

Table X: Isotope Dilution Single-Grain Analyses of Zircons from .

Fraction*	Weight (mg)	U (ppm)	Pb (ppm)	Observed# 206Pb/204Pb	Radiogenic Ratios ± 2SE (%)†			Calculated Ages ± 2SE (Ma)‡		
					207*Pb/235U	206*Pb/238U	207*Pb/206*Pb	207*Pb/235U	206*Pb/238U	207*/206*
<u>A. KSBB3: Bourbon County, Ks</u> <i>Stevenson well #319 1 K10:1030622153 added by NP</i>										
#1 NM(0)	0.001	260.61	66.26	441.4	2.9444±.043	.2098±.003	.1018±.0003	1393.4±20.4	1227.7±17.4	1657±6.4
#2 NM(0)	0.001	634.15	26.39	148.58	.2203±.009	.0295±.001	.0541±.001	202.14±7.9	187.57±5.78	375.73±50
#3 M(1)	0.002	627.23	104.52	529.38	1.1888±.009	.1444±.001	.05969±.0003	795.41±5.8	869.71±4.7	592.48±2.7
#3 M(1) (58)	0.006	829.62	88.57	1442.35	.85627±.57%	.10284±.535%	.06039±.192%	628.1±3.6	631±3.4	617.6±4.1
#3 M(1) (62)	0.003	376.65	34.08	534.235	.69417±.951%	.082646±.8%	.060917±1.6%	535.3±5.1	511.9±4.1	636.3±10
#6 M(0)	0.002	28.05	8.22	95.84	3.459±.211	.2049±.01	.1225±.003	1518±92.6	1201.4±61.4	1992.4±54
#8 M(0)	0.001	350.78	77.55	446.81	2.9179±.038	.1972±.002	.1073±.0004	1386.6±18	1160.4±14.4	1754.1±6.8
#8 M(0) (40)	0.001	237.85	58.83	315.98	2.734±1.83%	.19342±1.72%	.10252±.58%	1337.8±24.4	1139.9±19.6	1670.2±10.7
#11 M(0) (39)	0.002	569.55	66.82	365.297	.83929±.805%	.10057±.712%	.060528±.355%	618.75±5	617.72±4.4	622.51±7.7
<u>B. MOCE-1: USGS NS-2A, Cedar County, Mo</u>										
#1 NM(0)	0.003	294.03	100.69	365.48	3.5296±.036	.2590±.006	.0989±.0003	1533.9±15.8	1484.5±14.3	1602.6±6.3
#1 M(0) (80)	0.002	110.04	42.79	230.42	3.6805±.03	.2720±.002	.09813±.0004	1567.1±12.9	1551.1±11.2	1588.8±7
#1 M(0) (V5)	0.001	123.7	40.79	596.39	3.7517±.048	.2689±.003	.1012±.0004	1582.5±20	1535.3±18.6	1645.9±6.8
#2 M(0) (81)	0.001	173.55	56.37	107.27	1.2797±.34	.21267±.009	.0436±.011	836.73±222	1243±53.8	-130.85±21
#3 M(0) (V7)	0.001	55.37	20.23	153.58	3.4673±.086	.25543±.006	.09845±.001	1519.8±37.54	1466.4±32.6	1595±18
#3 M(0) (82)	0.003	57.69	13.08	121.14	1.6845±.084	.16779±.008	.07281±.001	1002.7±50	999.93±48	1008.7±23
#3 NM(0) (81)	0.003	70.35	13.89	198.68	1.5202±.023	.15521±.002	.07104±.0004	938.57±14	930.1±13	958.5±12
#3 M(0) (V6)	0.002	119.5	20.76	629.18	1.6882±.018	.16524±.002	.07410±.0002	1004.1±10.6	985.8±9.5	1044.3±8.1
#4 NM(0) (82)	0.001	98.03	35.98	297.29	4.5045±.052	.30419±.003	.1074±.0004	1731.8±20	1712±18.8	1755.8±6.3
#4 M(0) (V8)	0.001	256.58	67.25	575.16	2.8175±.047	.20812±.003	.09819±.0005	1360.2±22.6	1218.8±18.9	1590±10
#4 M(0) (88)	0.001	143.94	47.21	376.41	4.0253±.081	.28245±.005	.10336±.001	1639.3±33	1603.7±31	1685.3±9.9



