox Photo**	**Geological Unit**
MDD394	Falling Head	5 to 7m			2.90E-07		TZ3 Schist
MDD394	Falling Head	8 to 10m			4.00E-08		TZ3 Schist
MDD394	Falling Head	11 to 13m			-1.80E-08		TZ3 Schist

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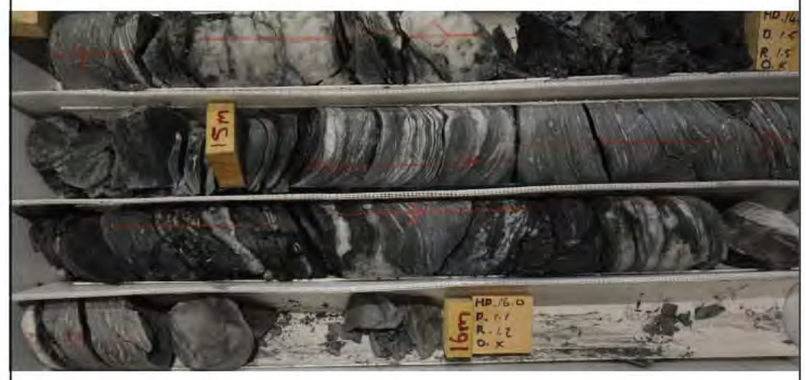
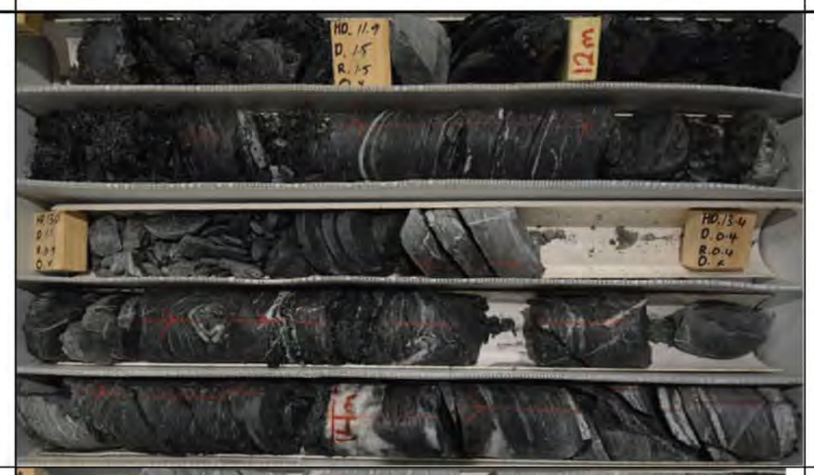
Permeability Test Results Summary Table - Bendigo-Ophir Gold Project

Job Number | **EGL9702**

BHID	Test Type	Depth	Flow Type	Lugeon	k (m/s) [1]	Corebox Photo	Geological Unit
MDD394	Falling Head	13.4 to 16m			8.20E-09		TZ3 Schist
MDD394	Packer	11.5 to 16m	Dilation	0.5	2.00E-06		TZ3 Schist
MDD394	Packer	23 to 28.4m	Dilation	1.1	7.10E-07		TZ3 Schist

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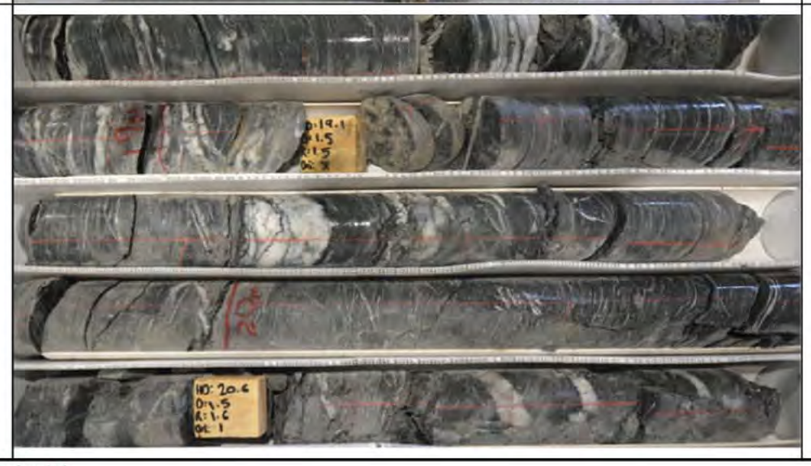
Permeability Test Results Summary Table - Bendigo-Ophir Gold Project

Job Number **EGL9702**

BHID	Test Type	Depth	Flow Type	Lugeon	k (m/s) [1]	Corebox Photo	Geological Unit
MDD396	Falling Head	5 to 7m			4.50E-06		Completely Weathered TZ3
MDD396	Falling Head	8 to 10m			4.30E-06		Highly Weathered TZ3
MDD396	Falling Head	19 to 22m			4.00E-06		TZ3 Schist

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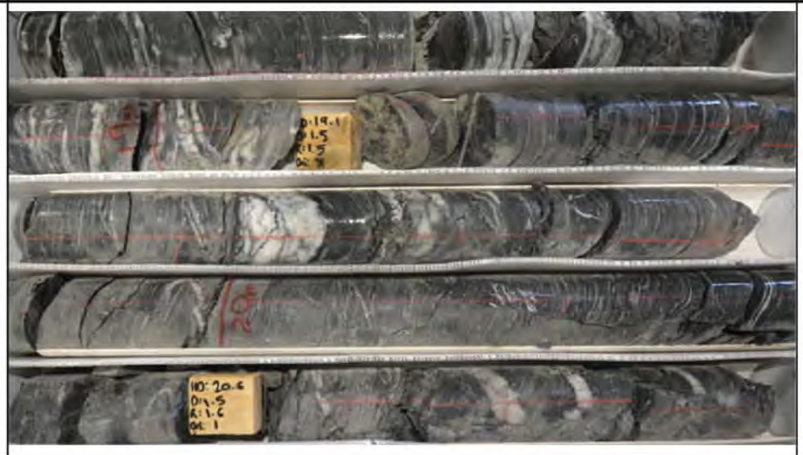
Permeability Test Results Summary Table - Bendigo-Ophir Gold Project

Job Number | **EGL9702**

BHID	Test Type	Depth	Flow Type	Lugeon	k (m/s) [1]	Corebox Photo	Geological Unit
MDD396	Packer	19 to 22m	Void Filling	0.2	8.80E-08		TZ3 Schist
MDD396	Packer	41.3 to 44m	Void Filling	1.2	1.80E-07		TZ3 Schist
MDD396	Packer	50.4 to 54m	Void Filling	1.4	2.80E-07		TZ3 Schist

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Permeability Test Results Summary Table - Bendigo-Ophir Gold Project

Job Number | **EGL9702**

BHID	Test Type	Depth	Flow Type	Lugeon	k (m/s) [1]	Corebox Photo	Geological Unit
MDD396	Packer	61 to 64	Dilation	1.3	7.80E-07		TZ3 Schist
MDD396	Packer	64 to 70.1	Void Filling	0.2	4.50E-08		TZ3 Schist

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Permeability Test Results Summary Table - Bendigo-Ophir Gold Project

Job Number | **EGL9702**

BHID	Test Type	Depth	Flow Type	Lugeon	k (m/s) [1]	Corebox Photo	Geological Unit
MDD399	Falling Head	5 to 7m			3.30E-06		Completely Weathered TZ3
MDD399	Falling Head	8 to 10m			6.50E-06		Completely Weathered TZ3

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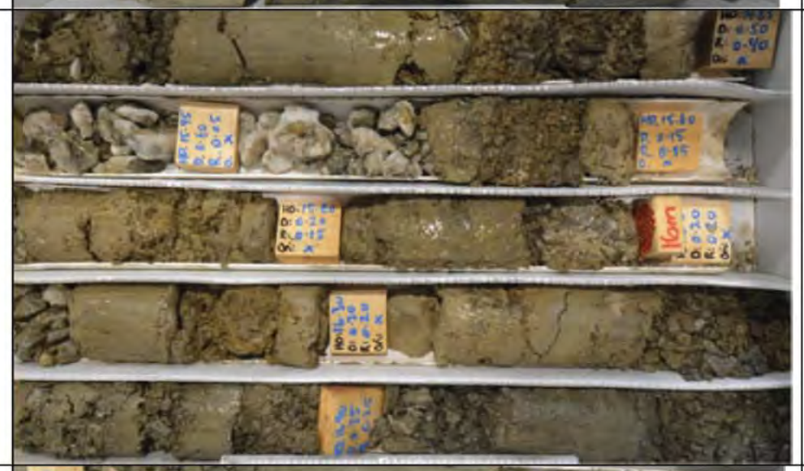
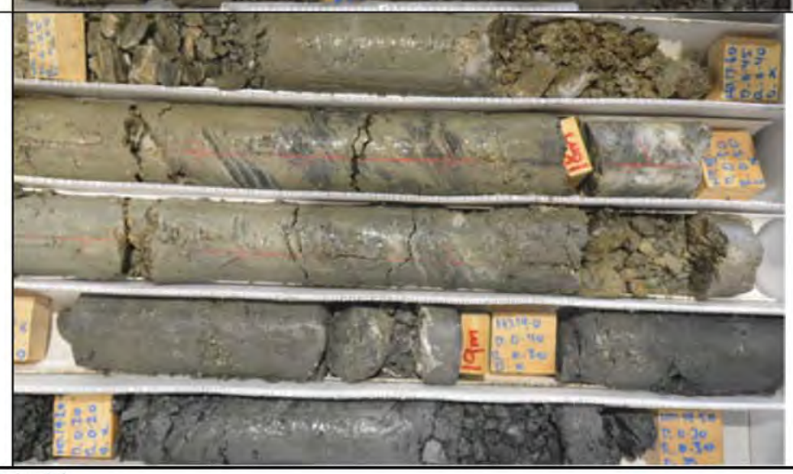
Permeability Test Results Summary Table - Bendigo-Ophir Gold Project

Job Number | **EGL9702**

BHID	Test Type	Depth	Flow Type	Lugeon	k (m/s) [1]	Corebox Photo	Geological Unit
MDD399	Falling Head	11 to 13m			6.20E-06		Highly Weathered Tz3
MDD399	Falling Head	15 to 17m			6.40E-06		Highly Weathered Tz3
MDD399	Falling Head	17 to 19m			6.40E-06		Highly Weathered Tz4

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Permeability Test Results Summary Table - Bendigo-Ophir Gold Project

Job Number | **EGL9702**

BHID	Test Type	Depth	Flow Type	Lugeon	k (m/s) [1]	Corebox Photo	Geological Unit
MDD399	Falling Head	20 to 22m			6.30E-06		TZ3 Schist
MDD399	Falling Head	25 to 27m			7.30E-06		TZ3 Schist
MDD399	Packer	62.2 to 65.3m	Void Filling	43.1	7.00E-06		TZ3 Schist

Notes: 1) The Hydraulic Conductivity (k) for the packer testing was obtained using Clayton, C. R. I., Matthews, M. C., & Simons, N. E. (1982). Site Investigation . Where $k=(Q/2\pi LHt) \times \text{Loge}\{L/r\}$

APPENDIX G
Laboratory Test Results

Central Testing Services
18 Ngapara St, P.O. Box 397, Alexandra 9340, Central Otago, New Zealand
P: 03 4487644, W: www.centraltesting.co.nz, E: info@centraltesting.co.nz

Reference No: CTS24W1705-1

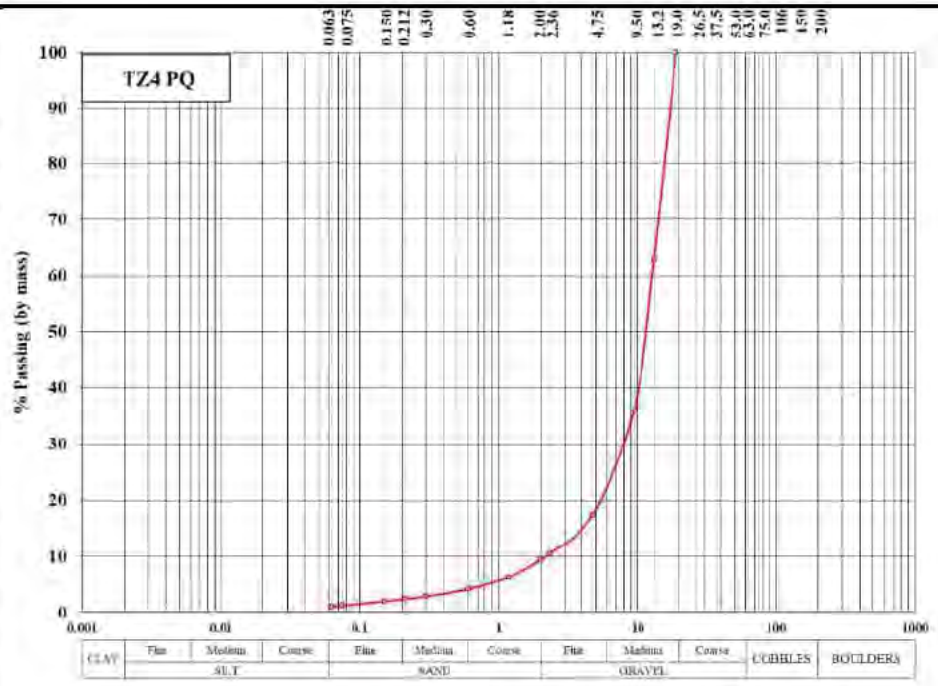
Date: 7 October 2024

TEST REPORT – SANTANA MINERALS INVESTIGATIONS

Client Details:	**Santana Minerals Limited, P.O. Box 11, Hokitika**	**Attention:**	**R. Redden**
Job Description:	**Santana Minerals Investigations**		
Sample Description:	**GRAVEL with minor sand & trace of silt**	**Client Order No:**	**N/A**
Sample Source: (cs)	**TZ4 PQ Material**	**Sample Label No:**	**N/A**
Date & Time Sampled:	**Unknown**	**Sampled By:**	**Unknown**
Sample Method:	**Unknown**	**Date Received:**	**30-Aug-24**

PARTICLE SIZE ANALYSIS (NZS 4402:1986, Test 2.8.1)

Test Sieve (mm)	% Passing (by mass)
26.5	
19.0	100
13.2	63
9.50	36
4.75	17
2.36	10
2.00	9
1.18	6
0.60	4
0.30	3
0.212	2
0.150	2
0.075	1
0.063	1



The sample was received in a natural state. The percentage passing the 63µm test sieve was obtained by difference.

DENSITY & ABSORPTION OF COARSE AGGREGATE - NZS 3111:1986, Test 12	
Density SSD Basis:	**2780 kg/m^3**
Density Dry Basis:	**2780 kg/m^3**
Absorption:	**0.3 %**

Notes:

- *Information contained in this report which is Not IANZ Accredited relates to the sample description based on NZ Geotechnical Society Guidelines 2005, the client supplied information (cs) and sampling.*
- *This report may not be reproduced except in full.*

Tested By: L.T. Smith **Date:** 19-Sep-24 to 4-Oct-24

Checked By: [redacted]

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Central Testing Services
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Reference No: CTS24W1705-1

Date: 7 October 2024

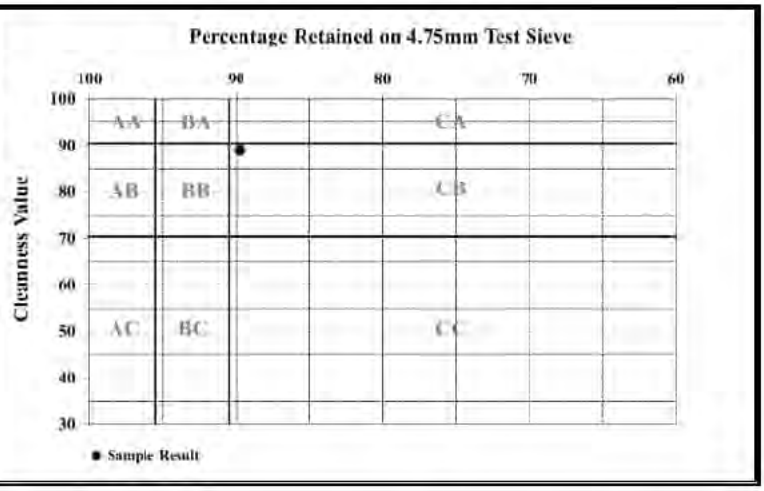
TEST REPORT – SANTANA MINERALS INVESTIGATIONS

Client Details:	**Santana Minerals Limited, P.O. Box 11, Hokitika**	**Attention:**	**R. Redden**
Job Description:	**Santana Minerals Investigations**		
Sample Description:	**GRAVEL with minor sand & trace of silt**	**Client Order No:**	**N/A**
Sample Source: (cs)	**TZ4 PQ Material**	**Sample Label No:**	**N/A**
Date & Time Sampled:	**Unknown**	**Sampled By:**	**Unknown**
Sample Method:	**Unknown**	**Date Received:**	**30-Aug-24**

CRUSHING RESISTANCE - NZS 4407:2015, Test 3.10	
Specified Load:	**130 kN**
% Passing 2.36 mm Test Sieve:	**5.2**
Crushing Resistance Compliance:	**Greater Than Specified Load**
Estimated Crushing Resistance:	**200 kN**

(1) The estimated crushing resistance is a derived result from NZS 3111:1986, Test 14. IANZ endorsement does not apply to this value.

WEATHERING RESISTANCE (NZS 4407:2015, Test 3.11)	
% Retained on 4.75 mm Test Sieve:	**90**
Cleanness Value:	**89**
Weathering Resistance Quality Index:	**CB**



Additional Notes:

- *Information contained in this report which is Not IANZ Accredited relates to the estimated crushing resistance, the sample description based on NZ Geotechnical Society Guidelines 2005, the client supplied information (cs) and sampling.*
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Tested By: **L.T. Smith** **Date:** **19-Sep-24 to 4-Oct-24** **Checked By:**

Approved Signatory

[redacted]

L.T. Smith
Key Technical Personnel

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Reference No: CTS24W1705-2

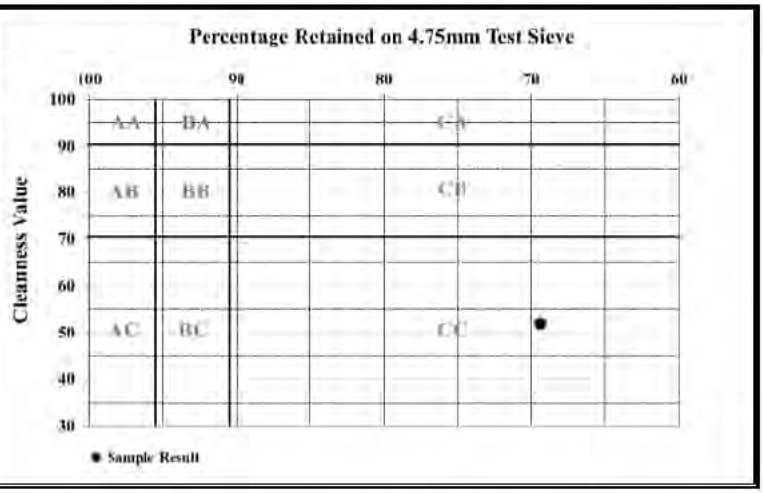
Date: 9 October 2024

TEST REPORT – SANTANA MINERALS INVESTIGATIONS

Client Details:	**Santana Minerals Limited, P.O. Box 11, Hokitika**	**Attention:**	**R. Redden**
Job Description:	**Santana Minerals Investigations**		
Sample Description: (cs)	**Scalp Cobbles / boulders from sample greater than 60mm diameter**		
Sample Source: (cs)	**Cherri Terrace**	**Sample Location: (cs)**	**5019008 (North) – 1314005 (East)**
Date & Time Sampled:	**Unknown**	**Sampled No: (cs)**	**MG 41762**
Sample Method:	**Unknown**	**Date Received:**	**30-Aug-24**

CRUSHING RESISTANCE - NZS 4407:2015, Test 3.10	
Specified Load:	**130 kN**
% Passing 2.36 mm Test Sieve:	**12.9**
Crushing Resistance Compliance:	**Less Than Specified Load**
Estimated Crushing Resistance:	**110 kN**
(1) The estimated crushing resistance is a derived result from NZS 3111:1986, Test 14. IANZ endorsement does not apply to this value.	

