Einstein Telescope

EMR-region

Total Depth: 300.29 m MD

Location: Teuven (BE)

X: - (RDcoordinates)

Y: - (RDcoordinates)

Hole Diameter: 122 mm

Elevation (Ground Surface): -

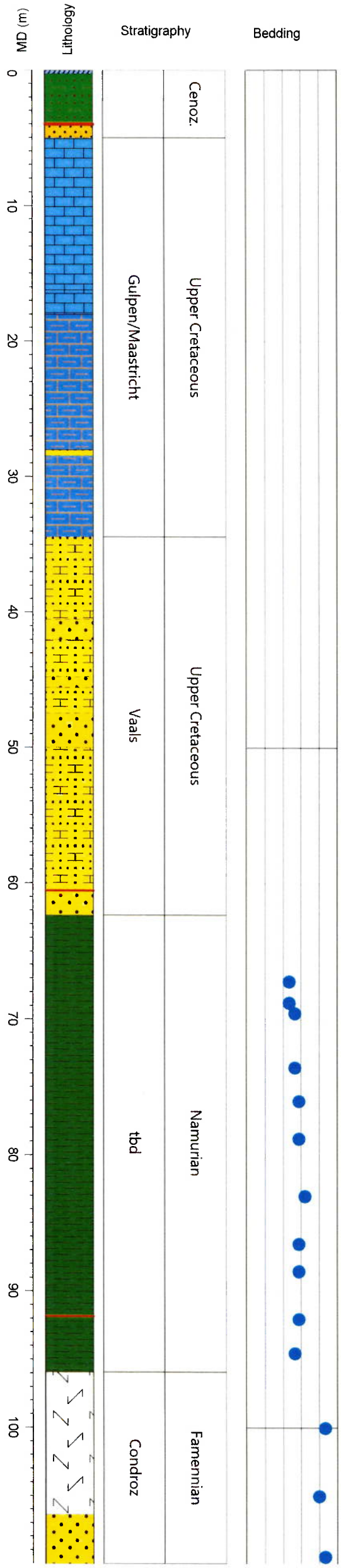
Drilling Date: 2-5-2024

Drilled By: Stump-BTE AG

Geologist litholog : Dario Ventra

Project office: Duboisdomein 30, Maastricht

Teuven (ETB13)



0-0 Topsoil - Weathered and oxidized sandy silt, weakly compacted, with vegetation remains.

0-4 Unconsolidated but compacted, reddish brown clayey silt, locally sandy. Massive, with sparse shell fragments of millimetric size, and sparse pebble-sized clasts (chalk, chert, and possibly other fine-grained siliciclastic lithologies).

4-5 Poorly consolidated muddy (clayey), very fine to fine sand with sparse shell fragments (millimetric scale). Lowermost 25 cm compris centimetric angular clasts of underlying carbonate lithology (probable mixing due to core extraction).
Possible stratigraphic contact between Cenozoic and Cretaceous successions.

5-16 Poorly consolidated, white micritic limestone. Massive, comprising very sparse millimetric shell debris. Local evidence for clay-filled or oxidized surfaces and fractures, suggestive of possible zones of subsurface weathering. Interval fully brecciated during core drilling/extraction.

16-18 Off-white, massive clayey to marly limestone. Sparse clastic component up to very fine sand. Possible evidence for incipient concretions preserved along some clast fractures/surfaces. Interval fully brecciated by core drilling/extraction.

18-28 Poorly consolidated, beige to very light brown, massive marlstone. Sparse, finely comminuted biogenic debris preserved locally and millimetric to centimetric concretions of possible siderite. Oxidized surfaces locally point to subsurface weathering. Interval completely brecciated by core drilling/extraction.

28-28 Calcareous sandstone (see below, 34,4--40,5 m).

28-34 Light brown marlstone.

34-41 Poorly consolidated, light grey to greenish grey, massive, calcareous very fine to fine sandstone. Possible muddy fraction, and sparse biogenic debris. Interval completely brecciated by core drilling/extraction, but possible bedding remnants are locally recognizable by textural segregations along clast surfaces.

