



REPORT

Drainage Åknes

DATA REPORT CORE LOGGING KH-02-2017

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Summary

KH-02-17 is a core drilled bore hole in the upper section of the Åknes rock slope. The bore hole is 300 meter deep, and was core drilled during September-October in 2017. Geodrilling AS performed the core drilling on assignment from Norwegian Water- and Energy directorate (NVE).

The rock type registered in KH-02-2017 is gneiss with variation in grain size and colour according to classification from ISO 14689.

The core logging shows that the core is intersected with crushed zones in the upper 60 meter. In this section also 6 intervals with core loss are registered. From approximately 60 to 130 meter depth the presence of crushed zones decrease. However RQD- and fractures/meter (FFm) values are varying, but with a trend towards higher RQD values and lower FFm values. From about 130 meter to end of bore hole the rock mass is considered solid with a massive character. Crushed zones are sparsely registered and the rock mass is generally considered good, evaluating RQD- and FFm values.

An analysis show high concentration of joints with characteristics corresponding to low friction joints in the upper 150 meter depth. An especially weak crushed zone, with intact silt/clay is located between 69.34-69.65 meter.

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Review and reference page

1 Introduction

KH-02-17 is a core drilled bore hole at Kulen in the Åknes rock slope. The bore hole is 300 meter deep, and was drilled during September to October 2017. Geodrilling AS performed the core drilling on assignment from Norwegian Water- and Energy directorate (NVE). Gustav Pless (NVE), Lise Tønset (master student NTNU) and Henrik Langeland performed engineering geological core logging in 2017 and 2018.

The core drilling is undertaken to investigate the subsurface in the Åknes rock slope, e.g. degree of fracturing, weak zones, and lithological composition. In addition to the core logging, several tests will be performed on selected core samples, e.g. to evaluate lithology, mineral composition and strength parameters.

This report gives an overview of the core logging of KH-02-17, method for core logging, and results. All ancillary data are organized in appendices:

Appendix A: Drilling report from Geodrilling

Appendix B: Core logging sheets (Logplot)

Appendix C: Pictures of cores

2 Core drilling KH-02-17

KH-02-17 is a vertical borehole, located in the upper section of Åknes rock slope, 733.77 meters above sea level (Figure 1). Drilling depth is 300 m. Steel casing is placed down to -4.5 m. Core length, logged length, is 300.11 meter.

During drilling it was necessary to stabilize the borehole with concrete in several sections down to -59 meters. The casted sections is not specified in the drilling report from Geodrilling (Appendix A). The core drilling has been performed with Diamec U-8 APC rig, with HQ diamond tipped core bit, giving a borehole diameter of about 96 mm and a core diameter of about 63.5 mm. Geodrilling AS report from core drilling is given in Appendix A.

Core logging sheets (Logplot), with results from core logging are presented in Appendix B, pictures of the cores are shown in Appendix C.

After drilling several water pressure- (Lugeon test) and pumping tests (falling head- and rising head test) was performed with double packer setup. The borehole have also been logged with optical televiewer, flowmeter and geophysics after core extraction.

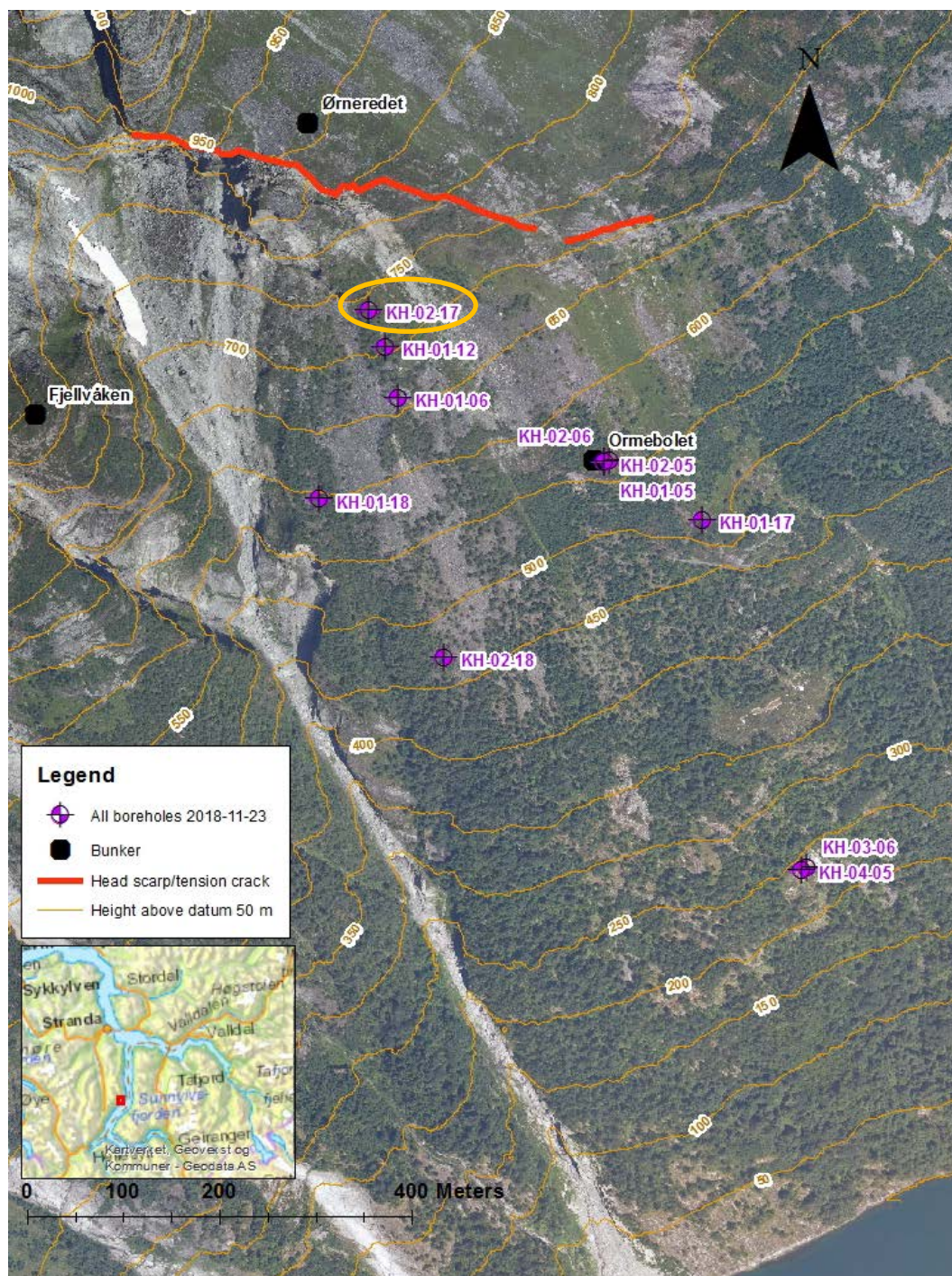


Figure 1. Overview of the Åknes unstable rock slope with bore hole locations, including bore hole KH-02-17 in yellow ellipse.

3 Brief regional geological description

The geology at the Åknes rock slope is thoroughly described, by field mapping and core logging [1] [2] [3] [4].

Åknes is situated in the Western Gneiss Region (WGR), located west of the Caledonian thrust nappe [5]. WGR consist of autochthon Precambrian rocks, mainly granitic- to dioritic gneiss, in some places migmatitic [1]. These rocks are about 1850-1500 million years old, and contain features such as bands with mica rich gneiss and amphibolite [6].

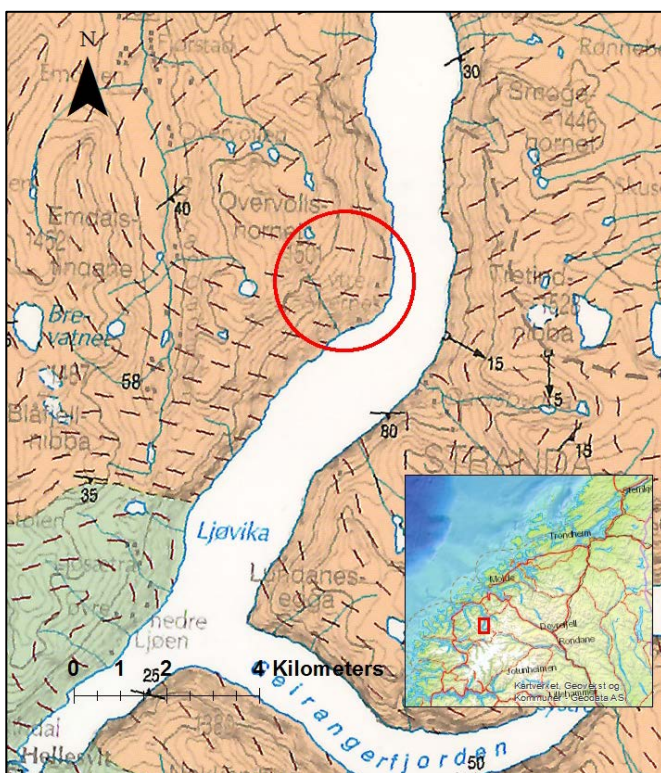


Figure 2. Excerpt of geological map 1:250 000 for the Åknes rock slope (red circle). Light orange color is mapped as: "Gneiss, not grouped, mainly quartzdioritic to granitic, in some places migmatitic" and light green colour is mapped as: "Mica gneiss, quartz mica gneiss, some garnet amphibolite, garnet mica schist, meta-arkose and anorthosite" [7].

The geological map from the area shows that at the Åknes rock slope the bedrock is defined as "Gneiss, not grouped, mainly quartzdioritic to granitic, in some places migmatitic" [7]. The map also shows that just West-southwest of the Åknes rock slope the bedrock is mapped as (2): "Mica gneiss, quartz mica gneiss, some garnet amphibolite, garnet mica schist, meta-arkose and anorthosite".

4 Method

The core logging sheets contain geological description of the core according to ISO 14689:2017 [8], registration of core loss, crushed core, fracture frequency and Q-method parameters; RQD (Rock Quality Designation), J_r (joint roughness number) and J_a (joint alteration number). The core is not oriented, but the borehole has been logged with televiewer, and therefore an overview of joint sets and dip/dip-direction are reported by the Geological Survey of Norway (NGU).

4.1 Q-parameters

The Q-method is a classification system for rock mass in relation to stability of underground excavations such as tunnels and caverns [9]. By determining the 6 Q-parameters one can decide the Q-value for the rock mass:

$$Q = \frac{RQD}{J_n} + \frac{J_r}{J_a} + \frac{J_w}{SRF} \quad (1)$$

where:

- RQD = Rock Quality Designation
- J_n = Joint set number
- J_r = Joint roughness number
- J_a = Joint alteration number
- J_w = Joint water reduction factor
- SRF = Stress reduction factor

Evaluation of the 6 parameters is described by NGI [9]. The Q-value can vary from 0,001 (exceptionally poor) to 1000 (exceptionally good), where values above 10 is equivalent to good rock mass quality. By core logging one can determine the parameters RQD, J_n (if cores are oriented), J_r , og J_a , and by this determine the rock mass properties. The parameters J_w (Joint water reduction factor) and SRF (Stress reduction factor) cannot be determined from cores, and therefore a Q-value from core logging will represent a Q-value where J_w and SRF are not accounted for.

There is also uncertainty connected to J_r - and J_a values in core logging. By logging a 64 mm core, only a small excerpt of the joint is visible. A J_r value determined for a joint in the core is not necessary representative for the bulk scale joint. This is equivalent for the J_a value. Joint filling and -coating can vary along the joint, and drilling can affect the remaining joint infill after core extraction.

J_n -values are not registered during logging, as the core is not oriented. However, the televiewer analysis will describe joint sets and dip/dip-direction of joints.

4.2 Fracture frequency and crushed core

The fracture frequency (fractures/meter, FFm) is evaluated every meter, based on the number of joints, inclusive crushed zones. For crushed zones an FFm value between 2 and 25 is given, counting one joint every 4 cm of crushed zone in addition to joint in the start and end of a crushed zone. Minimum FFm value for a crushed zone would then be 2 if the crushed zone is shorter than 4 cm. Maximum FFm value would be 25 for 100 cm core, which implies that the entire core is a crushed zone.

However, deciding FFm from core logging is connected to uncertainty due to the presence of artificial joints caused by drilling and handling of cores in the wireline system. It's sometimes difficult to determine a natural joint from an artificial joint, and the result would be overestimation of joints in the core logging. Having the televiewer analysis in addition to the core logging makes it possible to compare the joint frequency.

The drillers are instructed to mark joints which they certainly know are artificial, with a permanent marker. However, the marking can disappear or artificial joints could not be marked by drillers due to difficulty identifying such joints. This subject was discussed during core logging of KH-02-2017 as it could be difficult for the logger to identify artificial joints. The joints interpreted by the logger to be artificial, but not marked with a permanent marker, is marked with x as J_r and J_a value. In the following J_r and J_a overview (chapter 5.2.2) joint no. is set as 0.

4.3 Core loss

Core loss is evaluated every meter, based on missing core sections. To be sure this is registered correctly, the drillers have to mark core loss in the core box.

5 Results

5.1 Overview borehole

A simplified overview of RQD, average RQD every 10 meters, FFm, average FFm every 10 meters, crushed zone >10 cm and core loss distribution in the bore hole is shown in Figure 3. In Figure 3, FFm is given for all registered joints in the core. An overview of joints interpreted to be artificial is given in chapter 5.2.2.

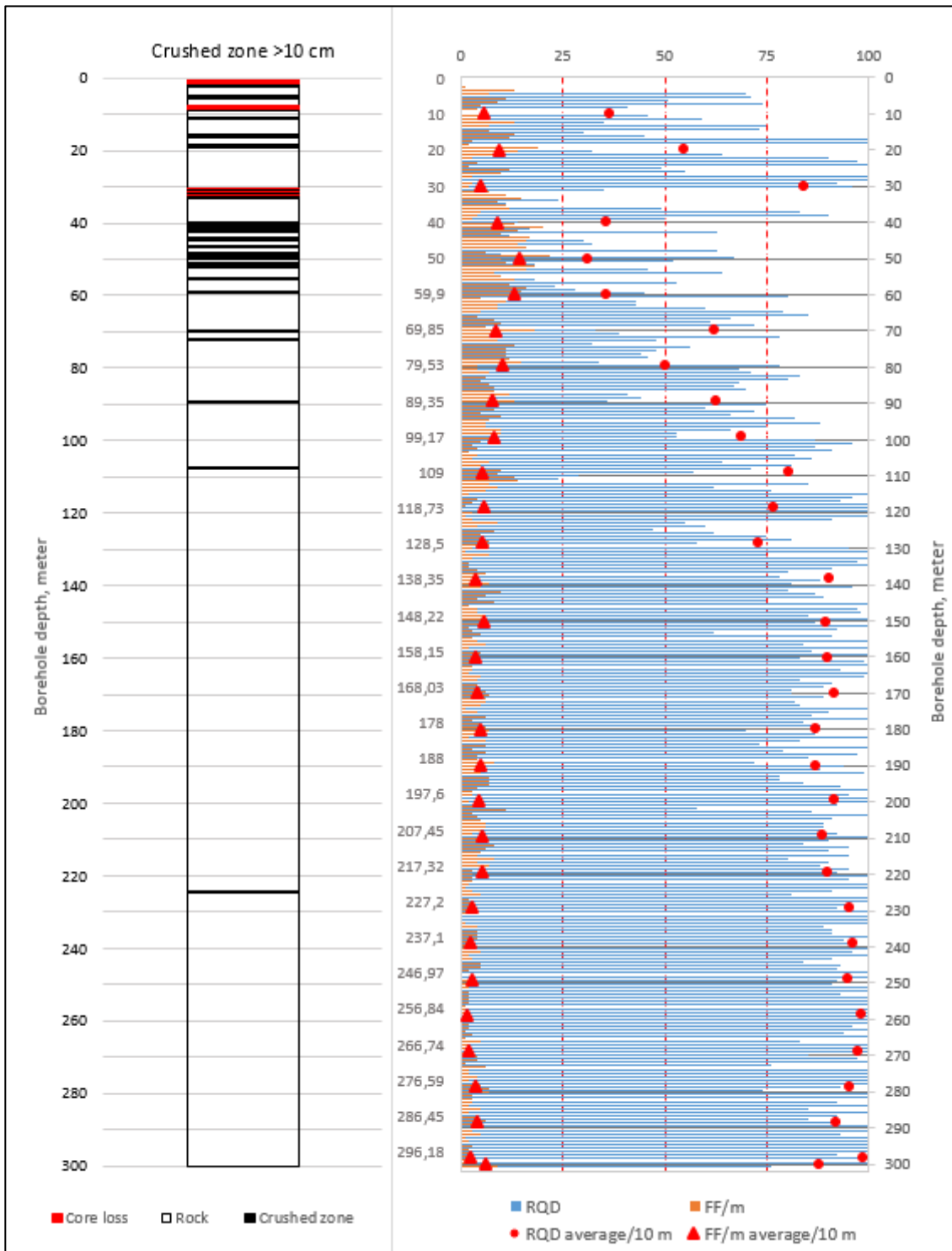


Figure 3. Simplified overview of RQD, average RQD every 10 meters, FFm, average FFm every 10 meters, crushed zone >10 cm and core loss distribution in KH-02-17.

5.2 Logging parameters

5.2.1 RQD and FFm

The upper 59.9 meters of the bore hole is intersected with crushed zones > 10 cm, and 5 sections with core loss is registered. The average RQD value from 0 to 59.9 meter is 46 and the FFm value is 9 (Figure 3).

From 59.9 meter down to 128.5 meter the presence of crushed zones > 10 cm decrease, the RQD and FFm values are varying, however with a trend towards higher RQD and lower FFm with increasing depth. The average RQD value from 59.9 to 128.5 meter is 68 and the FFm value is 7 (Figure 3).

From 128.5 meter to end of bore hole the rock mass is considered solid with a rather massive character, and only a few lengths with RQD below 75 %. Only one crushed zone > 10 cm is registered and the rock mass is generally considered good, evaluating RQD- and FFm values. The average RQD value from 128.5 to 300.11 meter is 92 and the FFm value is 4 (Figure 3).

5.2.2 J_r , J_a

J_r and J_a are registered for every joint, besides in the crushed zones where this is practical impossible. Figure 4 shows the frequency of J_r and J_a . The J_r and J_a categories are given values according to NGI [9] and X describe artificial joints. J_a range from a-p according to NGI [9], but only values from a-m are registered.

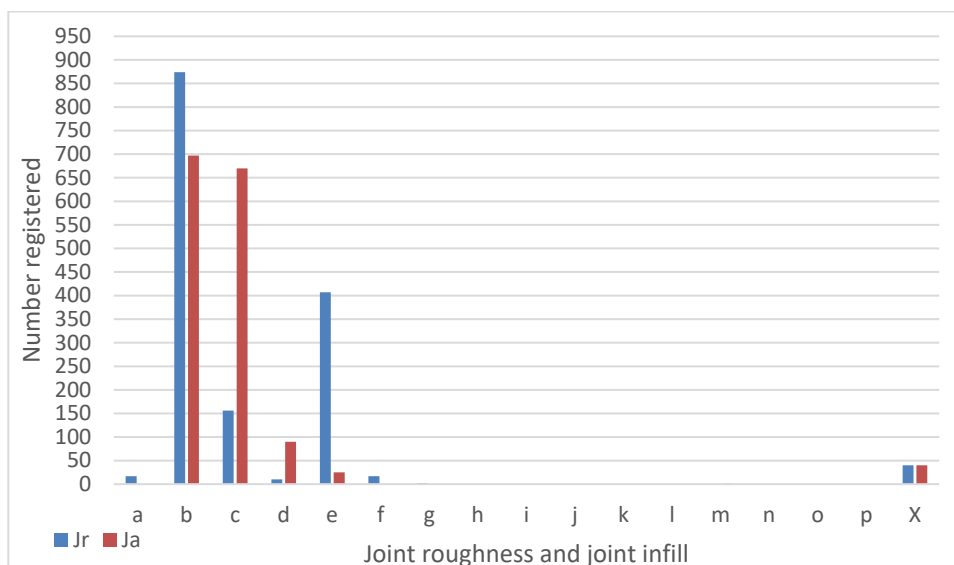


Figure 4. The histogram presents the frequency of J_r and J_a values for the entire borehole. J_a values can be determined in the range from a-p [9], however only values from a-g was registered.

The histogram shows that J_r categories of b (rough or irregular, undulating) and e (rough, irregular, planar) are dominating, and very few slickensided undulating (d), smooth planar (f) or slickensided planar (g) categories are registered. The dominating J_a categories are b (Unaltered joint walls, surface staining only) and c (Slightly altered joint walls. Non-softening mineral coatings; sandy particles, clay free disintegrated rock, etc.). However some joints are registered with coating or infilling (d, e and m).

Figure 5 and Figure 6 show distribution of J_r and J_a values in relation to borehole depth. J_r value 0.5 and 1 represent smooth/slickensided and planar joints, and J_a values 3, 4 and 8 represent coating or infill on joints. I.e. joints registered with J_r value 0.5 and 1 and J_a value 3, 4 and 8 will probably represent low friction joints. An analysis of joints with such characteristic show that we find a concentration of these joints in the upper 150 meters.

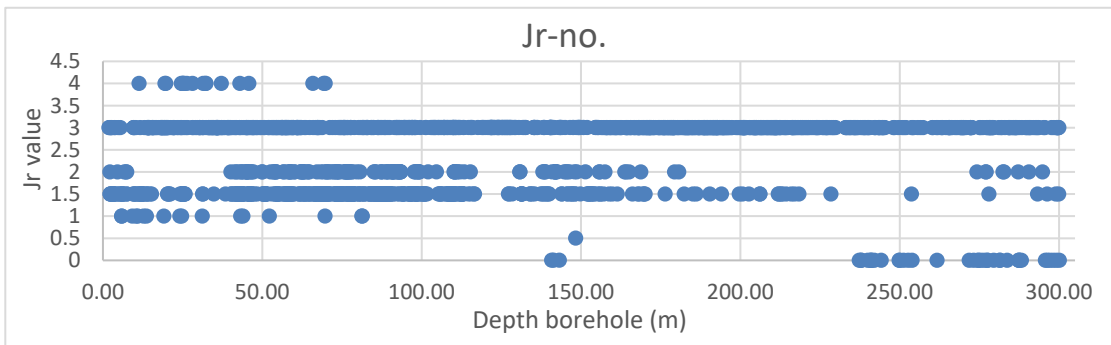


Figure 5. J_r values on joints in relation to borehole depth.

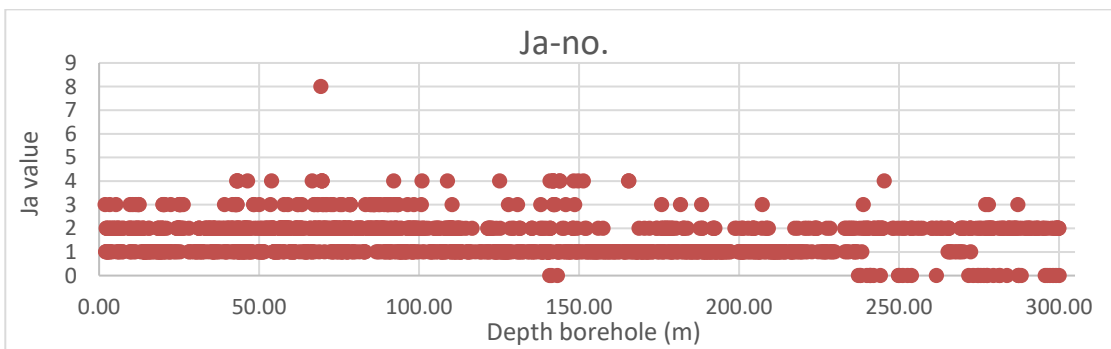


Figure 6. J_a values on joints in relation to borehole depth.