Fraction*	Weight (mg)	U (ppm)	Pb (ppm)	Observed <sup>#</sup> 206Pb/204Pb	Radiogenic Ratios ± 2SE (%) <sup>†</sup>			Calculated Ages ± 2SE (Ma) <sup>‡</sup>		
					207*Pb/235U	206*Pb/238U	207*Pb/206*Pb	207*Pb/235U	206*Pb/238U	207*/206*
<u>3. V-3/K Quartzite</u>										
#1 NM(0) (45)	0.008	342.73	108.09	1404.18	3.7155±.125	.2663±.002	.10119±.0002	1574.7±.14	1522.1±.13.5	1646±.3.9
#1 NM(0) (54)	0.004	383.31	106.05	1383.85	3.9341 ±.04	.27101±.003	.10528±.0002	1620.7±.16.4	1545.9±.15	1719.3±.4.1
#1 NM(0) (79)	0.002	54.99	6.69	149.65	.67771±.031	.08487±.002	.05791±.002	525.39±.24.2	525.13±.9.7	526.48±.88
#1b NM(0) (31)	0.002	39.35	34.16	25.97	.87011±.139	.11298±.004	.05586±.008	635.63±.101.7	690.04±.24	446.64±.330
#1b NM(0) (78)	0.003	63.41	7.27	185.28	.64745±.027	.08339±.001	.05631±.002	506.9±.21	516.3±.7.6	464.75±.82
#1 NM(0) (35)	0.001	131.57	56.44	111.40	3.1807±.137	.26969±.005	.08554±.003	1452.5±.62.5	1539.2±.27.4	1327.8±.70
#2 NM(0) (45)	0.002	63.94	22.79	372.72	3.863±.042	.2784±.003	.10064±.0004	1606±.1.2	1583.3±.16	1636±.7.7
#2 NM(0) (58)	0.003	36.22	12.49	742.76	3.776±.08	.2742±.005	.09986±.001	1587.6±.33.5	1562.3±.30.9	1621.4±.12
#2 NM(0) (62)	0.002	65.24	19.84	695.14	3.432±.059	.2473±.004	.10064±.0002	1511.8±.25.9	1424.7±.24	1635.9±.4.1

Notes:

\*: M, NM refer to magnetic, non-magnetic splits at Franz separator tilt (at 1.5 amp) given in parentheses.

#: Uncorrected for analytical blank (ca. 4 pg) or original non-radiogenic Pb in the zircon.

†: Corrected for analytical blank and original non-radiogenic Pb in the zircon; see text.

‡: Based on the decay constants of Steiger and Jäger (1977).

Final Summary, Co, Cr & Ni

Project Name				XXXX	XXXX			
Scientist Name				Lisa	Hampton			
Date Begun				Nov. 15	1996			
Date Completed				Jan. 17	1997			
KGS No.	960232	960233	960234	960235	960236	960237	960238	960239
Sample No.	1 KSBB 3	2 KSBB 3	3 KSBB 3	4 KSBB 3	5 KSBB 3	V-3/N SH	V-3/L SLT	V-3/PSH
Depth Interval	1943-1953'	2002-2039'	2098-2127'	2167-2185'	2233-2264'	1600-1615'	1960-1970'	1272-1313'
	ppm							
Co	118.8	43.66	41.18	59.62	55.92	71.56	68.7	<del>48.4</del> 34.92
Cr	57.09	57.89	56.86	60.7	52.48	65.3	22.65	34.92
Ni	26.38	33.43	36.49	27.79	56.8	22.26	79.58	56.3
Dried at	110	110	110	110	110	110	110	110