41-42 Greenish, muddy, very fine sandstone. Poorly consolidated, massive, possibly glauconitic. Interval completely brecciated by core drilling/extraction.

42-45 Poorly consolidated, massive, calcareous very fine sandstone. Interval completely brecciated by core extraction.

45-46 Greenish, muddy, very fine sandstone, possibly glauconitic. Completely brecciated by core drilling/extraction.

46-47 Poorly consolidated, massive, calcareous very fine sandstone. Interval completely brecciated by core extraction.

47-50 Greenish, muddy, very fine sandstone, possibly glauconitic. Completely brecciated by core drilling/extraction.

50-61 Poorly consolidated, light grey to greenish grey, massive, calcareous very fine to fine sandstone. Possible muddy fraction, and sparse biogenic debris. Interval completely brecciated by core drilling/extraction, but possible bedding remnants are locally recognizable by textural segregations along clast surfaces.

61-62 Greenish, muddy, very fine sandstone, possibly glauconitic. Completely brecciated by core drilling/extraction.
Possible stratigraphic contact between Mesozoic and Namurian successions.

62-67 Dark grey to black, massive claystones, locally comprising comminuted biogenic debris and incipient siderite cementation (in the form of thin bands or sparse, mm-scale nodules). The lower 1,5 m coarsen into silty claystones.
Uppermost 3 m completely brecciated by core drilling/extraction.

67-69 Thinly bedded silty claystones in millimetric to sub-millimetric beds/divisions. Planar bedding defined mostly by fining-upward textural successions. Rare, millimetric interbeds of very fine sand(stone) with basal scours. Sparse siderite concretions.

69-85 Dark grey to black, massive claystones with sparse siderite bands and small-scale concretions. Likely very thinly bedded.

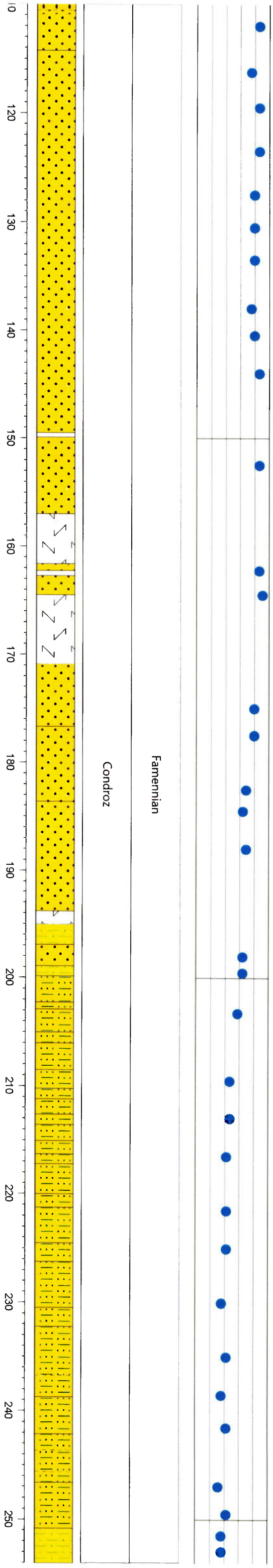
85-90 Thinly bedded silty claystone in planar strata defined by textural divisions. Rare, very thin planar strata of very fine sandstone with micro-scale scours along basal surfaces.

90-92 Dark grey to black, massive claystone.

92-96 Thinly bedded silty claystones. Heavily weathered, possibly crushed interval between 92,55 and 92,8 m (possible fault zone).
Base likely corresponding to stratigraphic transition between Namurian and Late Devonian (Famennian?) successions.