The joint registered at 69.34 m has J_r value 4 (g) and J_a value 8 (m) at the start of a crushed zone registered from 69.34-69.65. The core drilling managed to extract this section with intact silt/clay intersecting the crushed zone (Figure 7).



Figure 7. Zone with clay and crushed rock registered at 69.34-69.65.

Artificial joints is registered with J_r value 0 and J_a value 0 in Figure 5 and Figure 6. This does not include artificial joints that the drillers have marked, such joints is not registered at all. As this subject was discussed during core logging of KH-02-2017 it was decided to divide the artificial joints from the natural joints towards the end of the core logging. Therefore there is not marked any artificial joints, with J_r and J_a value 0 in the upper section of the borehole.

5.3 Description of the rock mass

Borehole KH-02-2017 is located in an area, which according to NGU, consists of gneiss [7]. The rock type registered in KH-02-2017 is gneiss with variation in grain size and colour [8]. ISO [8] terms foliated metamorphic rock types as Gneiss, Schist and Slate for coarse-, medium- and fine grain size respectively. It is decided to classify the entire borehole as Gneiss, but with specification of the different grain size and colour (Table 2 and Appendix B).

Table 1. Description of KH-02-17 rock type according to ISO 14689:2017 [8].

Identification	Core logging
Genetic group	Metamorphic
Structure	Foliated
Grain size	Coarse-fine
Mineralogical composition by visual inspection	Feldspar, quartz, mica

Table 2. Overview of evaluated grain size and colour in KH-02-17.

From	To	Length	Grain size	Colour	Rock Type
0,00	1,93	1,93	Core loss		
1,93	7,63	5,70	Coarse grained	Grey with pink/reddish bands	Gneiss
7,63	9,20	1,57	Core loss		
9,20	12,75	3,55	Coarse grained	Dark with pink/reddish bands	Gneiss
12,75	18,3	5,55	Coarse grained	Grey to dark grey with pink/reddish bands	
18,30	21,1	2,80	Coarse-medium grained	Dark with white bands	
21,10	24	2,90	Coarse grained	Grey with pink/reddish bands	
24,00	30,46	6,46	Coarse grained	Grey to dark grey with pink/reddish bands	
30,46	30,90	0,44	Core loss		
30,90	31,5	0,60	Coarse-medium grained	Grey to dark grey with pink/reddish bands	Gneiss
31,50	32,00	0,50	Core loss		
32,00	32,4	0,40	Coarse grained	Grey to dark grey with pink/reddish bands	Gneiss
32,40	32,78	0,38	Core loss		
32,78	38,49	5,71	Coarse grained	Grey to dark grey with pink/reddish bands	Gneiss
38,49	39,00	0,51	Core loss		
39,00	56,00	17,00	Coarse grained	Dark grey with reddish/pink bands	Gneiss

Table 3. Table 2 continues.

From	To	Length	Grain size	Colour	Rock Type
56,00	60	4,00	Coarse-medium grained	Dark with small pink/reddish bands	
60,00	68,4	8,40	Coarse grained	Coarse-medium grained	
68,40	69,85	1,45	Fine grained	Black to dark grey	
69,85	79,53	9,68	Coarse-medium grained	Black to dark grey with white bands	
79,53	98,16	18,63	Coarse-medium grained	Dark grey to black with reddish/pink/white bands	
98,16	99,17	1,01	Fine grained	Dark grey to black	
99,17	100,36	1,19	Fine grained	Dark grey to black	
100,36	109	8,64	Coarse grained	Black to dark grey with white/pink bands	
109,00	118,9	9,90	Coarse grained	Black to dark grey with white/pink/reddish bands	
118,90	130,47	11,57	Coarse grained	Black to dark grey with white/pink/reddish bands	
130,47	140,33	9,86	Fine grained	Black, partly greenish	
140,33	162,07	21,74	Medium-fine grained	Black, partly greenish with small white bands	

From	To	Length	Grain size	Colour	Rock Type
162,07	182	19,93	Medium- grained fine	Dark black, greenish and greyish	
182,00	191,7	9,70	Coarse- grained medium	Dark grey with white and pink bands	
191,70	201,55	9,85	Coarse- grained medium	Dark grey with white and pink bands	
201,55	211,4	9,85	Medium- grained fine	Black, partly greenish with small white bands	
211,40	223,2	11,80	Coarse- grained medium	Black, partly greenish with small white bands	
223,20	233,1	9,90	Coarse grained	Black to dark grey with white/pink bands and some places greenish	
233,10	237,1	4,00	Coarse grained	Black, partly greenish with white bands	
237,10	246,97	9,87	Medium-Coarse	Dark, greyish to greenish	
246,97	256,93	9,96	Medium-Coarse	Dark, greyish with white bands	
256,93	264,77	7,84	Medium-Coarse	Dark, greyish partly greenish with white bands	
264,77	272,67	7,90	Medium-Coarse	Dark, greyish partly greenish with white bands	
272,67	282,55	9,88	Medium-Coarse	Dark, greyish partly greenish to black with white bands	
282,55	292,26	9,71	Medium-Coarse	Black to grey, partly greenish with white bands	
292,26	300,11	7,85	Coarse	Dark grey partly greenish with white bands	

5.3.1 Gneiss, coarse grained

Example of a coarse grained rock, colour light grey to black with white and pink bands is shown in Figure 8.



Figure 8. Core box 59, ca. 231.7-232.2 meter.

5.3.2 Gneiss, medium to fine grained

Example of a medium- to fine grained rock, with colour black, partly greenish with small white bands is shown in Figure 9.



Figure 9. Core box 41, ca. 158.15-158.65 meter.

5.3.3 Gneiss, fine grained

Example of a fine grained rock, with colour dark grey to black is shown in Figure 10.



Figure 10. Core box 25, ca. 98.67-99.17 meter.

6 References

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Appendix A


GEODRILLING, REGISTERED DRILLING DATA KH-02-2017

Contents

A1	Geodrilling, Registered drilling data KH-02-2017	2
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A1 Geodrilling, Registered drilling data KH-02-2017

GEO DRILLING AS		REGISTRERING BOREDATA						SIDE 1		
PROSJEKT: P-160117		STED: Øvre 3, Åknes			HULL-NR: BH - 02 - 17		KRONE: HQ	DATO: September	MASKIN: Diamec U-8 APC	FALL/RETNING: Lodd
FRA BOREDYP	TIL BOREDYP	KJERNE LENGDE	ROTASJON RPM	MATEKRAFT KILO	PENETRERING ca CM/MIN	Mottrykk Spyl.vann Bar	FARVE SPYLEVANN	KOMMENTAR		
0,00	5,40	5,40	350	2500	11	3	Vann gj krone	Casing til 4,50 meter		
5,40	6,40	1,00	900	2300	10	4	50			
6,40	7,00	0,60	900	2400	10	4	45	Elendig dagfjell, rassoner, kiling		
7,00	8,40	1,40	900	1900	10	3	50			
8,40	9,60	1,20	900	2100	10	2	50	Elendig dagfjell, rassoner, kiling		
9,60	9,90	0,30	900	1600	10	3	40			
9,90	10,10	0,20	900	1300	10	3	40	Dårlig fjell, mye åpne partier, støping av dårlige soner		
10,10	10,50	0,40	900	1200	10	4	45	Filming av borehull, nye støpinger		
10,50	11,30	0,80	900	800	11	6	45	Dårlig fjell, mye åpne partier		
11,30	13,00	1,70	900	900	12	7	40			
13,00	14,10	1,10	900	2100	10	5	40			
14,10	14,70	0,60	800	2400	10	6	40			
14,70	14,90	0,20	800	2600	10	6	40			
14,90	15,50	0,60	800	2600	10	7	40			
15,50	15,90	0,40	800	3100	10	7	40			
15,90	16,60	0,70	800	3500	10	6	40			
16,60	17,40	0,80	800	1700	10	6	40			
17,40	18,30	0,90	800	600	8	4	35	Dårlig fra 18,10 til 20,20 meter		
18,30	20,30	2,00	800	1700	8	3	40	Støping av dårlige soner, filming av hull, ny støping		
20,30	21,30	1,00	800	2200	7	7	50			
21,30	21,90	0,60	800	2900	8	8	50			
21,90	22,30	0,40	800	3400	9	12	40			
22,30	23,30	1,00	800	3400	8	13	40			
23,30	23,60	0,30	800	2100	8	13	40			
23,60	26,40	2,80	800	2600	11	8	40			
26,40	28,00	1,60	800	2500	11	7	40			
28,00	29,00	1,00	800	2800	11	9	40			
29,00	29,40	0,40	800	2700	11	9	40			
29,40	30,30	0,90	800	2500	11	4	40	Store åpne rom, 30,30 - 30,70 mete		
30,30	31,10	0,80	800	1400	8	3	45			
31,10	31,50	0,40	800	1600	8	3	50			
SUM	31,50	31,50								

GEO DRILLING AS		REGISTRERING BOREDATA						SIDE 2		
PROSJEKT: P-160117		STED: Øvre 3, Åknes			HULL-NR: BH - 02 - 17		KRONE: HQ	DATO: September	MASKIN: Diamec U-8 APC	FALL/RETNING: Lodd
FRA BOREDYP	TIL BOREDYP	KJERNE LENGDE	ROTASJON RPM	MATEKRAFT KILO	PENETRERING ca CM/MIN	Mottrykk Spyl.vann Bar	FARVE SPYLEVANN	KOMMENTAR		
31,50	32,40	0,90	800	1200	8	9	Vann gj krone	Åpent, 31,50 - 32,00 meter, rensking og støping		
32,40	33,20	0,80	700	700	8	10	60	Åpent, 32,40 - 32,80 meter, rensking og støping		
33,20	35,00	1,80	700	1600	8	11	70	Ras ved 33,90 meter, rensking, filming og støping		
35,00	35,10	0,10	700	1700	8	10	60			
35,10	35,10	0,00	700	1600	8	11	60			
35,10	35,10	0,00	700	1400	8	12	60			
35,10	35,90	0,80	700	1200	10	9	50			
35,90	36,30	0,40	700	1500	9	9	50			
36,30	36,70	0,40	700	1700	9	9	50			
36,70	37,10	0,40	700	1900	9	13	50			
37,10	37,30	0,20	700	2100	9	13	40	Åpent, 38,60 - 39,00 meter, rensking		
37,30	38,40	1,10	700	2500	9	9	40			
38,40	39,70	1,30	700	1600	8	9	70			
39,70	40,90	1,20	700	700	8	9	70	Mye dårlig fjell, rensking		
40,90	41,40	0,50	700	800	8	11	70	Dårlige soner, 38,60 - 41,40 meter		
41,40	43,40	2,00	700	1000	9	9	60			
43,40	44,40	1,00	700	800	9	12	60	Rensking , filming og støping		
44,40	47,40	3,00	700	1200	11	9	65	Dårlig fjell, 44,40 - 47,40 meter		
47,40	48,80	1,40	700	1300	12	11	65			
48,80	50,40	1,60	700	1500	11	11	65	Dårlig fjell		
50,40	52,30	1,90	700	2100	12	11	60			
52,30	52,90	0,60	700	2200	12	10	60	Dårlig fjell		
52,90	53,40	0,50	700	1000	11	10	55			
53,40	55,30	1,90	700	800	13	8	55	Dårlig fjell		
55,30	55,60	0,30	700	900	13	8	55			
55,60	56,40	0,80	700	700	13	9	55	Dårlig fjell		
56,40	59,00	2,60	700	600	13	7	55	Filming, logging, rensking og støping		
59,00	59,40	0,40	700	200	14	11	60	Dårlig fjell		
59,40	62,40	3,00	800	1100	12	10	60			
62,40	63,70	1,30	800	1400	13	11	60	Dårlig fjell		
63,70	64,60	0,90	800	2100	9	13	60			
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Appendix B

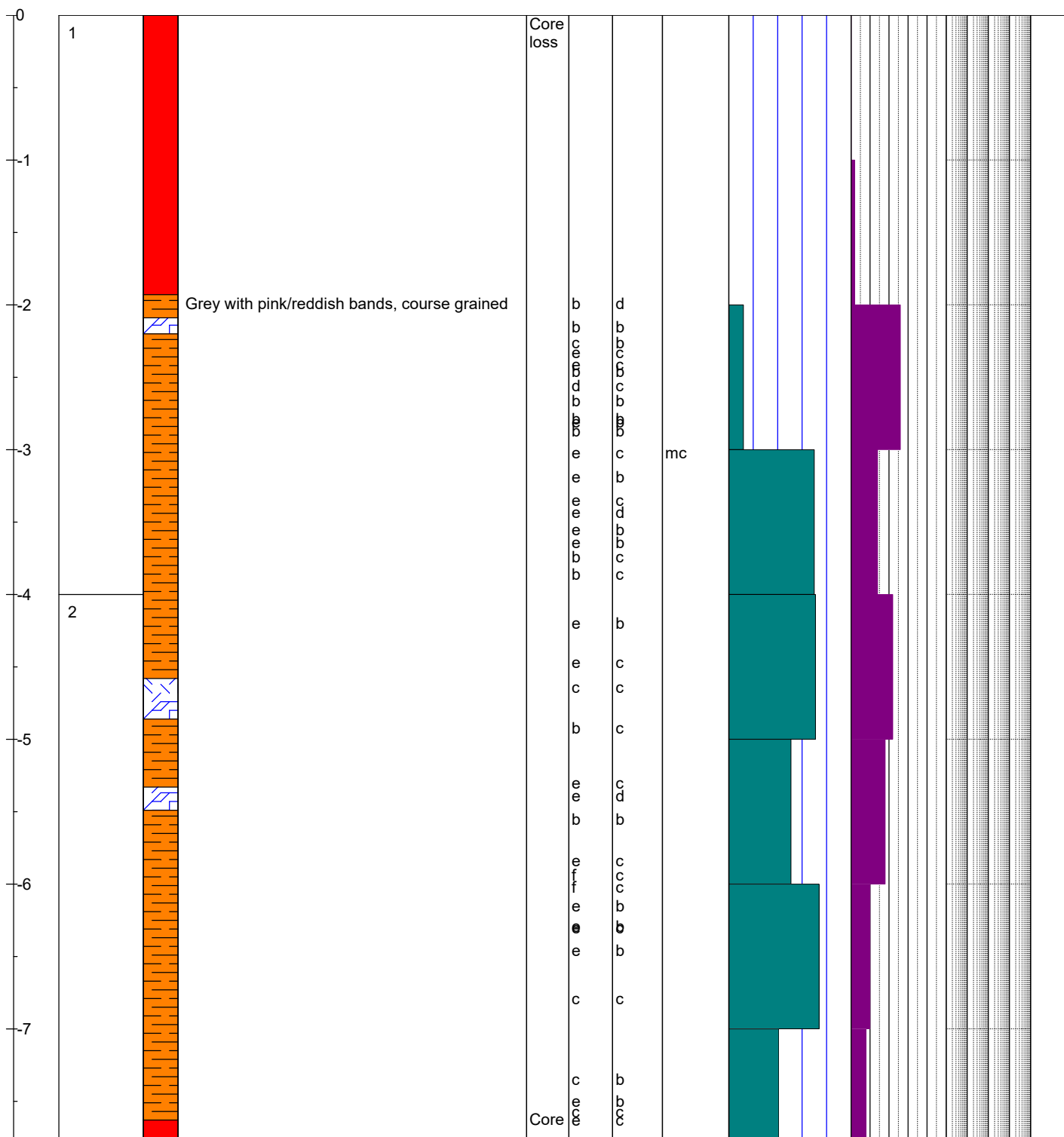
CORE LOGGING SHEETS (LOGPLOT) KH-02-2017





Contents

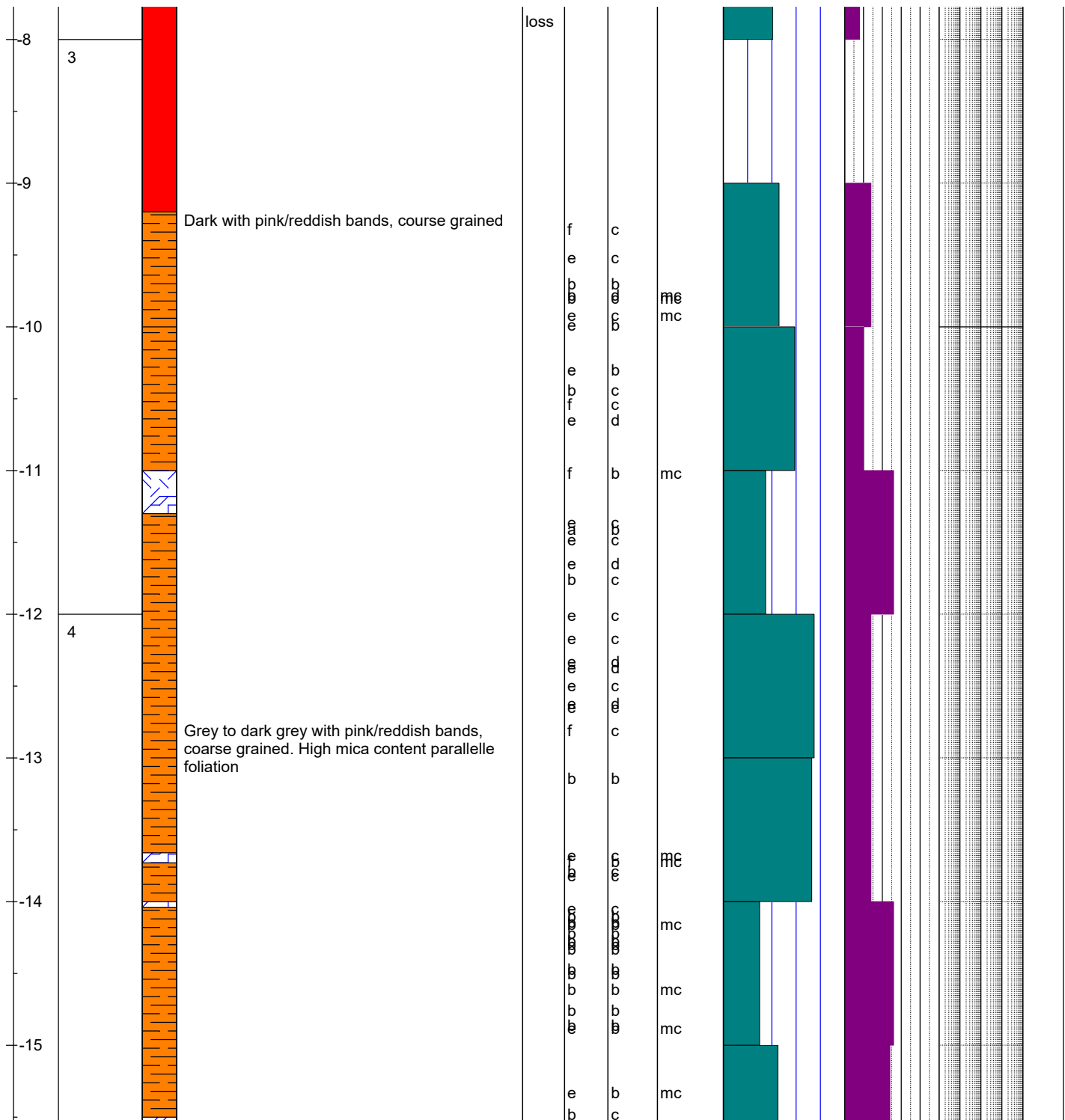
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B1 Core logging sheets (Logplot) KH-02-2017

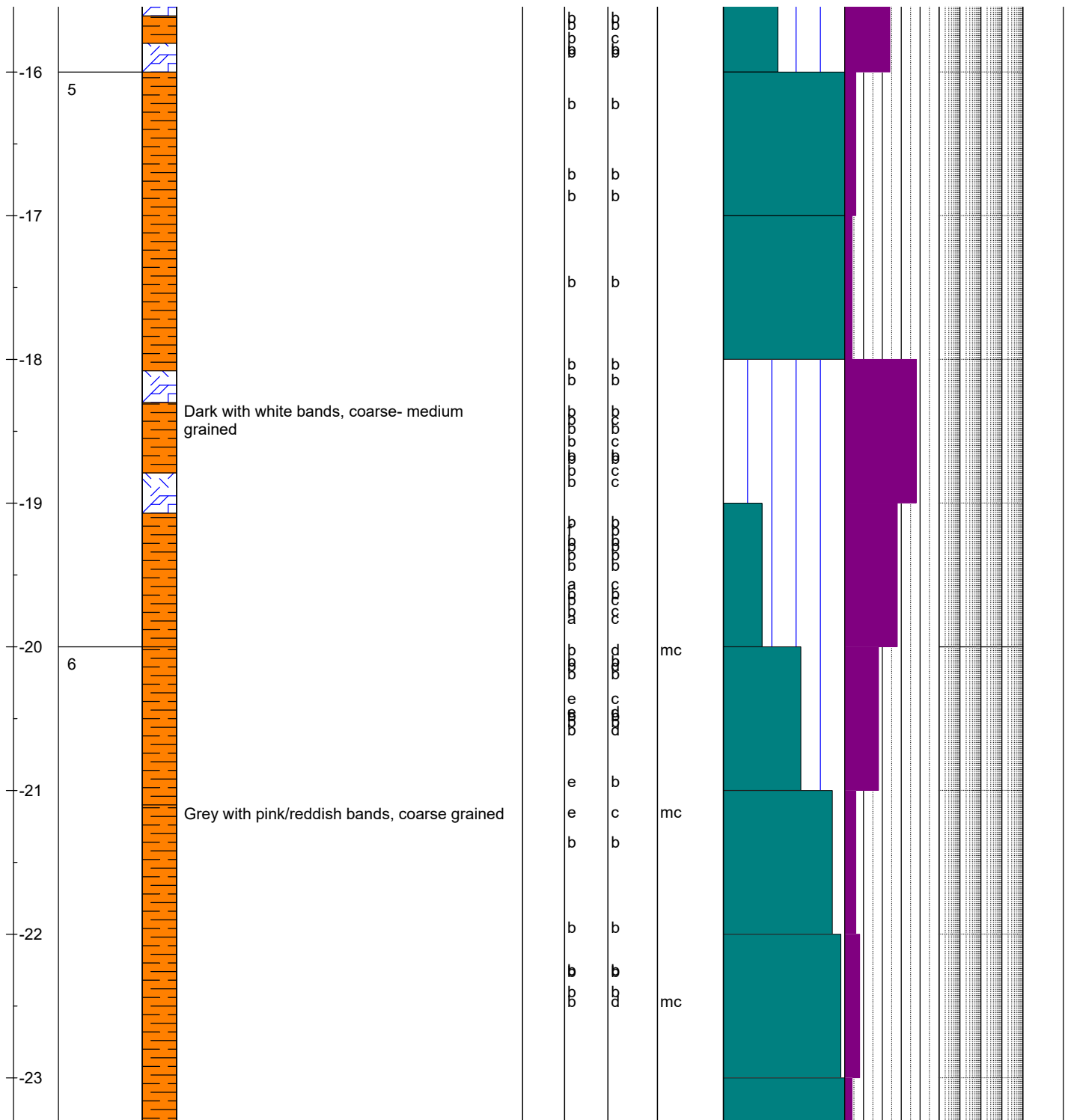
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REPORT NO.: 20180662 PROJECT NAME: Aknes drainage		ROCK TYPE:  Gneiss		ZONES:  Fractured zone  Core loss		JOINT INFILL MATERIAL: cy, Clay cl, Chlorite mc, Mica ca, Calcite x, Artificial joint					
DRILLED LENGTH: 300 m ELEVATION: 733,77 masl ORIENTATION: Vertical LOGGING DATE: Oct. 2017- Oct. 2018 NAME: Gustav Pless, Lise Tønset and Henrik Langeland File: P:\2018\06\20180662\Beregninger\Borehull\KH-02-2017\Logplot											
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								20 40 60 80	5 10 15 20	1 10 100	







