Research Advances

Latest Zircon U-Pb Geochronology of the Qingshan GroupVolcanic rocks along the Tan-Lu Fault Zone of Shandong Province, Eastern China

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Objective

Shandong Province is divided into two parts by the Tan -Lu fault zone: the western part (Luxi) and the eastern part (Jiaodong). Large-scale volcanic activity occurred during the Late Mesozoic in Shandong Province, eastern China (Fig. 1b), and was controlled by the Tan-Lu fault zone and its secondary faults. Mesozoic volcanic rocks in Shandong Province mainly occur within the Cretaceous Qingshan group, overlying the Laiyang group and underlying the Wangsi group. The Qingshan group has been divided into four volcanic cycles, i.e., the Houkuang, Bamudi, Shiqianzhuang and Fanggezhuang formations from the oldest to the youngest. Although geochronology data indicate the volcanic activity occurred during the Early Cretaceous, the starting time and duration of volcanic activity are still equivocal. Two zircon U-Pb ages of volcanic rocks from strata at the lower base of the volcanic sequence along the Tan-Lu fault zone were reported in this paper, which provide new evidence for the discussion of the geological age.

Methods

Zircons were separated using standard heavy liquid and magnetic techniques, and were selected by hand picking under a binocular microscope according to color, shape, transparency and homogeneity. Together with standard zircon crystals (TEMORA), the selected zircons were mounted and polished to half of the grain thickness and then carbon-coated. Cathodoluminescence (CL) images were obtained using a scanning electron microscope (SEM) at the SEM Laboratory of Peking University in Beijing, China. Zircon U-Th-Pb analyses were performed on a laser ablation-inductively coupled plasma-mass spectrometer (LA-ICP-MS) at the Key Laboratory of Orogenic Belt and Crustal Evolution, Peking University in Beijing, China. The instrument configuration consists of an Agilent 7500ce ICPMS instrument equipped with a 193 nm ArF-excimer laser. Helium was used as the carrier gas. The laser beam was accelerated at 5 Hz, with an intensity of 5 J/cm². The diameter and depth of the laser analysis pit were 32 μ m and 30–40 μ m, respectively. Plešovice zircon was used as an external standard for all U-Th-Pb isotopic analyses, and NIST 610 was used as an external standard to calculate the concentrations of U–Th–Pb and other trace elements in zircon. U-Th-Pb isotopic ratios were calculated using the Glitter program. Data reduction was conducted using Isoplot.

Results

Two samples including trachyandensite (sample No. SD -54) and trachyte (sample No. SD-165) were collected from strata at the lower base of the volcanic sequence along the Tan–Lu fault zone in Shandong Province. Specific details and features of the results are as follows.

Zircons from trachyandensite sample No. SD-54 are euhedral–subhedral, prismatic, and range from 100 to 300 µm in diameter. They have length-to-width ratios of 2:1 to 1:1, with distinct oscillatory zoning and occasionally exhibit sector zoning (Fig. 1e). The zircons all have relatively high Th/U ratios (0.82–1.78), suggestive of a magmatic origin. All 25 zircons analyzed are concordant and yield a weighted mean 206 Pb/²³⁸U age of 127.7±0.6Ma (MSWD = 0.26) (Fig. 1c). This age is interpreted as the crystallization age of the volcanic rocks.

Zircons from trachyte sample No. SD-165 are mostly euhedral–subhedral, prismatic, ranging from 150 to 400 μ m in diameter, and have length-to-width ratios of 4:1 to 2:1, with distinct oscillatory zoning. However, a few of the inherited zircon grains have a core-rim structure, and the core shows oscillatory zoning. The rim shows thin and light-color rim (Fig. 1e), likely reflecting a metamorphic event. The high Th/U ratios (0.53–2.46) of all the zircons suggest a magmatic origin. Of the two inherited zircon analyses, two are concordant and produce ²⁰⁷Pb/²⁰⁶Pb ages