96-106 Possible fault zone at Namurian-Devonian contact.
Very fine to fine sandstones, micaceous and locally silty, comprising centimetric to decimetric heterolithic intervals defined by interbedded siltstones. Thin planar bedding with weak basal scours, with local remnants of planar lamination and ripple cross-lamination (most evident in silt-bearing intervals).
Interval is affected by subsurface weathering, rock crushing, local juxtaposition of different lithologies, microfracturation with quartz-filled veins.

106-111 Fine to medium sandstone, micaceous, thinly bedded. Planar strata defined by fining-upward textural trends and sharp basal surfaces.



111-114 Very fine, silty sandstone, locally interbedded with siltstone strata. Planar bedding with micro-scale basal scours, erosional transitions between textural divisions and local evidence for remnants of ripple cross-lamination.
Interval brecciated by core drilling/extraction, likely weakened by lithological heterogeneity.

114-150 Thinly bedded, very fine to medium sandstone, locally with siltstone interbeds or bed divisions. Mostly millimetric plana rbeds defined by micro-scale basal scours and/or fining-upward textural trends. Rare evidence for ripple cross-lamination and sparse bedsets (centimetric intervals) affected by small-scale convolute bedding and load structures.

150-150 Possible fault zone.
Fine sandstones affected by crushing and weathering.

150-157 Thinly bedded, very fine to medium sandstone, locally with siltstone interbeds or bed divisions. Mostly millimetric plana rbeds defined by micro-scale basal scours and/or fining-upward textural trends. Rare evidence for ripple cross-lamination and sparse bedsets (centimetric intervals) affected by small-scale convolute bedding and load structures.
Large part of the interval brecciated by core drilling/extraction.

157-162 Possible fault zone.
Thinly bedded, very fine to fine sandstones affected by intense subsurface weathering, local microfracturation to large-scale fracturation with juxtaposed lithologies, crushed intervals. Abundant graphitic and possibly clayey coatings remineralized along some of the fracture surfaces (original lithology could have been heterolithic).

162-162 Thinly bedded, very fine to medium sandstone, locally with siltstone interbeds or bed divisions. Mostly millimetric plana rbeds defined by micro-scale basal scours and/or fining-upward textural trends. Rare evidence for ripple cross-lamination and sparse bedsets (centimetric intervals) affected by small-scale convolute bedding and load structures.

162-163 Interbedded very fine sandstones and siltstones. Planar beds of centimetric thickness affected by subsurface weathering and fracturation. Soft-sediment deformation features (loading, bed displacement and boudinage due to possible small-scale slumping/instability).

163-165 Thinly bedded, fine to medium sandstone in planar strata with locally erosional basal surfaces, comprising abundant intraformational mud chips of millimetric to centimetric size.

165-171 Possible fault zone.
Very fine to fine sandstones, locally intact, but mostly affected by subsurface weathering, microfracturation, crushing. Thick quartz-filled veins. Topmost 40 cm comprise a heterolithic interval of interbedded sandstone and siltstone.

171-177 Very fine to fine sandstone, micaceous, well-sorted, massive but preserving local evidence for planar stratification picked by subtle textural trends. Abundant veins and fractures filled with micro- and macrocrystalline quartz.

177-184 Very fine to fine sandstones interbedded with silty sandstones and siltstones. Planar beds ranging from millimetric to 1.5 cm in thickness, mostly defined by fining-upwards textural trends and sharp basal surfaces (scour most evident along base of relatively coarser beds), with local evidence for ripple cross-lamination or possible cross-bedding. Sparse soft-sediment deformation features. Lower half consists mostly of sandy siltstone.
Local evidence for erosional discontinuities and changes in aggradational trends (small-scale lobes, compensational stacking) defined by changing orientation of foreset laminae and/or geometry of basal surfaces for beds/laminasets.

184-194 Very fine to fine sandstone, micaceous, locally with siltstone interbeds. Thin (mostly millimetric) planar strata wih local evidence for ripple cross-lamination, small-scale scour-and-fill structures, and soft-sediment deformation features. Abundant quart-filled veins.

194-195 Possible fault zone. Very fine to fine sandstones, affected by intense subsurface weathering. Crushed core at 194,6 m.