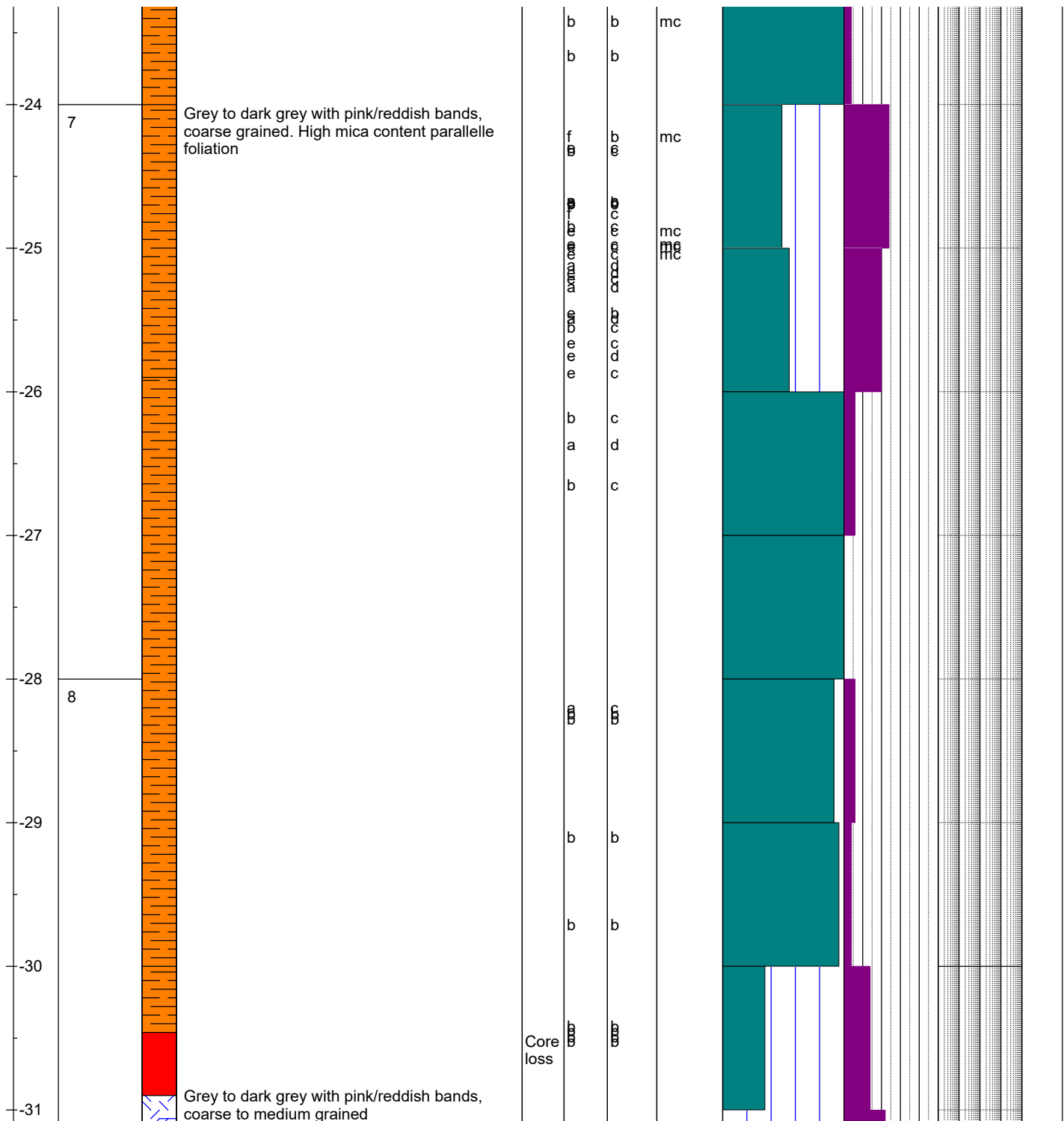
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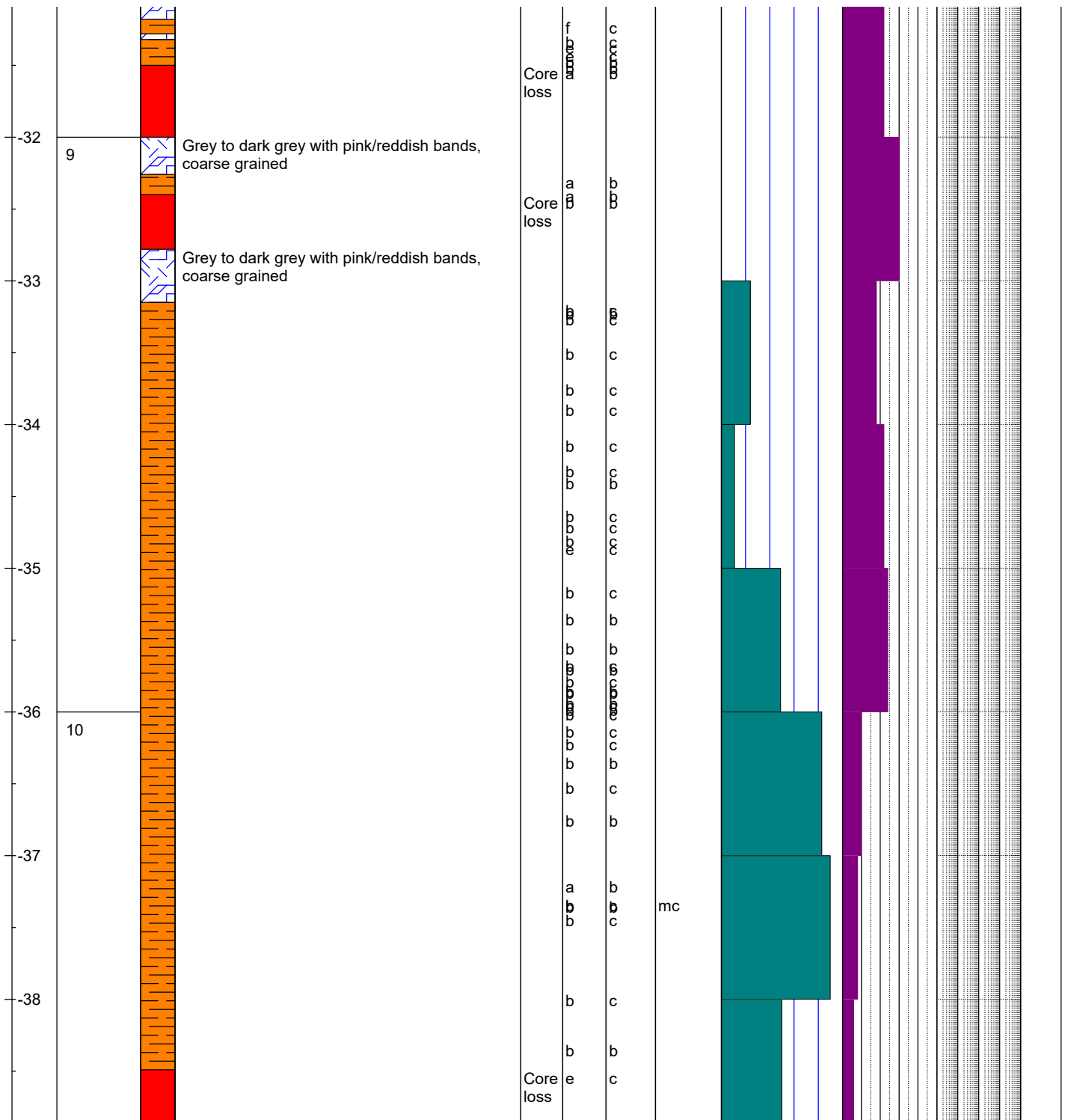
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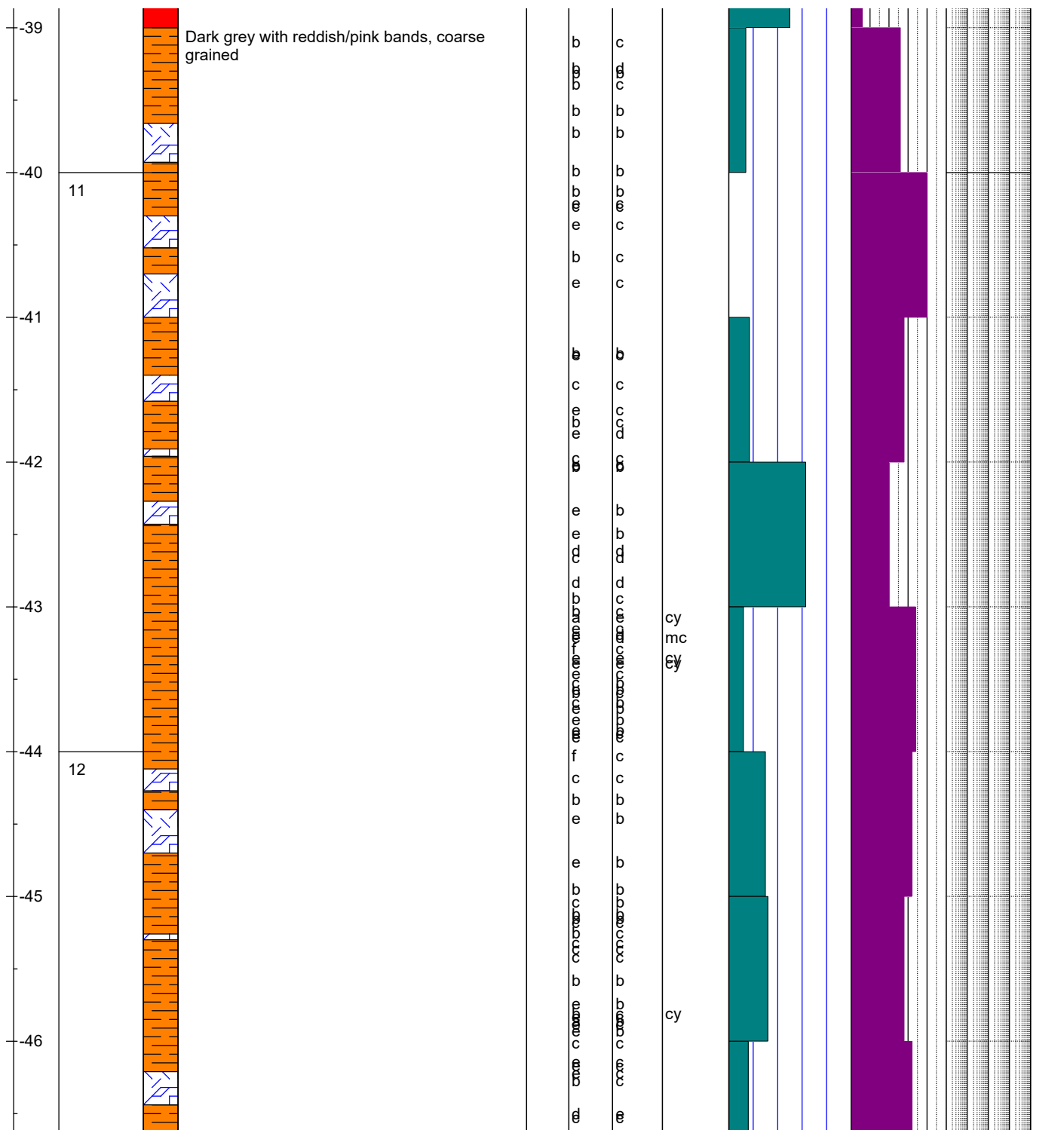
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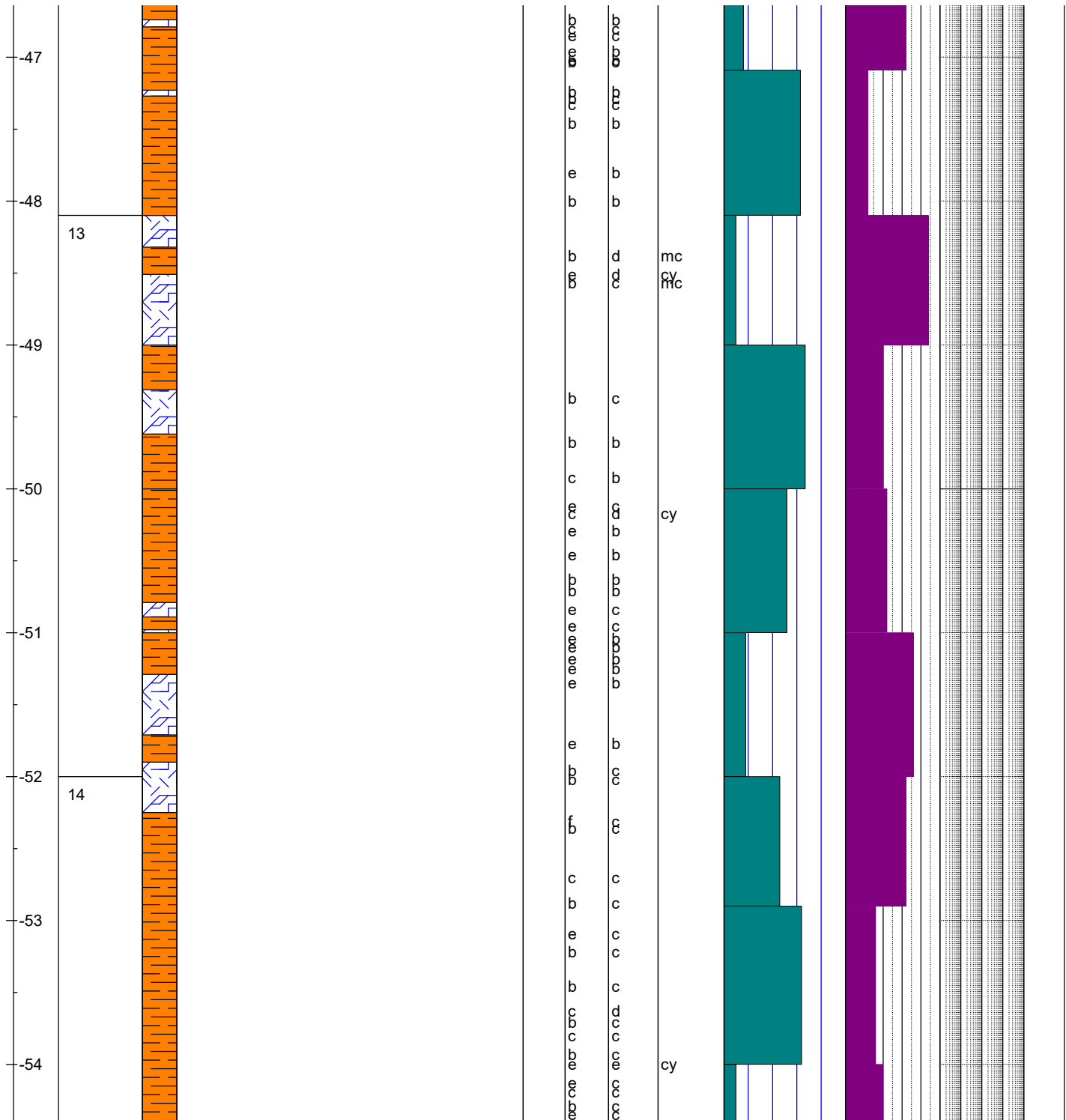
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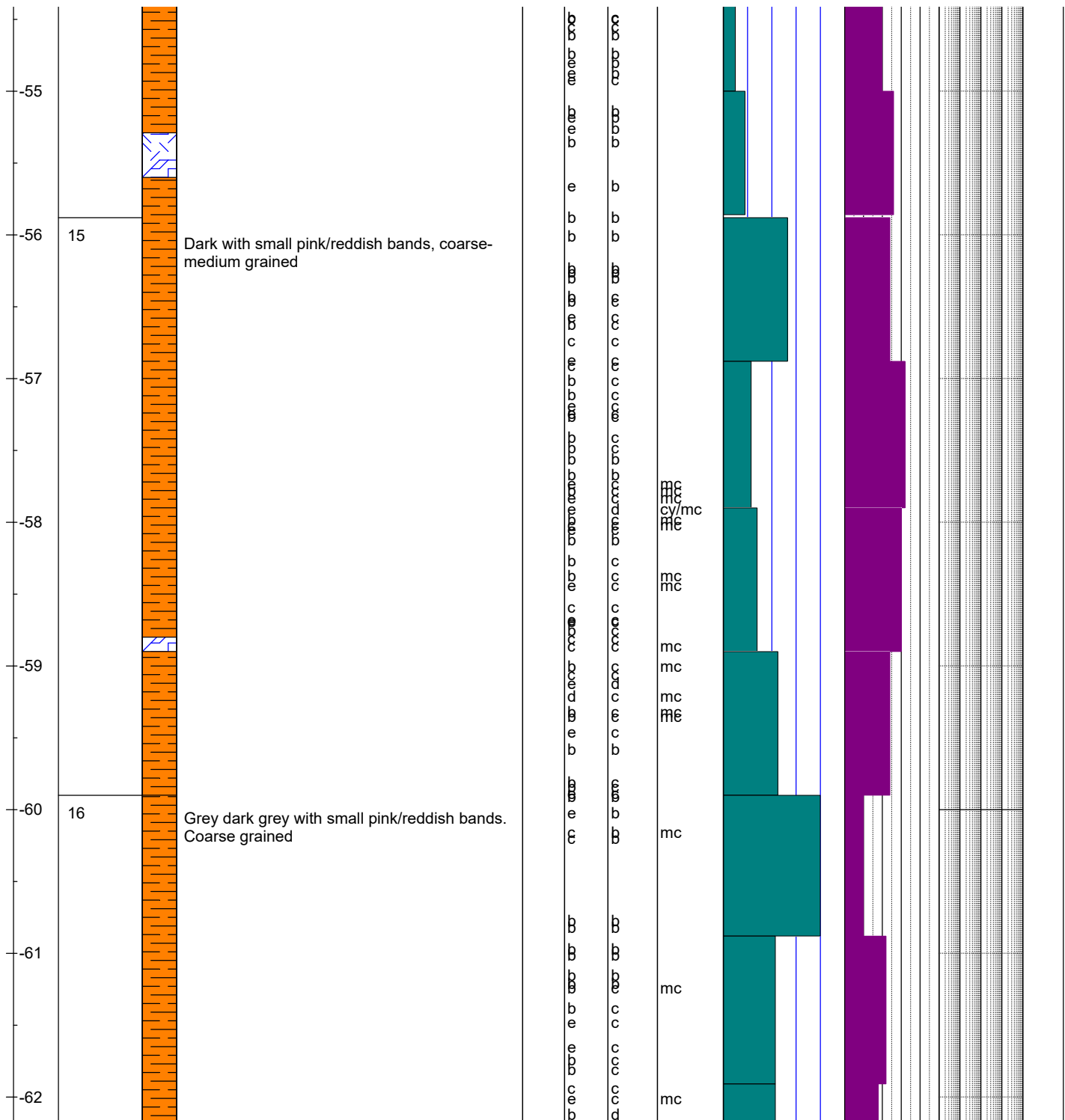
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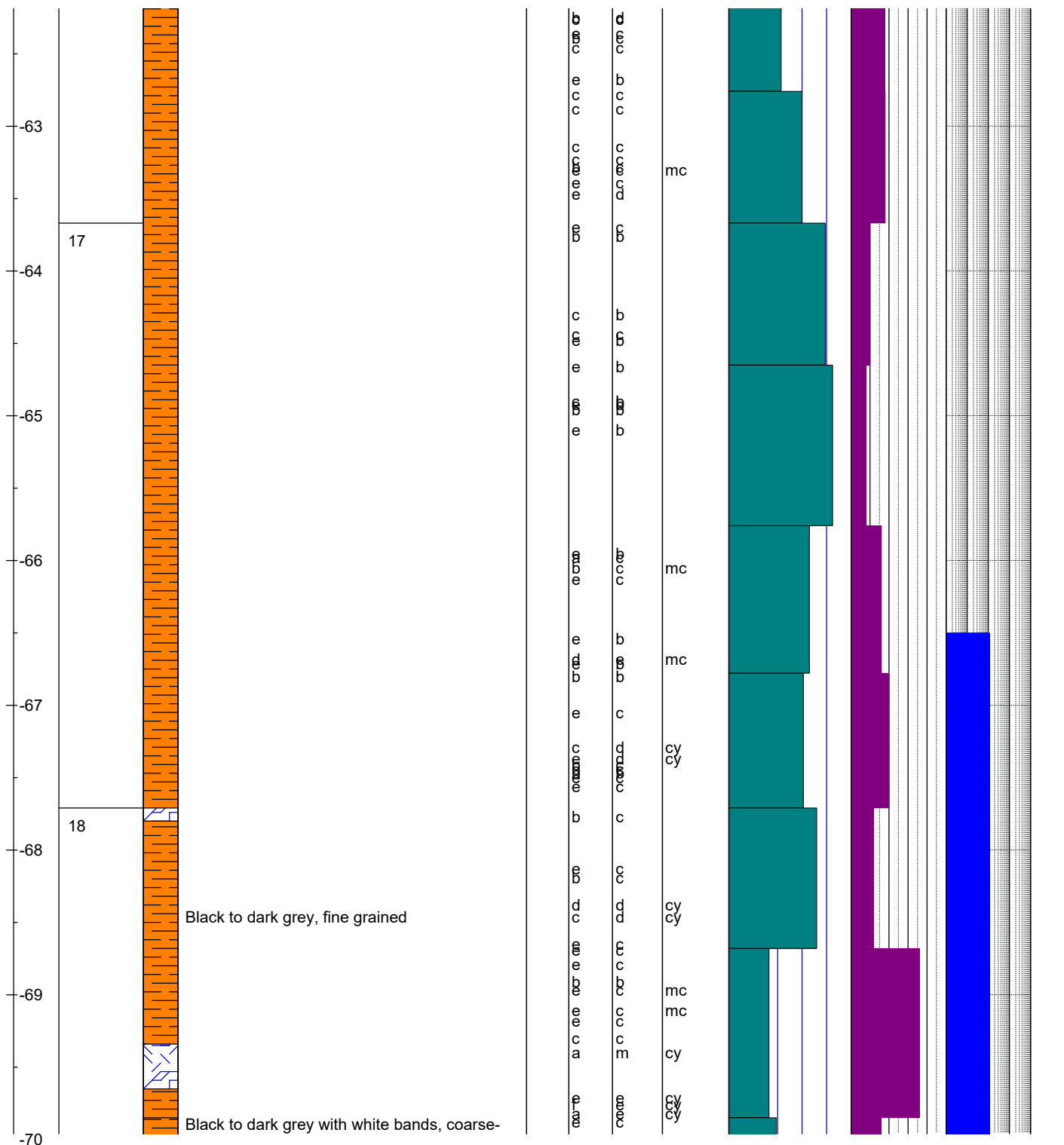
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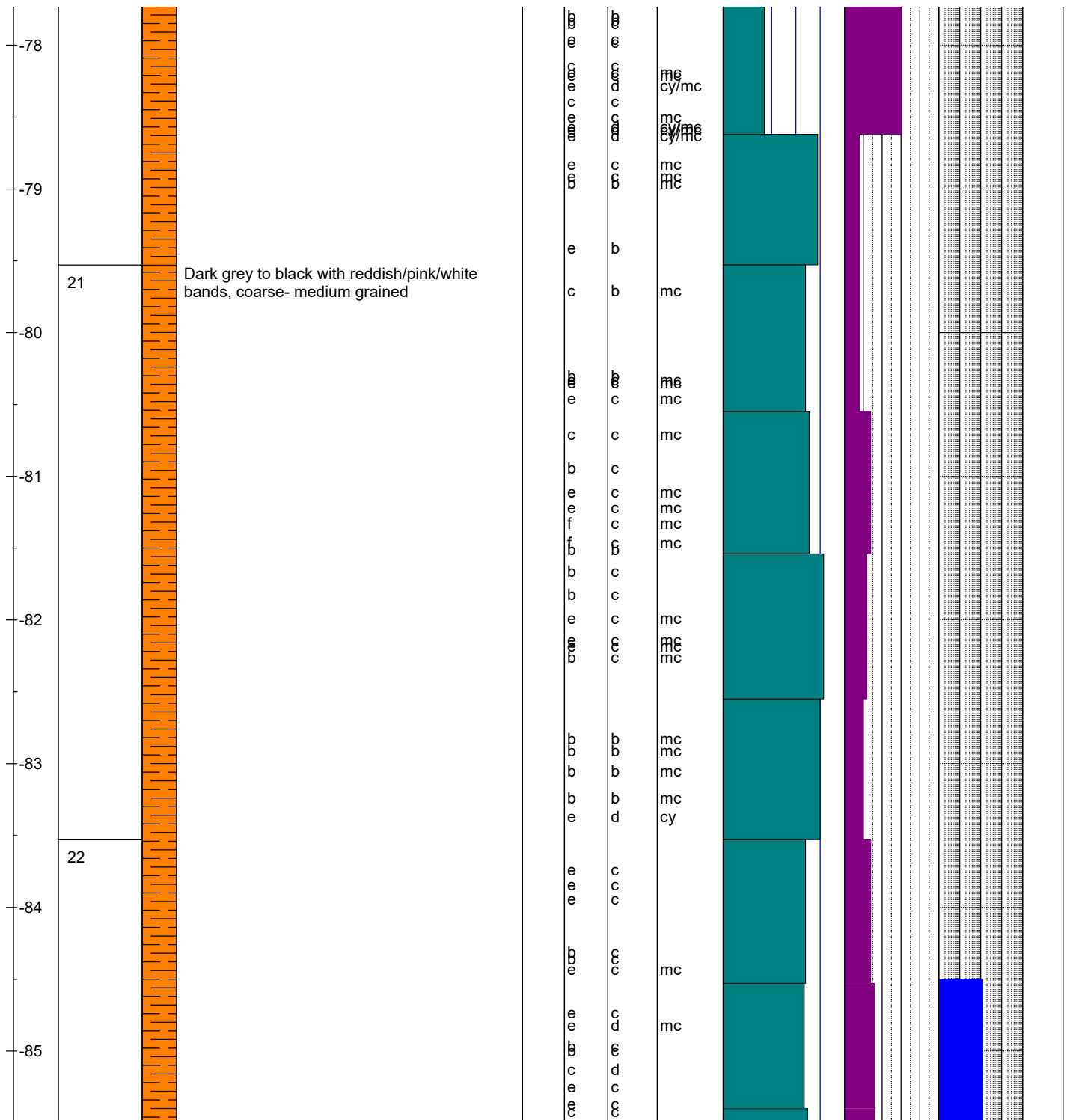
