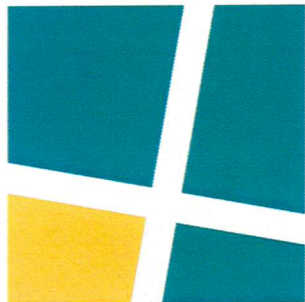


REIB



Rakendusgeodeesia ja Ehitusgeoloogia Inseneribüroo OÜ

Ärireg. kood 10434933



A. Adamsoni tn 26
10137 Tallinn

Telefon 661 3742
Faks 661 3744
e-post reib@reib.ee
www.reib.ee

MTR registreeringud: EG-, EH-, EK-, EO-, EP10434933-0001, KKP000025, KKA000229. Tegevuslitsentsid: 251 MA, 132 MA-k.

ARUANNE

VOOLA LIIVAKARJÄÄRI MÄEERALDISE L.MK/319361 MARKŠEIDERIMÕÕDISTAMINE

VALGA MAAKOND, TÕRVA VALD, JETI KÜLA

Töö nr TX-1303-5

Osakonnajuhataja

Andrus Arming

Projektijuht

Margus Pokrovski

Tallinn
jaanuar 2018

SISUJUHT

1.	Seletuskiri	3-6
2.	Markšeiderimõõdistamise punktid (lisa 1)	7-9
3.	Mäeeraldise plaan M 1:1000 (graafiline lisa 1/1)	10
4.	Geoloogilised läbilõiked (graafiline lisa 1/2)	11

TÖÖ NR. TX - 1303-5

1. ÜLDANDMED

Objekti asukoht: Valga maakond, Tõrva vald, Jeti küla.

Objekti nimetus: **Voola liivakarjääri markseiderimõõtmine (mäeeraldis L.MK/319361).**

Tellija: Riigi Metsamajanduse Keskus.

Töö tegija: Rakendusgeodeesia ja Ehitusgeoloogia Inseneribüroo OÜ, geodeet Margus Pokrovski.

Tööde teostamise aeg: jaanuar 2018.a.

Mõõdistamistööd on tehtud kooskõlas:

1. "Markseideritöö kord", Majandus- ja kommunikatsiooniministri 23. jaanuar 2012. a määrus nr 9, <https://www.riigiteataja.ee/akt/125012012004>

2. LÄHTEANDMED

Mõõdistamine tugineb Hades Invest OÜ GNSS püsijaamade võrgule. Koordinaadid L-EST 97 süsteemis ja kõrgusega Balti 1977.a. süsteemis. Kõrguslikuks aluseks riigi geodeetilise tihendusvõrgu punkt Koorküla97 (5421) kõrgusega H=90.762.

Kasutatud varasemaid materjale:

1. OÜ Inseneribüroo STEIGER koostatud Voola liivamaardla Voola uuringuruumi geoloogilise uuringu aruanne (varu seisuga 01.04.2009) (Tammekänd, 2009).
2. REIB OÜ koostatud Voola liivakarjääri markseiderimõõtmine (mäeeraldis L.MK/319361) aruanne töö nr TX-1303-5 (Pokrovski, 2017).

3. KARJÄÄRI ISELOOMUSTUS

Voola liivakarjääri mäeeraldis pindalaga 6,80 ha asub Valga maakonnas Tõrva vallas Jeti külas Koorküla metskonna maaüksusel (katastritunnus 20801:001:0481), mille üldpindala on 1 193,60 ha ning kasutamise sihtotstarve maatulundusmaa.

Mäeeraldis kujutab endast lääne-idasuunas väljavenitatud, lääneosas pisut kitsenevat ala mõõtmetega 460x140 m, hõlmates väikese osa Koorküla metskonna maatüki põhjaosast. Mäeeraldisel asub valdavalt raiesmik. Kogu mäeeraldis on ümbritsetud sama katastriüksuse maaga. Mäeeraldis külgneb osaliselt põhjapiirist 1963. a Valga Teedevalitsusele vormistatud, tänaseks peaaegu ammendatud ja mahajäetud Voola karjääriga.

Logistiliselt paikneb mäeeraldis Tõrva linnast ~11 km kaugusel lõunas ja Hummuli alevikust ~13 km kaugusel läänes. Mäeeraldisest ligikaudu 1,5 km kaugusel kulgeb Tõrva-Jeti-Valgjärve riigi kõrvalmaantee (T-23190). Mäeeraldisel piirides asustus puudub ning lähimad talud jäävad alast ligikaudu 1,0 km kaugusele kirdesse.