195-197 Heterolithic interval comprising dominant siltstone with interbedded very fine to fine sandstones. Planar strata of millimetric thickness with associated siderite bands. Millimetric veins with quartzose infill.

197-199 Very fine, silty sandstone in thin, planar beds with local remnants of ripple cross-lamination. Quartz-filled veins.

199-200 Fining-upward succession comprising a lower unit (199,4-199,85 m) of very fine to fine sandstone, massive to crudely planar-bedded, with local evidence for scour-and-fill structure and erosional base, gradually fining upward into a heterolithic intevral of sandy siltstone (198,9-199,85 m), in thin planar beds with small-scale soft-sediment deformation features.

200-202 Fining-upward succession comprising a lower unit (201-202,25 m) of silty sandstone with siltstone interbeds, with erosional base, overlain by a heterolithic interval of sandy siltstones (199,85-201 m).

202-203 Fining-upward succession comprising a basal unit of fine sandstone (202,45-202,9 m) with evidence for ripple cross-lamination and sharp base, gradually overlain by a heterolithic association of siltstones and very fine sandstones (202,25-202,45 m).

203-205 Fining-upward succession comprisinga lower unit of silty, very fine to fine sandstone (204,3-205 m), including scour-and-fill architecture with silty infill, sharply based, overlain by a heterolithic association of weakly bioturbated siltstones and very fine sandstones (202,9-204,3 m).

205-206 Fining-upward succession comprising a basal, sharply based unit of fine sandstone (205,6-206 m) overlain by a heterolithic association of thin-bedded siltstones and very fine sandstone)205-205,6 m).

206-209 Fining-upward succession comprising a basal unit (207,208,5 m) of fine to medium sandstone with erosional base, gradually overlain by a heterolithic association of thin-bedded siltstones and very fine sandstones (206-207 m).

209-210 Fining-upward succession comprising a basal, sharply based unit of very fine to fine sandstone (209,1-210,2 m) overlain by a heterolithic association of thinly bedded siltstone and very fine sandstone (208,5-209,1 m).

210-211 Fining-upward succession comprising a lower, erosionally based unit of fine sandstone (210,4-211,2 m) overlain by a heterolithic association of siltstone and very fine sandstone (210,2-210,4 m).

211-213 Fining-upward succession comprising a lower unit of fine sandstone (211,8-212,6 m), with local evidence for ripple cross-lamination and small-scale scour-and-fill, overlain by a heterolithic association of siltstones and very fine sandstones (211,2-211,8 m), moderately bioturbated.

213-214 Fining-upward succession of fine sandstone (212,9-213,55 m), sharply based, overlain by a heterolithic association of siltstone and very fine sandstone (212,6-212,9 m).

214-215 Fining-upward succession of fine to medium sandstone (213,65-215,05 m) with erosional base, overlain by sandy siltstone (213,55-213,65 m).

215-216 Fining-upward succession comprising a basal fine sandstone (216-216,3 m) with erosional base, gradually overlain by a heterolithic association of thinly bedded siltstone and very fine sandstone (215,05-215 m).

216-217 Fining-upward succession comprising a lower unit of fine to medium sandstone (216,55-217,2 m), sharply based, with evidence for ripple cross-lamination and possible remnants of cross-bedding, overlain by moderately bioturbated sandy siltstones (216,3-216,55 m).

217-220 Fining-upward succession comprising a basal, sharply based unit of fine sandstone with evidence for cross-bedding and muddy partings (217,4-220 m), overlain by sandy siltstones (217,2-217,4 m).

220-221 Fining-upward succession comprising a basal unit of sharply based, very fine to fine sandstone (220,4-221,25 m), overlain by an association of siltstones and very fine sandstones (220-220,4 m).

221-225 Fining-upward succession comprising a basal unit of very fine to fine sandstone (222,1-224,5 m) overlain by a heterolithic association of sitlstones and very fine sandstones (221,25-222,1 m).