WEATHERING RESISTANCE (NZS 4407:2015, Test 3.11)	
% Retained on 4.75 mm Test Sieve:	**69**
Cleanness Value:	**52**
Weathering Resistance Quality Index:	**CC**



Additional Notes:

- *Information contained in this report which is Not IANZ Accredited relates to the estimated crushing resistance, the sample description based on NZ Geotechnical Society Guidelines 2005, the client supplied information (cs) and sampling.*
- *This report may not be reproduced except in full.*

Tested By: L.T. Smith, V. Fawcett & C. Julius **Date:** 25-Sep-24 to 9-Oct-24 **Checked By:**

Approved Signatory

[redacted]

C. Julius
Key Technical Personnel

ACCREDITED IANZ TESTING LABORATORY №434

Test results indicated as not accredited are outside the scope of the laboratory's accreditation

Central Testing Services
18 Ngapara St, P.O. Box 397, Alexandra 9340, Central Otago, New Zealand
P: 03 4487644, W: www.centraltesting.co.nz, E: info@centraltesting.co.nz

Reference No: CTS24W1705-3

Date: 11 November 2024

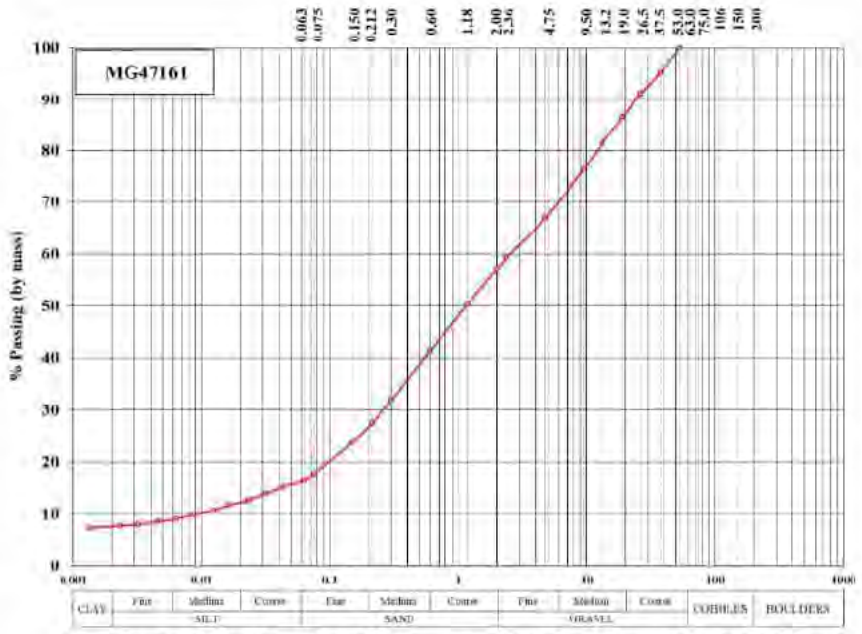
TEST REPORT – SANTANA MINERALS INVESTIGATIONS

Client Details:	Santana Minerals Limited, P.O. Box 11, Hokitika	**Attention:**	R. Redden
Job Description:	Santana Minerals Investigations		
Sample Description:	Sandy GRAVEL with minor silt & minor clay (CL)	**Sample No: (cs)**	MG41761
Sample Source: (cs)	Cherri Terrace	**Sample Location: (cs)**	5019008 - 1314005
Date & Time Sampled:	Unknown	**Sampled By:**	Unknown
Sample Method:	Unknown	**Date Received:**	30-Aug-24

PARTICLE SIZE ANALYSIS (NZS 4402:1986, Test 2.8.1 & 2.8.4)

Test Sieve (mm)	% Passing (by mass)
53.0	100
37.5	95
26.5	91
19.0	87
13.2	81
9.50	76
4.75	67
2.36	59
2.00	57
1.18	50
0.60	41
0.30	32
0.212	27
0.150	24
0.075	18
0.063	16

Fraction Size	Interpolated % Passing
60 µm	16
20 µm	13
6 µm	9
2 µm	8



The sample was received in a natural state. The percentage passing the 63µm test sieve was obtained by difference. The pH of the hydrometer suspension was 8.5. Sodium hexametaphosphate was used as a dispersant.

PARTICLE SIZE ANALYSIS & HYDROMETER ANALYSIS RESULTS - NZS 4402:1986, Test 2.8.1 & 2.8.4

Description	Fraction Range	% Within Range	Description	Fraction Range	% Within Range
Coarse Gravel	60.0 mm to 20.0 mm	13	Fine Sand	200 µm to 60 µm	11
Medium Gravel	20.0 mm to 6.0 mm	18	Coarse Silt	60 µm to 20 µm	3
Fine Gravel	6.0 mm to 2.00 mm	12	Medium Silt	20 µm to 6 µm	4
Coarse Sand	2.00 mm to 600 µm	16	Fine Silt	6 µm to 2 µm	1
Medium Sand	600 µm to 200 µm	14	Clay	< 2 µm	8

WATER CONTENT & PLASTICITY INDEX RESULTS - NZS 4402:1986, Test 2.1, 2.2, 2.3 &2.4

Water Content: ("All In" As Received)	8.4 %
Liquid Limit: (LL)	30
Plastic Limit: (PL)	18
Plasticity Index: (PI)	12

Note: The sample was received in a natural state. The plasticity index material tested was the fraction passing the 425 µm test sieve.

Notes:

- *USBR unified soil classification: figure 3-1*
- *Information contained in this report which is Not IANZ Accredited relates to the sample description based on NZ Geotechnical Society Guidelines 2005, the client supplied information (cs) and sampling.*
- *This report may not be reproduced except in full.*

Tested By: J. Smith & L.T. Smith **Date:** 3 to 9-Oct-24

Checked By: [redacted]

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Central Testing Services
18 Ngapara St, P.O. Box 397, Alexandra 9340, Central Otago, New Zealand
P: 03 4487644, W: www.centraltesting.co.nz, E: info@centraltesting.co.nz

Reference No: CTS24W1705-4

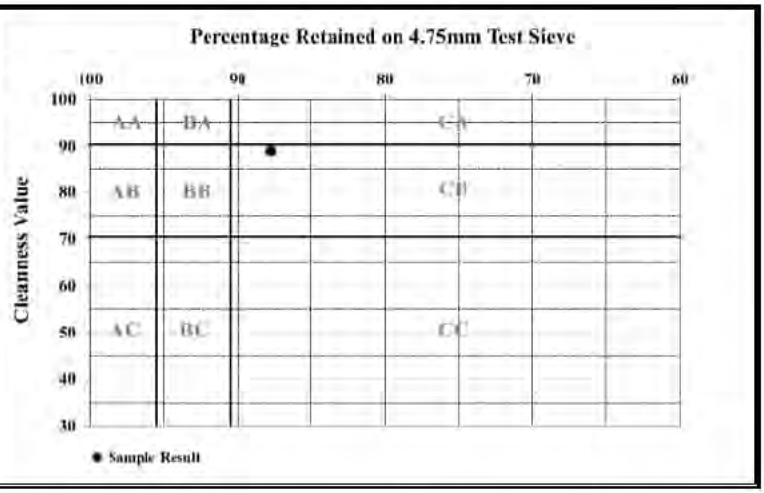
Date: 21 October 2024

TEST REPORT – SANTANA MINERALS INVESTIGATIONS

Client Details:	**Santana Minerals Limited, P.O. Box 11, Hokitika**	**Attention:**	**R. Redden**
Job Description:	**Santana Minerals Investigations**		
Sample Description:	**Scalp cobbles / boulders from sample greater than 60mm diameter**		
Sample Source: (cs)	**MG 41764 Material**	**Sample Label No:**	**N/A**
Date & Time Sampled:	**Unknown**	**Sampled By:**	**Unknown**
Sample Method:	**Unknown**	**Date Received:**	**30-Aug-24**

CRUSHING RESISTANCE - NZS 4407:2015, Test 3.10	
Specified Load:	**130 kN**
% Passing 2.36 mm Test Sieve:	**6.5**
Crushing Resistance Compliance:	**Greater Than Specified Load**
Estimated Crushing Resistance:	**170 kN**
(1) The estimated crushing resistance is a derived result from NZS 3111:1986, Test 14. IANZ endorsement does not apply to this value.	

WEATHERING RESISTANCE (NZS 4407:2015, Test 3.11)	
% Retained on 4.75 mm Test Sieve:	**88**
Cleanness Value:	**89**
Weathering Resistance Quality Index:	**CB**



Additional Notes:

- *Information contained in this report which is Not IANZ Accredited relates to the estimated crushing resistance, the sample description based on NZ Geotechnical Society Guidelines 2005, the client supplied information (cs) and sampling.*
- *This report may not be reproduced except in full.*

Tested By: L.T. Smith, V. Fawcett & C. Julius **Date:** 27-Sep to 14-Oct-24 **Checked By:** LTS

Approved Signatory

[redacted]

L.T. Smith
Key Technical Personnel

ACCREDITED IANZ TESTING LABORATORY №434

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Central Testing Services
18 Ngapara St, P.O. Box 397, Alexandra 9340, Central Otago, New Zealand
P: 03 4487644, W: www.centraltesting.co.nz, E: info@centraltesting.co.nz

Reference No: CTS24W1705-3

Date: 11 November 2024

TEST REPORT – SANTANA MINERALS INVESTIGATIONS

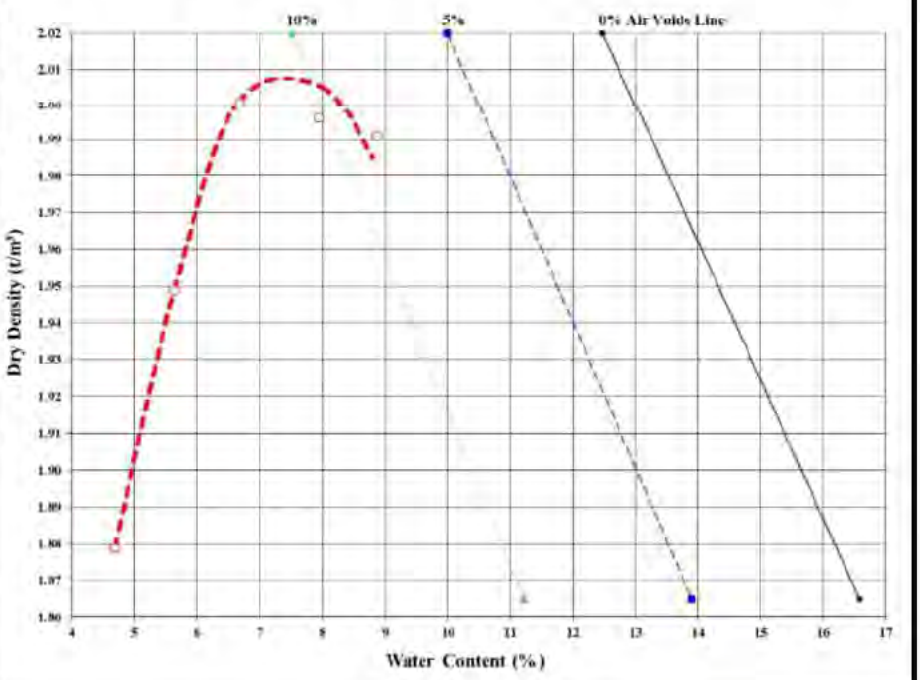
Client Details:	**Santana Minerals Limited, P.O. Box 11, Hokitika**	**Attention:**	**R. Redden**
Job Description:	**Santana Minerals Investigations**		
Sample Description:	**Sandy GRAVEL with minor silt & minor clay**	**Sample No: (cs)**	**MG41761**
Sample Source: (cs)	**Cherri Terrace**	**Sample Location: (cs)**	**5019008 - 1314005**
Date & Time Sampled:	**Unknown**	**Sampled By:**	**Unknown**
Sample Method:	**Unknown**	**Date Received:**	**30-Aug-24**

NZ STANDARD COMPACTION - NZS 4402:1986, Test 4.1.1
DRY DENSITY & ABSORPTION - NZS 3111:1986, Test 12

% Retained (+19.0mm Fraction)	**13.0 %**
Dry Density: (+19.0mm Fraction)	**2.53 t/m³**
Absorption (+19.0mm Fraction)	**2.1 %**
Solid Density: (-19.0mm Fraction)	**2.70 t/m³**
Maximum Dry Density: (-19.0mm Fraction)	**2.01 t/m³**
Optimum Water Content: (-19.0mm Fraction)	**7.5 %**

Notes:

- *The sample was received in a natural state.*
- *The material tested in the NZ Standard Compaction test was the fraction passing a 19.0mm test sieve.*
- *The air voids lines were calculated from the tested solid density above.*



Notes:

- *Information contained in this report which is Not IANZ Accredited relates to the sample description based on NZ Geotechnical Society Guidelines 2005, the client supplied information (cs) and sampling.*
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Tested By: J. Smith & L.T. Smith **Date:** 3 to 9-Oct-24

Checked By: [redacted]

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Reference No: CTS24W1705-3

Date: 11 November 2024

TEST REPORT – SANTANA MINERALS INVESTIGATIONS

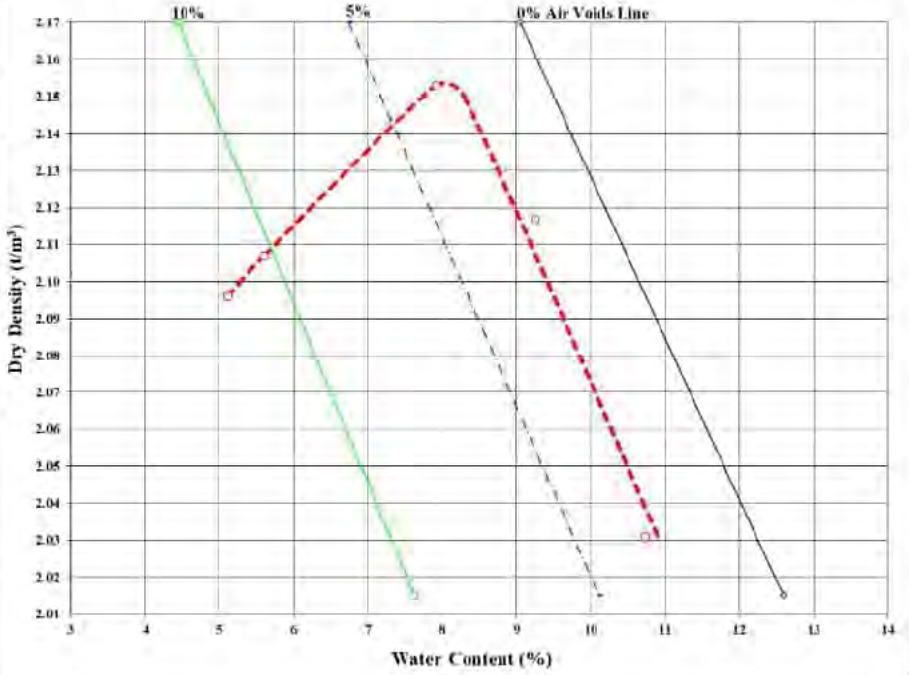
Client Details:	**Santana Minerals Limited, P.O. Box 11, Hokitika**	**Attention:**	**R. Redden**
Job Description:	**Santana Minerals Investigations**		
Sample Description:	**Sandy GRAVEL with minor silt & minor clay**	**Sample No: (cs)**	**MG41761**
Sample Source: (cs)	**Cherri Terrace**	**Sample Location: (cs)**	**5019008 - 1314005**
Date & Time Sampled:	**Unknown**	**Sampled By:**	**Unknown**
Sample Method:	**Unknown**	**Date Received:**	**30-Aug-24**

NZ HEAVY COMPACTION - NZS 4402:1986, Test 4.1.2
DRY DENSITY & ABSORPTION - NZS 3111:1986, Test 12

% Retained (+19.0mm Fraction)	**13.0 %**
Dry Density: (+19.0mm Fraction)	**2.53 t/m³**
Absorption (+19.0mm Fraction)	**2.1 %**
Solid Density: (-19.0mm Fraction)	**2.70 t/m³**
Maximum Dry Density: (-19.0mm Fraction)	**2.15 t/m³**
Optimum Water Content: (-19.0mm Fraction)	**8.0 %**

Notes:

- *The sample was received in a natural state.*
- *The material tested in the NZ Heavy Compaction test was the fraction passing a 19.0mm test sieve.*
- *The air voids lines were calculated from the tested solid density above.*



Notes:

- *Information contained in this report which is Not IANZ Accredited relates to the sample description based on NZ Geotechnical Society Guidelines 2005, the client supplied information (cs) and sampling.*
- *This report may not be reproduced except in full.*

Tested By: J. Smith & L.T. Smith **Date:** 3 to 9-Oct-24

Checked By: [redacted]

Approved Signatory

[redacted]

L.T. Smith
Key Technical Personnel

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Central Testing Services
18 Ngapara St, P.O. Box 397, Alexandra 9340, Central Otago, New Zealand
P: 03 4487644, W: www.centraltesting.co.nz, E: info@centraltesting.co.nz

Reference No: CTS24W1705-5

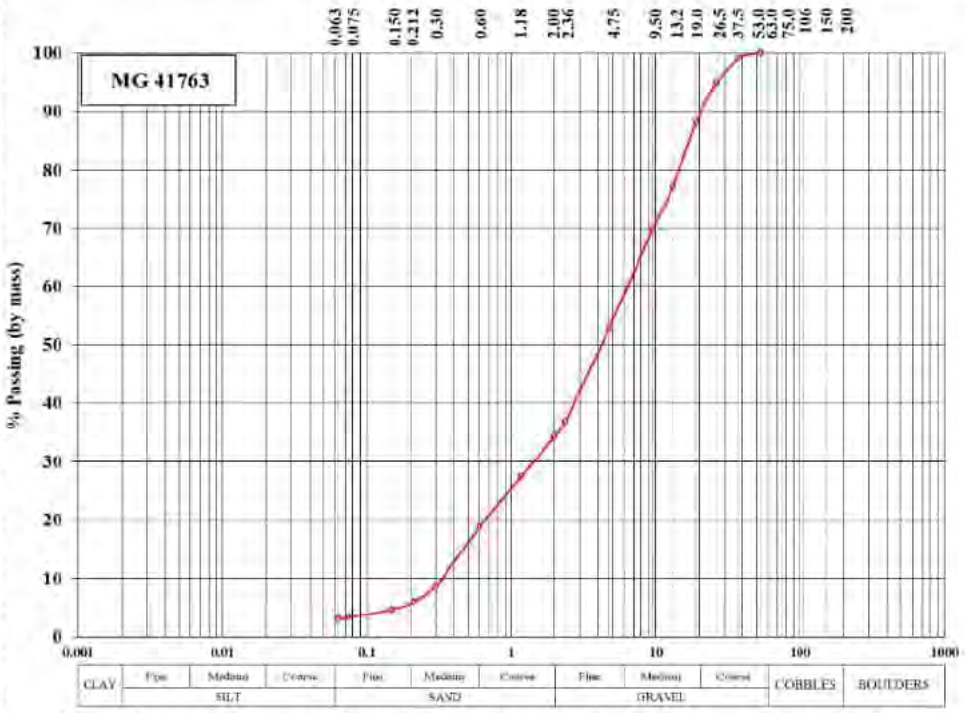
Date: 11 November 2024

TEST REPORT – SANTANA MINERALS INVESTIGATIONS

Client Details:	**Santana Minerals Limited, P.O. Box 11, Hokitika**	**Attention:**	**R. Redden**
Job Description:	**Santana Minerals Investigations**		
Sample Description:	**Sandy GRAVEL with trace of silt**	**Sample No: (cs)**	**MG41763**
Sample Source: (cs)	**Bendigo Borrow - Terrace Gravel Fines**	**Sample Location: (cs)**	**5019711 - 1310561**
Date & Time Sampled:	**Unknown**	**Sampled By:**	**Unknown**
Sample Method:	**Unknown**	**Date Received:**	**30-Aug-24**

PARTICLE SIZE ANALYSIS (NZS 4402:1986, Test 2.8.1)

Test Sieve (mm)	% Passing (by mass)
53.0	100
37.5	99
26.5	95
19.0	88
13.2	77
9.50	70
4.75	53
2.36	37
2.00	34
1.18	28
0.60	19
0.30	9
0.212	6
0.150	5
0.075	3
0.063	3



The sample was received in a natural state. The percentage passing the 63µm test sieve was obtained by difference..