Voola liivakarjääri mäeeraldis jääb tervikuna maaparandussüsteemi PÜ-141 (VID kood 4196130002) piiranguvööndisse. Saadud kooskõlastusest selgus, et eelnimetatud maaparandussüsteem mäeeraldisel alale ei jää.

Looduskaitsealad ja Natura 2000 alad mäeeraldisel piirides puuduvad. Mäeeraldisel kagupiiri lähedusse jääb Jeti kalakotka püsielupaiga sihtkaitsevöönd (VID kood KLO3000150).).

Mäeeraldisest ligikaudu 200 m kaugusel põhjasuunas voolab Õhne jõgi, mille kaldapiiranguvöönd jääb ~100 m kaugusele mäeeraldisest põhjapiirist. Ligikaudu 200 m kaugusele kirdesuunas jääb 2000. a -l kaitse alla võetud lamminiidud ja soostunud niidud.

Mäeeraldis jääb Eesti 1:50 000 baaskaardi lehele nr 5411. Ala keskosa geograafilised koordinaadid on 57° 90' 72" pl ja 25° 83' 50" ip

Voola liivakarjääri mäeeraldisest geoloogilise uuringu ja algse varuarvutuse on teinud OÜ Inseneribüroo STEIGER (Tammekänd, 2009). Voola liivakarjääri mäeeraldisest kaevandamise loa nr L.MK/319361 omanik on Riigi Metsamajanduse Keskus. Luba anti välja Keskkonnaameti Põlva-Valga-Võru regiooni poolt 14.10.2010. a. kehtivusega kuni 13.10.2025. a.

Vastavalt kaevandamise loale on karjääris maavara kaevandamise keskmine aastamäär 31,5 tuh m³ ning aktiivne tarbevaru seisuga 21.10.2016.a. on 498,4 tuh m³:

- plokk 4 Ta / 7 Ta (ehitusliiv) - 372,0 tuh m³;
- plokk 5 Ta / 8 Ta (ehituskruus) - 92,4 tuh m³;
- plokk 6 Ta (täiteliiv) - 34,0 tuh m³.

4. GEOLOOGILINE ISELOOMUSTUS

Voola liivakarjääri mäeeraldis paikneb ulatuslikul sandurtasandikul, mille piires levib liivsavimoreenil kruusa lisandiga keskmiseteralise liivakihi kompleks. Maapinna reljeef mäeeraldisest piires on tõusuga lääne suunas ning langusega ida- ja lõunasuunas. Maapinna abs kõrgused mäeeraldisest piires muutuvad vahemikus 79,6 – 74,1 m.

Käesoleva geoloogilise uuringu andmetel on mäeeraldisest piirkonna geoloogiline ehitus järgmine:

- Katend paksusega 0,2 – 2,3 m (keskmine 0,6 m), millest kasvukiht moodustab kuni 0,2 m, ülejäänud osa helebeež tolmpjas või punakaspruun orgaanikarikas ülipeeneteraline liiv.
- Nii pindalaliselt kui ka vertikaalselt on kasuliku kihi levik ebaühtlane, olles enamasti esindatud ülipeene- kuni ülijämedateralise helebeeži puhta või kohati kruusaka liivaga (kruusaterad 1 – 4 cm). Lisaks on mõnes kaevandis kasulik kiht esindatud kruusaga, milles kruusaterad valdavalt karbonaatsed ja läbimõõduga 2 - 6 cm. Kasuliku kihi paksus jääb 5,7 - 9,8 m vahemikku, keskmine paksus 8,2 m.
- Kasuliku kihi lamamiks on pruun liivsavi (kohati moreen). Käesoleva geoloogilise uuringu puuraukudest kuues (PA-1, 4, 5, 7, 8, 9) avati lamam, mis jääb nende põhjal vastavalt abs kõrgustele 70,84 m, 69,94 m, 70,26 m, 70,73 m, 67,07 m, 69,00 m (keskmine 69,6 m). Puuraukudega avatud lamami põhjal võib oletada, et lamam järgib teatud määral maapinna reljeefi, jäädes kõrgemale abs tasemele mäeeraldisest lääne- ja lõunaosas ning madalamale idaosas.

5. MÕÕDISTAMINE JA PLAANIDE KOOSTAMINE

Mäeeraldisest kaevandamisala ning selle lähiümbruse markseiderimõõdistamine toimus 03. jaanuar 2018.a.

Mõõdistusmeetod: reaalarajas kinemaatiline.