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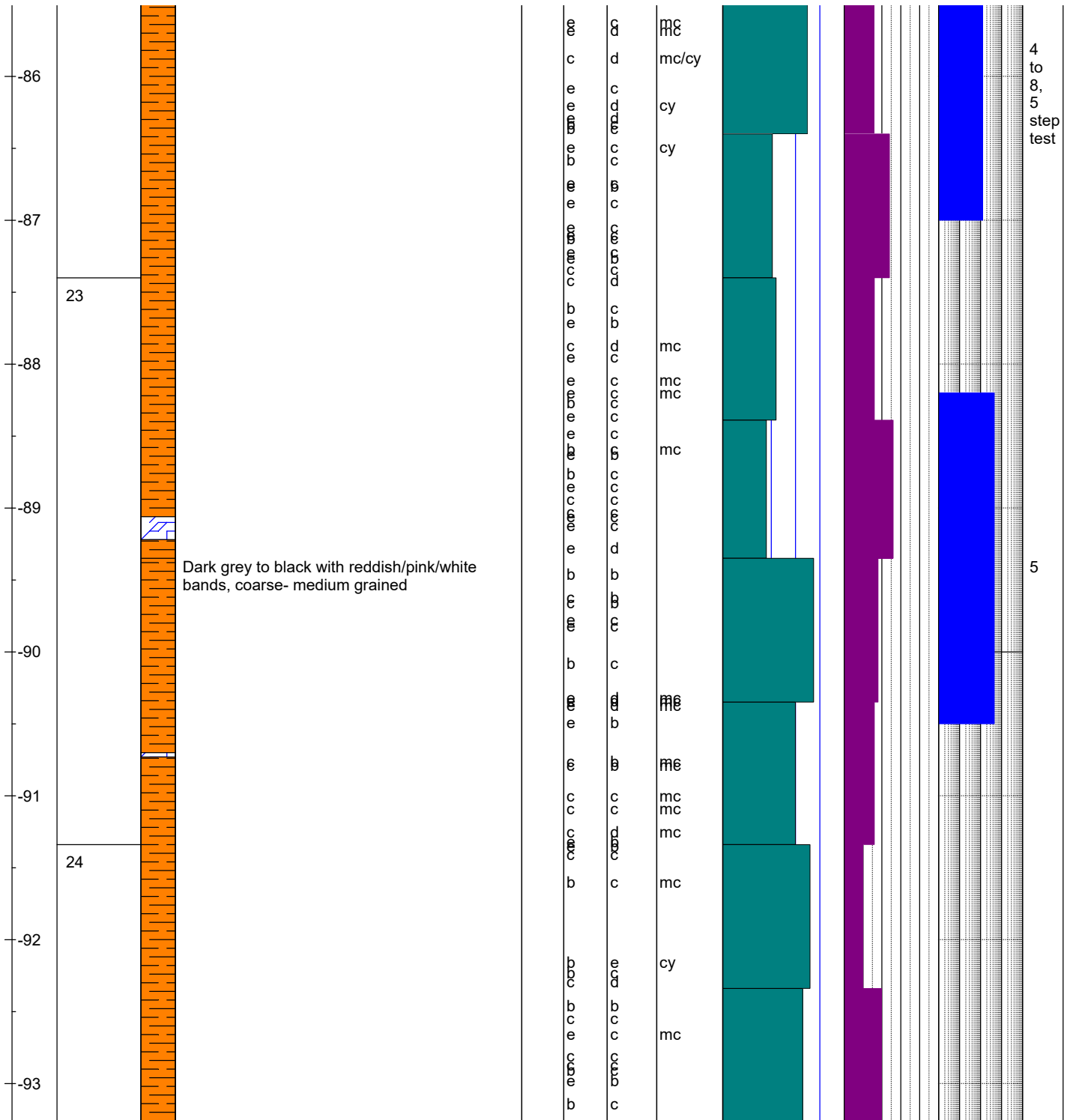
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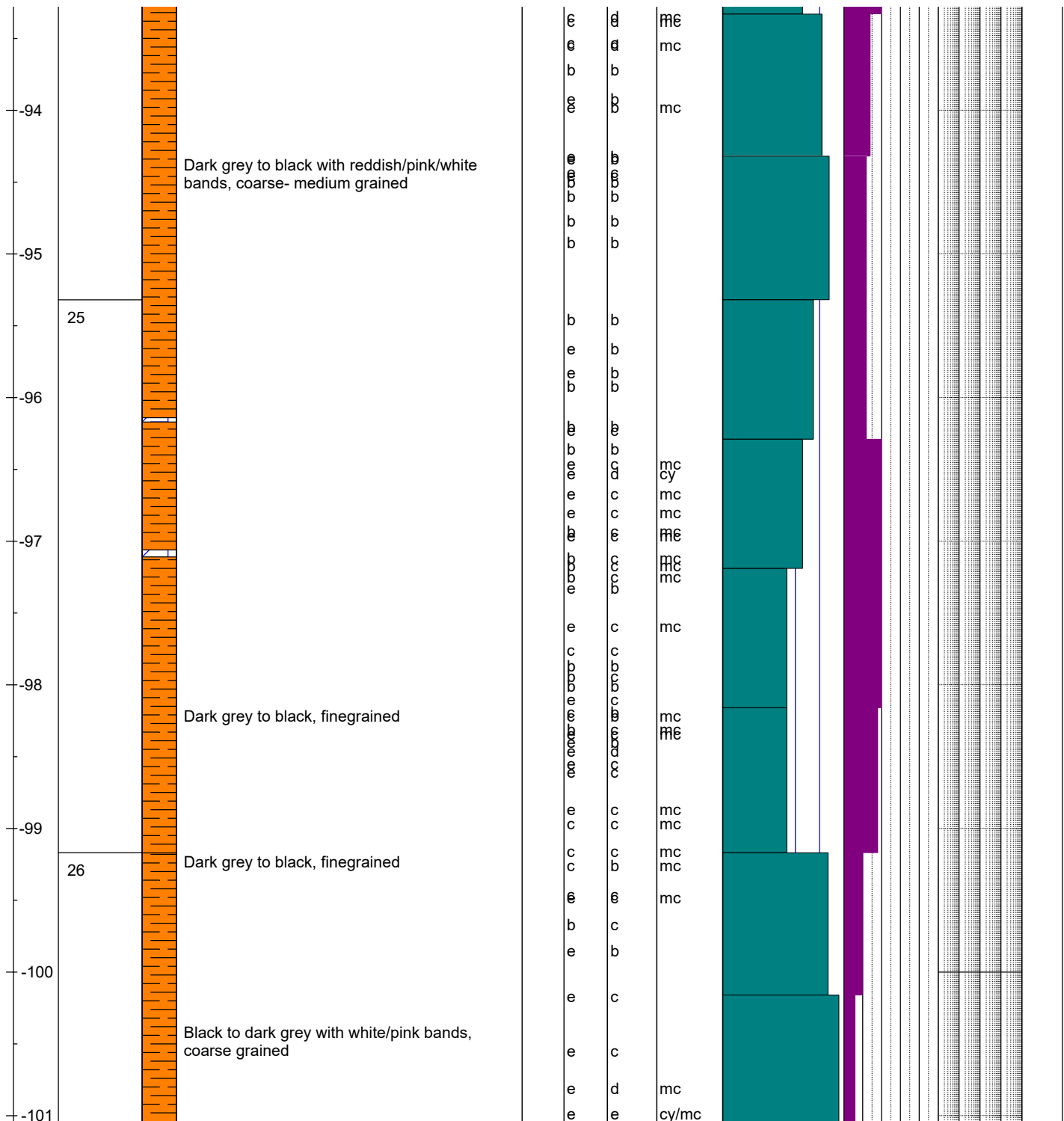
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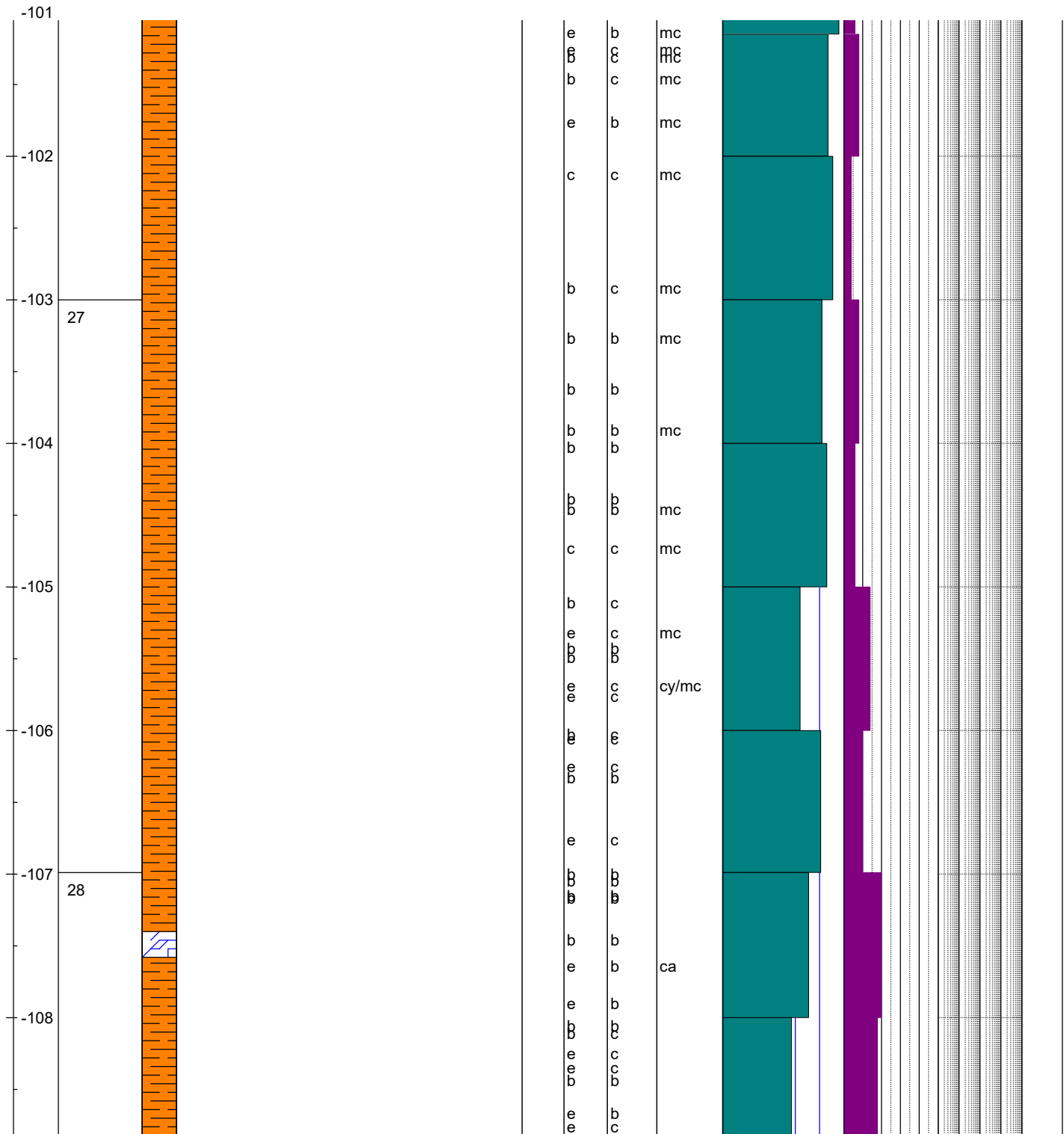
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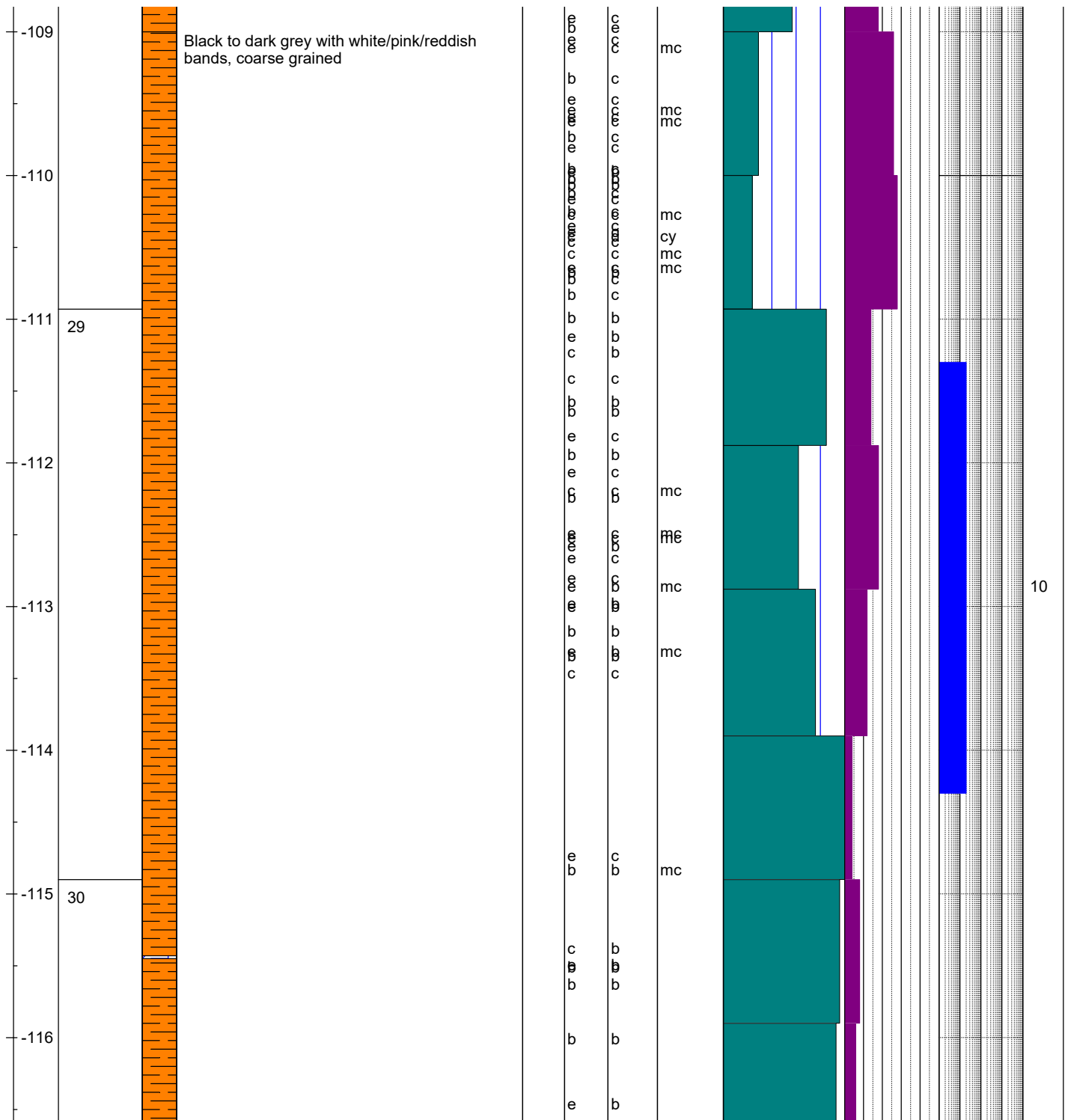
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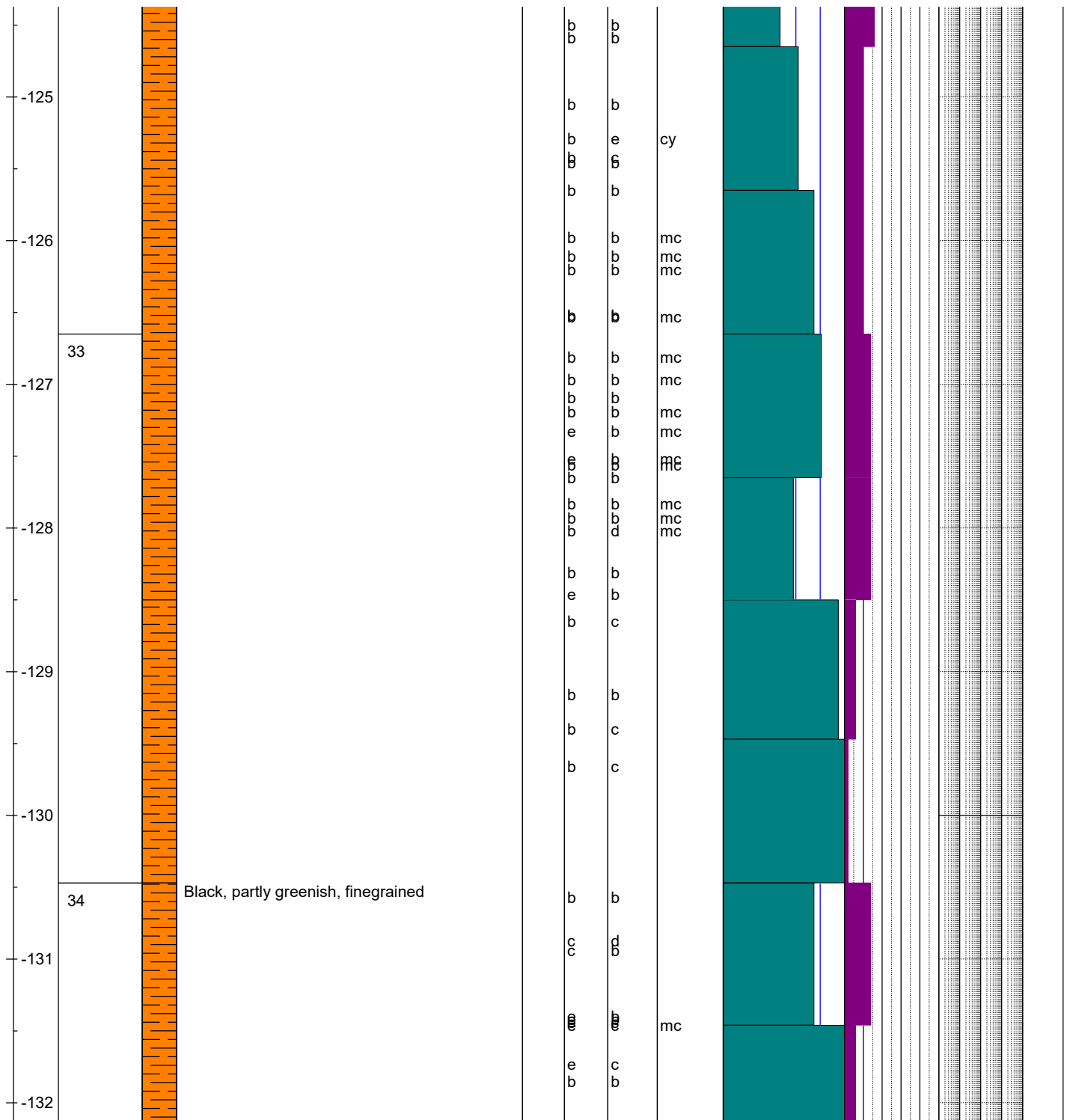
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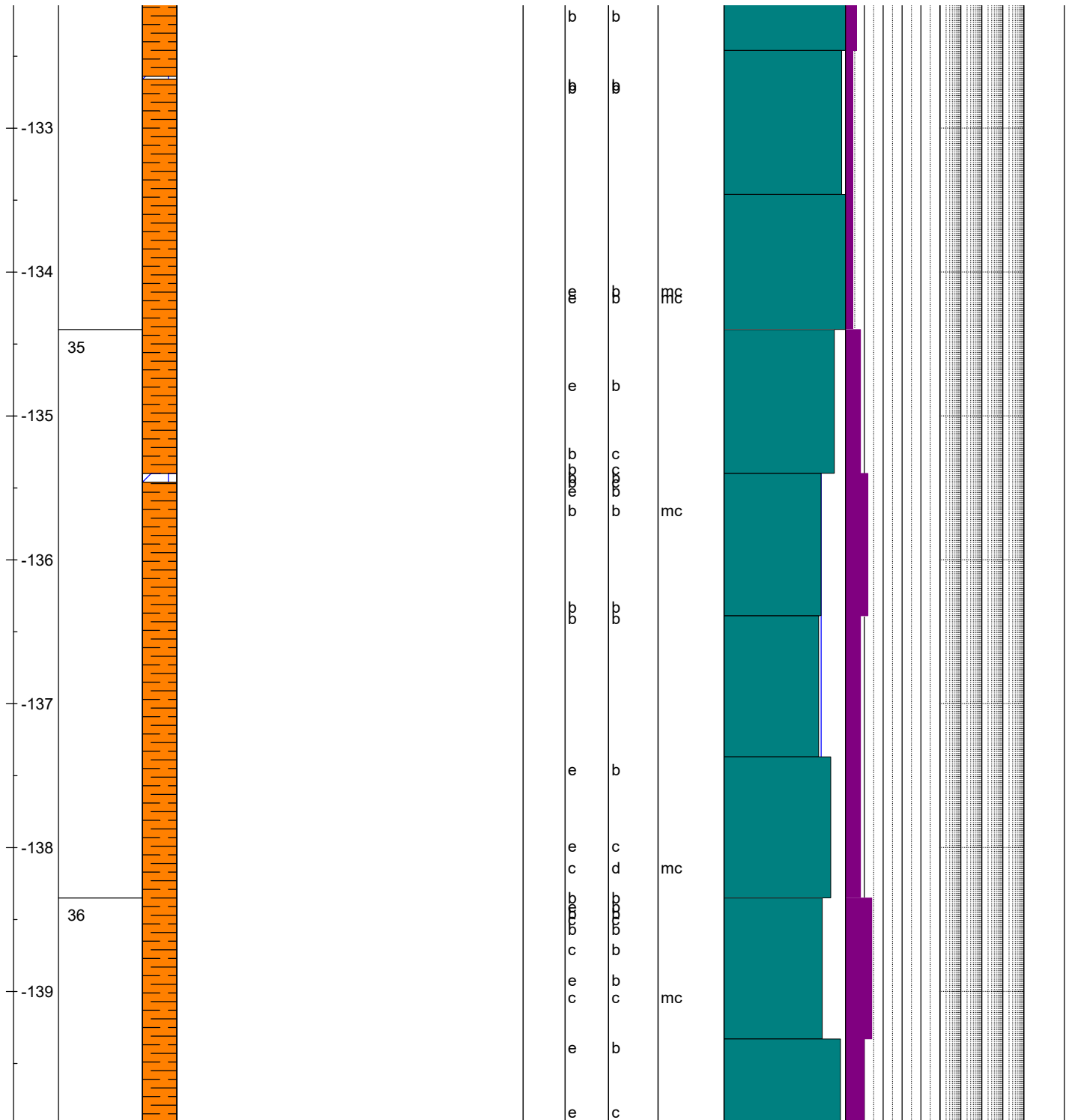
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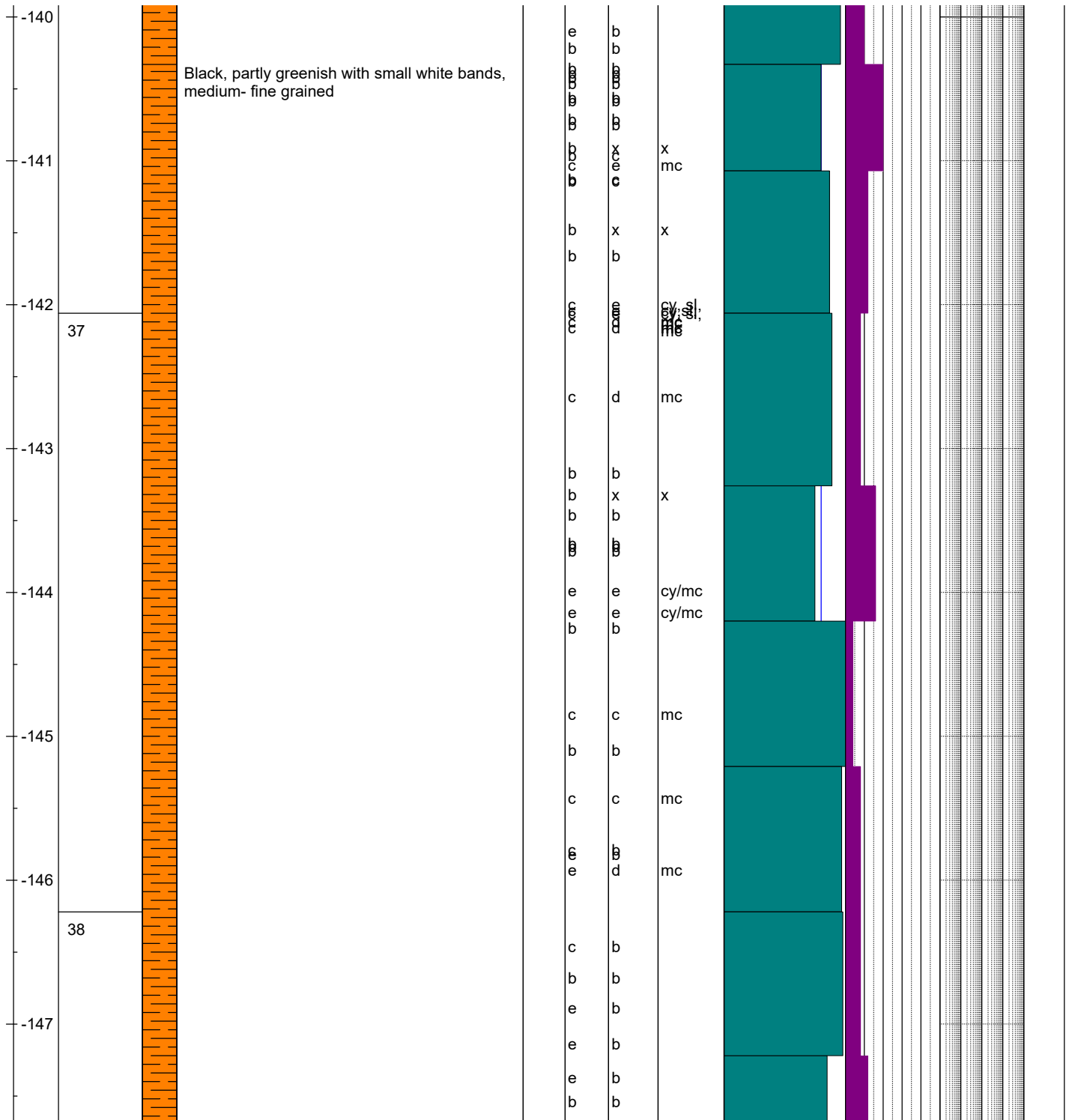