WATER CONTENT & PLASTICITY INDEX RESULTS - NZS 4402:1986, Test 2.1, 2.2, 2.3 & 2.4	
Water Content: ("All In" As Received)	**3.4 %**
Liquid Limit: (LL)	**Not Applicable (NA)**
Plastic Limit: (PL)	**Non - Plastic (NP)**
Plasticity Index: (PI)	**Non - Plastic (NP)**
Note: The sample was received in a natural state. The plasticity index material tested was the fraction passing the 425 µm test sieve.	

Notes:

- *Information contained in this report which is Not IANZ Accredited relates to the sample description based on NZ Geotechnical Society Guidelines 2005, the client supplied information (cs) and sampling.*
- *This report may not be reproduced except in full.*

Tested By: T. Shaw, K. Hedges & L.T. Smith **Date:** 24 to 31-Oct-24

Checked By: [redacted]

Approved Signatory

[redacted]

L.T. Smith
Key Technical Personnel

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P: 03 4487644, W: www.centraltesting.co.nz, E: info@centraltesting.co.nz

Reference No: CTS24W1705-6

Date: 15 November 2024

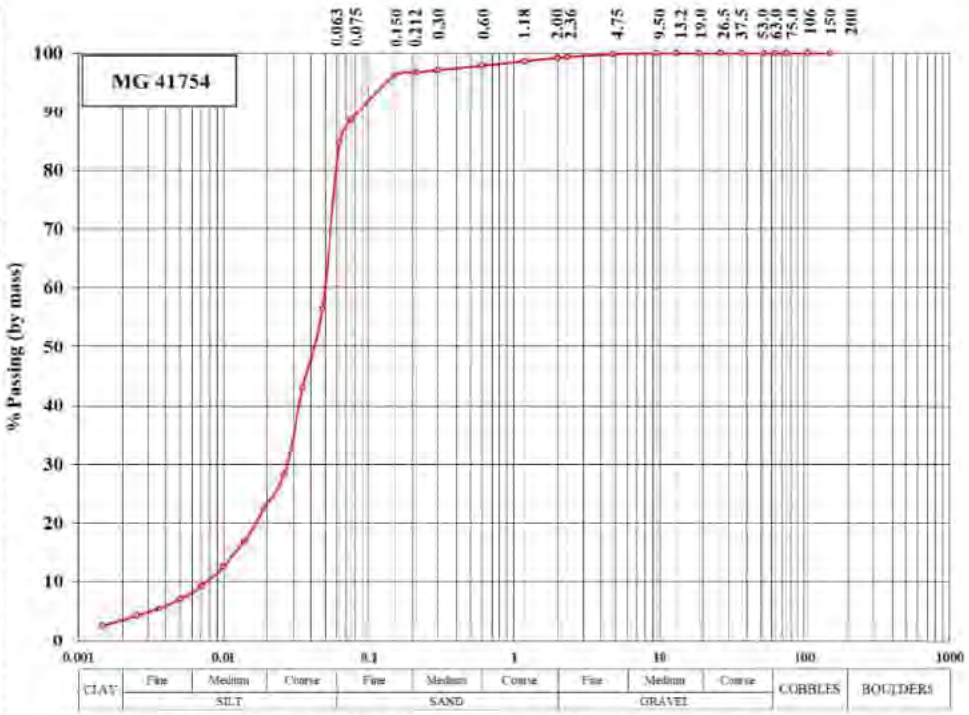
TEST REPORT – SANTANA MINERALS INVESTIGATIONS

Client Details:	**Santana Minerals Limited, P.O. Box 11, Hokitika**	**Attention:**	**R. Redden**
Job Description:	**Santana Minerals Investigations**		
Sample Description:	**SILT with some sand, trace of clay & trace of gravel**	**Sample No: (cs)**	**MG 41754**
Sample Source: (cs)	**Loess**	**Sample Location: (cs)**	**5016805 - 1317923**
Date & Time Sampled:	**Unknown**	**Sampled By:**	**Unknown**
Sample Method:	**Unknown**	**Date Received:**	**30-Aug-24**

PARTICLE SIZE ANALYSIS (NZS 4402:1986, Test 2.8.1 & 2.8.4)

Test Sieve (mm)	% Passing (by mass)
53.0	
37.5	
26.5	
19.0	
13.2	
9.50	
4.75	100
2.36	99
2.00	99
1.18	99
0.60	98
0.30	97
0.212	97
0.150	96
0.075	89
0.063	85

Fraction Size	Interpolated % Passing
60 µm	79
20 µm	23
6 µm	8
2 µm	3



The sample was received in a natural state. The percentage passing the 63µm test sieve was obtained by difference. The pH of the hydrometer suspension was 9.5. Sodium hexametaphosphate was used as a dispersant.

PARTICLE SIZE ANALYSIS & HYDROMETER ANALYSIS RESULTS - NZS 4402:1986, Test 2.8.1 & 2.8.4

Description	Fraction Range	% Within Range	Description	Fraction Range	% Within Range
Coarse Gravel	60.0 mm to 20.0 mm	-	Fine Sand	200 µm to 60 µm	18
Medium Gravel	20.0 mm to 6.0 mm	-	Coarse Silt	60 µm to 20 µm	56
Fine Gravel	6.0 mm to 2.00 mm	1	Medium Silt	20 µm to 6 µm	15
Coarse Sand	2.00 mm to 600 µm	1	Fine Silt	6 µm to 2 µm	5
Medium Sand	600 µm to 200 µm	1	Clay	< 2 µm	3

WATER CONTENT & PLASTICITY INDEX RESULTS - NZS 4402:1986, Test 2.1, 2.2, 2.3 &2.4

Water Content: ("All In" As Received)	**2.0 %**
Liquid Limit: (LL)	**Not Applicable (NA)**
Plastic Limit: (PL)	**Non - Plastic (NP)**
Plasticity Index: (PI)	**Non - Plastic (NP)**

Note: The sample was received in a natural state. The plasticity index material tested was the fraction passing the 425 µm test sieve.

Notes:

- *Information contained in this report which is Not IANZ Accredited relates to the sample description based on NZ Geotechnical Society Guidelines 2005, the client supplied information (cs) and sampling.*
- *This report may not be reproduced except in full.*

Tested By: T. S, K.H, M.D, V.F & L.T.S **Date:** 24-Oct-24 to 14-Nov-24

Checked By: [redacted]

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P: 03 4487644, W: www.centraltesting.co.nz, E: info@centraltesting.co.nz

Reference No: CTS24W1705-6

Date: 15 November 2024

TEST REPORT – SANTANA MINERALS INVESTIGATIONS

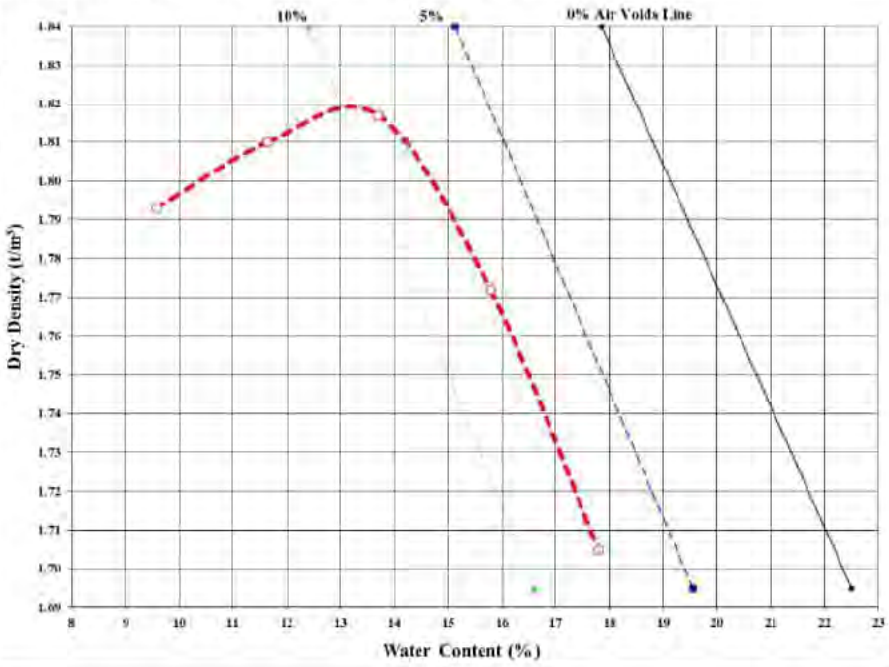
Client Details:	**Santana Minerals Limited, P.O. Box 11, Hokitika**	**Attention:**	**R. Redden**
Job Description:	**Santana Minerals Investigations**		
Sample Description:	**SILT with some sand, trace of clay & trace of gravel**	**Sample No: (cs)**	**MG 41754**
Sample Source: (cs)	**Loess**	**Sample Location: (cs)**	**5016805 - 1317923**
Date & Time Sampled:	**Unknown**	**Sampled By:**	**Unknown**
Sample Method:	**Unknown**	**Date Received:**	**30-Aug-24**

NZ STANDARD COMPACTION - NZS 4402:1986, Test 4.1.1

% Retained (+19.0mm Fraction)	**0.0 %**
Solid Density: (-19.0mm Fraction)	**2.74 t/m³**
Maximum Dry Density:	**1.82 t/m³**
Optimum Water Content:	**13.0 %**

Notes:

- *The sample was received in a natural state.*
- *The material tested in the NZ Standard Compaction test was whole soil.*
- *The air voids lines were calculated from the tested solid density above.*



Notes:

- *Information contained in this report which is Not IANZ Accredited relates to the sample description based on NZ Geotechnical Society Guidelines 2005, the client supplied information (cs) and sampling.*
- *This report may not be reproduced except in full.*

Tested By: T. S, K.H, M.D, V.F & L.T.S **Date:** 24-Oct-24 to 14-Nov-24

Checked By: [redacted]

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Central Testing Services
18 Ngapara St, P.O. Box 397, Alexandra 9340, Central Otago, New Zealand
P: 03 4487644, W: www.centraltesting.co.nz, E: info@centraltesting.co.nz

Reference No: CTS24W1705-7

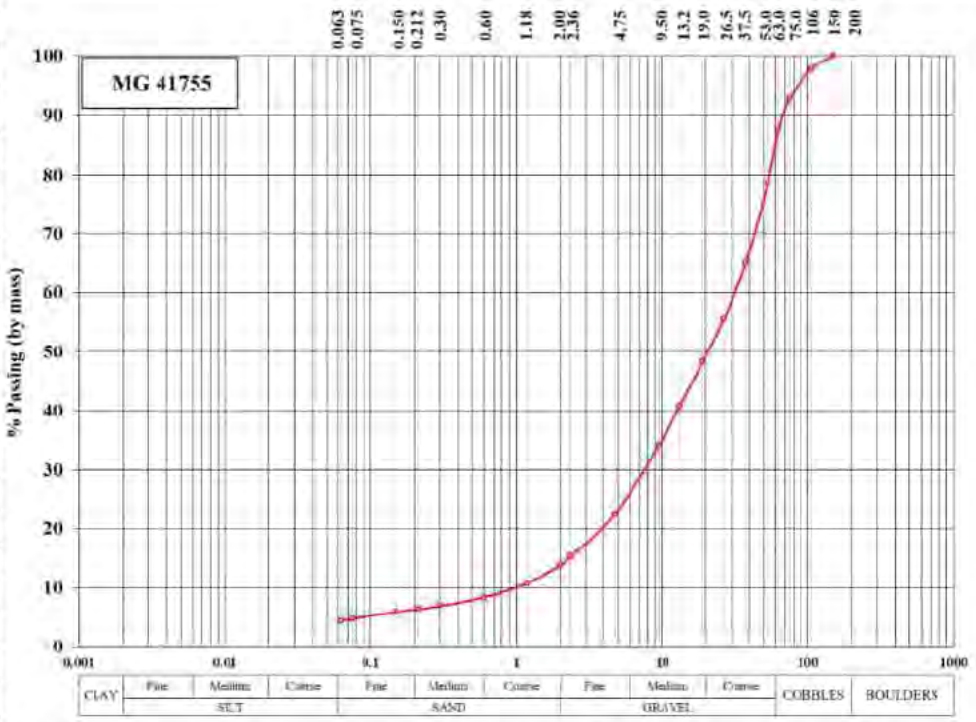
Date: 25 November 2024

TEST REPORT – SANTANA MINERALS INVESTIGATIONS

Client Details:	**Santana Minerals Limited, P.O. Box 11, Hokitika**	**Attention:**	**R. Redden**
Job Description:	**Santana Minerals Investigations**		
Sample Description:	**GRAVEL with some cobbles, minor sand & trace of silt**	**Sample No: (cs)**	**MG 41755**
Sample Source: (cs)	**Weathered brown schist x2**	**Sample Location: (cs)**	**5017377 - 1317920**
Date & Time Sampled:	**Unknown**	**Sampled By:**	**Unknown**
Sample Method:	**Unknown**	**Date Received:**	**30-Aug-24**

PARTICLE SIZE ANALYSIS (NZS 4402:1986, Test 2.8.1)

Test Sieve (mm)	% Passing (by mass)
150.0	100
106.0	98
75.0	93
63.0	88
53.0	79
37.5	65
26.5	56
19.0	48
13.2	41
9.50	34
4.75	22
2.36	15
2.00	14
1.18	11
0.60	8
0.30	7
0.212	6
0.150	6
0.075	5
0.063	4



The sample was received in a natural state. The percentage passing the 63μm test sieve was obtained by difference.

WATER CONTENT & PLASTICITY INDEX RESULTS - NZS 4402:1986, Test 2.1, 2.2, 2.3 &2.4	
Water Content: ("All In" As Received)	**1.2 %**
Liquid Limit: (LL)	**31**
Plastic Limit: (PL)	**27**
Plasticity Index: (PI)	**4**
Note: The sample was received in a natural state. The plasticity index material tested was the fraction passing the 425 μm test sieve.	

Notes:

- *Information contained in this report which is Not IANZ Accredited relates to the sample description based on NZ Geotechnical Society Guidelines 2005, the client supplied information (cs) and sampling.*
- *This report may not be reproduced except in full.*

Tested By: T. Shaw, K. Hedges, L.T. Smith & V. Fawcett **Date:** 6 to 18-Nov-24

Checked By: [redacted]

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P: 03 4487644, W: www.centraltesting.co.nz, E: info@centraltesting.co.nz

Reference No: CTS24W1705-7

Date: 25 November 2024

TEST REPORT – SANTANA MINERALS INVESTIGATIONS

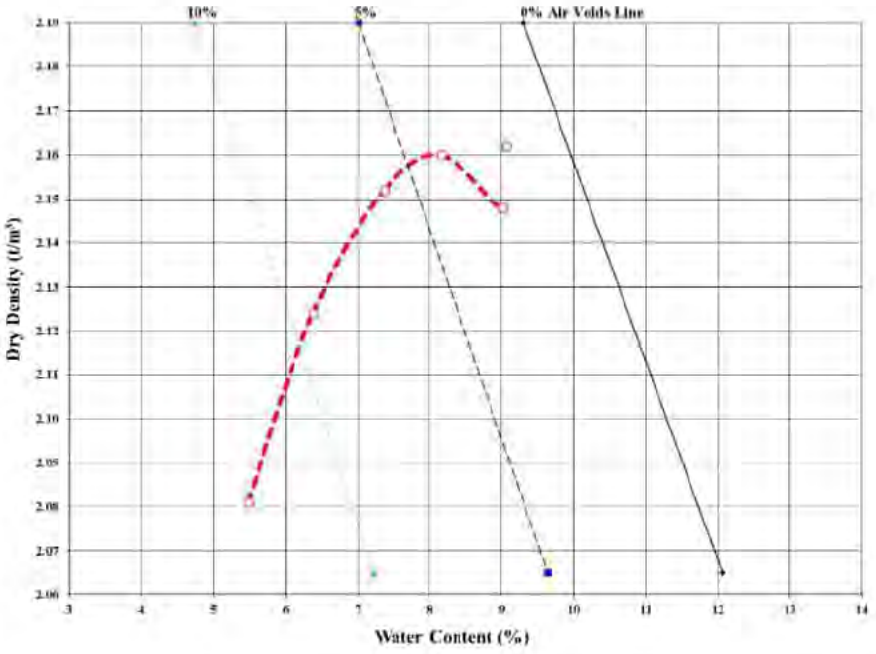
Client Details:	**Santana Minerals Limited, P.O. Box 11, Hokitika**	**Attention:**	**R. Redden**
Job Description:	**Santana Minerals Investigations**		
Sample Description:	**GRAVEL with some cobbles, minor sand & trace of silt**	**Sample No: (cs)**	**MG 41755**
Sample Source: (cs)	**Weathered brown schist x2**	**Sample Location: (cs)**	**5017377 - 1317920**
Date & Time Sampled:	**Unknown**	**Sampled By:**	**Unknown**
Sample Method:	**Unknown**	**Date Received:**	**30-Aug-24**

NZ STANDARD COMPACTION - NZS 4402:1986, Test 4.1.1
DRY DENSITY & ABSORPTION - NZS 3111:1986, Test 12

% Retained (+19.0mm Fraction)	**52.0 %**
Dry Density: (+19.0mm Fraction)	**2.60 t/m³**
Absorption (+19.0mm Fraction)	**2.3 %**
Solid Density: (-19.0mm Fraction)	**2.72 t/m³**
Maximum Dry Density: (-19.0mm Fraction)	**2.16 t/m³**
Optimum Water Content: (-19.0mm Fraction)	**8.0 %**

Notes:

- *The sample was received in a natural state.*
- *The material tested in the NZ Standard Compaction test was the fraction passing a 19.0mm test sieve.*
- *The air voids lines were calculated from the tested solid density above.*



Notes:

- *Information contained in this report which is Not IANZ Accredited relates to the sample description based on NZ Geotechnical Society Guidelines 2005, the client supplied information (cs) and sampling.*
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Tested By: T. Shaw, K. Hedges, L.T. Smith & V. Fawcett **Date:** 6 to 18-Nov-24