Mõõdistusandmete alusel koostati mäeeraldisest plaan M1:1000 (graafiline lisa 1/1).

Geoloogiliste uuringu šurfide andmete (lisa 1) alusel koostati mäeeraldisest geoloogilised läbilõiked M1:1000/1:100 (graafiline lisa 1/2).

6. KAEVANDATUD VARU MAHUARVUTUS

Varu arvutused on tehtud tarkvarapaketiga ACAD Civil 3D 2015.

Kaevandatud varu arvutamiseks koostati järgnevad kolmnurkmudelid:

1. mäeeraldise kasuliku kihi lamami pinna kohta 2009.a. uuringuandmete alusel;
2. plokkide 7 ja 8 kasuliku kihi lamami pinna kohta 2009.a. uuringuandmete alusel;
3. mäeeraldise maapinna kohta 2017.a. ja 2016.a. markseiderimõõdistuste andmete ning 2009.a. uuringuandmete alusel (2016.a. mõõdistuspunktidest lisati ainult kaevandatud ala andmed. Kooritud pinnase osas kasutati 2009.a. maapinna mudeli andmeid, et ei tekkiks mitte kaevandatud alal kõrgustest tingitud mahu erinevusi.)

Võrreldes mäeeraldise maapinna kolmnurkmudelit mäeeraldise kasuliku kihi lamami pinna kolmnurkmudeliga saadi pindade vahele tekkiva kujundi mahuks – 501,6 tuh m³, millest kattekihi maht 31,1 tuh m³ (0,6 m x 5,18 ha).

Võrreldes mäeeraldise maapinna kolmnurkmudelit plokkide 7 ja 8 kasuliku kihi lamami pinna kolmnurkmudeliga saadi pindade vahele tekkiva kujundi mahuks – 13,3 tuh m³. Antud plokkidel kattekiht puudub.

Seega on mäeeraldise aktiivne tarbevaru on 03.01.2018.a. seisuga 470,5 tuh m³, millest plokkides 7 ja 8 on varu 13,3 tuh m³. Aktiivne tarbevaru jaguneb plokkide vahel järgnevalt:

- plokk 4 Ta - 342,9 tuh m³;
- plokk 5 Ta - 82,3 tuh m³;
- plokk 6 Ta - 32,0 tuh m³;
- plokk 7 Ta - 8,2 tuh m³;
- plokk 8 Ta - 5,1 tuh m³.

Kaevandatud varu 2017.a. on 27,9 m³ (498,4 tuh m³ – 470,5 tuh m³), mis jaguneb plokide vahel järgmiselt:

- plokk 4 Ta - 20,8 tuh m³ (363,7 tuh m³ – 342,9 tuh m³);
- plokk 5 Ta - 5,0 tuh m³ (87,3 tuh m³ – 82,3 tuh m³);
- plokk 6 Ta - 2,0 tuh m³ (34,0 tuh m³ – 32,0 tuh m³);
- plokk 7 Ta - 0,1 tuh m³ (8,3 tuh m³ – 8,2 tuh m³);
- plokk 8 Ta - 0,0 tuh m³ (5,1 tuh m³ – 5,1 tuh m³).

7. KOKKUVÕTE

Ajavahemikul 21.10.2016.a. kuni 03.01.2018.a. on kaevandatud maavaravaru Voola liivakarjäärist 27,9 tuh m³ 0,7 ha-liselt maa-alalt, mis jaguneb plokkide vahel järgmiselt:

- plokk 4 Ta / 7 Ta (ehitusliiv) - 20,9 tuh m³;
- plokk 5 Ta / 8 Ta (ehituskruus) - 5,0 tuh m³;
- plokk 6 Ta (täiteliiv) - 2,0 tuh m³.

Voola liivakarjääri mäeeraldise aktiivne tarbevaru on 03.01.2018.a. seisuga 470,5 tuh m³, mis oma korda jaguneb tarbevaru plokkide vahel järgnevalt:

- plokk 4 Ta / 7 Ta (ehitusliiv) - 351,1 tuh m³;
- plokk 5 Ta / 8 Ta (ehituskruus) - 87,4 tuh m³;
- plokk 6 Ta (täiteliiv) - 32,0 tuh m³.

8. KASUTATUD SEADMED JA TARKVARA

Markšeiderimõõdistamisel kasutati reaalaja GNSS-i vastuvõtjat Leica Viva Gs16, koos väliarvutiga CS20. Instrumendi mõõtetäpsus: horisontaalne $\pm 8\text{mm} + 1\text{ mm/km}$
vertikaalne $\pm 15\text{mm} + 1\text{ mm/km}$

Plaan koostati ja mahuarvutused teostati tarkvarapaketi ACAD Civil 3D 2015.