KID: 1030622753

**CHEMICAL ANALYSES OF ROCK SAMPLES**  
**KANSAS GEOLOGICAL SURVEY**  
 University of Kansas, Lawrence

*Sturson*

County Bourbon Lab. No. 960232

Location SW, SW, NE Sec. 16 T. 26 S., R. 24 E

Lithology \_\_\_\_\_

Stratigraphic horizon \_\_\_\_\_

Thickness of bed \_\_\_\_\_ Depth 1943 - 1953'

Type of sample \_\_\_\_\_ Core Sample

Topographic position Sample # 1 KSBB3

Sampled by \_\_\_\_\_ Date Sampled \_\_\_\_\_

Majors	%	Traces	ppm
Silica (SiO <sub>2</sub> )	67.13	Cobalt (Co)	118.8
Alumina (Al <sub>2</sub> O <sub>3</sub> )	17.72	Chromium (Cr)	57.09
Iron oxide (Fe <sub>2</sub> O <sub>3</sub> )	5.25	Nickel (Ni)	26.37
Titanium oxide (TiO <sub>2</sub> )	0.80		
Manganese oxide (MnO)	0.07		
Calcium oxide (CaO)	0.15		
Magnesium oxide (MgO)	1.15		
Strontium oxide (SrO)			
Potassium oxide (K <sub>2</sub> O)	3.72		
Sodium Oxide (Na <sub>2</sub> )	0.68		
Loss on Ignition at <u>1000°C.</u>	3.08		
Total	99.75		
Dried at <u>110°C.</u>			

Date January, 1997 Analyst Galle



CHEMICAL ANALYSES OF ROCK SAMPLES  
 KANSAS GEOLOGICAL SURVEY  
 University of Kansas, Lawrence

County Bourbon Lab. No. 960234

Location SW, SW, NE Sec. 16 T. 26 S., R. 24 E

Lithology \_\_\_\_\_

Stratigraphic horizon \_\_\_\_\_

Thickness of bed \_\_\_\_\_ Depth 20298 - 2127

Type of sample \_\_\_\_\_ Core Sample

Topographic position Sample # 3 KSBB3

Sampled by \_\_\_\_\_ Date Sampled \_\_\_\_\_

Majors	%	Traces	ppm
Silica (SiO <sub>2</sub> )	68.34	Cobalt (Co)	41.18
Alumina (Al <sub>2</sub> O <sub>3</sub> )	16.48	Chromium (Cr)	56.86
Iron oxide (Fe <sub>2</sub> O <sub>3</sub> )	4.96	Nickel (Ni)	36.49
Titanium oxide (TiO <sub>2</sub> )	0.76		
Manganese oxide (MnO)	0.08		
Calcium oxide (CaO)	0.34		
Magnesium oxide (MgO)	1.22		
Strontium oxide (SrO)			
Potassium oxide (K <sub>2</sub> O)	3.69		
Sodium Oxide (Na <sub>2</sub> )	0.74		
Loss on Ignition at <u>1000°C.</u>	3.04		
Total	99.78		
Dried at <u>100 °C.</u>			

Date January 1997 Analyst Galle

**CHEMICAL ANALYSES OF ROCK SAMPLES**  
**KANSAS GEOLOGICAL SURVEY**  
**University of Kansas, Lawrence**

County Bourbon Lab. No. 960235

Location \_\_\_\_\_ Sec. \_\_\_\_\_ T. \_\_\_\_\_ S., R. \_\_\_\_\_ E

Lithology \_\_\_\_\_

Stratigraphic horizon \_\_\_\_\_

Thickness of bed \_\_\_\_\_ Depth 2167 - 2185

Type of sample \_\_\_\_\_ Core Sample

Topographic position Sample # 4 KSBB3

Sampled by \_\_\_\_\_ Date Sampled \_\_\_\_\_

Majors	%	Traces	ppm
Silica (SiO <sub>2</sub> )	67.80	Cobalt (Co)	59.62
Alumina (Al <sub>2</sub> O <sub>3</sub> )	15.44	Chromium (Cr)	60.70
Iron oxide (Fe <sub>2</sub> O <sub>3</sub> )	5.41	Nickel (Ni)	27.79
Titanium oxide (TiO <sub>2</sub> )	0.86		
Manganese oxide (MnO)	0.14		
Calcium oxide (CaO)	1.02		
Magnesium oxide (MgO)	1.36		
Strontium oxide (SrO)			
Potassium oxide (K <sub>2</sub> O)	3.16		
Sodium Oxide (Na <sub>2</sub> )	1.12		
Loss on Ignition at <u>1000°C.</u>	3.60		
Total	99.91		
Dried at <u>100°C.</u>			