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Fig. 1. (a), Generalized geological map of the North China Craton (NCC), showing the main cratonic blocks and orogenic belts; (b), Simplified geological map of Shandong Province, eastern China, showing the locations of samples obtained during this study; (c–d), Concordia diagrams of zircon U-Pb for the volcanic rocks from Qingshan group; (e), Cathodoluminescence (CL) images of zircons from the volcanic rocks.

of 2526 Ma and 2425 Ma, respectively. All the analyses define a discordia with lower and upper intercepts at 127±16 Ma and 2482±23 Ma (MSWD=2.2), respectively (Fig. 1d). Excluding analyses of inherited zircons, the 21 young zircons analyzed are concordant and yield a weighted mean 206 Pb/ 238 U age of 127.3±1 Ma (MSWD=1.17) (Fig. 1d) which is interpreted as the age of volcanism.

Conclusion

The weighted mean 206 Pb/ 238 U age of the volcanic rocks from the strata at the lower base of the volcanic sequence

Qingshan group along the Tan–Lu fault zone range from 127.7 to 127.3 Ma, match with the reported starting age (126.4 Ma) of the volcanic activity in the Jiaodong area, suggesting that the Qingshan group volcanic activity in Jiaodong and Tan–Lu fault zone began contemporaneously.

Acknowledgments

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$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	A na lytei e	$W_{\rm B}~({\rm ppm})$		Th/IT	^{20/} Pb/	²⁰⁶ Pb	0^{207} Pb/ ²³⁵ U		²⁰⁶ Pb	/ ²³⁸ U		dq ^{ou2/} dq ²⁰⁰ Pb		U ^{c23/} dq ²³²		²⁰⁶ Pb/ ²³⁸ U
Sup-static 133 (1)	The	n	Pb	1 III C	ratios	1σ	ratios	1σ	ratios	1σ	Age	1σ	Age	1σ	Age	1σ
	ple SD-54 trachyandensit	e (E118°8.285' N3	36°34.806′)													
	SD-54-01 153	163	4.49	0.93	0.0485	0.0032	0.1343	0.0088	0.0201	0.0004	121	114	128	8	128	7
SD-34-05 382 0.447 0.0017 0.1027 0.0037 0.0037 0.0037 0.003 1.033 SD-34-05 38 343 1.24 0.383 0.0483 0.0037 0.0037 0.0033 0.033 0.0033 0.003 0.033 0.003 0.033 0.003 0.033 0.003 0.003 0.003 0.003 0.003 0.013 0.003 0.003 0.003 0.003 0.003 0.003 0.003 0.003 0.003 0.003 0.003 0.003 0.003 0.003 0.003 0.003 0.003 0.003	SD-54-02 261	247	6.80	1.06	0.0484	0.0022	0.1334	0.0059	0.0200	0.0003	119	75	127	5	128	7
	SD-54-03 382	465	12.40	0.82	0.0477	0.0014	0.1327	0.0037	0.0202	0.0002	85	44	127	ς,	129	7
Strong to the strong	SD-54-04 310	352	9.53	0.88	0.0489	0.0017	0.1362	0.0046	0.0202	0.0003	145	55	130	4	129	7
SD-34-06 352 358 8.44 1.23 0.0486 0.001 0.135 0.0044 0.023 0.003 1.03 SD-34-06 352 358 1.12 0.0485 0.0015 0.138 0.0016 0.0035 <td>SD-54-05 98</td> <td>94</td> <td>2.68</td> <td>1.05</td> <td>0.0493</td> <td>0.0038</td> <td>0.1377</td> <td>0.0105</td> <td>0.0203</td> <td>0.0003</td> <td>162</td> <td>141</td> <td>131</td> <td>6</td> <td>129</td> <td>7</td>	SD-54-05 98	94	2.68	1.05	0.0493	0.0038	0.1377	0.0105	0.0203	0.0003	162	141	131	6	129	7