Tallinn, 10. 01. 2018.a.

Koostas: / Margus Pokrovski /

Markseiderimõõdistamise punktid

030118a1,6419943.256,608938.078,68.482,
 030118a2,6419942.287,608934.113,68.488,
 030118a3,6419945.484,608929.149,68.720,
 030118a4,6419953.849,608918.368,68.575,
 030118a5,6419962.335,608907.920,68.220,
 030118a6,6419969.492,608899.038,68.219,
 030118a7,6419978.983,608888.429,67.941,
 030118a8,6419982.963,608885.123,67.845,
 030118a9,6419989.384,608884.266,67.686,
 030118a10,6419991.871,608889.496,67.510,
 030118a11,6419987.882,608897.877,67.642,
 030118a12,6419982.443,608908.205,67.902,
 030118a13,6419975.361,608917.269,67.921,
 030118a14,6419965.258,608925.905,68.157,
 030118a15,6419955.539,608934.893,68.509,
 030118a16,6419950.990,608932.555,72.072,
 030118a17,6419951.553,608937.712,68.360,
 030118a18,6419946.093,608939.571,68.413,
 030118a19,6419938.609,608949.765,68.476,
 030118a20,6419935.872,608950.044,68.537,
 030118a21,6419933.076,608952.777,68.500,
 030118a22,6419928.658,608957.312,68.536,
 030118a23,6419926.127,608960.769,68.666,
 030118a24,6419923.644,608962.293,68.581,
 030118a25,6419921.445,608965.388,68.624,
 030118a26,6419920.615,608970.909,68.607,
 030118a27,6419919.632,608975.216,68.734,
 030118a28,6419916.641,608981.017,68.771,
 030118a29,6419912.663,608981.268,68.894,
 030118a30,6419908.629,608979.666,69.087,
 030118a31,6419903.785,608977.996,69.326,
 030118a32,6419901.301,608976.158,69.369,
 030118a33,6419899.517,608977.226,68.963,
 030118a34,6419901.131,608978.548,68.565,
 030118a35,6419902.592,608979.017,68.866,
 030118a36,6419904.632,608980.260,67.879,
 030118a37,6419907.898,608981.726,67.616,
 030118a38,6419912.834,608983.401,67.954,
 030118a39,6419915.591,608986.100,70.476,
 030118a40,6419918.269,608982.801,70.475,
 030118a41,6419922.468,608976.108,70.325,
 030118a42,6419924.303,608972.272,70.380,
 030118a43,6419923.862,608968.729,70.206,
 030118a44,6419928.004,608970.954,70.574,
 030118a45,6419926.224,608964.487,70.537,
 030118a46,6419929.780,608963.477,70.503,
 030118a47,6419933.300,608958.657,70.658,
 030118a48,6419935.235,608956.029,70.821,
 030118a49,6419937.388,608954.773,70.777,
 030118a50,6419905.393,608967.089,68.783,
 030118a51,6419900.963,608969.840,68.836,
 030118a52,6419902.828,608972.113,69.307,
 030118a53,6419901.537,608975.846,69.470,
 030118a54,6419898.318,608973.543,68.701,
 030118a55,6419898.318,608975.111,69.302,
 030118a56,6419898.004,608975.934,69.074,
 030118a57,6419896.736,608971.901,68.647,
 030118a58,6419893.183,608970.098,68.873,
 030118a59,6419890.437,608969.617,69.054,
 030118a60,6419887.045,608969.560,69.126,
 030118a61,6419882.912,608969.591,69.476,
 030118a62,6419878.776,608968.176,69.172,
 030118a63,6419873.310,608966.215,69.059,
 030118a64,6419866.768,608963.659,69.443,
 030118a65,6419862.026,608961.427,69.481,
 030118a66,6419855.546,608958.619,69.650,
 030118a67,6419851.306,608956.208,69.895,

