[RADIOCARBON, VOL 26, NO. 3, 1984, P 449-460]

RUDJER BOŠKOVIĆ INSTITUTE RADIOCARBON MEASUREMENTS VIII

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The following radiocarbon date list contains dates of samples measured since our previous list (R, 1982, v 24, p 352-371). As before, age calculations are based on the Libby half-life (5570 ± 30) yr and reported in years before 1950. The modern standard is 0.95 of the NBS oxalic acid activity. Sample pretreatment, combustion, and counting technique are essentially the same as described in R, 1971, v 13, p 135-140, supplemented by new techniques for groundwater processing (R, 1979, v 21, p 131-137).

Statistical processing of data has been computerized (Obelić & Planinić, 1977; Obelić, 1980). Sample descriptions were prepared with collectors and submitters. The errors quoted correspond to 1σ variation of sample net counting rate and do not include the uncertainty in ^{14}C half-life.

Calculations of age of speleothems and groundwaters are based on the initial activity equal to 0.85 of the NBS oxalic acid activity multiplied by 0.95.

ACKNOWLEDGMENTS

We thank E Hernaus for preparation of samples and methane synthesis, A Turković for data processing, and P Hojski for technical assistance.

ARCHAEOLOGIC SAMPLES

Vindija series

Charcoal particles from Vindija cave, Gornja Voća near Ivanec (46° 20′ N, 16° 04′ E), NW Croatia. Coll and subm 1978 by M Malez, Yugoslav Acad Sci Arts, Zagreb (Malez & Ullrich, 1982).

Z-612. Vindija 1 **24,000 ± 3300**

Charcoal particles from Layer II/P-1.

Z-613. Vindija 2 **29,700 ± 2000**

Charcoal particles from Layer II/P-2.

Z-712. Ždrelo, Mitropolija **900 ± 90**

Charred wood from N part of apse of medieval metropolitan church Mala crkva, Ždrelo village (44° 18′ N, 21° 31′ E), central Serbia. Coll 1979 and subm by D Madas, Inst Preservation Cultural Monuments, Kragujevac.

Z-863. Hrustovača **12,000 ± 200**

Speleothem deposited on cranium of cave bear (*Ursus spelaeus*) ca 700m from entrance of Hrustovača cave near Sanski Most, W Bosnia. Coll

and subm 1979 by M Malez. *Comment* (MM): expected age: Upper Pleistocene.

Z-864. Plavi Majdan **>37,000**

Fragment of stratified bone breccia, 6m below ground from Plavi Majdan quarry at Duzluk near Slavonska Orahovica, NE Croatia. Coll and subm 1981 by M Malez. Sample dates cave bear occupation. *Comment* (MM): expected age: Middle Pleistocene.

Z-893. Pernice **1970 ± 100**

Charcoal from profile of forest soil; charcoal, layer 10 to 15cm thick, 40 to 50cm below ground mixed with soil near Pernice village (46° 38′ 12″ N, 15° 07′ 20″ E) at 1025m alt, N Slovenia. Date determines age of colluvium drift and human influence on forest. Coll and subm by B Anko, Inst Forestry Biol Fac, Ljubljana. *Comment* (BA): expected age: 400-500 BP.

Z-895. Pokrovnik **6300 ± 150**

Carbonized wheat (*Triticum monococum*), Layer P-I; 1m below ground level, from cultivated field near Drniš, Dalmatia (43° 49′ N, 16° 04′ E) at 260m alt, S Croatia. Coll and subm 1981 by Z Brusić, Mus Šibenik. *Comment* (ZB): expected age: ca 2400 BC.

Z-978. Varaždin **440 ± 100**

Wood from log cabin 4m below surface, Varaždin (46° 18′ N, 16° 20′ E), NW Croatia. Assoc with pottery. Coll and subm 1980 by J Tomičić, Town Mus Varaždin. *Comment* (JT): expected age: 14th century.