225-226 Fining-upward succession comprising a basal unit of very fine to fine sandstones (225,1-226,2 m) with erosional base, gradually overlain by thinly bedded siltstones and very fine sandstones (224,5-225,1 m).

226-230 Fining-upward succession comprising a basal unit of very fine to fine, silty sandstone (227,15-230,45 m) with erosional base, overlain by a heterolithic unit of siltstones and fine to medium sandstones (226,2-227,15 m).

230-232 Fining-upward succession comprising a basal unit silty sandstone (231,5-232,2 m) with probably erosional base, overlain by a heterolithic association of siltstones and very fine sandstones (230,45-231,5 m).

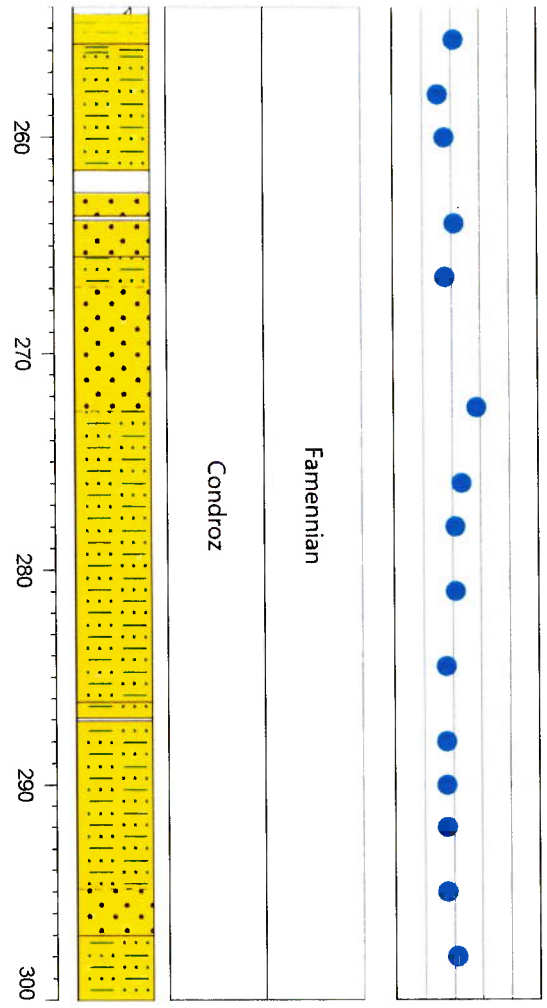
232-237 Fining-upward succession comprising a thick, sharply based, basal unit of fine to medium sandstones (232,4-236,7 m) overlain by a thin heterolithic association of siltstones and very fine sandstones (232,2-232,4 m).

237-239 Fining-upward succession comprising a basal unit of very fine to fine sandstone (237,25-238,7 m) overlain by silty sandstone (236,7-237,25 m).

239-242 Fining-upward succession comprising a basal unit of erosionally based, very fine to fine sandstone (239,4-242,1 m), gradually overlain by very fine silty sandstone (238,7-239,4 m).

242-244 Fining-upward succession comprising a basal unit of very fine to fine sandstone (242,35-243,6 m) overlain by sandy siltstones (242,1-242,35 m).

244-246 Fining-upward succession comprising a basal unit of very fine to fine sandstones (244,7-245,6 m) overlain by a heterolithic association of siltstones and very fine sandstones (243,6-244,7 m)



siltstones and very fine sandstones (245,6-244,7 m).

246-247 Fining-upward succession; basal unit of very fine sandstone (246-246,6 m) overlain by sandy siltstones (245,6-246 m).

247-251 Fining-upward succession; basal, sharply based unit of very fine, silty sandstones and interbedded siltstone partings (247,35-250,8 m), with remnants of ripple cross-lamination or cross-bedding, gradually overlain by sandy siltstones (246,6-247,35 m).