Checked By: [redacted]

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P: 03 4487644, W: www.centraltesting.co.nz, E: info@centraltesting.co.nz

Reference No: CTS24W1705-8

Date: 25 November 2024

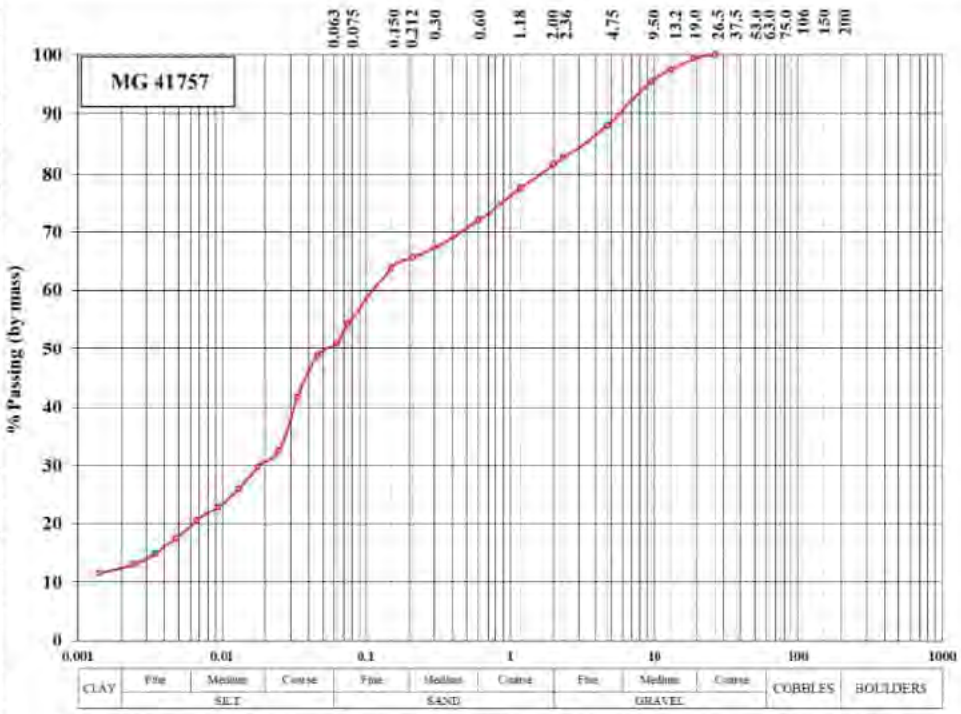
TEST REPORT – SANTANA MINERALS INVESTIGATIONS

Client Details:	**Santana Minerals Limited, P.O. Box 11, Hokitika**	**Attention:**	**R. Redden**
Job Description:	**Santana Minerals Investigations**		
Sample Description:	**Sandy SILT with some gravel & some clay, organics present**	**Sample No: (cs)**	**MG 41757**
Sample Source: (cs)	**Topsoil x3**	**Sample Location: (cs)**	**5017501 - 1317967**
Date & Time Sampled:	**Unknown**	**Sampled By:**	**Unknown**
Sample Method:	**Unknown**	**Date Received:**	**30-Aug-24**

PARTICLE SIZE ANALYSIS (NZS 4402:1986, Test 2.8.1 & 2.8.4)

Test Sieve (mm)	% Passing (by mass)
53.0	
37.5	
26.5	100
19.0	99
13.2	97
9.50	95
4.75	88
2.36	83
2.00	82
1.18	77
0.60	72
0.30	67
0.212	66
0.150	64
0.075	54
0.063	51

Fraction Size	Interpolated % Passing
60 µm	51
20 µm	31
6 µm	19
2 µm	12



The sample was received in a natural state. The percentage passing the 63µm test sieve was obtained by difference. The pH of the hydrometer suspension was 9.5. Sodium hexametaphosphate was used as a dispersant.

PARTICLE SIZE ANALYSIS & HYDROMETER ANALYSIS RESULTS - NZS 4402:1986, Test 2.8.1 & 2.8.4

Description	Fraction Range	% Within Range	Description	Fraction Range	% Within Range
Coarse Gravel	60.0 mm to 20.0 mm	1	Fine Sand	200 µm to 60 µm	14
Medium Gravel	20.0 mm to 6.0 mm	9	Coarse Silt	60 µm to 20 µm	20
Fine Gravel	6.0 mm to 2.00 mm	8	Medium Silt	20 µm to 6 µm	12
Coarse Sand	2.00 mm to 600 µm	10	Fine Silt	6 µm to 2 µm	7
Medium Sand	600 µm to 200 µm	7	Clay	< 2 µm	12

WATER CONTENT, SOLID DENSITY & ORGANIC CONTENT RESULTS - NZS 4402:1986, Test 2.1, 2.7.1 & 3.1.2

Water Content: ("All In" As Received)	**20.7 %**
Solid Density:	**2.61 t/m^3**
Organic Content:	**1.66 %**
Note: The sample was received in a natural state.	

Notes:

- *Information contained in this report which is Not IANZ Accredited relates to the sample description based on NZ Geotechnical Society Guidelines 2005, the client supplied information (cs) and sampling.*
- *This report may not be reproduced except in full.*

Tested By: K. Hedges, V. Fawcett, L.T. Smith & C. Henderson **Date:** 6 to 14-Nov-24

Checked By:
Approved Signatory

[redacted]

L.T. Smith
Key Technical Personnel

ACCREDITED IANZ TESTING LABORATORY №434

Test results indicated as not accredited are outside the scope of the laboratory's accreditation

Central Testing Services
18 Ngapara St, P.O. Box 397, Alexandra 9340, Central Otago, New Zealand
P: 03 4487644, W: www.centraltesting.co.nz, E: info@centraltesting.co.nz

Reference No: CTS24W1705-7

Date: 25 November 2024

TEST REPORT – SANTANA MINERALS INVESTIGATIONS

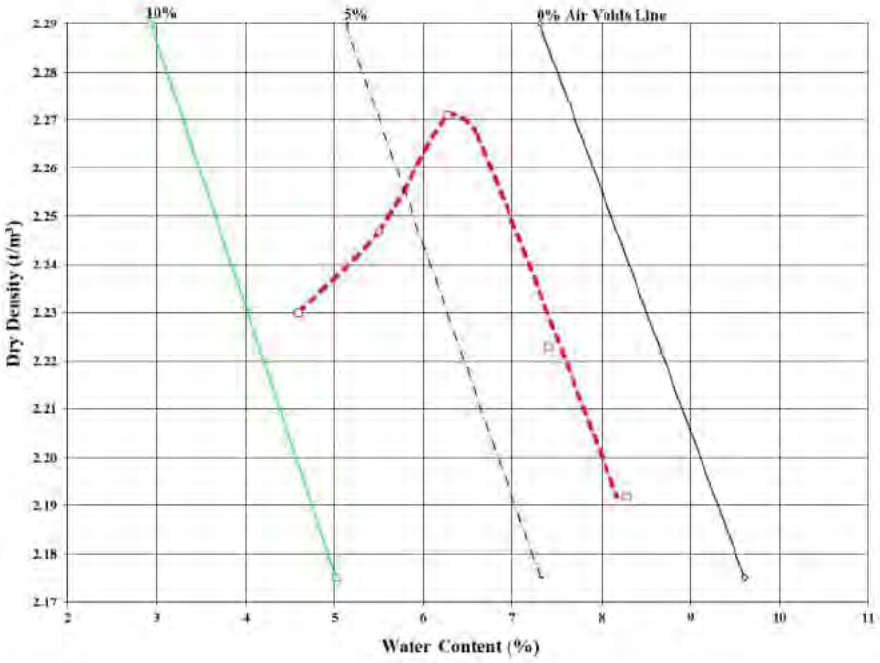
Client Details:	**Santana Minerals Limited, P.O. Box 11, Hokitika**	**Attention:**	**R. Redden**
Job Description:	**Santana Minerals Investigations**		
Sample Description:	**GRAVEL with some cobbles, minor sand & trace of silt**	**Sample No: (cs)**	**MG 41755**
Sample Source: (cs)	**Weathered brown schist x2**	**Sample Location: (cs)**	**5017377 - 1317920**
Date & Time Sampled:	**Unknown**	**Sampled By:**	**Unknown**
Sample Method:	**Unknown**	**Date Received:**	**30-Aug-24**

NZ HEAVY COMPACTION - NZS 4402:1986, Test 4.1.2
DRY DENSITY & ABSORPTION - NZS 3111:1986, Test 12

% Retained (+19.0mm Fraction)	**52.0 %**
Dry Density: (+19.0mm Fraction)	**2.60 t/m³**
Absorption (+19.0mm Fraction)	**2.3 %**
Solid Density: (-19.0mm Fraction)	**2.72 t/m³**
Maximum Dry Density: (-19.0mm Fraction)	**2.27 t/m³**
Optimum Water Content: (-19.0mm Fraction)	**6.5 %**

Notes:

- *The sample was received in a natural state.*
- *The material tested in the NZ Heavy Compaction test was the fraction passing a 19.0mm test sieve.*
- *The air voids lines were calculated from the tested solid density above.*



Notes:

- *Information contained in this report which is Not IANZ Accredited relates to the sample description based on NZ Geotechnical Society Guidelines 2005, the client supplied information (cs) and sampling.*
- *This report may not be reproduced except in full.*

Tested By: T. Shaw, K. Hedges, L.T. Smith & V. Fawcett **Date:** 6 to 18-Nov-24

Checked By: [redacted]

Approved Signatory

[redacted]

L.T. Smith
Key Technical Personnel

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Reference No: CTS24W1705-9

Date: 25 November 2024

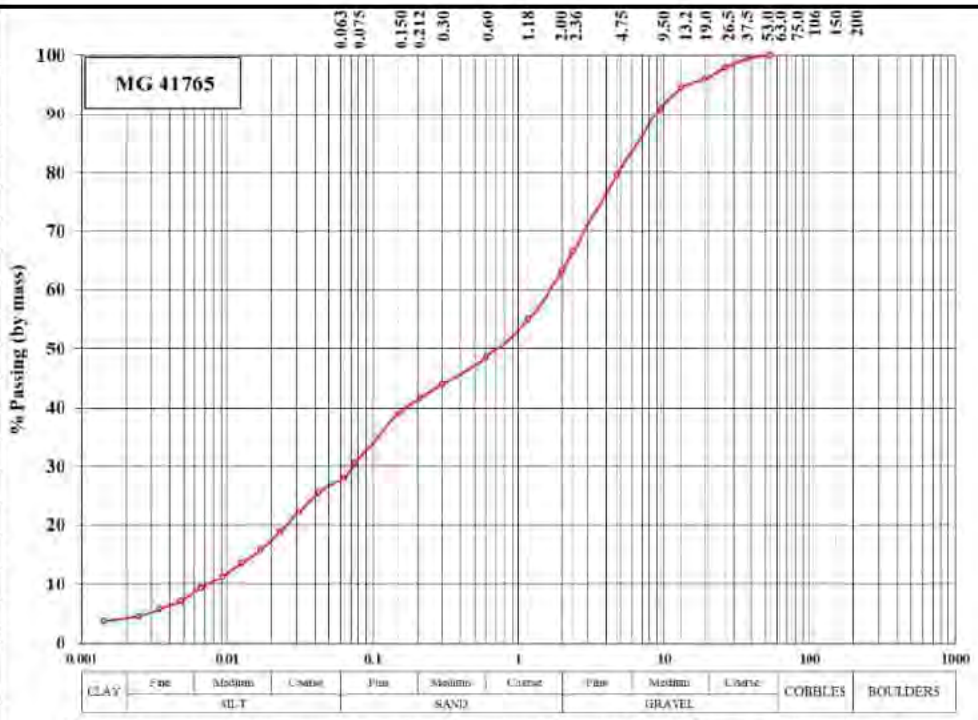
TEST REPORT – SANTANA MINERALS INVESTIGATIONS

Client Details:	**Santana Minerals Limited, P.O. Box 11, Hokitika**	**Attention:**	**R. Redden**
Job Description:	**Santana Minerals Investigations**		
Sample Description:	**Silty Sandy GRAVEL with trace of clay**	**Sample No: (cs)**	**MG 41765**
Sample Source: (cs)	**Alluvium / colluvium**	**Sample Location:**	**Not Stated**
Date & Time Sampled:	**Unknown**	**Sampled By:**	**Unknown**
Sample Method:	**Unknown**	**Date Received:**	**30-Aug-24**

PARTICLE SIZE ANALYSIS (NZS 4402:1986, Test 2.8.1 & 2.8.4)

Test Sieve (mm)	% Passing (by mass)
53.0	100
37.5	99
26.5	98
19.0	96
13.2	94
9.50	91
4.75	80
2.36	67
2.00	63
1.18	55
0.60	49
0.30	44
0.212	42
0.150	39
0.075	30
0.063	28

Fraction Size	Interpolated % Passing
60 µm	28
20 µm	17
6 µm	9
2 µm	4



The sample was received in a natural state. The percentage passing the 63µm test sieve was obtained by difference. The pH of the hydrometer suspension was 10.0. Sodium hexametaphosphate was used as a dispersant.

PARTICLE SIZE ANALYSIS & HYDROMETER ANALYSIS RESULTS - NZS 4402:1986, Test 2.8.1 & 2.8.4

Description	Fraction Range	% Within Range	Description	Fraction Range	% Within Range
Coarse Gravel	60.0 mm to 20.0 mm	4	Fine Sand	200 µm to 60 µm	13
Medium Gravel	20.0 mm to 6.0 mm	13	Coarse Silt	60 µm to 20 µm	11
Fine Gravel	6.0 mm to 2.00 mm	20	Medium Silt	20 µm to 6 µm	8
Coarse Sand	2.00 mm to 600 µm	14	Fine Silt	6 µm to 2 µm	5
Medium Sand	600 µm to 200 µm	8	Clay	< 2 µm	4

PLASTICITY INDEX RESULTS - NZS 4402:1986, Test 2.2, 2.3 &2.4

Liquid Limit: (LL)	**43**
Plastic Limit: (PL)	**34**
Plasticity Index: (PI)	**9**

Note: The sample was received in a natural state. The plasticity index material tested was the fraction passing the 425 µm test sieve.

Notes:

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Tested By: K. Hedges, V. Fawcett & L.T. Smith **Date:** 8 to 14-Nov-24

Checked By: [redacted]

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Central Testing Services
18 Ngapara St, P.O. Box 397, Alexandra 9340, Central Otago, New Zealand
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Reference No: CTS24W1705-9

Date: 25 November 2024

TEST REPORT – SANTANA MINERALS INVESTIGATIONS

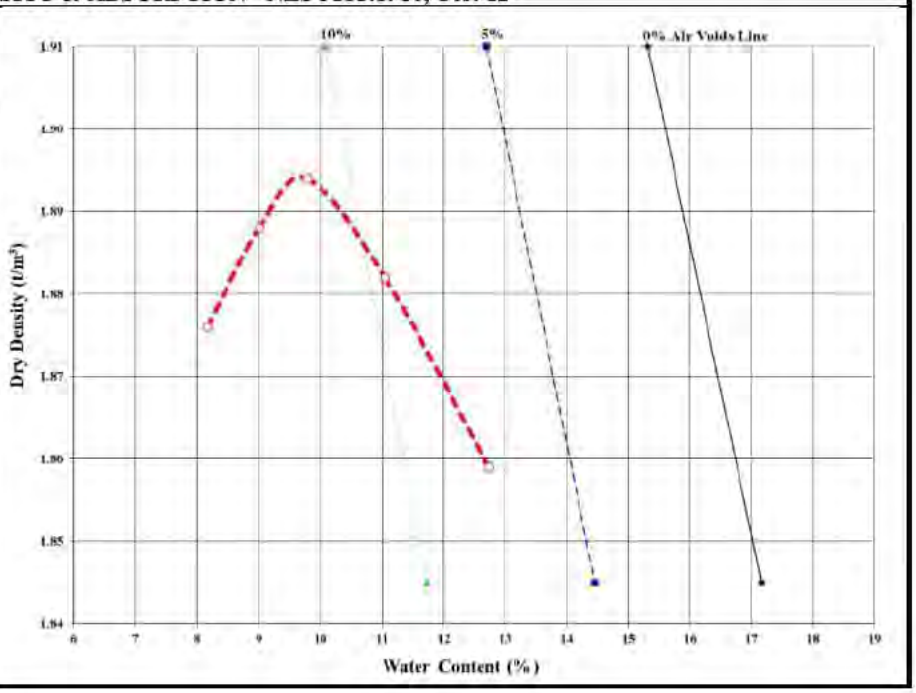
Client Details:	**Santana Minerals Limited, P.O. Box 11, Hokitika**	**Attention:**	**R. Redden**
Job Description:	**Santana Minerals Investigations**		
Sample Description:	**Silty Sandy GRAVEL with trace of clay**	**Sample No: (cs)**	**MG 41765**
Sample Source: (cs)	**Alluvium / colluvium**	**Sample Location:**	**Not Stated**
Date & Time Sampled:	**Unknown**	**Sampled By:**	**Unknown**
Sample Method:	**Unknown**	**Date Received:**	**30-Aug-24**

NZ STANDARD COMPACTION - NZS 4402:1986, Test 4.1.1
DRY DENSITY & ABSORPTION - NZS 3111:1986, Test 12

% Retained (+19.0mm Fraction)	**4.0 %**
Solid Density: (-19.0mm Fraction)	**2.70 t/m³**
Maximum Dry Density: (-19.0mm Fraction)	**1.89 t/m³**
Optimum Water Content: (-19.0mm Fraction)	**10.0 %**

Notes:

- *The sample was received in a natural state.*
- *The material tested in the NZ Standard Compaction test was the fraction passing a 19.0mm test sieve.*
- *The air voids lines were calculated from the tested solid density above.*



Notes:

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Tested By: K. Hedges, V. Fawcett & L.T. Smith **Date:** 8 to 14-Nov-24

Checked By: [redacted]

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P: 03 4487644, W: www.centraltesting.co.nz, E: info@centraltesting.co.nz

Reference No: CTS24W1705-9

Date: 25 November 2024

TEST REPORT – SANTANA MINERALS INVESTIGATIONS

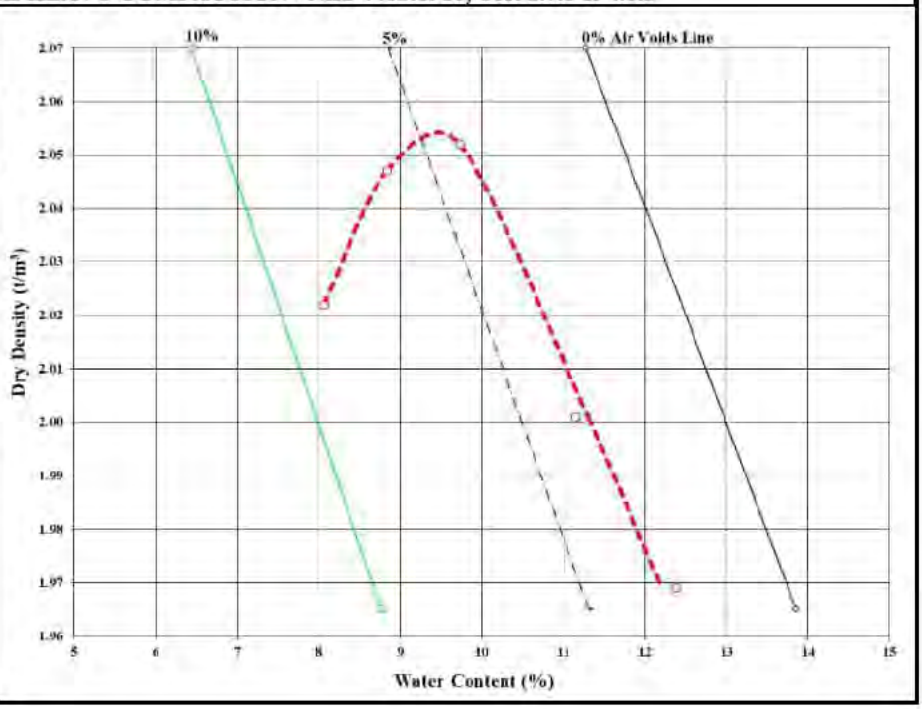
Client Details:	**Santana Minerals Limited, P.O. Box 11, Hokitika**	**Attention:**	**R. Redden**
Job Description:	**Santana Minerals Investigations**		
Sample Description:	**Silty Sandy GRAVEL with trace of clay**	**Sample No: (cs)**	**MG 41765**
Sample Source: (cs)	**Alluvium / colluvium**	**Sample Location:**	**Not Stated**
Date & Time Sampled:	**Unknown**	**Sampled By:**	**Unknown**
Sample Method:	**Unknown**	**Date Received:**	**30-Aug-24**