Z-982. Parti **4200 ± 110**

Wooden fragments of pile-dwelling post buried in calcareous sediment (lake chalk) at Ig near Ljubljana (45° 57′ 20″ N, 14° 32′ 10″ E), Slovenia. Dates pile-dwelling settlements in Lj Barje area (R, 1979, v 21, p 131). Coll 1981 by T Bregant, Fac Arts Sci, Ljubljana; subm by A Šercelj. *Comment* (AŠ): expected period: Eneolithic.

Z-983. Šafarsko **5050 ± 190**

Wooden particles mixed with soil from hearth, 0.8m below surface, Tr 8, Quad 6, Šafarsko near Ormož (46° 31′ 20″ N, 16° 16′ 45″ E), NE Slovenia. Coll 1981 by T Bregant; subm by A Šercelj. Date determines absolute age of culture.

Z-984. Rudnik **2950 ± 110**

Fragments of log buried in lake chalk, Tr IV, Rudnik near Ljubljana (46° 13′ 20″ N, 14° 32′ 45″ E), Slovenia. Coll 1981 by T Bregant; subm by A Šercelj.

Divje Babe series

Charcoal from Paleolithic site, Divje Babe cave near Šebrelje (46° 06′ 50″ N, 13° 54′ 50″ E) at 450m alt, SW Slovenia. Hearth in calcareous soil not affected by rootlets and groundwater. Coll and subm 1980 and 1981 by

M Brodar (1982), Archaeol Inst, Ljubljana. *Comment* (MB): expected period: end of Pleistocene.

Z-1032. Divje Babe A **17,500 ± 850**

Hearth A. *Comment* (MB): expected age older than Sample B.

Z-1033. Divje Babe B **>37,000**

Hearth B. Underlying layer: Mousterian.

Z-1036. Lukenjska jama **12,200 ± 250**

Charcoal from hearth, depth 3m in gravel and clay sediment, entrance of Lukenjska jama cave at Prečna near Novo Mesto (45° 49′ 10″ N, 15° 06′ 20″ E) at 186m alt, Slovenia. Sample from systematic excavations of younger Paleolithic site (Osole, 1982). Coll and subm 1982 by F Osole, Quaternary Inst, Univ Ljubljana. *Comment* (FO): expected age: ca 12,000 BP (Epigravettian).

Z-1041. Zaton **2130 ± 120**

Wooden beam from sunken boat 1.8m below sea level, buried in mud, 60cm depth, Zaton near Nin, Dalmatia (44° 13′ 40″ N, 15° 09′ 50″ E), S Croatia. Coll and subm 1982 by L Domijan, Inst Preservation Cultural Monuments, Zadar. Archaeol excavations of Roman harbor. *Comment* (LD): expected age: ca 2000 BP.

Ajdovska jama series

Charred wheat (*Triticum monococum*) and charcoal from Ajdovska jama cave near Nemška vas, Krško, E Slovenia. Coll 1982 by A Bregant, and subm by A Šercelj. Samples from systematic excavation of Neolithic site.

Z-1042. Ajdovska jama 1 **5120 ± 130**

Charred wheat from Grave 1 near Skeleton D/E. *Comment* (AŠ): expected age: ca 4500 BP.

Z-1043. Ajdovska jama 2 **5180 ± 150**

Charred wheat from Grave 2, left entrance near Skeleton 2.

Z-1044. Ajdovska jama 3 **5620 ± 130**

Charred wheat from Grave 1, left entrance near skeleton of child.

Z-1045. Ajdovska jama 4 **5340 ± 120**

Charcoal from hearth near Grave 2, Skeleton 2.

Z-1089. Citadella Zadar **420 ± 130**

Splinter of beam from town fortress (citadel), Zadar (45° 07′ N, 15° 15′ E), S Croatia. Coll and subm 1982 by L Domijan.

Pod series

Samples from prehistoric fortress Pod near Bugojno (44° 03′ 40″ N, 17° 26′ 30″ E) at 632m alt, central Bosnia (Čović, 1975). Coll and subm 1982 by B Čović, State Mus Bosnia and Hercegovina, Sarajevo.