$ \begin{array}{llllllllllllllllllllllllllllllllllll$	SD-54-06 352	285	8.44	1.23	0.0485	0.0016	0.1355	0.0044	0.0203	0.0003	126	54	129	4	129	7
$ \begin{array}{llllllllllllllllllllllllllllllllllll$	SD-54-07 140	136	3.81	1.02	0.0480	0.0030	0.1340	0.0083	0.0202	0.0003	100	107	128	7	129	7
	SD-54-08 286	188	5.98	1.52	0.0484	0.0022	0.1369	0.0061	0.0205	0.0003	119	76	130	S	131	0
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	SD-54-09 294	353	9.55	0.83	0.0485	0.0015	0.1368	0.0042	0.0205	0.0003	123	49	130	4	131	7
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	SD-54-10 202	149	4.40	1.36	0.0514	0.0027	0.1397	0.0072	0.0197	0.0003	259	89	133	9	126	7
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	3D-54-12 87	79	2.30	1.10	0.0555	0.0032	0.1538	0.0088	0.0201	0.0003	125	211	127	11	127	2
	3D-54-16 148	100	3.14	1.48	0.0472	0.0032	0.1312	0.0086	0.0202	0.0003	61	114	125	8	129	7
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	3D-54-17 647	671	18.41	0.96	0.0472	0.0009	0.1289	0.0025	0.0198	0.0002	58	27	123	2	127	_
$ \begin{array}{llllllllllllllllllllllllllllllllllll$	3D-54-19 118	100	3 02	1 18	0.0486	0 0027	0 1370	0 0076	0.0205	0 0003	127	95	130		131	0
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	ID-54-20 500	200	15.85	0.86	0.0403	0.0010	0.1351	0.0076	0.0100	0,000	160	26	179	. (101	ı -
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$		201	C9.C1	0.04	L010.0	010000	7661.0	0.0050	00100	0.0002	122	D7	141	1 4	141	- r
$\begin{array}{cccccccccccccccccccccccccccccccccccc$		101	20.0	0.94	0.040/	0700.0	0551.0	6000 0	0.0199	5000.0		6	/71	ი ი	121	4 -
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	070 070 070	034 102	cc./1	99.U	0100.0	0.0010	0.1392	0.0028	0.0198	0.0002	747	07	152	11	071	- ,
$ \begin{array}{llllllllllllllllllllllllllllllllllll$	SD-54-23 236	133	4.33	1.78	0.0493	0.0022	0.1341	0.0058	0.0198	0.0003	160	75	128	S	126	7
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	SD-54-24 161	101	3.17	1.60	0.0483	0.0027	0.1323	0.0073	0.0199	0.0003	112	95	126	7	127	7
$ \begin{array}{llllllllllllllllllllllllllllllllllll$	SD-54-25 240	262	7.17	0.92	0.0493	0.0020	0.1358	0.0054	0.0200	0.0003	164	65	129	S	127	7
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	SD-54-26 111	95	2.90	1.17	0.0581	0.0029	0.1654	0.0080	0.0207	0.0003	158	204	132	11	130	7
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	SD-54-27 77	70	2.01	1.11	0.0489	0.0040	0.1353	0.0109	0.0201	0.0004	144	145	129	10	128	7
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	SD-54-28 970	550	17.65	1.76	0.0490	0.0011	0.1329	0.0028	0.0197	0.0002	149	28	127	7	126	1