030118a68,6419846.416,608954.284,69.821,
 030118a69,6419844.050,608953.470,69.941,
 030118a70,6419842.968,608949.964,69.711,
 030118a71,6419842.804,608944.211,69.836,
 030118a72,6419842.405,608941.270,69.765,
 030118a73,6419842.137,608939.549,69.930,
 030118a74,6419840.279,608937.507,71.259,
 030118a75,6419838.242,608935.908,71.601,
 030118a76,6419838.904,608933.631,71.691,
 030118a77,6419838.721,608931.184,71.928,
 030118a78,6419837.535,608928.946,72.361,
 030118a79,6419836.420,608925.308,72.504,
 030118a80,6419837.912,608921.512,72.355,
 030118a81,6419840.637,608916.226,72.330,
 030118a82,6419842.593,608912.163,72.246,
 030118a83,6419844.874,608908.295,72.279,
 030118a84,6419847.836,608904.910,72.255,
 030118a85,6419851.303,608901.131,72.428,
 030118a86,6419854.253,608898.309,72.376,
 030118a87,6419856.695,608895.961,72.505,
 030118a88,6419858.702,608894.747,72.258,
 030118a89,6419864.042,608896.057,70.591,
 030118a90,6419866.731,608897.772,70.475,
 030118a91,6419870.049,608897.805,70.348,
 030118a92,6419872.837,608897.619,70.693,
 030118a93,6419877.106,608898.838,70.515,
 030118a94,6419881.050,608899.572,70.362,
 030118a95,6419882.498,608900.638,70.458,
 030118a96,6419882.325,608901.896,70.479,
 030118a97,6419885.280,608904.216,70.354,
 030118a98,6419887.771,608906.002,70.185,
 030118a99,6419890.751,608906.036,70.166,
 030118a100,6419895.073,608907.591,70.110,
 030118a101,6419898.677,608907.819,70.237,
 030118a102,6419902.107,608910.640,69.938,
 030118a103,6419905.069,608913.934,69.768,
 030118a104,6419907.365,608916.987,69.560,
 030118a105,6419911.121,608918.272,69.391,
 030118a106,6419916.220,608917.941,69.140,
 030118a107,6419920.304,608916.686,69.126,
 030118a108,6419925.192,608914.310,69.137,
 030118a109,6419927.714,608913.080,68.976,
 030118a110,6419929.679,608909.960,69.065,
 030118a111,6419930.341,608905.908,69.062,
 030118a112,6419928.992,608904.124,69.248,
 030118a113,6419927.282,608902.108,69.252,
 030118a114,6419925.350,608900.999,69.285,
 030118a115,6419920.615,608899.563,69.089,
 030118a116,6419915.835,608898.627,69.217,
 030118a117,6419911.545,608897.869,69.241,
 030118a118,6419912.767,608894.282,69.185,
 030118a119,6419914.165,608891.197,69.412,
 030118a120,6419915.721,608887.441,69.472,
 030118a121,6419922.054,608888.433,69.559,
 030118a122,6419910.203,608897.975,69.596,
 030118a123,6419908.352,608896.773,70.257,
 030118a124,6419905.829,608896.079,71.473,
 030118a125,6419926.264,608904.945,69.617,
 030118a126,6419926.326,608903.793,70.100,
 030118a127,6419921.179,608905.309,70.254,
 030118a128,6419921.326,608903.489,71.109,
 030118a129,6419916.846,608905.746,70.942,
 030118a130,6419916.953,608903.449,72.019,
 030118a131,6419913.011,608903.677,72.155,
 030118a132,6419911.292,608903.504,72.274,
 030118a133,6419911.759,608904.977,72.004,
 030118a134,6419908.310,608902.942,72.769,