Z-1091. Pod 1 **2420 ± 140**

Carbonized cereals from Horizon X, 1.09m depth between fortress walls. Cultural layer had no recent rootlets. *Comment* (BČ): expected age: ca 600 BC.

Z-1092. Pod 2 **2900 ± 140**

Carbonized wood from Tr III-13, deepest layer of prehistoric settlement "B", from space between bldg and ramparts, 2.15m depth. Cultural layer had no recent rootlets. *Comment* (BČ): expected age: ca 1000 BC.

Z-1093. Velika Gradina **3200 ± 140**

Charcoal from base level of burned house, 1.85m below ground level, Velika Gradina near village Varvari (43° 49′ N, 17° 29′ E), central Bosnia. Coll and subm 1978 by V Čović. *Comment* (BČ): expected age: ca 1600 BC. Layer out of reach of rootlets, but influence of groundwater is possible (Čović, 1978).

Z-1136. Ubli **1590 ± 130**

Wheat grains found in Roman amphora, 1.5m below ground level, at site of farmhouse. Sample from Roman settlement near Ubli, i Lastovo, Adriatic Sea (44° 45′ N, 16° 50′ E), S Croatia. Coll and subm by J Jeličić, Regional Inst Preservation Cultural Monuments, Split. *Comment* (JJ): expected period: 1st to 4th century AD.

Sisak series

Parts of wooden boat (monoxyl) (*Quercus robur*), 9m long, buried in mud, from Kupa R near Sisak (45° 30′ N, 16° 23′ E), Croatia. Samples assoc with Roman artifacts, coins, and ceramics. Coll by B Kraguljac, Mus Sisak and subm by A Sliepčević. *Comment* (BK): dates help determine Celtic or Roman occupation of site.

Z-1147. Sisak 1 **2040 ± 130**

Sample taken from outermost sec of trunk.

Z-1148. Sisak 2 **2330 ± 140**

Sample from trunk core.

GEOLOGIC SAMPLES

Fossil wood samples

Z-892. Dobrepolje **5800 ± 110**

Alluvial wood (unid.) from Layer 2, depth 70cm in profile dug near Videm-Podpeč Rd (45° 51′ N, 14° 42′ E) at 438m alt, central Slovenia. Coll by A Kranjc and subm 1981 by R Gospodarič, Inst Karst Research, Slovenian Acad Sci Arts. *Comment* (RG): expected period: Holocene.

Petišovci series

Fossil oaks (*Quercus robur*) from dry riverbed under 6 to 8m of gravel, presently below water table, at Petišovci near Lendava (46° 32′ 30″ N, 16°

28′ E) at 162m alt, NE Slovenia. Dendrochronologic measurements were made of fossil wood. Coll and subm 1981 by M Accetto, Inst Forestry Biol Fac, Ljubljana.

Z-896. Petišovci 1 **930 ± 100**

Fossil oak log, depth 6 to 8m under alluvium.

Z-897. Petišovci 2 **1520 ± 100**

Fossil oak log, 1.45m diam, depth 6 to 8m under alluvium.

Z-1086. Oroslavje **1680 ± 140**

Central tree rings of fossil oak (*Quercus robur*), 7m below present riverbed level, Krapina R near Oroslavje, Hrvatsko Zagorje (46° 00′ N, 15° 55′ E), NW Croatia. Coll and subm 1982 by A Gredičak, Oroslavje.

Ljutomer series

Fossil oaks buried in alluvium near Ljutomer (46° 31′ N, 16° 15′ E), NE Slovenia, exported to British timber import company TIMBMET, Oxford. Subm 1982 by J Burley, Univ Oxford.

Z-1015. Ljutomer 1 **4120 ± 120**

10 to 20 tree rings below trunk surface.

Z-1016. Ljutomer 2 **4280 ± 110**

70 to 87 tree rings below trunk surface.