SOLID DENSITY & NZ HEAVY COMPACTION - NZS 4402:1986, Test 2.7.1 & 4.1.2

% Retained (+19.0mm Fraction)	**4.0 %**
Solid Density: (-19.0mm Fraction)	**2.70 t/m³**
Maximum Dry Density: (-19.0mm Fraction)	**2.05 t/m³**
Optimum Water Content: (-19.0mm Fraction)	**9.5 %**

Notes:

- *The sample was received in a natural state.*
- *The material tested in the NZ Heavy Compaction test was the fraction passing a 19.0mm test sieve.*
- *The air voids lines were calculated from the tested solid density above.*



Notes:

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- *This report may not be reproduced except in full.*

Tested By: K. Hedges, V. Fawcett & L.T. Smith **Date:** 8 to 14-Nov-24

Checked By: [redacted]

Approved Signatory

[redacted]

L.T. Smith
Key Technical Personnel

ACCREDITED IANZ TESTING LABORATORY №434

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Central Testing Services
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P: 03 4487644, W: www.centraltesting.co.nz, E: info@centraltesting.co.nz

Reference No: CTS24W1705-6

Date: 15 November 2024

TEST REPORT – SANTANA MINERALS INVESTIGATIONS

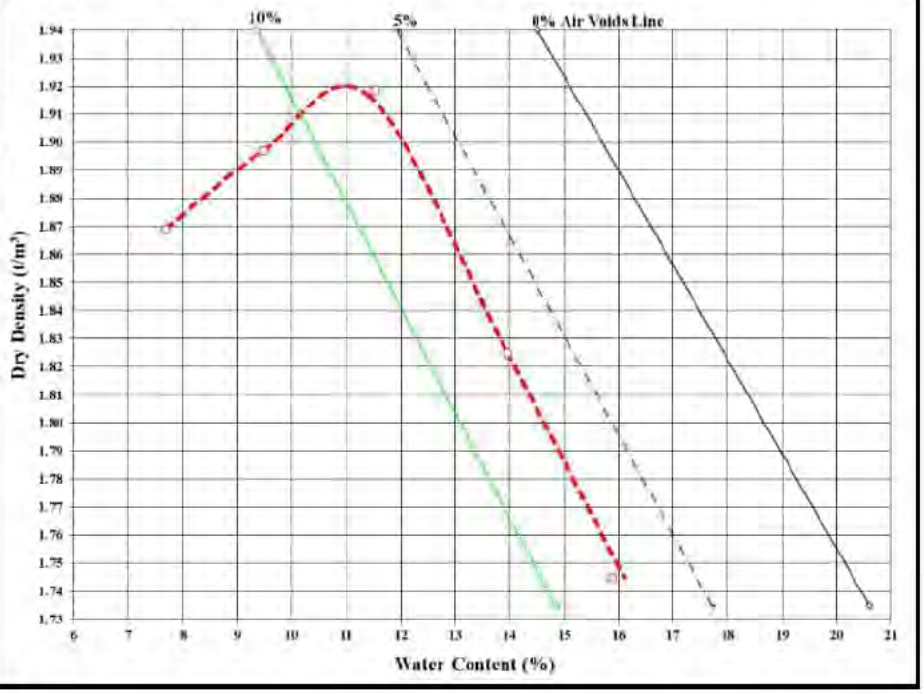
Client Details:	**Santana Minerals Limited, P.O. Box 11, Hokitika**	**Attention:**	**R. Redden**
Job Description:	**Santana Minerals Investigations**		
Sample Description:	**SILT with some sand, trace of clay & trace of gravel**	**Sample No: (cs)**	**MG 41754**
Sample Source: (cs)	**Loess**	**Sample Location: (cs)**	**5016805 - 1317923**
Date & Time Sampled:	**Unknown**	**Sampled By:**	**Unknown**
Sample Method:	**Unknown**	**Date Received:**	**30-Aug-24**

NZ HEAVY COMPACTION - NZS 4402:1986, Test 4.1.2

% Retained (+19.0mm Fraction)	**0.0 %**
Solid Density: (-19.0mm Fraction)	**2.74 t/m³**
Maximum Dry Density: (-19.0mm Fraction)	**1.92 t/m³**
Optimum Water Content: (-19.0mm Fraction)	**11.0 %**

Notes:

- *The sample was received in a natural state.*
- *The material tested in the NZ Heavy Compaction test was whole soil.*
- *The air voids lines were calculated from the tested solid density above.*



Notes:

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Tested By: T. S, K.H, M.D, V.F & L.T.S **Date:** 24-Oct-24 to 14-Nov-24

Checked By: [redacted]

Approved Signatory

[redacted]

N.P. Danischewski
Key Technical Personnel

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Test results indicated as not accredited are outside the scope of the laboratory's accreditation

APPENDIX H
Insitu Acoustic Test Results

Well Name:	MDD399
Surveys:	ATV, GR (Pre-Processing Plot)
Location:	Bendigo
Company:	Santana

Logging company

SPEIGHT DRILLING

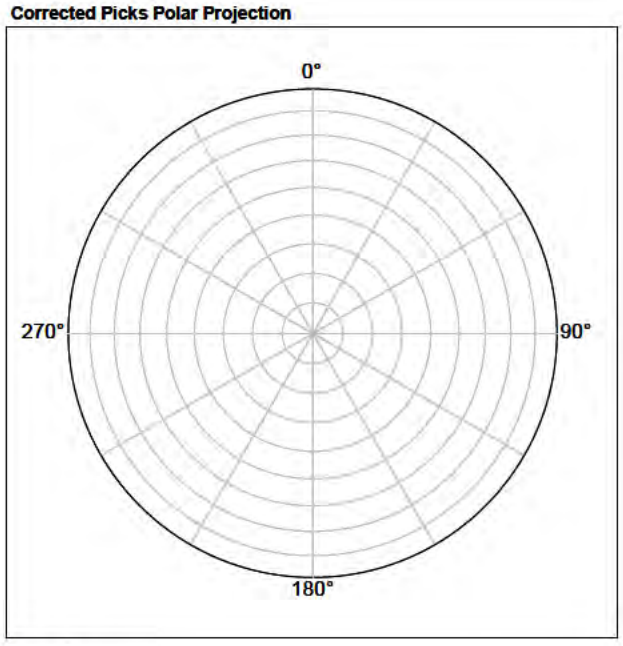
Service Company:	SPEIGHT DRILLING
Operator:	Gareth
Date Logged:	18/01/2025
Drilling Company:	SPEIGHT DRILLING
Date Drilled:	
Field:	
County / Township:	
State / Province:	
Country:	Australia

Log Measured From:	Ground Level		
Drilling Measured From:	Ground Level		
Driller Depth:	70.1	**Logger Depth:**	70.3
Inclination:	-57°	**Heading:**	360° (MN)
Easting:		**Northing:**	
Elevation:		**Grid:**	
Log Top:	0.8	**Log Bottom:**	70.3
Depth unit:	Meters	**Scale ratio:**	1 : 20

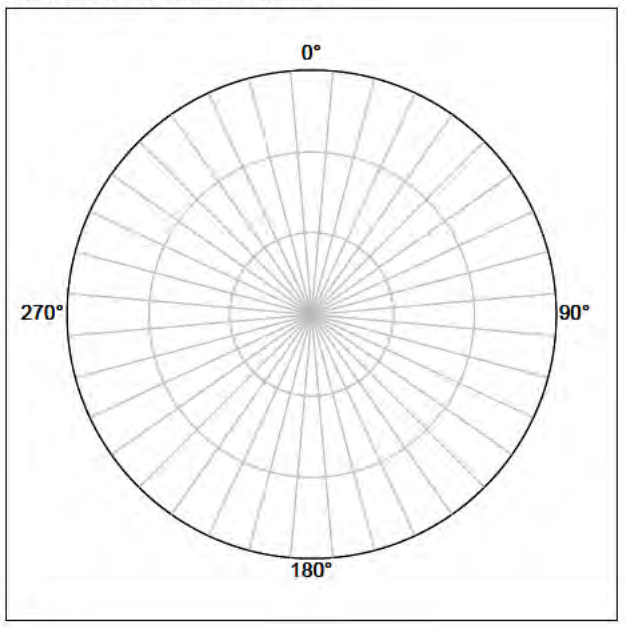
Bit Size:	Start Depth:	End Depth:	Casing:	Start Depth:	End Depth:	Winch Model:	Winch Serial:
PQ	0	33					
HQ	33	70				Wireline Length:	Depth Factor:

Remarks:

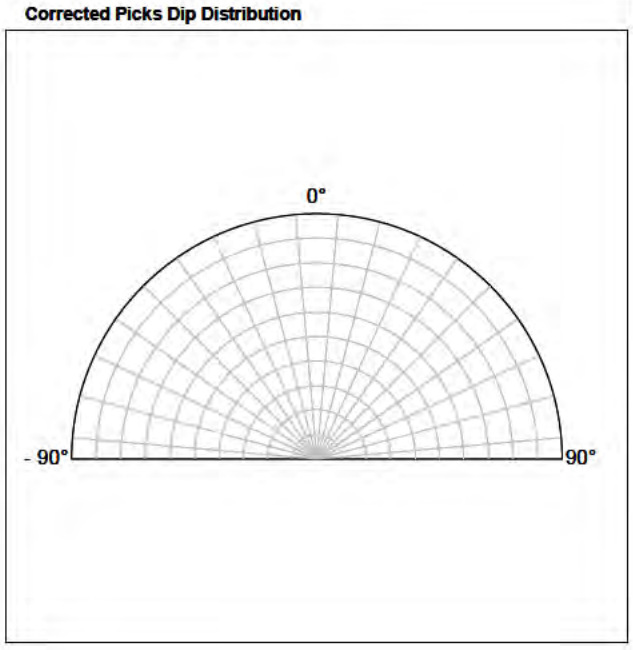
Corrected Picks Polar Projection



Corrected Picks Azimuth Distribution



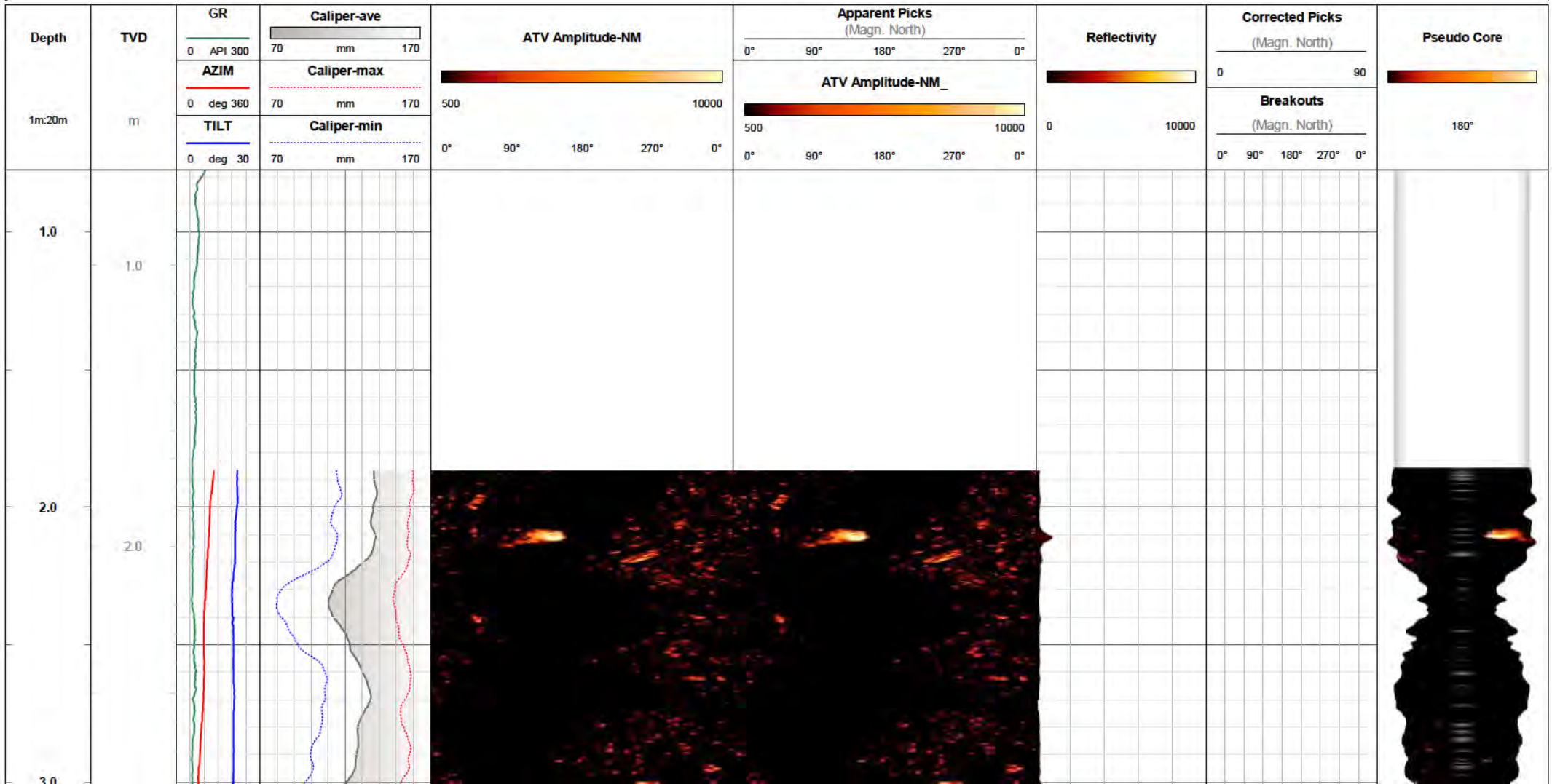
Corrected Picks Dip Distribution

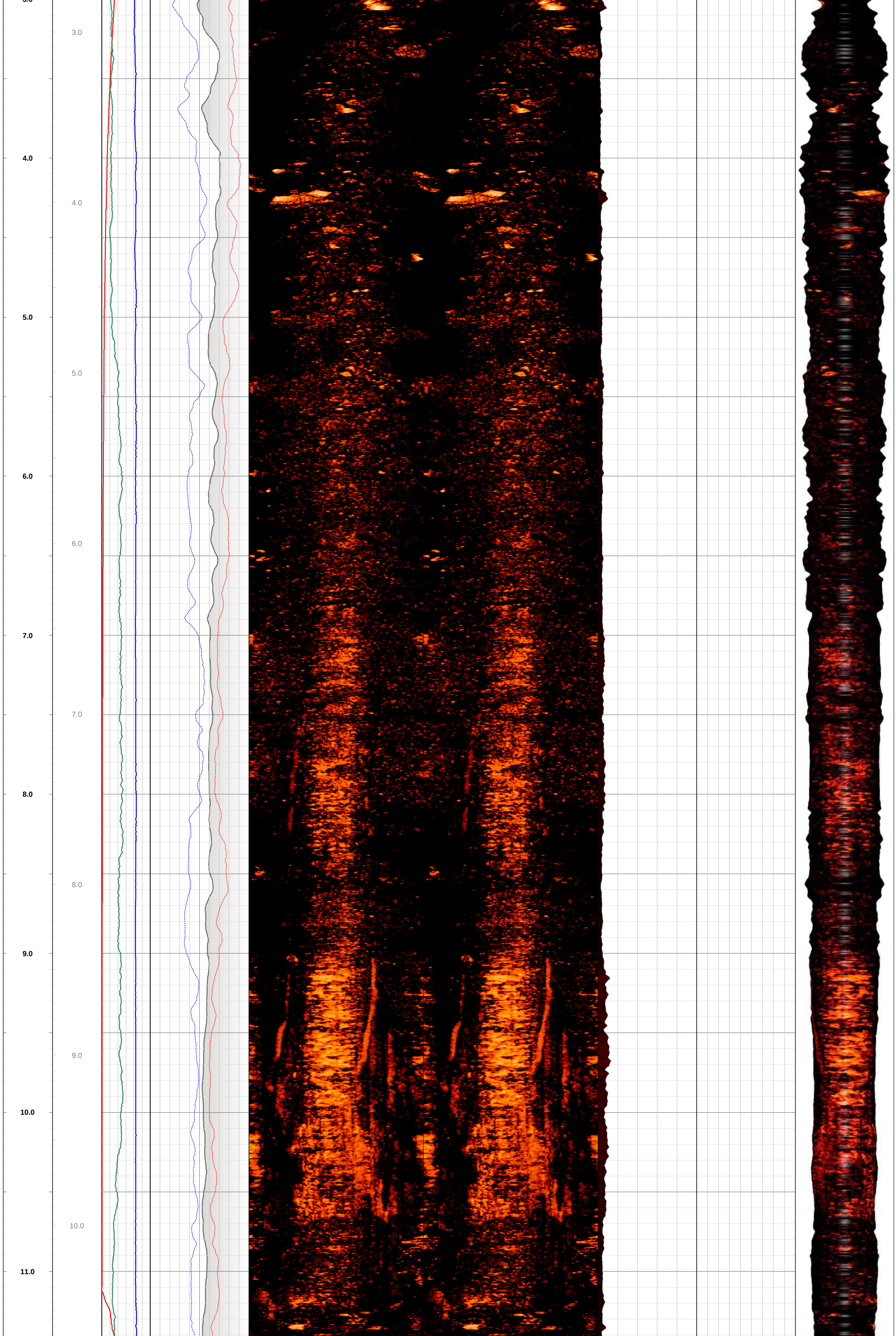


Legend:

Curve Description:

Title	Description	Top [m]	Base [m]	Tool s/n	Run / Date
Depth	Measured depth	0.8	70.3		
TVD	True vertical depth	0.8	70.3		
Tilt	Deviation from the vertical	1.9	70.3		
Azimuth	Deviation from magnetic North	1.9	70.3		
GR	Natural gamma ray	0.8	69.2	ABI/GR 2204023	Run 2 & 4, 18/01/2025
Caliper	Borehole diameter from ATV traveltime	1.9	70.3		
Apparent Picks	Uncorrected structure picks from ATV and OTV images	-	-		
ATV	ATV amplitude image	1.9	70.3	ABI/GR 220402	Run 2 & 4, 18/01/2025
OTV	OTV image	-	-		
Reflectivity	Acoustic reflectivity of the rock	1.9	70.3		
Corr. Picks	Structure picks correxcted for borehole deviation (oriented to magnetic North)	-	-		
Picks Stats	Stereonet of observed defects, features per 5m interval	-	-		
Pseudo Core	3D poresentation of ATV amp;litude, borehole radius and apparent picks	1.9	70.3		

