

**Table S1.** Results of U-Pb (CA-ID-TIMS) radioisotopic dating of zircon grains from the sample 19kzb-7, Starokuznetsk Formation, Kolchugino Group, Kuznetsk Basin

Fraction	Dates (Ma)						Composition						Isotopic Ratios						
	<sup>206</sup> Pb/ <sup>238</sup> U (a)	+/-2sigma abs	<sup>207</sup> Pb/ <sup>235</sup> U (a)	+/-2sigma abs	<sup>207</sup> Pb/ <sup>206</sup> Pb (a)	+/-2sigma abs	Corr. coef.	% disc (b)	Th/U (c)	Pb* (pg) (d)	Pbc (pg) (e)	Pb*/Pbc (f)	<sup>206</sup> Pb/ <sup>204</sup> Pb (h)	<sup>206</sup> Pb/ <sup>238</sup> U (i)	+/-2sigma %	<sup>207</sup> Pb/ <sup>235</sup> U (i)	+/-2sigma %	<sup>207</sup> Pb/ <sup>206</sup> Pb (i)	+/-2sigma %
<b>19kzb-7</b>																			
<b>19kzb7-1</b>	<b>276,96</b>	<b>0,32</b>	<b>274,06</b>	<b>10,12</b>	<b>249,37</b>	<b>97,00</b>	<b>0,002</b>	<b>-11,06</b>	<b>0,97</b>	<b>41,42</b>	<b>2,72</b>	<b>15,24</b>	<b>851,44</b>	<b>0,043899</b>	<b>0,12</b>	<b>0,309839</b>	<b>4,21</b>	<b>0,051212</b>	<b>4,21</b>
19kzb7-3	324,14	1,53	319,15	55,47	282,88	463,45	0,002	-14,59	0,77	11,97	4,02	2,98	189,69	0,051567	0,48	0,369316	20,25	0,051966	20,26
19kzb7-4	307,23	1,51	308,61	55,83	319,02	476,94	0,003	3,69	0,78	21,28	7,49	2,84	181,23	0,048813	0,50	0,355178	20,98	0,052796	20,98
19kzb7-5	282,38	0,98	285,57	31,50	311,78	288,11	0,004	9,43	1,10	19,57	3,84	5,09	288,69	0,044778	0,35	0,324778	12,66	0,052628	12,66
19kzb7-6	279,03	0,97	279,41	36,88	282,63	345,48	0,003	1,27	1,43	14,45	3,11	4,65	248,15	0,044235	0,36	0,316767	15,10	0,051960	15,10
19kzb7-7	298,37	1,10	304,86	40,68	354,80	348,95	0,004	15,90	0,91	17,57	4,48	3,93	235,94	0,047372	0,38	0,350178	15,45	0,053636	15,45
<b>19kzb7-8</b>	<b>276,74</b>	<b>1,89</b>	<b>254,91</b>	<b>72,22</b>	<b>58,51</b>	<b>763,87</b>	<b>0,005</b>	<b>-373,01</b>	<b>1,66</b>	<b>8,98</b>	<b>3,56</b>	<b>2,52</b>	<b>137,67</b>	<b>0,043865</b>	<b>0,70</b>	<b>0,285367</b>	<b>32,04</b>	<b>0,047204</b>	<b>32,04</b>
<b>19kzb7-9</b>	<b>276,95</b>	<b>0,84</b>	<b>275,83</b>	<b>32,18</b>	<b>266,26</b>	<b>305,76</b>	<b>-0,002</b>	<b>-4,01</b>	<b>1,24</b>	<b>21,88</b>	<b>4,30</b>	<b>5,09</b>	<b>280,49</b>	<b>0,043899</b>	<b>0,31</b>	<b>0,312123</b>	<b>13,32</b>	<b>0,051590</b>	<b>13,33</b>
19kzb7-10	280,08	1,62	265,25	62,97	136,19	633,96	0,002	-105,65	1,05	10,17	4,00	2,54	155,49	0,044405	0,59	0,298524	26,98	0,048780	26,98
<b>19kzb7-11</b>	<b>276,16</b>	<b>1,15</b>	<b>269,12</b>	<b>43,73</b>	<b>208,31</b>	<b>429,02</b>	<b>0,004</b>	<b>-32,57</b>	<b>1,27</b>	<b>15,21</b>	<b>4,02</b>	<b>3,78</b>	<b>212,08</b>	<b>0,043770</b>	<b>0,43</b>	<b>0,303485</b>	<b>18,50</b>	<b>0,050310</b>	<b>18,50</b>
<b>19kzb7-13</b>	<b>276,65</b>	<b>1,25</b>	<b>275,09</b>	<b>47,90</b>	<b>261,85</b>	<b>456,56</b>	<b>0,002</b>	<b>-5,65</b>	<b>1,66</b>	<b>33,72</b>	<b>9,02</b>	<b>3,74</b>	<b>194,57</b>	<b>0,043849</b>	<b>0,46</b>	<b>0,311170</b>	<b>19,88</b>	<b>0,051491</b>	<b>19,88</b>
19kzb7-14	278,46	1,09	277,34	41,48	267,90	392,14	0,002	-3,94	1,32	16,38	4,06	4,04	222,68	0,044142	0,40	0,314078	17,09	0,051627	17,10

(a) Isotopic dates calculated using the decay constants  $\lambda_{238} = 1.55125E-10$  and  $\lambda_{235} = 9.8485E-10$

(b) % discordance =  $100 - (100 * (^{206}\text{Pb}/^{238}\text{U date}) / (^{207}\text{Pb}/^{206}\text{Pb date}))$

(c) Th contents calculated from radiogenic  $^{208}\text{Pb}$  and the  $^{207}\text{Pb}/^{206}\text{Pb}$  date of the sample and assuming concordance between U-Th and Pb systems.

(d) Total mass of radiogenic Pb.

(e) Total mass of common Pb.

(f) Ratio of radiogenic Pb (including  $^{208}\text{Pb}$ ) to common Pb.

(g) Th/U ratio of magma from which mineral crystallized.

(h) Measured ratio corrected for fractionation and spike contribution only.

(i) Measured ratios corrected for fractionation and tracer and blank.