251-254 Siltstones with abundant, millimetric to centimetric interbeds of very fine sandstone to silty sandstone. Planar strata defined by fining-upward textural trends and sharp basal surfaces, with local evidence for planar lamination and cross-lamination, plus common small-scale soft-sediment deformation features. Sparse bioturbation.

254-254 Possible cataclastic breccia with fractured sandstone and siltstone fragments cemented by quartz. (Possible fault zone?)

254-256 Siltstones with abundant, millimetric to centimetric interbeds of very fine sandstone to silty sandstone. Planar strata defined by fining-upward textural trends and sharp basal surfaces, with local evidence for planar lamination and cross-lamination, plus common small-scale soft-sediment deformation features. Sparse bioturbation.

256-262 Heterolithic interval consisting mostly of very fine sandstone, locally up to medium-grained. Sandstone beds/division of centimetric to decimetric thickness, siltstones of millimetric to centimetric thickness. Planar bedding defined by textural trends and sharp basal surfaces with common small-scale soft-sediment deformation.
Sparse quartz-filled veins. Centimetric interval affected by microftacturing at 260,4 m.

262-263 Missing core interval.

263-264 Very fine to fine sandstone, silty, with minor silty interbeds or divisions. Apparently massive, local evidence for planar bedding.

264-264 Missing core interval.

264-266 Very fine to fine sandstone, silty, with minor silty interbeds or divisions. Apparently massive, local evidence for planar bedding.

266-267 Heterolithic interval comprising dominant siltstone and sandy siltstone strata with minot interbedded sandstones. Planar bedding with abundant soft-sediment deformation at small scale. Locally massive.

267-273 Very fine to fine sandstone, mostly massive, locally planar bedding identifiable where siltier divisions/interbeds are preserved.
Sparse quartz-filled veins of millimetric thickness. Microfractured around 271,2 m.

273-286 Heterolithic interval. Siltstones with millimetric to centimetric interbeds/divisions of very fine sandstone. Diffuse planar bedding commonly disrupted by small-scale soft-sediment deformation. Lower interval (below 280,5 m) presents a greater volume of sandy fraction.
Thick fracture infilled with pink quartz (or dolomite?) at 273,3 m.

286-287 Heterolithic interval consisting of very fine sandstones interbedded with a lesser volume of siltstones. Planar strata defined by textural trends and/or sharp basal surfaces, locally with remnant evidence for cross-lamination and plane lamination. Diffuse small-scale soft-sediment deformation.

287-287 Missing core interval.

287-295 Heterolithic interval consisting of very fine sandstones interbedded with a lesser volume of siltstones. Planar strata defined by textural trends and/or sharp basal surfaces, locally with remnant evidence for cross-lamination and plane lamination. Diffuse small-scale soft-sediment deformation.

295-297 Very fine sandstone in thin, planar strata defined by textural trends, basal surfaces and very thin silty divisions/interbeds. Mostly plane-laminated, with remnants of cross-lamination and local soft-sediment deformation.

297-300 Heterolithic interval. Siltstones with millimetric to centimetric interbeds/divisions of very fine sandstone. Diffuse planar bedding commonly disrupted by small-scale soft-sediment deformation.

Pattern Legend

top soil	Not recovered	Faulted interval	Sand
Sandstone - f to vfs	Calcareous Sandstone	interbedded clay- and sandstone	Interbedded silt- and sandstone
interbedded sand- and siltstone	Silt	marl	Limestone