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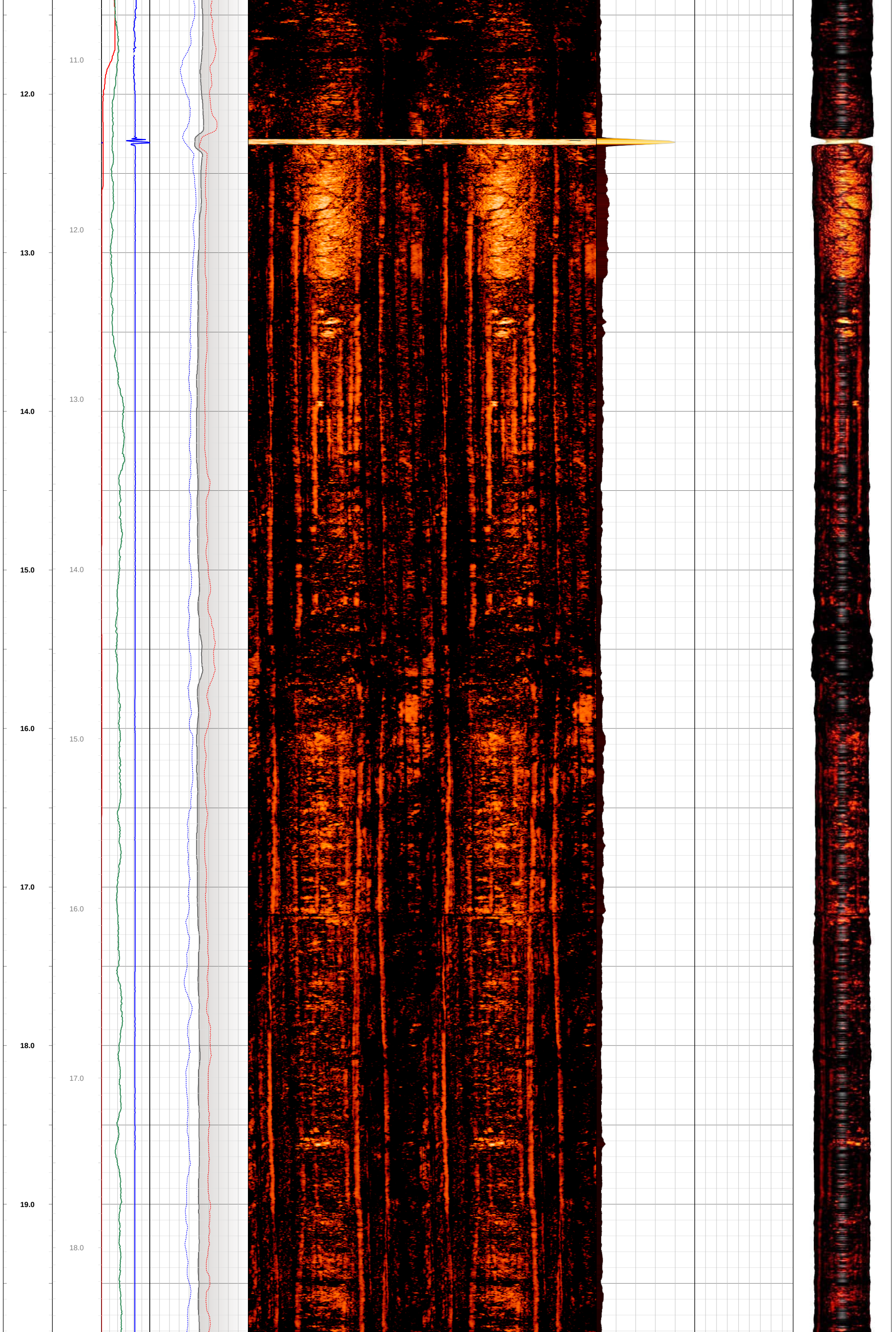
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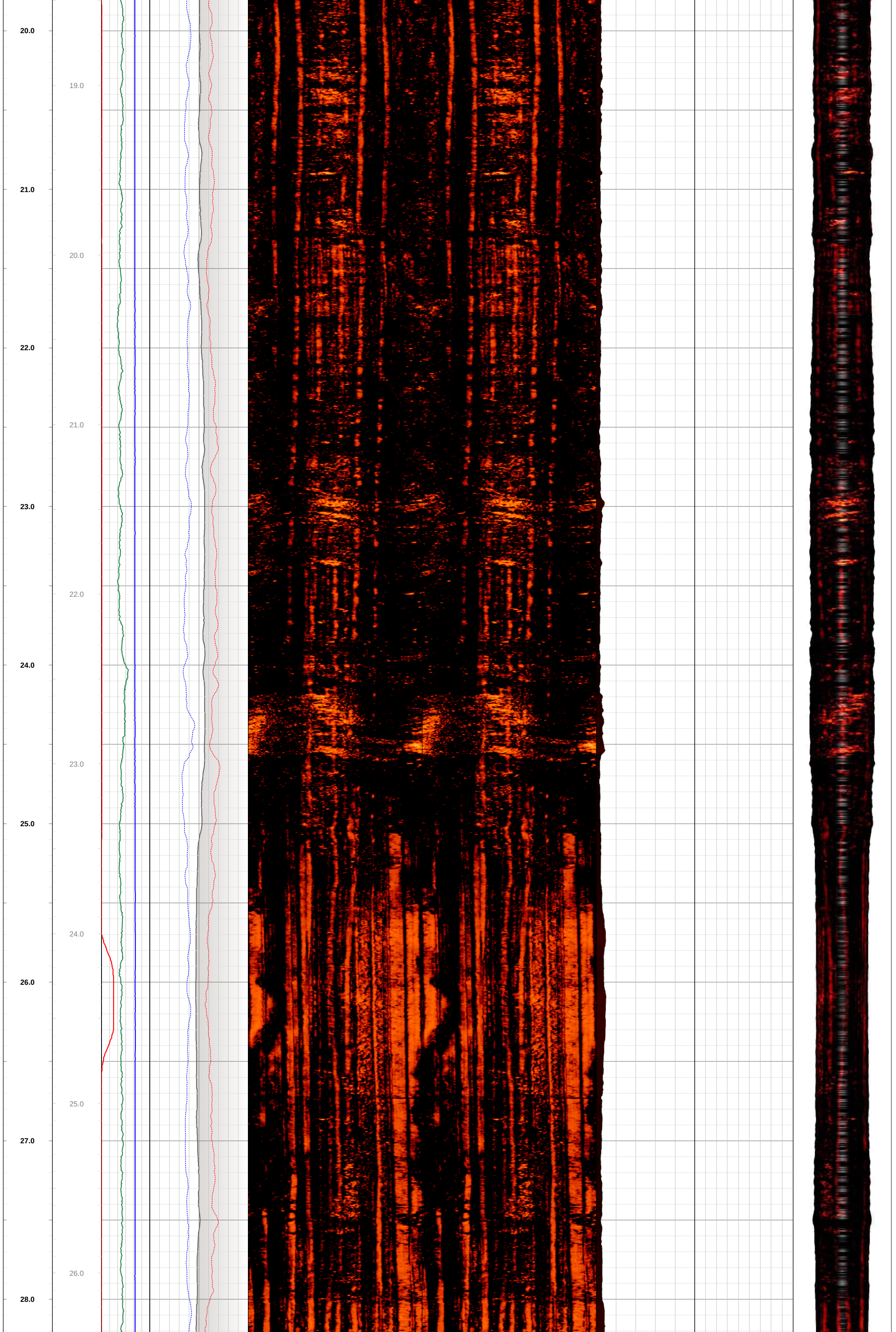
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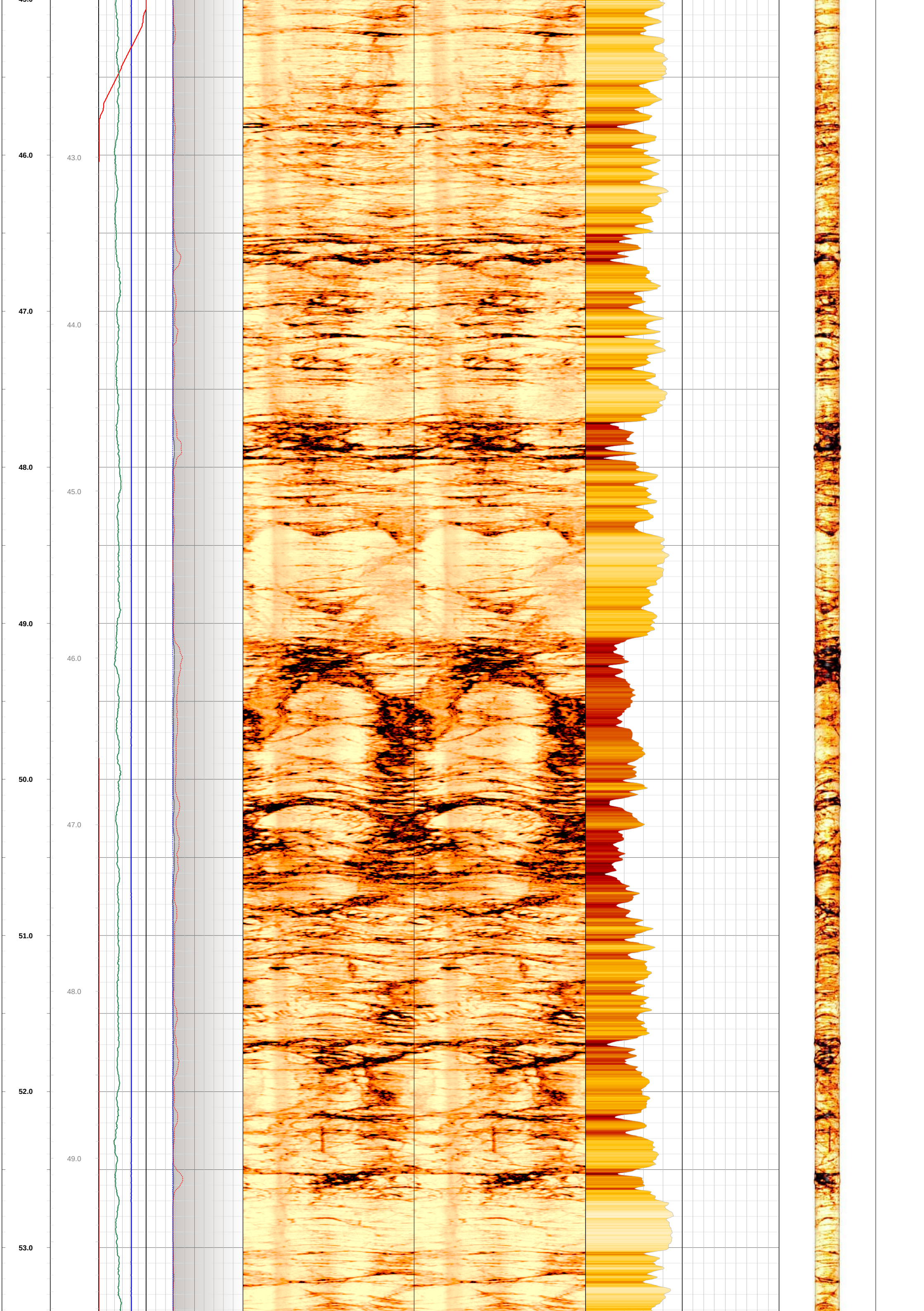
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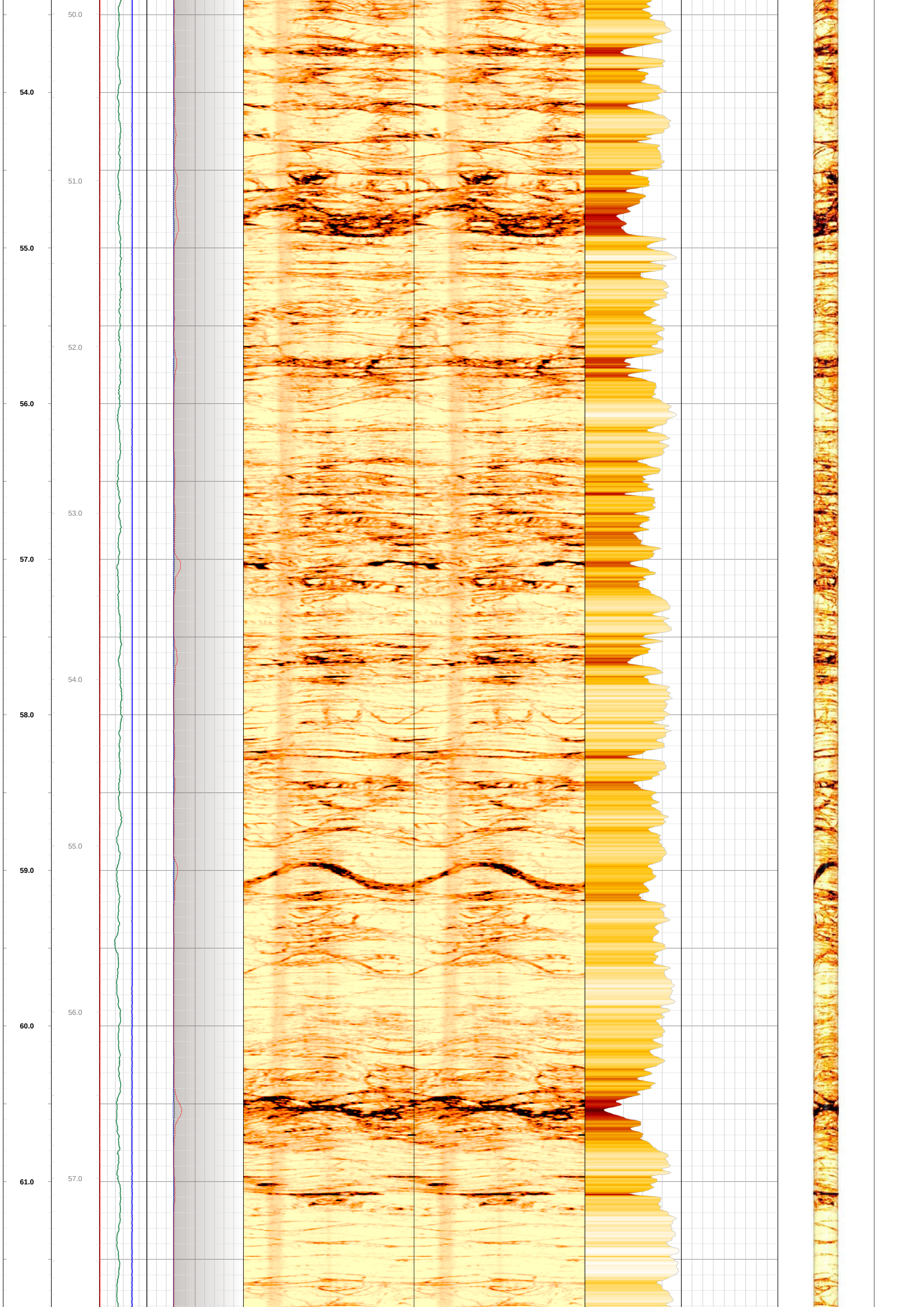
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69.0
65.0
70.0

Depth	TVD	GR	Caliper-ave	ATV Amplitude-NM	ATV Amplitude-NM_	Reflectivity	Corrected Picks	Pseudo Core
1m:20m	m	0 API 300	70 mm 170	0° 90° 180° 270° 0° 500 10000	0° 90° 180° 270° 0° 500 10000	0 10000	0° 90° 180° 270° 0° (Magn. North)	180°
		TILT: 0 deg 30	Caliper-min: 70 mm 170				Breakouts	
		AZIM: 0 deg 360	Caliper-max: 70 mm 170				0 90 (Magn. North)	
					0° 90° 180° 270° 0° (Magn. North)			

Apparent Picks

Well Name:	MDD333
Surveys:	ATV (Pre-Processing Plot)
Location:	
Company:	

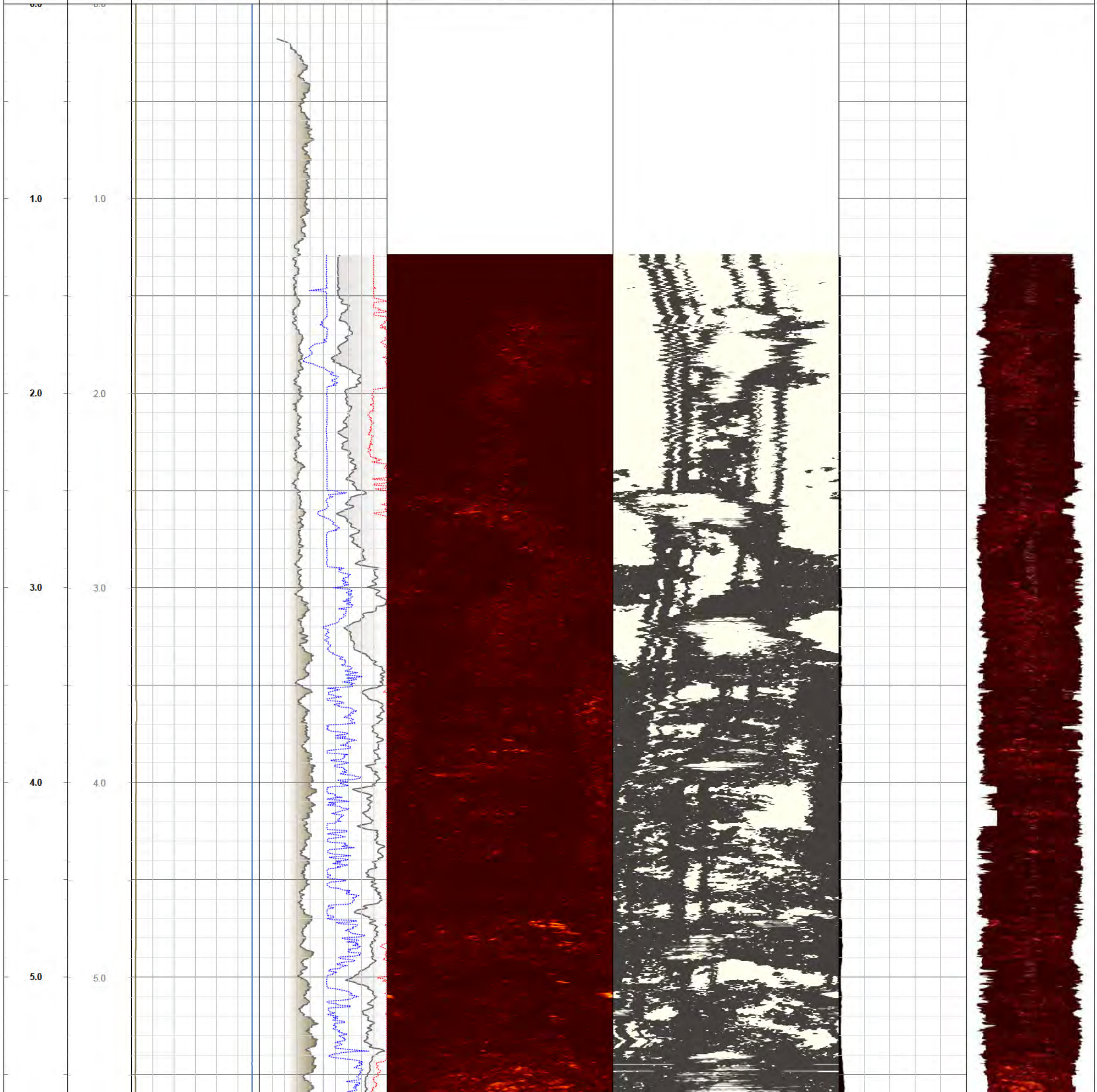
Service Company:	SPEIGHT DRILLING LTD
Operator:	Gareth
Date Logged:	15 June 2024
Drilling Company:	SPEIGHT DRILLING LTD
Date Drilled:	
Field:	
County / Township:	
State / Province:	
Country:	Australia