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	SD-54-29 209	156	4.61	1.34	0.0505	0.0026	0.1386	0.0069	0.0199	0.0003	217	86	132	9	127	7
Sample SD-165 trachyte (E1197.87 N36°16.504') SD165-01 106 88 2.61 10.0044 9.01204 0.00204 0.0012 0.0004 5.001204 0.001204 0.001204 0.001204 0.001204 0.00120 0.00014 15.3 SD165-04 134 1.13 0.0042 0.01046 0.0013 477 SD165-06 134 0.0012 0.0004 0.01204 0.0014 15 SD165-06 134 0.0156 0.01949 0.0003 2014 2015 SD165-06 134 133 0.01045 0.01042 0.01043 0.01043 0.01043 0.01043 0.01043 0.01043 0.01043 0.01043 0.0104	3D-54-30 706	729	20.55	0.97	0.0498	0.0009	0.1385	0.0025	0.0202	0.0002	187	23	132	2	129	1
$ \begin{array}{llllllllllllllllllllllllllllllllllll$	ple SD-165 trachyte (E	119°7.87' N36°16.	.504')													
$ \begin{array}{llllllllllllllllllllllllllllllllllll$	D165-01 106	88	2.61	1.20	0.0479	0.0046	0.1345	0.0129	0.0204	0.0004	93	180	128	12	130	7
$ \begin{array}{llllllllllllllllllllllllllllllllllll$	(D165-02 134	118	3.42	1.13	0.0523	0.0042	0.1455	0.0116	0.0202	0.0004	298	147	138	10	129	2
SDI65-04 104 74 2.22 1.40 0.0491 0.0056 0.1341 0.0152 0.0198 0.0004 153 SD165-06 139 106 147 95.52 0.72 0.1669 0.0073 0.0198 0.0003 2004 255 SD165-06 130 1112 3.39 1166 0.172 0.1669 0.0073 0.0198 0.0004 255 SD165-10 164 137 4.02 1.16 0.0500 0.0030 0.1412 0.0198 0.0004 216 SD165-11 332 1173 5.58 1.92 0.0447 0.0075 0.1388 0.0033 0.447 SD165-14 275 475 11.92 0.58 0.0447 0.0075 0.1388 0.0003 0.0137 0.0033 0.0073 0.0198 0.0003 0.0137 0.0135 0.0033 0.0137 0.0136 0.0033 0.0137 0.0137 0.0136 0.0033 0.0137 0.0136 0.0013	D165-03 260	149	4.68	1.75	0.0551	0.0036	0.1465	0.0093	0.0193	0.0003	417	114	139	8	123	0
$ \begin{array}{llllllllllllllllllllllllllllllllllll$:D165-04 104	74	2.22	1.40	0.0491	0.0056	0.1341	0.0152	0.0198	0.0004	153	219	128	14	126	7
$ \begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	D165-06 239	168	5.09	1.43	0.0502	0.0027	0.1370	0.0073	0.0198	0.0003	206	96	130	7	126	6
$ \begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	D165-08 106	147	95.52	0.72	0.1669	0.0022	10.9141	0.1383	0.4745	0.0049	2526	10	2516	12	2503	21
$ \begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	D165-09 130	112	3.39	1.16	0.0505	0.0040	0.1412	0.0110	0.0203	0.0004	216	143	134	10	130	7
$ \begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	D165-10 164	137	4.02	1.20	0.0500	0.0030	0.1398	0.0083	0.0203	0.0003	194	109	133	7	129	7
$ \begin{array}{llllllllllllllllllllllllllllllllllll$	D165-11 328	196	6.23	1.67	0.0500	0.0027	0.1366	0.0072	0.0198	0.0003	194	96	130	9	127	7
$ \begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	D165-13 332	173	5.58	1.92	0.0449	0.0026	0.1205	0.0070	0.0195	0.0003	-24	97	116	9	124	7
$ \begin{array}{llllllllllllllllllllllllllllllllllll$	D165-14 275	475	11.92	0.58	0.0497	0.0015	0.1388	0.0041	0.0203	0.0002	180	46	132	4	129	7