Lipova greda series

Fossil oak (*Quercus robur*) found in Lipova greda gravel pit near Draksenić village at Bosanska Dubica (45° 12′ N, 16° 53′ E), NW Bosnia during low water level, Fall 1983. Coll by V Brežančić, Inst Preservation Cultural Monuments, Sarajevo and subm by A Sliepčević. *Comments* (VB): expected age: Holocene. (DS): trunks and stumps are scattered around pit. No records of original positions exist. Dates time span of wood growth.

Z-1154. Lipova greda 1 **270 ± 130**

Oak trunk, 35cm diam, protruding from gravel during low water level.

Z-1155. Lipova greda 2 **3080 ± 130**

Outer part of oak stump, 87cm diam, from gravel pit.

Z-1156. Lipova greda 3 **440 ± 130**

Oak trunk, 9m long, 126cm diam, from gravel pit. Sample taken from surface, partially rotten.

Z-1149. Bednja **1590 ± 130**

Fossil oak (*Quercus robur*) from bed of Bednja R near Bednja village, Hrvatsko Zagorje (46° 10′ N, 16° 15′ E), NW Croatia. Coll and subm 1983 by I Popijač, Bednja.

Peat samples

Lovrenško barje series

Peat from bore hole in Lovrenško barje peat bog, Pohorje Mts (15° 18′ N, 46° 29′ E) at 1300m alt, N Slovenia. Coll and subm 1983 by A Šercelj, Slovenian Acad Sci Arts, Ljubljana. Depth in cm below surface. *Comment* (AŠ): expected age: Holocene.

Z-1157. Lovrenško barje 1 **2350 ± 130**

Peat, 130 to 150cm.

Z-1158. Lovrenško barje 2 **3400 ± 140**

Peat, 200 to 230cm.

Z-779. Oborovo 2 **>37,000**

Clay containing carbonized organic detritus from bore hole, Oborovo near Zagreb (45° 41′ N, 16° 15′ E), NW Croatia. Coll and subm 1980 by A Sokač, Fac Min Geol and Petrol Eng, Univ Zagreb. *Comment* (AS): dating Quaternary sediments to determine tectonic dislocations. Expected period: Late Pleistocene.

Speleothem and tufa samples

Z-1021. Kamniška jama **>37,000**

Stratified speleothem from Kamniška jama cave, near Kamnik, Slovenia. Coll and subm 1982 by J Urban, Speleol Soc, Kamnik. Date determines periods of speleothem growth.

Slatina series

Tufa samples from Slatina near Banja Luka (44° 45′ N, 17° 15′ E), W Bosnia. Dated for geothermal investigations. Coll and subm by N Miošić, Geoinženjering, Sarajevo. *Comment* (DS): tufa is precipitated from geothermal springs, containing no ^{14}C in dissolved bicarbonates. Low activity could be attributed to contamination with recent carbon.

Z-1046. Slatina T-269 **34,400 $^{+4000}_{-3600}$**

Surface of massive tufa block overgrown with moss, lowermost point.

Z-1047. Slatina T-270 **28,300 ± 1800**

Surface of massive tufa block, uppermost point.

Z-1048. Slatina T-71 **>37,000**

Recently deposited tufa.

Z-1049. Slatina T-85 **22,200 ± 900**

Surface layer of tufa surrounding extinct thermal spring.

Banja Luka series

Tufa from various thermal springs near Banja Luka (44° 45′ N, 17° 10′ E), NW Bosnia. Samples coll and subm by D Hrustanpašić, Geoinženjering, Sarajevo. Geothermal exploration near Banja Luka.

Z-1164. Slatina **20,700 ± 900**

Stratified tufa 0.3 to 1m below ground level, thermal spring Slatina spa.

Z-1165. Priječani **17,800 ± 600**

Tufa covered by humus, 0.5 to 1m below ground level, Priječani.