Markseiderimõõdistamise punktid

030118a135,6419906.173,608900.983,73.183,
 030118a136,6419903.838,608899.594,73.627,
 030118a137,6419901.789,608897.076,74.374,
 030118a138,6419900.363,608894.488,75.238,
 030118a139,6419899.514,608892.154,75.817,
 030118a140,6419899.968,608889.914,76.457,
 030118a141,6419900.597,608889.068,77.061,
 030118a142,6419896.296,608887.317,77.214,
 030118a143,6419892.867,608889.662,77.272,
 030118a144,6419890.551,608891.861,77.276,
 030118a145,6419889.646,608893.410,77.252,
 030118a146,6419891.705,608895.141,76.973,
 030118a147,6419893.484,608896.701,76.390,
 030118a148,6419894.947,608898.679,75.488,
 030118a149,6419897.951,608900.200,74.482,
 030118a150,6419899.349,608902.419,73.656,
 030118a151,6419901.478,608904.199,73.261,
 030118a152,6419904.235,608906.461,73.001,
 030118a153,6419906.712,608908.382,72.830,
 030118a154,6419909.091,608910.308,72.280,
 030118a155,6419911.139,608912.250,71.983,
 030118a156,6419912.142,608912.305,72.094,
 030118a157,6419912.205,608911.115,71.676,
 030118a158,6419915.107,608912.725,71.763,
 030118a159,6419915.365,608911.393,71.070,
 030118a160,6419918.695,608911.594,70.498,
 030118a161,6419918.946,608912.842,71.145,
 030118a162,6419923.533,608911.400,69.729,
 030118a163,6419923.538,608912.241,70.114,
 030118a164,6419894.289,608894.406,76.299,
 030118a165,6419896.486,608893.049,76.118,
 030118a166,6419887.999,608891.807,77.311,
 030118a167,6419884.814,608890.139,77.186,
 030118a168,6419881.559,608889.022,77.325,
 030118a169,6419877.740,608889.167,77.286,
 030118a170,6419874.120,608888.063,77.273,
 030118a171,6419870.310,608887.364,77.333,
 030118a172,6419866.516,608886.013,77.274,
 030118a173,6419863.534,608885.638,77.394,
 030118a174,6419860.174,608886.199,77.443,
 030118a175,6419856.960,608886.814,77.489,
 030118a176,6419853.181,608889.389,77.414,
 030118a177,6419848.998,608892.577,77.391,
 030118a178,6419845.534,608895.962,77.236,
 030118a179,6419842.280,608899.609,77.136,
 030118a180,6419838.996,608903.745,77.090,
 030118a181,6419836.086,608908.414,77.043,
 030118a182,6419833.613,608913.352,77.027,
 030118a183,6419831.511,608918.309,76.911,
 030118a184,6419829.540,608924.150,76.755,
 030118a185,6419829.128,608927.420,76.723,
 030118a186,6419830.473,608930.541,76.816,
 030118a187,6419830.449,608934.194,76.524,
 030118a188,6419830.680,608936.675,76.403,
 030118a189,6419829.078,608940.268,76.398,
 030118a190,6419829.466,608943.472,76.357,
 030118a191,6419831.108,608947.045,76.335,
 030118a192,6419831.149,608950.936,76.418,
 030118a193,6419832.501,608955.850,76.533,
 030118a194,6419833.218,608959.011,76.535,
 030118a195,6419834.974,608961.526,76.644,
 030118a196,6419837.481,608964.012,76.747,
 030118a197,6419840.503,608965.710,76.770,
 030118a198,6419846.299,608967.329,76.781,
 030118a199,6419852.037,608968.869,76.729,
 030118a200,6419855.854,608969.662,76.670,
 030118a201,6419858.696,608970.502,76.747,
 030118a202,6419864.357,608973.347,77.230,
 030118a203,6419864.398,608973.337,77.149,
 030118a204,6419867.331,608975.773,76.869,
 030118a205,6419871.547,608977.220,76.762,
 030118a206,6419871.559,608977.233,76.763,
 030118a207,6419876.184,608979.059,76.373,
 030118a208,6419879.774,608980.100,76.346,
 030118a209,6419882.893,608980.205,76.237,
 030118a210,6419884.846,608979.232,76.401,
 030118a211,6419888.533,608980.606,76.313,
 030118a212,6419892.318,608983.012,76.134,
 030118a213,6419891.485,608987.137,76.206,
 030118a214,6419834.039,608967.710,76.645,
 030118a215,6419834.022,608967.693,76.679,
 030118a216,6419816.440,608965.827,75.592,
 030118a217,6419816.447,608965.803,75.624,
 030118a218,6419798.884,608964.721,75.160,
 030118a219,6419780.843,608962.575,74.686,
 030118a220,6419762.409,608959.166,74.666,
 030118a221,6419758.486,608960.655,74.522,
 030118a222,6419755.584,608956.221,75.159,
 030118a223,6419759.832,608944.933,75.976,
 030118a224,6419762.580,608932.950,75.847,
 030118a225,6419754.937,608930.424,75.966,
 030118a226,6419759.776,608917.606,76.043,
 030118a227,6419766.258,608919.831,76.413,
 030118a228,6419769.583,608921.041,78.181,
 030118a229,6419771.336,608907.047,76.348,
 030118a230,6419778.495,608890.340,76.546,
 030118a231,6419772.385,608887.453,76.440,
 030118a232,6419784.810,608873.803,76.590,
 030118a233,6419784.831,608873.818,76.577,
 030118a234,6419794.757,608850.661,76.533,
 030118a235,6419788.754,608847.022,76.608,
 030118a236,6419801.096,608830.028,76.880,
 030118a237,6419801.269,608811.749,76.883,
 030118a238,6419806.189,608815.838,77.026,
 030118a239,6419808.785,608813.254,77.038,
 030118a240,6419815.794,608812.749,77.081,
 030118a241,6419827.091,608818.051,77.061,
 030118a242,6419836.345,608824.729,76.967,
 030118a243,6419849.996,608831.181,77.018,
 030118a244,6419859.078,608836.584,77.074,
 030118a245,6419869.946,608839.293,77.163,
 030118a246,6419880.176,608844.787,77.412,
 030118a247,6419889.926,608849.159,77.596,
 030118a248,6419899.891,608853.514,77.703,
 030118a249,6419907.288,608858.075,77.694,
 030118a250,6419905.344,608861.153,80.096,
 030118a251,6419911.318,608873.033,77.174,
 030118a252,6419903.917,608867.819,77.351,
 030118a253,6419896.987,608862.740,77.417,
 030118a254,6419894.133,608858.923,77.517,
 030118a255,6419885.528,608855.231,77.522,
 030118a256,6419877.916,608852.547,77.333,
 030118a257,6419868.752,608849.861,77.106,
 030118a258,6419860.556,608847.331,76.874,
 030118a259,6419852.723,608841.240,76.792,
 030118a260,6419839.805,608834.583,76.742,
 030118a261,6419828.320,608828.449,76.587,
 030118a262,6419820.744,608823.878,76.595,
 030118a263,6419815.318,608821.532,76.763,
 030118a264,6419811.532,608825.596,76.663,
 030118a265,6419808.705,608836.533,76.331,
 030118a266,6419805.784,608846.859,76.178,
 030118a267,6419800.373,608860.964,76.302,
 030118a268,6419796.709,608870.116,76.345,