SD165-16 194 188 5.14 1.04 0.0472 0.0026 0.1304 0.0070 0.0200 0.003 60 SD165-17 237 223 6.21 1.06 0.0484 0.0023 0.1346 0.0063 0.0202 0.0003 118 SD165-18 591 352 11.18 1.68 0.0476 0.017 0.1311 0.0455 0.0202 0.0003 77 SD165-19 222 1118 3.81 1.89 0.0544 0.0075 0.1134 0.0093 200 77 SD165-21 130 92 2.35 0.0516 0.0025 0.1156 0.003 270 270 213 SD165-21 130 92 2.70 1.42 0.0465 0.0057 0.157 0.0032 2003 237 SD165-23 274 513 2.577 0.53 0.1572 0.0035 0.0132 0.0035 222 SD165-24 128 9.73 0.0026	D165-15 158	126	3.67	1.26	0.0495	0.0036	0.1374	0.0099	0.0202	0.0003	170	132	131	6	129	7
SD165-17 237 223 6.21 1.06 0.0484 0.0023 0.1346 0.063 0.0202 0.0003 118 SD165-18 591 352 11.18 1.68 0.0476 0.0017 0.1311 0.0455 0.0202 0.0002 77 SD165-19 222 11.18 1.68 0.0476 0.0017 0.1311 0.0455 0.0198 0.0002 77 SD165-19 222 118 3.81 1.89 0.0564 0.0045 0.0198 0.003 270 SD165-21 130 92 2.770 1.42 0.0487 0.0055 0.1150 0.0032 131 SD165-22 211 130 92 2.770 1.42 0.0465 0.0057 0.0032 0.0032 2003 222 SD165-23 274 513 2.9577 0.53 0.1572 0.0057 0.0032 20138 20155 222 20155 225 235 235 235 235	D165-16 194	188	5.14	1.04	0.0472	0.0026	0.1304	0.0070	0.0200	0.0003	60	91	124	9	128	7
SD165-18 591 352 11.18 1.68 0.0476 0.017 0.1311 0.0045 0.0200 0.002 77 SD165-19 222 118 3.81 1.89 0.0564 0.0046 0.0198 0.0042 212 212 SD165-19 222 118 3.81 1.89 0.0564 0.0198 0.0044 212 SD165-21 668 284 9.81 2.35 0.0516 0.0056 0.0192 0.0003 270 SD165-22 211 130 92 2.770 1.42 0.0465 0.0021 0.1180 0.0192 0.003 22 SD165-22 211 238 0.0557 0.0257 0.0202 0.0033 22 22 SD165-24 128 93 2.71 1.37 0.0499 0.0046 0.1320 0.0044 20013 22 SD165-24 128 9.73 1.0370 0.0120 0.0144 0.0044 0.01202 0.0043	D165-17 237	223	6.21	1.06	0.0484	0.0023	0.1346	0.0063	0.0202	0.0003	118	82	128	9	129	7
SD165-19 222 118 3.81 1.89 0.0504 0.0040 0.1374 0.0198 0.0044 212 SD165-20 668 284 9.81 2.35 0.0516 0.0022 0.1358 0.0056 0.0192 0.003 270 SD165-21 130 92 2.70 1.42 0.0465 0.0056 0.0192 0.0005 131 SD165-21 130 92 2.70 1.42 0.0465 0.0051 0.150 0.0202 0.0005 131 SD165-22 211 258 6.85 0.82 0.0465 0.0021 0.1180 0.0198 0.0033 22 SD165-23 274 131 295.72 0.53 0.1572 0.0037 0.0232 0.0043 218 2455 SD165-24 128 9.73 1.037 0.0049 0.0146 0.0044 217 2455 SD165-24 376 347 9.73 1.08 0.01320 0.0044 20044 <td>D165-18 591</td> <td>352</td> <td>11.18</td> <td>1.68</td> <td>0.0476</td> <td>0.0017</td> <td>0.1311</td> <td>0.0045</td> <td>0.0200</td> <td>0.0002</td> <td>77</td> <td>56</td> <td>125</td> <td>4</td> <td>128</td> <td>7</td>	D165-18 591	352	11.18	1.68	0.0476	0.0017	0.1311	0.0045	0.0200	0.0002	77	56	125	4	128	7