Z-1166. Gornji Šeher **15,400 ± 500**

Porous tufa precipitated from thermal spring, Gornji Šeher, 0.5m below humus layer.

Z-1167. Laktaši **32,000 $^{+3800}_{-2900}$**

Stratified tufa contaminated with soil and moss around thermal spring Laktaši.

Krčić series

Tufa beds near Krčić waterfall, Kninsko polje (44° 01′ N, 16° 18′ E) at 280m alt, S Croatia. Brook flows intermittently but had steady flow in past and formed tufa barrier Topoljski buk 400m long and 15m high. Below this barrier is spring of Krka R. Coll and subm by A Pavičić, Geol Inst, Zagreb. Series dated to determine age of tufa beds and ancient flow patterns of ground water. *Comment* (DS): chronology of tufa deposits in this region agrees with our findings reported previously (Srdoč *et al*, 1982), proving that tufa is deposited during warm periods. Tufa samples having ^{14}C ages close to lower limit of measurement are probably much older (ca 100,000 yr) as shown by $^{230}Th/^{234}U$ analysis. Their ^{14}C ages are influenced by slight contamination with recent carbonates.

Z-1189. Krčić 1 **>37,000**

Surface tufa coll from stream 1km upstream from Topoljski buk barrier.

Z-1191. Krčić 2 **25,500 ± 1300**

Sample from entrance of cave, 3km upstream from Topoljski buk, 60m above stream bed.

Z-1192. Krčić 3 **25,000 ± 1200**

Tufa from dry barrier Krčić, 300m upstream from Topoljski buk barrier.

Z-1193. Krčić 4 **4570 ± 150**

Compact tufa, core from bore hole, overlying bedrock, Topoljski buk.

Z-1194. Krčić 5 **28,000 ± 1600**

Surface tufa from river terrace, E part of Kninsko polje near Orašnica R, right tributary of Krka R.

Loess samples

East Slavonia series

Series dated Pleistocene and Holocene loess and loess concretions

(loess dolls) from profiles near Danube R, Vukovar (Gorjanović profile) and profiles near Vinkovci (Dilj I and Dilj II), Privlaka, Mikanovci, and Djakovo. Sediments were dated for drafting of geologic map of Yugoslavia. Coll and subm 1982 and 1983 by I Galović and M Šparica, Geol Inst, Zagreb. Loess concretions and calcareous fractions of loess dissolved in diluted hydrochloric acid.

Profile Dilj I

Samples of loess concretions from profile, ca 14m deep, rich in fauna (mollusks) found in Slavko Knežević brickyard, SW of Vinkovci (45° 16′ N, 18° 46′ E), E Croatia. Sediment corresponds to marine environment.

Z-1076. Dilj I/1 **30,000 ± 2600**

Irregular loess concretions, 10cm long, 1 to 5cm diam, from deepest part of profile in brown clayey layer of silt, 1m thick, 13.5m below ground level. Sediment contains macrofossil fauna.

Z-1077. Dilj I/5 **5200 ± 170**

Tiny loess concretions of irregular shape in brownish-gray silt, 2.5m thick, depth to 3.7m. Assoc bones: *Bos taurus trachicensis, Equus coballus.*

Profile Dilj II

Samples of loess concretions and marl from profile, ca 15m deep, open in Slavonka brickyard, NE part of Vinkovci town.

Z-1078. Dilj II/1 **33,400 $^{+3400}_{-1700}$**

Loess concretions of irregular shape, 1 to 4cm diam, overlying layer of clayey silt, 1.5m thick, depth 13.1m.

Z-1096. Dilj II/2 **34,700 $^{+6000}_{-4600}$**

Loess concretions in dark-brown silt, 1.7 to 2m thick, depth 11.5m.

Z-1099. Dilj II/3 **32,000 $^{+3300}_{-2400}$**

Sandy silt, depth 8m.

Z-1110. Dilj II/27 **27,000 ± 1900**

Sandy silt under groundwater level, depth 7m.