Markseiderimõõdistamise punktid

030118a269,6419792.540,608879.829,76.453,
 030118a270,6419787.857,608892.595,76.333,
 030118a271,6419783.064,608901.661,76.247,
 030118a272,6419779.272,608910.655,76.195,
 030118a273,6419774.969,608920.394,76.425,
 030118a274,6419772.526,608929.812,75.852,
 030118a275,6419769.569,608940.911,75.804,
 030118a276,6419769.533,608940.903,75.800,
 030118a277,6419765.674,608952.280,75.537,
 030118a278,6419794.650,608954.971,76.176,
 030118a279,6419804.047,608929.099,76.146,
 030118a280,6419814.580,608903.587,76.620,
 030118a281,6419827.814,608878.594,76.808,
 030118a282,6419837.360,608857.803,76.752,
 030118a283,6419857.399,608866.869,77.198,
 030118a284,6419879.223,608874.774,77.534,
 030118a285,6419835.022,608946.396,73.836,
 030118a286,6419837.281,608948.185,73.230,
 030118a287,6419838.144,608945.648,72.831,
 030118a288,6419836.426,608943.719,72.511,
 030118a289,6419837.655,608943.747,72.498,
 030118a290,6419838.566,608941.237,72.139,
 030118a291,6419836.557,608940.347,72.325,
 030118a292,6419841.761,608936.847,71.110,
 030118a293,6419841.865,608934.776,71.277,
 030118a294,6419842.359,608933.282,71.567,
 030118a295,6419844.322,608932.473,71.533,
 030118a296,6419846.798,608933.027,71.472,
 030118a297,6419845.656,608933.748,72.250,
 030118a298,6419844.400,608935.228,72.768,
 030118a299,6419849.338,608931.921,71.448,
 030118a300,6419849.235,608928.896,71.541,
 030118a301,6419846.583,608929.255,71.529,
 030118a302,6419844.230,608928.976,71.578,
 030118a303,6419842.255,608926.432,71.659,
 030118a304,6419841.290,608924.240,72.074,
 030118a305,6419842.914,608920.661,72.260,
 030118a306,6419845.222,608916.071,72.250,
 030118a307,6419846.831,608913.949,72.186,
 030118a308,6419848.678,608910.380,72.086,
 030118a309,6419851.652,608907.433,72.122,
 030118a310,6419854.562,608904.656,72.252,
 030118a311,6419857.895,608902.286,72.252,
 030118a312,6419857.490,608899.196,72.239,
 030118a313,6419857.443,608904.622,73.422,
 030118a314,6419856.111,608906.913,73.551,
 030118a315,6419854.797,608909.024,74.221,
 030118a316,6419854.080,608910.895,74.514,
 030118a317,6419852.359,608912.603,74.483,
 030118a318,6419854.246,608913.869,74.161,
 030118a319,6419851.331,608917.595,74.279,
 030118a320,6419849.968,608915.983,74.421,
 030118a321,6419848.307,608920.571,74.452,
 030118a322,6419847.353,608920.147,74.501,
 030118a323,6419846.290,608922.509,74.437,
 030118a324,6419847.481,608923.211,74.462,
 030118a325,6419845.098,608923.790,74.234,
 030118a326,6419846.091,608924.715,74.200,
 030118a327,6419843.511,608939.483,69.939,
 030118a328,6419845.920,608940.133,69.958,
 030118a329,6419848.049,608938.056,69.894,
 030118a330,6419849.586,608935.564,70.034,
 030118a331,6419851.513,608933.128,70.137,
 030118a332,6419851.133,608928.809,70.322,
 030118a333,6419852.736,608926.698,70.407,
 030118a334,6419854.021,608923.475,70.502,
 030118a335,6419857.206,608919.650,70.401,