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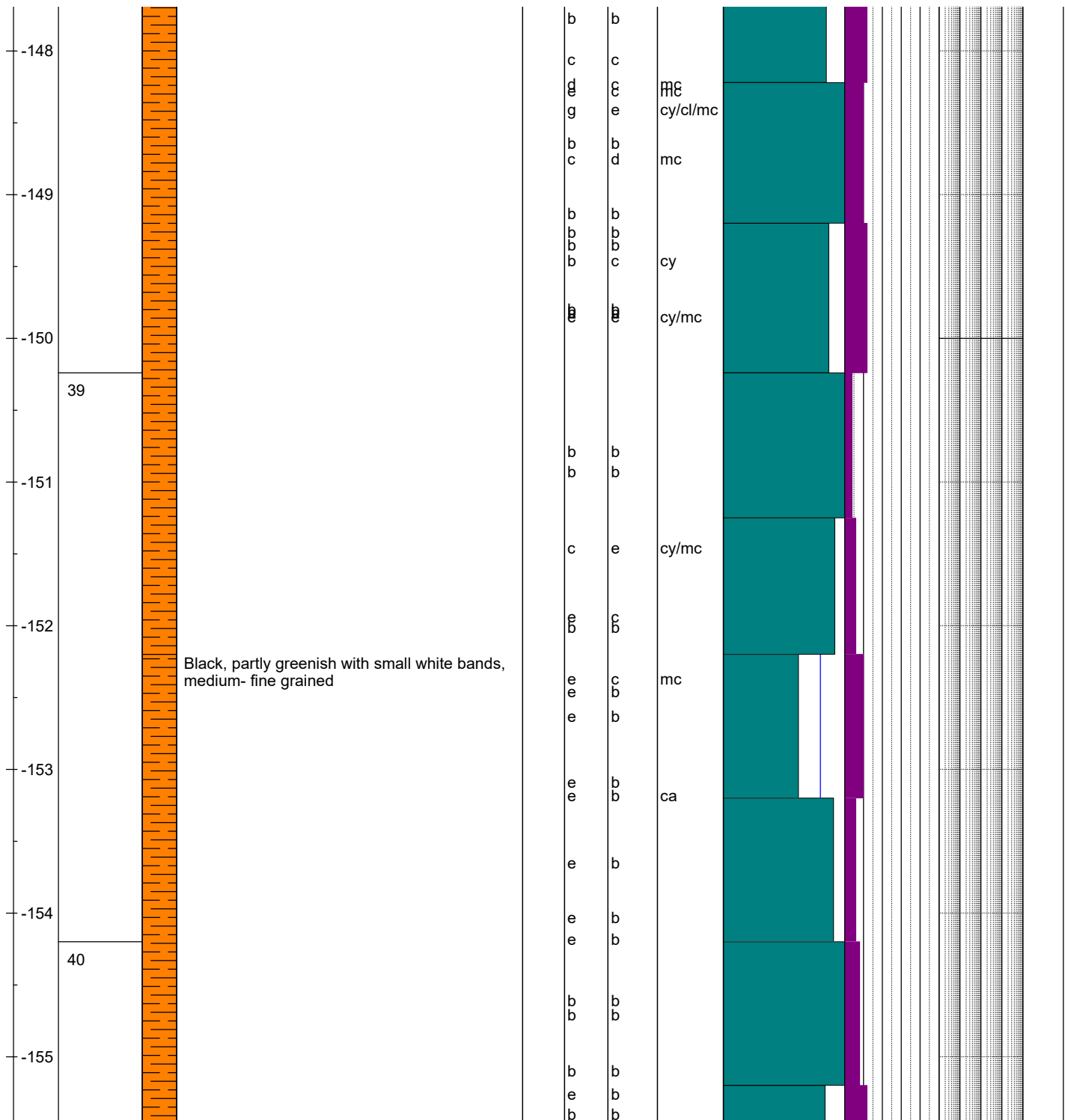
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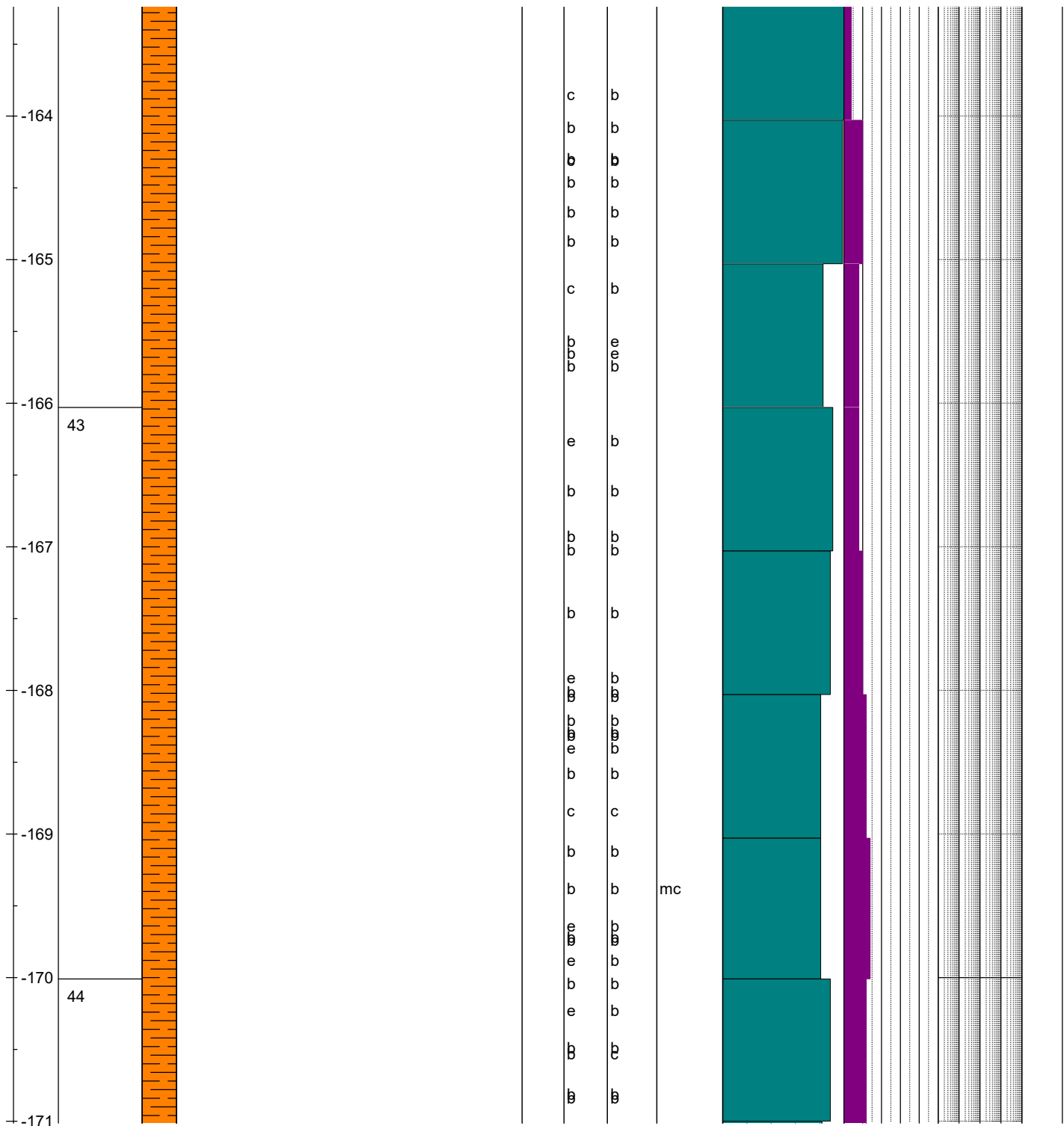
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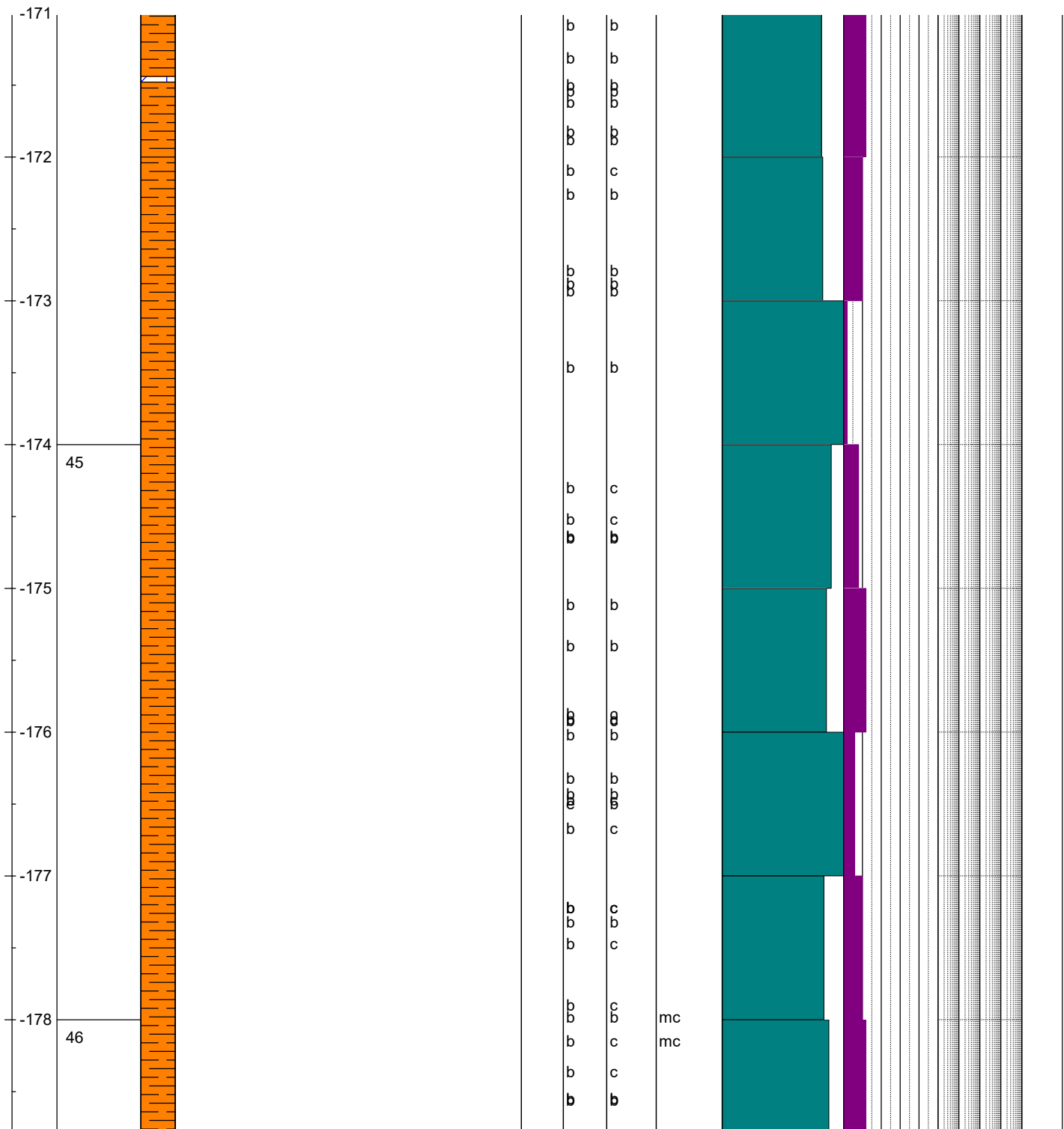
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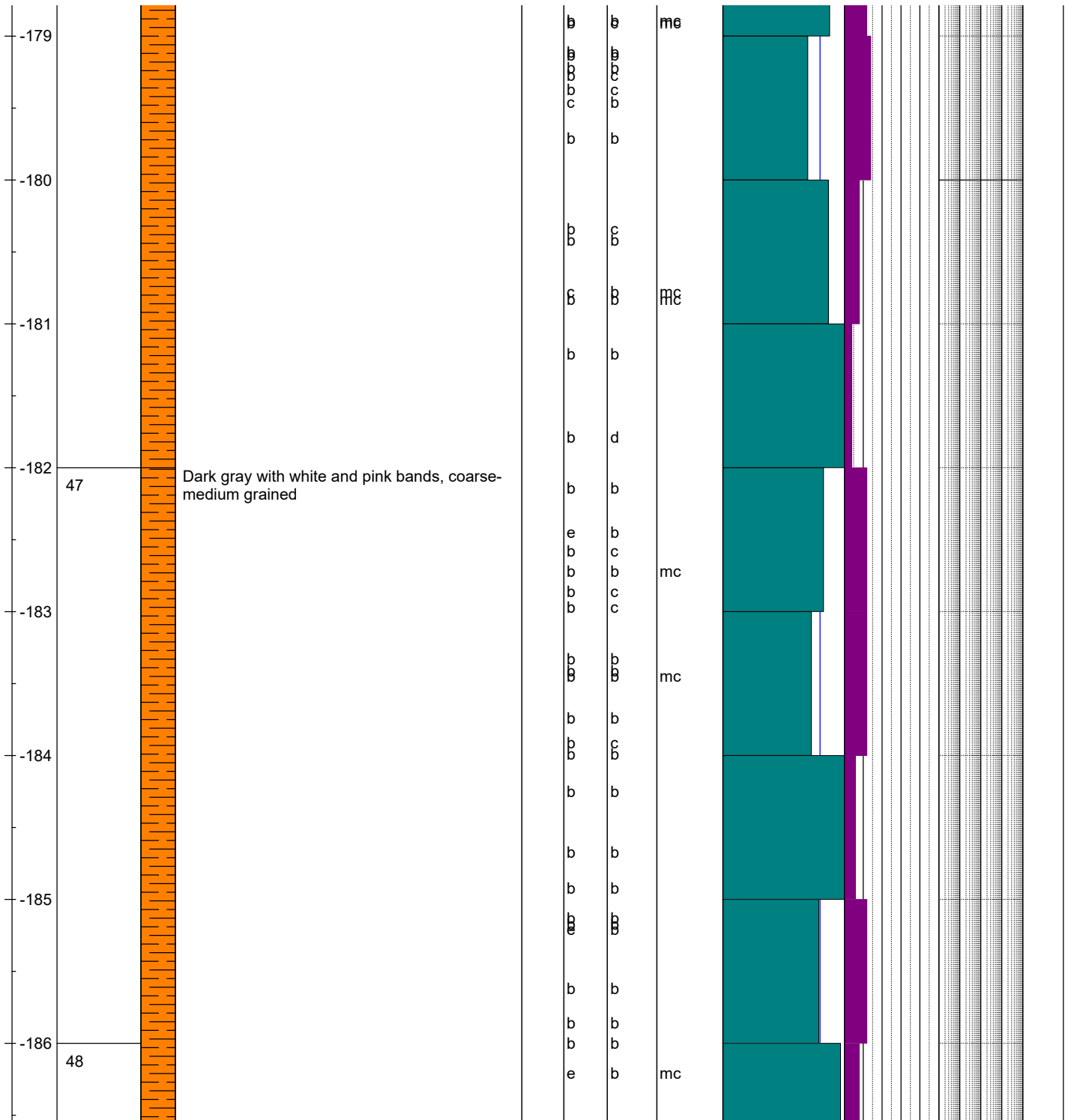
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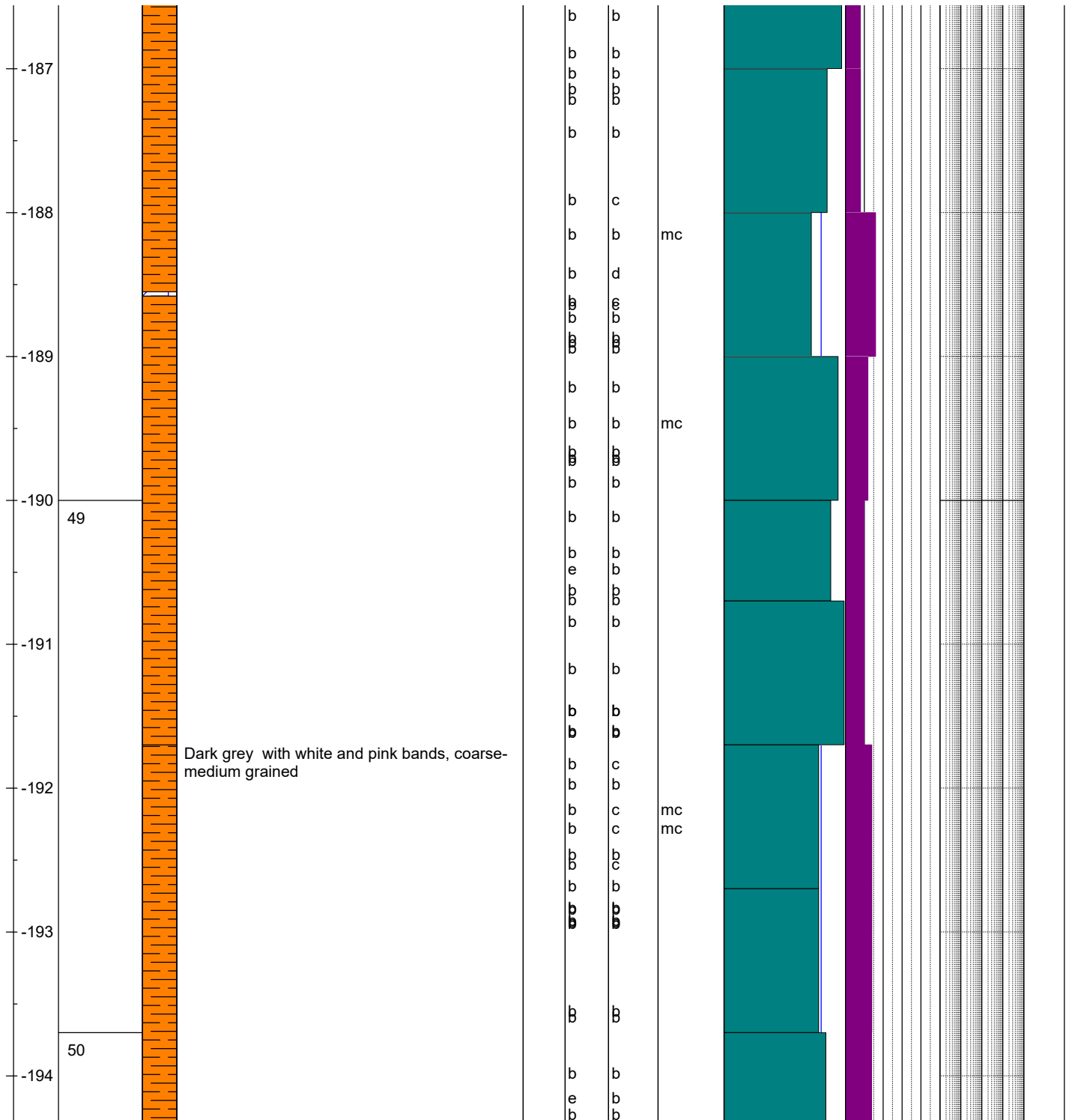
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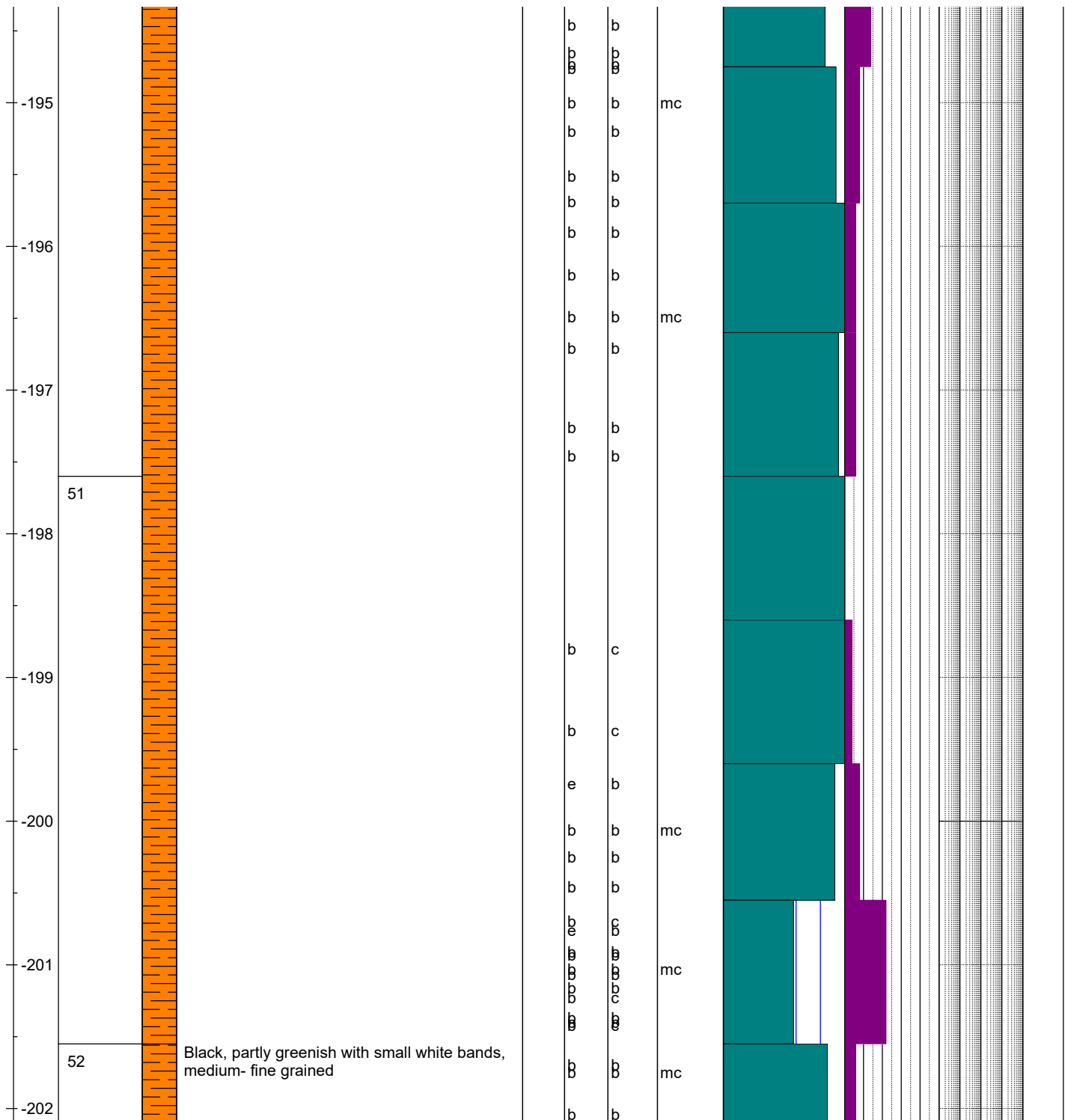
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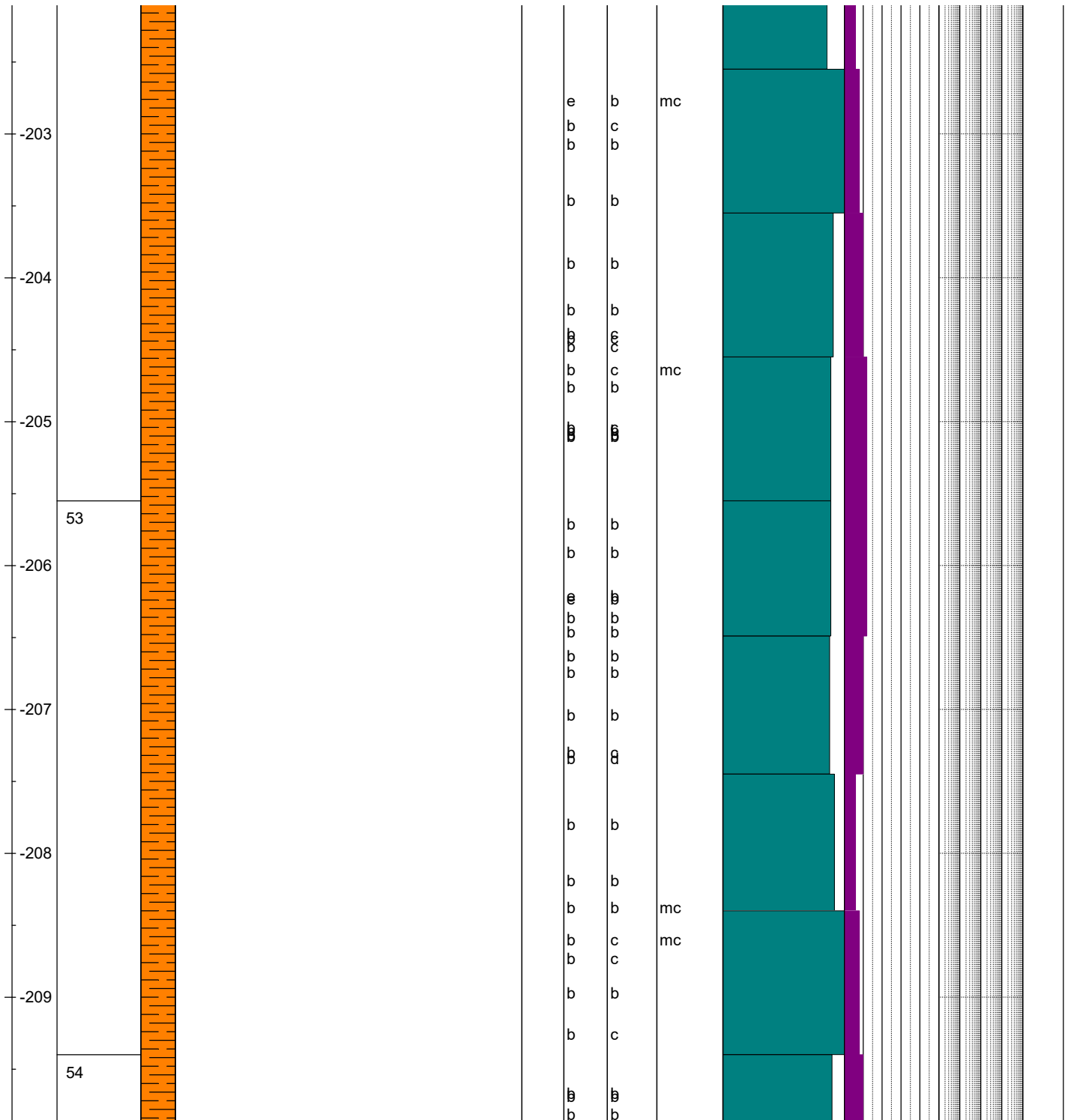