Log Measured From:	Ground Level		
Drilling Measured From:	Ground Level		
Driller Depth:		**Logger Depth:**	
Inclination:	-88.7°	**Heading:**	324.4° (MN)
Easting:		**Northing:**	
Elevation:		**Grid:**	
Log Top:	0.0	**Log Bottom:**	43.75
Depth unit:	Meters	**Scale ratio:**	1 : 20

Bit Size:	Start Depth:	End Depth:	Casing:	Start Depth:	End Depth:	Winch Model:	Winch Serial:
						334970	334G-042
						Wireline Length:	**Depth Factor:**
						1800	10501/1m

Remarks:

Depth	TVD	Borehole Azimuth-MN	Caliper-max	Gamma Ray	ATV Amplitude-MN	BH Radius-MN	Reflectivity	Pseudo Core
1m:20m	m	0 deg 360	50 mm 150	0 API 300	-500 12000	63 mm 65	0 10000	180°
		Borehole Tilt	Caliper-min	Caliper-ave	0° 90° 180° 270° 0°	0° 90° 180° 270° 0°		
		0 deg 60	50 mm 150	50 mm 150				



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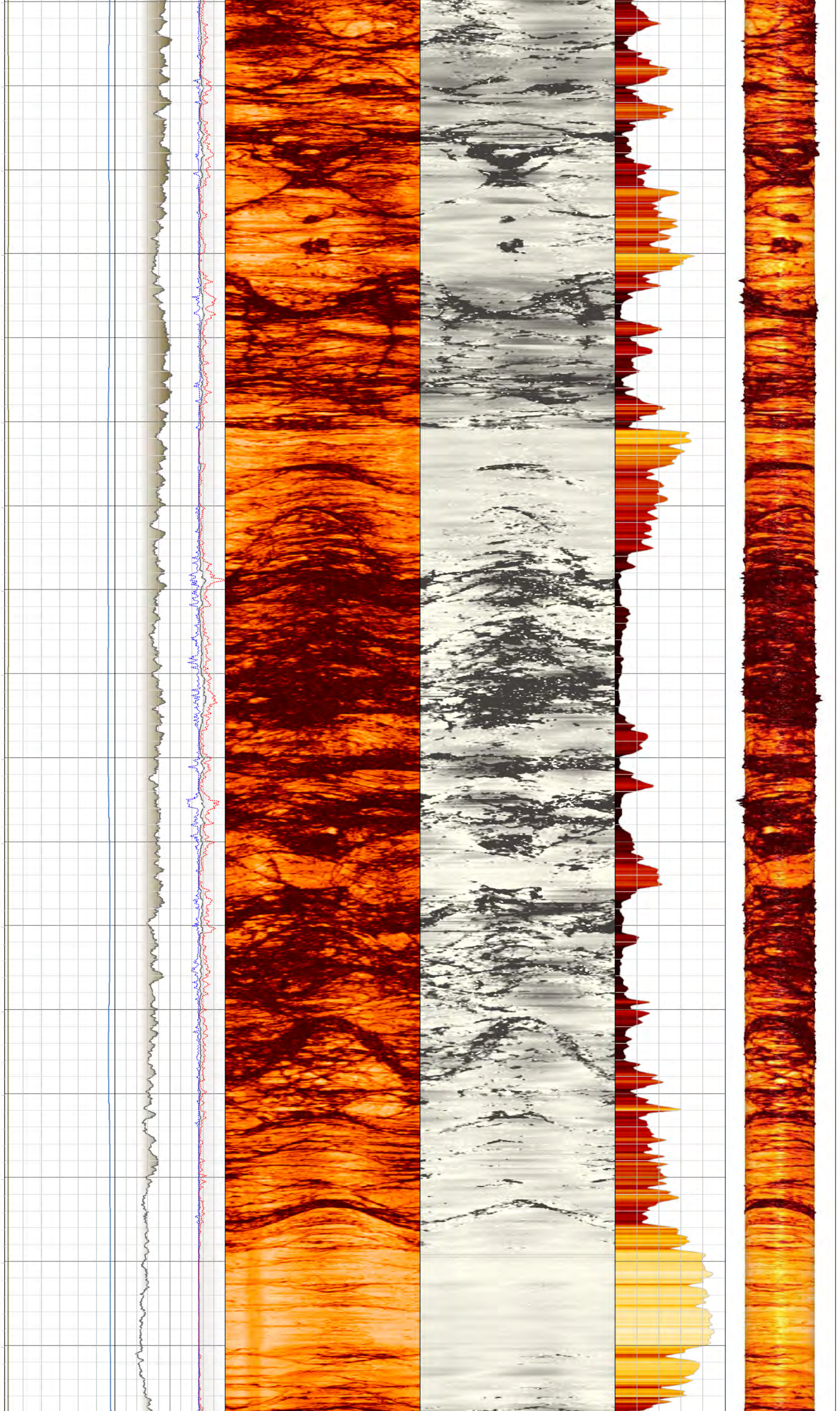

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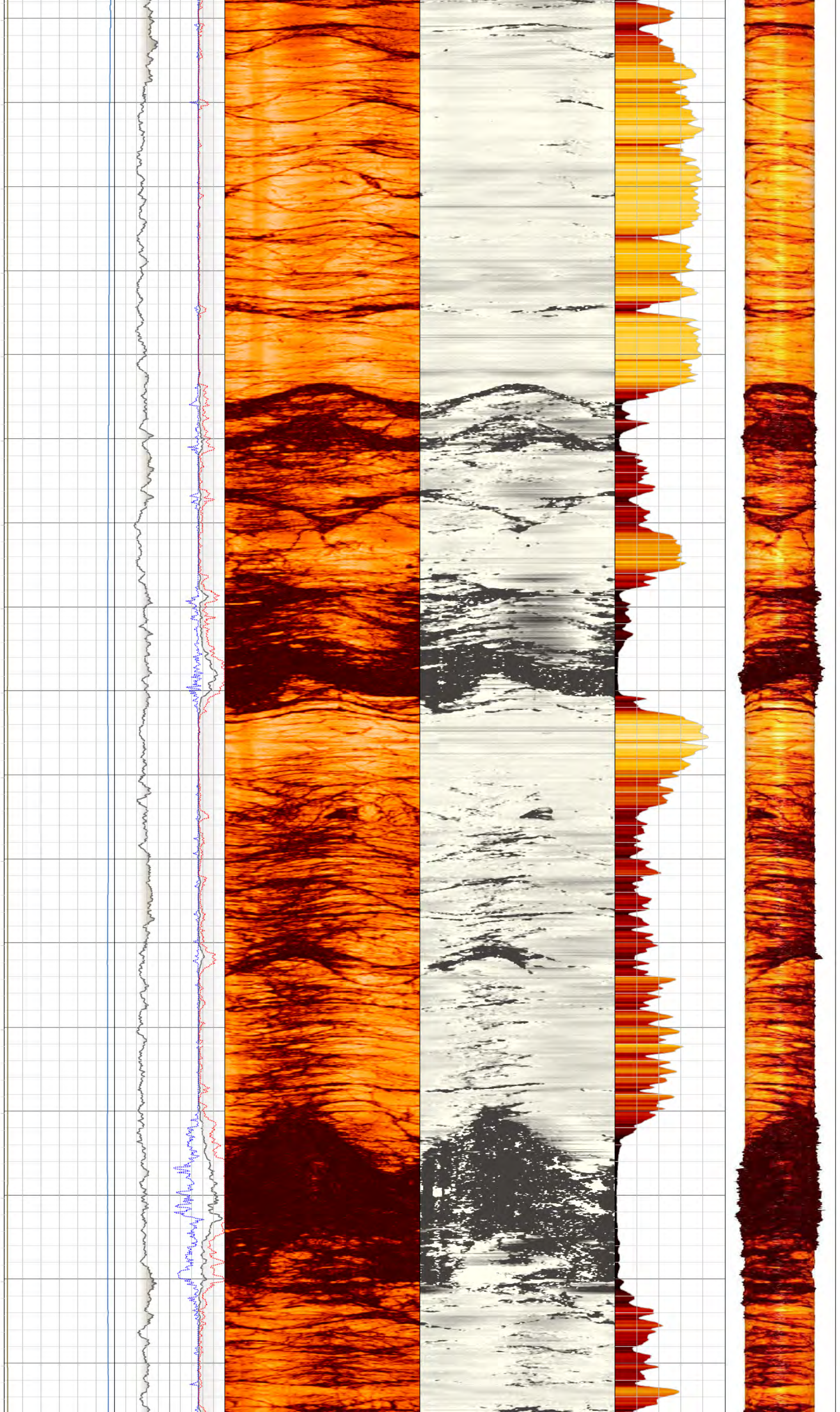

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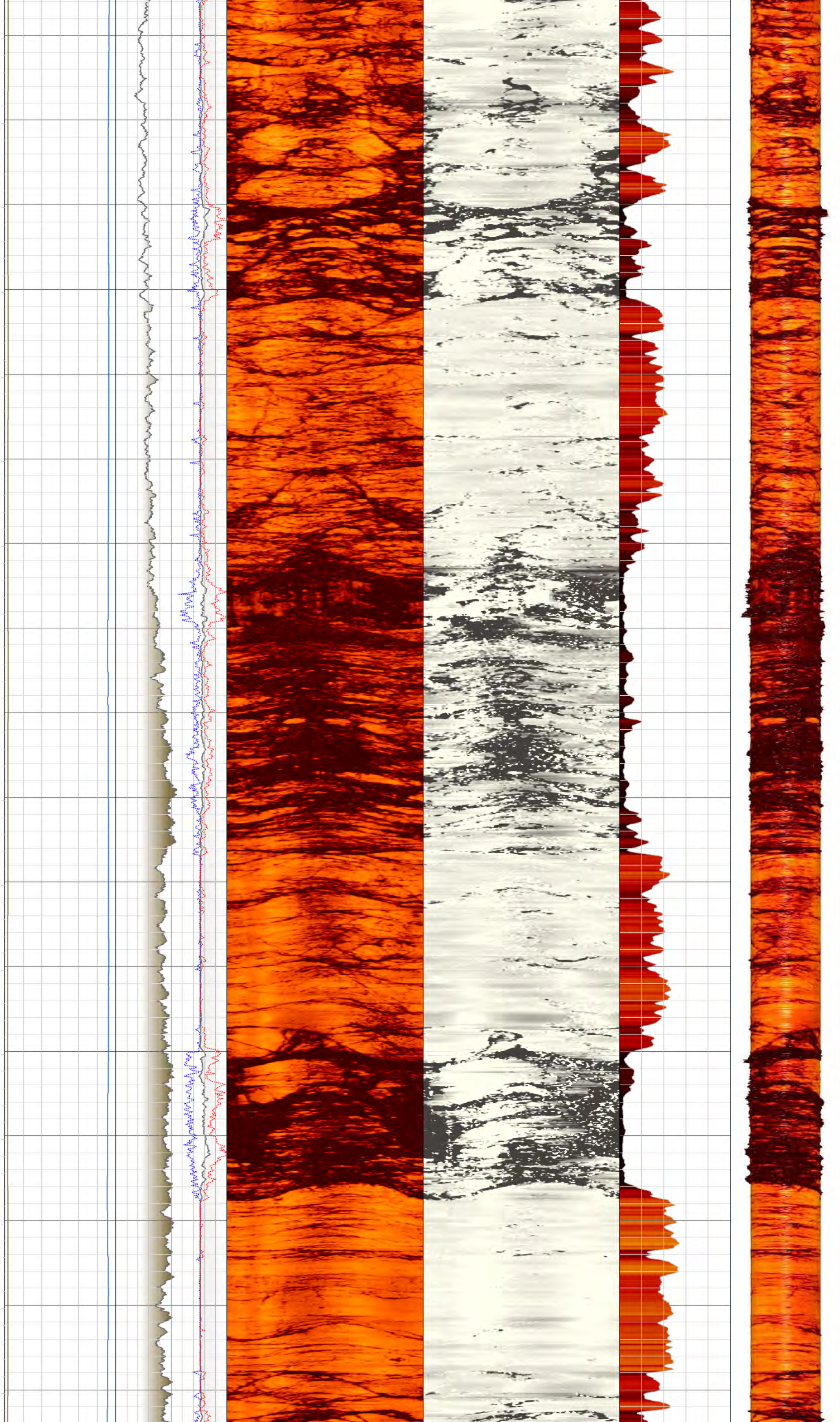
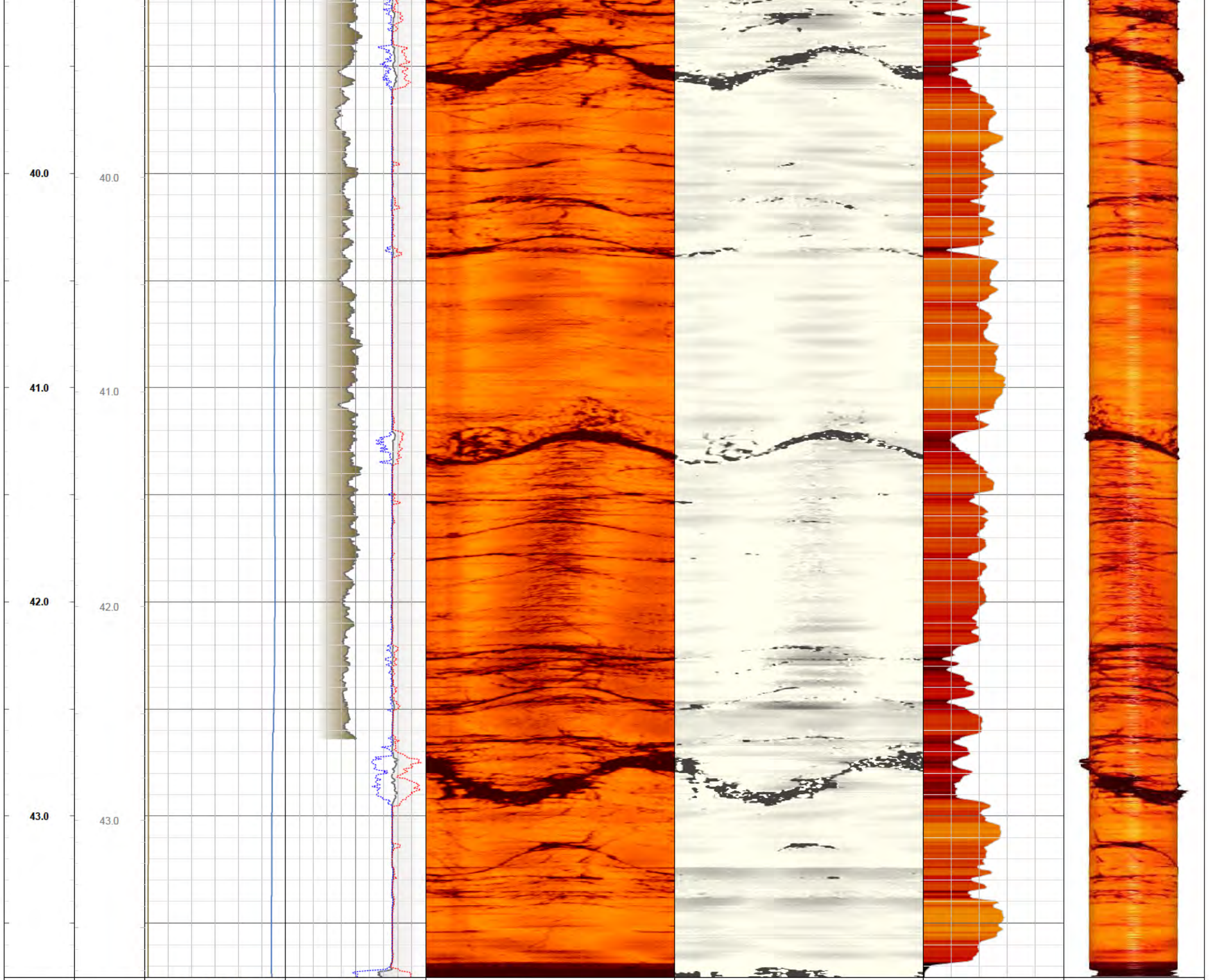




Depth	TVD	Borehole Tilt	Caliper-min	ATV Amplitude-MN	BH Radius-MN	Reflectivity	Pseudo Core
1m:20m	m	0 deg 60	50 mm 150	-500 12000	63 mm 65	0 10000	180°
		Borehole Azimuth-MN	Caliper-max	0° 90° 180° 270° 0°	0° 90° 180° 270° 0°		
		0 deg 360	50 mm 150				
			Caliper-ave				
			50 mm 150				
			Gamma Ray				
			0 API 300				

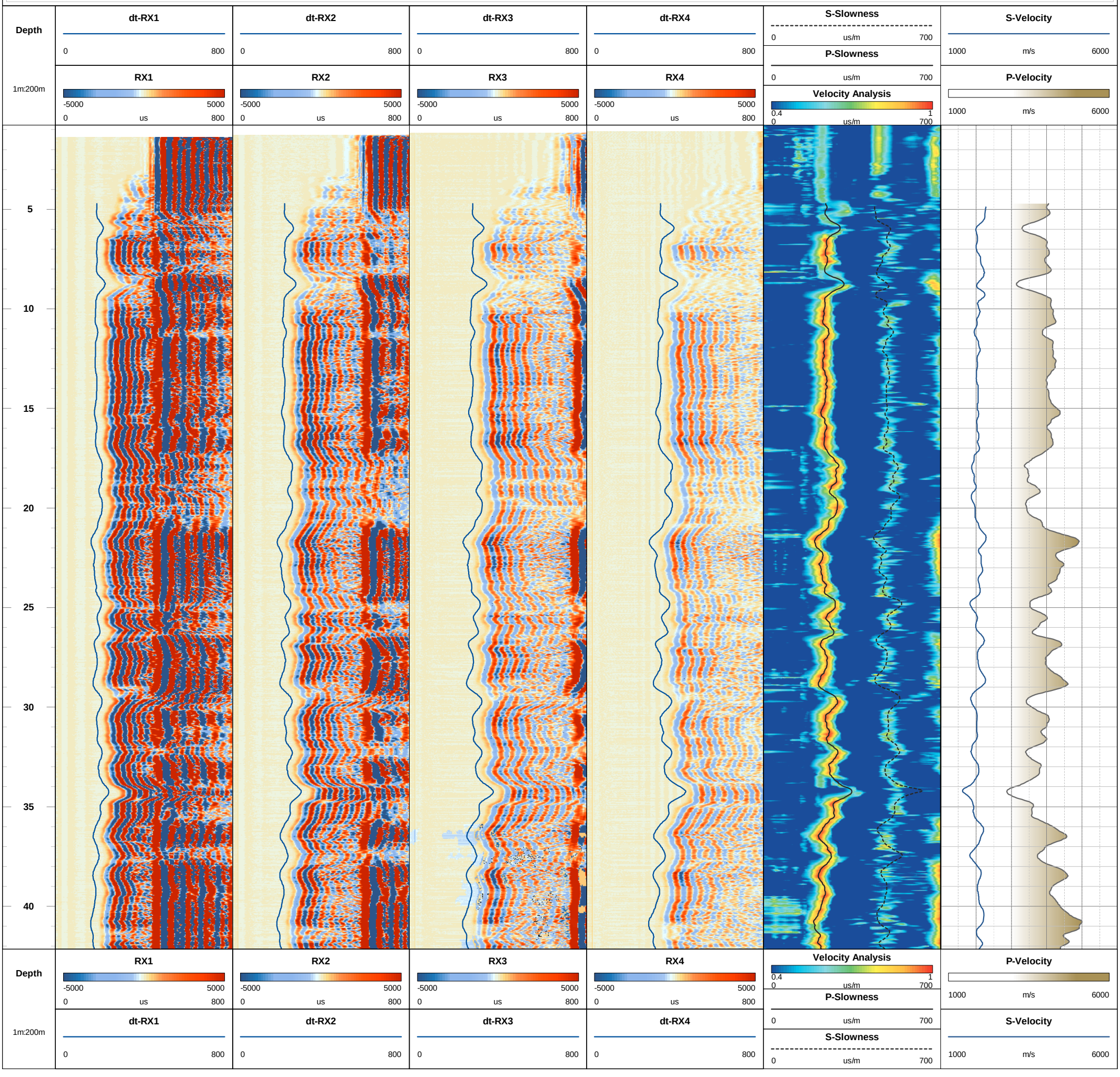
Well Name:	MDD333
Surveys:	Full Waveform Sonic
Location:	
Company:	