030118a336,6419860.182,608916.834,70.335,
 030118a337,6419860.057,608911.885,70.441,
 030118a338,6419860.841,608908.166,70.507,
 030118a339,6419862.110,608906.225,70.406,
 030118a340,6419864.495,608904.724,70.134,
 030118a341,6419865.223,608902.723,70.234,
 030118a342,6419863.694,608901.068,70.383,
 030118a343,6419860.906,608899.043,70.443,
 030118a344,6419875.390,608906.778,70.224,
 030118a345,6419869.824,608918.739,70.222,
 030118a346,6419865.520,608928.147,70.211,
 030118a347,6419860.601,608939.757,69.736,
 030118a348,6419856.030,608949.625,69.476,
 030118a349,6419859.881,608957.485,69.470,
 030118a350,6419862.641,608955.584,69.531,
 030118a351,6419867.829,608958.037,69.199,
 030118a352,6419870.181,608961.499,69.171,
 030118a353,6419872.266,608948.457,69.434,
 030118a354,6419878.611,608937.798,69.529,
 030118a355,6419883.522,608928.492,69.611,
 030118a356,6419890.724,608916.109,69.809,
 030118a357,6419902.956,608926.418,69.303,
 030118a358,6419900.225,608933.580,69.600,
 030118a359,6419895.107,608944.632,69.176,
 030118a360,6419890.379,608956.447,69.131,
 030118a361,6419895.048,608966.927,69.037,
 030118a362,6419895.434,608975.463,69.949,
 030118a363,6419895.512,608974.259,70.165,
 030118a364,6419892.776,608973.299,70.813,
 030118a365,6419889.622,608972.403,71.466,
 030118a366,6419888.588,608973.772,72.069,
 030118a367,6419891.093,608974.079,70.808,
 030118a368,6419893.865,608974.964,70.104,
 030118a369,6419907.042,608963.699,68.700,
 030118a370,6419905.691,608966.014,68.729,
 030118a371,6419903.681,608967.061,68.874,
 030118a372,6419902.076,608966.801,68.774,
 030118a373,6419900.690,608964.331,68.835,
 030118a374,6419900.806,608961.419,68.905,
 030118a375,6419901.887,608960.260,68.937,
 030118a376,6419904.159,608959.951,68.885,
 030118a377,6419906.062,608961.371,68.848,
 030118a378,6419903.719,608963.000,70.841,
 030118a379,6419905.615,608949.222,69.148,
 030118a380,6419909.743,608938.624,69.320,
 030118a381,6419916.414,608926.365,68.953,
 030118a382,6419928.264,608930.324,68.873,
 030118a383,6419923.147,608942.303,68.883,
 030118a384,6419918.339,608954.385,68.825,
 030118a385,6419913.665,608964.810,68.580,
 030118a386,6419970.814,608838.155,68.779,
 030118a387,6419974.023,608838.728,68.501,
 030118a388,6419975.871,608839.436,68.373,
 030118a389,6419977.154,608841.330,68.554,
 030118a390,6419978.824,608841.511,68.378,
 030118a391,6419977.890,608839.835,69.208,
 030118a392,6419978.315,608838.383,69.639,
 030118a393,6419978.151,608836.643,70.307,
 030118a394,6419977.003,608835.416,70.631,
 030118a395,6419975.446,608833.501,71.761,
 030118a396,6419973.341,608831.919,72.814,

Käesolevas toimikus on 11 (üksteist) nummerdatud lehte.

10. jaanuar 2018.a.