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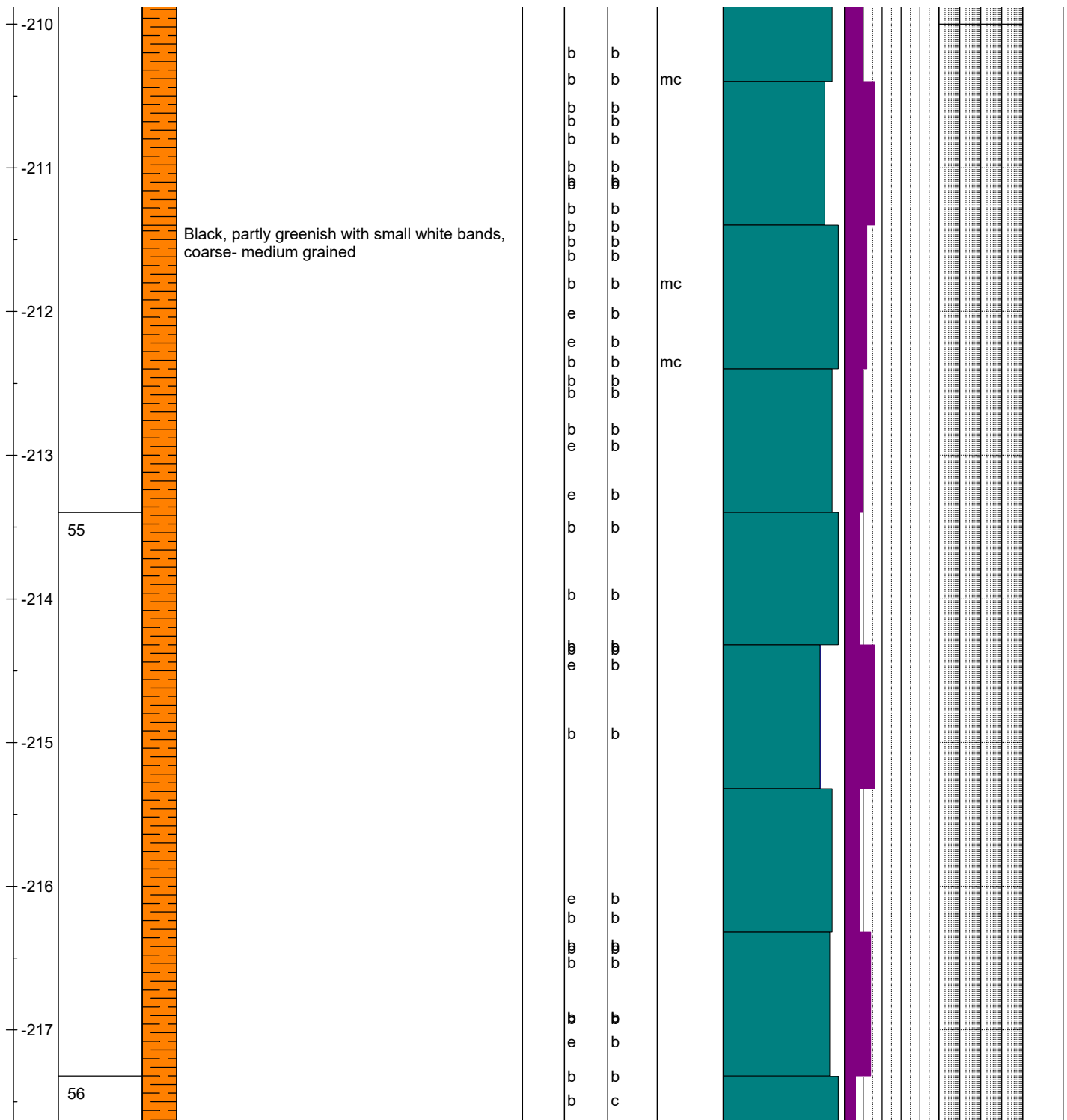
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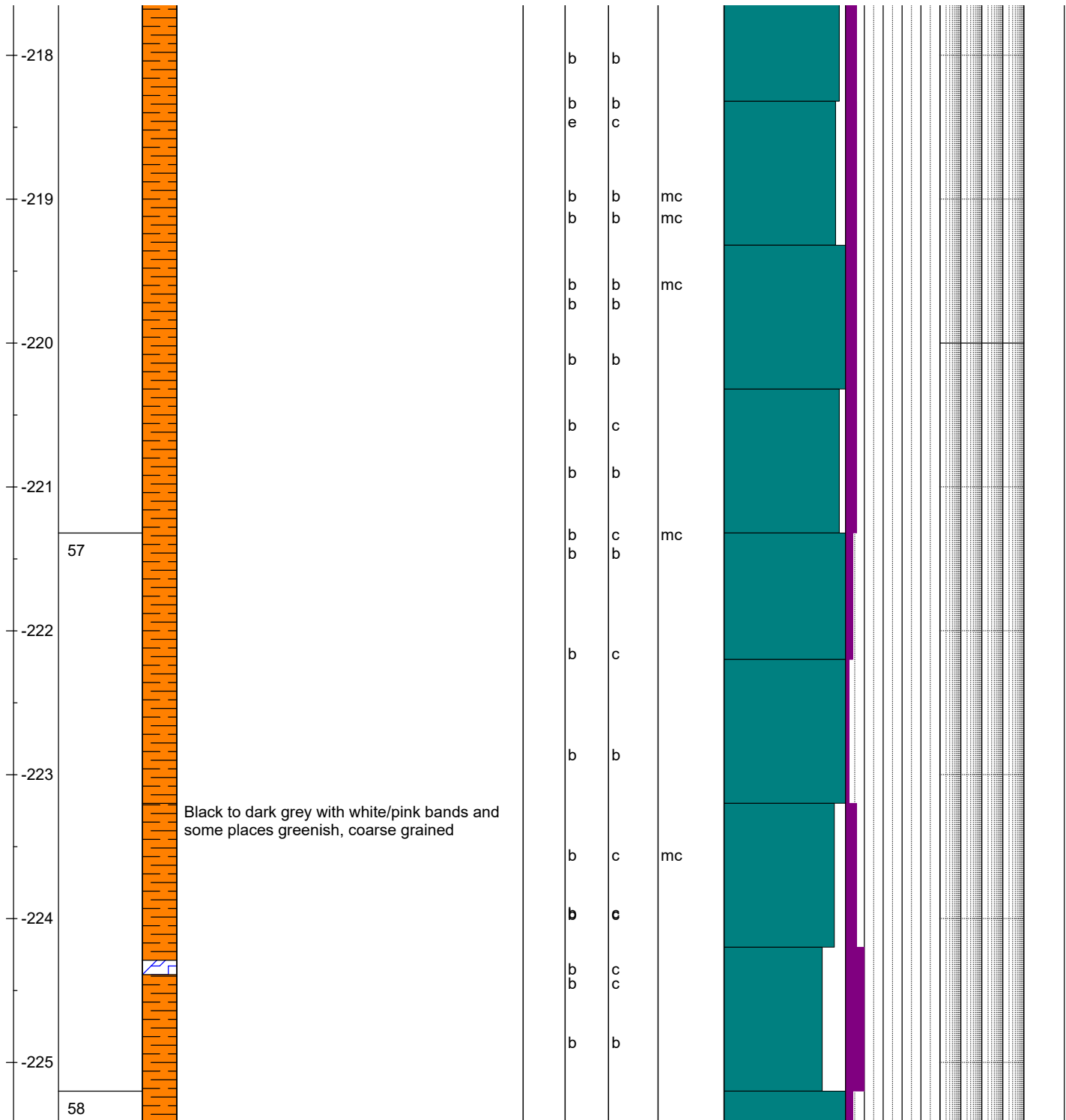
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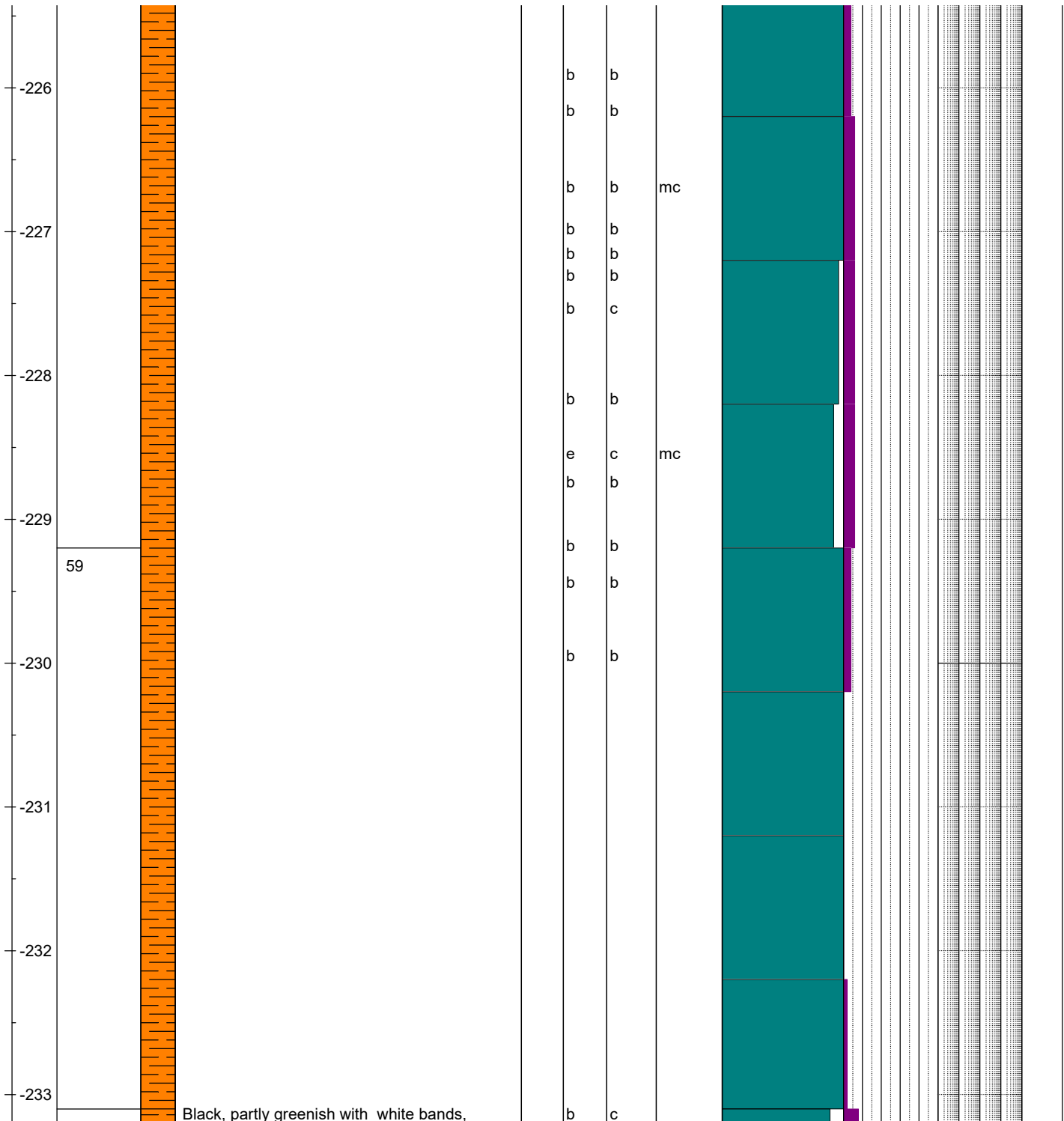
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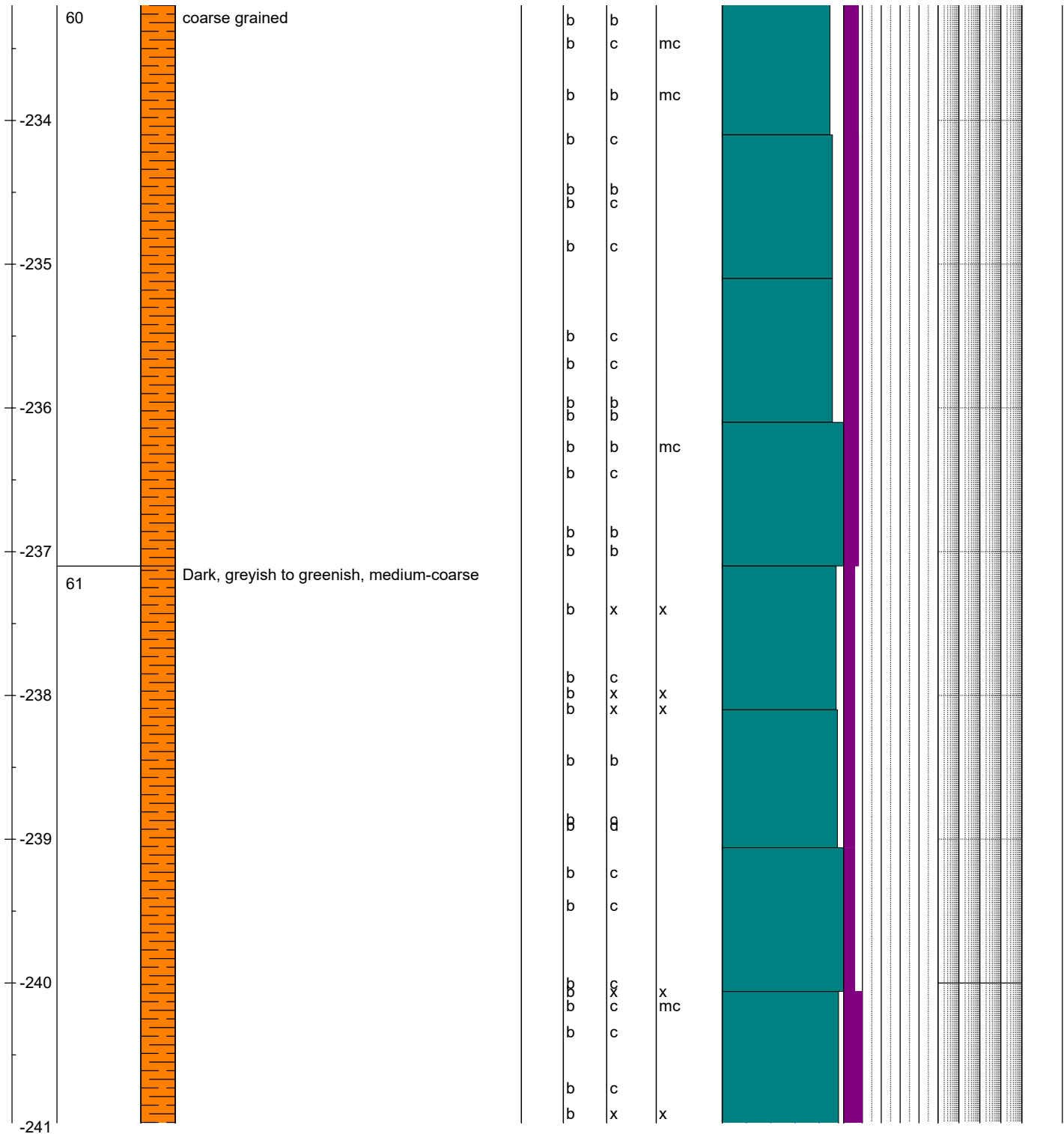
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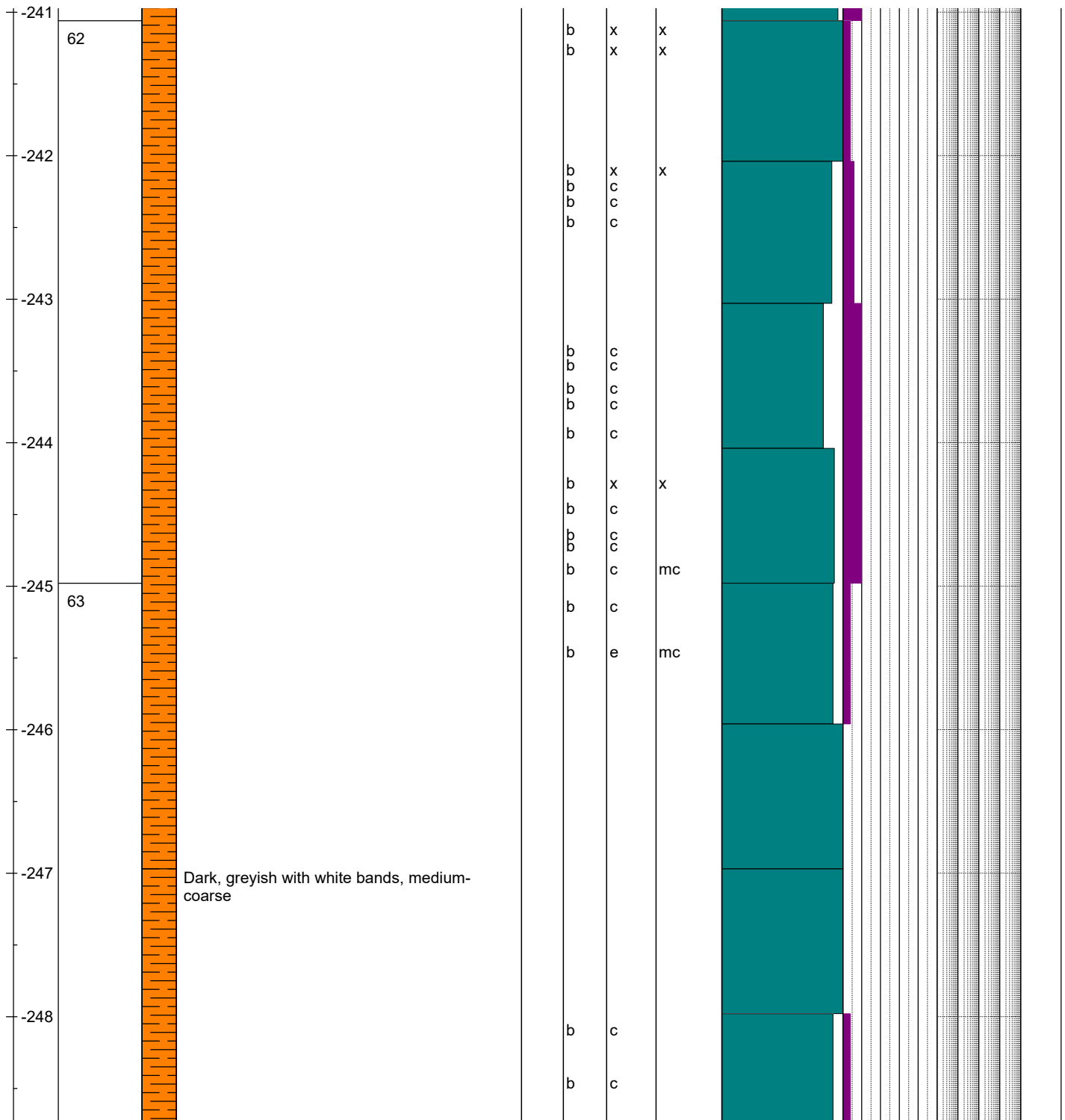
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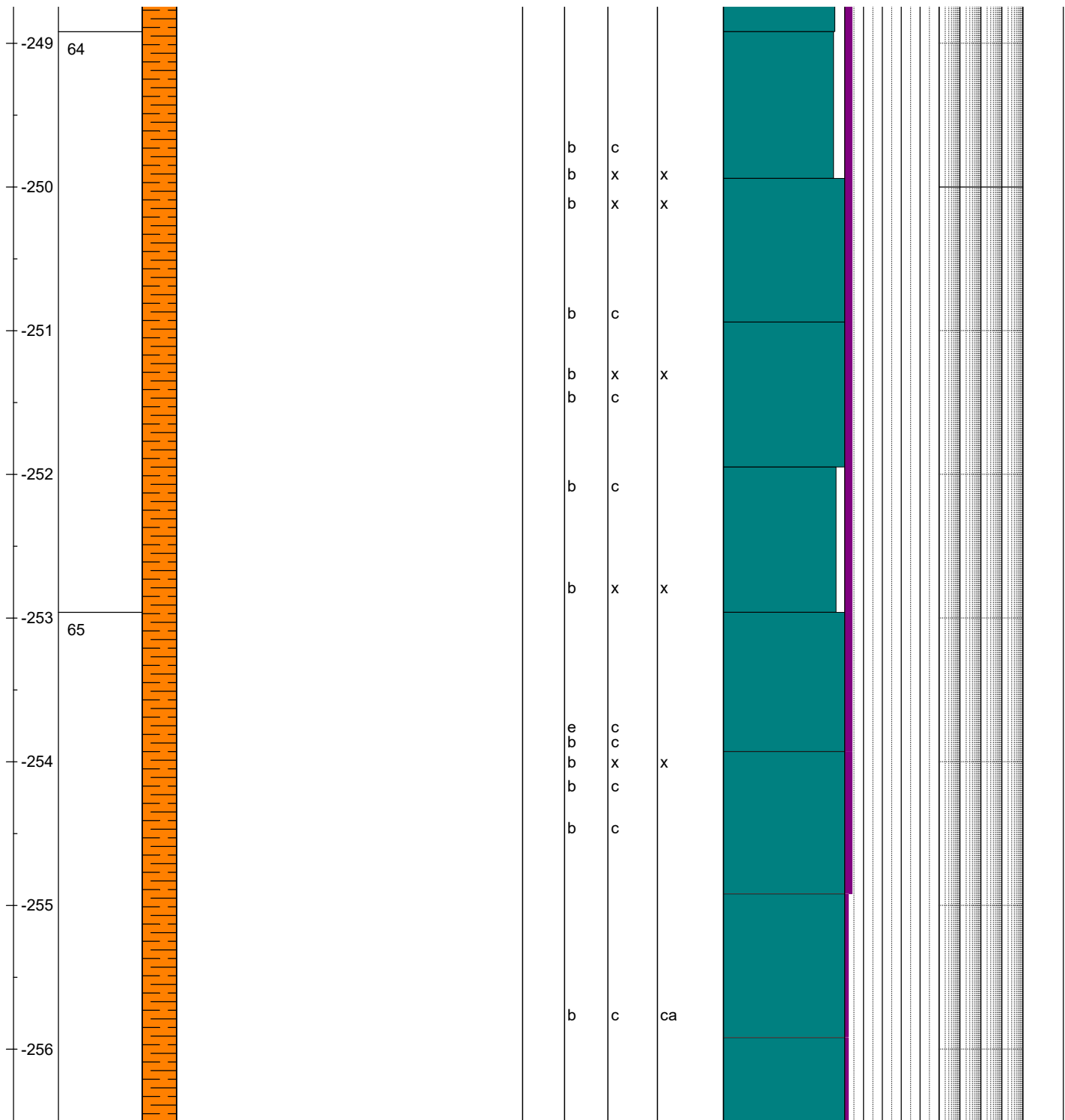