Service Company:	SPEIGHT DRILLING LTD
Operator:	Gareth
Date Logged:	15 June 2024
Drilling Company:	SPEIGHT DRILLING LTD
Date Drilled:	
Field:	
County / Township:	
State / Province:	
Country:	Australia

Log Measured From:	Ground Level		
Drilling Measured From:	Ground Level		
Driller Depth:		**Logger Depth:**	
Inclination:	-88.7°	**Heading:**	324.4° (MN)
Easting:		**Northing:**	
Elevation:		**Grid:**	
Log Top:	0.78	**Log Bottom:**	42.16
Depth unit:	Meters	**Scale ratio:**	1 : 200

Bit Size:	Start Depth:	End Depth:	Casing:	Start Depth:	End Depth:	Winch Model:	Winch Serial:
						334970	334G-042
						Wireline Length:	**Depth Factor:**
						1800	10501/1m

Remarks:

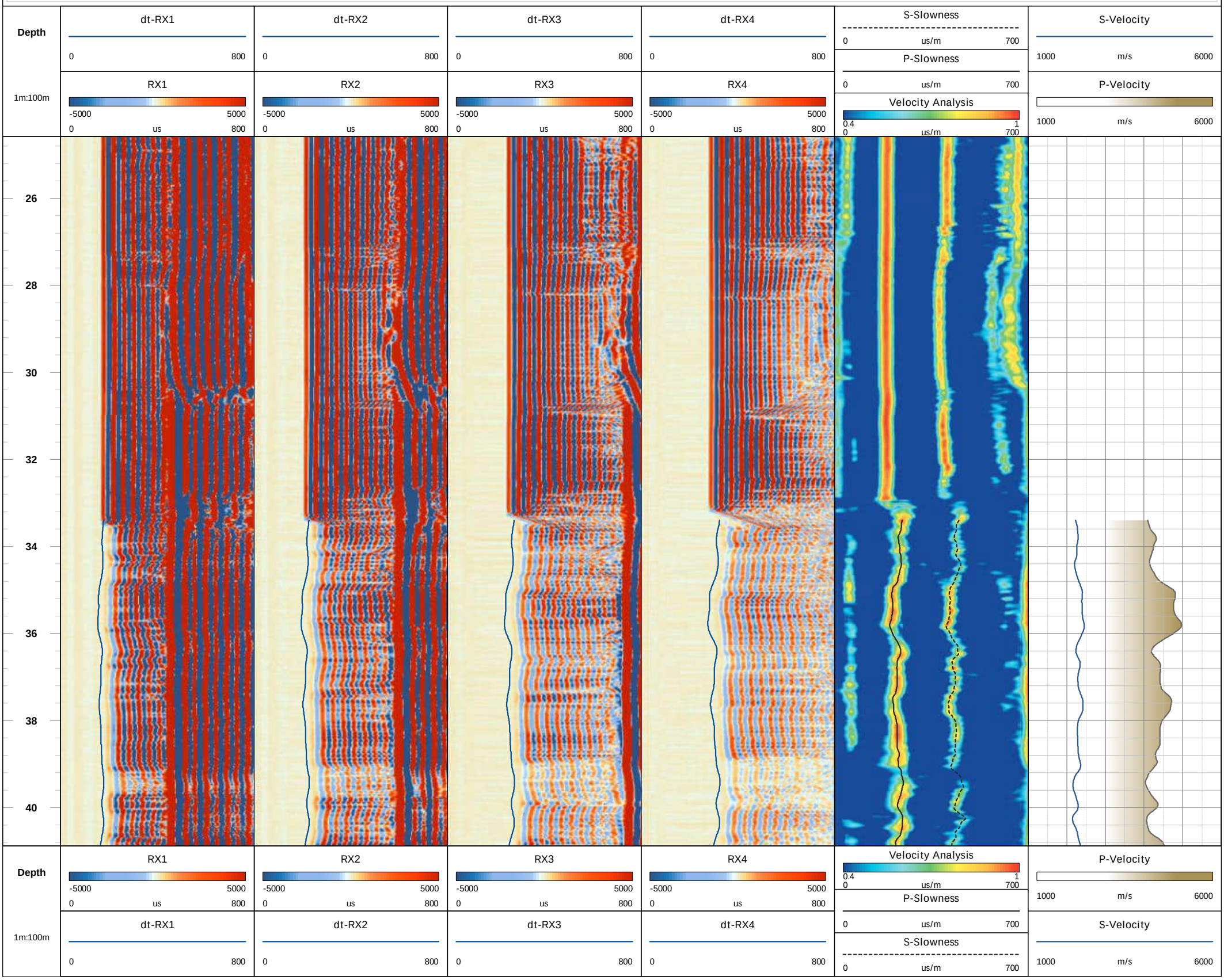


Well Name:	MDD365
Surveys:	Full Waveform Sonic
Location:	
Company:	

Service Company:	SPEIGHT DRILLING LTD	Log Measured From:	Ground Level	
Operator:	Gareth	Drilling Measured From:	Ground Level	
Date Logged:	18 Sep 2024	Driller Depth:	44.3	Logger Depth: 42.2
Drilling Company:		Inclination:		Heading:
Date Drilled:		Easting:		Northing:
Field:		Elevation:		Grid:
County / Township:		Log Top:	24.6	Log Bottom: 40.9
State / Province:		Depth unit:	Meters	Scale ratio: 1 : 100
Country:				

Bit Size:	Start Depth:	End Depth:	Casing:	Start Depth:	End Depth:	Winch Model:	Winch Serial:
						334970	334G-042
						Wireline Length:	Depth Factor:
						1800	10501/1m

Remarks:
Hole blocked several times around 27.7m and 28.9m; casing installed down to 33m.



Well Name:	MDD394
Surveys:	ATV-GR, OTV, FWS
Location:	Bendigo
Company:	Santana

Logging company

SPEIGHT DRILLING

Service Company:	SPEIGHT DRILLING	**Log Measured From:**	Ground Level		
Operator:	Gareth	**Drilling Measured From:**	Ground Level		
Date Logged:	10/12/2024	**Driller Depth:**		**Logger Depth:**	30.4
Drilling Company:	SPEIGHT DRILLING	**Inclination:**	-88.5°	**Heading:**	002° (MN)
Date Drilled:		**Easting:**		**Northing:**	
Field:		**Elevation:**		**Grid:**	
County / Township:		**Log Top:**	1.4	**Log Bottom:**	30.4
State / Province:					
Country:		**Depth unit:**	Meters	**Scale ratio:**	1 : 100

Bit Size:	Start Depth:	End Depth:	Casing:	Start Depth:	End Depth:	Winch Model:	Winch Serial:
PQ	0	153				334970	334G-042
HQ	153	233.7				**Wireline Length:**	**Depth Factor:**
						1800	10501/1m

Remarks:

Due to the reduced signal of the FWS tool, the S-Velocity was difficult to derive. Alternatively an empirical approach by Borcher to calculate the shear velocity has been applied.

Legend:

BF - Bedding/Foliation/Banding (Generic) | BE - Bedding (Sedimentary Rocks) | LA - Lamination (Sedimentary Rocks) | XB - Cross-Stratification | FO - Foliation (Metamorphic Rocks)

CL - Cleavage (Metamorphic Rocks) | BI - Banding (Igneous Rocks) | PA - Parting | JT - Joint | SH - Sheared Surface

SZ - Sheared Zone | SS - Sheared Seam | CS - Crushed Seam | IS - Infilled Seam | WS - Extremely Weathered Seam

BR - Breccia | VE - Vein | VU - Vugs | BZ - Broken Zone / Undifferentiated

Curve Description:

Title	Description	Top [m]	Base [m]	Tool s/n	Run / Date
TVD	True vertical depth	1.4	30.4		
Caliper-min	Minimum borehole diameter derived from ATV traveltime	2.4	30.4		
Caliper-max	Maximum borehole diameter derived from ATV traveltime	2.4	30.4		
Caliper-ave	Average borehole diameter derived from ATV traveltime	2.4	30.4		
ATV Amplitude-MN	Magnetic North oriented ATV amplitude image	2.4	30.4	ABI-GR 220402	2 & 6, 10/12/2024
Fracture Freq.	Fracture frequency calculated over 1m intervals	-	-		
Corrected Picks	Structure picks corrected for borehole deviation from ATV amplitude image (orientation Magn. North)	-	-		
Reflectivity	Acoustic reflectivity of the rock	2.4	30.4		
OTV	Image from optical televiewer	6.2	29.9	OBI 222204	3 & 7, 10/12/2024
dt-RX1	Intercept time of P-wave at receiver 1 (Tx-Rx1: 0.6m)	7.4	29.4		
RX1	Full waveform sonic trave recorded at 0.6m receiver	7.4	29.4	FWS 222606	4, 10/12/2024
P-Velocity	Compressional wave velocity derived from velocity analysis	7.4	29.4		
S-Velocity	Shear wave velocity derived from velocity analysis	7.4	29.4		
Vp/Vs Ratio	Ratio of compressional and shear velocities	7.4	29.4		
Poisson's Ratio	Poisson´s ratio derived from P- and S-wave velocities	7.4	29.4		

Disclaimer:

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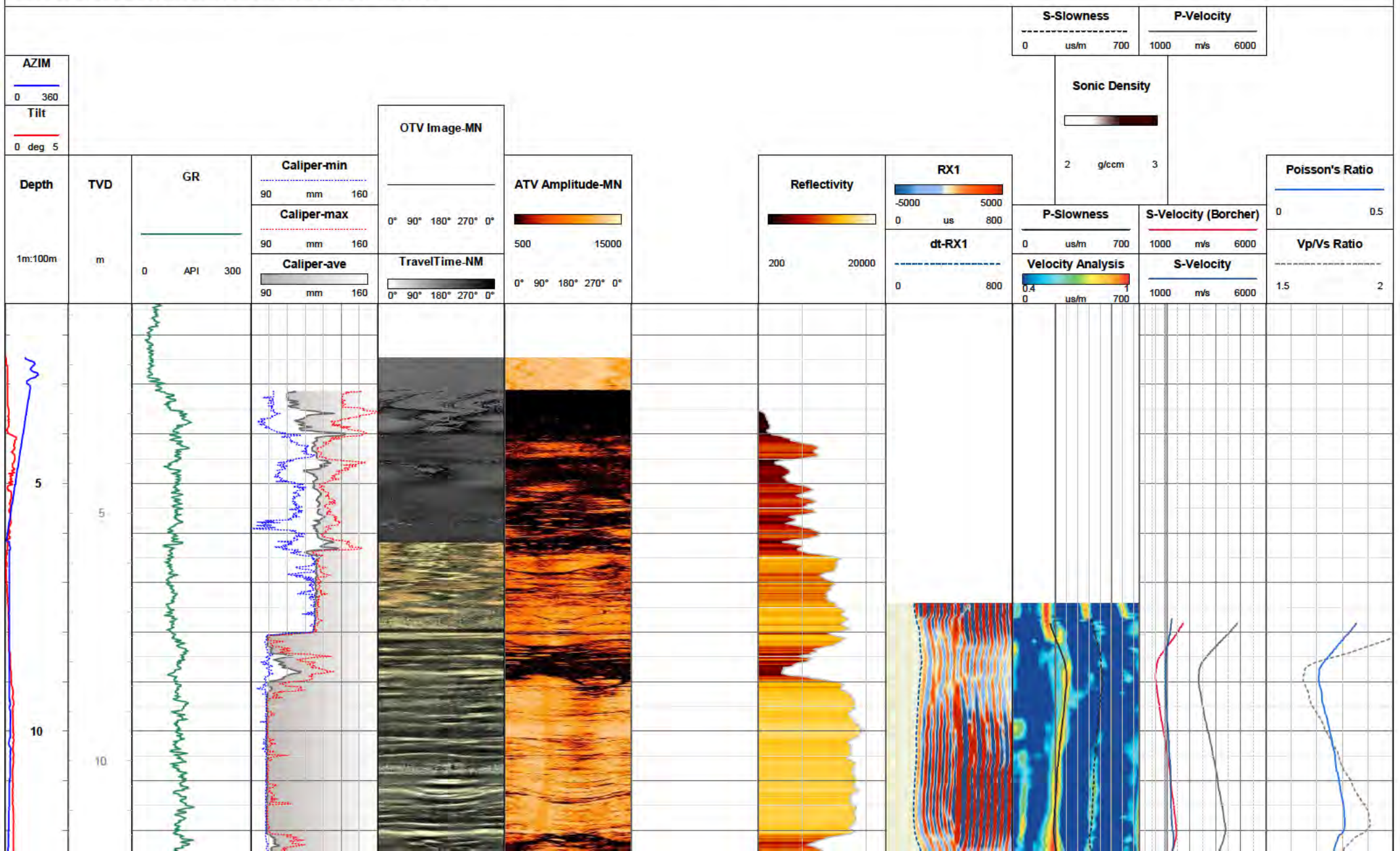

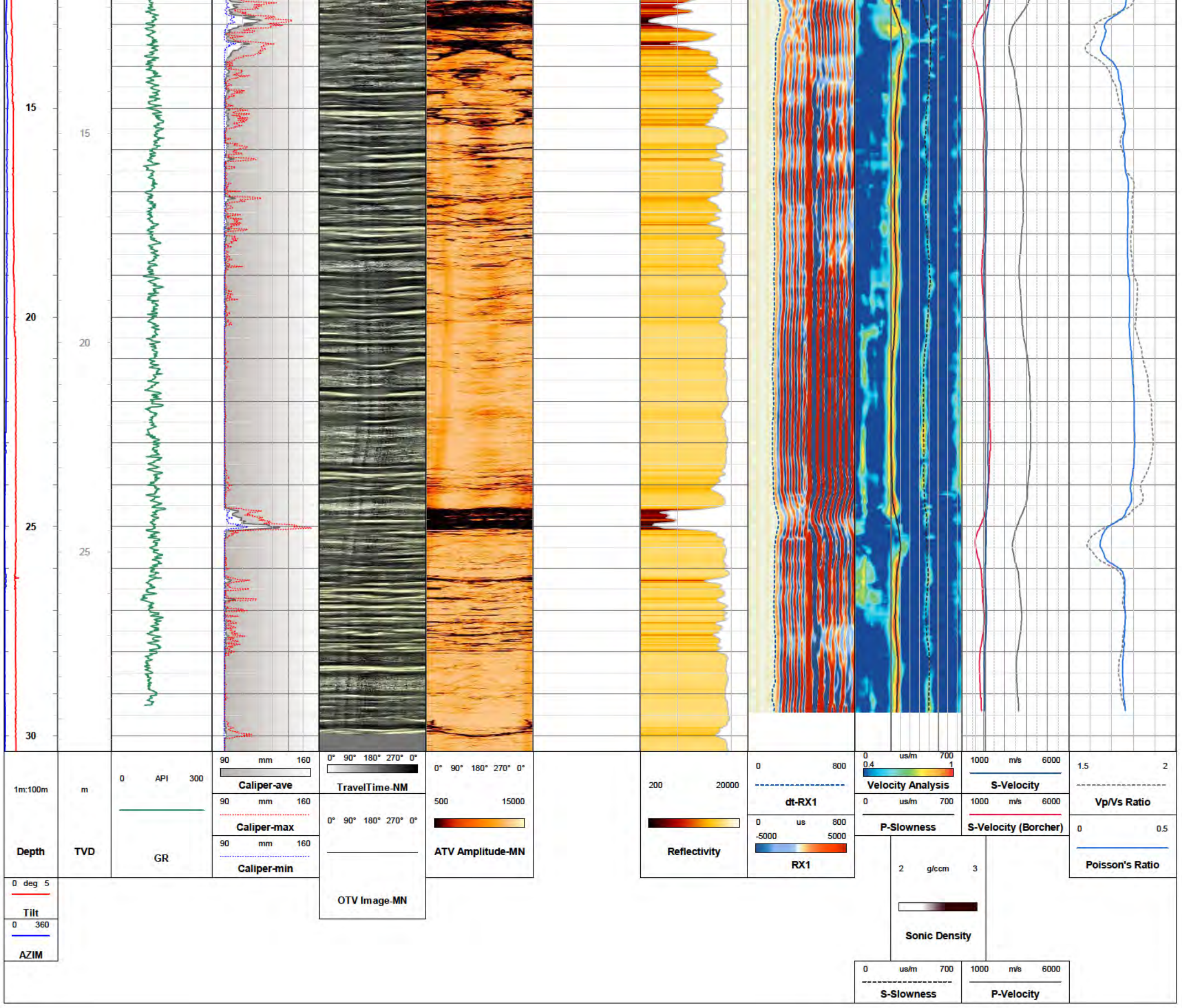
15
20
25
30
Depth
1m:100m
TVD
m
GR
0 API 300
Caliper-ave
90 mm 160
Caliper-max
Caliper-min
TravelTime-NM
0° 90° 180° 270° 0°
OTV Image-MN
ATV Amplitude-MN
500 15000
Reflectivity
200 20000
dt-RX1
0 800
RX1
0 us 800
-5000 5000
Velocity Analysis
0 us/m 700
0.4 1
P-Slowness
S-Velocity
1000 m/s 6000
S-Velocity (Borcher)
Vp/Vs Ratio
1.5 2
Poisson's Ratio
0 0.5
Tilt
0 deg 5
AZIM
0 360
Sonic Density
2 g/ccm 3
S-Slowness
P-Velocity

Well Name:	MDD394
Surveys:	FWS
Location:	Bendigo
Company:	Santana

Logging company

SPEIGHT DRILLING

Service Company:	Speight Drilling	**Log Measured From:**	Ground Level
Operator:	Gareth Speight	**Drilling Measured From:**	Ground Levelk
Date Logged:	10/12/2024	**Driller Depth:**	**Logger Depth:** 29.4
Drilling Company:	Speight Drilling	**Inclination:** -88.5°	**Heading:** 002° (MN)
Date Drilled:		**Easting:**	**Northing:**
Field:		**Elevation:**	**Grid:**
County / Township:		**Log Top:** 7.4	**Log Bottom:** 29.4
State / Province:			
Country:		**Depth unit:** m	**Scale ratio:** 1 : 200

Bit Size:	Start Depth:	End Depth:	Casing:	Start Depth:	End Depth:	Winch Model:	Winch Serial:
HQ	0	30					
						Wireline Length:	Depth Factor:

Remarks:

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