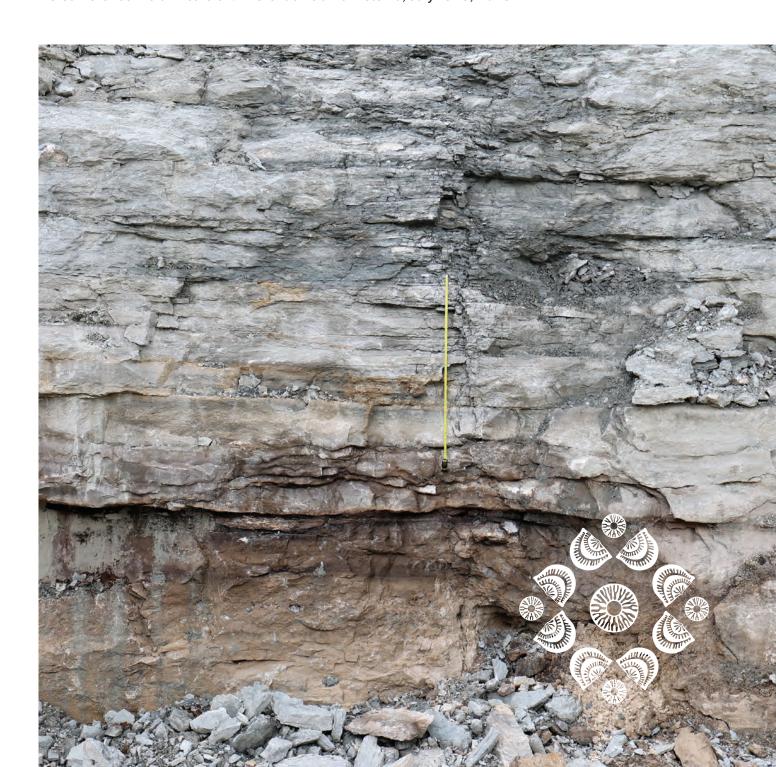
ISOS-14 Field Guide The Ordovician of Estonia

Edited by Olle Hints and Ursula Toom

14th International Symposium on the Ordovician System, Estonia, July 19-21, 2023 Pre-conference Field Excursion: The Ordovician of Estonia, July 15-18, 2023



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Stop 13: Kolu drill core, Central Estonia

Marko Kabel

Location: Latitude 58.81051°N, longitude 25.24221°E; Järva County, central Estonia. **Stratigraphy**: Complete Ordovician succession from the Tremadocian to Hirnantian.

Status: Reference section, drilled for geological mapping in 2021. **More information**: https://geoloogia.info/en/locality/24828

The Kolu EGT0016, drilled in 2021 in central Estonia, is one of the newest deep cores that reaches basement rocks in Estonia (Nezdoli et al. 2022). It has dip 80.9°, elevation of 56 m asl, and its depth is 550.60 m. The Quaternary cover is 9.2 m thick, followed by Llandovery Rumba Formation. The Ordovician–Silurian boundary is probably between 100–104 m depth, within the Varbola

Formation, Juuru Regional Stage. The lower boundary resides within the Kallavere Formation, probably near the depth of 271–272 m. In addition to coring, the Kolu borehole was logged using gamma log, cavernometry, temperature, electric resistivity, density and optical camera

References

Nezdoli, J., Kabel, M., Leben, K., Männik, M., Nirgi, S., Suuroja, K., Tarros, S. 2022. Kesk-Eesti puurimisprojekti

aruanne (Drilling raport from Central Estonia). EGF 9657. https://fond.egt.ee/fond/egf/9657