Date January 1997 Analyst Galle

**CHEMICAL ANALYSES OF ROCK SAMPLES**  
**KANSAS GEOLOGICAL SURVEY**  
**University of Kansas, Lawrence**

KID: 1036622753  
 Stevenson well # 319  
 well 1

County Bourbon Lab. No. 960003

Location SW,SW,NE Sec. 16 T. 26 S., R. 24 E  
W

Lithology \_\_\_\_\_

Stratigraphic horizon \_\_\_\_\_

Thickness of bed \_\_\_\_\_ Depth 2264 - 73'

Type of sample \_\_\_\_\_ Core Sample

Topographic position \_\_\_\_\_ Sample # 4 KSBB 3

Sampled by Lisa Hampton Date Sampled \_\_\_\_\_

Majors	%	Traces	ppm
Silica (SiO <sub>2</sub> )	68.62	Barium (Ba)	174.6
Alumina (Al <sub>2</sub> O <sub>3</sub> )	17.40	Cadmium (Cd)	0.025
Iron oxide (Fe <sub>2</sub> O <sub>3</sub> )	5.08	Chromium (Cr)	35.97
Titanium oxide (TiO <sub>2</sub> )	0.95	Cobalt (Co)	19.86
Manganese oxide (MnO)	0.09	Copper (Cu)	20.32
Calcium oxide (CaO)	0.67	Lead (Pb)	62.17
Magnesium oxide (MgO)	1.15	Lithium (Li)	31.82
Strontium oxide (SrO)		Molybdenum (Mo)	1.30
Potassium oxide (K <sub>2</sub> O)	0.57	Nickel (Ni)	31.36
Sodium Oxide (Na <sub>2</sub> O)	1.27	Silver (Ag)	0.064
		Strontium (Sr)	10.93
		Zinc (Zn)	89.98
		Palladium (Pd)	3.71
		Platinum (Pt)	0.00
Loss on Ignition at <u>1000°C.</u>	3.49		
Total	99.29		
Dried at <u>110 °C.</u>			

Date May, 1996 Analyst Galle

**CHEMICAL ANALYSES OF ROCK SAMPLES**  
**KANSAS GEOLOGICAL SURVEY**  
**University of Kansas, Lawrence**

County Bourbon Lab. No. 960236

Location SW, SW, NE Sec. 16 T. 26 S., R. 24 E

Lithology \_\_\_\_\_

Stratigraphic horizon \_\_\_\_\_

Thickness of bed \_\_\_\_\_ Depth 2233 - 2264

Type of sample \_\_\_\_\_ Core Sample

Topographic position Sample # 5 KSBB3

Sampled by \_\_\_\_\_ Date Sampled \_\_\_\_\_

Majors	%	Traces	ppm
Silica (SiO <sub>2</sub> )	67.94	Cobalt (Co)	55.92
Alumina (Al <sub>2</sub> O <sub>3</sub> )	17.13	Chromium (Cr)	52.48
Iron oxide (Fe <sub>2</sub> O <sub>3</sub> )	5.25	Nickel (Ni)	56.80
Titanium oxide (TiO <sub>2</sub> )	0.84		
Manganese oxide (MnO)	0.07		
Calcium oxide (CaO)	0.15		
Magnesium oxide (MgO)	1.14		
Strontium oxide (SrO)			
Potassium oxide (K <sub>2</sub> O)	3.66		
Sodium Oxide (Na <sub>2</sub> )	0.68		
Loss on Ignition at <u>1000°C.</u>	3.12		
Total	99.98		
Dried at <u>110°C.</u>			

Date January, 1997 Analyst Galle