Z-1097. Dilj II/4 **15,600 ± 500**

Loess concretions, 1 to 4cm diam, from layer, 3.5m thick, with vertical fissures and microfauna, depth 6.8m.

Z-1109. Dilj II/28 **25,100 ± 1400**

Terrestrial loess with fossils, depth 5.6m.

Z-1098. Dilj II/5 **21,700 ± 1000**

Loess concretions from layer, 0.5m thick, with vertical fissures and microfauna, depth 5.5m.

Z-1108. Dilj II/30 **19,400 ± 1000**

Typical terrestrial loess with vertical fissures and terrestrial macrofauna, depth 3m.

Z-1150. Dilj II/30c **16,200 ± 500**

Typical terrestrial loess with vertical fissures and terrestrial microfauna, depth 2.5m.

Z-1079. Dilj II/6 **3550 ± 160**

Loess concretions up to 10cm diam overlying layer of typical terrestrial loess, 2.5m thick, with vertical fissures and terrestrial microfauna, depth 1.8m.

Profile Gorjanović

Loess and loess concretions from various depths of profile, 18m deep, near Danube R at Vukovar (45° 20′ N, 19° 00′ E), E Croatia.

Z-1073. Gorjanović 1 **32,000 $^{+3500}_{-2800}$**

Loess concretions of irregular shape, up to 10cm long and several cm thick overlying layer of silt, 1m thick, depth 17.4m.

Z-1074. Gorjanović 2 **24,700 ± 1300**

Loess concretions of irregular shape, more than 20cm long overlying layer of loess, 3m thick, depth 13.2m. Fossil flora and fauna from colder climate found in layer.

Z-1107. Gorjanović 6 **22,200 ± 3700**

Typical loess, 7.5m below surface.

Z-1075. Gorjanović 3 **21,700 ± 1000**

Loess concretions 10 to 15cm diam overlying layer of loess, 6m thick, depth 6.8m.

Z-1103. Gorjanović 4 **18,800 ± 600**

Loess from layer, 4 to 5m thick, depth 1m.

Other loess profiles

Z-1080. Privlaka **6350 ± 200**

Loess concretions taken during digging channel near Bosut R, 1m below ground in clayey silt, Privlaka (45° 12′ N, 18° 50′ E), E Croatia.

Z-1104. Djakovo **7550 ± 200**

Loess concretions in clayey silt, depth 2.5m, Djakovo, Slavonia (45° 19′ N, 18° 25′ E), E Croatia.

Z-1105. Mikanovci **11,900 ± 300**

Loess concretions in clayey silt, depth 3.5m, Mikanovci (46° 17′ N, 18° 33′ E), E Croatia. Coll 1983 by I Galović, Geol Inst, Zagreb.

Z-1142. Sigečak Mali **5150 ± 170**

Loess concretions, depth 1.2m, Sigečak Mali near Ludbreg (46° 14′ N, 16° 39′ E), NW Croatia. Coll and subm 1983 by M Malez.

HYDROGEOLOGIC SAMPLES

Croatia

21.4 ± 0.7% modern

Z-868. Šmidhen, SM-1 **11,000 ± 300**

Mineral water from artesian well 800m deep, Šmidhen spa, near Samobor (43° 48′ N, 15° 43′ E), NW Croatia. Coll and subm July 1981 by INA Naftaplin staff, Zagreb. Dated to study hydrogeol properties of thermal waters.

3.9 ± 0.4% modern

Z-898. Šalata, SA-1 **24,800 ± 1200**

Groundwater from 950 to 1010m depth, Šalata, Zagreb (45° 49′ N, 16° 00′ E), NW Croatia. Coll and subm Feb 1982 by INA Naftaplin staff.

49.2 ± 0.7% modern

Z-1072. Križevci **4350 ± 160**

Groundwater, occasionally artesian water, near Vratno village (44° 08′ N, 16° 32′ E) at 200m alt, central Croatia. Sample from pumping sta of potable water for Križevci town. Coll and subm 1983 by J Krznar, Geotehnika.