SD165-20 668 284 9.81 2.35 0.0516 0.0022 0.1368 0.0056 0.0192 0.003 270 SD165-21 130 92 2.70 1,42 0.0487 0.0055 0.1358 0.0150 0.0202 0.0005 131 SD165-21 130 92 2.70 1,42 0.0465 0.0051 0.150 0.0202 0.0005 131 SD165-22 211 258 6.85 0.82 0.0465 0.0051 0.1592 0.0033 22 SD165-23 274 513 295.72 0.53 0.1572 0.0044 2425 SD165-24 128 9.3 2.71 1.37 0.0499 0.0046 0.1320 0.0144 2425 SD165-24 128 9.73 1.08 0.0499 0.0046 0.1320 0.0014 191 SD165-24 376 377 0.732 0.0198 0.0044 191 SD165-29 939 382	D165-19 222	118	3.81	1.89	0.0504	0.0040	0.1374	0.0108	0.0198	0.0004	212	146	131	10	126	7
SD165-21 130 92 2.70 1.42 0.0487 0.0055 0.1353 0.0150 0.0202 0.005 131 SD165-22 211 258 6.85 0.82 0.0465 0.0021 0.1292 0.0057 0.0202 0.0003 22 SD165-23 274 513 295.72 0.53 0.1572 0.0044 0.0044 2425 SD165-24 128 93 2.71 1.37 0.0049 0.0046 0.1320 0.0125 0.0144 2425 SD165-24 128 973 1.03 0.0499 0.0046 0.1320 0.0125 0.0198 0.0044 191 SD165-27 377 9.73 1.08 0.0499 0.0016 0.1320 0.0198 0.0003 76 SD165-27 339 382 13.82 2.46 0.0490 0.0016 0.1335 0.0198 0.0002 147	D165-20 668	284	9.81	2.35	0.0516	0.0022	0.1368	0.0056	0.0192	0.0003	270	69	130	5	123	7
SD165-22 211 258 6.85 0.82 0.0465 0.0021 0.1292 0.0057 0.0202 0.0033 22 SD165-23 274 513 295.72 0.53 0.1572 0.0020 9.5418 0.1180 0.4404 0.0044 2425 SD165-24 128 93 2.71 1.37 0.0499 0.0046 0.1362 0.0198 0.0044 2425 SD165-24 128 93 2.71 1.37 0.0499 0.0046 0.1362 0.0198 0.0004 191 SD165-27 376 347 9.73 1.08 0.0475 0.0018 0.1320 0.0037 76 SD165-29 939 382 13.82 2.46 0.0490 0.0016 0.1335 0.0198 0.0002 147	D165-21 130	92	2.70	1.42	0.0487	0.0055	0.1353	0.0150	0.0202	0.0005	131	206	129	13	129	ŝ
SD165-23 274 513 295.72 0.53 0.1572 0.0020 9.5418 0.1180 0.4044 0.004 2425 SD165-24 128 93 2.71 1.37 0.0499 0.0046 0.1362 0.0198 0.0004 191 SD165-27 376 347 9.73 1.08 0.0475 0.0018 0.1320 0.0198 0.0004 191 SD165-27 376 347 9.73 1.08 0.0475 0.0018 0.1320 0.00201 0.0003 76 SD165-29 939 382 13.82 2.46 0.0490 0.0016 0.1335 0.0198 0.0002 147	D165-22 211	258	6.85	0.82	0.0465	0.0021	0.1292	0.0057	0.0202	0.0003	22	70	123	5	129	7
SDI65-24 128 93 2.71 1.37 0.0499 0.0046 0.1362 0.0198 0.0004 191 SDI65-27 376 347 9.73 1.08 0.0475 0.0018 0.1320 0.0201 0.0003 76 SDI65-27 376 347 9.73 1.08 0.0475 0.0018 0.1320 0.0201 0.0003 76 SDI65-29 939 382 13.82 2.46 0.0490 0.0016 0.1335 0.0198 0.0002 147	D165-23 274	513	295.72	0.53	0.1572	0.0020	9.5418	0.1180	0.4404	0.0044	2425	10	2392	11	2352	19
SD165-27 376 347 9.73 1.08 0.0475 0.0018 0.1320 0.0050 0.0201 0.0003 76 SD165-29 939 382 13.82 2.46 0.0490 0.0016 0.1335 0.0043 0.0198 0.0002 147	D165-24 128	93	2.71	1.37	0.0499	0.0046	0.1362	0.0125	0.0198	0.0004	191	174	130	- 11	126	0
SD165-29 939 382 13.82 2.46 0.0490 0.0016 0.1335 0.00498 0.0002 14/	D165-27 376	347	9.73	1.08	0.0475	0.0018	0.1320	0.0050	0.0201	0.0003	29 - 12	62 5	126	4 .	129	0 0
	404 KT-C0101	582	13.82	2.40	0.0490	0.0010	CCC1.U	0.0043	0.0198	0.0002	14/	çç	171	4	170	7

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