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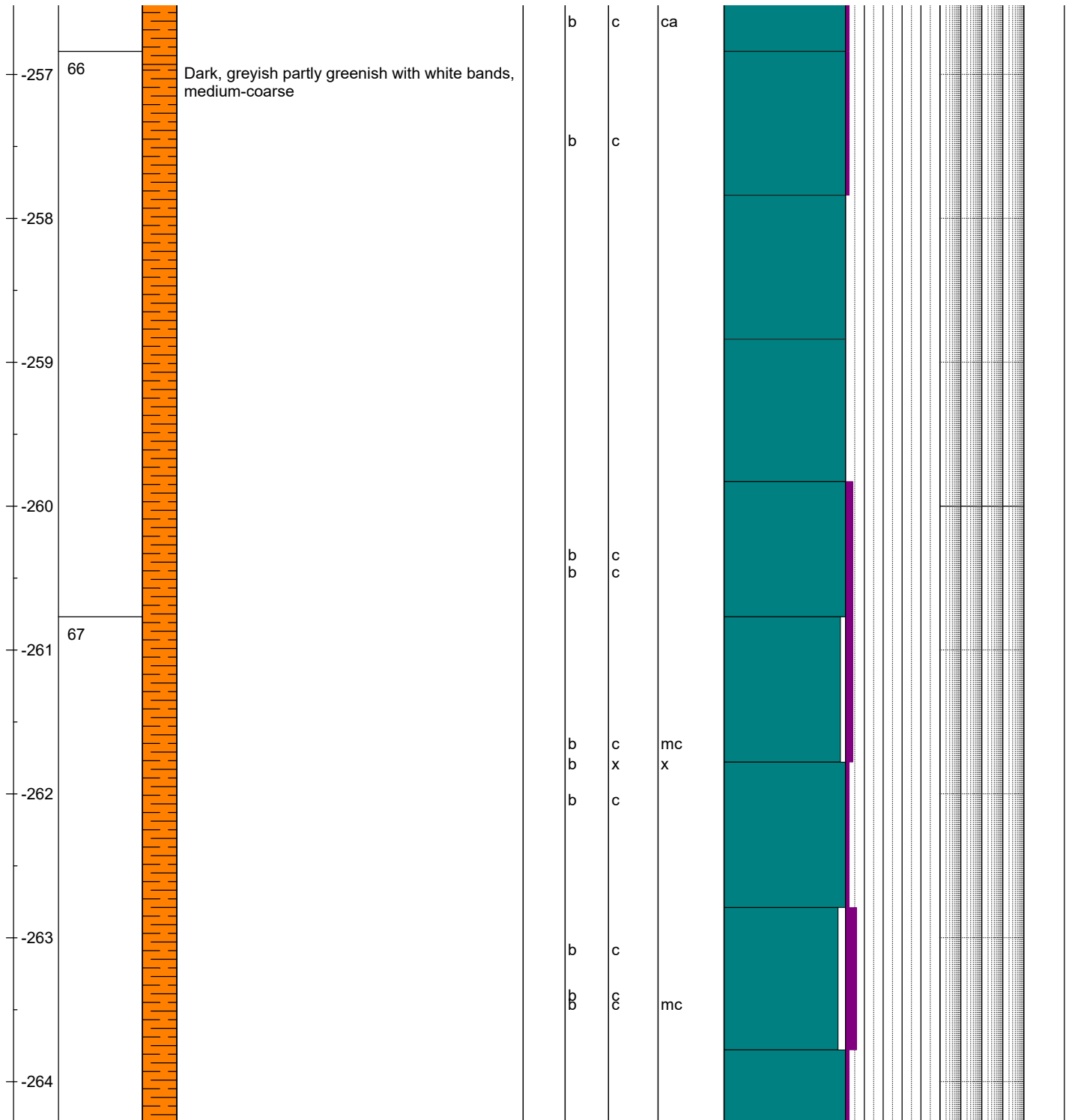
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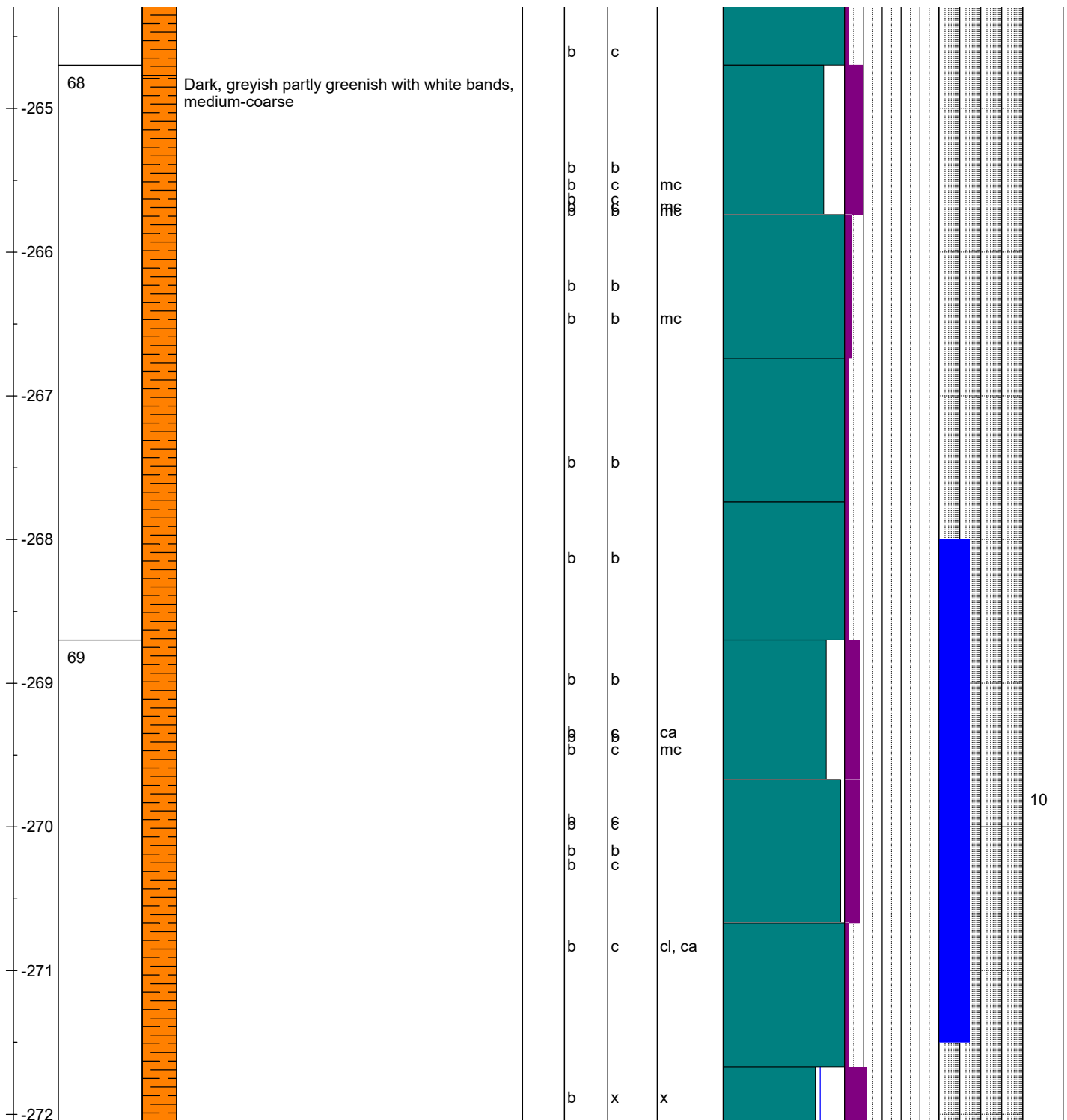
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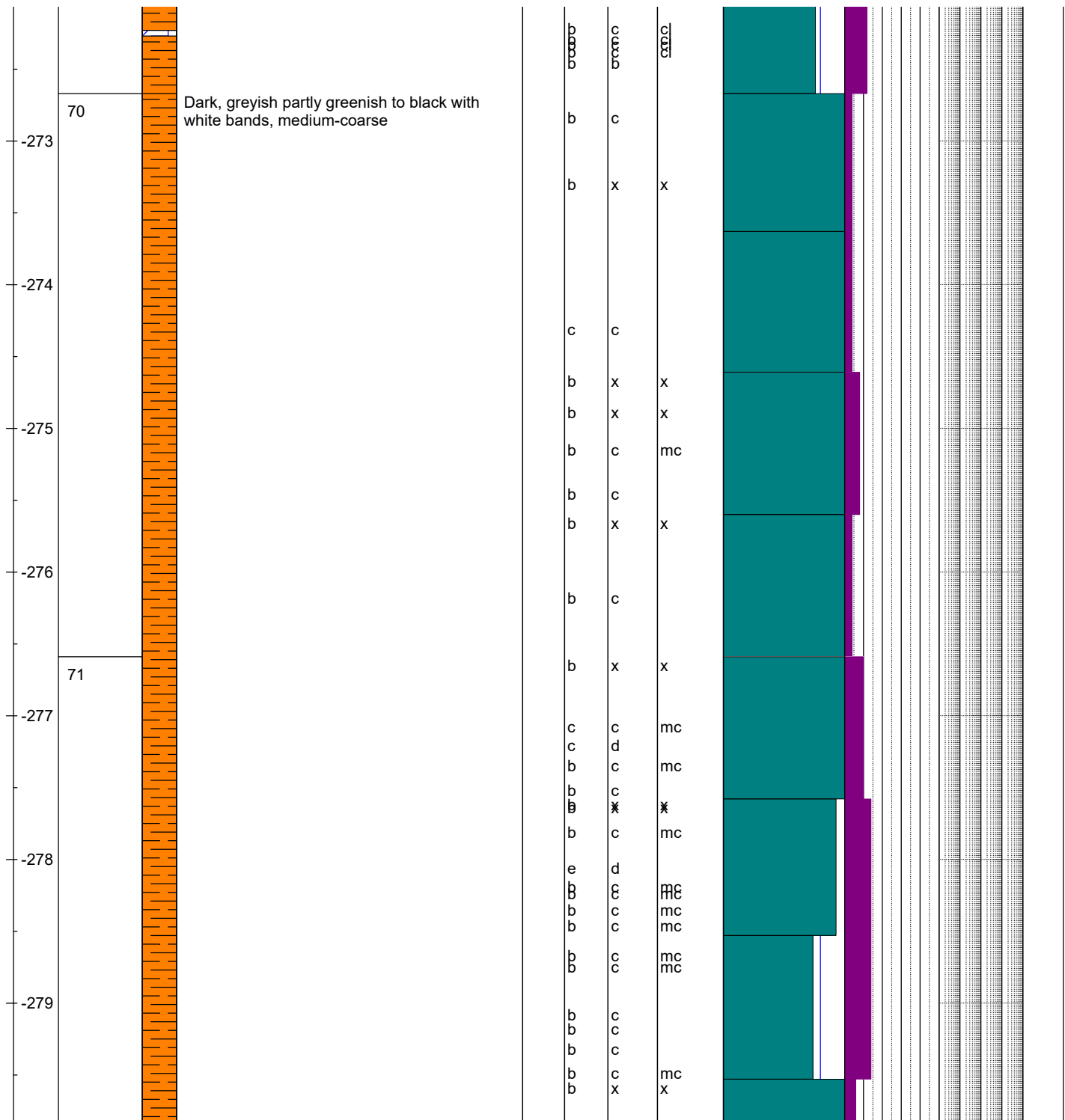
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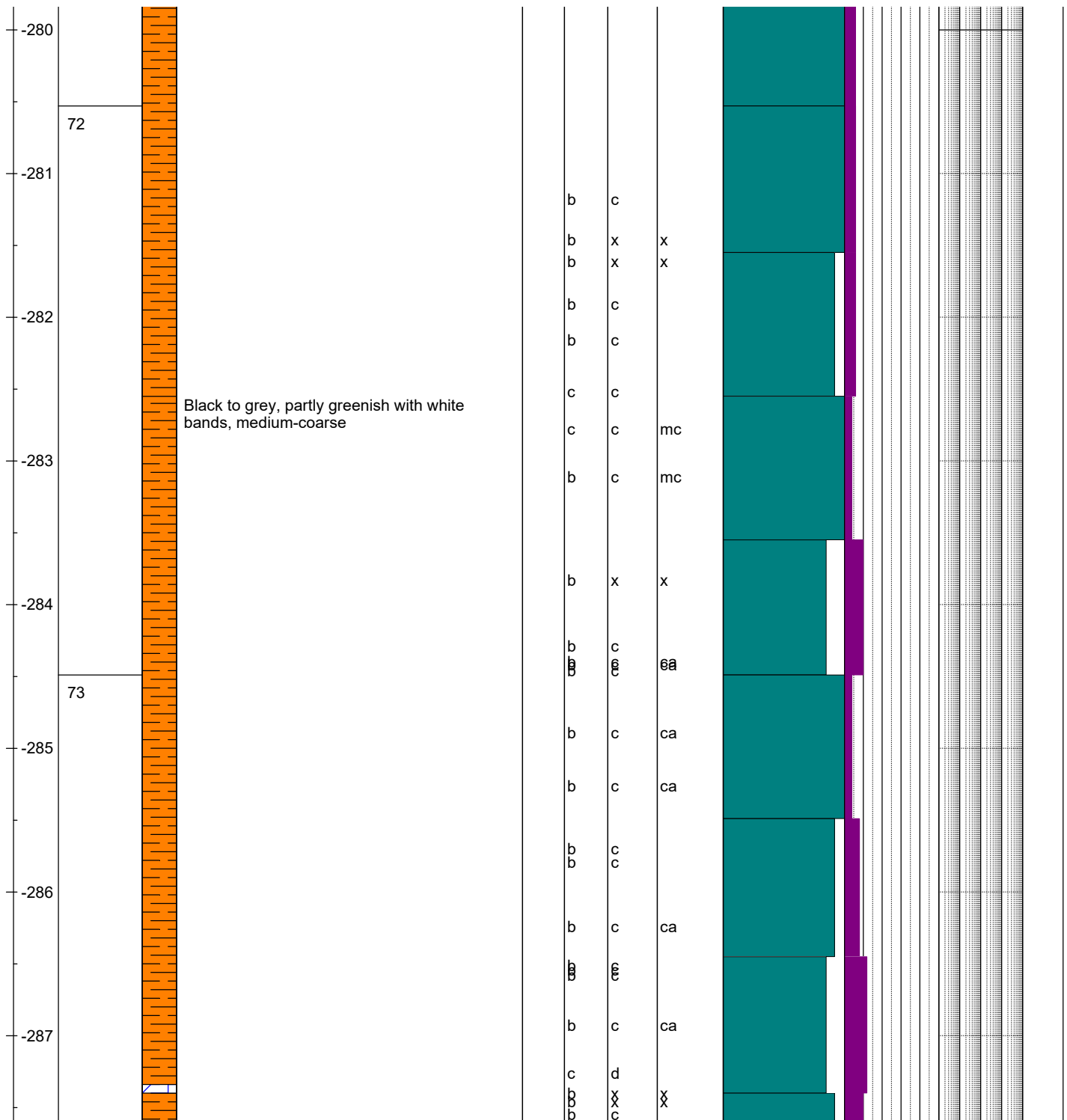
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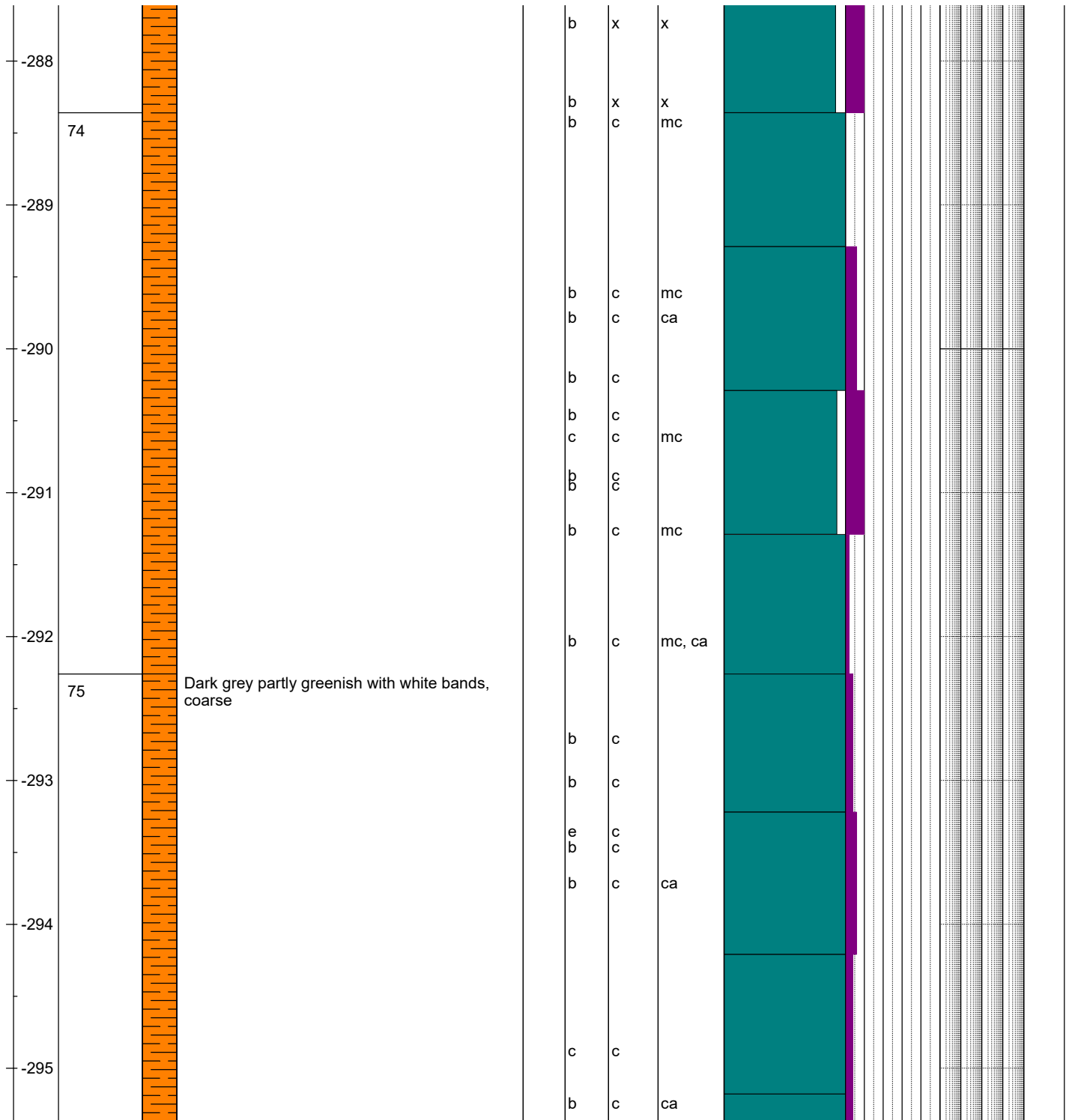
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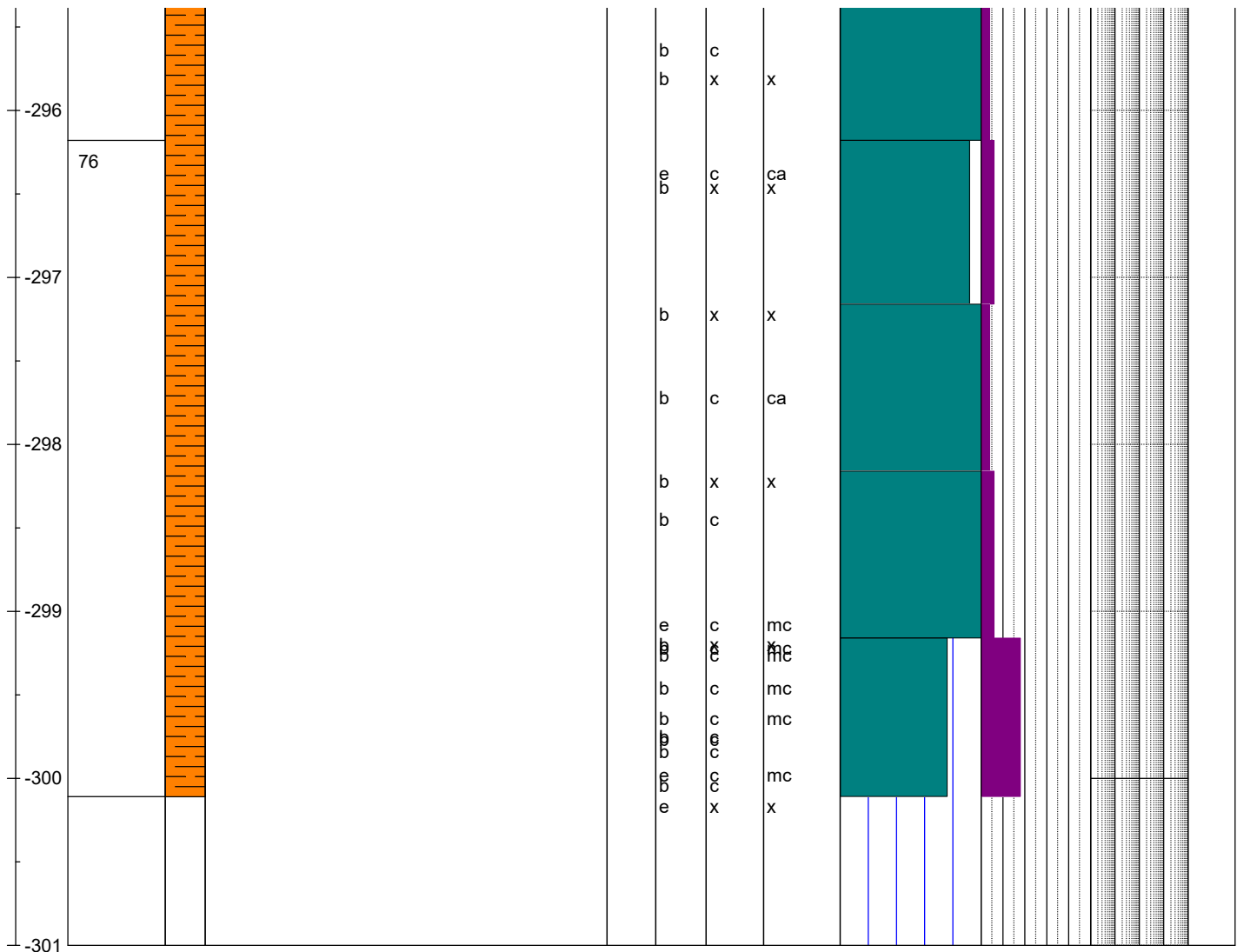
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								20 40 60 80	5 10 15 20	1 10 100	