Kolu (EGT0016) core interval 103,5-123,0 m XRF results

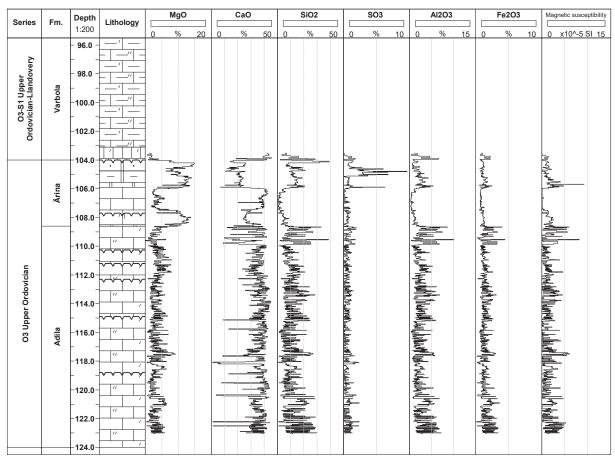
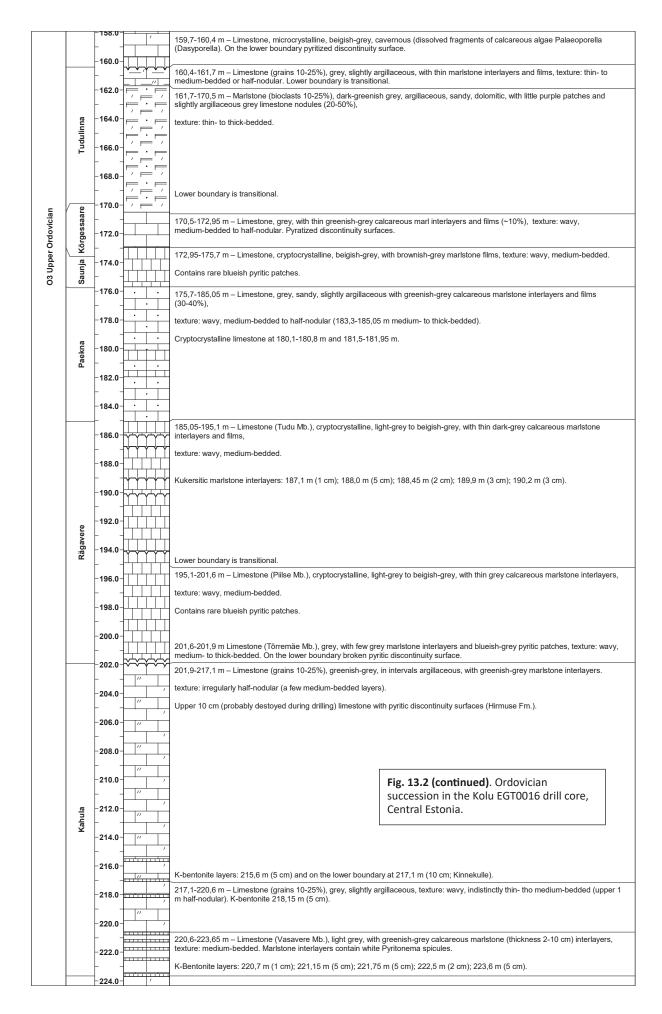


Fig. 13.1. Example results of XRF scanning of main elements across the Hirnantian (Porkuni Regional Stage) in the Kolu drill core. Geotek MSCL-XYZ Core Workstation scanner at the Arbavere Center was used. Note the cyclic patterns of several elements in the Adila Formation.