5.3 ± 0.4% modern

Z-973. Topusko, TP-1 **22,000 ± 900**

Water from Topusko thermal spa (45° 18′ N, 15° 58′ E), central Croatia. Coll and subm Feb 1982 by Industroprojekt staff.

11.4 ± 0.4% modern

Z-981. Smrdan **16,000 ± 400**

Water from Topusko thermal spa. Coll and subm by Industroprojekt staff.

8.9 ± 0.4% modern

Z-1137. Sutinske toplice **18,000 ± 600**

Thermal water from main well, Sutinske toplice spa, NW Croatia (46° 03′ N, 16° 02′ E).

Slovenia

Z-962. Rogaška slatina, G-4 **89.4 ± 1.4% modern**

Water from Rogaška slatina spa, NE Slovenia (46° 14′ N, 15° 39′ E). Coll and subm Dec 1981 by Inst Jožef Štefan staff, Ljubljana.

14.1 ± 0.5% modern

Z-1013. Leženj **14,400 ± 400**

Water from bore hole PT-22/82, 220 to 400m deep, near Velenje (46° 24′ N, 15° 01′ E), N Slovenia. Coll and subm May 1982 by M Veselič, Geol Inst, Ljubljana.

Z-1014. Topolšica **>37,000**

Water from bore hole E-5 82, Topolšica spa near Velenje (46° 24′ N, 15° 01′ E), N Slovenia. Coll and subm May 1982 by M Veselič.

Bosnia

23.7 ± 0.5% modern

Z-878. Ribnica, RB-1 **10,200 ± 200**

Mineral water from Ribnica near Kakanj (44° 07′ N, 18° 05′ E), Bosnia. Coll and subm by N Miošić.

8.1 ± 0.4% modern

Z-974. Laktaši **20,000 ± 600**

Thermal artesian water from Laktaši near Banja Luka (44° 45′ 15″ N, 17° 09′ 35″ E), NW Bosnia. Coll and subm Feb 1982 by N Miošić.

9.5 ± 0.4% modern

Z-975. Šaranovića haus **17,600 ± 500**

Thermal water at Gornji Šeher near Banja Luka (44° 45′ 15″ N, 17° 45′ 15″ E) at 168m alt, NW Bosnia. Coll and subm Feb 1982 by D Hrustanpašić. Part of investigations of geothermal potential of Banja Luka region.

Z-976. Slatina, Kiseljak II **>37,000**

Thermal artesian water at Slatina spa near Banja Luka (44° 49′ 35″ N, 17° 18′ 15″ E), NW Bosnia. Coll and subm Feb 1982 by N Miošić.

3.3 ± 0.3% modern

Z-977. Slatina **26,000 ± 1400**

Thermal artesian water from Slatina spa near Banja Luka (44° 49′ 45″ N, 17° 18′ 10″ E) at 210m alt, NW Bosnia. Coll and subm Feb 1982 by D Hrustanpašić.

3.3 ± 0.4% modern

Z-979. Omarska **24,000 ± 1100**

Artesian water from bore hole Jezero 8 at Omarska near Prijedor (44° 53′ N, 16° 54′ E) at 155m alt. Coll and subm Feb 1982 by Geotehnika staff.

19.2 ± 0.5% modern

Z-1182. Sanska Ilidža **11,900 ± 400**

Water from drilled hole, depth 200m, at Sanska Ilidža near Sanski Most spa (44° 41′ N, 16° 46′ E), W Bosnia.

Slatina series

Subartesian thermal water (43°C) at Slatina spa near Banja Luka (44° 49′ N, 17° 19′ E), NW Bosnia. Coll and subm by N Miošić.

		1 ± 0.3% modern
Z-1184.	**Slatina Ilidža, SB-1**	**35,400 +4500 −3500**
		1.2 ± 0.3% modern
Z-1185.	**Slatina Ilidža, Kiseljak**	**34,500 +3700 −3000**

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