Appendix C

PICTURES OF CORES KH-02-2017

Contents

C1	Pictures of cores KH-02-2017	2
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C1 Pictures of cores KH-02-2017

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K11



K12



K13



K14



K15



K16



K17



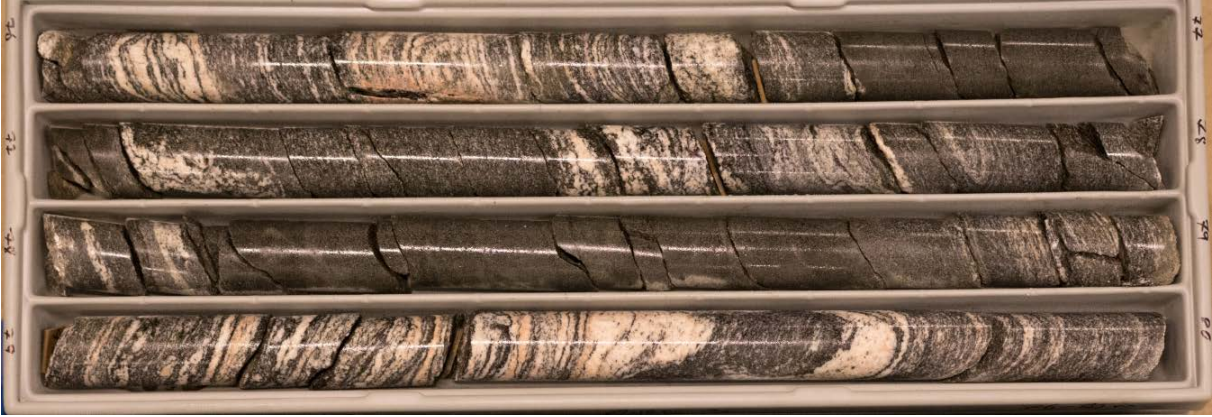
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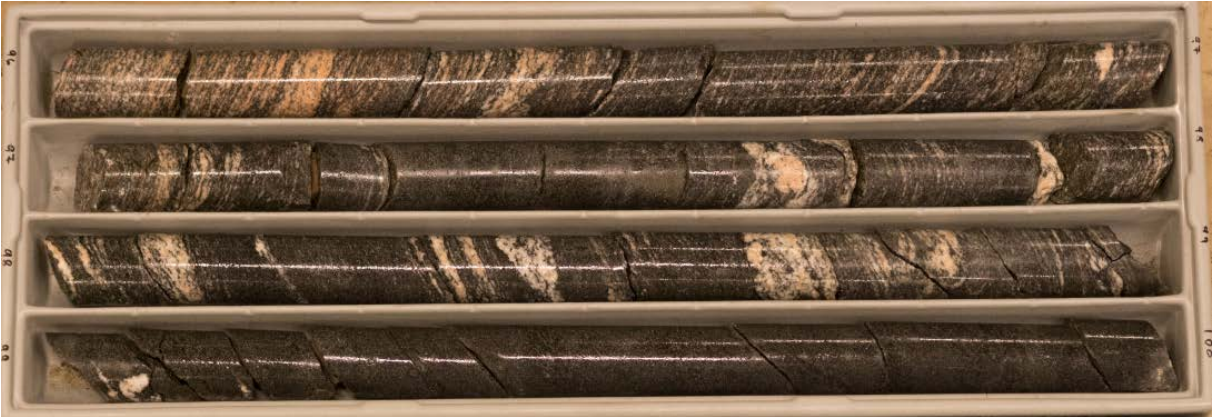
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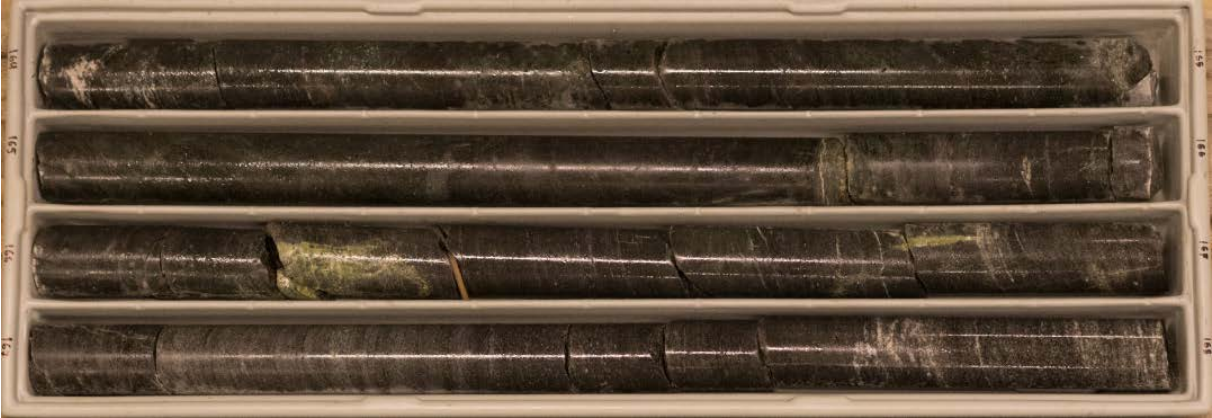
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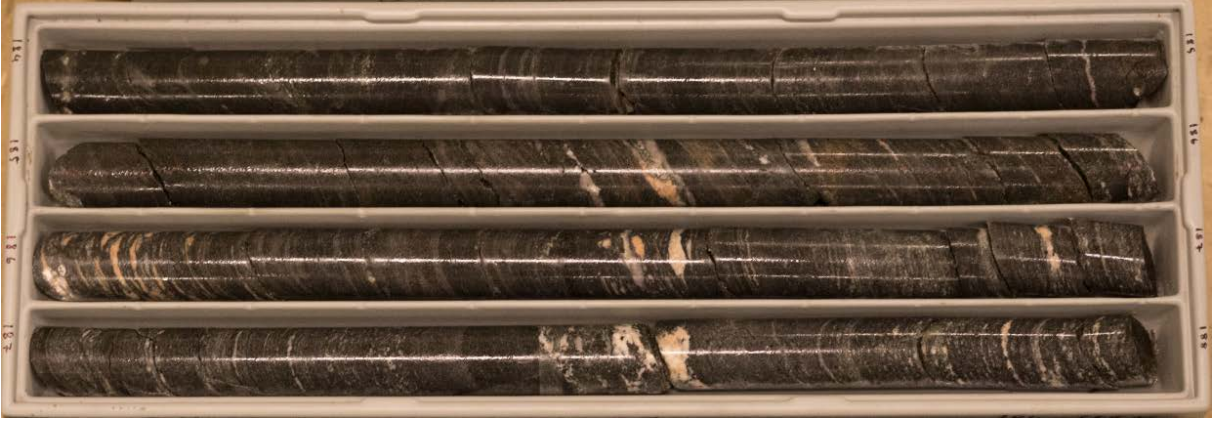
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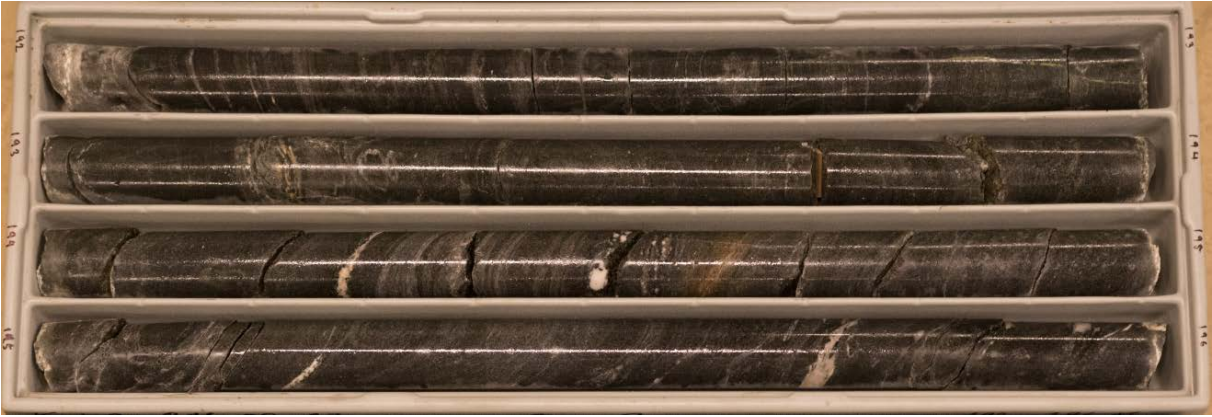
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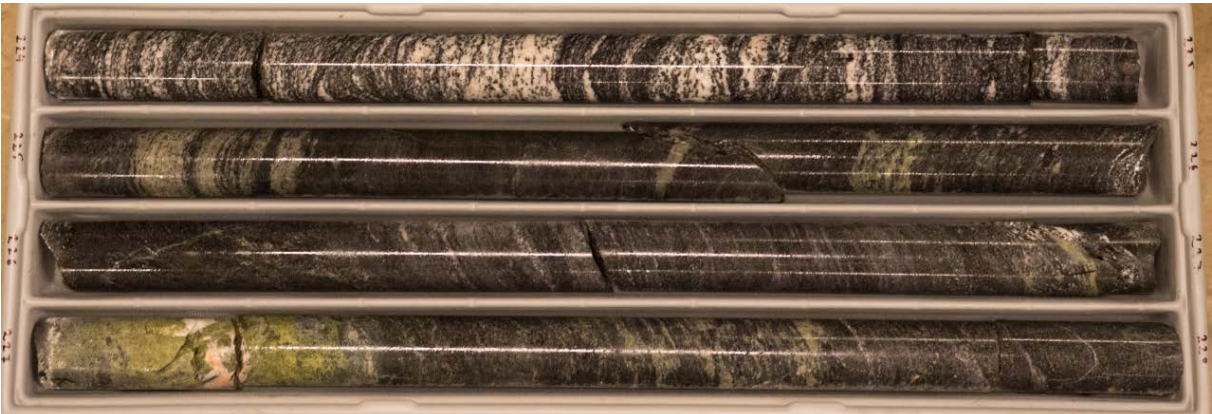
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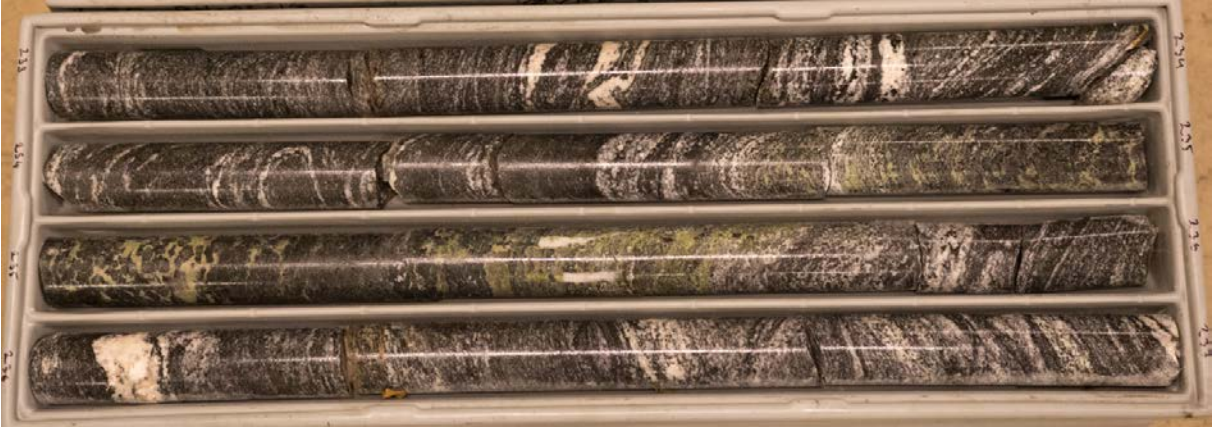
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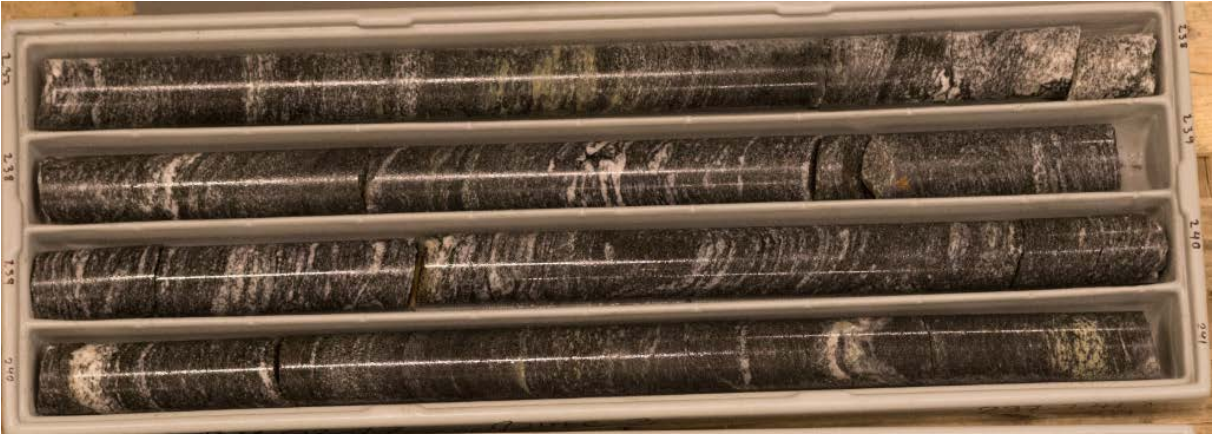
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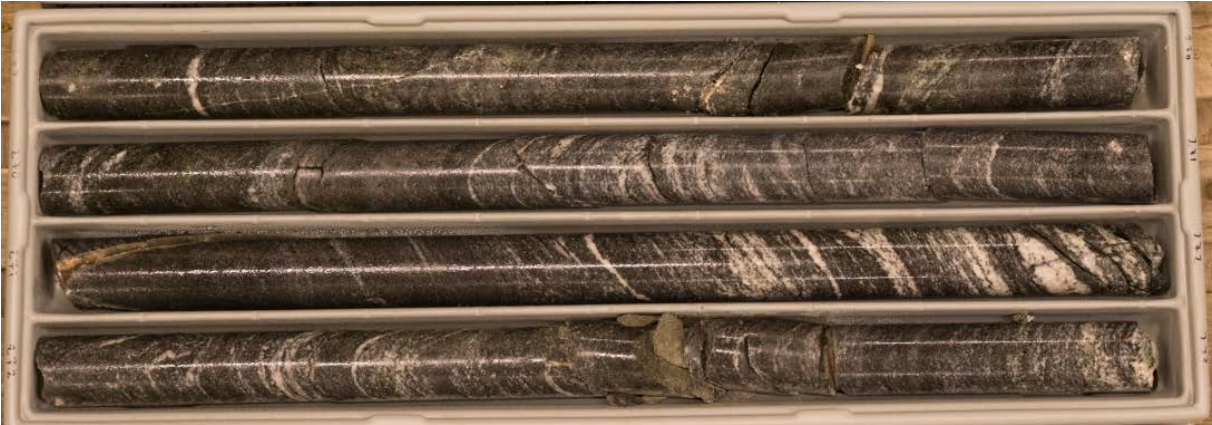
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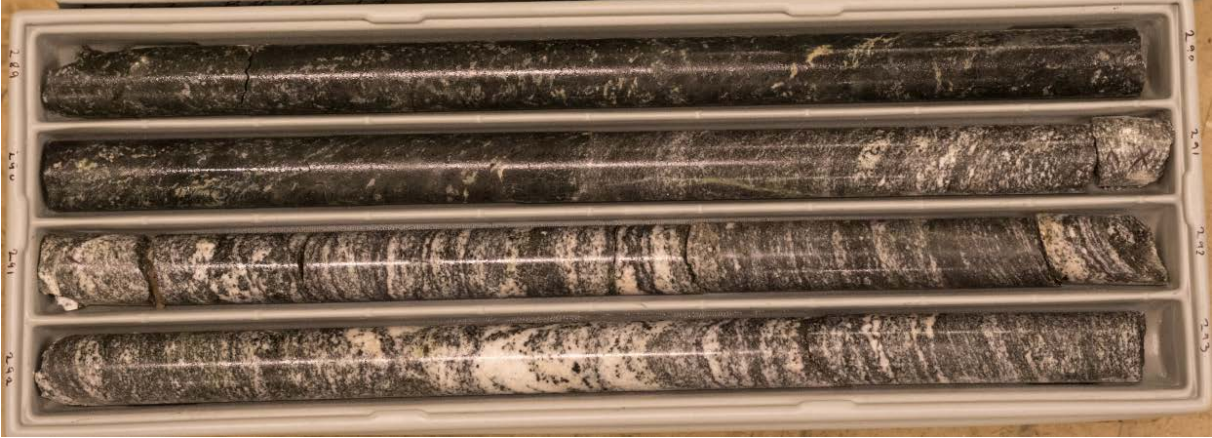
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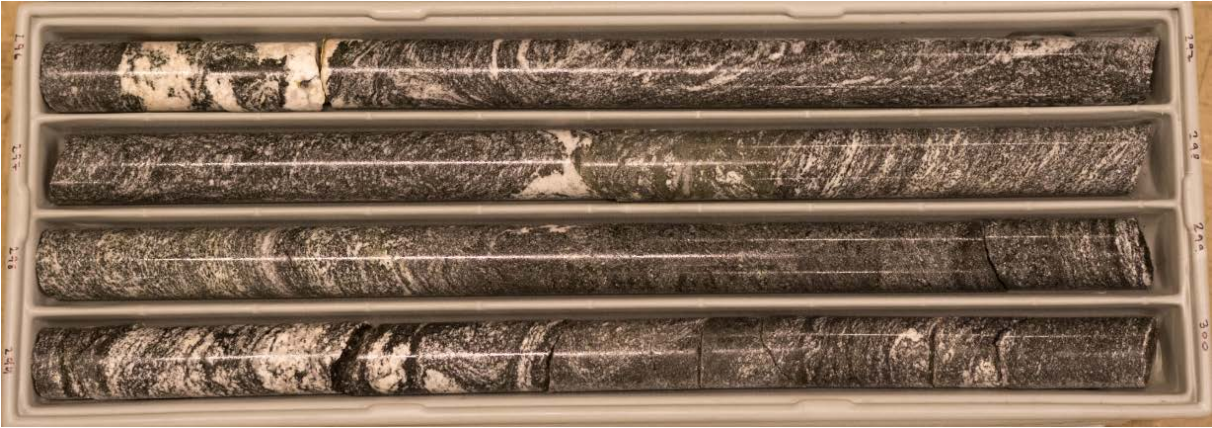
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K76



Dokumentinformasjon/Document information		
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