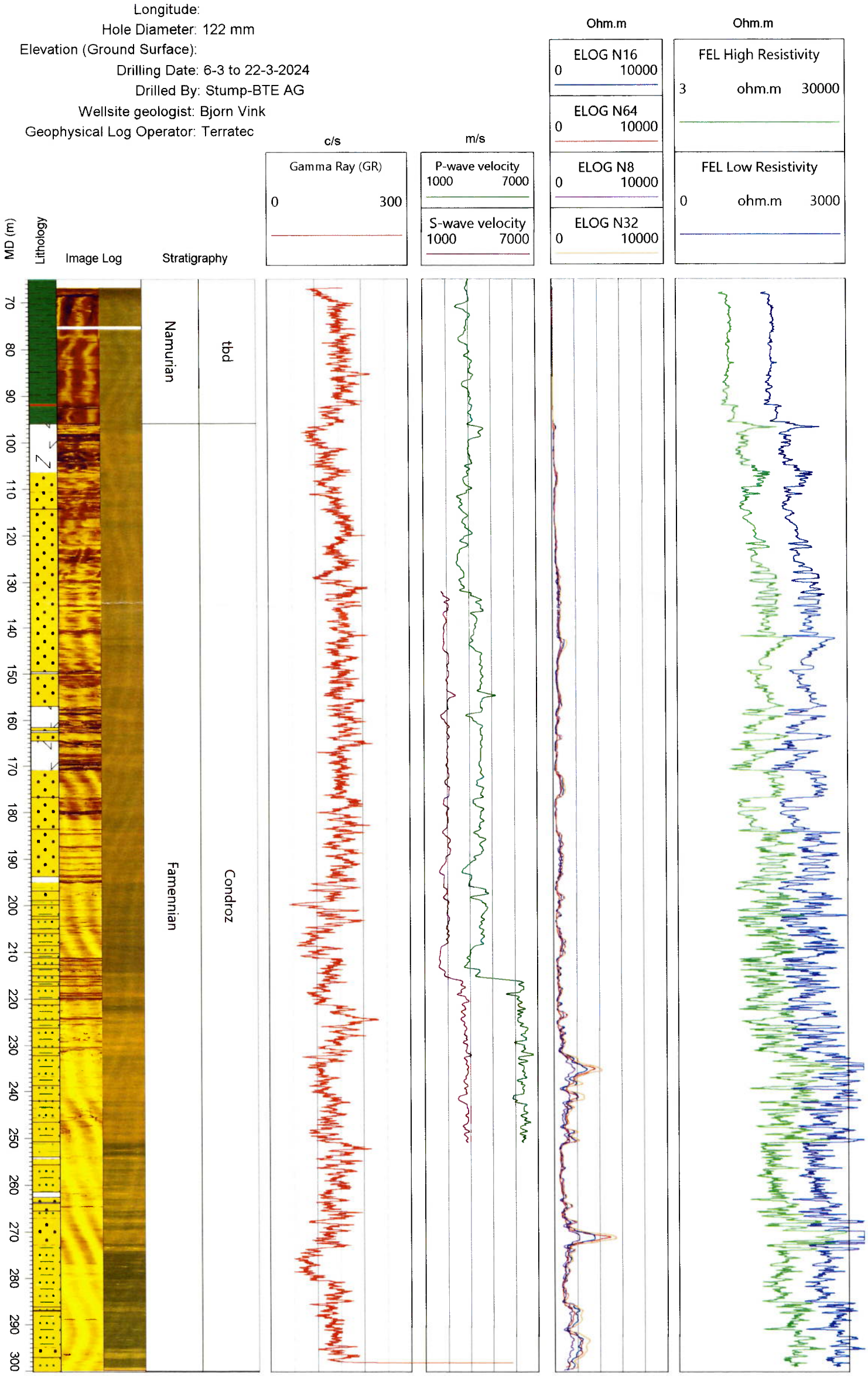
Einstein Telescope

EMR-region

Project office: Duboisdomein 30, Maastricht

ETB 13 - Teuven

Total Depth: 300 m
Location: Teuven (BE)
Latitude:
Longitude:
Hole Diameter: 122 mm
Elevation (Ground Surface):
Drilling Date: 6-3 to 22-3-2024
Drilled By: Stump-BTE AG
Wellsite geologist: Bjorn Vink
Geophysical Log Operator: Terratec



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top soil	Not recovered	Faulted interval
Sand	Sandstone - f to vfs	Calcareous Sandstone
interbedded clay- and sandstone	Interbedded silt- and sandstone	interbedded sand- and siltstone
Silt	marl	Limestone