Kolu (EGT0016) core interval 95,5-280 m

Series	Fm.	Depth 1:200	Lithology	Description/notes
O3-S1 Upper Ordovician-Llandovery	Varbola	- 96.0 -	'	95,5-103,1 m – Limestone, light grey, with greenish-grey sandy argillaceous marlstone interlayers (20-30% and lower 1,5 m up to 40%), clay content changes vertically,
		- 98.0 -		texture: wavy, thin-bedded to finely nodular.
		-100.0- 		
		-102.0-	-1-1-	
		- -104.0		103,1-104,0 m – Limestone (Koigi Mb.; grains 10-25%), light-grey, microcrystalline, texture: thin-bedded to half-nodular with wavy sandy calcareous maristone interlayers.
	Ärina		_ _	104,0-104,75 m – Dolostone (Kamariku Mb.), grey, sandy, texture: thick-bedded, cavernous. Pyratized discontinuity surfaces. 104,75-105,9 m – Dolostone (Siuge Mb.), light-grey, sandy, argillaceous, texture: microlayered.
		-106.0- 		105,9-107,7 m – Limestone (Vohilaiu Mb.), beigish-grey, with thin calcitic marlstone interlayers, texture: thick-bedded.
		-108.0-	, , , , , , , , , , , , , , , , , , ,	107,7-108,6 m – Limestone (Röa Mb.; grains 10-25%), grey, dolomitized, texture: massive.
	Adila	- -110.0-	"	108,6-130,0 m – Limestone (grains 10-25%), grey, with sandy argillaceous and calcareous maristone interlayers (20-40%), intercalation of more or less argillaceous intervals,
			~~~~	texture: wavy, thin-bedded (sometimes medium-bedded) to half-nodular.
		-112.0- 	~~~	Pyratized discontinuity surfaces.
		-114.0-	7	
		-116.0-	· ' ' ' '	
		 -118.0-	" "	
			~~~ <u>~</u>	
		-120.0-	" '	
		-122.0-	" '	
		- -124.0-	" '	
			" '	
		-126.0- -	" '	
		-128.0-		
		- -130.0	" '	Lower boundary is transitional (change in the proportions of marlstone interlayers)
	Moe			130,0-160,4 m – Limestone, light grey, with thin grey calcareous marfstone lenses and interlayers (~10%), texture: cyclically thick-bedded with medium- to thick-nodular intervals between,
		-132.0- -		bentonite layers at 140,65 m and 151,65 m.
		-134.0-		A lot of imprints of algae Palaeoporella (Dasyporella) at 145,3-145,8 m and 159,7-160,4 m.
		- -136.0-	'	
		 -138.0-		
			'	
		-140.0-	/	
		-142.0-		
		 -144.0-		
		-146.0- 		
		-148.0-		
		- -150.0-	/	
			/	
		-152.0- -		
		-154.0-	/	Fig. 13.2. Ordovician succession in the Kolu
		- -156.0-		EGT0016 drill core, Central Estonia.
		-	/	



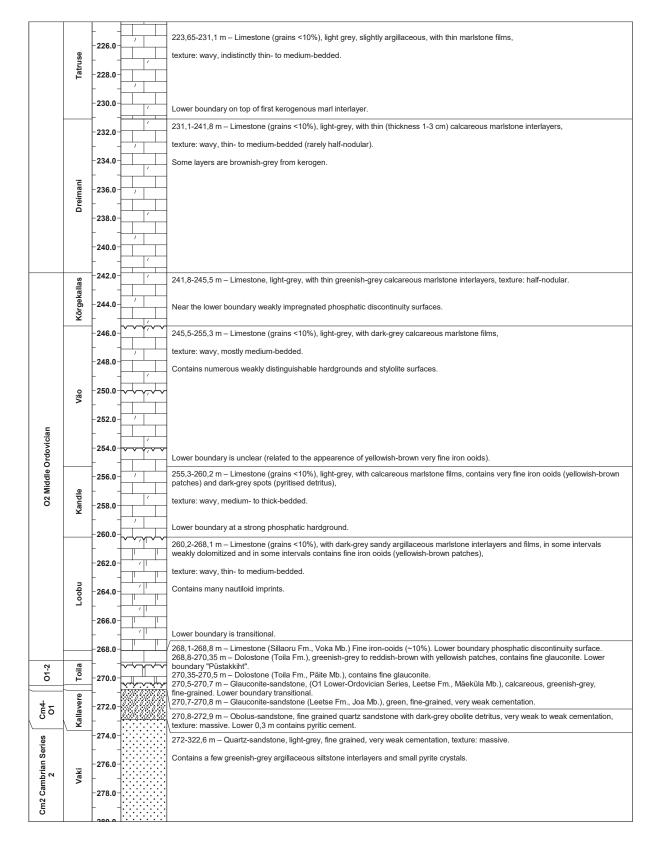


Fig. 13.2 (continued). Ordovician succession in the Kolu EGT0016 drill core, Central Estonia.